



National Center for Science and
Engineering Statistics

Annual Business Survey: 2022 (Data Year 2021)

Data Tables | NSF 24-303 | October 30, 2023

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General Notes

This report provides data from the 2022 Annual Business Survey (ABS) (data year 2021). The ABS is the primary source of data on research and development of for-profit, nonfarm businesses with one to nine employees operating in the 50 U.S. states and the District of Columbia. The ABS also collects data on innovation, technology, intellectual property, and business owner characteristics of business of all sizes. The ABS is designed to incorporate new content each survey year based on topics of relevance. The 2022 ABS is the fifth year of the ABS. The survey is conducted annually by the Census Bureau for the National Center for Science and Engineering Statistics within the National Science Foundation.

The Census Bureau has reviewed this data product to ensure appropriate access, use, and disclosure avoidance protection of the confidential source data (Project No. P-7504866, Disclosure Review Board (DRB) approval number: CBDRB-FY23-0394).

This report is initially published with a selection of tables containing the core data of the survey. The report will be updated with additional tables as more detailed data become available. In some instances, the initial selection of tables may also be updated from a preliminary version to add further data.

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TABLE 1

Annual Business Survey aggregate R&D estimates, by questionnaire reference and employment size, for companies with 1–9 employees in selected industries: 2021

(Thousands of U.S. dollars)

Company and financial information	All companies	1–4 employees	5–9 employees
Number of companies	15,855	9,993	5,861
Total R&D cost	8,131,847	3,659,817	4,472,030
Foreign R&D costs	877,630	489,208	388,422
Domestic R&D costs	7,254,217	3,170,609	4,083,608
Domestic R&D costs for salaries, wages, and fringe benefits	4,036,146	1,660,533	2,375,613
Domestic R&D costs for expensed machinery and equipment (not capitalized)	199,530	78,328	121,202
Domestic R&D costs for materials and supplies	573,007	230,443	342,565
Domestic R&D costs for payments to others for R&D	1,129,548	579,812	549,737
Domestic R&D costs for depreciation on R&D property and equipment	74,926	26,770	48,156
Domestic R&D costs for other costs	1,241,060	594,723	646,336
Domestic R&D performance	6,124,669	2,590,797	3,533,871
Domestic R&D performance paid for by the company	4,550,744	1,980,752	2,569,991
Domestic R&D performance paid for by foreign owner	179,119	59,662	119,457
Domestic R&D performance paid for by another U.S. business	270,888	135,905	134,983
Domestic R&D performance paid for by other businesses located outside the United States	16,580	11,384	5,196
Domestic R&D performance paid for by U.S. university or college	7,685	6,383	1,302
Domestic R&D performance paid for by U.S. nonprofit organization	26,720	11,660	r 15,061
Domestic R&D performance paid for by U.S. federal government	1,004,852	340,324	664,528
Domestic R&D performance paid for by U.S. state or local government	63,157	42,372	20,785
Domestic R&D performance paid for by all other organizations outside the United States	4,923	2,355	r 2,568
Domestic R&D performance for basic research	715,225	329,829	385,395
Domestic R&D performance for applied research	2,221,924	869,487	1,352,437
Domestic R&D performance for development	3,187,520	1,391,481	1,796,039

r = relative standard error > 50%.

Note(s):

Detail may not add to total because of rounding. Statistics are representative of companies located in the United States that performed or funded R&D. Selected industries include the 2017 North American Industry Classification System sectors 31, 32, 33, 42, and 51 and industries 5413, 5415, and 5417.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 2

Total R&D cost, by selected industry and employment size, for companies with 1–9 employees: 2021

(Number and thousands of U.S. dollars)

Industry	NAICS code	All companies		1–4 employees		5–9 employees	
		Companies (number)	Amount	Companies (number)	Amount	Companies (number)	Amount
All selected industries	31–33, 42, 51, 5413, 5415, 5417	15,855	8,131,847	9,993	3,659,817	5,861	4,472,030
Manufacturing industries	31–33	2,082	990,325	982	415,218	1,102	575,107
Food, beverage, and tobacco products	311–12	71	19,097	16	7,987	54	11,109
Textile, apparel, and leather products	313–16	20	7,096	20	7,096	0	0
Wood products	321	0	138	0	138	0	0
Paper	322	0	0	0	0	0	0
Printing and related support activities	323	0	0	0	0	0	0
Petroleum and coal products	324	2	739	0	0	2	739
Chemicals	325	349	224,348	188	113,915	162	110,433
Pharmaceuticals and medicines	3254	151	178,387	105	93,401	44	84,986
Chemicals, excluding pharmaceuticals	other 325	199	45,962	82	20,514	118	25,447
Plastics and rubber products	326	24	6,700	10	2,703	13	3,997
Nonmetallic mineral products	327	16	3,935	15	3,485	3	450
Primary metals	331	19	2,240	0	591	18	1,648
Fabricated metal products	332	74	16,827	34	10,196	41	6,631
Machinery	333	231	85,202	127	34,750	103	50,452
Computer and electronic products	334	740	372,243	353	109,934	388	262,308
Semiconductor and other electronic components	3344	182	124,080	91	35,134	90	88,946
Navigational, measuring, electromedical, and control instruments	3345	397	194,535	169	51,119	227	143,416
Other computer and electronic products	other 334	162	53,628	95	23,681	69	29,947
Electrical equipment, appliances, and components	335	146	42,416	50	8,593	95	33,824
Transportation equipment	336	78	36,232	42	21,551	37	14,681
Aerospace products and parts	3364	34	13,976	17	8,486	16	5,489
Other transportation equipment	other 336	46	22,257	25	13,065	22	9,192
Furniture and related products	337	4	1,471	2	1,094	3	377
Miscellaneous manufacturing	339	308	171,640	120	93,184	187	78,456
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	13,774	7,141,522	9,012	3,244,599	4,760	3,896,923
Wholesale trade	42	551	172,456	213	40,464	339	131,992
Information	51	2,177	961,919	1,088	295,126	1,088	666,793
Software publishers	5112	1,583	657,405	808	219,923	774	437,482
Information, excluding software publishers	51 less 5112	595	304,514	281	75,204	315	229,310
Architectural, engineering, and related services	5413	1,954	667,715	1,277	278,295	678	389,420
Computer systems design and related services	5415	5,533	1,975,063	4,117	1,043,298	1,414	931,765
Scientific research and development services	5417	3,557	3,364,369	2,318	1,587,415	1,240	1,776,953
Research and development in nanotechnology	541713	356	216,133	203	99,765	153	116,368

TABLE 2

Total R&D cost, by selected industry and employment size, for companies with 1–9 employees: 2021

(Number and thousands of U.S. dollars)

Industry	NAICS code	All companies		1–4 employees		5–9 employees	
		Companies (number)	Amount	Companies (number)	Amount	Companies (number)	Amount
Research and development in biotechnology (except nanobiotechnology)	541714	1,136	1,491,139	756	731,902	381	759,238
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	2,016	1,627,199	1,324	730,715	691	896,484
Social sciences and humanities research and development	541720	48	19,297	31	14,434	16	4,864

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 3

Total R&D cost, by selected industry and employment size, for companies with 1–9 employees: 2019, 2020, and 2021

(Thousands of U.S. dollars)

Industry	NAICS code	2019			2020			2021		
		All companies	1–4 employees	5–9 employees	All companies	1–4 employees	5–9 employees	All companies	1–4 employees	5–9 employees
All selected industries	31–33, 42, 51, 5413, 5415, 5417	7,247,880	3,217,255	4,030,625	7,522,839	3,623,592	3,899,247	8,131,847	3,659,817	4,472,030
Manufacturing industries	31–33	891,188	415,797	475,391	822,687	359,533	463,154	990,325	415,218	575,107
Food, beverage, and tobacco products	311–12	6,315	4,218	2,096	20,378	16,061	4,317	19,097	7,987	11,109
Textile, apparel, and leather products	313–16	236	236	0	472	472	0	7,096	7,096	0
Wood products	321	4,065	0	4,065	0	0	0	138	138	0
Paper	322	0	0	0	0	0	0	0	0	0
Printing and related support activities	323	555	141	414	0	0	0	0	0	0
Petroleum and coal products	324	0	0	0	0	0	0	739	0	739
Chemicals	325	345,503	163,854	181,649	201,214	96,869	104,345	224,348	113,915	110,433
Pharmaceuticals and medicines	3254	259,782	110,653	149,129	104,539	64,689	39,850	178,387	93,401	84,986
Chemicals, excluding pharmaceuticals	other 325	85,721	53,201	32,520	96,675	32,181	64,495	45,962	20,514	25,447
Plastics and rubber products	326	6,397	3,340	3,057	23,004	18,051	4,953	6,700	2,703	3,997
Nonmetallic mineral products	327	12,945	216	12,729	133	133	0	3,935	3,485	450
Primary metals	331	2,568	2,568	0	9,299	9,299	0	2,240	591	1,648
Fabricated metal products	332	20,594	9,950	10,644	59,474	387	59,087	16,827	10,196	6,631
Machinery	333	33,020	23,556	9,464	94,664	37,612	57,052	85,202	34,750	50,452
Computer and electronic products	334	279,725	146,657	133,068	237,090	101,714	135,376	372,243	109,934	262,308
Semiconductor and other electronic components	3344	44,841	26,337	18,504	40,558	24,002	16,556	124,080	35,134	88,946
Navigational, measuring, electromedical, and control instruments	3345	205,358	115,084	90,274	175,504	67,481	108,022	194,535	51,119	143,416
Other computer and electronic products	other 334	29,526	5,235	24,291	21,029	10,231	10,798	53,628	23,681	29,947
Electrical equipment, appliances, and components	335	13,243	8,404	4,839	32,026	27,642	4,383	42,416	8,593	33,824
Transportation equipment	336	31,730	24,976	6,754	40,780	12,035	28,745	36,232	21,551	14,681
Aerospace products and parts	3364	15,341	10,107	5,234	21,446	11,007	10,439	13,976	8,486	5,489
Other transportation equipment	other 336	16,389	14,869	1,520	19,333	1,028	18,305	22,257	13,065	9,192
Furniture and related products	337	0	0	0	124	0	124	1,471	1,094	377
Miscellaneous manufacturing	339	134,291	27,680	106,611	104,028	39,257	64,770	171,640	93,184	78,456
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	6,356,692	2,801,458	3,555,234	6,700,152	3,264,059	3,436,093	7,141,522	3,244,599	3,896,923
Wholesale trade	42	407,800	105,774	302,027	517,963	188,633	329,331	172,456	40,464	131,992
Information	51	708,356	314,081	394,274	829,283	373,836	455,448	961,919	295,126	666,793
Software publishers	5112	396,626	204,864	191,763	571,286	242,501	328,785	657,405	219,923	437,482
Information, excluding software publishers	51 less 5112	311,729	109,218	202,512	257,998	131,335	126,663	304,514	75,204	229,310
Architectural, engineering, and related services	5413	507,143	303,247	203,896	628,231	286,122	342,109	667,715	278,295	389,420
Computer systems design and related services	5415	1,848,184	910,765	937,419	1,473,927	879,174	594,753	1,975,063	1,043,298	931,765
Scientific research and development services	5417	2,885,208	1,167,591	1,717,617	3,250,748	1,536,295	1,714,453	3,364,369	1,587,415	1,776,953

TABLE 3

Total R&D cost, by selected industry and employment size, for companies with 1–9 employees: 2019, 2020, and 2021

(Thousands of U.S. dollars)

Industry	NAICS code	2019			2020			2021		
		All companies	1–4 employees	5–9 employees	All companies	1–4 employees	5–9 employees	All companies	1–4 employees	5–9 employees
Research and development in nanotechnology	541713	208,662	96,559	112,103	196,107	91,949	104,158	216,133	99,765	116,368
Research and development in biotechnology (except nanobiotechnology)	541714	1,174,789	496,758	678,031	1,548,115	757,706	790,409	1,491,139	731,902	759,238
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	1,462,446	560,509	901,937	1,479,130	677,617	801,514	1,627,199	730,715	896,484
Social sciences and humanities research and development	541720	37,089	11,544	25,546	27,396	9,023	18,373	19,297	14,434	4,864

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 4

Domestic R&D performed by the company, by selected industry and employment size, for companies with 1–9 employees: 2021

(Number and thousands of U.S. dollars)

Industry	NAICS code	All companies		1–4 employees		5–9 employees	
		Companies (number)	Amount	Companies (number)	Amount	Companies (number)	Amount
All selected industries	31–33, 42, 51, 5413, 5415, 5417	15,339	6,124,669	9,611	2,590,797	5,727	3,533,871
Manufacturing industries	31–33	2,029	747,124	941	326,147	1,089	420,977
Food, beverage, and tobacco products	311–12	71	18,270	16	7,327	54	10,944
Textile, apparel, and leather products	313–16	20	7,096	20	7,096	0	0
Wood products	321	0	134	0	134	0	0
Paper	322	0	0	0	0	0	0
Printing and related support activities	323	0	0	0	0	0	0
Petroleum and coal products	324	2	739	0	0	2	739
Chemicals	325	320	132,255	164	65,465	156	66,790
Pharmaceuticals and medicines	3254	133	96,666	91	53,353	43	43,313
Chemicals, excluding pharmaceuticals	other 325	186	35,589	74	12,112	112	23,477
Plastics and rubber products	326	22	6,427	11	2,453	13	3,974
Nonmetallic mineral products	327	16	3,638	15	3,187	3	450
Primary metals	331	19	2,117	0	508	18	1,609
Fabricated metal products	332	70	11,983	34	6,702	37	5,281
Machinery	333	231	64,109	127	28,854	103	35,255
Computer and electronic products	334	724	279,203	337	88,957	387	190,246
Semiconductor and other electronic components	3344	181	71,280	90	30,231	90	41,049
Navigational, measuring, electromedical, and control instruments	3345	394	164,799	167	42,347	226	122,452
Other computer and electronic products	other 334	150	43,124	83	16,379	69	26,745
Electrical equipment, appliances, and components	335	145	40,032	50	8,370	94	31,662
Transportation equipment	336	78	33,911	42	19,845	37	14,066
Aerospace products and parts	3364	34	13,003	17	7,688	16	5,315
Other transportation equipment	other 336	46	20,908	25	12,157	22	8,752
Furniture and related products	337	4	1,471	2	1,094	3	377
Miscellaneous manufacturing	339	306	145,741	118	86,156	187	59,584
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	13,312	5,377,544	8,671	2,264,650	4,639	3,112,894
Wholesale trade	42	546	143,063	207	35,526	339	107,536
Information	51	2,049	756,657	1,011	214,033	1,038	542,624
Software publishers	5112	1,509	535,950	742	151,758	766	384,192
Information, excluding software publishers	51 less 5112	541	220,707	268	62,275	272	158,432
Architectural, engineering, and related services	5413	1,952	606,186	1,275	244,629	676	361,557
Computer systems design and related services	5415	5,315	1,616,190	3,960	786,257	1,357	829,933
Scientific research and development services	5417	3,447	2,255,449	2,218	984,204	1,230	1,271,244
Research and development in nanotechnology	541713	349	172,582	197	63,725	153	108,858

TABLE 4

Domestic R&D performed by the company, by selected industry and employment size, for companies with 1–9 employees: 2021

(Number and thousands of U.S. dollars)

Industry	NAICS code	All companies		1–4 employees		5–9 employees	
		Companies (number)	Amount	Companies (number)	Amount	Companies (number)	Amount
Research and development in biotechnology (except nanobiotechnology)	541714	1,085	868,580	712	421,066	374	447,514
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	1,970	1,193,678	1,280	483,287	688	710,391
Social sciences and humanities research and development	541720	42	12,047	26	7,566	16	4,481

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 5

Domestic R&D performed by the company, by selected industry and R&D program size, for companies with 1–9 employees: 2021

(Thousands of U.S. dollars)

Industry	NAICS code	R&D program size (total)				
		Total	\$50,000–\$99,999	\$100,000–\$499,999	\$500,000–\$999,999	\$1 million or more
All selected industries	31–33, 42, 51, 5413, 5415, 5417	6,124,669	150,438	1,775,504	1,258,925	2,939,802
Manufacturing industries	31–33	747,124	19,513	225,094	167,527	334,991
Food, beverage, and tobacco products	311–12	18,270	119	12,011	3,644	2,495
Textile, apparel, and leather products	313–16	7,096	83	1,786	5,226	0
Wood products	321	134	134	0	0	0
Paper	322	0	0	0	0	0
Printing and related support activities	323	0	0	0	0	0
Petroleum and coal products	324	739	0	0	739	0
Chemicals	325	132,255	4,299	31,054	19,716	77,185
Pharmaceuticals and medicines	3254	96,666	1,180	11,470	13,745	70,271
Chemicals, excluding pharmaceuticals	other 325	35,589	3,119	19,584	5,972	6,914
Plastics and rubber products	326	6,427	537	661	2,653	2,576
Nonmetallic mineral products	327	3,638	73	1,293	2,271	0
Primary metals	331	2,117	561	1,556	0	0
Fabricated metal products	332	11,983	1,190	10,793	0	0
Machinery	333	64,109	375	35,254	6,359	22,121
Computer and electronic products	334	279,203	6,890	71,460	92,815	108,038
Semiconductor and other electronic components	3344	71,280	325	19,441	24,621	26,892
Navigational, measuring, electromedical, and control instruments	3345	164,799	5,594	31,504	50,656	77,044
Other computer and electronic products	other 334	43,124	970	20,515	17,537	4,101
Electrical equipment, appliances, and components	335	40,032	1,859	18,745	1,591	17,837
Transportation equipment	336	33,911	400	7,311	13,666	12,533
Aerospace products and parts	3364	13,003	400	3,453	3,157	5,993
Other transportation equipment	other 336	20,908	0	3,859	10,510	6,540
Furniture and related products	337	1,471	0	377	1,094	0
Miscellaneous manufacturing	339	145,741	2,992	32,792	17,751	92,205
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	5,377,544	130,925	1,550,410	1,091,398	2,604,812
Wholesale trade	42	143,063	11,323	57,491	6,703	67,545
Information	51	756,657	12,610	251,541	193,960	298,546
Software publishers	5112	535,950	10,012	174,840	153,661	197,436
Information, excluding software publishers	51 less 5112	220,707	2,598	76,700	40,298	101,110
Architectural, engineering, and related services	5413	606,186	23,035	227,052	240,997	115,102
Computer systems design and related services	5415	1,616,190	66,315	655,872	199,033	694,969
Scientific research and development services	5417	2,255,449	17,642	358,453	450,704	1,428,649
Research and development in nanotechnology	541713	172,582	1,418	42,990	70,412	57,762

TABLE 5

Domestic R&D performed by the company, by selected industry and R&D program size, for companies with 1–9 employees: 2021

(Thousands of U.S. dollars)

Industry	NAICS code	R&D program size (total)				
		Total	\$50,000–\$99,999	\$100,000–\$499,999	\$500,000–\$999,999	\$1 million or more
Research and development in biotechnology (except nanobiotechnology)	541714	868,580	5,531	95,409	130,587	637,052
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	1,193,678	10,692	211,775	245,938	725,274
Social sciences and humanities research and development	541720	12,047	0	8,279	3,768	0

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 6

Domestic R&D costs, by selected industry and type of cost, for companies with 1–9 employees: 2021

(Thousands of U.S. dollars)

Industry	NAICS code	Total	Salaries, wages, and fringe benefits	Expensed machinery and equipment	Materials and supplies	Payments to others for R&D	Depreciation on R&D property and equipment	All other costs
All selected industries	31–33, 42, 51, 5413, 5415, 5417	7,254,217	4,036,146	199,530	573,007	1,129,548	74,926	1,241,060
Manufacturing industries	31–33	920,331	425,563	27,714	128,070	173,207	9,581	156,196
Food, beverage, and tobacco products	311–12	19,097	11,185	2,710	3,718	827	57	600
Textile, apparel, and leather products	313–16	7,096	2,523	39	493	0	16	4,024
Wood products	321	138	106	14	3	4	0	11
Paper	322	0	0	0	0	0	0	0
Printing and related support activities	323	0	0	0	0	0	0	0
Petroleum and coal products	324	739	444	30	148	0	0	118
Chemicals	325	208,440	59,578	8,664	25,060	76,185	3,357	35,595
Pharmaceuticals and medicines	3254	163,546	37,379	6,958	22,124	66,881	2,717	27,488
Chemicals, excluding pharmaceuticals	other 325	44,894	22,199	1,706	2,937	9,305	640	8,107
Plastics and rubber products	326	6,486	3,001	491	940	59	115	1,880
Nonmetallic mineral products	327	3,808	3,250	0	327	170	8	52
Primary metals	331	2,240	930	348	253	123	209	376
Fabricated metal products	332	15,819	5,495	1,130	2,569	3,836	367	2,422
Machinery	333	76,360	46,830	1,091	6,670	12,252	81	9,437
Computer and electronic products	334	330,785	172,865	7,014	50,420	51,582	4,163	44,741
Semiconductor and other electronic components	3344	105,362	48,223	3,199	7,767	34,082	2,006	10,084
Navigational, measuring, electromedical, and control instruments	3345	179,628	102,953	2,865	35,825	14,829	1,141	22,014
Other computer and electronic products	other 334	45,795	21,689	950	6,828	2,672	1,016	12,642
Electrical equipment, appliances, and components	335	41,714	25,638	1,707	6,881	1,682	426	5,381
Transportation equipment	336	36,042	20,951	1,703	9,961	2,131	185	1,112
Aerospace products and parts	3364	13,903	9,043	311	3,031	900	45	573
Other transportation equipment	other 336	22,139	11,907	1,391	6,930	1,231	139	540
Furniture and related products	337	1,471	273	286	54	0	36	821
Miscellaneous manufacturing	339	170,097	72,495	2,487	20,574	24,356	560	49,626
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	6,333,886	3,610,583	171,816	444,937	956,342	65,345	1,084,863
Wholesale trade	42	154,712	71,006	7,676	43,108	11,649	1,159	20,114
Information	51	784,850	617,001	39,065	17,102	28,193	6,171	77,319
Software publishers	5112	560,818	460,456	9,596	13,299	24,868	6,109	46,490
Information, excluding software publishers	51 less 5112	224,032	156,545	29,469	3,803	3,325	61	30,829
Architectural, engineering, and related services	5413	647,610	447,922	27,288	59,372	41,424	7,188	64,415
Computer systems design and related services	5415	1,690,254	1,226,739	27,900	40,717	74,064	5,269	315,566
Scientific research and development services	5417	3,056,460	1,247,915	69,886	284,639	801,012	45,559	607,450
Research and development in nanotechnology	541713	201,891	111,127	5,676	17,371	29,309	2,815	35,595
Research and development in biotechnology (except nanobiotechnology)	541714	1,288,461	441,338	18,479	115,229	419,881	20,267	273,267

TABLE 6

Domestic R&D costs, by selected industry and type of cost, for companies with 1–9 employees: 2021

(Thousands of U.S. dollars)

Industry	NAICS code	Total	Salaries, wages, and fringe benefits	Expensed machinery and equipment	Materials and supplies	Payments to others for R&D	Depreciation on R&D property and equipment	All other costs
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	1,538,246	677,439	45,557	151,157	344,568	22,421	297,103
Social sciences and humanities research and development	541720	17,262	9,856	174	474	5,215	56 r	1,485

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 7

Domestic R&D performed by the company, by selected industry and source of funds, for companies with 1–9 employees: 2021

(Thousands of U.S. dollars)

Industry	NAICS code	Total	Paid for by the company	Foreign owner	Another U.S. company	Other businesses outside the United States	U.S. university or college	U.S. nonprofit organization	U.S. federal government	U.S. state or local government	All other organizations outside the United States
All selected industries	31–33, 42, 51, 5413, 5415, 5417	6,124,669	4,550,744	179,119	270,888	16,580	7,685	26,720	1,004,852	63,157	4,923
Manufacturing industries	31–33	747,124	533,030	41,326	13,745	2,068	1,444	2,178	142,418	10,098	818 r
Food, beverage, and tobacco products	311–12	18,270 r	16,920 r	0	0	0	484	0	865 r	0	0
Textile, apparel, and leather products	313–16	7,096 r	7,096 r	0	0	0	0	0	0	0	0
Wood products	321	134	134	0	0	0	0	0	0	0	0
Paper	322	0	0	0	0	0	0	0	0	0	0
Printing and related support activities	323	0	0	0	0	0	0	0	0	0	0
Petroleum and coal products	324	739	739	0	0	0	0	0	0	0	0
Chemicals	325	132,255	105,357	12,466	2,993	404	26	1,323	9,686	0	0
Pharmaceuticals and medicines	3254	96,666	71,680	12,466	1,988 r	152 r	0	1,323	9,056	0	0
Chemicals, excluding pharmaceuticals	other 325	35,589	33,676	0	1,005	252	26	0	630	0	0
Plastics and rubber products	326	6,427	4,712	0	0	0	0	0	1,715	0	0
Nonmetallic mineral products	327	3,638 r	3,151 r	0	0	0	0	0	486 r	0	0
Primary metals	331	2,117	2,117	0	0	0	0	0	0	0	0
Fabricated metal products	332	11,983 r	11,687 r	0	296 r	0	0	0	0	0	0
Machinery	333	64,109	46,810	0	5,921 r	690 r	329 r	0	8,376	1,983 r	0
Computer and electronic products	334	279,203	218,156	7,113 r	1,818 r	973	186	855 r	48,733	552	818 r
Semiconductor and other electronic components	3344	71,280	63,840	0	0	0	161	129	6,159	173	818 r
Navigational, measuring, electromedical, and control instruments	3345	164,799	118,083	5,818 r	344	588	24	726 r	38,853	362	0
Other computer and electronic products	other 334	43,124	36,232	1,296	1,474 r	385 r	0	0	3,721 r	16	0
Electrical equipment, appliances, and components	335	40,032	24,452	10,662 r	0	0	345	0	468	4,105 r	0
Transportation equipment	336	33,911	26,796	0	559	0	74	0	3,219	3,264 r	0
Aerospace products and parts	3364	13,003	8,931	0	559	0	74	0	3,219	221	0
Other transportation equipment	other 336	20,908	17,865	0	0	0	0	0	0	3,043 r	0
Furniture and related products	337	1,471 r	1,185 r	0	0	0	0	0	286	0	0
Miscellaneous manufacturing	339	145,741	63,719	11,085 r	2,158 r	0	0	0	68,584 r	195	0
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	5,377,544	4,017,713	137,793	257,144	14,513	6,241	24,542	862,434	53,059	4,106
Wholesale trade	42	143,063	120,053	507 r	0	1,488	183 r	0	20,777 r	54 r	0
Information	51	756,657	726,206	1,343 r	3,675	2,745	0	513	20,623	1,551	0
Software publishers	5112	535,950	511,079	471	3,307	2,745	0	280 r	16,517	1,551	0
Information, excluding software publishers	51 less 5112	220,707	215,127	872 r	368 r	0	0	233 r	4,107	0	0
Architectural, engineering, and related services	5413	606,186	461,332	2,580	61,996	1,021	1,233 r	4,544 r	70,603	2,877	0
Computer systems design and related services	5415	1,616,190	1,230,848	23,820 r	53,930	0	227 r	9,867 r	295,102 r	1,764 r	631 r
Scientific research and development services	5417	2,255,449	1,479,275	109,543	137,542	9,258	4,597	9,618	455,328	46,813	3,475
Research and development in nanotechnology	541713	172,582	116,927	5,374 r	6,006	267	659 r	2,046 r	40,900	404	0
Research and development in biotechnology (except nanobiotechnology)	541714	868,580	610,670	38,829	49,949	3,284	968 r	4,448	130,369	28,243 r	1,821 r

TABLE 7

Domestic R&D performed by the company, by selected industry and source of funds, for companies with 1–9 employees: 2021

(Thousands of U.S. dollars)

Industry	NAICS code	Total	Paid for by the company	Foreign owner	Another U.S. company	Other businesses outside the United States	U.S. university or college	U.S. nonprofit organization	U.S. federal government	U.S. state or local government	All other organizations outside the United States
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	1,193,678	735,709	65,340	80,924	5,707	1,765	2,924	281,490	18,165	1,654
Social sciences and humanities research and development	541720	12,047	7,408	0	664 r	0	1,205 r	200 r	2,570	0	0

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 8
Domestic R&D performed by the company and funded by the federal government and selected industry, by employment size, for companies with 1–9 employees: 2021

(Number and thousands of U.S. dollars)

Industry	NAICS code	All companies		1–4 employees		5–9 employees	
		Companies with federally funded R&D (number)	Amount	Companies with federally funded R&D (number)	Amount	Companies with federally funded R&D (number)	Amount
All selected industries	31–33, 42, 51, 5413, 5415, 5417	1,974	1,004,852	1,102	340,324	871	664,528
Manufacturing industries	31–33	255	142,418	150	89,341	106	53,077
Food, beverage, and tobacco products	311–12	4	865	0	119	3	746
Textile, apparel, and leather products	313–16	0	0	0	0	0	0
Wood products	321	0	0	0	0	0	0
Paper	322	0	0	0	0	0	0
Printing and related support activities	323	0	0	0	0	0	0
Petroleum and coal products	324	0	0	0	0	0	0
Chemicals	325	20	9,686	14	5,352	6	4,334
Pharmaceuticals and medicines	3254	16	9,056	11	4,722	6	4,334
Chemicals, excluding pharmaceuticals	other 325	3	630	3	630	0	0
Plastics and rubber products	326	4	1,715	4	395	0	1,320
Nonmetallic mineral products	327	6	486	6	486	0	0
Primary metals	331	0	0	0	0	0	0
Fabricated metal products	332	0	0	0	0	0	0
Machinery	333	35	8,376	13	1,868	23	6,508
Computer and electronic products	334	118	48,733	65	17,819	52	30,914
Semiconductor and other electronic components	3344	18	6,159	14	3,726	5	2,433
Navigational, measuring, electromedical, and control instruments	3345	85	38,853	39	10,372	45	28,481
Other computer and electronic products	other 334	12	3,721	12	3,721	0	0
Electrical equipment, appliances, and components	335	0	468	0	0	0	468
Transportation equipment	336	5	3,219	0	1,418	3	1,800
Aerospace products and parts	3364	5	3,219	0	1,418	3	1,800
Other transportation equipment	other 336	0	0	0	0	0	0
Furniture and related products	337	3	286	0	0	3	286
Miscellaneous manufacturing	339	59	68,584	47	61,884	13	6,700
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	1,717	862,434	952	250,983	764	611,451
Wholesale trade	42	60	20,777	3	1,832	57	18,945
Information	51	76	20,623	46	6,795	29	13,829
Software publishers	5112	56	16,517	27	2,969	28	13,547
Information, excluding software publishers	51 less 5112	20	4,107	19	3,825	0	282
Architectural, engineering, and related services	5413	229	70,603	85	18,868	143	51,736
Computer systems design and related services	5415	244	295,102	98	17,223	145	277,879
Scientific research and development services	5417	1,105	455,328	716	206,267	388	249,062
Research and development in nanotechnology	541713	107	40,900	63	17,352	45	23,547

TABLE 8
Domestic R&D performed by the company and funded by the federal government and selected industry, by employment size, for companies with 1–9 employees: 2021

(Number and thousands of U.S. dollars)

Industry	NAICS code	All companies		1–4 employees		5–9 employees	
		Companies with federally funded R&D (number)	Amount	Companies with federally funded R&D (number)	Amount	Companies with federally funded R&D (number)	Amount
Research and development in biotechnology (except nanobiotechnology)	541714	324	130,369	205	60,689	120	69,679
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	665	281,490	442	126,068	223	155,423
Social sciences and humanities research and development	541720	10	2,570	8	2,157 ^r	2	412

^r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 9

Domestic R&D performed by the company, by selected industry and type of R&D, for companies with 1–9 employees: 2021

(Thousands of U.S. dollars)

Industry	NAICS code	Total	Basic research	Applied research	Development
All selected industries	31–33, 42, 51, 5413, 5415, 5417	6,124,669	715,225	2,221,924	3,187,520
Manufacturing industries	31–33	747,124	59,635	275,850	411,640
Food, beverage, and tobacco products	311–12	18,270 r	704	3,942	13,624 r
Textile, apparel, and leather products	313–16	7,096 r	1,425 r	1,980 r	3,691 r
Wood products	321	134	14	21	99
Paper	322	0	0	0	0
Printing and related support activities	323	0	0	0	0
Petroleum and coal products	324	739	0	148	592
Chemicals	325	132,255	14,608	52,897	64,750
Pharmaceuticals and medicines	3254	96,666	11,004	38,762	46,899
Chemicals, excluding pharmaceuticals	other 325	35,589	3,604	14,135	17,850
Plastics and rubber products	326	6,427	204	3,787	2,436 r
Nonmetallic mineral products	327	3,638 r	2,236 r	811 r	590
Primary metals	331	2,117	295	806 r	1,016 r
Fabricated metal products	332	11,983 r	3,864 r	3,509 r	4,609 r
Machinery	333	64,109	4,914	18,164	41,031
Computer and electronic products	334	279,203	21,513	87,924	169,765
Semiconductor and other electronic components	3344	71,280	8,498	29,458	33,324
Navigational, measuring, electromedical, and control instruments	3345	164,799	10,675	46,797	107,327
Other computer and electronic products	other 334	43,124	2,340	11,670	29,114
Electrical equipment, appliances, and components	335	40,032	1,809 r	16,157	22,065
Transportation equipment	336	33,911	1,208 r	6,696	26,007
Aerospace products and parts	3364	13,003	266	4,607	8,130
Other transportation equipment	other 336	20,908	942 r	2,090 r	17,876
Furniture and related products	337	1,471 r	0	559	912 r
Miscellaneous manufacturing	339	145,741	6,841	78,446 r	60,454
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	5,377,544	655,590	1,946,074	2,775,881
Wholesale trade	42	143,063	20,107 r	49,941	73,015
Information	51	756,657	80,314	217,708	458,635
Software publishers	5112	535,950	62,233	164,325	309,391
Information, excluding software publishers	51 less 5112	220,707	18,080	53,383	149,244
Architectural, engineering, and related services	5413	606,186	75,293	155,913	374,980
Computer systems design and related services	5415	1,616,190	170,785	595,870	849,535
Scientific research and development services	5417	2,255,449	309,092	926,641	1,019,716
Research and development in nanotechnology	541713	172,582	27,987	73,792	70,804
Research and development in biotechnology (except nanobiotechnology)	541714	868,580	146,062	308,060	414,458
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	1,193,678	133,318	538,713	521,647
Social sciences and humanities research and development	541720	12,047	1,725	6,076	4,246

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 10

Domestic R&D performed by the company, by selected industry, for companies with 1–9 employees: 2019, 2020, and 2021

(Thousands of U.S. dollars)

Industry	NAICS code	2019	2020	2021
All selected industries	31–33, 42, 51, 5413, 5415, 5417	5,218,911	5,600,668	6,124,669
Manufacturing industries	31–33	622,220	627,387	747,124
Food, beverage, and tobacco products	311–12	5,896	9,614	18,270
Textile, apparel, and leather products	313–16	236	472	7,096
Wood products	321	4,065	0	134
Paper	322	0	0	0
Printing and related support activities	323	555	0	0
Petroleum and coal products	324	0	0	739
Chemicals	325	178,170	160,031	132,255
Pharmaceuticals and medicines	3254	117,508	77,054	96,666
Chemicals, excluding pharmaceuticals	other 325	60,661	82,977	35,589
Plastics and rubber products	326	6,261	18,099	6,427
Nonmetallic mineral products	327	5,860	133	3,638
Primary metals	331	2,353	9,077	2,117
Fabricated metal products	332	20,518	37,292	11,983
Machinery	333	22,057	62,840	64,109
Computer and electronic products	334	227,158	189,225	279,203
Semiconductor and other electronic components	3344	38,305	36,372	71,280
Navigational, measuring, electromedical, and control instruments	3345	161,373	135,652	164,799
Other computer and electronic products	other 334	27,480	17,201	43,124
Electrical equipment, appliances, and components	335	9,592	24,958	40,032
Transportation equipment	336	24,577	38,247	33,911
Aerospace products and parts	3364	11,859	19,307	13,003
Other transportation equipment	other 336	12,718	18,940	20,908
Furniture and related products	337	0	124	1,471
Miscellaneous manufacturing	339	114,922	77,276	145,741
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	4,596,691	4,973,281	5,377,544
Wholesale trade	42	225,813	392,416	143,063
Information	51	598,684	689,766	756,657
Software publishers	5112	327,921	468,557	535,950
Information, excluding software publishers	51 less 5112	270,764	221,209	220,707
Architectural, engineering, and related services	5413	454,913	574,367	606,186
Computer systems design and related services	5415	1,435,159	1,122,622	1,616,190
Scientific research and development services	5417	1,882,122	2,194,110	2,255,449
Research and development in nanotechnology	541713	175,639	162,996	172,582
Research and development in biotechnology (except nanobiotechnology)	541714	645,887	913,514	868,580
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	1,026,911	1,099,371	1,193,678
Social sciences and humanities research and development	541720	31,464	18,229	12,047

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 11
Domestic sales and domestic R&D performed by the company as a percentage of domestic sales, by selected industry and employment size, for companies with 1–9 employees: 2021

(Thousands of U.S. dollars and percent)

Industry	NAICS code	All companies		1–4 employees		5–9 employees	
		Total sales	R&D as percentage of sales	Total sales	R&D as percentage of sales	Total sales	R&D as percentage of sales
All selected industries	31–33, 42, 51, 5413, 5415, 5417	14,404,579	43	5,896,014	44	8,508,565	42
Manufacturing industries	31–33	2,481,919	30	676,678	48	1,805,241	23
Food, beverage, and tobacco products	311–12	161,694	11	29,791	25	131,903	8
Textile, apparel, and leather products	313–16	17,383	41	17,383	41	0	0
Wood products	321	110	122	110	122	0	0
Paper	322	0	0	0	0	0	0
Printing and related support activities	323	0	0	0	0	0	0
Petroleum and coal products	324	0	0	0	0	0	0
Chemicals	325	554,360	24	105,687	62	448,673	15
Pharmaceuticals and medicines	3254	115,349	84	32,752	163	82,597	52
Chemicals, excluding pharmaceuticals	other 325	439,010	8	72,934	17	366,076	6
Plastics and rubber products	326	36,857	17	13,696	18	23,161	17
Nonmetallic mineral products	327	13,482	27	12,333	26	1,148	39
Primary metals	331	25,945	8	333	152	25,612	6
Fabricated metal products	332	44,037	27	1,898	353	42,139	13
Machinery	333	206,671	31	82,425	35	124,246	28
Computer and electronic products	334	874,194	32	191,719	46	682,475	28
Semiconductor and other electronic components	3344	213,136	33	55,974	54	157,163	26
Navigational, measuring, electromedical, and control instruments	3345	454,887	36	104,711	40	350,177	35
Other computer and electronic products	other 334	206,170	21	31,035	53	175,135	15
Electrical equipment, appliances, and components	335	186,206	21	76,035	11	110,172	29
Transportation equipment	336	99,879	34	30,473	65	69,406	20
Aerospace products and parts	3364	29,152	45	8,770	88	20,382	26
Other transportation equipment	other 336	70,727	30	21,703	56	49,024	18
Furniture and related products	337	2,164	68	55	2,000	2,110	18
Miscellaneous manufacturing	339	258,937	56	114,740	75	144,197	41
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	11,922,660	45	5,219,336	43	6,703,324	46
Wholesale trade	42	677,836	21	121,911	29	555,926	19
Information	51	1,883,352	40	578,490	37	1,304,862	42
Software publishers	5112	1,382,671	39	392,245	39	990,426	39
Information, excluding software publishers	51 less 5112	500,681	44	186,245	33	314,436	50
Architectural, engineering, and related services	5413	2,265,778	27	866,339	28	1,399,439	26
Computer systems design and related services	5415	4,752,032	34	2,569,060	31	2,182,973	38
Scientific research and development services	5417	2,343,661	96	1,083,536	91	1,260,125	101
Research and development in nanotechnology	541713	158,222	109	78,764	81	79,459	137

TABLE 11

Domestic sales and domestic R&D performed by the company as a percentage of domestic sales, by selected industry and employment size, for companies with 1–9 employees: 2021

(Thousands of U.S. dollars and percent)

Industry	NAICS code	All companies		1–4 employees		5–9 employees	
		Total sales	R&D as percentage of sales	Total sales	R&D as percentage of sales	Total sales	R&D as percentage of sales
Research and development in biotechnology (except nanobiotechnology)	541714	678,671	128	340,728	124	337,943	132
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	1,472,335	81	641,371	75	830,965	85
Social sciences and humanities research and development	541720	23,832	51	12,074	63	11,758	38

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 12

Domestic R&D performed by the company, by state and employment size, for companies with 1–9 employees: 2021

(Number and thousands of U.S. dollars)

State	All companies		1–4 employees		5–9 employees				
	Companies (number)	Amount	Companies (number)	Amount	Companies (number)	Amount			
All states	15,339	6,124,669	9,611	2,590,797	5,727	3,533,871			
Alabama	80	27,599	68	18,036	13	9,563			
Alaska	4	826	4	826	0	0			
Arizona	256	88,693	162	38,821	93	49,871			
Arkansas	56	19,073	19	5,784	38	13,289			
California	3,953	2,012,984	2,547	701,550	1,407	1,311,433			
Colorado	602	234,304	316	91,543	287	142,761			
Connecticut	98	48,150	60	18,600	37	29,550			
Delaware	165	69,107	109	44,344	57	24,763			
District of Columbia	27	17,781	17	12,430	11	5,351			
Florida	711	281,389	455	170,107	257	111,282			
Georgia	337	96,196	272	46,919	64	49,277			
Hawaii	11	2,953	10	1,828	2	1,125			
Idaho	49	18,782	r	15	2,493	36	r	16,289	r
Illinois	429	150,100	289	54,633	139	95,467	r		
Indiana	194	62,734	145	40,815	48	21,919			
Iowa	78	18,990	56	11,902	23	7,088			
Kansas	106	r	23,961	83	r	16,546	r	24	7,414
Kentucky	97	25,048	69	14,846	29	10,202			
Louisiana	23	5,739	10	3,548	11	r	2,192		
Maine	46	r	8,666	32	r	4,995	r	15	3,670
Maryland	422	172,731	305	92,600	117	80,131			
Massachusetts	570	278,140	331	115,643	239	162,497			
Michigan	310	102,184	153	40,265	157	61,919			
Minnesota	430	128,300	300	52,184	129	76,117			
Mississippi	31	7,556	20	4,695	10	2,862			
Missouri	171	32,212	108	r	16,055	r	64	16,158	
Montana	34	14,611	14	2,292	19	12,319			
Nebraska	19	7,014	16	5,925	2	1,089			
Nevada	111	43,669	75	25,364	35	18,305			
New Hampshire	67	43,419	34	9,529	34	33,890			
New Jersey	256	134,415	161	84,273	95	50,142			
New Mexico	63	25,502	35	11,867	28	13,635			
New York	665	226,485	424	83,783	242	142,702			
North Carolina	431	144,595	280	71,987	150	72,608			

TABLE 12

Domestic R&D performed by the company, by state and employment size, for companies with 1–9 employees: 2021

(Number and thousands of U.S. dollars)

State	All companies		1–4 employees		5–9 employees	
	Companies (number)	Amount	Companies (number)	Amount	Companies (number)	Amount
North Dakota	12	3,068	5	1,491	8	1,577
Ohio	542	144,642	236	54,361	307	90,281
Oklahoma	107	30,764	89	19,605	20	11,159
Oregon	238	80,522	147	43,015	92	37,507
Pennsylvania	527	183,302	348	131,770	178	51,532
Rhode Island	18	6,696	16	5,937	3	758
South Carolina	178	95,782	36	14,113	144	81,669
South Dakota	12	3,156	7	966	6	2,190
Tennessee	116	47,601	65	19,105	50	28,496
Texas	842	301,057	479	133,984	362	167,073
Utah	189	66,559	140	31,699	48	34,860
Vermont	71	17,876	3	948	67	16,928
Virginia	543	137,037	385	57,374	158	79,663
Washington	572	243,051	425	105,850	147	137,201
West Virginia	20	3,795	18	2,426	2	1,369
Wisconsin	348	147,494	165	39,997	182	107,497
Wyoming	73	30,242	40	5,834	34	24,408
Undistributed	18	8,117	8	5,295	9	2,822

r = relative standard error > 50%.

Note(s):

Detail may not add to total because of rounding. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 13

Domestic R&D performed by the company, by state and source of funds, for companies with 1–9 employees: 2021

(Thousands of U.S. dollars)

State	Total	Paid for by the company	Foreign owner	Another U.S. company	Other businesses outside the United States	U.S. university or college	U.S. nonprofit organization	U.S. federal government	U.S. state or local government	All other organizations outside the United States
All states	6,124,669	4,550,744	179,119	270,888	16,580	7,685	26,720	1,004,852	63,157	4,923
Alabama	27,599	18,371	0	2,711	0	0	0	6,517	0	0
Alaska	826	0	0	44	0	345	0	437	0	0
Arizona	88,693	66,849	9,015 r	3,175	83 r	0	0	9,137	0	433 r
Arkansas	19,073	16,580	0	1,362 r	0	0	0	1,131	0	0
California	2,012,984	1,366,577	99,861	83,999	5,892	991 r	16,770	405,457 r	32,619 r	818 r
Colorado	234,304	184,814	594 r	19,231	0	536	838 r	26,099	2,192	0
Connecticut	48,150	34,231	2,007 r	604	45	68 r	1,395	9,709	7	84 r
Delaware	69,107	46,860	8,216	2,018 r	12 r	15	0	11,795 r	193 r	0
District of Columbia	17,781	12,813	1,898	1,391	0	0	0	1,678	0	0
Florida	281,389	199,663	0	10,611	711 r	590	0	68,067 r	1,549 r	198
Georgia	96,196	70,475	0	9,078 r	0	0	0	16,523	119 r	0
Hawaii	2,953	2,953	0	0	0	0	0	0	0	0
Idaho	18,782 r	18,325 r	0	5	235	88	0	54	8	67
Illinois	150,100	127,212	2,019 r	1,343	0	62	0	15,413	4,051 r	0
Indiana	62,734	45,816	5,899 r	4,292 r	3,229	228 r	0	3,077	193 r	0
Iowa	18,990	13,102	1,296	0	0	0	0	4,032	361	199 r
Kansas	23,961	15,431	0	3,756 r	0	0	1,435 r	3,338 r	0	0
Kentucky	25,048	18,740	0	900	0	0	0	5,129	279 r	0
Louisiana	5,739	3,398 r	0	67 r	0	0	0	1,368	906	0
Maine	8,666	7,012	166	1,059	0	0	0	429	0	0
Maryland	172,731	108,654	8,081	9,808 r	765 r	903	501	41,262	2,756	0
Massachusetts	278,140	219,594	1,957 r	10,674	201	169 r	2,616	41,361	110	1,458 r
Michigan	102,184	90,822	0	523 r	0	192 r	0	9,687	961	0
Minnesota	128,300	111,347	852	7,038	0	0	0	8,935 r	128	0
Mississippi	7,556	6,973	0	165 r	0	0	0	418	0	0
Missouri	32,212	27,132	0	1,237 r	0	0	0	3,843	0	0
Montana	14,611	11,679	0	1	0	0	0	2,893	38	0
Nebraska	7,014	5,656	0	0	0	0	201 r	1,157	0	0
Nevada	43,669	35,461	0	981 r	179	0	0	6,732 r	316 r	0
New Hampshire	43,419	37,033	0	280	2,538	0	0	3,569	0	0
New Jersey	134,415	104,651	2,668 r	4,528 r	0	0	200 r	20,649	1,720	0
New Mexico	25,502	13,201	0	3,841	0	0	0	8,259	201	0
New York	226,485	186,246	1,066	4,880 r	891	212 r	0	32,905	284 r	0
North Carolina	144,595	107,158	12,156	2,705	0	1,225 r	699 r	19,972	679	0
North Dakota	3,068	2,763	0	0	0	0	0	305	0	0

TABLE 13

Domestic R&D performed by the company, by state and source of funds, for companies with 1–9 employees: 2021

(Thousands of U.S. dollars)

State	Total	Paid for by the company	Foreign owner	Another U.S. company	Other businesses outside the United States	U.S. university or college	U.S. nonprofit organization	U.S. federal government	U.S. state or local government	All other organizations outside the United States
Ohio	144,642	129,856	0	3,918	0	74	1,725 r	8,428	641	0
Oklahoma	30,764	22,999	0	5,588 r	0	0	0	2,177	0	0
Oregon	80,522	49,026	5,897 r	15,872	0	1,194 r	0	8,355	179	0
Pennsylvania	183,302	136,052	10,157 r	900	0	0	0	31,426	4,767 r	0
Rhode Island	6,696	3,561	0	0	0	0	0	3,135	0	0
South Carolina	95,782 r	83,633 r	0	811	0	0	0	10,438	900	0
South Dakota	3,156	3,156	0	0	0	0	0	0	0	0
Tennessee	47,601	31,384	0	2,901 r	0	0	0	9,789	3,528	0
Texas	301,057	267,854	1,766	4,027	751	773	0	25,683	138 r	64 r
Utah	66,559	55,690	0	1,406	0	14	0	9,449	0	0
Vermont	17,876 r	1,326	0	431	0	0	0	14,929 r	1,190 r	0
Virginia	137,037	95,486	310 r	6,129 r	514 r	0	129	32,940	0	1,529
Washington	243,051	177,903	3,237	32,777 r	533 r	0	210 r	27,534	784	73
West Virginia	3,795	1,489 r	0	1,369	0	0	0	924	13 r	0
Wisconsin	147,494	135,818 r	0	2,387	0	0	0	8,298	990 r	0
Wyoming	30,242 r	10,755 r	0	0	0	6	0	19,237 r	243	0
Undistributed	8,117	7,162 r	0	65	0	0	0	775	116	0

r = relative standard error > 50%.

Note(s):

Detail may not add to total because of rounding. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 14

Domestic R&D employees, by selected industry and employment size, for companies with 1–9 employees: 2021

(Number)

Industry	NAICS code	All companies	1–4 employees	5–9 employees
All selected industries	31–33, 42, 51, 5413, 5415, 5417	38,962	16,374	22,587
Manufacturing industries	31–33	4,686	1,582	3,104
Food, beverage, and tobacco products	311–12	89 r	25	65 r
Textile, apparel, and leather products	313–16	25	25	0
Wood products	321	6	6	0
Paper	322	0	0	0
Printing and related support activities	323	0	0	0
Petroleum and coal products	324	9	0	9
Chemicals	325	607	240	367
Pharmaceuticals and medicines	3254	296	161	135
Chemicals, excluding pharmaceuticals	other 325	311	79	232
Plastics and rubber products	326	29	9 r	21
Nonmetallic mineral products	327	24	17 r	8
Primary metals	331	11 r	1	9 r
Fabricated metal products	332	159 r	35 r	124 r
Machinery	333	512	223	289
Computer and electronic products	334	1,950	610	1,340
Semiconductor and other electronic components	3344	509	167	342
Navigational, measuring, electromedical, and control instruments	3345	1,110	324	786
Other computer and electronic products	other 334	332	120	212
Electrical equipment, appliances, and components	335	306	54	252 r
Transportation equipment	336	190	83	107
Aerospace products and parts	3364	95	34	61
Other transportation equipment	other 336	96	49 r	47
Furniture and related products	337	3	2 r	2
Miscellaneous manufacturing	339	765	251 r	514 r
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	34,276	14,793	19,483
Wholesale trade	42	1,119	352	768
Information	51	5,859	1,670	4,189
Software publishers	5112	4,299	1,183	3,117
Information, excluding software publishers	51 less 5112	1,559	487	1,072
Architectural, engineering, and related services	5413	5,330	2,188	3,142
Computer systems design and related services	5415	11,653	6,351	5,302
Scientific research and development services	5417	10,315	4,232	6,083
Research and development in nanotechnology	541713	1,119	392	727
Research and development in biotechnology (except nanobiotechnology)	541714	3,199	1,325	1,874
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	5,878	2,455	3,423
Social sciences and humanities research and development	541720	110	52	58

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 15

Domestic R&D employees, by selected industry and sex, for companies with 1–9 employees: 2021

(Number)

Industry	NAICS code	Total	Male	Female
All selected industries	31–33, 42, 51, 5413, 5415, 5417	38,962	30,340	8,622
Manufacturing industries	31–33	4,686	3,735	951
Food, beverage, and tobacco products	311–12	89 r	79 r	10 r
Textile, apparel, and leather products	313–16	25	21	4
Wood products	321	6	4	1
Paper	322	0	0	0
Printing and related support activities	323	0	0	0
Petroleum and coal products	324	9	7	1
Chemicals	325	607	438	169
Pharmaceuticals and medicines	3254	296	201	95
Chemicals, excluding pharmaceuticals	other 325	311	237	74
Plastics and rubber products	326	29	26	3
Nonmetallic mineral products	327	24	23	1
Primary metals	331	11 r	7	4 r
Fabricated metal products	332	159 r	156 r	3
Machinery	333	512	422	90
Computer and electronic products	334	1,950	1,582	368
Semiconductor and other electronic components	3344	509	440	69
Navigational, measuring, electromedical, and control instruments	3345	1,110	852	258
Other computer and electronic products	other 334	332	290	42
Electrical equipment, appliances, and components	335	306	255	51
Transportation equipment	336	190	180	10
Aerospace products and parts	3364	95	88	7
Other transportation equipment	other 336	96	93	3
Furniture and related products	337	3	3	0
Miscellaneous manufacturing	339	765	531	233 r
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	34,276	26,605	7,671
Wholesale trade	42	1,119	954	165
Information	51	5,859	4,631	1,228
Software publishers	5112	4,299	3,382	917
Information, excluding software publishers	51 less 5112	1,559	1,248	311
Architectural, engineering, and related services	5413	5,330	4,454	876
Computer systems design and related services	5415	11,653	9,670	1,983
Scientific research and development services	5417	10,315	6,897	3,418
Research and development in nanotechnology	541713	1,119	763	355
Research and development in biotechnology (except nanobiotechnology)	541714	3,199	1,955	1,244
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	5,878	4,113	1,765
Social sciences and humanities research and development	541720	110	60	50

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 16

Domestic R&D employees, by selected industry and R&D work activity, for companies with 1–9 employees: 2021

(Number)

Industry	NAICS code	All R&D employees	Researchers (including R&D scientists, engineers, and their managers)	R&D technicians and equivalent staff	R&D support staff (clerical and other)
All selected industries	31–33, 42, 51, 5413, 5415, 5417	38,962	28,417	7,478	3,066
Manufacturing industries	31–33	4,686	3,432	882	372
Food, beverage, and tobacco products	311–12	89 r	88 r	2	0
Textile, apparel, and leather products	313–16	25	11	3	11 r
Wood products	321	6	3	1	1
Paper	322	0	0	0	0
Printing and related support activities	323	0	0	0	0
Petroleum and coal products	324	9	9	0	0
Chemicals	325	607	387	138	82
Pharmaceuticals and medicines	3254	296	227	50	19
Chemicals, excluding pharmaceuticals	other 325	311	160	88	63
Plastics and rubber products	326	29	15	3	12 r
Nonmetallic mineral products	327	24	18	6 r	0
Primary metals	331	11 r	11 r	0	0
Fabricated metal products	332	159 r	57 r	59 r	43 r
Machinery	333	512	380	104	28
Computer and electronic products	334	1,950	1,414	400	137
Semiconductor and other electronic components	3344	509	329	136 r	44
Navigational, measuring, electromedical, and control instruments	3345	1,110	878	176	56
Other computer and electronic products	other 334	332	207	88	37
Electrical equipment, appliances, and components	335	306	204	62 r	40
Transportation equipment	336	190	146	34	11
Aerospace products and parts	3364	95	69	21	5
Other transportation equipment	other 336	96	77	13 r	6 r
Furniture and related products	337	3	3	0	0
Miscellaneous manufacturing	339	765	687	70	7
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	34,276	24,985	6,596	2,695
Wholesale trade	42	1,119	860	191	68 r
Information	51	5,859	3,954	1,333	571
Software publishers	5112	4,299	2,911	892	496
Information, excluding software publishers	51 less 5112	1,559	1,043	442	75
Architectural, engineering, and related services	5413	5,330	4,067	920	343
Computer systems design and related services	5415	11,653	8,364	2,444	845
Scientific research and development services	5417	10,315	7,740	1,708	868
Research and development in nanotechnology	541713	1,119	812	140	167
Research and development in biotechnology (except nanobiotechnology)	541714	3,199	2,355	579	266
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	5,878	4,474	975	429
Social sciences and humanities research and development	541720	110	91	13	6

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 17

Domestic R&D researchers with PhDs, by selected industry, for companies with 1–9 employees: 2021

(Number)

Industry	NAICS code	All researchers (including R&D scientists, engineers, and their managers)	Researchers with PhD (excluding MD, JD, and EdD)
All selected industries	31–33, 42, 51, 5413, 5415, 5417	28,417	7,358
Manufacturing industries	31–33	3,432	945
Food, beverage, and tobacco products	311–12	88 r	4
Textile, apparel, and leather products	313–16	11	0
Wood products	321	3	3
Paper	322	0	0
Printing and related support activities	323	0	0
Petroleum and coal products	324	9	1
Chemicals	325	387	175
Pharmaceuticals and medicines	3254	227	120
Chemicals, excluding pharmaceuticals	other 325	160	55
Plastics and rubber products	326	15	1
Nonmetallic mineral products	327	18	9 r
Primary metals	331	11 r	9 r
Fabricated metal products	332	57 r	2 r
Machinery	333	380	59
Computer and electronic products	334	1,414	367
Semiconductor and other electronic components	3344	329	127
Navigational, measuring, electromedical, and control instruments	3345	878	211
Other computer and electronic products	other 334	207	29
Electrical equipment, appliances, and components	335	204	42 r
Transportation equipment	336	146	17 r
Aerospace products and parts	3364	69	1
Other transportation equipment	other 336	77	16 r
Furniture and related products	337	3	0
Miscellaneous manufacturing	339	687	253
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	24,985	6,412
Wholesale trade	42	860	137
Information	51	3,954	630
Software publishers	5112	2,911	499
Information, excluding software publishers	51 less 5112	1,043	131
Architectural, engineering, and related services	5413	4,067	505
Computer systems design and related services	5415	8,364	936
Scientific research and development services	5417	7,740	4,204
Research and development in nanotechnology	541713	812	498
Research and development in biotechnology (except nanobiotechnology)	541714	2,355	1,504
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	4,474	2,171
Social sciences and humanities research and development	541720	91	27

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 18

Domestic full-time equivalent R&D employees, by selected industry and work activity, for companies with 1–9 employees: 2021

(Number)

Industry	NAICS code	R&D employees: full-time equivalent	Researchers: full-time equivalent
All selected industries	31–33, 42, 51, 5413, 5415, 5417	31,015	22,130
Manufacturing industries	31–33	3,572	2,501
Food, beverage, and tobacco products	311–12	87 r	84 r
Textile, apparel, and leather products	313–16	15 r	8
Wood products	321	4	3
Paper	322	0	0
Printing and related support activities	323	0	0
Petroleum and coal products	324	9	9
Chemicals	325	470	316
Pharmaceuticals and medicines	3254	245	198
Chemicals, excluding pharmaceuticals	other 325	225	118
Plastics and rubber products	326	26	13
Nonmetallic mineral products	327	16	14
Primary metals	331	10 r	9 r
Fabricated metal products	332	100 r	41 r
Machinery	333	373	292
Computer and electronic products	334	1,521	924
Semiconductor and other electronic components	3344	427	210
Navigational, measuring, electromedical, and control instruments	3345	854	552
Other computer and electronic products	other 334	240	162
Electrical equipment, appliances, and components	335	234	164
Transportation equipment	336	153	115
Aerospace products and parts	3364	82	59
Other transportation equipment	other 336	71	56
Furniture and related products	337	2 r	2 r
Miscellaneous manufacturing	339	552	506
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	27,443	19,629
Wholesale trade	42	755	485
Information	51	5,023	3,122
Software publishers	5112	3,662	2,321
Information, excluding software publishers	51 less 5112	1,362	801
Architectural, engineering, and related services	5413	3,837	2,965
Computer systems design and related services	5415	9,141	6,464
Scientific research and development services	5417	8,686	6,594
Research and development in nanotechnology	541713	872	660
Research and development in biotechnology (except nanobiotechnology)	541714	2,803	2,077
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	4,913	3,772
Social sciences and humanities research and development	541720	90	77

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 19

Tax credit for research activities, by industry, for companies with R&D expenditures and 1–9 employees: 2021

(Number and percent)

Industry	NAICS code	Total (number)	Yes, filed Form 6765 in 2021 (%)	No, did not file Form 6765 in 2021 (%)	Did not answer (%)
All selected industries	31–33, 42, 51, 5413, 5415, 5417	15,855	21.8	77.6	0.6
Manufacturing industries	31–33	2,082	21.9	78.1	0.0
Food, beverage, and tobacco products	311–12	71	0.0	100.0	0.0
Textile, apparel, and leather products	313–16	20	20.0	80.0	0.0
Wood products	321	0	0.0	0.0	0.0
Paper	322	0	0.0	0.0	0.0
Printing and related support activities	323	0	0.0	0.0	0.0
Petroleum and coal products	324	2	100.0	0.0	0.0
Chemicals	325	349	15.8	84.2	0.0
Pharmaceuticals and medicines	3254	151	22.5	77.5	0.0
Chemicals, excluding pharmaceuticals	other 325	199	10.1	89.9	0.0
Plastics and rubber products	326	24	16.7	83.3	0.0
Nonmetallic mineral products	327	16	18.8	81.2	0.0
Primary metals	331	19	0.0	100.0	0.0
Fabricated metal products	332	74	17.6	82.4	0.0
Machinery	333	231	26.0	74.0	0.0
Computer and electronic products	334	740	27.0	73.0	0.0
Semiconductor and other electronic components	3344	182	20.3	79.7	0.0
Navigational, measuring, electromedical, and control instruments	3345	397	30.2	69.8	0.0
Other computer and electronic products	other 334	162	27.8	72.2	0.0
Electrical equipment, appliances, and components	335	146	16.4	83.6	0.0
Transportation equipment	336	78	38.5	61.5	0.0
Aerospace products and parts	3364	34	32.4	67.6	0.0
Other transportation equipment	other 336	46	39.1	60.9	0.0
Furniture and related products	337	4	0.0	100.0	0.0
Miscellaneous manufacturing	339	308	20.8	79.2	0.0
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	13,774	21.8	77.6	0.6
Wholesale trade	42	551	17.6	82.4	0.0
Information	51	2,177	27.8	71.4	0.8
Software publishers	5112	1,583	29.8	69.7	0.6
Information, excluding software publishers	51 less 5112	595	22.7	76.1	1.2
Architectural, engineering, and related services	5413	1,954	23.2	76.6	0.2
Computer systems design and related services	5415	5,533	16.5	83.0	0.5
Scientific research and development services	5417	3,557	26.1	72.8	1.1
Research and development in nanotechnology	541713	356	39.3	60.7	0.0
Research and development in biotechnology (except nanobiotechnology)	541714	1,136	28.2	71.1	0.7
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	2,016	22.9	75.6	1.5
Social sciences and humanities research and development	541720	48	16.7	83.3	0.0

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail across rows may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Detail across columns have been adjusted to add to total. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 20

Domestic employees, by selected industry and employment size, for R&D-active companies with 1–9 employees: 2021

(Number)

Industry	NAICS code	All companies	1–4 employees	5–9 employees
All selected industries	31–33, 42, 51, 5413, 5415, 5417	62,088	22,665	39,423
Manufacturing industries	31–33	9,885	2,375	7,510
Food, beverage, and tobacco products	311–12	476 r	34	442 r
Textile, apparel, and leather products	313–16	39	39	0
Wood products	321	6	6	0
Paper	322	0	0	0
Printing and related support activities	323	0	0	0
Petroleum and coal products	324	9	0	9
Chemicals	325	1,594	429	1,165
Pharmaceuticals and medicines	3254	560	267	293
Chemicals, excluding pharmaceuticals	other 325	1,034	162	872
Plastics and rubber products	326	113	23 r	90
Nonmetallic mineral products	327	30	21 r	9
Primary metals	331	102 r	4	97 r
Fabricated metal products	332	320 r	50	269 r
Machinery	333	921	277	644
Computer and electronic products	334	3,763	948	2,815
Semiconductor and other electronic components	3344	874	259	615
Navigational, measuring, electromedical, and control instruments	3345	2,248	489	1,759
Other computer and electronic products	other 334	642	200	442
Electrical equipment, appliances, and components	335	754	132 r	623
Transportation equipment	336	358	122	236
Aerospace products and parts	3364	145	40	105
Other transportation equipment	other 336	213	82 r	131
Furniture and related products	337	16	5 r	11
Miscellaneous manufacturing	339	1,384	283	1,101
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	52,204	20,290	31,913
Wholesale trade	42	2,730	480	2,250
Information	51	9,963	2,638	7,325
Software publishers	5112	7,228	1,944	5,284
Information, excluding software publishers	51 less 5112	2,735	694	2,041
Architectural, engineering, and related services	5413	7,531	2,789	4,742
Computer systems design and related services	5415	18,485	9,018	9,468
Scientific research and development services	5417	13,495	5,367	8,128
Research and development in nanotechnology	541713	1,413	466	947
Research and development in biotechnology (except nanobiotechnology)	541714	4,237	1,735	2,503
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	7,668	3,089	4,578
Social sciences and humanities research and development	541720	168	69	100

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 21

Product innovating companies, by industry: 2019–21

(Number and percent)

Industry	NAICS code	Companies (number)	Product innovation			
			Number		Percent	
			Yes	No	Yes	No
All industries	11, 21–23, 31–33, 42–81	4,874,928	459,474	4,415,454	9.4	90.6
Manufacturing industries	31–33	209,282	25,498	183,784	12.2	87.8
Food	311	19,326	2,387	16,939	12.4	87.6
Beverage and tobacco products	312	9,354	1,782	7,572	19.1	80.9
Textile, apparel, and leather products	313–16	9,443	1,097	8,346	11.6	88.4
Wood products	321	9,546	553	8,993	5.8	94.2
Paper	322	1,500	175	1,325	11.7	88.3
Printing and related support activities	323	20,212	1,943	18,269	9.6	90.4
Petroleum and coal products	324	546	22	524	4.0	96.0
Chemicals	325	7,961	1,669	6,292	21.0	79.0
Pesticide, fertilizer, and other agricultural chemicals	3253	580	75	505	12.9	87.1
Pharmaceuticals and medicines	3254	1,536	348	1,188	22.7	77.3
Soap, cleaning compound, and toilet preparation	3256	1,652	338	1,314	20.5	79.5
Other chemicals	other 325	4,194	907	3,287	21.6	78.4
Plastics and rubber products	326	7,060	776	6,284	11.0	89.0
Nonmetallic mineral products	327	7,290	663	6,627	9.1	90.9
Primary metals	331	2,079	120	1,959	5.8	94.2
Fabricated metal products	332	46,128	3,870	42,258	8.4	91.6
Machinery	333	16,440	2,670	13,770	16.2	83.8
Computer and electronic products	334	8,527	2,121	6,406	24.9	75.1
Communications equipment	3342	850	286	564	33.6	66.4
Semiconductor and other electronic components	3344	2,711	559	2,152	20.6	79.4
Navigational, measuring, electromedical, and control instruments	3345	3,737	889	2,848	23.8	76.2
Other computer and electronic products	other 334	1,230	389	841	31.6	68.4
Electrical equipment, appliances, and components	335	3,925	905	3,020	23.1	76.9
Transportation equipment	336	7,325	1,205	6,120	16.5	83.5
Automobiles, bodies, trailers, and parts	3361–63	4,494	751	3,743	16.7	83.3
Aerospace products and parts	3364	1,044	183	861	17.5	82.5
Other transportation	other 336	1,787	270	1,517	15.1	84.9
Furniture and related products	337	12,060	802	11,258	6.7	93.3
Miscellaneous	339	20,536	2,738	17,798	13.3	86.7
Medical equipment and supplies	3391	7,602	880	6,722	11.6	88.4
Other miscellaneous manufacturing	3399	12,933	1,856	11,077	14.4	85.6
Nonmanufacturing industries	11, 21–23, 42–81	4,665,645	433,975	4,231,670	9.3	90.7
Agriculture, forestry, fishing, and hunting	11	19,567	913	18,654	4.7	95.3
Mining, extraction, and support activities	21	14,004	490	13,514	3.5	96.5
Utilities	22	2,994	183	2,811	6.1	93.9
Construction	23	635,568	31,408	604,160	4.9	95.1
Wholesale trade	42	241,440	24,485	216,955	10.1	89.9
Retail trade	44–45	546,067	56,634	489,433	10.4	89.6
Transportation and warehousing	48–49	165,454	10,188	155,266	6.2	93.8
Information	51	65,445	12,343	53,102	18.9	81.1
Publishing	511	17,755	4,711	13,044	26.5	73.5
Newspaper, periodical, book, and directory publishers	5111	9,162	1,101	8,061	12.0	88.0
Software publishers	5112	8,589	3,608	4,981	42.0	58.0
Telecommunications	517	7,319	1,088	6,231	14.9	85.1
Data processing, hosting, and related services	518	8,346	1,909	6,437	22.9	77.1

TABLE 21

Product innovating companies, by industry: 2019–21

(Number and percent)

Industry	NAICS code	Companies (number)	Product innovation			
			Number		Percent	
			Yes	No	Yes	No
Other information	other 51	32,027	4,637	27,390	14.5	85.5
Finance and insurance	52	198,128	18,222	179,906	9.2	90.8
Real estate and rental and leasing	53	283,276	15,239	268,037	5.4	94.6
Lessors of nonfinancial intangible assets (except copyrighted works)	533	1,956	188 r	1,768	9.6 r	90.4
Other real estate and rental and leasing	other 53	281,321	15,051	266,270	5.4	94.6
Professional, scientific, and technical services	54	717,229	81,784	635,445	11.4	88.6
Legal services	5411	152,543	6,350	146,193	4.2	95.8
Accounting, tax preparation, bookkeeping, and payroll services	5412	109,075	7,723	101,352	7.1	92.9
Architectural, engineering, and related services	5413	87,994	8,796	79,198	10.0	90.0
Specialized design services	5414	29,258	4,255	25,003	14.5	85.5
Computer systems design and related services	5415	100,282	18,687	81,595	18.6	81.4
Management, scientific, and technical consulting services	5416	144,421	22,712	121,709	15.7	84.3
Scientific research and development services	5417	11,149	2,146	9,003	19.2	80.8
Advertising, public relations, and related services	5418	28,236	4,119	24,117	14.6	85.4
Other professional, scientific, and technical services	5419	54,270	6,997	47,273	12.9	87.1
Management of companies and enterprises	55	3,153	96 r	3,057	3.0 r	97.0
Administrative and support and waste management and remediation services	56	293,539	23,903	269,636	8.1	91.9
Educational services	61	57,078	13,512	43,566	23.7	76.3
Health care and social assistance	62	536,276	61,758	474,518	11.5	88.5
Health care services	621–23	469,939	54,003	415,936	11.5	88.5
Social assistance	624	66,336	7,753	58,583	11.7	88.3
Arts, entertainment, and recreation	71	89,491	9,343	80,148	10.4	89.6
Accommodation and food services	72	455,071	44,441	410,630	9.8	90.2
Other services	81	341,869	29,031	312,838	8.5	91.5

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail across rows may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Detail across columns have been adjusted to add to total. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 22

Product innovating companies, by company size: 2019–21

(Number and percent)

Employment size	Companies (number)	Product innovation			
		Number		Percent	
		Yes	No	Yes	No
All companies	4,874,928	459,474	4,415,454	9.4	90.6
Micro companies					
1–4	2,734,191	229,523	2,504,668	8.4	91.6
5–9	950,548	95,959	854,589	10.1	89.9
Small companies					
10–19	577,397	64,370	513,027	11.1	88.9
20–49	399,566	45,023	354,543	11.3	88.7
Medium companies					
50–99	115,591	12,069	103,522	10.4	89.6
100–249	63,969	7,563	56,406	11.8	88.2
Large companies					
250–499	18,124	2,359	15,765	13.0	87.0
500–999	7,668	1,144	6,524	14.9	85.1
1,000–4,999	6,010	1,010	5,000	16.8	r 83.2
5,000–9,999	982	198	784	20.2	79.8 r
10,000–24,999	516	157	359	30.4	69.6
25,000 or more	372	95	277	25.5	74.5

r = relative standard error > 50%.

Note(s):

Detail across rows may not add to total because of rounding. Detail across columns have been adjusted to add to total. Statistics are representative of companies located in the United States.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 23

Business process innovating companies, by industry: 2019–21

(Number and percent)

Industry	NAICS code	Companies (number)	Business process innovation			
			Number		Percent	
			Yes	No	Yes	No
All industries	11, 21–23, 31–33, 42–81	4,874,928	1,207,543	3,667,385	24.8	75.2
Manufacturing industries	31–33	209,282	60,971	148,311	29.1	70.9
Food	311	19,326	6,045	13,281	31.3	68.7
Beverage and tobacco products	312	9,354	3,597	5,757	38.5	61.5
Textile, apparel, and leather products	313–16	9,443	2,303	7,140	24.4	75.6
Wood products	321	9,546	2,223	7,323	23.3	76.7
Paper	322	1,500	540	960	36.0	64.0
Printing and related support activities	323	20,212	5,177	15,035	25.6	74.4
Petroleum and coal products	324	546	83	463	15.2	84.8
Chemicals	325	7,961	2,920	5,041	36.7	63.3
Pesticide, fertilizer, and other agricultural chemicals	3253	580	141	439	24.3	75.7
Pharmaceuticals and medicines	3254	1,536	584	952	38.0	62.0
Soap, cleaning compound, and toilet preparation	3256	1,652	611	1,041	37.0	63.0
Other chemicals	other 325	4,194	1,583	2,611	37.7	62.3
Plastics and rubber products	326	7,060	2,327	4,733	33.0	67.0
Nonmetallic mineral products	327	7,290	1,790	5,500	24.6	75.4
Primary metals	331	2,079	679	1,400	32.7	67.3
Fabricated metal products	332	46,128	12,154	33,974	26.3	73.7
Machinery	333	16,440	5,515	10,925	33.5	66.5
Computer and electronic products	334	8,527	3,414	5,113	40.0	60.0
Communications equipment	3342	850	453	397	53.3	46.7
Semiconductor and other electronic components	3344	2,711	993	1,718	36.6	63.4
Navigational, measuring, electromedical, and control instruments	3345	3,737	1,478	2,259	39.6	60.4
Other computer and electronic products	other 334	1,230	491	739	39.9	60.1
Electrical equipment, appliances, and components	335	3,925	1,591	2,334	40.5	59.5
Transportation equipment	336	7,325	2,221	5,104	30.3	69.7
Automobiles, bodies, trailers, and parts	3361–63	4,494	1,405	3,089	31.3	68.7
Aerospace products and parts	3364	1,044	302	742	28.9	71.1
Other transportation	other 336	1,787	514	1,273	28.8	71.2
Furniture and related products	337	12,060	2,736	9,324	22.7	77.3
Miscellaneous	339	20,536	5,641	14,895	27.5	72.5
Medical equipment and supplies	3391	7,602	1,807	5,795	23.8	76.2
Other miscellaneous manufacturing	3399	12,933	3,833	9,100	29.6	70.4
Nonmanufacturing industries	11, 21–23, 42–81	4,665,645	1,146,573	3,519,072	24.6	75.4
Agriculture, forestry, fishing, and hunting	11	19,567	2,641	16,926	13.5	86.5
Mining, extraction, and support activities	21	14,004	2,091	11,913	14.9	85.1
Utilities	22	2,994	698	2,296	23.3	76.7
Construction	23	635,568	112,634	522,934	17.7	82.3
Wholesale trade	42	241,440	61,317	180,123	25.4	74.6
Retail trade	44–45	546,067	141,820	404,247	26.0	74.0
Transportation and warehousing	48–49	165,454	46,209	119,245	27.9	72.1
Information	51	65,445	20,121	45,324	30.7	69.3
Publishing	511	17,755	6,587	11,168	37.1	62.9
Newspaper, periodical, book, and directory publishers	5111	9,162	2,162	7,000	23.6	76.4
Software publishers	5112	8,589	4,418	4,171	51.4	48.6
Telecommunications	517	7,319	1,987	5,332	27.1	72.9

TABLE 23

Business process innovating companies, by industry: 2019–21

(Number and percent)

Industry	NAICS code	Companies (number)	Business process innovation			
			Number		Percent	
			Yes	No	Yes	No
Data processing, hosting, and related services	518	8,346	3,333	5,013	39.9	60.1
Other information	other 51	32,027	8,215	23,812	25.7	74.3
Finance and insurance	52	198,128	51,176	146,952	25.8	74.2
Real estate and rental and leasing	53	283,276	54,403	228,873	19.2	80.8
Lessors of nonfinancial intangible assets (except copyrighted works)	533	1,956	551	1,405	28.2	71.8
Other real estate and rental and leasing	other 53	281,321	53,852	227,469	19.1	80.9
Professional, scientific, and technical services	54	717,229	207,012	510,217	28.9	71.1
Legal services	5411	152,543	28,630	123,913	18.8	81.2
Accounting, tax preparation, bookkeeping, and payroll services	5412	109,075	26,984	82,091	24.7	75.3
Architectural, engineering, and related services	5413	87,994	22,491	65,503	25.6	74.4
Specialized design services	5414	29,258	9,555	19,703	32.7	67.3
Computer systems design and related services	5415	100,282	37,212	63,070	37.1	62.9
Management, scientific, and technical consulting services	5416	144,421	52,587	91,834	36.4	63.6
Scientific research and development services	5417	11,149	4,153	6,996	37.2	62.8
Advertising, public relations, and related services	5418	28,236	9,799	18,437	34.7	65.3
Other professional, scientific, and technical services	5419	54,270	15,603	38,667	28.8	71.2
Management of companies and enterprises	55	3,153	772	2,381	24.5	75.5
Administrative and support and waste management and remediation services	56	293,539	67,547	225,992	23.0	77.0
Educational services	61	57,078	23,600	33,478	41.3	58.7
Health care and social assistance	62	536,276	137,875	398,401	25.7	74.3
Health care services	621–23	469,939	119,711	350,228	25.5	74.5
Social assistance	624	66,336	18,163	48,173	27.4	72.6
Arts, entertainment, and recreation	71	89,491	20,857	68,634	23.3	76.7
Accommodation and food services	72	455,071	122,438	332,633	26.9	73.1
Other services	81	341,869	73,362	268,507	21.5	78.5

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail across rows may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Detail across columns have been adjusted to add to total. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 24

Business process innovating companies, by company size: 2019–21

(Number and percent)

Employment size	Companies (number)	Business process innovation			
		Number		Percent	
		Yes	No	Yes	No
All companies	4,874,928	1,207,543	3,667,385	24.8	75.2
Micro companies					
1–4	2,734,191	587,696	2,146,495	21.5	78.5
5–9	950,548	248,624	701,924	26.2	73.8
Small companies					
10–19	577,397	171,026	406,371	29.6	70.4
20–49	399,566	127,045	272,521	31.8	68.2
Medium companies					
50–99	115,591	38,006	77,585	32.9	67.1
100–249	63,969	22,822	41,147	35.7	64.3
Large companies					
250–499	18,124	6,722	11,402	37.1	62.9
500–999	7,668	2,752	4,916	35.9	64.1
1,000–4,999	6,010	2,119	3,891	35.3	64.7
5,000–9,999	982	367	615	37.4	62.6 r
10,000–24,999	516	232	284	45.0	55.0
25,000 or more	372	133	239	35.8	64.2

r = relative standard error > 50%.

Note(s):

Detail across rows may not add to total because of rounding. Detail across columns have been adjusted to add to total. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 25

Companies with new-to-market product innovation, by industry: 2019–21

(Number and percent)

Industry	NAICS code	Companies (number)	Product innovation new to market			
			Number		Percent	
			Yes	No	Yes	No
All industries	11, 21–23, 31–33, 42–81	4,874,928	168,525	4,706,403	3.5	96.5
Manufacturing industries	31–33	209,282	11,638	197,644	5.6	94.4
Food	311	19,326	1,144	18,182	5.9	94.1
Beverage and tobacco products	312	9,354	629	8,725	6.7	93.3
Textile, apparel, and leather products	313–16	9,443	430	9,013	4.6	95.4
Wood products	321	9,546	248	9,298	2.6	97.4
Paper	322	1,500	91	1,409	6.1	93.9
Printing and related support activities	323	20,212	696	19,516	3.4	96.6
Petroleum and coal products	324	546	5	541	0.9	99.1
Chemicals	325	7,961	754	7,207	9.5	90.5
Pesticide, fertilizer, and other agricultural chemicals	3253	580	25	555	4.3	95.7
Pharmaceuticals and medicines	3254	1,536	230	1,306	15.0	85.0
Soap, cleaning compound, and toilet preparation	3256	1,652	124	1,528	7.5	92.5
Other chemicals	other 325	4,194	374	3,820	8.9	91.1
Plastics and rubber products	326	7,060	406	6,654	5.8	94.2
Nonmetallic mineral products	327	7,290	265	7,025	3.6	96.4
Primary metals	331	2,079	56	2,023	2.7	97.3
Fabricated metal products	332	46,128	1,699	44,429	3.7	96.3
Machinery	333	16,440	1,383	15,057	8.4	91.6
Computer and electronic products	334	8,527	1,194	7,333	14.0	86.0
Communications equipment	3342	850	153	697	18.0	82.0
Semiconductor and other electronic components	3344	2,711	303	2,408	11.2	88.8
Navigational, measuring, electromedical, and control instruments	3345	3,737	503	3,234	13.5	86.5
Other computer and electronic products	other 334	1,230	239	991	19.4	80.6
Electrical equipment, appliances, and components	335	3,925	597	3,328	15.2	84.8
Transportation equipment	336	7,325	602	6,723	8.2	91.8
Automobiles, bodies, trailers, and parts	3361–63	4,494	326	4,168	7.3	92.7
Aerospace products and parts	3364	1,044	120	924	11.5	88.5
Other transportation	other 336	1,787	154	1,633	8.6	91.4
Furniture and related products	337	12,060	347	11,713	2.9	97.1
Miscellaneous	339	20,536	1,092	19,444	5.3	94.7
Medical equipment and supplies	3391	7,602	324	7,278	4.3	95.7
Other miscellaneous manufacturing	3399	12,933	767	12,166	5.9	94.1
Nonmanufacturing industries	11, 21–23, 42–81	4,665,645	156,888	4,508,757	3.4	96.6
Agriculture, forestry, fishing, and hunting	11	19,567	159	19,408	0.8	99.2
Mining, extraction, and support activities	21	14,004	162	13,842	1.2	98.8
Utilities	22	2,994	78	2,916	2.6	97.4
Construction	23	635,568	8,651	626,917	1.4	98.6
Wholesale trade	42	241,440	11,152	230,288	4.6	95.4
Retail trade	44–45	546,067	26,000	520,067	4.8	95.2
Transportation and warehousing	48–49	165,454	2,520	162,934	1.5	98.5
Information	51	65,445	5,741	59,704	8.8	91.2
Publishing	511	17,755	2,753	15,002	15.5	84.5
Newspaper, periodical, book, and directory publishers	5111	9,162	430	8,732	4.7	95.3
Software publishers	5112	8,589	2,324	6,265	27.1	72.9
Telecommunications	517	7,319	337	6,982	4.6	95.4
Data processing, hosting, and related services	518	8,346	948	7,398	11.4	88.6

TABLE 25

Companies with new-to-market product innovation, by industry: 2019–21

(Number and percent)

Industry	NAICS code	Companies (number)	Product innovation new to market			
			Number		Percent	
			Yes	No	Yes	No
Other information	other 51	32,027	1,701	30,326	5.3	94.7
Finance and insurance	52	198,128	5,449	192,679	2.8	97.2
Real estate and rental and leasing	53	283,276	4,319	278,957	1.5	98.5
Lessors of nonfinancial intangible assets (except copyrighted works)	533	1,956	104 r	1,852	5.3 r	94.7
Other real estate and rental and leasing	other 53	281,321	4,216	277,105	1.5	98.5
Professional, scientific, and technical services	54	717,229	30,345	686,884	4.2	95.8
Legal services	5411	152,543	1,375	151,168	0.9	99.1
Accounting, tax preparation, bookkeeping, and payroll services	5412	109,075	1,575	107,500	1.4	98.6
Architectural, engineering, and related services	5413	87,994	3,829	84,165	4.4	95.6
Specialized design services	5414	29,258	1,311	27,947	4.5	95.5
Computer systems design and related services	5415	100,282	8,452	91,830	8.4	91.6
Management, scientific, and technical consulting services	5416	144,421	8,791	135,630	6.1	93.9
Scientific research and development services	5417	11,149	1,495	9,654	13.4	86.6
Advertising, public relations, and related services	5418	28,236	1,195	27,041	4.2	95.8
Other professional, scientific, and technical services	5419	54,270	2,326	51,944	4.3	95.7
Management of companies and enterprises	55	3,153	56 r	3,097	1.8 r	98.2
Administrative and support and waste management and remediation services	56	293,539	7,833	285,706	2.7	97.3
Educational services	61	57,078	5,120	51,958	9.0	91.0
Health care and social assistance	62	536,276	18,716	517,560	3.5	96.5
Health care services	621–23	469,939	16,355	453,584	3.5	96.5
Social assistance	624	66,336	2,362	63,974	3.6	96.4
Arts, entertainment, and recreation	71	89,491	3,150	86,341	3.5	96.5
Accommodation and food services	72	455,071	17,449	437,622	3.8	96.2
Other services	81	341,869	9,982	331,887	2.9	97.1

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail across rows may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Detail across columns have been adjusted to add to total. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 26

Companies with new-to-market product innovation, by company size: 2019–21

(Number and percent)

Employment size	Companies (number)	Product innovation new to market			
		Number		Percent	
		Yes	No	Yes	No
All companies	4,874,928	168,525	4,706,403	3.5	96.5
Micro companies					
1–4	2,734,191	81,768	2,652,423	3.0	97.0
5–9	950,548	36,804	913,744	3.9	96.1
Small companies					
10–19	577,397	24,367	553,030	4.2	95.8
20–49	399,566	16,319	383,247	4.1	95.9
Medium companies					
50–99	115,591	4,019	111,572	3.5	96.5
100–249	63,969	3,180	60,789	5.0	95.0
Large companies					
250–499	18,124	949	17,175	5.2	94.8
500–999	7,668	386	7,282	5.0	95.0
1,000–4,999	6,010	508	5,502	8.5 r	91.5
5,000–9,999	982	76	906	7.7	92.3 r
10,000–24,999	516	85	431	16.5	83.5
25,000 or more	372	60	312	16.1	83.9

r = relative standard error > 50%.

Note(s):

Detail across rows may not add to total because of rounding. Detail across columns have been adjusted to add to total. Statistics are representative of companies located in the United States.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 27

Companies with new-to-the-business product innovation, by industry: 2019–21

(Number and percent)

Industry	NAICS code	Companies (number)	Product innovation only new to the business			
			Number		Percent	
			Yes	No	Yes	No
All industries	11, 21–23, 31–33, 42–81	4,874,928	312,871	4,562,057	6.4	93.6
Manufacturing industries	31–33	209,282	18,021	191,261	8.6	91.4
Food	311	19,326	1,687	17,639	8.7	91.3
Beverage and tobacco products	312	9,354	1,462	7,892	15.6	84.4
Textile, apparel, and leather products	313–16	9,443	839	8,604	8.9	91.1
Wood products	321	9,546	345	9,201	3.6	96.4
Paper	322	1,500	121	1,379	8.1	91.9
Printing and related support activities	323	20,212	1,573	18,639	7.8	92.2
Petroleum and coal products	324	546	12	534	2.2	97.8
Chemicals	325	7,961	1,079	6,882	13.6	86.4
Pesticide, fertilizer, and other agricultural chemicals	3253	580	43	537	7.4	92.6
Pharmaceuticals and medicines	3254	1,536	227	1,309	14.8	85.2
Soap, cleaning compound, and toilet preparation	3256	1,652	229	1,423	13.9	86.1
Other chemicals	other 325	4,194	578	3,616	13.8	86.2
Plastics and rubber products	326	7,060	532	6,528	7.5	92.5
Nonmetallic mineral products	327	7,290	461	6,829	6.3	93.7
Primary metals	331	2,079	88	1,991	4.2	95.8
Fabricated metal products	332	46,128	2,904	43,224	6.3	93.7
Machinery	333	16,440	1,757	14,683	10.7	89.3
Computer and electronic products	334	8,527	1,405	7,122	16.5	83.5
Communications equipment	3342	850	188	662	22.1	77.9
Semiconductor and other electronic components	3344	2,711	351	2,360	12.9	87.1
Navigational, measuring, electromedical, and control instruments	3345	3,737	574	3,163	15.4	84.6
Other computer and electronic products	other 334	1,230	292	938	23.7	76.3
Electrical equipment, appliances, and components	335	3,925	525	3,400	13.4	86.6
Transportation equipment	336	7,325	870	6,455	11.9	88.1
Automobiles, bodies, trailers, and parts	3361–63	4,494	530	3,964	11.8	88.2
Aerospace products and parts	3364	1,044	126	918	12.1	87.9
Other transportation	other 336	1,787	214	1,573	12.0	88.0
Furniture and related products	337	12,060	465	11,595	3.9	96.1
Miscellaneous	339	20,536	1,893	18,643	9.2	90.8
Medical equipment and supplies	3391	7,602	563	7,039	7.4	92.6
Other miscellaneous manufacturing	3399	12,933	1,329	11,604	10.3	89.7
Nonmanufacturing industries	11, 21–23, 42–81	4,665,645	294,849	4,370,796	6.3	93.7
Agriculture, forestry, fishing, and hunting	11	19,567	603	18,964	3.1	96.9
Mining, extraction, and support activities	21	14,004	230	13,774	1.6	98.4
Utilities	22	2,994	144	2,850	4.8	95.2
Construction	23	635,568	20,189	615,379	3.2	96.8
Wholesale trade	42	241,440	16,637	224,803	6.9	93.1
Retail trade	44–45	546,067	37,795	508,272	6.9	93.1
Transportation and warehousing	48–49	165,454	5,700	159,754	3.4	96.6
Information	51	65,445	9,040	56,405	13.8	86.2
Publishing	511	17,755	3,233	14,522	18.2	81.8
Newspaper, periodical, book, and directory publishers	5111	9,162	786	8,376	8.6	91.4
Software publishers	5112	8,589	2,448	6,141	28.5	71.5
Telecommunications	517	7,319	801	6,518	10.9	89.1

TABLE 27

Companies with new-to-the-business product innovation, by industry: 2019–21

(Number and percent)

Industry	NAICS code	Companies (number)	Product innovation only new to the business			
			Number		Percent	
			Yes	No	Yes	No
Data processing, hosting, and related services	518	8,346	1,401	6,945	16.8	83.2
Other information	other 51	32,027	3,601	28,426	11.2	88.8
Finance and insurance	52	198,128	11,591	186,537	5.9	94.1
Real estate and rental and leasing	53	283,276	9,164	274,112	3.2	96.8
Lessors of nonfinancial intangible assets (except copyrighted works)	533	1,956	85 r	1,871	4.3 r	95.7
Other real estate and rental and leasing	other 53	281,321	9,080	272,241	3.2	96.8
Professional, scientific, and technical services	54	717,229	57,810	659,419	8.1	91.9
Legal services	5411	152,543	4,208	148,335	2.8	97.2
Accounting, tax preparation, bookkeeping, and payroll services	5412	109,075	4,951	104,124	4.5	95.5
Architectural, engineering, and related services	5413	87,994	5,901	82,093	6.7	93.3
Specialized design services	5414	29,258	2,932	26,326	10.0	90.0
Computer systems design and related services	5415	100,282	13,814	86,468	13.8	86.2
Management, scientific, and technical consulting services	5416	144,421	16,494	127,927	11.4	88.6
Scientific research and development services	5417	11,149	1,207	9,942	10.8	89.2
Advertising, public relations, and related services	5418	28,236	3,277	24,959	11.6	88.4
Other professional, scientific, and technical services	5419	54,270	5,023	49,247	9.3	90.7
Management of companies and enterprises	55	3,153	96 r	3,057	3.0 r	97.0
Administrative and support and waste management and remediation services	56	293,539	16,048	277,491	5.5	94.5
Educational services	61	57,078	9,613	47,465	16.8	83.2
Health care and social assistance	62	536,276	45,216	491,060	8.4	91.6
Health care services	621–23	469,939	40,443	429,496	8.6	91.4
Social assistance	624	66,336	4,772	61,564	7.2	92.8
Arts, entertainment, and recreation	71	89,491	6,526	82,965	7.3	92.7
Accommodation and food services	72	455,071	28,625	426,446	6.3	93.7
Other services	81	341,869	19,824	322,045	5.8	94.2

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail across rows may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Detail across columns have been adjusted to add to total. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 28

Companies with new-to-the-business product innovation, by company size: 2019–21

(Number and percent)

Employment size	Companies (number)	Product innovation only new to the business			
		Number		Percent	
		Yes	No	Yes	No
All companies	4,874,928	312,871	4,562,057	6.4	93.6
Micro companies					
1–4	2,734,191	154,449	2,579,742	5.6	94.4
5–9	950,548	65,107	885,441	6.8	93.2
Small companies					
10–19	577,397	45,015	532,382	7.8	92.2
20–49	399,566	31,288	368,278	7.8	92.2
Medium companies					
50–99	115,591	8,234	107,357	7.1	92.9
100–249	63,969	5,173	58,796	8.1	91.9
Large companies					
250–499	18,124	1,564	16,560	8.6	91.4
500–999	7,668	898	6,770	11.7	88.3
1,000–4,999	6,010	783	5,227	13.0 r	87.0
5,000–9,999	982	156	826	15.9	84.1 r
10,000–24,999	516	119	397	23.1	76.9
25,000 or more	372	84	288	22.6	77.4

r = relative standard error > 50%.

Note(s):

Detail across rows may not add to total because of rounding. Detail across columns have been adjusted to add to total.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 29

Product or business process innovating companies, by industry: 2019–21

(Number and percent)

Industry	NAICS code	Companies (number)	Product or business process innovation			
			Number		Percent	
			Yes	No	Yes	No
All industries	11, 21–23, 31–33, 42–81	4,874,928	1,310,146	3,564,782	26.9	73.1
Manufacturing industries	31–33	209,282	65,825	143,457	31.5	68.5
Food	311	19,326	6,741	12,585	34.9	65.1
Beverage and tobacco products	312	9,354	3,983	5,371	42.6	57.4
Textile, apparel, and leather products	313–16	9,443	2,581	6,862	27.3	72.7
Wood products	321	9,546	2,322	7,224	24.3	75.7
Paper	322	1,500	572	928	38.1	61.9
Printing and related support activities	323	20,212	5,522	14,690	27.3	72.7
Petroleum and coal products	324	546	93	453	17.0	83.0
Chemicals	325	7,961	3,219	4,742	40.4	59.6
Pesticide, fertilizer, and other agricultural chemicals	3253	580	152	428	26.2	73.8
Pharmaceuticals and medicines	3254	1,536	669	867	43.6	56.4
Soap, cleaning compound, and toilet preparation	3256	1,652	716	936	43.3	56.7
Other chemicals	other 325	4,194	1,680	2,514	40.1	59.9
Plastics and rubber products	326	7,060	2,506	4,554	35.5	64.5
Nonmetallic mineral products	327	7,290	1,969	5,321	27.0	73.0
Primary metals	331	2,079	694	1,385	33.4	66.6
Fabricated metal products	332	46,128	12,693	33,435	27.5	72.5
Machinery	333	16,440	5,855	10,585	35.6	64.4
Computer and electronic products	334	8,527	3,807	4,720	44.6	55.4
Communications equipment	3342	850	494	356	58.1	41.9
Semiconductor and other electronic components	3344	2,711	1,122	1,589	41.4	58.6
Navigational, measuring, electromedical, and control instruments	3345	3,737	1,645	2,092	44.0	56.0
Other computer and electronic products	other 334	1,230	548	682	44.6	55.4
Electrical equipment, appliances, and components	335	3,925	1,750	2,175	44.6	55.4
Transportation equipment	336	7,325	2,437	4,888	33.3	66.7
Automobiles, bodies, trailers, and parts	3361–63	4,494	1,539	2,955	34.2	65.8
Aerospace products and parts	3364	1,044	340	704	32.6	67.4
Other transportation	other 336	1,787	557	1,230	31.2	68.8
Furniture and related products	337	12,060	2,929	9,131	24.3	75.7
Miscellaneous	339	20,536	6,147	14,389	29.9	70.1
Medical equipment and supplies	3391	7,602	1,939	5,663	25.5	74.5
Other miscellaneous manufacturing	3399	12,933	4,206	8,727	32.5	67.5
Nonmanufacturing industries	11, 21–23, 42–81	4,665,645	1,244,320	3,421,325	26.7	73.3
Agriculture, forestry, fishing, and hunting	11	19,567	2,997	16,570	15.3	84.7
Mining, extraction, and support activities	21	14,004	2,285	11,719	16.3	83.7
Utilities	22	2,994	721	2,273	24.1	75.9
Construction	23	635,568	121,436	514,132	19.1	80.9
Wholesale trade	42	241,440	67,241	174,199	27.8	72.2
Retail trade	44–45	546,067	156,491	389,576	28.7	71.3
Transportation and warehousing	48–49	165,454	48,305	117,149	29.2	70.8
Information	51	65,445	22,200	43,245	33.9	66.1
Publishing	511	17,755	7,522	10,233	42.4	57.6
Newspaper, periodical, book, and directory publishers	5111	9,162	2,504	6,658	27.3	72.7
Software publishers	5112	8,589	5,014	3,575	58.4	41.6
Telecommunications	517	7,319	2,247	5,072	30.7	69.3

TABLE 29

Product or business process innovating companies, by industry: 2019–21

(Number and percent)

Industry	NAICS code	Companies (number)	Product or business process innovation			
			Number		Percent	
			Yes	No	Yes	No
Data processing, hosting, and related services	518	8,346	3,583	4,763	42.9	57.1
Other information	other 51	32,027	8,846	23,181	27.6	72.4
Finance and insurance	52	198,128	55,938	142,190	28.2	71.8
Real estate and rental and leasing	53	283,276	57,921	225,355	20.4	79.6
Lessors of nonfinancial intangible assets (except copyrighted works)	533	1,956	593	1,363	30.3	69.7
Other real estate and rental and leasing	other 53	281,321	57,329	223,992	20.4	79.6
Professional, scientific, and technical services	54	717,229	220,254	496,975	30.7	69.3
Legal services	5411	152,543	30,133	122,410	19.8	80.2
Accounting, tax preparation, bookkeeping, and payroll services	5412	109,075	28,766	80,309	26.4	73.6
Architectural, engineering, and related services	5413	87,994	23,728	64,266	27.0	73.0
Specialized design services	5414	29,258	10,329	18,929	35.3	64.7
Computer systems design and related services	5415	100,282	39,518	60,764	39.4	60.6
Management, scientific, and technical consulting services	5416	144,421	55,974	88,447	38.8	61.2
Scientific research and development services	5417	11,149	4,479	6,670	40.2	59.8
Advertising, public relations, and related services	5418	28,236	10,448	17,788	37.0	63.0
Other professional, scientific, and technical services	5419	54,270	16,881	37,389	31.1	68.9
Management of companies and enterprises	55	3,153	772	2,381	24.5	75.5
Administrative and support and waste management and remediation services	56	293,539	73,400	220,139	25.0	75.0
Educational services	61	57,078	25,792	31,286	45.2	54.8
Health care and social assistance	62	536,276	152,156	384,120	28.4	71.6
Health care services	621–23	469,939	131,793	338,146	28.0	72.0
Social assistance	624	66,336	20,362	45,974	30.7	69.3
Arts, entertainment, and recreation	71	89,491	23,400	66,091	26.1	73.9
Accommodation and food services	72	455,071	132,952	322,119	29.2	70.8
Other services	81	341,869	80,060	261,809	23.4	76.6

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail across rows may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Detail across columns have been adjusted to add to total. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE 30

Product or business process innovating companies, by company size: 2019–21

(Number and percent)

Employment size	Companies (number)	Product or business process innovation			
		Number		Percent	
		Yes	No	Yes	No
All companies	4,874,928	1,310,146	3,564,782	26.9	73.1
Micro companies					
1–4	2,734,191	643,403	2,090,788	23.5	76.5
5–9	950,548	269,471	681,077	28.3	71.7
Small companies					
10–19	577,397	183,697	393,700	31.8	68.2
20–49	399,566	135,519	264,047	33.9	66.1
Medium companies					
50–99	115,591	40,501	75,090	35.0	65.0
100–249	63,969	24,420	39,549	38.2	61.8
Large companies					
250–499	18,124	7,052	11,072	38.9	61.1
500–999	7,668	2,898	4,770	37.8	62.2
1,000–4,999	6,010	2,346	3,664	39.0	61.0
5,000–9,999	982	418	564	42.6	57.4 r
10,000–24,999	516	265	251	51.4	48.6
25,000 or more	372	157	215	42.2	57.8

r = relative standard error > 50%.

Note(s):

Detail across rows may not add to total because of rounding. Detail across columns have been adjusted to add to total. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

Technical Notes

Survey Overview (2022 Survey Cycle: Data Year 2021)

Purpose. The Annual Business Survey (ABS) provides information on selected economic and demographic characteristics for businesses and business owners by sex, ethnicity, race, and veteran status. Further, the survey measures research and development (R&D) for microbusinesses, business topics such as innovation and technology, and other business characteristics. The ABS is conducted jointly by the Census Bureau and the National Center for Science and Engineering Statistics (NCSES) within the National Science Foundation (NSF). The ABS replaces the quinquennial Survey of Business Owners for employer businesses, the Annual Survey of Entrepreneurs, the Business R&D and Innovation for Microbusinesses Survey, and the Innovation section of the Business R&D and Innovation Survey.

The ABS is designed to incorporate new content each survey year based on topics of relevance. For the 2022 ABS, content includes company information, owner characteristics, research activities at nonprofit organizations, R&D, technology, innovation, financing, and management practices. R&D data are collected on the ABS for businesses with a W-2 employment range between one and nine employees.

Data collection authority. Title 13, U.S. Code, Sections 8(b), 131, and 182; Title 42, U.S. Code, Sections 1861–76 (NSF Act of 1950, as amended); and Section 505 within the America COMPETES Reauthorization Act of 2010, authorize this collection. Sections 224 and 225 of Title 13 require mandatory response. Office of Management and Budget (OMB) No. 0607-1004.

Survey sponsor. NCSES within NSF.

Survey collection and tabulation agent. The survey is conducted annually by the Census Bureau in accordance with an interagency agreement with NCSES within NSF.

Key Survey Information

Frequency. Annual.

Initial survey year. Calendar year 2017; for innovation, the reference period was 2015–17.

Reference period. Calendar year 2021; for innovation, the reference period was 2019–21.

Response unit. Nonfarm businesses in the United States.

Sample or census. Sample.

Population size. A total of 4.9 million employer firms; approximately 505,000 firms with one to nine employees and in North American Industry Classification System (NAICS) industries 31–33 (manufacturing), 42 (wholesale trade), 51 (information), 5413 (architectural, engineering, and related services), 5415 (computer systems design and related services), or 5417 (scientific research and development services) were in scope for the R&D module.

Sample size. 300,000 employer businesses.

Survey Design

Target population. Included are all nonfarm businesses filing Internal Revenue Service (IRS) tax forms as individual proprietorships, partnerships, or any type of corporation and with receipts of \$1,000 or more. The target population included only companies that had paid employees according to the IRS Form 941 that covered 12 March 2022, are classified in an in-scope NAICS industry, were physically located in the United States, and were in business at the end of calendar year 2022. The ABS covers firms with paid employees only. The ABS is conducted on a company or firm basis rather than an establishment basis.

Sampling frame. The sampling universe was constructed from the final 2020 Business Register. The Business Register is the Census Bureau's comprehensive database of U.S. businesses. Business Register data are compiled from a combination of business tax returns, data collected from the economic census, and data from other Census Bureau surveys. The Business Register includes sole proprietorships, partnerships, and corporations reporting business activity to the IRS on any one of the following IRS tax forms: 1040 (Schedule C), "Profit or Loss from Business" (Sole Proprietorship); 1065, "U.S. Return of Partnership Income"; 941, "Employer's Quarterly Federal Tax Return"; 944, "Employer's Annual Federal Tax Return"; or any one of the 1120 corporate tax forms.

The Business Register contains establishments that are out of scope for the ABS sample. These establishments are removed from the sampling universe. They include the following:

- Establishments engaged in the following NAICS industries:
 - 110000, 111, or 112 - Agriculture production
 - 482 - Railroads
 - 491 - U.S. Postal Service
 - 521 - Monetary authorities—central bank
 - 525 - Funds, trusts, and other financial vehicles
 - 813 - Religious, grantmaking, civic, professional, and similar organizations
 - 814 - Private households
 - 92 - Public administration
- Unclassified with legal form of organization as tax exempt or unknown
- Establishments located in American Samoa, Northern Mariana Islands, Guam, Puerto Rico, or the U.S. Virgin Islands
- Establishments belonging to foreign entities
- Government establishments
- Establishments with zero payroll and zero employment
- Establishments identified as out of business during prior year data review
- Single-unit establishments modeled as likely to be out of business using administrative data from the most recent monthly Business Register data sets

Information on industry classification, receipts, payroll, and employment was extracted from the Business Register during the frame construction.

The sample is also designed to estimate demographic characteristics of the business owners. To efficiently sample for demographic characteristics, a variety of sources of information are used to estimate the likelihood that a business is a woman- or minority-owned business. Administrative sources include the Decennial Census, the American Community Survey (ACS), and the Numident file, which is the Social Security Administration's comprehensive database of information from Social Security applications. Individual business owners are identified through IRS K-1 filings for partnerships and corporations and from the Business Register for sole proprietorships. The owners are matched to the 2000 and 2010 Decennial Censuses to get race, sex, and ethnicity data; to the 2000–20 ACS; and to the Numident file (in that order) through a Protected Identification Key. Country of birth is also identified through the linkages to the ACS or Numident data. Each firm is then placed in one of the following eight strata describing characteristics of business owners for sampling: American Indian or Alaska Native, Asian, Black or African American, Hispanic, non-Hispanic White men, Native Hawaiian and Other Pacific Islander, publicly owned, and women owned. Businesses are assigned to one and only one stratum, with priority given to the less common race or ethnicity groups.

Sample design. The ABS frame is stratified by state, expected owner race or ethnicity, and industry and is systematically sampled within each stratum. A standard type of estimation for stratified systematic sampling is used. Large companies were selected with certainty based on volume of sales, payroll, or number of paid employees. Certainty cases have a selection probability of 1, a sampling weight of 1, and represent only themselves. Specifically for the 2022 ABS, firms were selected with certainty based on the following criteria:

- Firms in NAICS 5415 or 5417 with expected employment of fewer than 10 employees that reported at least \$500,000 in R&D expenses in a prior year ABS,
- Firms in NAICS 5413, 31, 32, 33, 42, or 51 with expected employment of fewer than 10 employees that reported at least \$50,000 in R&D expenses in a prior year ABS,
- Firms with more than 500 employees, or
- Firms larger than stratum-specific payroll and receipt cutoffs.

The certainty cutoffs vary by sampling stratum, and each stratum is sampled at varying rates, depending on the number and size of firms in a particular stratum.

The remaining frame is subjected to stratified systematic random sampling. Sampling rates vary by strata and are determined by the following calculations. Note that a systematic sample uses take rate to sample, and the sampling rate is $1/\text{take rate}$.

The ABS sample consisted of 300,000 businesses. There were 46,000 selected with certainty. The certainty portion of the sample consisted of

- 5,000 with sufficient R&D expenses in previous cycles of the ABS,
- 17,000 with 500 or more employees,
- 16,000 with payroll above the stratum cutoff, and
- 8,000 with receipts above the stratum cutoff. (Note that payroll cutoffs are applied first so cases above both cutoffs appear in payroll count.)

The remaining 254,000 noncertainty cases were selected using the systematic stratified random sample selection. The maximum sample weight was 40.

Data Collection and Processing Methods

Data collection. Prior to mailing the survey, certain businesses selected were determined to be out of scope and were not contacted. The survey was mailed to 300,000 employer businesses in July 2022. Businesses were sent a letter informing them of their requirement to report. The letter also provided instructions on how to access the survey and submit online. There were three mail follow-ups conducted to increase response. Additionally, the Census Bureau conducted e-mail follow-ups to respondents who entered the electronic system but did not submit the questionnaire. The collection period closed in January 2023.

Mode. The 2022 ABS was collected using a Web-based survey instrument.

Check-in rate. The check-in rate is defined as the unweighted number of surveys that were submitted online by in-scope companies, divided by the unweighted total number of all in-scope companies in the sample. Response to individual questions did not factor into this metric. At the close of the collection period in January 2023, there were 184,000 responses submitted (62% of the sample).

There were an additional 1,900 businesses that contacted the Census Bureau to indicate that the business was no longer in operation or had been sold for the reference year via the call center.

Businesses selected to report R&D represented 39% of those mailed. Of the businesses mailed and selected to report R&D, 71,000 businesses (or 65%) submitted responses.

Unit response rate (URR). The URR is the unweighted number of responding companies for the survey. For the ABS, *response* is defined as a company providing the number of owners, number of paid owners, and number of employees or a company responding that it ceased operations prior to 2021.

For the ABS, the URR was 67.0%. The URR for businesses eligible to report the R&D module was 70.3%.

Item response rates (IRR). The 2022 ABS collected data on approximately 650 variables, and the distribution of values reported by sample companies is highly skewed. Thus, rather than report unweighted item response rates, total quantity response rates are calculated, which are based on weighted data. The survey skip patterns vary for respondents; therefore, it can be impossible to know an exact denominator for item response calculations.

Total quantity response rate (TQRR). For a given published estimate other than count or ratio estimates, TQRR is the percentage of the weighted estimate based on data that were reported by units in the sample or on data that were obtained from other sources and were determined to be equivalent in quality to reported data and weighted only by sampling but not nonresponse weights. The TQRR for total sales in the United States in 2020 was 72.6%.

Total quantity nonresponse rate (TQNR). For a given published estimate, TQNR, defined as 100% minus TQRR, is calculated for each tabulation cell from the ABS, except for cells that contain count or ratio estimates. TQNR measures the combined effect of the procedures used to handle unit and item nonresponse on the weighted ABS estimate. Detailed imputation rates are available on request.

Data editing. Prior to tabulating the data, response data were reviewed and edited to correct reporting errors. R&D data were tabulated for records reporting \$50,000 or more in R&D expenditures.

Additionally, R&D data were only tabbed for records classified in the following NAICS industries:

- 31–33 - Manufacturing
- 42 - Wholesale trade
- 51 - Information
- 5413 - Architectural, engineering, and related services

- 5415 - Computer systems design and related services
- 5417 - Scientific research and development services

Survey analysts reviewed the R&D reported by the survey respondents. Research was done by evaluating the reported business descriptions, reported R&D-to-sales ratio, and company website information. The majority of corrections involved false-positive reports or data reported using incorrect units (such as whole dollars instead of thousands of dollars). For NAICS industries 5415 and 5417, it is difficult to differentiate R&D from other technical work based solely on company website information. Due to this difficulty and the large number of companies sampled in these industries, it was not feasible to review each case individually; thus, relatively few corrections were made for false-positive reports. All cases were reviewed in these industries that had greater than \$50,000 in R&D expenses.

Additional data errors were detected and corrected through mass corrections and an automated data edit system designed to review the data for reasonableness and consistency. The editing process interactively performed corrections by using standard procedures to fix detectable errors. Quality control techniques were used to verify that operating procedures were carried out as specified.

Unit nonresponse. Unit nonresponse is handled by adjusting weighted reported data as follows. Each company's sampling weight is multiplied by a nonresponse adjustment factor. To calculate the adjustment factors, each company in the sample that is eligible for tabulation is assigned to one (and only one) adjustment cell. The adjustment cells are based on employment size and NAICS sector. For employment size, there are five categories: 1–4 employees, 5–9 employees, 10–49 employees, 50–249 employees, and 250 or more employees. For a given adjustment cell, the nonresponse adjustment factor is the ratio of the sum of the sampling weights for all companies in the cell to the sum of the sampling weights for all companies in the cell with reported data. The nonresponse adjustment factor for adjustment cell h was calculated as follows:

$$NAF_h = \frac{\sum_{r+nr} wgt}{\sum_r wgt},$$

where

r is the respondents (partial and complete),

nr is the nonrespondents,

wgt is the original sampling weight value,

h is the nonresponse adjustment cell, and

NAF_h is the nonresponse adjust factor for cell h .

For the nonresponse adjustment, a business is considered a respondent if it provided the number of owners, number of paid owners, and number of employees. Businesses that responded they ceased operations prior to 2021 are excluded from nonresponse adjustments as out of scope.

Tabulation. Although as many firms as possible were identified as out of scope during sampling, additional out-of-scope firms were identified with either response or updated administrative data not available at the time of sampling. These 33,000 firms were removed for tabulations and include

- Firms reporting zero employment,
- Firms that responded as having gone out of business before 2021,
- Nonprofit organizations,

- Firms that responded as being owned by a domestic parent company, and
- Firms with unclassified NAICS industry.

Industry classification. The industry classifications of firms are based on the **2017 NAICS** (<https://www.census.gov/naics/>). Firms with more than one domestic establishment are assigned a single industry classification using a hierarchical system based on the largest payroll sector, largest payroll 3-digit NAICS (within the largest sector), largest payroll 4-digit NAICS (within the largest 3-digit), and largest payroll 6-digit NAICS (within the largest 4-digit). For tabulation, industry classification was based on administrative data for 2017.

Geography. Firms with establishments operating in more than one state are tabulated as unclassified geography and counted only once in state and national totals.

Variance estimation. The ABS uses the delete-a-group jackknife variance estimator. Note that certainty cases do not contribute to the sampling variance. The delete-a-group jackknife variance estimator requires that every sampling stratum contains at least two sampled firms. Sampling strata that do not meet this requirement are collapsed as needed to create a new set of variance estimation strata that satisfies this requirement.

Data tables showing relative standard errors are available on request from the Survey Manager.

Survey Quality Measures

The estimates produced from the ABS are subject to both sampling and nonsampling errors.

Sampling error. The sampling error is described above in the variance estimation section.

Coverage error. Coverage error occurs when the frame fails to completely enumerate the population of interest. There can be both *undercoverage error*, where units are not included in the frame, and *overcoverage error*, where units included in the frame are actually out of scope for the population of interest. The ABS uses the prior-year Business Register to construct the frame, so any changes in businesses that would change the inclusion or exclusion of the business to the survey scope could be sources of coverage error. Prior to tabulation, survey units' information is updated with the most recently available Business Register data to mitigate this source of error.

Nonsampling error. All surveys and censuses have nonsampling errors. Nonsampling errors are attributable to various sources, such as the inability to obtain information for all cases in the universe, imputation for missing data, data errors and biases, mistakes in recording or keying data, errors in collection or processing, and coverage problems.

Although explicit measures of the effects of these nonsampling errors are not available, adjustments are made to the published relative standard errors to account for errors associated with imputation of missing data. It is believed that most of the important operational and data errors were detected and corrected through an automated data edit designed to review the data for reasonableness and consistency. Quality control techniques were used to verify that operating procedures were carried out as specified.

Measurement error. The most common source of measurement error was reporting in different units (e.g., reporting whole dollars rather than thousands of dollars). Variations in respondent interpretations of the definitions of R&D activities are of particular concern, and error can occur when respondents do not report dollar amounts correctly. Little public information exists for most of the small businesses surveyed by the ABS, so it is difficult to determine whether companies are reporting R&D that satisfies the survey's definitions, particularly where the development of software and Internet applications are concerned. Although no metric of measurement error is produced, ongoing efforts to minimize measurement error include questionnaire pretesting, improvement of questionnaire wording and format, inclusion of more cues and examples in the questionnaire instructions, telephone interviews and consultations with respondents, and post-survey evaluations.

Data Comparability

Some estimates from the 2022 ABS may not be directly comparable to prior ABS results due to changes in survey methodology. Sources of possible incomparability include changes to questionnaire wording and instructions, changes to data editing and tabulation, and changes to imputation and nonresponse adjustments.

Changes in survey coverage and population. There were no changes to survey coverage and population for reference year 2021 (ABS 2022).

Changes to questionnaire wording and instructions. The survey section that collected information on R&D from businesses (section D) had nearly identical question wording and instructions for both the ABS 2021 and the ABS 2020 questionnaires. The 2022 ABS collected additional detail from businesses on the location of R&D performance and explicitly highlighted the concept of “domestic R&D performance.” For the 2022 ABS detailed questions about R&D expenditures (types of costs, funding sources, and R&D categories) were tied to domestic R&D performance (a subset of total R&D costs), whereas previous ABS questionnaires asked similar questions tied to total R&D costs.

The following are survey changes in the questionnaire from ABS 2021 to ABS 2022; question number references are in reference to the ABS 2022:

- New question: B.15 Owner Disability (added for all owners)
- New question: C.11 Research Performance by Type of Cost
- New questions: C.17–C.19 Additional questions on Capital Expenditures for Research Activities at Nonprofit Organizations
- New questions: D.10–D.12 Additional questions on Capital Expenditures for businesses with 1–9 employees
- New question: D.18 State Tax Credit for Research Activities
- New section E: Goods, Services, and Business Processes and Technology
- New section F: Design and Intellectual Property
- New section G: Domestic and Foreign Transactions
- Revised section H: Coronavirus Pandemic Impact on Research and Development and Business Activities
 - Removed question: H.5 Outsourcing R&D Expenditures Due to the Coronavirus Pandemic
 - New question: H.5 Changing R&D Payment Due to the Coronavirus Pandemic
 - New question: H.6 Effect of Coronavirus Pandemic on Business Sales
 - New question: H.7 Financial Health of the Business
 - New question: H.8 Outstanding Debt for the Business
 - New question: H.9 Level of Operations During the Coronavirus Pandemic

Changes in reporting procedures or classification. There were no changes to reporting procedures or classification for data year 2021.

Changes to data editing and tabulation. For data collected in the R&D section of the ABS, every response with \$50,000 or more in R&D costs was reviewed for reasonableness. All positive R&D cases were reviewed in industries with high rates of false-positive reports. Outside of the review for potential false-positive R&D cases, the editing of R&D data was performed similarly in 2020 and 2021. There have been no major changes to the edits from year to year.

Data collected in the innovation section of the ABS were edited similarly in 2018 and 2019, but the estimates for product innovation were tabulated differently. For 2017, a business must have responded positively to both the product innovation question and the subsequent business product innovation question (new to market or new to business) to be considered a product innovator. For 2021 and 2022, only a positive response to the question regarding new or improved goods or services was required to be tabulated as a product innovator.

Changes in imputation methods. In 2019, a change was made in how item nonresponse is treated in the ABS. Item nonresponse occurs when a company responds to the survey but leaves some items blank. In 2018, item nonresponse was treated using a combination of mode and donor imputation. For 2019 and future years (including 2021), no imputation was performed to treat item nonresponse, and missing items were included as no or zero in the estimates. For most of the estimates in 2019 (91%), this change in methods did not yield a change in the estimates. For an additional 9% of estimates, there was a difference in the estimate; the difference, however, was not statistically significant. In 2021, the imputation method was updated to exclude out-of-scope firms as donors and recipients. In previous ABS years, all sampled firms were included in imputation and out-of-scope firms were later removed.

Changes in collection methods. During the 2022 ABS collection period, a single letter was mailed to respondents using U.S. Postal Service Priority Mail. For the 2022 ABS, the third follow-up used First Class Mail.

Definitions

- *Affiliated (company or business).* An entity that is owned 10% or more (based on voting interest or an equivalent interest) directly or indirectly by your company.
- *Business processes.* Business process includes the following: (1) methods for producing goods or providing services, (2) distribution and logistics, (3) marketing and sales, (4) information and communication systems, (5) administration and management activities, and (6) product and business process development (including activities to identify, develop, or adapt products or a firm's processes).
- *Core production activity.* This term refers to your primary business activities. For manufacturing companies, core production typically involves production of physical goods. For service companies and other companies, core production refers to the main services or activities provided by your business, such as information and communications technology services, marketing services.
- *Domestic or U.S.-located.* Refers to a location in any of the U.S. 50 states and the District of Columbia.
- *Employment.* Paid employment consists of full- and part-time employees, including salaried officers and executives of corporations who were on the payroll in the pay period including March 12. Included are employees on sick leave, holidays, and vacations; not included are proprietors and partners of unincorporated businesses.
- *Ethnicity.* Based on OMB's guidance, there are two minimum categories for ethnicity: Hispanic or Latino and Not Hispanic or Latino. OMB considers race and Hispanic origin to be two separate and distinct concepts. Hispanics and Latinos may be of any race.
- *Exported goods.* Value of goods, including the value of equipment, supplies, materials, etc. This should equal the amounts reported in the Automated Export System's Electronic Export Information filed with U.S. Customs and Border Protection plus the cost of transporting the goods to customers located in foreign destinations (i.e., outside the United States).
- *Exported services.* An exported service is a service-related product (i.e., services performed, including digital service, license agreement) that is sold or transferred to, or performed for, customers (individual, government, business establishment, etc.) located in foreign destinations (i.e., outside the United States).
- *Firm.* A business organization or entity consisting of one or more domestic establishment locations under common ownership or control.

- *Foreign affiliate.* A foreign affiliate is an entity located outside the United States that is owned at least 10% (based on voting interest or an equivalent interest) directly or indirectly by the U.S. reporter.
- *Foreign parent (of a U.S.-located business).* The first entity outside the United States in an affiliate's ownership chain that has a direct or indirect investment interest of more than 50% of the affiliate's voting securities.
- *Goods.* Usually a tangible object (such as smartphone, furniture, or packaged software) but also includes digital goods (such as downloadable software, music, and film). Exclude the simple resale of new goods and changes of a solely aesthetic nature.
- *Imported goods.* The value of goods purchased from customers located in foreign destinations (i.e., outside the United States) as indicated in import declarations filed with the U.S. Customs and Border Protection.
- *Imported services.* An imported service is a service-related product (i.e., service performed, including digital service, license agreement) that is purchased from customers located in foreign destinations (i.e., outside the United States).
- *Innovation.* A business innovation is a new or improved product or business process (or combination thereof) that differs significantly from the firm's previous products or business processes and that has been introduced on the market or brought into use by the firm.
- *Intellectual property.* Includes patents, processes, and trade secrets; books and music; trademarks; recorded performances and events, such as radio and television programs and motion pictures; broadcast and recorded live performances and events and their content; general use computer software; franchise fees; and other (e.g., digital media).
- *Noise infusion.* A method of disclosure avoidance in which values are perturbed prior to tabulation by applying a random noise multiplier to the magnitude data, such as the sales and receipts for all firms. Disclosure protection is accomplished in a manner that causes the vast majority of cell values to be perturbed by, at most, a few percentage points.
- *North American Industry Classification System (NAICS).* NAICS is the standard used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. This system is used by the United States, Canada, and Mexico.
- *Race.* The data on race were derived from answers to the race question. Race data are collected in accordance with the guidelines provided by OMB, and these data are based on self-identification. The racial categories included in the questionnaire generally reflect a social definition of race recognized in this country and are not an attempt to define race biologically, anthropologically, or genetically. In addition, it is recognized that the categories of the race question include race and national origin or sociocultural groups. OMB requires that race data be collected for a minimum of five groups: White, Black or African American, American Indian or Alaska Native, Asian, and Native Hawaiian or Other Pacific Islander. Respondents may report more than one race.
- *Receipts.* Includes the total sales, shipments, receipts, revenue, or grants for domestic operations, excluding foreign subsidiaries.
- *Research and development (R&D).* R&D is planned, creative work aimed at discovering new knowledge or devising new applications of available knowledge. This includes basic research, applied research, and development (see definitions below). R&D includes both direct costs, such as salaries of researchers, and administrative and overhead costs clearly associated with the company's R&D. However, R&D does not include expenditures for routine product testing, quality control, and technical services unless they are an integral part of an R&D project. R&D also does not include market research; efficiency surveys or management studies; literary, artistic, or historical projects, such as films, music, or books and other publications; and prospecting or exploration for natural resources.
 - *Basic research.* Activities aimed at acquiring new knowledge or understanding without specific immediate commercial applications or uses.

- *Applied research*. Activities aimed at solving a specific problem or meeting a specific commercial objective.
- *Development*. Systematic work, drawing on research and practical experience and resulting in additional knowledge, which is directed to producing new products or processes or to improving existing products or processes.
- R&D activity in software includes
 - Software development or improvement activities that expand scientific or technological knowledge
 - Construction of new theories and algorithms in the field of computer science
- R&D activity in software excludes
 - Software development that does not depend on a scientific or technological advance, such as
 - Supporting or adapting existing systems,
 - Adding functionality to existing application programs,
 - Routine debugging of existing systems and software, and
 - Creation of new software based on known methods and applications.
 - Conversion or translation of existing software and software languages; and
 - Adaptation of a product to a specific client, unless knowledge that significantly improved the base program was added in that process.
- *Services*. Intangible activities, such as retailing, insurance, educational courses, air travel, consulting, etc.; also includes digital services. (Exclude the simple resale of new services.)
- *Sex*. For the purposes of the ABS, sex refers to a person's biological sex. The sex question wording very specifically intends to capture a person's biological sex and not gender.
- *Unaffiliated (company or business)*. Entity that is owned less than 10%, directly or indirectly, by your company (i.e., independent contractors and suppliers).
- *Worldwide sales*. Worldwide and domestic sales and operating revenues, including grants.

Technical Tables

Table	Title
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A-1	Companies in the target population and selected for the sample, by industry: 2021
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A-2	Response measures: 2021
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A-3	Unit response rates, by industry: 2021
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TABLE A-1

Companies in the target population and selected for the sample, by industry: 2021

(Number of companies)

Industry	NAICS code	Companies in target population ^a	All companies	Noncertainties	Certainties
All industries	11, 21–23, 31–33, 42–81, 00	5,410,000	300,000	254,000	46,500
Manufacturing industries	31–33	227,000	49,000	36,500	12,500
Food	311	21,500	4,600	3,400	1,200
Beverage and tobacco products	312	9,800	2,700	2,100	500
Textile, apparel, and leather products	313–16	11,500	2,600	2,000	600
Wood products	321	11,000	2,400	1,900	500
Paper	322	2,100	550	200	300
Printing and related support activities	323	20,500	3,800	3,100	700
Petroleum and coal products	324	650	150	60	100
Chemicals	325	9,100	3,300	2,100	1,100
Pesticide, fertilizer, and other agricultural chemical	3253	650	200	150	60
Pharmaceuticals and medicines	3254	2,000	1,000	650	350
Soap, cleaning compound, and toilet preparation	3256	1,900	650	450	200
Other chemicals	other 325	4,500	1,400	850	550
Plastic and rubber products	326	8,000	2,200	1,500	650
Nonmetallic mineral products	327	8,200	2,200	1,700	550
Primary metals	331	2,800	1,000	700	350
Fabricated metal products	332	46,000	5,500	4,400	1,100
Machinery	333	18,000	3,300	2,400	900
Computer and electronic products	334	9,300	3,600	2,300	1,300
Communications equipment	3342	1,000	450	250	200
Semiconductor and other electronic components	3344	2,900	1,100	750	350
Navigational, measuring, and control instruments	3345	3,900	1,500	900	600
Other computer and electronic products	other 334	1,500	600	400	200
Electrical equipment, appliances, and components	335	4,100	1,400	950	450
Transportation equipment	336	8,300	2,700	1,800	950
Automobiles, bodies, trailers, and parts	3361–63	5,100	1,500	950	550
Aerospace products and parts	3364	1,200	650	450	200
Other transportation	other 336	2,000	600	450	150
Furniture and related products	337	13,000	2,700	2,200	550
Miscellaneous manufacturing	339	21,000	4,100	3,300	800
Medical equipment and supplies	3391	7,800	1,600	1,200	400
Other miscellaneous manufacturing	3399	13,500	2,500	2,100	400
Nonmanufacturing industries	11, 21–23, 42–81	5,165,000	246,000	213,000	33,000
Agriculture, forestry, fishing and hunting	11	22,500	800	700	90
Mining, extraction, and support activities	21	16,000	2,700	2,100	600

TABLE A-1

Companies in the target population and selected for the sample, by industry: 2021

(Number of companies)

Industry	NAICS code	Companies in target population ^a	All companies	Noncertainties	Certainties
Utilities	22	3,500	1,300	950	400
Construction	23	704,000	23,000	21,500	1,600
Wholesale trade	42	264,000	17,500	14,000	3,300
Retail trade	44-45	593,000	22,000	19,500	2,300
Transportation and warehousing	48-49	189,000	13,500	11,500	2,200
Information	51	74,500	16,000	11,500	4,400
Publishing	511	19,500	5,100	3,500	1,500
Newspaper, periodical, book, and directory publishers	5111	9,100	2,200	1,800	350
Software publishers	5112	10,500	2,800	1,700	1,200
Telecommunications	517	11,000	2,900	2,200	700
Data processing, hosting, and related services	518	9,200	2,800	1,900	900
Other information	other 51	34,500	5,300	4,100	1,200
Finance and insurance	52	226,000	8,200	6,900	1,300
Real estate and rental and leasing	53	320,000	11,000	10,500	450
Lessors of nonfinancial intangible assets (except copyrighted works)	533	2,100	90	70	20
Other real estate and rental and leasing	other 53	318,000	11,000	10,500	400
Professional, scientific, and technical services	54	789,000	57,500	48,000	9,400
Legal services	5411	163,000	7,700	6,900	850
Accounting, tax preparation, bookkeeping, and payroll services	5412	112,000	5,200	4,800	400
Architectural, engineering, and related services	5413	89,000	10,500	8,400	2,200
Specialized design services	5414	31,500	1,400	1,400	50
Computer and electronic products	5415	114,000	9,700	7,700	2,000
Management, scientific, and technical consulting services	5416	170,000	8,500	7,400	1,100
Scientific research and development services	5417	13,000	5,800	4,200	1,600
Advertising, public relations, and related services	5418	31,500	5,400	4,500	950
Other professional, scientific, and technical services	5419	63,500	3,000	2,700	300
Management of companies and enterprises	55	4,000	150	150	30
Administrative and support and waste management and remediation services	56	330,000	13,000	11,000	2,400
Educational services	61	65,500	2,400	2,200	200
Health care and social assistance	62	577,000	21,500	19,500	2,100
Health care services	621-23	491,000	18,000	16,500	1,800
Social assistance	624	84,000	3,300	3,000	250
Arts, entertainment, and recreation	71	105,000	3,700	3,300	350
Accommodation and food services	72	504,000	19,500	17,500	1,900
Other services	81	379,000	12,500	12,500	200
Unclassified	00	18,000	4,900	4,400	400

NAICS = 2017 North American Industry Classification System.

^a Estimates of the number of companies in the target population are based on the original sampling frame that was created to select the 2021 Annual Business Survey.

Note(s):

Certainities were companies with a probability of selection of one because they had previously reported R&D costs, 500 or more employees, or high payroll or receipts defined by stratum specific cutoffs. Noncertainties are companies with a probability of selection of less than 1.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE A-2

Response measures: 2021

(Percent)

Measure	2021
Check-in rate ^a	61.5
Response rate (unweighted) ^b	67.0

^a The number of survey responses from sampled companies divided by the total number of companies in the sample. Note this includes companies who contacted the Census Bureau to indicate they were out of business and companies who were later determined to be in-active or otherwise out of scope for tabulations.

^b The number of active and in-scope companies responding to the number of owners and number of W-2 employees, divided by the total number of in-scope and active companies in the sample.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

TABLE A-3

Unit response rates, by industry: 2021

(Number)

Industry	NAICS code	In-scope units ^a	Reporting units that met the response criteria (%)
All industries	11, 21-23, 31-33, 42-81, 00	267,000	67
Manufacturing industries	31-33	44,000	68
Food	311	4,300	63
Beverage and tobacco products	312	2,400	71
Textile, apparel, and leather products	313-16	2,300	61
Wood products	321	2,200	68
Paper	322	500	60
Printing and related support activities	323	3,500	69
Petroleum and coal products	324	150	60
Chemicals	325	2,800	68
Pesticide, fertilizer, and other agricultural chemical	3253	150	67
Pharmaceuticals and medicines	3254	900	61
Soap, cleaning compound, and toilet preparation	3256	550	73
Other chemicals	other 325	1,200	67
Plastic and rubber products	326	1,900	68
Nonmetallic mineral products	327	2,000	65
Primary metals	331	800	69
Fabricated metal products	332	5,300	72
Machinery	333	2,900	72
Computer and electronic products	334	3,200	69
Communications equipment	3342	350	71
Semiconductor and other electronic components	3344	1,000	70
Navigational, measuring, and control instruments	3345	1,300	73
Other computer and electronic products	other 334	500	70
Electrical equipment, appliances, and components	335	1,200	71
Transportation equipment	336	2,400	67
Automobiles, bodies, trailers, and parts	3361-63	1,300	69
Aerospace products and parts	3364	550	73
Other transportation	other 336	550	64
Furniture and related products	337	2,500	68
Miscellaneous manufacturing	339	3,800	68
Medical equipment and supplies	3391	1,500	67
Other miscellaneous manufacturing	3399	2,300	70
Nonmanufacturing industries	11, 21-23, 42-81	223,000	67
Agriculture, forestry, fishing and hunting	11	700	64
Mining, extraction, and support activities	21	2,300	65

TABLE A-3

Unit response rates, by industry: 2021

(Number)

Industry	NAICS code	In-scope units ^a	Reporting units that met the response criteria (%)
Utilities	22	1,000	75
Construction	23	21,000	67
Wholesale trade	42	15,500	68
Retail trade	44–45	20,000	63
Transportation and warehousing	48–49	12,000	60
Information	51	13,500	68
Publishing	511	4,400	68
Newspaper, periodical, book, and directory publishers	5111	2,000	70
Software publishers	5112	2,400	67
Telecommunications	517	2,500	52
Data processing, hosting, and related services	518	2,400	71
Other information	other 51	4,500	71
Finance and insurance	52	7,200	71
Real estate and rental and leasing	53	9,700	67
Lessors of nonfinancial intangible assets (except copyrighted works)	533	80	63
Other real estate and rental and leasing	other 53	9,600	68
Professional, scientific, and technical services	54	52,500	74
Legal services	5411	7,300	75
Accounting, tax preparation, bookkeeping, and payroll services	5412	4,900	78
Architectural, engineering, and related services	5413	9,800	80
Specialized design services	5414	1,300	77
Computer and electronic products	5415	8,800	72
Management, scientific, and technical consulting services	5416	7,700	71
Scientific research and development services	5417	5,100	71
Advertising, public relations, and related services	5418	4,900	69
Other professional, scientific, and technical services	5419	2,700	74
Management of companies and enterprises	55	100	70
Administrative and support and waste management and remediation services	56	12,000	64
Educational services	61	2,100	67
Health care and social assistance	62	20,000	68
Health care services	621–23	17,000	71
Social assistance	624	3,000	60
Arts, entertainment, and recreation	71	3,300	70
Accommodation and food services	72	17,500	55
Other services	81	11,500	63

NAICS = 2017 North American Industry Classification System.

^a In-scope units are determined using response data and final frame data after all data have been processed.

^b Reporting units were considered to have fulfilled the response criteria if they provided the number of owners and number of W-2 employees.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

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