



# Construction Update

## 2022 Flexible Pavement Committee Meeting

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State Construction Pavement Engineer

FDOT State Construction Office

# Overview

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- Construction Specification Changes
- Smoothness
- e-Ticketing
- AMG Milling & Paving

# Spec Changes

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- 330
  - No Manufacturer's Letter Needed to Eliminate Auger Extension, Paddle, or Kicker Device
    - Demonstrate Ability to Achieve Acceptable Pavement Without Such Devices
  - Repair Options for Structural Course Straightedge Deficiencies When Not Final Surface
    - Pave Over with Friction - up to 5/16" Deficiency
    - Mill - Up to 8/16" Low
    - Mill - Any High
    - Remove & Replace

# Spec Changes

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- 200, 234, 334, 337, 339, & 520
  - Address Additional Asphalt Due To Earthwork and Curb & Gutter Issues
    - Earthwork Base Cross Slope Tolerance
    - Curb and Gutter Cross Slope Tolerance
    - Earthwork Base Elevation Checks
    - Increased Asphalt Max Pay Quantity to 110%

# Retroactive Specs

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- Jan 2022
  - Simplified Tack Spread Rates
  - DCE Memo 21-10
- July 2022
  - Plan to Make Structural Straightedge Repair Options Retroactive
  - Issue DCE Memo After Specs Are Published

# Smoothness

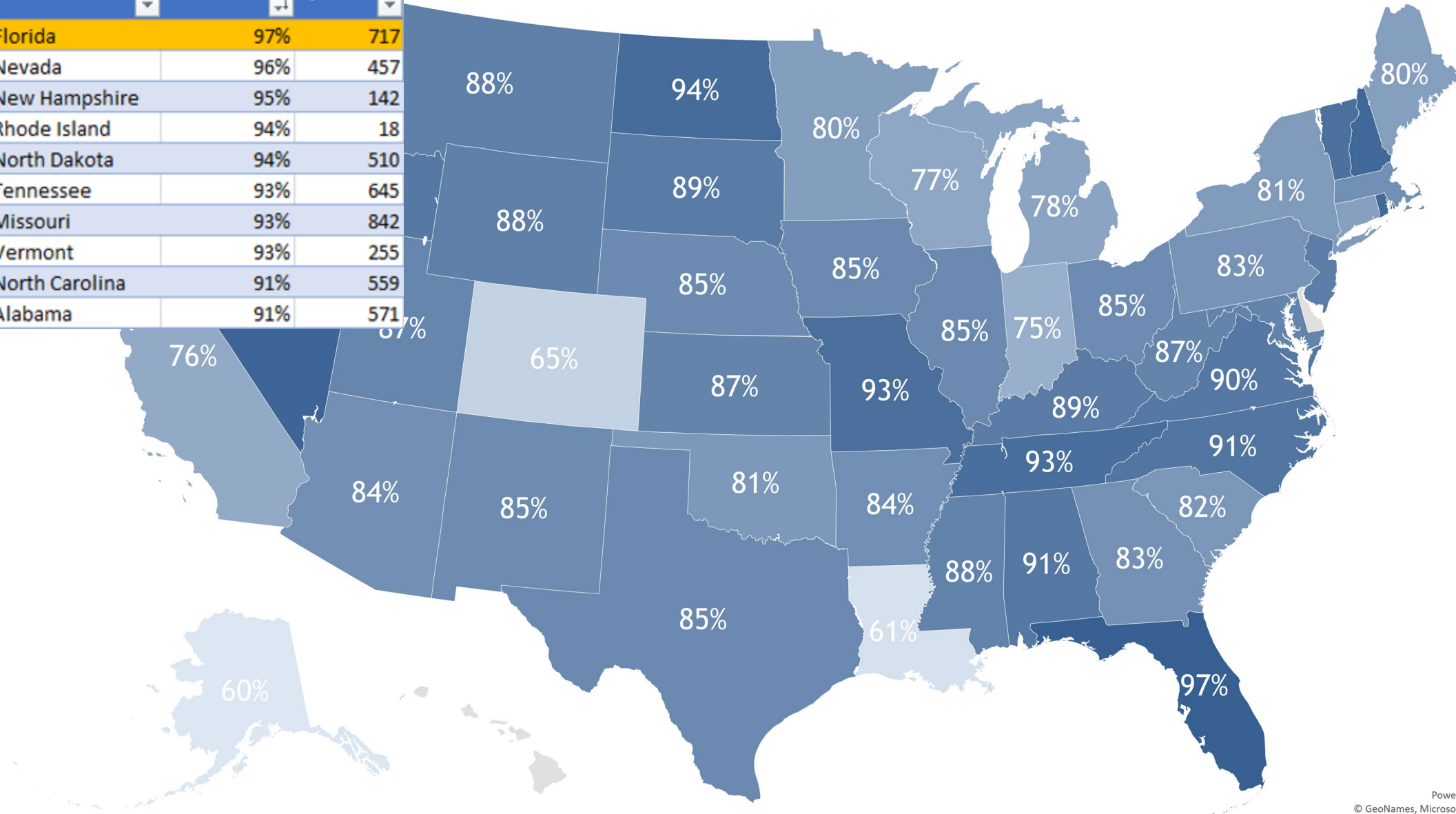
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- FHWA Smoothness Data
- Pavement Condition Survey Data
  - Not Construction Acceptance Data

# Rural Interstate Smoothness

## % Miles < 95 IRI

STATE	% Miles < 95	Total Miles Reported (All IRI's)
Florida	97%	717
Nevada	96%	457
New Hampshire	95%	142
Rhode Island	94%	18
North Dakota	94%	510
Tennessee	93%	645
Missouri	93%	842
Vermont	93%	255
North Carolina	91%	559
Alabama	91%	571



% Miles < 95

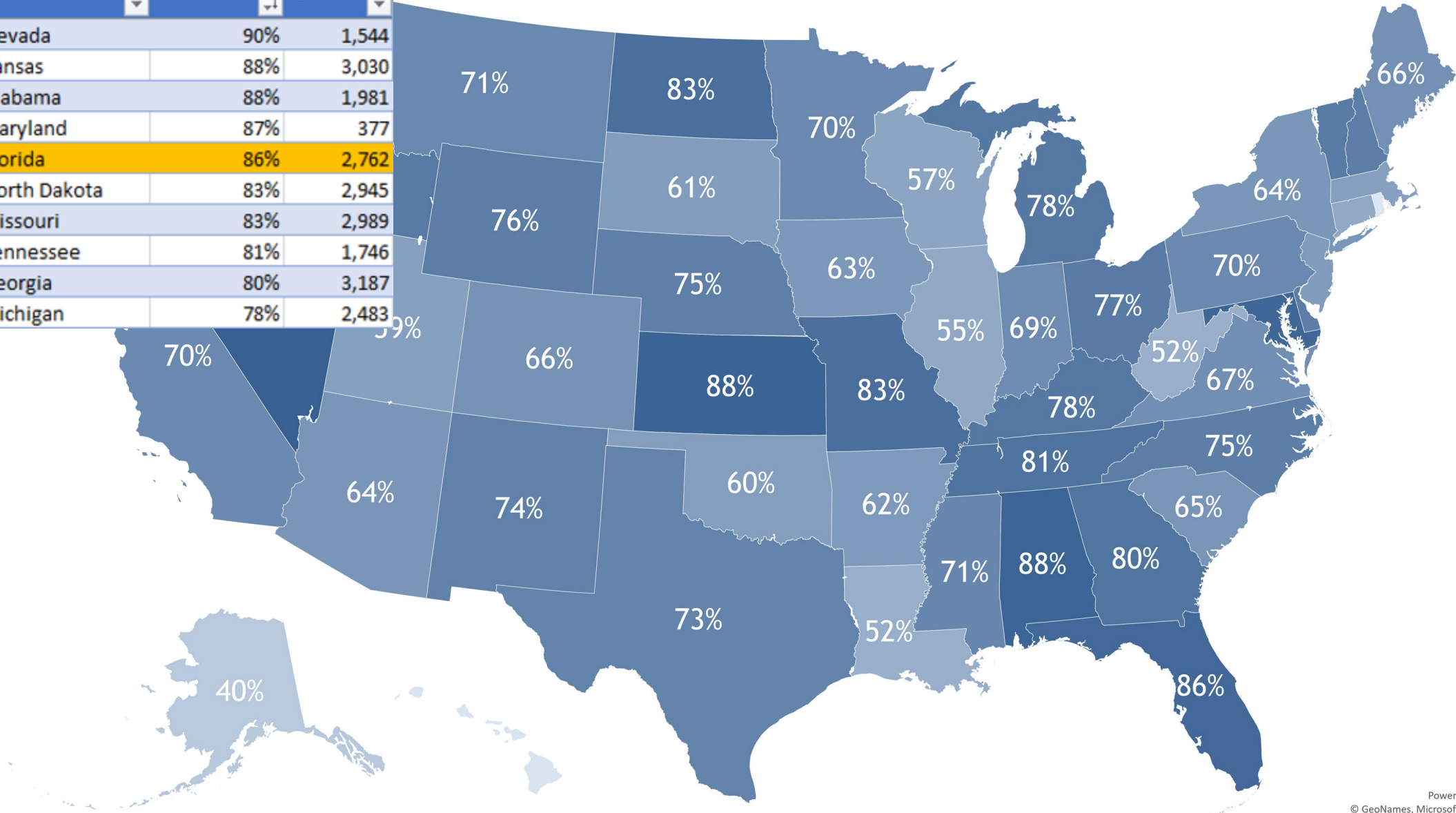
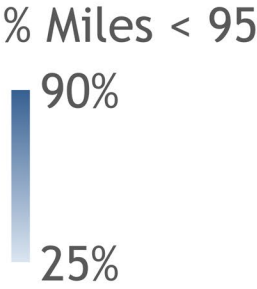
97%

60%

# Rural Other Roads Smoothness

## % Miles < 95 IRI

STATE	% Miles < 95	Total Miles Reported (All IRI's)
Nevada	90%	1,544
Kansas	88%	3,030
Alabama	88%	1,981
Maryland	87%	377
Florida	86%	2,762
North Dakota	83%	2,945
Missouri	83%	2,989
Tennessee	81%	1,746
Georgia	80%	3,187
Michigan	78%	2,483

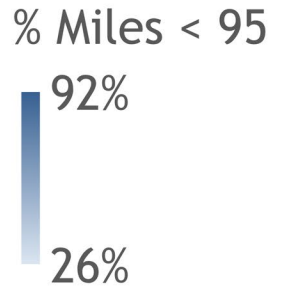
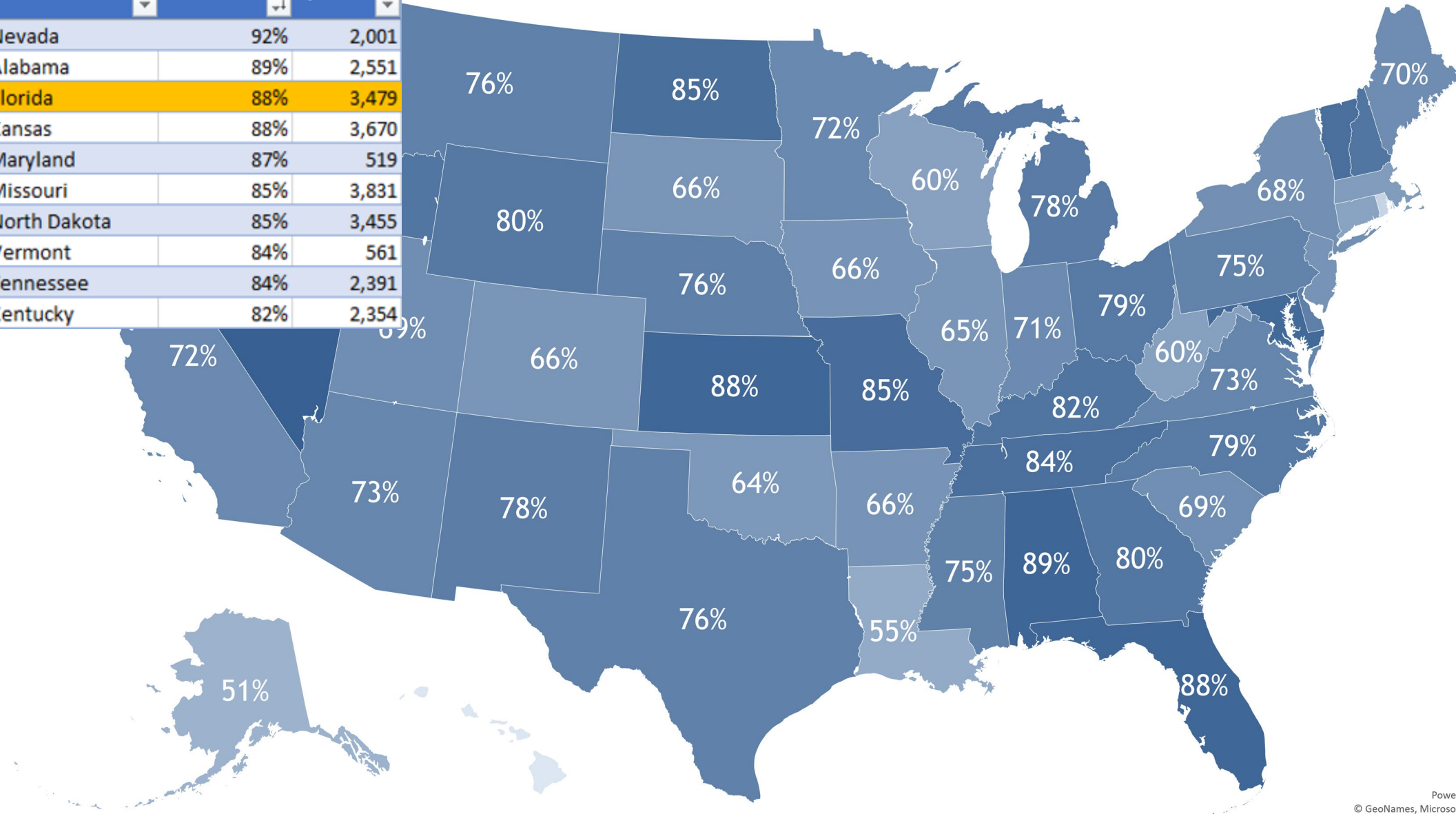




# Rural All Roads Smoothness

## % Miles < 95 IRI

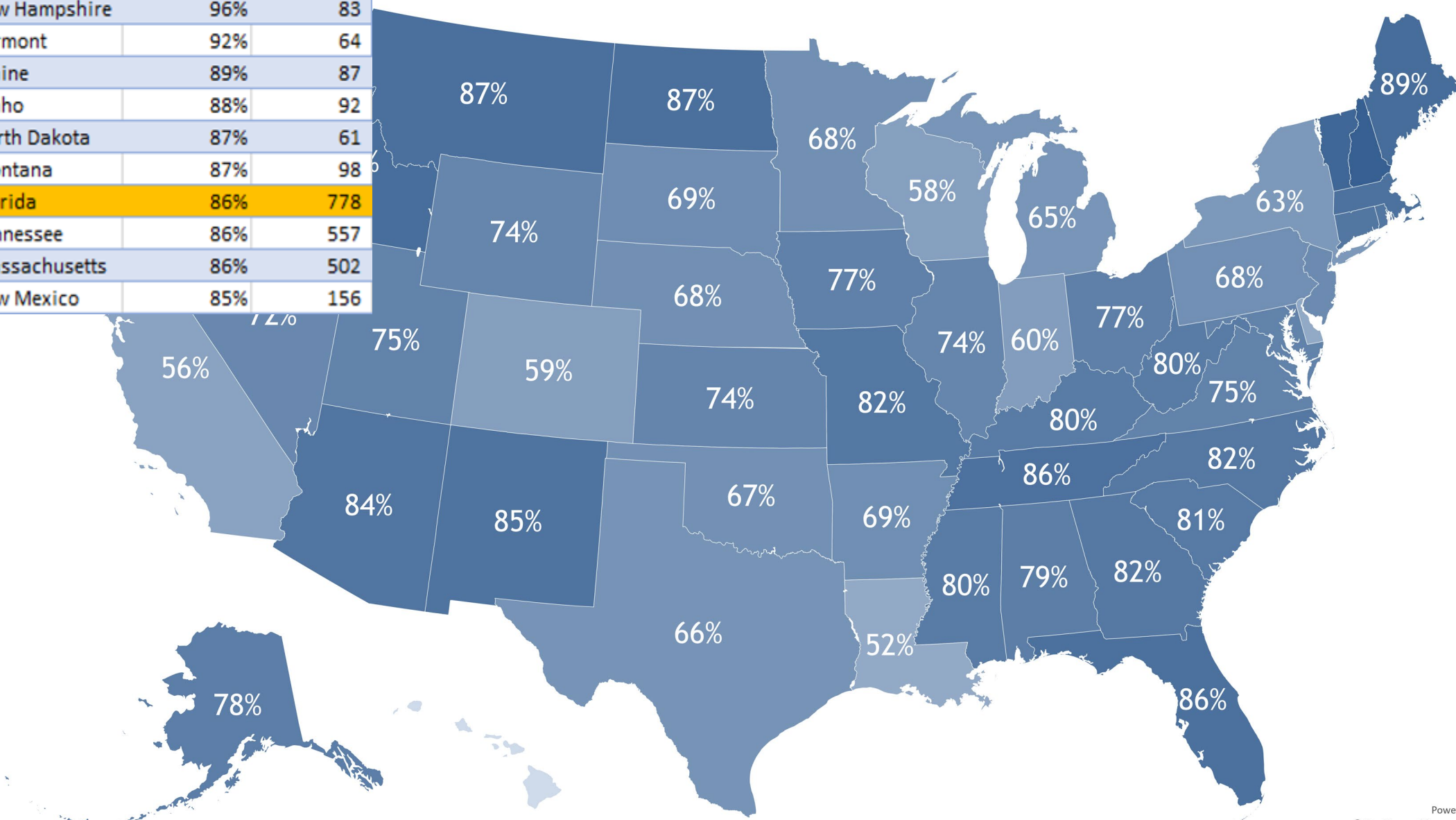
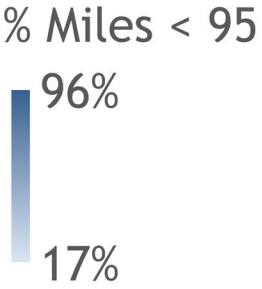
STATE	% Miles < 95	Total Miles Reported (All IRI's)
Nevada	92%	2,001
Alabama	89%	2,551
Florida	88%	3,479
Kansas	88%	3,670
Maryland	87%	519
Missouri	85%	3,831
North Dakota	85%	3,455
Vermont	84%	561
Tennessee	84%	2,391
Kentucky	82%	2,354



# Urban Interstate Smoothness

## % Miles < 95 IRI

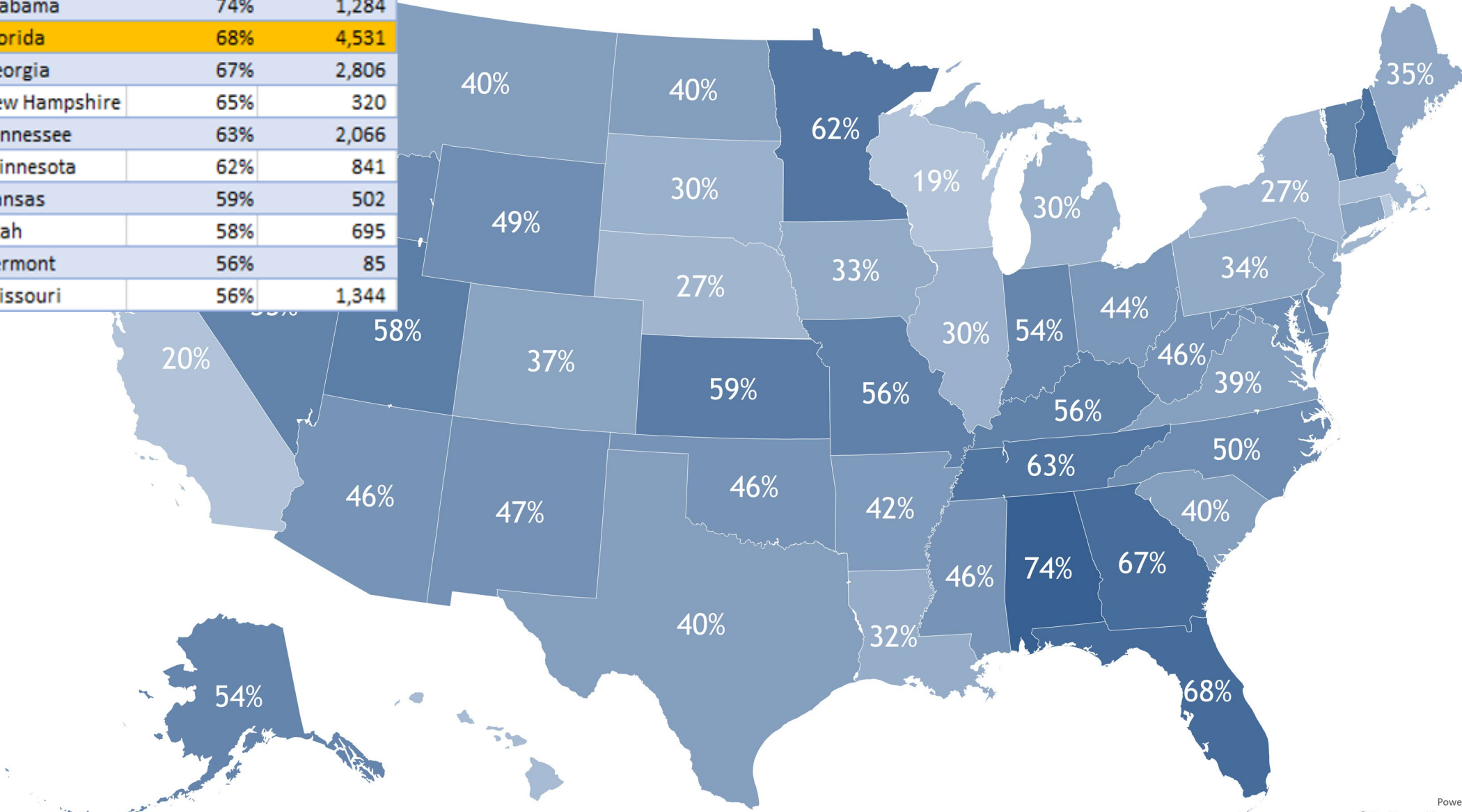
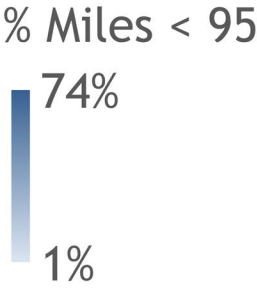
STATE	% Miles < 95	Total Miles Reported (All IRI's)
New Hampshire	96%	83
Vermont	92%	64
Maine	89%	87
Idaho	88%	92
North Dakota	87%	61
Montana	87%	98
Florida	86%	778
Tennessee	86%	557
Massachusetts	86%	502
New Mexico	85%	156



# Urban Other Roads Smoothness

## % Miles < 95 IRI

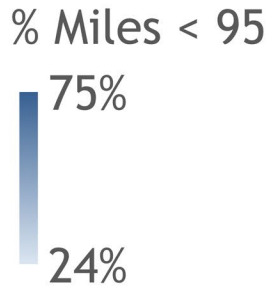
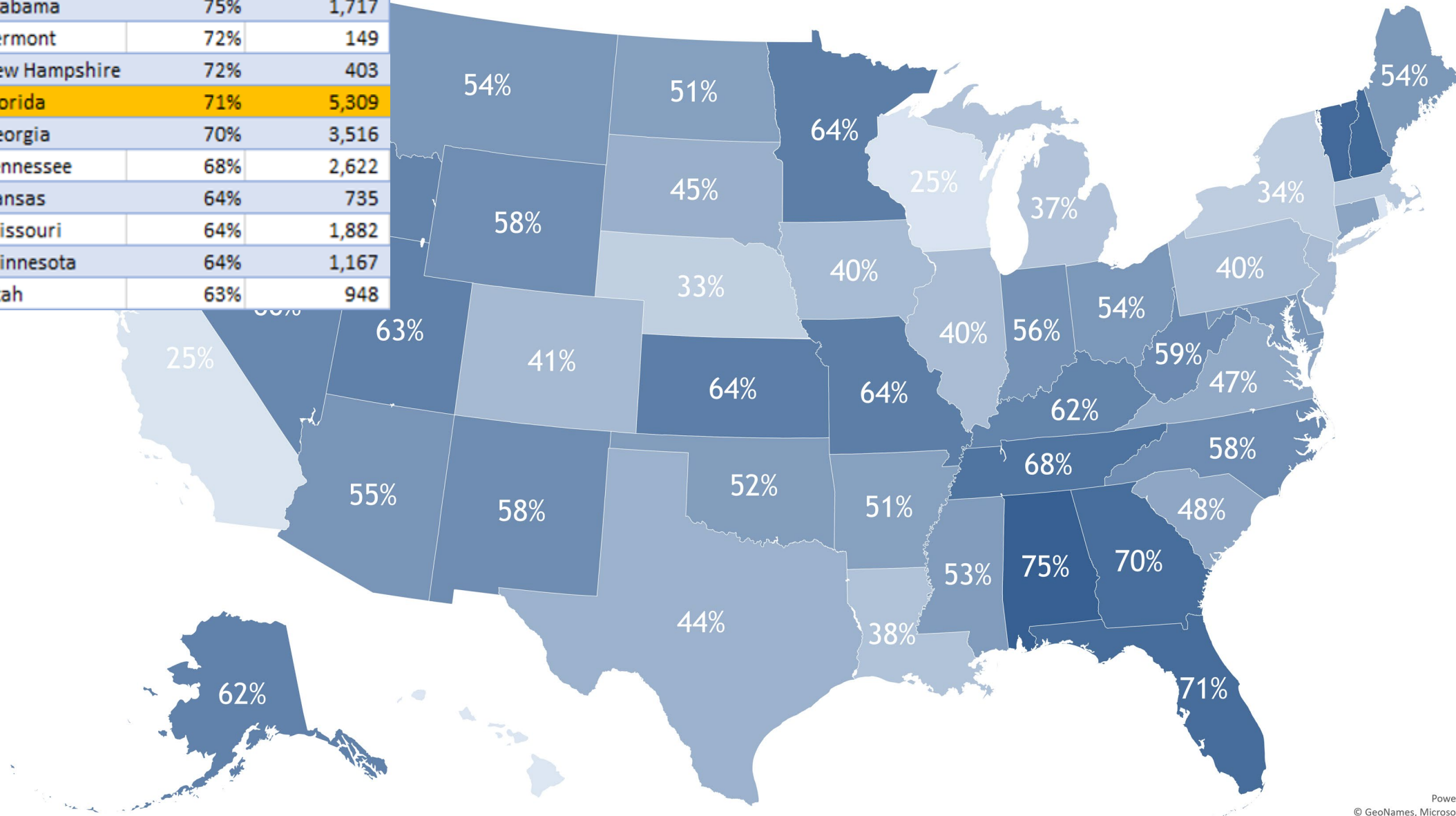
STATE	% Miles < 95	Total Miles Reported (All IRI's)
Alabama	74%	1,284
Florida	68%	4,531
Georgia	67%	2,806
New Hampshire	65%	320
Tennessee	63%	2,066
Minnesota	62%	841
Kansas	59%	502
Utah	58%	695
Vermont	56%	85
Missouri	56%	1,344



# Urban All Roads Smoothness

## % Miles < 95 IRI

STATE	% Miles < 95	Total Miles Reported (All IRI's)
Alabama	75%	1,717
Vermont	72%	149
New Hampshire	72%	403
Florida	71%	5,309
Georgia	70%	3,516
Tennessee	68%	2,622
Kansas	64%	735
Missouri	64%	1,882
Minnesota	64%	1,167
Utah	63%	948





# Florida: A Top State for Smoothness

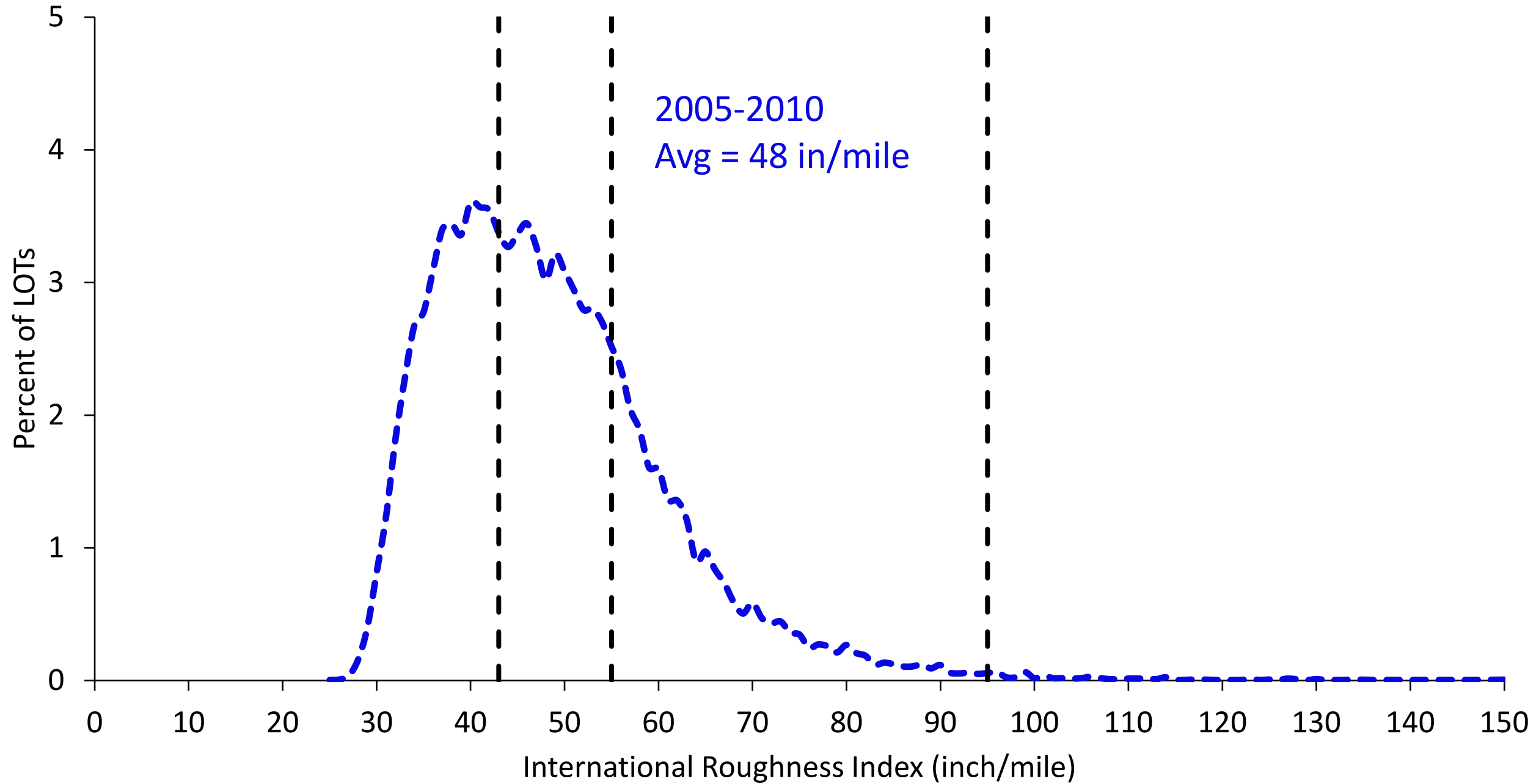
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- Team Effort
  - High-Quality Paving by Contractors
  - Timely Resurfacing Program
  - Challenging, but Reasonable Specifications & Inspection

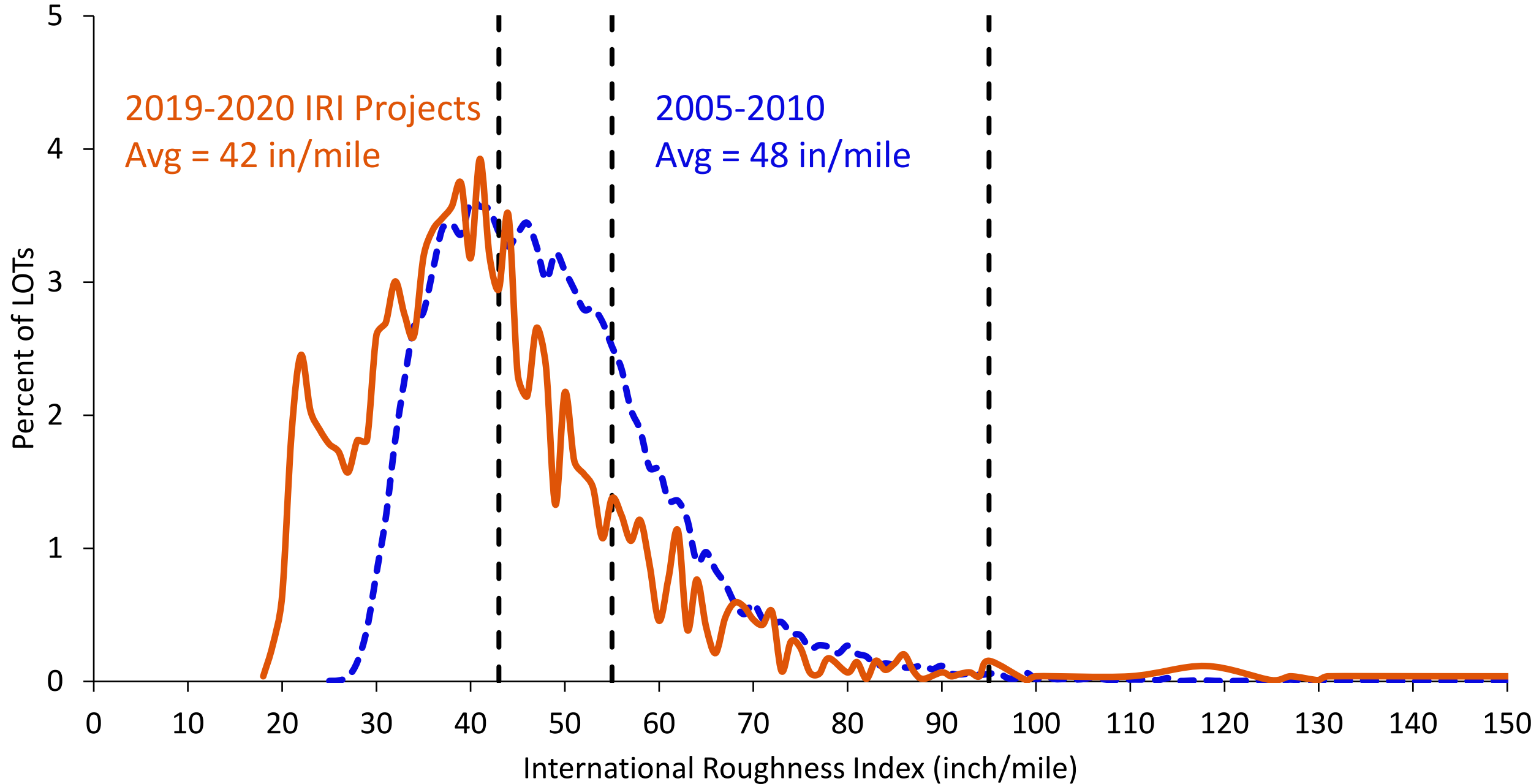


# Limited Access Roads

## Limited Access 2005-2010



# Limited Access 2019-2020 vs 2005-2010





# 2019 - IRI Project Overview

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- 5 Projects
  - Lowest Average Project IRI = 38
  - Highest Average Project IRI = 59
  - (Average) Average Project IRI = 45
  - Average Incentive/Disincentive = \$333 per lane mile
- 4 Projects Received Incentive
- No Projects Received 3% Consistency Bonus
  - All LOTs  $\leq$  55

# 2020 - IRI Project Overview

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- 12 Projects
  - Lowest Average Project IRI = 24 (Smoothest Project Ever)
  - Highest Average Project IRI = 71
  - (Average) Average Project IRI = 41
  - Average Incentive/Disincentive = \$800 per lane mile
- 10 Projects Received Incentive
- 2 Project Received 3% Consistency Bonus
  - All LOTs  $\leq$  55

# 2021 - IRI Project Overview

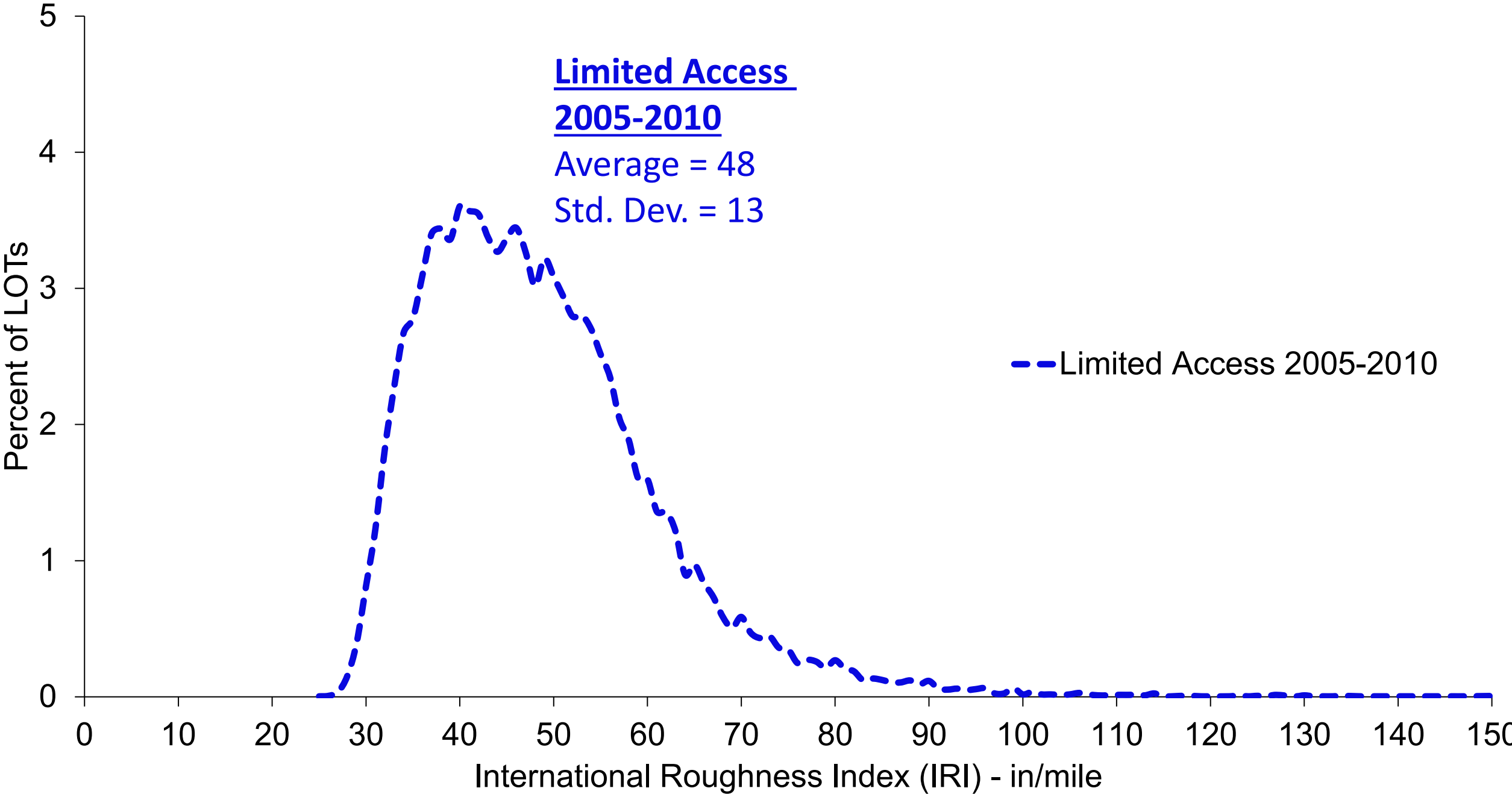
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- 9 Projects
  - Lowest Average Project IRI = 25 in/mile (2<sup>nd</sup> Smoothest Project Ever)
  - Highest Average Project IRI = 55 in/mile
  - (Average) Average Project IRI = 42
  - Average Incentive/Disincentive = \$793 per lane mile
- 6 Projects Received Incentive
- 2 Project Received 3% Consistency Bonus
  - All LOTs  $\leq$  55

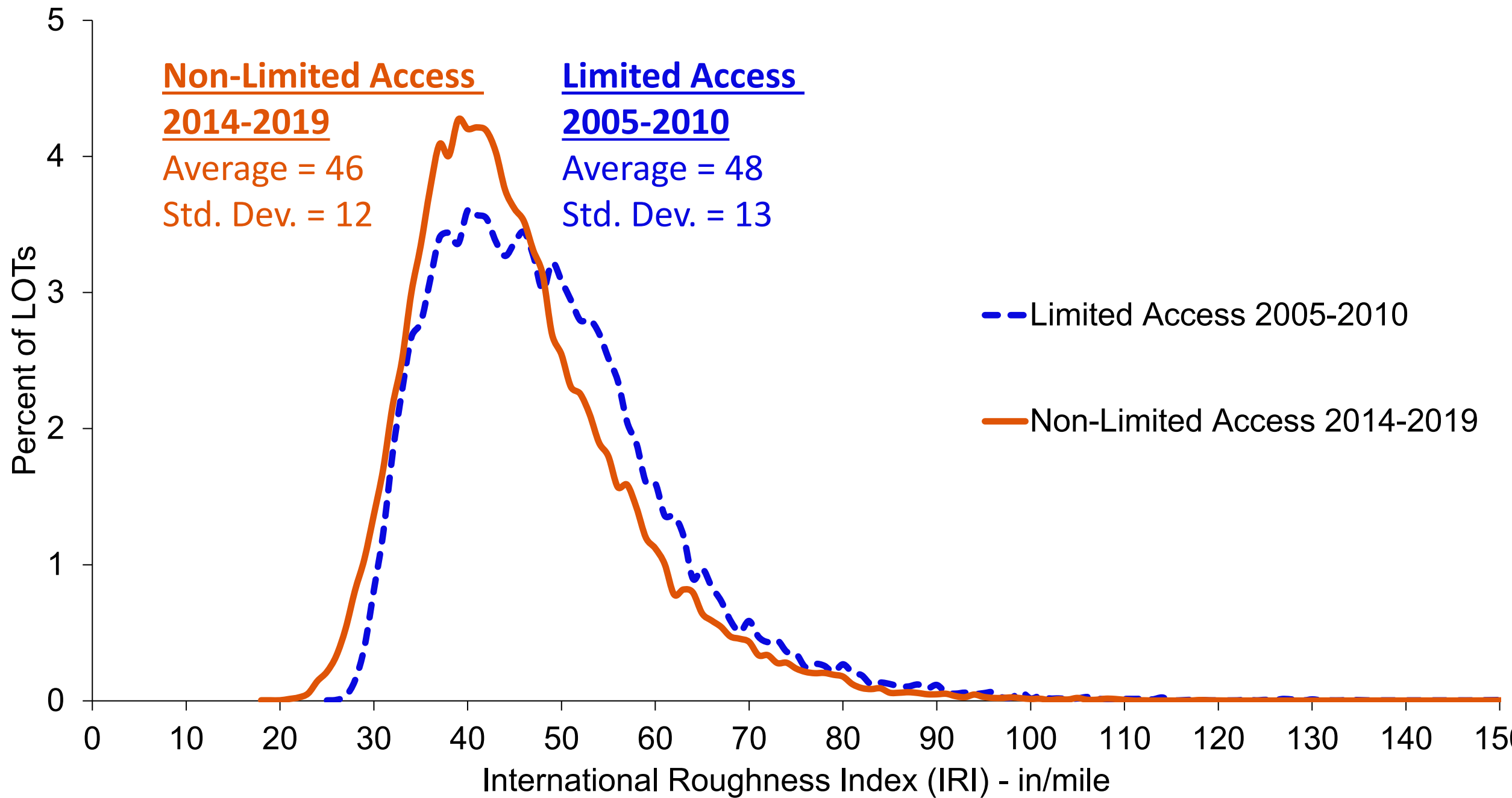
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# Non-Limited Access Roads

# Non- Limited Access vs. Limited Access Roads



# Non- Limited Access vs. Limited Access Roads



# Non-Limited Access, Incentive Disincentive, Smoothness Specification

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- Five Smoothness Classes
- Each Class Has IRI Pay Ranges
  - Incentive, Full Pay, Disincentive, & Corrective Action
- Based on Previous Construction Acceptance Data (2014-2019)
- Better Distribution of Pay Adjustments

# Non-Limited Access – IRI Pay Limits by Class

Class	IRI Pay Limits			
	Incentive	Full Pay	Disincentive	Corrective Action
1	≤ 36	37 - 42	43 - 95	>95
<b>2</b>	<b>≤ 42</b>	<b>43 - 55</b>	<b>56 - 95</b>	<b>&gt;95</b>
3	≤ 52	53 - 62	63 - 110	>110
4	≤ 62	63 - 85	86 - 125	>125
5	≤ 85	86 - 105	106 - 125	>125

- Class 2 IRI Limits Same as Limited Access IRI Limits
- Corrective Action Limit was not Lowered for Class 1

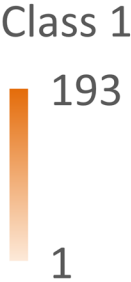


# Non-Limited Access (2014-2019)

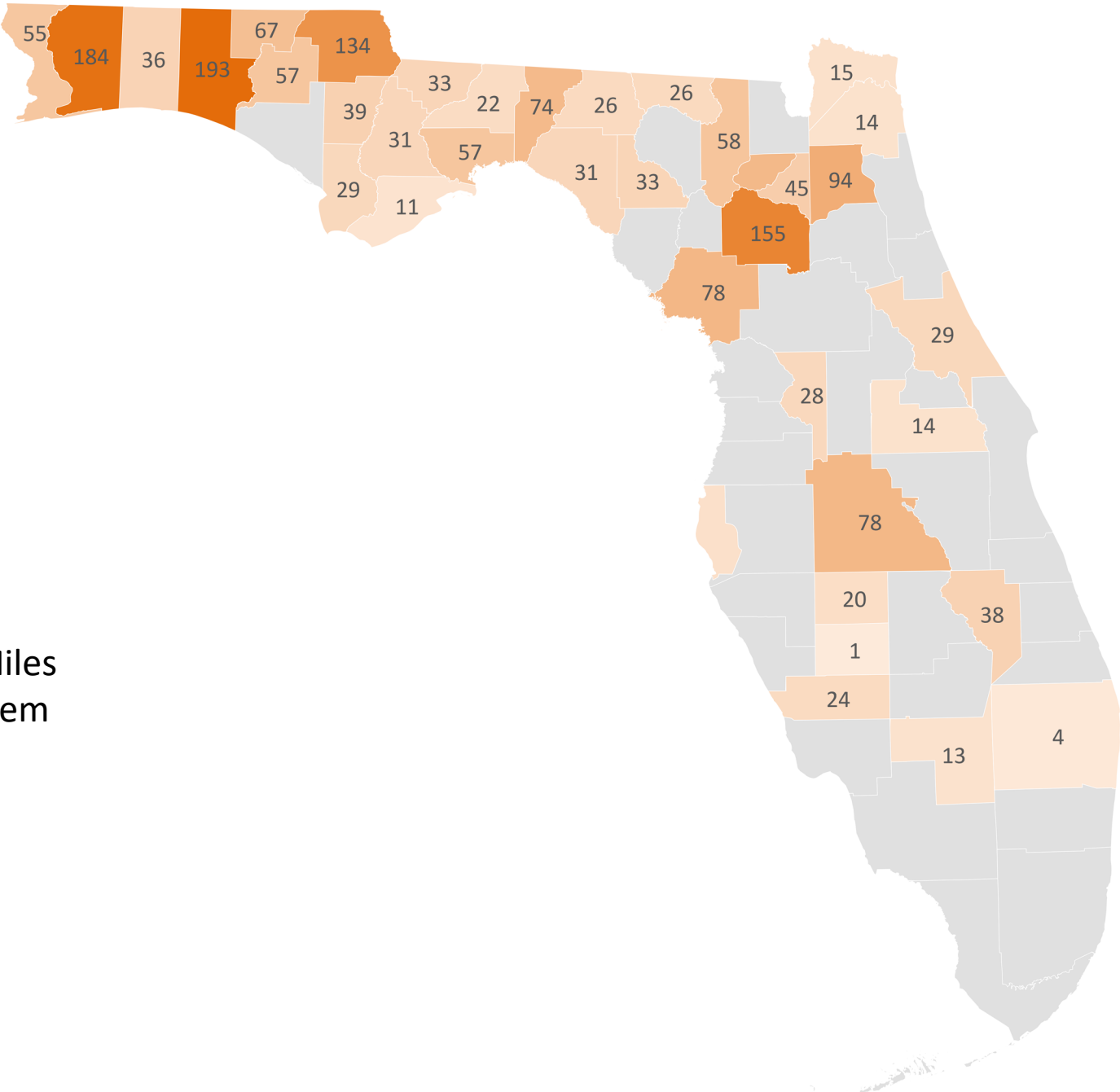
## Lane Miles per Class & District

District	Lane-Miles					Total
	Class 1	Class 2	Class 3	Class 4	Class 5	
1	207	343	212	74	1	838
2	626	487	158	41	0	1,313
3	1,014	408	24	1	0	1,447
4	4	263	70	72	0	409
5	71	202	264	19	1	558
6	0	44	100	58	1	203
7	16	214	379	45	0	655
Total	1,939	1,961	1,208	310	3	5,421

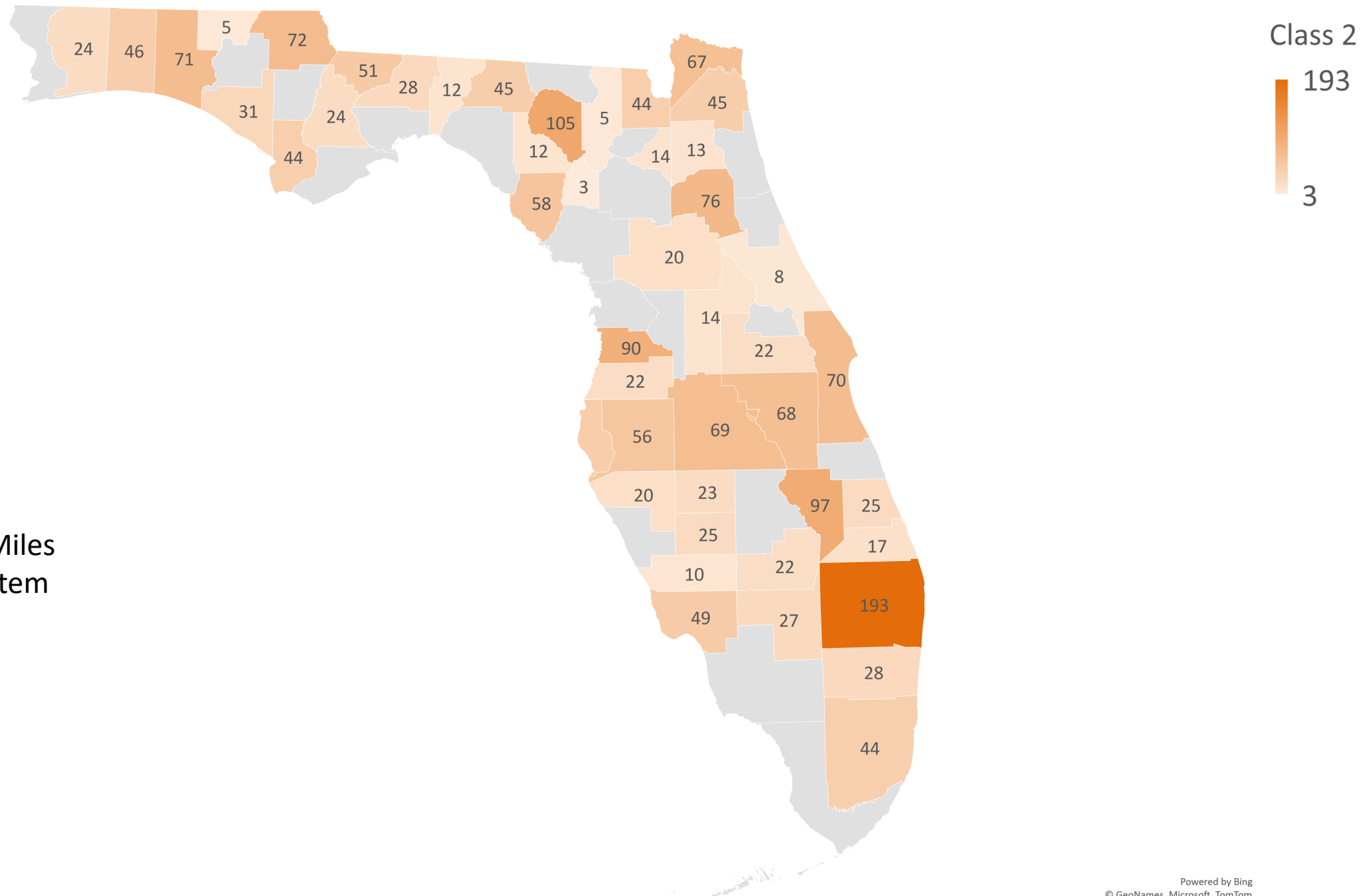
# Class 1 Lane Miles by County



Class 1  
1,939 Lane Miles  
35.8% of System

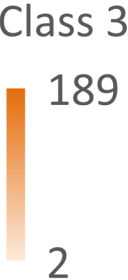


# Class 2 Lane Miles by County

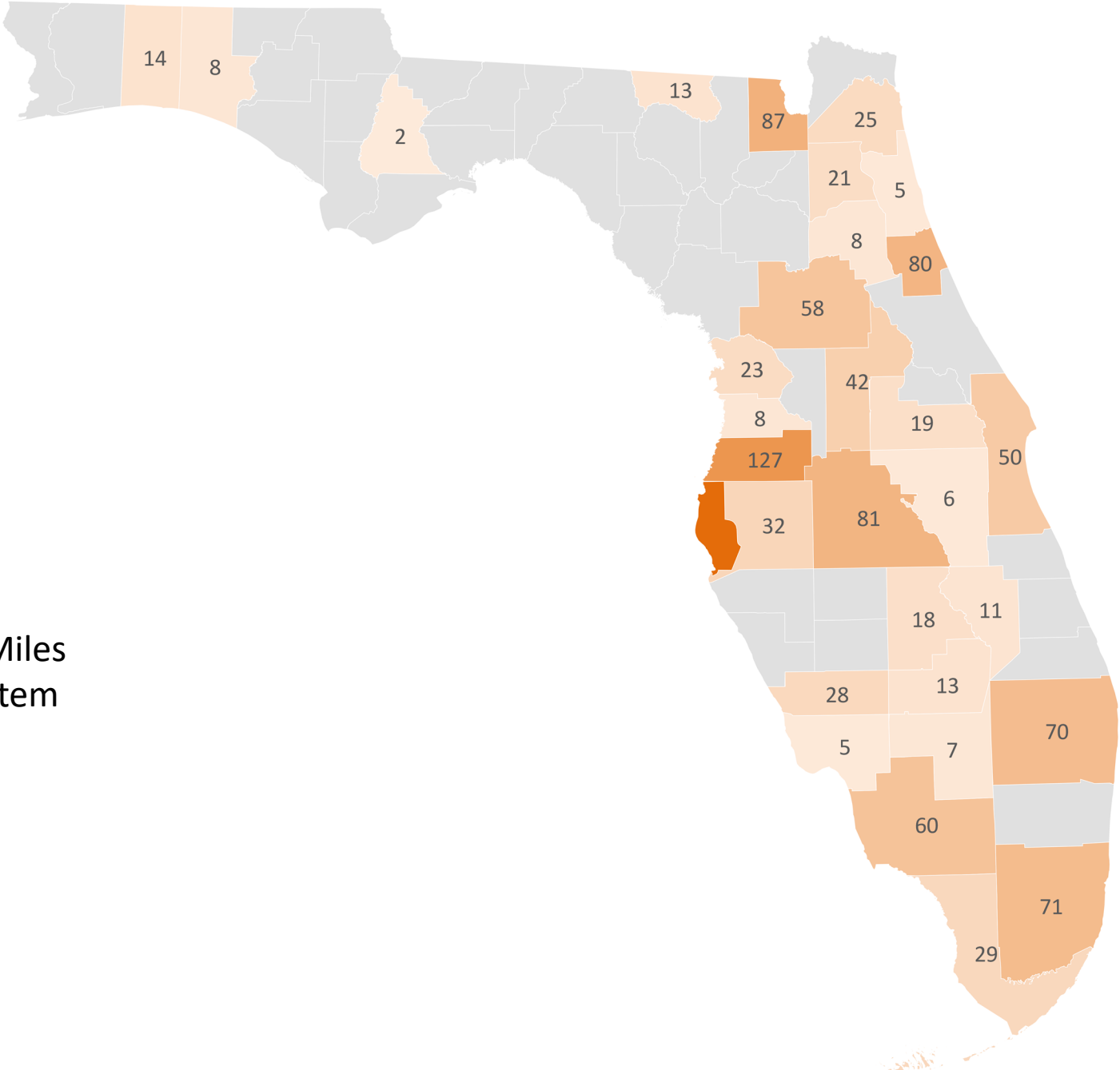


Class 2  
1,961 Lane Miles  
36.2% of System

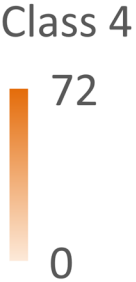
# Class 3 Lane Miles by County



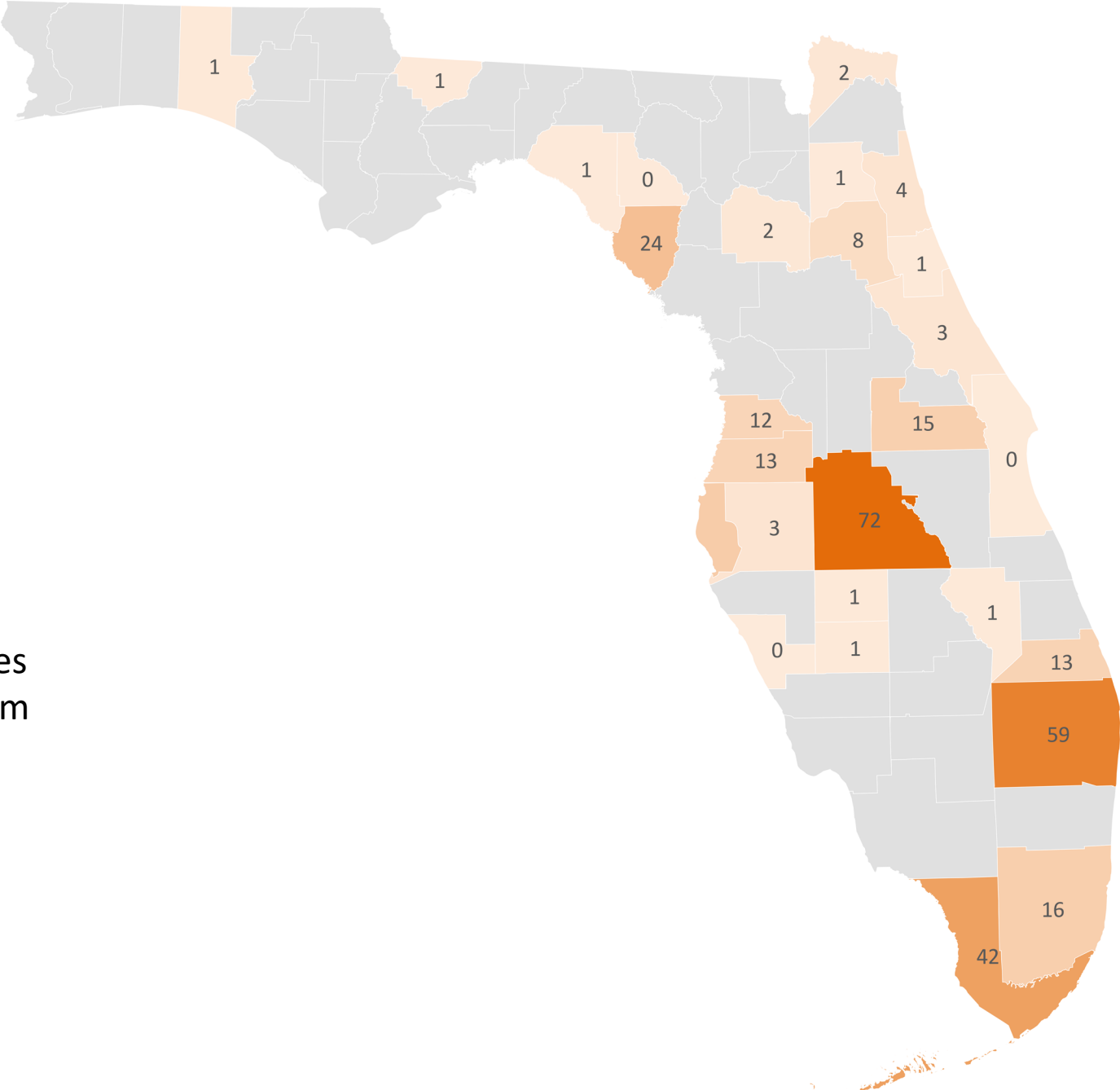
Class 3  
1,208 Lane Miles  
22.3% of System



# Class 4 Lane Miles by County



Class 4  
310 Lane Miles  
5.7% of System

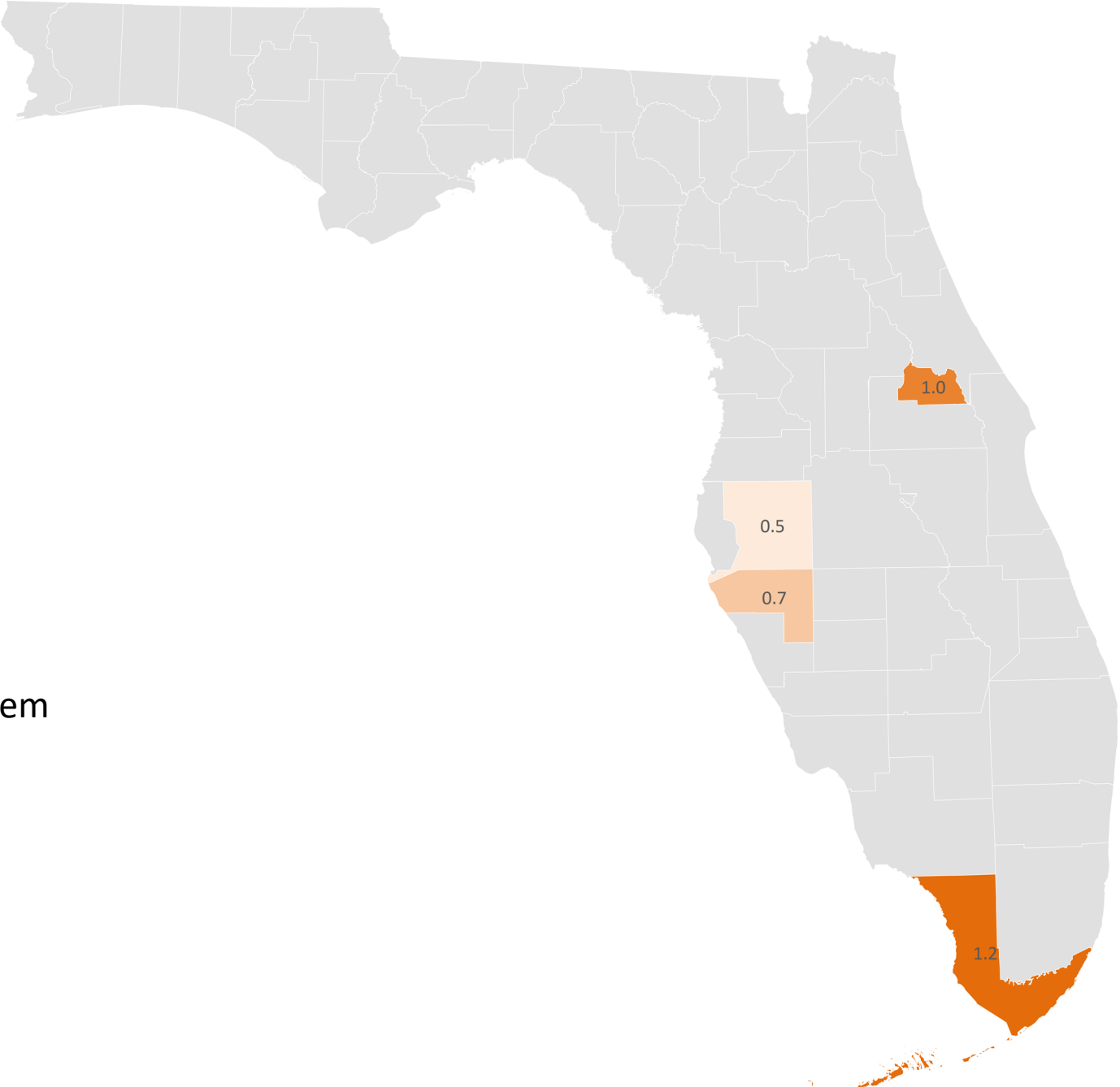


# Class 5 Lane Miles by County

Class 5



Class 5  
3 Lane Miles  
0.06% of System



# Non-Limited Access, Incentive Disincentive, Smoothness Specification

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- Established IRI Ranges So No District & No Class Was Negative
- Overall, A Positive Incentive Over \$700,000
  - Six Years of Data
  - Not “Breaking the Bank” When Compared to Total Asphalt Dollars
  - Incentivize Smoothness

# Non-Limited Access (2014-2019)

## Incentive/Disincentive by District & Class

Incentive/Disincentive						
District	Class 1	Class 2	Class 3	Class 4	Class 5	Total
1	\$5,233	\$75,431	\$5,199	\$47,879	(\$200)	\$133,543
2	\$12,356	\$70,427	\$30,536	\$22,051	\$0	\$135,370
3	\$44,565	\$49,666	\$14,398	(\$835)	\$0	\$107,793
4	\$2,588	\$56,930	\$14,073	\$2,619	\$0	\$76,210
5	(\$1,777)	\$52,973	\$52,649	\$8,637	(\$142)	\$112,340
6	\$0	\$1,981	\$7,630	\$24,835	\$1,028	\$35,475
7	(\$1,819)	\$43,682	\$133,343	\$16,385	\$312	\$191,903
<b>Total</b>	\$61,146	\$351,090	\$257,828	\$121,571	\$998	\$792,633



# Non-Limited Access (2014-2019)

## Incentive/Lane Mile per Class & District

Incentive/Lane Mile						
District	Class 1	Class 2	Class 3	Class 4	Class 5	Total
<b>1</b>	\$25	\$220	\$25	\$647	(\$305)	\$159
<b>2</b>	\$20	\$145	\$193	\$535	\$0	\$103
<b>3</b>	\$44	\$122	\$602	(\$663)	\$0	\$75
<b>4</b>	\$690	\$216	\$202	\$36	\$0	\$186
<b>5</b>	(\$25)	\$262	\$199	\$450	(\$136)	\$201
<b>6</b>	\$0	\$45	\$76	\$432	\$874	\$175
<b>7</b>	(\$114)	\$204	\$352	\$367	\$683	\$293
<b>All</b>	\$32	\$179	\$214	\$392	\$299	\$146

# Special Thanks To

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- Hank Lambert
- Mateo Carvajal
- Poura Arabali

# Non-Limited Access, Incentive Disincentive, Smoothness Specification

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- Status
  - MSP Written
  - Working With Design to Select Pilot Projects
  - Also Considering Requests on Existing Projects

# Asphalt e-Ticketing

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- Thanks to Contractors Who Implemented e-Ticketing
- Shows Asphalt Is a Progressive Industry in Florida & U.S.
  - Florida Now Considered a Lead State by FHWA
  - Several DOT's Reached Out to Hear Our Story & Lessons Learned
- Going Well for FDOT - How's It Going for Contractors, Districts?
- Any Way to Better Use e-Ticketing & Data?

# Automated Machine Guidance (AMG)

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- AMG Milling & Paving Projects
  - D5 - Wekiva Trail
  - Turnpike - Polk Parkway
  - D2 – SR 10 (US 90)
- Additional Pilot Projects Planned

# AMG Lessons Learned

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- AMG Helps Milling
  - Especially Complex Milling (Cross Slope Corrections, Supers, etc.)
- AMG Helps Overbuild Paving
- Better to Pave Traditionally for Constant Thickness Lifts
- Any Additional Feedback for AMG & AMG Specs?

# What is Next?

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- More Work Heading Our Way
- How Can We Simplify & ...
  - Construct Projects Safely
  - Construct Projects Faster
  - Pave Smooth Quality Projects
  - Have Fewer Repairs & Rework
  - Eliminate, Automate, Simplify “Paperwork”, Forms, & Data Entry
  - Be Profitable

# Questions, Discussion, & Suggestions

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