2014 URBAN MOBILITY REPORT

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SOUTHWEST REGION UNIVERSITY TRANSPORTATION CENTER

2014 URBAN MOBILITY REPORT
Powered by INRIX Traffic Data

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2014 Urban Mobility Report

The national "congestion recovery" continues. Urban areas of all sizes are experiencing the challenges seen in the early 2000s – population, jobs and therefore congestion are increasing. The total congestion problem is larger than the pre-recession levels, although the average commuter is "only" wasting as much time as in 2007 – more than a week's worth of vacation. For the report and congestion data on your city, see: http://mobility.tamu.edu/ums.

The data from 1982 to 2013 (see Exhibit 1) show that, short of major economic problems, congestion will continue to increase if projects, programs and policies are not expanded.

- The problem is very large. In 2013, congestion caused urban Americans to travel 6.8 billion hours more and to purchase an extra 3.1 billion gallons of fuel for a congestion cost of $153 billion.
- The extra time American motorists endure is about 4 percent above its pre-recession peak in 2007. Employment was up by more than 400,000 jobs from 2012 to 2013 (*1*); if transportation investment continues to lag, congestion will get worse. Exhibit 2 shows the historical national congestion trend.
- More detailed speed data from INRIX (*2*) a leading private sector provider of travel time information for travelers and shippers, have caused congestion estimates in most urban areas to be higher than in previous *Urban Mobility Reports*.

The best mobility improvement programs involve a mix of strategies – adding capacity of all kinds, operating the system to get the 'best bang for the buck,' providing travel and work schedule options and capitalizing on market trends for home and job locations. This involves everyone - agencies, businesses, manufacturers, commuters and travelers. Each region should use the **combination of strategies that match its goals and visions**. The recovery from economic recession has proven that the problem will not solve itself.

Exhibit 1. Major Findings of the *2014 Urban Mobility Report* (471 U.S. Urban Areas)
(Note: See page 2 for description of changes since the 2012 report)

Measures of…	1982	2000	2010	2013
… Individual Congestion				
Yearly delay per auto commuter (hours)	18	37	40	42
Travel Time Index	1.09	1.19	1.20	1.21
"Wasted" fuel per auto commuter (gallons)	4	15	15	19
Congestion cost per auto commuter (2013 dollars)	$390	$800	$910	$930
… The Nation's Congestion Problem				
Travel delay (billion hours)	1.8	5.2	6.4	6.8
"Wasted" fuel (billion gallons)	0.5	2.1	2.5	3.1
Congestion cost (billions of 2013 dollars)	$41	$112	$147	$153

Yearly delay per auto commuter – The extra time spent during the year traveling at congested speeds rather than free-flow speeds by private vehicle drivers and passengers who typically travel in the peak periods.
Travel Time Index (TTI) – The ratio of travel time in the peak period to travel time at free-flow conditions. A Travel Time Index of 1.30 indicates a 20-minute free-flow trip takes 26 minutes in the peak period.
Wasted fuel – Extra fuel consumed during congested travel.
Congestion cost – The yearly value of delay time and wasted fuel by all vehicles.
Truck congestion cost - The yearly value of operating time and wasted fuel for commercial trucks.

Turning Congestion Data Into Knowledge
(And the New Data Providing a More Accurate View)

The *2014 Urban Mobility Report* is the 4th prepared in partnership with INRIX (*2*). The data behind the *2014 Urban Mobility Report* are hundreds of speed data points on almost every mile of major road in urban America for almost every 15-minute period of the average day of the week. For the congestion analyst, this means more than 700 million speeds on 1.1 million miles of U.S. streets and highways – an awesome amount of information. For the policy analyst and transportation planner, this means congestion problems can be described in detail, and solutions can be targeted with much greater specificity and accuracy.

Key aspects of the *2014 Urban Mobility Report* are summarized below.

- Congestion estimates are presented for each of the 471 U.S. urban areas. Improvements in the INRIX traffic speed data and the data provided by the states to the Federal Highway Administration (*3*) means that for the first time the *Urban Mobility Report* can provide an estimate of the congestion effects on residents of every urban area.
- Speeds collected every 15-minutes from a variety of sources every day of the year on almost every major road are used in the study. The data for all 96 15-minute periods of the day makes it possible to track congestion problems for the midday, overnight and weekend time periods. For more information about INRIX, go to www.inrix.com.
- This data improvement created significant difference in congestion estimates compared with past *Urban Mobility Reports* – more congestion overall, a higher percentage of congestion on streets and different congestion estimates for many urban areas. As has been our practice, past measure values were revised to provide our best estimate of congestion trends.
- More detail is provided on truck travel and congestion. Estimates of truck volume during the day were developed (in past reports, trucks were assumed to have the same patterns as cars travel). This changed delay and fuel estimates in different ways for several cities; for example, fuel wasted per commuter in Los Angeles is much less than in cities with similar delay per auto commuter values due to its higher proportion of freeway travel.
- Many of the slow speeds that were formerly considered 'too slow to be a valid observation' are now being retained in the INRIX dataset. Experience and increased travel speed sample sizes have increased the confidence in the data.
- Where speed estimates are required, the estimation process is benefitting from the increased number of speeds in the dataset. The methodology is described on the mobility study website (*4*).

More information on the performance measures and data can be found at:
http://mobility.tamu.edu/resources/

Exhibit 2. National Congestion Measures, 1982 to 2013

Year	Travel Time Index	Delay Per Commuter (Hours)	Total Delay (Billion Hours)	Fuel Wasted (Billion Gallons)	Total Cost (Billions of 2013 Dollars)
2013	1.21	42	6.8	3.1	$153
2012	1.21	41	6.7	3.0	$151
2011	1.21	41	6.6	2.5	$149
2010	1.20	40	6.4	2.5	$147
2009	1.20	40	6.3	2.4	$145
2008	1.21	42	6.6	2.4	$150
2007	1.21	42	6.6	2.8	$151
2006	1.21	42	6.4	2.8	$147
2005	1.21	41	6.3	2.7	$141
2004	1.21	41	6.1	2.6	$134
2003	1.20	40	5.9	2.4	$126
2002	1.20	39	5.6	2.3	$122
2001	1.19	38	5.3	2.2	$117
2000	1.19	37	5.2	2.1	$112
1999	1.18	36	4.9	2.0	$104
1998	1.18	35	4.7	1.8	$99
1997	1.17	34	4.5	1.7	$96
1996	1.17	32	4.2	1.6	$91
1995	1.16	31	4.0	1.5	$86
1994	1.15	30	3.8	1.4	$81
1993	1.15	29	3.6	1.4	$76
1992	1.14	28	3.4	1.3	$72
1991	1.14	27	3.2	1.2	$68
1990	1.13	26	3.0	1.2	$64
1989	1.13	25	2.8	1.1	$61
1988	1.12	24	2.7	1.0	$57
1987	1.12	23	2.5	0.9	$54
1986	1.11	22	2.4	0.8	$51
1985	1.11	21	2.3	0.7	$50
1984	1.10	20	2.1	0.6	$47
1983	1.10	19	2.0	0.5	$44
1982	1.09	18	1.8	0.5	$41

Notes:
See Exhibit 1 for explanation of measures.
For more congestion information and for congestion information on your city, see Tables 1 to 4 and http://mobility.tamu.edu/ums.

One Page of Congestion Problems

In the biggest regions and most congested corridors, traffic jams can occur at any daylight hour, many nighttime hours and on weekends. The problems that travelers and shippers face include extra travel time, unreliable travel time and a transportation network that is vulnerable to a variety of every day, but never the same, events – bad weather, special events, roadwork, higher traffic volume, malfunctioning traffic signals, crashes and stalled vehicles. Some key measures are listed below. See data for your city at http://mobility.tamu.edu/ums/congestion_data.

Congestion costs are increasing. The congestion "invoice" for the cost of extra time and fuel in the 471 U.S. urban areas was (all values in constant 2013 dollars):

- In 2014 – $153 billion
- In 2000 – $112 billion
- In 1982 – $41 billion

Congestion wastes a massive amount of time, fuel and money. In 2013:

- 6.8 billion hours of extra time (equivalent to 47 million average summer vacations).
- 3.1 billion gallons of wasted fuel (more than 90 minutes worth of flow in the Missouri River).
- $153 billion of delay and fuel cost (the negative effect of uncertain or longer delivery times, missed meetings, business relocations and other congestion-related effects are not included) (equivalent to the lost productivity, clinic visit and medication costs for more than 50 million cases of poison ivy).
- The cost to the average commuter was $930 in 2014 compared to an inflation-adjusted $390 in 1982.

Congestion affects people who travel during the peak period. The average commuter:

- Spent an extra 42 hours traveling in 2014 up from 18 hours in 1982.
- Wasted 19 gallons of fuel in 2014 – a week's worth of fuel for the average U.S. driver – up from 4 gallons in 1982.
- In areas with over one million persons, 2013 commuters experienced:
  - an average of 62 hours of extra travel time
  - suffered 6 hours of congested road conditions on the average weekday

Congestion is also a problem at other hours.

- Approximately 41 percent of total delay occurs in the midday and overnight (outside of the peak hours) times of day when travelers and shippers expect free-flow travel. Many manufacturing processes depend on a free-flow trip for efficient production and congested networks interfere with those operations.

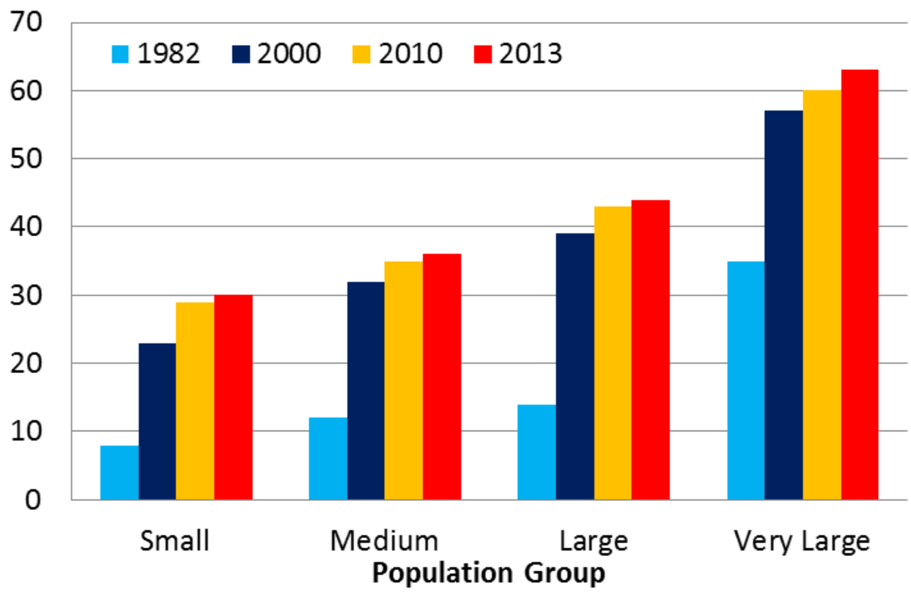
More Detail About Congestion Problems

Congestion, by every measure, has increased substantially over the 32 years covered in this report. Traffic problems as measured by per-commuter measures are about the same as a decade ago, but because there are so many more commuters, and more congestion during off-peak hours, total delay has increased by almost one billion hours. The total congestion cost has also risen with more wasted hours, greater fuel consumption and more trucks stuck in stop-and-go traffic.

Immediate solutions and long-term plans are needed to reduce undesirable congestion. The recession reduced construction costs, or at least slowed their growth. Urban areas and states can still take advantage of this situation – but each area must craft a set of programs, policies and projects that are supported by their communities. This mix will be different in every city, but all of them can be informed by data and trend information.

Congestion is worse in areas of every size – it is not just a big city problem. The growing delays also hit residents of smaller cities (Exhibit 3). Big towns and small cities have congestion problems – every economy is different and smaller regions often count on good mobility as a quality-of-life aspect that allows them to compete with larger, more economically diverse regions. As the national economy improves, it is important to develop the consensus on action steps -- major projects, programs and funding efforts take 10 to 15 years to develop.

Exhibit 3. Congestion Growth Trend – Hours of Delay per Auto Commuter



Medium = 500,000 to 1 million   Very Large = more than 3 million

Think of what else could be done with the 42 hours of extra time suffered by the average urban auto commuter in 2014:

- More than a week of vacation
- Equivalent to more than 550 David Letterman monologues
- Watch 28 tee-ball games
- Listen to 22 music recital programs

Congestion Patterns

- **Congestion builds through the week** from Monday to Friday. The two weekend days have less delay than any weekday (Exhibit 4).
- **Congestion is worse in the evening**, but it can be a problem during any daylight hour (Exhibit 5).
- **Midday hours** comprise a significant share of the congestion problem.

Exhibit 4. Percent of Delay for Each Day

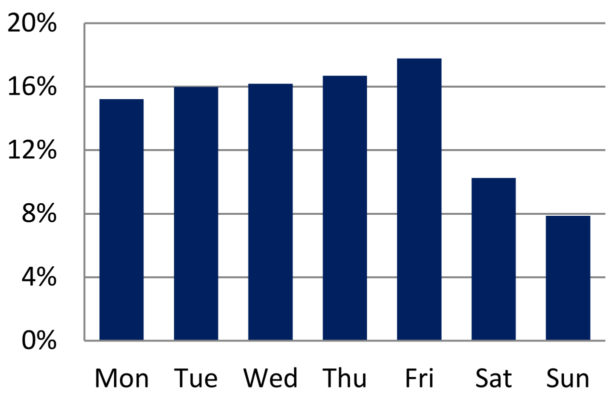
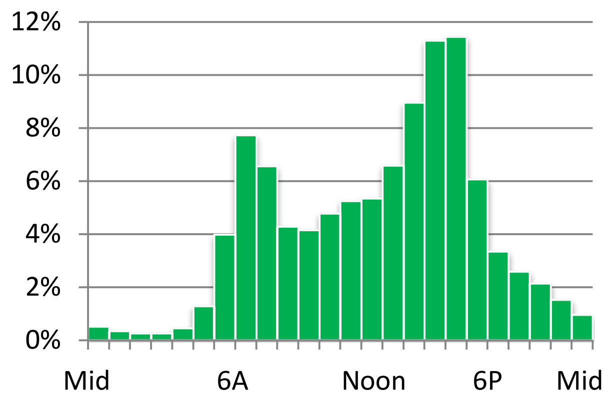


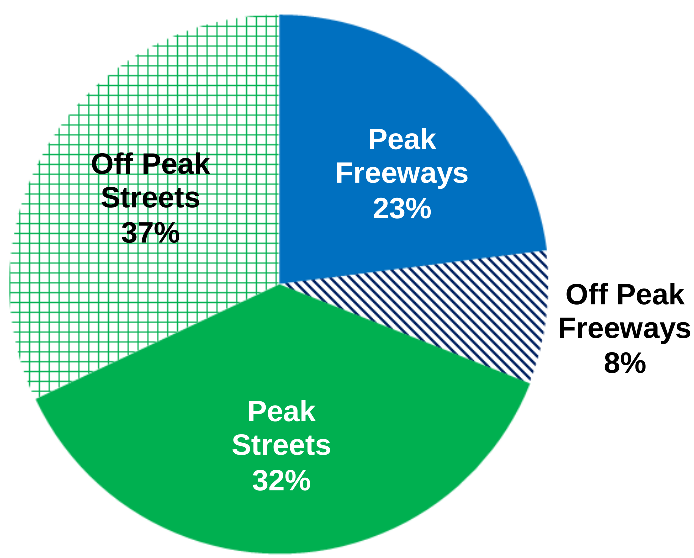
Exhibit 5. Percent of Delay for Hours of Day



Congestion on Freeways and Streets

- Streets have **more delay** than freeways, but there are also many more miles of streets (Exhibit 6).
- Approximately 45 percent of delay occurs in **off-peak hours**.

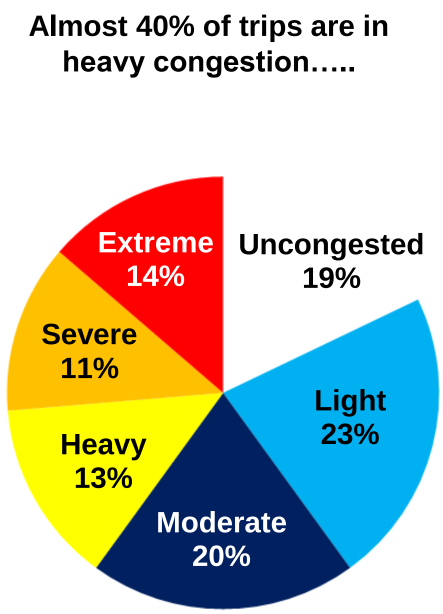
Exhibit 6. Percent of Delay for Road Types – All Population Ranges

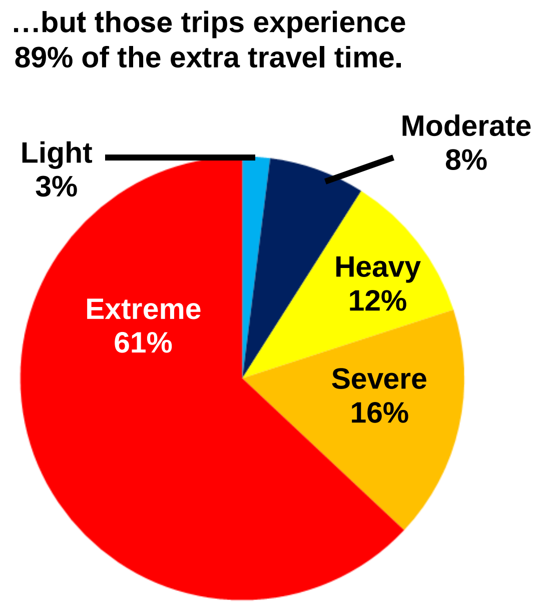


Rush Hour Congestion

- In the combined data for all 471 urban areas, the severe and extreme congestion levels affected only **1 in 9 trips in 1982, but 1 in 4 trips in 2014** (Exhibit 7).
- The most congested sections of road account for **77% of peak period delays**, but only have 26% of the travel (Exhibit 7).
- Delay is nearly **four times larger overall than in 1982** (Exhibit 2).

Exhibit 7. Peak Period Congestion in 2014

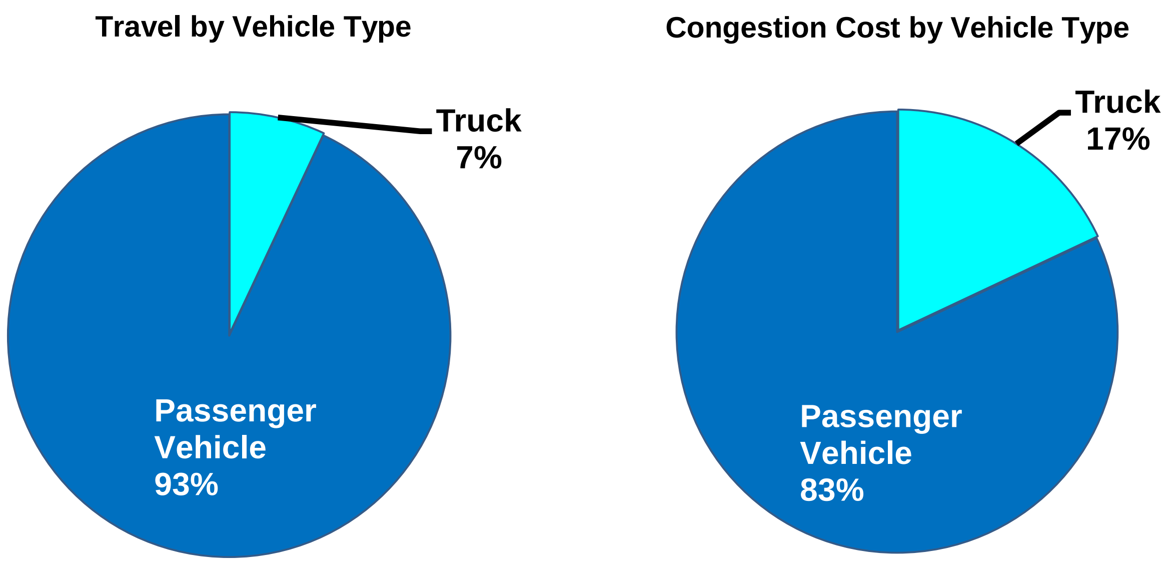




Truck Congestion

- Trucks account for 17 percent of the urban "congestion invoice" although they only represent 7 percent of urban travel,
- The costs in Exhibit 8 do not include the extra costs borne by private companies who build additional distribution centers, buy more trucks and build more satellite office centers to allow them to overcome the problems caused by a congested and inefficient transportation network.

Exhibit 8. 2014 Congestion Cost for Urban Passenger and Freight Vehicles



The Future of Congestion

Before the economic recession, congestion was increasing at between 2 and 4 percent every year – which meant that extra travel time for the average commuter increased slightly less than 1 hour every year. The economic recession set back that trend a few years, but the trend in the last few years indicates congestion is rising again. Congestion is the result of an imbalance between travel demand and the supply of transportation capacity – whether that is freeway lanes, bus seats or rail cars. If the number of residents or jobs goes up, or the miles or trips that those people make increases, the road and transit systems also need to expand. As the rising congestion levels in this report demonstrate, however, this is an infrequent occurrence, and travelers are paying the price for this inadequate response.

As one estimate of congestion in the near future, this report uses the expected population growth and congestion trends from the period of sustained economic growth between 2000 and 2005 to get an idea of what the next five years might hold. The basic input and analysis features:

- The combined role of the government and private sector will yield approximately the same rate of transportation system expansion (both roadway and public transportation). The analysis assumes that policies and funding levels will remain about the same.
- The growth in usage of any of the alternatives (biking, walking, work or shop at home) will continue at the same rate.
- The period before the economic recession (from 2000 to 2005) was used as the indicator of the effect of growth. These years had generally steady economic growth in most U.S. urban regions; these years are assumed to be the best indicator of the future level of investment in solutions and the resulting increase in congestion for each urban area.

The congestion estimate for any single region will be affected by the funding, project selections and operational strategies; the simplified estimation procedure used in this report did not capture these variations. Using this simplified approach the following offers an idea of the national congestion problem in 2020.

- The national congestion cost will grow from $153 billion to $185 billion in 2020 (in 2013 dollars).
- Delay will grow to 8.2 billion hours in 2020.
- Wasted fuel will increase to 3.7 billion gallons in 2020.
- The average commuter's congestion cost will grow to almost $1,100 in 2020 (in 2013 dollars).
- The average commuter will waste 46 hours and 20 gallons in 2020.

Congestion Relief – An Overview of the Strategies

We recommend a ***balanced and diversified approach*** to reduce congestion – one that focuses on more of everything. It is clear that our current investment levels have not kept pace with the problems. Most urban regions have big problems now – more congestion, poorer pavement and bridge conditions and less public transportation service than they would like. There will be a different mix of solutions in metro regions, cities, neighborhoods, job centers and shopping areas. Some areas might be more amenable to construction solutions, other areas might use more technology to promote and facilitate travel options, operational improvements, or land use redevelopment. In all cases, the solutions need to work together to provide an interconnected network of smart transportation services as well as improve the quality-of-life.

More information on the possible solutions, places they have been implemented, the effects estimated in this report and the methodology used to capture those benefits can be found on the website http://mobility.tamu.edu/solutions

- **Get as much service as possible from what we have** – Many low-cost improvements have broad public support and can be rapidly deployed. These operations programs require innovation, constant attention and adjustment, but they pay dividends in faster, safer and more reliable travel. Rapidly removing crashed vehicles, timing the traffic signals so that more vehicles see green lights, and improving road and intersection designs are relatively simple actions.
- **Add capacity in critical corridors** – Handling more freight or person travel on freeways, streets, rail lines, buses or intermodal facilities often requires "more." Important corridors or growing regions can benefit from more street and highway lanes, new or expanded public transportation facilities, and larger bus and rail fleets.
- **Change the usage patterns** – There are solutions that involve changes in the way employers and travelers conduct business to avoid traveling in the traditional "rush hours." Flexible work hours, internet connections or phones allow employees to choose work schedules that meet family needs *and* the needs of their jobs.
- **Provide choices** – This might involve different travel routes, travel modes or lanes that involve a toll for high-speed and reliable service. These options allow travelers and shippers to customize their travel plans.
- **Diversify the development patterns** – These typically involve denser developments with a mix of jobs, shops and homes, so that more people can walk, bike or take transit to more, and closer, destinations. Sustaining the quality-of-life and gaining economic development without the typical increment of congestion in each of these sub-regions appears to be part, but not all, of the solution.
- **Realistic expectations** are also part of the solution. Large urban areas will be congested. Some locations near key activity centers in smaller urban areas will also be congested. Identifying solutions and funding sources that meet a variety of community goals is challenging enough without attempting to eliminate congestion in all locations at all times. But congestion does not have to be an all-day event.

Using the Best Congestion Data & Analysis Methodologies

The base data for the *2014 Urban Mobility Report* came from INRIX, the U.S. Department of Transportation and the states (*2, 3*). Several analytical processes were used to develop the final measures, but the biggest improvement in the last two decades is provided by the INRIX data. The speed data covering most travel on most major roads in U.S. urban regions eliminates the difficult process of estimating speeds and dramatically improves the accuracy and level of understanding about the congestion problems facing US travelers.

The methodology is described in a technical report (*4*) that is posted on the mobility report website: http://mobility.tamu.edu/ums/methodology/.

- The INRIX traffic speeds are collected from a variety of sources and compiled in their Historical Profile database. Fleet operators who have location devices on their vehicles feed time and location data points to INRIX. Individuals who have downloaded the INRIX smart phone app also contribute time/location data. The proprietary process filters inappropriate data (e.g., pedestrians walking next to a street) and compiles a dataset of average speeds for each road segment. TTI was provided a dataset of 15-minute average speeds for each link of major roadway covered in the Historical Profile database (approximately 1.1 million miles in 2013).
- Traffic volume estimates were developed with a set of procedures developed from computer models and studies of real-world travel time and volume data. The congestion methodology uses daily traffic volume converted to 15-minute volumes using a national traffic count dataset (*5*).
- The 15-minute INRIX speeds were matched to the 15-minute volume estimates for each road section on the FHWA maps.
- An estimation procedure was also developed for the sections of road that did not have INRIX data. As described in the methodology website, the road sections were ranked according to volume per lane and then matched with a similar list of sections with INRIX and volume per lane data (as developed from the FHWA dataset) (*4*).

National Performance Measurement

"What Gets Measured, Gets Done"

Many of us have heard this saying, and it is very appropriate when discussing transportation system performance measurement.

Performance measurement at the national level is gaining momentum. Many state and local transportation agencies are implementing performance measurement activities to operate their systems as efficiently as possible with limited resources.

The Moving Ahead for Progress in the 21st Century Act (MAP-21) was signed into law on July 6, 2012 to fund surface transportation. Among other aspects, MAP-21 establishes performance-based planning and programming to improve transportation decision-making and increase the accountability and transparency of the Federal highway funding program (*6*).

As part of the transition to a performance and outcome-based Federal highway funding program, MAP-21 establishes national performance goals in the following areas *(6)*:
- Safety
- Infrastructure condition
- Congestion reduction
- System reliability
- Freight movement and economic vitality
- Environmental sustainability
- Reduced project delivery delays

MAP-21 requirements provide the opportunity to improve agency operations. While transportation professionals calculate required MAP-21 performance measures, there is an opportunity to also develop processes and measures to better understand their systems. The requirements of MAP-21 are specified through a Rulemaking process. At the time of this writing, the Notice of Proposed Rulemaking (NPRM) for system performance measures (congestion, reliability) has not been released by the United States Department of Transportation (USDOT).

While the specific requirements of MAP-21 related to system performance measures are not yet known, the data, measures, and methods in the *Urban Mobility Report* provide transportation professionals with a 32-year trend of foundational knowledge to inform performance measurement and target setting at the urban area level. The measures and techniques have stood the test of time to communicate mobility conditions and potential solutions.

"Don't Let Perfect be the Enemy of Good"

Occasionally there is reluctance at transportation agencies to dive in and begin performance measurement activities because there is a concern that the data or methods are just not good enough. Over the years, the *Urban Mobility Report* has taken advantage of data improvements – and associated changes in analysis methods – and the use of more powerful computational methods (for example, geographic information systems). Such adaptations are typical when conducting on-going performance reporting. As the successful 32-year data trend of *UMR* suggests, changes can be made as improvements become available. The key is to get started!

Concluding Thoughts

The national economy has improved since the last *Urban Mobility Report*, and unfortunately congestion has gotten worse. This has been the case in the past, and it appears that the economy-congestion linkage is as dependable as gravity. Some analysts had touted the decline in driving per capita and dip in congestion levels as a sign that traffic congestion would, in essence, fix itself. That is not happening.

The other seemingly dependable trend – not enough of any solution being deployed – also appears to be holding in most growing regions. That is really the lesson from this series of reports. The **mix of solutions** that are used is relatively less important than the **amount of solution** being implemented. All of the potential congestion-reducing strategies should be considered, and there is a role and location for most of the strategies.

- Getting more productivity out of the existing road and public transportation systems is vital to reducing congestion and improving travel time reliability.
- Businesses and employees can use a variety of strategies to modify their work schedules, traveling times and travel modes to avoid the peak periods, use less vehicle travel and increase the amount of electronic "travel."
- In growth corridors, there also may be a role for additional capacity to move people and freight more rapidly and reliably.
- Some areas are seeing renewed interest in higher density living in neighborhoods with a mix of residential, office, shopping and other developments. These places can promote shorter trips that are more amenable to walking, cycling or public transportation modes.

The *2014 Urban Mobility Report* points to national measures of the congestion problem for the 471 urban areas in 2013:

- $153 billion of wasted time and fuel
- An extra 6.8 billion hours of travel and 3.1 billion gallons of fuel consumed

The average urban commuter in 2013:

- spent an extra 42 hours of travel time on roads than if the travel was done in low-volume conditions
- used 19 extra gallons of fuel
- which amounted to an average value of $930 per commuter

Recent trends show traffic congestion has grown since the low point in 2009 during the economic recession. An additional 500 million hours and 700 million gallons of fuel were consumed in 2013 than in 2009. There have been increases in the extra hours of travel time and gallons commuters suffer showing that the economic recession has not been a permanent cure for traffic congestion problems.

States and cities have been addressing the congestion problems they face with a variety of strategies and more detailed data analysis. Some of the solution lies in identifying congestion that is undesirable – that which significantly diminishes the quality of life and economic productivity – and some lies in using the smart data systems and range of technologies, projects and programs to achieve results and communicate the effects to assure the public that their transportation project dollars are being spent wisely.

National Congestion Tables

Table 1. What Congestion Means to You, 2013

Urban Area	Yearly Delay per Auto Commuter		Travel Time Index		Excess Fuel per Auto Commuter		Congestion Cost per Auto Commuter	
	Hours	Rank	Value	Rank	Gallons	Rank	Dollars	Rank
Very Large Average (15 areas)	**63**		**1.32**		**26**		**1,419**	
Washington DC-VA-MD	82	1	1.34	8	34	1	1,809	1
Los Angeles-Long Beach-Anaheim CA	79	2	1.43	1	25	10	1,703	3
San Francisco-Oakland CA	77	3	1.40	2	32	3	1,664	4
New York-Newark NY-NJ-CT	73	4	1.34	8	34	1	1,724	2
Boston MA-NH-RI	63	6	1.29	17	29	4	1,374	8
Seattle WA	63	6	1.38	3	28	6	1,483	5
Houston TX	61	8	1.33	10	28	6	1,454	6
Chicago IL-IN	59	9	1.30	14	29	4	1,439	7
Atlanta GA	52	11	1.24	24	20	40	1,119	22
Dallas-Fort Worth-Arlington TX	52	11	1.27	19	22	21	1,171	14
Detroit MI	52	11	1.24	24	24	12	1,146	18
Miami FL	51	15	1.28	18	24	12	1,161	16
Phoenix-Mesa AZ	51	15	1.26	20	24	12	1,174	13
Philadelphia PA-NJ-DE-MD	47	21	1.24	24	23	17	1,111	23
San Diego CA	41	44	1.23	28	11	92	885	59

Very Large Urban Areas—over 3 million population.
Large Urban Areas—over 1 million and less than 3 million population.
Medium Urban Areas—over 500,000 and less than 1 million population.
Small Urban Areas—less than 500,000 population.

Yearly Delay per Auto Commuter—Extra travel time during the year divided by the number of people who commute in private vehicles in the urban area.

Travel Time Index—The ratio of travel time in the peak period to the travel time at free-flow conditions. A value of 1.30 indicates a 20-minute free-flow trip takes 26 minutes in the peak period.

Excess Fuel Consumed—Increased fuel consumption due to travel in congested conditions rather than free-flow conditions.

Congestion Cost—Value of travel time delay (estimated at $17.68 per hour of person travel and $93.17 per hour of truck time) and excess fuel consumption (estimated using state average cost per gallon for gasoline and diesel).

Note: Please do not place too much emphasis on small differences in the rankings. There may be little difference in congestion between areas ranked (for example) 6th and 12th. The actual measure values should also be examined. The best congestion comparisons are made between similar urban areas.

Table 1. What Congestion Means to You, 2013, Continued

Urban Area	Yearly Delay per Auto Commuter		Travel Time Index		Excess Fuel per Auto Commuter		Congestion Cost per Auto Commuter	
	Hours	Rank	Value	Rank	Gallons	Rank	Dollars	Rank
Large Average (31 areas)	**44**		**1.23**		**21**		**1,023**	
San Jose CA	65	5	1.37	4	27	9	1,358	9
Riverside-San Bernardino CA	57	10	1.32	11	18	57	1,265	10
Portland OR-WA	52	11	1.35	7	28	6	1,250	11
Austin TX	51	15	1.32	11	22	21	1,136	20
Denver-Aurora CO	49	19	1.30	14	24	12	1,091	25
Oklahoma City OK	47	21	1.19	41	21	27	1,049	28
Minneapolis-St. Paul MN-WI	46	23	1.26	20	18	57	1,022	33
Baltimore MD	45	25	1.25	23	20	40	1,058	27
Las Vegas-Henderson NV	45	25	1.26	20	21	27	958	42
Nashville-Davidson TN	45	25	1.20	36	22	21	1,164	15
Indianapolis IN	44	30	1.18	45	23	17	1,048	29
Orlando FL	44	30	1.21	33	20	40	1,019	34
Virginia Beach VA	44	30	1.19	41	18	57	923	50
Charlotte NC-SC	43	34	1.23	28	17	68	956	43
Louisville-Jefferson County KY-IN	43	34	1.20	36	21	27	999	37
Providence RI-MA	43	34	1.20	36	21	27	948	45
Sacramento CA	43	34	1.23	28	19	49	953	44
San Antonio TX	43	34	1.24	24	19	49	973	40
Memphis TN-MS-AR	42	40	1.18	45	21	27	1,045	30
St. Louis MO-IL	42	40	1.16	63	20	40	1,015	36
San Juan PR	42	40	1.30	14	24	12	1,140	19
Tampa-St. Petersburg FL	41	44	1.21	33	18	57	900	54
Cincinnati OH-KY-IN	40	47	1.18	45	21	27	975	39
Columbus OH	40	47	1.18	45	20	40	928	49
Cleveland OH	38	52	1.15	74	22	21	882	60
Kansas City MO-KS	38	52	1.15	74	18	57	922	51
Pittsburgh PA	38	52	1.19	41	20	40	866	64
Jacksonville FL	37	61	1.17	52	15	78	835	72
Milwaukee WI	37	61	1.17	52	22	21	982	38
Salt Lake City-West Valley City UT	36	67	1.18	45	21	27	1,019	34
Richmond VA	34	73	1.13	84	14	83	724	81

Large Urban Areas—over 1 million and less than 3 million population.
Yearly Delay per Auto Commuter—Extra travel time during the year divided by the number of people who commute in private vehicles in the urban area.
Travel Time Index—The ratio of travel time in the peak period to the travel time at free-flow conditions. A value of 1.30 indicates a 20-minute free-flow trip takes 26 minutes in the peak period.
Excess Fuel Consumed—Increased fuel consumption due to travel in congested conditions rather than free-flow conditions.
Congestion Cost—Value of travel time delay (estimated at $17.68 per hour of person travel and $93.17 per hour of truck time) and excess fuel consumption (estimated using state average cost per gallon for gasoline and diesel).
Note: Please do not place too much emphasis on small differences in the rankings. There may be little difference in congestion between areas ranked (for example) 6th and 12th. The actual measure values should also be examined. The best congestion comparisons are made between similar urban areas.

Table 1. What Congestion Means to You, 2013, Continued

Urban Area	Yearly Delay per Auto Commuter		Travel Time Index		Excess Fuel per Auto Commuter		Congestion Cost per Auto Commuter	
	Hours	Rank	Value	Rank	Gallons	Rank	Dollars	Rank
Medium Average (33 areas)	**36**		**1.18**		**18**		**849**	
Honolulu HI	50	18	1.36	5	25	10	1,111	23
Bridgeport-Stamford CT-NY	49	19	1.36	5	21	27	1,154	17
Baton Rouge LA	46	23	1.22	31	23	17	1,203	12
New Orleans LA	45	25	1.31	13	21	27	1,131	21
Tucson AZ	45	25	1.21	33	22	21	1,072	26
Hartford CT	44	30	1.20	36	21	27	1,029	32
Tulsa OK	43	34	1.17	52	19	49	938	47
Albany-Schenectady NY	42	40	1.16	63	21	27	972	41
Charleston-North Charleston SC	41	44	1.22	31	20	40	1,033	31
Grand Rapids MI	40	47	1.17	52	19	49	841	70
Buffalo NY	39	50	1.17	52	21	27	914	52
New Haven CT	39	50	1.16	63	19	49	930	48
Columbia SC	38	52	1.15	74	18	57	941	46
Rochester NY	38	52	1.16	63	20	40	886	58
Toledo OH-MI	38	52	1.18	45	20	40	909	53
Albuquerque NM	37	61	1.16	63	19	49	875	61
Springfield MA-CT	37	61	1.13	84	19	49	829	73
Birmingham AL	34	73	1.14	79	16	71	889	57
Knoxville TN	34	73	1.14	79	17	68	846	68
Raleigh NC	34	73	1.16	63	13	86	731	80
Wichita KS	34	73	1.17	52	17	68	811	74
Colorado Springs CO	33	79	1.15	74	16	71	740	78
El Paso TX-NM	33	79	1.16	63	16	71	756	77
Omaha NE-IA	32	83	1.16	63	16	71	703	83
Cape Coral FL	31	84	1.18	45	13	86	663	88
Allentown PA-NJ	30	87	1.17	52	15	78	688	87
McAllen TX	29	88	1.15	74	13	86	637	89
Akron OH	26	89	1.11	94	14	83	617	90
Sarasota-Bradenton FL	26	89	1.16	63	12	91	578	92
Dayton OH	24	91	1.11	94	13	86	584	91
Fresno CA	22	93	1.10	97	11	92	479	97
Provo-Orem UT	21	95	1.12	90	15	78	702	84
Bakersfield CA	16	99	1.10	97	7	97	430	98

Medium Urban Areas—over 500,000 and less than 1 million population.
Yearly Delay per Auto Commuter—Extra travel time during the year divided by the number of people who commute in private vehicles in the urban area.
Travel Time Index—A value of 1.30 indicates a 20-minute free-flow trip takes 26 minutes in the peak period.
Excess Fuel Consumed—Increased fuel consumption due to travel in congested conditions rather than free-flow conditions.
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Table 1. What Congestion Means to You, 2013, Continued

Urban Area	Yearly Delay per Auto Commuter		Travel Time Index		Excess Fuel per Auto Commuter		Congestion Cost per Auto Commuter	
	Hours	Rank	Value	Rank	Gallons	Rank	Dollars	Rank
Small Average (22 areas)	**30**		**1.13**		**14**		**689**	
Jackson MS	38	52	1.13	84	15	78	867	63
Pensacola FL-AL	38	52	1.17	52	18	57	845	69
Spokane WA	38	52	1.17	52	23	17	898	56
Little Rock AR	37	61	1.13	84	13	86	839	71
Worcester MA-CT	37	61	1.12	90	18	57	861	65
Madison WI	36	67	1.17	52	18	57	900	54
Poughkeepsie-Newburgh NY-NJ	36	67	1.12	90	16	71	856	67
Anchorage AK	35	70	1.19	41	18	57	860	66
Boulder CO	35	70	1.20	36	18	57	723	82
Salem OR	35	70	1.16	63	21	27	868	62
Boise ID	34	73	1.14	79	16	71	735	79
Beaumont TX	33	79	1.14	79	15	78	772	76
Eugene OR	33	79	1.17	52	19	49	793	75
Corpus Christi TX	31	84	1.12	90	16	71	690	86
Greensboro NC	31	84	1.10	97	14	83	698	85
Oxnard CA	23	92	1.13	84	8	96	487	96
Brownsville TX	22	93	1.14	79	11	92	491	94
Winston-Salem NC	19	96	1.11	94	7	97	411	99
Laredo TX	18	97	1.16	63	10	95	490	95
Stockton CA	18	97	1.13	84	7	97	511	93
Lancaster-Palmdale CA	16	99	1.10	97	5	100	347	100
Indio-Cathedral City CA	6	101	1.05	101	2	101	150	101
101 Area Average	**51**		**1.26**		**23**		**1,172**	
Remaining Areas Average	**16**		**1.09**		**7**		**370**	
All 472 Area Average	**42**		**1.21**		**19**		**950**	

Very Large Urban Areas—over 3 million population.
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Medium Urban Areas—over 500,000 and less than 1 million population.
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Yearly Delay per Auto Commuter—Extra travel time during the year divided by the number of people who commute in private vehicles in the urban area.

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Table 2. What Congestion Means to Your Town, 2013

Urban Area	Travel Delay (1,000 Hours)	Rank	Excess Fuel Consumed (1,000 Gallons)	Rank	Truck Congestion Cost ($ million)	Rank	Total Congestion Cost ($ million)	Rank
Very Large Average (15 areas)	**229,718**		**98,481**		**874**		**5,207**	
New York-Newark NY-NJ-CT	622,952	1	294,204	1	2,755	1	14,588	1
Los Angeles-Long Beach-Anaheim CA	619,823	2	194,648	2	1,713	2	13,261	2
Chicago IL-IN	301,248	3	146,370	3	1,476	3	7,190	3
Washington DC-VA-MD	201,541	4	86,908	6	701	6	4,496	5
Houston TX	198,332	5	92,053	4	1,091	4	4,806	4
Miami FL	194,692	6	89,742	5	731	5	4,415	6
Dallas-Fort Worth-Arlington TX	184,328	7	78,453	7	694	7	4,153	7
Philadelphia PA-NJ-DE-MD	157,119	8	77,425	8	682	8	3,668	8
Boston MA-NH-RI	152,402	9	70,862	11	422	14	3,328	11
Phoenix-Mesa AZ	152,202	10	74,218	9	677	9	3,558	9
Detroit MI	150,587	11	71,384	10	549	11	3,407	10
Atlanta GA	147,164	12	56,536	14	429	13	3,181	13
San Francisco-Oakland CA	145,072	13	61,918	12	357	17	3,123	14
Seattle WA	139,107	14	61,809	13	642	10	3,277	12
San Diego CA	79,202	20	20,687	35	192	34	1,653	21

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Small Urban Areas—less than 500,000 population.

Travel Delay—Extra travel time during the year.

Excess Fuel Consumed—Value of increased fuel consumption due to travel in congested conditions rather than free-flow conditions (using state average cost per gallon).

Truck Congestion Cost—Value of increased travel time and other operating costs of large trucks (estimated at $93.17 per hour of truck time) and the extra diesel consumed (using state average cost per gallon).

Congestion Cost—Value of delay and fuel cost (estimated at $17.68 per hour of person travel, $93.17 per hour of truck time and state average fuel cost).

Note:Please do not place too much emphasis on small differences in the rankings. There may be little difference in congestion between areas ranked (for example) 6^{th} and 12^{th}. The actual measure values should also be examined. The best congestion comparisons are made between similar urban areas.

Table 2. What Congestion Means to Your Town, 2013, Continued

Urban Area	Travel Delay		Excess Fuel Consumed		Truck Congestion Cost		Total Congestion Cost	
	(1,000 Hours)	Rank	(1,000 Gallons)	Rank	($ million)	Rank	($ million)	Rank
Large Average (31 areas)	**54,211**		**25,162**		**228**		**1,254**	
San Jose CA	99,825	15	41,981	16	229	30	2,130	16
Minneapolis-St. Paul MN-WI	98,477	16	38,065	18	324	20	2,169	15
Riverside-San Bernardino CA	95,271	17	29,557	23	347	18	2,117	17
Denver-Aurora CO	90,623	18	44,502	15	316	21	2,042	18
Baltimore MD	83,126	19	36,678	19	405	15	1,969	19
Tampa-St. Petersburg FL	71,064	21	31,405	22	235	28	1,576	24
Portland OR-WA	71,002	22	38,878	17	368	16	1,731	20
St. Louis MO-IL	68,951	23	32,801	21	327	19	1,628	22
San Antonio TX	62,497	24	27,989	25	244	27	1,420	25
Las Vegas-Henderson NV	62,032	25	29,219	24	154	45	1,338	26
Sacramento CA	59,881	26	26,141	26	188	36	1,327	27
San Juan PR	59,788	27	33,134	20	434	12	1,591	23
Orlando FL	51,433	28	23,352	31	207	33	1,177	28
Austin TX	50,055	29	21,205	33	178	39	1,117	31
Cincinnati OH-KY-IN	47,833	30	24,748	29	235	28	1,143	29
Virginia Beach VA	46,750	31	19,451	38	109	53	988	36
Indianapolis IN	45,894	32	24,774	28	256	26	1,129	30
Kansas City MO-KS	45,055	33	21,108	34	223	31	1,073	32
Cleveland OH	44,774	34	25,390	27	181	37	1,039	33
Pittsburgh PA	43,622	35	23,496	30	167	41	1,005	35
Oklahoma City OK	43,128	36	19,864	36	156	44	973	39
Columbus OH	39,793	37	19,755	37	160	43	916	40
Nashville-Davidson TN	38,822	38	19,017	39	283	22	1,009	34
Providence RI-MA	37,666	40	18,782	40	121	49	842	43
Milwaukee WI	37,469	41	21,847	32	265	24	979	38
Memphis TN-MS-AR	36,597	42	17,842	42	222	32	908	41
Louisville-Jefferson County KY-IN	33,942	45	16,999	43	177	40	820	44
Charlotte NC-SC	33,900	46	13,658	49	130	47	765	46
Jacksonville FL	29,418	47	11,957	52	100	57	652	48
Richmond VA	25,934	52	10,731	55	68	68	555	54
Salt Lake City-West Valley City UT	25,931	53	15,702	46	257	25	750	47

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Table 2. What Congestion Means to Your Town, 2013, Continued

Urban Area	Travel Delay (1,000 Hours)	Rank	Excess Fuel Consumed (1,000 Gallons)	Rank	Truck Congestion Cost ($ million)	Rank	Total Congestion Cost ($ million)	Rank
Medium Average (33 areas)	**19,605**		**9,619**		**92**		**464**	
New Orleans LA	38,133	39	18,399	41	274	23	988	36
Bridgeport-Stamford CT-NY	36,474	43	16,298	45	191	35	883	42
Tucson AZ	34,176	44	16,594	44	167	41	813	45
Tulsa OK	28,915	48	13,464	50	102	54	649	49
Hartford CT	28,054	49	13,291	51	114	50	649	49
Honolulu HI	27,344	50	13,951	48	74	63	609	52
Buffalo NY	26,716	51	13,983	47	102	54	617	51
Raleigh NC	23,031	54	9,120	62	71	65	502	55
Baton Rouge LA	22,072	55	11,534	53	180	38	593	53
Grand Rapids MI	21,234	56	10,404	57	58	72	463	61
Rochester NY	20,493	57	10,504	56	73	64	467	59
Albuquerque NM	20,206	58	10,829	54	111	52	495	57
Albany-Schenectady NY	20,031	59	9,976	58	86	59	469	58
Birmingham AL	19,335	60	9,081	63	139	46	500	56
El Paso TX-NM	19,028	61	9,311	60	77	62	437	62
Springfield MA-CT	18,368	62	9,303	61	54	76	406	63
Charleston-North Charleston SC	18,178	63	8,905	64	125	48	464	60
Omaha NE-IA	18,118	64	9,479	59	57	74	404	64
Allentown PA-NJ	16,956	65	8,662	65	66	70	390	67
New Haven CT	16,380	66	7,924	69	69	67	383	68
Wichita KS	16,343	67	8,330	67	85	60	395	66
Columbia SC	16,130	68	7,927	68	102	54	404	64
McAllen TX	15,942	69	7,208	73	48	82	349	71
Toledo OH-MI	15,723	70	8,355	66	78	61	377	69
Colorado Springs CO	15,406	71	7,387	71	48	82	341	73
Knoxville TN	14,903	72	7,160	74	87	58	366	70
Dayton OH	14,433	74	7,346	72	68	68	342	72
Sarasota-Bradenton FL	13,796	75	6,454	75	45	84	306	76
Cape Coral FL	12,854	77	5,591	81	43	85	286	79
Akron OH	11,943	81	6,404	76	49	81	277	82
Fresno CA	11,454	82	5,505	82	23	95	243	85
Provo-Orem UT	8,104	86	5,626	80	113	51	267	83
Bakersfield CA	6,708	92	3,138	93	54	76	180	88

Travel Delay—Extra travel time during the year.
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Table 2. What Congestion Means to Your Town, 2013, Continued

Urban Area	Travel Delay		Excess Fuel Consumed		Truck Congestion Cost		Total Congestion Cost	
	(1,000 Hours)	Rank	(1,000 Gallons)	Rank	($ million)	Rank	($ million)	Rank
Small Average (22 areas)	**7,993**		**3,768**		**36**		**187**	
Little Rock AR	14,556	73	5,176	83	60	71	331	74
Worcester MA-CT	13,079	76	6,401	77	51	80	300	77
Spokane WA	12,825	78	7,819	70	58	72	308	75
Poughkeepsie-Newburgh NY-NJ	12,672	79	5,646	79	55	75	295	78
Jackson MS	12,131	80	4,835	86	52	79	278	81
Madison WI	11,019	83	5,701	78	71	65	279	80
Pensacola FL-AL	10,971	84	5,099	84	38	87	246	84
Boise ID	10,553	85	5,005	85	35	90	237	86
Corpus Christi TX	7,932	87	4,068	88	27	93	177	89
Greensboro NC	7,818	88	3,503	91	27	93	174	90
Beaumont TX	7,743	89	3,500	92	38	87	184	87
Anchorage AK	6,945	90	3,625	90	36	89	170	92
Salem OR	6,890	91	4,218	87	40	86	173	91
Eugene OR	6,268	93	3,678	89	32	92	154	93
Oxnard CA	6,185	94	2,206	95	16	97	132	96
Winston-Salem NC	6,058	95	2,379	94	21	96	134	95
Stockton CA	5,067	96	2,082	98	53	78	147	94
Lancaster-Palmdale CA	4,154	97	1,220	100	11	99	88	98
Boulder CO	3,927	98	2,121	96	10	100	86	99
Laredo TX	3,873	99	2,105	97	33	91	106	97
Brownsville TX	3,494	100	1,857	99	14	98	81	100
Indio-Cathedral City CA	1,690	101	662	101	9	101	40	101
101 Area Total	**5,949,155**		**2,657,594**		**23,997**		**136,416**	
101 Area Average	**58,903**		**26,313**		**238**		**1,351**	
All 472 Area Total	**6,800,000**		**3,100,000**		**27,200**		**153,000**	
All 472 Area Average	**14,400**		**6,560**		**60**		**325**	

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