

TABLE 6

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

(Millions of U.S. dollars)

Business activity ^a	Business code ^b	Amount	
All business activities	21100–81000	709,663	
Oil and gas extraction	21100	950	
Mining	21200	102	i
Support activities for mining, including oil and gas	21300	660	
Utilities	22100	0 - 5,917	
Construction	23000	780	
Food manufacturing	31100	6,512	
Beverage manufacturing	31210	941	
Tobacco manufacturing	31220	999	
Textile, apparel, and leather products manufacturing	31990	942	
Wood products manufacturing	32100	506	
Paper manufacturing	32200	1,841	
Printing and related support activities	32300	371	
Petroleum refineries	32401	537	
Asphalt paving, roofing, and saturated materials manufacturing	32402	174	
Other petroleum and coal products manufacturing, including motor oil, hydraulic fluid, and charcoal	32403	220	
Basic chemicals manufacturing	32510	4,033	
Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing	32520	1,756	
Pesticide, fertilizer, and other agricultural chemicals manufacturing	32530	1,830	
Pharmaceutical, medicinal, botanical, and biological products (except diagnostic substances) manufacturing	32541	92,561	
In vitro diagnostic substances manufacturing	32542	2,035	
Biotechnology-based pharmaceutical and biological products (except diagnostic substances)	32543	52,963	
Soap, cleaning compound, and toilet preparations manufacturing	32591	3,212	
Paint, adhesive, and other chemical manufacturing	32592	1,765	
Plastics and rubber products manufacturing	32600	3,804	
Clay and glass products manufacturing	32710	1,598	
Cement, concrete, lime, gypsum, and other nonmetallic mineral products manufacturing	32790	435	
Primary metal manufacturing	33100	1,095	
Fabricated metal products manufacturing	33200	4,705	
Agricultural machinery and equipment manufacturing	33311	2,303	
Construction machinery manufacturing	33312	1,895	
Mining, oil, and gas field machinery and equipment manufacturing	33319	1,476	
Semiconductor machinery manufacturing	33321	6,409	
Industrial machinery manufacturing (except semiconductor machinery)	33322	1,373	
Photographic and photocopying equipment manufacturing	33331	77	
Commercial, service industry, temperature control, and air-flow control machinery manufacturing	33332	2,401	
Digital cameras manufacturing	33333	447	
Engine, turbine, and power transmission equipment manufacturing	33360	2,761	
Metalworking and other general purpose machinery manufacturing	33390	3,165	
Computers and peripheral equipment manufacturing and magnetic and optical media	33412	35,035	
Telephone apparatus manufacturing, including routers, modems, and gateways	33421	10,454	
Radio, television, and wireless communication equipment manufacturing	33422	3,939	
Other communication equipment manufacturing (except radio, television, and wireless communication equipment)	33429	838	
Audio and video equipment manufacturing	33430	1,945	
Semiconductor and other electronic components manufacturing	33440	62,109	
Electromedical, electrotherapeutic, and irradiation apparatus manufacturing	33451	4,877	
Search, detection, navigation, guidance, aeronautical, and nautical system and instruments manufacturing	33452	1,897	
Measuring and control instruments manufacturing (not listed elsewhere)	33459	6,091	
Electrical equipment, appliances, and components manufacturing	33500	6,601	
Motor vehicles manufacturing	33610	24,829	

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Motor vehicle body and trailer manufacturing	33620	189	
Motor vehicle parts manufacturing	33630	9,420	
Aircraft manufacturing	33641	5,205	
Aircraft engine and engine parts manufacturing	33642	3,223	
Other aircraft parts and auxiliary equipment manufacturing	33643	1,302	
Guided missiles, space vehicles, and related parts manufacturing	33644	950	
Railroad rolling stock manufacturing	33651	247	
Ship and boat building	33660	161	
Motorcycle, bicycle, and parts manufacturing	33691	548	
Military armored vehicle, tank, and tank components manufacturing	33692	437	i
All other transportation equipment manufacturing	33699	534	
Furniture and related products manufacturing	33700	519	
Medical equipment and supplies manufacturing	33910	22,134	
Miscellaneous manufacturing not listed elsewhere (games, office supplies, slot machines, etc.)	33990	3,798	
Merchant wholesalers, durable goods	42300	1,330	i
Merchant wholesalers, nondurable goods	42400	739	i
Wholesale electronic markets and agents and brokers (business to business)	42500	52	
Retail trade (except electronic shopping and electronic auctions)	44000	361 - 4,960	i
Electronic shopping and electronic auctions	45411	11,931 - 16,530	i
Transportation	48000	5,995	
Couriers, messengers, and express delivery services	49200	1,114 - 5,713	
Warehousing and storage	49300	0 - 5,917	
Newspaper, periodical, book, and directory publishers (except Internet)	51110	109	
Software publishers (except Internet)	51120	37,337	
Motion picture and sound recording (except Internet)	51200	0 - 5,917	
Broadcasting (except Internet)	51500	0 - 5,917	
Wired telecommunications carriers	51710	598	
Wireless telecommunications carriers (except satellite)	51720	2,974	
Satellite telecommunications	51740	529	
Other telecommunications (not listed elsewhere)	51790	379	
Data processing, hosting, and related services	51800	15,110	
Cloud computing applications and Internet-based software services	51801	53,118	
Other information services, including Internet publishing, broadcasting, and Web search portals	51910	73,561	
Finance: banking and credit intermediation	52200	14,212	
Securities, commodity contracts, and other financial investments and related activities, including funds and trusts	52310	5,150	
Insurance carriers and related activities	52400	4,015	
Real estate	53100	0 - 5,917	
Rental and leasing services	53200	1,525	
Lessors of nonfinancial intangible assets, including patent licensing	53300	95	
Legal, accounting, tax preparation, bookkeeping, and payroll services	54111	2,960	
Architectural, engineering, and related services	54130	3,097	
Specialized design services	54140	97	
Computer systems design and related services	54150	20,106	
Management, scientific, and technical consulting services	54160	3,036	
Research and development services in the social sciences and humanities	54172	38	
Research and development services in biotechnology	54173	2,526	
Research and development services in the physical, engineering, and life sciences (except biotechnology)	54174	5,054	
Research and development services in nanotechnology	54175	173	

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Advertising and related services	54180	2,495	i
Professional, scientific, and technical services (not listed elsewhere)	54190	1,419	
Management of companies and enterprises	55100	0 - 5,917	
Administrative and support services	56100	3,400	
Waste management and remediation services	56200	513	r
Offices of physicians	62110	248	
Medical and diagnostic laboratories	62150	2,336	
Other ambulatory health care services (ambulance, dental, home health care)	62199	307	
Hospitals and nursing care facilities	62200	0 - 5,917	
Social assistance services	62400	0 - 5,917	
Arts, entertainment, and recreation	71000	90	
Accommodation and food services	72000	115	
Other services (not listed elsewhere)	81000	8,635	i
Undistributed	-	0	

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.