

TABLE 28

**Foreign R&D paid for by the company and others and performed by the company, by type of R&D, industry, and company size: 2019**

(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	104,464	93,944	10,519	17,066	14,324	2,742	87,398	79,620	7,778
Manufacturing industries	31-33	64,351	63,006	1,345	11,824	11,585	239	52,527	51,421	1,105
Food	311	835	833	2	240	240	*	596	594	2
Beverage and tobacco products	312	674	674	0	192	192	0	482	482	0
Textile, apparel, and leather products	313-16	157	157	0	32	32	0	125	125	0
Wood products	321	7	7	0	2	2	0	5	5	0
Paper	322	101	101	*	5	5	*	96	96	*
Printing and related support activities	323	9	9	0	*	*	0	9	9	0
Petroleum and coal products	324	171 - 176	172	0 - 3	0 - 164	0 - 162	0 - 3	9 - 173	9 - 173	*
Chemicals	325	18,568	18,323	245	4,650	4,595	55	13,918	13,728	190
Basic chemicals	3251	742	740	2	236	234	2	506	506	*
Resin, synthetic rubber, and artificial synthetic fibers and filaments	3252	523	518	5	122	117	5	401	401	*
Pesticide, fertilizer, and other agricultural chemicals	3253	450	431	20	76	60	16	375	371	4
Pharmaceuticals and medicines	3254	15,868	15,654	214	4,033	4,001	31	11,835	11,652	183
Soap, cleaning compound, and toilet preparation	3256	757	757	0	102	102	0	655	655	0
Paint, coating, adhesive, and other chemicals	3255, 3259	227	224	4	82	81	1	146	143	3
Plastics and rubber products	326	503	494	9	79	79	1	424	416	8
Nonmetallic mineral products	327	192	192	0	143	143	0	49	49	0
Primary metals	331	76	73	2	46	46	1	29	27	2
Fabricated metal products	332	278	267	11	82	79	2	196	188	9
Machinery	333	4,251	4,218	34	479	474	6	3,772	3,744	28
Agricultural implement	33311	857	855	2	170	170	*	687	685	2
Semiconductor machinery	333242	915	896	19	58	55	3	857	841	16
Engine, turbine, and power transmission equipment	3336	630	619	11	10	9	1	619	610	10
Other machinery	other 333	1,850	1,848	1	241	240	1	1,609	1,608	1
Computer and electronic products	334	25,452	24,940	512	3,132	3,052	80	22,320	21,888	432
Communications equipment	3342	3,312 - 3,316	3,309	3 - 7	439 - 444	440	0 - 3	2,872	2,869	4
Semiconductor and other electronic components	3344	13,007	12,809	198	1,490	1,446	44	11,517	11,363	154

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Navigational, measuring, electromedical, and control instruments	3345	3,950	3,661	288	837	804	33	3,113	2,858	255
Electromedical, electrotherapeutic, and irradiation apparatus	334510, 334517	1,280	1,276	3	62	62	*	1,217	1,214	3
Search, detection, navigation, guidance, aeronautical, and nautical system and instrument	334511	878	621	258	144	126	18	735	495	240
Other measuring and controlling device	other 3345	1,792	1,764	28	631	615	16	1,161	1,149	12
Other computer and electronic products	other 334	5,179 - 5,183	5,160	19 - 22	361 - 365	362	0 - 3	4,818	4,798	20
Electrical equipment, appliances, and components	335	1,743	1,713	30	340	337	3	1,404	1,376	27
Transportation equipment	336	7,812	7,363	449	1,853	1,768	86	5,959	5,595	364
Motor vehicles, bodies, trailers, and parts	3361-63	6,993	6,667	326	1,604	1,558	46	5,389	5,108	281
Aerospace products and parts	3364	585	493	93	197	181	16	388	311	77
Aircraft, aircraft engine, and aircraft parts	336411-13	585	492	93	197	181	16	388	311	77
Guided missile, space vehicle, and related parts	336414-15, 336419	*	*	0	0	0	0	*	*	0
Military armored vehicle, tank, and tank component	336992	0	0	0	0	0	0	0	0	0
Other transportation	other 336	234	204	30	52	28	24	182	176	6
Furniture and related products	337	35	35	0	11	11	0	24	24	0
Miscellaneous	339	3,482 - 3,488	3,434	48 - 54	380 - 544	375 - 537	5 - 9	2,940 - 3,104	2,896 - 3,059	44
Medical equipment and supplies	3391	3,069	3,023	46	381	375	5	2,688	2,647	41
Other miscellaneous manufacturing	3399	413 - 419	411	2 - 8	0 - 164	0 - 162	0 - 4	251 - 415	249 - 412	3
Nonmanufacturing industries	21-23, 42-81	40,113	30,939	9,175	5,242	2,740	2,503	34,871	28,199	6,672
Mining, quarrying, oil and gas extraction, and support activities	21	589	561	28	187	185	2	402	376	26
Utilities	22	9	9	0	*	*	0	9	9	0
Wholesale trade	42	113	113	0	77	77	0	36	36	0
Electronic shopping and electronic auctions	454111-12	69 - 4,198	69 - 4,198	0	*	*	0	69 - 4,198	69 - 4,198	0
Transportation and warehousing	48-49	62	62	0	1	1	0	61	61	0
Information	51	19,051	19,002	48	1,614	1,599	14	17,437	17,403	34

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Publishing	511	6,949	6,901	48	754	740	14	6,195	6,161	34
Newspaper, periodical, book, and directory publishers	5111	0	0	0	0	0	0	0	0	0
Software publishers	5112	6,949	6,901	48	754	740	14	6,195	6,161	34
Telecommunications	517	124	123	*	19	19	0	104	104	*
Data processing, hosting, and related services	518	5,891	5,891	* i	583	583	* i	5,307	5,307	* i
Other information	other 51	6,087	6,087	0	257 i	257 i	0	5,831 i	5,831 i	0
Finance and insurance	52	1,175	1,092	83	91	91	0	1,084	1,002	83 i
Real estate and rental and leasing	53	104	104	0	3 - 69	3 - 69	0	35 - 101	35 - 101	0
Lessors of nonfinancial intangible assets (except copyrighted works)	533	4	4	0	4	4	0	0	0	0
Other real estate and rental and leasing	other 53	101	101	0	0 - 65	0 - 65	0	35 - 101	35 - 101	0
Professional, scientific, and technical services	54	14,790	5,778	9,012 i	3,198	711	2,487	11,592 i	5,066 i	6,526 i
Architectural, engineering, and related services	5413	37	35	2	4	4	*	33	31	2
Computer systems design and related services	5415	5,370	5,294	76	697	642	55	4,673 i	4,652 i	21
Scientific research and development services	5417	9,006 i	99	8,908 i	2,449 i	27 i	2,422 i	6,558 i	72	6,486 i
Research and development in biotechnology	541711	2,793	46	2,748	341	*	341	2,452 i	46	2,407 i
Research and development in the physical, engineering, and life sciences (except biotechnology)	541712	6,205 i	51	6,153 i	2,101 i	27 i	2,074 i	4,104 i	25	4,079 i
Research and development in the social sciences and humanities	541720	8	1	7	7	* i	7	1	1	0
Other professional, scientific, and technical services	other 54	376	349	27	49	39 i	10	327 i	311 i	16
Health care services	621-23	24	23	* i	9	9	0	14	14	* i
Other nonmanufacturing	23, 44-45 (excluding 454111-12), 55-56, 624, 71-72, 81	2 - 4,124	0 - 4,121	3	0 - 65	0 - 65	0	2 - 4,124	0 - 4,121	3
All companies (number of domestic employees)	-	104,464	93,944	10,519 i	17,066	14,324	2,742	87,398	79,620	7,778 i

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Small companies										
10–19 <sup>a</sup>	–	138	128	10	29	26	3 i	109	102	7
20–49	–	457	443	14 i	67	65	3 i	389	378	11
Medium companies										
50–99	–	737	674	64	162	154	8 i	575	520	56
100–249	–	2,192	1,979	214	428	403	25	1,765	1,576	189 i
Large companies										
250–499	–	2,709	2,639	70	525	499	26	2,184	2,139	45
500–999	–	2,953	2,807	146	749	727	22 i	2,204	2,080	124
1,000–4,999	–	16,553	16,140	413	3,278	3,199	80	13,275	12,942	333 i
5,000–9,999	–	11,965	9,828	2,137 i	2,311	1,263 i	1,048	9,654 i	8,565 i	1,089 i
10,000–24,999	–	23,612	18,183	5,429 i	3,869 i	2,786	1,084 i	19,743 i	15,398	4,345 i
25,000 or more	–	43,148	41,124	2,024	5,648	5,203	445	37,500	35,921	1,579

\* = amount &lt; \$500,000; i = &gt; 50% of the estimate is a combination of imputation and reweighting to account for nonresponse.

NAICS = 2012 North American Industry Classification System.

<sup>a</sup> 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. Beginning in survey year 2018, statistics are representative of companies located in the United States that performed or funded \$50,000 or more of R&D. This change has affected the comparability of these estimates 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, 2019.