



# OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

*Paula Gough, District Engineer*

**Tracker**

MEASURES OF DEPARTMENTAL PERFORMANCE



Missourians expect to get to their destinations on time, without delay regardless of their choice of travel mode. We coordinate and collaborate with our transportation partners throughout the state to keep people and goods moving freely and efficiently. We also maintain and operate the transportation system in a manner to minimize the impact to our customers and partners.

RESULT DRIVER:  
Paula Gough,  
District Engineer

## OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

MAP-21

### MEASUREMENT DRIVER:

Jon Nelson,  
Traffic Management and  
Operations Engineer

### PURPOSE OF THE MEASURE:

This measure tracks the mobility of significant state routes in St. Louis, Kansas City, Springfield, and Columbia.

### MEASUREMENT AND DATA COLLECTION:

Data for many state routes in the St. Louis and Kansas City regions is continuously collected via roadside sensors. For other routes, travel times are collected by driving routes at least twice in each direction during the morning and evening rush hours. To assess mobility, MoDOT compares travel times during rush hour versus free-flow conditions where vehicles can travel at the posted speed limit. The department also assesses reliability, measuring how consistent those travel times are on a daily basis. The charts in this measure show average travel time compared to the 80th percentile travel time, which is the time motorists should plan in order to reach their destinations on time 80 percent of the time.

## *Travel times and reliability on major routes-5a*

Minimizing travel times and delays on the state's most traveled routes are essential to operating a reliable and convenient transportation system. The desired outcome for traffic conditions on any route is to safely travel at the posted speed limit. The average travel times on freeways in St. Louis and Kansas City are reasonably close to free-flow speeds. Last quarter, it took customers, on average, anywhere from 10.76 to 12.12 minutes to travel 10 miles on the freeway during the morning and evening rush hours (60 mph speed limit).

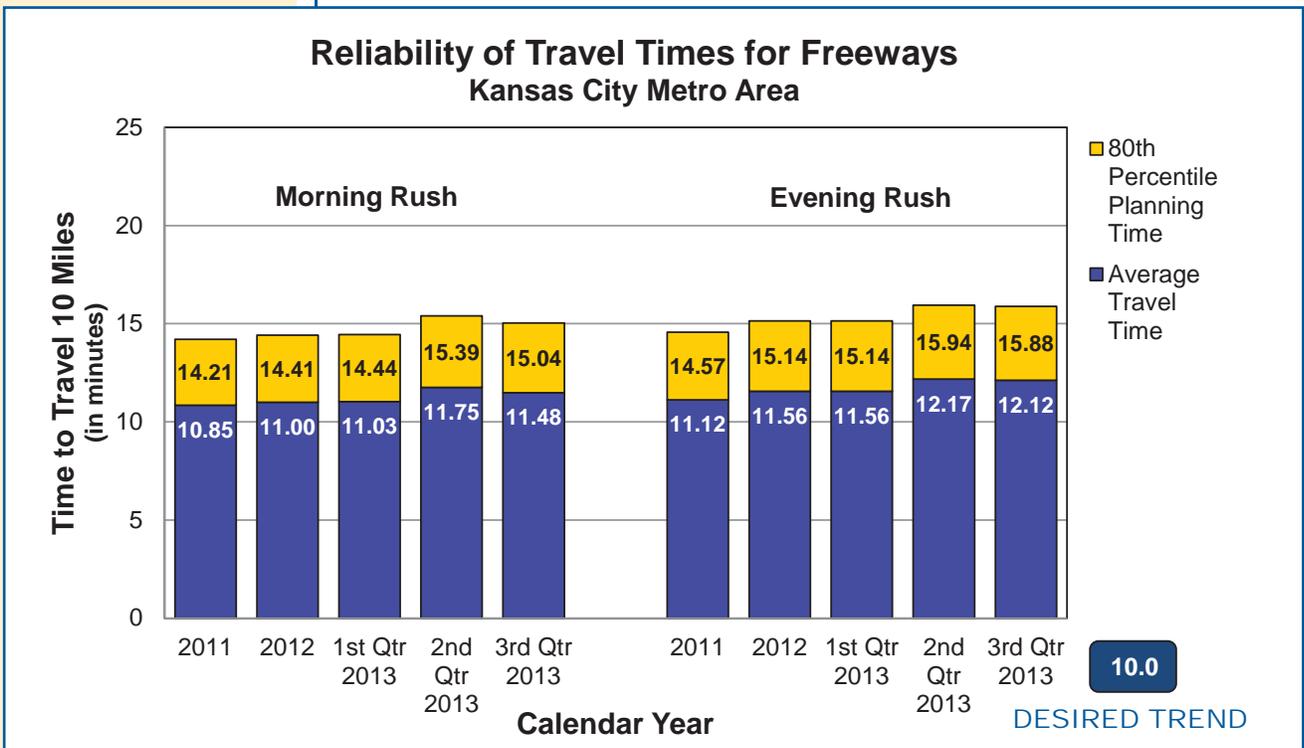
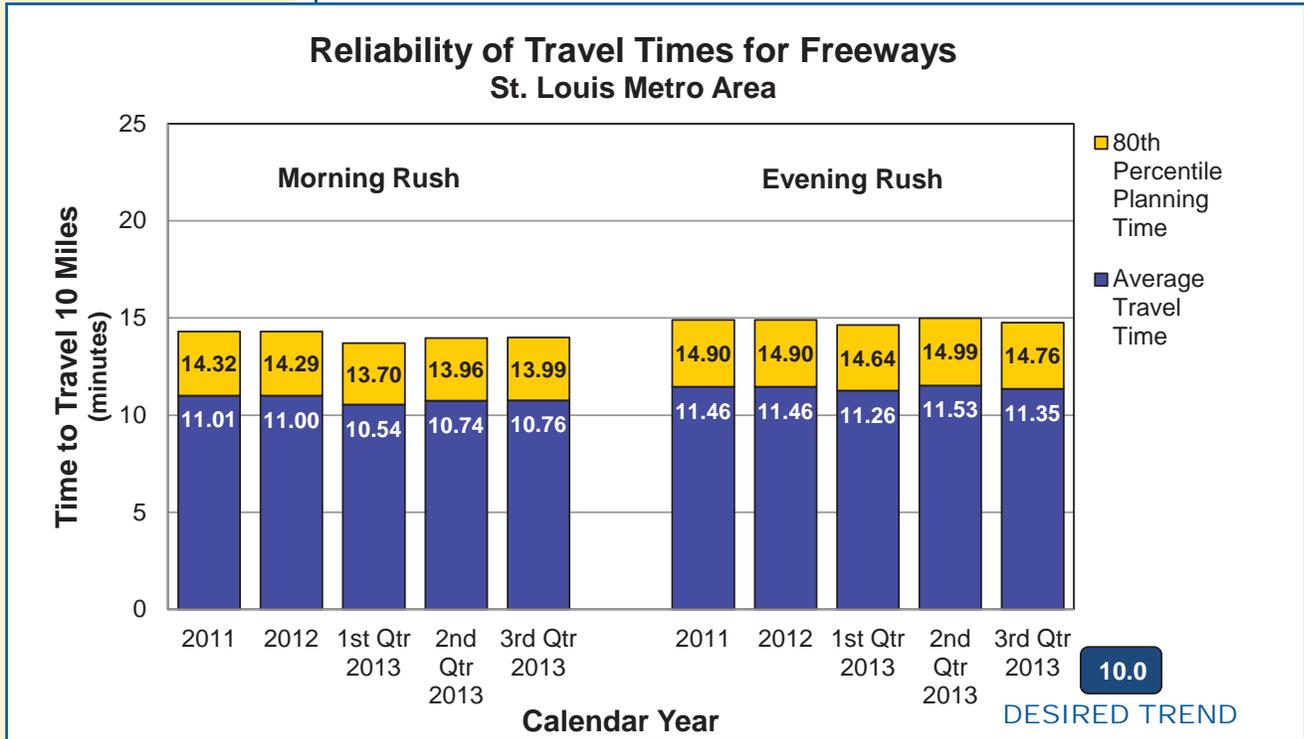
Average travel times, however, do not tell the whole story. On any given day, travel times may be higher due to things such as crashes, work zones, or adverse weather. In fact, for customers to make sure they arrived on time 80 percent of the time, they needed to plan an additional 3-4 minutes for every 10 miles traveled on freeways in St. Louis and Kansas City.

The maps in this measure help identify specific locations in urban areas where traffic did not typically move at free-flow speeds during the morning and evening rush hours. In St. Louis, the greatest traffic demands during rush hour continue to exist on I-270 between I-64 and I-44. Likewise, areas along I-64 continue to experience normal high demands during the peak periods. On I-70, the maps show that traffic impacts due to the Blanchette Bridge project have subsided when compared to previous quarters. This change can be attributed to the re-opening of the westbound bridge in August.

In Kansas City, notable congestion continues to be evident on I-70, specifically inside the I-435 loop. The congestion depicted on I-70 west of I-435 is uncharacteristic of previous quarters and is likely a result of construction projects under way in the downtown region. Work on multiple bridges in the area has required partial and full closures of both mainline traffic lanes and ramps. Work is expected to be completed by the end of the year. Two new sections of traffic flow are now shown on the maps for Kansas City: I-470 between I-435 and I-70 and I-435 north of I-70. In addition, KC Scout is now producing monthly mobility reports and an online dashboard, both of which can be accessed at [www.kcscout.net](http://www.kcscout.net).

As shown in the maps below, manual travel times in Columbia were not run this quarter. Arterial travel times are collected manually on different routes each quarter. MoDOT is currently reviewing proposals to obtain private sector traffic data that will allow for a more comprehensive look at traffic across the state with less dependence on manual travel time runs.

# OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

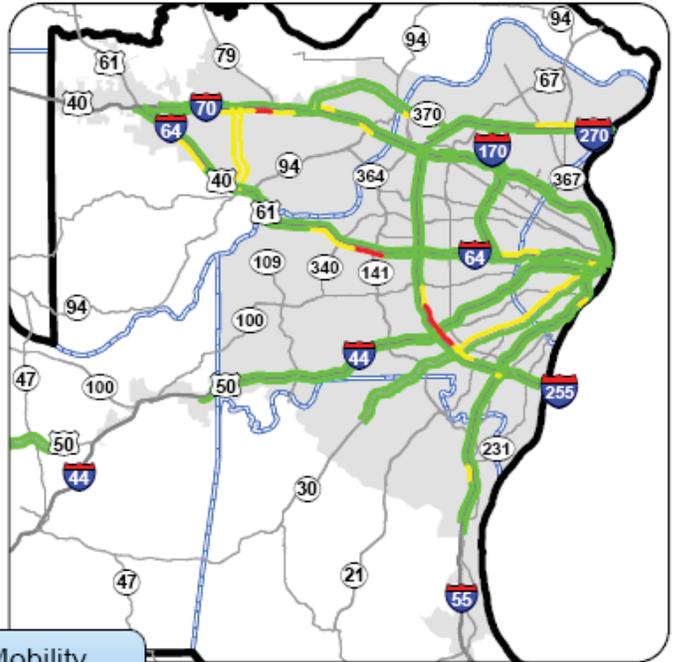


# OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

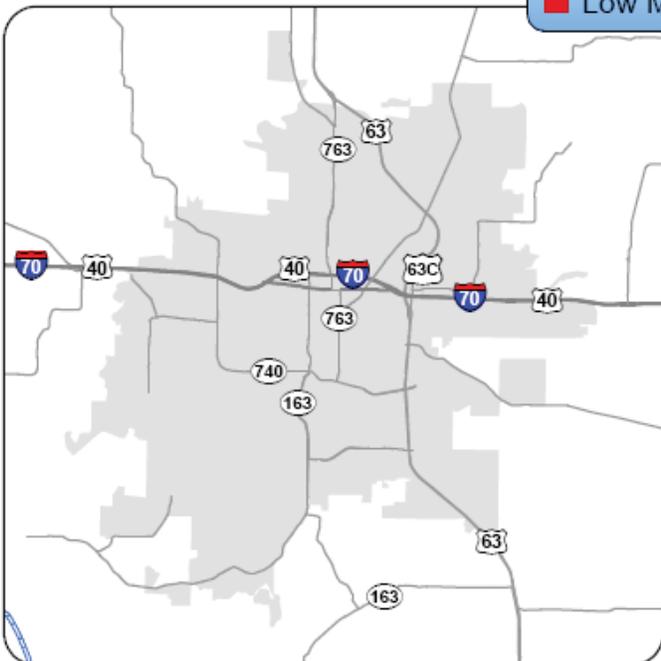
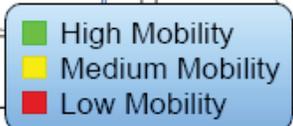
## AM Mobility



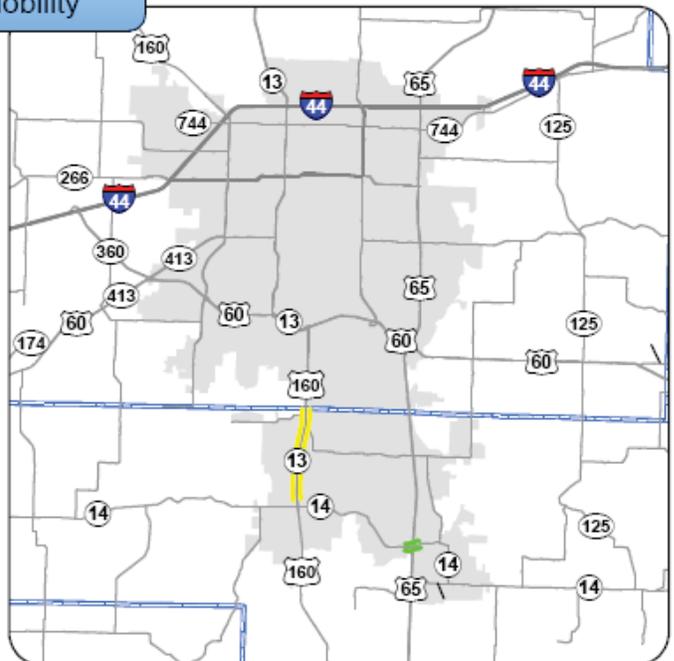
**Kansas City Area**



**Saint Louis Area**



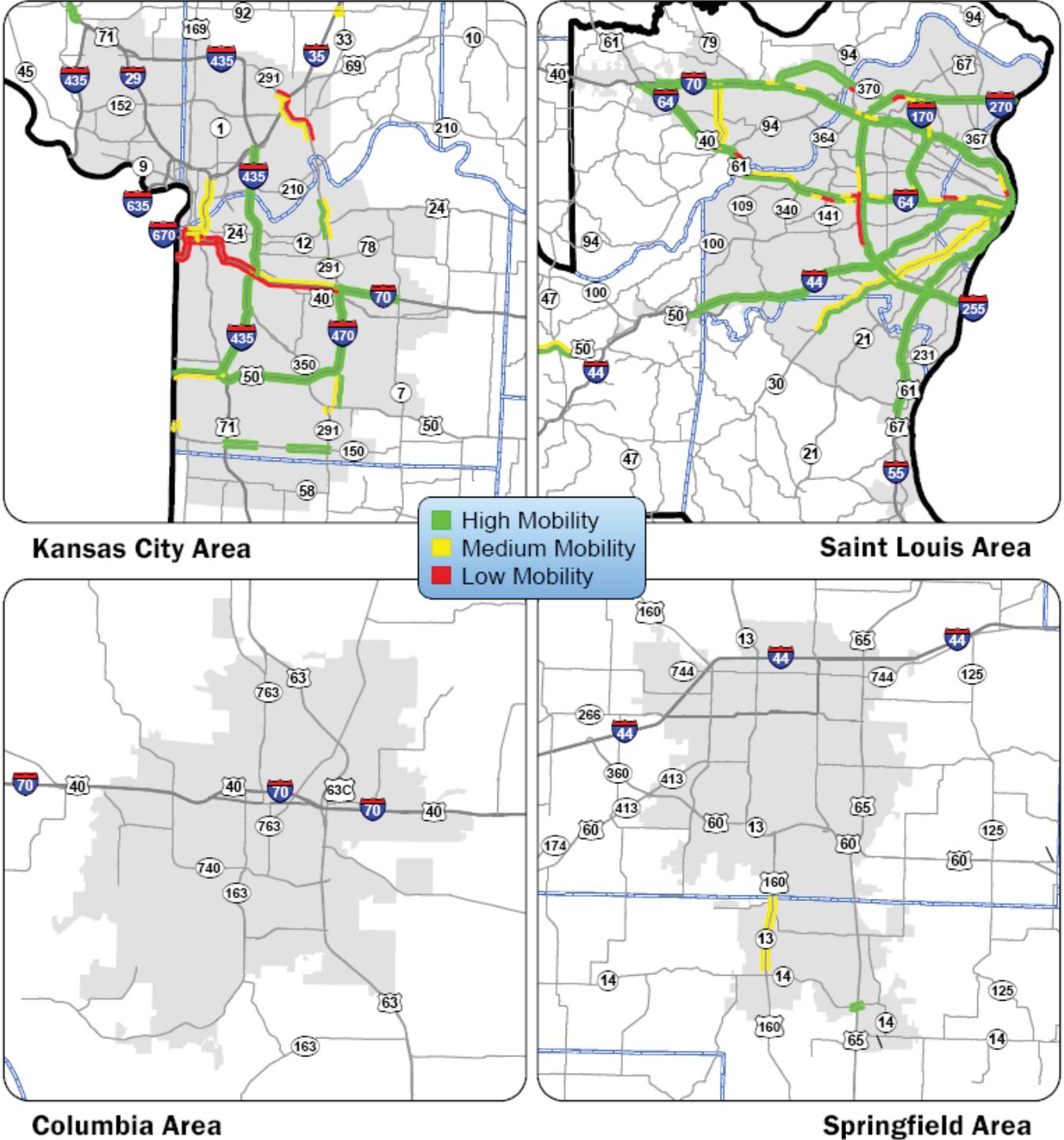
**Columbia Area**



**Springfield Area**

# OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

## PM Mobility



RESULT DRIVER:  
Paula Gough,  
District Engineer

## OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

MAP-21

MEASUREMENT  
DRIVER:  
Jeanne Olubogun,  
District Traffic Engineer

PURPOSE OF  
THE MEASURE:  
This measure tracks the  
annual cost and impact of  
traffic congestion to motor-  
ists in the areas of motorist  
delay, travel time, excess  
fuel consumed per auto  
commuter and congestion  
cost per auto commuter.

MEASUREMENT  
AND DATA  
COLLECTION:  
The Texas A&M Transpor-  
tation Institute annually  
produces the Urban Mobility  
Report. In the 2012 report,  
there 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. This  
means 600 million speeds  
on 875,000 miles across the  
U.S. – an enormous amount  
of information to analyze  
congestion patterns and  
accurately determine what  
solutions can be targeted to  
specific areas. This mea-  
sure will use that data to  
evaluate the St. Louis and  
Kansas City metro areas  
as compared to the es-  
tablished average of other  
large urban areas around  
the country.

### *Cost and impact of traffic congestion-5b*

Recurring congestion occurs at regular times, although the traffic jams are not necessarily consistent day-to-day. Nonrecurring congestion is an unexpected traffic crash or natural disaster that affects traffic flow. When either occurs, the time required for a given trip becomes unpredictable. This unreliability is costly for commuters and truck drivers moving goods which results in higher prices to consumers.

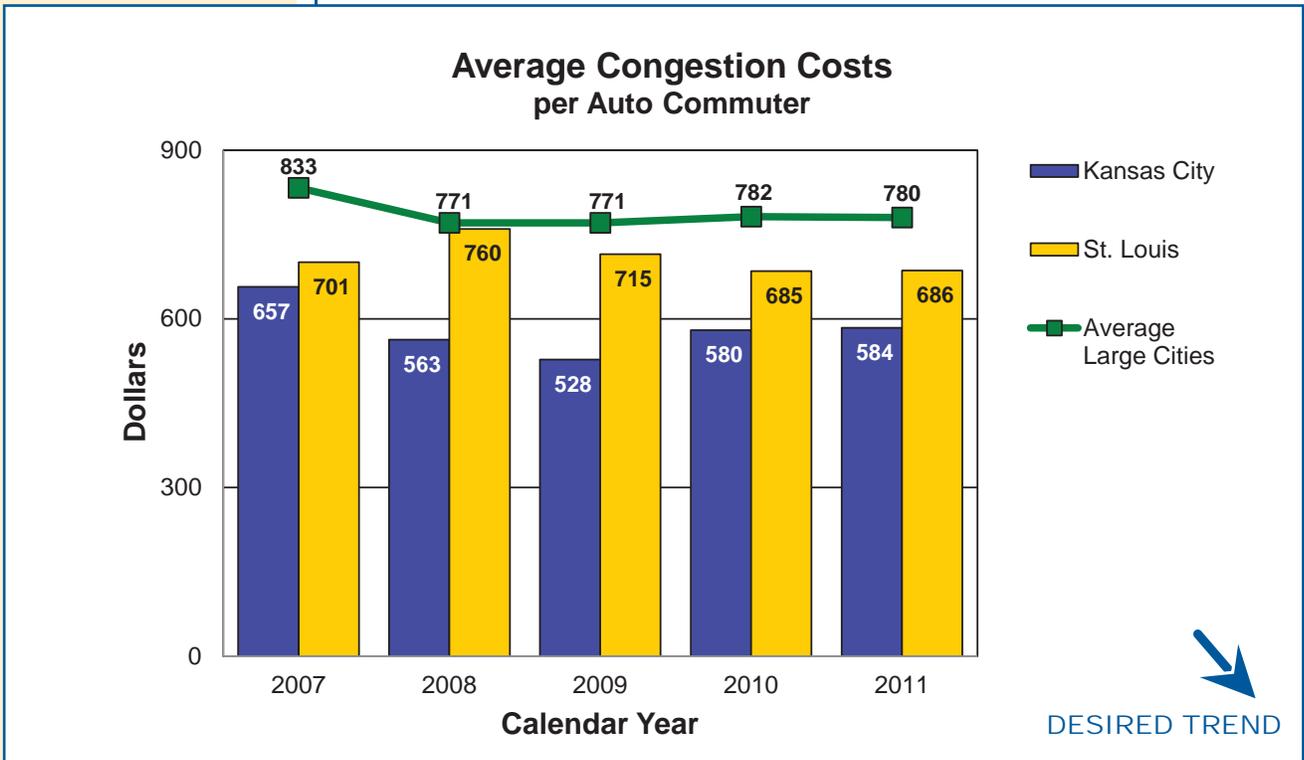
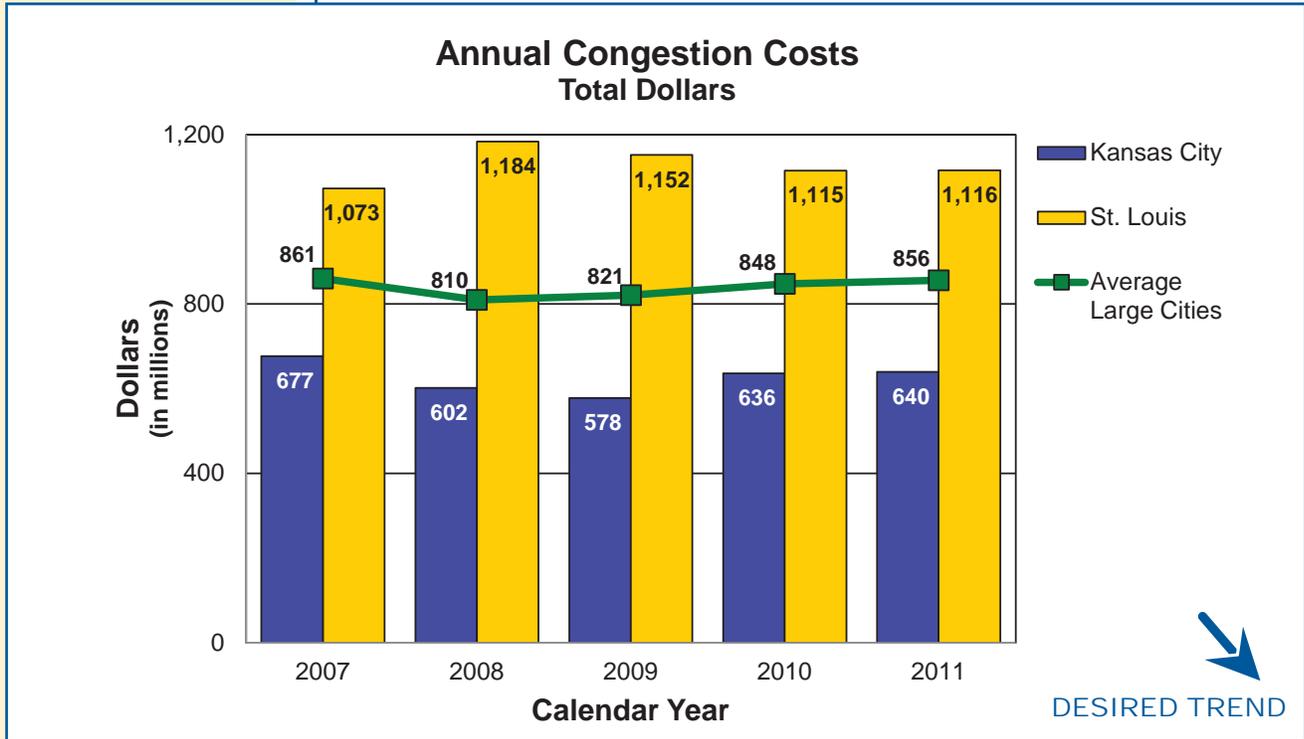
The Kansas City and St. Louis metro regions both fall within the category of large urban areas, according to the Urban Mobility Report. Large urban areas have populations between one million and three million people. Other cities considered to be large urban areas include Minneapolis-St. Paul, Nashville, Indianapolis, Milwaukee and Louisville.

The annual congestion cost totals and the annual congestion cost per auto commuter for Kansas City both follow a similar trend. There is a slight decrease from 2007 to 2009 and a slight increase since 2009. In St. Louis, both measures show a slight increase in 2008 and a slight decrease through 2010.

The desired trend for both costs is downward, as lower congestion costs would indicate traffic moving more efficiently.



# OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM



RESULT DRIVER:  
Paula Gough,  
District Engineer

## OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

MEASUREMENT  
DRIVER:  
Jason Sims,  
Traffic Center Manager

PURPOSE OF  
THE MEASURE:  
This measure is used to  
determine the trends in inci-  
dent clearance on the state  
highway system.

MEASUREMENT  
AND DATA  
COLLECTION:  
Advanced Transportation  
Management Systems are  
used by the Kansas City  
and St. Louis traffic man-  
agement centers to record  
incident start time and the  
time when all lanes are  
declared cleared.

### *Average time to clear traffic incident-5c*

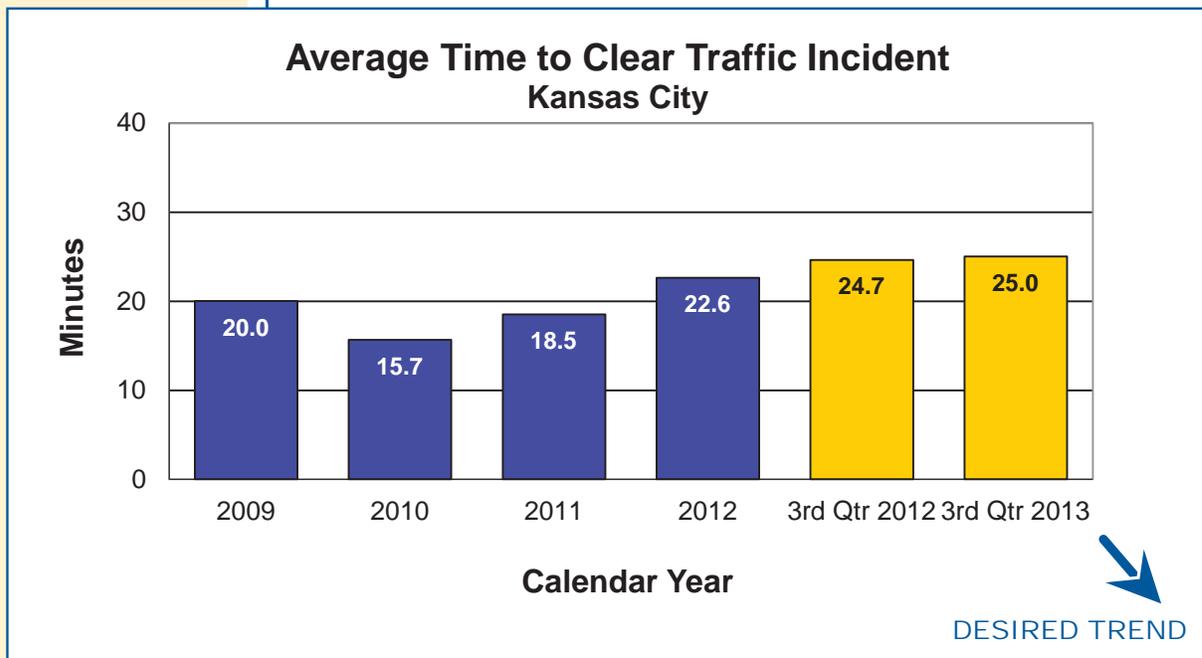
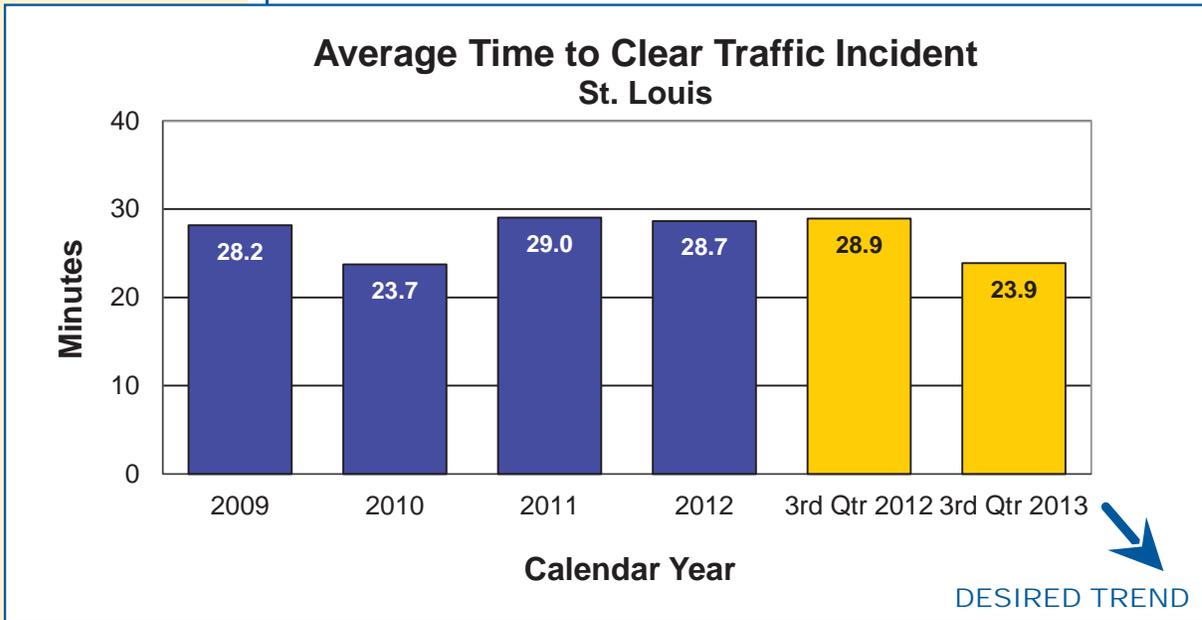
A traffic incident is an unplanned event that temporarily reduces the number of vehicles that can travel on the road. The faster an incident is cleared, the faster the highway system returns to normal. Therefore, responding to and quickly addressing the incident (crashes, flat tires and stalled vehicles) improves system performance.

St. Louis recorded 594 incidents in July, 579 in August, and 572 in September. The average time to clear traffic accidents was 23.9 minutes, a decrease of 17 percent compared to the third quarter of 2012.

Kansas City collected data on 753 incidents in July, 708 in August, and 589 in September. The average time to clear traffic incidents was 25 minutes, a slight increase of 3 percent from the third quarter of 2012. There were several long term incidents in August, including overturned semi-truck carrying cattle on westbound I-70 which resulted in a seven hour closure.



# OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM



RESULT DRIVER:  
Paula Gough,  
District Engineer

## OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

MEASUREMENT  
DRIVER:  
Rick Bennett,  
Traffic Liaison Engineer

PURPOSE OF  
THE MEASURE:  
This measure tracks the  
closures on Interstate 70  
and Interstate 44 due to  
various traffic impacts.

MEASUREMENT  
AND DATA  
COLLECTION:  
The interstate route clo-  
sures that have an actual  
or expected duration of  
30 minutes or more are  
entered into MoDOT's  
Transportation Management  
System for display on the  
Traveler Information Map  
on MoDOT's website.

### *Traffic impact closures on major interstate routes-5d*

Interstates are the arteries that connect our nation and keep people and commerce flowing. When they shut down in Missouri, the country is cut in half. Keeping interstates free-flowing is a top priority for MoDOT, but sometimes nature and vehicle crashes affect the department's ability to keep the interstate moving. During this review period, Missouri experienced several significant closure events.

Interstate 70 westbound was closed for six and a half hours at 18th Street in Kansas City due to an overturned tractor trailer carrying livestock on August 9. On July 21, a police chase resulted in a single vehicle crash in St. Louis County that damaged highway lighting and required a power disconnect before the vehicle could be moved. On August 29, a long-term planned closure of the eastbound Broadway Street exit ramp in downtown St. Louis was erroneously reported as a mainline closure instead of a ramp closure.

On Interstate 44, a crash involving a tractor trailer had eastbound lanes closed for over six hours on August 21. On August 7 and 8, I-44 was closed several times due to flooding of the Little Piney Creek near Jerome. The westbound lanes were closed four separate times, with a cumulative closure of 24 hours and 40 minutes. The eastbound lanes were closed three separate times, with a cumulative closure of 22 hours and 47 minutes. Both directions of I-44 were closed in Phelps County for 56 minutes on August 6 due to flash flooding from the Gasconade River.

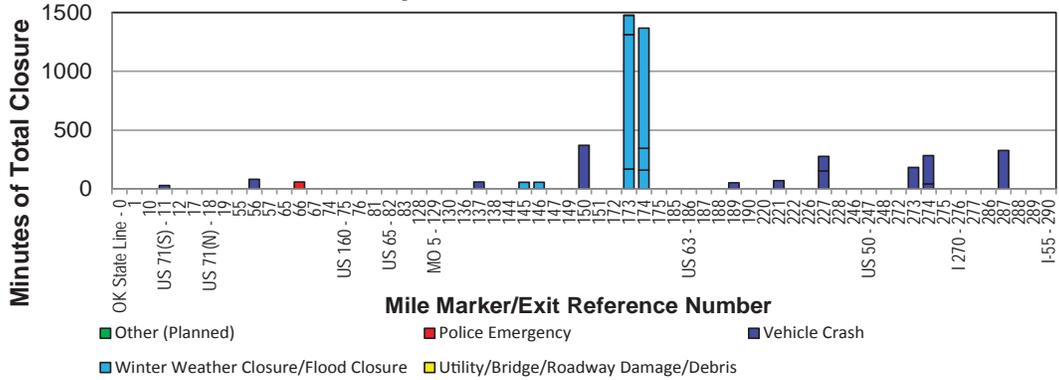
On westbound I-44 in Franklin County there were two incidents involving tractor trailers. On August 15, a pick-up truck struck a tractor trailer parked on the right shoulder, resulting in a fatality requiring reconstruction. On August 19, there was a crash involving an overturned tractor trailer. In St. Louis County, eastbound I-44 was closed on July 2 due to a chain reaction rear-end collision involving a tractor trailer and three passenger vehicles. Eastbound I-44 in St. Louis County was closed again on July 4 for three hours due to a vehicle crash. On July 27, a multi-vehicle crash involving city police, a tractor trailer and two other passenger vehicles resulted in a fatality, closing eastbound I-44 in St. Louis City for 5 hours and 26 minutes.

Except for the unusually long flood closures, which were beyond the control of responders, there did not appear to be any particular corridor locations on I-70 or I-44 that were locations of recurring long-term incidents. MoDOT continues to work with all emergency responders to minimize the delay caused by closures on our Interstate system.



# OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

## Traffic Impact Closures on Interstate 44



SYMBOL	COUNTY	DIR	MILE MARKER	START DATE	TYPE	DURATION (H:MM)
▲	JASPER	E	11.91	30-Aug-13	VEHICLE CRASH	0:30
■	LAWRENCE	W	56.92	27-Sep-13	VEHICLE CRASH	1:23
■	GREENE	E	66.87	11-Aug-13	POLICE EMERGENCY	0:59
■	LACLEDE	E	137.16	14-Sep-13	VEHICLE CRASH	0:59
■	PULASKI	W	145.91	6-Aug-13	FLOOD	0:56
■	PULASKI	E	146.25	6-Aug-13	FLOOD	0:56
★	PULASKI	E	150.68	21-Aug-13	VEHICLE CRASH	6:10
★	PHELPS	W	173.56	7-Aug-13	FLOOD	2:49
★	PHELPS	W	173.56	7-Aug-13	FLOOD	19:04
★	PHELPS	W	173.56	7-Aug-13	FLOOD	2:41
▲	PHELPS	W	173.56	8-Aug-13	FLOOD	0:06
★	PHELPS	E	173.81	7-Aug-13	FLOOD	2:41
★	PHELPS	E	173.81	7-Aug-13	FLOOD	3:04
★	PHELPS	E	173.81	7-Aug-13	FLOOD	17:02
■	PHELPS	E	189.78	21-Jul-13	VEHICLE CRASH	0:52
■	CRAWFORD	E	221.93	2-Sep-13	VEHICLE CRASH	1:11
★	FRANKLIN	W	227.00	15-Aug-13	VEHICLE CRASH	2:02
★	FRANKLIN	W	227.65	19-Aug-13	VEHICLE CRASH	2:34
★	ST. LOUIS	E	273.78	4-Jul-13	VEHICLE CRASH	3:03
★	ST. LOUIS	E	274.16	2-Jul-13	VEHICLE CRASH	3:59
■	ST. LOUIS	W	274.25	4-Jul-13	POLICE EMERGENCY	0:44
★	ST. LOUIS CITY	E	287.72	27-Jul-13	VEHICLE CRASH	5:26

RESULT DRIVER:  
Paula Gough,  
District Engineer

## OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

MEASUREMENT  
DRIVER:  
Jason Vanderfeltz,  
Design Liaison Engineer

PURPOSE OF  
THE MEASURE:  
Work zones are designed  
to allow the public to travel  
safely through work areas  
with minimal disruption.  
This measure indicates how  
well significant work zones  
perform.

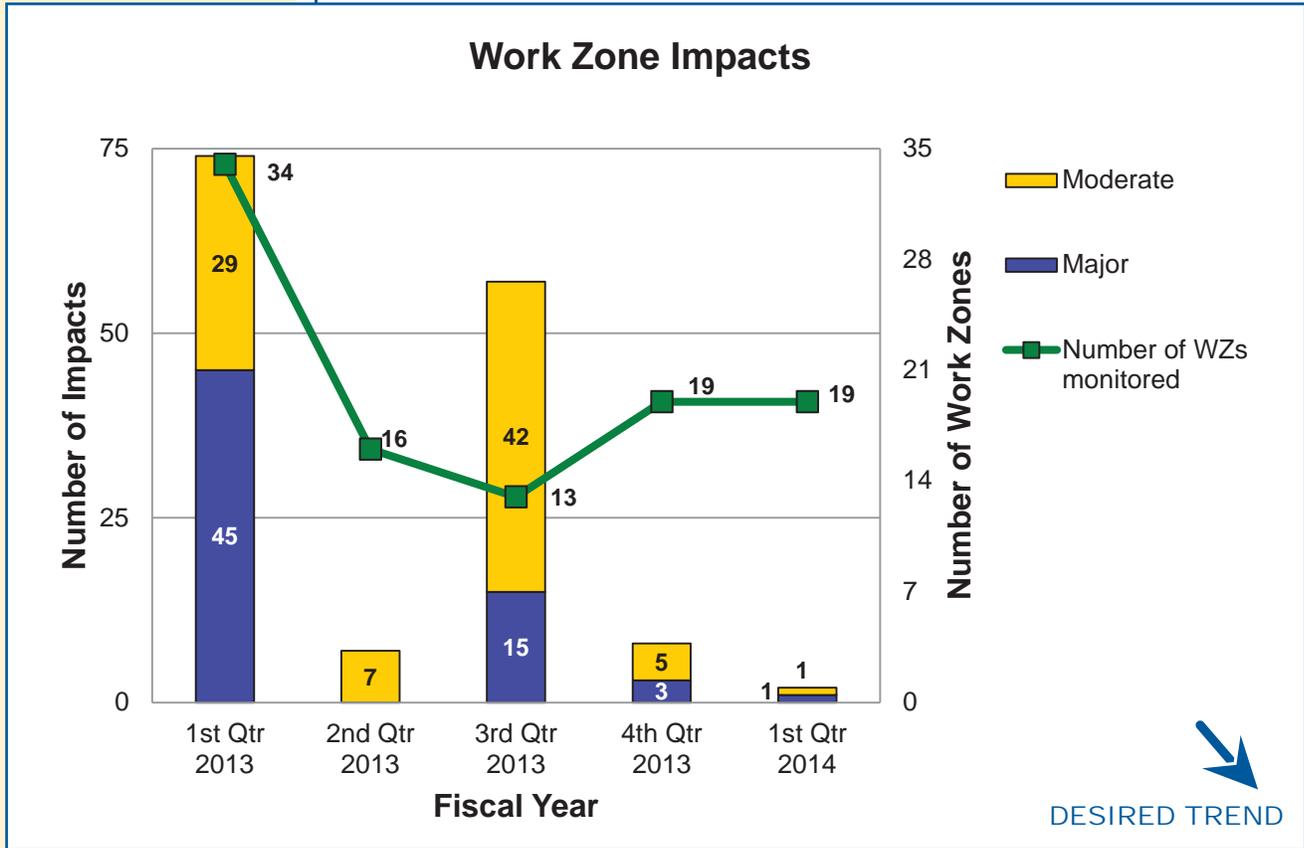
MEASUREMENT  
AND DATA  
COLLECTION:  
Work zone impacts are  
collected by MoDOT staff  
driving through work zones,  
conducting visual observa-  
tions or using automated  
data collection. An impact  
is defined as the additional  
time a work zone adds to  
normal travel. They are cat-  
egorized into three levels: a  
minor impact lasts less than  
10 minutes; a moderate im-  
pact lasts 10 to 14 minutes;  
and a major impact lasts 15  
minutes or more.

### *Work zone impacts to the traveling public-5e*

Motorists want to get through work zones with as little inconvenience as possible. Based on work zone surveys received this quarter, 71 percent are satisfied with timeliness when traveling in a work zone. MoDOT makes efforts to minimize the travel impacts by shifting work to nighttime hours or during times when there are fewer impacts to the traveling public. The department monitored 19 significant work zones this quarter, with major impacts showing an 80 percent decrease and moderate impacts showing a 67 percent decrease.



# OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM



RESULT DRIVER:  
Paula Gough,  
District Engineer

## OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

MAP-21

MEASUREMENT  
DRIVER:  
Mike Henderson,  
Transportation Planning  
Specialist

### *Effectiveness of improving air quality-5f*

**PURPOSE OF  
THE MEASURE:**  
This measure tracks concentrations of pollutants in on-road mobile source emissions. In other words, the department is tracking pollution caused by vehicles on the roads.

MoDOT is committed to improving air quality through modifying its daily operations, incorporating employee actions and education, providing information to the public, leading air quality improvements, managing congestion to reduce emissions, providing alternative choices for commuters and promoting the use of environmentally friendly fuels and vehicles.

**MEASUREMENT  
AND DATA  
COLLECTION:**  
MoDOT is still determining what pollutants to track and what concentration levels will align with the U.S. Environmental Protection Agency's air quality standards. At this time, the department is collecting samples of nitrogen dioxide, carbon monoxide, particulate matter and black carbon through air quality monitors located near I-64 in St. Louis and I-70 in Kansas City. Because this measure is part of the latest federal surface transportation act's performance requirements, guidance for measurement and data collection will be established by 2015.

#### Effectiveness of Improving Air Quality

**UNDER DEVELOPMENT**

RESULT DRIVER:  
Paula Gough,  
District Engineer

## OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

MEASUREMENT  
DRIVER:  
Tim Chojnacki,  
Maintenance Liaison  
Engineer

PURPOSE OF  
THE MEASURE:  
This measure tracks the  
amount of time needed to  
perform MoDOT's snow and  
ice removal efforts.

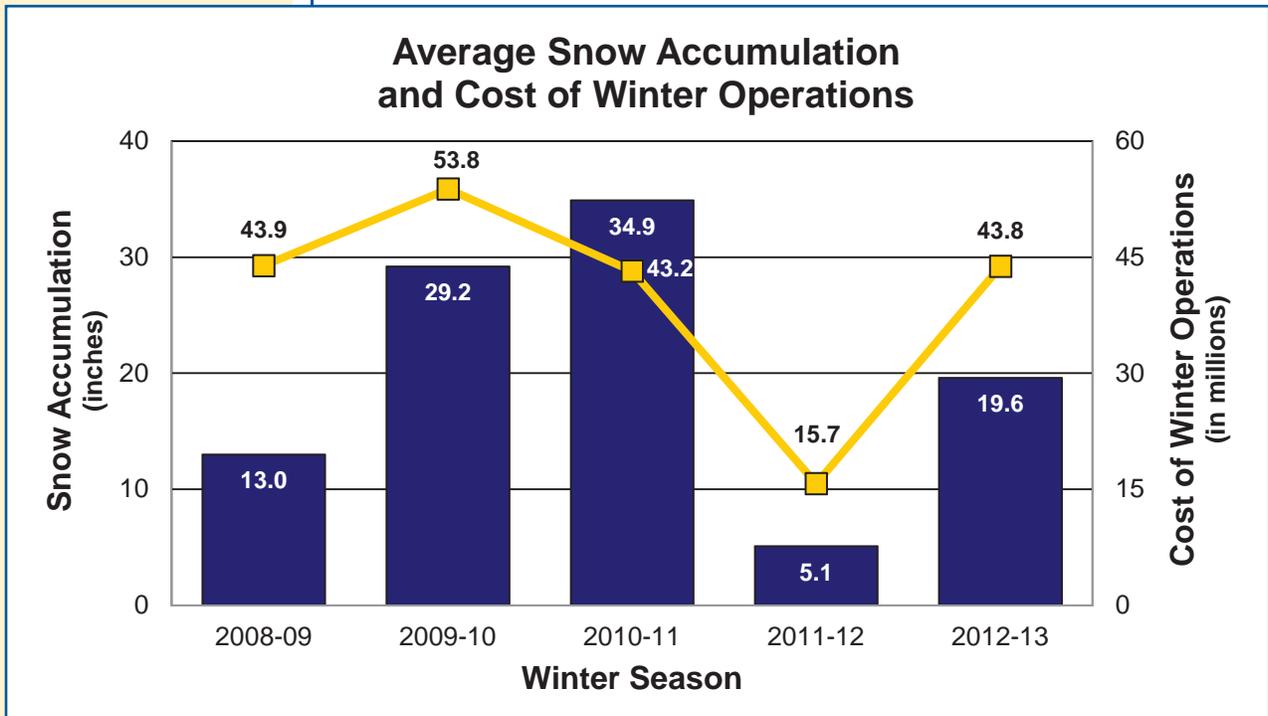
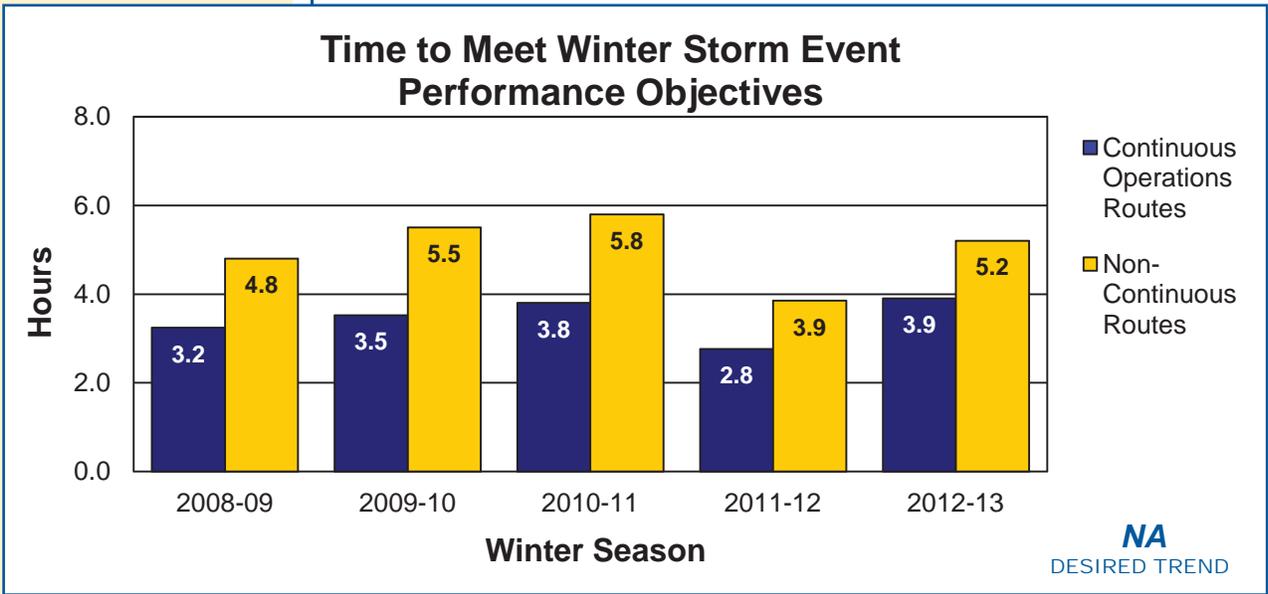
MEASUREMENT  
AND DATA  
COLLECTION:  
For major highways and  
regionally significant  
routes, the objective is to  
restore them to a mostly  
clear condition as soon as  
possible after the storm  
has ended. MoDOT calls  
these "continuous opera-  
tions" routes. State routes  
with lower traffic volumes  
should be opened to two-  
way traffic and treated with  
salt or abrasives at critical  
areas such as intersections,  
hills and curves. These are  
called "non-continuous"  
routes. After each winter  
event, maintenance  
personnel submit reports  
indicating how much time  
it took to meet the objec-  
tives for both route classifica-  
tions.

### *Time to meet winter storm event performance objectives-5g*

Knowing the time it takes to clear roads after a winter storm can help the department better analyze the costs associated with that work. MoDOT's response rate to winter events provides good customer service for the traveling public while keeping costs as low as possible. The winter of 2012 -2013 was an average winter for Missouri, with an average of 19.6 inches of snow statewide. It took an average of 3.9 hours to meet MoDOT's objective for continuous operations routes, and an average of 5.2 hours for non-continuous routes. These numbers compare favorably with past years.



# OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM



RESULT DRIVER:  
Paula Gough,  
District Engineer

MEASUREMENT  
DRIVER:  
Ron Effland, Non-motorized  
Transportation Engineer

PURPOSE OF  
THE MEASURE:  
This measure tracks Mo-  
DOT's investment in pedes-  
trian facilities and progress  
toward removing barriers  
to accessibility for all users.  
Accessibility applies both to  
right of way (sidewalks and  
traffic signals, for example)  
and to buildings, parking  
lots and restrooms.

MEASUREMENT  
AND DATA  
COLLECTION:  
Investment in pedestrian  
facilities data is gathered  
by querying total award  
amounts for the 20 most  
common construction  
elements of a pedestrian  
project. Transition Plan  
progress is based upon  
completed work that has  
corrected defective items  
reported in the 2010 Transi-  
tion Plan inventory. The dol-  
lar amounts are based on  
unadjusted estimates from  
2008 and may not reflect  
the actual expenditures.  
As each deficient segment  
is upgraded, reviewed and  
removed from MoDOT's  
Transition Plan, its 2008  
estimated total is accounted  
for and shown as progress.  
Inflation and changing field  
conditions therefore have  
no impact on the represen-  
tation of progress.

## OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

### *Bike/pedestrian and ADA transition plan improvements-5h*

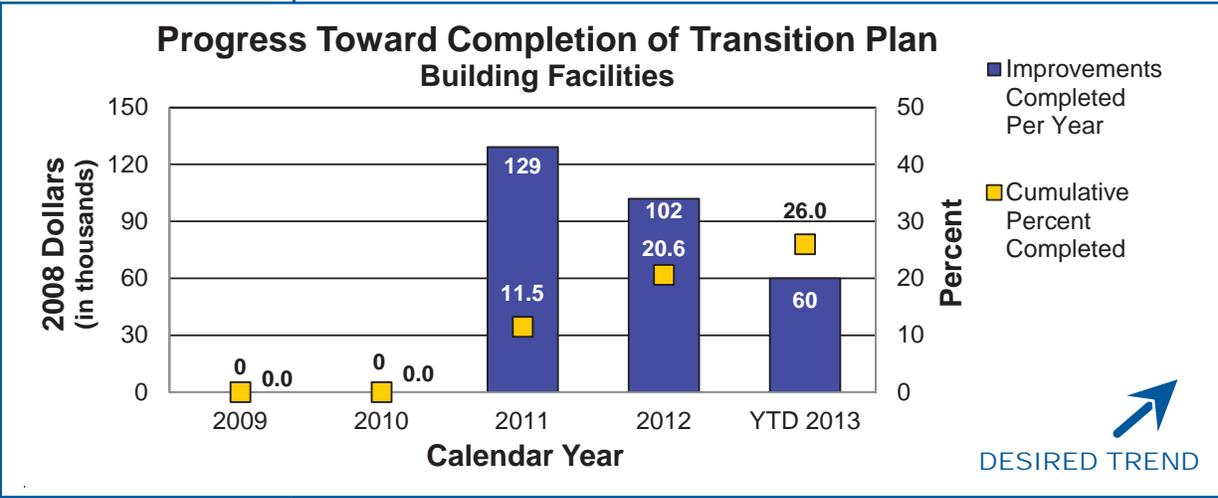
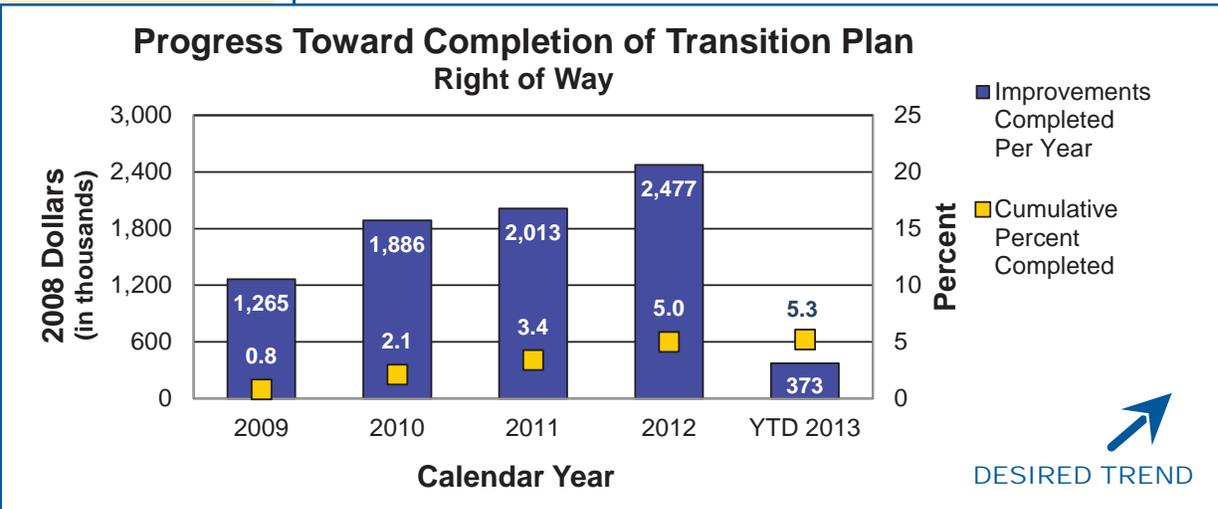
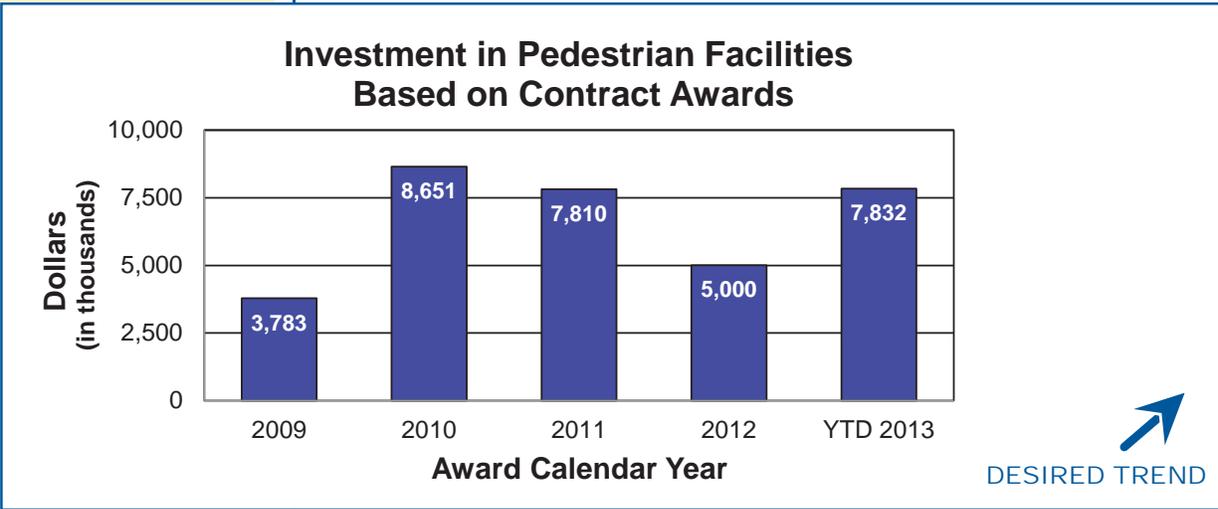
Completion of MoDOT's 2010 Transition Plan Update is necessary to bring the department into compliance with the Americans with Disabilities Act. MoDOT's current Transition Plan Update was published in August 2010 and reported an inventory of needed ADA improvements developed in 2008. Since then, MoDOT has made a determined effort to improve pedestrian travel by considering accessibility issues on all projects. MoDOT has been responsive to public requests and has been proactive in many areas to make system-wide improvements when opportunities arise.

MoDOT's investment in pedestrian facilities is key to providing a comprehensive transportation system that meets the needs of all users. Sidewalks around the state are being improved to meet accessibility requirements. MoDOT is adding sidewalks, traffic signals and marked crosswalks where needed to provide safer and more convenient transportation options.

Investment in pedestrian facilities fell in 2012, but has recovered in calendar year 2013 where it is currently 57 percent higher than the total invested in the system in 2012. This increase demonstrates the department's renewed commitment to improving pedestrian facilities in the state.



# OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM



## RESULT DRIVER:

Paula Gough,  
District Engineer

# OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

## MEASUREMENT DRIVER:

Amy Ludwig,  
Administrator of Aviation

## PURPOSE OF THE MEASURE:

This measure tracks passenger use of modes other than highways in Missouri.

## MEASUREMENT AND DATA COLLECTION:

Airline passenger counts are obtained from the Federal Aviation Administration and from individual airports. Washington is the benchmark due to its comparable population. Ferry passenger data is compiled from the New Bourbon and Mississippi County ferryboats, services owned and operated by Missouri public port authorities. Amtrak supplies Missouri River Runner passenger counts. Urban and rural transit services provide transit passenger data, with Wisconsin as the benchmark. Aviation and transit data is updated annually – in January and October, respectively – while ferryboat and rail data is updated quarterly.

## *Use and connectivity of modes of transportation-5i*

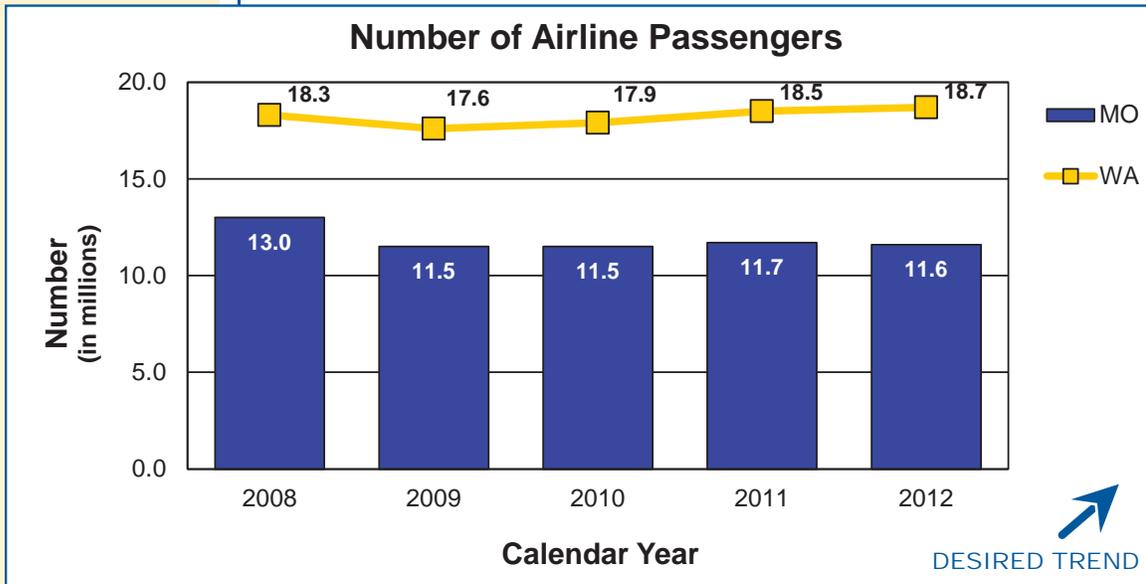
Planes, trains, ferries and transit options are vital means of transport for Missourians. Passengers are slowly returning to commercial airline travel and transit services following recession-related downturns. Bad economic times drive customers away from air travel and can cause cutbacks in transit services. The number of airline passengers in 2012 decreased slightly to the same levels as seen in 2009 and 2010. Metro transit ridership held relatively stable, while non-metro transit ridership in some regions decreased slightly in fiscal year 2013 to levels similar to 2010 and 2011.

Water levels remained high enough to support ample ferry operations throughout the summer. In the first quarter of fiscal year 2014, the number of ferry boat passengers increased significantly compared to the same period a year earlier when water levels were unusually low. Maintaining ferry service helps alleviate travel time and expenses for travelers who otherwise would have to drive substantially further to use Mississippi River bridge crossings to reach their destinations.

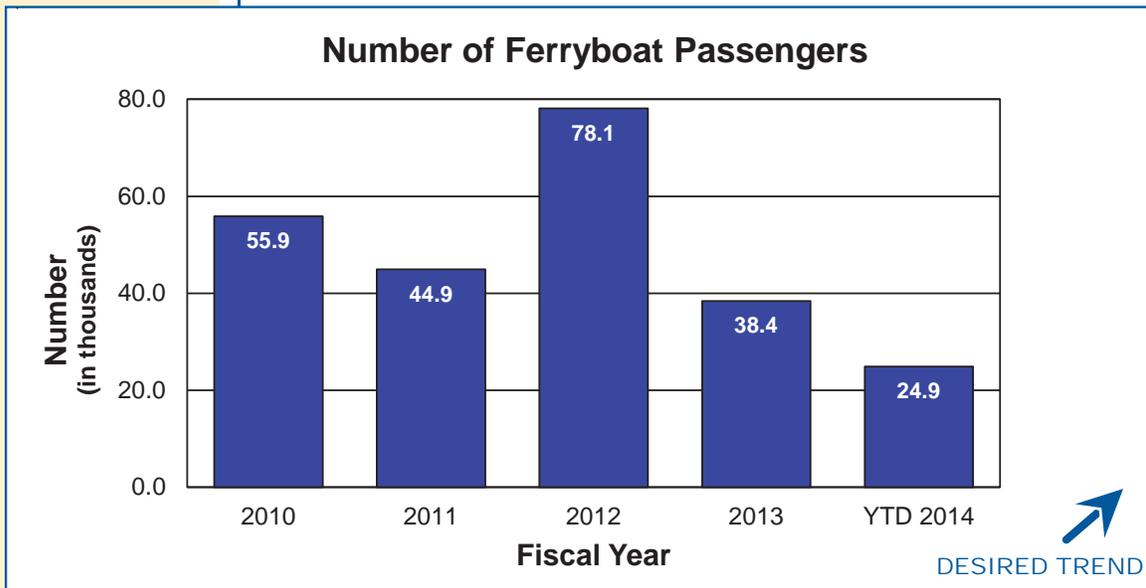
Strained economic times and high fuel prices, coupled with reliable on-time performance, help attract customers to train travel. Ridership was up on Missouri River Runner trains during the first quarter of fiscal year 2014.

MoDOT continues to support these travel modes by administering federal and state inspection, construction and operational programs, assisting with marketing efforts and educating the public about the benefits these services provide.

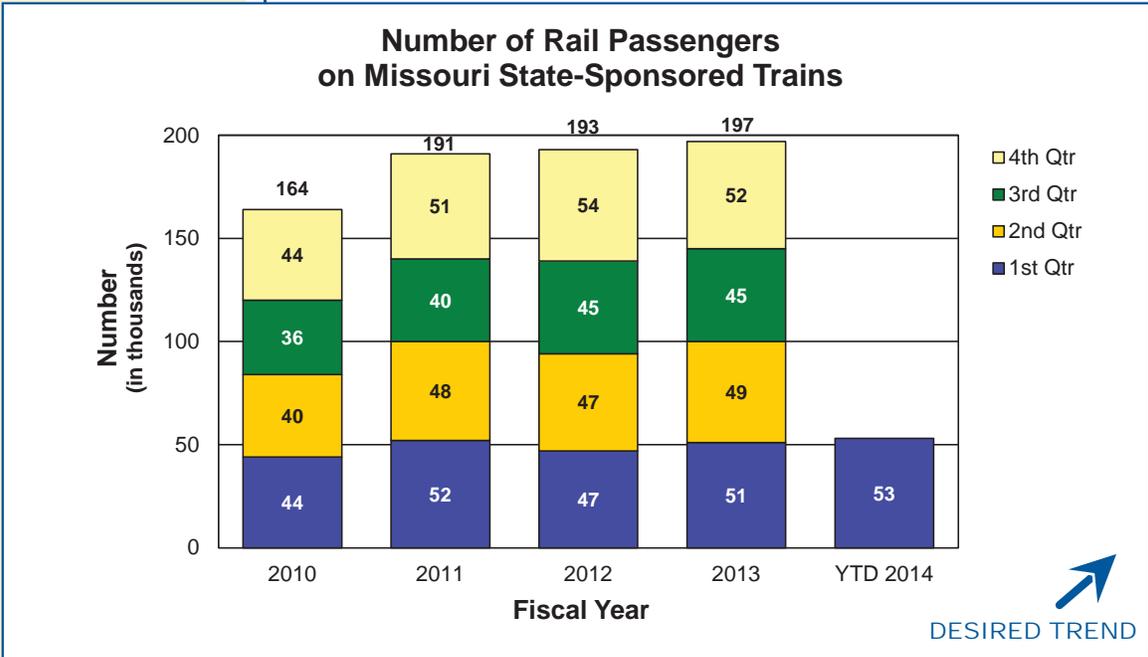
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\*FAA publishes data in October for the preceding year.



# OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM



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