

TABLE 6

Worldwide R&D paid for by the company and performed by the company and others, by business activity: 2022

(Millions of U.S. dollars)

Business activity ^a	Business code ^b	Amount
All business activities	21100-81000	799,154
Oil and gas extraction	21100	524
Mining	21200	158
Support activities for mining, including oil and gas	21300	882
Utilities	22100	D
Construction	23000	752
Food manufacturing	31100	7,646
Beverage manufacturing	31210	894
Tobacco manufacturing	31220	990
Textile, apparel, and leather products manufacturing	31990	688
Wood products manufacturing	32100	340
Paper manufacturing	32200	1,637
Printing and related support activities	32300	398
Petroleum refineries	32401	558
Asphalt paving, roofing, and saturated materials manufacturing	32402	D
Other petroleum and coal products manufacturing, including motor oil, hydraulic fluid, and charcoal	32403	319
Basic chemicals manufacturing	32510	4,019
Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing	32520	1,833
Pesticide, fertilizer, and other agricultural chemicals manufacturing	32530	1,874
Pharmaceutical, medicinal, botanical, and biological products (except diagnostic substances) manufacturing	32541	88,109
In vitro diagnostic substances manufacturing	32542	2,198
Biotechnology-based pharmaceutical and biological products (except diagnostic substances)	32543	69,445
Soap, cleaning compound, and toilet preparations manufacturing	32591	3,461
Paint, adhesive, and other chemical manufacturing	32592	1,780
Plastics and rubber products manufacturing	32600	4,108
Clay and glass products manufacturing	32710	1,582
Cement, concrete, lime, gypsum, and other nonmetallic mineral products manufacturing	32790	455
Primary metal manufacturing	33100	1,270
Fabricated metal products manufacturing	33200	3,916
Agricultural machinery and equipment manufacturing	33311	2,848
Construction machinery manufacturing	33312	1,910
Mining, oil, and gas field machinery and equipment manufacturing	33319	1,552
Semiconductor machinery manufacturing	33321	7,051
Industrial machinery manufacturing (except semiconductor machinery)	33322	1,516
Photographic and photocopying equipment manufacturing	33331	D
Commercial, service industry, temperature control, and air-flow control machinery manufacturing	33332	2,980
Digital cameras manufacturing	33333	238
Engine, turbine, and power transmission equipment manufacturing	33360	3,143
Metalworking and other general purpose machinery manufacturing	33390	3,393
Computers and peripheral equipment manufacturing and magnetic and optical media	33412	37,324
Telephone apparatus manufacturing, including routers, modems, and gateways	33421	10,509
Radio, television, and wireless communication equipment manufacturing	33422	4,422
Other communication equipment manufacturing (except radio, television, and wireless communication equipment)	33429	811
Audio and video equipment manufacturing	33430	2,118
Semiconductor and other electronic components manufacturing	33440	72,075
Electromedical, electrotherapeutic, and irradiation apparatus manufacturing	33451	5,440
Search, detection, navigation, guidance, aeronautical, and nautical system and instruments manufacturing	33452	3,235
Measuring and control instruments manufacturing (not listed elsewhere)	33459	6,357
Electrical equipment, appliances, and components manufacturing	33500	7,834
Motor vehicles manufacturing	33610	31,676

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Motor vehicle body and trailer manufacturing	33620	218	
Motor vehicle parts manufacturing	33630	9,299	
Aircraft manufacturing	33641	5,475	
Aircraft engine and engine parts manufacturing	33642	2,751	
Other aircraft parts and auxiliary equipment manufacturing	33643	2,082	
Guided missiles, space vehicles, and related parts manufacturing	33644	2,755	
Railroad rolling stock manufacturing	33651	330	
Ship and boat building	33660	281	
Motorcycle, bicycle, and parts manufacturing	33691	506	
Military armored vehicle, tank, and tank components manufacturing	33692	429	i
All other transportation equipment manufacturing	33699	432	
Furniture and related products manufacturing	33700	475	
Medical equipment and supplies manufacturing	33910	24,067	
Miscellaneous manufacturing not listed elsewhere (games, office supplies, slot machines, etc.)	33990	3,786	
Merchant wholesalers, durable goods	42300	1,226	
Merchant wholesalers, nondurable goods	42400	781	
Wholesale electronic markets and agents and brokers (business to business)	42500	170	r
Retail trade (except electronic shopping and electronic auctions)	44000	432	
Electronic shopping and electronic auctions	45411	15,976	i
Transportation	48000	6,883	
Couriers, messengers, and express delivery services	49200	D	
Warehousing and storage	49300	D	
Newspaper, periodical, book, and directory publishers (except Internet)	51110	D	
Software publishers (except Internet)	51120	43,881	
Motion picture and sound recording (except Internet)	51200	102	r
Broadcasting (except Internet)	51500	452	
Wired telecommunications carriers	51710	622	
Wireless telecommunications carriers (except satellite)	51720	3,065	
Satellite telecommunications	51740	640	
Other telecommunications (not listed elsewhere)	51790	340	
Data processing, hosting, and related services	51800	13,572	
Cloud computing applications and Internet-based software services	51801	64,350	
Other information services, including Internet publishing, broadcasting, and Web search portals	51910	96,932	
Finance: banking and credit intermediation	52200	12,137	
Securities, commodity contracts, and other financial investments and related activities, including funds and trusts	52310	5,262	
Insurance carriers and related activities	52400	2,529	
Real estate	53100	793	
Rental and leasing services	53200	1,739	
Lessors of nonfinancial intangible assets, including patent licensing	53300	D	
Legal, accounting, tax preparation, bookkeeping, and payroll services	54111	3,819	
Architectural, engineering, and related services	54130	3,864	
Specialized design services	54140	D	
Computer systems design and related services	54150	21,956	
Management, scientific, and technical consulting services	54160	3,521	
Research and development services in the social sciences and humanities	54172	28	
Research and development services in biotechnology	54173	3,392	
Research and development services in the physical, engineering, and life sciences (except biotechnology)	54174	5,828	
Research and development services in nanotechnology	54175	224	
Advertising and related services	54180	2,395	i
Professional, scientific, and technical services (not listed elsewhere)	54190	2,055	
Management of companies and enterprises	55100	D	

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Administrative and support services	56100	4,404
Waste management and remediation services	56200	5
Offices of physicians	62110	D
Medical and diagnostic laboratories	62150	3,554
Other ambulatory health care services (ambulance, dental, home health care)	62199	331
Hospitals and nursing care facilities	62200	9
Social assistance services	62400	7
Arts, entertainment, and recreation	71000	D
Accommodation and food services	72000	D
Other services (not listed elsewhere)	81000	8,738 i
Undistributed	-	0

D = data withheld to avoid disclosing operations of individual companies; 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.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, Business Enterprise Research and Development Survey, 2022.