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Building Roads to Reduce Traffic Congestion in America's Cities: How Much and at What Cost?

Detailed State-by-State Analysis of Future Congestion and Capacity Needs

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Part 1

Introduction

This addendum to Reason Foundation's July 2006 study "Building Roads to Reduce Traffic Congestion" (available online at www.reason.org/ps346/) presents more detailed information about each state and major urban area than is available in the main body of the study.

In the main study, we quantify the magnitude of traffic congestion and the cost of its removal through the provision of additional capacity. We define and quantify *severe congestion*, in which peak-hour traffic volumes exceed road capacity, and estimate future congestion if trends continue. With the help of 32 participating urbanized areas, the report uses sophisticated traffic modeling techniques to determine how much additional capacity will be needed to relieve severe congestion. These findings are then extended to all 403 urbanized areas. The report then estimates the cost of providing that additional capacity.

This report finds that severe traffic congestion is pervasive in large regions and is worsening throughout the United States. In the future even small, urbanized areas are likely to experience congestion common in mid-sized areas today. The cause of this increase is not wastefulness but increasing population and preferences for private mobility, combined with limited additions to road capacity. Nationwide, the number of lane-miles of severely congested roads is expected to increase from about 39,500 in 2003 to 59,700 in 2030. To relieve severe congestion by providing additional capacity, an additional 104,000 lane-miles of capacity (about 6.2 percent of current lane-miles) will be needed, costing about $533 billion over 25 years, in 2005 dollars. The amount needed—about $21 billion per year—is about 10–15 percent of the federal highway program over 25 years, about 28 percent of the cost of present urban transportation plans, and about 39 cents per day per commuter trip. However, the travel time savings are estimated at about 7.7 billion hours annually, so the cost per hour of delay saved is about $2.76. If moderate congestion and rural congestion are also to be addressed, an additional $304 billion will be needed.

Part 2

Trends in Congestion

The Texas Transportation Institute generates an annual survey on congestion. The Institute uses a "Travel Time Index" (TTI), defined as the ratio of travel time in peak hours to the travel time in off-peak hours. For instance, an index of 1.5 means that travel time in the peak hour is 50 percent longer than in the off-peak. The 'delay' in the travel time is the portion over 1.0. This data was used to chart trends in congestion in the nation's largest 86 cities, then extended to other smaller urbanized areas, and then forecast to 2030 based on trends and on forecasts of population and traffic density.

If trends continue, by 2030 even small cities will be experiencing significant and noticeable congestion. In very large regions, 'delay' over the next 25 years will increase 65 percent, from 46 percent over free-flow travel time to 76 percent over free-flow travel time. In smaller regions, the 'delay' portion of peak-hour travel time will more than double.

To put these in perspective, consider today's congestion levels. Present-day (2003) Los Angeles is the most congested city in the United States, with a travel time index of 1.75. But by 2030, urbanized areas with over three million people will be *averaging* about the same travel time delay as today's Los Angeles. Cities with travel time delays equal to today's Los Angeles will include Atlanta, Denver, and Minneapolis/St. Paul.

By 2030, regions in the 1–3 million range will be seeing congestion about as severe as present-day Chicago (1.56). These cities include Baltimore, Portland, Sacramento, and Tucson. By 2030, small regions will be seeing congestion about the same as areas with over one million in population saw in the early 1980s.

Table 1: Cities with 2030 Travel Time Delays Worse Than Today's Los Angeles		
City	**Population in 2030 (000s)**	**Congestion Index in 2030**
Los Angeles-Long Beach	15,652	1.94
Chicago	9,522	1.88
Washington	5,973	1.87
San Francisco-Oakland	4,968	1.86
Atlanta	5,009	1.85
Miami	7,551	1.84
Denver-Aurora	3,210	1.80
Seattle-Tacoma, WA	3,963	1.79
Las Vegas	1,029	1.79
Minneapolis-St. Paul	3,370	1.76
Baltimore	2,437	1.75
Portland	2,513	1.75

Table 2: Additional Cities with Travel Time Delays Worse Than Today's Chicago		
City	**Population in 2030 (000s)**	**Congestion Index in 2030**
New York-Newark	21,295	1.74
Sacramento	2,488	1.73
Dallas-Fort Worth	7,014	1.73
San Diego	3,720	1.70
San Jose	2,036	1.65
Phoenix-Mesa	5,313	1.64
Riverside-San Bernardino	2,629	1.64
Charlotte	1,185	1.62
Bridgeport-Stamford	1,018	1.62
Boston	4,636	1.62
Houston	3,987	1.61
Philadelphia	5,879	1.61
Tucson	1,094	1.60
Salt Lake City	1,251	1.59
Orlando	2,112	1.59

State Rankings

The following tables show where each state ranks in terms of how many congested lane-miles they are projected to have in 2030, how many additional lane-miles need to be built to relieve that congestion, and what they will cost.

Table 3: States Ranked by Congested Lane-miles in 2030		Table 4: States Ranked by 2030 Urban Area Lane-miles Needed		Table 5: States Ranked by Total Costs of Lane-miles Needed	
State	2030 Urbanized Area Lane-miles Congested	State	2030 Urban Area Lane-miles Needed	State	Total Costs of Lane-miles Needed ($B)
1. California	8,730	1. California	13,132	1. California	121.90
2. Texas	7,986	2. Texas	12,929	2. Illinois	55.00
3. New York	4,735	3. Florida	8,536	3. Texas	49.10
4. Arizona	4,082	4. Colorado	4,668	4. New York	45.00
5. Florida	3,990	5. New York	4,512	5. Florida	38.70
6. Illinois	3,037	6. Pennsylvania	4,465	6. Michigan	27.10
7. Pennsylvania	2,456	7. Illinois	4,459	7. Pennsylvania	25.50
8. Michigan	1,785	8. North Carolina	4,361	8. Massachusetts	21.90
9. North Carolina	1,537	9. Arizona	3,813	9. D.C.	16.20
10. Georgia	1,516	10. Michigan	3,668	10. Georgia	14.30
11. Minnesota	1,427	11. Georgia	3,221	11. North Carolina	12.40
12. Tennessee	1,291	12. Tennessee	2,754	12. Colorado	11.40
13. Massachusetts	1,214	13. Minnesota	2,531	13. Arizona	11.30
14. Ohio	1,212	14. Indiana	2,269	14. Minnesota	7.70
15. Missouri	1,164	15. Missouri	1,972	15. Washington	6.90
16. D.C.	1,130	16. Massachusetts	1,961	16. Ohio	5.60
17. Colorado	1,111	17. South Carolina	1,934	17. Tennessee	5.00
18. Washington	1,063	18. D.C.	1,803	18. South Carolina	4.90
19. Wisconsin	877	19. Wisconsin	1,687	19. Kentucky	4.60
20. Louisiana	846	20. Connecticut	1,618	20. Missouri	4.60
21. Indiana	762	21. Ohio	1,610	21. Connecticut	3.40
22. Virginia	735	22. Washington	1,477	22. Louisiana	3.30
23. South Carolina	726	23. Louisiana	1,248	23. Oregon	3.20
24. Oregon	660	24. Kentucky	1,234	24. Oklahoma	3.10
25. Connecticut	585	25. Arkansas	1,207	25. Virginia	3.10
26. Maryland	546	26. Oregon	1,020	26. Indiana	3.10
27. Utah	505	27. Virginia	989	27. Wisconsin	3.00
28. Alabama	458	28. Alabama	967	28. Alabama	2.50
29. Kentucky	392	29. Nebraska	966	29. Arkansas	2.50
30. Oklahoma	363	30. Utah	948	30. Utah	2.30
31. Nevada	281	31. Nevada	919	31. Nevada	2.30
32. Arkansas	271	32. Oklahoma	727	32. Maryland	2.30
33. Rhode Island	267	33. Maryland	580	33. Nebraska	1.70
34. Nebraska	262	34. Kansas	578	34. New Mexico	1.40
35. New Mexico	249	35. New Mexico	556	35. Hawaii	1.10
36. Idaho	180	36. New Jersey	388	36. Alaska	0.85
37. Iowa	165	37. Hawaii	321	37. Rhode Island	0.85
38. New Jersey	164	38. Iowa	304	38. Kansas	0.81
39. Kansas	148	39. Idaho	278	39. Mississippi	0.72
40. New Hampshire	142	40. Rhode Island	257	40. New Jersey	0.65
41. Mississippi	139	41. Mississippi	254	41. Iowa	0.57
42. Hawaii	121	42. Alaska	230	42. Idaho	0.37
43. West Virginia	77	43. New Hampshire	218	43. New Hampshire	0.30
44. Alaska	68	44. West Virginia	154	44. West Virginia	0.28
45. North Dakota	55	45. North Dakota	108	45. Maine	0.18
46. Maine	50	46. Maine	82	46. North Dakota	0.15
47. Vermont	28	47. Vermont	61	47. Vermont	0.13
48. South Dakota	26	48. South Dakota	51	48. South Dakota	0.06
49. Wyoming	25	49. Delaware	42	49. Montana	0.06
50. Delaware	25	50. Montana	31	50. Delaware	0.06
51. Montana	24	51. Wyoming	22	51. Wyoming	0.05

Part 4

State Data

Alabama

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Alabama needs almost 970 new lane-miles at a total cost of $2.5 billion, in today's dollars. That's a cost of approximately $48 per resident each year. Alabama ranks 28th out of 50 states and the District of Columbia in terms of most lane-miles needed and 28th in the total costs of those improvements. If the state made these improvements, it would save over 13 million hours per year that are now wasted in traffic jams.

Alabama has only one area currently suffering from severe congestion. The Birmingham area in the north central part of the state is currently the 53rd most congested region in the United States, with a Travel Time Index (TTI) of 1.17. This means that driving times during peak traffic are 17 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in this part of Alabama can expect to see a TTI of 1.32 by 2030. For an idea of how severe that level of congestion would be, note that this projection is comparable to the traffic delays experienced today in places like Tampa-St. Petersburg, Boston, and Philadelphia.

As Table 6 suggests, the picture is not too bad for the other cities in Alabama with populations over 50,000. While their TTIs do not reach the 1.18 level that this study identifies as severe congestion, the relative increase in delay projected over the next 25 years for these cities is about 100 percent, which will be sharply felt by local commuters. (The 'delay' in the travel time is the portion of the TTI over 1.0.) With TTIs of 1.10, smaller cities like Mobile and Huntsville are facing future traffic delays similar to those currently experienced in much larger cities like Buffalo, Pittsburgh, and Cleveland. Alabama can significantly reduce congestion by adding about 970 new lane-miles by 2030 at an estimated cost of $2.5 billion in today's dollars.

This investment would save an estimated 13 million hours per year that are now lost sitting in traffic, at a yearly cost of $7.52 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle

operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 6: Urbanized Area Congestion Needs—Alabama

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Birmingham	665	802	1.17	1.32	254.4	460.0	$1,664.7	$90.77	$0.73	8,777,801	$7.59
Mobile	319	332	1.05	1.10	51.1	283.7	406.1	49.88	0.40	1,249,074	13.01
Huntsville	215	274	1.05	1.10	42.6	103.2	148.3	24.24	0.19	1,031,801	5.75
Montgomery	198	244	1.05	1.09	28.8	34.7	86.2	15.62	0.12	750,151	4.60
Tuscaloosa	118	139	1.04	1.09	20.3	20.3	41.8	13.03	0.10	350,977	4.76
Anniston	77	69	1.04	1.08	5.4	8.2	12.8	7.03	0.06	199,566	2.58
Florence	73	80	1.04	1.08	8.1	7.2	14.8	7.75	0.06	193,131	3.07
Gadsden	63	66	1.04	1.07	9.0	8.1	16.6	10.27	0.08	137,665	4.81
Auburn	62	97	1.04	1.08	11.9	10.6	27.0	13.60	0.11	173,813	6.22
Dothan	62	73	1.04	1.07	8.8	7.9	16.2	9.61	0.08	161,709	4.00
Decatur	54	63	1.04	1.07	17.4	23.3	39.4	26.88	0.22	135,693	11.62
Alabama (Urban Area)	1,906	2,239			458.0	967.2	$2,474.0	$47.75	$0.38	13,161,381	$7.52

Alaska

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Alaska needs a modest 230 new lane-miles at a total cost of $850 million, in today's dollars. That's a cost of approximately $91 per resident each year. Alaska ranks 42nd out of 50 states and the District of Columbia in terms of most lane-miles needed and 36th in the total costs of those improvements. If the state made these improvements, it would save almost one million hours per year that are now wasted in traffic jams.

As Table 7 suggests, Alaska really does not have a significant traffic congestion problem, although there are likely to be specific sites in the state where traffic does have some major adverse impacts. The two cities in Alaska with populations over 50,000, Anchorage and Fairbanks, currently have reasonable Travel Time Indices (TTIs) of 1.05 and 1.03, respectively. This means that driving times during peak traffic are 5 and 3 percent longer than during off-peak times. While these TTIs do not reach the 1.18 level that this study identifies as severe congestion, the relative increase in delay projected over the next 25 years for these cities is over 60 percent, which will certainly be noticed by local commuters. (The 'delay' in the travel time is that portion of the TTI over 1.0.) To put things into perspective, TTIs of around 1.10, reflect current traffic in cities such as Cleveland, Richmond-Petersburg, and Spokane. Alaska could solve this problem by adding about 230 new lane-miles by 2030 at an estimated cost of $850 million in today's dollars.

This investment would save an estimated 991 thousand hours per year that are now lost sitting in traffic, at a yearly cost of $34.25 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 7: Urbanized Area Congestion Needs—Alaska

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Anchorage	274	367	1.05	1.08	62.1	224.6	$815.3	$101.71	$0.81	816,532	$39.94
Fairbanks	52	56	1.03	1.07	6.2	5.9	33.5	24.87	0.20	174,619	7.67
Alaska (Urban Area)	326	423			68.3	230.5	$848.7	$90.66	$0.73	991,152	$34.25

Arizona

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Arizona needs just over 3,800 new lane-miles at a total cost of $11.3 billion, in today's dollars. That's a cost of approximately $84 per resident each year. Arizona ranks ninth out 50 states and the District of Columbia in terms of most lane-miles needed and 13th in the total costs of those improvements. If the state made these improvements, it would save almost 193 million hours per year that are now wasted in traffic jams.

Arizona has two urban areas suffering from severe congestion; Phoenix-Mesa and Tucson. Phoenix is the 20th most congested region in the United States, with a Travel Time Index (TTI) of 1.35. (This means that driving times during peak traffic are 35 percent longer than during off-peak times.) And as the 26th most congested area, Tucson is close behind with a TTI of 1.31.

Unless major steps are taken to relieve congestion, drivers in these Arizona cities can expect to see TTIs of 1.64 and 1.60 by 2030, respectively. For an idea of how severe that level of congestion would be, note that this projection is worse than the traffic delays experienced today in places like Atlanta, Chicago, and San Francisco. In fact, only one city—Los Angeles—currently has a TTI in excess of 1.60.

As Table 8 suggests, the picture is much better for the other Arizona cities with populations over 50,000. In these cities, the TTIs do not exceed 1.04 currently, although the relative increase in delay projected over the next 25 years for these cities is 100 percent, which will certainly be felt by local commuters. (The 'delay' in the travel time is the portion of the TTI over 1.0.) To put this into perspective, TTIs of around 1.08 reflect current traffic in cities such as Cleveland, Richmond-Petersburg, and Spokane.

Arizona can significantly reduce congestion by adding about 3,813 new lane-miles by 2030 at an estimated cost of $11.3 billion in today's dollars. This investment would save an estimated 193 million hours per year that are now lost sitting in traffic, at a yearly cost of $2.35 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 8: Urbanized Area Congestion Needs—Arizona

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Phoenix-Mesa	2,907	5,313	1.35	1.64	3,841.0	3,340.6	$10,142.0	$98.71	$0.79	161,644,215	$2.51
Tucson	720	1,094	1.31	1.60	160.1	374.0	973.8	42.95	0.34	30,138,889	1.29
Yuma	95	164	1.04	1.09	15.4	13.9	32.4	10.01	0.08	334,423	3.87
Avondale	68	124	1.04	1.08	37.7	34.8	96.5	40.13	0.32	344,922	11.19
Prescott	62	116	1.04	1.08	16.0	28.5	35.9	16.13	0.13	205,618	6.98
Flagstaff	57	77	1.04	1.08	12.1	21.5	27.0	16.16	0.13	151,695	7.13
Arizona (Urban Area)	3,909	6,888			4,082.2	3,813.3	$11,307.5	$83.79	$0.67	192,819,761	$2.35

Arkansas

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Arkansas needs 1,207 new lane-miles at a total cost of $2.5 billion, in today's dollars. That's a cost of approximately $121 per resident each year. Arkansas ranks 25th out of 50 states and the District of Columbia in terms of most lane-miles needed and 29th in the total costs of those improvements. If the state made these improvements, it would save 2.9 million hours per year that are now wasted in traffic jams.

As Table 9 suggests, Arkansas really does not have a significant traffic congestion problem, although there are likely to be specific sites in the state where traffic does have some major adverse impacts. The four cities in Arkansas with populations over 50,000, all currently have Travel Time Indices (TTI) of 1.06 or less. This means that driving times during peak traffic hours are 6 percent longer than during off-peak times. While these TTIs do not reach the 1.18 level that this study identifies as severe congestion, the relative increase in delay projected over the next 25 years for these cities is over 60 percent, which will be certainly be noticed by local commuters. (The 'delay' in the travel time is that portion of the TTI over 1.0.) To put things into perspective, TTIs of around 1.10, reflect current traffic in cities such as Cleveland, Richmond-Petersburg, and Spokane. Arkansas could solve this limited problem by adding about 1,200 new lane-miles by 2030 at an estimated cost of $2.5 billion in today's dollars.

This investment would save an estimated 2.9 million hours per year that are now lost sitting in traffic, at a yearly cost of $34.08 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle

operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 9: Urbanized Area Congestion Needs—Arkansas

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Little Rock	338	436	1.06	1.11	176.2	1,092.0	$2,263.9	$234.06	$1.87	1,491,055	$60.73
Fort Smith	172	227	1.05	1.10	23.6	30.4	56.7	11.38	0.09	682,930	3.32
Fayetteville-Springdale	126	221	1.04	1.10	68.1	82.1	142.4	32.85	0.26	618,985	9.20
Pine Bluff	56	55	1.04	1.07	3.2	2.9	7.8	5.64	0.05	107,099	2.91
Arkansas (Urban Area)	692	938			271.0	1,207.4	$2,470.8	$121.28	$0.97	2,900,069	$34.08

California

Six of the 18 most congested cities in America are in California, with Los Angeles leading the way as the most congested place in the country and the Bay Area ranking third.

California is expected to add another 10 million people by 2030 and traffic congestion is a serious threat to the state's economic health. To significantly reduce today's severe congestion and cope with the traffic that will accompany the state's growth by 2030 California needs to add over 13,100 lane-miles at a cost of nearly $122 billion—both figures are the highest in the nation. That's a cost of approximately $139 per resident each year. By comparison, Texas needs nearly the same number of new lane-miles—12,930—but because of the lower cost of land and construction, those lanes will cost Texas approximately $49 billion, just 40 percent of California's $122 billion price tag.

If the state made these improvements, it would save over 1,843 million hours per year that are now wasted in traffic jams. In addition to these time savings, there would be additional benefits that are not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

California has seven cities that currently suffer from severe congestion, which this study identifies as areas with Travel Time Indices (TTIs) of 1.18 or higher. (This means that driving times during peak traffic hours are 18 percent longer than during off-peak times.) These cities (Los Angeles, San Francisco, San Diego, Riverside-San Bernardino, San Jose, Sacramento, and Oxford-Ventura) are addressed separately below. Also addressed separately are Fresno and Bakersfield, two large cities that are not yet severely congested.

Los Angeles

Los Angeles has the nation's worst Travel Time Index (TTI), 1.75. This means that driving times during LA's peak traffic are 75 percent longer than during off-peak times. In 2030, LA is still expected to have the nation's worst traffic, with the TTI increasing to 1.94 and travel times during peak hours increasing to 94 percent longer than during off-peak hours.

Los Angeles could significantly reduce congestion and have room for the expected growth by adding nearly 3,700 new lane-miles by 2030 at an estimated cost of $67.7 billion, in today's dollars. That's a cost of $192.22 per resident each year. This investment would save a whopping one billion hours each year that Angelenos now lose sitting in traffic, at a cost of $2.62 per delay-hour saved.

While $67.7 billion may sound like an unattainably large investment, it is actually just 58.7 percent of the planned transportation spending under the long-range plans of the Southern California Association of Governments (SCAG), which is the Los Angeles area's Metropolitan Planning Organization (MPO). Those plans call for $115.4 billion over the next 25 years—$48.5 billion on highway improvements and $66.9 billion on mass transit. While some of the planned highway improvement funding may be used for capacity expansion, the majority is often allocated to preserving, maintaining, and operating the highway system. About 4.7 percent of the LA labor force now uses mass transit to commute. And yet, transit accounts for 58 percent of the area's planned spending over the next 25 years.

San Francisco-Oakland

With the nation's third worst traffic congestion today, the Bay Area is facing even more severe congestion in the future. San Francisco-Oakland currently has a Travel Time Index (TTI) of 1.54. This means that driving times during peak traffic hours are 54 percent longer than during off-peak times. In 2030, the travel time index is expected to be 1.86—meaning drivers will experience travel delays far worse than even present-day Los Angeles (1.75).

San Francisco-Oakland could significantly reduce congestion and prepare for growth expected by 2030 by adding nearly 2,300 new lane-miles at an estimated cost of $29.2 billion, in today's dollars. That's a cost of $257.17 per resident each year. This investment would save a nearly 314 million hours each year that residents now lose sitting in traffic, at a cost of $3.72 per delay-hour saved.

While $29.2 billion may sound like an exceedingly large investment, it is actually just 24.8 percent of the planned transportation spending under the long-range plans of the Metropolitan Transportation Commission (MTC), which is the San-Francisco-Oakland area's Metropolitan Planning Organization (MPO). Those plans call for $118 billion over the next 25 years—$42 billion on highway improvements and $76 billion on mass transit. Around 80 percent of Bay Area workers commute in their cars, either alone or in a carpool. In contrast, 9.5 percent now use mass transit to commute. And yet, transit accounts for well over half, 64 percent, of the area's planned transportation spending over the next 25 years. While some of the planned highway improvement funding may be used for capacity expansion, the majority is often allocated to preserving, maintaining, and operating the highway system.

San Diego

San Diego is home to the nation's eighth worst Travel Time Index (TTI), 1.41. This means that driving times during peak traffic are 41 percent longer than during off-peak times. In 2030, San Diego's congestion is expected to worsen, with driving times during peak hours increasing to 70 percent longer than off-peak hours. San Diego's 2030 Travel Time Index of 1.70 is slightly lower than the delays experienced in present-day Los Angeles (1.75) and higher than that of today's Chicago (1.57).

San Diego could significantly reduce severe congestion by adding 1,400 new lane-miles by 2030 at an estimated cost of $7.5 billion, in today's dollars. That's a cost of $91.04 per resident each year. This investment would save 147 million hours each year that residents lose sitting in traffic, at a cost of just $2.02 for each hour saved.

While $7.5 billion may sound like an exceedingly large investment, it is actually just 23.3 percent of the planned transportation spending under the long-range plans of the San Diego Association of Governments (SANDAG), which is the San Diego area's Metropolitan Planning Organization (MPO). Those plans call for $32.2 billion over the next 25 years—$8.1 billion on highway improvements, $15.9 billion on mass transit, and $8.3 billion on other projects. Well over 80 percent of San Diego workers commute in their cars, either alone or in a carpool. In contrast, 3.4 percent now use mass transit to commute. And yet, transit accounts for almost half, 49.4 percent, of the area's planned transportation spending over the next 25 years.

Bakersfield

Bakersfield's Travel Time Index (TTI) is expected to rise from 1.07 to 1.17 by 2030. This means that in 2030, travel times during peak traffic will be 17 percent longer than during off-peak times.

Bakersfield could significantly reduce congestion and have room for the incoming population growth by adding 210 new lane-miles by 2030 at an estimated cost of $421 million, in today's dollars. That's a cost of $31.26 per resident each year. This investment would save 3.7 million hours each year residents currently lose sitting in traffic.

The $421 million needed to reduce congestion is just 7.4 percent of the planned transportation spending under the long-range plans of the Kern Council of Governments, which is the Bakersfield area's Metropolitan Planning Organization (MPO). Those plans call for $5.7 billion over the next 25 years—$4.2 billion on highway improvements, $1.4 billion on mass transit, and $15 million on other projects. Over 90 percent of Bakersfield area workers commute by car, either alone or in a carpool. In contrast, just 1.4 percent now use mass transit to commute. And yet, transit accounts for 25 percent of the area's planned transportation spending over the next 25 years.

San Jose

San Jose's population is expected to exceed two million by 2030, and while the city has not yet experienced the severe traffic pains that San Francisco or Los Angeles have, that could soon change.

San Jose currently has a Travel Time Index (TTI) of 1.37. This means that driving times during peak traffic hours are 37 percent longer than during off-peak times. In 2030, the travel time index is expected to be 1.65—meaning the city will experience travel delays significantly worse than even present-day San Francisco (1.54) and Chicago (1.57).

San Jose could significantly reduce congestion and account for impending growth expected by 2030 by adding 286 new lane-miles at an estimated cost of $1.3 billion, in today's dollars. That's a cost of just $27.63 per resident each year. This investment would save nearly 87 million hours each year that residents now lose sitting in traffic, at a cost of just 59 cents for each hour saved.

Riverside-San Bernardino

The Riverside-San Bernardino area has one of the nation's highest Travel Time Indices (TTIs), 1.37. This means that driving times during peak traffic are 37 percent longer than during off-peak times. In 2030, that number is expected to rise to 1.64—travel times would be 64 percent longer during peak times than off-peak hours. That would leave Riverside slightly better off than other cities like San Jose (1.65) and Sacramento (1.73).

Riverside-San Bernardino could significantly reduce severe congestion by adding 906 new lane-miles by 2030 at an estimated cost of $4.3 billion, in today's dollars. That's a cost of $80.24 per resident each year. This investment would save 97 million hours each year that residents now lose sitting in traffic, at a cost of just $1.78 per delay-hour saved.

Sacramento

With housing prices significantly lower in Sacramento than in many of the state's other metro areas, the city is expected to see significant growth over the next 25 years. As a result, Sacramento's Travel Time Index (TTI) is expected to increase from 1.37 today to 1.73 by 2030. This means that, in 2030, driving times during Sacramento's peak traffic would be 73 percent longer than travel times during off-peak hours and Sacramento would be experiencing travel time delays nearly identical to the delays in present-day Los Angeles (1.75) and delays much longer than those in today's Chicago (1.57) and San Francisco (1.54).

Sacramento could significantly reduce severe congestion by adding 833 new lane-miles by 2030 at an estimated cost of $3.1 billion, in today's dollars. That's a cost of $60.60 per resident each year. This investment would save 94 million hours each year that residents lose sitting in traffic, at a cost of just $1.33 for each hour saved.

Fresno

Fresno's Travel Time Index (TTI) is expected to rise from 1.14 to 1.30 by 2030. This means that in 2030, travel times during peak traffic will be 30 percent longer than during off-peak times.

Fresno could significantly reduce congestion and have room for the incoming population growth by adding 534 new lane-miles by 2030 at an estimated cost of $941 million, in today's dollars. That's a cost of $52.44 per resident each year, about $5.09 per delay hour saved. This investment would save 7.4 million hours each year residents currently lose sitting in traffic.

Fairfield, Simi Valley, Oxnard-Ventura

Fairfield, Simi Valley and the Oxnard-Ventura area are expected to see three of the largest increases in Travel Time Indices (TTIs) in the state. Fairfield will see its TTI jump from 1.04 to 1.25 by 2030 and Simi Valley's will increase from 1.04 to 1.24. Oxnard and Ventura will see delays grow from 1.23 to 1.46 by 2030. Together, these areas need to add 522.9 lane-miles to significantly reduce severe congestion by 2030, at a total cost of $1.6 billion.

Table 10: Urbanized Area Congestion Needs—California

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
LA-Long Beach	12,520	15,652	1.75	1.94	3,593.6	3,695.0	$67,689.2	$192.22	$1.54	1,033,545,854	$2.62
San Francisco-Oakland	4,120	4,968	1.54	1.86	1,304.4	2,261.2	29,213.3	257.17	2.06	313,916,535	3.72
San Diego	2,872	3,720	1.41	1.70	852.7	1,439.3	7,501.1	91.04	0.73	148,614,155	2.02
Riverside-San Bernardino	1,666	2,629	1.37	1.64	684.7	906.3	4,307.8	80.24	0.64	96,609,857	1.78
San Jose	1,664	2,036	1.37	1.65	356.8	285.5	1,277.7	27.63	0.22	86,749,951	0.59
Sacramento	1,656	2,488	1.37	1.73	608.7	833.0	3,138.5	60.60	0.48	94,387,725	1.33
Fresno	600	836	1.14	1.30	119.0	534.1	941.1	52.44	0.42	7,388,717	5.09
Oxnard-Ventura	577	775	1.23	1.46	143.8	408.3	1,143.9	67.67	0.54	18,177,168	2.52
Bakersfield	443	633	1.07	1.17	89.1	209.6	420.6	31.26	0.25	3,710,134	4.53
Stockton	347	533	1.05	1.17	85.4	302.6	876.8	79.70	0.64	3,211,160	10.92
Modesto	340	507	1.05	1.21	94.0	430.8	909.1	85.89	0.69	5,076,641	7.16
Indio-Palm Springs	295	535	1.05	1.21	69.1	437.2	698.8	67.38	0.54	4,452,013	6.28
Santa Rosa	295	392	1.05	1.19	74.1	204.8	916.2	106.77	0.85	4,273,249	8.58
Lancaster-Palmdale	290	405	1.05	1.11	34.6	219.0	349.9	40.30	0.32	2,234,423	6.26
Antioch	249	300	1.05	1.16	66.4	78.5	255.0	37.14	0.30	3,290,303	3.10
Victorville-Hesperia	231	369	1.05	1.10	55.6	107.4	203.2	27.07	0.22	1,440,694	5.64
Santa Barbara	198	228	1.05	1.10	68.9	81.7	339.5	63.74	0.51	772,577	17.58
Salinas	182	233	1.05	1.12	33.6	55.4	178.1	34.30	0.27	1,065,977	6.68
Santa Cruz	161	189	1.04	1.09	43.0	77.2	207.6	47.42	0.38	775,222	10.71
Simi Valley	156	234	1.04	1.24	70.3	77.6	287.3	58.99	0.47	4,876,960	2.36

Table 10: Urbanized Area Congestion Needs—California

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Visalia	133	181	1.04	1.09	20.6	53.2	85.0	21.68	0.17	453,499	7.49
Fairfield	131	196	1.04	1.25	40.6	37.0	158.5	38.74	0.31	3,268,855	1.94
Hemet	130	157	1.04	1.09	21.6	55.8	89.1	24.85	0.20	354,120	10.07
Santa Maria	130	171	1.04	1.09	19.7	50.7	81.1	21.53	0.17	527,635	6.15
Seaside-Monterey-Marina	123	147	1.04	1.09	28.9	72.2	115.4	34.23	0.27	497,882	9.27
Merced	121	175	1.04	1.10	13.1	11.7	34.5	9.31	0.07	429,478	3.21
Yuba City	116	150	1.04	1.09	15.5	27.6	44.2	13.27	0.11	381,108	4.64
Redding	114	145	1.04	1.09	17.3	16.9	68.5	21.11	0.17	322,542	8.49
Chico	102	126	1.04	1.09	13.2	11.7	29.0	10.16	0.08	314,553	3.68
Vacaville	97	141	1.04	1.09	14.0	28.0	44.7	15.03	0.12	543,220	3.29
Lodi	91	137	1.04	1.09	10.5	18.6	29.8	10.46	0.08	402,797	2.96
Napa	84	113	1.04	1.08	10.6	9.5	33.3	13.52	0.11	343,501	3.87
Davis	71	107	1.04	1.08	13.9	28.0	56.9	25.63	0.21	284,020	8.02
Watsonville	71	122	1.04	1.08	10.4	26.0	41.6	17.29	0.14	288,876	5.76
Lompoc	57	75	1.04	1.07	6.0	5.3	13.1	7.93	0.06	174,094	3.01
San Luis Obispo	54	71	1.04	1.07	26.5	35.3	145.4	92.96	0.74	118,399	49.12
California (Urban Area)	30,487	39,874			8,730.1	13,132.0	121,924.5	$138.63	$1.11	1,843,273,895	$2.65

Colorado

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Colorado needs almost 4,670 new lane-miles at a total cost of $11.5 billion, in today's dollars. That's a cost of $110 per resident each year. Colorado ranks fourth out of 50 states and the District of Columbia in terms of most lane-miles needed and 12th in the total cost of those improvements. If the state made these improvements, it would save 169 million hours per year that are now wasted in traffic jams.

Colorado is home to the ninth most congested city in the United States, Denver, where the Travel Time Index (TTI) is 1.40. This means that driving times during peak traffic hours are 40 percent longer than during off-peak times. Only eight cities in the country have worse traffic, and they're all at least 30percent larger in population.

However, unless major steps are taken to relieve congestion, drivers in the Mile High City can expect to see a TTI of 1.80 by 2030, meaning they will experience travel delays far worse than even present-day Los Angeles.

Colorado could significantly reduce congestion by adding about 4,670 new lane-miles by 2030 (including some 4,000 in the Denver-Aurora area) at an estimated cost of $11.4 billion in today's dollars. This includes the costs of adding 3 percent of the new capacity by building elevated roadways and tunnels, which will be necessary in the more densely packed city areas.

This investment would save an estimated 153 million hours per year that are now lost sitting in Denver traffic, at a cost of $2.60 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

While $11.4 billion may sound like an unattainably large investment, it is actually only 13 percent of the amount that the Denver area's Metropolitan Planning Organization (MPO) already plans to spend in its long-range transportation plan alone, and less than half of the funds allocated to transit. The Denver Regional Council of Governments (DRCOG) plans to spend approximately $87.8 billion during the next 25 years—$53.9 billion on highway improvements and $23.4 billion on mass transit. Approximately 4.3 percent of Denver commuters now use mass transit, but 27 percent of funds are allocated to transit. While some of the planned highway improvement funding may be used for capacity expansion, the majority is often allocated to preserving, maintaining, and operating the highway system.

As Table 11 shows, Colorado's other urban areas are substantially less congested than Denver. However, the relative increase in delay projected over the next 25 years for these cities is actually higher than that for Denver. (The 'delay' in the travel time is the portion of the TTI over 1.0.) In Denver, the expected relative increase in traffic delay from 2003 to 2030 is 100 percent. However, all other smaller urban areas in Colorado listed in Table 11 can expect an increase in delay of 100 percent or more, which will be sharply felt by local commuters. With TTIs of around 1.09, Fort Collins, Pueblo, Greeley, Grand Junction and Longmont are facing future traffic delays similar to those currently experienced in much larger cities like Buffalo, Pittsburgh, and Cleveland. And Colorado Springs and Boulder have some significant traffic challenges on the horizon with expected TTIs of 1.43 (as high as present-day Miami) and 1.17 (as high as present-day El Paso), respectively.

Table 11: Urbanized Area Congestion Needs—Colorado

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Denver-Aurora	2,050	3,210	1.40	1.80	816.2	4,002.0	$9,965.0	$151.55	$1.21	153,414,216	$2.60
Colorado Springs	476	742	1.19	1.43	159.8	424.1	1,088.6	71.53	0.57	12,058,957	3.61
Fort Collins	215	342	1.05	1.11	33.7	87.0	113.7	16.33	0.13	1,265,200	3.60
Pueblo	133	187	1.04	1.09	12.5	32.4	42.3	10.59	0.08	378,862	4.47
Greeley	108	203	1.04	1.09	19.9	30.2	43.3	11.12	0.09	513,827	3.37
Boulder	98	127	1.08	1.17	35.0	38.0	88.3	31.43	0.25	810,249	4.36
Grand Junction	96	146	1.04	1.09	20.0	35.7	46.7	15.41	0.12	311,814	5.99
Longmont	70	90	1.04	1.08	14.0	18.7	28.9	14.43	0.12	290,443	3.99
Colorado (Urban Area)	3,246	5,048			1,111.4	4,667.9	$11,416.9	$110.12	$0.88	169,043,567	$2.70

Connecticut

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Connecticut needs just over 1,600 new lane-miles at a total cost of $3.4 billion, in today's dollars. That's a cost of approximately $45 per resident each year. Connecticut ranks 20th out of 50 states and the District of Columbia in terms of most lane-miles needed and 21st in the total costs of those improvements. If the state made these improvements, it would save over 56 million hours per year that are now wasted in traffic jams.

Connecticut has several areas suffering from severe congestion. The Bridgeport-Stamford area in the southwestern part of Connecticut is the 29th most congested region in the United States, with a Travel Time Index (TTI) of 1.29. This means that driving times during peak traffic are 29 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in this part of Connecticut can expect to see a TTI of 1.62 by 2030. For an idea of how severe that level of congestion would be, note that this projection is worse than the traffic delays experienced today in places like Atlanta, Chicago, and San Francisco. In fact, only one city—Los Angeles—currently has a TTI in excess of 1.62.

As Table 12 suggests, the picture is not much better for New Haven or Hartford. Connecticut can significantly reduce congestion by adding about 1,600 new lane-miles by 2030 at an estimated cost of $3.4 billion in today's dollars.

This investment would save an estimated 56 million hours per year that are now lost sitting in traffic, at a yearly cost of $2.41 per delay-hour saved. The annual cost to relieve severe congestion in the Bridgeport-Stamford area alone is significantly lower, at $1.19 per delay hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Several of Connecticut's other cities, such as Waterbury, Danbury, Norwich, and New London are currently less congested than those along the southwestern leg of I–95. However, the relative increase in delay projected over the next 25 years for these cities is over 100 percent, which will be sharply felt by local commuters. (The 'delay' in the travel time is the portion of the TTI over 1.0.) With TTIs of 1.10, small cities like Waterbury and New London are facing future traffic delays similar to those currently experienced in much larger cities like Buffalo, Pittsburgh, and Cleveland.

Table 12: Urbanized Area Congestion Needs—Connecticut											
Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Hartford	880	989	1.11	1.23	184.3	518.2	$1,222.3	$52.31	$0.42	9,103,843	$5.37
Bridgeport-Stamford	861	1,018	1.29	1.62	187.7	554.4	1,135.8	48.36	0.39	38,235,129	1.19
New Haven	553	611	1.13	1.27	109.4	365.2	664.2	45.66	0.37	6,608,929	4.02
Norwich-New London	194	216	1.05	1.10	34.5	79.8	110.9	21.62	0.17	797,490	5.56
Waterbury	192	214	1.05	1.10	32.9	45.5	139.3	27.45	0.22	802,294	6.95
Danbury	157	186	1.04	1.09	36.4	54.8	117.6	27.46	0.22	793,713	5.93
Connecticut (Urban Area)	**2,837**	**3,234**			**585.2**	**1,617.9**	**$3,390.1**	**$44.67**	**$0.36**	**56,341,398**	**$2.41**

Delaware

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Delaware (outside of the Wilmington area) needs almost 42.2 new lane-miles at a total cost of $56 million, in today's dollars. That's a cost of approximately $24 per resident each year. Delaware ranks 49th out of 50 states and the District of Columbia in terms of most lane-miles needed and 50th in the total costs of those improvements. If the state made these improvements, it would save almost 293 thousand hours per year that are now wasted in traffic jams.

It should be noted that this total does not included the heavily urbanized northern portion of the state which falls in the Philadelphia metropolitan area. This region, which includes the Delaware city of Wilmington and its environs, is the 25th most congested urbanized area in the United States, with a Travel Time Index (TTI) is 1.32. This means that driving times during peak traffic hours are 32 percent longer than during off-peak times. And unless major steps are taken to relieve congestion, drivers in the Wilmington area can expect to see a TTI of 1.61 by 2030, meaning they will experience travel delays worse than any present-day city in the United States with the exception of Los Angeles, which has a TTI of 1.75.

Philadelphia-Wilmington could significantly reduce congestion by adding about 1,900 new lane-miles by 2030 at an estimated cost of $19.6 billion in today's dollars. This includes the costs of adding 5 percent of the new capacity by building elevated roadways and tunnels, which will be necessary in a densely settled location like Philadelphia.

This investment would save an estimated 209 million hours per year that are now lost sitting in Philadelphia-Wilmington traffic, at a cost of $3.75 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

As Table 13 suggests, Delaware really does not have a significant traffic congestion problem in other areas around the state, although there are likely to be specific sites where traffic does have some major adverse impacts. The only other city in Delaware with a population over 50,000, Dover, has a Travel Time Index (TTI) of 1.04. This means that driving times during peak traffic are 4 percent longer than during off-peak times. While this TTI does not reach the 1.18 level that this study identifies as severe congestion, the relative increase in delay projected over the next 25 years is 100 percent, which will be sharply noticed by local commuters. (The 'delay' in the travel time is that portion of the TTI over 1.0.) To put things into perspective, TTIs of around 1.08, reflect current traffic in cities such as Cleveland, Richmond-Petersburg, and Spokane. Delaware could solve this limited problem by adding just 42.2 new lane-miles by 2030 at an estimated cost of $56 million in today's dollars. This investment would save an estimated 293 thousand hours per year that are now lost sitting in traffic, at a yearly cost of $7.64 per delay-hour saved.

Table 13: Urbanized Area Congestion Needs—Delaware (except the Wilmington area)

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Dover	80	107	1.04	1.08	24.8	42.2	$55.9	$23.97	$0.19	292,906	$7.64
Delaware (Urban Area)	80	107			24.8	42.2	$55.9	$23.97	$0.19	292,906	$7.64

District of Columbia

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Washington, DC needs just over 1,800 new lane-miles at a total cost of $16 billion, in today's dollars. That's a cost of $127 per resident each year. Washington, DC ranks 18th out of 50 states and the District of Columbia in terms of most lane-miles needed and ninth in the total cost of those improvements. If the region made these improvements, it would save 428 million hours per year that are now wasted in traffic jams.

Washington, DC is the fourth most congested city in the United States, where the Travel Time Index (TTI) is 1.51. This means that driving times during peak traffic hours are 51 percent longer than during off-peak times. The only regions that experience worse traffic are San Francisco (1.54), Chicago (1.57), and Los Angeles (1.75).

However, unless major steps are taken to relieve congestion, drivers in the nation's capital can expect to see a TTI of 1.87 by 2030, meaning they will experience travel delays worse than present-day Los Angeles.

The District of Columbia region could significantly reduce congestion by adding about 1,800 new lane-miles by 2030 at an estimated cost of $16.2 billion in today's dollars. This includes the costs of adding 4 percent of the new capacity by building elevated roadways and tunnels, which will be necessary in a densely settled location like Washington.

This investment would save an estimated 428 million hours per year that are now lost sitting in capital city traffic, at a cost of just $1.52 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

While $16.2 billion may sound like an unattainably large investment, it is actually only 17 percent of the amount that the DC area's Metropolitan Planning Organization (MPO) already plans to spend in their long-range transportation plan. The Metropolitan Washington Council of Governments (MWCOG) plans to spend approximately $93.3 billion during the next 25 years—$36.9 billion on highway improvements and $56.4 billion on mass transit. While transit spending constitutes 60 percent of the budget, only about 11.2 percent of DC commuters now use mass transit. While some of the planned highway improvement funding may be used for capacity expansion, the majority is often allocated to preserving, maintaining, and operating the highway system.

Table 14: Urbanized Area Congestion Needs—District of Columbia

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Washington	4,277	5,973	1.51	1.87	1,130.2	1,802.9	$16,218.0	$126.58	$1.01	427,529,075	$1.52
District of Columbia	4,277	5,973			1,130.2	1,802.9	$16,218.0	$126.58	$1.01	427,529,075	$1.52

Florida

Florida has six urbanized areas that suffer from severe congestion, more than any other state except California. The Sunshine State is expected to add another 6.4 million people in its urbanized areas by 2030. Traffic congestion is a serious threat to the state's economic health.

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Florida needs over 8,500 new lane-miles at a total cost of $39 billion, in today's dollars. That's a cost of approximately $95 per resident each year. Florida ranks third out of 50 states and the District of Columbia in terms of most lane-miles needed and fifth in the total costs of those improvements.

If the state made these improvements, it would save over 531 million hours per year that are now wasted in traffic jams. In addition to these time savings, there would be additional benefits that are not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Florida has six cities that currently suffer from severe congestion, which this study identifies as areas with Travel Time Indices (TTIs) of 1.18 or higher. (This means that driving times during peak traffic hours are 18 percent longer than during off-peak times.) These cities (Miami-Hialeah, Tampa-St. Petersburg, Orlando, Jacksonville, Sarasota-Bradenton, and Cape Coral) are addressed separately below.

As Table 15 shows, the other cities in Florida with populations of over 50,000 are currently less congested than the six above, with one TTI of 1.12 (Pensacola) and the rest in the 1.04–1.08 range. However, the relative increase in delay projected over the next 25 years for these cities is still quite high, ranging from 100–150 percent, with Gainesville experiencing the largest increase at 150 percent. (The 'delay' in the travel time is the portion of the TTI over 1.0.) Such dramatic increases in traffic delays will be sharply felt by local commuters.

Table 15: Urbanized Area Congestion Needs—Florida

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Miami	5,104	7,551	1.42	1.84	1,919.0	3,400.0	$29,975.4	$189.49	$1.52	353,813,305	$3.39
Tampa-St. Petersburg	2,057	2,863	1.33	1.50	693.5	1,288.1	2,386.8	38.81	0.31	62,751,524	1.52
Orlando	1,267	2,112	1.30	1.59	313.6	581.4	1,170.0	27.70	0.22	65,139,203	0.72
Jacksonville	927	1,359	1.18	1.36	349.4	508.1	1,106.8	38.73	0.31	17,804,482	2.49
Sarasota-Bradenton	578	857	1.25	1.42	160.8	686.0	1,045.9	58.30	0.47	10,655,292	3.93
Palm Bay-Melbourne	389	533	1.05	1.11	33.6	178.5	325.3	28.21	0.23	2,140,726	6.08
Cape Coral	326	547	1.18	1.36	51.6	326.7	439.2	40.25	0.32	5,497,783	3.20
Pensacola	307	426	1.12	1.24	65.5	382.5	589.1	64.30	0.51	3,300,888	7.14
Port St.Lucie-Fort Pierce	285	443	1.05	1.10	38.1	215.0	308.4	33.88	0.27	1,303,050	9.47
Daytona Beach-Port Orange	281	417	1.05	1.11	52.0	329.4	442.9	50.78	0.41	1,327,454	13.35
Tallahassee	207	281	1.05	1.10	47.0	109.0	155.6	25.53	0.20	1,059,766	5.87
Lakeland	186	266	1.05	1.10	26.2	67.7	91.0	16.09	0.13	861,058	4.23
Bonita Springs-Naples	181	360	1.05	1.10	50.2	129.4	174.0	25.72	0.21	1,069,120	6.51
Gainesville	161	214	1.04	1.10	31.7	81.8	110.0	23.48	0.19	640,209	6.87
Fort Walton Beach	142	187	1.04	1.09	23.0	59.2	79.7	19.40	0.16	627,065	5.08
Panama City	126	165	1.04	1.09	15.1	30.1	40.5	11.13	0.09	474,031	3.42
Winter Haven	109	162	1.04	1.09	13.1	13.1	27.2	8.03	0.06	442,251	2.46
Ocala	98	160	1.04	1.09	6.9	6.5	15.1	4.67	0.04	369,489	1.63
North Port-Punta Gorda	92	139	1.04	1.09	48.0	60.0	124.8	43.29	0.35	278,161	17.95
Vero Beach-Sebastian	87	131	1.04	1.09	9.9	8.8	18.8	6.90	0.06	274,195	2.75
Deltona	74	110	1.04	1.08	7.9	7.2	22.5	9.80	0.08	365,601	2.46
Brooksville	72	100	1.04	1.08	11.6	10.3	21.4	9.95	0.08	195,557	4.38
Titusville	66	90	1.04	1.08	22.7	56.8	76.4	39.06	0.31	256,186	11.93
Florida (Urban Area)	13,122	19,474			3,990.5	8,535.7	$38,746.7	$95.10	$0.76	530,646,395	$2.92

With projected TTIs of 1.08–1.10, cities like Deltona, Panama City and Tallahassee are facing future traffic delays similar to those currently experienced in the much larger cities of Dayton, Cleveland, and Pittsburgh, respectively. And Pensacola is looking at worse congestion than present-day St. Louis and Cincinnati.

Miami-Hialeah

Miami-Hialeah's is tied with Houston for the dubious honor of being the sixth most congested city in the nation. The area's Travel Time Index (TTI) is expected to rise from 1.42 to 1.84 by 2030 This means that travel times during peak traffic hours are projected to be 84 percent longer than during off-peak times. The level of congestion is far worse than even the most congested region in the United States, Los Angeles.

Miami could significantly reduce severe congestion and have room for the incoming population growth by adding 3,400 new lane-miles by 2030 at an estimated cost of $30 billion, in today's dollars. That's a cost of $189 per resident each year. This investment would save 354 million hours each year that residents currently lose sitting in traffic. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

The $30 billion needed to significantly reduce severe congestion is 1.5 times the planned transportation spending under the Miami-Dade Metropolitan Planning Organization (MPO) long-range plans. Those plans call for $19.3 billion over the next 25 years -- $6.0 billion on highway improvements and $13.3 billion on mass transit. While just 3.9 percent of Miami area workers now use mass transit to commute, transit accounts for 69 percent of the area's planned transportation spending over the next 25 years.

Tampa-St. Petersburg

Tampa-St. Petersburg's Travel Time Index (TTI) is expected to rise from 1.33 to 1.50 by 2030. This means that in 2030, travel times during peak traffic hours will be 50 percent longer than during off-peak times. This level of congestion is worse than present-day Atlanta and will certainly have adverse effects on the regional economy.

The area could significantly reduce severe congestion and have room for the incoming population growth by adding 1,288 new lane-miles by 2030 at an estimated cost of $2.4 billion, in today's dollars. That's a cost of $38.81 per resident each year. This investment would save 62.8 million hours each year that residents currently lose sitting in traffic.

Orlando

Orlando's Travel Time Index (TTI) is projected to rise from 1.30 to 1.59 by 2030. This means that driving times during peak traffic hours will be 59 percent longer than during off-peak times. Traffic congestion of this magnitude is worse than that currently in any city in the nation, with the exception of Los Angeles, and the impact will be felt by commuters and businesses alike.

Orlando could significantly reduce severe congestion and have room for the imminent growth by adding nearly 581 new lane-miles by 2030 at an estimated cost of $1.2 billion, in today's dollars. That's a cost of $27.70 per resident each year. This investment would save 65 million hours each year that city residents now lose sitting in traffic, at a cost of a mere $0.72 per delay-hour saved.

Jacksonville

By 2030, the Jacksonville area will see its Travel Time Index (TTI) grow from 1.18 to 1.36, to a level similar to present-day Dallas-Fort Worth. This means that driving times during peak traffic hours are 36 percent longer than during off-peak times. This growth is similar to that in the Cape Coral area and represents a doubling of the delay in the travel time over 25 years. (The 'delay' in the travel time is the portion of the TTI over 1.0.).

Jacksonville could significantly reduce severe congestion by adding 508 new lane-miles by 2030 at an estimated cost of $1.1 billion, in today's dollars. That's a cost of $38.73 per resident each year. This investment would save 18 million hours each year that residents now lose sitting in traffic, at a cost of just $2.49 per delay-hour saved.

Sarasota-Bradenton

The Travel Time Index (TTI) in the Sarasota-Bradenton area is projected to rise from 1.25 to 1.42 by 2030, which is where Miami is today. This means that driving times during peak traffic hours are forecasted to be 42 percent longer than travel times during off-peak hours.

Severe congestion could be significantly reduced in the Sarasota-Bradenton area by adding 686 new lane-miles by 2030 at an estimated cost of $1.0 billion, in today's dollars. That's a cost of $58.30 per resident each year. This investment would save 11 million hours each year that residents lose sitting in traffic, at a cost of just $3.93 for each hour saved.

Cape Coral

Cape Coral's Travel Time Index (TTI), now at 1.18 are expected to grow to 1.36 by 2030, to a level similar to that of present-day Dallas-Fort Worth. This means that driving times during peak traffic hours are expected to be 36 percent longer than during off-peak times. This growth is similar to that in the Jacksonville area and represents a doubling of the delay in the travel time over 25 years. (The 'delay' in the travel time is the portion of the TTI over 1.0.).

Cape Coral could significantly reduce these severe congestion problems by adding just over 325 new lane-miles by 2030 at an estimated cost of $439 million, in today's dollars. That's a cost of $40.25 per resident each year. This investment would save a nearly 5.5 million hours each year that residents now lose sitting in traffic, at a cost of only $3.20 per delay-hour saved.

Georgia

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Georgia needs just over 3,200 new lane-miles at a total cost of $14.3 billion, in today's dollars. That's a cost of $104 per resident each year. Georgia ranks 11th out of 50 states and the District of Columbia in terms of most lane-miles needed and tenth in the total cost of those improvements. If the state made these improvements, it would save 278 million hours per year that are now wasted in traffic jams.

Georgia is home to the fifth most congested city in the United States, Atlanta, where the Travel Time Index (TTI) is 1.46. This means that driving times during peak traffic hours are 46 percent longer than during off-peak times. The only drivers who experience worse traffic are those in Washington, DC (1.51), San Francisco (1.54), Chicago (1.57), and Los Angeles (1.75).

However, unless major steps are taken to relieve congestion, drivers in the Atlanta area can expect to see a TTI of 1.85 by 2030, meaning they will experience travel delays worse than present-day Los Angeles.

Atlanta could significantly reduce congestion by adding about 2,600 new lane-miles by 2030 at an estimated cost of $13.1 billion in today's dollars. This includes the costs of adding 10 percent of the new capacity by building elevated roadways and tunnels, which will be necessary in a densely settled location like Atlanta. Atlanta has already made significant steps toward the congestion reduction goal by setting congestion reduction targets and selecting projects to reduce congestion.

This investment would save an estimated 272 million hours per year that are now lost sitting in Atlanta traffic, at a cost of just $1.92 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

While $13.1 billion may sound like an unattainably large investment, it is actually only 25 percent of the amount that the Atlanta area's Metropolitan Planning Organization (MPO) already plans to spend in their long-range transportation plan. The Atlanta Regional Commission (ARC), the region's MPO, plans to spend approximately $53 billion during the next 25 years—$29.6 billion on highway improvements, $21.5 billion on mass transit, and $1.9 billion on other projects. While some of the planned highway improvement funding may be used for capacity expansion, the majority is often allocated to preserving, maintaining, and operating the highway system. Just 3.7 percent of Atlanta commuters now use mass transit and yet, transit accounts for 41 percent of the region's transportation spending.

As Table 16 shows, the other urban areas in Georgia with populations over 50,000 are substantially less congested than Atlanta. However, the relative increase in delay projected over the next 25 years for these cities is actually higher than that for Atlanta. (The 'delay' in the travel time is the portion of the TTI over 1.0.) In Atlanta, the expected increase in traffic delay from 2003 to 2030 is 85 percent. However, all other smaller urban area in Georgia listed in Table 16 can expect an increase in delay of 100 percent or more, which will be sharply felt by local commuters. With projected TTIs of 1.08–1.10, cities like Albany, Macon, and Columbus are facing future traffic delays similar to those currently experienced in the much larger cities of Dayton, Cleveland, and Pittsburgh, respectively.

Table 16: Urbanized Area Congestion Needs—Georgia

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Atlanta	2,924	5,009	1.46	1.85	1,273.5	2,613.0	$13,057.2	$131.68	$1.05	272,415,903	$1.92
Augusta-Richmond	285	347	1.05	1.10	74.6	385.4	667.8	84.48	0.68	1,228,253	21.75
Columbus	252	252	1.05	1.10	28.2	36.4	86.9	13.80	0.11	924,681	3.76
Savannah	235	302	1.05	1.12	37.7	47.7	139.0	20.71	0.17	1,472,451	3.78
Macon	155	179	1.04	1.09	23.1	26.4	81.4	19.49	0.16	549,629	5.93
Warner Robins	120	185	1.04	1.10	20.2	25.3	60.3	15.80	0.13	633,728	3.81
Athens-Clarke County	112	159	1.04	1.09	19.6	24.7	70.7	20.84	0.17	400,342	7.06
Albany	96	112	1.04	1.08	14.6	36.6	56.4	21.74	0.17	258,825	8.72
Brunswick	70	92	1.04	1.08	14.0	12.3	32.3	15.96	0.13	240,610	5.37
Rome	62	79	1.04	1.08	10.6	13.2	32.1	18.25	0.15	190,845	6.73
Georgia (Urban Area)	4,311	6,716			1,516.1	3,221.0	$14,284.2	$103.63	$0.83	278,315,267	$2.05

Hawaii

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Hawaii needs just over 320 new lane-miles at a total cost of $1.1 billion, in today's dollars. That's a cost of approximately $55 per resident each year. Hawaii ranks 37th out of 50 states and the District of Columbia in terms of most lane-miles needed and 35th in the total costs of those improvements. If the state made these improvements, it would save over 9 million hours per year that are now wasted in traffic jams.

Hawaii has one city that currently suffers from severe congestion, which this study identifies as those areas with Travel Time Indices (TTIs) of 1.18 or higher. The Honolulu area on Oahu Island is tied with five other urban areas (Providence, Columbus, New Orleans, Raleigh-Durham and Colorado Springs) as the 42nd most congested region in the United States, with a Travel Time Index (TTI) of 1.19. This means that driving times during peak traffic hours are 19 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in this part of Hawaii can expect to see a TTI of 1.31 by 2030. For an idea of how severe that level of congestion would be, note that this projection is comparable to the traffic delays experienced today in places like Philadelphia, Charlotte, and Tucson. But Hawaii can significantly reduce these congestion problems by adding about 320 new lane-miles by 2030 at an estimated cost of $1.1 billion in today's dollars.

This investment would save an estimated 9 million hours per year that are now lost sitting in traffic, at a yearly cost of $4.72 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

As Table 17 shows, the other urban area in Hawaii with a population over 50,000, Kailua-Kaneohe, is currently much less congested than Honolulu, with a TTI of 1.04. However, the relative increase in delay projected over the next 25 years for Kailua-Kaneohe is 100 percent, which will be sharply felt by local commuters. (The 'delay' in the travel time is the portion of the TTI over 1.0.) With a TTI of 1.08, Kailua-Kaneohe is facing future traffic delays similar to those currently experienced in the larger cities of Dayton and Spokane.

Table 17: Urbanized Area Congestion Needs—Hawaii

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Honolulu	648	693	1.19	1.31	107.0	296.0	**$1,023.6**	$61.06	$0.49	8,626,356	$4.75
Kailua-Kaneohe	94	139	1.04	1.08	14.2	25.2	**50.0**	17.19	0.14	471,455	4.24
Hawaii (Urban Area)	**742**	**832**			**121.1**	**321.3**	**$1,073.7**	**$54.58**	**$0.44**	**9,097,812**	**$4.72**

Idaho

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Idaho needs just over 275 new lane-miles at a total cost of $372 million, in today's dollars. That's a cost of approximately $22 per resident each year. Idaho ranks 39th out of 50 states and the District of Columbia in terms of most lane-miles needed and 42nd in the total costs of those improvements. If the state made these improvements, it would save almost 2.6 million hours per year that are now wasted in traffic jams.

As Table 18 suggests, Idaho really does not have a significant traffic congestion problem, although there are likely to be specific sites in the state where traffic does have some major adverse impacts. The five cities in Idaho with populations over 50,000 (Boise City, Nampa, Coeur d'Alene, Pocatello, and Idaho Falls) all have Travel Time Indices (TTIs) in the 1.04–1.05 range. This means that driving times during peak traffic hours are 4–5 percent longer than during off-peak times. While these TTIs do not reach the 1.18 level that this study identifies as severe congestion, the relative increase in delay projected over the next 25 years for each of these cities is 100–120 percent, which will be sharply noticed by local commuters. (The 'delay' in the travel time is that portion of the TTI over 1.0.) To put things into perspective, TTIs of around 1.08 reflect current traffic in larger cities such as Cleveland, Richmond-Petersburg, and Spokane. Idaho could solve this problem by adding 275 new lane-miles by 2030 at an estimated cost of $372 million in today's dollars.

This investment would save an estimated 2.6 million hours per year that are now lost sitting in traffic, at a yearly cost of $5.76 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 18: Urbanized Area Congestion Needs—Idaho

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Boise City	254	452	1.05	1.11	118.9	196.0	$276.7	$31.36	$0.25	1,576,210	$7.02
Nampa	93	120	1.04	1.08	31.6	47.7	53.0	19.93	0.16	352,749	6.01
Coeur d'Alene	68	123	1.04	1.08	11.7	10.3	18.3	7.70	0.06	249,583	2.94
Pocatello	61	70	1.04	1.08	9.8	17.5	14.5	8.84	0.07	161,438	3.59
Idaho Falls	60	77	1.04	1.08	7.5	6.6	9.6	5.60	0.04	245,228	1.57
Idaho (Urban Area)	536	841			179.6	278.1	$372.1	$21.61	$0.17	2,585,208	$5.76

Illinois

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Illinois needs just over 4,450 new lane-miles at a total cost of $55 billion, in today's dollars. That's a cost of $218 per resident each year. Illinois ranks 7th out of 50 states and the District of Columbia in terms of most lane-miles needed and 2nd in the total cost of those improvements. If the state made these improvements, it would save 617 million hours per year that are now wasted in traffic jams.

Illinois is home to the second most congested city in the United States, Chicago, where the Travel Time Index (TTI) is 1.57. This means that driving times during peak traffic are 57 percent longer than during off-peak times. The only drivers who experience worse traffic are those in Los Angeles, where the TTI is now about 1.75.

However, unless major steps are taken to relieve congestion, drivers in the Windy City can expect to see a TTI of 1.88 by 2030, meaning they will experience travel delays worse than present-day Los Angeles.

Chicago could significantly reduce congestion by adding about 3,800 new lane-miles by 2030 at an estimated cost of $53.9 billion in today's dollars. This includes the costs of adding 15 percent of the new capacity by building elevated roadways and tunnels, which will be necessary in a densely settled location like Chicago.

This investment would save an estimated 613 million hours per year that are now lost sitting in Chicago traffic, at a cost of $3.52 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

While $53.9 billion may sound like an unattainably large investment, it is about 88 percent of the amount that the Chicago area's Metropolitan Planning Organization (MPO) already plans to spend in their long-range transportation plan. The Chicago Area Transportation Study Policy Committee (the region's MPO) plans to spend approximately $61 billion during the next 25 years—$33.5 billion on highway improvements and $27.5 billion on mass transit. While 12.5 percent of Chicago commuters now use mass transit, transit spending constitutes 45 percent of the region's total transportation dollars.

As Table 19 shows, Illinois' other urban areas are substantially less congested than Chicago. However, the increase in delay projected over the next 25 years for these cities is actually higher than that for Chicago. (The 'delay' in the travel time is the portion of the TTI over 1.0.) In Chicago, the expected increase in traffic delay from 2003 to 2030 is 54 percent. However, all other smaller urban area in Illinois listed in Table 19 can expect an increase in delay of between 75–133 percent, which will be sharply felt by local commuters. With projected TTIs of 1.08–1.10, cities like Decatur, Springfield, and Peoria are facing future traffic delays similar to those currently experienced in the much larger cities of Dayton, Cleveland, and Pittsburgh, respectively.

Table 19: Urbanized Area Congestion Needs—Illinois

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Chicago	7,702	9,522	1.57	1.88	2,793.2	3,874.7	$53,850.6	$250.11	$2.00	612,699,301	$3.52
Davenport	267	268	1.05	1.10	45.2	253.4	425.5	63.58	0.51	932,117	18.26
Peoria	244	251	1.05	1.10	28.1	72.5	113.8	18.41	0.15	839,468	5.42
Rockford	208	263	1.05	1.10	53.0	70.3	308.9	52.41	0.42	853,624	14.47
Springfield	125	135	1.04	1.09	14.5	28.9	45.4	13.97	0.11	418,208	4.34
Champaign	116	131	1.04	1.09	21.9	36.2	59.1	19.19	0.15	348,192	6.79
Decatur	97	81	1.04	1.08	6.4	5.7	16.9	7.56	0.06	227,498	2.97
Bloomington-Normal	94	112	1.04	1.08	41.8	66.0	118.6	46.06	0.37	285,278	16.63
Alton	92	103	1.04	1.08	6.6	8.2	15.9	6.51	0.05	272,063	2.34
Kankakee	60	68	1.04	1.07	14.7	26.2	41.2	25.64	0.21	161,159	10.21
DeKalb	56	64	1.04	1.08	5.4	4.8	13.3	8.87	0.07	156,304	3.40
Danville	53	45	1.03	1.07	6.7	11.8	18.6	15.22	0.12	121,805	6.10
Illinois (Urban Area)	9,114	11,044			3,037.4	4,458.8	$55,027.7	$218.39	$1.75	617,315,016	$3.57

Indiana

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Indiana needs almost 2,270 new lane-miles at a total cost of $3.1 billion, in today's dollars. That's a cost of approximately $51 per resident each year. Indiana ranks 14th out of 50 states and the District of Columbia in terms of most lane-miles needed and 26th in the total costs of those improvements. If the state made these improvements, it would save 28 million hours per year that are now wasted in traffic jams.

Indiana has one city that currently suffers from severe congestion, which this study identifies as those areas with Travel Time Indices (TTIs) of 1.18 or higher. The capital city of Indianapolis is the 32nd most congested region in the United States (sharing this 'honor' with Louisville), with a TTI of 1.24. This means that driving times during peak traffic are 24 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in Indianapolis can expect to see a TTI of 1.42 by 2030. For an idea of how severe that level of congestion would be, note that this projection is equivalent to the traffic delays experienced today in Houston and Miami. Indeed, only five cities across the United States have worse traffic: Atlanta, Washington, DC, San Francisco, Chicago and Los Angeles. But Indiana can significantly reduce this congestion problem by adding about 2,270 new lane-miles by 2030 at an estimated cost of $3.1 billion in today's dollars.

This investment would save an estimated 28 million hours per year that are now lost sitting in traffic, at a yearly cost of $4.41 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle

operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

As Table 20 suggests, the other cities in Indiana with populations over 50,000 are currently much less congested than Indianapolis and have reasonable TTIs in the 1.04–1.05 range. However, the relative increase in delay projected over the next 25 years for these cities is 75–100 percent, which is actually as high or higher than the Indianapolis area's 75 percent increase. (The 'delay' in the travel time is the portion of the TTI over 1.0.) Such significant increases will be sharply felt by local commuters. With projected TTIs of 1.08–1.10, cities like Terre Haute, Fort Wayne, and South Bend are facing future traffic delays similar to those currently experienced in the much larger cities of Dayton, Buffalo, and Pittsburgh, respectively.

Table 20: Urbanized Area Congestion Needs—Indiana

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Indianapolis	915	1,267	1.24	1.42	434.2	1,632.6	$2,319.2	$85.04	$0.68	23,621,553	$3.93
South Bend	251	278	1.05	1.10	72.4	181.7	198.5	30.01	0.24	964,191	8.23
Fort Wayne	248	307	1.05	1.10	57.7	112.0	142.2	20.51	0.16	1,118,213	5.09
Evansville	187	207	1.05	1.10	51.5	104.5	129.1	26.19	0.21	654,804	7.89
Lafayette	100	121	1.04	1.08	31.6	38.3	51.8	18.73	0.15	270,001	7.67
Elkhart	99	135	1.04	1.08	30.2	60.4	65.0	22.21	0.18	342,810	7.58
Muncie	88	83	1.04	1.08	12.2	21.7	23.4	10.95	0.09	213,081	4.39
Terre Haute	77	77	1.04	1.08	34.8	59.4	69.9	36.32	0.29	169,334	16.51
Anderson	74	72	1.04	1.08	10.9	19.4	20.8	11.44	0.09	189,848	4.39
Bloomington	71	85	1.04	1.08	18.4	25.0	31.5	16.20	0.13	179,922	7.00
Kokomo	57	60	1.04	1.07	7.9	14.0	15.0	10.31	0.08	112,602	5.34
Indiana (Urban Area)	2,167	2,691			761.7	2,269.0	$3,066.4	$50.50	$0.40	27,836,358	$4.41

Iowa

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Iowa needs some 164.5 new lane-miles at a total cost of $572 million, in today's dollars. That's a cost of approximately $21 per resident each year. Iowa ranks 38th out of 50 states and the District of Columbia in terms of most lane-miles needed and 41st in the total costs of those improvements. If the state made these improvements, it would save almost four million hours per year that are now wasted in traffic jams.

As Table 21 suggests, Iowa really does not have a significant traffic congestion problem, although there are likely to be specific sites in the state where traffic does have some major adverse impacts. There are seven cities in the Hawkeye State with populations over 50,000, and all have reasonable Travel Time Indices (TTIs) of 1.03–1.05. This means that driving times during peak traffic hours are 3–5 percent longer than during off-peak times. While these TTIs do not reach the 1.18 level that this study identifies as severe congestion, the relative increase in delay projected for each city over the next 25 years is 100–133 percent, which will be sharply noticed by local commuters. (The 'delay' in the travel time is that portion of the TTI over 1.0.) To put things into perspective, TTIs of around 1.09, reflect current traffic in large cities like Cleveland, Richmond-Petersburg, and Spokane. Iowa could solve this limited problem by adding 164.5 new lane-miles by 2030 at an estimated cost of $572 million in today's dollars.

This investment would save an estimated 4.0 million hours per year that are now lost sitting in traffic, at a yearly cost of $5.65 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 21: Urbanized Area Congestion Needs—Iowa

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Des Moines	394	530	1.05	1.11	80.8	167.1	$408.0	$35.32	$0.28	2,242,680	$7.28
Cedar Rapids	154	193	1.04	1.09	20.2	25.0	45.2	10.42	0.08	601,872	3.00
Waterloo	112	111	1.04	1.09	13.8	27.6	28.5	10.21	0.08	286,504	3.97
Sioux City	108	122	1.04	1.09	10.9	18.5	20.8	7.23	0.06	331,280	2.51
Iowa City	78	101	1.04	1.08	24.4	43.4	44.8	19.98	0.16	282,766	6.34
Dubuque	64	68	1.04	1.08	10.8	19.2	19.8	11.96	0.10	151,667	5.22
Ames	51	58	1.03	1.07	3.7	3.3	5.3	3.84	0.03	157,284	1.34
Iowa (Urban Area)	961	1,184			164.5	304.1	$572.2	$21.35	$0.17	4,054,053	$5.65

Kansas

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Kansas needs 578 new lane-miles at a total cost of $812 million, in today's dollars. That's a cost of approximately $49 per resident each year. Kansas ranks 34th out of 50 states and the District of Columbia in terms of most lane-miles needed and 38th in the total costs of those improvements. If the state made these improvements, it would save almost 2.6 million hours per year that are now wasted in traffic jams.

As Table 22 suggests, Kansas really does not have a significant traffic congestion problem, although there are likely to be specific sites in the state where traffic does have some major adverse impacts. The three cities in Kansas with populations over 50,000, Wichita, Topeka, and Lawrence, all have Travel Time Indices (TTIs) in the 1.04–1.05 range. This means that driving times during peak traffic hours are 4–5 percent longer than during off-peak times. While this TTI does not reach the 1.18 level that this study identifies as severe congestion, the relative increase in delay projected over the next 25 years is 100–125 percent, which will be sharply noticed by local commuters. (The 'delay' in the travel time is that portion of the TTI over 1.0.) To put things into perspective, TTIs of around 1.08 reflect current traffic in much larger cities such as Cleveland, Richmond-Petersburg, and Spokane. Kansas could solve this limited problem by adding 578 new lane-miles by 2030 at an estimated cost of $812 million in today's dollars.

This investment would save an estimated 2.6 million hours per year that are now lost sitting in traffic, at a yearly cost of $12.69 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 22: Urbanized Area Congestion Needs—Kansas

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Wichita	377	457	1.05	1.11	109.1	510.1	$726.2	69.64	0.56	1,791,071	$16.22
Topeka	142	160	1.04	1.09	14.7	37.9	43.3	11.47	0.09	492,270	3.52
Lawrence	82	113	1.04	1.08	24.0	29.7	42.1	17.29	0.14	274,931	6.12
Kansas (Urban Area)	**601**	**730**			**147.8**	**577.6**	**$811.5**	**48.79**	**0.39**	**2,558,272**	**$12.69**

Kentucky

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Kentucky needs just over 1,200 new lane-miles at a total cost of $4.6 billion, in today's dollars. That's a cost of approximately $120 per resident each year. Kentucky ranks 24th out of 50 states and the District of Columbia in terms of most lane-miles needed and 19th in the total costs of those improvements. If the state made these improvements, it would save almost 23 million hours per year that are now wasted in traffic jams.

Kentucky has one city that currently suffers from severe congestion, which this study identifies as those areas with Travel Time Indices (TTIs) of 1.18 or higher. The Ohio River city of Louisville is the 32nd most congested region in the United States (sharing that 'honor' with Indianapolis), with a TTI of 1.24. This means that driving times during peak traffic are 24 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in the Louisville area can expect to see a TTI of 1.44 by 2030. For an idea of how severe that level of congestion would be, note that this projection is higher than the traffic delays experienced today in all but five cities across the United States: Atlanta, Washington, DC, San Francisco, Chicago and Los Angeles. But Kentucky can significantly reduce this congestion problem by adding about 1,200 new lane-miles by 2030 at an estimated cost of $4.6 billion in today's dollars.

This investment would save an estimated 23 million hours per year that are now lost sitting in traffic, at a yearly cost of $8.05 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

As Table 23 suggests, the other cities in Kentucky with populations over 50,000 are currently much less congested than Louisville and have TTIs in the 1.04–1.05 range. However, the relative increase in delay projected over the next 25 years for these cities is 100 percent, which is actually higher than the Louisville area's 83 percent increase. (The 'delay' in the travel time is the portion of the TTI over 1.0.) Such significant increases will be sharply felt by local commuters. With TTIs of 1.08, the small cities of Radcliff-Elizabethtown, Owensboro, and Bowling Green are facing future traffic delays similar to those currently experienced in much larger cities like Dayton and Spokane.

Table 23: Urbanized Area Congestion Needs—Kentucky

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Louisville	891	1,091	1.24	1.44	289.0	858.1	$3,615.0	145.93	1.17	20,982,178	$6.89
Lexington-Fayette	263	349	1.05	1.10	64.3	319.4	858.7	112.23	0.90	1,314,863	26.12
Radcliffe-Elizabethtown	77	90	1.04	1.08	8.9	7.7	29.9	14.29	0.11	295,824	4.04
Owensboro	73	80	1.04	1.08	3.5	3.1	13.3	6.92	0.06	187,382	2.83
Bowling Green	68	92	1.04	1.08	25.9	46.2	107.9	53.85	0.43	188,996	22.84
Kentucky (Urban Area)	**1,372**	**1,703**			**391.7**	**1,234.4**	**$4,624.8**	**120.33**	**0.96**	**22,969,243**	**$8.05**

Louisiana

(It should be noted that this analysis was completed before the devastating effects of Hurricane Katrina; we have assumed that New Orleans will recover and will therefore need congestion reduction in the future.) To significantly reduce today's severe congestion and prepare for growth expected by 2030, Louisiana needs almost 1,250 new lane-miles at a total cost of $3.3 billion, in today's dollars. That's a cost of approximately $50 per resident each year. Louisiana ranks 23rd out of 50 states and the District of Columbia in terms of most lane-miles needed and 22nd in the total costs of those improvements. If the state made these improvements, it would save over 17 million hours per year that are now wasted in traffic jams.

Louisiana has one city that currently suffers from severe congestion, which this study identifies as those areas with Travel Time Indices (TTIs) of 1.18 or higher. The port city of New Orleans is the

42nd most congested region in the United States, with a TTI of 1.19. This means that driving times during peak traffic are 19 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in New Orleans can expect to see a TTI of 1.31 by 2030. For an idea of how severe that level of congestion would be, note that this projection is equivalent to the traffic delays experienced today in places like Charlotte and Philadelphia. But Louisiana can significantly reduce this congestion problem by adding about 1,250 new lane-miles by 2030 at an estimated cost of $3.3 billion in today's dollars.

This investment would save an estimated 17 million hours per year that are now lost sitting in traffic, at a yearly cost of $7.87 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

As Table 24 suggests, the other cities in Louisiana with populations over 50,000 are currently much less congested than New Orleans and have TTIs in the 1.04–1.05 range. However, the relative increase in delay projected over the next 25 years for these cities is 100 percent or more, which is higher than the Big Easy's 63 percent. (The 'delay' in the travel time is the portion of the TTI over 1.0.) Such significant increases will be sharply felt by local commuters. With projected TTIs of 1.08–1.10, cities like Alexandria, Monroe and Shreveport are facing future traffic delays similar to those currently experienced in the much larger cities of Dayton, Cleveland, and Pittsburgh, respectively.

Table 24: Urbanized Area Congestion Needs—Louisiana

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
New Orleans	1,009	1,053	1.19	1.31	327.4	208.6	$597.9	$23.19	$0.19	10,545,014	$2.27
Baton Rouge	479	594	1.05	1.12	124.5	318.3	826.8	61.64	0.49	2,642,437	12.52
Shreveport	275	303	1.05	1.10	92.9	301.2	1,040.9	144.15	1.15	1,028,941	40.46
Lafayette	178	226	1.05	1.10	96.8	150.3	315.1	62.46	0.50	774,039	16.28
Lake Charles	133	155	1.04	1.09	48.8	72.5	156.6	43.51	0.35	415,155	15.09
Houma	126	146	1.04	1.10	42.6	64.6	108.9	32.06	0.26	499,292	8.73
Monroe	114	120	1.04	1.09	64.3	68.5	171.4	58.57	0.47	301,461	22.75
Slidell	79	82	1.04	1.09	14.1	25.1	38.7	19.16	0.15	342,109	4.52
Alexandria	78	84	1.04	1.08	30.4	35.1	70.0	34.61	0.28	183,668	15.24
Mandeville-Covington	63	66	1.04	1.08	4.2	3.7	8.9	5.53	0.04	211,092	1.69
Louisiana (Urban Area)	2,534	2,829			846.0	1,248.0	$3,335.2	$49.75	$0.40	16,943,211	$7.87

Maine

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Maine needs just over 82 new lane-miles at a total cost of $177 million, in today's dollars. That's a cost of approximately $24 per resident each year. Maine ranks 46th out of 50 states and the District of Columbia in terms of most lane-miles needed and 45th in the total costs of those improvements. If the state made these improvements, it would save over 882 thousand hours per year that are now wasted in traffic jams.

As Table 25 suggests, Maine really does not have a significant traffic congestion problem, although there are likely to be specific sites in the state where traffic does have some major adverse impacts. The three cities in Maine with populations over 50,000, Portland, Lewiston, and Bangor, all have Travel Time Indices (TTIs) of 1.04. This means that driving times during peak traffic hours are 4 percent longer than during off-peak times. While this TTI does not reach the 1.18 level that this study identifies as severe congestion, the relative increase in delay projected over the next 25 years is 100–125 percent, which will be sharply noticed by local commuters. (The 'delay' in the travel time is that portion of the TTI over 1.0.) To put things into perspective, TTIs of around 1.09 reflect current traffic in cities such as Cleveland, Richmond-Petersburg, and Spokane. Maine could solve this limited problem by adding 82 new lane-miles by 2030 at an estimated cost of $177 million in today's dollars.

This investment would save an estimated 882 thousand hours per year that are now lost sitting in traffic, at a yearly cost of $8.03 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 25: Urbanized Area Congestion Needs—Maine

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Portland	136	178	1.04	1.09	32.5	61.8	$130.8	$33.34	$0.27	552,102	$9.47
Lewiston	69	72	1.04	1.08	8.9	7.9	21.7	12.34	0.10	178,895	4.86
Bangor	63	64	1.04	1.08	8.4	12.6	24.6	15.45	0.12	151,290	6.51
Maine (Urban Area)	268	314			49.8	82.3	$177.1	$24.34	$0.19	882,287	$8.03

Maryland

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Maryland needs almost 580 new lane-miles at a total cost of $2.3 billion, in today's dollars. That's a cost of $30 per resident each year. Maryland ranks 33rd out of 50 states and the District of

Columbia in terms of most lane-miles needed and 32nd in the total cost of those improvements. If the state made these improvements, it would save 130 million hours per year that are now wasted in traffic jams.

Maryland is home to the 14th most congested city in the United States, Baltimore (which shares this 'honor' with Portland, Sacramento, San Jose, and Riverside-San Bernardino), where the Travel Time Index (TTI) is 1.37. This means that driving times during peak traffic hours are 37 percent longer than during off-peak times. Unless major steps are taken to relieve congestion, drivers in this port city can expect to see a TTI of 1.75 by 2030, meaning they will experience travel delays equivalent to present-day Los Angeles.

Baltimore could significantly reduce congestion by adding about 403 new lane-miles by 2030 at an estimated cost of $1.8 billion in today's dollars. This includes the costs of adding 3 percent of the new capacity by building elevated roadways and tunnels, which will be necessary in a densely settled location like Baltimore.

This investment would save an estimated 125 million hours per year that are now lost sitting in Baltimore traffic, at a cost of just $0.58 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

While $1.8 billion may sound like a large investment, it is actually only 7.2 percent of the amount that the Baltimore area's Metropolitan Planning Organization already plans to spend in their long-range transportation plan. The Baltimore Regional Transportation Board (the region's MPO) plans to spend approximately $25.5 billion during the next 25 years—$13.2 billion on highway improvements, $11.8 billion on mass transit, and $0.5 billion on other projects. While some of the planned highway improvement funding may be used for capacity expansion, the majority is often allocated to preserving, maintaining, and operating the highway system. Transit spending comprises 46 percent of the budget, even though only 6.2 percent of Baltimore commuters now use mass transit.

As Table 26 shows, Maryland's other urban areas are substantially less congested than Baltimore. However, the relative increase in delay projected over the next 25 years for these cities is still quite high, ranging from 100–225 percent. (The 'delay' in the travel time is the portion of the TTI over 1.0.) Such significant increases in travel delays will be sharply felt by local commuters. With TTIs of 1.08–1.10, cities like Westminster, Frederick, and St. Charles are facing future traffic delays similar to those currently experienced in the much larger cities of Dayton, Cleveland, and Pittsburgh, respectively.

Table 26: Urbanized Area Congestion Needs—Maryland (except the Washington, D.C. area)											
Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Baltimore	2,076	2,437	1.37	1.75	416.9	403.0	$1,824.9	$32.35	$0.26	125,495,309	$0.58
Aberdeen-Havre de Grace	175	205	1.05	1.10	24.1	42.6	111.5	23.44	0.19	943,018	4.73
Hagerstown	121	167	1.04	1.13	21.5	21.4	70.2	19.50	0.16	1,057,736	2.66
Frederick	119	217	1.04	1.09	36.4	49.0	134.3	31.98	0.26	898,637	5.98
St. Charles	75	107	1.04	1.10	14.7	26.1	43.0	18.87	0.15	646,971	2.66
Westminster	65	93	1.04	1.08	21.8	19.4	49.5	25.06	0.20	346,068	5.72
Salisbury	58	72	1.04	1.08	10.3	18.4	30.3	18.61	0.15	208,037	5.82
Maryland (Urban Area)	2,689	3,299			545.7	579.8	$2,263.7	$30.24	$0.24	129,595,776	$0.70

Massachusetts

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Massachusetts needs just over 1,960 new lane-miles at a total cost of $21.9 billion, in today's dollars. That's a cost of $145 per resident each year. Massachusetts ranks 16th out of 50 states and the District of Columbia in terms of most lane-miles needed and 8th in the total cost of those improvements. If the state made these improvements, it would save 184 million hours per year that are now wasted in traffic jams.

Massachusetts is home to the 21st most congested city in the United States, Boston (which shares this 'honor' with Minneapolis-St. Paul), where the Travel Time Index (TTI) is 1.34. This means that driving times during peak traffic hours are 34 percent longer than during off-peak times. Unless major steps are taken to relieve congestion, drivers in Beantown can expect to see a TTI of 1.62 by 2030, meaning they will experience travel delays far worse than even present-day Chicago.

Boston could significantly reduce congestion by adding about 1,500 new lane-miles by 2030 at an estimated cost of $20.3 billion in today's dollars. This includes the costs of adding 15 percent of the new capacity by building elevated roadways and tunnels, which will be necessary in a densely settled location like Boston.

This investment would save an estimated 178 million hours per year that are now lost sitting in Boston traffic, at a cost of $4.56 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

While $20.3 billion may sound like an unattainably large investment, it is actually only 42 percent of the amount that the Boston area's Metropolitan Planning Organization (MPO) already plans to spend in their long-range transportation plan. The Boston MPO plans to spend approximately $48.3 billion during the next 25 years—$4.5 billion on highway improvements and $43.8 billion on mass transit. Approximately 13.9 percent of Boston commuters now use mass transit, but transit accounts for 91 percent of the transportation spending.

As Table 27 shows, Massachusetts' other urban areas are substantially less congested than Boston. However, the relative increase in delay projected over the next 25 years for these cities is still quite high. (The 'delay' in the travel time is the portion of the TTI over 1.0.) In Boston, the expected relative increase in traffic delay from 2003 to 2030 is 82 percent. However, all other urban areas in Massachusetts with populations over 50,000, except Springfield, can expect an increase in delay of more than 100 percent. Such dramatic increases will be sharply felt by local commuters. With projected TTIs of 1.09–1.12, cities like New Bedford, Worcester, and Barnstable Town are facing future traffic delays similar to those currently experienced in the much larger cities of Cleveland, Pittsburgh, and Kansas City, respectively.

Table 27: Urbanized Area Congestion Needs—Massachusetts

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Boston	3,988	4,636	1.34	1.62	989.8	1,492.7	$20,322.2	$188.51	$1.51	178,082,713	$4.56
Springfield	589	620	1.06	1.08	82.1	203.1	706.0	46.72	0.37	1,090,014	25.91
Worcester	435	530	1.05	1.11	55.0	102.7	507.9	42.11	0.34	2,285,405	8.89
Barnstable Town	247	347	1.05	1.12	49.6	83.2	204.1	27.51	0.22	1,378,830	5.92
New Bedford	149	173	1.04	1.09	15.1	39.1	74.1	18.44	0.15	495,375	5.98
Leominster-Fitchburg	114	139	1.04	1.09	18.3	36.7	69.6	22.01	0.18	490,405	5.67
Pittsfield	53	49	1.03	1.07	4.4	3.9	11.5	9.03	0.07	114,396	4.01
Massachusetts (Urban Area)	5,575	6,493			1,214.3	1,961.3	$21,895.4	$145.15	$1.16	183,937,138	$4.76

Michigan

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Michigan needs just over 3,660 new lane-miles at a total cost of $27 billion, in today's dollars. That's a cost of $151 per resident each year. Michigan ranks 10th out of 50 states and the District of Columbia in terms of most lane-miles needed and sixth in the total cost of those improvements. If the state made these improvements, it would save 123 million hours per year that are now wasted in traffic jams.

Michigan is home to the 12th most congested city in the United States, Detroit (sharing this 'honor' with Seattle-Tacoma), where the Travel Time Index (TTI) is 1.38. This means that driving times during peak traffic hours are 38 percent longer than during off-peak times. And unless major steps are taken to relieve congestion, drivers in Motown can expect to see a TTI of 1.50 by 2030, meaning they will experience travel delays worse than any other cities today except Washington, DC, San Francisco, Chicago and Los Angeles.

Detroit could significantly reduce congestion by adding about 2,300 new lane-miles by 2030 at an estimated cost of $24.1 billion in today's dollars. This includes the costs of adding 10 percent of the new capacity by building elevated roadways and tunnels, which will be necessary in a densely settled location like Detroit.

This investment would save an estimated 106 million hours per year that are now lost sitting in Motown traffic, at a cost of $9.05 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

While $24.1 billion may sound like an exceedingly large investment, it is actually only 59 percent of the amount that the Detroit area's Metropolitan Planning Organization (MPO) already plans to spend in their long-range transportation plan. The Southeast Michigan Council of Governments (SEMCOG) plans to spend approximately $41 billion during the next 25 years—$31.5 billion on highway improvements, $9.3 billion on mass transit, and $0.2 billion on other projects. While some of the planned highway improvement funding may be used for capacity expansion, the majority is often allocated to preserving, maintaining, and operating the highway system. The transit portion of the budget is about 23%—about 1.8 percent of Motown commuters now use mass transit.

As Table 28 shows, Michigan's other urban areas are substantially less congested than Detroit. However, the relative increase in delay projected over the next 25 years for these cities is actually higher than that for Detroit. (The 'delay' in the travel time is the portion of the TTI over 1.0.) In Motown, the expected relative increase in traffic delay from 2003 to 2030 is 32 percent. However, all other smaller urban areas in Illinois listed in Table 28 can expect an increase in delay of 75–200 percent, which will be sharply felt by local commuters. With projected TTIs of 1.08–1.10, cities like Battle Creek, Saginaw, and Kalamazoo are facing future traffic delays similar to those currently experienced in the much larger cities of Dayton, Cleveland, and Pittsburgh, respectively. And with a forecasted TTI of 1.28, Grand Rapids will experience traffic congestion worse than St. Louis or Cincinnati.

Table 28: Urbanized Area Congestion Needs—Michigan											
Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Detroit	3,939	4,277	1.38	1.50	1,135.8	2,301.0	$24,052.0	$234.19	$1.87	106,317,423	$9.05
Grand Rapids	589	758	1.14	1.28	91.2	409.7	751.5	44.62	0.36	6,759,976	4.45
Flint	386	414	1.05	1.11	232.9	204.3	378.4	37.83	0.30	1,504,754	10.06
Lansing	312	336	1.05	1.11	41.2	241.5	419.2	51.75	0.41	1,326,368	12.64
Ann Arbor	307	416	1.05	1.15	65.2	174.5	768.9	85.07	0.68	2,943,764	10.45
Kalamazoo	208	238	1.05	1.10	36.2	63.0	177.9	31.90	0.26	815,566	8.73
Muskegon	163	189	1.04	1.10	22.8	58.9	97.9	22.26	0.18	510,598	7.67
Saginaw	143	138	1.04	1.09	21.6	36.7	78.4	22.32	0.18	369,064	8.49
S. Lyon-Howell-Brighton	119	167	1.04	1.09	35.9	47.3	125.4	35.05	0.28	544,827	9.21
Holland	99	183	1.04	1.09	15.1	13.4	34.5	9.77	0.08	426,805	3.23
Jackson	96	112	1.04	1.08	18.2	18.2	46.9	18.03	0.14	256,848	7.30
Port Huron	91	145	1.04	1.09	11.9	10.6	34.1	11.55	0.09	346,485	3.93
Battle Creek	85	87	1.04	1.08	15.6	27.8	46.2	21.52	0.17	210,859	8.77
Bay City	77	72	1.04	1.08	14.6	13.0	33.4	17.98	0.14	197,209	6.77
Benton Harbon-St Joseph	63	63	1.04	1.08	11.6	20.7	34.4	21.85	0.17	129,405	10.64
Monroe	55	70	1.04	1.07	15.5	27.5	45.8	29.30	0.23	201,338	9.10
Michigan (Urban Area)	6,732	7,666			1,785.3	3,668.0	$27,125.0	$150.71	$1.21	122,861,289	$8.83

Minnesota

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Minnesota needs just over 2,530 new lane-miles at a total cost of $7.7 billion, in today's dollars. That's a cost of $94 per resident each year. Minnesota ranks 13th out of 50 states and the District of Columbia in terms of most lane-miles needed and 14th in the total cost of those improvements. If the state made these improvements, it would save 155 million hours per year that are now wasted in traffic jams.

Minnesota is home to the 21st most congested city in the United States, Minneapolis-St. Paul (which shares this 'honor' with Boston), where the Travel Time Index (TTI) is 1.34. This means that driving times during peak traffic hours are 34 percent longer than during off-peak times. Unless major steps are taken to relieve congestion, drivers in the Twin Cities can expect to see a TTI of 1.76 by 2030, meaning they will experience travel delays worse than present-day Los Angeles.

Minneapolis-St. Paul could significantly reduce congestion by adding about 2,400 new lane-miles by 2030 at an estimated cost of $7.6 billion in today's dollars. This includes the costs of adding 5 percent of the new capacity by building elevated roadways and tunnels, which will be necessary in a densely settled location like Minneapolis-St. Paul.

This investment would save an estimated 153 million hours per year that are now lost sitting in Twin City traffic, at a cost of just $1.97per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

While $7.6 billion may sound like an exceptionally large investment, it is actually 86 percent of the amount that the Minneapolis-St. Paul area's Metropolitan Planning Organization (MPO) already plans to spend in their long-range transportation plan. The Metropolitan Council of the Twin Cities Area (the region's MPO) plans to spend approximately $8.8 billion during the next 25 years—$5.6 billion on highway improvements, $2.6 billion on mass transit, and $0.7 billion on other projects. Approximately 4.5 percent of Twin City commuters now use mass transit, while transit spending accounts for about 30 percent of the budget.

As Table 29 shows, Minnesota's other urban areas are substantially less congested than Minneapolis-St. Paul. However, the relative increase in delay projected over the next 25 years for these cities is still quite high. (The 'delay' in the travel time is the portion of the TTI over 1.0.) In the Twin Cities, the expected increase in traffic delay from 2003 to 2030 is 124 percent, while all other smaller urban area in Minnesota listed in Table 29 can expect an increase in delay of more than 125 percent, which will be sharply felt by local commuters. With TTIs of 1.09, cities like Duluth, Rochester, and St. Cloud are facing future traffic delays similar to those currently experienced in much larger cities like Akron, Richmond-Petersburg, and Cleveland.

Table 29: Urbanized Area Congestion Needs—Minnesota

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Minneapolis-St. Paul	2,482	3,370	1.34	1.76	1,348.7	2,388.7	$7,556.8	$103.31	$0.83	153,467,726	$1.97
Duluth	127	131	1.04	1.09	18.3	36.6	48.3	14.99	0.12	343,130	5.63
Rochester	99	133	1.04	1.09	24.9	44.3	58.4	20.17	0.16	358,659	6.52
St. Cloud	95	123	1.04	1.09	34.7	61.7	81.4	29.92	0.24	340,627	9.56
Minnesota (Urban Area)	2,803	3,756			1,426.6	2,531.4	$7,744.9	$94.47	$0.76	154,510,141	$2.01

Mississippi

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Mississippi needs just over 254 new lane-miles at a total cost of $718 million, in today's dollars. That's a cost of approximately $34 per resident each year. Mississippi ranks 41st out of 50 states and the District of Columbia in terms of most lane-miles needed and 39th in the total costs of those improvements. If the state made these improvements, it would save almost 3.4 million hours per year that are now wasted in traffic jams.

As Table 30 suggests, Mississippi really does not have a significant traffic congestion problem, although there are likely to be specific sites in the state where traffic does have some major adverse impacts. The four cities in Mississippi with populations over 50,000, Jackson, Gulfport-Biloxi, Hattiesburg, and Pascagoula, all have Travel Time Indices (TTIs) in the 1.04–1.05 range. This means that driving times during peak traffic hours are 4–5 percent longer than during off-peak times. While this TTI does not reach the 1.18 level that this study identifies as severe congestion, the relative increase in delay projected over the next 25 years is 75–120 percent, which will be sharply noticed by local commuters. (The 'delay' in the travel time is that portion of the TTI over 1.0.) To put things into perspective, TTIs of around 1.10 reflect current traffic in the much larger cities of Buffalo and Pittsburgh, while 1.08 reflects current traffic in cities such as Cleveland, Richmond-Petersburg, and Spokane. Mississippi could solve this limited problem by adding 254 new lane-miles by 2030 at an estimated cost of $718 million in today's dollars.

This investment would save an estimated 3.4 million hours per year that are now lost sitting in traffic, at a yearly cost of $8.53 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 30: Urbanized Area Congestion Needs—Mississippi

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Jackson	394	496	1.05	1.11	48.2	121.5	$349.2	$31.38	$0.25	2,119,320	$6.59
Gulfport-Biloxi	216	284	1.05	1.10	65.3	100.8	302.6	48.41	0.39	936,023	12.93
Hattiesburg	73	97	1.04	1.07	17.9	24.7	48.0	22.52	0.18	165,438	11.60
Pascagoula	60	75	1.04	1.07	8.1	7.2	18.7	11.06	0.09	149,338	5.01
Mississippi (Urban Area)	743	953			139.5	254.2	$718.4	$33.89	$0.27	3,370,119	$8.53

Missouri

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Missouri needs just over 1,970 new lane-miles at a total cost of $4.6 billion, in today's dollars. That's a cost of approximately $42 per resident each year. Missouri ranks 15th out of 50 states and the District of Columbia in terms of most lane-miles needed and 20th in the total costs of those improvements. If the state made these improvements, it would save over 79 million hours per year that are now wasted in traffic jams.

Missouri has one city that currently suffers from severe congestion, which this study identifies as those areas with Travel Time Indices (TTIs) of 1.18 or higher. The St. Louis area on the eastern edge of the state is tied with three other cities (Memphis, San Antonio and Cincinnati) as the 35th most congested region in the United States, with a Travel Time Index (TTI) of 1.22. This means that driving times during peak traffic hours are 22 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in St. Louis can expect to see a TTI of 1.42 by 2030. For an idea of how severe that level of congestion would be, note that this projection is worse than the traffic delays experienced today in all but five cities in the United States: Atlanta, Washington, DC, Chicago, San Francisco and Los Angeles.

As Table 31 suggests, the picture is a little better for Kansas City which is projected to see a TTI of 1.33 by 2030, which reflects traffic delays similar to those experienced currently in the larger cities of Tampa-St. Petersburg and Minneapolis-St. Paul.

But Missouri can significantly reduce these congestion problems by adding about 1,970 new lane-miles by 2030 at an estimated cost of $4.6 billion in today's dollars. This investment would save an estimated 79 million hours per year that are now lost sitting in traffic, at a yearly cost of $2.32 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

The other cities in Missouri with populations above 50,000 (Springfield, Columbia, St. Joseph, and Joplin) are currently much less congested than St. Louis and Kansas City, with TTIs in the 1.04–1.05 range. However, the relative increase in delay projected over the next 25 years for these cities is still quite high, at 100 percent or more. Such a significant increase will be sharply felt by local commuters. (The 'delay' in the travel time is the portion of the TTI over 1.0.) With TTIs of 1.08 and 1.09, small cities like St. Joseph and Columbia are facing future traffic delays similar to those currently experienced in much the much larger cities of Dayton and Cleveland, respectively.

Table 31: Urbanized Area Congestion Needs—Missouri

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
St. Louis	2,067	2,324	1.22	1.42	541.5	830.6	$2,239.5	$40.80	$0.33	45,473,175	$1.97
Kansas City	1,434	1,859	1.11	1.33	519.6	955.0	2,083.7	50.62	0.40	31,688,133	2.63
Springfield	181	258	1.05	1.10	33.8	72.2	92.8	16.90	0.14	755,358	4.92
Columbia	94	128	1.04	1.09	37.8	59.0	84.7	30.55	0.24	313,102	10.82
St Joseph	80	89	1.04	1.08	12.5	22.2	25.6	12.15	0.10	215,538	4.75
Joplin	74	100	1.04	1.08	18.5	33.0	38.1	17.55	0.14	231,419	6.58
Missouri (Urban Area)	3,930	4,757			1,163.7	1,972.0	$4,564.3	$42.03	$0.34	78,676,726	$2.32

Montana

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Montana needs just 31 new lane-miles at a total cost of $57 million, in today's dollars. That's a cost of approximately $8 per resident each year. Montana ranks 50th out of 50 states and the District of Columbia in terms of most lane-miles needed and 49th in the total costs of those improvements. If the state made these improvements, it would save almost 708 thousand hours per year that are now wasted in traffic jams.

As Table 32 suggests, Montana really does not have a significant traffic congestion problem, although there are likely to be specific sites in the state where traffic does have some major adverse impacts. The three cities in Montana with populations over 50,000, Billings, Missoula, and Great Falls, have Travel Time Indices (TTIs) of 1.04. This means that driving times during peak traffic hours are 4 percent longer than during off-peak times. While this TTI does not reach the 1.18 level that this study identifies as severe congestion, the relative increase in delay projected over the next 25 years is 100–125 percent, which will be sharply noticed by local commuters. (The 'delay' in the travel time is that portion of the TTI over 1.0.) To put things into perspective, TTIs of around 1.08 reflect current traffic in much larger cities such as Cleveland, Richmond-Petersburg, and Spokane. Montana could solve this limited problem by adding just 31 new lane-miles by 2030 at an estimated cost of $57 million in today's dollars.

This investment would save an estimated 708 thousand hours per year that are now lost sitting in traffic, at a yearly cost of $3.21 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 32: Urbanized Area Congestion Needs—Montana

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Billings	105	131	1.04	1.09	10.6	9.5	$23.7	$8.01	$0.06	355,349	$2.66
Missoula	74	99	1.04	1.08	9.0	17.0	23.1	10.69	0.09	219,002	4.22
Great Falls	66	63	1.04	1.08	4.8	4.2	10.2	6.29	0.05	134,081	3.03
Montana (Urban Area)	245	293			24.4	30.7	$56.9	$8.46	$0.07	708,432	$3.21

Nebraska

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Nebraska needs almost 966 new lane-miles at a total cost of $1.7 billion, in today's dollars. That's a cost of approximately $70 per resident each year. Nebraska ranks 29th out of 50 states and the

District of Columbia in terms of most lane-miles needed and 33rd in the total costs of those improvements. If the state made these improvements, it would save over 11 million hours per year that are now wasted in traffic jams.

Nebraska has one city that currently suffers from severe congestion, which this study identifies as those areas with Travel Time Indices (TTIs) of 1.18 or higher. The Omaha area in eastern Nebraska is tied with three other areas (Nashville, Jacksonville, and Fort-Myers-Cape Coral) as the 49th most congested region in the United States, with a Travel Time Index (TTI) of 1.18. This means that driving times during peak traffic are 18 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in this part of Nebraska can expect to see a TTI of 1.36 by 2030. For an idea of how severe that level of congestion would be, note that this projection is comparable to the traffic delays experienced today in places like Phoenix, Dallas-Fort Worth, and Baltimore. But Nebraska can significantly reduce these congestion problems by adding about 966 new lane-miles by 2030 at an estimated cost of $1.7 billion in today's dollars.

This investment would save an estimated 11 million hours per year that are now lost sitting in traffic, at a yearly cost of $6.20 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

As Table 33 shows, the other urban area in Nebraska with a population over 50,000, Lincoln, is currently much less congested than Omaha, with a TTI of 1.05. However, the relative increase in delay projected over the next 25 years for Lincoln is 100 percent, which will be sharply felt by local commuters. (The 'delay' in the travel time is the portion of the TTI over 1.0.) With a TTI of 1.10, Lincoln is facing future traffic delays similar to those currently experienced in much larger cities like Buffalo, Pittsburgh, and Cleveland.

Table 33: Urbanized Area Congestion Needs—Nebraska

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Omaha	625	805	1.18	1.36	225.8	898.0	$1,588.8	$88.90	$0.71	9,909,968	$6.41
Lincoln	227	302	1.05	1.10	35.9	67.6	116.2	17.58	0.14	1,094,760	4.25
Nebraska (Urban Area)	852	1,107			261.7	965.6	$1,705.0	$69.64	$0.56	11,004,728	$6.20

Nevada

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Nevada needs just over 919 new lane-miles at a total cost of $2.3 billion, in today's dollars. That's a cost of $71 per resident each year. Nevada ranks 31st out of 50 states and the District of Columbia in terms of most lane-miles needed and 31st in the total cost of those improvements. If the state made these improvements, it would save 62 million hours per year that are now wasted in traffic jams.

Nevada is home to the tenth most congested city in the United States, Las Vegas (tied with New York City for this honor), where the Travel Time Index (TTI) is 1.39. This means that driving times during peak traffic hours are 39 percent longer than during off-peak times. However, unless major steps are taken to relieve congestion, drivers in Sin City can expect to see a TTI of 1.79 by 2030, meaning they will experience travel delays far worse than even present-day Los Angeles.

Las Vegas could significantly reduce congestion by adding about 688 new lane-miles by 2030 at an estimated cost of $1.4 billion in today's dollars. This investment would save an estimated 52 million hours per year that are now lost sitting in Las Vegas traffic, at a cost of $1.11 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

As Table 34 shows, Nevada's other urban area with a population over 50,000, Reno, is currently substantially less congested than Las Vegas, with a very reasonable TTI of 1.05. However, this TTI is expected to jump to 1.39 over the next 25 years to about where Las Vegas is today. This is an increase in delay of a whopping 680 percent, which will be quite a shock to the local commuters. (The 'delay' in the travel time is the portion of the TTI over 1.0.) In contrast, the increase of delay in the Las Vegas area is 'only' about 100 percent, which is more than enough to grab drivers' attention.

Table 34: Urbanized Area Congestion Needs—Nevada

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Las Vegas	876	1,029	1.39	1.79	198.0	688.4	$1,447.8	$60.79	$0.49	52,206,028	$1.11
Reno	271	453	1.05	1.39	82.8	230.4	871.4	96.23	0.77	9,590,759	3.63
Nevada (Urban Area)	1,147	1,483			280.8	918.7	$2,319.3	$70.55	$0.56	61,796,787	$1.50

New Hampshire

To significantly reduce today's severe congestion and prepare for growth expected by 2030, New Hampshire needs some 218 new lane-miles at a total cost of $302 million, in today's dollars. That's a cost of approximately $27 per resident each year. New Hampshire ranks 43rd out of 50 states and the District of Columbia in terms of most lane-miles needed and 43rd in the total costs of those improvements. If the state made these improvements, it would save over 1.8 million hours per year that are now wasted in traffic jams.

As Table 35 suggests, New Hampshire really does not have a significant traffic congestion problem, although there are likely to be specific sites in the state where traffic does have some major adverse impacts. The three cities in New Hampshire with populations over 50,000, Nashua, Manchester, and Portsmouth-Dover, all have Travel Time Indices (TTIs) of 1.04. This means that driving times during peak traffic hours is 4 percent longer than during off-peak times. While this TTI does not reach the 1.18 level that this study identifies as severe congestion, the relative increase in delay projected over the next 25 years is 125 percent, which will be sharply noticed by local commuters. (The 'delay' in the travel time is that portion of the TTI over 1.0.) To put things into perspective, TTIs of around 1.09, reflect current traffic in cities such as Cleveland, Richmond-Petersburg, and Spokane. New Hampshire could solve this limited problem by adding 218 new lane-miles by 2030 at an estimated cost of $302 million in today's dollars.

This investment would save an estimated 1.8 million hours per year that are now lost sitting in traffic, at a yearly cost of $6.71 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 35: Urbanized Area Congestion Needs—New Hampshire

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Nashua	137	184	1.04	1.09	44.9	79.8	$94.2	$23.49	$0.19	705,416	$5.34
Manchester	127	171	1.04	1.09	59.7	84.2	138.8	37.31	0.30	559,934	9.91
Portsmouth-Dover	127	166	1.04	1.09	36.9	54.1	69.3	18.91	0.15	537,532	5.15
New Hampshire (Urban Area)	391	521			141.5	218.1	$302.3	$26.53	$0.21	1,802,882	$6.71

New Jersey

To significantly reduce today's severe congestion and prepare for growth expected by 2030, New Jersey needs just over 388 new lane-miles (outside of the New York City and Philadelphia metro areas) at a total cost of $650 million, in today's dollars. That's a cost of approximately $32 per resident each year. New Jersey ranks 36th out of 50 states and the District of Columbia in terms of most lane-miles needed and 40th in the total costs of those improvements. If the state made these improvements, it would save almost 4 million hours per year that are now wasted in traffic jams.

As noted above, this total does not include the New York City-Newark metropolitan area. This region is the tenth most congested urbanized area in the United States, sharing this ‘honor’ with Las Vegas. Here, the Travel Time Index (TTI) is 1.39. This means that driving times during peak traffic are 39 percent longer than during off-peak times. Only nine cities in the United States have worse traffic, and unless major steps are taken to relieve congestion, drivers in this region can expect to see a TTI of 1.74 by 2030. This means they will experience travel delays similar to those in present-day Los Angeles.

New York City-Newark needs about 2,400 new lane-miles by 2030 at an estimated cost of $38.5 billion in today’s dollars. (This includes the costs of adding 15 percent of the new capacity by building elevated roadways and tunnels, which will be necessary in a densely settled location like NYC.) This investment would save an estimated 1,248 million hours per year that are now lost sitting in NYC traffic, at a cost of just $1.24 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

The New Jersey totals also do not include the Camden region, which falls in the Philadelphia metropolitan area, the 25th most congested urbanized area in the United States. The Travel Time Index (TTI) here is 1.32, and unless major steps are taken to relieve congestion, Philly drivers can expect to see a TTI of 1.61 by 2030. This level of congestion is worse than any present-day city in the United States with the exception of Los Angeles, which has a TTI of 1.75.

The Philadelphia region needs about 1,900 new lane-miles by 2030 at an estimated cost of $19.6 billion in today’s dollars. (This includes the costs of adding 5 percent of the new capacity by building elevated roadways and tunnels, which will be necessary in a densely settled location like Philadelphia.) If they would make this level of investment, city leaders would save an estimated 209 million hours per year that are now lost sitting in traffic, at a cost of $3.75 per delay-hour saved.

As Table 36 suggests, the picture is somewhat better for the other cities in New Jersey with populations over 50,000. But while less congested, the relative increases in delay projected over the next 25 years are all 100 percent or more, as compared to increases in the Big Apple of 90 percent and Philly of 91 percent. (The ‘delay’ in the travel time is the portion of the TTI over 1.0.) Such dramatic increases in traffic will be sharply felt by local commuters. With projected TTIs of 1.08–1.12, cities like Hightstown, Atlantic City, and Trenton are facing future traffic delays similar to those currently experienced in the much larger cities of Dayton, Cleveland, and Pittsburgh, respectively.

New Jersey can significantly reduce these severe congestion problems by adding about 388 new lane-miles by 2030 at an estimated cost of $650 million in today’s dollars. (Again, this excludes New York City-Newark and Philadelphia, which are included in the New York and Pennsylvania state totals, respectively, and reflected in Table 37.) This investment would save an estimated 3.9 million hours per year that are now lost sitting in traffic, at a yearly cost of $6.72 per delay-hour saved.

Table 36: Urbanized Area Congestion Needs—New Jersey

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Trenton	277	335	1.05	1.12	55.4	200.4	$388.2	$50.76	$0.41	1,770,018	$8.77
Atlantic City	236	307	1.05	1.11	47.8	114.6	140.6	20.70	0.17	1,298,738	4.33
Vineland	96	107	1.04	1.08	17.2	30.7	36.2	14.27	0.11	294,117	4.92
Hightstown	72	97	1.04	1.08	36.6	29.2	70.4	33.25	0.27	313,521	8.98
Wildwood-Cape May	53	67	1.03	1.07	7.4	13.2	15.5	10.32	0.08	198,062	3.13
New Jersey (Urban Area)	734	913			164.4	388.0	$650.8	$31.60	$0.25	3,874,457	$6.72

Table 37: Urbanized Area Congestion Needs—New York-Newark and Philadelphia Metro Areas

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
New York-Newark	17,717	21,295	1.39	1.74	3,827.0	2,446.2	$38,546.7	$79.05	$0.63	1,248,296,982	$1.24
Philadelphia	5,287	5,879	1.32	1.61	1,474.8	1,928.6	$19,592.2	$140.38	$1.12	209,040,564	$3.75

New Mexico

To significantly reduce today's severe congestion and prepare for growth expected by 2030, New Mexico needs just over 550 new lane-miles at a total cost of $1.4 billion, in today's dollars. That's a cost of approximately $60 per resident each year. New Mexico ranks 35th out of 50 states and the District of Columbia in terms of most lane-miles needed and 34th in the total costs of those improvements. If the state made these improvements, it would save almost 11 million hours per year that are now wasted in traffic jams.

New Mexico has one city that currently suffers from borderline severe congestion, which this study identifies as areas with Travel Time Indices of 1.18 or higher. The Albuquerque area in central New Mexico is the 53rd most congested region in the United States, with a Travel Time Index (TTI) of 1.17. This means that driving times during peak traffic are 17 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in the Albuquerque area can expect to see a TTI of 1.36 by 2030. For an idea of how severe that level of congestion would be, note that this projection is equivalent to the traffic delays experienced today in places like Phoenix, Dallas-Fort Worth, and Baltimore. But New Mexico can significantly reduce these congestion problems by adding 550 new lane-miles by 2030 at an estimated cost of $1.4 billion in today's dollars.

This investment would save an estimated 11 million hours per year that are now lost sitting in traffic, at a yearly cost of $5.14 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

As Table 38 suggests, the picture is much better for the other three cities in New Mexico with populations over 50,000—Las Cruces, Santa Fe and Farmington—which all have TTIs in the 1.04 range. However, the relative increase in delay projected over the next 25 years for these cities is 75–100 percent, which will be sharply felt by local commuters. (The 'delay' in the travel time is the portion of the TTI over 1.0.)

Table 38: Urbanized Area Congestion Needs—New Mexico

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Albuquerque	543	766	1.17	1.36	212.0	515.2	$1,272.0	$77.74	$0.62	9,899,768	$5.14
Las Cruces	75	108	1.04	1.08	14.4	14.5	38.3	16.77	0.13	239,605	6.40
Santa Fe	65	99	1.04	1.08	13.5	18.4	29.1	14.16	0.11	236,498	4.92
Farmington	55	85	1.04	1.07	9.1	8.1	17.0	9.75	0.08	189,648	3.59
New Mexico (Urban Area)	738	1,058			248.9	556.3	$1,356.4	$60.42	$0.48	10,565,519	$5.14

New York

To significantly reduce today's severe congestion and prepare for growth expected by 2030, New York needs just over 4,500 new lane-miles at a total cost of $45 billion, in today's dollars. That's a cost of $79 per resident each year. New York ranks fifth out of 50 states and the District of Columbia in terms of most lane-miles needed and fourth in the total cost of those improvements. If the state made these improvements, it would save 1,276 million hours per year that are now wasted in traffic jams.

New York is home to the tenth most congested city in the United States, New York City-Newark (which shares this 'honor' with Las Vegas), where the Travel Time Index (TTI) is 1.39. This means that driving times during peak traffic are 39 percent longer than during off-peak times. Only nine cities in the United States have worse traffic, and unless major steps are taken to relieve congestion, drivers in the Big Apple can expect to see a TTI of 1.74 by 2030, meaning they will experience travel delays similar to those in present-day Los Angeles.

New York City-Newark could significantly reduce congestion by adding about 2,400 new lane-miles by 2030 at an estimated cost of $38.5 billion in today's dollars. This includes the costs of adding 15 percent of the new capacity by building elevated roadways and tunnels, which will be necessary in a densely settled location like NYC.

This investment would save an estimated 1,248 million hours per year that are now lost sitting in NYC traffic, at a cost of just $1.24 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

While $38.5 billion may sound like an unattainably large investment, it is actually only 12 percent of the amount that the New York City area's Metropolitan Planning Organization already plans to spend in their long-range transportation plan. The New York Metropolitan Transportation Council (the region's MPO) plans to spend approximately $327.8 billion during the next 25 years—$78.7 billion on highway improvements and $249.0 billion on mass transit. While some of the planned highway improvement funding may be used for capacity expansion, the majority is often allocated to preserving, maintaining, and operating the highway system. Transit spending is 76 percent of the budget, while about 24.9 percent of Big Apple commuters now use mass transit.

As Table 39 shows, New York's other urban areas are substantially less congested than the City. However, the relative increase in delay projected over the next 25 years for these cities is in the same range or higher than for NYC. (The 'delay' in the travel time is the portion of the TTI over 1.0.) In the Big Apple, the expected relative increase in traffic delay from 2003 to 2030 is 90 percent. However, all other smaller urban area in New York listed in Table 39 can expect an increase in delay ranging from 75–175 percent, with most 100 percent or greater. Such dramatic increases in traffic will be sharply felt by local commuters. With projected TTIs of 1.08–1.10, cities like Glens Falls, Utica, and Poughkeepsie-Newburgh are facing future traffic delays similar to those currently experienced in the much larger cities of Dayton, Cleveland, and Pittsburgh, respectively. And Buffalo and Albany are looking at traffic woes equal to or greater than present-day St. Louis.

Table 39: Urbanized Area Congestion Needs—New York

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
New York-Newark	17,717	21,295	1.39	1.74	3,827.0	2,446.2	$38,546.7	$79.05	$0.63	1,248,296,982	$1.24
Buffalo	1,123	1,011	1.10	1.26	257.1	219.5	761.5	28.54	0.23	12,663,428	2.41
Rochester	658	674	1.07	1.16	169.5	592.2	1,811.5	108.81	0.87	4,744,403	15.27
Albany	524	546	1.08	1.22	241.4	692.2	2,179.9	163.05	1.30	6,167,716	14.14
Syracuse	390	363	1.05	1.11	69.8	294.7	766.9	81.53	0.65	1,577,806	19.44
Poughkeepsie-Newburgh	206	266	1.05	1.10	80.3	139.3	452.6	76.66	0.61	1,087,775	16.64
Utica	166	134	1.04	1.09	39.7	75.1	204.9	54.71	0.44	418,690	19.58
Binghamton	137	114	1.04	1.09	15.2	15.7	131.8	41.96	0.34	369,276	14.28
Glens Falls	59	64	1.04	1.08	20.6	18.3	55.8	36.19	0.29	159,323	14.01

Table 39: Urbanized Area Congestion Needs—New York											
Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Elmira	57	49	1.04	1.07	8.9	9.4	25.5	19.15	0.15	113,759	8.96
Ithaca	52	57	1.03	1.07	5.2	9.2	18.2	13.37	0.11	107,049	6.78
New York (Urban Area)	21,089	24,573			4,734.9	4,511.8	$44,955.2	$78.76	$0.63	1,275,706,207	$1.41

North Carolina

To significantly reduce today's severe congestion and prepare for growth expected by 2030, North Carolina needs just over 4,350 new lane-miles at a total cost of $12.4 billion, in today's dollars. That's a cost of $113 per resident each year. North Carolina ranks eighth out of 50 states and the District of Columbia in terms of most lane-miles needed and 11th in the total cost of those improvements. If the state made these improvements, it would save 68 million hours per year that are now wasted in traffic jams.

North Carolina has two cities that currently suffer from severe congestion, which this study identifies as areas with Travel Time Indices (TTIs) of 1.18 or higher. The Charlotte and Raleigh-Durham areas are the 26th and 42nd most congested regions in the United States, with TTIs of 1.31 and 1.19, respectively. This means that driving times during peak traffic hours are 31 and 19 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in these parts of North Carolina can expect to see TTIs of 1.62 and 1.37 by 2030. For an idea of how severe these levels of congestion would be, projections for Charlotte are greater than traffic delays in any city in the United States but present-day Los Angeles, and those for Raleigh-Durham are equivalent to present-day Baltimore and San Jose. But North Carolina can significantly reduce these congestion problems by adding about 4,350 new lane-miles by 2030 at an estimated cost of $12.4 billion in today's dollars.

This investment would save an estimated 68 million hours per year that are now lost sitting in Tar Heel traffic, at a cost of $7.23 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

As Table 40 shows, North Carolina's other urban areas are substantially less congested than Charlotte and Raleigh-Durham. However, the relative increase in delay projected over the next 25 years for these cities is quite high, ranging from 75–200 percent. (The 'delay' in the travel time is the portion of the Congestion Index over 1.0.) Such a significant increase will be sharply felt by local commuters in these smaller cities. With TTIs of 1.09–1.10, cities like Greensboro, Wilmington, Gastonia, and Concord are facing future traffic delays similar to those currently experienced in much larger cities like Buffalo, Pittsburgh, and Cleveland.

Table 40: Urbanized Area Congestion Needs—North Carolina

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Charlotte	725	1,185	1.31	1.62	429.1	1,070.0	$2,908.1	$121.81	$0.97	40,626,254	$2.86
Raleigh	528	970	1.19	1.37	378.6	1,203.9	$4,123.9	220.29	1.76	12,767,882	12.92
Fayetteville	314	387	1.05	1.15	70.6	280.2	521.0	59.43	0.48	2,534,934	8.22
Durham	281	406	1.19	1.37	109.9	796.5	$2,442.0	284.44	2.28	5,015,482	19.48
Winston-Salem	266	362	1.05	1.11	78.9	306.5	809.3	103.17	0.83	1,327,132	24.39
Greensboro	243	333	1.05	1.10	73.7	95.1	310.5	43.13	0.35	1,273,389	9.75
Wilmington	168	278	1.04	1.10	60.5	89.6	176.6	31.65	0.25	926,991	7.62
Gastonia	135	221	1.04	1.09	69.9	130.7	253.6	57.05	0.46	671,899	15.10
Concord	131	185	1.04	1.10	64.7	127.7	267.8	67.87	0.54	655,329	16.35
Asheville	129	178	1.04	1.09	78.0	97.8	278.8	72.53	0.58	502,096	22.21
High Point	110	151	1.04	1.08	22.4	44.8	62.9	19.29	0.15	431,066	5.83
Jacksonville	104	111	1.04	1.08	10.4	18.5	25.9	9.64	0.08	418,622	2.47
Hickory	94	126	1.04	1.09	28.6	28.6	62.0	22.50	0.18	393,229	6.31
Burlington	92	132	1.04	1.08	17.8	13.3	36.6	13.09	0.10	372,937	3.93
Greenville	71	102	1.04	1.08	16.3	14.5	31.5	14.55	0.12	263,935	4.77
Goldsboro	60	67	1.04	1.07	12.0	21.3	29.9	18.78	0.15	154,543	7.73
Rocky Mount	56	64	1.04	1.07	15.6	22.6	35.7	23.87	0.19	149,132	9.58
North Carolina (Urban Area)	3,507	5,257			1,536.7	4,361.4	$12,376.0	$112.97	$0.90	68,484,850	$7.23

North Dakota

To significantly reduce today's severe congestion and prepare for growth expected by 2030, North Dakota needs over 108 new lane-miles at a total cost of $148 million, in today's dollars. That's a cost of approximately $20 per resident each year. North Dakota ranks 45th out of 50 states and the District of Columbia in terms of most lane-miles needed and 46th in the total costs of those improvements. If the state made these improvements, it would save almost 852 thousand hours per year that are now wasted in traffic jams.

As Table 41 suggests, North Dakota really does not have a significant traffic congestion problem, although there are likely to be specific sites in the state where traffic does have some major adverse impacts. The three cities in North Dakota with populations over 50,000, Fargo, Bismarck, and Grand Forks, have Travel Time Indices (TTIs) of 1.04. This means that driving times during peak traffic are 4 percent longer than during off-peak times. While this TTI does not reach the 1.18 level that this study identifies as severe congestion, the relative increase in delay projected over the next 25 years is 75–125 percent, which will be sharply noticed by local commuters. (The 'delay' in the travel time is that portion of the TTI over 1.0.) To put things into perspective, TTIs of around 1.08 reflect current traffic in much larger cities such as Cleveland, Richmond-Petersburg, and Spokane. North Dakota could solve this limited problem by adding just 108 new lane-miles by 2030 at an estimated cost of $148 million in today's dollars.

This investment would save an estimated 852 thousand hours per year that are now lost sitting in traffic, at a yearly cost of $6.96 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 41: Urbanized Area Congestion Needs—North Dakota

Urbanized Area	Popula-tion (000s) 2003	Popula-tion (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Fargo	146	187	1.04	1.09	34.9	82.6	$109.0	$26.22	$0.21	542,378	$8.04
Bismarck	74	93	1.04	1.08	11.6	10.4	20.1	9.66	0.08	201,380	4.00
Grand Forks	56	42	1.04	1.07	8.6	15.3	19.2	15.62	0.12	108,270	7.09
North Dakota (Urban Area)	276	322			55.1	108.3	$148.4	$19.86	$0.16	852,027	$6.96

Ohio

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Ohio needs just over 1,600 new lane-miles at a total cost of $5.6 billion, in today's dollars. That's a cost of $27 per resident each year. Ohio ranks 21st out of 50 states and the District of Columbia in terms of most lane-miles needed and 16th in the total cost of those improvements. If the state made these improvements, it would save 92 million hours per year that are now wasted in traffic jams.

Ohio has two cities that currently suffer from severe congestion, which this study identifies as areas with Travel Time Indices (TTIs) of 1.18 or higher. The Cincinnati and Columbus areas are the 35th and 42nd most congested regions in the United States, with TTIs of 1.22 and 1.19, respectively. This means that driving times during peak traffic hours are 22 and 19 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in these cities can expect to see TTIs of 1.47 and 1.30 by 2030. For an idea of how severe these levels of congestion would be, projections for Cincinnati are equivalent to traffic delays in present-day Atlanta, and those for Columbus are slightly less than in present-day Philadelphia. But Ohio can significantly reduce these congestion problems by adding about 1,600 new lane-miles by 2030 at an estimated cost of $5.6 billion in today's dollars.

This investment would save an estimated 92 million hours per year that are now lost sitting in traffic, at a cost of $2.44 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

As Table 42 shows, the other urban areas in Ohio with populations over 50,000 are currently substantially less congested than Cincinnati and Columbus. These other cities fall into two groups: those with TTIs around 1.09 (Cleveland, Dayton, Akron, and Toledo) and the others with TTIs around 1.04. Some of these cities have slow growth rates or are declining in population, but traffic is, nevertheless, increasing. Despite these lower numbers, the relative increase in delay projected over the next 25 years for these cities is as high (ranging from 75–133 percent) as for the two cities with severe congestion. (The 'delay' in the travel time is the portion of the TTI over 1.0.) Such a substantial increase will be sharply felt by local commuters. As points of reference, large cities like Buffalo, Pittsburgh, and Kansas City have present-day TTIs of around 1.10, so the much smaller cities of Youngstown–Warren, Canton, and Lorain-Elyria will be facing comparable traffic delays in the future.

Table 42: Urbanized Area Congestion Needs—Ohio

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Cleveland	1,792	1,792	1.09	1.21	136.8	107.9	**$555.8**	$12.41	$0.10	16,984,812	$1.31
Cincinnati	1,606	1,890	1.22	1.47	403.9	167.2	**630.8**	14.43	0.12	41,616,229	0.61
Columbus	1,195	1,572	1.19	1.30	222.6	299.9	**1,473.1**	42.59	0.34	14,682,875	4.01
Dayton	744	715	1.08	1.16	78.0	209.2	**656.4**	35.99	0.29	4,813,347	5.45
Akron	614	678	1.09	1.18	82.9	46.7	**265.3**	16.43	0.13	4,345,034	2.44
Toledo	521	529	1.10	1.22	108.3	284.2	**898.6**	68.48	0.55	4,339,185	8.28
Youngstown-Warren	444	393	1.05	1.11	48.9	127.9	**277.0**	26.48	0.21	1,465,424	7.56
Canton	286	302	1.05	1.11	31.7	102.7	**404.5**	55.08	0.44	1,108,804	14.59
Lorain-Elyria	276	418	1.05	1.11	29.7	188.0	**292.5**	33.73	0.27	1,440,944	8.12
Middletown	107	131	1.04	1.09	14.1	12.0	**31.4**	10.56	0.08	381,387	3.29
Springfield	96	88	1.04	1.08	10.9	9.6	**33.1**	14.44	0.12	254,328	5.21
Mansfield	87	88	1.04	1.08	9.6	8.1	**26.0**	11.90	0.10	233,076	4.46
Lima	81	75	1.04	1.08	6.4	5.7	**17.0**	8.75	0.07	185,266	3.67
Newark	81	172	1.04	1.09	13.7	12.4	**37.3**	11.80	0.09	384,396	3.88
Weirton-Steubenville	79	59	1.04	1.07	9.3	23.2	**36.2**	20.99	0.17	135,392	10.69
Sandusky	53	54	1.03	1.07	5.2	4.7	**14.5**	10.82	0.09	129,458	4.49
Ohio (Urban Area)	**8,062**	**8,954**			**1,212.1**	**1,609.5**	**$5,649.5**	**$26.56**	**$0.21**	**92,499,959**	**$2.44**

Oklahoma

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Oklahoma needs just over 725 new lane-miles at a total cost of $3.1 billion, in today's dollars. That's a cost of approximately $76 per resident each year. Oklahoma ranks 32nd out of 50 states and the District of Columbia in terms of most lane-miles needed and 24th in the total costs of those improvements. If the state made these improvements, it would save over 20 million hours per year that are now wasted in traffic jams.

As Table 43 suggests, Oklahoma has no cities that currently suffer from severe congestion, which this study identifies as those areas with Travel Time Indices (TTIs) of 1.18 or higher. Oklahoma City and Tulsa both have TTIs of 1.10 and Lawton has a TTI of 1.04. This means that driving times during peak traffic hours are 10 percent longer than during off-peak times in Oklahoma City and Tulsa, and 4 percent longer in Lawton. TTIs are a regional measure, so there are likely specific points throughout these cities and the state as a whole where traffic congestion is a significant problem.

Unless major steps are taken to relieve congestion, drivers in these three urban areas can expect to see by 2030, TTIs of 1.26 for Oklahoma City and Tulsa, and 1.08 for Lawton. For an idea of how severe that level of congestion would be, note that a TTI of 1.26 is worse than the traffic delays experienced today in places like St. Louis and Cincinnati, cities much larger than any in Oklahoma. (TTIs of 1.08 are experienced in present-day Dayton, OH and Laredo, TX.)

But Oklahoma can significantly reduce these congestion problems by adding about 725 new lane-miles by 2030 at an estimated cost of $3.1 billion in today's dollars. This investment would save an estimated 20 million hours per year that are now lost sitting in traffic, at a yearly cost of $6.32 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 43: Urbanized Area Congestion Needs—Oklahoma

Urbanized Area	Popula-tion (000s) 2003	Popul a-tion (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Oklahoma City	834	1,069	1.10	1.26	184.5	339.8	$1,564.8	$65.78	$0.53	12,184,687	$5.14
Tulsa	559	704	1.10	1.26	168.4	378.4	1,557.9	98.65	0.79	7,557,093	8.25
Lawton	90	71	1.04	1.08	9.9	8.7	25.2	12.51	0.10	180,745	5.57
Oklahoma (Urban Area)	1,483	1,844			362.8	727.0	$3,147.9	$75.68	$0.61	19,922,526	$6.32

Oregon

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Oregon needs just over 1,000 new lane-miles at a total cost of $3.2 billion, in today's dollars. That's a cost of approximately $43 per resident each year. Oregon ranks 26th out of 50 states and the District of Columbia in terms of most lane-miles needed and 23rd in the total costs of those improvements. If the state made these improvements, it would save over 106 million hours per year that are now wasted in traffic jams.

Oregon has one city that currently suffers from severe congestion, which this study identifies as those areas with Travel Time Indices (TTIs) of 1.18 or higher. The Portland area in the northwestern part of Oregon is tied with four other cities (Baltimore, Sacramento, San Jose, and Riverside-San Bernardino) as the 14th most congested region in the United States, with a Travel Time Index (TTI) of 1.37. This means that driving times during peak traffic hours are 37 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in Portland can expect to see a TTI of 1.75 by 2030. For an idea of how severe that level of congestion would be, note that this projection is worse than the traffic delays experienced today in places like Atlanta, Chicago, and San Francisco. Indeed, it would be equivalent to the traffic congestion in present-day Los Angeles.

As Table 44 suggests, the picture is better for Eugene and Salem, which are projected to see TTIs of 1.22 and 1.23, respectively, by 2030, which reflect traffic delays similar to those experienced currently in the much larger cities of St. Louis and Cincinnati. But Oregon can significantly reduce these congestion problems by adding about 1,000 new lane-miles by 2030 at an estimated cost of $3.2 billion in today's dollars.

This investment would save an estimated 106 million hours per year that are now lost sitting in traffic, at a yearly cost of $1.20 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

The other cities in Oregon with populations above 50,000 (Medford, Bend, and Corvallis) are currently much less congested than those named above. However, the relative increase in delay projected over the next 25 years for these cities is almost as high, at 100 percent or more. Such a significant increase will be sharply felt by local commuters. (The 'delay' in the travel time is the portion of the TTI over 1.0.)

Table 44: Urbanized Area Congestion Needs—Oregon											
Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Portland	1,685	2,513	1.37	1.75	495.6	771.6	$2,692.6	$51.31	$0.41	101,563,090	$1.06
Eugene	239	303	1.11	1.22	61.5	115.7	233.5	34.44	0.28	1,927,999	4.84
Salem	214	311	1.11	1.23	38.7	50.0	110.1	16.76	0.13	2,112,263	2.08
Medford	101	146	1.04	1.09	17.0	30.2	43.0	13.95	0.11	341,801	5.04
Bend	70	131	1.04	1.08	34.9	31.4	68.7	27.40	0.22	236,471	11.62
Corvallis	63	74	1.04	1.08	11.9	21.1	30.1	17.57	0.14	190,008	6.34
Oregon (Urban Area)	2,372	3,478			659.6	1,020.1	$3,178.0	$43.46	$0.35	106,371,631	$1.20

Pennsylvania

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Pennsylvania needs just over 4,450 new lane-miles at a total cost of $26 billion, in today's dollars. That's a cost of $99 per resident each year. Pennsylvania ranks sixth out of 50 states and the District of Columbia in terms of most lane-miles needed and seventh in the total cost of those improvements. If the state made these improvements, it would save 247 million hours per year that are now wasted in traffic jams.

Pennsylvania is home to the 25th most congested city in the United States, Philadelphia, where the Travel Time Index (TTI) is 1.32. This means that driving times during peak traffic hours are 32 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in the City of Brotherly Love can expect to see a TTI of 1.61 by 2030, meaning they will experience travel delays worse than any present-day city in the United States with the exception of Los Angeles, which has a TTI of 1.75.

Philadelphia could significantly reduce congestion by adding about 1,900 new lane-miles by 2030 at an estimated cost of $19.6 billion in today's dollars. This includes the costs of adding 5 percent of the new capacity by building elevated roadways and tunnels, which will be necessary in a densely settled location like Philadelphia.

This investment would save an estimated 209 million hours per year that are now lost sitting in Philadelphia traffic, at a cost of $3.75 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

While $19.6 billion may sound like an unattainably large investment, it is actually only 34 percent of the amount that the Philadelphia area's Metropolitan Planning Organization (MPO) already plans to spend in their long-range transportation plan. The Delaware Valley Regional Planning Commission (the region's MPO) plans to spend approximately $57.4 billion during the next 25 years—$21.9 billion on highway improvements, $22.8 billion on mass transit, and $12.7 billion on other projects. While some of the planned highway improvement funding may be used for capacity expansion, the majority is often allocated to preserving, maintaining, and operating the highway system. About 40 percent of the spending will be for transit, while approximately 9.7 percent of Philly commuters now use mass transit.

As Table 45 shows, Pennsylvania's other urban areas are substantially less congested than Philadelphia. Even though population growth is slower, traffic is predicted to increase. However, the relative increase in delay projected over the next 25 years for most of these cities is actually higher than that for Philadelphia. (The 'delay' in the travel time is the portion of the TTI over 1.0.) In Philadelphia, the expected relative increase in traffic delay from 2003 to 2030 is 91 percent. However, most of the other cities listed in Table 45 can expect an increase in delay of 100 percent or more, which will be sharply felt by local commuters. With TTIs of 1.10, cities like Erie and York are facing future traffic delays similar to those currently experienced in much larger cities like Buffalo, Pittsburgh, and Cleveland.

Table 45: Urbanized Area Congestion Needs—Pennsylvania

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Philadelphia	5,287	5,879	1.32	1.61	1,474.8	1,928.6	$19,592.2	$140.38	$1.12	209,040,564	$3.75
Pittsburgh	1,793	1,630	1.10	1.26	350.6	377.2	1,085.1	25.36	0.20	21,306,234	2.04
Bethlehem	579	702	1.14	1.26	192.8	766.1	1,701.2	106.24	0.85	5,812,381	11.71
Scranton-Wilkes-Barre	378	327	1.05	1.11	41.9	256.3	478.9	54.34	0.43	1,198,564	15.98
Harrisburg	334	378	1.05	1.11	77.5	303.2	896.8	100.73	0.81	1,523,306	23.55
Lancaster	323	399	1.05	1.18	77.7	365.9	797.0	88.32	0.71	3,546,393	8.99
Reading	250	314	1.05	1.12	86.0	163.4	366.1	51.95	0.42	1,357,042	10.79
Erie	197	201	1.05	1.10	23.4	60.3	110.5	22.20	0.18	617,110	7.16
York	196	249	1.05	1.10	52.2	123.6	237.7	42.76	0.34	889,983	10.69
Altoona	85	77	1.04	1.08	8.6	15.4	28.1	13.86	0.11	190,487	5.91
Pottstown	78	68	1.04	1.09	10.6	18.8	34.5	18.86	0.15	284,804	4.84
Monessen	75	68	1.04	1.08	4.9	4.4	17.7	9.88	0.08	178,919	3.95
State College	75	89	1.04	1.08	9.4	16.7	30.6	14.89	0.12	189,760	6.45
Williamsport	71	65	1.04	1.08	12.2	10.8	39.0	22.90	0.18	151,745	10.29
Johnstown	70	55	1.04	1.07	8.7	15.6	28.5	18.33	0.15	118,113	9.67
Lebanon	68	77	1.04	1.08	8.7	15.4	28.2	15.54	0.12	242,563	4.66
Uniontown-Connellsville	67	61	1.04	1.08	6.2	5.6	21.6	13.52	0.11	136,650	6.33
Hazleton	52	59	1.03	1.07	9.8	17.4	**31.9**	22.98	0.18	111,522	11.43
Pennsylvania (Urban Area)	**9,978**	**10,698**			**2,456.1**	**4,464.6**	**$25,525.7**	**$98.76**	**$0.79**	**246,896,139**	**$4.14**

Rhode Island

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Rhode Island needs some 257 new lane-miles at a total cost of $848 million, in today's dollars. That's a cost of approximately $26 per resident each year. Rhode Island ranks 40th out of 50 states and the District of Columbia in terms of most lane-miles needed and 37th in the total costs of those improvements. If the state made these improvements, it would save 19 million hours per year that are now wasted in traffic jams.

Rhode Island has one major metropolitan area and it currently suffers from severe congestion, which this study identifies as areas with Travel Time Indices of 1.18 or higher. The Providence-Fall River-Newport area in eastern Rhode Island is tied with six other cities as the 42nd most congested region in the United States, with a Travel Time Index (TTI) of 1.19. This means that driving times during peak traffic are 19 percent longer than during off-peak times.
Unless major steps are taken to relieve congestion, drivers in the Providence area can expect to see a TTI of 1.36 by 2030. For an idea of how severe that level of congestion would be, note that this projection is equivalent to the traffic delays experienced today in places like Phoenix, Dallas-Fort Worth, and Baltimore. But Rhode Island can significantly reduce these congestion problems by adding 257 new lane-miles by 2030 at an estimated cost of $848 million in today's dollars.

This investment would save an estimated 19 million hours per year that are now lost sitting in traffic, at a yearly cost of $1.83 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 46: Urbanized Area Congestion Needs—Rhode Island

Urbanized Area	Popula-tion (000s) 2003	Popul a-tion (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Providence-Fall River	1,218	1,411	1.19	1.36	266.5	257.0	$848.0	$25.81	$0.21	18,540,447	$1.83
Rhode Island (Urban Area)	1,218	1,411			266.5	257.0	$848.0	$25.81	$0.21	18,540,447	$1.83

South Carolina

To significantly reduce today's severe congestion and prepare for growth expected by 2030, South Carolina needs just over 1,900 new lane-miles at a total cost of $4.9 billion, in today's dollars. That's a cost of approximately $97 per resident each year. South Carolina ranks 17th out of 50 states and the District of Columbia in terms of most lane-miles needed and 18th in the total costs of those improvements. If the state made these improvements, it would save over 19 million hours per year that are now wasted in traffic jams.

South Carolina has one city that currently suffers from severe congestion, which this study identifies as those areas with Travel Time Indices (TTIs) of 1.18 or higher. The port city of Charleston is the 41st most congested region in the United States, with a TTI of 1.20. This means that driving times during peak traffic are 20 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in Charleston can expect to see a TTI of 1.34 by 2030. For an idea of how severe that level of congestion would be, note that this projection is equivalent to the traffic delays experienced today in places like Minneapolis-St. Paul, Boston, and Phoenix. But South Carolina can significantly reduce this congestion problem by adding about 1,900 new lane-miles by 2030 at an estimated cost of $4.9 billion in today's dollars.

This investment would save an estimated 19 million hours per year that are now lost sitting in traffic, at a yearly cost of $10.04 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

As Table 47 suggests, the other cities in South Carolina with populations over 50,000 are currently much less congested than Charleston and have TTIs in the 1.04–1.06 range. However, the relative increase in delay projected over the next 25 years for these cities is 100 percent or more, with Myrtle Beach and Columbia facing dramatic increases of 600 percent and 250 percent, respectively. (The 'delay' in the travel time is the portion of the TTI over 1.0.) Such significant increases will be sharply felt by local commuters. With TTIs of 1.08, small cities like Anderson and Florence are facing future traffic delays similar to those currently experienced in much larger cities like Dayton, OH and Spokane, WA.

Table 47: Urbanized Area Congestion Needs—South Carolina

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Charleston	432	515	1.20	1.34	192.5	564.9	$1,408.5	$119.05	$0.95	6,334,770	$8.89
Columbia	429	583	1.06	1.21	139.2	367.4	1,115.8	88.21	0.71	6,576,323	6.79
Greenville	308	426	1.05	1.12	142.8	656.1	1,539.9	167.87	1.34	1,913,619	32.19
Spartanburg	148	189	1.04	1.10	23.0	59.3	96.4	22.91	0.18	628,144	6.14
Myrtle Beach	125	219	1.04	1.28	95.4	117.7	377.2	87.65	0.70	3,015,002	5.00
Anderson	72	96	1.04	1.08	25.7	28.0	61.3	29.26	0.23	253,389	9.67
Rock Hill	71	111	1.04	1.08	73.0	80.1	174.6	76.64	0.61	309,242	22.58
Florence	69	81	1.04	1.08	23.5	41.9	68.1	36.43	0.29	211,971	12.85
Sumter	66	67	1.04	1.08	10.8	19.1	31.1	18.73	0.15	166,732	7.47

Table 47: Urbanized Area Congestion Needs—South Carolina											
Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
South Carolina (Urban Area)	1,720	2,285			725.8	1,934.4	$4,872.8	$97.33	$0.78	19,409,192	$10.04

South Dakota

To significantly reduce today's severe congestion and prepare for growth expected by 2030, South Dakota needs some 50.6 new lane-miles at a total cost of $57 million, in today's dollars. That's a cost of approximately $10 per resident each year. South Dakota ranks 48th out of 50 states and the District of Columbia in terms of most lane-miles needed and 48th in the total costs of those improvements. If the state made these improvements, it would save almost 721 thousand hours per year that are now wasted in traffic jams.

As Table 48 suggests, South Dakota really does not have a significant traffic congestion problem, although there are likely to be specific sites in the state where traffic does have some major adverse impacts. The two cities in South Dakota with populations over 50,000, Sioux Falls and Rapid City, have Travel Time Indices (TTIs) of 1.04. This means that driving times during peak traffic are 4 percent longer than during off-peak times. While this TTI does not reach the 1.18 level that this study identifies as severe congestion, the relative increase in delay projected over the next 25 years is 75–125 percent, which will be sharply noticed by local commuters. (The 'delay' in the travel time is that portion of the TTI over 1.0.) To put things into perspective, TTIs of around 1.08 reflect current traffic in cities such as Cleveland, Richmond-Petersburg, and Spokane. South Dakota could solve this limited problem by adding just 50.6 new lane-miles by 2030 at an estimated cost of $57 million in today's dollars.

This investment would save an estimated 721 thousand hours per year that are now lost sitting in traffic, at a yearly cost of $3.16 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 48: Urbanized Area Congestion Needs—South Dakota											
Urbanized Area	Popula-tion (000s) 2003	Popul a-tion (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Sioux Falls	130	191	1.04	1.09	13.8	35.6	$37.0	$9.22	$0.07	547,919	$2.70
Rapid City	60	69	1.04	1.07	12.7	15.0	19.9	12.38	0.10	173,149	4.60
South Dakota (Urban Area)	190	260			26.5	50.6	$56.9	$10.12	$0.08	721,068	$3.16

Tennessee

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Tennessee needs just over 2,750 new lane-miles at a total cost of $5.0 billion, in today's dollars. That's a cost of approximately $51 per resident each year. Tennessee ranks 12th out 50 states and the District of Columbia in terms of most lane-miles needed and 17th in the total costs of those improvements. If the state made these improvements, it would save over 47 million hours per year that are now wasted in traffic jams.

Tennessee has two cities that currently suffer from severe congestion, which this study identifies as areas with Travel Time Indices (TTIs) of 1.18 or higher. The Memphis and Nashville-Davidson areas are the 35th and 49th most congested regions in the United States, with TTIs of 1.22 and 1.18, respectively. This means that driving times during peak traffic hours are 22 and 18 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in these parts of Tennessee can expect to see TTIs of 1.40 and 1.34 by 2030. For an idea of how severe these levels of congestion would be, projections for Memphis are equivalent to traffic delays in present-day Denver and San Diego, and those for Nashville-Davidson are equivalent to present-day Minneapolis-St. Paul and Boston. But Tennessee can significantly reduce these congestion problems by adding about 2,750 new lane-miles by 2030 at an estimated cost of $5.0 billion in today's dollars.

This investment would save an estimated 47 million hours per year that are now lost sitting in traffic, at a yearly cost of $4.25 per delay-hour saved. The annual cost to relieve severe congestion in the Memphis and Nashville areas alone are significantly lower, at $1.93 and $2.85 per delay hour saved, respectively. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

As Table 49 suggests, the other cities in Tennessee with populations of over 50,000 are currently less congested than Memphis and Nashville, with TTIs in the 1.04–1.05 range. However, the relative increase in delay projected over the next 25 years for these cities is between 75–280 percent, which will be sharply felt by local commuters. (The 'delay' in the travel time is the portion of the TTI over 1.0.) With TTIs of 1.09, cities like Clarksville and Johnson City are facing future traffic delays similar to those currently experienced in much larger cities like Buffalo, Pittsburgh, and Cleveland.

Table 49: Urbanized Area Congestion Needs—Tennessee

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Memphis	996	1,277	1.22	1.40	355.1	544.8	**$1,001.5**	$35.25	$0.28	20,744,360	$1.93
Nashville-Davidson	964	1,433	1.18	1.34	445.5	592.8	**1,213.1**	40.50	0.32	17,014,895	2.85
Knoxville	438	572	1.05	1.19	229.2	706.6	**1,383.8**	109.57	0.88	5,314,432	10.42
Chattanooga	349	425	1.05	1.11	125.2	644.8	**1,031.4**	106.64	0.85	1,739,245	23.72
Clarksville	139	193	1.04	1.09	23.2	58.0	**77.1**	18.55	0.15	609,979	5.06
Johnson City	104	133	1.04	1.09	10.7	21.4	**27.9**	9.43	0.08	357,628	3.12
Kingsport	100	113	1.04	1.09	23.6	45.4	**60.6**	22.73	0.18	319,400	7.59
Jackson	70	93	1.04	1.08	22.2	38.6	**51.1**	25.09	0.20	229,931	8.88
Bristol	62	70	1.04	1.08	7.7	15.4	**20.2**	12.20	0.10	172,031	4.69
Cleveland	58	79	1.04	1.08	30.0	53.4	**69.7**	40.70	0.33	179,088	15.57
Morristown	54	78	1.04	1.07	18.3	32.7	**42.7**	25.87	0.21	208,934	8.17
Tennessee (Urban Area)	**3,334**	**4,467**			**1,290.6**	**2,753.8**	**$4,979.1**	**$51.06**	**$0.41**	**46,889,922**	**$4.25**

Texas

Texas is home to five of the 53 most congested cities in America. The Lone Star State is expected to add another 6.7 million people in its urbanized areas by 2030, and traffic congestion is a serious threat to its economic health. To reduce today's congestion and prepare for growth expected by 2030, Texas needs almost 13,000 new lane-miles at a total cost of $49 billion, in today's dollars. That's a cost of approximately $118 per resident each year. Texas ranks second out 50 states and the District of Columbia in terms of most lane-miles needed and third in the total costs of those improvements.

If the state made these improvements, it would save over 532 million hours per year that are now wasted in traffic jams. In addition to these time savings, there would be substantial benefits that are not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Texas has four cities that currently suffer from severe congestion and one from borderline severe congestion, which this study identifies as areas with Travel Time Indices (TTIs) of 1.18 or higher. (This means that driving times during peak traffic hours are 18 percent longer than during off-peak times.) These cities, Dallas-Fort Worth, Houston, San Antonio, Austin, and El Paso, are addressed separately below.

As Table 50 suggests, the other cities in Texas with populations of over 50,000 are currently less congested than the largest five above, with TTIs in the 1.04–1.08 range. However, the relative increase in delay projected over the next 25 years for these cities is between 75–600 percent, with Texas City and McAllen experiencing the largest increases at 600 percent and 400 percent, respectively. (The 'delay' in the travel time is the portion of the TTI over 1.0.) Such dramatic increases in traffic delays will be sharply felt by local commuters.

With projected TTIs of 1.08–1.10, cities like Texarkana, Killeen, and Amarillo are facing future traffic delays similar to those currently experienced in the much larger cities of Dayton, Cleveland, and Pittsburgh, respectively. And Texas City and McAllen are looking at worse congestion than present-day St. Louis and Cincinnati.

Dallas-Fort Worth

Dallas-Fort Worth's Travel Time Index (TTI) is expected to rise from 1.36 to 1.73 by 2030. This means that travel times during peak traffic hours will be 73 percent longer than during off-peak times. Such congested conditions are seen today only in Los Angeles, the most congested city in the United States.

Dallas-Fort Worth could significantly reduce severe congestion and have room for the incoming population growth by adding 3,650 new lane-miles by 2030 at an estimated cost of $26 billion, in today's dollars. That's a cost of $185 per resident each year. This investment would save 297 million hours each year that residents currently lose sitting in traffic, at a cost of $3.52 per delay-hour saved.

The $26 billion needed to reduce congestion is actually just 58 percent of the planned transportation spending under the Dallas-Fort Worth Metropolitan Organization (MPO) long-range plans. Those plans call for $45.1 billion over the next 25 years—$30.6 billion on highway improvements, $13.5 billion on mass transit, and $1.0 Billion on other projects. Just 1.8 percent of the regional work force now uses mass transit to commute. And yet, transit accounts for 30 percent of the area's planned transportation spending over the next 25 years. While some of the planned highway improvement funding may be used for capacity expansion, the majority is often allocated to preserving, maintaining, and operating the highway system.

Houston

Houston's Travel Time Index (TTI) is expected to rise from 1.42 to 1.61 by 2030. This means that in 2030, travel times during peak traffic hours will be 61 percent longer than during off-peak times.

Such congested conditions are seen today only in Los Angeles, the most congested city in the United States.

Houston could significantly reduce severe congestion and have room for the incoming population growth by adding 2,660 new lane-miles by 2030 at an estimated cost of $9.2 billion, in today's dollars. That's a cost of $111 per resident each year. This investment would save 134 million hours each year that residents currently lose sitting in traffic, at a cost of $2.74 per delay-hour saved.

While $9.2 billion may sound like an exceedingly large investment, it is actually just 12 percent of the planned transportation spending under the Houston-Galveston Area Council (H-GAC) long-range plans. (H-GAC is the regional Metropolitan Planning Organization, or MPO.) Those plans call for $77.3 billion over the next 25 years—$46.7 billion on highway improvements, $17.9 billion on mass transit, and $12.7 billion on other projects. While about 3.3 percent of Houston area commuters now use mass transit to commute, transit accounts for 23 percent of the area's planned spending over the next 25 years. While some of the planned highway improvement funding may be used for capacity expansion, the majority is often allocated to preserving, maintaining, and operating the highway system.

San Antonio

San Antonio's Travel Time Index (TTI) is expected to rise from 1.22 to 1.45 by 2030. This means that in 2030, travel times during peak traffic hours will be 45 percent longer than during off-peak times. Such congested conditions are similar to those in present-day Atlanta.

San Antonio could significantly reduce severe congestion and have room for the imminent growth by adding nearly 2,330 new lane-miles by 2030 at an estimated cost of $5.6 billion, in today's dollars. That's a cost of $137 per resident each year. This investment would save a 36 million hours each year that San Antonians now lose sitting in traffic, at a cost of $6.30 per delay-hour saved.

While $5.6 billion may sound like an exceedingly large investment, it is actually just 54 percent of the planned transportation spending under the San Antonio-Bexar County Metropolitan Planning Organization (MPO) long-range plans. Those plans call for $10.5 billion over the next 25 years—$6.5 billion on highway improvements and $4.0 billion on mass transit. About 2.9 percent of San Antonio area commuters now use mass transit to commute. Nonetheless, transit accounts for 38 percent of the area's planned spending over the next 25 years. While some of the planned highway improvement funding may be used for capacity expansion, the majority is often allocated to preserving, maintaining, and operating the highway system.

Austin

Austin's Travel Time Index (TTI) is expected to rise from 1.33 to 1.54 by 2030. This means that in 2030, travel times during peak traffic hours will be 54 percent longer than during off-peak times. Such congested conditions are similar to those in present-day San Francisco. Only Los Angeles and Chicago have worse traffic.

Austin could significantly reduce severe congestion by adding 1,168 new lane-miles by 2030 at an estimated cost of $2.5 billion, in today's dollars. That's a cost of $91.80 per resident each year. This investment would save 35 million hours each year that residents now lose sitting in traffic, at a cost of just $2.82 per delay-hour saved.

El Paso

El Paso's Travel Time Index (TTI) is expected to rise from 1.17 to 1.37 by 2030. This means that in 2030, travel times during peak traffic hours will be 37 percent longer than during off-peak times. Such congested conditions are a little worse than those in present-day Dallas-Fort Worth.

El Paso could significantly reduce severe congestion by adding 801 new lane-miles by 2030 at an estimated cost of $1.4 billion, in today's dollars. That's a cost of $80.16 per resident each year. This investment would save 9.2 million hours each year that residents lose sitting in traffic, at a cost of just $6.21 for each hour saved.

Table 50: Urbanized Area Congestion Needs—Texas

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Dallas-Fort Worth	4,312	7,014	1.36	1.73	2,645.5	3,656.0	$26,139.4	$184.64	$1.48	296,989,012	$3.52
Houston	2,620	3,987	1.42	1.61	3,053.7	2,664.0	9,172.5	111.07	0.89	133,989,872	2.74
San Antonio	1,333	1,963	1.22	1.45	638.2	2,330.0	5,638.7	136.85	1.09	35,799,197	6.30
Austin	757	1,391	1.33	1.54	438.9	1,168.0	2,464.7	91.80	0.73	34,964,794	2.82
El Paso	629	795	1.17	1.37	128.9	801.0	1,426.6	80.16	0.64	9,184,240	6.21
McAllen	376	676	1.05	1.25	145.9	382.0	645.8	49.10	0.39	5,269,634	4.90
Corpus Christi	295	335	1.05	1.11	93.5	280.0	862.1	109.51	0.88	1,323,177	26.06
Denton-Lewisville	277	391	1.05	1.16	130.0	467.2	865.7	103.66	0.83	3,481,204	9.95
Lubbock	206	246	1.05	1.10	22.9	78.0	150.0	26.57	0.21	753,448	7.96
Laredo	197	342	1.08	1.13	127.6	238.8	398.6	59.11	0.47	783,210	20.36
Amarillo	179	238	1.05	1.10	31.3	73.6	82.0	15.72	0.13	694,491	4.72
Waco	164	211	1.04	1.09	30.9	45.8	68.0	14.50	0.12	505,230	5.38
Brownsville	156	239	1.06	1.13	46.1	75.6	111.6	22.60	0.18	589,111	7.58
Texas City	152	173	1.04	1.28	71.4	89.1	248.0	61.10	0.49	3,431,584	2.89
Killeen	147	213	1.04	1.09	76.8	117.6	221.5	49.20	0.39	580,910	15.25
College Station-Bryan	141	188	1.04	1.09	48.0	118.1	128.2	31.15	0.25	479,966	10.68
Beaumont	122	128	1.07	1.12	27.3	30.1	68.2	21.84	0.17	435,194	6.27
Abilene	116	126	1.04	1.09	16.2	32.4	34.3	11.31	0.09	316,825	4.33
Port Arthur	103	117	1.04	1.08	9.9	8.8	17.5	6.38	0.05	267,925	2.62

Table 50: Urbanized Area Congestion Needs—Texas

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Wichita Falls	103	117	1.04	1.08	10.3	18.3	19.3	7.04	0.06	291,186	2.65
Midland	97	113	1.04	1.08	8.3	14.7	15.6	5.93	0.05	286,395	2.17
Harlingen	92	141	1.04	1.08	40.5	46.4	83.4	28.65	0.23	210,367	15.86
Odessa	91	95	1.04	1.08	9.2	8.2	13.4	5.76	0.05	208,233	2.57
Tyler	91	125	1.04	1.08	23.5	39.0	45.8	17.00	0.14	288,346	6.36
San Angelo	88	97	1.04	1.08	11.3	20.0	21.2	9.18	0.07	221,893	3.82
Longview	81	96	1.04	1.08	6.9	6.1	10.1	4.55	0.04	222,788	1.81
Temple	70	90	1.04	1.08	34.9	54.0	68.3	34.10	0.27	181,650	15.03
Texarkana	68	79	1.04	1.08	17.6	15.7	25.6	13.95	0.11	164,588	6.22
Sherman	62	88	1.04	1.07	13.5	24.1	25.4	13.61	0.11	180,335	5.64
Victoria	61	73	1.04	1.07	6.4	6.8	14.0	8.40	0.07	158,571	3.54
Galveston	58	66	1.04	1.07	20.5	19.5	30.5	19.68	0.16	138,807	8.78
Texas (Urban Area)	13,244	19,951			7,986.0	12,929.0	$49,115.9	$118.37	$0.95	532,392,181	$3.69

Utah

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Utah needs just over 948 new lane-miles at a total cost of $2.3 billion, in today's dollars. That's a cost of approximately $41 per resident each year. Utah ranks 30th out of 50 states and the District of Columbia in terms of most lane-miles needed and 30th in the total costs of those improvements. If the state made these improvements, it would save over 39 million hours per year that are now wasted in traffic jams.

Utah has one city that currently suffers from severe congestion, which this study identifies as those areas with Travel Time Indices of 1.18 or higher. The Salt Lake City area in the north-central part of Utah is the 30th most congested region in the United States, with a TTI of 1.28. This means that driving times during peak traffic hours are 28 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in this part of Utah can expect to see a TTI of 1.59 by 2030. For an idea of how severe that level of congestion would be, note that this projection is worse than the traffic delays experienced today in places like Atlanta, Chicago, and San Francisco. In fact, only one city—Los Angeles—currently has a TTI in excess of 1.59. But Utah can significantly reduce this congestion problem by adding about 948 new lane-miles in urban areas by 2030 at an estimated cost of $2.3 billion in today's dollars.

This investment would save an estimated 39 million hours per year that are now lost sitting in traffic, at a yearly cost of $2.40 per delay-hour saved. The annual cost to relieve severe congestion in the Salt Lake City area alone is significantly lower, at $1.46 per delay hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

As Table 51 suggests, the other cities in Utah with populations over 50,000 are currently less congested than Salt Lake City, with TTIs in the 1.04–1.05 range. However, the relative increase in delay projected over the next 25 years for these cities is between 100–200 percent, which will be sharply felt by local commuters. (The 'delay' in the travel time is the portion of the TTI over 1.0.) As points of comparison, Buffalo, Pittsburgh, and Cleveland have TTIs around 1.10. So future traffic delays for the Logan and St. George areas would be slightly lower and those in the Ogden-Layton and Provo-Orem areas higher than these three much larger cities.

Table 51: Urbanized Area Congestion Needs—Utah

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Salt Lake City	877	1,251	1.28	1.59	318.0	477.0	$1,227.9	$46.17	$0.37	33,542,397	$1.46
Ogden-Layton	434	651	1.05	1.12	84.8	179.1	515.2	37.99	0.30	2,515,179	8.19
Provo-Orem	366	619	1.05	1.15	73.3	250.9	540.3	43.88	0.35	2,540,041	8.51
Logan	79	119	1.04	1.09	11.6	20.6	27.4	11.07	0.09	258,974	4.23
St. George	74	158	1.04	1.08	17.5	20.5	34.9	12.06	0.10	275,299	5.08
Utah (Urban Area)	1,830	2,797			505.2	948.0	$2,345.7	$40.55	$0.32	39,131,890	$2.40

Vermont

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Vermont needs some 61.5 new lane-miles at a total cost of $132 million, in today's dollars. That's a cost of approximately $35 per resident each year. Vermont ranks 47th out of 50 states and the District of Columbia in terms of most lane-miles needed and 47th in the total costs of those improvements. If the state made these improvements, it would save almost 552 thousand hours per year that are now wasted in traffic jams.

As Table 52 suggests, Vermont really does not have a significant traffic congestion problem, although there are likely to be specific sites in the state where traffic does have some major adverse impacts. The one city in Vermont with a population over 50,000, Burlington, has a Travel Time Index (TTI) of 1.04. This means that driving times during peak traffic hours is 4 percent longer than during off-peak times. While this TTI does not reach the 1.18 level that this study identifies as severe congestion, the relative increase in delay projected over the next 25 years is 125 percent, which will be sharply noticed by local commuters. (The 'delay' in the travel time is that portion of the TTI over 1.0.) To put things into perspective, TTIs of around 1.09 reflect current traffic in cities such as Cleveland, Richmond-Petersburg, and Spokane. Vermont could solve this limited problem by adding 61.5 new lane-miles by 2030 at an estimated cost of $132 million in today's dollars.

This investment would save an estimated 552 thousand hours per year that are now lost sitting in traffic, at a yearly cost of $9.56 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 52: Urbanized Area Congestion Needs—Vermont

Urbanized Area	Popula-tion (000s) 2003	Popula-tion (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Burlington	133	168	1.04	1.09	28.3	61.5	$131.8	$35.10	$0.28	551,535	$9.56
Vermont (Urban Area)	133	168			28.3	61.5	$131.8	$35.10	$0.28	551,535	$9.56

Virginia

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Virginia needs just over 989 new lane-miles (outside of the Washington, DC metro area) at a total cost of $3.1 billion, in today's dollars. That's a cost of approximately $34 per resident each year. Virginia ranks 27th out 50 states and the District of Columbia in terms of most lane-miles needed and 25th in the total costs of those improvements. If the state made these improvements, it would save almost 51 million hours per year that are now wasted in traffic jams.

Virginia has one city that currently suffers from severe congestion, which this study identifies as areas with Travel Time Indices (TTIs) of 1.18 or higher. The Virginia Beach-Norfolk area in the southeastern corner of Virginia is tied with Milwaukee as the 39th most congested region in the United States, with a TTI of 1.21. This means that driving times during peak traffic hours are 21 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in this part of Virginia can expect to see a TTI of 1.37 by 2030. For an idea of how severe that level of congestion would be, note that this projection is equivalent to the traffic delays experienced today in much larger places like Boston, Phoenix and Dallas-Fort Worth.

As Table 53 suggests, the picture is only a little better for the Richmond-Petersburg area, where the TTI is expected to jump from 1.09 to 1.27 by 2030. This portends a congestion problem worse than the present-day St. Louis or Cincinnati areas. Virginia can significantly reduce congestion by adding about 989 new lane-miles by 2030 at an estimated cost of $3.1 billion in today's dollars.

This investment would save an estimated 51 million hours per year that are now lost sitting in traffic, at a yearly cost of $2.42 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle

operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

The other cities in Virginia with populations over 50,000 are currently much less congested than the Virginia Beach-Norfolk and Richmond-Petersburg areas, with TTIs in the 1.05 range. However, the relative increase in delay projected over the next 25 years for these cities is 75–100 percent, with Fredericksburg facing a whopping 525 percent increase. (The 'delay' in the travel time is the portion of the TTI over 1.0.) Such a significant increase will be sharply felt by local commuters. With TTIs of 1.09, small cities like Lynchburg and Charlottesville are facing future traffic delays similar to those currently experienced in much larger cities like Buffalo, Pittsburgh, and Cleveland.

Table 53: Urbanized Area Congestion Needs—Virginia (except the Washington, DC Metro area)

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Virginia Beach	1,536	1,794	1.21	1.37	419.6	567.4	$1,998.6	$48.01	$0.38	27,154,810	$2.94
Richmond-Petersburg	919	1,216	1.09	1.27	158.3	176.2	499.1	18.70	0.15	16,902,190	1.18
Roanoke	207	233	1.05	1.10	25.1	64.8	109.7	19.94	0.16	843,564	5.20
Fredericksburg	168	222	1.04	1.25	69.5	110.2	289.6	59.33	0.47	4,746,229	2.44
Lynchburg	114	136	1.04	1.09	13.5	13.8	47.4	15.17	0.12	384,529	4.93
Charlottesville	92	129	1.04	1.09	14.4	13.0	44.2	16.02	0.13	324,410	5.45
Winchester	61	90	1.04	1.08	13.7	24.3	41.2	21.75	0.17	192,475	8.56
Blacksburg	58	66	1.04	1.08	7.9	7.2	22.2	14.36	0.11	155,111	5.72
Harrisonburg	58	80	1.04	1.08	8.3	7.4	25.0	14.54	0.12	172,739	5.79
Danville	56	54	1.04	1.07	5.2	4.6	14.1	10.19	0.08	123,411	4.55
Virginia (Urban Area)	3,269	4,021			735.4	988.9	$3,091.0	$33.92	$0.27	50,999,468	$2.42

Washington

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Washington needs just under 1,500 new lane-miles at a total cost of $6.9 billion, in today's dollars. That's a cost of approximately $58 per resident each year. Washington ranks 22nd out of 50 states and the District of Columbia in terms of most lane-miles needed and 15th in the total costs of those improvements. If the state made these improvements, it would save over 205 million hours per year that are now wasted in traffic jams.

Washington has one city that currently suffers from severe congestion, which this study identifies as areas with Travel Time Indices of 1.18 or higher. The Seattle-Tacoma area is tied with Detroit as the 12th most congested region in the United States, with a TTI of 1.38. This means that driving times during peak traffic hours are 38 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in this part of Washington can expect to see a TTI of 1.79 by 2030. For an idea of how severe that level of congestion would be, note that this projection is significantly worse than the traffic delays experienced today in places like Atlanta, Chicago, and San Francisco. Indeed, it is even higher than Los Angeles, the most congested area in the United States with a TTI of 1.75. But Washington can significantly reduce this congestion problem by adding about 1,500 new lane-miles by 2030 at an estimated cost of $6.9 billion in today's dollars.

This investment would save an estimated 205 million hours per year that are now lost sitting in traffic, at a yearly cost of $1.34 per delay-hour saved. The annual cost to relieve severe congestion in the Seattle area alone is significantly lower, at $0.96 per delay hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

As Table 54 suggests, the other cities in Washington with populations over 50,000 are currently less congested than the Seattle area. However, the relative increase in delay projected over the next 25 years for these cities is 88–150 percent, which will be sharply felt by local commuters. (The 'delay' in the travel time is the portion of the TTI over 1.0.) With TTIs of 1.10, cities like Bremerton, Kennewick-Richland, and Olympia-Lacey are facing future traffic delays similar to those currently experienced in much larger cities like Buffalo, Pittsburgh, and Cleveland.

Table 54: Urbanized Area Congestion Needs—Washington

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Seattle-Tacoma, WA	2,946	3,963	1.38	1.79	852.2	703.8	$4,795.6	$55.53	$0.44	200,004,461	$0.96
Spokane	357	443	1.08	1.15	80.5	518.0	1,410.9	141.11	1.13	1,875,698	30.09
Bremerton	189	250	1.05	1.10	24.4	63.0	143.0	26.09	0.21	955,172	5.99
Kennewick-Richland	167	257	1.04	1.10	25.9	49.8	173.9	32.78	0.26	770,773	9.02
Olympia-Lacey	151	221	1.04	1.10	38.6	83.9	210.0	45.17	0.36	721,351	11.65
Yakima	119	151	1.04	1.09	16.3	16.6	53.1	15.74	0.13	364,271	5.83
Bellingham	88	132	1.04	1.09	12.5	22.3	50.5	18.35	0.15	343,575	5.88
Longview	64	80	1.04	1.08	12.3	19.7	47.4	26.40	0.21	152,325	12.45
Washington (Urban Area)	4,081	5,497			1,062.8	1,477.0	$6,884.6	$57.50	$0.46	205,187,627	$1.34

West Virginia

To significantly reduce today's severe congestion and prepare for growth expected by 2030, West Virginia needs 154.3 new lane-miles at a total cost of $280 million, in today's dollars. That's a cost of approximately $22.50 per resident each year. West Virginia ranks 44th out of 50 states and the District of Columbia in terms of most lane-miles needed and 44th in the total costs of those improvements. If the state made these improvements, it would save almost 1.3 million hours per year that are now wasted in traffic jams.

As Table 55 suggests, West Virginia really does not have a significant traffic congestion problem, although there are likely to be specific sites in the state where traffic does have some major adverse impacts. There are five cities in the Mountain State with populations over 50,000, and all have Travel Time Indices (TTIs) of 1.04–1.05. This means that driving times during peak traffic are 4–5 percent longer than during off-peak times. While these TTIs do not reach the 1.18 level that this study identifies as severe congestion, the relative increase in delay projected for each city over the next 25 years (even though population growth is slow or declining) is 75–100 percent, which will be sharply noticed by local commuters. (The 'delay' in the travel time is that portion of the TTI over 1.0.) To put things into perspective, TTIs of around 1.09, reflect current traffic in much larger cities such as Cleveland, Richmond-Petersburg, and Spokane. West Virginia could solve this limited problem by adding 154.3 new lane-miles by 2030 at an estimated cost of $280 million in today's dollars.

This investment would save an estimated 1.3 million hours per year that are now lost sitting in traffic, at a yearly cost of $8.30 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 55: Urbanized Area Congestion Needs—West Virginia

Urbanized Area	Popula-tion (000s) 2003	Popula-tion (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Charleston	183	175	1.05	1.10	34.3	87.1	$149.3	$33.34	$0.27	597,141	$10.00
Huntington	103	98	1.04	1.07	9.6	16.5	28.5	11.35	0.09	179,894	6.34
Wheeling	95	81	1.04	1.09	11.8	22.6	44.8	20.38	0.16	258,431	6.93
Parkersburg	72	70	1.04	1.08	14.6	16.0	36.4	20.46	0.16	179,502	8.11
Morgantown	56	63	1.04	1.08	6.8	12.2	20.6	13.93	0.11	132,905	6.21
West Virginia (Urban Area)	509	487			77.1	154.3	$279.6	$22.46	$0.18	1,347,872	$8.30

Wisconsin

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Wisconsin needs just over 1,680 new lane-miles at a total cost of $3.0 billion, in today's dollars. That's a cost of approximately $36 per resident each year. Wisconsin ranks 19th out 50 states and the District of Columbia in terms of most lane-miles needed and 27th in the total costs of those improvements. If the state made these improvements, it would save almost 26 million hours per year that are now wasted in traffic jams.

Wisconsin has one city that suffers from severe congestion, which this study identifies as areas with Travel Time Indices (TTIs) of 1.18 or higher. The Milwaukee area in southeastern Wisconsin is tied with the Norfolk-Virginia Beach area as the 39th most congested region in the United States, with a TTI of 1.21. This means that driving times during peak traffic hours are 21 percent longer than during off-peak times.

Unless major steps are taken to relieve congestion, drivers in this part of Wisconsin can expect to see a TTI of 1.35 by 2030. For an idea of how severe that level of congestion would be, note that this projection is equivalent to the traffic delays experienced today in much larger places like Boston, Phoenix and Dallas-Fort Worth. Wisconsin can significantly reduce congestion by adding about 1,680 new lane-miles by 2030 at an estimated cost of $3.0 billion in today's dollars.

This investment would save an estimated 26 million hours per year that are now lost sitting in traffic, at a yearly cost of $4.61 per delay-hour saved. The annual cost to relieve severe congestion in the Milwaukee area alone is significantly lower, at $2.70 per delay hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

As Table 56 suggests, the other cities in Wisconsin with populations over 50,000 are currently much less congested than the Milwaukee area, with TTIs in the 1.04–1.05 range. However, the relative increase in delay projected over the next 25 years for these cities is between 75–125 percent, which will be sharply felt by local commuters. (The 'delay' in the travel time is the portion of the TTI over 1.0.) With TTIs of 1.10, cities like Madison, Appleton, and Green Bay are facing future traffic delays similar to those currently experienced in much larger cities like Buffalo, Pittsburgh, and Cleveland.

Table 56: Urbanized Area Congestion Needs—Wisconsin

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Milwaukee	1,356	1,460	1.21	1.35	399.2	564.8	$1,284.9	$36.50	$0.29	19,007,178	$2.70
Madison	345	455	1.05	1.11	86.4	346.8	683.6	68.35	0.55	2,028,093	13.48
Appleton	199	272	1.05	1.10	67.4	168.6	208.1	35.35	0.28	847,727	9.82
Green Bay	198	260	1.05	1.10	46.9	116.7	144.4	25.20	0.20	816,554	7.07
Racine	134	154	1.04	1.09	49.1	106.3	142.5	39.54	0.32	447,995	12.72
Kenosha	117	135	1.04	1.09	23.7	47.5	57.6	18.30	0.15	435,608	5.29
La Crosse	103	120	1.04	1.09	21.9	35.4	48.6	17.42	0.14	345,118	5.63
Eau Claire	99	115	1.04	1.09	21.1	42.3	51.3	19.13	0.15	300,045	6.84
Wausau	78	90	1.04	1.08	26.2	39.2	52.5	25.00	0.20	243,488	8.62
Oshkosh	74	87	1.04	1.08	15.5	23.4	31.2	15.48	0.12	218,140	5.72
Sheboygan	73	85	1.04	1.08	19.8	35.3	42.8	21.68	0.17	204,125	8.38
Janesville	71	84	1.04	1.08	20.7	36.8	44.7	23.05	0.18	244,373	7.32
Round Lake Beach-McHenry	62	73	1.04	1.08	3.8	3.4	6.3	3.75	0.03	311,034	0.81
Beloit	56	66	1.04	1.07	16.2	18.0	41.2	27.02	0.22	158,285	10.42
Fond du Lac	54	62	1.04	1.07	59.0	102.0	125.8	86.87	0.69	140,048	35.94
Wisconsin (Urban Area)	3,019	3,519			877.1	1,686.5	$2,965.5	$36.28	$0.29	25,747,812	$4.61

Wyoming

To significantly reduce today's severe congestion and prepare for growth expected by 2030, Wyoming needs some 22.4 new lane-miles at a total cost of $45 million, in today's dollars. That's a cost of approximately $13 per resident each year. Wyoming ranks 51st out of 50 states and the District of Columbia in terms of most lane-miles needed and 51st in the total costs of those improvements. If the state made these improvements, it would save almost 339 thousand hours per year that are now wasted in traffic jams.

As Table 57 suggests, Wyoming really does not have a significant traffic congestion problem, although there are likely to be specific sites in the state where traffic does have some major adverse impacts. The two cities in Wyoming with populations over 50,000, Cheyenne and Casper, have Travel Time Indices (TTIs) of 1.04. This means that driving times during peak traffic are 4 percent longer than during off-peak times. While this TTI does not reach the 1.18 level that this study identifies as severe congestion, the relative increase in delay projected over the next 25 years is 100 percent, which will be sharply noticed by local commuters. (The 'delay' in the travel time is that portion of the TTI over 1.0.) To put things into perspective, TTIs of around 1.08, reflect current traffic in cities such as Cleveland, Richmond-Petersburg, and Spokane. Wyoming could solve this limited problem by adding just 22.4 new lane-miles by 2030 at an estimated cost of $45 million in today's dollars.

This investment would save an estimated 339 thousand hours per year that are now lost sitting in traffic, at a yearly cost of $5.28 per delay-hour saved. This does not account for the additional benefits not quantified in this study, including: lower fuel use, reduced accident rates and vehicle operating costs, lower shipping costs and truck travel time reductions, greater freight reliability, and a number of benefits associated with greater community accessibility, including an expanded labor pool for employers and new job choices for workers.

Table 57: Urbanized Area Congestion Needs—Wyoming

Urbanized Area	Population (000s) 2003	Population (000s) 2030	Travel Time Index 2003	Travel Time Index 2030	Lane-Miles Over 1.0, Total 2030	TOTAL Lane-Miles Needed 2030	TOTAL Lane-Mile Costs to Relieve Severe Congestion, 2030, $M	Cost per Resident per Year	Cost per Commuter per Day	Average Annual Delay Hours Saved	Annual Cost per Delay Hour Saved
Cheyenne	70	85	1.04	1.08	12.5	11.2	$19.7	$10.16	$0.08	182,438	$4.33
Casper	59	69	1.04	1.08	12.7	11.3	25.0	15.61	0.12	156,521	6.38
Wyoming (Urban Area)	**129**	**154**			**25.3**	**22.4**	**$44.7**	**$12.62**	**$0.10**	**338,959**	**$5.28**