

State of Technology 2018



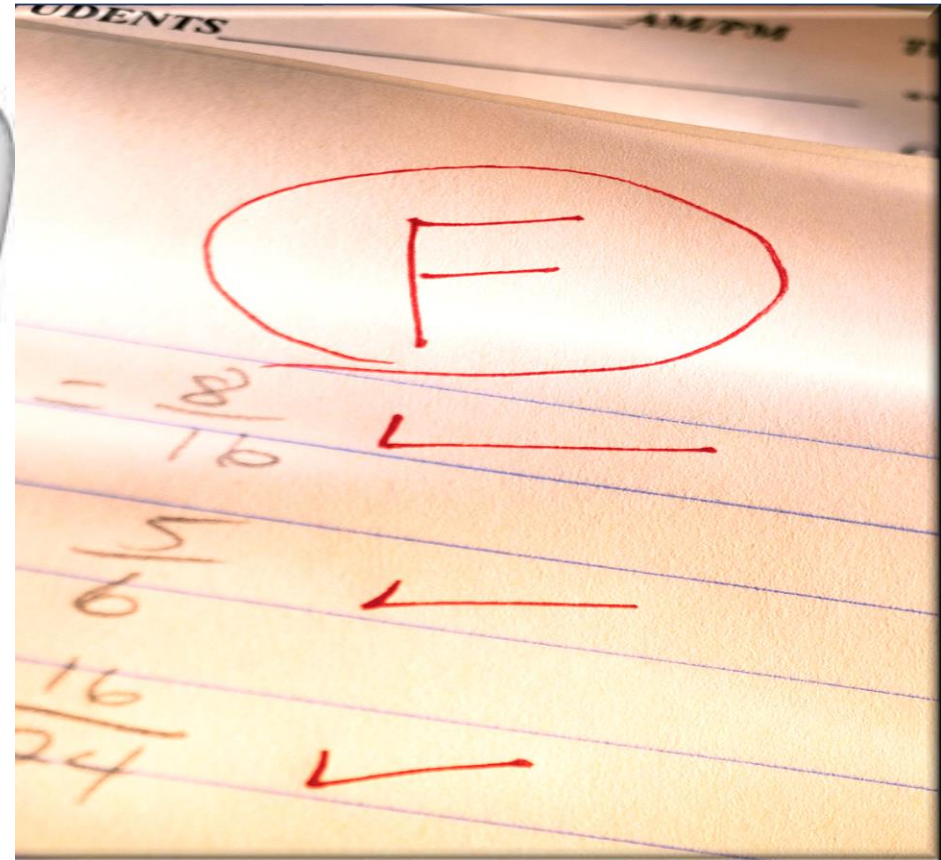
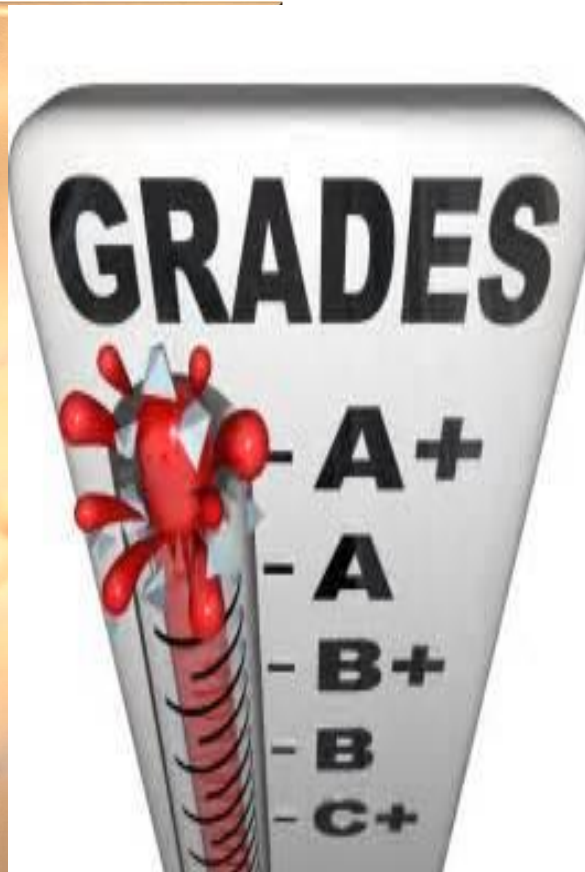
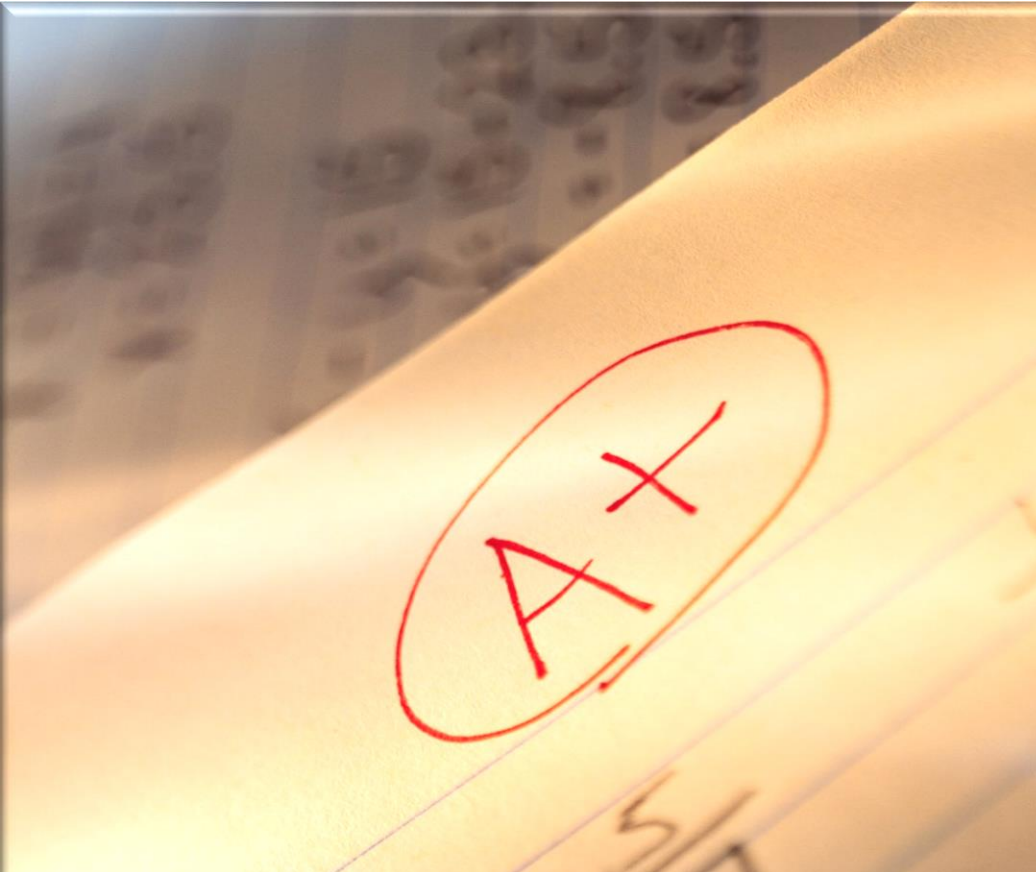
North Carolina
**STATE OF
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ECONOMIC
LEADERSHIP

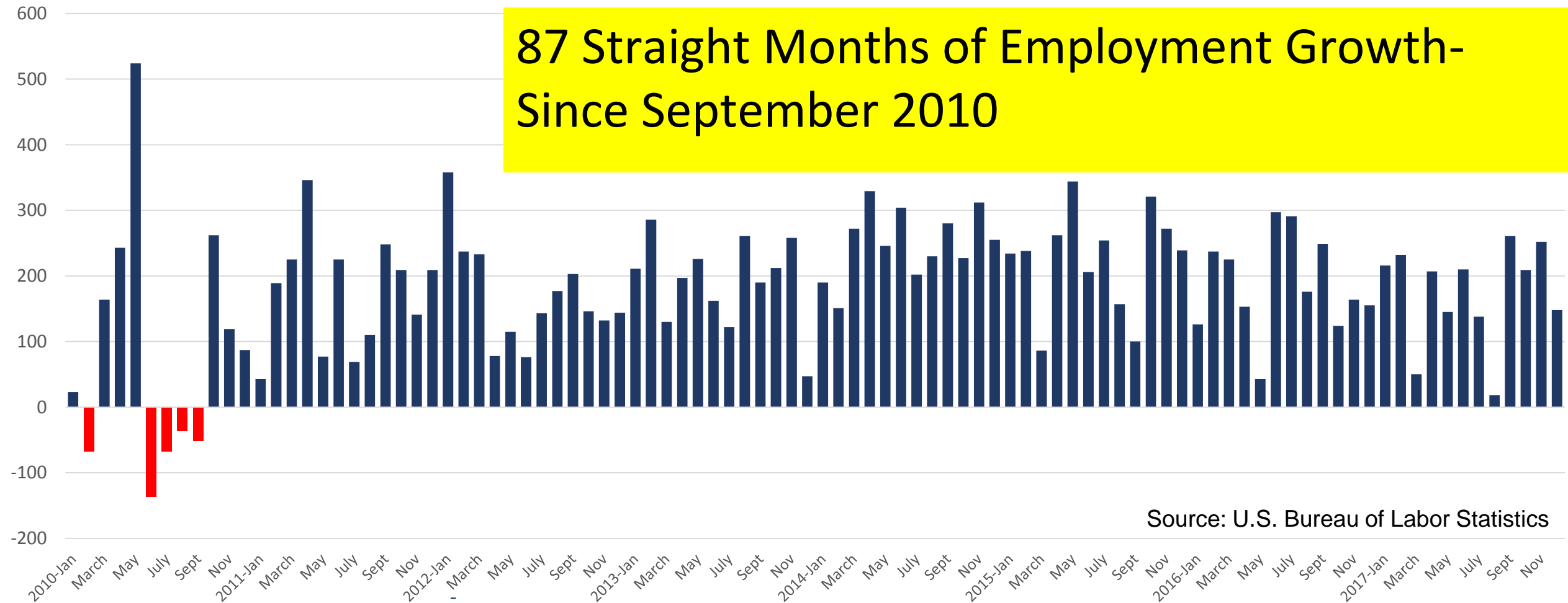
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How Is The Economy?



USA Nonfarm Payroll Employment

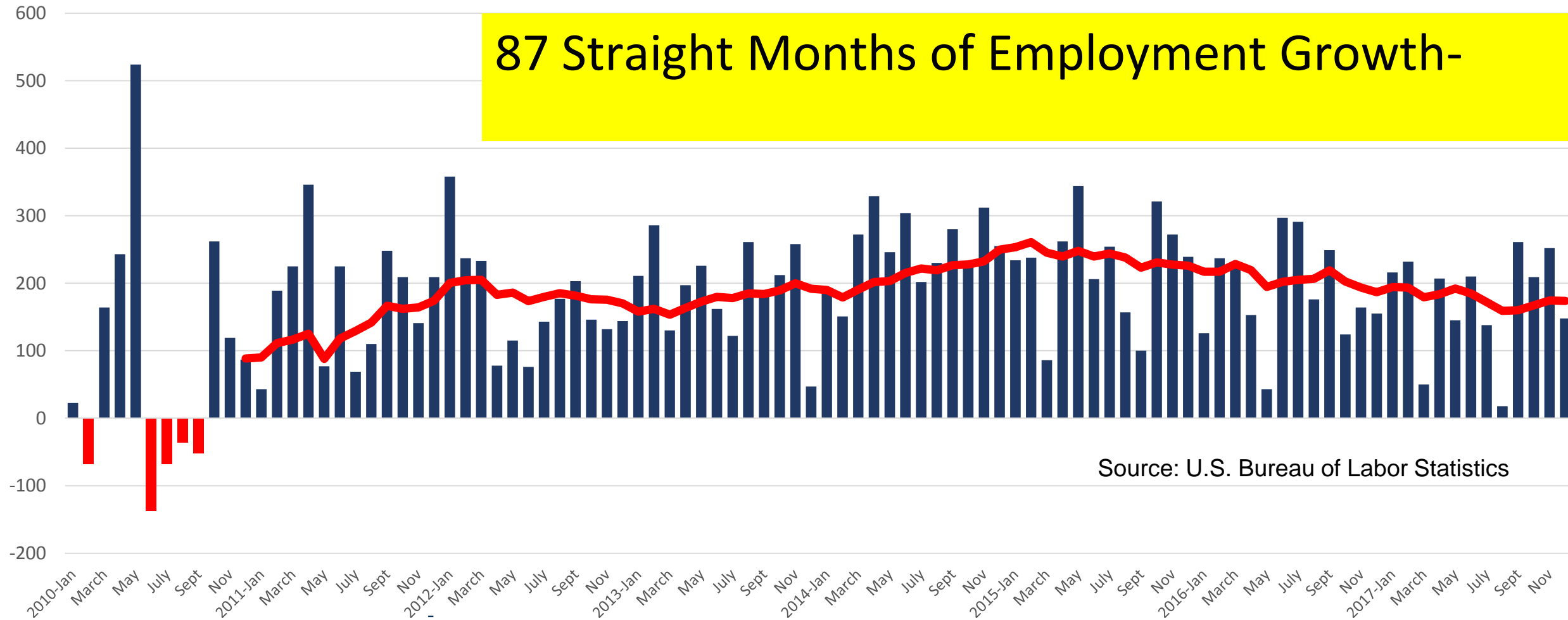
87 Straight Months of Employment Growth-
Since September 2010



Source: U.S. Bureau of Labor Statistics

USA Nonfarm Payroll Employment

87 Straight Months of Employment Growth-



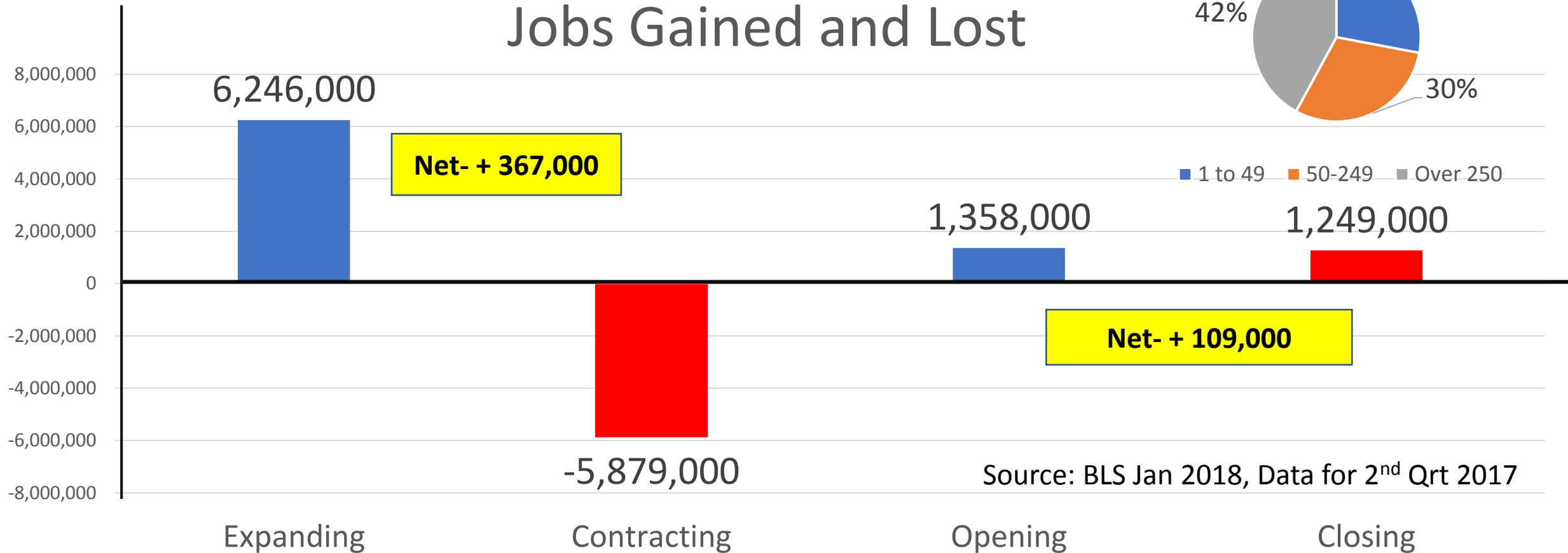
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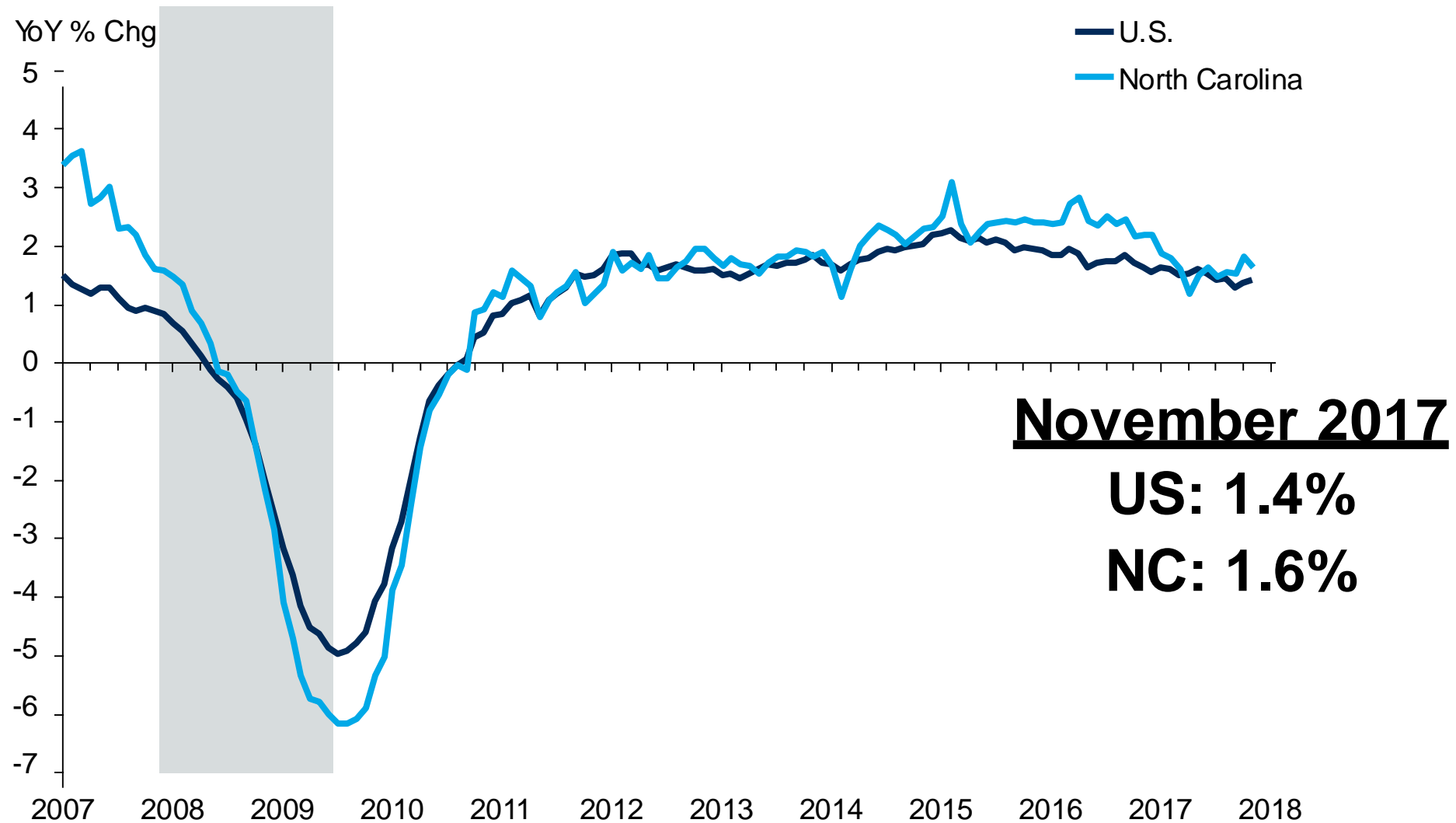
Economic Dynamism (Churn)

Net New Jobs

Jobs Gained and Lost

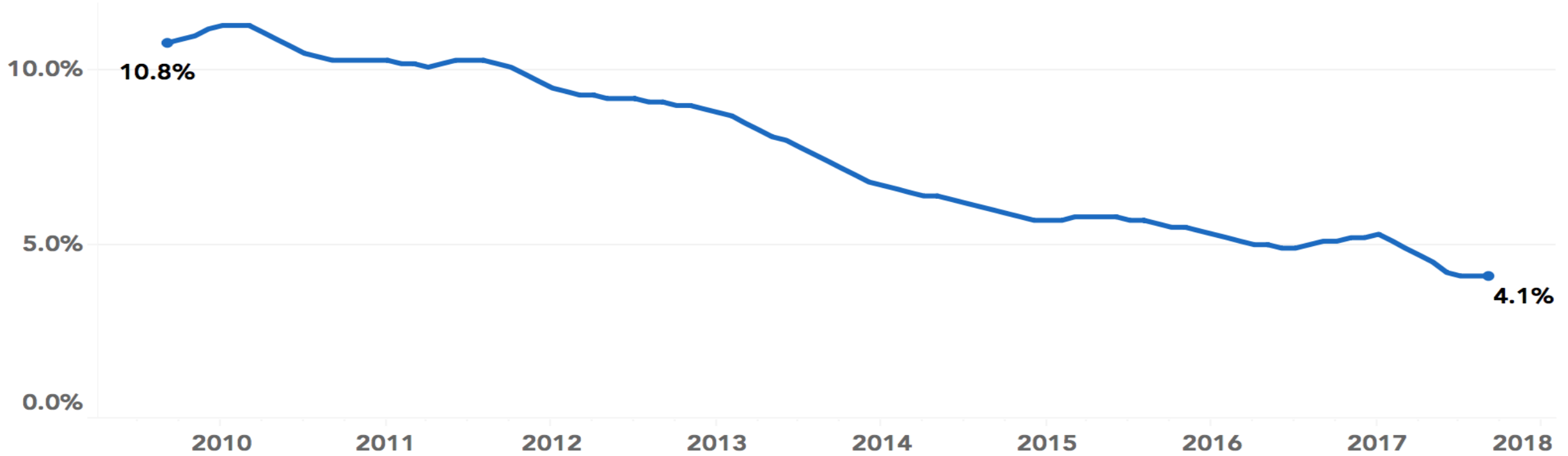


North Carolina Payroll Employment



Source: Bureau of Labor Statistics/Haver Analytics

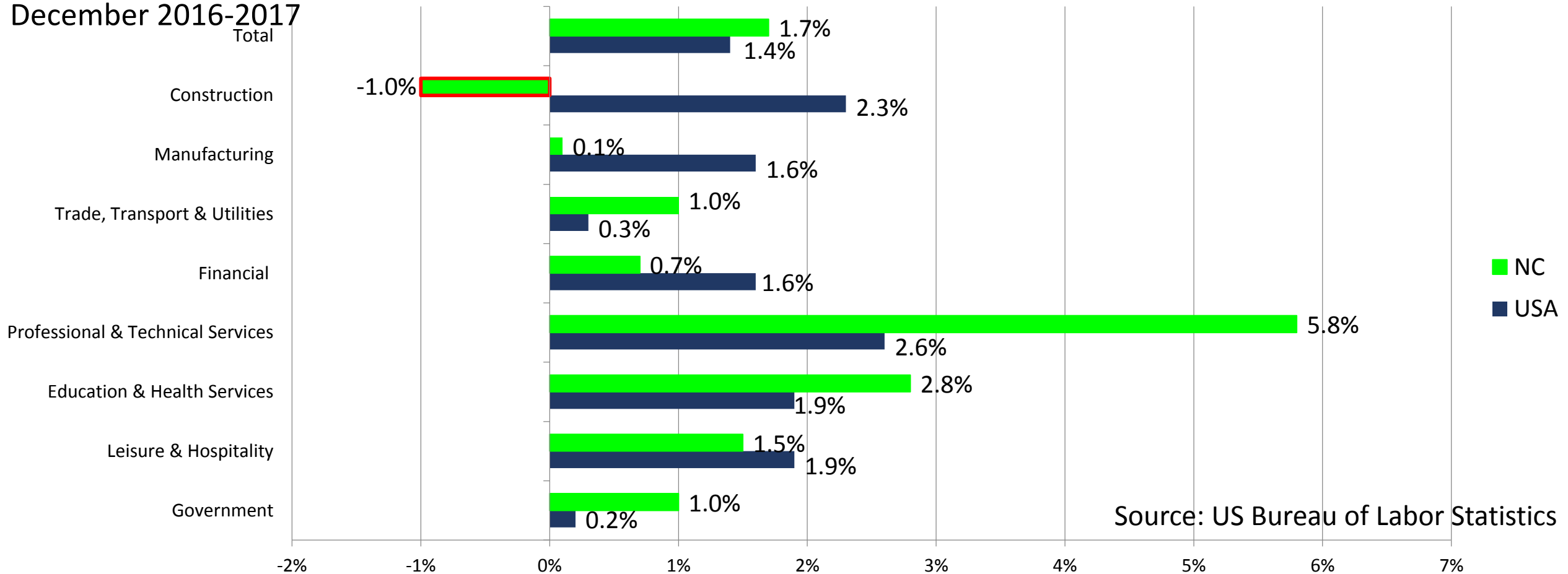
North Carolina's Unemployment Rate



Source: Bureau of Labor Statistics

Employment Gains By Sector for the United States and NC

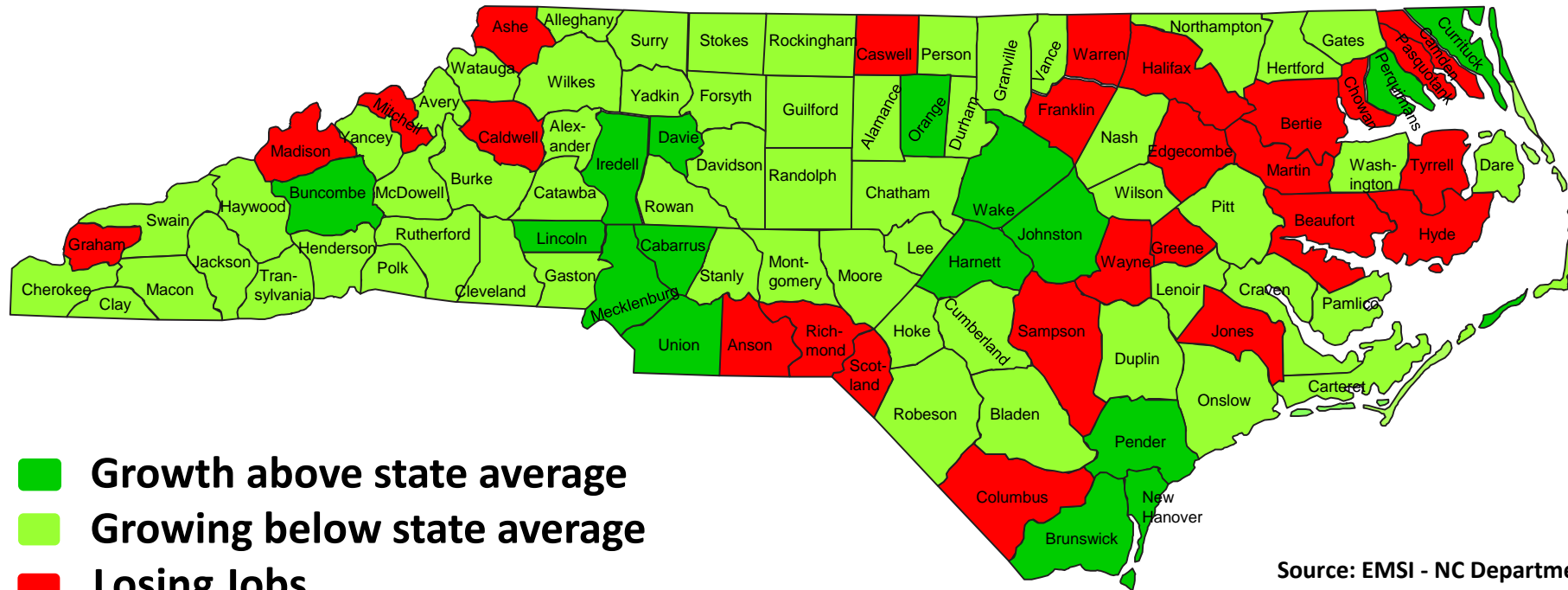
December 2016-2017
Total



Source: US Bureau of Labor Statistics

5 Year Job Growth 2011-2016

North Carolina Average 11.0%



Source: EMSI - NC Department of Commerce



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Methodology

- 87 separate 6-digit NAICS code sectors to characterize the Total Technology Sector
- The Total Technology Sector was further broken down into four sub-categories:
 - **Energy Technology**
 - **Environmental Technology**
 - **Life Sciences**
 - **IT, Telecom, Hardware & Software (Tech Core)**
- 65 separate 5-digit Standard Occupational Classification (SOC) codes
- Economic Modeling Specialists International (EMSI), based on the Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages

The Difference Between Tech Industry Workers and Tech Occupational Workers



87 separate 6-digit NAICS



65 separate 5-digit
(SOC) codes

North Carolina Technology Industry Summary Statistics 2016

Indicator	Technology Sector	State Total
Employees	247,208	4,259,606
Establishments	18,868	270,802
Wages (millions)	\$25,409	\$229,003

Tech Industry in North Carolina- 2016

Percentage of Total North Carolina Economy

Employees

247,208



5.8%

Establishments

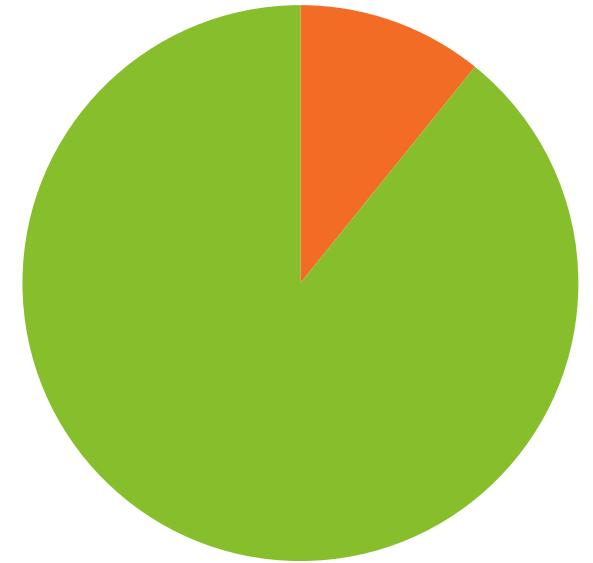
18,868



7.0%

Wages

\$25,409,000,000



11.1%

North Carolina's Technology Industry by Sub-

Tech Category	Employment 2015	Change 2015-2016	Change 2011-2016	Establishments 2016
Energy Tech	13,198	-0.9%	14.5%	378
Environmental Tech	22,738	1.5%	21.4%	1,524
Life Sciences	77,299	3.2%	9.8%	4,650
IT	133,974	3.8%	21.9%	12,316

North Carolina's Technology Industry by Sub-

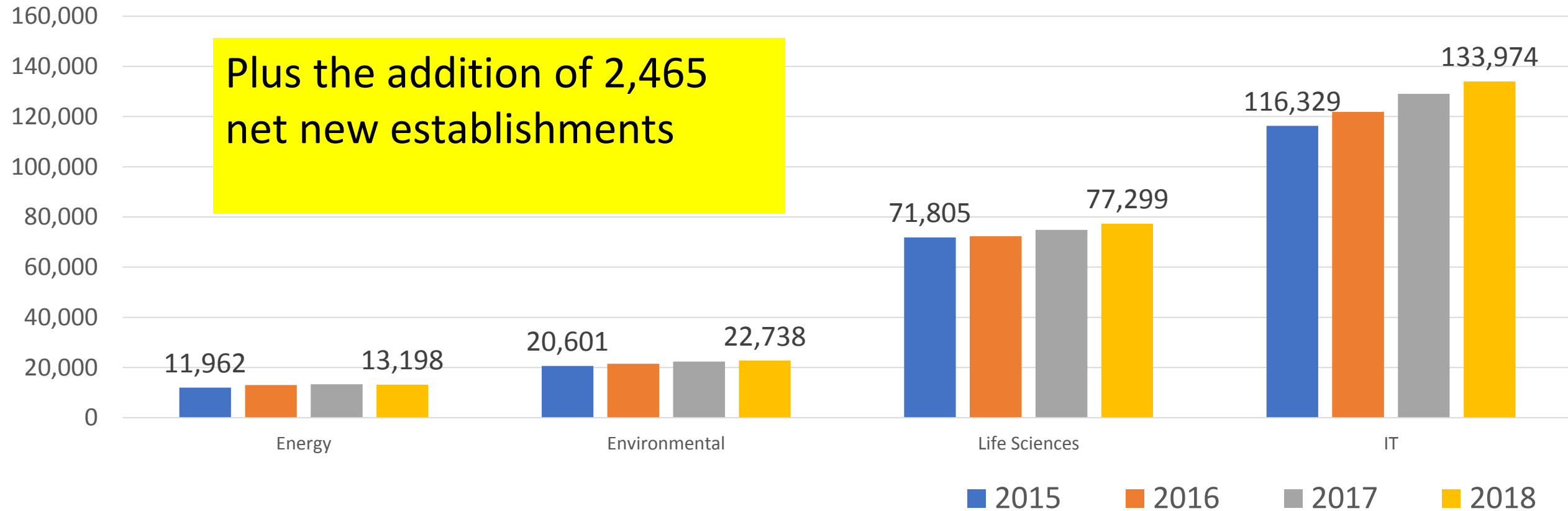
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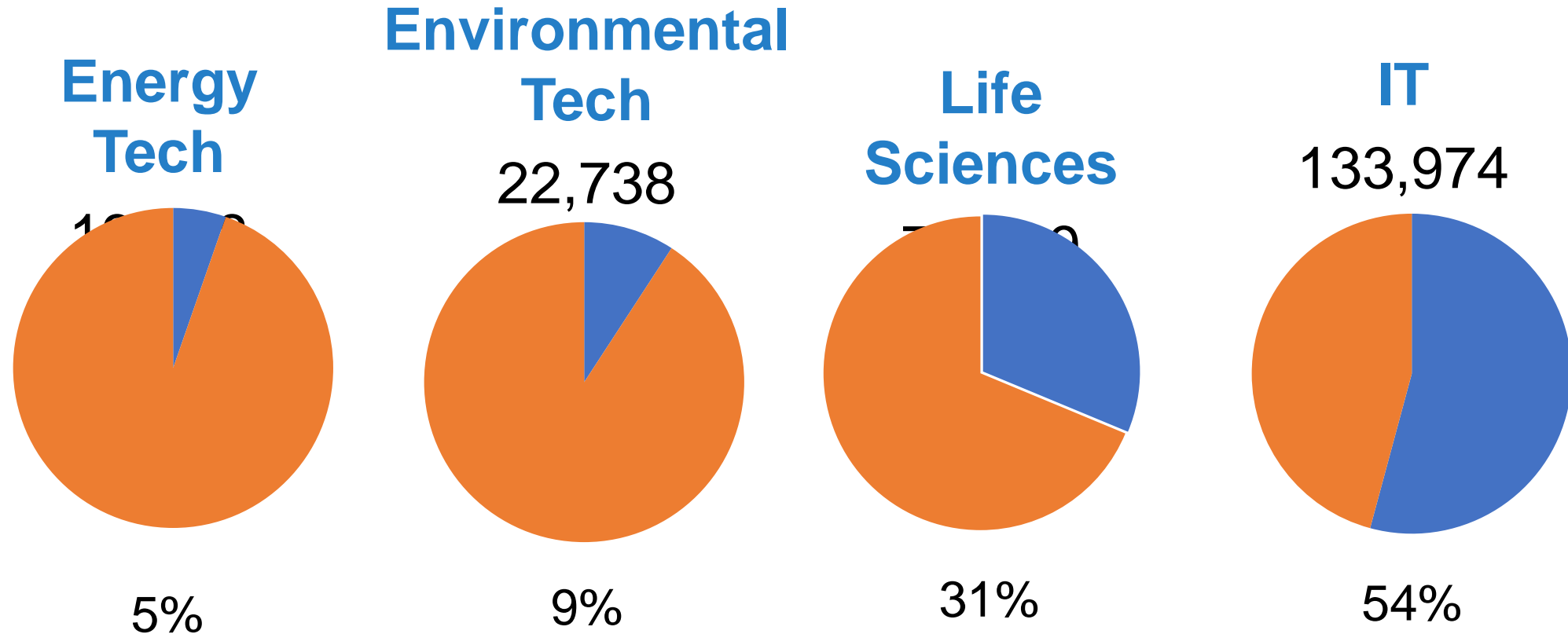
Employment State of Tech Reports 2015-2018

Employment Growth



Makeup of Tech Industry

Percentage of Total North Carolina Tech Sector



Employment Growth Rate, 2011-2016

**Energy
Tech**

14.5%



**Environmental
Tech**

21.4%



**Life
Sciences**

9.8%



IT

21.9%



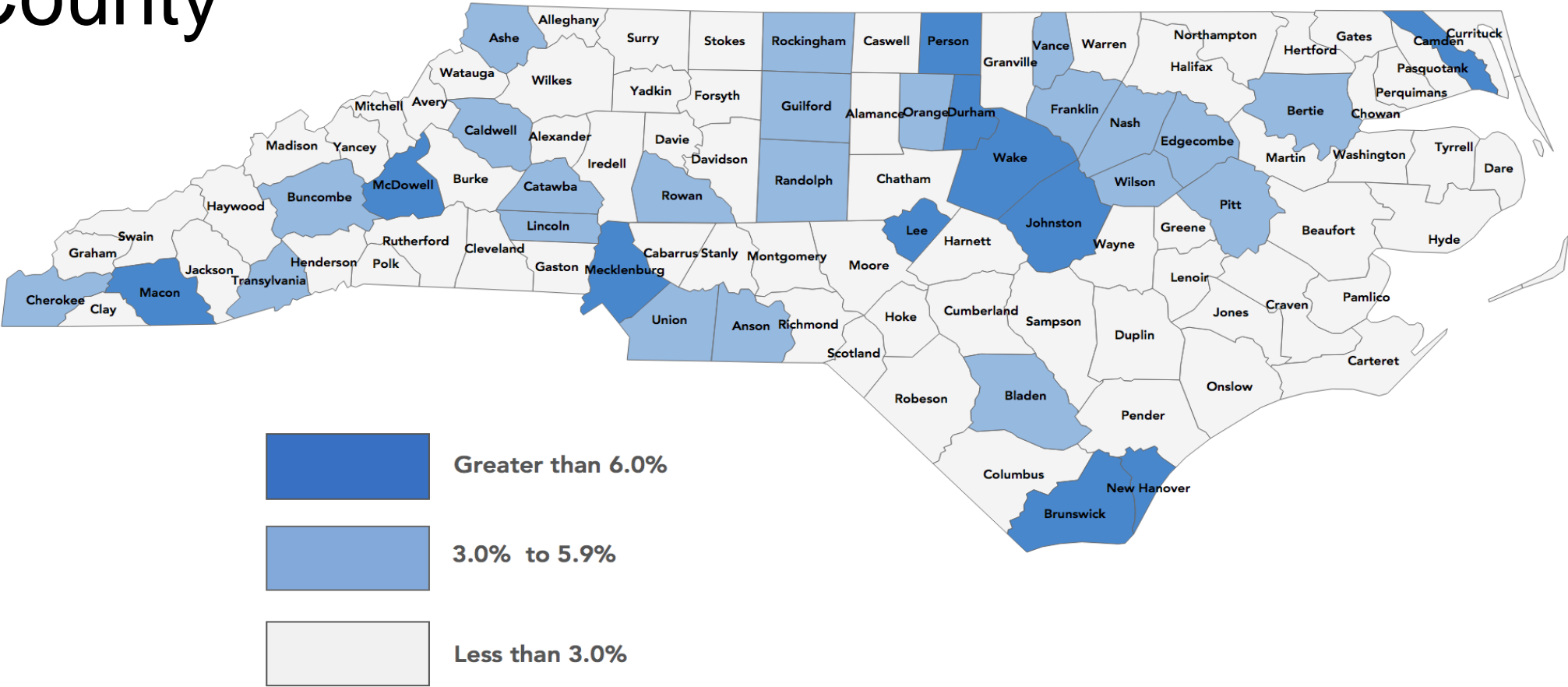
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North Carolina's Technology Industry by Sub-

Tech Category	Employment, 2016	Change, 2015-2016	Change 2011-2016	Establishments 2016
Tech Services	183,856	5.2%	24.5%	18,104
Tech Manufacturing	63,352	-2.5%	0.8%	764
Total Tech	247,208	3.1%	17.4%	18,868

Tech Industry Jobs by County in North Carolina



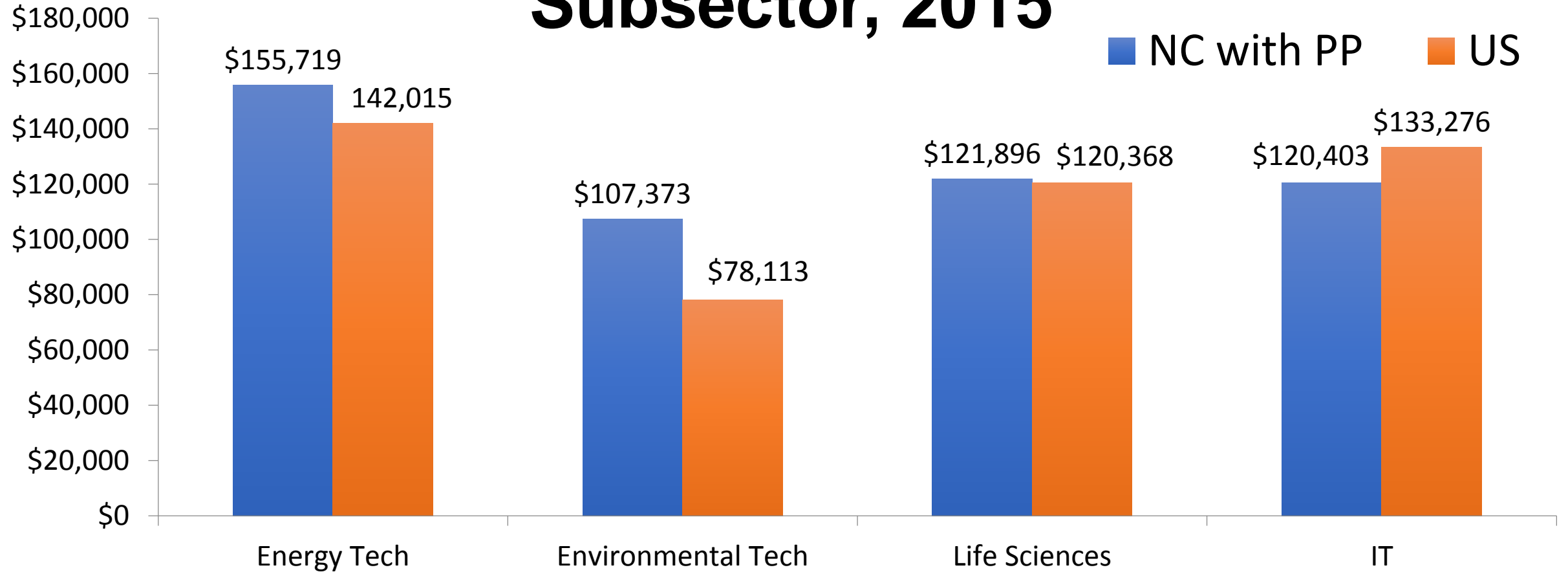
Average Annual Earnings per Worker by Subsector 2016

Tech Category	North Carolina	North Carolina (With Purchasing Power)	National Average
Energy Tech	\$131,115	\$155,719	\$142,015
Environmental Tech	\$97,923	\$107,373	\$78,113
Life Sciences	\$111,168	\$121,896	\$120,368
IT	\$109,807	\$120,403	\$133,276

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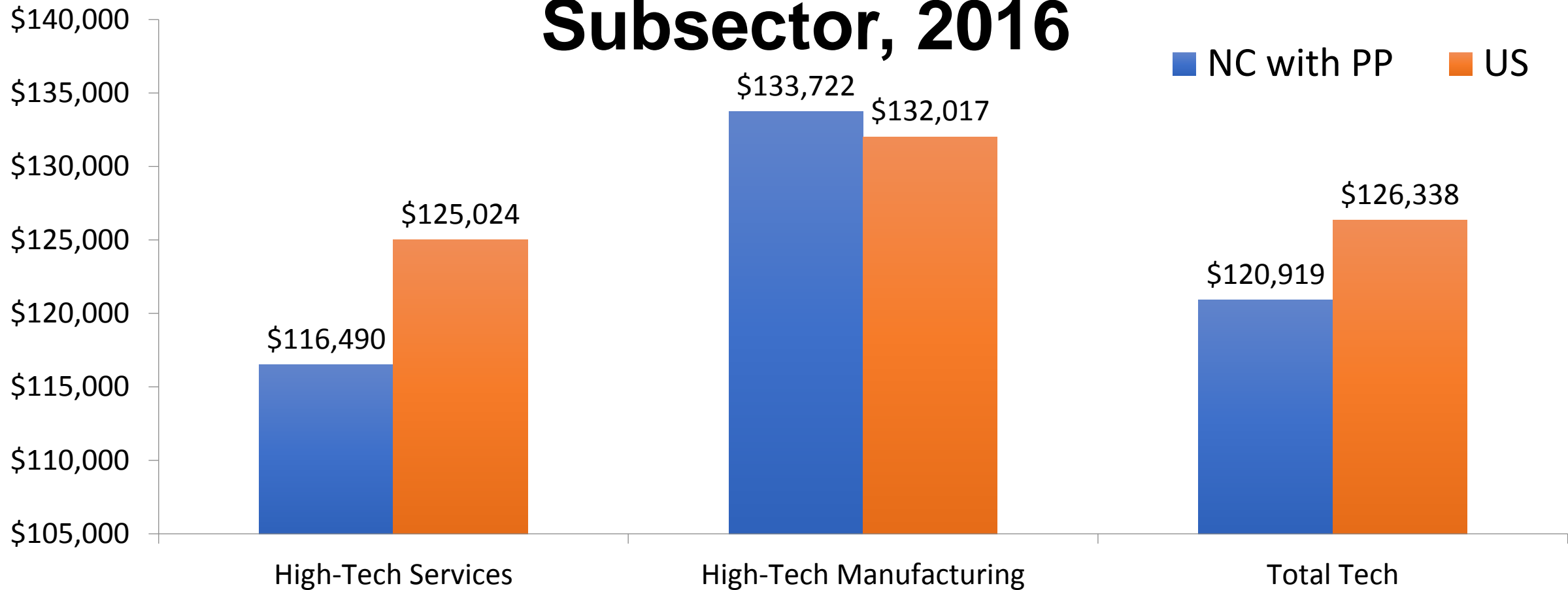
Average Annual Earnings per Worker by

Tech Category	North Carolina	North Carolina (With Purchasing Power)	National Average
Tech Services	\$106,238	\$116,490	\$125,024
Tech Manufacturing	\$121,999	\$133,772	\$132,017
Total Tech	\$110,277	\$120,919	\$126,338

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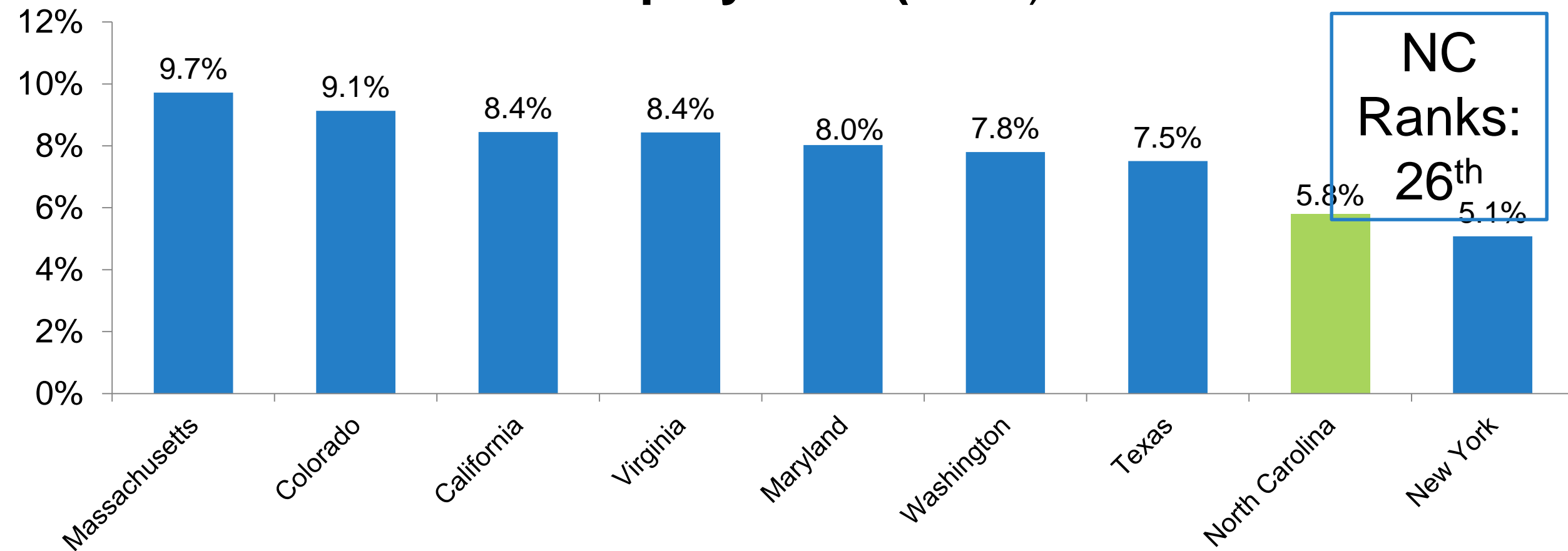
Economic Impact of Technology Sector on State

Impact	Employees	Earnings (Millions)	Sales (Millions)
Direct Impact	247,200	\$25,400	\$81,600
Multiplier	2.52	1.70	1.67
Indirect & Induced Impact	375,000	\$17,900	\$54,500
Total Impact	622,200	\$43,300	\$136,100

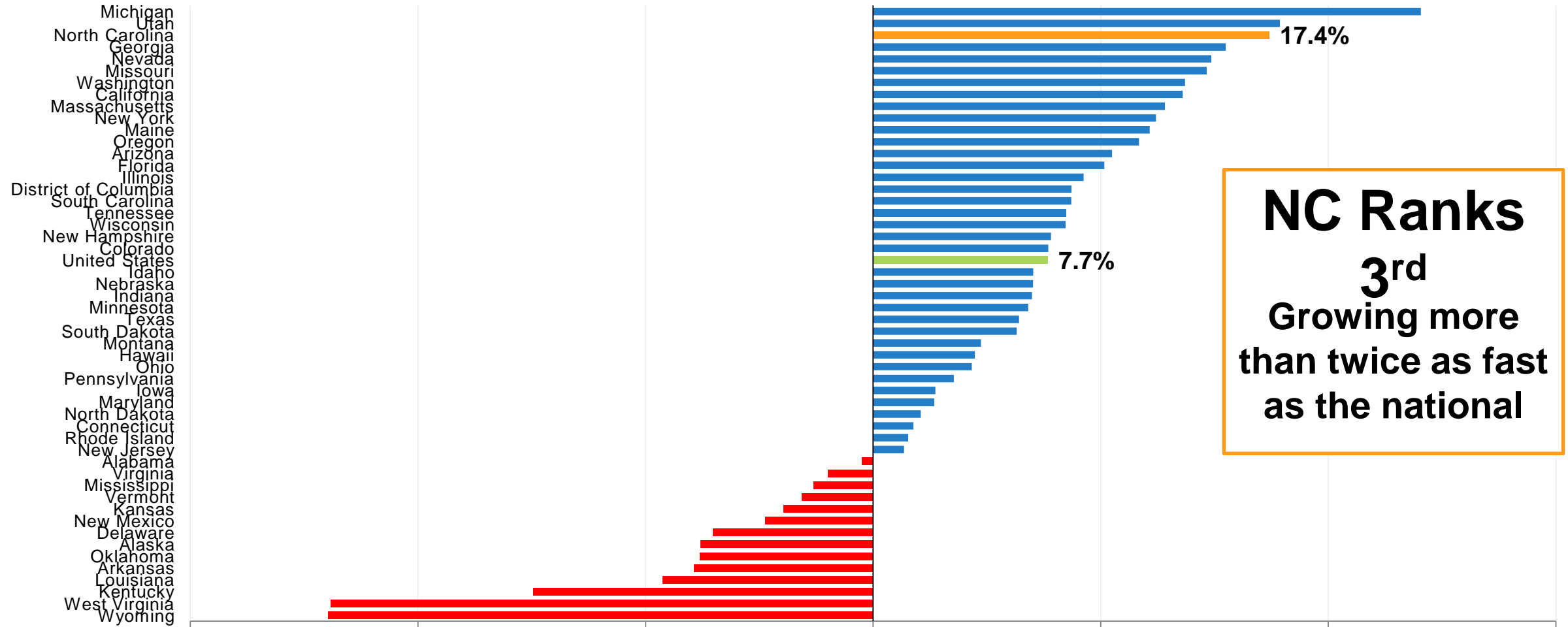
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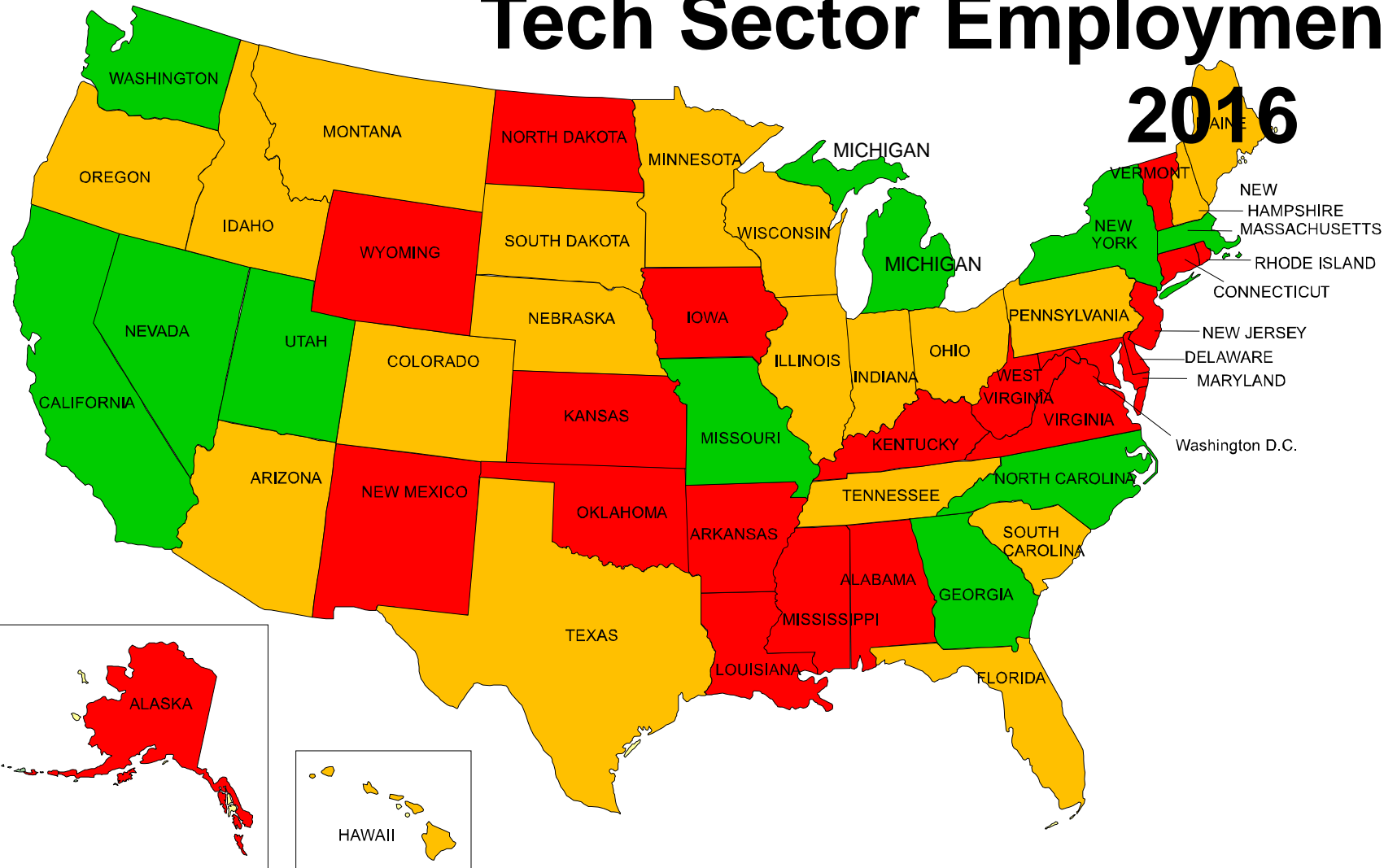
Technology Sector Employment as a Percentage of Total Employment (2016)



Tech Sector Employment Growth, 2011-2016



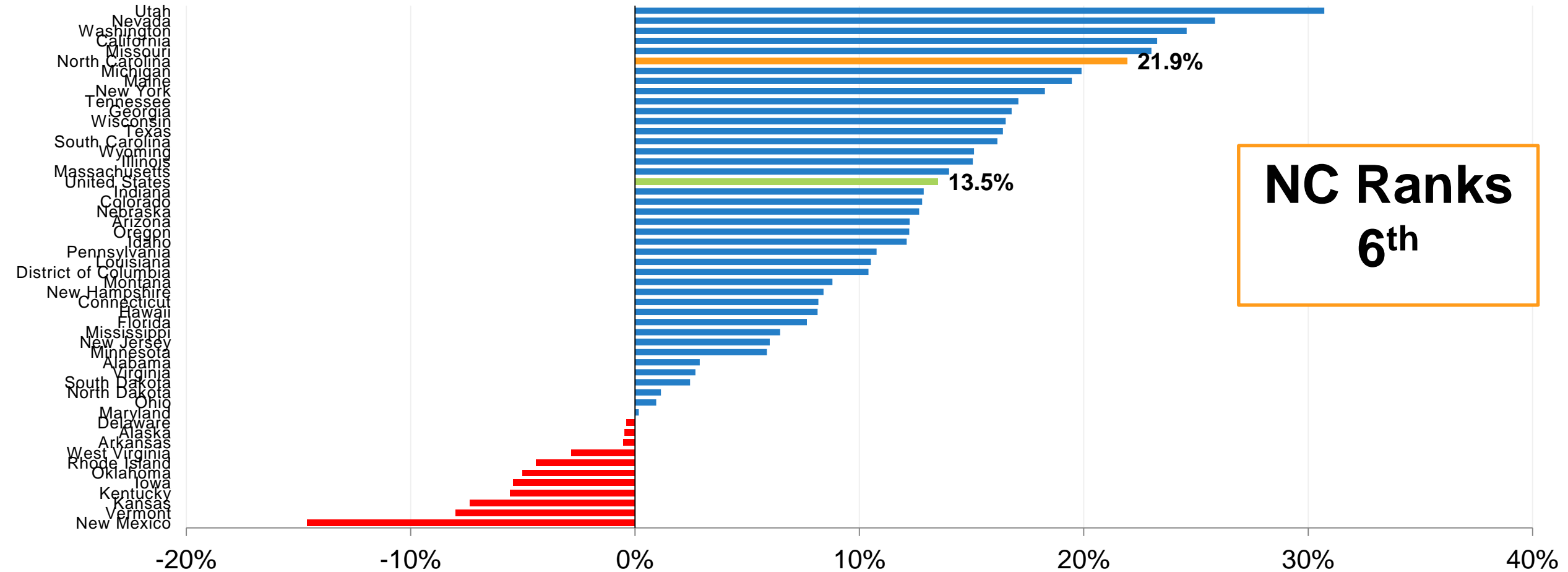
Tech Sector Employment Growth, 2011-2016



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IT Sector Employment Growth, 2011-2016



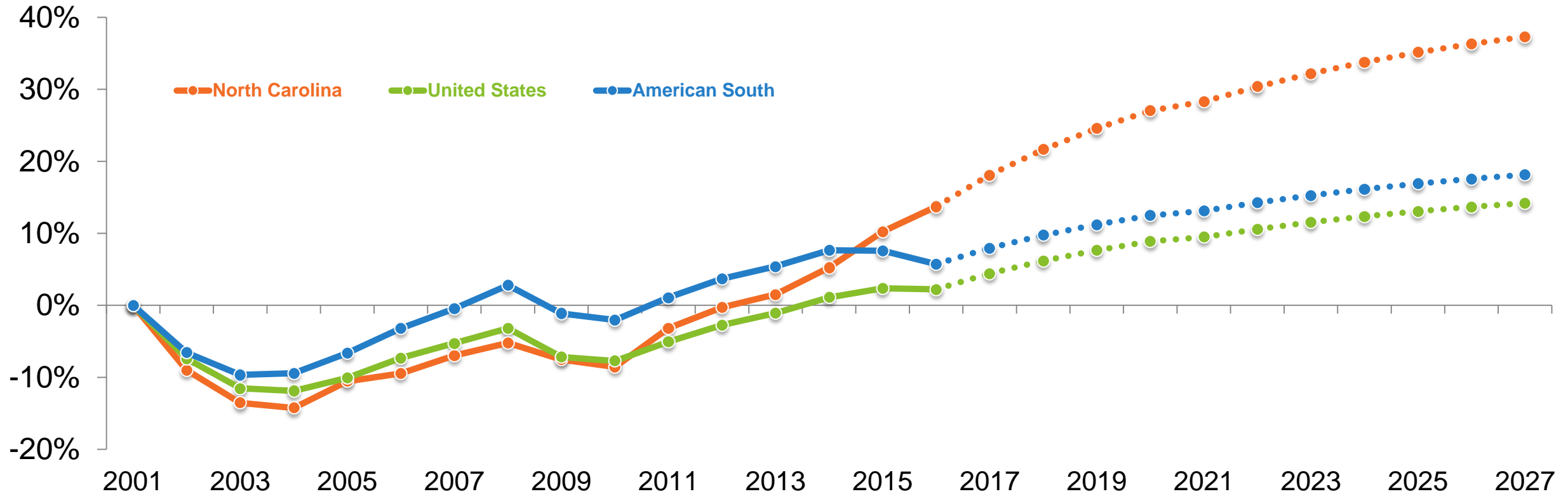
**NC Ranks
6th**



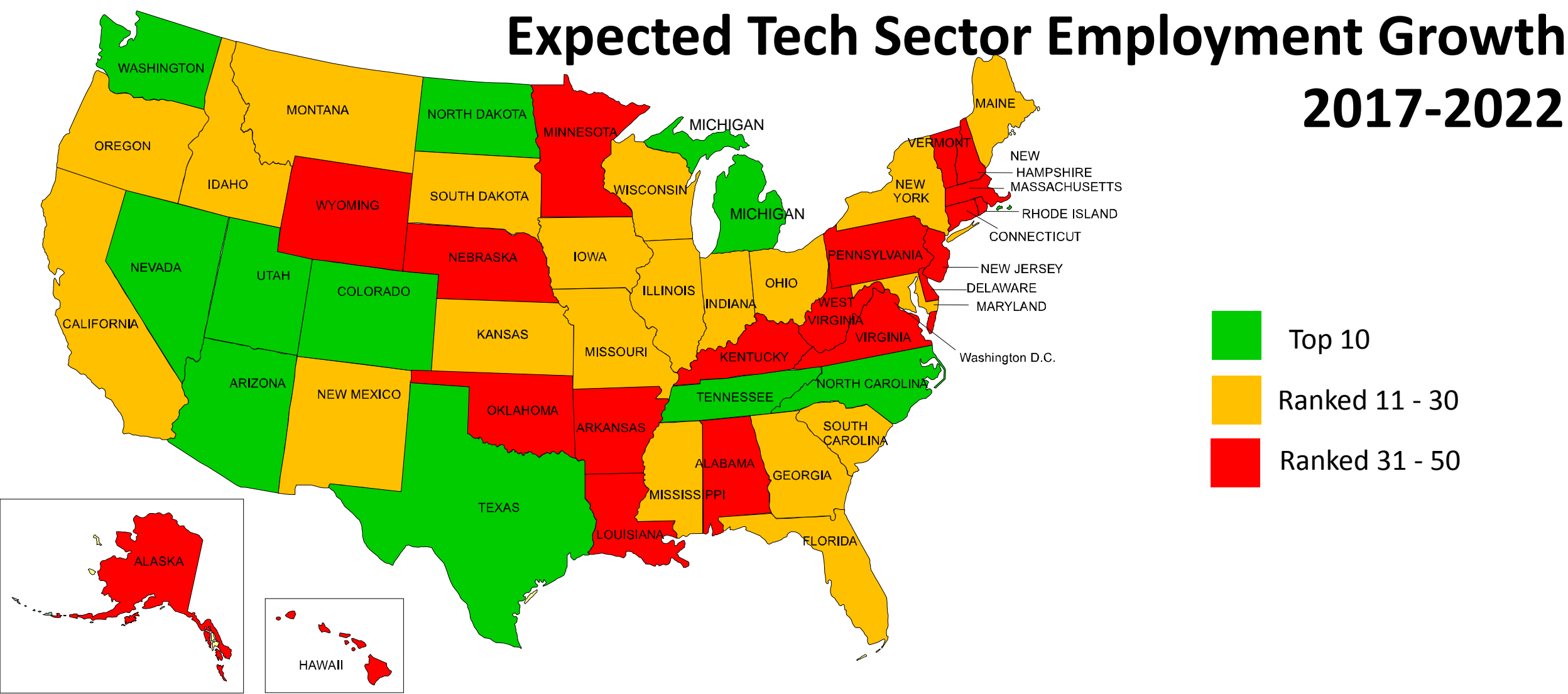
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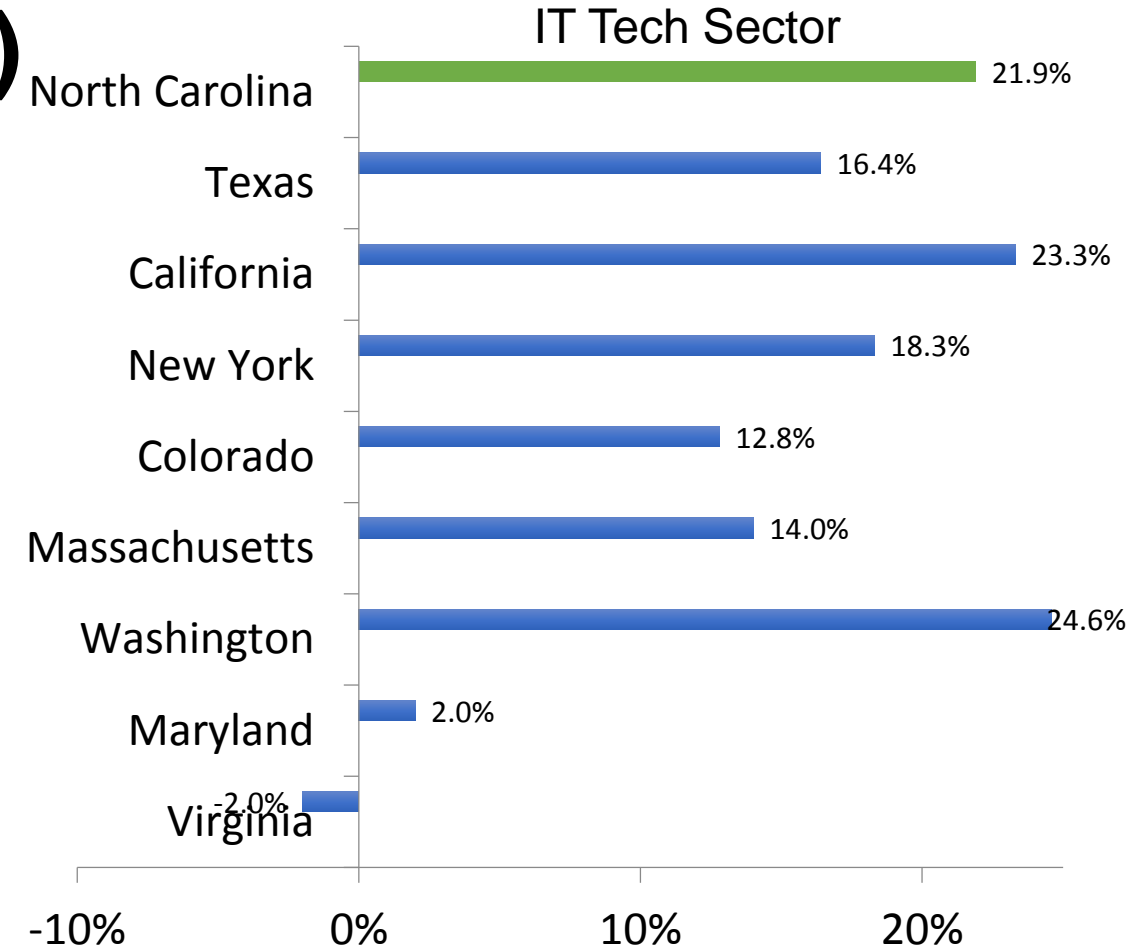
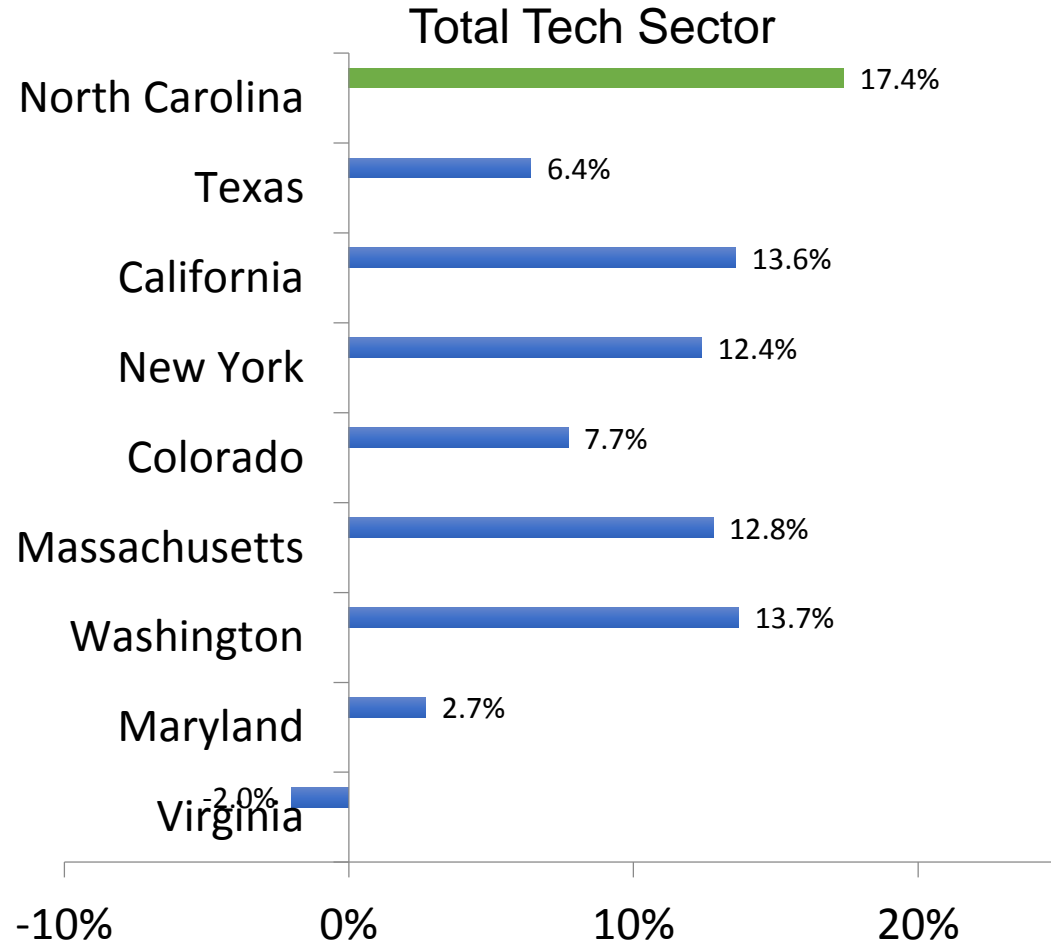
Long Term Technology Sector Trends (Percentage Change in Employment Post 2001)



Expected Tech Sector Employment Growth 2017-2022

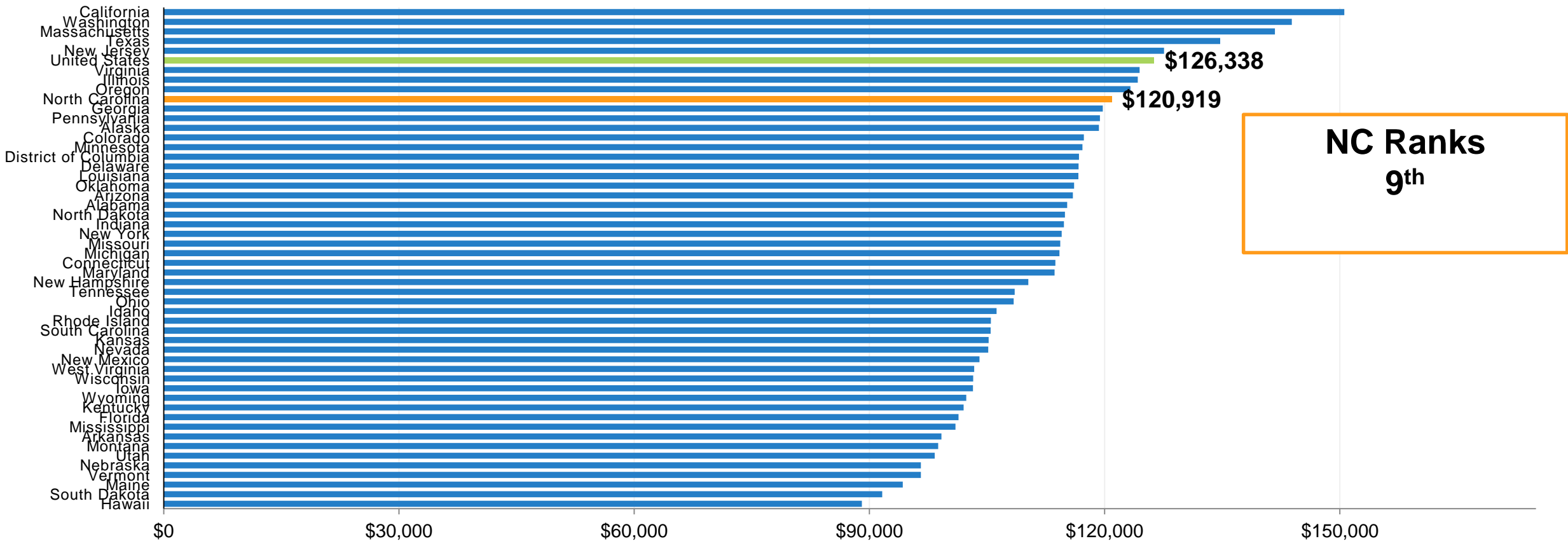


Technology Sector Employment Growth Rates (2011-2016)



Average Annual Earnings for Tech Sector Employees, 2016

Adjusted for Purchasing Power



Tech Occupations in North Carolina

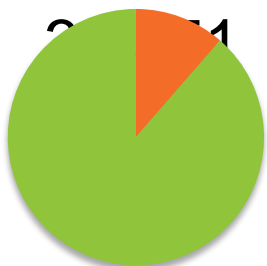
2016



Total Tech Occupation Jobs	289,936
Median Hourly Wage	\$37.45
2011-2016 Employment Change	16.5%

Top Four Tech Occupations

Business
Operation
Specialists



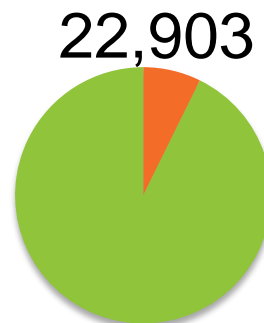
11.9%

Software
Developers,
Applications



8.3%

Computer
Systems Analysts



7.9%

Computer User
Support
Specialists



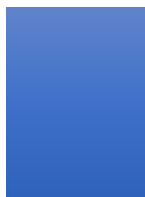
7.6%

Employment Growth Rate, 2011-2016

12.7%



30.7%



29.3%



21.5%



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Top Four Tech Occupations

**Business
Operation
Specialist**

\$31.34

**Software
Developers,
Applications**

\$45.72

**Computer
Systems
Analysts**

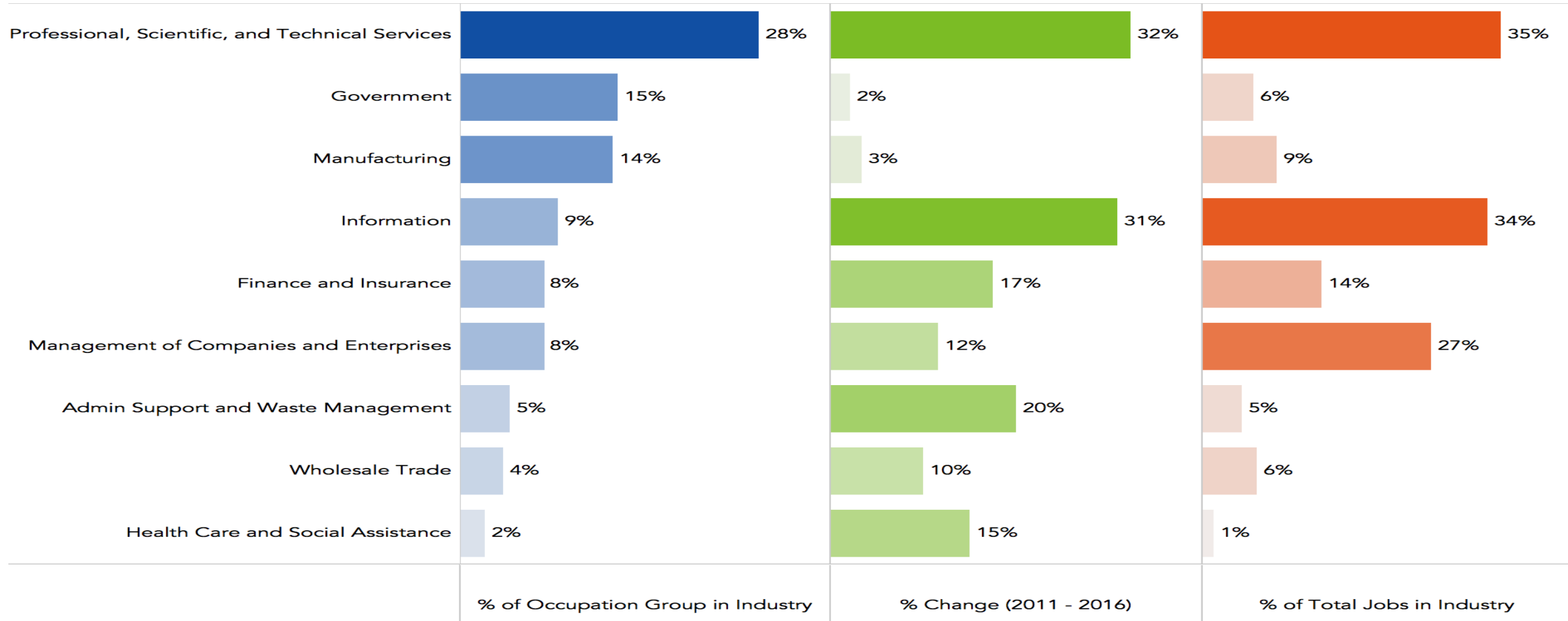
\$42.89

**Computer User
Support
Specialists**

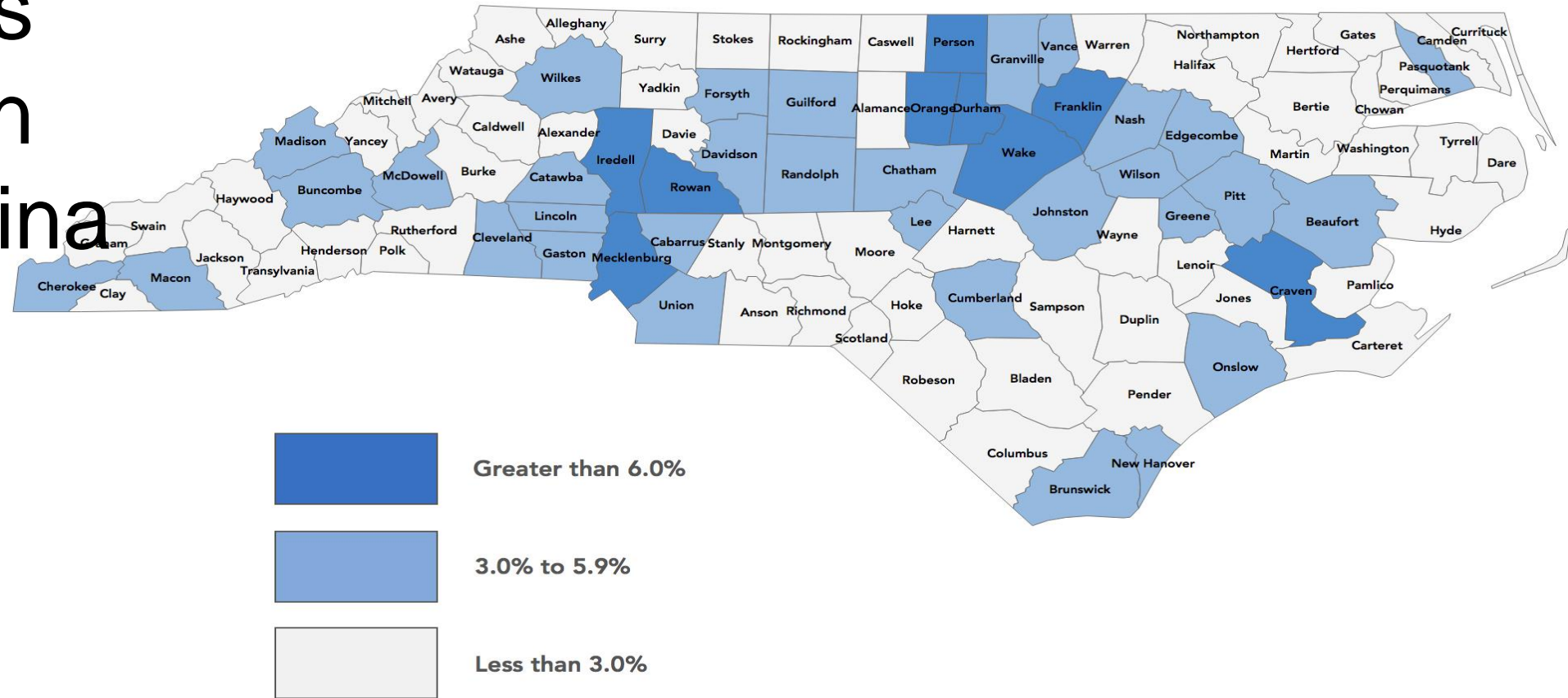
\$23.06

Median Hourly Wage, 2016

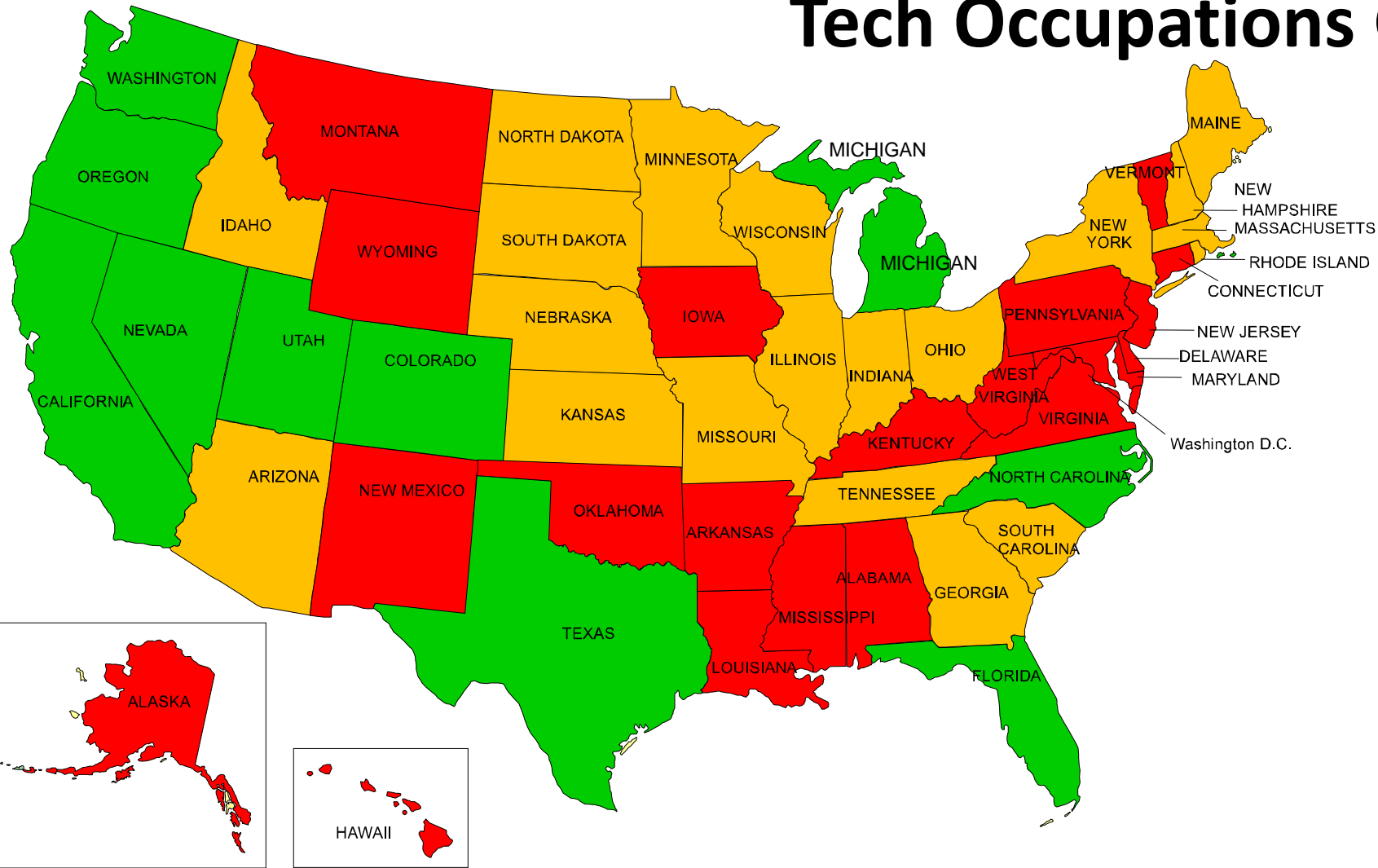
Top Industries Employing Tech Occupations



Tech Occupations by County in North Carolina



Tech Occupations Growth, 2011-2016



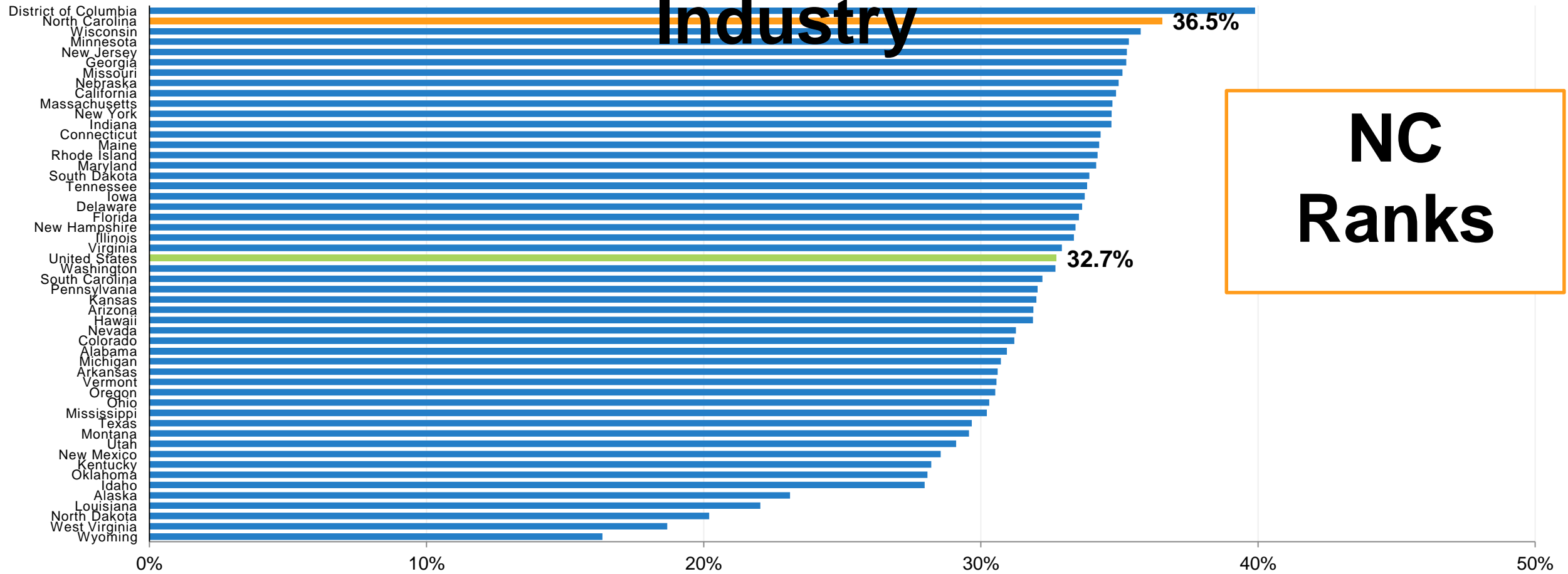
How Competitive Is North Carolina?



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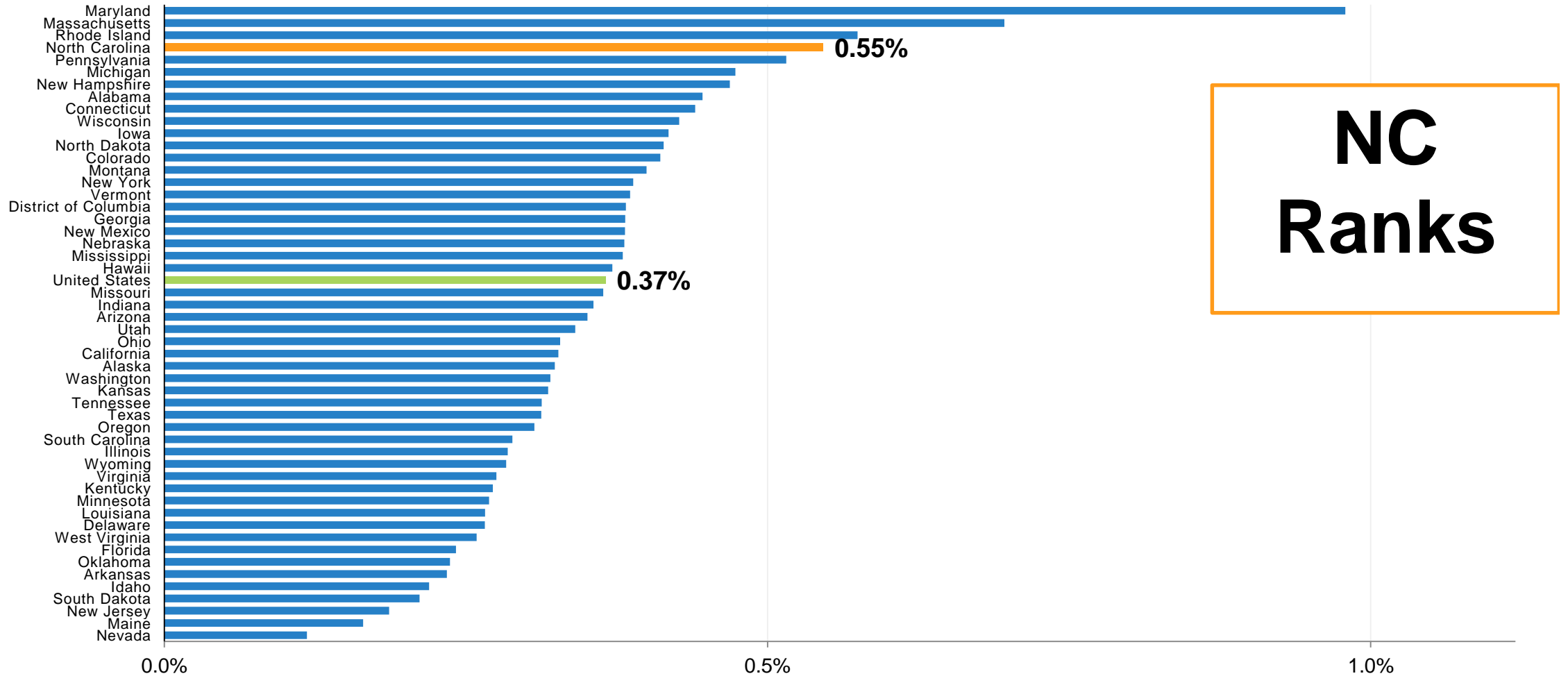
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Percentage of Women Working in the Tech Industry

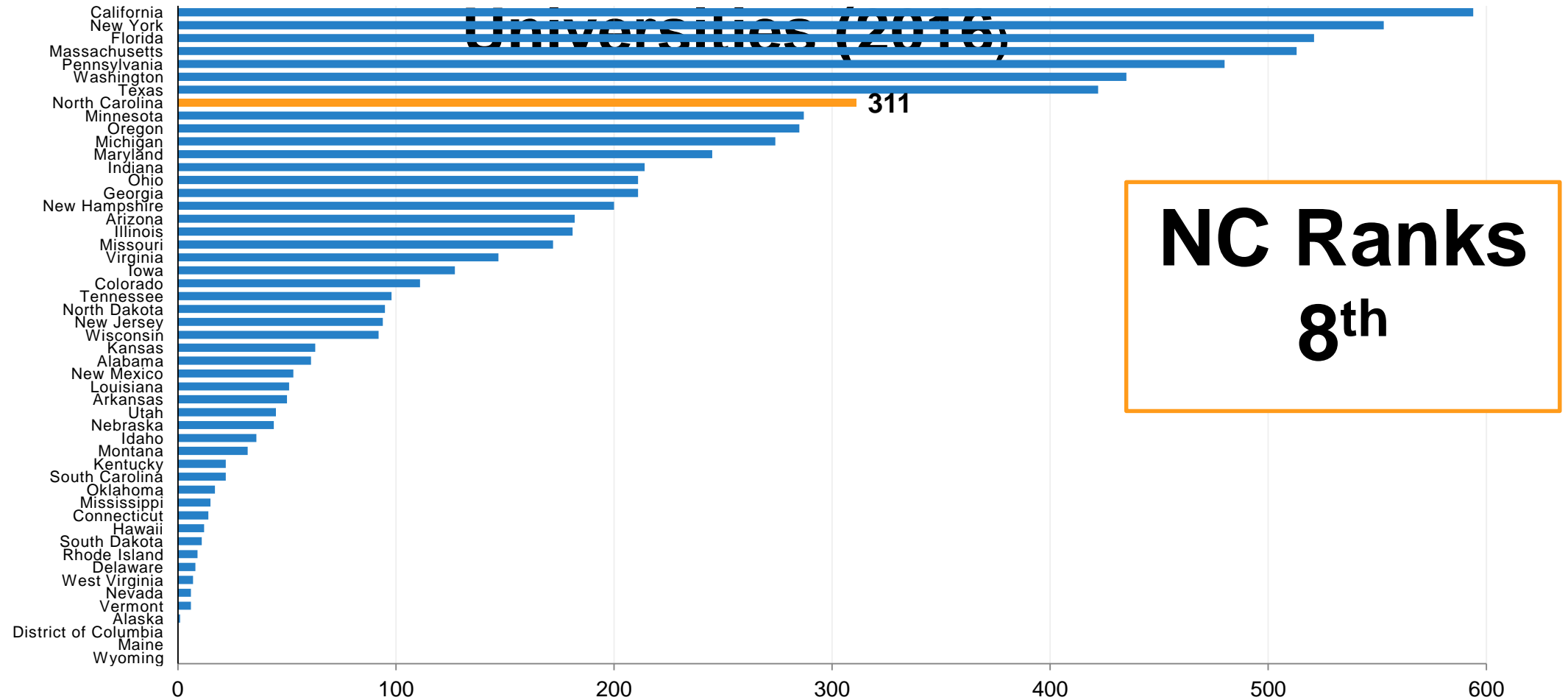


Higher Education R&D in Science & Engineering Fields Intensity

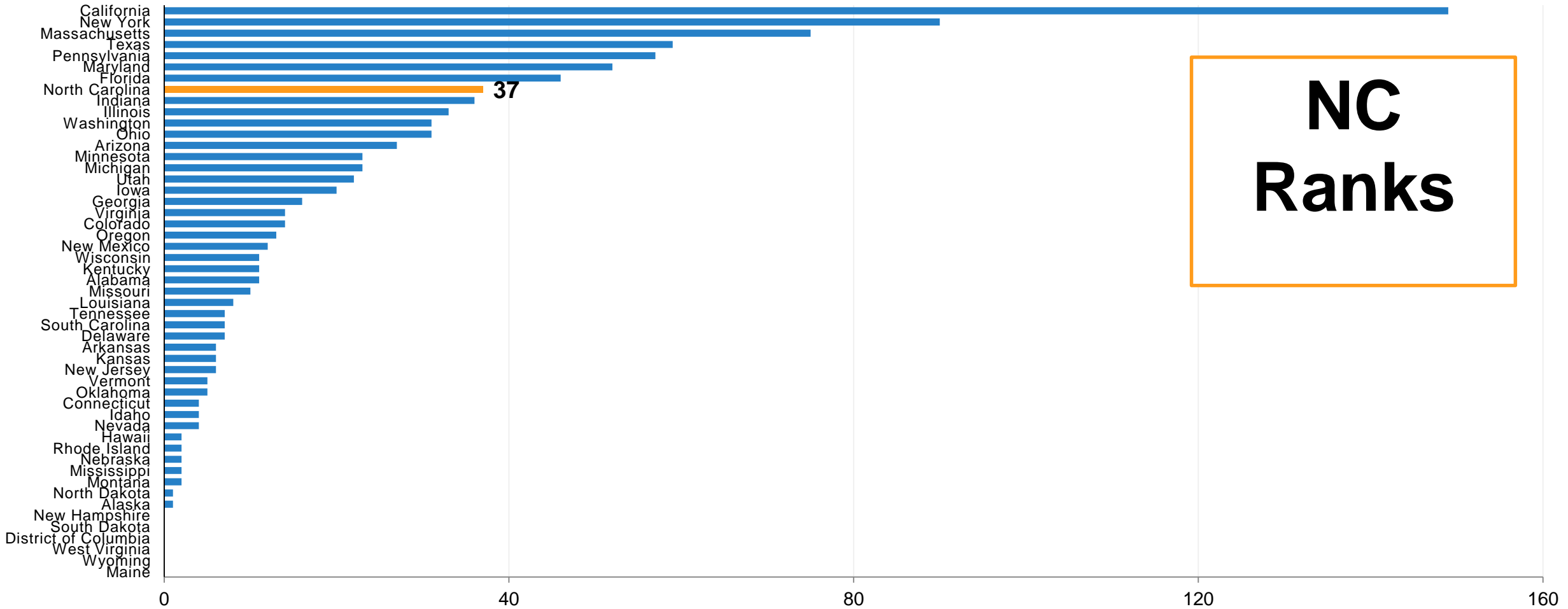
R&D As A Percentage of GDP (2016)



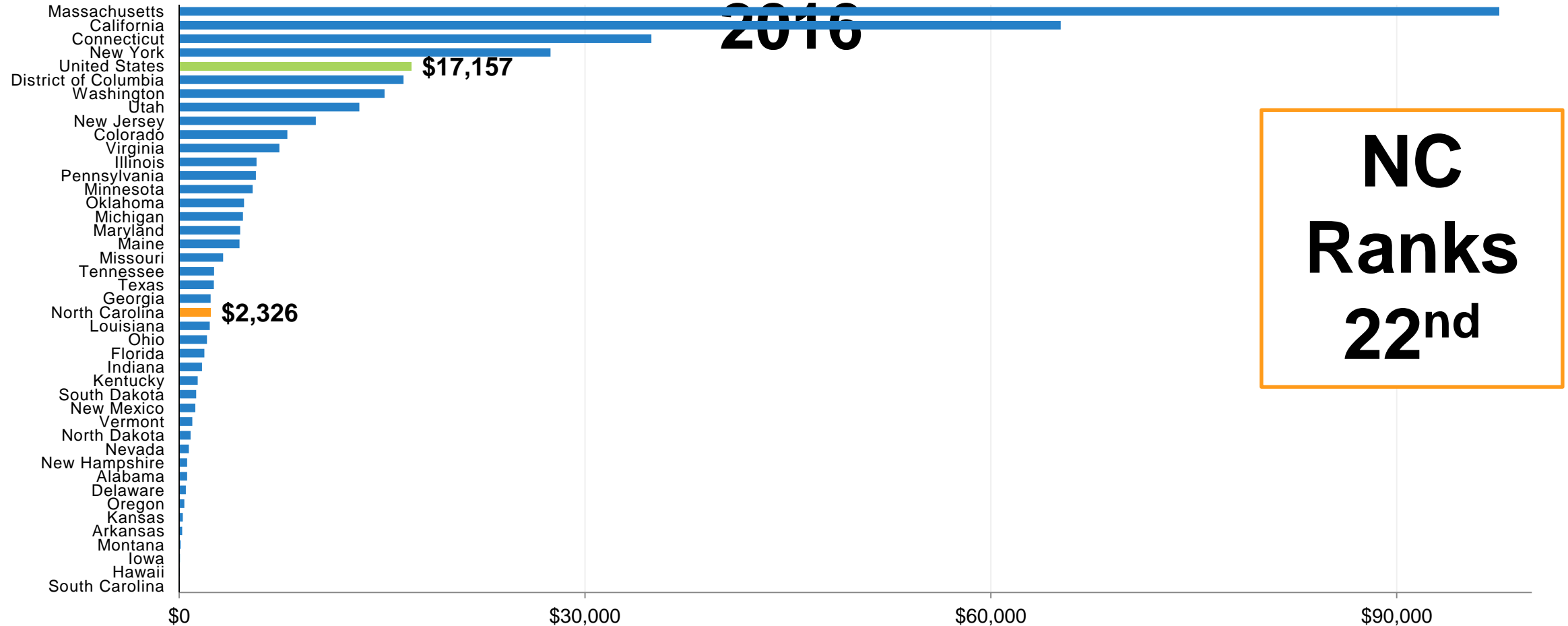
Technology Licenses and Options Executed From



Start-Ups From Universities (2016)



Venture Capital Funding Per \$1 Million of GSP, 2011-

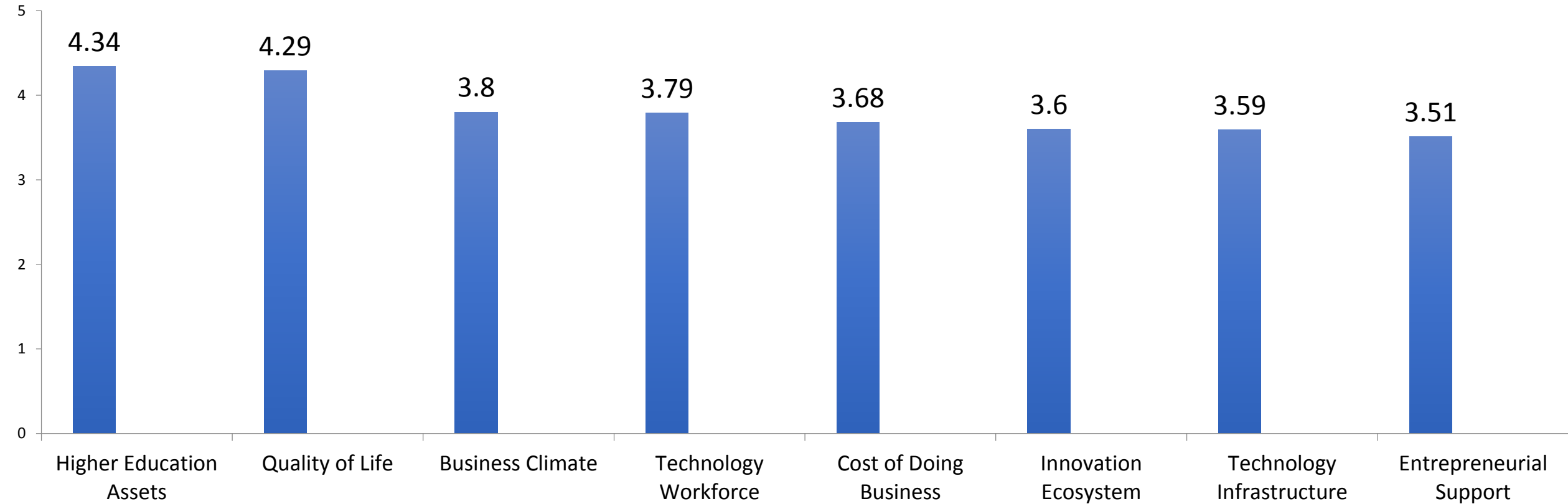


Flash Survey Results

- 88% of respondents believe that 2017 was a 'good' or 'great' year for the tech sector in North Carolina, **20% higher than 2016**.
- When asked about their own businesses, 30% of respondents said 2017 was a 'great' year (**up from 20% in 2016**) and almost half of respondents thought 2017 was a 'good' year for their company.
- **All respondents expected their business to grow or stay the same in 2018. No respondents believed their business would experience contraction in 2018.**

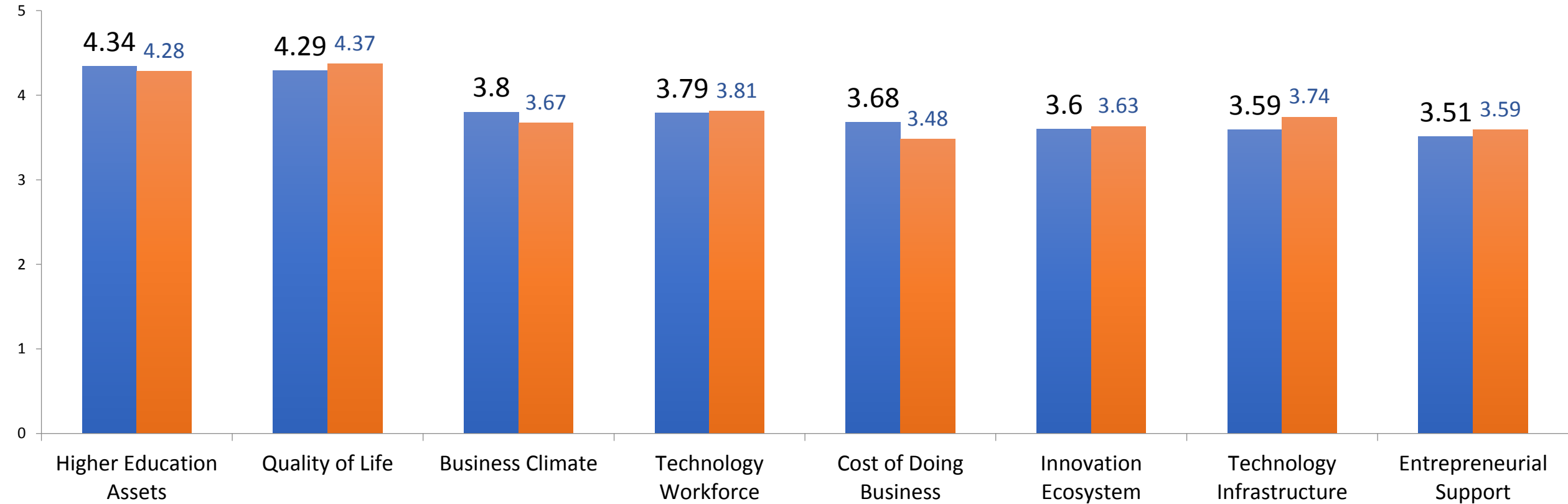
Flash Survey Results

Factors Impacting the Competitive Position of North Carolina



Flash Survey Results

Factors Impacting the Competitive Position of North Carolina



Overall North Carolina IT Sector Rankings

Metric	Value	Rank
IT Sector as a Percentage of Total Employment (2015)	3.1%	17
IT (Tech Core) Employment Growth (2011-2016)	21.9%	6
Expected IT Sector Employment Growth (2017-2022)	10.7%	5
Average Annual Wage for IT Sector Employees with Purchasing Power (2016)	\$120,403	10

Indicates a state ranking of 15th or higher

Indicates a state ranking between 16th and 35th

Indicates a state ranking greater than 36th

Overall North Carolina Tech Sector Rankings

Metric	Value	Rank
Technology Sector Location Quotients (2016)	0.94	23
Technology Sector Employment Growth (2011-2016)	17.4%	3
Average Annual Wage for Technology Sector Employees with Purchasing Power (2016)	\$120,919	9
Percentage of Women in the Technology Workforce	36.5%	2 (1)
Tech Industry Diversity Index	71.86	21

Indicates a state ranking of 15th or higher

Indicates a state ranking between 16th and 35th

Indicates a state ranking greater than 36th

Overall North Carolina IT Sector Rankings

Metric	Value	Rank
Percentage of Tech Occupations As a Total of All Occupations (2016)	6.8%	20
Tech Occupations Growth (2011-2016)	16.5%	6
Expected Tech Occupations Growth (2017-2022)	9.8%	7
Median Hourly Earnings Adjusted for Purchasing Power (2016)	\$41.07	5

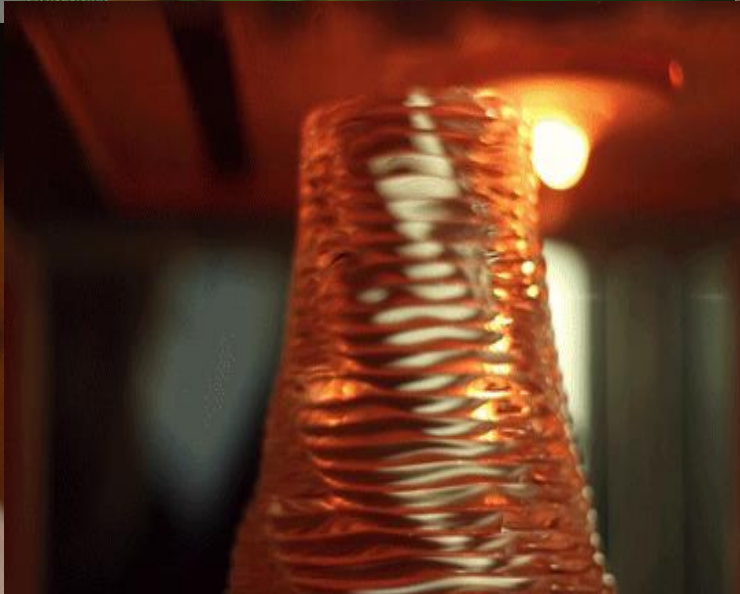
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Metric	Value	Rank
Total R&D As a Percentage of GSP (2014)	2.3%	19
Business Performed R&D as a Percentage of Private Industry Output (2014)	2.0%	16
Higher Education R&D in S&E Fields as a Percentage of GDP (2016)	0.55%	4
Patents Issued per 1,000 Science & Engineering Workers, 2015	17.8	19
Venture Capital Funding Per \$1 Million of GDP (2011-2016)	\$2,326	22
Technology Licenses and Options Executed from Universities (2016)	311	8
Start-Ups from Universities (2015)	37	8
SBIR and STTR Funding Per \$1 Million of GDP (2011-2016)	\$116	19
Average Number of New Entrepreneurs (2016)	0.34%	15
Small Business Opening Rate vs. Closing Rate (2015)	1.52%	17
Completed STEM Education Programs per 1,000 Enrolled Students (2016)	28.6	14
Percent Change in Tech & STEM Education Program Completions (2011-2016)	26.3%	22
Average In-State Tuition Cost (2017-2018)	\$7,385	8
State Spending Per Student for Higher Education (2017)	\$10,598	7

Strengths	Weaknesses
<ul style="list-style-type: none"> • Strong employment growth across 1-year and 5-year timeframes • Competitive wages with high purchasing power • High levels of academic R&D funding for science and engineering • Top 10 state in rate of technology transfer from universities • Highest percentage of women in the industry workforce • Cheaper operational costs than traditional tech markets 	<ul style="list-style-type: none"> • Tech growth numbers have slowed slightly from previous reports • Venture capital funding for industry in the state is ranked below average • Private innovation not matching university innovation • Average performance in business dynamism
Opportunities	Threats
<ul style="list-style-type: none"> • NC predicted to be 2nd fastest growing tech state in the next five years • Sector has large multiplying effect on total state economy • Potential to grow minority presence in industry 	<ul style="list-style-type: none"> • Higher educational requirements to meet job demand may result in a labor shortage • Start-ups may lack adequate access to capital • Competition between other emerging tech states • Talent wars • Political uncertainty



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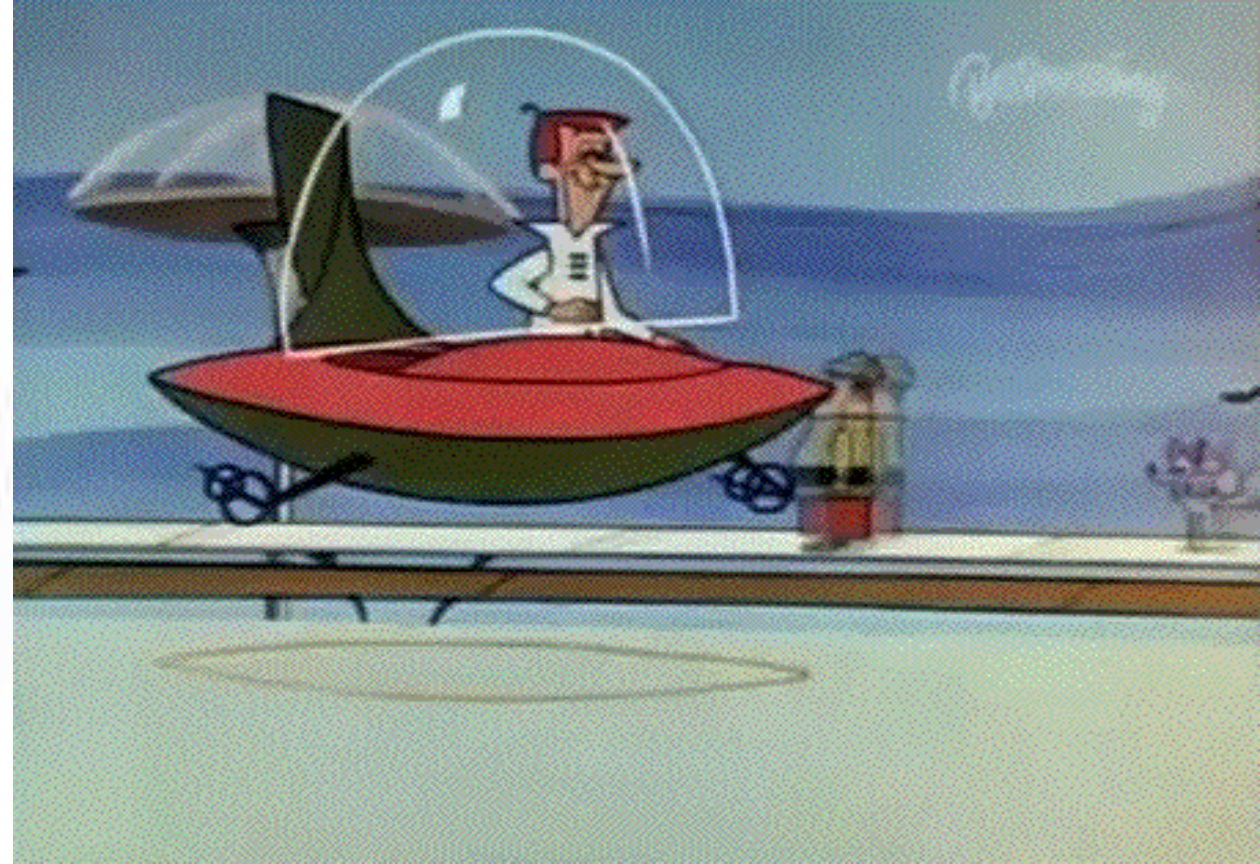
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ECONOMIC
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Coming Soon 2019



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