

Table 32. Domestic R&D paid for by others and performed by the company, by type of cost, industry, and company size: 2023

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Salaries, wages, and fringe benefits	Stock-based compensation	Temporary staffing	Expensed equipment	Materials and supplies	Lease and rental payments	Depreciation	Royalties and licensing fees	Other purchased services (except R&D)	Other
All industries	21-23, 31-33, 42-81	86,314	48,692	1,415	2,726	668	8,610	984	2,481	445	4,954	15,339
Manufacturing industries	31-33	50,682	29,253	887	1,368	205	5,244	354	1,117	404	2,382	9,469
Food	311	329	195	D	12	1	15	21	13	0	1	D
Beverage and tobacco products	312	3	3	0	0	0	0	0	*	0	0	0
Textile, apparel, and leather products	313-16	8	5	0	0	0	1	0	*	0	0	3
Wood products	321	6	4	* i	* i	*	*	*	*	* i	* i	1
Paper	322	1	1	* i	* i	0	* i	* i	0	* i	* i	* i
Printing and related support activities	323	7 r	2 r	* r	* r	0	5 r	* r	0	* r	* r	* r
Petroleum and coal products	324	5	4	* i	* i	*	* i	* i	0	* i	* i	* i
Chemicals	325	12,789	7,078	525	739	46	628	129	533	55	1,579	1,478
Basic chemicals	3251	259	150	*	19	3	36	1	18	0	1	32
Resin, synthetic rubber, and artificial synthetic fibers and filaments	3252	78 i	60 i	0	*	0	D	*	D	0	*	D
Pesticide, fertilizer, and other agricultural chemicals	3253	D	D	* r	D	* r	D	D	D	* r	* r	* r
Pharmaceuticals and medicines	3254	11,761	6,501	525	684	35	484	85	466	51	1,555	1,375
Soap, cleaning compound, and toilet preparations	3256	262	142	0	D	*	10	D	14	4	20	D
Paint, coating, adhesive, and other chemicals	3255, 3259	D	D	0	D	8	D	D	D	*	2	D
Plastics and rubber products	326	144	91	0	0	*	7	0	6	0	7	34
Nonmetallic mineral products	327	23	13	0	0	1	3	*	1	0	2	2
Primary metals	331	5	1	* i	* i	*	2	* i	*	* i	* i	1 i
Fabricated metal products	332	231 i	200 i	0	* i	* i	10 i	* i	2 i	1 i	1 i	17 i
Machinery	333	2,193	1,325	D	140	25	259	10	54	1	99	D
Agricultural implement	33311	D	D	0	D	0	D	2	D	0	D	D
Semiconductor machinery	333242	D	721	D	D	4	49	1	D	0	D	D
Engine, turbine, and power transmission equipment	3336	D	140	0	6	4	23 i	*	*	0	1	D
Other machinery	other 333	795	D	*	D	16	D	6 r	D	1	D	D
Computer and electronic products	334	7,627	4,530	306	218	57	1,004	76	227	16	101	1,091
Communications equipment	3342	1,081 i	591 i	2 i	21 i	3 i	103 i	9	31 i	1 i	4	315 i
Semiconductor and other electronic components	3344	3,380	2,335	302	89	19 r	80	32	115	15	37	357
Navigational, measuring, electromedical, and control instruments	3345	3,072	1,544	2	109 i	34	810	35	79	* i	56	403
Electromedical, electrotherapeutic, and irradiation apparatus	334510, 334517	686 i	383 i	0	83 i	6 i	33 i	8 i	12 i	* i	18 i	142 i
Search, detection, navigation, guidance, aeronautical, and nautical system and instruments	334511	2,261	1,082	2	18	27	763	25	65	0	36	243
Other measuring and controlling devices	other 3345	125	79	0	8 i	1 i	14 i	1	2	*	3 i	18 i
Other computer and electronic products	other 334	94	60	* r	*	1	10	*	2	0	4	15
Electrical equipment, appliances, and components	335	627	323	0	*	1	75	5	7	148	5	62

Table 32. Domestic R&D paid for by others and performed by the company, by type of cost, industry, and company size: 2023

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Salaries, wages, and fringe benefits	Stock-based compensation	Temporary staffing	Expensed equipment	Materials and supplies	Lease and rental payments	Depreciation	Royalties and licensing fees	Other purchased services (except R&D)	Other
Transportation equipment	336	26,379	15,288	10	246	67	3,200	110	272	183	564	6,441
Motor vehicles, bodies, trailers, and parts	3361-63	2,124	1,000	9	54	12	173	48	66	156	81	526
Aerospace products and parts	3364	22,624	13,410	0	173	51	2,823	53	189	D	432	D
Aircraft, aircraft engine, and aircraft parts	336411-13	D	9,507	0	98	D	2,184	D	D	0	D	D
Guided missile, space vehicle, and related parts	336414-15, 336419	D	3,903	0	75	D	638	D	D	D	D	D
Military armored vehicle, tank, and tank components	336992	D	2	0	*	*	1	*	*	*	*	D
Other transportation	other 336	D	876	1	19	4	203	10	17	D	50	D
Furniture and related products	337	3	2	*	*	0	*	*	*	*	*	*
Miscellaneous	339	301	187	0	13	6	36	2	2	*	23	32
Medical equipment and supplies	3391	247	158	0	13	3	24	2	2	*	15	31
Other miscellaneous manufacturing	3399	54	29	0	*	3	12	*	*	0	8	1
Nonmanufacturing industries	21-23, 42-81	35,632	19,439	528	1,358	462	3,366	631	1,364	42	2,572	5,870
Mining, quarrying, oil and gas extraction, and support activities	21	D	24	0	0	0	1	1	D	1	D	D
Utilities	22	2	1	0	0	*	*	0	0	0	0	*
Wholesale trade	42	131	96	1	1	3	3	2	2	*	11	12
Electronic shopping and electronic auctions	454111-12	0	0	0	0	0	0	0	0	0	0	0
Transportation and warehousing	48-49	3	1	0	0	0	2	0	*	0	0	0
Information	51	825	588	21	40	5	89	8	12	*	19	42
Publishing	511	486	375	2	20	3	48	1	7	*	6	23
Newspaper, periodical, book, and directory publishers	5111	1	1	0	0	0	0	0	0	0	0	0
Software publishers	5112	485	374	2	20	3	48	1	7	*	6	23
Telecommunications	517	D	D	0	*	1	*	1	D	*	3	D
Data processing, hosting, and related services	518	271	173	16	18	1	40	3	2	*	5	12
Other information	other 51	D	D	3	1	*	*	3	D	0	5	D
Finance and insurance	52	347	346	0	*	0	0	0	0	0	0	1
Real estate and rental and leasing	53	0	0	0	0	0	0	0	0	0	0	0
Lessors of nonfinancial intangible assets (except copyrighted works)	533	0	0	0	0	0	0	0	0	0	0	0
Other real estate and rental and leasing	other 53	0	0	0	0	0	0	0	0	0	0	0
Professional, scientific, and technical services	54	33,891	18,185	506	1,306	446	3,261	616	1,332	41	2,429	5,769
Architectural, engineering, and related services	5413	1,250	731	0	240	34	81	7	8	0	47	101
Computer systems design and related services	5415	4,310	2,965	281	140	6	385	47	75	3	69	338
Scientific research and development services	5417	27,085	13,619	225	785	401	2,754	541	1,246	37	2,301	5,177
Research and development in nanotechnology	541713	148	69	*	1	1	22	6	4	0	2	43
Research and development in biotechnology (except nanobiotechnology)	541714	6,820	2,975	25	128	3	525	76	133	5	1,163	1,787

Table 32. Domestic R&D paid for by others and performed by the company, by type of cost, industry, and company size: 2023

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total	Salaries, wages, and fringe benefits		Stock-based compensation		Temporary staffing		Expensed equipment		Materials and supplies		Lease and rental payments		Depreciation		Royalties and licensing fees		Other purchased services (except R&D)		Other	
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	19,568 i	10,210 i		173 i		626 i		397 i		2,161 i		450 i		1,084 i		32 i		1,135 i		3,299 i	
Research and development in the social sciences and humanities	541720	549		365		26		30		1		46		8		25		0		1		48
Other professional, scientific, and technical services	other 54	1,246		870		0		141		4		42		21		3		1		12		153
Health care services	621-23	D		89		0		1		*		5		3		D		*		106 i		10 i
Other nonmanufacturing	23, 44-45 (excluding 454111-12), 55-56, 624, 71-72, 81	186		109		0		9		8		4		2		16		0		D		D
All companies (number of domestic employees)	-	86,314		48,692		1,415		2,726		668		8,610		984		2,481		445		4,954 i		15,339
Small companies																						
10-19 ^a	-	1,110		753		4 r		37		8		84		25		6		5		40		146
20-49	-	2,166		1,300		19		79		11		244		45		29		7		142		291
Medium companies																						
50-99	-	2,098		1,136		36		191		13		317		51		42		1 i		53		259
100-249	-	3,604		1,896		47		176		21		409		94		99		6		126		730
Large companies																						
250-499	-	3,210		1,899		43		372		44		318		44		58		30		54		349
500-999	-	4,422		2,931		10		157		76		509		51		98		6 i		78		506
1,000-4,999	-	10,500		5,599		473		438		115		552		154		534		8 i		1,143 i		1,485
5,000-9,999	-	5,357		3,299		88		203		15		452		24		180		23 i		718 i		354 i
10,000-24,999	-	21,600		12,162		639		618		224 i		1,660 i		306 i		836 i		302 i		1,863 i		2,992 i
25,000 or more	-	32,246 i		17,717 i		56 i		456 i		141 i		4,064 i		191 i		600 i		57 i		737 i		8,227 i

* = 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.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, Business Enterprise Research and Development Survey, 2023.