

## State Indicators

# S-50 Academic Patents Awarded per 1,000 Science, Engineering, and Health Doctorate Holders in Academia

## Description

Academic institutions over time have increasingly been viewed as engines of economic growth. Growing attention has been paid to the role of academic R&D in creating new products, processes, and services. One indicator of such R&D results is the volume of patents with inventors associated with academic institutions. Academic patenting is highly concentrated in many universities and partly reflects the resources devoted to institutional patenting offices.

This indicator relates the number of academic-owned utility patents to the size of the doctoral S&E workforce in academia. Academia includes 2-year colleges, 4-year colleges and universities, medical schools, and university-affiliated research centers. Utility patents, commonly known as patents for inventions, include any new, useful, or improved method, process, machine, device, manufactured item, or chemical compound and represent a key measure of intellectual property. Patent assignments are made based on the address of their inventors. For patents with multiple U.S. university inventors from different U.S. states, patents are fractionally allocated among each U.S. state based on the proportion of residences of all named inventors.

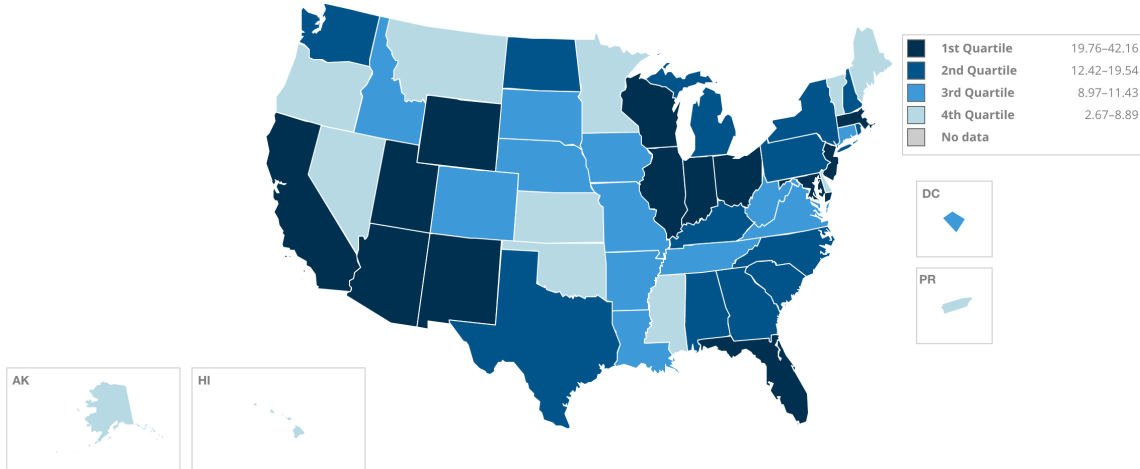
Science, engineering, and health (SEH) doctorates include those in computer sciences; mathematics; biological, agricultural, or environmental life sciences; physical sciences; social sciences; psychology; engineering; and health fields. Those academically employed who received doctorates from foreign institutions and those older than 75 are not included in the data. For states with smaller populations, estimates of doctorate holders in academia are generally less precise than estimates for states with larger populations. Data for SEH doctorate holders are presented by employment location regardless of residence.

Data sources: Science-Metrix, special tabulations from U.S. Patent and Trademark Office data in PatentsView; National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients.

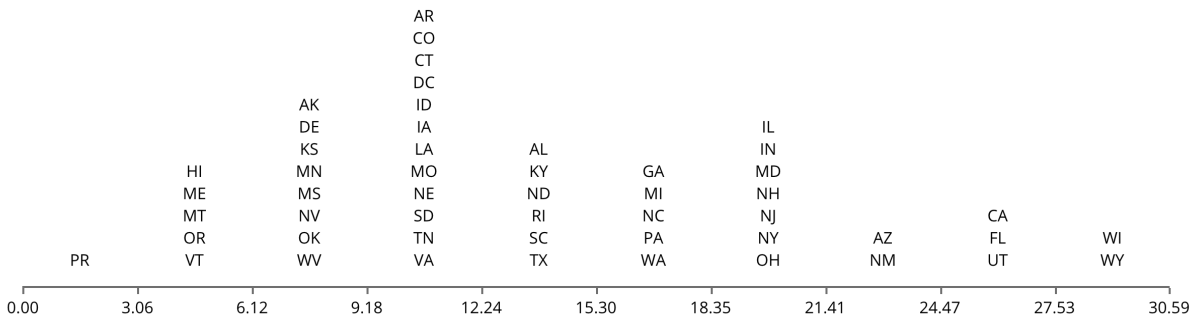
# State Indicators

## S-50 Academic Patents Awarded per 1,000 Science, Engineering, and Health Doctorate Holders in Academia

2015



### Distribution of states across indicator values, 2015



Histograms do not display states with extreme values. Please consult the data tables for exact indicator values for each state. State positions on the histogram are based on unrounded values of the indicator and may not always match the rounded values displayed in the table.

## State Indicators

### Academic Patents Awarded per 1,000 Science, Engineering, and Health Doctorate Holders in Academia

(Patents)

State	1997	1999	2001	2003	2006	2008	2010	2013	2015
United States	11.21	16.31	13.68	13.04	12.56	10.78	14.95	17.76	18.35
Alabama	5.26	16.56	14.33	16.98	8.73	5.59	9.17	12.31	12.42
Alaska	4.44	7.50	1.89	1.67	1.72	0.00	5.71	6.25	7.50
Arizona	7.19	7.24	6.31	5.87	8.95	6.92	7.18	16.74	22.27
Arkansas	4.61	15.15	16.88	14.13	12.95	12.00	12.00	13.16	9.82
California	18.08	30.59	25.93	23.76	25.27	18.31	23.27	26.07	27.14
Colorado	7.71	7.65	4.33	5.53	5.46	6.40	8.39	10.97	10.98
Connecticut	8.53	12.47	9.57	10.02	10.99	5.71	10.96	8.46	11.03
Delaware	5.56	4.00	6.58	9.46	5.95	15.00	22.22	15.00	7.50
District of Columbia	6.32	5.33	5.20	6.75	4.80	5.00	4.78	8.21	10.68
Florida	15.47	14.66	13.55	14.79	18.14	13.44	21.03	23.17	25.97
Georgia	7.75	13.08	11.04	11.06	10.99	8.97	14.40	20.23	16.14
Hawaii	4.80	5.45	3.33	3.41	6.45	3.89	3.13	3.89	4.38
Idaho	7.69	2.67	6.45	7.02	6.52	3.08	8.33	7.14	9.57
Illinois	7.95	10.76	10.50	10.18	10.71	12.79	17.13	21.28	20.56
Indiana	9.45	5.38	3.21	4.01	5.26	4.48	10.75	15.00	20.78
Iowa	15.48	26.67	20.57	17.80	14.29	8.46	14.36	11.84	9.65
Kansas	3.57	13.51	8.64	7.33	1.95	2.96	9.20	8.85	8.13
Kentucky	5.69	11.93	6.17	8.79	7.52	6.76	11.14	13.06	13.42
Louisiana	8.14	6.10	13.77	9.30	7.16	9.66	8.00	11.67	11.27
Maine	0.78	1.74	1.74	3.48	3.31	3.33	8.18	8.46	5.00
Maryland	11.66	27.63	20.24	16.91	19.22	13.72	16.33	15.81	19.90
Massachusetts	28.16	38.70	28.11	25.58	25.00	25.88	33.12	41.99	42.16

## State Indicators

State	1997	1999	2001	2003	2006	2008	2010	2013	2015
Michigan	13.66	17.38	12.73	14.85	13.28	14.66	13.43	14.57	17.77
Minnesota	7.39	9.15	6.81	7.24	6.19	5.47	6.17	7.90	7.18
Mississippi	4.12	7.37	6.67	5.42	7.58	10.53	7.37	8.50	6.67
Missouri	7.91	16.00	9.98	8.93	8.19	4.91	9.05	11.94	10.44
Montana	4.04	8.00	4.94	2.80	4.17	7.50	5.38	3.08	5.38
Nebraska	10.53	13.75	10.82	10.38	9.89	11.67	10.48	13.16	10.20
Nevada	2.06	4.44	3.17	7.38	2.50	3.57	8.57	16.15	8.89
New Hampshire	2.75	8.42	7.44	7.26	15.70	6.67	12.50	26.88	18.82
New Jersey	10.88	18.65	14.36	12.65	13.60	12.67	13.97	15.67	21.37
New Mexico	12.28	37.50	19.57	30.25	17.39	7.73	9.13	16.09	21.43
New York	12.29	17.07	14.92	13.95	13.10	11.82	17.34	18.12	19.54
North Carolina	12.05	14.56	15.64	13.68	12.12	9.80	12.60	14.04	16.29
North Dakota	6.74	6.67	6.06	4.11	4.12	3.33	7.27	11.00	12.94
Ohio	8.79	13.33	10.86	9.68	10.38	7.53	17.72	23.70	19.76
Oklahoma	6.04	7.39	5.76	2.49	9.19	5.33	10.91	5.81	7.59
Oregon	9.54	8.36	8.01	4.40	5.68	7.58	6.29	8.97	5.98
Pennsylvania	12.06	17.64	15.89	11.33	9.96	9.32	13.63	18.40	16.40
Rhode Island	7.74	12.94	17.37	11.59	8.54	10.00	12.50	12.35	14.19
South Carolina	4.17	3.92	4.45	9.96	6.38	4.29	7.78	14.05	15.00
South Dakota	2.99	1.54	3.28	0.00	3.03	4.29	4.29	3.75	11.43
Tennessee	5.40	6.82	9.34	5.70	6.73	5.00	8.17	12.62	10.26
Texas	9.55	12.83	11.53	10.71	11.71	8.98	11.09	13.10	14.56
Utah	13.29	15.92	15.18	9.16	10.23	11.18	20.29	23.59	27.16
Vermont	3.70	6.00	3.06	4.90	5.00	8.89	13.33	13.00	4.44
Virginia	8.72	10.00	5.52	7.56	6.16	6.02	11.79	11.90	9.56
Washington	10.31	13.20	9.92	7.10	6.14	7.46	11.94	12.34	15.89

## State Indicators

State	1997	1999	2001	2003	2006	2008	2010	2013	2015
West Virginia	1.72	1.82	3.54	10.92	1.52	1.67	7.69	6.88	8.97
Wisconsin	12.67	17.58	15.51	18.00	18.01	16.10	21.94	23.19	27.68
Wyoming	7.14	7.27	1.75	8.16	8.16	4.00	16.00	30.00	28.89
Puerto Rico	0.00	0.00	5.77	5.38	1.57	1.54	1.33	4.44	2.67

**Note(s):**  
 Patents were fractionally allocated among regions/countries/economies based on the proportion of residences of all named inventors. The total for the United States reported here includes Puerto Rico, as well as patents for which the location could not be determined. Employed SEH doctorate holders are classified by employment location.

**Source(s):**  
 Science-Matrix, special tabulations (2019) from U.S. Patent and Trademark Office data in PatentsView; National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients (various years), data as of August 2017.

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Last updated: March 4, 2019

*Science and Engineering Indicators 2018*

## State Indicators

### Patents awarded to academic institutions

State	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
United States	2,281	2,659	3,433	3,628	3,309	3,444	3,498	3,503	3,262	2,876
Alabama	13	24	40	53	38	43	40	54	51	29
Alaska	3	2	1	3	3	1	2	1	2	1
Arizona	23	21	17	21	17	20	27	20	29	22
Arkansas	6	7	8	25	17	27	17	26	17	19
California	397	448	633	647	643	652	681	678	650	622
Colorado	27	34	36	31	15	21	22	28	23	18
Connecticut	19	33	45	53	45	40	39	42	29	41
Delaware	5	4	6	2	4	5	9	7	9	6
District of Columbia	15	12	14	12	22	13	15	16	12	5
Florida	78	101	104	96	117	105	110	122	130	127
Georgia	46	43	75	70	79	70	94	77	65	71
Hawaii	6	6	7	6	10	5	8	6	6	6
Idaho	7	6	5	2	6	6	5	8	3	2
Illinois	44	81	85	99	69	111	101	107	134	85
Indiana	22	43	44	25	23	18	28	23	26	38
Iowa	51	48	77	80	50	65	41	60	43	27
Kansas	16	8	13	25	13	19	33	17	20	7
Kentucky	16	17	22	34	25	20	34	29	21	24
Louisiana	23	28	49	18	29	46	35	32	18	19
Maine	0	1	0	2	3	2	2	4	6	0
Maryland	48	69	105	134	101	118	120	115	130	100
Massachusetts	304	321	419	447	339	362	349	364	343	313
Michigan	73	106	121	126	127	111	115	132	120	117

## State Indicators

State	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Minnesota	31	32	41	43	43	36	39	39	44	38
Mississippi	10	8	7	14	15	13	12	11	12	19
Missouri	27	45	65	80	44	56	48	50	48	32
Montana	3	4	2	8	2	4	0	3	0	5
Nebraska	28	24	25	22	27	21	24	19	21	15
Nevada	2	2	1	4	3	4	3	9	4	2
New Hampshire	4	3	9	8	10	9	12	9	12	10
New Jersey	41	53	75	83	74	78	87	72	63	56
New Mexico	9	28	39	60	66	54	69	85	61	46
New York	204	240	336	321	321	301	288	295	242	214
North Carolina	93	91	95	115	100	135	105	126	108	102
North Dakota	5	6	3	5	4	4	4	3	4	3
Ohio	77	84	98	122	103	106	115	100	109	83
Oklahoma	11	16	12	17	13	16	11	7	11	11
Oregon	22	25	26	23	26	25	23	16	21	17
Pennsylvania	122	142	204	217	188	211	194	173	159	125
Rhode Island	8	13	19	22	26	29	16	24	31	20
South Carolina	11	13	14	10	10	13	30	28	20	19
South Dakota	1	2	0	1	1	2	0	0	1	0
Tennessee	15	25	26	29	38	44	51	29	31	24
Texas	134	128	155	152	153	157	172	158	175	160
Utah	42	40	44	39	29	46	35	25	30	24
Vermont	2	4	2	6	1	3	8	5	3	4
Virginia	43	47	50	60	56	36	41	53	33	30
Washington	28	54	60	66	83	62	49	47	38	42
West Virginia	1	2	1	2	0	4	5	13	8	0



## State Indicators

State	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Wisconsin	67	67	90	87	68	78	88	90	71	75
Wyoming	1	4	7	4	0	1	6	4	6	5
Puerto Rico	1	0	1	0	1	6	2	7	1	0

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## State Indicators

### Patents awarded to academic institutions

State	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
United States	3,520	3,215	3,024	3,265	4,516	4,415	5,044	5,628	6,091	6,182
Alabama	29	35	19	33	33	29	32	48	63	59
Alaska	1	2	0	3	4	10	2	5	3	6
Arizona	34	31	27	21	28	42	52	77	80	98
Arkansas	25	22	18	15	24	19	33	25	32	28
California	698	618	540	541	740	711	846	881	946	996
Colorado	29	28	32	29	47	47	51	68	86	73
Connecticut	49	39	28	40	57	53	53	44	65	59
Delaware	5	10	12	16	20	14	16	15	15	9
District of Columbia	11	10	10	17	11	22	30	23	32	39
Florida	164	148	125	160	225	238	284	285	294	274
Georgia	81	80	70	75	121	129	141	174	168	138
Hawaii	10	7	7	6	5	2	3	7	4	7
Idaho	9	1	4	6	10	8	7	10	11	11
Illinois	122	127	142	157	209	226	233	249	270	292
Indiana	32	44	26	51	72	63	67	105	144	160
Iowa	50	52	33	52	56	38	46	45	51	41
Kansas	5	8	8	19	23	10	30	23	42	26
Kentucky	27	23	23	28	39	39	47	47	59	51
Louisiana	24	23	28	20	24	25	29	35	29	40
Maine	4	3	4	3	9	8	4	11	6	7
Maryland	138	100	107	97	129	127	142	136	207	203
Massachusetts	358	353	339	344	467	463	555	655	650	704
Michigan	124	111	129	119	137	142	156	153	194	191

## State Indicators

State	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Minnesota	35	34	29	34	37	39	39	49	47	47
Mississippi	15	13	20	4	14	11	7	17	8	13
Missouri	46	39	28	35	57	67	70	80	78	71
Montana	5	7	9	5	7	5	5	4	5	7
Nebraska	18	17	21	10	22	13	20	25	26	25
Nevada	4	8	5	11	12	20	15	21	13	12
New Hampshire	19	18	10	13	20	23	29	43	29	32
New Jersey	82	71	76	65	88	110	112	105	109	140
New Mexico	36	12	17	15	21	34	43	37	51	45
New York	285	263	260	297	411	374	365	444	549	515
North Carolina	120	103	99	88	131	119	146	153	147	180
North Dakota	4	1	3	9	8	13	9	11	12	11
Ohio	105	80	73	97	179	186	190	256	228	242
Oklahoma	26	28	16	25	36	24	23	18	21	22
Oregon	20	20	25	26	22	38	34	35	38	32
Pennsylvania	157	129	137	144	218	184	247	298	305	310
Rhode Island	17	12	17	16	20	22	19	21	22	22
South Carolina	22	15	15	8	28	27	43	52	59	48
South Dakota	2	1	3	0	3	6	2	3	5	8
Tennessee	37	30	27	33	49	58	52	77	85	59
Texas	194	172	158	174	214	213	253	262	285	316
Utah	36	46	38	51	71	60	112	92	104	110
Vermont	5	7	8	6	12	9	5	13	12	6
Virginia	47	62	50	60	99	71	78	100	108	87
Washington	43	45	53	54	86	62	83	95	92	116
West Virginia	2	2	2	8	10	4	8	11	12	13



## State Indicators

State	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Wisconsin	103	95	95	119	147	149	164	167	164	173
Wyoming	4	10	2	8	8	9	9	15	17	13
Puerto Rico	2	2	2	1	2	1	5	8	8	4

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## State Indicators

### Patents awarded to academic institutions

State	2016	2017
United States	6,634	7,007
Alabama	53	54
Alaska	5	4
Arizona	114	140
Arkansas	37	27
California	1,067	1,018
Colorado	98	84
Connecticut	72	86
Delaware	4	12
District of Columbia	53	42
Florida	306	328
Georgia	138	139
Hawaii	4	6
Idaho	3	7
Illinois	285	311
Indiana	181	168
Iowa	35	57
Kansas	33	40
Kentucky	63	38
Louisiana	41	47
Maine	7	7
Maryland	238	219
Massachusetts	747	874
Michigan	216	204

## State Indicators

State	2016	2017
Minnesota	58	80
Mississippi	12	13
Missouri	89	80
Montana	10	6
Nebraska	28	39
Nevada	14	13
New Hampshire	27	36
New Jersey	141	116
New Mexico	62	66
New York	541	540
North Carolina	198	235
North Dakota	9	15
Ohio	255	290
Oklahoma	24	28
Oregon	45	42
Pennsylvania	322	401
Rhode Island	30	33
South Carolina	51	57
South Dakota	6	6
Tennessee	67	95
Texas	312	374
Utah	111	98
Vermont	17	12
Virginia	94	104
Washington	106	122
West Virginia	12	16



## State Indicators

State	2016	2017
Wisconsin	176	170
Wyoming	14	8
Puerto Rico	6	5

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## State Indicators

### SEH doctorate holders in academia

State	1997	1999	2001	2003	2006	2008	2010	2013	2015
United States	237,190	222,450	251,740	268,570	280,340	280,400	302,000	316,900	336,950
Alabama	4,560	3,200	3,000	3,180	3,320	3,400	3,600	3,900	4,750
Alaska	450	400	530	600	580	700	700	800	800
Arizona	2,920	2,900	3,170	3,410	3,800	3,900	3,900	4,600	4,400
Arkansas	1,520	1,650	1,600	1,840	1,930	1,500	2,000	1,900	2,850
California	24,780	21,150	25,140	28,530	27,620	29,500	31,800	33,800	36,700
Colorado	4,410	4,050	4,850	5,060	5,310	5,000	5,600	6,200	6,650
Connecticut	3,870	4,250	4,180	4,190	4,460	4,900	5,200	5,200	5,350
Delaware	720	500	760	740	840	800	900	1,000	1,200
District of Columbia	1,900	2,250	2,500	2,370	2,290	2,000	2,300	2,800	3,650
Florida	6,530	6,550	7,750	8,250	9,040	9,300	10,700	12,300	10,550
Georgia	5,550	5,350	6,340	6,960	7,370	7,800	8,400	8,600	8,550
Hawaii	1,250	1,100	1,500	1,760	1,550	1,800	1,600	1,800	1,600
Idaho	780	750	930	1,140	1,380	1,300	1,200	1,400	1,150
Illinois	10,190	9,200	10,570	10,510	11,390	11,100	12,200	11,700	14,200
Indiana	4,550	4,650	5,610	5,740	6,080	5,800	6,700	7,000	7,700
Iowa	3,100	3,000	3,160	3,370	3,500	3,900	3,900	3,800	4,250
Kansas	2,240	1,850	2,200	2,320	2,560	2,700	2,500	2,600	3,200
Kentucky	2,990	2,850	3,240	3,300	3,590	3,400	3,500	3,600	3,800
Louisiana	3,440	2,950	3,340	3,440	3,350	2,900	3,000	3,000	3,550
Maine	1,290	1,150	1,150	1,150	1,210	1,200	1,100	1,300	1,400
Maryland	5,920	4,850	5,830	6,800	7,180	7,800	7,900	8,600	10,200
Massachusetts	11,400	11,550	12,880	14,230	14,320	13,100	14,100	15,600	16,700
Michigan	7,760	7,250	8,720	8,890	9,340	8,800	10,200	10,500	10,750

## State Indicators

State	1997	1999	2001	2003	2006	2008	2010	2013	2015
Minnesota	4,330	4,700	5,290	5,390	5,650	5,300	6,000	6,200	6,550
Mississippi	1,940	1,900	1,950	2,030	1,980	1,900	1,900	2,000	1,950
Missouri	5,690	5,000	5,610	5,600	5,620	5,700	6,300	6,700	6,800
Montana	990	1,000	810	1,070	1,200	1,200	1,300	1,300	1,300
Nebraska	2,280	1,600	1,940	1,830	1,820	1,800	2,100	1,900	2,450
Nevada	970	900	1,260	1,220	1,600	1,400	1,400	1,300	1,350
New Hampshire	1,090	950	1,210	1,240	1,210	1,500	1,600	1,600	1,700
New Jersey	4,870	4,450	5,430	5,690	6,030	6,000	6,300	6,700	6,550
New Mexico	2,280	1,600	2,760	2,810	2,070	2,200	2,300	2,300	2,100
New York	19,530	18,800	20,180	21,150	21,760	22,000	23,700	24,500	26,350
North Carolina	7,550	7,900	8,630	9,210	9,900	10,100	10,400	10,900	11,050
North Dakota	890	750	660	730	970	900	1,100	1,000	850
Ohio	9,560	9,150	9,760	10,330	10,120	9,700	10,100	10,800	12,250
Oklahoma	2,650	2,300	2,780	2,810	2,830	3,000	3,300	3,100	2,900
Oregon	2,620	2,750	3,120	3,640	3,520	3,300	3,500	3,900	5,350
Pennsylvania	11,770	12,300	13,280	15,270	15,770	14,700	16,000	16,200	18,900
Rhode Island	1,680	1,700	1,670	2,070	1,990	1,700	1,600	1,700	1,550
South Carolina	3,120	2,550	2,920	2,810	3,450	3,500	3,600	3,700	3,200
South Dakota	670	650	610	620	660	700	700	800	700
Tennessee	4,630	4,250	4,710	5,090	5,500	5,400	6,000	6,100	5,750
Texas	13,410	11,850	13,620	14,750	16,570	17,600	19,300	20,000	21,700
Utah	3,010	2,450	3,030	2,730	3,520	3,400	3,500	3,900	4,050
Vermont	1,080	1,000	980	1,020	1,000	900	900	1,000	1,350
Virginia	5,390	6,000	6,520	7,010	7,630	8,300	8,400	8,400	9,100
Washington	5,240	5,000	6,250	6,620	7,000	7,100	7,200	7,700	7,300
West Virginia	1,160	1,100	1,130	1,190	1,320	1,200	1,300	1,600	1,450





## State Indicators

State	1997	1999	2001	2003	2006	2008	2010	2013	2015
Wisconsin	5,290	4,950	5,030	5,000	5,720	5,900	6,700	7,200	6,250
Wyoming	560	550	570	490	490	500	500	500	450
Puerto Rico	640	850	1,040	1,300	1,270	1,300	1,500	1,800	1,500

*Science and Engineering Indicators 2018*