

TABLE 23

Foreign R&D paid for by the company and others and performed by the company, by type of R&D, industry, and company size: 2021

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total foreign R&D performance			Research (basic and applied)			Development		
		Total	Paid for by the company	Paid for by others	Total	Paid for by the company	Paid for by others	Total	Paid for by the company	Paid for by others
All industries	21-23, 31-33, 42-81	135,412	120,270	15,142	24,477	19,940	4,537	110,936	100,330	10,605
Manufacturing industries	31-33	78,389	76,683	1,706	14,143	13,865	279	64,245	62,818	1,427
Food	311	1,190	1,182 - 1,187	3 - 8	441	437 - 442	0 - 5	749	745	4
Beverage and tobacco products	312	893	893	0	202	202	0	691	691	0
Textile, apparel, and leather products	313-16	169	169	0	31	31	0	138	138	0
Wood products	321	4	4	0	0 - 4	0 - 4	0	0 - 4	0 - 4	0
Paper	322	67	67	*	11	11	*	57	57	*
Printing and related support activities	323	27	27	0	2	2	0	25	25	0
Petroleum and coal products	324	175	175	0	40	40	0	135	135	0
Chemicals	325	23,741	23,419	322	5,980	5,875	105	17,761	17,544	217
Basic chemicals	3251	997	994	4	420	417	3	577	577	*
Resin, synthetic rubber, and artificial synthetic fibers and filaments	3252	580	550 - 581	0 - 29	151	122 - 152	0 - 29	429	429	*
Pesticide, fertilizer, and other agricultural chemicals	3253	123	94 - 123	0 - 29	39	10 - 40	29	84	84	0
Pharmaceuticals and medicines	3254	20,936	20,656	280	5,171	5,099	73	15,765	15,558	207
Soap, cleaning compound, and toilet preparations	3256	871	861	10	132	130	2	739	731	9
Paint, coating, adhesive, and other chemicals	3255, 3259	234	224 - 234	0 - 9	68	59 - 69	0 - 9	166	165	1
Plastics and rubber products	326	607	603	5	147	146	1	460	457	3
Nonmetallic mineral products	327	198	198	0	19	19	0	179	179	0
Primary metals	331	50	46 - 49	2 - 5	19	16 - 19	0 - 3	32	29	2
Fabricated metal products	332	378	346	32	103	97	6	275	250	25
Machinery	333	5,343	5,225	118	1,105	1,098	7	4,238	4,127	111
Agricultural implement	33311	907	899 - 907	0 - 8	161	160	*	746	739 - 747	0 - 8
Semiconductor machinery	333242	1,299	1,278	21	417	416	1	882	863	20
Engine, turbine, and power transmission equipment	3336	546	526 - 533	13 - 19	5	5	*	541	521 - 529	12 - 19
Other machinery	other 333	2,591	2,513	77	523	517	6	2,068	1,996	72
Computer and electronic products	334	31,535	31,264	271	4,028	3,993	36	27,506	27,271	235
Communications equipment	3342	3,411	3,392	19	430	428	2	2,980	2,964	17
Semiconductor and other electronic components	3344	16,521	16,384	137	2,265	2,262	4	14,256	14,122	134
Navigational, measuring, electromedical, and control instruments	3345	3,576	3,466	110	774	745	29	2,802	2,721	81
Electromedical, electrotherapeutic, and irradiation apparatus	334510, 334517	467	454	12	212	203	9	254	251	3

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Search, detection, navigation, guidance, aeronautical, and nautical system and instruments	334511	594	519	75	51	29 - 52	0 - 21	543	467 - 490	53 - 75
Other measuring and controlling devices	other 3345	2,516	2,493	23	511	490 - 512	0 - 21	2,004	1,981 - 2,003	2 - 24
Other computer and electronic products	other 334	8,027	8,022	5	559	558	1	7,468	7,464	4
Electrical equipment, appliances, and components	335	1,880	1,840	41	415	397	17	1,466	1,442	23
Transportation equipment	336	7,663	6,824	839	1,011	911	100	6,652	5,913	740
Motor vehicles, bodies, trailers, and parts	3361-63	6,720	6,070	650	782	723	59	5,938	5,347	591
Aerospace products and parts	3364	711	548	164	183	166	17	528	382	147
Aircraft, aircraft engine, and aircraft parts	336411-13	693	529	164	181	164	17	512	365	147
Guided missile, space vehicle, and related parts	336414-15, 336419	18	18	0	2	2	0	17	17	0
Military armored vehicle, tank, and tank components	336992	0 - 3	0 - 3	0	0 - 3	0 - 3	0	*	*	0
Other transportation	other 336	228 - 233	202 - 207	26	42 - 48	18 - 24	24	186	184	2
Furniture and related products	337	37	37	*	27	27	0	11	11	*
Miscellaneous	339	4,431	4,359	72	553 - 570	548 - 566	5	3,860 - 3,878	3,793 - 3,811	67
Medical equipment and supplies	3391	4,007	3,942	65	525	521	4	3,481	3,420	61
Other miscellaneous manufacturing	3399	424	418	7	27 - 45	26 - 45	1	379 - 397	373 - 391	6
Nonmanufacturing industries	21-23, 42-81	57,024	43,588	13,436	10,333	6,075	4,258	46,690	37,512	9,178
Mining, quarrying, oil and gas extraction, and support activities	21	5 - 79	0 - 73	6	0 - 73	0 - 73	0	5 - 79	0 - 73	6
Utilities	22	0 - 1,129	0 - 1,129	0	0 - 660	0 - 660	0	0 - 1,014	0 - 1,014	0
Wholesale trade	42	0 - 109	0 - 109	0	0 - 109	0 - 109	0	0 - 109	0 - 109	0
Electronic shopping and electronic auctions	454111-12	4,330 - 6,357	4,330 - 6,357	0	0 - 2,456	0 - 2,456	0	1,989 - 6,357	1,989 - 6,357	0
Transportation and warehousing	48-49	73	72 - 74	0 - 1	0 - 70	0 - 70	0	3 - 74	2 - 74	0 - 1
Information	51	29,258	29,210	48	2,835	2,831	5	26,423	26,380	43
Publishing	511	9,933	9,908	25	1,028	1,028	0	8,904	8,880	25
Newspaper, periodical, book, and directory publishers	5111	*	*	0	*	*	0	*	*	0
Software publishers	5112	9,933	9,908	25	1,028	1,028	0	8,904	8,880	25
Telecommunications	517	77	77	0	18	18	0	60	60	0
Data processing, hosting, and related services	518	9,881	9,858	23	986	981	5	8,895	8,876	19
Other information	other 51	9,367	9,367	*	803	803	*	8,564	8,564	*
Finance and insurance	52	2,461	2,421	40	35 - 2,421	0 - 2,386	36	40 - 2,426	35 - 2,422	5
Real estate and rental and leasing	53	103	103	0	0 - 104	0 - 104	0	0 - 104	0 - 104	0

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Lessors of nonfinancial intangible assets (except copyrighted works)	533	0 - 2	0 - 2	0	*	*	0	0 - 2	0 - 2	0
Other real estate and rental and leasing	other 53	100 - 104	100 - 104	0	0 - 104	0 - 104	0	0 - 104	0 - 104	0
Professional, scientific, and technical services	54	18,763 i	5,423	13,340 i	5,004 i	787	4,217 i	13,759 i	4,636	9,123 i
Architectural, engineering, and related services	5413	39 r	38 r	1	3	3	*	35 r	35 r	*
Computer systems design and related services	5415	4,632	4,591	42	699	679	20 i	3,933	3,911	22 i
Scientific research and development services	5417	13,630 i	353	13,277 i	4,232 i	36	4,196 i	9,398 i	317	9,081 i
Research and development in nanotechnology	541713	16	16	0	8	8	0	8	8	0
Research and development in biotechnology (except nanobiotechnology)	541714	4,402	136	4,267	493	5	488	3,910 i	131	3,779 i
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	9,207 i	201	9,005 i	3,726 i	23	3,703 i	5,480 i	178	5,302 i
Research and development in the social sciences and humanities	541720	5	0	5	5	0	5	0	0	0
Other professional, scientific, and technical services	other 54	463	442	21	70 i	69 i	1 i	392 i	373 i	20
Health care services	621-23	2 - 81	2 - 80	*	3	3	0	0 - 78	0 - 78	* i
Other nonmanufacturing	23, 44-45 (excluding 454111-12), 55-56, 624, 71-72, 81	1 - 637	0 - 634	0 - 3	0 - 634	0 - 634	0	0 - 637	0 - 634	0 - 3
All companies (number of domestic employees)	-	135,412	120,270	15,142 i	24,477	19,940	4,537 i	110,936	100,330	10,605 i
Small companies										
10-19 ^a	-	359	353	6	59	57	2 i	300	296	4
20-49	-	909	875	34	170	165	5	739	710	29
Medium companies										
50-99	-	866	812	53	269	255	15	596	558	39
100-249	-	2,382	2,203	179	650	579	71	1,733	1,624	108
Large companies										
250-499	-	3,660	3,611	49 i	819	818	1 i	2,841	2,794	47
500-999	-	4,528	4,262	266	914	887	26	3,615	3,375	240 i
1,000-4,999	-	20,663	20,170	493 i	3,954	3,894	60	16,709	16,276	434 i
5,000-9,999	-	15,571	13,521	2,051	3,570	1,887	1,683	12,001	11,634	367 i
10,000-24,999	-	28,481	19,096	9,385 i	5,817 i	3,687	2,130 i	22,664 i	15,409	7,255 i
25,000 or more	-	57,992	55,367	2,625	8,255 i	7,712 i	543	49,737	47,656	2,082

* = 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%.

NAICS = 2017 North American Industry Classification System.

^a The Business Enterprise Research and Development Survey does not include companies with fewer than 10 domestic employees.

Note(s):

Detail may not add to total because of rounding. Industry classification is based on the dominant business code for domestic R&D performance, where available. 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.