



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:

Tonya Lohman  
District Maintenance and  
Traffic Engineer

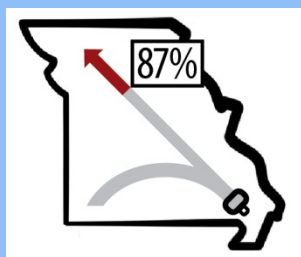
## PURPOSE OF THE MEASURE:

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 for fatalities and a 5 percent improvement in serious injuries from the immediate prior year.



# KEEP CUSTOMERS AND OURSELVES SAFE

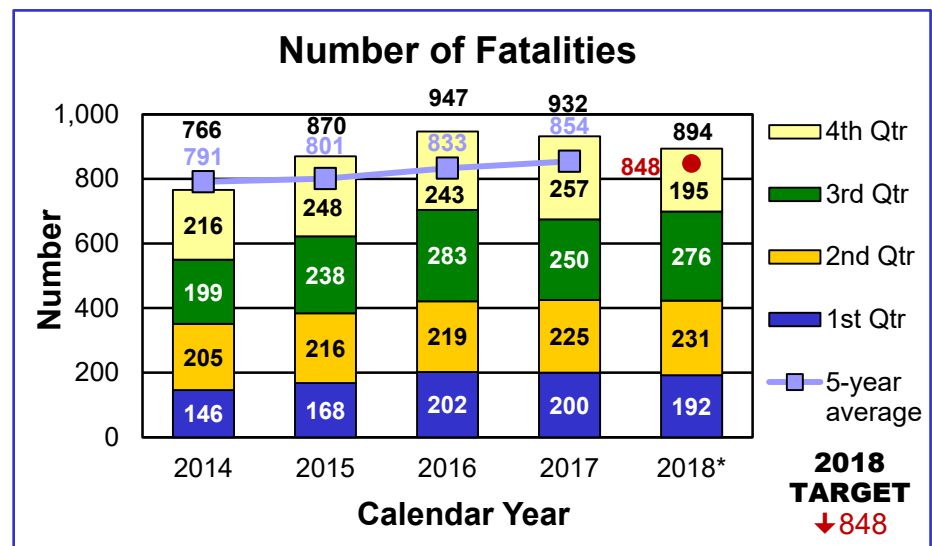
## Number and rate of fatalities and serious injuries – 1a

The ultimate goal is for everyone to reach their destination safely. MoDOT supports *Missouri's Blueprint – A Partnership Toward Zero Deaths*, 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.

Safety culture is being improved through statewide strategic initiatives such as Buckle Up Phone Down. This is an opportunity for citizens, businesses and MoDOT employees to commit to driving without distractions by putting the phone down and having all passengers use safety belts.

Additionally, MoDOT is using innovation to improve system-wide safety with a prioritized project list based on techniques offered in the Highway Safety Manual, analyzed with benefit cost ratios and implemented via a Design-Build approach. MoDOT is partnering with other agencies and the private sector through predictive analytics to optimize development of enforcement and winter operations resources. In order to reach our Blueprint goal of 700 or fewer fatalities by 2020, new reduction targets were established for 2018: reduce fatalities by 9 percent and serious injuries by 5 percent.

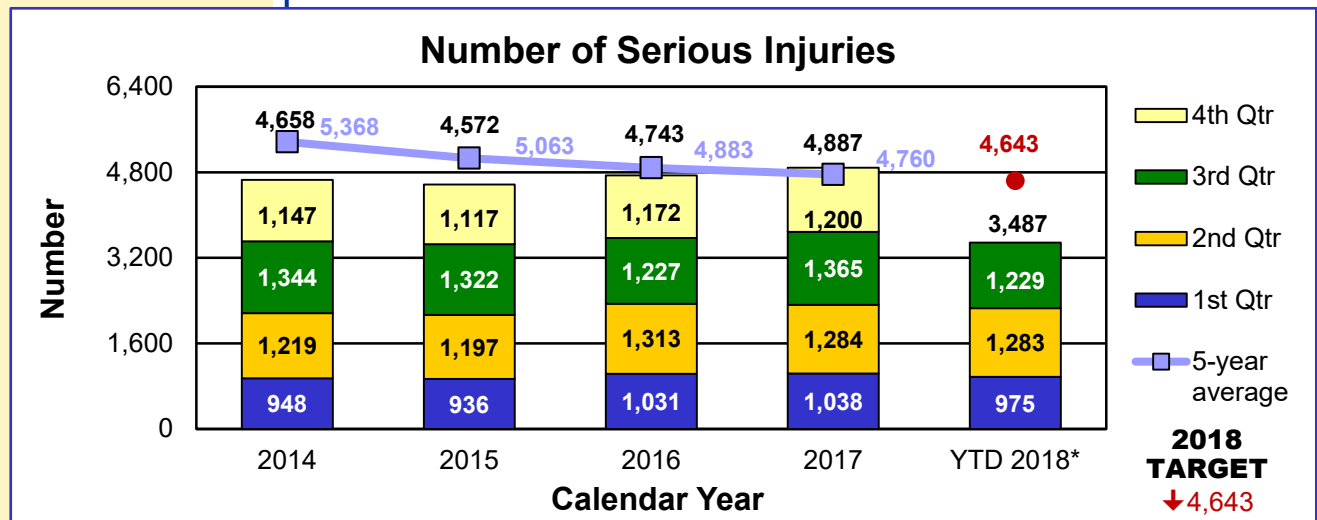
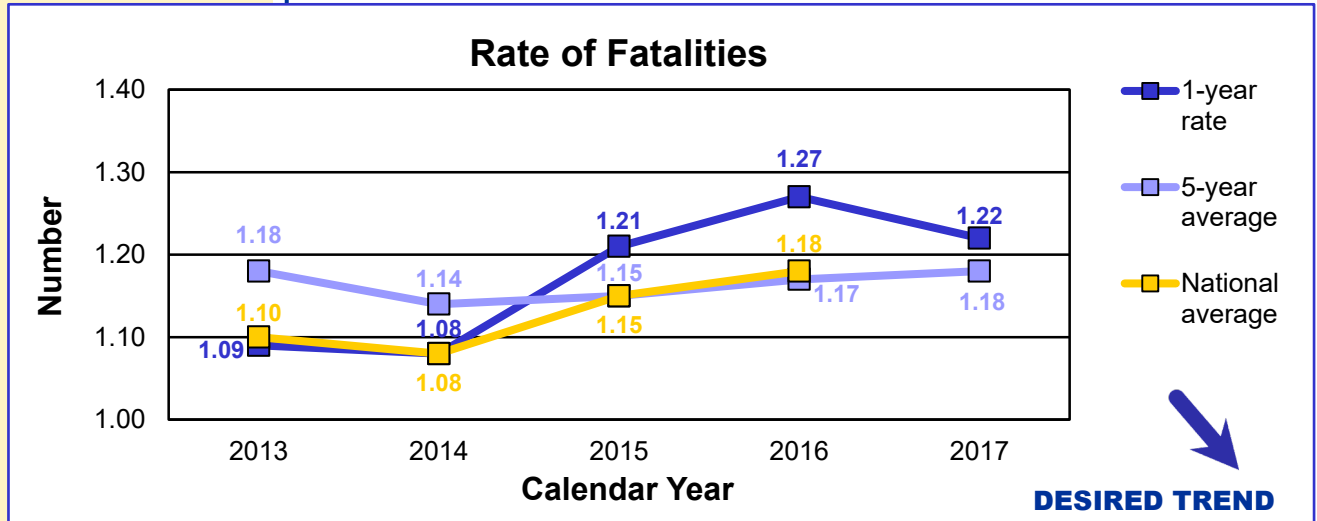
There were 894 fatalities this year, down from 932 in 2017. This represents a reduction of 4 percent from the previous year, which does not meet the desired goal of reducing fatalities by 9 percent. On a more positive note, 3,487 serious injuries have occurred year to date, representing a decrease of 5.5 percent from this time last year, which is on target to meet the desired goal.



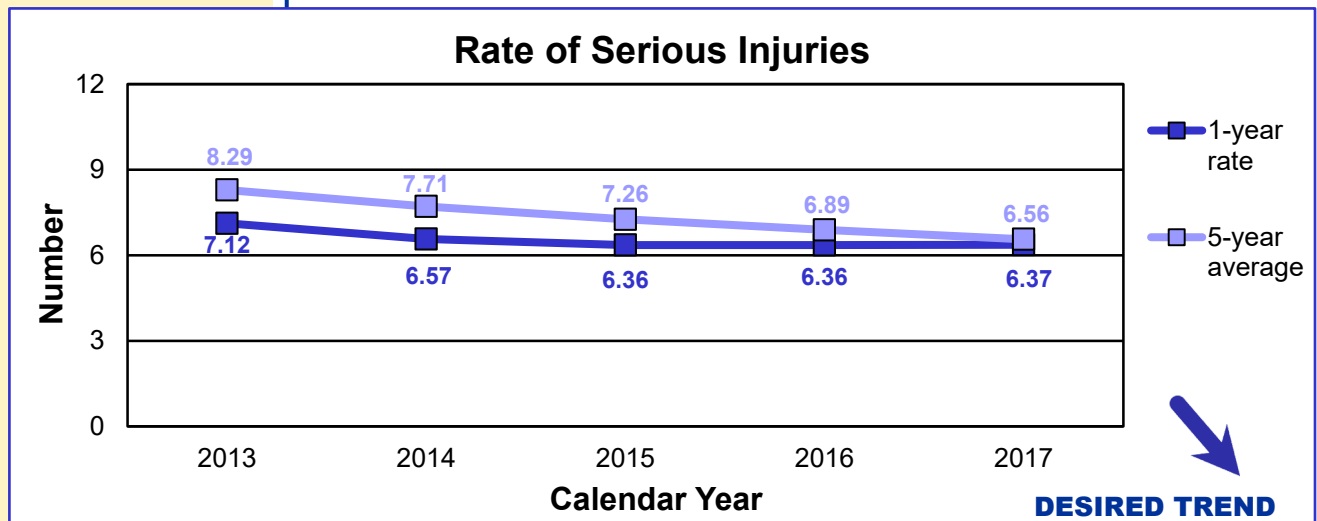
2018\* – Due to the backlog of data, first, second and third quarter fatalities were derived from TMS. Fourth quarter fatalities are from MSHP radio reports.



# KEEP CUSTOMERS AND OURSELVES SAFE



\*YTD 2018 – Due to a backlog of crash reports into STARS, the serious injury measure only includes data derived from TMS. Fourth quarter 2018 data is unavailable on the MSHP radio reports and is incomplete in TMS.



**RESULT DRIVER:**

Mark Shelton  
District Engineer

**MEASUREMENT DRIVER:**

Tonya Lohman  
District Maintenance and  
Traffic Engineer

**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 2017, vulnerable roadway users were 24 percent of the total number of fatalities. Pedestrian fatalities remained almost unchanged from 2016 to 2017. Motorcycle and bicycle fatalities decreased, 7 percent and 1 percent, respectively.

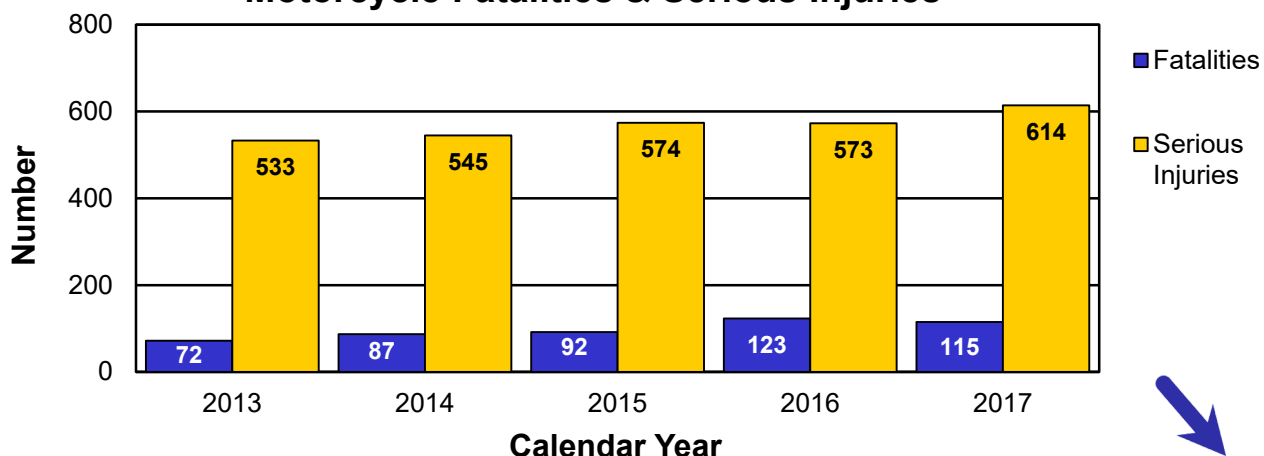
Motorcycle serious injuries increased by 7 percent in 2017, meanwhile bicyclist injuries decreased 14 percent, and pedestrian injuries were relatively unchanged.

Walking is an essential form of transportation for many Missourians. However, not all pedestrians who die or are injured on the roadway are out walking. Frequently, people are out of their vehicles after an incident occurs and are hit in the crash zone. Others are out of their vehicles to change a tire or check a load. MoDOT is included in the state law encouraging all vehicles to get over for emergency vehicles, tow trucks, utility vehicles and maintenance equipment, to help protect MoDOT employees. However, driver behavior still needs to change so that more vehicles slow down and move over.



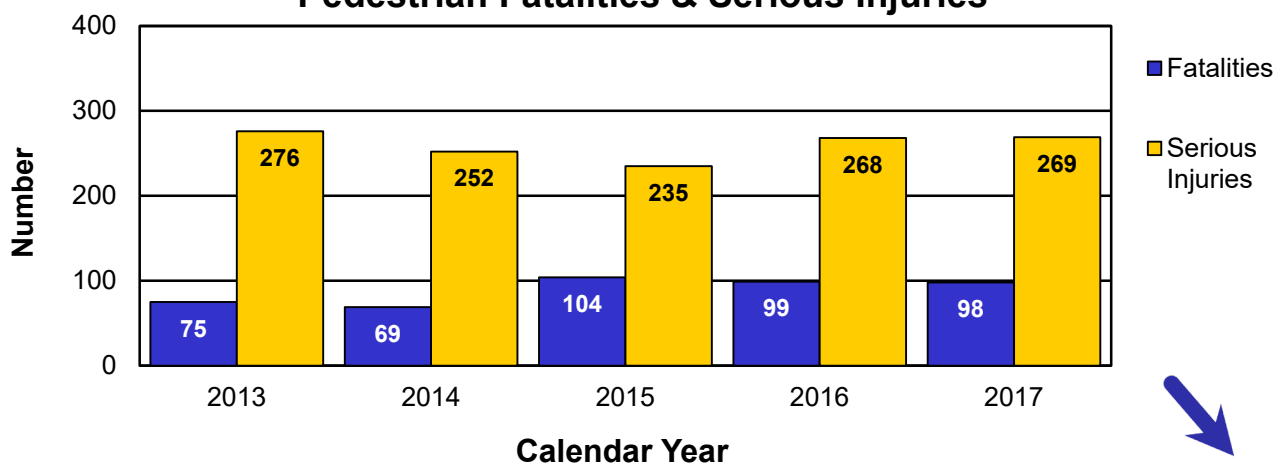
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## Motorcycle Fatalities & Serious Injuries



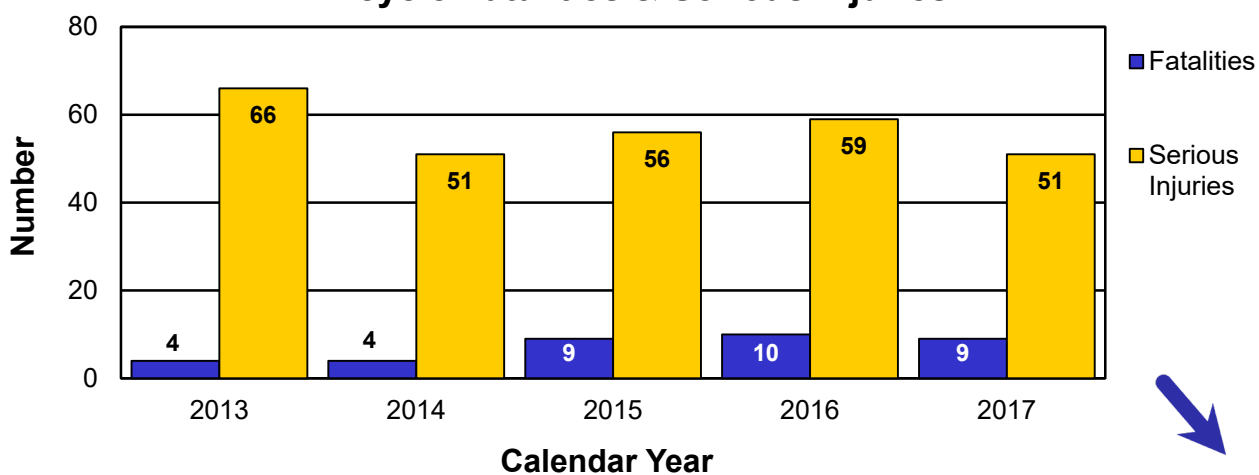
**DESIRED TREND**

## Pedestrian Fatalities & Serious Injuries



**DESIRED TREND**

## Bicycle Fatalities & Serious Injuries



**DESIRED TREND**

**RESULT DRIVER:**

Mark Shelton  
District Engineer

**MEASUREMENT DRIVER:**

Jon Nelson  
Assistant to the State Highway  
Safety and Traffic 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.

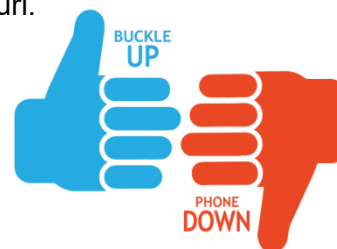
# KEEP CUSTOMERS AND OURSELVES SAFE

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

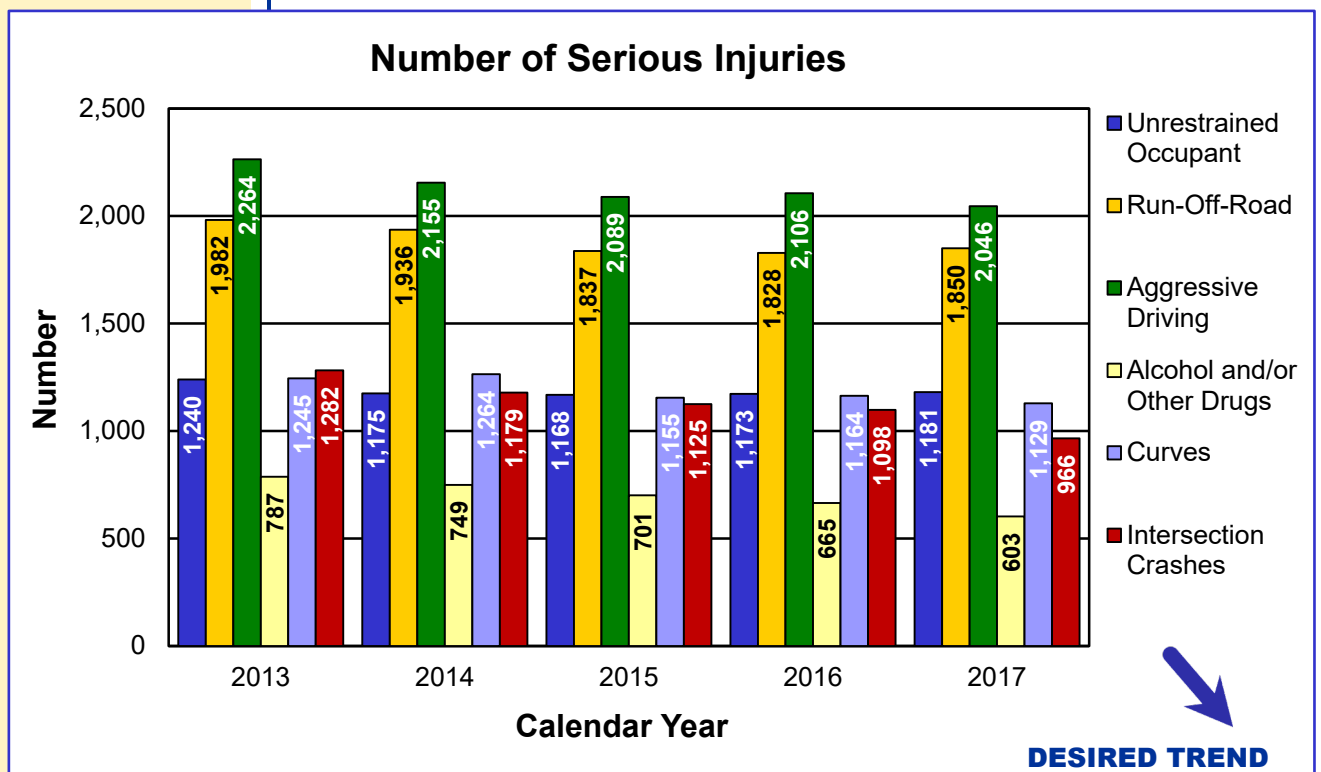
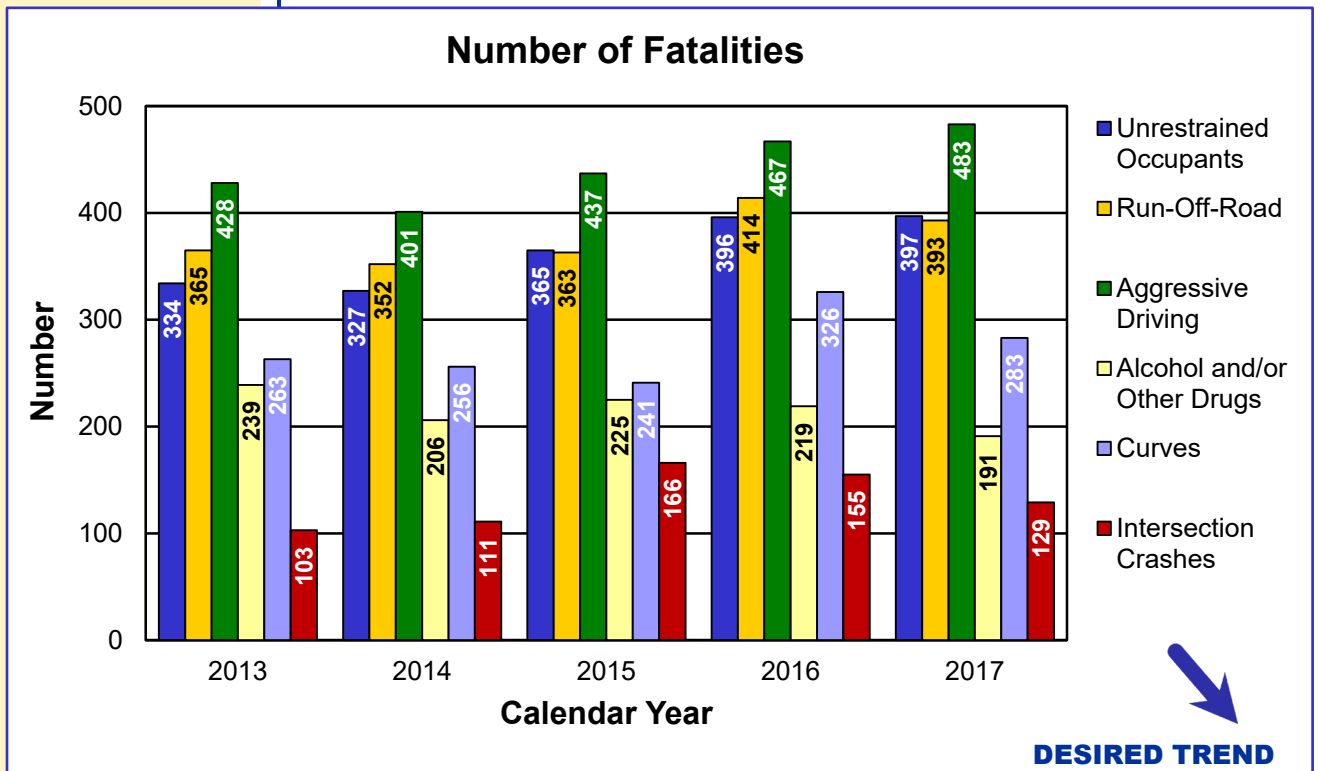
MoDOT's first value and tangible result is to keep customers and ourselves safe. The greatest challenge in providing this is the recurring frequency of fatal and serious crashes on Missouri roadways. In order to combat this, MoDOT utilizes a comprehensive data-driven analysis to identify the most common contributing circumstances of severe crashes. By identifying behaviors and characteristics most closely associated with these crashes, MoDOT can make more informed decisions to address the problem. Though the most common causes are related to human behavior, MoDOT can help implement solutions through education, enforcement and engineering to minimize poor decisions or the impact of the resulting consequences.

With 932 traffic fatalities in 2017, aggressive driving and impaired driving continued to be the leading behavioral causes of severe crashes in Missouri. These poor driving behaviors have a direct impact on the occurrence of run-off road crashes, particularly in curves and intersection crashes. When coupled with the decision to not buckle up, the results are even more deadly. In 2017, only 16 percent of Missourians were unbuckled. However, they accounted for 64 percent of the state's fatalities. Another increasingly troubling behavior is distracted driving. Studies have shown distracted driving significantly increases the risk of having a crash.

Through the Statewide Transportation Improvement Program, MoDOT continues to program millions of dollars in safety improvements each year: curve improvements, high friction surface treatment, paved shoulders, rumble strips and intersection improvements including J-Turns, turn lanes, roundabouts and pedestrian accommodations. These improvements are being identified through a data-driven, benefit-cost analysis to maximize the return on investment. In addition, MoDOT continues to invest in educational and enforcement programs to reduce the occurrence of poor driving behaviors. Substance impaired crashes are trending downward over the last five years, an indication these programs are effective. In addition, the Buckle Up Phone Down campaign has more than 4,600 pledges from individuals and participation from more than 380 organizations. MoDOT will continue implementing programs to reach new audiences and improve the culture of highway safety in Missouri.



# KEEP CUSTOMERS AND OURSELVES SAFE





## RESULT DRIVER:

Mark Shelton  
District Engineer

## MEASUREMENT DRIVER:

Steve Campbell  
District Construction and  
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. Missouri State Highway Patrol 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.

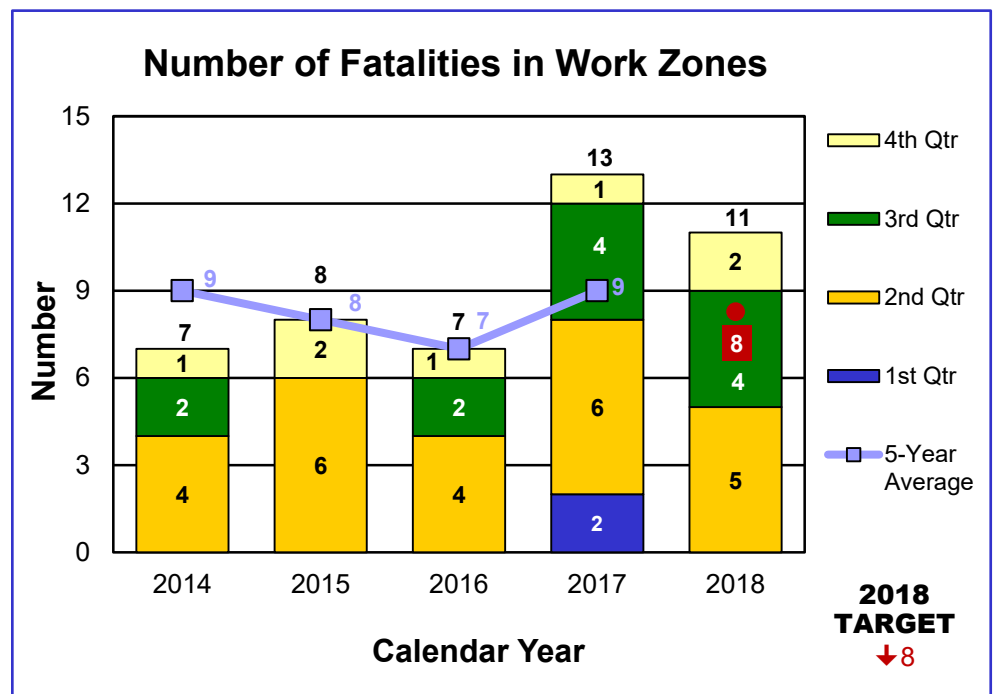
# KEEP CUSTOMERS AND OURSELVES SAFE

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

Work zone safety is crucial to MoDOT. Crews are expected to be safe and visible and expect contractors and utility companies to do the same. 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.

MoDOT's goal is zero fatalities in work zones. Only through continued efforts from MoDOT, industry and the driving public will that happen. There must be continual improvement in planning, strategies and technologies employed. Based on information currently available, work zone crashes accounted for 11 fatalities and 36 serious injuries in 2018.

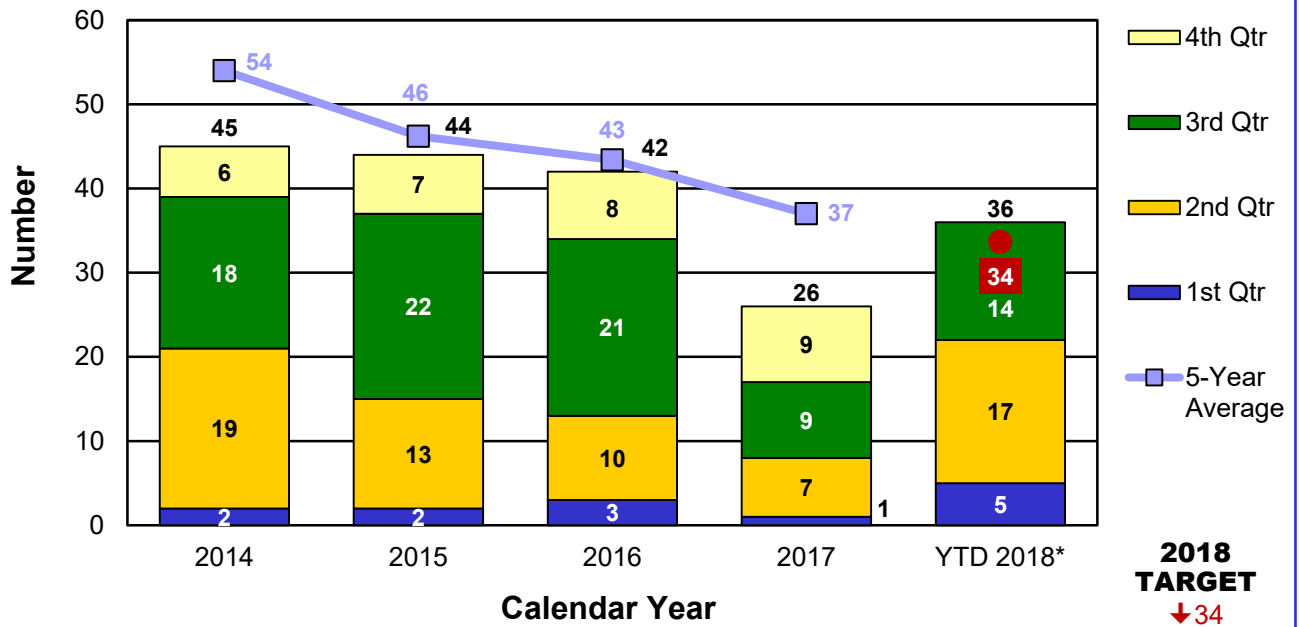
The challenges for MoDOT remain many. Strategic initiatives, such as the use of autonomous Truck Mounted Attenuators and TMA flagger vehicles, will help overcome some of the challenges. Continual monitoring of work zones and deployment of sound queue management strategies are imperative. The time of day and day of week should always be considered before working.



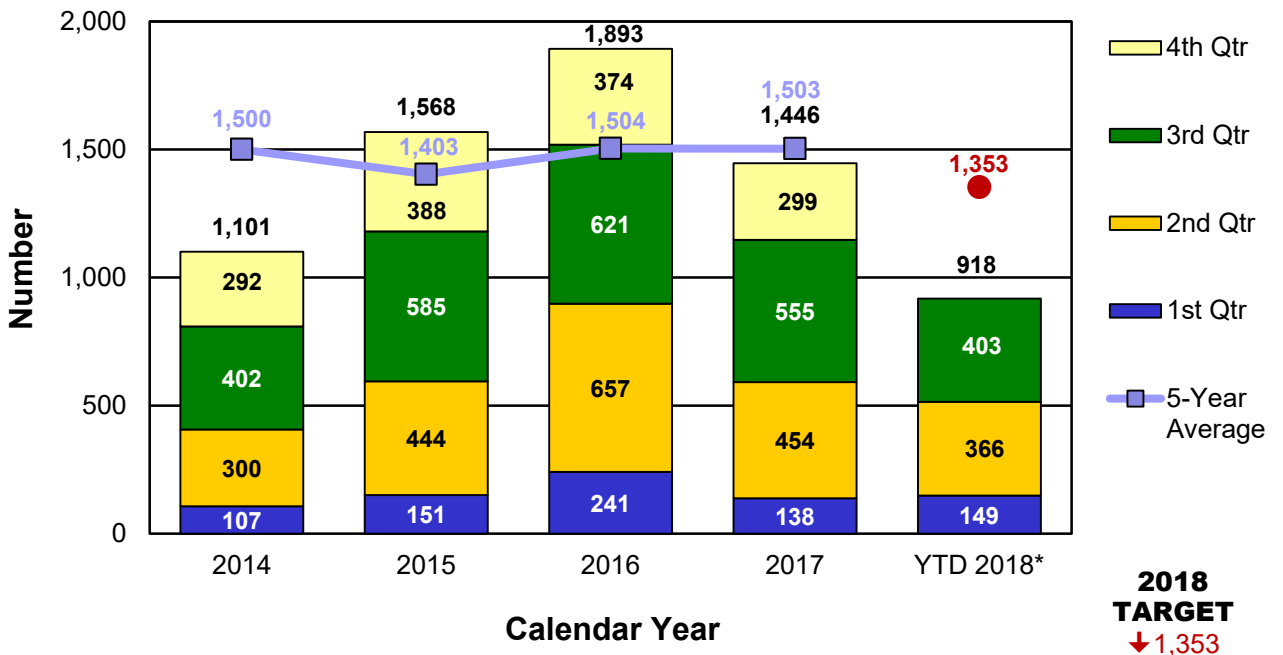
2018 – Fatalities derived from TMS.

# KEEP CUSTOMERS AND OURSELVES SAFE

## Number of Serious Injuries in Work Zones



## Number of Crashes in Work Zones



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

## RESULT DRIVER:

Mark Shelton  
District Engineer

## 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 are selected from counties that represent 85 percent of the state's vehicle occupant fatalities. While the data collection plan is the same each year for consistency, NHTSA guidelines require survey sites to be re-selected every five years based on updated fatality data. The 2018 survey is the first survey using updated survey sites since Missouri's new survey methodology started in 2013. The target for this measure is updated annually in October for the next calendar year. This target is established as the current national average.

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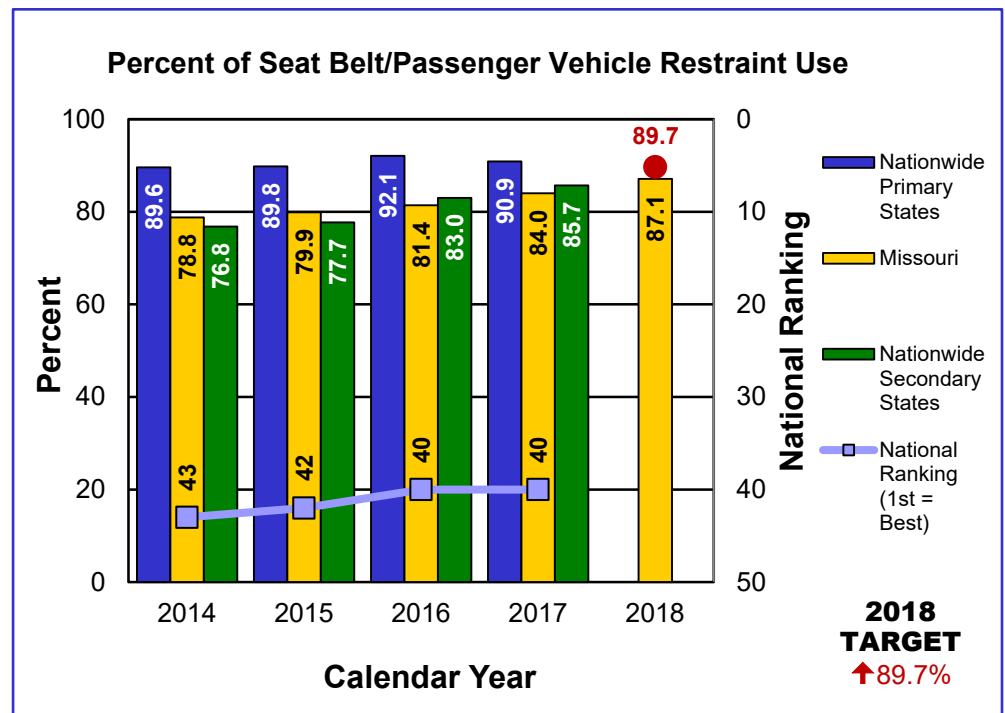
## Percent of seat belt/passenger vehicle restraint use – 1e

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 58 municipalities and two counties that have adopted primary seat belt ordinances, representing almost 27 percent of the state's population.

Based on 135,646 observations, the seat belt use in Missouri for 2018 was 87.1 percent. Johnson County was the lowest at 64.4 percent and Webster County was the highest at 94.8 percent (weighted data). The national average for seat belt use in 2017 was 89.7 percent (2018 data is not yet available). Missouri's national ranking in 2017 was 40th, with 11 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.

MoDOT is improving safety culture through Statewide Strategic Initiatives such as Buckle Up Phone Down and coordinating the Click It or Ticket, Youth Seat Belt and Child Passenger Safety Campaigns as well as providing educational programs such as Teens Taking Action To Prevent Traffic Crashes and ThinkFirst.





**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, which is the plan required to receive Motor Carrier Safety Assistance Program 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. Deploying a suite of these demonstrably impactful safety techniques through a design-build program structure is one of the Strategic Vision Initiatives that will help MoDOT use innovation to improve work zone and system-side safety.

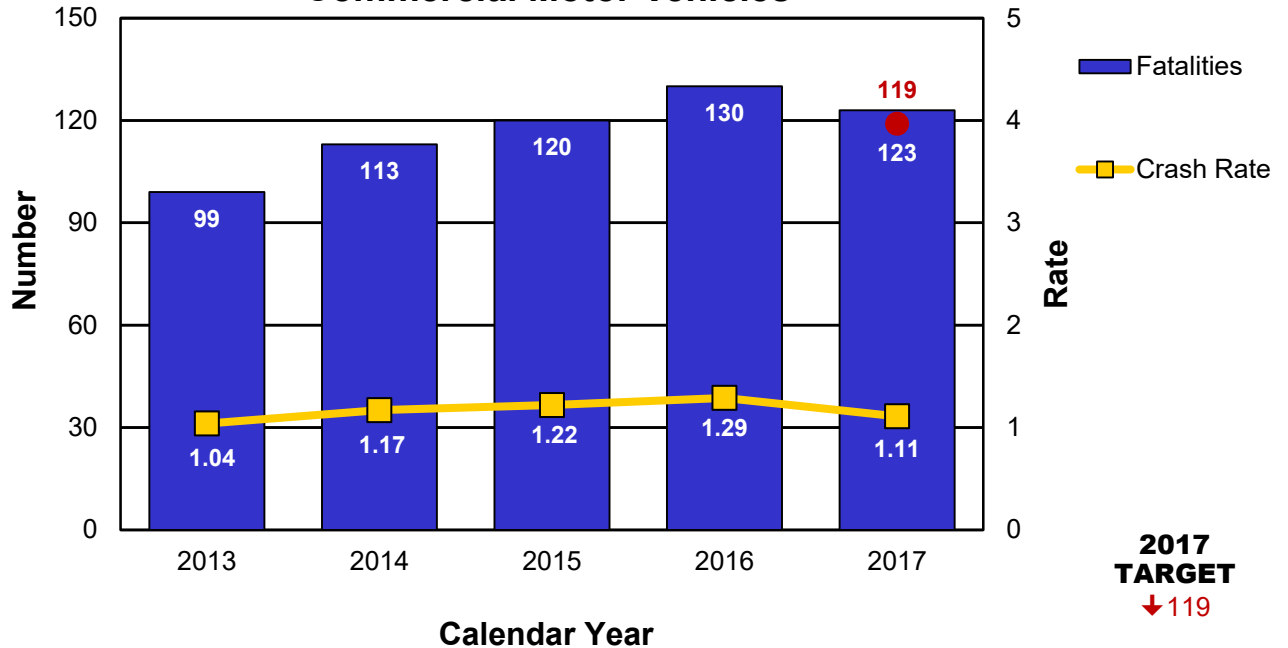
While efforts from MoDOT and the partner agencies are effective in improving safety on roadways, Missouri has experienced an increase in the number and rate of fatalities and serious injuries involving CMVs. Between 2013 and 2017, fatalities involving a CMV increased by 24.2 percent and the fatality 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 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 serious injury rate of 3.51 in 2017 compared to 4.12 for 2016.

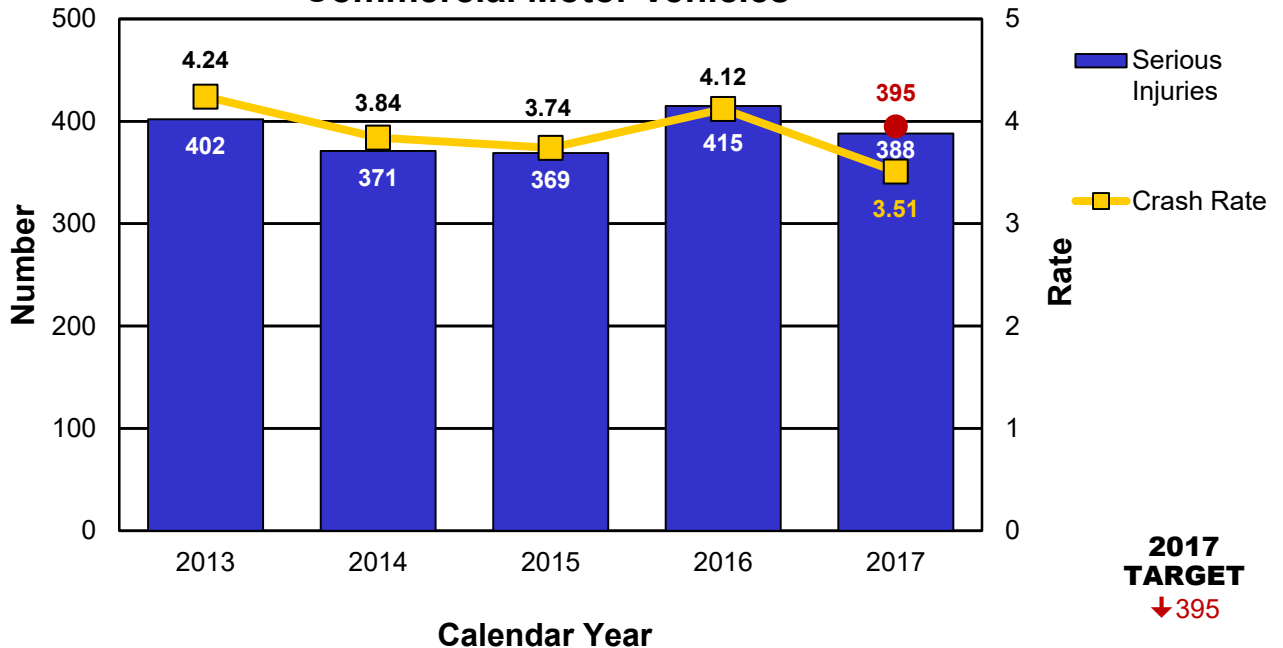


# KEEP CUSTOMERS AND OURSELVES SAFE

## Number and Rate of Fatalities Involving Commercial Motor Vehicles



## Number and Rate of Serious Injuries Involving Commercial Motor Vehicles



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

**RESULT DRIVER:**

Mark Shelton  
District Engineer

**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.

## KEEP CUSTOMERS AND OURSELVES SAFE

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

The total and rate of recordable incidents are tracked to measure the department's performance in improving safety. Safety is an expectation of each employee. In addition to Behavioral Based Safety integration, the development of Statewide Safety Standard Procedures, and District Training Academies have been introduced to continue the growth of the department's safety culture. The department's Innovations Challenge encourages employees to create or improve tools and equipment, processes and projects to progress safety. These initiatives are expected to reduce injuries and help improve in this measure.

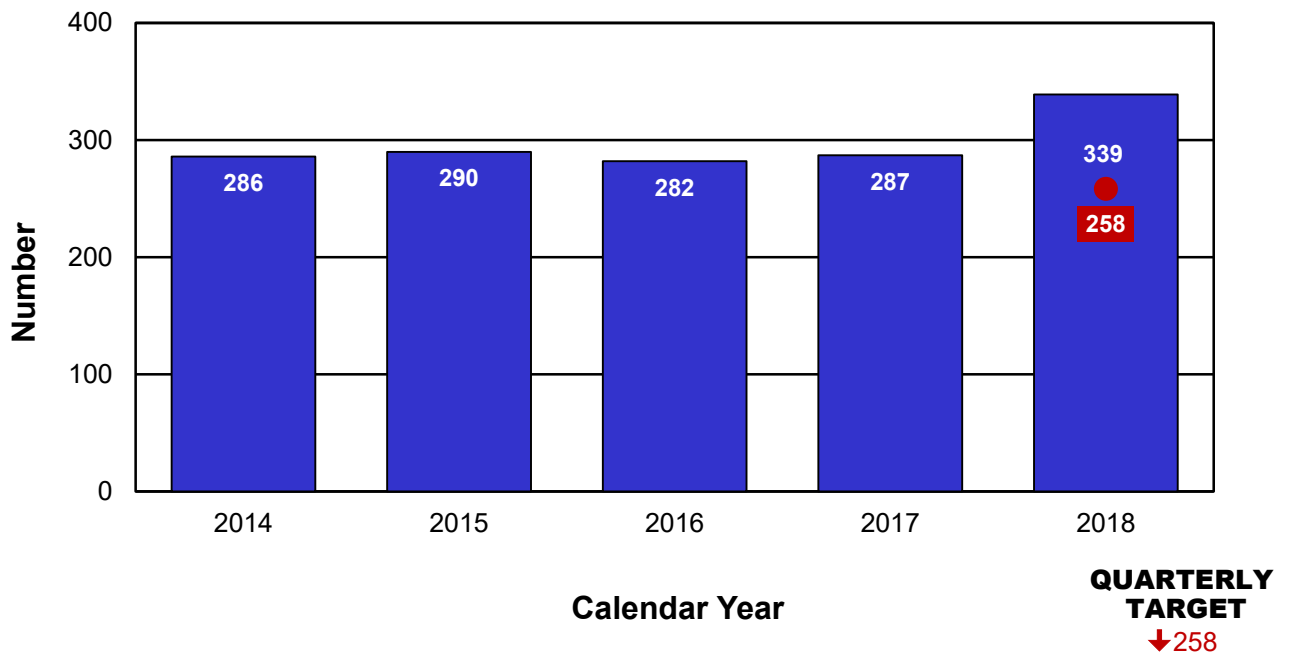
It is believed that the conclusion of the individual and team safety incentive programs have resulted in a spike in reporting. This has contributed to the increase in the rate and the total number of recordable incidents. There was an 18 percent increase in the total number of recordables for 2018 compared to last year. There was also a 21 percent increase in the rate of incidents. Leading causes of injuries this year were: slips, trips, and falls (19 percent), strain of injury (14 percent), struck/injured by and cut/punctured/scraped (13 percent each). Based on the work activity being performed at the time of the incident, 29 percent of employee injuries were equipment related, 11 percent were due to vehicle use and 10 percent were related to mowing.



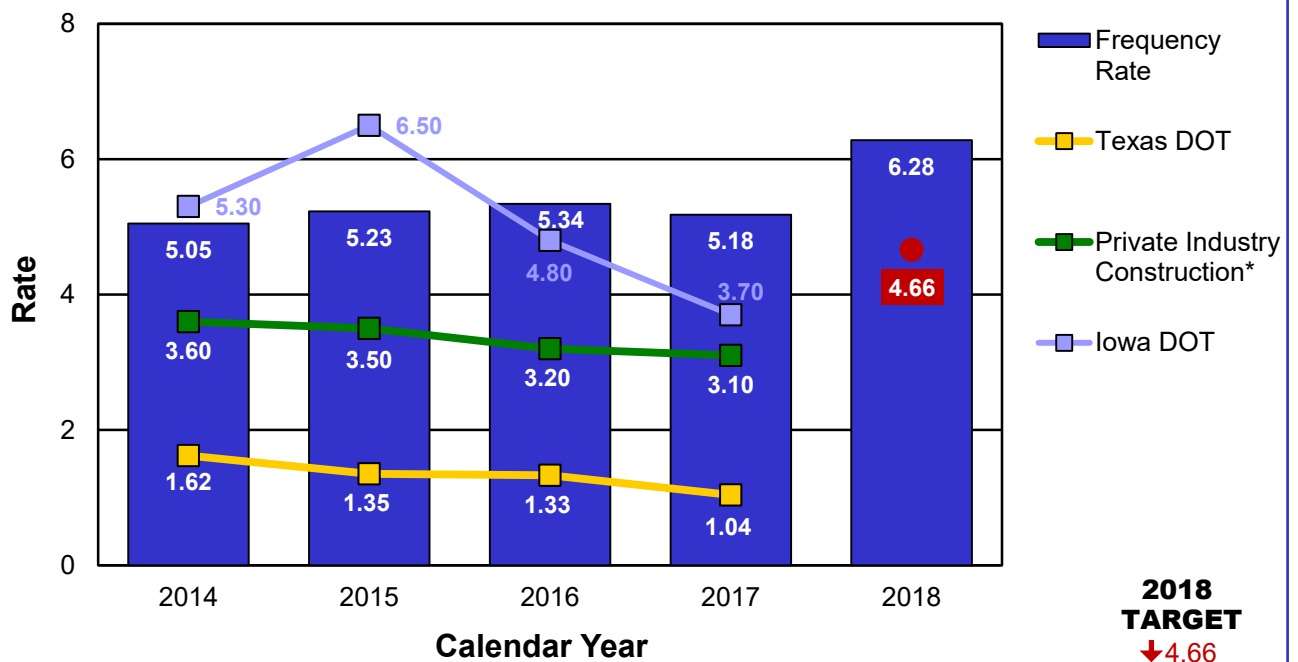


# KEEP CUSTOMERS AND OURSELVES SAFE

## Total of MoDOT Recordable Incidents



## Rate of MoDOT Recordable Incidents



\*OSHA private industry data is not yet available for 2018.

## RESULT DRIVER:

Mark Shelton  
District Engineer

## 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).

# KEEP CUSTOMERS AND OURSELVES SAFE

## *General liability claims and costs – 1h*

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 2017, there was a 20 percent increase in the number of claims in 2018. The majority of claims in 2018 were attributed to pavement defects. During the same time frame, there was a 97 percent increase in the amount paid.

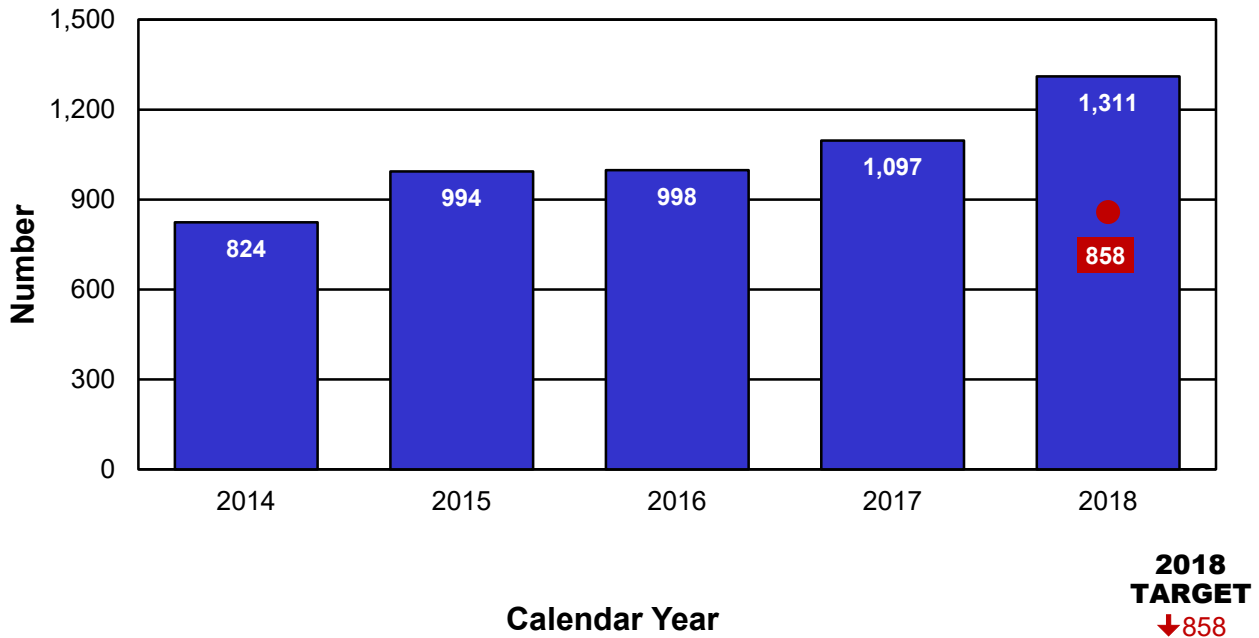
This quarter, payments were made on 92 claims against the department, totaling \$1,897,770.78. Four claims accounted for 59 percent of the fourth quarter's payments. The first claim occurred in 2010 where a vehicle lost control due to loose gravel on the roadway. The driver sustained serious injuries. This claim was settled for \$270,000. The second claim occurred in 2015 where a vehicle ran off the road and down an embankment in an area where it was alleged the embankment was too steep to be unprotected. The driver sustained serious injuries. This claim settled for \$350,000. The third claim occurred in 2015, where there was a collision between two vehicles. It was alleged a tree in the right of way and lack of a guardrail contributed to the accident. This accident also resulted in serious injuries. The claim was settled for \$200,000. The last claim occurred in 2016 which was a fatality accident where a vehicle pulled out of a private driveway in front of a motorcycle causing the collision. Inadequate sight distance was alleged. This claim was settled for \$300,000 based on poor sight distance and overgrown foliage.

In an effort to achieve the number of liability claims target, the focus needs to be on MoDOT's most common claims. For 2018, the top three claims types are attributed to potholes, chip seal operations and debris on roadway.

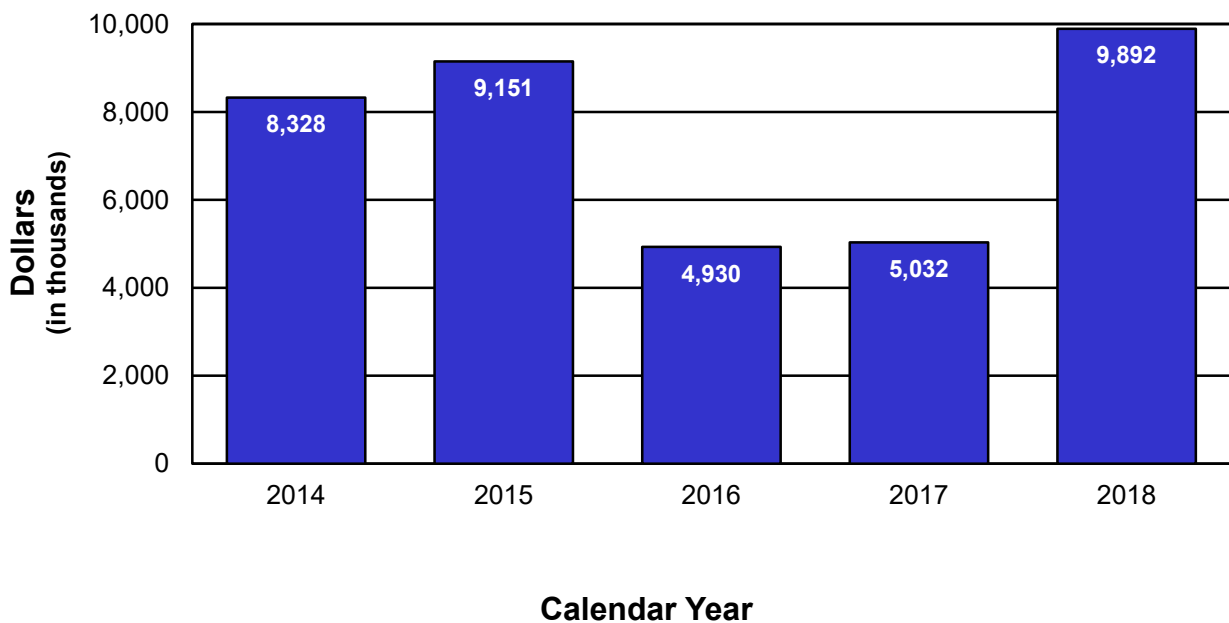


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## Number of General Liability Claims



## Amount Paid on General Liability Claims





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