

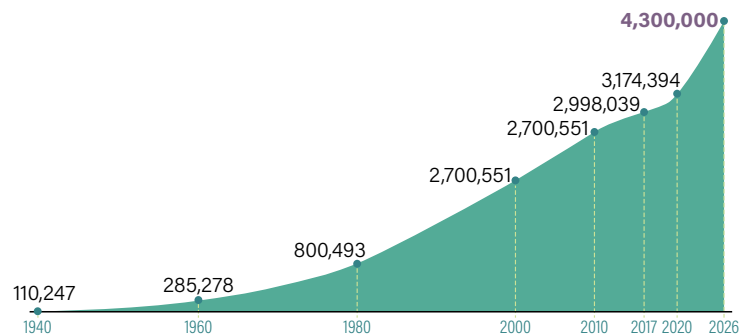
WHY TSMO



POPULATIONS

CURRENT CHALLENGES

- ↑ **133%** 1990—2008, fastest growing State in the nation.
- 3 Million** Population in 2018, fastest growing in the nation based on U.S. Census Bureau.
- 4.3 Million** Projected population by 2026



NEED:

- ◀ Increase in demand, congestion, and delay
- ◀ Reduction of capacity, transportation safety, and reliability

TSMO'S CONTRIBUTION

BENEFIT:

Implement solutions on existing roadways and collaborate within NDOT to include TSMO strategies such as Traffic Incident Management, Work Zone Management, Special Event Management, and Road Weather Management as well as the design of new infrastructure that can increase efficiency, reduce congestion and crashes, and increase the reliability of NDOT roadways to help to accommodate this growing population.

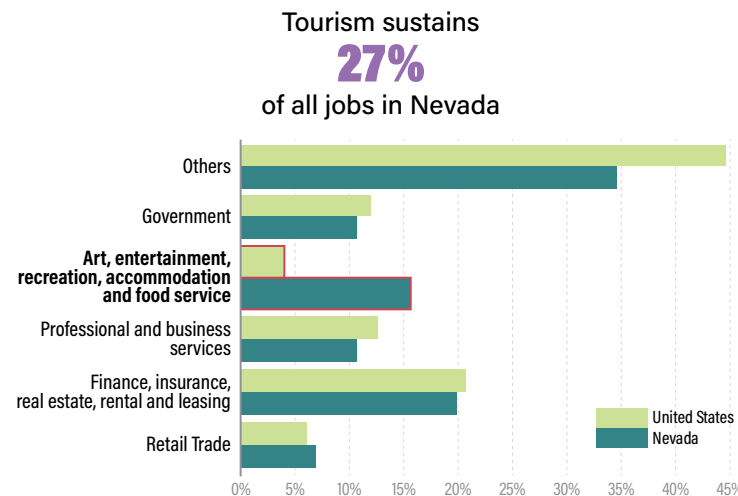
Ohio—Kentucky—Indiana Regional Council of Governments benefits from TSMO strategies:

- ◀ Advanced Regional Traffic Interactive Management and Information System (ARTIMIS) program yielded a benefit of 12:1, while the capacity-adding project would have had a benefit of only 1.1:1.
- ◀ Additionally, the ARTIMIS program cost was 1/20 the cost of the capacity-adding project.

TOURISM-BASED ECONOMY

CURRENT CHALLENGES

Service sector employs about **half of Nevada's workers**



NEED:

- ◀ NDOT must provide, maintain, and operate a safe, reliable, and efficient transportation network for its workers and tourists

TSMO'S CONTRIBUTION

BENEFIT:

Easily implementable and cost-effective TSMO strategies such as real-time traffic information to plan efficient and reliable work trips, encouraging ridership on public transportation to reduce the number of vehicles on the road, and providing safe alternatives such as pedestrian and bicycle paths will help to reduce congestion and subsequent crashes.

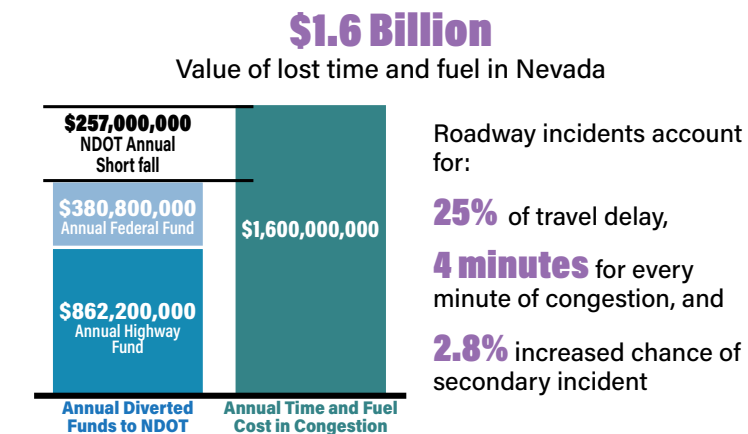
The Colorado DOT benefits from TSMO strategies such as the Freeway Service Patrol, I-70 Peak Period Shoulder Lane, and Colorado Bottleneck Reduction Alternatives (COBRA) Project. These projects have:

- ◀ High benefit-cost ratios typically 10:1 and as much as 40:1
- ◀ Readily implementable in less time (usually within 12 months) and for less money than adding lanes
- ◀ Highly visible, many times but not always, and noticeable improvements
- ◀ Quantifiable reduction in delay and improvement in travel time reliability
- ◀ Measurable safety-related improvements
- ◀ Improvements that continue to provide value even when long-term construction projects are completed

CONGESTION AND ASSOCIATED COSTS

CURRENT CHALLENGES

- ↑ **\$121 B** In wasted time and fuel cost in U.S. per year.
- \$1,400 & 60 hrs** Cost of congestion to average driver in Nevada annually.



NEED:

- ◀ Wasted time and vehicle operating costs
- ◀ Hundreds of lost lives
- ◀ Increased chance of secondary incidents

TSMO'S CONTRIBUTION

BENEFIT:

TSMO focuses on easily implementable and cost-effective solutions that have measurable benefits to existing roadways and maximizes the efficiency of new infrastructure. Solutions such as Traffic Responsive Freeway Ramp Metering can decrease delay and improve trip reliability, which in turn reduces traffic crashes.

The Pennsylvania DOT benefits from TSMO strategies:

- ◀ Incident Response Management reduced incident response times by 8.7 minutes, incident clearance times by 8.3 minutes, and hours of delay by 547,000 hours per year, with a total monetary savings of \$6.5 million per year.

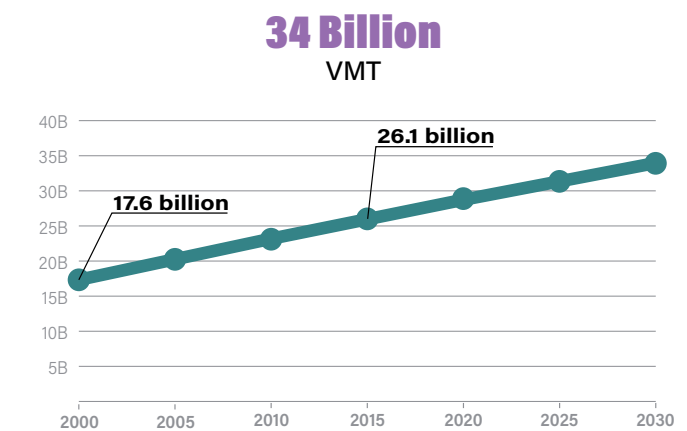
Nevada WayCare Project:

- ◀ The WayCare Project reduced congestion and incident response times by leveraging real-time predictive analytics to identify high-risk incident locations. Therefore agencies such as NDOT, DPS-NHP, and RTC FAST can now take proactive preventative measures accordingly.

VEHICLE MILES TRAVELED (VMT)

CURRENT CHALLENGES

- ↑ **48%** From 17.6 billion in 2000 to 26.1 billion in 2015
- Projected increase of **30%** by the year 2030 to:



NEED:

- ◀ With VMT demand increasing at rapid rate, the need for efficient and reliable roads to accommodate this demand is paramount.

TSMO'S CONTRIBUTION

BENEFIT:

Improvements to non-motorized facilities (pedestrian and bicycle paths) to reduce the demand on motorized facilities, switching mode choices (bus rider or ride share) to reduce the number of vehicles on the roadway, real-time traffic information to help with trip pre-planning, and trip rerouting due to congestion or incidents will help to make the roadway more efficient and reduce the potential for traffic crashes.

Washington DOT Commute Trip Reduction (CTR) Program:

- ◀ In 2009, WSDOT's CTR program implemented strategies such as encouraging vanpools, carpools, condensed work weeks and telecommuting to help shift commuters out of single-occupancy automobiles and into alternative modes. The program was implemented across the nine most populous counties within the State and is credited with reducing the average daily weekday morning peak-period trips by 28,000, congestion delays by 12,900 hours, annual VMT by 62 million, and fuel consumption by 3 million gallons. This equates to a reduction of approximately 27,500 metric tons of carbon dioxide emissions.

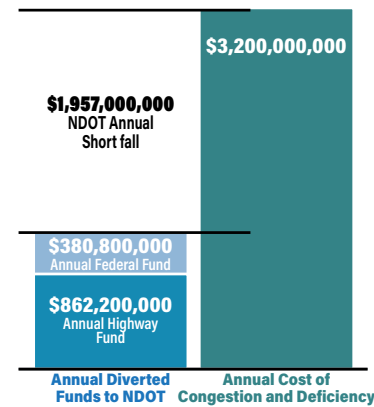
WHY TSMO



DEFICIENT ROADS AND BRIDGES

CURRENT CHALLENGES

\$3.2 Billion Annual cost to Nevada motorists due to inadequate roads.



\$24 M Deficit has been projected in bridge preservation by 2020

NEED:

- ◀ NDOT's yearly operating budget is not sufficient to keep up with operations and maintenance, let alone to keep up with the demands for new infrastructure.

TSMO'S CONTRIBUTION

BENEFIT:

TSMO tries to focus on easily implementable, low-cost, high-return solutions with highly visible results. When these low-cost solutions produce the desired results, it has the potential to save money, which then can be reallocated to help solve more problems.

NDOT I-515/215 Restriping:

- ◀ In 2018, NDOT restriped the I-515/I-215 interchange for the southbound to westbound movement. This solution improved roadway efficiency, delayed the need for major rehabilitation and reconstruction, increased safety, and improved mobility at the cost of approximately \$800,000, which was substantially lower than the cost to rebuild the entire interchange.



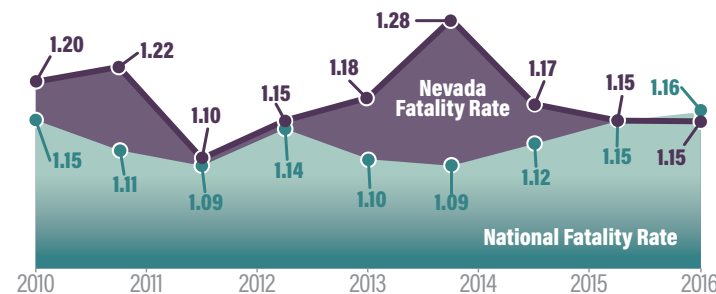
SAFETY

CURRENT CHALLENGES

331 People died in Nevada in 2018.

\$1.9 B Economic cost of traffic crashes in 2017.

\$906 M Annual cost to Nevada motorists from medical costs, lost productivity, etc.



NEED:

- ◀ Traffic crashes have a demonstrable negative effect on the operations of NDOT roadways and cost billions of dollars to the economy.

TSMO'S CONTRIBUTION

BENEFIT:

TSMO focuses on increasing the efficiency of roadways, reducing congestion, and helping to eliminate the causal factors of these crashes. It is most effective on reducing the secondary crashes that are associated with the congestion that results from the primary crash. Through Integrated Statewide Traffic Incident Management Programs and real-time traffic monitoring, these primary crashes can be identified and cleared quickly.

Traffic Incident Management (TIM):

- ◀ Nevada DOT implemented this effective TSMO strategy to more efficiently detect, respond to, and resolve traffic incidents to restore traffic capacity as safely and quickly as possible through planned and coordinated processes between various public agencies and private sectors.



TRUCKS AND FREIGHT MOVEMENT

CURRENT CHALLENGES

The efficiency of the transportation system is critical to the health of the state's economy in Nevada. The key to success is the level of access and convenience for customers and markets.

\$144 Billion

Goods and products are shipped mostly by truck to and from the state of Nevada

73%

of goods and products are carried by trucks annually.

NEED:

- ◀ Negative effect on the economy of Nevada.
- ◀ Delay has a negative effect on the cost of goods and products.

TSMO'S CONTRIBUTION

BENEFIT:

Several TSMO strategies can be implemented to help provide a reliable and efficient roadway system for truckers. Each dollar spent on typical road, highway, and bridge improvements results in an average benefit of \$5.20 in the form of reduced vehicle maintenance costs, reduced delays, reduced fuel consumption, improved safety, reduced road and bridge maintenance costs, and reduced emissions. TSMO strategies are expected to greatly increase this average benefit.

Wyoming Freight:

- ◀ Truckers use a dedicated radio band on SiriusXM Radio that provides them with Real-Time Traffic Information on WYDOT roads. This service increases trip reliability and allows the industry to make informed decisions on their routes.

Smart Truck Parking Systems:

- ◀ These types of real-time systems allow truckers to more efficiently plan their routes and determine where they can safely park and rest between pick-ups and deliveries. The State of Michigan is currently implementing this TSMO strategy with much success throughout the state. To view this parking data from MDOT, please visit [MiDrive](#).



ASSET & PERFORMANCE MANAGEMENT

CURRENT CHALLENGES

NDOT Asset Management Program has identified

\$23 Billion

replacement cost for pavements, bridges, and ITS assets.

Over 20% of state pavements are more than 10 years old

Most of the state bridges have already or will soon exceed their design life of **50 years**

\$1.21 B or approximately 24% of the NDOT's annual budget in preservation activities between 2017 to 2027 to extend the assets' lives

NEED:

- ◀ Cost to maintain is increasing while funding is stagnant.
- ◀ To efficiently maintain infrastructure, NDOT needs to develop a comprehensive database and management strategies to establish priorities.

TSMO'S CONTRIBUTION

BENEFIT:

TSMO strategies will help NDOT to more efficiently spend their limited funds on their aging infrastructure. The benefits of Asset Management include:

- ◀ Improves and embraces decision-making based on long-term life-cycle cost considerations.
- ◀ Allows NDOT to efficiently prioritize maintenance projects.
- ◀ Increases safety and reliability of the transportation system.

NDOT ITS Asset Management Database and Dashboard:

- ◀ NDOT's Traffic Operations developed a comprehensive database of ITS and communication devices. This database provides real-time information on the conditions and performance of ITS assets that helps to efficiently operate NDOT roadways.

NDOT Transportation Asset Management Plan (TAMP):

- ◀ NDOT developed its TAMP that includes pavement, bridge, and ITS assets. It outlines NDOT's planned investments over the next 10 years, placing priority on actively preserving these assets so they continue to operate as efficiently and effectively as possible.