Measuring & Improving West Virginia Manufacturing Competitiveness







Place Comparisons Data Analytics

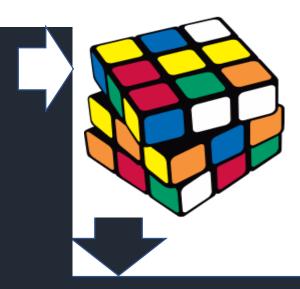


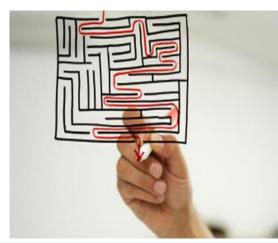
Trendspotting



Best Practices







Collaborative (Group) Leadership

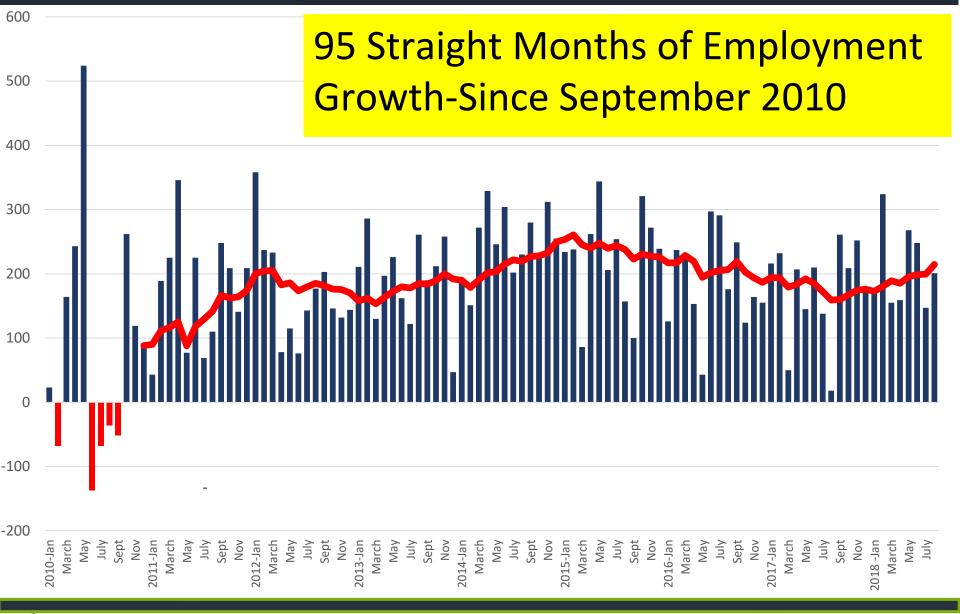


- ✓ Intentional
- ✓ Specific
- Measurable Actions

Competitive Improvement

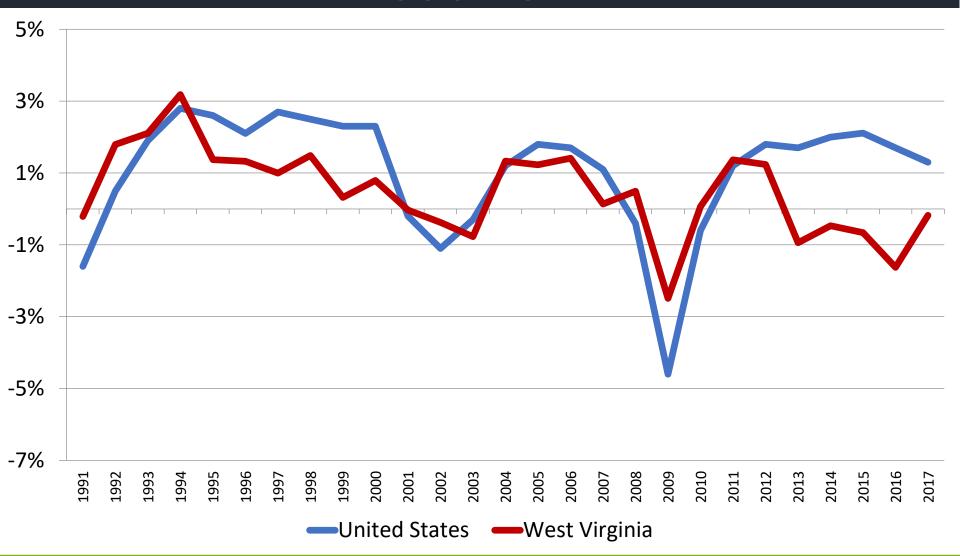


USA Nonfarm Payroll Employment



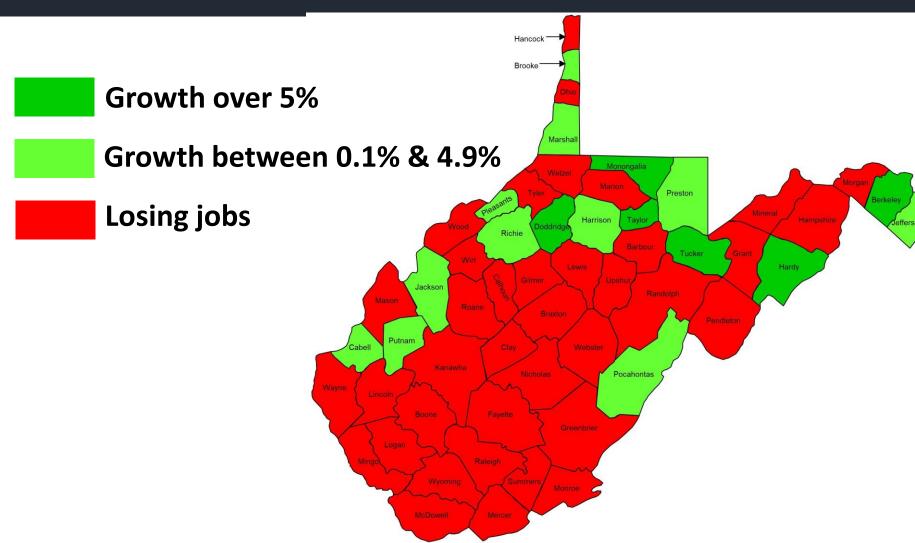


Percentage Annual Job Change 1990-2017



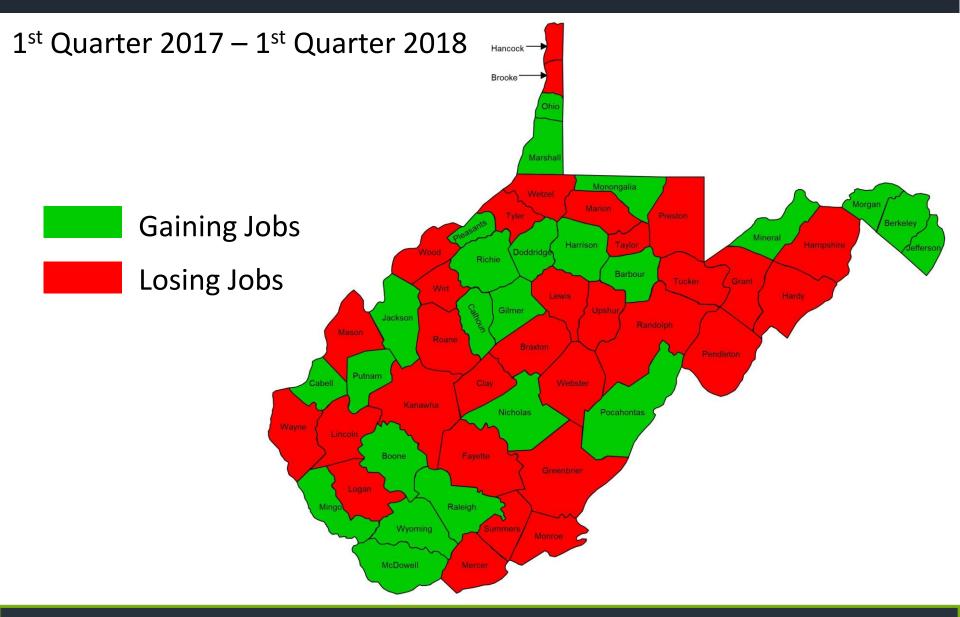


5 Year Job Growth 2012-2017 West Virginia Average -3.8%



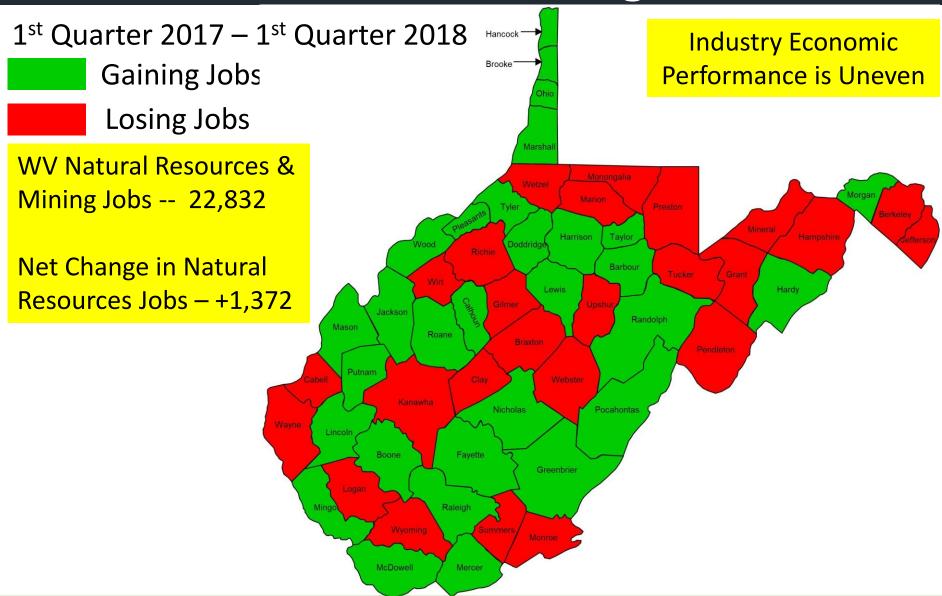


Total Job Growth Last 12 months





Natural Resources & Mining Job Growth



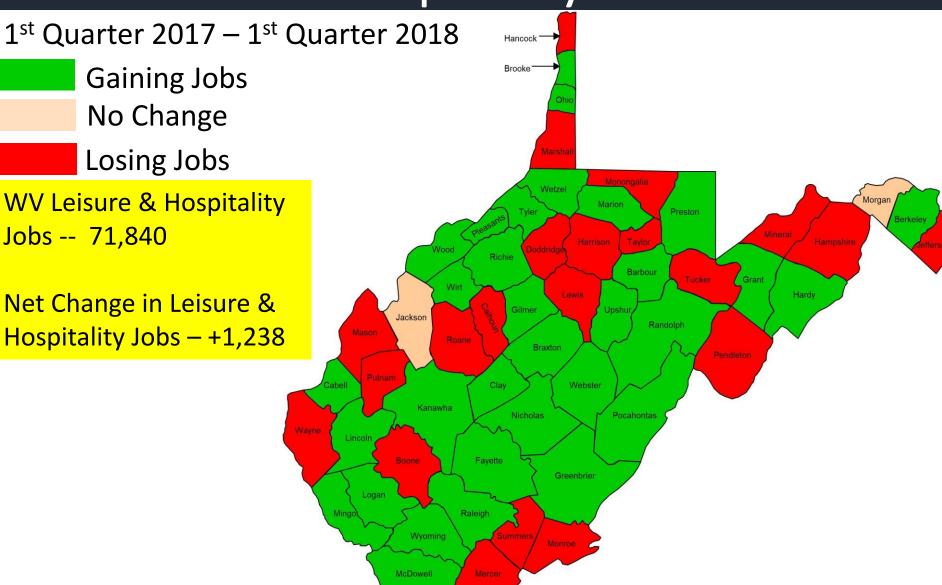


Construction Job Growth

1st Quarter 2017 – 1st Quarter 2018 Hancock 7 Brooke' **Gaining Jobs Losing Jobs** Marshal WV Construction Jobs --Monongalia Wetzel Morgan Marion 30,420 Preston Taylor **Net Change in** Tucker Grant Lewis Construction Jobs – Upshi Jackson Randolph +3,883 Roane Putnam Webster Nicholas Boone Logan Raleigh Wyoming



Leisure & Hospitality Job Growth





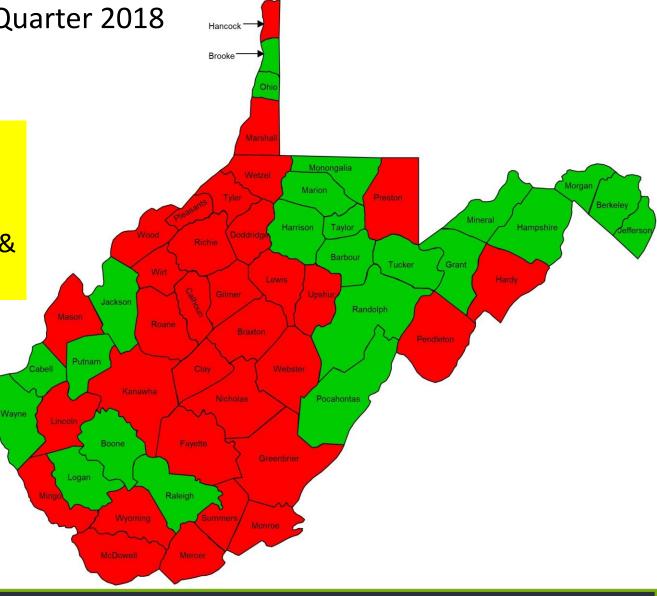
Education & Health Job Growth

1st Quarter 2017 – 1st Quarter 2018

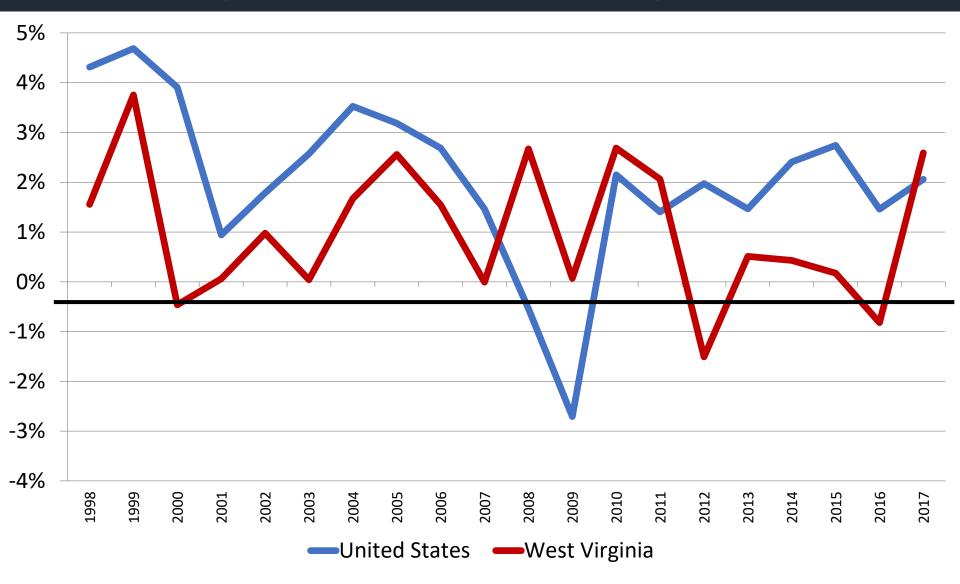
Gaining Jobs
Losing Jobs

WV Education & Health Jobs -- 123,963

Net Change in Education & Health Jobs — +2,492

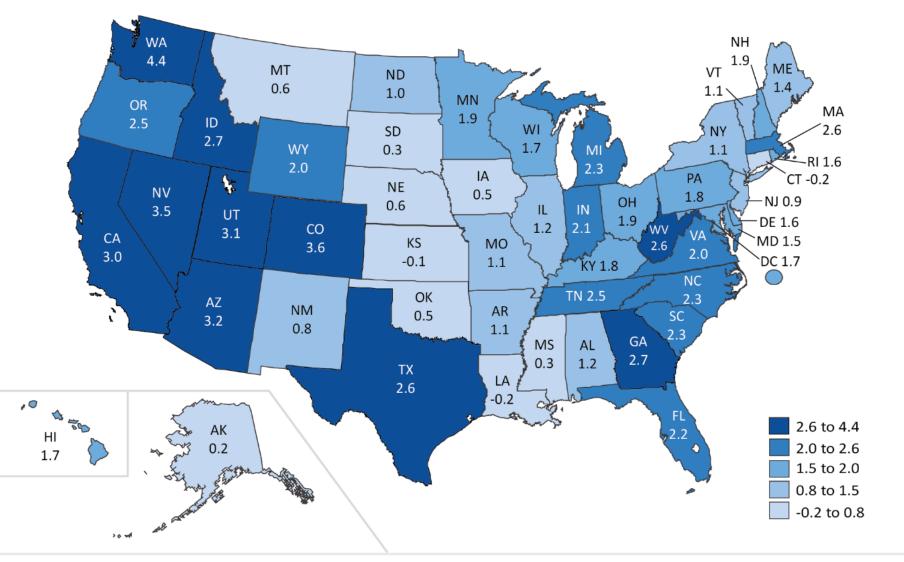


Percentage Annual GDP Change 1997-2017





Percent Change in Real GDP by State, 2016–2017



U.S. Bureau of Economic Analysis



West Virginia Ranked Compared to All States

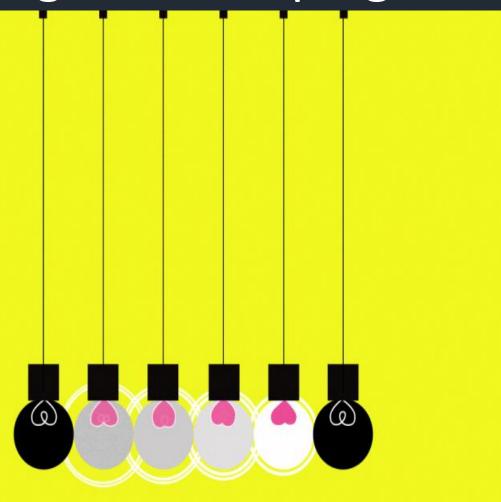
	Job Growth	Wage Growth	GDP Growth
1 Year 2016 – 2017	48	4	10
5 Year 2012 – 2017	51	43	45
10 Year 2007 - 2017	51	9	31

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



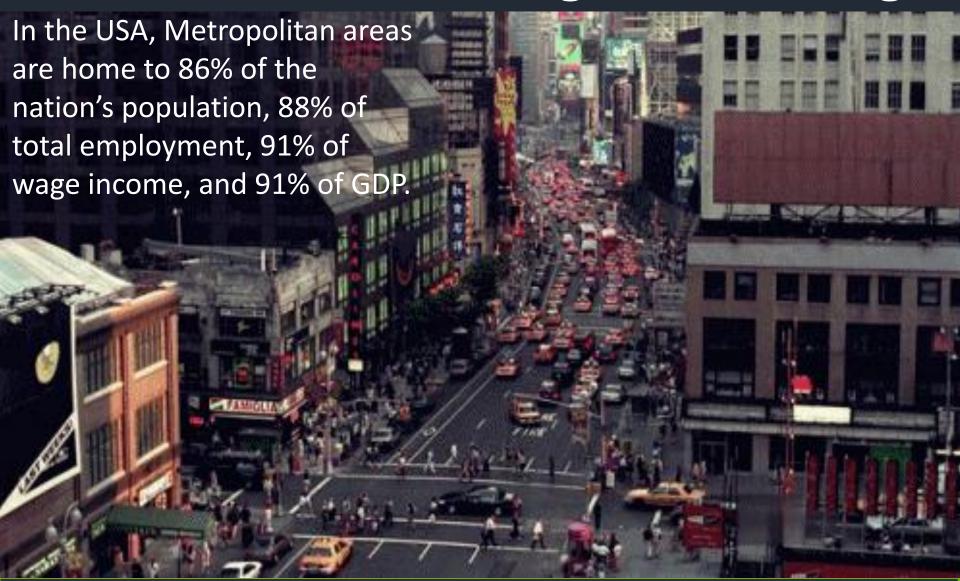
Source: BLS Jobs & Wages: BLS QCEW annual; GDP: BEA Real GDP Annual 2009 chained dollars

Change is Reshaping Competitiveness



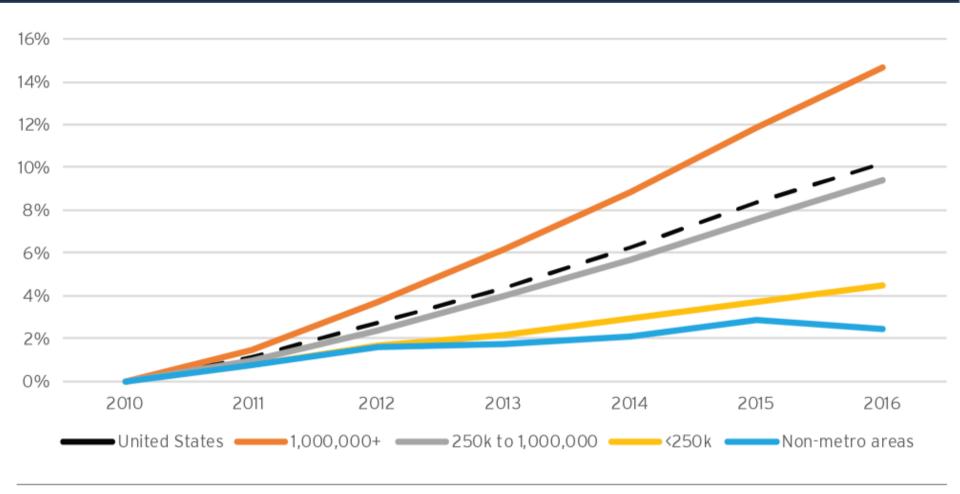


The Urban Advantage is Growing





Percentage Employment Growth Since 2010

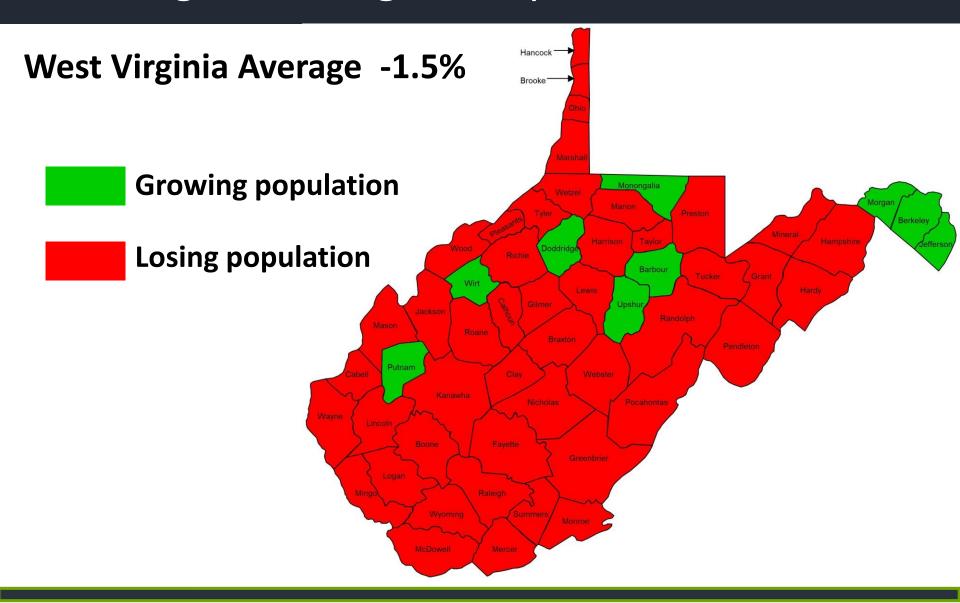


Source: Brookings analysis of Moody's Analytics data

B Metropolitan Policy Program at BROOKINGS

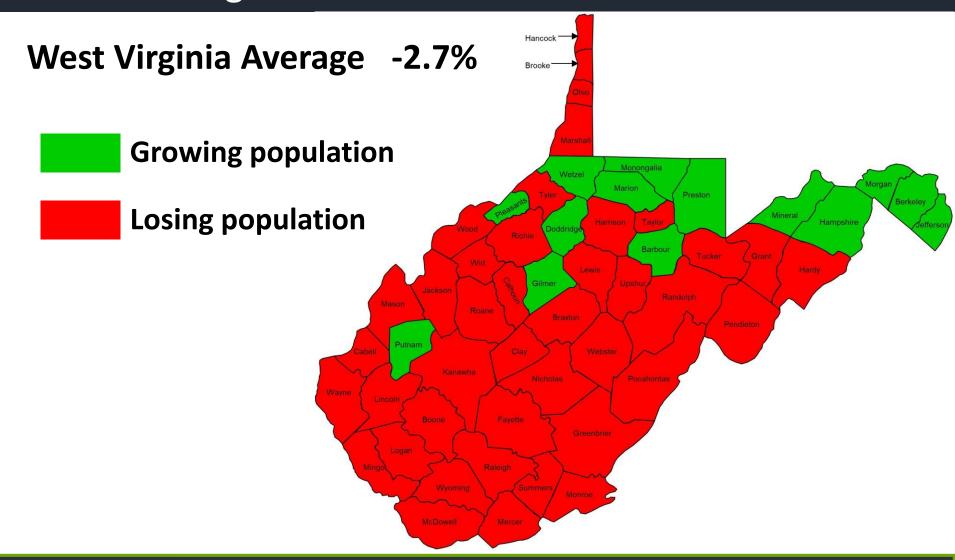


West Virginia Change in Population 2012 - 2017



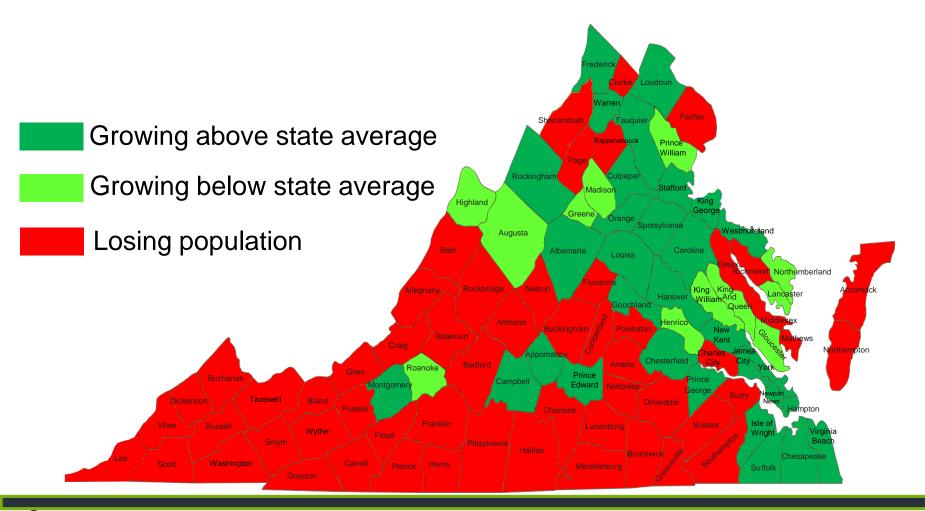


PROJECTED CHANGE IN LABOR FORCE AGE POPULATION Ages 25 – 44 2017 - 2027





Population Change 2012 to 2017 Ages 25-44 Virginia average 1.9%





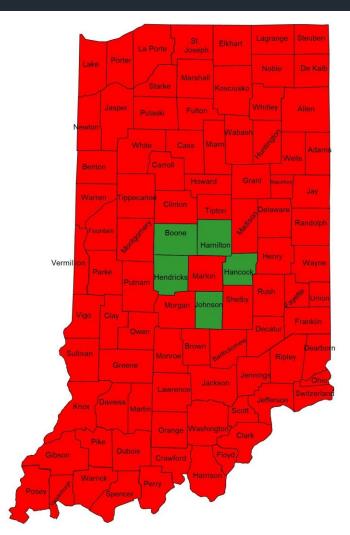
Source: EMSI-US Census

PROJECTED CHANGE IN LABOR FORCE AGE POPULATION Ages 25 – 44 2016 - 2026

INDIANA (-4.3%) U.S. (-2.0%)

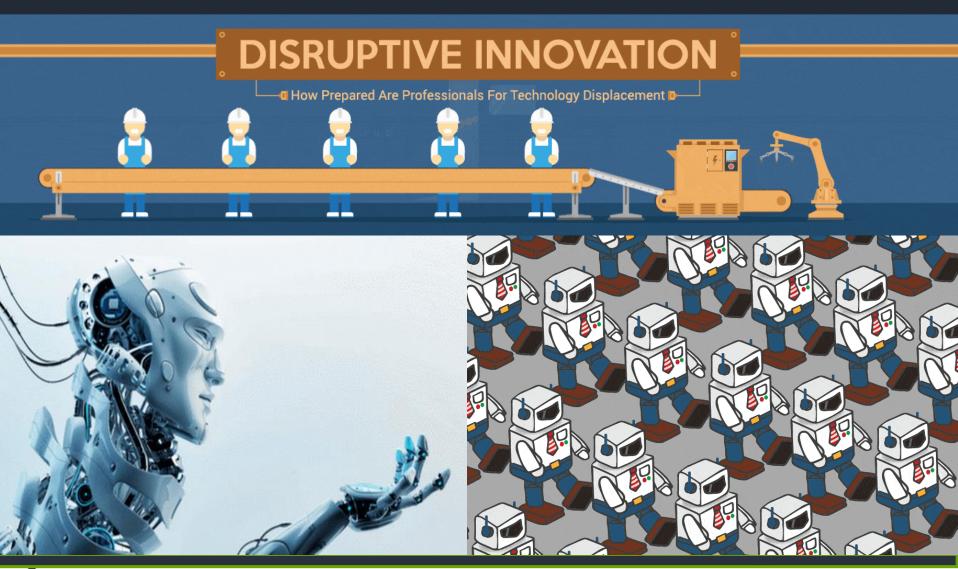
population growth

population decrease





Technological Disruption





The Next Big Things-Technological





Quantitative and Qualitative Challenges









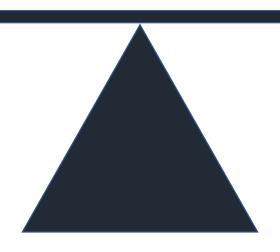


The Workforce Supply-Demand Balance

Automation, robotics and the possible loss of jobs and need for labor

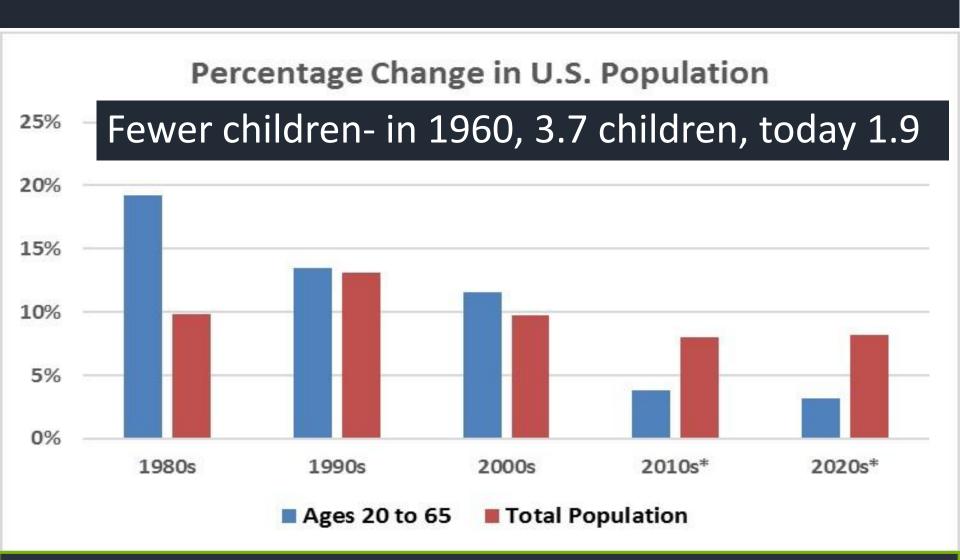
Slowing birthrates, aging baby boomers, declining participation rates, immigration debates







USA Workforce Growth Slows

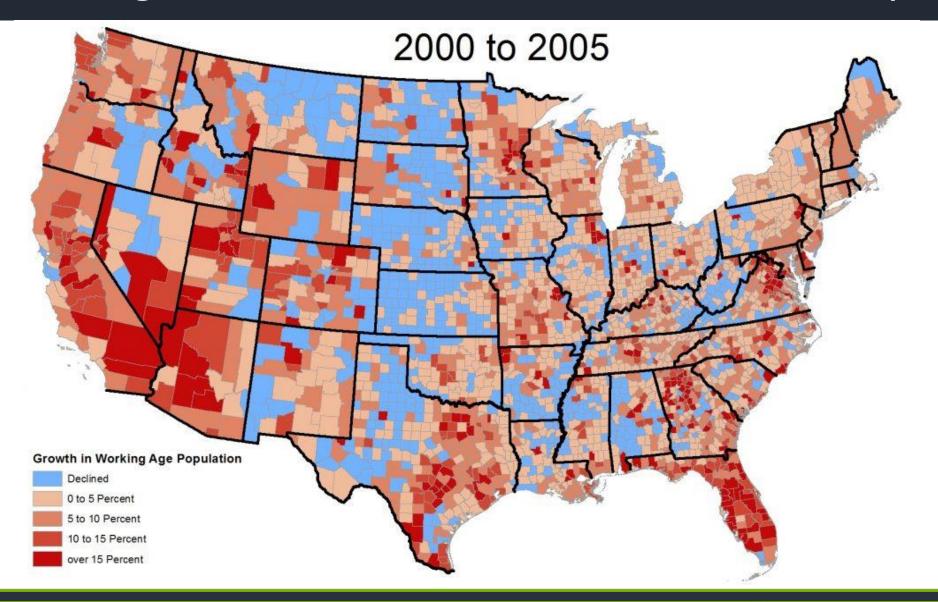




U.S. states by population growth rate 1950-2016 Nevada +1.736% Arizona +824 Florida +643 Alaska +477 Utah +343 Colorado +318 population growth above 200% California +271 Texas +261 population growth between 100% and 199% Washington +206 New Mexico +205 population growth between 1% and 99% Delaware +199 Georgia +199 population decrease Hawaii +186 Idaho +186 +206% Oregon +169 +157% Marvland +157 Virginia +153 +76% +22% +65% New Hampshire +150 +169% North Carolina +150 +85% South Carolina +134 +68% Tennessee +102 +186% +32% +33% Wyoming +102 +102% Minnesota +85 +56% +78% New Jersev +85 +20% +22% Connecticut +78 +85% +44% +1.736% +68% +46% Montana +76 +199% +343% +47% Oklahoma +76 Louisiana +74 +318% +157% Indiana +68 +271% +52% +54% +51% Wisconsin +68 Vermont +65 +150% Alabama +59 +102% Arkansas +56 +824% +205% +76% Michigan +56 +134% +56% Missouri +54 +59% +199% Kansas +52 Kentucky +51 +37% Illinois +47 Maine +46 +261% Ohio +46 +74% Massachusetts +45 Nebraska +44 +477% Mississippi +37 New York +33 FactsMaps.com Rhode Island +33 South Dakota +32 @factsmaps North Dakota +22 +186% Pennsylvania +22 Iowa +20 West Virginia -8 Source: United States Census Bureau

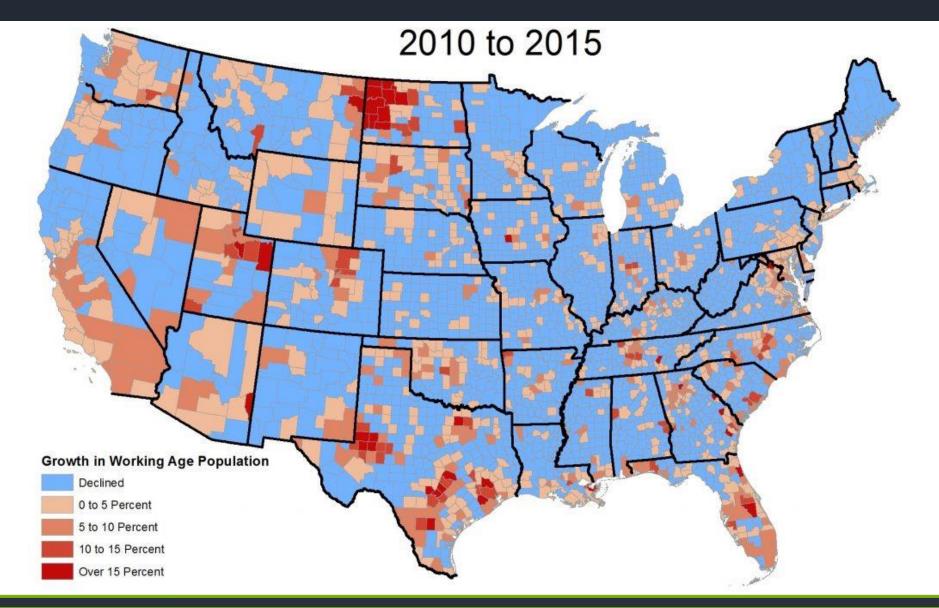


Strong Workforce Growth Across the Country





Workforce Growth Concentrates



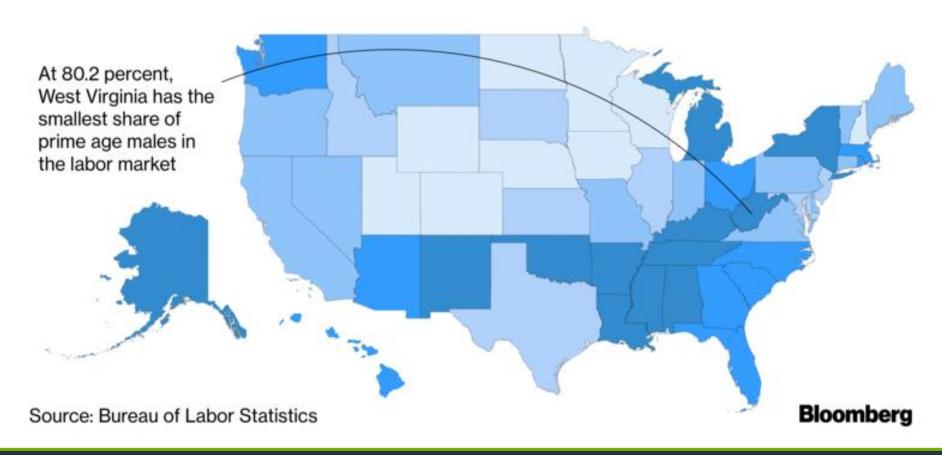


Where Have All The Men Gone?

Prime-age male labor-force participation is lower in poorer, more rural states

80.2% 86.9% 88.5% 90.3% 91.8% or higher

2016 participation rate, males 25-54 years old



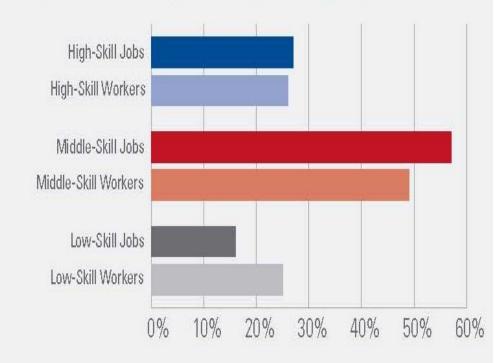


Demand for middle-skills (57% of jobs) is strong

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.

Jobs and Workers by Skill Level, West Virginia, 2015



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

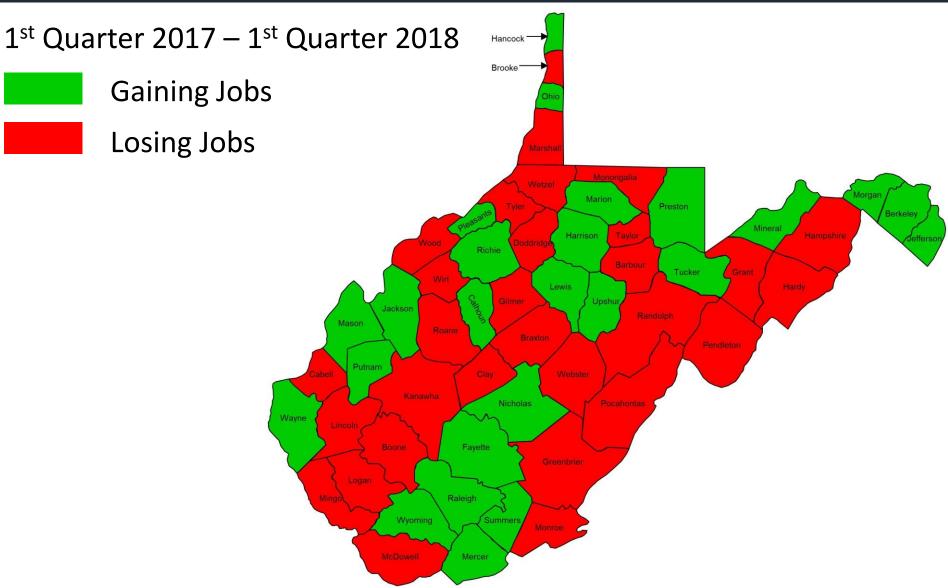
A Workforce assessment with recommendations in December







Manufacturing Job Growth





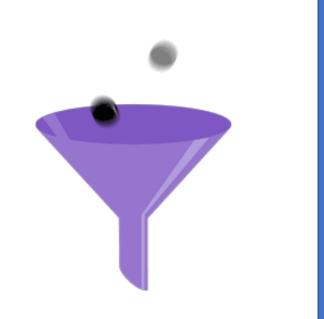
Measuring Competitiveness







The cruel, cruel client filtering funnel- and big data



Top Factors for Companies Considering New Investment

Biggest Moves 2017

Quality of Life from 10th to 4th

Proximity to Suppliers from 20th to 12th



West Virginia Rankings

Tax Foundation 2018

Overall Rank	#19
 Corporate Tax Rank 	#17

- Individual Income Tax Rank #25
- Sales Tax Rank #15
- Unemployment Insurance Rank #28
- Property Tax Rank #17

Cato Institute - Freedom in the 50 States 2018 rankings

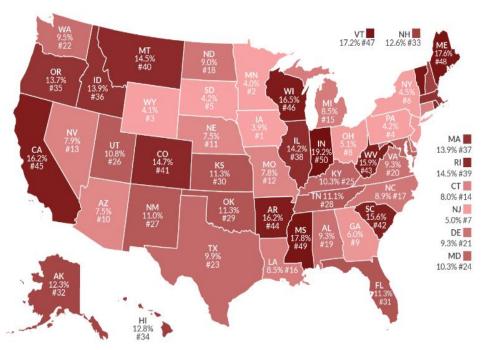
- Fiscal Policy #31
- Regulatory Policy #42
- Personal Freedom #22



Manufacturing State Tax Rankings- #43 & #47

Location Matters: The State Tax Costs for Capital-Intensive Manufacturing Facilities

Total Effective State and Local Tax Rate on a Mature Capital-Intensive Manufacturing Facility, 2014



Map shows effective combined state and local tax rate for a hypothetical mature capital-intensive manufacturer located in a midsized city in each state. The model firm, which is at least ten years old, is assumed to have 200 positions, including management, administrative, installation and maintenance, production, transportation, and materials employees. We assume it has a capital investment of \$300 million, including a 250,000 square foot suburban industrial building owned by the firm. Revenue is assumed to be approximately \$200 million with a gross profit ratio of 25 percent, earnings before tax of 10 percent, and an equity ratio of 50 percent. We also assume that all property and payroll is located within the state, while sales are assumed to be distributed among all 50 states in proportion to the relative population of each state.

Source: Tax Foundation, Location Matters (August 2015)

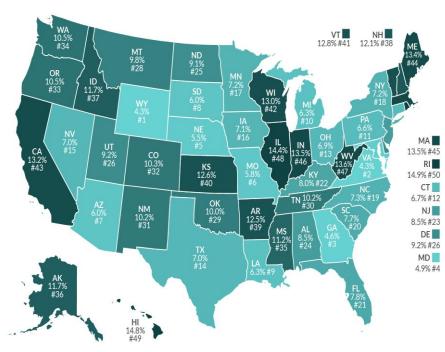
Total Effective State and Local Tax Rate

Lower Rate

Lower Rate

Location Matters: The State Tax Costs for Labor-Intensive Manufacturing Facilities

Total Effective State and Local Tax Rate on a Mature Labor-Intensive Manufacturing Facility, 2014



Notes: Map shows effective combined state and local tax rate for a hypothetical mature labor-intensive manufacturer located in a midsized city in each state. The model firm, which is at least ten years old, is assumed to employ 300 people, chiefly in management, installation, maintenance, production, and assembly. We assume a capital investment of \$65 million, including a 250,000 square foot suburban industrial building owned by the business. Revenue is approximately \$174 million with a gross profit ratio of 20 percent and earnings before tax of 7 percent. The equity ratio is assumed to be 30 percent. We also assume that all property and payroll is located within the state, while sales are assumed to be distributed among all 50 states in proportion to the relative population of each state.

Source: Tax Foundation, Location Matters (August 2015)

Total Effective State and Local Tax Rate

Lower Rate

Higher Rate

TAX FOUNDATION @TaxFoundation TAX FOUNDATION @TaxFoundation



Multifactor Competitive Index

5 Indexes

- Business
 Climate
- ☐ Workforce
- ☐ Infrastructure
- Innovation
- ☐ Economic Strength (52 metrics)

Workforce Index Metrics

- High School Graduation Rate for all students 2015-16
- Percentage of Population with Adult Obesity 2016 (this metric has not been updated as new data is not available)
- Persons age 18 to 24 not attending school, not working, and no degree beyond high school 2016
- Labor Force Participation Rate 2017
- Manufacturing Output Per Manufacturing Employee 2017
- Change in Manufacturing Output Per Manufacturing Employee 2010-2017
- Age 25-44 Population Growth 2012-2017
- Completed Tech & STEM Education Programs Per 1,000 Enrolled Students 2016
- Percent Change in Tech & STEM Education Program Completions 2010-2016
- Average 8th Grade Reading Score 2017
- Average 8th Grade Math Score 2017
- Veteran Unemployment Rate 2016
- Veteran % share of total population 2016
- Total number of sub-baccalaureate occupational credentials in manufacturing
 2013
- Sub-baccalaureate occupational credentials in manufacturing as % of total credentials 2013



MANUFACTURING COMPETITIVENESS INDEX

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BUSINESS CLIMATE	Manufacturing Industry Health Scorecard (Conexus Indiana) 2018	top marginal corporate tax rate 2018	Legal Climate Rankings (2017)	Air Quality - PM2.5 (2016)	Workers Comp insurance premium per \$100/payroll (2016)	State and Local Tax Costs for Capital- Intensive Manufacturing (2014)	State and Local Tax Costs for Labor-Intensive Manufacturing (2014)	Value of \$100 (2018)	Greenhouse Gas Emissions Per Capita (Metric Tons of CO2) 2014	RANKING	STATE RANK
South Dakota	19	1	1	3	19	4	7	6	26	9.6	1
Ohio	8	1	26		11	- 8	13	8	31	16.8	2
Wyoming	37	1	8		28	3	2	26	50	17.3	3
Michigan	1	16	22		17	15	9	22	25	18.1	4
Virginia	39	16	10		5	19	1	39	15	18.2	5
Arizona	19	10	25		13	10	.7	25	19	19.3	6
Idaho	8	32	3		12.534	36	36	21	10	19.4	7
North Carolina	16	7	33		29	17	19	17	13	19.6	8
Nebraska	32	34			19	10	5	15	42	19.9	9
Iowa	1	50	13		27	1	16	10	39	20.2	10
North Dakota	44	8	17		1	18	25	18	49	20.2	10
Minnesota	14	48	4		29	2	17	30	24	20.9	12
Oregon	8	33	21	13	7	35	33	36	3	21.0	13
Utah	19	11	12		6	26	26	28	34	21.3	14
South Carolina	1	11	34	25	33	42	20	12	22	22.2	15
Kansas	6	30	18	18	10	29	40	15	35	22.3	16
Nevada	46	1	37	43	9	13	14	29	14	22.9	17
Kentucky	1	16	42		15	24	22	5	44	23.0	18
Tennessee	8	24	30	32	21	28	30	11	23	23.0	19
Georgia	37	16	40	0.0000	24	9	3	19	20	23.2	20
Texas	19	1	39	39	11	23	14	27	36	23.2	20
Arkansas	16	24	36	16	3	44	39	3	32	23.7	22
Missouri	19	21	49	33	31	12	6	9	33	23.7	22
Washington	19	1	28	25	36	22	33	42	9	23.9	24
Massachusetts	19	36	14	10	8	36	45	44	4	24.0	25
New Hampshire	14	38	5	6	34	33	38	43	11	24.7	26
Alabama	8	24	43	39	26	19	23	2	40	24.9	27
Mississippi	6	11	44	20	22	49	35	1	36	24.9	27
Florida	39	14	46	13	18	29	21	35	11	25.1	29
Colorado	19	9	35	12	16	41	32	40	27	25.7	30
Maryland	39	39	19		13	24	4	46	6	25.7	30
Connecticut	19	39	16	35	46	14	12	45	7	25.9	32
Vermont	19	41	2		37	47	41	38	5	25.9	32
Indiana	1	21	15	46	2	50	45	12	43	26.1	34
New York	46	24	29	16	48	6	17	49	1	26.2	35
New Mexico	46	15	32	5	31	27	30	23	38	27.4	36
Louisiana	19	36	50		41	15	9	14	46	28.3	37
Oklahoma	32	16	31	30	43	29	29	7	41	28.7	38
West Virginia	19	24	45	24	4	43	47	4	48	28.7	38
Wisconsin	8	35	20		39	- 46	42	20	29	28.7	38
Pennsylvania	32	49	38	0.000.0	24	4	11	31	30	29.7	41
Maine	32	44	9	100000	37	48	44	31	17	30.3	42
Delaware	39	42	11	43	45	19	26	37	21	31.4	43
Hawaii	46	23	23		34	34	49	50	18	31.4	43
Montana	44	29	27	9	40	39	28	24	45	31.7	45
Rhode Island	39	30	24		42	39	50	34	8	31.8	46
New Jersey	32	45	41	34	49	7	23	47	16	32.7	47
Alaska	46	46	6		46	32	36	41	47	37.3	48
California	19	43	47	50	50	44	43	48	2	38,4	49
Illinois	16	47	48	49	43	38	48	33	28	38.9	50



MANUFACTURING COMPETITIVENESS INDEX

MANUFA	CTURING	COMP	ETITIVEN	NESS INC	EX

INFRASTRUCTURE	ation Per Capita (FY2017)	Average Retail Electricity Price for Industrial Customers, Cents Per KwH (May 2018)	percent of structurally deficient bridges (2017)	% growth in Freight Shipments tons (thousands) (2007-2013)	% growth in Freight Shipments \$\$ (millions) (2007-2013)	Miles of Interstate highways per 10,000 people (2016)	Average Retail Natural Gas Price for Industrial Customers, \$ per thousand cubic feet (May 2018)	State Transportation Expenditures as % of Total Expenditures (FY2017)	Percentage of Population Without 25 Mbps/3 Mbps Broadband Access - All Areas (2016)	AVERAGE RANKING	STATE
North Dakota	2	40	42	1	1	5	1	4	22	13.1	
Nevada	33	6	1	.5	16	20	28	16	10	15.0	
Texas	35	8	1	12	9	38	2	16	19	15.6	
Utah	28	17	5	32	12	9	23	13	9	16.4	
Idaho	15	26	27	16	10	8	16	5	32	17.2	
Minnesota	- 8	38	11	13	19	31	6	11	20	17.4	
South Dakota	12	35	47	2	4	4	18	2	33	17.4	
Vermont	6	43	10	9	39	6	12	13	37	19.4	
Oregon	22	16	12	3	11	24	21	44	24	19.7	
lowa	20	12	49	8	16	14	15	27	27	20.9	
Kansas	32	37	25	9	7	11	13	25	30	21.0	
Washington	36	1		19	6	40	41	36	3	21.2	
Montana	16	2	31	41	12	3	27	15	48	21.7	
New Mexico	37	9		29	3	7	4	49	44	22.4	
Virginia	10	24	16	39	28	35	22	6	25	22.8	
Nebraska	28	32	45	6	15	14	10	27	31	23.1	
Maryland	7	39	13	23	30	44	44	7	7	23.8	
Connecticut	3	44	23	13	45	41	40	9	1	24.3	
Illinois	26	19	26	20	43	28	24	18	15	24.3	
Kentucky	21	9		47	14	23	11	34	38	24.4	
Arizona	31	25	4	6	27	29	36	27	39	24.9	
Oklahoma	39	3		4	5	17	33	37	49	25.4	
Pennsylvania	13	21	46	27	21	33	45	12	13	25.7	
Florida	25	34	3	27	48	45	38	3		26.0	
North Carolina	24	13	34	34	36	37	31	8	18	26.1	
New Jersey	9	42	29	32	31	48	34	10	2	26.3	
Wyoming	30	26	32	48	2	1	7	46	46	26.4	
Maine	18	41	41	17	23	12	39	19	29	26.4	
Louisiana	47	41		23	8	21	5	49	40	26.8	
South Carolina	34	14	100100	31	37	27	14	22	33	27.1	
West Virginia	14	22	48	50	25	10	2	33	43	27.1	
Colorado	43	30	13	39	23	26	25	41	13	27.4	1
Tennessee	43 50	11	7	39	37	25	25	41	23	27.8	
Indiana	45	28	150	11	21	25	35	35	35	28.1	
Mississippi	19	15	39	38	21	13	19	35	50	28.1	\vdash
Delaware			59	38 46	44	49	48	23		-	
	4	49		46	50	49	26	1	8 45		
Alaska	44	7	35 7	49	46	39	17	31	25	28.7 28.7	
Georgia Alabama	44	18	21	30	33	19	8	42	42	28.7	1
		18		25	33	19	36	42	42		
Arkansas	41	-	16							29.6	
Michigan	38	31	35	15	24	36	32	27	28	29.6	
Wisconsin	27	36	27	22	40	32	9	40	36	29.9	-
New York	23	20	35	25	41	42	43	37	5	30.1	-
California	42	45	19	18	18	47	29	45	15	30.9	
Massachusetts	10	47	30	36	42	43	46	24	6	31.6	
Hawaii	5	50	15	45	49	50	50	20	12	32.9	
Missouri	46	33	40	43	26	18	30	25	41	33.6	
New Hampshire	40	46	38	20	46	29	47	21	17	33.8	
Ohio	49	23	18	36	35	34	42	47	21	33.9	
Rhode Island	17	48	50	44	33	46	49	39	4	36.7	

INNOVATION	Technology Licenses and Options Executed from Universities (2016)	Patents Issued (2010- 2017)	Total Technology Industry Employment Growth (2012- 2017)	Total R&D % of GDP (2015)	Business Performed R&D - % of Private Industry Output (2015)	Venture Capital Funding Per \$1 Million of GDP (2016)	Start-Up Firms per 1,000 Firms (2016)	AVERAGE RANKING	STATE RANK
California	1	1	14	4	2	1	6	4.1	MODEL
Washington	6	5	2	5	4	5	12	5.6	-
Massachusetts	4	4	10	2	1	2	28	7.3	
Oregon	10	17	9	10	7	17	14	12.0	
New York	2	3	12	29	26	4	10	12.3	
Utah	32	23	3	12	11	3	4	12.6	
North Carolina	8	13	4	17	16	15	18	13.0	
Michigan	11	7	7	6	5	28	33	13.9	
Florida	3	10	5	34	32	20	2	15.1	
Arizona	17	15	15	17	14	21	8	15.3	10
Colorado	22	14	20	20	21	6	7	15.7	10
Minnesota	9	6	23	15	12	12	34	15.9	10
Missouri	19	24	15	15	12	26	2	16.1	13
Texas	7	24	31	30	26	16	5	16.7	14
Georgia	14	16	8	31	28	14	11	17.4	15
Maryland	12	22	27	31	21	11	26	17.4	15
Illinois	18	8	25	20	17	10	25	17.6	17
New Hampshire	16	30	6	11	8	7	48	18.0	18
New Jersey	25	9	35	12	9	19	17	18.0	18
Pennsylvania	5	11	29	20	19	13	42	19.9	20
Idaho	34	26	13	9	10	35	13	20.0	21
Connecticut	40	18	34	8	6	8	45	22.7	20
Virginia	20	20	36	20	28	22	19	23.6	23
Indiana	13	21	26	19	14	34	41	24.0	24
Delaware	44	37	42	6	3	24	14	24.3	25
Ohio	14	12	23	25	19	29	48	24.3	25
Tennessee	23	25	18	31	35	23	24	25.6	27
Wisconsin	26	19	21	25	17	32	44	25.0	28
New Mexico	29	36	38	1	35	30	30	28.4	29
Nevada	46	31	1	50	44	31	1	29.1	30
South Carolina	36	29	11	34	34	41	20	29.3	31
Kansas	27	28	41	28	21	33	31	29.9	32
lowa	21	27	30	27	21	42	49	31.0	33
Rhode Island	43	39	37	14	25	18	43	31.3	34
Alabama	28	35	32	20	30	45	36	32.3	35
Maine	not reported	41	17	39	35	25	37	32.3	31
Montana	35	44	33	36	35	27	27	33.9	37
Vermont	46	34	40	33	30	9	47	34.1	38
Kentucky	36	32	45	36	32	43	16	34.3	39
Nebraska	33	40	22	36	35	36	40	34.6	40
North Dakota	24	46	47	41	40	47	9	36.3	41
Oklahoma	38	33	44	44	40	46	21	38.0	42
Arkansas	31	43	43	48	40	39	29	39.6	43
Hawaii	41	45	28	42	47	38	38	39.0	44
South Dakota	42	48	19	47	47	44	39	40.3	45
Wyoming	not reported	49	50	45	40	40	22	41.0	46
Mississippi	39	42	39	39	47	49	35	41.4	47
Louisiana	30	38	46	49	47	50	31	41.6	48
Alaska	48	50	48	45	50	37	23	43.1	49
West Virginia	48	47	48	43	44	48	50	45.1 46.6	50



MANUFACTURING COMPETITIVENESS INDEX

IVIAIVUIF	CIC	טאוואט	COIVI		IVLIV	LJJ	INDL	Λ						
ECONOMIC STRENGTH		Change in Manufacturing's Share of Gross State Product 2012 - 2017	Growth in Manufacturing GDP 2012 - 2017	Total Manufacturing Employment 2017	Manufacturing Employment as percent of Total Employment 2017	Change in Real GDP per Capita (2012-2017)	Change in Real Personal Income per Capita (2012- 2017)	Change in Real GDP (2012-2017) chained 2009 dollars		Total Exports Per Capita (2017)	Manufact- uring establish- ments total capital expend- itures (\$millions)2	Manufact- uring establish- ments total capital expend- itures per manufact- uring employee 2016	AVERAGE RANKING	STA RAI
Indiana	1		13	7	1	12		19	20000000	9	7	20	10.3	IVAI
Michigan	3			4		3	8			8	. 5		11.4	
California	26		5	1	31	1	1	2		16	2	42	13.5	
Tennessee	12		16	13		9	15	11	_	12	11	_	14.4	
Ohio	11			3	8	13	21	26		17	3		15.1	
South Carolina	10		11	21	11	20	13	9		7	18	15	15.2	
Texas	19		25	2	32	15	41	5		3	- 1	4	17.8	
lowa	8		31	23	4	5	_	13		18	17		18.6	
Pennsylvania	22		19	6	19	4	20	24		34	6		18.6	
Minnesota	16			14	13	17	28	14		31	19		18.8	
Georgia	27		12	11	25	6	-	8			13	28	18.9	
Alabama	9	14	26	17	5	39	26	40	31	14	14	10	20.4	
Arkansas	15	3	8	28	7	25	24	30	17	40	28	22	20.6	
North Carolina	4	41	29	8	14	26	29	15	8	33	9	34	20.8	
Kentucky	5	25	33	18	6	36	33	37	28	5	16	11	21.1	
Illinois	18	43	44	5	19	22	10	35	14	11	8	27	21.3	
New Hampshire	20	2	6	36	15	9	32	20	3	25	39	50	21.4	
Florida	44	6	4	12	43	22	14	7	22	36	15	35	21.7	
Wisconsin	6	45	40	9	2	14	27	25	23	24	12	39	22.2	
Washington	23	47	37	15	27	2	. 2	1	48	2	24	49	23.1	
Kansas	12	17	28	26	11	30	48	34	7	23	27	18	23.4	
Utah	24	35	17	32	26	7	.5	3	47	30	31	24	23.4	
Oregon	2	50	48	24	17	34	4	16	44	10	23	17	24.1	
Louisiana	7		42	31	32	48	41	48	5	1	4	1	24.4	
Massachusetts	29		35	19	34	19	12	20	6	21	25	44	24.8	
Idaho	21		22	37	24	17	9	6		39	34	5	24.9	
Colorado	39		15	29	41	6		4		48	32	36	25.2	
New Jersey	38		24	20	37	38	21	39		26	22	31	27.1	
Nebraska	25			35	17	9	39	12		28	36	29	28.1	
Montana	42		3	47	43	36		27		46	38	3	28.7	
New York	45			10	42	32		35		27	10		29,1	
Nevada	47		27	39	47	35	16	10	4	20	42	40	29.3	
Delaware	41		23	45	40	39	25	28	2000	13	41	6	29.8	
Alaska	49		1	49	45	50	47	50		6	49		30.2	
Arizona	34		30	25	39	41	11	18	45	35	29	26	30.4	
Mississippi	14		38	30	8	43	34	46		29	30	32	30.4	
Rhode Island	36			42		28	30	33		38	46		30.6	
South Dakota	30			41	16	43	46	31		45	45		30.8	L
West Virginia	31		32	40	35	24	40	44		22	37	16	30.9	L
Missouri	17		36	16	21	41	38	41		37	21	38	31,0	
Maryland	43			34	46	29	30	29		47	35		32.1	H
North Dakota	40		34	46	37	49	50	45		4	47	19	32.4	H
Oklahoma	36		47	33	30	21		22		49	26	8	32.9	L
Hawaii	50			48	50	15		23		50	50	46	33.0	
Wyoming	45		20	50	48	46	45	47		41	43	2	34.5	H
Virginia	35		43	22	36	45	37	38		43	20	23	34.7	H
Connecticut	28		45	27	22	47	44			19	33		35.9	H
Maine	32		41	38	28	27	21	32	46	42	44	47	36.1	H
Vermont	33		50	43	22	31		43		15	48		36,3	
New Mexico	48	40	49	44	49	33	35	42	21	44	40	7	97.7	

MANUFACTURING COMPETITIVENESS INDEX

ı						-										90		
ш																		
ш			Persons age															
ш			18 to 24 not						W									
ш			attending						Completed							sub-		
П			school, not						Tech & STEM	Percent					total number of	baccalaure ate		
П	WORKFORCE	Percentage	working,				Change in		Education	Change in					sub-	occupational		
П		d	and no	High School		Manufacturing	Manufacturing		Programs Per	Tech & STEM					baccalaureate	credentials in		
ш		Population	degree	Graduation		Output Per	Output Per	Age 25-44	1,000	Education	Average 8th		Veteran	Veteran %	occupational	manufacturing		
ш		With Adult	beyond high	Section 1	Labor Force	Manufacturing		Population	Enrolled	Program	Grade	Average 8th	Unemployme	share of total	credentials in	as % of total		
ш		Obesity	school	Constitution of	Participation	Employee	Employee (2010-		Students	Completions	Reading	Grade Math	nt Rate	population	manufacturing	credentials	AVERAGE	STATE
П		(2016)	(2016)	A 100 TO 100	Rate (2017)	(2017)	2017)	(2012-2017)		(2010-2016)	Score (2017)	Store (2017)	(2016)	(2016)	(2013)	(2013)	RANKING	
		100000	20000	A A CHARLES	ATTORNEY OF THE	N. Control	STATE OF THE PARTY	ANESON STORY		Office of the second	Same Annual	NAME OF TAXABLE PARTY.	Contract Con	No. of Lot	W. C.	10000	Programme and the second	and the same of
	Nyoming	16	_	39	15		13	20	31			_	-	_			15.4	_
	Montana	6	18	24	26		3	8	15		_	_	34	_	2 333	_		
	Colorado	1	11	45	8		25	2	9	12			22			_		
	Mashington	19	27	40	22	9	37	3	1	10	6	6	28	6			15.1	4
- [North Dakota	36	2	14	1	32	6	1	11	35	30	8	1	28	43	13	17,4	5
- [Maryland	24	18	12	10	5	7	29	2	16	20	30	13	31	35	32	18.6	6
	Massachusetts	2	2	13	15	6	14	23	6	13	1	1	42	46	35	4,	17.4	7
	Vinnesota	17	1	35			9	26	41		_	2				_		
- 1	firginia	21		20	17		43	32	23	36		5	9					
_ +	Texas	43		- 5	24		17	32	24			·	_	·		3		
	Jtah	5		27	3			4	25									
-	2.05			27 9					48		_	_						100
- H	New Hampshire	10		- 1	9			43	_	_	_	_						
- 1	Nebraska	37	7	4	5			21	46			_					AMERICA	1000
- H	owa	37	1	1	7	25	29	24	35	43		15	7	31		_		
	Pennsylvania	26		21	31			34	- 4	_						9	-	
	South Dakota	23	11	28	4	49	21	17	16	46	20	15	2	14	42	17	21.7	16
T [Misconsin	27	7	9	6	42	33	46	27	43	11	8	25	35	20	34	24.5	17
- [Connecticut	9	7	15	13	14	45	49	18	8	4	21	47	44	19	-	21.1	18
- 1	Missouri	34	18	6	23	31	34	29	17	10	26	30	20	20	21	25	22.5	19
	ndiana	40		19			47	35		_		_	_					
_ H	Oklahoma	42		36	38		19	14		25			11	11	- 100		25.5	A LANCE
_ +	Cansas	29		23	12		8	38	42				16					
- 1	North Carolina	35		22	36			26	14									
	llinois	33		25	18		101	48	22		-						1,000	
_ F		13					- 00	-	_	_	_	_			_	_		_
	New Jersey		_	2	29		36	45						_				
- 1	Hawaii	3	18	32	31		1	14	50	28		_	8		0 000		- 1000	
	Kentucky	44		7	43		39	42	19	_	_	36	22	31			28.5	
	Ohio	32		29				35	10								1000000	
_ +	Rhode Island	10		31	19		15	24	33			_	36				- 1,000	
- 1	Maine	24		17	25			44								_		
	krizona	21		43	40			12	32	_	34	24	33	14			-	
	/ermont	12	10	11	11	50	42	47	34	43	4	8	3	34	50	45	27.1	31
Ī	California	4	27	30	33	4	4	14	47	25	34	38	47	48	1	35	26.1	33
	Tennessee	45	36	8	40		20	21	45	48	38	34	29	24	15	10	29.0	34
	Alaska	30		47	13			11	37									35
- 1	Oregon	20		48	26	100	50	1	39	16		_		_		_	1000	
	daho	13		40	21			10	49			_	_				-	
	Georgia	30		44	26		31	26	20	22			36					
- 1	Delaware	27	40	25	33		46	18	26		_	-	6				1000	1
	Florida	13		37				10	29									
							177.5	4	29	1b						_		
	Louisiana	46		46	44		49	19					22				28.9	4
- 1	South Carolina	39		33	45		27	13	40	28		_	34					
	New York	6	18	38	39		41	33	21				39					
	Alabama	47		16	48			40	13		100							
	Nevada	8	42	49	33			9	30	2	_		47	_	7/01/			
	Arkansas	47		17	46	107		29	43									
	Michigan	40	27	40	36	19	35	37	7	42	30	33	46	40	16	42	32.8	
	New Mexico	18	47	50	47	28	32	38	38	31	49	48	16	9	34	27	34.1	48
	Mest Virginia	50	48	3	50	20	16	49	28	5	45	46	43	11	41	44	33.3	49
	Wississippi	49		34	49			41	36	-	49	47	38	38			- Sinter	
- 1	TOTAL .	- 19	74	J4			20	- "	- 00								- 200	



OVERALL STATE RANKINGS

		BUSINESS		INFRA-		ECONOMIC
		CLIMATE	WORKFORCE	STRUCTURE	INNOVATION	STRENGTH
-1	Minnesota	12	S	6	12	10
2		20T	10	3	14	7
	Utah	14	11	4	6	21T
	Washington	24	4	12	2	20
	Iowa	10T	14	10	33	8T
	North Carolina	8	23	25	7	14
	Oregon	13	36	9	4	23
	Idaho	7	37	5	21	26
	Virginia	5	9	15	23	46
	North Dakota	10T	5	1	41	42
10	Michigan	4	47	40T	8	2
	Kansas	16	22	11	32	21T
13T	Arizona	6	31T	21	10	35T
						27
13T	Colorado	30T	7	32T 45	11	(15,770)
	Massachusetts	25			3	25
16	South Dakota	1	16	6	45	3.8
122722222	Nebraska	9	13	16	40	29
17T	Pennsylvania	41	15	23	20	8T
19T	Maryland	30T	6	17	15T	41
19T	Ohio	2	28T	49	25T	5
21	Indiana	34	20	34T	24	1
22	Tennessee	19	34	32T	27	4
	Kentucky	18	27	20	39	15
	Florida	29	40 38	24	9	18
25T		20T		37T	15T	11
	New Hampshire	26	12	48	18T	17
	Wyoming	3	1	27	46	45
28		15	42	30	31	6
	Illinois	50	24	18T	17	16
30		17	45	2	30	32
	Montana	45	2	13	37	30
32	California	49	33	44	1	3
33	Connecticut	32T	18	18T	22	47
	Missouri	22T	19	47	13	40
35T	New Jersey	47	25	26	18T	28
35T	Wisconsin	387	17	42	28	19
37T	Alabama	27T	44	39	35T	12
37T	New York	35	43	43	5	31
39		32T	31T	8	38	49
40		22T	46	40T	43	13
41		38T	21	22	42	43
42		43T	39	36	25T	33
43	New Mexico	36 37	48	14	29	50
	Louisiana		41	29	48	24
45	Maine	42	30	28	35T	48
46	Mississippi	27T	50	34T	47	35T
47	Rhode Island	46	28T	50	34	37
48T	Alaska	48	35	37T	49	34
AOT	Hawaii	43T	26	46	44	44
401				31	50	39

Multifactor Competitive Index

5 Indexes

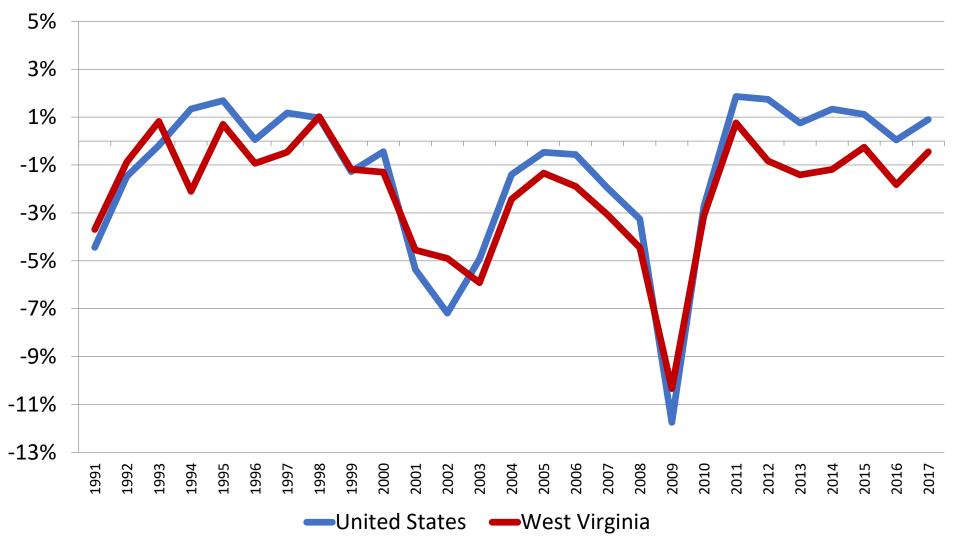
- Business
 - Climate
- Workforce
- ☐ Infrastructure
- Innovation
- EconomicStrength
- (52 metrics)

2018	2017
38 th 👉	46 th
49 th 🔷	49 th
31 st	36 th
50 th \leftrightarrow	50 th
39 th 👉	40 th
50 th ↔	50 th
	38 th

Improvements in top marginal corporate tax rate, high school graduation rates, veteran's share of population, freight shipment value, GDP growth, income per capita, exports per capita.

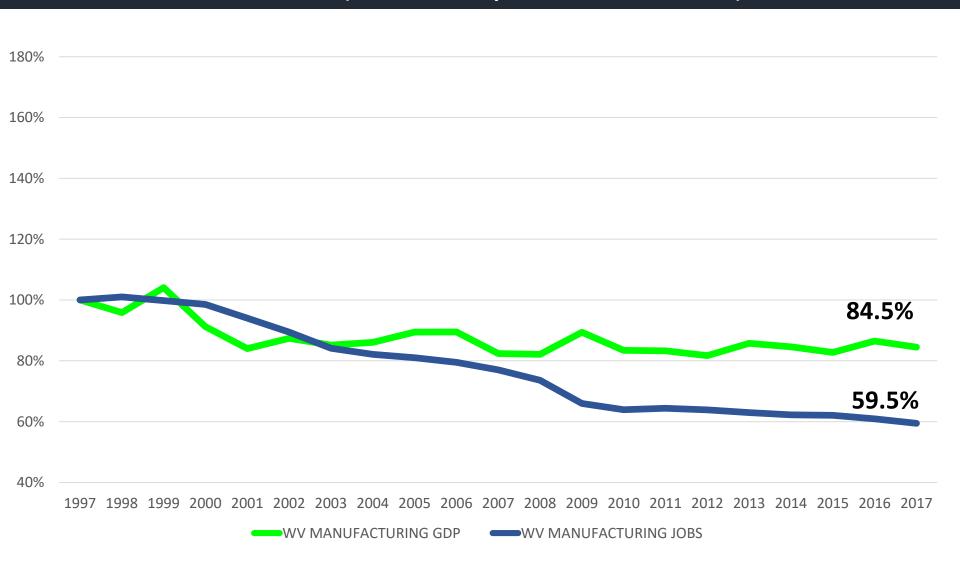


Percentage Annual Manufacturing Job Change 1990-2017



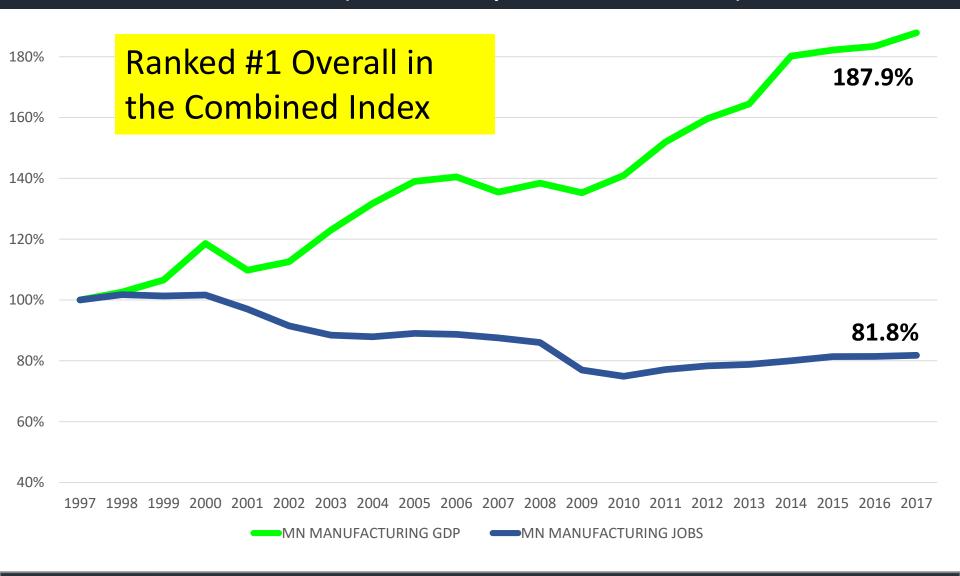


West Virginia Manufacturing Jobs and Manufacturing GDP Growth 1997 – 2017 (normalized as percent of levels in 1997)





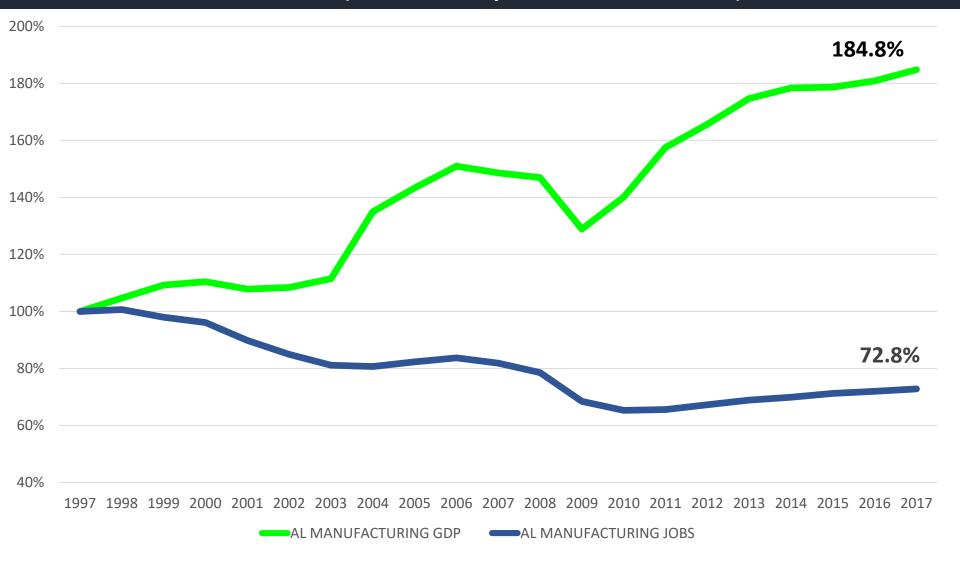
Minnesota Manufacturing Jobs and Manufacturing GDP Growth 1997 – 2017 (normalized as percent of levels in 1997)





Alabama Manufacturing Jobs and Manufacturing GDP Growth

1997 - 2017 (normalized as percent of levels in 1997)









1 Advanced Industry Joh Growth 200

(16.6%)

38.7%

55.7%

82.6%

(26.7%)

(9.0%)

(37.4%)

(4.1%)

(22.3%)

(19.8%)

(36.8%)

(7.4%)

(2.6%)1.3%

(12.6%)

(17.1%)

(22.0%)

12.6%

(788)907

1,156

1,452

(246)

(1,451)

(99)

(601)

(458)

(837)

(103)

(148)

(24)

(164)

(221)

Source: EMSI-US Bureau of Labor Statistics OCEW

86

11

(1,016)

vv v Auvanceu muusu	y Job Gi	OWLII	2007 -	ZU1/
ADVANCED INDUSTRY	2007 Jobs	2017 Jobs	2007 - 2017 Change	2007 - 2017 % Change
Architectural, Engineering, and Related Services	5,089	4,306	(783)	(15.4%)
Computer Systems Design and Related Services	2,546	4,096	1,550	60.9%

4,751

2,342

2,077

1,758

3,800

2,719

3,875

2,442

2,694

2,317

2,272

1,385

1,174

937

847

960

1,004

683

3,963

3,249

3,233

3,210

2,784

2,473

2,424

2,343

2,093

1,859

1,435

1,282

1,026

913

858

796

783

769

Electric Power Generation, Transmission & Distribution

Pharmaceutical and Medicine Manufacturing

Aerospace Product and Parts Manufacturing

Scientific Research and Development Services

Medical Equipment and Supplies Manufacturing

Agriculture, Construction, & Mining Machinery Mfg

Navigational, Measuring, Electromedical, & Control

Data Processing, Hosting, and Related Services

Clay Product and Refractory Manufacturing

Iron and Steel Mills and Ferroalloy Manufacturing

Alumina and Aluminum Production and Processing

Wired and Wireless Telecommunications Carriers

Motor Vehicle Parts Manufacturing

and Filaments Manufacturing **Basic Chemical Manufacturing**

Instruments Manufacturing

Medical and Diagnostic Laboratories

Oil and Gas Extraction

Management, Scientific & Technical Consulting Services

Resin, Synthetic Rubber, and Artificial and Synthetic Fibers

Recommendations from 2017 Call to Action

- Develop a 5-year strategy to improve WV manufacturing competitiveness.
- Expand cluster strategies-including supply chain analysis for automotive, aerospace and chemical manufacturing
- Improvements to the state's manufacturing business climate be a top priority
- A more demand-driven approach to education and workforce development
- Research the state's technology sector and create innovation recommendations
- Prioritize high-speed broadband
- Developing a public dashboard to measure progress.

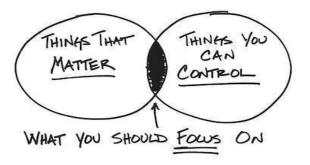






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"Leadership and learning are indispensable to each other."

John F. Kennedy

