

Table 4**U.S. R&D expenditures, by type of R&D: Selected years, 1970–2021**

(Billions of current and constant 2012 dollars and percent)

Type of R&D	1970	1980	1990	2000	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020 ^a	2021 ^b
Current \$billions																
All R&D	26.3	63.2	152.0	267.9	406.6	426.2	433.7	454.3	476.0	494.5	521.7	553.8	604.4	666.2	717.0	791.9
Basic research	3.6	8.7	23.0	42.0	76.4	73.6	73.8	79.1	82.8	84.3	87.3	90.0	97.8	105.1	111.9	118.2
Applied research	5.8	13.7	34.9	56.5	79.0	81.9	86.8	88.2	91.8	97.2	109.7	113.7	118.7	130.7	133.3	144.0
Experimental development	16.9	40.7	94.1	169.4	251.2	270.8	273.1	287.0	301.4	313.0	324.7	350.2	387.9	430.4	471.7	529.7
Constant 2012 \$billions																
All R&D	121.2	149.6	238.7	343.4	422.8	434.2	433.7	446.5	459.2	472.3	493.4	513.9	547.7	593.1	630.1	666.0
Basic research	16.6	20.7	36.2	53.9	79.4	74.9	73.8	77.8	79.9	80.5	82.5	83.5	88.6	93.5	98.3	99.4
Applied research	26.5	32.5	54.8	72.4	82.2	83.4	86.8	86.6	88.5	92.9	103.7	105.5	107.6	116.4	117.2	121.1
Experimental development	78.1	96.4	147.7	217.1	261.2	275.8	273.1	282.0	290.8	299.0	307.1	325.0	351.5	383.2	414.6	445.5
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
Basic research	13.7	13.8	15.2	15.7	18.8	17.3	17.0	17.4	17.4	17.0	16.7	16.2	16.2	15.8	15.6	14.9
Applied research	21.9	21.7	23.0	21.1	19.4	19.2	20.0	19.4	19.3	19.7	21.0	20.5	19.6	19.6	18.6	18.2
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	64.6	65.8	66.9
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
Business	15.7	13.8	20.1	16.7	21.4	17.7	18.0	24.7	26.5	25.9	28.7	28.5	29.9	31.0	32.5	34.6
Federal intramural	15.6	13.9	10.1	9.0	6.7	6.9	7.4	6.7	6.9	7.0	7.0	7.0	7.0	7.0	6.5	5.3
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
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
Higher education	51.6	49.3	48.3	53.0	50.6	53.8	53.9	50.6	48.7	49.1	48.9	49.5	48.1	46.8	45.2	44.4
Nonprofit organizations	8.5	8.2	8.3	11.7	12.4	12.7	12.9	12.6	12.8	13.1	10.5	10.3	10.5	10.8	11.3	11.3
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
Business	57.9	59.5	69.9	69.3	56.8	57.6	58.5	57.9	58.2	58.1	57.3	56.3	56.1	58.3	58.8	61.1
Federal intramural	23.2	18.5	10.5	10.8	10.1	9.8	9.9	9.4	9.6	9.6	8.9	8.9	9.4	8.6	8.6	7.4
FFRDCs	5.8	5.5	3.3	3.1	6.6	6.4	6.6	7.7	7.6	7.6	7.0	7.1	7.2	7.1	7.2	7.0
Nonfederal government	NA	NA	NA	NA	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4
Higher education	7.8	11.8	12.6	11.3	18.4	18.7	18.0	18.0	17.6	17.7	17.1	17.4	17.5	16.6	16.9	16.3
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	9.4	9.0	8.1	7.9
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
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	90.8	91.3
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	4.6	4.4
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
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
Higher education	0.7	1.3	1.5	0.7	1.9	1.9	2.0	2.0	2.0	2.0	2.0	1.9	1.8	1.7	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	0.9

NA = not available.

FFRDC = federally funded research and development center.

^a Some data for 2020 are preliminary and may be revised later.

^a The data for 2021 include estimates and are likely to be revised later.

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).