

TABLE 57

R&D costs paid for by the company and others projected for 2022, by industry and company size: 2021

(Millions of U.S. dollars)

Industry and company size	NAICS code	Projected worldwide R&D cost			Projected domestic R&D cost						Projected foreign R&D cost paid for by the company
		Paid for by the company	Paid for by others	Total	Paid for by the company			Paid for by others			
					Purchased and collaborative R&D	R&D performed by the company	Total	U.S. government	Non-U.S. government sources		
All industries	21-23, 31-33, 42-81	808,021	105,528	913,549	56,078	605,915	80,708	26,320	54,388	146,028	
Manufacturing industries	31-33	459,977	46,835	506,812	49,430	319,406	39,659	16,172	23,487	91,141	
Food	311	6,353	421	6,774	357	4,586	410	0	410	1,409	
Beverage and tobacco products	312	2,695	28	2,723	188	1,254	27	0	27	1,253	
Textile, apparel, and leather products	313-16	1,039	12	1,051	12	843	11	1	10	184	
Wood products	321	486	0 - 55	541	15	466	0 - 55	0	0 - 55	5	
Paper	322	1,425	*	1,425	5	1,362	0	0	0	58	
Printing and related support activities	323	221	1	222	5	193	1	0	1	23	
Petroleum and coal products	324	1,315	7	1,322	448	671	6	0	6	196	
Chemicals	325	179,875	16,419	196,294	36,011	111,306	12,367	787	11,579	32,558	
Basic chemicals	3251	4,214	170	4,384	61	2,855	165	11	154	1,297	
Resin, synthetic rubber, and artificial synthetic fibers and filaments	3252	1,966	113	2,079	11	1,338	76	0 - 19	57 - 77	617	
Pesticide, fertilizer, and other agricultural chemicals	3253	1,249	0 - 274	1,523	121	953	0 - 260	0	0 - 260	175	
Pharmaceuticals and medicines	3254	166,881	15,604	182,485	35,479	102,195	11,625	759	10,867	29,207	
Soap, cleaning compound, and toilet preparations	3256	3,965	261	4,226	303	2,662	243	0	243	1,001	
Paint, coating, adhesive, and other chemicals	3255, 3259	1,600	0 - 274	1,874	36	1,303	0 - 260	0 - 19	0 - 260	261	
Plastics and rubber products	326	3,888	126	4,014	119	3,098	123	2	120	671	
Nonmetallic mineral products	327	1,832	19	1,851	19	1,611	19	3	16	203	
Primary metals	331	556	23	579	6	492	22	*	22	58	
Fabricated metal products	332	4,555	192	4,747	453	3,724	165	12	153	377	
Machinery	333	24,246	1,369	25,615	367	18,643	1,075	561	514	5,236	
Agricultural implement	33311	3,426	0 - 378	4,004	171	2,512	0 - 324	*	0 - 324	743	
Semiconductor machinery	333242	6,783	205	7,088	3	5,545	171	22	150	1,235	
Engine, turbine, and power transmission equipment	3336	2,012	358	2,370	14	1,405	151	109	42	593	
Other machinery	other 333	12,025	429 - 808	12,454	179	9,181	429 - 754	430	0 - 324	2,665	
Computer and electronic products	334	142,861	7,919	150,780	4,108	103,885	7,479	2,779	4,700	34,868	
Communications equipment	3342	16,176	1,607	17,783	893	11,639	1,448	396 - 542	1,052	3,644	
Semiconductor and other electronic components	3344	70,273	2,479	72,752	454	51,146	2,313	132	2,181	18,673	
Navigational, measuring, electromedical, and control instruments	3345	14,077	3,682	17,759	249	10,394	3,575	2,107	1,469	3,434	
Electromedical, electrotherapeutic, and irradiation apparatus	334510, 334517	3,264	269	3,533	75	2,718	249	4	245	471	

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				Total	Purchased and collaborative R&D	R&D performed by the company	Total	U.S. government	Non-U.S. government sources	
Search, detection, navigation, guidance, aeronautical, and nautical system and instruments	334511	2,592	3,204	2,283	35	2,248	3,147	1,922 - 2,104	1,043 - 1,225	309
Other measuring and controlling devices	other 3345	8,222	209	5,568	140	5,429	179	0 - 180	0 - 180	2,654
Other computer and electronic products	other 334	42,334	151	33,216	2,511	30,706	142	0 - 143	0 - 143	9,118
Electrical equipment, appliances, and components	335	7,331	614	5,795	76	5,720	574	31	542	1,536
Transportation equipment	336	52,076	19,298	44,523	5,815	38,708	17,059	11,908	5,151	7,553
Motor vehicles, bodies, trailers, and parts	3361-63	37,041	5,271	30,368	5,004	25,364	3,768	80	3,688	6,673
Aerospace products and parts	3364	12,943	12,861	12,302	770	11,532	12,151	10,741	1,410	641
Aircraft, aircraft engine, and aircraft parts	336411-13	12,055	11,802	11,435	0 - 771	11,436	11,173	9,979	1,195	620
Guided missile, space vehicle, and related parts	336414-15, 336419	888	1,059	867	0 - 771	96 - 868	978	762	216	21
Military armored vehicle, tank, and tank components	336992	23	*	21	*	21	*	*	*	2
Other transportation	other 336	2,068	1,166	1,832	40	1,791	1,140	1,087	53	236
Furniture and related products	337	510	4	468	15	453	4	0	4	42
Miscellaneous	339	28,714	327 - 391	23,802	1,411	22,391	325	87	183 - 239	4,912
Medical equipment and supplies	3391	25,555	317	21,118	1,300	19,817	260	76	184	4,437
Other miscellaneous manufacturing	3399	3,159	10 - 75	2,684	111	2,574	10 - 66	11	0 - 55	475
Nonmanufacturing industries	21-23, 42-81	348,043	58,693	293,156	6,647	286,509	41,049	10,148	30,901	54,887
Mining, quarrying, oil and gas extraction, and support activities	21	1,391	163	1,298	82	1,217	150	0	150	93
Utilities	22	713	34	703	331	371	29	23	6	10
Wholesale trade	42	2,031 - 10,175	98	2,032	211	1,821	91	0	91	0 - 8,143
Electronic shopping and electronic auctions	454111-12	45 - 40,989	10	45 - 32,850	46	0 - 32,805	10	8	2	0 - 8,143
Transportation and warehousing	48-49	7,306	10	7,237	47	7,190	10	0	10	69
Information	51	215,665	1,505	178,927	3,187	175,740	1,325	363	962	36,738
Publishing	511	57,964	784	46,615	1,560	45,055	719	12	707	11,349
Newspaper, periodical, book, and directory publishers	5111	93	0	93	5	88	0	0	0	*
Software publishers	5112	57,871	784	46,522	1,555	44,967	719	12	707	11,349
Telecommunications	517	5,188	3 - 127	5,092	576	4,516	3 - 125	4	0 - 121	97
Data processing, hosting, and related services	518	64,751	596	51,910	833	51,077	483	347	136	12,841
Other information	other 51	87,761	0 - 123	75,310	217	75,092	0 - 121	0	0 - 121	12,452

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				Total	Purchased and collaborative R&D	R&D performed by the company	Total	U.S. government	Non-U.S. government sources		
Finance and insurance	52	31,350	i 86	27,796	i 203	27,593	i 48	0	48	3,554	
Real estate and rental and leasing	53	2,642	* i	2,531	4	2,527	* i	0	* i	111	
Lessors of nonfinancial intangible assets (except copyrighted works)	533	8	0	8	1	7	0	0	0	*	
Other real estate and rental and leasing	other 53	2,634	* i	2,523	3	2,520	* i	0	* i	111	
Professional, scientific, and technical services	54	43,003	56,504	i 36,913	1,891	35,022	39,145	i 9,710	29,436	i 6,090	
Architectural, engineering, and related services	5413	2,676	2,432	2,637	203	2,433	2,325	1,614	711	40	
Computer systems design and related services	5415	24,350	3,455	19,337	610	18,727	3,376	615	2,761	5,013	
Scientific research and development services	5417	8,606	49,021	i 7,870	1,001	6,869	32,067	i 6,583	25,483	i 736	
Research and development in nanotechnology	541713	213	94	i 198	17	181	89	i 56	33	i 15	
Research and development in biotechnology (except nanobiotechnology)	541714	2,901	12,472	2,513	275	2,238	7,823	1,985	5,838	388	
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	5,454	35,890	i 5,122	702	4,420	23,649	i 4,057	19,591	i 333	
Research and development in the social sciences and humanities	541720	37	564	i 37	7	30	506	i 485	21	i 0	
Other professional, scientific, and technical services	other 54	7,371	1,596	i 7,069	76	6,994	1,378	i 897	481	302	
Health care services	621-23	2,654	129	i 2,570	342	2,228	118	i 27	91	i 84	
Other nonmanufacturing	23, 44-45 (excluding 454111-12), 55-56, 624, 71-72, 81	303 - 41,247	156	303 - 33,108	304	r 0 - 32,805	122	17	105	0 - 8,143	
All companies (number of domestic employees)	-	808,021	105,528	i 661,993	56,078	605,915	80,708	26,320	54,388	i 146,028	
Small companies											
10-19 ^a	-	6,538	1,192	5,860	968	4,892	1,113	521	592	i 678	
20-49	-	19,127	2,756	17,390	3,545	13,845	2,467	925	1,542	1,737	
Medium companies											
50-99	-	20,244	2,545	18,245	3,293	14,952	2,225	772	1,453	1,999	
100-249	-	29,230	5,082	26,005	2,429	23,576	4,264	1,512	2,752	3,225	
Large companies											
250-499	-	30,444	4,152	25,968	3,075	22,893	3,642	1,291	2,350	4,476	
500-999	-	33,823	4,771	28,770	2,956	25,814	4,419	1,508	i 2,910	5,053	
1,000-4,999	-	131,981	12,881	106,988	5,736	i 101,252	11,187	1,667	9,520	24,993	
5,000-9,999	-	82,301	13,781	i 66,227	4,747	61,480	10,088	i 1,091	i 8,997	i 16,074	
10,000-24,999	-	127,840	36,828	i 104,583	12,709	91,874	23,146	i 5,190	17,956	i 23,258	

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25,000 or more	-	326,493	21,539	261,958	16,619	245,339	i	18,158	11,842	i	6,316	64,535

* = 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.