

Table 5**U.S. R&D expenditures, by type of R&D: Selected years, 1970–2022**

(Billions of current and constant 2017 dollars and percent)

Type of R&D	1970	1980	1990	2000	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021 ^a	2022 ^b
Current \$billions																	
All R&D	26.3	63.2	152.0	267.9	406.6	426.2	433.7	454.2	475.9	494.5	521.7	553.6	604.0	665.6	716.9	789.1	885.6
Basic research	3.6	8.7	23.0	42.0	76.5	73.7	74.0	79.3	82.9	84.4	87.5	90.2	97.9	105.0	111.8	118.6	129.4
Applied research	5.8	13.7	34.9	56.5	78.9	81.7	86.6	88.0	91.6	97.1	109.5	113.3	118.3	130.2	132.5	144.0	159.9
Experimental development	16.9	40.7	94.1	169.4	251.2	270.8	273.1	287.0	301.4	313.0	324.7	350.1	387.8	430.3	472.5	526.4	596.2
Constant 2017 \$billions																	
All R&D	130.1	160.6	256.3	368.5	453.6	465.9	465.4	479.3	493.6	508.1	531.0	553.6	590.5	639.9	680.3	716.0	750.6
Basic research	17.8	22.2	38.8	57.8	85.3	80.6	79.4	83.6	86.0	86.8	89.1	90.2	95.7	101.0	106.1	107.6	109.7
Applied research	28.5	34.9	58.8	77.7	88.0	89.3	93.0	92.8	95.0	99.7	111.4	113.3	115.7	125.2	125.8	130.7	135.6
Experimental development	83.8	103.5	158.6	233.0	280.3	296.0	293.1	302.8	312.6	321.6	330.5	350.1	379.1	413.7	448.4	477.6	505.4
Percent distribution																	
R&D performance																	
All R&D	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Basic research	13.7	13.8	15.2	15.7	18.8	17.3	17.1	17.4	17.4	17.1	16.8	16.3	16.2	15.8	15.6	15.0	14.6
Applied research	21.9	21.7	23.0	21.1	19.4	19.2	20.0	19.4	19.2	19.6	21.0	20.5	19.6	19.6	18.5	18.3	18.1
Experimental development	64.4	64.5	61.9	63.2	61.8	63.5	63.0	63.2	63.3	63.3	62.2	63.2	64.2	64.7	65.9	66.7	67.3
R&D performance by performer																	
Basic research	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Business	15.7	13.8	20.1	16.7	21.4	17.7	18.0	24.6	26.5	25.8	28.6	28.4	29.8	31.0	32.5	34.4	35.8
Federal intramural	15.6	13.9	10.1	9.0	6.7	6.8	7.4	6.7	6.9	7.0	7.0	6.9	7.0	7.0	6.5	5.6	6.1
FFRDCs	8.5	14.8	13.2	9.6	8.7	8.8	7.7	5.3	5.0	4.9	4.8	4.6	4.4	4.4	4.3	4.3	4.1
Nonfederal government	NA	NA	NA	NA	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Higher education	51.6	49.3	48.3	53.0	50.7	53.9	54.0	50.7	48.7	49.2	49.0	49.7	48.3	47.0	45.5	45.6	44.7
Nonprofit organizations	8.5	8.2	8.3	11.7	12.4	12.7	12.8	12.6	12.8	13.0	10.4	10.2	10.4	10.5	11.1	10.1	9.3
Applied research	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Business	57.9	59.5	69.9	69.3	56.9	57.7	58.6	58.0	58.3	58.2	57.4	56.5	56.3	58.5	59.1	61.6	62.7
Federal intramural	23.2	18.5	10.5	10.8	10.2	9.8	9.9	9.4	9.6	9.6	9.0	8.9	9.4	8.7	8.7	7.7	8.3
FFRDCs	5.8	5.5	3.3	3.1	6.6	6.4	6.6	7.8	7.6	7.6	7.0	7.1	7.3	7.1	7.2	7.1	6.7
Nonfederal government	NA	NA	NA	NA	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3
Higher education	7.8	11.8	12.6	11.3	18.2	18.6	17.8	17.8	17.5	17.5	16.9	17.3	17.4	16.5	16.8	16.3	15.6
Nonprofit organizations	5.2	4.6	3.7	5.5	7.4	6.8	6.4	6.4	6.5	6.6	9.3	9.8	9.3	8.8	7.7	6.9	6.3
Experimental development	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Business	80.9	83.1	83.3	90.8	86.7	86.4	87.2	87.8	88.0	88.7	89.8	90.3	90.2	90.5	90.7	91.0	91.6
Federal intramural	13.3	10.0	10.3	5.5	7.5	8.1	7.3	6.9	6.7	6.1	4.9	4.5	4.9	4.9	4.7	4.5	4.3

Table 5**U.S. R&D expenditures, by type of R&D: Selected years, 1970–2022**

(Billions of current and constant 2017 dollars and percent)

Type of R&D	1970	1980	1990	2000	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021 ^a	2022 ^b
FFRDCs	4.7	4.9	3.9	2.1	2.8	2.5	2.5	2.3	2.2	2.3	2.3	2.3	2.2	2.1	2.0	1.9	1.7
Nonfederal government	NA	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Higher education	0.7	1.3	1.5	0.7	2.0	1.9	2.0	2.0	2.0	2.0	2.0	1.9	1.8	1.7	1.6	1.6	1.5
Nonprofit organizations	0.4	0.7	1.0	0.9	1.1	1.1	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.8	0.9	1.0	0.9

NA = not available.

FFRDC = federally funded research and development center.

^a Some data for 2021 are preliminary and may later be revised.^a The data for 2022 include estimates and are likely to later be revised.**Note(s):**

Data throughout the span of time reported here are consistently based on Organisation for Economic Co-operation and Development *Frascati Manual* definitions for basic research, applied research, and experimental development. Prior to 2010, however, some changes had been introduced in the questionnaires of the sectoral expenditure surveys to improve the accuracy of respondents' classification of their R&D by type. Accordingly, small percentage changes in the historical data may not be meaningful.

Source(s):

National Center for Science and Engineering Statistics, National Patterns of R&D Resources (annual series).