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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 speeds on selected roadway sections

**Result Driver:** Don Hillis, Director of System Management  
**Measurement Driver:** Eileen Rackers, State Traffic Engineer

**Purpose of the Measure:**

This measure tracks average speeds on various roadway sections. The desired trend is for the average speed to approach the posted speed limit.

**Measurement and Data Collection:**

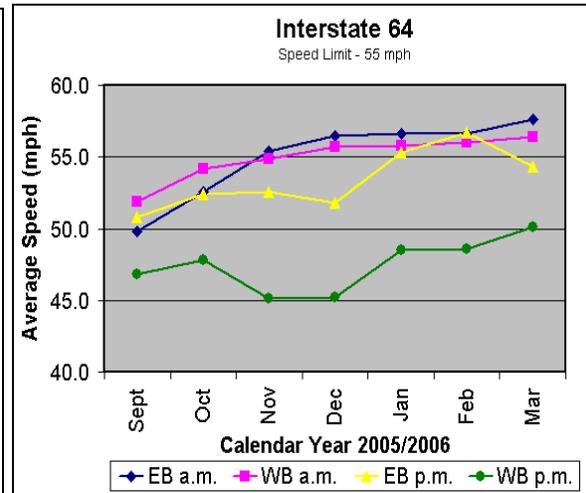
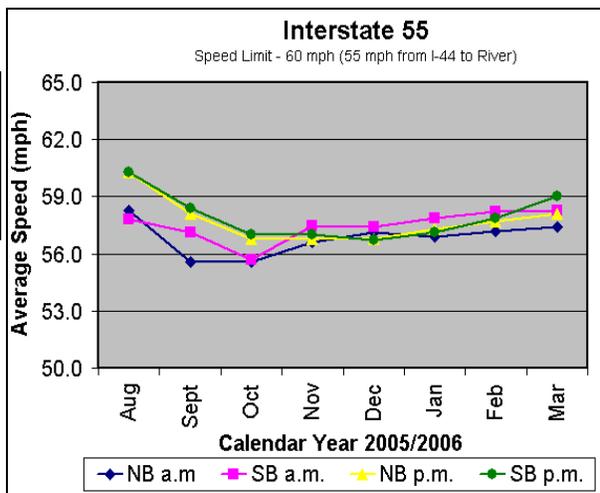
Data from the St. Louis area is provided through our partnership with Traffic.com. They have installed traffic sensors along five routes in the St. Louis metropolitan area to help monitor traffic conditions. This data is reported for weekdays only, to better represent peak traffic conditions, and is consistent with Kansas City’s reporting. Please note that data from St. Louis is for large sections of roadway, while Kansas City and statewide data are shown at specific sensor locations. Speed data for I-44 in Pulaski County is unavailable this quarter due to construction. In December 2005, MoDOT entered into a contract for statewide traffic data services. These services will provide traffic data, such as speed and travel time, on 5,500 roadway miles using cellular phones as anonymous traffic data probes. This data will allow a statewide approach to proactively managing traffic flow, including improved incident management and traveler information services.

**Improvement Status:**

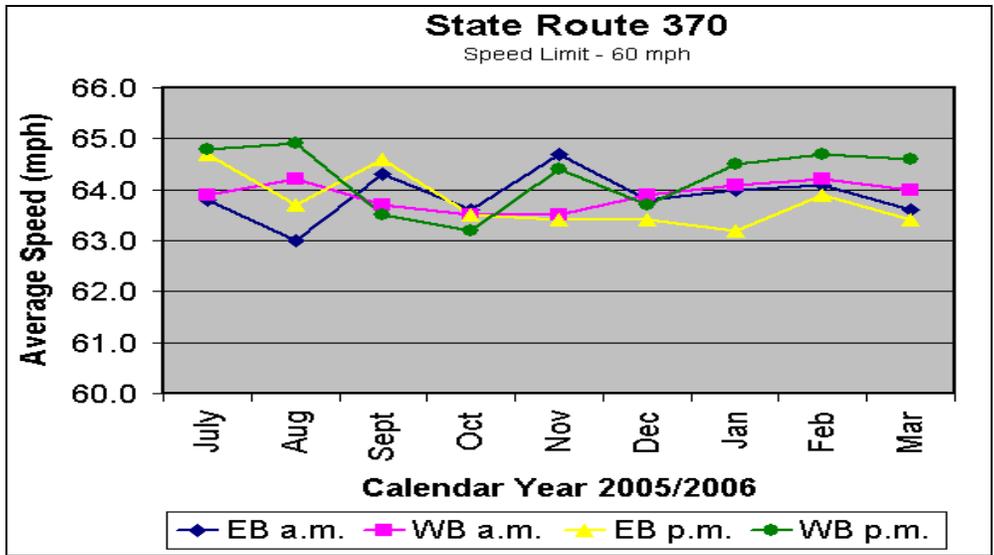
To help improve average speeds, live traffic data for three Missouri metro areas is available on MoDOT’s Web site at [www.modot.org](http://www.modot.org) in the Services section under Traveler Services. Kansas City Scout provides traffic information for Kansas City, Gateway Guide provides traffic information for St. Louis, and Ozarks Traffic provides traffic information for Springfield. MoDOT’s Web site also provides a work zone map. MoDOT is placing an increased emphasis on managing incidents and work zones to provide uninterrupted traffic flow, including the formation of I-70 and I-44 corridor teams that coordinate incident management and work zone management efforts. In Kansas City, eastbound I-435 at 104th Street has historically been the most congested movement in the evening rush; however, recent improvements including a new eastbound I-470 bridge and additional I-435/Hwy 71 lanes dramatically improved travel speeds over the last several months. The eastbound I-435 movement through the Grandview Triangle is not expected to have any significant changes until later this year; speeds are anticipated to go down slightly as construction picks up on the final phase, then they will dramatically improve again as additional lanes are opened. Southbound I-35 across the Missouri River is Kansas City’s most congested movement, so MoDOT has chosen the Paseo Bridge and I-35 across the Missouri River as a Design/Build project.

### ST. LOUIS

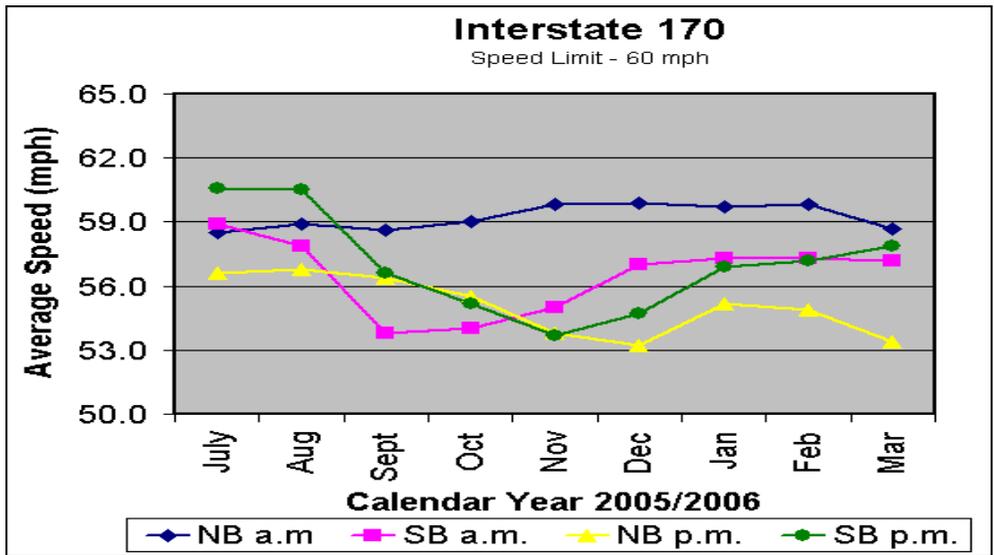
**Desired Trend:**  
  
N/A



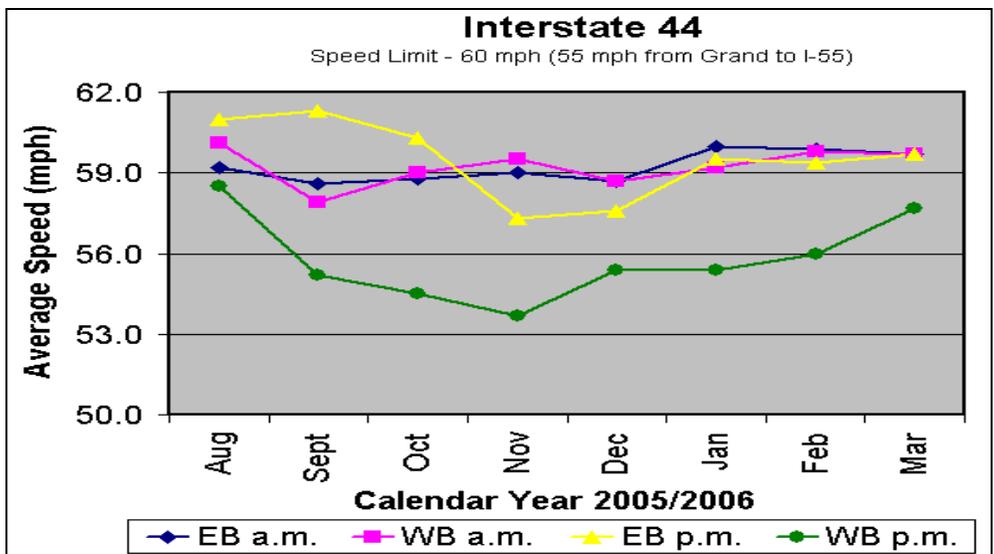
**Desired Trend:**  
  
N/A



**Desired Trend:**  
N/A

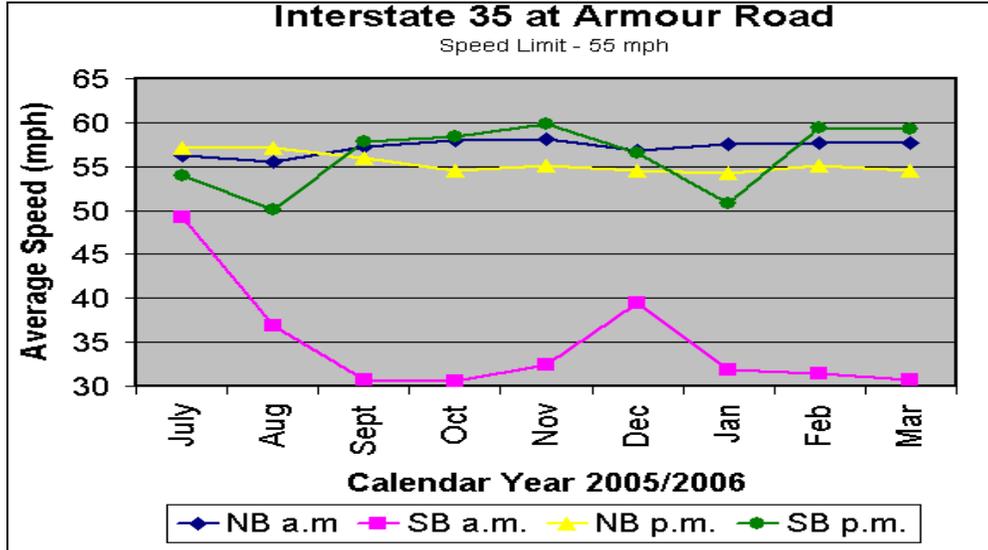


**Desired Trend:**  
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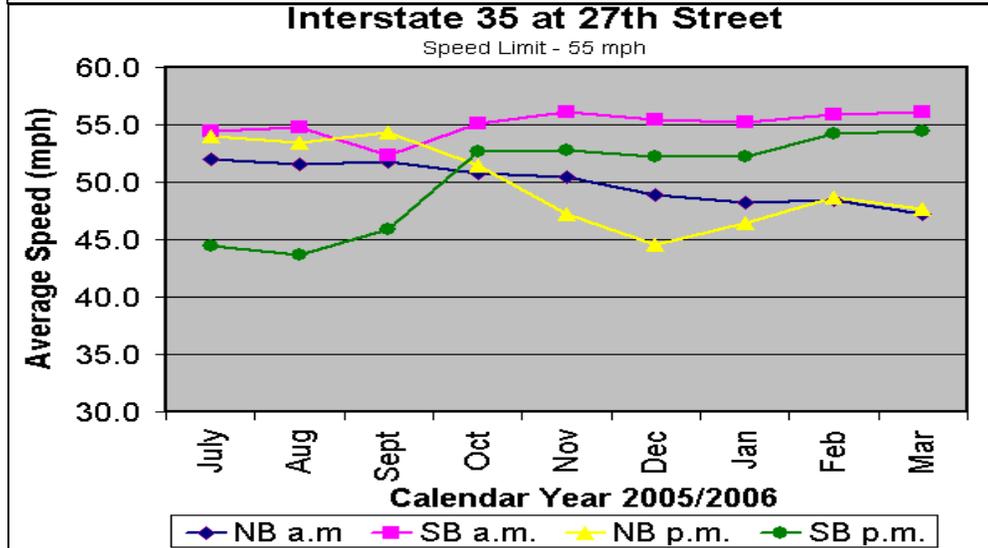


**Desired Trend:**  
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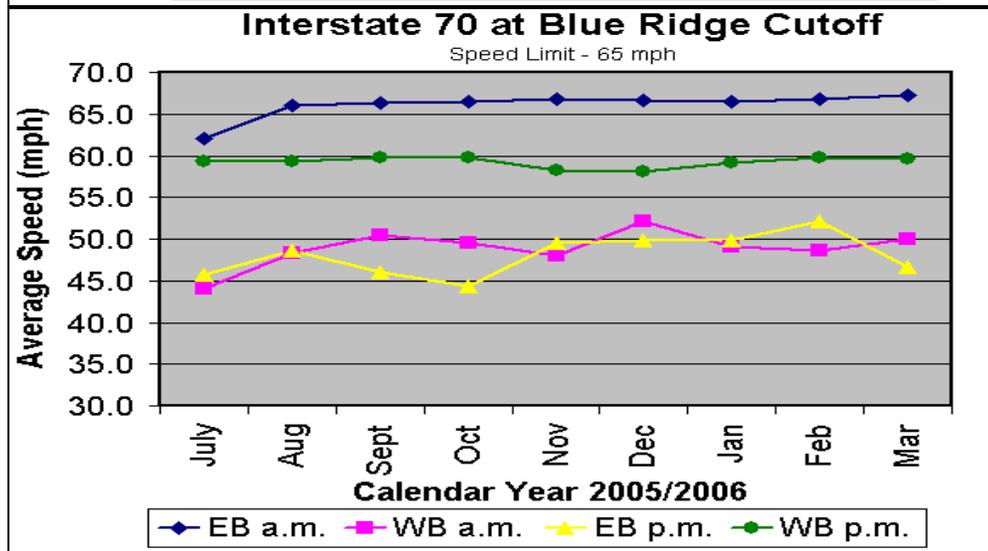
## KANSAS CITY



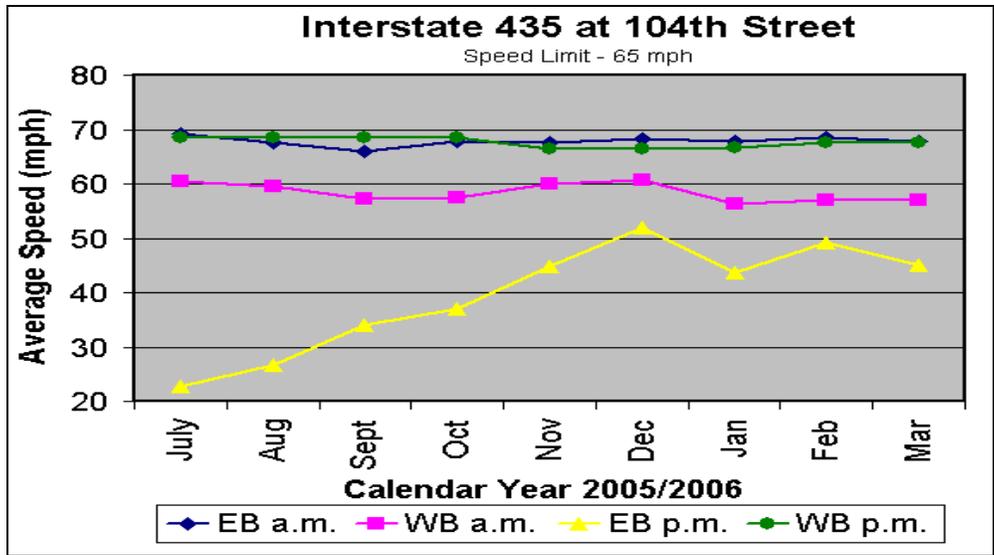
Desired Trend:  
N/A



Desired Trend:  
N/A

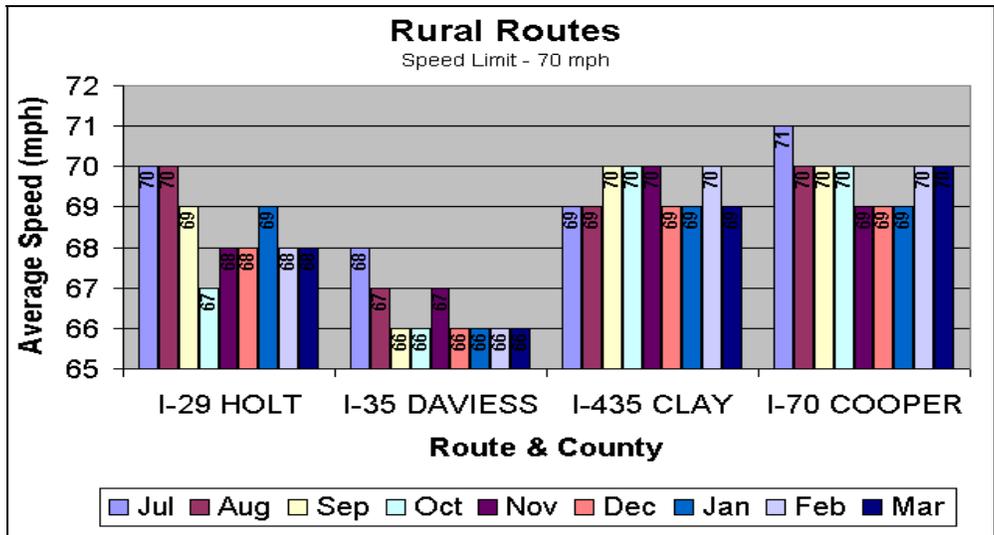


Desired Trend:  
N/A

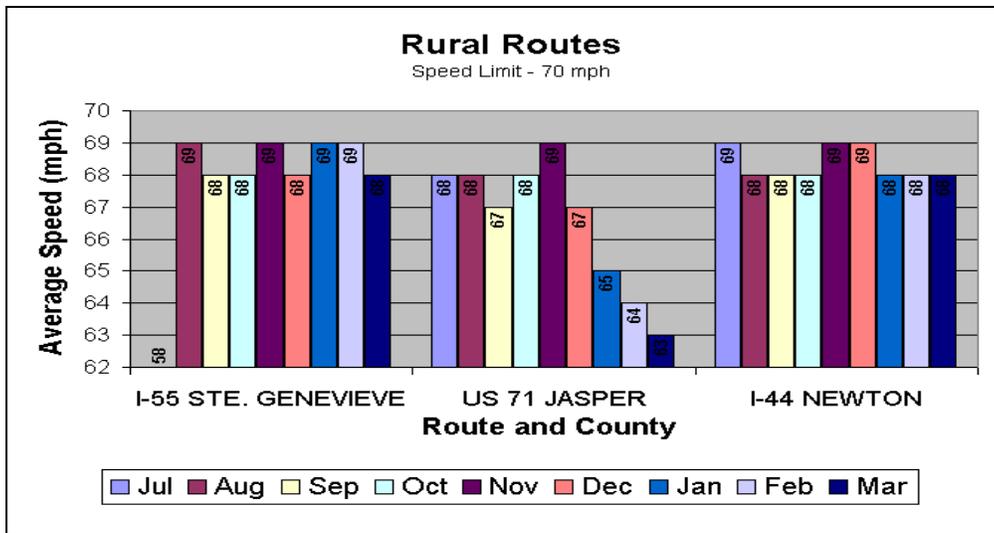


Desired Trend:  
N/A

### STATEWIDE



Desired Trend:  
N/A



Desired Trend:  
N/A

# Uninterrupted Traffic Flow

## *Average time to clear traffic incident*

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

**Measurement Driver:** Eileen Rackers, State Traffic Engineer

**Purpose of the Measure:**

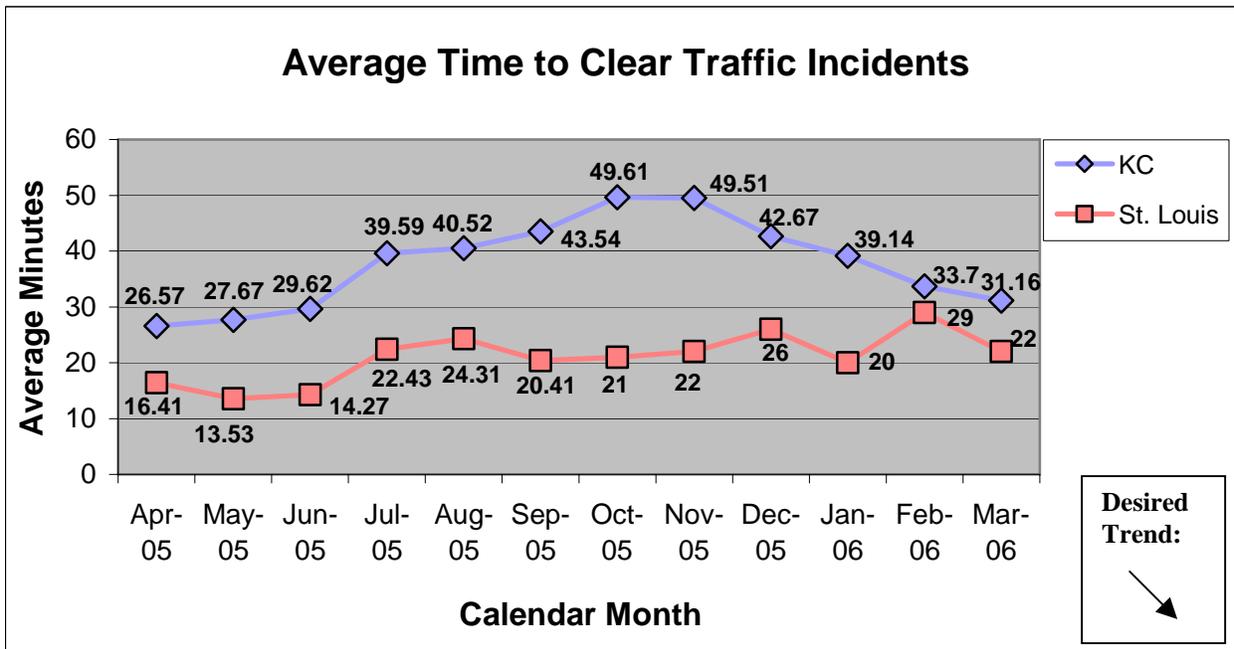
This measure is used to determine what deficiencies or efficiencies exist in incident clearance on the state highway system. A traffic incident is an unplanned event that creates a temporary reduction in the number of vehicles that can travel on the road.

**Measurement and Data Collection:**

Collection of data began March 1, 2005. "Time of arrival" and the time for "all lanes cleared" are being recorded by Motorist Assist operators and Traffic Management Center staff. Average time to clear traffic incidents is calculated from these recorded times. Data included in this measure includes only those incidents handled by Motorist Assist and urban Emergency Response crews in districts 4 (Kansas City metro) and 6 (St. Louis metro).

**Improvement Status:**

This data shows that overall, the Kansas City metro area has experienced some improvements in incident clearance times, while the St. Louis metro area remains relatively constant. Upon review of the data, the spike in St. Louis for the month of February was mostly due to a multi-day incident involving an overturned gasoline tanker on MoDOT right of way in St. Louis City. Overall, incident clearance times in St. Louis and Kansas City should become similar, with minor seasonal changes due to increased traffic volumes and weather conditions. Renewed efforts in Incident Management in the Kansas City region should help to develop long-term partnerships and identify MoDOT's expectations for quick clearance and open roadways.



# Uninterrupted Traffic Flow

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

**Result Driver:** Don Hillis, Director of System Management  
**Measurement Driver:** Eileen Rackers, State Traffic Engineer

**Purpose of the Measure:**

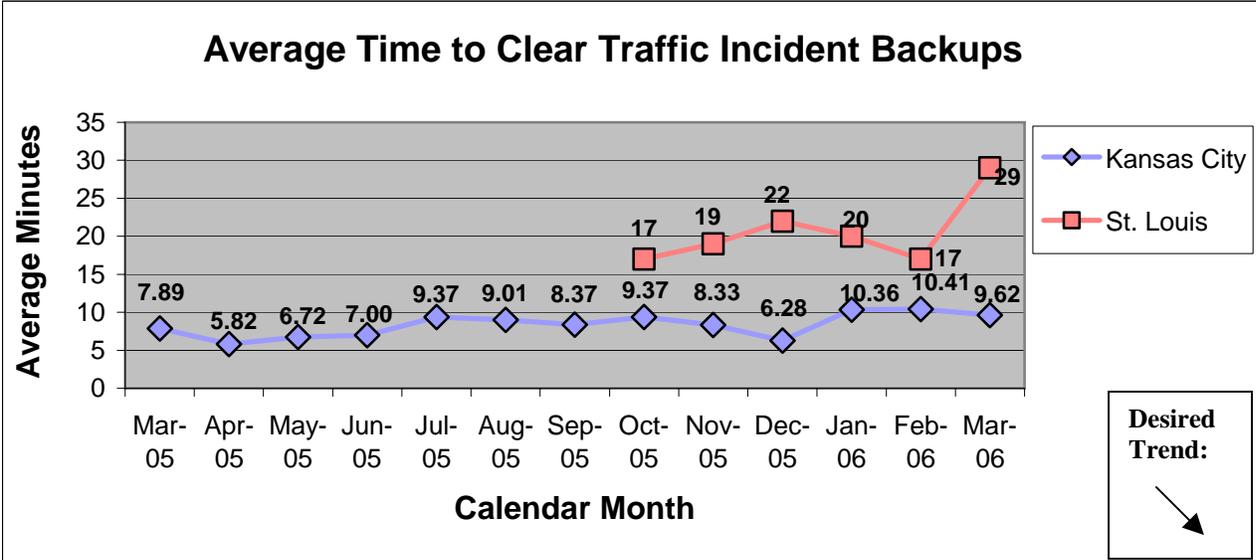
This measure tracks the amount of time it takes to return traffic flow back to normal after a traffic incident. A traffic incident is any unplanned event that creates a temporary reduction in the number of vehicles that can travel on the road.

**Measurement and Data Collection:**

“Lanes cleared” times and “clear backup” times are being recorded by the Traffic Management Center operators using automated detection systems. District 4 has devices already deployed with data being gathered along portions of I-435 and I-70. District 6 began collecting data manually using video and Motorist Assist verification. St. Louis will use advanced transportation management system devices and software as soon as they come online during the next several months. Average times to clear traffic backups are calculated from these recorded times.

**Improvement Status:**

This data shows that queue clearance times in Kansas City appear to average around 9 minutes, while the St. Louis metro area queue clearance times are slightly more than double. Although St. Louis data is a sampling based on data collected manually through observations, the data is somewhat skewed in its inclusion of most major incidents on the St. Louis freeway network. The St. Louis data does not necessarily capture short-term incidents that clear before a Motorist Assist operator can get to the scene. The Kansas City data includes all detected incidents on the KC Scout instrumented routes. A comparison of traffic volumes per lane on the routes included in this analysis also indicate that the increased volumes on St. Louis area routes will create more significant congestion problems by impacting routes that have higher vehicle demand per lane in St. Louis than in Kansas City. The spike in St. Louis data in March 2006 is largely due to two major incidents on I-270 just south of I-70, one southbound at the start of the morning commute and one northbound at the start of the evening commute. These incidents congested traffic for over 90 minutes throughout the balance of the heavy commute in both cases.



# Uninterrupted Traffic Flow

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

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

**Measurement Driver:** Eileen Rackers, State Traffic Engineer

**Purpose of the Measure:**

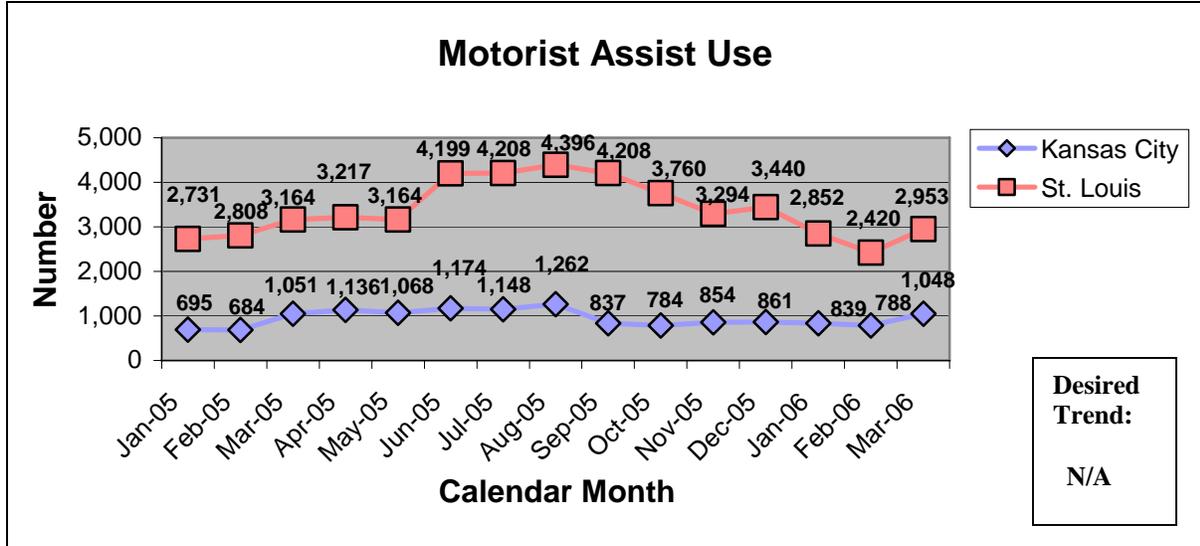
This measure is used to gauge the use of the Motorist Assist programs. Incidents impact Missouri’s transportation system capacity. An incident is any unplanned event that creates a temporary reduction in roadway capacity that impedes normal traffic flow. The sooner an incident is removed, the sooner the highway system returns to normal capacity. Therefore, responding to and quickly addressing the incidents (crashes, flat tires, stalled vehicles, etc.) improves system performance.

**Measurement and Data Collection:**

Monthly data collection began in January 2005. The Motorist Assist operators record each assist and then prepare a monthly summary. St. Louis operators patrol approximately 160 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 experienced a routine increase in assists due to increased weather temperatures and roadway volumes. The sharp increase in assists in the St. Louis area is attributable to a spike in temperature and a period of recurring severe weather resulting in increased breakdowns and collisions. This data also demonstrates a typical pattern of increased assists during peak travel season, followed by a decrease in services in late summer and early fall.



## Uninterrupted Traffic Flow

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

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

**Measurement Driver:** Eileen Rackers, State Traffic Engineer

**Purpose of the Measure:**

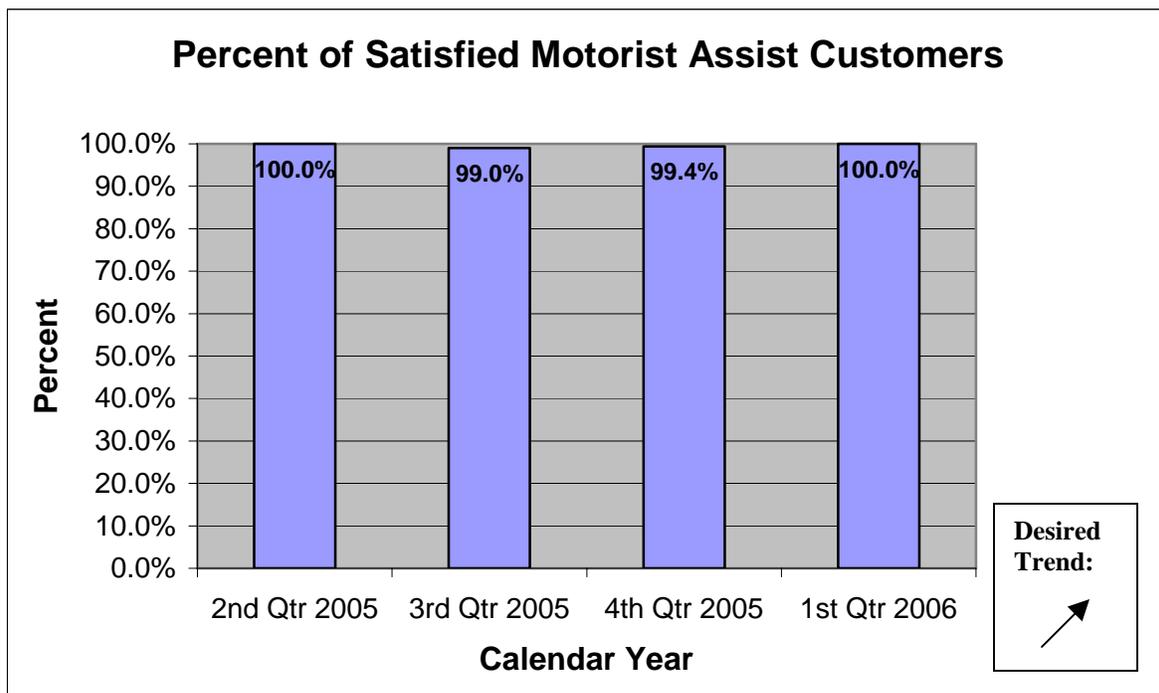
This measure helps evaluate services provided through MoDOT's Motorist Assist Program, specifically whether the customers who use the program are satisfied with the service. Information received provides direction on how to better serve our customers and keep traffic moving safely and efficiently.

**Measurement and Data Collection:**

Motorist Assist operators began distributing a survey card to customers on June 1 to collect data. Data is compiled and tabulated by the Missouri Transportation Institute. Surveys with selections identifying that the service was "probably" or "definitely" valuable were tabulated as "satisfied" for this measure.

**Improvement Status:**

The data for this measure included responses from 120 pre-printed survey forms in the second quarter, 204 pre-printed forms in the third quarter, 361 pre-printed survey forms in the fourth quarter and 380 pre-printed survey forms in the first quarter of 2006 that were returned to MoDOT by motorists who used the Motorist Assist service in the Kansas City and St. Louis metro areas. This initial data concurs with the comments that have been historically provided by customers on prior comment forms. Based on a specific question in these surveys, 98 percent of respondents selected that they believed that MoDOT should continue to provide this service. It should be noted that in one year's worth of surveys to date, no respondent has identified dissatisfaction with the program, the operator or the services provided. Additionally, there has not been a single negative response when the customer was asked if, in their opinion, the program should continue.



# Uninterrupted Traffic Flow

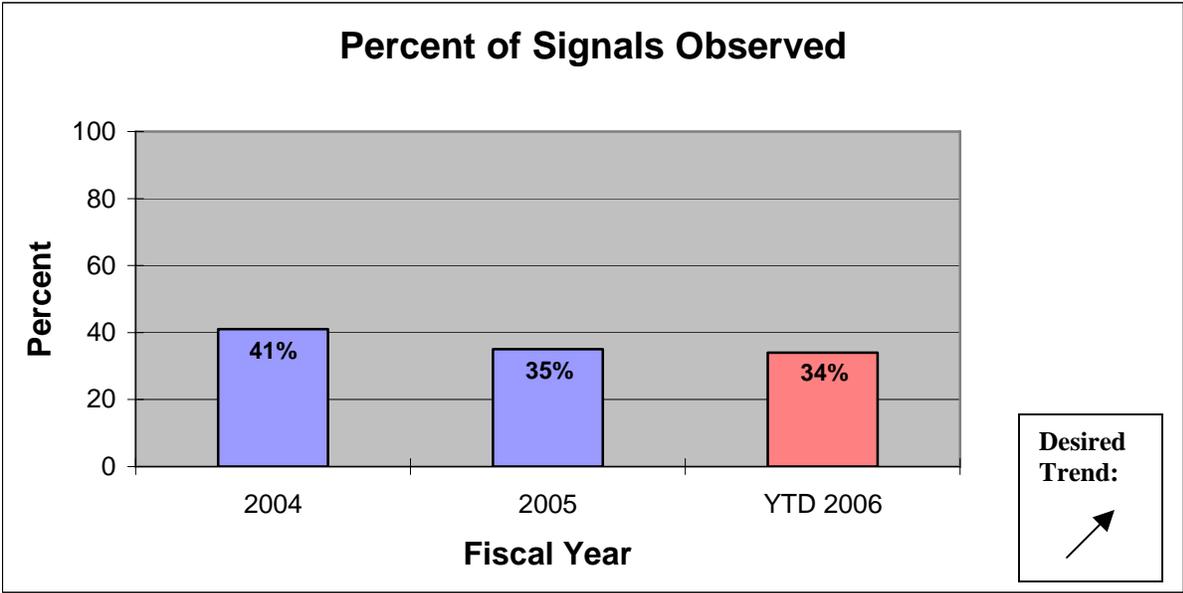
## Percent of signals observed

**Result Driver:** Don Hillis, Director of System Management  
**Measurement Driver:** Julie Stotlemeyer, Signal and Lighting Engineer

**Purpose of the Measure:**  
This measure tracks how well the department is monitoring the signal system to improve traffic flow.

**Measurement and Data Collection:**  
Traffic engineers document observed signal data on an observation sheet. The date of the signal observation will be recorded in the Transportation Management System database. Data is collected from the TMS database to generate the report. A complete signal observation requires personnel to monitor the signal during four different times of day: AM peak, Noon peak, PM peak and off peak.

**Improvement Status:**  
For the third quarter of fiscal year 2006, we again have made progress. Thirty-four percent of our signals, an amount almost equal to that completed for fiscal year 2005, have been observed. However, to complete observations on all signals, we should observe approximately 25 percent of signals per quarter (75 percent for three quarters). We are significantly behind our expected observations for third quarter. All signals should be observed each year with adjustments made to the timing, if necessary, to improve uninterrupted traffic flow. Guidance on how to conduct signal observations has been developed as well as a quality assurance plan for signal observations. A quality assurance review of five districts has been completed.



# Uninterrupted Traffic Flow

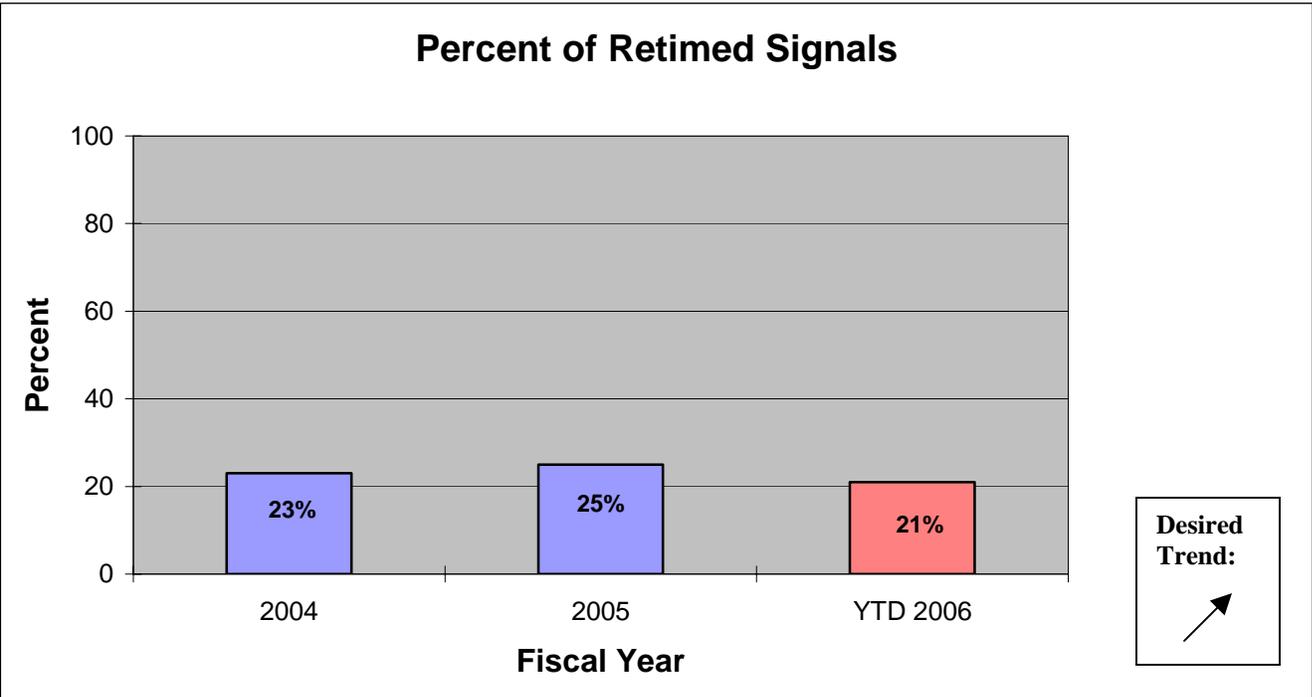
## Percent of retimed signals

**Result Driver:** Don Hillis, Director of System Management  
**Measurement Driver:** Julie Stotlemeyer, Signal and Lighting Engineer

**Purpose of the Measure:**  
This measure tracks how well the department is adjusting the timing of the signal system to improve traffic flow.

**Measurement and Data Collection:**  
Traffic engineers document retimed signal data on a timing sheet. The date of the retiming is recorded in the Transportation Management System database. Data is collected from the TMS database to generate the report. Signals usually operate under several timing plans. Only one portion of the timing plan may have been changed and captured as a retiming. The retiming could have been completed as a result of a customer complaint or a signal observation. Retiming signals for efficient operation should involve an in-depth study and this may not be reflected in this measure.

**Improvement Status:**  
MoDOT has increased performance somewhat from second quarter. Last year at this point, the department had retimed 18 percent of its signals, and now MoDOT is at 21 percent through this quarter, three percent higher in comparison. Not every signal may need to be retimed, so the department would not expect 100 percent of all signals to be retimed every year. But in order to maintain uninterrupted traffic flow, signals should be retimed at a minimum of every three years. Based on this, MoDOT could expect about eight percent to be retimed each quarter (24 percent for three quarters). Therefore, the department is behind its target for this time of year. A quality assurance plan for signal timing has been developed and a quality assurance review of five districts has been completed.



# Uninterrupted Traffic Flow

## Percent of work zones meeting expectations for traffic flow

**Result Driver:** Don Hillis, Director of System Management  
**Measurement Driver:** Scott Stotlemeyer, Technical Support Engineer

**Purpose of the Measure:**

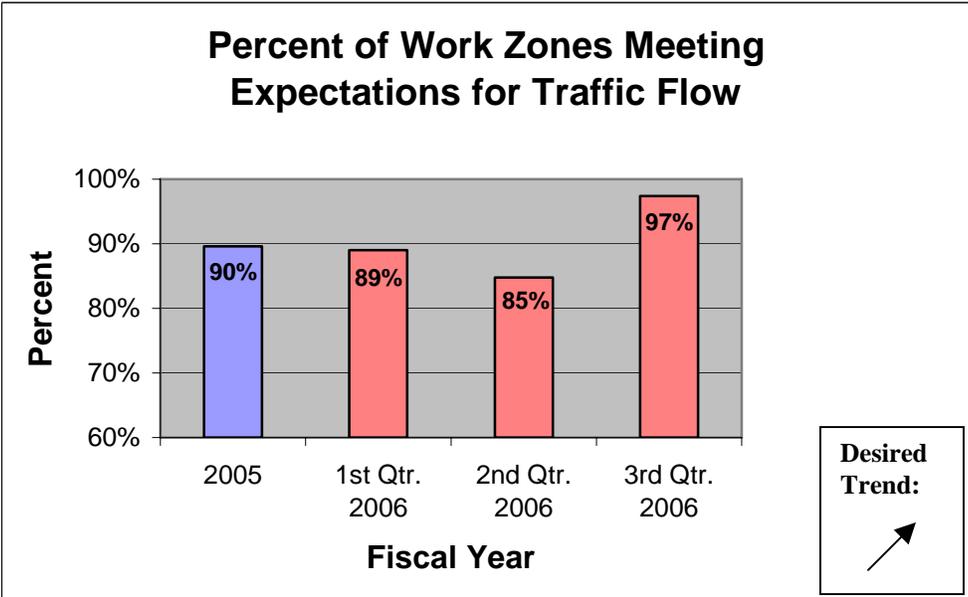
An important factor in evaluating the department’s performance in temporary traffic control design, deployment, operation, and maintenance is the measurement of our work zones affect on the mobility of highway users. This measure tracks how well the department meets its customer expectations of work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

**Measurement and Data Collection:**

Using a formal inspection worksheet, staff from Construction and Materials, Maintenance, Traffic, and the districts 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. Note: This inspection program began in June 2005. A total of 857 inspections have been completed since its inception.

**Improvement Status:**

The results of the 232 inspections performed this quarter showed great progress in this measurement, as the percent of work zones meeting visibility expectations rose by 12.6 percent. The higher percentage resulted from a combination of MoDOT’s greater emphasis on providing motorists with exemplary work zones and a seasonal anomaly in which there was less traffic volume encountering less complex work zones. The former component being an outcome of the continued enhancement of the department’s work zone mobility guidelines; conveyance of those expectations to its contractors, employees, and permittees; and those entities efforts to meet those expectations in the field.



# 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, Technical Support Engineer

**Purpose of the Measure:**

This measure tracks the amount of time needed to meet the performance objectives in MoDOT’s snow and ice removal efforts.

**Measurement and Data Collection:**

This data is collected in the Lotus Notes Winter Event database. This measurement will track 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 began after the first snowfall this winter for inclusion in the January 2006 Tracker. The objectives are to restore the major highways to a wet or dry condition as soon as possible after a storm’s end; to restore the higher volume (greater than 1,000 average daily traffic) minor highways to a wet or dry condition as soon as possible after a storm’s end; and to have the lower volume (less than or equal to 1,000 average daily traffic) 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 after a storm’s end. The end of the storm is defined as when freezing precipitation stops accumulating on the roadways, either from falling or drifting conditions.

**Improvement Status:**

The two categories for minor highways were averaged into one number for all minor highways. The chart shows that, from December to January, the time to meet the winter storm event performance objectives decreased by a small amount. These times remained relatively fixed for the remainder of the winter season due to the fact that there were very few additional snowstorms in Missouri. This winter was a very mild winter for the state in terms of winter events and below freezing temperatures. An advanced snow removal training module is being developed for veteran employees and supervisors to increase consistency and efficiency in this area. We continue to upgrade our equipment by providing wider snowplows and towplows to improve our efficiency.

