



**NCTECH**  
Association



# Old School Flash Survey

What Kind of Year was 2018 for NC's Tech Sector?

Great  
Year

Good  
Year

Not a  
Good Year



# Old School Flash Survey

What Kind of Year was 2018 for Your Organization?

Great  
Year

Good  
Year

Not a  
Good Year



# Old School Flash Survey

In 2019 I Expect Our Organization To...?

Grow

Stay the  
Same

Reduce  
Employment



# Old School Flash Survey

Today, My Biggest Issue To Growth is...

More

Customers

Finding

Workers

Taxes

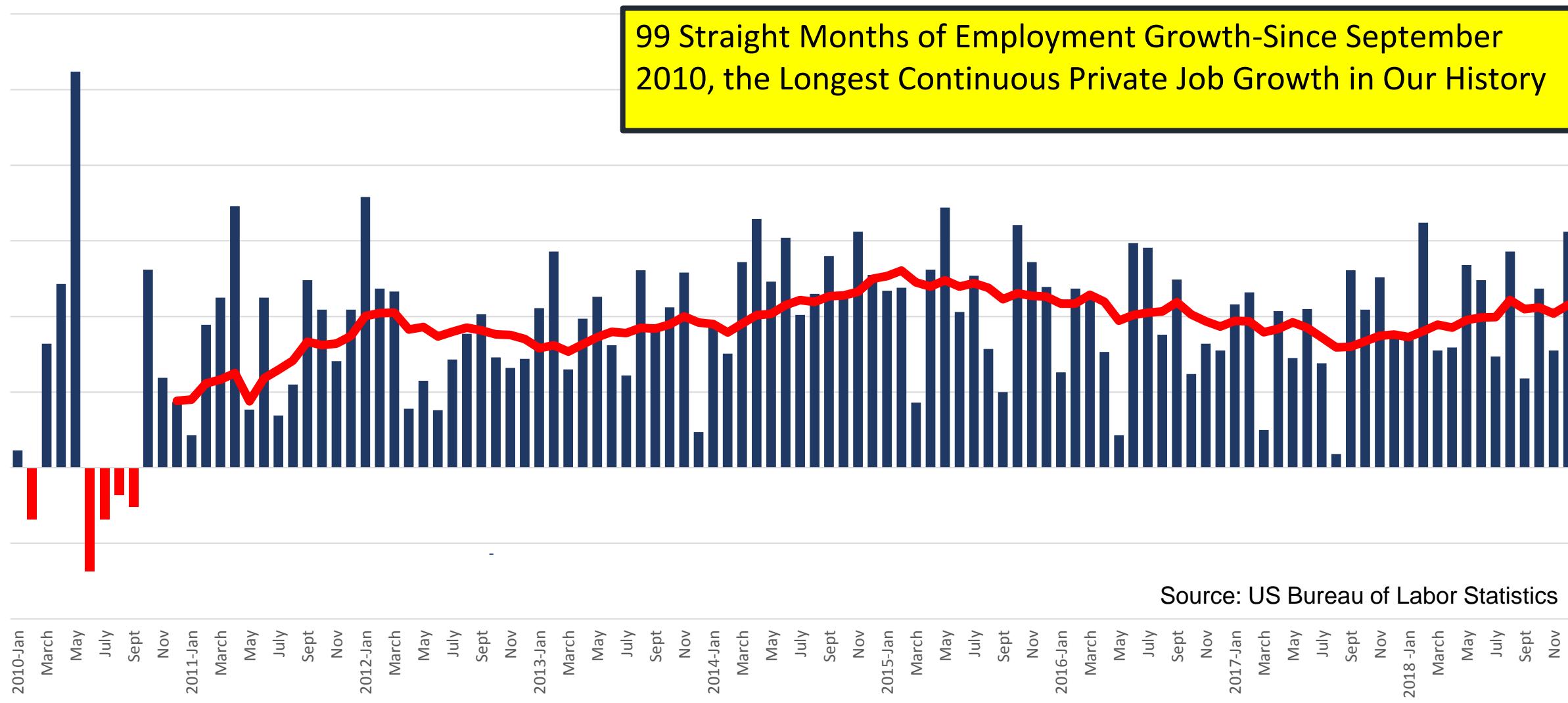
Regulation

Other



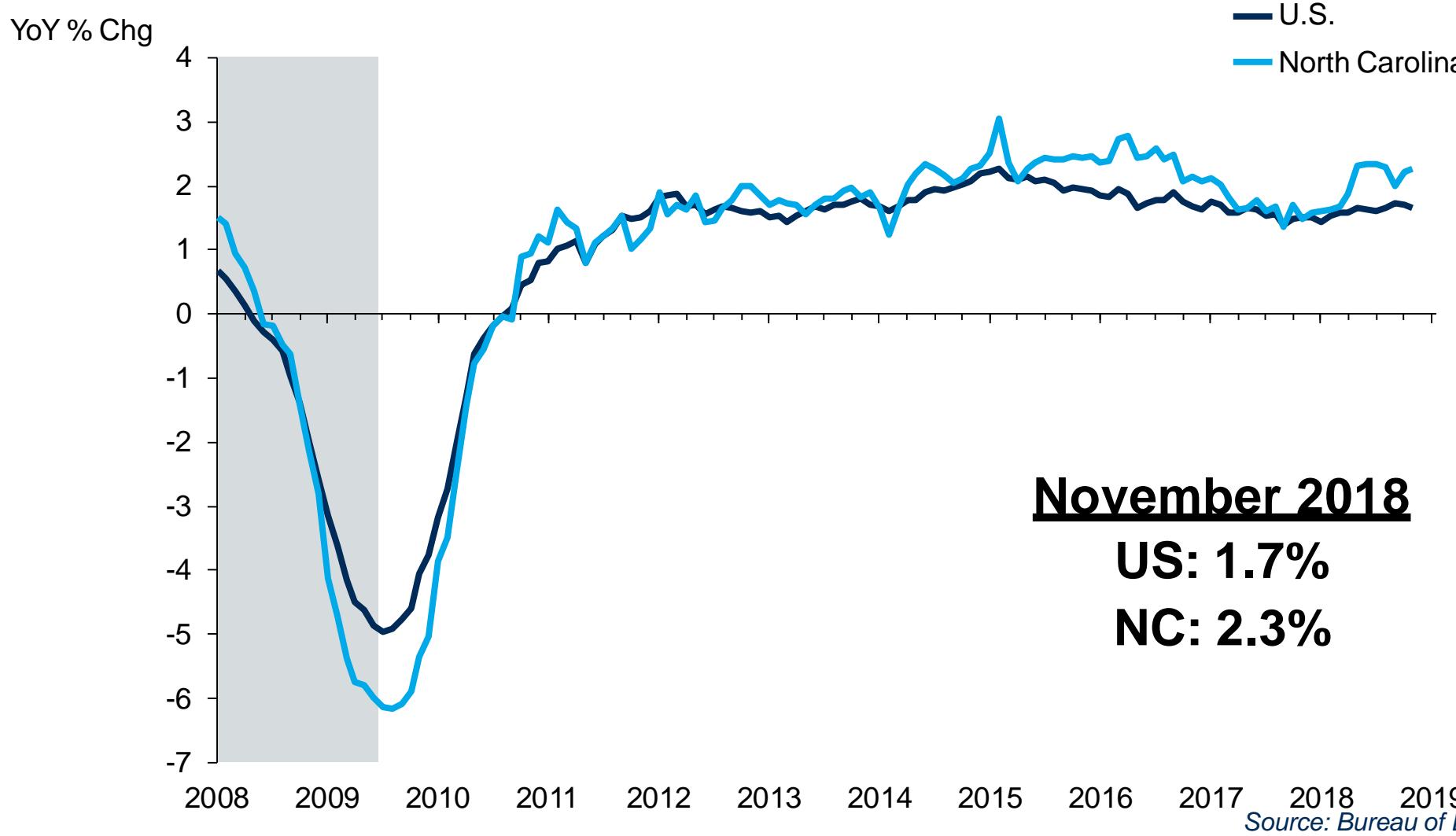
# USA Nonfarm Payroll Employment

99 Straight Months of Employment Growth-Since September 2010, the Longest Continuous Private Job Growth in Our History



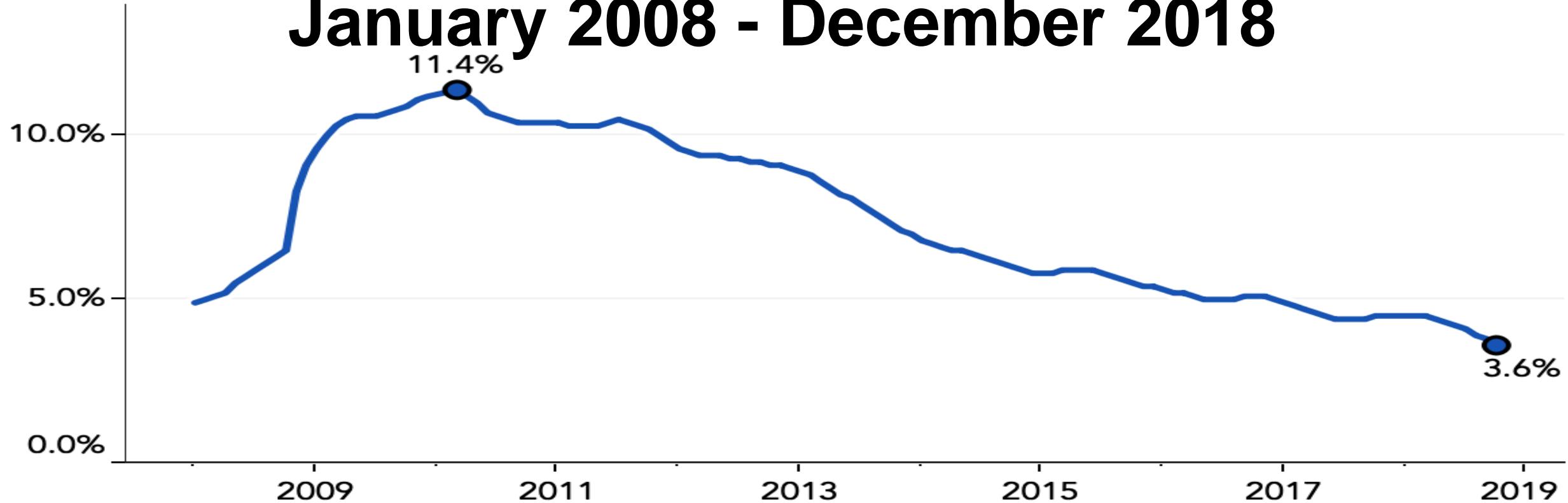
Source: US Bureau of Labor Statistics

# North Carolina Payroll Employment



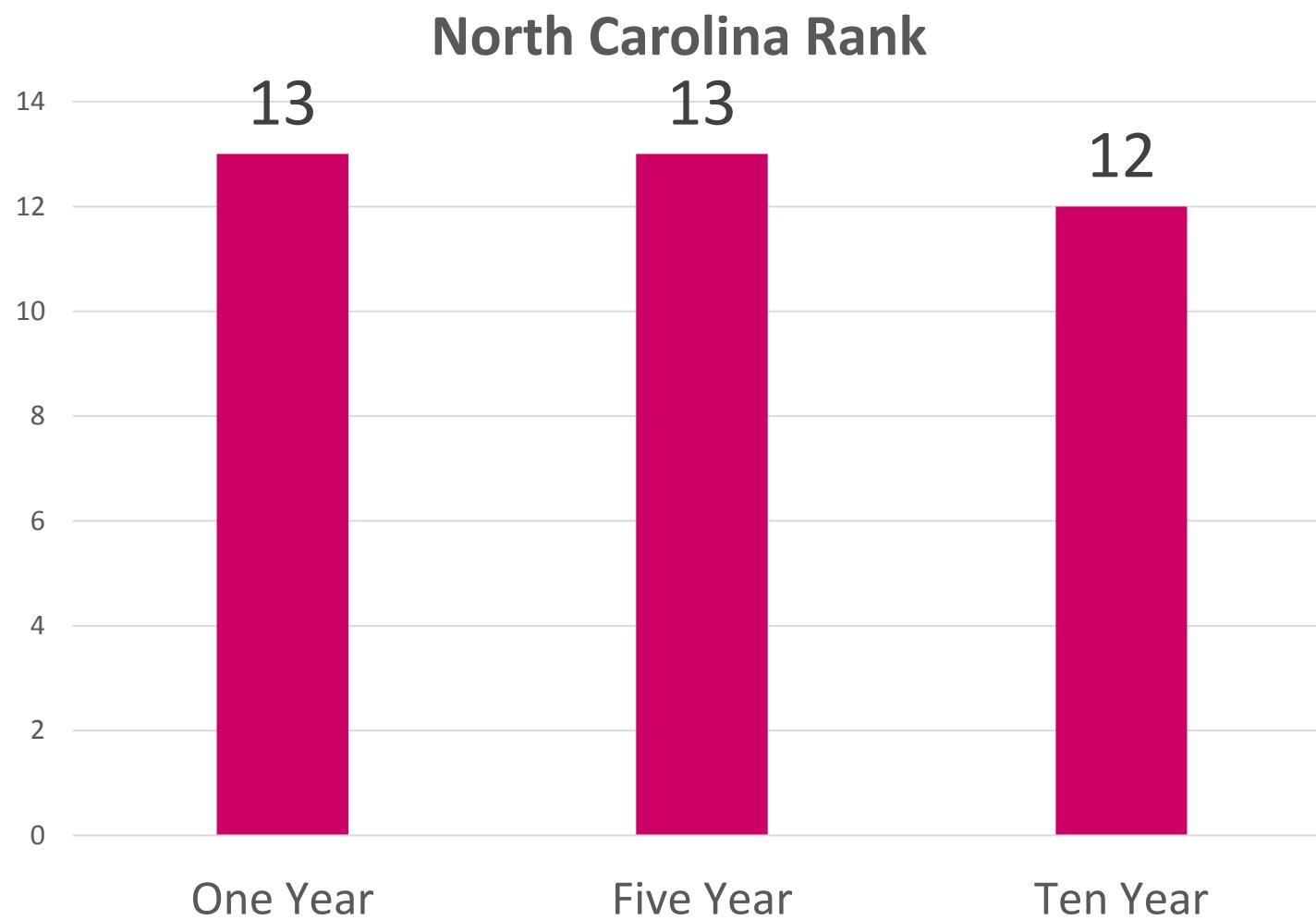
# North Carolina's Unemployment Rate

January 2008 - December 2018



Source: Bureau of Labor Statistics

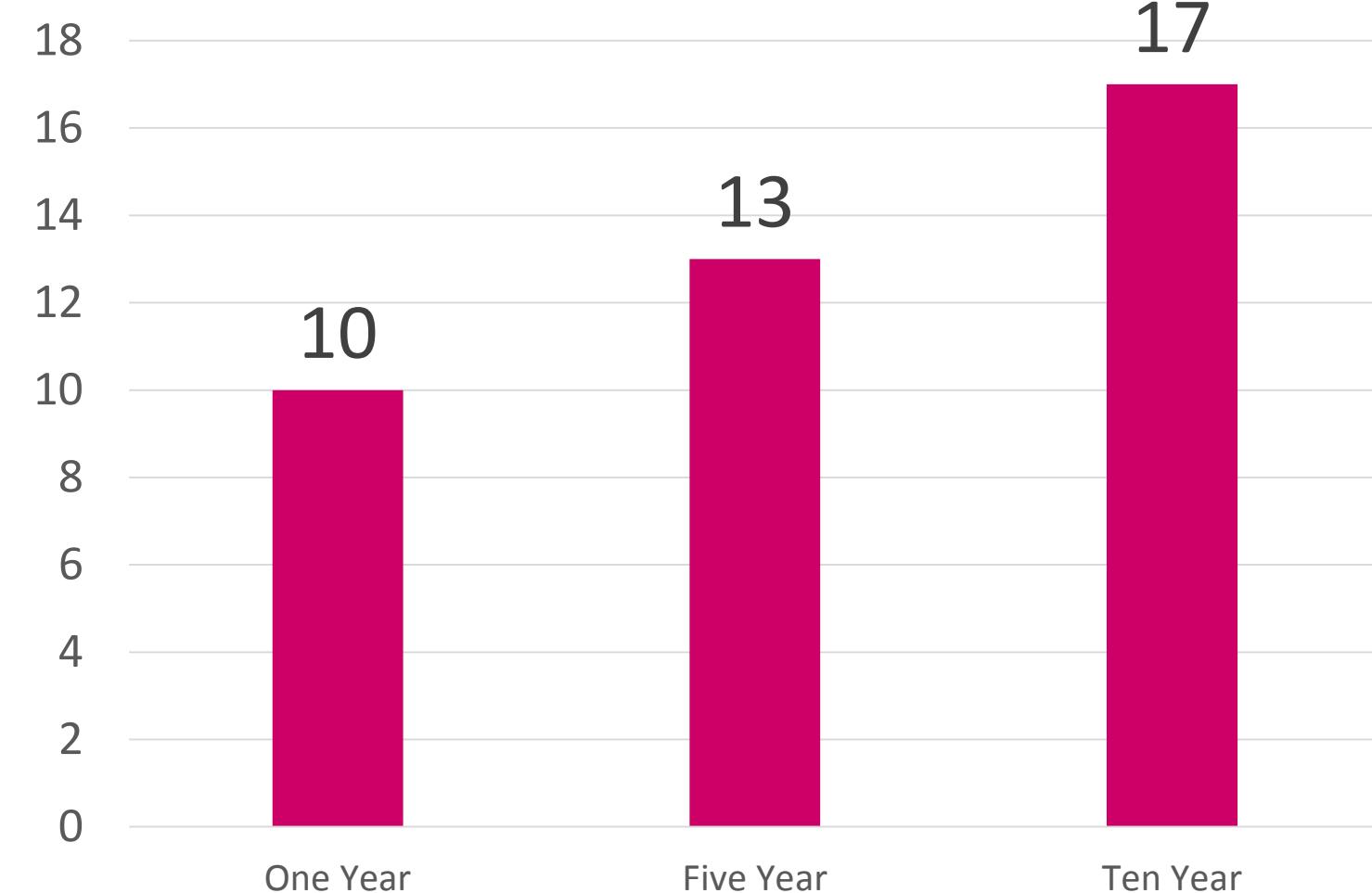
# % Job Growth By State Rankings



	Neighbor's Rank		
	1 Year	5 Year	10 Year
SC	10	11	11
TN	14	14	18
VA	19	28	26
GA	9	9	17
FL	7	3	2

# % Wage Growth By State Rankings

North Carolina Rank



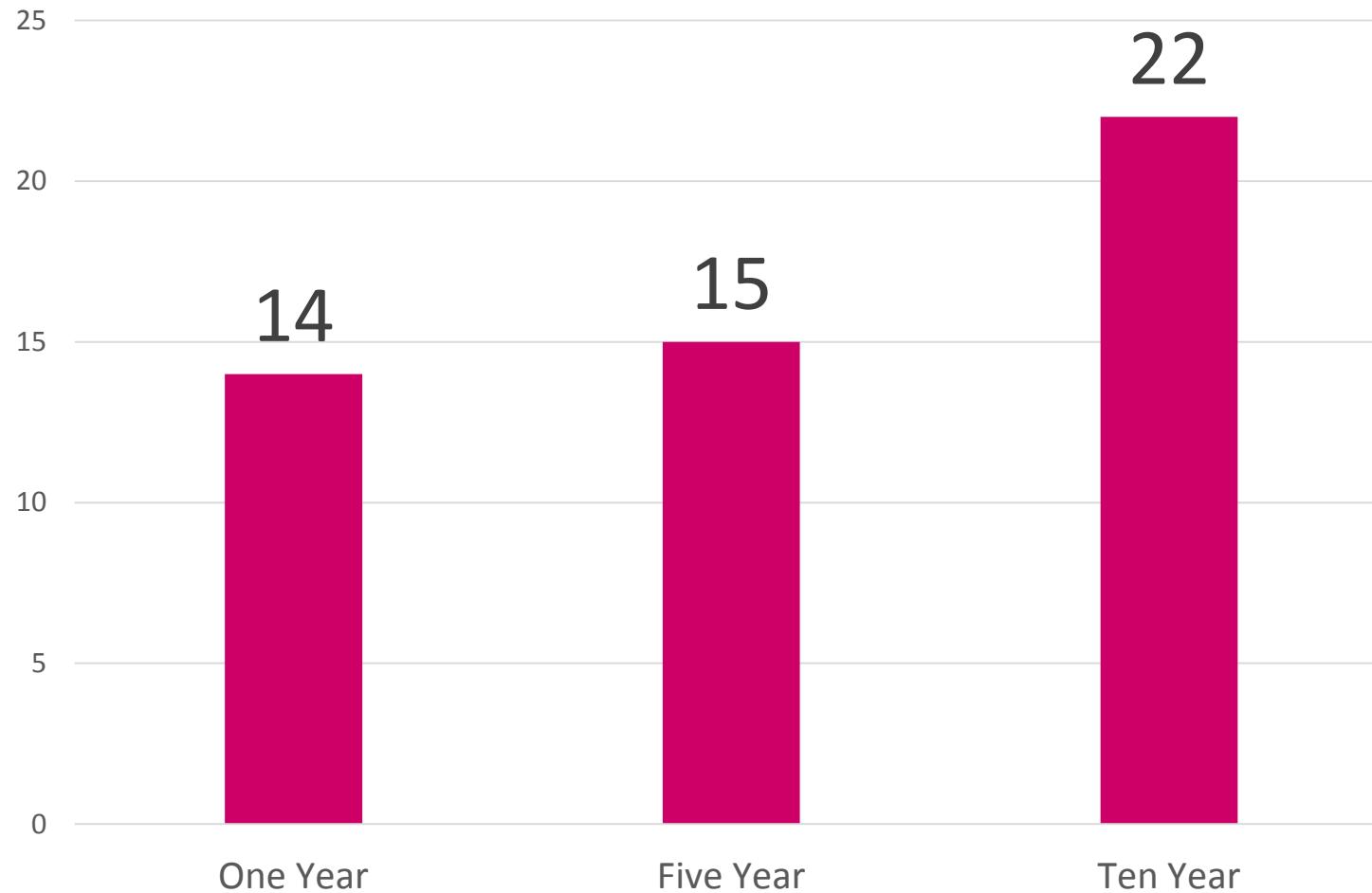
Neighbors Rank

1 Year    5 Year    10 Year

State	1 Year	5 Year	10 Year
SC	17	18	21
TN	24	31	23
VA	21	40	34
GA	29	17	29
FL	22	25	8

# % GDP Growth By State Rankings

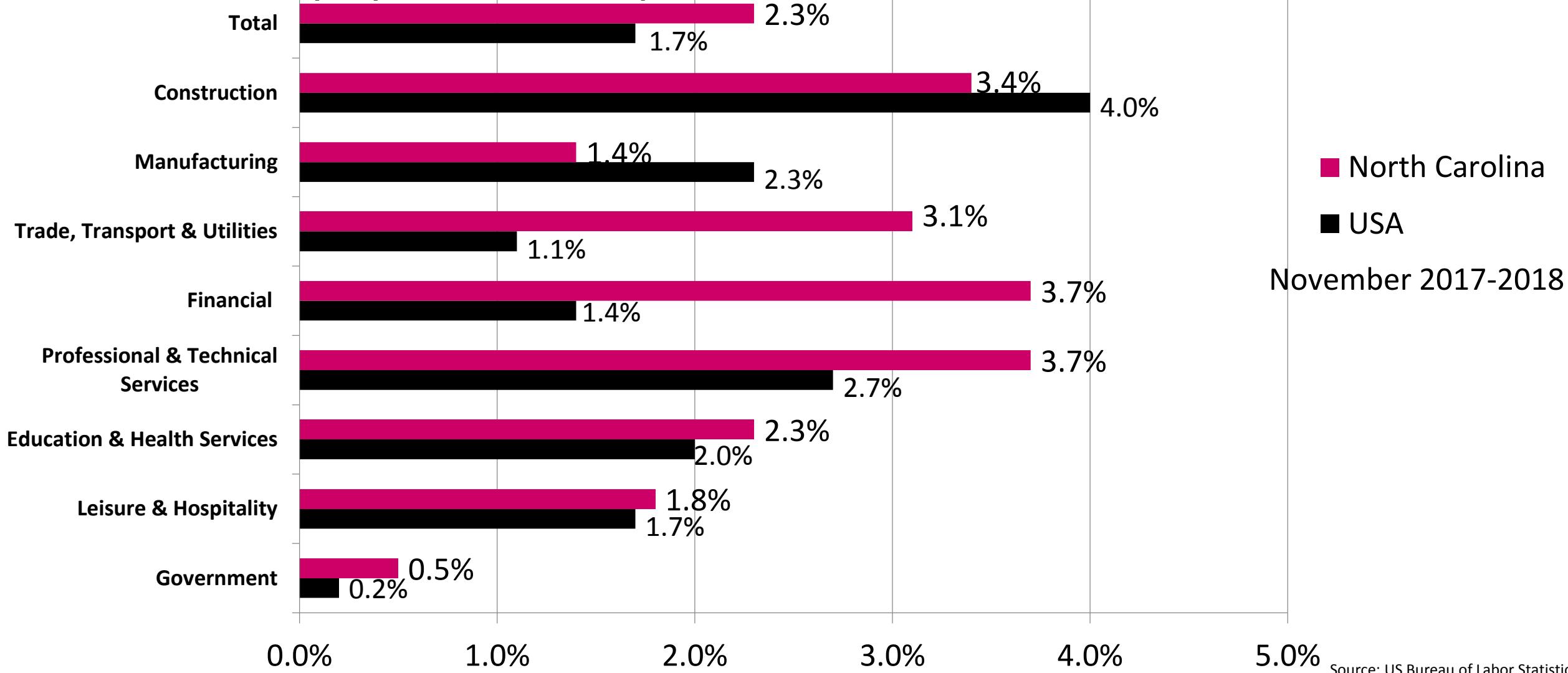
North Carolina Rank



Neighbors Rank

	Neighbors Rank		
	1 Year	5 Year	10 Year
SC	16	9	18
TN	13	11	11
VA	19	38	31
GA	8	8	25
FL	17	7	39

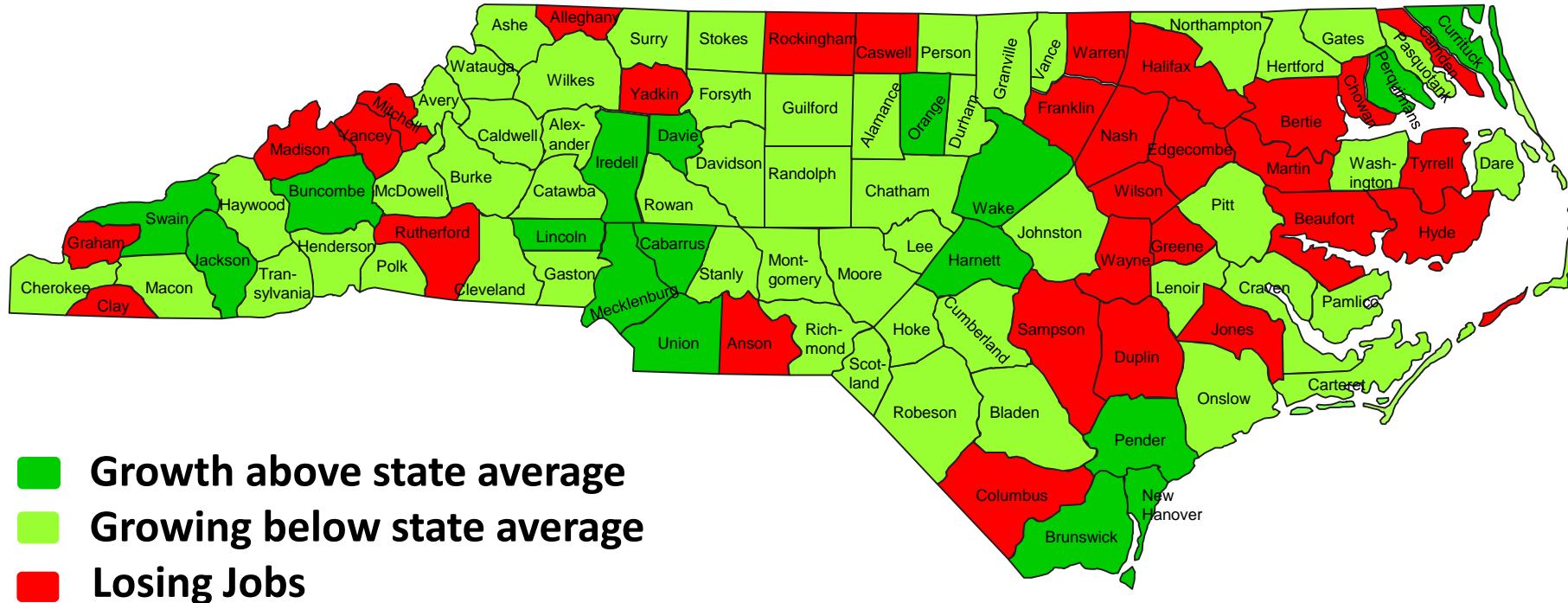
# Employment Gains By Sector for the United States and NC



Source: US Bureau of Labor Statistics

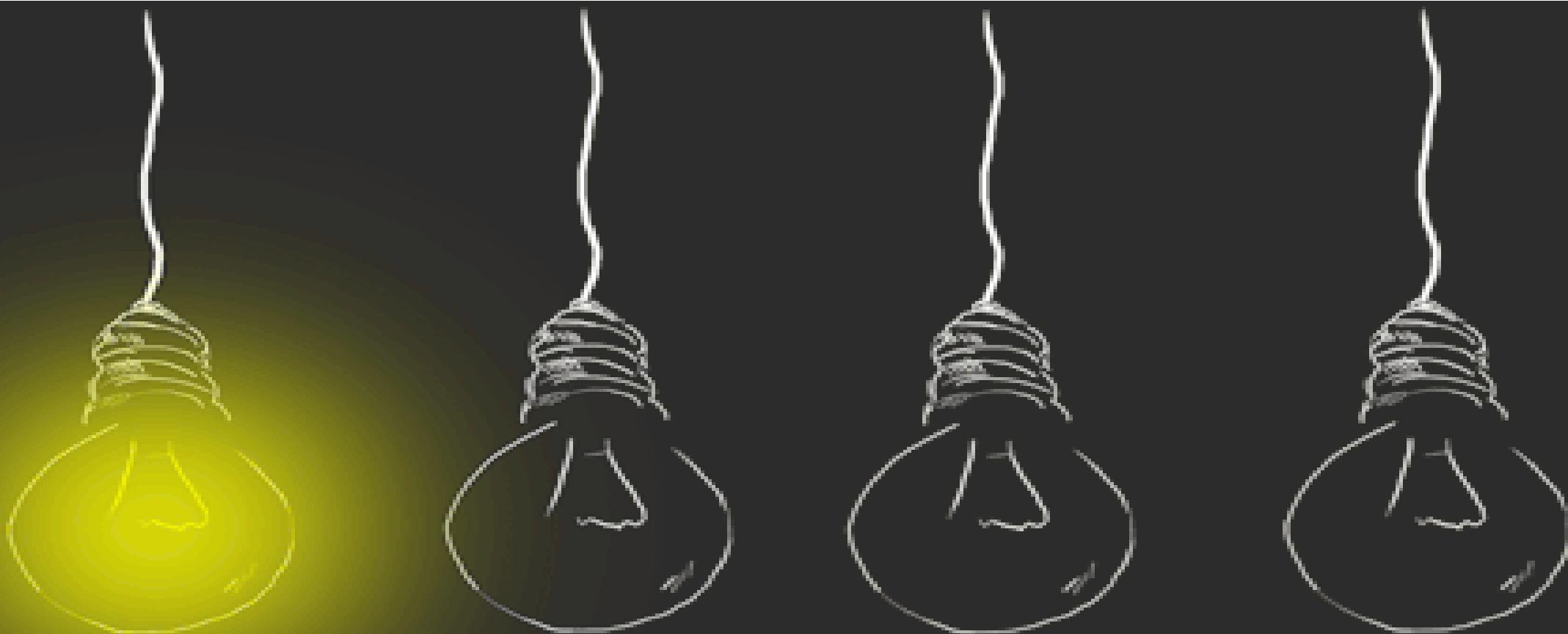
# 5 Year Job Growth 2012-2017

## North Carolina Average 10.8%



- Growth above state average
- Growing below state average
- Losing Jobs

Source: US Bureau of Labor Statistics QCEW



# Technology Data

# 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

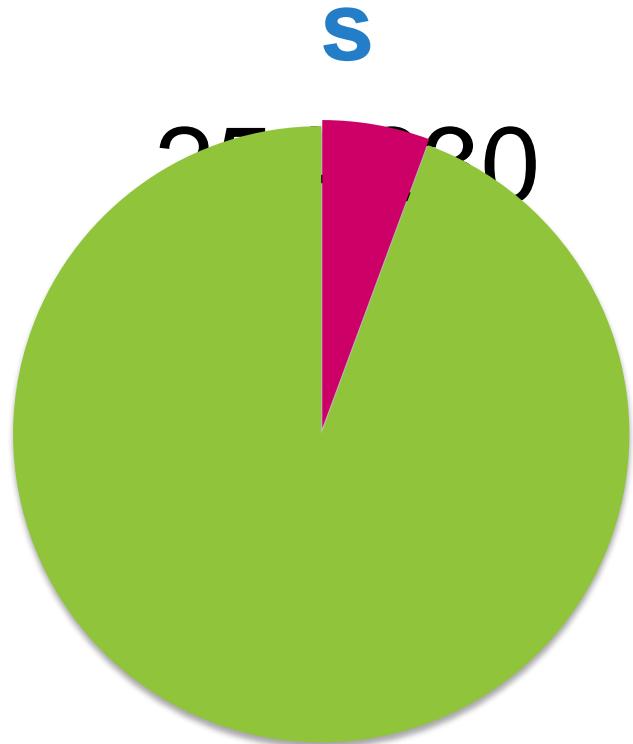


65 separate 5-digit  
(SOC) codes

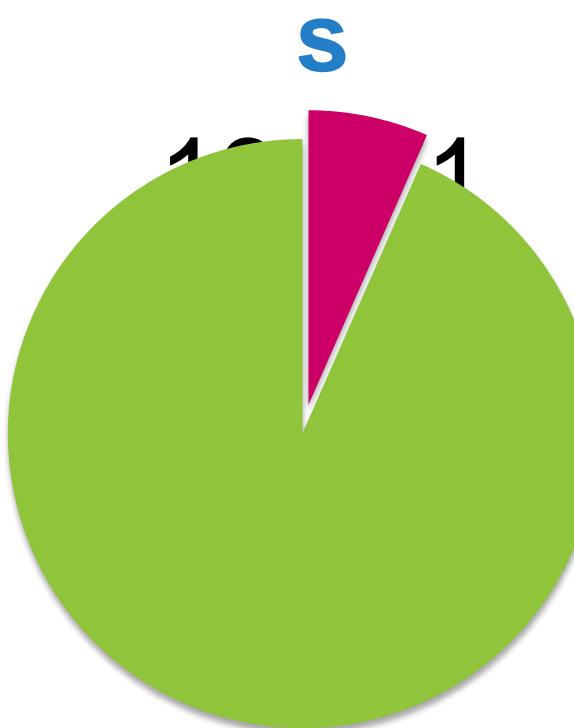
# Tech Industry in North Carolina - 2017

Percentage of Total North Carolina Economy

## Employee

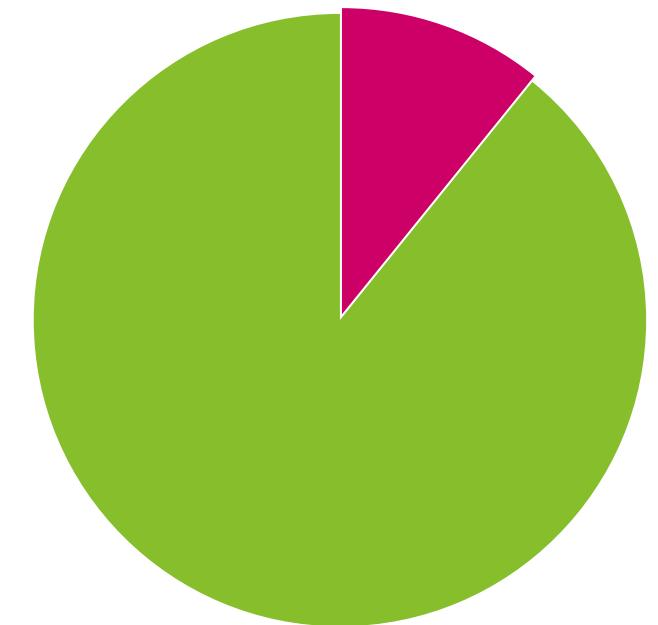


## Establishment



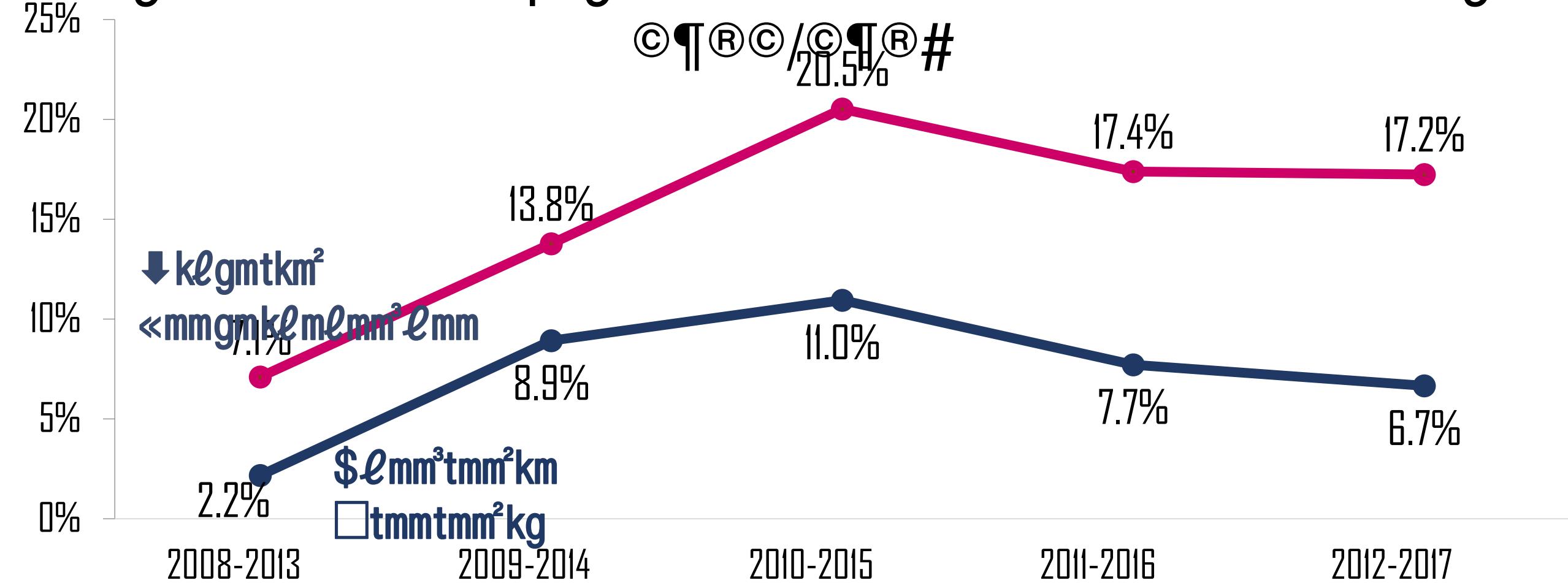
## Wages

\$26,557,000

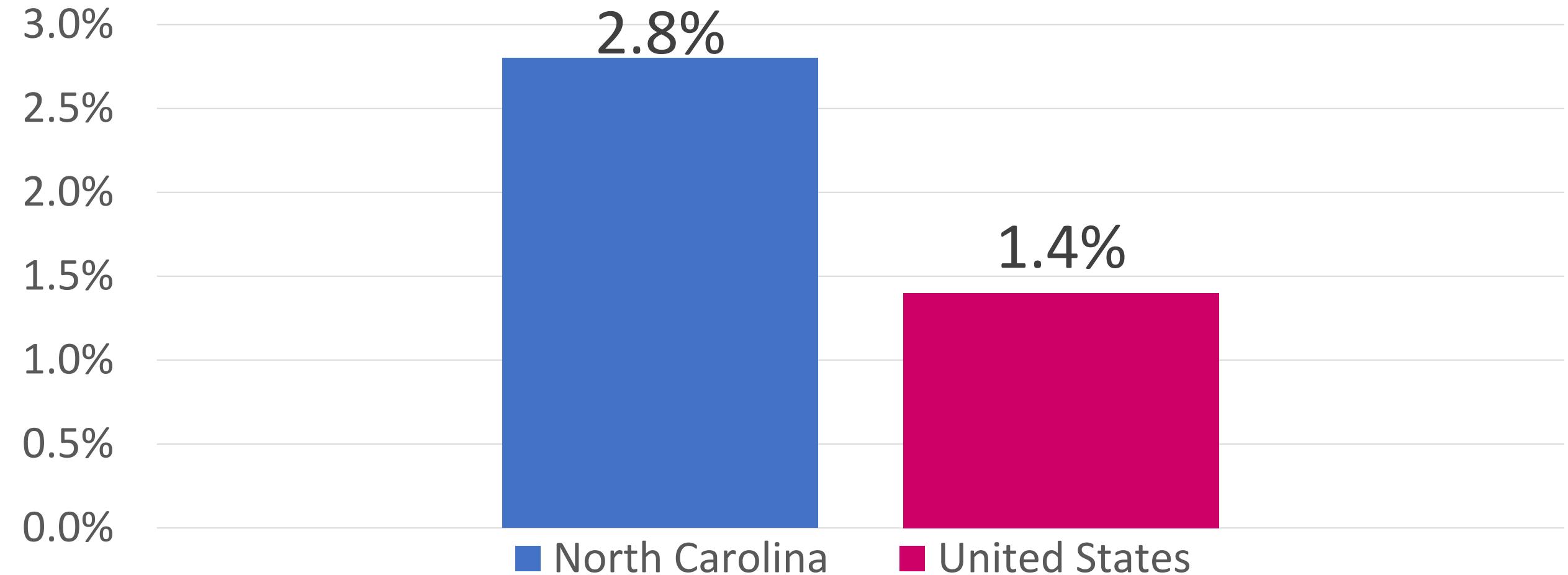


$\text{kg}/\text{mm}^2 \text{mm} \text{gm} \rightarrow \text{gm} \text{kg} \text{C} \text{t} \text{km}^2$   $\square \text{mm} \text{t} \text{mm}^2 \text{kg}$   $\text{cm}^2 \text{kg} \text{gm} \downarrow \text{kg} \text{m} \text{t} \text{km}^2$

$\ll \text{mm} \text{gm} \text{kg} \text{m} \text{t} \text{mm}^3 \text{kg} \text{mm} \gamma \text{kg} \square \text{kg} \text{t} \text{mm} \text{m} \text{t} \square \text{mm}^2 \text{m} \text{km}^2 \square \text{mm}^2 \text{m} \text{t} \text{kg} \text{gm} \geq$

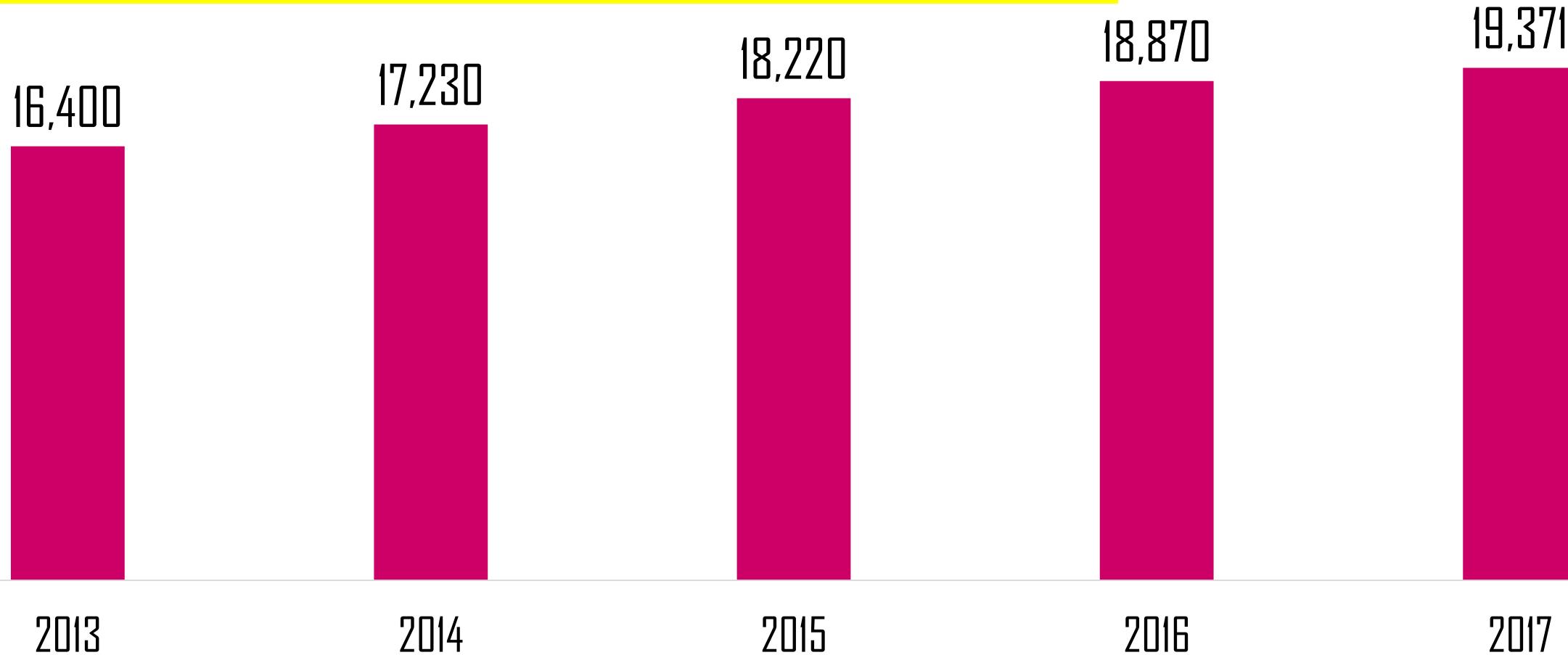


# Total Tech Sector Growth Rate 2017



# North Carolina Total Tech Establishments, 2013-2017

2,971 New Tech Establishments Over the Past 5 Years

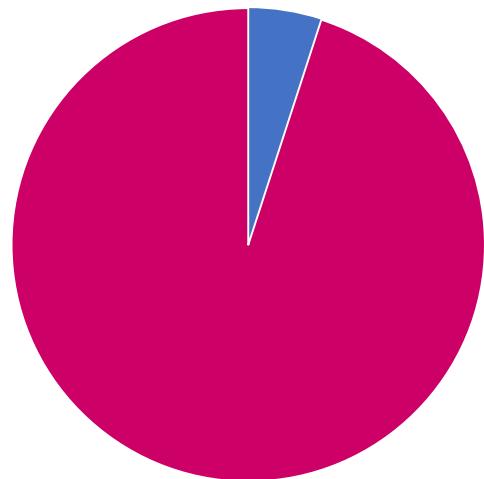


# Makeup of Tech Industry

Percentage of Total North Carolina Tech Sector

## Energy Tech

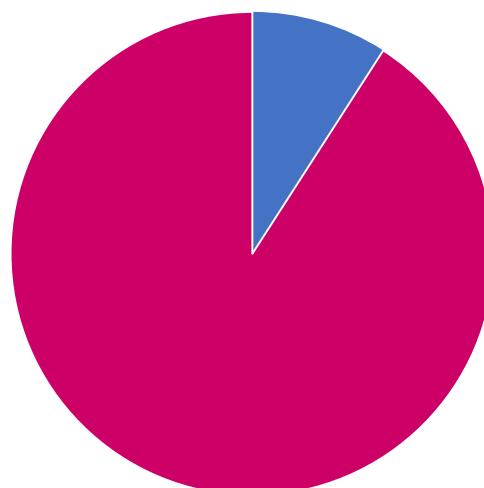
13,205



5%

## Environmental Tech

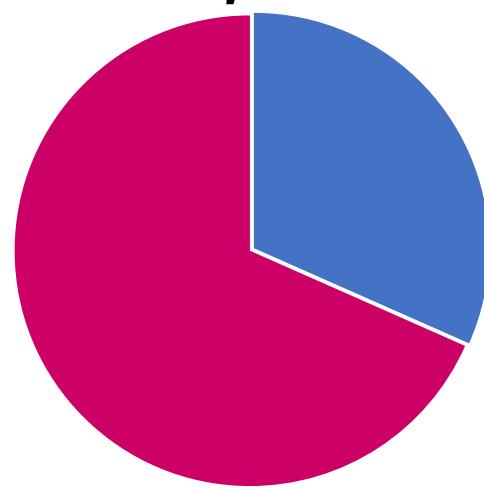
23,158



9%

## Life Sciences

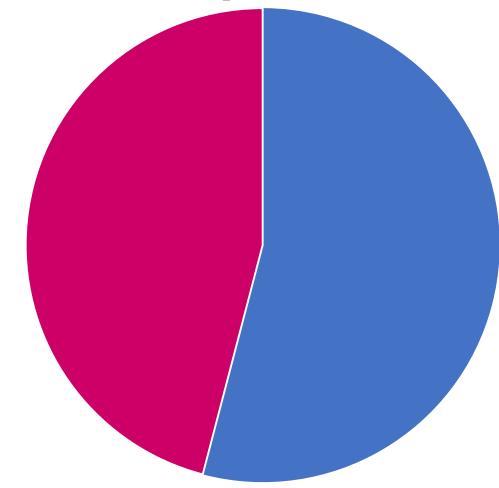
80,409



32%

## IT

137,458



54%

# North Carolina's Technology Industry by Sub-Categories 2017

Tech Category	Employment 2017 t 2017	Change 2016-2017	Change 2012- 2012-2017	Establishments 2017 s 2017
Energy Tech	13,205	0.0%	12.3%	383
Environmental Tech	23,158	1.8%	17.0%	1,522
Life Sciences	80,409	4.1%	12.0%	4,681
IT	137,458	2.6%	21.1%	12,785

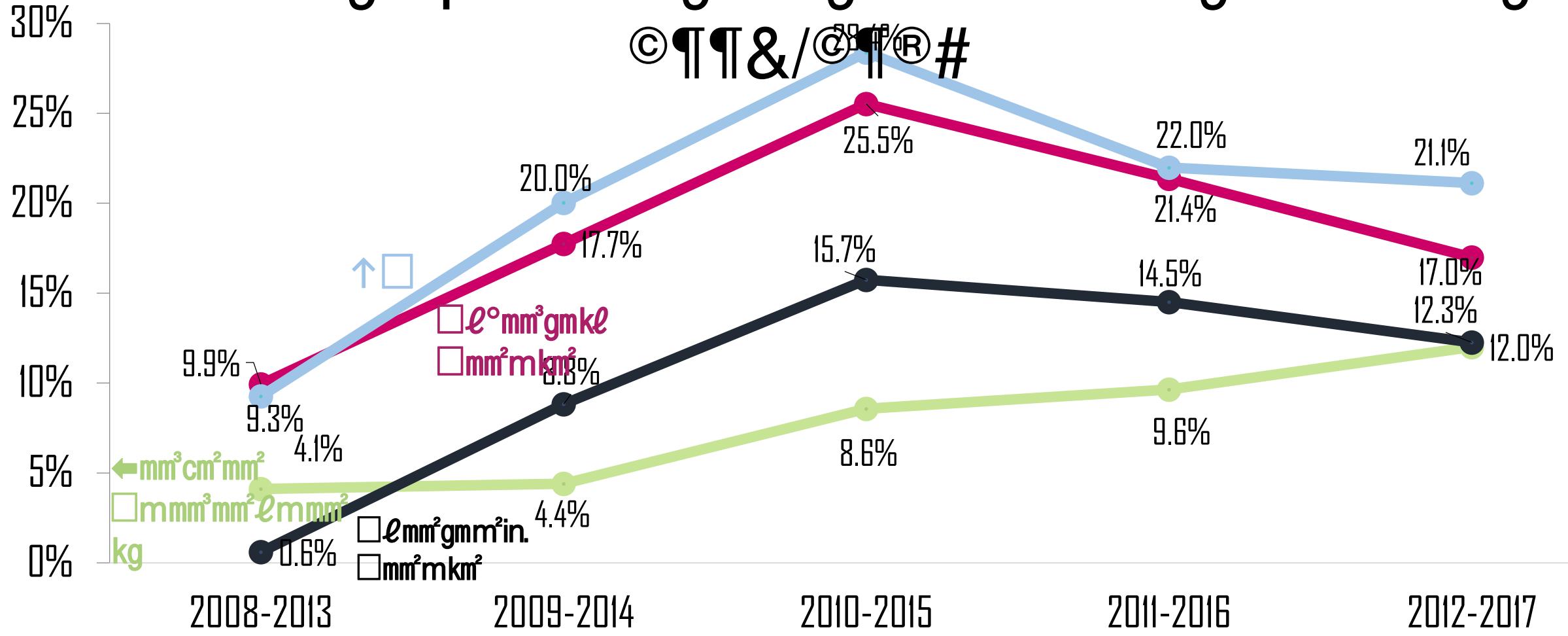
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$\downarrow k\ell gmtkm^2 \ll mmgmk\ell m\ell mm^3\ell mm$   $\square mm^2m km^2$   $\square cccm/$   
 $\square mm^2mtk\ell gm$   $j/\mathcal{E}mm^2mmgm \rightarrow gm\ell^\circ Ctkm^2$   $\square gmm^2\ell km/kg$



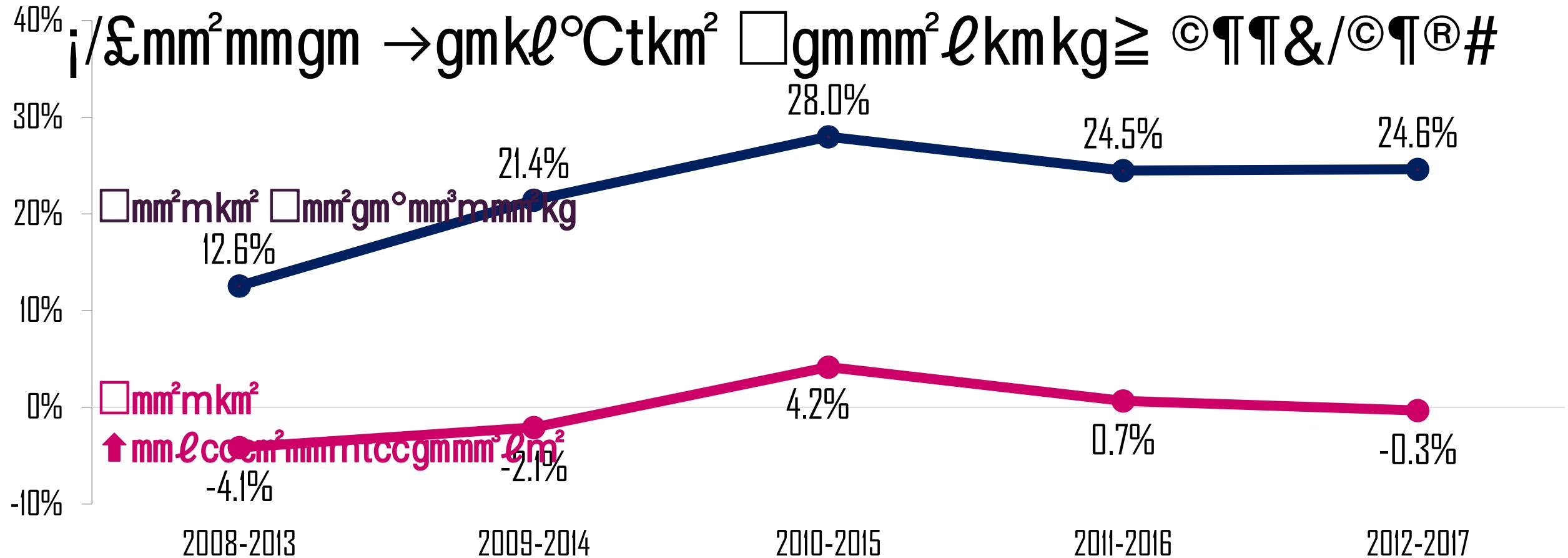
# North Carolina's Technology Industry by Sub-Categories 2016

Tech Category Category	Employment, t, 2017	Change, 2016-2017	Change 2012- 2012-2017	Establishments s 2017
Tech Services Services	190,373	3.5%	24.6%	18,608
Tech Manufacturing	63,857	0.9%	-0.3%	763
Total Tech	254,230	2.8%	17.2%	19,371

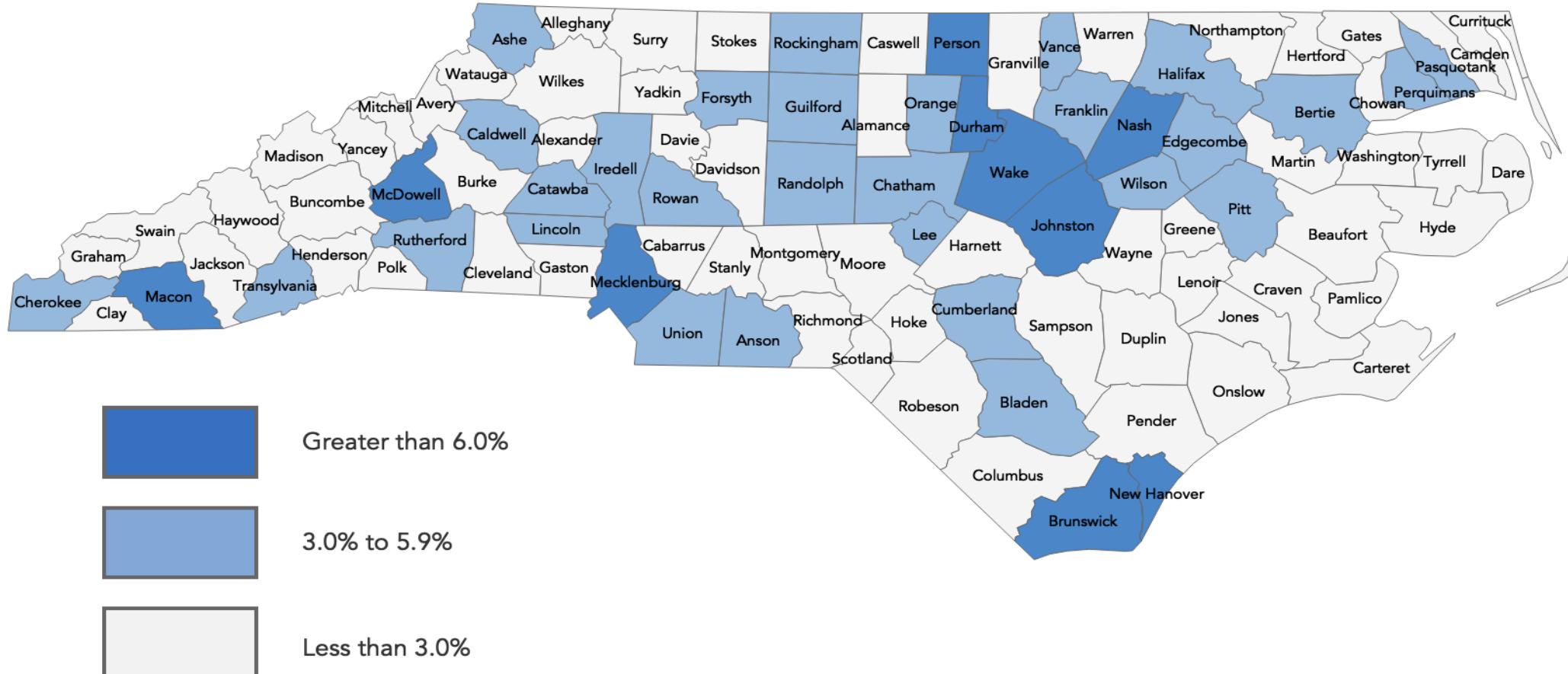
$\downarrow k \text{g m t k m}^2 < m \text{m g m k l m l m m}^3 \ell \text{m m} \square \text{m m}^2 \text{m k m}^2$

$\square \text{m m}^2 \text{g m}^{\circ} \text{m m}^3 \text{m m}^2 \text{k g} \text{ } \square \text{m m}^2 \text{g m}^{\circ} \text{m m}^3 \text{m m}^2 \text{k g} \uparrow \text{m m} \ell \text{c c c m}^2 \text{m m m t c c g m m m}^3 \ell \text{m}^2$

$i / \xi \text{m m}^2 \text{m m g m} \rightarrow \text{g m k l}^{\circ} \text{C t k m}^2 \square \text{g m m m}^2 \ell \text{k m k g} \geq \odot \ddagger \ddagger \& / \odot \ddagger \ddagger \#$



# Tech Industry Jobs by County in North Carolina



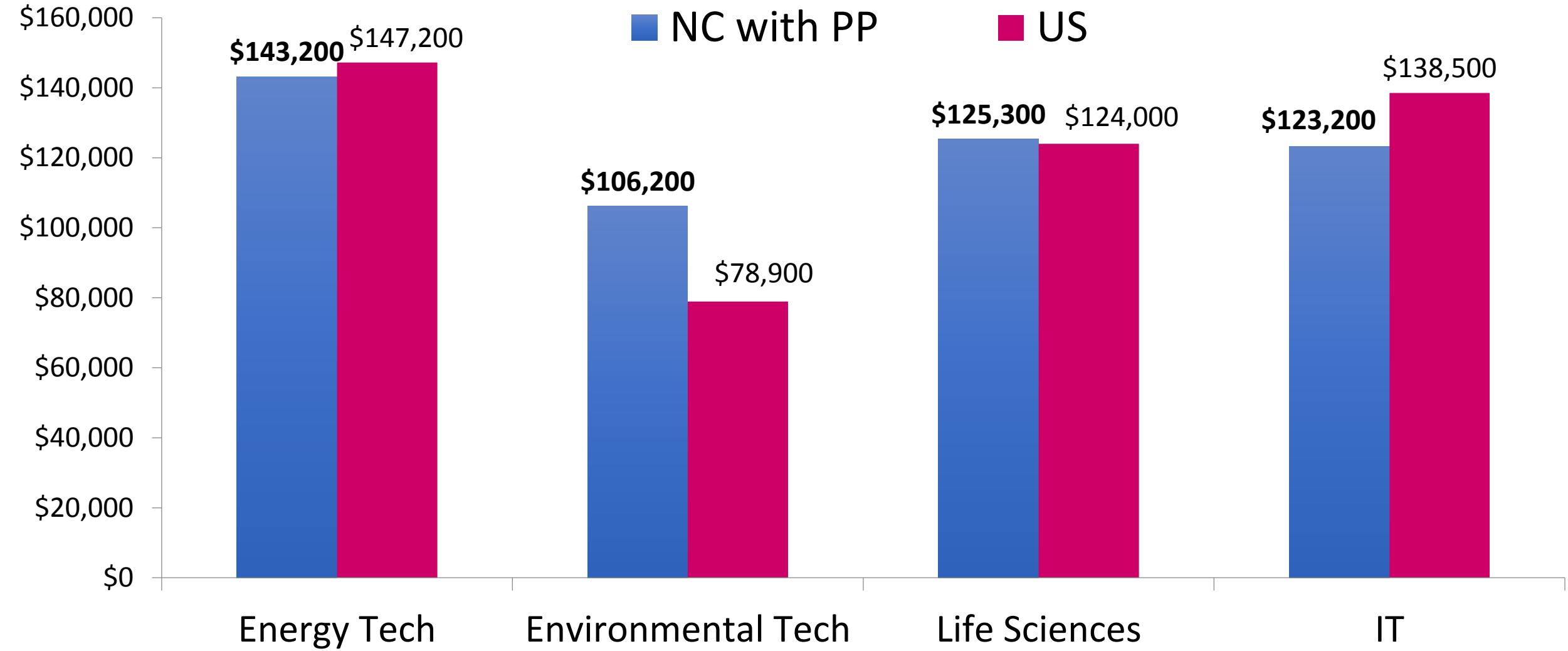
# Average Annual Earnings per Worker by Subsector, 2017

Tech Category	North Carolina	North Carolina (With Purchasing Power)	National Average
Energy Tech	\$130,200	\$143,200	\$147,200
Environmental Tech	\$96,600	\$106,200	\$78,900
Life Sciences	\$113,900	\$125,300	\$124,000
IT	\$112,000	\$123,200	\$138,500

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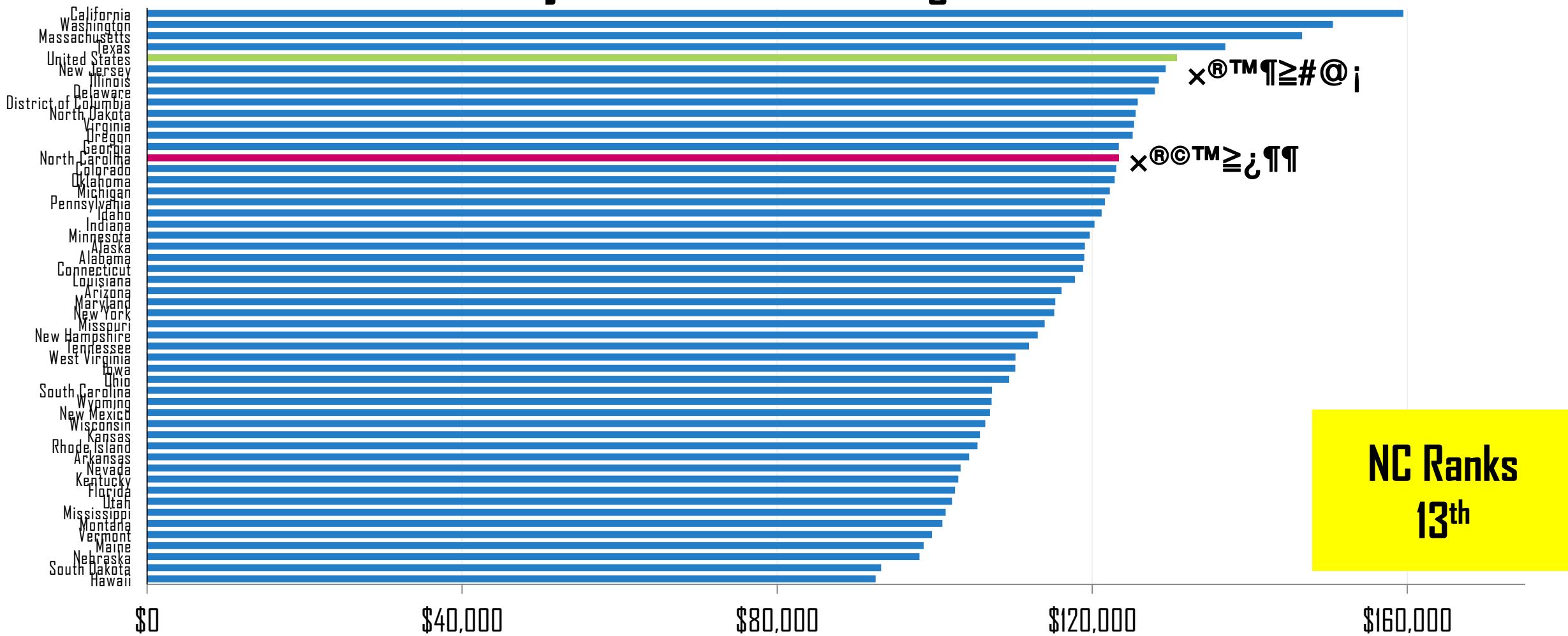
Tech Category	North Carolina	North Carolina (With Purchasing Power) Power)	National Average
Tech Services	\$107,800	\$118,600	\$129,300
Tech Manufacturing	\$125,100	\$137,600	\$137,300
Total Tech	\$112,100	\$123,400	\$130,800

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# Average Annual Earnings for Tech Sector Employees, 2017

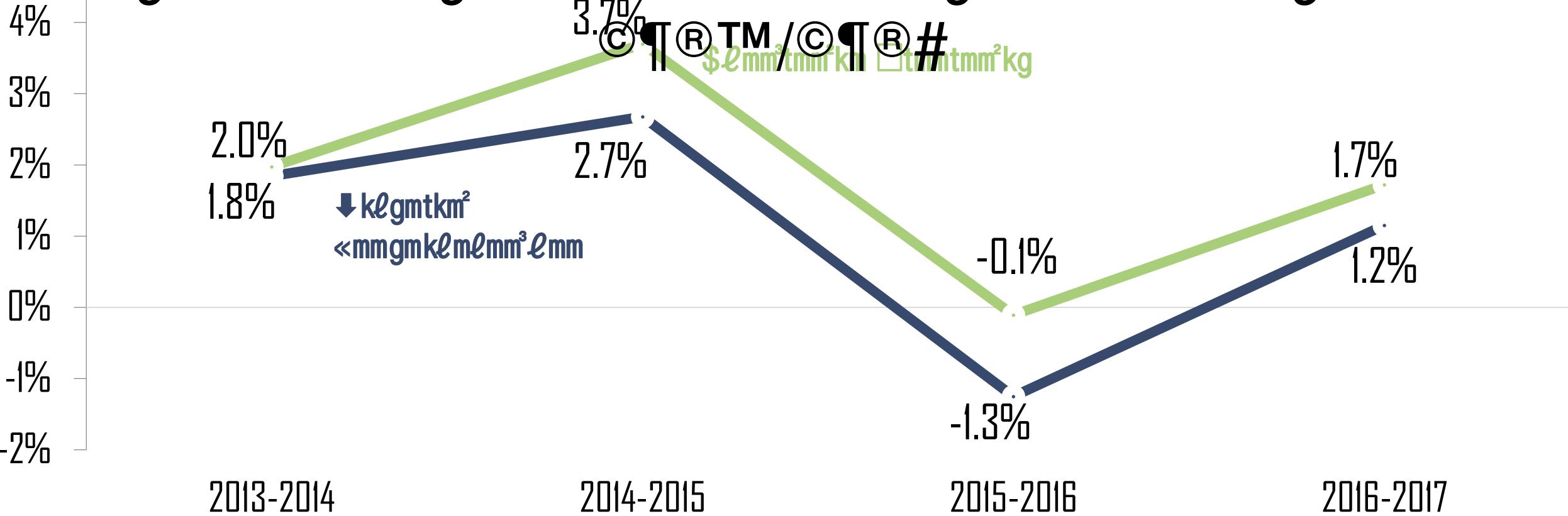
## Adjusted for Purchasing Power



$\square k\ell t m m m \ell$   $\square m m^2 m km^2$   $\textcircled{R}/\text{\texteuro} mm^2 m m g m$   $\square m m g m \ell mm^3 \ell m^2 kg$

$\rightarrow gm k \ell^\circ C tkm^2 \geq \uparrow \ell cm^2 m \ell mm t mm^3 k \ell \ell mm \ell km$

$\Leftarrow ccgmm km^2 mm kg mm^3 \ell m^2 \Leftrightarrow k \ell^\circ C mm^2 gm < km cm^3 cc kgt mm^2 km \geq$



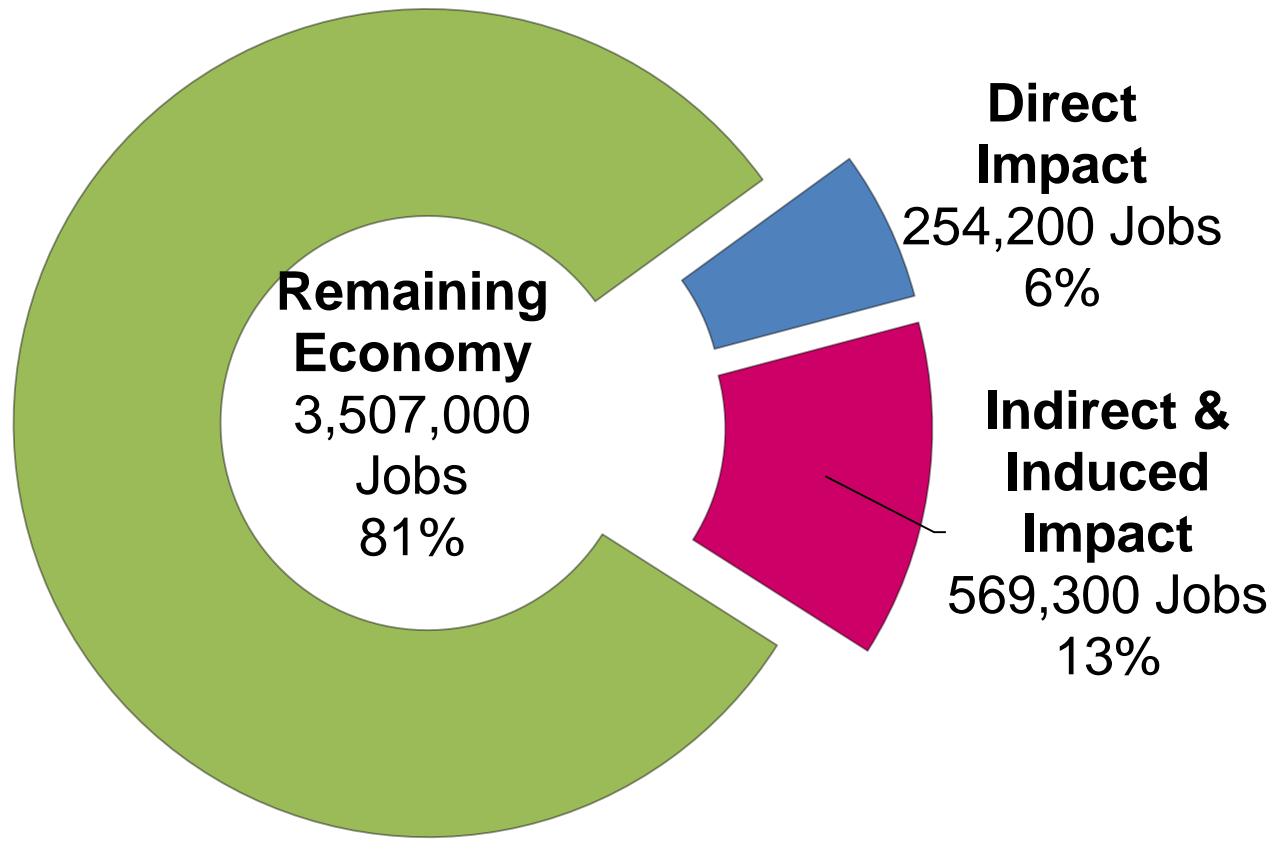
# Economic Impact of Technology Sector on State Economy, 2017

Impact	Employees	Earnings (Millions) (Millions)	Sales (Millions) (Millions)
Direct Impact	254,230	\$26,600	\$86,300
Multiplier	3.24	1.99	1.90
Indirect & Induced Impact	569,300	\$26,400	\$78,000
Total Impact	823,530	\$52,957	\$164,272

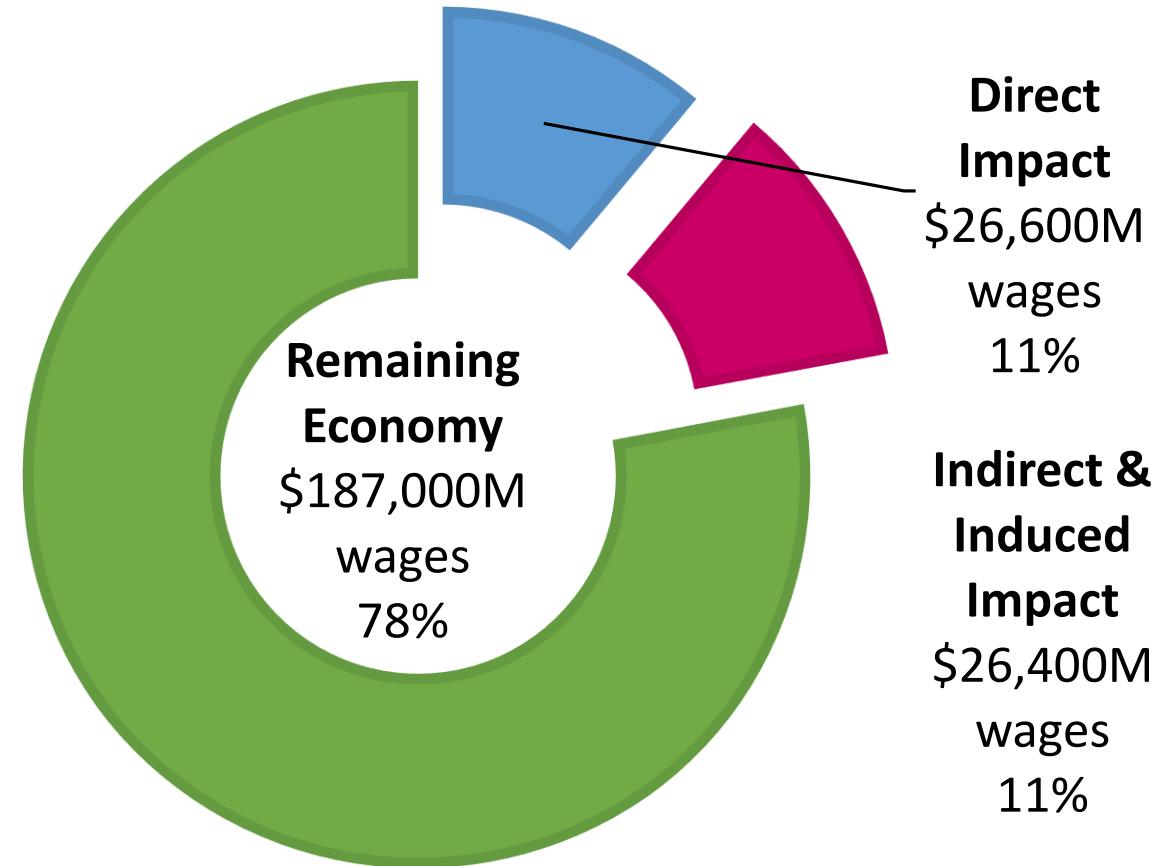
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<b>Total Impact</b>	<b>823,530</b>	<b>\$53,000</b>	<b>\$164,300</b>

# Tech Sector Contribution to State Economy, 2017

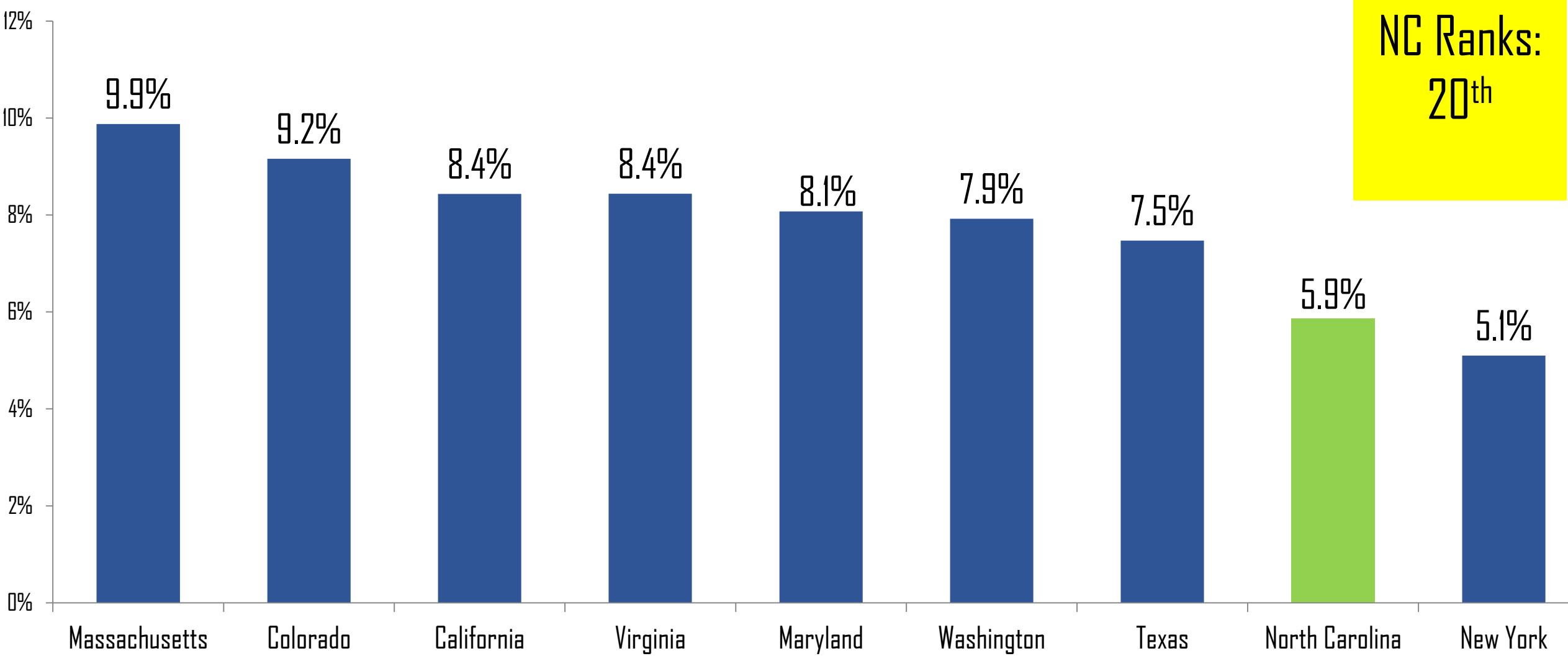


19% of Jobs

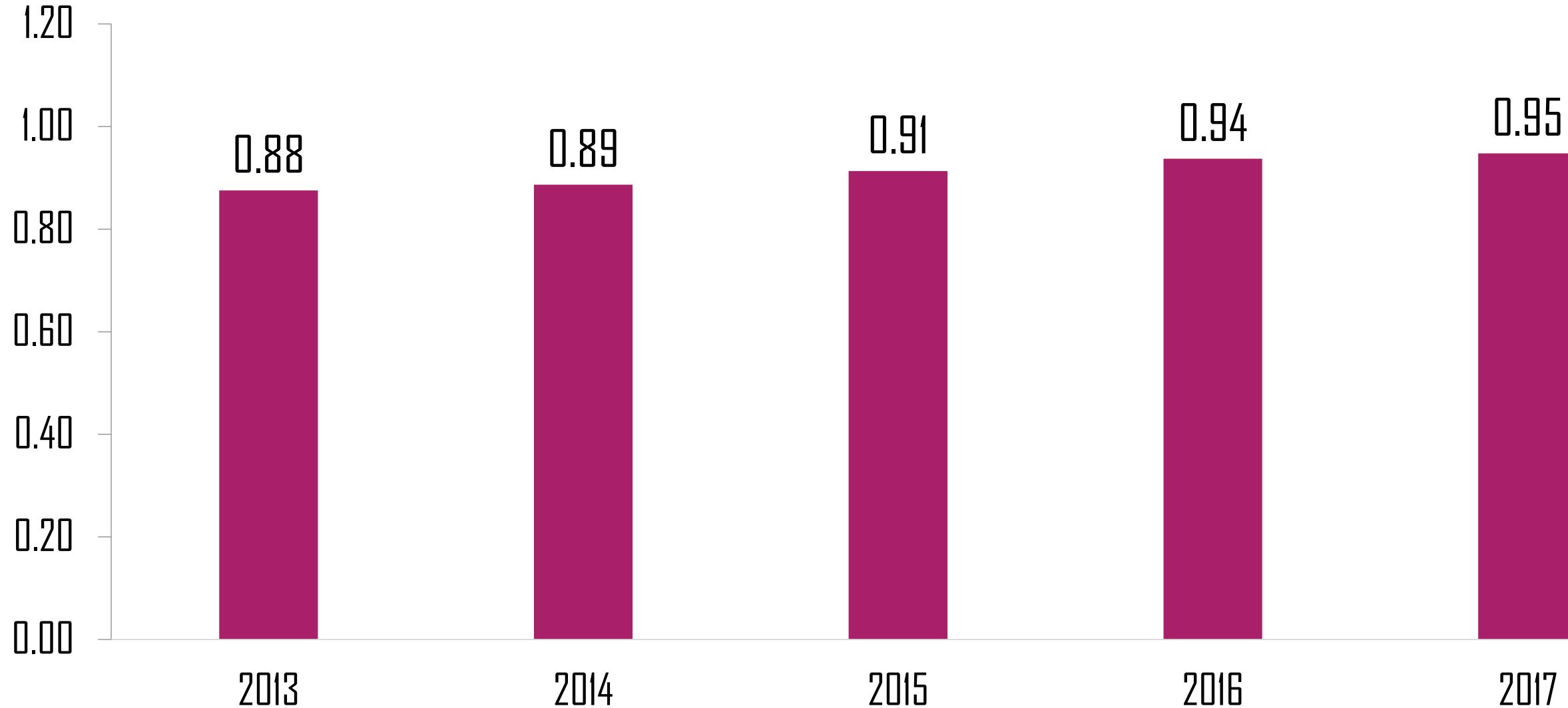


22% of Wages

# Technology Sector Employment as a Percentage of Total Employment (2017)

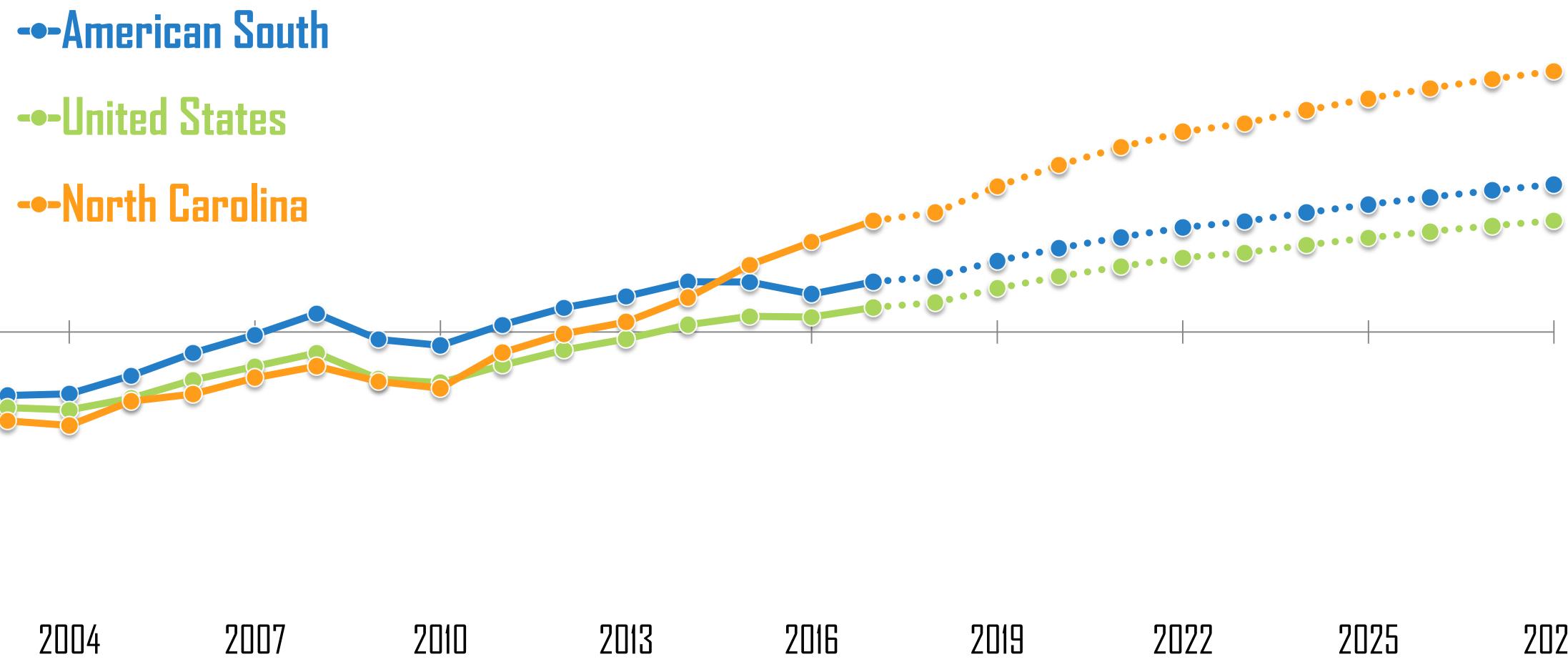


# Location Quotient of North Carolina's Total Tech Sector



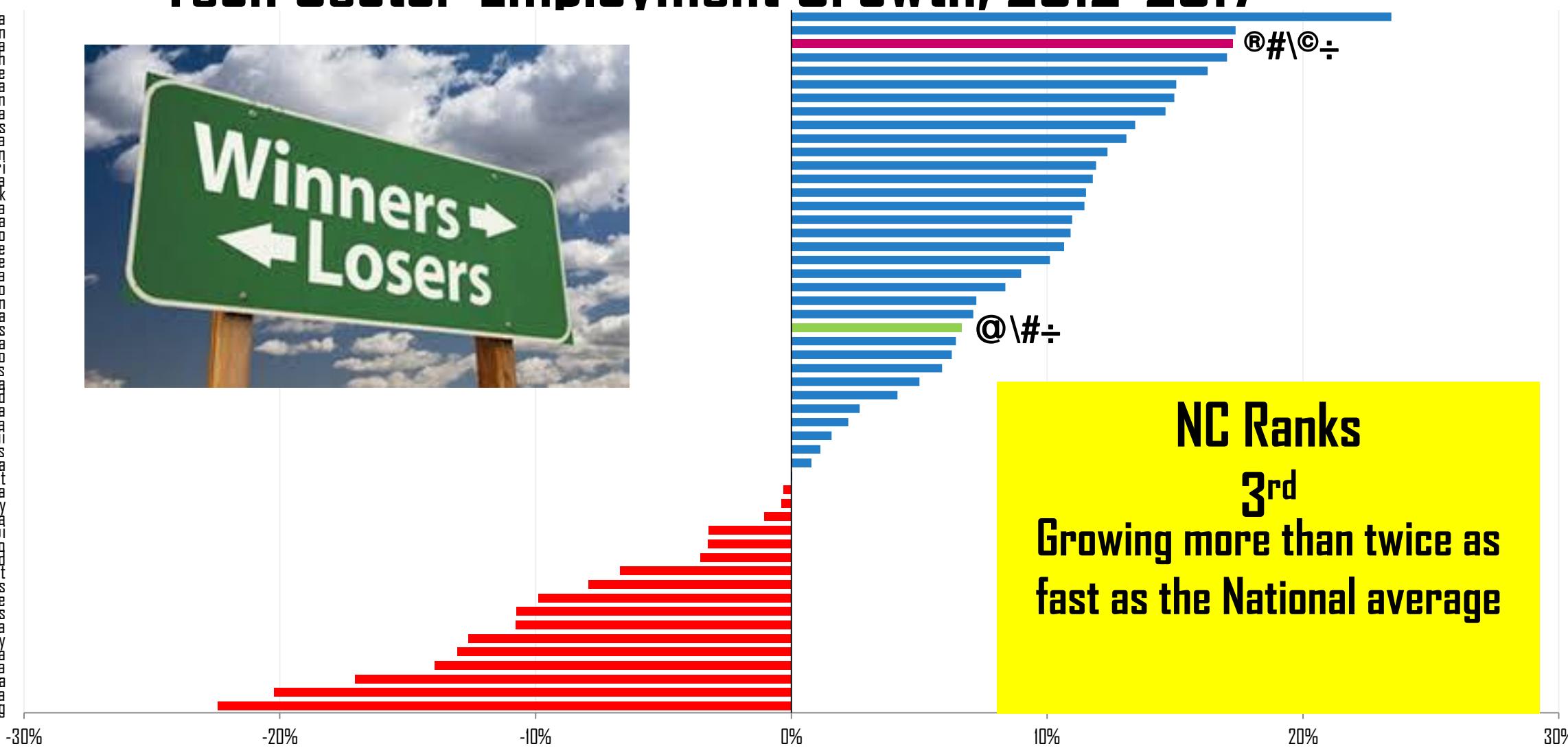
# Long Term Technology Sector Trends

## (Percentage Change in Employment Post 2001)

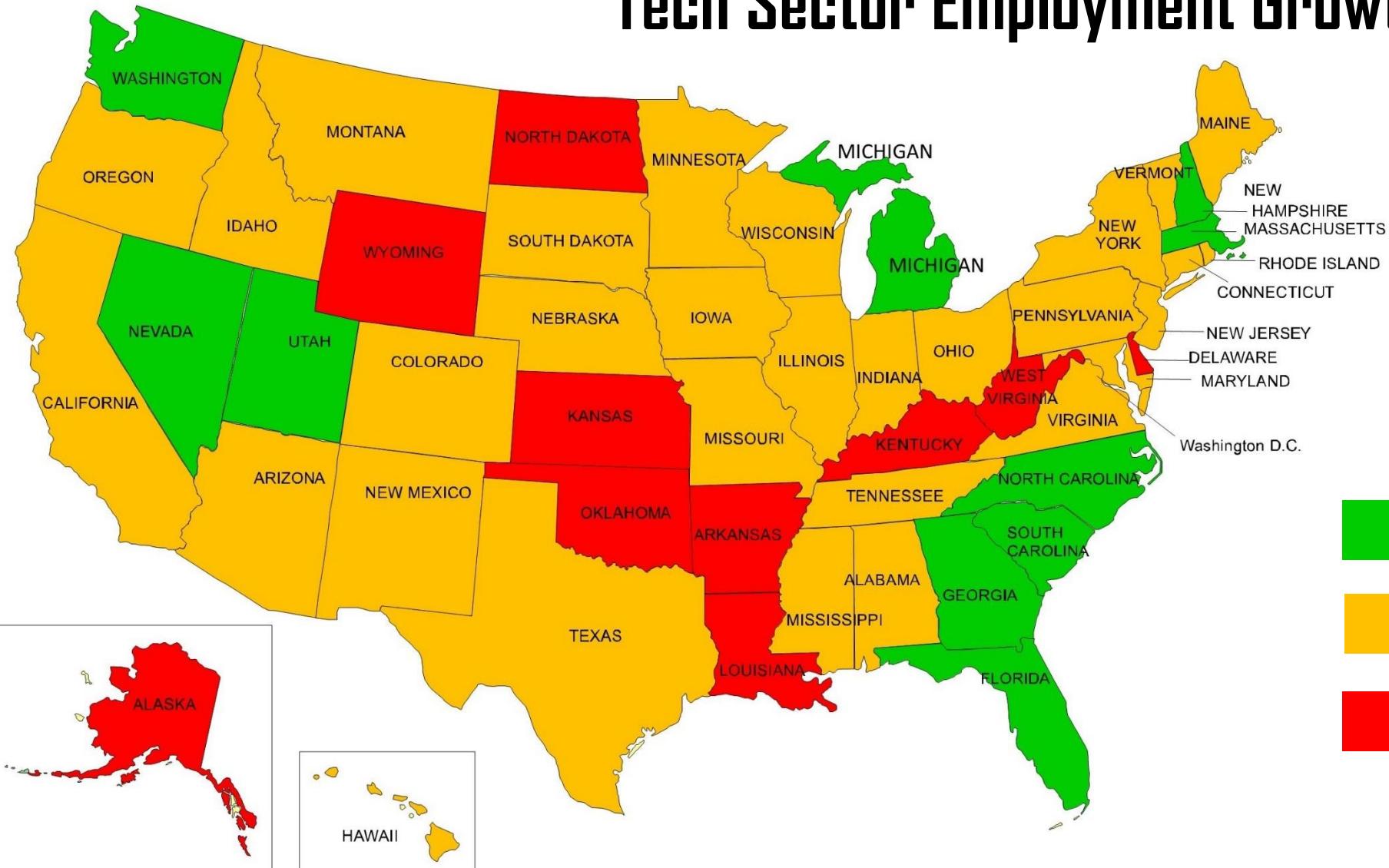


# Tech Sector Employment Growth, 2012-2017

Nevada  
Washington  
North Carolina  
Utah  
New Hampshire  
Florida  
Michigan  
Georgia  
Massachusetts  
South Carolina  
Oregon  
Missouri  
California  
New York  
District of Columbia  
Arizona  
Idaho  
Tennessee  
Maine  
South Dakota  
Colorado  
Wisconsin  
Nebraska  
United States  
Minnesota  
Ohio  
Illinois  
Indiana  
Maryland  
Iowa  
Pennsylvania  
Hawaii  
Texas  
Alabama  
Connecticut  
Virginia  
New Jersey  
Montana  
Mississippi  
New Mexico  
Rhode Island  
Vermont  
Kansas  
Delaware  
Arkansas  
Oklahoma  
Kentucky  
Louisiana  
North Dakota  
Alaska  
West Virginia  
Wyoming

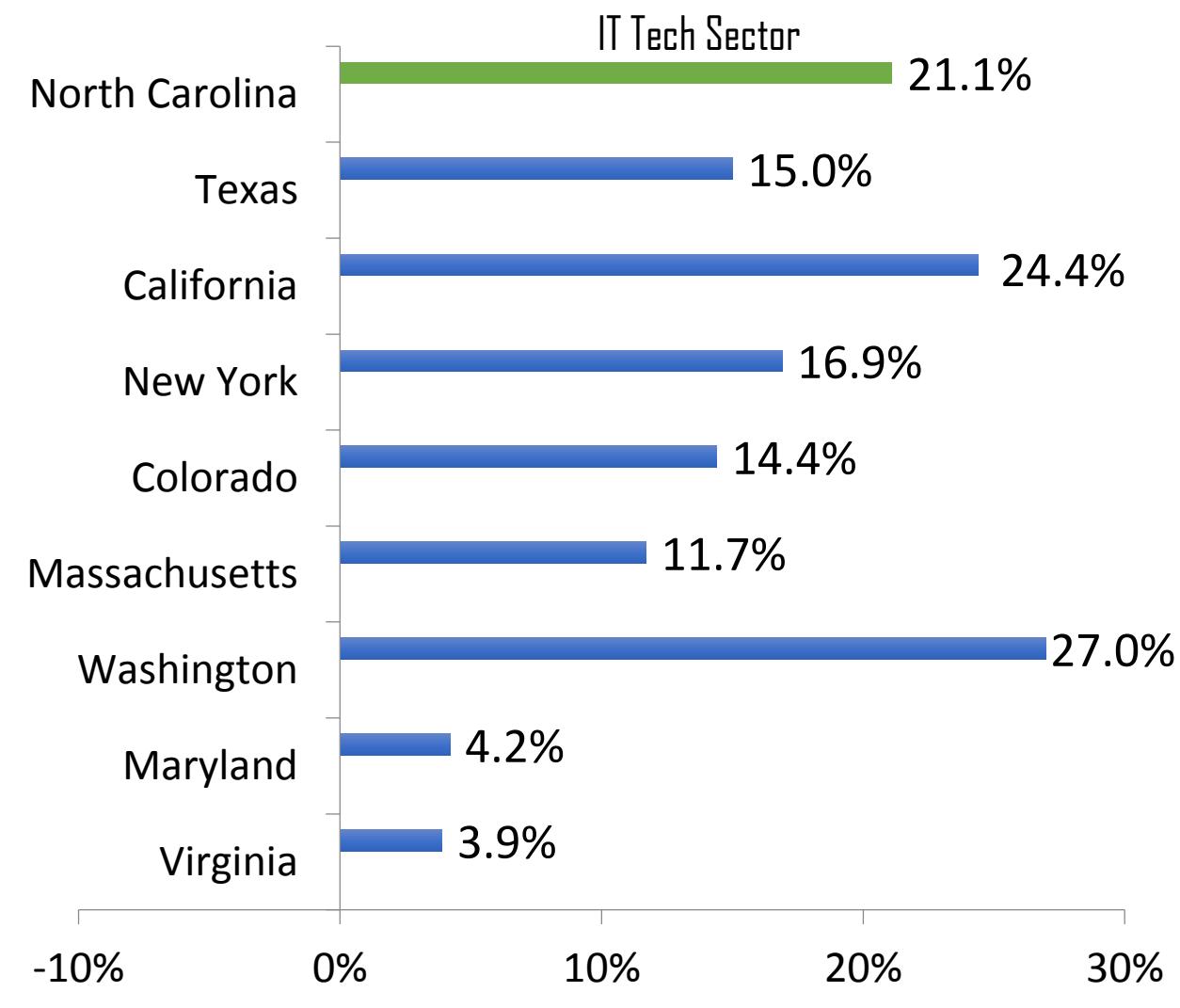
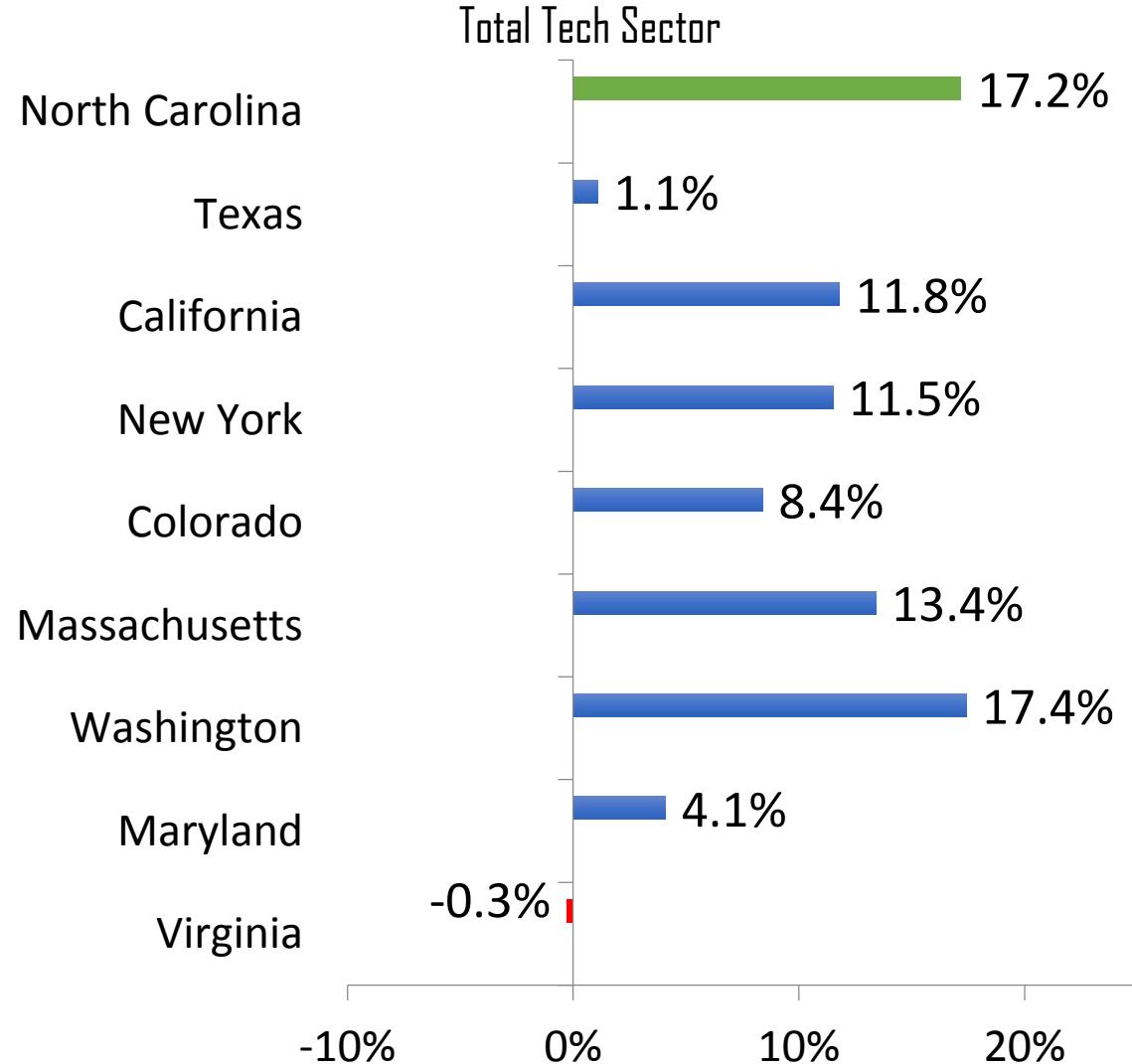


# Tech Sector Employment Growth, 2012-2017

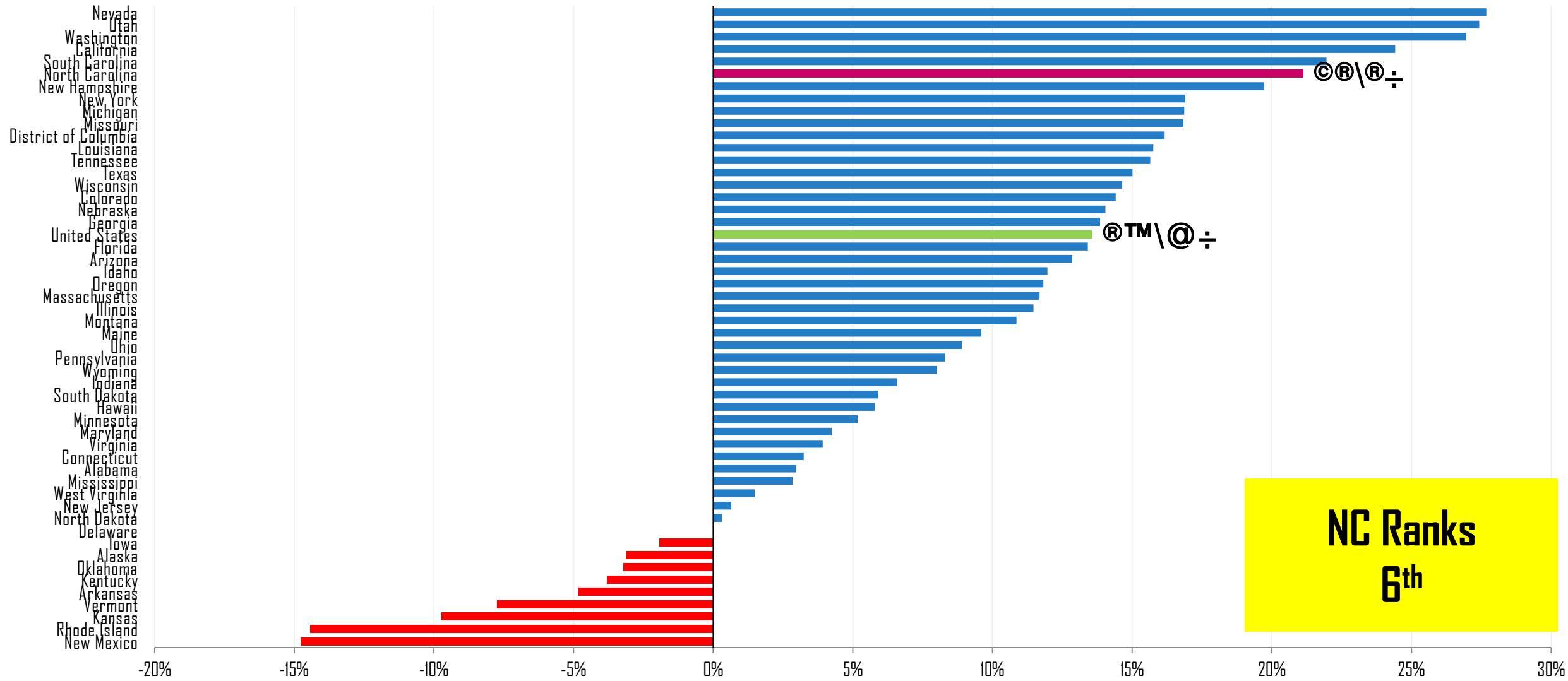


- Top 10
- Ranked 11 - 40
- Ranked 41 - 50

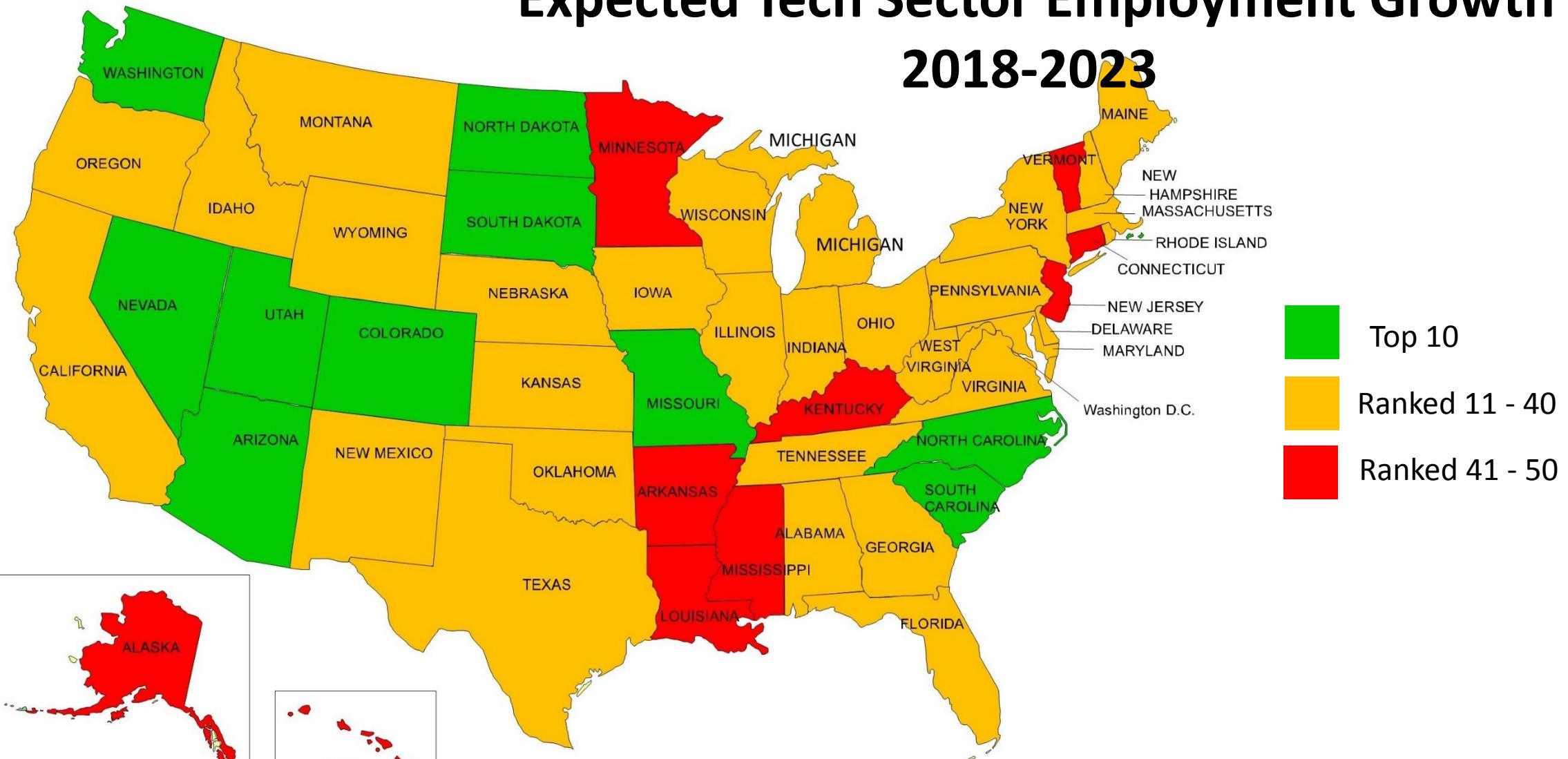
# Technology Sector Employment Growth Rates (2012-2017)



# IT Sector Employment Growth, 2012-2017



# Expected Tech Sector Employment Growth 2018-2023



# Tech Occupations in North Carolina

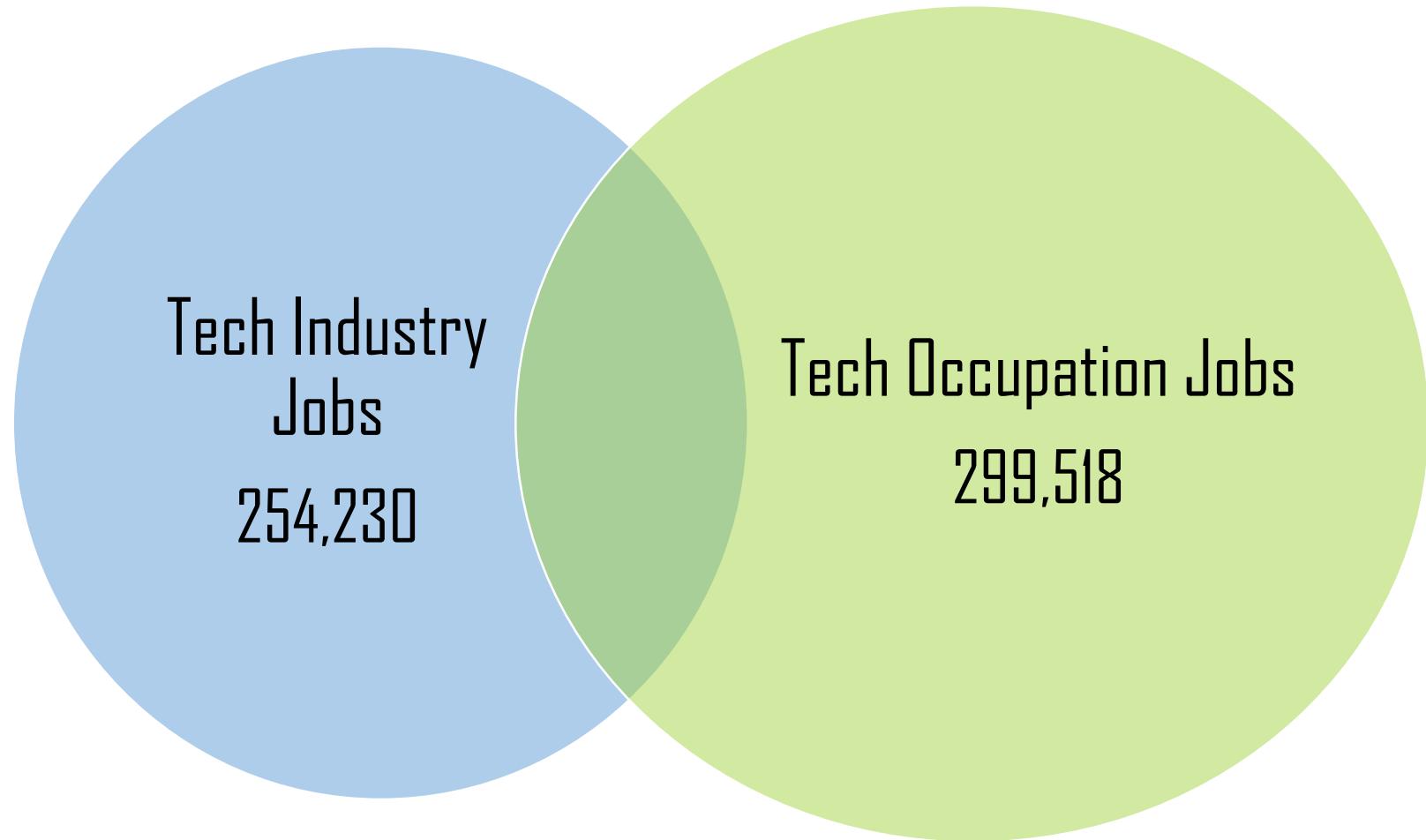
## 2017



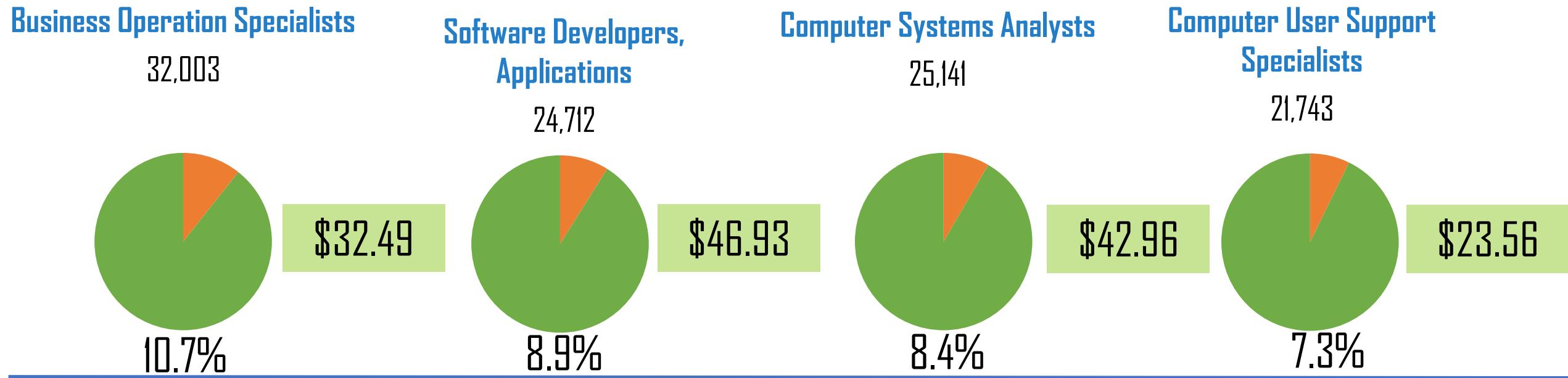
Total Tech Occupation Jobs	<b>299,518</b>
Median Hourly Wage	<b>\$38.58</b>
2012-2017 Employment Change	<b>21.6%</b>

# Staffing Patterns of Tech Industries & Tech Occupations, 2017

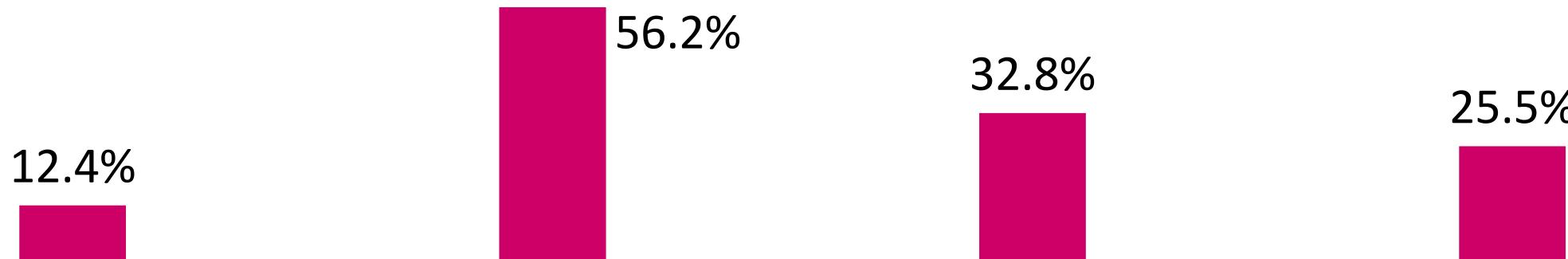
**37% of tech occupation jobs are employed in tech industries.**



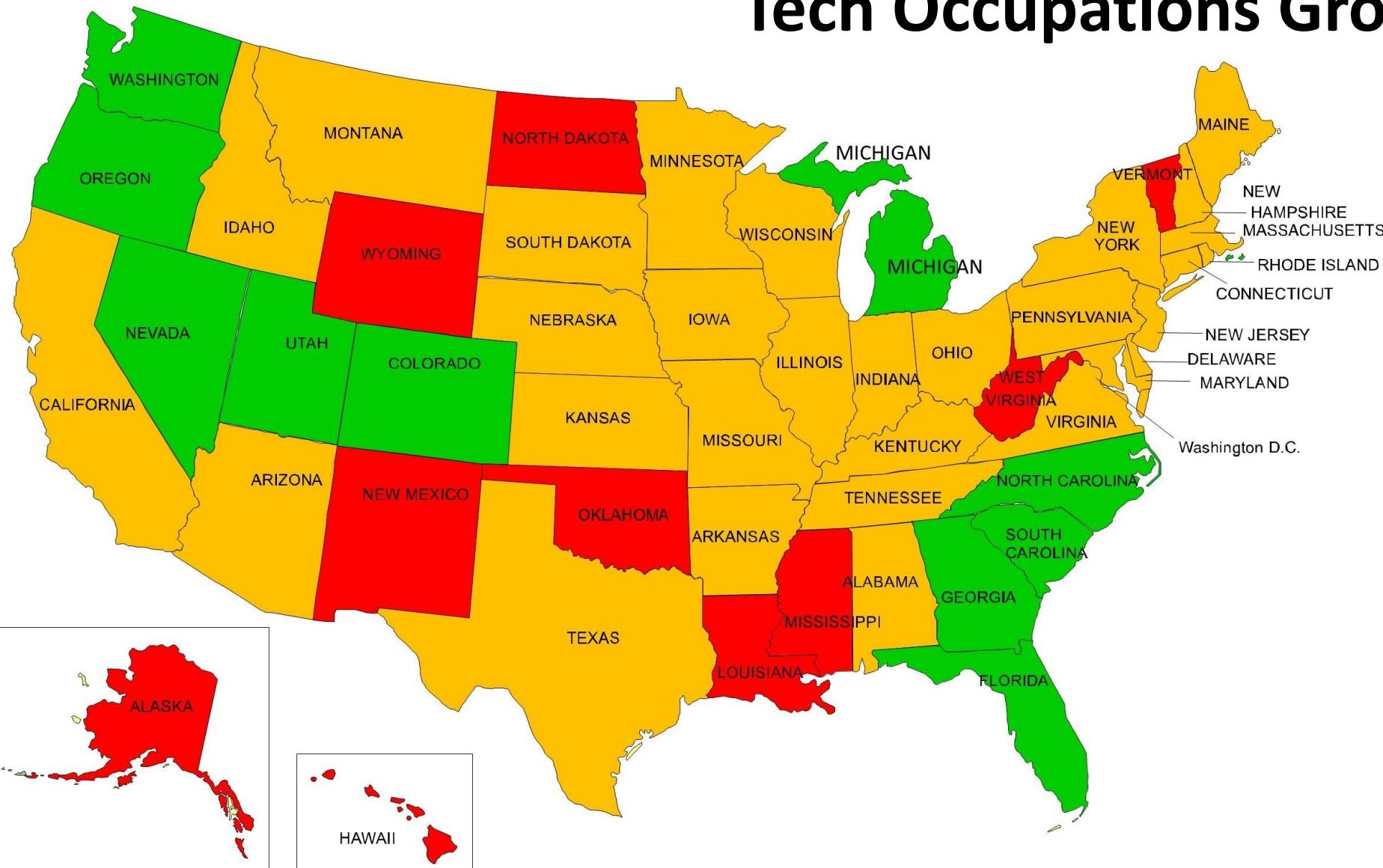
# Top Four Tech Occupations



Employment Growth Rate, 2012-2017

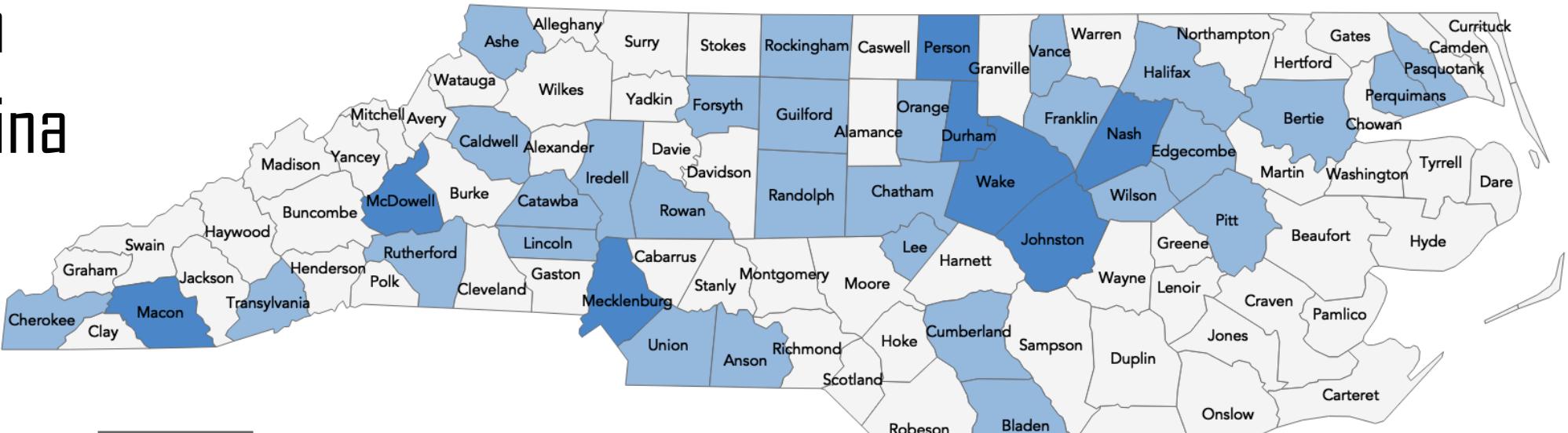


# Tech Occupations Growth, 2012-2017



- Top 10
- Ranked 11 - 30
- Ranked 31 - 50

# Tech Occupations by County in North Carolina



Greater than 6.0%



3.0% to 5.9%



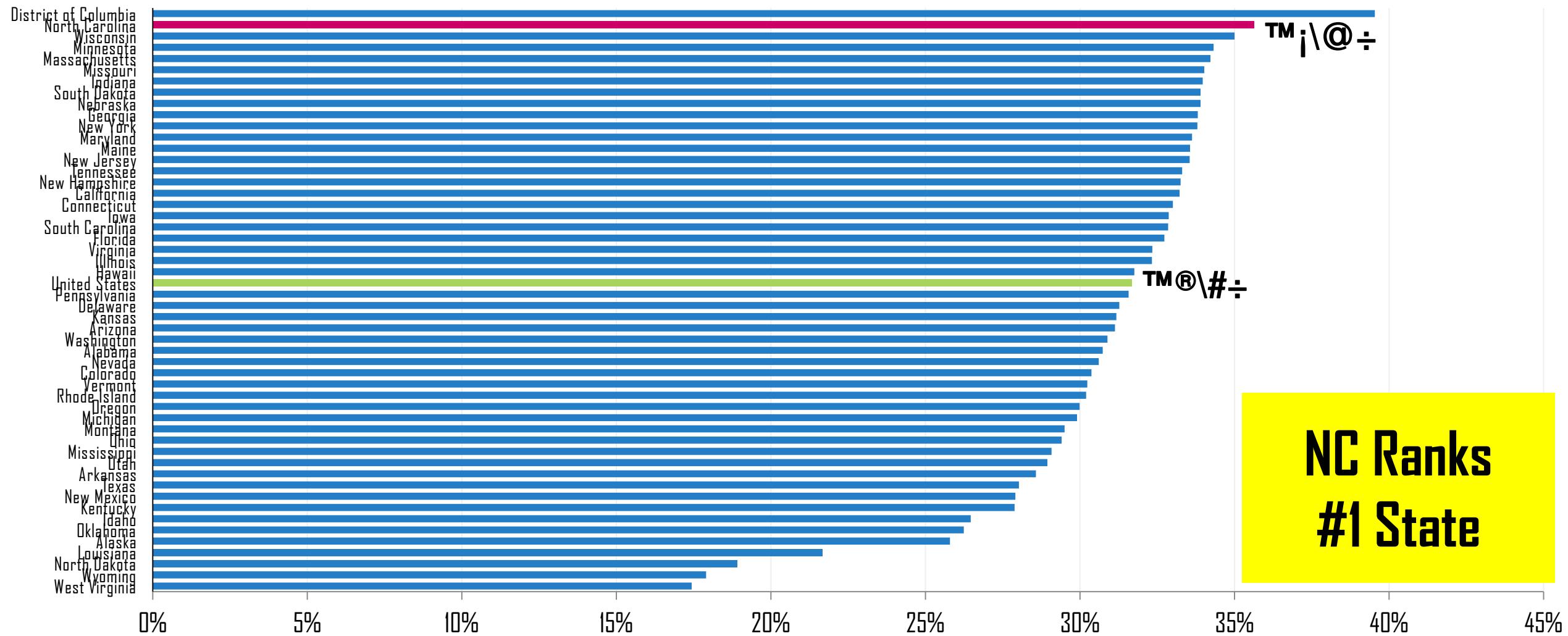
Less than 3.0%

# How Competitive Is North Carolina?



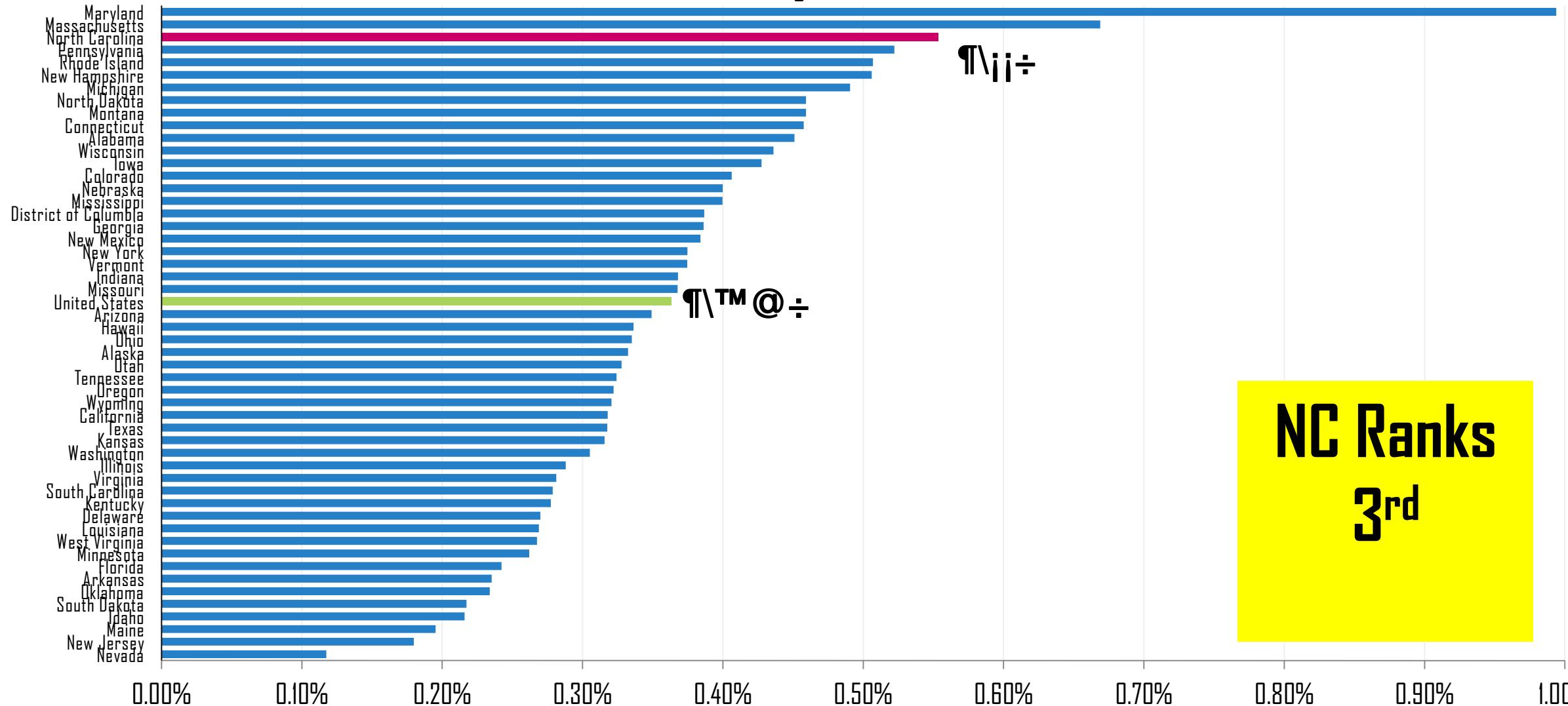
Winning the Race

# Percentage of Women Working in the Tech Industry



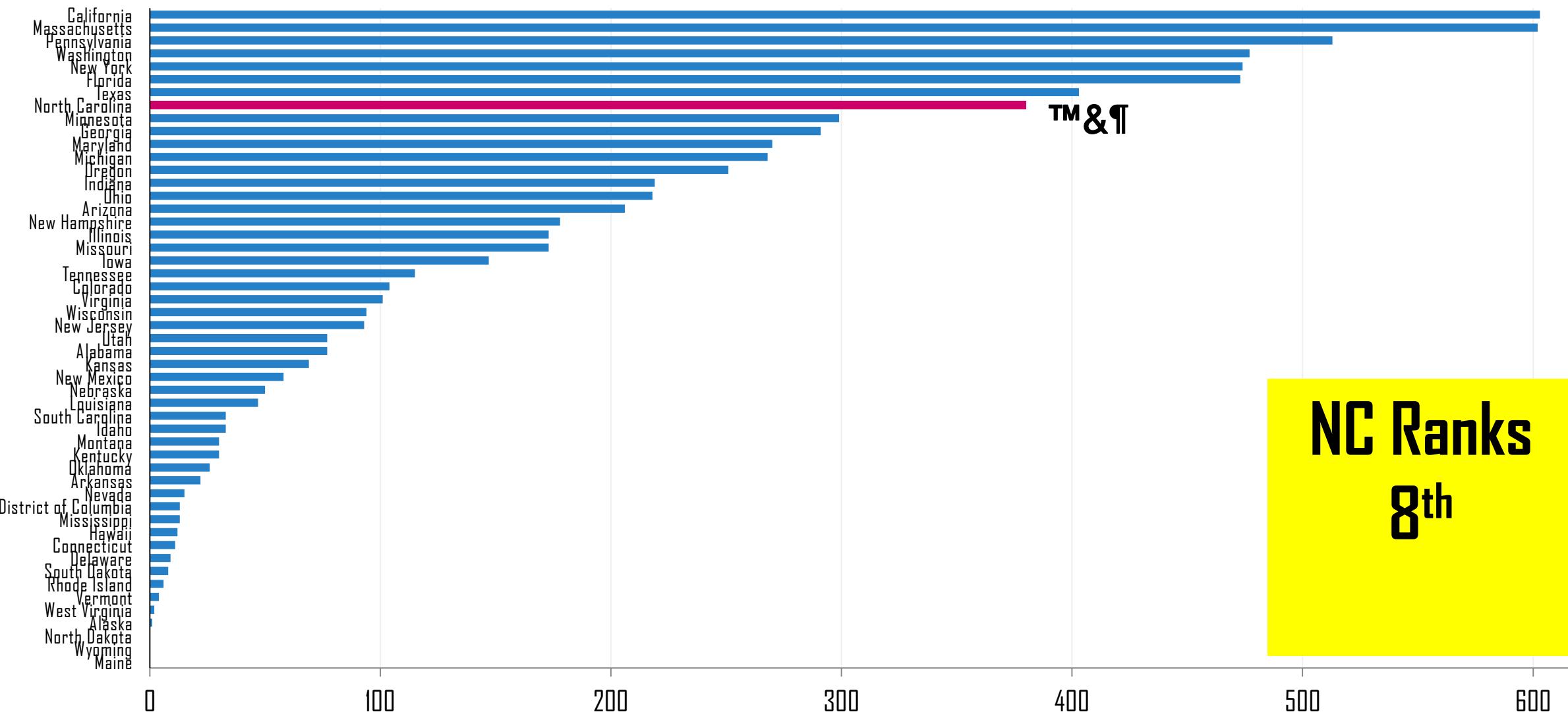
# Higher Education R&D in Science & Engineering Fields Intensity

R&D As A Percentage of GDP (2016)



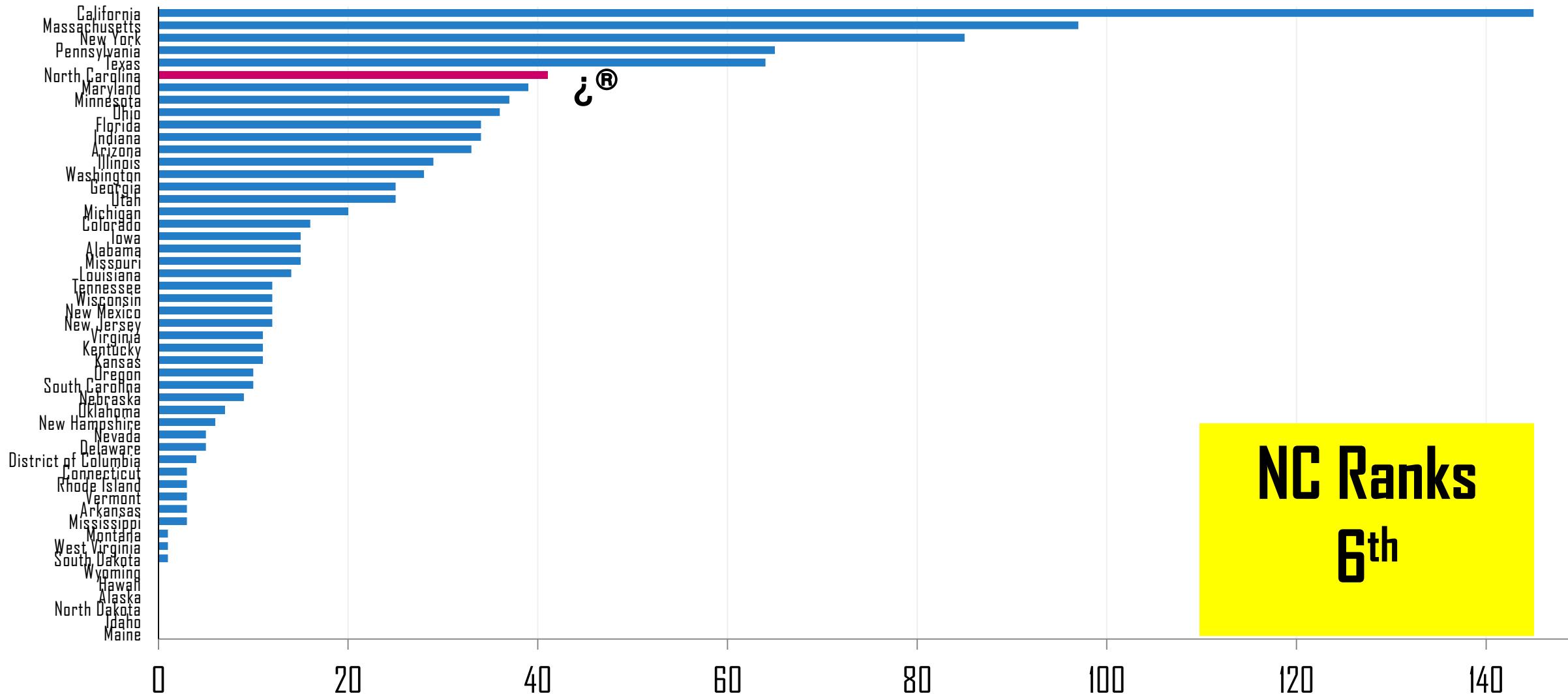
NC Ranks  
3rd

# Technology Licenses and Options Executed From Universities (2017)



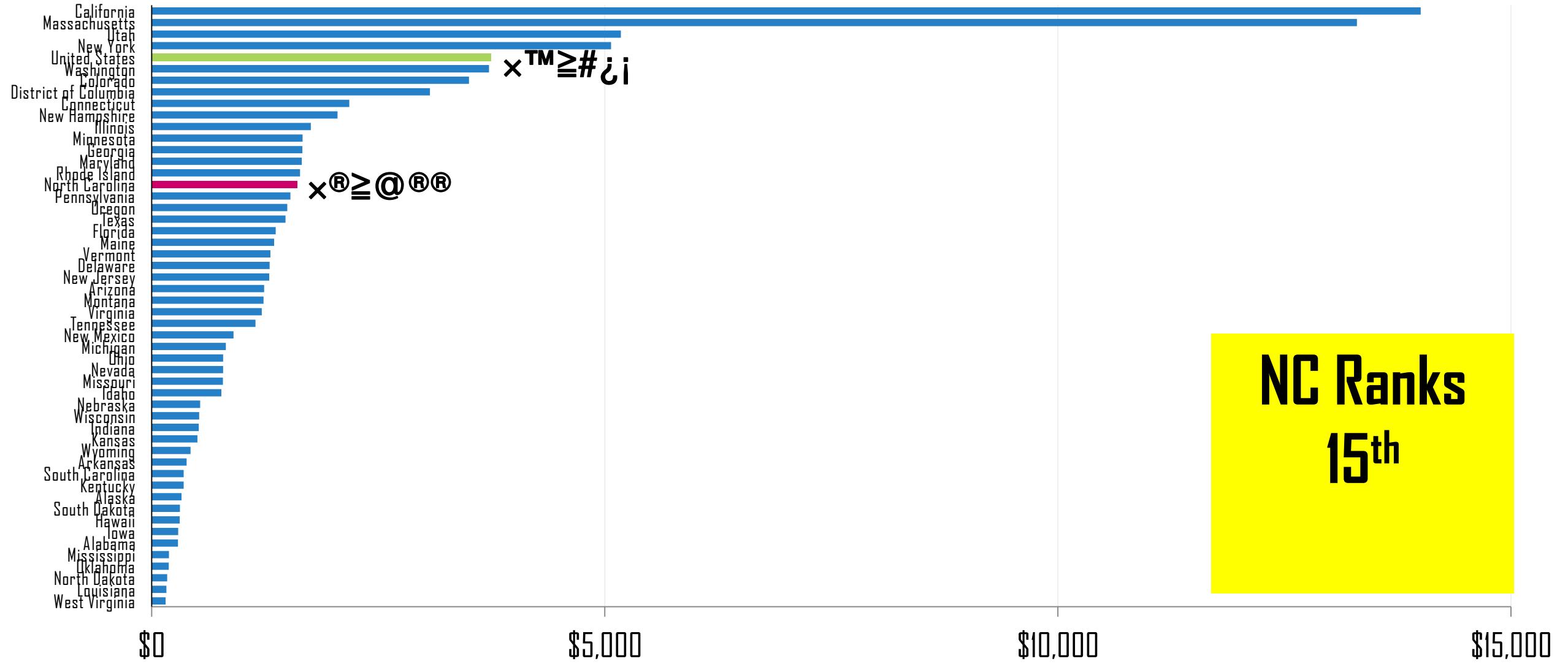
NC Ranks  
8<sup>th</sup>

# Start-Ups From Universities (2017)



NC Ranks  
6<sup>th</sup>

# Venture Capital Funding Per \$1 Million of GSP, 2012-2017



# Overall North Carolina IT Sector Rankings

Metric	Value	Rank
IT Sector as a Percentage of Total Employment (2017)	3.2%	16
IT (Tech Core) Employment Growth (2012-2017)	21.1%	6
Expected IT Sector Employment Growth (2018-2023)	11.0%	8
Average Annual Wage for IT Sector Employees with Purchasing Power (2017)	\$123,206	12

Indicates a state ranking of 15<sup>th</sup> or higher

Indicates a state ranking between 16<sup>th</sup> and 35<sup>th</sup>

Indicates a state ranking greater than 36<sup>th</sup>

# Overall North Carolina Tech Sector Rankings

Metric	Value	Rank
Technology Sector Location Quotients (2017)	0.95	20
Technology Sector Employment Growth (2012-2017)	17.2%	3
Average Annual Wage for Technology Sector Employees with Purchasing Power (2017)	\$123,362	13
Percentage of Women in the Technology Workforce	35.6%	2 (1)
Tech Industry Diversity Index	79.2	22

Indicates a state ranking of 15<sup>th</sup> or higher

Indicates a state ranking between 16<sup>th</sup> and 35<sup>th</sup>

Indicates a state ranking greater than 36<sup>th</sup>

# Overall North Carolina Tech Occupations Rankings

Metric	Value	Rank
Percentage of Tech Occupations As a Total of All Occupations (2017)	6.9%	20
Tech Occupations Growth (2012-2017)	21.6%	6
Expected Tech Occupations Growth (2018-2023)	11.2%	5
Median Hourly Earnings Adjusted for Purchasing Power (2017)	\$42.45	4

Indicates a state ranking of 15<sup>th</sup> or higher

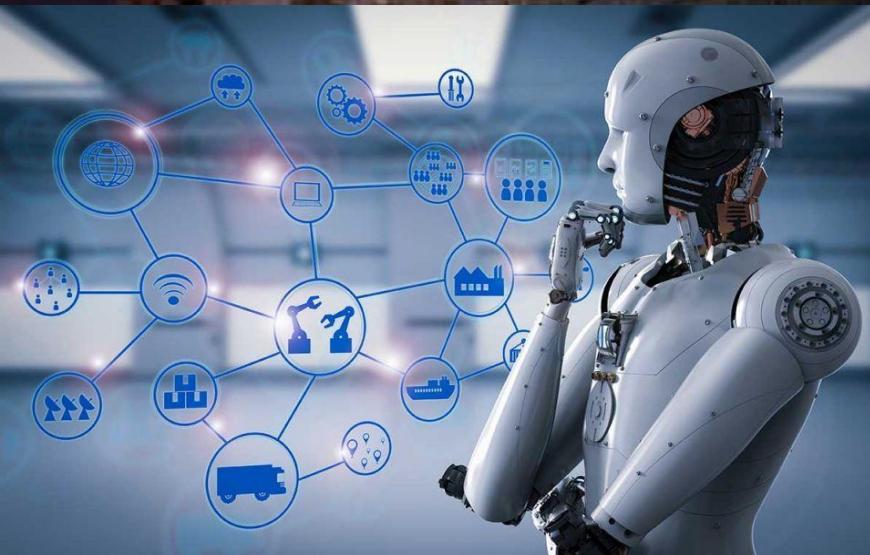
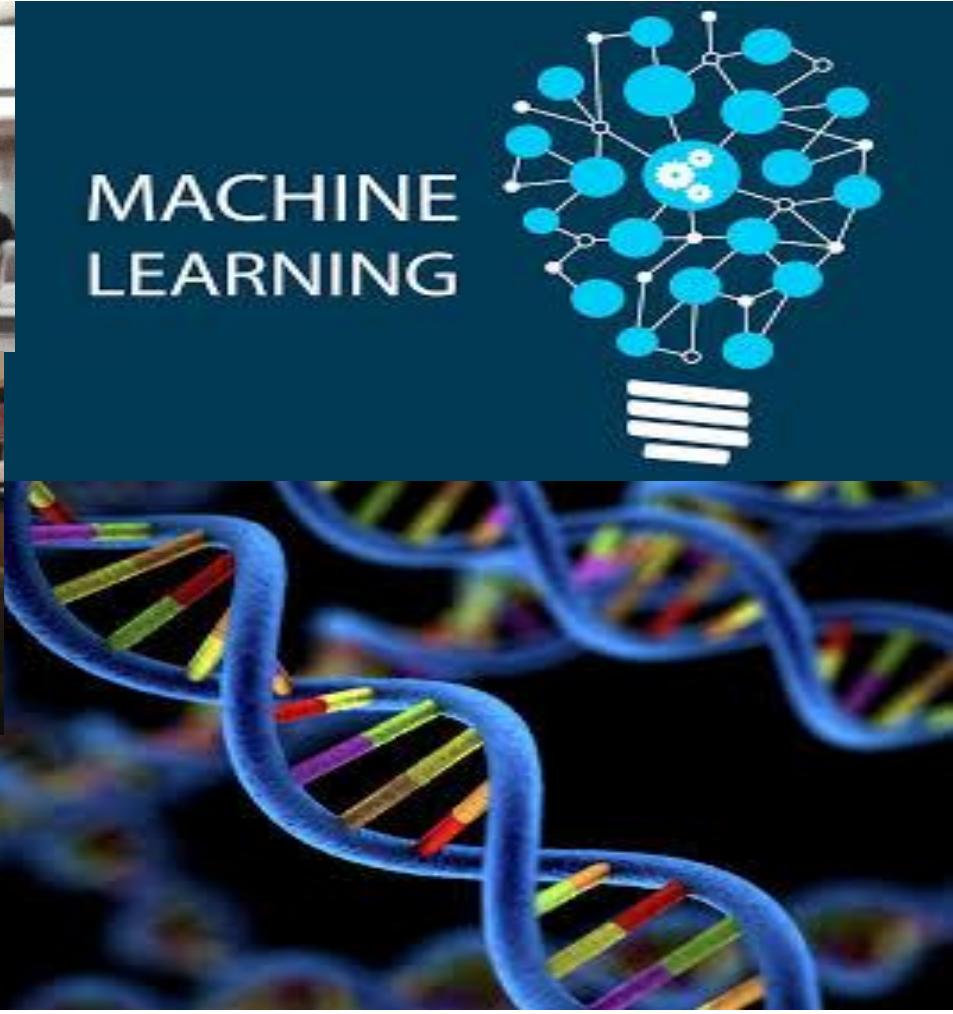
Indicates a state ranking between 16<sup>th</sup> and 35<sup>th</sup>

Metric	Value	Rank
Total R&D As a Percentage of GSP (2015)	2.4%	19
Business Performed R&D as a Percentage of Private Industry Output (2015)	2.0%	16
Higher Education R&D in S&E Fields as a Percentage of GDP (2016)	0.55%	3
Patents Issued per 1,000 Science & Engineering Workers (2016)	17.8	18
Venture Capital Funding Per \$1 Million of GDP (2012-2017)	\$1,611	15
Technology Licenses and Options Executed from Universities (2017)	380	8
Start-Ups from Universities (2017)	41	6
SBIR and STTR Funding Per \$1 Million of GDP (2012-2017)	\$132	17
Small Business Opening Rate vs. Closing Rate (2016)	2.1%	13
Change in Employment by Young Companies (2014-2016)	13.1%	6
Completed STEM Education Programs per 1,000 Enrolled Students (2017)	30.7	16
Percent Change in Tech & STEM Education Program Completions (2012-2017)	32%	16
Average In-State Tuition Cost (2018-2019)	\$7,220	6
State Spending Per Student for Higher Education (2018)	\$10,541	8

**“Sir, the possibility of successfully navigating an asteroid field is approximately 3,720 to 1.” (C-3PO to Han Solo in Star Wars)**



# The Intersection of Trends is Where the Future is Reimagined





NC Remains One  
of the Best  
Technology States  
in the Country,  
and Looking  
Ahead...The  
Future Should Be  
Even Better