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29TH ANNUAL HIGHWAY REPORT

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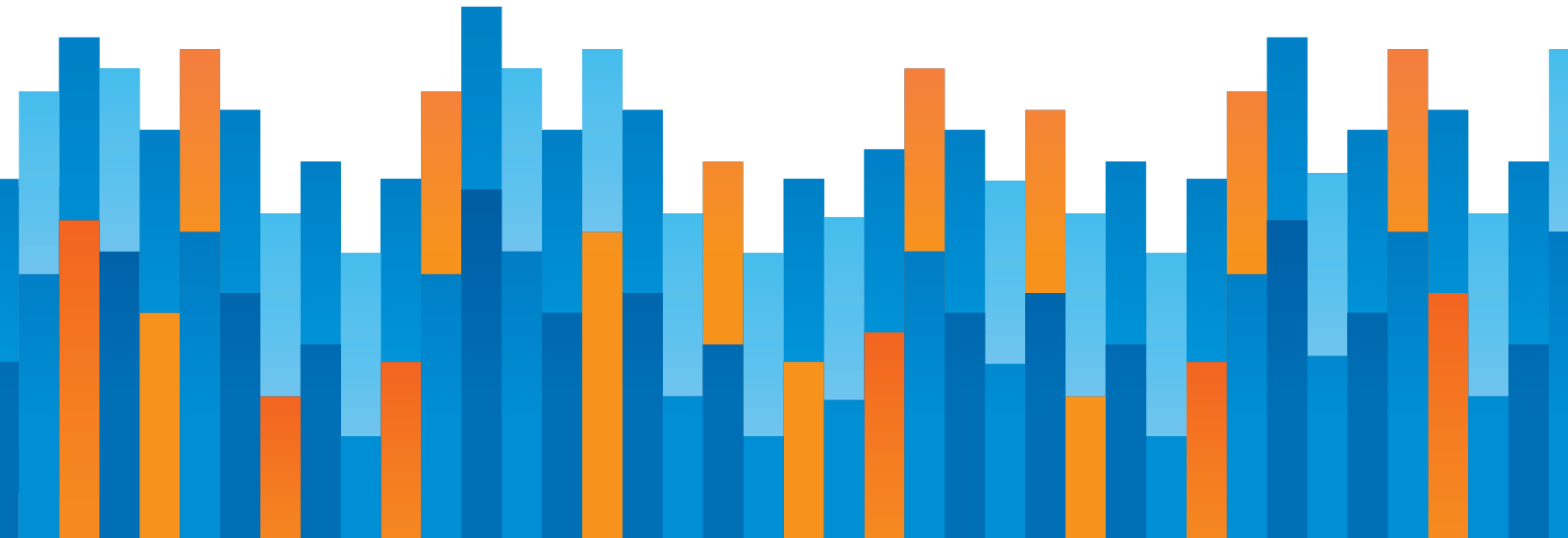

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PART 1

STATE HIGHWAY PERFORMANCE RANKINGS

Reason Foundation's *29th Annual Highway Report* evaluates state highway systems on cost versus quality using a method developed in the early 1990s by David T. Hartgen, Ph.D., emeritus professor at the University of North Carolina at Charlotte. This method has since been refined by Hartgen, M. Gregory Fields, Ph.D., Baruch Feigenbaum, and Truong Bui. Since states have different budgets, system sizes, and traffic and geographic circumstances, their comparative performance depends on both system performance and the resources available. To determine relative performance across the country, state highway system budgets (per mile of responsibility) are compared with system performance, state by state. States with high rankings typically have better-than-average system conditions (good for road users) along with relatively low per-mile expenditures (good for taxpayers).

The following table shows the overall highway performance of the state highway systems using 2023 data. This year's leading states are Virginia, Georgia, South Carolina, North Carolina, and Ohio. At the other end of the rankings are Alaska, California, Washington, New York, and Louisiana.

Similar to last year, the top-performing states are a mix of large and small states as well as states that are more urban and more rural. (Tables 1, 2, 3, 4, and Figure 1). Four large-population (more than seven million people) states place in the top five of the overall rankings: Virginia (1st), Georgia (2nd), North Carolina (4th), and Ohio (5th). Numerous factors—terrain, climate, truck volumes, urbanization, system age, budget priorities, unit cost differences, state budget circumstances, and management/maintenance philosophies—all affect overall performance. The remainder of this report reviews the statistics underlying these overall rankings in more detail.

TABLE 1: OVERALL HIGHWAY PERFORMANCE RANKINGS, 2023

Overall	State
1	Virginia
2	Georgia
3	South Carolina
4	North Carolina
5	Ohio
6	North Dakota
7	Connecticut
8	Alabama
9	Missouri
10	Utah
11	Minnesota
12	Tennessee
13	New Hampshire
14	Florida
15	Kentucky
16	Maine
17	Massachusetts
18	Indiana
19	Kansas
20	Wyoming
21	Arkansas
22	Montana
23	Michigan
24	Mississippi
25	Nevada
26	Idaho
27	Texas
28	South Dakota
29	Nebraska
30	West Virginia
31	Wisconsin
32	Delaware
33	Oregon
34	Maryland
35	Iowa
36	Pennsylvania
37	Illinois
38	Vermont
39	New Mexico
40	New Jersey
41	Arizona
42	Colorado
43	Rhode Island
44	Hawaii
45	Oklahoma
46	Louisiana
47	New York
48	Washington
49	California
50	Alaska

TABLE 2: OVERALL HIGHWAY PERFORMANCE RANKINGS IN ALPHABETICAL ORDER, 2023

State	Overall
Alabama	8
Alaska	50
Arizona	41
Arkansas	21
California	49
Colorado	42
Connecticut	7
Delaware	32
Florida	14
Georgia	2
Hawaii	44
Idaho	26
Illinois	37
Indiana	18
Iowa	35
Kansas	19
Kentucky	15
Louisiana	46
Maine	16
Maryland	34
Massachusetts	17
Michigan	23
Minnesota	11
Mississippi	24
Missouri	9
Montana	22
Nebraska	29
Nevada	25
New Hampshire	13
New Jersey	40
New Mexico	39
New York	47
North Carolina	4
North Dakota	6
Ohio	5
Oklahoma	45
Oregon	33
Pennsylvania	36
Rhode Island	43
South Carolina	3
South Dakota	28
Tennessee	12
Texas	27
Utah	10
Vermont	38
Virginia	1
Washington	48
West Virginia	30
Wisconsin	31
Wyoming	20

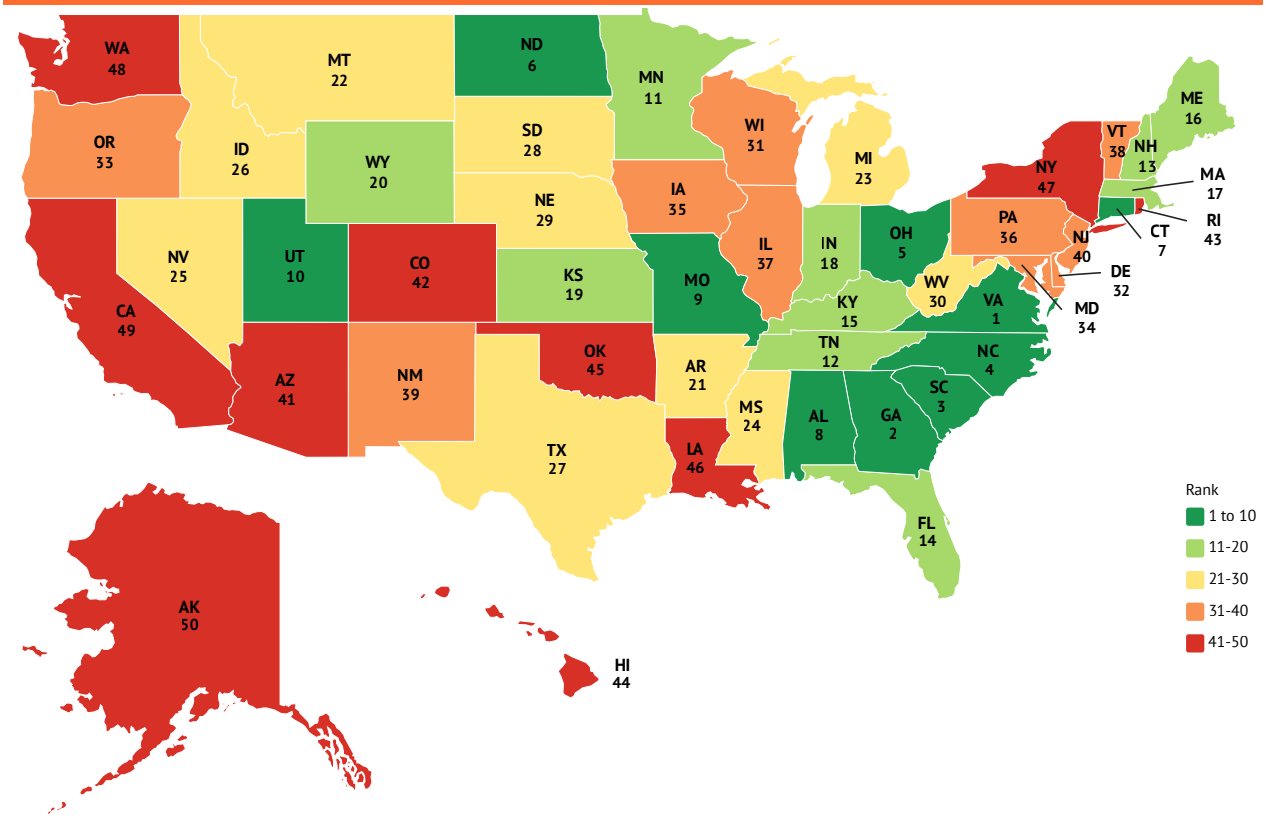
TABLE 3: HIGHWAY PERFORMANCE RANKINGS BY CATEGORY, 2023

State	Overall	Capital & Bridge Disbursements Ratio	Maintenance Disbursements Ratio	Admin Disbursements Ratio	Other Disbursements Ratio	Rural Interstate Pavement Condition	Urban Interstate Pavement Condition	Rural Arterial Pavement Condition	Urban Arterial Pavement Condition	Urbanized Area Congestion	Structurally Deficient Bridges	Rural Fatality Rate	Urban Fatality Rate	Other Fatality Rate
Alabama	8	13	1	41	5	32	30	5	1	14	8	44	28	25
Alaska	50	49	45	21	28	48	8	50	16	10	37	50	11	5
Arizona	41	29	12	48	36	45	24	42	20	11	1	39	43	48
Arkansas	21	23	5	6	26	40	38	25	28	17	22	45	35	37
California	49	41	44	35	48	47	48	39	50	46	25	36	27	39
Colorado	42	27	33	33	18	46	45	33	36	35	16	33	39	28
Connecticut	7	19	11	16	22	1	11	32	21	28	18	18	15	23
Delaware	32	5	39	46	23	N/A	46	6	12	47	4	41	29	35
Florida	14	43	34	19	13	2	6	7	5	40	9	32	46	20
Georgia	2	11	13	24	7	16	14	3	2	45	5	23	37	24
Hawaii	44	9	9	29	6	N/A	50	48	40	20	30	48	40	1
Idaho	26	48	35	14	43	22	9	19	32	22	19	35	25	34
Illinois	37	35	18	27	32	25	34	46	33	44	41	25	23	30
Indiana	18	46	49	17	3	38	26	4	4	31	21	27	19	11
Iowa	35	42	24	26	19	33	32	38	26	1	49	17	24	19
Kansas	19	47	21	34	45	13	18	8	19	3	20	28	8	31
Kentucky	15	15	23	1	24	24	36	15	10	27	32	11	42	50
Louisiana	46	14	25	2	33	44	49	47	42	29	44	21	33	40
Maine	16	22	37	11	15	3	2	41	31	8	46	3	9	13
Maryland	34	20	32	36	42	30	43	30	43	43	13	1	32	14
Massachusetts	17	6	15	38	10	36	20	17	46	49	38	2	3	2
Michigan	23	39	19	12	21	39	41	16	34	15	43	7	22	21
Minnesota	11	32	43	32	38	9	16	22	3	24	11	5	1	6
Mississippi	24	21	2	8	12	34	37	34	29	12	26	37	48	47
Missouri	9	3	10	5	27	23	27	13	22	26	40	15	30	16
Montana	22	16	36	28	30	29	15	26	27	7	31	43	45	32
Nebraska	29	26	30	25	16	12	7	44	49	23	35	13	13	18
Nevada	25	36	31	49	35	10	22	2	11	33	2	40	38	29
New Hampshire	13	18	27	45	20	5	1	14	8	32	34	9	4	17
New Jersey	40	44	42	31	40	17	42	31	41	50	27	16	14	4
New Mexico	39	12	4	47	31	42	31	35	38	13	17	38	50	22
New York	47	45	46	43	49	37	47	28	47	48	39	12	17	9
North Carolina	4	8	7	3	9	20	23	20	14	30	33	31	16	33
North Dakota	6	30	8	9	29	7	3	23	24	2	42	26	2	12
Ohio	5	10	6	30	17	19	25	9	35	18	14	6	18	27
Oklahoma	45	38	48	42	44	31	39	45	30	16	36	24	44	45
Oregon	33	40	41	40	37	15	19	24	23	34	15	47	36	41
Pennsylvania	36	7	20	15	39	41	40	37	37	42	45	8	21	36
Rhode Island	43	31	29	18	11	6	10	49	48	37	47	4	20	15
South Carolina	3	1	3	4	1	28	5	21	6	25	24	49	41	46
South Dakota	28	25	40	44	25	4	13	18	18	9	48	19	10	44
Tennessee	12	17	17	23	2	14	12	27	13	36	12	20	47	42
Texas	27	34	22	37	34	21	33	12	39	41	3	42	26	43
Utah	10	33	38	20	41	8	17	10	9	19	6	22	12	3
Vermont	38	37	47	50	46	18	4	43	25	6	7	10	7	10
Virginia	1	2	26	10	4	11	21	11	15	38	10	29	6	26
Washington	48	50	50	39	50	43	28	29	44	39	23	34	31	38
West Virginia	30	4	16	7	8	35	29	36	7	5	50	30	34	49
Wisconsin	31	24	10	24	39	26	35	39	44	24	27	7	10	10
Wyoming	20	24	28	13	14	27	44	1	17	4	28	46	49	8

TABLE 4: OVERALL HIGHWAY PERFORMANCE RANKING TRENDS, 2020-2023

State	Year			Change in Rank	
	2020	2022	2023	2020-2023	2020-2023
Alabama	15	17	8	9	7
Alaska	50	50	50	0	0
Arizona	30	29	41	-12	-11
Arkansas	13	28	21	7	-8
California	47	49	49	0	-2
Colorado	43	43	42	1	1
Connecticut	5	13	7	6	-2
Delaware	35	41	32	9	3
Florida	8	14	14	0	-6
Georgia	4	6	2	4	2
Hawaii	48	48	44	4	4
Idaho	34	15	26	-11	8
Illinois	29	36	37	-1	-8
Indiana	23	20	18	2	5
Iowa	31	31	35	-4	-4
Kansas	22	22	19	3	3
Kentucky	7	11	15	-4	-8
Louisiana	40	46	46	0	-6
Maine	32	21	16	5	16
Maryland	24	32	34	-2	-10
Massachusetts	20	40	17	23	3
Michigan	27	23	23	0	4
Minnesota	12	7	11	-4	1
Mississippi	18	18	24	-6	-6
Missouri	11	9	9	0	2
Montana	25	16	22	9	-5
Nebraska	26	30	29	1	-3
Nevada	21	24	25	-1	-4
New Hampshire	14	19	13	6	1
New Jersey	44	34	40	-6	4
New Mexico	36	38	39	-1	-3
New York	49	45	47	-2	2
North Carolina	2	1	4	-3	-2
North Dakota	9	3	6	-3	3
Ohio	17	10	5	5	12
Oklahoma	45	39	45	6	0
Oregon	37	35	33	2	4
Pennsylvania	41	37	36	1	5
Rhode Island	42	42	43	-1	-1
South Carolina	6	2	3	-1	3
South Dakota	28	27	28	-1	0
Tennessee	3	5	12	-7	-9
Texas	19	25	27	-2	-8
Utah	10	8	10	-2	0
Vermont	38	44	38	6	0
Virginia	1	4	1	3	0
Washington	46	47	48	-1	-2
West Virginia	39	33	30	3	9
Wisconsin	33	26	31	-5	2
Wyoming	16	12	20	-8	-4

FIGURE 1: OVERALL HIGHWAY PERFORMANCE RANK, 2023



The overall rankings are not dramatically different from the previous version of the *Annual Highway Report*. However, one state's overall ranking improved by double digits, while two states' overall rankings declined by 10 or more spots:

- **Massachusetts improved 23 positions from 40th to 17th in the overall rankings**, as the state made double-digit improvements in multiple categories. Maintenance disbursements improved by 26 positions, rural arterial pavement condition improved by 14 positions, and rural fatality rate improved by 22 positions.
- **Arizona worsened by 12 positions from 29th to 41st in the overall rankings,** as two of the four pavement categories worsened significantly. Urban Interstate pavement worsened by 12 positions and rural arterial pavement condition worsened by 12 positions.

- **Idaho worsened 11 positions from 15th to 26th in the overall rankings,** as the state decreased by double-digits in five categories. Urban arterial pavement condition worsened by 20 positions, urban area congestion worsened by 15 positions, rural fatality rate worsened by 12 positions, urban fatality rate worsened by 20 positions, and other fatality rate worsened by 19 positions. The state has bounced around in the rankings as its pavement conditions and fatality rate have varied year to year more than most other states.

PART 2

METHODOLOGICAL CHANGE

Some years, based on data availability, we need to make changes to the methodology we use for certain categories. Similar to last year, this year we will be using the INRIX data for congestion.

In the last handful of years, we have alternated between using publicly available INRIX data and the Texas A&M Transportation (TTI) Institute's *Urban Mobility Report* (UMR). Using the INRIX dataset, we aggregated congestion per commuter collected from publicly available INRIX data. We used the Census Bureau's *American Community Survey* to obtain the number of commuters for metro areas. We also estimated congestion hours for non-INRIX cities, since INRIX includes data on a smaller number of cities.

With the TTI dataset, we do not need to use the Census Bureau's *American Community Survey* to obtain the number of commuters for cities since the TTI's UMR includes these data. We also do not need to estimate congestion hours for non-INRIX cities, as the UMR dataset covers a sufficiently large sample of cities. The TTI dataset is preferred, but it is not available every year.

Since the methodologies are somewhat different, the rankings vary slightly. Given the importance of using one source, and the more limited availability of the TTI data, moving forward we have decided to use INRIX data every year.

PART 3

BACKGROUND DATA

State highway system sizes range from fewer than 2,500 lane-miles to more than 200,000 lane-miles. States with larger geographic areas and larger populations tend to have larger systems. Some states, such as North Carolina, maintain all of their roads, except for subdivision streets, on the state level, Other states, such as Florida, have robust county road systems. States are not ranked on the same of their state-controlled highway mileage. This information is included in this report as background information and is used to weight the financial data.

STATE-CONTROLLED MILES

State-controlled mileage encompasses the state highway systems, state-agency toll roads, some ferry services, and smaller systems serving universities and state-owned properties. It includes the Interstate System, the National Highway System, and most federal-aid system roads. A few states also manage major portions of the rural road system (collectors and local roads). Nationally, the average number of lanes *per mile* is 2.40 lanes, but some states (Florida, New Jersey, California, and Massachusetts) manage significantly wider roads, averaging more than three lanes per mile.

Nationwide in 2023, there were 1,976,970 lane-miles under state control (Table 5, State-Controlled Highway Mileage by Lane-Miles), which is 83,548 more lane-miles than in 2022 (1,893,422), the last time this assessment was completed. State transportation agencies increase the size of state-controlled highway systems due to population growth and migration. The size of state-controlled systems decreases as urbanized areas expand, and ownership and control of some state highways is transferred to county or city governments. Hawaii (2,491 miles) and Rhode Island (2,872 miles) have the fewest lane-miles under state control. Texas (200,635 miles) and North Carolina (174,598 miles) have the most.

TABLE 5: STATE-CONTROLLED HIGHWAY MILES, 2023

2023 Size	State	Lane-Miles
1	Texas	200,635
2	North Carolina	174,598
3	Pennsylvania	171,941
4	Virginia	129,921
5	South Carolina	90,262
6	Missouri	77,636
7	West Virginia	71,130
8	Kentucky	62,485
9	California	51,729
10	Ohio	49,802
11	Georgia	49,663
12	Florida	45,710
13	Illinois	42,229
14	Louisiana	40,197
15	New York	37,970
16	Arkansas	37,698
17	Tennessee	37,625
18	Oklahoma	30,438
19	Wisconsin	29,904
20	Alabama	29,852
21	New Mexico	29,433
22	Minnesota	29,272
23	Indiana	28,729
24	Mississippi	28,367
25	Michigan	27,382
26	Montana	25,219
27	Kansas	24,064
28	Iowa	23,286
29	Colorado	23,147
30	Nebraska	22,615
31	Arizona	20,124
32	Washington	18,507
33	Oregon	18,444
34	South Dakota	17,942
35	Maine	17,453
36	North Dakota	17,257
37	Utah	16,079
38	Wyoming	15,798
39	Maryland	14,977
40	Nevada	13,592
41	Idaho	12,226
42	Delaware	12,071
43	Alaska	11,851
44	Connecticut	9,826
45	Massachusetts	9,536
46	New Jersey	8,525
47	New Hampshire	8,460
48	Vermont	5,998
49	Rhode Island	2,872
50	Hawaii	2,491
	U.S. Total	1,976,970
	Average	39,539

TABLE 6: STATE-CONTROLLED HIGHWAY MILEAGE BY SYSTEM WIDTH, 2023

2023 Size	State	Ratio	Lane-Miles	Centerline Mileage
1	Florida	3.75	45,710	12,190
2	New Jersey	3.68	8,525	2,316
3	California	3.48	51,729	14,869
4	Massachusetts	3.19	9,536	2,991
5	Arizona	2.94	20,124	6,853
6	Maryland	2.87	14,977	5,220
7	Michigan	2.84	27,382	9,654
8	Georgia	2.77	49,663	17,905
9	Utah	2.73	16,079	5,897
10	Alabama	2.73	29,852	10,950
11	Tennessee	2.69	37,625	13,984
12	Illinois	2.66	42,229	15,886
13	Connecticut	2.64	9,826	3,716
14	Washington	2.62	18,471	7,052
15	Iowa	2.62	23,896	8,892
16	Hawaii	2.62	2,491	952
17	Indiana	2.60	28,729	11,059
18	Rhode Island	2.59	2,872	1,107
19	Mississippi	2.59	28,367	10,957
20	Ohio	2.58	49,802	19,281
21	Colorado	2.56	23,147	9,029
22	Wisconsin	2.55	29,904	11,743
23	Nevada	2.54	13,592	5,352
24	New York	2.54	37,970	14,970
25	Minnesota	2.50	29,272	11,698
26	Oklahoma	2.49	30,438	12,223
27	Texas	2.48	200,636	81,014
28	New Mexico	2.47	29,433	11,914
29	Idaho	2.47	12,226	4,952
30	Oregon	2.43	18,444	7,592
31	Louisiana	2.36	40,197	17,026
32	Wyoming	2.35	15,798	6,734
33	Kansas	2.34	24,064	10,294
34	Arkansas	2.33	37,698	16,188
35	North Dakota	2.33	17,257	7,413
36	South Dakota	2.32	17,942	7,747
37	Missouri	2.30	77,636	33,811
38	Montana	2.28	25,219	11,038
39	Vermont	2.28	5,998	2,629
40	Nebraska	2.28	22,616	9,930
41	Kentucky	2.25	62,485	27,713
42	South Carolina	2.20	90,262	41,119
43	Delaware	2.19	12,071	5,503
44	Virginia	2.18	129,921	59,656
45	New Hampshire	2.17	8,460	3,890
46	North Carolina	2.17	174,088	80,384
47	Pennsylvania	2.11	171,941	81,396
48	Maine	2.10	17,453	8,327
49	Alaska	2.09	11,851	5,679
50	West Virginia	2.07	71,130	34,375
	U.S. Total		1,976,970	823,166
	Average	2.40	39,539	16,461

PART 4

FOCUS STATES

While each state is unique, peer exchanges among states can provide valuable insight. This section of the *29th Annual Highway Report* spotlights four states that excel in state highway performance. These states highlight best practices and innovation, and can serve as potential models for other states.

VIRGINIA: OVERALL RANK 1

Virginia has been near or at the top of the rankings for years, and there are several reasons why. The first is the state has no bottom 10 categorical rankings. States in the top 10 of the rankings often have no categorical number one rankings. What they share is a lack of poor rankings. Rankings in the bottom 10 can be exponentially worse, due to the magnitude. For example, the state with the worst rural arterial pavement condition has 11 times more poor arterial pavement than the average state. Even one very bad score can harm a state's overall ranking. The second is the state's mature public-private partnership (P3) office. Virginia has used P3s on most of its managed lanes network. By encouraging innovation, P3s tend to lower all costs, particularly capital and bridge . The best example of this may be the original phase of the I-495 express lanes in Northern Virginia where the concessionaire's final project cost was 25% lower than the state's original estimate. This year Virginia has the second lowest capital and bridge disbursements in the country.

GEORGIA: OVERALL RANK 2

While it may not rank number one in any category, no state has improved in the rankings over the years as much as number two ranked Georgia. Fifteen years ago the department was churning through leaders and as recently as five years ago the state ranked in the bottom half of all states. What changed was a coordinated long-range plan. The department developed the Major Mobility Investment Program to fast-track projects on Interstates and other limited access highways. The Program sped up construction of needed highway projects, such as the reconstruction of the I-285/SR 400 interchange (a major bottleneck) and the widening of I-85 from four to six lanes in northeast Georgia. The state still struggles with traffic congestion, but it would be worse without these projects. States tend to rank highly because of several factors, and Georgia has a well-developed long-term transportation plan and the ability to accelerate projects.

OHIO: OVERALL RANK 5

As a flyover state that does not stand out for climate or topography, Ohio is often overlooked on the list of best transportation departments. But the state's transportation system routinely ranks highly in our report, this year placing number five. Ohio is a state where the sum of its rankings is better than any of the categorical rankings. Its strongest categories are in maintenance disbursements and rural fatality rate, ranking 6th in both. What sets Ohio apart is its lack of poor rankings. Its worst ranking is urban arterial pavement condition (35th) and next worst is administrative disbursements (30th). As much as any state, Ohio has found a way to maximize its resources to improve its performance. For example, Ohio has the 10th lowest capital and bridge disbursements and the 9th best rural arterial pavement condition. Neighboring West Virginia's 4th lowest capital and bridge disbursements sounds good, but combined with the 36th best rural Interstate pavement condition, Ohio has an edge. Ohio is a model for states looking to maximize their overall performance.

UTAH: OVERALL RANK 10

If you ask transportation professionals around the country to name their top 10 state transportation departments, Utah will make everybody's list. Not surprisingly, the state highway system is perennially in our top 10 list. The state ranks highly for a number of reasons. Utah excels at cost-benefit analysis and choosing projects based on merit, and it has a well-developed long-term planning process. But, most impressively, the state

maintains a top 10 ranking while having significantly higher than average spending. Many states rank poorly due in part to high spending. But higher than average spending can be overcome with excellent system performance. Despite ranking 33rd, 38th, 20th, and 41st in the four spending categories, Utah ranks highly because its pavement quality, traffic congestion, bridges, and fatality rates rank so well. Utah should be a model, not just for its leadership and project selection process, but also for higher-cost states looking to improve in the rankings.

PART 5

PERFORMANCE INDICATORS

The *Annual Highway Report* ranks each state in 13 categories. Four of the categories measure **spending**: Capital and Bridge Disbursements, Maintenance Disbursements, Administrative Disbursements, and Other Disbursements. The remaining nine categories measure **performance**. Four of the performance categories measure pavement quality: Rural Interstate Pavement Condition, Urban Interstate Pavement Condition, Rural Other Principal Arterial Pavement Condition, and Urban Other Principal Arterial Pavement Condition. One of the performance categories measures traffic congestion: Urban Area Congestion. The four remaining categories measure safety: Structurally Deficient Bridges, Rural Fatality Rate, Urban Fatality Rate, and Other Fatality Rate.

The performance ratio for each of the 13 categories is calculated individually (pages 16-43, Tables 7-17, Figures 2-14) for each state by dividing the actual measure by the expected measure. The expected values for the four spending categories are determined by locally estimated scatterplot soothing (LOESS) regressions between the spending amounts per lane-mile and the percent of urban lane-miles. These regressions incorporate the fact that more-urbanized states are expected to spend more on roads (per lane-mile) than less-urbanized ones. For the other nine categories, the expected measure is the national weighted average. States are ranked in each category based on the performance ratios they attain, with higher ratios indicating worse performance. For all categories, 1 is the best ranking and 50 is the worst. To determine the total ranking, each state's categorical ratios are added together, weighted equally, and then averaged to get one overall final ratio. Each

measure, whether spending efficiency or system performance, is weighted equally, so each categorical score makes up 1/13 of the total score. Additional details on how the rankings are calculated are in the Appendix.

This part of the report includes detailed data and trends for each category. Rankings include a table showing the state, the ranking, and a score. Each ranking also includes a color-coded map with the score for each state.

CAPITAL AND BRIDGE DISBURSEMENTS

Capital and bridge disbursements are the costs to build new, and widen existing, highways and bridges. Capital and bridge disbursements for state-owned roads equal 52.9% of total disbursements, totaling $93.57 billion in 2023, 19% more than what was spent in 2022 ($78.68 billion).

In 2019, we measured capital and bridge disbursements per lane-mile. For 2018, we measured capital and bridge disbursements per centerline-mile, lane-mile, and vehicle-miles traveled (VMT) per lane-mile. This year we measured disbursements per lane adjusted for urbanization, the same process that we've used the past two years. For the calculations, we take the disbursement per lane-mile and divide it by the expected disbursement per lane-mile to get a ratio. The average 2023 lane-mile disbursement is $47,332, an 8.4%

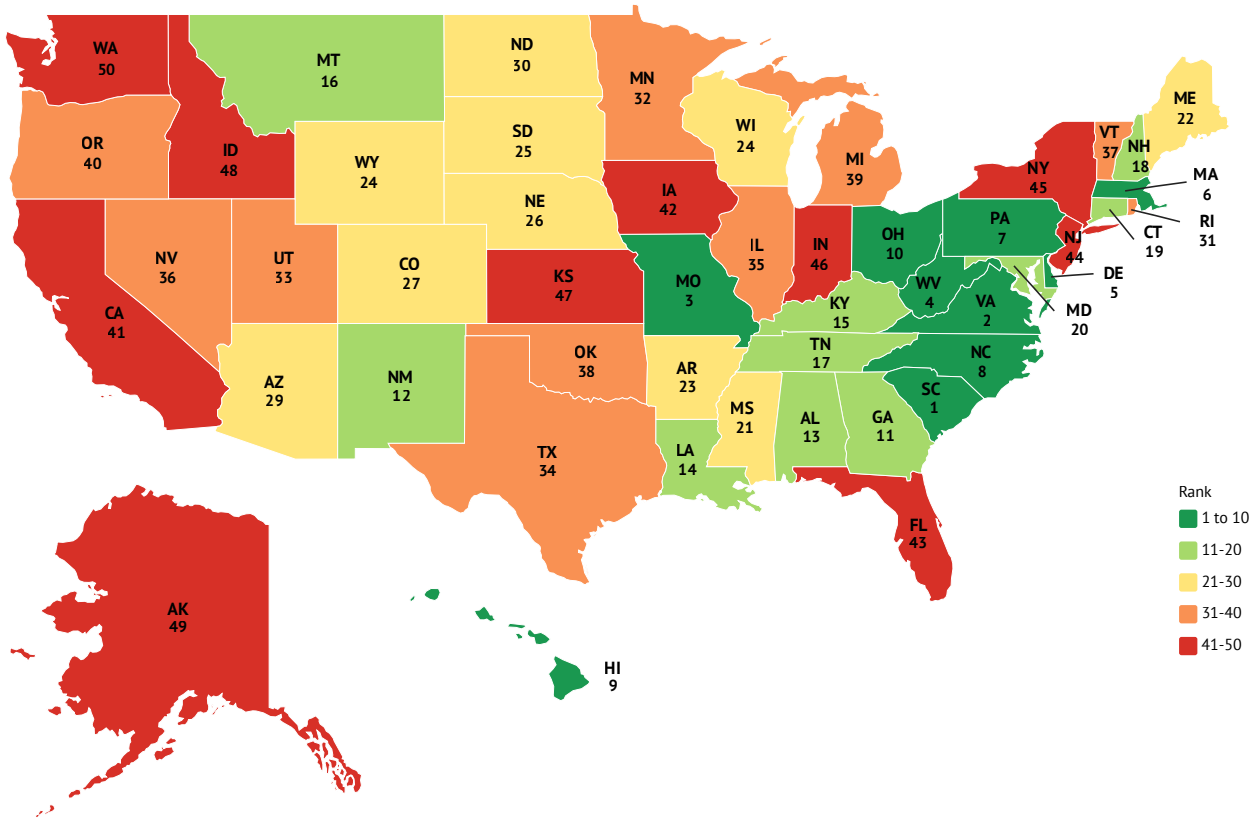
TABLE 7: CAPITAL AND BRIDGE DISBURSEMENTS, 2023

2023 Rank	State	Disbursement Per Lane-Mile	Expected Disbursement per Lane-Mile	Adjusted Ratio
1	South Carolina	$19,308	$57,418	0.34
2	Virginia	$19,025	$47,245	0.40
3	Missouri	$18,324	$39,178	0.47
4	West Virginia	$17,881	$38,013	0.47
5	Delaware	$45,039	$90,261	0.50
6	Massachusetts	$114,199	$225,406	0.51
7	Pennsylvania	$23,813	$40,187	0.59
8	North Carolina	$27,578	$44,907	0.61
9	Hawaii	$69,028	$110,952	0.62
10	Ohio	$41,972	$66,853	0.63
11	Georgia	$42,090	$66,330	0.63
12	New Mexico	$24,124	$37,187	0.65
13	Alabama	$32,434	$49,883	0.65
14	Louisiana	$31,846	$47,363	0.67
15	Kentucky	$26,936	$39,158	0.69
16	Montana	$23,202	$33,642	0.69
17	Tennessee	$43,805	$61,690	0.71
18	New Hampshire	$33,353	$43,732	0.76
19	Connecticut	$126,175	$161,016	0.78
20	Maryland	$83,475	$102,134	0.82
21	Mississippi	$33,126	$40,326	0.82
22	Maine	$32,520	$38,447	0.85
23	Arkansas	$38,753	$40,973	0.95
24	Wyoming	$35,151	$35,924	0.98
25	South Dakota	$33,839	$33,484	1.01
26	Nebraska	$36,765	$35,295	1.04
27	Colorado	$49,664	$46,797	1.06
28	Wisconsin	$50,782	$46,820	1.08
29	Arizona	$51,951	$47,891	1.08
30	North Dakota	$36,391	$33,264	1.09
31	Rhode Island	$160,029	$143,634	1.11
32	Minnesota	$48,976	$42,876	1.14
33	Utah	$56,659	$48,957	1.16
34	Texas	$55,907	$47,347	1.18
35	Illinois	$90,400	$73,679	1.23
36	Nevada	$52,636	$42,638	1.23
37	Vermont	$46,426	$37,385	1.24
38	Oklahoma	$50,295	$40,403	1.24
39	Michigan	$90,270	$71,189	1.27

increase from 2022's $43,674. (Table 7, Capital and Bridge Disbursements by State, 2023, Figure 2). This increase continues a decade-long trend of steady increases in spending. Since 2015, total capital and bridge disbursements have increased about 25%, similar to the Consumer Price Index (CPI), which has increased about 28%.[1]

2023 Rank	State	Disbursement Per Lane-Mile	Expected Disbursement per Lane-Mile	Adjusted Ratio
40	Oregon	$55,397	$43,197	1.28
41	California	$107,122	$82,135	1.30
42	Iowa	$53,143	$39,977	1.34
43	Florida	$165,167	$118,996	1.39
44	New Jersey	$348,891	$243,842	1.43
45	New York	$116,626	$75,832	1.54
46	Indiana	$72,891	$47,363	1.54
47	Kansas	$59,858	$37,810	1.58
48	Idaho	$60,694	$37,247	1.63
49	Alaska	$65,711	$39,330	1.67
50	Washington	$117,118	$54,282	2.16

FIGURE 2: CAPITAL AND BRIDGE DISBURSEMENTS PER STATE-CONTROLLED LANE-MILE, 2023



In 2023, South Carolina, Virginia, Missouri, West Virginia, and Delaware reported the lowest capital and bridge expenditure ratios, after adjusting for urbanization. Washington, Alaska, Idaho, Kansas, and Indiana reported the highest expenditure ratios. Compared to 2022, the

[1] "Consumer Priced Index Historical Table for U.S. City Average," U.S. Bureau of Labor Statistics, bls.gov, 2025. https://www.bls.gov/regions/mid-atlantic/data/consumerpriceindexhistorical_us_table.htm (8 Oct 2025).

states whose ratio increased by the highest percentage were New Hampshire, Mississippi, Kansas, Missouri, and Ohio (25%, 24%, 32%, 18%, and 15% respectively). The states that improved the most were Hawaii (30%), Alabama (29%), Utah (28%), Colorado (28%), and Massachusetts (22%). The disbursements per state-controlled lane-mile can vary widely from year to year reflecting funding actions and project schedules.

MAINTENANCE DISBURSEMENTS

Maintenance disbursements are the costs to perform routine roadway upkeep, such as filling in potholes and repaving roads. Maintenance disbursements comprise about 17.2% of total disbursements, totaling $30.41 billion in 2023, 8.4% higher than the $28.06 billion in 2022, the last time this assessment was completed.

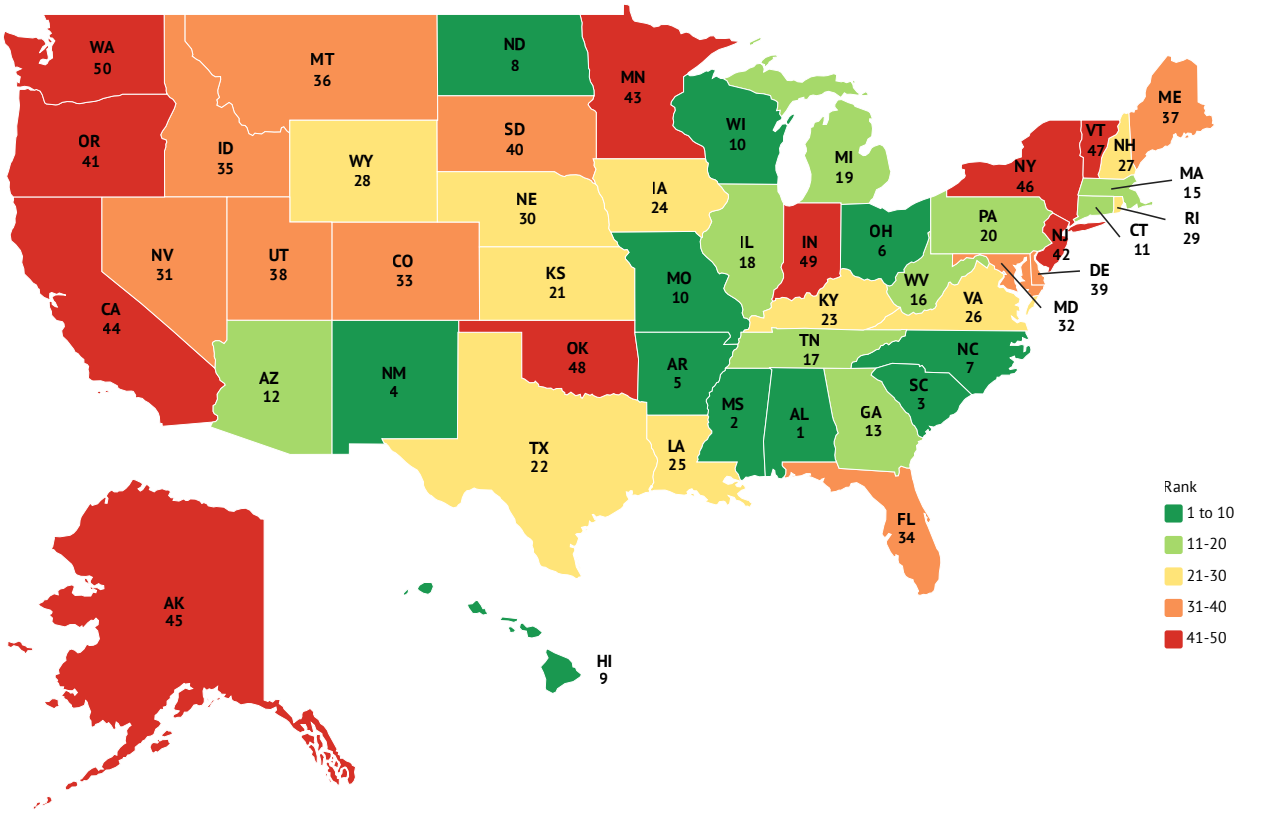
In 2019, we measured maintenance disbursements per lane-mile. For 2018, we measured maintenance disbursements per centerline-mile, lane-mile, and vehicle-miles traveled (VMT) per lane-mile. This year, we measured disbursements per lane-mile adjusted for urbanization, the same process that we used the past two years. For this process, we take the disbursement per lane-mile and divide it by the expected disbursement per lane-mile to calculate a ratio. The average 2023 per-mile disbursement is $15,382 (Table 8, Maintenance Disbursements by State, 2023, Figure 3), an increase of 3.8% compared with $14,819 in 2022. This increase continues a decade-long trend of steady increases in spending. Since 2015, total maintenance disbursements have increased 33.1%, while the Consumer Price Index (CPI) has increased about 28%.

TABLE 8: MAINTENANCE DISBURSEMENTS, 2023

2023 Rank	State	Disbursement Per Lane-Mile	Expected Disbursement per Lane-Mile	Adjusted Ratio
1	Alabama	$1,275	$15,453	0.08
2	Mississippi	$4,622	$13,602	0.34
3	South Carolina	$6,052	$17,573	0.34
4	New Mexico	$3,953	$10,521	0.38
5	Arkansas	$6,193	$14,066	0.44
6	Ohio	$9,937	$21,680	0.46
7	North Carolina	$7,304	$15,411	0.47
8	North Dakota	$2,811	$5,591	0.50
9	Hawaii	$20,647	$39,346	0.52
10	Missouri	$7,582	$12,545	0.60
11	Connecticut	$31,849	$50,919	0.63
12	Arizona	$9,596	$15,103	0.64
13	Georgia	$13,855	$21,340	0.65
14	Wisconsin	$10,523	$15,773	0.67
15	Massachusetts	$43,573	$65,252	0.67
16	West Virginia	$7,645	$11,416	0.67
17	Tennessee	$13,337	$19,102	0.70
18	Illinois	$18,928	$26,152	0.72
19	Michigan	$17,813	$24,579	0.72
20	Pennsylvania	$10,161	$13,481	0.75
21	Kansas	$8,759	$11,200	0.78
22	Texas	$12,284	$15,548	0.79
23	Kentucky	$10,106	$12,527	0.81
24	Iowa	$11,124	$13,287	0.84
25	Louisiana	$13,237	$15,481	0.86
26	Virginia	$13,483	$15,731	0.86
27	New Hampshire	$13,175	$15,129	0.87
28	Wyoming	$7,923	$9,065	0.87
29	Rhode Island	$42,997	$46,979	0.92
30	Nebraska	$7,732	$8,295	0.93
31	Nevada	$14,789	$14,801	1.00
32	Maryland	$38,918	$37,187	1.05
33	Colorado	$16,608	$15,769	1.05
34	Florida	$44,190	$41,267	1.07
35	Idaho	$11,554	$10,588	1.09
36	Montana	$7,134	$6,119	1.17
37	Maine	$14,131	$11,861	1.19
38	Utah	$18,758	$15,239	1.23
39	Delaware	$43,682	$33,823	1.29
40	South Dakota	$7,729	$5,900	1.31
41	Oregon	$20,424	$14,978	1.36
42	New Jersey	$98,482	$69,323	1.42
43	Minnesota	$21,244	$14,879	1.43
44	California	$49,989	$30,680	1.63
45	Alaska	$20,955	$12,680	1.65
46	New York	$57,991	$27,434	2.11
47	Vermont	$23,641	$10,739	2.20
48	Oklahoma	$31,339	$13,666	2.29
49	Indiana	$36,607	$15,483	2.36
50	Washington	$40,592	$16,615	2.44

In 2023, Alabama, Mississippi, South Carolina, New Mexico, and Arkansas reported the lowest overall maintenance expenditure ratios, after adjusting for urbanization. Washington, Indiana, Oklahoma, Vermont, and New York reported the highest overall expenditure ratios. Compared to 2022, the states whose ratio worsened by the highest percentage were New Jersey, Oklahoma, New York, Arizona, and Florida (103%, 44%, 34%, 31%, and 29% respectively). The states that improved the most were Massachusetts (57%), Pennsylvania (40%), Ohio (39%), Colorado (36%), and Delaware (24%). The disbursements per state-controlled lane-mile can vary widely from year to year reflecting funding actions and project schedules.

FIGURE 3: MAINTENANCE DISBURSEMENTS PER STATE-CONTROLLED LANE-MILE, 2023



ADMINISTRATIVE DISBURSEMENTS

Administrative disbursements typically include general and main-office expenditures in support of state-administered highways. They do not include project-related costs but occasionally include "parked" funds, which are funds from bond sales or asset sales awaiting later expenditure. Therefore, they can vary widely from year to year. Administrative disbursements comprise about 7.6% of total disbursements, totaling $13.42 billion in 2023, a 12.4% increase from $11.94 billion in 2022, the last time this assessment was completed.

In 2019, we measured administrative disbursements per lane-mile. For 2018, we measured administrative disbursements per centerline-mile, lane-mile, and vehicle-miles traveled (VMT) per lane-mile. This year, we measured administrative disbursements per lane-mile adjusted for urbanization, the same process that we used the past two years year. For this process, we take the administrative disbursement per lane-mile and divide it by the expected administrative

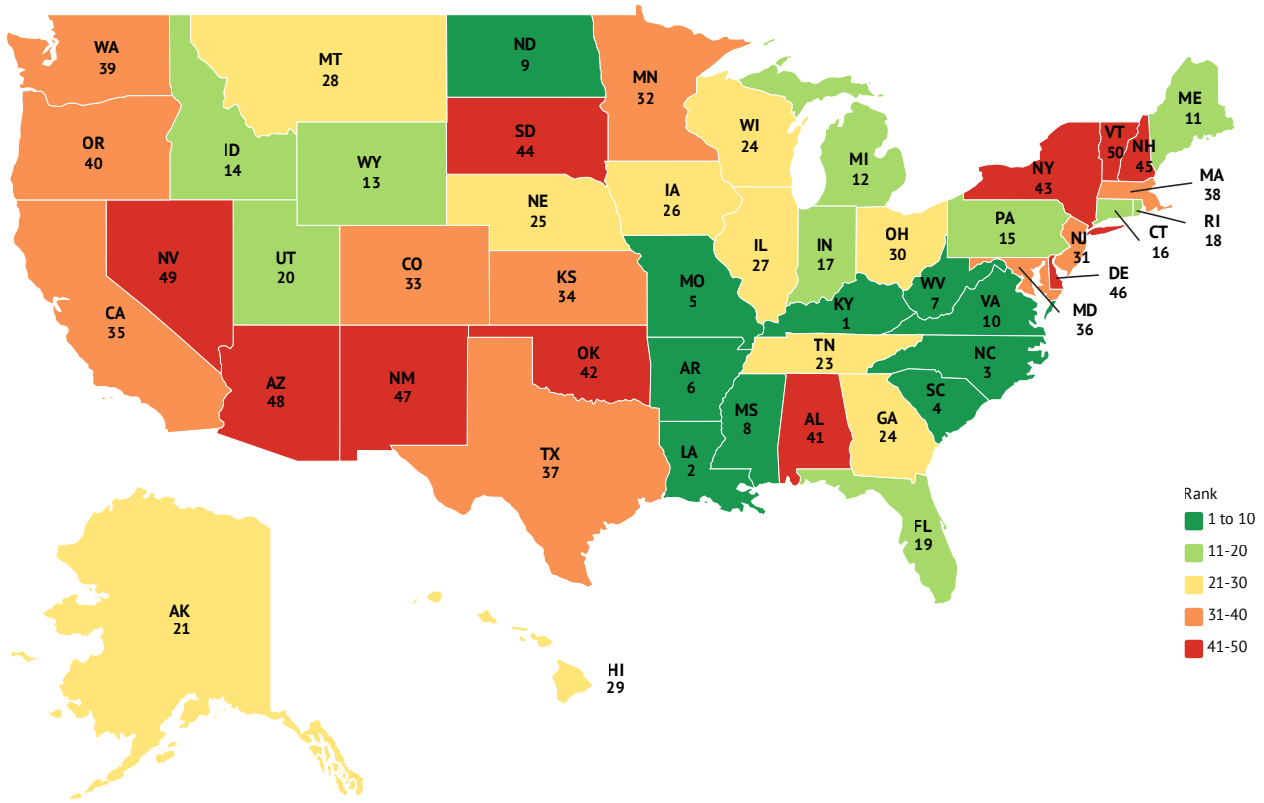
TABLE 9: ADMINISTRATIVE DISBURSEMENTS, 2023

2023 Rank	State	Disbursement Per Lane-Mile	Expected Disbursement per Lane-Mile	Adjusted Ratio
1	Kentucky	$665	$6,198	0.11
2	Louisiana	$1,428	$9,379	0.15
3	North Carolina	$1,357	$8,902	0.15
4	South Carolina	$1,607	$9,070	0.18
5	Missouri	$1,143	$6,206	0.18
6	Arkansas	$2,146	$7,045	0.30
7	West Virginia	$1,963	$5,738	0.34
8	Mississippi	$2,396	$6,753	0.35
9	North Dakota	$1,811	$4,448	0.41
10	Virginia	$4,353	$9,513	0.46
11	Maine	$2,788	$5,915	0.47
12	Michigan	$5,521	$10,873	0.51
13	Wyoming	$2,617	$5,055	0.52
14	Idaho	$2,968	$5,453	0.54
15	Pennsylvania	$3,659	$6,682	0.55
16	Connecticut	$9,097	$16,483	0.55
17	Indiana	$5,311	$9,380	0.57
18	Rhode Island	$9,597	$15,939	0.60
19	Florida	$9,868	$15,116	0.65
20	Utah	$6,049	$9,025	0.67
21	Alaska	$4,568	$6,265	0.73
22	Wisconsin	$7,173	$9,506	0.75
23	Tennessee	$7,401	$9,221	0.80
24	Georgia	$7,881	$9,736	0.81
25	Nebraska	$4,074	$4,891	0.83
26	Iowa	$5,566	$6,571	0.85
27	Illinois	$9,784	$11,422	0.86
28	Montana	$4,035	$4,522	0.89
29	Hawaii	$13,268	$14,827	0.89
30	Ohio	$9,009	$9,851	0.91
31	New Jersey	$19,760	$18,896	1.05
32	Minnesota	$8,484	$7,937	1.07
33	Colorado	$10,252	$9,503	1.08
34	Kansas	$6,225	$5,658	1.10
35	California	$14,809	$12,927	1.15
36	Maryland	$17,539	$14,490	1.21
37	Texas	$11,474	$9,418	1.22
38	Massachusetts	$23,758	$18,375	1.29
39	Washington	$12,401	$9,041	1.37
40	Oregon	$11,417	$8,097	1.41
41	Alabama	$13,553	$9,036	1.50
42	Oklahoma	$10,439	$6,792	1.54
43	New York	$19,203	$11,864	1.62
44	South Dakota	$8,045	$4,480	1.79
45	New Hampshire	$17,252	$8,360	2.06
46	Delaware	$28,937	$13,809	2.10
47	New Mexico	$12,651	$5,433	2.33
48	Arizona	$21,490	$9,073	2.37
49	Nevada	$21,156	$7,818	2.71
50	Vermont	$16,550	$5,500	3.01

disbursement per lane-mile to get a ratio. The average 2023 lane-mile disbursement is $6,788 (Table 9, Administrative Disbursements per State, 2023, Figure 4). The average disbursement per lane-mile increased 7.6% from 2022 ($6,308 disbursement per lane-mile), the last time this assessment was completed. This change is in line with an increasing spending trend over the last decade. Since 2015, total administrative disbursements have increased by about 52.5%, outpacing the Consumer Price Index (CPI), which has increased by about 28%.

In 2023, Kentucky, Louisiana, North Carolina, South Carolina, and Missouri reported the lowest administrative expenditure ratios, after adjusting for urbanization. Vermont, Nevada, Arizona, New Mexico, and Delaware reported the highest expenditure ratios. Compared to 2022, the states whose ratio worsened by the largest percentages were New Jersey, Arkansas, Maryland, North Carolina, and Ohio (114%, 76%, 68%, 67%, and 47% respectively). The states that improved the most were Washington (43%), Pennsylvania (36%), Massachusetts (34%), North Dakota (25%), and Utah (19%). The disbursements per state-controlled lane-mile can vary widely from year to year reflecting funding actions and project schedules.

FIGURE 4: ADMINISTRATIVE DISBURSEMENTS PER STATE-CONTROLLED LANE-MILE, 2023



The Difference Between Maintenance and Administrative Disbursements

Some disbursement data can be counted in one of several categories. One example is benefits (vacation, health care, etc.) of state department of transportation maintenance workers. Certain states, such as Vermont, count the benefits as a maintenance disbursement since the employees are conducting routine highway maintenance. Other states, such as Delaware, count the benefits as an administrative disbursement since benefits are an administrative expense. Not surprisingly, Vermont ranks in the bottom 10 in Maintenance Disbursements, and Delaware has a bottom 10 ranking in Administrative Disbursements. As a result, it is important to look at both the individual disbursement categories and disbursements as a whole**,** as states have some leeway in their classification of certain expenditures.

OTHER DISBURSEMENTS

Other disbursements include funds for law enforcement, safety, bonds, and interest payments. Since they include interest payments, they can vary widely from year to year. Other disbursements comprise about 22.2% of total funding, totaling $39.40 billion in 2023, about the same as the $39.99 billion in 2022, the last time this assessment was completed. In 2019, we measured other disbursements per lane-mile. For 2018, we measured other disbursements per centerline-mile, lane-mile, and vehicle-miles traveled (VMT) per lane-mile. This year, we measured other disbursements per lane-mile adjusted for urbanization, the same process that we used the past two years. For this process, we take the disbursement per lane-mile and divide it by the expected disbursement per lane-mile to calculate a ratio.

The average 2023 per lane-mile disbursement is $19,929. (Table 10, Other Disbursements per State, 2023, Figure 5). This equals a 2.45% decrease from $20,430 in 2022, the last time this assessment was completed. This change contrasts with an increasing spending trend over the last decade. This is likely the result of some states reclassifying certaint types of disbursements.

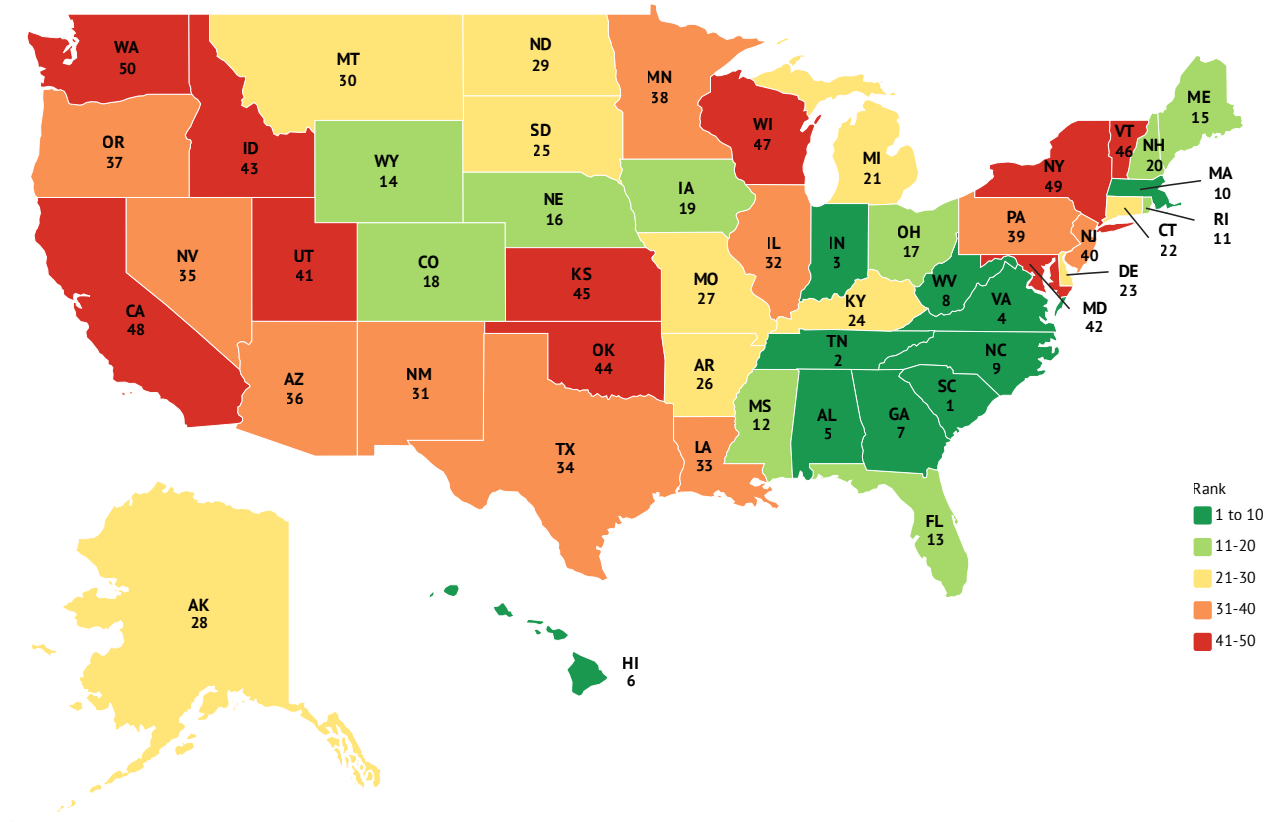
TABLE 10: OTHER DISBURSEMENTS, 2023

2023 Rank	State	Disbursement Per Lane-Mile	Expected Disbursement per Lane-Mile	Adjusted Ratio
1	South Carolina	$432	$22,656	0.02
2	Tennessee	$1,130	$25,987	0.04
3	Indiana	$4,133	$15,937	0.26
4	Virginia	$5,606	$15,916	0.35
5	Alabama	$6,150	$17,422	0.35
6	Hawaii	$26,652	$69,414	0.38
7	Georgia	$12,015	$30,364	0.40
8	West Virginia	$3,438	$7,994	0.43
9	North Carolina	$6,399	$14,163	0.45
10	Massachusetts	$139,184	$296,382	0.47
11	Rhode Island	$60,234	$126,411	0.48
12	Mississippi	$5,118	$10,364	0.49
13	Florida	$44,370	$82,334	0.54
14	Wyoming	$3,360	$5,780	0.58
15	Maine	$5,135	$8,443	0.61
16	Nebraska	$3,121	$5,098	0.61
17	Ohio	$19,355	$30,975	0.62
18	Colorado	$10,338	$15,599	0.66
19	Iowa	$6,480	$10,002	0.68
20	New Hampshire	$9,102	$13,259	0.69
21	Michigan	$24,367	$35,229	0.69
22	Connecticut	$114,522	$160,237	0.71
23	Delaware	$31,688	$43,884	0.72
24	Kentucky	$6,736	$9,159	0.74
25	South Dakota	$2,303	$3,085	0.75
26	Arkansas	$8,354	$10,988	0.76
27	Missouri	$7,228	$9,180	0.81
28	Alaska	$7,703	$9,332	0.83
29	North Dakota	$2,409	$2,836	0.85
30	Montana	$2,925	$3,263	0.90
31	New Mexico	$6,480	$7,127	0.91
32	Illinois	$34,182	$36,816	0.93
33	Louisiana	$15,341	$15,936	0.96
34	Texas	$15,647	$15,944	0.98
35	Nevada	$14,244	$12,395	1.15
36	Arizona	$19,182	$16,133	1.19
37	Oregon	$16,979	$12,840	1.32
38	Minnesota	$17,197	$12,586	1.37
39	Pennsylvania	$14,586	$10,221	1.43
40	New Jersey	$519,641	$337,403	1.54
41	Utah	$26,786	$16,806	1.65
42	Maryland	$95,566	$56,525	1.69
43	Idaho	$13,270	$7,191	1.85
44	Oklahoma	$19,626	$10,442	1.88
45	Kansas	$15,117	$7,782	1.94
46	Vermont	$14,268	$7,336	1.94
47	Wisconsin	$33,087	$15,617	2.12
48	California	$85,392	$39,775	2.15
49	New York	$95,886	$37,795	2.54
50	Washington	$72,494	$20,408	3.55

Since 2015, total other disbursements have decreased about 2.3%, while the Consumer Price Index (CPI) rose about 28% in that time period.

In 2023, South Carolina, Tennessee, Indiana, Virginia, and Alabama reported the lowest other expenditure disbursement ratios after adjusting for urbanization. Washington, New York, California, Wisconsin, and Vermont reported the highest expenditure ratios. Compared to 2022, the states whose ratios worsened by the highest percent were North Carolina, New York, North Dakota, Utah, and Wisconsin (200%, 69%, 55%, 54%, 51%). The states that improved the most were Alabama (81%), New Hampshire (60%), Georgia (47%), Louisiana (46%), and Indiana (45%). Some of the other disbursements per state-controlled lane-mile can vary widely from year to year reflecting funding actions and project schedules.

FIGURE 5: OTHER DISBURSEMENTS PER STATE-CONTROLLED LANE-MILE, 2023



RURAL INTERSTATE PAVEMENT CONDITION

Rural Interstates are typically four- to six-lane highways connecting urban areas. One measurement of roadway condition is pavement condition. In most states, road pavement condition is measured using special machines that determine the roughness of road surfaces. A few states continue to use visual ratings, which are then converted to roughness. In 2023, about 2.19% of U.S. rural Interstates—638 miles out of 29,117—was reported to be in poor condition. (Table 11, Percent Rural Interstate Mileage in Poor Condition, 2023, Figure 6). This is similar to 2022, the last time this assessment was completed, when 594 miles out of 29,311 (2.03%) miles of rural Interstate pavement were rated poor.

Rural interstate mileage in poor condition varies widely by state. Between 2022 and 2023, the percentage of poor rural Interstate mileage decreased in 21 states, increased in 28 states, and remained the same in one state. In 2023, 19 states reported less than 1% poor-condition mileage. On the other hand, four states (Alaska, California, Colorado, and Arizona) all reported greater than 5% poor-condition mileage. Those four states have about 12.5% of U.S. rural Interstate mileage (3,627 miles out of 29,117) but have 44% of the poor-condition mileage.

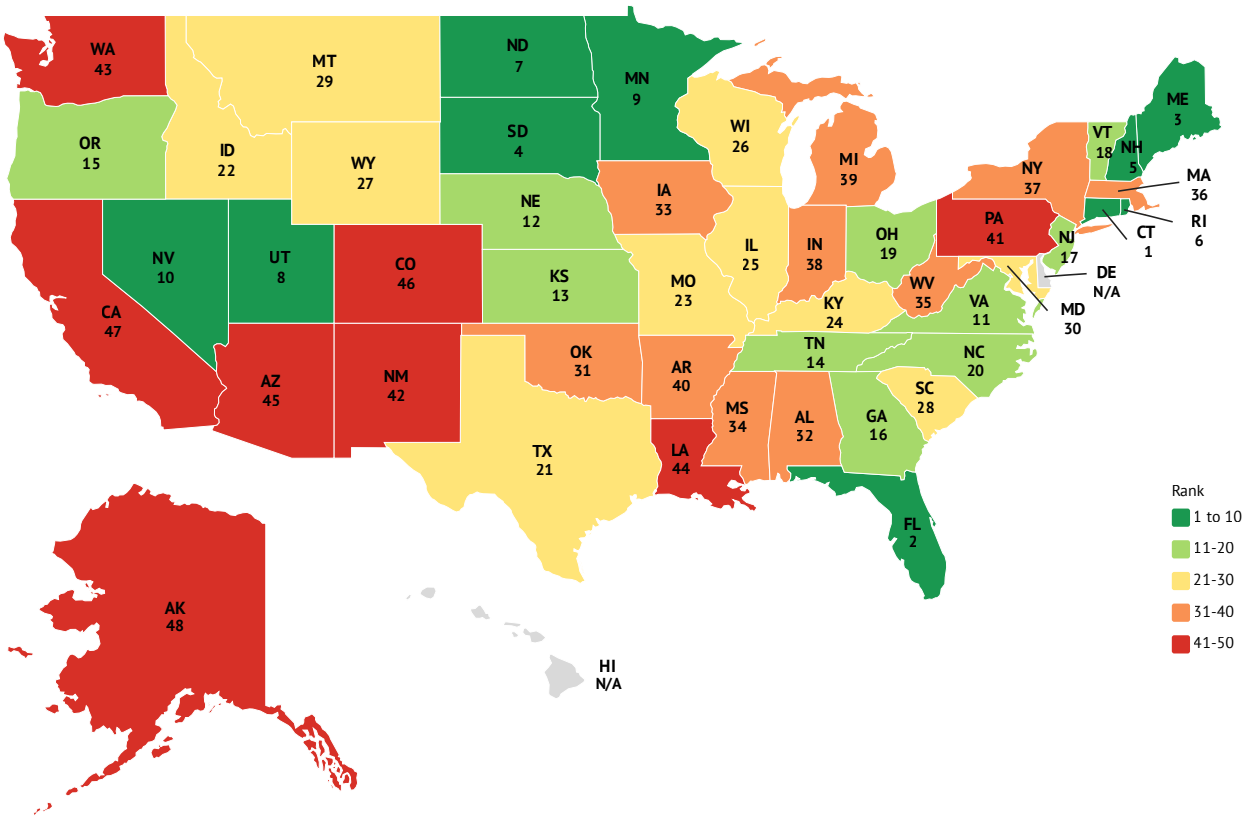
TABLE 11: PERCENT RURAL INTERSTATE MILEAGE IN POOR CONDITION, 2023

2023 Rank	State	Percent Rural Interstate Mileage in Poor Condition
1	Connecticut	0.03
2	Florida	0.17
3	Maine	0.19
4	South Dakota	0.31
5	New Hampshire	0.39
6	Rhode Island	0.46
7	North Dakota	0.47
8	Utah	0.48
9	Minnesota	0.51
10	Nevada	0.53
11	Virginia	0.54
12	Nebraska	0.57
13	Kansas	0.62
14	Tennessee	0.64
15	Oregon	0.69
16	Georgia	0.76
17	New Jersey	0.91
18	Vermont	0.95
19	Ohio	0.95
20	North Carolina	1.02
21	Texas	1.05
22	Idaho	1.06
23	Missouri	1.12
24	Kentucky	1.24
25	Illinois	1.33
26	Wisconsin	1.38
27	Wyoming	1.43
28	South Carolina	1.49
29	Montana	1.49
30	Maryland	1.51
31	Oklahoma	1.71
32	Alabama	1.73
33	Iowa	1.76
34	Mississippi	1.81
35	West Virginia	1.92
36	Massachusetts	2.01
37	New York	2.08
38	Indiana	2.14
39	Michigan	2.30
40	Arkansas	2.40
41	Pennsylvania	2.67
42	New Mexico	2.89
43	Washington	4.17
44	Louisiana	4.55
45	Arizona	5.16
46	Colorado	7.21
47	California	7.29
48	Alaska	10.86
	Delaware	N/A
	Hawaii	N/A
	Weighted Average	2.19

In 2023, Connecticut, Florida, Maine, South Dakota, and New Hampshire had the lowest percent of rural Interstate pavement in poor condition. Alaska, California, Colorado, Arizona, and Louisiana had the most. Compared to 2022, the states that decreased poor-condition miles the most were Massachusetts, New York, Vermont, Michigan, and Arkansas (1.61%, 1.33%, 0.78%, 0.58% and 0.57% respectively). The states with the highest increase in poor-condition miles were California (2.40%), Arizona (1.79%), Alaska (1.56%), Montana (0.97%), and Rhode Island (0.46%).

Delaware and Hawaii are the only states with no rural mileage in their Interstate systems.

FIGURE 6: RURAL INTERSTATES IN POOR CONDITION, 2023



URBAN INTERSTATE PAVEMENT CONDITION

Urban Interstates are major multi-lane highways in urbanized areas. The pavement condition of the urban Interstate system improved from 2022 to 2023, decreasing from 4.55% in poor condition to 4.53% (Table 12, Percent Urban Interstate Mileage in Poor Condition, 2023, Figure 7). In 2023, 864 of 19,094 miles of urban Interstate highways were rated as poor, just below 2022's numbers, the last time this assessment was completed.

The condition of urban Interstate highways also varies widely by state. In 2023, New Hampshire was the only state to report no mileage in poor condition. Between 2022 and 2023, the percentage of poor urban Interstate mileage increased in 26 states, decreased in 23 states, and remained the same in one state. The percentage of poor mileage changed by less than one percentage point in 41 of the states. The bottom two states (Hawaii and Louisiana) continued to report more than 13% of their mileage to be in poor condition. These two states, collectively, only have 2.45% of the urban Interstate mileage in the U.S. (469 of 19,094 miles) but have over 7.5% of the mileage in poor condition (65 of 864 miles).

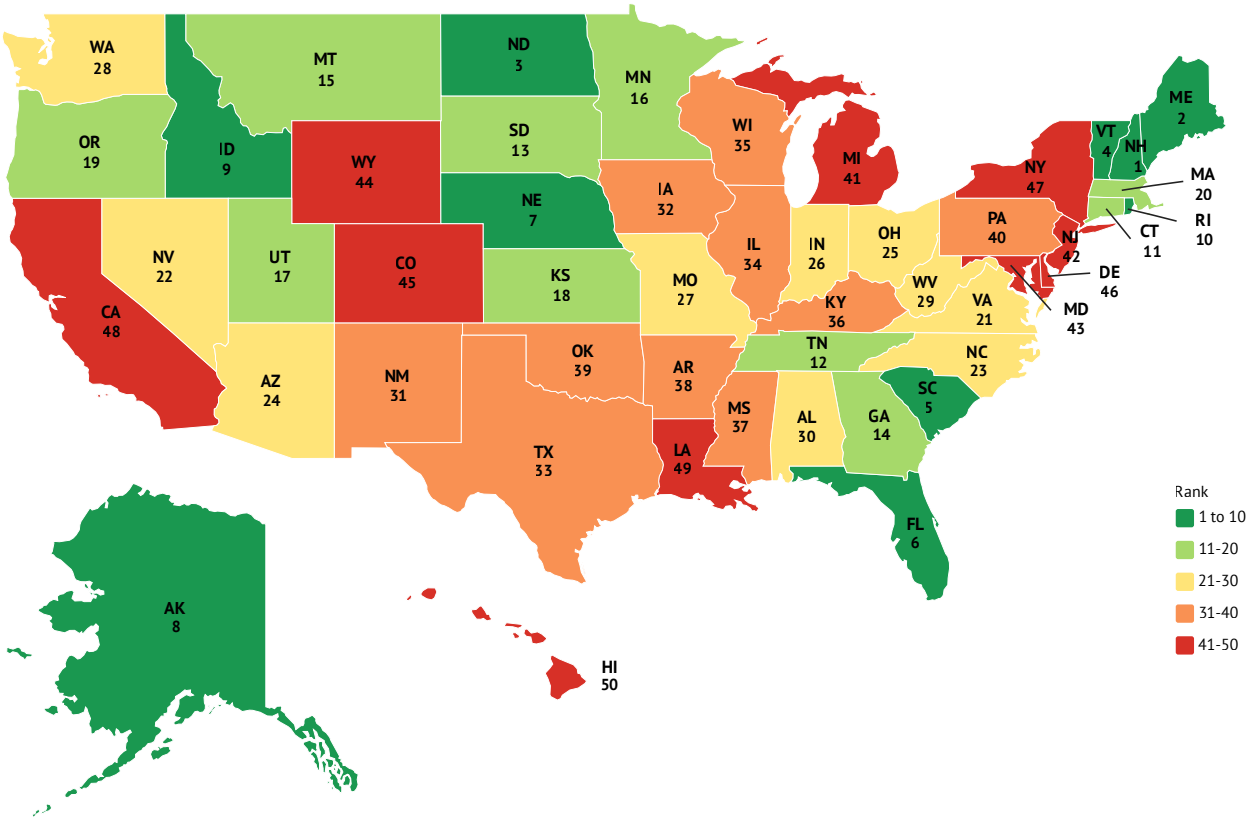
In 2023, New Hampshire, Maine, North Dakota, Vermont, and South Carolina had the lowest percent of urban Interstate pavement in poor condition. Hawaii, Louisiana, California, New York, and Delaware had the most. Compared to 2022, the states that decreased poor-condition

TABLE 12: PERCENT URBAN INTERSTATE MILEAGE IN POOR CONDITION, 2023

2023 Rank	State	Percent Urban Interstate Mileage in Poor Condition
1	New Hampshire	0.00
2	Maine	0.64
3	North Dakota	0.65
4	Vermont	0.75
5	South Carolina	1.11
6	Florida	1.18
7	Nebraska	1.28
8	Alaska	1.35
9	Idaho	1.53
10	Rhode Island	1.56
11	Connecticut	1.58
12	Tennessee	1.59
13	South Dakota	1.60
14	Georgia	1.62
15	Montana	1.83
16	Minnesota	1.87
17	Utah	2.37
18	Kansas	2.49
19	Oregon	2.49
20	Massachusetts	2.56
21	Virginia	2.69
22	Nevada	2.69
23	North Carolina	2.72
24	Arizona	2.73
25	Ohio	2.98
26	Indiana	3.05
27	Missouri	3.21
28	Washington	3.65
29	West Virginia	3.77
30	Alabama	3.84
31	New Mexico	4.32
32	Iowa	4.32
33	Texas	4.52
34	Illinois	4.66
35	Wisconsin	4.70
36	Kentucky	4.77
37	Mississippi	4.84
38	Arkansas	5.18
39	Oklahoma	5.64
40	Pennsylvania	5.69
41	Michigan	6.16
42	New Jersey	6.25
43	Maryland	6.92
44	Wyoming	7.45
45	Colorado	7.47
46	Delaware	7.78
47	New York	8.84
48	California	10.16
49	Louisiana	13.49
50	Hawaii	16.35
	Average	4.53

miles the most were Hawaii, Nebraska, Delaware, Ohio, and Massachusetts (3.20%, 2.03%, 1.57%, 1.17% and 1.06% respectively). The states with the highest increase in poor-condition miles were Montana (1.53%), Arizona (1.26%), Iowa (1.10%), Wyoming (1.08%), and Rhode Island (0.98%).

FIGURE 7: URBAN INTERSTATES IN POOR CONDITION, 2023



RURAL OTHER PRINCIPAL ARTERIAL PAVEMENT CONDITION

Rural other principal arterials (ROPA) are two- to four-lane highways connecting different cities or regions. The condition of major rural arterials worsened slightly from 2022 to 2023, by about 0.09 percentage points. Overall, about 1.09% of the ROPA system—980 miles out of 90,323—was reported to be in poor condition (Table 13, Percent Rural Other Principal Arterial Mileage in Poor Condition, 2023, Figure 8). This compares with about 1.00% (906 of 90,315 miles) in 2022, the last time this assessment was completed. This bucks a steady long-term trend of improvement in ROPA pavement quality. (It should be noted that as cities grow, the urbanized area around them grows as well. As this occurs, highways near cities are often reclassified from rural to urban. If these highways were in good condition already, their reclassification has the effect of increasing the percentage of rural roads in poor condition.)

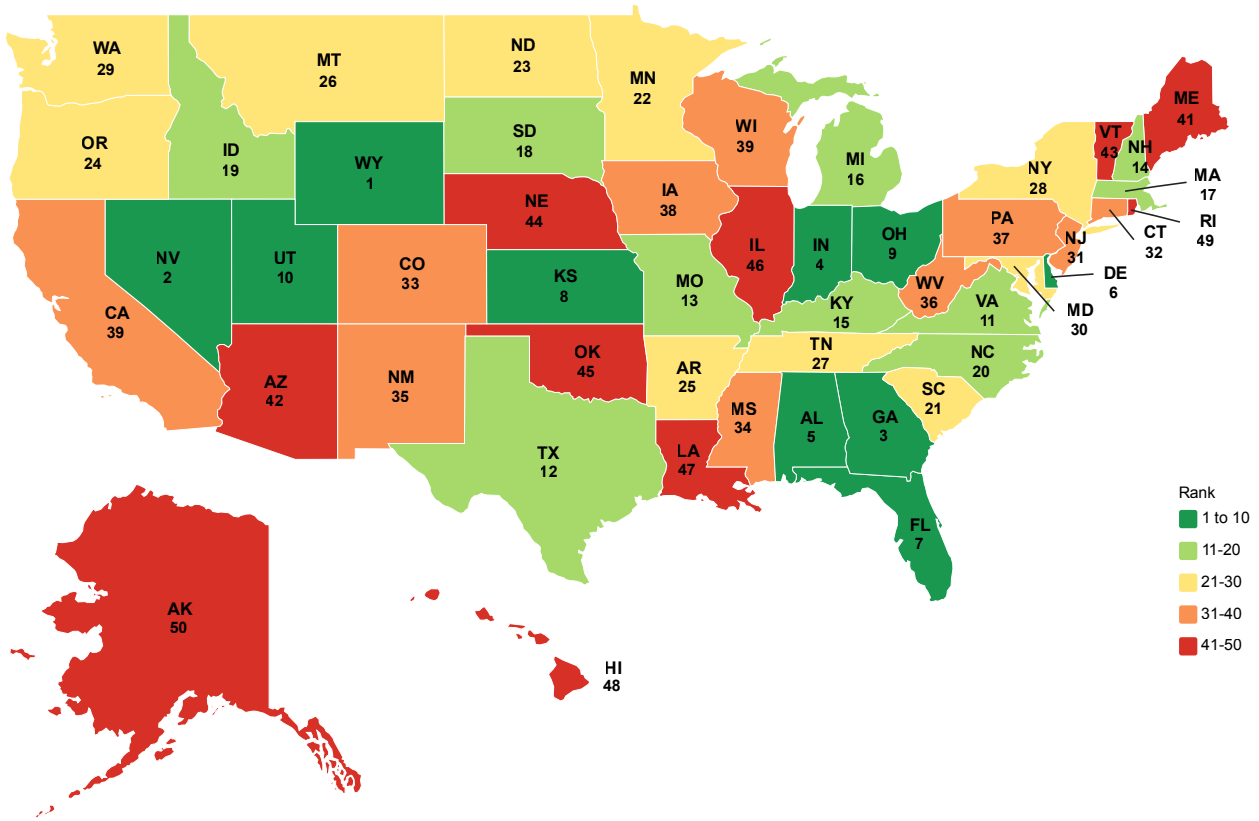
The percentage of ROPA increased in 30 states, decreased in 15 states and remained the same in five states. Twenty-eight states reported 1% or less of their ROPA mileage was in poor condition. On the other hand, Alaska reported 12% of its ROPA mileage was in poor condition. Alaska has only 0.57% of the U.S. ROPA mileage, but 6.1% of the mileage that is in poor condition.

TABLE 13: PERCENT RURAL OTHER PRINCIPAL ARTERIAL MILEAGE IN POOR CONDITION, 2023

2023 Rank	State	Percent Rural Other Principal Arterial Mileage in Poor Condition
1	Wyoming	0.13
2	Nevada	0.18
3	Georgia	0.21
4	Indiana	0.22
5	Alabama	0.26
6	Delaware	0.26
7	Florida	0.26
8	Kansas	0.37
9	Ohio	0.39
10	Utah	0.41
11	Virginia	0.42
12	Texas	0.44
13	Missouri	0.47
14	New Hampshire	0.53
15	Kentucky	0.56
16	Michigan	0.57
17	Massachusetts	0.57
18	South Dakota	0.64
19	Idaho	0.65
20	North Carolina	0.68
21	South Carolina	0.68
22	Minnesota	0.72
23	North Dakota	0.88
24	Oregon	0.89
25	Arkansas	0.91
26	Montana	0.95
27	Tennessee	0.96
28	New York	0.98
29	Washington	1.04
30	Maryland	1.08
31	New Jersey	1.11
32	Connecticut	1.34
33	Colorado	1.40
34	Mississippi	1.53
35	New Mexico	1.63
36	West Virginia	1.67
37	Pennsylvania	1.71
38	Iowa	1.88
39	California	1.97
40	Wisconsin	1.98
41	Maine	1.99
42	Arizona	2.00
43	Vermont	2.02
44	Nebraska	2.21
45	Oklahoma	2.23
46	Illinois	2.52
47	Louisiana	2.90
48	Hawaii	4.19
49	Rhode Island	6.45
50	Alaska	11.55
	Average	1.09

In 2023, Wyoming, Nevada, Georgia, Indiana, and Alabama reported the lowest percentage of poor ROPA mileage. Alaska, Rhode Island, Hawaii, Louisiana, and Illinois reported the highest. Compared to 2022, the states whose percentage increased the most were Kentucky, Nevada, Arizona, Tennessee, and Nebraska (100%, 100%, 85%, 66%, and 50% respectively.). The states that improved the most were Delaware (61%), Massachusetts (60%), Vermont (50%), Wyoming (50%), and Arkansas (40%).

FIGURE 8: RURAL OTHER PRINCIPAL ARTERIAL MILEAGE IN POOR CONDITION, 2023



URBAN OTHER PRINCIPAL ARTERIAL PAVEMENT CONDITION

Urban other principal arterials (UOPA) are four- to eight-lane highways connecting different parts of an urban region. The condition of major urban arterials worsened slightly from 2022 to 2023, by about 0.12 percentage points. Overall, 13.07% of the UOPA system—8,224 miles out of 62,904—was reported to be in poor condition (Table 14, Percent Urban Other Principal Arterial Mileage in Poor Condition, 2023, Figure 8). This compares with about 12.95% (906 of 90,315 miles) in 2022, the last time this assessment was completed. This bucks a steady long-term trend of improvement in UOPA pavement quality.

The percentage of UOPA increased in 26 states, decreased in 23 states and remained the same in one state. Thirteen states reported less than 5% of their UOPA mileage was in poor condition. On the other hand, four states (California, Nebraska, Rhode Island, and New York) reported more than 20% of their UOPA mileage was in poor condition. These four states have 15.88% of the U.S. ROPA mileage, but 36.09% of the mileage that is in poor condition.

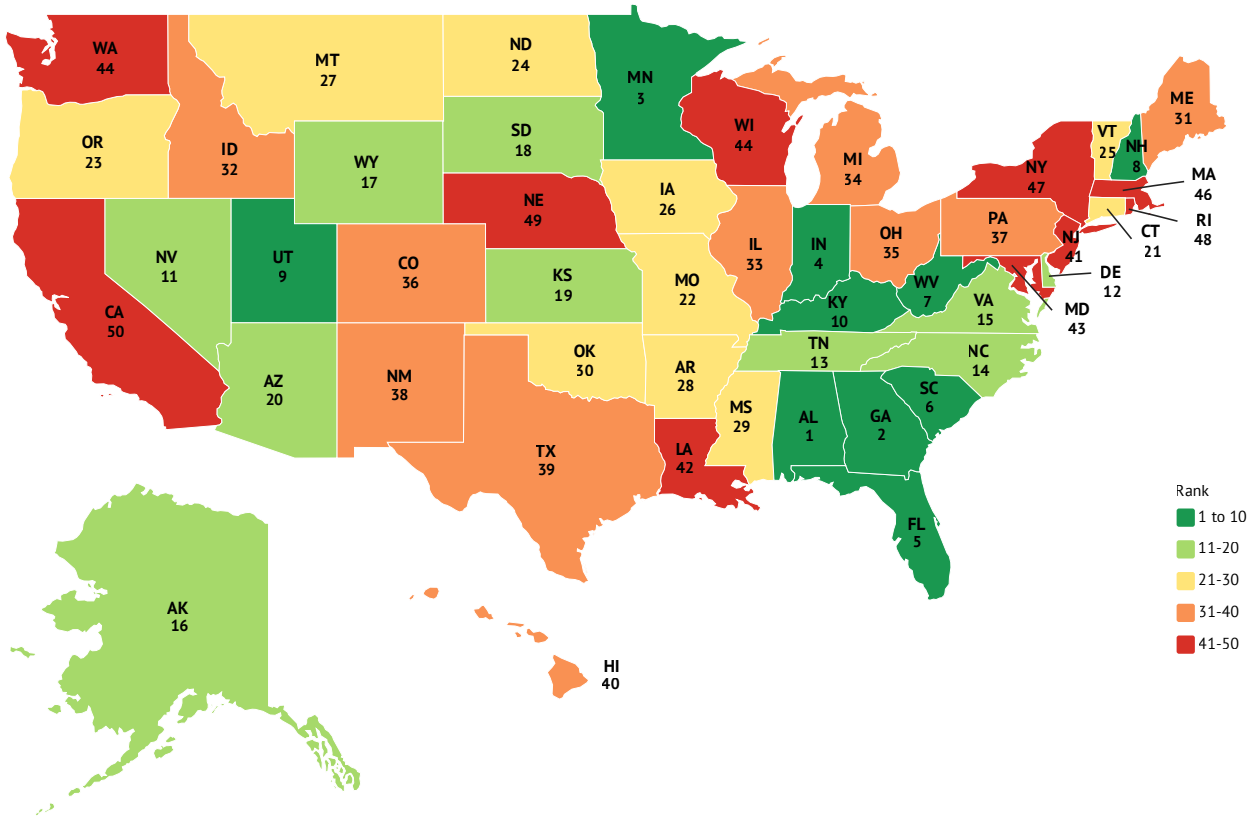
In 2023, Alabama, Georgia, Minnesota, Indiana, and Florida reported the lowest percentage of poor UOPA mileage. California, Nebraska, Rhode Island, New York, and Massachusetts reported the highest percentage.

TABLE 14: URBAN OTHER PRINCIPAL ARTERIAL MILEAGE IN POOR CONDITION, 2023

2023 Rank	State	Percent Urban Other Principal Arterial Mileage in Poor Condition
1	Alabama	1.70
2	Georgia	1.75
3	Minnesota	1.76
4	Indiana	2.05
5	Florida	2.48
6	South Carolina	2.76
7	West Virginia	3.39
8	New Hampshire	3.40
9	Utah	3.50
10	Kentucky	3.54
11	Nevada	4.77
12	Delaware	4.89
13	Tennessee	4.95
14	North Carolina	5.45
15	Virginia	5.95
16	Alaska	6.44
17	Wyoming	6.88
18	South Dakota	7.40
19	Kansas	7.48
20	Arizona	8.13
21	Connecticut	8.15
22	Missouri	8.38
23	Oregon	8.66
24	North Dakota	8.66
25	Vermont	8.84
26	Iowa	9.11
27	Montana	9.66
28	Arkansas	10.34
29	Mississippi	10.71
30	Oklahoma	11.14
31	Maine	11.23
32	Idaho	11.54
33	Illinois	11.62
34	Michigan	11.76
35	Ohio	12.71
36	Colorado	12.93
37	Pennsylvania	13.20
38	New Mexico	13.32
39	Texas	13.46
40	Hawaii	13.96
41	New Jersey	15.46
42	Louisiana	17.02
43	Maryland	17.34
44	Washington	19.08
45	Wisconsin	19.37
46	Massachusetts	19.74
47	New York	24.69
48	Rhode Island	27.16
49	Nebraska	28.31
50	California	32.35
	Average	13.07

Compared to 2022, the states whose percentage increased the most were Idaho, Alabama, Minnesota, Utah, and South Dakota (136%, 63%, 28%, 26%, and 24% respectively.). The states that improved the most were Kentucky (40%), West Virginia (31%), New Hampshire (23%), Delaware (22%), and Massachusetts (14%).

FIGURE 9: URBAN OTHER PRINCIPAL ARTERIAL MILEAGE IN POOR CONDITION, 2023



URBANIZED AREA CONGESTION

There is no universally accepted definition of traffic congestion. In reporting to the federal government, in the past the states have used peak-hour traffic volume-to-capacity (V/C) ratios, as calculated in the Transportation Research Board's Highway Capacity Manual, as a congestion measure. Through 2009, the Federal Highway Administration (FHWA) summed these V/C calculations to determine the state mileage in various V/C categories. Since 2009, however, these tables have not been published by FHWA. Instead, FHWA has been reporting periodic statistics based on travel delays from mobile devices, but only for selected regions and roads, not for states.

This year, the *Annual Highway Report* uses data from INRIX's 2024 Global Traffic Scorecard, which uses 2023 congestion data. The metric selected was the "annual hours of delay per auto commuter." INRIX defines annual delay per auto commuter as "a measure of the extra travel time endured throughout the year by auto commuters who make trips during the peak period." The INRIX data, which are computed for urbanized areas, are aggregated by state. See the Appendix for details.

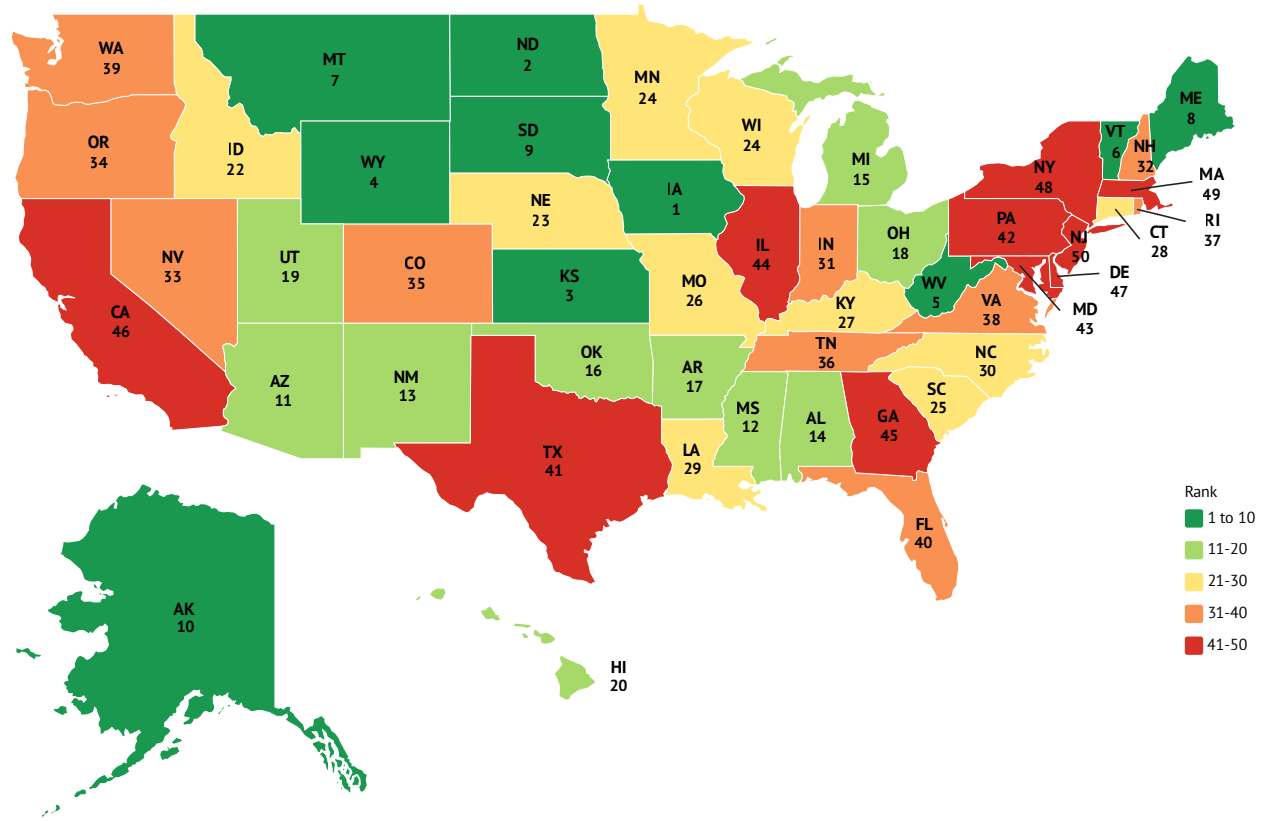
TABLE 15: ANNUAL PEAK HOURS SPENT IN CONGESTION PER AUTO COMMUTER, 2023

2023 Rank	State	Peak Hours Spent in Congestion per Auto Commuter
1	Iowa	9.8
2	North Dakota	9.9
3	Kansas	10.2
4	Wyoming	11.6
5	West Virginia	12.5
6	Vermont	12.5
7	Montana	12.6
8	Maine	12.8
9	South Dakota	13.0
10	Alaska	13.4
11	Arizona	13.8
12	Mississippi	13.9
13	New Mexico	14.2
14	Alabama	14.5
15	Michigan	14.6
16	Oklahoma	14.9
17	Arkansas	15.1
18	Ohio	15.9
19	Utah	16.2
20	Hawaii	16.5
21	Wisconsin	16.9
22	Idaho	17.3
23	Nebraska	17.4
24	Minnesota	17.7
25	South Carolina	21.6
26	Missouri	21.6
27	Kentucky	22.2
28	Connecticut	23.6
29	Louisiana	23.7
30	North Carolina	24.3
31	Indiana	24.4
32	New Hampshire	25.6
33	Nevada	25.8
34	Oregon	27.3
35	Colorado	28.1
36	Tennessee	30.2
37	Rhode Island	31.6
38	Virginia	32.8
39	Washington	33.8
40	Florida	37.0
41	Texas	37.1
42	Pennsylvania	38.5
43	Maryland	44.1
44	Illinois	45.9
45	Georgia	46.2
46	California	49.4
47	Delaware	54.8
48	New York	61.6
49	Massachusetts	64.4
50	New Jersey	84.8
	Average	35.22

In 2023, the average annual hours of delay per auto commuter in urbanized areas was 35.22 hours, a decrease of 14.8% from 2022's 41.33 hours (see Table 15, Annual Hours of Delay per Auto Commuter, Figure 10). Since 2014 congestion has decreased by 31.5%. Cumulatively, commuters lose 3.6 million hours in urban congestion. We did not collect 2015 congestion data to compare to like the other sections, so 2014 was chosen to collect a larger sample of data. The congestion problem is primarily concentrated in the major cities of about 10 states.

In 2023, Iowa, North Dakota, Kansas, Wyoming, and West Virginia reported the lowest urbanized area delay per auto commuter. New Jersey, Massachusetts, New York, Delaware, and California reported the most. Compared to 2022, the states whose ratio increased by the highest percentage were North Dakota, Idaho, Arkansas, Maine, and Mississippi (134%, 132%, 118%, 92%, and 90% respectively). The states that improved the most were Oregon (42%), Arizona (41%), Delaware (34%), Massachusetts (32%), and Louisiana (31%). Commuters in the bottom three states (New Jersey, Massachusetts, and New York) spent more than 60 hours of delay per year in traffic congestion.

FIGURE 10: PEAK HOURS SPENT IN AUTO CONGESTION PER COMMUTER, 2023



STRUCTURALLY DEFICIENT BRIDGES

Federal law mandates the uniform inspection of all bridges for structural adequacy at least every two years; bridges rated "deficient" are eligible for federal repair dollars. The National Bridge Inventory (NBI) is the source of the bridge data in the table and figure following, which is provided in summary form in *Better Roads* (see Appendix). Since the NBI contains some recent inspections and some as old as two years, the age of the "average" inspection is about one year old. So, a "December 2024" summary from the NBI would represent, on average, bridge condition as of December 2023.

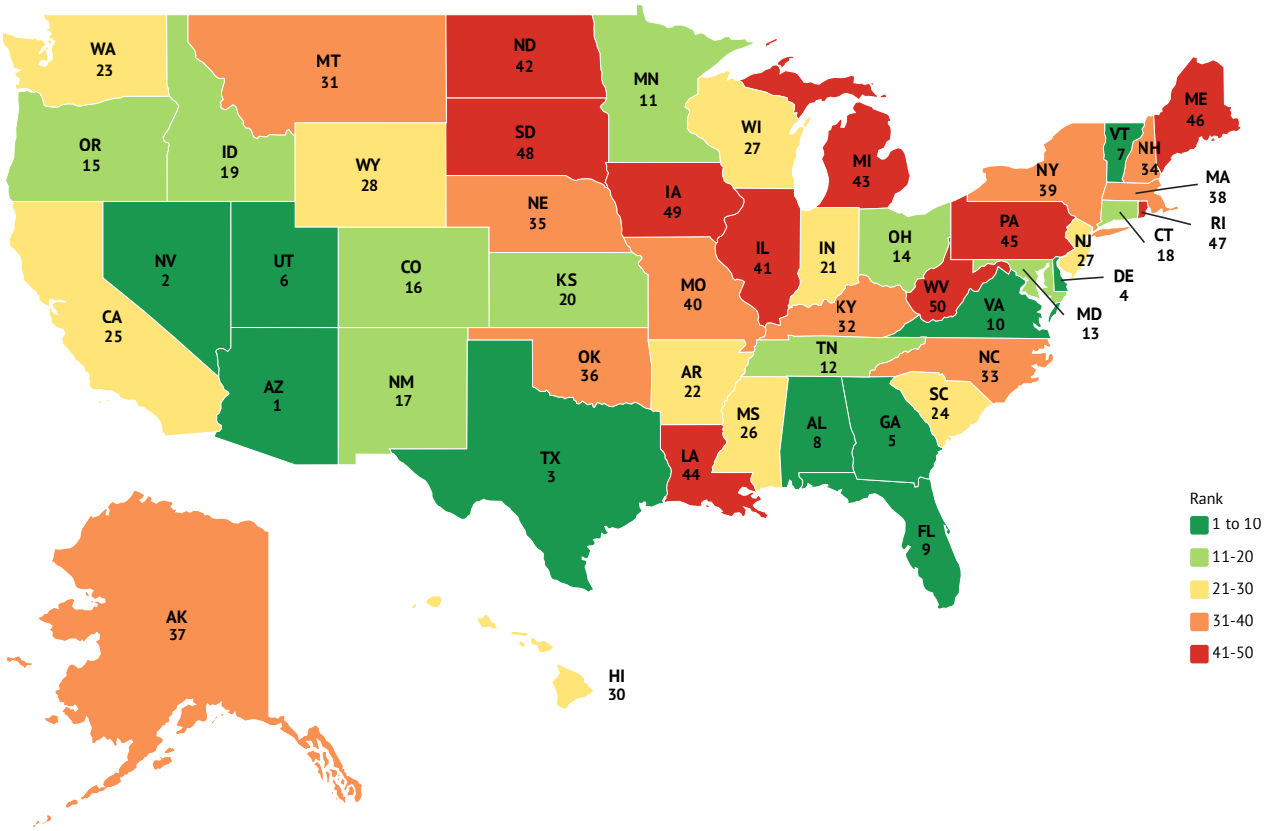
The condition of the nation's highway bridges in 2023 improved slightly from 2022, the last time this assessment was completed. Of the 618,923 highway bridges reported, 42,093 (6.8%) were rated structurally deficient for 2023 (Table 16, Percent Structurally Deficient Bridges, 2023, Figure 11). This represents a 0.10% improvement over 2022 when 6.9% were rated as structurally deficient.

In 2023, Arizona, Nevada, Texas, Delaware, and Georgia reported the lowest percentage of structurally deficient bridges (less than 2%). On the other hand, West Virginia, Iowa, South Dakota, Rhode Island, and Maine have the highest percentage. Compared to 2022, the states whose percentage of deficient bridges increased the most are Utah, South Carolina, Washington, Hawaii, and Vermont (16%, 10%, 8%, 7%, and 6% respectively). The states that improved the most were Delaware (22%), Georgia (18%), Oklahoma (17%), Nevada (14%), and Arizona (12%).

TABLE 16: STRUCTURALLY DEFICIENT BRIDGES, 2023

2023 Rank	State	Percent Structurally Deficient Bridges
1	Arizona	1.11
2	Nevada	1.20
3	Texas	1.26
4	Delaware	1.26
5	Georgia	1.59
6	Utah	2.41
7	Vermont	2.63
8	Alabama	3.46
9	Florida	3.49
10	Virginia	3.54
11	Minnesota	4.31
12	Tennessee	4.41
13	Maryland	4.60
14	Ohio	4.64
15	Oregon	4.84
16	Colorado	4.88
17	New Mexico	4.98
18	Connecticut	5.02
19	Idaho	5.12
20	Kansas	5.24
21	Indiana	5.25
22	Arkansas	5.38
23	Washington	5.42
24	South Carolina	5.56
25	California	6.16
26	Mississippi	6.28
27	New Jersey	6.48
28	Wyoming	6.52
29	Wisconsin	6.54
30	Hawaii	6.72
31	Montana	6.86
32	Kentucky	6.98
33	North Carolina	7.10
34	New Hampshire	7.61
35	Nebraska	7.90
36	Oklahoma	7.94
37	Alaska	8.12
38	Massachusetts	8.52
39	New York	8.98
40	Missouri	8.99
41	Illinois	9.20
42	North Dakota	10.63
43	Michigan	11.39
44	Louisiana	12.15
45	Pennsylvania	12.99
46	Maine	14.76
47	Rhode Island	15.35
48	South Dakota	16.73
49	Iowa	19.22
50	West Virginia	19.69
	Average	6.80

FIGURE 11: STRUCTURALLY DEFICIENT BRIDGES, 2023



RURAL FATALITY RATE

The rural fatality rate measures fatalities on all major rural arterials in the state. The nation's rural highway fatality held steady at 1.25 between 2022 and 2023 (Table 17, Fatality Rate per 100 Million Rural Vehicle-Miles, 2023, Figure 12). In 2023, 6,095 rural fatalities were reported, fewer than the 6,466 rural fatalities reported in 2022 as rural VMT (vehicle-miles of travel) decreased from 0.52 trillion miles in 2022 to 0.51 trillion miles in 2023.

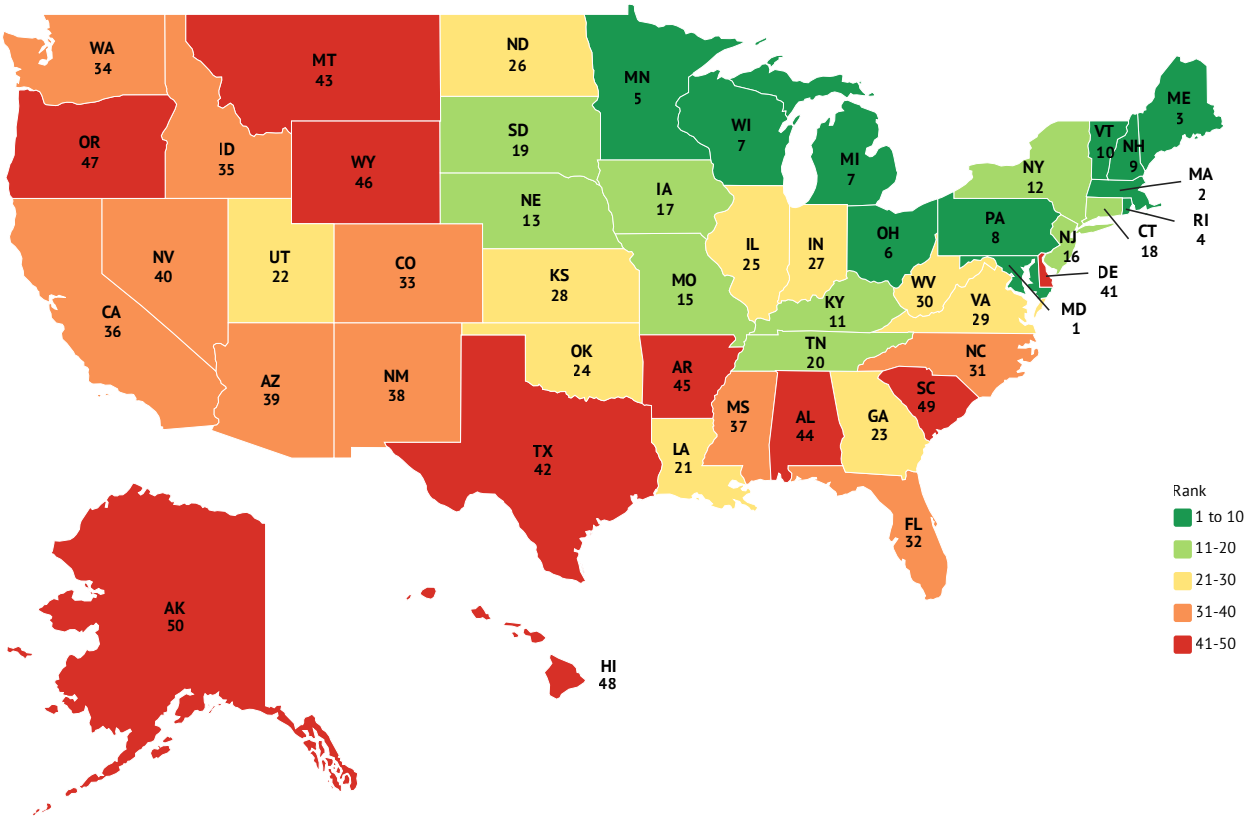
Eighteen states reported an increase in their rural fatality rate compared to 2022, led by Kansas (0.30 points), Washington (0.25 points), and Iowa (0.24 points). No states had rates remain the same. Thirty-two states reported a decrease in rural fatality rate, led by Hawaii (2.15 points), Delaware (1.48 points), and Rhode Island (0.87 points).

In 2023, Maryland, Massachusetts, Maine, Rhode Island, and Minnesota reported the lowest rural fatality rate. Alaska, South Carolina, Hawaii, Oregon, and Wyoming reported the highest. Compared to 2022, the states whose ratio increased by the highest percentage were New York, Kansas, Iowa, New Jersey, and Wisconsin (33%, 33%, 32%, 30%, 24% respectively). The states that improved the most were Massachusetts (71%), Maryland (68%), Rhode Island (63%), Maine (56%), and Hawaii (53%).

TABLE 17: FATALITY RATE PER 100 MILLION RURAL VEHICLE-MILES, 2023

2023 Rank	State	Fatality Rate Per 100 Million Rural Vehicle-Miles
1	Maryland	0.04
2	Massachusetts	0.34
3	Maine	0.44
4	Rhode Island	0.51
5	Minnesota	0.65
6	Ohio	0.66
7	Michigan	0.71
8	Pennsylvania	0.78
9	New Hampshire	0.88
10	Vermont	0.88
11	Kentucky	0.89
12	New York	0.89
13	Nebraska	0.91
14	Wisconsin	0.92
15	Missouri	0.95
16	New Jersey	0.95
17	Iowa	0.98
18	Connecticut	0.99
19	South Dakota	1.02
20	Tennessee	1.05
21	Louisiana	1.06
22	Utah	1.08
23	Georgia	1.10
24	Oklahoma	1.10
25	Illinois	1.11
26	North Dakota	1.17
27	Indiana	1.18
28	Kansas	1.21
29	Virginia	1.21
30	West Virginia	1.25
31	North Carolina	1.26
32	Florida	1.28
33	Colorado	1.28
34	Washington	1.29
35	Idaho	1.32
36	California	1.33
37	Mississippi	1.35
38	New Mexico	1.38
39	Arizona	1.42
40	Nevada	1.48
41	Delaware	1.50
42	Texas	1.51
43	Montana	1.54
44	Alabama	1.66
45	Arkansas	1.67
46	Wyoming	1.73
47	Oregon	1.79
48	Hawaii	1.89
49	South Carolina	1.91
50	Alaska	1.99
	Average	1.25

FIGURE 12: FATALITY RATE PER 100 MILLION RURAL VEHICLE-MILES, 2023



URBAN FATALITY RATE

The urban fatality rate measures fatalities on all major urban arterials in the state. The nation's urban highway fatality rate improved from 1.07 in 2022 to 1.00 in 2023 (Table 18, Fatality Rate per 100 Million Urban Vehicle-Miles, 2023, Figure 13). In 2023, 13,019 urban fatalities were reported, fewer than the 13,545 urban fatalities reported in 2022, as urban VMT (vehicle-miles of travel) increased from 1.26 trillion miles in 2022 to 1.3 trillion miles in 2023.

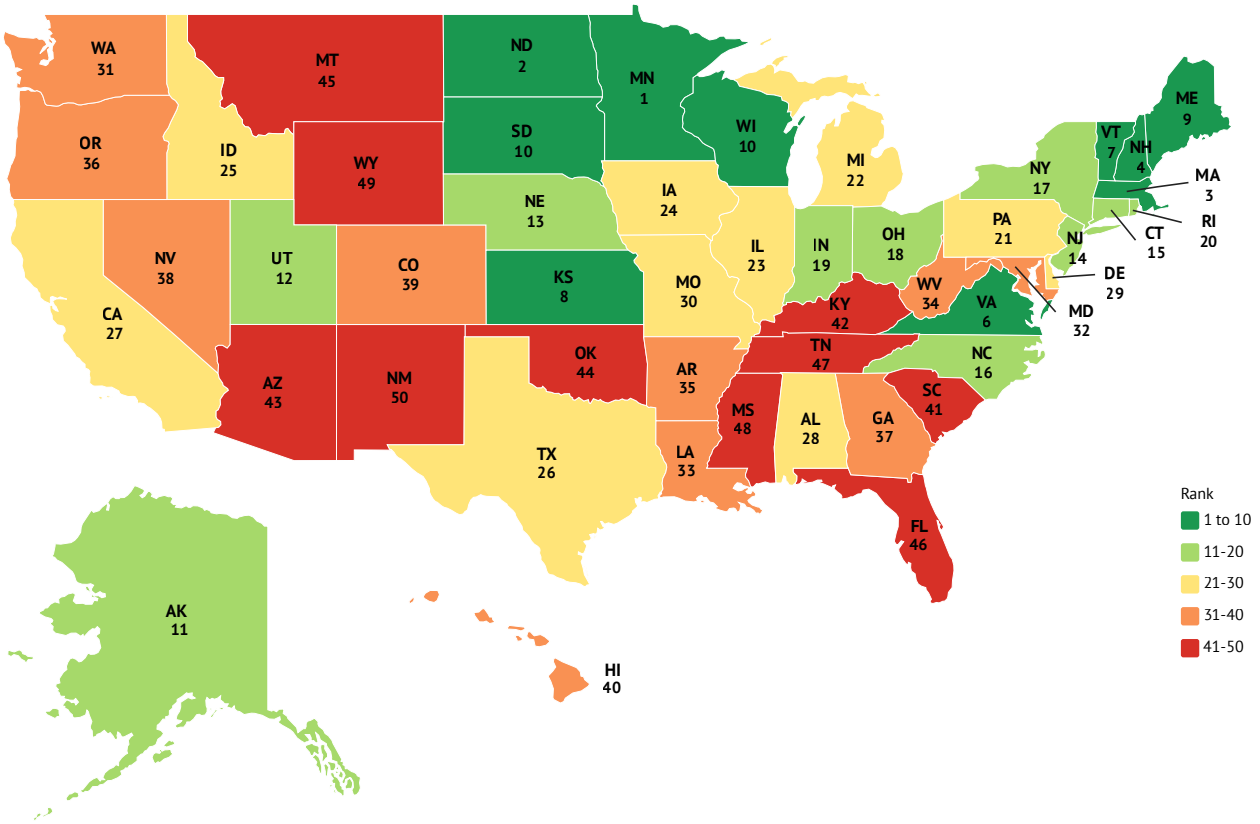
Seventeen states reported an increase in their urban fatality rate compared to 2022, led by Wyoming (1.00 points), West Virginia (0.37 points), and Idaho (0.35 points). No states had rates that remained the same. Thirty-three states reported decreases in their urban fatality rate compared to 2022, led by Alaska (1.20 points), Indiana (0.66 points), Arkansas (0.37 points), and Virginia (0.37 points).

In 2023, Minnesota, North Dakota, Massachusetts, New Hampshire, and Wisconsin reported the lowest urban fatality rate. New Mexico, Wyoming, Mississippi, Tennessee, and Florida reported the highest. Compared to 2022, the states whose ratios increased by the highest percentage were Wyoming, Idaho, West Virginia, Rhode Island, and Kentucky (124%, 54%, 48%, 40%, 34% respectively). The states that improved the most were Alaska (64%), Indiana (45%), Virginia (38%), Nebraska (34%), and Kansas (32%).

TABLE 18: FATALITY RATE PER 100 MILLION URBAN VEHICLE-MILES, 2023

2023 Rank	State	Fatality Rate Per 100 Million Urban Vehicle-Miles
1	Minnesota	0.38
2	North Dakota	0.48
3	Massachusetts	0.50
4	New Hampshire	0.52
5	Wisconsin	0.58
6	Virginia	0.60
7	Vermont	0.60
8	Kansas	0.62
9	Maine	0.62
10	South Dakota	0.66
11	Alaska	0.67
12	Utah	0.68
13	Nebraska	0.69
14	New Jersey	0.70
15	Connecticut	0.76
16	North Carolina	0.77
17	New York	0.80
18	Ohio	0.80
19	Indiana	0.81
20	Rhode Island	0.82
21	Pennsylvania	0.92
22	Michigan	0.92
23	Illinois	0.93
24	Iowa	0.95
25	Idaho	0.99
26	Texas	1.02
27	California	1.02
28	Alabama	1.02
29	Delaware	1.06
30	Missouri	1.06
31	Washington	1.07
32	Maryland	1.12
33	Louisiana	1.13
34	West Virginia	1.13
35	Arkansas	1.14
36	Oregon	1.17
37	Georgia	1.18
38	Nevada	1.19
39	Colorado	1.19
40	Hawaii	1.21
41	South Carolina	1.23
42	Kentucky	1.28
43	Arizona	1.29
44	Oklahoma	1.32
45	Montana	1.35
46	Florida	1.40
47	Tennessee	1.50
48	Mississippi	1.63
49	Wyoming	1.81
50	New Mexico	2.09
	Average	1.00

FIGURE 13: FATALITY RATE PER 100 MILLION URBAN VEHICLE-MILES, 2023



OTHER FATALITY RATE

The other fatality rate measures fatalities on rural and urban minor arterials, collectors, and local roadways in the state as fatalities per 100 million vehicle-miles. The nation's other highway fatality rate improved from 1.56 per 100 million urban vehicle-miles in 2022 to 1.49 per 100 million urban vehicle-miles in 2023 (Table 19, Fatality Rate per 100 Million Other Vehicle-Miles, 2023, Figure 14). In 2023, 21,305 other fatalities were reported, fewer than the 22,098 other fatalities reported in 2022.

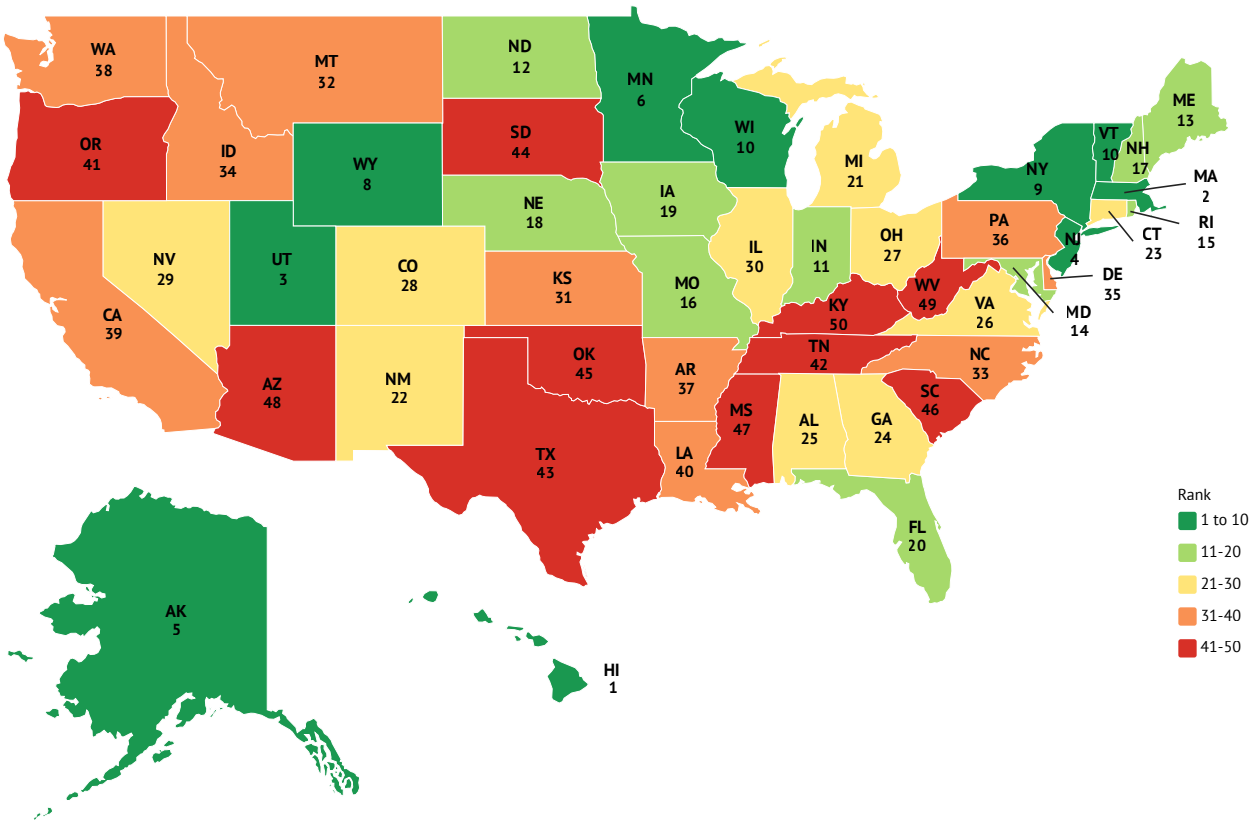
Fifteen states reported an increase in their other fatality rate compared to 2022, led by Rhode Island (0.55 points), Mississippi (0.47 points), and Idaho (0.31 points). Thirty-five states saw their fatality rate decrease, led by Wyoming (0.43 points), Louisiana (0.38 points), and New Mexico (0.28 points).

In 2023, Hawaii, Massachusetts, Utah, New Jersey, and Alaska reported the lowest other fatality rate. Kentucky, West Virginia, Arizona, Mississippi, and South Carolina reported the highest. Compared to 2022, the states whose ratio increased by the highest percentage were Rhode Island, Mississippi, Indiana, Idaho, and Alaska (80%, 30%, 29%, 23%, 22% respectively). The states that improved the most were Wyoming (29%), Utah (22%), Maine (19%), Massachusetts (19%), and Louisiana (18%).

TABLE 19: FATALITY RATE PER 100 MILLION OTHER VEHICLE-MILES, 2023

2023 Rank	State	Fatality Rate Per 100 Million Vehicle-Miles
1	Hawaii	0.57
2	Massachusetts	0.66
3	Utah	0.82
4	New Jersey	0.84
5	Alaska	0.89
6	Minnesota	0.91
7	Wisconsin	1.03
8	Wyoming	1.04
9	New York	1.07
10	Vermont	1.08
11	Indiana	1.14
12	North Dakota	1.17
13	Maine	1.19
14	Maryland	1.21
15	Rhode Island	1.23
16	Missouri	1.23
17	New Hampshire	1.32
18	Nebraska	1.35
19	Iowa	1.35
20	Florida	1.35
21	Michigan	1.36
22	New Mexico	1.37
22	Connecticut	1.38
24	Georgia	1.40
25	Alabama	1.40
26	Virginia	1.41
27	Ohio	1.47
28	Colorado	1.48
29	Nevada	1.48
30	Illinois	1.49
31	Kansas	1.50
32	Montana	1.50
33	North Carolina	1.57
34	Idaho	1.63
34	Delaware	1.64
36	Pennsylvania	1.64
37	Arkansas	1.67
38	Washington	1.67
39	California	1.71
40	Louisiana	1.73
41	Oregon	1.83
42	Tennessee	1.87
43	Texas	1.90
44	South Dakota	1.93
45	Oklahoma	2.00
46	South Carolina	2.02
47	Mississippi	2.03
48	Arizona	2.04
49	West Virginia	2.09
50	Kentucky	2.34
	Average	1.49

FIGURE 14: FATALITY RATE PER 100 MILLION OTHER VEHICLE–MILES, 2023



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APPENDIX: TECHNICAL NOTES

This brief technical appendix summarizes the definitions and sources of the data used in this assessment. The discussion is based on the assumption that comparative cost-effectiveness requires data on system condition or performance, information on the costs to operate and improve the system, and an understanding of the relationship between economic activity and tax revenues.

This report relies heavily on the *Highway Statistics* series, which is compiled by the Federal Highway Administration (FHWA) from data reported by each state. We also use bridge condition data from the National Bridge Inventory and highway fatality rates reported by each state, and for congestion, we use data from INRIX. This assessment evaluates states based on expenditures, pavement quality, traffic congestion, and safety. In general, we use self-reported data as posted in the various data tables. We do not attempt to audit the data; instead, we assume the data to be correct. However, in cases where the data are clearly incorrect, we make appropriate adjustments to the data and footnote the changes made.

MEASURE OF MILEAGE

In general, larger highway systems require more resources to build and maintain than smaller systems. Accordingly, it is important to weight systems so that states can be compared accurately. In this study, mileage is the basic measure for bringing the states to a common baseline. Highway width is also important in differentiating system size (number of lanes), as more pavement generally requires more resources. This study does not rank states based on the size of their highway systems. However, it does use average highway width differences, as derived from state highway agency lane width measures, to measure overall financial performance.

State Highway Agency Mileage: For each state the report uses the total numbers of lane-miles for the state roadway system. Each state's responsibility for roads varies. In some, such as North Carolina, the state is responsible for every roadway except subdivision streets, while in others, such as New Jersey, the state is responsible primarily for the major, multiple-lane roads. In addition, other features such as bridges also vary, with some states having many and others few. We use lane-miles to calculate and then to weight overall financial performance. The source of data for state lane-miles is Table HM-81, *Highway Statistics 2023* (https://www.fhwa.dot.gov/policyinformation/statistics/2023/).

DISBURSEMENTS FOR STATE-OWNED HIGHWAYS

There are multiple types of disbursements for state-administered highways: capital and bridge work, maintenance and highway services, administration, research and planning, law enforcement and safety, interest (on bond payments) and bond retirement. Disbursement data are put into four categories (Capital and Bridge Disbursements, Maintenance Disbursements, Administrative Disbursements, and Other Disbursements). Disbursements by state-administered agencies fund the state highway agency, other toll and turnpike state agencies, and state universities, parks, prisons, etc.

The source of all these data is Table SF-4, *Highway Statistics 2023* (https://www.fhwa.dot.gov/policyinformation/statistics/2023/).

Capital and Bridge Disbursements and Maintenance Disbursements: "Capital" actions are those intended to reconstruct or improve the system, whereas "maintenance" actions are those intended to preserve or repair the system, but not improve it. However, the definitions of these categories vary somewhat between the states. Most states contract with private-sector companies to build and reconstruct the system, although in some cases

states may also use their own workforces for some projects. Most states also conduct maintenance largely with agency forces, and the work is generally light in character, but many also conduct some major repairs such as thick overlays using contracted forces from the private sector.

Administrative Disbursements: Administrative disbursements are intended to include all non-project-specific disbursements, and typically include most main-office and regional-office costs, research, planning, and similar activities. Sometimes this category also includes bond restructurings and other non-project-specific financial actions. As a result, administrative disbursement can vary widely from year to year.

Other Disbursements: These disbursements are not counted in the first three categories and include law enforcement, safety, bonds, and interest. This category can vary from year to year due to major bond sales, which, because they are collected in one year and expended in another, show up as major increases in "receipts" without a similar increase in disbursements. And sometimes, later-year disbursements can be higher than receipts as states transfer money into projects without increasing revenues.

MEASURES OF SYSTEM CONDITION

There are nine measures of highway system condition: Rural Interstate Poor-Condition Mileage, Urban Interstate Poor-Condition Mileage, Rural Other Principal Arterial (ROPA) Poor-Condition Mileage, Urban Other Principal Arterial (UOPA) Poor-Condition Mileage, Urbanized Area Congestion, Structurally Deficient Bridges, Rural Fatality Rate, Urban Fatality Rate, and Other Fatality Rate.

Poor-Condition Mileage: Perhaps no measure is more fundamental to road performance than road condition. There are numerous ways of defining road condition, but the one used for the U.S. higher-road system is the International Roughness Index (IRI), a measure of surface "bumpiness" in inches of vertical deviation per mile of length. The states use a variety of procedures in gathering the data, but most use mechanical or laser equipment driven over the road system. They often supplement these data with detailed information on road distress features, but this information is not generally used in federal reporting. A few states, however, still use visual ratings as the basis of their reports. Lower "roughness index" scores equate to a smoother road. Roads classified as poor typically have visible bumps and ruts leading to a rough ride. Long, smooth sections (greater than one mile in length) tend to dampen out short rough ones, so if a state has long, smooth sections in its database it can report very little "rough mileage" as a percent of the system.

The source of road roughness data is Table HM-64, *Highway Statistics 2023* (https://www.fhwa.dot.gov/policyinformation/statistics/2023/), which shows miles by roughness, for several functional classes, for each state. This mileage is then converted into a percent, to account for different sizes of systems (rural Interstate, urban Interstate, rural other principal arterial, and urban other principal arterial) in each state. The national average is the weighted average, obtained by dividing the sum of all poor-rated mileage by the sum of all state-administered mileage.

Rural Interstate Poor-Condition Mileage: Rural Interstate mileage is all mileage outside of urban areas. By convention, Interstate sections with an IRI roughness of greater than 170 inches of roughness per mile (about three inches of vertical variation per 100 feet of road) are classified as "poor" in most reports. By comparison, sections with less than 60 inches of roughness per mile (about one inch of vertical deviation per 100 feet) would be classified as "excellent." (Delaware and Hawaii have no rural Interstate mileage and are not rated on this measure).

Urban Interstate Poor-Condition Mileage: Urban Interstate mileage is all mileage inside census-defined urban areas. It is calculated the same way as rural Interstate mileage is calculated. The IRI cutoff for urban Interstates is the same as for rural Interstates: 170 inches per mile or higher, for "poor" mileage.

Rural Other Principal Arterial Poor-Condition Mileage: Rural other principal arterials (ROPAs) are the major inter-city or regional connectors, off the Interstate system. They can be US-numbered and state-numbered roads, and sometimes toll roads or parkways. This system is generally a top priority of most state highway agencies because of its importance to the economic competitiveness of the state. By convention, ROPA sections with an IRI greater than 220 inches per mile of roughness (about four inches of vertical deviation per 100 feet) are classified as "poor" in most reports. The cutoff is higher than for Interstates since speeds on these roads are typically lower, resulting in a smoother trip.

Urban Other Principal Arterial Poor-Condition Mileage: Urban other principal arterials (UOPAs) are the major connectors within an urban area, off the Interstate system. They can be US-numbered and state-numbered roads, and sometimes toll roads or parkways. The IRI cutoff for urban other principal arterials is the same as for rural principal arterials: 220 inches per mile or higher for "poor" mileage.

Urbanized Area Congestion*:* The Urbanized Area Congestion metric is measured as the "annual hours of delay per auto commuter during peak hours compared to free flow conditions." Peak commute is defined as the most congested portion of the morning and afternoon commute periods. Free flow is defined as the highest average speed over the previous 24 hours. Hours of delay captures the intensity of traffic in a given city. In other words, it compares how fast traffic would move from one destination to another (which destinations are chosen is defined further by INRIX) during free flow periods compared to speed during peak periods.

Two data sources are required to calculate the current metric: *INRIX's 2023 Global Traffic Scorecard* (https://inrix.com/scorecard/) and Table HM-74 from the FHWA *Highway Statistics* series (https://www.fhwa.dot.gov/policyinformation/statistics.cfm)

INRIX's 2023 global traffic scorecard provides 2023 congestion data for approximately 200 urban areas in the U.S. Data items include annual hours of delay per auto commuter as well as the number of auto commuters for each area. INRIX calculates their rankings based on speed data. Table HM-74 (Daily Vehicle-Miles of Travel (DVMT) by Measured Pavement Roughness / Present Serviceability Rating) includes data on all urbanized areas in the U.S. (i.e., those with populations above 50,000). The DVMT data for multi-state urbanized areas are apportioned by state, and the percentages of the DVMT in each state are calculated based on total reported DVMT.

The calculation of the final metric is completed through three steps. First, the total annual hours of delay for each state are calculated by multiplying the annual hours of delay per auto commuter by the number of auto commuters for each urban area, and then summing them up for each state, adjusted by the DVMT data. Second, the total number of commuters for each state, adjusted by the DVMT data, are added up from the urban areas. Finally, each state's annual hours of delay per commuter are computed by dividing the state's total annual hours of delay by its total number of commuters.

Structurally Deficient Bridges: As a result of several major bridge disasters in the 1960s and 1970s, states are required to inspect bridges biennially (every year if a bridge is rated structurally deficient) and maintain uniform records of inspections.

This data source, titled the *National Bridge Inventory* (NBI), provides information on deficient bridges. Since the NBI contains a mixture of bridges inspected at different times, some as long ago as two years ago, the "average" inspection age is about one year. So, an October

2024 summary from the *Inventory* would represent, on average, bridge condition as of October 2023.

While deficient bridge data are in the NBI, we use the annual summary of bridge deficiencies prepared by *Better Roads*, a trade publication, as our source. This summary, published since 1979, contains very recent information, gathered from each state shortly before the end of each calendar year, using a proprietary survey sent to state bridge engineers. The 2024 *Better Roads Bridge Inventory* http://www.equipmentworld.com/2024-better-roads-bridge-inventory-2-year-decline-in-deficient-u-s-bridges-snapped/) contains data collected through October 2024.

Rural Fatality Rate: Road safety is a very important measure of system performance, and fatality rates are a key measure of safety. The overall state fatality rate has long been seen as a measure of state performance in road safety.

The Rural Fatality Rate applies to all rural Interstates, other freeways and expressways, and other principal arterials. The fatality rate includes two components: a count of fatalities and a measure of travel, i.e., vehicle-miles. The sources of each are Tables FI-20 and VM-2, *Highway Statistics 2023* (https://www.fhwa.dot.gov/policyinformation/statistics/2023/). Table FI-20 provides a count of fatalities by state and highway functional class and Table VM-2 provides an estimate of annual vehicle-miles of travel for each state by functional class. The national average fatality rates are the weighted averages across the states.

Urban Fatality Rate: The Urban Fatality Rate applies to all urban Interstates, other freeways and expressways, and other principal arterials. It is calculated in the same manner as the Rural Fatality Rate.

Other Fatality Rate: The Overall Fatality Rate applies to all rural and urban minor arterials, collectors, and local roads. It is calculated in the same manner as the Rural Fatality Rate.

OVERALL RATINGS

The overall ratings for each state are developed in several steps:

- The relative performance of each state on each of 13 performance measures is determined by computing each state's "performance ratio." This is defined as the ratio of each state's measure to the expected measure. The mathematical structure is as follows:

M_{is} = Measure "i" for state "s" (e.g., percent of rural Interstates in poor condition, for North Carolina)

$E(M_{is})$ = Expected value of Measure "i" for state "s"

The expected values for the four spending categories are determined by LOESS regressions between the spending amounts per lane-mile and the percent of urban lane-miles to take into account the fact that more-urbanized states are expected to spend more on roads (per lane-mile) than less-urbanized ones. For each state, the percent of urban lane-miles is calculated by dividing the urban lane-miles by the total (urban plus rural) lane-miles of that state. We use local regressions instead of linear regressions to account for the non-linear relationships between the percent of urban lane-miles and the disbursement per lane-mile, especially for the "other disbursement" category. The local regressions are performed in R, a statistical programming language, using the default span of 0.75. For the other nine categories, the expected value is the national weighted average of the measure across the 50 states.

R_{is} = Performance Ratio for measure "i", state "s"
= $M_{is}/E(M_{is})$

- The 13 performance ratios are combined to calculate the average performance ratio:

$$\overline{R_s} = \frac{1}{n}\sum_{i=1}^{n} R_{is}$$

In lieu of 13, Delaware and Hawaii use 12 since they have no rural Interstates. In final weighting, all metrics are weighted equally.

Since several state agencies are included in each state's reports, this report should *not* be viewed as a cost-effectiveness comparison of the state highway departments. Instead, it should be viewed as an assessment of how the state, as a whole, is managing the state-owned roads.