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R&D

Research and Development: U.S. Trends and International Comparisons

Supplemental Tables

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Table SRD-1

GERD, GDP, GERD-to-GDP ratio, and growth rates, by selected region, country, or economy: Selected years, 1990–2021

(Billions of U.S. current or constant PPP dollars and percent)

Region, country, or economy	GERD								GDP				GERD-to-GDP ratio (%)				Longer-term growth rates								
	Current PPP dollars				Constant (2015) PPP dollars				Current PPP dollars				GERD-to-GDP ratio (%)				GERD compound annual growth rate						GDP compound annual growth rate		
																	Current PPP dollars			Constant (2015) PPP dollars			Current PPP dollars		
	1990	2000	2010	2021 ^a	1990	2000	2010	2021 ^a	1990	2000	2010	2021 ^a	1990	2000	2010	2021 ^a	1990–2000	2000–10	2010–21 ^a	1990–2000	2000–10	2010–21 ^a	1990–2000	2000–10	2010–21 ^a
Australia (2019)	3.83	7.94	20.56	24.06	6.40	10.65	21.37	21.74	304.41	538.76	943.32	1,337.59	1.26	1.47	2.18	1.80	7.6	10.0	1.8	5.2	7.2	0.2	5.9	5.8	4.0
Austria	2.02	4.44	9.58	17.49	3.67	6.62	11.15	14.89	149.51	235.39	351.32	537.01	1.35	1.89	2.73	3.26	8.2	8.0	5.6	6.1	5.3	2.7	4.6	4.1	3.9
Belgium	NA	5.52	8.95	23.40	NA	7.98	10.07	19.25	186.28	284.88	434.06	682.14	NA	1.94	2.06	3.43	NA	5.0	9.1	NA	2.4	6.1	4.3	4.3	4.2
Canada	8.26	16.74	24.89	34.40	12.96	21.75	26.72	30.48	560.18	901.00	1,363.58	2,026.90	1.48	1.86	1.83	1.70	7.3	4.0	3.0	5.3	2.1	1.2	4.9	4.2	3.7
Chile (2020)	NA	NA	1.02	1.61	NA	NA	1.11	1.38	62.13	145.36	307.86	481.37	NA	NA	0.33	0.33	NA	NA	4.7	NA	NA	2.2	8.9	7.8	4.6
Colombia (2020)	NA	0.37	0.93	2.23	NA	0.47	0.96	1.84	165.52	262.51	480.53	769.21	NA	0.14	0.19	0.29	NA	9.7	9.1	NA	7.5	6.7	4.7	6.2	4.8
Costa Rica	NA	NA	NA	0.32	NA	NA	NA	0.28	NA	31.92	60.59	116.70	NA	NA	NA	0.28	NA	NA	NA	NA	NA	NA	NA	6.6	6.1
Czechia	NA	1.85	3.87	9.57	NA	2.66	4.36	8.01	131.49	166.53	292.03	479.38	NA	1.11	1.33	2.00	NA	7.7	8.6	NA	5.0	5.7	2.4	5.8	4.6
Denmark	1.42	NA	6.96	10.69	2.83	NA	7.63	8.82	93.79	153.05	238.56	387.05	1.52	NA	2.92	2.76	NA	NA	4.0	NA	NA	1.3	5.0	4.5	4.5
Estonia	NA	0.08	0.45	1.01	NA	0.14	0.51	0.85	NA	13.16	28.78	57.86	NA	0.60	1.58	1.75	NA	19.1	7.6	NA	13.9	4.7	NA	8.1	6.6
Finland	1.65	4.49	7.74	9.06	2.82	6.31	8.60	7.61	90.49	138.67	208.93	303.52	1.82	3.24	3.71	2.99	10.6	5.6	1.4	8.4	3.1	-1.1	4.4	4.2	3.5
France	23.38	33.28	50.86	77.22	42.10	47.75	56.27	63.75	1,027.98	1,589.55	2,334.56	3,479.87	2.27	2.09	2.18	2.22	3.6	4.3	3.9	1.3	1.7	1.1	4.5	3.9	3.7
Germany	35.97	53.90	86.97	153.72	63.12	79.15	97.65	129.35	1,380.32	2,236.50	3,185.27	4,913.17	2.61	2.41	2.73	3.13	4.1	4.9	5.3	2.3	2.1	2.6	4.9	3.6	4.0
Greece	NA	NA	1.87	4.85	NA	NA	2.14	4.34	135.74	210.93	310.42	333.01	NA	NA	0.60	1.46	NA	NA	9.0	NA	NA	6.6	4.5	3.9	0.6
Hungary	NA	0.96	2.45	5.86	NA	1.53	2.69	5.22	NA	121.06	217.42	357.06	NA	0.79	1.13	1.64	NA	9.9	8.2	NA	5.8	6.2	NA	6.0	4.6
Iceland	0.05	0.22	NA	0.61	0.08	0.28	NA	0.52	5.60	8.38	12.65	21.68	0.96	2.57	NA	2.81	14.9	NA	NA	13.4	NA	NA	4.1	4.2	5.0
Ireland	0.38	1.25	3.14	6.07	0.72	1.92	3.74	5.64	48.29	114.96	197.04	546.18	0.79	1.08	1.59	1.11	12.5	9.7	6.2	10.4	6.9	3.8	9.1	5.5	9.7
Israel	NA	6.18	8.63	22.93	NA	6.99	9.64	21.03	72.76	161.55	223.36	412.65	NA	3.83	3.86	5.56	NA	3.4	9.3	NA	3.3	7.3	8.3	3.3	5.7
Italy	12.70	15.47	25.38	40.14	22.85	22.56	28.24	33.14	1,057.15	1,541.86	2,084.00	2,760.72	1.20	1.00	1.22	1.45	2.0	5.1	4.3	-0.1	2.3	1.5	3.8	3.1	2.6
Japan	65.44	98.94	140.51	177.43	109.27	133.31	153.24	172.06	2,458.76	3,461.20	4,525.40	5,383.43	2.66	2.86	3.10	3.30	4.2	3.6	2.1	2.0	1.4	1.1	3.5	2.7	1.6
Latvia	NA	0.08	0.22	0.49	NA	0.13	0.25	0.42	NA	19.04	37.14	65.99	NA	0.43	0.61	0.74	NA	10.5	7.3	NA	7.2	4.7	NA	6.9	5.4
Lithuania	NA	0.17	0.49	1.36	NA	0.27	0.54	1.15	NA	29.56	62.24	122.67	NA	0.59	0.78	1.11	NA	10.9	9.8	NA	7.4	7.0	NA	7.7	6.4
Luxembourg	NA	0.38	0.65	0.88	NA	0.65	0.79	0.74	11.44	24.05	45.81	84.18	NA	1.58	1.42	1.04	NA	5.5	2.7	NA	1.9	-0.6	7.7	6.7	5.7
Mexico (2017)	NA	3.36	8.61	8.08	NA	5.11	9.54	7.67	626.54	1,096.75	1,740.49	2,460.77	NA	0.31	0.49	0.33	NA	9.9	-0.9	NA	6.4	-3.1	5.8	4.7	5.1
Netherlands	5.49	9.09	12.75	25.65	9.92	12.8	14.0	21.65	286.71	507.66	748.38	1,130.68	1.92	1.79	1.70	2.27	5.2	3.4	6.6	2.6	0.9	4.1	5.9	4.0	3.8
New Zealand	0.47	NA	NA	3.60	0.8	NA	NA	3.06	49.43	82.95	135.85	245.36	0.95	NA	NA	1.47	NA	NA	NA	NA	NA	NA	5.3	5.1	5.5
Norway	NA	NA	4.67	8.58	NA	NA	4.89	7.01	78.30	166.12	284.69	442.76	NA	NA	1.64	1.94	NA	NA	5.7	NA	NA	3.3	7.8	5.5	4.1
Poland	2.03	2.62	5.77	20.67	3.58	3.84	6.35	18.31	235.99	408.38	794.70	1,443.51	0.86	0.64	0.73	1.43	2.6	8.2	12.3	0.7	5.1	10.1	5.6	6.9	5.6
Portugal	0.55	1.40	4.43	6.36	1.0	2.15	4.92	5.57	117.61	194.28	288.23	378.29	0.46	0.72	1.54	1.68	9.9	12.2	3.3	7.5	8.6	1.1	5.1	4.0	2.5
Slovakia	NA	0.39	0.83	1.72	NA	0.56	0.87	1.69	NA	61.32	136.95	188.09	1.61	0.64	0.61	0.92	NA	7.8	6.9	NA	4.5	6.2	NA	8.4	2.9
Slovenia	NA	0.49	1.17	1.98	NA	0.67	1.31	1.68	24.74	35.81	57.00	92.83	NA	1.36	2.05	2.13	NA	9.2	4.9	NA	7.0	2.3	3.8	4.8	4.5
South Korea	NA	18.52	52.15	119.58	NA	22.39	55.17	110.15	358.19	871.48	1,572.68	2,425.56	NA	2.13	3.32	4.93	NA	10.9	7.8	NA	9.4	6.5	9.3	6.1	4.0
Spain	4.14	7.73	20.07	27.56	7.78	11.62	22.07	24.01	531.94	875.80	1,475.61	1,928.02	0.78	0.88	1.36	1.43	6.4	10.0	2.9	4.1	6.6	0.8	5.1	5.4	2.5

Table SRD-1

GERD, GDP, GERD-to-GDP ratio, and growth rates, by selected region, country, or economy: Selected years, 1990–2021

(Billions of U.S. current or constant PPP dollars and percent)

Region, country, or economy	GERD								GDP				Longer-term growth rates															
	Current PPP dollars				Constant (2015) PPP dollars				Current PPP dollars				GERD-to-GDP ratio (%)				GERD compound annual growth rate						GDP compound annual growth rate					
																	Current PPP dollars			Constant (2015) PPP dollars			Current PPP dollars					
	1990	2000	2010	2021 ^a	1990	2000	2010	2021 ^a	1990	2000	2010	2021 ^a	1990	2000	2010	2021 ^a	1990–2000	2000–10	2010–21 ^a	1990–2000	2000–10	2010–21 ^a	1990–2000	2000–10	2010–21 ^a			
Sweden	NA	NA	12.54	21.40	NA	NA	13.69	18.50	174.82	262.83	395.96	629.08	NA	NA	3.17	3.40	NA	NA	5.0	NA	NA	2.8	4.2	4.2	4.3			
Switzerland	NA	5.97	NA	22.21	NA	9.34	NA	19.89	191.14	263.64	425.98	661.28	NA	2.26	NA	3.36	NA	NA	NA	NA	NA	NA	3.3	4.9	4.1			
Turkey	1.08	2.84	10.07	36.23	1.59	4.51	11.41	37.14	457.06	609.05	1,268.71	2,581.59	0.24	0.47	0.79	1.40	10.2	13.5	12.3	11.0	9.7	11.3	2.9	7.6	6.7			
United Kingdom	19.06	25.15	37.54	97.79	33.27	35.10	41.11	83.71	978.44	1,563.07	2,295.93	3,355.09	1.95	1.61	1.63	2.91	2.8	4.1	9.1	0.5	1.6	6.7	4.8	3.9	3.5			
United States	152.39	268.56	408.50	806.01	250.73	360.34	444.71	709.71	5,963.14	10,250.95	15,048.97	23,315.08	2.56	2.62	2.71	3.46	5.8	4.3	6.4	3.7	2.1	4.3	5.6	3.9	4.1			
Total OECD	NA	629.59	1,020.39	1,832.07	NA	863.25	1,117.12	1,618.86	NA	29,639.93	44,614.98	67,397.78	NA	2.12	2.29	2.72	NA	4.9	5.5	NA	2.6	3.4	NA	4.2	3.8			
EU-27	NA	158.82	270.17	474.11	NA	230.92	301.13	400.17	NA	9,478.62	14,512.23	21,987.71	NA	1.68	1.86	2.16	NA	5.5	5.2	NA	2.7	2.6	NA	4.4	3.8			
Non-OECD																												
Argentina	NA	1.88	4.16	5.61	NA	2.26	4.55	4.29	262.14	478.43	736.80	1,083.36	NA	0.39	0.56	0.52	NA	8.3	2.8	NA	7.2	-0.5	6.2	4.4	3.6			
China	NA	32.90	212.16	667.64	NA	39.81	208.28	620.10	1,114.09	3,683.44	12,380.17	27,445.50	NA	0.89	1.71	2.43	NA	20.5	11.0	NA	18.0	10.4	12.7	12.9	7.5			
Romania	NA	0.48	1.57	3.28	NA	0.90	1.67	2.53	129.77	131.27	351.40	693.44	NA	0.37	0.45	0.47	NA	12.6	6.9	NA	6.3	3.9	0.1	10.3	6.4			
Russia (2020)	24.11	10.50	33.08	47.95	60.98	19.76	34.05	40.32	1,274.54	1,073.59	3,143.87	4,367.29	1.89	0.98	1.05	1.10	-8.0	12.2	3.8	-10.7	5.6	1.7	-1.7	11.3	3.3			
Singapore (2020)	NA	3.20	7.38	12.37	NA	3.99	7.45	11.44	72.56	176.32	382.73	558.07	NA	1.82	1.93	2.22	NA	8.7	5.3	NA	6.4	4.4	9.3	8.1	3.8			
South Africa (2020)	NA	NA	4.38	4.80	NA	NA	4.52	4.46	260.34	381.72	661.39	796.45	NA	NA	0.66	0.60	NA	NA	0.9	NA	NA	-0.1	3.9	5.7	1.9			
Taiwan	NA	9.15	25.04	55.56	NA	12.10	26.89	51.23	204.00	478.09	889.50	1,471.83	NA	1.91	2.82	3.77	NA	10.6	7.5	NA	8.3	6.0	8.9	6.4	4.7			

NA = not available.

EU-27 = European Union; GDP = gross domestic product; GERD = gross domestic expenditures on R&D; OECD = Organisation for Economic Co-operation and Development; PPP = purchasing power parity.

^a 2021 or most recent year with GERD data available.**Note(s):**

Regions, countries, or economies without 2021 data have the most recent data year shown in parentheses next to their name. Data for U.S. GERD differ slightly from the U.S. total R&D data tabulated elsewhere in this report. For better consistency with international standards, U.S. GERD includes federal capital funding for federal intramural and nonprofit R&D, in addition to what is reported as U.S. total R&D. Some data are preliminary and may be revised later. Foreign currencies are converted by OECD to U.S. dollars using PPP.

Source(s):National Center for Science and Engineering Statistics, National Patterns of R&D Resources (2020–21 edition); OECD, *Main Science and Technology Indicators*, September 2023, https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB.*Science and Engineering Indicators*

Table SRD-2

GERD for selected region, country, or economy, by performing sector and source of funds: 2021 or most recent year

(Billions of current U.S. PPP dollars and percent)

Region, country, or economy	GERD (PPP US\$billions)	R&D performing sector: Share of total (percent)				R&D source of funds: Share of total (percent)			
		Business	Government	Higher education	Private nonprofit ^a	Business	Government	Other domestic	Rest of the world
Australia (2019)	24.1	51.0	9.5	35.7	3.7	NA	NA	NA	NA
Austria	17.5	68.9	7.5	23.1	0.5	53.0	28.5	1.3	17.2
Belgium	23.4	74.7	8.6	16.2	0.5	64.4	17.3	3.1	15.2
Canada	34.4	55.0	6.9	37.7	0.4	44.0	30.9	15.0	10.1
Chile (2020)	1.6	35.6	11.1	47.6	5.8	34.7	39.3	23.9	2.1
Colombia (2020)	2.2	51.6	6.2	21.3	20.8	53.4	25.0	16.4	5.2
Costa Rica	0.3	31.7	9.8	58.4	0.1	29.3	46.8	21.0	2.9
Czechia	9.6	62.8	16.7	20.3	0.3	36.1	32.3	1.1	30.5
Denmark ^b	10.7	62.1	3.4	34.1	0.4	59.2	28.7	6.5	5.6
Estonia	1.0	55.8	9.3	33.6	1.2	50.9	37.0	1.6	10.5
Finland	9.1	68.8	7.3	23.1	0.8	58.1	25.6	2.3	14.0
France	77.2	65.7	11.7	20.5	2.1	55.4	32.5	4.4	7.7
Germany	153.7	66.9	14.8	18.3	NA	62.8	30.0	0.3	6.9
Greece	4.9	47.1	22.3	30.1	0.6	38.3	44.5	2.9	14.4
Hungary	5.9	75.5	10.2	13.8	NA	50.6	35.1	0.6	13.8
Iceland	0.6	71.7	2.8	25.5	NA	48.8	25.0	4.6	21.5
Ireland	6.1	80.5	3.5	16.0	NA	55.5	16.8	1.5	26.3
Israel ^c	22.9	91.0	1.1	7.1	0.8	40.0	8.9	0.8	50.2
Italy	40.1	60.2	14.0	24.0	1.9	53.9	35.1	2.1	8.8
Japan	177.4	78.6	8.4	11.9	1.2	78.1	15.5	5.9	0.6
Latvia	0.5	37.3	18.4	44.3	NA	33.5	33.9	2.2	30.4
Lithuania	1.4	49.2	15.7	35.1	NA	36.1	29.8	2.9	31.3
Luxembourg	0.9	50.6	24.4	25.0	NA	44.2	47.0	1.7	7.1
Mexico (2017)	8.1	22.5	26.2	50.2	1.1	19.1	76.8	3.3	0.9
Netherlands	25.7	66.1	5.5	28.5	NA	56.5	30.7	2.5	10.3
New Zealand	3.6	59.0	17.1	23.9	NA	50.1	31.6	10.4	8.0
Norway	8.6	53.9	13.2	33.0	NA	43.4	46.6	1.9	8.1
Poland	20.7	63.1	2.0	34.7	0.2	51.0	37.4	3.5	8.2
Portugal	6.4	59.7	4.7	33.3	2.3	53.7	35.6	4.4	6.3
Slovakia	1.7	56.0	18.5	25.4	0.0	45.7	37.9	2.5	13.9
Slovenia	2.0	73.3	13.5	12.3	0.8	48.7	24.3	0.6	26.4
South Korea	119.6	79.1	9.8	9.1	2.0	76.1	22.8	0.8	0.3
Spain	27.6	56.2	16.9	26.6	0.3	50.2	37.5	4.8	7.5
Sweden	21.4	72.4	4.4	23.0	0.1	60.7	23.3	4.1	11.7
Switzerland	22.2	68.3	0.9	28.2	2.6	65.9	26.8	1.8	5.5

Table SRD-2

GERD for selected region, country, or economy, by performing sector and source of funds: 2021 or most recent year

(Billions of current U.S. PPP dollars and percent)

Region, country, or economy	GERD (PPP US\$billions)	R&D performing sector: Share of total (percent)				R&D source of funds: Share of total (percent)			
		Business	Government	Higher education	Private nonprofit ^a	Business	Government	Other domestic	Rest of the world
Turkey	36.2	61.3	4.5	34.2	NA	54.6	27.5	16.5	1.5
United Kingdom	97.8	70.9	5.1	22.5	1.5	58.5	19.4	11.4	10.6
United States ^d	806.0	77.6	8.3	10.4	3.7	67.9	19.9	5.5	6.7
Total OECD	1,832.1	73.0	8.9	15.8	2.3	64.6	23.3	5.0	7.1
EU-27	474.1	65.6	11.6	22.0	0.8	57.0	30.8	2.4	9.9
Non-OECD									
Argentina	5.6	39.1	38.0	21.7	1.2	21.1	58.5	2.1	18.3
China	667.6	76.9	15.3	7.8	NA	78.0	19.0	NA	0.2
Romania	3.3	60.4	30.0	9.2	0.3	55.2	31.6	0.6	12.6
Russia (2020)	48.0	56.6	32.8	9.8	0.7	29.2	67.8	1.2	1.8
Singapore (2020)	12.4	63.4	12.3	24.2	NA	58.3	34.3	3.0	4.4
South Africa (2020)	4.8	30.0	24.3	41.1	4.7	26.9	56.3	3.5	13.3
Taiwan	55.6	84.3	8.8	6.9	0.1	84.2	15.1	0.6	0.1

NA = not available.

EU-27 = European Union; GERD = gross domestic expenditures on R&D; OECD = Organisation for Economic Co-operation and Development; PPP = purchasing power parity.

^a The private nonprofit sector comprises all nonprofit institutions serving households except those classified as part of the higher education sector.^b R&D performing sector data for Denmark are for 2021. R&D source of fund data are for 2019.^c R&D performing sector data for Israel are for 2021. R&D source of fund data are for 2020.^d Data for U.S. GERD differ slightly from the U.S. total R&D data tabulated elsewhere in this report. For better consistency with international standards, U.S. GERD includes federal capital funding for federal intramural and nonprofit R&D in addition to what is reported as U.S. total R&D. The data for U.S. funding from the rest of the world include funding for business R&D and academic R&D.**Note(s):**

Regions, countries, or economies without 2021 data have the most recent data year shown in parentheses next to their name. Some data are preliminary and may be revised later. Percentages may not add to 100% because of rounding. Germany's nonprofit sector expenditures are included in data for other performing sectors. Classification of sectors follows OECD surveys. U.S. data have been adjusted for international comparability.

Source(s):National Center for Science and Engineering Statistics, National Patterns of R&D Resources (2020–21 edition); OECD, *Main Science and Technology Indicators*, September 2023, https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB.

Table SRD-3

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

(Millions of U.S. dollars)

Industry	NAICS code	Company size (domestic employees)										
		All companies	10–19 ^a	20–49	50–99	100–249	250–499	500–999	1,000–4,999	5,000–9,999	10,000–24,999	25,000 or more
All industries	21–23, 31–33, 42–81	602,499	5,477	15,061	14,540	24,023	23,932	27,432	94,615	62,817	104,607	229,995
Manufacturing industries	31–33	326,060	1,898	7,104	7,841	11,861	13,782	15,336	48,714	38,038	74,022	107,464
Food	311	5,266	3	89	223	234	171	299	569	519	2,225	934
Beverage and tobacco products	312	1,247	3	15	23	26	19	18	175	305	66	595
Textile, apparel, and leather products	313–16	829	*	23	34	65	19	54	182	209	242	0
Wood products	321	444	179	0 - 50	11	12	7	12	73	104	0 - 50	0
Paper	322	1,139	5	5	6	32	28	19	197	78	349	420
Printing and related support activities	323	204	1	6	26	24	25	3	13	28	78	0
Petroleum and coal products	324	957	3	4	42	15	19	33	23	73	124	622
Chemicals	325	109,490	736	3,258	3,839	5,448	7,703	5,516	15,920	10,896	35,401	20,773
Basic chemicals	3251	2,713	5	66	74	250	146	154	931	657	430	0
Resin, synthetic rubber, and artificial synthetic fibers and filaments	3252	1,389	6	20	28	101	82	53	170	0	616	313
Pesticide, fertilizer, and other agricultural chemicals	3253	1,157	3	21	30	33	0 - 103	0 - 129	535	20 - 65	247 - 518	0
Pharmaceuticals and medicines	3254	100,220	690	3,088	3,586	4,862	7,336	5,097	13,515	9,911	33,022	19,114
Soap, cleaning compound, and toilet preparations	3256	2,740	0 - 35	21	35	110	35	86	376	264 - 307	551	1,224
Paint, coating, adhesive, and other chemicals	3255, 3259	1,271	0 - 35	44	85	92	3 - 107	0 - 129	394	0	262 - 533	123
Plastics and rubber products	326	3,144	25	93	110	192	233	244	921	692	367	266
Nonmetallic mineral products	327	1,533	12	47	85	64	23	179	48	95	981	0
Primary metals	331	912	0	18	67	72	29	32	249	418	27	0
Fabricated metal products	332	4,291	310	865	330	705	419	345	970	170	177	0
Machinery	333	17,730	104	673	803	1,053	714	754	2,263	3,801	4,742	2,823
Agricultural implement	33311	1,867	0 - 87	28	0 - 663	62	0 - 613	63	167	531	0	0 - 1,019
Semiconductor machinery	333242	5,349	3	30	66	76	53	315	832	1,735	2,239	0
Engine, turbine, and power transmission equipment	3336	1,374	5	24	43	95	43	42	51	423	648	0
Other machinery	other 333	9,140	9 - 98	590	31 - 696	819	6 - 620	335	1,213	1,111	1,855	1,804 - 2,824
Computer and electronic products	334	101,063	261	1,170	1,140	1,565	2,891	3,629	13,343	14,349	14,666	48,047
Communications equipment	3342	12,557	0 - 74	0 - 131	145	0 - 937	0 - 568	0 - 1,000	2,416	0 - 4,116	0	3,171 - 9,998
Semiconductor and other electronic components	3344	47,396	93	580	65 - 612	0 - 937	1,766	1,622	6,387	6,322	13,381	15,693 - 17,182
Navigational, measuring, electromedical, and control instruments	3345	13,644	96	460	385	629	558	1,007	1,444	3,913	353	4,800
Electromedical, electrotherapeutic, and irradiation apparatus	334510, 334517	3,087	30	219	130	253	168	437	155	1,695	0	0
Search, detection, navigation, guidance, aeronautical, and nautical system and instruments	334511	5,301	14	92	22 - 97	164	102	0 - 495	227	0 - 2,219	0	2,044 - 4,683
Other measuring and controlling devices	other 3345	5,256	53	148	157 - 234	212	288	75 - 571	1,061	0 - 2,219	353	117 - 2,757
Other computer and electronic products	other 334	27,465	0 - 74	0 - 131	0 - 546	0 - 794	0 - 568	0 - 1,001	3,097	0 - 4,116	932	16,205 - 23,437
Electrical equipment, appliances, and components	335	5,494	78	129	288	374	264	843	1,907	582	1,028	0
Transportation equipment	336	50,760	37	225	290	1,099	594	1,961	7,804	2,332	8,793	27,625

Table SRD-3

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

(Millions of U.S. dollars)

Industry	NAICS code	Company size (domestic employees)											
		All companies	10–19 ^a	20–49	50–99	100–249	250–499	500–999	1,000–4,999	5,000–9,999	10,000–24,999	25,000 or more	
Motor vehicles, bodies, trailers, and parts	3361–63	26,391	17	53	120	467	297	1,167	5,615	1,385	4,405	12,866	
Aerospace products and parts	3364	21,468	i 19	131	102	551	266	577	i 1,801	635	4,269	13,117	i
Aircraft, aircraft engine, and aircraft parts	336411–13	19,845	i 0 - 20	122	96	299	28 - 264	341 - 578	i 680	635	4,033 - 4,270	13,117	i
Guided missile, space vehicle, and related parts	336414–15, 336419	1,623	0 - 20	9	6	252	i 2 - 238	0 - 235	1,121	0	0 - 235	0	
Military armored vehicle, tank, and tank components	336992	21 - 25	0	0 - 6	4	5	0	11	0	0	0	0	
Other transportation	other 336	2,875 - 2,880	1	34 - 42	65	75	30	206	389	313	119	i 1,642	
Furniture and related products	337	426	2	r 9	12	67	20	17	110	178	11	0	
Miscellaneous	339	21,133	140	417 - 484	512	814	604	1,377	3,946	3,208	4,687 - 4,753	5,358	
Medical equipment and supplies	3391	18,438	103	330	398	562	408	918	2,780	3,177	4,521	5,242	
Other miscellaneous manufacturing	3399	2,695	36	87 - 154	114	252	196	459	1,167	32	166 - 233	116	
Nonmanufacturing industries	21–23, 42–81	276,439	3,579	7,957	6,699	12,162	10,150	12,096	45,901	24,779	30,585	i 122,530	
Mining, quarrying, oil and gas extraction, and support activities	21	1,260 - 1,334	4	144	r 12 - 107	i 94	i 283	59	i 322	i 0 - 94	324	0	
Utilities	22	168 - 17,997	11	3 - 168	0	*	0	0 - 279	1 - 1,608	11	0 - 529	27 - 17,969	i
Wholesale trade	42	1,745 - 1,855	i 172	394	263	512	i 215	i 85	i 0 - 111	i 4	i 25	i 78	i
Electronic shopping and electronic auctions	454111–12	5,936 - 24,040	i 9	23	r 20	r 29	109	46	29	0 - 2,839	0 - 529	2,300 - 22,477	i
Transportation and warehousing	48–49	7,208	0	163	r 27	46	96	57	2,711	0 - 1,869	2,243	i 0 - 1,869	
Information	51	147,855	746	1,686	1,950	4,094	4,589	5,832	27,722	9,872	7,846	83,517	
Publishing	511	39,152	388	690	5 - 639	1,832	1,165	1,172	8,633	3,235	1,240 - 1,880	20,156	
Newspaper, periodical, book, and directory publishers	5111	103	0	34	r 6	3	60	i 1	0	0	0	0	
Software publishers	5112	39,049	388	656	0 - 633	1,829	1,105	1,171	8,633	3,235	1,240 - 1,880	20,156	
Telecommunications	517	3,835	46	r 94	35	106	13	178	50	31	31	3,252	
Data processing, hosting, and related services	518	45,192	298	834	1,259	1,825	3,221	3,076	14,090	5,665	4,465	i 10,459	
Other information	other 51	59,676	14	68	19 - 652	331	190	1,407	4,950	941	1,469 - 2,109	49,650	
Finance and insurance	52	20,947	115	351	r 111	292	335	1,179	7,147	3,042	i 2,740	5,636	
Real estate and rental and leasing	53	2,096	*	5	4	25	11	37	3 - 1,609	0 - 2,014	0	0 - 2,014	
Lessors of nonfinancial intangible assets (except copyrighted works)	533	5 - 8	0	0	1 - 4	0	0	0	4	0	0	0	
Other real estate and rental and leasing	other 53	2,088 - 2,091	*	5	0 - 4	25	11	37	0 - 1,605	0 - 2,014	0	0 - 2,014	
Professional, scientific, and technical services	54	66,496	2,390	4,979	3,957	6,016	4,017	3,983	5,353	8,219	i 16,880	i 10,701	
Architectural, engineering, and related services	5413	4,560	233	772	586	809	468	227	683	76	705	0	
Computer systems design and related services	5415	20,409	892	1,982	1,297	1,202	1,412	1,411	1,520	1,455	4,578	4,661	
Scientific research and development services	5417	34,142	i 1,134	1,895	1,658	3,030	1,617	2,050	2,478	i 6,640	i 9,778	i 3,863	
Research and development in nanotechnology	541713	228	69	73	42	i 44	i 0	0	0	0	0	0	
Research and development in biotechnology (except nanobiotechnology)	541714	9,039	355	462	591	944	124	231	0	0	2,469	3,863	
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	24,312	i 704	1,342	1,024	1,987	1,467	1,820	2,471	i 6,188	i 7,308	i 0	

Table SRD-3

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

(Millions of U.S. dollars)

Industry	NAICS code	Company size (domestic employees)										
		All companies	10–19 ^a	20–49	50–99	100–249	250–499	500–999	1,000–4,999	5,000–9,999	10,000–24,999	25,000 or more
Research and development in the social sciences and humanities	541720	563	6	17	0	56	26	0	7	452	0	0
Other professional, scientific, and technical services	other 54	7,385	132	331	415	974	520	294	672	49	1,819	2,178
Health care services	621–23	2,060 - 2,138	12	45 - 132	106	285	318	535	648	9	1	97
Other nonmanufacturing	23, 44–45 (excluding 454111–12), 55–56, 624, 71–72, 81	2,564 - 3,199	118 r	2 - 167	150 - 253	768 r	177	6 - 288	362	786	0 - 529	0 - 831

* = 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 (BERD) Survey, 2021.

Science and Engineering Indicators

Table SRD-4

Domestic R&D performed by the company, by selected industry and employment size, for companies with 1–9 employees: 2021

(Number and thousands of U.S. dollars)

Industry	NAICS code	All companies		1–4 employees		5–9 employees	
		Companies (number)	Amount	Companies (number)	Amount	Companies (number)	Amount
All selected industries	31–33, 42, 51, 5413, 5415, 5417	15,339	6,124,669	9,611	2,590,797	5,727	3,533,871
Manufacturing industries	31–33	2,029	747,124	941	326,147	1,089	420,977
Food, beverage, and tobacco products	311–12	71 r	18,270 r	16	7,327	54 r	10,944 r
Textile, apparel, and leather products	313–16	20	7,096 r	20	7,096 r	0	0
Wood products	321	0	134	0	134	0	0
Paper	322	0	0	0	0	0	0
Printing and related support activities	323	0	0	0	0	0	0
Petroleum and coal products	324	2	739	0	0	2	739
Chemicals	325	320	132,255	164	65,465	156	66,790
Pharmaceuticals and medicines	3254	133	96,666	91	53,353	43	43,313
Chemicals, excluding pharmaceuticals	other 325	186	35,589	74	12,112	112	23,477
Plastics and rubber products	326	22	6,427	11	2,453 r	13	3,974
Nonmetallic mineral products	327	16 r	3,638 r	15 r	3,187 r	3 r	450
Primary metals	331	19 r	2,117	0	508	18 r	1,609 r
Fabricated metal products	332	70 r	11,983 r	34 r	6,702 r	37 r	5,281 r
Machinery	333	231	64,109	127	28,854	103	35,255
Computer and electronic products	334	724	279,203	337	88,957	387	190,246
Semiconductor and other electronic components	3344	181	71,280	90	30,231	90	41,049
Navigational, measuring, electromedical, and control instruments	3345	394	164,799	167	42,347	226	122,452
Other computer and electronic products	other 334	150	43,124	83	16,379	69	26,745 r
Electrical equipment, appliances, and components	335	145	40,032	50	8,370	94 r	31,662
Transportation equipment	336	78	33,911	42	19,845	37	14,066
Aerospace products and parts	3364	34	13,003	17	7,688 r	16	5,315
Other transportation equipment	other 336	46	20,908	25 r	12,157 r	22	8,752
Furniture and related products	337	4	1,471 r	2 r	1,094 r	3 r	377
Miscellaneous manufacturing	339	306	145,741	118	86,156 r	187	59,584
Selected nonmanufacturing industries	42, 51, 5413, 5415, 5417	13,312	5,377,544	8,671	2,264,650	4,639	3,112,894
Wholesale trade	42	546	143,063	207	35,526	339	107,536
Information	51	2,049	756,657	1,011	214,033	1,038	542,624
Software publishers	5112	1,509	535,950	742	151,758	766	384,192
Information, excluding software publishers	51 less 5112	541	220,707	268	62,275	272	158,432
Architectural, engineering, and related services	5413	1,952	606,186	1,275	244,629	676	361,557
Computer systems design and related services	5415	5,315	1,616,190	3,960	786,257	1,357	829,933
Scientific research and development services	5417	3,447	2,255,449	2,218	984,204	1,230	1,271,244

Table SRD-4

Domestic R&D performed by the company, by selected industry and employment size, for companies with 1–9 employees: 2021

(Number and thousands of U.S. dollars)

Industry	NAICS code	All companies		1–4 employees		5–9 employees	
		Companies (number)	Amount	Companies (number)	Amount	Companies (number)	Amount
Research and development in nanotechnology	541713	349	172,582	197	63,725	153	108,858
Research and development in biotechnology (except nanobiotechnology)	541714	1,085	868,580	712	421,066	374	447,514
Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	1,970	1,193,678	1,280	483,287	688	710,391
Social sciences and humanities research and development	541720	42	12,047	26	7,566	16	4,481

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Detail may not add to total because of rounding or unavailable NAICS detail for select records beyond the four-digit industry classification. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States that performed or funded R&D.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey (ABS): Data Year 2021.

Science and Engineering Indicators

Table SRD-5

U.S. business R&D performance, by state and source of funds: 2021

(Millions of dollars)

State	All R&D	Paid for by the company		Paid for by others	
United States	602,499	527,804		74,695	
Alabama	2,910	1,383		1,528	i
Alaska	207	188	i	18	
Arizona	9,386	6,947		2,440	i
Arkansas	497	452		45	
California	211,615	199,157		12,458	
Colorado	8,098	7,213		886	
Connecticut	8,429	6,887		1,543	
Delaware	3,592	2,137		1,455	
District of Columbia	744	652		92	
Florida	9,688	7,545		2,143	
Georgia	6,448	5,249		1,199	i
Hawaii	409	372	i	38	
Idaho	2,258	2,203		54	
Illinois	16,485	15,398		1,087	
Indiana	9,514	7,888	i	1,627	
Iowa	3,045	2,338		707	i
Kansas	2,748	1,960		788	i
Kentucky	1,486	897		590	
Louisiana	530	444		86	
Maine	499	444		55	
Maryland	6,432	4,550		1,882	
Massachusetts	39,749	33,937		5,812	
Michigan	22,381	19,420		2,962	
Minnesota	8,248	7,754		494	
Mississippi	343	307		36	
Missouri	7,060	4,927		2,133	i
Montana	261	237		24	
Nebraska	1,067	1,004		62	
Nevada	1,033	757		276	
New Hampshire	3,183	1,461		1,723	
New Jersey	25,049	20,091		4,958	
New Mexico	1,693	1,351		342	
New York	26,319	23,939		2,379	
North Carolina	15,490	9,812		5,678	i
North Dakota	343	330		12	
Ohio	11,545	7,814		3,730	
Oklahoma	1,056	969		87	
Oregon	11,292	10,954		338	
Pennsylvania	17,555	14,541		3,014	i
Rhode Island	837	689		149	i
South Carolina	1,857	1,601		256	
South Dakota	221	213		8	
Tennessee	2,776	1,802	i	974	i
Texas	28,264	24,495		3,770	i
Utah	3,962	3,730		232	
Vermont	456	434		22	
Virginia	8,179	6,330		1,849	
Washington	49,083	47,644		1,440	
West Virginia	522	435	i	86	
Wisconsin	6,781	5,723		1,058	

Table SRD-5**U.S. business R&D performance, by state and source of funds: 2021**

(Millions of dollars)

State	All R&D	Paid for by the company		Paid for by others	
Wyoming	93	88		5	i
Undistributed funds ^a	780	712		67	

i = more than 50% of the estimate is a combination of imputation and reweighting to account for nonresponse.

^a Includes data reported that were not allocated to a specific state by multi-establishment companies. For single-establishment companies, data reported were allocated to the state in the address used to mail the survey form.

Note(s):

Data are for companies with 10 or more domestic employees. All R&D is the cost of domestic R&D paid for by the respondent company and others outside of the company and performed by the respondent company. This table excludes data for federally funded research and development centers.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, Business Enterprise Research and Development (BERD) Survey, 2021.

Science and Engineering Indicators

Table SRD-6

U.S. business R&D performed, by industry and select technology focus: 2021

(Millions of U.S. dollars)

Industry	NAICS code	Domestic R&D	Software products and embedded software	Biotechnology	Nanotechnology	Artificial intelligence
All industries	21-23, 31-33, 42-81	602,499	257,030	102,513	32,718	28,875
Manufacturing industries	31-33	326,060	50,012	85,389	27,805	10,716
Food	311	5,266	279	522	24	48
Beverage and tobacco products	312	1,247	1	23	6	0
Textile, apparel, and leather products	313-16	829	29	9	1	16
Wood products	321	444	149	4	0	14
Paper	322	1,139	65	2	5	32
Printing and related support activities	323	204	120	0	0	14
Petroleum and coal products	324	957	17	107	0	0
Chemicals	325	109,490	1,442	79,551	619	448
Basic chemicals	3251	2,713	11	310	218	15
Resin, synthetic rubber, and artificial synthetic fibers and filaments	3252	1,389	55	109	58	18
Pesticide, fertilizer, and other agricultural chemicals	3253	1,157	63.00	109	49	1
Pharmaceuticals and medicines	3254	100,220	1,290	78,889	292	397
Soap, cleaning compound, and toilet preparation	3256	2,740	26.00	131	1	1
Paint, coating, adhesive, and other chemicals	3255, 3259	1,271	56	6	51	19
Plastics and rubber products	326	3,144	181	82	114	6
Nonmetallic mineral products	327	1,533	39	1	11	37
Primary metals	331	912	149	4	5	14
Fabricated metal products	332	4,291	169	225	30	72
Machinery	333	17,730	2,392	114	2,318	834
Agricultural implement	33311	1,867	106	29	0	54
Semiconductor machinery	333242	5,349	768	54	2,279	581
Engine, turbine, and power transmission equipment	3336	1,374	156	0	1	27
Other machinery	other 333	9,140	1,362	32	38	172
Computer and electronic products	334	101,063	32,906	2,344	23,907	6,874
Communications equipment	3342	12,557	7,283	0	47	138
Semiconductor and other electronic components	3344	47,396	9,270	41	23,549	4,115
Navigational, measuring, electromedical, and control instruments	3345	13,644	4,081	2,277	204	511
Electromedical, electrotherapeutic, and irradiation apparatus	334510, 334517	3,087	482	1,247	50	195
Search, detection, navigation, guidance, aeronautical, and nautical system and instrument	334511	5,301	2,086	364	42	203
Other measuring and controlling device	other 3345	5,256	1,512	665	113	113
Other computer and electronic products	other 334	27,465	12,271	27	108	2,174
Electrical equipment, appliances, and components	335	5,494	1,200	54	16	321

Table SRD-6

U.S. business R&D performed, by industry and select technology focus: 2021

(Millions of U.S. dollars)

Industry	NAICS code	Domestic R&D	Software products and embedded software	Biotechnology	Nanotechnology	Artificial intelligence
Transportation equipment	336	50,760	7,717 i	9	226 i	1,525
Motor vehicles, bodies, trailers, and parts	3361-63	26,391	4,254	0	3	1,147
Aerospace products and parts	3364	21,468 i	3,363 i	9	223 i	373 i
Aircraft, aircraft engine, and aircraft parts	336411-13	19,845 i	3,317 i	0	223 i	372 i
Guided missile, space vehicle, and related parts	336414-15, 336419	1,623	46	9	*	i 1
Military armored vehicle, tank, and tank component	336992	23	0	0	0	0
Other transportation	other 336	2,878	101	0	1	5
Furniture and related products	337	426	105 i	0	0	1 i
Miscellaneous	339	21,133	3,208	2,347	530	495
Medical equipment and supplies	3391	18,438	3,057	2,338	477	481
Other miscellaneous manufacturing	3399	2,695	152	9	53 i	14
Nonmanufacturing industries	21-23, 42-81	276,439	207,017 i	17,123 i	4,913 i	18,159 i
Mining, quarrying, oil and gas extraction, and support activities	21	1,297	245 i	6.00	2	16
Utilities	22	9,083	8,985	2	0	23
Wholesale trade	42	1,800 i	229 i	72 i	2 i	6 i
Electronic shopping and electronic auctions	454111-12	14,988 i	12,017 i	0	0	885 i
Transportation and warehousing	48-49	7,208	3,600	8 i	0	885
Information	51	147,855	134,216 i	198	3,417 i	9,982 i
Publishing	511	39,152	32,932	110	3,365 i	2,364
Newspaper, periodical, book, and directory publishers	5111	103	5	0	0	1
Software publishers	5112	39,049	32,926	110	3,365 i	2,364
Telecommunications	517	3,835	1,503	* i	0	338
Data processing, hosting, and related services	518	45,192	43,677	87	51	2,901 i
Other information	other 51	59,676	56,104 i	1	2	4,379 i
Finance and insurance	52	20,947	18,558	4	0	853
Real estate and rental and leasing	53	2,096	1,922	2	0	885
Lessors of nonfinancial intangible assets (except copyrighted works)	533	7	1	2	0	0
Other real estate and rental and leasing	other 53	2,090	1,921	0	0	885
Professional, scientific, and technical services	54	66,496	25,158 i	15,504 i	1,458 i	5,487 i
Architectural, engineering, and related services	5413	4,560	746	119	37 i	171
Computer systems design and related services	5415	20,409	12,875	39 i	758 i	1,717 i
Scientific R&D services	5417	34,142 i	5,733 i	15,190 i	518 i	2,739 i
R&D in nanotechnology	541713	228	9 i	70 i	156 i	13 i
R&D in biotechnology (except nanobiotechnology)	541714	9,039	81	6,570	10	19

Table SRD-6

U.S. business R&D performed, by industry and select technology focus: 2021

(Millions of U.S. dollars)

Industry	NAICS code	Domestic R&D		Software products and embedded software		Biotechnology		Nanotechnology		Artificial intelligence	
R&D in the physical, engineering, and life sciences (except nanotechnology and biotechnology)	541715	24,312	i	5,614	i	8,550	i	353	i	2,665	i
R&D in the social sciences and humanities	541720	563		29		0		0		42	
Other professional, scientific, and technical services	other 54	7,385		5,804	i	156	i	144	i	860	i
Health care services	621-23	2,099		318	i	1,325		34		27	
Other nonmanufacturing	na	2,882		1,573		8		0		885	

* = amount < \$500,000; i = more than 50% of the estimate is a combination of imputation and reweighting to account for nonresponse; na = not applicable; r = relative standard error is more than 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):

Data are for companies with 10 or more domestic employees. 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. Companies could report R&D in one, more than one, or no application area.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, Business Enterprise Research and Development (BERD) Survey, 2021.

Science and Engineering Indicators

Table SRD-7

Federal obligations for research, by agency and field of R&D: FY 2022

(Thousands of dollars)

Agency	Total	Computer and information sciences	Geosciences, atmospheric sciences, and ocean sciences	Life sciences	Mathematics and statistics	Physical sciences	Psychology	Social sciences	Engineering	Other fields
All agencies	93,807,126	4,830,950	5,565,684	41,609,665	904,053	12,099,233	4,587,769	1,916,873	15,496,600	6,796,301
Departments										
Department of Agriculture	2,860,100	19,399	24,172	2,256,782	8,816	133,362	10,632	192,417	108,014	106,506
Agricultural Marketing Service	9,865	-	-	9,865	-	-	-	-	-	-
Agricultural Research Service	1,485,517	1,931	6,536	1,364,744	-	95,370	-	3,565	13,370	-
Animal and Plant Health Inspection Service	23,598	-	-	23,598	-	-	-	-	-	-
Economic Research Service	87,794	-	-	-	-	-	-	87,794	-	-
Forest Service	245,837	-	4,980	189,548	-	6,467	-	35,687	9,155	-
National Agricultural Statistics Service	6,126	6,126	-	-	-	-	-	-	-	-
National Institute of Food and Agriculture	985,983	11,342	12,656	653,648	8,816	31,524	10,632	65,370	85,489	106,506
Natural Resources Conservation Service	15,379	-	-	15,379	-	-	-	-	-	-
Department of Commerce	1,689,980	248,546	624,857	91,477	12,909	282,550	-	87,589	325,010	17,041
Census Bureau	150,213	72,996	-	-	7,685	-	-	69,532	-	-
National Institute of Standards and Technology	780,207	171,527	10,153	34,468	5,023	254,588	-	796	303,652	-
National Oceanic and Atmospheric Administration	748,259	4,023	614,704	57,009	201	27,962	-	17,260	10,058	17,041
National Telecommunications and Information Administration	11,300	-	-	-	-	-	-	-	11,300	-
Department of Defense	10,165,798	1,814,420	546,911	937,656	109,971	418,127	103,715	47,072	4,864,353	1,323,572
Defense Advanced Research Projects Agency	1,798,258	994,693	94,937	256,577	5,188	60,419	17,241	14,435	326,379	28,389
Defense Health Agency	145,348	-	-	144,769	-	-	-	-	-	579
Department of the Air Force	2,925,568	55,457	-	17,961	6,260	60,131	402	2,454	2,353,740	429,163
Department of the Army	1,803,812	180,524	12,811	302,066	40,193	43,501	67,052	2,461	629,192	526,012
Department of the Navy	1,738,918	170,188	410,770	65,551	11,250	102,629	11,280	10,889	772,284	184,076
Space Force	175,192	-	-	-	-	-	-	-	175,192	-
Other defense agencies	1,578,702	413,558	28,393	150,734	47,080	151,446	7,741	16,833	607,566	155,351
Department of Education	299,085	-	-	-	-	-	-	-	-	299,085
Department of Energy	11,108,630	1,626,887	343,692	539,457	67,837	5,133,287	-	-	2,931,097	466,374
Advanced Research Projects Agency–Energy	201,482	6,122	823	10,697	-	23,559	-	-	160,281	-
Electricity Delivery and Energy Reliability	61,315	-	-	-	-	-	-	-	61,315	-
Energy Efficiency and Renewable Energy	678,802	-	-	-	-	-	-	-	678,802	-
Environmental Management	11,808	-	11,808	-	-	-	-	-	-	-
Fossil Energy	558,637	-	53,071	-	-	88,823	-	-	416,744	-
National Nuclear Security Administration	2,793,813	588,894	6,009	2,073	19,593	1,377,758	-	-	793,487	6,000
Defense Programs	2,336,964	580,794	-	-	-	1,159,282	-	-	596,888	-
Naval Nuclear Propulsion Program	191,110	-	-	-	-	-	-	-	191,110	-
Office of Defense Nuclear Nonproliferation	265,739	8,100	6,009	2,073	19,593	218,476	-	-	5,488	6,000
Nuclear Energy	657,246	-	-	-	-	-	-	-	657,246	-

Table SRD-7

Federal obligations for research, by agency and field of R&D: FY 2022

(Thousands of dollars)

Agency	Total	Computer and information sciences	Geosciences, atmospheric sciences, and ocean sciences	Life sciences	Mathematics and statistics	Physical sciences	Psychology	Social sciences	Engineering	Other fields
Office of Cybersecurity, Energy Security, and Emergency Response	21,377	21,377	-	-	-	-	-	-	-	-
Office of Science	6,124,150	1,010,493	271,982	526,687	48,244	3,643,147	-	-	163,223	460,374
Department of Health and Human Services	48,271,429	38,708	610,190	33,993,520	426,855	1,064,784	4,416,187	1,148,584	3,395,120	3,177,481
Administration for Children and Families	5,228	-	-	-	-	-	-	5,228	-	-
Administration for Community Living	106,731	-	-	-	-	-	-	106,731	-	-
Agency for Healthcare Research and Quality	314,345	36,189	-	176,074	8,400	-	7,799	20,813	803	64,267
Agency for Toxic Substances and Disease Registry	11,777	-	11,777	-	-	-	-	-	-	-
Biomedical Advanced Research and Development Authority	2,644,021	-	-	2,644,021	-	-	-	-	-	-
Centers for Disease Control and Prevention	550,366	2,519	-	452,038	275	4,395	924	39,598	31,670	18,947
Centers for Medicare and Medicaid Services	419,105	-	-	419,105	-	-	-	-	-	-
Food and Drug Administration	560,910	-	-	560,910	-	-	-	-	-	-
Health Resources and Services Administration	34,884	-	-	34,884	-	-	-	-	-	-
National Institutes of Health	43,588,544	-	598,413	29,706,489	418,179	1,060,388	4,407,464	940,696	3,362,647	3,094,268
Office of the Secretary of Health and Human Services	35,517	-	-	-	-	-	-	35,517	-	-
Office of the Assistant Secretary for Planning and Evaluation	35,517	-	-	-	-	-	-	35,517	-	-
Department of Homeland Security	327,816	87,792	20,843	10,320	-	38,001	-	-	112,196	58,664
Coast Guard	2,243	563	3	-	-	-	-	-	1,678	-
Countering Weapons of Mass Destruction Office	34,878	7,919	-	5,500	-	21,459	-	-	-	-
Cybersecurity and Infrastructure Security Agency	3,440	2,647	-	-	-	-	-	-	793	-
Science and Technology Directorate	287,005	76,414	20,840	4,820	-	16,542	-	-	109,725	58,664
Secret Service	250	250	-	-	-	-	-	-	-	-
Transportation Security Administration	*	*	-	-	-	-	-	-	-	-
Department of the Interior	785,328	3,431	413,193	308,320	-	7,025	-	28,137	21,318	3,904
Bureau of Indian Affairs	5,000	-	-	5,000	-	-	-	-	-	-
Bureau of Land Management	10,583	-	-	10,583	-	-	-	-	-	-
Bureau of Ocean Energy Management	66,305	3,431	42,477	-	-	4,854	-	11,639	-	3,904
Bureau of Reclamation	17,705	-	-	-	-	-	-	-	17,705	-
Bureau of Safety and Environmental Enforcement	6,056	-	271	-	-	2,172	-	-	3,613	-
Fish and Wildlife Service	35,000	-	-	35,000	-	-	-	-	-	-
Geological Survey	617,457	-	370,444	247,013	-	-	-	-	-	-
National Park Service	27,222	-	-	10,724	-	-	-	16,498	-	-
Department of Justice	102,945	408	-	6,209	266	12,806	2,438	71,399	531	8,887
Bureau of Prisons	2	-	-	-	-	-	-	2	-	-
Federal Bureau of Investigation	8,887	-	-	-	-	-	-	-	-	8,887
Office of Justice Programs	94,056	408	-	6,209	266	12,806	2,438	71,398	531	-
Department of Labor	3,698	-	-	-	-	-	-	3,698	-	-

Table SRD-7

Federal obligations for research, by agency and field of R&D: FY 2022

(Thousands of dollars)

Agency	Total	Computer and information sciences	Geosciences, atmospheric sciences, and ocean sciences	Life sciences	Mathematics and statistics	Physical sciences	Psychology	Social sciences	Engineering	Other fields
Employee Benefits Security Administration	1,910	-	-	-	-	-	-	1,910	-	-
Occupational Safety and Health Administration	1,788	-	-	-	-	-	-	1,788	-	-
Department of State	45,000	-	-	38,000	-	-	-	7,000	-	-
Department of Transportation	808,368	22,104	14,933	26,589	6,347	23,737	21,622	20,930	647,954	24,152
Federal Aviation Administration	260,969	15,467	14,933	7,580	6,347	-	21,622	-	175,577	19,443
Federal Highway Administration	341,879	-	-	-	-	-	-	-	341,879	-
Federal Motor Carrier Safety Administration	21,154	-	-	-	-	21,154	-	-	-	-
Federal Railroad Administration	32,291	-	-	-	-	-	-	-	32,291	-
Federal Transit Administration	11,909	700	-	-	-	-	-	3,107	5,303	2,800
National Highway Traffic Safety Administration	91,739	5,916	-	19,009	-	-	-	17,559	49,255	-
Office of the Secretary of Transportation	24,389	21	-	-	-	-	-	-	24,368	-
Pipeline and Hazardous Materials Safety Administration	24,038	-	-	-	-	2,583	-	265	19,282	1,909
Department of the Treasury	37,082	-	-	-	-	37,082	-	-	-	-
Bureau of Engraving and Printing	37,082	-	-	-	-	37,082	-	-	-	-
Department of Veterans Affairs	1,605,959	-	-	1,605,959	-	-	-	-	-	-
Other agencies										
Administrative Office of the U.S. Courts	1,443	1,443	-	-	-	-	-	-	-	-
Agency for Global Media	8,413	-	-	-	-	-	-	8,413	-	-
Agency for International Development	152,853	-	-	146,214	-	-	-	5,329	-	1,310
Appalachian Regional Commission	804	-	-	-	-	-	-	804	-	-
Consumer Product Safety Commission	165	-	-	-	-	-	-	-	165	-
Environmental Protection Agency	406,371	5,566	167,490	160,543	3,090	9,703	-	2,348	57,632	-
Federal Trade Commission	2,713	-	-	-	-	-	-	2,713	-	-
Library of Congress	512	-	-	-	-	512	-	-	-	-
National Aeronautics and Space Administration	7,304,822	-	1,740,610	100,254	-	3,569,584	-	-	1,847,442	46,931
National Science Foundation	6,896,067	961,874	1,034,143	792,464	267,961	1,326,313	33,174	186,317	1,051,629	1,242,194
Nuclear Regulatory Commission	61,399	372	-	-	-	-	-	-	61,027	-
Patient-Centered Outcomes Research Trust Fund	521,671	-	-	521,671	-	-	-	-	-	-
Postal Service	13,860	-	-	-	-	-	-	-	13,860	-
RESTORE Act Centers of Excellence Research Grants Program	6,960	-	-	-	-	-	-	-	-	6,960
Smithsonian Institution	227,400	-	24,650	74,230	-	42,360	-	25,420	47,500	13,240
Social Security Administration	78,704	-	-	-	-	-	-	78,704	-	-
Tennessee Valley Authority	11,752	-	-	-	-	-	-	-	11,752	-

* = amount greater than \$0 but less than \$50,000.

Note(s):

Because of rounding, detail may not add to total. Only those agencies and subdivisions that had obligations in variables represented by this table appear in the table. FY 2022 obligations include additional funding provided by supplemental COVID-19-related appropriations (e.g., Coronavirus Aid, Relief, and Economic Security [CARES] Act).

Source(s):

National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development, Volume 72, FYs 2022–23.

Science and Engineering Indicators