EXPLORING THE HIGH-TECH INDUSTRY TAXONOMY USING LED

National and State Comparisons

LED Conference – Washington DC – September 2014

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WHY, HOW AND WHAT?

- WHY – Develop a national standard/definition/taxonomy
  - High-tech spans across several NAICS sectors and to date does not have its own independent codes
  - Develop a standard for cross state comparisons
  - Industry rather than occupational taxonomies allow for the use of other economic and business metrics such as economic impact measurements
- HOW – Develop a high-tech definition based on research and statistics
  - Learn from previous research efforts
  - Develop a formal, research based, robust methodology
- WHAT – Use industry coded data sets to make objective cross-geography comparisons
  - Identify the geographies with the most and least heavy concentrations of high tech and study the demographics, trends and economic characteristics associated with these sectors

2013/2014 CHARTER

- Four major components in the high-tech suite;
  - **Developing a standardized statistically based high-tech taxonomy**
  - **Providing employment and wage comparisons at the national and state levels**
  - **Study independent high-tech taxonomies in the Pacific Northwest**
  - **Do-It-Yourself guide for your state or geography**

COMPARISONS

- Dan Hecker, BLS - approach analyzed at three tiers or levels (I - II – III)
- STEM High-Tech chose only to use one single tier in order to maintain simplicity and structure

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- STEM Core resulted in a level between tier 1 and II using Hecker's approach

HOW - DEFINITIONS OF HIGH-TECH OCCUPATIONS

From STEM sub-domains, 1 and 4.

- Science, Engineering, Mathematics, and Information Technology Domain
  - **1 - Life and Physical Science, Engineering, Mathematics and Information Technology Occupations - STEM Core**
  - ~~2 - Social Science Occupations~~
  - ~~3 - Architecture Occupations~~
  - **4 - Health Occupations - STEM Health Care**

- Measure the **concentrations** of these occupations are in industry and use that data to define the high-tech industry cluster

2014 HIGH TECH TAXONOMY

- Includes a total of 46 NAICS 4-digit industries categories
  - 33 in STEM CORE category
  - 13 in STEM Health Care category

DATA SETS

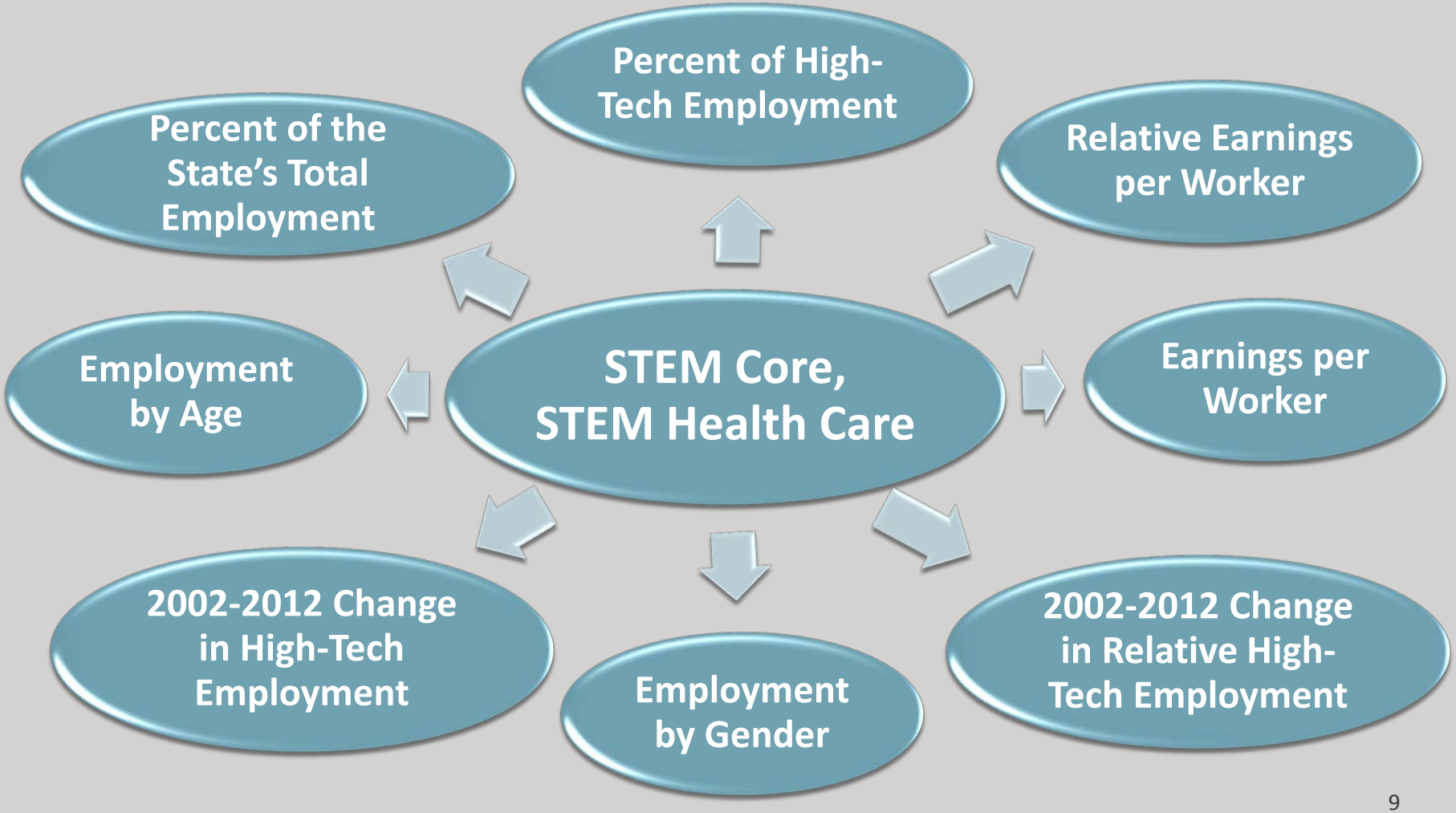
Taxonomy Development (HOW)

- Used the national Occupational Employment Statistics Industry-Occupation Matrix or Inverse Staffing Pattern counts to study the concentration levels of STEM occupations within industry – Dalton Terrell, BLS

Taxonomy Analyses (WHAT)

- Quarterly Census of Employment and Wages and Employment Projections & Occupational Employment Statistics from the Bureau of Labor Statistics
- Quarterly Workforce Indicators from the US Census Bureau were used to study State comparisons across the nation

OUTLINES (CONT'D)
- STATES COMPARISON -



STEM CORE INDUSTRIES
- EMPLOYMENT -

In 2012, STEM Core industry employment:

- Made up a little over 8 percent of the U.S. total covered employment, at almost 11 million workers

STEM Core - National Covered High-Tech Employment

Industry	Employment	Rank
Computer Systems Design and Related Services	1,630,641	1
Architectural and Engineering Services	1,382,720	2
Management and Technical Consulting Services	1,130,143	3
Scientific Research and Development Services	654,755	4
Commercial Equip. Merchant Wholesalers	620,217	5
Magnetic Media Manufacturing and Reproducing	20,335	29
Audio and Video Equipment Manufacturing	20,316	30
Monetary Authorities - Central Bank	17,286	31
Satellite Telecommunications	10,266	32
Pipeline Transportation of Crude Oil	9,348	33

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages

STEM CORE INDUSTRIES
- TOTAL EARNINGS -

- Industries with more employment also had higher total wages

STEM Core - National Covered High-Tech Earnings		
Industry	Total Earnings	Rank
Computer Systems Design and Related Services	$167,336,349,782	1
Architectural and Engineering Services	$111,962,736,382	2
Management and Technical Consulting Services	$96,910,683,800	3
Scientific Research and Development Services	$70,316,976,643	4
Commercial Equip. Merchant Wholesalers	$56,063,537,983	5
Magnetic Media Manufacturing and Reproducing	$2,059,310,259	29
Monetary Authorities - Central Bank	$1,739,345,054	30
Audio and Video Equipment Manufacturing	$1,606,171,375	31
Pipeline Transportation of Crude Oil	$1,124,491,494	32
Satellite Telecommunications	$992,503,259	33

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages

STEM CORE INDUSTRIES
- EARNINGS PER WORKER BY INDUSTRY -

- Electrical equipment manufacturing ranked at the bottom. But its $65,098 average wage was more than 32 percent higher than the national average covered wage.

STEM Core - National Covered High-Tech Earnings		
Industry	EPW	Rank
Oil and Gas Extraction	$155,061	1
Computer and Peripheral Equipment Mfg.	$152,884	2
Software Publishers	$131,335	3
Pipeline Transportation of Crude Oil	$120,292	4
Petroleum and Coal Products Manufacturing	$109,358	5
Turbine and Power Transmission Equipment Mfg.	$74,167	29
Industrial Machinery Manufacturing	$72,341	30
Wireless Telecommunications Carriers	$70,547	31
Commercial and Service Industry Machinery	$66,681	32
Electrical Equipment Manufacturing	$65,098	33

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wage

STEM HEALTH CARE INDUSTRIES

- In 2012, STEM Health Care industries had over 40 percent more jobs at 15.8 million workers
- Compared to employment and total earnings, the rankings for earnings per worker change considerably.
- Six STEM Health Care industries had per worker earnings below the national average

Industry	Employment		Total Earnings		Earnings per Worker	
	Employment	Rank	Total Earnings	Rank	EPW	Rank
General Medical and Surgical Hospitals	**5,541,129**	**1**	**$312,219,582,023**	**1**	$56,346	4
Offices of Physicians	2,428,436	2	$194,422,993,956	2	**$80,061**	**1**
Nursing Care Facilities	1,737,570	3	$51,949,963,141	3	$29,898	12
Home Health Care Services	1,193,169	4	$32,922,994,299	7	**$27,593**	**13**
Health and Personal Care Stores	998,409	5	$35,686,977,801	6	$35,744	11
Offices of Dentists	852,002	6	$39,871,186,561	4	$46,797	6
Offices of Other Health Practitioners	726,483	7	$27,968,647,462	8	$38,499	10
Outpatient Care Centers	704,876	8	$39,146,216,668	5	$55,536	5
Other Professional and Technical Services	614,903	9	$27,602,150,511	9	$44,889	8
Other Ambulatory Health Care Services	281,466	10	$11,060,883,607	12	$39,297	9
Other Hospitals	254,629	11	$14,948,542,027	10	$58,707	2
Medical and Diagnostic Laboratories	236,892	12	$13,638,925,008	11	$57,574	3
Psychiatric and Substance Abuse Hospitals	**235,453**	**13**	**$10,892,556,932**	**13**	$46,262	7

STEM CORE OCCUPATIONS

- Nationally STEM Core high-tech occupations included 8.4 million jobs, about 2.6 million fewer than the STEM Core industries employed.
- STEM Core high-tech occupations are projected to add a little over 1 million jobs by 2022, a 13 percent increase compared to the 11 percent increase, or 15.6 million jobs, for all occupations.
- A total of 97 occupations categories are included in the STEM Core category.

STEM CORE OCCUPATIONS
- EMPLOYMENT -

- In 2012, the top four STEM Core occupations by employment involve computers, the stereotype of high-tech.

STEM Core - National High-Tech Employment		
Occupation	Employment	Rank
Software Developers, Applications	613,000	1
Computer User Support Specialists	547,700	2
Computer Systems Analysts	520,600	3
Software Developers, Systems Software	405,000	4
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	382,300	5
Astronomers	2,700	93
Animal Scientists	2,700	94
Agricultural Engineers	2,600	95
Mathematical Science Occupations, All Other	1,900	96
Mathematical Technicians	1,900	97

Source: Bureau of Labor Statistics, Employment Projections

STEM CORE OCCUPATIONS
- 2012-2022 PROJECTED EMPLOYMENT -

- Not all STEM Core occupations are projecting growth. Of the 97 occupation categories, four occupations are expected to decline, and two more should remain flat.

STEM Core - Projected National High-Tech Employment Growth, 2012-2022

Occupation	Projected Change	Rank
Software Developers, Applications	139,900	1
Computer Systems Analysts	127,800	2
Computer User Support Specialists	110,800	3
Software Developers, Systems Software	82,800	4
Civil Engineers	53,700	5
Electrical and Electronics Engineering Technicians	0	92
Aerospace Engineering and Operations Technicians	0	92
Biological Scientists, All Other	-200	94
Forest and Conservation Technicians	-1,200	95
Industrial Engineering Technicians	-2,200	96
Mechanical Drafters	-3,300	97

Source: Bureau of Labor Statistics, Employment Projections

STEM CORE OCCUPATIONS - 2012-2022 PROJECTED EMPLOYMENT -

- Forty-three STEM Core occupations are projected to have a higher growth rate than all occupations

STEM Core - Projected National High-Tech Employment Growth, 2012-2022		
Occupation	**Percent Change**	**Rank**
Information Security Analysts	36.5%	1
Biomedical Engineers	26.8%	2
Operations Research Analysts	26.6%	3
Statisticians	26.4%	4
Actuaries	25.9%	5
Electrical and Electronics Engineering Technicians	0.0%	92
Aerospace Engineering and Operations Technicians	0.0%	92
Biological Scientists, All Other	-0.6%	94
Industrial Engineering Technicians	-3.2%	95
Forest and Conservation Technicians	-3.5%	96
Mechanical Drafters	-4.9%	97

Source: Bureau of Labor Statistics, Employment Projections

STEM CORE OCCUPATIONS
- ANNUAL MEDIAN WAGE -

- The majority of STEM Core occupations have wages that significantly exceed the national average.
- Ten occupations led by petroleum engineers had annual median wages above $100,000. Engineering occupations made up five of the top 10 STEM Core occupations by median wage.

Occupation	Median	Rank	Occupation	Median	Rank
Petroleum Engineers	$130,280	1	Nuclear Engineers	$104,270	6
Architectural and Engineering Managers	$124,870	2	Aerospace Engineers	$103,720	7
Computer and Information Systems Managers	$120,950	3	Computer and Information Research Scientists	$102,190	8
Natural Sciences Managers	$115,730	4	Mathematicians	$101,360	9
Physicists	$106,840	5	Computer Hardware Engineers	$100,920	10

STEM CORE OCCUPATIONS
- ANNUAL MEDIAN WAGE (CONT'D) -

- Only two – agriculture and food science technicians and forest and conservation technicians – had annual median wages lower than the national median of $34,750 for all occupations.

Occupation	Median	Rank	Occupation	Median	Rank
Computer User Support Specialists	$46,420	88	Environmental Science and Protection Technicians, Including Health	$41,240	93
Drafters, All Other	$46,110	89	Biological Technicians	$39,750	94
Environmental Engineering Technicians	$45,350	90	Surveying and Mapping Technicians	$39,670	95
Life, Physical, and Social Science Technicians, All Other	$43,130	91	Agricultural and Food Science Technicians	$34,070	96
Chemical Technicians	$42,920	92	Forest and Conservation Technicians	$33,920	97

STEM CORE OCCUPATIONS - EMPLOYMENT BY EDUCATION LEVEL -

- An estimated 6.6 million STEM Core occupational jobs – 78 percent – have a typical entry-level education requirement of no less than a bachelor's degree.

STEM Core - National Covered High-Tech Employment, by Education Level

	2012	2022	Total Growth	Percent Growth
Doctoral or Professional Degree	**472,000**	**537,000**	**65,000**	**13.8%**
Master's Degree	**43,600**	**53,000**	**9,400**	**21.6%**
Bachelor's Degree	**6,077,500**	**6,897,500**	**820,000**	**13.5%**
Associate's Degree	1,208,900	1,278,800	69,900	5.8%
Some College, No Degree	547,700	658,500	110,800	20.2%
High School Diploma or Equivalent	54,000	61,300	7,300	13.5%

Source: Bureau of Labor Statistics, Employment Projections

STEM HEALTH CARE OCCUPATIONS

- STEM Health Care occupations covered 8.6 million jobs in the United States, just over half the number employed by STEM Health Care industries.
- The difference between the occupation and industry totals is greater in the STEM Health Care category because of the much larger number of supporting occupations that are not high-tech.
- By 2022 the Bureau of Labor Statistics estimates an additional 1.9 million STEM Health Care occupation jobs, a 22 percent increase that is double the all-occupation growth rate.
- A total of 64 occupation categories are included in the STEM Health Care category.

STEM HEALTH CARE OCCUPATIONS - EMPLOYMENT -

- Registered nurses, at 2.7 million jobs in 2012, accounted for 31.4 percent of all STEM Health Care occupational employment.

STEM Health Care - National High-Tech Employment		
Occupation	Employment	Rank
Registered Nurses	2,711,500	1
Licensed Practical and Licensed Vocational Nurses	738,400	2
Pharmacy Technicians	355,300	3
Physicians and Surgeons, All Other	348,900	4
Medical and Health Services Managers	315,500	5
Nurse Midwives	6,000	60
Exercise Physiologists	6,000	60
Hearing Aid Specialists	5,300	62
Genetic Counselors	2,100	63
Prosthodontists	400	64

Source: Bureau of Labor Statistics, Employment Projections

STEM HEALTH CARE OCCUPATIONS - 2012-2022 PROJECTED EMPLOYMENT -

- Unlike STEM Core occupations, which had a few professions projecting declines or flat growth into 2022, all STEM Health Care occupations will increase.

STEM Health Care - Projected National High-Tech Employment Growth, 2012-2022

Occupation	Projected Change	Rank
Registered Nurses	526,900	1
Licensed Practical and Licensed Vocational Nurses	182,900	2
Physical Therapists	73,500	3
Medical and Health Services	73,300	4
Pharmacy Technicians	70,800	5
Oral and Maxillofacial Surgeons	1,100	60
Genetic Counselors	900	61
Exercise Physiologists	500	62
Dentists, All Other Specialists	400	63
Prosthodontists	100	64

Source: Bureau of Labor Statistics, Employment Projections

STEM HEALTH CARE OCCUPATIONS - 2012-2022 PROJECTED EMPLOYMENT -

- Fifty-eight of the 64 occupations included in STEM Health Care are projected to grow faster than the all-occupation rate of 11 percent.

STEM Health Care - Projected National High-Tech Employment Growth, 2012-2022

Occupation	Percent Change	Rank
Diagnostic Medical Sonographers	46.1%	1
Genetic Counselors	42.9%	2
Physician Assistants	38.4%	3
Health Specialties Teachers, Postsecondary	36.1%	4
Physical Therapists	36.0%	5
Exercise Physiologists	8.3%	60
Health Diagnosing and Treating Practitioners, All Other	7.8%	61
Occupational Health and Safety Specialists	6.7%	62
Dentists, All Other Specialists	6.3%	63
Psychiatric Technicians	3.9%	64

Source: Bureau of Labor Statistics, Employment Projections

STEM HEALTH CARE OCCUPATIONS - ANNUAL MEDIAN WAGE -

- Seven professions had median wages of over $187,999 – the highest number the Bureau of Labor Statistics publishes.

Occupation	Median	Rank	Occupation	Median	Rank
Physicians and Surgeons, All Other	>$187,199	1	Orthodontists	>$187,199	1
Internists, General	>$187,199	1	Oral and Maxillofacial Surgeons	>$187,199	1
Surgeons	>$187,199	1	Psychiatrists	$173,330	8
Anesthesiologists	>$187,199	1	Family and General Practitioners	$172,020	9
Obstetricians and Gynecologists	>$187,199	1	Prosthodontists	$169,130	10

STEM HEALTH CARE OCCUPATIONS - ANNUAL MEDIAN WAGE (CONT'D) -

- Eight STEM Health Care occupations had median wages below the all occupation median of $34,750

Occupation	Median	Rank	Occupation	Median	Rank
Health Technologists and Technicians, All Other	$40,700	55	Emergency Medical Technicians and Paramedics	$31,020	60
Medical and Clinical Laboratory Technicians	$37,240	56	Veterinary Technologists and Technicians	$30,290	61
Ophthalmic Medical Technicians	$34,240	57	Psychiatric Technicians	$30,050	62
Medical Records and Health Information Technicians	$34,160	58	Pharmacy Technicians	$29,320	63
Opticians, Dispensing	$33,330	59	Dietetic Technicians	$26,260	64

STEM HEALTH CARE OCCUPATIONS - EMPLOYMENT BY EDUCATION LEVEL -

- Ninety-four percent of STEM Health Care occupations require a degree or postsecondary award while 27 percent typically required a master's degree or higher. Only about 4 percent of all occupations require a master's degree or higher.

STEM Health Care - National Covered High-Tech Employment by Education Level	2012	2022	Total Growth	Percent Growth
Associate Degree	3,688,300	4,482,000	793,700	21.5%
Doctoral or Professional Degree	1,690,400	2,050,200	359,800	21.3%
Postsecondary Non-Degree Award	1,362,900	1,683,200	320,300	23.5%
Bachelor's Degree	739,200	879,700	140,500	19.0%
Master's Degree	611,000	782,300	171,300	28.0%
High School Diploma or Equivalent	531,200	644,700	113,500	21.4%

Source: Bureau of Labor Statistics, Employment Projections

STATE/NATIONAL COMPARISONS

QCEW VS. CENSUS/LOCAL EMPLOYMENT DYNAMICS

LED-QUARTERLY WORKFORCE INDICATORS

CONFIDENTIALITY

- Allows for cross-state comparisons of sub II-digit NAICS industries.
- Data is “fuzzed” yet is derived from real or actual original data sets. Other vendors estimate confidential cells using a variety of statistical methods and models. QWIs come from actual data from sub-industry and sub-geographic levels.
- Our own departments tax/employment files can’t be used due confidentiality.

LED-QUARTERLY WORKFORCE INDICATORS

BYPRODUCTS

- By using LED employment data for cross-state comparisons additional elements are available.
- Demographics- Age and Gender which are not readily available from other traditional economic and business sources.

STEM HEALTH CARE STATE COMPARISON
- PERCENT OF STEM HEALTH CARE EMPLOYMENT -

- The populous states of California, Texas, New York, Florida and Pennsylvania made up the largest portion of STEM Health Care employment.

STEM Health Care - Percent of Total** High-Tech Employment		
Area	Percent	Rank
California*	9.8%	1
Texas	8.3%	2
New York	7.4%	3
Florida	6.3%	4
Pennsylvania	4.8%	5
North Dakota	0.3%	46
Washington, D.C.	0.3%	47
Vermont	0.2%	48
Alaska	0.2%	49
Wyoming	0.2%	50

Source: U.S. Census Bureau, Quarterly Workforce Indicators
*Data for Q4 2012 was unavailable, Q4 2011 substituted
**Only states with available data

STEM HEALTH CARE STATE COMPARISON
- PERCENT OF THE STATE'S TOTAL EMPLOYMENT -

- The range among the states in employment concentration of STEM Health Care industries was not as great, running from Nevada at 8.3 percent to West Virginia at 15.5 percent.

STEM Health Care - Relative High-Tech Employment

Area	Percent	Rank
Average**	**12.0%**	**-**
West Virginia	15.5%	1
Rhode Island	15.3%	2
Michigan	14.0%	3
Maine	13.9%	4
Ohio	13.5%	5
Utah	9.8%	46
Colorado	9.8%	47
Wyoming	9.3%	48
Washington, D.C.	8.6%	49
Nevada	8.3%	50

Source: U.S. Census Bureau, Quarterly Workforce Indicators
**Only states with available data

STEM HEALTH CARE STATE COMPARISON
-2002-2012 CHANGE IN HEALTH CARE EMPLOYMENT -

- Every state recorded increases in STEM Health Care employment. Their average growth was almost 25 percent compared to the overall decline in STEM Core industries.

STEM Health Care - Change in High-Tech Employment 2002 - 2012		
Area	Percent	Rank
Average**	**24.8%**	**-**
Alaska	43.9%	1
New Mexico*	37.5%	2
Texas	35.9%	3
Utah	35.5%	4
Idaho	33.4%	5
Louisiana*	8.8%	41
Kansas	8.8%	42
Connecticut	8.8%	43
Rhode Island	8.1%	44
Vermont	7.2%	45

Source: U.S. Census Bureau, Quarterly Workforce Indicators
*Data for Q4 2012 was unavailable, Q4 2011 substituted
**Only states with available data

STEM HEALTH CARE STATE COMPARISON
- 2002-2012 CHANGE IN RELATIVE HEALTH CARE EMPLOYMENT -

- The STEM Health Care concentration increased an average of 14 percent between 2002 and 2012. The only state where STEM Health Care industry employment concentration declined was North Dakota.

STEM Health Care - Change in Relative High-Tech Employment, 2002 - 2012		
Area	Percent	Rank
Average**	**14.3%**	**-**
New Mexico*	23.5%	1
Michigan	21.3%	2
Alaska	20.0%	3
Idaho	19.4%	4
Tennessee	19.0%	5
Louisiana*	7.3%	41
Vermont	6.8%	42
Hawaii	6.0%	43
Iowa	4.5%	44
North Dakota	-9.0%	45

Source: U.S. Census Bureau, Quarterly Workforce Indicators
*Data for Q4 2012 was unavailable, Q4 2011 substituted
**Only states with available data

STEM HEALTH CARE STATE COMPARISON - EARNINGS PER WORKER -

- STEM Health Care industry earnings were not as strong as STEM Core, although in the majority of states they were higher than the all-industry average.

STEM Health Care - Earnings in High-Tech Employment		
Area	EPW	Rank
Average**	**$51,305**	-
Washington, D.C.	$73,413	1
California*	$60,616	2
Nevada	$57,358	3
Minnesota	$56,119	4
New York	$55,766	5
Utah	$44,173	46
West Virginia	$43,738	47
Kansas	$43,722	48
Alabama	$42,406	49
Idaho	$42,241	50

Source: U.S. Census Bureau, Quarterly Workforce Indicators
*Data for Q4 2012 was unavailable, Q4 2011 substituted
**Only states with available data

STEM HEALTH CARE STATE COMPARISON - RELATIVE EARNINGS PER WORKER -

- Six states had STEM Health Care earnings below their average for all industries. Those state all were in the top 10 for highest average earnings per worker for all industries.

STEM Health Care - Relative Earnings in High-Tech Employment		
Area	EPW	Rank
Average**	**104.6%**	**-**
South Dakota	133.3%	1
Hawaii	132.5%	2
Nevada	130.5%	3
Mississippi	127.6%	4
South Carolina	124.9%	5
Texas	93.3%	46
Washington, D.C.	92.7%	47
New Jersey	92.2%	48
Connecticut	88.3%	49
New York	87.2%	50

Source: U.S. Census Bureau, Quarterly Workforce Indicators
**Only states with available data

STEM HEALTH CARE STATE COMPARISON - GENDER -

- The gender of workers in STEM Health Care industries was greatly skewed toward women.
- Utah and the District of Columbia employed the most men, but only at 29 percent of their STEM Health Care totals.

STEM Health Care - Gender of High-Tech Employment		
Area	Male	Female
Average**	**22.6%**	**77.4%**
Utah	29.2%	70.8%
Washington, D.C.	29.1%	70.9%
California*	27.5%	72.5%
New York	26.5%	73.5%
Hawaii	26.1%	73.9%
South Dakota	18.4%	81.6%
Wisconsin	18.4%	81.6%
Indiana	18.3%	81.7%
North Dakota	17.6%	82.4%
Iowa	17.6%	82.4%

Source: U.S. Census Bureau, Quarterly Workforce Indicators
*Data for Q4 2012 was unavailable, Q4 2011 substituted
**Only states with available data

STEM HEALTH CARE STATE COMPARISON - AGE -

- The STEM Health Care industries had noticeably lower employment under 25 at 9.2 percent. This underscored the requirements for postsecondary education.
- Only one state, Utah, had more than 60 percent of its STEM Health Care workforce in the under 45 age group.

STEM Health Care - Average** Age of High-Tech Employment				
	14-24	25-44	45-64	65-99
STEM Health Care	**9.2%**	**45.9%**	**40.6%**	**4.3%**
All Industry	13.4%	43.1%	38.7%	4.7%
Utah	15.3%	50.9%	30.7%	3.0%
Montana	9.1%	42.2%	44.4%	4.3%
New Hampshire	8.7%	40.3%	46.5%	4.6%
Vermont	8.7%	40.0%	46.0%	5.4%
Maine	8.2%	40.0%	47.1%	4.7%

Source: U.S. Census Bureau, Quarterly Workforce Indicators

**Only states with available data

STEM CORE STATE COMPARISON - PERCENT OF STEM CORE EMPLOYMENT -

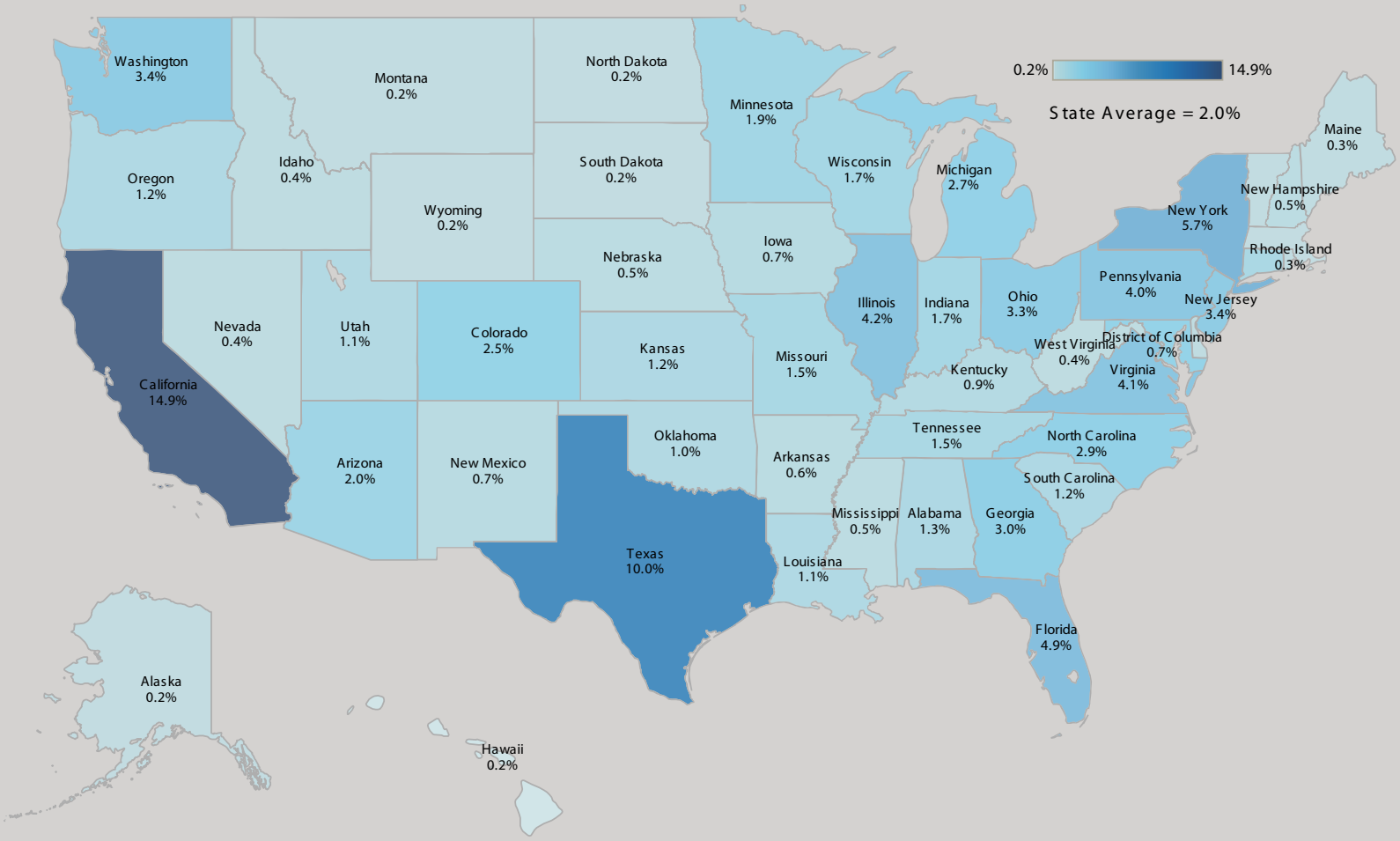
- Share of total STEM Core employment generally follows total population. California had the lion's share of STEM Core employment at almost 15 percent.

STEM Core - Percent of Total**
High-Tech Employment

Area	Percent	Rank
California*	14.9%	1
Texas	10.0%	2
New York	5.7%	3
Florida	4.9%	4
Illinois	4.2%	5
Alaska	0.2%	46
Montana	0.2%	47
North Dakota	0.2%	48
South Dakota	0.2%	49
Wyoming	0.2%	50

Source: U.S. Census Bureau, Quarterly Workforce Indicators
*Data for Q4 2012 was unavailable, Q4 2011 substituted
**Only states with available data

TOTAL SIZE - VISUAL OF ALL 50



Source: U.S. Census Bureau, Quarterly Workforce Indicators
*No Data: Massachusetts

STEM CORE STATE COMPARISON
- PERCENT OF THE STATE'S TOTAL EMPLOYMENT -

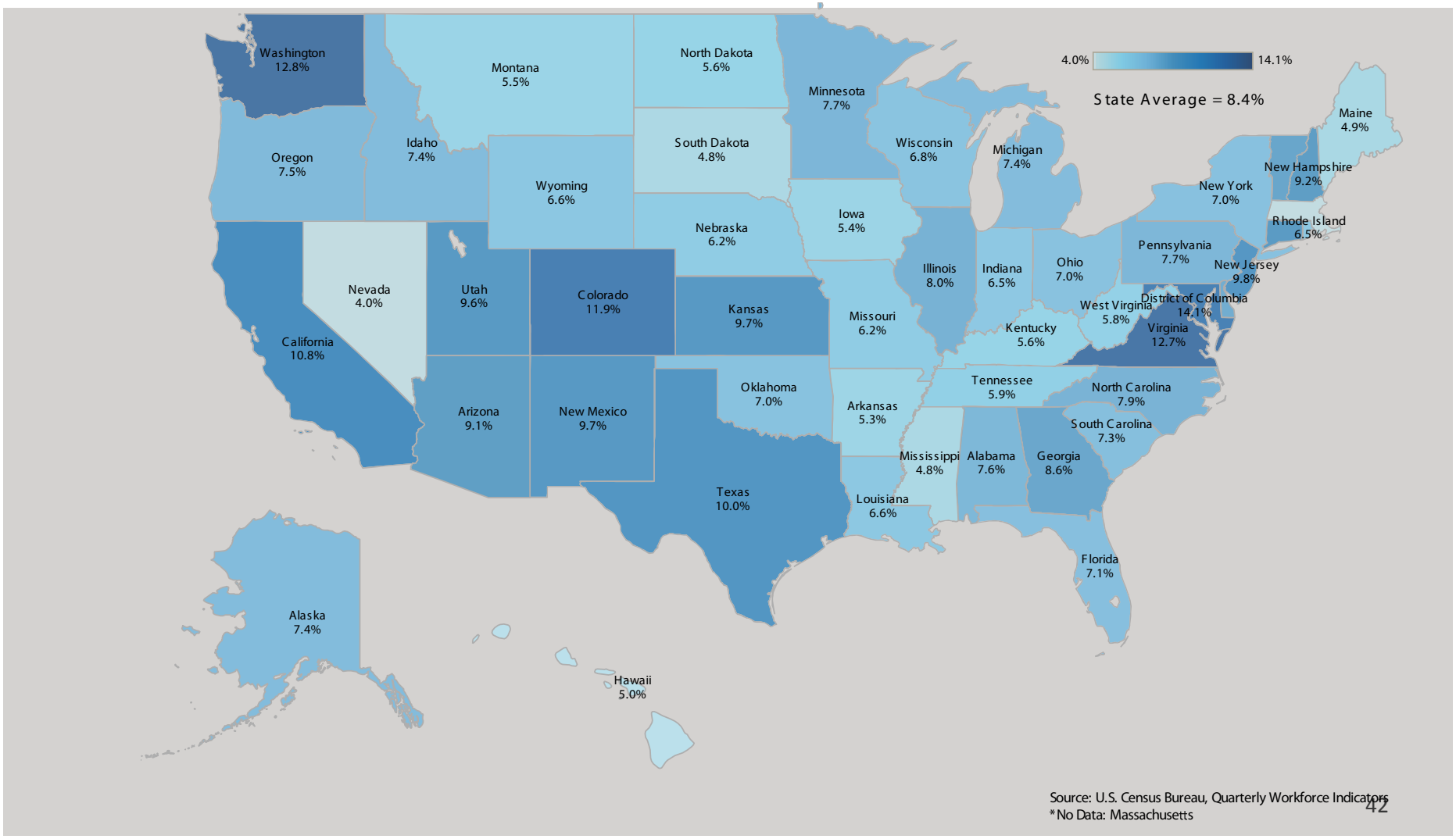
- Sixteen states had more than the average concentration of STEM Core employment of 8.4 percent.

STEM Core - Relative High-Tech Employment

Area	Percent	Rank
Average**	**8.4%**	-
Washington, D.C.	14.1%	1
Washington	12.8%	2
Virginia	12.7%	3
Colorado	11.9%	4
Maryland	11.7%	5
Hawaii	5.0%	46
Maine	4.9%	47
Mississippi	4.8%	48
South Dakota	4.8%	49
Nevada	4.0%	50

Source: U.S. Census Bureau, Quarterly Workforce Indicators
** Only states with available data

BY SHARE - VISUAL OF ALL 50



Source: U.S. Census Bureau, Quarterly Workforce Indicators
*No Data: Massachusetts

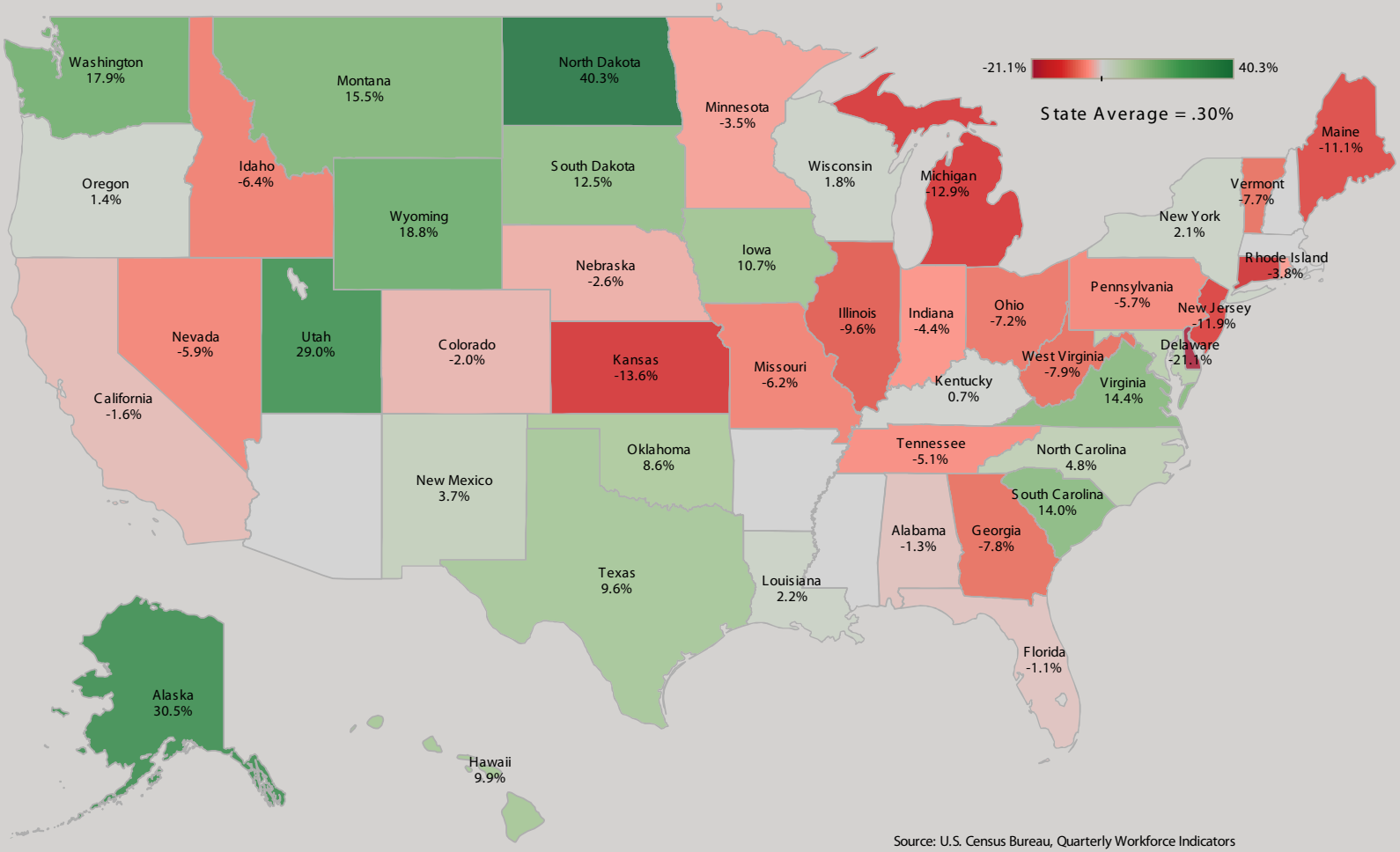
STEM CORE STATE COMPARISON
- 2002-2012 CHANGE IN STEM CORE EMPLOYMENT -

- STEM Core industries employment on average dropped 0.3 percent between 2002 and 2012

STEM Core - Change in High-Tech Employment, 2002 - 2012		
Area	Percent	Rank
Average**	**-0.3%**	-
North Dakota	40.3%	1
Alaska	30.5%	2
Utah	29.0%	3
Wyoming	18.8%	4
Washington	17.9%	5
New Jersey	-11.9%	41
Michigan	-12.9%	42
Kansas	-13.6%	43
Connecticut	-14.9%	44
Delaware	-21.1%	45

Source: U.S. Census Bureau, Quarterly Workforce Indicators
** Only states with available data

TOTAL GROWTH - VISUAL OF ALL 50



Source: U.S. Census Bureau, Quarterly Workforce Indicators
*California, Louisiana, and New Mexico: Q4 2012 data were unavailable. Q4 2011 data were substituted.
**No Data: Arizona, Arkansas, Massachusetts, Mississippi, and New Hampshire

STEM CORE STATE COMPARISON
- 2002-2012 CHANGE IN RELATIVE STEM CORE EMPLOYMENT -

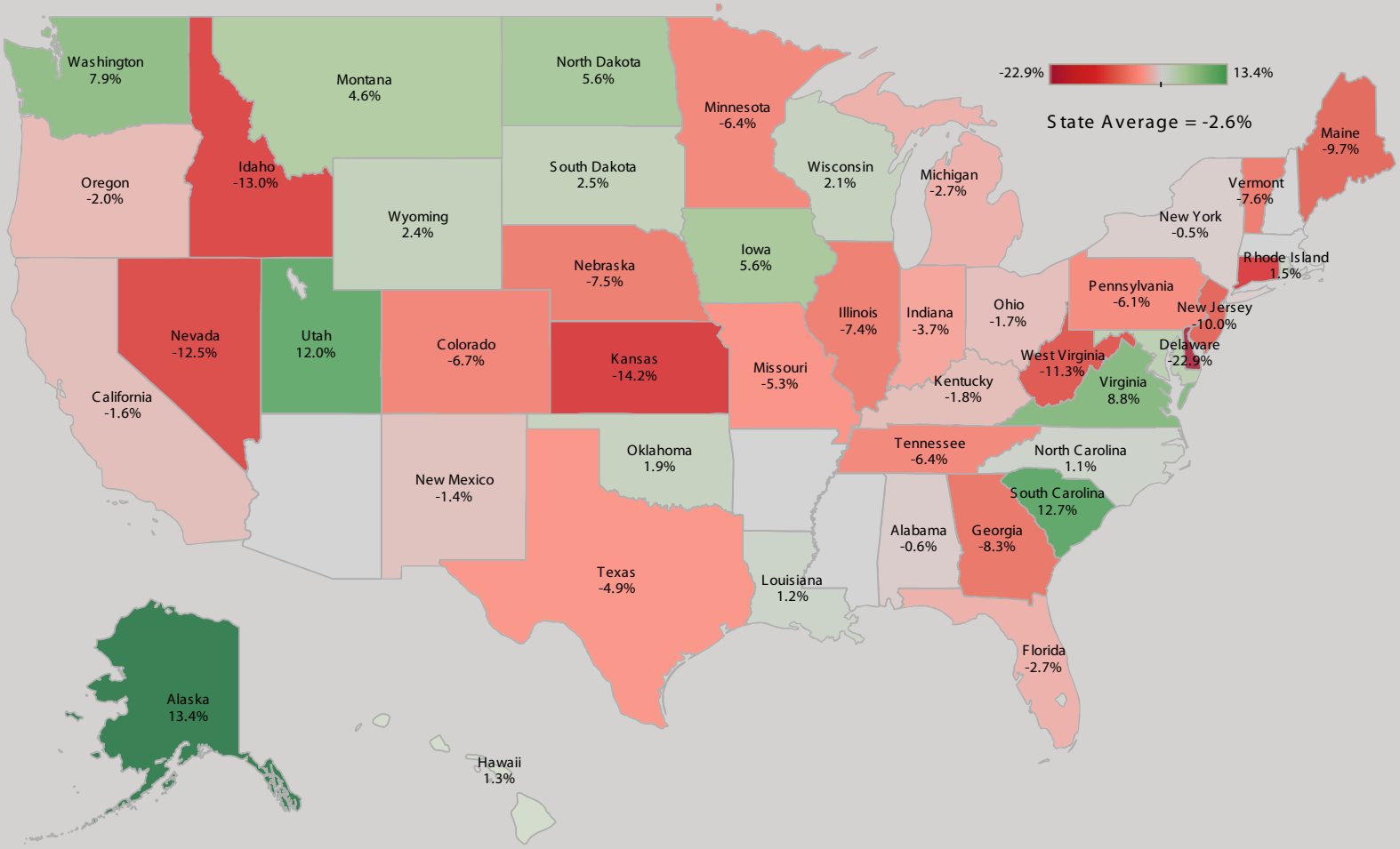
- On average, STEM Core industries made up 2.6 percent less of the states' total employment in 2012 than they did in 2002.

STEM Core - Change in Relative High-Tech Employment, 2002 - 2012

Area	Percent	Rank
Average**	**-2.6%**	-
Alaska	13.4%	1
South Carolina	12.7%	2
Utah	12.0%	3
Virginia	8.8%	4
Washington	7.9%	5
Nevada	-12.5%	41
Idaho	-13.0%	42
Connecticut	-13.7%	43
Kansas	-14.2%	44
Delaware	-22.9%	45

Source: U.S. Census Bureau, Quarterly Workforce Indicators
** Only states with available data

SHARE GROWTH - VISUAL OF ALL 50



Source: U.S. Census Bureau, Quarterly Workforce Indicators
No Data: Arizona, Arkansas, Massachusetts, Mississippi, and New Hampshire

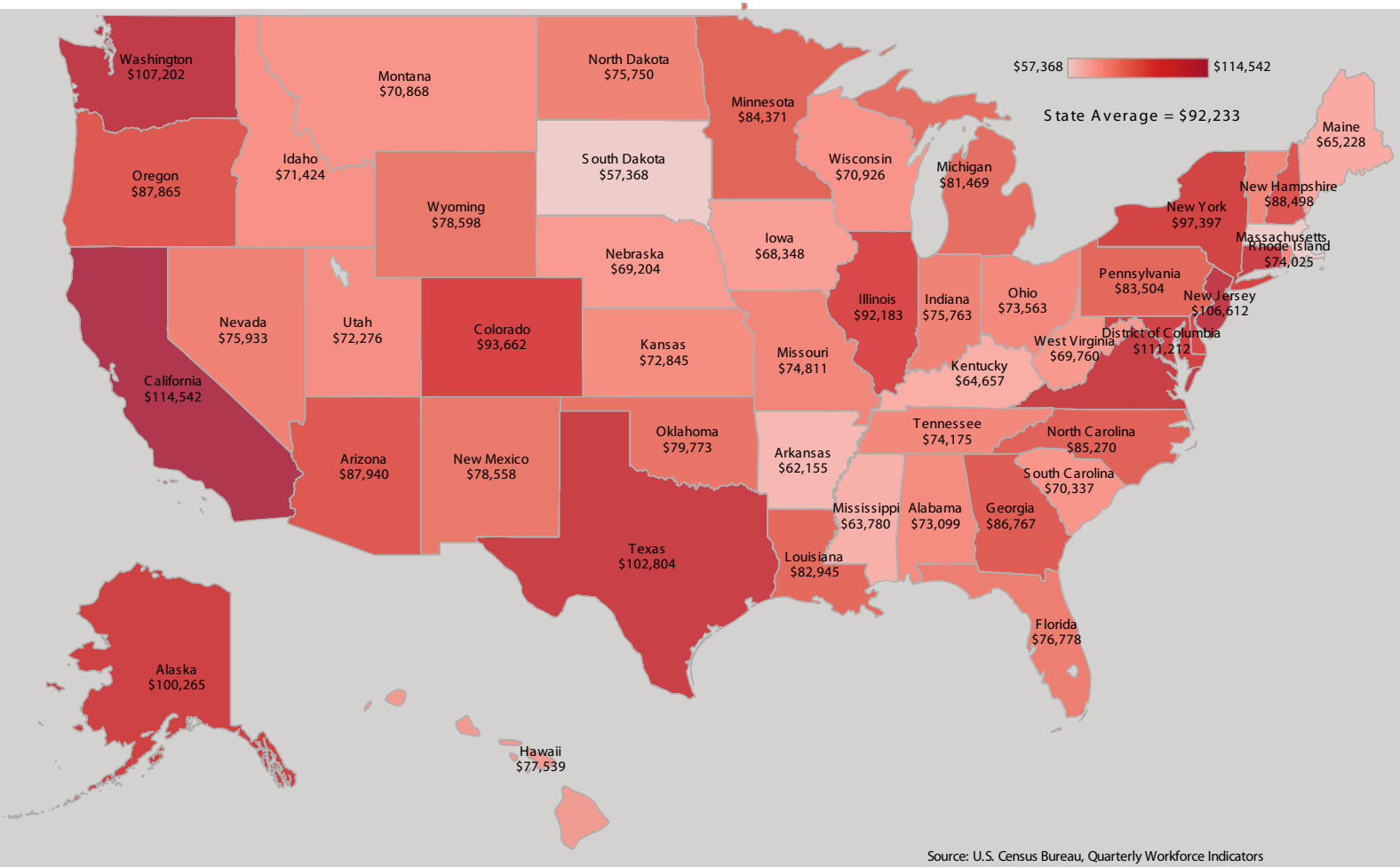
STEM CORE STATE COMPARISON (5) - EARNINGS PER WORKER -

- The average earnings per worker in STEM Core industries in 2012 were over $92,000. Eight states did even better, coming in at more than $100,000 per worker.

STEM Core - Earnings in High-Tech Employment		
Area	EPW	Rank
Average**	**$92,233**	-
California*	$114,542	1
Washington, D.C.	$111,212	2
Washington	$107,202	3
New Jersey	$106,612	4
Virginia	$103,069	5
Maine	$65,228	46
Kentucky	$64,657	47
Mississippi	$63,780	48
Arkansas	$62,155	49
South Dakota	$57,368	50

Source: U.S. Census Bureau, Quarterly Workforce Indicators
*Data for Q4 2012 was unavailable, Q4 2011 substituted
**Only states with available data

TOTAL EARNINGS - VISUAL OF ALL 50



Source: U.S. Census Bureau, Quarterly Workforce Indicators
*California, Louisiana, and New Mexico: Q4 2012 data were unavailable, so Q4 2011 data were substituted.
**No data: Massachusetts

STEM CORE STATE COMPARISON - RELATIVE EARNINGS PER WORKER -

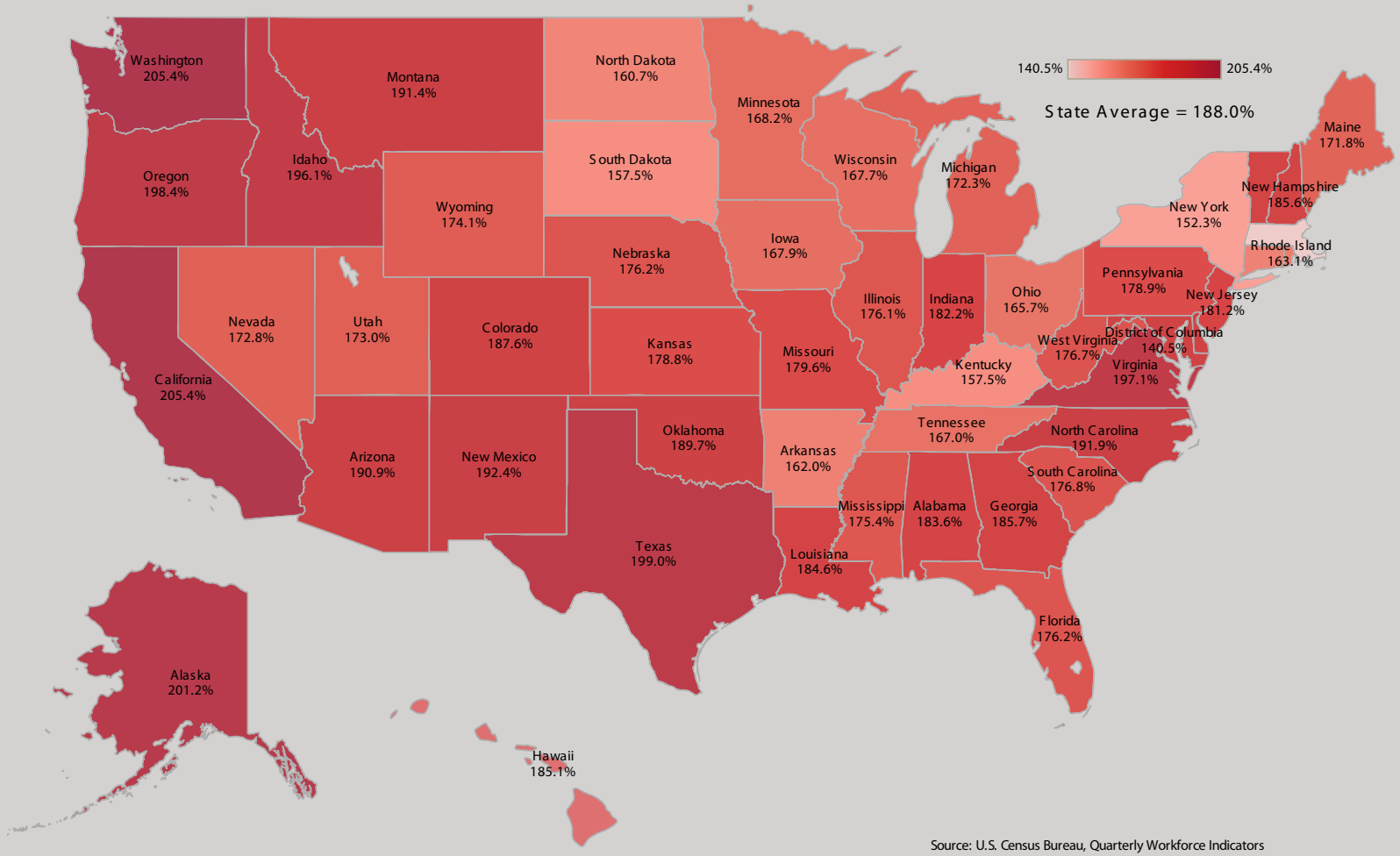
- STEM Core industry average earnings were always higher than the all-industry averages.

STEM Core - Relative Earnings in High-Tech Employment

Area	EPW	Rank
Average**	**188.0%**	-
Washington	205.4%	1
California*	205.4%	2
Alaska	201.2%	3
Texas	199.0%	4
Oregon	198.4%	5
North Dakota	160.7%	46
South Dakota	157.5%	47
Kentucky	157.5%	48
New York	152.3%	49
Washington, D.C.	140.5%	50

Source: U.S. Census Bureau, Quarterly Workforce Indicators
*Data for Q4 2012 was unavailable, Q4 2011 substituted
**Only states with available data

EARNINGS SHARE - VISUAL OF ALL 50



Source: U.S. Census Bureau, Quarterly Workforce Indicators
*California, Louisiana, and New Mexico: Q4 2012 data were unavailable, so Q4 2011 data were substituted.
**No data: Massachusetts

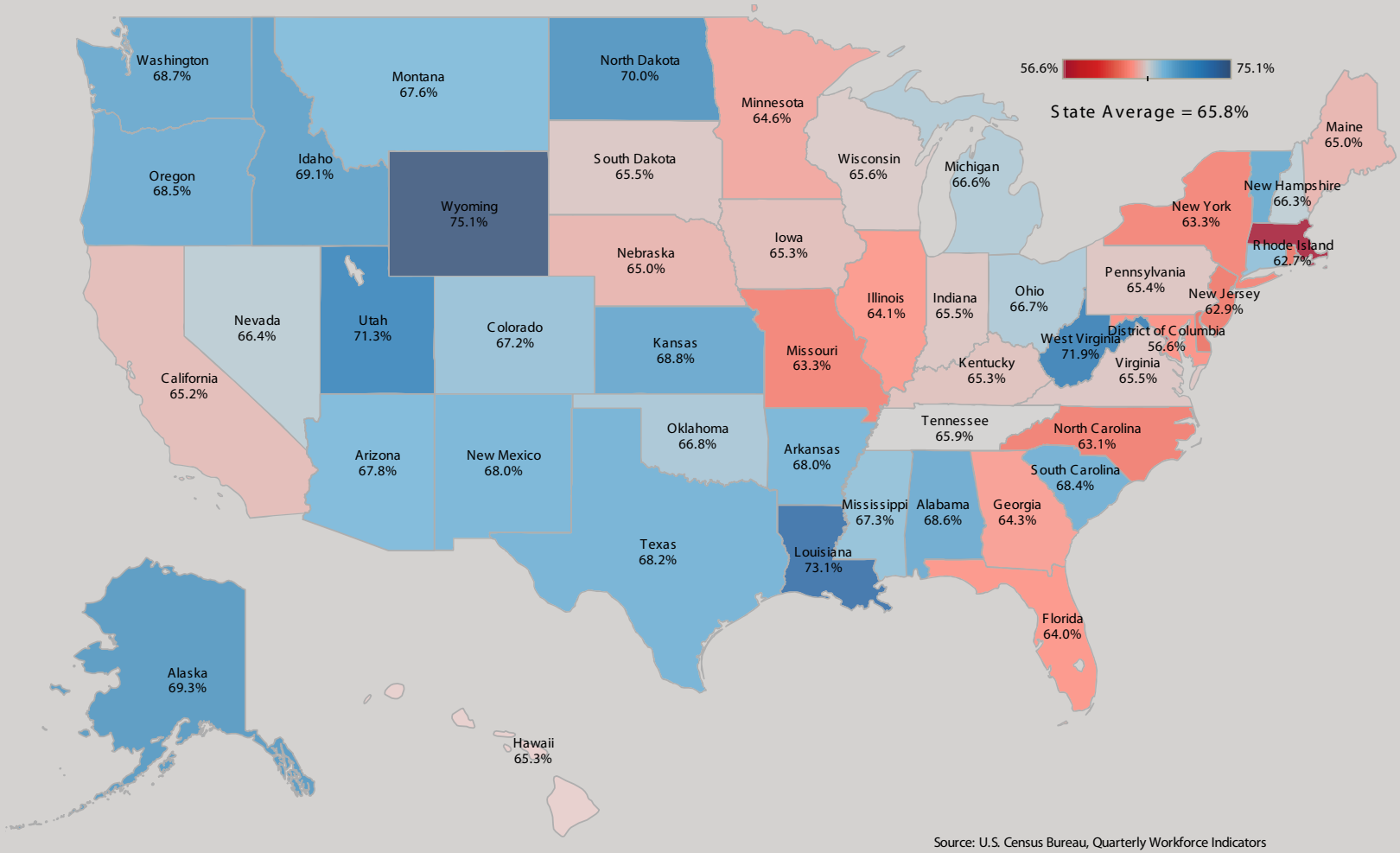
STEM CORE STATE COMPARISON - GENDER -

- The majority of workers in STEM Core industries were male, averaging 65.8 percent. No state has a majority of female workers, but the District of Columbia was the closest at 43.4 percent.

STEM Core - Gender of High-Tech Employment		
Area	Male	Female
Average**	**65.8%**	**34.2%**
Wyoming	75.1%	24.9%
Louisiana*	73.1%	26.9%
West Virginia	71.9%	28.1%
Utah	71.3%	28.7%
North Dakota	70.0%	30.0%
North Carolina	63.1%	36.9%
New Jersey	62.9%	37.1%
Rhode Island	62.7%	37.3%
Delaware	62.7%	37.3%
Washington, D.C.	56.6%	43.4%

Source: U.S. Census Bureau, Quarterly Workforce Indicators
*Data for Q4 2012 was unavailable, Q4 2011 substituted
**Only states with available data

HT GENDER - VISUAL OF ALL 50



Source: U.S. Census Bureau, Quarterly Workforce Indicators
*California, Louisiana, and New Mexico: Q4 2012 data were unavailable, so Q4 2011 data were substituted.
**No data: Massachusetts

STEM CORE STATE COMPARISON
- AGE -

- Workers in STEM Core industries were slightly more concentrated in the middle age groups than for all industries.

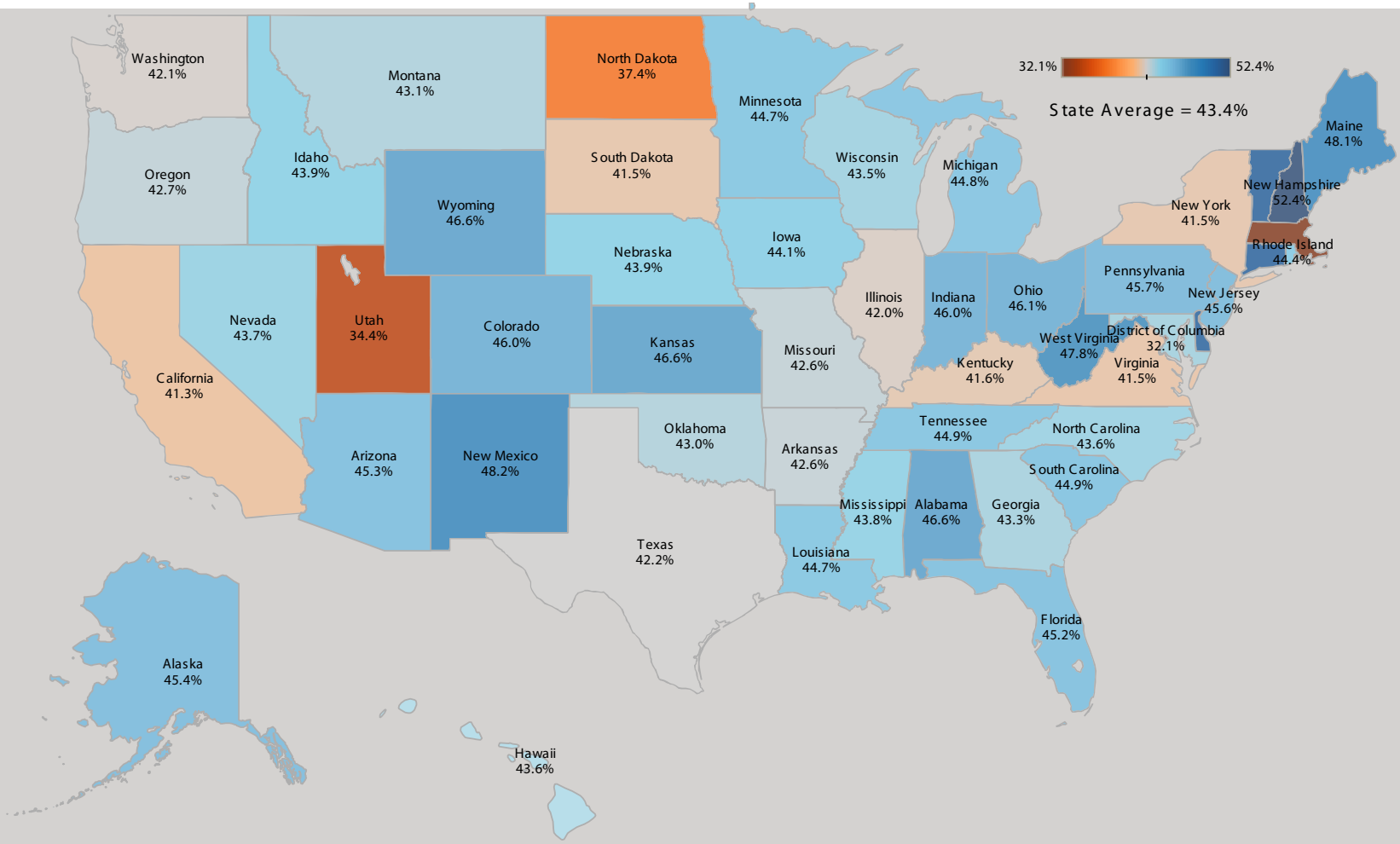
STEM Core - Average** Age of High-Tech Employment				
	14-24	25-44	45-64	65-99
STEM Core	**5.5%**	**47.7%**	**43.4%**	**3.4%**
All Industry	13.4%	43.1%	38.7%	4.7%
DC	7.5%	56.6%	32.1%	3.8%
Utah	9.5%	53.6%	34.4%	2.5%
North Dakota	8.5%	51.7%	37.4%	2.3%
Maine	4.7%	43.0%	48.1%	4.1%
Vermont	5.7%	40.1%	50.9%	3.3%
Delaware	4.2%	41.1%	50.8%	3.8%
Connecticut	5.2%	39.2%	50.9%	4.7%
New Hampshire	4.6%	39.2%	52.4%	3.8%

Source: U.S. Census Bureau, Quarterly Workforce Indicators

**Only states with available data

HIGH TECH - AGE COHORTS

VISUAL OF ALL 50 STATES



Source: U.S. Census Bureau, Quarterly Workforce Indicators
*California, Louisiana, and New Mexico: Q4 2012 data were unavailable, so Q4 2011 data were substituted.
**No data: Massachusetts

NEXT STEPS

- Test stability
- Update data and re-evaluate state/national comparisons
- Focus on economic impact

THANK YOU