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 roadway 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 roadway 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:

Travel Index = Average speed/Free flow speed

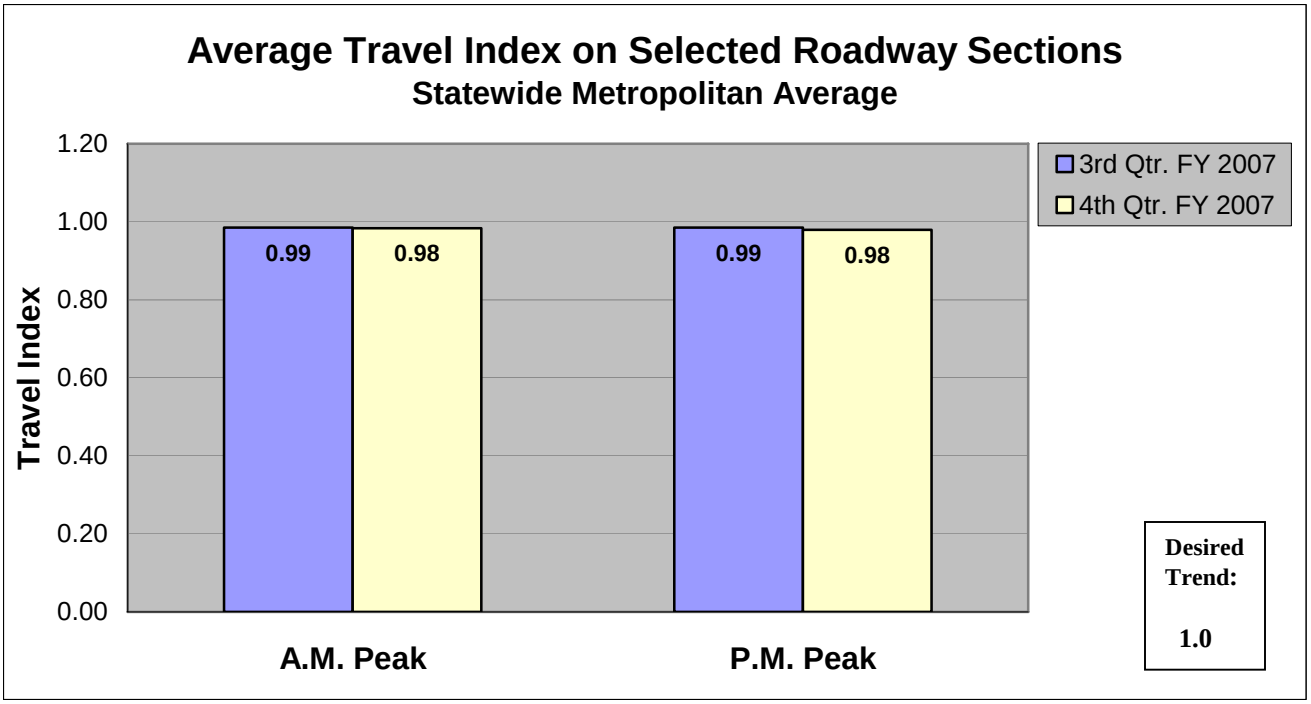
Where: Average speeds are taken from sensor data.
The free flow speed is constant and is determined by averaging the speeds at which vehicles are traveling when the volumes are less than 200 vehicles per hour per lane (vphpl).

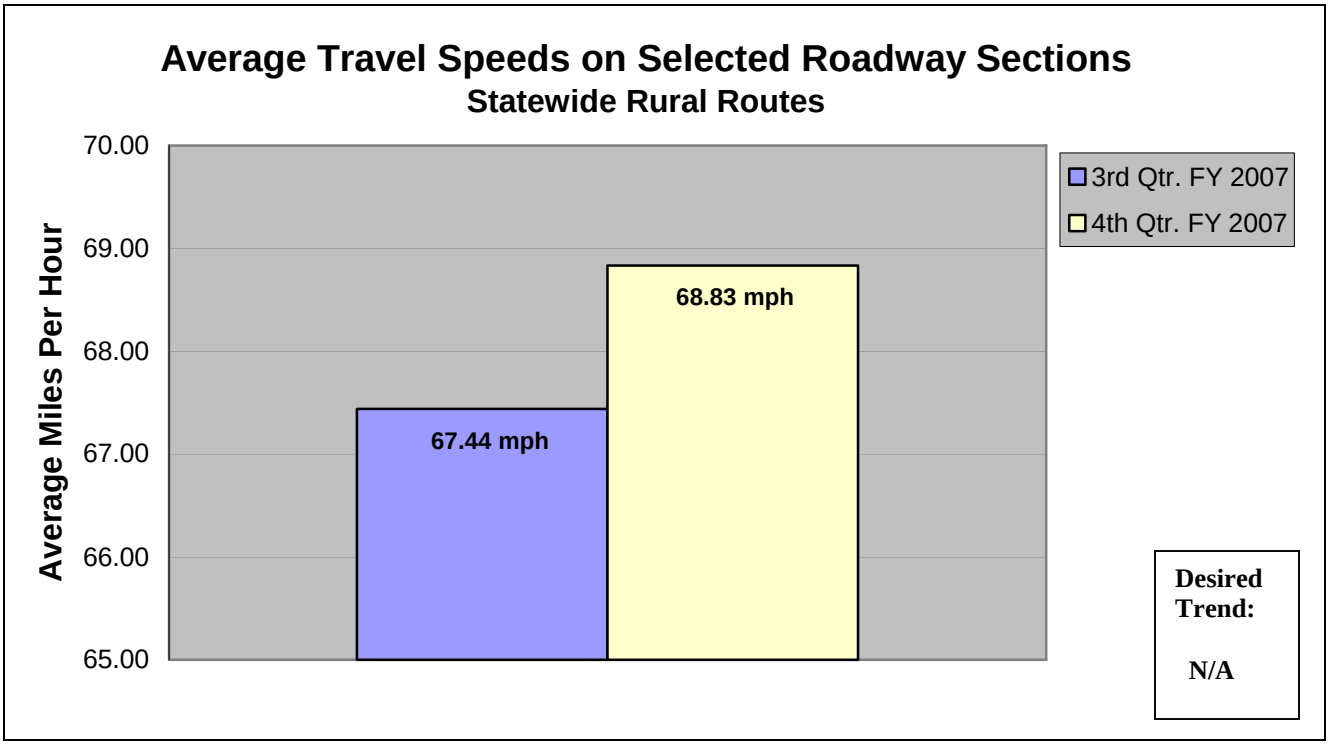
Measurement and Data Collection:
Data from the St. Louis and Kansas City regions are provided by MoDOT's traffic management centers. Information about the St. Louis traffic management center, Gateway Guide can be found at http://www.gatewayguide.com and information about the traffic management center 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:
St. Louis & Kansas City metropolitan regions:
As shown on the graph, the freeway systems in the St. Louis and Kansas City regions are performing very close to the free flow condition during the peak hours, down only slightly from 0.99 to 0.98. Recurring congestion in the morning and afternoon peak periods causes average speeds to fall slightly but does not have a significant impact on the system. The St. Louis region has experienced a vast amount of construction in the last few months on the I-64 design-build project with lane restrictions on I-170 and I-64. Major work zones along this corridor will be present over the next couple of years. The remaining corridors in the area have not had any significant work zone impacts in this quarter and have maintained a high level of service.

Most of the Kansas City region has also been free from significant work zone impacts. The evening peak along eastbound I-435 prior to the Three Trails Interchange has experienced an increase in congestion due to the closing of the northbound Route 71 ramp from eastbound I-435 throughout the summer of 2007. This ramp will reopen by the end of July 2007.

Statewide:
The Statewide Average Speed on Rural Routes for this quarter is 68.83 mph.


Average Travel Index on Selected Roadway Sections
Statewide Metropolitan Average
Travel Index
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.99
0.98
0.99
0.98
A.M. Peak
P.M. Peak
3rd Qtr. FY 2007
4th Qtr. FY 2007
Desired Trend:
1.0


Average Travel Speeds on Selected Roadway Sections
Statewide Rural Routes
Average Miles Per Hour
70.00
69.00
68.00
67.00
66.00
65.00
67.44 mph
68.83 mph
3rd Qtr. FY 2007
4th Qtr. FY 2007
Desired Trend:
N/A

Uninterrupted Traffic Flow

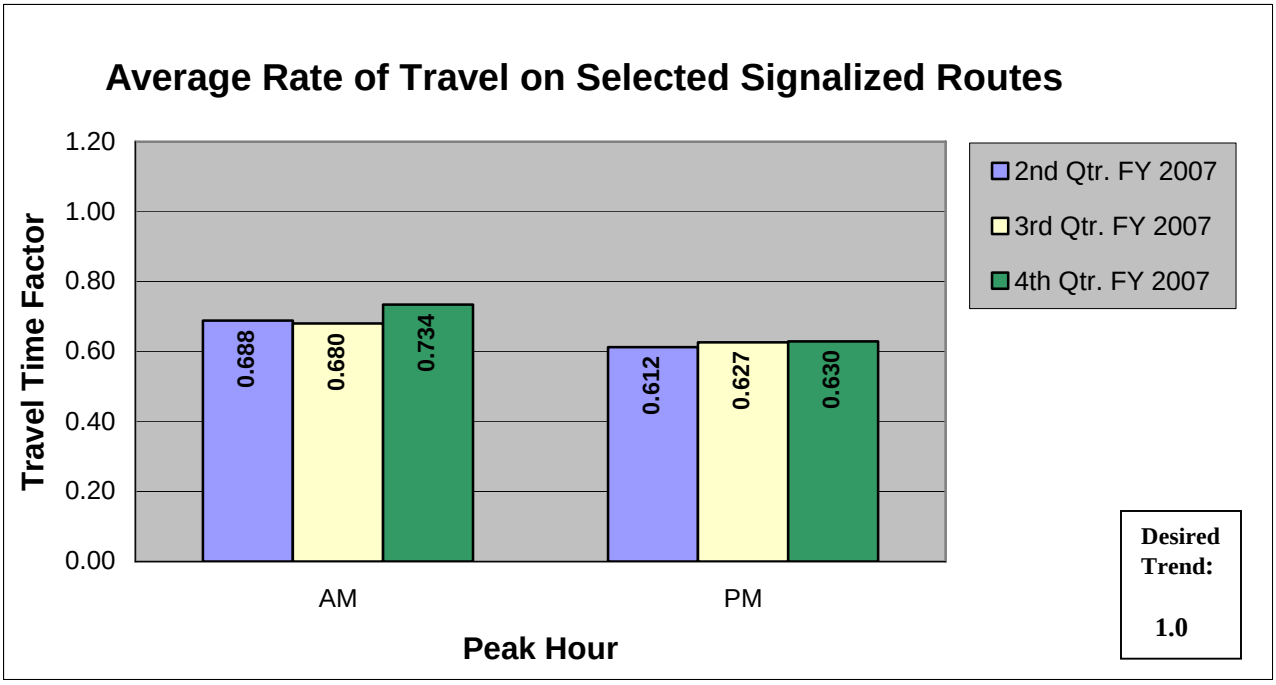
Average rate of travel on selected signalized routes

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 AM and PM 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 1.0, traffic is moving at the speed limit. This is a quarterly measure.

Improvement Status:
For fiscal year 2007, the average statewide travel time factor for AM peak is 0.701 and PM peak is 0.623. Overall performance is 0.662. AM peak travel time is 11 percent higher than PM peak travel time. Fourth quarter data shows improvement from second and third quarters for PM peak while AM peak improved during the fourth quarter.



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.

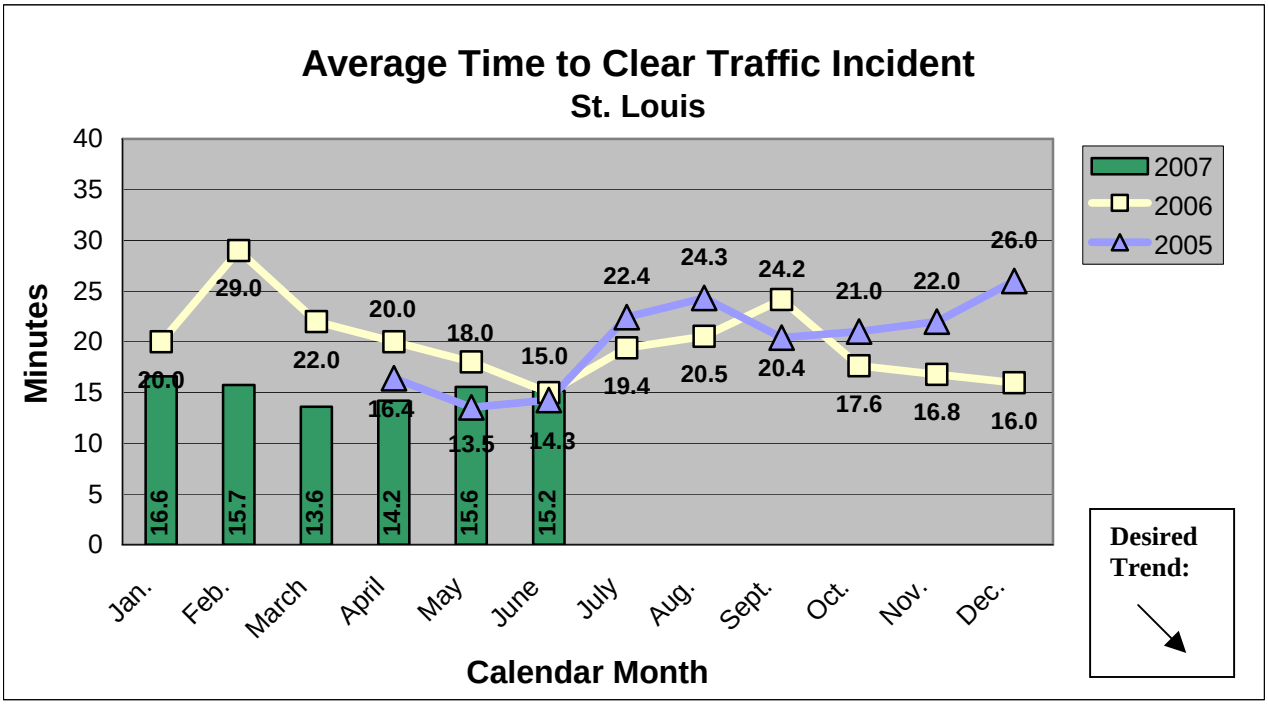
Measurement and Data Collection:
Collection of data began March 1, 2005. Traffic Management Center staff record "incident start time" and the time for "all lanes cleared." Average time to clear traffic incidents is calculated from these times.

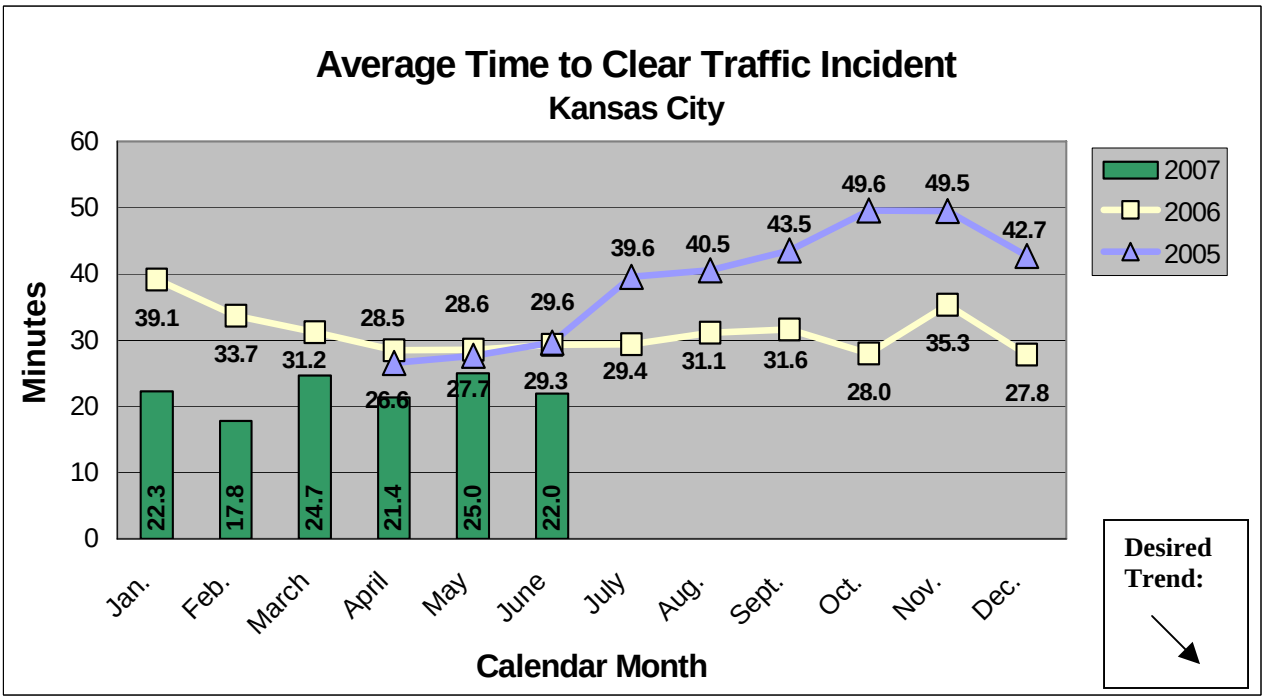
Improvement Status:
Overall, data shows that both St. Louis and Kansas City areas continue to experience incident clearance times at or below those for the same time period last year. Increased efforts in incident management, Motorist Assist and police coordination in both the St. Louis and Kansas City regions continue to support MoDOT's objective of quick clearance and open roadways with the ultimate goal of improving clearance times.

May data in Kansas City shows a slightly elevated "average time to clear" which can be attributed to the increased number of weather-related incidents, including heavy rainfall and flooding during that month. Kansas City collected data on 264, 255 and 261 incidents respectively for the months of April, May and June.

St. Louis collected data on 1,162, 1,293 and 1,101 incidents respectively for the months of April, May and June. 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, not all the incidents on the system.


Average Time to Clear Traffic Incident
St. Louis
Minutes
Calendar Month
2007
2006
2005
Desired Trend:
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
16.6
15.7
13.6
14.2
15.6
15.2
20.0
29.0
22.0
20.0
18.0
15.0
22.4
24.3
24.2
21.0
22.0
26.0
20.0
16.4
13.5
14.3
19.4
20.5
20.4
17.6
16.8
16.0


Average Time to Clear Traffic Incident
Kansas City
Minutes
Calendar Month
2007
2006
2005
Desired Trend:
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
22.3
17.8
24.7
21.4
25.0
22.0
39.1
33.7
31.2
28.5
28.6
29.6
39.6
40.5
43.5
49.6
49.5
42.7
26.6
27.7
29.3
29.4
31.1
31.6
28.0
35.3
27.8

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.

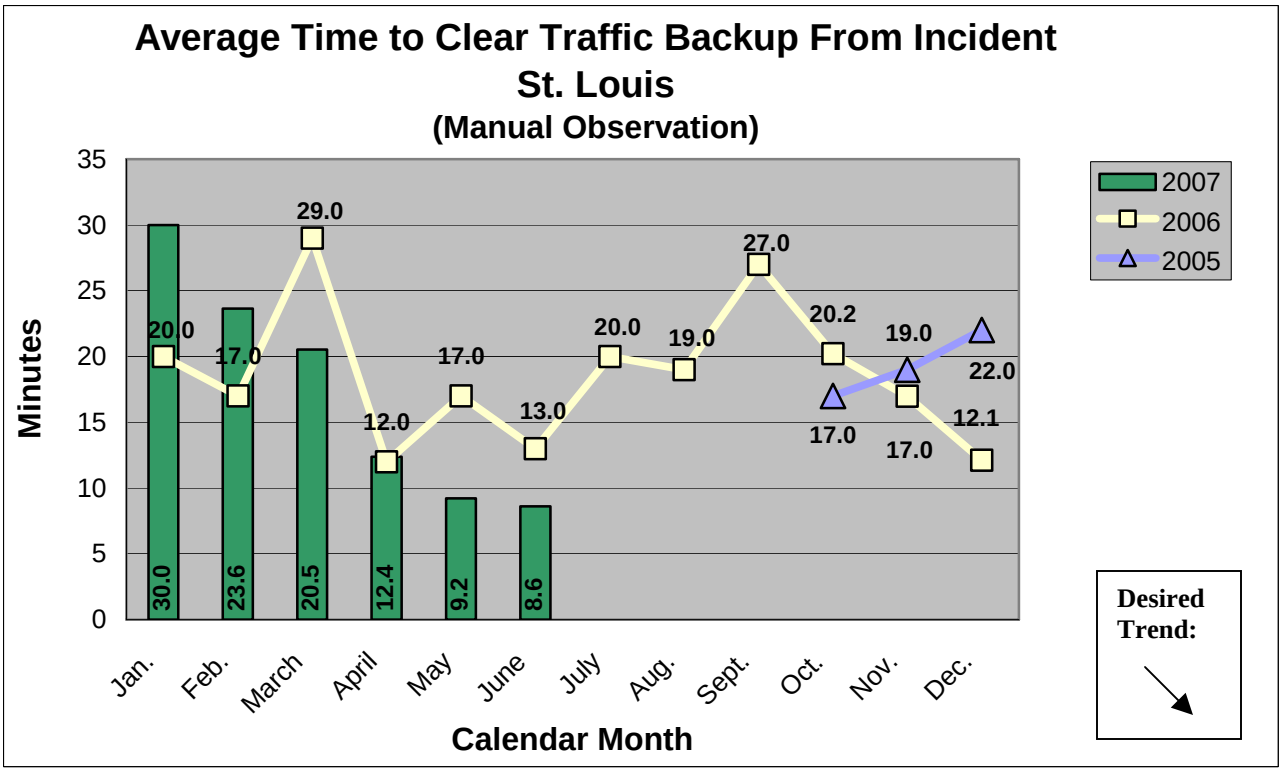
Measurement and Data Collection:
"Lanes cleared" and "clear backup" times are being recorded by MoDOT's Traffic Management Centers in Kansas City and St. Louis. Average times to clear traffic backups are calculated from these recorded times. In 2005, the Kansas City operators just terminated the incident 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.

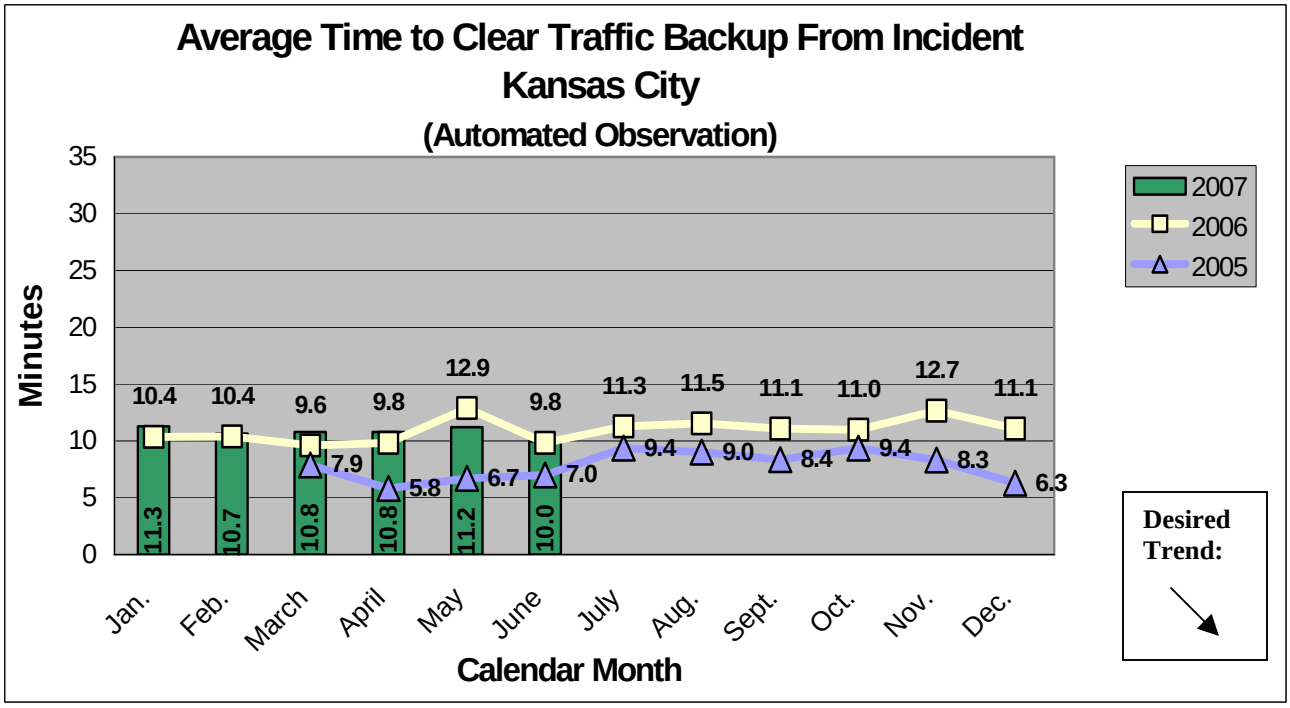
Improvement Status:
The Kansas City data includes all detected incidents on the KC Scout instrumented routes. The St. Louis data is skewed because it only includes a portion of major incidents on the St. Louis freeway network that can be monitored by operators in the traffic management center or by Motorist 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.

Overall, Kansas City Scout's average time to clear traffic back-up continues to decline due to the launch of the travel-time system and drivers having real-time information to make informed decisions about detouring away from extended backups.

The marked decrease in the time to clear traffic backup in the St. Louis area for April, May and June is a result of the increased number of incidents that the operators can monitor from the TMC due to the installation of additional closed circuit televisions, thus increasing the number of incidents for which data is collected.

In addition, the St. Louis area has more Dynamic Message Signs (DMS) available to convey traffic conditions and lane blockage information to drivers. Also, St. Louis started displaying travel times on the I-70 DMS signs between I-270 and downtown. Both of these improvements give drivers real-time information to make informed decisions about taking alternate routes to avoid extended backups.


Average Time to Clear Traffic Backup From Incident
St. Louis
(Manual Observation)
Minutes
Calendar Month
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
2007
2006
2005
Desired Trend:
30.0
23.6
20.5
12.4
9.2
8.6
20.0
17.0
29.0
12.0
17.0
13.0
20.0
19.0
27.0
20.2
17.0
19.0
17.0
22.0
12.1


Average Time to Clear Traffic Backup From Incident
Kansas City
(Automated Observation)
Minutes
Calendar Month
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
2007
2006
2005
Desired Trend:
11.3
10.7
10.8
10.8
11.2
10.0
10.4
10.4
9.6
9.8
12.9
9.8
11.3
11.5
11.1
11.0
12.7
11.1
7.9
5.8
6.7
7.0
9.4
9.0
8.4
9.4
8.3
6.3

Uninterrupted Traffic Flow

Number of customers assisted by the Motorist Assist program

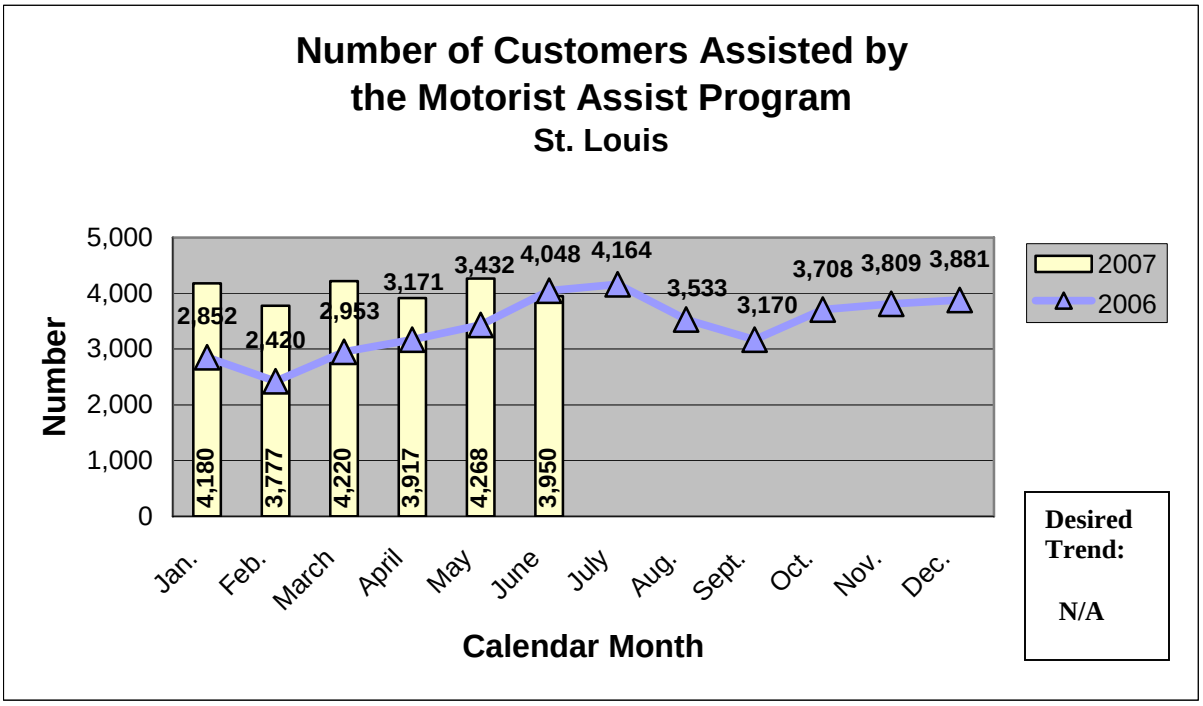
Result Driver: Don Hillis, Director of System Management
Measurement Driver: Rick Bennett, Traffic Liaison Engineer

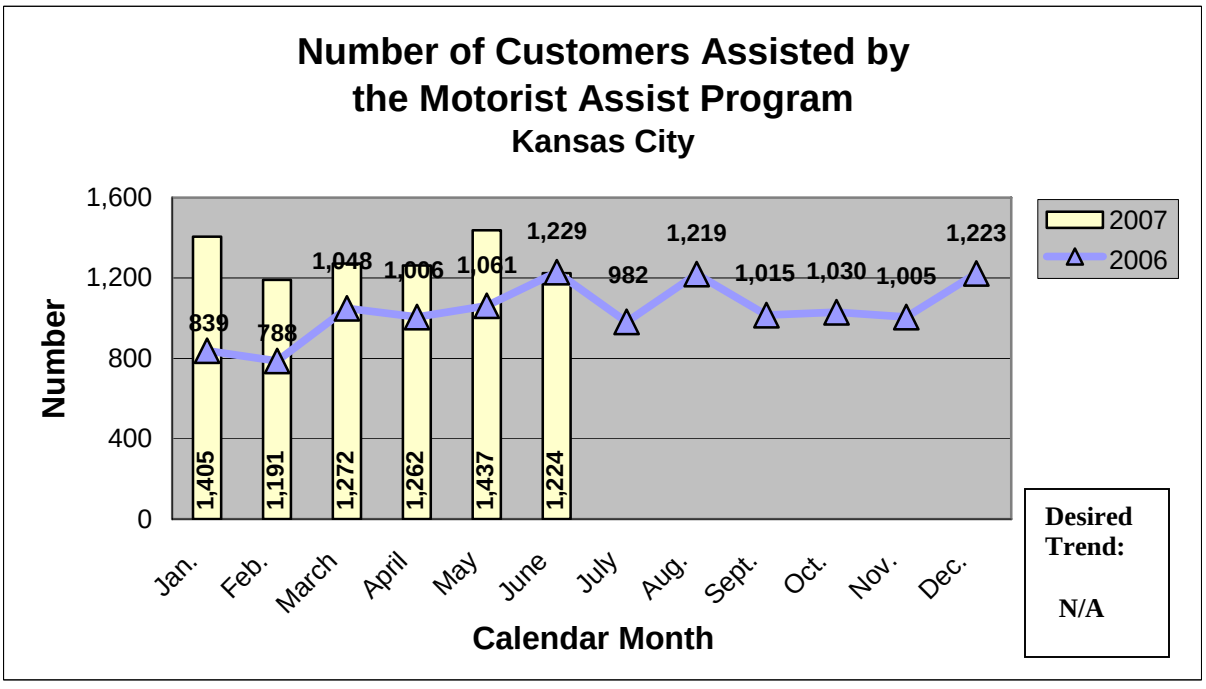
Purpose of the Measure:
This measure is used to gauge the use of the Motorist Assist programs. Incidents impact Missouri's transportation system capacity. An incident is any unplanned event that creates a temporary reduction in roadway capacity that impedes normal traffic flow. The sooner an incident 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. Our 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 experienced a routine increase in assists due to increased roadway volumes. Typical patterns show increased assists during peak travel season and winter weather and decreased services in late summer and early fall.

The increased number of assists in Kansas City during May can be contributed to the increased number of weather related storms that caused flooding and adverse driving conditions in the area.


Number of Customers Assisted by
the Motorist Assist Program
St. Louis
Number
5,000
4,000
3,000
2,000
1,000
0
2,852
2,420
2,953
3,171
3,432
4,048
4,164
3,533
3,170
3,708
3,809
3,881
4,180
3,777
4,220
3,917
4,268
3,950
2007
2006
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Calendar Month
Desired Trend:
N/A


Number of Customers Assisted by
the Motorist Assist Program
Kansas City
Number
1,600
1,200
800
400
0
839
788
1,048
1,006
1,061
1,229
982
1,219
1,015
1,030
1,005
1,223
1,405
1,191
1,272
1,262
1,437
1,224
2007
2006
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Calendar Month
Desired Trend:
N/A

Uninterrupted Traffic Flow

Percent of Motorist Assist customers who are satisfied with the service

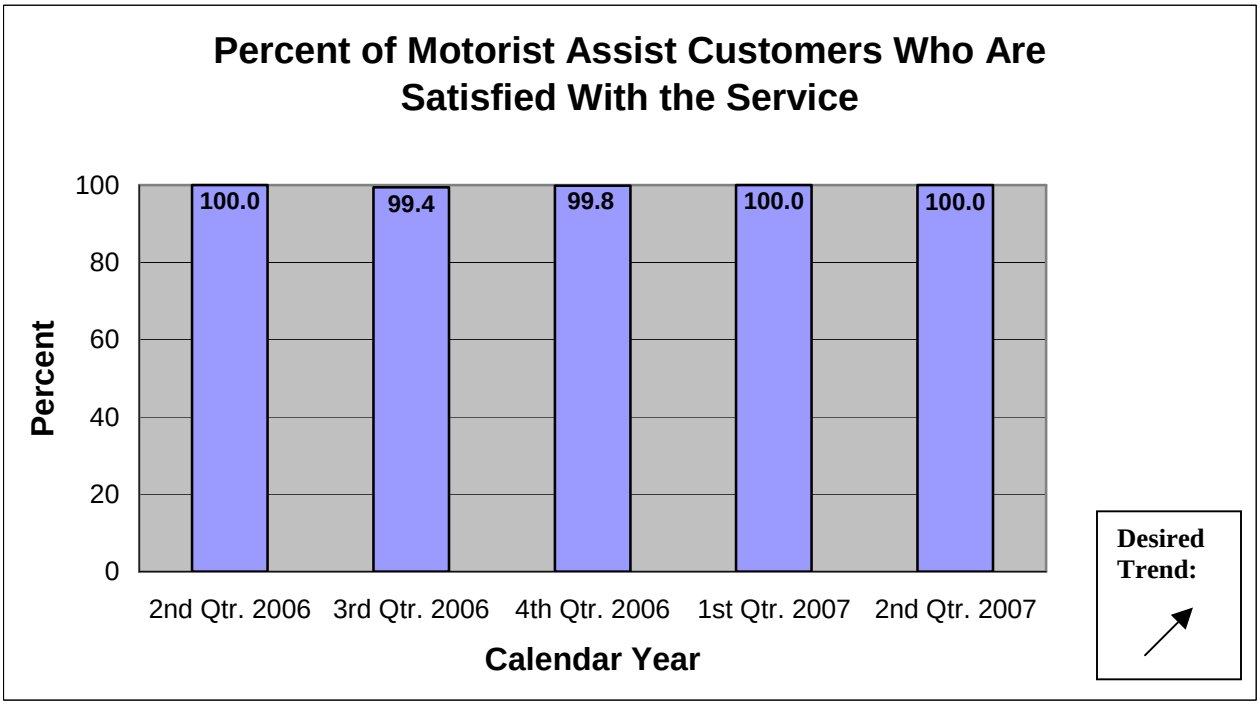
Result Driver: Don Hillis, Director of System Management
Measurement Driver: Rick Bennett, Traffic Liaison Engineer

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

- Second Quarter 2006, 447 surveys received
- Third Quarter 2006, 704 surveys received
- Fourth Quarter 2006, 575 surveys received
- First Quarter 2007, 540 surveys received
- Second Quarter 2007, 548 surveys received



Uninterrupted Traffic Flow

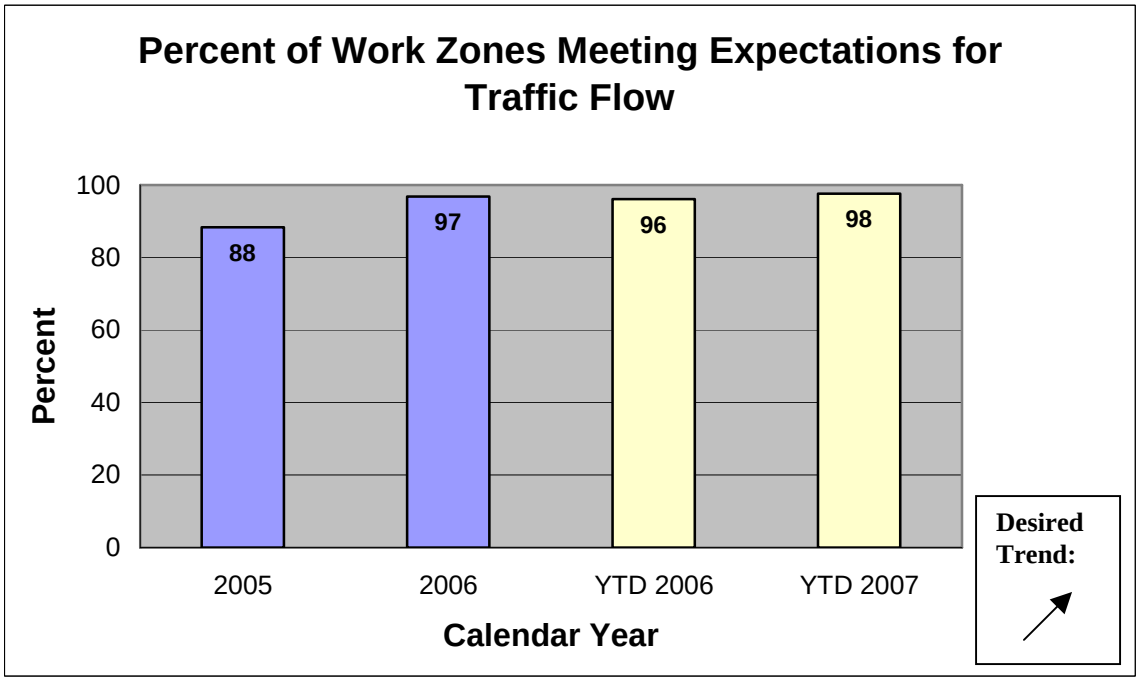
Percent of work zones meeting expectations for traffic flow

Result Driver: Don Hillis, Director of System Management
Measurement Driver: Scott Stotlemeyer, 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 1,462 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 2.4 percent of the evaluations). This rating is 1.6 percentage points higher than last calendar year's year-to-date, and 0.7 percentage points higher when compared to the year-end rating – a year the department showed an 8.4 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

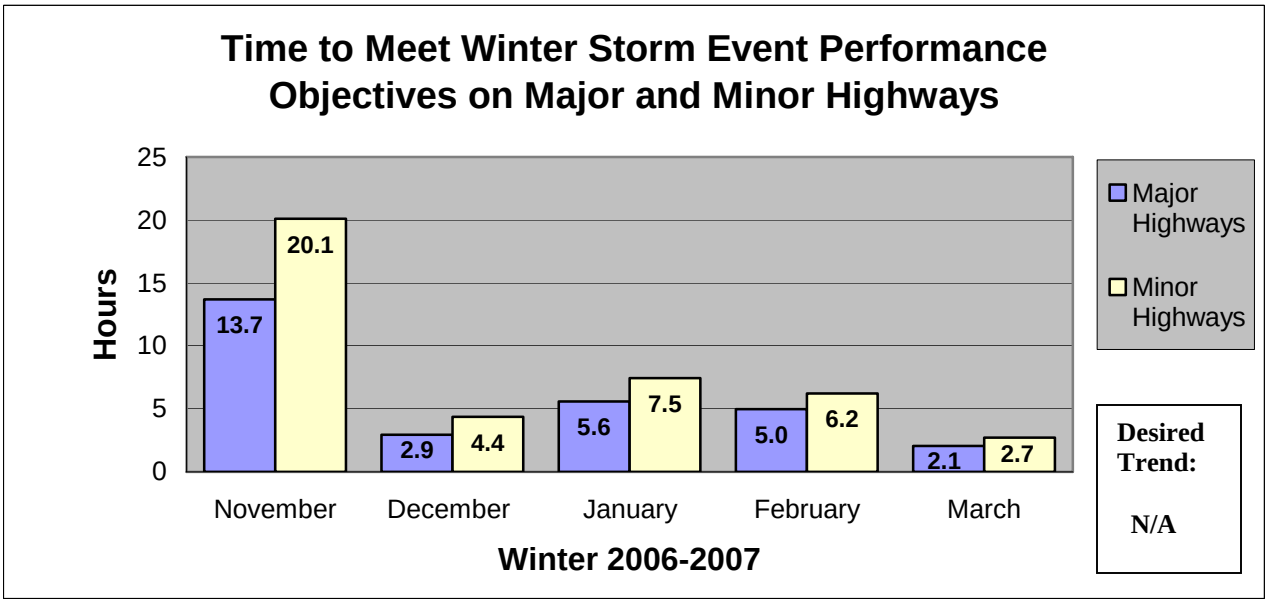
Time to meet winter storm event performance objectives on major and minor highways

Result Driver: Don Hillis, Director of System Management
Measurement Driver: Tim Jackson, Technical Support 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 wet or dry condition as soon as possible, restore the higher-volume minor highways to a wet or dry 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:
January and February had several large snowstorms that covered most of the state of Missouri. A major ice storm hit southwest, central and south central Missouri in January. The average time to meet the winter event performance objectives declined over January, February and March. These times 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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