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20th Annual Report on the Performance of State Highway Systems

by David T. Hartgen, Ph.D., P.E., M. Gregory Fields and Elizabeth San José
Project Director: Adrian T. Moore, Ph.D.



Reason Foundation



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20th Annual Report on the Performance of State Highway Systems (1984-2009/10)

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Part 1

Overview

Reason Foundation's 20th Annual Highway Report tracks the performance of state-owned highway systems of the United States from 1984 to 2009, with some more recent information (fatalities, bridges, travel, economic trends and federal stimulus funds) for 2010 and 2011. Eleven indicators make up each state's overall rating. They cover highway expenditures, interstate and primary road pavement condition, bridge condition, urban interstate congestion, fatality rates and narrow rural lanes. The study is based on spending and performance data submitted by the state highway agencies to the federal government.

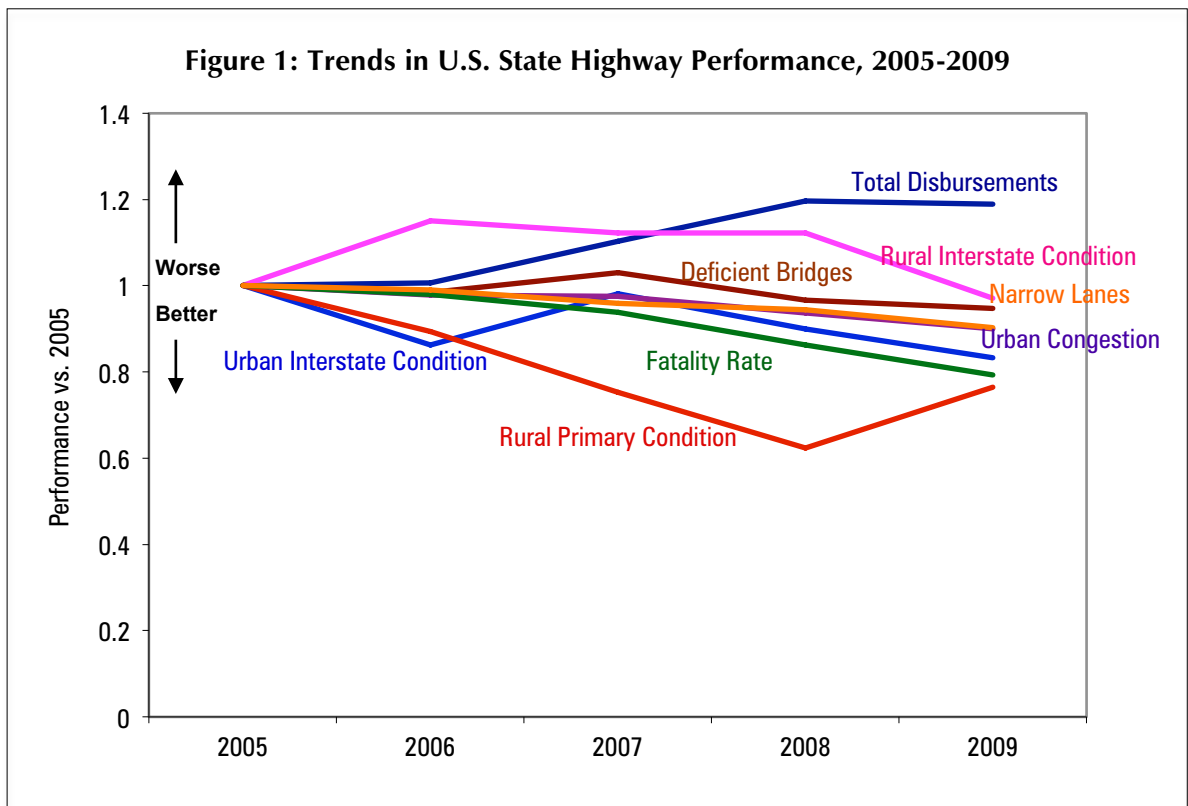
Table 1 summarizes recent system trends for key indicators. Although some individual system elements (roads, bridges, pavements) steadily deteriorate over time, others are improved by maintenance and re-construction. Over time, therefore, the system has improved in condition and in 2009 *the overall condition of the U.S. state-owned highway system was in the best shape ever*. If difficult-to-measure features such as accessibility, mobility and system quality are included, the improvement is even more dramatic.

Statistic	2005	2006	2007	2008	2009	% Change 2008–2009
Mileage under State Control	812,871	814,770	815,504	815,594	814,287	-0.16
Total Revenues, All Sources, \$B	102.71	104.73	118.65	124.04	117.02	-5.66
Total Expenditures, \$B	98.91	99.61	109.17	118.36	117.69	-0.57
Expenditures, Capital/Bridges, \$B	50.31	54.66	62.57	62.91	65.10	3.48
Expenditures, Maintenance, \$B	15.94	17.07	19.45	18.71	20.76	10.96
Expenditures, Administration, \$B	6.36	7.02	7.91	10.78	9.25	-14.19
Highway Construction Price Index	169.20	192.45	203.01	189.02	178.71	-5.45
Rural Interstate, Percent Poor Condition*	1.72	1.98	1.93	1.93	1.67	-13.47
Urban Interstate, Percent Poor Condition*	5.97	5.15	5.86	5.37	4.97	-7.45
Rural Arterial, Percent Poor Condition*	0.85	0.76	0.64	0.53	0.65	22.64
Urban Interstate, Percent Congested*	51.85	50.72	50.59	48.61	46.67	-3.99
Bridges, Percent Deficient*	24.53	24.13	25.29	23.72	23.24	-2.02
Fatality Rate per 100 Million Veh-Miles*	1.45	1.42	1.36	1.25	1.15	-8.60
Rural Primary, Percent Narrow Lanes*	10.70	10.60	10.27	10.11	9.66	-4.45

*weighted U.S. averages

The system's overall condition improved dramatically from 2008 to 2009. Six of the seven key indicators of system condition showed improvement, including large gains in rural interstate and

urban interstate condition, and a reduction in the fatality rate. Only rural arterial condition worsened slightly, but poor mileage is still only a fraction of 1 percent. These improvements were achieved despite a slight reduction in per-mile expenditures. All seven indicators of performance improved between 2005 and 2009. Overall, expenditures for state-owned roads have increased about 18.8 percent since 2005, but in the 2008-09 recession expenditures actually decreased slightly between 2008 and 2009, dropping about 0.6 percent. States were also more cost-efficient with their money in 2009: administrative costs dropped about 14 percent (possibly through the states disbursing funds received earlier). In addition, money was shifted to capital and bridge expenditures (up 3.5 percent) and maintenance expenditures (up 11.0 percent).



The U.S. economic downturn, which began in 2007 and continued in earnest in 2008 and 2009, is an important background factor influencing these trends. In 2008 total U.S. annual vehicle-miles traveled (VMT) fell about 3.5 percent from 2007 levels, lowering congestion slightly from prior years.¹ Also, beginning in late 2008 and continuing into 2009 and 2010, federal stimulus funding contributed an additional 22 percent to funding resources. These events have given the states some breathing room in addressing long-delayed construction work and may have led to better overall system performance. But looking forward, the recession also slowed federal and state fuel tax revenues, making future repairs more difficult.

The top rated states continue to be dominated by relatively small rural states. North Dakota continued to lead the cost-effectiveness ratings, followed by Kansas, Wyoming, New Mexico and Montana. But some large states—notably Missouri, Texas and Georgia—were also top-12 performers. At the bottom were Alaska, Rhode Island, Hawaii, California and New Jersey. Most

states continued to improve their systems, but increasingly, system performance problems seem to be concentrated in a few states:

- Almost two-thirds of the poor-condition rural interstate mileage is in just five states: California, Alaska, Minnesota, New York and Colorado.
- Over half (52.7 percent) of the poor-condition urban interstate mileage is in just five states: California, New York, New Jersey, Illinois and Texas.
- Two states (Alaska and Rhode Island) reported more than 10 percent of their rural primary mileage to be in poor condition.
- Four states (California, Minnesota, Maryland and Connecticut) reported more than two-thirds of their urban interstates congested.
- Although bridge conditions are steadily improving, 20 states report more than one-quarter of their bridges are deficient, with one state (Rhode Island) reporting more than 50 percent of its bridges deficient.
- Most states are improving their fatality rates. One state (Montana) reports a fatality rate greater than 2.0 per 100 million vehicle-miles and nine other states report a rate greater than 1.5 fatalities per 100 million vehicle-miles.
- Five states (Pennsylvania, Arkansas, West Virginia, Washington and Virginia) report more than one-quarter of their rural primary mileage with narrow lanes.

A widening gap seems to be emerging between most states that are making progress and a few states that are finding it difficult to improve. There is also increasing evidence that higher-level road systems (Interstates, other freeways and principal arterials) are in better shape than lower-level road systems, particularly local roads.

At present there are no national or cross-state standards for basic measures of transportation system performance, although several measures are fairly widely used. Recent draft legislation has called for establishing several national performance measures. Unfortunately, the release of some data (such as for pavement condition, financial statistics and mileage) is increasingly delayed, while the release of other data (such as for traffic accidents, congestion and bridge condition) is more timely. In the internet era we should not have to wait more than two years for basic information on road conditions, financial statistics or other key measures. These delays threaten the timely usefulness of our national data reporting systems and directly impact our ability to make sound policy decisions based on recent data. Until these issues are resolved it will be difficult to track, in timely fashion, the overall condition of the U.S. highway system against targeted goals or to identify and assist states that need help in meeting goals.

Part 2

Economic and System Trends

The financial and physical condition of the state-owned highway system should be reviewed in the context of broader economic trends. These trends (particularly trends in population, employment, Gross Domestic Product (GDP), traffic and construction prices) are the underlying factors that generate travel demand, provide federal and state revenues for highway repairs and determine repair costs.

The Effects of the 2008-09 Recession

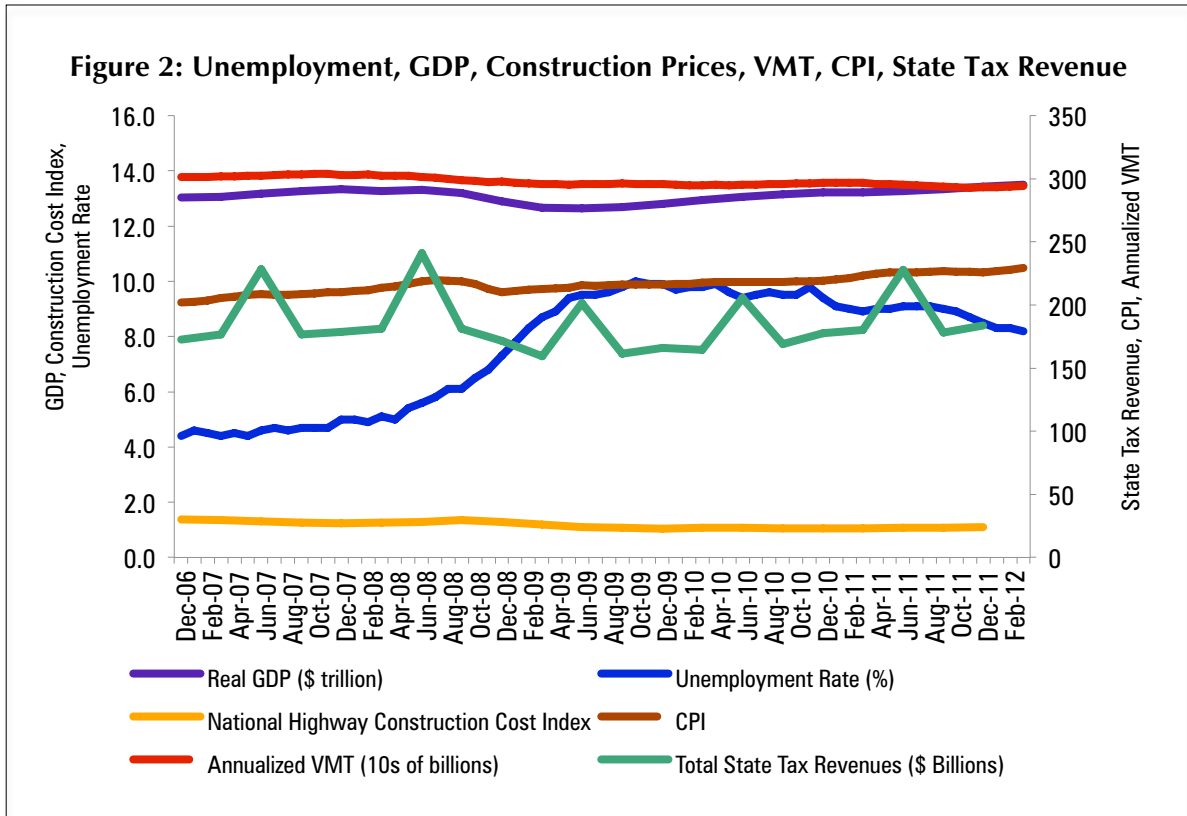
The recent financial crisis began in mid- to late-2007 (Figure 2). U.S. Real GDP declined 3.3 percent from the second quarter of 2008 to the second quarter of 2009, reflecting the common definition of a recession, which is two consecutive quarters of negative real GDP growth.² Since this decline GDP has recovered steadily, albeit slowly and passed the previous GDP high of the fourth quarter in 2007 (\$13.326 trillion) in the third quarter of 2011 (\$13.332 trillion). Consumer prices, as reflected in the Consumer Price Index (CPI), follow trends similar to that of GDP. Prices steadily rose until the middle of 2008, at which point the CPI declined as demand for products fell. It began rising in early 2009 and by January 2011 had reached the previous highs of 2008. It has continued to increase and is now about 4.5 percent higher than in 2008.

Unemployment reflects both the size of the labor force and corporate and government actions regarding layoffs and terminations. From 2005 to 2008, unemployment rates ranged from approximately 4.4 percent to 5.4 percent and were under 5.0 percent from December 2005 to November 2007. In May 2007, unemployment bottomed out at 4.4 percent. Thereafter it rose quickly, reaching its peak in October 2009 at 10.1 percent. Since this point it has improved steadily and by May 2012 stood at 8.2 percent, well above pre-recession levels.

These economic shocks have significantly affected on the flow of tax revenues to state coffers. The overall trend of state tax revenues in the past five years shows a general increase through June of 2008, followed by decreases through June 2010 and slight increases since then.

These trends have also dramatically affected flow of revenues to state and federal highway funds. Measures of travel, particularly vehicle-miles of travel (VMT), influence fuel sales and highway revenues. Trends in VMT nationally were up from January 2005 to November 2007. During this period, month-to-month VMT growth ranged from -0.1 percent to +0.3 percent. However, VMT

growth then turned down, beginning in late 2007 through mid-2009. Since then, VMT trends have been relatively flat and in March 2012, VMT remained 3.3 percent below its fourth quarter 2007 high.



Highway construction price trends have to some extent offset declining highway fund revenues. Overall highway construction prices illustrate an increasing trend until their high in the third quarter 2006, at which point the index began to decline, reaching a low in the fourth quarter of 2009, some 26 percent below the high. In recent quarters, the index has been relatively flat, with a slight growth trend.

An important issue regarding continuing transportation funding is the status of federal legislation. Since the expiration of SAFETEA-LU—the federal legislation covering FY 2004-2009—on September 30, 2009, Congress has failed to pass new legislation. Instead, Congress has transferred general funds to the Highway Trust Fund or extended SAFETEA-LU nine separate times. Initially \$7 B was transferred in August 2009, another \$8 B in September 2009 and another \$19.5 B in March 2010. These transfers were intended to keep the Highway Trust Fund solvent and the federal highway program in place until congressional action can revise SAFETEA-LU. These transfers-continuations have continued periodically since then. The latest, in March 2012, extended SAFETEA-LU to June 30th, 2012. In the meantime, Congress has continued to debate various proposals for a new surface transportation program and may continue to do so until after the November 2012 elections.

One effect of these periodic transfers has been a *de-facto* weaning of the highway program from dependence on gasoline revenues, which have been falling short of needs as fuel efficiency rises. How long this approach will continue is conjecture, but many observers expect no major action on the federal transportation program until after the November 2012 election³.

Additional support for the federal highway program has also come from federal “stimulus” funds. These funds, also known as Highway Infrastructure Investment Grants (HIIG), have provided \$26 billion for almost 13,000 highway projects. HIIG funds have been focused primarily on job creation or job protection and are targeted at shovel-ready projects near bid/construction. They have not been limited only to state highways or to federal needs; some target local transportation needs. Table 2 shows the program status as of May 11, 2012. Virtually all funds available have been obligated. Most of the funds are directed to projects that would improve or widen pavements, add new roads or repair bridges.

State (In Order of Percent of 2009 Disbursements)	Total HIIG Available (\$M)	Total HIIG Obligations (\$M)	Percent of HIIG Obligated	2009 Total State Highway System Disbursements, (\$M)	HIIG as a Percentage of 2009 Total Disbursements
North Dakota	\$167	\$164	98.2	\$386	43.3
South Dakota	\$187	\$186	99.9	\$459	40.7
Michigan	\$856	\$854	99.8	\$2,152	39.8
Arkansas	\$352	\$352	100.0	\$909	38.7
Vermont	\$126	\$126	99.9	\$339	37.1
Rhode Island	\$137	\$137	99.7	\$385	35.7
South Carolina	\$464	\$464	100.0	\$1,306	35.5
Alabama	\$514	\$513	100.0	\$1,456	35.3
Tennessee	\$573	\$571	99.6	\$1,639	35.0
Mississippi	\$355	\$352	99.1	\$1,038	34.2
Iowa	\$358	\$357	99.8	\$1,060	33.7
Nebraska	\$232	\$227	98.0	\$708	32.8
Montana	\$213	\$213	100.0	\$665	32.0
Minnesota	\$506	\$506	100.0	\$1,663	30.5
Kansas	\$348	\$348	99.9	\$1,158	30.1
Oklahoma	\$465	\$465	100.0	\$1,548	30.0
Wisconsin	\$531	\$528	99.4	\$1,956	27.2
Hawaii	\$126	\$125	99.3	\$467	26.9
Georgia	\$903	\$902	99.9	\$3,393	26.6
Ohio	\$920	\$917	99.7	\$3,474	26.5
Indiana	\$658	\$652	99.1	*\$2,487	26.4
Idaho	\$179	\$179	99.9	\$680	26.3
Wyoming	\$158	\$158	100.0	\$607	26.0
Missouri	\$639	\$639	100.0	\$2,476	25.8
Colorado	\$386	\$386	99.9	\$1,592	24.2
Arizona	\$521	\$517	99.2	\$2,169	24.0
Texas	\$2,240	\$2,240	100.0	\$9,420	23.8
New Mexico	\$253	\$250	99.0	\$1,110	22.8

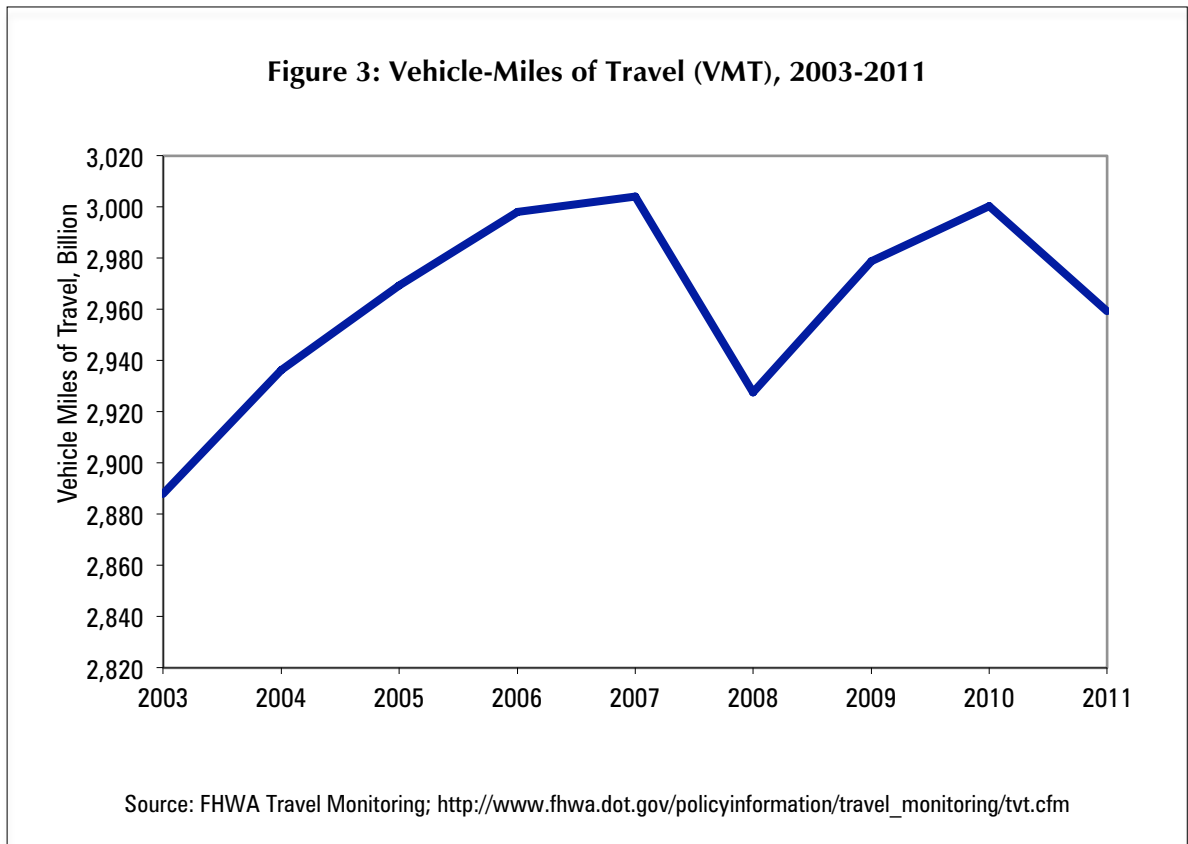
Table 2: Status of Highway Infrastructure Investment Grants, by State					
State (In Order of Percent of 2009 Disbursements)	Total HIIG Available (\$M)	Total HIIG Obligations (\$M)	Percent of HIIG Obligated	2009 Total State Highway System Disbursements, (\$M)	HIIG as a Percentage of 2009 Total Disbursements
Oregon	\$275	\$270	98.2	\$1,217	22.6
Maine	\$138	\$137	99.6	\$627	22.0
New Hampshire	\$129	\$129	100.0	\$603	21.5
North Carolina	\$730	\$727	99.5	\$3,512	20.8
California	\$2,542	\$2,527	99.4	\$12,404	20.5
Florida	\$1,347	\$1,337	99.3	\$6,659	20.2
Illinois	\$937	\$935	99.8	\$4,652	20.1
Virginia	\$634	\$634	100.0	\$3,217	19.7
Kentucky	\$421	\$420	99.8	\$2,220	19.0
Alaska	\$173	\$172	99.4	\$934	18.5
Maryland	\$416	\$416	100.0	\$2,289	18.2
Delaware	\$122	\$122	100.0	\$711	17.1
Nevada	\$202	\$201	99.7	\$1,215	16.6
Massachusetts	\$378	\$374	98.8	\$2,339	16.2
Washington	\$491	\$490	99.8	\$3,055	16.1
New Jersey	\$652	\$641	98.3	\$4,070	16.0
Pennsylvania	\$1,029	\$1,029	100.0	\$6,534	15.7
New York	\$951	\$944	99.2	\$6,098	15.6
West Virginia	\$211	\$208	98.6	\$1,399	15.1
Connecticut	\$299	\$297	99.4	\$2,143	13.9
Utah	\$214	\$213	99.8	\$1,615	13.2
Louisiana	\$433	\$433	100.0	\$3,476	12.5
Total	\$26,090	\$25,985	99.6	\$117,691	22.2

*2008 data

On average, the stimulus funds represent about 22.2 percent of the 2009 state highway disbursements. But for some states (North Dakota, South Dakota) stimulus funds can reach over 40 percent of the annual state funding, while in other states (e.g., Louisiana, Utah and Connecticut) they account for as little as 14 percent of the annual program. Further, some of these funds target local roads and bridges. Therefore, given the focus of stimulus funds on projects that are likely to significantly impact system condition, their impact should be largest in smaller rural states. Since many of these states already have relatively good systems, the impact of stimulus funds is likely to accentuate the differences between high-performing (generally smaller, rural) and low-performing (generally larger, urban) states.

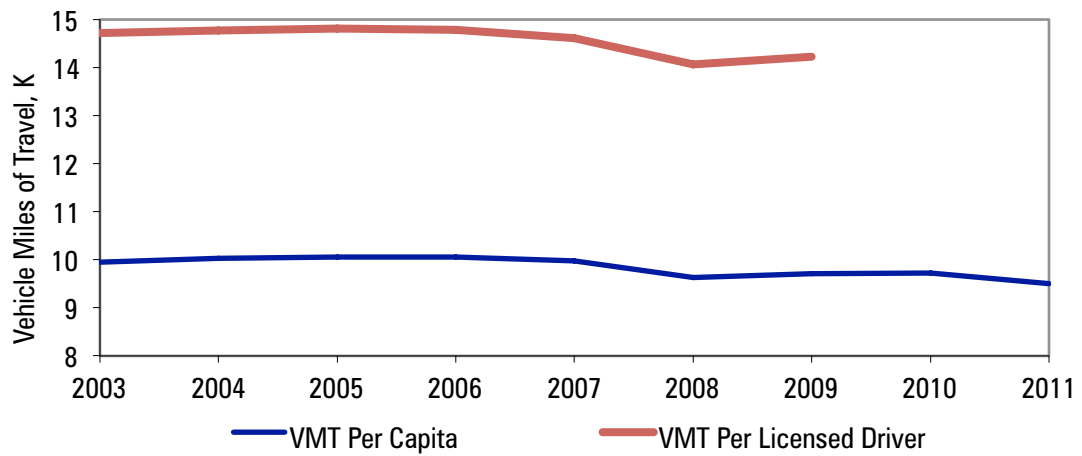
Travel and Unemployment

In the last two years as the economic recovery has slowly emerged, VMT and other measures have also shown signs of recovery. Since its low point in 2008 (a 2.54% drop from 2007), VMT reached 99.9% of its 2007 level at the end of 2010 and showed signs of revival, effectively wiping out the three-year downturn. In March 2011, however, after increasing nine straight months (as compared to the previous month), VMT took a slight dip (-0.1%), likely due to rising gas prices averaging above \$3.50/gallon nationally. Gas prices continued to increase through mid-May 2011 (nearing \$4.00/gallon nationally) before beginning to subside. VMT continued the March dip for the remainder of 2011. By 2011's end, VMT was down about 1.8 percent from the March high. Nonetheless, as gas prices decline again and/or drivers adjust to the new elevated "normal" cost of gas, VMT will most likely to rise again, although at a slower rate of increase.



Population continued to grow during this period and the near return to the 2007 VMT levels in 2010 masked the less abrupt decline and slower recovery of VMT *per capita*, which in 2011 was just 5.5 percent below its 2006 high at 10,055 annual miles per person. VMT per licensed driver has likewise failed to recover fully, reaching levels in 2009 that were 4.0 percent below the 2005 high of 14,800 miles per driver. People are traveling slightly fewer miles now than they were several years ago, a trend that is likely to continue, at least until the economy fully recovers.

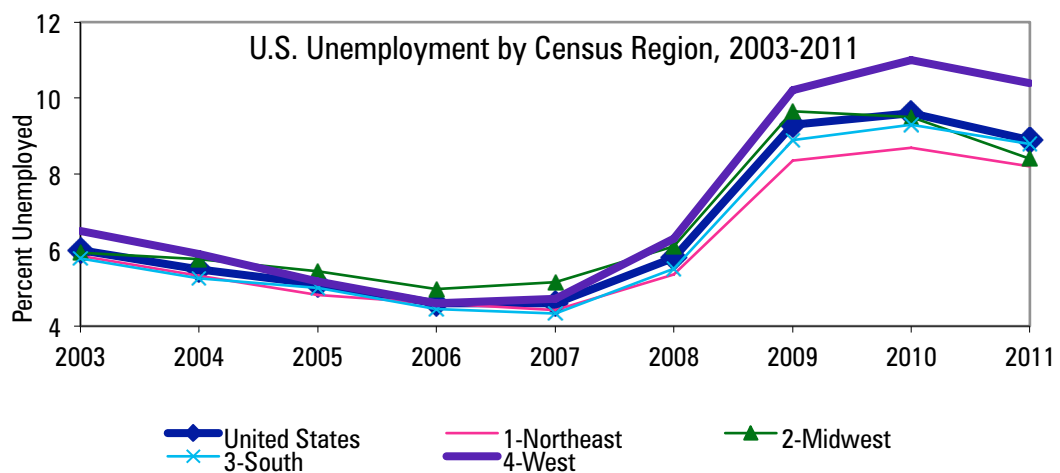
Figure 4: Vehicle-miles of Travel (VMT) per Capita or Licensed Driver, 2003-2011



Sources: U.S. Census; FHWA Highway Statistics, Table DL-1C; FHWA Office of Highway Policy Information, Travel Monitoring; http://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm,

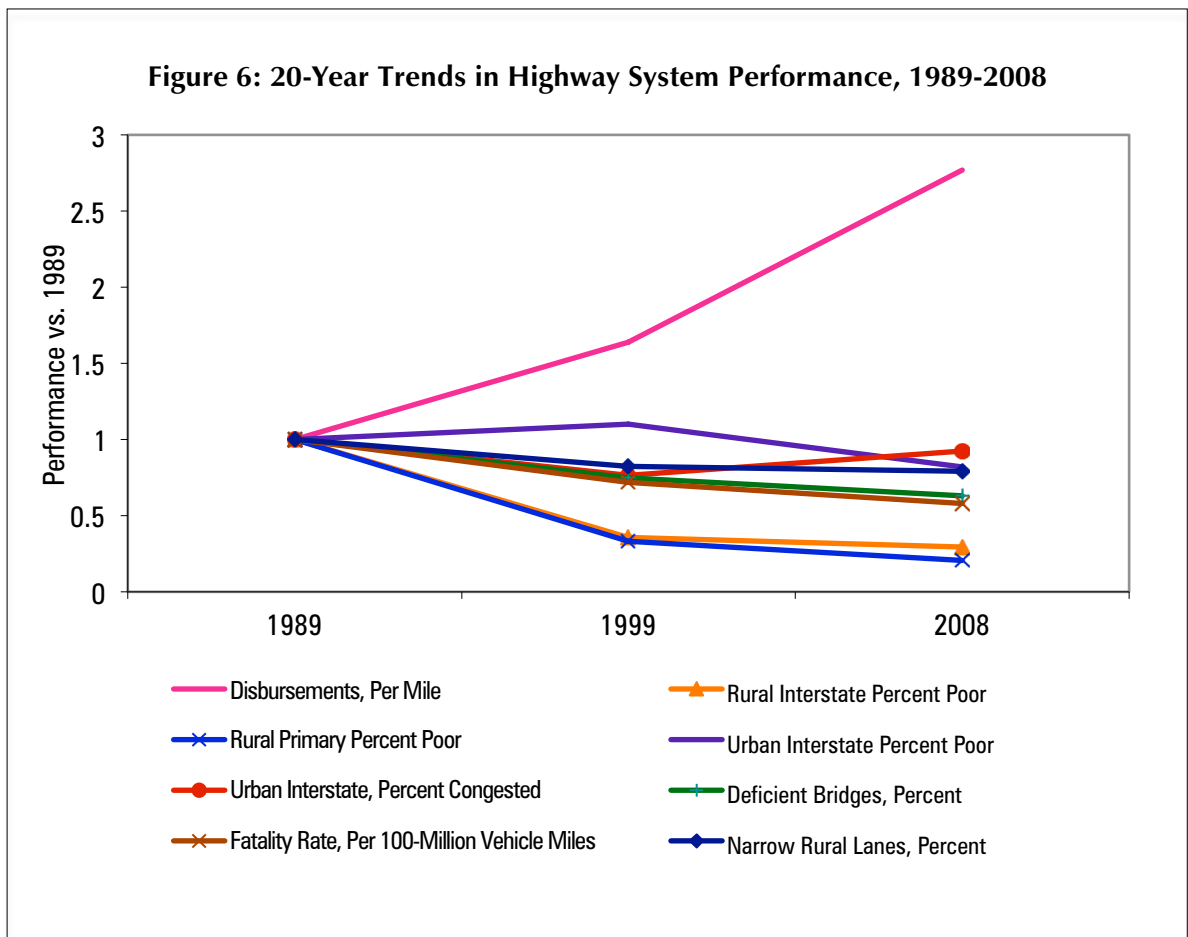
The economy has yet to recover and unemployment rates remain stubbornly high—especially in the West Region (Montana south to New Mexico and all states to the west where the unemployment rate is 1.5 points above the 2011 U.S. average of 8.9 percent.⁴ 2010 rates are the high point on the chart for U.S. as a whole and also for all Census regions except the Midwest, where the high was in 2009. Since then, the nationwide employment picture improved slowly until May 2012, when the unemployment rate saw a slight uptick (8.2 percent) from the month before (8.1 percent). Whether this is a new trend or a brief aberration remains to be seen. Regardless, it will likely take years before the country again enjoys the 4.6 percent unemployment rate of 2007.

Figure 5: United States Annual Unemployment Rate by Census Region, 2003-2011



20-Year System Performance Trends

Although it is widely believed that the U.S. highway system is crumbling, objective data tell a different story. The recent USDOT report to Congress on the status of the nation’s highways, bridges and transit finds that four highway indicators (pavement condition, bridge condition, congestion and accident rates) have all improved in the last decade.⁵ And a long-term study looking back over 20 years found that seven key system performance measures improved substantially between 1989 and 2008.⁶ Figure 6 summarizes the results of this review. The condition of rural interstates and rural principal arterials improved most, with poor-rated pavements declining 70 and 80 percent, respectively. Fatality rates declined 42 percent and deficient bridges declined 24 percent. Even urban interstate congestion was found to have slightly improved, by about 8 percent. But six of the seven key measures also show slower progress in the last decade compared to the 1990s, suggesting more difficult future progress. On one measure (fatality rates) all 50 states improved, on two others (bridge deficiencies and narrow lanes of rural arterials) 40 states improved and on the remaining four measures 32-37 states improved. From 1989 to 2008, per-mile expenditures for state-administered highways increased 60 percent, adjusted for inflation. However, there was only weak correlation between system improvement and expenditures, with high-spending states and low-spending states both improving and worsening on various measures.



Performance Goals and Standards

Although this Annual Report rates the 50 state highway systems against one another on various measures, it does not specify the level of performance that *should* be achieved at either the national or state level. How good *should* a road system be? This is an important question that deserves some discussion.

When the first Annual Highway Report was published in 1991, there was considerable opposition from the states to the idea of comparing state highways on various measures of performance. Even though FHWA had for years prepared rank-order charts showing interstate system condition, some states and trade organizations were concerned that direct comparisons were inappropriate or might be interpreted negatively. Beginning with the 1994 edition of *Highway Statistics*, FHWA's rank-order charts were subsequently deleted from *Highway Statistics* and notes were added indicating that comparisons between states were "inappropriate."⁷ But shortly thereafter FHWA, the states, the American Association of State Highway and Transportation Officials (AASHTO) and TRB initiated efforts to encourage state-based performance criteria, but *without* cross-state comparisons. During the 1990s most states initiated internal efforts to measure and track performance. Many states set up internet "dashboards" showing performance of key indicators such as projects completed, accident rates, bridge condition, congestion or road condition. Some of these showed trends over time and some set goals or targets for measures, but very few compared a state with other states. A recent typical example (for New Mexico) reports measures for fatality rates, road condition and bridge condition over five to seven years.⁸ However, there was little uniformity in the measures across states and even less agreement regarding appropriate standards for satisfactory performance. A late 1990s review of various performance measures used by the states found over 525 measures in use, but very few—less than 30—in use by more than any two states, 10 by three agencies and just one by four or more agencies.⁹ Essentially, each state reinvented its own performance measures, slightly different from other states' measures and therefore not directly comparable.

During the last decade additional work has continued to expand the use of road system performance measures. AASHTO prepared several guides to development and use of state-based system performance measures, illustrating the measures of certain states.¹⁰ AASHTO's position has historically been that the 50 state highway systems are too different to be measured comparatively; the above-mentioned AASHTO review asserts that "...imposing specific performance measures as standards or targets on an organization is counterproductive...imposing 'one size fits all' national performance standards on state DOTs is counterproductive." Interestingly, the report then goes on to give examples of several performance measures, some of which (fatality rate, percent deficient bridges) are virtually identical by state. The National Cooperative Highway Research Program has also issued a series of reports dealing with various aspects of highway performance measurement.¹¹ None of these studies calls for comparable measures across states, even though for several topics (fatality rates, traffic, bridge condition), comparable measures are *de facto* in place already and for several others (congestion, pavement condition) most states use identical or very similar measures.

Recently, several reports have gone further in recommending national standards, for which cross-state consistent measurement is obviously a prerequisite. A 2010 overview study by the U.S. Government Accounting Office recommended that states and MPOs develop and use goals and performance measures to track progress over time, but did not specify either the particular measures to be used or their target values.¹² An independent review of the state highway systems by Readers Digest rated the 50 states on road safety, congestion, pavement condition, bridge condition and spending—the only other report we are aware of that considers expenditures in assigning rankings.¹³ In a 2011 review of state practices the Pew Center on the States found that only 13 states had clear goals and performance measures for their road systems.¹⁴ About three-quarters of the states were measuring infrastructure condition (but with slightly different measures) and that virtually all states were tracking accident data. But fewer states were measuring jobs and commerce, mobility, access or environment stewardship, and were using different measures (across states) to do so. An important federal series, USDOT’s Report to Congress on the Condition and Performance of the U.S. Highways, Bridges and Transit, tracks national performance over time on just a few key indicators (fatality rates, bridge condition, pavement condition for higher systems and urban congestion).¹⁵ The most recent report (issued in 2012) actually contains mostly 2008 data. The report notes, on page 41 of 502 pages, that all four measures have improved or stabilized over the decade, but provides no state-by-state tables or maps. This report series is based largely on several national data reporting systems (Highway Performance Monitoring System, Fatal Accident Reporting System, National Bridge Inventory and the National Transit Database) that were designed for consistent cross-state reporting of key indicators. The USDOT report does not suggest appropriate goals for various performance indicators, but it does estimate the cost of various levels of “maintained” or “improved” performance using a single metric for all states.

Although earlier consensus generally opposed the use of single performance measures for all states, there has been some renewed interest in *national* state performance measures that might be used to track the system performance over time or set standards for general use and would therefore have to be gathered uniformly across states. USDOT has recently suggested that several key highway performance measures will be its focus:¹⁶

- Highway-related fatalities per 100 million VMT
- Highway-related injuries per 100 million VMT
- Pavement condition: percent of VMT on National Highway System (NHS) with International Roughness Index (IRI) < 170 (excellent-good-fair condition)
- Pavement condition: percent of Strategic Highway Network (STRAHNET) miles with IRI <170
- Congestion: annual hours of delay (presumably TTI index or similar measure)
- Congested travel

While the specific measures for these are not all defined and some measures (for instance, bridge condition) are not noted, nevertheless this initiative clearly indicates an intent to measure and monitor key indicators, at least for the higher-level (NHS and STRAHNET) road system.

The recently proposed Senate MAP-21 legislation (Section 1106) calls for the establishment of a “national highway performance program” to “achieve performance targets for infrastructure condition and performance.”¹⁷ Its specified goals (and measures) are:

- **Safety** (“significant reduction in fatalities and injuries”);
- **Infrastructure condition** (“maintain highway infrastructure ..in a state of good repair”);
- **System reliability** (“improve efficiency of the surface transportation system.”)
- **Freight movement and economic vitality** (“improve national freight network, strengthen rural communities... and support regional economic development”)
- **Environmental sustainability** (“enhance performance while protecting ...natural environment”)
- **Reduced project delivery delays** (“...eliminate delays in project development”)

Although the bill does not specify target levels or numerical goals, it goes further than prior legislation in naming and partially defining national goals for the National Highway System. But it is silent about the *state-owned* highway systems. It remains to be seen if this proposed initiative will become law.

To summarize, considerable evidence is accumulating that the U.S. highway state-owned system is actually *improving* in condition and performance on numerous measures, but that improvement seems to be slowing. Some evidence is also emerging that lagging highway performance is increasingly limited to a few states and to lower road systems. Against this background, pressure for national performance standards seems to be increasing. Nevertheless, as a profession the highway management community is clearly several decades behind others such as environmental protection, education and health management, all of which have initiated efforts to track national performance and/or set standards. Time will tell whether the U.S. will continue on a path which results in national highway performance standards, with all that entails or whether the states will continue to manage their own systems without the backdrop of national measures or goals. In the interim it is unlikely that federal or state initiatives will reduce the need for long-term comparative assessments of state road systems on a few key performance measures, such as are produced by this series of reports.

Part 3

Overall Highway Performance Rank by States

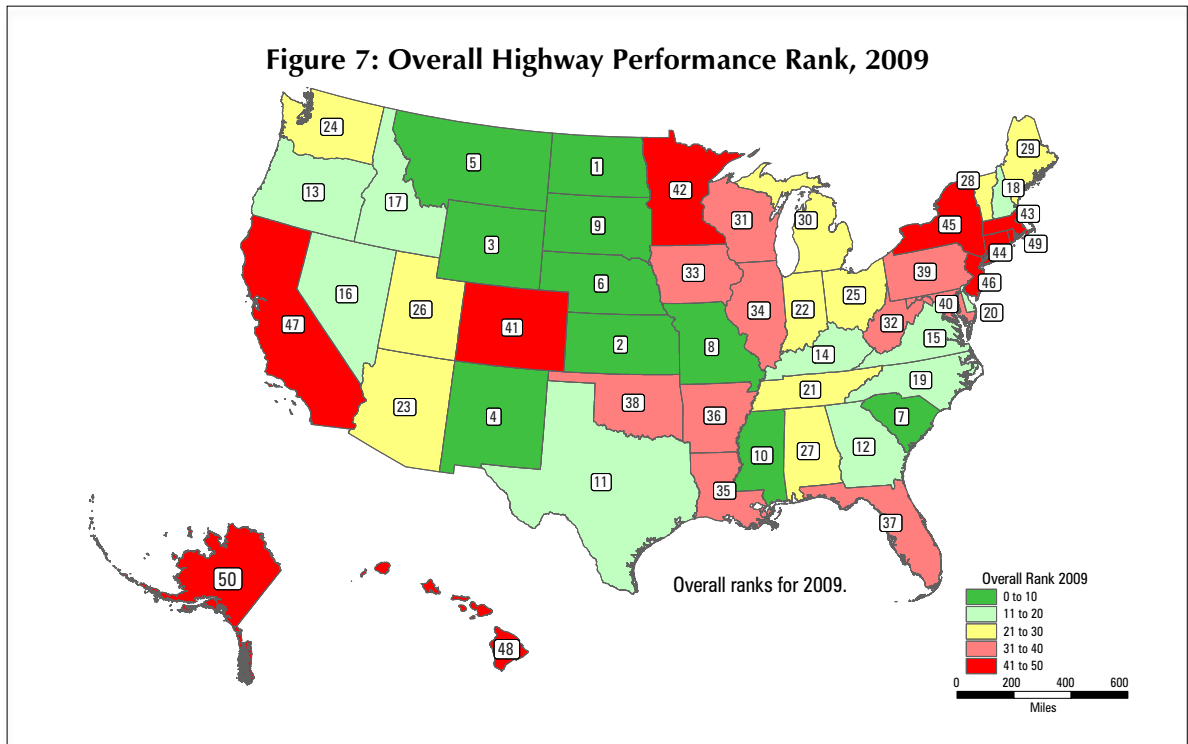
This report continues its annual ratings of state highway systems on cost versus effectiveness. Since the states have different budgets, system sizes and traffic, comparative performance depends on both system quality and the resources available. To determine relative performance, state highway system budgets (per mile of responsibility) are compared with system performance, state by state. States rated high typically have good-condition systems along with relatively thin budgets.

The following table shows the overall highway performance of the state highway systems for 2009 and for prior years. This year's leading states are North Dakota, Kansas, Wyoming, New Mexico and Montana. At the other end are Alaska, Rhode Island, Hawaii, California and New Jersey.

As in prior years, the best-performing states tend to be smaller, rural states with limited congestion (Figure 7). But several larger states with large urban areas also rank well: Missouri (8th), Texas (11th) and Georgia (12th). Although it is tempting to ascribe these ratings solely to background circumstances, a more careful review suggests that numerous factors—terrain, climate and geography, urban congestion, system age, budget priorities, unit cost differences, state budget circumstances and management philosophies, just to name a few—are likely also affecting overall performance. The remainder of this report reviews the statistics underlying these overall ratings in more detail.

Table 3: Overall Highway Performance Ratings, 2005-09

	2005	2006	2007	2008	2009	Change in Rank, 2008-09
ND	1	1	1	1	1	0
KS	3	5	3	3	2	1
WY	7	4	6	7	3	4
NM	4	3	2	4	4	0
MT	5	2	5	2	5	-3
NE	19	8	7	5	6	-1
SC	2	6	4	6	7	-1
MO	17	13	24	8	8	0
SD	11	7	8	12	9	3
MS	25	38	28	16	10	6
TX	15	12	17	13	11	2
GA	6	10	9	9	12	-3
OR	8	11	23	10	13	-3
KY	12	9	10	14	14	0
VA	18	16	12	18	15	3
NV	9	20	18	15	16	-1
ID	10	14	14	17	17	0
NH	34	46	39	27	18	9
NC	31	23	20	21	19	2
DE	40	28	11	11	20	-9
TN	20	19	19	19	21	-2
IN	14	15	22	23	22	1
AZ	27	26	25	26	23	3
WA	32	39	35	33	24	9
OH	16	17	13	24	25	-1
UT	21	25	16	22	26	-4
AL	43	29	25	20	27	-7
VT	37	30	42	42	28	14
ME	23	22	29	32	29	3
MI	42	42	31	35	30	5
WI	22	21	21	28	31	-3
WV	26	24	27	30	32	-2
IA	35	32	30	31	33	-2
IL	33	34	36	40	34	6
LA	30	40	43	36	35	1
AR	28	27	32	29	36	-7
FL	41	41	40	39	37	2
OK	24	33	34	37	38	-1
PA	36	36	38	38	39	-1
MD	38	37	41	43	40	3
CO	29	31	33	34	41	-7
MN	13	18	15	25	42	-17
MA	45	43	44	44	43	1
CT	39	35	37	41	44	-3
NY	48	45	45	46	45	1
NJ	50	50	47	45	46	-1
CA	44	44	48	48	47	1
HI	46	47	46	47	48	-1
RI	47	48	49	50	49	1
AK	49	49	50	49	50	-1



Several states improved their ratings sharply from 2008:

- **Vermont improved 14 spots, from 42nd to 28th**, as total disbursements increased slightly and the state's urban interstate condition problem was largely resolved.
- **New Hampshire improved 9 spots, from 27th to 18th**. Maintenance disbursements remained twice the national per-mile average but the state's urban interstate condition problem was largely resolved.
- **Washington improved 9 spots, from 33rd to 24th**, as total disbursements increased slightly and its mileage of poor condition (on urban and rural interstates and rural arterials) improved.

On the other hand several states worsened sharply from 2008:

- **Minnesota fell 17 spots, from 25th to 42nd**, as its mileage in poor condition (on urban and rural interstates and rural arterials) worsened considerably (by 4.3, 5.7 and 0.6 percentage points, respectively).
- **Delaware fell 9 spots, from 11th to 20th**, as total disbursements increased slightly and the percentage of urban interstates in poor condition doubled.
- **Alabama fell 7 spots, from 20th to 27th**, as total disbursements increased slightly and system performance worsened.
- **Arkansas fell 7 spots, from 29th to 36th**, as total disbursements remained flat while system performance worsened.
- **Colorado fell 7 spots, from 34th to 41st**, as disbursements increased but there was a large increase (4.1 percentage points) in the percentage of poor-condition rural interstates.

Part 4

Performance Indicators

Detailed data and trends in rankings for each of the states are shown in the attached tables. Selected system condition measures are also shown in the attached maps. *(For a detailed look at overall state ranks and the comparative performance of each state's highway system, 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. It includes the Interstate System, the National Highway System and most federal aid system roads. Nationwide in 2009, about 814,287 miles were under state control (Table 4, State-Controlled Highway Mileage), about 1,307 fewer miles than in 2008. However some of this mileage is for 2008. The smallest state-owned road systems continued to be Hawaii (1,011 miles) and Rhode Island (1,112 miles); the largest were North Carolina (80,214 miles) and Texas (80,212 miles).

Table 4: State-Controlled Highway Mileage, 2009

Rank	State	Mileage
1	NC	*80,214
2	TX	*80,212
3	VA	58,142
4	PA	*43,612
5	SC	41,613
6	WV	34,596
7	MO	33,638
8	KY	27,891
9	OH	*20,394
10	GA	18,283
11	CA	18,260
12	WA	17,281
13	IL	16,735
14	LA	16,694
15	AR	*16,431
16	NY	16,301
17	TN	14,204
18	OK	*13,490
19	MN	*12,905
20	NM	12,166
21	FL	*12,084
22	WI	*11,839
23	IN	11,175
24	MT	11,134
25	AL	*11,107
26	MS	10,997
27	KS	*10,607
28	NE	10,170
29	CO	*9,764
30	MI	9,701
31	IA	9,515
32	SD	*8,895
33	ME	8,652
34	OR	8,175
35	WY	7,755
36	ND	7,408
37	AK	7,401
38	AZ	*7,142
39	NV	6,085
40	UT	5,840
41	MD	5,413
42	DE	5,386
43	ID	4,959
44	CT	4,064
45	NH	*4,025
46	MA	3,639
47	NJ	3,333
48	VT	2,840
49	RI	1,112
50	HI	1,011
	US Total	814,287
	US Average	16,286

*2008 data

State Highway Agency (SHA) Miles

In 2008, about 778,345 miles were the responsibility of the 50 state highway agencies (Table 5, State Highway Agency Mileage). In most states these are generally the Interstates and other major US-numbered and state-numbered roads, but a few states also manage major portions of the rural road system. The average number of lanes, per mile, is 2.38 lanes, but a few states (New Jersey, Florida, California and Massachusetts) manage significantly wider roads. This is the latest data available; no new data is available for 2009, but SHA mileage is slow to change and relatively uniform when it does change. State rankings tend to remain predictably consistent over time.

Table 5: State Highway Agency Mileage, 2008

Rank	State	Miles	Lane- Miles	Ratio
1	WV	34,369	70,792	2.06
2	AK	5,650	11,699	2.07
3	ME	8,510	18,115	2.13
4	NC	79,466	170,084	2.14
5	VA	57,918	125,281	2.16
6	SC	41,429	89,976	2.17
7	DE	5,329	11,693	2.19
8	PA	39,862	88,475	2.22
9	NH	3,972	8,825	2.22
10	KY	27,574	61,499	2.23
11	MO	33,677	75,656	2.25
12	NE	9,959	22,487	2.26
13	AR	16,430	37,119	2.26
14	MT	10,796	24,490	2.27
15	VT	2,630	6,038	2.30
16	ND	7,384	16,986	2.30
17	SD	7,836	18,071	2.31
18	LA	16,685	38,501	2.31
19	WY	6,742	15,594	2.31
20	KS	10,369	23,988	2.31
21	TX	80,067	193,188	2.41
22	OR	7,538	18,264	2.42
23	NV	5,379	13,055	2.43
24	NM	11,951	29,237	2.45
25	ID	4,958	12,137	2.45
26	OK	12,280	30,114	2.45
27	MN	11,893	29,266	2.46
28	WI	11,770	29,481	2.50
29	CO	9,101	22,948	2.52
30	MS	10,973	27,743	2.53
31	IN	11,215	28,458	2.54
32	OH	19,258	49,034	2.55
33	NY	14,969	38,142	2.55
34	AL	10,938	28,121	2.57
35	IA	8,895	23,036	2.59
36	WA	7,042	18,443	2.62
37	HI	945	2,477	2.62
38	IL	16,040	42,150	2.63
39	TN	13,881	36,521	2.63
40	CT	3,717	9,800	2.64
41	RI	1,108	2,923	2.64
42	GA	17,997	47,498	2.64
43	UT	5,841	15,699	2.69
44	AZ	6,755	18,819	2.79
45	MI	9,652	27,459	2.84
46	MD	5,148	14,671	2.85
47	MA	2,834	8,659	3.06
48	CA	15,205	50,541	3.32
49	FL	12,084	42,439	3.51
50	NJ	2,324	8,480	3.65
	U.S.	778,345	1,854,172	
	Weighted Average	15,567	37,083	2.38

Capital and Bridge Disbursements

Capital and bridge disbursements for state-owned roads totaled \$65.103 billion in 2009, about 3.49 percent higher than in 2008. On a per-mile basis, capital and bridge disbursements increased about 3.66 percent, from \$77,130/mile to \$79,951/mile (Table 6, Capital and Bridge Disbursements per State-Controlled Mile). Since 1984, these per-mile disbursements have increased about 300 percent. In 2009, South Carolina, Virginia, West Virginia and North Carolina reported the lowest per-mile capital and bridge expenditures, and New Jersey, Florida, California and Hawaii the highest per-mile expenditures. The states with the largest percent increases from 2008 to 2009 include New Mexico, Alaska, Utah, Louisiana and Nevada. For states that did not report 2009 disbursement data, 2008 data was used. Per mile calculations were made using 2008 system size and mileage data.

Table 6: Capital and Bridges Disbursements per State-Controlled Mile, 2009

Rank	State	Disbursements per Mile
1	SC	15,515
2	VA	18,765
3	WV	24,331
4	NC	*24,806
5	AR	*32,273
6	ME	34,664
7	SD	*35,073
8	MT	39,149
9	ND	40,324
10	NE	41,959
11	NM	43,414
12	MO	43,822
13	KY	53,382
14	VT	54,665
15	WY	55,321
16	NH	*55,466
17	DE	62,149
18	MS	64,349
19	MN	*65,785
20	TX	*66,883
21	KS	*70,175
22	IA	71,529
23	OK	*71,633
24	TN	71,693
25	AK	78,220
26	PA	*79,318
27	OR	83,744
28	AL	*85,631
29	CO	*86,164
30	OH	*87,641
31	ID	*97,820
32	WA	99,814
33	WI	*100,797
34	GA	114,901
35	NV	121,411
36	MI	131,132
37	RI	135,032
38	IN	141,380
39	UT	156,163
40	CT	162,230
41	NY	169,358
42	AZ	*170,352
43	IL	170,460
44	LA	178,148
45	MA	206,699
46	MD	263,932
47	HI	273,718
48	CA	320,323
49	FL	*367,718
50	NJ	478,374
	Weighted Average	79,951

* 2008 disbursement data

Maintenance Disbursements

Maintenance disbursements increased over 11 percent from 2008 to 2009, going from \$18.7 billion to \$20.8 billion and accounted for about 17.6 percent of total disbursements, an increase from a 15.6 percent share in 2008 (Table 7, Maintenance Disbursements per State-Controlled Mile). Since 1984 per-mile maintenance disbursements have increased about 245 percent, relative to a 289 percent increase in total disbursements. On a per-mile basis 2008 maintenance disbursements per mile of responsibility averaged about \$25,497, also up about 11 percent. The lowest per-mile maintenance disbursement was \$5,087 in North Dakota, the highest \$185,102 in New Jersey. For states that did not report 2009 data, 2008 data was used. Per mile calculations were made using 2008 system size and mileage data.

Table 7: Maintenance Disbursements per State-Controlled Mile, 2009

Rank	State	Disbursements per Mile
1	ND	5,087
2	SD	*7,962
3	WV	8,382
4	SC	8,634
5	NC	*8,651
6	MT	9,640
7	AR	*10,586
8	WY	10,721
9	IN	10,900
10	MS	11,603
11	GA	11,670
12	NM	12,539
13	OK	*13,272
14	KY	13,494
15	AL	*14,442
16	MO	15,646
17	KS	*15,713
18	TX	*16,032
19	NE	17,229
20	WI	*18,989
21	LA	19,616
22	IA	19,773
23	AZ	*19,895
24	DE	20,116
25	ID	*21,072
26	VA	21,342
27	NV	22,557
28	TN	22,636
29	CO	*23,335
30	ME	25,521
31	OR	26,153
32	CT	27,656
33	OH	*29,959
34	VT	30,391
35	MI	30,504
36	AK	32,431
37	MN	*33,912
38	WA	36,260
39	PA	*39,676
40	UT	41,360
41	IL	47,096
42	NH	*51,780
43	HI	55,196
44	MD	71,345
45	FL	*76,557
46	NY	85,676
47	RI	98,270
48	MA	109,161
49	CA	149,934
50	NJ	185,102
	Weighted Average	25,497

* 2008 disbursement data

Administrative Disbursements

Although administrative disbursements increased sharply in 2008 (about 36 percent), they decreased significantly in 2009, dropping from \$10.8 billion to \$9.2 billion (about 15 percent). This change could be related to agencies holding some funds temporarily, such as stimulus funds, as projects are readied for implementation.

Administrative disbursements accounted for about 7.8 percent of total disbursements, down from 9.4 percent in 2008. However, since 1984, per-mile administrative disbursements have increased about 335 percent, relative to a 289 percent increase in total disbursements. On a per-mile basis, 2009 administrative disbursements averaged \$11,356, ranging from a very low \$645 in Kentucky to a high of \$81,249 in Connecticut (Table 8, Administrative Disbursements per State-Controlled Mile). For states that did not report 2009 data, 2008 data was used. Per mile calculations were made using 2008 system size and mileage data.

Table 8: Administrative Disbursements per State-Controlled Mile, 2009

Rank	State	Disbursements per Mile
1	KY	645
2	AR	*1,984
3	MO	2,138
4	SC	2,180
5	NE	2,756
6	WV	2,765
7	ND	2,774
8	ME	2,812
9	LA	3,158
10	TX	*3,601
11	NC	*4,040
12	SD	*4,653
13	MT	5,031
14	ID	*5,944
15	VA	6,311
16	KS	*6,585
17	WY	6,633
18	MS	6,661
19	IA	7,292
20	AK	7,594
21	OK	*9,573
22	PA	*10,435
23	MN	*10,461
24	WA	11,685
25	VT	11,936
26	MI	12,585
27	IL	14,980
28	OH	*15,219
29	WI	*15,451
30	NH	*15,792
31	OR	15,843
32	AL	*16,614
33	DE	17,382
34	MD	17,436
35	TN	18,467
36	NY	19,156
37	NM	19,328
38	FL	*19,763
39	NV	22,152
40	CO	*22,573
41	GA	23,426
42	RI	27,782
43	IN	34,260
44	AZ	*37,396
45	UT	42,390
46	NJ	49,897
47	MA	69,458
48	CA	77,184
49	HI	79,203
50	CT	81,249
	Weighted Average	11,356

* 2008 disbursement data

Total Disbursements

In total, the states disbursed about \$117.7 billion for state-owned roads in 2009, about 0.6 percent less than the \$118.4 billion in 2008. Since 1984, per-mile total disbursements have increased about 289 percent. On a per-mile basis, 2009 disbursements averaged \$144,533 (Table 9, Total Disbursements per State-Controlled Mile), with the lowest disbursement per mile in South Carolina (\$31,379) and the highest in New Jersey (\$1,221,403). For states that did not report 2009 data, 2008 data was used. Per mile calculations were made using 2008 system size and mileage data.

Table 9: Total Disbursements per State-Controlled Mile, 2009

Rank	State	Disbursements per Mile
1	SC	31,379
2	WV	40,436
3	NC	*43,785
4	SD	*51,631
5	ND	52,143
6	AR	*55,294
7	VA	55,333
8	MT	59,736
9	NE	69,629
10	ME	72,518
11	MO	73,616
12	WY	78,232
13	KY	79,588
14	NM	91,248
15	MS	94,379
16	KS	*109,198
17	IA	111,422
18	OK	*114,722
19	TN	115,369
20	TX	*117,439
21	VT	119,431
22	AK	126,156
23	MN	*128,849
24	AL	*131,103
25	DE	132,028
26	ID	*137,105
27	OR	148,911
28	PA	*149,813
29	NH	*149,840
30	CO	*163,028
31	WI	*165,184
32	OH	*170,346
33	WA	176,786
34	GA	185,575
35	NV	199,722
36	LA	208,215
37	MI	221,854
38	IN	222,546
39	UT	276,601
40	IL	277,977
41	AZ	*303,680
42	RI	345,970
43	NY	374,102
44	MD	422,852
45	HI	461,992
46	CT	527,419
47	FL	*551,045
48	MA	642,834
49	CA	679,296
50	NJ	1,221,403
	Weighted Average	144,533

* 2008 disbursement data

Rural Interstate Condition

In most states road pavement condition is measured using special machines that determine the roughness of road surfaces. (A few states continue to use visual ratings.) About 1.67 percent of U.S. rural interstates—498 miles out of 29,910—were reported in poor condition in 2009 (Table 10, Rural Interstate Condition and Figure 8). This was significantly improved from 2008, when 579 miles out of 30,076 (about 1.93 percent) of rural interstates were rated poor.

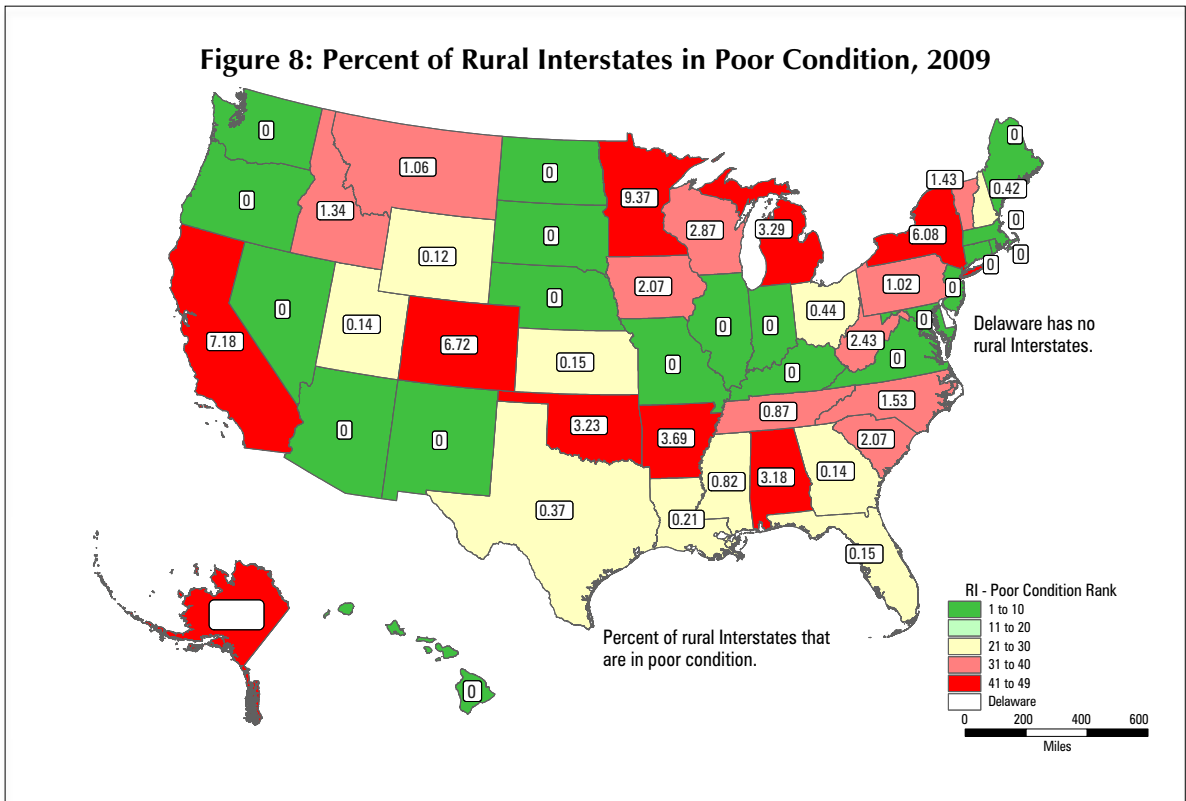
Two states (California and Alaska) cut their poor-condition rural interstate mileage in half, but another (Minnesota) saw its poor-condition interstate mileage more than double.

The amount of poor-condition rural interstate mileage varies widely by state. Twenty states reported no poor mileage and 11 more reported less than 1 percent poor mileage. On the other hand, five states (Minnesota, California, Colorado, New York and Alaska) reported more than 5 percent poor mileage. Almost two-thirds of the poor-condition rural interstate mileage in the U.S. is in just 5 states: California, Alaska, Minnesota, New York and Colorado.

Table 10: Rural Interstate Condition, 2009

Rank	State	Percent Poor Miles
1	AZ	*0.00
1	CT	0.00
1	HI	0.00
1	IL	0.00
1	IN	0.00
1	KY	0.00
1	MA	0.00
1	MD	0.00
1	ME	0.00
1	MO	0.00
1	ND	0.00
1	NE	0.00
1	NJ	0.00
1	NM	0.00
1	NV	0.00
1	OR	0.00
1	RI	0.00
1	SD	*0.00
1	VA	0.00
1	WA	0.00
21	WY	0.12
22	UT	0.14
23	GA	0.14
24	KS	0.15
25	FL	0.15
26	LA	0.21
27	TX	0.37
28	NH	0.42
29	OH	0.44
30	MS	0.82
31	TN	0.87
32	PA	1.02
33	MT	1.06
34	ID	1.34
35	VT	1.43
36	NC	1.53
37	SC	2.07
38	IA	2.07
39	WV	2.43
40	WI	2.87
41	AL	3.18
42	OK	3.23
43	MI	3.29
44	AR	3.69
45	AK	5.88
46	NY	6.08
47	CO	6.72
48	CA	7.18
49	MN	9.37
NA	**DE	NA
	Weighted Average	1.67

* 2008 data; ** Delaware has no rural interstates.



Urban Interstate Condition

The urban interstates consist of major multi-lane interstates in and near urban areas. The condition of the urban interstate system continued to improve in 2009, to 4.97 percent poor from 5.37 percent poor in 2008 (Table 11, Urban Interstate Condition and Figure 9). This was an improvement of 7.4 percent and represents an improvement of poor mileage from 878 to 809 miles rated poor.

In 2009, a majority of the states (29 of 50) maintained or improved on their poor-mileage urban interstates. Several states (Utah, New Hampshire, Oregon and Nevada) reported reducing their poor-mileage urban interstate by half or more, although their total poor mileage was less than five miles in each state. Other states reporting large reductions include Vermont, California and Michigan. On the other hand, Alaska, Delaware and Minnesota saw increases in poor-mileage urban interstate of four percentage points or more.

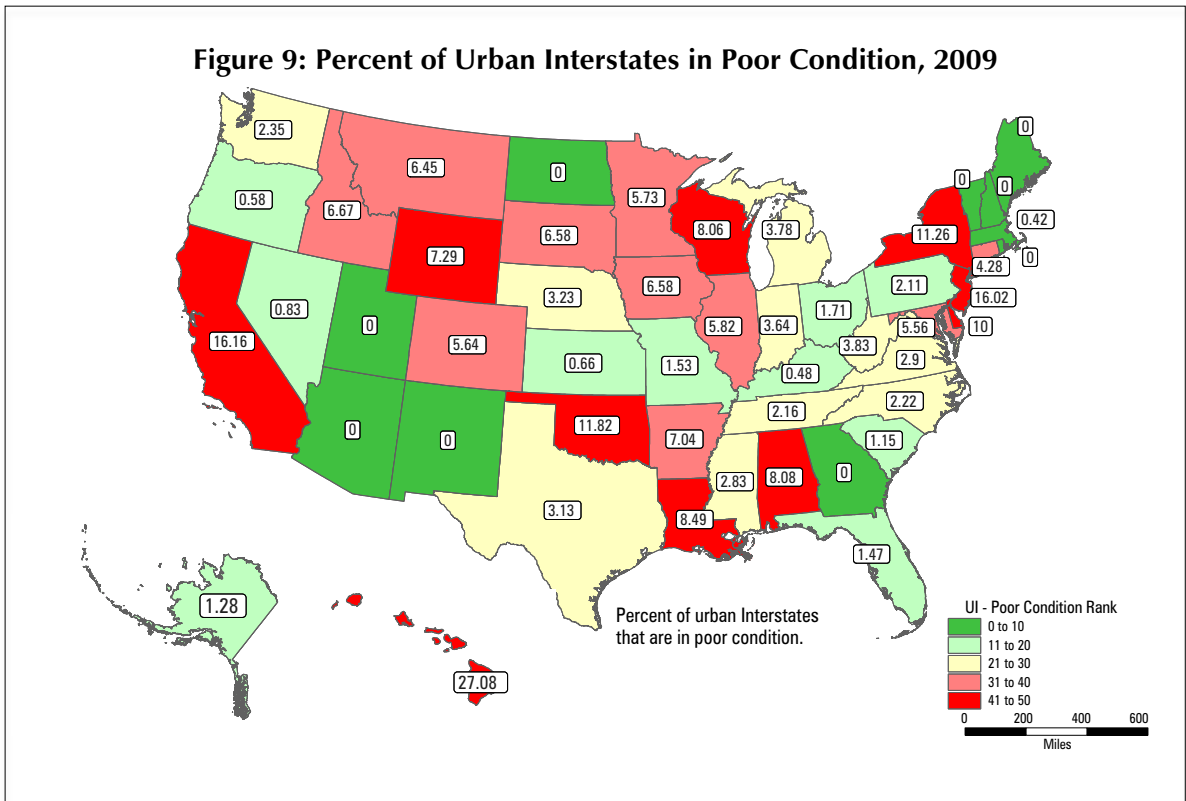
The condition of the urban interstate continues to vary widely. Nine states reported no poor urban interstate mileage, down from ten in 2008, but three states (New Jersey, California and Hawaii) reported more than 15 percent poor mileage. However, over half (52.7 percent) of the total poor-condition urban interstate mileage is in just five states: California, New York, New Jersey, Illinois and Texas.

Table 11: Urban Interstate Condition, 2009

Rank	State	Percent Poor Miles
1	AZ	*0.00
1	GA	0.00
1	ME	0.00
1	ND	0.00
1	NH	0.00
1	NM	0.00
1	RI	0.00
1	UT	0.00
1	VT	0.00
10	MA	0.42
11	KY	0.48
12	OR	0.58
13	KS	0.66
14	NV	0.83
15	SC	1.15
16	AK	1.28
17	FL	1.47
18	MO	1.53
19	OH	1.71
20	PA	2.11
21	TN	2.16
22	NC	2.22
23	WA	2.35
24	MS	2.83
25	VA	2.90
26	TX	3.13
27	NE	3.23
28	IN	3.64
29	MI	3.78
30	WV	3.83
31	CT	4.28
32	MD	5.56
33	CO	5.64
34	MN	5.73
35	IL	5.82
36	MT	6.45
37	IA	6.58
37	SD	*6.58
39	ID	6.67
40	AR	7.04
41	WY	7.29
42	WI	8.06
43	AL	8.08
44	LA	8.49
45	DE	10.00
46	NY	11.26
47	OK	11.82
48	NJ	16.02
49	CA	16.16
50	HI	27.08
	Weighted Average	4.97

* 2008 data

Figure 9: Percent of Urban Interstates in Poor Condition, 2009



Rural Other Principal Arterial Pavement Condition

The condition of the major rural highways worsened slightly from 2008 to 2009, by about 0.12 percentage points. Overall, about 0.65 percent of the rural other principal arterial system—600 miles out of 92,867—were reported to be in poor condition (Table 12, Rural Arterial Condition and Figure 10). This compares with 0.53 percent or about 498 miles, in 2008.

Although no states reported substantial improvements in the percentage of poor-mileage rural other principal arterials, 31 of 50 maintained or improved on their 2008 levels. One state, Alaska, worsened significantly, reporting a doubling in poor rural arterial condition roads (from 53 to 106 miles).

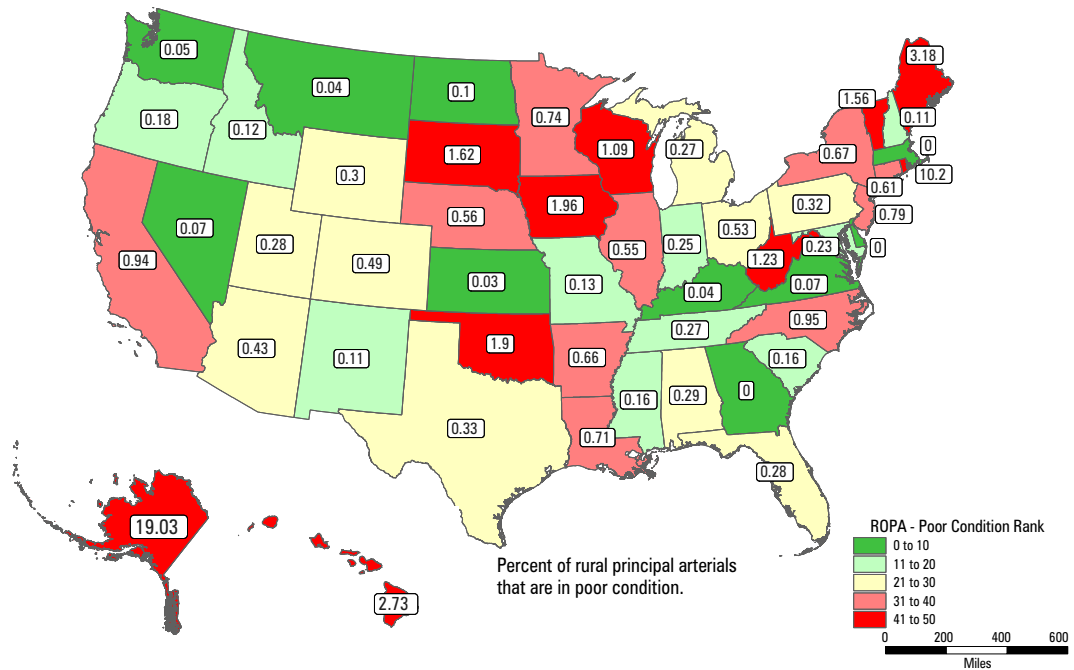
Three states reported no poor rural primary mileage in 2009, down from six in 2008. On the other hand, Alaska and Rhode Island reported more than 10 percent of their rural primary mileage to be in poor condition.

Table 12: Rural Principal Arterial Condition, 2009

Rank	State	Percent Poor Miles
1	DE	0.00
1	GA	0.00
1	MA	0.00
4	KS	0.03
5	MT	0.04
6	KY	0.04
7	WA	0.05
8	NV	0.07
9	VA	0.07
10	ND	0.10
11	NM	0.11
12	NH	0.11
13	ID	0.12
14	MO	0.13
15	SC	0.16
16	MS	0.16
17	OR	0.18
18	MD	0.23
19	IN	0.25
20	TN	0.27
21	MI	0.27
22	FL	0.28
23	UT	0.28
24	AL	0.29
25	WY	0.30
26	PA	0.32
27	TX	0.33
28	AZ	*0.43
29	CO	0.49
30	OH	0.53
31	IL	0.55
32	NE	0.56
33	CT	0.61
34	AR	0.66
35	NY	0.67
36	LA	0.71
37	MN	0.74
38	NJ	0.79
39	CA	0.94
40	NC	0.95
41	WI	1.09
42	WV	1.23
43	VT	1.56
44	SD	*1.62
45	OK	1.90
46	IA	1.96
47	HI	2.73
48	ME	3.18
49	RI	10.20
50	AK	19.03
	Weighted Average	0.65

* 2008 data

Figure 10: Percent of Rural Other Principal Arterials in Poor Condition, 2009



Urban Interstate Congestion

There is no universally accepted definition of traffic congestion, but in reporting to the federal government the states use peak-hour volume-to-capacity ratios, as calculated in the Transportation Research Board's Highway Capacity Manual. The congestion measures for 2009 are not totally comparable with years before about 2002, since most states increased the rated capacities of urban interstates from earlier estimates based on the 1997 and 2000 Highway Capacity Manuals. Therefore, the percentage of urban interstates rated "congested" sometimes shows an artificial improvement between 2002 and 2004. This effect should be largely muted with data from 2005 forward.

The overall 2009 statistic—46.7 percent of urban interstates congested—shows a slight improvement from 2008 (48.6 percent congested, see Table 13, Urban Interstate Congestion and Figure 11). For 2009, about 7,680 miles out of 16,458 urban interstate miles were rated as having volume/capacity ratios greater than 0.70, the standard for mild congestion. This compares with 7,971 miles congested, out of 16,397 miles measured, for 2008. Some of this improvement may be due to the slow-down of employment, road widenings or other actions that increased capacity or other actions such as improved HOT lanes or shifts to transit and carpooling.

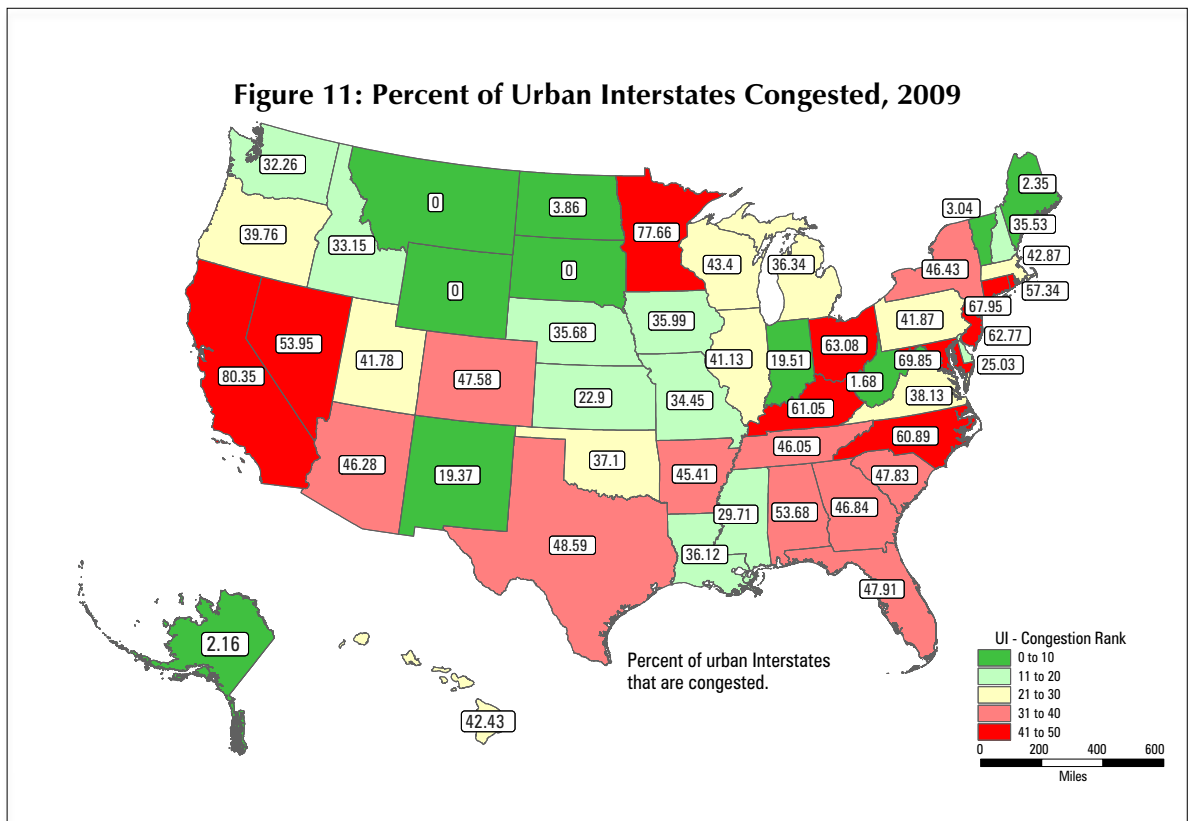
In 2009, three states (Montana, South Dakota and Wyoming) reported no

Table 13: Urban Interstate Congestion, 2009

Rank	State	Percent Congested
1	MT	0.00
1	SD	*0.00
1	WY	0.00
4	WV	1.68
5	AK	2.16
6	ME	2.35
7	VT	3.04
8	ND	3.86
9	NM	19.37
10	IN	19.51
11	KS	*22.90
12	DE	25.03
13	MS	29.71
14	WA	32.26
15	ID	33.15
16	MO	34.45
17	NH	*35.53
18	NE	35.68
19	IA	35.99
20	LA	36.12
21	MI	36.34
22	OK	*37.10
23	VA	38.13
24	OR	39.76
25	IL	41.13
26	UT	41.78
27	PA	**41.87
28	HI	42.43
29	MA	42.87
30	WI	***43.40
31	AR	*45.41
32	TN	46.05
33	AZ	*46.28
34	NY	46.43
35	GA	46.84
36	CO	*47.5
37	SC	***47.83
38	FL	*47.91
39	TX	*48.59
40	AL	*53.68
41	NV	53.95
42	RI	57.34
43	NC	*60.89
44	KY	61.05
45	NJ	62.77
46	OH	*63.08
47	CT	67.95
48	MD	69.85
49	MN	*77.66
50	CA	80.35
	Weighted Average	46.67

*2008 data; **2007 data; ***2006 data

congested urban interstates, while 11 states reported half or more of their urban interstates congested. Four states (California 80.4 percent, Minnesota 77.7 percent, Maryland 69.8 percent and Connecticut 67.9 percent) reported more than two-thirds of their urban interstates congested. While most of the states (35 of 50) improved on or maintained their 2008 levels in 2009, Michigan reported the most improvement, almost 32 percentage points, possibly stemming from population declines and increased unemployment in Michigan’s urban areas. For 2009, the FHWA used 2008 data for 15 states in table HM-61, from which we calculated the congestion data. The reported data for Pennsylvania, South Carolina and Wisconsin also included some clearly erroneous data (0 miles reported as congested for each state), so we used 2006 data for South Carolina and Wisconsin and 2007 data for Pennsylvania as a substitute.



Deficient Bridges

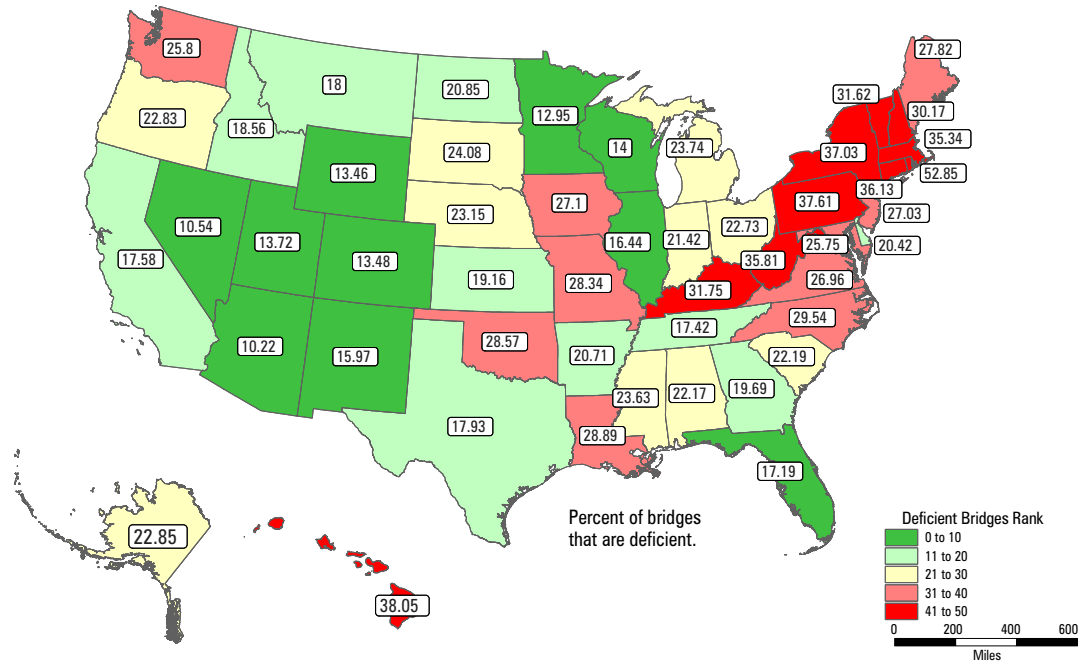
Federal law mandates the uniform inspection of all bridges for structural and functional adequacy at least every two years; bridges rated “deficient” are eligible for federal repair dollars. The National Bridge Inventory (NBI) is the source of the bridge data below, although we use summaries provided in *Better Roads* (see appendix). Since the NBI Inventory contains a mixture of inspections, some as old as two years, the average inspection is about one year old. So, a December 2010 summary from the NBI would represent, on average, bridge condition as of 2009.

The condition of the nation's highway bridges improved again in 2009. Of the 600,314 highway bridges in the current NBI, 139,497 (about 23.24 percent) were reported deficient for 2009 (Table 14, Deficient Bridges and Figure 12). This represents a 2.03 percentage-point improvement over 2008 and a significant 15.79 percentage-point improvement over 2000.

Arizona reported the lowest percentage of deficient bridges, 10.22 percent, while Rhode Island reported the highest, 52.85 percent. Most states (41 of 50) reported at least some improvement in the percentage of deficient bridges, with Vermont and Utah seeing the most improvement (3.8 and 2.2 percentage points, respectively). Of the nine states that reported the highest percentage of deficient bridges, only Kentucky and Delaware saw more than a percentage point change (3.3 and 1.7 points, respectively).

Table 14: Deficient Bridges					
2009			2010		
Rank	State	Percent Deficient	Rank	State	Percent Deficient
1	AZ	10.22	1	AZ	10.43
2	NV	10.54	2	NV	11.38
3	MN	12.95	3	MN	12.49
4	WY	13.46	4	CO	13.10
5	CO	13.48	5	UT	13.24
6	UT	13.72	6	WY	14.03
7	WI	14.00	7	WI	14.19
8	NM	15.97	8	NM	15.37
9	IL	16.44	9	FL	16.26
10	FL	17.19	10	TN	16.51
11	TN	17.42	11	IL	16.54
12	CA	17.58	12	TX	17.27
13	TX	17.93	13	MT	17.62
14	MT	18.00	14	CA	17.93
15	ID	18.56	15	KS	18.10
16	KS	19.16	16	ID	18.47
17	GA	19.69	17	GA	19.36
18	DE	20.42	18	ND	19.71
19	AR	20.71	19	AR	19.74
20	ND	20.85	20	DE	20.05
21	IN	21.42	21	IN	21.01
22	AL	22.17	22	AL	21.67
23	SC	22.19	23	SC	21.70
24	OH	22.73	24	OR	22.24
25	OR	22.83	25	AK	22.37
26	AK	22.85	26	OH	22.54
27	NE	23.15	27	MS	22.62
28	MS	23.63	28	NE	22.70
29	MI	23.74	29	MI	24.34
30	SD	24.08	30	SD	24.42
31	MD	25.75	31	VA	25.02
32	WA	25.80	32	MD	25.42
33	VA	26.96	33	ME	26.68
34	NJ	27.03	34	VA	26.72
35	IA	27.10	35	IA	26.96
36	ME	27.82	36	MO	27.03
37	MO	28.34	37	NJ	27.16
38	OK	28.57	38	LA	27.76
39	LA	28.89	39	OK	27.89
40	NC	29.54	40	NC	29.23
41	NH	30.17	41	NH	29.63
42	VT	31.62	42	VT	29.78
43	KY	31.75	43	KY	30.54
44	MA	35.34	44	WV	34.78
45	WV	35.81	45	MA	35.07
46	CT	36.13	46	CT	35.90
47	NY	37.03	47	PA	36.14
48	PA	37.61	48	NY	36.77
49	HI	38.05	49	HI	38.18
50	RI	52.85	50	RI	49.40
	Weighted Average	23.24			22.71

Figure 12: Percent of Bridges in Deficient Condition, 2009



Fatality Rates

Fatality rates are an important overall measure of each state's road performance. The nation's highway fatality rate continued to improve (Table 15, Fatality Rates and Figure 13). In 2009, 33,779 fatalities were reported, about 9.3 percent lower than 37,227 reported for 2008. Also, VMT (vehicle-miles of travel) decreased slightly from 2,969,898 trillion VMT in 2008 to 2,948,224 trillion VMT in 2009. So, the national average fatality rate was 1.15 fatalities per 100 million vehicle-miles, down 8.6 percent from 1.25 in 2008 and 24.7 percent from 1.52 in 2000.

For 2009, Massachusetts reported the lowest fatality rate, 0.61, while Montana reported the highest, 2.01. Most states (41 of 50) reported a reduction in their fatality rate, led by Nevada and Wyoming, which improved 0.37 and 0.28 points, respectively. Nine states saw their fatality rate increase: North Dakota reported its rate increased 0.39 points and Rhode Island, 0.21 points.

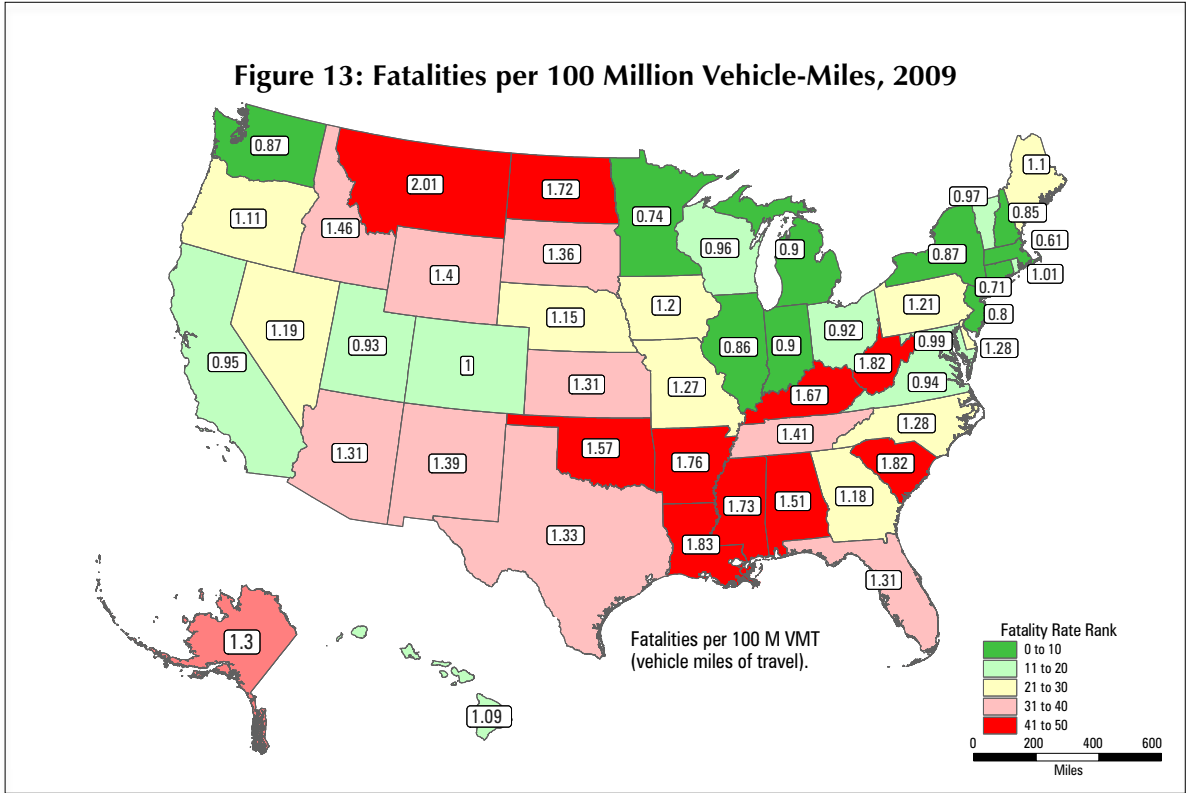
In 2010, 32,861 fatalities were reported, a further drop of 918 from 2009. The VMT (Vehicle-miles of Travel) also decreased by about 11,000 million to 2,962,915 trillion VMT in 2009. So, the 2010 national average fatality rate was 1.11 fatalities per 100 million vehicle-miles, down 3.2 percent from 1.15 in 2009 and 27.1 percent from 1.52 in 2000.

For 2010, Massachusetts again reported the lowest fatality rate, 0.58, while Montana again reported the highest, 1.69 (but significantly down from the 2.01 in 2008). Most states (32 of 50) reported a reduction in their fatality rate, led by North Dakota and Montana, which improved 0.45 and 0.32 percentage points, respectively. Eighteen states saw their fatality rate increase: Connecticut reported its rate increased 0.31 points and South Dakota 0.22 points.

Table 15: Fatality Rates					
2009			2010		
Rank	State	Fatalities per 100 Million Vehicle Miles	Rank	State	Fatalities per 100 Million Vehicle Miles
1	MA	0.61	1	MA	0.58
2	CT	0.71	2	MN	0.73
3	MN	0.74	3	NJ	0.76
4	NJ	0.80	4	RI	0.80
5	NH	0.85	5	WA	0.80
6	IL	0.86	6	CA	0.84
7	NY	0.87	7	IL	0.88
8	WA	0.87	8	MD	0.88
9	MI	0.90	9	UT	0.89
10	IN	0.90	10	VA	0.90
11	OH	0.92	11	NY	0.91
12	UT	0.93	12	OR	0.94
13	VA	0.94	13	CO	0.95
14	CA	0.95	14	WI	0.96
15	WI	0.96	15	MI	0.97
16	VT	0.97	16	OH	0.97
17	MD	0.99	17	NE	0.98
18	CO	1.00	18	VT	0.98
19	RI	1.01	19	NH	0.98
20	HI	1.09	20	IN	1.00
21	ME	1.10	21	CT	1.02
22	OR	1.11	22	ME	1.11
23	NE	1.15	23	GA	1.11
24	GA	1.18	24	DE	1.13
25	NV	1.19	25	HI	1.13
26	IA	1.20	26	MO	1.16
27	PA	1.21	27	AK	1.17
28	MO	1.27	28	NV	1.22
29	DE	1.28	29	IA	1.24
30	NC**	1.28	30	FL	1.25
31	AK	1.30	31	AZ	1.27
32	KS	1.31	32	ND	1.27
33	AZ	1.31	33	TX	1.28
34	FL	1.31	34	NC	1.29
35	TX	1.33	35	PA	1.32
36	SD	1.36	36	ID	1.32
37	NM	1.39	37	AL	1.34
38	WY	1.40	38	NM	1.37
39	TN	1.41	39	OK	1.40
40	ID	1.46	40	KS	1.44
41	AL	1.51	41	TN	1.46
42	OK	1.57	42	LA	1.56
43	KY	1.67	43	SD	1.58
44	ND	1.72	44	KY	1.58
45	MS	1.73	45	MS	1.61
46	AR	1.76	46	WY	*1.62
47	WV	1.82	47	WV	1.64
48	SC	1.82	48	SC	1.65
49	LA	1.83	49	AR	1.68
50	MT	2.01	50	MT	1.69
	Weighted Average	1.15			1.11

*Based on 2009 mileage data **VMT estimation issue

Figure 13: Fatalities per 100 Million Vehicle-Miles, 2009



Narrow Rural Lanes

Narrow lanes on major rural primary roads are key indicators of sight visibility and road design adequacy. The national design standard for lane width on major rural roads is generally 12 feet and few if any major rural primary roads would be improved without widening lanes to that standard.

In 2009, about 9.66 percent of rural other principal arterials—9,584 miles out of 99,193—had narrow lanes less than 12 feet wide (Table 16, Rural Narrow Lanes and Figure 14), better than the 10.11 percent reported in 2008.

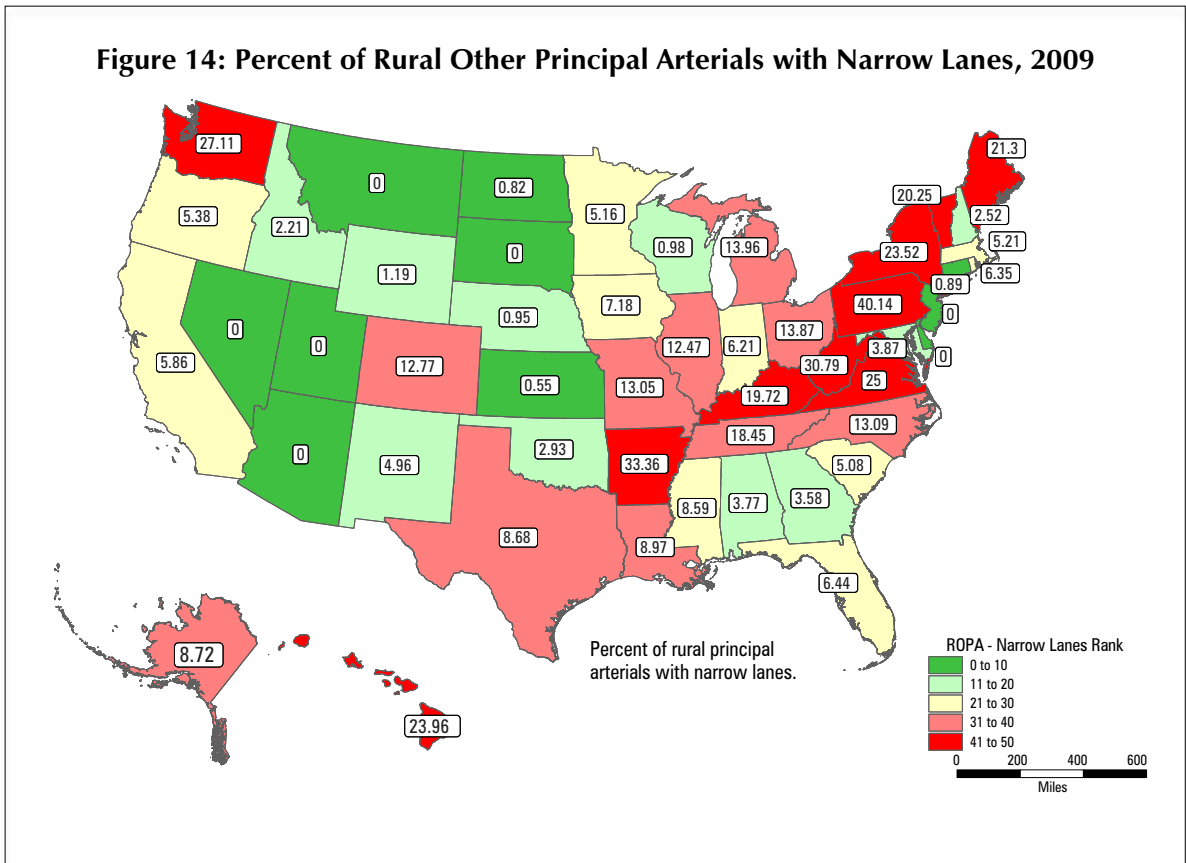
Most states reported improvement or maintained the status quo, with seven states reporting no narrow-lane mileage. Only eight states experienced worsening and of these, all but three (Rhode Island, Idaho and Alaska) were by less than a percentage point. The two states showing the highest percentage of narrow lanes (Pennsylvania and Arkansas) are based on 2008 data, but both states were in the bottom four in this category in both 2007 and 2008, with at least 32 percent narrow-lane mileage. For states that did not report 2009 data, 2008 data was used.

Table 16: Rural Other Principal Arterials, Narrow Lanes, 2009

Rank	State	Percent Narrow
1	AZ	*0.00
1	DE	0.00
1	MT	0.00
1	NJ	0.00
1	NV	0.00
1	SD	*0.00
1	UT	0.00
8	KS	*0.55
9	ND	0.82
10	CT	0.89
11	NE	0.95
12	WI	*0.98
13	WY	1.19
14	ID	2.21
15	NH	*2.52
16	OK	*2.93
17	GA	3.58
18	AL	*3.77
19	MD	3.87
20	NM	4.96
21	SC	5.08
22	MN	*5.16
23	MA	5.21
24	OR	5.38
25	CA	5.86
26	IN	6.21
27	RI	6.35
28	FL	*6.44
29	IA	7.18
30	MS	8.59
31	TX	*8.68
32	AK	8.72
33	LA	8.97
34	IL	12.47
35	CO	*12.77
36	MO	13.05
37	NC	*13.09
38	OH	*13.87
39	MI	13.96
40	TN	18.45
41	KY	19.72
42	VT	20.25
43	ME	21.30
44	NY	23.52
45	HI	23.96
46	VA	25.00
47	WA	27.11
48	WV	30.79
49	AR	*33.36
50	PA	*40.14
	Weighted Average	9.66

* 2008 data

Figure 14: Percent of Rural Other Principal Arterials with Narrow Lanes, 2009



Part 5

State Summaries

Top Ten States, 2009

1. North Dakota:

North Dakota continues to hold the first position in the overall performance ratings. It has a total of 7,408 miles under the state-owned highway system. All rankings for 2009 were in the top ten, except in two areas (fatality rate at 44th and deficient bridges at 20th) and all bested the national averages, except for fatality rate, which was 51 percent worse than the national rate. North Dakota's relatively low traffic volumes, modest congestion and good system condition, combined with relatively low expenditures, have consistently placed it in the top-performing states.

North Dakota	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	40,126	40,588	40,324	12	12	9	0.52	0.53	0.50
Maintenance Disbursements per Mile	2,765	4,017	5,087	1	1	1	0.12	0.18	0.20
Administrative Disbursements per Mile	1,951	2,018	2,774	3	3	7	0.20	0.15	0.24
Total Disbursement per Mile	47,673	50,094	52,143	5	5	5	0.36	0.35	0.36
Rural Interstate Percent Poor Condition	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Rural Other Principal Arterial Percent Poor	0.82	0.38	0.10	35	25	10	1.28	0.71	0.16
Urban Interstate Percent Poor	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Urban Interstate Percent Congested	5.77	0.00	3.86	7	1	8	0.11	0.00	0.08
Rural Arterial Percent Narrow Lanes	0.00	0.00	0.82	1	1	9	0.00	0.00	0.08
Percent of Deficient Bridges	22.25	21.28	21.04	19	20	20	0.88	0.88	0.89
Fatality Rate	1.42	1.33	1.72	28	27	44	1.04	1.06	1.51
Overall Performance	0.41	0.35	0.37	1	1	1			

2. Kansas:

With 10,607 miles under the state control, in 2009, Kansas moved up one position from 2008 to second in the overall performance ratings. Although there were no number one ratings, Kansas had excellent performance scores across the board, especially in areas where there were many states tied for first. Moreover, there was only one area in which it did not best the U.S. average: its fatality rate was 15 percent higher than the national rate. And Kansas was able to achieve this performance in spite of spending 24 percent less than the U.S. average per-mile spending.

Kansas	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	59,833	66,323	70,175	20	23	21	0.78	0.86	0.88
Maintenance Disbursements per Mile	15,187	15,610	15,713	15	16	17	0.64	0.68	0.62
Administrative Disbursements per Mile	5,798	6,595	6,585	16	17	16	0.60	0.50	0.58
Total Disbursement per Mile	101,544	112,042	109,198	18	19	16	0.76	0.77	0.76
Rural Interstate Percent Poor Condition	0.00	0.00	0.15	1	1	24	0.00	0.00	0.09
Rural Other Principal Arterial Percent Poor	0.07	0.03	0.03	10	7	4	0.10	0.06	0.05
Urban Interstate Percent Poor	0.51	0.00	0.66	10	1	13	0.09	0.00	0.13
Urban Interstate Percent Congested	30.99	22.90	22.90	11	10	11	0.61	0.47	0.49
Rural Arterial Percent Narrow Lanes	0.55	0.55	0.55	9	9	8	0.05	0.05	0.06
Percent of Deficient Bridges	21.06	20.06	19.87	17	18	18	0.83	0.83	0.84
Fatality Rate	1.38	1.30	1.31	27	25	32	1.02	1.03	1.15
Overall Performance	0.50	0.48	0.52	3	3	2			

3. Wyoming:

With 7,755 miles of state-owned highway system, Wyoming ranked third in the overall performance ratings in 2009, improving four slots over 2008 when it was ranked seventh. It outperformed the national averages in all but two categories, fatality rate (38th nationwide) and urban interstate mileage in poor condition (41st nationwide). Despite per-mile spending of about 58-72 percent of the U.S. average, Wyoming has been ranked in the top seven the last three years and in the top 10 since 2000.

Wyoming	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	34,778	46,010	55,321	11	14	15	0.45	0.60	0.69
Maintenance Disbursements per Mile	15,822	15,152	10,721	17	14	8	0.66	0.66	0.42
Administrative Disbursements per Mile	6,963	7,026	6,633	19	19	17	0.72	0.53	0.58
Total Disbursement per Mile	61,643	73,083	78,232	10	12	12	0.46	0.50	0.54
Rural Interstate Percent Poor Condition	1.35	0.12	0.12	33	24	21	0.70	0.06	0.07
Rural Other Principal Arterial Percent Poor	0.05	0.30	0.30	8	21	25	0.08	0.57	0.47
Urban Interstate Percent Poor	5.15	7.29	7.29	32	40	41	0.88	1.36	1.47
Urban Interstate Percent Congested	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Rural Arterial Percent Narrow Lanes	1.21	1.21	1.19	12	13	13	0.12	0.12	0.12
Percent of Deficient Bridges	20.46	11.98	13.54	15	3	4	0.81	0.49	0.57
Fatality Rate	1.60	1.68	1.40	36	43	38	1.18	1.34	1.23
Overall Performance	0.55	0.58	0.57	6	7	3			

4. New Mexico:

In 2009, New Mexico maintained its fourth position in overall performance ratings. It reported a total of 12,166 miles under the state control. It bested the U.S. average in all categories except administrative disbursements per mile and fatality rate, where it exceeded the averages by 70 percent and 22 percent, respectively. New Mexico maintains a good highway system while spending substantially less per-mile than average; in 2009, per-mile spending was 37 percent below the national average.

New Mexico	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	31,328	20,846	43,414	8	2	11	0.41	0.27	0.54
Maintenance Disbursements per Mile	16,522	19,524	12,539	20	22	12	0.69	0.85	0.49
Administrative Disbursements per Mile	6,053	16,252	19,328	17	34	37	0.62	1.23	1.70
Total Disbursement per Mile	67,658	65,451	91,248	12	11	14	0.51	0.45	0.63
Rural Interstate Percent Poor Condition	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Rural Other Principal Arterial Percent Poor	0.11	0.11	0.11	13	11	11	0.17	0.21	0.17
Urban Interstate Percent Poor	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Urban Interstate Percent Congested	19.23	18.71	19.37	9	9	9	0.38	0.38	0.42
Rural Arterial Percent Narrow Lanes	4.94	5.05	4.96	21	22	20	0.48	0.50	0.51
Percent of Deficient Bridges	18.13	16.92	16.13	10	8	8	0.72	0.70	0.68
Fatality Rate	1.54	1.39	1.39	32	32	37	1.13	1.11	1.22
Overall Performance	0.46	0.51	0.57	2	4	4			

5. Montana:

In 2009, Montana ranked fifth in the overall performance ratings, a slight decline from the second position in 2008. With 11,134 miles under state control, Montana has a medium-sized state highway system that is in good shape. It bested the U.S. averages in all but two categories (urban interstates in poor condition and fatality rate), while spending at less than half the national per-mile rate. Montana has been in the top ten every year since 2000, except in 2004 when it finished 13th.

Montana	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	28,458	36,023	39,149	6	8	8	0.37	0.47	0.49
Maintenance Disbursements per Mile	8,630	9,242	9,640	5	6	6	0.36	0.40	0.38
Administrative Disbursements per Mile	12,753	6,037	5,031	31	13	13	1.31	0.46	0.44
Total Disbursement per Mile	54,407	56,747	59,736	9	7	8	0.41	0.39	0.41
Rural Interstate Percent Poor Condition	0.35	0.35	1.06	24	27	33	0.18	0.18	0.64
Rural Other Principal Arterial Percent Poor	0.04	0.00	0.04	5	1	5	0.06	0.00	0.06
Urban Interstate Percent Poor	3.28	3.28	6.45	24	30	36	0.56	0.61	1.30
Urban Interstate Percent Congested	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Rural Arterial Percent Narrow Lanes	1.03	1.03	0.00	10	12	1	0.10	0.10	0.00
Percent of Deficient Bridges	20.36	17.53	17.63	14	9	10	0.80	0.72	0.74
Fatality Rate	2.45	2.12	2.01	50	50	50	1.81	1.69	1.77
Overall Performance	0.55	0.47	0.58	5	2	5			

6. Nebraska:

Nebraska is rated sixth in the overall performance ratings in 2009, down slightly from fifth place in 2008. With 10,170 miles under state control, it has been in the top ten since 2006. With only three top ten rankings in the 11 categories in 2009, Nebraska nonetheless bested the U.S. averages in all but one category—fatality rate—where it was just 1 percent worse than the national average. It achieved this performance while spending less than half the national average per highway mile.

Nebraska	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	31,319	36,924	41,959	7	11	10	0.41	0.48	0.52
Maintenance Disbursements per Mile	11,975	15,178	17,229	10	15	19	0.50	0.66	0.68
Administrative Disbursements per Mile	2,987	3,278	2,756	8	9	5	0.31	0.25	0.24
Total Disbursement per Mile	54,322	63,369	69,629	8	9	9	0.41	0.44	0.48
Rural Interstate Percent Poor Condition	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Rural Other Principal Arterial Percent Poor	0.56	0.63	0.56	30	34	32	0.87	1.20	0.86
Urban Interstate Percent Poor	7.94	0.00	3.23	39	1	27	1.35	0.00	0.65
Urban Interstate Percent Congested	39.34	40.98	35.68	16	22	18	0.78	0.84	0.76
Rural Arterial Percent Narrow Lanes	1.08	0.97	0.95	11	10	11	0.10	0.10	0.10
Percent of Deficient Bridges	23.41	22.80	23.60	23	23	27	0.93	0.94	0.99
Fatality Rate	1.32	1.09	1.15	23	19	23	0.97	0.87	1.01
Overall Performance	0.61	0.54	0.58	7	5	6			

7. South Carolina:

South Carolina is also in the top ten, where it has finished every year since 2000 except 2002. It ranked seventh in 2009 slipping one position from 2008. With 41,613 miles under state control, it is the fourth largest state-administered system in the country. South Carolina has traditionally had a very thin budget relative to system size: for 2009, it ranked in the top five in all disbursement categories. It bested the U.S. averages in all but three categories: rural interstates in poor condition, where it exceeded the national average by 24 percent (a significant drop in performance from 2008); urban interstate congestion, where it exceeded the national average by 2 percent; and, fatality rate where it exceeded the national average by 60 percent.

South Carolina	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	14,466	13,214	15,515	1	1	1	0.19	0.17	0.19
Maintenance Disbursements per Mile	13,173	8,164	8,634	11	3	4	0.55	0.36	0.34
Administrative Disbursements per Mile	2,688	8,499	2,180	6	20	4	0.28	0.64	0.19
Total Disbursement per Mile	34,382	34,299	31,379	2	1	1	0.26	0.24	0.22
Rural Interstate Percent Poor Condition	0.17	0.17	2.07	21	26	37	0.09	0.09	1.24
Rural Other Principal Arterial Percent Poor	0.16	0.16	0.16	17	15	15	0.24	0.30	0.24
Urban Interstate Percent Poor	0.76	0.76	1.15	11	12	15	0.13	0.14	0.23
Urban Interstate Percent Congested	50.00	50.00	47.83	36	38	37	0.99	1.03	1.02
Rural Arterial Percent Narrow Lanes	6.64	5.70	5.08	26	25	21	0.65	0.56	0.53
Percent of Deficient Bridges	22.43	23.20	22.76	20	25	22	0.89	0.96	0.96
Fatality Rate	2.09	1.85	1.82	47	48	48	1.54	1.48	1.60
Overall Performance	0.54	0.54	0.62	4	6	7			

8. Missouri:

With 33,638 miles under state control, Missouri is the seventh largest state-administered system. In 2009, it ranked eighth in the overall performance rankings, maintaining the same ranking as in 2008, despite spending only about 51 percent of the national average per-highway mile. Missouri bested the U.S. averages in all but three categories (rural arterial mileage with narrow lanes, deficient bridges and fatality rate), where it exceeded national averages by 35, 24 and 12 percent, respectively.

Missouri	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	40,289	36,649	43,822	13	10	12	0.53	0.48	0.55
Maintenance Disbursements per Mile	52,621	14,762	15,646	42	12	16	2.21	0.64	0.61
Administrative Disbursements per Mile	2,079	2,099	2,138	4	4	3	0.21	0.16	0.19
Total Disbursement per Mile	105,728	64,633	73,616	19	10	11	0.79	0.45	0.51
Rural Interstate Percent Poor Condition	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Rural Other Principal Arterial Percent Poor	0.32	0.06	0.13	22	8	14	0.50	0.12	0.20
Urban Interstate Percent Poor	2.40	1.30	1.53	20	14	18	0.41	0.24	0.31
Urban Interstate Percent Congested	44.10	43.93	34.45	27	26	16	0.87	0.90	0.74
Rural Arterial Percent Narrow Lanes	20.63	18.05	13.05	40	39	36	2.01	1.79	1.35
Percent of Deficient Bridges	31.33	29.87	29.48	37	38	40	1.24	1.23	1.24
Fatality Rate	1.43	1.41	1.27	30	33	28	1.06	1.12	1.12
Overall Performance	0.91	0.64	0.63	24	8	8			

9. South Dakota:

South Dakota ranked ninth in overall performance in 2009, up from 12th in 2008. With 8,895 miles under state control, South Dakota maintains its system in good condition despite spending about half the national per-mile average. While the performance in most categories is better than the national averages, four areas were worse: deficient bridges (5 percent worse), fatality rate (20 percent worse), urban interstate in poor condition (32 percent worse) and rural arterials in poor condition (2.5 times the U.S. average).

South Dakota	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	26,391	27,482	35,073	5	6	7	0.34	0.36	0.44
Maintenance Disbursements per Mile	7,450	9,141	7,962	3	5	2	0.31	0.40	0.31
Administrative Disbursements per Mile	5,562	5,293	4,653	14	11	12	0.57	0.40	0.41
Total Disbursement per Mile	42,503	45,291	51,631	4	4	4	0.32	0.31	0.36
Rural Interstate Percent Poor Condition	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Rural Other Principal Arterial Percent Poor	1.38	1.62	1.62	40	45	44	2.15	3.07	2.51
Urban Interstate Percent Poor	5.26	6.58	6.58	34	36	37	0.90	1.22	1.32
Urban Interstate Percent Congested	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Rural Arterial Percent Narrow Lanes	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Percent of Deficient Bridges	24.93	24.87	24.82	25	29	30	0.99	1.03	1.05
Fatality Rate	1.62	1.32	1.36	38	26	36	1.20	1.06	1.20
Overall Performance	0.62	0.72	0.69	8	12	9			

10. Mississippi:

In 2009, Mississippi ranked 10th in the overall performance ratings—an improvement from 2008, when it ranked 16th and a sharp improvement from 2007, when it ranked 27th. With 10,997 miles in the state-owned highway system, Mississippi bested the U.S. averages in all but two categories (deficient bridges and fatality rate), while spending about two-thirds of the national per-mile average. While the percentage of deficient bridges is close to the national average (4 percent over), the fatality rate is 52 percent higher and could be a problem area.

Mississippi	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	101,192	75,786	64,349	33	26	18	1.32	0.98	0.80
Maintenance Disbursements per Mile	14,913	10,313	11,603	13	8	10	0.63	0.45	0.46
Administrative Disbursements per Mile	6,903	6,938	6,661	18	18	18	0.71	0.53	0.59
Total Disbursement per Mile	130,312	100,858	94,379	26	18	15	0.97	0.69	0.65
Rural Interstate Percent Poor Condition	1.01	1.43	0.82	31	32	30	0.53	0.74	0.49
Rural Other Principal Arterial Percent Poor	0.48	0.37	0.16	28	24	16	0.74	0.71	0.24
Urban Interstate Percent Poor	8.70	3.37	2.83	41	31	24	1.48	0.63	0.57
Urban Interstate Percent Congested	35.44	29.81	29.71	12	13	13	0.70	0.61	0.64
Rural Arterial Percent Narrow Lanes	9.34	10.20	8.59	31	33	30	0.91	1.01	0.89
Percent of Deficient Bridges	25.38	24.84	24.67	26	28	29	1.00	1.02	1.04
Fatality Rate	2.04	1.79	1.73	46	45	45	1.51	1.43	1.52
Overall Performance	0.94	0.76	0.70	28	16	10			

Bottom Ten States

50. Alaska:

In 2009, Alaska ranked 50th in the overall performance ratings, one position down from 2008 when it was ranked 49th. Alaska has 7,401 miles under the state-owned highway system. Although ranked last, Alaska has three major problem areas: rural arterials in poor condition (over 29 times the national average), rural interstates in poor condition (3.5 times the national average) and the fatality rate (14 percent above the national rate). Despite increasing maintenance spending per mile (which in 2009 was 27 percent above the national average), Alaska's rural highways continue to report poor performance.

Alaska	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	49,396	44,847	78,220	16	13	25	0.64	0.58	0.98
Maintenance Disbursements per Mile	30,619	28,085	32,431	36	33	36	1.28	1.22	1.27
Administrative Disbursements per Mile	7,200	6,305	7,594	21	14	20	0.74	0.48	0.67
Total Disbursement per Mile	94,900	86,268	126,156	16	15	22	0.71	0.59	0.87
Rural Interstate Percent Poor Condition	6.03	10.75	5.88	45	48	45	3.12	5.58	3.53
Rural Other Principal Arterial Percent Poor	16.44	10.54	19.03	50	50	50	25.60	19.97	29.47
Urban Interstate Percent Poor	1.47	1.45	1.28	14	17	16	0.25	0.27	0.26
Urban Interstate Percent Congested	5.88	4.35	2.16	8	7	5	0.12	0.09	0.05
Rural Arterial Percent Narrow Lanes	7.07	7.08	8.72	29	29	32	0.69	0.70	0.90
Percent of Deficient Bridges	27.18	23.45	22.76	33	26	23	1.07	0.97	0.96
Fatality Rate	1.63	1.27	1.30	39	24	31	1.20	1.02	1.14
Overall Performance	3.26	2.89	3.70	50	49	50			

49. Rhode Island:

Rhode Island ranked 49th in the overall performance rankings in 2009, up one position from 50th in 2008. With 1,112 miles in the state-owned highway system, Rhode Island is the second smallest system and ranks 42nd in per-mile spending, with disbursements per mile 2.4 times the national average. Despite this spending, the highway system lags the U.S. averages in three key areas: rural arterials in poor condition (almost 16 times the national average); deficient bridges (2.25 times the national average); and, urban interstate congestion (23 percent above the national average). The bottom line is that Rhode Island is spending two to three times the national per-mile average on its state road system, but its rural non-interstate roads, deficient bridges and urban congestion are not improving.

Rhode Island	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	232,891	158,996	135,032	47	43	37	3.04	2.06	1.69
Maintenance Disbursements per Mile	80,457	80,506	98,270	47	46	47	3.37	3.51	3.85
Administrative Disbursements per Mile	47,775	19,270	27,782	46	36	42	4.92	1.46	2.45
Total Disbursement per Mile	436,320	361,089	345,970	46	43	42	3.26	2.49	2.39
Rural Interstate Percent Poor Condition	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Rural Other Principal Arterial Percent Poor	10.20	10.20	10.20	49	49	49	15.89	19.34	15.80
Urban Interstate Percent Poor	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Urban Interstate Percent Congested	59.52	56.00	57.34	41	41	42	1.18	1.15	1.23
Rural Arterial Percent Narrow Lanes	2.08	4.17	6.35	15	19	27	0.20	0.41	0.66
Percent of Deficient Bridges	52.94	53.43	53.43	50	50	50	2.09	2.20	2.25
Fatality Rate	0.80	0.79	1.01	2	3	19	0.59	0.63	0.89
Overall Performance	3.00	2.92	2.75	49	50	49			

48. Hawaii:

In 2009, Hawaii ranked 48th in the overall performance rankings, slipping one position from 2008 where it ranked 47th. With 1,011 miles under the state-owned highway system, Hawaii is the smallest system among the 50 states. It has also been in the bottom five performing systems each year since 2000, except 2004 when it finished 43rd. In 2009, its system underperformed the U.S. averages in all but three categories (rural interstate condition, urban interstate congestion and fatality rate), despite spending 3.2 times the national per-mile average. Of particular note are the urban interstate mileage and rural primary arterial mileage in poor condition, which exceed the national averages by factors of 5.4 and 4.2, respectively.

Hawaii	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	185,904	259,466	273,718	44	46	47	2.42	3.36	3.42
Maintenance Disbursements per Mile	36,855	49,194	55,196	38	42	43	1.55	2.14	2.16
Administrative Disbursements per Mile	59,513	57,257	79,203	47	45	49	6.13	4.33	6.97
Total Disbursement per Mile	335,135	420,686	461,992	43	46	45	2.50	2.90	3.20
Rural Interstate Percent Poor Condition	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Rural Other Principal Arterial Percent Poor	2.73	2.70	2.73	48	48	47	4.25	5.12	4.22
Urban Interstate Percent Poor	25.00	25.00	27.08	50	50	50	4.27	4.65	5.45
Urban Interstate Percent Congested	48.98	47.92	42.43	34	36	28	0.97	0.99	0.91
Rural Arterial Percent Narrow Lanes	30.63	30.63	23.96	46	45	45	2.98	3.03	2.48
Percent of Deficient Bridges	44.84	38.81	37.96	48	47	48	1.77	1.60	1.60
Fatality Rate	1.33	1.04	1.09	24	12	20	0.98	0.83	0.96
Overall Performance	2.43	2.54	2.73	46	47	48			

47. California:

With a state-owned highway system of 18,260 miles, California ranked 47th in the overall performance rankings in 2009, up from 48th in both 2007 and 2008. This improvement came following a significant increase (24 percent more than 2008) in per-mile highway expenditures, making total per-mile disbursements 4.7 times the national average. Improvements in rural road conditions (from 43rd to 39th) were reported. Despite these expenditures and the one point increase in overall standings, California remains in the bottom 10, where it has been since 2000. Still, it bested the U.S. averages in three areas: rural arterial mileage with narrow lanes (39 percent below the national average), deficient bridges (20 percent below the national average) and fatality rate (16 percent below the national rate).

California	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	264,175	265,061	320,323	48	48	48	3.44	3.44	4.01
Maintenance Disbursements per Mile	37,208	53,473	149,934	40	43	49	1.56	2.33	5.88
Administrative Disbursements per Mile	62,640	93,464	77,184	49	50	48	6.45	7.07	6.80
Total Disbursement per Mile	455,529	545,890	679,296	47	47	49	3.40	3.76	4.70
Rural Interstate Percent Poor Condition	16.32	16.32	7.18	49	49	48	8.45	8.47	4.31
Rural Other Principal Arterial Percent Poor	1.08	1.12	0.94	39	43	39	1.69	2.12	1.45
Urban Interstate Percent Poor	24.72	24.72	16.16	49	49	49	4.22	4.60	3.25
Urban Interstate Percent Congested	82.95	79.81	80.35	50	50	50	1.64	1.64	1.72
Rural Arterial Percent Narrow Lanes	6.15	6.00	5.86	24	26	25	0.60	0.59	0.61
Percent of Deficient Bridges	28.85	18.76	18.88	35	14	14	1.14	0.77	0.80
Fatality Rate	1.21	1.05	0.95	16	13	14	0.89	0.84	0.84
Overall Performance	2.66	2.80	2.57	48	48	47			

46. New Jersey:

New Jersey, with 3,333 miles of state highways, stands at 46th in the overall performance ratings in 2009, down one place from 2008. Its main problem seems to be its financial performance rather than the performance of the system itself. New Jersey spends 8.4 times the national per-mile average, but bests the national averages in just three categories: rural arterial mileage with narrow lanes (0 miles narrow), rural interstate mileage in poor condition (0 miles poor, a dramatic improvement over 2008) and fatality rate (30 percent below the national rate). However urban road conditions (pavement condition and congestion) rate in the bottom five states.

New Jersey	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	568,736	537,267	478,374	50	50	50	7.41	6.97	5.98
Maintenance Disbursements per Mile	132,071	123,844	185,102	50	50	50	5.54	5.40	7.26
Administrative Disbursements per Mile	62,603	62,748	49,897	48	47	46	6.45	4.75	4.39
Total Disbursement per Mile	1,155,149	1,140,039	1,221,403	50	50	50	8.63	7.86	8.45
Rural Interstate Percent Poor Condition	6.15	6.15	0.00	46	47	1	3.19	3.20	0.00
Rural Other Principal Arterial Percent Poor	0.79	0.79	0.79	34	37	38	1.23	1.49	1.22
Urban Interstate Percent Poor	17.73	17.73	16.02	48	48	48	3.03	3.30	3.22
Urban Interstate Percent Congested	72.21	63.84	62.77	47	45	45	1.43	1.31	1.35
Rural Arterial Percent Narrow Lanes	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Percent of Deficient Bridges	34.91	27.31	27.45	43	35	35	1.38	1.13	1.16
Fatality Rate	0.95	0.80	0.80	6	4	4	0.70	0.64	0.70
Overall Performance	2.64	2.48	2.24	47	45	46			

45. New York:

New York ranked 45th in the overall performance ratings in 2009, up one position from 2008 when it ranked 46th. With 16,301 miles, it has the 16th largest state-controlled highway system in the nation. In 2009 it spent 2.6 times the national average per-mile expenditures, but beat U.S. averages in only two categories: fatality rate (24 percent better than the national rate) and urban interstate congestion (1 percent better than the national average). Despite this spending, New York's system has been one of the bottom 10 performing systems each year since 2000.

New York	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	166,345	154,642	169,358	42	42	41	2.17	2.00	2.12
Maintenance Disbursements per Mile	128,044	88,407	85,676	49	48	46	5.37	3.85	3.36
Administrative Disbursements per Mile	20,085	89,194	19,156	41	49	36	2.07	6.75	1.69
Total Disbursement per Mile	407,122	402,118	374,102	45	45	43	3.04	2.77	2.59
Rural Interstate Percent Poor Condition	7.69	6.08	6.08	48	46	46	3.98	3.16	3.65
Rural Other Principal Arterial Percent Poor	1.50	0.67	0.67	41	35	35	2.33	1.27	1.03
Urban Interstate Percent Poor	10.76	11.26	11.26	44	45	46	1.84	2.09	2.26
Urban Interstate Percent Congested	50.29	45.99	46.43	37	30	34	0.99	0.95	0.99
Rural Arterial Percent Narrow Lanes	28.23	29.29	23.52	44	44	44	2.75	2.90	2.43
Percent of Deficient Bridges	38.28	37.40	37.10	46	46	47	1.51	1.54	1.56
Fatality Rate	0.97	0.92	0.87	8	6	7	0.72	0.73	0.76
Overall Performance	2.35	2.49	1.99	45	46	45			

44. Connecticut:

For the year 2009, Connecticut ranked 44th in the overall performance rankings, down from 41st in 2008. With 4,064 miles under state highway control, it is one of the smaller systems in the country. Connecticut's main problem seems to be total highway disbursements (3.6 times the national per-mile average) and especially administrative disbursements (7.2 times the national per-mile average). Despite its poor overall score, Connecticut performed well in several areas, besting the U.S. averages in rural interstate mileage in poor condition (0 miles poor), fatality rate (38 percent below the national rate) and rural arterial mileage with narrow lanes (91 percent below the national average).

Connecticut	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	124,041	136,748	162,230	39	38	40	1.62	1.77	2.03
Maintenance Disbursements per Mile	39,957	29,492	27,656	41	35	32	1.68	1.29	1.08
Administrative Disbursements per Mile	34,556	57,437	81,249	44	46	50	3.56	4.35	7.15
Total Disbursement per Mile	305,356	329,955	527,419	42	41	46	2.28	2.27	3.65
Rural Interstate Percent Poor Condition	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Rural Other Principal Arterial Percent Poor	0.61	0.61	0.61	32	31	33	0.95	1.15	0.95
Urban Interstate Percent Poor	4.64	3.97	4.28	28	32	31	0.79	0.74	0.86
Urban Interstate Percent Congested	65.56	66.67	67.95	44	46	47	1.30	1.37	1.46
Rural Arterial Percent Narrow Lanes	1.22	1.22	0.89	13	14	10	0.12	0.12	0.09
Percent of Deficient Bridges	33.53	36.22	36.09	41	43	44	1.33	1.49	1.52
Fatality Rate	0.86	0.83	0.71	4	5	2	0.64	0.66	0.62
Overall Performance	1.21	1.28	1.65	37	41	44			

43. Massachusetts:

In 2009, Massachusetts ranked 43rd in the overall performance rankings, up from 44th in 2008 and had 3,639 miles under the state-owned highway system. Its main problem seems to be total highway disbursements (4.4 times the national per-mile average) and especially administrative disbursements (6.1 times the national per-mile average). Despite its poor overall score, Massachusetts's system outperformed U.S. averages in all categories but one, deficient bridges, where it had 53 percent more deficient bridges than the national average. Bottom line: Massachusetts is spending four to five times the national per-mile average but seems to be getting a relatively good system.

Massachusetts	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	197,258	165,145	206,699	45	44	45	2.57	2.14	2.59
Maintenance Disbursements per Mile	85,044	105,670	109,161	48	49	48	3.57	4.61	4.28
Administrative Disbursements per Mile	70,131	71,982	69,458	50	48	47	7.23	5.45	6.12
Total Disbursement per Mile	660,456	661,994	642,834	49	48	48	4.93	4.56	4.45
Rural Interstate Percent Poor Condition	0.00	0.00	0.00	1	1	1	0.00	0.00	0.00
Rural Other Principal Arterial Percent Poor	0.00	0.60	0.00	1	30	1	0.00	1.13	0.00
Urban Interstate Percent Poor	0.42	0.00	0.42	8	1	10	0.07	0.00	0.08
Urban Interstate Percent Congested	43.70	41.60	42.87	25	23	29	0.86	0.86	0.92
Rural Arterial Percent Narrow Lanes	4.79	4.79	5.21	20	21	23	0.47	0.47	0.54
Percent of Deficient Bridges	51.26	36.38	36.38	49	44	45	2.03	1.50	1.53
Fatality Rate	0.76	0.67	0.61	1	1	1	0.56	0.53	0.54
Overall Performance	1.65	1.58	1.56	44	44	43			

42. Minnesota:

In 2009, Minnesota ranked 42nd in the overall performance ratings, down 18 positions from 24th in 2008. With 12,905 miles under its state-controlled highway system, it has the 19th largest system in the country. In 2009 Minnesota's total per-mile disbursements were slightly less (11 percent) than the national average, but its mileage in poor condition (on urban and rural interstates and rural arterials) worsened considerably, with mileage in poor condition increasing 4.3, 5.7 and 0.6 percentage points, respectively. Otherwise, only urban interstate congestion performance was worse (by 66 percent) than the national average.

Minnesota	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	62,505	73,249	65,785	24	25	19	0.81	0.95	0.82
Maintenance Disbursements per Mile	29,263	31,434	33,912	34	38	37	1.23	1.37	1.33
Administrative Disbursements per Mile	11,038	10,853	10,461	26	24	23	1.14	0.82	0.92
Total Disbursement per Mile	116,836	129,361	128,849	23	25	23	0.87	0.89	0.89
Rural Interstate Percent Poor Condition	2.12	3.65	9.37	36	45	49	1.10	1.90	5.62
Rural Other Principal Arterial Percent Poor	0.19	0.14	0.74	18	13	37	0.30	0.27	1.15
Urban Interstate Percent Poor	1.98	1.41	5.73	18	15	34	0.34	0.26	1.15
Urban Interstate Percent Congested	80.48	77.66	77.66	49	49	49	1.59	1.60	1.66
Rural Arterial Percent Narrow Lanes	5.28	5.16	5.16	22	23	22	0.51	0.51	0.53
Percent of Deficient Bridges	12.08	12.83	13.37	3	4	3	0.48	0.53	0.56
Fatality Rate	0.88	0.79	0.74	5	2	3	0.65	0.63	0.65
Overall Performance	0.80	0.88	1.38	15	25	42			

41. Colorado:

In the overall performance rankings, Colorado stood at 41st in 2009, down seven positions from 2008. With 9,764 miles under the state-owned highway system, it has a mid-sized system, with total per-mile expenditures slightly (13 percent) above the national average. In 2009, Colorado saw a big drop (4.1 percentage points) in the condition of its rural interstates. This poor condition mileage, coupled with a relatively high number of rural arterial miles with narrow lanes (32 percent above the U.S. average), are the main reasons Colorado ranked in the bottom 10 overall. Otherwise, its system is solidly in the middle of the pack.

Colorado	State Data			State Rank			Ratio to U.S. Data		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Capital-Bridge Disbursements per Mile	60,723	70,823	86,164	22	24	29	0.79	0.92	1.08
Maintenance Disbursements per Mile	26,347	25,483	23,335	33	30	29	1.10	1.11	0.92
Administrative Disbursements per Mile	20,008	19,563	22,573	40	38	40	2.06	1.48	1.99
Total Disbursement per Mile	137,536	147,169	163,028	30	27	30	1.03	1.01	1.13
Rural Interstate Percent Poor Condition	2.48	2.64	6.72	39	41	47	1.29	1.37	4.03
Rural Other Principal Arterial Percent Poor	0.91	0.99	0.49	37	41	29	1.41	1.88	0.76
Urban Interstate Percent Poor	5.22	6.64	5.64	33	37	33	0.89	1.24	1.13
Urban Interstate Percent Congested	43.49	47.58	47.58	23	33	36	0.86	0.98	1.02
Rural Arterial Percent Narrow Lanes	14.14	12.77	12.77	37	34	35	1.38	1.26	1.32
Percent of Deficient Bridges	16.78	13.85	13.76	7	5	5	0.66	0.57	0.58
Fatality Rate	1.14	1.15	1.00	14	21	18	0.84	0.91	0.88
Overall Performance	1.09	1.14	1.32	33	34	41			

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 and how road investment depends on economic activity and tax revenues to road trust funds.

Economic Trends

Economic trend data come from several well-known sources:

- 1) **Real GDP with a base year of 2005:** These quarterly data were collected in \$ billion, but graphed in \$ trillion. Source: U.S. Department of Commerce, Bureau of Economic Analysis, *National Economic Accounts*, “Current Dollar and ‘Real’ GDP,” May 22, 2012. Available at: <http://www.bea.gov/national/index.htm#gdp>.
- 2) **Unemployment Rate:** These monthly data were collected and graphed as a percentage. Source: U.S. Department of Labor, Bureau of Labor Statistics, *Labor Force Statistics from the Current Population Survey*, May 22, 2012. Available at: <http://data.bls.gov/timeseries/LNS14000000>.
- 3) **CPI with a base of July 1983:** This is a monthly index with a base of 100. Source: U.S. Department of Labor, Bureau of Labor Statistics, *Consumer Price Index*, May 22, 2012. Available at: <ftp://ftp.bls.gov/pub/special.requests/cpi/cpiiai.txt>.
- 4) **Highway Construction Cost Index:** This is a quarterly index with a base of 1.00, for March 2003. Source: Federal Highway Administration, Office of Highway Policy Information, “National Highway Construction Cost Index (NHCCI),” October 2011 update, May 22, 2012. Available at: <http://www.fhwa.dot.gov/policyinformation/nhcci.cfm>.
- 5) **VMT (Vehicle-miles of travel):** This is collected on a monthly basis as a 12-month rolling total. It was collected in billions of miles, but graphed in 10’s of billions of miles. Source: U.S. Department of Transportation, Federal Highway Administration, *Traffic Volume Trends*, May 22, 2012. Available at: http://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm.

- 6) **Total State Tax Revenues:** This quarterly data was collected as tax revenue for each state and then added up to reach a national total. It was collected in \$ thousand, but graphed in \$ billion. Source: U.S. Census Bureau, *State Government Tax Collections*. Several years referenced, May 22, 2012. Available at: <http://www.census.gov/govs/ntax/index.html>.

State Highway 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 standard 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, 2009, Table HM-10, available at: <http://www.fhwa.dot.gov/policyinformation/statistics/2009/xls/hm10.xls>.

Capital and Bridge Disbursements

Disbursements for state-administered highways are of several types: capital and bridge work, maintenance and highway services, administration, research and planning, law enforcement and safety, interest (on bond payments) and bond retirement. "Capital" actions are those intended to reconstruct or improve the system, whereas "maintenance" actions are those intended to preserve or repair the system, but not improve it. However, the definitions of these categories vary somewhat between the states, particularly on capital and maintenance actions. Most states use contracts with the private sector to build and reconstruct the system, although in some cases they may also use their own work forces for some major jobs. Most states also conduct maintenance largely with agency forces and the work is generally light in character, but some also conduct some major repairs such as thick overlays using contracted forces from the private sector.

The source of data for capital and bridge disbursements is Table SF-4, FHWA Highway Statistics, 2009 (<http://www.fhwa.dot.gov/policyinformation/statistics/2009/xls/sf4.xls>). These

disbursements are divided by mileage under state control to arrive at a relative measure of capital expenditure per unit of responsibility. The national average is the weighted average, obtained by adding up the numbers for all states, then dividing by the sum of all state-administered mileage. Since large per-mile capital and bridge expenditures are also a burden on taxpayers, the states are ranked inversely by this measure, with the highest per-mile expenditures being rated lowest.

Maintenance Disbursements

The source for maintenance disbursements is also Table SF-4, FHWA Highway Statistics 2009, (<http://www.fhwa.dot.gov/policyinformation/statistics/2009/xls/sf4.xls>). These maintenance disbursements are divided by mileage under state control to arrive at a relative measure of maintenance activity per unit of responsibility. The national average is the weighted average. Since large per-mile maintenance expenditures are also a burden on taxpayers, the states are ranked inversely by this measure, with the highest per-mile expenditures being rated lowest.

Administrative Disbursements

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

The source for administrative disbursements is also Table SF-4, FHWA Highway Statistics 2009, (<http://www.fhwa.dot.gov/policyinformation/statistics/2009/xls/sf4.xls>). These disbursements are divided by mileage under state control to arrive at a relative measure of administrative costs per unit of responsibility. The national average is the weighted average. Since large per-mile administrative expenditures are also a burden on taxpayers, the states are ranked inversely by this measure, with the highest per-mile expenditures being rated lowest.

Total Disbursements

Total disbursements represent total state outlays for state-administered roads and include several categories not detailed above. Usually, states disburse about 2-3 percent less money 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 again Table SF-4, FHWA Highway Statistics 2009, (<http://www.fhwa.dot.gov/policyinformation/statistics/2009/xls/sf4.xls>). These disbursements are

divided by mileage under state control to arrive at a relative measure of administrative costs per unit of responsibility. The national average is the weighted average. 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.

Rural Interstate Poor-Condition Mileage

Perhaps no measure is more fundamental to road performance than a measure of road condition. There are numerous ways of defining road condition, but the one used for the U.S. higher-road system is the International Roughness Index (IRI), essentially a measure of surface bumpiness in inches of vertical deviation per mile of length. The states use a variety of procedures in gathering this data, but most use mechanical or laser equipment driven over the road system. They often supplement this data with detailed information on road distress features, but this information is not generally used in federal reporting. A few states, however, still use visual ratings as the basis of their reports. Higher “roughness index” scores mean 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 percentage of the system, even though it has some.

The source of road roughness data is Highway Statistics 2009, FHWA, Table HM-64 (<http://www.fhwa.dot.gov/policyinformation/statistics/2009/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 percentage, 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). The national average is the weighted average, obtained by dividing the sum of all poor-rated mileage by the sum of all state-administered mileage.

Urban Interstate Poor-Condition Mileage

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 2009, FHWA, Table HM-64 (<http://www.fhwa.dot.gov/policyinformation/statistics/2009/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 percentage, to account for different sizes of urban interstate systems in each state. The national average is the weighted average.

Rural Other Principal Arterial Poor-Condition Mileage

Rural other principal arterials are the major inter-city connectors, off the interstate system, connecting regions of states. They can be 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 2009, FHWA, Table HM-64 (<http://www.fhwa.dot.gov/policyinformation/statistics/2009/xls/hm64.xls>). We use the mileage at IRI greater than 220 inches per mile. This mileage is then converted into a percentage, to account for different sizes of rural other principal arterial systems in each state. The national average is the weighted average.

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, 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 2008, FHWA, Table HM 61 (<http://www.fhwa.dot.gov/policyinformation/statistics/2009/xls/hm61.xls>). Data is shown as miles of road, in each state, with various volume/capacity ratios. We use 0.70 as the cutoff for “congested.” Although other studies sometimes use 0.80 and 0.95 as cutoffs, the use of these higher cutoffs would result in modest congestion not being counted, a distinct advantage for rural states. Each state’s congested mileage is then expressed as a percentage of the state’s urban interstate mileage. The national average is the weighted average.

Generally, traffic volumes have generally been rising over time, increasing congestion (2008 and 2009 may be exceptions). But since driver skills and road geometrics have also been improving over time, road capacity is also rising, although not as rapidly as traffic. Freeway maximum flow was assumed to be 2,000 vehicles per lane per hour until 1994, then 2,200 until the year 2000. It is now 2,400 vehicles per lane per hour. These re-definitions had the effect of artificially increasing

freeway capacity, thus appearing to reduce congestion between 2000 and 2002. For this reason, comparisons of congestion trends before about 2002 should be cautious.

Fatality Rates

Road safety is an undisputed important measure of system performance and fatality rates are a key measure of safety. The overall state fatality rate has long been seen as a measure of state performance in road safety.

The source of the data for fatality rates is from two tables in FHWA Highway Statistics 2009: Table FI-20 provides a count of fatalities by state and functional class (<http://www.fhwa.dot.gov/policyinformation/statistics/2009/xls/fi20.xls>) and Table VM-2 provides an estimate of daily vehicle-miles of travel for each state by functional class (<http://www.fhwa.dot.gov/policyinformation/statistics/2009/xls/vm2.xls>). The national average fatality rates are the weighted averages across the states. The National Highway Traffic Safety Administration also provides data on fatality rates, which we have used for more recent national trends.

Deficient Bridges

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

Historically, our source for deficient bridges has been an annual summary of bridge deficiencies prepared by *Better Roads*, a trade publication. This source generally contains very recent information, gathered from each state just weeks before the end of each calendar year.

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 2010 summary from the Inventory would represent, on average, bridge condition as of 2009, consistent with our other data.

Each state’s count of deficient bridges is then converted to a percentage of all highway bridges in the state. The national average fatality rates are the weighted averages across the states.

Narrow Lanes on Rural Other Principal Arterials

Narrow lanes on rural roads are a surrogate measure for system quality, since no data on other 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 Highway Statistics 2009, FHWA, Table HM-53 (<http://www.fhwa.dot.gov/policyinformation/statistics/2009/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. The national average is a weighted average across all states.

Overall Ratings

The 2009 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, for North Carolina)

N = Number of measures (11 for 49 states, 10 for Delaware, which has no rural interstate)

R_{is} = Performance Ratio for measure "i", state "s".
= M_{is} / \mathbf{M} , where \mathbf{M} is the weighted average of M_{is} across the 50 states.

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

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

where L_s is the average SHA lanes-per-mile for measure "i" for state "s" and L is the weighted average of the lanes-per-mile, over 50 states.

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

$$\text{Grand Performance Ratio for state "s"} = \left(\sum_{i=1}^{11} R'_{is} \right) / 11$$

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

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Endnotes

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- ¹ A “vehicle-mile” is defined as one vehicle traveling one mile and is a standard measure of travel.
 - ² While this is a common and widely accepted definition, it is not the official definition set forth by the National Bureau of Economic Research (NBER). The NBER defines a recession as a significant decline in economic activity lasting more than a few months.
 - ³ Ken Orski, “The Transportation Community Braces for Continued Uncertainty,” Innovation Briefs, Feb 8, 2010. Available at www.innobriefs.com
 - ⁴ Of the 13 states in this region, five exceed the national unemployment rate, with New Mexico and California leading the way, with unemployment rates of 13.5 and 11.7 percent, respectively.
 - ⁵ USDOT, 2010 Status of the Nation’s Highways, Bridges and Transit: Condition and Performance Report to Congress, April 5, 2012. At www.fhwa.dot.gov
 - ⁶ David T. Hartgen and M. Gregory Fields, *Are Highways Really Crumbling?* Report in press, Reason Foundation, 2012. Will be available at www.reason.org
 - ⁷ Federal Highway Administration, Highway Statistics, 1994. Available at www.fhwa.dot.gov.
 - ⁸ New Mexico Department of Transportation, Annual Report, 2008. Albuquerque, NM.
 - ⁹ Transportation Research Board, A Guidebook for performance-based transportation planning, NCHRP Report 446, TRB, 2000. At www.trb.org
 - ¹⁰ AASHTO, Performance-Based Highway Program Management: Select Examples, December 2007, at www.aashto.org.
 - ¹¹ For example: Cambridge Systematics Inc, Performance Measures and Targets for Transportation Asset Management, NCHRP Report 551, Transportation Research Board, 2006. At www.trb.org; and Cambridge Systematics, Inc., Target-Setting Methods and Data Management to support Performance-Based Resource Allocation by Transportation Agencies, NCHRP Report 666, Transportation Research Board, 2007, at www.trb.org.
 - ¹² U.S. Government Accounting Office, Statewide Transportation Planning: Opportunities Exist to Transition to Performance-based Planning and Federal Oversight, USGAO Report GAO-11-77, December 2010.
 - ¹³ “The Best, Worst, Deadliest Roads: A Special Report on the Nation’s Highways,” *Readers Digest*, April 2010, pp. 126–bn139.
 - ¹⁴ Pew Center on the States, *Measuring Transportation Investments: the Road to Results*, May 11, 2011. At www.pew.org
 - ¹⁵ USDOT, 2010 Status of the Nation’s Highways, Bridges and Transit: Condition and Performance Report to Congress, April 5, 2012. At www.fhwa.dot.gov

¹⁶ USDOT, Office of Highway Policy Information, Highway Performance Seminar, November 2011. At www.dot.gov.

¹⁷ U.S. Senate, MAP-21, Senate Bill 1813, 112th Congress, 2nd Session, April 2, 2012.



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