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: Troy Pinkerton, Traffic Liaison 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.

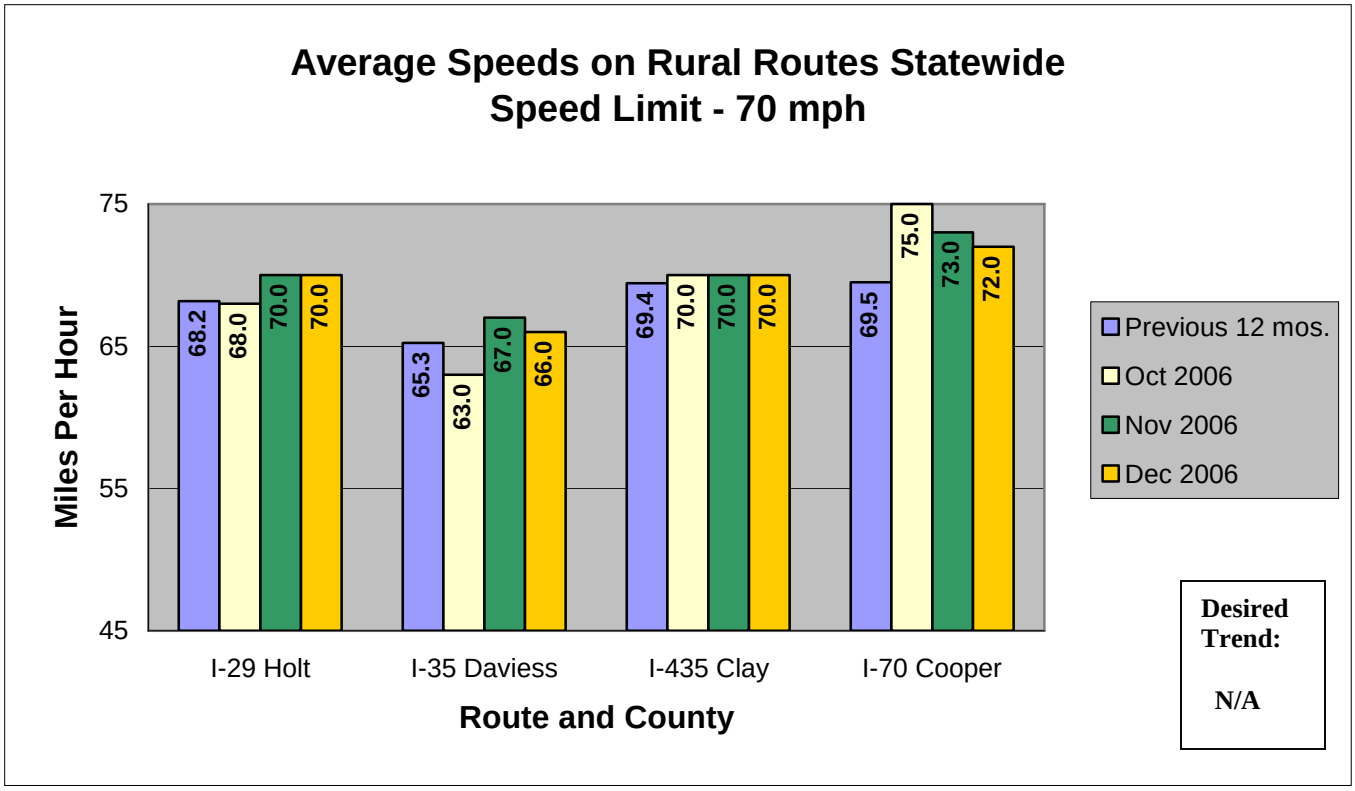
Measurement and Data Collection:
Data from the St. Louis and Kansas City regions are provided by the Traffic Management Centers. Information about the St. Louis traffic management center Gateway Guide can be found at http://www.gatewayguide.com, and information about the traffic management center in 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*. All data is reported for weekdays only, to better represent peak traffic conditions. The data from St. Louis is representative of large sections of roadway, while Kansas City and statewide data are shown at specific sensor locations.

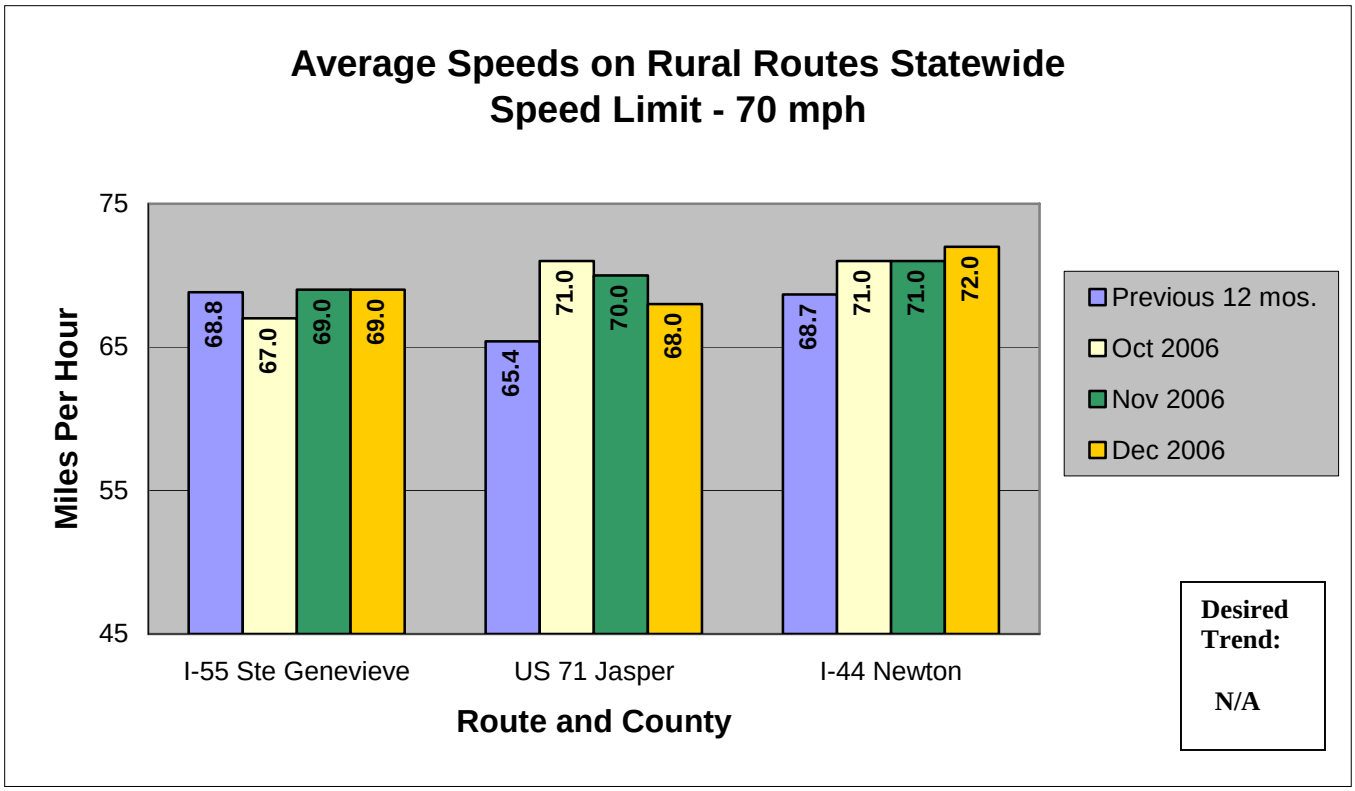
Improvement Status:
Average speed data this quarter is running at or very near the posted speed limit on rural routes statewide. A few locations experienced minor equipment issues that resulted in erroneously high average speed-readings. The equipment issues from the last quarter on Interstate 70 in Cooper County were repaired in October. Thus, data for the month of October is still incorrect at that location. An overlay on Interstate 44 in Newton County has created problems with the speed information at that location. Volume data is consistent with calibration readings, but the calibration for speed indicates the reported averages may be a little higher than actual. Interstate 35 in Daviess County was under construction early in the quarter and equipment problems for a single lane in this location reduced the reported average.

The average speeds in the St. Louis region are once again fairly consistent compared to the posted speeds. Interstate 64 continues to experience some volatility due to increased volumes in the afternoon peak. The St. Louis region recently awarded a contract for traffic data collection, which will increase the traffic detection coverage area for the region. The dynamics of our transportation system will experience many changes during construction of the I-64 corridor, and this more proactive approach is necessary for managing our system.

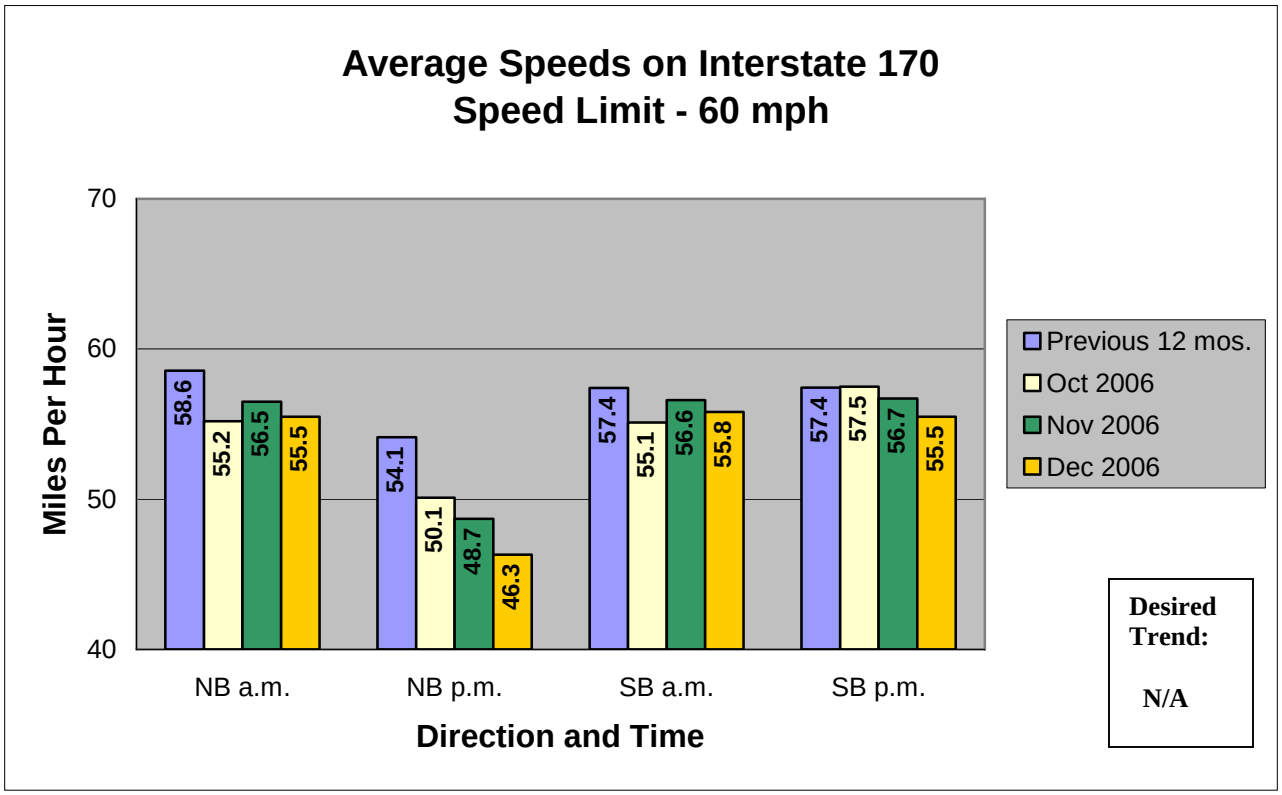
Generally, normal peak-hour speed fluctuations are seen this quarter in the Kansas City region. The completion of construction along the west side of the downtown loop has contributed to an increase in the morning peak average on I-35 at 27th Street. The morning peak on southbound I-35 at Armour experienced an increased number of incidents resulting in greatly reduced average speeds. This is typically the most congested area in the region, and small incidents have a major impact to traffic conditions. KC Scout has developed and is testing the ability to report travel times on dynamic message signs in the region. It is expected that travel times will be common information on the signs in the Kansas City region very early in 2008.

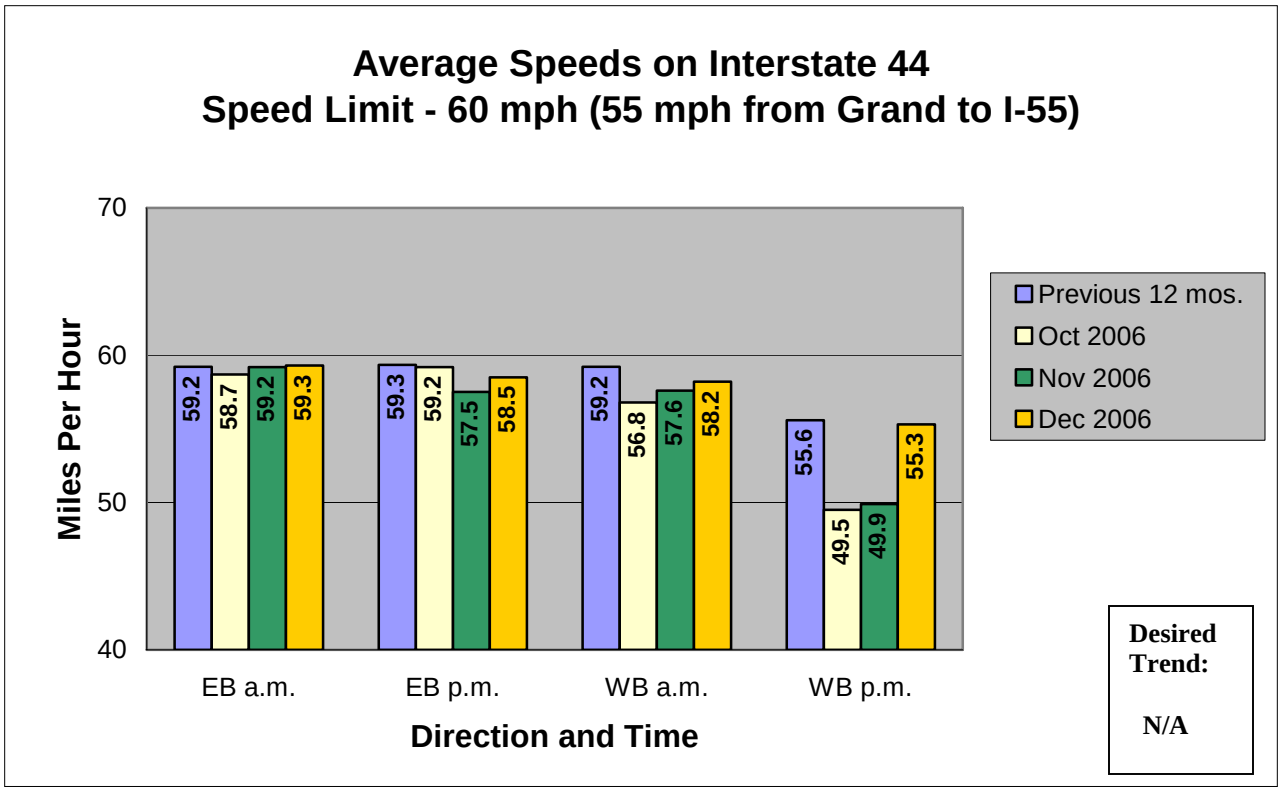
STATEWIDE


Average Speeds on Rural Routes Statewide
Speed Limit - 70 mph
Miles Per Hour
75
65
55
45
68.2
68.0
70.0
70.0
65.3
63.0
67.0
66.0
69.4
70.0
70.0
70.0
69.5
75.0
73.0
72.0
I-29 Holt
I-35 Daviess
I-435 Clay
I-70 Cooper
Route and County
Previous 12 mos.
Oct 2006
Nov 2006
Dec 2006
Desired Trend:
N/A

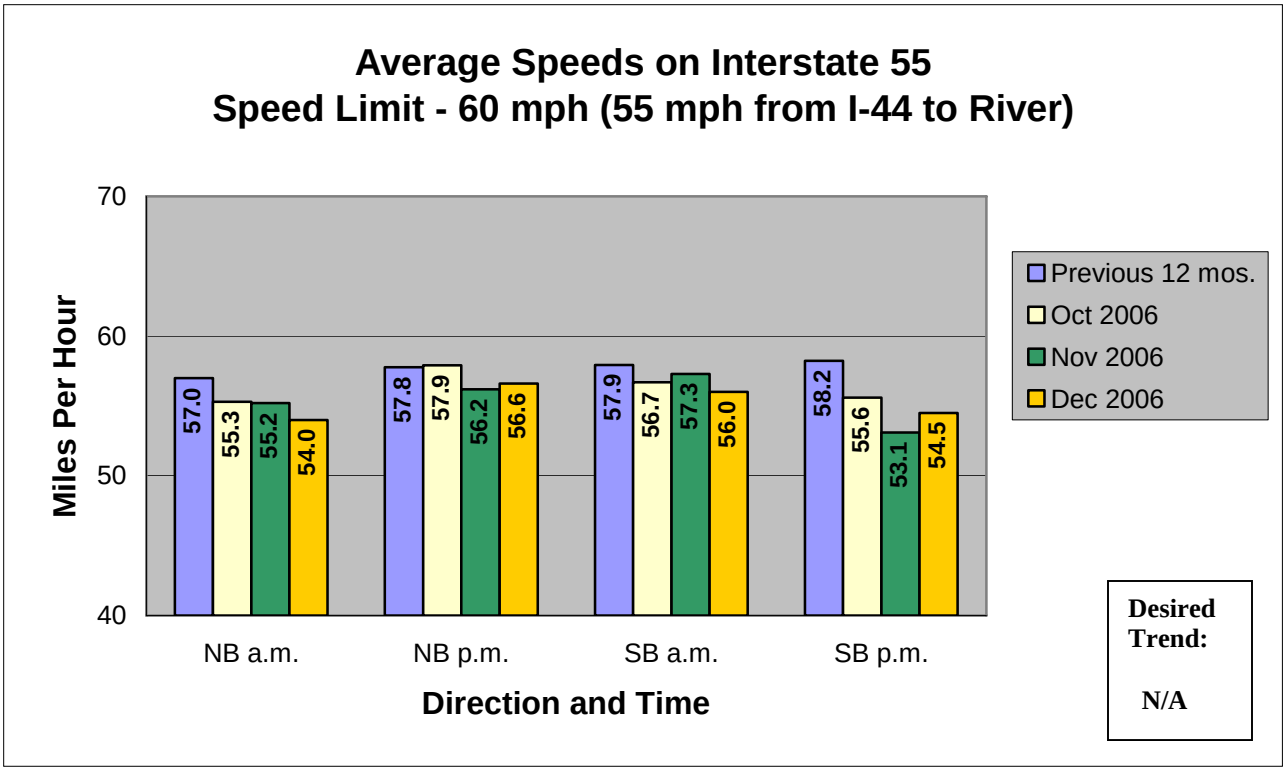

Average Speeds on Rural Routes Statewide
Speed Limit - 70 mph
Miles Per Hour
75
65
55
45
68.8
67.0
69.0
69.0
65.4
71.0
70.0
68.0
68.7
71.0
71.0
72.0
I-55 Ste Genevieve
US 71 Jasper
I-44 Newton
Route and County
Previous 12 mos.
Oct 2006
Nov 2006
Dec 2006
Desired Trend:
N/A

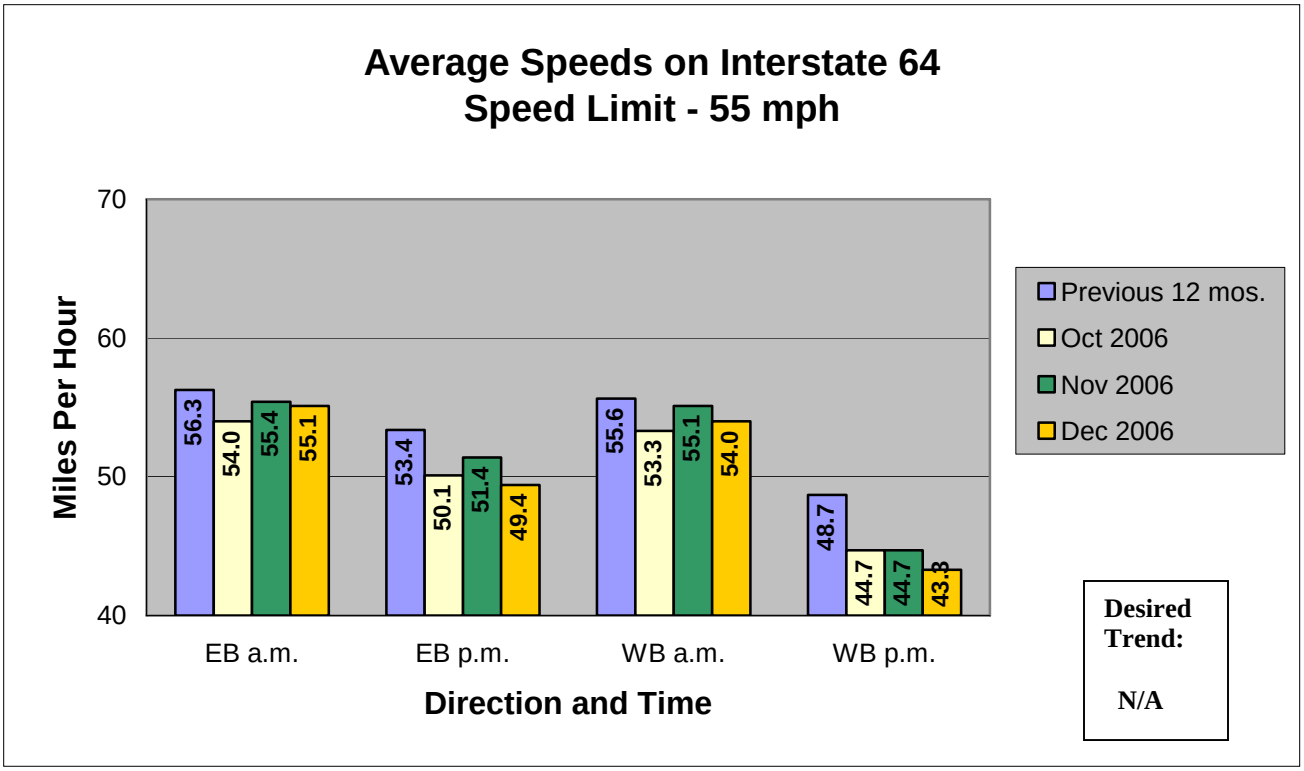
ST. LOUIS


Average Speeds on Interstate 170
Speed Limit - 60 mph
Miles Per Hour
70
60
50
40
58.6
55.2
56.5
55.5
54.1
50.1
48.7
46.3
57.4
55.1
56.6
55.8
57.4
57.5
56.7
55.5
NB a.m.
NB p.m.
SB a.m.
SB p.m.
Direction and Time
Previous 12 mos.
Oct 2006
Nov 2006
Dec 2006
Desired Trend:
N/A

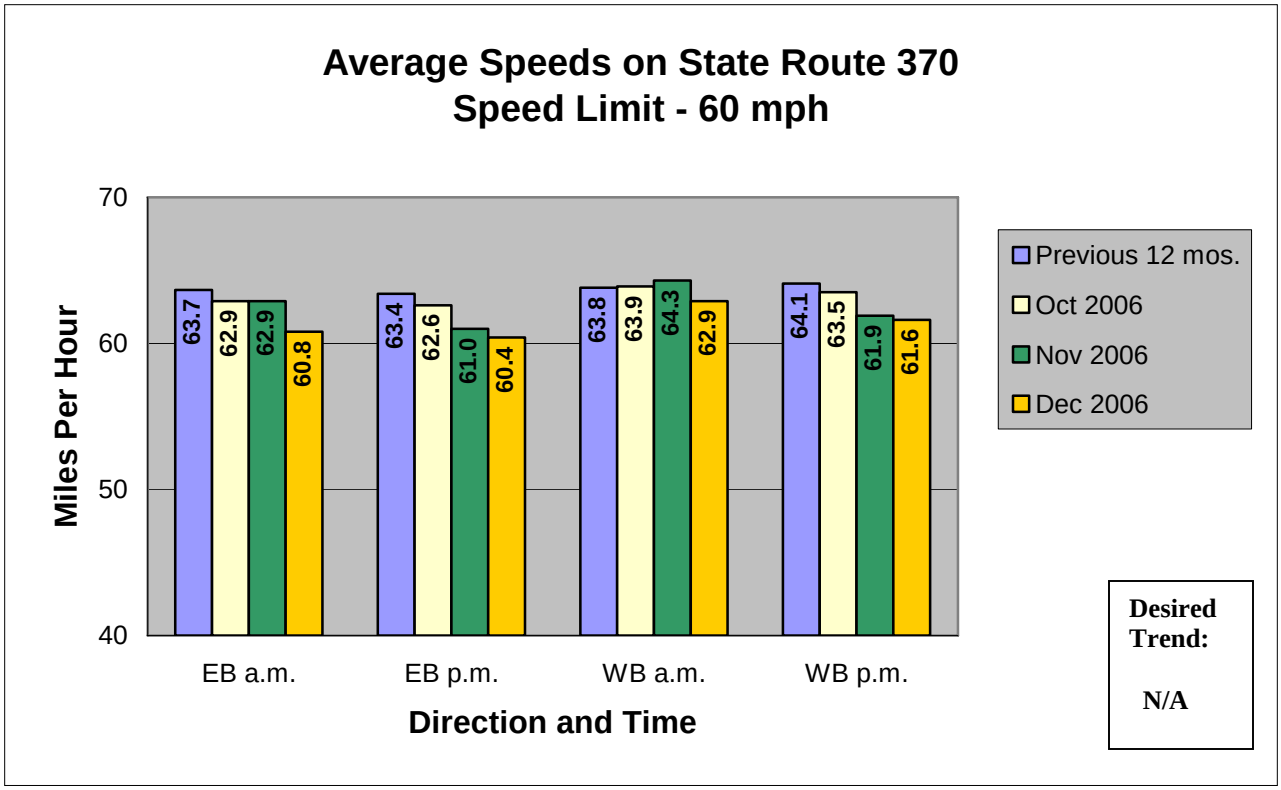

Average Speeds on Interstate 44
Speed Limit - 60 mph (55 mph from Grand to I-55)
Miles Per Hour
70
60
50
40
59.2
58.7
59.2
59.3
59.3
59.2
57.5
58.5
59.2
56.8
57.6
58.2
55.6
49.5
49.9
55.3
EB a.m.
EB p.m.
WB a.m.
WB p.m.
Direction and Time
Previous 12 mos.
Oct 2006
Nov 2006
Dec 2006
Desired Trend:
N/A

ST. LOUIS

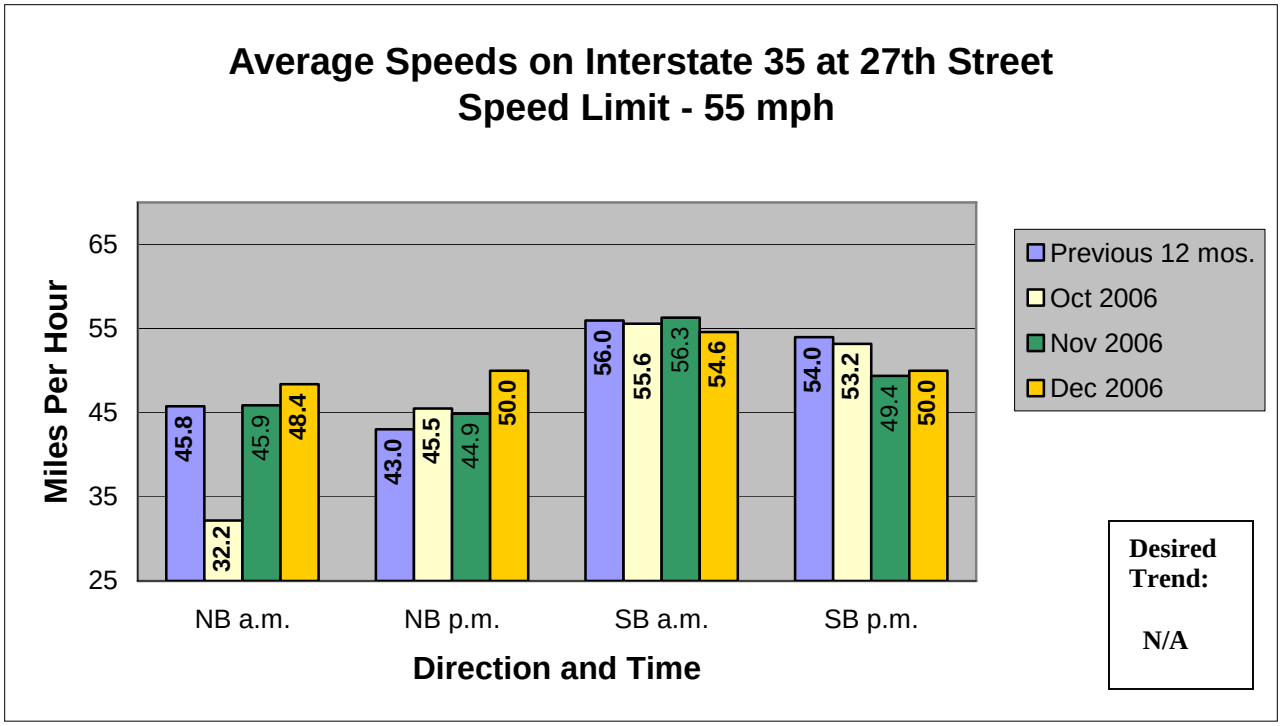

Average Speeds on Interstate 55
Speed Limit - 60 mph (55 mph from I-44 to River)
Miles Per Hour
70
60
50
40
57.0
55.3
55.2
54.0
57.8
57.9
56.2
56.6
57.9
56.7
57.3
56.0
58.2
55.6
53.1
54.5
NB a.m.
NB p.m.
SB a.m.
SB p.m.
Direction and Time
Previous 12 mos.
Oct 2006
Nov 2006
Dec 2006
Desired Trend:
N/A


Average Speeds on Interstate 64
Speed Limit - 55 mph
Miles Per Hour
70
60
50
40
56.3
54.0
55.4
55.1
53.4
50.1
51.4
49.4
55.6
53.3
55.1
54.0
48.7
44.7
44.7
43.8
EB a.m.
EB p.m.
WB a.m.
WB p.m.
Direction and Time
Previous 12 mos.
Oct 2006
Nov 2006
Dec 2006
Desired Trend:
N/A

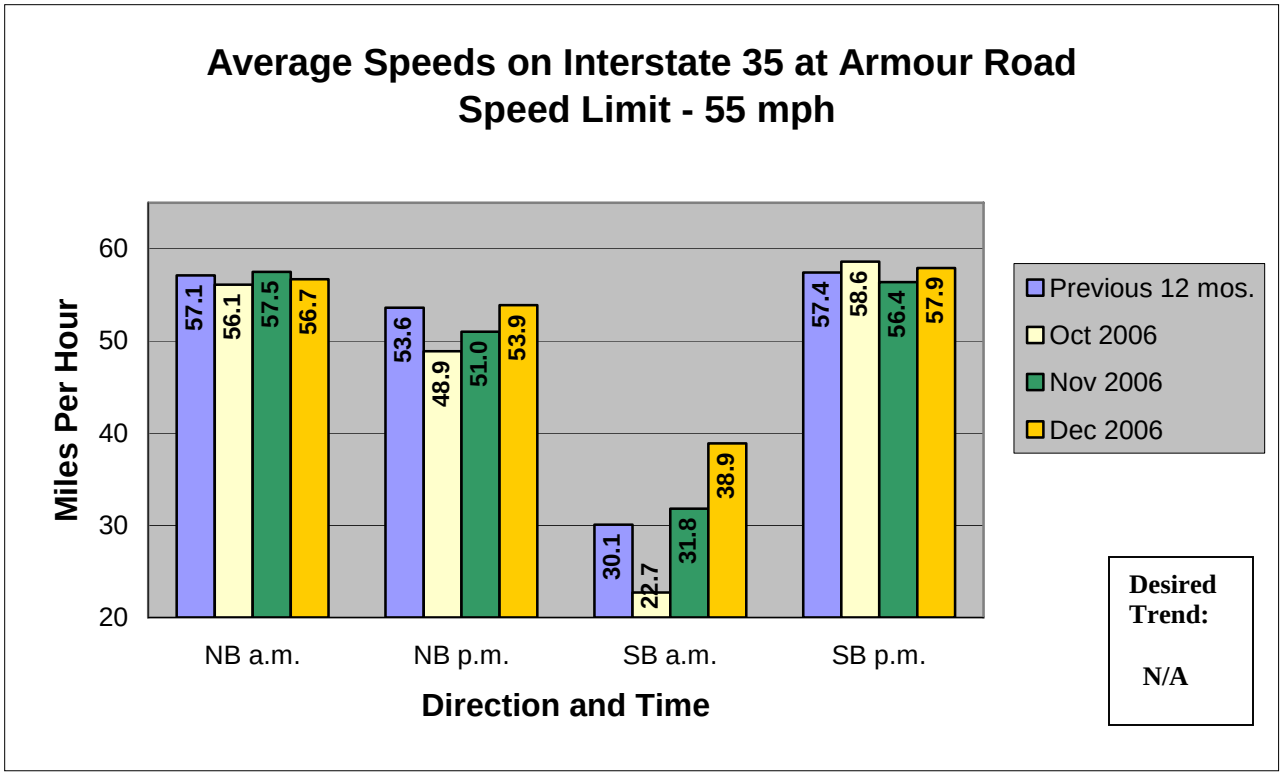
ST. LOUIS

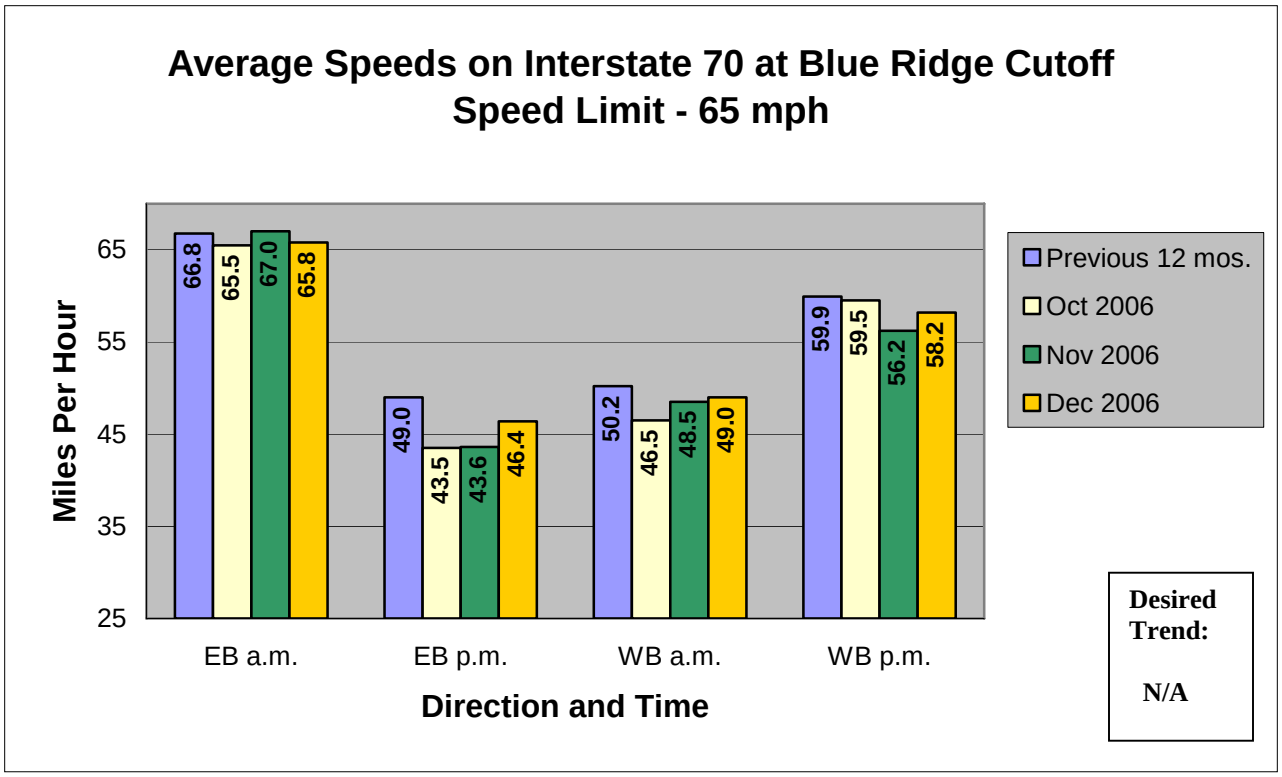


KANSAS CITY

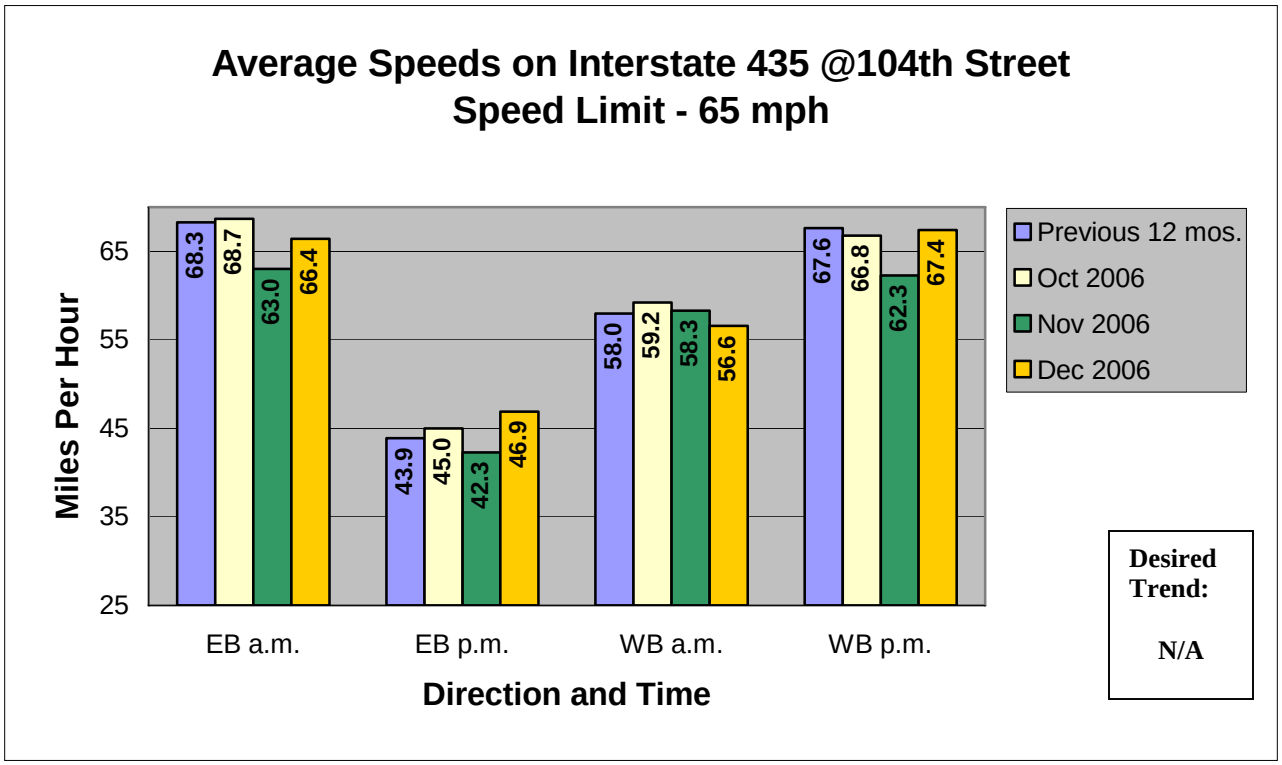


KANSAS CITY


Average Speeds on Interstate 35 at Armour Road
Speed Limit - 55 mph
Miles Per Hour
60
50
40
30
20
57.1
56.1
57.5
56.7
53.6
48.9
51.0
53.9
30.1
22.7
31.8
38.9
57.4
58.6
56.4
57.9
NB a.m.
NB p.m.
SB a.m.
SB p.m.
Direction and Time
Previous 12 mos.
Oct 2006
Nov 2006
Dec 2006
Desired Trend:
N/A


Average Speeds on Interstate 70 at Blue Ridge Cutoff
Speed Limit - 65 mph
Miles Per Hour
65
55
45
35
25
66.8
65.5
67.0
65.8
49.0
43.5
43.6
46.4
50.2
46.5
48.5
49.0
59.9
59.5
56.2
58.2
EB a.m.
EB p.m.
WB a.m.
WB p.m.
Direction and Time
Previous 12 mos.
Oct 2006
Nov 2006
Dec 2006
Desired Trend:
N/A

KANSAS CITY


Average Speeds on Interstate 435 @104th Street
Speed Limit - 65 mph
Miles Per Hour
65
55
45
35
25
68.3
68.7
63.0
66.4
43.9
45.0
42.3
46.9
58.0
59.2
58.3
56.6
67.6
66.8
62.3
67.4
EB a.m.
EB p.m.
WB a.m.
WB p.m.
Direction and Time
Previous 12 mos.
Oct 2006
Nov 2006
Dec 2006
Desired Trend:
N/A

Uninterrupted Traffic Flow

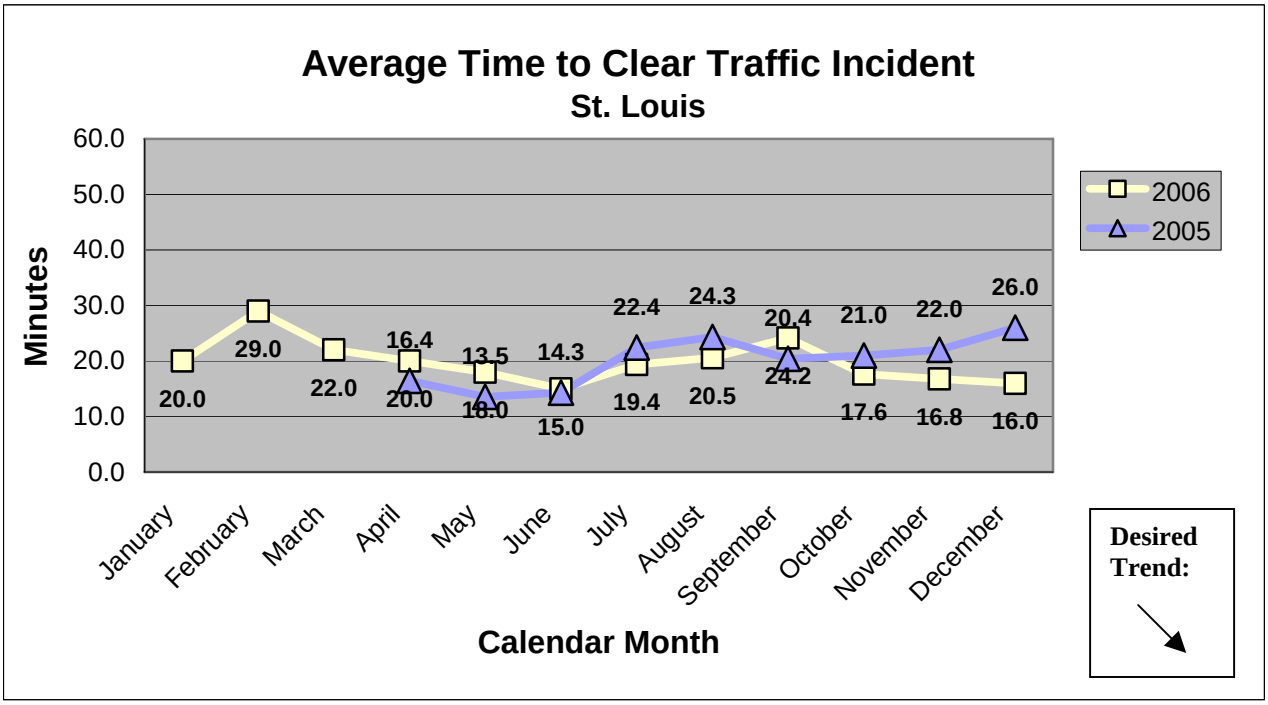
Average time to clear traffic incident

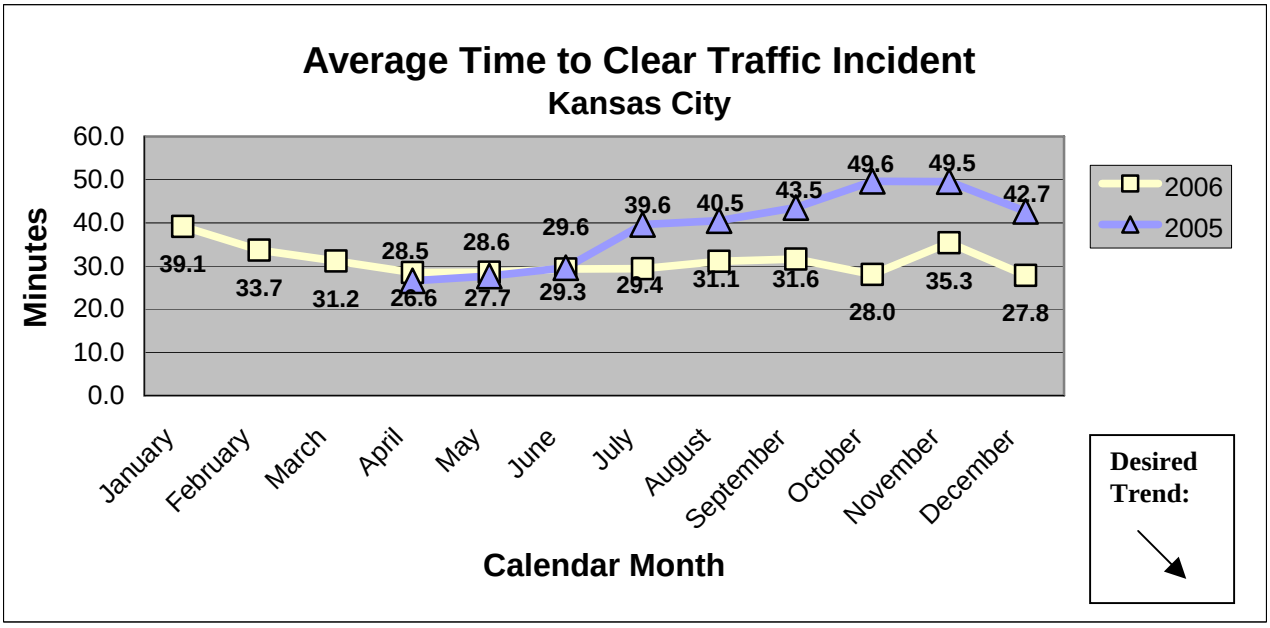
Result Driver: Don Hillis, Director of System Management
Measurement Driver: Rick Bennett, Technical Support Engineer

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. Motorist Assist operators and Traffic Management Center staff are recording "time of arrival" and the time for "all lanes cleared." Average time to clear traffic incidents is calculated from these times. The data includes only those incidents handled by Motorist Assist and urban emergency response crews in the Kansas and St. Louis areas.

Improvement Status:
Overall, data shows that both St. Louis and Kansas City areas continued to experience consistent incident clearance times. The slight increase in St. Louis during September can be attributed to an operations shutdown due to the death of a Motorist Assist operator and the impact on the St. Louis operators. The spike in the Kansas City clearance time for November was the result of a 10 percent increase in incidents that took two hours or more to clear. Three of these incidents involved fatalities that took in excess of six hours to clear. Renewed efforts in incident management and Motorists Assist coordination in both the St. Louis and Kansas City regions are helping to develop long-term partnerships with local agencies and identify MoDOT's expectations for quick clearance and open roadways with the ultimate goal of improving clearance times.


Average Time to Clear Traffic Incident
St. Louis
Minutes
60.0
50.0
40.0
30.0
20.0
10.0
0.0
20.0
29.0
22.0
16.4
20.0
13.5
18.0
14.3
15.0
22.4
19.4
24.3
20.5
20.4
24.2
21.0
17.6
22.0
16.8
26.0
16.0
January
February
March
April
May
June
July
August
September
October
November
December
Calendar Month
2006
2005
Desired Trend:


Average Time to Clear Traffic Incident
Kansas City
Minutes
60.0
50.0
40.0
30.0
20.0
10.0
0.0
39.1
33.7
31.2
28.5
26.6
28.6
27.7
29.6
29.3
39.6
29.4
40.5
31.1
43.5
31.6
49.6
28.0
49.5
35.3
42.7
27.8
January
February
March
April
May
June
July
August
September
October
November
December
Calendar Month
2006
2005
Desired Trend:

Uninterrupted Traffic Flow

Average time to clear traffic backup from incident

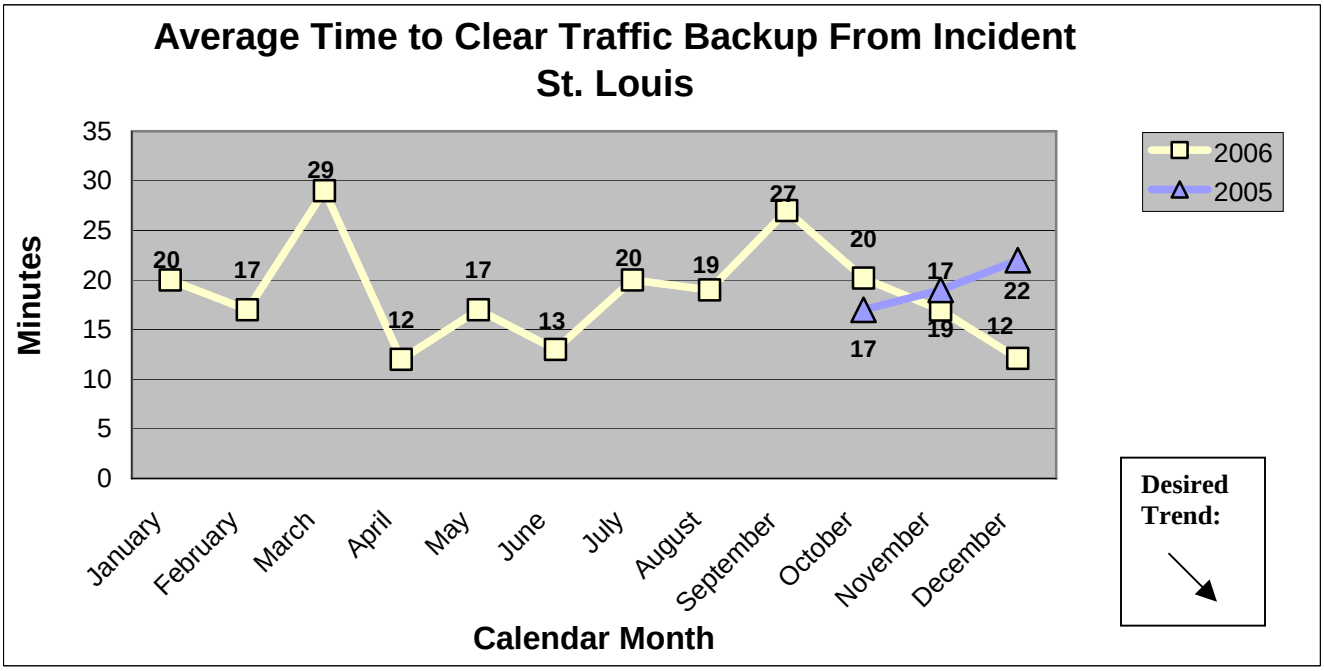
Result Driver: Don Hillis, Director of System Management
Measurement Driver: Rick Bennett, Technical Support Engineer

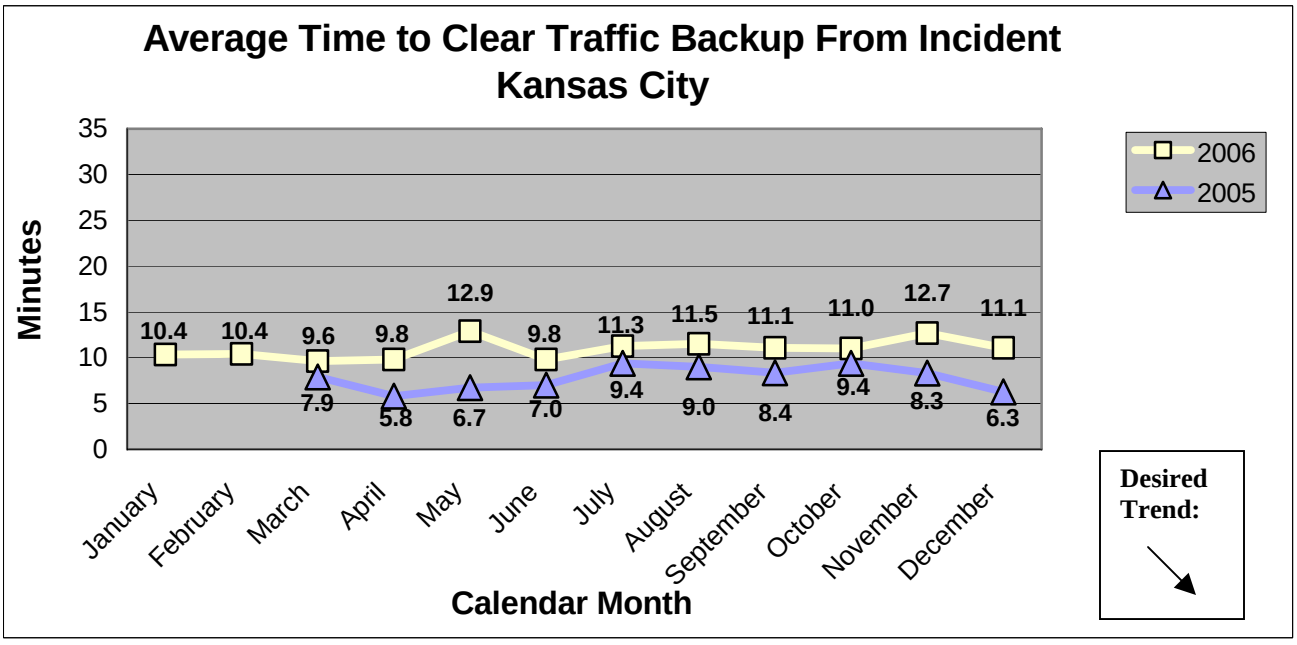
Purpose of the Measure:
This measure tracks the amount of time it takes to return traffic flow back to normal after a traffic incident. A traffic incident is any unplanned event that creates a temporary reduction in the number of vehicles that can travel on the road.

Measurement and Data Collection:
"Lanes cleared" and "clear backup" times are being recorded by the Traffic Management Centers in both 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 of 2006, Kansas City reports were modified to capture when 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 will use advanced transportation management system devices and software when they become available.

Improvement Status:
This data shows clearance times in Kansas City average around 11 minutes, while the St. Louis metro area clearance times are higher. The Kansas City data includes all detected incidents on the KC Scout, the Kansas City emergency response unit, instrumented routes. The St. Louis data is somewhat skewed because it includes 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. St. Louis area routes also have larger traffic volumes that create more significant congestion problems than in Kansas City.

The spike in St. Louis data in March 2006 is largely due to two major incidents during peak periods. There are also minor spikes in May 2006 in both St. Louis and Kansas City again due to major incidents during peak periods. The spiked increase in the St. Louis clearance time in September of 2006 is due to the seasonal traffic increases and increased number of work zones in the area. The slight increase in the clearance time for November in Kansas City correlates to the increase in incident time due to an incident that required more than six hours to clear.


Average Time to Clear Traffic Backup From Incident
St. Louis
Minutes
35
30
25
20
15
10
5
0
20
17
29
12
17
13
20
19
27
20
17
17
19
22
12
January
February
March
April
May
June
July
August
September
October
November
December
Calendar Month
2006
2005
Desired
Trend:


Average Time to Clear Traffic Backup From Incident
Kansas City
Minutes
35
30
25
20
15
10
5
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
January
February
March
April
May
June
July
August
September
October
November
December
Calendar Month
2006
2005
Desired
Trend:

Uninterrupted Traffic Flow

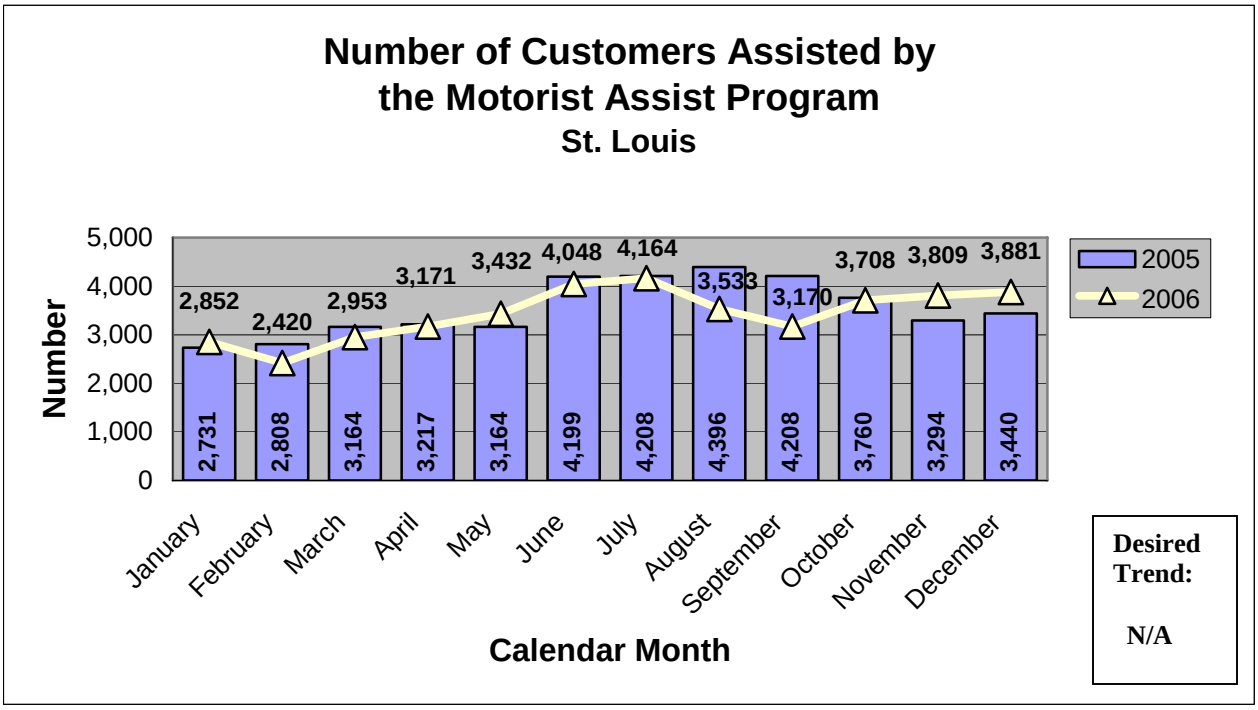
Number of customers assisted by the Motorist Assist program

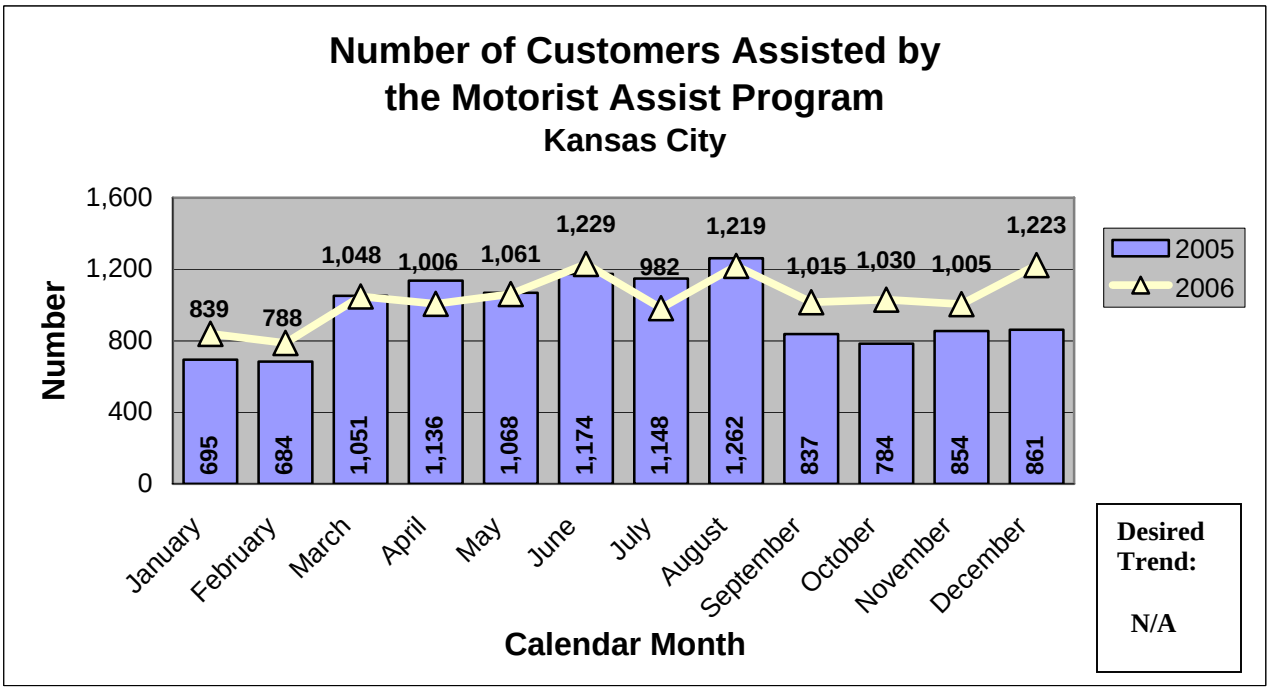
Result Driver: Don Hillis, Director of System Management
Measurement Driver: Rick Bennett, Technical Support Engineer

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 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 roadway volumes. Typical patterns increased assists during peak travel season and decreased services in late summer and early fall. The decreased number of assists in Kansas City in July is attributed to a decrease in operators available for that time period due to multiple vacations and sick time. The decreased number of assists in St. Louis in the months of August and September is attributed to period of time operations were shut down due to the death of a Motorist Assist operator in August and its impact on the St. Louis operators. The increase in assists for the month of December in Kansas City corresponds to the increased stranded motorists and accidents due to a major snow event in early December.


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
2,731
2,808
3,164
3,217
3,164
4,199
4,208
4,396
4,208
3,760
3,294
3,440
January
February
March
April
May
June
July
August
September
October
November
December
Calendar Month
2005
2006
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
695
684
1,051
1,136
1,068
1,174
1,148
1,262
837
784
854
861
January
February
March
April
May
June
July
August
September
October
November
December
Calendar Month
2005
2006
Desired Trend:
N/A

Uninterrupted Traffic Flow

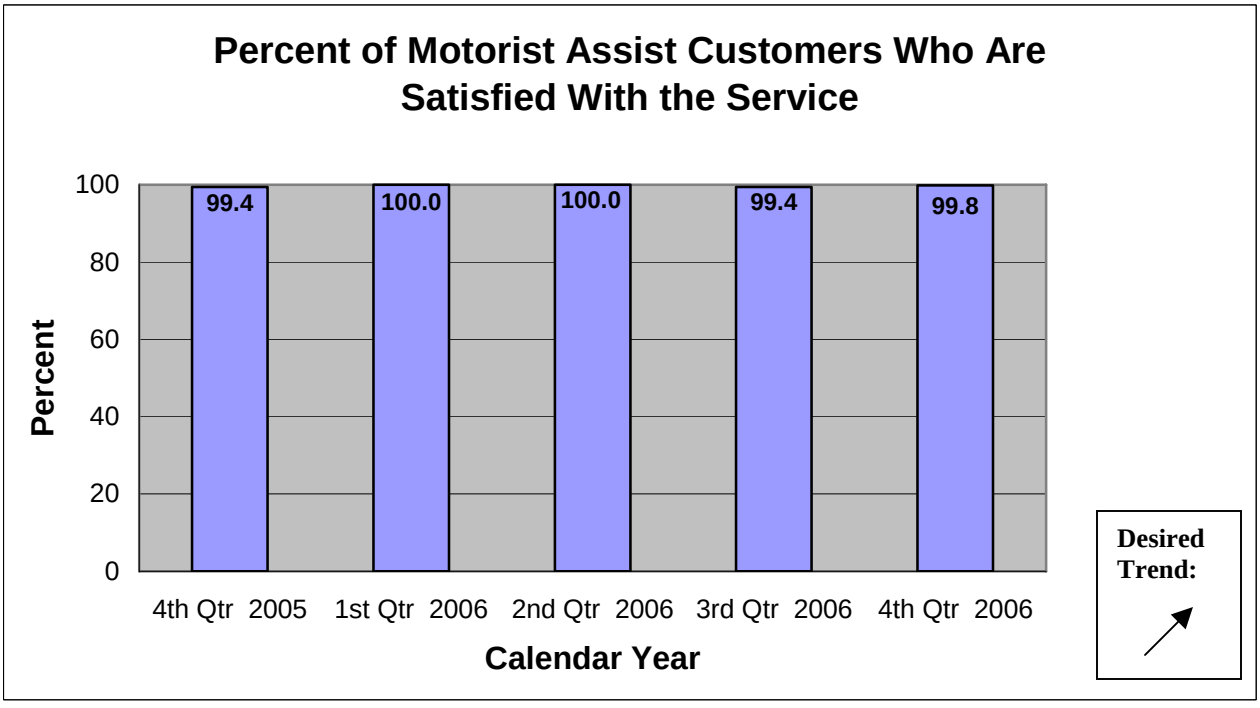
Percent of Motorist Assist customers who are satisfied with the service

Result Driver: Don Hillis, Director of System Management
Measurement Driver: Rick Bennett, Technical Support 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 distributed survey cards to customers starting June 1, 2005. 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:
The data for this measure included responses from 361 surveys in the fourth quarter of calendar year 2005. In calendar year 2006, there were responses from 380 surveys in the first quarter, 447 surveys in the second quarter, 704 surveys in the third quarter, and 575 surveys in the fourth quarter by motorists who used the Motorist Assist service in the Kansas City or St. Louis metro areas. This data agrees with information provided by customers on prior comment forms - almost all customers are satisfied.



Uninterrupted Traffic Flow

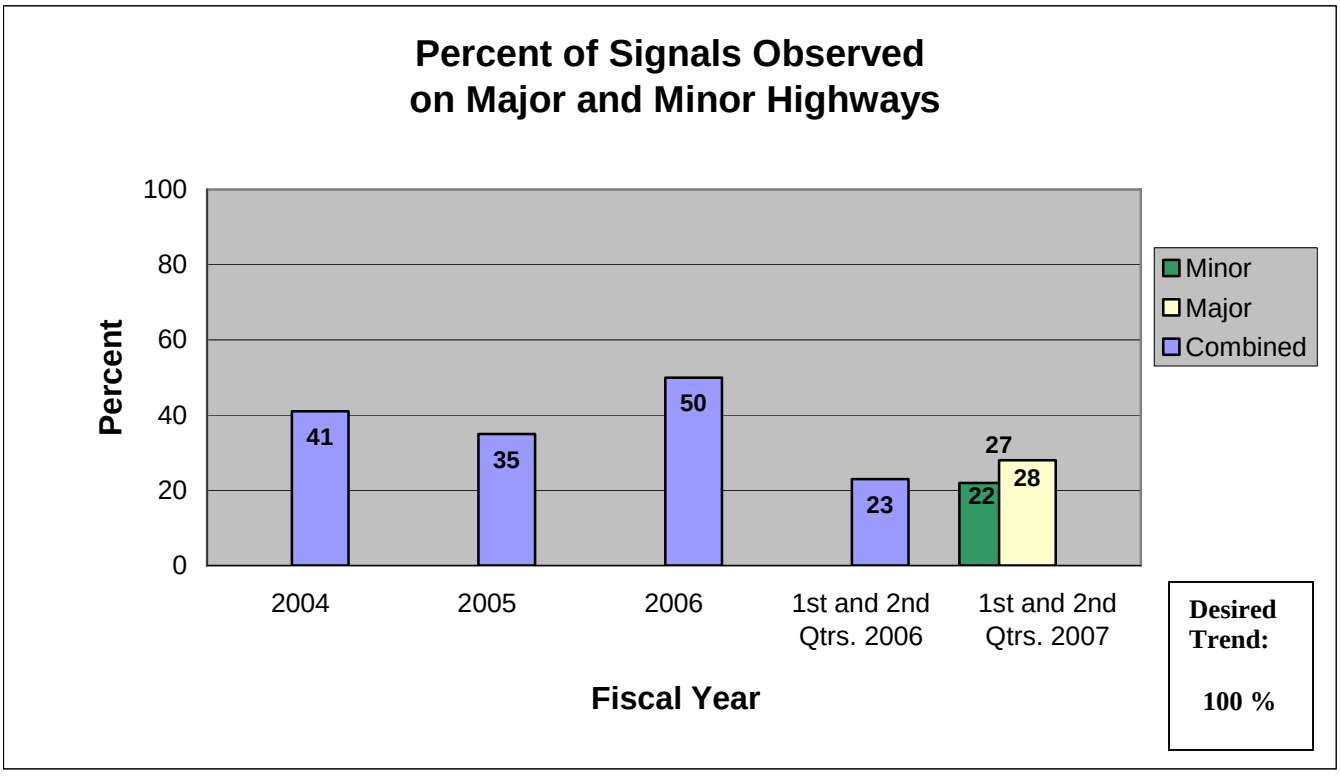
Percent of signals observed

Result Driver: Don Hillis, Director of System Management
Measurement Driver: Julie Stotlemeyer, Traffic Liaison 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 signals are observed each year to ensure proper operation and verify effective traffic flow. Four observation periods, a.m. peak, noon, p.m. peak and off peak, are completed for each signal. Traffic engineers document observed signal data on an observation sheet, and the observation date is recorded in the Transportation Management System database. Data is collected from the TMS database to generate the report for this quarterly measure.

Improvement Status:
District staff has observed 27 percent of all signals on the state highway system from July through December 2006. This reflects a four percent increase from the same time period of 2005. In order to complete the observation program, 50 percent of the signals should be completed by second quarter.



Uninterrupted Traffic Flow

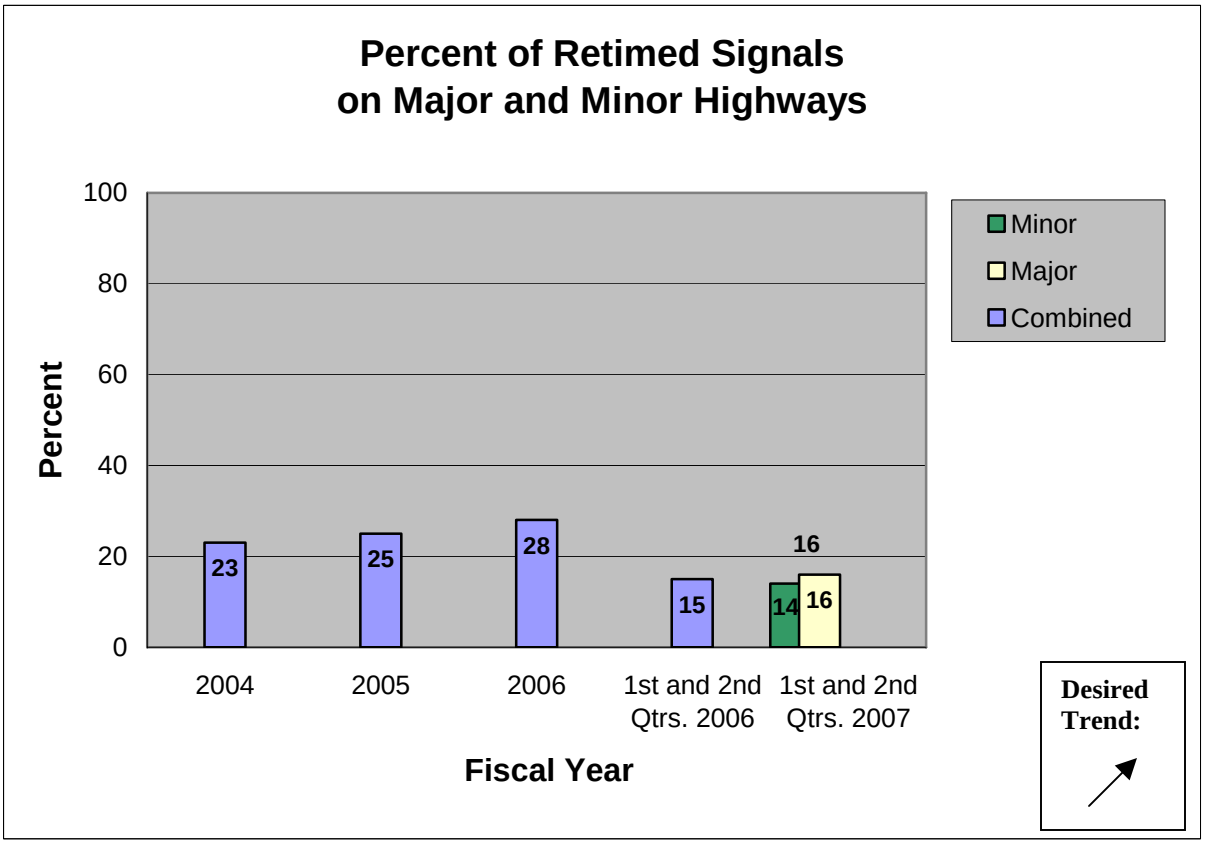
Percent of retimed signals

Result Driver: Don Hillis, Director of System Management
Measurement Driver: Julie Stotlemeyer, Traffic Liaison 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:
In order to maintain uninterrupted traffic flow, FHWA recommends retiming signals every three to five years. These retiming efforts produce increased traffic flow and less delay to motorists. MoDOT follows this recommendation by retiming signals on major highways every three years and minor highways every five years. Traffic engineers record retimed signal data and enters the date in the Transportation Management System database. Data is collected from the TMS database to generate the report for this quarterly measure.

Improvement Status:
District staff has retimed 16 percent of all signals on the state highway system from July through December 2006. This reflects a one percent increase from the same time period of 2005. This meets the expected level of performance for retiming signals on major roads. Fourteen percent of signals on minor roads have been retimed, which is four percent above expected performance.



Uninterrupted Traffic Flow

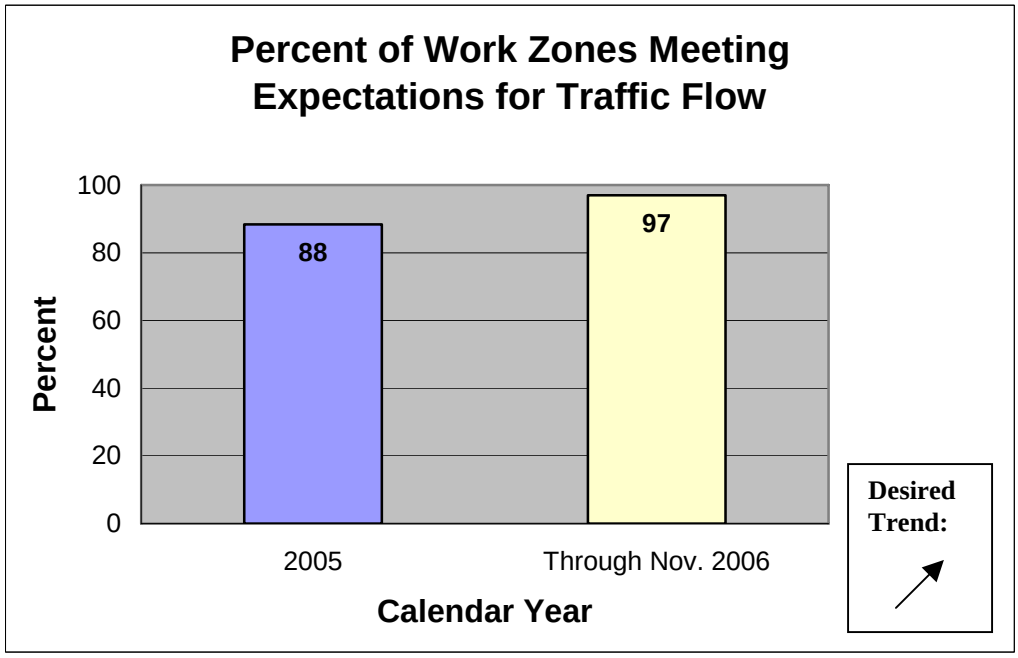
Percent of work zones meeting expectations for traffic flow

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 customer expectations of traffic flow in, around, and through work zones on state highways.

Measurement and Data Collection:
Using a formal inspection worksheet, Construction and Materials, Maintenance, Traffic, 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. Note: This inspection program began in June 2005.

Improvement Status:
Compilation of the 2,220 evaluations performed by MoDOT staff between January and November of this calendar year resulted in a 97 percent satisfaction rating for work zone traffic flow (i.e., a negative perception of traffic flow was recorded in 3 percent of the evaluations). This rating represents a positive increase of 8.6 percent over calendar year 2005 inspection results. Such progress may be attributed 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 this year.



Uninterrupted Traffic Flow

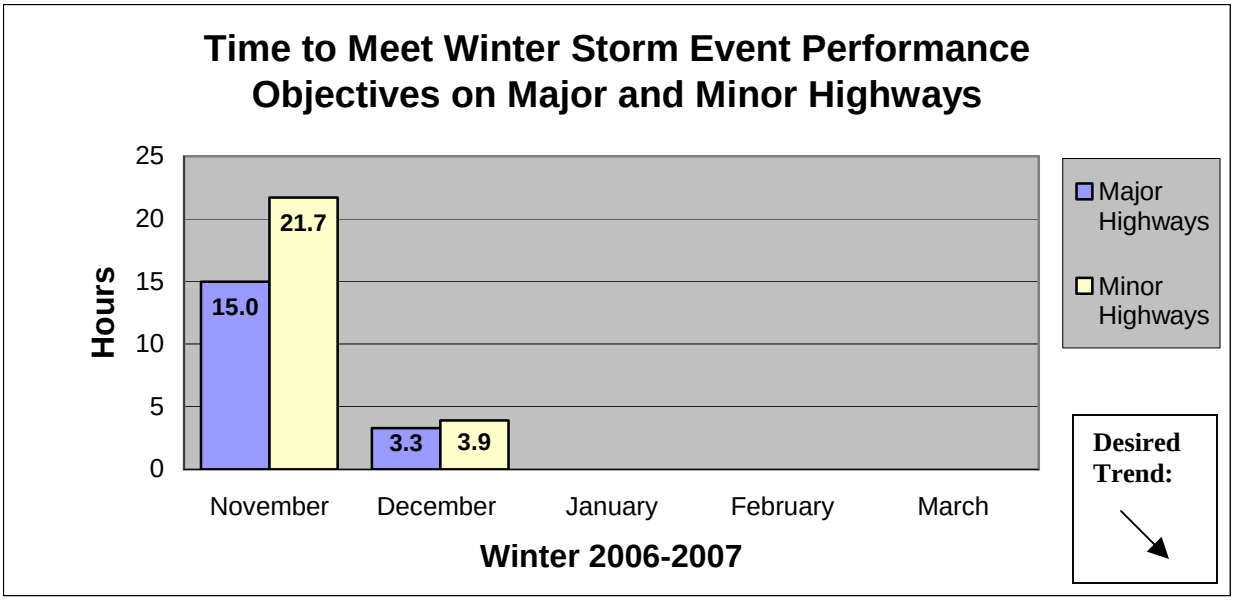
Time to meet winter storm event performance objectives on major and minor highways

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:
A major snowstorm crossed over most of the state at the end of November. This storm produced snowfall amounts up to 17 inches across Mid-Missouri on top of sleet and freezing rain. The snow fell at such a rate that whiteout conditions caused the snowplow fleet to stop plowing for a period in several areas. The heavy snowfall in a short amount of time and not being able to plow because of the whiteout conditions contributed to the longer times to meet the winter storm event performance objectives. A thorough review of this storm has been performed by districts and by interstate corridors to determine what happened and to develop solutions to improve upon performance in future storms. There were a few minor winter events around the state in December.



(This page is intentionally left blank for duplexing purposes)