

TABLE 16

Domestic R&D paid for by the company and others and performed by the company, by business activity: 2021

(Millions of U.S. dollars)

Business activity ^a	Business code ^b	Total	Paid for by the company	Paid for by others
All business activities	21100–81000	602,499	527,804	74,695
Oil and gas extraction	21100	813	793	21 i
Mining	21200	89	89	0
Support activities for mining, including oil and gas	21300	651	499	152 i
Utilities	22100	34 - 1,538	1,503	35 i
Construction	23000	783	750	32
Food manufacturing	31100	5,235	4,961	273
Beverage manufacturing	31210	740	740	* r
Tobacco manufacturing	31220	233	215	18
Textile, apparel, and leather products manufacturing	31990	775	764	11
Wood products manufacturing	32100	476	472	4
Paper manufacturing	32200	1,534	1,534	*
Printing and related support activities	32300	307 - 1,044	308	0 - 735
Petroleum refineries	32401	392	388	3
Asphalt paving, roofing, and saturated materials manufacturing	32402	138	138	0
Other petroleum and coal products manufacturing, including motor oil, hydraulic fluid, and charcoal	32403	91	91	*
Basic chemicals manufacturing	32510	3,048	2,892	156
Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing	32520	1,284 - 2,021	1,285	0 - 735 i
Pesticide, fertilizer, and other agricultural chemicals manufacturing	32530	1,266 - 2,003	1,267	0 - 735
Pharmaceutical, medicinal, botanical, and biological products (except diagnostic substances) manufacturing	32541	58,651	51,255	7,396
In vitro diagnostic substances manufacturing	32542	1,622	1,609	13
Biotechnology-based pharmaceutical and biological products (except diagnostic substances)	32543	38,166	34,222	3,944
Soap, cleaning compound, and toilet preparations manufacturing	32591	2,238 - 2,975	2,239	0 - 735
Paint, adhesive, and other chemical manufacturing	32592	1,325 - 2,062	1,326	0 - 735
Plastics and rubber products manufacturing	32600	3,226	3,076	149 i
Clay and glass products manufacturing	32710	1,376	1,367	9
Cement, concrete, lime, gypsum, and other nonmetallic mineral products manufacturing	32790	418	363	54 i
Primary metal manufacturing	33100	1,023	988	35 i
Fabricated metal products manufacturing	33200	4,861	4,195	666
Agricultural machinery and equipment manufacturing	33311	1,475 - 2,212	1,476	0 - 735
Construction machinery manufacturing	33312	1,384	1,374	11
Mining, oil, and gas field machinery and equipment manufacturing	33319	1,223	1,160	63
Semiconductor machinery manufacturing	33321	5,308	5,133	175
Industrial machinery manufacturing (except semiconductor machinery)	33322	1,411	1,090	321
Photographic and photocopying equipment manufacturing	33331	70	69	1 r
Commercial, service industry, temperature control, and air-flow control machinery manufacturing	33332	1,907	1,828	79
Digital cameras manufacturing	33333	398 - 1,135	399	0 - 735
Engine, turbine, and power transmission equipment manufacturing	33360	2,050	1,926	124

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Metalworking and other general purpose machinery manufacturing	33390	2,532	2,444	88
Computers and peripheral equipment manufacturing and magnetic and optical media	33412	24,633	24,562	71
Telephone apparatus manufacturing, including routers, modems, and gateways	33421	7,853 - 8,590	7,854	0 - 735
Radio, television, and wireless communication equipment manufacturing	33422	3,313	2,239	1,074 i
Other communication equipment manufacturing (except radio, television, and wireless communication equipment)	33429	681	620	61 i
Audio and video equipment manufacturing	33430	1,517	1,515	2
Semiconductor and other electronic components manufacturing	33440	46,882	45,046	1,837
Electromedical, electrotherapeutic, and irradiation apparatus manufacturing	33451	4,358	4,109	249
Search, detection, navigation, guidance, aeronautical, and nautical system and instruments manufacturing	33452	3,918	1,729	2,189
Measuring and control instruments manufacturing (not listed elsewhere)	33459	4,273	4,098	175
Electrical equipment, appliances, and components manufacturing	33500	5,420	4,925	495
Motor vehicles manufacturing	33610	18,365	16,249	2,116
Motor vehicle body and trailer manufacturing	33620	137	137	* r
Motor vehicle parts manufacturing	33630	7,728	6,343	1,385
Aircraft manufacturing	33641	9,707 i	4,959	4,748 i
Aircraft engine and engine parts manufacturing	33642	8,246 i	2,842	5,404 i
Other aircraft parts and auxiliary equipment manufacturing	33643	1,491	1,073	418
Guided missiles, space vehicles, and related parts manufacturing	33644	2,426	878	1,548
Railroad rolling stock manufacturing	33651	212 i	163 i	48
Ship and boat building	33660	858	158	700
Motorcycle, bicycle, and parts manufacturing	33691	447	447	1
Military armored vehicle, tank, and tank components manufacturing	33692	731	364 i	367
All other transportation equipment manufacturing	33699	559	443	115
Furniture and related products manufacturing	33700	456	449	8
Medical equipment and supplies manufacturing	33910	16,924	16,669	255
Miscellaneous manufacturing not listed elsewhere (games, office supplies, slot machines, etc.)	33990	3,193	2,981	212
Merchant wholesalers, durable goods	42300	1,301 i	1,242 i	59 i
Merchant wholesalers, nondurable goods	42400	660 i	627 i	33 i
Wholesale electronic markets and agents and brokers (business to business)	42500	50	49	1
Retail trade (except electronic shopping and electronic auctions)	44000	362	362	* r
Electronic shopping and electronic auctions	45411	11,931 - 12,668 i	11,932 i	0 - 735
Transportation	48000	5,929 i	5,918 i	11
Couriers, messengers, and express delivery services	49200	1,115	1,115	0
Warehousing and storage	49300	0 - 2,201	0 - 1,503	0 - 735
Newspaper, periodical, book, and directory publishers (except Internet)	51110	127 i	104	23 r
Software publishers (except Internet)	51120	27,969	26,996	973
Motion picture and sound recording (except Internet)	51200	0 - 1,503	0 - 1,503	* r
Broadcasting (except Internet)	51500	0 - 2,201 i	0 - 1,503 i	0 - 735 i
Wired telecommunications carriers	51710	599	592	6
Wireless telecommunications carriers (except satellite)	51720	2,492	2,432	60
Satellite telecommunications	51740	510	505	5
Other telecommunications (not listed elsewhere)	51790	304	285 i	19
Data processing, hosting, and related services	51800	13,122	13,053	69

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Cloud computing applications and Internet-based software services	51801	43,204	42,679	525
Other information services, including Internet publishing, broadcasting, and Web search portals	51910	63,299	63,159	140
Finance: banking and credit intermediation	52200	12,777	12,734	43
Securities, commodity contracts, and other financial investments and related activities, including funds and trusts	52310	4,427	4,424	2
Insurance carriers and related activities	52400	3,661	3,661	0
Real estate	53100	0 - 2,201	1,503	0 - 735
Rental and leasing services	53200	1,423	1,423	* i
Lessors of nonfinancial intangible assets, including patent licensing	53300	0 - 831	0 - 96	0 - 735
Legal, accounting, tax preparation, bookkeeping, and payroll services	54111	2,674	2,673	1
Architectural, engineering, and related services	54130	4,900	2,918	1,982
Specialized design services	54140	170	85	85
Computer systems design and related services	54150	18,843	16,074	2,769
Management, scientific, and technical consulting services	54160	3,761	2,810	951
Research and development services in the social sciences and humanities	54172	562	38	524
Research and development services in biotechnology	54173	8,686	1,965	6,720
Research and development services in the physical, engineering, and life sciences (except biotechnology)	54174	24,511 i	4,415	20,096 i
Research and development services in nanotechnology	54175	231	157	74 i
Advertising and related services	54180	2,096 i	2,095 i	1
Professional, scientific, and technical services (not listed elsewhere)	54190	1,714	1,243	471
Management of companies and enterprises	55100	0 - 1,503	1,503	0
Administrative and support services	56100	3,293	3,288	4
Waste management and remediation services	56200	530 r	512 r	18
Offices of physicians	62110	298	222	77
Medical and diagnostic laboratories	62150	2,721	1,879	842
Other ambulatory health care services (ambulance, dental, home health care)	62199	300	299	1
Hospitals and nursing care facilities	62200	0 - 1,503	1,503	* i
Social assistance services	62400	0 - 1,503	1,503	0
Arts, entertainment, and recreation	71000	64 r	64 r	0
Accommodation and food services	72000	103	103	0
Other services (not listed elsewhere)	81000	6,736 i	6,638 i	99
Undistributed	-	0	0	0

* = amount < \$500,000; i = more than 50% of the estimate is a combination of imputation and reweighting to account for nonresponse; r = relative standard error is more than 50% .

^a Data are tabulated independent of the industry classification of the company. Companies were asked to report their sales and R&D activity in one or more business activity codes.

^b Business codes and descriptions are based on 2017 North American Industry Classification System industry definitions.

Note(s):

Detail may not add to total because of rounding. For companies that did not report business codes, the classification used for sampling was assigned. Statistics are representative of companies located in the United States that performed or funded \$50,000 or more of R&D and are not comparable with estimates published for years prior to 2018. An estimate range may be displayed in place of a single estimate to avoid disclosing operations of individual companies.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, Business Enterprise Research and Development Survey, 2021.