West Virginia Competitiveness in a Time of Rapid Transformation

ECONOMIC LEADERSHIP

WEST VIRGINIA CHAMBER

Place Comparisons Data Analytics

Collaborative (Group) Leadership

- ✓ Intentional
- ✓ Specific
- ✓ Measurable Actions

Best Practices

Trendspotting

ECONOMIC LEADERSHIP
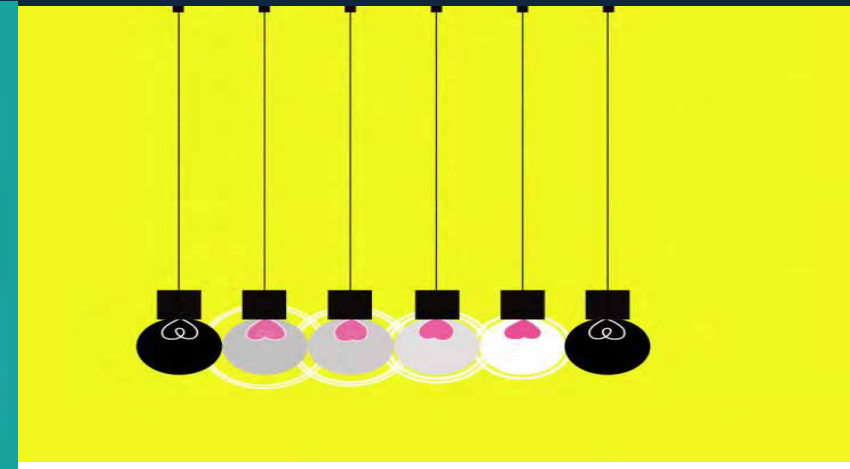
Think Forward Together

Trends That Seems Certain

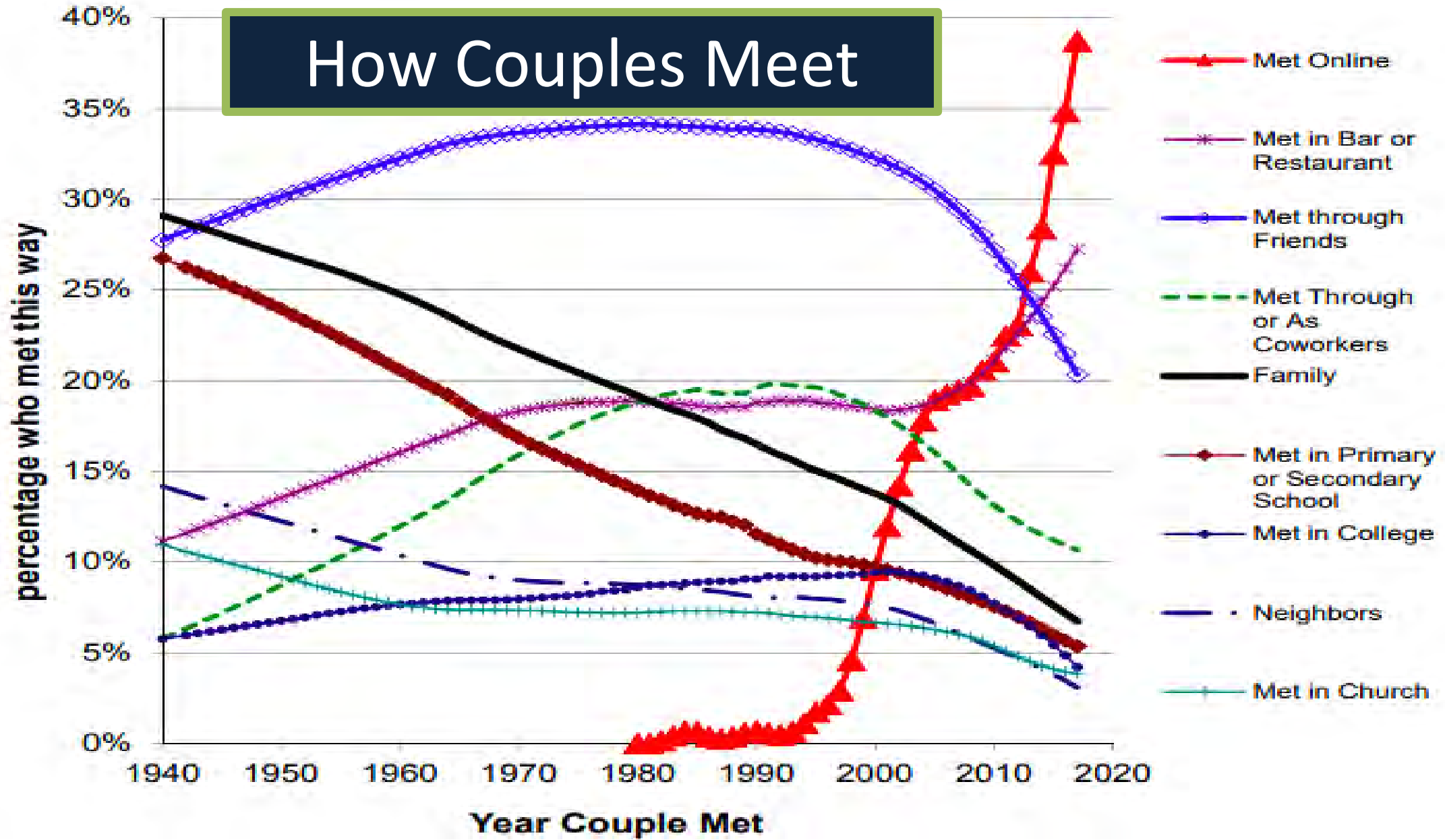

Urbanization

Longevity

Diversity

Tech

ECONOMIC LEADERSHIP

How Couples Meet

Acceleration
Everything Gets Faster & Faster

- Customer expectations are for instantaneous

- Response time shortens

- Technology adoption time shortens
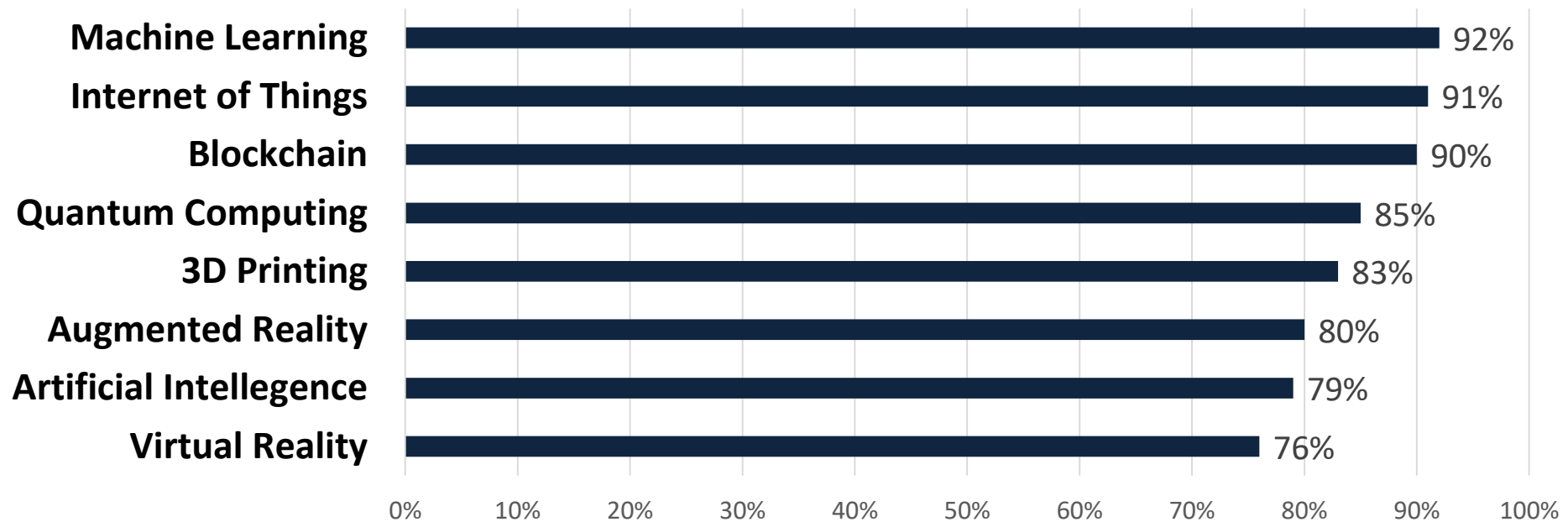
- Speed to market shortens

Is there anyone here today that believes the pace of change will slow over the next 10 years?

ECONOMIC LEADERSHIP

Technologies That Will Change Us Over the Next Few Years - The Science of Certainty

MACHINE LEARNING

Emerging Industries Will Have an Impact in the Next 4 Years

Industry	Percentage
Machine Learning	92%
Internet of Things	91%
Blockchain	90%
Quantum Computing	85%
3D Printing	83%
Augmented Reality	80%
Artificial Intelligence	79%
Virtual Reality	76%

ECONOMIC LEADERSHIP

Hyper Connectivity & Information Democratization

- 4.1 billion people on the internet

- 30 billion connected devices by next year

- By 2021, 2 billion people using digital assistants

ECONOMIC
LEADERSHIP

- Launched way back in 2017…
- **200 million players and $2B in revenue**

But Also, Segmented Hyper Connectivity

- Launched way back in 2017…
- **200 million players and $2B in revenue**

- What Special Interest or Groups Do You Belong To?

- What Do You Know a Lot About?

- What Do You Know Nothing About?

ECONOMIC
LEADERSHIP

Constant Disruption

12 Years Ago There Was No...

Motorola Dynatac (1983)

$10,000. 2 Pounds.

10 Hours to Charge...lasts 20 minutes

Constant Disruption

CURRENT LEVEL OF DISRUPTION SCORE (0–1)

SUSCEPTIBILITY TO FUTURE DISRUPTION SCORE (0–1)
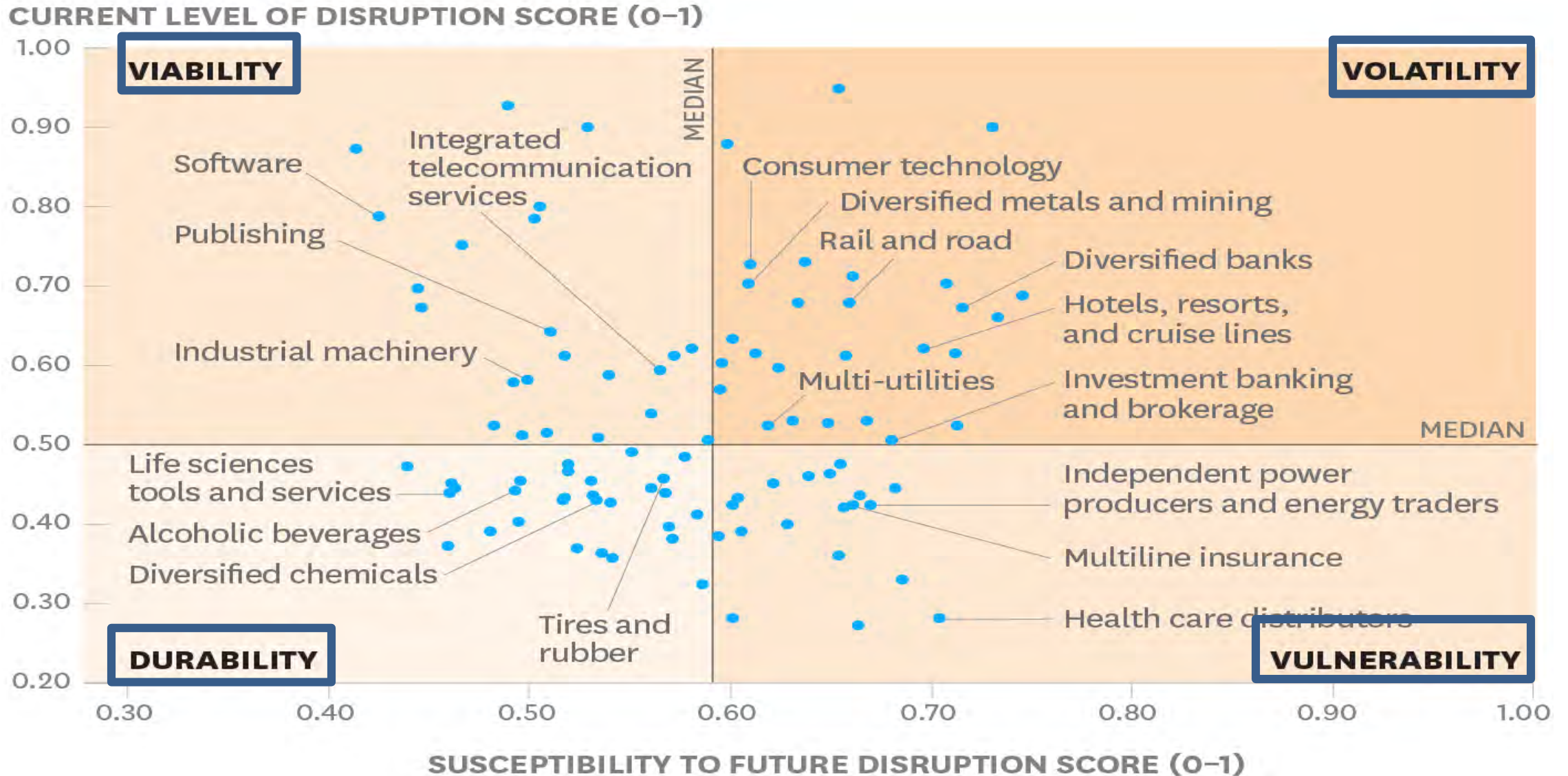
Data Analytics Might Rule the World

Economic Leadership Multifactor Analysis

200 Factors for top 100 Metros

Business Climate (building costs, adjusted COL, household disposable income, rental costs, housing costs, traffic congestion, crime rates, regulatory and legal rankings)

Workforce/Education (educational attainment, standardized tests scores, education expenditures, HB1 visas)

Innovation (private funded R&D, patents, tech growth, STEM completers, broadband penetration, VC, biz birth rates)

Demographics (population change, projected population growth, age dependency, out-of-state & foreign in-migration, millennial growth, age, poverty)

Economy (GDP, GDP Growth, wages, employment growth, unemployment, economic diversity)

1) Raleigh
2) Austin
3) Seattle
4) Dallas
5) Charlotte
6) Nashville
7) St Lake City
8) San Francisco
9) Durham
10) Atlanta

ECONOMIC LEADERSHIP

Talent Attraction is the Top Competitive Factor

Brain Attraction Index Components Measured for 933 Metros & Micros Across the County

- **Change in Number of People with Advanced Degrees**
- **Change in STEM Jobs**
- **Number of STEM Jobs**
- **Median Hourly Wage for STEM Jobs – Cost of Living Adjusted**
- **Net Business Generation**
- **Change in White Collar Jobs**
- **Science & Engineering Graduates**
- **Number of People with Advanced Degrees**

Top 10 Brain Attraction Index Areas

1 Charlottesville, VA

2 San Jose-Sunnyvale-Santa Clara, CA

3 Raleigh-Cary, NC

4 Denver-Aurora-Lakewood, CO

5 Charlotte-Concord-Gastonia, NC-SC

6 Austin-Round Rock, TX

7 Palm Bay-Melbourne-Titusville, FL

8 Portland-Vancouver OR-WA

9 Columbus, OH

10 Fort Collins, CO
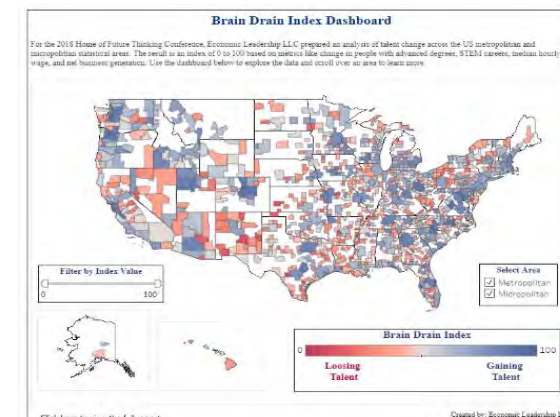
Source: EL calculations based on EMSI 2018

Acceleration- Hyper Connectivity-Disruption and a Data Deluge

Acceleration- Hyper Connectivity-Disruption and a Data Deluge

ECONOMIC
LEADERSHIP

USA Nonfarm Payroll Employment

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

Source: US Bureau of Labor Statistics

ECONOMIC LEADERSHIP

U.S. Annual % Jobs Change
1990-2018

United States

Source: US Bureau of Labor Statistics
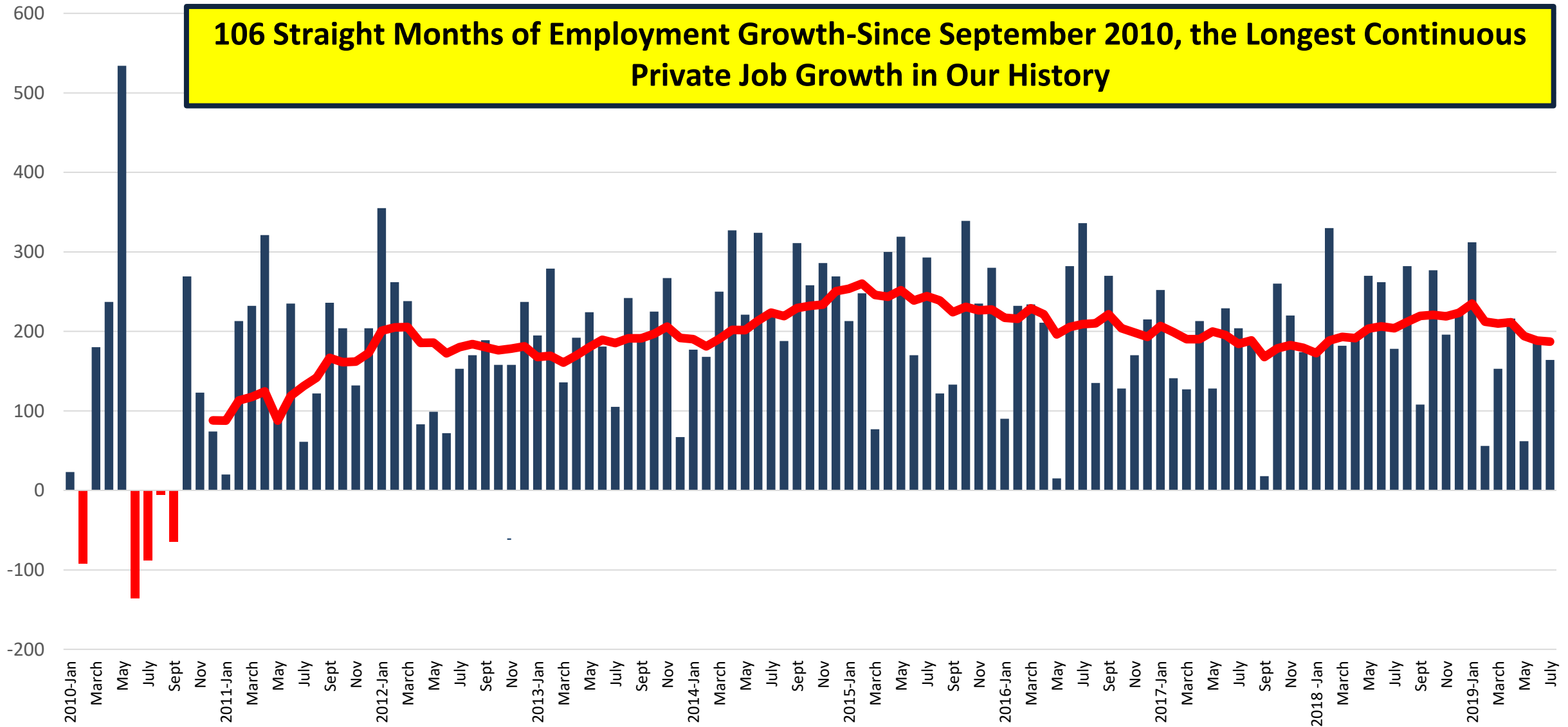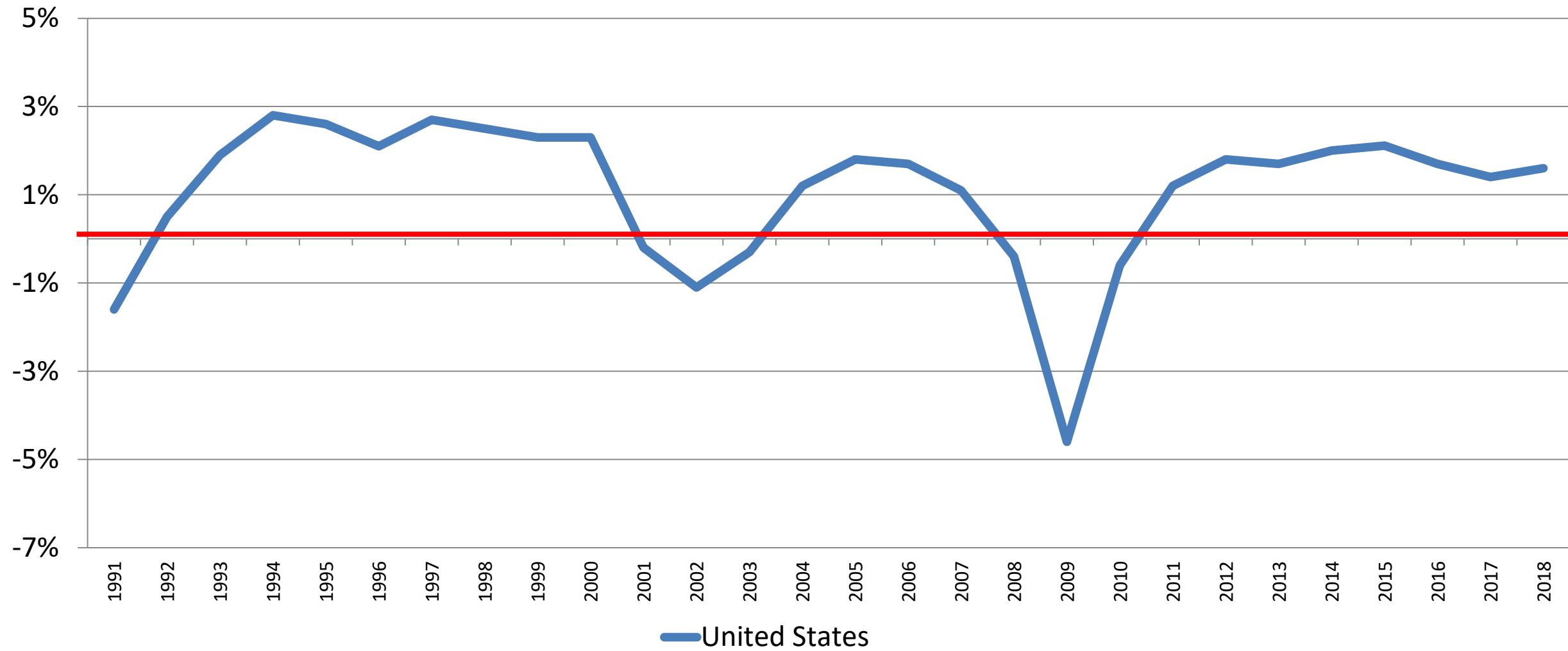
West Virginia Annual % Jobs Change 1990-2018
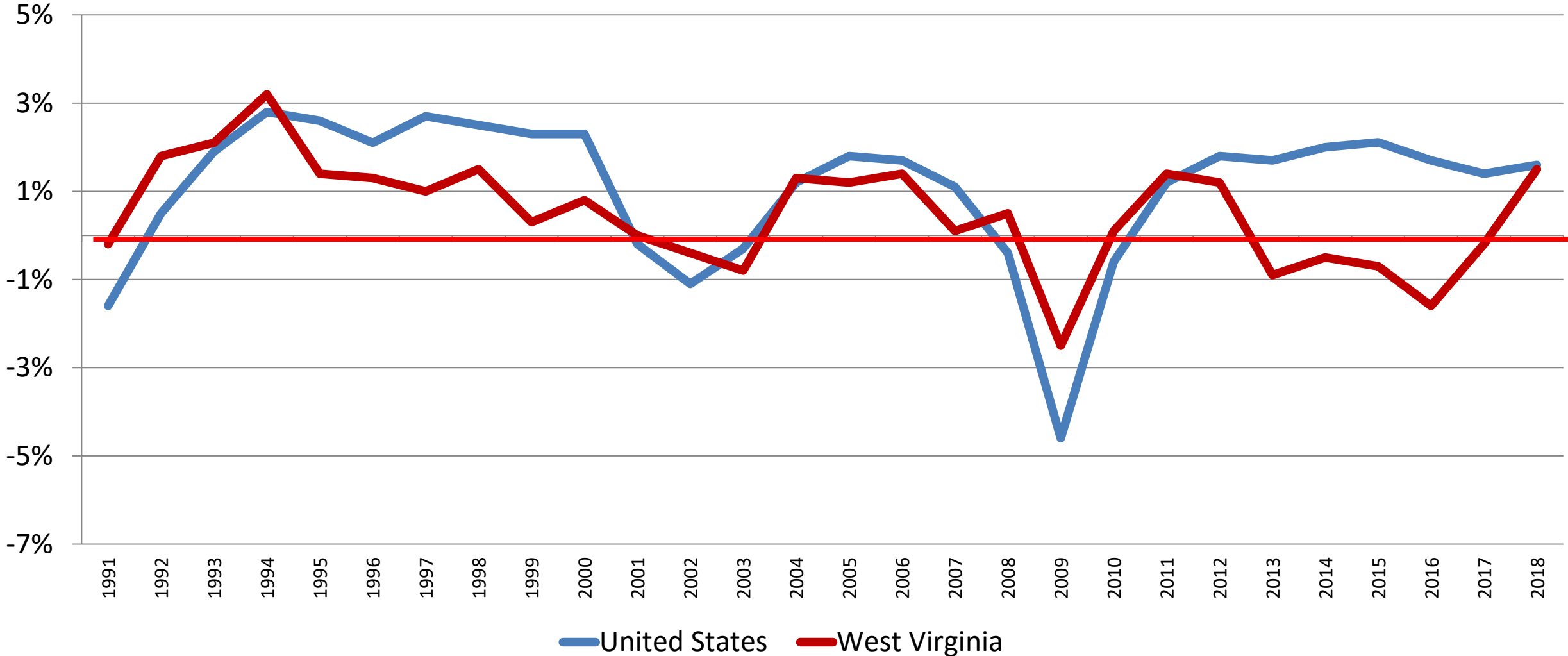
Legend: United States — West Virginia

Source: US Bureau of Labor Statistics

ECONOMIC LEADERSHIP

U.S. Unemployment Rate

HIGHEST 10% OCTOBER, 2009

Unemployment Has Been Dropping for Almost 10 Years and is Currently at a 50-Year Low

July, 2019 3.7%

Source: US Bureau of Labor Statistics

ECONOMIC LEADERSHIP

U.S. Unemployment Rate

U.S. HIGHEST 10% OCTOBER, 2009
WV HIGHEST 8.8% OCTOBER, 2010

Unemployment Has Been Dropping for Almost 10 Years and is Currently at a 50-Year Low

U.S. July, 2019 3.7%
WV July, 2019 4.7%

Source: US Bureau of Labor Statistics

ECONOMIC LEADERSHIP

5 Year Employment Gains By Sector for the United States and West Virginia 2013-2018

Sector	WV	USA
Construction	19.5%	24.4%
Manufacturing	-2.7%	5.6%
Trade, Transport & Utilities	-4.2%	7.2%
Financial	-4.0%	8.7%
Professional & Technical Services	6.3%	13.0%
Education & Health Services	4.1%	12.3%
Leisure & Hospitality	-0.8%	14.7%
Government	-0.7%	2.8%

Legend: ■ WV ■ USA

Source: US Bureau of Labor Statistics

ECONOMIC LEADERSHIP
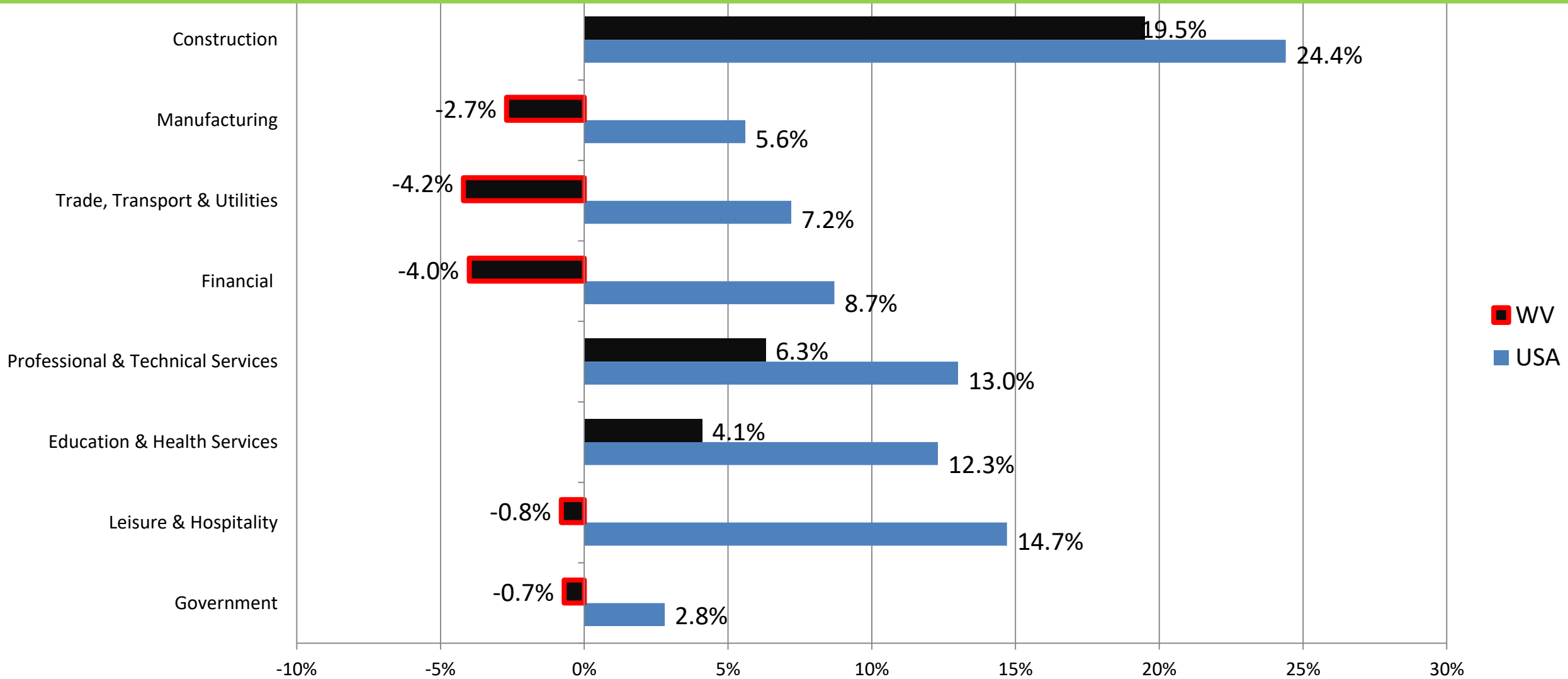
Percentage Change in Jobs 2017 –2018 By State

1-Year View

Source: US Bureau of Labor Statistics

One Year Percentage Change in Jobs
2017 –2018

Source: US Bureau of Labor Statistics

Projected Change in Jobs in West Virginia
WV Change in Average Annual Number of Jobs - 2019 to 2029
West Virginia state average 4.2%

Growth above state average

Growth below state average

Losing jobs

ECONOMIC LEADERSHIP
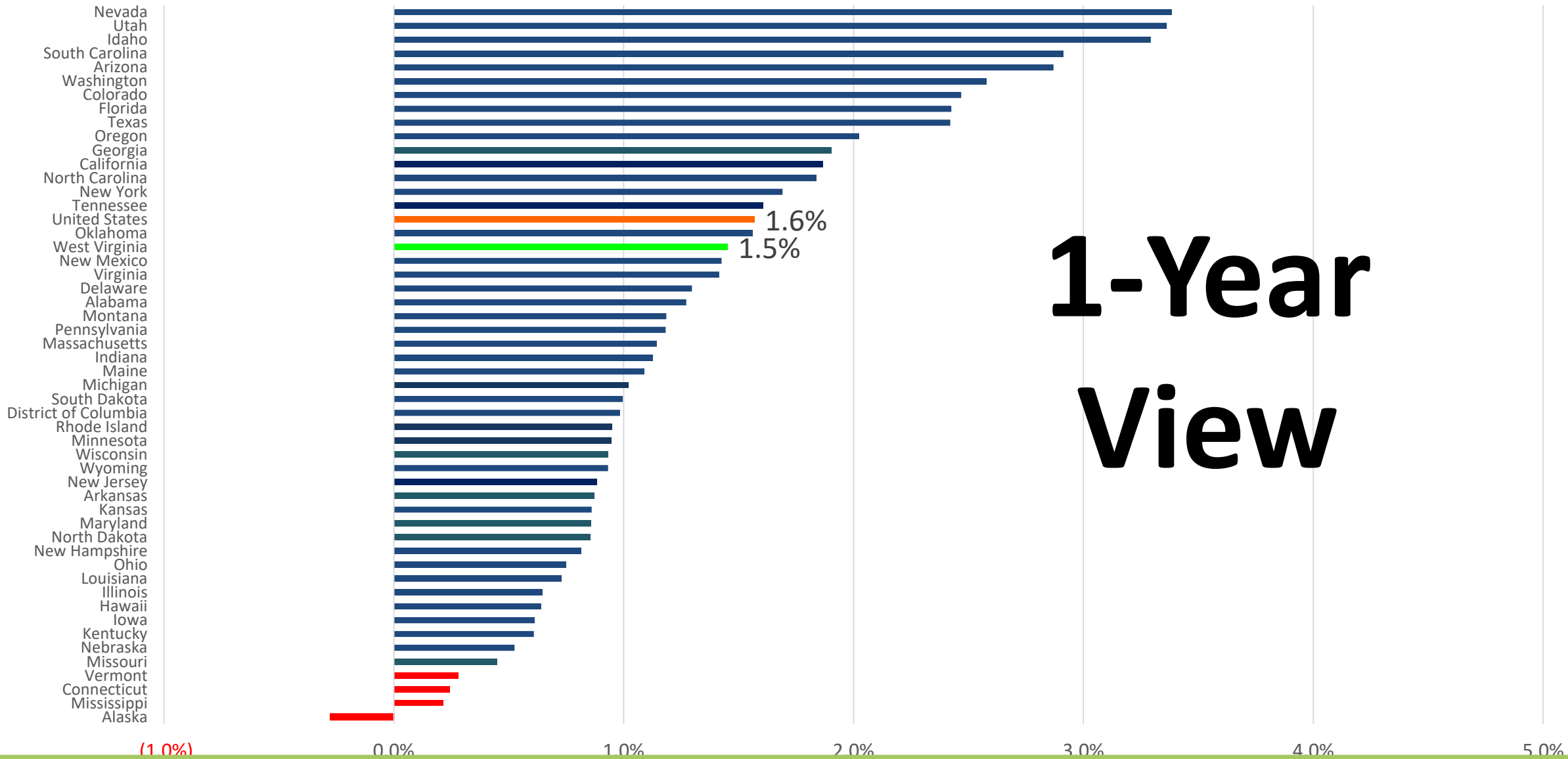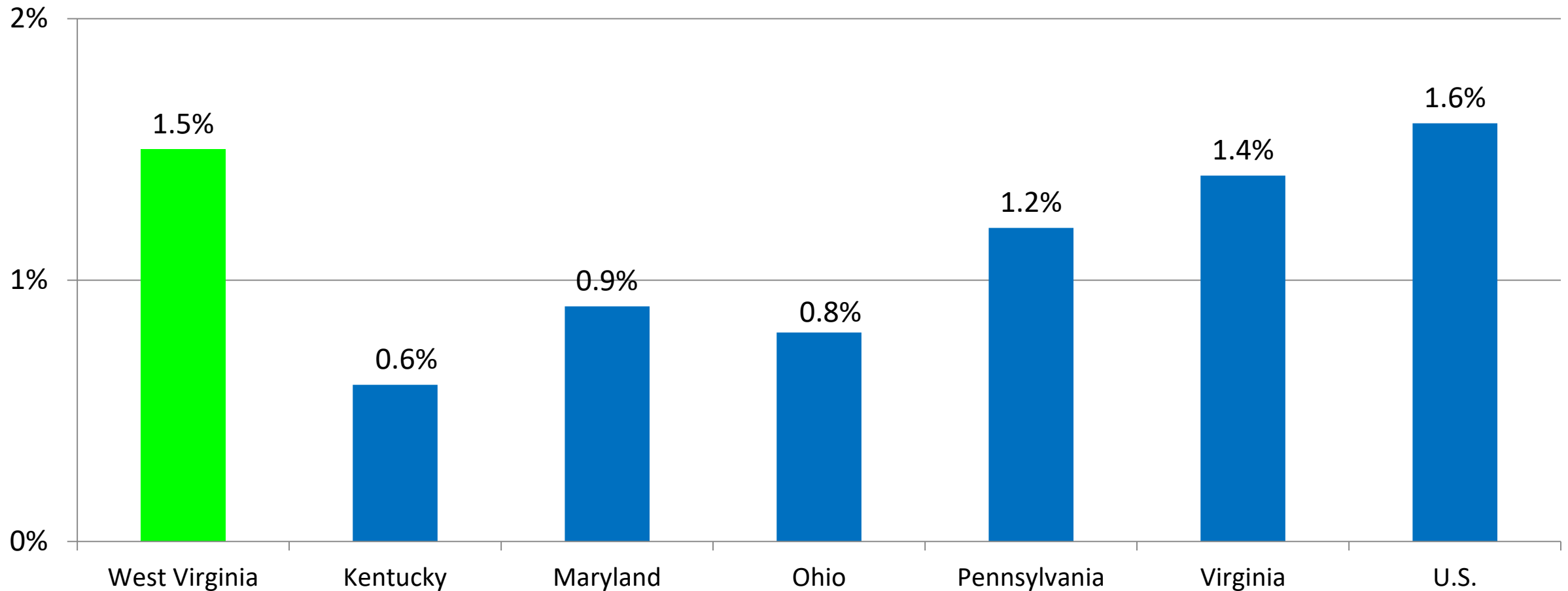
Annual growth of the real Gross Domestic Product (GDP) of the United States from 1990 to 2018
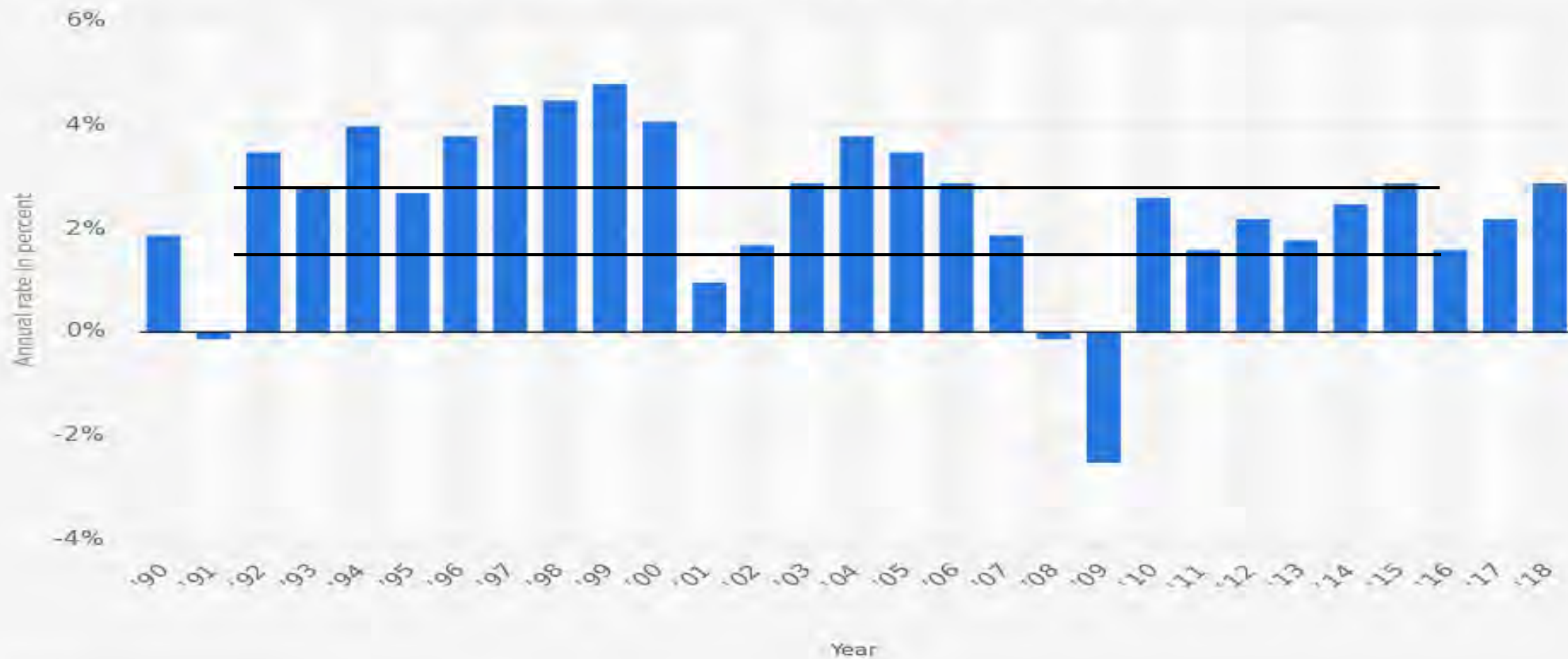
ECONOMIC
LEADERSHIP

Percent Change in Real GDP by State, 2017–2018

State	Value
WA	5.7
OR	3.4
ID	4.1
MT	0.9
ND	2.5
MN	2.2
NH	2.2
VT	1.2
ME	1.9
MA	2.7
NV	3.2
UT	4.3
WY	0.3
SD	1.3
WI	2.5
MI	2.7
NY	2.1
RI	0.6
CT	1.0
CA	3.5
CO	3.5
NE	1.5
IA	1.4
IL	2.1
IN	1.9
OH	1.8
PA	2.1
NJ	2.0
DE	0.3
MD	1.6
DC	2.1
AZ	4.0
NM	1.8
KS	1.9
MO	2.3
KY	1.4
WV	2.4
VA	2.8
NC	2.9
OK	1.8
AR	0.9
TN	3.0
SC	1.6
TX	3.2
LA	1.1
MS	1.0
AL	2.0
GA	2.6
FL	3.5
HI	1.0
AK	-0.3

Quintile growth rates
- 3.2 to 5.7
- 2.3 to 3.2
- 1.9 to 2.3
- 1.2 to 1.9
- -0.3 to 1.2

U.S. growth rate = 2.9

U.S. Bureau of Economic Analysis

ECONOMIC LEADERSHIP

Percentage Change in GDP Per Capita 2008 – 2018

10-Year View

Source: US Bureau of Economic Analysis

10 Year Percentage Change in GDP Per Capita
2008 –2018

Source: US Bureau of Economic Analysis
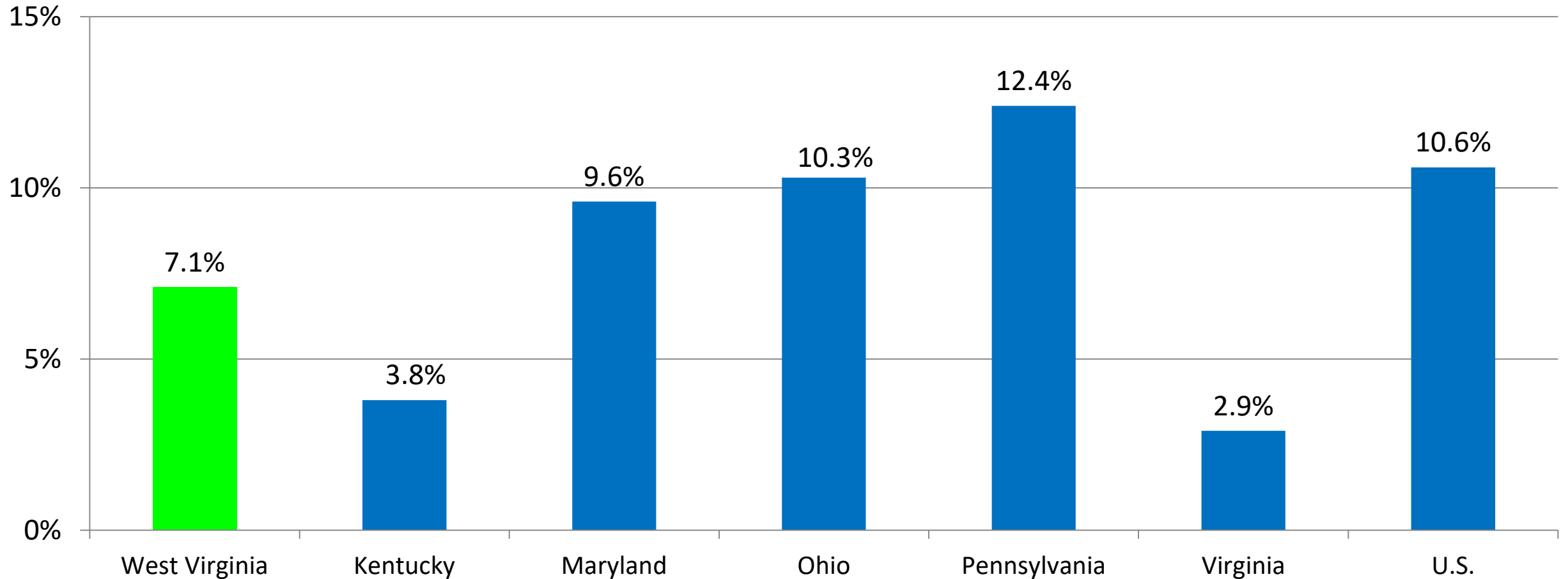
Percentage Change in GDP Per Capita 2015 –2018

3-Year
View

California
Washington
Oregon
Maryland
Michigan
New York
Georgia
Arizona
Massachusetts
Hawaii
Kansas
Maine
Utah
Pennsylvania
United States — 4.7%
West Virginia — 4.7%
New Hampshire
Tennessee
Colorado
Wisconsin
Florida
Idaho
Illinois
Vermont
Minnesota
Indiana
Alabama
Ohio
New Jersey
South Carolina
Virginia
North Carolina
Nevada
Kentucky
Mississippi
District of Columbia
New Mexico
Missouri
Rhode Island
Arkansas
Texas
Connecticut
Iowa
Nebraska
Louisiana
Oklahoma
Wyoming
South Dakota
Alaska
Montana
Delaware
North Dakota

-15.0%   -10.0%   -5.0%   0.0%   5.0%   10.0%

ECONOMIC LEADERSHIP

Source: US Bureau of Economic Analysis

Top 15 Countries GDP Growth Projections 2019

76% of the Global Economy

Country	Growth
United States	2.2%
China	6.2%
Japan	1.0%
Germany	0.8%
United Kingdom	1.3%
India	6.7%
France	1.2%
Italy	0.1%
Brazil	0.8%
Canada	1.6%
South Korea	1.9%
Russia	1.3%
Australia	2.2%
Spain	2.2%
Mexico	0.4%

ECONOMIC LEADERSHIP

Source: The Economist August 17 2019
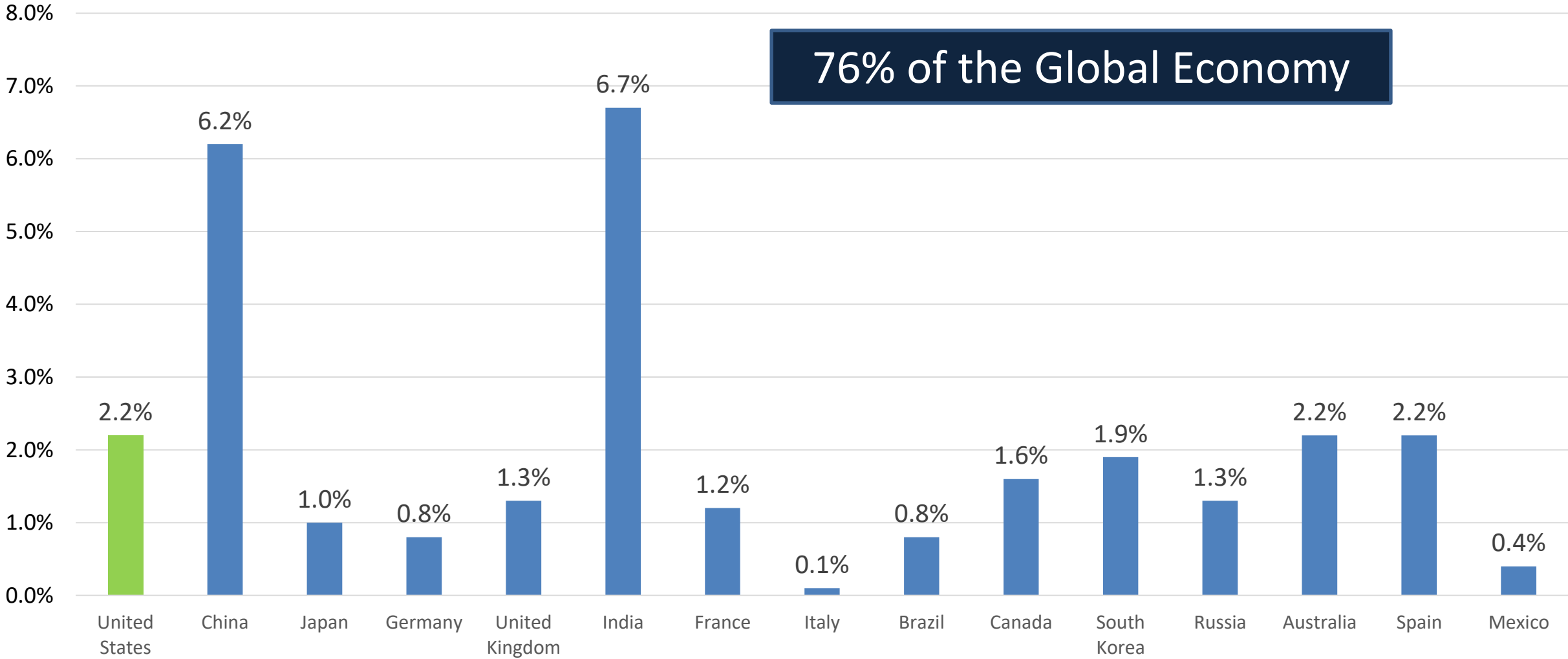
West Virginia Ranked Compared to All States

	Job Growth	Wage Growth	GDP Growth
1 Year 2017 – 2018	17	2	19
5 Year 2013 – 2018	48	19	47
10 Year 2008 - 2018	51	9	44

DC is included so that all rankings are of 51 "states"

ECONOMIC LEADERSHIP

West Virginia Rankings

	Tax Foundation 2019	2016
• Overall Rank	#19	#20
• Corporate Tax Rank	#13	#20
• Individual Income Tax Rank	#28	#25
• Sales Tax Rank	#17	#12
• Unemployment Insurance Rank	#30	#23
• Property Tax Rank	#18	#16

Cato Institute – Freedom in the 50 States 2018 rankings

- Fiscal Policy   #39
- Regulatory Policy   #29
- Personal Freedom   #12

ECONOMIC LEADERSHIP

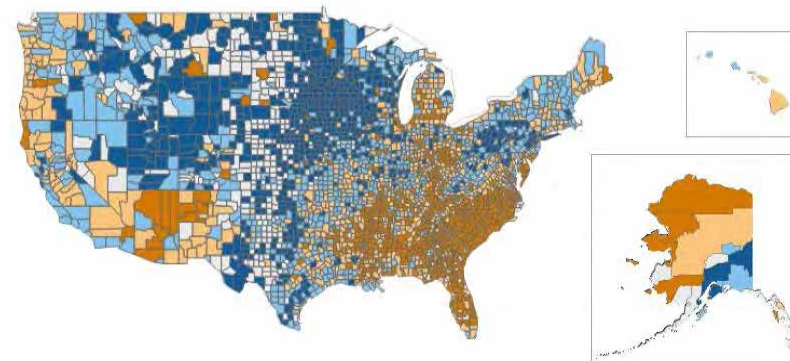# Other 3rd Party Rankings

- Forbes Best States for Business 2018   #49
- CNBC Best States 2019   #45
- US News Best States 2018   #47
- Chief Executive 2019   #39
- Mercatus State Fiscal Condition 2018   #29

ECONOMIC
LEADERSHIP

- Globalization is changing
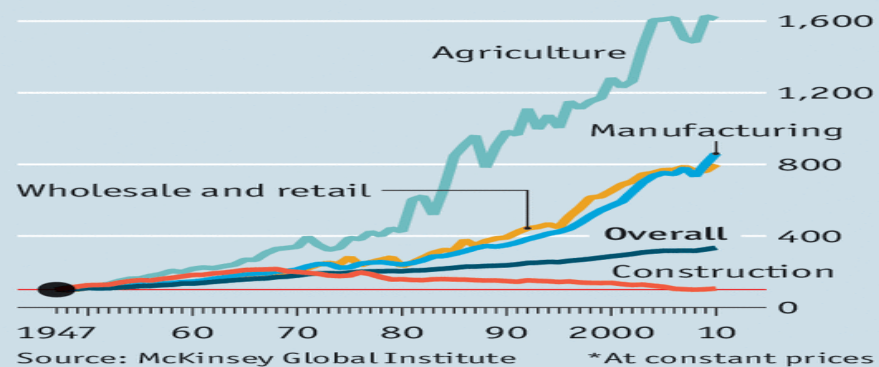- US Economic dynamism has been falling

Economic mobility in US counties

Most upwardly mobile — Least upwardly mobile — Insufficient data

Source: Equality of Opportunity Project (http://equality-of-opportunity.org/data/)[2]; data available in 2,769 counties and unavailable in 372.

Unlearning by doing
United States, gross value–added*
Per hour worked, 1947=100

Agriculture — 1,600
— 1,200
Manufacturing — 800
Wholesale and retail
Overall — 400
Construction
— 0

1947 60 70 80 90 2000 10

Source: McKinsey Global Institute   *At constant prices
Economist.com

ECONOMIC
LEADERSHIP

GLOBAL EROSION
OF DEMOCRATIC NORMS

ELECTIONS
Over the last 4 years, electoral processes have declined more than any other measure of freedom.

TERM LIMITS FOR EXECUTIVES
Leaders in 34 countries have tried to revise term limits in the last 13 years and were successful 31 times.

ETHNIC CLEANSING
Instances of forced changes in the ethnic makeup of a country are more widespread than in 2005.

Freedom House

FREEDOM OF EXPRESSION
Freedom of expression, already in decline, has taken a steeper downturn in the past 6 years.

SAFETY OF EXPATS
Nearly half of Not Free countries have physically targeted their nationals and diasporas in other countries in the last 13 years.

RIGHTS OF MIGRANTS
Since the migration crisis emerged in 2015, eight democracies have declined due to the government's treatment of migrants.

The Economist

Venezuela erupts
How to defend Taiwan
India's internet tycoon bets big
Drones: hovering with intent

JANUARY 26TH–FEBRUARY 1ST 2019

Slowbalisation
The future of global commerce

ECONOMIC LEADERSHIP

How Much States Rely on Foreign Trade

Blue shades Total GDP
Pink circle size Share of Trade

TOP 5
STATES MOST DEPENDENT ON FOREIGN TRADE
----
1. MICHIGAN 38%
2. LOUISIANA 35.1%
3. SOUTH CAROLINA 34.8%
4. TENNESSEE 34.7%
5. KENTUCKY 34.3%

TOP 5
STATES WITH LARGEST VOLUME IN FOREIGN TRADE
----
1. CALIFORNIA $573.6B
2. TEXAS $500.3B
3. NEW YORK $216.2B
4. ILLINOIS $184.5B
5. MICHIGAN $178.1B

AK 13.4%
HI 7%

WA 30.9%
MT 11.9%
ND 12.4%
MN 14.8%
WI 15%
MI 38%
NY 15.1%
MA 12.1%
RI 18.4%
ME 11.1%
VT 24.1%
NH 18%

ID 14.3%
WY 5.8%
SD 5.3%
IA 13%
IL 23.7%
IN 24.6%
OH 19.6%
PA 16.8%
NJ 26.7%
CT 16.3%

OR 16%
NV 13%
CO 6.8%
NE 9.4%
MO 10.9%
KY 34.3%
WV 12.9%
VA 9%
MD 11.4%
DE 21.2%

CA 23.1%
UT 17.2%
NM 6.5%
KS 15%
AR 11.6%
TN 34.7%
NC 16.4%
SC 34.8%
DC 1.3%

AZ 14.5%
OK 8.7%
LA 35.1%
MS 23.5%
AL 20.6%
GA 25.5%

TX 30.7%
FL 14.3%

Share of Trade in State GDP
100%
MI 38%
DC 1.3%

$70 | $150 | $350 | $900 | $2,481
GDP ($ bln)

howmuch.net

ECONOMIC LEADERSHIP

West Virginia

Top Sources of FDI in West Virginia
(48 Total Announced Greenfield Projects)

- Other — 38%
- Japan — 23%
- Italy — 13%
- Canada — 10%
- China — 8%
- Germany — 8%

Legend:
- Other
- Germany
- China
- Canada
- Italy
- Japan
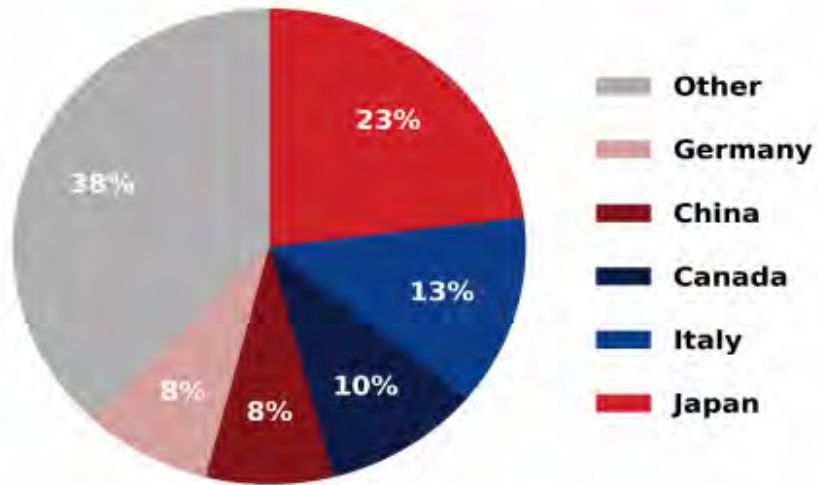
Top Industry Sectors in West Virginia

Industry Sector	# of Projects
Building Materials	4
Industrial Equipment	5
Plastics	5
Coal, Oil & Gas	6
Automotive Components	10
Other Industries	18

# of Projects

ECONOMIC LEADERSHIP

US Trade Administration www.selectusa.gov
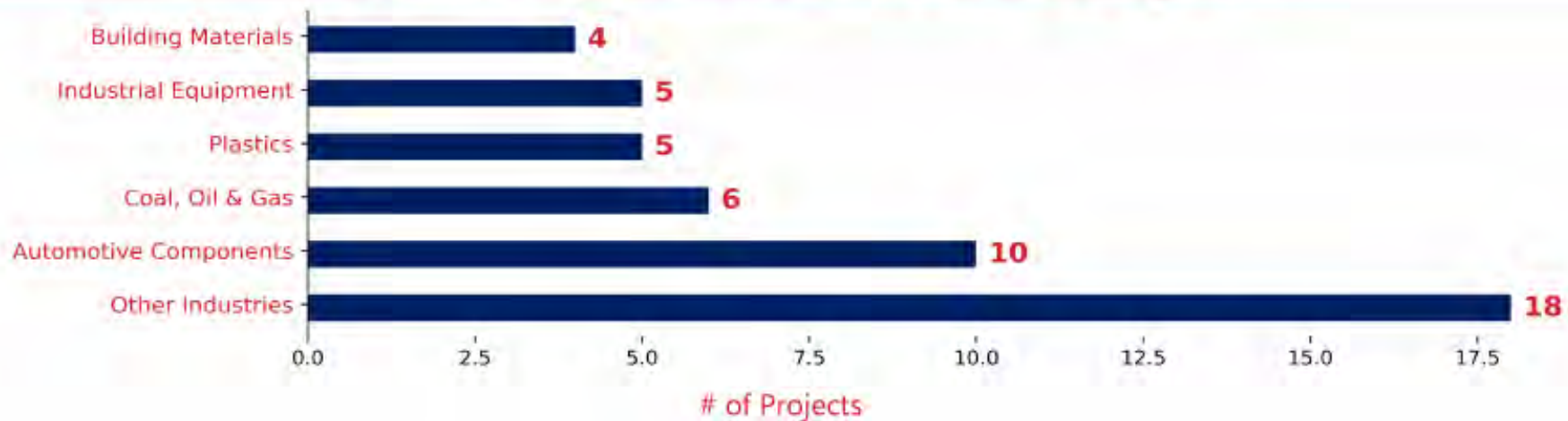
Firm Startup (Birth) Rate Near All-time Lows

Business Dynamism is a growing Issue

Source: U.S. Census Bureau

ECONOMIC LEADERSHIP
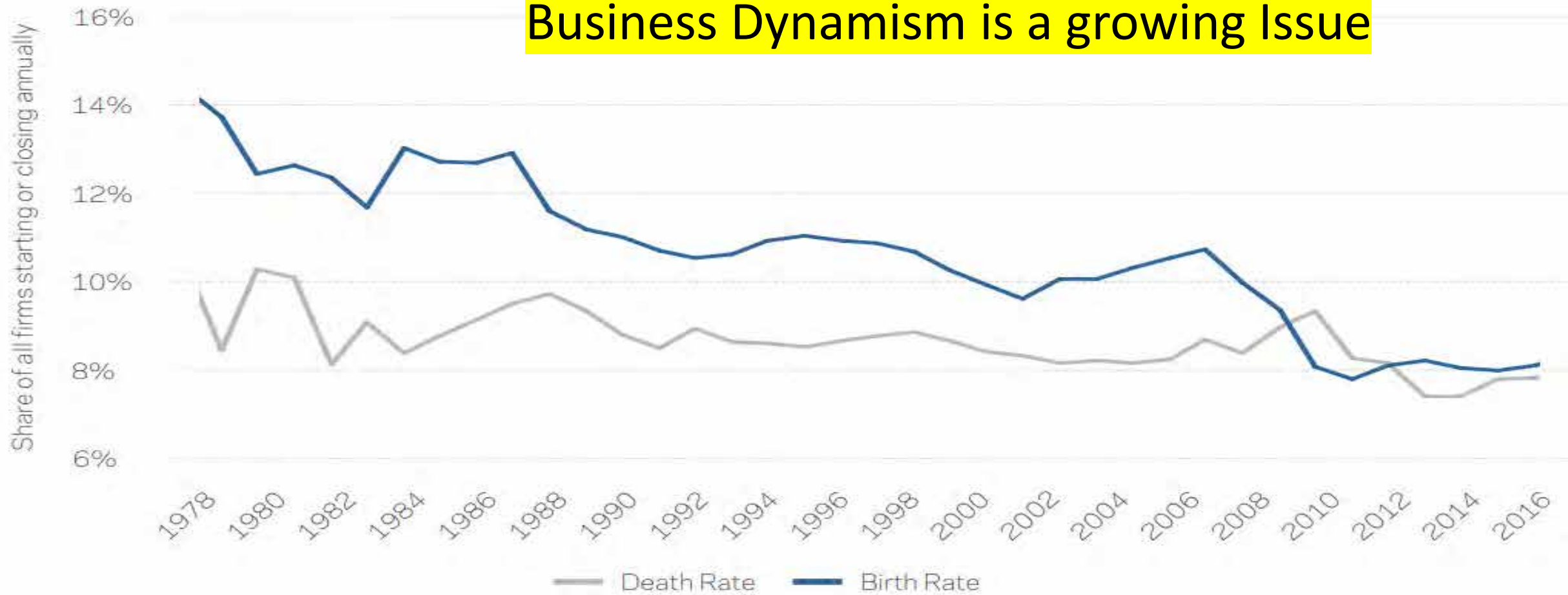
Number of US Metros Where Firm Deaths Outnumber Births
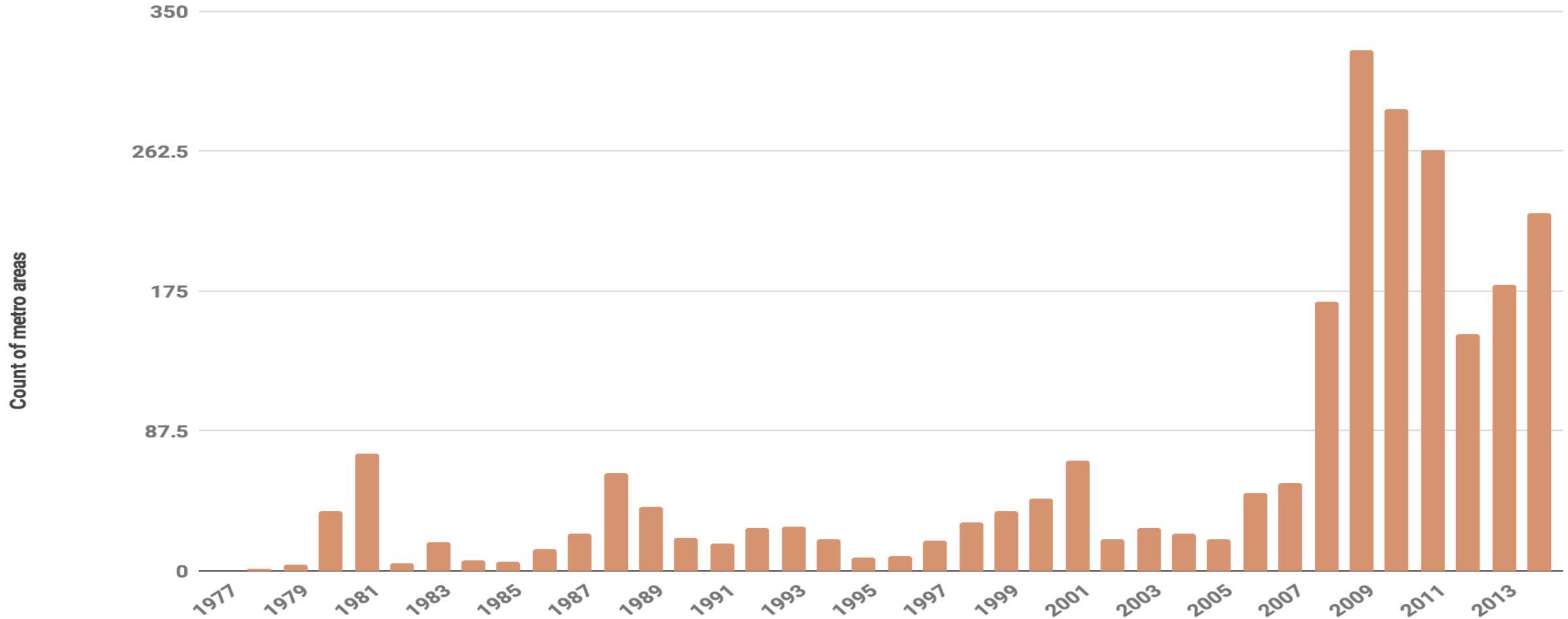
US Employment by Size of Firm
1998 & 2018
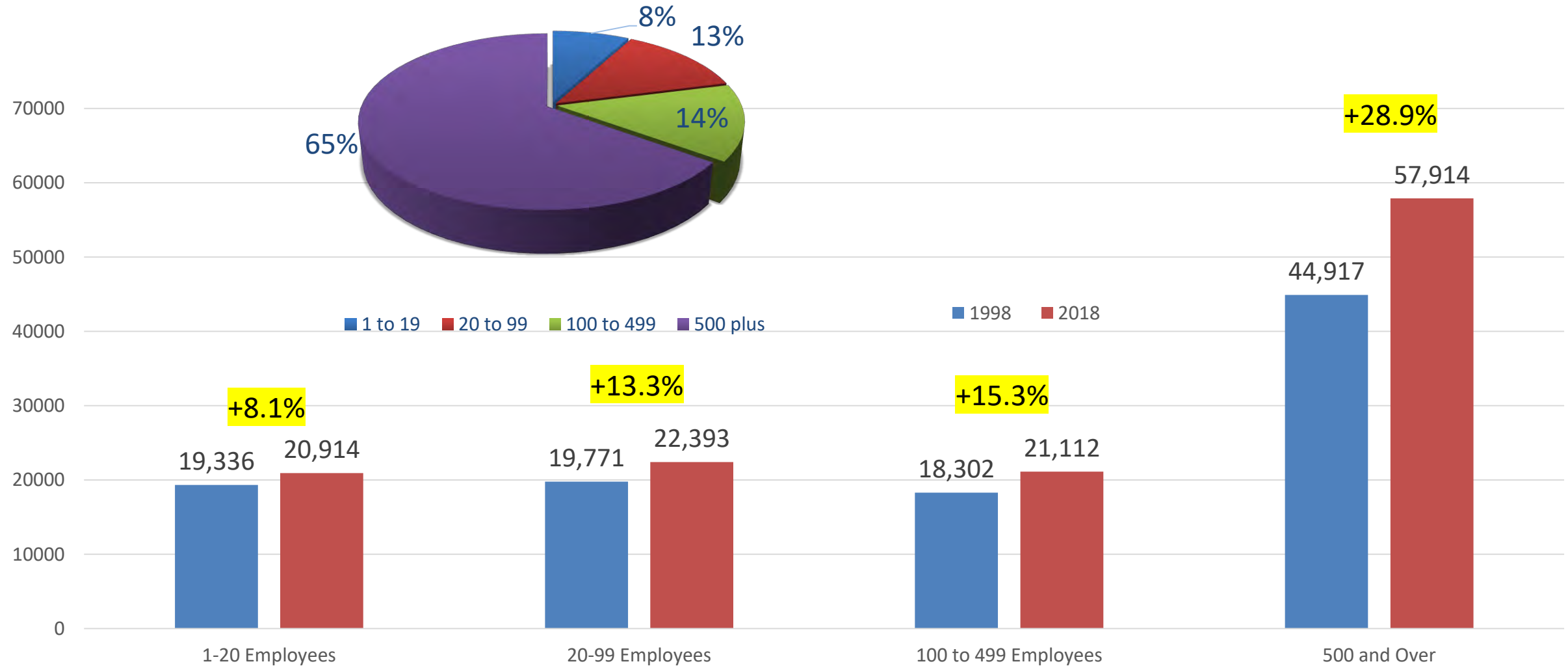
More Corporations are Merging

Thousands

Corporate mergers and acquisitions in the US

Since 2000 concentration has increased by 60% in ¾ of sectors
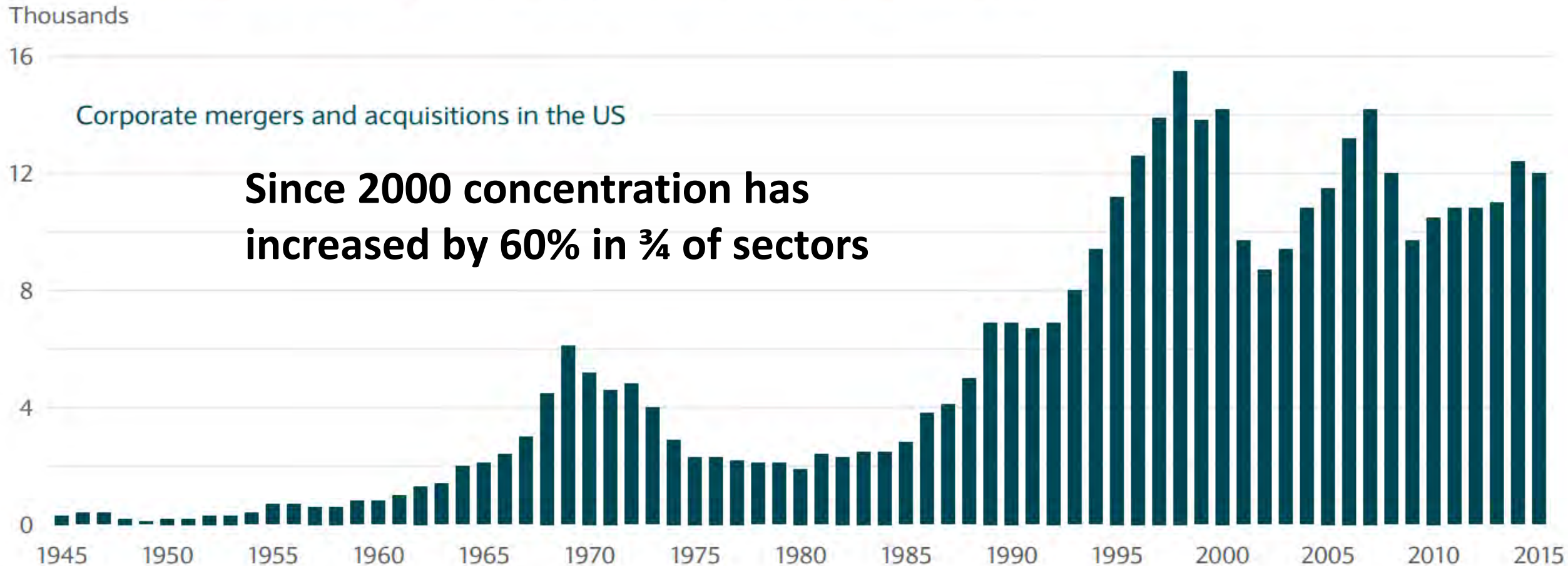
Source: Institute for Mergers, Acquisitions, and Alliances

ECONOMIC LEADERSHIP

Source: Barclays Research

Corporate Profits Have Risen as Share of GDP

% GDP

9%

6%

5%

Aftertax
profit share
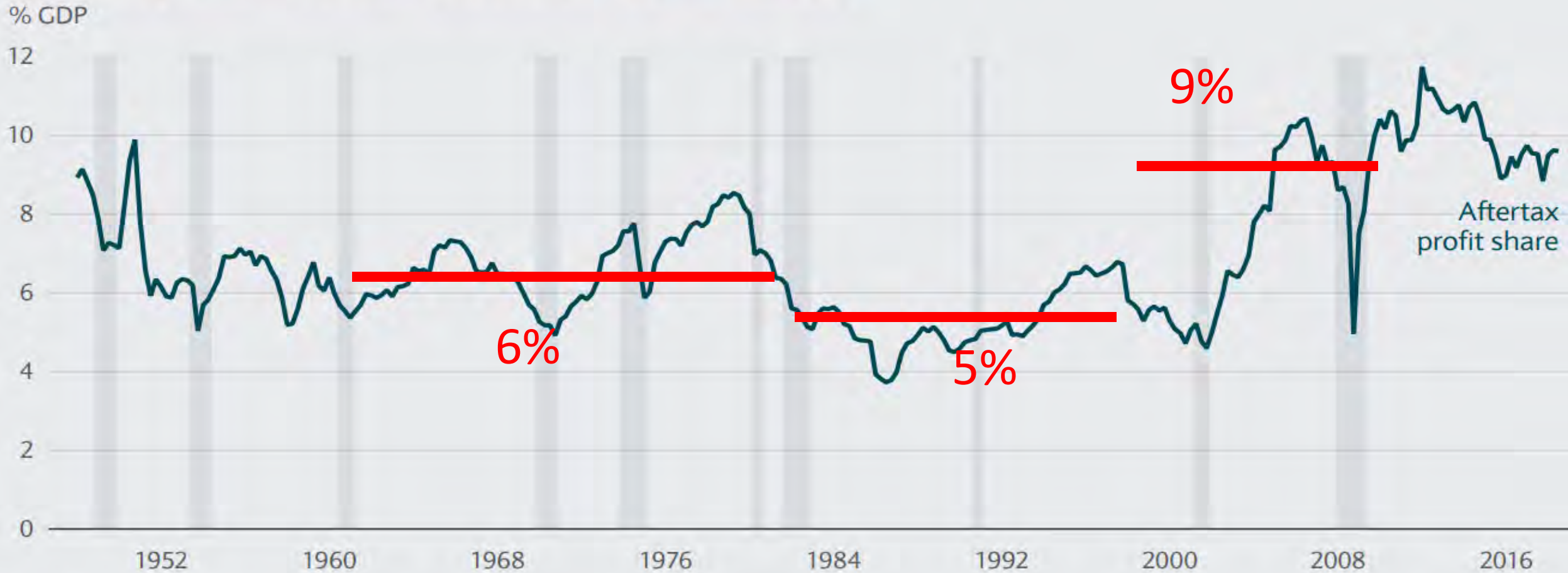
Source: Bureau of Economic Analysis, Haver Analytics, Barclays Research

Source: Barclays Research

Thoughts About the US Economy in the Near Future

- The Next Cycle
- Rising Healthcare Costs
- US-China Interconnectivity
- Low Inflation
- Rising Gas Costs
- Widening Household Winners and Losers

ECONOMIC LEADERSHIP

Winning the Talent Wars
Rising Skill Demands and Mismatches, Automation, Robotics & Fear

ECONOMIC LEADERSHIP

Top Factors for Investment Decisions
33rd Annual Survey

1) Availability of skilled labor

2) Labor costs

3) Highway accessibility

4) Corporate tax rate

5) Tax exemptions

6) Quality of life

7) **State and local incentives**

8) **Energy availab. & costs**

9) **Available buildings**

10) **Occupancy costs**

11) **Shovel-ready land**

12) **Low union profile**

ECONOMIC LEADERSHIP

Source : Area Development

U.S. Annual Rates of Labor Force Growth
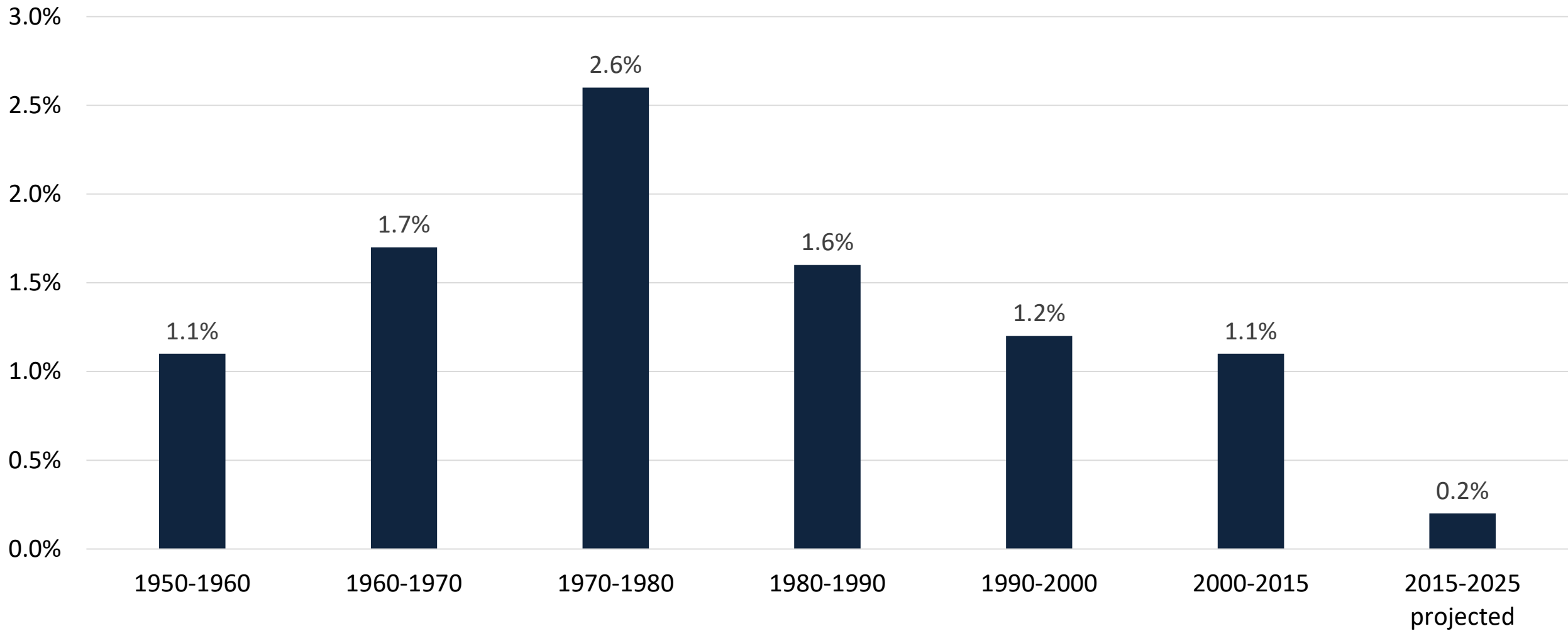
US Population & Prime Working Age
Change from Previous Year

2018 was the Lowest Birth Rate in 32 Years
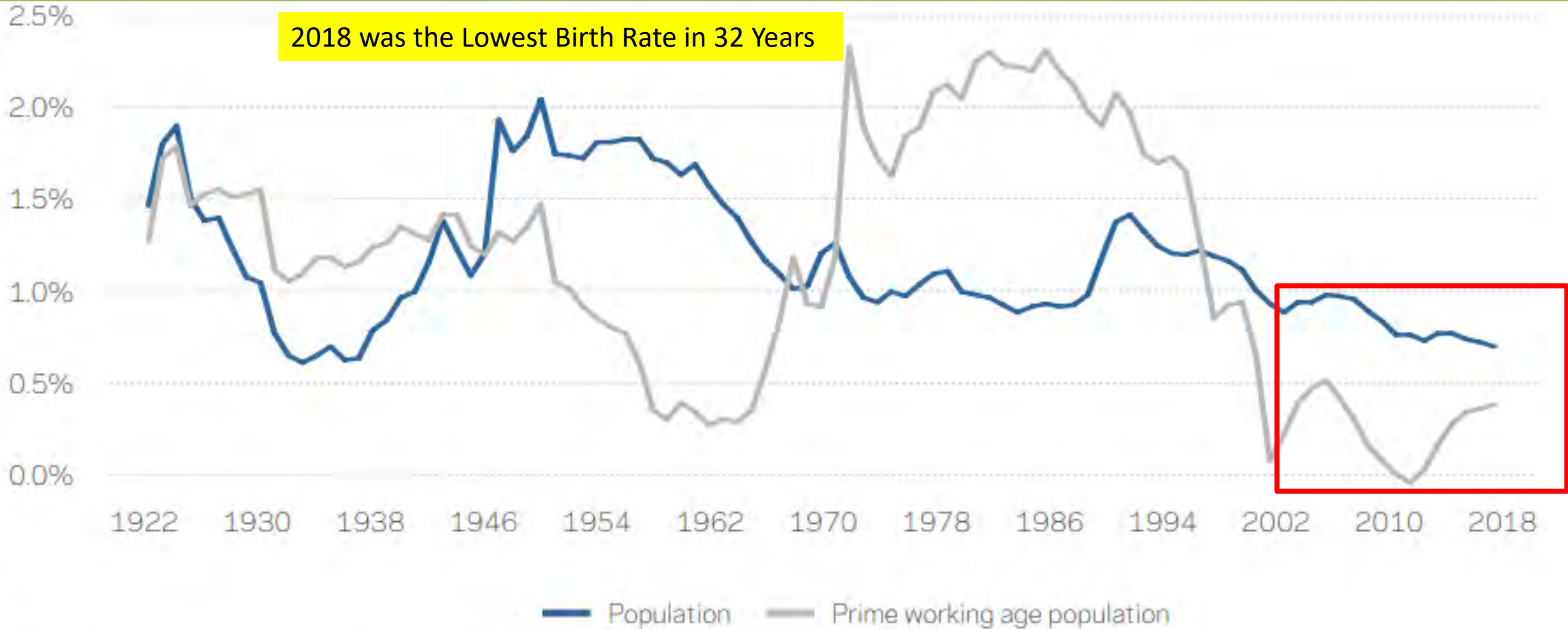
Source: U.S. Census Bureau, Moody's Analytics

County Population Change 2007-2017

Legend: More than 5% loss | Between 0 and 5% loss | Between 0 and 5% gain | More than 5% gain
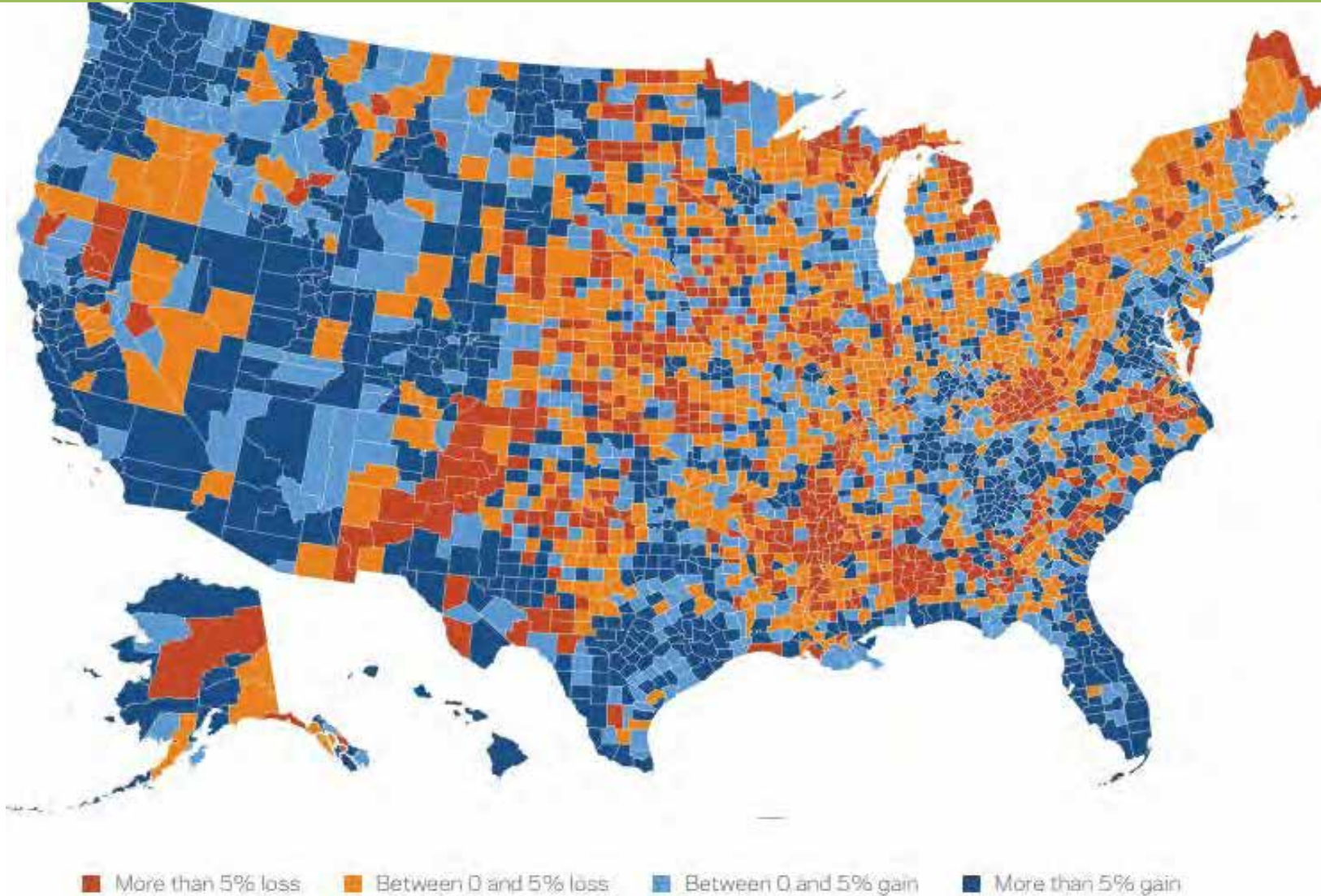
Source: U.S. Census Bureau, Moody's Analytics

Prime Working Age Population Change 2007-2017

More than 10% loss | Between 0 and 10% loss | Between 0 and 10% gain | More than 10% gain

ECONOMIC LEADERSHIP
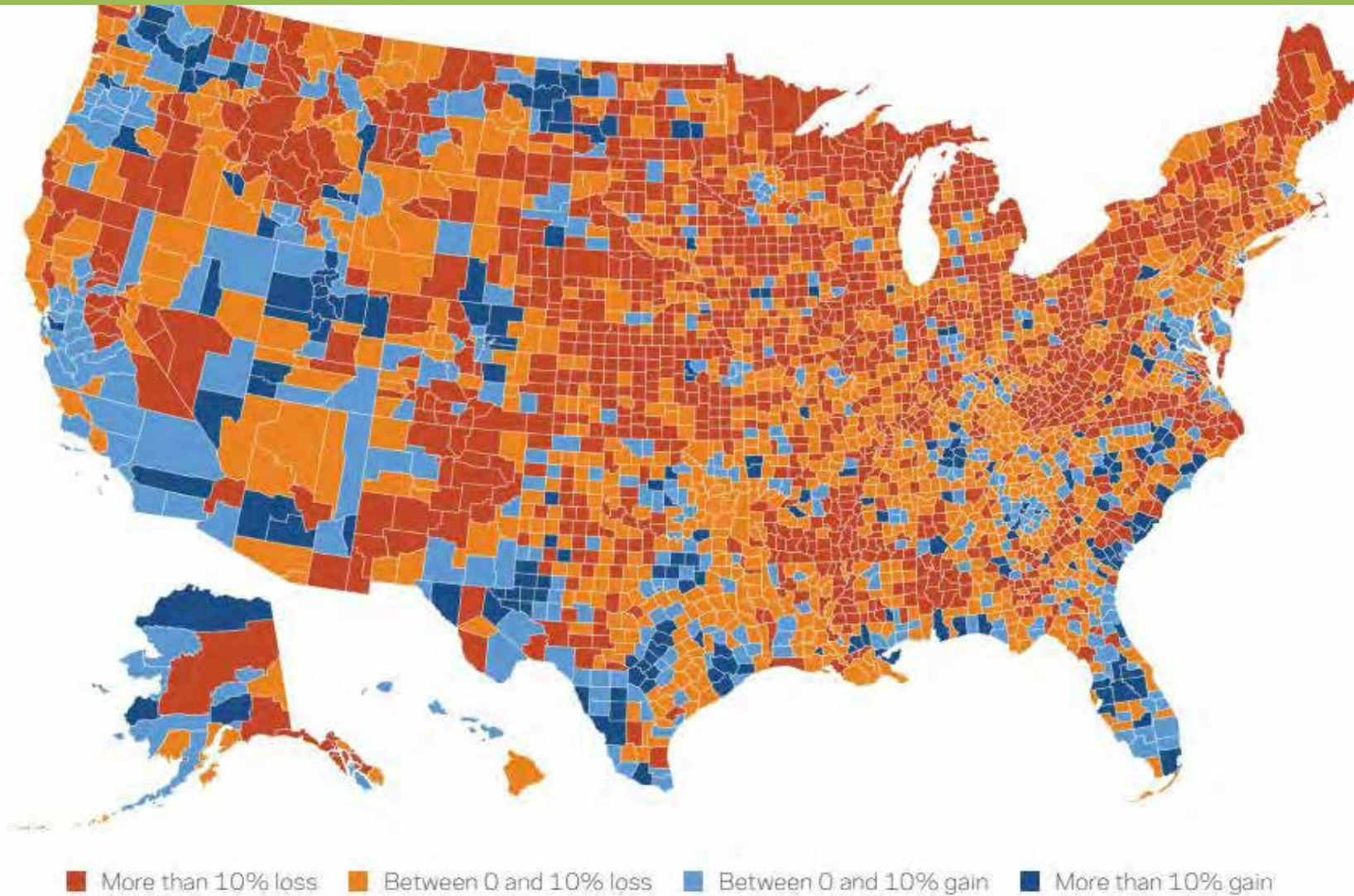
Annual Rate of Geographic Mobility 1990-2018
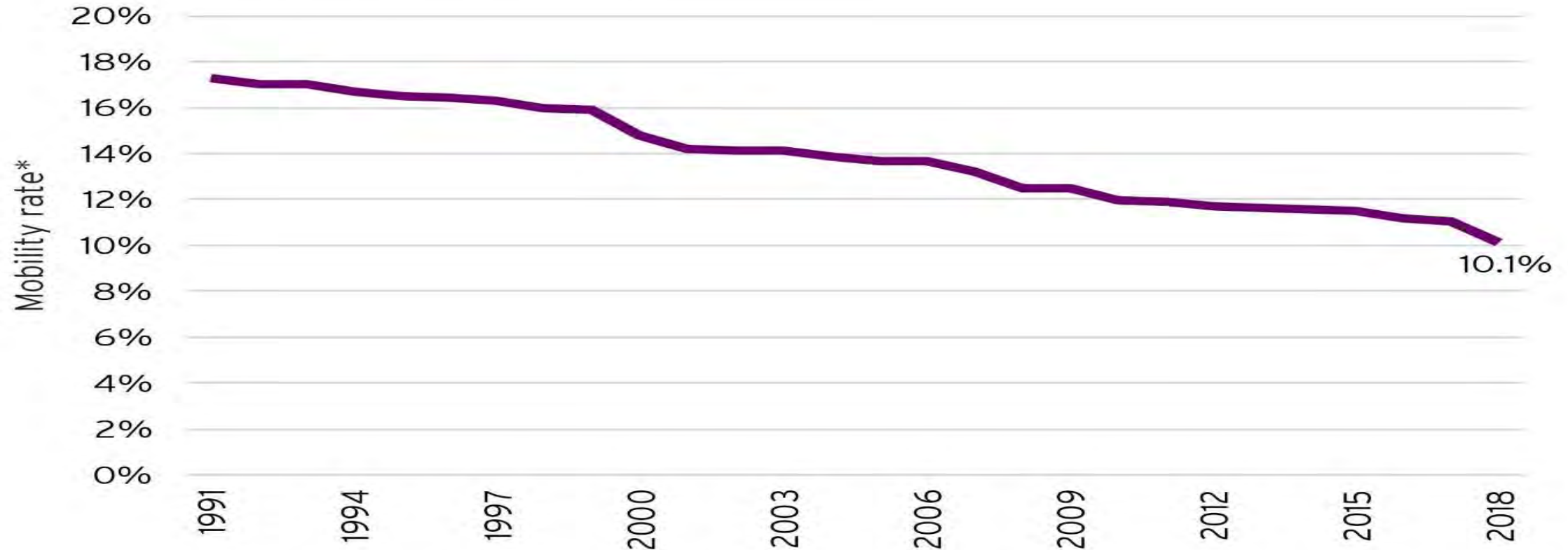
*Mobility rate is defined as the percent of the population changing residences over the 12 month period ending in March of the year shown.

Source: William H. Frey analysis of U.S. Census Bureau Current Population ASEC Supplement released November 27, 2018

B | Metropolitan Policy Program at BROOKINGS

ECONOMIC LEADERSHIP
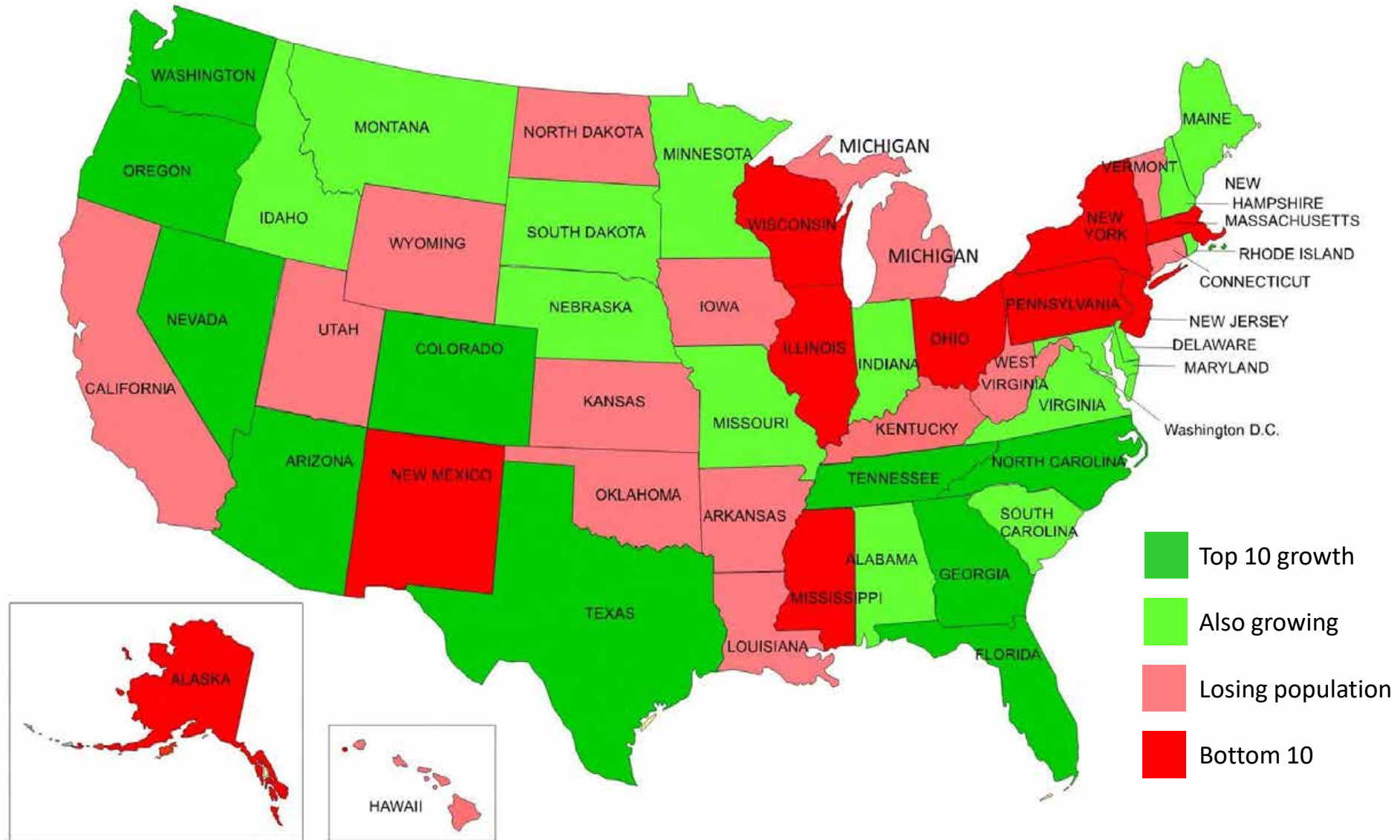
Percent change in population, July 1, 2017 — July 1, 2018

Legend: Less than -2% | -2 — -1% | -1 — 0% | 0 — 1% | 1 — 2% | Over 2%
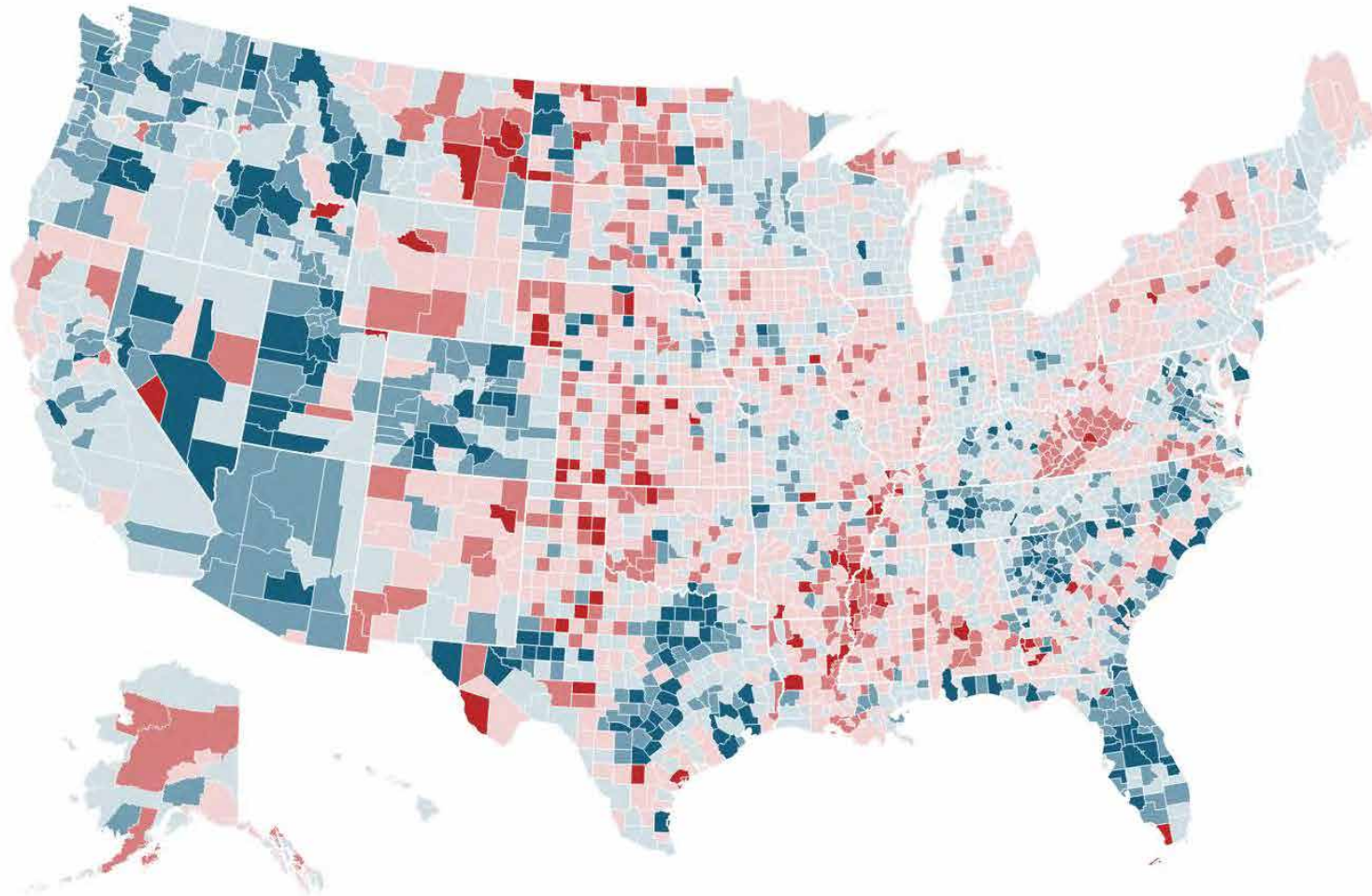
Source: US Census Bureau

BUSINESS INSIDER

ECONOMIC LEADERSHIP

Age 25 – 34 Annual Net Migration 2012-2017

Legend:
- Top 10 growth
- Also growing
- Losing population
- Bottom 10

West Virginia Projected Change in Population 2019-2029

West Virginia average -1.6%
U.S. average 3.2%

Gaining population

Losing population

ECONOMIC
LEADERSHIP
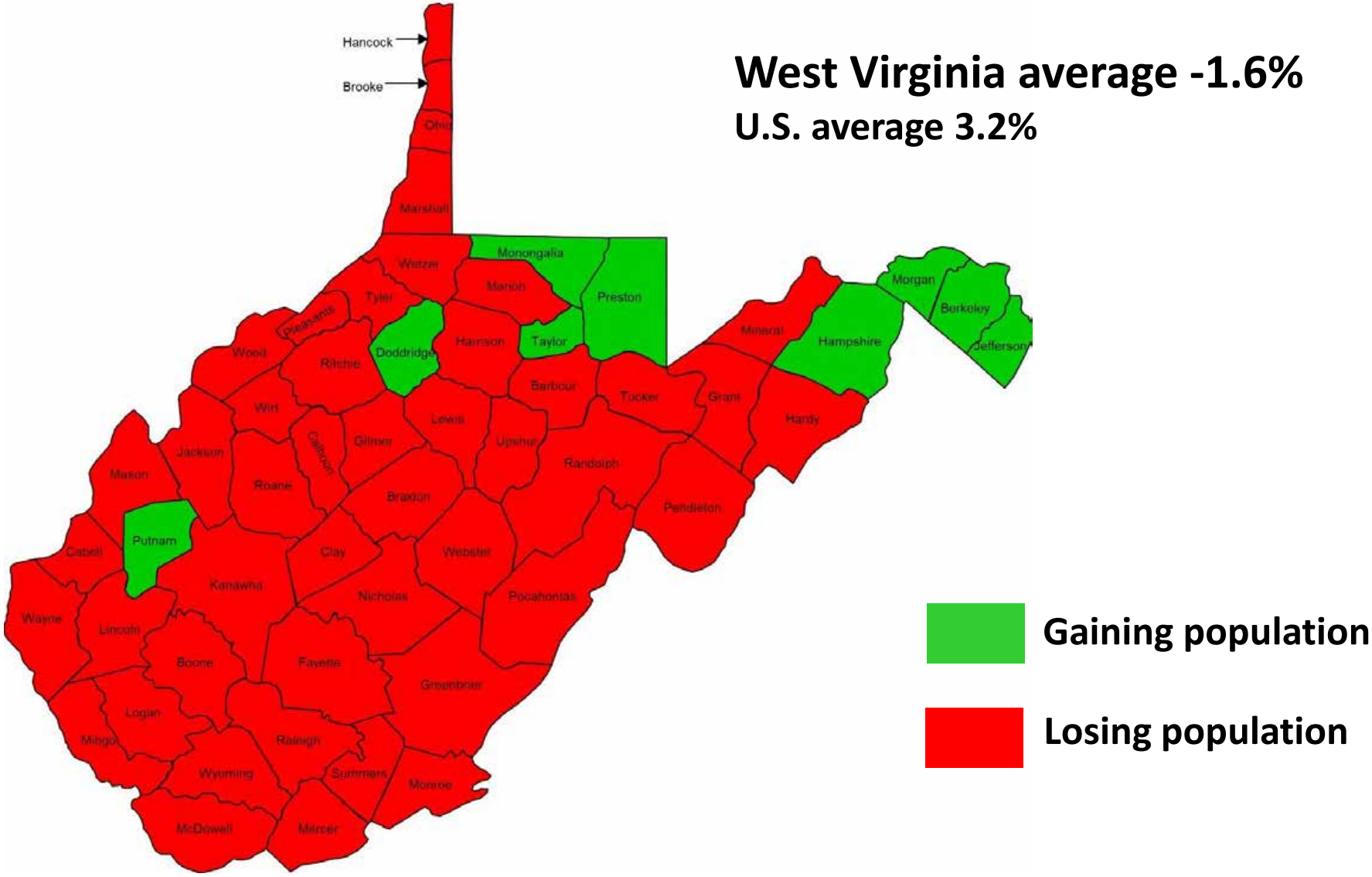
West Virginia Metro
% Projected Population Growth 2016-2046

	Beckley	Charleston	Huntington	Morgantown	Parkersburg	Wheeling
%	-5.3%	-2.4%	-1.8%	15.6%	-2.3%	-8.2%

Source: US Conference of Mayors
"Metro Economies" 2017

ECONOMIC LEADERSHIP
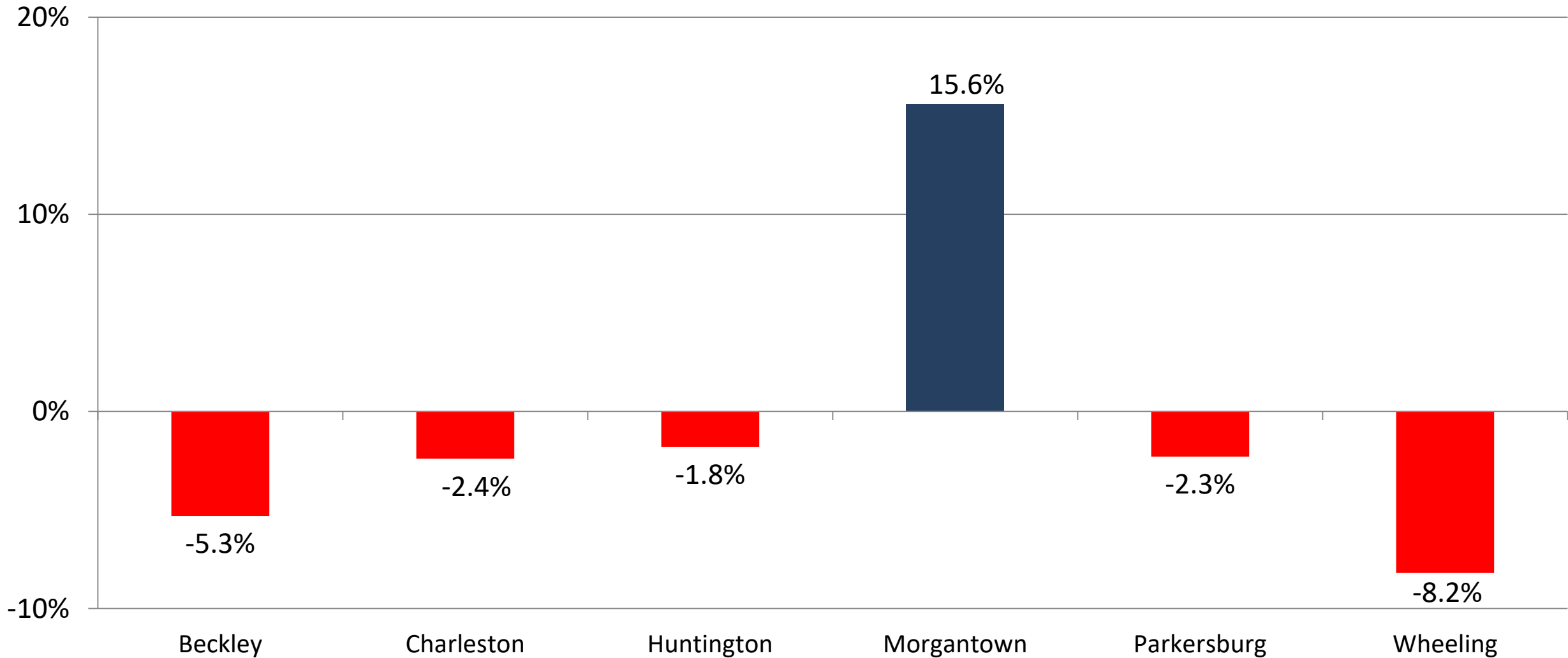
THE TOP 20 QUALITIES MILLENNIALS WANT IN A CITY

Quality	Rating
A thriving job market	8.19
Affordable rent	7.94
Affordable home prices	7.55
Parks or hiking trails	6.52
Local restaurants (non-chain)	6.49
Quality pizza	6.11
Top-rated public schools	6.07
Movie theaters	5.96
Walkability	5.75
Revitalized downtown	5.64
LGBTQ-friendly	5.47
Ethnic food	5.43
Green or farmers market	5.40
Concert or music venues	5.38
Quality public transportation	5.34
Mall or town center	5.33
Local coffee shops	5.21
Affordable clothing stores	5.18
A nearby beach, lake, or river	5.07
Local college or university	4.99

Rated on a scale of 1–10:
10 being most important and 1 being not important

Technology Induced Displacement of Employees (TIDE)

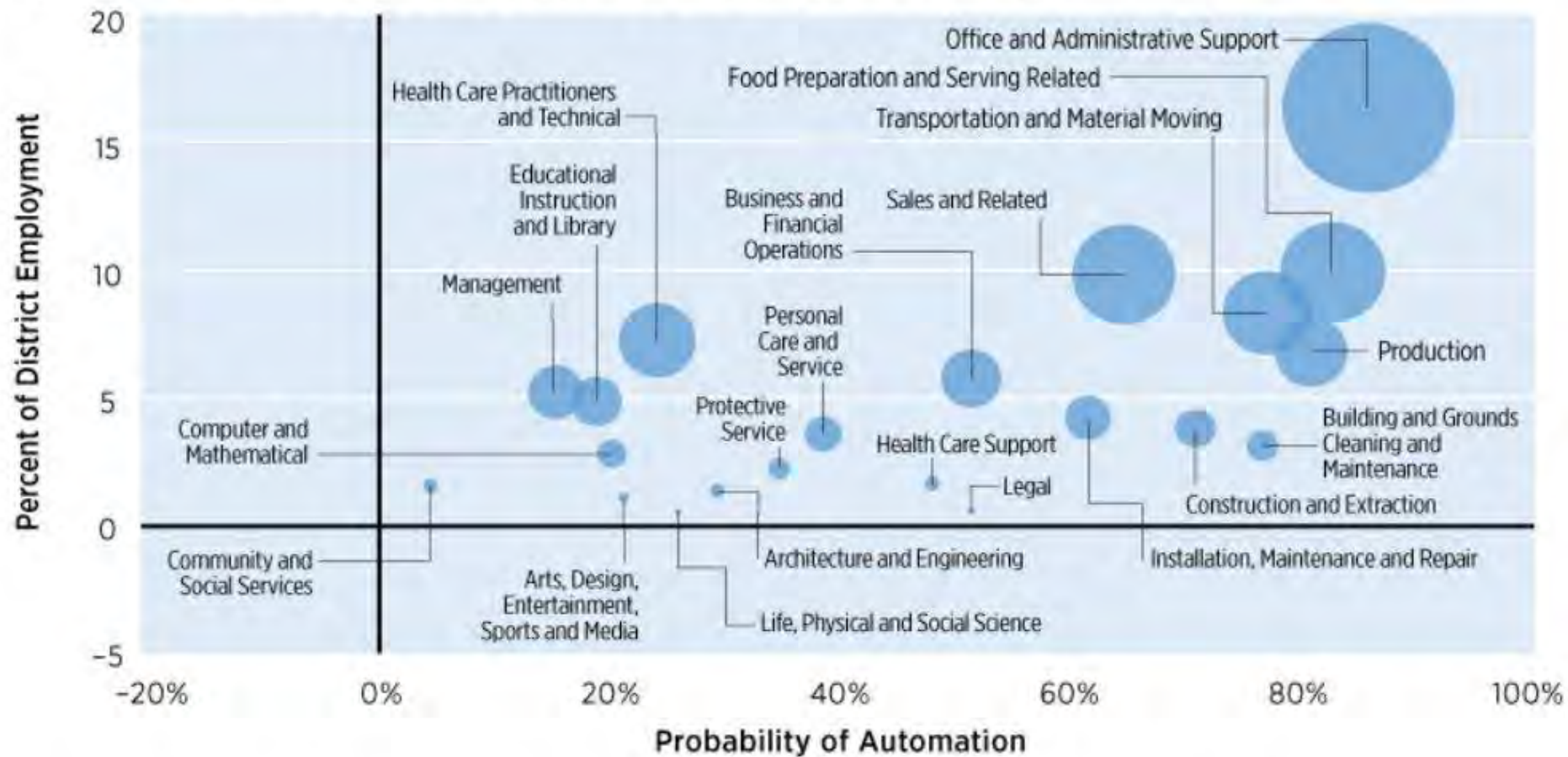# States Where Jobs are Most Vulnerable to Automation

Ranked 1 - 15
Ranked 16 - 35
Ranked 36 - 50

Source: SmartAsset.com October 11, 2018

ECONOMIC LEADERSHIP
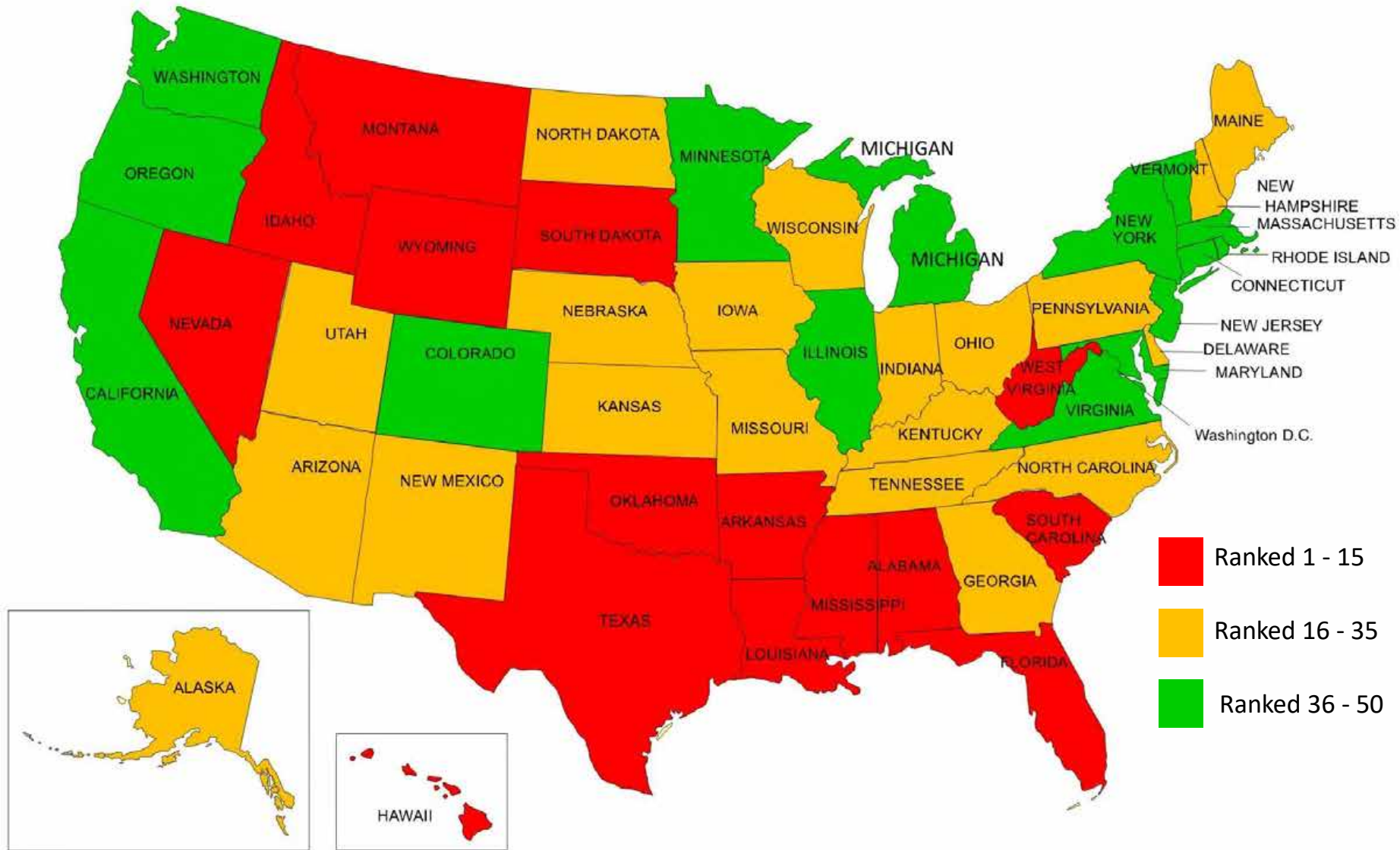
Which Jobs Are Most at Risk of Being Automated?

SOURCES: Census Bureau's Occupational Employment Statistics, Frey and Osborne, authors' calculations.

NOTE: The figure shows a positive correlation between probability of automation and percentage of employment for occupations in the Eighth District. Probability of automation is on the horizontal axis, while percentage of employment is on the vertical axis. The size of the bubbles represents the number of jobs in each occupation.

# Top Projected Growth Occupations 2019-2029

Top 10 Occupations with the Greatest Number of New Jobs	2019 Jobs	2029 Jobs	2019 - 2029 Change	2019 - 2029 % Change	2019 Average Hourly Earnings	Entry Level Education Required
Construction Laborers	10,902	13,579	2,677	25%	$17.27	No formal education
Personal Care Aides	13,844	15,759	1,915	14%	$10.01	High school
Registered Nurses	19.899	21,612	1,713	9%	$29.69	BA
Construction Equipment Operators	6.809	8,134	1,325	20%	$21.77	High School
Laborers & Freight, Stock, & Material Movers	11,772	12,956	1,184	10%	$14.18	No formal education
Heavy and Tractor-Trailer Truck Drivers	12,903	13,878	976	8%	$19.47	Postsecondary non-degree
First-Line Supervisors of Construction	5,894	6,841	947	16%	$33.69	High School
General and Operations Managers	11,152	11,995	843	8%	$41.93	BA
Medical Assistants	3,704	4,538	834	23%	$13.55	Postsecondary non-degree
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	10,041	10,707	667	7%	$12.62	No formal education

ECONOMIC LEADERSHIP

Percentage Annual Manufacturing Job Change 1990-2018

Source: US Bureau of Labor Statistics
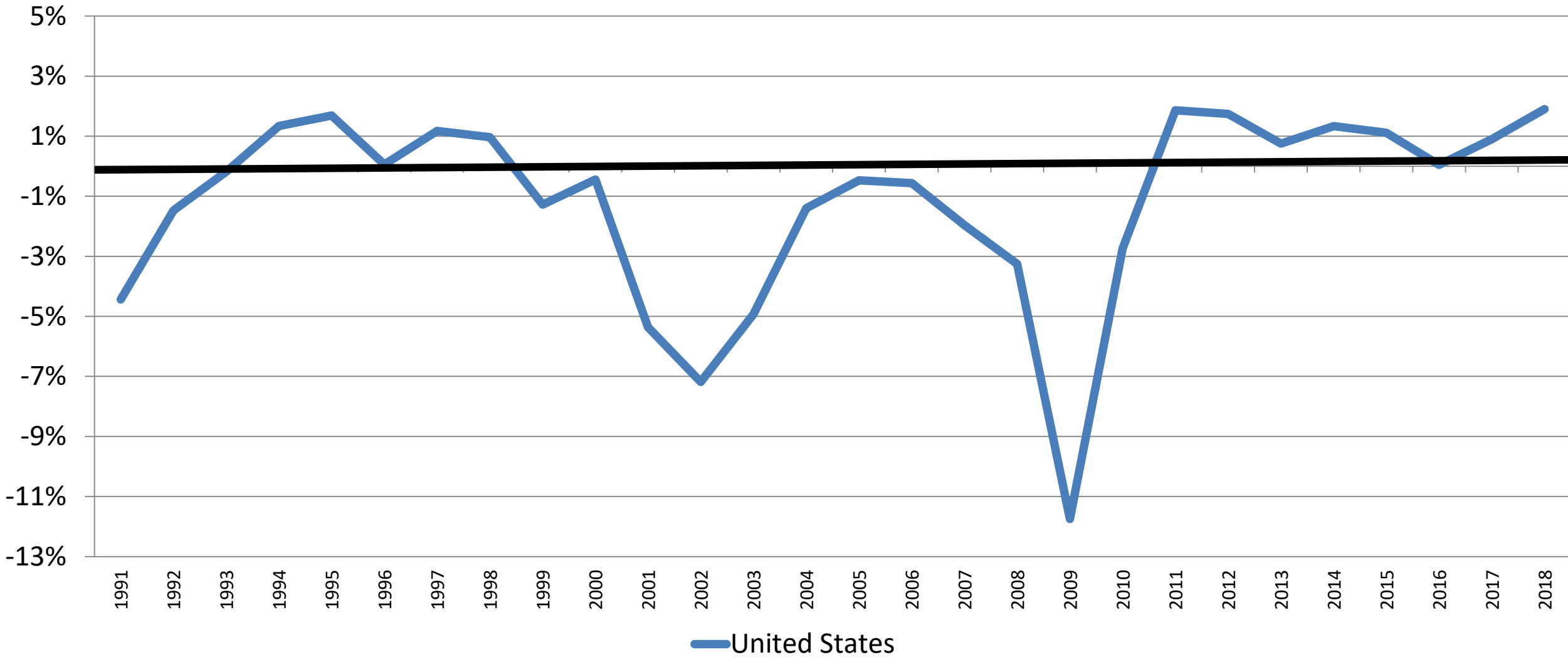
United States

Percentage Annual Manufacturing Job Change 1990-2018

Source: US Bureau of Labor Statistics
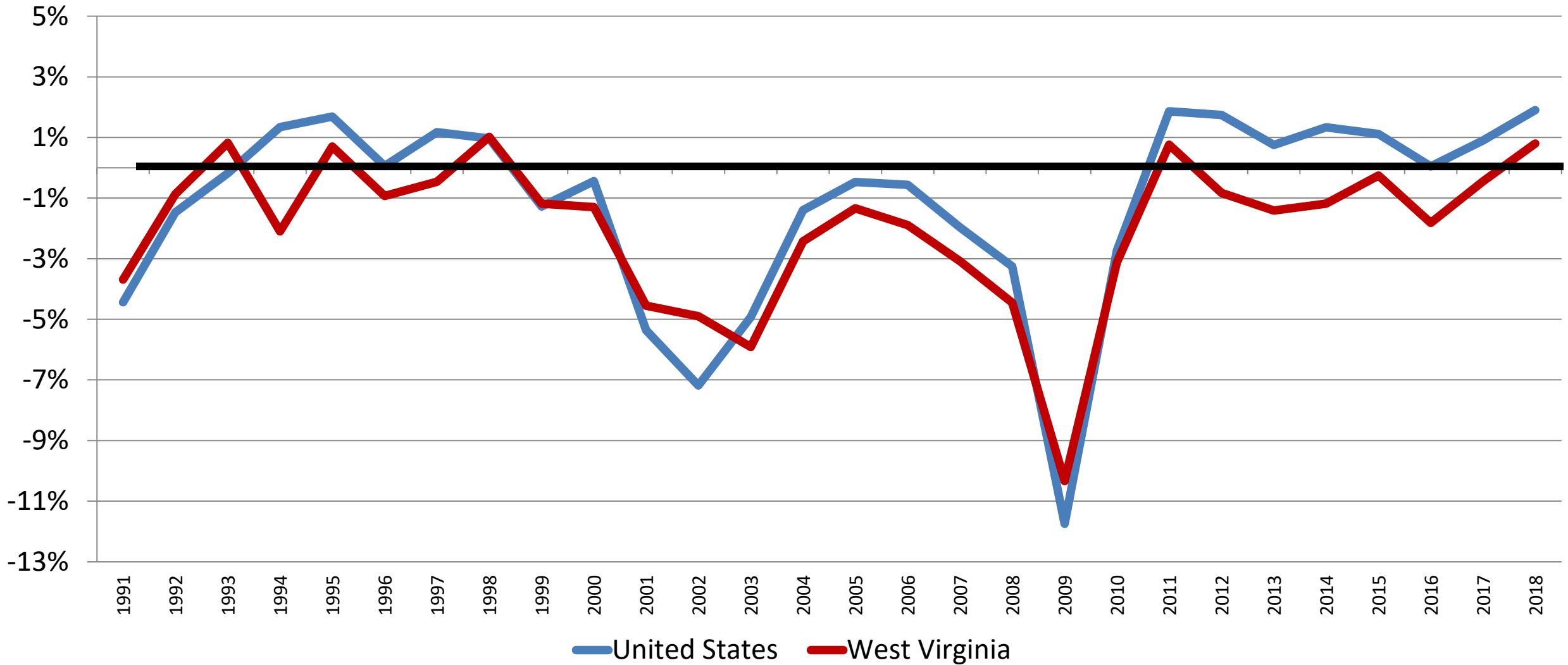
The Rising Skills and Education Balance

Employers Demand Higher Skills But Are Not Finding Them

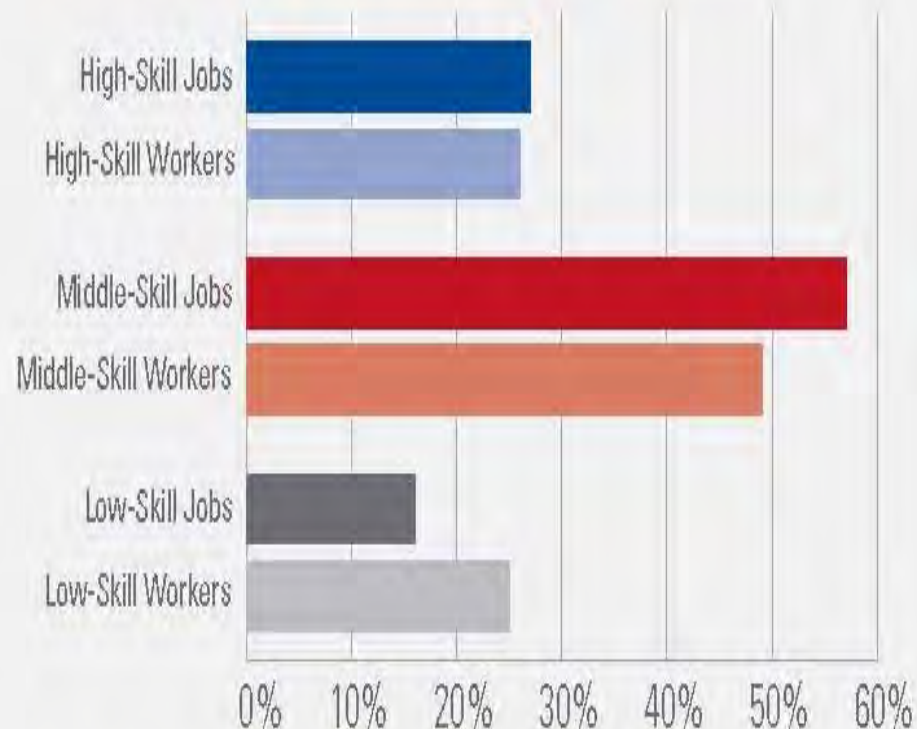More People Go To College, But We Seem to Have a Mismatch

THE
21
MOST VALUABLE
CAREER SKILLS

ECONOMIC LEADERSHIP
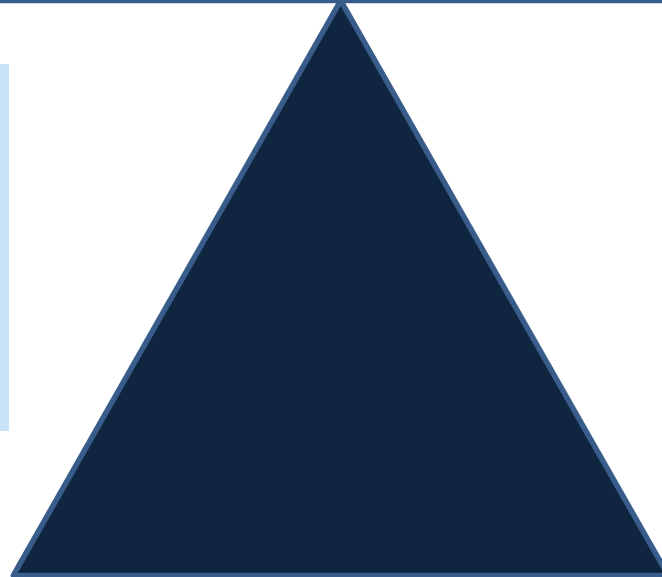
Jobs and Workers by Skill Level, West Virginia, 2015
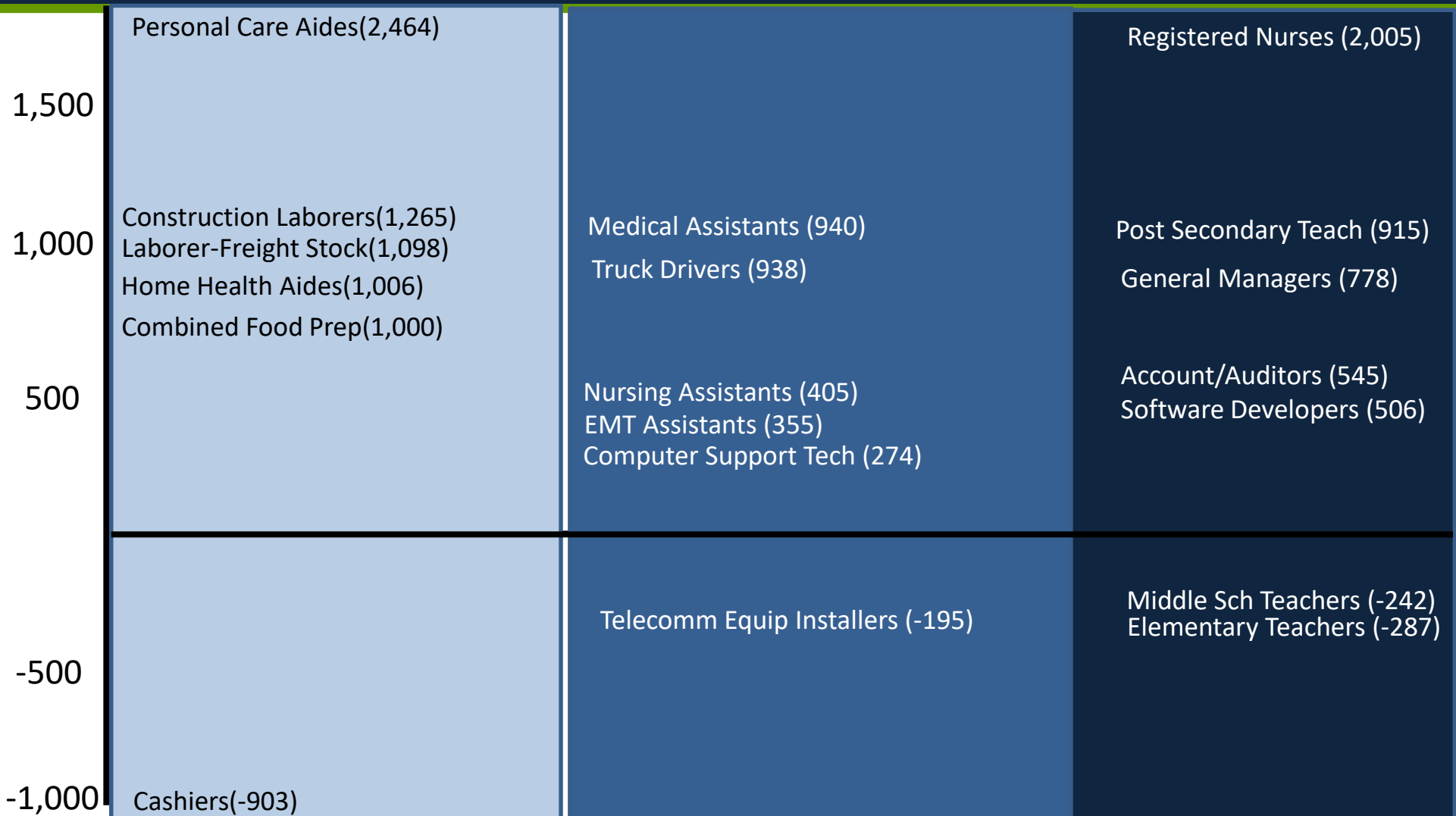
A Middle-Skill Gap

Middle-skill jobs account for 57 percent of West Virginia's labor market, but only 49 percent of the state's workers are trained to the middle-skill level.
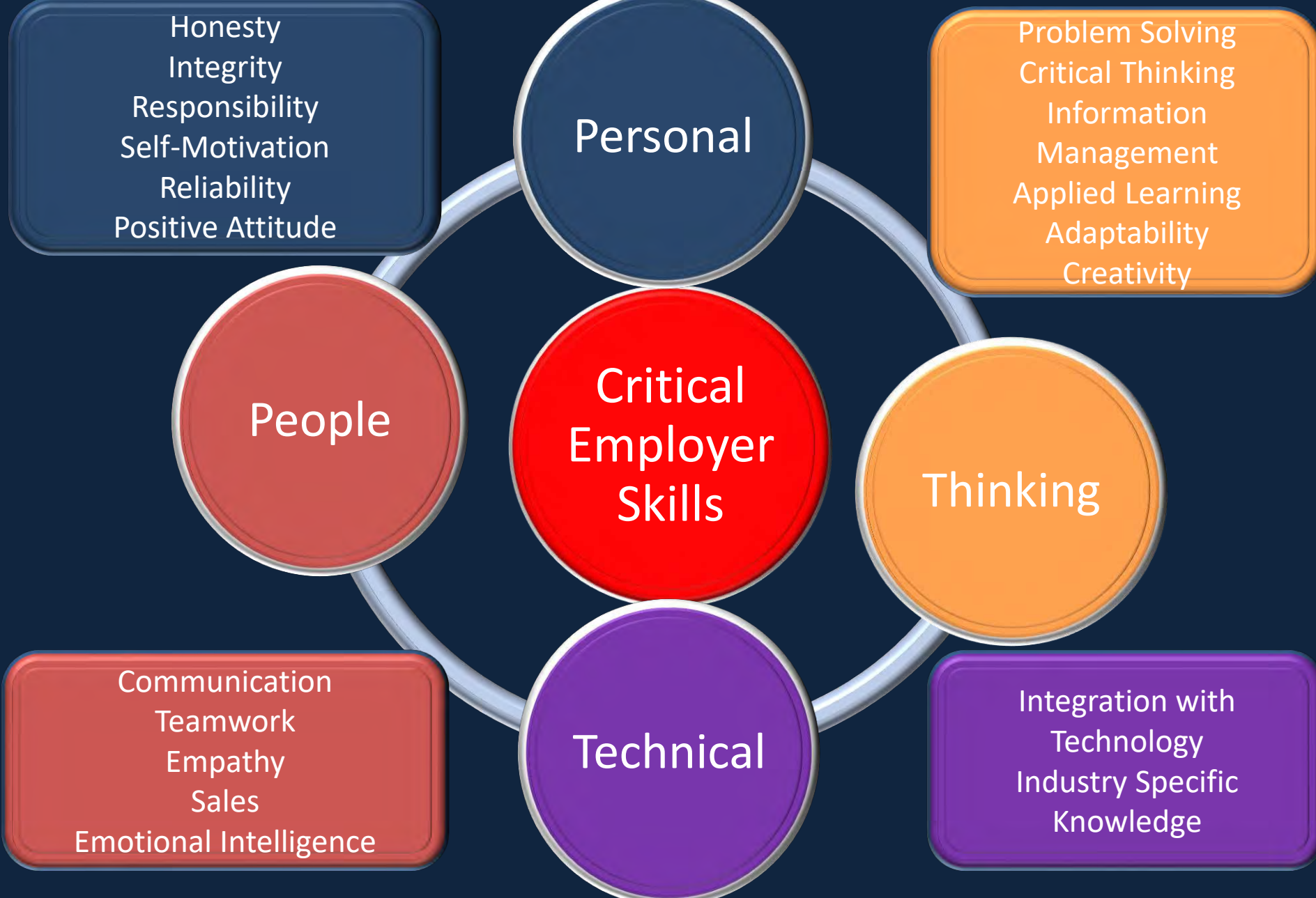

Source: NSC analysis of Bureau of Labor Statistics Occupational Employment Statistics by State, May 2015 and American Community Survey data, 2015.

ECONOMIC LEADERSHIP

WV Occupational Change 2018-2028

Personal Care Aides(2,464)

Registered Nurses (2,005)

1,500

Construction Laborers(1,265)
Laborer-Freight Stock(1,098)
Home Health Aides(1,006)
Combined Food Prep(1,000)

Medical Assistants (940)
Truck Drivers (938)

Post Secondary Teach (915)
General Managers (778)

1,000

500

Nursing Assistants (405)
EMT Assistants (355)
Computer Support Tech (274)

Account/Auditors (545)
Software Developers (506)

Telecomm Equip Installers (-195)

Middle Sch Teachers (-242)
Elementary Teachers (-287)

-500

Cashiers(-903)

-1,000

ECONOMIC
LEADERSHIP

www.econleadership.com
ted@econleadership.com

Follow on twitter
@tedabernathy
Link to me on LinkedIn
Ted Abernathy

ECONOMIC LEADERSHIP