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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, which 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 average speed and traffic volumes. The travel index is calculated according to the following equation:

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

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 mid-80 to low-90 percentile range during the peak hours, as compared to the free-flow condition. The morning peak Travel Index increased slightly over the previous quarter at 0.91, while the evening peak Travel Index remained consistent with last quarter at 0.85 for the fourth 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, bridge work and resurfacing jobs are being conducted at the Paseo Bridge causing some slow downs in the morning commute southbound into downtown. This should see some dramatic slow downs over the next few years due to the KC ICON bridge replacement project. Additional information on the construction activities along interstates 29 and 35 can be found at [www.kcicon.org](http://www.kcicon.org).

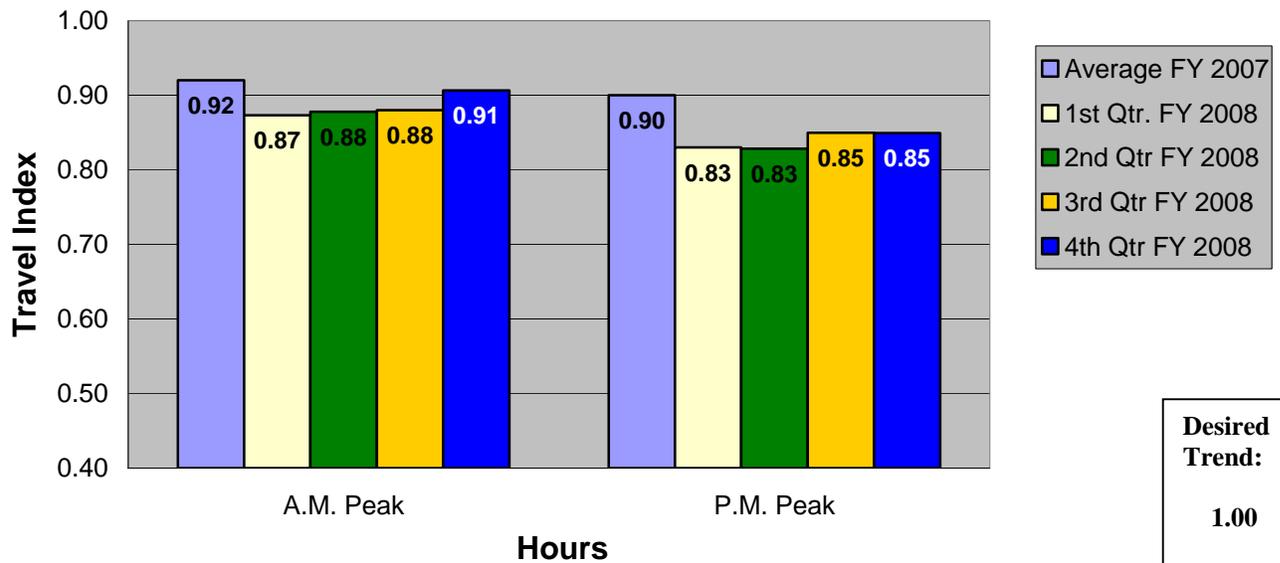
#### St. Louis metropolitan region:

Data in the St. Louis region shows a slight decrease in the quarterly morning peak Travel Index, while the evening peak increased slightly. The morning peak Travel Index decreased from 0.96 to 0.95. The evening peak Travel Index increased from 0.94 to 0.95 for the fourth quarter fiscal year 2008. The average peak travel indices for fiscal year 2007 for this region were 0.92 for both the morning and evening peaks. The average peak travel indices for fiscal year 2008 for this region were 0.95 for the morning and 0.94 for the evening. This quarter is the second of four quarters impacted by the closure 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:

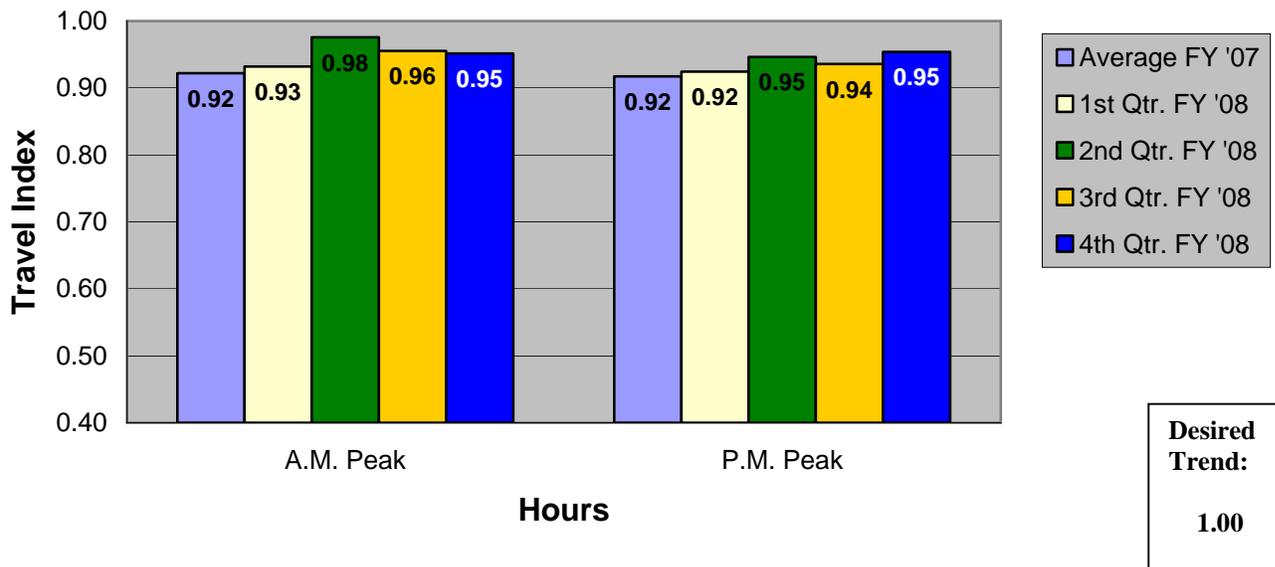
The statewide average speed on rural routes for this quarter is 69.39 mph, which is an increase from last quarter's report of 67.27 mph. Historically, we have seen an increase in average speeds in the first and fourth quarters of the fiscal year. Fourth quarter fiscal year 2007 average speed was 68.83 mph. Dynamic message sign usage continues around the clock as a constant reminder to travelers to drive safely, as well as providing current road condition information. The department's partnership with the Missouri State Highway Patrol has fostered improvements to our management processes with regards to incident management and notification through sign messaging.

### 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 Metro 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 Roadway 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.

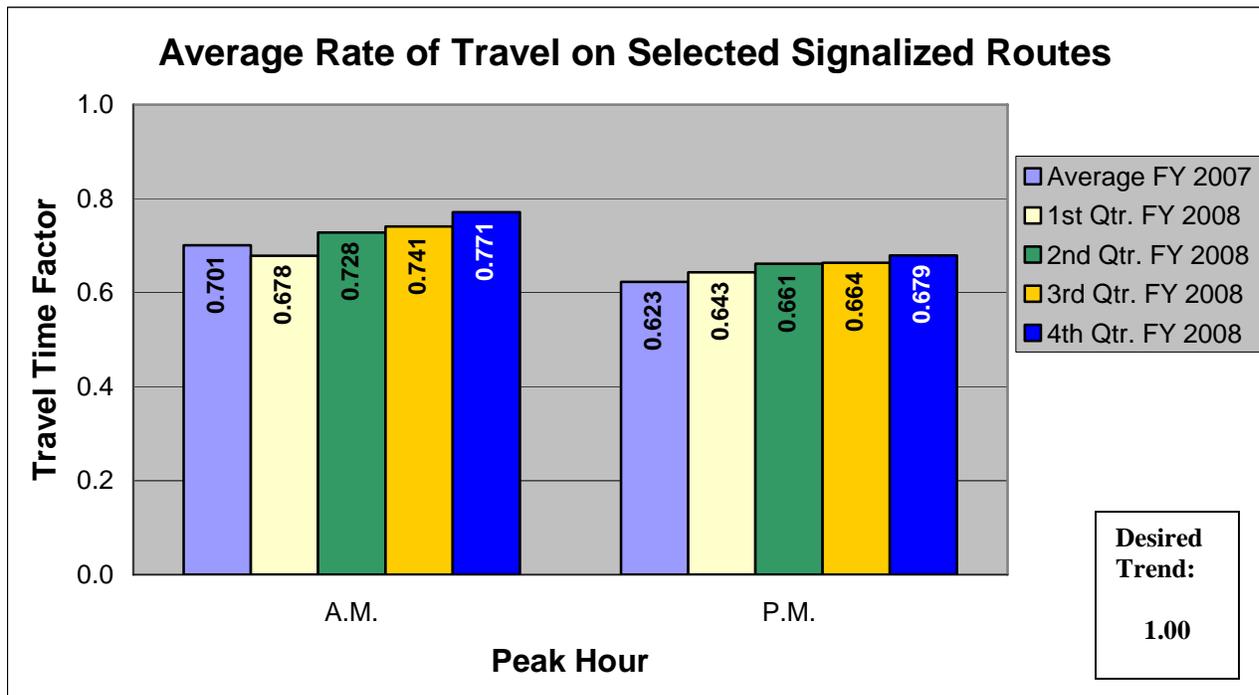
**Measurement and Data Collection:**

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 fourth quarter fiscal year 2008, the average statewide travel time factor for a.m. peak is 0.771 and p.m. peak is 0.679. Overall performance is 0.725. The a.m. peak travel time factor is nine percent higher than p.m. peak travel time factor. Fourth quarter data shows a.m. and p.m. peaks for arterials operating higher than the average for fiscal year 2007. For fourth quarter fiscal year 2008, the a.m. peak travel time factor is four percent higher and the p.m. peak travel time factor is five percent higher than the fourth quarter fiscal year 2007 a.m. and p.m. peak travel time factors.

The average rate of travel on selected signalized routes has improved due to increased retiming of signals.



\* 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:**

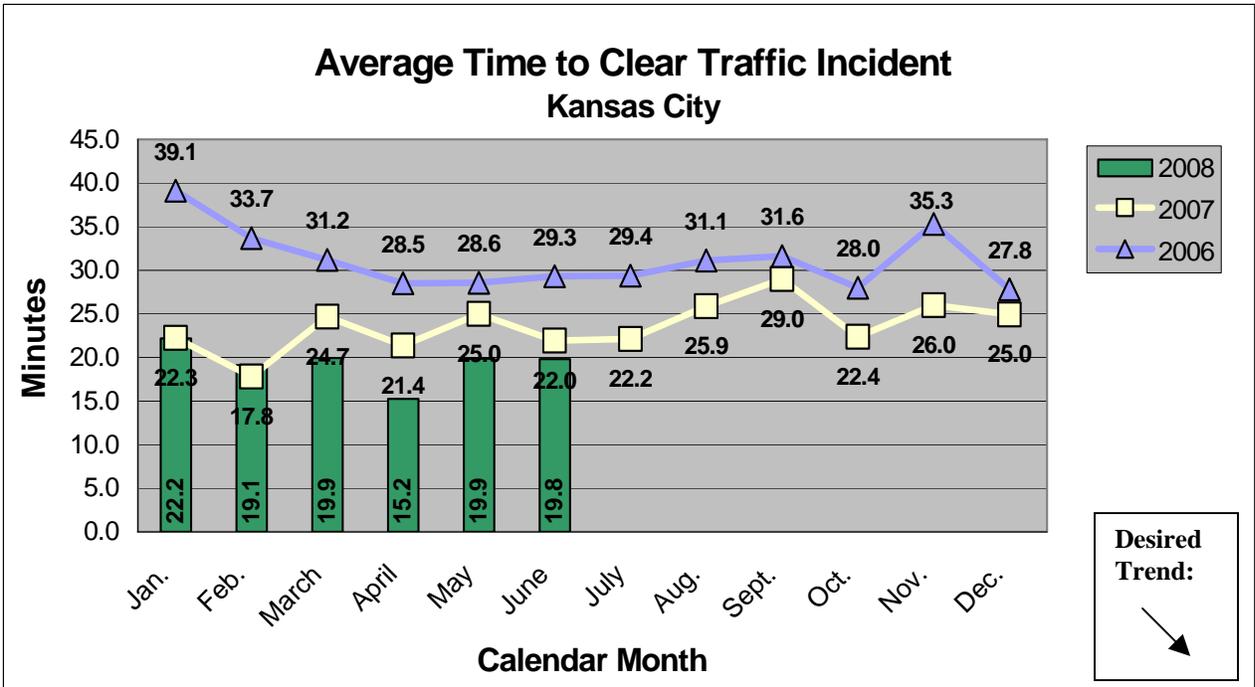
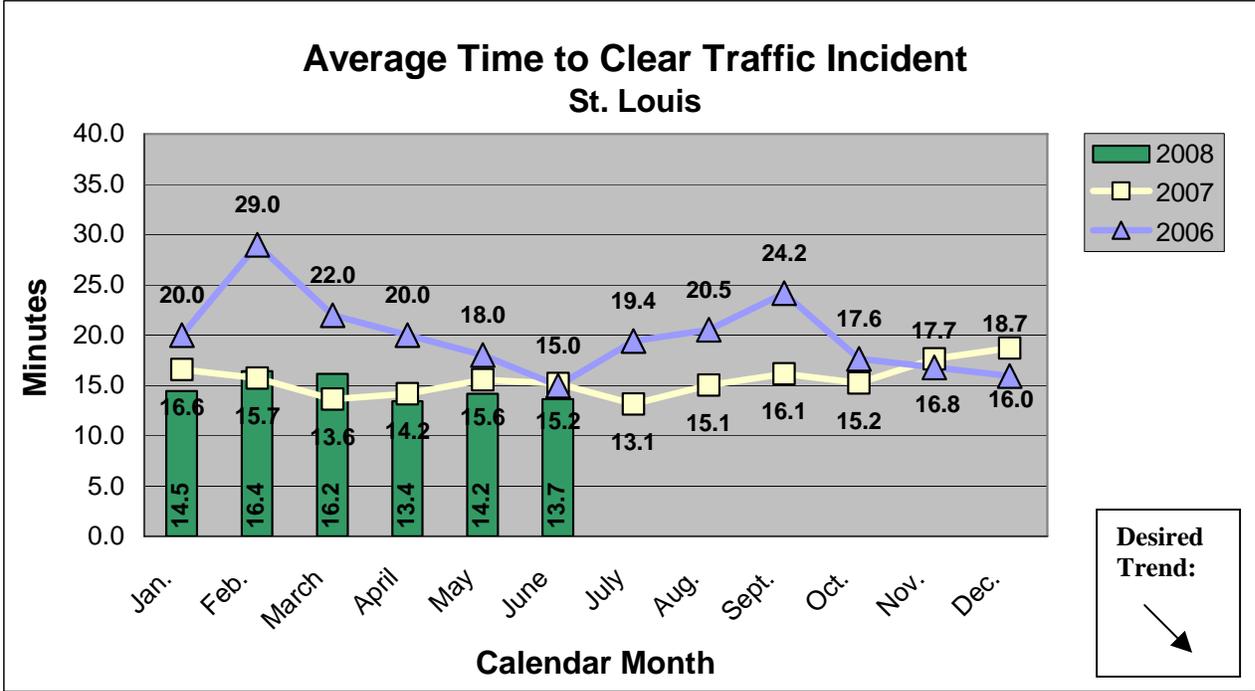
Traffic Management Center staff record “incident start time” and the time for “all lanes cleared.” Average time to clear traffic incidents is calculated from these times.

**Improvement Status:**

The Kansas City area continues to experience incident clearance times at or near those for the same time period last year. Kansas City collected data on 186, 194, and 215 incidents respectively for the months of April, May, and June. April has a significantly lower average clearance time because there were only 4 incidents that lasted longer than 2 hours (187 minutes average), which is a 45 percent decrease comparative to other months. 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 679, 844, and 912 incidents respectively for the months of April, May and June. The overall time to clear incidents remains fairly consistent. St. Louis’ data includes considerably more incidents because St. Louis monitors more freeway miles 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:**

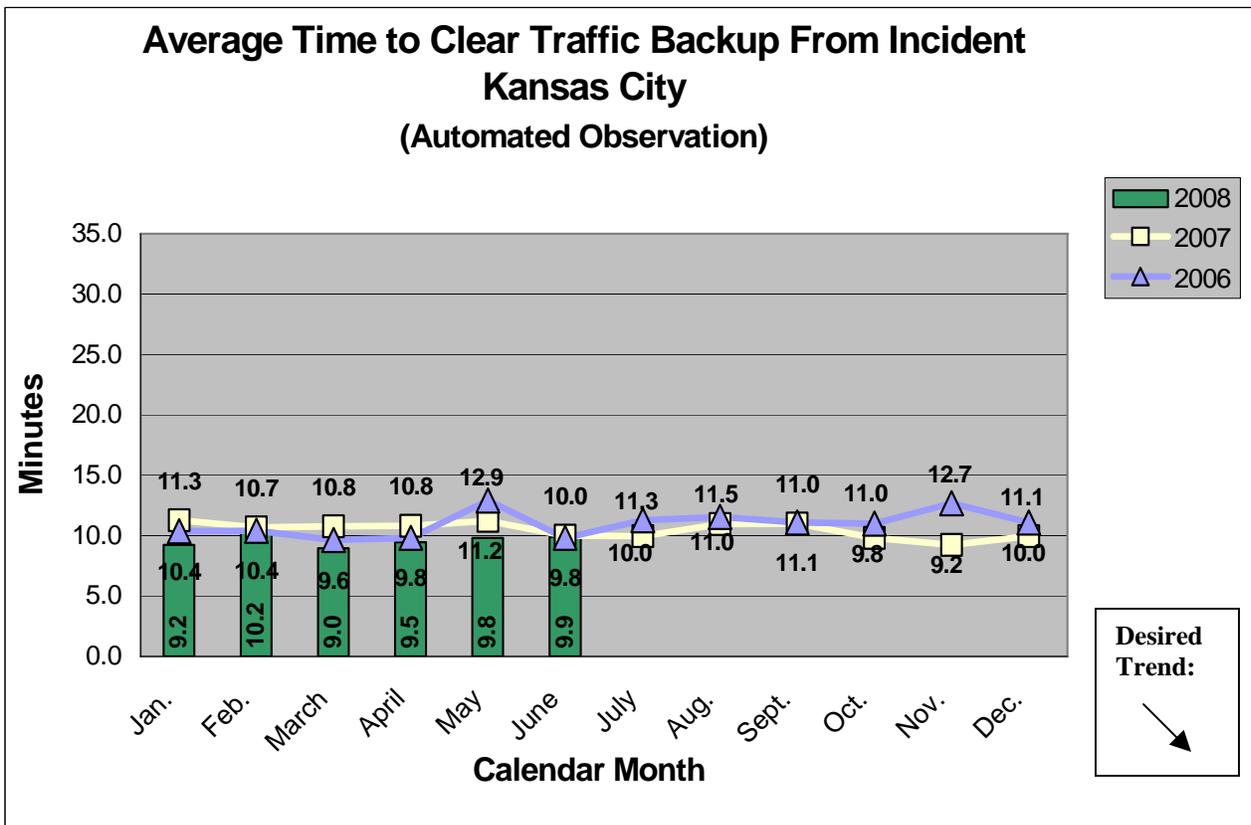
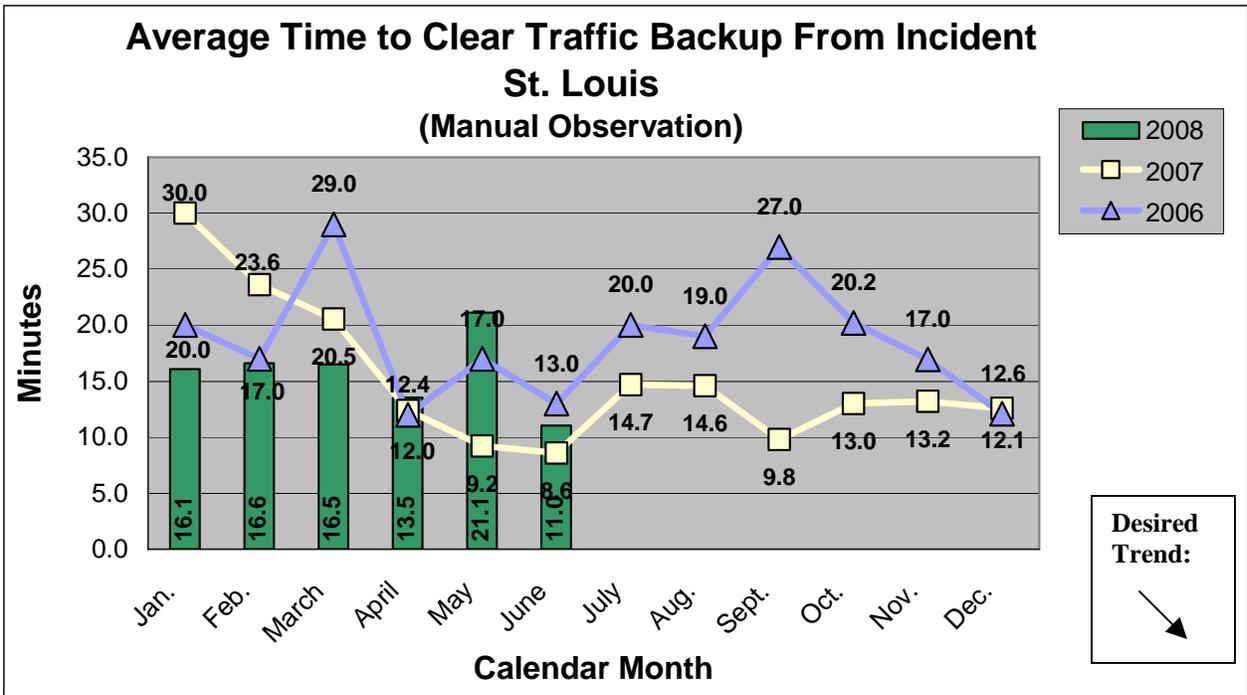
“All lanes cleared” and “clear backup” times are being recorded by MoDOT’s Traffic Management Centers in Kansas City and St. Louis. Average times to clear traffic backups are calculated from these recorded times. Kansas City reports capture when a backup is relieved as an automated process. The Kansas 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 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 on our state roadways, because traffic 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:**

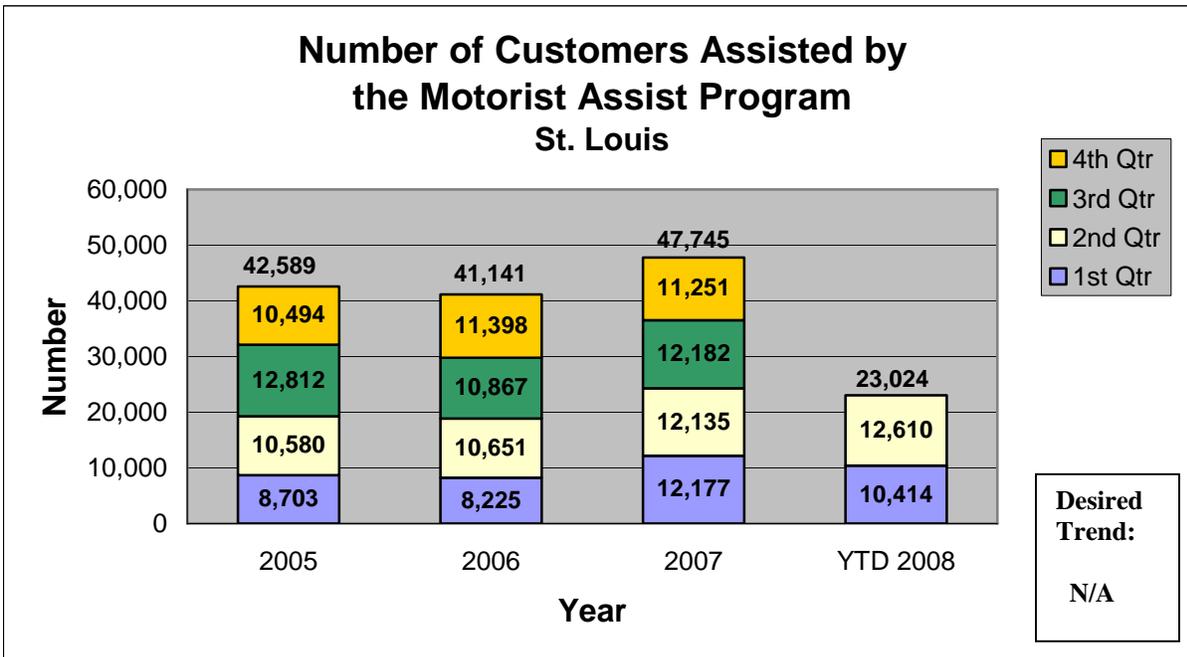
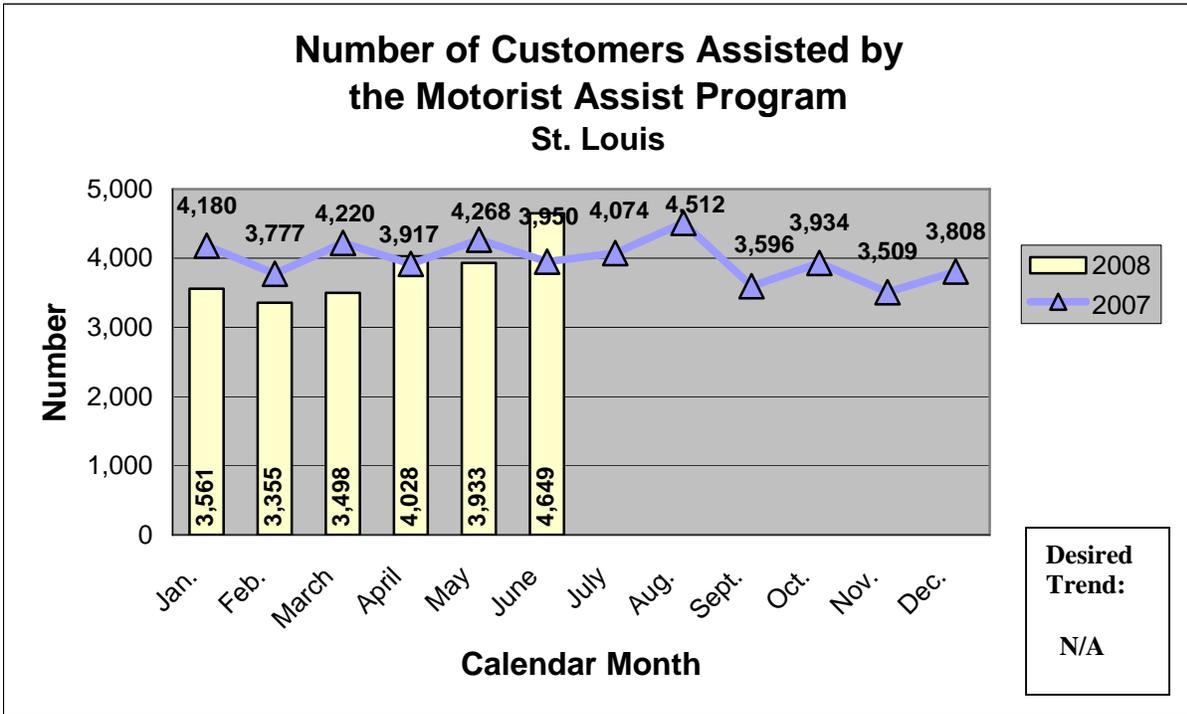
The Motorist Assist operators record each assist and then prepare a monthly summary. St. Louis operators patrol approximately 170 freeway miles, while Kansas City operators patrol approximately 105 freeway miles.

In January 2008, MoDOT partnered with St. Louis County to develop the Interstate 64 Traffic Response Service Patrol to ease congestion created by the reconstruction on the I-64 corridor. The I-64 Traffic Response Service Patrol provides similar services to motorists as the MoDOT Motorist Assist program on the arterials impacted by the closure of I-64. The I-64 Traffic Response Service Patrol records each assist and prepares a monthly report.

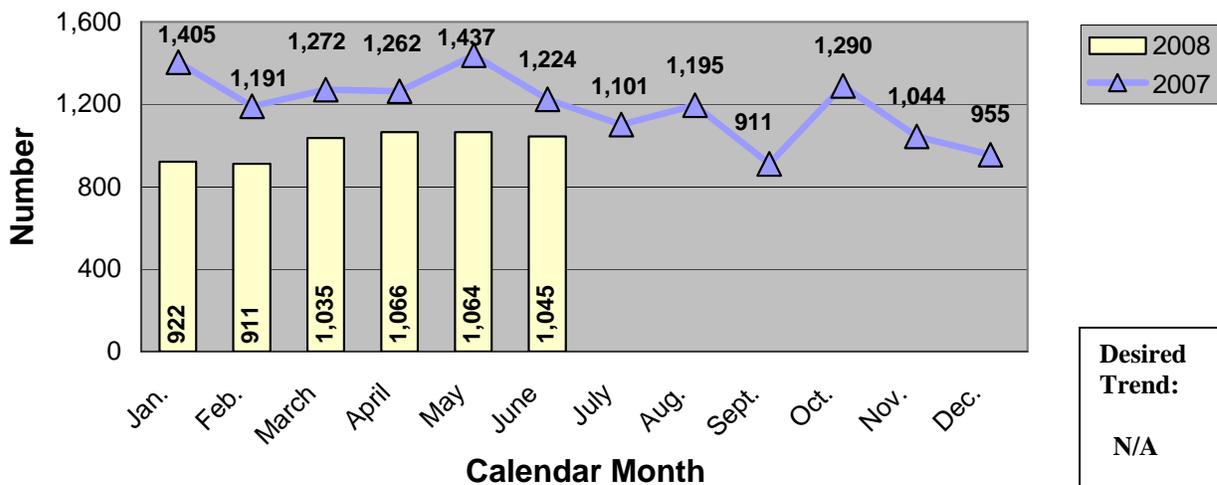
**Improvement Status:**

This data demonstrates that the Motorist Assist program in both St. Louis and Kansas City continue to provide motorists 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.

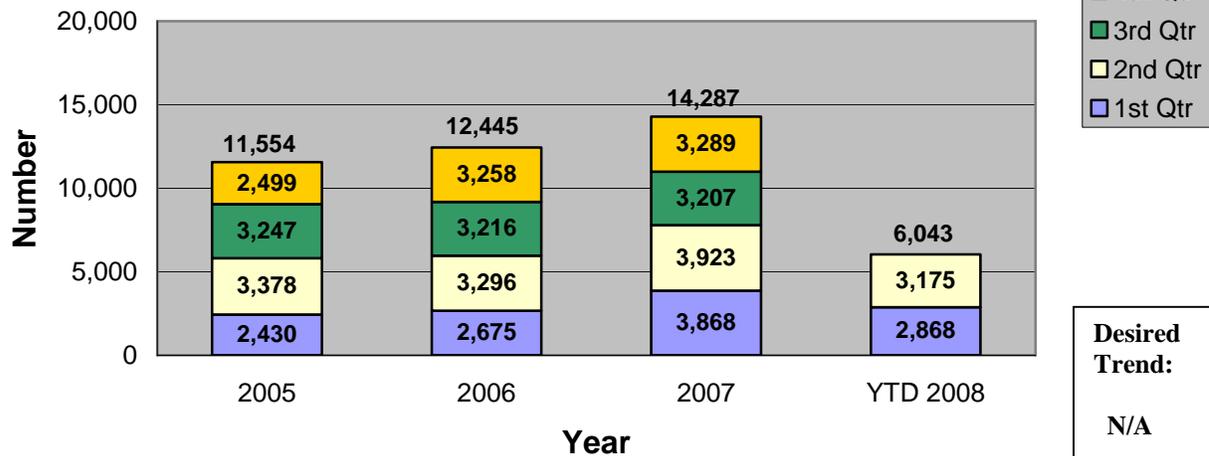
The reduction of assists in Kansas City is due to the reduction of secondary accidents that the region is seeing due to the ongoing efforts in incident management and coordination. Kansas City has also seen a reduction in long-term accidents while increasing their patrol area with the same amount of operators, which has reduced the number of times a roving patrol gets through a zone. An added emphasis on training and administrative responsibilities of the operators has provided better reporting and more accurate performance measures, but takes away from the time available to patrol the roadways.



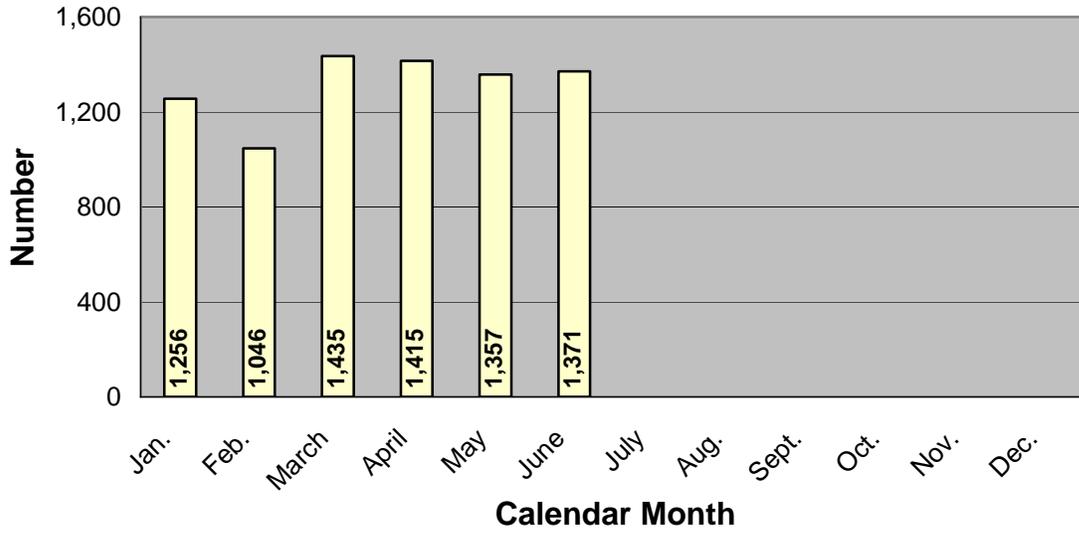
### Number of Customers Assisted by the Motorist Assist Program Kansas City



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



**Number of Customers Assisted by  
I-64 Traffic Response Service Patrol  
St. Louis**



**Desired  
Trend:**  
  
N/A

## 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 Heartland Market Research, LLC. Surveys with selections identifying that the service was "probably" or "definitely" valuable were tabulated as "satisfied" for this measure.

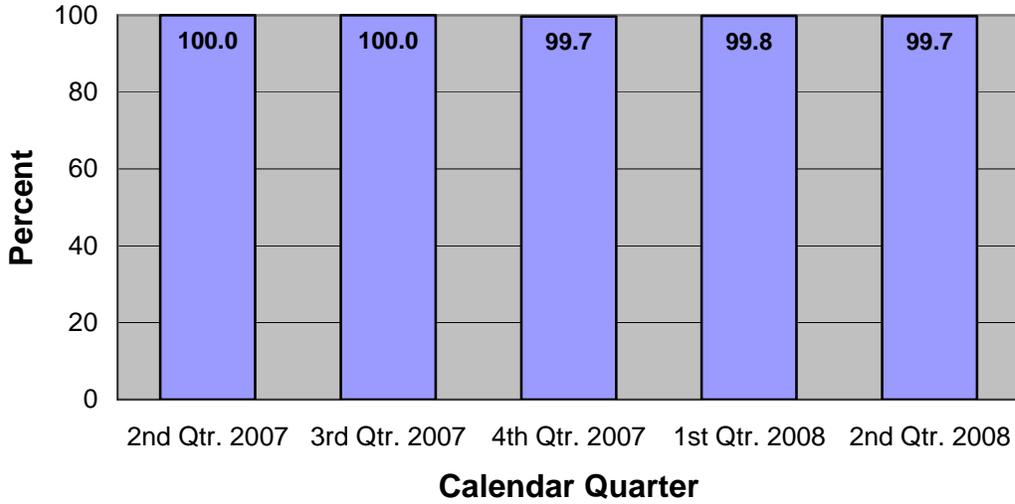
In January 2008, MoDOT partnered with St. Louis County to develop the Interstate 64 Traffic Response Service Patrol to ease congestion created by the reconstruction on the I-64 corridor. The I-64 Traffic Response Service Patrol provides similar services to motorists as the MoDOT Motorist Assist program, however, it patrols the arterials impacted by the closure of I-64. The I-64 Traffic Response Service Patrol distributes a separate but similar survey card to its customers.

**Improvement Status:**

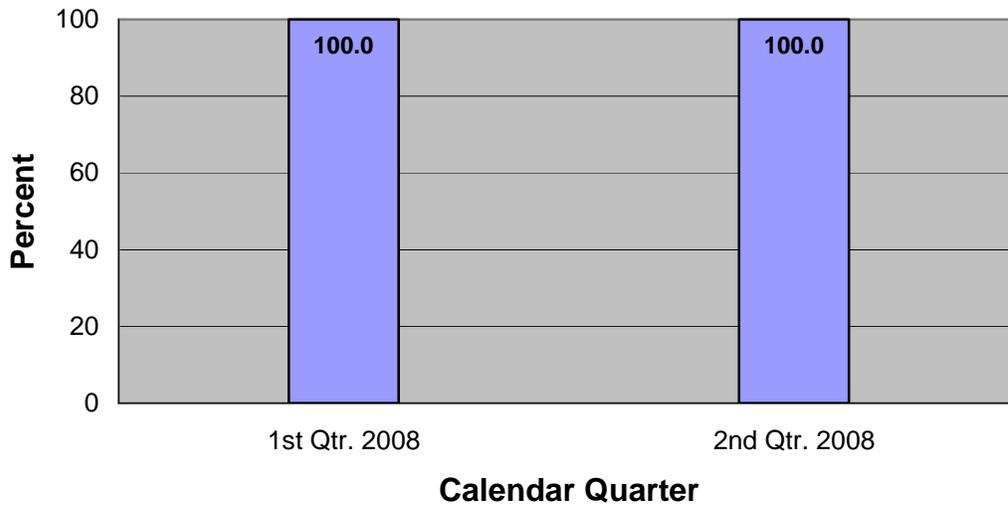
This data agrees with information provided by customers on prior comment forms - almost all customers are satisfied.

- Second Quarter 2007, 548 surveys received
- Third Quarter 2007, 851 surveys received
- Fourth Quarter 2007, 688 surveys received
- First Quarter 2008,
  - 568 Motorist Assist surveys received
  - 119 I-64 Traffic Response surveys received
- Second Quarter 2008,
  - 1,117 Motorist Assist surveys received
  - 323 I-64 Traffic Response surveys received

### Percent of Motorist Assist Customers Who Are Satisfied With the Service



### Percent of I-64 Traffic Response Service Patrol Customers Who Are Satisfied With the Service



# Uninterrupted Traffic Flow

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

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

**Measurement Driver:** Dan Smith, Traffic Management & Operations Engineer

**Purpose of the Measure:**

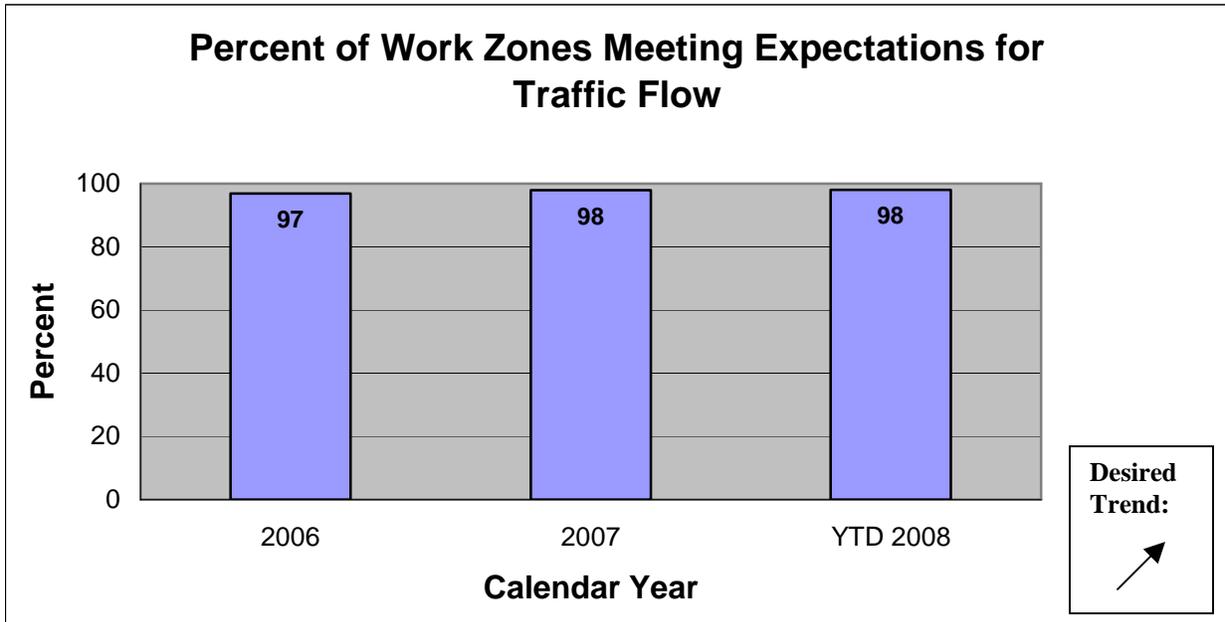
An important factor in evaluating the department’s performance in temporary traffic control design, deployment, operation and maintenance is the measurement of work zones’ affect on the mobility of highway users. This measure tracks how well the department meets customer expectations of traffic flow 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 1,636 evaluations performed by MoDOT staff between January and June of 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 percent of the evaluations). This rating is consistent with the previous calendar year’s rating. 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:**

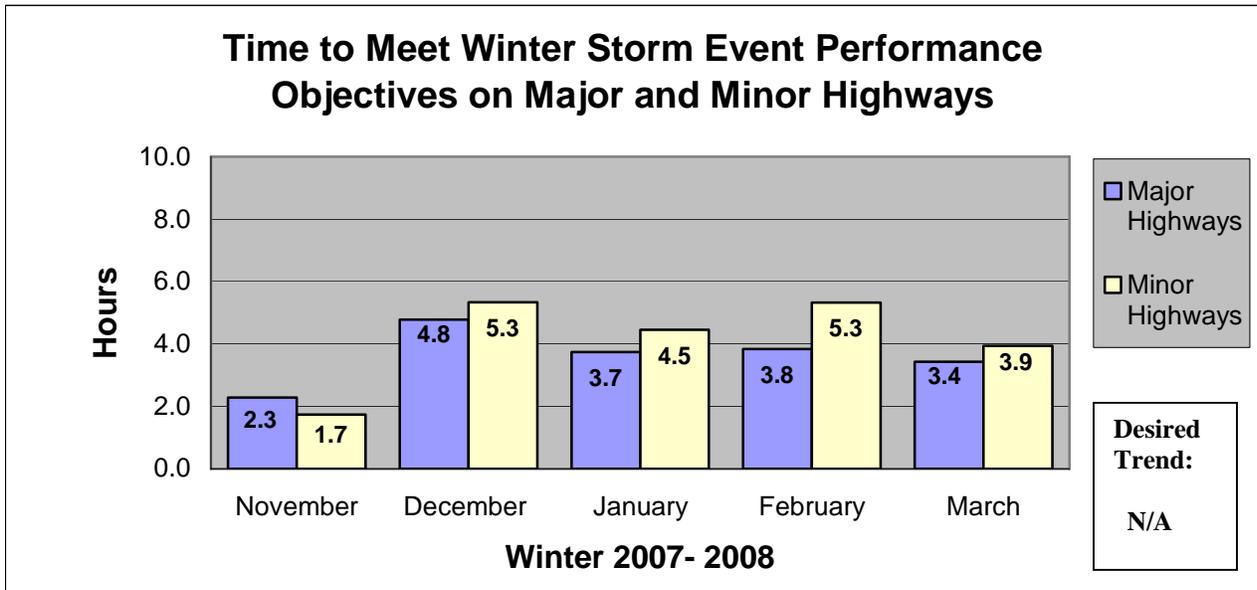
This measure tracks the amount of time needed to perform MoDOT’s snow and ice removal efforts.

**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:**

The average time to meet the performance objectives on the major highways varied from 3.4 to 3.8 hours over the reporting period. The average time to meet the performance objectives on the minor highways varied from 3.9 to 5.3 hours. February was the harshest month in terms of snowfall, which resulted in the slightly higher numbers for that month. 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.



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