High-Tech Nation:

How Technological Innovation Shapes America's 435 Congressional Districts

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Introduction

For years, policy discussions about America's innovation-driven, high-tech economy have focused on just a few iconic places, such as the Route 128 tech corridor around Boston, Massachusetts; Research Triangle Park in Raleigh, Durham, and Chapel Hill, North Carolina; Austin, Texas; Seattle, Washington; and, of course, California's white-hot Silicon Valley. This has always been too myopic a view of how innovation is distributed across the country, because many other metropolitan areas and regions—from Phoenix to Salt Lake City to Philadelphia—are innovative hot spots, too, and many more areas are developing tech capabilities. An unfortunate result of this myopia has been that policy debates about how to bolster the country's innovative capacity have often been seen as the province of only the few members of Congress who represent districts or states that are recognizably tech-heavy, while many members from other districts focus on other issues. This needs to change, not only because the premise is incorrect, but also because the country's competitive position in the global economy hinges on developing a broad-based, bipartisan, bicameral understanding and support for federal policies to spur innovation and growth.

A defining trend of the last decade is the degree to which technology—information technology, in particular—has become a critical driver of productivity and competitiveness for the whole economy, not just the tech sector itself. This is abundantly clear throughout the United States, as revealed in both traditional economic data, such as high-tech export activity, and in newer metrics, such as broadband deployment. Indeed, all districts have some kind of technology and innovation-driven activity occurring locally, either because long-established industries such as agriculture, mining, manufacturing, and professional services are rapidly evolving into tech-enabled industries, or because new developments such as cloud computing and ubiquitous access to broadband Internet service allow innovators to create new, IT-enabled enterprises in any small town or rural area they may choose, not just in Silicon Valley or Boston.

The purpose of this report is to shed light on just how widely diffused the country's innovation-driven, high-tech economy really is, so members of Congress and other policymakers can find common cause in advancing an agenda that builds up the shared foundations of national strength in a globally integrated marketplace. Among other things, these shared foundations include:

- **A highly educated and skilled workforce**, for which there must be better STEM education in high schools and colleges, along with policies that encourage high-skilled immigration;
- **Robust research and development**, which demands expanded federal investments in scientific and engineering research, along with corporate tax reforms that include key incentives such as an expanded R&D tax credit and an "innovation box";
- **Digital-age infrastructure**, including not just wireline and wireless broadband, but also hybrid digital infrastructure that incorporates sensors and other information technologies to boost productivity by speeding the flow of people, products, services, and information; and
- **Globally competitive high-tech industries**, which need all of those things, plus the right regulatory and trade policies so companies can grow and access global markets.

The report draws on 20 indicators of the innovation economy to paint statistical portraits of all 435 U.S. congressional districts, 50 states, plus the District of Columbia. The indicators include measures of innovative vitality in four main areas:

1. **Exports of high-tech goods and services**, including manufacturing, IT services, and royalty and license services;
2. **Workforce education and skills**, including the numbers of workers in high-tech sectors and STEM occupations, and the number of highly educated immigrants;
3. **Innovative ideas**, including patent-related activity and public funding for R&D; and
4. **Digital infrastructure**, including the share of households with access to broadband Internet services and the number of broadband providers in each district.

To see interactive, nationwide maps of these indicators—and to download individual congressional district profiles with statistics and other highlights—go to itif.org/technation. Also available are statewide totals.

The remainder of this report ranks the top 50 congressional districts and all 50 states on each indicator.

What the Data Reveal About the Innovation-Driven, High-Tech Economy

The data in this report underscore how technological innovation shapes the entire U.S. economy—including every congressional district, in every part of the country. For example, the high-tech sector employs nearly 30,000 people per congressional district, on average, totaling just under 13 million people nationwide. There is not a district in the country that is not home to at least a few dozen tinkerers and innovators who have filed patent applications in recent years—and three-quarters of all districts have had 1,000 or more of these patent filers. Meanwhile, more than half of all congressional districts received at least $50 million in federal research funding in the last two fiscal years. And in just under half of all congressional districts, every single household has access to broadband Internet service with speeds in excess of 10 Mbps. (Indeed, there are no congressional districts in which fewer than 80 percent of households have access to that level of broadband Internet service.)

Digging further into the data, there are a number of telling relationships between indicators. The first is that there is little correlation between strength in exporting high-tech manufactured products and strength in exporting either IT services (where the correlation coefficient is 0.15, which is close to nonexistent on a scale of negative one to one) or intellectual property-based services (where it is 0.31), though there is a moderate correlation between the latter two categories (0.55). In other words, a congressional district can very easily be strong in one area, but not necessarily in the others. This underscores the significance of the trend in which technological innovation—through IT and other means—is transforming every sector of the economy, and must continue to do so for the country to build its competitive edge. In short, the U.S. economy is extremely diverse, and different regions may specialize in different products and services, but all industries have an opportunity to capitalize on technological innovation to increase their productivity and competitiveness, thereby increasing their employees' wages and Americans' standards of living.

A second noteworthy pattern is that there is a very strong correlation (0.74) between high-tech employment and IT service exports. On the one hand, this is not surprising, because high-tech employment encompasses the IT services sector. But the correlation is nonetheless significant because it underscores how high-skill, high-wage jobs depend on access to global markets. There is a similarly strong correlation (0.72) between the number of highly skilled immigrants in a district and the value of its IT service exports. Likewise, there are strong correlations at the district level between highly skilled immigration and employment in computer and math occupations (0.74), in the broader category of STEM occupations (0.73), and in the overlapping universe of high-tech occupations (0.65). This highlights the valuable role that highly educated and skilled immigrants play in America's innovation ecosystem, and it explains why talent has become one of the world's most sought-after commodities.

Finally, there is a strong correlation at the district level between the number of workers in STEM occupations and the number in high-tech occupations (0.70)—and there are clear connections between federal R&D funding and both of those indicators (correlations of 0.52 and 0.54, respectively). Meanwhile, there are consistent correlations between the number of people filing patent applications in a given congressional district and most other measures of strength in the innovation-driven, high-tech economy, including IT service exports (0.61), intellectual property-based service exports (0.55), and STEM jobs as a share of total employment (0.65). These connections illustrate the essential, catalytic role that public and private investments in research and development play in creating knowledge, sparking innovation, and driving growth economy-wide.

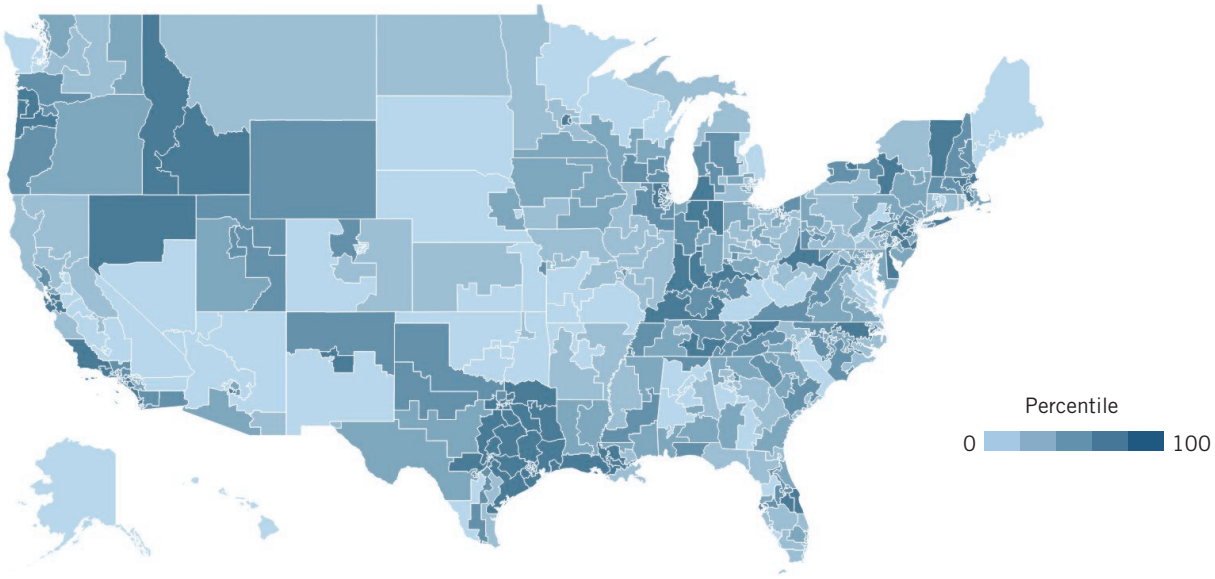
Implications for Policymakers

The nation—every state and congressional district—has a stake in continuing to strengthen the underlying foundations of the innovation-driven high-tech economy, because that is the surest way to boost productivity and competitiveness, and thereby raise people's standards of living. But putting innovation, productivity, and competitiveness in the center of the national economic agenda requires that policymakers look beyond the confines of traditional partisan ideology—including the left's "demand-side" focus on getting money into middle-class pockets and the right's "supply-side" focus on increasing the supply of capital—and instead embrace a strategy that is grounded in several essentials:

- A highly educated and skilled workforce;
- Robust public investment in research and development;
- World-class digital-age infrastructure;
- "Smart government" policies, including how agencies procure and implement technology in their own operations, and how government spurs adoption of emerging information technologies more broadly (e.g., Internet of Things, smart cities, etc.);
- Tax and regulatory policies that encourage firms to invest in technology; and
- Strong connections to the global marketplace, but through a rules-based, carefully enforced trading system.

High-Tech Manufacturing Exports

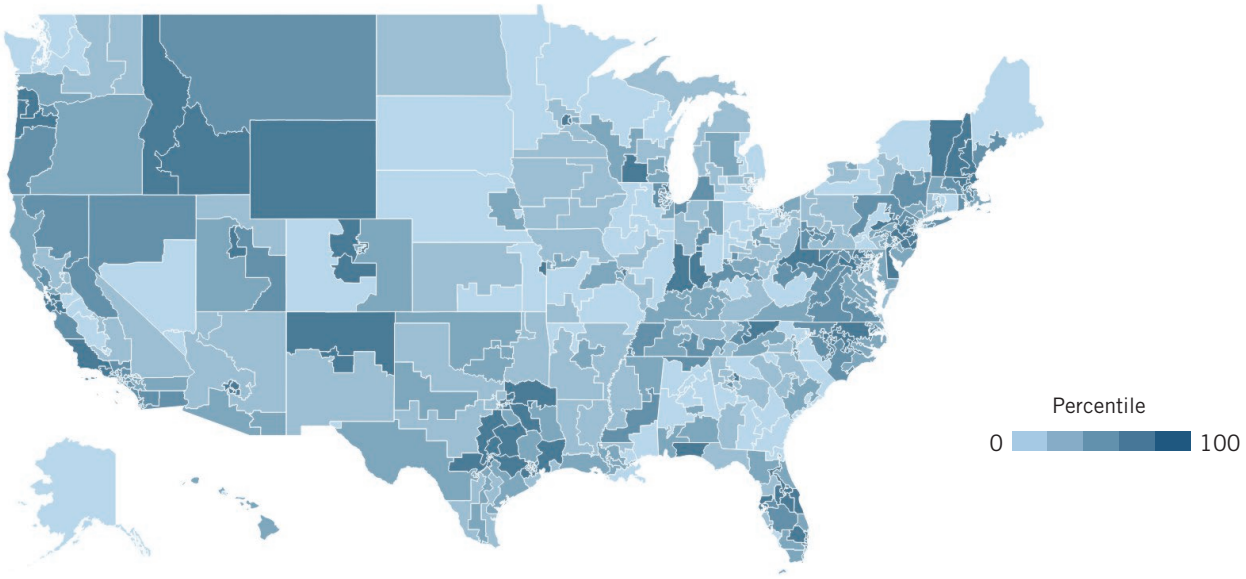
Gross Value From Chemical Manufacturing, and Computer and Electronic Products Exports



Rank	District	Gross Value	Rank	District	Gross Value
1	Texas 14	$6.75B	26	Texas 25	$2.72B
2	Texas 4	$5.93B	27	Vermont At-Large	$2.60B
3	Oregon 1	$5.71B	28	Texas 24	$2.59B
4	Texas 3	$5.53B	29	Louisiana 2	$2.57B
5	Texas 22	$5.10B	30	Texas 35	$2.48B
6	California 19	$4.76B	31	Massachusetts 6	$2.41B
7	Texas 2	$4.42B	32	Texas 5	$2.39B
8	Texas 36	$4.36B	33	Florida 13	$2.29B
9	California 18	$4.24B	34	Texas 21	$2.28B
10	Texas 32	$4.21B	35	Texas 1	$2.21B
11	Florida 8	$4.18B	36	California 52	$2.13B
12	Texas 30	$4.11B	37	California 46	$2.07B
13	California 17	$3.99B	38	Indiana 8	$2.00B
14	Texas 29	$3.82B	38	Massachusetts 3	$2.00B
15	Texas 18	$3.79B	40	California 45	$1.97B
16	Texas 10	$3.72B	41	Indiana 7	$1.89B
17	Texas 27	$3.29B	41	New Jersey 6	$1.89B
18	Texas 9	$3.17B	43	Massachusetts 5	$1.87B
19	Delaware At-Large	$3.10B	44	Louisiana 3	$1.84B
20	Texas 17	$3.06B	45	Arizona 7	$1.81B
21	California 14	$3.03B	46	Tennessee 4	$1.77B
21	Tennessee 1	$3.03B	47	California 13	$1.75B
23	Louisiana 6	$2.94B	48	Texas 6	$1.74B
24	Illinois 10	$2.86B	49	New Jersey 12	$1.70B
25	Texas 33	$2.82B	50	New Jersey 7	$1.69B
				U.S. Average	$893M
				U.S. Median	$598M

High-Tech Share of All Manufacturing Exports

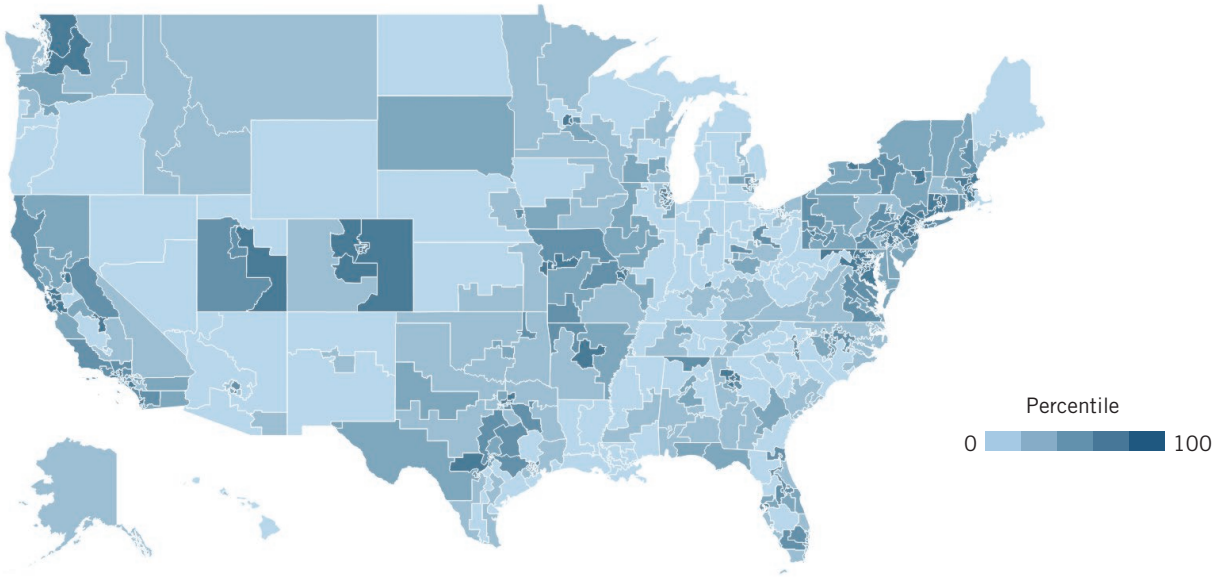
Chemical Manufacturing and Computer and Electronic Products Exports as a Share of All Manufacturing Exports



Rank	District	Percentage	Rank	District	Percentage
1	Wyoming At-Large	80.8%	26	Florida 1	56.9%
2	California 14	79.5%	27	Massachusetts 5	56.7%
3	Texas 3	77.2%	28	Texas 32	56.4%
4	Oregon 1	73.6%	29	Colorado 5	55.5%
5	California 18	72.7%	30	Texas 30	54.9%
6	California 19	72.6%	31	Texas 25	54.5%
6	Vermont At-Large	72.6%	32	Massachusetts 3	54.4%
8	West Virginia 1	68.1%	33	New Hampshire 1	54.0%
9	New Mexico 1	68.0%	34	Florida 9	53.4%
10	Florida 8	67.8%	35	Idaho 1	53.3%
11	California 17	67.2%	35	Tennessee 1	53.3%
12	Virginia 11	67.0%	37	Pennsylvania 13	52.5%
13	New Mexico 3	66.8%	38	Maryland 8	51.9%
14	Delaware At-Large	63.3%	38	Texas 35	51.9%
15	Idaho 2	60.1%	40	New Jersey 12	51.8%
16	Massachusetts 7	59.6%	40	Texas 17	51.8%
17	Illinois 10	59.5%	42	Texas 4	51.6%
18	Texas 22	59.0%	43	Oregon 5	51.1%
19	Colorado 2	58.5%	43	Texas 21	51.1%
20	Indiana 7	57.9%	45	Florida 10	51.0%
20	Virginia 8	57.9%	46	Florida 13	50.4%
22	Virginia 10	57.7%	47	Maryland 3	50.0%
23	New Jersey 6	57.4%	48	New Jersey 3	49.7%
24	Massachusetts 6	57.1%	48	Texas 36	49.7%
24	Pennsylvania 8	57.1%	50	Georgia 7	49.1%
				U.S. Average	28.6%
				U.S. Median	25.5%

IT Services Exports

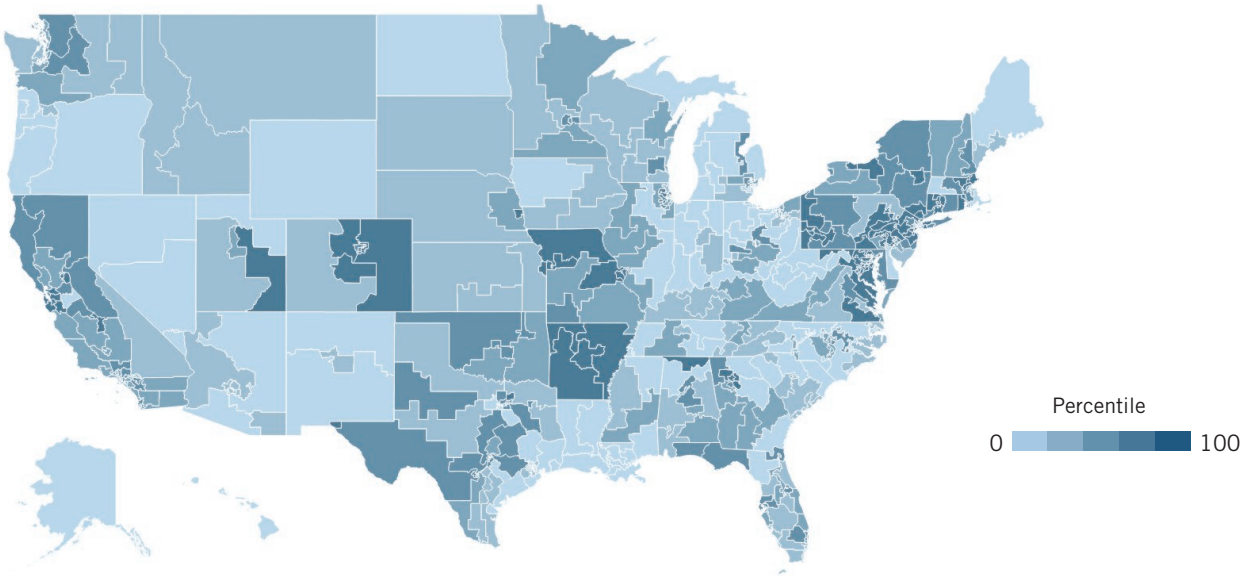
Gross Value From Telecommunications, Computer, and Information Services Exports



Rank	District	Gross Value	Rank	District	Gross Value
1	California 17	$1.72B	26	California 52	$225M
2	New York 12	$1.54B	26	Massachusetts 3	$225M
3	California 12	$1.46B	28	Colorado 2	$217M
4	California 18	$1.43B	29	California 33	$206M
5	New York 10	$1.13B	30	Maryland 3	$203M
6	California 14	$800M	31	Texas 3	$201M
7	DC At-Large	$611M	32	Missouri 2	$198M
8	California 19	$570M	33	Pennsylvania 6	$196M
9	Virginia 11	$493M	34	Pennsylvania 14	$194M
10	Virginia 8	$457M	35	New York 25	$193M
11	Georgia 6	$449M	36	Washington 1	$192M
12	Washington 7	$393M	37	Massachusetts 6	$191M
13	Georgia 5	$369M	38	Maryland 6	$185M
14	Massachusetts 5	$362M	38	Texas 32	$185M
14	Virginia 10	$362M	40	Illinois 7	$181M
16	Colorado 6	$345M	41	Massachusetts 7	$177M
17	Arkansas 2	$332M	42	Colorado 1	$176M
18	New Jersey 6	$294M	42	New York 20	$176M
19	New Jersey 12	$282M	44	California 15	$171M
20	Maryland 8	$281M	44	California 30	$171M
21	New Jersey 7	$278M	46	Pennsylvania 13	$166M
22	Connecticut 1	$267M	47	Kansas 3	$165M
23	Washington 9	$260M	48	California 13	$161M
24	New York 13	$252M	48	New York 3	$161M
25	Texas 24	$230M	48	Utah 3	$161M
				U.S. Average	$82M
				U.S. Median	$35M

IT Share of All Services Exports

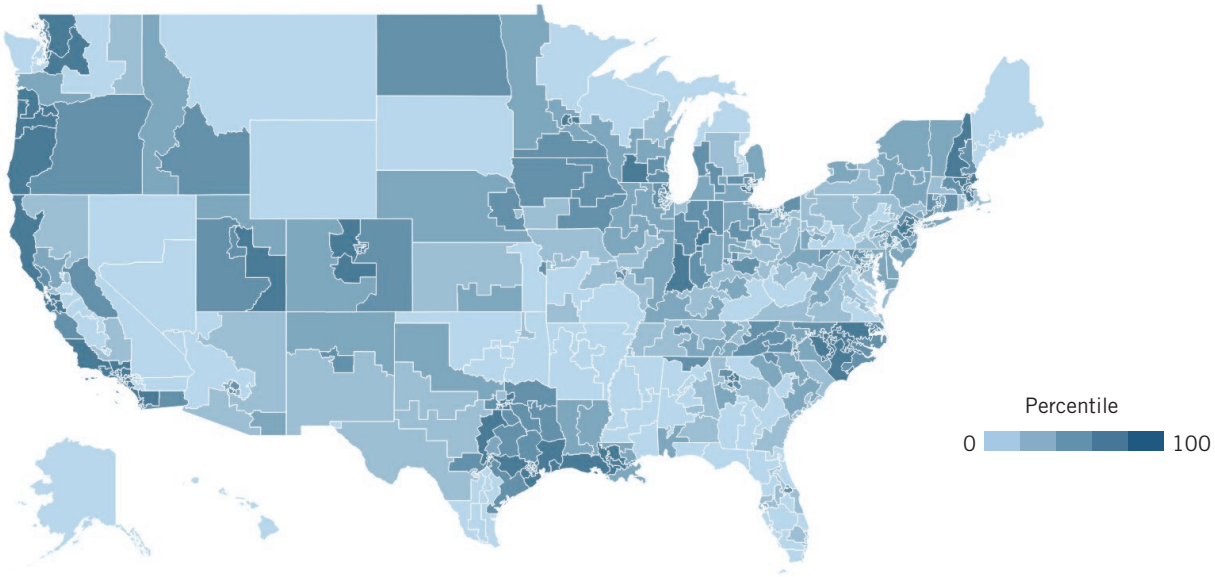
Telecommunications, Computer, and Information Services Exports as a Share of All Services Exports



Rank	District	Percentage	Rank	District	Percentage
1	Arkansas 2	35.9%	26	Georgia 4	11.5%
2	Virginia 11	26.7%	27	Maryland 6	11.4%
3	California 18	24.3%	28	Pennsylvania 15	11.0%
4	California 17	24.2%	28	Pennsylvania 6	11.0%
5	California 12	21.4%	30	New Jersey 7	10.8%
6	California 19	20.9%	31	Nebraska 2	10.7%
7	Colorado 6	18.3%	32	New Jersey 4	10.6%
8	Virginia 10	15.8%	33	Colorado 5	10.4%
9	New Jersey 6	15.2%	33	Missouri 5	10.4%
9	New York 15	15.2%	35	Kansas 3	10.3%
11	California 22	14.8%	35	Pennsylvania 13	10.3%
12	Connecticut 1	13.7%	37	California 14	10.2%
12	Maryland 8	13.7%	38	Maryland 4	10.0%
14	Arkansas 1	13.4%	39	Connecticut 5	9.9%
15	California 11	13.1%	39	Pennsylvania 8	9.9%
16	Missouri 2	12.8%	39	Virginia 4	9.9%
17	California 7	12.7%	42	Pennsylvania 14	9.8%
17	Colorado 4	12.7%	42	Pennsylvania 17	9.8%
17	New York 25	12.7%	44	New York 20	9.7%
20	Georgia 6	11.8%	45	Connecticut 3	9.6%
20	Virginia 8	11.8%	46	Arkansas 3	9.5%
22	New Jersey 12	11.7%	47	Maryland 3	9.1%
22	Texas 3	11.7%	48	Pennsylvania 11	9.0%
24	California 6	11.6%	49	California 15	8.8%
24	DC At-Large	11.6%	50	Illinois 11	8.7%
				U.S. Average	5.2%
				U.S. Median	3.1%

Royalty and License Services Exports

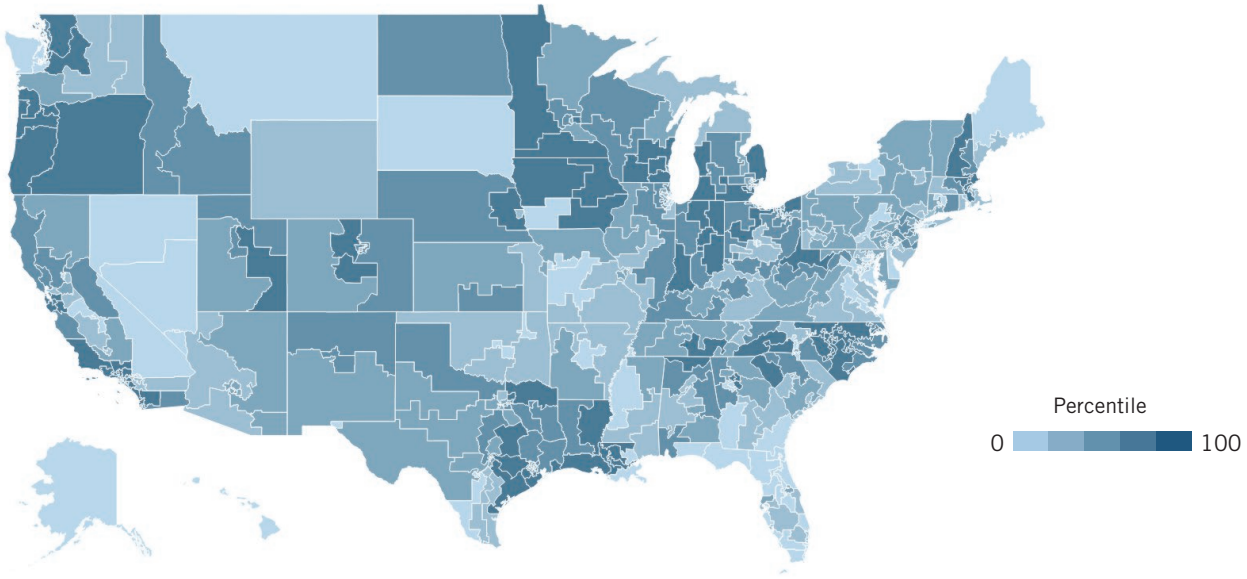
Gross Value of Intellectual Property Services Exports (Patents, Trademarks, Copyrights, and Other Licenses)



Rank	District	Gross Value	Rank	District	Gross Value
1	Washington 9	$4.17B	26	Indiana 7	$902M
2	Oregon 1	$3.91B	27	North Carolina 1	$810M
3	California 28	$3.51B	28	Michigan 12	$774M
4	Washington 7	$3.29B	29	North Carolina 4	$759M
5	California 33	$3.23B	30	California 24	$743M
6	California 17	$3.13B	31	California 48	$738M
7	California 14	$3.08B	32	California 34	$718M
8	Washington 1	$3.00B	33	Massachusetts 4	$717M
9	New York 12	$2.97B	34	California 13	$688M
10	California 30	$2.57B	35	California 49	$681M
11	California 18	$2.45B	36	Louisiana 2	$680M
12	New York 10	$2.11B	37	Massachusetts 8	$650M
13	Massachusetts 5	$1.86B	38	Texas 24	$649M
14	Massachusetts 3	$1.48B	39	Utah 3	$645M
15	California 45	$1.39B	40	Texas 14	$619M
16	Washington 8	$1.32B	41	Louisiana 6	$608M
17	California 37	$1.17B	42	California 26	$606M
18	California 19	$1.16B	43	Minnesota 3	$584M
18	Massachusetts 6	$1.16B	44	California 15	$579M
20	California 52	$1.07B	45	New Jersey 7	$566M
21	Georgia 6	$1.04B	46	Oregon 5	$555M
21	Wisconsin 2	$1.04B	47	California 27	$547M
23	California 29	$979M	48	Oregon 3	$535M
24	Colorado 2	$967M	49	Massachusetts 7	$526M
25	California 12	$934M	49	North Carolina 13	$526M
				U.S. Average	$300M
				U.S. Median	$142M

Royalty and License Share of All Services Exports

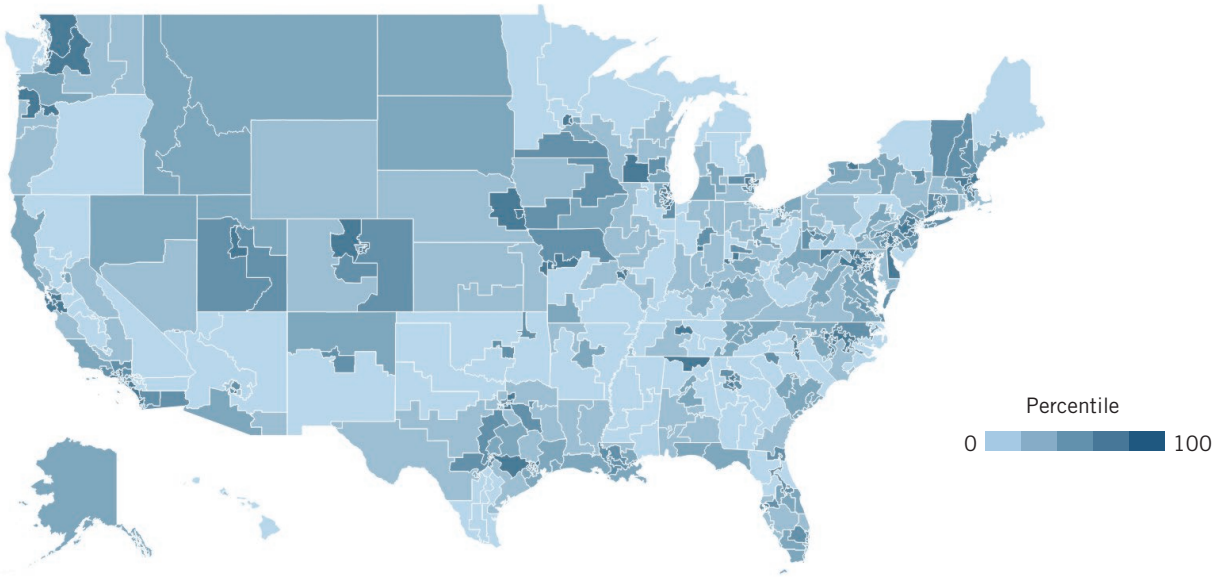
Intellectual Property Services Exports (Patents, Trademarks, Copyrights, and Other Licenses) as a Share of All Services Exports



Rank	District	Percentage	Rank	District	Percentage
1	Washington 1	67.4%	26	Oregon 4	38.5%
2	California 28	66.3%	27	California 45	38.3%
3	Washington 9	59.5%	28	Indiana 7	38.1%
4	Oregon 1	58.8%	29	California 37	37.7%
5	Wisconsin 2	54.9%	30	Wisconsin 1	37.1%
6	Washington 8	53.2%	31	Georgia 7	36.9%
7	California 30	51.1%	32	Ohio 4	36.2%
8	Massachusetts 3	48.4%	33	California 24	35.9%
9	California 29	46.8%	34	California 26	35.5%
10	Texas 14	46.6%	35	Louisiana 6	35.2%
11	Indiana 8	46.5%	36	Utah 3	34.4%
12	California 33	46.0%	37	Colorado 2	33.9%
13	Indiana 2	45.5%	38	North Carolina 13	33.4%
14	Oregon 5	44.7%	39	Iowa 2	33.3%
15	North Carolina 1	44.4%	40	Iowa 4	32.8%
16	California 17	43.9%	41	California 25	32.7%
17	Washington 7	43.6%	42	Massachusetts 4	32.5%
18	North Carolina 7	42.8%	43	Michigan 12	32.1%
19	California 19	42.7%	44	North Carolina 4	31.9%
19	North Carolina 2	42.7%	45	Indiana 6	31.6%
21	Texas 22	42.5%	46	New Hampshire 2	31.1%
22	Massachusetts 6	41.8%	47	Tennessee 4	30.9%
23	Massachusetts 5	41.7%	48	Georgia 4	30.5%
24	California 18	41.4%	48	Minnesota 4	30.5%
25	California 14	39.1%	50	Indiana 5	30.2%
				U.S. Average	19.1%
				U.S. Median	13.3%

High-Tech Sector Workers

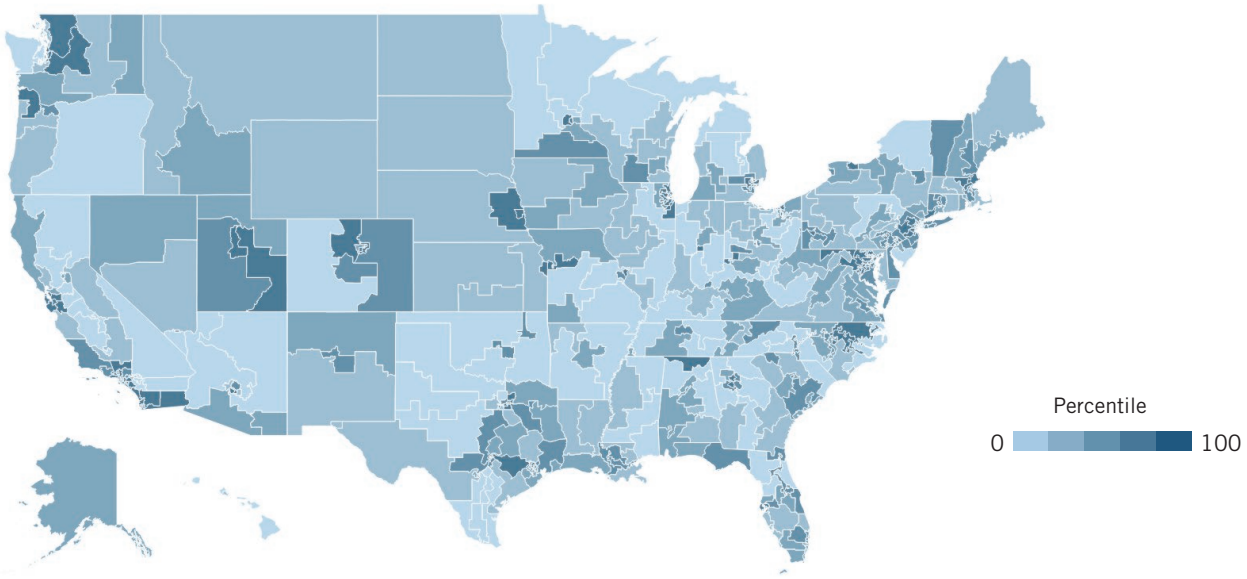
Employment Across Seven High-Tech Industry Sectors



Rank	District	Count	Rank	District	Count
1	Virginia 8	146,212	26	California 28	62,425
2	New York 12	141,872	27	California 33	61,928
3	New York 13	139,415	28	Maryland 8	61,556
4	California 12	129,985	29	Colorado 2	61,324
5	Virginia 11	123,579	30	New Jersey 6	60,341
6	DC At-Large	116,352	31	Kansas 3	59,649
7	New York 10	112,586	32	New Jersey 7	59,215
8	California 19	107,418	33	California 52	59,077
9	California 18	98,226	34	Texas 30	58,489
10	California 14	96,888	35	Illinois 10	58,488
11	California 17	91,875	36	Texas 32	58,264
12	Massachusetts 5	88,722	37	Maryland 3	56,525
13	Illinois 7	86,517	38	Missouri 1	56,351
14	Massachusetts 7	84,616	39	Texas 3	54,744
15	Virginia 10	79,388	40	Texas 7	53,751
16	Washington 9	73,399	41	Maryland 6	52,468
17	Georgia 5	73,016	42	New Jersey 11	52,429
18	Washington 7	71,790	43	Alabama 5	52,366
19	Georgia 6	69,185	44	Michigan 11	52,118
20	Minnesota 5	67,855	45	Utah 4	51,200
21	Minnesota 3	65,046	46	Colorado 6	51,159
22	Colorado 1	64,937	47	Maryland 7	50,682
23	Nebraska 2	64,762	48	Oregon 1	50,633
24	New Jersey 12	63,710	49	Massachusetts 6	49,002
25	Massachusetts 3	62,585	50	Washington 8	48,962
				U.S. Average	29,517
				U.S. Median	23,683

High-Tech Share of Total Workforce

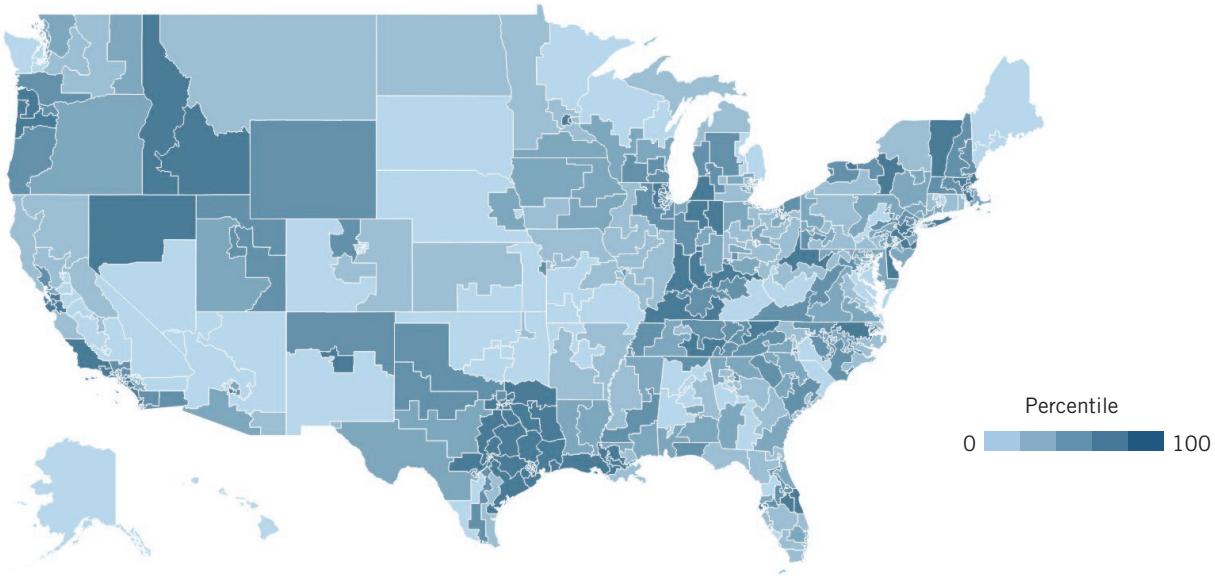
Employment Across Seven High-Tech Industry Sectors as a Share of Total Workforce



Rank	District	Percentage	Rank	District	Percentage
1	New York 13	40.2%	26	California 33	16.7%
2	DC At-Large	33.7%	26	Massachusetts 3	16.7%
3	Virginia 8	32.8%	28	Alabama 5	16.5%
4	New York 12	31.7%	29	New Jersey 6	16.4%
5	California 12	30.0%	30	California 28	16.0%
6	New York 10	29.3%	30	Missouri 1	16.0%
7	Virginia 11	29.2%	32	Kansas 3	15.7%
8	California 19	28.8%	32	Maryland 8	15.7%
9	California 18	26.7%	34	California 52	15.6%
10	Illinois 7	26.5%	35	New Jersey 7	15.3%
11	California 14	24.4%	36	Colorado 1	15.1%
12	California 17	24.1%	37	Maryland 7	15.0%
13	Massachusetts 5	21.8%	38	Michigan 14	14.9%
14	Georgia 5	21.2%	39	Colorado 2	14.8%
15	Massachusetts 7	20.9%	39	Texas 32	14.8%
16	Washington 9	20.1%	41	Michigan 11	14.4%
17	Virginia 10	19.4%	41	Washington 8	14.4%
18	Nebraska 2	19.3%	43	Utah 4	14.1%
19	Texas 30	18.1%	44	Maryland 6	14.0%
20	Georgia 6	18.0%	45	New Jersey 11	13.9%
21	Minnesota 3	17.5%	45	Texas 18	13.9%
22	Minnesota 5	17.4%	47	Maryland 3	13.8%
23	Illinois 10	17.1%	48	Illinois 1	13.7%
23	New Jersey 12	17.1%	49	Indiana 7	13.4%
25	Washington 7	16.9%	49	Texas 7	13.4%
				U.S. Average	8.4%
				U.S. Median	6.9%

STEM Workers

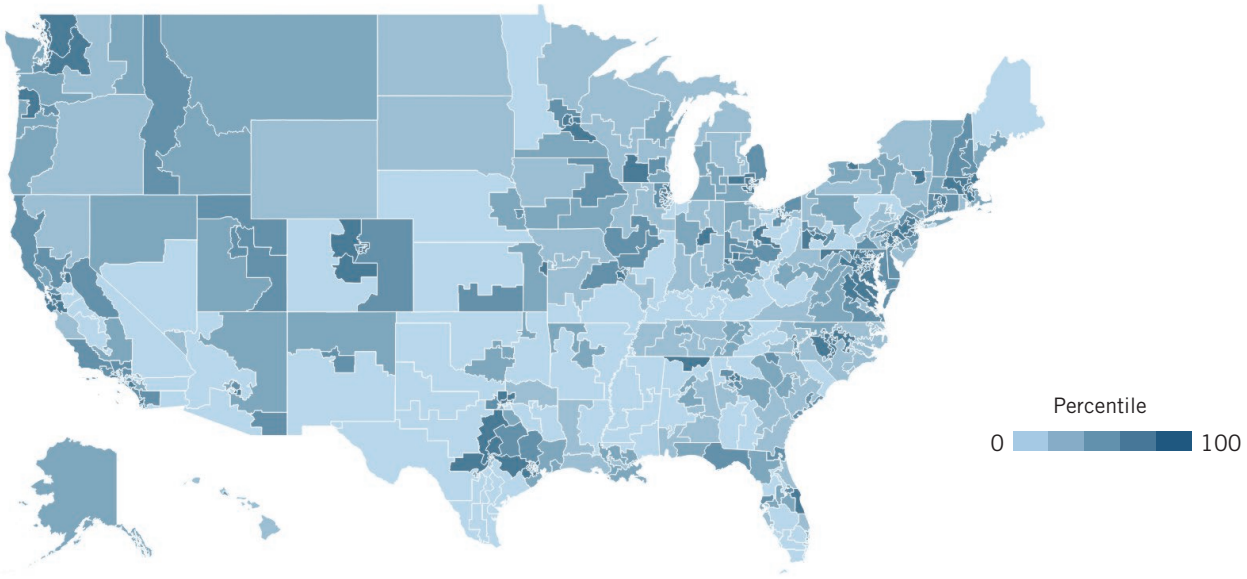
Employment in Science, Technology, Engineering, and Mathematics Occupations



Rank	District	Count	Rank	District	Count
1	California 17	100,114	26	Massachusetts 7	36,806
2	California 18	64,927	27	California 19	36,483
3	Virginia 11	57,514	28	Washington 9	36,309
4	Washington 7	55,545	29	California 13	35,637
5	California 12	55,280	30	New Jersey 7	35,635
6	Virginia 8	54,446	31	Maryland 5	34,532
7	Virginia 10	53,991	32	Wisconsin 2	34,159
8	California 52	53,826	33	Texas 24	33,926
9	Texas 3	47,224	34	Minnesota 3	33,485
10	Massachusetts 5	47,114	35	Virginia 1	33,321
11	California 15	45,875	36	North Carolina 4	33,250
12	Maryland 8	44,855	37	DC At-Large	32,797
13	Washington 1	42,670	38	Texas 10	32,713
14	Maryland 6	42,102	39	Massachusetts 4	32,709
15	Texas 22	41,842	40	Illinois 6	32,699
16	Colorado 2	40,861	41	Virginia 7	32,662
17	Georgia 6	40,638	42	Colorado 6	32,468
18	Oregon 1	39,477	43	Texas 2	32,458
19	Maryland 3	39,371	44	New Jersey 6	32,229
20	Texas 7	38,968	45	North Carolina 13	31,839
21	California 14	38,711	46	Minnesota 5	31,792
22	New Jersey 12	38,563	47	Missouri 2	31,629
23	Massachusetts 3	38,360	48	Massachusetts 6	31,117
24	California 45	37,571	49	Indiana 5	31,034
25	Michigan 11	37,203	50	Colorado 1	30,993
				U.S. Average	18,517
				U.S. Median	16,045

STEM Share of Total Workforce

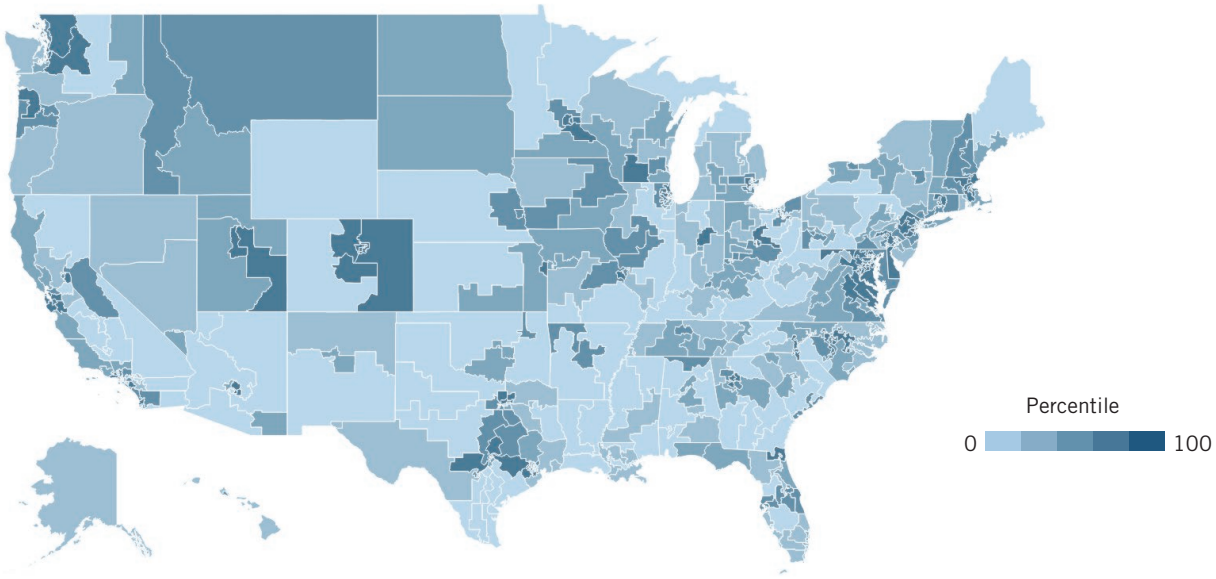
Employment in Science, Technology, Engineering, and Mathematics Occupations as a Share of Total Workforce



Rank	District	Percentage	Rank	District	Percentage
1	California 17	26.3%	25	Texas 7	9.7%
2	California 18	17.7%	27	Maryland 3	9.6%
3	California 52	14.2%	28	California 13	9.5%
4	Virginia 11	13.6%	28	DC At-Large	9.5%
5	Virginia 10	13.2%	30	Alabama 5	9.3%
6	Washington 7	13.1%	31	New Jersey 7	9.2%
7	California 12	12.8%	32	Maryland 5	9.1%
8	California 15	12.5%	32	Massachusetts 7	9.1%
9	Virginia 8	12.2%	32	Virginia 1	9.1%
10	Washington 1	12.1%	35	Minnesota 3	9.0%
11	Massachusetts 5	11.6%	36	New Jersey 6	8.8%
12	Maryland 8	11.5%	37	Michigan 8	8.7%
13	Texas 3	11.4%	37	Texas 10	8.7%
14	Maryland 6	11.2%	39	Illinois 6	8.5%
15	Texas 22	10.8%	39	North Carolina 4	8.5%
16	Georgia 6	10.6%	41	Indiana 5	8.4%
17	New Jersey 12	10.4%	41	North Carolina 13	8.4%
18	Michigan 11	10.3%	41	Texas 2	8.4%
19	Massachusetts 3	10.2%	41	Wisconsin 2	8.4%
20	Oregon 1	10.1%	45	Maryland 7	8.3%
21	Colorado 2	9.9%	45	Massachusetts 4	8.3%
21	Washington 9	9.9%	45	Minnesota 4	8.3%
23	California 19	9.8%	45	Missouri 2	8.3%
23	California 45	9.8%	45	Virginia 7	8.3%
25	California 14	9.7%	50	Arizona 5	8.2%
				U.S. Average	5.5%
				U.S. Median	4.7%

Computer and Math Workers

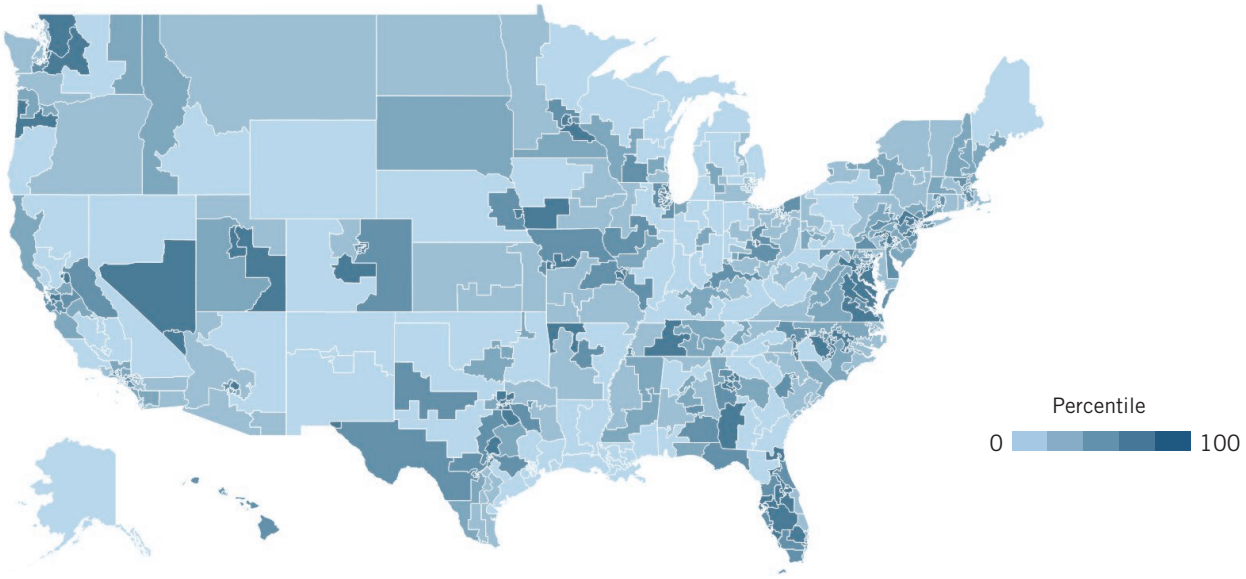
Employment in Computer and Mathematics Occupations



Rank	District	Count	Rank	District	Count
1	California 17	62,088	26	New Jersey 7	20,049
2	Virginia 11	41,046	27	Oregon 1	19,828
3	California 18	37,042	28	California 45	19,770
4	Virginia 8	36,265	29	Colorado 6	19,400
5	Virginia 10	36,221	30	Minnesota 3	19,386
6	California 12	34,988	31	California 19	19,313
7	Washington 7	32,304	32	Georgia 7	19,209
8	Texas 3	30,220	33	Wisconsin 2	18,810
9	Georgia 6	29,425	34	Missouri 2	18,658
10	Washington 1	27,019	35	North Carolina 13	18,653
11	California 15	26,929	36	Minnesota 5	18,566
12	Texas 24	25,133	37	Texas 10	18,543
13	Washington 9	24,994	38	Colorado 2	18,506
14	New Jersey 12	23,858	39	New Jersey 11	18,480
15	New Jersey 6	23,296	40	Texas 26	18,383
16	California 52	23,217	41	Illinois 6	18,137
17	Maryland 6	23,103	42	Illinois 8	18,107
18	Maryland 3	23,014	43	New York 12	18,048
19	Massachusetts 5	22,990	44	DC At-Large	17,995
20	Maryland 8	22,545	45	Maryland 4	17,764
21	Maryland 5	22,192	46	Minnesota 2	17,689
22	Virginia 7	21,510	47	Maryland 2	17,315
23	California 14	21,032	48	North Carolina 4	17,245
24	Virginia 1	20,849	49	Pennsylvania 6	17,160
25	Massachusetts 3	20,161	50	Texas 31	17,095
				U.S. Average	9,448
				U.S. Median	7,678

Computer and Math Share of STEM Workers

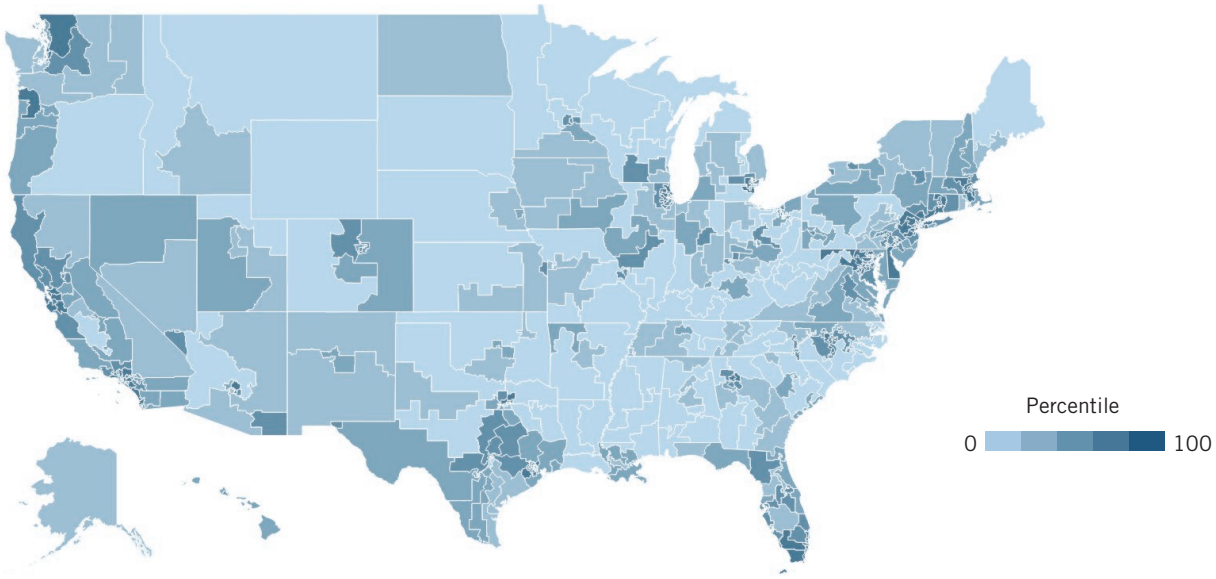
Employment in Computer and Mathematics Occupations as a Share of All STEM Workers



Rank	District	Percentage	Rank	District	Percentage
1	Texas 24	74.1%	26	Nevada 1	63.8%
2	Georgia 6	72.4%	26	New Jersey 9	63.8%
3	New Jersey 6	72.3%	28	Minnesota 2	63.7%
4	Virginia 11	71.4%	29	Florida 14	63.5%
5	New Jersey 8	70.1%	29	Maryland 2	63.5%
6	New Jersey 10	69.1%	31	California 12	63.3%
7	Washington 9	68.8%	31	Washington 1	63.3%
8	Illinois 8	68.4%	33	Georgia 2	63.1%
8	Maryland 4	68.4%	34	Utah 3	62.6%
10	Ohio 3	67.5%	34	Virginia 1	62.6%
11	Virginia 10	67.1%	36	Florida 15	62.5%
12	Florida 4	66.8%	37	Arkansas 3	62.3%
12	Nevada 3	66.8%	37	Connecticut 4	62.3%
14	Florida 12	66.6%	37	Florida 10	62.3%
14	Virginia 8	66.6%	40	Florida 23	62.1%
16	Nevada 4	66.3%	41	California 17	62.0%
17	Virginia 7	65.9%	41	Illinois 10	62.0%
18	North Carolina 12	65.5%	43	New Jersey 12	61.9%
19	Texas 26	65.1%	44	Utah 4	61.8%
19	Texas 30	65.1%	45	Georgia 13	61.6%
21	Florida 20	64.3%	45	Tennessee 7	61.6%
21	Maryland 5	64.3%	47	Colorado 5	61.5%
23	Georgia 7	64.2%	47	Florida 9	61.5%
24	New York 6	64.0%	49	Washington 8	61.4%
24	Texas 3	64.0%	50	Arizona 6	61.3%
				U.S. Average	51.0%
				U.S. Median	49.2%

Highly Educated Immigrant Workers

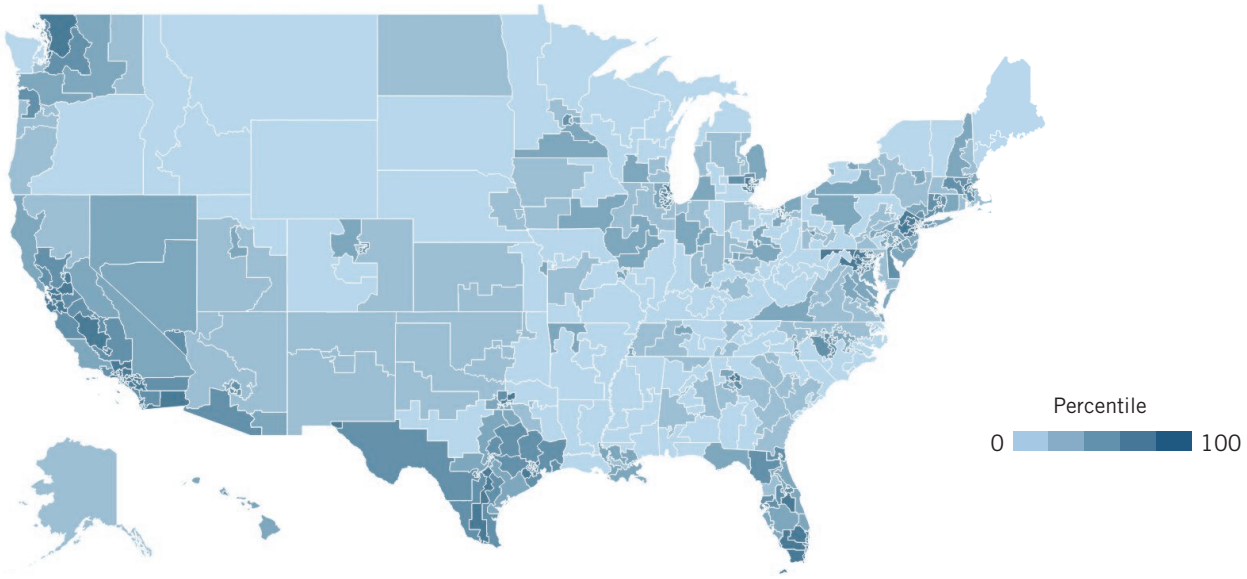
Number of Foreign-Born Individuals With a Graduate or Professional Degree



Rank	District	Count	Rank	District	Count
1	California 17	92,582	26	California 28	28,074
2	California 18	61,563	27	Florida 27	28,032
3	New York 12	49,798	28	California 39	27,412
4	New York 10	43,808	29	New Jersey 11	27,369
5	New Jersey 12	42,108	30	Massachusetts 7	27,273
6	New York 6	40,925	31	Illinois 9	27,197
7	California 33	38,707	32	Georgia 6	27,172
8	Maryland 8	38,663	33	New Jersey 7	27,118
9	California 45	38,553	34	New York 3	26,691
10	Massachusetts 5	38,288	35	California 30	26,473
11	California 52	37,909	36	Massachusetts 4	24,769
12	Virginia 11	36,895	37	California 19	24,631
13	California 15	35,557	38	New Jersey 9	24,551
14	Florida 23	34,935	39	New York 16	23,762
15	New Jersey 6	34,872	40	California 13	23,621
16	California 12	34,774	41	DC At-Large	23,397
17	Virginia 8	34,030	42	Washington 9	23,215
18	Maryland 6	32,609	43	New York 9	22,970
19	California 14	32,048	44	Florida 26	22,787
20	Virginia 10	31,780	45	Texas 24	22,743
21	California 27	31,662	46	Florida 25	22,739
22	Texas 7	31,635	47	New York 11	22,628
23	Texas 3	31,119	48	Michigan 11	22,427
24	Texas 22	30,763	49	Illinois 10	21,965
25	New Jersey 8	29,133	50	New Jersey 5	21,882
				U.S. Average	9,425
				U.S. Median	5,785

Immigrant Share of Highly Educated Workers

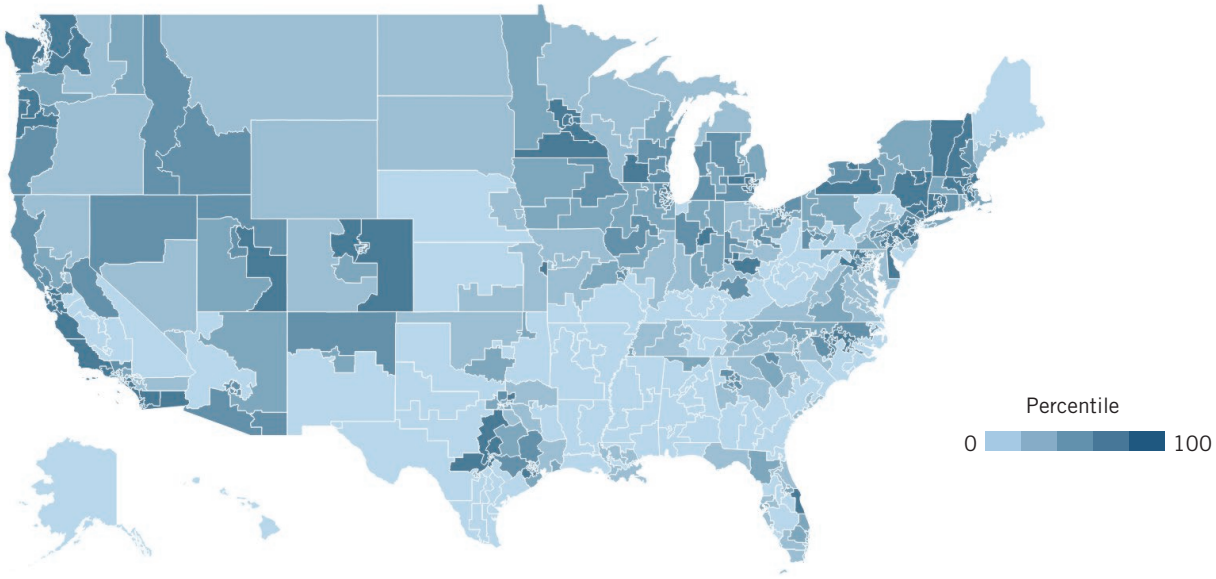
Number of Foreign-Born Individuals With a Graduate or Professional Degree as a Share of All Workers with a Graduate or Professional Degree



Rank	District	Percentage	Rank	District	Percentage
1	California 17	74.8%	26	California 14	39.5%
2	Florida 25	55.1%	27	California 45	39.2%
2	New York 6	55.1%	28	California 27	38.6%
4	New Jersey 8	51.8%	29	California 32	38.3%
5	Florida 26	50.9%	30	Illinois 8	38.0%
6	California 15	50.6%	31	California 28	37.9%
7	New York 5	49.5%	32	California 46	37.4%
8	New Jersey 6	48.4%	33	New York 11	36.6%
9	Florida 27	47.2%	34	New Jersey 10	36.5%
10	Florida 24	46.9%	35	California 30	36.2%
11	California 19	46.3%	36	Florida 20	35.6%
12	California 39	45.6%	37	New York 13	35.2%
13	New York 15	45.2%	37	Texas 3	35.2%
14	Florida 23	44.9%	39	New York 9	35.0%
15	New York 14	44.7%	40	Maryland 6	34.7%
16	New Jersey 9	44.4%	41	Texas 7	34.6%
17	New Jersey 12	43.4%	42	Washington 9	34.4%
18	California 40	42.7%	43	California 35	34.3%
19	Texas 22	42.4%	44	Washington 1	32.4%
20	California 18	42.2%	45	California 52	32.2%
20	California 29	42.2%	46	Texas 24	32.1%
22	New York 8	41.5%	47	California 51	31.7%
22	Texas 9	41.5%	48	California 37	31.3%
24	California 34	40.7%	49	California 31	30.4%
25	California 38	40.5%	50	Massachusetts 7	30.1%
				U.S. Average	17.8%
				U.S. Median	12.6%

Patent Filers

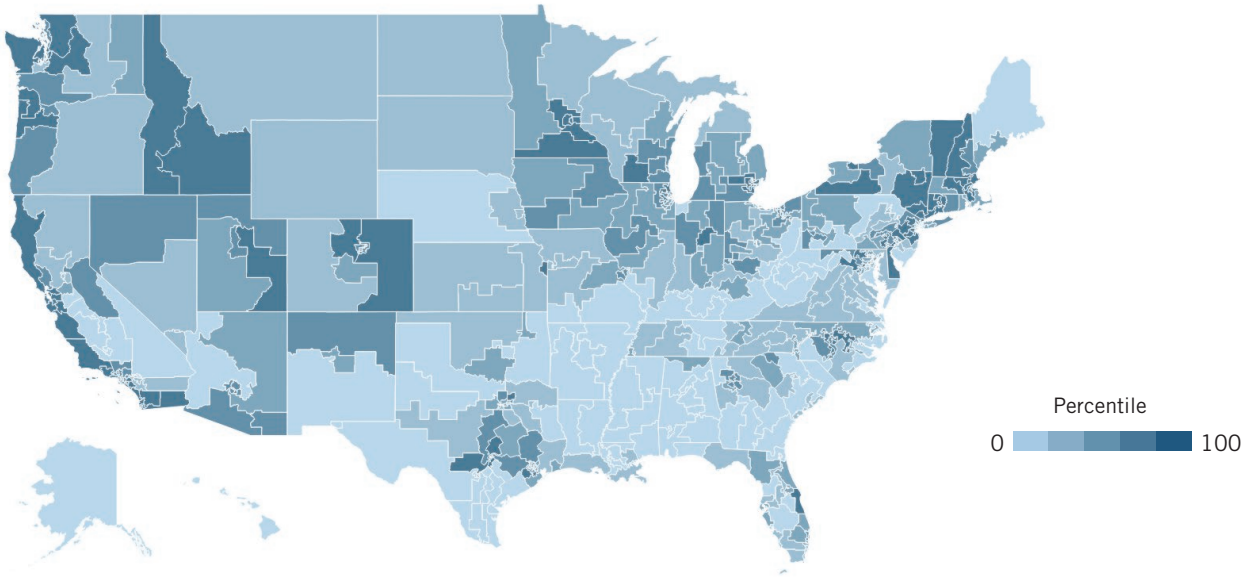
Number of Individuals, by Residential Address, That Filed a Utility Patent From 2012 to 2015



Rank	District	Count	Rank	District	Count
1	California 19	59,918	26	New York 18	10,031
2	California 18	54,340	27	California 51	10,019
3	California 17	48,954	28	Massachusetts 6	9,738
4	California 14	39,223	29	Texas 22	9,729
5	Massachusetts 5	18,355	30	North Carolina 4	9,673
6	Washington 9	18,274	31	New Jersey 12	9,665
7	Washington 7	17,862	32	Washington 1	9,235
8	California 13	17,024	33	Minnesota 4	8,966
9	California 15	15,998	34	Minnesota 5	8,879
10	Massachusetts 3	13,520	35	Minnesota 3	8,859
11	California 52	13,273	36	New York 17	8,627
11	California 53	13,273	37	New York 16	8,615
13	Texas 31	13,077	38	North Carolina 13	8,421
14	New York 25	12,670	39	California 20	8,287
15	California 50	11,849	40	Michigan 12	8,128
16	Washington 6	11,696	41	Illinois 10	8,079
17	California 49	11,631	42	Minnesota 1	7,884
18	Oregon 1	11,471	43	Michigan 11	7,741
19	Massachusetts 7	11,431	44	Massachusetts 4	7,536
20	California 12	11,332	45	California 11	7,247
21	Washington 8	11,262	46	Minnesota 2	7,128
22	Colorado 2	10,925	47	Texas 35	7,123
23	New Jersey 7	10,585	48	New Jersey 6	7,000
24	Texas 3	10,528	49	Kansas 3	6,961
25	New York 20	10,448	50	Vermont At-Large	6,702
				U.S. Average	3,401
				U.S. Median	2,103

Patents Filed

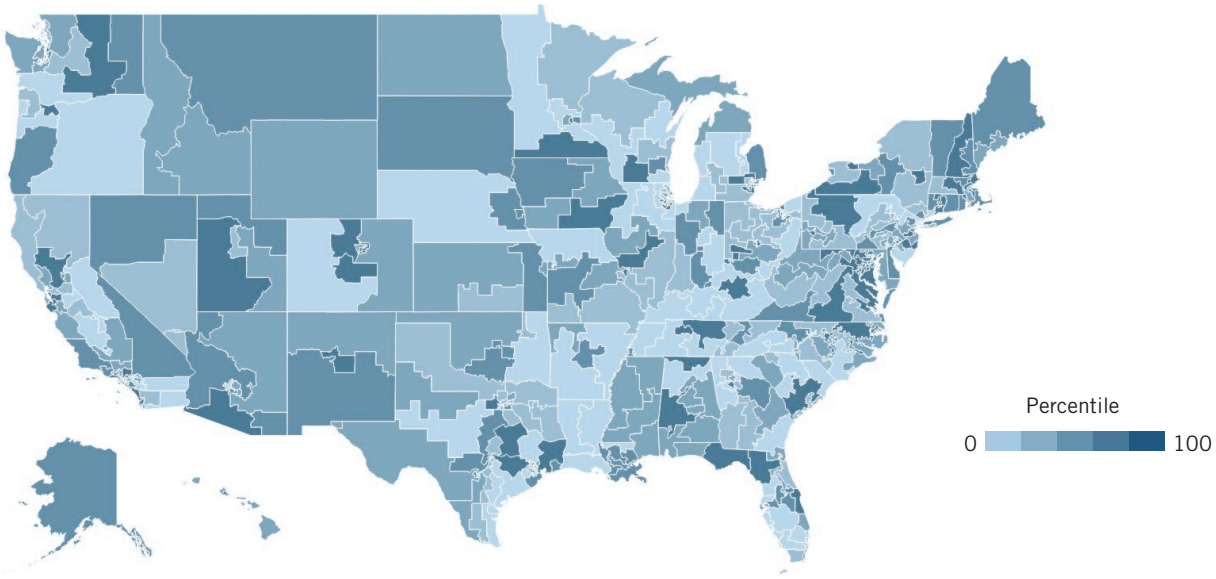
Number of Utility Patents Filed From 2012 to 2015



Rank	District	Count	Rank	District	Count
1	California 19	21,236	26	Washington 8	3,362
2	California 18	19,069	27	North Carolina 4	3,314
3	California 17	17,217	28	Massachusetts 6	3,233
4	California 14	12,724	29	California 20	3,203
5	Massachusetts 5	6,004	30	New York 20	3,198
6	California 13	5,514	31	New Jersey 12	3,122
7	Washington 9	5,405	32	Minnesota 5	3,062
8	Washington 7	5,295	33	Minnesota 3	3,047
9	California 15	5,207	34	North Carolina 13	2,996
10	New York 25	4,814	35	Michigan 11	2,955
11	Texas 31	4,659	36	Michigan 12	2,940
12	Texas 3	4,530	37	Minnesota 4	2,923
13	California 52	4,466	38	New York 18	2,903
13	California 53	4,466	39	Washington 1	2,862
15	Massachusetts 3	4,443	40	New York 17	2,733
16	Colorado 2	4,305	41	Kansas 3	2,657
17	California 49	4,017	42	New York 16	2,640
18	California 50	3,995	43	Colorado 4	2,611
19	Oregon 1	3,983	44	Illinois 10	2,603
20	California 12	3,693	45	California 11	2,594
21	Massachusetts 7	3,641	46	Texas 35	2,584
22	Texas 22	3,578	47	Minnesota 1	2,580
23	Washington 6	3,521	48	California 45	2,573
24	New Jersey 7	3,482	48	California 46	2,573
25	California 51	3,375	48	California 48	2,573
				U.S. Average	1,239
				U.S. Median	797

Public R&D Funding

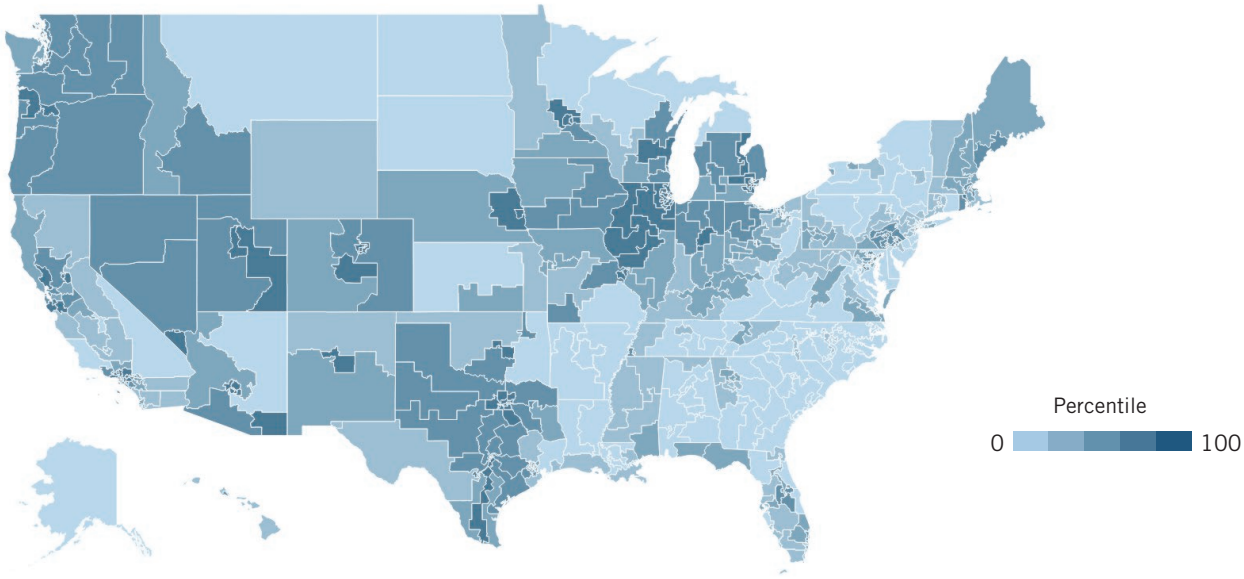
Gross Value of Federal R&D Outlays from the DOA, DOD, DOE, DHHS, NASA, and NSF in FY 2014 and 2015



Rank	District	Gross Value	Rank	District	Gross Value
1	Massachusetts 7	$4.83B	26	Pennsylvania 14	$1.85B
2	California 33	$4.55B	26	Texas 36	$1.85B
3	Alabama 5	$4.06B	28	New York 12	$1.83B
4	California 27	$3.92B	29	California 12	$1.74B
5	Massachusetts 5	$3.85B	30	Michigan 12	$1.55B
6	Colorado 2	$3.64B	31	New Jersey 3	$1.51B
7	California 17	$3.18B	32	Massachusetts 8	$1.36B
8	California 15	$3.08B	33	Missouri 1	$1.30B
9	Maryland 7	$2.86B	34	Illinois 7	$1.29B
10	Virginia 11	$2.68B	35	Ohio 3	$1.25B
11	California 52	$2.67B	36	Wisconsin 2	$1.20B
12	Texas 12	$2.64B	37	North Carolina 1	$1.17B
13	Virginia 8	$2.62B	38	Colorado 5	$1.08B
14	Maryland 8	$2.57B	39	California 49	$1.06B
15	DC At-Large	$2.50B	40	Massachusetts 6	$1.04B
16	Washington 7	$2.46B	41	Colorado 6	$1.03B
17	California 18	$2.29B	42	Minnesota 5	$1.03B
18	Washington 4	$2.28B	43	Tennessee 5	$999M
19	Connecticut 3	$2.03B	44	California 13	$947M
19	Maryland 3	$2.03B	45	Texas 9	$935M
21	Georgia 5	$2.02B	46	Maryland 2	$845M
21	New York 13	$2.02B	47	Maryland 6	$835M
23	Maryland 5	$1.96B	48	Arizona 3	$806M
24	Pennsylvania 2	$1.94B	49	New Mexico 1	$793M
25	North Carolina 4	$1.89B	50	New York 3	$771M
				U.S. Average	$360M
				U.S. Median	$93M

Average Number of Broadband Providers Per Household

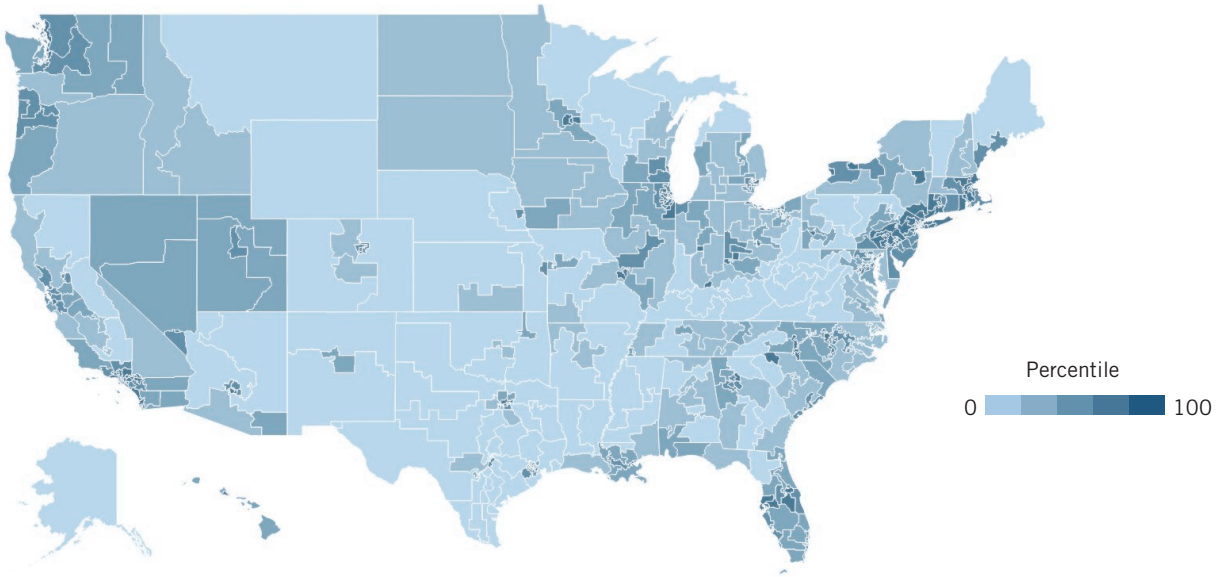
Number of Wired and Wireless Services That Provide Coverage for an Average Housing Unit



Rank	District	Count	Rank	District	Count
1	Arizona 7	8.00	24	California 30	7.97
1	Arizona 9	8.00	24	California 7	7.97
1	Colorado 1	8.00	24	Michigan 13	7.97
1	Colorado 7	8.00	24	Washington 7	7.97
1	Illinois 11	8.00	24	Washington 9	7.97
1	Michigan 9	8.00	31	California 46	7.96
1	Missouri 2	8.00	31	Illinois 14	7.96
1	Nevada 1	8.00	31	Illinois 9	7.96
1	Texas 12	8.00	31	New Mexico 1	7.96
1	Texas 3	8.00	31	New York 12	7.96
1	Texas 32	8.00	31	Texas 24	7.96
1	Texas 33	8.00	37	Arizona 6	7.95
1	Texas 35	8.00	37	Indiana 7	7.95
14	California 6	7.99	37	Texas 26	7.95
14	Michigan 14	7.99	40	Pennsylvania 1	7.94
14	Missouri 1	7.99	41	Nevada 3	7.93
17	Colorado 6	7.98	42	Arizona 8	7.92
17	Illinois 1	7.98	42	California 34	7.92
17	Illinois 3	7.98	42	Illinois 2	7.92
17	Illinois 6	7.98	42	Illinois 5	7.92
17	Illinois 8	7.98	46	California 28	7.91
17	Minnesota 5	7.98	46	Texas 20	7.91
17	Texas 30	7.98	46	Texas 6	7.91
24	Arizona 5	7.97	49	Illinois 7	7.90
24	California 29	7.97	49	Pennsylvania 13	7.90
				U.S. Average	6.64
				U.S. Median	6.73

25Mbps Broadband Coverage

Percentage of Households With Wired and Wireless Broadband Access at Speeds in Excess of 25Mbps

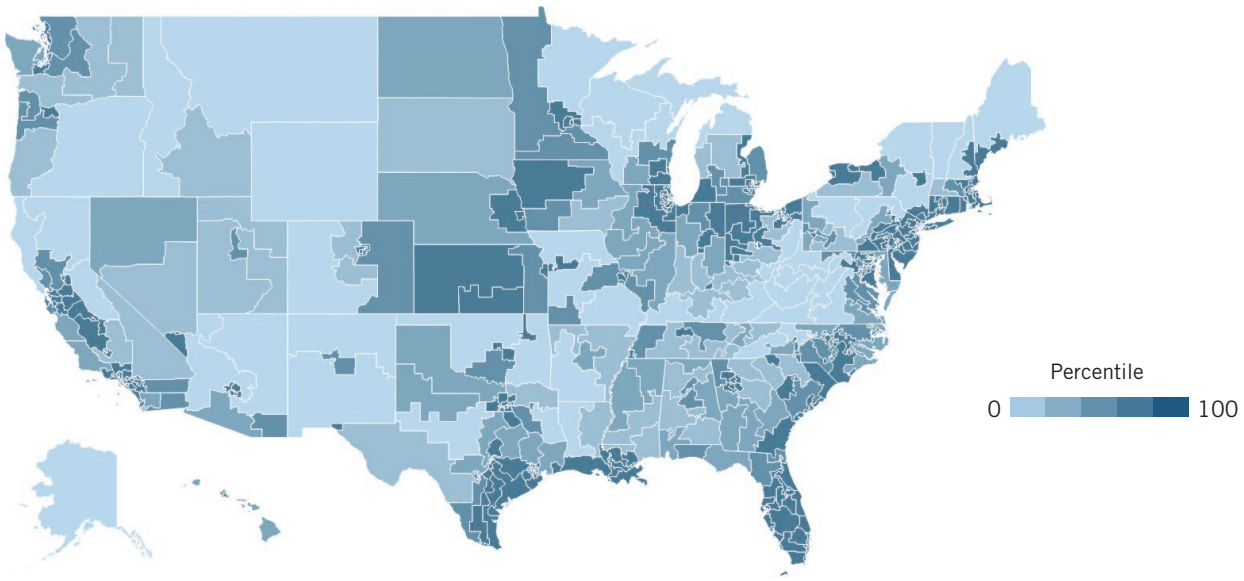


Rank*	District	Percentage	Rank*	District	Percentage
1	Arizona 9	100.0%	1	New York 26	100.0%
1	California 28	100.0%	1	Pennsylvania 1	100.0%
1	California 37	100.0%	1	Pennsylvania 2	100.0%
1	California 38	100.0%	1	Pennsylvania 13	100.0%
1	California 46	100.0%	1	Texas 32	100.0%
1	Florida 9	100.0%	1	Texas 33	100.0%
1	Kentucky 3	100.0%	1	Texas 9	100.0%
1	Missouri 1	100.0%	1	Washington 7	100.0%
1	Missouri 2	100.0%	1	Washington 9	100.0%
1	Nevada 1	100.0%	1	Wisconsin 4	100.0%
1	New York 2	100.0%	36	California 12	99.9%
1	New York 3	100.0%	36	California 32	99.9%
1	New York 4	100.0%	36	California 48	99.9%
1	New York 5	100.0%	36	California 53	99.9%
1	New York 6	100.0%	36	Illinois 4	99.9%
1	New York 8	100.0%	36	Illinois 5	99.9%
1	New York 9	100.0%	36	Illinois 11	99.9%
1	New York 10	100.0%	36	Massachusetts 5	99.9%
1	New York 11	100.0%	36	New York 7	99.9%
1	New York 12	100.0%	36	New York 14	99.9%
1	New York 13	100.0%	36	Ohio 3	99.9%
1	New York 15	100.0%	36	Washington 2	99.9%
1	New York 16	100.0%	48	California 31	99.8%
1	New York 17	100.0%	48	Connecticut 4	99.8%
1	New York 25	100.0%	48	New York 18	99.8%
				U.S. Average	86.3%
				U.S. Median	94.6%

**In 35 districts, all households have access to broadband Internet service at speeds of 25 Mbps or more, and in almost a quarter of all districts (106 out of 436) at least 99 percent of households have access to that level of service.*

10Mbps Broadband Coverage

Percentage of Households With Wired and Wireless Broadband Access at Speeds in Excess of 10Mbps

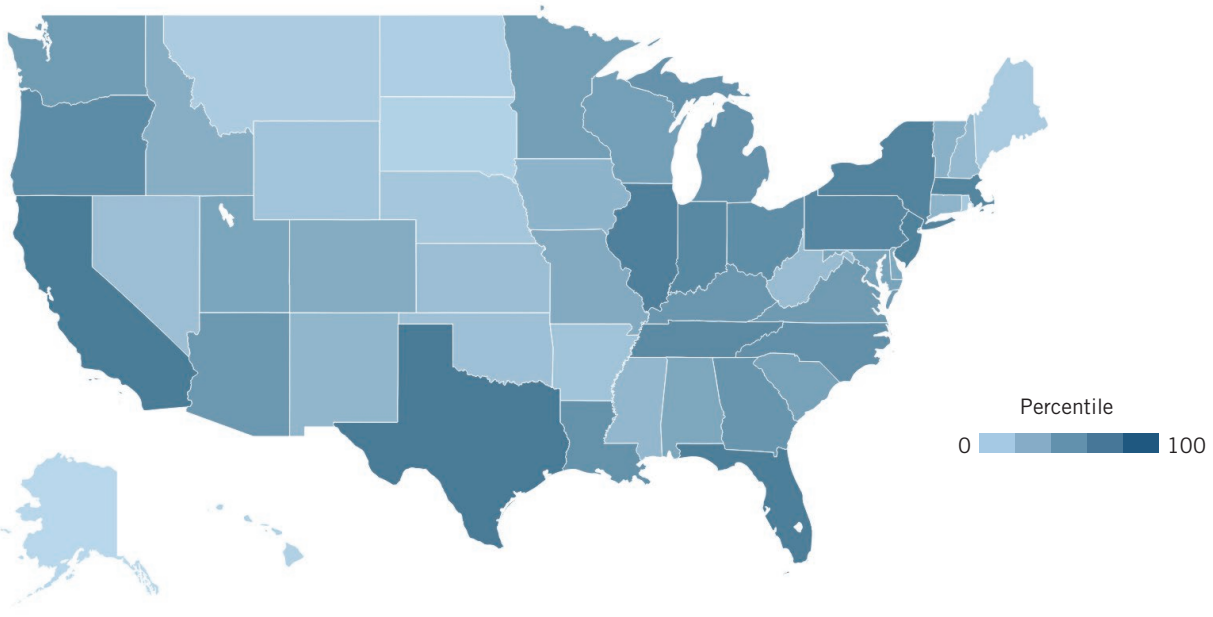


Rank*	District	Percentage	Rank*	District	Percentage
1	Arizona 5	100.0%	1	California 40	100.0%
1	Arizona 6	100.0%	1	California 41	100.0%
1	Arizona 7	100.0%	1	California 43	100.0%
1	Arizona 8	100.0%	1	California 44	100.0%
1	Arizona 9	100.0%	1	California 45	100.0%
1	California 11	100.0%	1	California 46	100.0%
1	California 12	100.0%	1	California 48	100.0%
1	California 13	100.0%	1	California 49	100.0%
1	California 15	100.0%	1	California 52	100.0%
1	California 16	100.0%	1	California 53	100.0%
1	California 17	100.0%	1	California 6	100.0%
1	California 21	100.0%	1	California 7	100.0%
1	California 22	100.0%	1	California 9	100.0%
1	California 27	100.0%	1	Colorado 1	100.0%
1	California 28	100.0%	1	Colorado 6	100.0%
1	California 29	100.0%	1	Colorado 7	100.0%
1	California 30	100.0%	1	Connecticut 1	100.0%
1	California 31	100.0%	1	Connecticut 2	100.0%
1	California 32	100.0%	1	Connecticut 3	100.0%
1	California 33	100.0%	1	Connecticut 4	100.0%
1	California 34	100.0%	1	Delaware At-Large	100.0%
1	California 35	100.0%	1	DC At-Large	100.0%
1	California 37	100.0%	1	Florida 10	100.0%
1	California 38	100.0%	1	Florida 11	100.0%
1	California 39	100.0%	1	Florida 12	100.0%
				U.S. Average	99.0%
				U.S. Median	99.9%

**In just under half of all congressional districts (205 out of 436), 100 percent of households have access to broadband Internet service at speeds of at least 10 Mbps. The first 50 are listed here alphabetically.*

High-Tech Manufacturing Exports

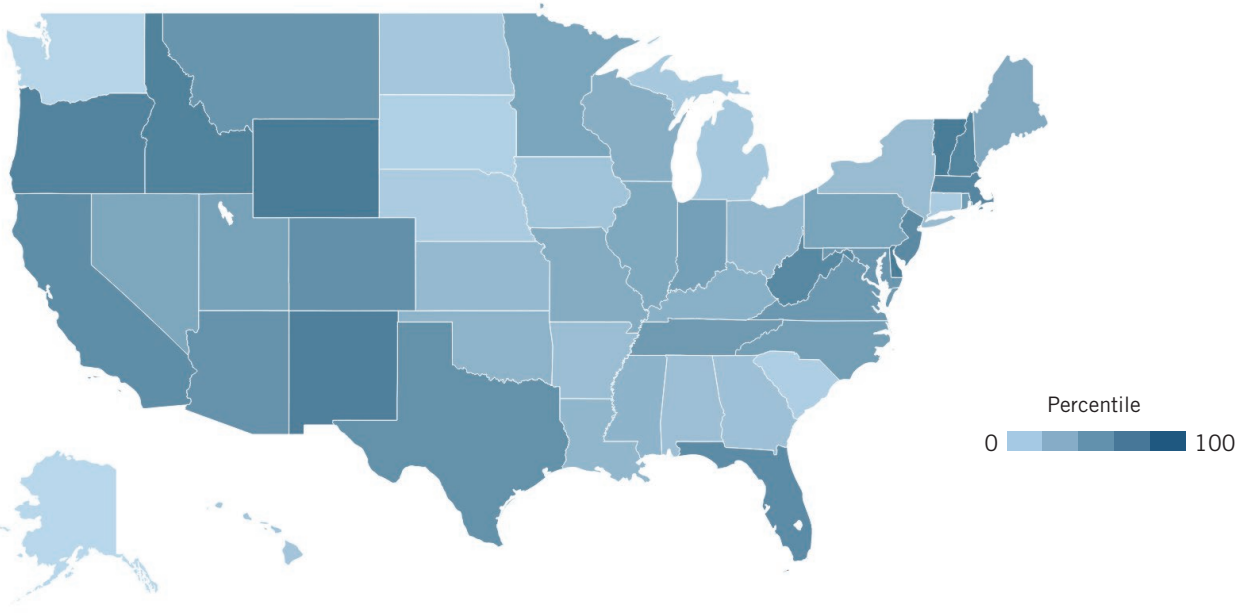
Gross Value From Chemical Manufacturing, and Computer and Electronic Products Exports



Rank	State	Gross Value	Rank	State	Gross Value
1	Texas	$92.63B	26	Alabama	$3.12B
2	California	$56.85B	27	Delaware	$3.10B
3	Florida	$21.26B	28	Missouri	$2.99B
4	Illinois	$14.93B	29	Colorado	$2.84B
5	New Jersey	$13.11B	30	Idaho	$2.60B
6	New York	$12.56B	30	Vermont	$2.60B
7	Massachusetts	$11.66B	32	Connecticut	$2.24B
8	Pennsylvania	$10.71B	33	Iowa	$2.18B
9	Indiana	$10.58B	34	New Mexico	$2.17B
10	Tennessee	$10.32B	35	Mississippi	$2.15B
11	Oregon	$9.67B	36	New Hampshire	$1.95B
12	Ohio	$9.30B	37	West Virginia	$1.90B
13	North Carolina	$8.91B	38	Kansas	$1.80B
14	Louisiana	$8.89B	39	Nevada	$1.75B
15	Michigan	$7.92B	40	Oklahoma	$1.26B
16	Georgia	$6.29B	41	Arkansas	$1.15B
17	Kentucky	$6.00B	42	Wyoming	$1.01B
18	Arizona	$5.99B	43	Nebraska	$940M
19	Virginia	$5.69B	44	Rhode Island	$526M
20	Washington	$5.12B	45	Maine	$377M
21	Minnesota	$5.07B	46	Montana	$356M
22	Wisconsin	$4.92B	47	North Dakota	$351M
23	South Carolina	$3.98B	48	Hawaii	$205M
24	Maryland	$3.86B	49	South Dakota	$176M
25	Utah	$3.40B	50	District of Columbia	$105M
			51	Alaska	$33M
				U.S. Average	$7.64B
				U.S. Median	$3.12B

High-Tech Share of All Manufacturing Exports

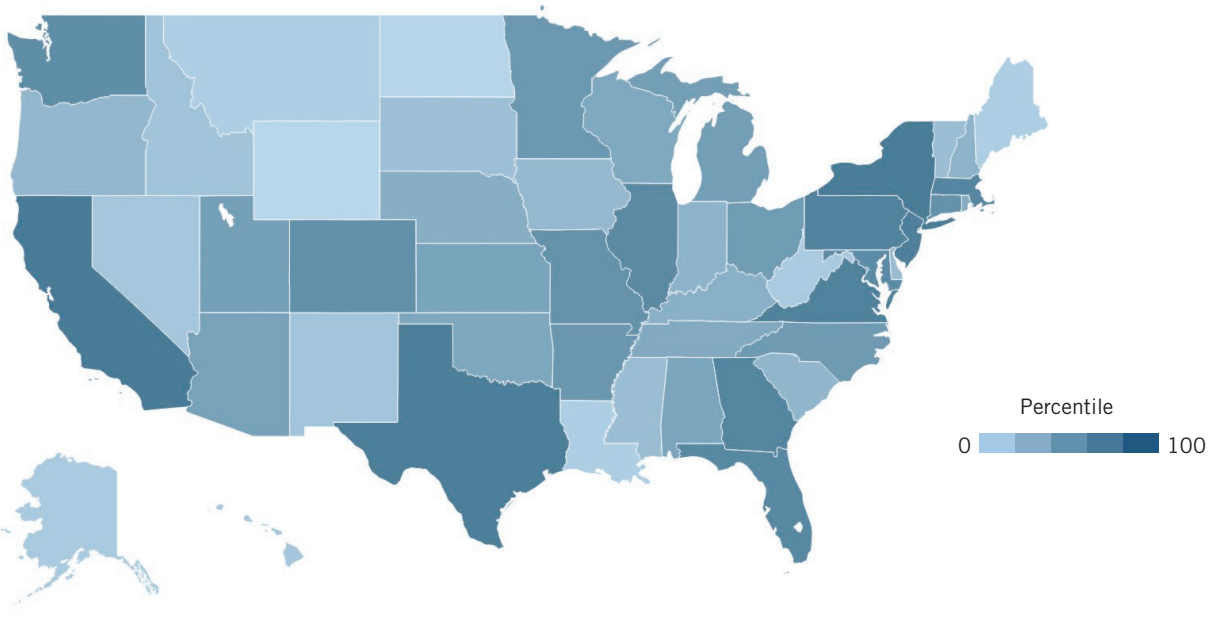
Chemical Manufacturing and Computer and Electronic Products Exports as a Share of All Manufacturing Exports



Rank	State	Percentage	Rank	State	Percentage
1	Wyoming	80.8%	26	Nevada	25.3%
2	Vermont	72.6%	27	Illinois	24.1%
3	Delaware	63.3%	28	Maine	23.3%
4	New Mexico	59.5%	29	Missouri	23.2%
5	Idaho	56.5%	30	Wisconsin	22.3%
6	Oregon	54.4%	31	Kentucky	22.1%
7	New Hampshire	49.4%	32	Oklahoma	21.1%
8	Massachusetts	45.2%	33	Mississippi	19.6%
9	West Virginia	43.4%	34	Louisiana	19.4%
10	New Jersey	40.4%	35	Ohio	18.9%
11	Florida	39.5%	36	Kansas	18.6%
12	California	38.0%	37	New York	18.4%
13	Colorado	36.6%	38	Arkansas	18.0%
14	Texas	36.1%	39	Alabama	17.7%
15	Arizona	35.5%	40	Georgia	17.5%
16	Montana	34.7%	41	Iowa	17.0%
17	Maryland	34.5%	42	Hawaii	16.6%
18	Virginia	34.4%	43	North Dakota	15.6%
19	Tennessee	32.2%	44	Michigan	14.8%
20	Rhode Island	31.5%	45	Connecticut	14.6%
21	North Carolina	30.4%	46	Nebraska	14.5%
22	Indiana	30.2%	47	South Carolina	13.7%
23	Utah	29.4%	48	South Dakota	12.0%
24	Pennsylvania	29.1%	49	District of Columbia	11.2%
25	Minnesota	25.7%	50	Washington	6.8%
			51	Alaska	6.1%
				U.S. Average	28.6%
				U.S. Median	25.3%

IT Services Exports

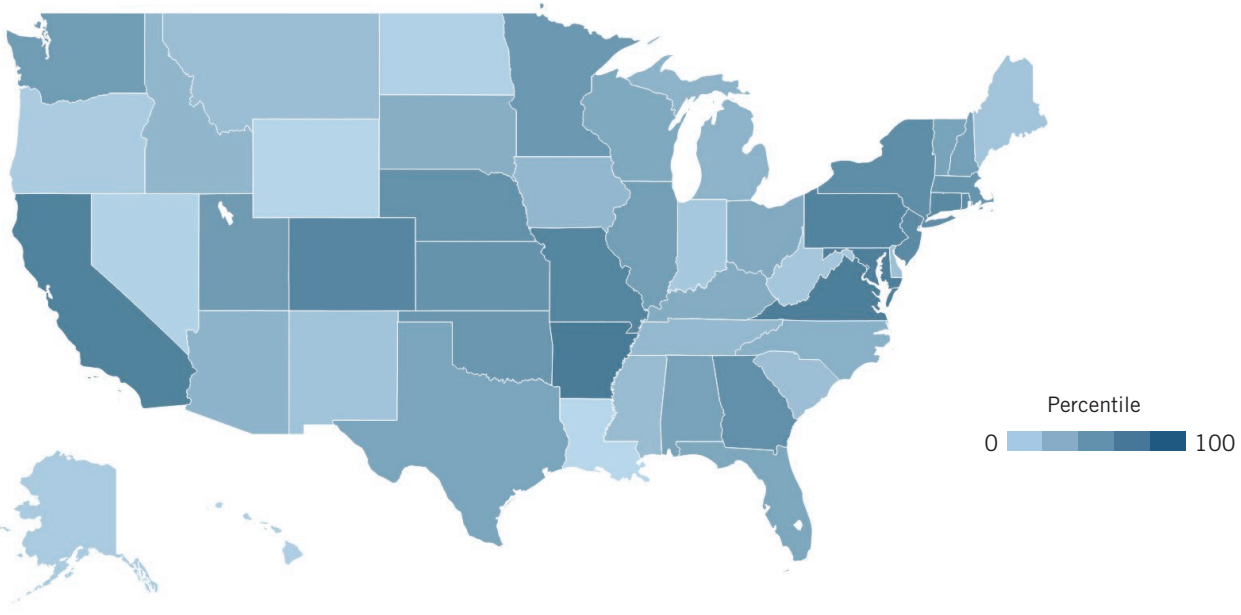
Gross Value From Telecommunications, Computer, and Information Services Exports



Rank	State	Gross Value	Rank	State	Gross Value
1	California	$9.57B	26	Oklahoma	$173M
2	New York	$4.78B	27	Wisconsin	$155M
3	Texas	$1.83B	28	Tennessee	$141M
4	New Jersey	$1.70B	29	Rhode Island	$130M
5	Virginia	$1.65B	30	Nebraska	$124M
6	Pennsylvania	$1.60B	31	Kentucky	$113M
7	Georgia	$1.33B	32	New Hampshire	$104M
8	Massachusetts	$1.26B	33	Indiana	$80M
9	Florida	$1.20B	34	South Carolina	$71M
10	Illinois	$1.19B	35	Oregon	$69M
11	Maryland	$1.14B	36	Iowa	$61M
12	Washington	$1.08B	37	Delaware	$37M
13	Colorado	$1.07B	38	Mississippi	$36M
14	Connecticut	$724M	38	Vermont	$36M
14	Missouri	$724M	40	South Dakota	$33M
16	District of Columbia	$611M	41	Idaho	$30M
17	Arkansas	$451M	42	New Mexico	$25M
18	Minnesota	$425M	43	Hawaii	$24M
19	North Carolina	$423M	43	Nevada	$24M
20	Ohio	$348M	45	Alaska	$15M
21	Michigan	$304M	45	West Virginia	$15M
22	Utah	$279M	47	Louisiana	$14M
23	Arizona	$257M	47	Maine	$14M
24	Kansas	$201M	47	Montana	$14M
25	Alabama	$175M	50	North Dakota	$5M
			51	Wyoming	$1M
				U.S. Average	$703M
				U.S. Median	$173M

IT Share of All Services Exports

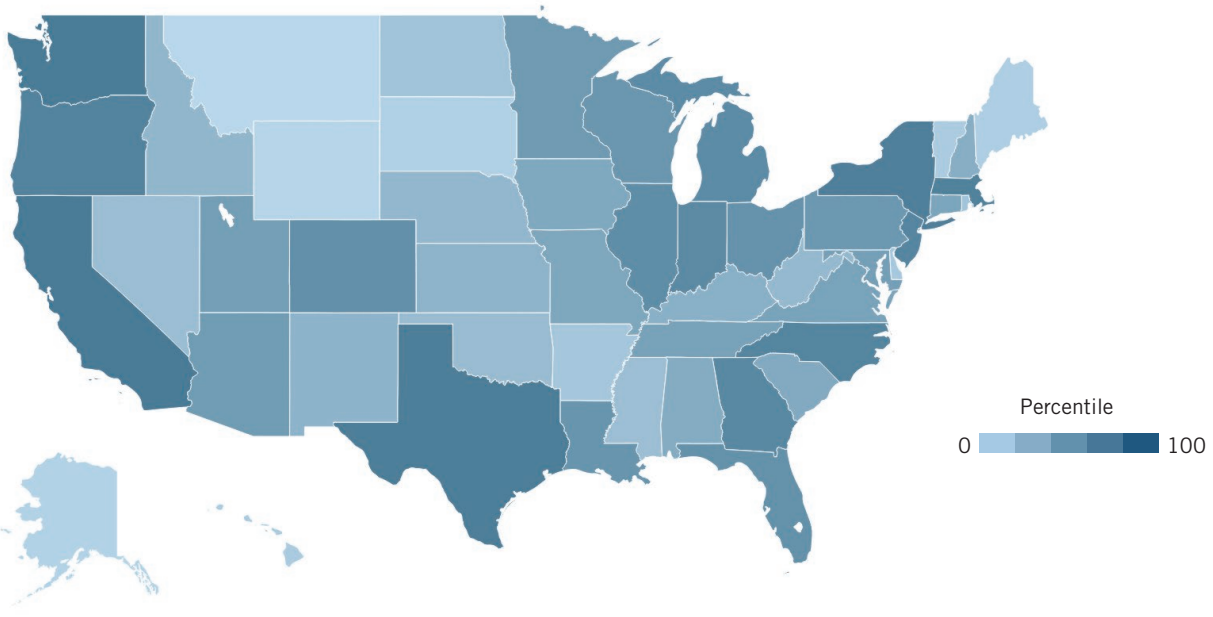
Telecommunications, Computer, and Information Services Exports as a Share of All Services Exports



Rank	State	Percentage	Rank	State	Percentage
1	Arkansas	21.4%	26	Florida	3.1%
2	District of Columbia	11.6%	27	Kentucky	2.4%
3	Virginia	9.8%	27	Ohio	2.4%
4	Maryland	9.2%	27	South Dakota	2.4%
5	California	8.1%	27	Wisconsin	2.4%
5	Missouri	8.1%	31	North Carolina	2.3%
5	Pennsylvania	8.1%	32	Michigan	2.2%
8	Colorado	7.9%	33	Arizona	2.0%
9	Connecticut	7.8%	34	Idaho	1.8%
10	New Jersey	7.4%	35	Iowa	1.7%
11	Rhode Island	7.0%	36	Tennessee	1.6%
12	New York	6.3%	37	Mississippi	1.5%
13	Georgia	6.0%	38	Montana	1.4%
14	Nebraska	5.6%	39	South Carolina	1.3%
15	Kansas	5.4%	40	Delaware	1.1%
16	Massachusetts	4.7%	41	Maine	1.0%
17	Oklahoma	4.5%	41	New Mexico	1.0%
18	Minnesota	4.4%	41	West Virginia	1.0%
18	Utah	4.4%	44	Alaska	0.9%
20	Washington	4.1%	44	Indiana	0.9%
21	Illinois	4.0%	46	Hawaii	0.6%
22	Alabama	3.8%	46	Oregon	0.6%
22	New Hampshire	3.8%	48	North Dakota	0.5%
24	Vermont	3.7%	49	Nevada	0.3%
25	Texas	3.4%	50	Wyoming	0.2%
			51	Louisiana	0.1%
				U.S. Average	5.2%
				U.S. Median	3.1%

Royalty and License Services Exports

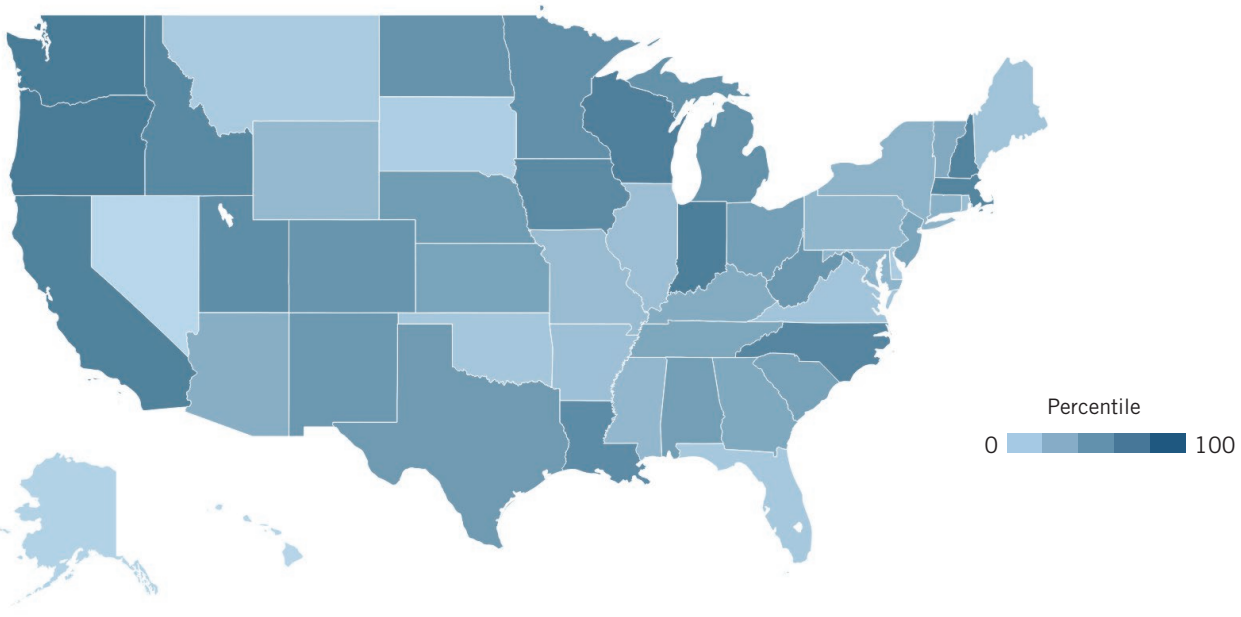
Gross Value of Intellectual Property Services Exports (Patents, Trademarks, Copyrights, and Other Licenses)



Rank	State	Gross Value	Rank	State	Gross Value
1	California	$36.50B	26	Missouri	$864M
2	Washington	$12.35B	27	Iowa	$813M
3	Texas	$9.82B	28	South Carolina	$811M
4	New York	$7.88B	29	Alabama	$773M
5	Massachusetts	$6.83B	30	New Hampshire	$718M
6	Oregon	$5.72B	31	Kentucky	$581M
7	North Carolina	$4.72B	32	Kansas	$552M
8	New Jersey	$3.32B	33	New Mexico	$452M
9	Georgia	$3.13B	34	Idaho	$406M
10	Indiana	$2.95B	35	Nebraska	$398M
11	Michigan	$2.83B	36	West Virginia	$282M
12	Illinois	$2.81B	37	Oklahoma	$254M
13	Colorado	$2.67B	38	Nevada	$247M
14	Florida	$2.26B	39	Mississippi	$238M
15	Ohio	$2.23B	40	District of Columbia	$228M
16	Louisiana	$2.19B	41	North Dakota	$190M
17	Wisconsin	$2.08B	42	Rhode Island	$179M
18	Pennsylvania	$2.02B	43	Arkansas	$176M
19	Minnesota	$1.97B	44	Delaware	$172M
20	Arizona	$1.52B	45	Hawaii	$133M
21	Utah	$1.34B	46	Vermont	$129M
22	Maryland	$1.28B	47	Maine	$103M
22	Tennessee	$1.28B	48	South Dakota	$68M
24	Virginia	$1.18B	49	Alaska	$59M
25	Connecticut	$1.04B	50	Wyoming	$55M
			51	Montana	$54M
				U.S. Average	$2.57B
				U.S. Median	$864M

Royalty and License Share of All Services Exports

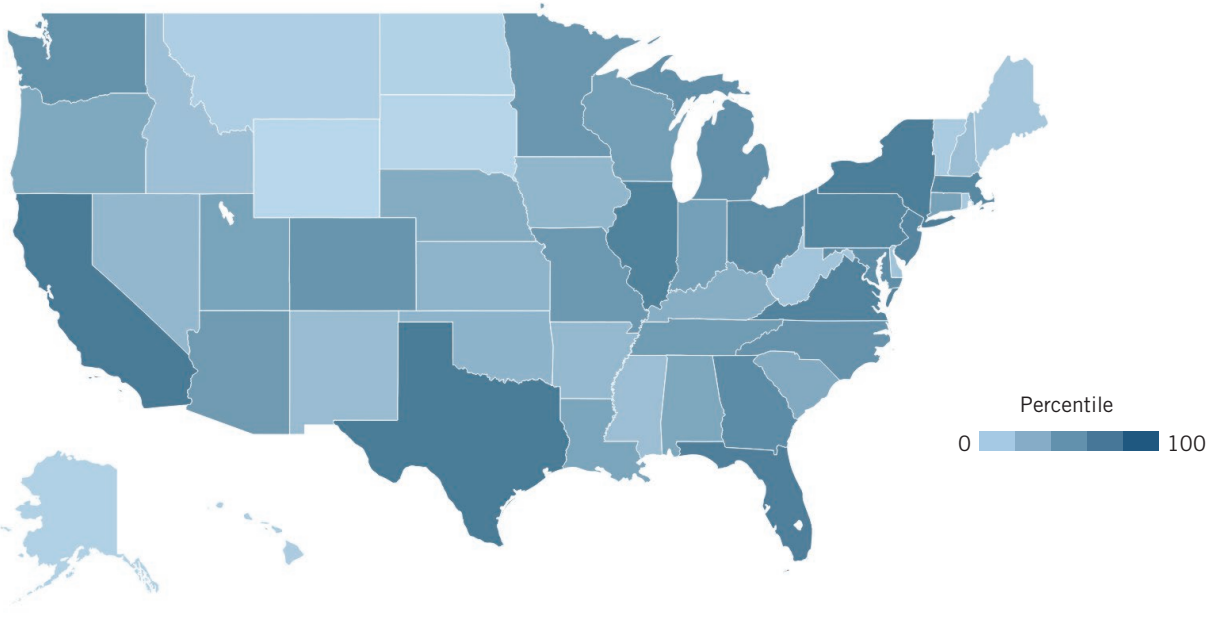
Intellectual Property Services Exports (Patents, Trademarks, Copyrights, and Other Licenses) as a Share of All Services Exports



Rank	State	Percentage	Rank	State	Percentage
1	Oregon	48.8%	26	Tennessee	14.4%
2	Washington	47.1%	27	Georgia	14.2%
3	Indiana	33.2%	28	Vermont	13.1%
4	Wisconsin	32.6%	29	Kentucky	12.3%
5	California	30.9%	30	Arizona	12.1%
6	New Hampshire	26.1%	31	Connecticut	11.2%
7	Massachusetts	25.3%	32	New York	10.4%
8	North Carolina	25.1%	33	Maryland	10.3%
9	Idaho	24.1%	34	Mississippi	10.2%
10	Iowa	22.3%	34	Pennsylvania	10.2%
11	Louisiana	22.1%	36	Wyoming	10.1%
12	Utah	21.0%	37	Missouri	9.6%
13	Minnesota	20.4%	37	Rhode Island	9.6%
14	Michigan	20.2%	39	Illinois	9.3%
15	North Dakota	20.0%	40	Arkansas	8.3%
16	Colorado	19.6%	41	Maine	7.5%
17	West Virginia	19.1%	42	Virginia	7.0%
18	New Mexico	18.6%	43	Oklahoma	6.6%
19	Texas	18.3%	44	Florida	5.9%
20	Nebraska	18.0%	45	Montana	5.5%
21	Alabama	16.7%	46	Delaware	4.9%
22	Ohio	15.5%	46	South Dakota	4.9%
23	South Carolina	15.3%	48	District of Columbia	4.3%
24	Kansas	14.9%	49	Alaska	3.5%
25	New Jersey	14.5%	50	Hawaii	3.1%
			51	Nevada	2.6%
				U.S. Average	19.1%
				U.S. Median	14.4%

High-Tech Sector Workers

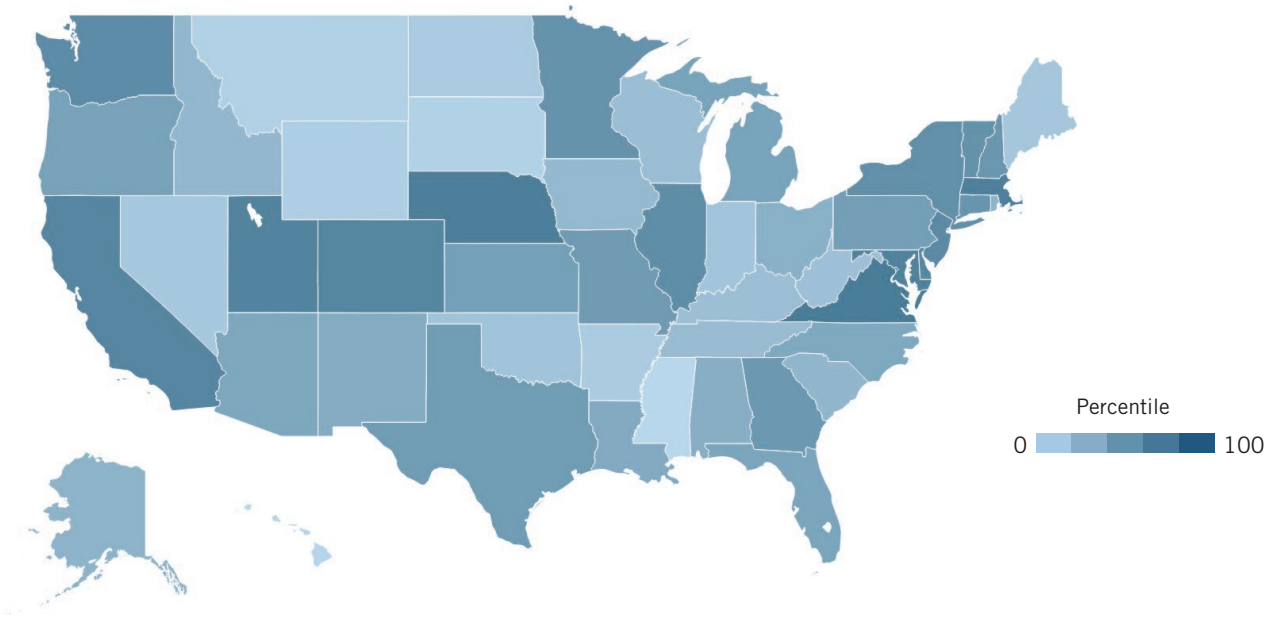
Employment Across Seven High-Tech Industry Sectors



Rank	State	Count	Rank	State	Count
1	California	1,868,883	26	Alabama	143,959
2	Texas	1,005,620	27	Oregon	143,759
3	New York	910,030	28	South Carolina	138,173
4	Florida	664,145	29	Nebraska	124,225
5	Illinois	598,720	30	Kentucky	118,156
6	Virginia	541,936	31	District of Columbia	116,352
7	Pennsylvania	489,212	32	Kansas	110,791
8	New Jersey	457,715	33	Oklahoma	102,631
9	Massachusetts	426,863	34	Iowa	101,735
10	Ohio	378,575	35	Nevada	75,441
11	Georgia	372,862	36	Arkansas	68,494
12	Maryland	351,314	37	New Mexico	62,489
13	Michigan	349,763	38	New Hampshire	59,206
14	Washington	336,551	39	Mississippi	49,348
15	North Carolina	326,555	40	Idaho	46,824
16	Colorado	288,491	41	Delaware	46,729
17	Minnesota	258,397	42	West Virginia	44,865
18	Missouri	232,613	43	Maine	38,383
19	Arizona	211,184	44	Rhode Island	35,263
20	Tennessee	185,693	45	Vermont	30,859
21	Wisconsin	185,448	46	Hawaii	30,318
22	Indiana	181,598	47	Montana	26,379
23	Connecticut	156,194	48	Alaska	24,449
24	Utah	148,253	49	North Dakota	22,721
25	Louisiana	144,637	50	South Dakota	20,357
			51	Wyoming	16,148
				U.S. Average	252,339
				U.S. Median	143,959

High-Tech Share of Total Workforce

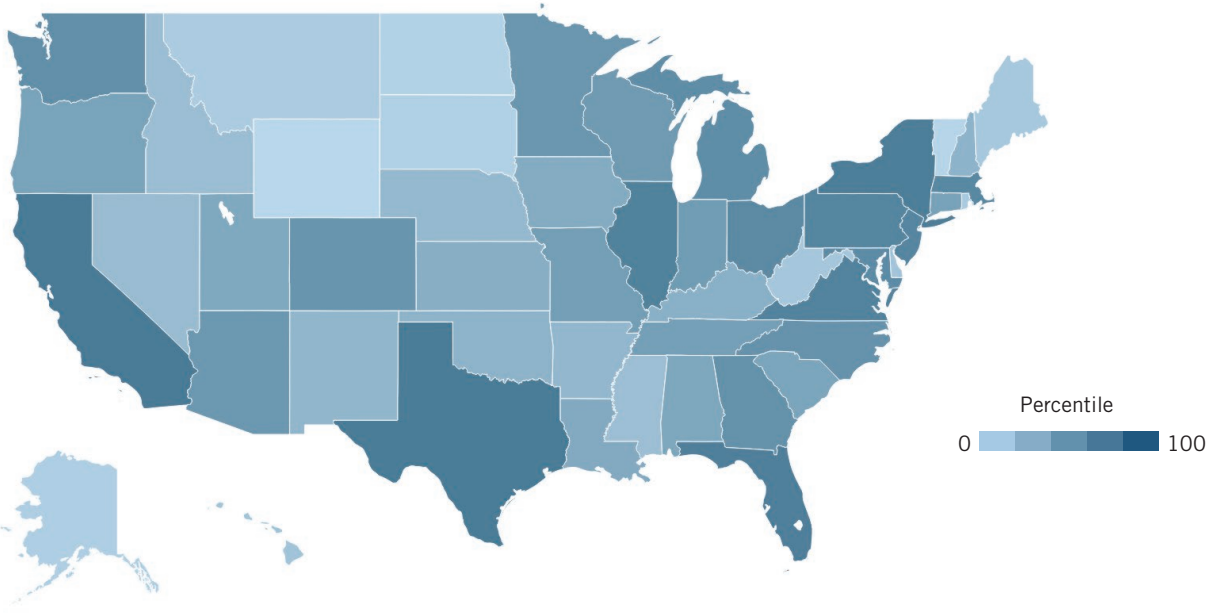
Employment Across Seven High-Tech Industry Sectors as a Share of Total Workforce



Rank	State	Percentage	Rank	State	Percentage
1	District of Columbia	33.7%	26	Arizona	7.4%
2	Virginia	13.4%	27	North Carolina	7.3%
3	Nebraska	12.7%	28	Louisiana	7.2%
4	Massachusetts	12.3%	29	Alabama	7.1%
5	Maryland	11.7%	29	New Mexico	7.1%
6	Utah	10.9%	31	Ohio	7.0%
7	Colorado	10.7%	32	Alaska	6.9%
8	California	10.6%	33	Rhode Island	6.8%
8	Delaware	10.6%	34	South Carolina	6.5%
10	New Jersey	10.5%	35	Idaho	6.4%
11	Washington	10.1%	35	Iowa	6.4%
12	Illinois	9.7%	35	Tennessee	6.4%
12	New York	9.7%	35	Wisconsin	6.4%
14	Vermont	9.5%	39	Kentucky	6.2%
15	Minnesota	9.0%	40	West Virginia	6.0%
16	Connecticut	8.7%	41	Indiana	5.9%
17	New Hampshire	8.4%	41	Maine	5.9%
18	Georgia	8.3%	41	Oklahoma	5.9%
18	Missouri	8.3%	44	Nevada	5.8%
20	Pennsylvania	8.1%	44	North Dakota	5.8%
20	Texas	8.1%	46	Arkansas	5.4%
22	Kansas	7.9%	46	Wyoming	5.4%
22	Michigan	7.9%	48	Montana	5.3%
22	Oregon	7.9%	49	Hawaii	4.6%
25	Florida	7.6%	49	South Dakota	4.6%
			51	Mississippi	4.1%
				U.S. Average	8.7%
				U.S. Median	7.4%

STEM Workers

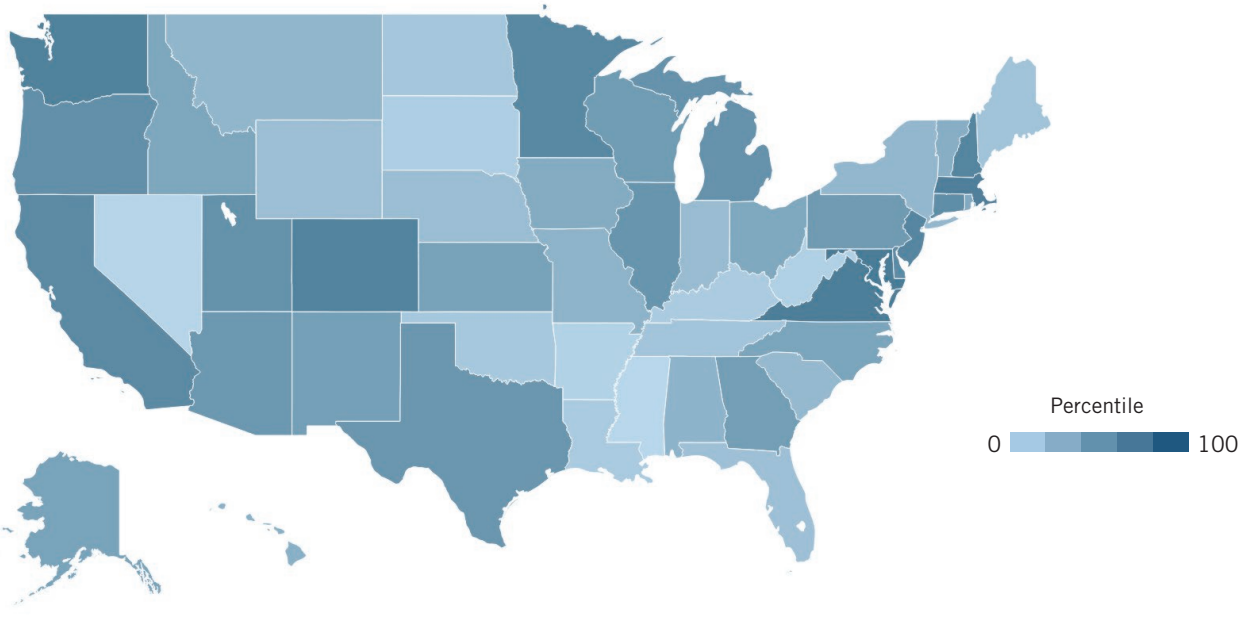
Employment in Science, Technology, Engineering, and Mathematics Occupations



Rank	State	Count	Rank	State	Count
1	California	1,116,786	26	Alabama	92,535
2	Texas	660,369	27	Utah	80,695
3	New York	424,702	28	Louisiana	77,159
4	Florida	361,878	29	Iowa	75,884
5	Illinois	329,740	30	Kansas	71,357
6	Virginia	328,360	31	Kentucky	70,049
7	Pennsylvania	315,882	32	Oklahoma	67,431
8	New Jersey	281,603	33	New Hampshire	46,036
9	Massachusetts	275,121	34	New Mexico	45,011
10	Ohio	274,337	35	Arkansas	44,456
11	Maryland	262,465	36	Nebraska	43,026
12	Michigan	258,075	37	Nevada	40,957
13	Washington	255,981	38	Idaho	36,685
14	Georgia	230,057	39	Mississippi	33,743
15	North Carolina	226,491	40	District of Columbia	32,797
16	Colorado	192,385	41	Hawaii	31,045
17	Minnesota	183,087	42	Delaware	27,231
18	Arizona	152,071	43	West Virginia	26,397
19	Wisconsin	150,889	44	Maine	26,327
20	Indiana	138,242	45	Rhode Island	25,165
21	Missouri	128,579	46	Montana	22,536
22	Tennessee	116,071	47	Alaska	17,979
23	Connecticut	110,847	48	South Dakota	15,799
24	Oregon	110,012	49	North Dakota	15,607
25	South Carolina	95,537	50	Vermont	15,334
			51	Wyoming	12,436
				U.S. Average	158,299
				U.S. Median	92,535

STEM Share of Total Workforce

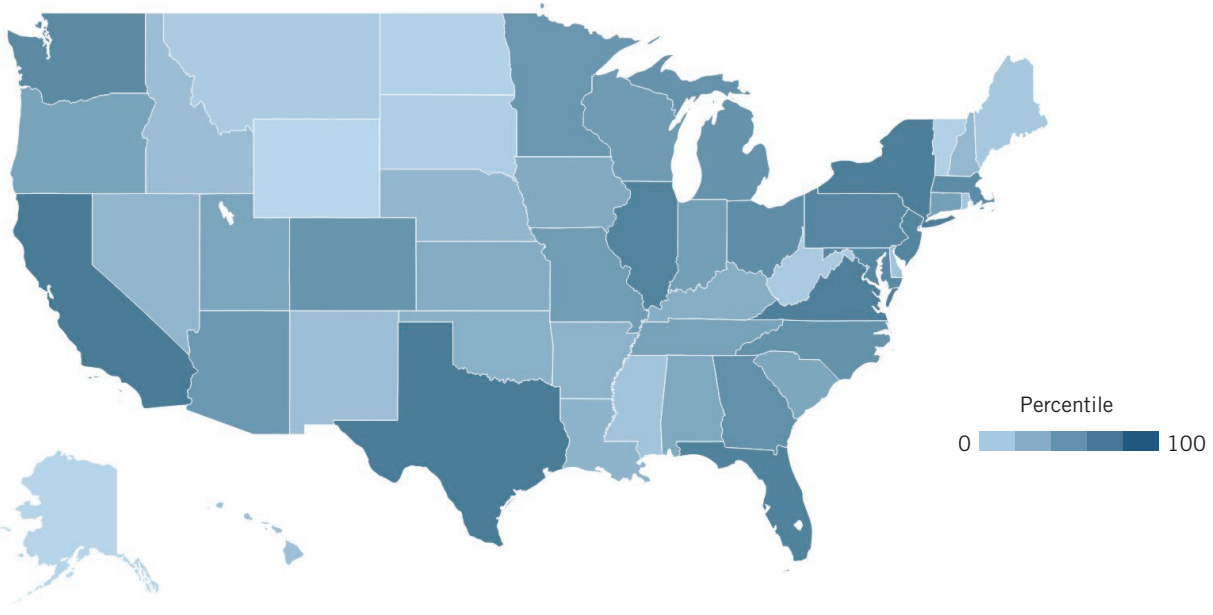
Employment in Science, Technology, Engineering, and Mathematics Occupations as a Share of Total Workforce



Rank	State	Percentage	Rank	State	Percentage
1	District of Columbia	9.5%	26	Idaho	5.0%
2	Maryland	8.8%	26	Ohio	5.0%
3	Virginia	8.1%	28	Rhode Island	4.9%
4	Massachusetts	7.9%	29	Iowa	4.8%
5	Washington	7.7%	30	Hawaii	4.7%
6	Colorado	7.1%	30	Vermont	4.7%
7	New Hampshire	6.5%	32	Alabama	4.6%
8	Minnesota	6.4%	32	Missouri	4.6%
8	New Jersey	6.4%	32	Montana	4.6%
10	California	6.3%	35	Indiana	4.5%
11	Connecticut	6.2%	35	New York	4.5%
11	Delaware	6.2%	35	South Carolina	4.5%
13	Oregon	6.1%	38	Nebraska	4.4%
14	Utah	5.9%	39	Wyoming	4.2%
15	Michigan	5.8%	40	Florida	4.1%
16	Illinois	5.4%	41	Maine	4.0%
17	Arizona	5.3%	41	North Dakota	4.0%
17	Texas	5.3%	41	Tennessee	4.0%
19	Georgia	5.2%	44	Oklahoma	3.9%
19	Pennsylvania	5.2%	45	Louisiana	3.8%
19	Wisconsin	5.2%	46	Kentucky	3.7%
22	Alaska	5.1%	47	South Dakota	3.6%
22	Kansas	5.1%	48	Arkansas	3.5%
22	New Mexico	5.1%	48	West Virginia	3.5%
22	North Carolina	5.1%	50	Nevada	3.2%
			51	Mississippi	2.8%
				U.S. Average	5.5%
				U.S. Median	5.0%

Computer and Math Workers

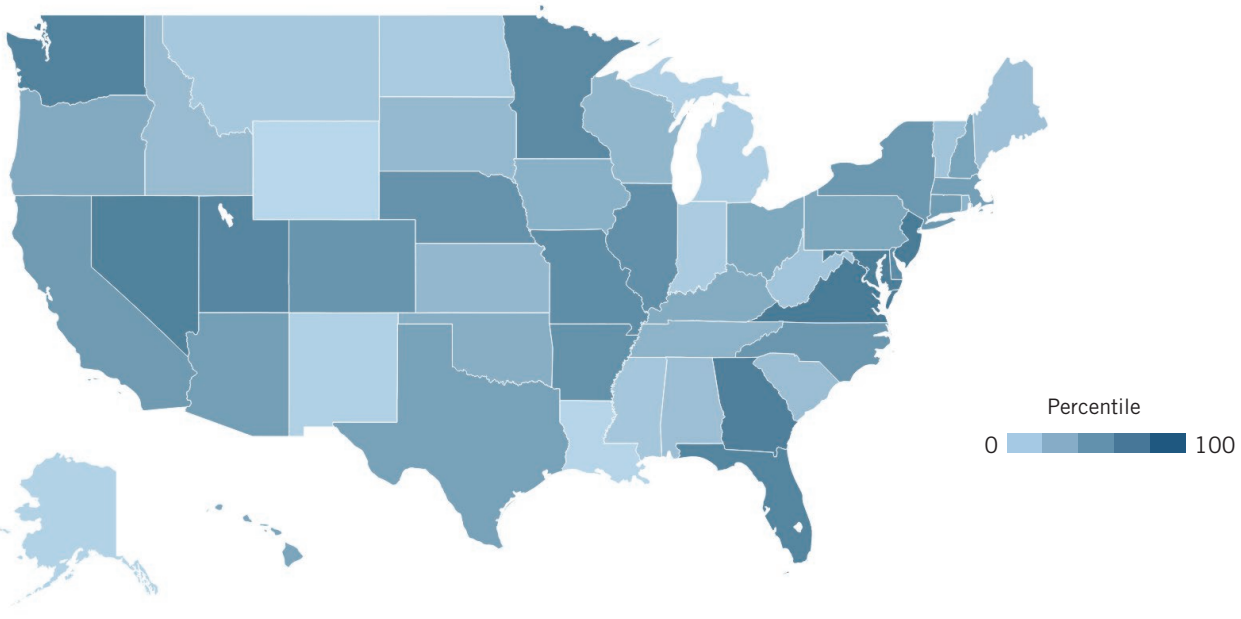
Employment in Computer and Mathematics Occupations



Rank	State	Count	Rank	State	Count
1	California	565,055	26	South Carolina	42,784
2	Texas	325,189	27	Alabama	41,217
3	New York	220,147	28	Iowa	35,851
4	Virginia	204,991	29	Kansas	33,421
5	Florida	201,408	30	Kentucky	33,277
6	Illinois	178,761	31	Oklahoma	31,897
7	New Jersey	171,071	32	Arkansas	23,831
8	Pennsylvania	154,411	33	Louisiana	23,780
9	Maryland	150,862	34	Nevada	23,142
10	Washington	143,072	35	Nebraska	22,941
11	Massachusetts	135,893	36	New Hampshire	22,638
12	Ohio	131,830	37	District of Columbia	17,995
13	Georgia	131,112	38	Idaho	16,442
14	North Carolina	117,404	39	New Mexico	16,391
15	Michigan	103,935	40	Hawaii	15,246
16	Colorado	100,972	41	Delaware	14,813
17	Minnesota	99,725	42	Mississippi	14,231
18	Arizona	75,745	43	Rhode Island	11,854
19	Wisconsin	70,774	44	Maine	11,496
20	Missouri	69,800	45	West Virginia	11,244
21	Indiana	56,278	46	Montana	9,386
22	Connecticut	55,632	47	South Dakota	7,305
23	Tennessee	54,798	48	Vermont	6,595
24	Oregon	52,514	49	North Dakota	6,442
25	Utah	44,745	50	Alaska	5,857
			51	Wyoming	3,036
				U.S. Average	80,769
				U.S. Median	42,784

Computer and Math Share of STEM Workers

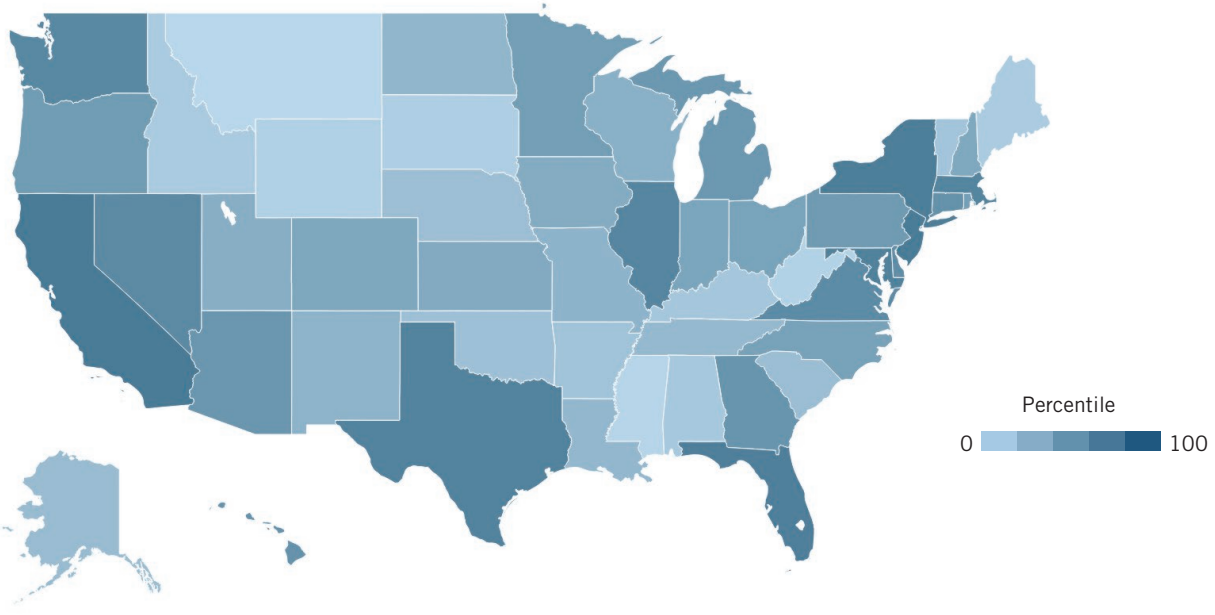
Employment in Computer and Mathematics Occupations as a Share of All STEM Workers



Rank	State	Percentage	Rank	State	Percentage
1	Virginia	62.4%	26	Pennsylvania	48.9%
2	New Jersey	60.7%	27	Ohio	48.1%
3	Maryland	57.5%	28	Oregon	47.7%
4	Georgia	57.0%	29	Kentucky	47.5%
5	Nevada	56.5%	30	Oklahoma	47.3%
6	Washington	55.9%	31	Iowa	47.2%
7	Florida	55.7%	31	Tennessee	47.2%
8	Utah	55.4%	33	Rhode Island	47.1%
9	District of Columbia	54.9%	34	Wisconsin	46.9%
10	Minnesota	54.5%	35	Kansas	46.8%
11	Delaware	54.4%	36	South Dakota	46.2%
12	Missouri	54.3%	37	Idaho	44.8%
13	Illinois	54.2%	37	South Carolina	44.8%
14	Arkansas	53.6%	39	Alabama	44.5%
15	Nebraska	53.3%	40	Maine	43.7%
16	Colorado	52.5%	41	Vermont	43.0%
17	New York	51.8%	42	West Virginia	42.6%
17	North Carolina	51.8%	43	Mississippi	42.2%
19	California	50.6%	44	Montana	41.6%
20	Connecticut	50.2%	45	North Dakota	41.3%
21	Arizona	49.8%	46	Indiana	40.7%
22	Massachusetts	49.4%	47	Michigan	40.3%
23	New Hampshire	49.2%	48	New Mexico	36.4%
23	Texas	49.2%	49	Alaska	32.6%
25	Hawaii	49.1%	50	Louisiana	30.8%
			51	Wyoming	24.4%
				U.S. Average	51.0%
				U.S. Median	48.9%

Highly Educated Immigrant Workers

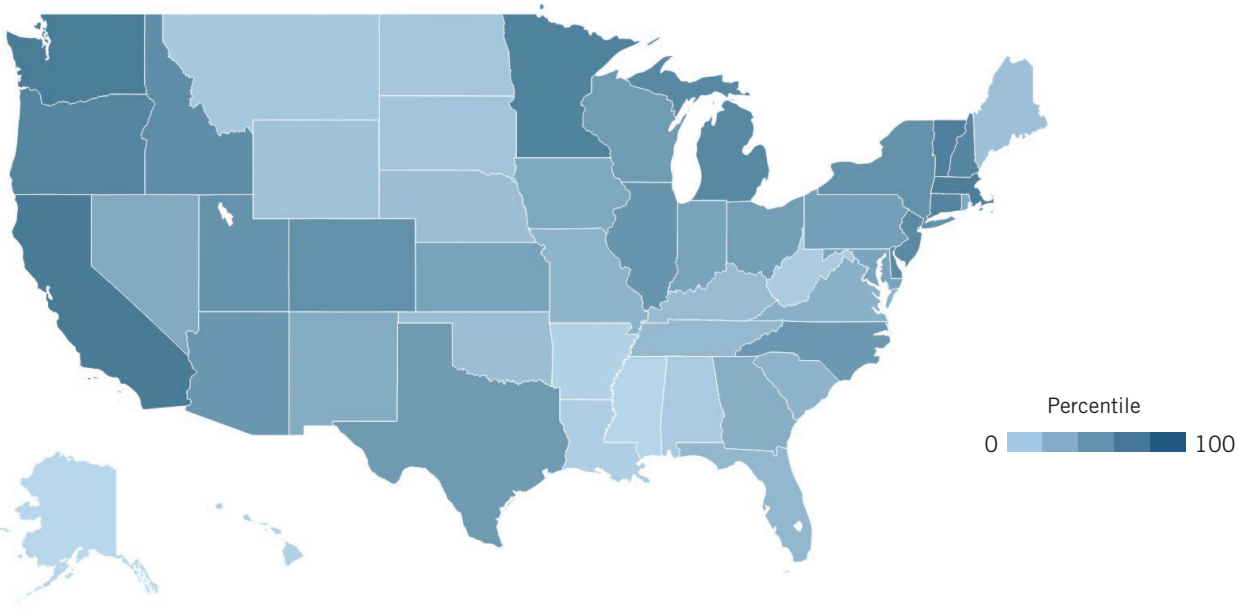
Number of Foreign-Born Individuals With a Graduate of Professional Degree



Rank	State	Count	Rank	State	Count
1	California	880,636	26	District of Columbia	23,397
2	New York	454,280	27	South Carolina	22,206
3	Texas	312,503	28	Kansas	19,078
4	Florida	301,169	29	Louisiana	18,506
5	New Jersey	253,510	30	Alabama	17,509
6	Illinois	193,736	31	Kentucky	17,337
7	Massachusetts	157,357	32	Iowa	15,928
8	Maryland	147,481	33	Utah	15,568
9	Virginia	146,870	34	Hawaii	15,234
10	Pennsylvania	117,617	35	Oklahoma	14,299
11	Washington	100,445	36	New Mexico	13,134
12	Michigan	96,595	37	Delaware	13,080
13	Georgia	96,030	38	New Hampshire	11,389
14	Ohio	80,173	39	Rhode Island	10,406
15	North Carolina	70,927	40	Arkansas	9,616
16	Connecticut	67,365	41	Nebraska	8,299
17	Arizona	61,174	42	Mississippi	5,787
18	Colorado	47,467	43	Maine	5,588
19	Minnesota	46,140	44	Idaho	4,886
20	Indiana	36,821	45	West Virginia	4,481
21	Oregon	36,048	46	Vermont	4,075
22	Missouri	34,082	47	Alaska	3,532
23	Wisconsin	31,739	48	North Dakota	2,931
24	Tennessee	30,650	49	South Dakota	2,531
25	Nevada	25,412	50	Montana	2,502
			51	Wyoming	1,793
				U.S. Average	80,575
				U.S. Median	23,397

Immigrant Share of Highly Educated Workers

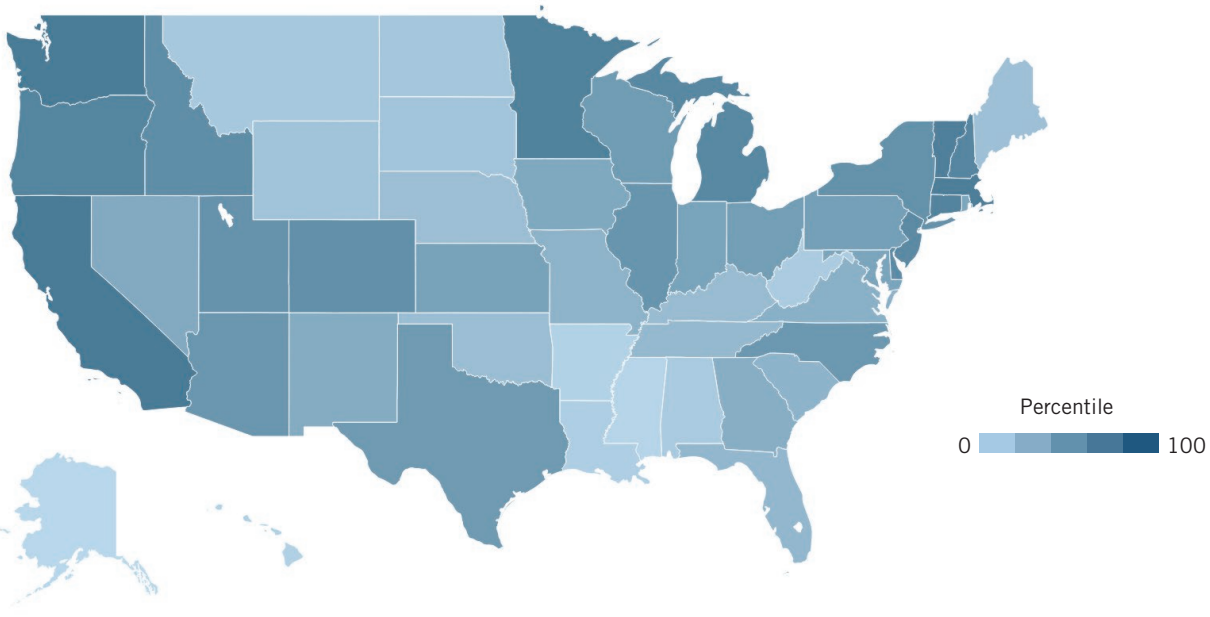
Number of Foreign-Born Individuals With a Graduate or Professional Degree as a Share of All Workers with a Graduate or Professional Degree



Rank	State	Percentage	Rank	State	Percentage
1	California	31.0%	26	Colorado	10.0%
2	New Jersey	30.2%	27	New Hampshire	9.6%
3	New York	23.4%	28	Kansas	9.5%
4	Florida	23.1%	29	Iowa	9.3%
5	Maryland	21.8%	29	Utah	9.3%
6	Texas	20.8%	31	Wisconsin	8.8%
7	Massachusetts	19.9%	32	New Mexico	8.6%
8	Illinois	18.6%	33	Missouri	8.5%
9	Washington	18.5%	34	Louisiana	8.3%
10	Nevada	17.9%	34	North Dakota	8.3%
11	Virginia	17.8%	36	Tennessee	8.1%
12	Delaware	17.6%	37	Alaska	7.8%
12	District of Columbia	17.6%	38	South Carolina	7.6%
14	Connecticut	16.8%	39	Nebraska	7.3%
15	Hawaii	15.5%	39	Oklahoma	7.3%
16	Georgia	14.4%	41	Arkansas	6.9%
17	Arizona	14.3%	42	Vermont	6.7%
18	Michigan	14.2%	43	Kentucky	6.6%
19	Pennsylvania	12.3%	44	Alabama	6.3%
20	Oregon	12.0%	45	Idaho	6.0%
21	Minnesota	11.8%	46	Maine	5.9%
22	Rhode Island	11.5%	47	South Dakota	5.8%
23	North Carolina	11.4%	48	Wyoming	5.6%
24	Ohio	10.8%	49	West Virginia	4.8%
25	Indiana	10.1%	50	Mississippi	4.0%
			50	Montana	4.0%
				U.S. Average	17.8%
				U.S. Median	10.0%

Patent Filers Per 1,000 Workers

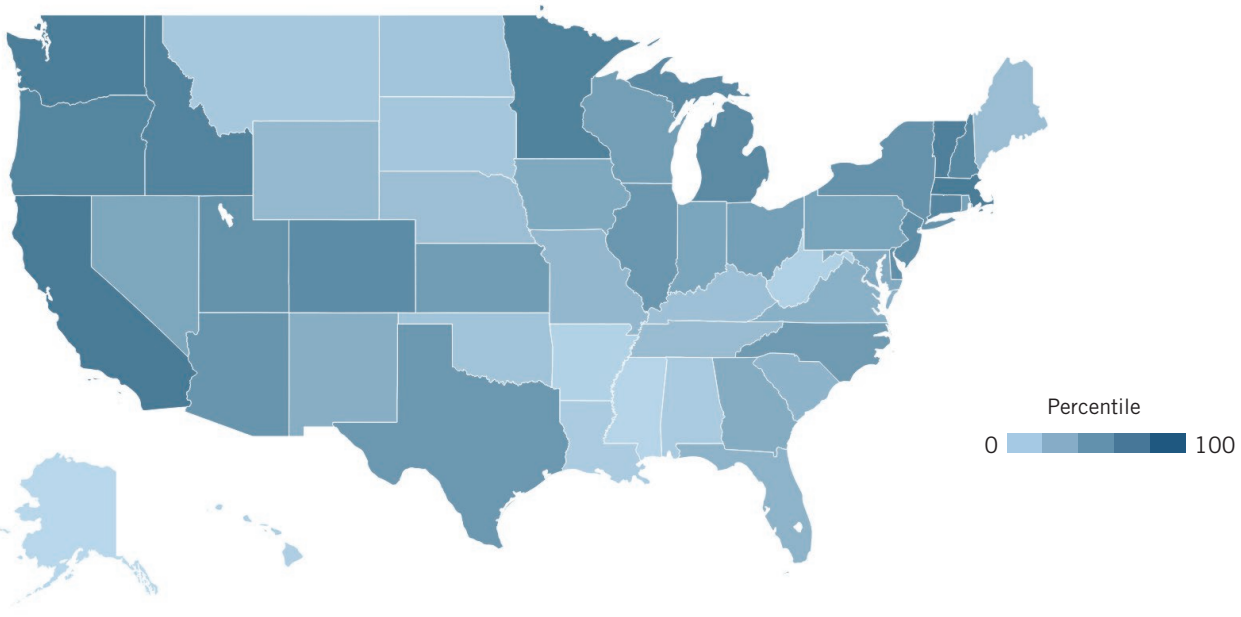
Number of Individuals Per 1,000 Workers Who Filed a Utility Patent From 2012 to 2015



Rank	State	Count	Rank	State	Count
1	California	23.6	26	Rhode Island	6.1
2	Washington	23.3	27	Iowa	5.9
3	Massachusetts	22.3	28	Nevada	5.7
4	Vermont	20.6	29	Georgia	5.2
5	Minnesota	17.6	29	New Mexico	5.2
6	Connecticut	14.0	31	Virginia	5.0
7	Oregon	13.5	32	Missouri	4.4
8	New Hampshire	13.0	33	South Carolina	4.3
9	Michigan	12.5	34	District of Columbia	4.0
10	New Jersey	12.3	35	Florida	3.9
11	Delaware	11.8	36	Tennessee	3.5
12	Idaho	11.1	37	Kentucky	3.4
13	Colorado	10.6	38	Nebraska	3.1
14	New York	10.3	38	Oklahoma	3.1
15	Utah	9.6	40	Maine	2.9
16	Illinois	8.5	41	Wyoming	2.8
17	Arizona	8.3	42	South Dakota	2.6
18	North Carolina	8.2	43	Alabama	2.3
19	Texas	7.8	43	Montana	2.3
20	Wisconsin	7.6	43	North Dakota	2.3
21	Ohio	7.4	46	West Virginia	1.8
22	Pennsylvania	7.2	47	Louisiana	1.7
23	Kansas	7.1	48	Hawaii	1.5
24	Indiana	6.7	49	Arkansas	1.3
25	Maryland	6.3	50	Mississippi	1.1
			51	Alaska	0.9
				U.S. Average	10.0
				U.S. Median	6.1

Patents Filed Per 1,000 Workers

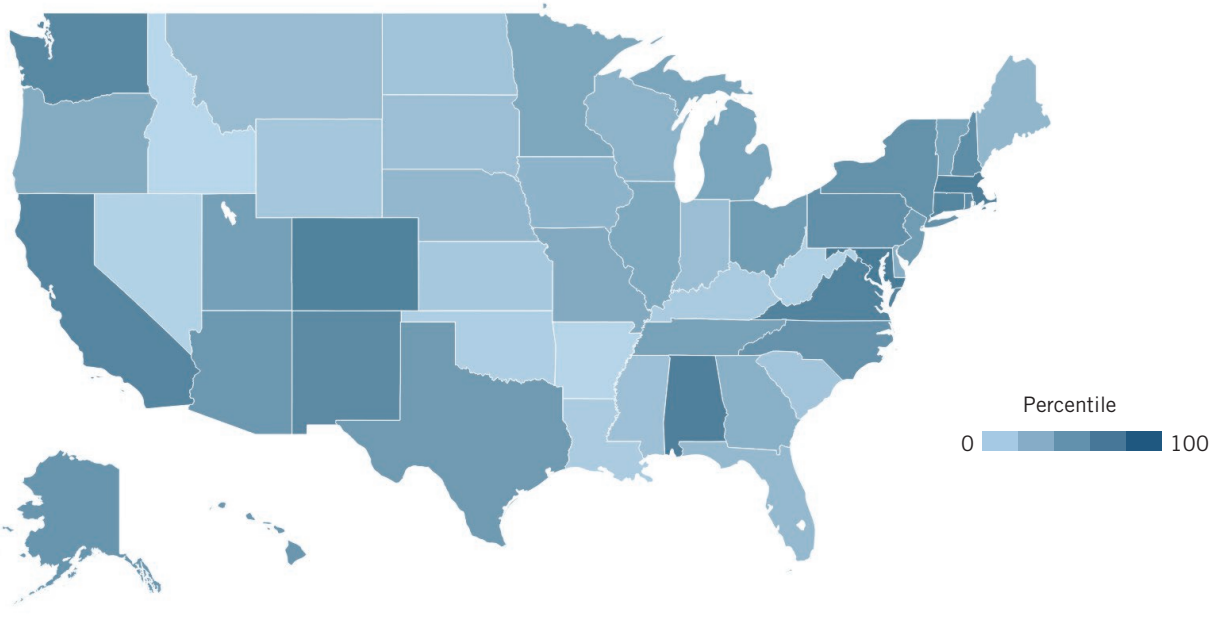
Number of Utility Patents Filed Per 1,000 Workers From 2012 to 2015



Rank	State	Count	Rank	State	Count
1	California	8.5	26	Iowa	2.4
2	Massachusetts	7.4	26	Maryland	2.4
3	Washington	7.2	26	Nevada	2.4
4	Vermont	6.3	29	Georgia	2.2
5	Minnesota	6.0	30	New Mexico	2.0
6	Idaho	5.2	31	Virginia	1.9
7	Connecticut	4.9	32	Florida	1.8
7	Oregon	4.9	33	District of Columbia	1.7
9	New Hampshire	4.7	33	South Carolina	1.7
10	Michigan	4.6	35	Missouri	1.6
11	Colorado	4.3	35	Wyoming	1.6
11	New Jersey	4.3	37	Tennessee	1.4
13	Delaware	3.9	38	Kentucky	1.3
14	Utah	3.8	38	Maine	1.3
15	New York	3.6	38	Nebraska	1.3
16	Arizona	3.3	41	Oklahoma	1.2
17	Illinois	3.1	42	North Dakota	1.1
18	Texas	3.0	42	South Dakota	1.1
19	North Carolina	2.9	44	Montana	1.0
20	Kansas	2.8	45	Alabama	0.9
21	Ohio	2.7	46	Hawaii	0.8
21	Wisconsin	2.7	46	Louisiana	0.8
23	Pennsylvania	2.6	48	West Virginia	0.7
24	Rhode Island	2.5	49	Arkansas	0.6
24	Indiana	2.5	50	Alaska	0.5
			50	Mississippi	0.5
				U.S. Average	3.7
				U.S. Median	2.4

Public R&D Funding Per Worker

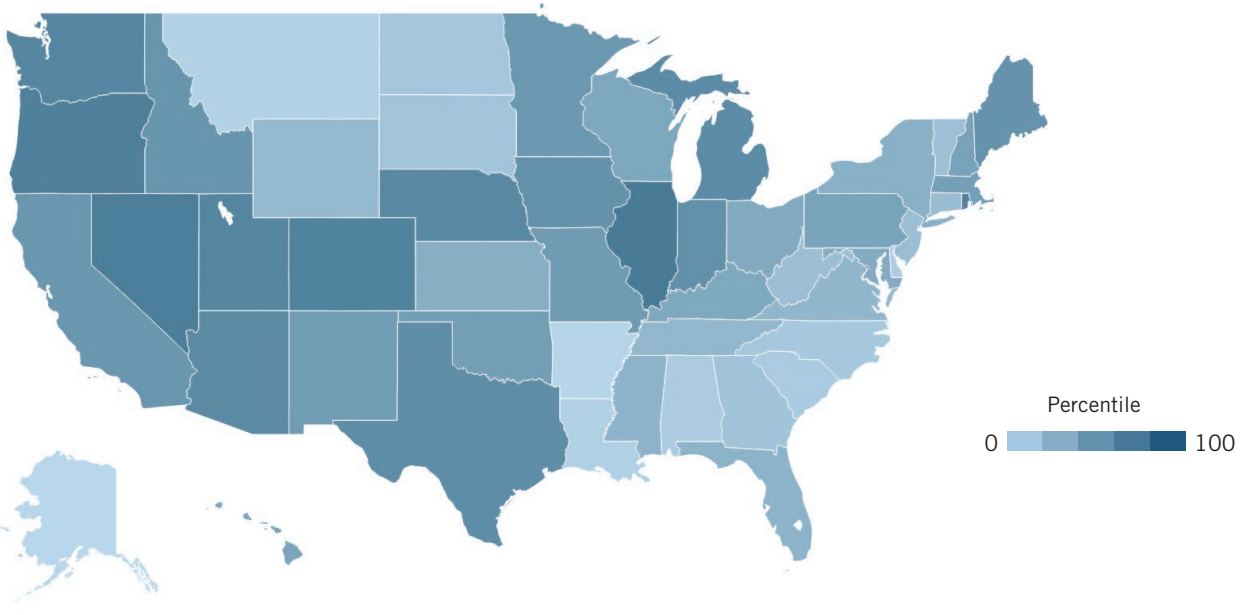
Gross Value of Federal R&D Outlays, Per Worker, from DOA, DOD, DOE, DHHS, NASA, and NSF in FY 2014 and 2015



Rank	State	Gross Value	Rank	State	Gross Value
1	District of Columbia	$7,235	26	Minnesota	$638
2	Maryland	$3,803	27	Illinois	$637
3	Massachusetts	$3,588	28	Missouri	$627
4	Alabama	$2,493	29	Oregon	$613
5	Colorado	$2,295	30	Delaware	$606
6	Virginia	$2,067	31	Georgia	$572
7	Connecticut	$1,759	32	Wisconsin	$534
8	California	$1,708	33	Iowa	$531
9	Washington	$1,667	34	Maine	$515
10	New Mexico	$1,267	35	Nebraska	$492
11	Rhode Island	$1,181	36	Florida	$463
12	New Hampshire	$1,060	37	Montana	$451
13	Pennsylvania	$1,007	38	Indiana	$437
14	New York	$901	39	South Dakota	$418
15	North Carolina	$855	40	Mississippi	$385
16	Alaska	$827	41	North Dakota	$360
17	Hawaii	$792	42	South Carolina	$354
18	Arizona	$781	43	Wyoming	$336
19	Texas	$771	44	Kansas	$329
20	New Jersey	$733	45	Kentucky	$326
20	Ohio	$733	46	Louisiana	$292
22	Utah	$722	47	Oklahoma	$282
23	Tennessee	$716	48	West Virginia	$266
24	Vermont	$703	49	Nevada	$264
25	Michigan	$663	50	Arkansas	$242
			51	Idaho	$236
				U.S. Average	$1,059
				U.S. Median	$638

Average Number of Broadband Providers Per Household

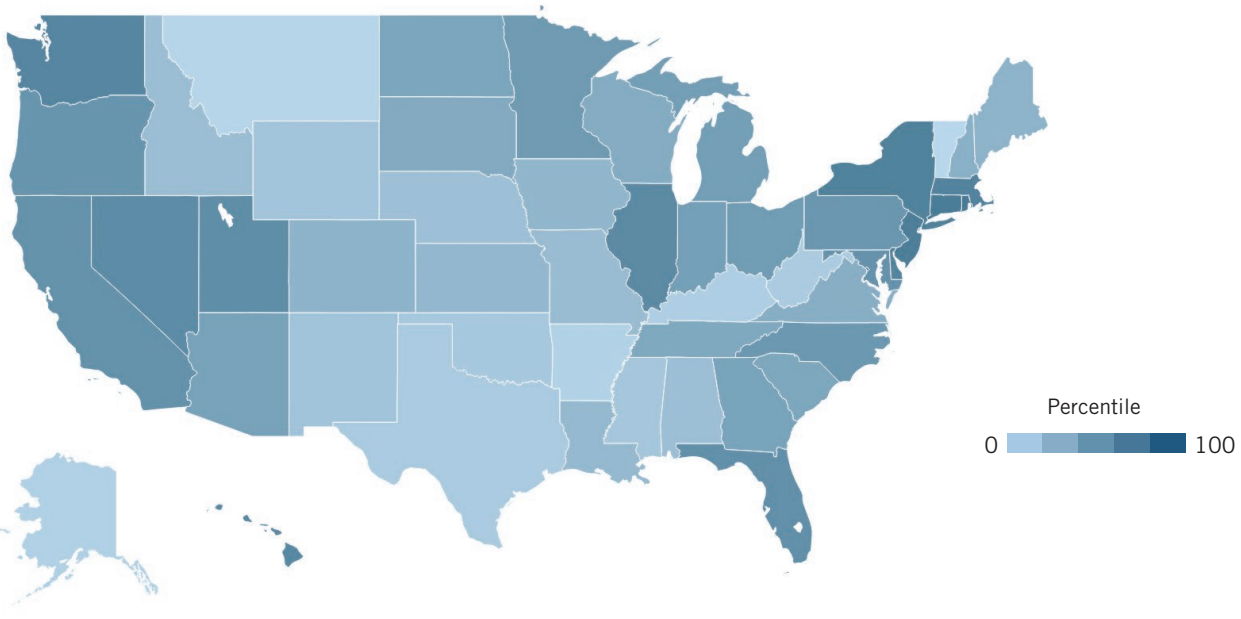
Number of Wired and Wireless Services That Provide Coverage for an Average Housing Unit



Rank	State	Count	Rank	State	Count
1	Illinois	7.76	26	Wisconsin	6.70
2	District Of Columbia	7.74	27	Kentucky	6.52
3	Nevada	7.72	28	Ohio	6.49
4	Colorado	7.63	29	Maryland	6.43
4	Oregon	7.63	30	Kansas	6.29
6	Rhode Island	7.58	31	Florida	6.27
7	Utah	7.49	31	New York	6.27
8	Washington	7.48	33	Mississippi	6.11
9	Nebraska	7.43	34	Virginia	6.04
10	Arizona	7.37	35	Tennessee	5.96
11	Michigan	7.36	36	Wyoming	5.90
12	Texas	7.21	37	Connecticut	5.85
13	Indiana	7.11	38	New Jersey	5.83
14	Iowa	7.10	39	West Virginia	5.76
15	Idaho	7.08	40	Vermont	5.67
15	Maine	7.08	41	Georgia	5.66
17	California	7.04	42	South Dakota	5.61
18	Minnesota	6.99	43	North Dakota	5.55
19	Missouri	6.87	44	North Carolina	5.32
20	New Mexico	6.84	45	South Carolina	5.27
21	Oklahoma	6.81	46	Alabama	5.26
22	Massachusetts	6.80	47	Delaware	5.25
23	New Hampshire	6.80	48	Louisiana	5.12
24	Pennsylvania	6.77	49	Montana	4.84
25	Hawaii	6.74	50	Arkansas	4.71
			51	Alaska	4.38
				U.S. Average	6.46
				U.S. Median	6.70

25Mbps Broadband Coverage

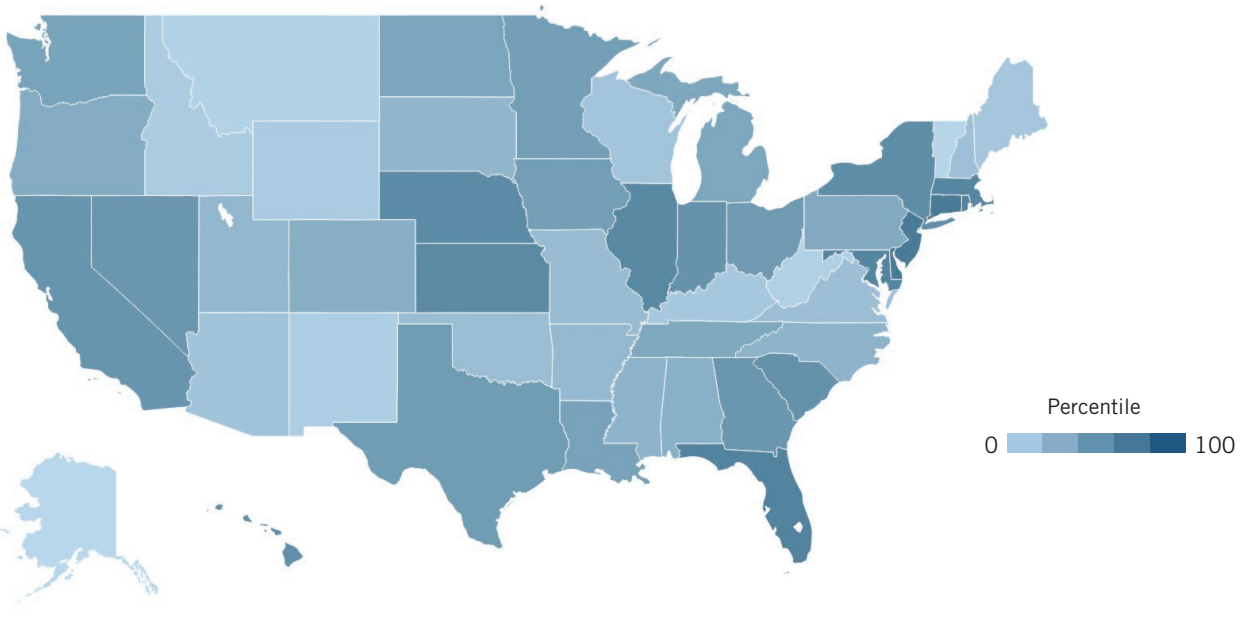
Percentage of Households With Wired and Wireless Broadband Access at Speeds in Excess of 25Mbps



Rank	State	Percentage	Rank	State	Percentage
1	Rhode Island	99.3%	26	South Carolina	84.7%
2	Connecticut	98.9%	27	Tennessee	84.1%
3	New Jersey	98.7%	28	South Dakota	83.7%
4	District Of Columbia	98.4%	29	Wisconsin	83.6%
5	New York	97.2%	30	Virginia	82.9%
6	Massachusetts	96.5%	31	New Hampshire	82.7%
7	Delaware	96.1%	32	Maine	81.4%
8	Washington	95.9%	33	Colorado	80.6%
9	Hawaii	95.5%	33	Iowa	80.6%
10	Illinois	94.9%	35	Kansas	79.3%
11	Nevada	94.2%	36	Louisiana	78.4%
12	Utah	93.9%	37	Missouri	78.3%
13	Florida	93.8%	38	Idaho	76.9%
14	California	93.7%	39	Alabama	75.7%
15	Maryland	93.3%	40	Nebraska	74.6%
16	Oregon	93.2%	41	New Mexico	72.2%
17	Pennsylvania	90.3%	42	Wyoming	69.7%
18	North Carolina	90.1%	43	Mississippi	67.8%
19	Minnesota	88.7%	44	Oklahoma	65.7%
20	Ohio	88.5%	45	Texas	65.3%
21	Michigan	87.7%	46	West Virginia	64.7%
22	Indiana	87.3%	47	Kentucky	64.2%
23	Arizona	86.6%	48	Alaska	57.6%
24	Georgia	86.1%	49	Arkansas	56.3%
25	North Dakota	85.6%	50	Montana	21.7%
			51	Vermont	18.2%
				U.S. Average	81.5%
				U.S. Median	84.7%

10Mbps Broadband Coverage

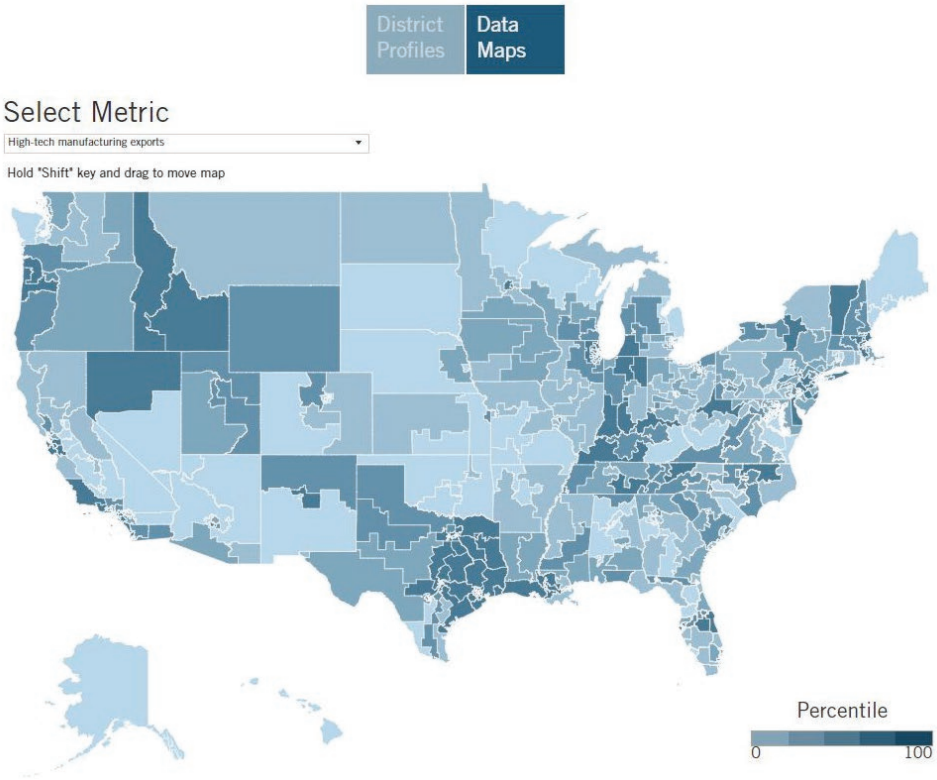
Percentage of Households With Wired and Wireless Broadband Access at Speeds in Excess of 10Mbps

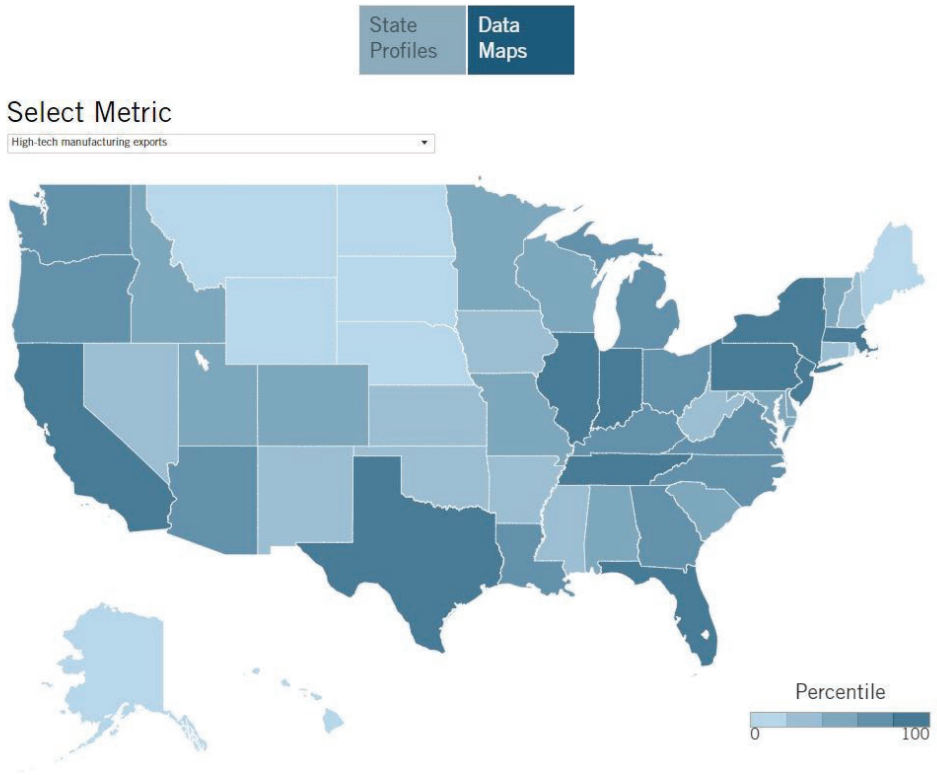


Rank	State	Percentage	Rank	State	Percentage
1	Connecticut	100.0%	25	Michigan	99.0%
1	New Jersey	100.0%	27	Tennessee	98.9%
1	District Of Columbia	100.0%	27	Pennsylvania	98.9%
1	Delaware	100.0%	27	Oregon	98.9%
5	Rhode Island	99.9%	30	Colorado	98.8%
5	Florida	99.9%	30	Alabama	98.8%
7	Maryland	99.8%	32	North Carolina	98.7%
7	Massachusetts	99.8%	32	Mississippi	98.7%
9	Illinois	99.7%	34	South Dakota	98.5%
9	Kansas	99.7%	34	Utah	98.5%
11	Nebraska	99.6%	36	Arkansas	98.3%
11	New York	99.6%	37	Missouri	98.2%
11	Hawaii	99.6%	38	Oklahoma	98.1%
14	South Carolina	99.5%	39	Virginia	98.0%
14	Indiana	99.5%	40	New Hampshire	97.9%
14	California	99.5%	41	Arizona	97.6%
17	Nevada	99.4%	42	Wisconsin	97.3%
17	Georgia	99.4%	43	Maine	96.8%
17	Ohio	99.4%	44	Kentucky	96.3%
20	Texas	99.3%	45	Wyoming	96.0%
20	Minnesota	99.3%	46	Idaho	95.9%
20	Iowa	99.3%	47	New Mexico	95.3%
23	Louisiana	99.2%	48	West Virginia	91.5%
23	Washington	99.2%	49	Montana	90.9%
25	North Dakota	99.0%	50	Vermont	90.1%
			51	Alaska	83.2%
				U.S. Average	98.0%
				U.S. Median	99.0%

Browse Interactive Maps

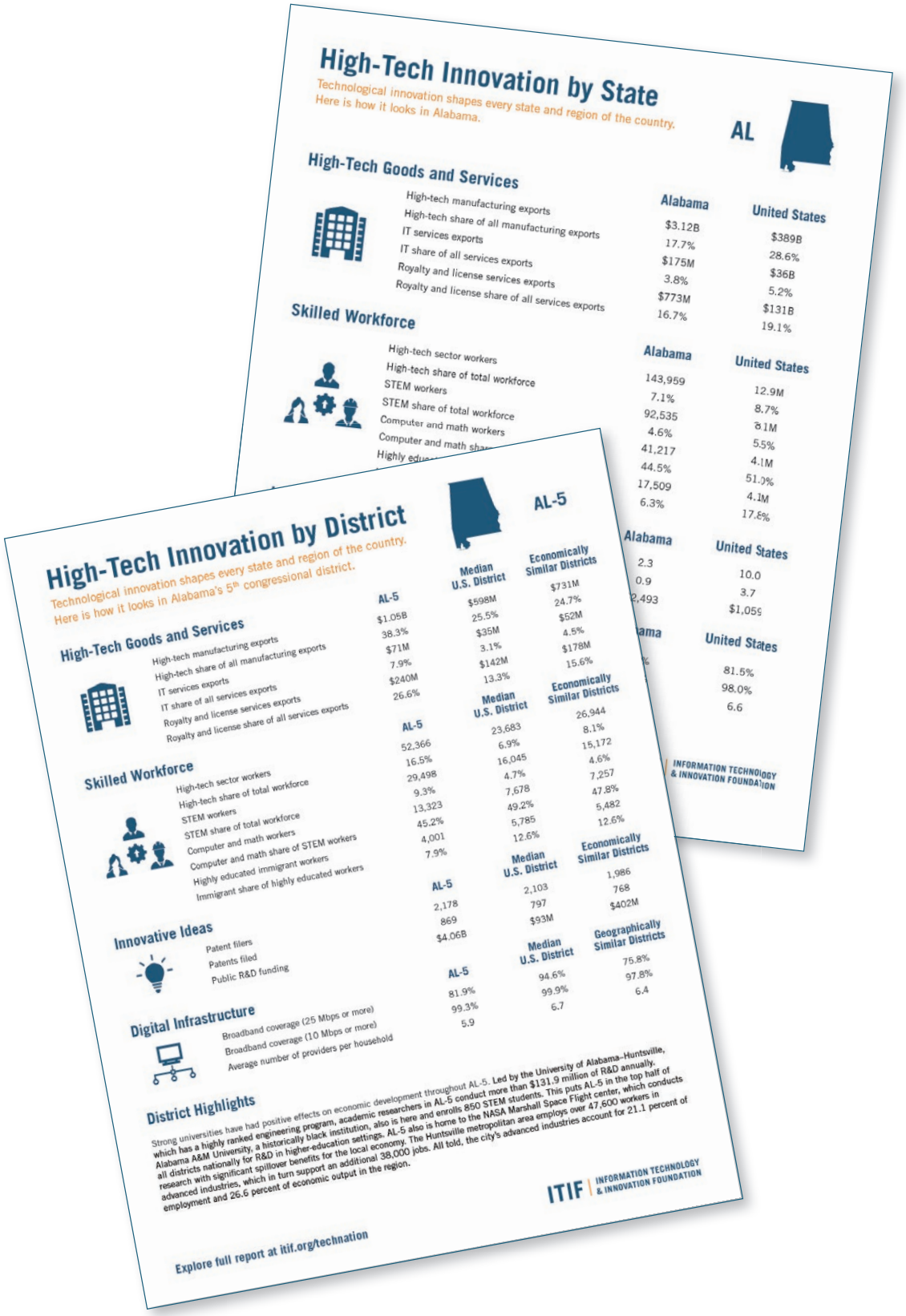
Visit itif.org/technation to explore data.





Get District and State Profiles

Choose individual profiles to download.



High-Tech Innovation by State

Technological innovation shapes every state and region of the country.
Here is how it looks in Alabama.

AL

High-Tech Goods and Services

	Alabama	United States
High-tech manufacturing exports	$3.12B	$389B
High-tech share of all manufacturing exports	17.7%	28.6%
IT services exports	$175M	$36B
IT share of all services exports	3.8%	5.2%
Royalty and license services exports	$773M	$131B
Royalty and license share of all services exports	16.7%	19.1%

Skilled Workforce

	Alabama	United States
High-tech sector workers	143,959	12.9M
High-tech share of total workforce	7.1%	8.7%
STEM workers	92,535	8.1M
STEM share of total workforce	4.6%	5.5%
Computer and math workers	41,217	4.1M
Computer and math share	44.5%	51.9%
Highly edu	17,509	4.1M
	6.3%	17.6%

	Alabama	United States
	2.3	10.0
	0.9	3.7
	2,493	$1,05

	United States
	81.5%
	98.0%
	6.6

INFORMATION TECHNOLOGY & INNOVATION FOUNDATION

High-Tech Innovation by District

Technological innovation shapes every state and region of the country.
Here is how it looks in Alabama's 5th congressional district.

AL-5

High-Tech Goods and Services

	AL-5	Median U.S. District	Economically Similar Districts
High-tech manufacturing exports	$1.05B	$598M	$731M
High-tech share of all manufacturing exports	38.3%	25.5%	24.7%
IT services exports	$71M	$35M	$52M
IT share of all services exports	7.9%	3.1%	4.5%
Royalty and license services exports	$240M	$142M	$178M
Royalty and license share of all services exports	26.6%	13.3%	15.6%

Skilled Workforce

	AL-5	Median U.S. District	Economically Similar Districts
High-tech sector workers	52,366	23,683	26,944
High-tech share of total workforce	16.5%	6.9%	8.1%
STEM workers	29,498	16,045	15,172
STEM share of total workforce	9.3%	4.7%	4.6%
Computer and math workers	13,323	7,678	7,257
Computer and math share of STEM workers	45.2%	49.2%	47.8%
Highly educated immigrant workers	4,001	5,785	5,482
Immigrant share of highly educated workers	7.9%	12.6%	12.6%

Innovative Ideas

	AL-5	Median U.S. District	Economically Similar Districts
Patent filers	2,178	2,103	1,986
Patents filed	869	797	768
Public R&D funding	$4.06B	$93M	$402M

Digital Infrastructure

	AL-5	Median U.S. District	Geographically Similar Districts
Broadband coverage (25 Mbps or more)	81.9%	94.6%	75.8%
Broadband coverage (10 Mbps or more)	99.3%	99.9%	97.8%
Average number of providers per household	5.9	6.7	6.4

District Highlights

Strong universities have had positive effects on economic development throughout AL-5. Led by the University of Alabama–Huntsville, which has a highly ranked engineering program, academic researchers in AL-5 conduct more than $131.9 million of R&D annually. Alabama A&M University, a historically black institution, also is here and enrolls 850 STEM students. This puts AL-5 in the top half of all districts nationally for R&D in higher-education settings. AL-5 also is home to the NASA Marshall Space Flight center, which conducts research with significant spillover benefits for the local economy. The Huntsville metropolitan area employs over 47,600 workers in advanced industries, which in turn support an additional 38,000 jobs. All told, the city's advanced industries account for 21.1 percent of employment and 26.6 percent of economic output in the region.

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Data and Methodology

Measuring the innovation economy is difficult under most circumstances due to limited national data—and measuring innovation capabilities and performance at the congressional district level is considerably harder due to an even greater scarcity of data. This report draws on public and private data sources to highlight 20 key indicators of strength in the high-tech economy for all 435 U.S. congressional districts plus the District of Columbia. These data sets are from 2014, unless otherwise specified, and they are typically segmented to the level of zip codes or counties. To re-segment (or "crosswalk") the data into congressional districts, we used reference tables available from the U.S. Department of Housing and Urban Development (for zip-code-level data) and the Missouri Census Data Center (for county-level data).[1] This process involves some modeling, since some counties and zip codes extend across congressional district lines rather than falling neatly within them.

The resulting estimates reflect the congressional district boundaries that states drew following the 2010 Census. Those boundaries were in effect nationwide during the 113th and 114th sessions of Congress. But federal courts subsequently ordered Florida, North Carolina, and Virginia to redraw their districts for the 115th Congress. These changes are not captured here, because at the time of publication new reference tables were not yet available to re-segment the indicator data into those three states' new district boundaries.

Details follow on the sources and methodologies behind each individual indicator.

High-Tech Manufacturing Exports

Description: Exports from chemical manufacturing (which includes pharmaceuticals and certain biotechnology) and computer and electronic-product manufacturing, as designated by the North American Industry Classification System (NAICS) under industry sectors 325 and 334.[2]

Sources: U.S. Census Bureau, USA Trade Online (state export data, by NAICS); U.S. Census Bureau, County Business Patterns 2014 (complete county file).

Methodology: State-level manufacturing exports (at the NAICS three-digit level) are apportioned to each congressional district by weighting each industry's share of total employment. Each manufacturing sector's employment is estimated at the county level and then crosswalked into congressional districts.[3] Next, a state's manufacturing exports are allocated to its respective congressional districts using the districts' proportion of state-level employment in each manufacturing subsector.[4]

IT Services Exports & Royalty and License Services Exports

Description: Telecommunications, computer, and information services exports include hardware- and software-related services and electronic content. Fees for intellectual property include patents, trademarks, copyrights, and other licenses, such as franchise fees.

Sources: District-level data on service exports from The Trade Partnership, a consultancy, via the Coalition of Services Industries.

High-Tech Sector Workers

Description: Includes employment in seven industry sectors—NAICS 325 (chemical manufacturing), 334 (computer and electronics manufacturing), 511 (publishing industries), 517 (telecommunications), 518 (data processing, hosting, and related services), 519 (other information services), and 541 (professional, scientific, and technical services).

Source: U.S. Census Bureau, County Business Patterns 2014 (complete county file).[5]

Methodology: Employment in these seven industry sectors are estimated from county-level data and then crosswalked into congressional districts.[6] District employment data are then adjusted using state-level employment estimates for each industry sector.[7]

STEM Workers and Computer and Math Workers

Description: The definition of STEM (science, technology, engineering, and math) comes from the U.S. Bureau of Labor Statistics. The majority of these STEM occupations fall under Standard Occupational Classification (SOC) 15-0000, which includes computer and math occupations; SOC 17-0000, which covers architecture and engineering occupations; and SOC 19-0000, which covers life-science, physical-sciences, and social-science occupations.[8]

Source: U.S. Census Bureau, American Fact Finder (series C24010: "Sex by Occupation for the Civilian Employed Population 16 Years and Over—1 Year Estimates").

Methodology: The Census Bureau provides estimates of "computer, engineering, and science occupations" by congressional districts. The counts of "computer and math workers" are a subcategory within this dataset. No additional computation is necessary.

Highly Educated Immigrant Workers

Description: Naturalized and non-naturalized foreign-born individuals who are older than 25 and hold a graduate or professional degree.

Source: U.S. Census Bureau, American Fact Finder (series S0501: "Selected Characteristics of the Native and Foreign-Born Populations").

Methodology: The Census Bureau provides estimates of naturalized and non-naturalized foreign-born individuals by congressional district. This is a summed total of those above the age of 25 who hold a graduate or professional degree.[9]

Patent Filers

Description: Sum of individuals, by residential address, listed as filers of utility patents between 2012 and 2015.

Source: U.S. Patent and Trademark Office, U.S. Resident Inventors and Their Utility Patents Breakout by State Regional Component.[10]

Methodology: County-level inventor counts are crosswalked to their respective congressional districts and then summed.[11] Filer counts are allocated to congressional districts based on each filer's address at the time of their patent filing.[12]

Patent Filings

Description: Sum of utility patents filed between 2012 and 2015.

Source: U.S. Patent and Trademark Office, U.S. State Patenting Breakout by Regional Component.[13]

Methodology: County-level patent counts are crosswalked to their respective congressional districts and then summed.[14]

Public R&D Funding

Description: This indicator includes federal R&D inflows from the departments of Agriculture, Defense, Energy, and Health and Human Services (HHS), plus the National Science Foundation (NSF), and National Aeronautics and Space Administration (NASA) for fiscal years 2014 and 2015.

Sources: USAspending.gov; Research.gov; U.S. Department of Health and Human Services, Federal RePORTER.[15]

Methodology: Agriculture, Defense, Energy, and NASA R&D data are extracted from USAspending.gov. Individual R&D contracts and manually identified R&D grants are then summed up by the place of performance.[16] NSF R&D projects are summed from individual project data extracted from research.gov. HHS R&D projects are summed from individual project data extracted from the RePORTER platform. R&D inflows, aggregated across congressional districts, are equivalent to 60 percent of federal R&D outlays for fiscal years 2014 and 2015.[17]

Broadband Coverage

Description: Percentage of households with access to wired or wireless broadband download speeds in excess of 10 Mbps or in excess of 25 Mbps.

Source: National Broadband Map.[18]

Methodology: The National Broadband Map provides estimates at the district level for the percentage of households that have access to broadband speeds greater than 10 Mbps or 25 Mbps. No further calculations are required. U.S. averages for congressional district and state sections differ due to data limitations.

Average Number of Broadband Providers Per Household

Description: The number of wired and wireless services that provide coverage for an average housing unit.

Source: National Broadband Map.[19]

Methodology: The National Broadband Map breaks districts into nine tiers representing the number of broadband service providers available to each household in a given district. The map shows the percentage of households with no access to any broadband provider, one or more providers, two or more providers, etc., up to eight or more providers. This report uses those nine groupings to provide an unweighted estimate of the average number of broadband providers available in the entire congressional district.[20] U.S. averages for congressional district and state sections differ due to data limitations.

"Similar Districts" Definition

In addition to comparing each district to the U.S. median, this report also compares each district to a group of districts that are economically or geographically similar. (See this in the interactive portion of the report, and in the downloadable district and state profiles, at itif.org/technation.) In the categories of "High-Tech Goods and Services," "Skilled Workforce," and "Innovative Ideas," the indicators are compared to districts of similar economic output, while the "Digital Infrastructure" indicators are compared to districts with similar levels of urbanization.

For each indicator in a congressional district profile, the value listed in the "Similar District" column is the mean value of 51 districts—the district and the 25 districts ranked above and below it. When districts are ranked in the top 25 or bottom 25 of all districts nationally, the "Similar District" figure averages the country's top 51 districts or bottom 51 districts, respectively.

Economic output for each congressional district is estimated by multiplying the mean household income by the total number of households in the district and then adjusting by gross state product.[21] Data on gross state product come from the U.S. Bureau of Economic Analysis, while data on household incomes come from the U.S. Census Bureau's American Community Survey.[22]

The relative level of urbanization for each congressional district is defined as the percentage of that district's population that lives in urban areas.[23] Data on urbanization come from ProximityOne, an organization that develops geodemographic-economic data. Their estimates are a secondary data set derived from the 2010 Census.[24]

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2. For a full breakdown of NAICS industry sectors, see: "Introduction to NAICS," U.S. Census Bureau, http://www.census.gov/eos/www/naics/.

3. The U.S. Census Bureau suppresses certain employment data at the county level to maintain business confidentiality. In those cases, it provides a county-level employment range for the industry sectors in question. For counties with suppressed data, ITIF selected the middle value of the published range. County-level data is then summed and adjusted according to the state's employment in each NAICS three-digit manufacturing sector (which does not run into data-suppression issues). To illustrate, if a state exported $100 worth of high-tech products and contained two congressional districts that employed 60 workers and 40 workers respectively, the first district is allocated $60 in high-tech exports and the second is allocated $40.

4. This indicator assumes that firms' productivity and propensity to export are homogenous across the state. Because the data crosswalk process derives congressional district allocation factors for counties based on their populations (because one county may belong to multiple congressional districts), districts that are initially estimated to have the same values of exports (due to identical population allocation weights) are adjusted according to their respective shares of total employment compared to other districts with the same export value.

5. Note that state-level employment data comes from the "American Fact Finder" aggregations of the Census Bureau's *County Business Patterns 2014*; state-level industry data from the Bureau of Labor Statistics' *Occupational Employment Statistics* are substituted wherever Census data are suppressed.

6. Missouri Census Data Center (MABLE/Geocorr 14: Geographic Correspondence Engine; accessed October 28, 2016), http://mcdc.missouri.edu/websas/geocorr14.html.

7. Similar to the previous indicator, the Census Bureau suppresses certain employment data at the county level to maintain business confidentiality. In these cases, it provides a county-level employment range for the industry sectors in question. For counties with suppressed data, ITIF has selected the middle value of this range.

8. U.S. Bureau of Labor Statistics, "STEM 101: Intro to Tomorrow's Jobs," *Occupational Outlook Quarterly* (Spring 2014), http://www.bls.gov/careeroutlook/2014/spring/art01.pdf.

9. This data series does not include two congressional districts (West Virginia's 3rd and Kentucky's 5th) due to sample results being insufficient for reporting. For these two districts, ITIF has created a proxy estimate by calculating the number of foreign-born individuals as a share of total population and then applying that percentage to the total number of individuals with a graduate degree or higher.

10. U.S. Patent and Trademark Office, U.S. Resident Inventors and Their Utility Patents Breakout by State Regional Component (listing of viewable PTMT reports, table of contents for this set of reports; accessed October 28, 2016), https://www.uspto.gov/web/offices/ac/ido/oeip/taf/inv_countyall/usa_invcounty_gd.htm.

11. Missouri Census Data Center.

12. As this is a count of the number of inventors filing patents, an inventor may be counted more than once if he or she filed for multiple patents in the same period.

13. U.S. Patent and Trademark Office, U.S. State Patenting Breakout by Regional Component (listing of viewable PTMT reports, table of contents for this set of reports; accessed October 28, 2016), https://www.uspto.gov/web/offices/ac/ido/oeip/taf/countyall/usa_county_gd.htm.

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16. R&D contracts are identified according to federal acquisition product service codes (AA–AZ). For further information, see https://www.acquisition.gov. Individual grant awards are curated manually to identify R&D-related projects. ITIF allocates an R&D project to a particular district based on where the R&D was performed because this fairly represents an R&D inflow to a congressional district. Specific to the Department of Defense, data is not provided at the district level, but at the zip-code level. Sums of R&D projects are made at the zip-code level before being crosswalked to the districts.

17. Because this indicator combines three separate data sets, it provides a reasonably complete picture of R&D funding at the congressional district level, but this comes with a number of caveats. First, the indicator captures R&D inflows only; it ignores R&D outflows over this two-year period, which could include such things as contract or grant adjustments. Second, these six federal agencies together fund approximately 95 percent of all federal R&D and, therefore, provide a clear idea of how federal funds are allocated across the various districts. Third, certain R&D projects cannot be allocated to a specific district due to confidentiality, or because projects are conducted across multiple geographic locations, among other factors. Fourth, NSF and HHS datasets account for close to the entirety of their respective agencies' R&D outlays when compared to aggregated federal R&D outlays as reported by the NSF (see https://ncsesdata.nsf.gov/fedfunds/2014/). Fifth, Agriculture, Energy, Defense, and NASA R&D funding that is captured by USAspending.gov likely only covers extramural R&D funding by those agencies, not R&D conducted within the agencies themselves.

18. National Broadband Map, Analyze, Rank (data search for congressional districts, maximum advertised download speeds, and percentage of housing units; accessed October 28, 2016), http://broadbandmap.gov/rank.

19. National Broadband Map, Analyze, Rank (data search for congressional districts, number of providers, all providers, and percentage of housing units; accessed October 28, 2016), http://broadbandmap.gov/rank.

20. To illustrate, if 10 percent of housing units in a district have access to service from eight providers, 25 percent have access to service from seven providers, 35 percent from six providers, and 30 percent from five providers, this indicator would report an average of 6.15 providers—that is, 10%*8 + 25%*7 + 35%*6 + 30%*5. As an additional note, this data set reports up to eight providers, which creates underestimates for congressional districts that may have segments of their households with coverage by nine or more providers.

21. Allocating gross state product (GSP) according to household incomes captures a simple understanding of the economic output in the congressional district because we assume that households would spend the majority of their income within that district. It provides a more "closed-loop" estimation versus using industry value added or industry employment as an allocation factor. Value added might more accurately capture economic output, but it does not translate entirely to the dollars that flow within that district because we would expect firms to export out of their district. Employment, on the other hand, faces the confounding factor of workers employed in other congressional districts where they commute to work. ITIF also considered including other income transfers, such as Social Security, retirement incomes, and welfare, but due to the heterogeneous nature of such transfers, we determined the simpler method is better. In summary, the economic output of a state, GSP, is apportioned to its congressional districts according to the income share of each district. To illustrate, if a state has a GSP of $100 and contains two congressional districts, District A and District B, in which households earned an average of $30 and $20 respectively, then District A is allocated a GSP of $60 while District B is allocated a GSP of $40. In this manner, the model captures each district's relative affluence.

22. U.S. Bureau of Economic Analysis, Annual Gross Domestic Product (GDP) by State, 2014 (interactive data, regional data, GDP & personal income; accessed October 13, 2016), http://www.bea.gov/itable/iTable.cfm?ReqID=70&step=1#reqid=70&step=1&isuri=1Annual; U.S. Census Bureau (series DP03, selected economic characteristics 2010-2014 American community survey 5-year estimates; accessed October 13, 2016), https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

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Acknowledgements

The authors wish to thank Robert D. Atkinson, Randolph Court, and Stephen Ezell for providing editorial guidance and direction on this report. Any errors or omissions are the authors' alone.

Graphic design by Alex Key.

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About ITIF

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