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

MEASUREMENT DRIVER:
Alex Wassman
Senior Traffic Studies Specialist

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:
Travel time data is collected continuously via wireless technology. To assess mobility, MoDOT compares travel times during rush hour to free-flow conditions where vehicles can travel at the posted speed limit. This measure also assesses reliability, an indicator of how variable those travel times are on a daily basis. The charts in this measure show the average travel time and the 95th percentile travel time, which is the time motorists should plan in order to reach their destinations on time 95 percent of the time. The maps display the mobility of specific sections of roadways during rush hour.

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Travel times and reliability on major routes – 5a

From January to March 2016, travel times in St. Louis and Kansas City increased compared to the same period in 2015. For first quarter 2016, the average 10-mile travel time in St. Louis was 10.94 minutes during the morning and 12.03 minutes during the evening. For Kansas City, the average travel time was 10.86 minutes during the morning and 11.36 minutes during the evening. Overall, average speeds ranged between 50 and 55 mph.

The planning times account for unexpected delays and indicate how long customers needed to plan in order to arrive on time 95 percent of the time. In St. Louis, the average 10-mile planning times were 14.69 minutes during the morning and 17.95 minutes during the evening. Customers in the St. Louis evening rush needed to plan about eight minutes more for a 10-mile trip than they would need in free-flow conditions. In Kansas City, the average planning times were 14.22 minutes during the morning and 15.19 minutes during the evening. The planning times in St. Louis and Kansas City represent average rush-hour speeds between 33 and 43 mph.

Individual freeway segments within the regions experienced longer travel times than the regional averages as depicted in the maps. The maps also depict rush-hour conditions on arterial routes compared to normal traffic flow during non-peak traffic conditions.

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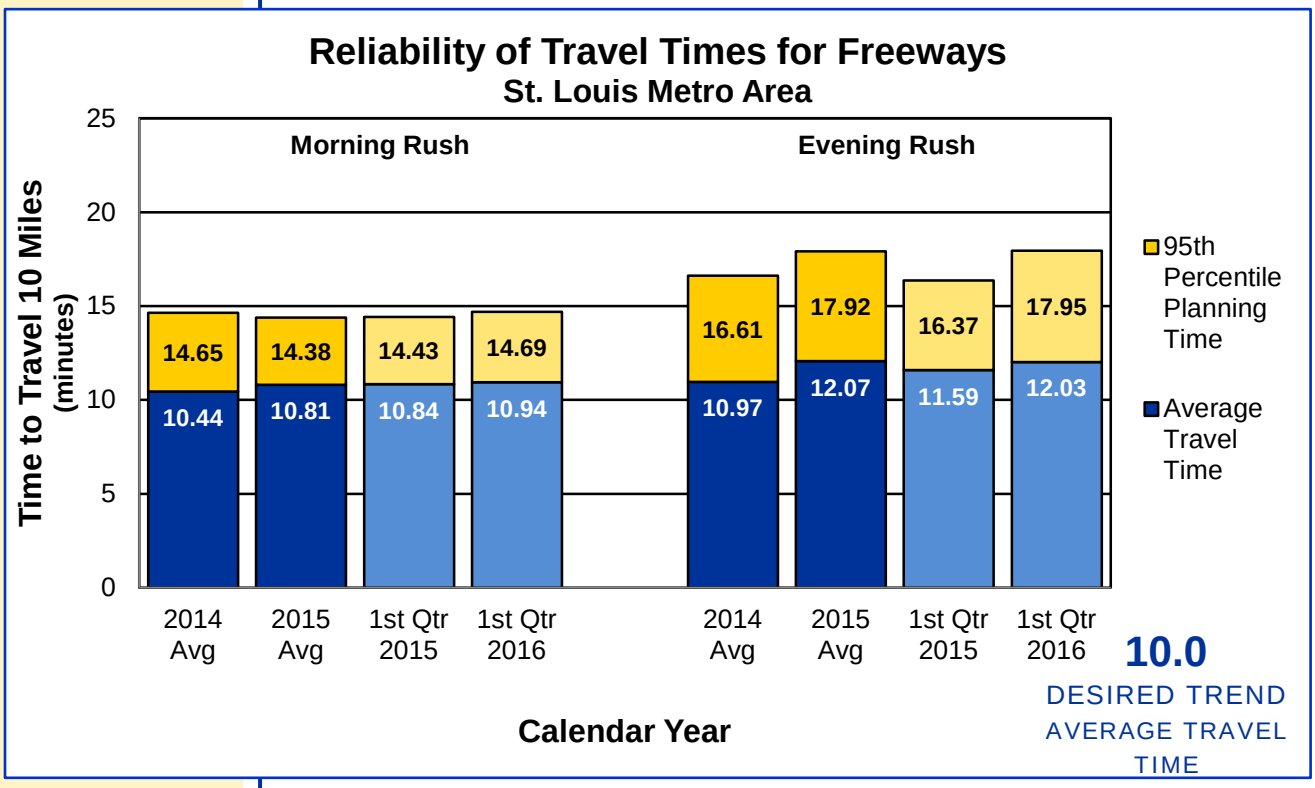
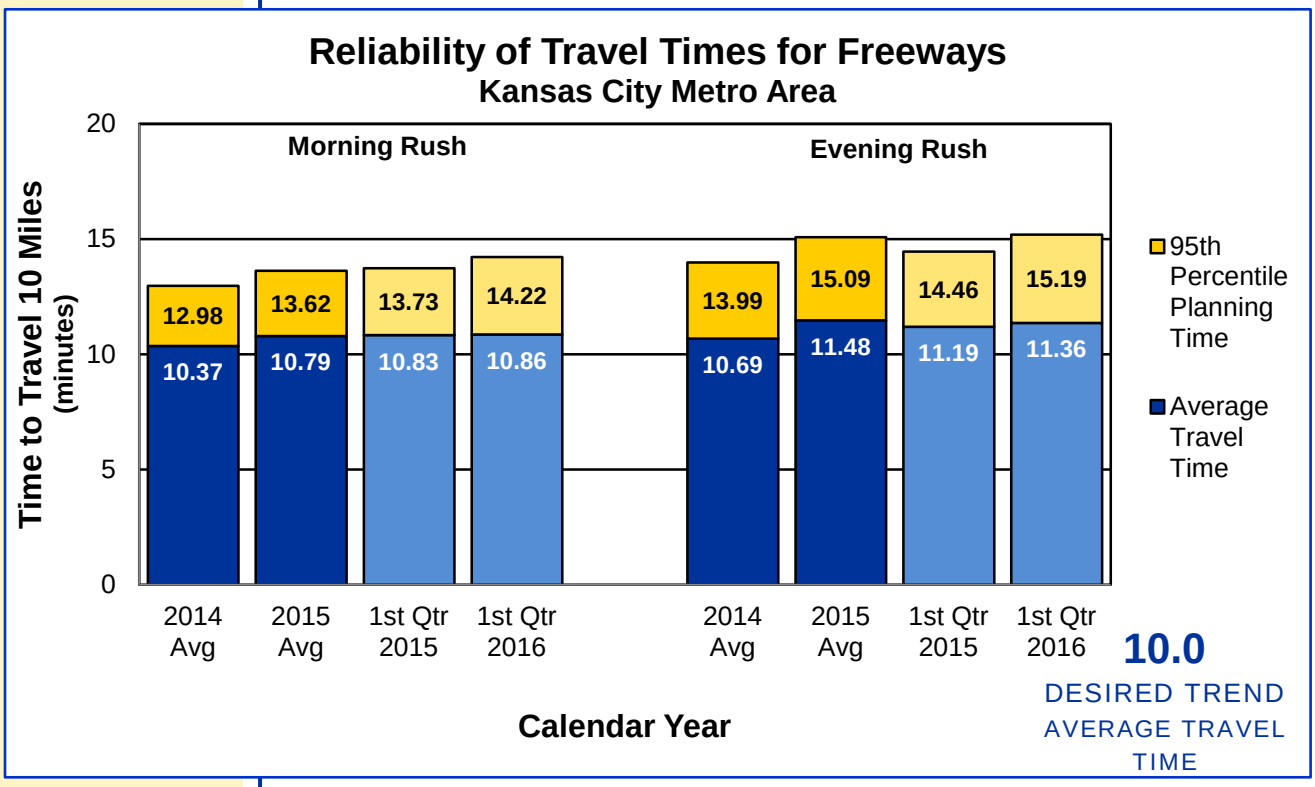
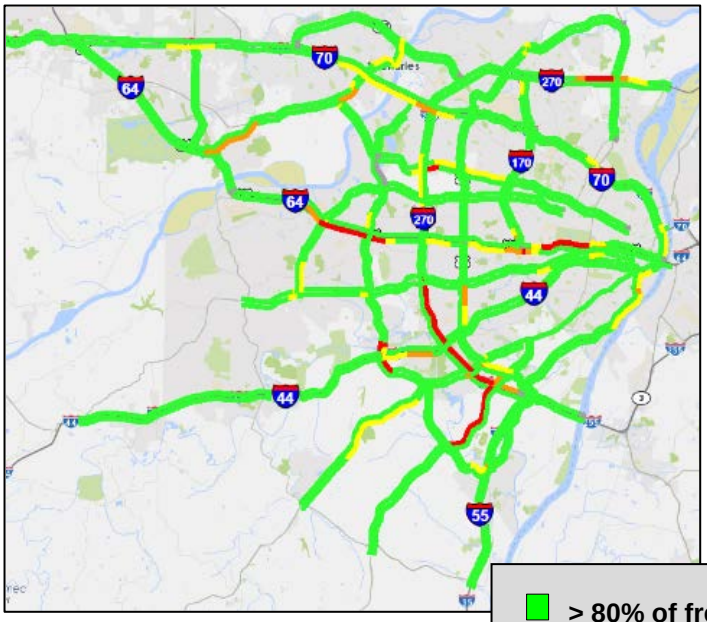
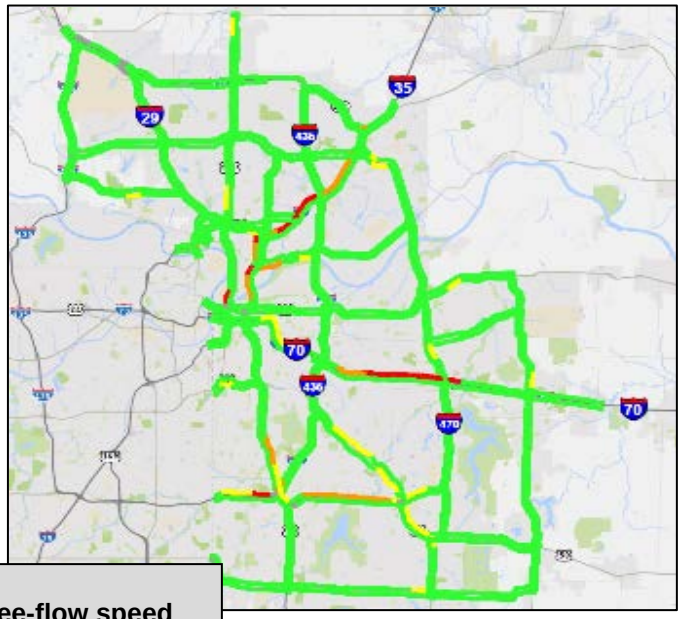




A.M. Mobility

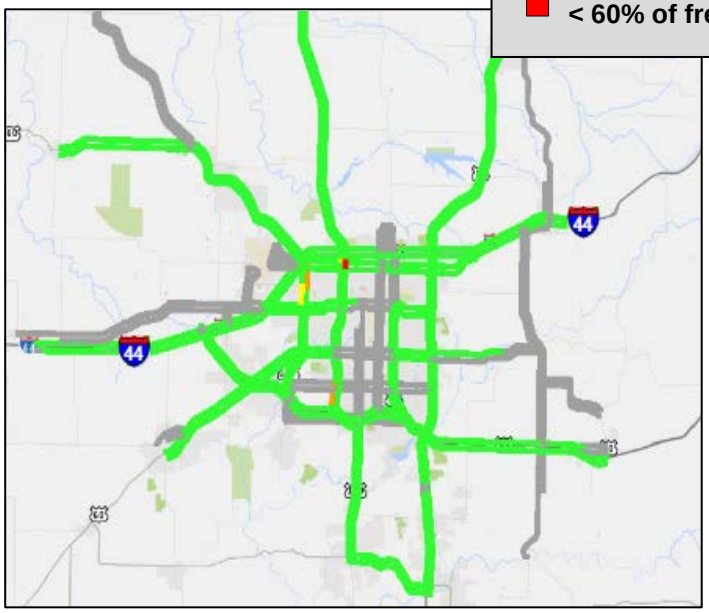


St. Louis Area

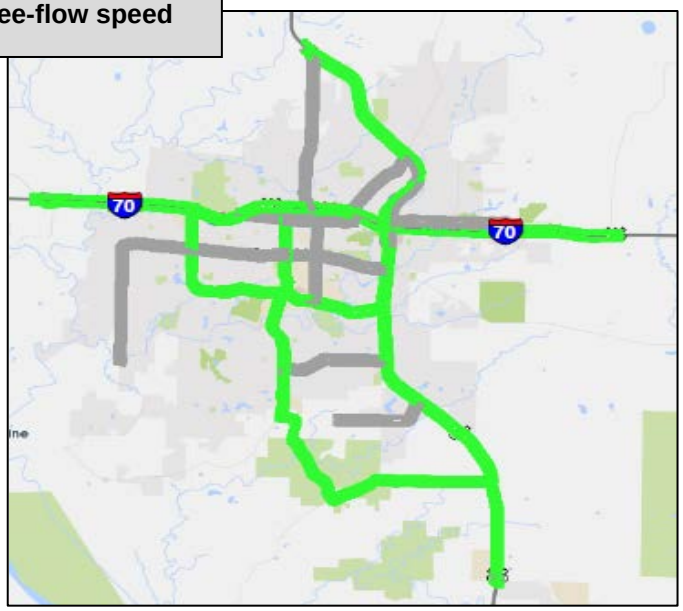


Kansas City Area

- > 80% of free-flow speed
- 70-80% of free-flow speed
- 60-70% of free-flow speed
- < 60% of free-flow speed

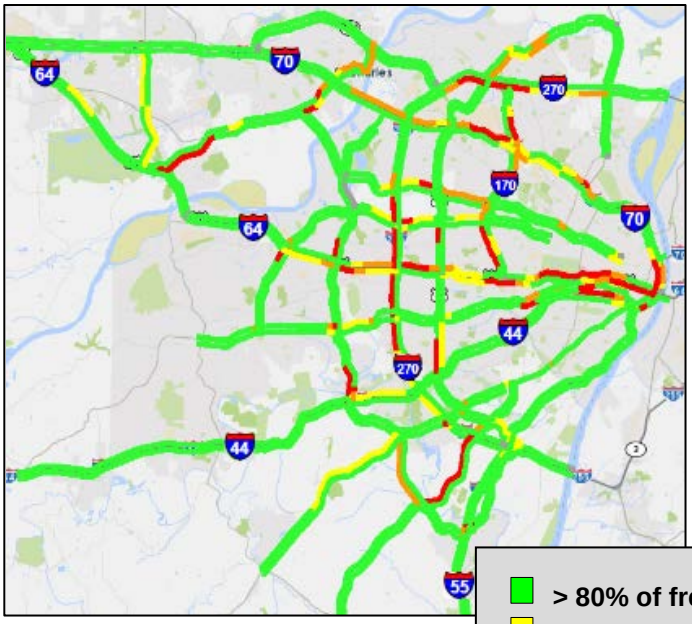


Springfield Area

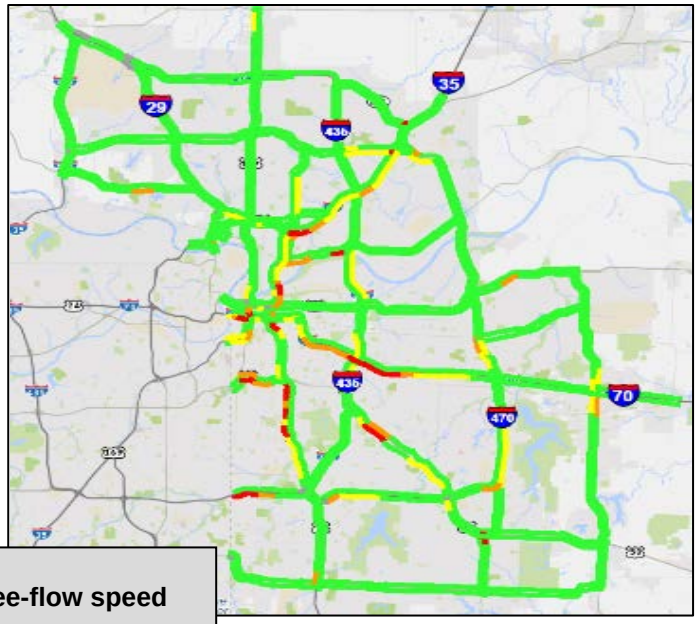


Columbia Area

P.M. Mobility



St. Louis Area



Kansas City Area

- > 80% of free-flow speed
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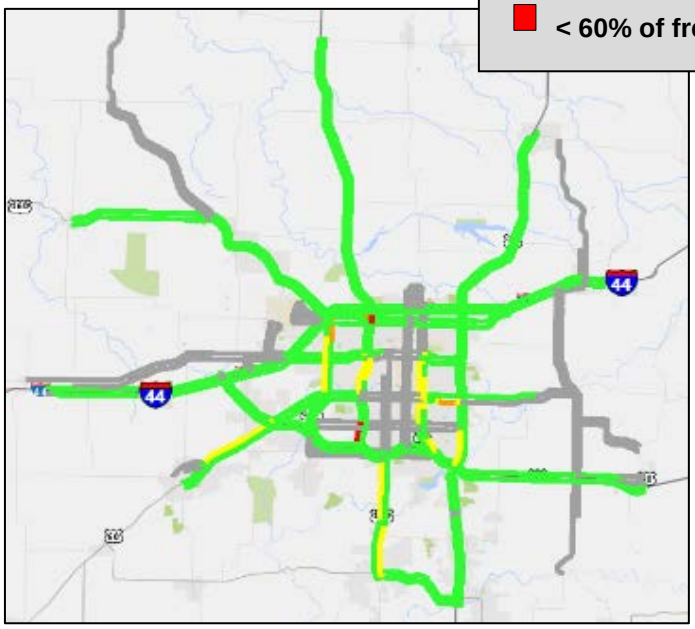
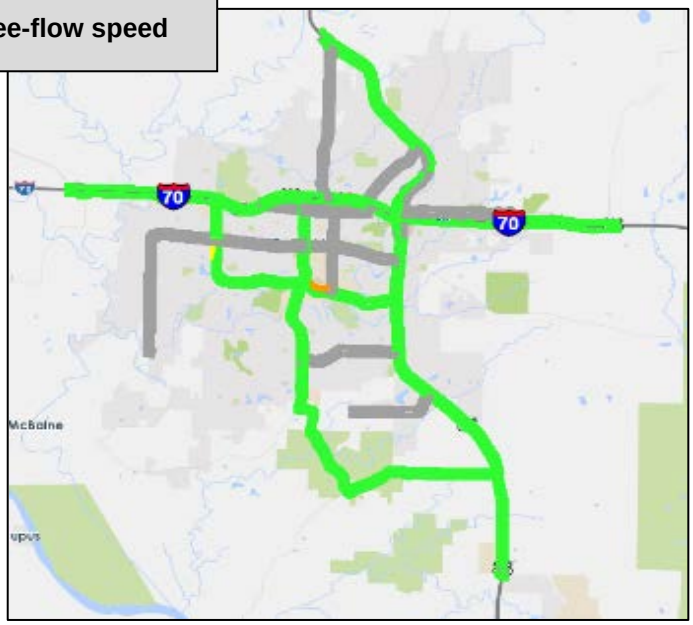
- 60-70% of free-flow speed
- < 60% of free-flow speed



Springfield Area



Columbia Area

OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

Cost and impact of traffic congestion – 5b

RESULT DRIVER:
Paula Gough
District Engineer

MEASUREMENT DRIVER:
Jeanne Olubogun
District Traffic Engineer

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

MEASUREMENT AND DATA COLLECTION:
A reporting tool available in the Regional Integrated Transportation Information System looks at user delay costs. This data, in combination with industry standard costs for passenger cars and trucks, reflects the overall costs of congestion. RITIS also includes historic data so trend lines can be tracked and evaluated. The unit cost per passenger car is $16.79 per hour and is obtained from the Texas A&M Transportation Institute. The unit cost per truck is $65.29 obtained from the American Transportation Research Institute, which specializes in tracking freight mobility and provides the best source of data related to freight costs. For previous reporting, the department used data provided by the TTI, which annually produces the Urban Mobility Report.

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.

While the desired trend for both costs is downward, challenges exist in Missouri's metropolitan regions to continue toward this desired outcome. A comprehensive look at congestion is needed, looking beyond typical solutions of adding capacity. As the department adapts to limited revenue streams, the capacity for adding projects will be scarce. Using smarter technology to help guide motorists is a must. Still, the desired outcome is lower congestion costs and an indication that traffic is moving more efficiently.

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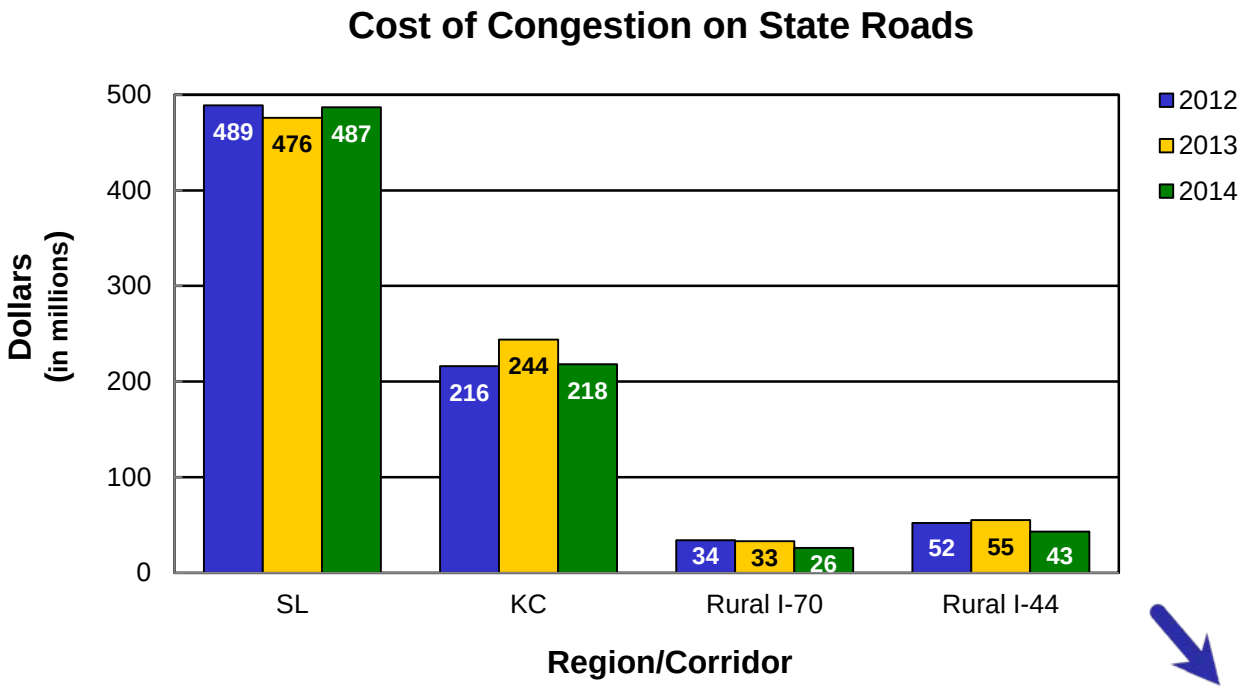
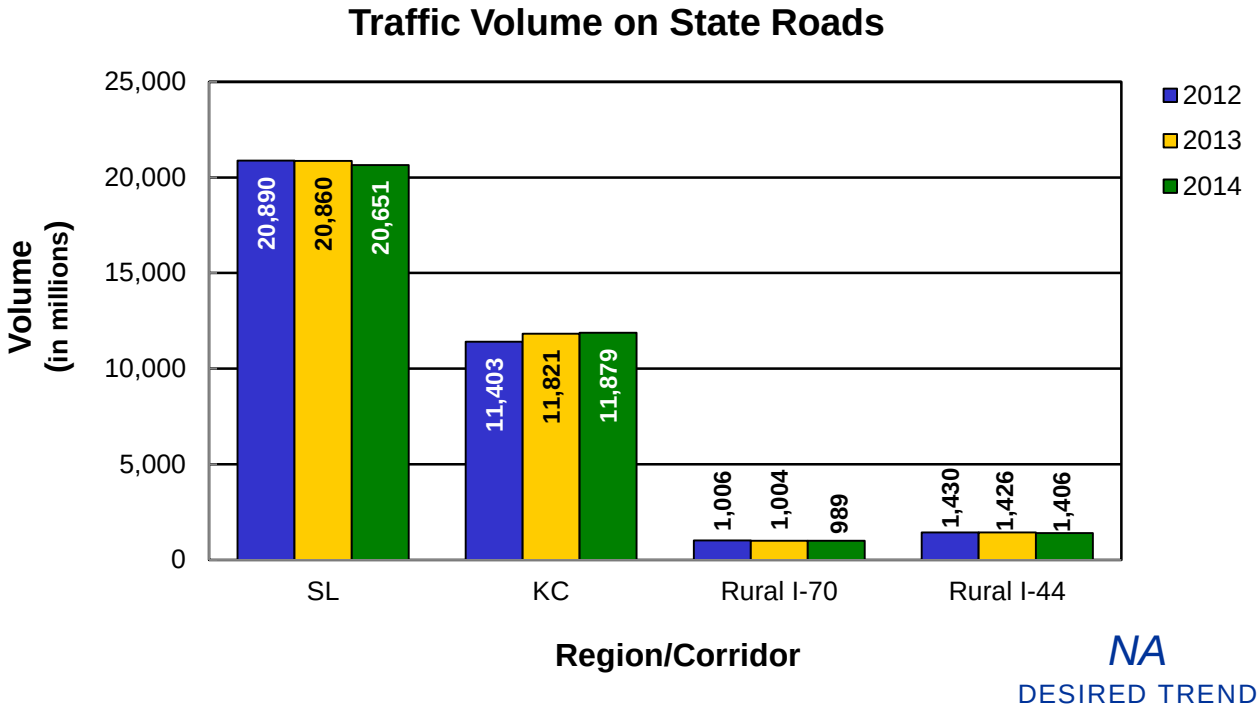


DESIRED TREND



NA

DESIRED TREND

RESULT DRIVER:
Paula Gough
District Engineer

MEASUREMENT DRIVER:
Randy Johnson
Traffic Center Manager

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

MEASUREMENT AND DATA COLLECTION:
Advanced transportation management systems are used by the Kansas City and St. Louis traffic management centers to record incident start time and the time when all lanes are declared cleared. Traffic incidents can be divided into three general classes of duration set forth by the Manual on Uniform Traffic Control Devices that include minor, intermediate and major. Each class has unique traffic control characteristics and needs.

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Average time to clear traffic incident – 5c

A traffic incident is an unplanned event that blocks travel lanes and temporarily reduces the number of vehicles that can travel on the road. The speed of incident clearance is essential to the highway system returning back to normal conditions. Responding to and quickly addressing the incident (crashes, flat tires and stalled vehicles) improves system performance.

St. Louis recorded 704 incidents in January, 782 in February and 847 in March. The average time to clear traffic incidents was 26.1 minutes, a decrease of 2.7 percent compared to the first quarter of 2015.

Kansas City recorded 493 incidents in January, 417 in February and 497 in March. The average time to clear traffic incidents was 25 minutes, an increase of 0.4 percent from the first quarter of 2015.

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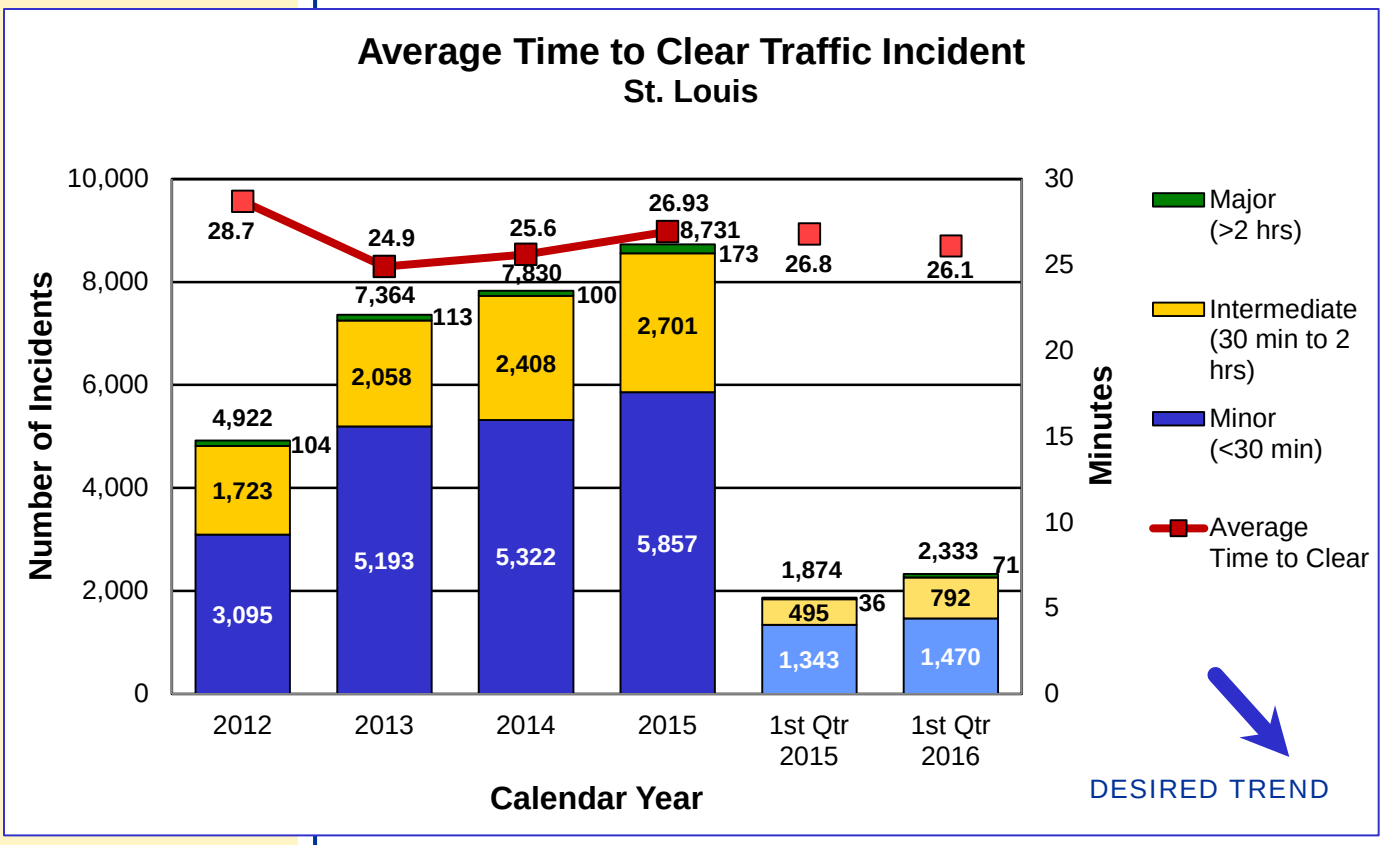

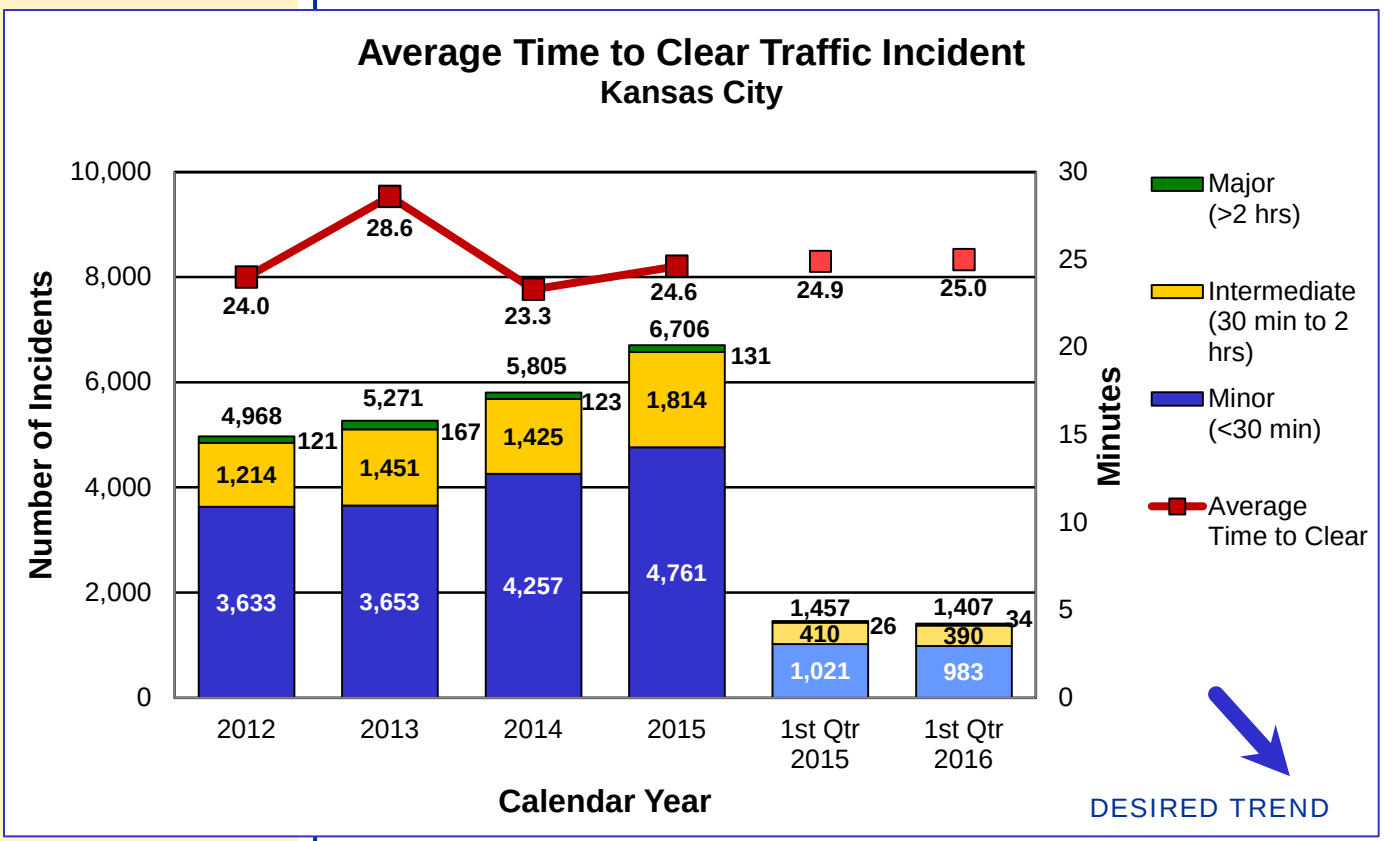

RESULT DRIVER:
Paula Gough
District Engineer

MEASUREMENT DRIVER:
Rick Bennett
Traffic Liaison Engineer

PURPOSE OF THE MEASURE:
This measure tracks the traffic incident impacts on Interstate 70 and Interstate 44 due to highway incidents.

MEASUREMENT AND DATA COLLECTION:
Interstate route closures having 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. By using the incident locations identified from the Traveler Information Map data along with the Regional Integrated Transportation Information System, real-time durations and delays for these incidents can be identified. The impact duration is the total amount of time that there was a noticeable impact on traffic speeds as a result of the incident regardless of how long the actual incident closure lasted. The maximum delay is the longest delay that an individual traveler would have experienced as a result of the incident. What is important about these measurements is that they represent the impacts that are "felt" by our customers resulting from incident closures.

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Traffic incident impacts 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 vehicle crashes affect the department's ability to keep the interstates moving.

The I-70 and I-44 charts give a comparison of the duration of the incidents and the actual delay experienced by the travelers as provided by the RITIS tool. An incident with a long duration may not create a long delay. This can occur when at least one lane remains open or if there is a good detour route around the incident. The time of day and traffic volumes on the corridor also can be a factor. The final map provides a picture of where the incidents are occurring over a full year to see the areas with higher concentrations of incidents.

MoDOT continues to work with emergency responder partners to minimize the delay caused by closures on the interstate system. This measure provides more information so staff can focus on the incidents with higher "real" impact to travelers. This information is used to develop and implement strategies and best practices to reduce the impacts to travelers.

Top 10 Incidents by Delay
January - March 2016

Route	County	Dir	Mile Marker	Date	Impact Duration (hrs:min)	Max Delay (hrs:min)
I-70	LAFAYETTE	E	34	1/5/2016	4:10	4:08
I-70	BOONE	W	126	1/19/2016	7:00	3:45
I-70	BOONE	W	128	1/19/2016	6:10	3:17
I-70	MONTGOMERY	E	167	2/10/2016	6:00	1:32
I-70	CALLAWAY	W	154	1/19/2016	4:50	1:30
I-70	MONTGOMERY	E	169	3/25/2016	3:40	1:30
I-44	PHELPS	W	174	3/30/2016	2:30	1:30
I-44	LACLEDE	E	144	1/19/2016	10:50	1:28
I-44	LACLEDE	E	144	1/19/2016	10:50	1:28
I-44	PULASKI	W	156	1/19/2016	8:00	1:20

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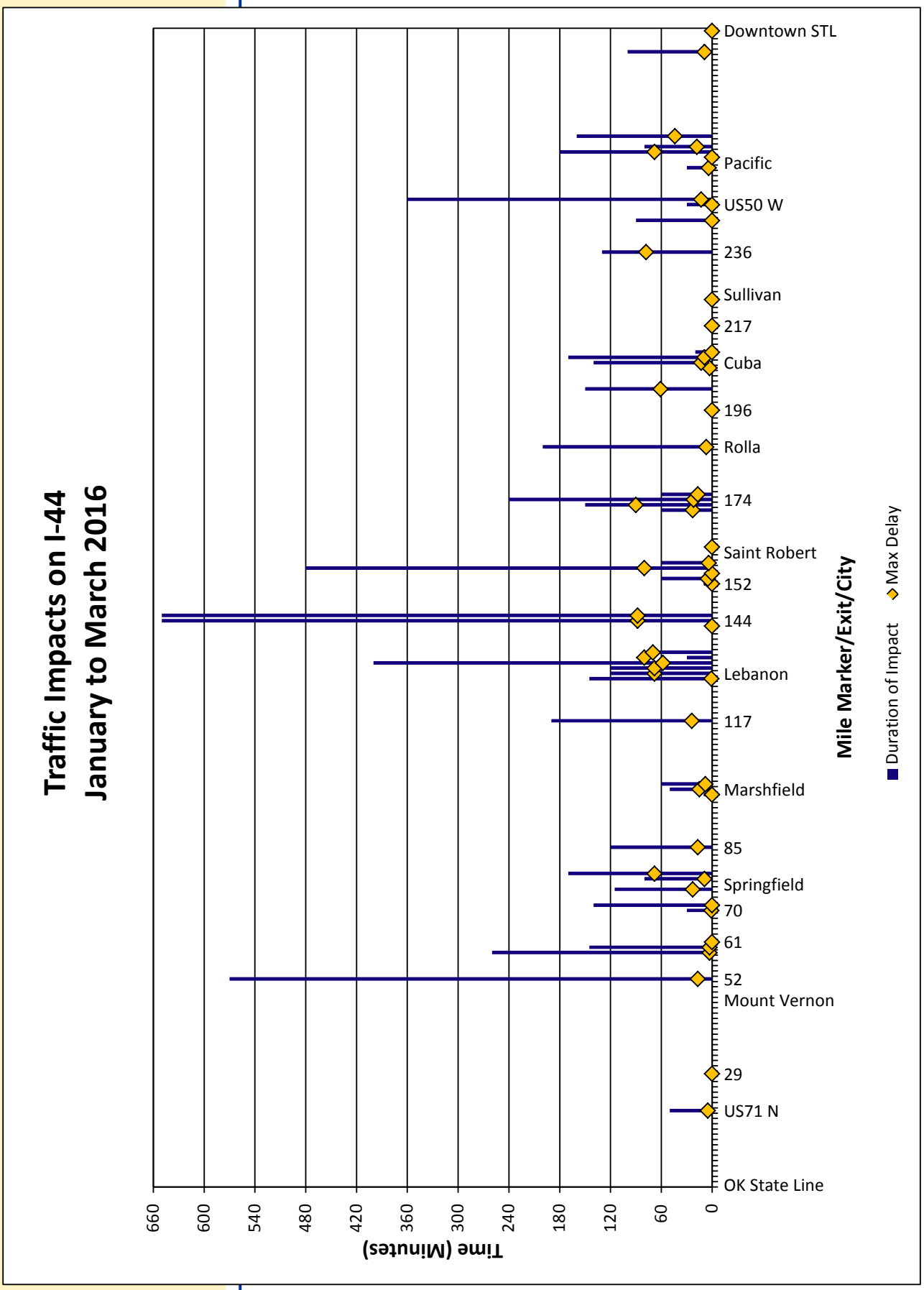
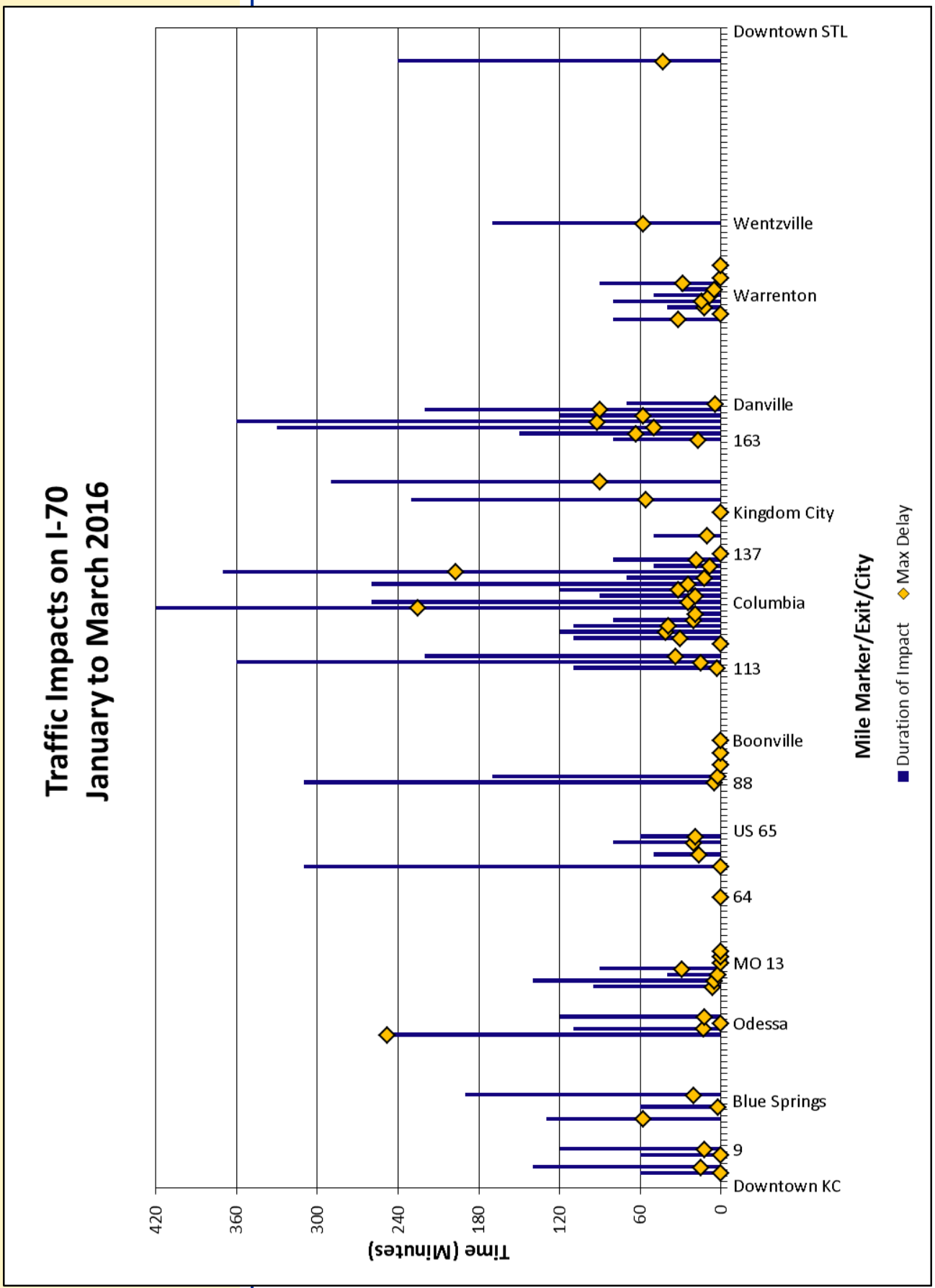
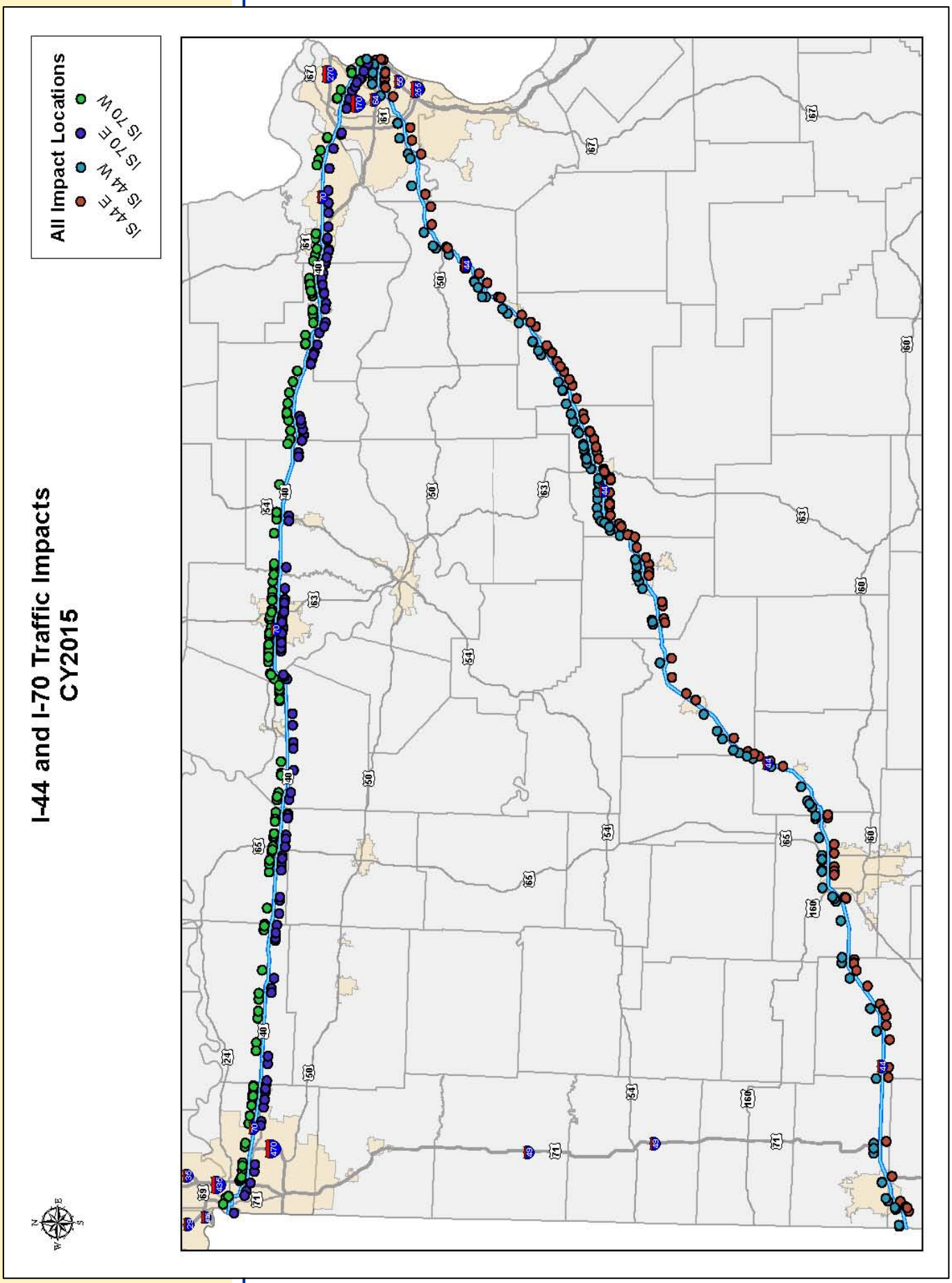



Traffic Impacts on I-70
January to March 2016
Downtown STL
Wentzville
Warrenton
Danville
163
Kingdom City
137
Columbia
113
Boonville
88
US 65
64
MO 13
Odessa
Blue Springs
9
Downtown KC
Mile Marker/Exit/City
Duration of Impact
Max Delay
420
360
300
240
180
120
60
0
Time (Minutes)


All Impact Locations
IS 44 E
IS 44 W
IS 70 E
IS 70 W
I-44 and I-70 Traffic Impacts
CY2015

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Work zone impacts to the traveling public – 5e

RESULT DRIVER:
Paula Gough
District Engineer

MEASUREMENT DRIVER:
Jerica Holtsclaw
Design Liaison Engineer

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

MEASUREMENT AND DATA COLLECTION:
Work zone impacts are collected by conducting visual observations or using automated data collection. Recent updates to traffic data collection methods allow for more work zones to be evaluated. An impact is defined as the additional time a work zone adds to normal travel. They are categorized into three levels: a minor impact that lasts less than 10 minutes; a moderate impact that lasts 10 to 14 minutes; and a major impact that lasts 15 minutes or more.

Motorists want to get through work zones with as little inconvenience as possible. MoDOT tries to minimize the travel impacts by shifting work to nighttime hours or during times when there are fewer impacts to the traveling public. To get a wider range of data and a better understanding of the impact work zones have on motorists, the department has increased the number of work zones it monitors each quarter.

MoDOT monitored 98 significant work zones this quarter, with nine major impacts and 11 moderate impacts. Two work zones accounted for all of the impacts this quarter: the Design Build Project on I-70 in Central District and the Daniel Boone Bridge in St. Louis.

Based on work zone surveys received through this year, 83 percent of motorists are satisfied with timeliness when traveling in a work zone.

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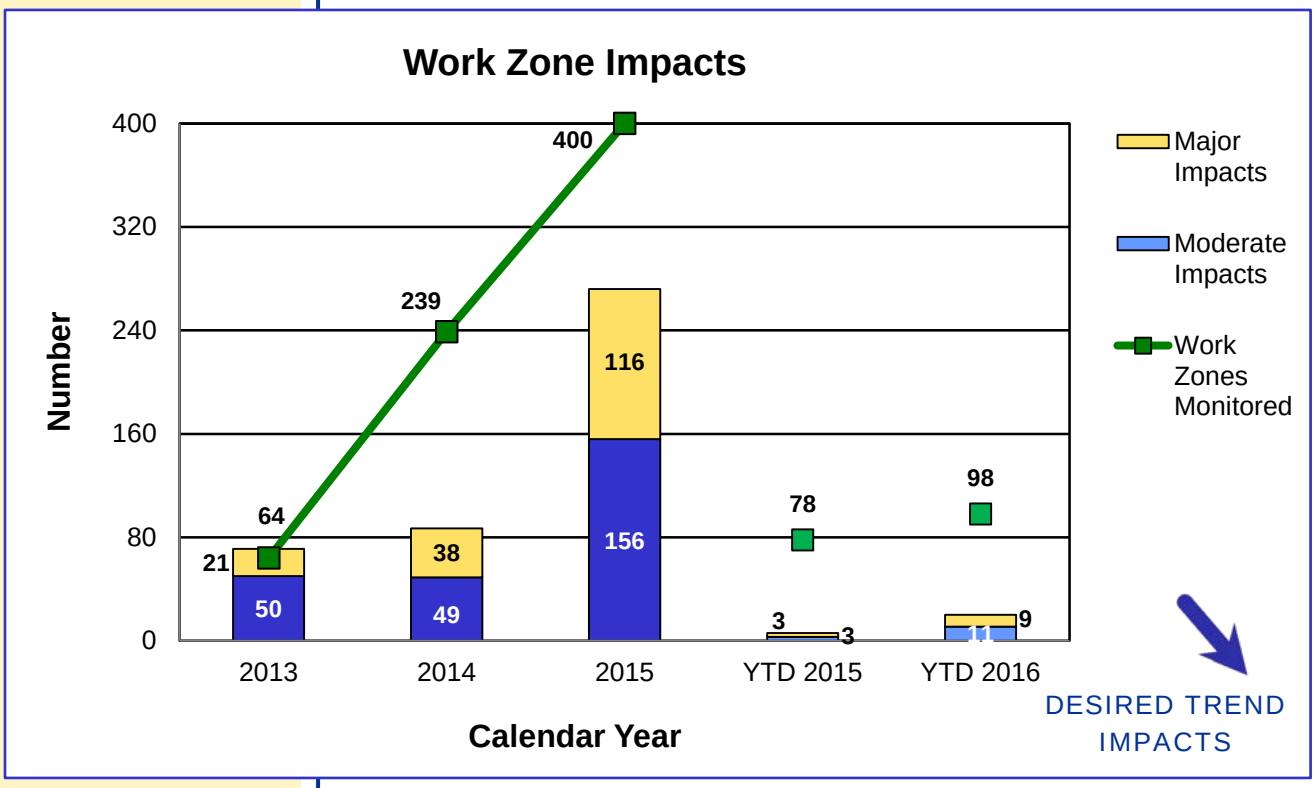

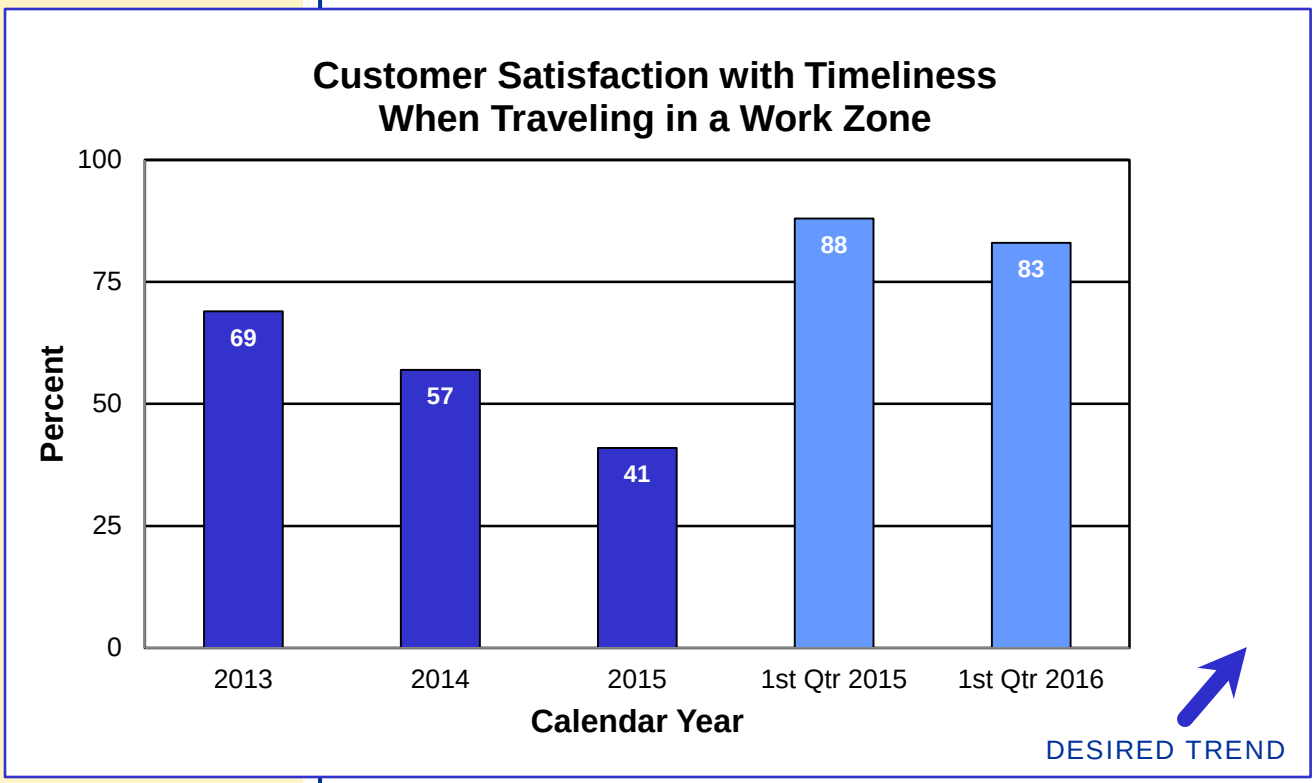

RESULT DRIVER:
Paula Gough
District Engineer

MEASUREMENT DRIVER:
Mike Henderson
Transportation Planning Specialist

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.

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 collects data on oxides of nitrogen, volatile organic compounds, fine particulate matter and carbon monoxide. Because this measure is part of the latest federal surface transportation act's performance requirements, guidance for measurement and data collection will be established in 2015.

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Effectiveness of improving air quality – 5f

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.

Effectiveness of Improving Air Quality

RESULT DRIVER:
Paula Gough
District Engineer

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 operations" 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 operations" routes. After each winter event, maintenance personnel submit reports indicating how much time it took to meet the objectives for both route classifications.

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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 2015-2016 winter was relatively light with less than average winter precipitation. It took an average of 3.3 hours to meet MoDOT's objective for continuous operations routes, and an average of 4.7 hours for non-continuous routes. These numbers compare favorably with the type of storms received and our historical performance.

Winter operations, on average, cost about $46.8 million dollars per year. As of March 31, 2016, MoDOT has expended $22.9 million dollars responding to events this winter. The money and time spent on clearing the roads of snow and ice means funds are not available to maintain the roadways in the spring, such as surface improvements, sign repair, brush cutting and drainage work.

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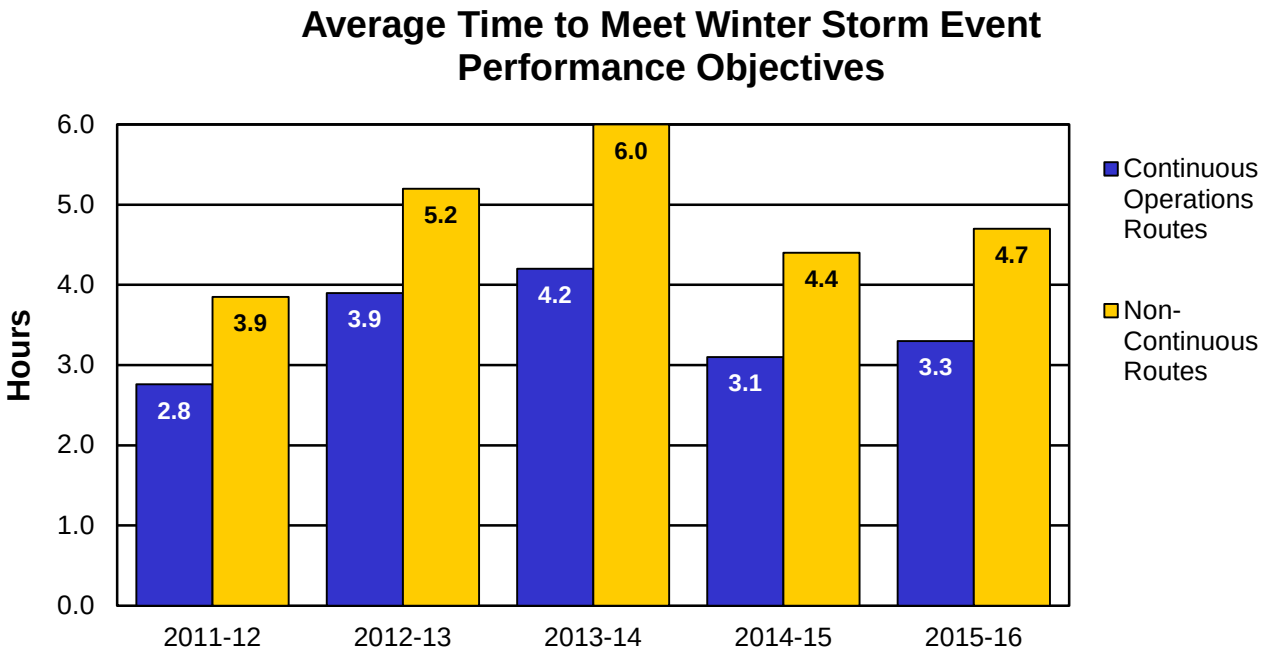

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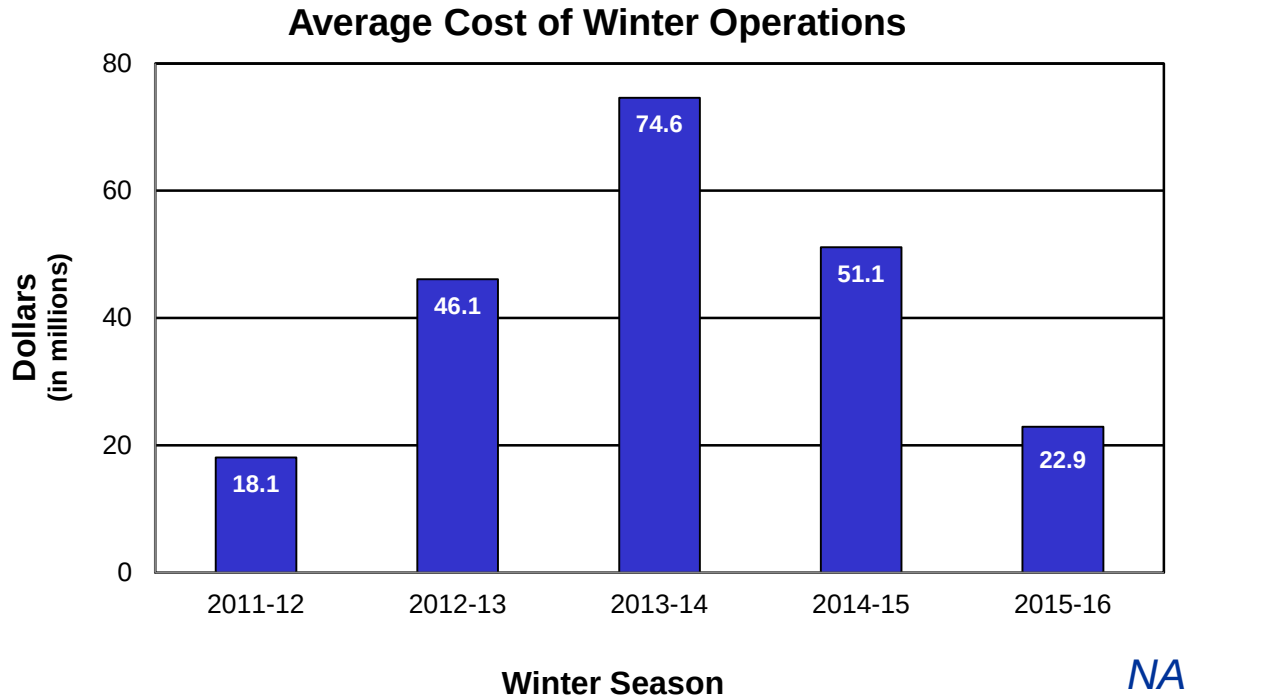
DESIRED TREND



NA

DESIRED TREND

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Bike/pedestrian and ADA transition plan improvements – 5h

RESULT DRIVER:
Paula Gough
District Engineer

MEASUREMENT DRIVER:
Ron Effland
Non-motorized Transportation Engineer

PURPOSE OF THE MEASURE:
This measure tracks MoDOT's investment in pedestrian facilities and progress toward removing barriers. Accessibility needs occur both within the right of way, such as sidewalks and traffic signals, and within department buildings, parking lots and restrooms. Removal of the barriers listed in MoDOT's 2010 Transition Plan is required as part of the department's compliance with the Americans with Disabilities Act.

MEASUREMENT AND DATA COLLECTION:
Tracking of MoDOT's investment in pedestrian facilities is done by collecting awarded contract amounts for the 20 most common construction elements used on pedestrian projects each year. Transition Plan progress is based upon completed work that has corrected defective items reported in the August 2010 Transition Plan inventory. The dollar amounts are based on unadjusted estimates from 2008 and will not reflect actual expenditures. This avoids impacts from inflation or changing field conditions.

MoDOT continues to be responsive to public requests for improved accessibility and has been proactive in many areas to make systematic improvements when opportunities arise and limited funding allows.

MoDOT has improved more than $16.2 million of deficient ADA facilities in the right of way since 2008. Additional work totaling more than $135.3 million is still necessary to complete the 2010 ADA Transition Plan inventory.

In February 2016, the Commission increased funding available to the districts for use on correcting ADA transition plan items by $5 million annuallly. This new funding source will assist districts in making the improvements to pedestrian facilities that Missourians desire.

MoDOT's annual investment in pedestrian facilities for the first quarter of 2016 totaled $3.68 million. For 2015, the total annual investment was $6.82 million. In 2014, the annual investment was an all time high of $11.77 million. Since 2008, MoDOT has invested over $62.7 million in pedestrian facilities statewide.

MoDOT has committed to complete the ADA transition plan improvements, including cross slope corrections, as work is being done on the adjacent roadway section or by standalone projects by 2027.

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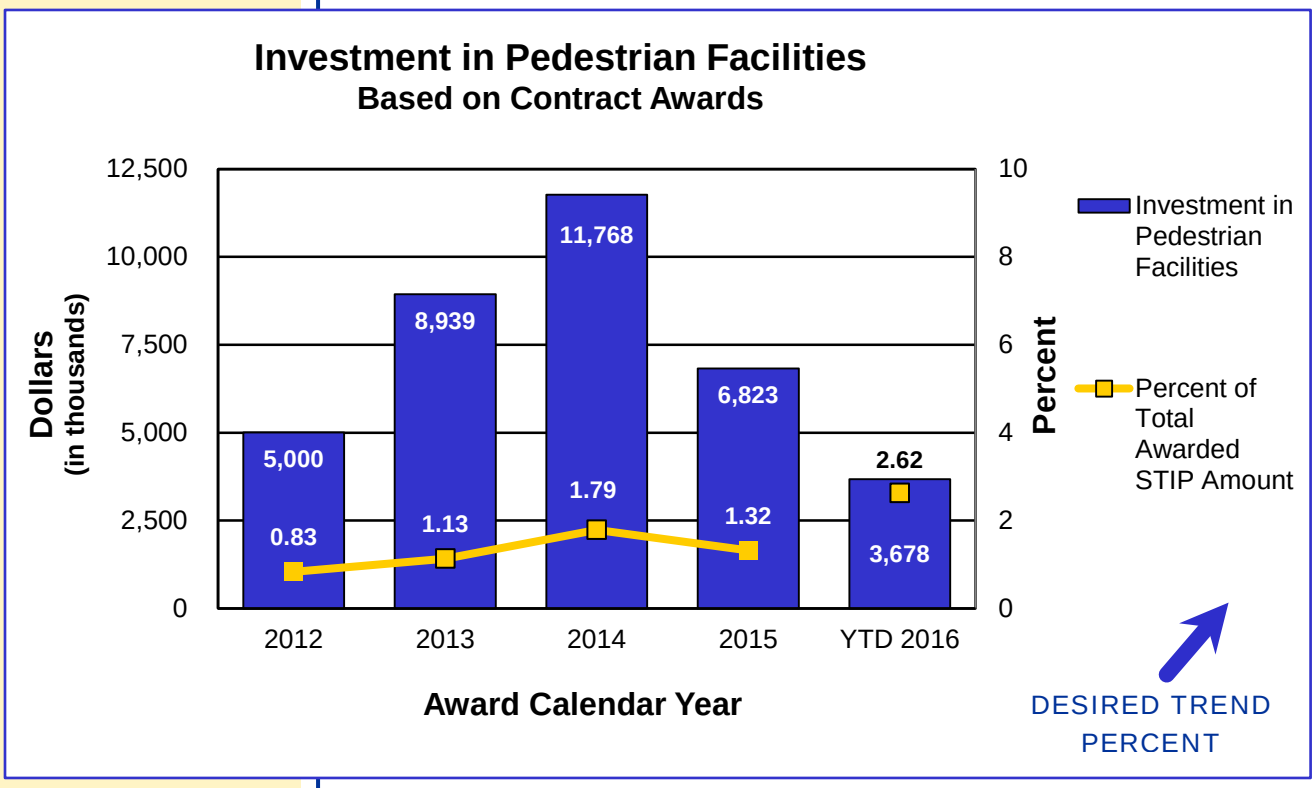

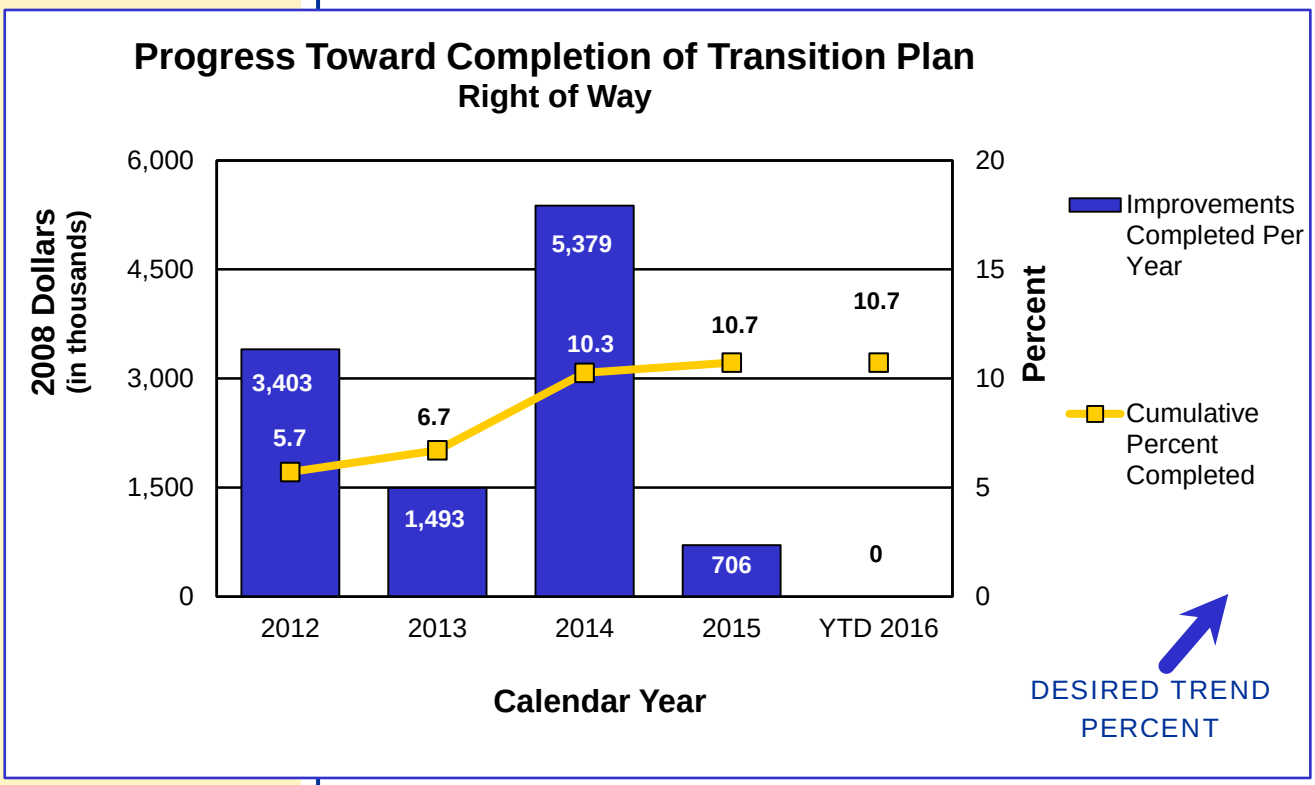

RESULT DRIVER:
Paula Gough
District Engineer

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. The state of 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 October while ferryboat and rail data is updated quarterly.

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Use and connectivity of non-highway modes of transportation – 5i

Planes, trains, ferries and transit are vital means of transport for Missourians. Alternative modes of transportation connect Missourians to work, healthcare and other necessary activities. They also are used to grow Missouri's economy and create jobs. Missouri's current transportation funding for these modes is inadequate and unreliable. The state is unable to meet even the existing needs for these important transportation system components.

The number of ferryboat passengers in the third quarter of fiscal year 2016 totaled 3,341, an increase from the 3,247 passengers in the third quarter of FY 2015. The third quarter typically sees lower numbers of ferryboat passengers than the other quarters of the year. In addition, the Mississippi County ferry was damaged after striking a submerged object and was only operational for nine days at the beginning of the quarter.

Ridership continues to decline on Missouri River Runner trains. There were 35,383 passengers in the third quarter of FY 2016, compared to 38,856 passengers in the same period of FY 2015. Year to date, ridership has declined 9 percent, primarily due to low gas prices and recurrent bus bridges due to construction on the high-speed rail corridor between St. Louis and Chicago.

Transit ridership (passenger boardings) showed a slight decrease from 63.1 million trips in FY 2014 to 62.8 million trips in FY 2015. Urban ridership, which accounts for over 95 percent of the ridership totals for the state, decreased 0.5 percent in FY 2015, while non-urban ridership increased 2 percent in FY 2015. The overall decrease in ridership in FY 2015 can be attributed to low gas prices.

The number of airline passengers has remained fairly steady from 2010 to 2014, with a slight increase in passenger enplanements (boardings) for 2014. Due to increasing state Aviation Trust Fund revenues, in March 2015 MoDOT issued grants to commercial service airports for the air service program. These grants can be used for air service promotion and marketing and to study potential new routes.

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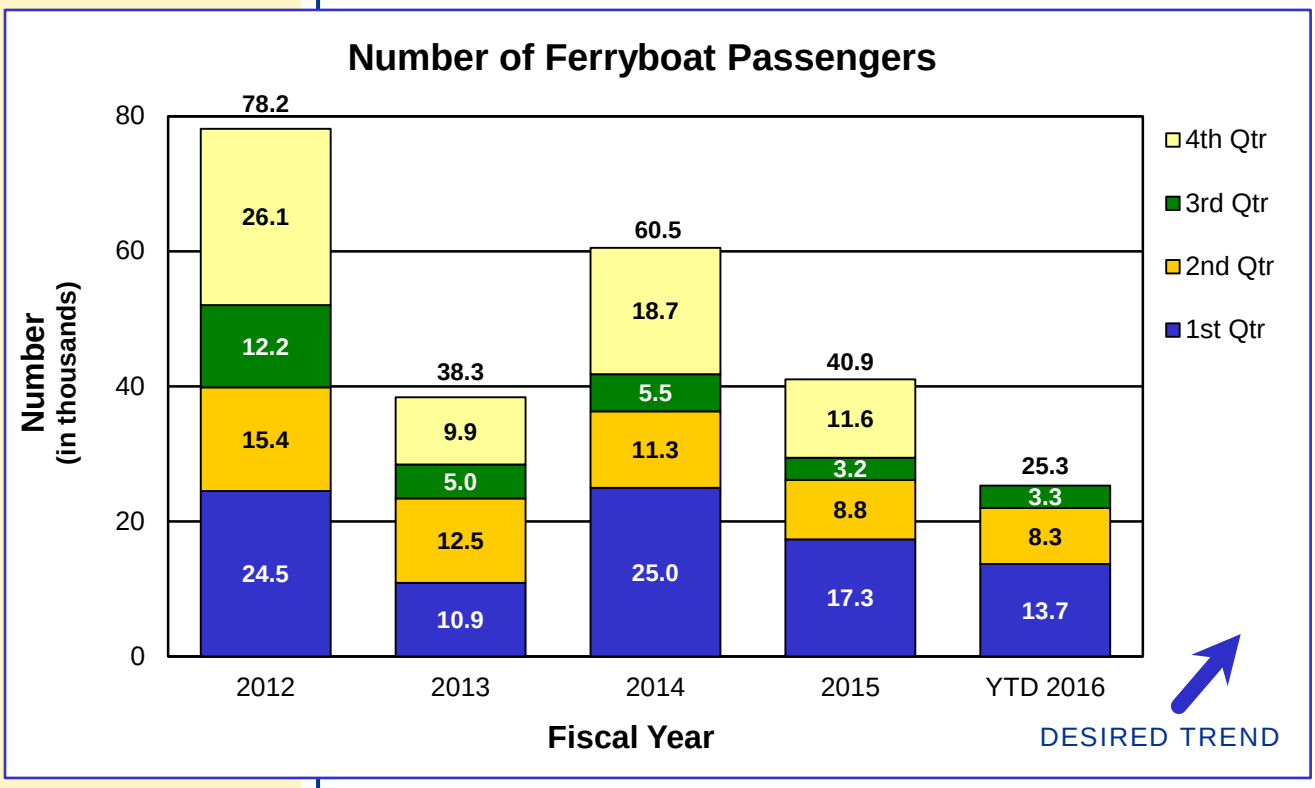
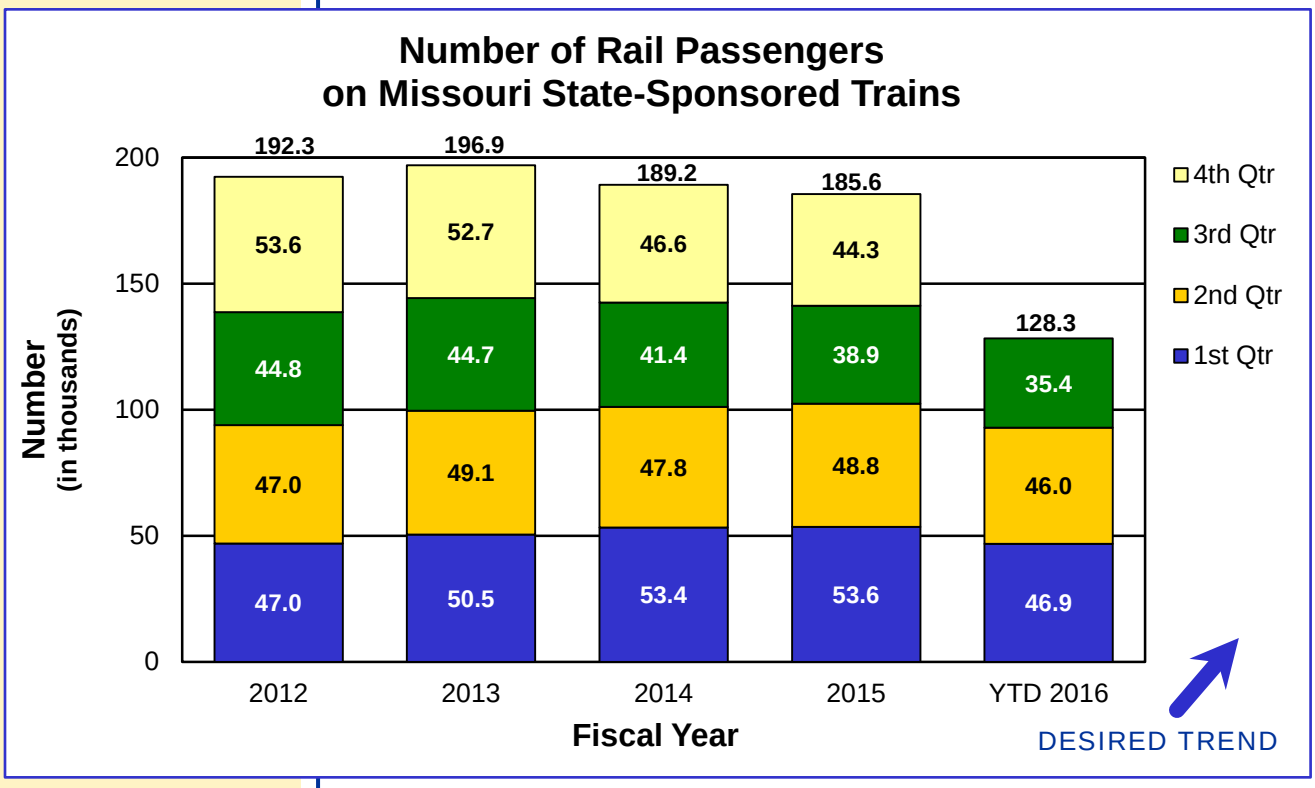
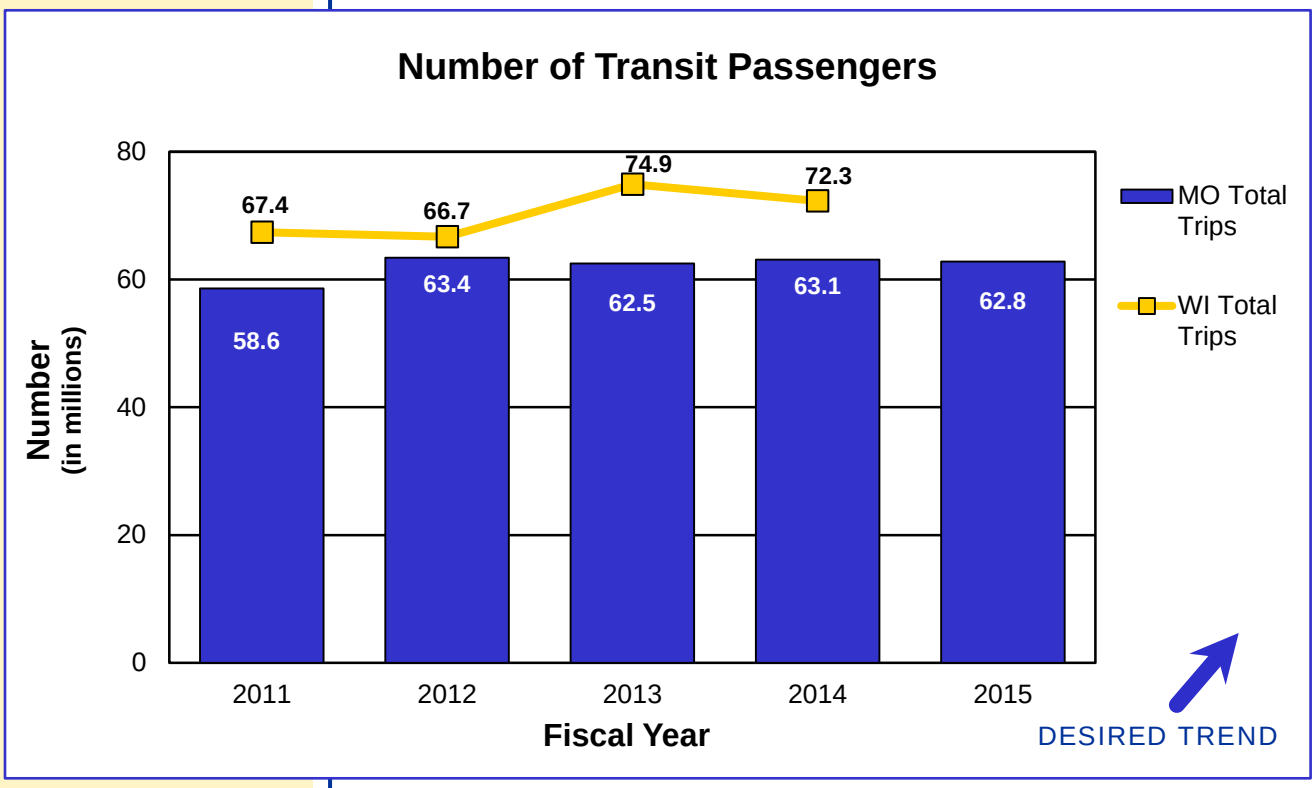
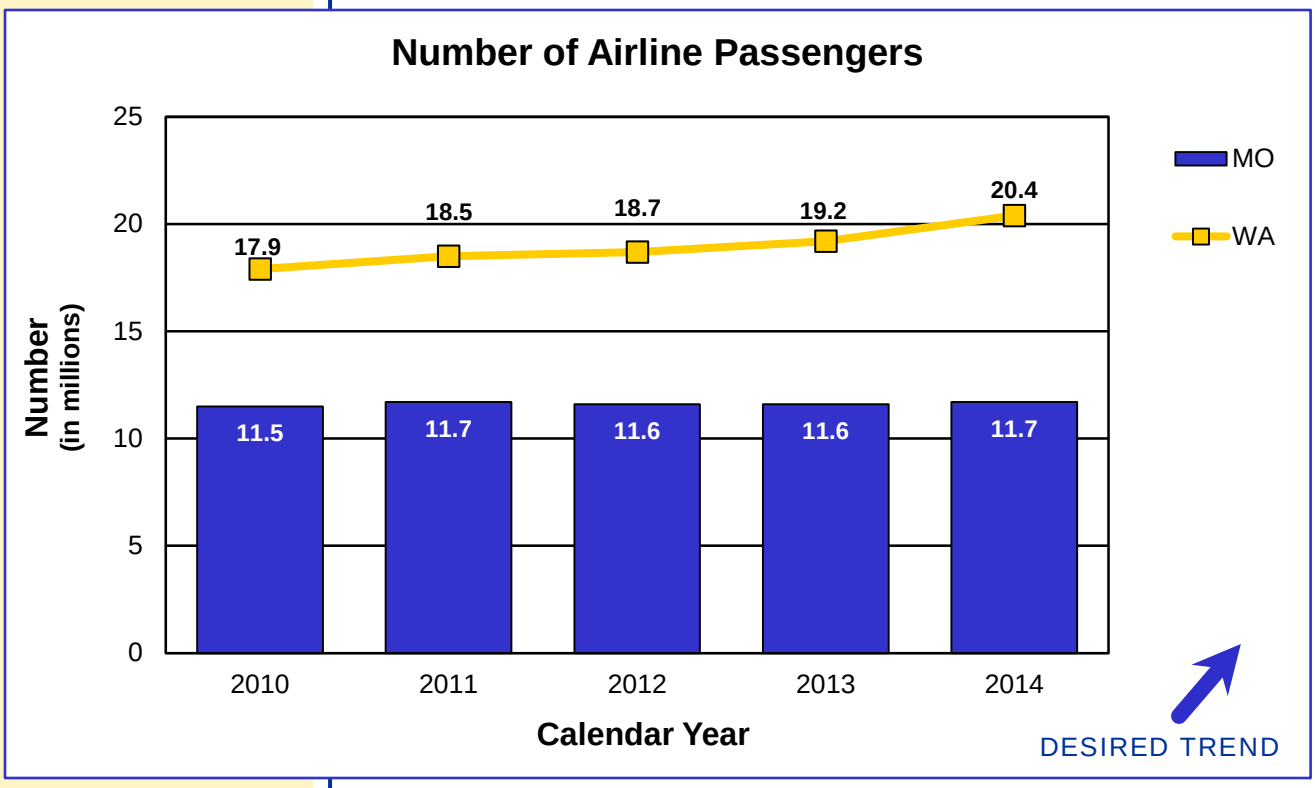




OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM





2015 data is not available until October 2016.