

TABLE S4-5

Federal obligations for research, by detailed S&E field: Selected years, FYs 1990–2018

(Millions of current and constant 2012 dollars, percent share by field, and annual growth rates)

S&E field	1990	1995	2000	2005	2010	2015	2016	2017	2018	Average annual growth rate		
										1990–2000	2000–10	2010–17
	Current \$millions									Percent		
Total, all fields	21,622.4	28,434.4	38,470.6	53,738.2	63,728.0	63,825.4	67,104.6	69,871.3	74,587.6	5.9	5.2	1.3
Computer sciences and mathematics	840.7	1,579.1	2,205.6	2,983.4	3,411.8	3,862.7	4,222.8	3,894.2	4,206.9	10.1	4.5	1.9
Computer sciences	562.1	1,013.9	1,659.6	2,157.1	2,362.0	2,645.6	2,815.4	2,734.7	NA	-	-	-
Mathematics	241.3	258.6	432.9	686.6	835.5	1,005.9	1,160.0	941.7	NA	-	-	-
Other computer sciences and mathematics	37.3	306.6	113.1	139.7	214.4	211.2	247.3	217.8	NA	-	-	-
Environmental sciences	2,174.1	2,854.4	3,328.8	3,502.6	3,338.9	4,413.7	4,450.4	4,469.6	4,567.6	4.4	0.0	4.3
Atmospheric sciences	773.4	1,135.6	1,104.3	1,185.1	953.8	1,567.9	1,597.0	1,651.3	NA	-	-	-
Geological sciences	661.1	848.3	639.2	673.5	530.4	643.3	562.4	580.3	NA	-	-	-
Oceanography	520.1	407.3	673.0	771.5	743.7	726.0	773.0	774.3	NA	-	-	-
Other environmental sciences	219.5	463.3	912.2	872.5	1,111.0	1,476.5	1,518.0	1,463.8	NA	-	-	-
Life sciences	8,829.8	11,811.0	17,964.7	28,127.8	33,909.1	30,625.1	32,045.4	34,089.6	36,994.4	7.4	6.6	0.1
Biological and agricultural	5,178.4	na	na	na	na	na	na	na	na	-	-	-
Agricultural sciences	691.4	670.3	895.0	1,094.2	1,131.9	1,320.3	1,283.1	1,353.4	NA	-	-	-
Biological sciences (excluding environmental biology)	4,144.6	4,925.4	10,740.0	13,351.6	17,213.9	14,839.7	15,922.6	16,555.7	NA	-	-	-
Environmental biology	342.3	806.9	740.0	699.0	816.4	819.1	788.1	783.4	NA	-	-	-
Medical sciences	3,382.4	4,972.2	4,463.8	10,862.1	11,677.0	11,086.8	11,358.6	12,648.7	NA	-	-	-
Clinical medical	na	na	na	na	na	na	na	na	na	-	-	-
Other medical	na	na	na	na	na	na	na	na	na	-	-	-
Other life sciences	269.1	436.3	1,125.9	2,120.9	3,070.0	2,559.2	2,693.0	2,748.4	NA	-	-	-
Physical sciences	3,808.7	4,278.3	4,788.0	5,493.7	5,870.8	6,510.3	6,705.6	6,581.5	7,881.4	2.3	2.1	1.6
Astronomy	597.2	764.5	880.3	884.9	559.9	1,230.2	1,246.7	1,292.4	NA	-	-	-
Chemistry	761.7	863.5	1,225.6	1,197.5	1,310.6	967.7	998.9	969.2	NA	-	-	-
Physics	2,254.9	2,451.2	2,405.4	3,041.3	3,470.1	3,040.2	3,731.9	3,675.9	NA	-	-	-
Other physical sciences	195.0	199.2	276.7	370.0	530.2	1,272.2	728.1	643.9	NA	-	-	-
Psychology	448.6	622.6	1,626.7	1,891.8	2,155.6	1,994.9	2,021.4	2,081.2	2,326.9	13.7	2.9	-0.5
Biological aspects	130.6	58.8	8.2	2.3	13.6	19.1	19.8	10.4	NA	-	-	-
Social aspects	177.5	156.3	56.0	46.6	74.5	58.5	56.0	56.4	NA	-	-	-
Other psychological sciences	140.5	407.5	1,562.5	1,842.8	2,067.4	1,917.2	1,945.6	2,014.4	NA	-	-	-
Social sciences	630.0	678.7	1,050.4	1,097.1	1,197.3	1,136.3	1,226.7	1,027.2	1,039.4	5.2	1.3	-2.2
Anthropology	14.4	21.7	15.9	18.0	24.7	29.9	31.5	32.1	NA	-	-	-
Economics	197.2	206.5	249.5	215.9	274.0	336.8	370.9	294.1	NA	-	-	-
Political science	13.1	22.3	22.6	32.7	14.2	16.0	14.6	17.6	NA	-	-	-
Sociology	116.2	47.8	90.6	70.2	132.3	128.2	197.4	178.0	NA	-	-	-
Other social sciences	289.1	380.3	671.8	760.4	752.0	625.3	612.2	505.4	NA	-	-	-
History	na	na	na	na	na	na	na	na	na	-	-	-

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Federal obligations for research, by detailed S&E field: Selected years, FYs 1990–2018

(Millions of current and constant 2012 dollars, percent share by field, and annual growth rates)

S&E field	1990	1995	2000	2005	2010	2015	2016	2017	2018	Average annual growth rate		
										1990–2000	2000–10	2010–17
Linguistics	na	na	na	na	na	na	na	na	na	-	-	-
Other social sciences	na	na	na	na	na	na	na	na	na	-	-	-
Other sciences nec	663.7	901.8	1,160.2	2,088.9	2,763.2	3,298.8	3,460.8	4,520.6	3,812.4	5.7	9.1	7.3
Engineering	4,226.6	5,708.4	6,346.4	8,552.9	11,081.2	11,983.6	12,971.5	13,207.4	13,758.6	4.1	5.7	2.5
Aeronautical engineering	927.1	1,248.3	1,463.9	1,276.3	830.1	1,825.1	1,836.1	1,892.1	NA	-	-	-
Astronautical engineering	580.8	546.5	515.0	494.1	389.9	660.6	650.7	651.4	NA	-	-	-
Chemical engineering	241.9	246.1	196.5	283.8	509.7	374.6	373.0	302.3	NA	-	-	-
Civil engineering	317.7	339.4	239.2	279.2	699.8	457.6	461.9	605.9	NA	-	-	-
Electrical engineering	640.0	756.3	744.8	1,033.5	1,360.9	897.3	1,062.9	1,102.7	NA	-	-	-
Mechanical engineering	268.3	412.5	289.3	323.7	363.6	323.6	374.2	449.8	NA	-	-	-
Metallurgy and materials engineering	554.5	815.3	918.1	1,184.1	1,758.8	1,756.9	1,975.4	1,941.1	NA	-	-	-
Other engineering	696.3	1,344.0	1,979.6	3,678.3	5,168.4	5,688.0	6,237.3	6,262.1	NA	-	-	-
	Constant 2012 \$millions									Percent		
Total, all fields	34,104.7	39,558.2	49,321.3	61,654.7	66,231.6	60,745.6	63,282.3	64,719.6	67,622.5	3.8	3.0	-0.3
Computer sciences and mathematics	1,326.1	2,196.9	2,827.7	3,422.9	3,545.8	3,676.3	3,982.3	3,607.1	3,814.1	7.9	2.3	0.2
Computer sciences	886.6	1,410.5	2,127.7	2,474.9	2,454.8	2,517.9	2,655.0	2,533.1	NA	-	-	-
Mathematics	380.7	359.8	555.0	787.7	868.3	957.4	1,093.9	872.3	NA	-	-	-
Other computer sciences and mathematics	58.8	426.5	145.0	160.3	222.8	201.0	233.2	201.7	NA	-	-	-
Environmental sciences	3,429.2	3,971.1	4,267.7	4,018.6	3,470.1	4,200.7	4,196.9	4,140.1	4,141.1	2.2	-2.0	2.6
Atmospheric sciences	1,219.9	1,579.9	1,415.8	1,359.7	991.3	1,492.2	1,506.0	1,529.5	NA	-	-	-
Geological sciences	1,042.8	1,180.2	819.5	772.7	551.2	612.3	530.4	537.5	NA	-	-	-
Oceanography	820.4	566.6	862.8	885.2	772.9	691.0	729.0	717.2	NA	-	-	-
Other environmental sciences	346.1	644.5	1,169.5	1,001.0	1,154.6	1,405.3	1,431.5	1,355.9	NA	-	-	-
Life sciences	13,927.2	16,431.6	23,031.7	32,271.5	35,241.2	29,147.3	30,220.1	31,576.1	33,539.8	5.2	4.3	-1.6
Biological and agricultural	8,167.8	na	na	na	na	na	na	na	na	-	-	-
Agricultural sciences	1,090.6	932.5	1,147.4	1,255.4	1,176.4	1,256.6	1,210.0	1,253.6	NA	-	-	-
Biological sciences (excluding environmental biology)	6,537.3	6,852.3	13,769.2	15,318.5	17,890.1	14,123.6	15,015.7	15,335.0	NA	-	-	-
Environmental biology	540.0	1,122.6	948.7	802.0	848.5	779.6	743.2	725.6	NA	-	-	-
Medical sciences	5,334.9	6,917.4	5,722.8	12,462.3	12,135.7	10,551.8	10,711.6	11,716.1	NA	-	-	-
Clinical medical	na	na	na	na	na	na	na	na	na	-	-	-
Other medical	na	na	na	na	na	na	na	na	na	-	-	-
Other life sciences	424.5	607.0	1,443.5	2,433.3	3,190.6	2,435.7	2,539.6	2,545.8	NA	-	-	-

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Federal obligations for research, by detailed S&E field: Selected years, FYs 1990–2018

(Millions of current and constant 2012 dollars, percent share by field, and annual growth rates)

S&E field	1990	1995	2000	2005	2010	2015	2016	2017	2018	Average annual growth rate		
										1990–2000	2000–10	2010–17
Physical sciences	6,007.4	5,952.0	6,138.5	6,303.0	6,101.4	6,196.2	6,323.7	6,096.2	7,145.4	0.2	-0.1	-0.0
Astronomy	941.9	1,063.6	1,128.6	1,015.3	581.9	1,170.8	1,175.7	1,197.1	NA	-	-	-
Chemistry	1,201.4	1,201.3	1,571.3	1,373.9	1,362.1	921.0	942.0	897.7	NA	-	-	-
Physics	3,556.7	3,410.1	3,083.8	3,489.3	3,606.4	2,893.5	3,519.3	3,404.9	NA	-	-	-
Other physical sciences	307.5	277.1	354.7	424.5	551.0	1,210.8	686.6	596.4	NA	-	-	-
Psychology	707.6	866.2	2,085.5	2,170.5	2,240.3	1,898.6	1,906.3	1,927.8	2,109.6	11.4	0.7	-2.1
Biological aspects	206.1	81.8	10.5	2.6	14.1	18.2	18.7	9.6	NA	-	-	-
Social aspects	279.9	217.4	71.8	53.5	77.4	55.7	52.8	52.2	NA	-	-	-
Other psychological sciences	221.6	566.9	2,003.2	2,114.3	2,148.6	1,824.7	1,834.8	1,865.9	NA	-	-	-
Social sciences	993.7	944.2	1,346.7	1,258.7	1,244.3	1,081.5	1,156.8	951.5	942.3	3.1	-0.8	-3.8
Anthropology	22.7	30.2	20.4	20.7	25.7	28.5	29.7	29.7	NA	-	-	-
Economics	311.0	287.3	319.9	247.7	284.8	320.5	349.8	272.4	NA	-	-	-
Political science	20.7	31.0	29.0	37.5	14.8	15.2	13.8	16.3	NA	-	-	-
Sociology	183.2	66.5	116.2	80.5	137.5	122.0	186.2	164.9	NA	-	-	-
Other social sciences	456.1	529.1	861.3	872.4	781.5	595.1	577.3	468.1	NA	-	-	-
History	na	na	na	na	na	na	na	na	na	-	-	-
Linguistics	na	na	na	na	na	na	na	na	na	-	-	-
Other social sciences	na	na	na	na	na	na	na	na	na	-	-	-
Other sciences nec	1,046.9	1,254.6	1,487.4	2,396.6	2,871.8	3,139.6	3,263.7	4,187.3	3,456.4	3.6	6.8	5.5
Engineering	6,666.6	7,941.6	8,136.4	9,812.9	11,516.5	11,405.3	12,232.6	12,233.6	12,473.8	2.0	3.5	0.9
Aeronautical engineering	1,462.3	1,736.6	1,876.8	1,464.3	862.7	1,737.0	1,731.5	1,752.6	NA	-	-	-
Astronautical engineering	916.1	760.3	660.3	566.9	405.2	628.7	613.6	603.4	NA	-	-	-
Chemical engineering	381.5	342.4	251.9	325.6	529.7	356.5	351.8	280.0	NA	-	-	-
Civil engineering	501.1	472.2	306.7	320.3	727.3	435.5	435.6	561.2	NA	-	-	-
Electrical engineering	1,009.5	1,052.2	954.9	1,185.8	1,414.4	854.0	1,002.4	1,021.4	NA	-	-	-
Mechanical engineering	423.2	573.9	370.9	371.4	377.9	308.0	352.9	416.6	NA	-	-	-
Metallurgy and materials engineering	874.6	1,134.3	1,177.1	1,358.5	1,827.9	1,672.1	1,862.9	1,798.0	NA	-	-	-
Other engineering	1,098.3	1,869.8	2,537.9	4,220.2	5,371.4	5,413.5	5,882.0	5,800.4	NA	-	-	-
Share by field (%)										Percent		
Total, all fields	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	-	-	-
Computer sciences and mathematics	3.9	5.6	5.7	5.6	5.4	6.1	6.3	5.6	5.6	-	-	-
Computer sciences	2.6	3.6	4.3	4.0	3.7	4.1	4.2	3.9	NA	-	-	-
Mathematics	1.1	0.9	1.1	1.3	1.3	1.6	1.7	1.3	NA	-	-	-
Other computer sciences and mathematics	0.2	1.1	0.3	0.3	0.3	0.3	0.4	0.3	NA	-	-	-
Environmental sciences	10.1	10.0	8.7	6.5	5.2	6.9	6.6	6.4	6.1	-	-	-
Atmospheric sciences	3.6	4.0	2.9	2.2	1.5	2.5	2.4	2.4	NA	-	-	-

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(Millions of current and constant 2012 dollars, percent share by field, and annual growth rates)

S&E field	1990	1995	2000	2005	2010	2015	2016	2017	2018	Average annual growth rate		
										1990–2000	2000–10	2010–17
Geological sciences	3.1	3.0	1.7	1.3	0.8	1.0	0.8	0.8	NA	-	-	-
Oceanography	2.4	1.4	1.7	1.4	1.2	1.1	1.2	1.1	NA	-	-	-
Other environmental sciences	1.0	1.6	2.4	1.6	1.7	2.3	2.3	2.1	NA	-	-	-
Life sciences	40.8	41.5	46.7	52.3	53.2	48.0	47.8	48.8	49.6	-	-	-
Biological and agricultural	23.9	na	na	na	na	na	na	na	na	-	-	-
Agricultural sciences	3.2	2.4	2.3	2.0	1.8	2.1	1.9	1.9	NA	-	-	-
Biological sciences (excluding environmental biology)	19.2	17.3	27.9	24.8	27.0	23.3	23.7	23.7	NA	-	-	-
Environmental biology	1.6	2.8	1.9	1.3	1.3	1.3	1.2	1.1	NA	-	-	-
Medical sciences	15.6	17.5	11.6	20.2	18.3	17.4	16.9	18.1	NA	-	-	-
Clinical medical	na	na	na	na	na	na	na	na	na	-	-	-
Other medical	na	na	na	na	na	na	na	na	na	-	-	-
Other life sciences	1.2	1.5	2.9	3.9	4.8	4.0	4.0	3.9	NA	-	-	-
Physical sciences	17.6	15.0	12.4	10.2	9.2	10.2	10.0	9.4	10.6	-	-	-
Astronomy	2.8	2.7	2.3	1.6	0.9	1.9	1.9	1.8	NA	-	-	-
Chemistry	3.5	3.0	3.2	2.2	2.1	1.5	1.5	1.4	NA	-	-	-
Physics	10.4	8.6	6.3	5.7	5.4	4.8	5.6	5.3	NA	-	-	-
Other physical sciences	0.9	0.7	0.7	0.7	0.8	2.0	1.1	0.9	NA	-	-	-
Psychology	2.1	2.2	4.2	3.5	3.4	3.1	3.0	3.0	3.1	-	-	-
Biological aspects	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	NA	-	-	-
Social aspects	0.8	0.5	0.1	0.1	0.1	0.1	0.1	0.1	NA	-	-	-
Other psychological sciences	0.6	1.4	4.1	3.4	3.2	3.0	2.9	2.9	NA	-	-	-
Social sciences	2.9	2.4	2.7	2.0	1.9	1.8	1.8	1.5	1.4	-	-	-
Anthropology	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	NA	-	-	-
Economics	0.9	0.7	0.6	0.4	0.4	0.5	0.6	0.4	NA	-	-	-
Political science	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	NA	-	-	-
Sociology	0.5	0.2	0.2	0.1	0.2	0.2	0.3	0.3	NA	-	-	-
Other social sciences	1.3	1.3	1.7	1.4	1.2	1.0	0.9	0.7	NA	-	-	-
History	na	na	na	na	na	na	na	na	na	-	-	-
Linguistics	na	na	na	na	na	na	na	na	na	-	-	-
Other social sciences	na	na	na	na	na	na	na	na	na	-	-	-
Other sciences nec	3.1	3.2	3.0	3.9	4.3	5.2	5.2	6.5	5.1	-	-	-
Engineering	19.5	20.1	16.5	15.9	17.4	18.8	19.3	18.9	18.4	-	-	-
Aeronautical engineering	4.3	4.4	3.8	2.4	1.3	2.9	2.7	2.7	NA	-	-	-
Astronautical engineering	2.7	1.9	1.3	0.9	0.6	1.0	1.0	0.9	NA	-	-	-
Chemical engineering	1.1	0.9	0.5	0.5	0.8	0.6	0.6	0.4	NA	-	-	-
Civil engineering	1.5	1.2	0.6	0.5	1.1	0.7	0.7	0.9	NA	-	-	-
Electrical engineering	3.0	2.7	1.9	1.9	2.1	1.4	1.6	1.6	NA	-	-	-

TABLE S4-5

Federal obligations for research, by detailed S&E field: Selected years, FYs 1990–2018

(Millions of current and constant 2012 dollars, percent share by field, and annual growth rates)

S&E field	1990	1995	2000	2005	2010	2015	2016	2017	2018	Average annual growth rate		
										1990–2000	2000–10	2010–17
Mechanical engineering	1.2	1.5	0.8	0.6	0.6	0.5	0.6	0.6	NA	-	-	-
Metallurgy and materials engineering	2.6	2.9	2.4	2.2	2.8	2.8	2.9	2.8	NA	-	-	-
Other engineering	3.2	4.7	5.1	6.8	8.1	8.9	9.3	9.0	NA	-	-	-

na = not applicable; data collected for this table were not recorded at that level in that particular fiscal year, or the agency or subagency did not exist as such or in that organization in that year. NA = not available.

nec = not elsewhere classified.

Note(s)

Detail may not add to total because of rounding.

Source(s)

National Center for Science and Engineering Statistics, National Science Foundation, Survey of Federal Funds for Research and Development, FYs 2018–19 (Volume 68).

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