



# KEEP CUSTOMERS AND OURSELVES SAFE

*Mark Shelton, District Engineer*



# Tracker

MEASURES OF DEPARTMENTAL PERFORMANCE



Safety is a daily commitment for all MoDOT employees. From design and construction to operations and maintenance of the state transportation system, the safety of our customers, partners, and employees is our top priority. We work with our safety partners to promote safe behavior for all users and modes of transportation so everyone goes home safe every day.

## RESULT DRIVER:

Mark Shelton  
District Engineer

## MEASUREMENT

### DRIVER:

Bill Whitfield  
Highway Safety Director

## PURPOSE OF THE MEASURE:

The fatal and serious injury number measure tracks quarterly, annual and five-year average trends resulting from traffic crashes on all Missouri roadways.

## MEASUREMENT AND DATA COLLECTION:

Missouri law enforcement agencies submit a vehicle accident report form to the Missouri State Highway Patrol to be entered into a statewide traffic crash database. The database automatically updates MoDOT's crash database system, which is part of the Transportation Management System. The rate of fatal and serious injury charts display annual and five-year average fatality and injury rates per 100 million vehicle miles traveled for these same crashes. In addition, the fatality rate chart includes the national average. The targets are based on a 9 percent improvement rate from the immediate prior year fatalities and a 5 percent improvement in serious injuries from the immediate prior year.



# KEEP CUSTOMERS AND OURSELVES SAFE

## Number and rate of fatalities and serious injuries – 1a

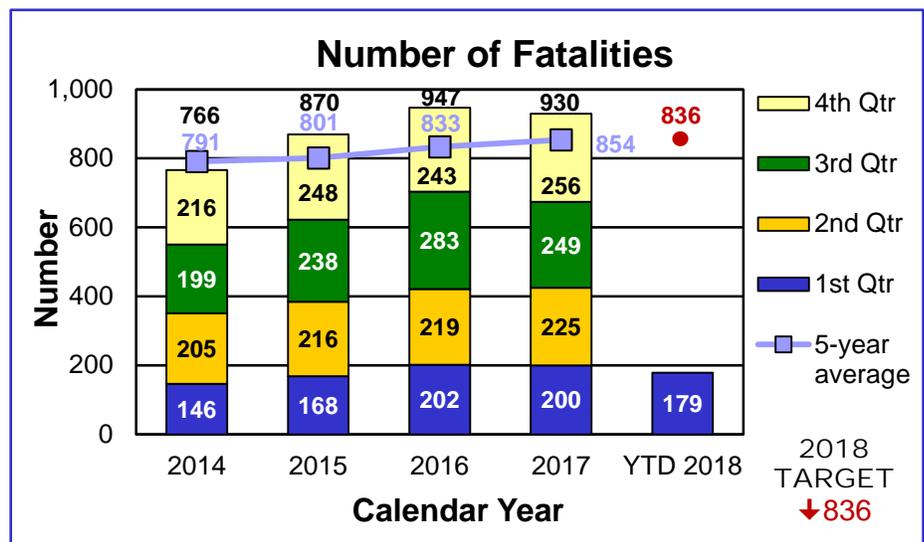
MoDOT wants everyone to reach their destinations safely, so all can go home to their families each day. *Missouri's Blueprint – A Partnership Toward Zero Deaths* is Missouri's strategic highway safety plan designed to reduce the number and severity of traffic crashes using the four key disciplines of traffic safety: engineering, enforcement, education and emergency response.

From 2015-2017, substance-impaired drivers contributed to 21 percent of Missouri's traffic crash fatalities. Alcohol remains the primary contributor to these crash types. Male drivers were more likely than females to be involved in substance-impaired driving crashes contributing to 80 percent of substance-impaired fatalities. Ten percent of the children less than 15 years of age killed in motor vehicle crashes were riding with a substance-impaired driver.

Overall, driver error contributes to 94 percent of traffic crashes nationwide. Missouri's top crash types are:

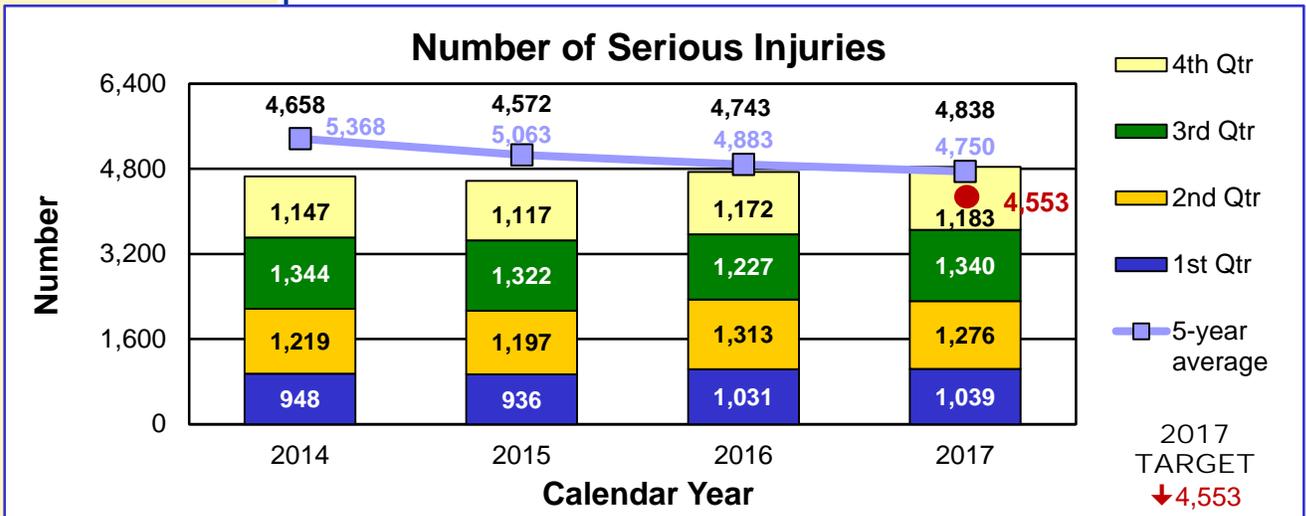
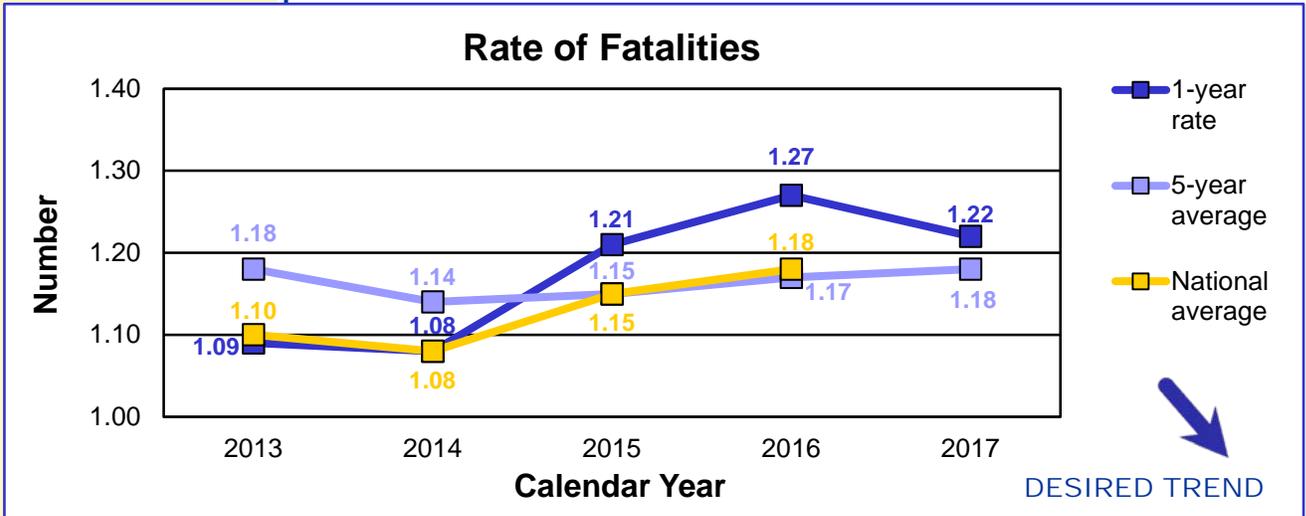
- Run-off-road and curves
- Head-on collisions
- Collision with trees and poles
- Intersection collisions
- Aggressive driving
- Unrestrained occupants
- Substance-impaired driving
- Distracted and inattentive driving
- Younger and older drivers
- Motorcyclists
- Pedestrians
- Commercial motor vehicle crashes

MoDOT's goal was to reduce fatalities by 7 percent and serious injuries by 4 percent between 2016 and 2017. Compared to 2016, fatalities are down 2 percent, but 5 percent over the 2017 target. Serious injuries increased by 95, or 2 percent. In order to reach our Blueprint goal of 700 or fewer by 2020, new targets have been established with a fatality reduction target of 9 percent and a 5 percent reduction for serious injuries. These targets may seem aggressive but are needed to work toward the ultimate goal of zero fatalities.

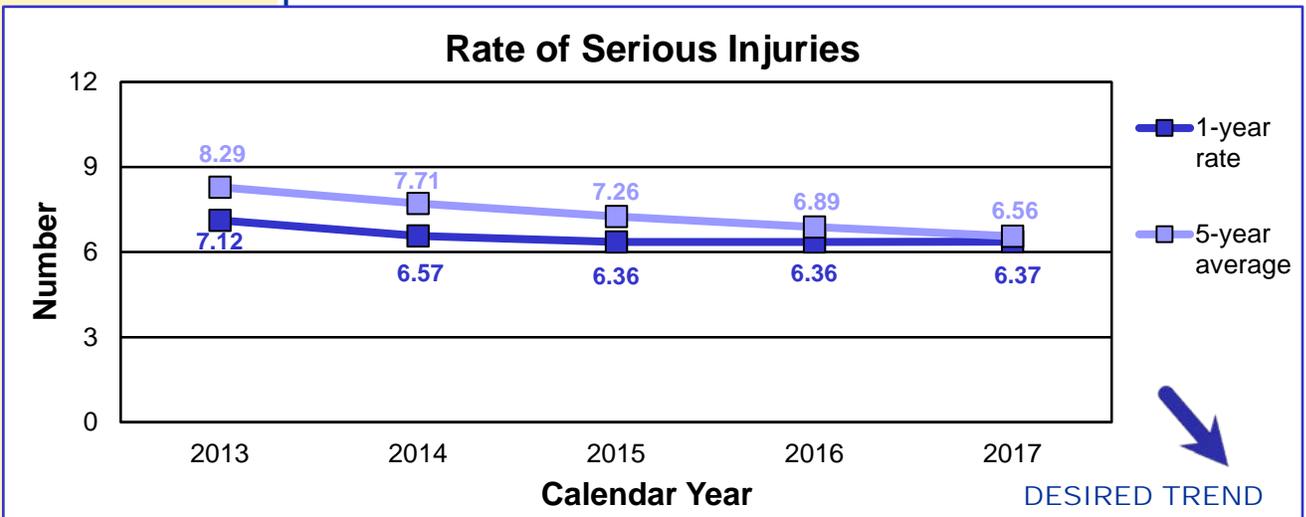


YTD 2018 – First quarter fatalities were derived from MSHP radio reports.

# KEEP CUSTOMERS AND OURSELVES SAFE



YTD 2017 – Due to a backlog of crash reports into STARS, the serious-injury measure only includes data derived from TMS. First quarter 2018 data is not available on the MSHP radio reports and is incomplete in TMS.



## RESULT DRIVER:

Mark Shelton  
District Engineer

## MEASUREMENT

### DRIVER:

Bill Whitfield  
Highway Safety Director

## PURPOSE OF THE MEASURE:

The vulnerable roadway user measure tracks annual trends in fatalities and serious injuries of motorcyclists, pedestrians and bicyclists. These roadway users are at risk for death or serious injury when involved in a motor-vehicle-related crash.

## MEASUREMENT AND DATA COLLECTION:

Missouri law enforcement agencies submit a vehicle accident report form to the Missouri State Highway Patrol to be entered into a statewide traffic crash database. The database automatically updates MoDOT's crash database system, which is part of the Transportation Management System.

# KEEP CUSTOMERS AND OURSELVES SAFE

## *Number of vulnerable roadway user fatalities and serious injuries – 1b*

In 2016, vulnerable roadway users were 24 percent of the total number of fatalities. Pedestrian fatalities decreased in 2016 by 5 percent. Motorcycle fatalities increased by 34 percent and bicycle fatalities increased by 11 percent.

Pedestrian and bicycle serious injuries increased in 2016, meanwhile motorcyclist injuries decreased. Serious injury data for 2016 is incomplete.

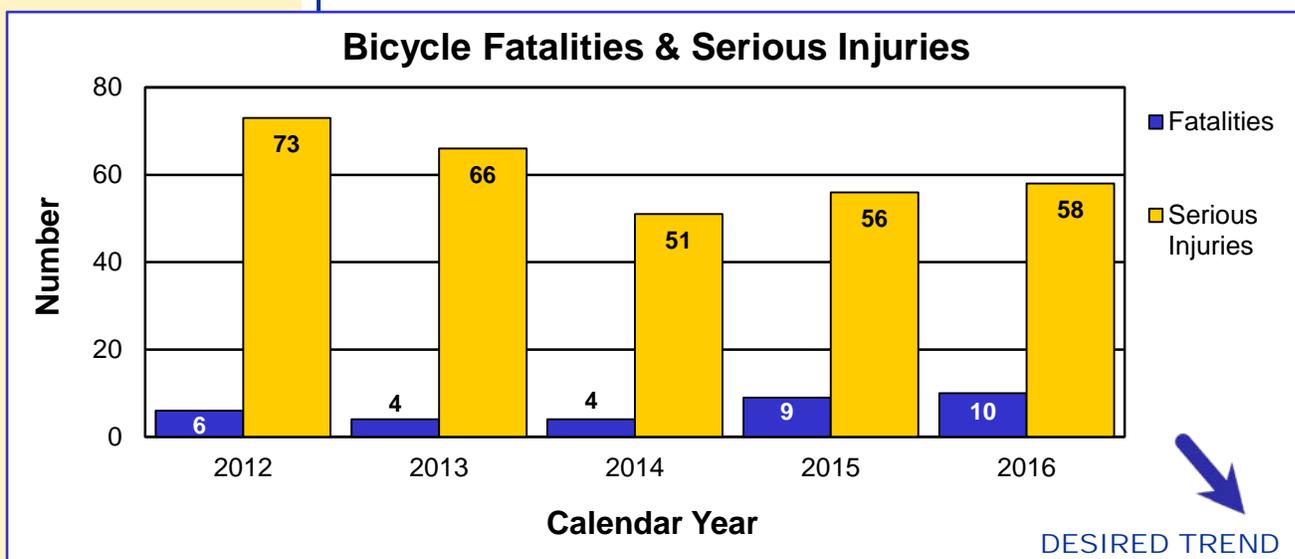
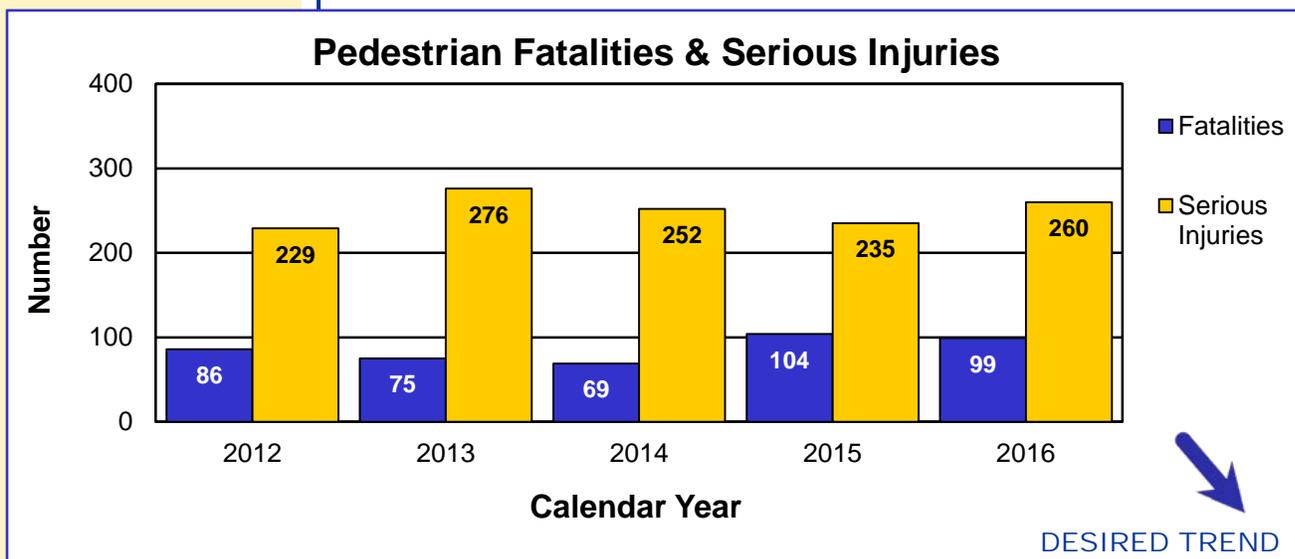
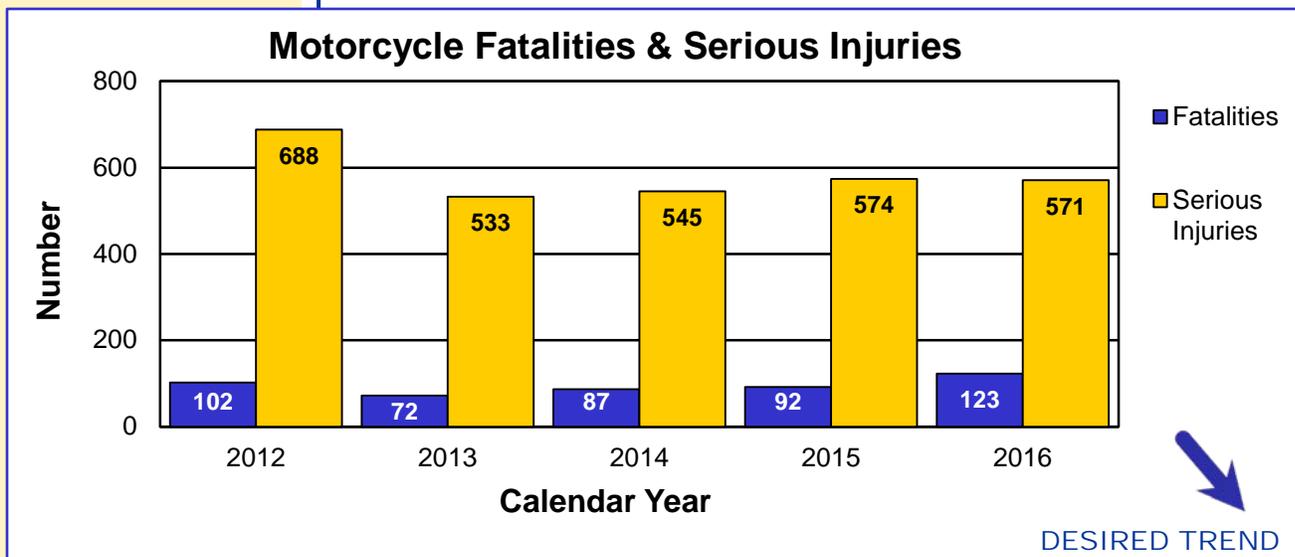
A closer look at these vulnerable roadway users shows that, between 2014 and 2016, there were 151 motorcycle operators who were aggressively driving, which resulted in a fatality. Of those fatalities, 96 percent were male.

Walking is an essential form of transportation for many Missourians. Between 2014 and 2016, 65 percent of pedestrian fatalities were NOT crossing the roadway at a designated crosswalk.

Lastly, of the 23 bicycle fatalities between 2014 and 2016, the highest percentage, 43 percent, occurred on city streets.



# KEEP CUSTOMERS AND OURSELVES SAFE



## RESULT DRIVER:

Mark Shelton  
District Engineer

# KEEP CUSTOMERS AND OURSELVES SAFE

## *Number of fatalities and serious injuries resulting from the most frequent crash causes – 1c*

## MEASUREMENT DRIVER:

Jon Nelson  
Traffic Liaison Engineer

## PURPOSE OF THE MEASURE:

The measure tracks annual trends in motor-vehicle-related fatal and serious injuries resulting from the most common contributing factors or highway features. This data represents six of the top focus areas presented in Missouri's Blueprint to Save More Lives.

## MEASUREMENT AND DATA COLLECTION:

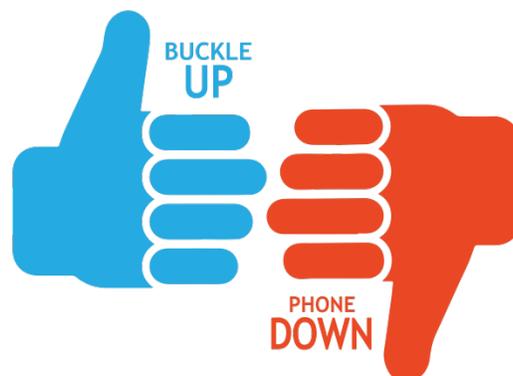
Missouri law enforcement agencies submit a vehicle accident report form to the Missouri State Highway Patrol to be entered into a statewide traffic crash database, which is part of the Transportation Management System. MoDOT staff query and analyze this data to determine the number of unrestrained occupants in crashes, how often aggressive driving, alcohol and other drugs contribute to crashes, and whether or not the vehicles ran off the road, the crash occurred in a curve, or the crash occurred at an intersection.

The Highway Patrol experiences a lag in data entry each year which prohibits MoDOT from using current complete crash data. This lag is being reduced through a combination of efforts involving not only manual data entry, but also an increased emphasis in electronic data entry.

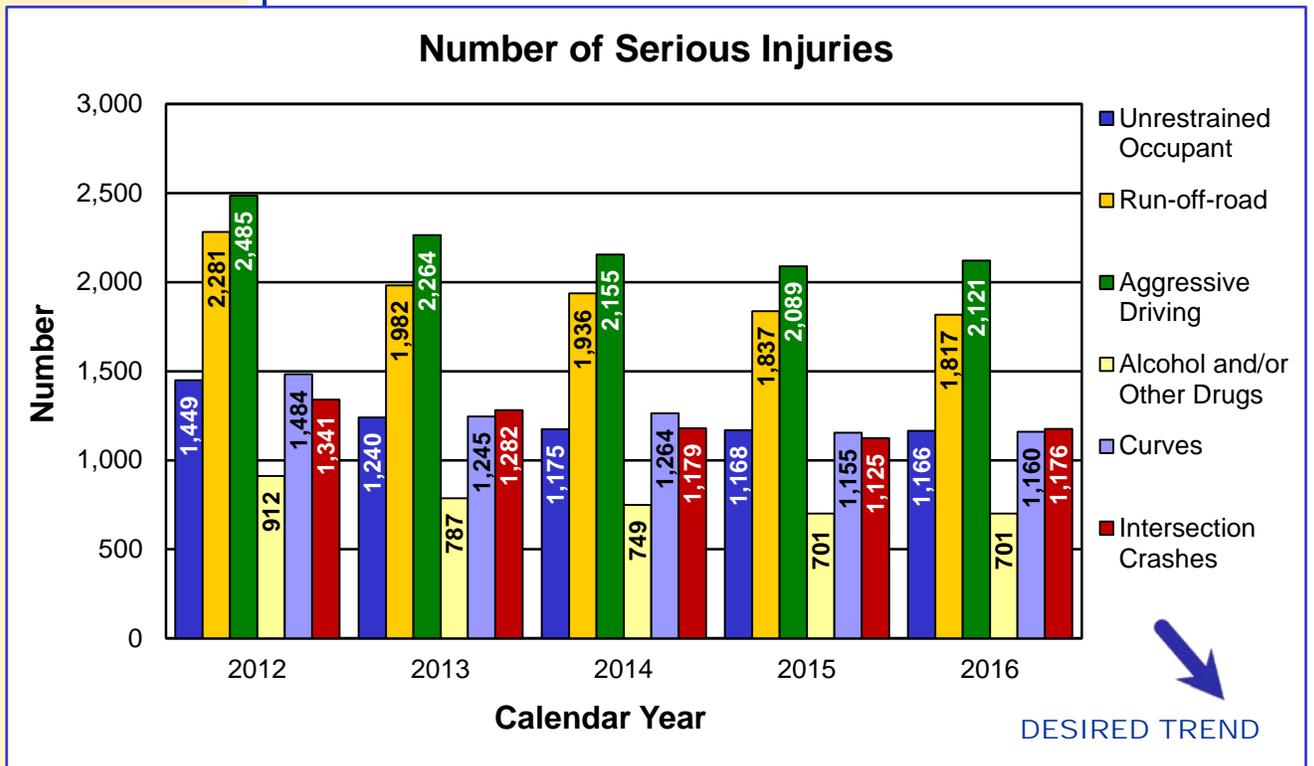
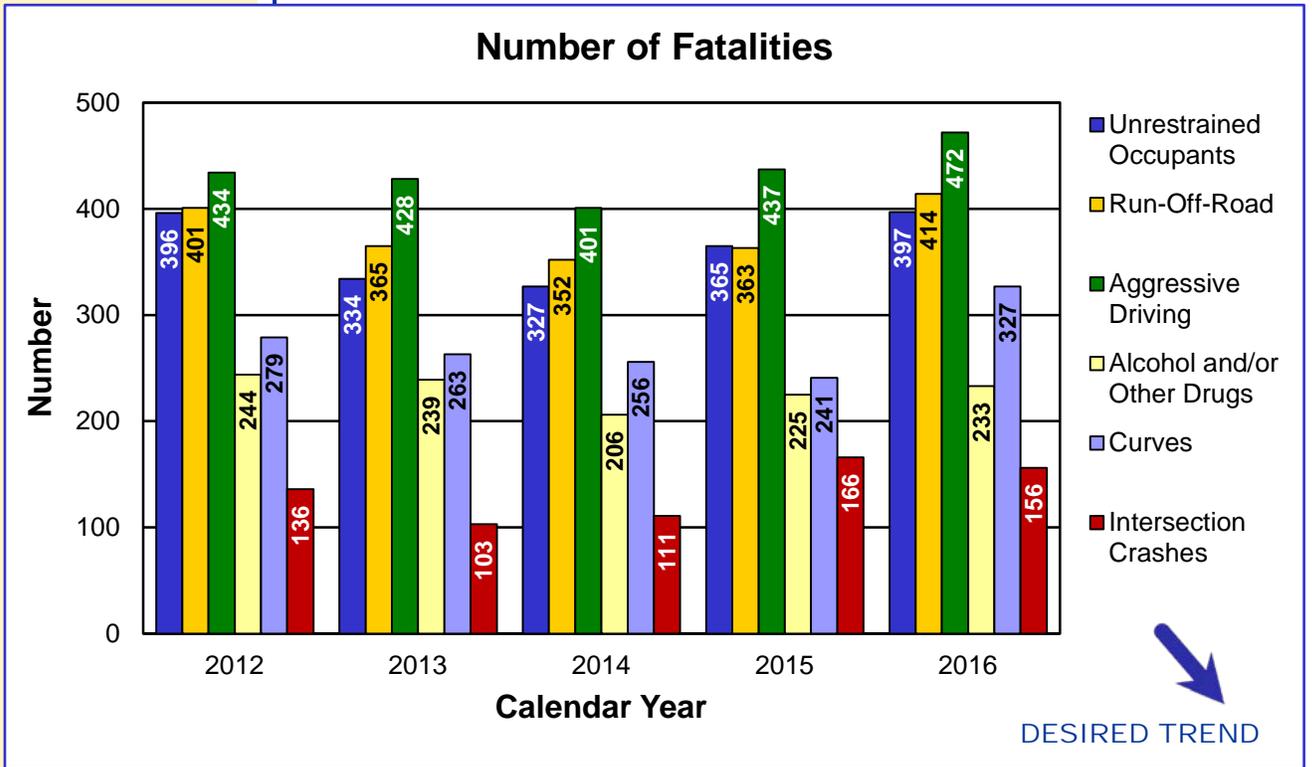
Recording and monitoring crash data is an important part of improving safety for Missouri drivers. But without looking at the causes of these incidents, the data is nothing but numbers. Looking for the reasons why an incident occurs is MoDOT's best approach to address the problem. With that approach, the department finds the most frequent causes continue to be a mix of engineering and behavioral issues.

The general trend for fatalities is no longer declining in Missouri, but instead has increased for two consecutive years. Serious injuries increased in 2016, revealing a change in the downward trend for the first time in over a decade. Comparing the number of fatalities in 2015 to 2016 shows a large increase in curve-related fatalities (36 percent) and run-off-road fatalities (14 percent). Unrestrained occupants, aggressive driving and alcohol and/or other drugs also had increases in fatalities (9 percent, 8 percent and 4 percent respectively) while intersection-related fatalities decreased by 6 percent. Comparing the number of serious injuries in 2015 to 2016 shows minimal change for all areas with the exception of intersection-related which had more than a 4 percent increase.

As traffic on Missouri roadways continues to increase, MoDOT efforts will be instrumental in changing the current trends for each of these causes. The primary current initiatives include adding shoulders and rumble strips to minor roads, installing high-friction surface treatments on curves and improving intersection safety. MoDOT continues to target locations and behaviors based on crash data analysis. Another troubling behavior is distracted driving as it may significantly magnify all six of the top crash factors. Mobile devices magnify the fatalities and serious injuries in the categories of unrestrained occupants, run-off-road, aggressive driving, alcohol and/or other drugs, curves and intersection-related crashes as drivers will be less likely to safely navigate roadways, especially in curves and at intersections.



# KEEP CUSTOMERS AND OURSELVES SAFE



**RESULT DRIVER:**

Mark Shelton  
District Engineer

# KEEP CUSTOMERS AND OURSELVES SAFE

## Number of fatalities and serious injuries in work zones – 1d

**MEASUREMENT  
DRIVER:**

Steve Campbell  
District Construction &  
Materials Engineer

**PURPOSE OF  
THE MEASURE:**

This measure tracks the number of traffic-related and non-traffic-related fatalities, injuries and overall crashes occurring in work zones on state-owned roadways.

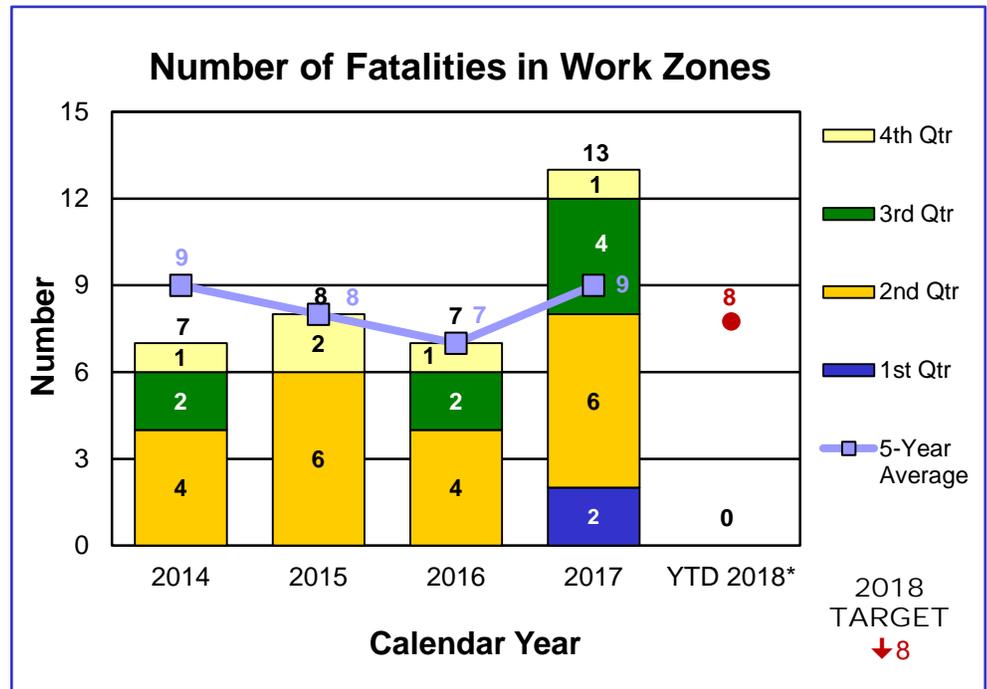
**MEASUREMENT AND  
DATA COLLECTION:**

Missouri law enforcement agencies submit a vehicle accident report form to the Missouri State Highway Patrol to be entered into a statewide traffic crash database. The database automatically updates MoDOT's crash database system, which is part of the Transportation Management System. MoDOT staff query and analyze this data to identify work zone related crash statistics. MSHP prioritizes entry of the crash reports by fatality, serious injury and then property damage only. The target for this measure is updated quarterly. This target is established by projecting a 10 percent improvement over a five-year average.

Work zone safety is at the center of MoDOT's safety culture and the driving force in all maintenance and construction work. Just as MoDOT expects its crews to be safe and visible, it also expects contractors and utility companies to provide safe work zones and visible workers. Staying safe in work zones also is a partnership shared with the driving public. MoDOT wants everyone to get home safely. While MoDOT makes every effort to work safely, motorists need to pay attention, slow down, move over, buckle up and drive without distractions.

Based on information currently available for the first quarter of 2018, work zone crashes have accounted for zero fatalities. The target for 2018 will be eight, which is slightly below the running four-year average.

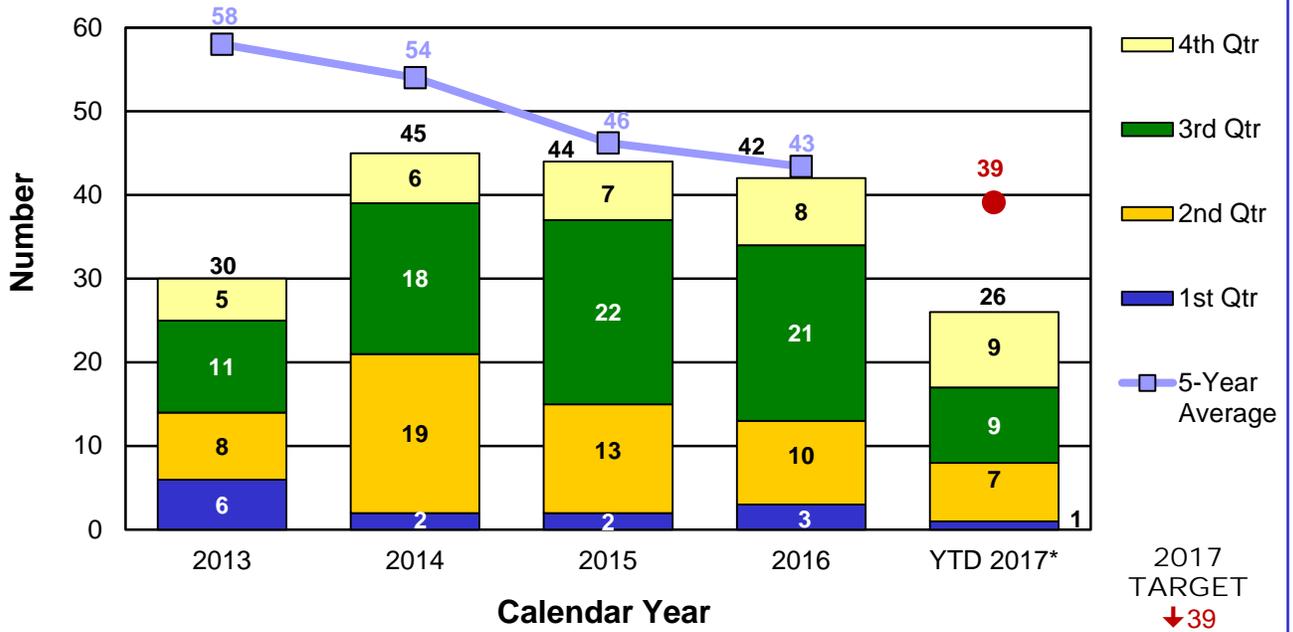
The challenge for 2018 will be to prevent any stopped traffic without advanced warning. When traffic is stopped, better queue management strategies must be employed. The time of day and day of week when performing operations also should be considered.



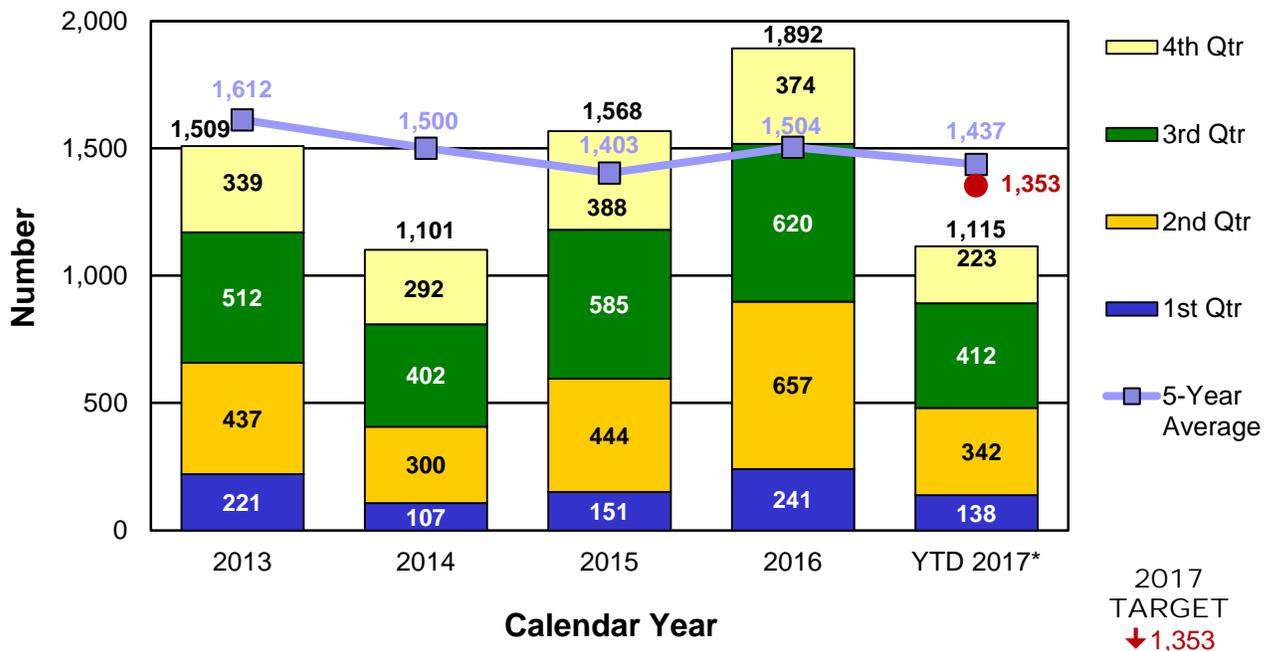
2018 – Fatalities derived from TMS.

# KEEP CUSTOMERS AND OURSELVES SAFE

## Number of Serious Injuries in Work Zones



## Number of Crashes in Work Zones



\*YTD 2017 – Due to a backlog of crash reports into STARS, serious injury and crash measures are not final and only illustrate data derived from TMS. First quarter 2018 data is unavailable through the MSHP radio reports and is incomplete in TMS.

**RESULT DRIVER:**

Mark Shelton  
District Engineer

# KEEP CUSTOMERS AND OURSELVES SAFE

**MEASUREMENT DRIVER:**

Scott Jones  
Highway Safety Program  
Administrator

**PURPOSE OF THE MEASURE:**

This measure tracks annual trends in seat belt use in passenger vehicles. This data drives the development and focus of the Missouri Highway Safety Plan and supports Missouri's Blueprint to Save More Lives.

**MEASUREMENT AND DATA COLLECTION:**

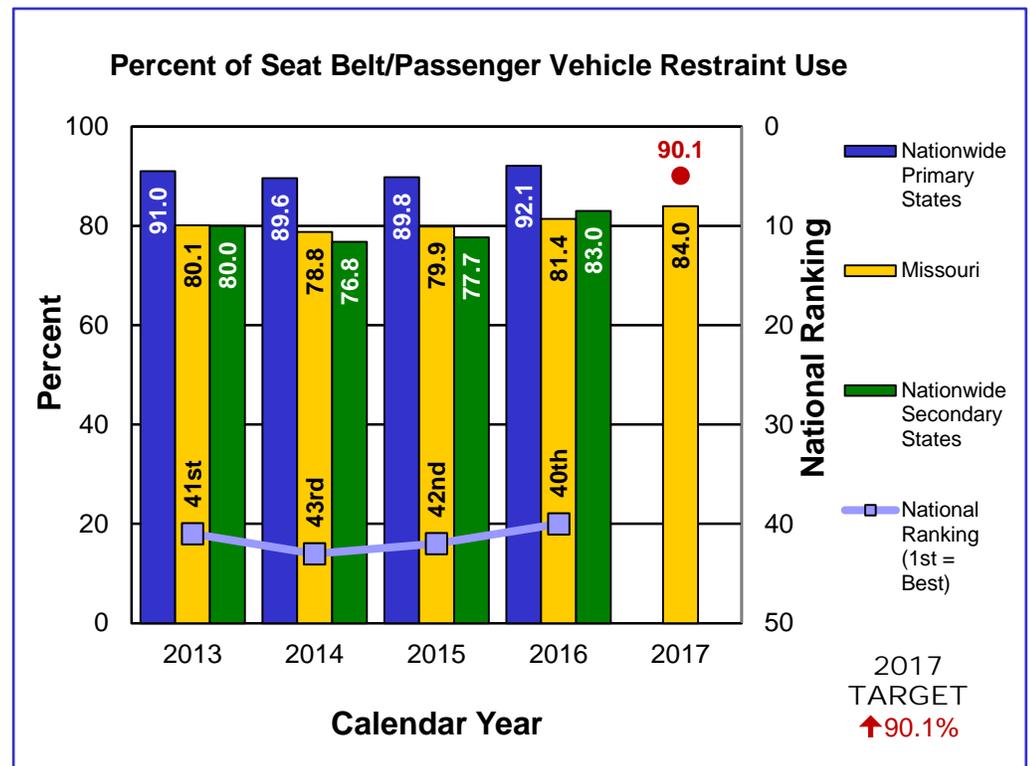
Each June, a statewide survey is conducted at 560 preselected locations in 28 counties. The data collected is calculated into a seat belt usage rate using a formula approved by the National Highway Traffic Safety Administration. Data collection locations represent 85 percent of the state's vehicle occupant fatalities. The data collection plan is the same each year for consistency and compliance with NHTSA guidelines. The target for this measure is updated annually in October for the next calendar year. This target is established as the current national average.

## Percent of seat belt/passenger vehicle restraint use – 1e

Seat belts save lives, but getting people to use them – even to protect their own lives – is a challenge. Public education is one way to keep the issue in front of motorists. Legislation is another. MoDOT supports each approach, attacking the problem with focused marketing campaigns and reinforcing it with hard facts to back legislative efforts. Several municipalities across the state are taking matters into their own hands enacting primary ordinances within city limits. Missouri currently has 53 municipalities and two counties that have adopted primary seat belt ordinances, representing nearly one fourth of the state's population.

Based on 115,902 observations, the seat belt use in Missouri for 2017 was 84.0 percent. Johnson County was the lowest at 57.2 percent and Callaway County was the highest at 95.1 percent. The national average for seat belt use in 2016 was 90.1 percent (2017 data is not yet available). Missouri's national ranking in 2016 was 40th, with 10 states ranking lower in seat belt use.

States with a primary seat belt law rank highest on seat belt use nationwide. States that have a secondary law continue to rate lowest in national rankings.



## RESULT DRIVER:

Mark Shelton  
District Engineer

## MEASUREMENT DRIVER:

Angie Hoecker  
Highway Safety and Traffic  
Commercial Motor Vehicle  
Program Manager

## PURPOSE OF THE MEASURE:

This measure tracks annual trends in fatalities and serious injuries involving Commercial Motor Vehicles. This data guides the development and focus of the Commercial Vehicle Safety Plan (CVSP), which is the plan required to receive Motor Carrier Safety Assistance Program (MCSAP) funds.

## MEASUREMENT AND DATA COLLECTION:

Missouri law enforcement agencies submit a vehicle accident report form to the Missouri State Highway Patrol to be entered into a statewide traffic crash database. The database automatically updates MoDOT's crash database system, which is a part of the Transportation Management System. The fatal and serious injury rates on the charts display the annual fatality and injury rates per 100 million vehicle miles traveled for commercial motor vehicles for these same crashes. The targets are based on a 9 percent improvement rate from the immediate prior year fatalities and a 5 percent improvement in serious injuries from the immediate prior year.

# KEEP CUSTOMERS AND OURSELVES SAFE

## *Number and rate of fatalities and serious injuries involving commercial motor vehicles – 1f*

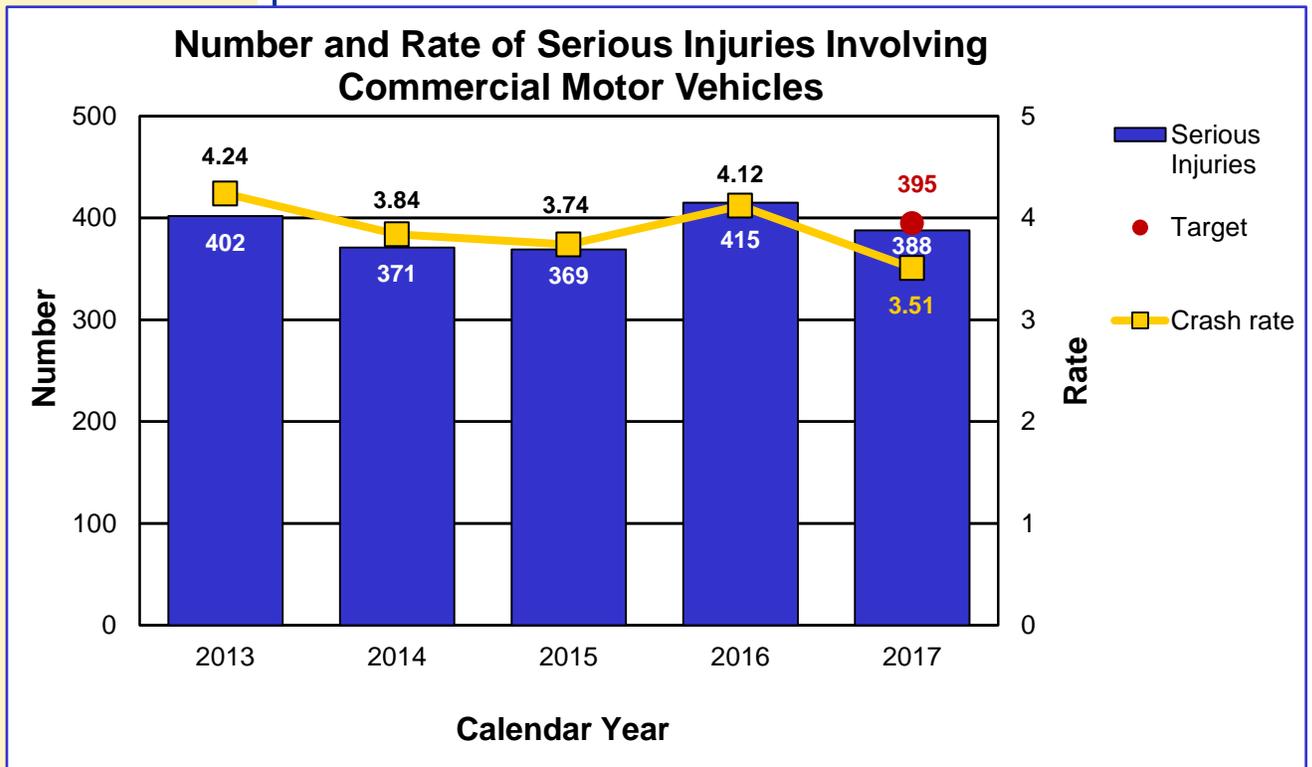
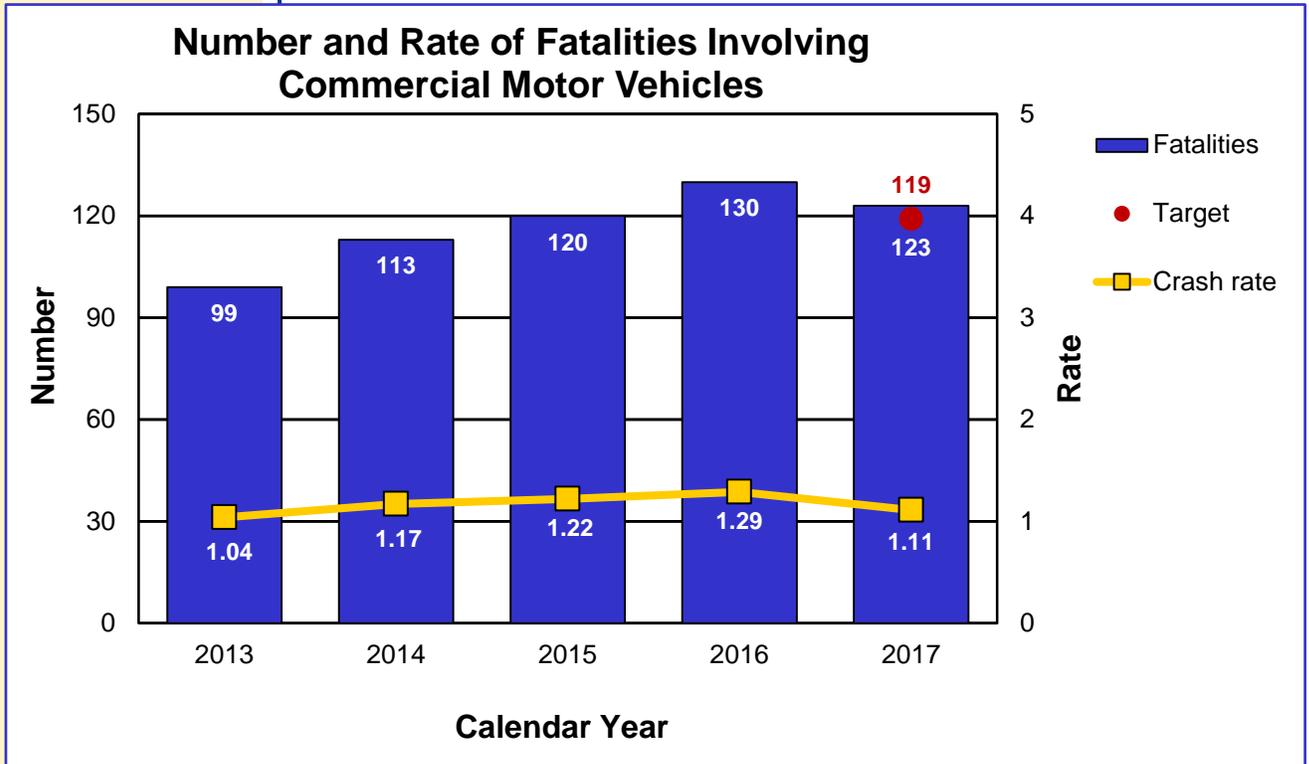
Commercial Motor Vehicles are essential to Missouri's economy. They transport goods and products to keep the nation moving. MoDOT partners with the Missouri State Highway Patrol, St. Louis Metropolitan Police Department, Kansas City Police Department, St. Louis County Police Department and Franklin County's Sheriff's Office to keep people traveling safely in and around CMVs. By tracking the number of CMV involved fatalities and serious injuries, MoDOT can target educational and enforcement efforts, as well as improve safety features such as highway signs, reflective pavement markings, guard cables, rumble strips and incident management alert signs.

While efforts from MoDOT and the partner agencies are effective in improving safety on roadways, Missouri has experienced an increase in the number and rate of fatalities and serious injuries involving CMVs. Between 2013 and 2017, fatalities involving a CMV increased by 24.2 percent and the fatality rate increased from 1.04 to 1.11 per 100 million CMV vehicle miles traveled. In 2017, Missouri had seven fewer fatalities involving a CMV. This resulted in a 2017 fatality rate of 1.11 as compared to 1.29 for 2016.

Between 2013 and 2017, serious injuries involving a CMV decreased by 3.5 percent and the serious injury rate decreased from 4.24 to 3.51 per 100 million CMV vehicle miles traveled. The 388 serious injuries experienced in 2017 is 27 less than reported for 2016. This resulted in a 2017 serious injury rate of 3.51 compared to 4.12 for 2016.



# KEEP CUSTOMERS AND OURSELVES SAFE



Due to a backlog of crash reports into STARS, these measures will only illustrate data derived from TMS.

## RESULT DRIVER:

Mark Shelton  
District Engineer

# KEEP CUSTOMERS AND OURSELVES SAFE

## *Total and rate of MoDOT recordable incidents – 1g*

## MEASUREMENT

### DRIVER:

Evan Adrian  
Senior Safety Officer

## PURPOSE OF THE MEASURE:

This measure tracks the number of recordable injuries in total and as a rate of injuries per 100 workers.

## MEASUREMENT AND DATA COLLECTION:

The calculation for incidence rate is the number of recordables times 200,000 divided by the number of hours worked. The 200,000 used in the calculation is the base for 100 full-time workers (working 40 hours per week, 50 weeks per year). MoDOT defines a recordable incident as a work-related injury or illness that results in death, days away from work or medical treatment resulting in cost to the department. The injury data is collected from Riskmaster, the department's risk management claims administration software. The number of hours worked is taken from MoDOT's payroll data.

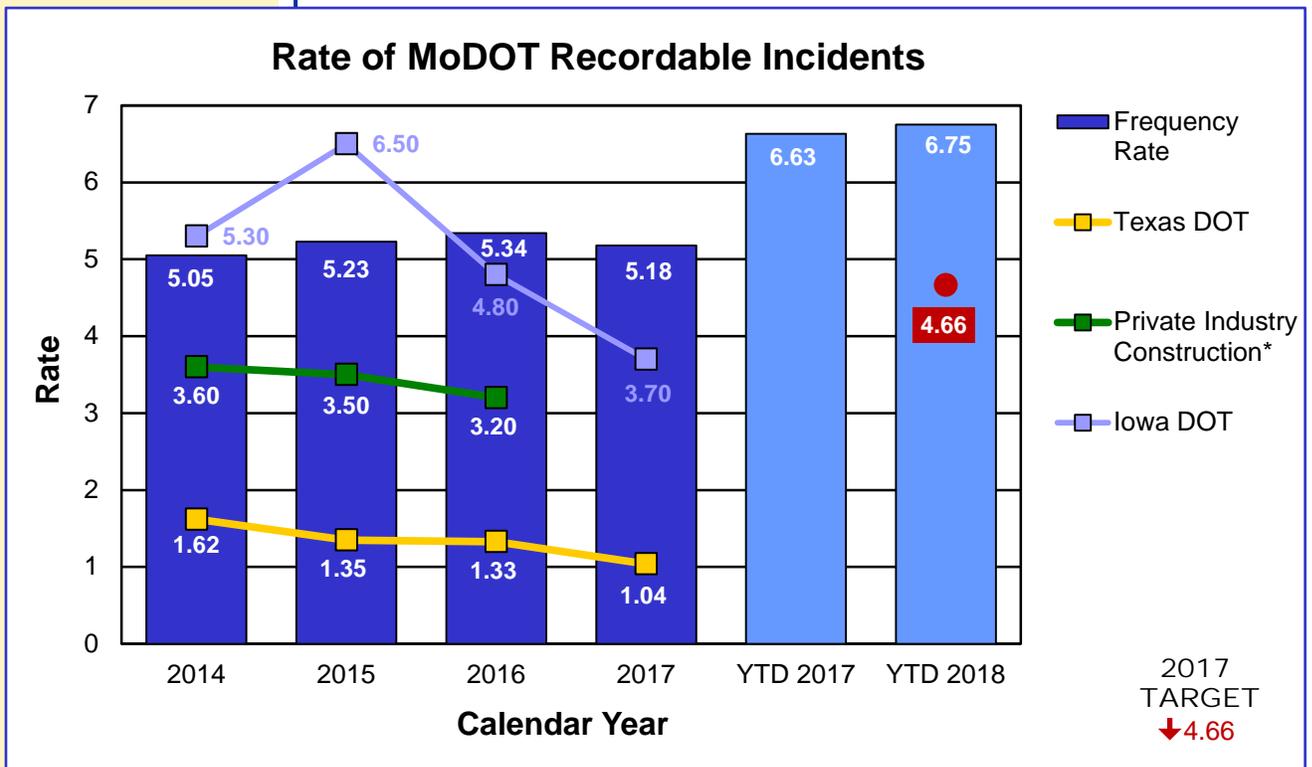
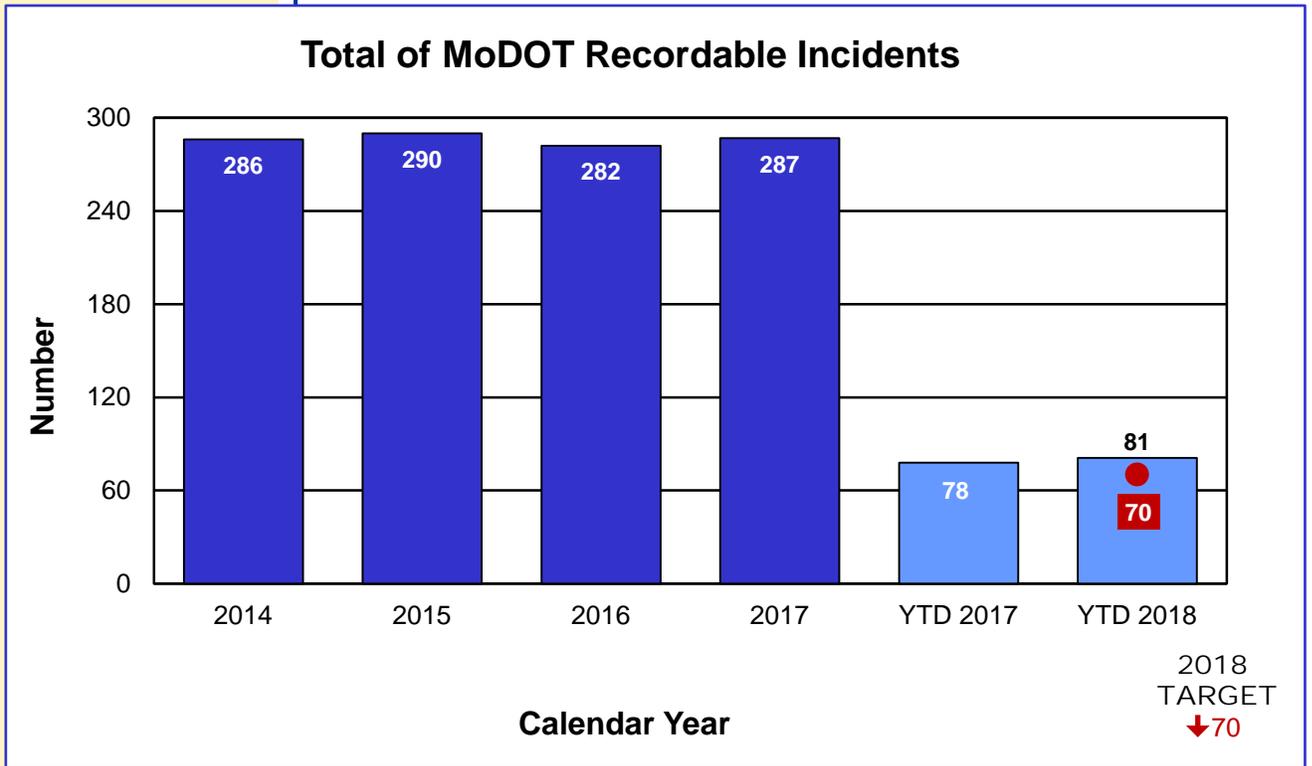
The target for total recordable incidents is updated quarterly. The target for rate of recordable incidents is updated annually. The target is calculated by subtracting 10 percent from the year to date comparison period.

Safety is a core value of MoDOT. The total and rate of recordable incidents are tracked to look for areas of improvement and learn from mistakes. Although employee loss or suffering is the primary concern, there are many additional benefits to a safe workplace. Safety improves the department's stewardship of tax money through lower worker compensation costs. In addition, emphasizing excellence in safety habits will likely help MoDOT improve overall quality and efficiency.

There has been a slight increase in total number of recordables and rate so far in 2018. Leading causes of injury remains slips, trips and falls followed by motor vehicle and strain or injury. Based on the work activity being performed at the time of the incident, 30 percent of employee injuries were equipment related, 14 percent were related to vehicle operation and 9 percent were related to mowing. MoDOT has established a target of a 10 percent reduction in incidents per quarter and a 10 percent reduction in rate per year until the ultimate goal of zero is reached.



# KEEP CUSTOMERS AND OURSELVES SAFE



\*OSHA private industry data is not yet available for 2017.

## RESULT DRIVER:

Mark Shelton  
District Engineer

# KEEP CUSTOMERS AND OURSELVES SAFE

## General liability claims and costs – 1h

## MEASUREMENT

### DRIVER:

Steve Patterson  
Safety and Claims Manager

## PURPOSE OF THE MEASURE:

This measure tracks the number of general liability claims and the amount paid.

## MEASUREMENT AND DATA COLLECTION:

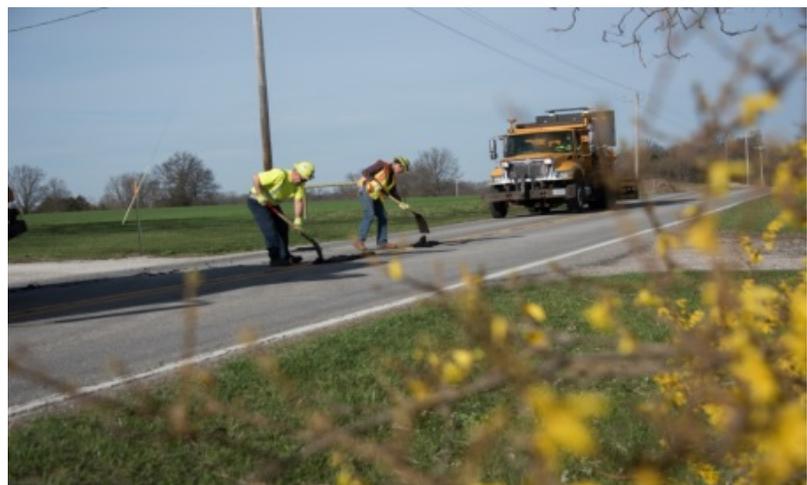
General liability claims arise from allegations of injuries/damages caused by the dangerous condition on MoDOT property and the injury/damage that directly resulted from the dangerous condition. In addition, an employee must be negligent and create the dangerous condition or MoDOT must have actual or constructive notice of the dangerous condition in sufficient time prior to the injury/damage to have taken measures to protect the public against the dangerous condition. Claims data is collected from Riskmaster, the department's risk management claims administration software.

The target for this measure is updated annually. This target is calculated by determining a five-year average and subtracting 10 percent. (Exceptionally high or low years are excluded from the five-year average calculation to determine a practical target).

Keeping employees and the public safe is MoDOT's highest value. Controlling damage to vehicles and reducing personal injury in work zones, on right of way and other areas under department control helps MoDOT accomplish this goal. Compared to the first quarter of 2017, there was a 106 percent increase in the number of claims. The majority of claims in the first quarter of 2018 were attributed to pavement defects. During the same timeframe, there was a 321 percent increase in the amount paid.

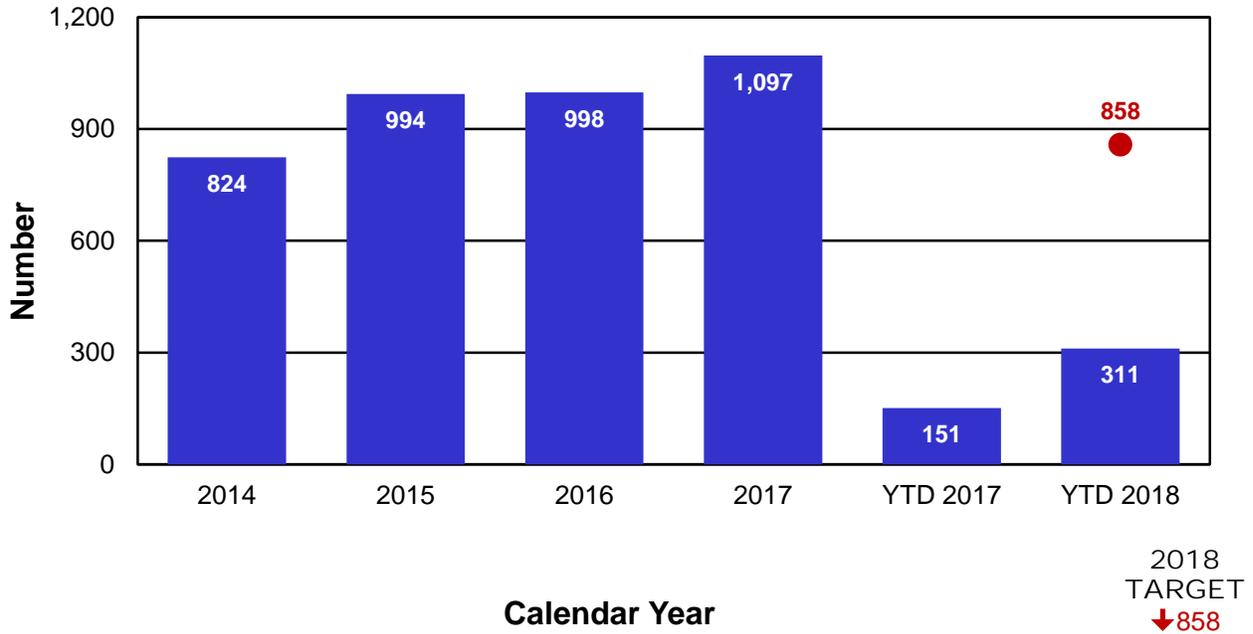
This quarter, payment was made on 121 claims against the department, totaling \$4,136,253. Four claims accounted for 47 percent of the first quarter's payments. The department went to arbitration on a 2010 claim in which a vehicle crossed the centerline and collided with another vehicle resulting in disabling injuries to three people. The plaintiff was awarded \$420,606 based on the allegation that narrow shoulders with guardrail on both sides prevented the second vehicle from avoiding the collision. The second claim occurred in 2016 where a collision in an intersection resulted in a fatality. This claim was settled for \$414,418 based on poor sight distance and inadequate signaling. The third claim occurred in 2016 where the signal was malfunctioning and plaintiff pulled into the intersection colliding with another vehicle, resulting in two fatalities. This claim was settled for \$700,000. The last claim occurred in 2016 where a crossover crash resulted in a fatality. This claim was settled for \$420,606 based on poor sight distance and numerous crash history at this location.

The target for the number of general liability claims is a 10 percent reduction from a five-year average. In an effort to achieve this target, the focus needs to be on our most common claims. For 2018, the top three claims types are attributed to potholes, chip seal operations, and debris on roadway.



# KEEP CUSTOMERS AND OURSELVES SAFE

## Number of General Liability Claims



## Amount Paid on General Liability Claims

