OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

Becky Allmeroth, State Maintenance 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.

OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

Travel times and reliability on major routes – 5a

RESULT DRIVER:
Becky Allmeroth
State Maintenance Engineer

MEASUREMENT DRIVER:
Alex Wassman
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:
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.

The target for this measure is updated quarterly. This target is established by projecting a 10 percent improvement over the same quarter of the previous year. The minimum value for the target time is 10 minutes. This corresponds to the time it takes to travel 10 miles at the posted speed limit of 60 miles per hour.

From January to March 2018, average travel times in St. Louis and Kansas City were generally longer compared to the same period last year. In the first quarter of 2018, the average 10-mile travel time in St. Louis was 10 min., 35 sec. during the morning and 11 min., 37 sec. during the evening. For Kansas City, the average travel time was 10 min., 46 sec. during the morning and 11 min., 14 sec. during the evening. The average travel time for the St. Louis morning rush period was the same as last year. All other rush periods experienced longer average travel times than the previous year. All average travel times were within 10 seconds above or below the 2017 average with the exception of the St. Louis evening rush, which was 24 seconds lower than the 2017 average. Overall, average speeds ranged between 50 mph and 57 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 13 min., 46 sec. during the morning and 16 min., 46 sec. during the evening. This means customers in the St. Louis evening rush needed to plan 6 min, and 46 sec. more for a 10-mile trip than they would need in free-flow conditions. In Kansas City, the average planning times were 13 min., 55 sec. during the morning and 14 min., 56 sec. during the evening. Customers in the Kansas City evening rush needed to plan 4 min. and 56 sec. more for a 10-mile trip than they would need in free-flow conditions. The planning times in St. Louis and Kansas City represent average rush-hour speeds between 36 and 44 mph. The planning times for morning rushes in both regions were in line with previous years, while the planning times for evening rushes were more than one minute higher. Morning planning times for the quarter were higher than the 2017 average while evening times were lower.

The average travel times in both regions are higher than the target for the first quarter of 2018. The morning travel times are 35 seconds to 46 seconds greater than the target, while the evening travel times are 1 min. 14 sec. and 1 min. 27 sec. greater than the target.

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 selected arterial routes compared to normal traffic flow during non-peak traffic conditions.

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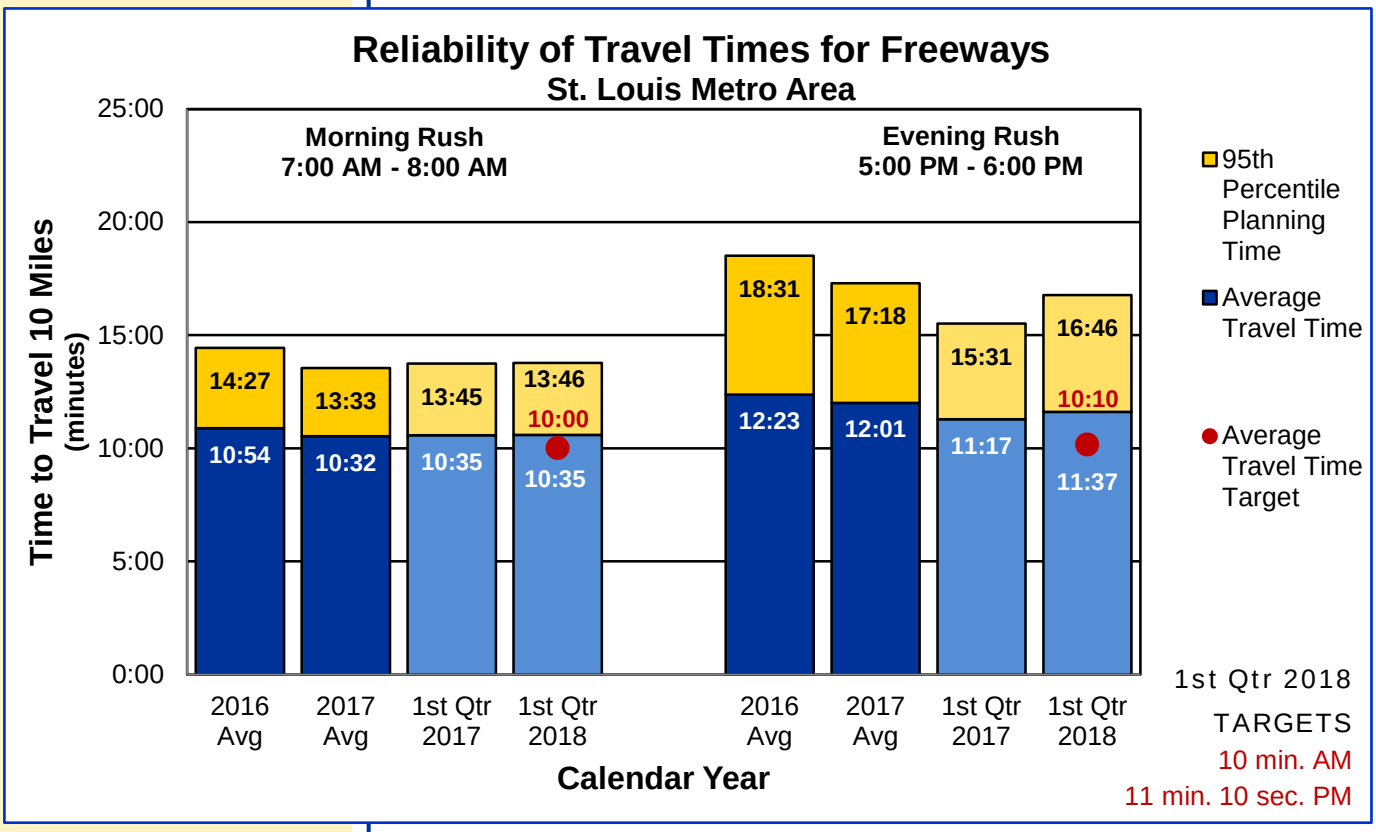
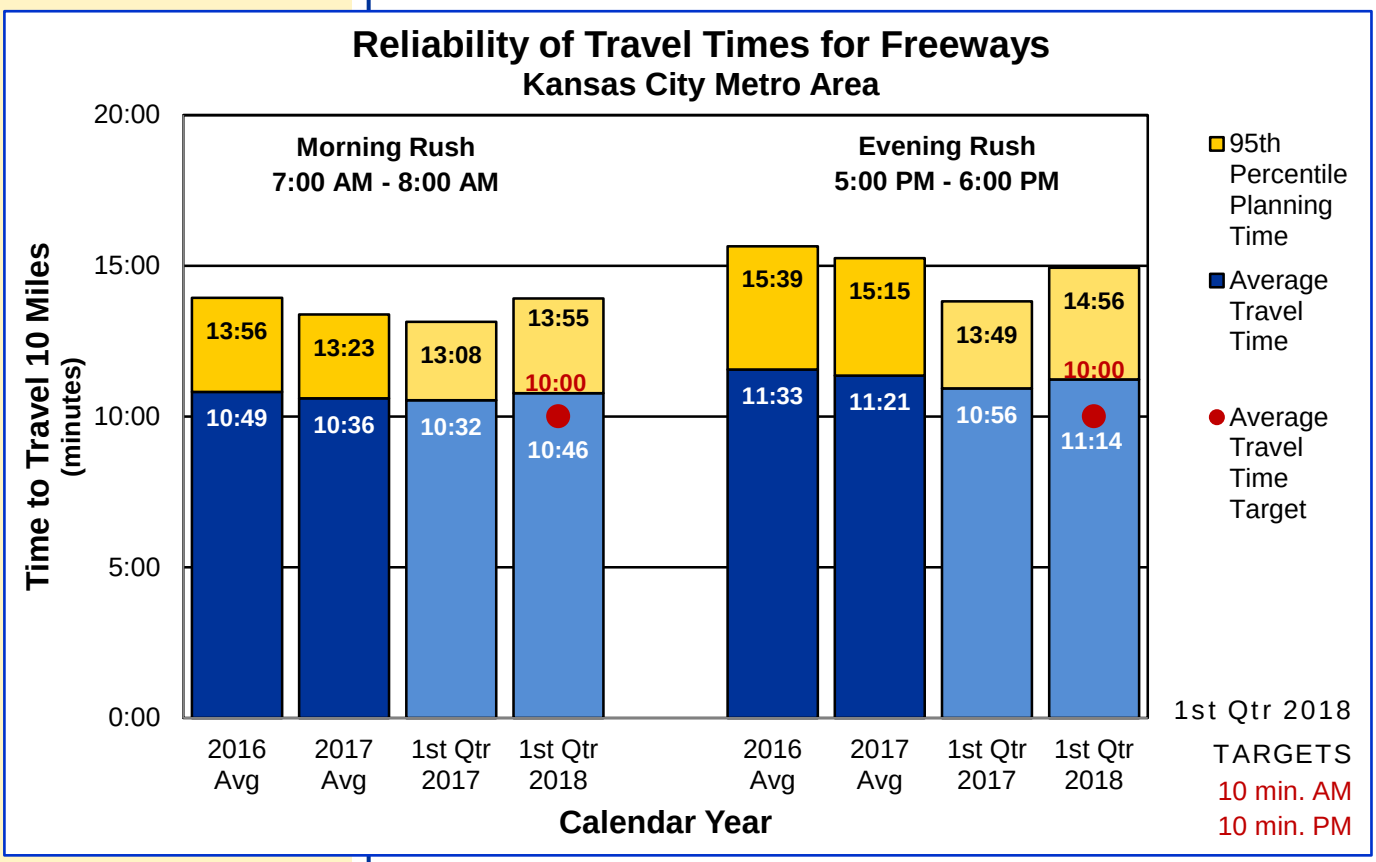
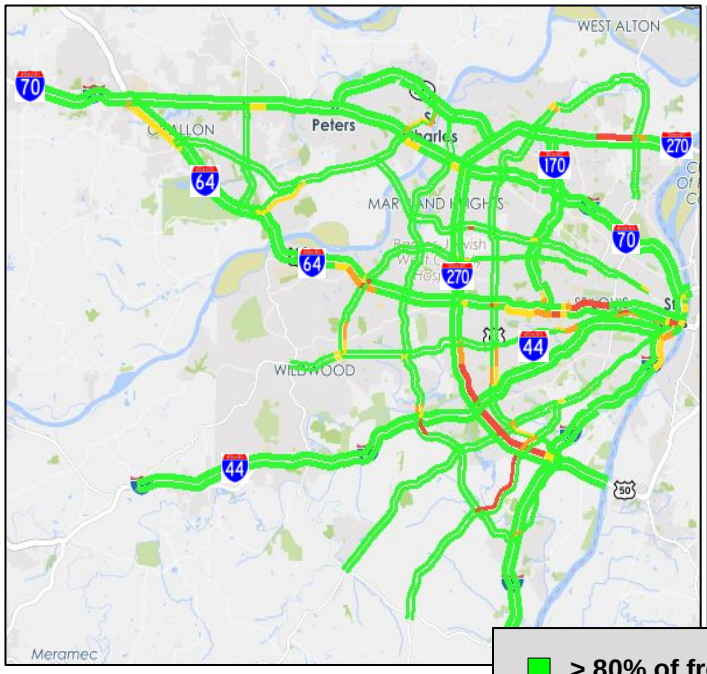
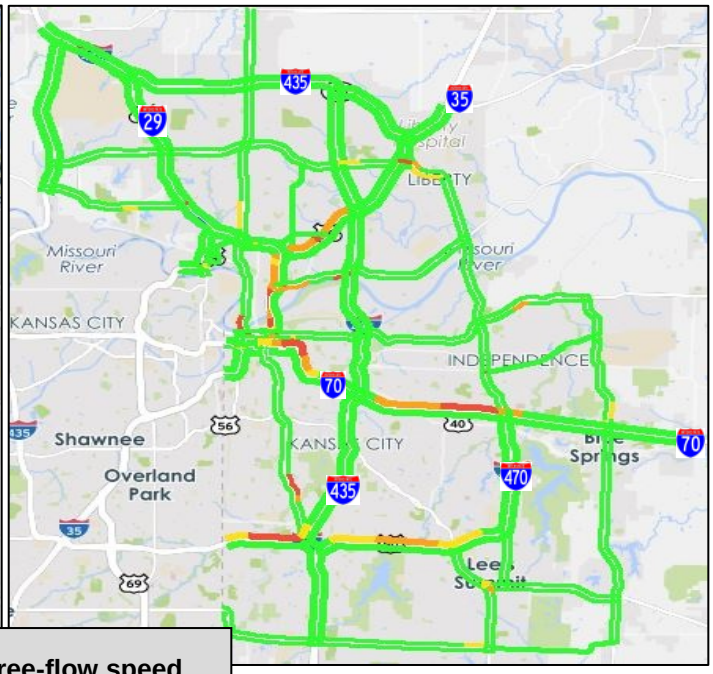




A.M. Mobility

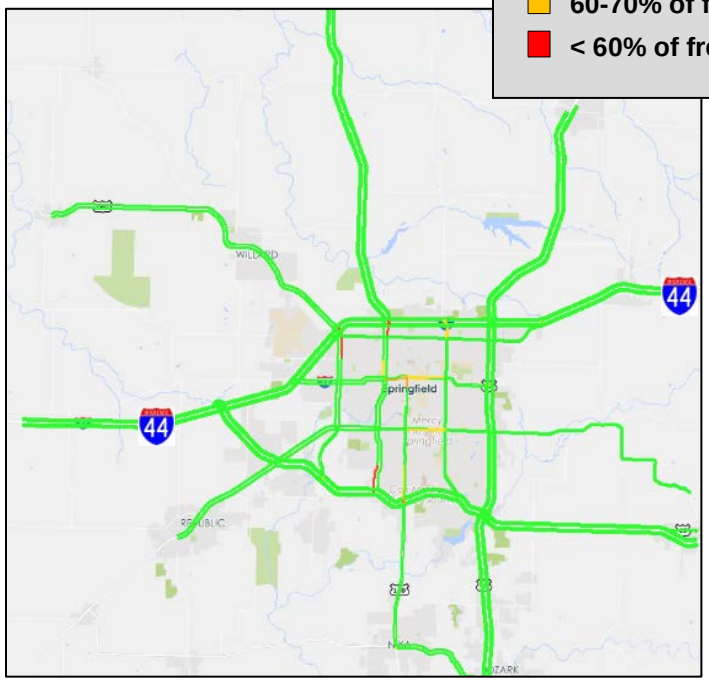


St. Louis Area

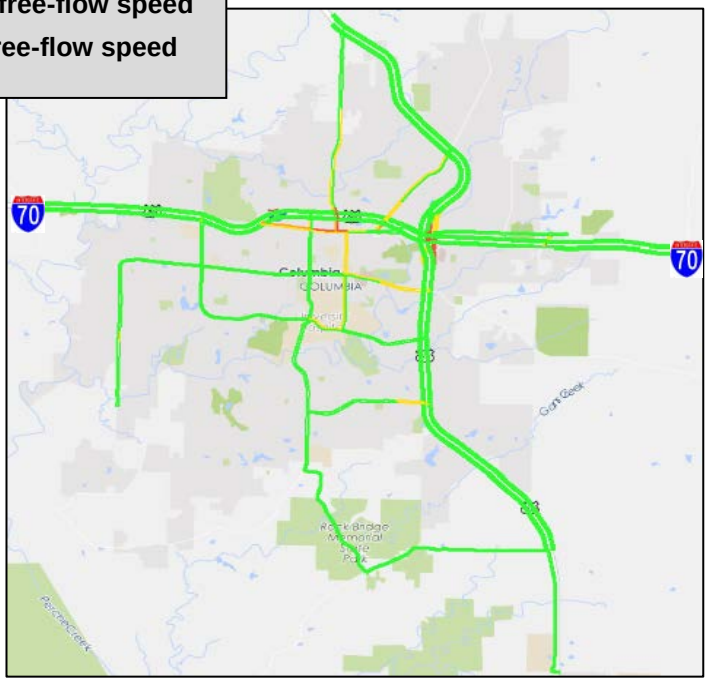


Kansas City Area

- > 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

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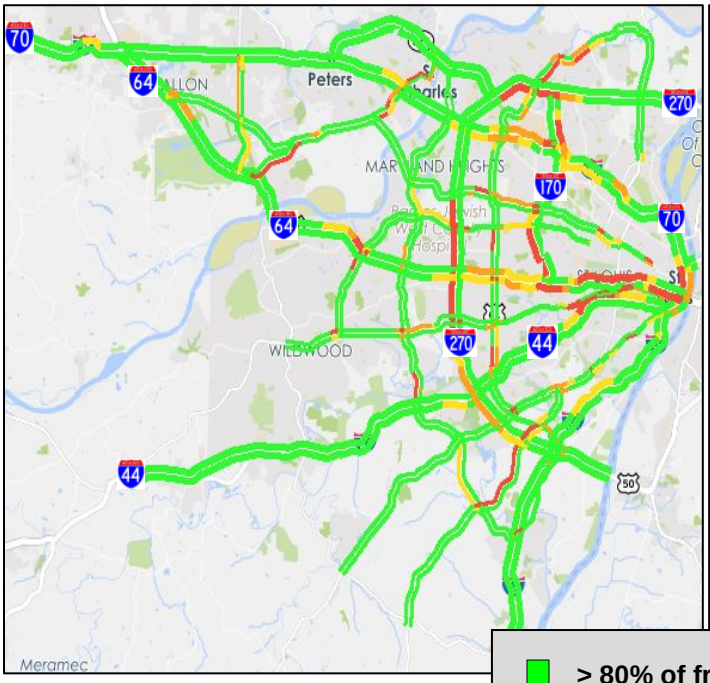
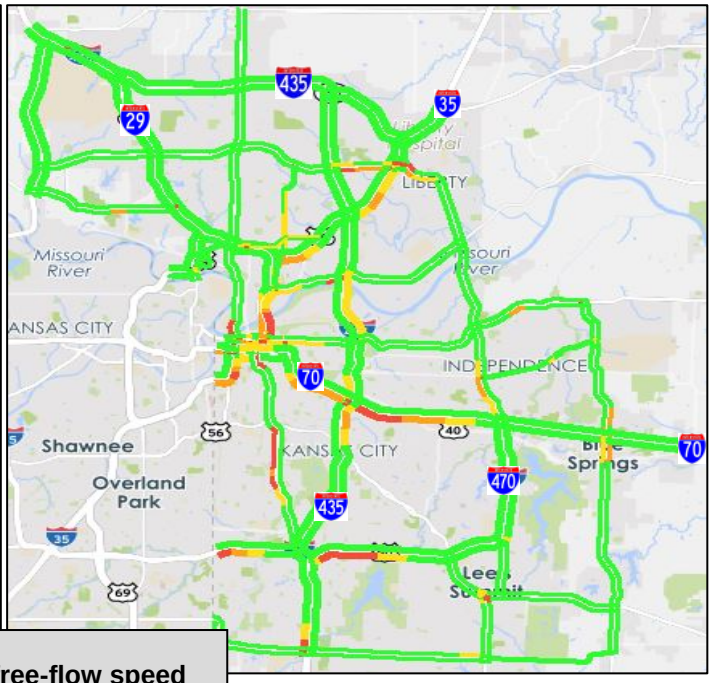
P.M. Mobility



St. Louis Area



Kansas City Area

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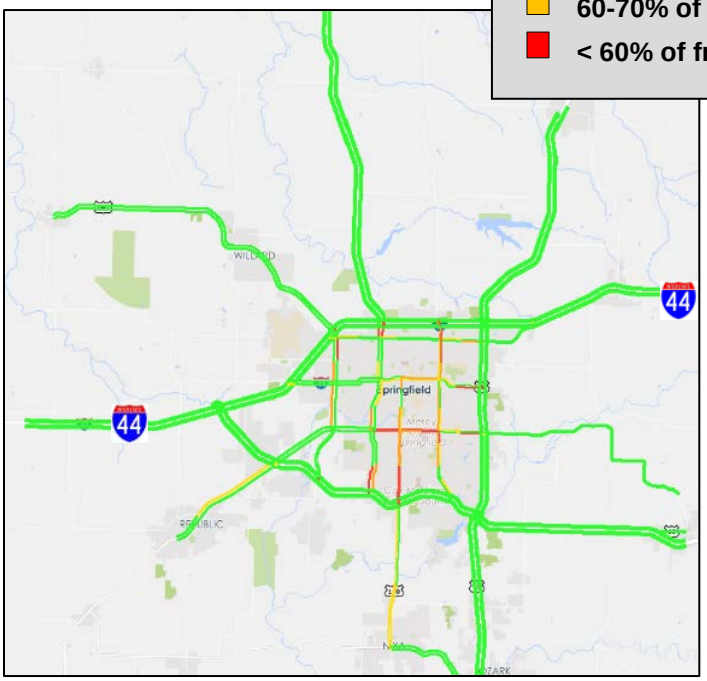
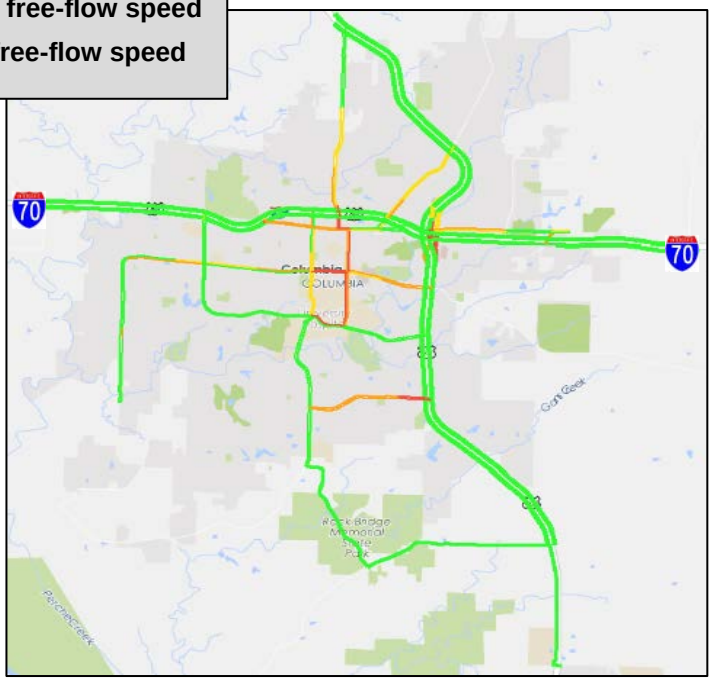


Springfield Area



Columbia Area

OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

Cost and impact of traffic congestion – 5b

RESULT DRIVER:
Becky Allmeroth
State Maintenance 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 $17.67 per hour and is obtained from the Texas A&M Transportation Institute. The unit cost per truck is $68.09 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. The target for this measure is updated annually in April and is established by projecting a 10 percent improvement over a four-year average.

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. 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.

The 2017 target was $496 million. The actual calculation from the RITIS data is $568 million. This report looks at the 2014 to 2017 cost of congestion in the urban areas of Kansas City and St. Louis, as well as rural I-44 and I-70 across the state.

Congestion costs in Kansas City and St. Louis have steadily increased during this period, and the volume trends have slightly decreased. Interestingly, the costs on rural I-44 and I-70 have decreased, as well as volume trends being down slightly.

Volume growth is often seen when gas prices remain low. The average cost of gasoline in April 2014 was $3.52/gallon, while in April 2018 it was about $2.45/gallon. Since mid-2016, while gas prices have fluctuated a bit, the price has been fairly steady.

Traffic congestion is widely viewed as a growing problem in many urban areas because the overall volume of vehicular traffic in many areas (based on VMT) continues to grow faster than the overall capacity of the transportation system. Capacity is not merely defined by roadway expansion, but also by things such as carpool efforts, transit usage increases, flexible work hours, incident clearance practices, work zone management and many other factors. Like many other state DOTs, MoDOT puts forth great effort in incident clearance practices, work zone management and other factors that impact mobility.

As a state and individual regions, a comprehensive look at all available means to reduce the cost of congestion is necessary.

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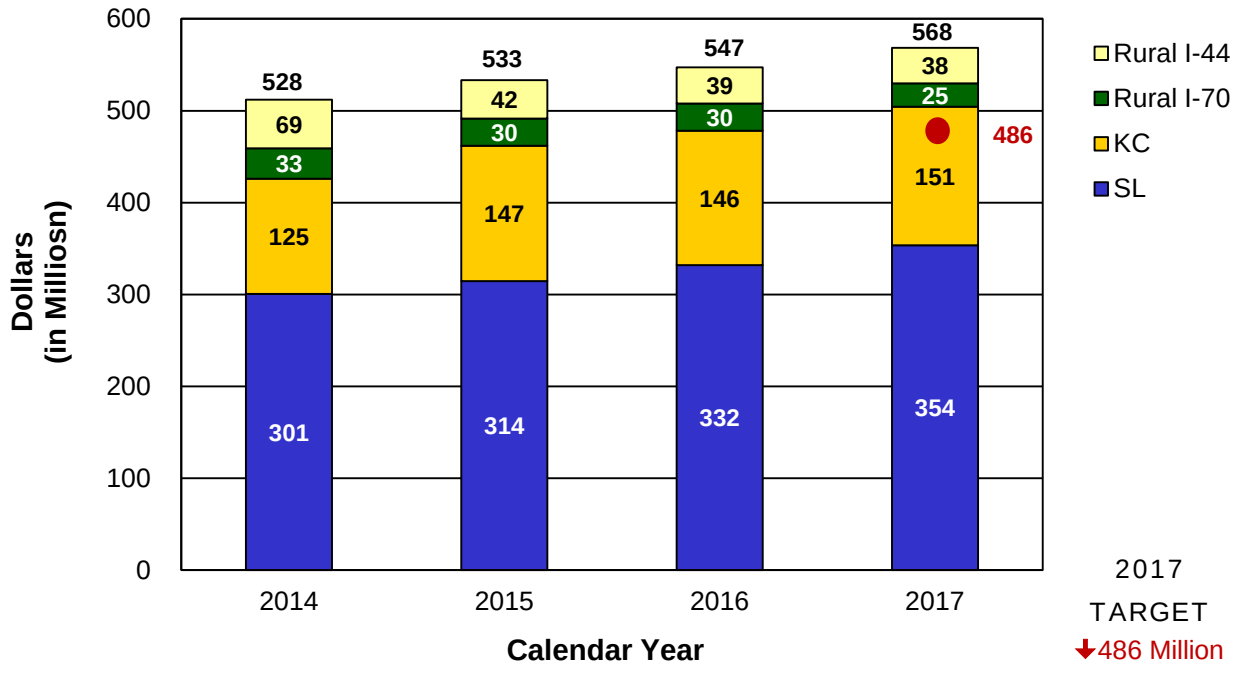
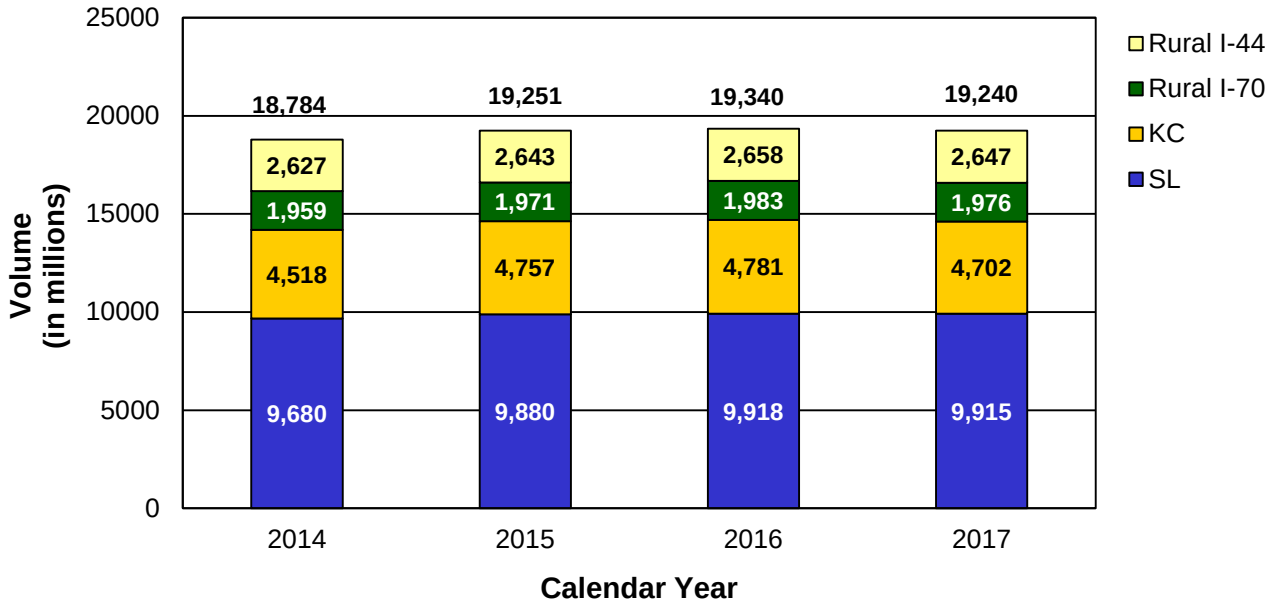
Cost of Congestion on Selected State Roads



Traffic Volume on Selected State Routes



OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

Average time to clear traffic incident – 5c

RESULT DRIVER:
Becky Allmeroth
State Maintenance 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.

This target is established by projecting a 10 percent improvement over a five-year average.

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, debris and stalled vehicles) improves system performance.

St. Louis recorded 2,426 incidents in the first quarter of 2018. The average time to clear traffic incidents was 26.9 minutes, an increase of 3.1 percent from the first quarter of 2017.

Kansas City recorded 1,929 incidents in the first quarter of 2018. The average time to clear traffic incidents was 21.8 minutes, a decrease of 10.2 percent from the first quarter of 2017.

The first quarter for Kansas City and St. Louis revealed an array of incidents that included overturned tractor trailers, school bus, multi-vehicles and MoDOT fleet. Kansas City and St. Louis had an increase in the number of incidents when compared to first quarter of 2017, but continue to use communication, coordination and data to reduce the average time to clear. Continuous traffic incident management training has helped with quick clearance of incidents. Communication between the Traffic Management Center and Emergency Response team is vital for quick and safe responses. St. Louis had a slight increase of 3.1 percent due to several major crashes involving tractor trailers. Kansas City had a reduction of 10.2 percent with significant credit going to increased push/pulls and quicker debris removal.

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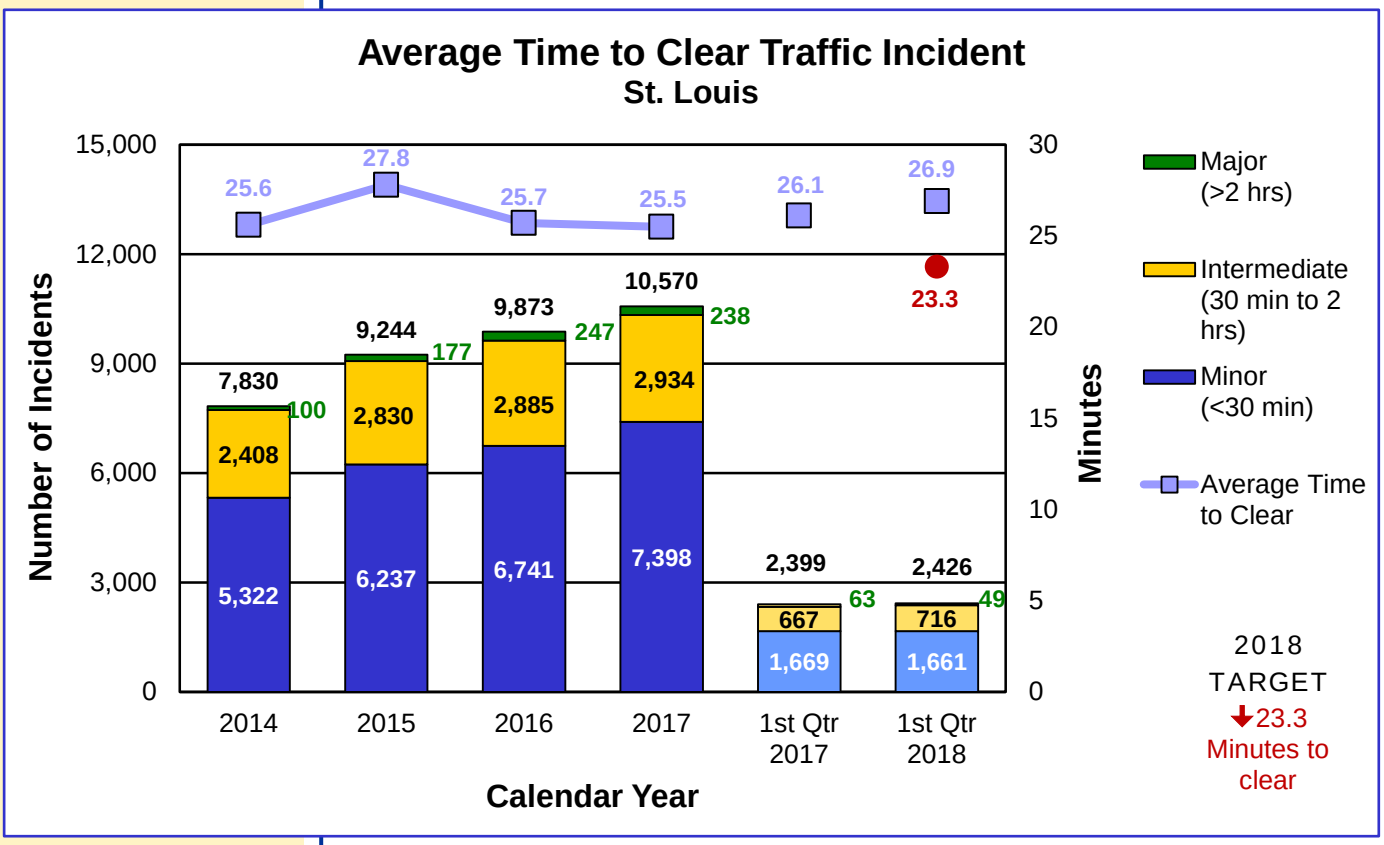

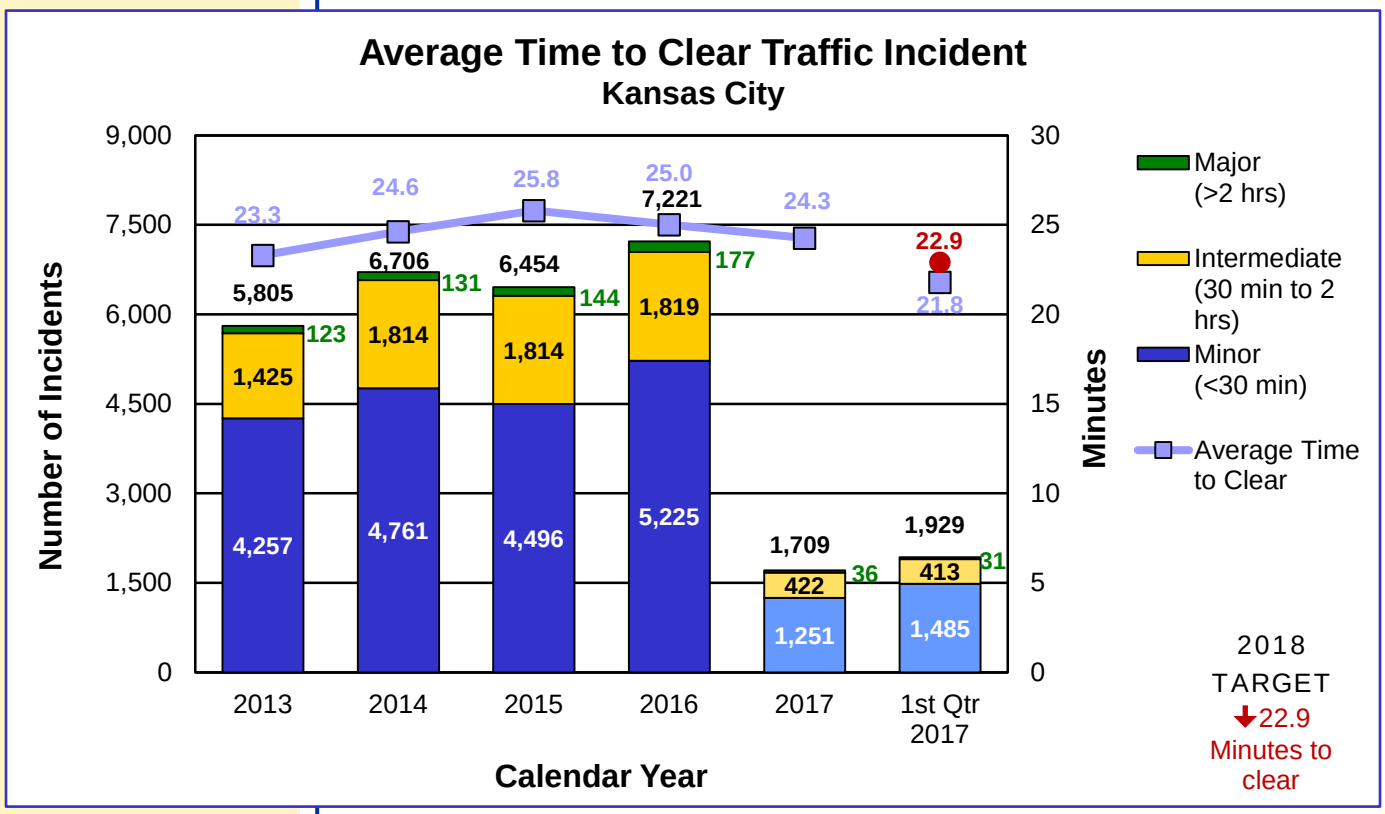

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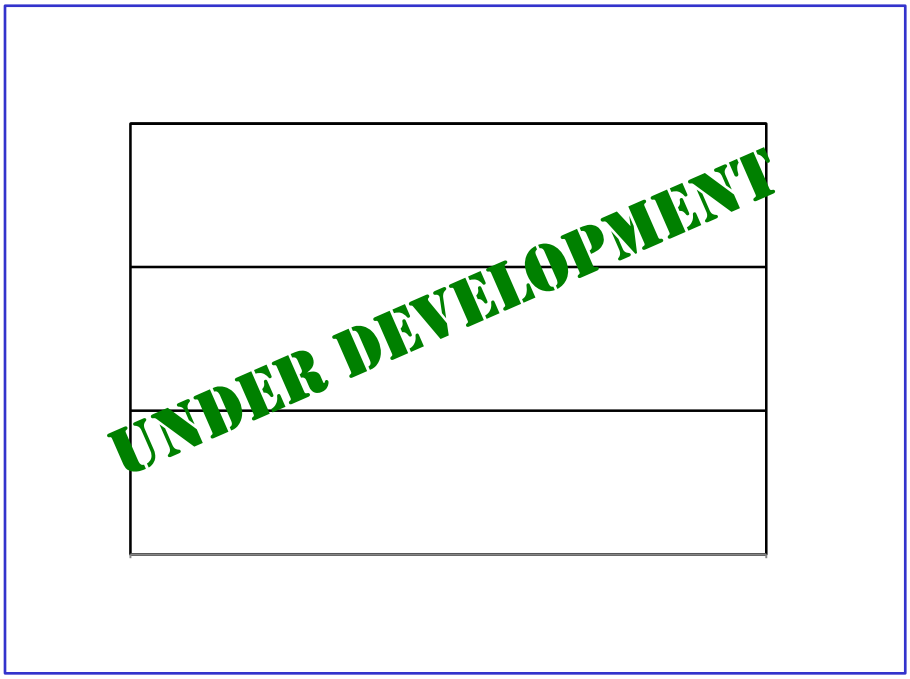
Traffic incident impacts on major interstate routes – 5d

RESULT DRIVER:
Becky Allmeroth
State Maintenance Engineer

MEASUREMENT DRIVER:
Laurel McKean
Assistant District 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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Work zone delays to the traveling public – 5e

RESULT DRIVER:
Becky Allmeroth
State Maintenance Engineer

MEASUREMENT DRIVER:
Jon Nelson
Traffic 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 identified using automated data collection or by visual observations. An impact is defined as the additional time a work zone adds to normal travel. Impacts resulting in a delay of at least 10 minutes are included in this report.

The targeted hours of work zone congestion are based on previous years' data and an acceptable tolerance of 30 total minutes for work zone congestion statewide. The target for this measure is updated quarterly.

Motorists want to get through work zones with as little inconvenience as possible. MoDOT tries to minimize travel impacts by shifting work to nighttime hours or during times when there are fewer impacts to the traveling public. Other strategies include using technology in work zones, providing valuable information to customers and innovative uses of traffic control devices to promote efficient traffic flow. To measure the effectiveness of these strategies, each quarter MoDOT monitors the performance of work zones with the greatest potential to impact traffic. The goal is to minimize the number of times a work zone creates a traffic delay of 10 minutes or more.

From January to March, MoDOT monitored 262 work zones. There were 95 instances in which traffic was delayed for at least 10 minutes. These 95 instances occurred in six work zones and accounted for 2,060 total minutes (34.3 hours) of congestion. Most of the congestion was experienced in three work zones: Poplar Street Bridge (I-64) in St. Louis, bridge work on I-44 at Grand in St. Louis and the new interchange on I-70 at Warrenton. The Poplar Street Bridge work zone was congested for a total of 21.5 hours during the quarter (1 percent of the time). The I-44 work zone at Grand was congested for a total of 8.3 hours during the quarter (0.4 percent of the time). The work zone on I-70 at Warrenton was congested for a total of 3.2 hours during the quarter (0.1 percent of the time).

An initial target for the cumulative work zone congestion statewide has been set at 180 hours for the year (45 hours per quarter). This target translates to approximately 30 minutes of work zone congestion per day statewide. Since this is a new measure, MoDOT will evaluate the identified target after the first year and adjust accordingly.

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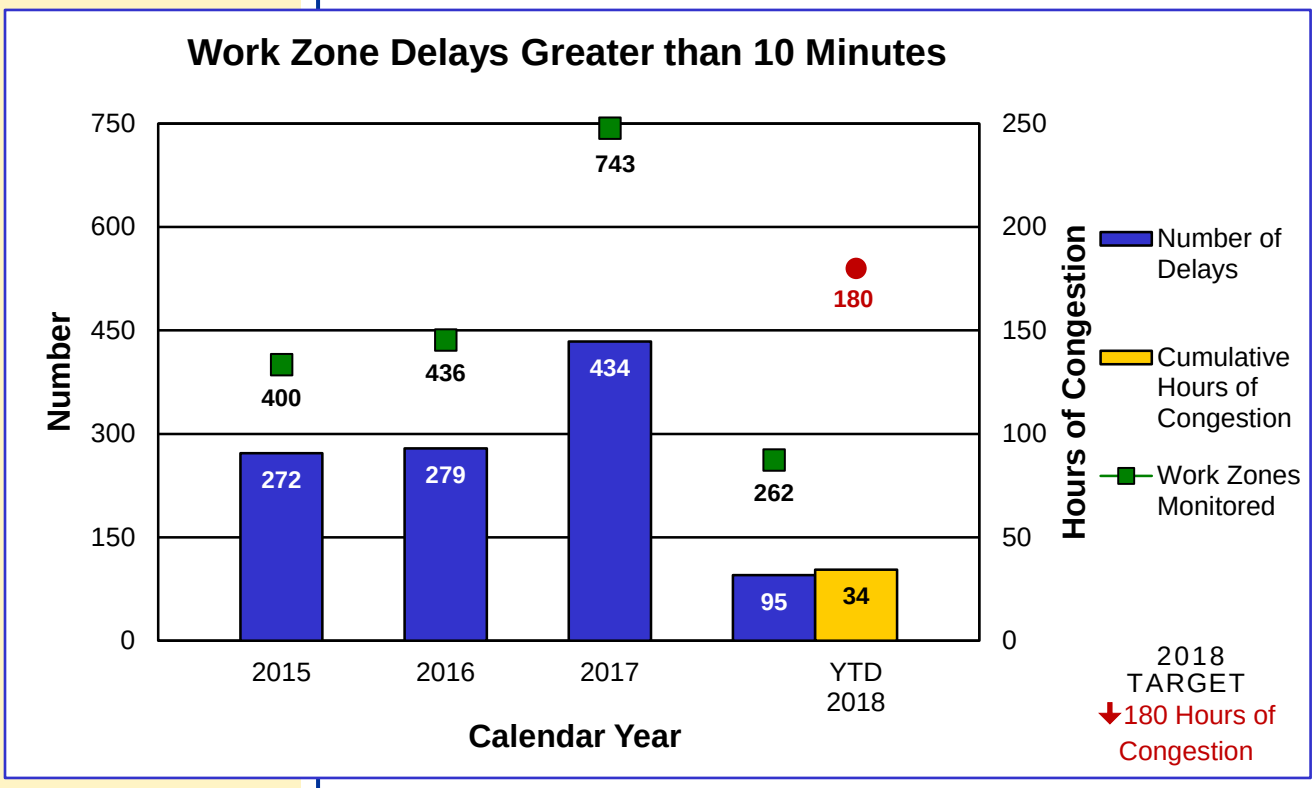

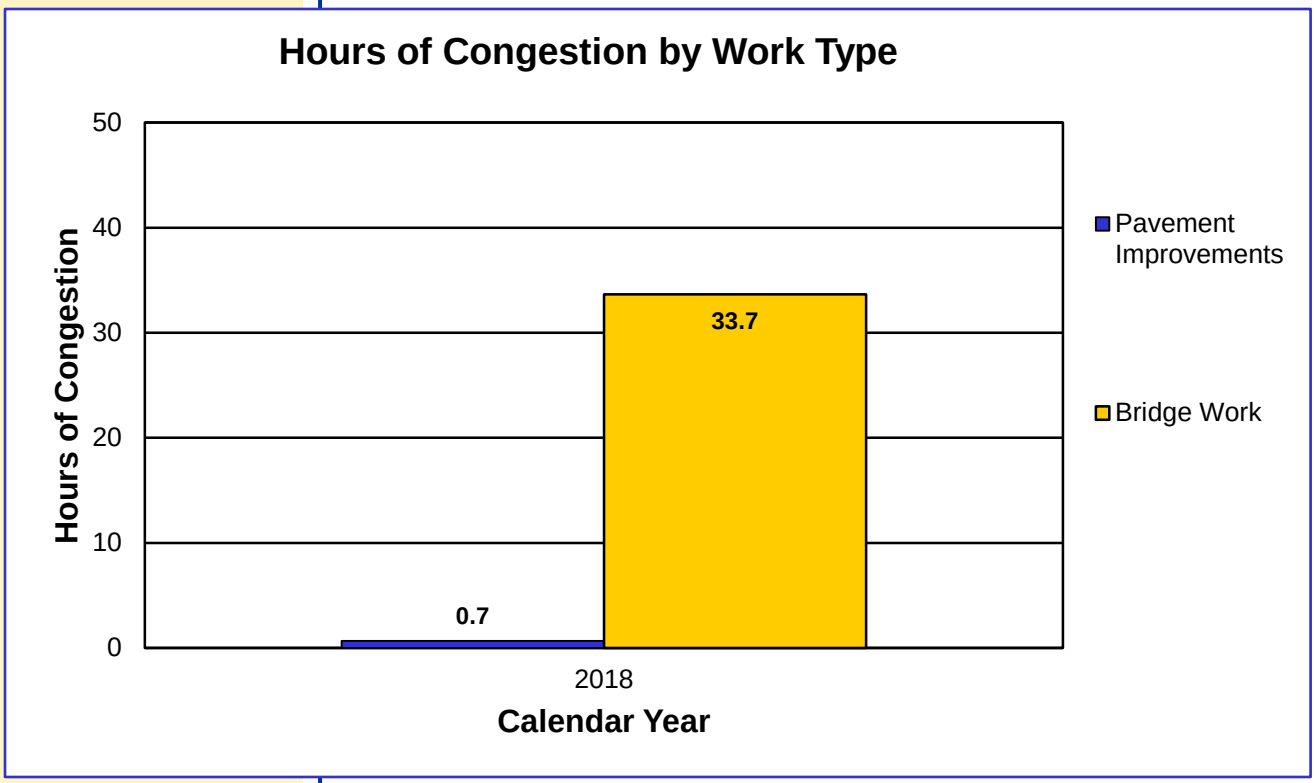

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Time to meet winter storm event performance objectives – 5f

RESULT DRIVER:
Becky Allmeroth
State Maintenance Engineer

MEASUREMENT DRIVER:
Arisa Prapaisilp
Assistant District Maintenance 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.

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.

Through March, the 2017-2018 winter has been relatively light in accumulation of snow and ice but still challenging. Most of the winter events have been freezing rain and ice events that require significant treatment which is costly. Responding to this high number of freezing rain and ice events has resulted in the average times to meet MoDOT's objective of 4.0 hours for continuous operations routes, and 4.5 hours for non-continuous routes. These response times are typical for the last several winters and this winter should result in typical expenditure levels.

Winter operations on average cost about $45 million per year. As of March 31, 2018, MoDOT expended $38.2 million responding to events this winter. Unfortunately, winter events are rare after March 31st but that is not the case for 2018, an additional update will occur in July to represent the entire 2017-2018 storm season.

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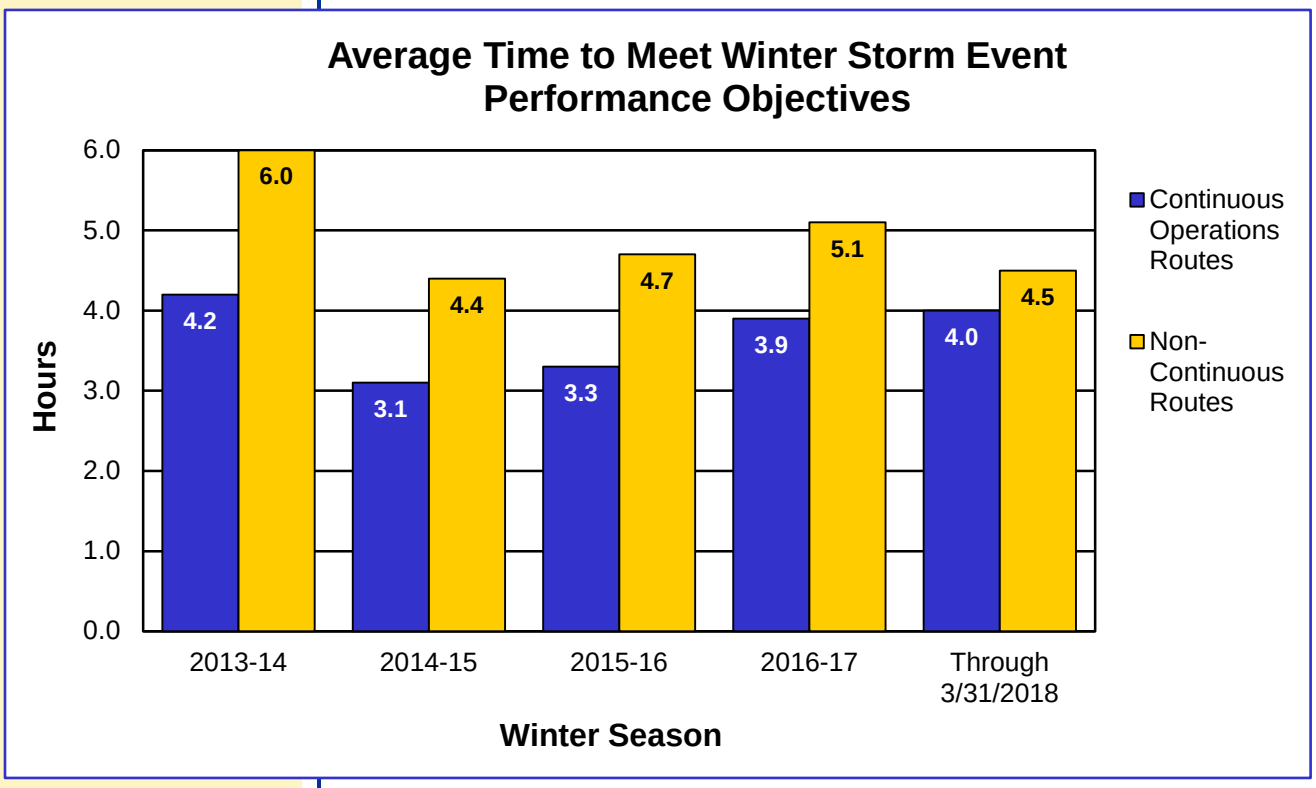
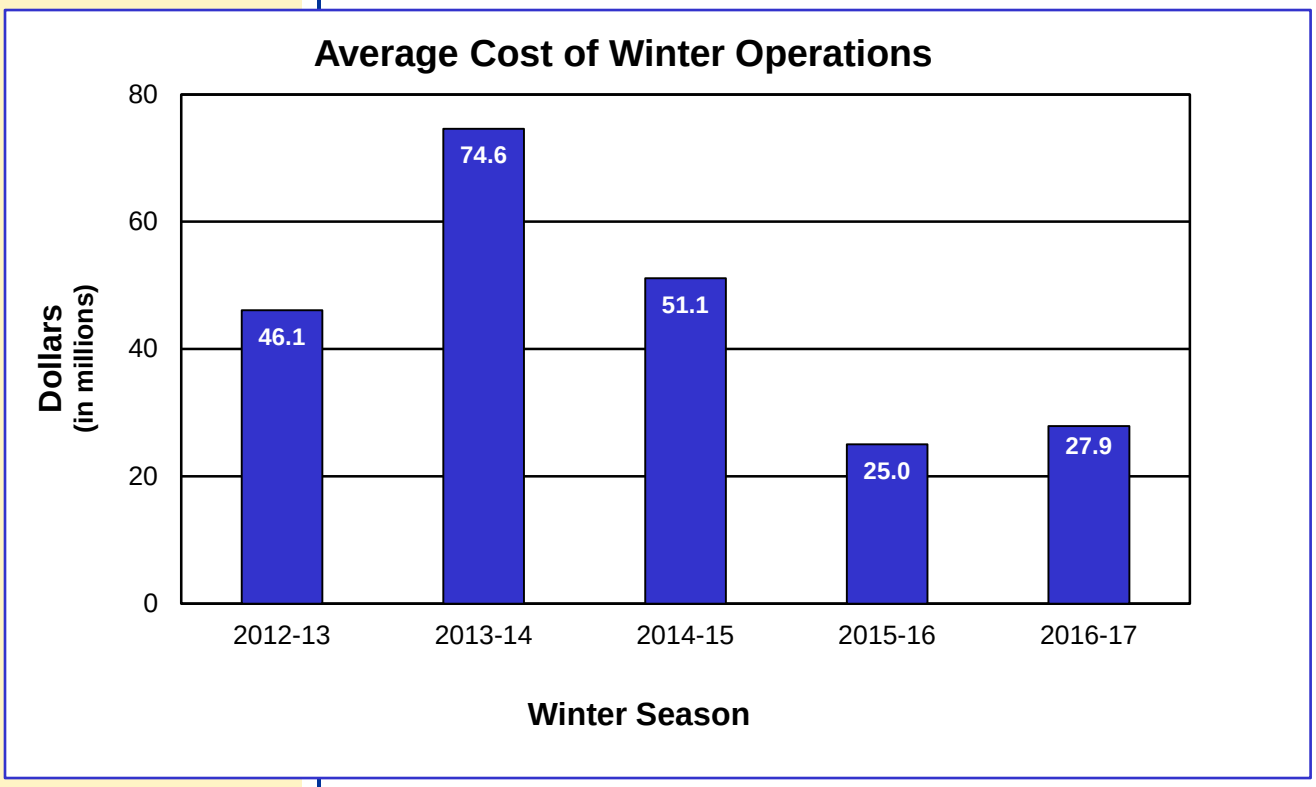




OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

Bike/pedestrian and ADA transition plan improvements – 5g

RESULT DRIVER:
Becky Allmeroth
State Maintenance 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 within the right of way, such as sidewalks and traffic signals. Removal of the barriers listed in MoDOT's 2010 ADA Transition Plan is required as part of the department's compliance with the Americans with Disabilities Act.

MEASUREMENT AND DATA COLLECTION:
MoDOT's investment in pedestrian facilities is determined from the awarded contract amounts for the 20 most common construction elements used on pedestrian projects each year.
ADA Transition Plan progress is based upon completed work that has corrected defective items reported in the ADA 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.
A progress target line is included to show where MoDOT's progress should be in order to fully complete the ADA Transition Plan by 2027. Annual funding levels necessary to complete the ADA Transition Plan by 2027 determine the target, which is set in April of each year.

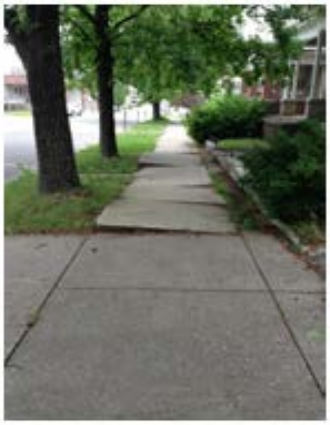
MoDOT has improved more than $27.7 million of deficient Americans with Disabilities Act facilities in the right of way since 2008. However, additional work totaling more than $123.6 million remains to be completed from the 2010 ADA Transition Plan inventory before the August 2027 completion date. To meet the commitment of the Missouri Highways and Transportation Commission, MoDOT needs to be completing more than $12 million of improvements each year until 2027.

Since FY 2016, the MHTC has retained half of the Transportation Alternatives Program funding it receives to be used toward MoDOT's Americans With Disabilities Act Transition Plan activities. The 2018 STIP estimates the annual TAP funds retained for MoDOT ADA projects at approximately $8.6 million per year. Additional investments is required to complete the ADA Transition Plan by August 2027.

So far in 2018, MoDOT has completed $660,085 in ADA improvements. In 2017, MoDOT completed a total of $3.29 million in ADA improvements. These amounts are well below the annual pace needed to complete the required ADA improvements by 2027. Current reporting of Transition Plan Completion at 18.3 percent complete is significantly behind the 44.6 percent target for the first quarter of 2018.

In first quarter 2018, MoDOT invested $3.69 million toward improvements in pedestrian facilities. At 1.55 percent of the 2018 STIP awards, ADA investment in 2018 is showing an increase over the record low rate posted in 2017 of 0.72 percent. In all of 2017, MoDOT invested a total of $5.38 million in pedestrian facility improvements.

The annual investment target for this measure has been set at $15 million. A significant increase in ADA Transition Plan progress is necessary for MoDOT to be able to complete the ADA Transition Plan by August 2027.



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