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# Uninterrupted Traffic Flow

*Tangible Result Driver – Don Hillis,  
Director of System Management*

Missouri drivers expect to get to their destinations on time, without delays. Traffic, changes in weather, work zones and highway incidents can all impact their travel. MoDOT works to ensure that motorists travel as efficiently as possible on the state system by better managing work zones, snow removal and highway incidents, and by using the latest technology to inform motorists of possible delays and available options. Better traffic flow means fewer crashes.



## Uninterrupted Traffic Flow

### *Average travel indices and speeds on selected freeway sections*

**Result Driver:** Don Hillis, Director of System Management

**Measurement Driver:** Troy Pinkerton, Traffic Liaison Engineer

**Purpose of the Measure:**

This measure tracks the average travel index values and average speeds on various freeway sections. The desired trend is for the travel index to remain at or near a value of 1.00. A value of 1.00 is representative of a free flow condition. The travel index is directly related to the average speed. The travel index represents the level of congestion by taking into consideration not only average speed but also the traffic volumes. The travel index is calculated according to the following equation:

$$\textit{Travel Index} = \textit{Average speed} / \textit{Free flow speed}$$

Where: Average speeds are taken from sensor data. The free flow speed is constant and is equal to the highest hourly average speed for any hour in that data set.

**Measurement and Data Collection:**

Data from the St. Louis and Kansas City regions are provided by MoDOT's traffic management centers. Information about the St. Louis traffic management center, Gateway Guide, can be found at <http://www.gatewayguide.com> and information about the traffic management center in Kansas City, KC Scout, can be found at <http://www.kcscout.net/>. Data for the St. Louis region is also provided through a partnership with *Traffic.com*. Data for each location is updated quarterly.

**Improvement Status:**

Kansas City metropolitan region:

As shown on the graph, the freeway systems in the Kansas City region are performing in the upper 80 percent during the peak hours as compared to the free flow condition – up just slightly from 0.87 to 0.88 in the morning and down slightly from 0.85 to 0.83 in the evening, for second quarter fiscal year 2008. The average a.m. and p.m. peak travel indices for fiscal year 2007 for this region is 0.92 and 0.90, respectively. Most of the Kansas City region has been free from significant work zone impacts. However, bridgework and resurfacing jobs at the Paseo Bridge are causing some slow downs in the morning commute southbound into downtown. This area should experience some dramatic slow downs over the next few years due to the kcICON bridge replacement project. Likewise, the evening peak along eastbound Interstate 435 prior to the 3-Trails Interchange has experienced increased congestion due to the closing of the northbound Route 71 ramp from eastbound I-435. All ramps have been reopened and the speeds are starting to recover in this area.

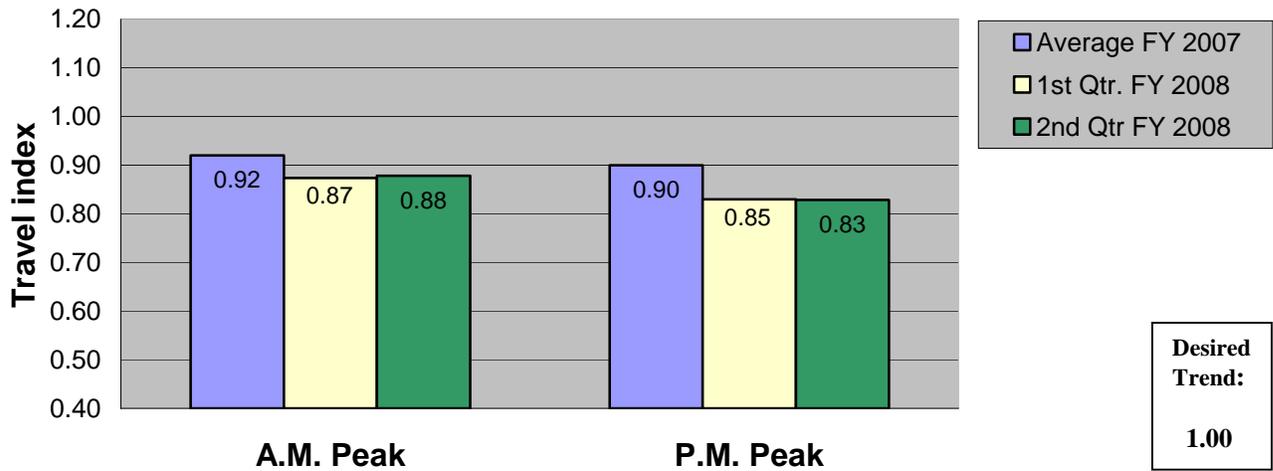
St. Louis metropolitan region:

Data in the St. Louis region continues to show improvements with the current quarter index values approaching very near the free flow value. The St. Louis region continues to focus efforts around preparation for the construction activities for Interstate 64. The upcoming quarter will be the first of four quarters that will be impacted by the close of the western portion of I-64. Additional information on the construction activities along I-64 can be found at [www.thenewi64.org](http://www.thenewi64.org).

Statewide:

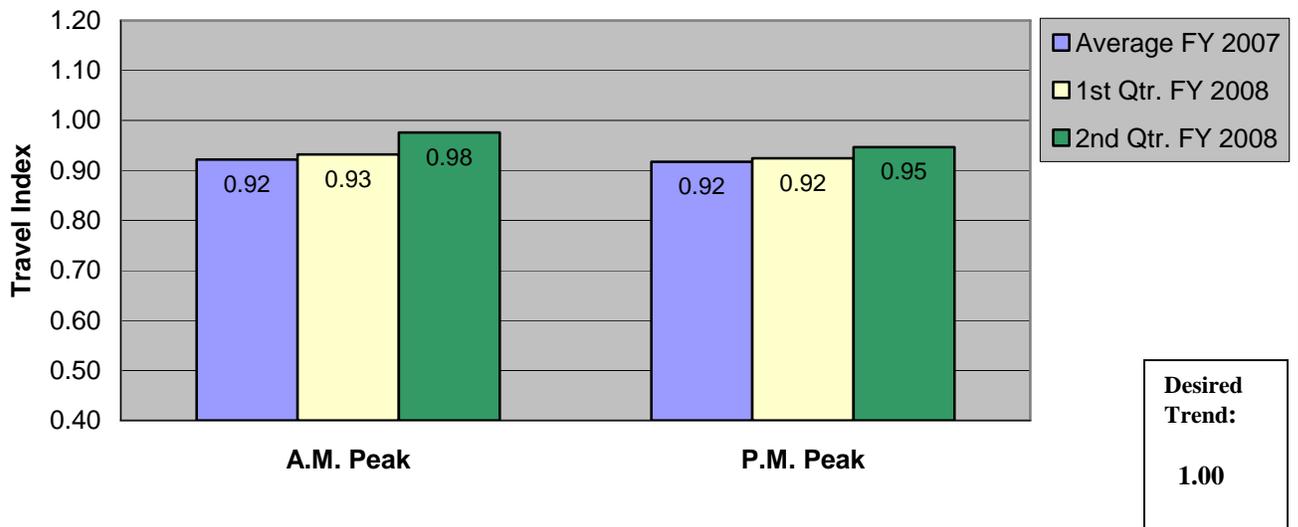
The statewide average speed on rural routes for this quarter is 67.42 mph. Dynamic message sign use has increased to around the clock messaging to remind travelers of safe driving practices as well as how to obtain road condition information. The incident management protocol in the partnership with the Missouri State Highway Patrol was recently improved with respect to sign messaging incident information and notification.

### Travel Index on Selected Freeway Sections Kansas City Metropolitan Averages



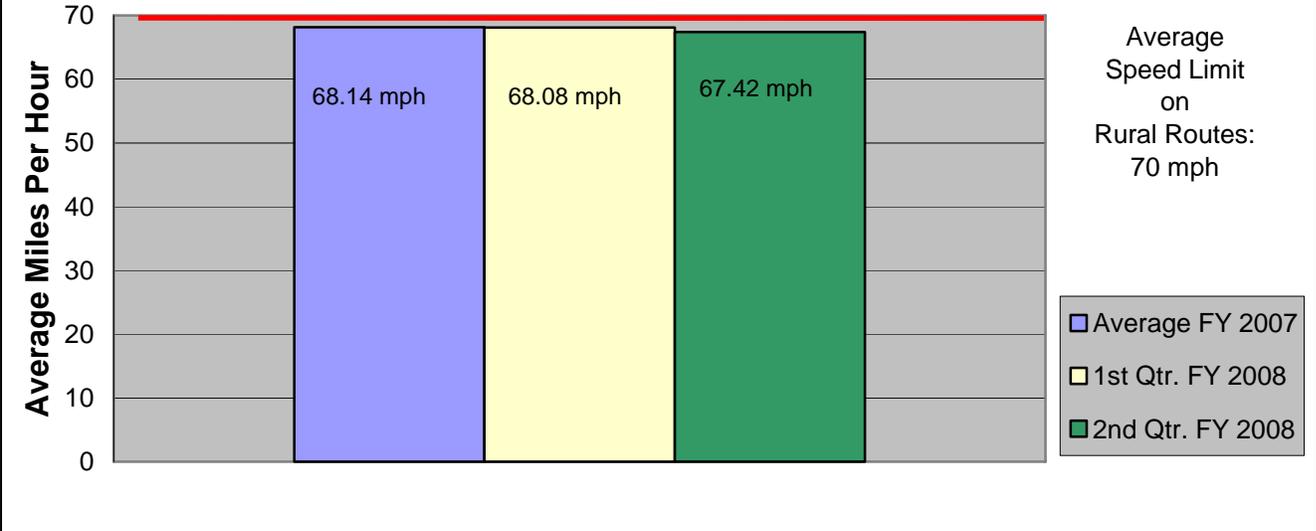
\* The average fiscal year 2007 data is an average of the last two quarters in fiscal year 2007. The 1<sup>st</sup> & 2<sup>nd</sup> quarters of fiscal year 2007 are unavailable.

### Travel Index on Selected Freeway Sections St. Louis Metropolitan Averages



\* The average fiscal year 2007 data is an average of the last two quarters in fiscal year 2007. The 1<sup>st</sup> & 2<sup>nd</sup> quarters of fiscal year 2007 are unavailable.

### Average Travel Speeds on Selected Freeway Sections Statewide Rural Routes



\* The average fiscal year 2007 data is an average of the last two quarters in fiscal year 2007. The 1<sup>st</sup> & 2<sup>nd</sup> quarters of fiscal year 2007 are unavailable.

# Uninterrupted Traffic Flow

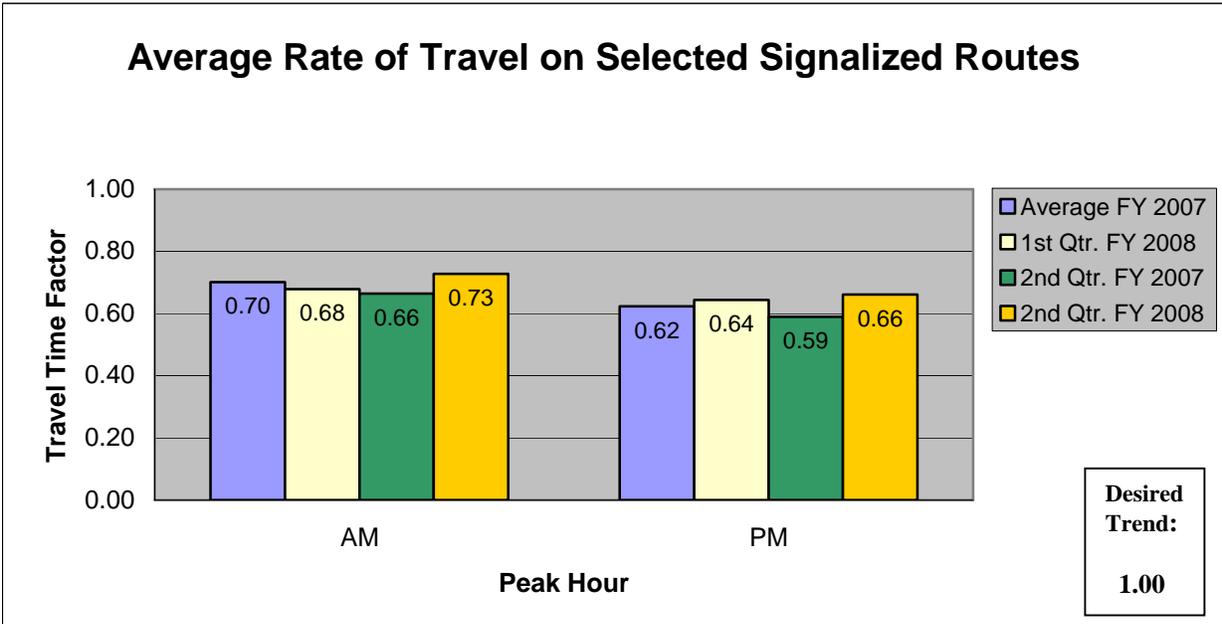
*Average rate of travel on selected signalized routes*

**Result Driver:** Don Hillis, Director of System Management  
**Measurement Driver:** Julie Stotlemeyer, Traffic Liaison Engineer

**Purpose of the Measure:**  
 This measure indicates how well selected arterials across the state are operating during peak traffic times. As improvements are made, such as signal timing or access management, this measure will show the effects of those efforts and decisions on the arterial system.

**Measurement and Data Collection:**  
 Travel times are measured on various arterials. Data is collected from driving each route twice during a.m. and p.m. peak times and timing how long it takes to traverse the route. The travel time is compared to the speed limit and the travel time factor determined. As the travel time factor approaches 1.00, traffic is moving at the speed limit. Data collection began in the second quarter of fiscal year 2007. This is a quarterly measure.

**Improvement Status:**  
 For second quarter fiscal year 2008, the average statewide travel time factor for a.m. peak is 0.73 and p.m. peak is 0.66. Overall performance is 0.69. The a.m. peak travel time is seven percent higher than p.m. peak travel time. Second quarter data shows a.m. and p.m. peaks for arterials operating higher than the average for fiscal year 2007 and first quarter fiscal year 2008.



\* The average FY 2007 data is from the last three quarters in FY 2007. The 1<sup>st</sup> quarter FY 2007 is unavailable.

## Uninterrupted Traffic Flow

### *Average time to clear traffic incident*

**Result Driver:** Don Hillis, Director of System Management

**Measurement Driver:** Rick Bennett, Traffic Liaison Engineer

**Purpose of the Measure:**

This measure is used to determine the trends in incident clearance on the state highway system. A traffic incident is an unplanned event that creates a temporary reduction in the number of vehicles that can travel on the road. The sooner an incident is removed, the sooner the highway system returns to normal capacity. Therefore, responding to and quickly addressing the incidents (crashes, flat tires and stalled vehicles) improves system performance.

**Measurement and Data Collection:**

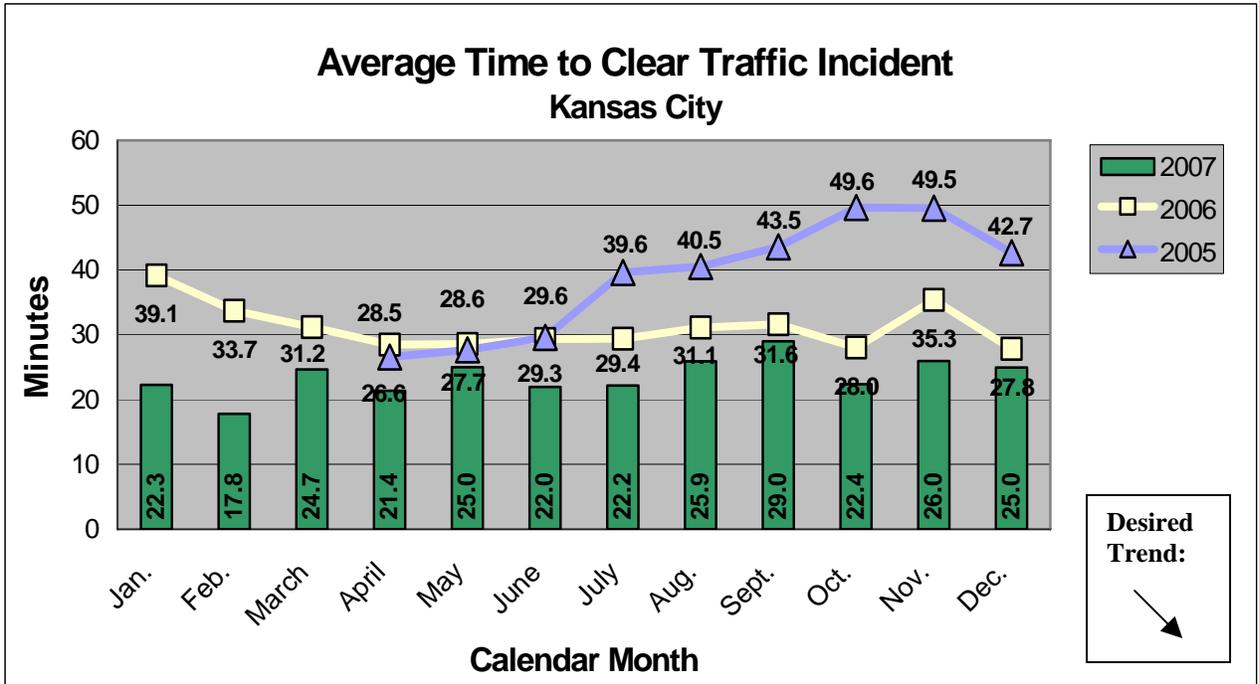
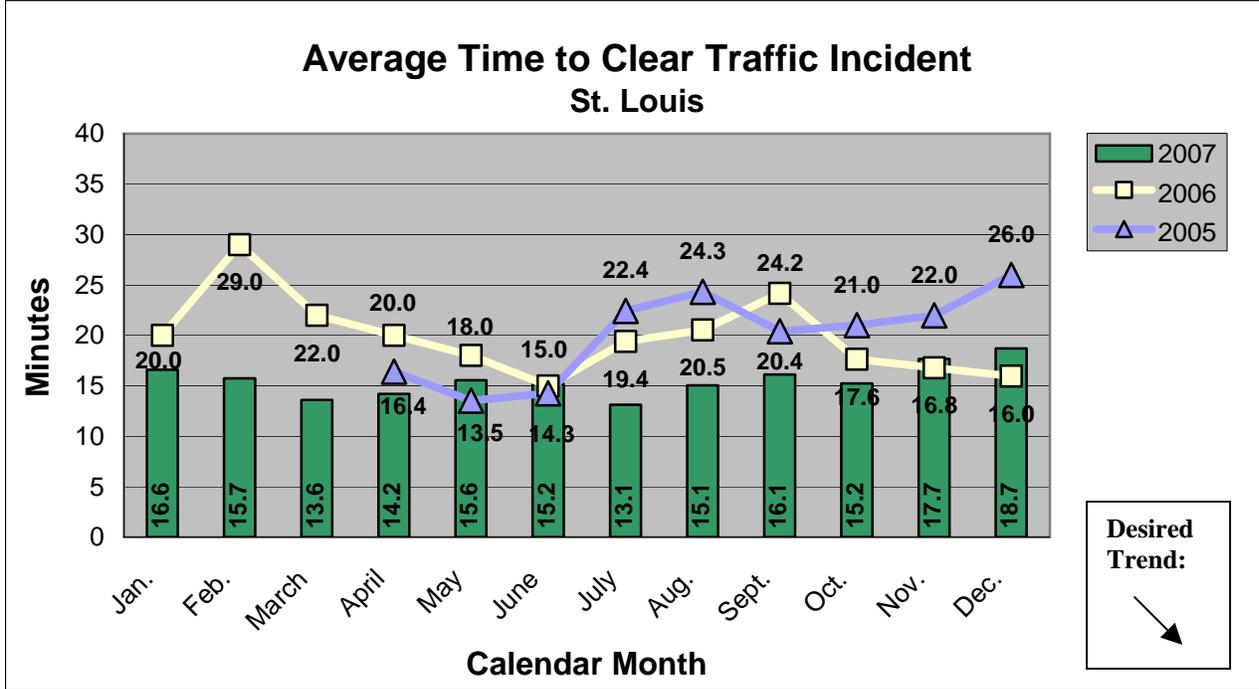
Collection of data began March 1, 2005. Traffic Management Center staff record "incident start time" and the time for "all lanes cleared." Average time to clear traffic incidents is calculated from these times.

**Improvement Status:**

The Kansas City area continues to experience incident clearance times at or below those for the same time period last year. Kansas City collected data on 235, 267 and 308 incidents respectively for the months of October, November and December. Increased efforts in incident management, Motorist Assist and police coordination in the Kansas City region continues to support MoDOT's objective of quick clearance and open roadways.

St. Louis recorded 1,160, 1,064 and 1,355 incidents respectively for the months of October, November and December. St. Louis experienced a slight increase in clearance times for this quarter as might be expected with the onset of winter weather, but the overall time to clear incidents remains fairly consistent. St. Louis' data includes considerably more incidents; however; St. Louis monitors more freeway miles with more cameras than the Kansas City area.

This data consists of only those incidents in which the TMC was able to collect data.



## Uninterrupted Traffic Flow

### *Average time to clear traffic backup from incident*

**Result Driver:** Don Hillis, Director of System Management

**Measurement Driver:** Rick Bennett, Traffic Liaison Engineer

**Purpose of the Measure:**

This measure tracks the amount of time it takes to return traffic flow back to normal after a traffic incident. A traffic incident is any unplanned event that creates a temporary reduction in the number of vehicles that can travel on the road.

**Measurement and Data Collection:**

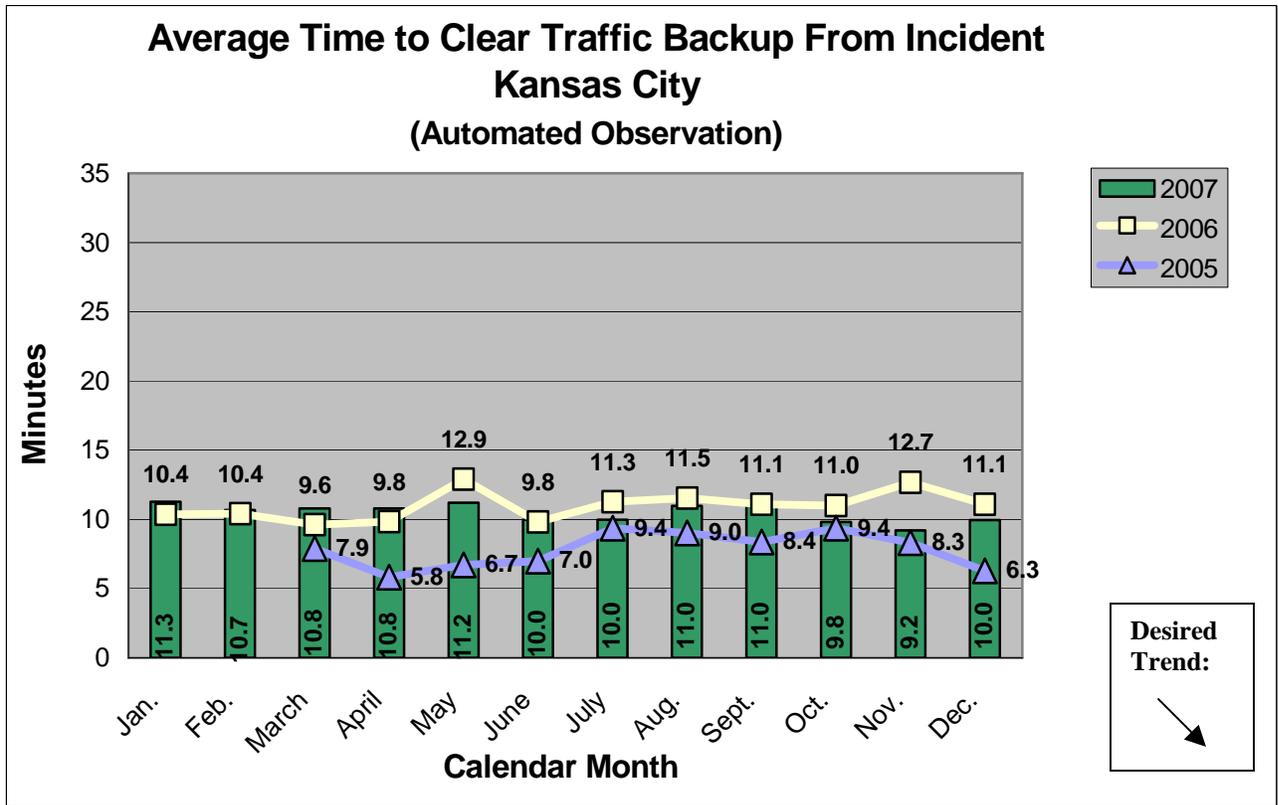
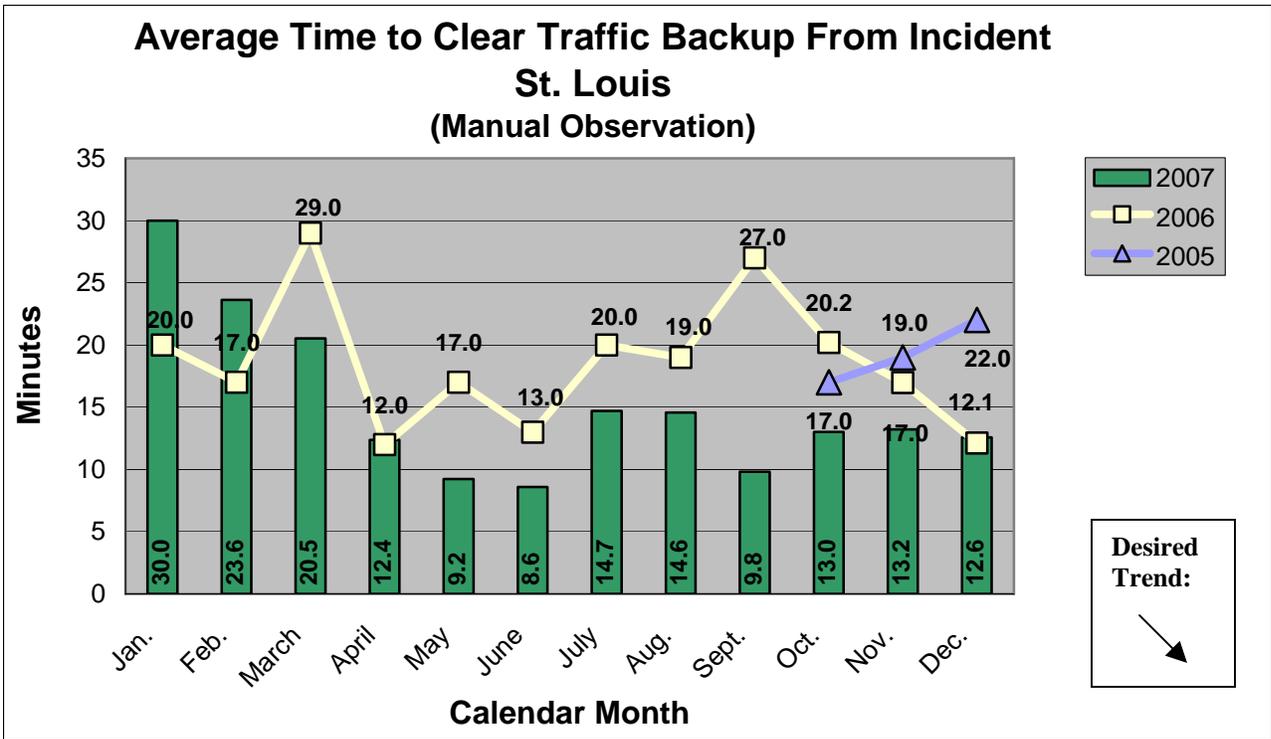
“Lanes cleared” and “clear backup” times are being recorded by MoDOT’s Traffic Management Centers in Kansas City and St. Louis. Average times to clear traffic backups are calculated from these recorded times. In 2005, the Kansas City operators just terminated the incident when they perceived it to be back to “normal” conditions. To standardize that data, Kansas City set up benchmarks of what normal is across the system and automated it to the reports. Starting in January 2006, Kansas City reports were modified to capture when a backup was relieved as an automated process. The Kansas City area has devices to collect data along portions of interstates 435 and 70. St. Louis collects data manually using video equipment and verification from Motorist Assist operators. St. Louis continues to record “clear backup” times when they perceive traffic to be back to “normal” conditions. They will use advanced transportation management system devices and software when they become available.

**Improvement Status:**

The Kansas City data includes all detected incidents on the KC Scout instrumented routes. The St. Louis data is skewed because it only includes a portion of major incidents on the St. Louis freeway network that can be monitored by operators in the traffic management center or by Motorist Assist and Emergency Response personnel on the scene. The St. Louis data does not necessarily capture short-term incidents that clear before a Motorist Assist operator can get to the scene. St. Louis area routes also have larger traffic volumes that create more significant congestion problems than in Kansas City.

The average time to clear traffic backup in both Kansas City and St. Louis has remained fairly consistent due to the effectiveness of travel-time systems on dynamic message signs and drivers having real-time information to make informed decisions about detouring away from extended backups and secondary accidents.

Renewed efforts in developing long-term partnerships with local agencies and law enforcement have increased the awareness of MoDOT’s expectations for quick clearance and open roadways.



## Uninterrupted Traffic Flow

### *Number of customers assisted by the Motorist Assist program*

**Result Driver:** Don Hillis, Director of System Management

**Measurement Driver:** Rick Bennett, Traffic Liaison Engineer

**Purpose of the Measure:**

This measure is used to gauge the use of the Motorist Assist programs. Incidents impact Missouri's transportation system capacity. An incident is any unplanned event that creates a temporary reduction in roadway capacity that impedes normal traffic flow. The sooner an incident is removed, the sooner the highway system returns to normal capacity. Therefore, responding to and quickly addressing the incidents (crashes, flat tires and stalled vehicles) improves system performance. MoDOT's Motorist Assist operators are able to respond to nearly every incident, major or minor, in the areas they cover.

**Measurement and Data Collection:**

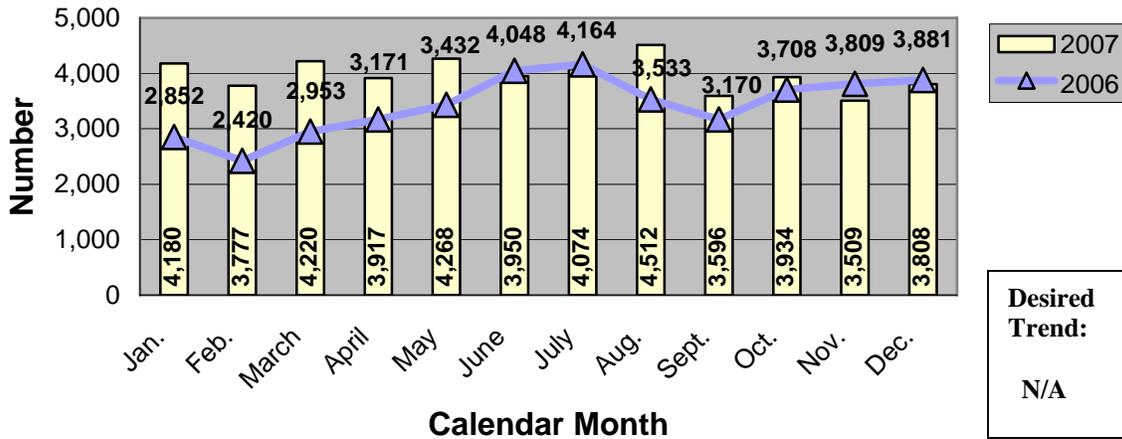
The Motorist Assist operators record each assist and then prepare a monthly summary. St. Louis operators patrol approximately 170 freeway miles, while Kansas City operators patrol approximately 60 freeway miles.

**Improvement Status:**

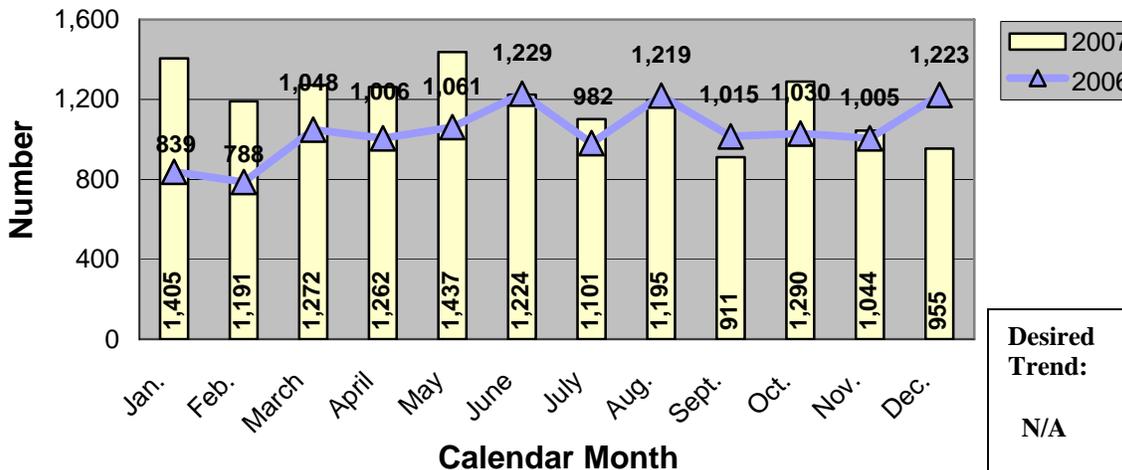
This data demonstrates that the Motorist Assist program in both St. Louis and Kansas City continue to provide motorist's assistance on the urban freeways in both metropolitan areas. Typical patterns show increased assists during peak travel season and winter weather and decreased services in late summer and early fall.

The decreased number of assists in Kansas City in December is attributed to the decreased availability of operators for that time period due to their involvement in scheduled mandatory training sessions.

### Number of Customers Assisted by the Motorist Assist Program St. Louis



### Number of Customers Assisted by the Motorist Assist Program Kansas City



# Uninterrupted Traffic Flow

## *Percent of Motorist Assist customers who are satisfied with the service*

**Result Driver:** Don Hillis, Director of System Management  
**Measurement Driver:** Rick Bennett, Traffic Liaison Engineer

**Purpose of the Measure:**

This measure helps evaluate services provided through MoDOT’s Motorist Assist Program, specifically whether the customers who use the program are satisfied with the service. Information received provides direction on how to better serve our customers and keep traffic moving safely and efficiently.

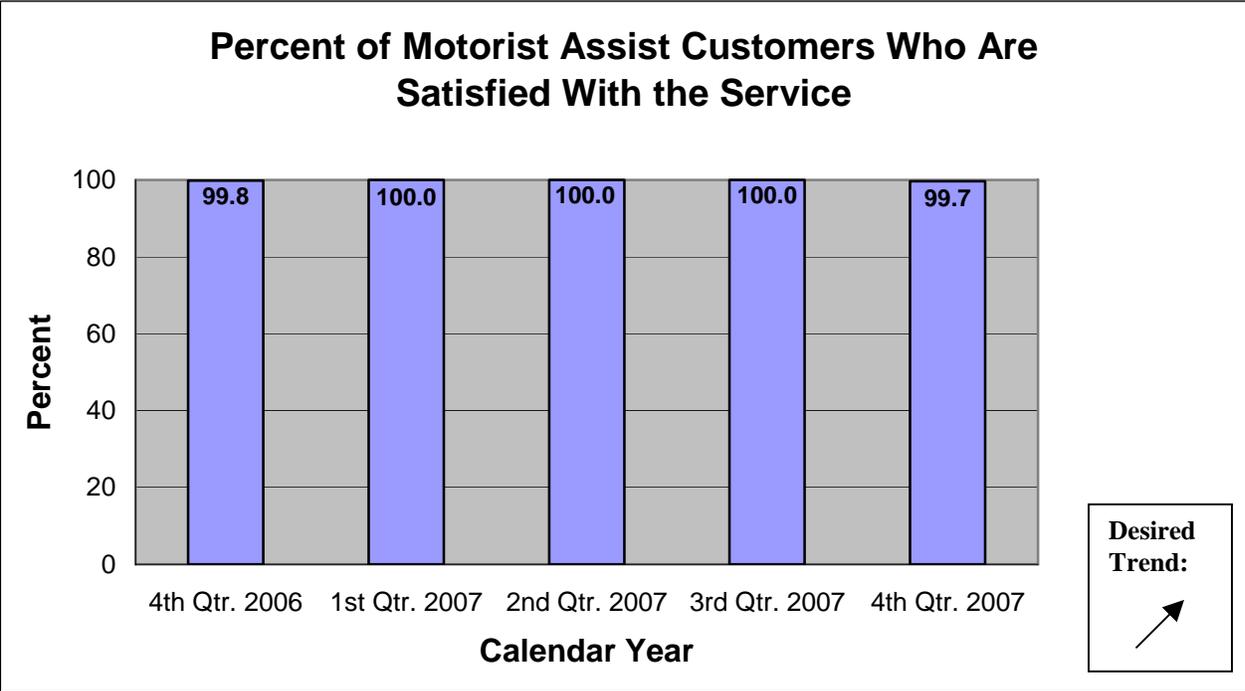
**Measurement and Data Collection:**

Motorist Assist operators distribute survey cards to customers. Data from the cards is compiled and tabulated by the Heartland Market Research, LLC. Surveys with selections identifying that the service was “probably” or “definitely” valuable were tabulated as “satisfied” for this measure.

**Improvement Status:**

This data agrees with information provided by customers on prior comment forms - almost all customers are satisfied.

- Fourth Quarter 2006, 575 surveys received
- First Quarter 2007, 540 surveys received
- Second Quarter 2007, 548 surveys received
- Third Quarter 2007, 851 surveys received
- Fourth Quarter 2007, 688 surveys received



# Uninterrupted Traffic Flow

## *Percent of work zones meeting expectations for traffic flow*

**Result Driver:** Don Hillis, Director of System Management

**Measurement Driver:** Brian Chandler, Traffic Liaison Engineer

**Purpose of the Measure:**

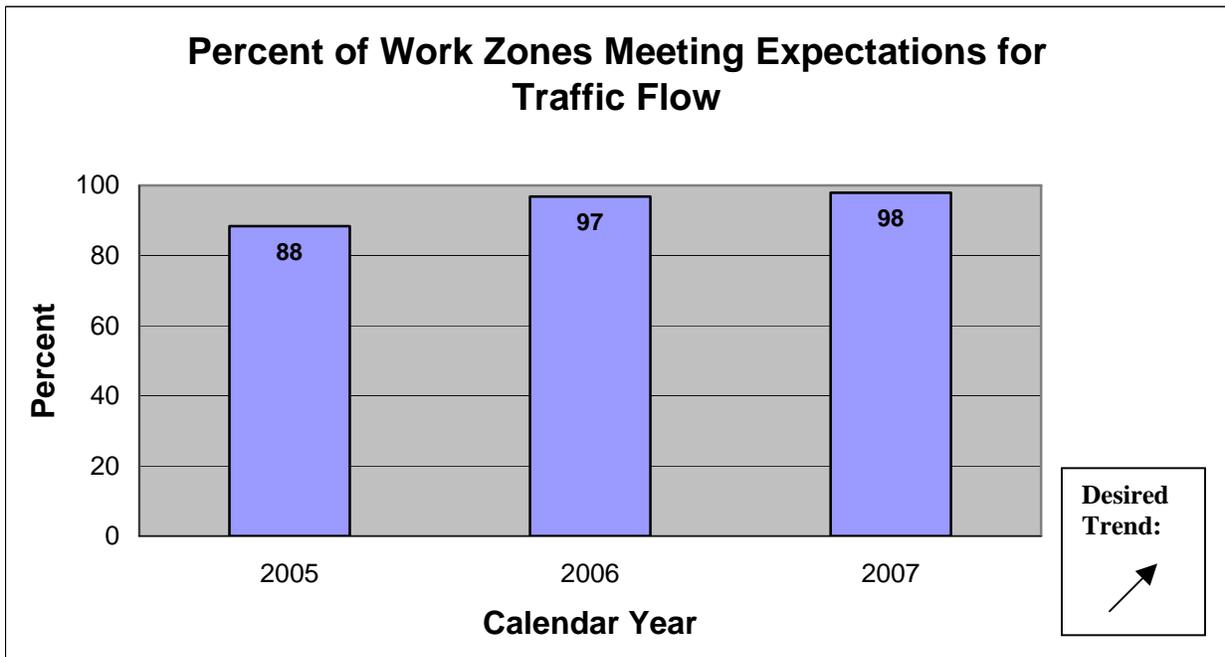
An important factor in evaluating the department’s performance in temporary traffic control design, deployment, operation and maintenance is the measurement of work zones’ affect on the mobility of highway users. This measure tracks how well the department meets customer expectations of traffic flow in, around and through work zones on state highways.

**Measurement and Data Collection:**

Using a formal inspection worksheet, Central Office and district employees evaluate mobility in work zones across the state. Each evaluation consists of a subjective assessment of engineered and operational factors affecting traffic flow. The evaluator assigns a pass, fail, or n/a rating to each of these individual factors and a pass or fail rating for their overall perception of traffic flow in, around and through the work zone. The overall perception ratings are compiled quarterly and reported via this measurement.

**Improvement Status:**

Compilation of the 3,504 evaluations performed by MoDOT staff this calendar year resulted in a 98 percent satisfaction rating for work zone traffic flow (i.e., a negative perception of traffic flow was recorded in 2.1 percent of the evaluations). This rating is one percent higher than last calendar year’s year-end rating – a year the department showed an 8.5 percent improvement in work zone traffic flow when compared to the previous year’s inspection results. Such progress is attributable to MoDOT’s emphasis on creating exemplary work zones by minimizing work zone congestion and delays despite increased traffic demand and volume of work zones in Missouri.



# Uninterrupted Traffic Flow

***Time to meet winter storm event performance objectives on major and minor highways***

**Result Driver:** Don Hillis, Director of System Management  
**Measurement Driver:** Tim Jackson, Maintenance Liaison Engineer

**Purpose of the Measure:**  
 This measure tracks the amount of time needed to perform MoDOT’s snow and ice removal efforts.

**Measurement and Data Collection:**  
 This data is collected in the winter event database. This measurement tracks the actual time involved in this process so improvements can be made. After each winter event, such as a snow or ice storm, area maintenance personnel submit a report indicating how much time it took to clear snow from the major and minor highways. Data collection for this measure runs from November through March of each winter season. After a storm ends, the objectives are to restore the major highways to a clear condition as soon as possible and have the lower-volume minor highways open to two-way traffic and treated with salt and/or abrasives at all critical areas such as intersections, hills and curves as soon as possible. The end of the storm is defined as when freezing precipitation stops accumulating on the roadways, either from falling or drifting conditions. This data is updated in the January and April Tracker reports. The time in hours is the statewide average for each month.

**Improvement Status:**  
 November had a few minor snowstorms over the northern part of Missouri. Several moderate snowstorms and a major ice storm hit the state in December. The time to meet the performance objectives will vary based on the amount of snow received, the duration and the intensity of the storm. Strategies to improve these numbers include pursuing equipment enhancements, testing new materials and continued training of snow removal employees.

