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Municipal Strategy | North America

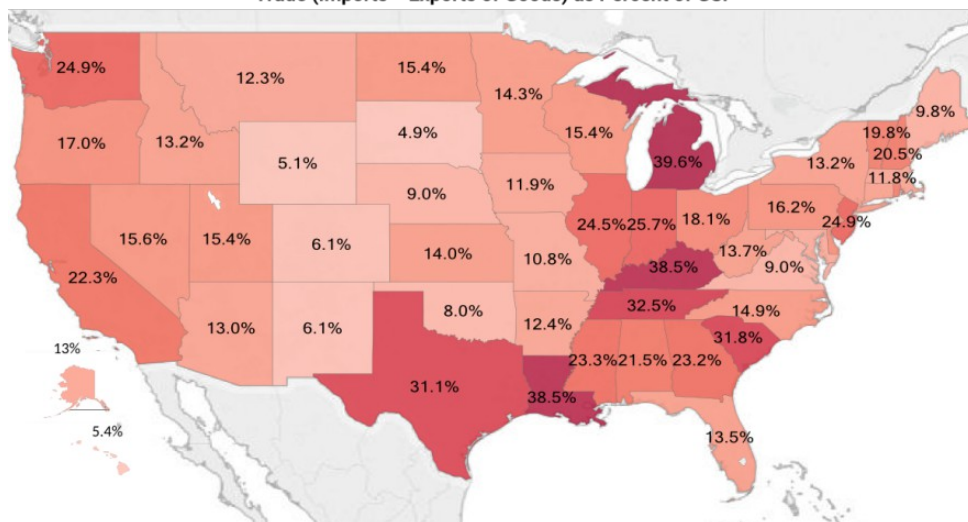
State & Local Tariff Exposure Guide

Governments have recently imposed tariffs on over \$400bn worth of goods and the trade conflict persists. Which state and local governments are most exposed?

What we did: Investors have asked us how tariffs will be felt across state and local credits. Using wage, export, and import data, we developed a regional exposure guide that measures how tariffs on \$290bn of US imports and \$135bn of US exports may affect states and MSAs. We then extend this analysis to simulate how exposures increase under full-scale US-China tariffs which would propel the total value of goods subject to tariffs to over \$700bn. We find the impact to be unevenly distributed, just as general exposure to trade is unevenly distributed across states. Agricultural, manufacturing, and trading hubs are most at risk.

Exhibit 1:

Trade (Imports + Exports of Goods) as Percent of GSP



Source: AlphaWise, Morgan Stanley Research, BEA, US Census Bureau. Figures are all based on annual 2017 data.

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Overview | Tariff Timeline: The Road to \$400bn+ of Global Tariffs

Exhibit 2:

Date	Selected actions
January 22	US: Imposes safeguard tariffs on solar panels and washing machines
February 6	US: Releases Section 232 investigation results, finds steel and aluminum imports threaten national security
March 1	US: Announces steel and aluminum import tariffs
March 22	US: USTR releases Section 301 investigation results, finds China trade practices regarding technology transfer and IP rights to be unfair
March 23	US: Imposes tariffs on steel and aluminum imports, but exempts certain trading partners such as Mexico and Canada
April 2	China: Imposes retaliatory tariffs on US aluminum and agricultural products
April 3	US: Releases tariff list on \$50bn worth of imports from China
April 4	China: Releases tariff list on US \$50bn worth of imports from US
June 1	US: Reduces exemption list for steel and aluminum tariffs to only Argentina (steel and aluminum), Australia (steel and aluminum), Brazil (steel), and South Korea (steel)* Canada: Imposes retaliatory tariffs in response to the US's steel and aluminum tariffs
June 5	Mexico: Imposes retaliatory tariffs in response to the US's steel and aluminum tariffs
June 18	US: President directs USTR to identify list for tariffs on \$200bn worth of products from China
June 21	Turkey: Imposes retaliatory tariffs in response to the US's steel and aluminum tariffs
June 22	EU: Imposes retaliatory tariffs in response to the US's steel and aluminum tariffs
July 6	US: Imposes tariffs on \$34bn worth of imports from China from \$50bn list China: Imposes retaliatory tariffs on \$34bn worth of imports from US from \$50bn list
July 10	US: Releases preliminary list for tariffs on \$200bn worth of imports from China
July 20	US: Threatens tariffs on all imports from China
August 3	China: Announces retaliatory tariffs on \$60bn worth of imports from US US: Imposes tariffs on \$16bn worth of imports from China from \$50bn list
August 23	China: Imposes retaliatory tariffs on \$16bn worth of imports from US from \$50bn list
September 17	US: Announces final list of tariffs on \$200bn worth of imports from China
September 24	US: Imposes tariff on \$200bn worth of imports from China China: Imposes retaliatory tariffs on \$60bn worth of imports from US

Source: Morgan Stanley Research, PIIE, USTR, White House, The Guardian, International Trade Administration, CBP. See [Trade Tensions: Chipping Away at Growth](#), September 3, 2018. Note: This is not an exhaustive list of global trade actions in 2018. *Argentina, Brazil, and South Korea are subject to quotas instead of tariffs.

Overview | We Assess the Impact of the Status Quo & Further Escalation

Exhibit 3:

List of tariffs included in this analysis*			
Tariffs by country		Approximate value of tariffed goods (\$bn)	
		Scenario 1: Current Tariffs (as of 9/24/18)	Scenario 2: Full-Scale US-China Tariffs
Tariffs imposed by the US on:	Rest of World	• Section 232 steel tariffs (exemptions: Argentina, Australia, Brazil, and South Korea)** • Section 232 aluminum tariffs (exemptions: Argentina and Australia)**	\$41
	China	• Section 301 tariffs	\$250
Retaliatory tariffs imposed on the US by:	China	• Retaliatory tariffs in response to the US's Section 232 tariffs	\$3
		• Retaliatory tariffs in response to the US's Section 301 tariffs	\$110
	EU		\$3
	Mexico	• Retaliatory tariffs in response to the US's Section 232	\$3
	Canada	tariffs	\$13
	Turkey		\$2
Sum of value of tariffed goods		\$425	\$692

Source: Morgan Stanley Research, PIIE, US Census USA Trade Online Tool, WTO, Global Policy Watch, CNN, International Trade Administration, Mohawk Global, Canada Department of Finance. Approximate values of tariffed goods are generally based on 2017 trade data. *This is not an exhaustive list of new tariffs introduced since the US began enforcing Section 232 tariffs. Other tariffs, such as those from India and Russia, were not included due to either a lack of data availability or data quality concerns. **Argentina, Brazil, and South Korea are subject to quotas instead of tariffs; quotas were not accounted for in this analysis.

Methodology | We Measured Impact Using Wage, Export, & Import Data

Tariffs in Response to US Tariffs

Percent of Wages Impacted by Tariffs

We mapped 6-digit Harmonized System (HS6) codes to 6-digit NAICS codes to identify regional exposure to industries impacted by the retaliatory tariffs. The percent of wages affected was used to determine the degree of impact. All HS6 codes included in the US's steel and aluminum tariffs were eliminated since domestic producers of those goods should benefit from the global tariffs.

NAICS data paired with the BLS's Quarterly Census of Employment and Wages allow us to assess the impact by state and MSA, but do not differentiate between domestic- and global-focused establishments.

State Exports of Goods Subject to Tariffs / GSP

We used the Census' USA Trade Online tool to quantify the annual value of tariffed goods exported by a state to the specific country applying the tariff. As done for the percent of wages method, HS6 codes included in the US's steel and aluminum tariffs were eliminated.

Using state exports more precisely tells us the value of goods that are subject to tariffs versus the percent of wages method which is based on broader classifications of business type; however, the exporting state, or 'Origin of Movement State', does not reflect the state of production. Practically, this means states that consolidate goods for export, such as Louisiana, will be overemphasized. No MSA-level data is available.

US Tariffs

State Imports of Goods Subject to Tariffs / GSP

Using the Census' USA Trade Online tool, we quantified the annual value of tariffed goods imported to each state from a specific country. Tariffs were assumed to apply to steel and aluminum imports from all countries besides those that were exempted. Quotas were not taken into account.

The Census refers to the importing state as the 'State of Destination' which is not equivalent to the state of consumption. This series can reflect consolidation points and can overemphasize large states since a shipment with multiple destinations will only be considered to be imported to the state that receives the greatest value of the shipment's goods. No MSA-level data are available.

Impact | Top Industries, Exports, & Imports Impacted by Tariffs

Exhibit 4:

Top Three Industries Exposed to Tariffs

Industry	Total Wages (nationwide, \$bn)
Current Tariffs	
334413 Semiconductor and Related Device Manufacturing	29
325412 Pharmaceutical Preparation Manufacturing	24
334111 Electronic Computer Manufacturing	21
Full-Scale US-China Tariffs	
334413 Semiconductor and Related Device Manufacturing	29
325412 Pharmaceutical Preparation Manufacturing	24
334111 Electronic Computer Manufacturing	21

Source: Morgan Stanley Research, BLS QCEW (accessed August 2018). Figures are all based on annual 2017 data.

Exhibit 5:

Top Three Exports Exposed to Tariffs (Chinese retaliation tariffs only)

Product	Total Exports (nationwide, \$bn)
Current Tariffs	
120190 Soybeans	12
870323 Motor Vehicles Of A Cylinder Capacity Btw 1500cc And 3000cc	7
270900 Crude Oil From Petroleum And Bituminous Minerals	4
Full-Scale US-China Tariffs	
880000 Civilian Aircraft, Engines, And Parts	16
120190 Soybeans	12
870323 Motor Vehicles Of A Cylinder Capacity Btw 1500cc And 3000cc	7

Source: Morgan Stanley Research, US Census USA Trade Online Tool. Figures are all based on annual 2017 data.

Exhibit 6:

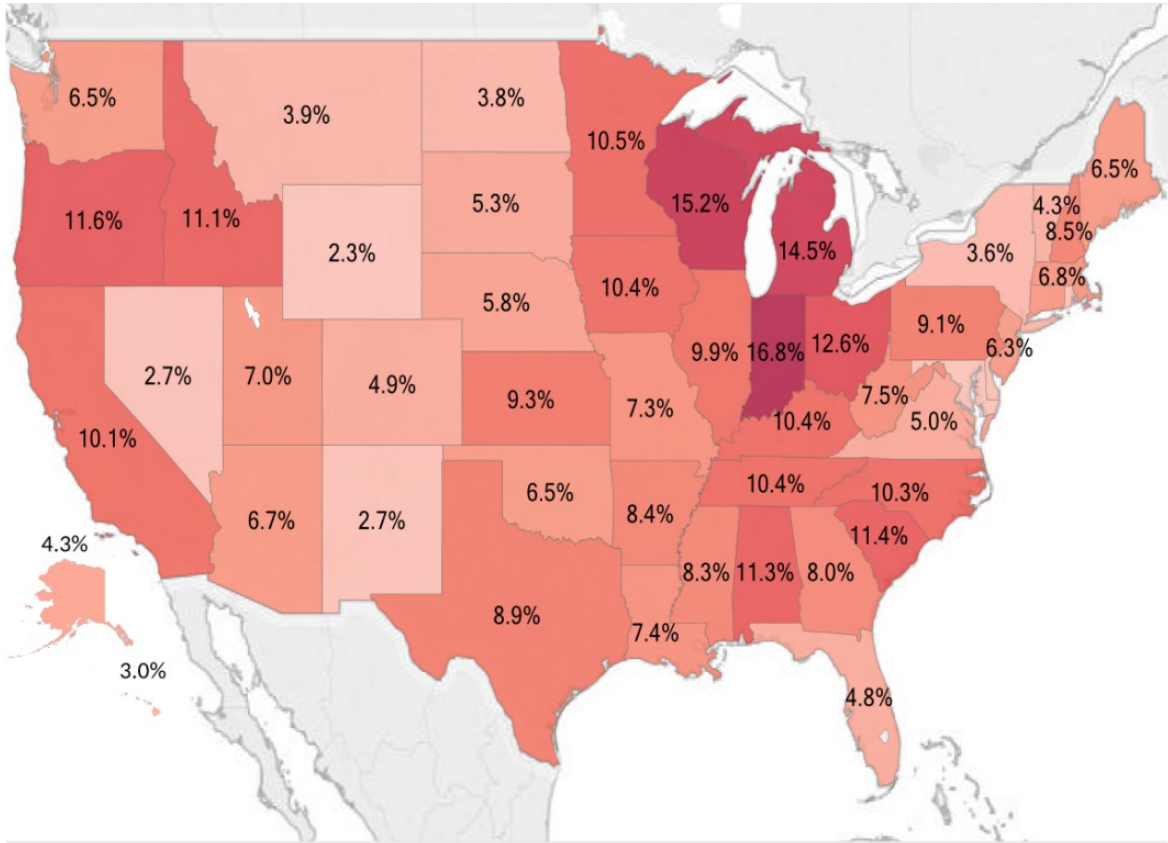
Top Three Imports Exposed to Tariffs (US tariffs on China only, ex Steel and Aluminum)

Product	Total Imports (nationwide, \$bn)
Current Tariffs	
851762 Machines For The Reception/Conversion/Transmission Of Voice, Etc	23
847330 Parts & Accessories For Auto Data Processors	15
850440 Static Converters; Auto Data Processor Power Supplies	5
Full-Scale US-China Tariffs	
851712 Phones For Cellular Ntwks Or For Oth Wireless Ntwk	45
847130 Portable automatic data processing machines < 10 Kg	37
851762 Machines For The Reception/Conversion/Transmission Of Voice, Etc	23

Source: Morgan Stanley Research, US Census USA Trade Online Tool. Figures are all based on annual 2017 data.

Tariffs in Response to US Tariffs | Wage Exposure to Current Tariffs

Exhibit 7:



Source: AlphaWise, Morgan Stanley Research, BLS QCEW (accessed August 2018), BEA. Figures are all based on annual 2017 data.

Exhibit 8:

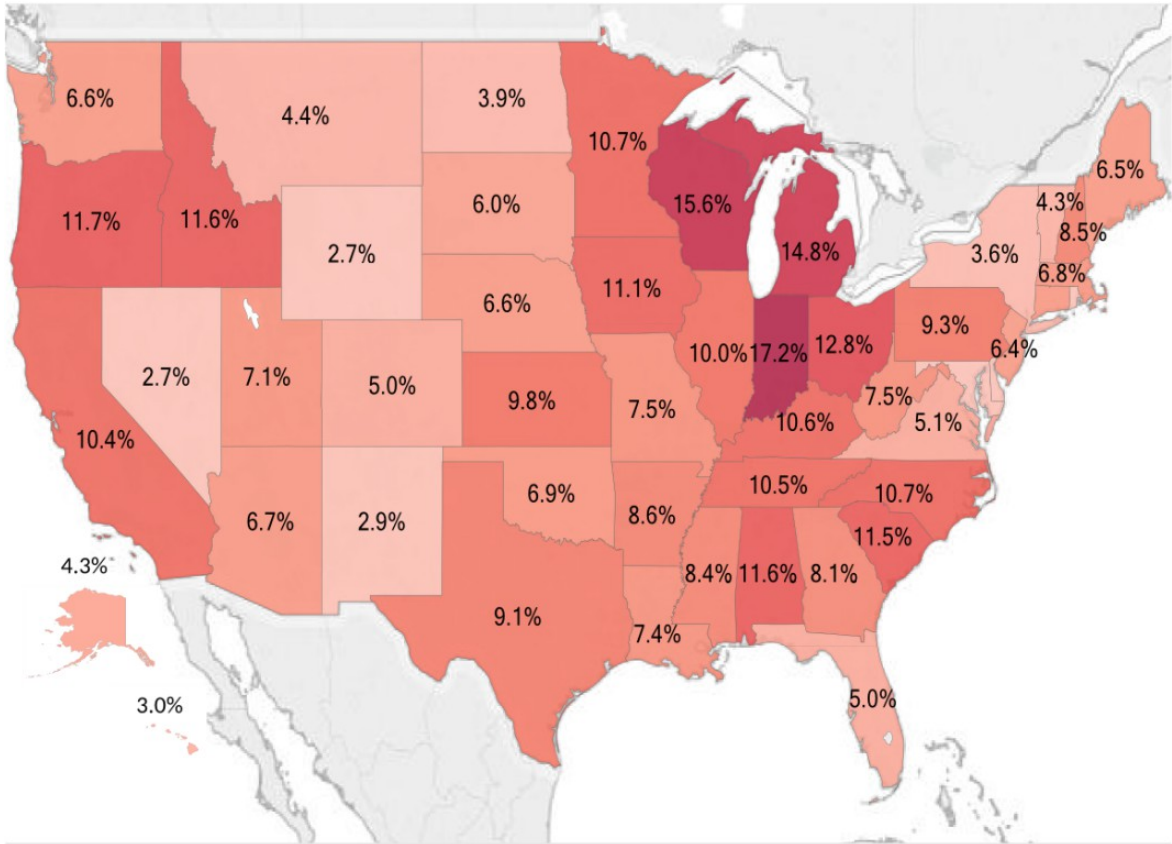
Most and least affected states

Rank	State	Percent of wages impacted
1	Indiana	16.8%
2	Wisconsin	15.2%
3	Michigan	14.5%
4	Ohio	12.6%
5	Oregon	11.6%
6	South Carolina	11.4%
7	Alabama	11.3%
8	Idaho	11.1%
9	Minnesota	10.5%
10	Iowa	10.4%
41	Montana	3.9%
42	North Dakota	3.8%
43	New York	3.6%
44	Hawaii	3.0%
45	New Mexico	2.7%
46	Rhode Island	2.7%
47	Nevada	2.7%
48	Delaware	2.6%
49	Maryland	2.5%
50	Wyoming	2.3%

Source: AlphaWise, Morgan Stanley Research, BLS QCEW (accessed August 2018), BEA. Figures are all based on annual 2017 data.

Tariffs in Response to US Tariffs | Wage Exposure to Full-Scale US-China Tariffs

Exhibit 9:



Source: AlphaWise, Morgan Stanley Research, BLS QCEW (accessed August 2018), BEA. Figures are all based on annual 2017 data.

Exhibit 10:

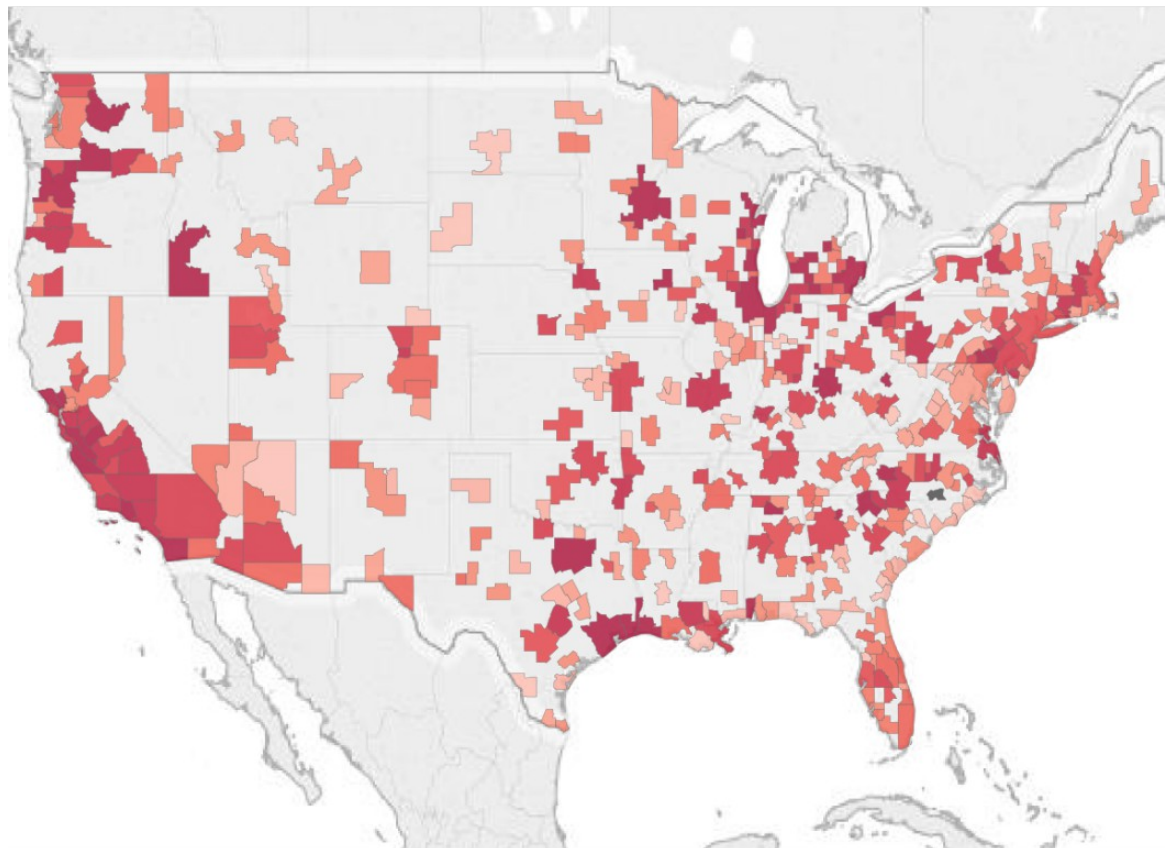
Most and least affected states

Rank	State	Percent of wages impacted
1	Indiana	17.2%
2	Wisconsin	15.6%
3	Michigan	14.8%
4	Ohio	12.8%
5	Oregon	11.7%
6	Alabama	11.6%
7	Idaho	11.6%
8	South Carolina	11.5%
9	Iowa	11.1%
10	North Carolina	10.7%
41	Alaska	4.3%
42	North Dakota	3.9%
43	New York	3.6%
44	Hawaii	3.0%
45	New Mexico	2.9%
46	Maryland	2.8%
47	Wyoming	2.7%
48	Rhode Island	2.7%
49	Nevada	2.7%
50	Delaware	2.6%

Source: AlphaWise, Morgan Stanley Research, BLS QCEW (accessed August 2018), BEA. Figures are all based on annual 2017 data.

Tariffs in Response to US Tariffs | Wage Exposure to Current Tariffs

Exhibit 11:



Source: AlphaWise, Morgan Stanley Research, BLS QCEW (accessed August 2018), BEA. Figures are all based on annual 2017 data. MSAs were colored based on deciles.

Exhibit 12:

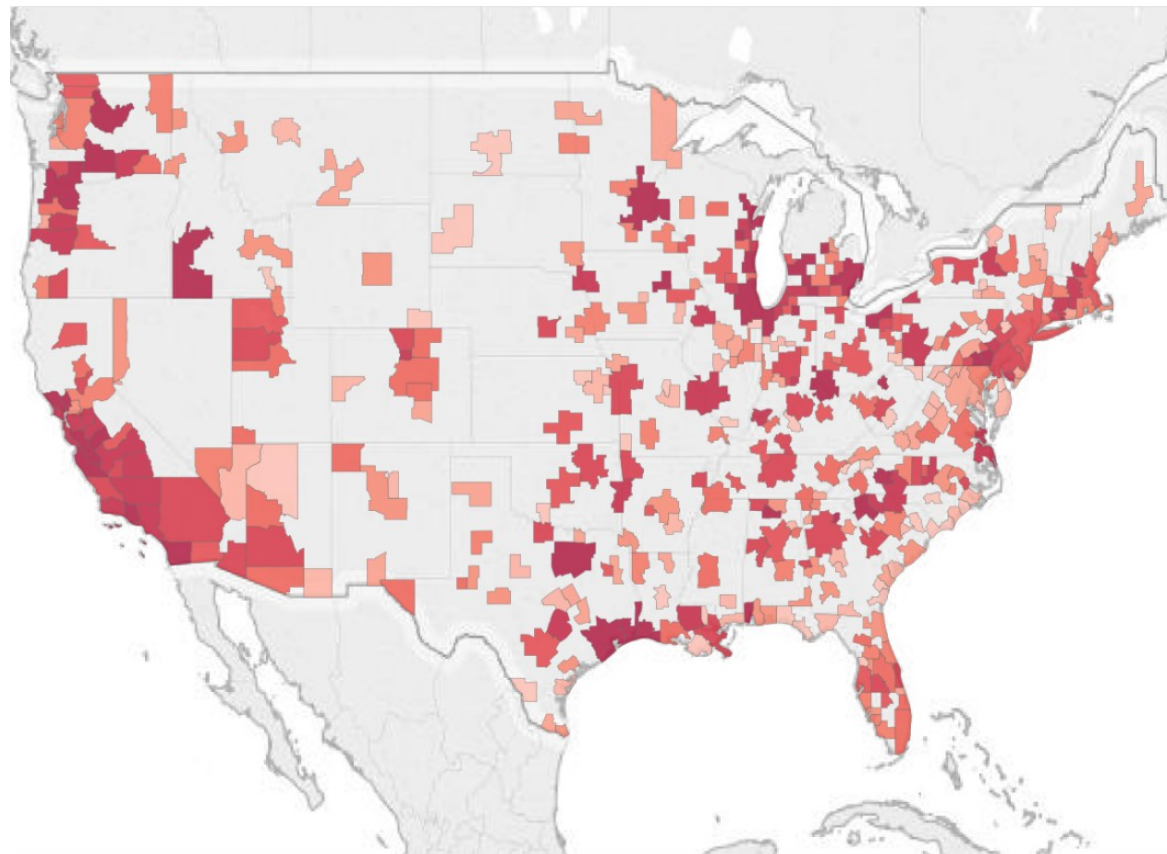
Most and least affected large MSAs*

Rank	MSA	Percent of wages impacted
1	Elkhart-Goshen, IN	40.7%
2	San Jose-Sunnyvale-Santa Clara, CA	20.6%
3	Beaumont-Port Arthur, TX	15.4%
4	Yakima, WA	15.1%
5	Hickory-Lenoir-Morganton, NC	11.9%
6	Grand Rapids-Wyoming, MI	11.0%
7	Cincinnati, OH-KY-IN	10.5%
8	Portland-Vancouver-Hillsboro, OR-WA	10.4%
9	Santa Rosa, CA	10.1%
10	Boise City, ID	10.0%
11	York-Hanover, PA	9.3%
12	Detroit-Warren-Dearborn, MI	9.0%
13	Salinas, CA	8.7%
14	Minneapolis-St. Paul-Bloomington, MN-WI	8.7%
15	Chicago-Naperville-Elgin, IL-IN-WI	8.5%
16	Dallas-Fort Worth-Arlington, TX	8.3%
17	San Juan-Carolina-Caguas, PR	8.1%
18	Milwaukee-Waukesha-West Allis, WI	7.9%
19	San Diego-Carlsbad, CA	7.8%
20	Lake Charles, LA	7.7%
177	College Station-Bryan, TX	0.6%
178	Hagerstown-Martinsburg, MD-WV	0.6%
179	Atlantic City-Hammonton, NJ	0.6%
180	Lincoln, NE	0.6%
181	McAllen-Edinburg-Mission, TX	0.5%
182	Salisbury, MD-DE	0.5%
183	Waco, TX	0.5%
184	Amarillo, TX	0.5%
185	Topeka, KS	0.4%
186	Springfield, IL	0.4%
187	Burlington-South Burlington, VT	0.3%
188	Tallahassee, FL	0.3%
189	Gulfport-Biloxi-Pascagoula, MS	0.3%
190	Corpus Christi, TX	0.3%
191	Anchorage, AK	0.3%
192	Killeen-Temple, TX	0.3%
193	Myrtle Beach-Conway-North Myrtle Beach, SC-NC	0.2%
194	Crestview-Fort Walton Beach-Destin, FL	0.2%
195	Wilmington, NC	0.1%
196	Fayetteville, NC	0.1%

Source: AlphaWise, Morgan Stanley Research, BLS QCEW (accessed August 2018), BEA. Figures are all based on annual 2017 data. *MSAs w/ >100,000 employees.

Tariffs in Response to US Tariffs | Wage Exposure to Full-Scale US-China Tariffs

Exhibit 13:



Source: AlphaWise, Morgan Stanley Research, BLS QCEW (accessed August 2018), BEA. Figures are all based on annual 2017 data. MSAs were colored based on deciles.

Exhibit 14:

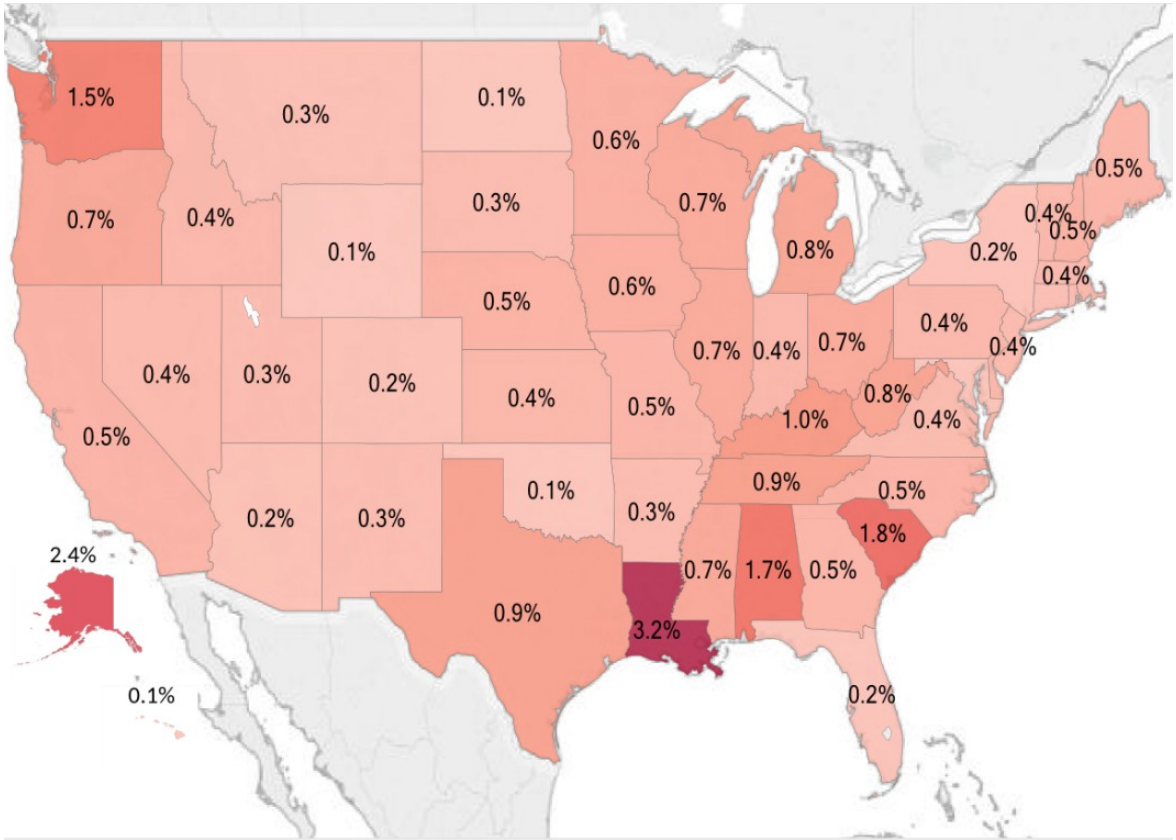
Most and least affected large MSAs*

Rank	MSA	Percent of wages impacted
1	Elkhart-Goshen, IN	42.4%
2	San Jose-Sunnyvale-Santa Clara, CA	20.6%
3	Beaumont-Port Arthur, TX	15.4%
4	Yakima, WA	15.2%
5	Hickory-Lenoir-Morganton, NC	11.9%
6	Grand Rapids-Wyoming, MI	11.0%
7	Cincinnati, OH-KY-IN	10.6%
8	Portland-Vancouver-Hillsboro, OR-WA	10.4%
9	Boise City, ID	10.2%
10	Santa Rosa, CA	10.1%
11	York-Hanover, PA	9.3%
12	Detroit-Warren-Dearborn, MI	9.2%
13	Minneapolis-St. Paul-Bloomington, MN-WI	8.7%
14	Salinas, CA	8.7%
15	Chicago-Naperville-Elgin, IL-IN-WI	8.5%
16	Dallas-Fort Worth-Arlington, TX	8.3%
17	San Juan-Carolina-Caguas, PR	8.1%
18	Milwaukee-Waukesha-West Allis, WI	7.9%
19	San Diego-Carlsbad, CA	7.9%
20	Lake Charles, LA	7.8%
177	Washington-Arlington-Alexandria, DC-VA-MD-WV	0.6%
178	Portland-South Portland, ME	0.6%
179	Lincoln, NE	0.6%
180	College Station-Bryan, TX	0.6%
181	Hagerstown-Martinsburg, MD-WV	0.6%
182	Atlantic City-Hammonton, NJ	0.6%
183	McAllen-Edinburg-Mission, TX	0.6%
184	Salisbury, MD-DE	0.5%
185	Topeka, KS	0.5%
186	Burlington-South Burlington, VT	0.4%
187	Springfield, IL	0.4%
188	Tallahassee, FL	0.3%
189	Gulfport-Biloxi-Pascagoula, MS	0.3%
190	Corpus Christi, TX	0.3%
191	Anchorage, AK	0.3%
192	Killeen-Temple, TX	0.3%
193	Wilmington, NC	0.2%
194	Myrtle Beach-Conway-North Myrtle Beach, SC-NC	0.2%
195	Crestview-Fort Walton Beach-Destin, FL	0.2%
196	Fayetteville, NC	0.1%

Source: AlphaWise, Morgan Stanley Research, BLS QCEW (accessed August 2018), BEA. Figures are all based on annual 2017 data. *MSAs w/ >100,000 employees.

Tariffs in Response to US Tariffs | Export Exposure to Current Tariffs

Exhibit 15:



Source: AlphaWise, Morgan Stanley Research, BEA, US Census USA Trade Online Tool. Figures are all based on annual 2017 data.

Exhibit 16:

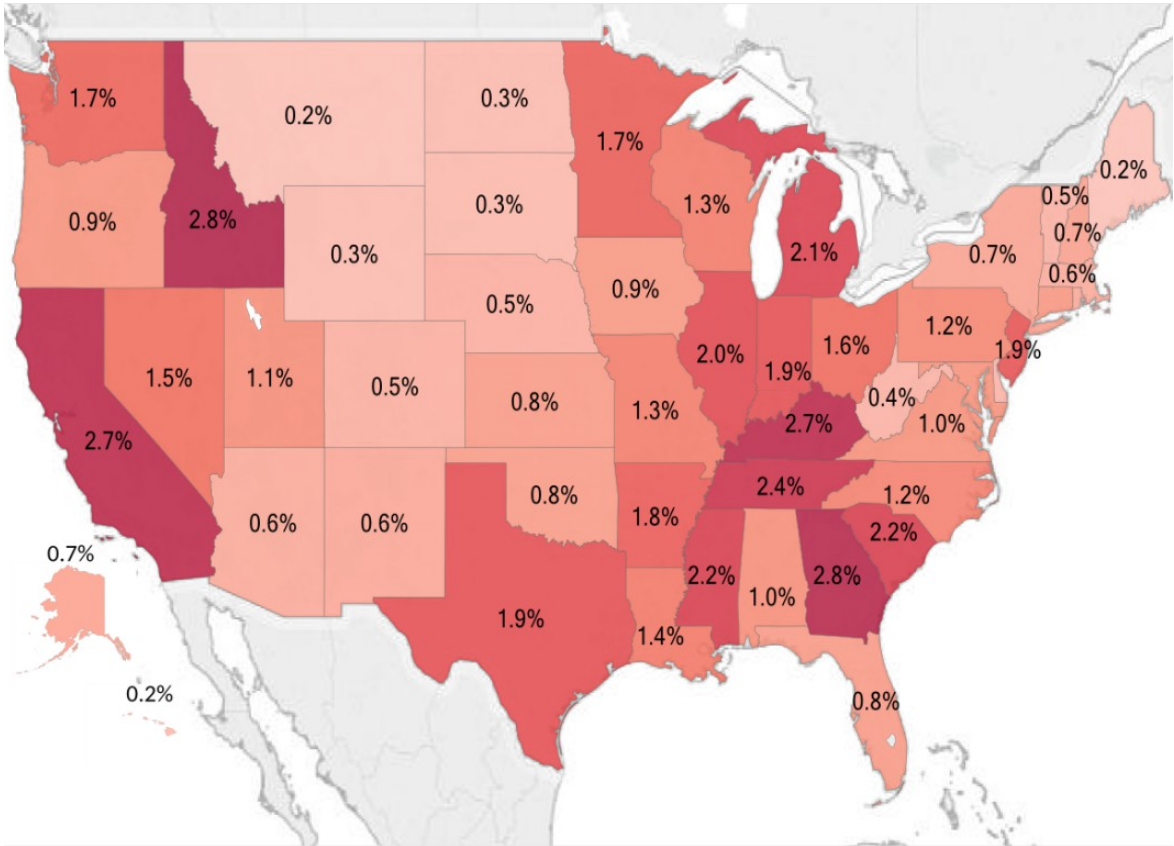
Most and least affected states

Rank	State	Exports / GSP
1	Louisiana	3.2%
2	Alaska	2.4%
3	South Carolina	1.8%
4	Alabama	1.7%
5	Washington	1.5%
6	Kentucky	1.0%
7	Tennessee	0.9%
8	Texas	0.9%
9	West Virginia	0.8%
10	Michigan	0.8%
41	Connecticut	0.3%
42	Arizona	0.2%
43	Colorado	0.2%
44	New York	0.2%
45	Florida	0.2%
46	Maryland	0.1%
47	Oklahoma	0.1%
48	North Dakota	0.1%
49	Hawaii	0.1%
50	Wyoming	0.1%

Source: AlphaWise, Morgan Stanley Research, BEA, US Census USA Trade Online Tool. Figures are all based on annual 2017 data.

US Tariffs | Import Exposure to Current Tariffs

Exhibit 19:



Source: AlphaWise, Morgan Stanley Research, BEA, US Census USA Trade Online Tool. Figures are all based on annual 2017 data.

Exhibit 20:

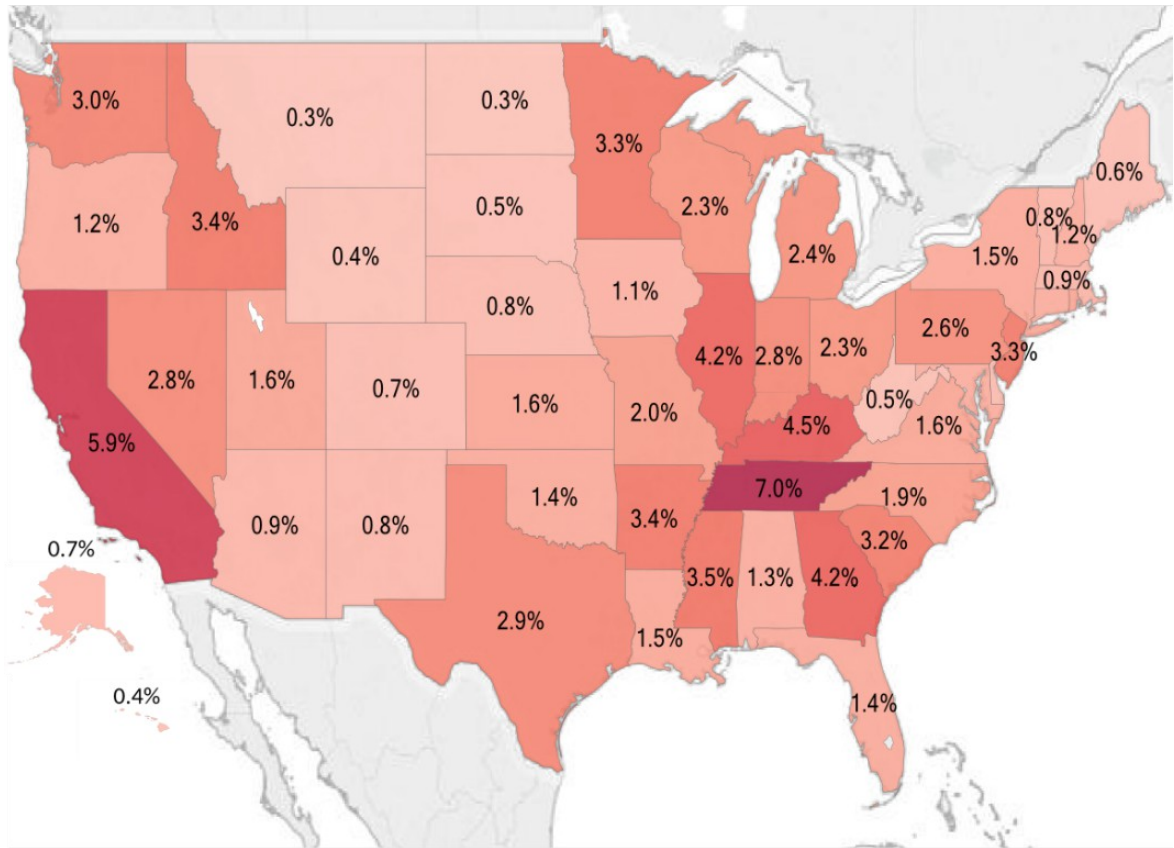
Most and least affected states

Rank	State	Imports / GSP
1	Idaho	2.8%
2	Georgia	2.8%
3	Kentucky	2.7%
4	California	2.7%
5	Tennessee	2.4%
6	South Carolina	2.2%
7	Mississippi	2.2%
8	Michigan	2.1%
9	Illinois	2.0%
10	Indiana	1.9%
41	Colorado	0.5%
42	Vermont	0.5%
43	West Virginia	0.4%
44	Delaware	0.4%
45	South Dakota	0.3%
46	North Dakota	0.3%
47	Wyoming	0.3%
48	Hawaii	0.2%
49	Montana	0.2%
50	Maine	0.2%

Source: AlphaWise, Morgan Stanley Research, BEA, US Census USA Trade Online Tool. Figures are all based on annual 2017 data.

US Tariffs | Import Exposure to Full-Scale US-China Tariffs

Exhibit 21:



Source: AlphaWise, Morgan Stanley Research, BEA, US Census USA Trade Online Tool. Figures are all based on annual 2017 data.

Exhibit 22:

Most and least affected states

Rank	State	Imports / GSP
1	Tennessee	7.0%
2	California	5.9%
3	Kentucky	4.5%
4	Georgia	4.2%
5	Illinois	4.2%
6	Mississippi	3.5%
7	Arkansas	3.4%
8	Idaho	3.4%
9	New Jersey	3.3%
10	Minnesota	3.3%
41	Alaska	0.7%
42	Colorado	0.7%
43	Delaware	0.7%
44	Maine	0.6%
45	West Virginia	0.5%
46	South Dakota	0.5%
47	Hawaii	0.4%
48	Wyoming	0.4%
49	North Dakota	0.3%
50	Montana	0.3%

Source: AlphaWise, Morgan Stanley Research, BEA, US Census USA Trade Online Tool. Figures are all based on annual 2017 data.

Impact | A Tale of Four Municipalities

Beyond targeting states in America's breadbasket, tariffs apply to states in the manufacturing heartland as well:

Kentucky

Don't Drink Or Drive: Kentucky whiskey has been the subject of many trade-related headlines since multiple trading partners targeted the politically sensitive export, yet the state only exported \$380mn worth of whiskey in 2017 according to Census data. We'd be more concerned about transportation manufacturing, with large motor vehicle exports featuring prominently on the state's tariffed exports and tens of thousands of jobs tied to the industry. In addition to ranking among the top ten states impacted by current tariffs by each measure we assessed, the Bluegrass State's credit quality lags that of most states as it has one of the lowest pension funding ratios in the nation.

Washington

Aircraft On The Radar: Like Louisiana, Washington appears to be more drastically impacted by current tariffs on exports than the coastal state actually is since about \$4bn of soybeans produced elsewhere flow through the state's ports. However, full-scale tariffs loom large for Washington's aircraft industry: the state's aircraft exports are worth over \$10bn annually and its transportation equipment manufacturing businesses that could be further scoped in by tariffs provides at least 35k jobs and over \$2bn in annual wages in the state.

Louisiana

There's Trouble In Transit: Louisiana stands out as the state with the greatest percentage of tariffed exports to GSP, which is a reflection of the outsized role the state's ports play in consolidating agricultural goods at the mouth of the Mississippi. Soybeans represent over two-thirds of the \$8bn in non-steel-and-aluminum exports we estimate to be currently tariffed by China. Beyond impacting just the ports, Chinese tariffs also scope in energy and chemical products which support billions in annual wages in the state.

Michigan

A Bump In The Road: Unsurprisingly, Michigan's exposure to the auto industry has caused the state to rank among the top ten states impacted by current tariffs by wages, exports, and imports. The transportation equipment manufacturing industry alone provides over 180,000 jobs and \$13bn of annual wages in Michigan. Auto manufacturers could face margin erosion not only from revenue pressure if tariffs decrease foreign demand, but also from cost increases from US-imposed tariffs on vehicle parts.

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(as of August 31, 2018)

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STOCK RATING CATEGORY	COVERAGE UNIVERSE		INVESTMENT BANKING CLIENTS (IBC)			OTHER MATERIAL INVESTMENT SERVICES CLIENTS (MISC)	
	COUNT	% OF TOTAL	COUNT	% OF TOTAL IBC	% OF RATING CATEGORY	COUNT	% OF TOTAL OTHER MISC
Overweight/Buy	1156	37%	296	40%	26%	546	39%
Equal-weight/Hold	1363	44%	348	48%	26%	635	45%
Not-Rated/Hold	50	2%	5	1%	10%	7	0%
Underweight/Sell	553	18%	82	11%	15%	223	16%
TOTAL	3,122		731			1411	

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months. Due to rounding off of decimals, the percentages provided in the "% of total" column may not add up to exactly 100 percent.

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next 12-18 months.

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