Reason

December 2009

18th Annual Report on the Performance of State Highway Systems (1984-2007/8)

by David T. Hartgen, Ph.D., P.E., Ravi K. Karanam, and M. Gregory Fields
Project Director: Adrian T. Moore, Ph.D.

POLICY BRIEF 380

Reason Foundation

Reason Foundation's mission is to advance a free society by developing, applying and promoting libertarian principles, including individual liberty, free markets and the rule of law. We use journalism and public policy research to influence the frameworks and actions of policymakers, journalists and opinion leaders.

Reason Foundation's nonpartisan public policy research promotes choice, competition and a dynamic market economy as the foundation for human dignity and progress. Reason produces rigorous, peer-reviewed research and directly engages the policy process, seeking strategies that emphasize cooperation, flexibility, local knowledge and results. Through practical and innovative approaches to complex problems, Reason seeks to change the way people think about issues and promote policies that allow and encourage individuals and voluntary institutions to flourish.

Reason Foundation is a tax-exempt research and education organization as defined under IRS code 501(c)(3). Reason Foundation is supported by voluntary contributions from individuals, foundations and corporations. The views expressed in these essays are those of the individual author, not necessarily those of Reason Foundation or its trustees.

Reason Foundation

18th Annual Report on the Performance of State Highway Systems (1984-2007/8)

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

Table of Contents

Part 1

Overview

Reason Foundation's 18th Annual Highway Report tracks the performance of state-owned roads of the United States from 1984 to 2007, with some recent information (fatalities, bridge condition and travel) for 2008. Eleven indicators make up each state's overall rating and cover highway expenditures, pavement and bridge condition, urban congestion, fatality rates and narrow lanes. The study is based on spending and performance data submitted to the federal government by the state highway agencies.

The overall condition of the state-owned highway system continued to generally improve from 2006 to 2007, but several key indicators of performance worsened. Five of seven key condition indicators improved, but the percentage of deficient bridges worsened for the first time in 25 years. And after several years of improvement, the proportion of urban interstates in poor condition also worsened between 2006 and 2007. Table 1 summarizes the trends for key indicators.

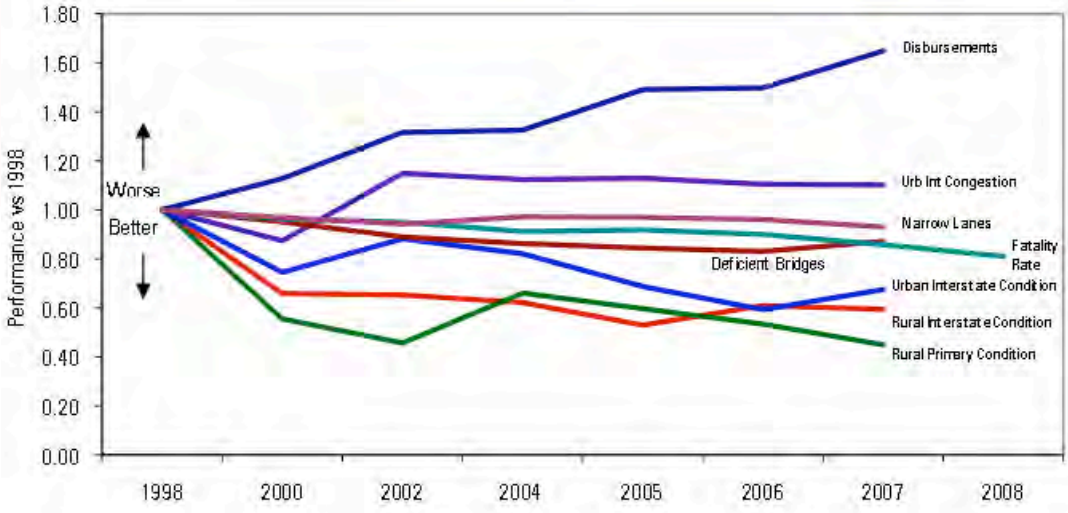
Table 1: Performance of State-Owned Highways, 1998-2007

Statistic	1998	2004	2005	2006	2007	% Change (2006-07)
Mileage under State Control	812,987	810,707	812,871	814,770	815,504	0.09
Total Revenues, All Sources, $B	$67.80	$90.68	$102.71	$104.73	NA*	NA*
Total Disbursements, $B	$66.40	$87.69	$98.91	$99.61	$109.71	10.14
Disbursements, Capital/Bridges, $B	$36.30	$47.74	$50.31	$54.66	$62.57	14.47
Disbursements, Maintenance, $B	$11.40	$14.29	$15.94	$17.07	$20.00	17.18
Disbursements, Administration, $B	$4.70	$6.32	$6.36	$7.02	$7.91	12.80
Highway Construction Price Index	126.9	154.4	175.4	185.9	205.2	10.3
Rural Interstate, Percent Poor Condition	3.25	2.02	1.72	1.98	1.93	-2.53
Urban Interstate, Percent Poor Condition	8.69	7.13	5.97	5.15	5.86	13.79
Rural Arterial, Percent Poor Condition	1.42	0.94	0.85	0.76	0.64	-15.79
Urban Interstate, Percent Congested	45.9	51.6	51.85	50.72	50.59	-0.26
Bridges, Percent Deficient	29.0	25.0	24.53	24.13	25.29	4.94
Fatality Rate per 100M Miles Driven	1.58	1.44	1.453	1.421	1.355	-4.64
Rural Arterial, Percent Narrow Lanes	11.04	10.72	10.70	10.60	10.27	-3.11

*The revenue data used in all previous studies were not available from the government this year, so we dropped this measure from the assessment. This will have an impact on the overall rankings as compared to previous years, but we expect this impact to be slight, with most states seeing a one or two-rank shift at most. In 2006, if the receipt data had been omitted, 17 states would have seen no change in rank, 15 states would have moved one slot, 12 states two slots, 5 states three slots, and one state four slots. It is likely that a similar shift would occur in other years if the revenue data were omitted from consideration.

Spending for state-owned roads surged 10.1 percent between 2006 and 2007. Expenditures for bridge and capital actions increased even faster, 14.5 percent, from $54.66 billion to $62.57 billion. Capital and bridge expenditures now account for about 56.7 percent of the state highway budget. Maintenance expenditures increased faster still, 17.2 percent, from $17.07 billion to $20.00 billion, and account for about 18.2 percent of the budget. Administrative costs also rose 12.8 percent, from $7.02 billion to $ 7.91 billion, and now account for 7.2 percent of state highway spending.

Figure 1: Trends in U.S. Highway Performance



States continued to make progress in overall performance, and in some cases the improvements were dramatic. The percent of rural primary pavement in poor condition decreased 15.8 percent, falling from 0.76 percent poor to 0.64 percent poor. Close behind was the fatality rate, which decreased 4.6 percent from 1.421 deaths per 100 million vehicle-miles traveled to 1.355. This is a very large improvement indeed, but has been bested by even more dramatic performance in 2008. According to early estimates 37,313 people died on state highways, or 1.28 fatalities per 100 million vehicle-miles in 2008. Urban interstate congestion improved 0.25 percent, and the percentage of poor rural interstates and narrow lanes on rural primary roads decreased 2.5 percent and 3.1 percent, respectively.

On the downside, two key indicators worsened. Bridges rated deficient or structurally obsolete increased from 24.13 percent to 25.29 percent, the first worsening of this key statistic since our data began in 1984. Urban interstates with poor pavement also worsened sharply, from 5.15 percent to 5.86 percent. So, even though funding surged forward, the resulting system improvement was mixed.

This latest data highlight the difficulty of making across-the-board progress in road conditions. Over one quarter of the nation's bridges are rated deficient. Urban interstate conditions are worsening again. And progress in reducing urban congestion has slowed to a crawl.

The study continues to find wide variations among the states in road performance, and an increasing concentration of problems:

- About 53 percent of the poor-condition urban interstate mileage is in just four states (California, New York, New Jersey and Texas).
- About 64 percent of all the poor-condition rural interstate mileage in the U.S. is in just four states (California, New York, Alaska and Louisiana).
- About 49 percent of all the poor-condition mileage rural primary roads is in just five states (Alaska, Oklahoma, Iowa, California and South Dakota).
- Poor-condition mileage is increasingly a local problem rather than a national problem. And four states (California, Minnesota, Maryland and New Jersey) have more than 70 percent of their urban interstates congested.
- The states also vary widely by fatality rates: Massachusetts has a fatality rate less than half that of Montana, which has the highest rate.

This year's report adds a new analysis, tracking individual state trends in expenditures and performance from 2002 to 2007. Twenty states, led by Nebraska, Montana and North Carolina, improved their systems while spending less than the national average. Ten other states, led by Ohio and Utah, improved their systems but spent more than the national average. However, the systems of 10 states worsened as their states spent less than the national average, and 10 states worsened even though they spent more than the national average. The findings highlight the increasing difficulties that some states have in making progress.

Part 2

Overall Highway Performance Rank by 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 thin budgets.

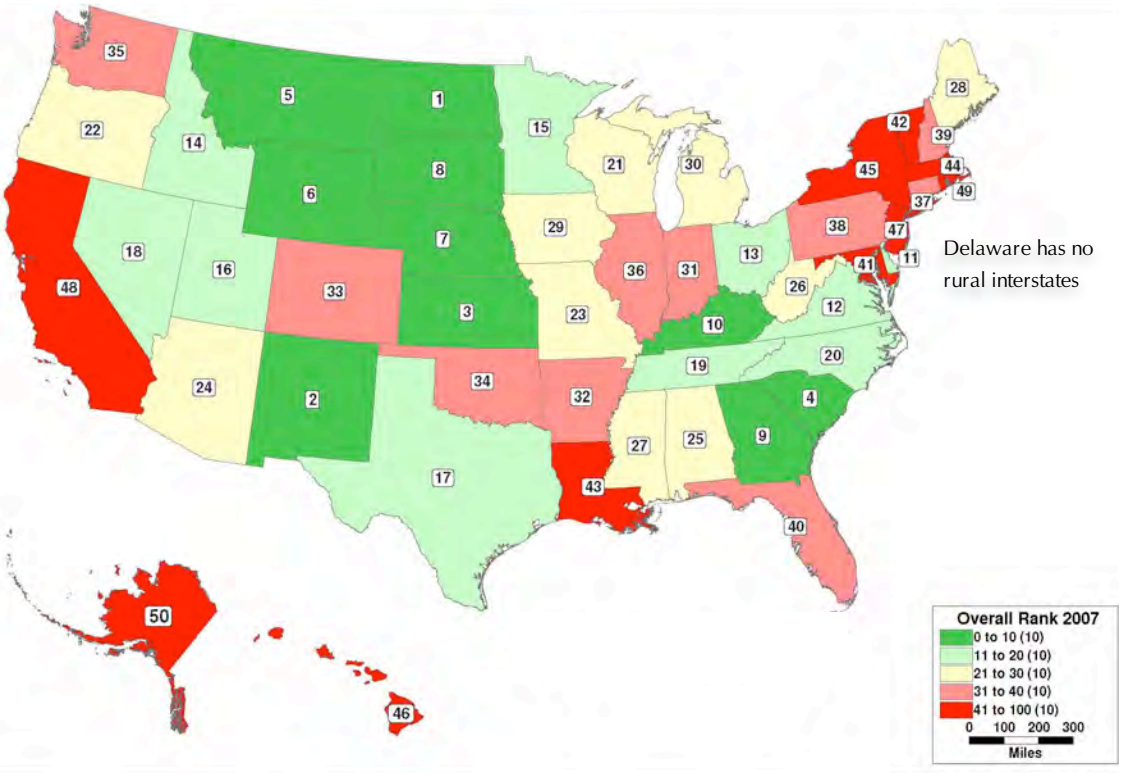
The following tables show the results for 2007.

Table 2: 2007 Overall Performance Rank by State			
1	North Dakota	26	West Virginia
2	New Mexico	27	Mississippi
3	Kansas	28	Maine
4	South Carolina	29	Iowa
5	Montana	30	Michigan
6	Wyoming	31	Indiana
7	Nebraska	32	Arkansas
8	South Dakota	33	Colorado
9	Georgia	34	Oklahoma
10	Kentucky	35	Washington
11	Delaware	36	Illinois
12	Virginia	37	Connecticut
13	Ohio	38	Pennsylvania
14	Idaho	39	New Hampshire
15	Minnesota	40	Florida
16	Utah	41	Maryland
17	Texas	42	Vermont
18	Nevada	43	Louisiana
19	Tennessee	44	Massachusetts
20	North Carolina	45	New York
21	Wisconsin	46	Hawaii
22	Oregon	47	New Jersey
23	Missouri	48	California
24	Arizona	49	Rhode Island
25	Alabama	50	Alaska

Table 3: Overall Performance Rank by State, Historical Comparison				
State	1998 Overall Performance Rank	2006 Overall Performance Rank	2007 Overall Performance Rank	Change in Rank, 2006-2007
Delaware	38	28	11	+17
Michigan	42	42	30	+12
Mississippi	19	38	27	+11
Utah	30	25	16	+9
New Hampshire	16	46	39	+7
Virginia	18	16	12	+4
Ohio	28	17	13	+4
Alabama	10	29	25	+4
Washington	24	39	35	+4
Minnesota	32	18	15	+3
North Carolina	35	23	20	+3
Iowa	25	32	29	+3
New Jersey	50	50	47	+3
Kansas	11	5	3	+2
South Carolina	4	6	4	+2
Nevada	13	20	18	+2
Arizona	20	26	24	+2
New Mexico	31	3	2	+1
Nebraska	17	8	7	+1
Georgia	6	10	9	+1
Florida	40	41	40	+1
Hawaii	46	47	46	+1
North Dakota	1	1	1	0
Idaho	5	14	14	0
Tennessee	26	19	19	0
Wisconsin	29	21	21	0
New York	48	45	45	0
South Dakota	15	7	8	-1
Kentucky	9	9	10	-1
Oklahoma	27	33	34	-1
Massachusetts	49	43	44	-1
Rhode Island	43	48	49	-1
Alaska	21	49	50	-1
Wyoming	2	4	6	-2
West Virginia	22	24	26	-2
Colorado	45	31	33	-2
Illinois	36	34	36	-2
Connecticut	41	35	37	-2

Table 3: Overall Performance Rank by State, Historical Comparison				
State	1998 Overall Performance Rank	2006 Overall Performance Rank	2007 Overall Performance Rank	Change in Rank, 2006-2007
Pennsylvania	33	36	38	-2
Montana	3	2	5	-3
Louisiana	39	40	43	-3
Maryland	37	37	41	-4
California	44	44	48	-4
Texas	7	12	17	-5
Arkansas	47	27	32	-5
Maine	12	22	28	-6
Missouri	14	13	23	-10
Oregon	8	11	22	-11
Vermont	34	30	42	-12
Indiana	23	15	31	-16

Figure 2: Overall Highway Performance Rank, 2007



Several states improved their rankings sharply from 2006:

- **Delaware** moved up 17 positions from 28th to 11th by cutting disbursements without sacrificing condition.
- **Michigan** moved up 12 positions from 42nd to 30th reporting a very large improvement in rural pavement condition.
- **Mississippi** moved up 11 positions, from 38th to 27th by sharp improvements in both urban and rural interstate condition.
- **Utah** improved 10 positions from 25th to 16th by substantially reducing the mileage of poor urban interstate.
- **New Hampshire** moved up 7 positions from 46th to 39th by sharply improving rural and urban interstate conditions.

On the other hand, several states lost ground between 2006 and 2007:

- **Indiana** fell 16 positions, from 15th to 31st due to a sharp increase in disbursements per mile and a sharp decline in urban interstate condition.
- **Vermont** slipped 12 positions, from 30th to 42nd with a very large increase in poor rural and urban interstate mileage.
- **Oregon** slipped 11 slots, from 11th to 22nd due to a recalculation of state-controlled mileage.
- **Missouri** lost 10 positions, from 13th to 23rd resulting from a large increase in the budget and a quadrupling of maintenance funds. However, congestion decreased. The additional maintenance expenditure should show up in better system condition in future years.
- **Maine** fell 6 slots from 22th to 28nd due to an increase in deficient bridgets and worsened condition of rural arterials.

Part 3

Performance Indicators

Detailed data and trends in rankings for each of the states are shown in the following tables. Selected system condition measures are also shown in the following maps. For a more detailed look at overall state ranks and the comparative performance of state highway systems, please go to the Reason Foundation website (www.reason.org).

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 815,504 miles are under state control (Table 4, State-Controlled Highway Mileage), about 734 more miles than in 2006. The smallest state-owned road systems continue to be Hawaii (999 miles) and Rhode Island (1,108 miles); the largest are Texas (80,134 miles) and North Carolina (80,036 miles). Despite the massive size of the system, Texas ranks 17th in overall cost-effectiveness. In contrast, Hawaii, with the smallest system ranks 46th in cost-effectiveness. Texas continues to be the state with largest state-owned system.

Table 4: State-Controlled Highway Mileage, 2007

Rank	State	Mileage	Rank	State	Mileage
1	TX	80,134	26	MS	11,046
2	NC	80,036	27	KS	10,607
3	VA	57,766	28	NE	10,218
4	PA	43,621	29	CO	9,752
5	SC	41,628	30	MI	9,711
6	WV	34,304	31	IA	9,438
7	MO	33,685	32	ME	8,676
8	KY	27,849	33	SD	8,488
9	OH	22,508	34	OR	8,163
10	CA	18,336	35	WY	7,857
11	GA	18,040	36	AK	7,476
12	WA	17,837	37	ND	7,407
13	IL	16,765	38	AZ	7,213
14	LA	16,698	39	NV	5,925
15	AR	16,440	40	UT	5,831
16	NY	16,296	41	MD	5,409
17	TN	14,232	42	DE	5,345
18	OK	13,496	43	ID	4,959
19	MN	12,905	44	NH	4,034
20	NM	12,198	45	CT	4,022
21	FL	12,062	46	MA	3,606
22	WI	11,838	47	NJ	3,333
23	IN	11,188	48	VT	2,843
24	AL	11,105	49	RI	1,108
25	MT	11,071	50	HI	999
				U.S.	815,504
				Average	16,310

State Highway Agency Mileage

Some 777,741 miles are the responsibility of the 50 state highway agencies. 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 2.38 lanes, but a few states (New Jersey, Florida, California and Massachusetts) manage significantly wider roads (Table 5, State Highway Agency Mileage).

Table 5: State Highway Agency Mileage, 2007

Rank	State	Miles	Lane Miles	Ratio	Rank	State	Miles	Lane Miles	Ratio
1	WV	34,217	70,491	2.06	26	OK	12,284	30,057	2.45
2	AK	5,651	11,698	2.07	27	MN	11,881	29,180	2.46
3	ME	8,519	18,111	2.13	28	WI	11,769	29,417	2.50
4	NC	79,288	169,612	2.14	29	MS	10,957	27,395	2.50
5	VA	57,727	124,891	2.16	30	CO	9,092	22,912	2.52
6	SC	41,437	89,861	2.17	31	IN	11,188	28,358	2.53
7	DE	5,309	11,642	2.19	32	OH	19,266	48,970	2.54
8	PA	39,871	88,445	2.22	33	NY	14,969	38,055	2.54
9	NH	3,990	8,857	2.22	34	AL	10,936	28,098	2.57
10	KY	27,547	61,386	2.23	35	IA	8,887	22,974	2.59
11	MO	33,685	75,471	2.24	36	HI	939	2,442	2.60
12	AR	16,439	37,025	2.25	37	UT	5,831	15,188	2.60
13	NE	9,955	22,486	2.26	38	WA	7,044	18,392	2.61
14	MT	10,785	24,469	2.27	39	IL	16,058	41,977	2.61
15	VT	2,633	6,043	2.30	40	TN	13,886	36,420	2.62
16	ND	7,384	16,987	2.30	41	RI	1,105	2,908	2.63
17	SD	7,843	18,071	2.30	42	CT	3,717	9,789	2.63
18	LA	16,681	38,458	2.31	43	GA	17,914	47,273	2.64
19	WY	6,753	15,612	2.31	44	AZ	6,785	18,752	2.76
20	KS	10,369	23,997	2.31	45	MI	9,673	27,503	2.84
21	TX	79,975	192,345	2.41	46	MD	5,150	14,675	2.85
22	OR	7,536	18,266	2.42	47	MA	2,833	8,655	3.06
23	NV	5,383	13,058	2.43	48	CA	15,269	50,732	3.32
24	ID	4,959	12,093	2.44	49	FL	12,062	42,080	3.49
25	NM	11,983	29,301	2.45	50	NJ	2,327	8,504	3.65
						U.S.	777,741	1,849,382	2.38

Capital and Bridge Disbursements

Capital and bridge disbursements for state-owned roads totaled $62.57 billion in 2007, about 14.5 percent higher than in 2006. This again reflects the "surge" forward due to financing from SAFETEA-LU, as well as renewed attention after the I-35W Mississippi River bridge collapse in Minneapolis, Minnesota on August 1, 2007.

Since 1984, per-mile capital and bridge disbursements have increased about 284 percent. Per-mile capital and bridge disbursements averaged $76,726 in 2007 compared to $67,089 in 2006. In 2007, the state with the lowest capital and bridge disbursements state-controlled mile was South Carolina at $14,466 disbursements per mile of responsibility, while the highest was New Jersey with $568,736 disbursements state-controlled mile (Table 6, Capital and Bridge Disbursements per State-Controlled Mile).

Note: New Mexico did not report 2007 disbursement data, so the data shown are for 2006.

Table 6: Capital and Bridges Disbursements per State-Controlled Mile, 2007

Rank	State	Disbursements state-controlled mile	Rank	State	Disbursements state-controlled mile
1	SC	$14,466	26	ID	$72,522
2	VA	$18,652	27	AL	$78,696
3	WV	$18,784	28	OH	$80,599
4	NC	$21,778	29	WA	$80,738
5	SD	$26,391	30	LA	$81,990
6	MT	$28,458	31	WI	$84,671
7	NE	$31,319	32	OR	$86,871
8	NM	$31,328	33	MS	$101,192
9	ME	$32,005	34	IN	$101,254
10	AR	$34,371	35	AZ	$107,416
11	WY	$34,778	36	NV	$109,660
12	ND	$40,126	37	GA	$112,239
13	MO	$40,289	38	TX	$120,372
14	KY	$43,984	39	CT	$124,041
15	OK	$47,259	40	UT	$127,792
16	AK	$49,396	41	MI	$141,502
17	VT	$50,956	42	NY	$166,345
18	DE	$51,733	43	IL	$177,992
19	PA	$58,531	44	HI	$185,904
20	KS	$59,833	45	MA	$197,258
21	IA	$60,070	46	MD	$227,990
22	CO	$60,723	47	RI	$232,891
23	NH	$61,377	48	CA	$264,175
24	MN	$62,505	49	FL	$427,145
25	TN	$65,360	50	NJ	$568,736
				U.S.	$76,726

Maintenance Disbursements

Maintenance disbursements increased by 17.2 percent from 2006 to 2007, from $17.07 billion in 2006 to $20.0 billion in 2007, and accounted for about 18.2 percent of total disbursements.

Since 1984, maintenance disbursements have increased about 232 percent, averaging about $24,531 state-controlled mile in 2007. The lowest per-mile maintenance disbursement was $2,765 in North Dakota; the highest $132,071 in New Jersey (Table 7, Maintenance Disbursements per State-Controlled Mile).

Note: New Mexico did not report 2007 disbursement data, so the data shown are for 2006.

Table 7: Maintenance Disbursements per State-Controlled Mile, 2007

Rank	State	Disbursements per Mile	Rank	State	Disbursements per Mile
1	ND	$2,765	26	LA	$18,850
2	WV	$7,045	27	ID	$20,086
3	SD	$7,450	28	UT	$20,491
4	AR	$8,573	29	WA	$21,607
5	MT	$8,630	30	DE	$22,741
6	NC	$9,925	31	VT	$25,704
7	KY	$11,325	32	CO	$26,347
8	GA	$11,353	33	MN	$29,263
9	NE	$11,975	34	MI	$29,285
10	SC	$13,173	35	AK	$30,619
11	OK	$13,306	36	IL	$35,232
12	MS	$14,913	37	HI	$36,855
13	AL	$14,970	38	PA	$36,899
14	KS	$15,187	39	CA	$37,208
15	NV	$15,407	40	CT	$39,957
16	WY	$15,822	41	MO	$52,621
17	IA	$16,004	42	NH	$54,524
18	WI	$16,240	43	IN	$59,747
19	NM	$16,522	44	OR	$60,111
20	AZ	$16,741	45	FL	$72,201
21	VA	$17,127	46	MD	$76,495
22	TN	$17,301	47	RI	$80,457
23	TX	$17,468	48	MA	$85,044
24	OH	$18,013	49	NY	$128,044
25	ME	$18,833	50	NJ	$132,071
				U.S.	$24,531

Administrative Disbursements

Administrative disbursements increased 12.8 percent, from $7.02 billion in 2006 to $7.91 billion in 2007. Administrative costs accounted for about 7.21 percent of total disbursements, up slightly from 7.04 percent in 2006.

Since 1984, per-mile administrative disbursements have increased about 271.4 percent. On a per-mile basis, 2007 administrative disbursements averaged $9,705, ranging from a low of $853 in Kentucky to a high of $70,131 in Massachusetts (Table 8, Administrative Disbursements per State-Controlled Mile).

Note: New Mexico did not report 2007 disbursement data, so the data shown are for 2006.

Table 8: Administrative Disbursements per State-Controlled Mile, 2007

Rank	State	Disbursements per Mile	Rank	State	Disbursements per Mile
1	KY	$853	26	MN	$11,038
2	AR	$1,888	27	PA	$11,057
3	ND	$1,951	28	MI	$11,670
4	MO	$2,079	29	WI	$12,361
5	WV	$2,396	30	NH	$12,456
6	SC	$2,688	31	MT	$12,753
7	LA	$2,950	32	UT	$12,938
8	NE	$2,987	33	VT	$12,969
9	NC	$3,434	34	IL	$13,603
10	ME	$3,935	35	DE	$13,863
11	TX	$4,117	36	GA	$14,036
12	ID	$5,227	37	MD	$15,631
13	IA	$5,279	38	AL	$17,731
14	SD	$5,562	39	FL	$18,628
15	VA	$5,756	40	CO	$20,008
16	KS	$5,798	41	NY	$20,085
17	NM	$6,053	42	NV	$23,950
18	MS	$6,903	43	IN	$31,682
19	WY	$6,963	44	CT	$34,556
20	WA	$7,062	45	AZ	$40,409
21	AK	$7,200	46	RI	$47,775
22	OK	$8,045	47	HI	$59,513
23	OH	$8,976	48	NJ	$62,603
24	TN	$10,112	49	CA	$62,640
25	OR	$10,376	50	MA	$70,131
				U.S.	$9,705

Total Disbursements

In total, the states disbursed about $109.714 billion for state-owned roads in 2007, some 10.14 percent higher than the $99.609 billion in 2006. However, since highway construction costs increased 11 percent, this actually represents a 1 percent decline in purchasing power from 2006.

Since 1984, per-mile total disbursements have increased about 262 percent. On a per-mile basis, 2007 disbursements averaged $134,535. The lowest disbursement per mile was $30,810 in West Virginia; the highest was over $1 million per mile in New Jersey. Three states (Montana, Arizona, and Hawaii) reported administrative disbursements of greater than 15 percent of the budget (Table 9, Total Disbursements per State-Controlled Mile).

Note: New Mexico did not report 2007 disbursement data, so the data shown are for 2006.

Table 9: Total Disbursements per State-Controlled Mile, 2007

Rank	State	Disbursements per Mile	Rank	State	Disbursements per Mile
1	WV	$30,810	26	MS	$130,312
2	SC	$34,382	27	PA	$131,997
3	NC	$40,567	28	WA	$134,461
4	SD	$42,503	29	OH	$135,749
5	ND	$47,673	30	CO	$137,536
6	VA	$49,958	31	WI	$140,793
7	AR	$53,089	32	GA	$152,176
8	NE	$54,322	33	TX	$158,047
9	MT	$54,407	34	NH	$163,611
10	WY	$61,643	35	NV	$179,450
11	ME	$64,255	36	UT	$192,024
12	NM	$67,658	37	OR	$196,358
13	KY	$67,774	38	AZ	$201,910
14	OK	$91,211	39	MI	$219,356
15	IA	$93,423	40	IN	$270,002
16	AK	$94,900	41	IL	$270,192
17	TN	$95,364	42	CT	$305,356
18	KS	$101,544	43	HI	$335,135
19	MO	$105,728	44	MD	$376,099
20	VT	$106,656	45	NY	$407,122
21	ID	$111,979	46	RI	$436,320
22	LA	$115,022	47	CA	$455,529
23	MN	$116,836	48	FL	$619,596
24	AL	$125,019	49	MA	$660,456
25	DE	$126,545	50	NJ	$1,155,149
				U.S.	$134,535

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 1.93 percent of U.S. rural interstates—580 miles out of 30,040—were reported in poor condition in 2007. Rural interstate condition has shown a slight improvement from 2006, when 1.98 percent of rural interstates were rated poor. However, the percentage of poor miles has consistently hovered near 2 percent since 2002, indicating that progress is becoming increasingly difficult.

The amount of poor mileage varies widely by state. Twenty states reported no poor mileage, and 10 more reported less than 1 percent poor mileage. On the other hand, four states (New York, Louisiana, New Jersey and Alaska) reported 5-10 percent poor mileage, and California reported more than 10 percent poor mileage (16.32 percent poor). California, in 2007, reported a total of 209 miles of rural interstate in poor condition, up significantly from just 49 miles reported to be in poor condition in 2006.

Poor-mileage interstate is increasingly a local problem rather than a national problem. About 64 percent of all the poor-condition rural interstate in the U.S. is in just four states (CA, NY, AK and LA), and two of these (CA and NY) have almost half (Table 10, Rural Interstate Condition, and Figure 3).

Figure 3: Percent of Rural Interstates in Poor Condition, 2007

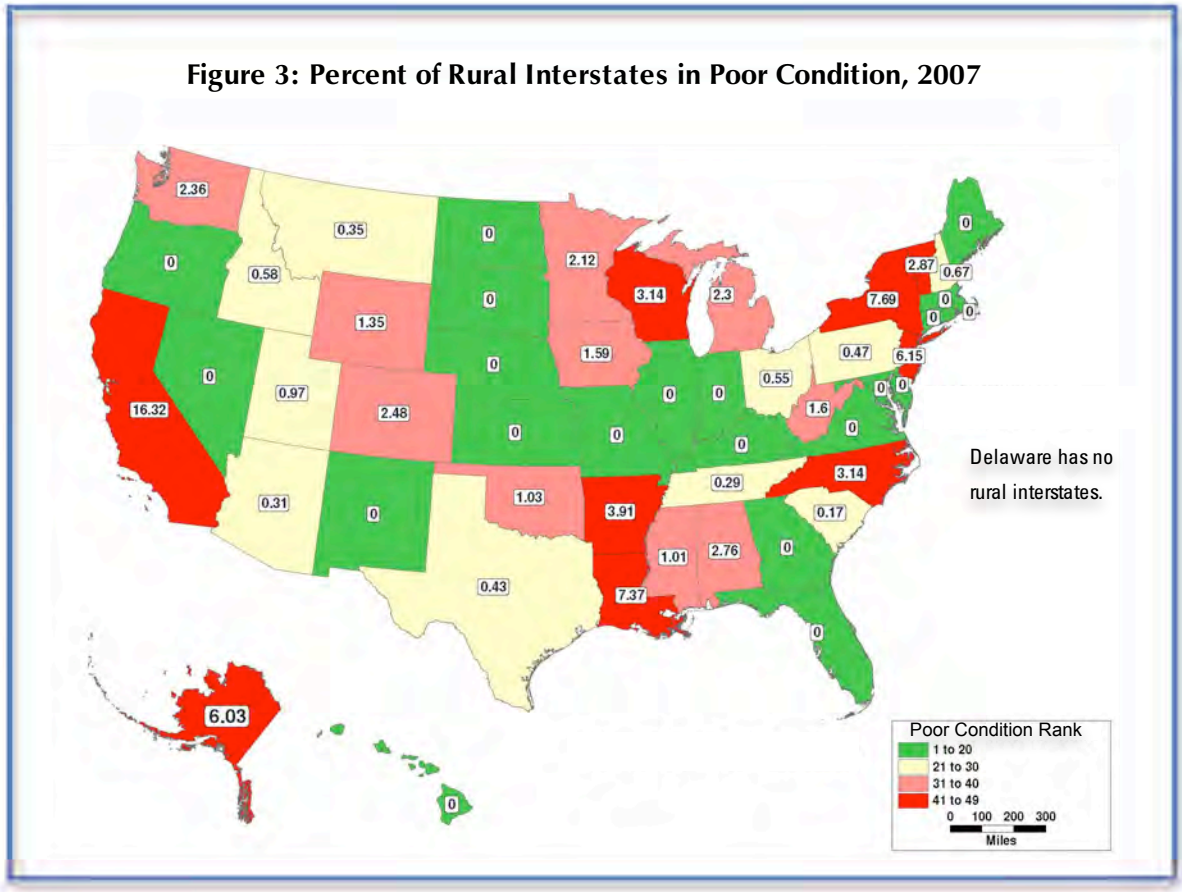


Table 10: Rural Interstate Condition, 2007					
Rank	State	Percent Poor Miles	Rank	State	Percent Poor Miles
1	CT	0.00	26	PA	0.47
1	FL	0.00	27	OH	0.55
1	GA	0.00	28	ID	0.58
1	HI	0.00	29	NH	0.67
1	IL	0.00	30	UT	0.97
1	IN	0.00	31	MS	1.01
1	KS	0.00	32	OK	1.02
1	KY	0.00	33	WY	1.35
1	MA	0.00	34	IA	1.59
1	MD	0.00	35	WV	1.60
1	ME	0.00	36	MN	2.12
1	MO	0.00	37	MI	2.30
1	ND	0.00	38	WA	2.36
1	NE	0.00	39	CO	2.48
1	NM	0.00	40	AL	2.76
1	NV	0.00	41	VT	2.87
1	OR	0.00	42	WI	3.14
1	RI	0.00	43	NC	3.14
1	SD	0.00	44	AR	3.91
1	VA	0.00	45	AK	6.03
21	SC	0.17	46	NJ	6.15
22	TN	0.29	47	LA	7.37
23	AZ	0.31	48	NY	7.69
24	MT	0.35	49	CA	16.32
25	TX	0.43		DE*	NA
				U.S.	1.93

* Delaware has no rural Interstate mileage.

Urban Interstate Condition

The urban interstates consist of major multi-lane interstates in and near urban areas. The condition of the urban interstate system worsened slightly in 2007, to 5.86 percent poor from 5.15 percent poor in 2006 (Table 11, Urban Interstate Condition, and Figure 4). Overall, about 939 of 16,023 miles were rated poor in 2007.

The condition of the urban interstates also varies widely. Six states reported no poor urban interstate mileage while four states (VT, NJ, CA and HI) reported more than 15 percent poor mileage.

Vermont reported a sharp increase in the poor urban interstate mileage going from no miles in poor condition in 2006 to 17.07 percent in poor condition.

About 53 percent of the poor-condition urban interstate mileage (496 of 939 miles) is in just four states (CA, NY, NJ and TX).

Figure 4: Percent of Urban Interstates in Poor Condition, 2007

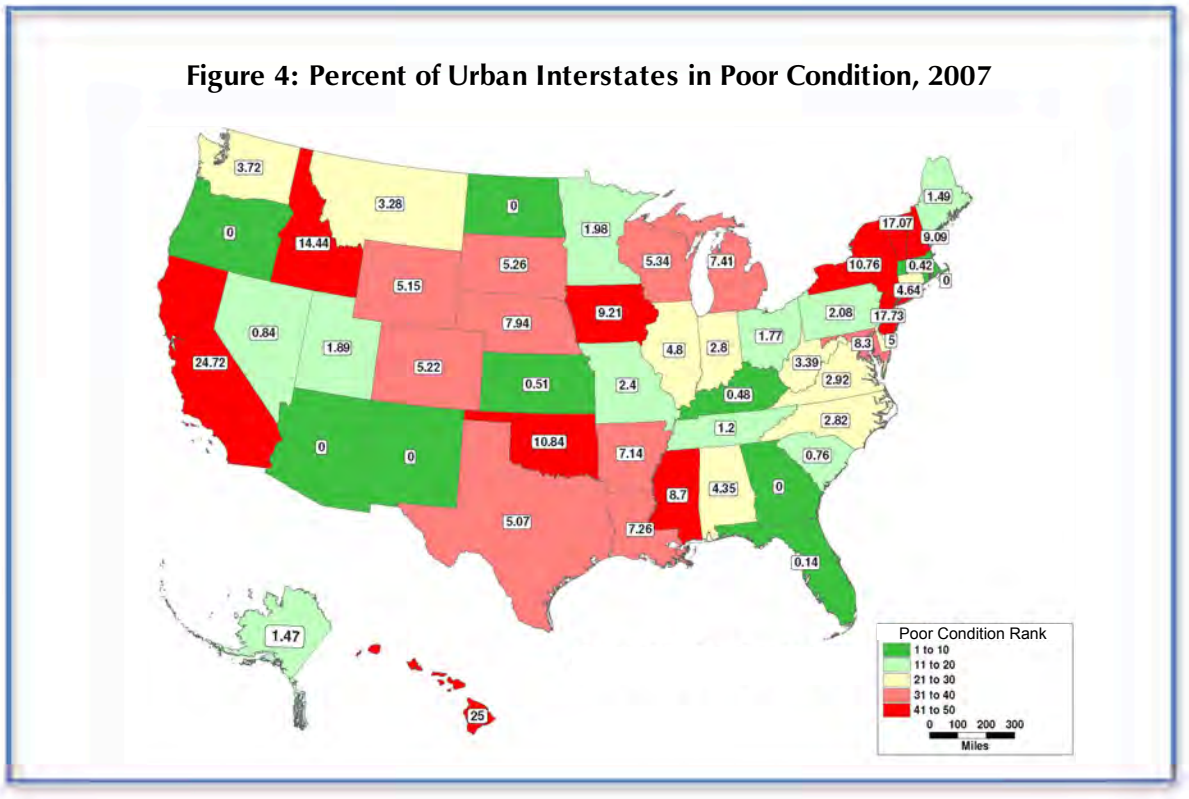


Table 11: Urban Interstate Condition, 2007 (Rank 1-25)					
Rank	State	Percent Poor Miles	Rank	State	Percent Poor Miles
1	AZ	0.00	26	WA	3.72
1	GA	0.00	27	AL	4.35
1	ND	0.00	28	CT	4.64
1	NM	0.00	29	IL	4.80
1	OR	0.00	30	DE	5.00
1	RI	0.00	31	TX	5.07
7	FL	0.14	32	WY	5.15
8	MA	0.42	33	CO	5.22
9	KY	0.48	34	SD	5.26
10	KS	0.51	35	WI	5.34
11	SC	0.76	36	AR	7.14
12	NV	0.84	37	LA	7.26
13	TN	1.20	38	MI	7.41
14	AK	1.47	39	NE	7.94
15	ME	1.49	40	MD	8.30
16	OH	1.77	41	MS	8.70
17	UT	1.89	42	NH	9.09
18	MN	1.98	43	IA	9.21
19	PA	2.08	44	NY	10.76
20	MO	2.40	45	OK	10.84
21	IN	2.80	46	ID	14.44
22	NC	2.82	47	VT	17.07
23	VA	2.92	48	NJ	17.73
24	MT	3.28	49	CA	24.72
25	WV	3.39	50	HI	25.00
				US	5.86

Rural Arterial Condition

The condition of the major rural highways continued to improve from 2006 to 2007 by about 0.12 percent.

Overall, about 0.64 percent of the rural other principal arterial system (rural arterial)—606 miles out of 94,396—was reported to be in poor condition (Table 12, Rural Arterial Condition, and Figure 5). This compares with 0.76 percent, or about 719 miles, in 2006. Since 2004, the rural arterial condition has been steadily improving, from 0.94 percent in poor condition in 2004 to 0.64 percent in poor condition in 2007.

Four states reported no poor rural arterial mileage in 2007 and another eight reported less than 0.10 percent of rural arterial in poor condition. On the other hand, Alaska and Rhode Island reported more than 10 percent of their rural arterial mileage to be in poor condition. About 49 percent of all the poor-mileage rural arterials (294 of 606 miles) are in just five states (AK, OK, IA, CA and SD).

Figure 5: Percent of Rural Arterials in Poor Condition, 2007

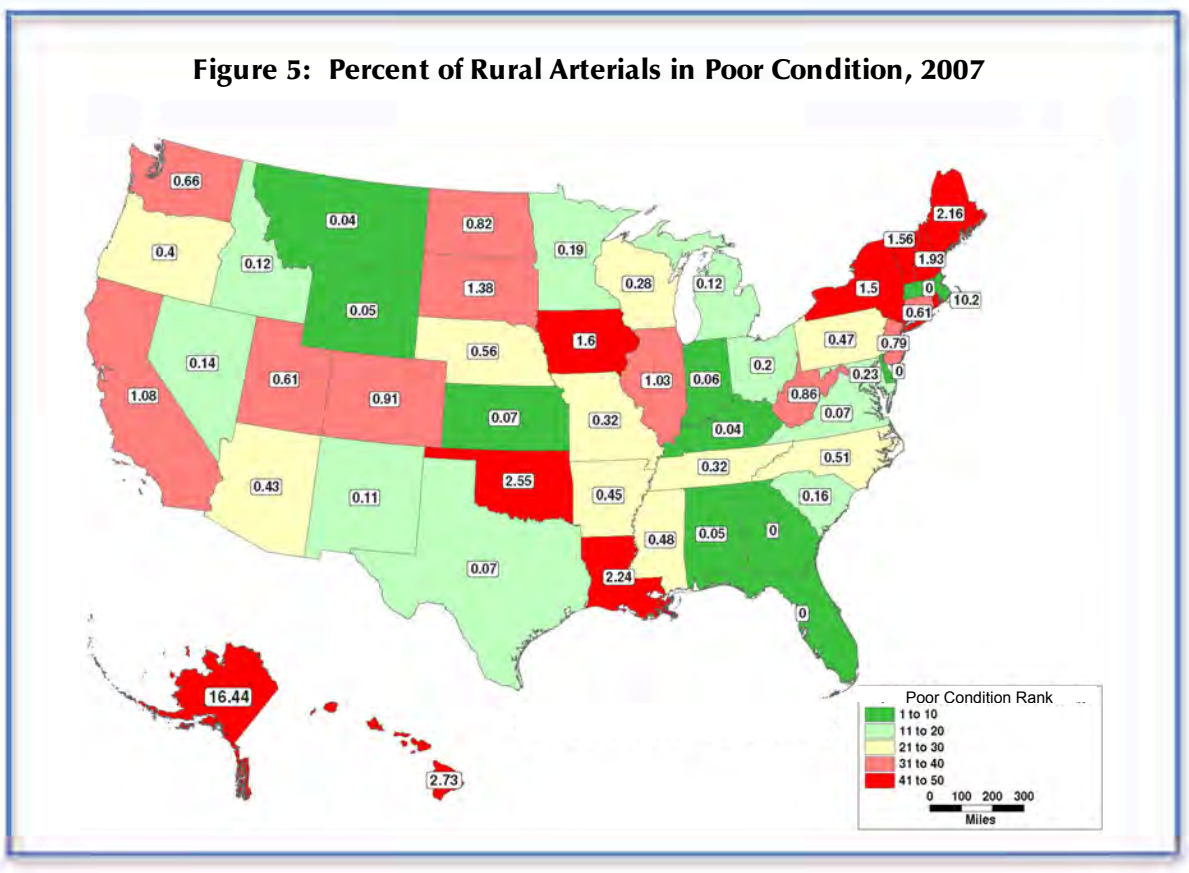


Table 12: Rural Arterial Condition, 2007					
Rank (1-25)	State	Percent Poor Miles	Rank (26-50)	State	Percent Poor Miles
1	DE	0.00	26	AR	0.45
1	FL	0.00	27	PA	0.47
1	GA	0.00	28	MS	0.48
1	MA	0.00	29	NC	0.51
5	MT	0.04	30	NE	0.56
6	KY	0.04	31	UT	0.61
7	AL	0.05	32	CT	0.61
8	WY	0.05	33	WA	0.66
9	IN	0.06	34	NJ	0.79
10	KS	0.07	35	ND	0.82
11	VA	0.07	36	WV	0.86
12	TX	0.07	37	CO	0.91
13	NM	0.11	38	IL	1.03
14	MI	0.12	39	CA	1.08
15	ID	0.12	40	SD	1.38
16	NV	0.14	41	NY	1.50
17	SC	0.16	42	VT	1.56
18	MN	0.19	43	IA	1.60
19	OH	0.20	44	NH	1.93
20	MD	0.23	45	ME	2.16
21	WI	0.28	46	LA	2.24
22	MO	0.32	47	OK	2.55
23	TN	0.32	48	HI	2.73
24	OR	0.40	49	RI	10.20
25	AZ	0.43	50	AK	16.44
				U.S.	0.64

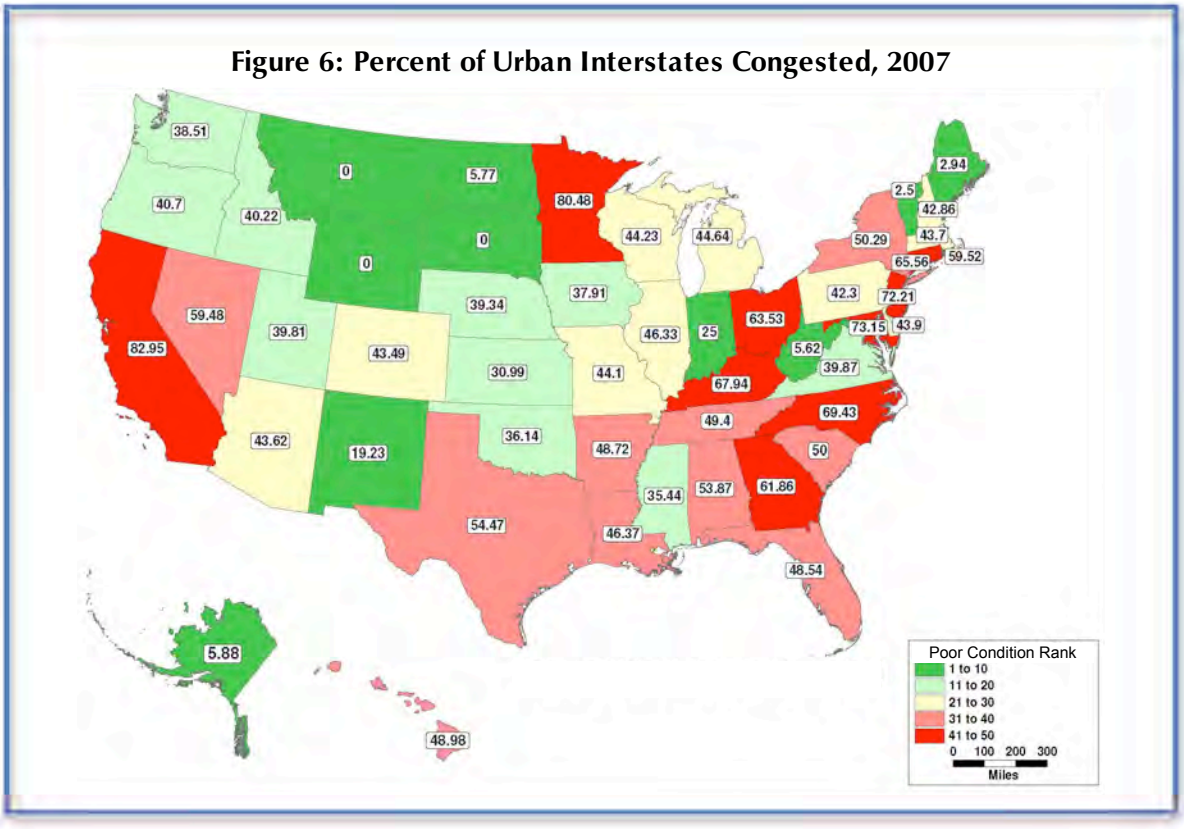
Urban Interstate Congestion

There is no universally accepted definition of traffic congestion, but in reporting to the federal government, the states use the peak-hour volume-to-capacity ratios that are determined by Transportation Research Board's Highway Capacity Manual. The overall 2007 statistic—50.59 percent congested—shows a slight improvement from 2006 (50.72 percent congested) (Table 13, Urban Interstate Congestion, and Figure 6).

For 2007, about 8,170 miles out of 16,149 urban interstate miles were rated as having volume/capacity ratios greater than 0.70, the standard for mild congestion. In 2007, only three states (MT, SD and WY) reported no congested urban interstates, while 15 states reported half or more of their urban interstates congested.

Four states (CA with 83 percent, MI with 80.5 percent, MD with 73.2 percent and NJ with 72.2 percent) reported more than 70 percent of their urban interstates as congested. Traffic volumes were about 3.6 percent lower nationwide in 2008,* so we might expect further improvements in this statistic.

Figure 6: Percent of Urban Interstates Congested, 2007



Notes: Wisconsin and South Carolina reported zero congested urban interstate mileage for 2007, clearly inconsistent with prior numbers. We used the 2006 data for these two states.

* FHWA, Traffic Volume Trends, December 2008, March 9, 2009

Table 13: Urban Interstate Congestion, 2007					
Rank (1-25)	State	Percent Miles Congested	Rank (26-50)	State	Percent Miles Congested
1	MT	0.00	26	DE	43.90
1	SD	0.00	27	MO	44.10
1	WY	0.00	28	WI	44.23
4	VT	2.50	29	MI	44.64
5	ME	2.94	30	IL	46.33
6	WV	5.62	31	LA	46.37
7	ND	5.77	32	FL	48.54
8	AK	5.88	33	AR	48.72
9	NM	19.23	34	HI	48.98
10	IN	25.00	35	TN	49.40
11	KS	30.99	36	SC	50.00
12	MS	35.44	37	NY	50.29
13	OK	36.14	38	AL	53.87
14	IA	37.91	39	TX	54.47
15	WA	38.51	40	NV	59.48
16	NE	39.34	41	RI	59.52
17	UT	39.81	42	GA	61.86
18	VA	39.87	43	OH	63.53
19	ID	40.22	44	CT	65.56
20	OR	40.70	45	KY	67.94
21	PA	42.30	46	NC	69.43
22	NH	42.86	47	NJ	72.21
23	CO	43.49	48	MD	73.15
24	AZ	43.62	49	MN	80.48
25	MA	43.70	50	CA	82.95
				US	50.59

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.

Despite large expenditures on bridges, the percentage of bridges rated deficient and or functionally obsolete worsened in 2007 from 2006, after a steady 22-year improvement to 2006. Of the 597,375 highway bridges in the current National Bridge Inventory, 151,101—about 25.29 percent—were reported deficient for 2007 (Table 14, Deficient Bridges, and Figure 7), a slight worsening from 2006.

Arizona reported the lowest percentage of deficient bridges, 10.63 percent, while Rhode Island reported the highest, 52.94 percent.

As Figure 7 shows, the states with the highest percentages are primarily northeastern and New England states.

Figure 7: Percent of Bridges in Deficient Condition, 2007

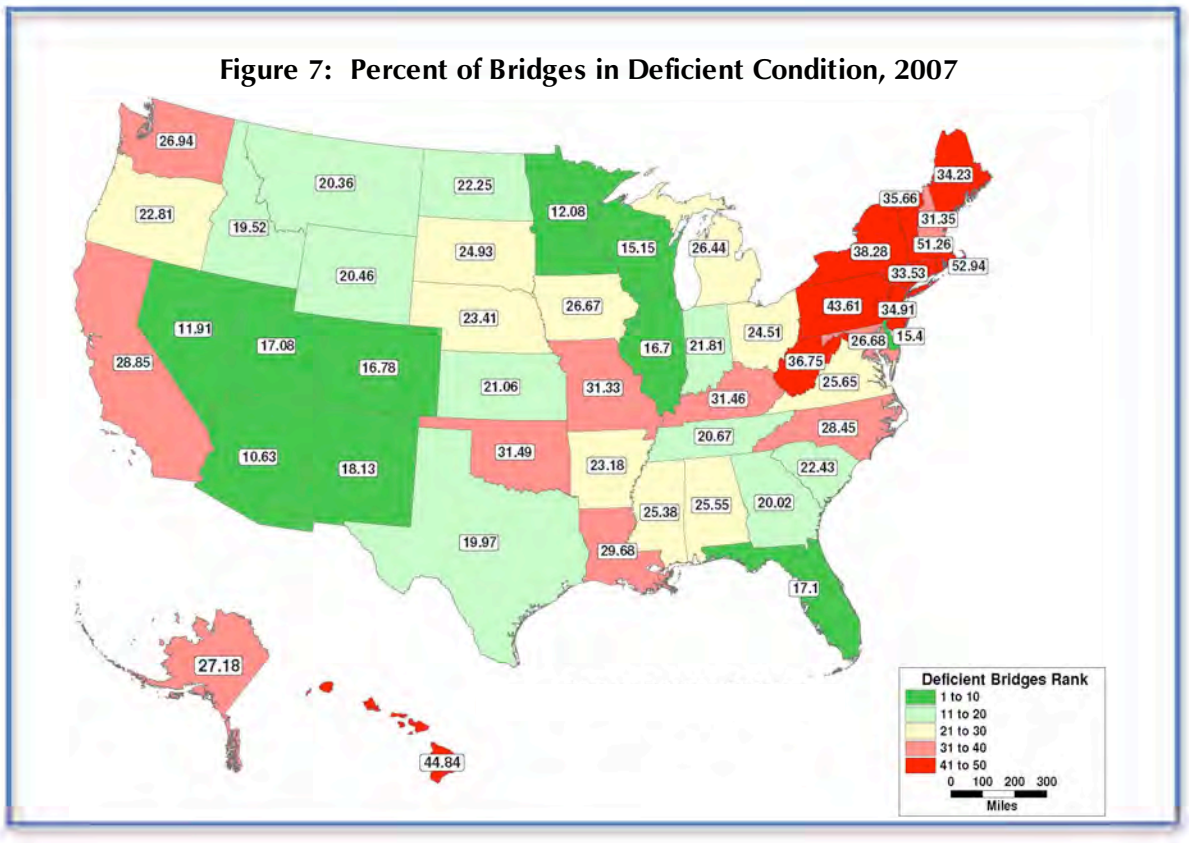


Table 14: Deficient Bridges					
Rank (1-25)	State	Percent Deficient	Rank (26-50)	State	Percent Deficient
1	AZ	10.63	26	MS	25.38
2	NV	11.91	27	AL	25.55
3	MN	12.08	28	VA	25.65
4	WI	15.15	29	MI	26.44
5	DE	15.40	30	IA	26.67
6	IL	16.70	31	MD	26.68
7	CO	16.78	32	WA	26.94
8	UT	17.08	33	AK	27.18
9	FL	17.10	34	NC	28.45
10	NM	18.13	35	CA	28.85
11	ID	19.52	36	LA	29.68
12	TX	19.97	37	MO	31.33
13	GA	20.02	38	NH	31.35
14	MT	20.36	39	KY	31.46
15	WY	20.46	40	OK	31.49
16	TN	20.67	41	CT	33.53
17	KS	21.06	42	ME	34.23
18	IN	21.81	43	NJ	34.91
19	ND	22.25	44	VT	35.66
20	SC	22.43	45	WV	36.75
21	OR	22.81	46	NY	38.28
22	AR	23.18	47	PA	43.61
23	NE	23.41	48	HI	44.84
24	OH	24.51	49	MA	51.26
25	SD	24.93	50	RI	52.94
				US	25.29

Fatality Rates

Fatality rates are an important overall measure of each state's road performance. The nation's highway fatality rate improved slightly for 2007: 41,015 fatalities were reported, lower than 42,605 reported for 2006.

As travel continued to increase, the average fatality rate was 1.355 fatalities per 100 million vehicle miles (Table 15, Fatality Rates, and Figure 8), down 4.6 percent from 1.421 in 2006.

Since 1984 the overall fatality rate has dropped about 48 percent. For 2007, Massachusetts reported the lowest rate, 0.757 fatalities per 100 million vehicle miles, while Montana reported the highest, 2.45 fatalities per 100 million vehicle miles.

In 2007, slowing travel (down 3.6 percent from 2004), reduced speeds and greater seatbelt use, along with the economic recession, combined to lower fatalities even further. For 2008, 37,313 fatalities were reported, for a rate of 1.28 fatalities per 100 million miles.* (This is a decrease of 9.1 percent from 2007, when traffic fatalities were 41,015 and the fatality rate was 1.36.)

*National Highway Traffic Safety Administration, Early estimate of motor vehicle fatalities in 2008, March 2009.

Figure 8: Fatality Rates per 100 Million Vehicle Miles, 2007

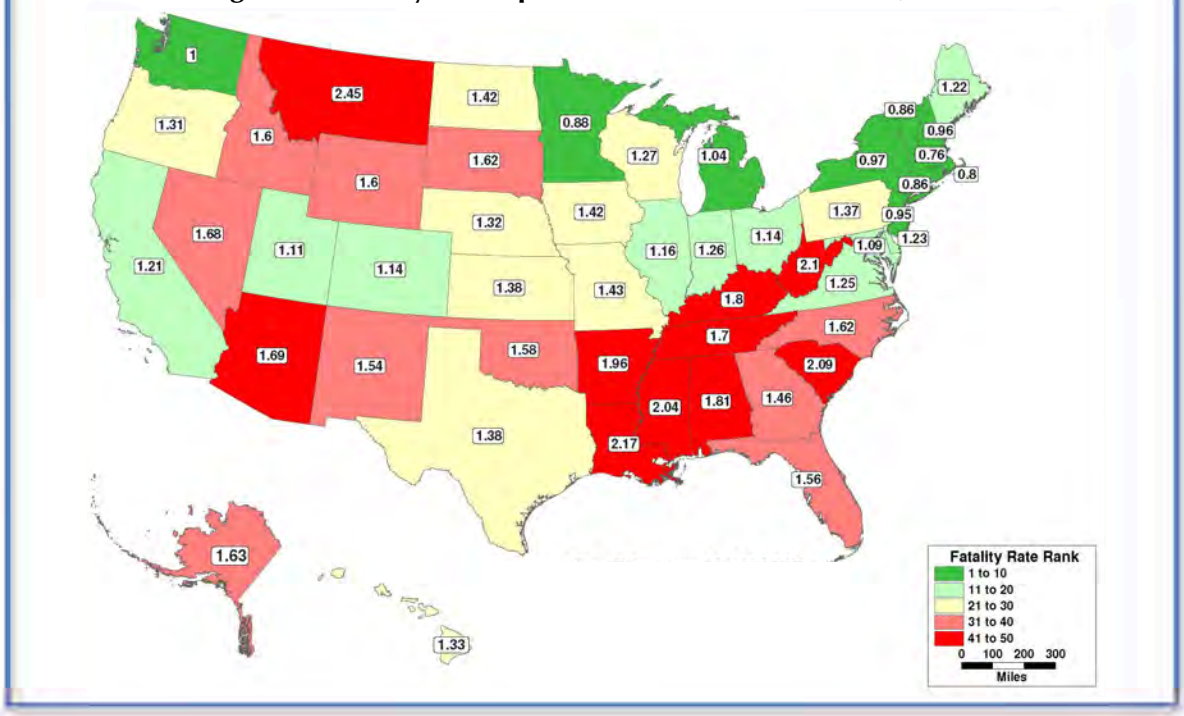


Table 15: Fatality Rates, 2007					
Rank (1-25)	State	Fatalities per 100 Million Miles	Rank (26-50)	State	Fatalities per 100 Million Miles
1	MA	0.76	26	TX	1.38
2	RI	0.80	27	KS	1.38
3	VT	0.86	28	ND	1.42
4	CT	0.86	29	IA	1.42
5	MN	0.88	30	MO	1.43
6	NJ	0.95	31	GA	1.46
7	NH	0.96	32	NM	1.54
8	NY	0.97	33	FL	1.56
9	WA	1.00	34	OK	1.58
10	MI	1.04	35	ID	1.60
11	MD	1.09	36	WY	1.60
12	UT	1.11	37	NC	1.62
13	OH	1.14	38	SD	1.62
14	CO	1.14	39	AK	1.63
15	IL	1.16	40	NV	1.68
16	CA	1.21	41	AZ	1.69
17	ME	1.22	42	TN	1.70
18	DE	1.23	43	KY	1.80
19	VA	1.25	44	AL	1.81
20	IN	1.26	45	AR	1.96
21	WI	1.27	46	MS	2.04
22	OR	1.31	47	SC	2.09
23	NE	1.32	48	WV	2.10
24	HI	1.33	49	LA	2.17
25	PA	1.37	50	MT	2.45
				US	1.36

Rural Narrow Lanes

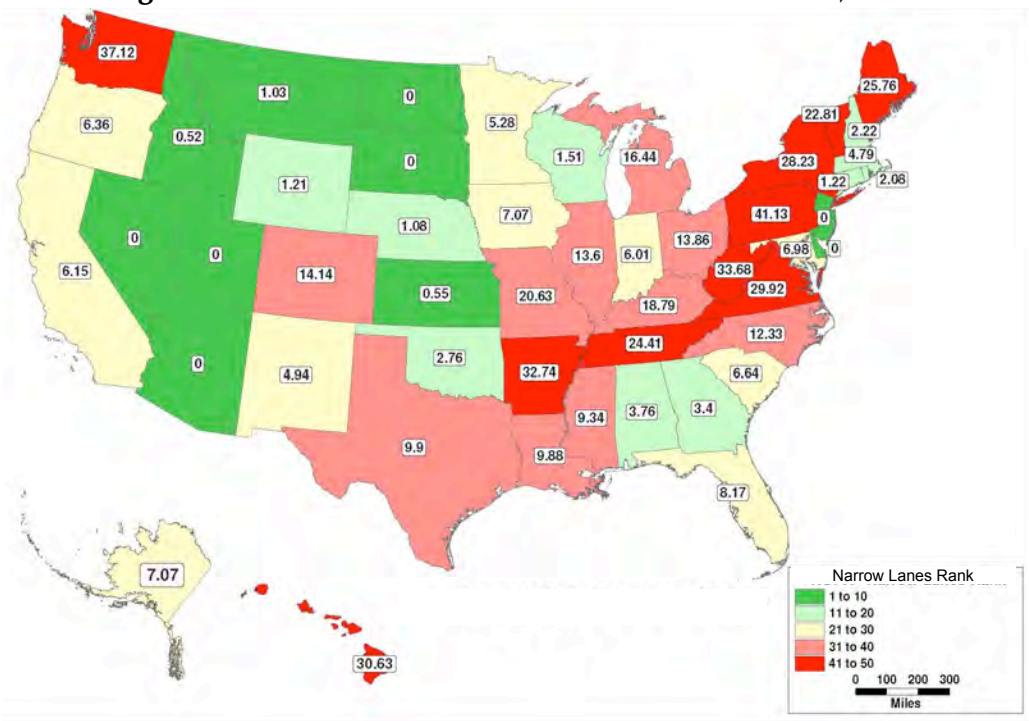
Narrow lanes on major rural roads are a key indicator of sight visibility and design adequacy. The national design standard for lane width on major rural roads is generally 12 feet, and few if any major rural roads would be improved without widening lanes to the standard; the exceptions would be some urban or mountainous circumstances.

In 2007, about 10.27 percent of rural principal arterials—9,730 miles out of 94,763—had narrow lanes less than 12 feet wide (Table 16, Rural Narrow Lanes, Figure 9), better than the 10.60 percent reported in 2006. Seven states reported no narrow-lane mileage, while Pennsylvania (41.13 percent) reported the highest percentage of narrow lanes. The states with the highest percent of narrow lanes tend to be in more mountainous terrains, but are not exclusively so.

Table 16: Rural Narrow Lanes, 2007

Rank (1-25)	State	Percent Narrow	Rank (26-50)	State	Percent Narrow
1	AZ	0.00	26	SC	6.64
1	DE	0.00	27	MD	6.98
1	ND	0.00	28	IA	7.07
1	NJ	0.00	29	AK	7.07
1	NV	0.00	30	FL	8.17
1	SD	0.00	31	MS	9.34
1	UT	0.00	32	LA	9.88
8	ID	0.52	33	TX	9.90
9	KS	0.55	34	NC	12.33
10	MT	1.03	35	IL	13.60
11	NE	1.08	36	OH	13.86
12	WY	1.21	37	CO	14.14
13	CT	1.22	38	MI	16.44
14	WI	1.51	39	KY	18.79
15	RI	2.08	40	MO	20.63
16	NH	2.22	41	VT	22.81
17	OK	2.76	42	TN	24.41
18	GA	3.40	43	ME	25.76
19	AL	3.76	44	NY	28.23
20	MA	4.79	45	VA	29.92
21	NM	4.94	46	HI	30.63
22	MN	5.28	47	AR	32.74
23	IN	6.01	48	WV	33.68
24	CA	6.15	49	WA	37.12
25	OR	6.36	50	PA	41.13
				US	10.27

Figure 9: Percent of Rural Arterials with Narrow Lanes, 2007



Measures of Population, Travel, Vehicles and Federal Payments

Some critics argue that our system, comparing states by cost-effectiveness per mile, favors smaller, rural states that have lower traffic levels, less congestion, and less population but also receive greater shares of federal highway dollars. To investigate this, we compared state ratings by various factors, versus their rating in our 2007 assessment (Table 17). While there is some modest correlation (for instance, Montana, rated 5th in our study, has the 4th highest disbursement per capita, per vehicle-mile, and donor-donee ratio), there are also many notable exceptions. The most glaring is Alaska, which is rated 50th in our survey but has the highest disbursements per capita, per VMT, per vehicle, and the highest donor-donee ratio. Yet in spite of these advantages Alaska's system is clearly in poor shape by our basic indicators. Rhode Island, rated 49th in our survey, is similarly advantaged, as are New Jersey and Vermont. Other states with similar patterns include New Hampshire and Pennsylvania. Most states, however, appear to be similarly positioned on these other indicators. California, rated 48th in our survey, is rated between 45 and 50 in relative measures of expenditure but has a higher federal return ratio (1.22, 19th). In short, the evidence suggests that our system, using mileage as a measure of size is based on a reasonable and possibly a superior measure of size.

Table 17: Disbursement Ratings by Population, Travel, Vehicles and Federal Allocations									
State	Overall Rank, 2007	2007 $ Disbursements per Person	Rank	2007 Disbursements per Vehicle-Mile	Rank	2007 $ Disbursements per Vehicle	Rank	2007 Ratio of Federal Transportation $ Received to Paid	Rank
ND	1	552	7	45.02	15	478	24	2.31	7
NM	2	419	22	30.74	35	501	21	1.19	23
KS	3	388	25	35.85	29	430	31	1.18	25
SC	4	325	36	28.00	39	396	35	1.04	45
MT	5	629	4	53.27	4	622	10	2.54	4
WY	6	926	2	51.71	7	702	8	1.56	11
NE	7	313	37	28.55	36	312	43	1.15	29
SD	8	453	15	40.06	22	391	37	2.34	6
GA	9	288	43	24.39	46	316	41	1.04	44
KY	10	445	17	39.27	24	523	17	1.10	37
DE	11	782	3	71.33	2	773	2	1.93	9
VA	12	374	26	35.16	31	431	30	1.12	35
OH	13	266	45	27.62	40	273	46	1.15	28
ID	14	370	28	35.19	30	419	33	1.57	10
MN	15	290	42	26.34	42	302	44	1.16	27
UT	16	423	20	41.73	21	472	25	1.01	49
TX	17	530	8	52.02	6	686	9	1.00	50
NV	18	414	23	48.01	13	716	5	1.02	48
TN	19	220	49	19.07	50	247	49	1.11	36
NC	20	358	31	31.34	34	505	19	1.06	40
WI	21	298	40	28.02	38	312	42	1.20	22
OR	22	428	19	46.13	14	503	20	1.28	15
MO	23	606	5	51.50	8	711	6	1.15	30
AZ	24	230	47	23.13	47	324	40	1.03	47
AL	25	300	39	22.61	48	290	45	1.20	21

Table 17: Disbursement Ratings by Population, Travel, Vehicles and Federal Allocations									
State	Overall Rank, 2007	2007 $ Disbursements per Person	Rank	2007 Disbursements per Vehicle-Mile	Rank	2007 $ Disbursements per Vehicle	Rank	2007 Ratio of Federal Transportation $ Received to Paid	Rank
WV	26	583	6	51.40	9	724	4	1.96	8
MS	27	493	10	33.21	32	707	7	1.14	32
ME	28	423	21	37.08	26	493	22	1.14	31
IA	29	295	41	28.21	37	250	48	1.04	43
MI	30	211	50	20.36	49	252	47	1.12	34
IN	31	476	12	42.26	18	592	12	1.03	46
AR	32	308	38	26.31	43	421	32	1.23	18
CO	33	276	44	27.53	41	738	3	1.06	41
OK	34	340	35	25.88	44	370	38	1.26	17
WA	35	371	27	42.12	20	402	34	1.19	24
IL	36	352	32	42.14	19	450	26	1.21	20
CT	37	351	33	38.32	25	395	36	1.56	12
PA	38	463	13	52.97	5	559	15	1.30	14
NH	39	502	9	49.04	11	524	16	1.26	16
FL	40	409	24	36.26	27	437	28	1.05	42
MD	41	362	30	36.00	28	443	27	1.10	38
VT	42	488	11	39.41	23	513	18	2.97	3
LA	43	447	16	42.33	17	481	23	1.14	33
MA	44	369	29	43.25	16	432	29	1.16	26
NY	45	344	34	48.52	12	562	14	1.33	13
HI	46	261	46	32.36	33	327	39	2.38	5
NJ	47	443	18	50.56	10	601	11	1.06	39
CA	48	222	48	25.44	45	241	50	1.22	19
RI	49	457	14	55.98	3	584	13	2.98	2
AK	50	1038	1	137.68	1	1005	1	4.35	1

Part 5

State Performance over Time

During much of the time that this 18-year series has been conducted, some have argued that the transportation systems in states cannot be directly compared with one another because of the widely varying circumstances between the states. While that criticism has some merit, we find it to be overshadowed by the benefits that head-to-head comparisons provide for those who seek out information on how they are doing, against a group of states deemed similar. However, we also recognize that each state is dealt a different 'hand' and that some circumstances may be harder to deal with than others. So we have included in this annual study a review of each state's performance over time. Our goal is to determine whether each state, separately, is making progress or not according to the performance measures we have been examining.

Specifically, we have consolidated the annual performance data from 2002 to 2007, the most recent years of data available. For this time period, we calculated the average number of highway miles under state control and the total highway disbursements, from which we determined the 5-year disbursements per mile of responsibility. We then measured the change in system performance over this period by comparing the percentages of deficient highways and bridges (in all the categories of the annual performance reports), as well as the fatality rates, at the beginning of the period (2002 data) and again at the end of the period (2007 data). We then averaged these changes in percentage points and changes in the fatality rate to obtain an overall assessment of how much each state's condition changed.

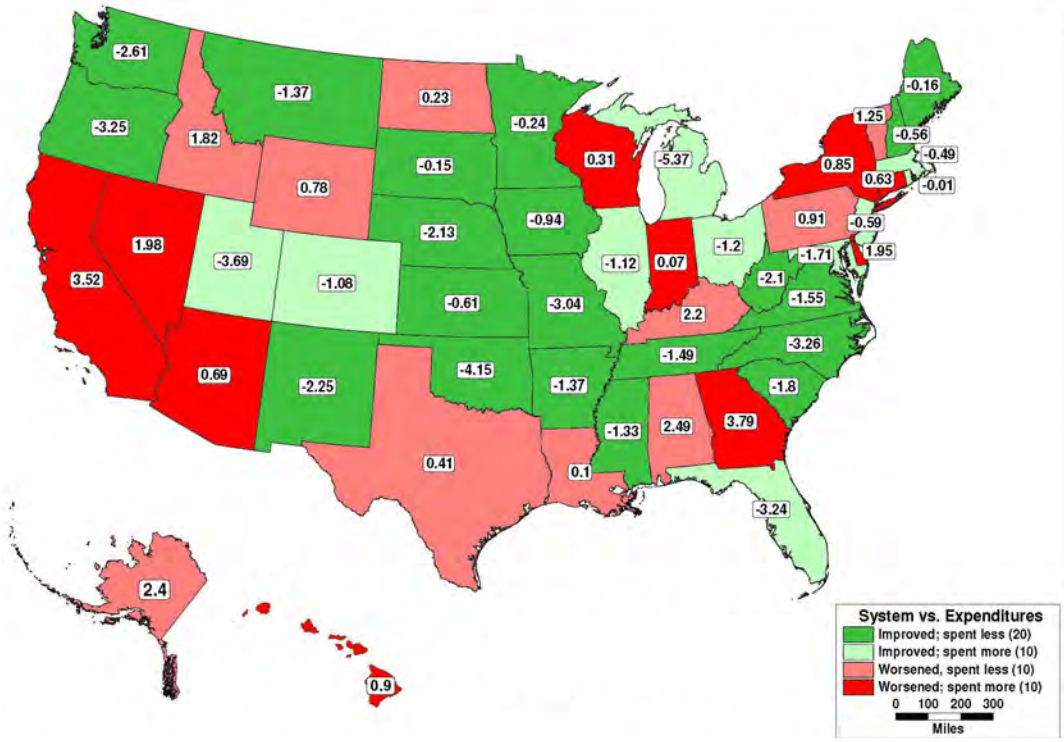
From 2003 to 2007, the U.S., as a whole, spent some $600,000 per mile for highways under state control, and on average, highways under state control improved 0.90% from 2002 to 2007 (Table 18). This nationwide improvement occurred across all performance indicators, with the most improvement in the percent of urban interstates congested, and the least in the percent of rural arterials in poor condition.

This improvement, however, was not enjoyed equally by all states. While every state saw improvement in at least one indicator, 20 states experienced worsening overall system performance, and 10 of these states spent more than the U.S. average while experiencing these declines (Table 19 and Figure 10). The other 30 states saw an overall improvement in their highway system, and 20 of these states were able to achieve these results while spending less than the U.S. average. These four categories of states (improved, spent less; improved, spent more; worsened, spent less; and, worsened, spent more) are discussed in more detail below. Additionally, the change in the performance of the highway system will be put in context with where that system was in 2007, relative to the other states and the nation as a whole. After all, some of the states showing the most improvement had the most room for improvement, and more slowly improving states should not be penalized if they had less 'room to grow.' And the best performing states may not be able to improve significantly further, even with increased spending.

States Improving and Spending Less than Average

There are 20 states that fall into this category, able to both improve conditions and spend less than the national average. Table 18 shows these 20 states and their disbursements, and then shows their system performance independent of cost effectiveness. But almost half of these states (8 of 20) have systems that are below the U.S. average in this year's ratings. Three states (Montana, Nebraska and North Carolina) improved in all seven categories. North Carolina had the greatest overall improvement, but it still ranks 34th on system performance. Montana and Nebraska also saw gains or achieved the highest rating in every category, and they have better performing systems in 2007, ranking 8th and 17th, respectively. Kansas, South Dakota and Missouri improved on six of seven indicators while spending less than the national average.

Figure 10: System Performance vs. Ratio of State Spending to U.S. Average, 2003-2007*



Note: The number on each state represents the percent average of the changes from 2002-2007 in system performance, from Table 18.

Table 18: States with Improving Systems that are Spending Less than the U.S. Average												
STATE	$ Disburse-ments per Average Mile of State Roads 2003-07*	Ratio to US Average *	% Rural Inter-state Poor*	% Rural Other Principal Arterials Poor*	% Urban Inter-state Poor*	% Urban Interstate Conges-ted*	% Rural Other Principal Arterials Narrow*	Fatalities per billion VMT*	% Bridges Deficient*	Average of the Changes from 2002-07**	2007 Average System Performance *	2007 Rank in System Performanc e*
AR	292,691	0.49	-11.30	-0.42	-10.32	16.80	0.35	-1.68	-3.03	-1.37	1.49	42
IA	447,334	0.75	0.02	-0.98	-5.76	1.17	-1.33	1.14	-0.87	-0.94	1.20	36
KS	588,112	0.98	-0.72	-0.09	-0.06	3.46	-0.68	-4.16	-2.05	-0.61	0.39	1
ME	344,076	0.57	0.00	2.16	1.49	-2.61	-1.94	-2.50	2.26	-0.16	1.21	37
MN	540,136	0.90	2.12	0.16	-1.04	3.42	-0.64	-3.24	-2.46	-0.24	0.71	16
MO	330,647	0.55	-0.37	-0.99	-4.31	-15.52	6.60	-3.38	-3.31	-3.04	0.87	27
MS	446,840	0.75	-5.09	0.32	4.82	-5.65	3.58	-3.90	-3.42	-1.33	0.98	31
MT	284,561	0.47	-1.06	-0.08	-2.18	0.00	-3.01	-1.48	-1.81	-1.37	0.50	8
NE	289,928	0.48	0.00	-1.06	-0.95	-4.13	-2.51	-3.23	-3.04	-2.13	0.71	17
NH	560,203	0.93	0.67	0.40	9.09	-12.46	-1.73	-0.51	0.61	-0.56	1.13	35
NM	361,264	0.60	0.00	-0.22	-6.48	-0.95	-2.68	-4.32	-1.07	-2.25	0.41	2
NC	204,711	0.34	-4.55	-1.16	-7.75	-5.43	-0.40	-0.79	-2.71	-3.26	1.11	34
OK	465,097	0.78	0.47	0.87	-12.71	-8.57	-0.01	-0.20	-8.93	-4.15	1.39	41
OR	469,667	0.78	-0.17	0.29	-2.76	-18.21	0.19	0.48	-2.58	-3.25	0.56	12
SC	154,582	0.26	-4.81	-0.85	-8.55	3.50	0.51	-1.41	-0.97	-1.80	0.65	15
SD	250,538	0.42	-0.48	-0.18	5.26	0.00	0.00	-4.97	-0.66	-0.15	0.75	20
TN	469,346	0.78	0.15	0.05	-0.86	-7.83	-0.75	-0.22	-0.95	-1.49	0.90	30
VA	255,619	0.43	0.00	-0.12	-0.68	-11.68	-1.53	0.71	2.48	-1.55	0.89	29
WA	547,270	0.91	2.36	0.56	-1.65	-21.56	-2.01	-2.06	6.08	-2.61	1.29	39
WV	170,729	0.28	-0.16	-0.16	-1.93	0.24	-11.12	-0.99	-0.60	-2.10	1.30	40

* Better than the U.S. average or have improving systems

** Worse than the U.S. average or have worsening systems

***Delaware has no rural interstate; average based on 6 measures.

States Improving but Spending More than Average

Ten states improved in overall highway performance, but spent more than the U.S. average to achieve these gains. Ohio saw over twice the average improvement (1.20 percentage points, due largely to improvements in congestion), but spent close to the national average (102%), and is in the upper half of states (21st) in system performance in 2007. Utah, Michigan and Florida each improved on all seven measures, but at some cost. Michigan enjoyed the biggest improvement (5.37 percentage points), but spent about 60 percent more than the U.S. average; Florida spent four times the U.S. average. Rhode Island saw the smallest gain (0.01 points), but spent about three times the national average. New Jersey and Massachusetts spent over 14 and seven times as much as the national average, respectively, while seeing relatively small improvements in their systems of 0.59 and 0.49 percentage points.

Table 19: States with Improving Systems that are Spending More than the U.S. Average

State	$ Disbursements per Average Mile of State Roads 2003-07*	Ratio to US Average*	% Rural Interstate Poor*	% Rural Other Principal Arterials Poor*	% Urban Interstate Poor*	% Urban Interstate Conges-ted*	% Rural Other Principal Arterials Narrow*	Fatalities per billion VMT*	% Bridges Deficient*	Average of the Changes from 2002-07**	2007 Average System Performance*	2007 Rank in System Performance*
CO	696,849	1.16	-5.96	-0.38	-4.51	4.58	0.57	-5.67	3.82	-1.08	1.05	33
FL	2,766,252	4.61	0.00	-0.17	-0.06	-8.77	-9.55	-1.97	-2.16	-3.24	0.51	9
IL	1,104,726	1.84	0.00	0.57	-3.27	-9.48	7.90	-1.77	-1.80	-1.12	0.88	28
MD	1,534,416	2.56	-0.44	-0.70	0.42	-9.06	1.34	-1.40	-2.15	-1.71	0.82	24
MA	4,306,155	7.18	-0.62	-4.85	-2.06	-8.78	-1.64	-1.05	15.59	-0.49	0.57	13
MI	1,052,309	1.75	-7.94	-1.58	-12.23	-6.87	-4.08	-2.35	-2.54	-5.37	0.99	32
NJ	8,551,484	14.26	-10.65	0.02	1.34	0.32	-1.13	-1.54	7.53	-0.59	1.56	43
OH	611,984	1.02	0.31	0.11	0.96	-6.86	-0.87	-1.78	-0.26	-1.20	0.76	21
RI	1,804,527	3.01	0.00	10.20	-2.04	-0.89	-4.07	-2.33	-0.95	-0.01	2.85	49
UT	922,166	1.54	-6.81	0.29	0.11	-16.74	0.00	-2.21	-0.48	-3.69	0.58	14

* Better than the U.S. average or have improving systems

** Worse than the U.S. average or have worsening systems

***Delaware has no rural interstate; average based on 6 measures.

States Worsening but Spending Less than Average

The 10 states in this group saw their highway systems performance decline, with Alabama seeing the biggest decline at 2.49 percentage points and Louisiana the smallest at 0.10 points. These states, however, spent less than average, so some of the lack of improvement may be due to a lack of resources. North Dakota is the best performer in this category—it spent about 40 percent of the national average, but declined just 0.23 percentage points, and still has the fourth best performing system for 2007.

Table 20: States with Worsening Systems that are Spending Less than the U.S. Average

State	$ Disburse-ments per Average Mile of State Roads 2003-07*	Ratio to US Average*	% Rural Interstate Poor*	% Rural Other Principal Arterials Poor*	% Urban Interstate Poor*	% Urban Interstate Congested*	% Rural Other Principal Arterials Narrow*	Fatalities per billion VMT*	% Bridges Deficient*	Average of the Changes from 2002-07**	2007 Average System Perfor-mance*	2007 Rank in System Perfor-mance*
AL	577,511	0.96	2.76	0.05	3.35	14.62	0.33	0.11	-3.80	2.49	0.86	26
AK	489,020	0.82	6.03	16.18	-0.45	-11.43	3.36	-1.47	4.55	2.40	4.58	50
ID	450,720	0.75	-0.95	0.06	3.98	10.81	0.00	-2.67	1.49	1.82	0.82	23
KY	302,238	0.50	0.00	0.04	-3.01	15.10	4.60	-1.56	0.22	2.20	0.84	25
LA	486,167	0.81	2.16	0.98	-2.03	5.87	-4.20	1.50	-3.56	0.10	1.89	45
ND	227,753	0.38	0.00	0.82	0.00	5.77	-3.79	0.93	-2.15	0.23	0.47	4
PA	566,110	0.94	-1.27	-0.25	-2.56	1.72	5.40	-1.73	5.05	0.91	1.27	38
TX	538,643	0.90	0.11	-0.19	2.08	-1.46	6.43	-3.04	-1.08	0.41	0.72	18
VT	476,175	0.79	1.44	-2.21	14.57	-2.50	-2.97	0.52	-0.07	1.25	1.59	44
WY	290,033	0.48	1.11	0.05	1.71	0.00	-0.65	-3.52	6.80	0.78	0.54	10

* Better than the U.S. average or have improving systems

** Worse than the U.S. average or have worsening systems

***Delaware has no rural interstate; average based on 6 measures.

States Worsening and Spending More than Average

Ten states have higher than average spending and worsening highway performance. California spent over three times the national average and yet saw its system performance decline by 3.52 percentage points. Moreover, California ranks in the bottom five for 2007 system performance, as do New York and Hawaii, which also spent about three times the national average and saw no improvements in their systems. Georgia actually experienced the largest decline in system performance (3.79 percentage points, caused primarily by a significant worsening of urban interstate congestion), but spent about the average to do so, and its system ranks 6th in performance in 2007. Other states in this group also have generally good-condition systems (Nevada (3), Arizona (5), and Indiana (7)), but have experienced declines in performance since 2002.

Table 21: States with Worsening Systems that are Spending More than the U.S. Average

State	$ Disburse-ments per Average Mile of State Roads 2003-07*	Ratio to US Average*	% Rural Interstate Poor*	% Rural Other Principal Arterials Poor*	% Urban Interstate Poor*	% Urban Interstate Congested *	% Rural Other Principal Arterials Narrow*	Fatalities per billion VMT*	% Bridges Deficient*	Average of the Changes from 2002-07**	2007 Average System Perfor-mance*	2007 Rank in System Perfor-mance*
AZ	1,245,263	2.08	0.31	0.34	-1.16	4.66	-0.08	-4.83	5.59	0.69	0.48	5
CA	1,950,229	3.25	8.66	0.20	2.66	0.70	0.91	-0.60	12.09	3.52	2.66	48
CT	1,811,303	3.02	0.00	0.00	-0.97	4.84	1.22	-1.68	1.03	0.63	0.73	19
DE	820,199	1.37	***	-0.48	0.00	17.07	-0.96	-1.63	-2.30	1.95	0.54	11
GA	604,765	1.01	0.00	0.00	0.00	25.70	1.05	0.52	-0.71	3.79	0.49	6
HI	1,721,082	2.87	0.00	2.17	-13.78	19.81	-8.48	-0.05	6.63	0.90	2.17	47
IN	902,291	1.50	0.00	-0.12	-0.36	0.08	0.02	1.64	-0.75	0.07	0.49	7
NV	720,776	1.20	0.00	0.14	-1.69	13.33	0.00	-4.36	6.41	1.98	0.46	3
NY	1,910,777	3.19	1.36	0.02	-4.76	6.11	4.44	-1.69	0.44	0.85	2.02	46
WI	662,109	1.10	3.14	-0.07	3.49	5.48	-4.33	-0.96	-4.54	0.31	0.79	22

* Better than the U.S. average or have improving systems

** Worse than the U.S. average or have worsening systems

***Delaware has no rural interstate; average based on 6 measures.

Part 6

Summary of States

It is worth taking a closer look at the best and worst performing states to see in what areas they do well and poorly. In addition to the performance measures discussed so far, we look at how large their systems are compared to average and a ranking of financial performance composed of the ratio of state spending to the national average.

Top Ten States

1. North Dakota

North Dakota continues to lead in the overall performance ratings. In 2000, the state stood 2nd in overall performance, improved to the 1st position in 2001 and has maintained that position. Although the state-owned system is about half the average size at 7,407 miles, it combines a strong 2nd for financial performance and 4th for system performance. It scores best in maintenance disbursements per state-controlled mile (1st), urban interstate condition (1st tie), urban interstate congestion (7th), rural narrow lanes (1st tie), rural interstate condition (1st tie), administrative disbursements per state-controlled mile (3rd). Its lowest ratings were for rural arterial condition (35th), deficient bridges (19th) and fatality rate (28th). North Dakota's relatively low traffic volumes, good system condition and relatively low unit costs have consistently placed it in the top-performing states.

2. New Mexico

In 2007, New Mexico ranked 2nd in the overall performance ratings, up from 3rd in 2006, combining a 10th place showing for financial performance with a strong 2nd in system performance. The state has seen steady improvement in the ratings from 2000, when it ranked 27th. In 2007, its best ratings were for rural interstate condition (1st tie), urban interstate condition (1st tie), capital and bridge disbursements per state-controlled mile (8th) and urban interstate congestion (9th). New Mexico's lowest rankings were for fatality rate (32nd), maintenance disbursements per state-controlled mile (19th), rural narrow lanes (21st) and administrative disbursements per state-controlled mile (17th).

3. Kansas

With 10,607 miles under state control in 2007, Kansas was ranked 3rd in the overall performance ratings, up from 5th in 2006. Kansas combines a very strong 1st place rating for system performance with a good 16th place rating for financial performance. For 2007, Kansas's best ratings were for rural interstate condition (1st tie), urban interstate condition (10th), rural narrow lanes (9th), urban interstate congestion (11th) and rural arterial condition (10th). Kansas scored lowest on fatality rate (27th), capital and bridge disbursements per state-controlled mile (20th) and total disbursements per state-controlled mile (18th).

4. South Carolina

South Carolina has the 5th largest state-owned highway system, 41,628 miles. It ranked 4th in performance in 2007 compared with 6th in 2006, combining a strong 3rd place rating on financial performance with a good 15th place rating on system performance. South Carolina ranked high on financial data, particularly capital and bridge disbursements per state-controlled mile (1st), total disbursements per state-controlled mile (2nd), maintenance disbursements per state-controlled mile (2nd) and administrative disbursements per state-controlled mile (6th). Its lowest ratings were for fatality rate (47th), rural interstate condition (21st) and urban interstate congestion (36th). South Carolina reported a sharp improvement in its rural interstate condition, from 2.2 percent poor in 2006 to 0.17 percent poor in 2007. Swift attention to this problem, reported in the prior year, resulted in its return to the top ranks.

5. Montana

In 2007, Montana ranked 5th in overall performance, compared with 2nd in 2006. Montana combines strong system performance (8th) with good fiscal performance (14th). Montana's 11,071-mile system is somewhat smaller than the national average, but ranks high in rural arterial condition (5th tie), urban interstate congestion (1st tie), capital and bridge disbursements per state-controlled mile (6th), total disbursements per state-controlled mile (9th) and maintenance disbursements per state-controlled mile (5th). Its lowest rankings were for its fatality rate (50th), worst in the nation, urban and rural interstate condition (both 24th) and administrative disbursements per state-controlled mile (31st).

6. Wyoming

Wyoming, with a relatively small 7,857-mile system, is rated at 6th for 2007, compared with 4th in 2006. It combines good showings for both system performance (10th) and financial performance, (12th). For 2007, Wyoming's best ratings were for urban interstate congestion (1st tie) (it reported no congestion), deficient bridges (15th), rural narrow lanes (12th), rural arterial condition (8th), capital and bridge disbursements per state-controlled mile (11th) and total disbursements per state-controlled mile (10th). However, Wyoming performed less well in fatality rate (36th), urban interstate condition (32nd) and rural interstate condition (33rd).

7. Nebraska

Nebraska's 10,218-mile system is somewhat smaller than the national average. In the overall performance rankings in 2007, Nebraska ranked 7th, compared with 8th in 2006. Its rating combines strong financial performance (7th) with solid system performance, 17th. Since 2000 Nebraska has steadily improved its ranking from 29th in 2000 to 7th in 2007. For 2007, Nebraska fared well in rural interstate condition (1st tie), administrative disbursements per state-controlled mile (8th), maintenance disbursements per state-controlled mile (9th), rural narrow lanes (11th), capital and bridge disbursements per state-controlled mile (7th), total disbursements per state-controlled mile (8th) and urban interstate congestion (16th). Its worst ratings were for urban interstate condition (39th), rural arterial condition (30th), deficient bridges (23rd) and fatality rate (also 23rd).

8. South Dakota

South Dakota's 8,488-mile system ranked 8th in 2007, compared with 7th in 2006. South Dakota combines a strong rating (6th) in financial performance with a good (20th) rating on system performance. South Dakota performed best on percent of rural narrow lanes (1st tie), rural interstates condition (1st tie), urban interstate congestion (1st tie), maintenance disbursements per state-controlled mile (3rd), capital and bridge disbursements per state-controlled mile (5th) and total disbursements per state-controlled mile (4th). Its worst ratings were for fatality rate (38th), rural arterial condition (40th), urban interstate condition (34th) and deficient bridges (25th).

9. Georgia

The 18,040-mile state-owned highway system in Georgia is just slightly larger than the national average. In 2007, Georgia rated 9th in overall performance, close to its 10th place rating in 2006. Georgia's system combines a strong 6th place rating for system performance with a mid-rank 29th place rating for financial performance. Georgia's system ranked highest in rural interstate condition (1st tie), urban interstate condition (1st tie) and rural arterial condition (1st tie). It also received good ratings for maintenance disbursements per state-controlled mile (8th), rural narrow lanes (18th) and deficient bridges (13th). Georgia in 2007 fared worst in urban interstate congestion (42nd), administrative disbursements per state-controlled mile (36th), capital and bridge disbursements per state-controlled mile (37th), and total disbursements per state-controlled mile (32nd) and fatality rate (31st).

10. Kentucky

Kentucky has 27,849 miles under state control, almost twice the national average. Kentucky was ranked 10th in 2007, close to its 9th place rating in 2006. Its rating for financial performance, 8th, is better than its rating for system performance, 25th. Kentucky's best ratings were for administrative disbursements per state-controlled mile (1st), rural interstate condition (1st tie), total disbursements per state-controlled mile (13th), capital and bridge disbursements per state-controlled mile (14th), maintenance disbursements per state-controlled mile (7th), rural arterial condition (6th) and urban interstate condition (9th). Its worst ratings were for (perhaps surprisingly) urban interstate congestion (45th), fatality rate (43rd), rural narrow lanes (39th) and deficient bridges (39th).

Bottom Ten States

41. Maryland

Maryland's 5,409-mile system is rated 41st overall for 2007, a combination of 24th rating for system performance and 43rd for fiscal performance. Maryland's best ratings are for its rural interstate condition (1st tie), fatality rate (11th) and rural arterial condition (20th). However it ranks 46th on capital and bridge disbursements per state-controlled mile, 46th on maintenance disbursements per state-controlled mile, 44th on total disbursements per state-controlled mile, 40th on urban interstate condition and 48th on urban interstate congestion.

42. Vermont

Vermont's 2,843-mile system is ranked 42nd overall, a sharp drop from 30th in 2006. Vermont's rating is a combination of its 44th place rating for system performance and a 28th place rating for fiscal performance. Vermont's best ratings are for urban interstate congestion (4th), fatality rate (3rd), total disbursements per state-controlled mile (20th) and capital and bridge disbursements per state-controlled mile (17th). However, it is rated 41st on rural interstate condition, 42nd on rural arterial condition, 47th on urban interstate condition, 41st on rural narrow lanes and 44th on bridge deficiencies.

43. Louisiana

Louisiana's 16,698-mile system is close to the U.S. average in length. For 2007, Louisiana was rated 43rd overall, combining a relatively good fiscal rating (19th) with a 45th system rating. The state was rated 40th in 2006. The state is rated highest on administrative disbursements per state-controlled mile (7th), 22nd on total disbursements per state-controlled mile, 30th on capital and bridge disbursements per state-controlled mile, 31st on urban interstate congestion and 32nd on rural narrow lanes. However, Louisiana ranks 47th on rural interstate condition, 46th on rural arterial condition, 37th on urban interstate condition, 49th on fatality rate and 36th on bridge deficiencies.

44. Massachusetts

The state-owned highway system in Massachusetts has about 3,606 miles, 5th smallest in the nation. For 2007, Massachusetts's system is rated 44th, close to its 43rd rating for 2006. The state's rating is a combination of good system performance (13th) but 49th overall in financial performance. Massachusetts ranks 1st in three of the eleven categories: rural interstate condition (1st tie), rural primary pavement condition (1st tie) and fatality rate (1st). It also scored well on urban interstate condition (8th), narrow rural primary roads (20th) and urban interstate congestion (25th). However, its relative costs are higher than average. It ranks 49th in total disbursements per state-controlled mile, 50th on administrative disbursements per state-controlled mile, capital and bridge disbursements per state-controlled mile (45th), maintenance disbursements per state-controlled mile (48th) and deficient bridges (49th).

45. New York

New York has about 16,296 miles of state-owned highways, close to the national average. In 2007, New York ranked 45th overall, the same as its 2006 rating. New York was rated 47th in 2000, but had been rated as high as 40th in earlier reviews. Its best 2007 rating was for its fatality rate (8th) and urban interstate congestion (37th). Its worst ratings were for deficient bridges (46th), maintenance disbursements per state-controlled mile (49th), rural interstate condition (48th), urban interstate condition (44th), total disbursements per state-controlled mile (45th), capital and bridge disbursements per state-controlled mile (42nd), administrative disbursements per state-controlled mile (41st) and rural arterial condition (41st).

46. Hawaii

With just 999 miles under the state control, Hawaii has the smallest state-owned system. In 2007, Hawaii was rated 46th overall, close to its 47th rating in 2006. Its overall rating is a combination of a 46th rating for fiscal performance and 47th for system performance. Hawaii's best rating is for rural interstate condition (1st), fatality rate (24th) and urban interstate congestion (34th). However, Hawaii has the highest percentage of urban interstates in poor condition, 50th in the nation. In addition, Hawaii did not fare well in deficient bridges (48th), rural narrow lanes (46th), rural arterial condition in poor condition (48th), administrative disbursements per state-controlled mile (47th), total disbursements per state-controlled mile (43rd) and capital and bridge disbursements per state-controlled mile (44th).

47. New Jersey

For 2007, New Jersey's 3,333-mile system is rated 47th, up four spots from 50th in 2006. Its rating is based on a 43rd rating in system performance and a 50th place rating on financial performance. New Jersey's best rankings are for rural narrow lanes (1st tie) with no rural arterials reported as narrow and fatality rate (6th). However, New Jersey ranks 50th in three categories (capital and bridge disbursements per state-controlled mile, maintenance disbursements per state-controlled mile and total disbursements per state-controlled mile) and 48th in administrative disbursements per state-controlled mile. It ranks 48th in urban interstate condition, 46th in rural interstate condition, 43rd in bridge deficiencies and 48th in urban interstate congestion.

48. California

California has 18,336 miles of state-owned highway system, slightly larger than the national average. California ranked 48th overall in the 2007 ratings, down from 44th in 2006. Its fiscal performance rating is 45th and its system performance rating is 48th. In 2007, its best ratings were for fatality rate (16th), bridge deficiencies (35th) and rural narrow lanes (24th). However, California has the highest percent of urban interstates congested in the entire nation. It also performed poorly on administrative disbursements per state-controlled mile (49th), urban and rural interstate in poor condition (both 49th), total disbursements per state-controlled mile (47th), capital and bridge disbursements per state-controlled mile (48th) and maintenance disbursements per state-controlled mile (39th).

49. Rhode Island

Rhode Island has the second smallest state-owned system, just 1,108 miles. Rhode Island rated 49th in 2007. It rates 48th for financial performance and 49th for system performance. The state has continued to slide down from 36th in 2000. Rhode Island's best performance is the condition of its interstates (1st tie), which continue to report no poor condition mileage. It also fared well in fatality rate (2nd). Its worst ratings were for deficient bridges (50th), rural arterial condition (49th), maintenance disbursements per state-controlled mile (47th), capital and bridge disbursements per state-controlled mile (47th), total disbursements per state-controlled mile (46th), administrative disbursements per state-controlled mile (46th) and urban interstate congestion (41st).

50. Alaska

For 2007, Alaska is rated 50th overall, compared with 49th in 2006. Since 1998 Alaska has fallen from 21st to 50th place. The state has 7,476 miles of state-owned highway, less than half the national average. Alaska is rated 23rd for financial performance, but 50th for system performance. Alaska's best ratings are for urban interstate condition (14th) and urban interstate congestion (8th). Its worst ratings are for rural arterial condition (50th), rural interstate condition (45th), fatality rate (39th), maintenance disbursements per state-controlled mile (35th) and bridge deficiencies (33rd).

Synopsis of All States

Alabama

Alaska

Overall Rank in 2007 - 50

Overall Rank in 2006 - 49

Overall Rank in 2005 - 49

Overall Rank in 2000 - 40

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	36
Bridges, Deficient or Obsolete	33
Fatality Rate Per 100 Million Miles Driven	39
Urban Interstate Congested	8
Urban Interstate in Poor Condition	14
Rural Interstate in Poor Condition	45
Percent of Narrow Lanes, Rural	29
Total Disbursements	16
Disbursements – Capital, Bridges	16
Disbursements – Maintenance	35
Disbursements – Administration	21

Arizona

Arkansas

California

Colorado

Overall Rank in 2007 - 33

Overall Rank in 2006 - 31

Overall Rank in 2005 - 29

Overall Rank in 2000 - 19

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	29
Bridges, Deficient or Obsolete	7
Fatality Rate Per 100 Million Miles Driven	14
Urban Interstate Congested	23
Urban Interstate in Poor Condition	33
Rural Interstate in Poor Condition	39
Percent of Narrow Lanes, Rural	37
Total Disbursements	30
Disbursements – Capital, Bridges	22
Disbursements – Maintenance	32
Disbursements – Administration	40

Connecticut

Delaware

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	42
Bridges, Deficient or Obsolete	5
Fatality Rate Per 100 Million Miles Driven	18
Urban Interstate Congested	26
Urban Interstate in Poor Condition	30
Rural Interstate in Poor Condition	NA (no rural interstate mileage)
Percent of Narrow Lanes, Rural	1
Total Disbursements	25
Disbursements – Capital, Bridges	18
Disbursements – Maintenance	30
Disbursements – Administration	35

Florida

Georgia

Overall Rank in 2007 - 9

Overall Rank in 2006 - 10

Overall Rank in 2005 - 6

Overall Rank in 2000 - 4

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	11
Bridges, Deficient or Obsolete	13
Fatality Rate Per 100 Million Miles Driven	31
Urban Interstate Congested	42
Urban Interstate in Poor Condition	1
Rural Interstate in Poor Condition	1
Percent of Narrow Lanes, Rural	18
Total Disbursements	32
Disbursements – Capital, Bridges	37
Disbursements – Maintenance	8
Disbursements – Administration	36

Hawaii

Idaho

Illinois

Indiana

Iowa

Kansas

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	27
Bridges, Deficient or Obsolete	17
Fatality Rate Per 100 Million Miles Driven	27
Urban Interstate Congested	11
Urban Interstate in Poor Condition	10
Rural Interstate in Poor Condition	1
Percent of Narrow Lanes, Rural	9
Total Disbursements	18
Disbursements – Capital, Bridges	20
Disbursements – Maintenance	14
Disbursements – Administration	16

Kentucky

Louisiana

Overall Rank in 2007 - 43

Overall Rank in 2006 - 40

Overall Rank in 2005 - 30

Overall Rank in 2000 - 42

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	14
Bridges, Deficient or Obsolete	36
Fatality Rate Per 100 Million Miles Driven	49
Urban Interstate Congested	31
Urban Interstate in Poor Condition	37
Rural Interstate in Poor Condition	47
Percent of Narrow Lanes, Rural	32
Total Disbursements	22
Disbursements – Capital, Bridges	30
Disbursements – Maintenance	26
Disbursements – Administration	7

Maine

Maryland

Massachusetts

Michigan

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	30
Bridges, Deficient or Obsolete	29
Fatality Rate Per 100 Million Miles Driven	10
Urban Interstate Congested	29
Urban Interstate in Poor Condition	38
Rural Interstate in Poor Condition	37
Percent of Narrow Lanes, Rural	38
Total Disbursements	39
Disbursements – Capital, Bridges	41
Disbursements – Maintenance	34
Disbursements – Administration	28

Minnesota

Mississippi

Overall Rank in 2007 - 27

Overall Rank in 2006 - 38

Overall Rank in 2005 - 25

Overall Rank in 2000 - 21

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	26
Bridges, Deficient or Obsolete	26
Fatality Rate Per 100 Million Miles Driven	46
Urban Interstate Congested	12
Urban Interstate in Poor Condition	41
Rural Interstate in Poor Condition	31
Percent of Narrow Lanes, Rural	31
Total Disbursements	26
Disbursements – Capital, Bridges	33
Disbursements – Maintenance	12
Disbursements – Administration	18

Missouri

Montana

Overall Rank in 2007 - 5

Overall Rank in 2006 - 2

Overall Rank in 2005 - 5

Overall Rank in 2000 - 5

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	25
Bridges, Deficient or Obsolete	14
Fatality Rate Per 100 Million Miles Driven	50
Urban Interstate Congested	1
Urban Interstate in Poor Condition	24
Rural Interstate in Poor Condition	24
Percent of Narrow Lanes, Rural	10
Total Disbursements	9
Disbursements – Capital, Bridges	6
Disbursements – Maintenance	5
Disbursements – Administration	31

Nebraska

Nevada

Overall Rank in 2007 - 18

Overall Rank in 2006 - 20

Overall Rank in 2005 - 9

Overall Rank in 2000 - 13

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	39
Bridges, Deficient or Obsolete	2
Fatality Rate Per 100 Million Miles Driven	40
Urban Interstate Congested	40
Urban Interstate in Poor Condition	12
Rural Interstate in Poor Condition	1
Percent of Narrow Lanes, Rural	1
Total Disbursements	35
Disbursements – Capital, Bridges	36
Disbursements – Maintenance	15
Disbursements – Administration	42

New Hampshire

New Jersey

New Mexico

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	20
Bridges, Deficient or Obsolete	10
Fatality Rate Per 100 Million Miles Driven	32
Urban Interstate Congested	9
Urban Interstate in Poor Condition	1
Rural Interstate in Poor Condition	1
Percent of Narrow Lanes, Rural	21
Total Disbursements	12
Disbursements – Capital, Bridges	8
Disbursements – Maintenance	19
Disbursements – Administration	17

New York

North Carolina

North Dakota

Overall Rank in 2007 - 1

Overall Rank in 2006 - 1

Overall Rank in 2005 - 1

Overall Rank in 2000 - 2

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	37
Bridges, Deficient or Obsolete	19
Fatality Rate Per 100 Million Miles Driven	28
Urban Interstate Congested	7
Urban Interstate in Poor Condition	1
Rural Interstate in Poor Condition	1
Percent of Narrow Lanes, Rural	1
Total Disbursements	5
Disbursements – Capital, Bridges	12
Disbursements – Maintenance	1
Disbursements – Administration	3

Ohio

Oklahoma

Overall Rank in 2007 - 34

Overall Rank in 2006 - 33

Overall Rank in 2005 - 24

Overall Rank in 2000 - 31

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	18
Bridges, Deficient or Obsolete	40
Fatality Rate Per 100 Million Miles Driven	34
Urban Interstate Congested	13
Urban Interstate in Poor Condition	45
Rural Interstate in Poor Condition	32
Percent of Narrow Lanes, Rural	17
Total Disbursements	14
Disbursements – Capital, Bridges	15
Disbursements – Maintenance	11
Disbursements – Administration	22

Oregon

Pennsylvania

Overall Rank in 2007 - 38

Overall Rank in 2006 - 36

Overall Rank in 2005 - 36

Overall Rank in 2000 - 33

Performance by Category in 2007 .... Rank

State-Controlled Highway Miles 4

Bridges, Deficient or Obsolete 47

Fatality Rate Per 100 Million Miles Driven....25

Urban Interstate Congested 21

Urban Interstate in Poor Condition....19

Rural Interstate in Poor Condition....26

Percent of Narrow Lanes, Rural 50

Total Disbursements....27

Disbursements – Capital, Bridges....19

Disbursements – Maintenance 38

Disbursements – Administration....27

Rhode Island

South Carolina

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	5
Bridges, Deficient or Obsolete	20
Fatality Rate Per 100 Million Miles Driven	47
Urban Interstate Congested	36
Urban Interstate in Poor Condition	11
Rural Interstate in Poor Condition	21
Percent of Narrow Lanes, Rural	26
Total Disbursements	2
Disbursements – Capital, Bridges	1
Disbursements – Maintenance	10
Disbursements – Administration	6

South Dakota

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	33
Bridges, Deficient or Obsolete	25
Fatality Rate Per 100 Million Miles Driven	38
Urban Interstate Congested	1
Urban Interstate in Poor Condition	34
Rural Interstate in Poor Condition	1
Percent of Narrow Lanes, Rural	1
Total Disbursements	4
Disbursements – Capital, Bridges	5
Disbursements – Maintenance	3
Disbursements – Administration	14

Tennessee

Texas

Utah

Overall Rank in 2007 - 16

Overall Rank in 2006 - 25

Overall Rank in 2005 - 21

Overall Rank in 2000 - 24

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	40
Bridges, Deficient or Obsolete	8
Fatality Rate Per 100 Million Miles Driven	12
Urban Interstate Congested	17
Urban Interstate in Poor Condition	17
Rural Interstate in Poor Condition	30
Percent of Narrow Lanes, Rural	1
Total Disbursements	36
Disbursements – Capital, Bridges	40
Disbursements – Maintenance	28
Disbursements – Administration	32

Vermont

Virginia

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	3
Bridges, Deficient or Obsolete	28
Fatality Rate Per 100 Million Miles Driven	19
Urban Interstate Congested	18
Urban Interstate in Poor Condition	23
Rural Interstate in Poor Condition	1
Percent of Narrow Lanes, Rural	45
Total Disbursements	6
Disbursements – Capital, Bridges	2
Disbursements – Maintenance	21
Disbursements – Administration	15

Washington

West Virginia

Overall Rank in 2007 - 26

Overall Rank in 2006 - 24

Overall Rank in 2005 - 26

Overall Rank in 2000 - 32

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	6
Bridges, Deficient or Obsolete	45
Fatality Rate Per 100 Million Miles Driven	48
Urban Interstate Congested	6
Urban Interstate in Poor Condition	25
Rural Interstate in Poor Condition	35
Percent of Narrow Lanes, Rural	48
Total Disbursements	1
Disbursements – Capital, Bridges	3
Disbursements – Maintenance	2
Disbursements – Administration	5

Wisconsin

Wyoming

Overall Rank in 2007 - 6

Overall Rank in 2006 - 4

Overall Rank in 2005 - 7

Overall Rank in 2000 - 1

Performance by Category in 2007	**Rank**
State-Controlled Highway Miles	35
Bridges, Deficient or Obsolete	15
Fatality Rate Per 100 Million Miles Driven	36
Urban Interstate Congested	1
Urban Interstate in Poor Condition	32
Rural Interstate in Poor Condition	33
Percent of Narrow Lanes, Rural	12
Total Disbursements	10
Disbursements – Capital, Bridges	11
Disbursements – Maintenance	16
Disbursements – Administration	19

Technical Notes

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

A. 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 account for 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 also 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 (FHWA), in Highway Statistics, 2007, Table HM-10 (http://www.fhwa.dot.gov/policy/ohim/hs07/xls/hm10.xls).

B. Population, Travel, Vehicles and Federal Allocations

In Table 17, we also consider whether other definitions of 'size' (population, travel, vehicle registrations or federal allocations) might yield similar or different findings. Statistics for state population, travel and vehicle registrations are from Highway Statistics, Tables PS1 and MV1, for 2007. Data for federal allocations to the states and each state's contribution to the Highway Trust

Fund come from Highway Statistics, Table FE221. This table also shows information for donor (contribute more than receive) and 'donee'(contribute less than receive) contributions from 1956 to 2007.

C. Receipts For State-Controlled Highways

Receipts for state-controlled 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-controlled highways, as reported by the states in Highway Statistics, 2007, Table SF-3 (http://www.fhwa.dot.gov/policy/ohim/hs07/finance.htm). Revenues include those of all state-controlled roads, not just the state highway system.

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 state-controlled mile 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.

Unfortunately, due to a staffing problem at the Federal Highway Administration (FHWA), the 'receipts' data were not available for 2007, and therefore are dropped from the assessment. The use of this data in future years is under review.

D. Capital and Bridge Disbursements

Disbursements for state-controlled 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 workforces 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 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, 2007, FHWA, Table SF-4 (http://www.fhwa.dot.gov/policy/ohim/hs07/finance.htm). 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.

E. Maintenance Disbursements

The source for maintenance disbursements is also Table SF-4, Highway Statistics 2007, FHWA (http://www.fhwa.dot.gov/policy/ohim/hs07/finance.htm). 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.

F. Administrative Disbursements

Administrative disbursements are intended to reflect 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 again Table SF-4, Highway Statistics 2007, FHWA (http://www.fhwa.dot.gov/policy/ohim/hs07/finance.htm). 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.

G. Total Disbursements

Total disbursements represent total state outlays for state-controlled roads and include several categories not detailed above. Usually, states disburse about 2-3 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 than 'receipts' as states move money into projects without increasing revenues.

The source for total disbursements is also Table SF-4, Highway Statistics 2007, FHWA (http://www.fhwa.dot.gov/policy/ohim/hs07/finance.htm). 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, with the highest per-mile expenditures being rated lowest.

H. Rural Interstate Condition

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 1 inch per 100 feet) would be classified as 'excellent'. These measures also vary by section length: long smooth sections (greater than 1 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 Highway Statistics 2007, FHWA, Table HM-64 (http://www.fhwa.dot.gov/policy/ohim/hs07/xls/hm64.xls). This table shows miles by roughness, for several functional classes, for each state. We measure roughness by subjecting mileage to the International Roughness Index (IRI). 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.)

I. Rural Arterial Condition

Rural other principal arterials are the major inter-city connectors, off the interstate system, connecting regions of states. They can be US-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 well-being 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 2007, FHWA, Table HM-64 (http://www.fhwa.dot.gov/policy/ohim/hs07/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.

J. Urban Interstate Condition

The measure used for urban interstate road condition is again the International Roughness Index (IRI), and the same cutoff as for rural interstates, 170 inches per mile or higher, for 'poor' mileage.

The source of road roughness data is also Highway Statistics 2007, FHWA, Table HM-64 (http://www.fhwa.dot.gov/policy/ohim/hs07/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.

K. 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 seconds 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 of 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 Highway Statistics 2007, FHWA, Table HM 61 (http://www.fhwa.dot.gov/policy/ohim/hs07/xls/hm61.xls). Data are 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.

Two states, South Carolina and Wisconsin, reported zero congested urban interstate mileage for 2007, which was inconsistent with their reported congested mileage for 2006 (118 miles or 50 percent and 115 miles or 44 percent of their total urban interstate mileage, respectively). We used the 2006 data for these two 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 until 2000, and now is 2,400 vehicles per lane per hour. For this reason, comparisons of congestion trends before about 2001 should be cautious.

L. 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 2007, FHWA. Table FI-20 (http://www.fhwa.dot.gov/policy/ohim/hs07/xls/fi20.xls) provides a count of fatalities by state and functional class for 2007, and Table HM-81 (http://www.fhwa.dot.gov/policy/ohim/hs07/xls/hm81.xls) provides an estimate of daily vehicle-miles of travel for the state highway system, by state.

M. Deficient Bridges

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

Historically we have used an annual summary of bridge deficiencies prepared by *Better Roads*, a trade publication, to assess bridge conditions. However, beginning in 2007 we used summaries prepared by the federal Bureau of Transportation Statistics, called the National Bridge Inventory, rather than data from *Better Roads*, since that is in a more convenient form. Since the National Bridge Inventory contains a mixture of inspections, some as old as two years, the 'average' inspection is about one-year old. So, a 'December 2008' summary from the Inventory would represent, on average, bridge condition as of 2007, consistent with our other data.

N. Rural Narrow Lanes

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 2007, FHWA, Table HM-52 (http://www.fhwa.dot.gov/policy/ohim/hs07/xls/hm53.xls). This table shows the mileage of roads, by functional class, in various lane-width categories, by state. For our purpose, 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.

O. Methodology of Overall Ratings

The 2007 overall ratings for each state are developed in several steps.

- First, the relative performance of each state on each of 11 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 (11 for 49 states, 10 for Delaware which has no rural interstate)

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

  L = Average number of lanes per mile, US.

  L_s = Average number of lanes per mile, state s.

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

  $$R'_{is} = R_{is}(L/\mathbf{L}_s)$$

  Then, all 11 ratios (10 ratios for Delaware) are averaged:

  $$\text{Grand Performance Ratio}_{state} = \left(\sum_{\text{mod}\,e}^{N} R'_{is}\right)/11$$

  This method essentially treats each of the 11 measures as equally important.

About the Authors

David T. Hartgen is a senior fellow at Reason Foundation and emeritus professor of Transportation Studies at the University of North Carolina at Charlotte, where he established the Center for Interdisciplinary Transportation Studies and now conducts research in transportation policy. Before coming to Charlotte, he was at the New York State Department of Transportation and the Federal Highway Administration. He is the author of about 350 papers and reports on transportation policy and planning, is U.S. Co-Editor of the international journal *Transportation*, and is active in professional organizations, particularly the Transportation Research Board. He holds engineering degrees from Duke University and Northwestern University and has taught at SUNY Albany, Union University and Syracuse University. His recent studies of congestion for Reason Foundation (at www.reason.org), urban growth for the Urban Land Institute (at www.hartgengroup.net) and transit and congestion in North Carolina (at www.johnlocke.org) have attracted wide national attention. He can be contacted at david@hartgengroup.net, or by telephone at 704-405-4278.

Ravi K. Karanam is a System-On-Chip Verification Engineer at Qualcomm Incorporated. He graduated from the University of North Carolina at Charlotte with an MS in Electrical Engineering. His primary areas of interest are in the design and verification of system-on-chips for mobile computing. He has been a key participant in the annual Highway Study for the last several years.

M. Gregory Fields is a retired military officer with degrees from West Point, Webster University in St. Louis, and UNC Charlotte. He is enrolled in the PhD program in Urban Regional Analysis at UNC Charlotte and has participated in a number of comparative transportation studies including the Fraser Institute's study of Canadian provinces, Reason's recent study of congestion, and Reason's recent study of accessibility and productivity.

Related Reason Foundation Studies

David T. Hartgen and M. Gregory Fields, *Gridlock and Growth: The Effect of Traffic Congestion on Regional Economic Performance*, Reason Foundation Policy Study No. 371, June 2009.

David T. Hartgen and Ravi K. Karanam, *17th Annual Report on the Performance of State Highway Systems* (1984–2006), Reason Foundation Policy Study No.369, July 2008, http://www.reason.org/news/show/1003049.html

David T. Hartgen and Ravi K. Karanam, *16th Annual Report on the Performance of State Highway Systems* (1984–2005), Reason Foundation Policy Study No.360, June 2007, http://www.reason.org/news/show/1002859.html.

Peter Samuel, *Leasing State Toll Roads: Frequently Asked Questions*, Reason Foundation Policy Brief No.60, March 2007, http://www.reason.org/pb60_leasing_state_toll_roads.pdf.

Leonard C. Gilroy, Robert W. Poole, Jr., Peter Samuel, and Geoffrey Segal, *Building New Roads Through Public-Private Partnerships: Frequently Asked Questions*, Reason Foundation Policy Brief No.58, March 2007, http://www.reason.org/pb58_building_new_roads.pdf.

Peter Samuel, *Innovative Roadway Design: Making Highways More Likeable*, Reason Foundation Policy Study No.348, September 2006, http://www.reason.org/ps348.pdf.

David T. Hartgen and M. Gregory Fields, *Building Roads to Reduce Traffic Congestion in America 's Cities: How Much and at What Cost?,* Policy Study No. 346, August 2006, http://www.reason.org/news/show/127670.html.

Reason Foundation
3415 S. Sepulveda Blvd., Suite 400
Los Angeles, CA 90034
310/391-2245
310/391-4395 (fax)
www.reason.org