MISSOURI DEPARTMENT OF TRANSPORTATION

FOCUS

STRATEGIC INITIATIVES FOR CONTINUOUS IMPROVEMENT

October 2019

SAFETY • SERVICE • STABILITY

MoDOT

WWW.MODOT.ORG

Director's Message

This past month has been very special to me. After spending much of last year as vice president of the American Association of State Highway and Transportation Officials, on Oct. 9, I was elected to serve as that organization's 2019-2020 president. Like MoDOT, AASHTO has at its core an interest in achieving transportation excellence. Every idea, every achievement and every area in need of improvement are closely monitored, tracked and acted upon as necessary to make sure we never lose sight of our goals.

In simpler terms, by looking at where we are on the roadmap and knowing where we want to be, we can focus on arriving at that destination.

As president of AASHTO, I plan to focus a good deal my effort on transportation safety. I find it unacceptable that more than 37,000 lives are lost across the country each year due to traffic crashes, and I view it as a public health crisis.

As part of my commitment to safety I plan to take Missouri's own Buckle Up Phone Down campaign to national prominence.

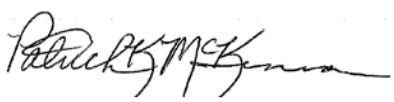
The Buckle Up Phone Down Challenge was introduced in January 2017 to tackle two of the most effective actions drivers can take to stay safe when getting behind the wheel – fastening their seatbelts and putting down their cell phones. The challenge reached a milestone in Missouri this year with more than 10,000 individuals and more than 500 businesses taking the BUPD pledge to always wear their seat belts and put their phones down while driving.

And the campaign is working! The latest Missouri Seat Belt Usage Survey, which has been taken annually since 1998, shows that seat belt use in the state has climbed to its highest rate ever, with 87.7% of Missourians buckling up whenever they get into a vehicle. In 1998 that figure was 60%. The life-saving message is getting out!

Safety is one of the three core values here at MoDOT and arguably the most important. Our goal will always be that our workers, our families and all who travel Missouri roadways go home safely every night.

In the coming months, we will continue to look into the strategic initiatives put forth in this publication. Like Tracker, Focus will be evolving to better deal with the new challenges that are coming our way. Your input in this process is always welcomed.

Thanks for your hard work and dedication!



Patrick McKenna

MISSOURI

Department of Transportation

2018 Version 1.0

ASPIRATION

We will provide a world-class transportation system that is safe, innovative, reliable, and dedicated to a prosperous Missouri

THEMES

Safety

Keep citizens and employees safe

Service

Deliver transportation solutions of great value and use resources wisely

Stability

Preserve and operate a reliable transportation system with an engaged workforce

INITIATIVES

- Improve safety culture
  - Buckle Up Phone Down, Behavior Based Safety
  - District training academy pilot
  - Development of statewide safety standard operating procedures
- Innovate to improve work zone and system-wide safety
  - Autonomous truck-mounted attenuators and flagger vehicles
  - Deploy a suite of demonstrably impactful safety techniques through a design-build program structure
- Improve partnerships with other agencies and leverage private sector
  - Predictive analytics to optimize development of enforcement and winter operations resources

- Improve communications
  - Citizen's Guide to Transportation Funding
  - New department website
  - Better traveler information map
- Improve project management tools
  - Maintenance Management Information System
- Develop innovative program delivery
  - Design-build, design-build finance, and/or operations and maintenance options
  - Value engineering
- Fleet and facilities optimization strategy implementation

- Increase employee engagement and recognition
  - Pay plan
  - Training and certifications
  - Evaluate job descriptions
  - Leadership coins
  - Succession planning
- Research and deploy alternative funding solutions
  - Cross-cabinet collaboration
- Leverage innovations to reduce costs and improve service quality
- Cost share program with local government statewide

RANKINGS		
1-10	=	A
11-20	=	B
21-30	=	C
31-40	=	D
41-50	=	F

A

Road Conditions

Current Performance = 90 percent major highways (5,517 miles) in good condition. 76 percent of minor highways (28,339) in good condition.
National Ranking = Missouri had the 9th best pavements on the National Highway System. (FHWA Highway Statistics)

A

Customer Satisfaction

Current Performance = 83 percent satisfied customers
National Ranking = Missouri trails the highest rated company on the American Customer Satisfaction Index by only 4 percent.

A

Project Management

Current Performance = Missouri road and bridge projects were delivered within 0.8 percent of the award amount and 93 percent were delivered on-time.
National Ranking = Not available.

A

Congestion (travel time index)

Current Performance = Kansas City - 1.13 St. Louis - 1.15
National Ranking = Kansas City (9th) and St. Louis (10th) rank as some of the least congested urban areas in the U.S. *(Texas Transportation Institute)*

A

Administrative Costs

Current Performance = $2,187 cost per mile
National Ranking = Missouri has the 3rd lowest administrative cost per mile. *(FHWA Highway Statistics)*

B

Infrastructure for Business

Current Performance = No internal measure
National Ranking = A CNBC business study ranks Missouri's infrastructure as the 11th best for business.

D

Number of Fatalities

Current Performance = 932 fatalities
National Ranking = Only 12 states experienced more motor vehicle deaths ranking Missouri 38th. (National Safety Council)

D

Bridge Conditions

Current Performance = 8 percent of Missouri bridges in poor condition by deck area.
National Ranking = Missouri ranked 38th for the percent of bridges in poor condition by deck area. *(FHWA Highway Statistics-2017)*

F

Revenue

Current Performance = $50,882 revenue per mile
National Ranking = Missouri has the 48th lowest revenue per mile. *(FHWA Highway Statistics)*

F

Employee Turnover

Current Performance = 11.99 percent
National Ranking = Not available; However, **Stretch Target =** 6 percent. (Price Waterhouse Cooper's Saratoga Institute benchmark data)

MODOT VALUES

TANGIBLE RESULTS

SAFETY Be Safe	Keep Customers and Ourselves Safe
Be Accountable **SERVICE** Be Respectful Be Inclusive	Provide Outstanding Customer Service Deliver Transportation Solutions of Great Value Use Resources Wisely
Be Bold Be Better **STABILITY** Be One Team So we can be a great organization	Keep Roads and Bridges in Good Condition Operate a Reliable and Convenient Transportation System Advance Economic Development

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SAFETY

Keep citizens and employees safe

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  - Autonomous Truck-mounted Attenuators and Flagger Vehicles
  - Deploy a Suite of Demonstrably Impactful Safety Techniques through a Design-build Program Structure
- **Improve Partnerships with Other Agencies and Leverage Private Sector**

Improve Safety Culture

Buckle Up Phone Down

SAFETY CHAMPION
Mark Shelton, District Engineer

PROJECT MANAGER:
Nicole Hood, Highway Safety and Traffic Engineer

PURPOSE OF THE PROJECT:
MoDOT is improving the safety culture through Statewide Strategic Initiatives such as Buckle Up Phone Down. In 2017, MoDOT introduced the Buckle Up Phone Down challenge to address the two most impactful actions a driver can take to prevent crashes or survive if one occurs.

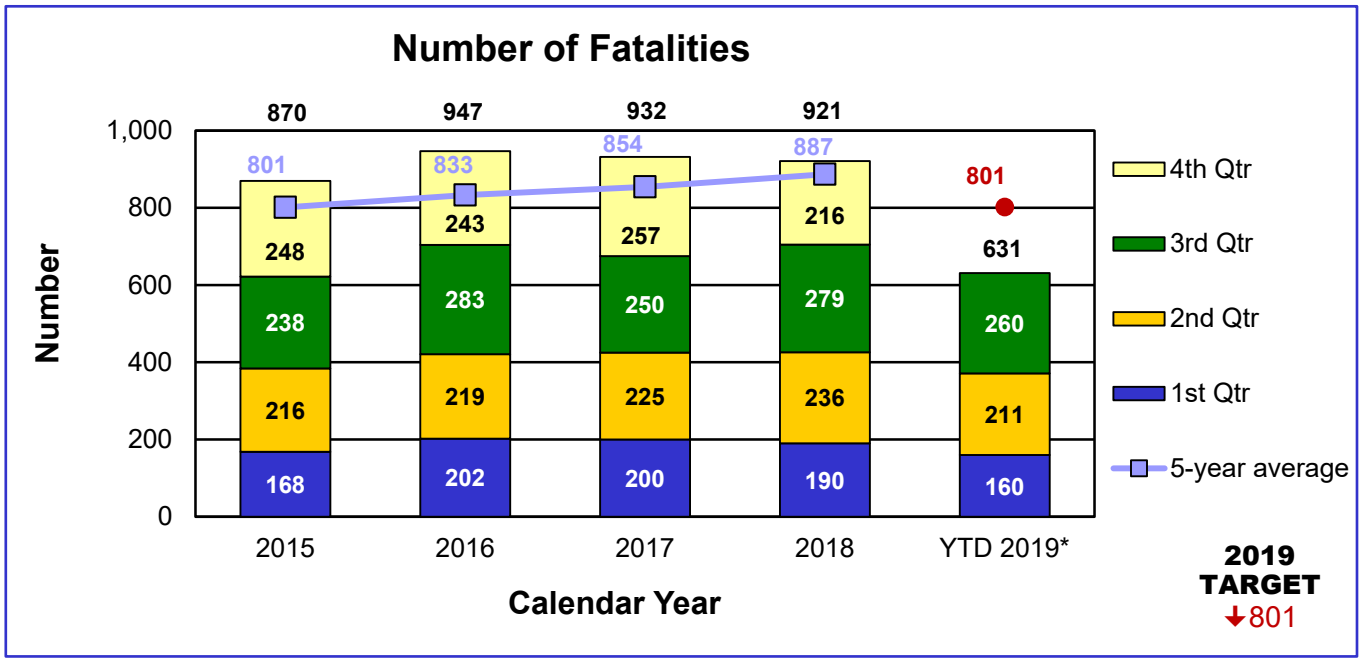
The Buckle Up Phone Down challenge is an attempt to drive down the record number of fatalities and serious injuries on our roadways. The challenge encourages businesses and individuals to pledge to buckle up every person, every trip and for drivers to put their phone down. Distracted driving is a leading cause of traffic crashes, with texting and driving increasing the risk of a crash by 50 percent. In a 2018 survey conducted by AT&T, nearly nine out of ten drivers admitted to using a smart phone while driving. In addition, over 60 percent of traffic fatalities in Missouri involve unbuckled drivers or passengers who may have survived if they were properly restrained. Several hundred Missouri businesses have pledged to promote this challenge with their employees and thousands of individuals have also made the pledge to promote their own safety and that of others.

Not only are we getting individuals to accept the challenge, we're getting businesses to support safety policies such as banning cellphone use in company vehicles and making safety belts mandatory. October 29, 2019, was MoDOT's third annual Buckle Up Phone Down Day in conjunction with a Distracted Driving Roundtable facilitated by the National Transportation Safety Board. The day was a success; Governor Mike Parson proclaimed October 29th as BUPD Day in Missouri. On that day, several hundred additional people signed up to take the challenge, social media was saturated with the BUPD message and various activities occurred across the state.

The results from Missouri's 2019 safety belt survey indicate the challenge is helping to educate and encourage more people to buckle up. The most recent statewide safety belt use rate was 87.7 percent, which is a 6.3 percent increase since the BUPD challenge started in 2017.

Champions in each district are continuing to raise awareness with the BUPD challenge by reaching out and educating all drivers about the importance of these two very simple and important life-saving measures, #BUPD.

Improve Safety Culture



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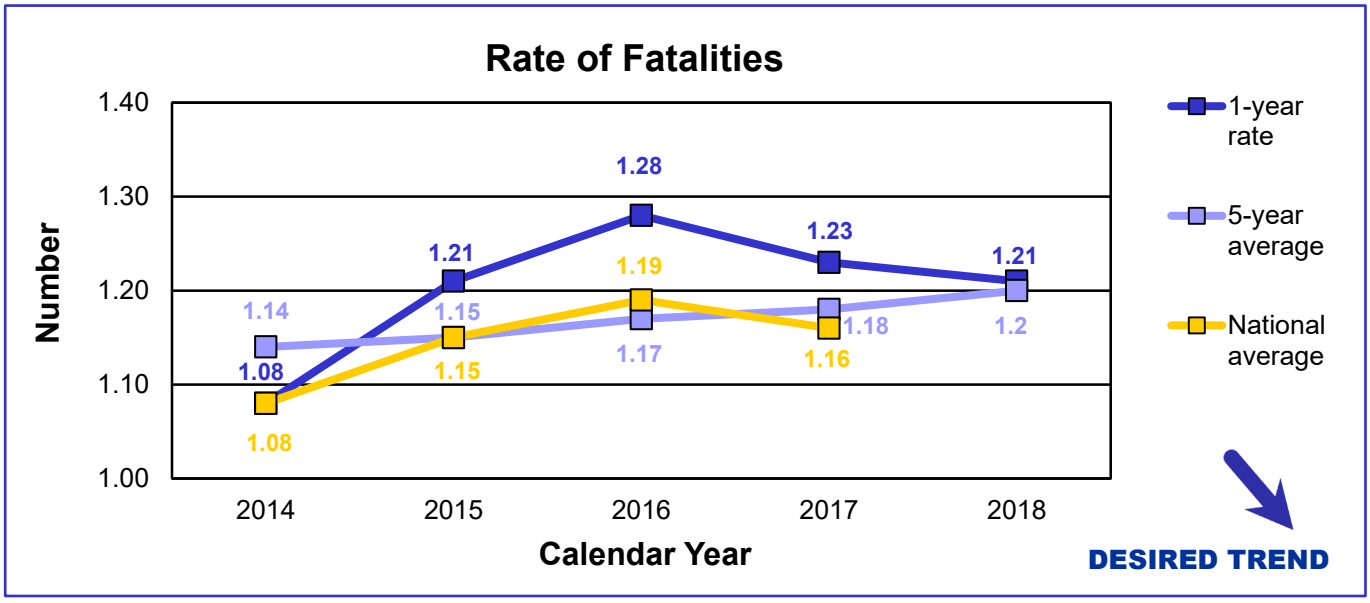
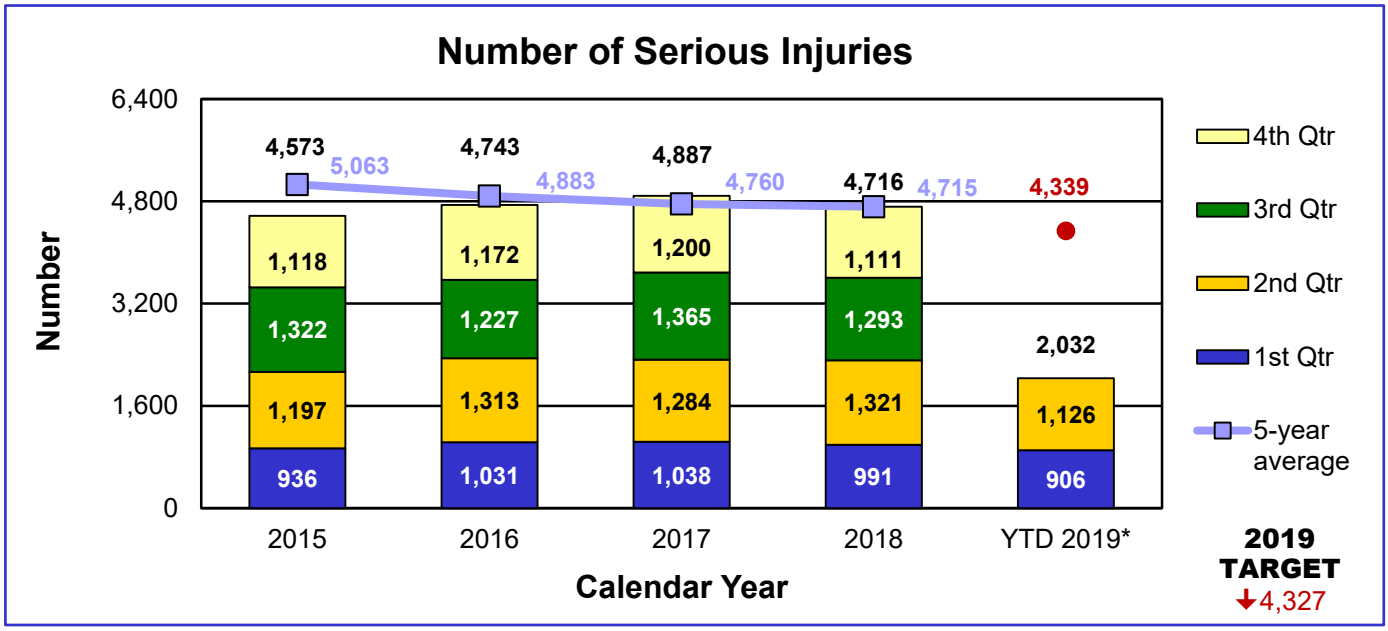


Improve Safety Culture



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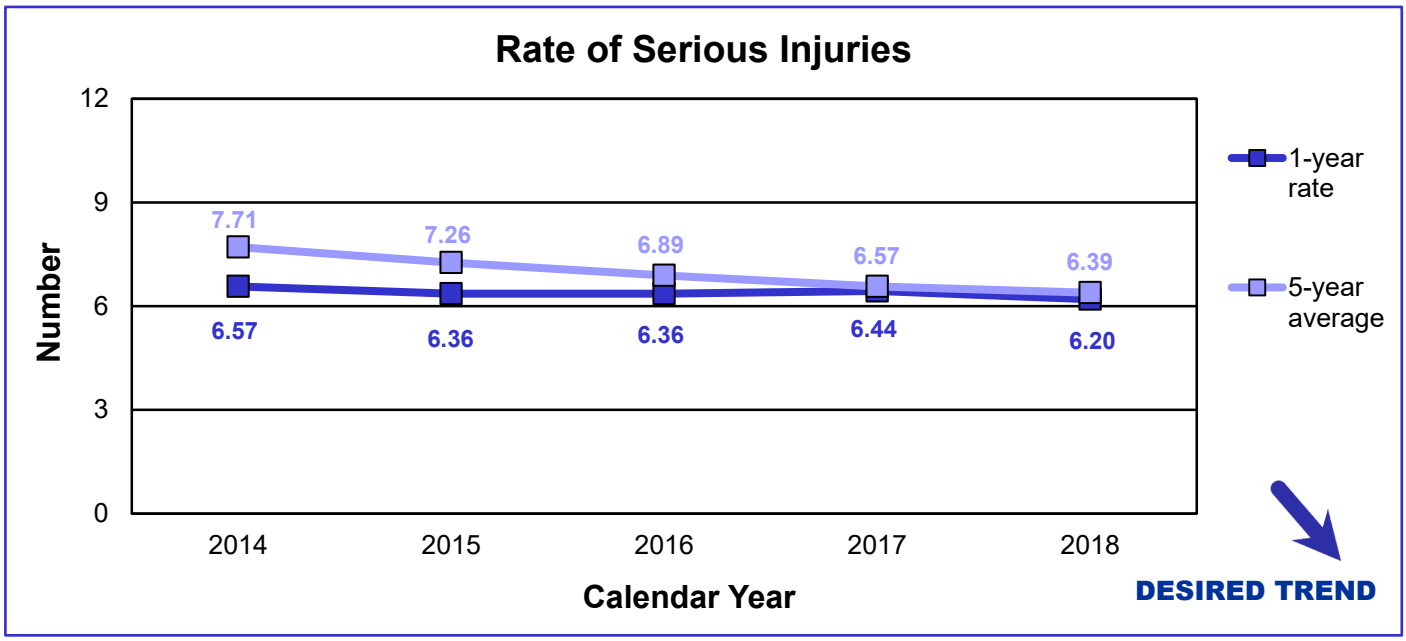

Improve Safety Culture

Behavior Based Safety

SAFETY CHAMPION:
Mark Shelton, District Engineer

PROJECT MANAGER:
Chris Engelbrecht, Assistant to the CSOO – Safety & Emergency Management Unit

PURPOSE OF THE PROJECT:
The total and rate of recordable incidents is the measure currently used to track the department's performance in improving safety. Behavior Based Safety is a strategic initiative that has been implemented over the last two years to improve MoDOT's safety culture. BBS is a concept that emphasizes employees' actively caring about the safety of themselves and their co-workers. BBS training also involves instruction regarding the ability to understand human behavior. The objective of BBS is to engage employees in the recognition of at risk behaviors to reduce the number of incidents and injuries attributable to employees' actions.

Incidents result in direct cost to MoDOT for the treatment of injuries and/or payment of Workers' Compensation benefits; typically $5-6 million annually. The desired outcome of BBS is to reduce incidents and injuries to MoDOT employees. Efforts are underway to reiterate MoDOT's commitment to employee safety and to determine strategies to improve performance and increase employee involvement in our safety programs.

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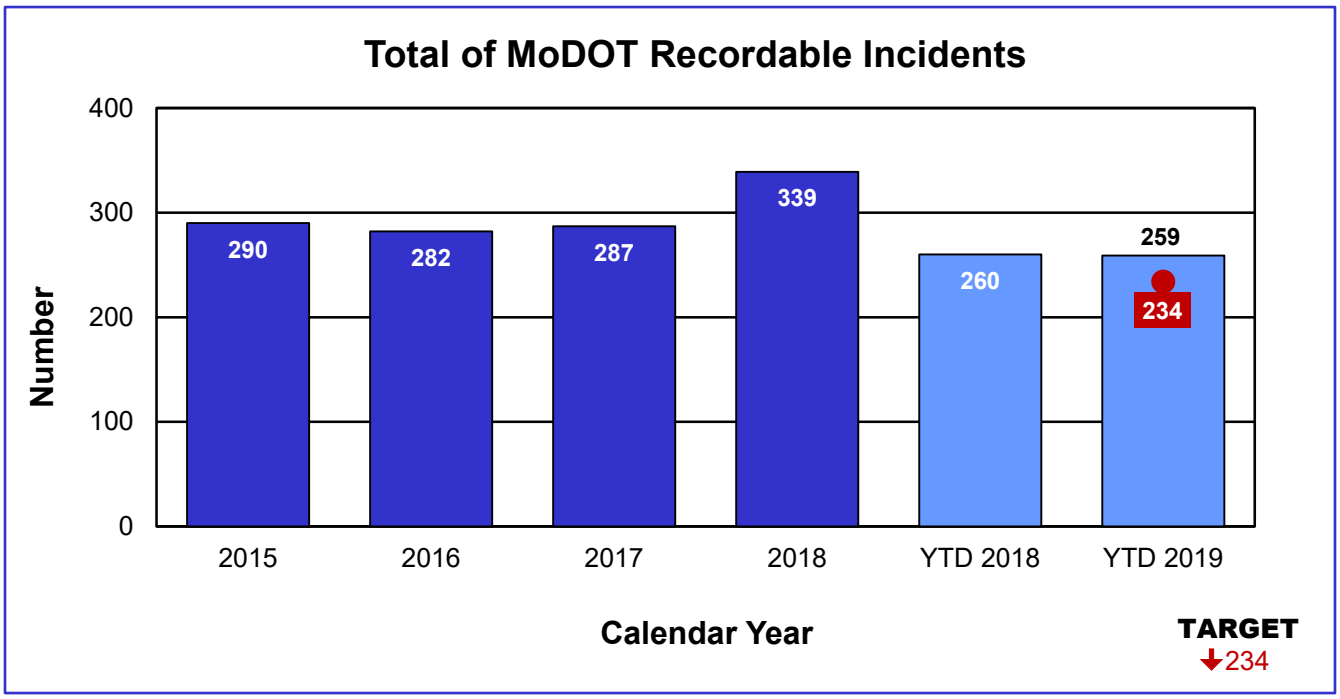
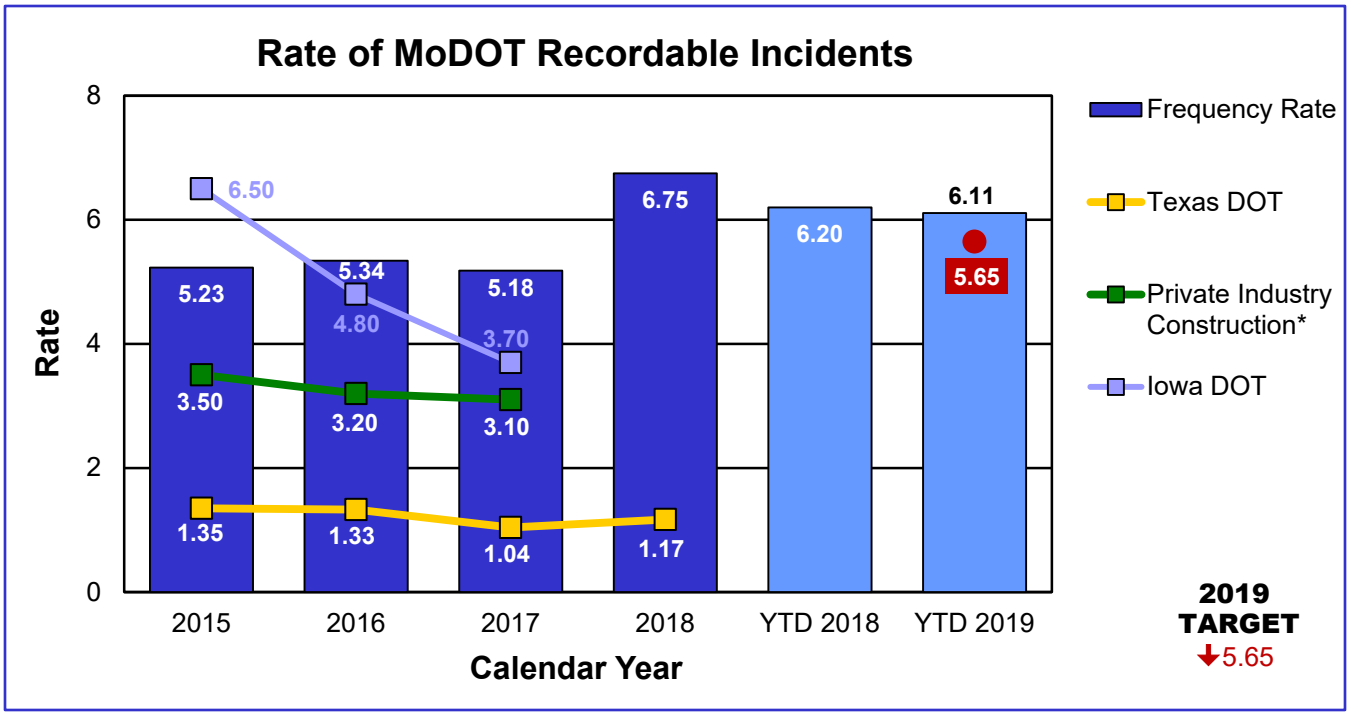
Improve Safety Culture





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

Improve Safety Culture

District Training Academy Pilot

SAFETY CHAMPION:
Mark Shelton, District Engineer

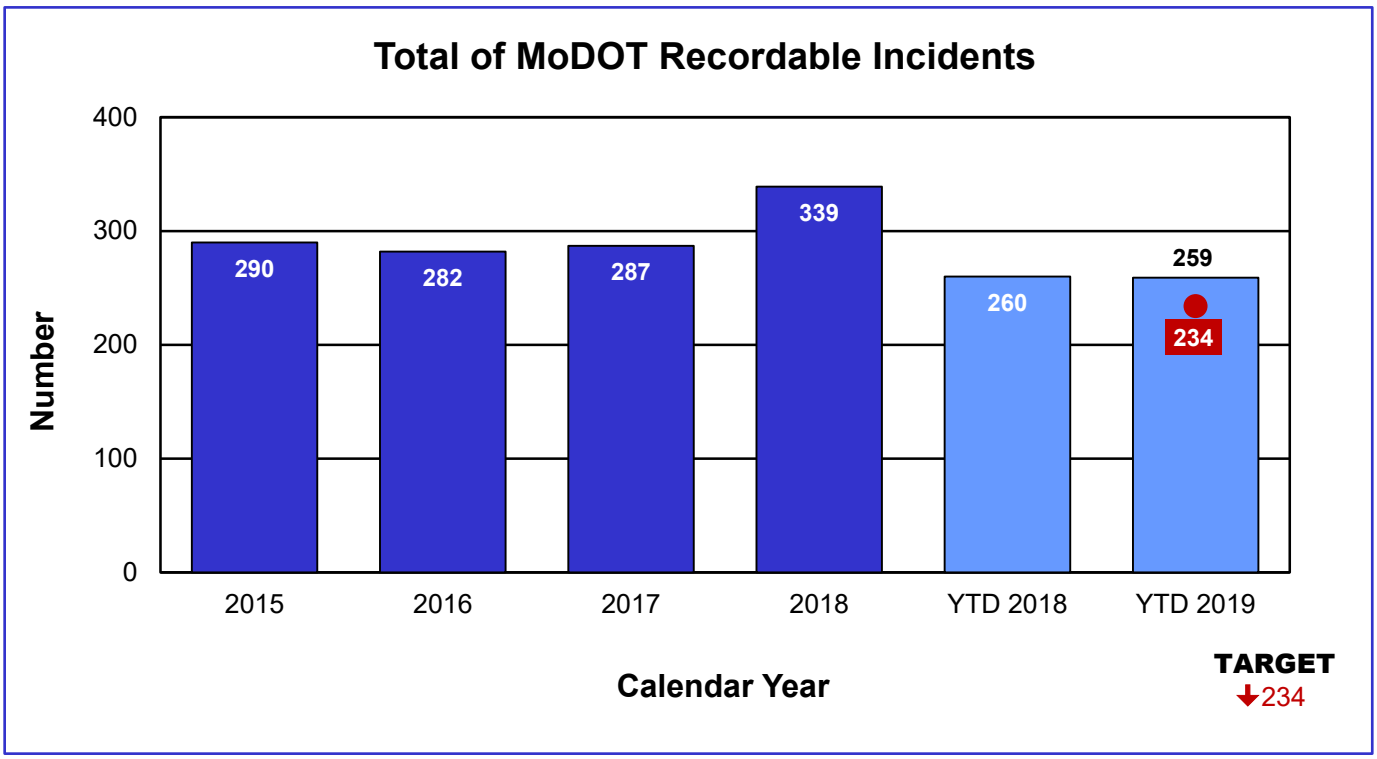
PROJECT MANAGER:
James Shannon, Assistant District Maintenance Engineer

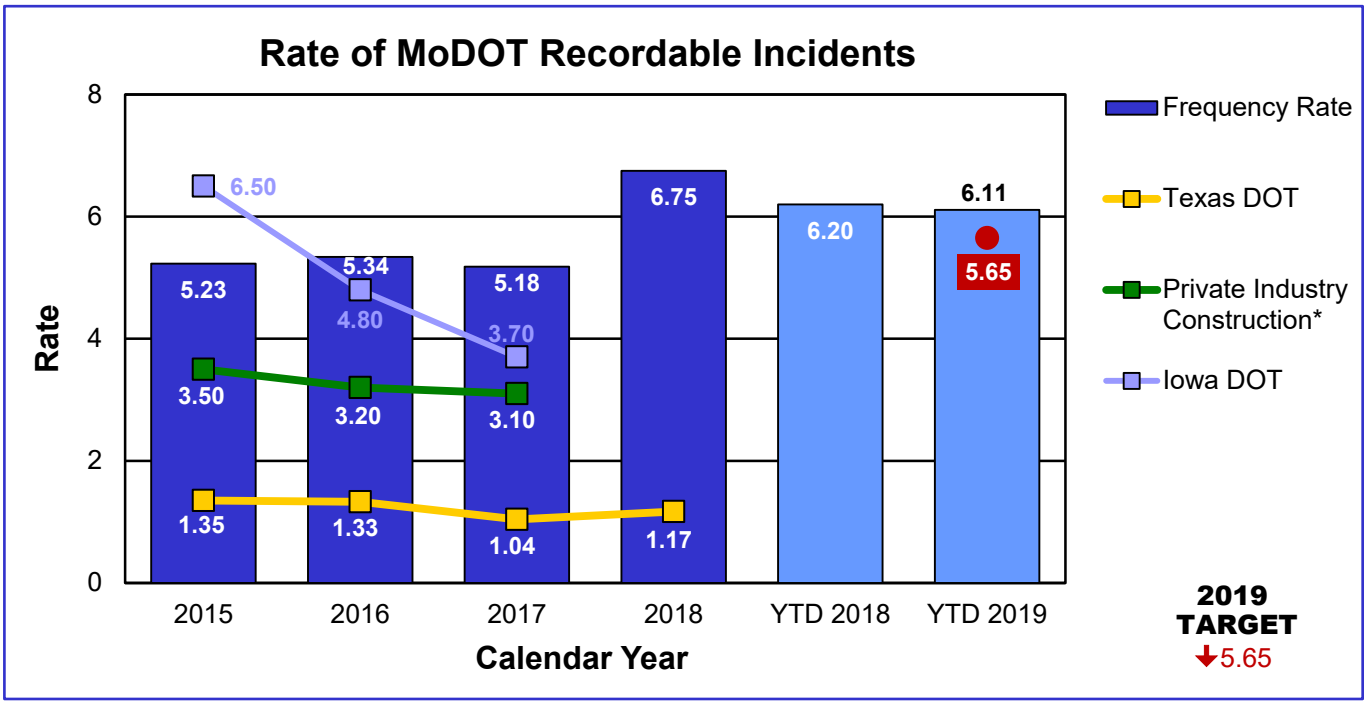
PURPOSE OF THE PROJECT:
The total and rate of recordable incidents are tracked to measure the department's performance in improving safety. The Maintenance Training Academy is an approach to getting new employees to the point they are working safely and productively inside the department's many shops and facilities. MoDOT workers are exposed to hazards such as high-speed traffic, use of heavy equipment, tools, machinery and driving large vehicles.

Excellent training is a cornerstone of a successful safety culture. Innovative initiatives such as Kansas City's Training Academy will give employees the skills needed to progress in this measure. The marked success of this program is a welcome addition to the department's safety culture. There has been an evident increase in both total and rate of recordable incidents. This is an anticipated result of employee acceptance of BBS and the maturing of safety culture. MoDOT is committed to improving this measure and recognizes that it takes time to move culture.

The District Training Academy provides consistent training by experienced instructors so employees are able to enter into their work group prepared to work safely and aware of the hazards. The academy provides valuable information to supervisors as they can quickly move forward knowing exactly where the new employees stand in their ability to carry out certain tasks safely. In pursuit of MoDOT's mission and values, the District Training Academy will deliver successful outcomes so all employees go home safe.

Improve Safety Culture





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

Improve Safety Culture

Development of Statewide Safety Standard Operating Procedures

SAFETY CHAMPION:
Mark Shelton, District Engineer

PROJECT MANAGER:
Chris Rutledge, Assistant District Engineer

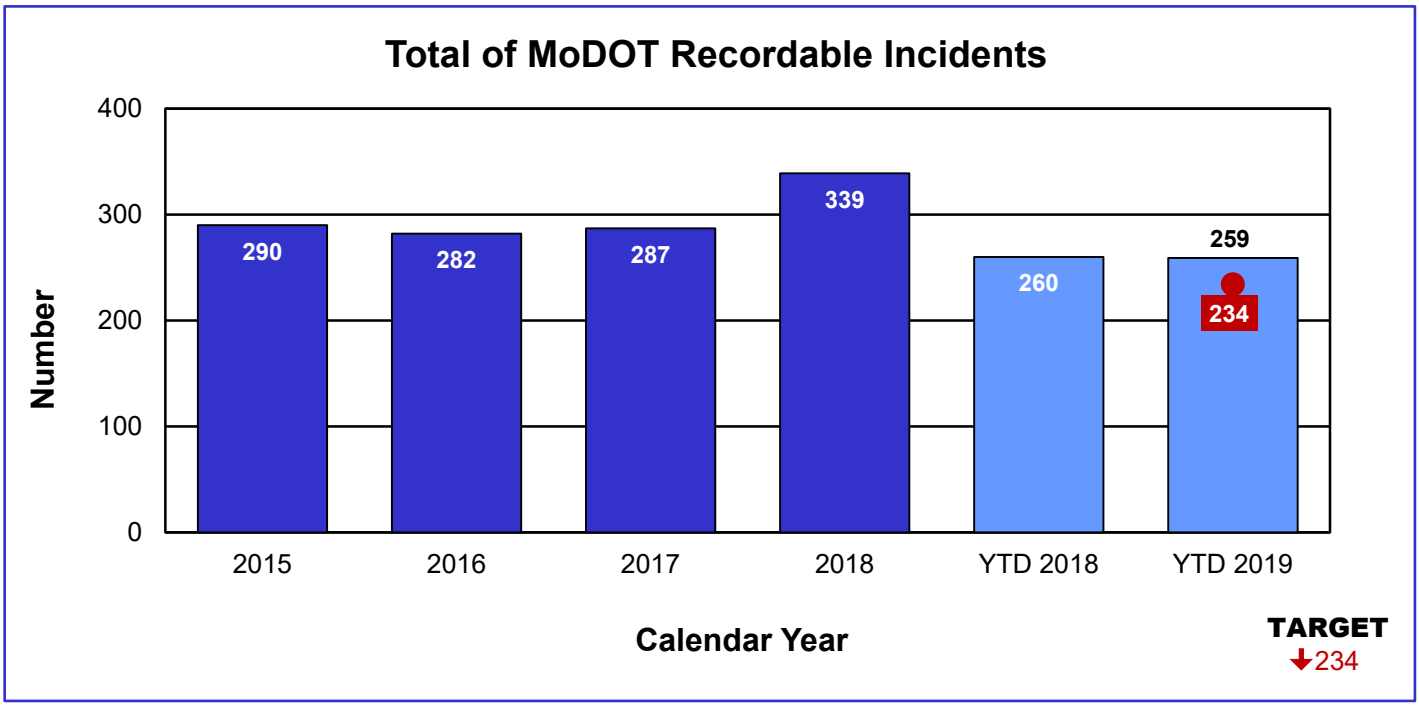
PURPOSE OF THE PROJECT:
The total and rate of recordable incidents are tracked to measure the department's performance in improving safety. MoDOT spends approximately $6 million each year for workplace injuries and workers' compensation costs.

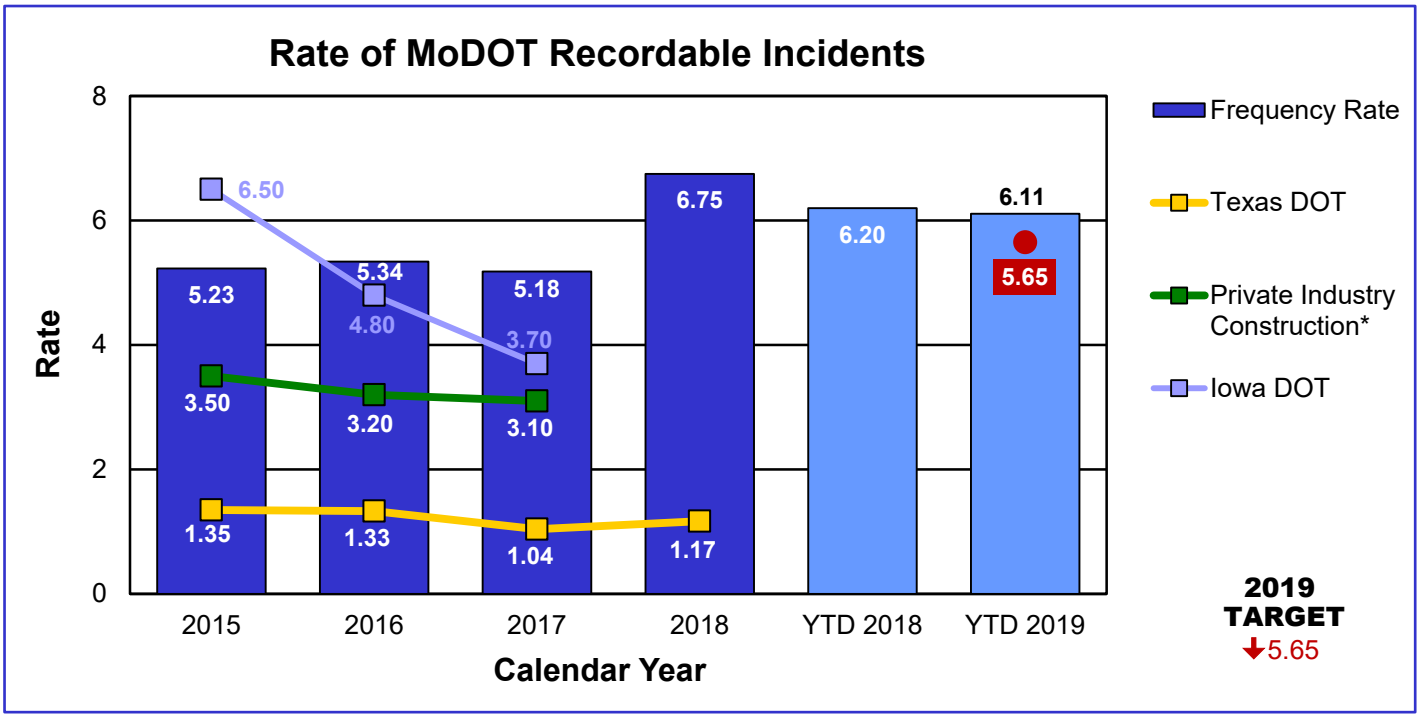
The development of Statewide Safety Standard Operating Procedures will result in the clarification and union of MoDOT's current safety practices and processes with the department's strategic vision and mission. Focus will be primarily in the updating of Safety Policies and Procedures and Risk-Based Assessments as well as incorporating Behavior Based Safety in the revisions. MoDOT's evolvement with BBS has emphasized the need to assure consistency in applying those concepts in its planning and carrying out of departmental field operations.

To support this effort, two comprehensive actions will be taken. First, evaluation and modification of departmental risk-based assessments will be made for safe planning and preparation of field operations. Second, a structured review and revisions will be made of the department's safety policies and procedures to ensure clarity and consistency in the context of MoDOT's BBS culture. Thus far, 65 of 76 policies have been drafted for revision and 55 of 70 risk-based assessments have been drafted. Completion of this specific effort is planned for Summer/Fall 2019.

The desired outcome for this initiative is a safer work environment that reduces incidents, injuries, fatalities and customer claims involving MoDOT activity.

Improve Safety Culture





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

Use Innovation to Improve Work Zone and System-wide Safety

Autonomous Truck-mounted Attenuators and Flagger Vehicles

SAFETY CHAMPION:
Mark Shelton, District Engineer

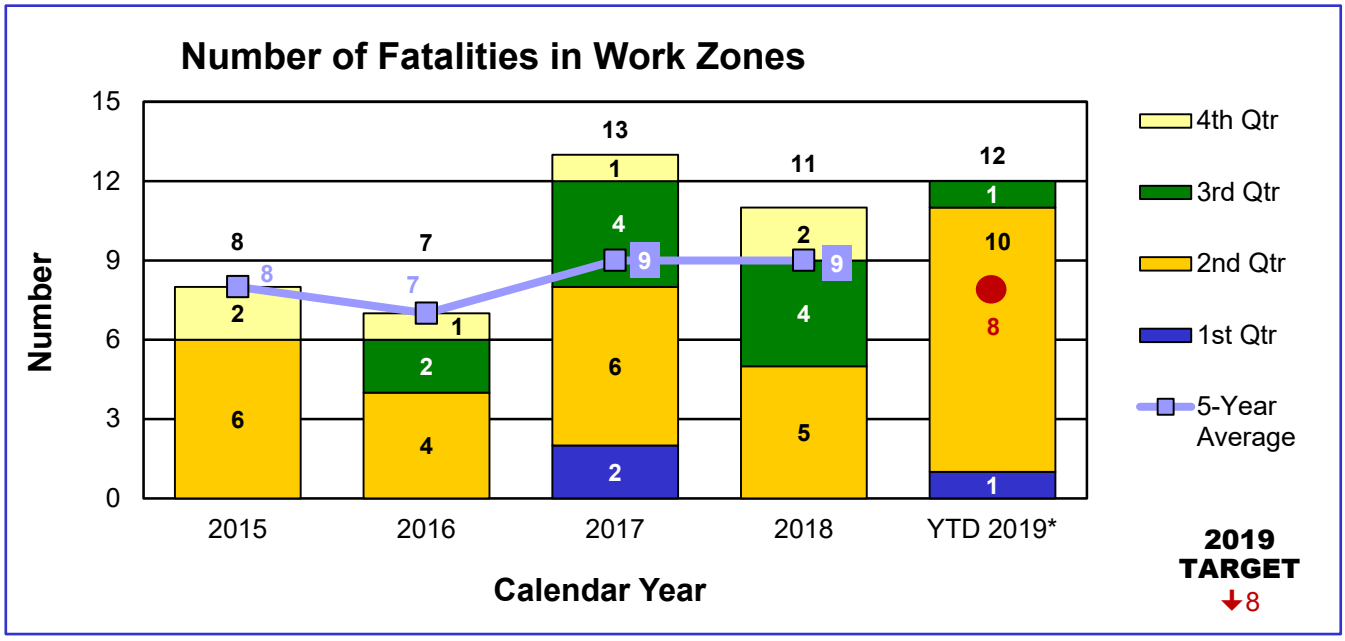
PROJECT MANAGERS:
Chris Redline, District Engineer

PURPOSE OF THE PROJECT:
MoDOT's commitment to safety applies to members of its work crew as well as the general public. In 2018, 11 people were killed in work zone crashes on state system routes and an additional two on the local system. MoDOT's ultimate goal is zero fatalities in work zones. Additionally, MoDOT TMA's have been involved in over 100 incidents since 2015 injuring many MoDOT employees. There must be constant improvement in both the planning and technology we employ in the field. MoDOT is investigating a two prong approach to improve work zone safety for our field professionals.

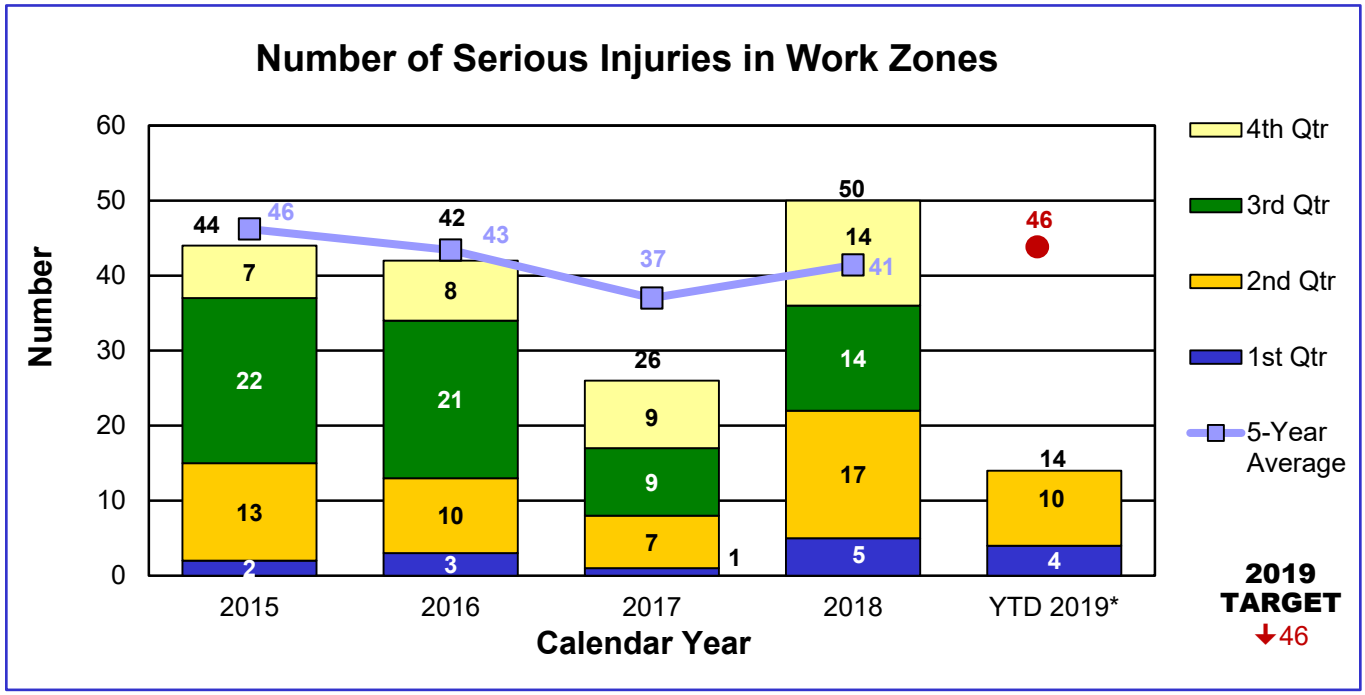
The first approach is to implement an employee innovation that combines a TMA and an Automated Flagging Assistance Device. This will allow flagging operations to be performed using the protection of a TMA. The purpose of this innovation is to keep MoDOT and contractor flaggers alive and uninjured while performing flagging for traffic control. MoDOT is currently in the procurement process and plans to receive prototype TMA flagger devices from two vendors by mid-November. Once received, they will be individually inspected and evaluated for future purchases.

The second approach is to develop and implement a Driverless TMA to eliminate injuries to MoDOT employees that drive the first TMA truck motorist's encounter. This is the truck most impacted by motorists. This type of traffic control is used for moving operations such as sweeping and striping. We will eliminate injuries by having an unstaffed TMA truck autonomously follow a lead truck at specified distances. Recently, the system successfully passed Phase 1 testing at the Missouri State Fairgrounds. The units are currently in the Kansas City District awaiting navigation and communication system upgrades before the testing resumes in October.

Use Innovation to Improve Work Zone and System-wide Safety



*2019 – Fatalities derived from TMS.



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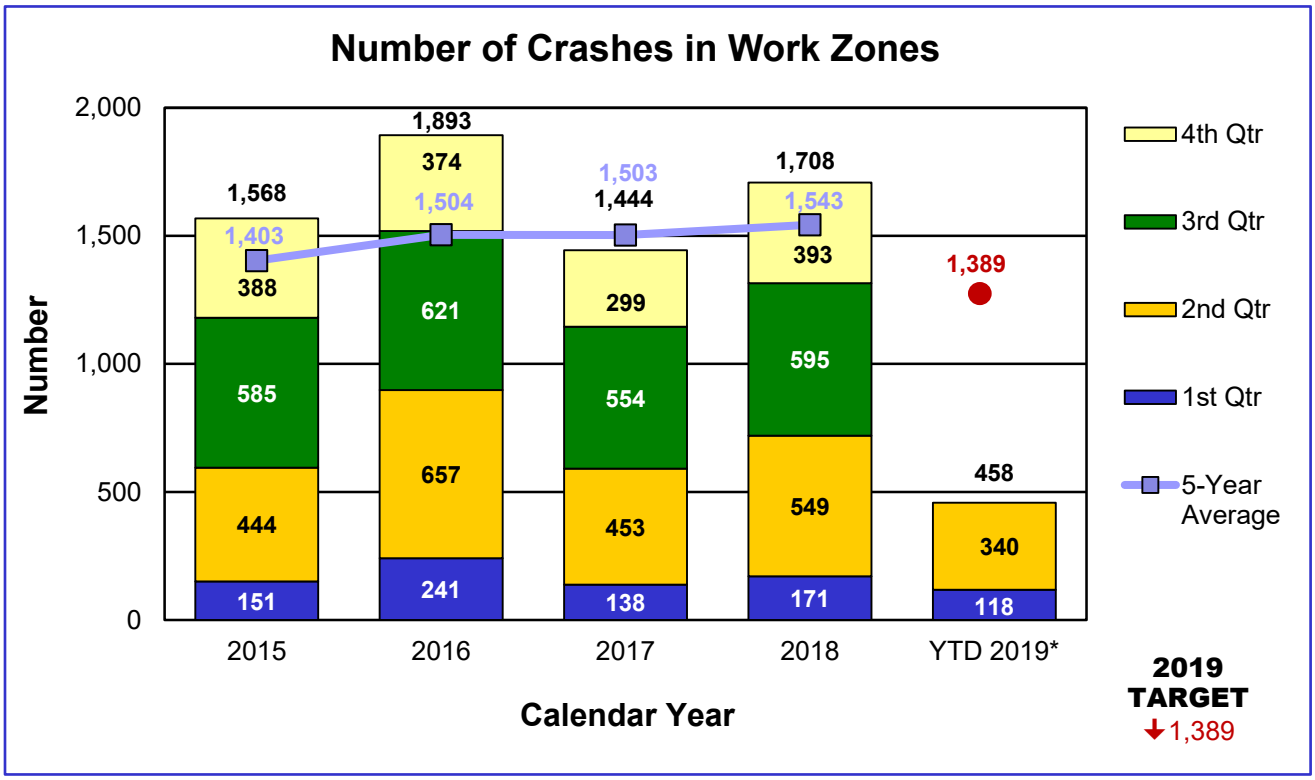


***2019 – Third quarter 2019 data is unavailable through the MSHP radio reports and is incomplete in TMS.**

Deploy a Suite of Demonstrable Impactful Safety Techniques through Data-Driven Safety Analysis

SAFETY CHAMPION:
Mark Shelton, District Engineer

PROJECT MANAGER:
Jon Nelson, Assistant to the State Highway Safety and Traffic Engineer

PURPOSE OF THE PROJECT:
While many eligible safety improvements have an influence on reducing fatal and serious injury crashes, using a data-driven approach will allow the department to maximize the benefit of each dollar invested. Nationally, accepted analysis found in the Highway Safety Manual can be utilized to determine the most cost-effective measures for various sections of roadways.

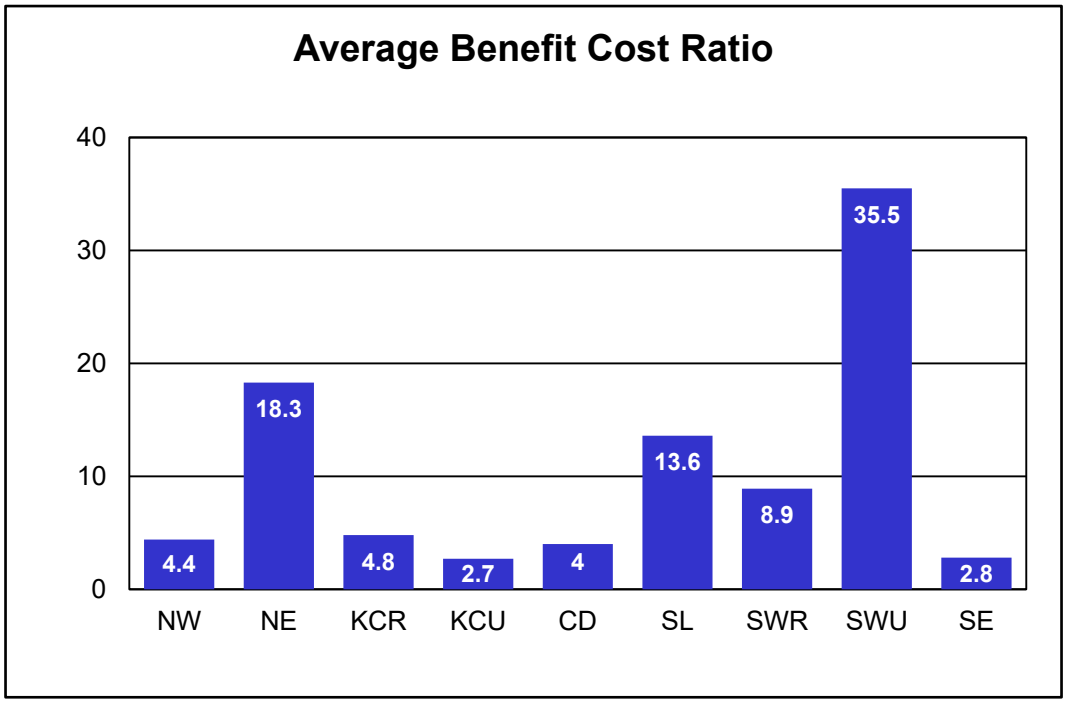
Traditional crash and roadway analysis methods mostly rely on subjective or limited quantitative measures of safety performance. This makes it difficult to estimate safety impacts alongside other criteria when planning projects. Data-driven safety analysis (DDSA) employs a newer approach to identify high-risk roadway and traffic features and execute the most beneficial projects with limited resources to achieve fewer fatal and serious injury crashes.

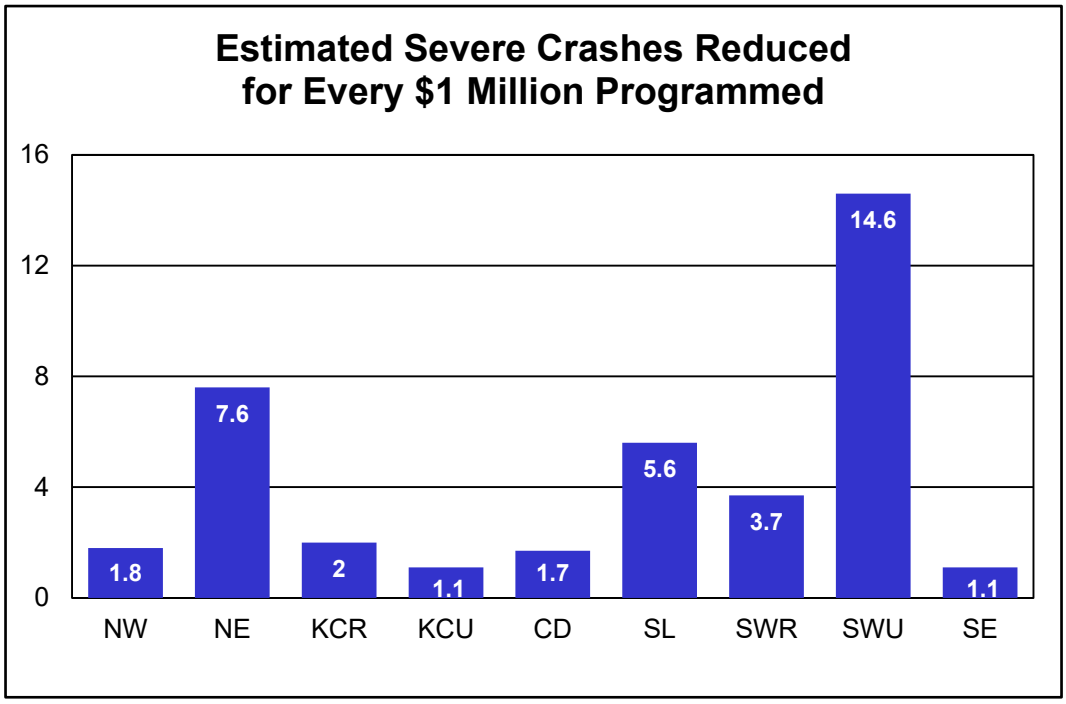
The data not only helps make better decisions during the project development phase, but also helps inform the public as to what safety benefits they can expect from their investment. DDSA improvements may be identified on a project level basis or on a program level.

DDSA is also used for systemic analysis to identify high-risk roadway features that correlate with particular crash types. Severe crashes are widely dispersed, and their location and frequency fluctuate over time. Systemic analysis identifies locations that are at risk for severe crashes, even if there is not a high crash frequency. Low-cost countermeasures can then be applied systemically across those locations. This approach helps ensure funds are expended in the locations with the greatest risk for severe crashes.

The focus of this measure will be to track how DDSA is utilized in the districts to maximize safety funds. The measure will track the number of fatal and serious injury crashes reduced for every safety dollar invested. The Highway Safety and Traffic Division will help review and prioritize safety projects during the draft Statewide Transportation Improvement Program phase and also help estimate the anticipated impacts on crashes. The data will be updated annually in accordance with the STIP cycle.

Use Innovation to Improve Work Zone and System-wide Safety





This represents the average B/C ratio and predicted reduction in severe and fatal crashes for STIP projects programed in years 2020-2022. These benefits are calculated over the expected life of the improvements. The department is currently working to have the data driven safety analysis process reviewed by independent traffic consultant experts to assure the analysis is performed using a consistent methodology.

Use Innovation to Improve Work Zone and System-wide Safety

Totals for STIP Years 2020-2022				
	Estimated Severe Crashes Reduced (Over the Life of the Improvements)	**Total Safety Dollars Programmed**	**Benefit Cost Ratio**	**Estimated Severe Crashes Reduced for Every $1 Million Programmed**
NW	12	$ 6,562,000	4.4	1.8
NE	38	$ 5,031,000	18.3	7.6
KCR	15	$ 7,497,000	4.8	2.0
KCU	32	$ 28,286,000	2.7	1.1
CD	62	$ 36,998,000	4.0	1.7
SL	153	$ 27,185,000	13.6	5.6
SWR	62	$ 16,993,000	8.9	3.7
SWU	65	$ 4,424,000	35.5	14.6
SE	21	$ 18,867,000	2.8	1.1
Statewide	**459**	**$ 151,843,000**	**7.3**	**3.0**

Improve Partnerships with Other State Agencies and Leverage Private Sector

Predictive Analytics to Optimize the Development of Enforcement Operations

SAFETY CHAMPION:
Mark Shelton, District Engineer

PROJECT MANAGER:
Alex Wassman, Traffic Management and Operations Engineer

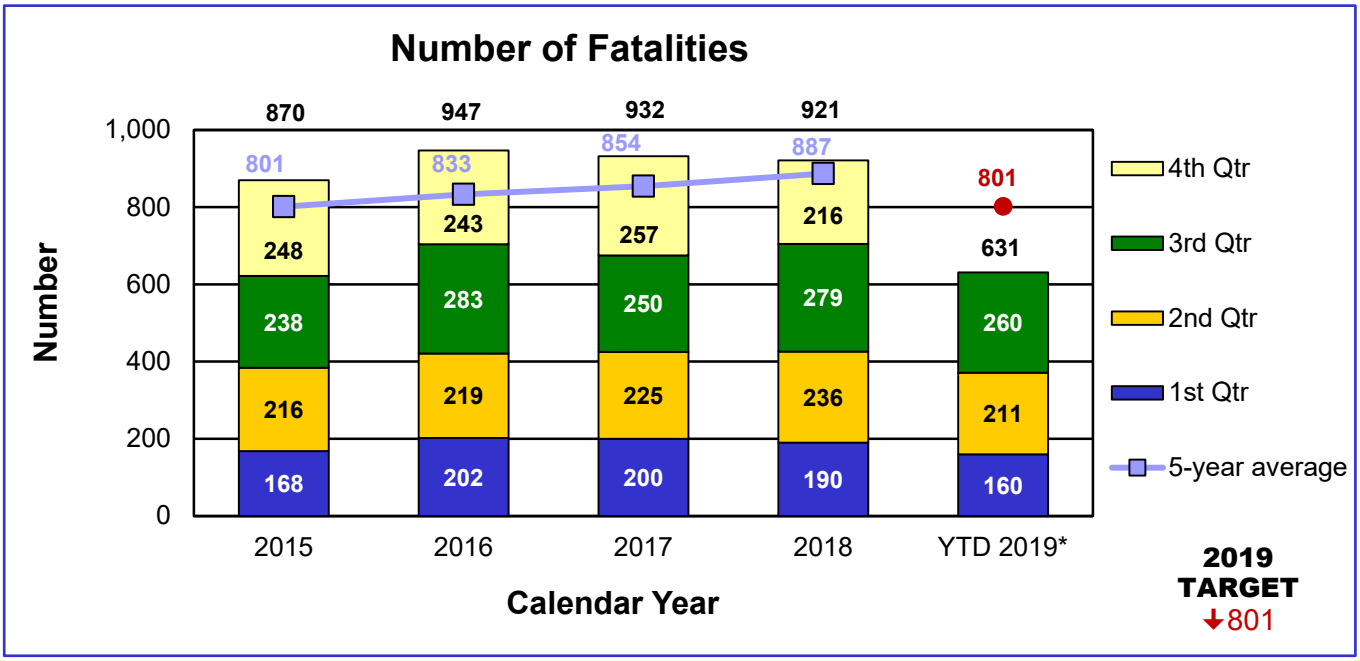
PURPOSE OF THE PROJECT:
There were 208 fatalities in the second quarter of 2019, which is the lowest total for the second quarter among the five years tracked. The new target for 2019 is 801 fatalities. Distracted driving is still a serious concern that MoDOT is addressing with news releases, digital message boards and Buckle Up Phone Down campaign.

Research indicates 94 percent of crashes are the result of poor driver behavior. MoDOT's Blueprint is a comprehensive strategic plan of diverse countermeasures to help reduce the number of fatalities and serious injuries by discouraging poor driving behaviors or minimizing the consequences of such actions.

One key strategy to achieve this is high-visibility enforcement activities. However, with such a vast highway system and limited resources, it's impossible to deploy the necessary enforcement in all areas. To help with this, MoDOT has partnered with the Missouri State Highway Patrol to implement a predictive analytics tool to help MSHP strategically direct officers when and where they are needed most. The tool takes into account crash history, weather patterns, traffic volumes and regional events to identify areas most prone to traffic crashes.

As a result, MSHP, and eventually other law enforcement agencies, can use the information to make more informed decisions regarding the time and location of enforcement activities. This tool will provide improved efficiency of resources and, ultimately, fewer traffic crashes. MSHP has completed development of the tool and began implementation of the model in September 2019. The system is currently capable of running locally on user computers, with a planned expansion to a centralized system is being tested for implementation in early 2020.

Improve Partnerships with Other State Agencies and Leverage Private Sector



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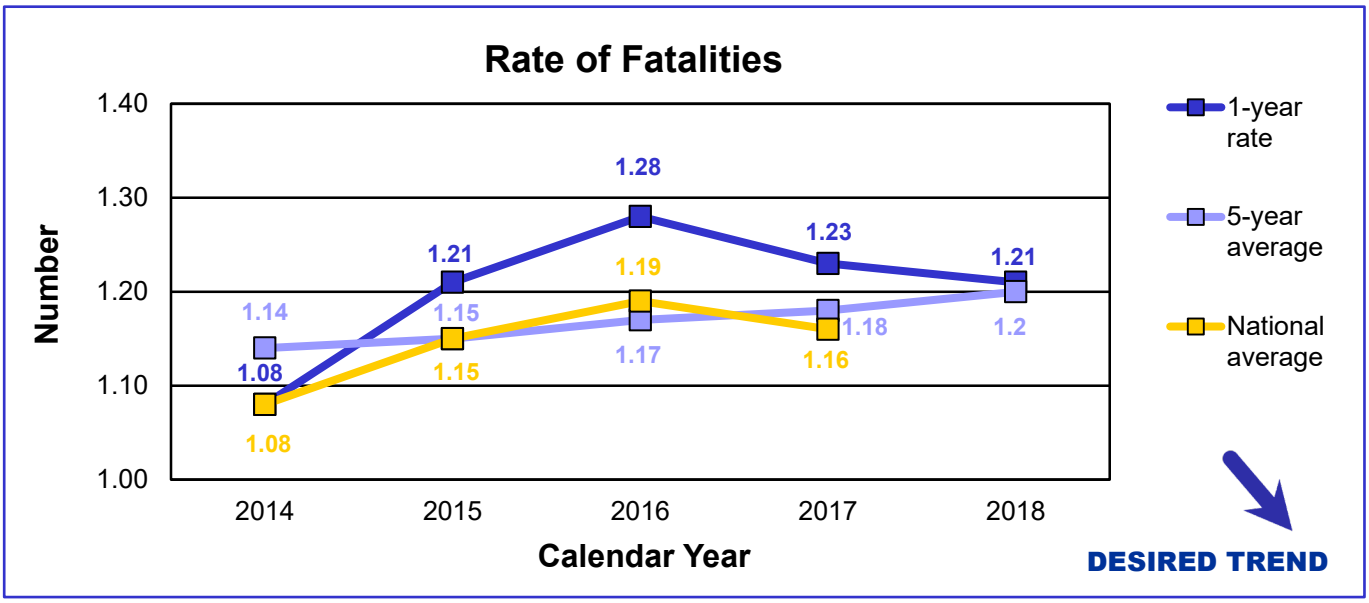
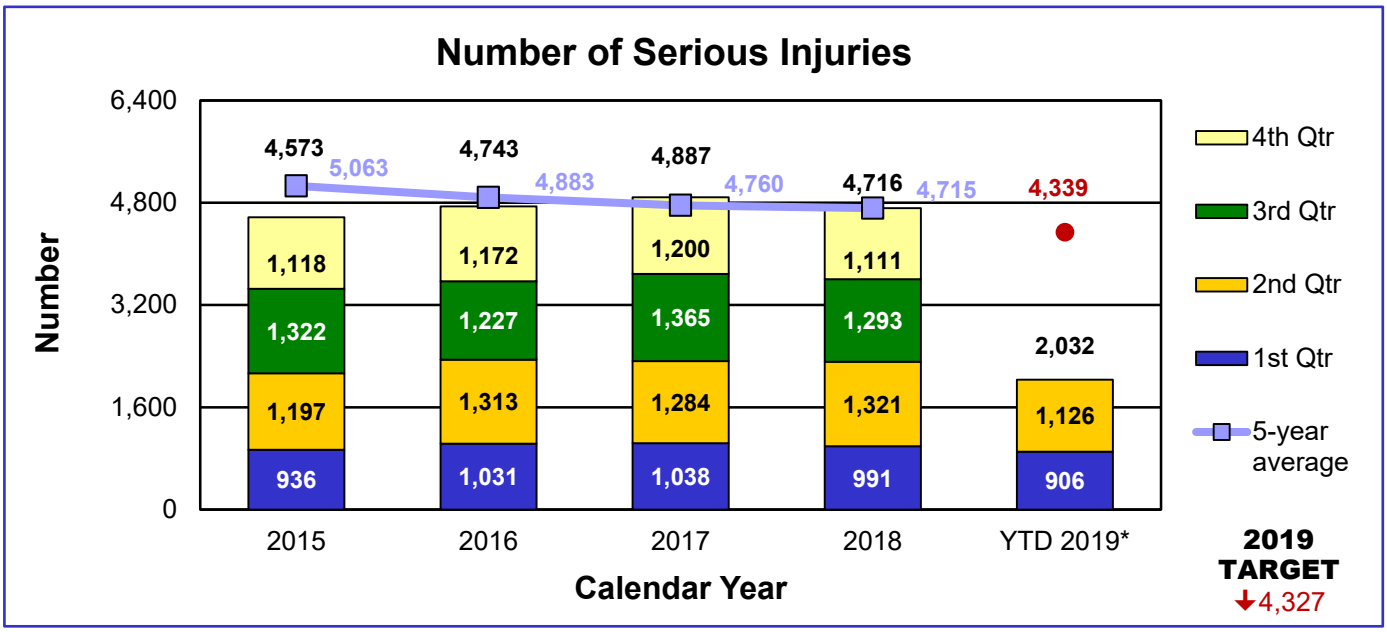


Improve Partnerships with Other State Agencies and Leverage Private Sector



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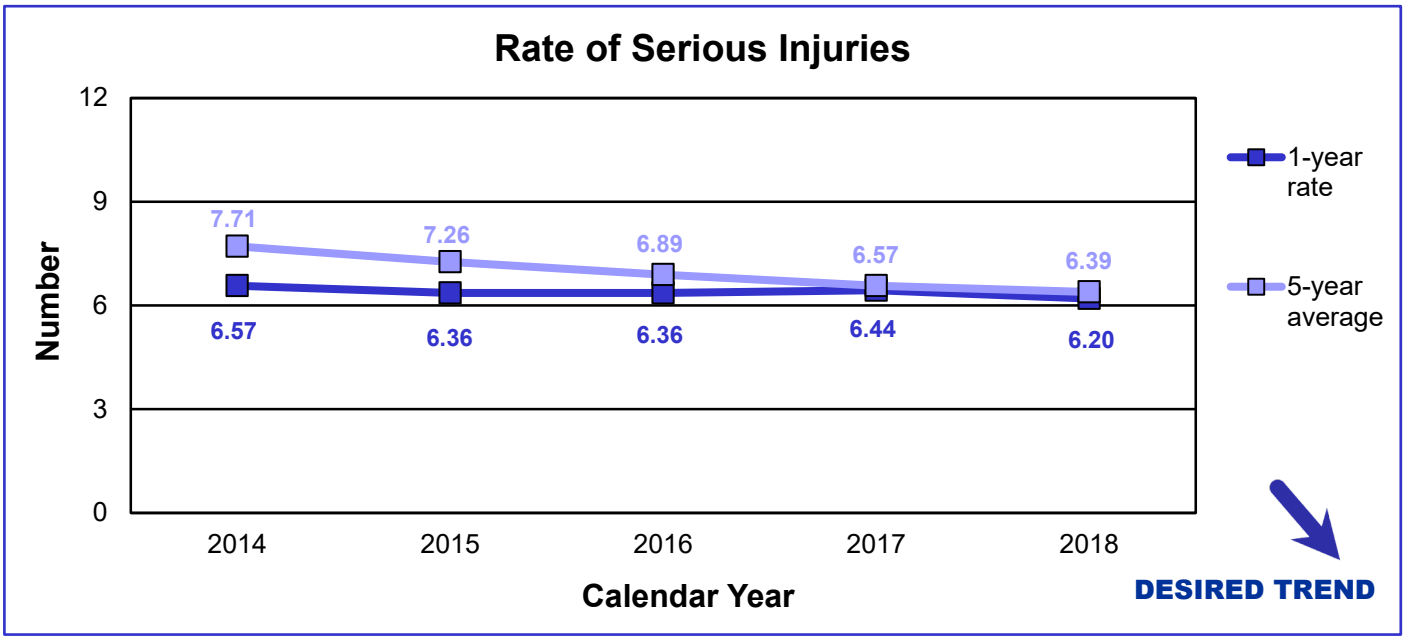


Predictive Analytics to Optimize Winter Operation Resources

SAFETY CHAMPION:
Mark Shelton, District Engineer

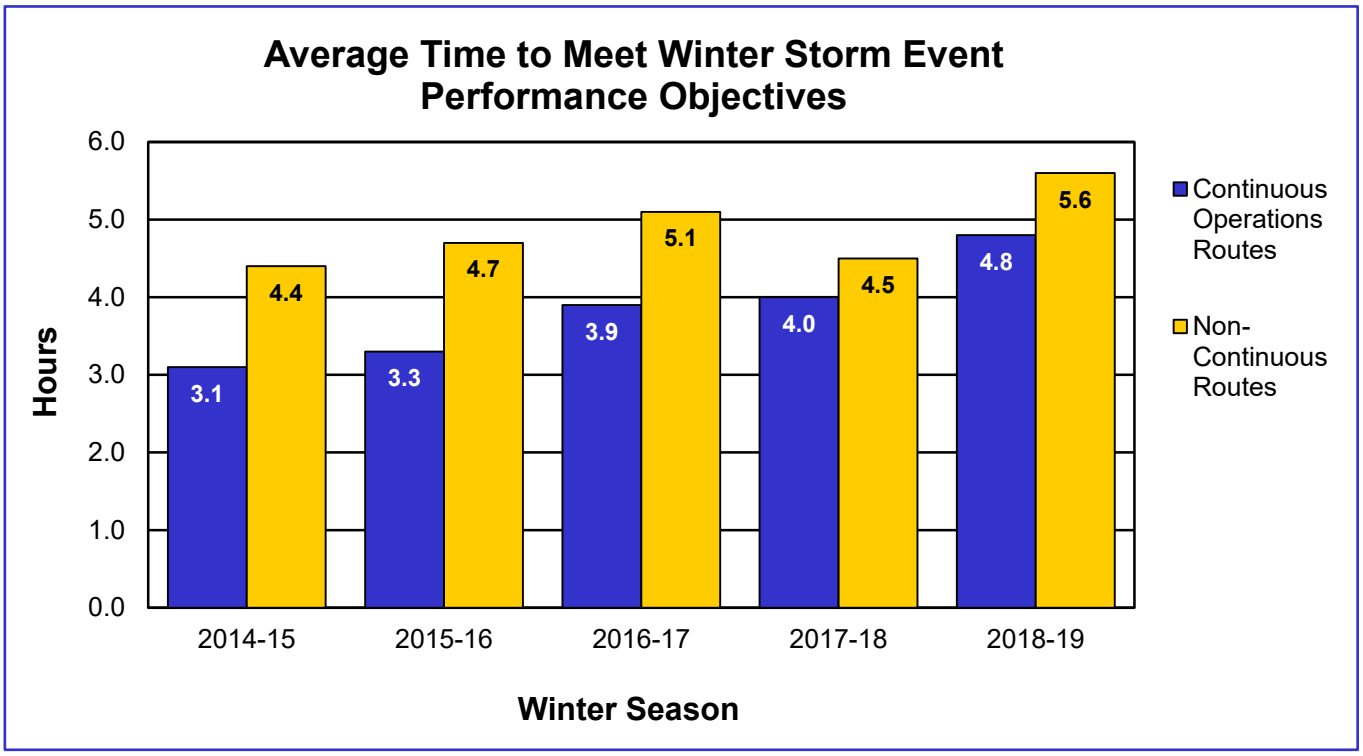
PROJECT MANAGER:
Alex Wassman, Traffic Management and Operations Engineer

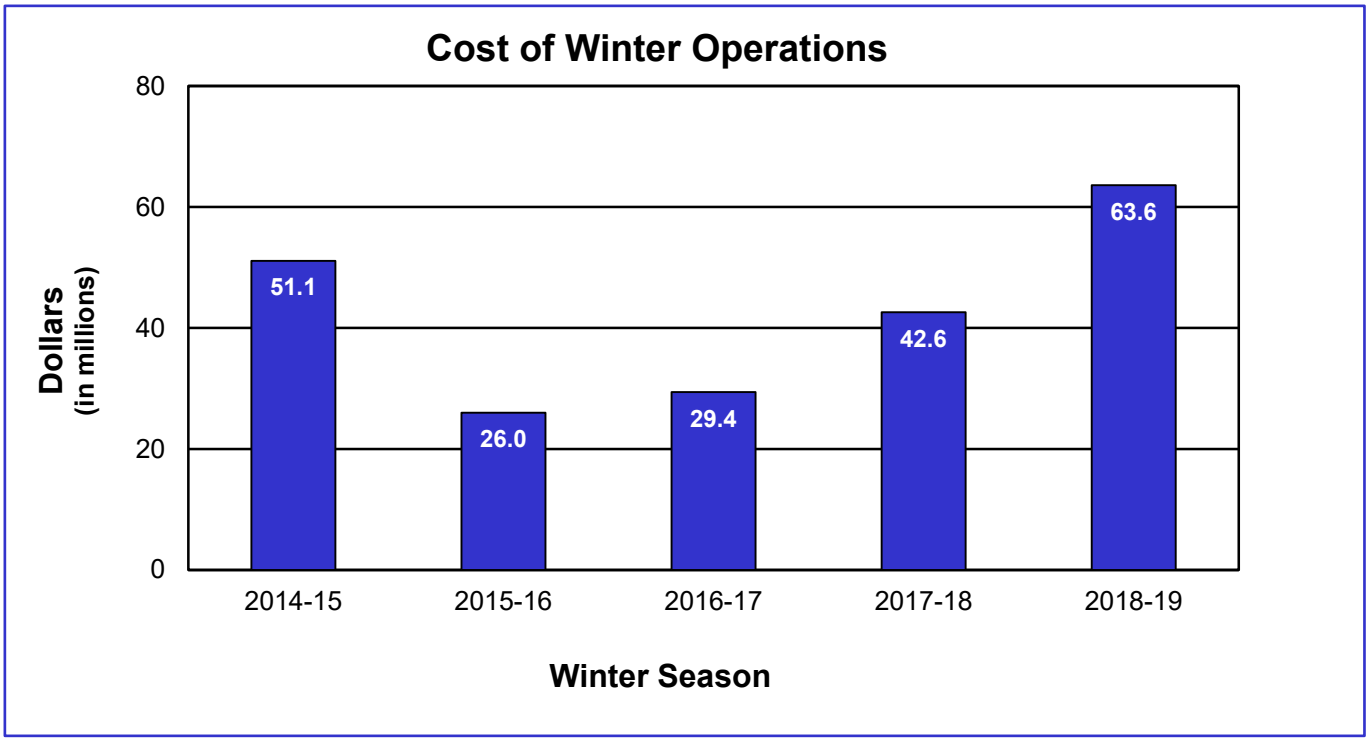
PURPOSE OF THE PROJECT:
Costs associated with over or under preparedness of severe weather events aren't easily captured and are seldomly reported. Simple atmospheric weather forecasts do not tell the whole story and, as a result, MoDOT has sometimes incurred additional costs for storms which never materialized or been caught off guard when storms arrived in advance of expectations.

Road condition prediction is a better gauge for anticipating when conditions warrant treatment and advance traveler information. By partnering with FHWA on the Integrated Modeling for Road Condition Prediction pilot project, MoDOT will be the first DOT in the country to access a simple-to-use, web-based tool that utilizes both historic real-time data to more accurately predict when road conditions are likely to deteriorate. This will enable MoDOT staff to better prepare for adverse road conditions and strategically deploy crews where they are most needed.

This tool will provide the ability to predict conditions up to eight hours in the future and, conversely, enable accurate after-action reviews of MoDOT's response. This will facilitate improved efficiency of resources and timeliness in response.

Improve Partnerships with Other State Agencies and Leverage Private Sector





SERVICE

Deliver transportation solutions of great value and use resources wisely

- **Improve Communications**
  - Citizen's Guide to Transportation Funding
  - New Department Website
  - Better Traveler Information Map
- **Improve Project Management Tools**
  - Maintenance Management System
- **Develop Innovative Program Delivery**
  - Design-build, Design-build Finance and/or Operations and Maintenance Options
  - Value Engineering
- **Fleet and Facilities Optimization Strategy Implementation**

Improve Communications

Citizen's Guide to Transportation Funding

SERVICE CHAMPION:
Eric Schroeter, Assistant Chief Engineer

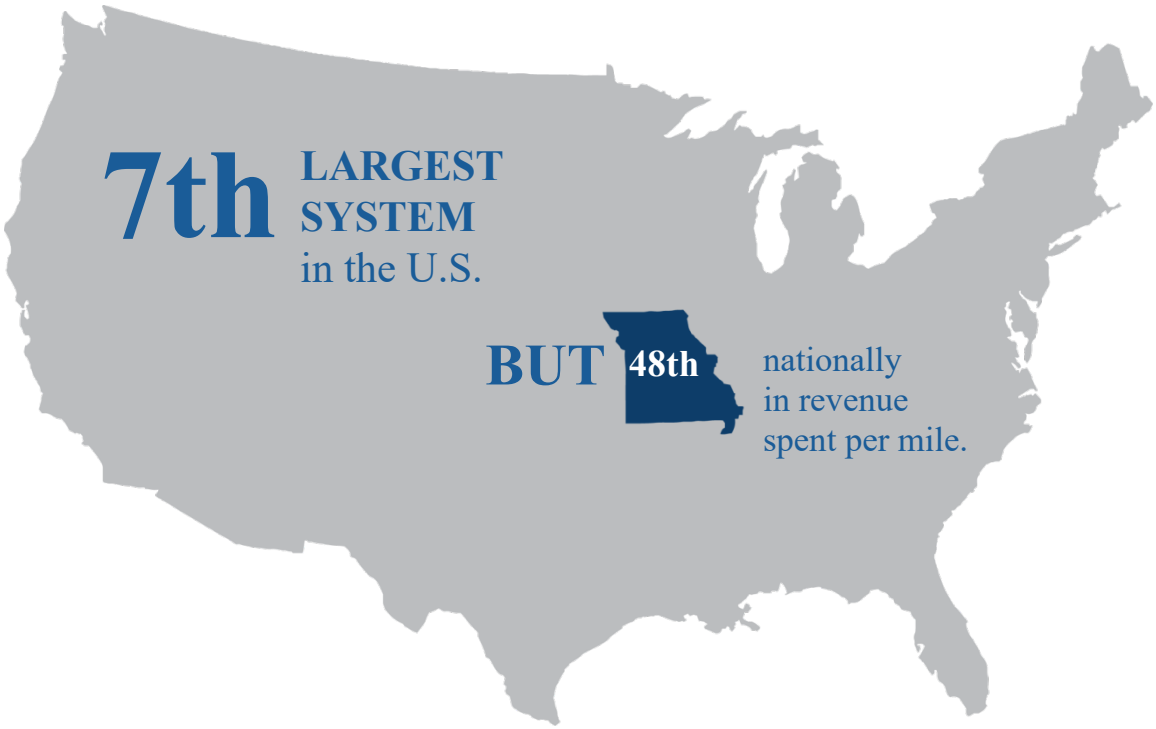
PROJECT MANAGER:
Ben Reeser, Assistant Transportation Planning Director

PURPOSE OF THE PROJECT:
The Citizen's Guide to Transportation Funding serves as an educational piece for elected officials, stakeholders and the general public to address consistent concerns and misconceptions about transportation funding. The Citizen's Guide takes the complex issues of the state's transportation revenue, expenditures, system condition and unfunded needs and explains them in clear and easy-to-understand terms.

In conjunction with the Citizen's Guide, an online transportation calculator was developed to show Missouri taxpayers how much they're paying per month in state and federal transportation taxes/fees and where the money is invested.

The Citizen's Guide can be found online at: www.modot.org/guidetotransportation.

The Financial Snapshot serves as an appendix to the Citizen's Guide and can be found online at: http://www.modot.org/about/documents/FinancialSnapshot.pdf



Improve Communications

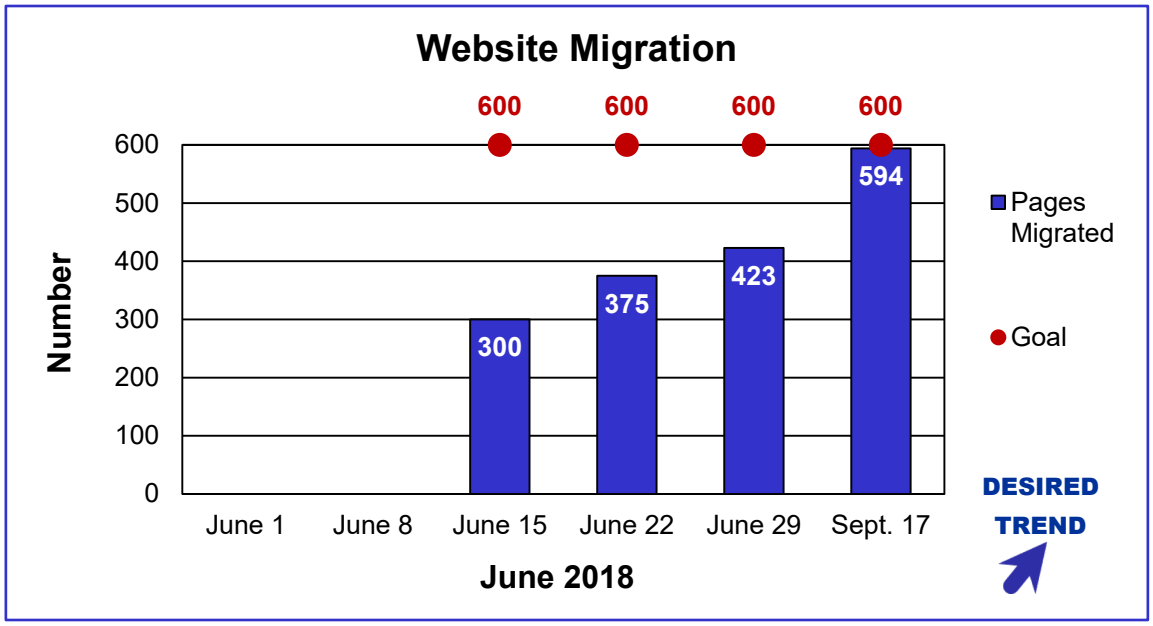
New Department Website

SERVICE CHAMPION:
Eric Schroeter, Assistant Chief Engineer

PROJECT MANAGER:
Matt Hiebert, Assistant Communications Director

PURPOSE OF THE PROJECT:
MoDOT's website had not been significantly upgraded since 2005. This has led to the site falling below current technological standards. As a result, customers using mobile devices have a difficult time navigating the site and employees must often spend unacceptably large amounts of time making simple updates to web pages. A Content Management System was chosen as the best solution to the multiple issues. Other factors necessitating the upgrade include:

- "Contribute" web updating software was no longer supported by manufacturer.
- A CMS is in-line with web technology currently used by federal and state agencies.
- Mobile devices account for more than half of MoDOT's web traffic. A CMS will make our site "mobile ready" without a stripped down alternative site.
- Updating the website will be much easier for employees. Right now, it can take several minutes to an hour to update a simple webpage.
- A CMS offers ongoing upgrades that could potentially expand functionality for the public
- The effort will be performed in stages. It was estimated that an initial migration of 600 top visited pages by the end of summer 2018 would cover 99 percent of all MoDOT web traffic. Stage 1 is the migration of those top pages.



Improve Communications

Better Traveler Information Map

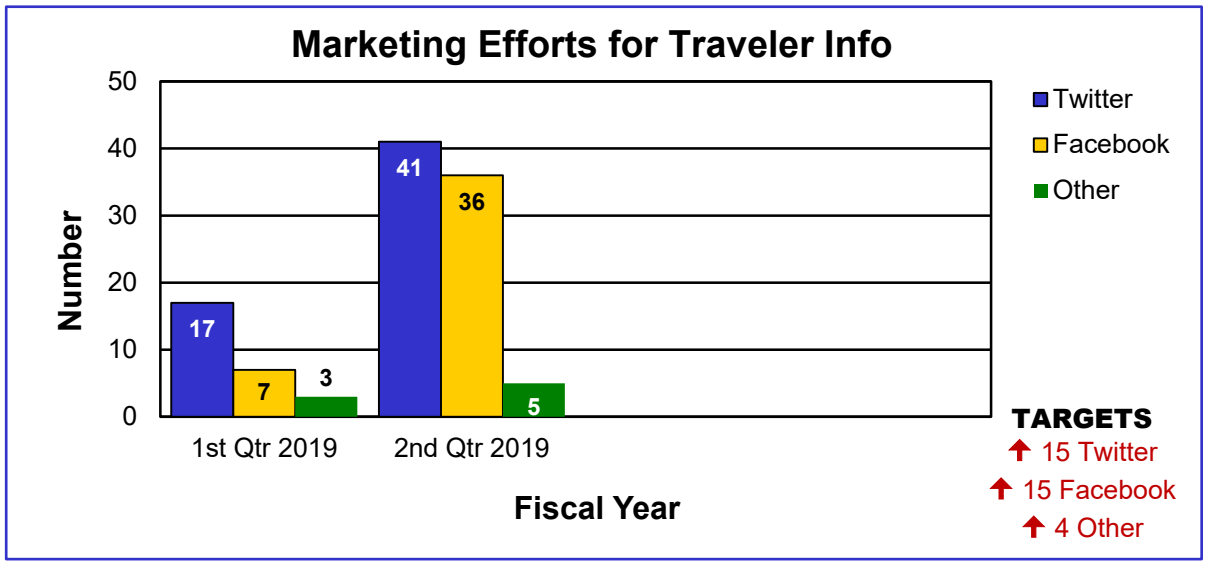
SERVICE CHAMPION:
Eric Schroeter, Assistant Chief Engineer

PROJECT MANAGER:
Matt Hiebert, Assistant Communications Director

PURPOSE OF THE PROJECT:
The Traveler Information Map is MoDOT's highest-trafficked website. To increase traffic during "off season" quarters and to enhance potential and existing features, the Communications Division will work with other departments to:

- Collect input through a permanent online survey linked from the map. Note: Survey added Jan. 2019.
- Enhance the text report to work better with the newly designed Drupal website.
- To actively promote the map in spring and summer (off seasons) to increase attention to the work zone, traffic and detour features.
- To explore and add technical features which will be described in narrative portion of this measure.

A team lead by the Northeast District has also added features that allow the addition of active links and the ability to name projects in the text reports. This allows district personnel to link to "more info" and associate text in the map with "branded" projects



SURVEY CHART UNDER DEVELOPMENT

Improve Project Management Tools

Maintenance Management System

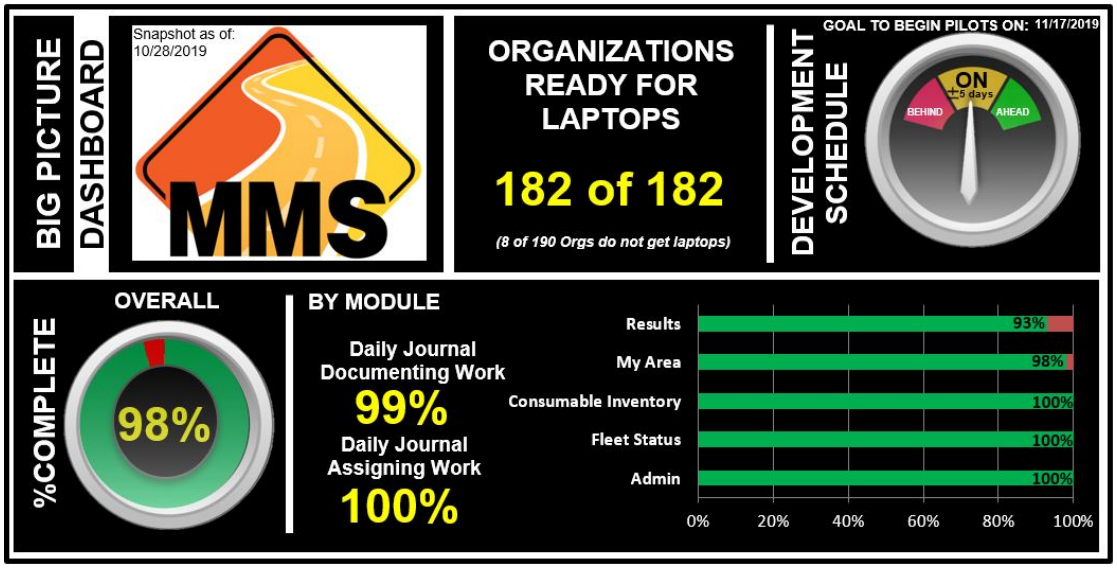
SERVICE CHAMPION:
Eric Schroeter, Assistant Chief Engineer

PROJECT MANAGER
Mike Rinehart, Maintenance Liaison Engineer

PURPOSE OF THE PROJECT:
With maintenance staff constituting about 54 percent of salaried employment at MoDOT and with about 23 percent of MoDOT's budget being used to accomplish maintenance related tasks, it makes sense to look at the challenges that staff has in recording and finding data related to what gets accomplished by this important organizational division. Multiple software programs, difficulty in documenting work and challenges in finding maintenance-related information is substantial.

MoDOT intends to create a Maintenance Management System that will be a simple to use, web-based program for capturing and easily reporting data related to what gets accomplished in maintenance. The size and scope of the project has prompted a phased approach to get a significant portion of the project completed under Phase 1.

The MMS Phase 1 project is currently under development with implementation scheduled for the pilot locations in mid November 2019. Full roll-out scheduling of Phase 1 will be identified by districts with a goal of having all maintenance organizations using the production version of MMS by March 1, 2020. Resources have been secured to begin Phase 2 work on November 18, 2019.



Design-Build, Design-Build Finance, and/or Operations and Maintenance Options

SERVICE CHAMPION:
Eric Schroeter, Assistant Chief Engineer

PROJECT MANAGER:
Kenny Voss, Assistant State Design Engineer

PURPOSE OF THE PROJECT:
Design-build is a project delivery method in which the design and construction services are contracted by a single design-build contractor. This provides a single point of responsibility in the contract to reduce risks and overall costs to the state.

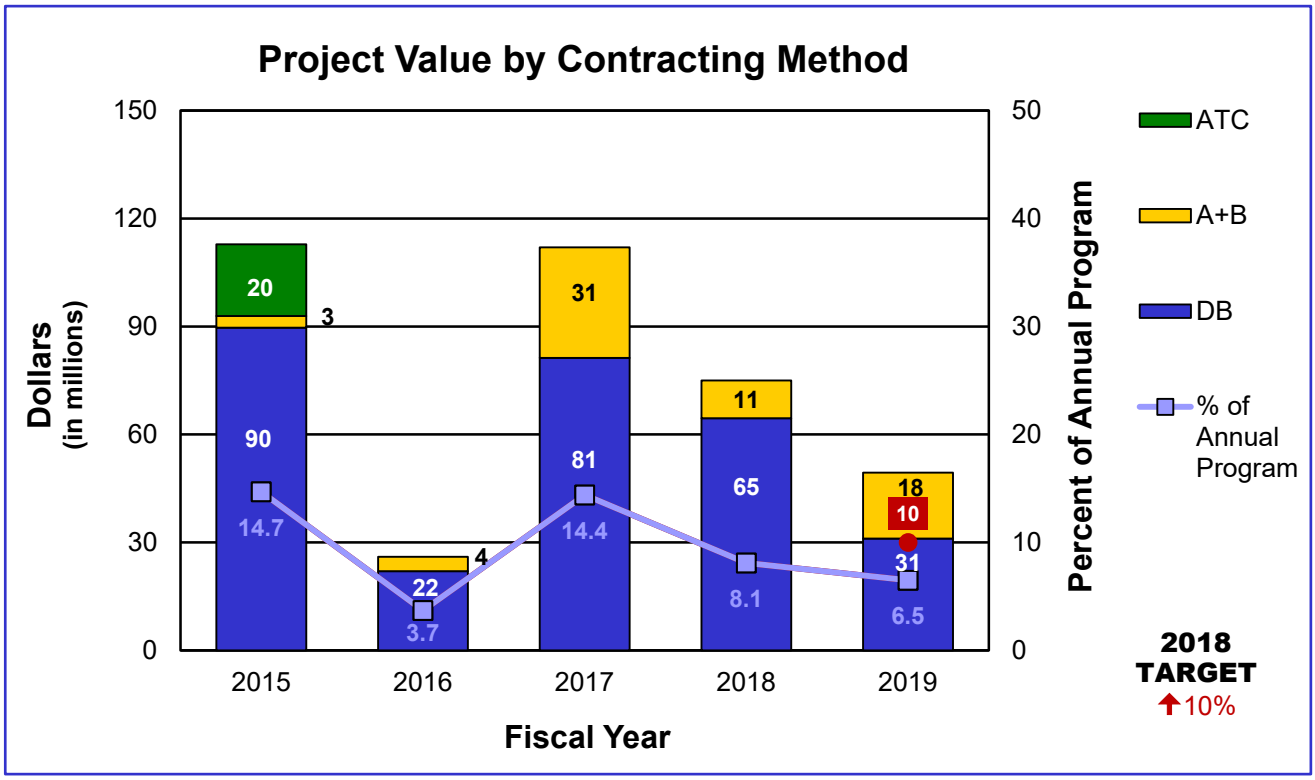
MoDOT has delivered more than $1.7 billion in Design-build projects that have saved taxpayers over $277 million. When combined, these projects were completed more than 74 months ahead of schedule. MoDOT partners with the public and private sectors to deliver projects that maximize available resources into collaborative solutions that achieve goals. This effort challenges the way projects are delivered with innovation, speed and efficiency as driving forces. MoDOT pushes the boundaries to execute projects using innovative data-driven processes and a wide range of partnerships.

MoDOT evaluates project risks such as size (cost), type (preservation, rehabilitation or reconstruction) and complexity (opportunity for innovation and speed) when determining project delivery methods. The advantages of MoDOT's innovative contracting methods are as follows:

- DB contracts include design and construction under one contract, procured using a two-phased selection process. MoDOT scores proposals using a best-value or "build-to-budget" selection.
- Cost-plus-time bidding (A+B) aims to expedite project completion through competitive bidding on construction time (days).
- Alternate Technical Concepts give the contractor the opportunity to provide a more cost-effective alternative design prior to the bid. ATC discussions are held in a confidential environment which maximizes competitive bidding. The low bid is awarded the contract.

Based on the 2019 STIP, MoDOT delivered three out of 434 projects statewide using innovative contracting methods. One was delivered using Design-build and two were delivered using the A+B process. The DB project accounted for $31.1 million and the two A+B projects accounted for $18.3 million of the $758.6 million programmed budget (6.5 percent). The target of two projects per year was met, but the percentage of programmed STIP dollars awarded was below the 10 percent target. MoDOT will continue to look for opportunities to further develop the innovative project delivery program as part of the FOCUS strategic initiative.

Develop Innovative Program Delivery



Develop Innovative Program Delivery

Value Engineering

SERVICE CHAMPION:
Eric Schroeter, Assistant Chief Engineer

PROJECT MANAGER:
Kenny Voss, Assistant State Design Engineer

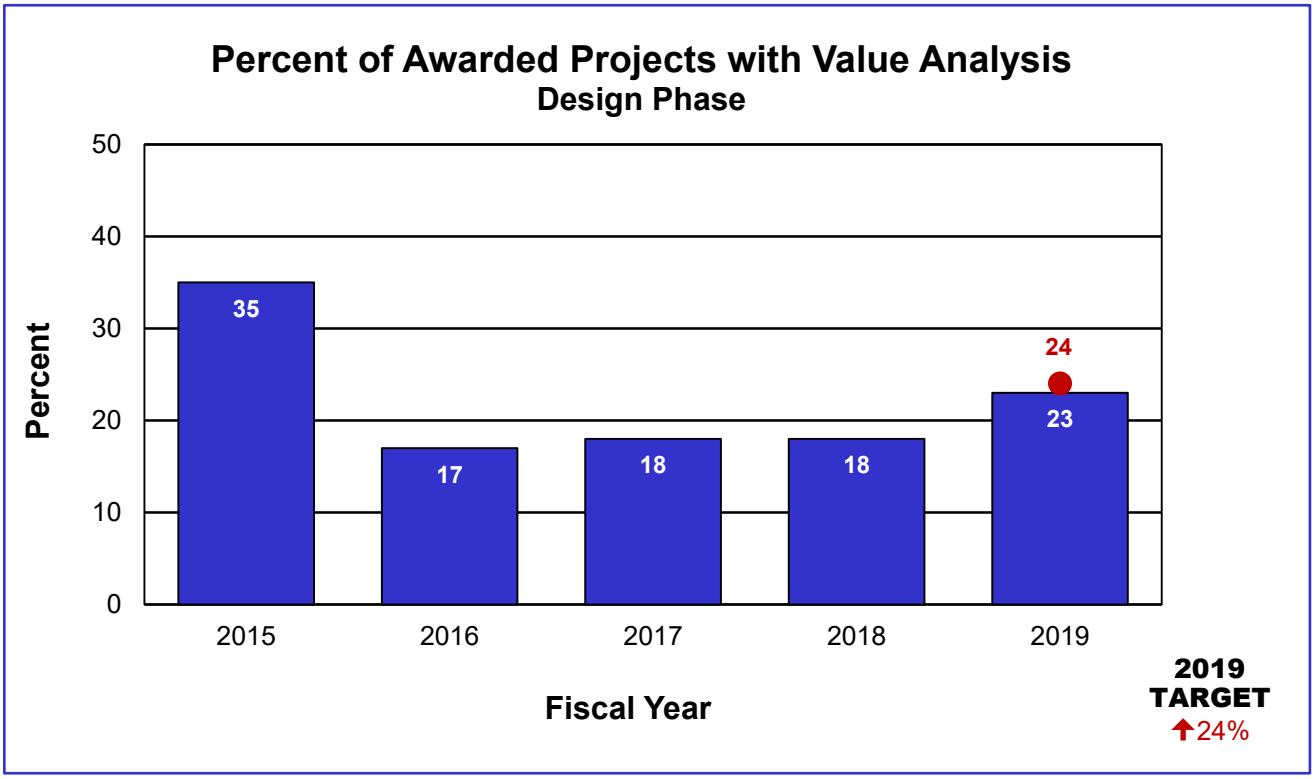
PURPOSE OF THE PROJECT:
The goal of value engineering is to build the right project at the right time, meeting the project need with the appropriate project scope. MoDOT uses the VE program to ensure the public receives great value for every tax dollar invested in Missouri's transportation system. MoDOT has been increasingly focused on smaller, maintenance-type projects that are not traditionally targeted by the VE program. Still, MoDOT must be innovative in using the VE process to search for solutions to reduce project costs and provide additional value.

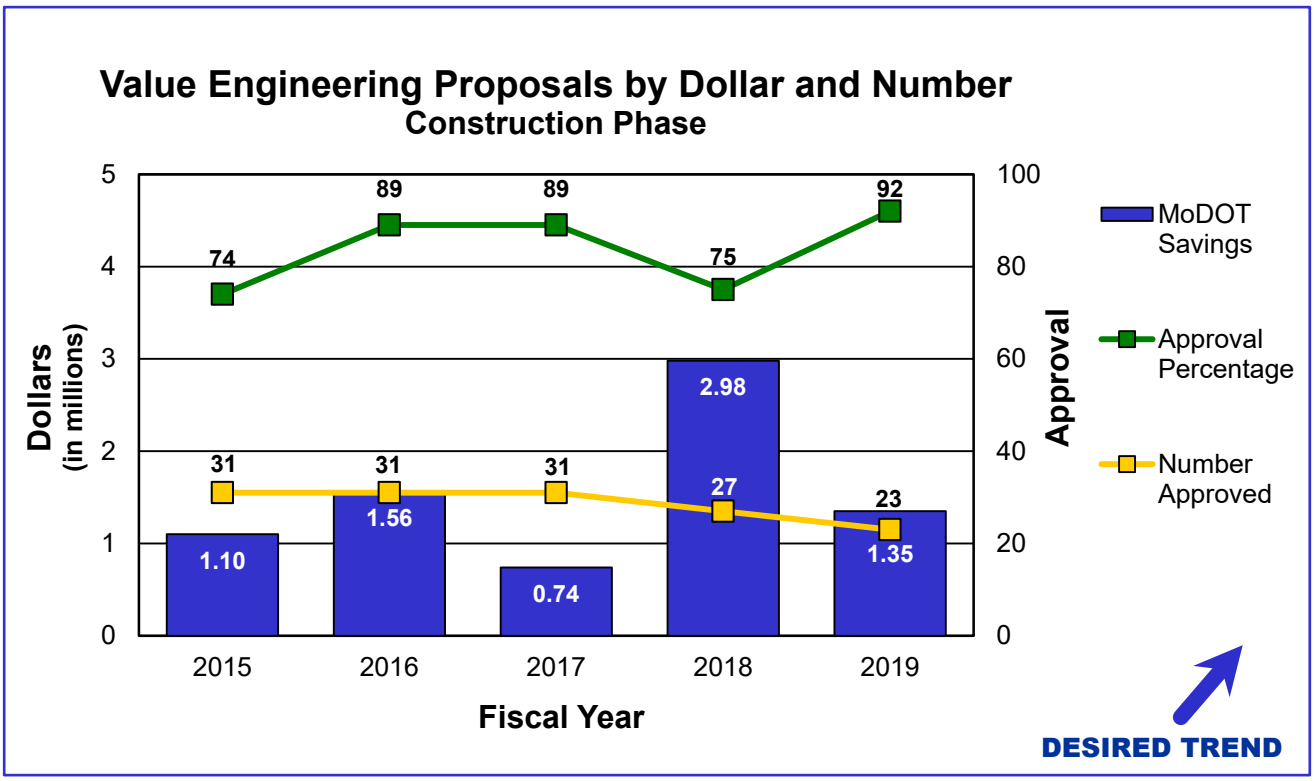
MoDOT uses design-phase value analysis to remove unnecessary scope, reduce project costs and improve project flexibility. For fiscal year 2019, 42 percent of applicable projects underwent some form of value analysis during design, which is currently above the 26 percent target for design-phase value analyses. Value engineering is an important strategic FOCUS initiative and MoDOT is committed to adding value and identifying savings in every project possible.

MoDOT partners with industry to find more cost-effective solutions during the construction phase. Value Engineering Change Proposals (VECP) engages contractor ideas to deliver improved projects. The number of approved VECPs dropped from 85 in FY 2010 to 31 in FY 2017. During this period, MoDOT savings dropped from $8.97 million to $740,000. Key impediments to VECP approvals are owner resistance, time for approval, lack of leadership support and at-risk costs to VECP development. To reverse this trend and counter these impediments, MoDOT partnered with CMT to pilot the Post-Award Value Engineering (PAVE) program initiative. Six projects were selected for the pilot resulting in 16 approved VECP's, totaling $1.225 million in net approved cost savings. Based on the success of the pilot, MoDOT has decided to implement the PAVE process as a statewide program. This initiative has been submitted for institutionalization into MoDOT policy with an anticipated effective date of July 2019.

For FY 2019, 23 VECPs were approved resulting in a MoDOT savings of $1.35 million. This represents a 92 percent approval rate. Three PAVE workshops have been held in two districts this fiscal year.

Develop Innovative Program Delivery





Fleet and Facilities Optimization Strategy Implementation

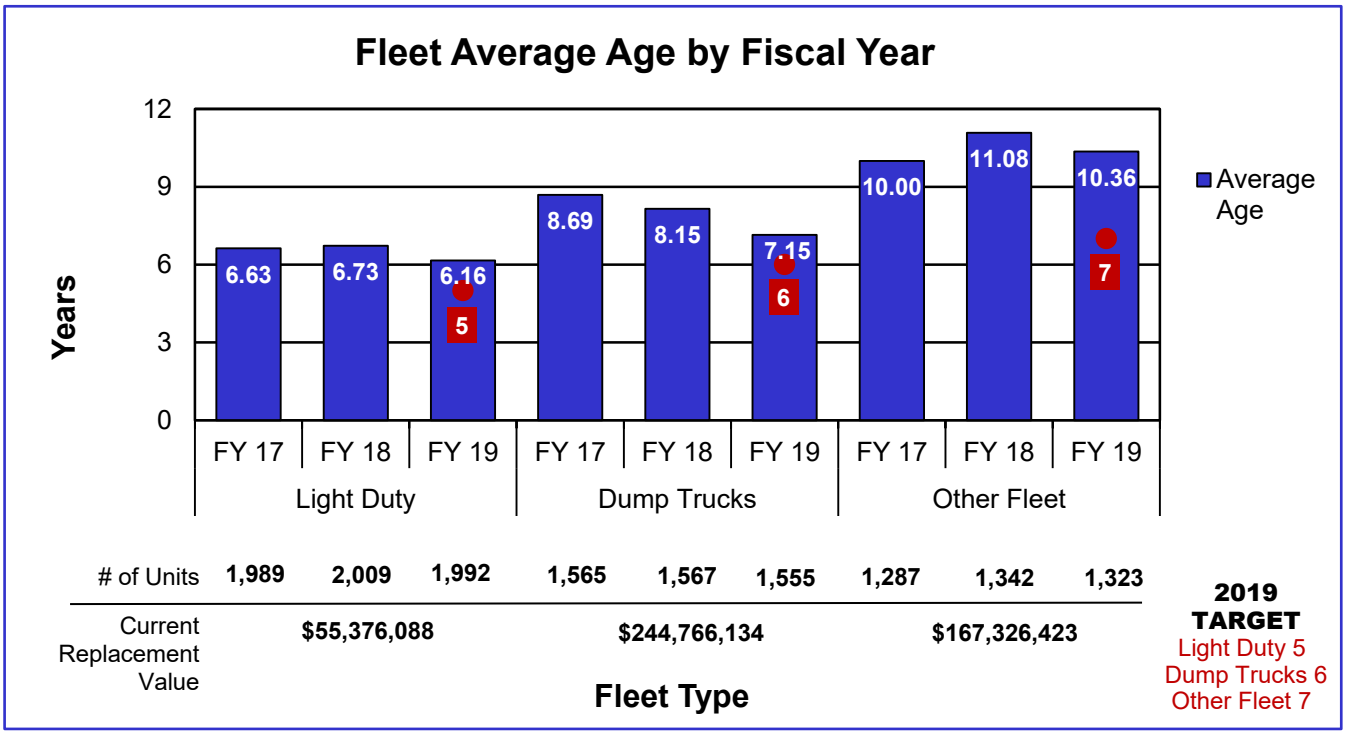
Fleet Optimization

SERVICE CHAMPION:
Eric Schroeter, Assistant Chief Engineer

PROJECT MANAGER:
Amy Niederhelm, Central Office General Services Manager

PURPOSE OF THE PROJECT:
MoDOT must keep a dependable fleet to meet customer's needs. The fleet age is the best indication of fleet condition. The large investment in fleet, with a replacement value over $475 million, emphasizes the importance. MoDOT is moving toward an asset management approach for fleet using data to plan fleet purchases over the next several years.

In FY 2019, the average age for Light Duty fleet, Dump Truck fleet and Other fleet (includes equipment such as backhoes, loaders, tractors and specialty items like under bridge inspection units and stripers) shows gradual decreases. This is attributed to purchasing equipment based on the asset management approach. The goal is for the average age to be half the department's age threshold.



Fleet and Facilities Optimization Strategy Implementation

Facilities Optimization

SERVICE CHAMPION:
Eric Schroeter, Assistant Chief Engineer

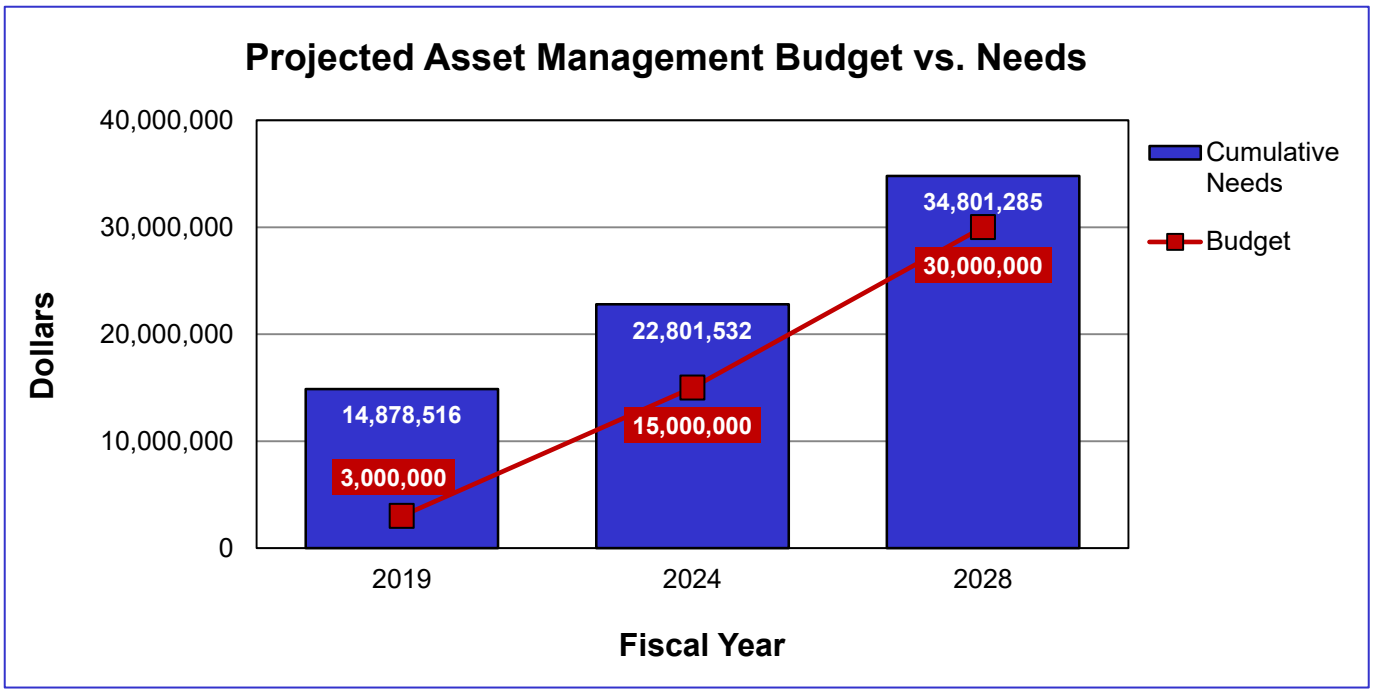
PROJECT MANAGER:
Levi Woods, Central Office General Services Manager

PURPOSE OF THE PROJECT:
Facilities Optimization provides a similar asset management process for MoDOT facilities as is used by the Department for roadways. Like the Statewide Transportation Improvement Program, MoDOT facilities assets are placed into a rolling five-year budget based on needs. Facilities are currently funded at $7.2 million annually for Capital Improvement and Asset Management purposes. The charts depict MoDOT's progress toward meeting our goal of having facilities that meet minimum needs and the systems maintained which keep the facility operational.

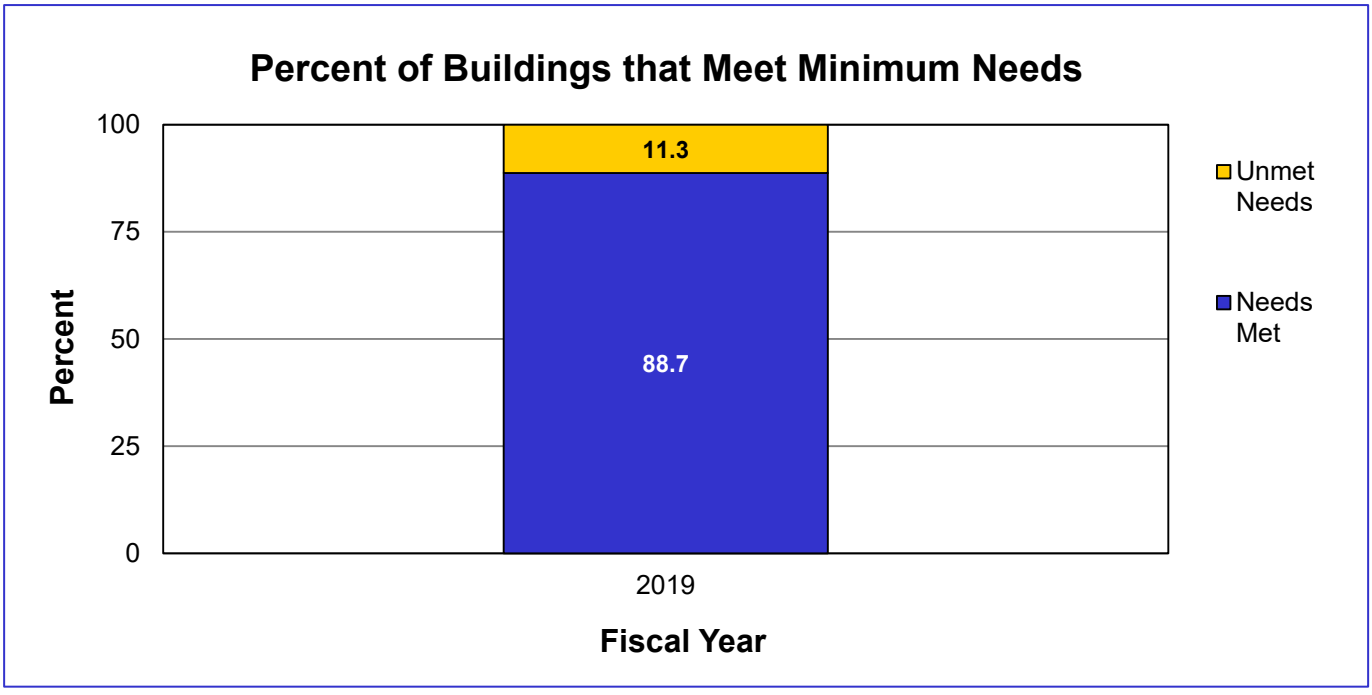
Facilities staff utilizes Vanderweil Facility Advisor, a computer-based program, to inventory, with age and condition of all buildings and improvements. Individual systems within the building are inventoried, with all units having a specified lifecycle. Based on actual annual inspections, the asset's lifecycle is determined to be either due for early replacement, replace at end of calculated life, or the lifecycle can be extended based on actual observed conditions. These options allow MoDOT the flexibility to optimize and maximize the useful life of each asset.

Facilities Asset Management and the Long Term Facilities Plan are currently funded at $7.2 million annually. In 2014, the Long Term Facilities Planning Team recognized in order to operate, facilities have many necessities including space for mechanics to work inside during inclement weather, adequate restrooms for employees, sufficient meeting space for muster sessions and cold storage for operational supplies and equipment. Due to ever changing conditions at MoDOT facilities, the Long Term Facilities Planning Team reviews the needs and allocation of funds for each program on an annual basis. Funds are then allocated to the Capital Asset Preservation Plan (CAPP or Asset Management) and the Long Term Facilities Plan (Capital Improvement Plan- CIP). The $7.2 million budget is allocated based on needs with $6.85 million allocated to the CAPP and CIP Plans, with the remaining funds available for asset management of weigh scales, rest area/welcome centers, and design consultants.

Fleet and Facilities Optimization Strategy Implementation



Note: Budget of $3 million annually over 10 year period.



STABILITY

Preserve and operate a reliable transportation system with an engaged workforce

- **Increase Employee Engagement and Recognition**
  - Pay Plan
  - Training and Certifications
  - Evaluate Job Descriptions
  - Leadership Coins
  - Succession Planning
- **Research and Deploy Alternative Funding Solutions**
  - Cross-cabinet Collaboration
- **Leverage Innovations to Reduce Costs and Improve Service Quality**
- **Cost Share Program with Local Government Statewide**

Increase Employee Engagement and Recognition

Employee Engagement and Cost of Turnover

STABILITY CHAMPION:
Lester Woods, Chief Administrative Officer

PROJECT MANAGER:
Paul Imhoff, Special Projects Coordinator

PURPOSE OF THE PROJECT:
Employee turnover not only has a direct impact on MoDOT's ability to preserve and operate a reliable transportation system, but also is a reflection of the level of employee engagement within MoDOT. Increasing employee engagement and reducing turnover and its subsequent costs are prudent goals toward organizational stability and a wise use of taxpayer dollars.

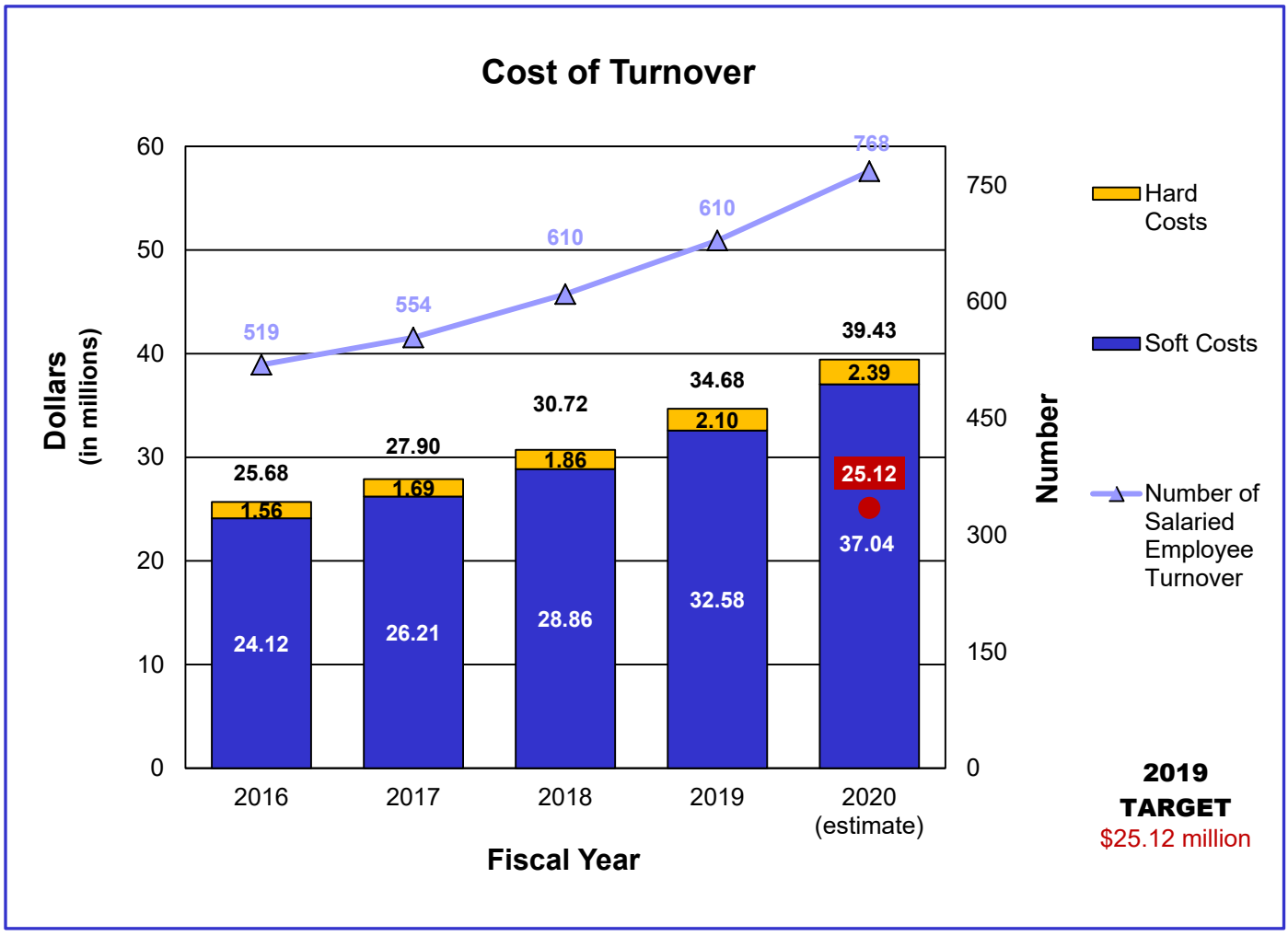
For first quarter of fiscal year 2020, MoDOT turned over 192 employees. This places MoDOT on track to turn over 768 employee in FY 2020. Applying a Society for Human Resources Management turnover cost calculator to these estimates, we can anticipate the hard cost of backfilling positions to be $2.4 million for FY 2020. For the same period, the soft cost of turnover is estimated to be $37.04 million. This total of $39.44 million would be a 13.7 percent increase over FY 2019 total turnover cost..

Efforts to improve the stability of MoDOT by increasing employee engagement are underway.

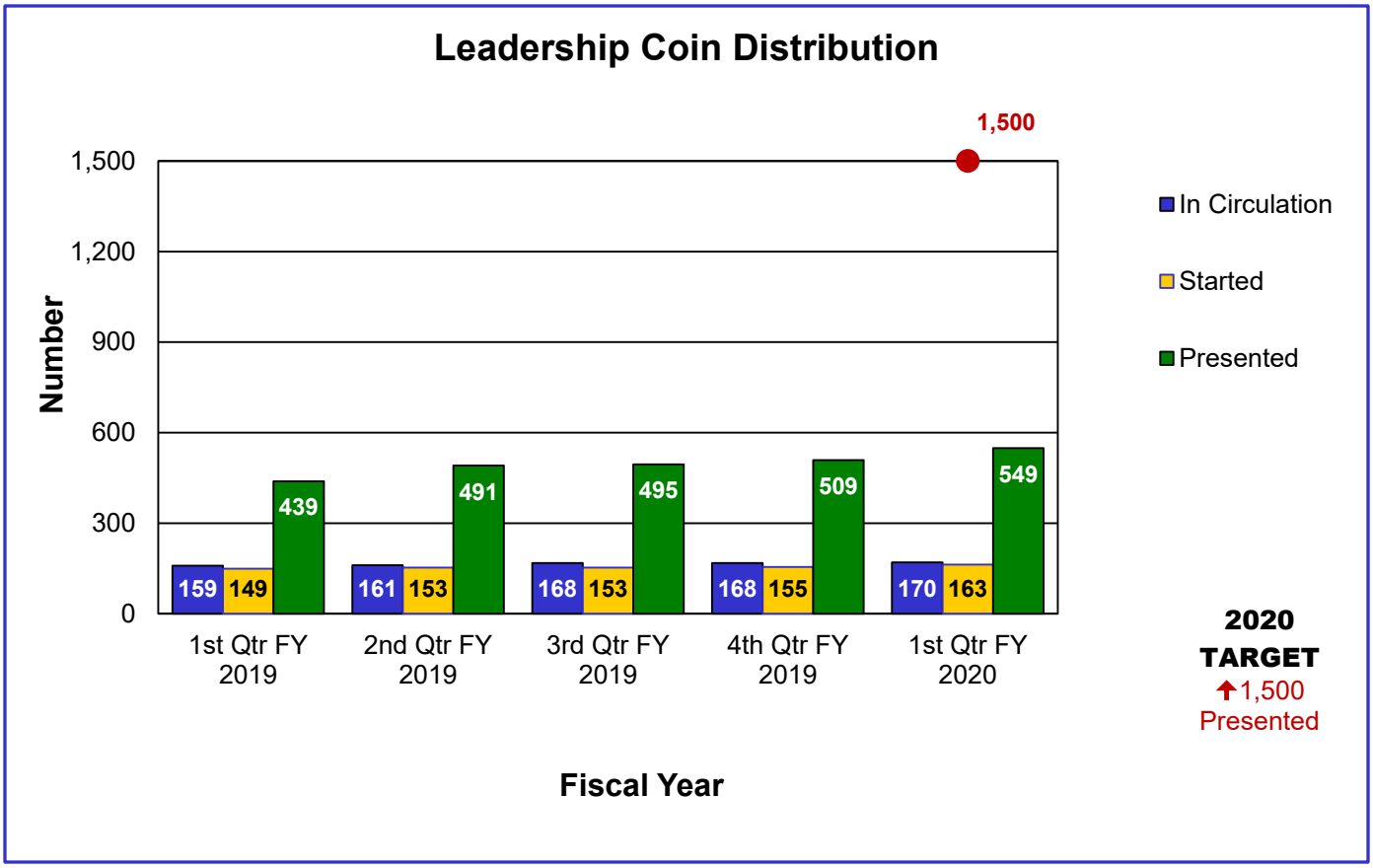
- **Pay Plan:** For fiscal year 2020, the Legislature has approved a pay plan that would effectively complete the first three years of the MoDOT pay strategy by providing a 1.1 percent cost of living increase, plus a two-step increase for salaried employees on steps 1-8 of their salary range, and a one-step increase for employees on step 9-17 of their range. Every salaried employee will receive at least a 3 percent increase.
- **Training and Certifications:**
    - **Registered Apprenticeship Program**: The registered apprenticeship program is officially open for enrollment. The current emphasis is on helping people get enrolled in both the Department of Labor and Veteran's Affairs programs. Also, a focused effort is underway to partner with the Department of Economic Development's Workforce Development Division to enhance MoDOT's recruitment efforts and develop partnerships with Missouri colleges and universities to grant college credit for employees who complete registered apprenticeships with MoDOT. There are currently six employees enrolled in the program.
- **Leadership Coins:** The Leadership in Action recognition coin passing program has been in effect since September 2017. The purpose of the program is for coin holders to look for leaders within MoDOT who are actively demonstrating MoDOT's Values and/or moving MoDOT forward in the areas of Safety, Service or Stability. Each coin will be passed ten times and will be subsequently retired. There are currently 170 coins in circulation that have been presented 549 times. Five coins have been retired.

Increase Employee Engagement and Recognition

- **Succession Planning:** Substantive changes have been made to the executive level organizational structure with the addition of the Chief Administrative Officer and Chief Safety and Operations Officer roles. Additionally, position have been added to staff an Assistant to the Chief Administrative Officer – Employee Health and Wellness, and an Assistant to the Chief Safety and Operations Officer – Safety and Emergency Management
- **Evaluate Job Descriptions:** This is the next phase of the Succession Planning process to begin in the second quarter of FY20.



Increase Employee Engagement and Recognition



Research and Deploy Alternative Funding Solutions

Cross-Cabinet Collaboration

STABILITY CHAMPION:
Lester Woods, Chief Administrative Officer

PROJECT MANAGER:
Liz Prestwood, Policy/Innovation Program Manager

PURPOSE OF THE PROJECT:
The current Missouri vehicle registration fee is based on taxable horsepower, an archaic measure which bears no correlation with vehicle power, vehicle weight, or impact caused on infrastructure. Missouri is the only state using taxable horsepower to assess vehicle registration fees.

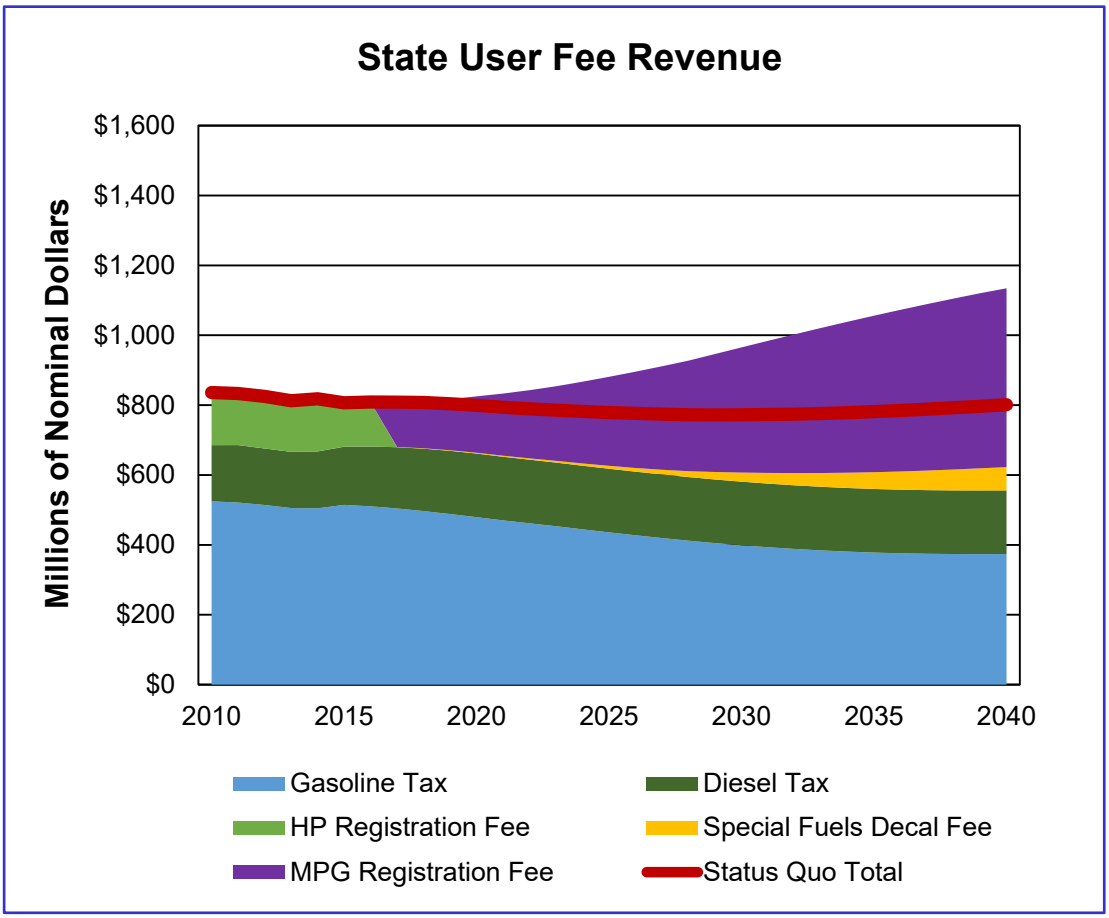
Missouri has been the recipient of three consecutive Surface Transportation System Funding Alternative (STSFA) federal grants totaling $4,805,000. The first award was to perform pre-deployment activities for concept feasibility in the amount of $250,000. Phase two award provided $2,772,500 and is being used to determine existing system capabilities for implementation and further investigates the impacts to Missouri residents through a Highway Cost Allocation and Revenue Attribution Study (HCARAS) and Rural Urban Transportation Funding Analysis. In 2019 MoDOT received a third STSFA award in the amount of $1,782,500 for the design and implementation of an MPG based registration fee.

The initial work and deliverables from the Department's STSFA activities modeled how an MPG-based fee could be used to supplement and or replace the current registration fee schedule. The project team began work with Missouri Department of Revenue (DOR) in 2018 to explore existing system capabilities to collect this type of fee and identify gaps. This DOR-led study concluded in January 2019. The consultant presented five options of varying cost to implement an MPG-based fee structure. This cross-cabinet effort is ongoing and the preferred implementation option has not been selected. Legislation has been filed in the 2019 Missouri General Assembly to support this MPG-based registration fee.

Two additional studies are underway to fully understand impacts of an MPG based registration fee. A revenue study will determine the typical impacts (per year, per mile, per driver etc.) of highway use and will provide a quantitative basis for the fees attributed to non-gasoline and non-diesel vehicles. The second study currently underway will analyze fees paid by rural and urban drivers under the proposed MPG-based registration fee system, considering the commuting behaviors and vehicle characteritics of highway users statewide.

The principal project goals are to generate revenue consistent with technological trends in the motor vehicle market and to ensure privacy and security for Missouri drivers while utilizing current adaptable technologies to collect and administer the fee.

Research and Deploy Alternative Funding Solutions



Leverage Innovations to Reduce Costs and Improve Service Quality

Innovations Challenge Submissions and Best Practices

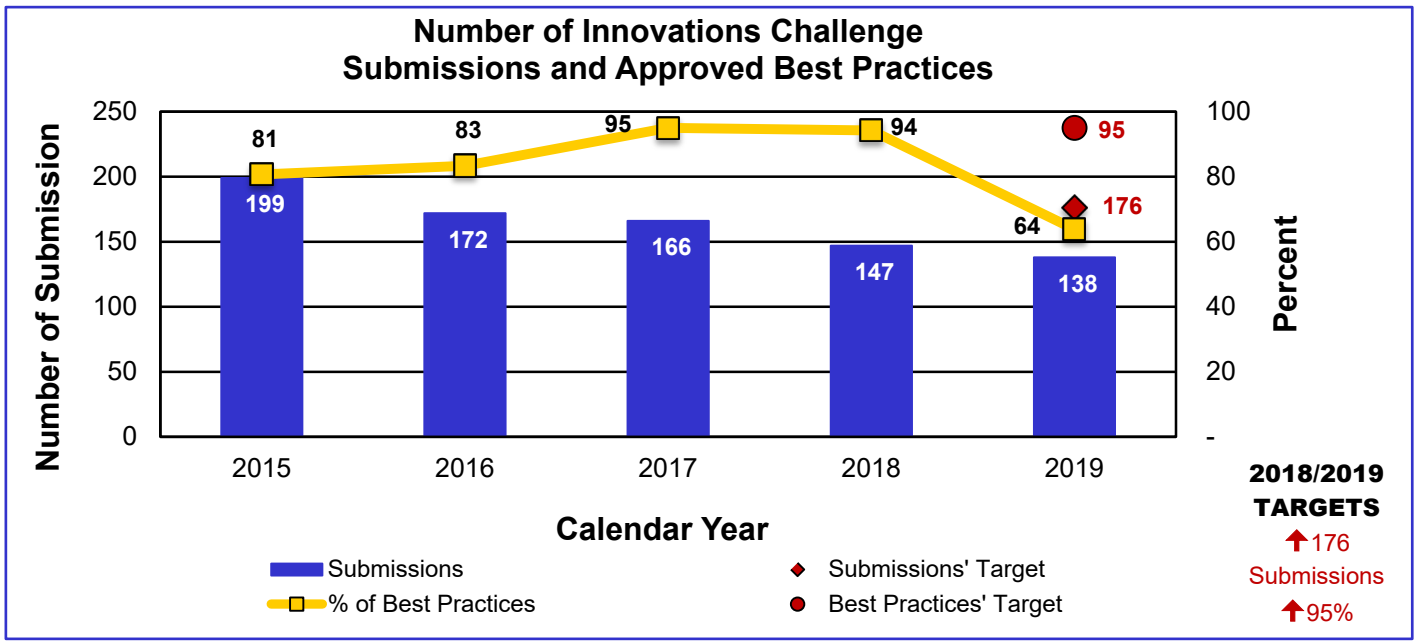
STABILITY CHAMPION:
Lester Woods, Chief Administrative Officer

PROJECT MANAGER:
Kelly Backues, Transportation Planning Specialist

PURPOSE OF THE PROJECT:
Preserving and operating a reliable transportation system takes an engaged workforce. MoDOT's Innovations Challenge program provides employees opportunity and recognition for their efforts to leverage innovations so the department may reduce costs and improve service quality.

The percent of approved best practices fell to an all-time low of 64 percent in 2019 with 37 of the 58 showcase innovations making the best practices list. The decrease in percent is attributed to innovations being held for further studied by the Highway Safety and Traffic Division before they can be added to the best practice list, as well as work-specific innovations that are not transferable statewide. As the innovations being studied become approved, they can be added to the statewide best practices list.

The redesigned Innovations Challenge SharePoint site continues to serve as a great resource to MoDOT employees with easy to find documents and best practices database, as well as prior year virtual showcase videos. The statewide distribution of funds process to implement best practices was approved for the second year in a row, and 13 maintenance-related innovations were allotted funds to implement them statewide. Continuing the distribution of funds to implement best practices will continue to enhance the program's participation.



Leverage Innovations to Reduce Costs and Improve Service Quality

Number of submissions by location:

Location	Total 2018	Total 2017	Change +/-	Percentage Change +/-
Northwest District	13	13	0	0%
Northeast District	20	19	1	5%
Kansas City District	14	29	-15	-52%
Central District	11	22	-11	-50%
St. Louis District	17	7	10	142%
Southwest District	21	28	-7	-25%
Southeast District	20	25	-5	-25%
Central Office	31	23	8	35%
Total Submissions	**147**	**166**	**-6**	**-11%**

2019 Approved Best Practices

- Auger Quick Connect* (SW)
- Board Position Indicator* (SW)
- Bridge Definition Summary Form (SW)
- Collapsible Stop Slow Paddle* (KC)
- Commercial Motor Vehicle Awareness (MCS)
- Cone Handle* (SW)
- Crash Prediction Tool (TP)
- High Friction Surface Treatment (CM)
- Divergabout (KC)
- Drive (SL)
- Electronic Inventory Count System (FS)
- eProjects Training Videos (DE)
- Gore Rumbles (KC)
- Hydraulic Hose Safety Chain* (NE)
- Impact Attenuator Reflectivity (SL)
- Lane Mile Calculator (KC)
- Lug Nut Indicators* (SW)
- Mobile Orbiting Sign Trailer (SW)
- Online E11 Form (KC)
- Panic Light Confirmation* (NW)
- Reflective Tab Replacement Tool* (NW)
- Reverse Guardrail Sprayer* (CD)
- School Bus Stop Ahead Sign (NW)
- Signal Timing Calculator (NW)
- Signal Warrants Analyzer (NW)
- Sign Post Foam (SW)
- Solar Gore Point Warning Flasher (KC)
- STIP Checker (NW)
- Tailgate Lever* (NE)
- Tie Down Bar* (NE)
- TMA Bed Pin Holders* (SE)
- Vacuum Breaker* (NW)
- Virtual Pre-Bid Meeting (DE)

* Indicates maintenance funds allocated to districts to implement the best practice.

Details on these innovations can be found at: http://sp/sites/tp/planpol/SitePages/PriorSubmissions.aspx

Cost Share Program with Local Government Statewide

Local Entity Cash Leveraged for Cost Share Program

STABILITY CHAMPION:
Lester Woods, Chief Administrative Officer

PROJECT MANAGER:
Todd Grosvenor, Assistant Financial Services Director

PURPOSE OF THE PROJECT:
The Cost Share Program builds partnerships with local entities to pool efforts and resources to deliver state highway and bridge projects. When local entities are willing to partner with MoDOT, MoDOT matches their investment up to 50 percent of the project cost. MoDOT works in cooperation with the Department of Economic Development with local entities to determine when targeted investments can be made to create jobs and may provide up to 100 percent of the project cost.

On Jan. 8, 2014, the Missouri Highways and Transportation Commission suspended the Cost Share Program due to declining transportation funding.

On Jan. 4, 2017, the Missouri Highways and Transportation Commission reactivated the Cost Share Program for FY 2018. As of the first quarter of FY 2019, Cost Share Program funds totaling $9.1 million were approved for six projects. For every $1 of Cost Share Program funds, local entities provided $1.59 of cash, which is $0.59 above the target.