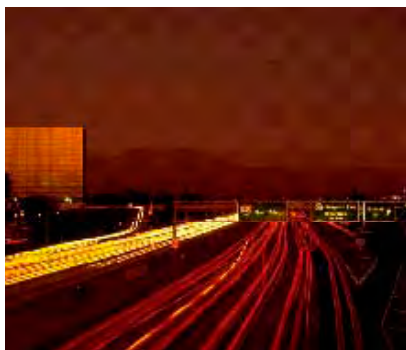




July 2008

17TH ANNUAL REPORT ON THE PERFORMANCE OF STATE HIGHWAY SYSTEMS (1984–2006)

By David T. Hartgen, Ph.D., P.E., and Ravi K. Karanam
Project Director: Adrian T. Moore, Ph.D.



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17th Annual Report on the Performance of State Highway Systems (1984–2006)

By David T. Hartgen, Ph.D., P.E. and Ravi K. Karanam
Project Director: Adrian T. Moore, Ph.D.

This is the 17th annual report in a series on the condition and performance of the U.S. state-owned road system. The report is supported this year by Reason Foundation, a public policy research institution. The views expressed in the report are solely those of the authors. Copyright 2008, Reason Foundation. Permission to copy and reproduce by electronic or paper means with appropriate credit is given.

Table of Contents

Overview	1
Cost-Effectiveness Rankings of the States	4
Trends in Performance Indicators	8
State-Controlled Miles	9
State Highway Agency Mileage	10
Receipts for State-Administered Highways	11
Capital and Bridge Disbursements	12
Maintenance Disbursements	13
Administrative Disbursements	14
Total Disbursements	15
Rural Interstate Condition	16
Urban Interstate Condition	18
Rural Principal Arterial Pavement Condition	20
Urban Interstate Congestion	22
Deficient Bridges	24
Fatality Rates	25
Narrow Rural Lanes	27
What Works and What Doesn't	28
Is National Progress Still Possible?	28
Top Ten States	29
1. North Dakota	29
2. Montana	29
3. New Mexico	30
4. Wyoming	30
5. Kansas	30
6. South Carolina	31
7. South Dakota	31
8. Nebraska	31
9. Kentucky	32
10. Georgia	32
Bottom Ten States	33
41. Florida	33

42. Michigan	33
43. Massachusetts.....	34
44. California	34
45. New York.....	34
46. New Hampshire	35
47. Hawaii	35
48. Rhode Island	35
49. Alaska	36
50. New Jersey.....	36
Individual State Results.....	37
Alabama.....	37
Alaska	37
Arizona	37
Arkansas.....	38
California	38
Colorado.....	38
Connecticut	38
Delaware	39
Florida.....	39
Georgia	39
Hawaii	39
Idaho	40
Illinois	40
Indiana.....	40
Iowa.....	40
Kansas.....	41
Kentucky	41
Louisiana.....	41
Maine	41
Maryland.....	42
Massachusetts.....	42
Michigan	42
Minnesota	42
Mississippi	43
Missouri	43
Montana	43
Nebraska.....	43
Nevada	44
New Hampshire	44
New Jersey.....	44
New Mexico	44
New York.....	45
North Carolina	45

North Dakota	45
Ohio	45
Oklahoma	46
Oregon	46
Pennsylvania	46
Rhode Island	46
South Carolina	47
South Dakota	47
Tennessee	47
Texas	47
Utah.....	48
Vermont.....	48
Virginia.....	48
Washington.....	48
West Virginia.....	49
Wisconsin	49
Wyoming.....	49
Technical Notes	50
Mileage by Ownership	50
Receipts for State-Administered Highways.....	51
Capital and Bridge Disbursements	51
Maintenance Disbursements	52
Administrative Disbursements.....	52
Total Disbursements.....	52
Rural Interstate Poor-Condition Mileage	53
Rural Other Principal Arterial Poor-Condition Mileage.....	53
Urban Interstate Poor-Condition Mileage	54
Urban Interstate Congestion	54
Fatality Rates	55
Deficient Bridges.....	55
Narrow Lanes on Rural Other Principal Arterials.....	55
Overall Ratings.....	56
About the Authors.....	57
Related Reason Studies	58

Tables and Figures

Table 1: Performance of State-Owned Highways, 2004-2006	2
Table 2: Overall Cost-Effectiveness Rankings	5
Table 3: State-Controlled Highway Mileage, 2006.....	9
Table 4: State Highway Agency Mileage, 2006	10
Table 5: Receipts per State-Controlled Mile, 2006	11
Table 6: Capital and Bridge Disbursements per State-Controlled Mile, 2006.....	12
Table 7: Maintenance Disbursements per State-Controlled Mile, 2006.....	13
Table 8: Administrative Disbursements per State-Controlled Mile, 2006	14
Table 9: Total Disbursements per State-Controlled Mile, 2006	15
Table 10: Rural Interstate Condition, 2006.....	16
Table 11: Urban Interstate Condition, 2006	18
Table 12: Rural Arterial Condition, 2006.....	20
Table 13: Urban Interstate Congestion, 2006	22
Table 14: Deficient Bridges, 2006	24
Table 15: Fatality Rates, 2006	25
Table 16: Rural Narrow Lanes, 2006.....	27
Figure 1: Trends in US Highway Performance	2
Figure 2: Overall State Ranks	6
Figure 3: Rural Interstate Condition.....	17
Figure 4: Urban Interstate Condition	19
Figure 5: Rural Arterial Condition.....	21
Figure 6: Urban Interstate Congestion	23
Figure 7: Fatality Rates	26

Part 1

Overview

This 17th annual study tracks the performance of the state-owned roads from 1984 to 2006. Twelve indicators make up each state's overall rating. They cover highway revenues and expenditures, pavement and bridge condition, congestion, accident rates, and narrow lanes. The study is based on spending and performance data submitted to the federal government by the state highway agencies. (See Appendix 2 for definitions and discussion of the measures used).

The nation's continuing trend of generally improving highway performance from 1998 to 2003 was reestablished in 2005 and continued in 2006. Six of seven key performance indicators improved between 2005 and 2006.

Passage of new federal highway legislation in 2005 provided new dollars for roads, bridges, and transit systems. Using the increased funding, states improved pavements, made bridge repairs, and achieved some congestion relief.

Although highway revenues and disbursements increased only modestly from the prior year (2.0 percent and 0.7 percent, respectively), highway funds directed to the pavement increased, about 8.6 percent for capital and bridge work, and about 7.1 percent for maintenance. However, administrative costs increased even faster, at about 10.4 percent. For the first time, administrative costs are more than 7 percent of highway costs.

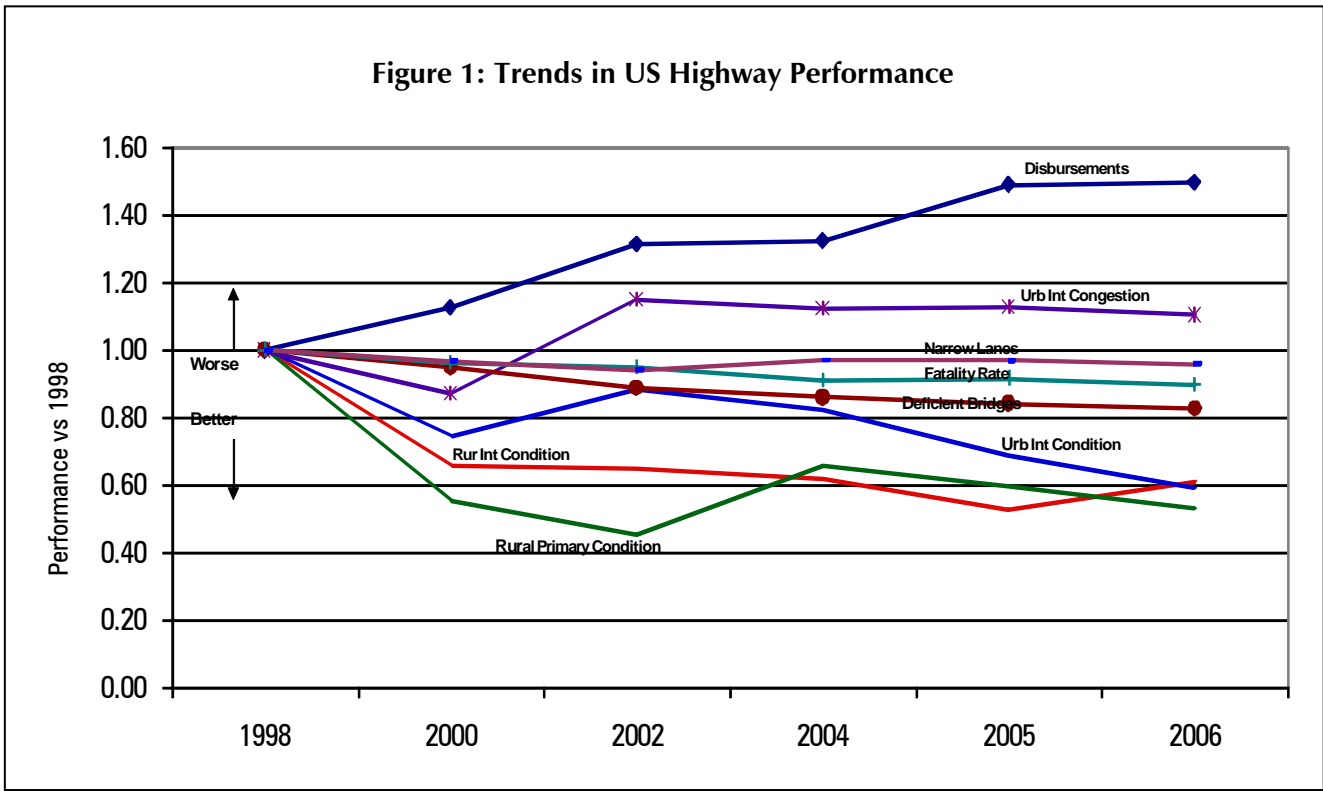


Table 1: Performance of State-Owned Highways, 2004–2006				
Statistic	2004	2005	2006	Percent Change, 05–06
Mileage under State Control	810,707	812,871	814,770	0.23
Total Revenues, All Sources, \$B	\$ 90.68	\$ 102.71	\$ 104.73	1.96
Total Expenditures, \$B	\$ 87.69	\$ 98.91	\$ 99.61	0.70
Expenditures, Capital/Bridges, \$B	\$ 47.74	\$ 50.31	\$ 54.66	8.64
Expenditures, Maintenance, \$B	\$ 14.29	\$ 15.94	\$ 17.07	7.09
Expenditures, Administration, \$B	\$ 6.32	\$ 6.36	7.02	10.38
Highway Construction Price Index	154.4	175.4	185.1	5.5
Rural Interstate, Percent Poor Condition	2.02	1.72	1.98	15.1
Urban Interstate, Percent Poor Condition	7.13	5.97	5.15	-13.7
Rural Primary, Percent Poor Condition	0.94	0.85	0.76	-10.6
Urban Interstate, Percent Congested	51.6	51.85	50.72	-2.22
Bridges, Percent Deficient	25.03	24.53	24.13	-1.63
Fatality Rate per 100 Mil Miles Driven	1.440	1.453	1.421	-2.20
Rural Primary, Percent Narrow Lanes	10.72	10.70	10.60	-0.93

The percentage of urban interstates in poor condition decreased, from 5.97 percent to 5.15 percent, and the percentage of rural primary roads in poor condition also decreased, from 0.85 percent to 0.76 percent. Almost all areas studied in this report improved, including the percentage of bridges rated deficient, fatality rates, narrow rural lanes, and (in a turn-around) urban interstate congestion. This latter statistic has been worsening since the mid-1980s, so the improvement, while slight, is encouraging. Only the percentage of rural interstates in poor condition worsened, from 1.72 to 1.98 percent.

Despite welcome progress, the study highlights continuing problems. Just under one-quarter of all bridges remain deficient; 50 percent of urban interstates remain congested; accident rates are stubbornly high; and substantial urban interstate mileage remains in poor condition. The recent sharp increases in highway construction costs mean that fewer repairs can be made from the same dollars.

This study also found wide variations among the states in road performance. Just six states (Alaska, Michigan, New York, California, New Hampshire, and Louisiana) have over half the poor rural interstate mileage in the country. And three states (California, Minnesota, and North Carolina) have more than 70 percent of their urban interstates congested. The states also vary widely by fatality rates: Massachusetts reported the lowest rate, Montana the highest.

Part 2

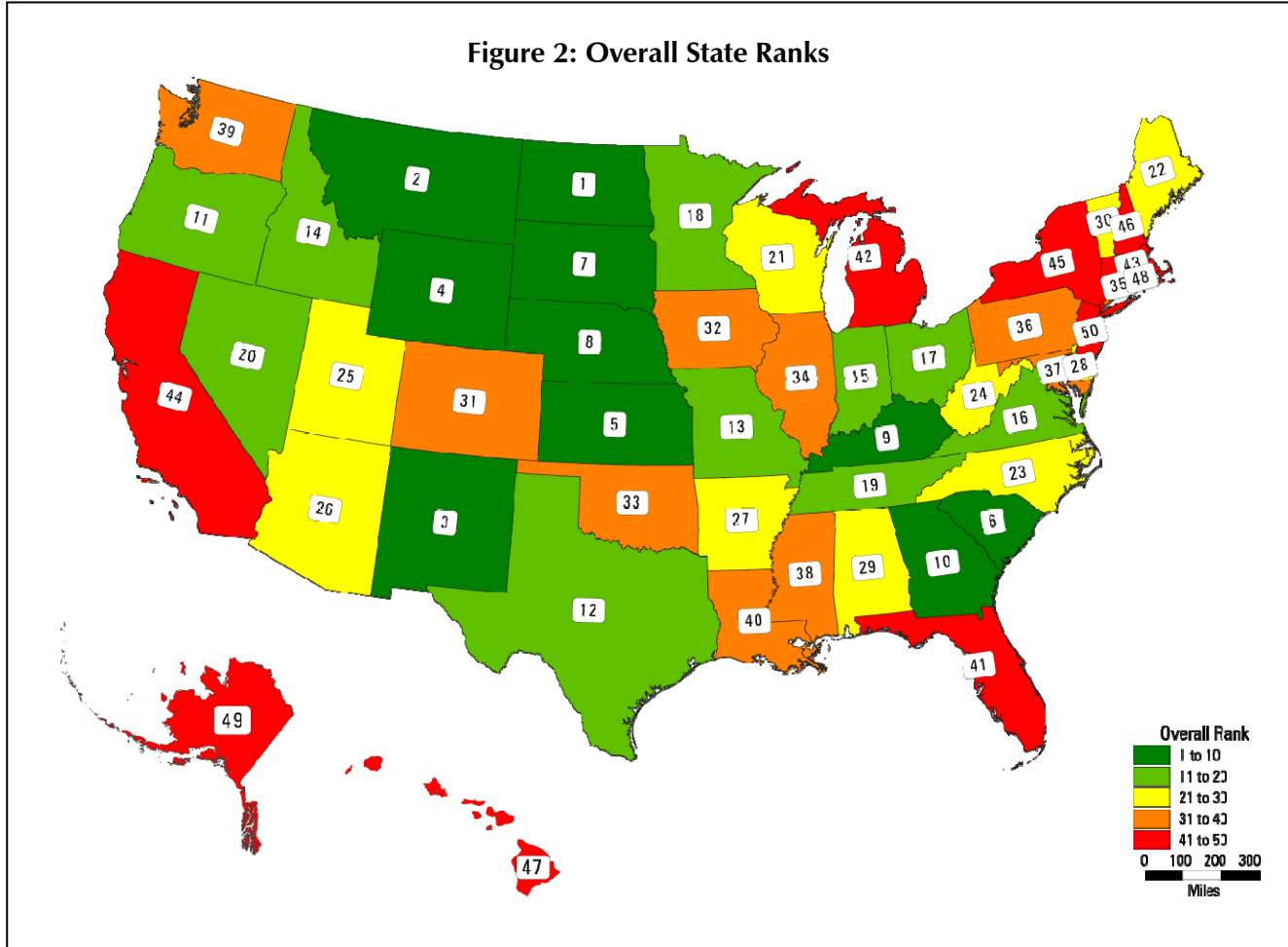
Cost-Effectiveness Rankings of the States

This report continues its annual ranking of the state highway systems on costs-versus-effectiveness. Since the states have different budgets, system sizes, and traffic, comparative performance depends on both system quality and resources available. To determine relative performance, state highway budgets (per mile of responsibility) are compared with system performance, state by state. States ranked high typically have good-condition systems along with relatively lower costs—i.e., better outcomes for less money.

Table 2 shows the results for 2006. For 2006, the top ten states in overall cost-effectiveness are:

- | | |
|-----------------|-------------------|
| 1. North Dakota | 6. South Carolina |
| 2. Montana | 7. South Dakota |
| 3. New Mexico | 8. Nebraska |
| 4. Wyoming | 9. Kentucky |
| 5. Kansas | 10. Georgia |

Table 2: Overall Cost-Effectiveness Rankings			
State	2006 Overall Cost-Effectiveness Rank	2005 Overall Cost-Effectiveness Rank	Change in Rank, 2005-2006
North Dakota	1	1	Same
Montana	2	5	Improved 3
New Mexico	3	4	Improved 1
Wyoming	4	7	Improved 3
Kansas	5	3	Dropped 2
South Carolina	6	2	Dropped 4
South Dakota	7	11	Improved 4
Nebraska	8	19	Improved 11
Kentucky	9	12	Improved 3
Georgia	10	6	Dropped 4
Oregon	11	8	Dropped 3
Texas	12	15	Improved 3
Missouri	13	17	Improved 4
Idaho	14	10	Dropped 4
Indiana	15	14	Dropped 1
Virginia	16	18	Improved 2
Ohio	17	16	Dropped 1
Minnesota	18	13	Dropped 5
Tennessee	19	20	Improved 1
Nevada	20	9	Dropped 11
Wisconsin	21	22	Improved 1
Maine	22	23	Improved 1
North Carolina	23	31	Improved 8
West Virginia	24	26	Improved 2
Utah	25	21	Dropped 4
Arizona	26	27	Improved 1
Arkansas	27	28	Improved 1
Delaware	28	40	Improved 12
Alabama	29	43	Improved 14
Vermont	30	37	Improved 7
Colorado	31	29	Dropped 2
Iowa	32	35	Improved 3
Oklahoma	33	24	Dropped 11
Illinois	34	33	Dropped 1
Connecticut	35	39	Improved 4
Pennsylvania	36	36	Same
Maryland	37	38	Improved 1
Mississippi	38	25	Dropped 13
Washington	39	32	Dropped 7
Louisiana	40	30	Dropped 10
Florida	41	41	Same
Michigan	42	42	Same
Massachusetts	43	45	Improved 2
California	44	44	Same
New York	45	48	Improved 3
New Hampshire	46	34	Dropped 12
Hawaii	47	46	Dropped 1
Rhode Island	48	47	Dropped 1
Alaska	49	49	Same
New Jersey	50	50	Same



Several states improved their rankings sharply from 2005:

- Alabama jumped from 43rd to 29th after sharp improvements in its rural and urban pavement condition.
- Nebraska moved up 11 positions from 19th to 8th, reporting no rural pavement in poor condition.
- Delaware ranked 28th in 2006, a sharp improvement from 2005 where it stood 40th.
- North Carolina improved from 31st in 2005 to 23rd in 2006, a gain of eight positions, by substantially reducing the mileage of poor urban interstate.

On the other hand, several states lost ground between 2005 and 2006:

- Mississippi fell 13 positions, from 25th to 38th, due to a sharp increase in administrative and capital/bridge disbursements per mile and a sharp decrease in urban interstate condition.
- New Hampshire slipped 12 positions from 34th to 46th. It reported a very large increase in poor rural interstate mileage.

- Nevada slipped 11 slots, from 9th to 20th, due to increased administrative disbursements and higher urban interstate congestion.
- Louisiana lost 10 positions, from 30th to 40th, as a result of an increase in capital/bridge disbursements and a sharp increase in percentage of poor condition rural interstates.

Detailed data and trends in rankings for each of the states are shown in the attached tables.

Part 3

Trends in Performance Indicators

Details on the trends of performance measures follow. Selected system condition measures are also shown in the attached maps.

State-Controlled Miles

State-controlled miles include the state highway systems, state-agency toll roads, some ferry services, and smaller systems serving universities and state-owned properties.

Nationwide, about 814,770 miles are under state control (Table 3, State-Controlled Highway Mileage), about 1,899 more miles than in 2005. The smallest state-owned road systems continue to be Hawaii (975 miles) and Rhode Island (1,104 miles); the largest are Texas (79,852 miles) and North Carolina (79,815 miles). Texas replaces North Carolina as the largest state-owned highway system.

Table 3: State-Controlled Highway Mileage, 2006

Rank	State	Mileage
1	TX	79,852
2	NC	79,815
3	VA	57,505
4	PA	43,237
5	SC	41,621
6	WV	34,153
7	MO	33,681
8	KY	27,775
9	OH	22,435
10	CA	18,251
11	GA	17,994
12	WA	17,767
13	LA	16,690
14	IL	16,481
15	AR	16,432
16	NY	15,985
17	TN	14,177
18	OK	13,391
19	MN	13,242
20	NM	12,209
21	FL	12,069
22	OR	12,065
23	WI	11,783
24	IN	11,183
25	AL	11,147
26	MT	11,075
27	MS	11,056
28	KS	10,546
29	CO	10,356
30	NE	10,225
31	MI	9,734
32	IA	9,284
33	ME	8,683
34	SD	8,145
35	WY	7,467
36	ND	7,407
37	AZ	7,048
38	AK	6,436
39	NV	5,923
40	UT	5,848
41	DE	5,304
42	MD	5,287
43	ID	4,959
44	NH	4,011
45	CT	3,959
46	MA	3,244
47	NJ	2,911
48	VT	2,843
49	RI	1,104
50	HI	975
Total		814,770
Mean		16,295

State Highway Agency Mileage

About 777,682 miles are the responsibility of the 50 state highway agencies (Table 4, State Highway Agency Mileage). In most states these are generally the Interstates and other major U.S.-numbered and state-numbered roads, but a few states also manage major portions of the rural road system.

The average number of lanes is 2.37 lanes, but a few states (New Jersey, Florida, California, and Massachusetts) manage significantly wider roads.

Table 4: State Highway Agency Mileage, 2006

Rank	State	Miles	Lane-Miles	Ratio
1	WV	34,087	70,186	2.06
2	AK	5,674	11,689	2.06
3	ME	8,547	18,167	2.13
4	NC	79,067	168,930	2.14
5	VA	57,481	124,383	2.16
6	SC	41,430	89,737	2.17
7	DE	5,275	11,571	2.19
8	PA	39,843	88,293	2.22
9	NH	3,981	8,828	2.22
10	KY	27,530	61,208	2.22
11	MO	33,681	75,231	2.23
12	AR	16,432	36,939	2.25
13	NE	9,956	22,461	2.26
14	MT	10,780	24,461	2.27
15	ND	7,384	16,836	2.28
16	VT	2,633	6,044	2.30
17	SD	7,843	18,050	2.30
18	LA	16,687	38,438	2.30
19	WY	6,753	15,594	2.31
20	KS	10,368	23,969	2.31
22	TX	79,849	191,530	2.40
23	NV	5,381	13,051	2.43
24	OR	7,532	18,279	2.43
25	ID	4,959	12,083	2.44
26	NM	11,994	29,308	2.44
27	OK	12,287	30,061	2.45
28	MN	11,926	29,240	2.45
29	MS	10,970	27,310	2.49
30	WI	11,771	29,375	2.50
31	CO	9,110	22,993	2.52
32	NY	15,549	39,267	2.53
33	IN	11,183	28,340	2.53
34	OH	19,266	48,888	2.54
35	AL	10,978	28,156	2.56
36	IA	8,909	22,970	2.58
37	HI	928	2,409	2.60
38	UT	5,848	15,237	2.61
39	TN	13,836	36,110	2.61
40	IL	16,083	41,990	2.61
41	WA	7,043	18,396	2.61
42	CT	3,716	9,782	2.63
43	RI	1,104	2,908	2.63
44	GA	17,910	47,192	2.63
45	AZ	6,813	18,737	2.75
46	MI	9,696	27,545	2.84
47	MD	5,150	14,657	2.85
48	MA	2,830	8,638	3.05
49	CA	15,234	50,594	3.32
50	FL	12,069	41,914	3.47
51	NJ	2,326	8,506	3.66
		777,682	1,846,481	2.37

Receipts for State-Administered Highways

The states obtain their road funds primarily from federal funds, state-imposed fuel taxes, and vehicle/license/equipment fees, general funds, tolls, bonds and other financial initiatives.

In 2006, a total of about \$104.73 billion was received by the states for state-administered roads, up 2.0 percent from 2005 (Table 5, Receipts per State-Controlled Mile). This reflects the first full year of SAFETEA-LU funding.

In 2006, receipts per mile of responsibility averaged \$128,538 and ranged from a low of \$31,685 per mile of responsibility for South Carolina to a high of \$2,209,394 for New Jersey. Since 1984, per-mile receipts for state-owned roads have increased about 224 percent.

Table 5: Receipts per State-Controlled Mile, 2006

Rank	State	Receipts/mile
1	SC	31,685
2	WV	31,774
3	MT	38,815
4	NC	40,736
5	NM	48,556
6	WY	51,714
7	SD	53,942
8	VA	54,799
9	AR	58,356
10	ND	58,872
11	NE	60,022
12	MO	61,021
13	ME	63,725
14	KY	68,284
15	IA	86,762
16	VT	97,962
17	MS	98,547
18	AK	100,042
19	TN	104,927
20	TX	105,397
21	KS	105,924
22	LA	106,032
23	MN	116,318
24	WA	123,255
25	OR	124,272
26	NH	125,212
27	AL	125,288
28	GA	127,797
29	PA	128,385
30	IN	130,245
31	WI	131,780
32	ID	133,940
33	OH	140,142
34	OK	150,639
35	DE	152,463
36	UT	159,502
37	NV	171,078
38	CO	173,758
39	MI	224,707
40	AZ	259,468
41	IL	281,850
42	HI	293,843
43	NY	299,622
44	MD	333,971
45	CT	337,208
46	RI	551,553
47	CA	579,773
48	MA	581,657
49	FL	599,694
50	NJ	2,209,394
Mean		128,538

Capital and Bridge Disbursements

Capital and bridge disbursements for state-owned roads totaled \$54.662 billion in 2006, about 8.7 percent higher than in 2005 (Table 6, Capital and Bridge Disbursements per State-Controlled Mile). This reflects the surge forward in improvement due to financing from SAFETEA-LU.

Since 1984, per-mile capital and bridge disbursements have increased about 235 percent. Per-mile capital and bridge disbursements averaged \$67,089 in 2006 compared to \$61,891 in 2005. In 2006 the state with the lowest capital and bridge disbursements per mile was Virginia at \$16,796 disbursements per mile while the highest was New Jersey with \$589,361 disbursements per mile.

Table 6: Capital and Bridge Disbursements per State-Controlled Mile, 2006

Rank 2006	State	Disbursements/Mile
1	VA	16,796
2	SC	19,084
3	WV	20,501
4	NC	23,138
5	MT	30,027
6	WY	30,934
7	NM	31,299
8	KY	31,848
9	MO	36,984
10	ME	37,669
11	AR	37,945
12	NE	39,212
13	SD	39,855
14	ND	43,771
15	VT	44,808
16	OK	49,080
17	OR	49,711
18	CO	50,725
19	PA	52,552
20	AK	53,318
21	IA	57,277
22	MN	65,451
23	TN	65,614
24	NH	65,819
25	WA	67,924
26	ID	68,640
27	MS	70,836
28	KS	71,467
29	IN	72,782
30	TX	72,921
31	DE	73,853
32	LA	74,886
33	AL	76,910
34	OH	76,991
35	GA	90,372
36	WI	90,692
37	UT	96,369
38	NV	97,817
39	CT	133,118
40	AZ	136,079
41	MI	137,014
42	HI	158,967
43	NY	160,328
44	IL	166,543
45	CA	194,552
46	MD	207,631
47	RI	219,238
48	MA	276,611
49	FL	380,367
50	NJ	589,361
Mean		67,089

Maintenance Disbursements

Maintenance disbursements increased by 7.1 percent from 2005 to 2006, from \$15.94 billion in 2005 to \$17.07 billion in 2006, and accounted for about 17.1 percent of total disbursements (Table 7, Maintenance Disbursements per State-Controlled Mile).

Since 1984 per-mile maintenance disbursements have increased about 183 percent. On a per-mile basis, 2006 maintenance disbursements per mile of responsibility averaged about \$20,953. The lowest per-mile maintenance disbursement was \$4,643 in North Dakota, the highest \$145,186 in New Jersey.

Table 7: Maintenance Disbursements per State-Controlled Mile, 2006

Rank	State	Disbursements/mile
1	ND	4,643
2	WV	6,687
3	SD	7,422
4	MS	7,884
5	SC	8,281
6	NC	8,670
7	MT	9,251
8	NE	10,547
9	KY	10,812
10	AR	10,850
11	GA	11,752
12	AL	13,232
13	WY	13,483
14	MO	13,770
15	WI	14,195
16	ID	14,360
17	OK	14,719
18	KS	15,457
19	IA	15,690
20	AZ	15,768
21	NM	16,507
22	TN	17,369
23	UT	17,630
24	VA	18,488
25	OH	18,488
26	ME	18,820
27	NV	18,914
28	OR	19,488
29	NH	20,703
30	WA	21,706
31	TX	22,842
32	VT	24,339
33	DE	25,107
34	MI	27,922
35	LA	28,082
36	MN	29,242
37	IL	30,513
38	PA	30,720
39	AK	31,282
40	HI	32,362
41	CO	33,085
42	IN	37,432
43	CT	41,496
44	CA	43,895
45	MD	51,447
46	NY	68,553
47	MA	70,830
48	RI	85,418
49	FL	90,291
50	NJ	145,186
Mean		20,953

Administrative Disbursements

Administrative disbursements increased sharply: they totaled \$7.02 billion in 2006, about 10.3 percent higher than in 2005 (Table 8, Administrative Disbursements per State-Controlled Mile).

Administrative costs accounted for about 7.04 percent of total disbursements, up from 6.43 percent in 2005. Since 1984, per-mile administrative disbursements have increased about 229.6 percent. On a per-mile basis, 2006 administrative disbursements averaged \$8,611, ranging from a low of \$1,132 in Kentucky to a high of \$71,720 in New Jersey.

Table 8: Administrative Disbursements per State-Controlled Mile, 2006

Rank 2006	State	Disbursements/Mile
1	KY	1,132
2	ND	1,762
3	AR	1,875
4	MO	1,990
5	SC	2,424
6	LA	2,832
7	WV	2,917
8	NC	3,176
9	TX	3,377
10	ME	3,436
11	VA	3,800
12	ID	4,824
13	WY	4,987
14	IA	5,105
15	WA	5,417
16	IN	5,504
17	NE	5,685
18	SD	6,029
19	NM	6,048
20	KS	6,151
21	MS	6,165
22	CO	6,774
23	MT	6,993
24	OK	7,302
25	AK	7,878
26	OH	8,694
27	OR	8,941
28	MN	9,889
29	TN	10,151
30	PA	10,675
31	WI	11,435
32	MI	11,736
33	IL	11,964
34	MD	12,985
35	NH	13,072
36	GA	13,658
37	VT	13,925
38	CT	15,883
39	AL	16,677
40	DE	16,698
41	FL	17,326
42	NY	20,984
43	NV	21,433
44	RI	21,794
45	UT	22,123
46	AZ	30,370
47	HI	59,036
48	MA	66,436
49	CA	67,264
50	NJ	71,720
Mean		8,611

Total Disbursements

In total, the states disbursed about \$99.609 billion for state-owned roads in 2006, about 1.1 percent higher than in 2005 (Table 9, Total Disbursements per State-Controlled Mile).

Since 1984, per-mile total disbursements have increased about 229 percent. On a per-mile basis, 2006 disbursements averaged \$122,254. The lowest disbursement per mile was \$32,699 in West Virginia, the highest \$1,839,188 in New Jersey. Two states (Hawaii and California) reported administrative disbursements of greater than 15 percent of their budgets.

Table 9: Total Disbursements per State-Controlled Mile, 2006

Rank	State	Disbursements/Mile
1	WV	32,699
2	SC	33,560
3	NC	40,011
4	VA	49,281
5	KY	50,283
6	MT	51,027
7	WY	53,488
8	ND	53,827
9	SD	56,371
10	AR	58,672
11	MO	61,338
12	NE	62,275
13	NM	67,597
14	ME	69,377
15	OR	86,062
16	IA	91,149
17	MS	92,407
18	ID	94,728
19	TN	95,735
20	VT	99,932
21	AK	101,225
22	TX	110,502
23	LA	111,319
24	WA	113,969
25	MN	114,381
26	KS	115,091
27	AL	118,385
28	CO	119,666
29	NH	122,319
30	PA	122,778
31	OH	130,087
32	WI	134,530
33	GA	142,239
34	OK	145,491
35	DE	151,503
36	IN	154,781
37	NV	164,120
38	UT	165,792
39	MI	222,567
40	IL	247,414
41	AZ	264,273
42	CT	300,419
43	HI	303,847
44	NY	307,506
45	MD	324,731
46	RI	426,508
47	CA	447,647
48	FL	592,908
49	MA	749,070
50	NJ	1,839,188
Mean		122,254

Rural Interstate Condition

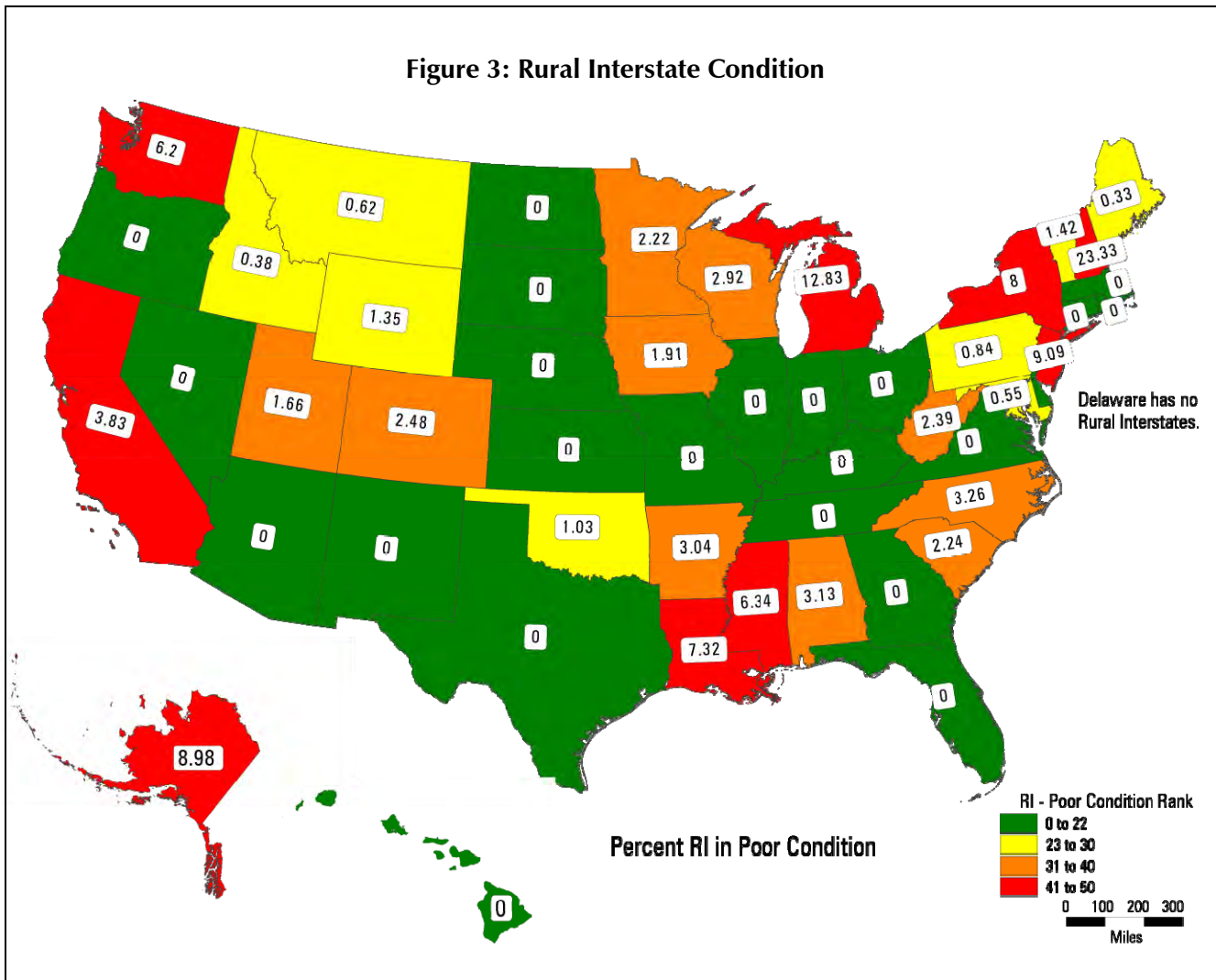
In most states road condition is measured using special machines that determine the roughness of road surfaces. (A few states continue to use visual ratings.) About 1.98 percent of U.S. rural interstates—603 miles out of 30,512—were reported in poor condition in 2006 (Table 10, Rural Interstate Condition, and Figure 3).

Rural interstate condition has witnessed a slight worsening from 2005 when 1.73 percent of rural interstates were rated poor.

The amount of poor mileage varies widely by state. Twenty-two states reported no poor mileage, and five more reported less than 1 percent poor mileage. On the other hand, six states (Washington, Mississippi, Louisiana, New York, Alaska, and New Jersey) reported 5-10 percent poor mileage, and two states (Michigan and New Hampshire) reported more than 10 percent poor mileage. Just six states (Louisiana, New Hampshire, California, New York, Michigan, and Alaska) collectively have more than 50 percent of the poor rural interstate mileage in the country. New Hampshire, particularly, reported an increase of 35 miles of poor-condition rural interstate measures in just one year.

Table 10: Rural Interstate Condition, 2006		
Rank 2006	State	Percent Poor Miles
1	AZ	0.00
1	CT	0.00
1	FL	0.00
1	GA	0.00
1	HI	0.00
1	IL	0.00
1	IN	0.00
1	KS	0.00
1	KY	0.00
1	MA	0.00
1	MO	0.00
1	ND	0.00
1	NE	0.00
1	NM	0.00
1	NV	0.00
1	OH	0.00
1	OR	0.00
1	RI	0.00
1	SD	0.00
1	TN	0.00
1	TX	0.00
1	VA	0.00
23	ME	0.33
24	ID	0.38
25	MD	0.55
26	MT	0.62
27	PA	0.84
28	OK	1.03
29	WY	1.35
30	VT	1.42
31	UT	1.66
32	IA	1.91
33	MN	2.22
34	SC	2.24
35	WV	2.39
36	CO	2.48
37	WI	2.92
38	AR	3.04
39	AL	3.13
40	NC	3.26
41	CA	3.83
42	WA	6.20
43	MS	6.34
44	LA	7.32
45	NY	8.00
46	AK	8.98
47	NJ	9.09
48	MI	12.83
49	NH	23.33
	DE	NA
Mean		1.98

Figure 3: Rural Interstate Condition



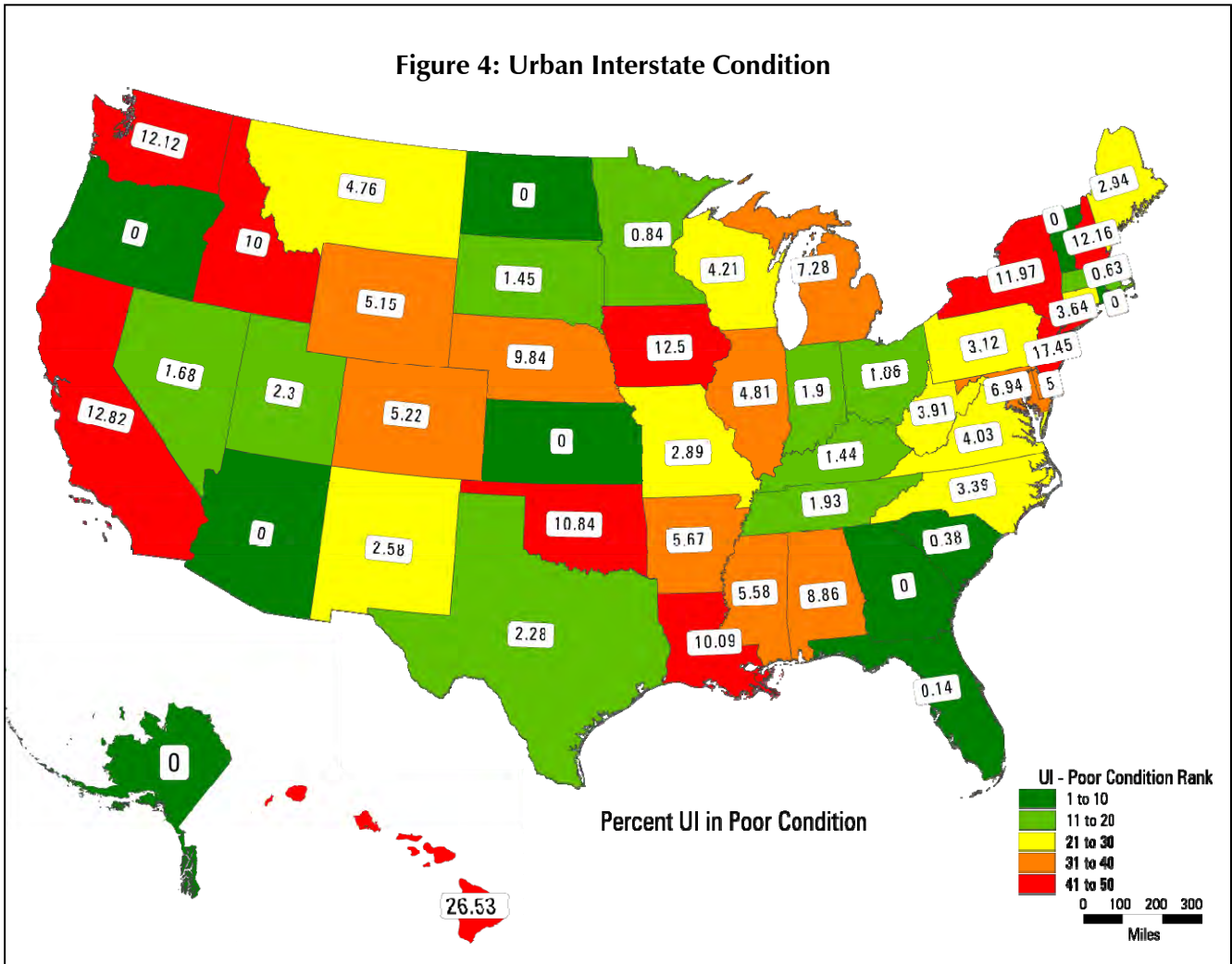
Urban Interstate Condition

The urban interstates consist of major multi-lane interstates in and near urban areas. The condition of the urban interstate system improved in 2006 to 5.15 percent poor from 5.97 percent poor in 2005 (Table 11, Urban Interstate Condition, and Figure 4). The condition of the urban interstate also varies widely. Eight states reported no poor urban interstate mileage, while two states (New Jersey and Hawaii) reported more than 15 percent poor mileage. Since 1984, the percentage of poor urban interstate mileage has been reduced by about 40 percent.

Table 11: Urban Interstate Condition, 2006

Rank	State	Percent Poor Miles
1	AK	0.00
1	AZ	0.00
1	GA	0.00
1	KS	0.00
1	ND	0.00
1	OR	0.00
1	RI	0.00
1	VT	0.00
9	FL	0.14
10	SC	0.38
11	MA	0.63
12	MN	0.84
13	OH	1.06
14	KY	1.44
15	SD	1.45
16	NV	1.68
17	IN	1.90
18	TN	1.93
19	TX	2.28
20	UT	2.30
21	NM	2.58
22	MO	2.89
23	ME	2.94
24	PA	3.12
25	NC	3.39
26	CT	3.64
27	WV	3.91
28	VA	4.03
29	WI	4.21
30	MT	4.76
31	IL	4.81
32	DE	5.00
33	WY	5.15
34	CO	5.22
35	MS	5.58
36	AR	5.67
37	MD	6.94
38	MI	7.28
39	AL	8.86
40	NE	9.84
41	ID	10.00
42	LA	10.09
43	OK	10.84
44	NY	11.97
45	WA	12.12
46	NH	12.16
47	IA	12.50
48	CA	12.82
49	NJ	17.45
50	HI	26.53
Mean		5.15

Figure 4: Urban Interstate Condition



Rural Principal Arterial Pavement Condition

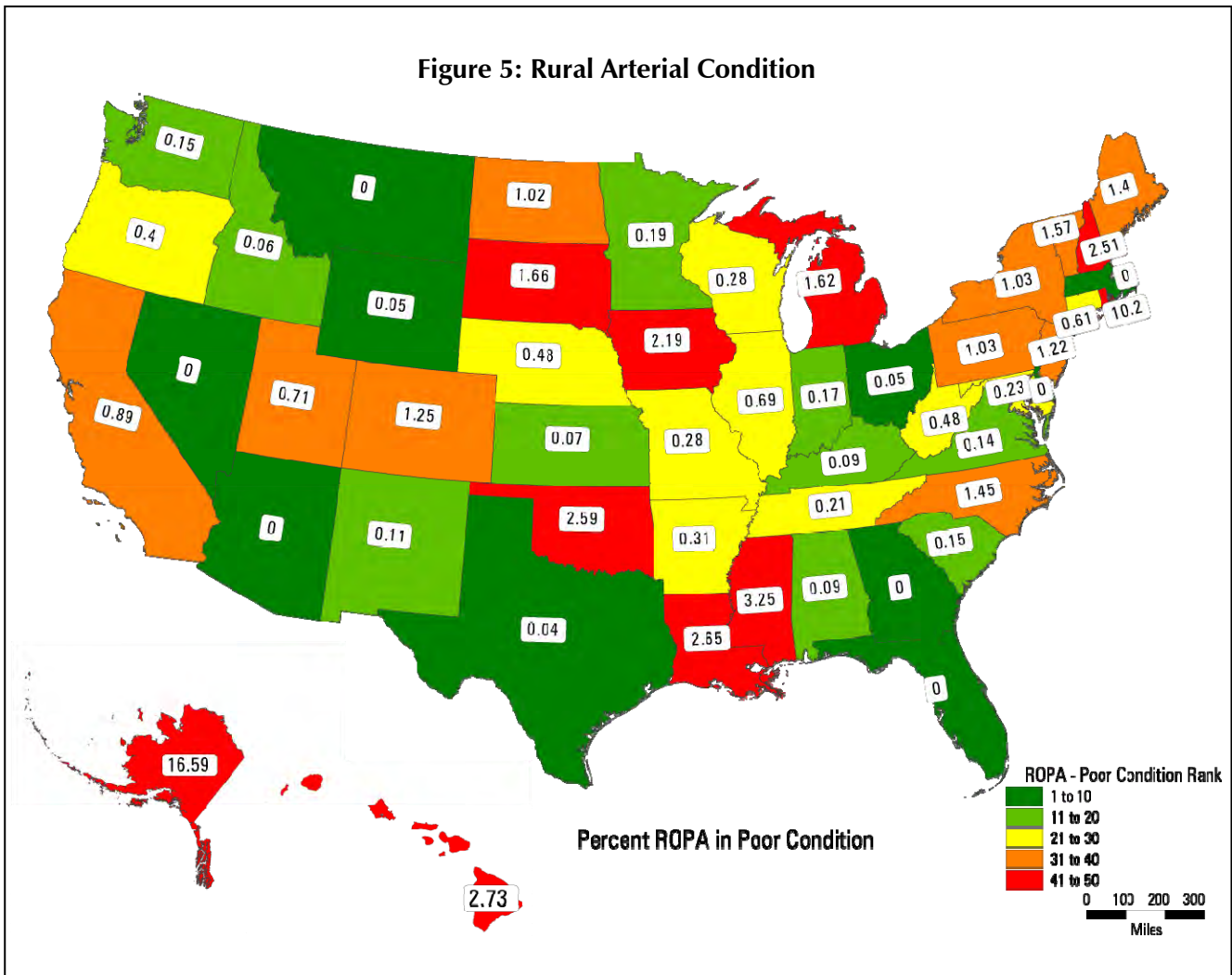
The condition of the major rural highways continued to improve from 2005 to 2006 by about 0.09 percent. Overall, about 0.76 percent of the “rural other principal arterial system”—719 miles out of 94,500—were reported to be in poor condition (Table 12, Rural Arterial Condition, and Figure 5). This compares with 0.85 percent, or about 799 miles, in 2005. Since 1998, the percentage of poor rural primary mileage has decreased more than one-third, but since 2000, it has remained relatively constant, between 0.65 and 0.94 percent.

Seven states reported no poor rural primary mileage in 2006. On the other hand, Alaska and Rhode Island reported more than 10 percent of their rural primary mileage to be in poor condition. Hawaii reported 2.73 percent of its rural primary to be in poor condition in 2006, a sharp increase from 2005 when it reported no rural primary in poor condition. Alabama showed a sharp improvement in its rural primary condition, going from 0.56 percent poor in 2005 to 0.09 percent poor in 2006.

Table 12: Rural Arterial Condition, 2006

Rank	State	Percent Poor Miles
1	AZ	0.00
1	DE	0.00
1	FL	0.00
1	GA	0.00
1	MA	0.00
1	MT	0.00
1	NV	0.00
8	TX	0.04
9	WY	0.05
10	OH	0.05
11	ID	0.06
12	KS	0.07
13	KY	0.09
14	AL	0.09
15	NM	0.11
16	VA	0.14
17	WA	0.15
18	SC	0.15
19	IN	0.17
20	MN	0.19
21	TN	0.21
22	MD	0.23
23	MO	0.28
24	WI	0.28
25	AR	0.31
26	OR	0.40
27	WV	0.48
28	NE	0.48
29	CT	0.61
30	IL	0.69
31	UT	0.71
32	CA	0.89
33	ND	1.02
34	NY	1.03
35	PA	1.03
36	NJ	1.22
37	CO	1.25
38	ME	1.40
39	NC	1.45
40	VT	1.57
41	MI	1.62
42	SD	1.66
43	IA	2.19
44	NH	2.51
45	OK	2.59
46	LA	2.65
47	HI	2.73
48	MS	3.25
49	RI	10.20
50	AK	16.59
Mean		0.76

Figure 5: Rural Arterial Condition



Urban Interstate Congestion

There is no universally accepted definition of traffic congestion, but in reporting to the federal government, the states use the volume-to-capacity ratios that are determined by Transportation Research Board’s *Highway Capacity Manual*. The congestion measures for 2006 are not totally comparable with earlier years, since most states increased the rated capacities of urban interstates based on the 1997 and 2000 *Highway Capacity Manuals*. Nevertheless, the overall 2006 statistic—50.72 percent congested—shows just a slight improvement from 2005 (51.85 percent congested). (See Table 13, Urban Interstate Congestion, and Figure 6).

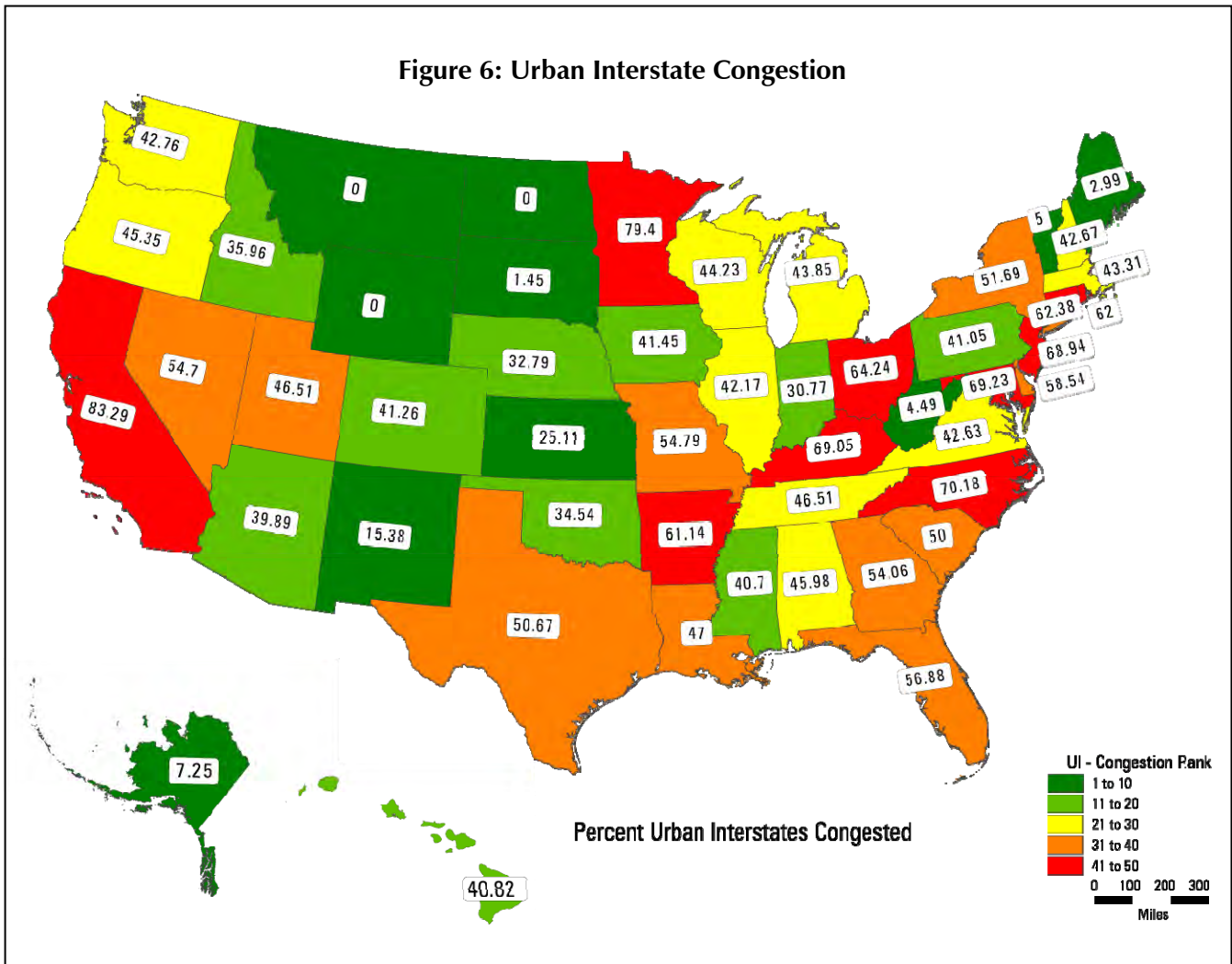
For 2006, about 8,056 miles out of 15,882 urban interstate miles were rated as having volume/capacity ratios greater than 0.70, the standard for mild congestion.

In 2006, three rural states (Montana, North Dakota, and Wyoming) reported no congested urban interstates, while 18 states reported half or more of their urban interstates congested. Three states (California 83.3 percent, Minnesota 79.4 percent, and North Carolina 70.2 percent) reported more than 70 percent of their urban interstates as congested. Arizona, New Hampshire, Illinois, and Michigan showed significant reduction in their urban interstate congestion from 2005. Wisconsin, Nevada, and Oregon showed sharp increases.

Table 13: Urban Interstate Congestion, 2006

Rank	State	Percent Miles Congested
1	MT	0.00
1	ND	0.00
1	WY	0.00
4	SD	1.45
5	ME	2.99
6	WV	4.49
7	VT	5.00
8	AK	7.25
9	NM	15.38
10	KS	25.11
11	IN	30.77
12	NE	32.79
13	OK	34.54
14	ID	35.96
15	AZ	39.89
16	MS	40.70
17	HI	40.82
18	PA	41.05
19	CO	41.26
20	IA	41.45
21	IL	42.17
22	VA	42.63
23	NH	42.67
24	WA	42.76
25	MA	43.31
26	MI	43.85
27	WI	44.23
28	OR	45.35
29	AL	45.98
30	TN	46.51
31	UT	46.51
32	LA	47.00
33	SC	50.00
34	TX	50.67
35	NY	51.69
36	GA	54.06
37	NV	54.70
38	MO	54.79
39	FL	56.88
40	DE	58.54
41	AR	61.14
42	RI	62.00
43	CT	62.38
44	OH	64.24
45	NJ	68.94
46	KY	69.05
47	MD	69.23
48	NC	70.18
49	MN	79.40
50	CA	83.29
Mean		50.72

Figure 6: Urban Interstate Congestion



Deficient Bridges

Federal law mandates the uniform inspection of all bridges for structural and functional adequacy at least every two years; bridges rated ‘deficient’ are eligible for federal repair dollars.

The condition of the nation's highway bridges has been slowly but steadily improving, and it continued to improve from 2005 to 2006. Of the 597,598 highway bridges in the current National Bridge Inventory, 144,225—about 24.13 percent—were reported deficient for 2006 (Table 14, Deficient Bridges), a slight improvement from 2005. In 1998, about 29.0 percent were rated deficient. However, progress is slow. At the current rate of improvement, it would take 62 years for all deficient bridges to be brought to standard. Nevada reported the lowest percentage of deficient bridges, 3.92 percent, while Rhode Island reported the highest, 53.43 percent.

Table 14: Deficient Bridges, 2006

Rank 2006	State	Percent Deficient
1	NV	3.92
2	AZ	5.54
3	WY	12.22
4	CO	12.99
5	MN	13.00
6	WI	15.41
7	UT	16.37
8	NM	17.71
9	CA	17.72
10	IL	17.79
11	DE	17.83
12	FL	18.26
13	TN	18.83
14	ID	19.05
15	MT	19.62
16	GA	19.64
17	TX	19.92
18	KS	20.73
19	AR	21.58
20	IN	21.65
21	AK	22.34
22	VA	23.10
23	OH	23.27
24	SC	23.32
25	ND	23.45
26	OR	23.73
27	NE	23.82
28	AL	24.93
29	SD	25.12
30	MS	25.47
31	MI	25.89
32	WA	26.18
33	MD	26.89
34	IA	27.01
35	NJ	27.47
36	KY	28.59
37	LA	29.88
38	ME	29.97
39	NH	30.27
40	MO	30.50
41	NC	31.05
42	OK	31.10
43	CT	32.80
44	VT	35.71
45	MA	36.16
46	WV	36.56
47	NY	38.09
48	HI	39.71
49	PA	39.77
50	RI	53.43
Mean		24.13

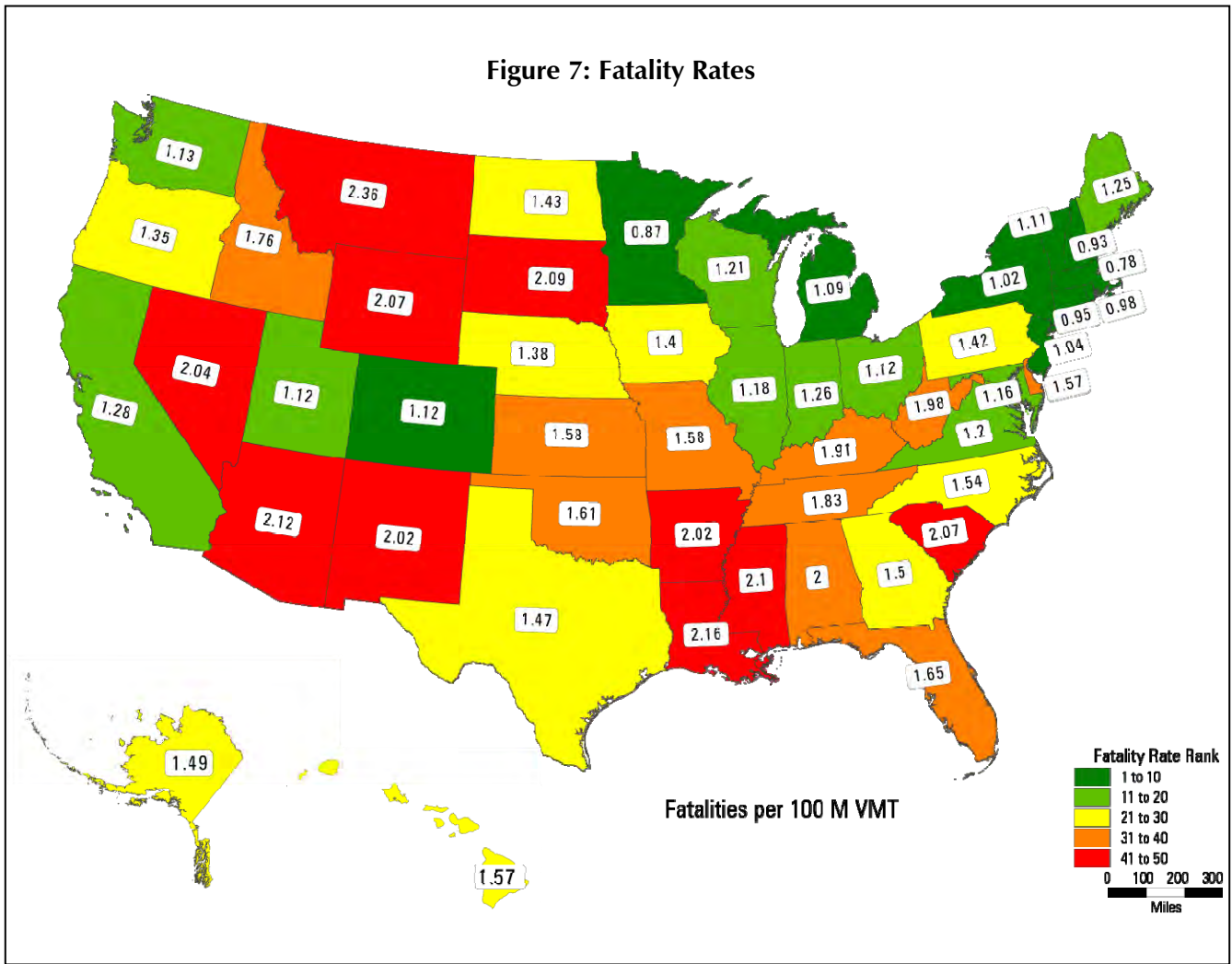
Fatality Rates

Fatality rates are an important overall measure of each state's road performance. The nation's highway fatality rate has improved slightly (Table 15, Fatality Rates, and Figure 7). For 2006, 42,605 fatalities were reported, lower than 43,395 reported for 2005. As travel continued to increase, the average fatality rate was 1.421 fatalities per 100 million vehicle miles, down 2.2 percent from 1.453 in 2005. For 2006, Massachusetts reported the lowest rate, 0.785, while Montana reported the highest, 2.364.

Table 15: Fatality Rates, 2006

Rank	State	Fatalities per 100 million miles
1	MA	0.785
2	MN	0.867
3	NH	0.931
4	CT	0.950
5	RI	0.976
6	NY	1.022
7	NJ	1.042
8	MI	1.094
9	VT	1.109
10	CO	1.120
11	UT	1.121
12	OH	1.124
13	WA	1.129
14	MD	1.164
15	IL	1.181
16	VA	1.198
17	WI	1.209
18	ME	1.251
19	IN	1.260
20	CA	1.275
21	OR	1.352
22	NE	1.378
23	IA	1.402
24	PA	1.416
25	ND	1.433
26	TX	1.468
27	AK	1.494
28	GA	1.497
29	NC	1.537
30	HI	1.569
31	DE	1.570
32	KS	1.577
33	MO	1.583
34	OK	1.612
35	FL	1.655
36	ID	1.756
37	TN	1.829
38	KY	1.911
39	WV	1.979
40	AL	1.999
41	AR	2.016
42	NM	2.017
43	NV	2.039
44	SC	2.067
45	WY	2.075
46	SD	2.088
47	MS	2.098
48	AZ	2.116
49	LA	2.160
50	MT	2.364
Mean		1.421

Figure 7: Fatality Rates



Narrow Rural Lanes

Narrow lanes on major rural roads indicate problems with lines of sight and design adequacy. The national design standard for lane width on major rural roads is generally 12 feet, and few, if any, major rural roads would be improved without widening lanes to the standard. In 2006, about 10.60 percent of “rural other principal arterials”—10,064 miles out of 94,915—had narrow lanes less than 12 feet wide (Table 16, Rural Narrow Lanes), better than the 10.70 percent reported in 2005. Seven states reported no narrow-lane mileage, while West Virginia (41.14 percent) reported the highest percentage of narrow lanes.

Table 16: Rural Narrow Lanes, 2006

Rank	State	Percent Narrow
1	AZ	0.00
1	DE	0.00
1	ND	0.00
1	NJ	0.00
1	NV	0.00
1	SD	0.00
1	UT	0.00
8	ID	0.52
9	KS	0.55
10	MT	1.03
11	NE	1.04
12	CT	1.22
13	WY	1.81
14	GA	2.01
15	RI	2.08
16	WI	2.45
17	OK	2.72
18	NH	3.64
19	AL	3.83
20	NM	4.78
21	MA	4.79
22	MN	5.27
23	CA	5.68
24	IN	6.03
25	MD	6.09
26	AK	6.82
27	OR	7.00
28	SC	7.21
29	FL	7.36
30	IA	8.29
31	MS	8.53
32	LA	9.98
33	TX	11.83
34	NC	12.40
35	IL	13.06
36	CO	13.89
37	OH	13.93
38	KY	17.86
39	MI	18.84
40	MO	21.08
41	VT	22.81
42	TN	25.92
43	ME	26.30
44	NY	27.84
45	VA	29.50
46	AR	32.32
47	HI	32.43
48	WA	38.94
49	PA	40.57
50	WV	41.14
Mean		10.6

Part 4

What Works and What Doesn't

The long-term data on road conditions, overall performance, and cost-effectiveness permits some generalizations regarding road management policy. Although there are many exceptions, over the long-run our analysis suggests:

- *Regular, effective maintenance is a must.* States should strive to implement policies that emphasize the treatment of problems early in the life cycle, which can reduce costs and prevent system deterioration. Delayed or deferred maintenance often reduces short-term expenditures, but allows conditions to worsen and can increase costs later.
- *High administration costs, relative to system size, are problematic.* Limiting administrative expenditures that don't actually improve road and bridge conditions is a key to success.
- *Size and geography don't matter.* Some states with large state-owned highway systems have high ratings (South Carolina—6th, Georgia—10th). The two states with the smallest state-owned highway systems are actually at the bottom of the overall rankings (Hawaii 47th, Rhode Island 48th). New Jersey, which ranks last in overall performance again, has the fourth smallest system. By contrast, Texas has the largest state highway system and ranks 12th overall.

Is National Progress Still Possible?

Another emerging issue in this long-term data is the question of appropriate goals. There is increasing evidence that some measures may have essentially irreducible 'bottoms' below which it may not be realistic to go. Since 2000, urban interstate congestion has hovered around 50 percent; the percent of rural primary roads in poor condition has remained near 0.75 percent; the percent of rural interstates in poor condition has remained near 2 percent; and the percent of rural primary roads with narrow lanes has remained close to 10 percent. Although some states have achieved remarkably lower statistics, overall, the nation has found it difficult to reduce these statistics even though dollars have substantially increased. This suggests that combinations of system condition, unit costs, and background trends, such as traffic, make further progress problematic. On the other hand, substantial progress still seems possible for reducing accident rates, improving bridges, and improving urban interstate condition. One of the most useful features of long-term studies, such as this, is that they help us to understand the limits of, and potential for, goal achievement relative to cost, and thereby encourage us to choose wisely, and what is most important.

Part 5

Top Ten States

1. North Dakota

North Dakota is once again 1st in the overall performance ratings, where it has been since 2001. The system ranks best for urban interstate condition (tied for 1st), urban interstate congestion (tied for 1st), rural primary pavements narrow (tied for 1st), rural interstate condition (tied for 1st), maintenance disbursements per mile of responsibility (1st), and administrative disbursements per mile of responsibility (2nd). Its lowest ratings were for rural primary pavement condition (33rd), deficient bridges (25th) and fatality rate (25th). North Dakota's relatively low traffic volumes, good system condition and relatively low unit costs have consistently placed it in the top-performing states.

Compared to 2005, the receipts per mile of responsibility for North Dakota increased from \$42,199 in 2005 to \$58,872 in 2006. Its fatality rate decreased by 11.7 percent from 1.62 in 2005 to 1.43 in 2006. Other performance measures did not see significant changes from 2005 to 2006.

2. Montana

In 2006, Montana ranked 2nd in overall performance, 5th in 2005. With 11,075 miles, Montana has a medium-sized state highway system. Montana's best ranks are in rural primary pavement condition (tied for 1st), urban interstate congestion (tied for 1st), receipts per mile of responsibility (3rd), capital disbursements per mile of responsibility (5th), total disbursements per mile of responsibility (6th) and maintenance disbursements per mile of responsibility (7th). Its lowest rankings were for fatality rate (50th), urban interstate condition (30th), and rural interstate condition (26th).

Montana showed significant improvement in urban interstate condition from 2005, when 11.67 percent of its urban interstates were reported poor, to just 4.76 percent reported poor in 2006. At the same time its administrative costs, per mile of responsibility rose by 44.9 percent from 2005.

3. New Mexico

In 2006, New Mexico ranked 3rd in the overall performance ratings. The state has seen steady improvement in the performance ratings from 2000, when it ranked 27th. In 2006, its best ratings were for rural interstate condition (tied for 1st), receipts per mile of responsibility (5th), capital-bridge disbursements per mile of responsibility (7th), deficient bridges (8th), and urban interstate congestion (9th). New Mexico's lowest rankings were for fatality rate (42nd), maintenance disbursements per mile of responsibility (21st), urban interstate condition (21st), rural primary pavement narrow (20th) and administrative disbursements per mile of responsibility (19th).

New Mexico had a large reduction in administrative disbursements per mile of responsibility, from \$11,466 per mile in 2005 (which was inordinately high) to \$6,048 per mile in 2006, in line with earlier years. This occurred possibly as a result of moving dollars from administration into project budgets.

4. Wyoming

In the overall performance ratings for 2006, Wyoming stood 4th, compared with 7th in 2005 and 2nd in 1998. Wyoming reported a total of 7,467 miles under state control, about one-half the national average. For 2006, Wyoming's best ratings were for urban interstate congestion (tied for 1st), deficient bridges (3rd), receipts per mile of responsibility (6th), capital disbursements per mile of responsibility (6th), total disbursements per mile of responsibility (7th), and rural primary pavement condition (9th). Wyoming performed worst in fatality rate (45th), urban interstate condition (33rd), and rural interstate condition (29th).

Between 2005 and 2006, Wyoming moved from 7th to 4th overall, largely as a result of cost reductions and improvement in the urban interstate. Its fatality rate worsened slightly but not enough to prevent its gains.

5. Kansas

With 10,546 miles under state control in 2006, Kansas was ranked 5th in the overall performance ratings. This compares to 3rd in 2005 and 6th in 2000. For 2006, Kansas's best ratings were for rural interstate condition (tied for 1st)—with no poor miles reported for 2006, urban interstate condition (tied for 1st), rural narrow roads (9th), urban interstate congestion (10th), and rural primary pavement condition (12th). Kansas scored lowest on fatality rate (32nd), capital disbursements per mile of responsibility (28th), and total disbursements per mile of responsibility (26th).

Kansas's 3-point drop between 2005 and 2006 was largely caused by an 8 percent worsening of its fatality rate and an increase in receipts.

6. South Carolina

South Carolina has the 5th largest state-owned highway system at 41,621 miles. It ranked 6th in the overall performance ratings in 2006, compared to 3rd in 2000 and 2nd in 2005. It ranked best on receipts per mile of responsibility (1st), capital disbursements per mile of responsibility (2nd), total disbursements per mile of responsibility (2nd), maintenance disbursements per mile of responsibility (5th) and administrative disbursements per mile of responsibility (5th). Its lowest ratings were for fatality rate (44th), rural interstate condition (34th), and urban interstate congestion (33rd).

South Carolina reported a sharp increase in its rural interstate in poor condition, from 0 percent in poor condition in 2005 to 2.24 percent in poor condition in 2006. This corresponded to a 15-mile increase in poor mileage.

7. South Dakota

South Dakota's 8,145-mile system ranked 7th in the overall performance ratings in 2006 compared to 11th in 2005 and 30th in 2000. It performed best on percent of rural primary pavements that are narrow (tied for 1st), rural interstate in poor condition (tied for 1st), maintenance disbursements per mile of responsibility (3rd), and urban interstate congestion (4th). Its worst ratings were for fatality rate (46th), rural primary roads in poor condition (42nd) and deficient bridges (29th).

For the first time, South Dakota reported some urban congestion in 2006. The amount was modest, just 1.45 percent of the system, and it was not enough to offset improvements in its financial picture or hurt the overall ranking.

8. Nebraska

In the overall performance rankings in 2006, Nebraska ranked 8th compared with 19th in 2005. Since 2000, Nebraska has steadily improved its rankings from 29th in 2000 to 8th in 2006. The factors where Nebraska fared well in 2006 were rural interstate in poor condition (tied for 1st), maintenance disbursements per mile of responsibility (8th), receipts per mile of responsibility (11th), rural primary pavement narrow (11th), capital disbursements per mile of responsibility (12th), total disbursements per mile of responsibility (12th) and urban interstate congestion (12th). Its worst ratings were for urban interstate condition (40th), rural other primary pavement condition (28th), and deficient bridges (27th).

Nebraska's jump from 19th to 8th in 2006 was based on significant improvement in the rural interstate system, which was improved from 2.12 percent poor (36th) to 0.0 percent poor. Nebraska also improved its urban interstate condition from 14.0 percent poor (45th) to 9.8 percent poor (40th).

Smaller gains were also made in urban congestion, deficient bridges, narrow lanes, and fatality rate.

9. Kentucky

Kentucky has 27,775 miles under state control, almost twice the national average. Kentucky was ranked 9th in the overall performance ratings in 2006, a slight improvement from 2005 where it ranked 12th. Its best ratings were for administrative disbursements per mile of responsibility (1st), rural interstate condition (tied for 1st) with 0 percent reported as poor, total disbursements per mile of responsibility (5th), capital disbursements per mile of responsibility (8th), and maintenance disbursements per mile of responsibility (9th). Its worst ratings were for (perhaps surprisingly) urban interstate congestion (46th), fatality rate (38th), rural primary pavement narrow (38th), and deficient bridges (36th).

Kentucky reported a significantly lower administrative disbursement per mile of responsibility from \$3,989 in 2005 to \$1,132 in 2006, with 3 percent of bridges deficient and a slight improvement in its fatality rate.

10. Georgia

The 17,994-mile state-owned highway system in Georgia is just slightly larger than the national average. In 2006, Georgia ranked 10th in the overall performance ratings, a slight drop from 6th in 2005 and 4th in 2000. Georgia's system ranked highest in rural interstate condition (tied for 1st), urban interstate condition (tied for 1st), and rural primary condition (tied for 1st). Apart from these, its best ratings were for maintenance disbursements per mile of responsibility (11th), narrow rural primary pavement (14th), and deficient bridges (16th). Georgia, in 2006, fared worst in urban interstate congestion (36th), administrative disbursements per mile of responsibility (36th), capital/bridge disbursements per mile of responsibility (35th), and total disbursements per mile of responsibility (33rd).

In 2006, Georgia reported a significant increase in receipts per mile of responsibility (from 23rd to 28th) and a 29.8 percent increase in its capital/bridge disbursements per mile of responsibility (from 27th to 35th). The percentage of deficient bridges was reduced by about 1 percent, but the percent of narrow lanes increased. So, increased expenditures did not, generally, make their way into improved relative scores.

Part 6

Bottom Ten States

41. Florida

Florida has 12,069 miles of highway under the state-owned highway system, slightly less than the national average. In 2006, Florida ranked 41st in the overall state highway performance ratings, the same overall rating as in 2005; in 2000 it ranked 38th. Florida's best ratings were for rural interstate condition (tied for 1st)—with no percent reported as poor, rural primary pavement condition (tied for 1st)—with 0 percent reported as poor, urban interstate condition (9th) and deficient bridges (12th). Its worst ratings were for receipts per mile of responsibility (49th), capital/bridge disbursements per mile of responsibility (49th), maintenance disbursements per mile of responsibility (49th), total disbursements per mile of responsibility (48th) and administrative disbursements per mile of responsibility (41st). Florida's statistics show very little change between 2005 and 2006.

42. Michigan

In 2006, Michigan reported about 9,734 miles of highway under state control. Michigan was ranked 43rd in 2000, 42nd in 2005, and 42nd in 2006. The state's best ratings are its fatality rate (8th) and (perhaps surprisingly) urban interstate congestion (26th). It fared poorly in rural interstate condition (48th), rural primary pavement condition (41st), capital/bridge disbursements per mile of responsibility (41st), receipts per mile of responsibility (39th), total disbursements per mile of responsibility (39th), rural primary pavement narrow (39th), and urban interstate condition (38th).

Michigan's overall stable rating between 2005 and 2006 masks several large changes. Rural interstate condition worsened sharply from 7.7 to 12.8 percent poor, and the rural primary also worsened significantly, from 24th to 41st. But urban interstate condition improved from 12.8 to 7.3 percent poor, congestion improved slightly, deficient bridges.

43. Massachusetts

The state-owned highway system in Massachusetts has about 3,244 miles, 5th smallest in the nation. For 2006, Massachusetts is rated at 43rd overall, up slightly from 45, in 2005; in 2000 the state was ranked 49th. Massachusetts ranks 1st in three of the twelve categories: rural interstate condition (tied for 1st), rural primary pavement condition (tied for 1st), and fatality rate. It also scored well on urban interstate condition (11th), narrow rural primary roads (21st), and urban interstate congestion (25th). However, its relative costs are higher than average, ranking 49th in total disbursements per mile of responsibility, 48th in administrative disbursements per mile of responsibility, 48th in capital/bridge disbursements per mile of responsibility, 48th in receipts per mile of responsibility, 47th in maintenance disbursements per mile of responsibility, and 45th in deficient bridges. Between 2005 and 2006, the state lowered its capital expenditures while increasing maintenance expenditures,

44. California

California has 18,251 miles of state-owned highway system, slightly larger than the national average. In 2006, California ranked 44th in the overall state highway performance ratings, the same as in 2005 and one spot better than in 2000. In 2006, its best ratings were for deficient bridges (9th), fatality rate (20th) and narrow rural primary pavements (23rd). However, California has the highest percent urban interstate congested in the entire nation, 83.3 percent. It also performed poorly on administrative disbursements per mile of responsibility (49th), urban interstate in poor condition (48th), receipts per mile of responsibility (47th), total disbursements per mile of responsibility (47th), capital/bridge disbursements per mile of responsibility (45th), maintenance disbursements per mile of responsibility (44th) and rural interstate condition (41st). California's total disbursements increased about 33 percent from 2005 to 2006, yet its system performance remained essentially unchanged.

45. New York

New York has about 15,985 miles of state-owned highways. In 2006, it ranked 45th in the overall state highway performance ratings, an improvement from 48th in 2005. New York was rated 47th in 2000, but had been rated as high as 40th in earlier reviews. Its best 2006 ratings were for its fatality rate (6th), rural primary pavement condition (34th), and urban interstate congestion (35th). Its worst ratings were for deficient bridges (47th), maintenance disbursements per mile of responsibility (46th), rural interstate condition (45th), urban interstate condition (44th), total disbursements per mile of responsibility (44th), capital/bridge disbursements per mile of responsibility (43rd), receipts per mile of responsibility (43rd), and administrative disbursements per mile of responsibility (42nd).

On balance, New York seems to be progressing after years of declining ratings. Between 2005 and 2006, the percentage of rural interstates in poor condition was cut almost in half (from 13.3 to 8.0

percent), urban interstate poor mileage reduced by one-third from 16.5 to 12.0 percent, and rural primary poor mileages reduced by three-quarters from 3.9 to 1.0 percent. The percent of urban interstates congested also reduced slightly. However, the percent of deficient bridges increased about 1 percent, and the percentage of narrow lanes increased 3 percent.

46. New Hampshire

New Hampshire's state-owned highway, at 4,011 miles, is the 7th smallest in the nation. The state witnessed a sharp decline in overall performance ratings from 2005 where it stood 34th to 46th in 2006. This is attributed to a big increase in its percentage of rural and urban interstates in poor condition, from 0 percent in 2005 to 23.33, and 0 percent to 12.16 percent, respectively. This drastic change overshadowed the improvements the state saw in fatality rate, urban interstate congestion and maintenance disbursements per mile of responsibility. New Hampshire's best ratings were for fatality rate (3rd) and narrow rural primary pavements (18th). Its worst ratings were for rural interstate condition (49th), urban interstate in poor condition (46th), and rural primary pavement condition (44th).

47. Hawaii

With just 975 miles under the state control, Hawaii has the smallest state-owned system. In 2006, Hawaii ranked 47th in the overall performance ratings, compared with 46th in 2005, and 48th in 2000. With no rural interstate reported as poor, Hawaii ranks best (1st) in this category. Its other better ratings were urban interstate congestion (17th) and fatality rate (30th). However, Hawaii has 26.53 percent of its urban interstates in poor condition, 50th in the nation. In addition, Hawaii did not fare well in deficient bridges (48th), narrow rural primary pavements (47th), rural primary in poor condition (47th), administrative disbursements per mile of responsibility (47th), total disbursements per mile of responsibility (43rd), receipts per mile of responsibility (42nd) and capital/bridge disbursements per mile of responsibility. Hawaii is spending two to three times the national average per mile of responsibility, yet its system is performing poorly.

48. Rhode Island

Rhode Island has the second smallest state-owned system, just 1,104 miles. The state has continued to slide, from 47th in 2005 to 48th in 2006, down from 36th in 2000. Rhode Island's best performance is the condition of its interstates, which reported no poor condition mileage. It also fared well in fatality rate (5th). Its worst ratings were for deficient bridges (50th), rural primary pavement condition (49th), maintenance disbursements per mile of responsibility (48th), capital/bridge disbursements per mile of responsibility (47th), receipts per mile of responsibility (46th), total disbursements per mile of responsibility (46th), administrative disbursements per mile of responsibility (44th) and urban interstate congestion (42nd). Clearly, Rhode Island is spending

significantly more than the average state, but (except for the interstate) is not getting the basic results.

49. Alaska

In the overall performance ratings for 2006, Alaska ranked the same as in 2005 but was down from 40th in 2000. The state has 6,436 miles of state-owned highway, less than one-half the national average. Alaska's best ratings are for urban interstate condition (tied for 1st) with no poor mileage reported and urban interstate congestion (8th). Its worst ratings are for rural primary pavement condition (50th), rural interstate condition (46th), and maintenance disbursements per mile of responsibility (39th).

Between 2005 and 2006, Alaska reduced its total disbursements but increased its maintenance costs. Its percent of rural poor interstate doubled, from 4.4 to 8.8 percent.

50. New Jersey

New Jersey has 2,911 miles of state-owned highways, the 4th smallest in the nation. In 2006, New Jersey ranked 50th in the overall performance ratings, the same as in 2005. New Jersey ranks 50th in several categories: receipts per mile of responsibility, capital/bridge disbursements per mile of responsibility, maintenance disbursements per mile of responsibility, administrative disbursements per mile of responsibility and total disbursements per mile of responsibility. It ranks 49th in urban interstate condition, 47th in rural interstate condition and 45th in urban interstate congestion. Its best rankings are for narrow rural primary pavement (tied for 1st) with no rural primary pavements reported as narrow, and fatality rate (7th). Very high unit costs relative to other states, in combination with heavy traffic, more than offset low accident rates and rural primary pavement condition.

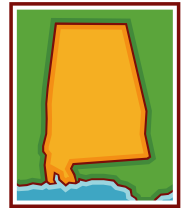
New Jersey's disbursements were reduced slightly between 2005 and 2006, and it made modest progress in reducing rural interstate condition, congestion, and bridge condition. However the percent of urban interstates in poor condition jumped sharply from 12.8 to 17.5 percent, over three times the national average.

Part 7

Individual State Results

Alabama

Alabama ranked 29th in overall performance and cost-effectiveness. In last year's rankings, Alabama ranked 43rd overall. Alabama is 29th in urban interstate congestion, with 45.98 percent congested. The state ranks 39th in rural interstate condition and 39th in urban interstate condition. Alabama ranks 28th in deficient bridges—24.93 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Alabama is 40th in the nation in fatality rates per 100 million vehicle miles traveled.



Alaska

Alaska ranked 49th in overall performance and cost-effectiveness. In last year's rankings, Alaska ranked 49th overall. Alaska is 8th in urban interstate congestion, with 7.25 percent congested. The state ranks 46th in rural interstate condition and tied for 1st in urban interstate condition. Alaska ranks 21st in deficient bridges—22.34 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Alaska is 27th in the nation in fatality rates per 100 million vehicle miles traveled.



Arizona

Arizona ranked 26th in overall performance and cost-effectiveness. In last year's rankings, Arizona ranked 27th overall. Arizona is 15th in urban interstate congestion, with 39.89 percent congested. The state tied for 1st in rural interstate condition and tied for 1st in urban interstate condition. Arizona ranks 2nd in deficient bridges—5.54 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Arizona is 48th in the nation in fatality rates per 100 million vehicle miles traveled.



Arkansas

Arkansas ranked 27th in overall performance and cost-effectiveness. In last year's rankings, Arkansas ranked 28th overall. Arkansas is 41st in urban interstate congestion, with 61.14 percent congested. The state ranks 38th in rural interstate condition and 36th in urban interstate condition. Arkansas ranks 19th in deficient bridges—21.58 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Arkansas is 41st in the nation in fatality rates per 100 million vehicle miles traveled.



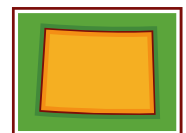
California

California ranked 44th in overall performance and cost-effectiveness. In last year's rankings, California ranked 44th overall. California is 50th in urban interstate congestion, with 83.29 percent congested. The state ranks 41st in rural interstate condition and 48th in urban interstate condition. California ranks 9th in deficient bridges—17.72 percent of the state's bridges are deemed structurally deficient or functionally obsolete. California is 20th in the nation in fatality rates per 100 million vehicle miles traveled.



Colorado

Colorado ranked 31st in overall performance and cost-effectiveness. In last year's rankings, Colorado ranked 29th overall. Colorado is 19th in urban interstate congestion, with 41.26 percent congested. The state ranks 36th in rural interstate condition and 34th in urban interstate condition. Colorado ranks 4th in deficient bridges—12.99 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Colorado is 10th in the nation in fatality rates per 100 million vehicle miles traveled.



Connecticut

Connecticut ranked 35th in overall performance and cost-effectiveness. In last year's rankings, Connecticut ranked 39th overall. Connecticut is 43rd in urban interstate congestion, with 62.38 percent congested. The state tied for 1st in rural interstate condition and 26th in urban interstate condition. Connecticut ranks 43rd in deficient bridges—32.80 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Connecticut is 4th in the nation in fatality rates per 100 million vehicle miles traveled.



Delaware

Delaware ranked 28th in overall performance and cost-effectiveness. In last year's rankings, Delaware ranked 40th overall. Delaware is 40th in urban interstate congestion, with 58.54 percent congested. The state ranks 32nd in urban interstate condition. Delaware ranks 11th in deficient bridges—17.83 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Delaware is 31st in the nation in fatality rates per 100 million vehicle miles traveled.



Florida

Florida ranked 41st in overall performance and cost-effectiveness. In last year's rankings, Florida ranked 41st overall. Florida is 39th in urban interstate congestion, with 56.88 percent congested. The state tied for 1st in rural interstate condition and 9th in urban interstate condition. Florida ranks 12th in deficient bridges—18.26 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Florida is 35th in the nation in fatality rates per 100 million vehicle miles traveled.



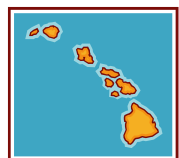
Georgia

Georgia ranked 10th in overall performance and cost-effectiveness. In last year's rankings, Georgia ranked 6th overall. Georgia is 36th in urban interstate congestion, with 54.06 percent congested. The state tied for 1st in rural interstate condition and tied for 1st in urban interstate condition. Georgia ranks 16th in deficient bridges—19.64 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Georgia is 28th in the nation in fatality rates per 100 million vehicle miles traveled.



Hawaii

Hawaii ranked 47th in overall performance and cost-effectiveness. In last year's rankings, Hawaii ranked 46th overall. Hawaii is 17th in urban interstate congestion, with 40.82 percent congested. The state tied for 1st in rural interstate condition and 50th in urban interstate condition. Hawaii ranks 48th in deficient bridges—39.71 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Hawaii is 30th in the nation in fatality rates per 100 million vehicle miles traveled.



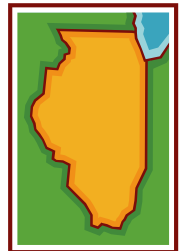
Idaho

Idaho ranked 14th in overall performance and cost-effectiveness. In last year's rankings, Idaho ranked 10th overall. Idaho is 14th in urban interstate congestion, with 35.96 percent congested. The state ranks 24th in rural interstate condition and 41st in urban interstate condition. Idaho ranks 14th in deficient bridges—19.05 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Idaho is 36th in the nation in fatality rates per 100 million vehicle miles traveled.



Illinois

Illinois ranked 34th in overall performance and cost-effectiveness. In last year's rankings, Illinois ranked 33rd overall. Illinois is 21st in urban interstate congestion, with 42.17 percent congested. The state tied for 1st in rural interstate condition and 31st in urban interstate condition. Illinois ranks 10th in deficient bridges—17.79 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Illinois is 15th in the nation in fatality rates per 100 million vehicle miles traveled.



Indiana

Indiana ranked 15th in overall performance and cost-effectiveness. In last year's rankings, Indiana ranked 14th overall. Indiana is 11th in urban interstate congestion, with 30.77 percent congested. The state tied for 1st in rural interstate condition and 17th in urban interstate condition. Indiana ranks 20th in deficient bridges—21.65 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Indiana is 19th in the nation in fatality rates per 100 million vehicle miles traveled.



Iowa

Iowa ranked 32nd in overall performance and cost-effectiveness. In last year's rankings, Iowa ranked 35th overall. Iowa is 20th in urban interstate congestion, with 41.45 percent congested. The state ranks 32nd in rural interstate condition and 47th in urban interstate condition. Iowa ranks 34th in deficient bridges—27.01 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Iowa is 23rd in the nation in fatality rates per 100 million vehicle miles traveled.



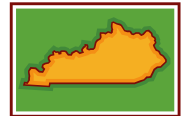
Kansas

Kansas ranked 5th in overall performance and cost-effectiveness. In last year's rankings, Kansas ranked 3rd overall. Kansas is 10th in urban interstate congestion, with 25.11 percent congested. The state tied for 1st in rural interstate condition and tied for 1st in urban interstate condition. Kansas ranks 18th in deficient bridges—20.73 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Kansas is 32nd in the nation in fatality rates per 100 million vehicle miles traveled.



Kentucky

Kentucky ranked 9th in overall performance and cost-effectiveness. In last year's rankings, Kentucky ranked 12th overall. Kentucky is 46th in urban interstate congestion, with 69.05 percent congested. The state tied for 1st in rural interstate condition and 14th in urban interstate condition. Kentucky ranks 36th in deficient bridges—28.59 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Kentucky is 38th in the nation in fatality rates per 100 million vehicle miles traveled.



Louisiana

Louisiana ranked 40th in overall performance and cost-effectiveness. In last year's rankings, Louisiana ranked 30th overall. Louisiana is 32nd in urban interstate congestion, with 47.00 percent congested. The state ranks 44th in rural interstate condition and 42nd in urban interstate condition. Louisiana ranks 37th in deficient bridges—29.88 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Louisiana is 49th in the nation in fatality rates per 100 million vehicle miles traveled.



Maine

Maine ranked 22nd in overall performance and cost-effectiveness. In last year's rankings, Maine ranked 23rd overall. Maine is 5th in urban interstate congestion, with 2.99 percent congested. The state ranks 23rd in rural interstate condition and 23rd in urban interstate condition. Maine ranks 38th in deficient bridges—29.97 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Maine is 18th in the nation in fatality rates per 100 million vehicle miles traveled.



Maryland

Maryland ranked 37th in overall performance and cost-effectiveness. In last year's rankings, Maryland ranked 38th overall. Maryland is 47th in urban interstate congestion, with 69.23 percent congested. The state ranks 25th in rural interstate condition and 37th in urban interstate condition. Maryland ranks 33rd in deficient bridges—26.89 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Maryland is 14th in the nation in fatality rates per 100 million vehicle miles traveled.



Massachusetts

Massachusetts ranked 43rd in overall performance and cost-effectiveness. In last year's rankings, Massachusetts ranked 45th overall. Massachusetts is 25th in urban interstate congestion, with 43.31 percent congested. The state tied for 1st in rural interstate condition and 11th in urban interstate condition. Massachusetts ranks 45th in deficient bridges—36.16 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Massachusetts is 1st in the nation in fatality rates per 100 million vehicle miles traveled.



Michigan

Michigan ranked 42nd in overall performance and cost-effectiveness. In last year's rankings, Michigan ranked 42nd overall. Michigan is 26th in urban interstate congestion, with 43.85 percent congested. The state ranks 48th in rural interstate condition and 38th in urban interstate condition. Michigan ranks 31st in deficient bridges—25.89 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Michigan is 8th in the nation in fatality rates per 100 million vehicle miles traveled.



Minnesota

Minnesota ranked 18th in overall performance and cost-effectiveness. In last year's rankings, Minnesota ranked 13th overall. Minnesota is 49th in urban interstate congestion, with 79.40 percent congested. The state ranks 33rd in rural interstate condition and 12th in urban interstate condition. Minnesota ranks 5th in deficient bridges—13 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Minnesota is 2nd in the nation in fatality rates per 100 million vehicle miles traveled.



Mississippi

Mississippi ranked 38th in overall performance and cost-effectiveness. In last year's rankings, Mississippi ranked 25th overall. Mississippi is 16th in urban interstate congestion, with 40.70 percent congested. The state ranks 43rd in rural interstate condition and 35th in urban interstate condition. Mississippi ranks 30th in deficient bridges—25.47 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Mississippi is 47th in the nation in fatality rates per 100 million vehicle miles traveled.



Missouri

Missouri ranked 13th in overall performance and cost-effectiveness. In last year's rankings, Missouri ranked 17th overall. Missouri is 38th in urban interstate congestion, with 54.79 percent congested. The state tied for 1st in rural interstate condition and 22nd in urban interstate condition. Missouri ranks 40th in deficient bridges—30.50 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Missouri is 33rd in the nation in fatality rates per 100 million vehicle miles traveled.



Montana

Montana ranked 2nd in overall performance and cost-effectiveness. In last year's rankings, Montana ranked 5th overall. Montana tied for 1st in urban interstate congestion, with 0 percent congested. The state ranks 26th in rural interstate condition and 30th in urban interstate condition. Montana ranks 15th in deficient bridges—19.62 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Montana is 50th in the nation in fatality rates per 100 million vehicle miles traveled.



Nebraska

Nebraska ranked 8th in overall performance and cost-effectiveness. In last year's rankings, Nebraska ranked 19th overall. Nebraska is 12th in urban interstate congestion, with 32.79 percent congested. The state tied for 1st in rural interstate condition and 40th in urban interstate condition. Nebraska ranks 27th in deficient bridges—23.82 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Nebraska is 22nd in the nation in fatality rates per 100 million vehicle miles traveled.



Nevada

Nevada ranked 20th in overall performance and cost-effectiveness. In last year's rankings, Nevada ranked 9th overall. Nevada is 37th in urban interstate congestion, with 54.70 percent congested. The state tied for 1st in rural interstate condition and 16th in urban interstate condition. Nevada ranks 1st in deficient bridges—3.92 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Nevada is 43rd in the nation in fatality rates per 100 million vehicle miles traveled.



New Hampshire

New Hampshire ranked 46th in overall performance and cost-effectiveness. In last year's rankings, New Hampshire ranked 34th overall. New Hampshire is 23rd in urban interstate congestion, with 42.67 percent congested. The state ranks 49th in rural interstate condition and 46th in urban interstate condition. New Hampshire ranks 39th in deficient bridges—30.27 percent of the state's bridges are deemed structurally deficient or functionally obsolete. New Hampshire is 3rd in the nation in fatality rates per 100 million vehicle miles traveled.



New Jersey

New Jersey ranked 50th in overall performance and cost-effectiveness. In last year's rankings, New Jersey ranked 50th overall. New Jersey is 45th in urban interstate congestion, with 68.94 percent congested. The state ranks 47th in rural interstate condition and 49th in urban interstate condition. New Jersey ranks 35th in deficient bridges—27.47 percent of the state's bridges are deemed structurally deficient or functionally obsolete. New Jersey is 7th in the nation in fatality rates per 100 million vehicle miles traveled.



New Mexico

New Mexico ranked 3rd in overall performance and cost-effectiveness. In last year's rankings, New Mexico ranked 4th overall. New Mexico is 9th in urban interstate congestion, with 15.38 percent congested. The state tied for 1st in rural interstate condition and 21st in urban interstate condition. New Mexico ranks 8th in deficient bridges—17.71 percent of the state's bridges are deemed structurally deficient or functionally obsolete. New Mexico is 42nd in the nation in fatality rates per 100 million vehicle miles traveled.



New York

New York ranked 45th in overall performance and cost-effectiveness. In last year's rankings, New York ranked 48th overall. New York is 35th in urban interstate congestion, with 51.69 percent congested. The state ranks 45th in rural interstate condition and 44th in urban interstate condition. New York ranks 47th in deficient bridges—38.09 percent of the state's bridges are deemed structurally deficient or functionally obsolete. New York is 6th in the nation in fatality rates per 100 million vehicle miles traveled.



North Carolina

North Carolina ranked 23rd in overall performance and cost-effectiveness. In last year's rankings, North Carolina ranked 31st overall. North Carolina is 48th in urban interstate congestion, with 70.18 percent congested. The state ranks 40th in rural interstate condition and 25th in urban interstate condition. North Carolina ranks 41st in deficient bridges—31.05 percent of the state's bridges are deemed structurally deficient or functionally obsolete. North Carolina is 29th in the nation in fatality rates per 100 million vehicle miles traveled.



North Dakota

North Dakota ranked 1st in overall performance and cost-effectiveness. In last year's rankings, North Dakota ranked 1st overall. North Dakota tied for 1st in urban interstate congestion, with 0 percent congested. The state tied for 1st in rural interstate condition and tied for 1st in urban interstate condition. North Dakota ranks 25th in deficient bridges—23.45 percent of the state's bridges are deemed structurally deficient or functionally obsolete. North Dakota is 25th in the nation in fatality rates per 100 million vehicle miles traveled.



Ohio

Ohio ranked 17th in overall performance and cost-effectiveness. In last year's rankings, Ohio ranked 16th overall. Ohio is 44th in urban interstate congestion, with 64.24 percent congested. The state tied for 1st in rural interstate condition and 13th in urban interstate condition. Ohio ranks 23rd in deficient bridges—23.27 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Ohio is 12th in the nation in fatality rates per 100 million vehicle miles traveled.



Oklahoma

Oklahoma ranked 33rd in overall performance and cost-effectiveness. In last year's rankings, Oklahoma ranked 24th overall. Oklahoma is 13th in urban interstate congestion, with 34.54 percent congested. The state ranks 28th in rural interstate condition and 43rd in urban interstate condition. Oklahoma ranks 42nd in deficient bridges—31.10 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Oklahoma is 34th in the nation in fatality rates per 100 million vehicle miles traveled.



Oregon

Oregon ranked 11th in overall performance and cost-effectiveness. In last year's rankings, Oregon ranked 8th overall. Oregon is 28th in urban interstate congestion, with 45.35 percent congested. The state tied for 1st in rural interstate condition and tied for 1st in urban interstate condition. Oregon ranks 26th in deficient bridges—23.73 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Oregon is 21st in the nation in fatality rates per 100 million vehicle miles traveled.



Pennsylvania

Pennsylvania ranked 36th in overall performance and cost-effectiveness. In last year's rankings, Pennsylvania ranked 36th overall. Pennsylvania is 18th in urban interstate congestion, with 41.05 percent congested. The state ranks 27th in rural interstate condition and 24th in urban interstate condition. Pennsylvania ranks 49th in deficient bridges—39.77 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Pennsylvania is 24th in the nation in fatality rates per 100 million vehicle miles traveled.



Rhode Island

Rhode Island ranked 48th in overall performance and cost-effectiveness. In last year's rankings, Rhode Island ranked 47th overall. Rhode Island is 42nd in urban interstate congestion, with 62 percent congested. The state tied for 1st in rural interstate condition and tied for 1st in urban interstate condition. Rhode Island ranks 50th in deficient bridges—53.43 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Rhode Island is 5th in the nation in fatality rates per 100 million vehicle miles traveled.



South Carolina

South Carolina ranked 6th in overall performance and cost-effectiveness. In last year's rankings, South Carolina ranked 2nd overall. South Carolina is 33rd in urban interstate congestion, with 50 percent congested. The state ranks 34th in rural interstate condition and 10th in urban interstate condition. South Carolina ranks 24th in deficient bridges—23.32 percent of the state's bridges are deemed structurally deficient or functionally obsolete. South Carolina is 44th in the nation in fatality rates per 100 million vehicle miles.



South Dakota

South Dakota ranked 7th in overall performance and cost-effectiveness. In last year's rankings, South Dakota ranked 11th overall. South Dakota is 4th in urban interstate congestion, with 1.45 percent congested. The state tied for 1st in rural interstate condition and 15th in urban interstate condition. South Dakota ranks 29th in deficient bridges—25.12 percent of the state's bridges are deemed structurally deficient or functionally obsolete. South Dakota is 46th in the nation in fatality rates per 100 million vehicle miles traveled.



Tennessee

Tennessee ranked 19th in overall performance and cost-effectiveness. In last year's rankings, Tennessee ranked 20th overall. Tennessee is 30th in urban interstate congestion, with 46.51 percent congested. The state tied for 1st in rural interstate condition and 18th in urban interstate condition. Tennessee ranks 13th in deficient bridges—18.83 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Tennessee is 37th in the nation in fatality rates per 100 million vehicle miles traveled.



Texas

Texas ranked 12th in overall performance and cost-effectiveness. In last year's rankings, Texas ranked 15th overall. Texas is 34th in urban interstate congestion, with 50.67 percent congested. The state tied for 1st in rural interstate condition and 19th in urban interstate condition. Texas ranks 17th in deficient bridges—19.92 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Texas is 26th in the nation in fatality rates per 100 million vehicle miles traveled.



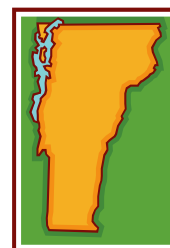
Utah

Utah ranked 25th in overall performance and cost-effectiveness. In last year's rankings, Utah ranked 21st overall. Utah is 31st in urban interstate congestion, with 46.51 percent congested. The state ranks 31st in rural interstate condition and 20th in urban interstate condition. Utah ranks 7th in deficient bridges—16.37 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Utah is 11th in the nation in fatality rates per 100 million vehicle miles traveled.



Vermont

Vermont ranked 30th in overall performance and cost-effectiveness. In last year's rankings, Vermont ranked 37th overall. Vermont is 7th in urban interstate congestion, with 5 percent congested. The state ranks 30th in rural interstate condition and tied for 1st in urban interstate condition. Vermont ranks 44th in deficient bridges—35.71 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Vermont is 9th in the nation in fatality rates per 100 million vehicle miles traveled.



Virginia

Virginia ranked 16th in overall performance and cost-effectiveness. In last year's rankings, Virginia ranked 18th overall. Virginia is 22nd in urban interstate congestion, with 42.63 percent congested. The state tied for 1st in rural interstate condition and 28th in urban interstate condition. Virginia ranks 22nd in deficient bridges—23.10 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Virginia is 16th in the nation in fatality rates per 100 million vehicle miles traveled.



Washington

Washington ranked 39th in overall performance and cost-effectiveness. In last year's rankings, Washington ranked 32nd overall. Washington is 24th in urban interstate congestion, with 42.76 percent congested. The state ranks 42nd in rural interstate condition and 45th in urban interstate condition. Washington ranks 32nd in deficient bridges—26.18 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Washington is 13th in the nation in fatality rates per 100 million vehicle miles traveled.



West Virginia

West Virginia ranked 24th in overall performance and cost-effectiveness. In last year's rankings, West Virginia ranked 26th overall. West Virginia is 6th in urban interstate congestion, with 4.49 percent congested. The state ranks 35th in rural interstate condition and 27th in urban interstate condition. West Virginia ranks 46th in deficient bridges—36.56 percent of the state's bridges are deemed structurally deficient or functionally obsolete. West Virginia is 39th in the nation in fatality rates per 100 million vehicle miles traveled.



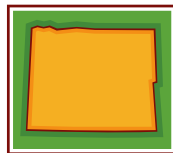
Wisconsin

Wisconsin ranked 21st in overall performance and cost-effectiveness. In last year's rankings, Wisconsin ranked 22nd overall. Wisconsin is 27th in urban interstate congestion, with 44.23 percent congested. The state ranks 37th in rural interstate condition and 29th in urban interstate condition. Wisconsin ranks 6th in deficient bridges—15.41 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Wisconsin is 17th in the nation in fatality rates per 100 million vehicle miles traveled.



Wyoming

Wyoming ranked 4th in overall performance and cost-effectiveness. In last year's rankings, Wyoming ranked 7th overall. Wyoming tied for 1st in urban interstate congestion, with 0 percent congested. The state ranks 29th in rural interstate condition and 33rd in urban interstate condition. Wyoming ranks 3rd in deficient bridges—12.22 percent of the state's bridges are deemed structurally deficient or functionally obsolete. Wyoming is 45th in the nation in fatality rates per 100 million vehicle miles traveled.



Part 8

Technical Notes

This brief technical section summarizes the definitions and sources of the data used in this assessment. The discussion is based on the assumption that comparative cost-effectiveness requires not just data on system condition or performance, but also on what it costs to operate and improve the system.

Mileage by Ownership

Since it is generally easier to achieve high performance with a larger budget than with a smaller one, measures of resources should reflect the different sizes of the state-owned systems. In this study, the mileage of state-owned roads is used as the basic metric for bringing the states to a common basis.

In each state, the state-owned highway systems consist of the State Highway System and other systems, such as toll roads or similar, state-owned smaller systems in state parks, universities, prisons, medical facilities, etc. Each state's responsibility for roads varies. In some, for instance North Carolina, the state is responsible for almost all roads outside of municipalities, while in others, such as New Jersey, the state is responsible for primarily the major multiple-lane roads. In addition, other features, such as bridges, vary with some states having many and others few. Since several agencies are included, this report should not be viewed as a cost-effectiveness study 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.

The source of this data is statistics on State Highway Agency mileage (rural and urban), and other rural state-owned mileage, as reported by each state to the Federal Highway Administration, in Highway Statistics, 2006, Table HM-10. (www.fhwa.dot.gov/policy/ohim/hs06/xls/hm10.xls)

Receipts for State-Administered Highways

Receipts for state-administered highways include all revenues from a variety of sources, including highway user revenues, general fund appropriations, other state fees, bond issuance and debt service, federal funds, and funds from local governments. The source of the data is statistics on revenues used for state-administered highways, as reported by the states in *Highway Statistics, 2006*, Table SF-3, (<http://www.fhwa.dot.gov/policy/ohim/hs06/finance.htm>). Revenues include those of all state-administered roads, not just the state highway system. (Indiana did not report for 2006, so FHWA used 2005).

To bring each state to a common—base, total receipts are divided by total mileage under state control. This produces “receipts per mile of responsibility” a close measure of the *relative* resources each state has to work with per mile of responsibility. All other things being equal, states with higher resources per mile of responsibility should have a better performing system. Since large per-mile revenues are also a burden on taxpayers, the states are ranked inversely by this measure, with the highest per-mile receipts being rated lowest.

Capital and Bridge Disbursements

Disbursements for state-administered highways are of several types: capital and bridge work, maintenance and highway services, administration, research and planning, law enforcement and safety, interest (on bond payments), and bond retirement. ‘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, particularly on ‘capital’ and ‘maintenance’ actions. Most states use contracts with the private sector to build and reconstruct the system, although in some cases they may also use their own workforce for some major jobs. Most states also conduct maintenance largely with agency forces and the work is generally light in character, but some also conduct some major repairs such as thick overlays using contracted forces from the private sector.

The source of data for disbursements for ‘capital and bridges’ is *Highway Statistics, 2006*, Federal Highway Administration, Table SF-4. (www.fhwa.dot.gov/policy/ohim/hs06/finance.htm). (Indiana and Colorado did not report 2006 numbers, so FHWA used 2005 numbers). These disbursements are divided by ‘mileage under state control’ to arrive at a relative measure of capital expenditure per unit of responsibility. Since large per-mile capital and bridge expenditures are also a burden on taxpayers, the states are ranked inversely by this measure, with the highest per-mile expenditures being rated lowest.

Maintenance Disbursements

The source for maintenance disbursements is also Table SF-4, *Highway Statistics 2006*, Federal Highway Administration. (<http://www.fhwa.dot.gov/policy/ohim/hs06/finance.htm>). (Indiana and Colorado did not report 2006 numbers, so FHWA used 2005). These maintenance disbursements are divided by ‘mileage under state control’ to arrive at a relative measure of maintenance activity per unit of responsibility. Since large per-mile maintenance expenditures are also a burden on taxpayers, the states are ranked inversely by this measure, with the highest per-mile expenditures being rated lowest.

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 sometimes vary widely from year to year.

The source for administrative disbursements is also Table SF-4, *Highway Statistics 2006*, Federal Highway Administration. (<http://www.fhwa.dot.gov/policy/ohim/hs06/finance.htm>). (Indiana and Colorado did not report 2006 numbers, so FHWA used 2005). These disbursements are divided by ‘mileage under state control’ to arrive at a relative measure of administrative costs per unit of responsibility. Since large per-mile administrative expenditures are also a burden on taxpayers, the states are ranked inversely by this measure, with the highest per-mile expenditures being rated lowest.

Total Disbursements

Total disbursements represent total state outlays for state-administered roads, and include several categories not detailed above. Usually, states disburse about 2 to 3 percent less funds than they take in, the difference being due to timing differences and delays in getting projects completed. However, states sometimes bring in revenues that are not immediately expended, such as major bond sales, which show up as major increases in ‘receipts’ without a similar increase in disbursements. And sometimes, later-year disbursements can be higher in ‘receipts’ as states move money into projects without increasing revenues.

The source for total disbursements is also Table SF-4, *Highway Statistics 2006*, Federal Highway Administration. (<http://www.fhwa.dot.gov/policy/ohim/hs06/finance.htm>). (Indiana and Colorado did not report 2006 numbers, so FHWA used 2005 numbers). These disbursements are divided by ‘mileage under state control’ to arrive at a relative measure of administrative costs per unit of

responsibility. Since large per-mile total expenditures are also a burden on taxpayers, the states are ranked inversely by this measure.

Rural Interstate Poor-Condition Mileage

Perhaps no measure is more fundamental to road performance than a measure of 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), essentially a measure of surface ‘bumpiness’ in inches of vertical deviation per mile of length. The states use a variety of procedures in gathering this data, but most use mechanical or laser equipment driven over the road system. They often supplement this 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.

Higher ‘roughness index’ scores mean a worse condition. By convention, interstate sections with roughness of greater than 170 inches per mile of roughness (about three inches of vertical variation per 100 feet of road) are classified as ‘poor’ in most reports. Roads classified as poor typically have visible bumps and create noticeable annoying bumpiness in vehicles. By comparison, sections with less than 60 inches of roughness per mile (about one inch per 100 feet) would be classified as ‘excellent’. These measures also vary by section length: long smooth sections (greater than one mile in length) tend to dampen out short rough ones, so if a state has long sections in its database it can report very little ‘rough mileage’ as a percent of the system, even though it has some.

The source of road roughness data is also *Highway Statistics 2006*, Federal Highway Administration, Table HM-64. (<http://www.fhwa.dot.gov/policy/ohim/hs06/xls/hm64.xls>). This table shows miles by roughness for several functional classes for each state. We use the mileage at IRI greater than 170 inches per mile. This mileage is then converted into a percent to account for different sizes of rural interstate systems in each state. (Note: Delaware has no rural interstate and is not rated on this measure.)

Rural Other Principal Arterial Poor-Condition Mileage

Rural other principal arterials are the major inter-city connectors, off the interstate system, connecting regions of states. They can be U.S.-numbered and state-numbered roads, and sometimes toll roads or parkways. This system would generally be a top priority of most state highway agencies because of its importance to the economic wellbeing of the state.

The roughness measure used for rural other principal arterials is also the International Roughness Index (IRI). By convention, however, road sections with greater than 220 inches per mile of roughness are classified as ‘poor’ in most reports. The cutoff is higher than for interstate since speeds on these roads are typically lower and roughness not as noticeable.

The source of this road roughness data is also *Highway Statistics 2006*, Federal Highway Administration, Table HM-64. (<http://www.fhwa.dot.gov/policy/ohim/hs06/xls/hm64.xls>). We use the mileage at IRI greater than 220 inches per mile. This mileage is then converted into a percent to account for different sizes of rural other principal arterial systems in each state.

Urban Interstate Poor-Condition Mileage

The measure used for urban interstate road condition is also the International Roughness Index (IRI), with the same cutoff—170 inches per mile or higher—for ‘poor’ mileage.

The source of road roughness data is also *Highway Statistics 2006*, Federal Highway Administration, Table HM-64. (<http://www.fhwa.dot.gov/policy/ohim/hs06/xls/hm64.xls>). This table shows miles by roughness for several functional classes for each state. We use the mileage at IRI greater than 170 inches per mile. This mileage is then converted into a percent, to account for different sizes of urban interstate systems in each state.

Urban Interstate Congestion

Urban interstate congestion is measured as the ratio of traffic volume to the maximum carrying capacity of each road section. Road capacity is limited by driver skill, traffic, and geometric characteristics. For most modern interstates, carrying capacity is about 2,400 vehicles per lane per hour, or one vehicle each 1.5 second passing by a roadside observer. Congestion (the delay caused by the presence of other vehicles) builds up incrementally as vehicles compete for road space and have to slow to avoid each other and drive safely. Maximum flow (and maximum delay) at capacity, defined as 2,400 vehicles per lane per hour, occurs not at high speeds but at about 40-45 mph. However, even at lower flow rates, some congestion occurs.

The source of urban interstate congestion data is Table HM 61, *Highway Statistics 2006*, Federal Highway Administration (<http://www.fhwa.dot.gov/policy/ohim/hs06/xls/hm61.xls>). Data is shown as miles of road, in each state, with various volume/capacity ratios. We use 0.70 as the cutoff for ‘congested’; although other studies sometimes use 0.80 and 0.95 as cutoffs, the use of these higher cutoffs would result in modest congestion not being counted, a distinct advantage for rural states.

Of course, traffic volumes have generally been rising over time, increasing congestion. But since driver skills and road geometrics have also been improving over time, road capacity is also rising, although not as rapidly as traffic. The definition of maximum flow was 2,000 vehicles per lane per hour until 1994, then 2,200 in 2000, and now is 2,400 vehicles per lane per hour. For this reason, comparisons of congestion trends before about 2001 should be cautious.

Fatality Rates

Road safety is an undisputed 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 source of the data for fatality rates is from two tables in Highway Statistics. Table FI-20, *Highway Statistics 2006*, Federal Highway Administration (<http://www.fhwa.dot.gov/policy/ohim/hs06/xls/fi20.xls>) provides a count of fatalities by state and functional class for 2006. Table HM 81 (<http://www.fhwa.dot.gov/policy/ohim/hs06/xls/hm81.xls>) provides an estimate of daily vehicle-miles of travel, for the state highway system, by state. At the time of this analysis, an estimate of total state VMT was not available, so the daily SHA VMT for 2005 and 2006 was used to estimate total 2006 VMT.

Deficient Bridges

As a result of several major bridges disasters in the 1960s and 1970s, states are required to inspect bridges biennially (every year if rated structurally deficient) and maintain uniform records of inspections. This data source, called the National Bridge Inventory, is the source of information on deficient bridges. Bridges are classified as ‘deficient’ if their structural elements score poorly, or if they are no longer functionally adequate for the road system.

Our source for deficient bridges is an annual summary of bridges deficiencies prepared by *Better Roads*, a trade publication. Each year, *Better Roads* asks the state highway agencies to summarize their bridge inventories. The data, published in November of each year, generally report the inventory as of September/October, which represents bridges in various stages of inspection. For our purposes we consider the *Better Roads* data to be representative of about a year earlier, 2006, since some would have been inspected in late 2007 and others as long ago as 2005.

Narrow Lanes on Rural Other Principal Arterials

Narrow lanes on rural roads are a surrogate measure for system quality since no data on other (perhaps more accurate) features, such as sight distance, shoulder width, or pavement edge drop-offs, are readily available nationwide. The standard lane width for most major rural roads is 12 feet, and it is unlikely that a major rural road would be upgraded without widening its lanes to that standard.

The data source for our measure is also *Highway Statistics 2006*, Table HM-52, Federal Highway Administration (<http://www.fhwa.dot.gov/policy/ohim/hs06/xls/hm53.xls>). This table shows the mileage of roads by functional class, in various lane-width categories, by state. We use the

percentage of mileage on the rural other principal arterial system with less than 12-ft lanes, to adjust for different system lengths in different states.

Overall Ratings

Overall ratings for each state are developed in several steps.

- First, the relative performance of each state on each of the 12 performance measures is determined by computing each state's 'performance ratio.' This is defined as the ratio of each state's measure to the weighted U.S. mean for the measure. The mathematical structure is as follows:

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

N = Number of measures (12; 11 for Delaware, which has no rural interstate)

R_{is} = Performance Ratio for State s, measure i.
 $= M_{is} / \mathbf{M}$, where \mathbf{M} is the aggregate (weighted) mean of M over the 50 states.

- For the five financial measures, these ratios are adjusted again for the 'average width' of each state's state-owned system, on the assumption that states with 'wider' roads should be given some credit for the extra per-mile cost of that.

$R'_{is} = R_{is} (L/L_s)$

Then, all 12 ratios (11 ratios for Delaware) are averaged:

$$\text{Grand Performance Ratio}_{\text{state}} = \left(\sum_{\text{mode}}^N R_{is} \right) / 12$$

This method essentially treats each of the 12 measures as equally important.

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