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Oklahoma's Roads Compared to Other States: Road Performance Data

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It is not uncommon to hear people complain about the state of Oklahoma's road network compared to those of other states. As it happens, there are objective statistics available across all states by which the 50 road networks and, to some extent, the 50 highway departments can be evaluated. The Reason Foundation, for example, produces a thick book of statistics comparing states' highways, mostly based on statistics from the Federal Highway Administration, itself significantly dependent on self-reporting by the states.

Instead of a thick book, two tables of essential statistics are presented in this publication. Table 1 contains overall travel and road network data as well as spending on road maintenance and administration. Table 2 contains performance data, including pavement condition, congestion, and bridge condition. Both tables rank the states in various measures, highlighting Oklahoma.

It should be kept in mind that the statistics include locally-maintained (city and county) roads in addition to state-maintained roads. While readers may discern insights of their own from these statistics, some thoughts are provided here, subject to refinement based on future research. The following bullets derive from the discussion below:

- Oklahoma's road network is not large for its geographic size, but is for its population.
- Heavy truck traffic comprises a relatively large share of traffic in Oklahoma.
- Maintenance spending in Oklahoma is relatively high, more on a par with states that suffer from more intensive freeze/thaw cycles.
- Traffic congestion in Oklahoma is *not* a serious problem.
- While Oklahoma has made great strides in improving state-maintained bridges, interstate pavement condition ranks poorly among the states.
- Locally-maintained bridges reduce Oklahoma's bridge ranking to the bottom 10 of states.
- There is a needless and costly emphasis in the state on passenger rail transportation.

- The legislature must exercise vigorous oversight over state road agencies.

Lane Miles & Travel

NOTE: A *lane mile* of road is, as the name implies, one lane of road that is one mile long. Thus, a four-lane road one mile long contributes four lane miles to a state's total lane mile measure. *Vehicle Miles Traveled* means the total miles traveled by road by a population.

Oklahoma has the 16th lowest average population density among the states (Table 1, column 9), the 16th lowest urban share of total population (Table 1, column 11), and the 17th lowest share of its land in urban areas (Table 1, column 10). That is, Oklahoma's population as a whole is more thinly spread than most states'. Consequently, Oklahoma has a relatively large amount of road surface relative to its population, ranked tenth among the states in this regard (lane miles per capita, Table 1, column 1). This tenth overall ranking occurs substantially because of the state's sixth-place ranking in urban lane miles per capita (Table 1, column 2). In other words, the length of lane miles indicates Oklahoma's urban areas are more sprawled than most states'.

Based on lane miles of road per square mile (Table 1, column 4), Oklahoma, despite its rural/urban sprawl, is ranked in the middle, not the top, of states. For its geographic size, Oklahoma does not appear to be over-invested in roads. However, for its population, Oklahoma's road investment in lane miles seems excessive.

Heavy truck traffic's share of all traffic in the state is quite high in Oklahoma, especially as a percentage of rural traffic, with Oklahoma ranked third (Table 1, column 8). A few of Oklahoma's nearby neighbors also rank somewhat highly in rural truck traffic, with Texas, Arkansas, Missouri, and Kansas ranking 7th, 9th, 11th, and 12th, respectively. No doubt, Oklahoma and Texas rank highly partly due to oil-industry traffic. Nevertheless, the overall *intensity*

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of road use in Oklahoma is low, with the 12th fewest miles driven per lane mile of road in the nation (Table 1, column 6).

In sum, an outsize number of miles are traveled by road in Oklahoma given its population, and an outsize share of those miles is traveled by heavy trucks. However, Oklahoma's very outsized road network relative to the population (though not relative to the state's physical size) results in relatively little traffic demand on roads in the state, on average.

Maintenance Spending

Maintenance spending in Oklahoma on a lane-mile basis is relatively high, with Oklahoma ranked 17th (Table 1, column 12), which is somewhat surprising because of Oklahoma's relatively high number of lane miles on a per capita basis. One might think Oklahomans, having to support a far-flung road network, could not afford relatively high maintenance spending. The state's maintenance spending ranks even higher based on vehicle miles traveled, at tenth in the nation (Table 1, column 14).

The need for maintenance can be determined by several factors, which bear on each other. One factor is weather, with water playing a large role in impacting road surface. Water interacts with soils, especially those with a high clay content, causing sub-surface soil expansion (when wet) and contraction (when dry) that can crack and buckle pavement. Freeze/thaw cycles are particularly hard on road surfaces due to the forces water exerts as it freezes in surface cracks. States with maintenance costs comparable to Oklahoma's are mostly well north of Oklahoma and would be expected to suffer far more from freeze/thaw cycles. Other than Colorado with its Rocky Mountains, every state that neighbors Oklahoma has considerably lower maintenance costs. This particularly calls into question both past construction and present maintenance methods employed in Oklahoma.

Another factor, already alluded to, is soil type. For example, sandy soil is difficult for initial construction, but can be fairly stable. Soils very high in clay are very expansive and act like a sponge, expanding greatly when wet and shrinking when dry. The greatest stability occurs with bedrock near the surface combined with little tectonic activity. Initial construction can stabilize soil conditions by treating some soils with lime or digging out expansive soil and replacing it with crushed rock. Oklahoma's high maintenance spending may well be a function of old road beds constructed with insufficient consideration for soil type.

Still another issue that impacts maintenance spending is the nature of traffic. Namely, is traffic relatively heavy or light in weight as well as numbers? Most highways are built well enough that four-wheeled vehicles make little or no impact. The impact from weight is from large, heavy trucks – typically called 18-wheelers. If a road carries a lot of heavy truck traffic, it will need more maintenance than an identical road that carries fewer trucks. As already noted, Oklahoma's roads carry a relatively large share of truck traffic compared to other states, at least as a share of vehicle miles traveled, which is also high in Oklahoma. In addition to ranking third in the nation in trucks' share of rural traffic (Table 1, column 8), Oklahoma ranks 16th in trucks' share of urban traffic (Table 1, column 7).

Another factor related directly to road surface that impacts maintenance spending is the age of the road. Pavement simply

ages. There is a degree to which any pavement surface must be repaired and, eventually, replaced. There are no extensive comparative statistics on pavement age across states, but one factor might be that much of Oklahoma's highway pavement is old. It is not uncommon for complete reconstruction of a road to occur about every 40 years. Many turnpike pavements in Oklahoma are a good deal older than 40 years.

Finally, Oklahoma's relatively high maintenance expenditures may well be related to inefficiency within Oklahoma's road authorities, the Oklahoma Department of Transportation (ODOT), the Oklahoma Turnpike Authority (OTA), and various city and county governments. On the other hand, there is an argument that currently high maintenance spending combined with poor pavement condition is partly a result of poor state-level funding in the past.¹

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Given the current level of maintenance spending, and presuming 2020 was not an anomalous year, it might be expected that Oklahoma's interstate highway pavement quality would rank higher than 39th in rural areas and 22nd in urban areas among the states (Table 2, columns 1 & 2). Oklahoma's rankings in pavement quality on non-interstate roads in rural and urban areas are even worse, at 41st and 25th (Table 2, columns 3 & 4), respectively. This might be attributable to relatively heavy truck traffic, but a quick statistical analysis investigating the relationship between truck traffic and pavement condition across the states showed no statistical relationship, nor is there a statistical relationship between the amount of pavement in poor condition and maintenance spending on a lane-mile basis.

Based on the statistics reported in the tables, the evidence indicates that relative maintenance spending across states is highly idiosyncratic. It depends on any number of issues just discussed, which are different in every state. But it also depends on how efficiently road maintenance is managed and how well it is funded in the present as well as in the past and how efficiently past construction has been managed. While it is apparent Oklahoma has under-funded road maintenance and construction in decades past, strong efforts have been made to improve funding for well over a decade. With rural interstate pavement conditions ranking so poorly, it appears that state authorities are likely biding time for full reconstruction, although this might not be the most efficient solution.

Administrative Costs

One indicator that Oklahoma's road agencies suffer from inefficiency is the state's rankings in administrative costs on a lane-mile and vehicle-miles-traveled basis. Oklahoma has the 15th and ninth-highest administrative costs among the states, respectively. Of Oklahoma's neighboring states, only Colorado

ranks higher in administrative costs per lane mile; the others rank considerably lower at 35th (KS), 37th (TX), 45th (MO), and 49th (AR). Even Colorado ranks lower (12th) in administrative costs per vehicle mile traveled, with other neighboring states ranking 37th (KS), 43rd (TX), 47th (MO), and 48th (AR) (Table 1, Columns 13 and 15). Oklahoma's high administration spending on roads would look even worse if it were adjusted for the cost of living, which is very low in Oklahoma and is an adjustment that would be justified since the bulk of administrative costs is in salaries.

What about Construction?

Construction spending is not considered in the statistical tables because so much must be accounted for in making state-to-state comparisons. For example, if a state has to build heavily in urban areas, construction costs will be very high compared to those building the same number of lane miles in rural areas. This is because urban areas require more grade separations (bridges and overpasses) than rural areas, adding a great deal of expense due to support structures. Without knowing in some detail the nature of construction projects across the states, construction cost comparisons are rendered almost entirely meaningless.

Performance Measures Congestion

Despite Oklahoma's relatively high number of vehicle miles traveled (17th among the states, Table 1, column 5), its high number of lane miles per capita results in mild traffic congestion. Oklahoma is the 16th *least* congested state in the nation, and only two border states, Arkansas and Kansas, are slightly less congested (Table 2, column 5).

Of course, there is congestion in Oklahoma's urban areas, especially in the Tulsa and Oklahoma City Metropolitan Statistical Areas (MSAs). However, as anyone who has lived in Houston, Dallas, Phoenix, or Albuquerque can attest, Oklahoma's urban traffic congestion is relatively mild. Oklahoma City ranked 66th and Tulsa ranked 70th among 80 ranked cities in terms of congestion in 2019 by one measure.² Oklahoma City's congestion in 2017 ranked lower than that of Tulsa's, but worsened significantly in just two years.

Congestion *should* be a major determinant of where resources flow for road improvements through maintenance and, especially, construction, with a goal of relieving congestion as much as possible. Several construction projects in the Oklahoma City and Tulsa MSAs reconfiguring major highway intersections indicate that ODOT and the OTA are taking steps to relieve congestion.

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These construction projects might very well explain some of the increased congestion in the last few years as they interfere with traffic as long as construction is underway.

Pavement and Bridge Conditions

Oklahoma's pavement condition has already been mentioned, but familiar complaints about the poor state of Oklahoma's roads, despite relatively high maintenance spending, appear justified. Only one of Oklahoma's nearby neighbors has pavement in worse condition on rural interstates – Colorado, which suffers severe freeze/thaw cycles. None of Oklahoma's nearby neighbors has worse urban interstate pavement conditions. It should be kept in mind that the interstates are entirely under the control of Oklahoma's two statewide road agencies, ODOT and OTA. Statistics do not separate OTA-controlled highways on the interstate system from ODOT-controlled interstates.

Oklahoma's non-interstate highways are in relatively better comparative condition, with its neighbors, Colorado, Missouri, and Arkansas's, rural non-interstate highways in poorer condition. Interestingly, of Oklahoma's neighboring states, only Colorado and *Texas* have non-interstate urban roads in worse condition than Oklahoma's. Non-interstate roads include those controlled by counties and cities. The relative condition of locally administered roads compared to those administered by state agencies is not separately reported, but it is somewhat surprising that this classification of roads ranks as well as it does given that locally-maintained bridges so negatively affect Oklahoma's bridge-condition ranking.

Despite a concerted effort to improve Oklahoma's state-maintained bridges, which has resulted in a great deal of improvement and much safer bridge conditions on state-maintained roads, Oklahoma still has the tenth worst overall bridge conditions in the nation. None of Oklahoma's immediately neighboring states is ranked lower. Missouri is close, with the 13th worst bridge conditions, but the next closest ranked neighboring state, Colorado, has the 20th *best* overall bridge conditions.

Oklahoma's state-maintained bridges, on the whole, are now in good shape, with their collective condition ranked in the top-ten among states. Oklahoma's abysmal overall bridge ranking results from locally-maintained bridges, of which there are nearly 16,000. Clearly, many of these are obsolete or in poor condition.³

Policy Implications Say No to Passenger Rail

The fact of Oklahoma's mild congestion only begs the question of why Oklahoma's state and city transportation authorities appear so enamored of passenger rail projects. Oklahoma City has its novelty downtown trolley (streetcar). Periodically, efforts arise in Tulsa to create a light rail system. The state has applied for federal funding for an intercity high-speed passenger rail, which will only draw resources away from improving pavement and local bridges.⁴ Although passenger rail has proven not to actually solve any problems with congestion, its enormous expense is almost always justified by proponents as a potential solution to that very problem.⁵ Combining Oklahoma's mild congestion with passenger rail's objective failure as a real transportation solution in modern times, it appears rail proponents' motives have little to do with congestion relief.

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The Need for Vigorous Road Department Oversight

Judging by the condition of the bridges they maintain, it is clear that Oklahoma’s local governments need more help than they are already getting to maintain their roads. This means state-level expertise and resources have to be used more heavily than they already are. The agency in the most natural position to be relied upon is ODOT. Another agency in a position to at least provide some expertise is OTA. However, this requires a great deal of trust to be placed in agencies that are clearly administratively heavy, as indicated by the administrative cost statistics in Table 1 (columns 13 and 15).

Road agencies are monopolies. Though subject to some federal

Table 2: Road Performance Data⁷

Rank	Percent of Roads Reported in Poor Condition (>170 IRI)								Congestion		Bridge Condition	
	Column 1		Column 2		Column 3		Column 4		Column 5		Column 6	
	Rural Interstate		Urban Interstate		Other Rural		Other Urban		Peak Hrs in Congestion/ Urban Driver		Percent in Poor Condition	
	State	% Poor	State	% Poor	State	% Poor	State	% Poor	State	Hours	State	% Poor
1	RI	0.08%	NH	0.00%	NV	0.90%	GA	4.97%	DE	116.40	NV	1.36%
2	NH	0.14%	ND	0.61%	DE	1.07%	FL	5.07%	IL	112.00	TX	1.50%
3	UT	0.23%	VT	1.06%	FL	1.10%	AL	7.17%	MA	102.60	AZ	1.57%
4	ND	0.35%	ME	1.16%	MA	1.16%	UT	7.91%	MD	96.80	UT	2.02%
5	VA	0.40%	ID	1.22%	AL	1.30%	MN	8.27%	RI	69.30	DE	2.15%
6	VT	0.48%	CT	1.40%	GA	1.48%	AK	8.81%	CA	62.50	VT	2.33%
7	FL	0.49%	UT	1.59%	MD	1.74%	TN	9.97%	VA	60.90	GA	2.50%
8	SD	0.55%	TN	1.72%	WY	1.95%	NV	10.16%	PA	58.10	FL	3.24%
9	OR	0.57%	MT	1.74%	VA	2.11%	VT	10.20%	GA	56.00	AL	3.84%
10	NV	0.59%	NC	1.75%	TN	2.14%	KY	10.21%	TX	54.00	VA	4.13%
11	MO	0.64%	NV	1.79%	OH	2.28%	NC	10.60%	NJ	51.70	TN	4.35%
12	TX	0.76%	AK	1.85%	KS	2.29%	NH	10.92%	WA	49.50	OR	4.81%
13	TN	0.79%	AZ	2.13%	ND	2.42%	KS	11.38%	OR	44.50	MN	4.91%
14	KS	0.84%	SD	2.29%	OR	2.72%	DE	11.38%	CO	43.90	WA	4.99%
15	ID	0.86%	GA	2.67%	ID	2.99%	MO	13.29%	MN	43.20	MD	5.03%
16	NJ	0.91%	VA	2.69%	TX	3.11%	SC	13.62%	LA	40.80	OH	5.09%
17	IA	0.94%	MO	2.76%	KY	3.29%	AZ	14.21%	FL	40.40	AR	5.12%
18	WY	0.96%	MA	2.76%	MI	3.82%	ID	14.27%	ME	38.80	NM	5.14%
19	MT	1.04%	RI	2.84%	IN	4.51%	VA	15.36%	IN	36.50	KS	5.30%
20	KY	1.18%	OR	2.85%	MT	4.77%	AR	15.92%	AZ	32.60	CO	5.45%
21	NC	1.20%	FL	2.86%	SC	4.85%	OR	16.00%	VT	30.60	CT	5.69%
22	MD	1.27%	KY	2.91%	OK	5.04%	WV	16.56%	NY	29.90	IN	5.75%
23	GA	1.30%	NE	3.15%	MO	5.05%	IN	16.64%	CT	25.50	CA	5.96%
24	AL	1.44%	NM	3.28%	SD	5.45%	WY	16.66%	NH	25.30	ID	6.32%
25	CT	1.60%	TX	3.41%	AR	5.72%	OK	18.12%	MI	24.90	WI	6.86%
26	MS	1.76%	MS	3.51%	IA	5.74%	MS	18.79%	NC	24.80	WY	6.98%
27	IL	1.78%	WA	3.61%	VT	6.14%	CT	19.50%	TN	23.20	MT	7.15%
28	OH	1.80%	SC	3.72%	NY	6.42%	ND	20.31%	SD	20.80	KY	7.16%
29	NE	1.82%	KS	3.73%	NE	6.71%	CO	20.92%	WI	20.30	HI	7.29%
30	NM	1.98%	IA	3.86%	CA	7.03%	IA	21.79%	OH	19.30	NJ	7.38%
31	AZ	2.15%	WI	4.28%	PA	7.13%	MD	22.21%	MO	18.90	NC	7.79%
32	WV	2.20%	OH	4.44%	NC	7.24%	TX	22.46%	AL	18.50	SC	7.88%
33	WI	2.25%	WV	4.67%	IL	7.39%	SD	23.21%	NV	16.00	MS	8.21%
34	AR	2.30%	WY	4.74%	AZ	7.77%	PA	23.51%	NM	15.10	NE	8.48%
35	MN	2.42%	MN	5.78%	NH	7.86%	IL	23.59%	OK	14.90	NH	8.55%
36	MA	2.43%	CO	5.83%	UT	7.89%	ME	23.76%	SC	13.80	AK	8.57%
37	PA	2.44%	AR	6.11%	WA	8.21%	OH	24.75%	MT	13.30	IL	8.84%
38	ME	2.46%	AL	6.29%	MS	8.64%	MT	26.07%	KY	13.20	MO	8.92%
39	OK	2.49%	IL	6.34%	WV	9.56%	NM	26.09%	AR	12.60	MA	9.03%
40	NY	2.68%	IN	6.35%	MN	9.74%	WA	26.27%	KS	10.70	NY	9.70%
41	CA	3.08%	OK	6.36%	LA	9.74%	MI	29.31%	WV	9.30	OK	10.05%
42	MI	3.31%	MD	6.81%	NJ	9.93%	LA	30.83%	MS	9.20	ND	10.30%
43	LA	3.55%	PA	7.81%	CT	10.16%	WI	32.38%	WY	8.90	MI	10.82%
44	IN	4.13%	CA	8.04%	CO	10.48%	NJ	32.84%	NE	7.60	LA	12.71%
45	SC	4.30%	MI	8.19%	WI	12.92%	HI	33.13%	UT	7.40	ME	12.74%
46	WA	5.46%	DE	9.31%	ME	13.27%	NY	34.38%	AK	7.20	PA	14.60%
47	CO	6.19%	NY	9.35%	NM	15.42%	MA	37.18%	HI	6.90	SD	17.65%
48	AK	8.14%	NJ	10.08%	HI	20.28%	NE	37.56%	ND	5.40	RI	19.05%
49	DE		LA	12.44%	AK	24.24%	CA	43.64%	IA	4.20	IA	19.06%
50	HI		HI	22.91%	RI	29.41%	RI	47.14%	ID	3.40	WV	21.18%

oversight, they exclusively have road planning, contracting, and decision-making over the road networks for which they are individually responsible. Oversight boards exist, but there is a tendency to appoint individuals from the general public who have particularly strong interests in what road agencies do, which can result in at least mild conflicts of interest, or members of oversight bodies know very little about the subject matter and often act as rubber stamps. This means career road agency administrators' goodwill, ethical codes, and good judgement are almost entirely relied upon to achieve effective and efficient outcomes.

Road agency administrators are hamstrung in their decision-making by the lack of a critical piece of information relied on by managers of enterprises huge and small – pricing information. That is, most roads in Oklahoma are not priced. Even toll road pricing fails to account for congestion. This hampers resource management by making it more difficult to know how much road users would be willing to pay for improvements. When polls show people rejecting higher taxes for roads, part of the problem is that many would prefer paying nothing monetarily while paying with their own time that they do not value, even if it means the waste of others' very valuable time.

The resulting system is one where politics instead of rational markets are relied upon to make resource allocation decisions. A poor solution, but the only one available is vigorous oversight by citizen legislators with a sincere desire to see efficiency and effectiveness achieved. The legislature should more vigorously assert its fiduciary duty to ensure government is operating efficiently for the benefit of the people.

Conclusion

In sum, given such factors as its geographic size, sprawling urban areas, dispersed population, and environmental conditions, Oklahoma faces some challenges in maintaining an efficient, well-maintained road network. Nevertheless, data suggests there is room to improve road quality and administrative efficiency. State and local governments can better target limited resources at initiatives that could have a greater impact on urban and rural mobility rather than needlessly investing in rail transit. Additionally, the state legislature should provide vigorous oversight to limit excessive administrative bloat and ensure the efficient use of taxpayer dollars.

End Notes

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