

TABLE 57

R&D costs paid for by the company and others projected for 2023, by industry and company size: 2022

(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	Paid for by the company			Paid for by others				
				Total	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	860,437	112,152 i	705,424	50,728	654,697	89,551	33,668	55,883 i	155,013	
Manufacturing industries	31-33	482,855	52,918	388,598	44,282	344,316	46,475	24,483	21,992	94,257	
Food	311	8,555	356	6,937	437	6,499	352	11	341	1,619	
Beverage and tobacco products	312	1,664	110	743	193	550	110	0	110	921	
Textile, apparel, and leather products	313-16	742	15	625	11	615	13	5 i	8	117	
Wood products	321	269	5	262	21	241	5	* i	4	7 i	
Paper	322	927	1 i	855	8	848	* i	0	* i	72	
Printing and related support activities	323	191 i	1 i	180 i	9	172 i	1 i	0	1 i	11 i	
Petroleum and coal products	324	974	8 i	743	486	258	4	*	4	231	
Chemicals	325	187,679	16,028	156,176	31,991	124,184	12,322	443	11,879	31,503	
Basic chemicals	3251	3,640	235	2,657	72	2,585	228	48	180 i	983	
Resin, synthetic rubber, and artificial synthetic fibers and filaments	3252	2,063	106 i	1,472	27	1,445	80 i	1	79 i	592	
Pesticide, fertilizer, and other agricultural chemicals	3253	1,256	D	1,035	117	918	D	0	D	221	
Pharmaceuticals and medicines	3254	175,109	15,078	146,705	31,404	115,301	11,417	382	11,035	28,405	
Soap, cleaning compound, and toilet preparations	3256	4,181	250	3,156	337	2,819	249	0	249	1,025	
Paint, coating, adhesive, and other chemicals	3255, 3259	1,430	D	1,151	34	1,117	D	11	D	279	
Plastics and rubber products	326	4,193	131	3,496	71	3,425	113	2 i	110 i	697 i	
Nonmetallic mineral products	327	1,552	37	1,382	21	1,361	37	6	31	170	
Primary metals	331	850	25 i	821	15	805	23 i	* i	23 i	29	
Fabricated metal products	332	3,720	233 i	3,504	167	3,337	196 i	27	169 i	217	
Machinery	333	26,443	1,540	19,514	508	19,006	1,281	648	633	6,929	
Agricultural implement	33311	4,470	164	2,609	241	2,368	160	4 r	156	1,861	
Semiconductor machinery	333242	6,924	75	5,352	9	5,343	57	18 i	39	1,572	
Engine, turbine, and power transmission equipment	3336	4,174	380	3,100	16	3,084	249	226	23	1,074	
Other machinery	other 333	10,876	920	8,453	242	8,211	815	399	415	2,422	
Computer and electronic products	334	148,686 i	7,262	110,913 i	4,344 i	106,569 i	6,002	2,839	3,162	37,773	
Communications equipment	3342	15,368	967 i	11,637	741 i	10,896	831 i	202	629 i	3,731	
Semiconductor and other electronic components	3344	75,522 i	2,123	52,077 i	483	51,594 i	2,053	65	1,988	23,445	
Navigational, measuring, electromedical, and control instruments	3345	12,819	4,082	10,056	264	9,792	3,038	2,532	506	2,763	
Electromedical, electrotherapeutic, and irradiation apparatus	334510, 334517	4,078	1,815 i	3,688	121	3,568	854 i	609 i	245	389	
Search, detection, navigation, guidance, aeronautical, and nautical system and instruments	334511	2,638	2,176	2,283	5	2,279	2,101	1,909	192	354	
Other measuring and controlling devices	other 3345	6,104	92	4,085	139	3,946	83	13 i	70	2,020	

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Other computer and electronic products	other 334	44,978	i 89	37,144	i 2,857	i 34,287	i 80	40	40	7,834	i
Electrical equipment, appliances, and components	335	8,759	458	7,073	102	6,971	455	45	410	1,686	
Transportation equipment	336	57,653	26,324	50,374	4,731	45,643	25,258	20,388	4,871	7,279	
Motor vehicles, bodies, trailers, and parts	3361-63	41,146	2,994	34,989	4,415	30,574	2,472	103	2,369	6,158	
Aerospace products and parts	3364	14,719	22,241	13,726	263	13,463	21,728	19,244	i 2,484	993	
Aircraft, aircraft engine, and aircraft parts	336411-13	10,533	17,303	i 9,924	171	9,753	16,830	i 15,415	i 1,416	609	
Guided missile, space vehicle, and related parts	336414-15, 336419	4,186	4,938	3,802	92	3,710	4,898	3,829	1,068	384	
Military armored vehicle, tank, and tank components	336992	25	3	24	1	i 24	3	1	2	1	
Other transportation	other 336	1,763	i 1,085	1,635	i 53	1,583	i 1,056	1,040	15	128	
Furniture and related products	337	469	6	432	7	i 425	5	0	5	37	
Miscellaneous	339	29,527	378	24,567	1,161	23,407	299	68	231	4,960	
Medical equipment and supplies	3391	26,046	344	21,491	1,089	20,402	267	52	215	4,555	
Other miscellaneous manufacturing	3399	3,481	34	3,076	72	i 3,004	32	16	16	405	
Nonmanufacturing industries	21-23, 42-81	377,582	59,234	i 316,827	6,446	310,381	43,076	i 9,185	33,892	i 60,755	
Mining, quarrying, oil and gas extraction, and support activities	21	1,203	i 70	i 1,100	i 68	1,032	i 51	i 0	51	i 103	
Utilities	22	1,192	116	i 1,180	609	572	78	i 73	i 5	12	
Wholesale trade	42	1,912	i 51	i 1,822	i 249	i 1,573	i 45	i *	r 45	i 90	i
Electronic shopping and electronic auctions	454111-12	D	0	D	50	i D	0	0	0	D	
Transportation and warehousing	48-49	11,259	i D	11,114	i 59	11,055	i D	D	D	145	
Information	51	250,591	1,296	206,911	2,859	204,052	1,021	206	815	43,680	
Publishing	511	70,183	982	57,190	1,028	56,162	792	126	r 666	12,993	
Newspaper, periodical, book, and directory publishers	5111	103	i 1	i 100	i 18	i 82	1	i 0	1	i 3	
Software publishers	5112	70,080	981	57,090	1,010	56,081	791	126	r 665	12,990	
Telecommunications	517	4,488	D	4,302	510	3,792	66	i 43	r 23	186	
Data processing, hosting, and related services	518	70,943	177	55,503	942	54,562	124	37	87	15,440	
Other information	other 51	104,976	i D	89,916	i 379	89,536	i 38	i 0	38	i 15,061	i
Finance and insurance	52	21,906	85	19,035	358	i 18,677	28	0	28	2,872	
Real estate and rental and leasing	53	2,683	i 0	2,589	i 2	i 2,587	0	0	0	94	i
Lessors of nonfinancial intangible assets (except copyrighted works)	533	6	i 0	4	i 1	i 4	0	0	0	1	i
Other real estate and rental and leasing	other 53	2,677	i 0	2,585	i 1	r 2,584	0	0	0	92	i
Professional, scientific, and technical services	54	50,144	56,833	i 42,669	1,796	40,873	41,078	i 8,826	32,252	i 7,475	
Architectural, engineering, and related services	5413	3,411	1,019	3,324	130	3,195	946	565	381	87	

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Computer systems design and related services	5415	24,873	3,826	19,853	483	19,370	3,746	1,011	2,735	5,019	
Scientific research and development services	5417	12,065	50,641 i	10,809	933	9,876	35,169 i	6,387	28,782 i	1,256 i	
Research and development in nanotechnology	541713	319	136	245	34	211	126	88	38	74	
Research and development in biotechnology (except nanobiotechnology)	541714	3,716	12,245 i	3,514	521	2,993	7,884	843	7,040 i	202	
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	7,997	37,402 i	7,017	377	6,640	26,305 i	4,680	21,626 i	980 i	
Research and development in the social sciences and humanities	541720	33	858 i	33	1 i	32	854 i	776 i	79 i	0	
Other professional, scientific, and technical services	other 54	9,795	1,347	8,682	251	8,432	1,217	863	354	1,113	
Health care services	621-23	3,338 i	69	3,183 i	283 i	2,900 i	66	22	45	155 i	
Other nonmanufacturing	23, 44-45 (excluding 454111-12), 55-56, 624, 71-72, 81	D	D	D	113	D	D	D	D	D	
All companies (number of domestic employees)	-	860,437	112,152 i	705,424	50,728	654,697	89,551	33,668	55,883 i	155,013	
Small companies											
10-19 ^a	-	5,583	1,429	5,129	897	4,231 i	1,347	700	648 i	454	
20-49	-	18,141	3,058	15,808	2,179	13,629	1,924	796	1,128	2,333	
Medium companies											
50-99	-	18,200	2,414	16,575	2,011	14,564	2,132	838	1,294	1,624	
100-249	-	32,482	3,932	29,393	3,395	25,998	3,470	1,820	1,650	3,090	
Large companies											
250-499	-	36,634	4,008	31,459	3,490	27,969	3,554	789	2,765	5,176	
500-999	-	36,985	4,192	32,466	2,386	30,081	3,567	1,105	2,463	4,518	
1,000-4,999	-	138,102	11,760	110,925	5,754	105,171	10,003	1,173	8,831	27,178	
5,000-9,999	-	75,311	5,323	60,961	3,201 i	57,760	4,795	2,682	2,113 i	14,350	
10,000-24,999	-	138,792	38,920 i	111,938	13,312	98,626	27,595 i	2,274	25,321 i	26,855	
25,000 or more	-	360,207	37,116	290,771	14,104	276,668 i	31,163	21,491	9,672	69,436	

* = amount < \$500,000; 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%.

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.

Source(s):

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