Transportation, Sustainability, and Urbanization

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Transportation Index for Sustainable Places (TISP)

“What gets measured, gets managed”

Mobility Aspect of Transportation

Bigger Picture of Transportation

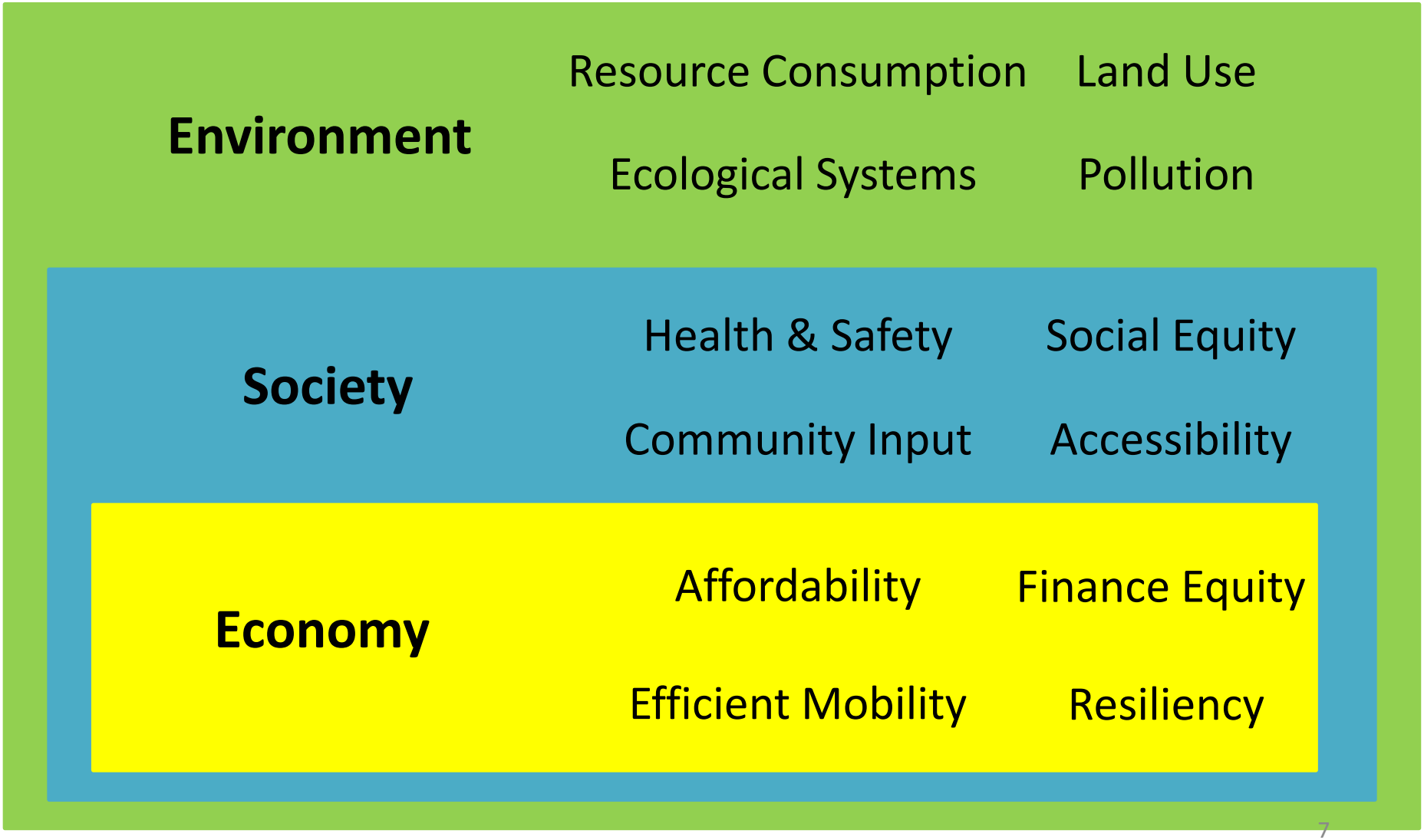
Transportation Sustainability

Canadian Centre for Sustainable Transport (CST)

The Centre for Sustainable Transportation
Le Centre pour un transport durable

European Commission on Sustainable Development

Transportation Sustainability



Environmental Elements

1. Minimize consumption of renewable and non-renewable resources for transportation
2. Transportation and placemaking system is designed to maximize land use efficiency
3. Minimize transportation and placemaking system's impact on ecological systems
4. Limit transportation related wastes and pollution

Social Elements

5. Transportation meets access needs while consistent with human health and safety
6. Planning and management of transportation incorporates government and community input
7. Transportation and placemaking system promote social equity
8. Transportation and placemaking system meets basic access needs of all individuals

Economic Elements

9. Transportation is affordable for individuals
10. Transportation is financed in an equitable manner
11. Transportation provides efficient movement of people and goods for economic growth
12. Transportation is resilient to economic fluctuations

Sustainability

World Commission on Environment and Development (WCED), 1987

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

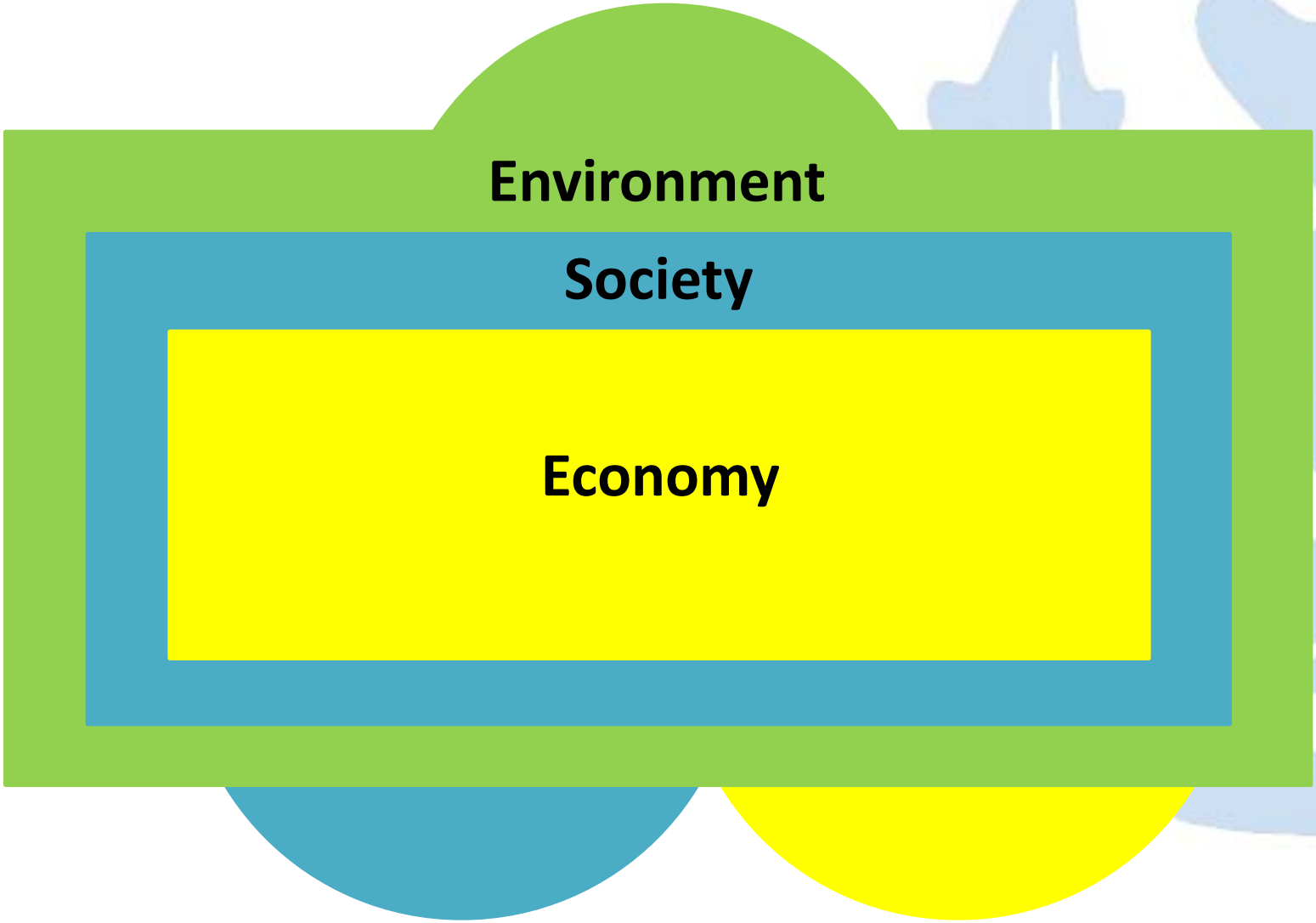
Principles of Equity (Graham Haughton)

Defines sustainability as equity issues between groups of people

Green & Brown Environmental Agendas

Defines sustainability with perspective for direct, indirect, short-term, and long-term issues

Sustainability



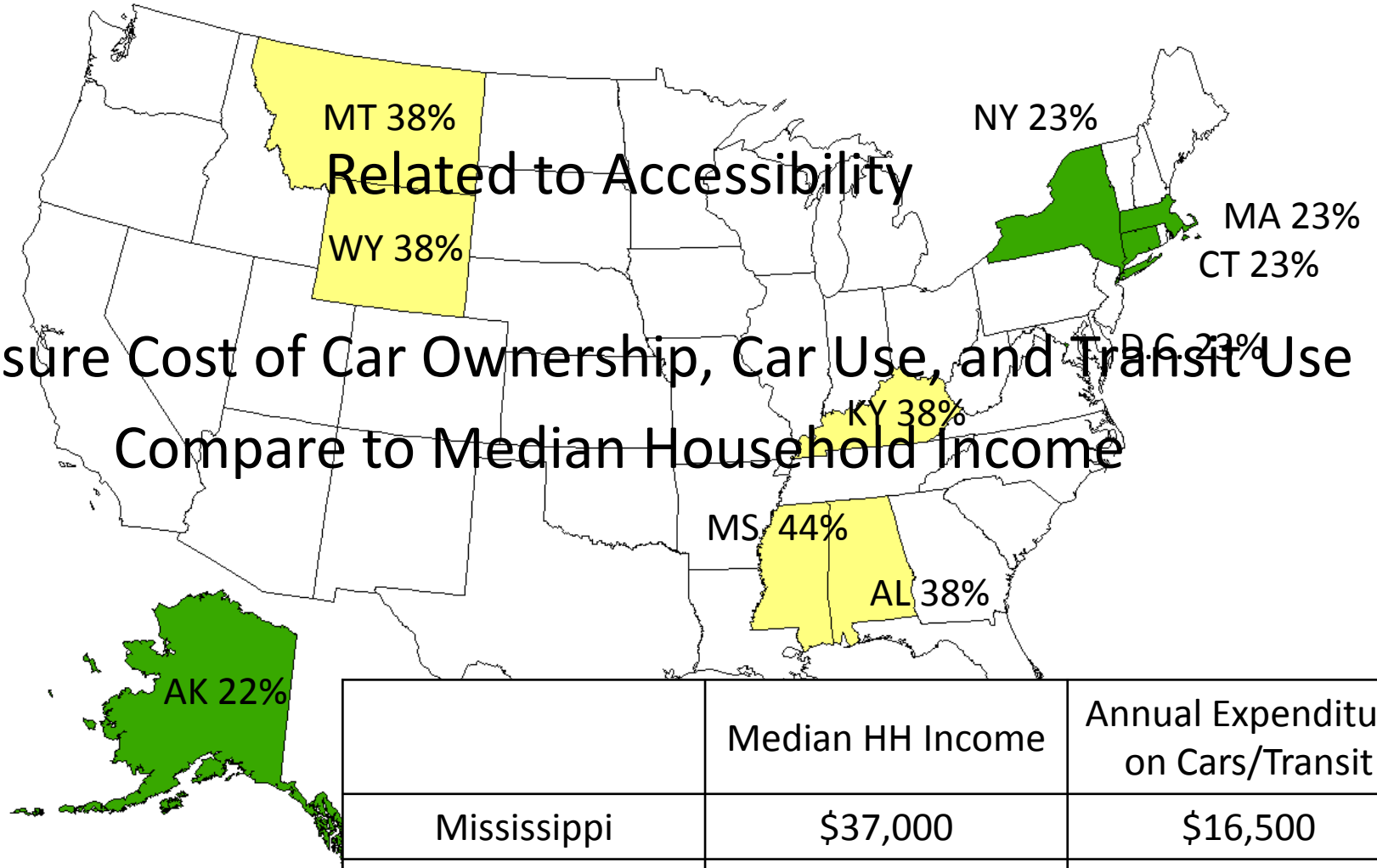
Economic Elements

State Wide Scale (1997-2007)

	Element	Variable
9	Affordable for Individuals	*% of household income spent on transportation*
10	Financed in an Equitable Manner	*federal funding for transportation per capita*
11	Provides Efficient Movement for Economic Activity	*change in ratio of GDP per VMT*
		current ratio of GDP per VMT
12	Resilient to Economic Fluctuations	*fuel expenditure as % of GDP*

Affordability

% of household income spent on transportation



Related to Accessibility

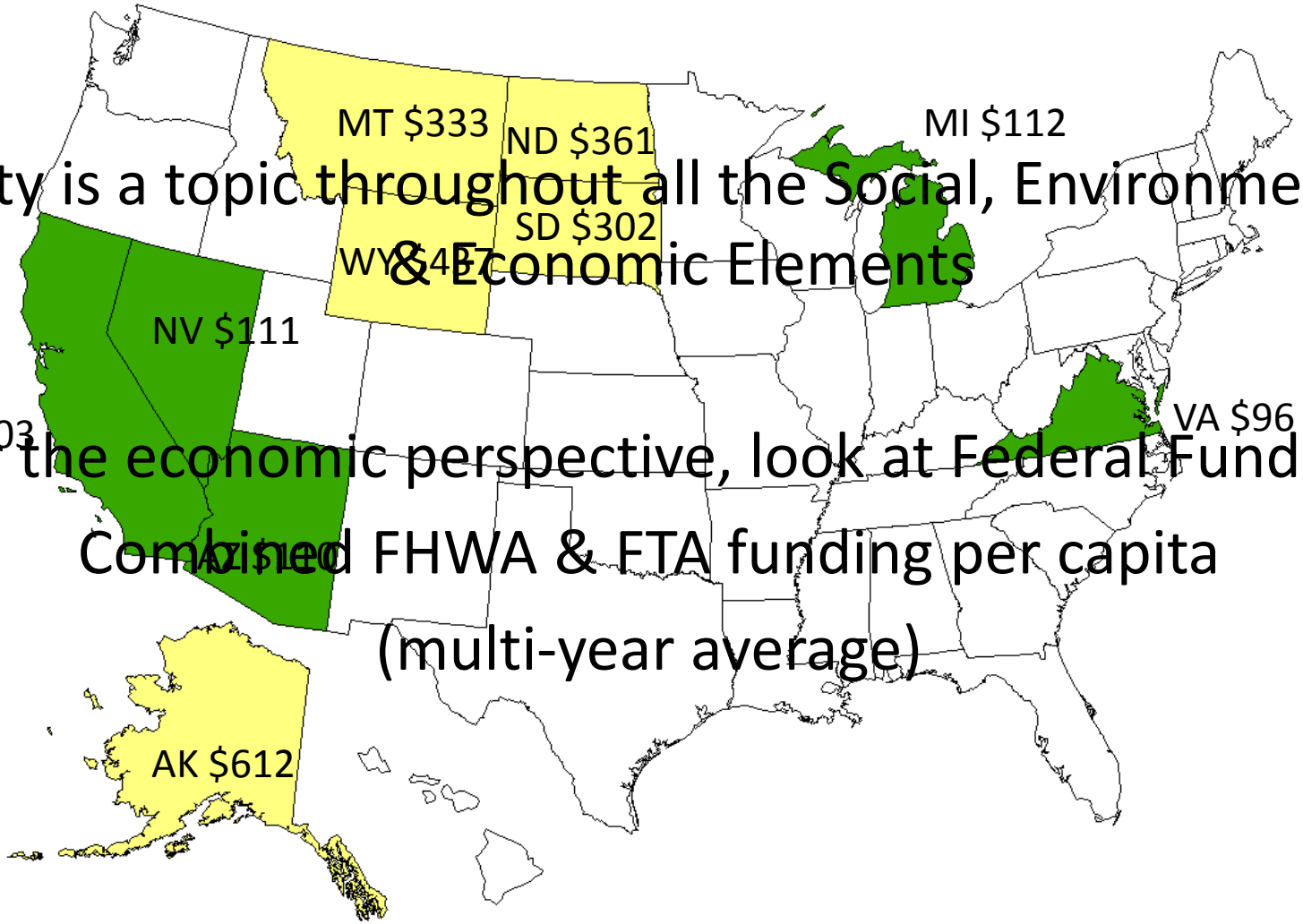
Measure Cost of Car Ownership, Car Use, and Transit Use

Compare to Median Household Income

	Median HH Income	Annual Expenditure on Cars/Transit
Mississippi	$37,000	$16,500
Connecticut	$64,000	$14,500

Equitably Financed

federal funding per capita ($/capita)



Equity is a topic throughout all the Social, Environmental, & Economic Elements

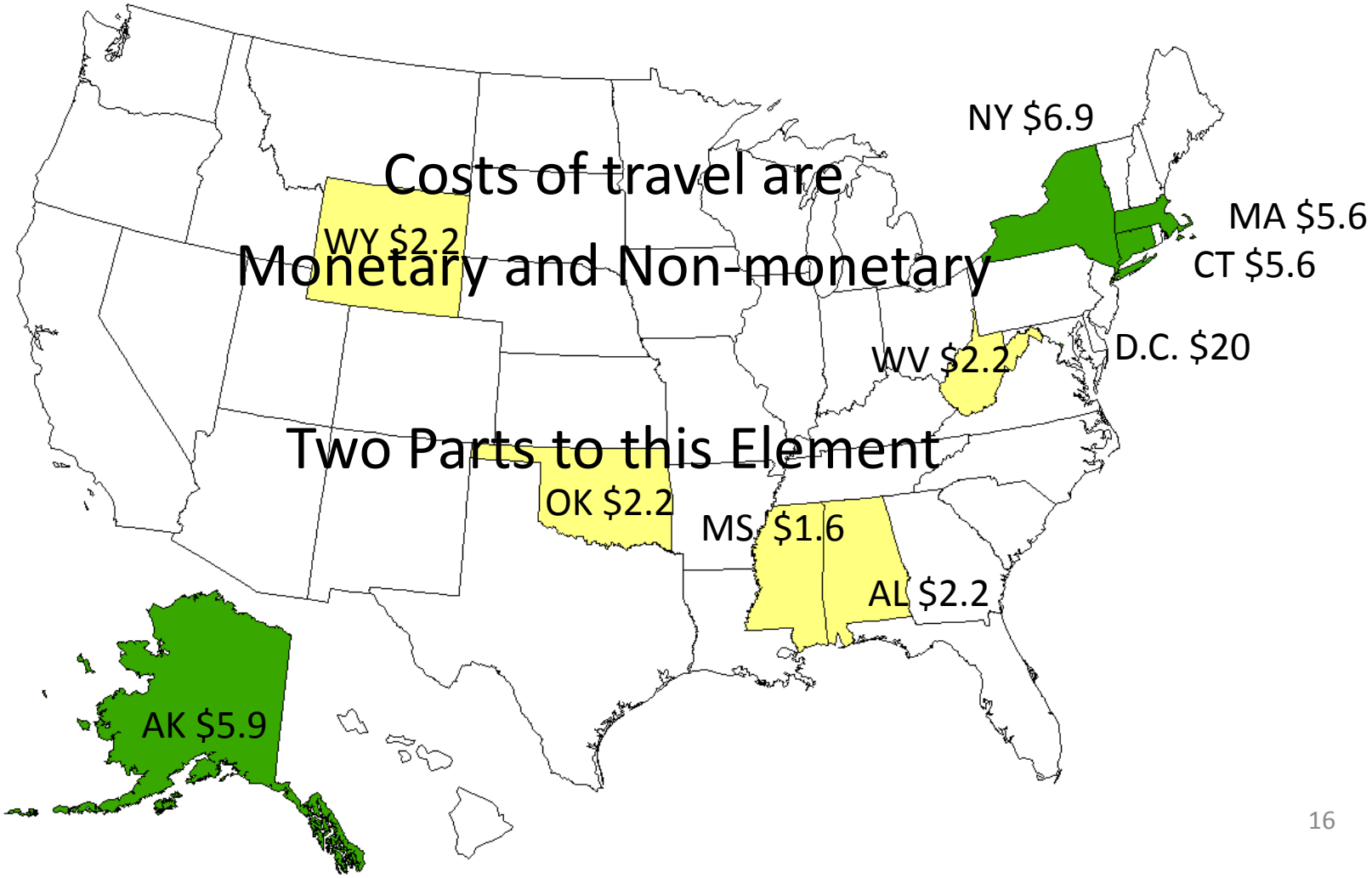
For the economic perspective, look at Federal Funding

Combined FHWA & FTA funding per capita

(multi-year average)

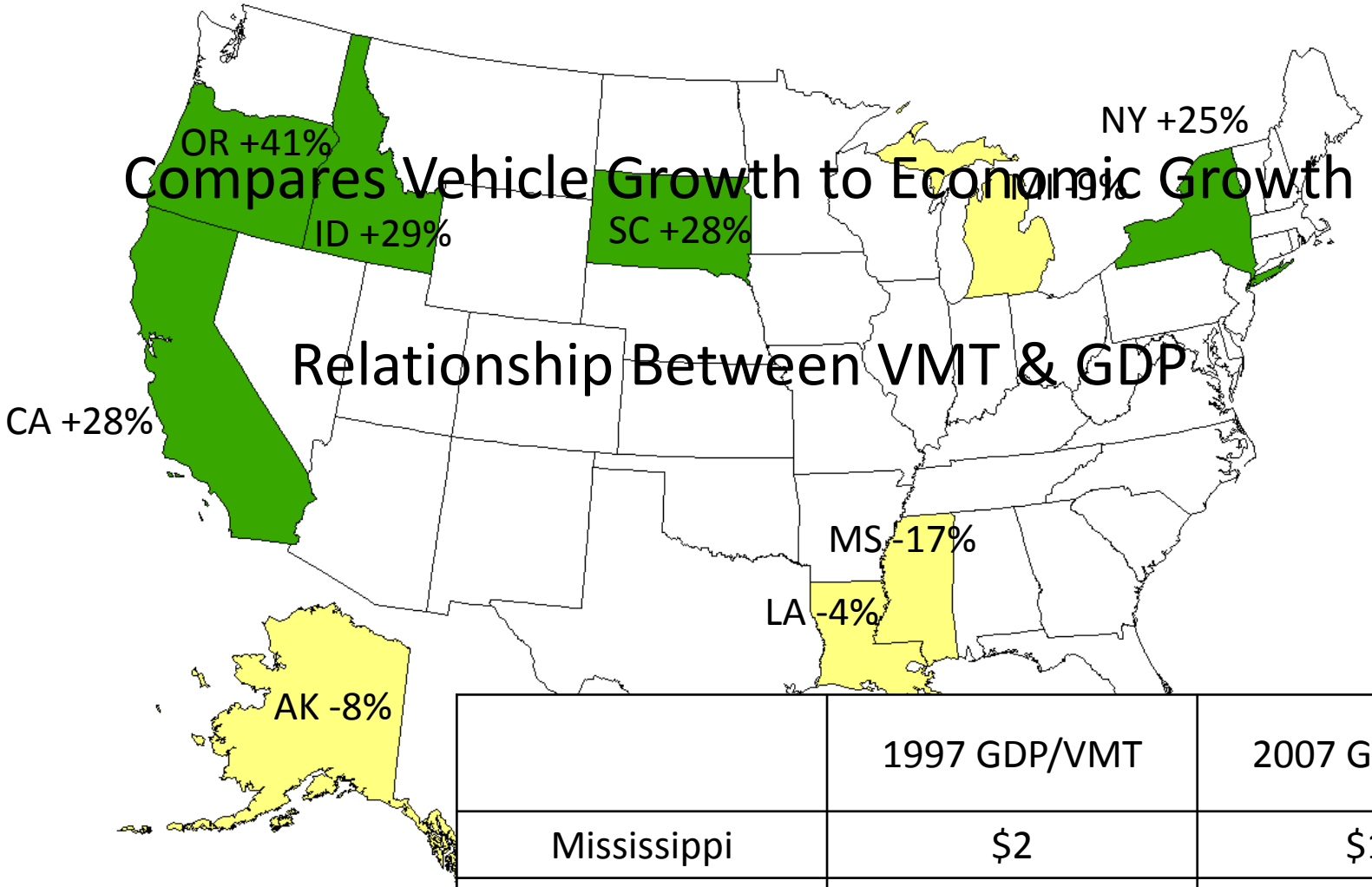
Efficient Mobility (part 1)

current level of GDP per VMT ($/miles)



Efficient Mobility (part 2)

growth rate of GDP per VMT



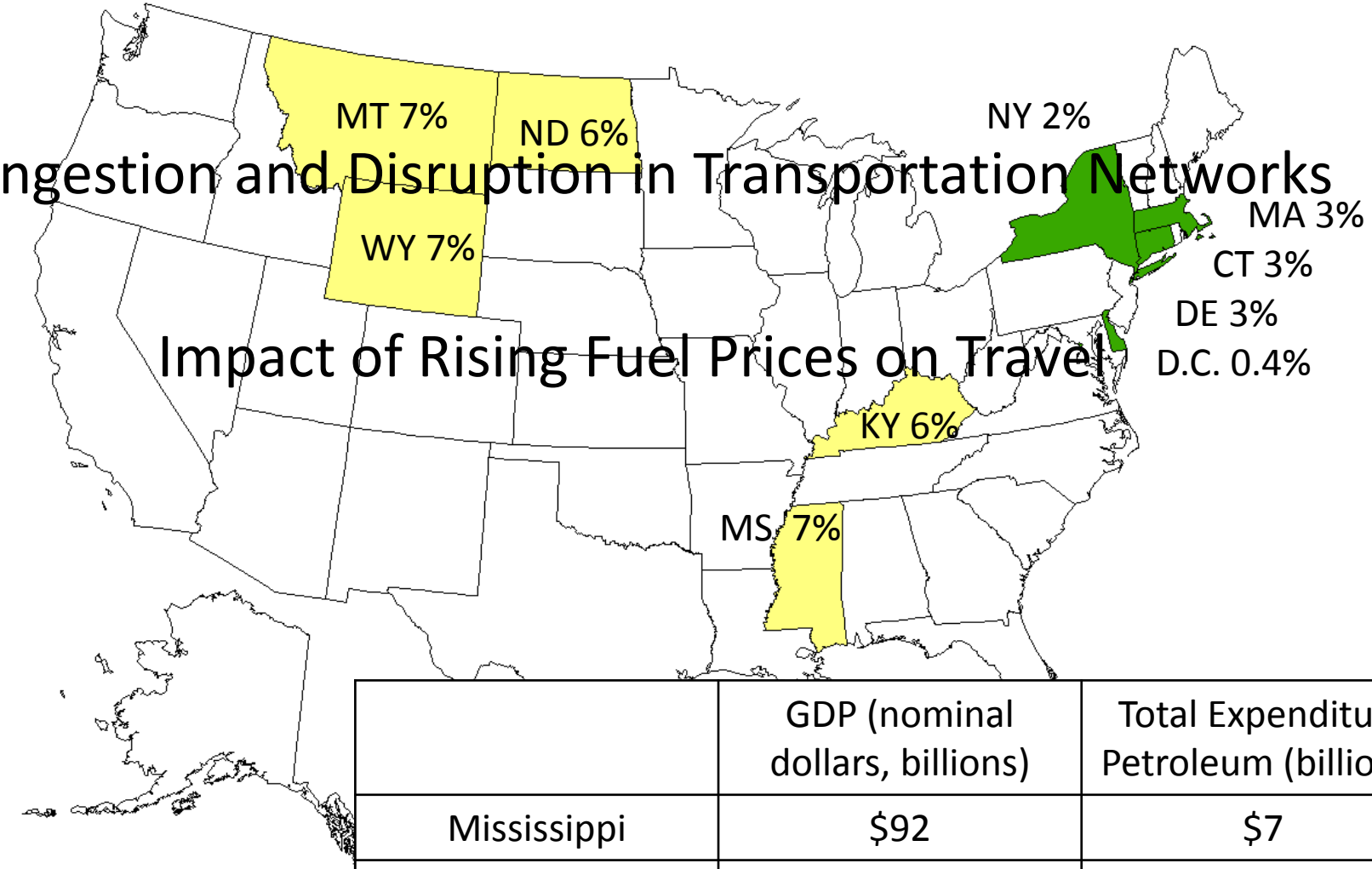
Compares Vehicle Growth to Economic Growth

Relationship Between VMT & GDP

	1997 GDP/VMT	2007 GDP/VMT
Mississippi	$2	$1.6
Oregon	$3	$4

Resiliency

fuel expenditure as % of GDP

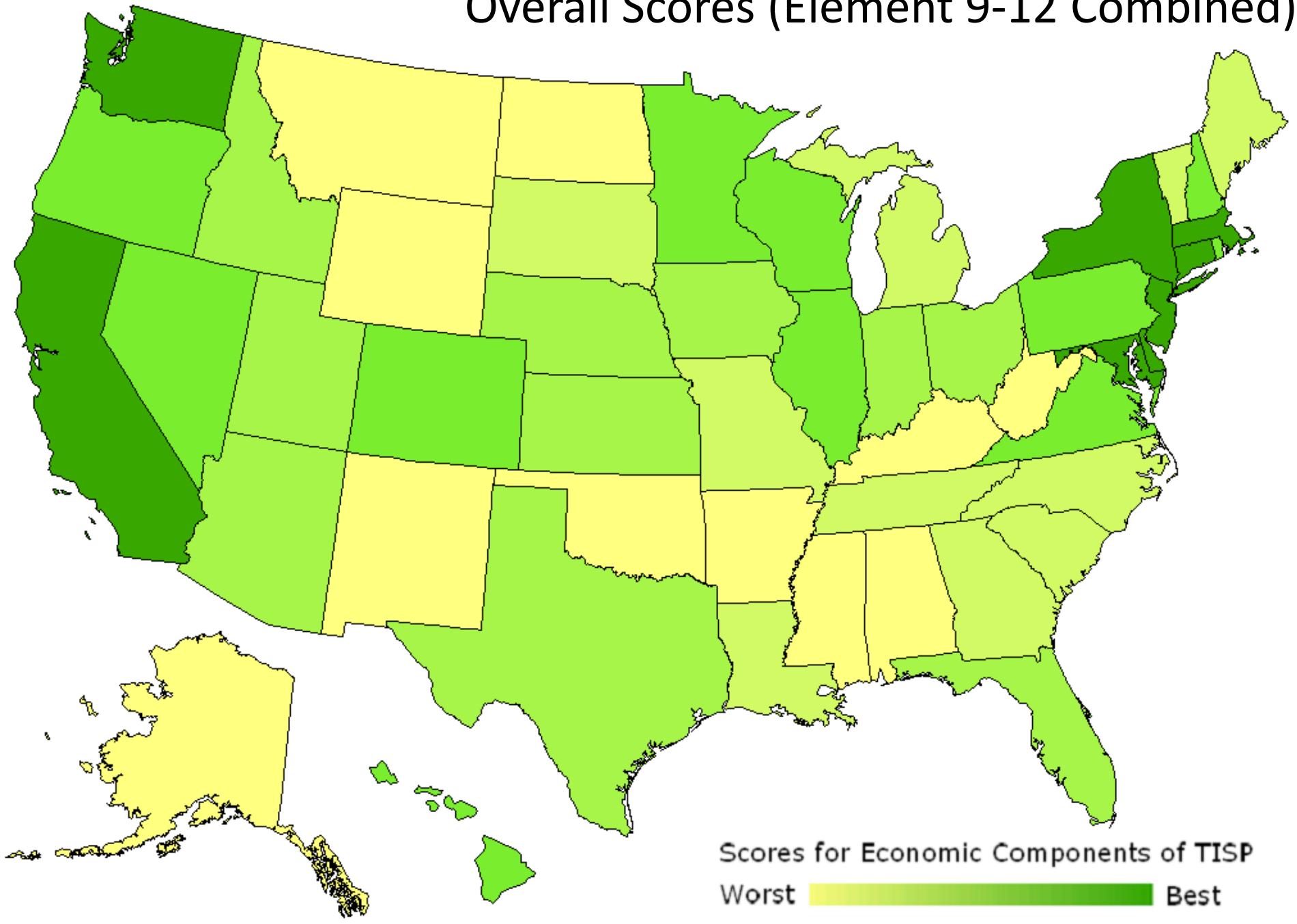


Congestion and Disruption in Transportation Networks

Impact of Rising Fuel Prices on Travel

	GDP (nominal dollars, billions)	Total Expenditure Petroleum (billions)
Mississippi	$92	$7
D.C.	$92	$0.3

Overall Scores (Element 9-12 Combined)



Sustainability & Economic Growth

Sustainability does not mean “no growth”

In our study, the higher scoring states generally exhibit lower VMT growth and greater GDP growth

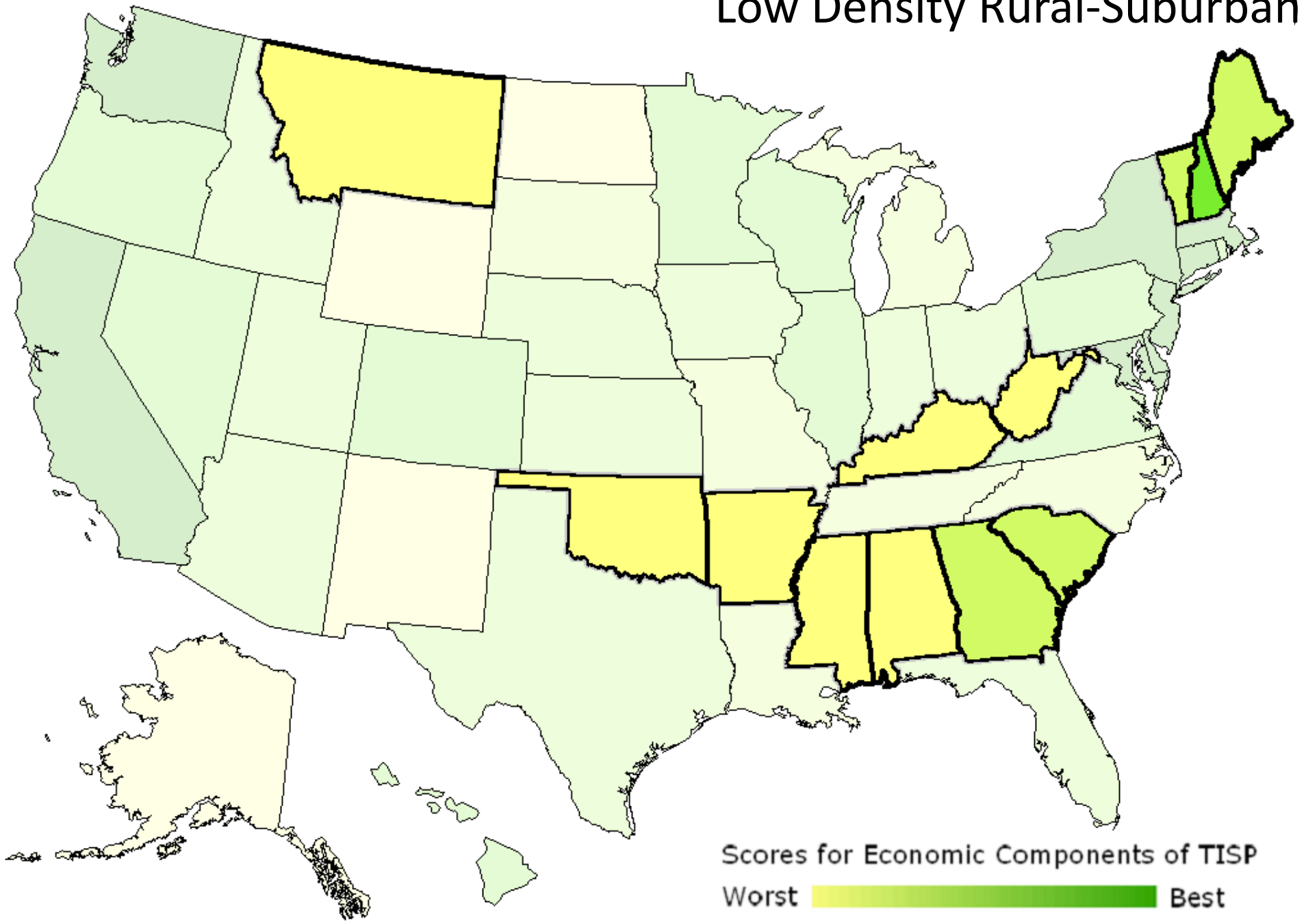
State	VMT Growth ('97-'07)	GDP Growth ('97-'07)
Oregon	8%	51%
Illinois	8%	21%
District of Columbia	9%	33%
Mississippi	37%	14%
Arizona	45%	66%
Florida	54%	48%

Urbanization & Mode Share

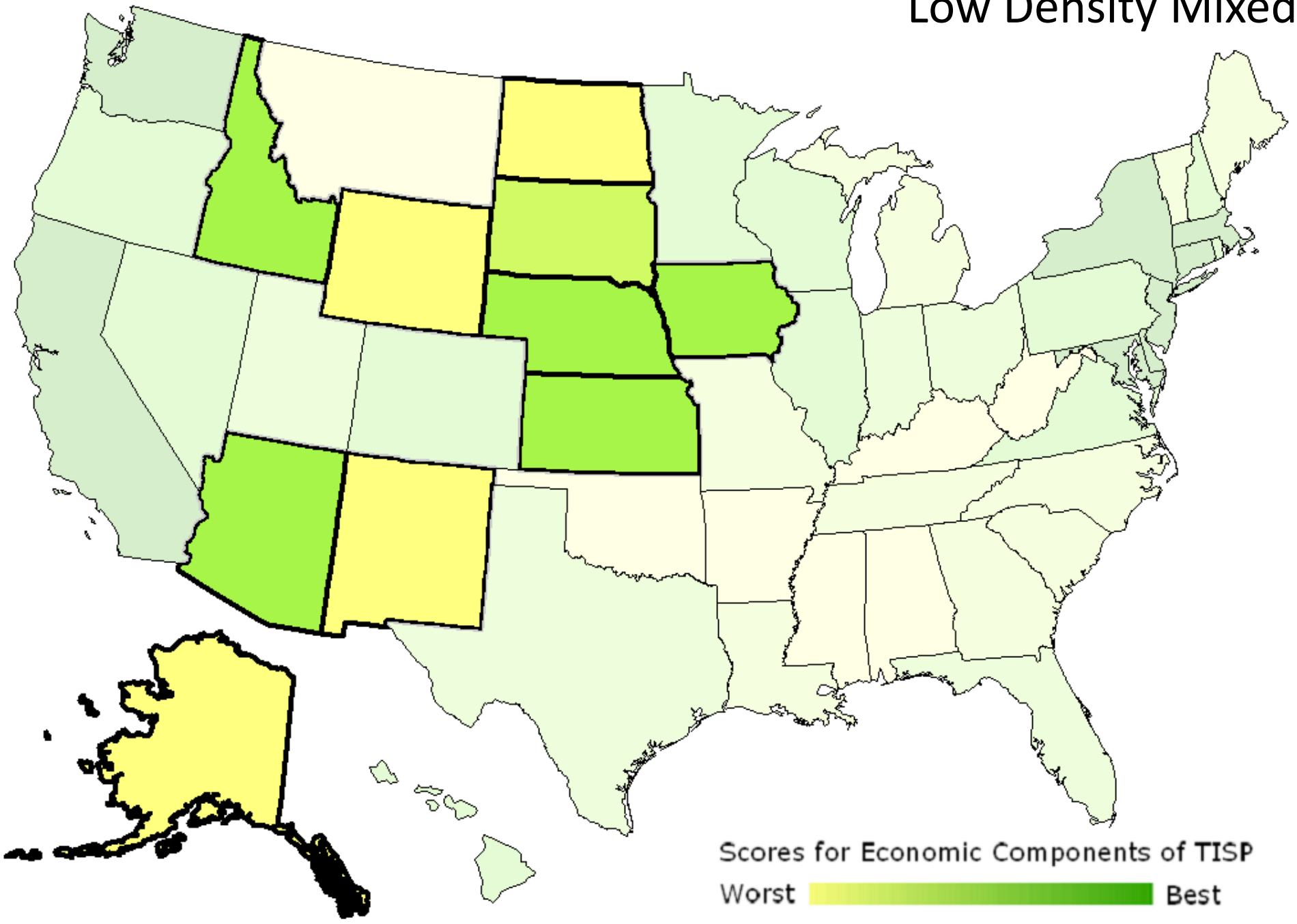
Urbanization assessed as density and percentage of state population living in

Central Cities, Small Towns, Suburbs, & Rural Areas

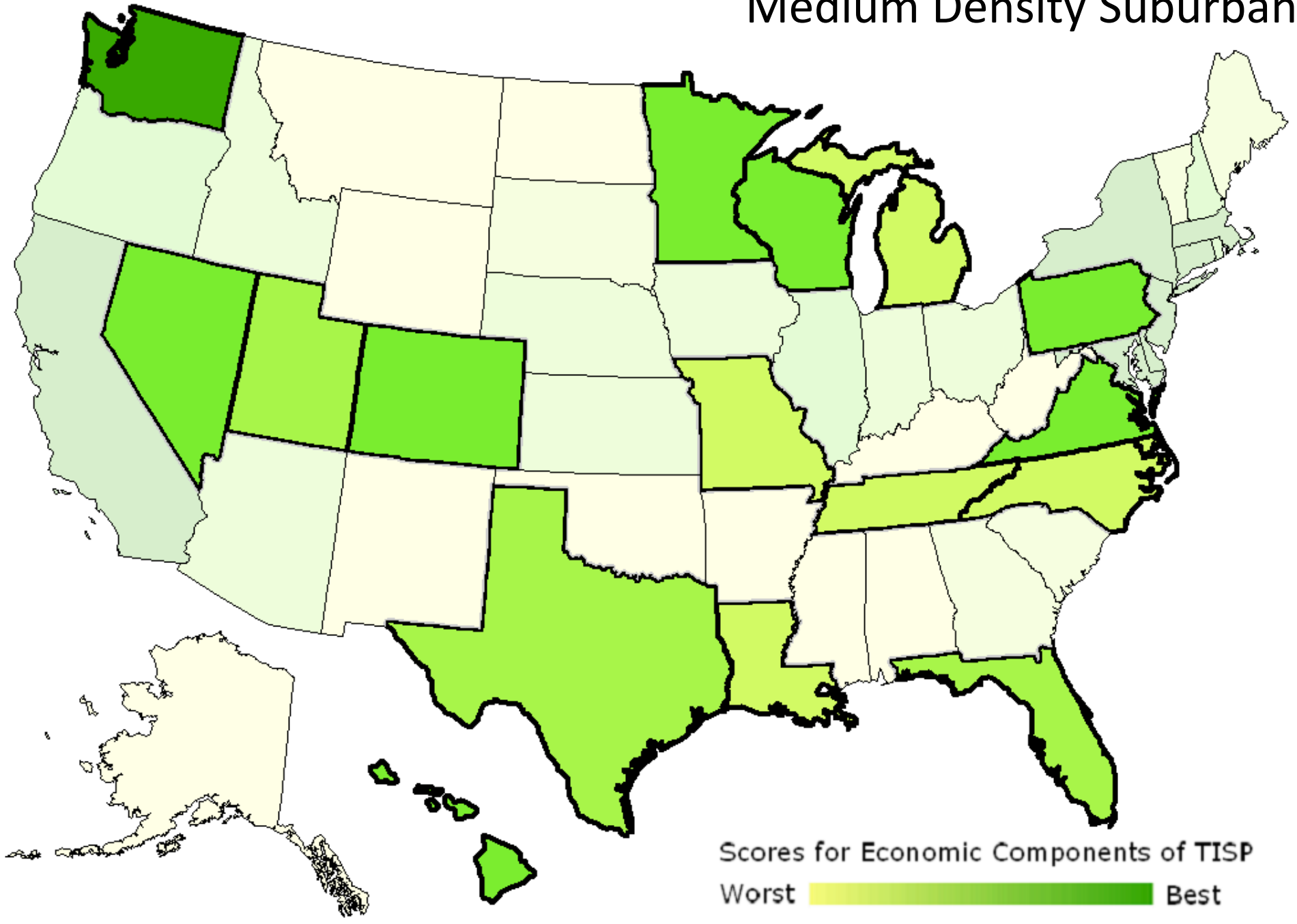
Low Density Rural-Suburban



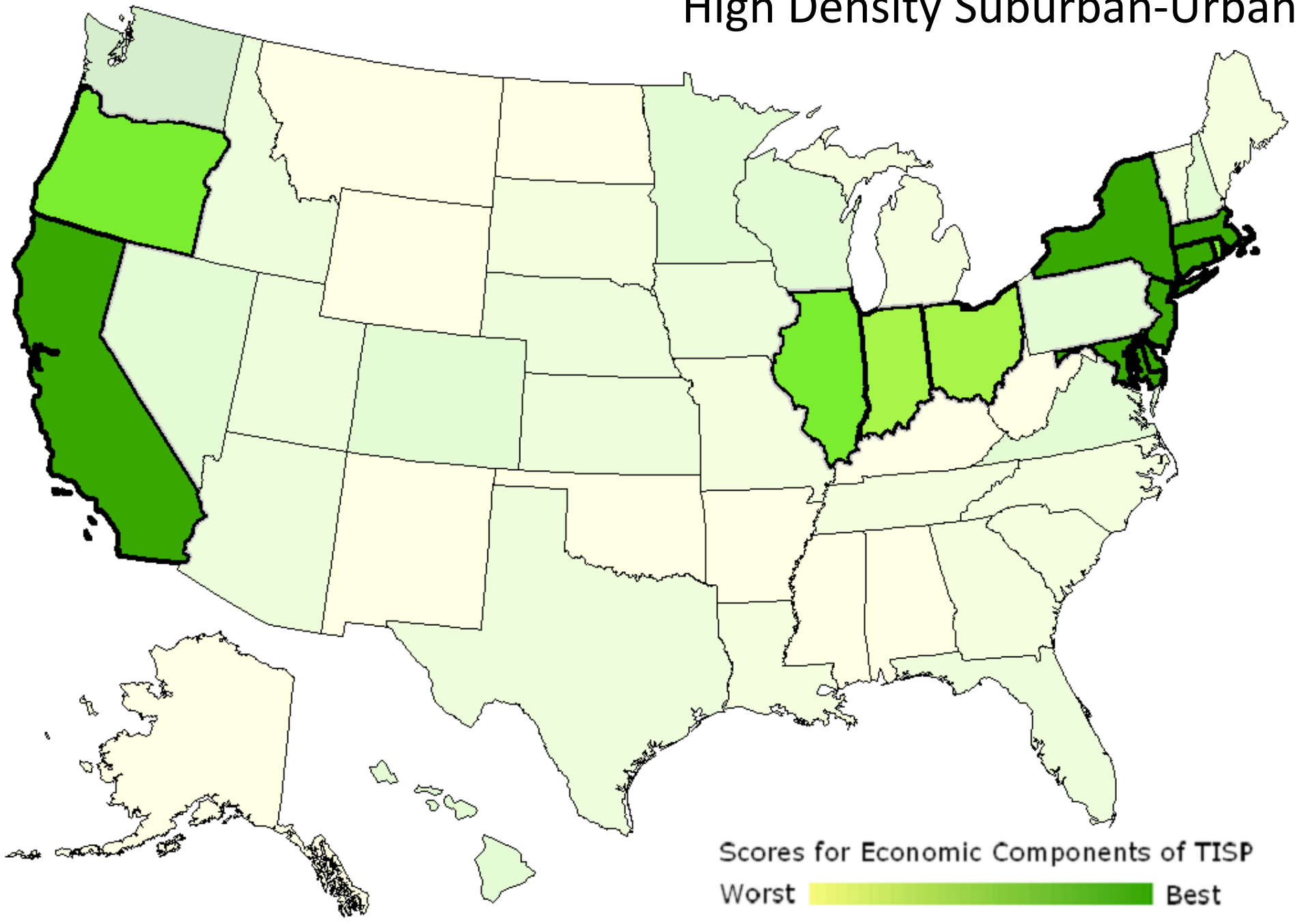
Low Density Mixed



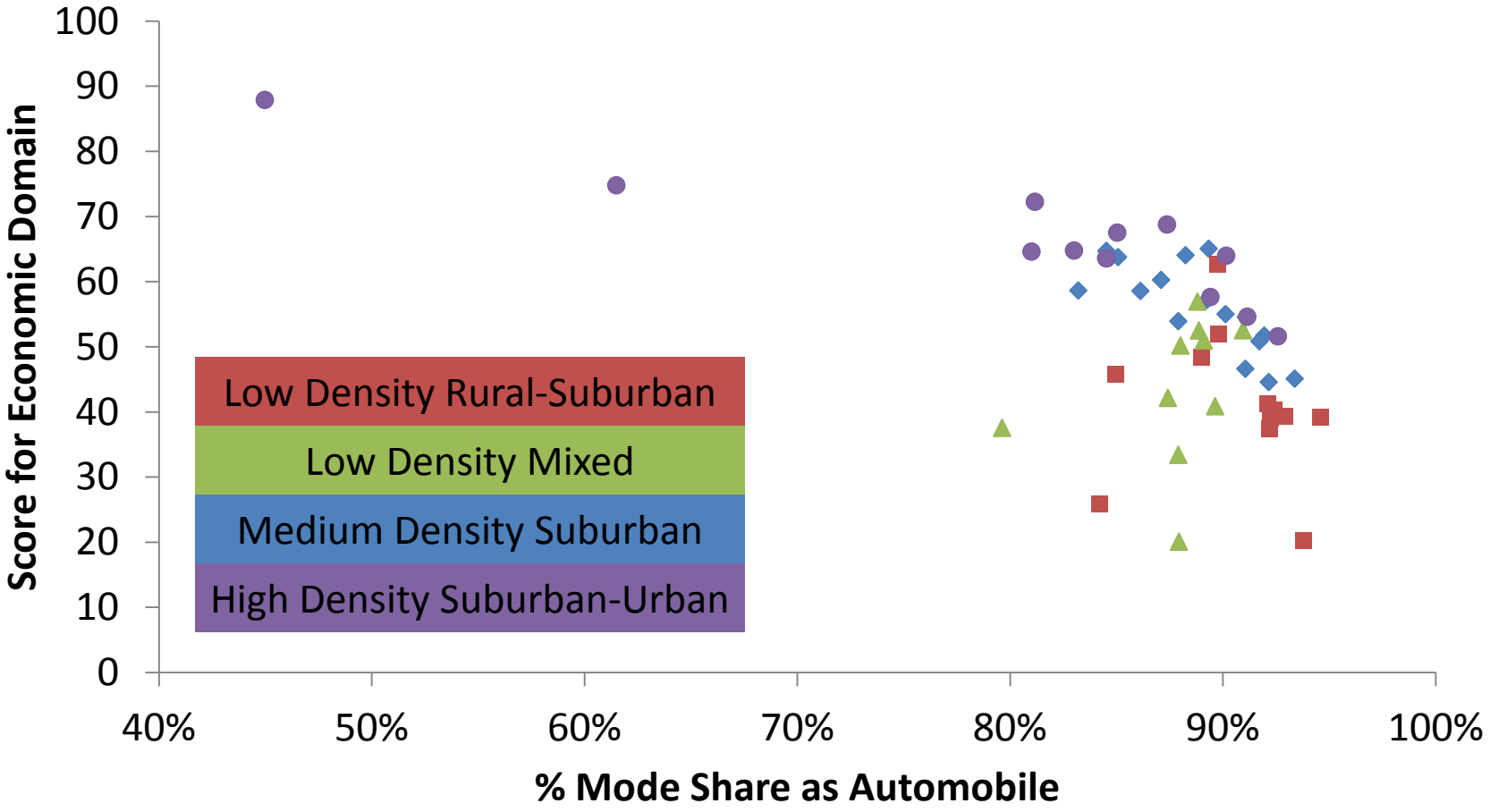
Medium Density Suburban



High Density Suburban-Urban



Urban Form & Mode Share



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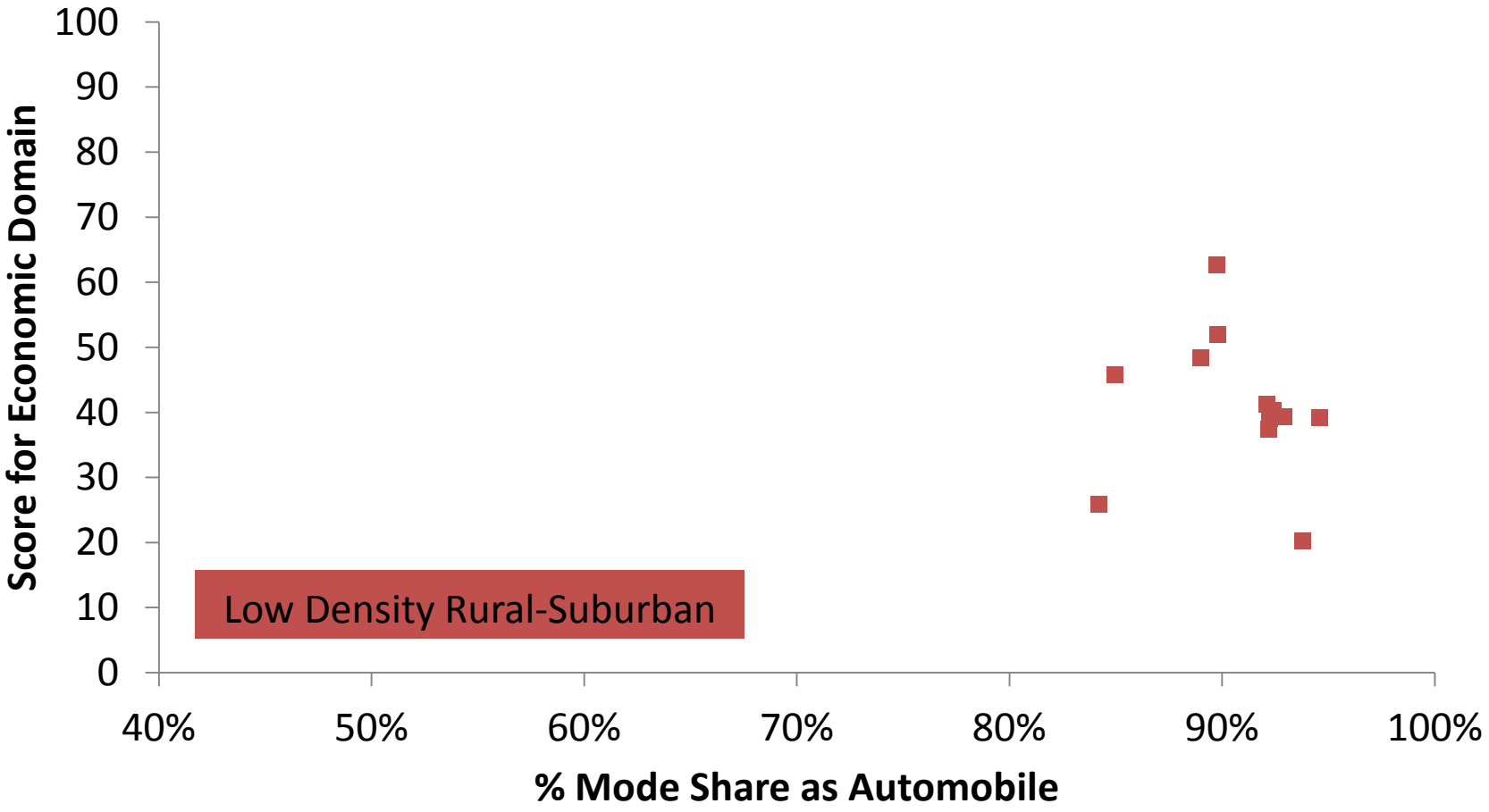

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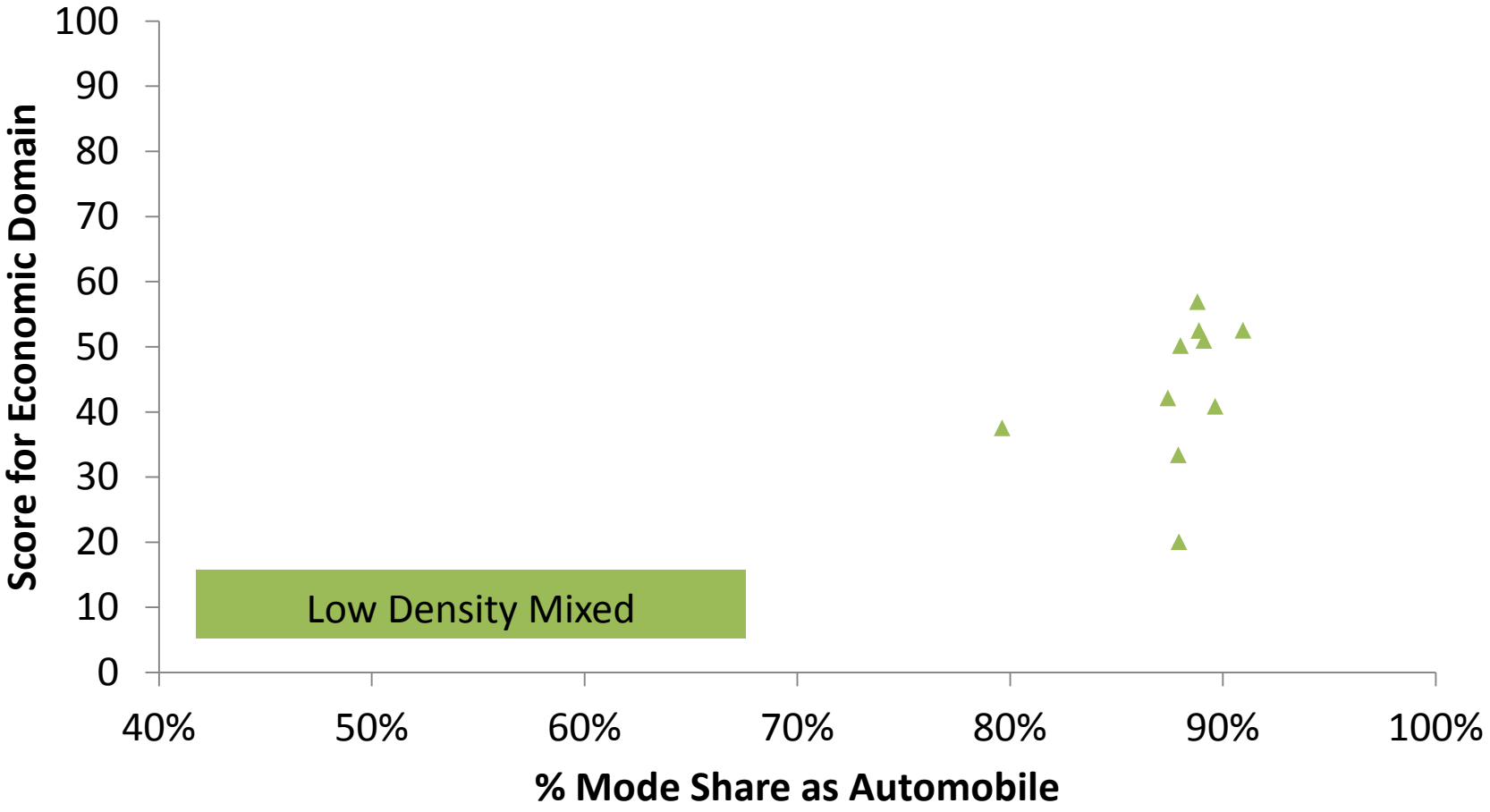

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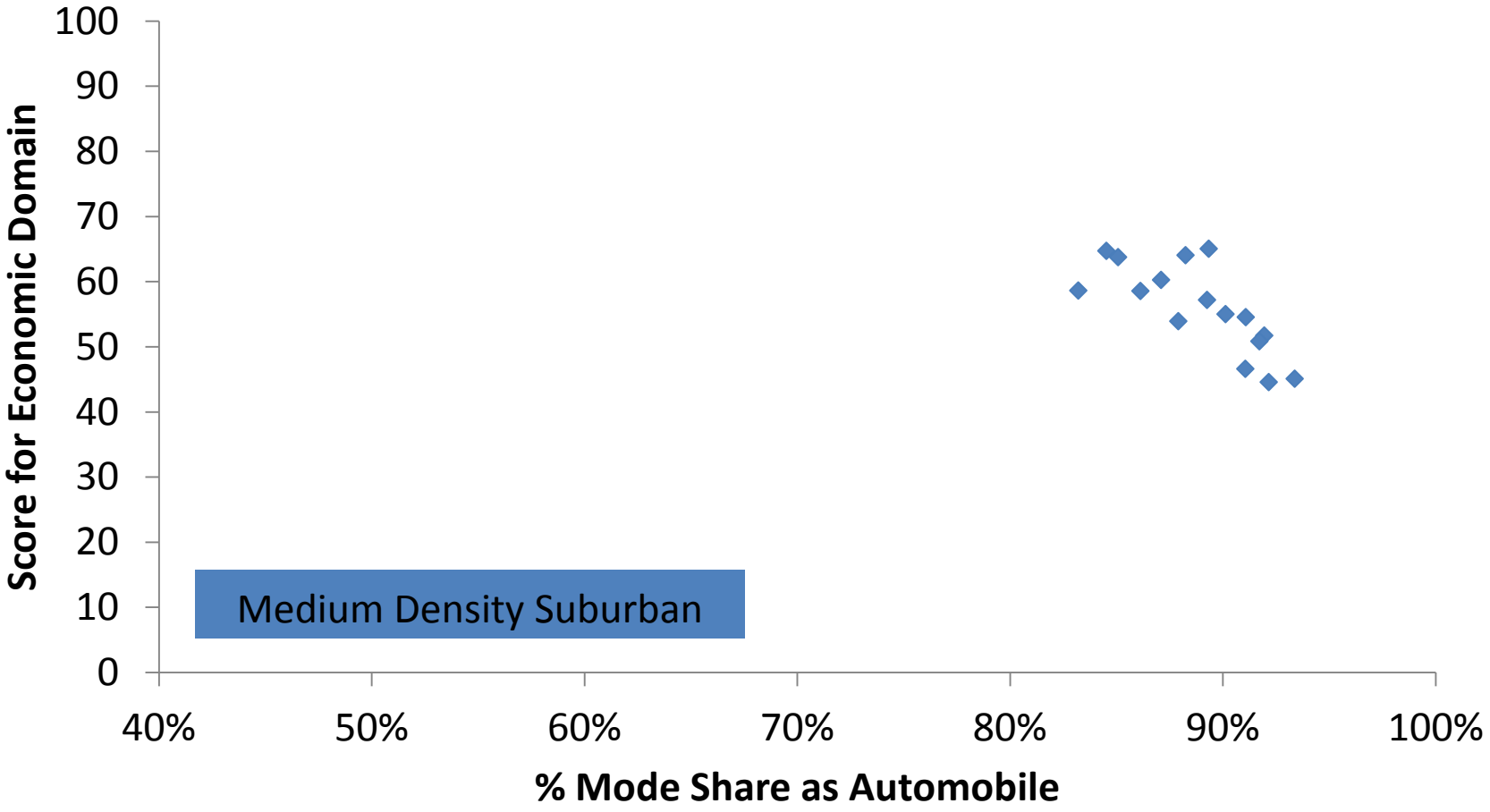

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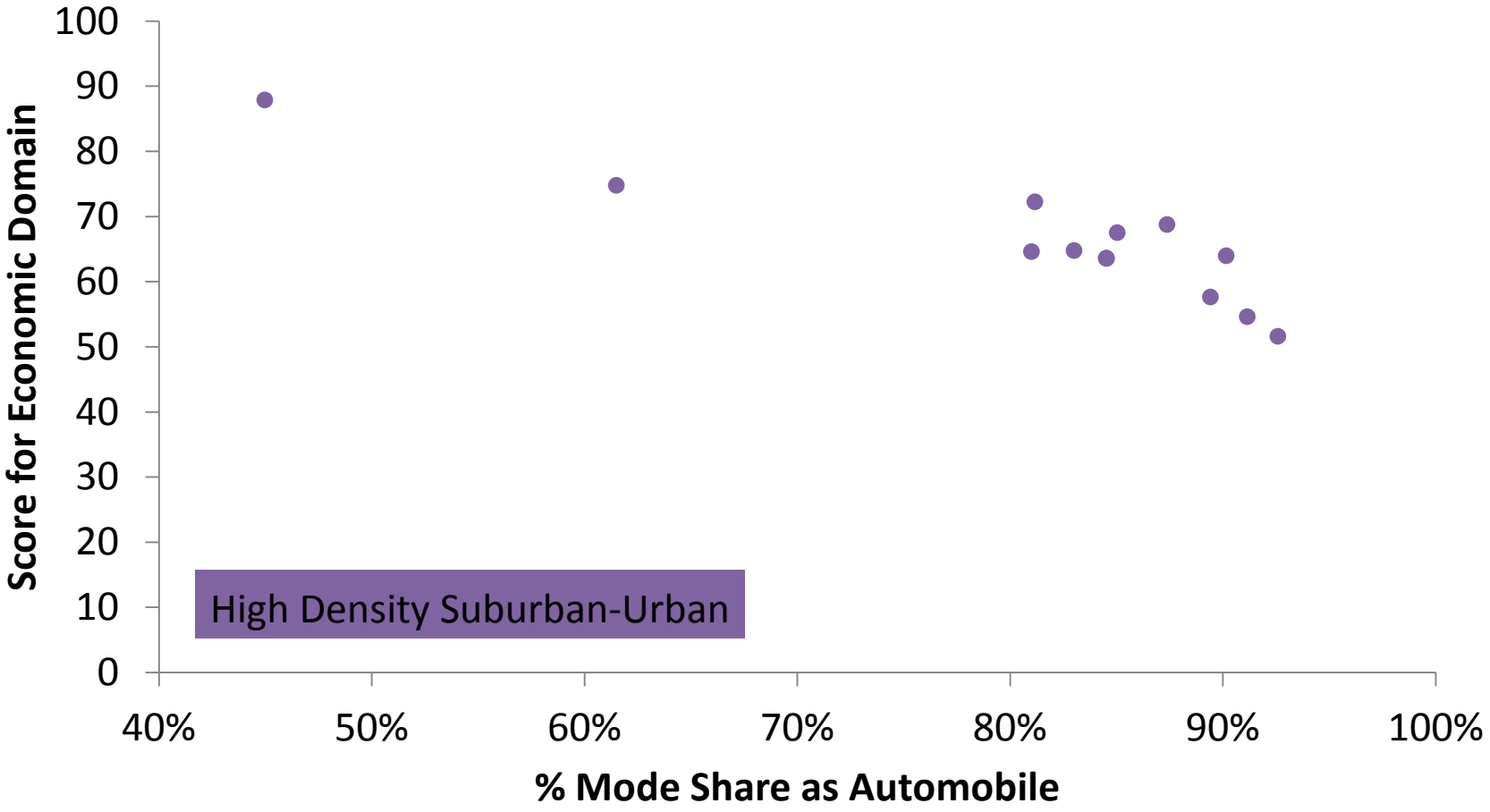

Conclusions

Performance of transportation systems goes beyond measurements of automobility

Environment

Society

Economy

Conclusions

Urbanization is a factor

Both rural states and urban states can be sustainable

Conclusions

In general, we find that the most affordable, efficient, equitable, and resilient states are those that tend to be more urban and have diverse transportation options.

Questions

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