Average travel indices and speeds on selected freeway sections-1a

Result Driver: Don Hillis, Director of System Management
Measurement Driver: Troy Pinkerton, Traffic Liaison Engineer

Purpose of the Measure:

This measure tracks the average travel index values and average speeds on various freeway sections. The desired trend is for the travel index to remain at or near a value of 1.00. A value of 1.00 is representative of a free-flow condition. The travel index is directly related to the average speed and 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

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 continue to perform in the mid to upper-80 percentile range during the peak hours, as compared to the free-flow condition. The morning peak dropped slightly from 0.87 in the first quarter of fiscal year 2010 to 0.86 in the second quarter of fiscal year 2010. The evening peak also decreased from 0.89 to 0.87.

The KCicon project has made some significant changes in lane configurations on I-35 causing some additional slow downs specifically in the AM peak in the southbound direction.

The I-435 Blue Ridge construction has concluded but Kansas City is seeing increased volume throughout this area due to commercial development opening up. On November 30, 2009, a 13.5-hour sulfide spill incident caused issues on northbound I-35.

The inclement weather in December proved to have a significant impact on the averages for this month in particular. During the six days of the Christmas holiday, the index dropped to about 0.52.

Most of the Kansas City region has been free from significant work zone impacts. Construction associated with the Paseo Bridge continues to contribute to some slow downs in the morning commute southbound into downtown. This area 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 I-29/35 can be found at www.kcicon.org.

St. Louis metropolitan region:

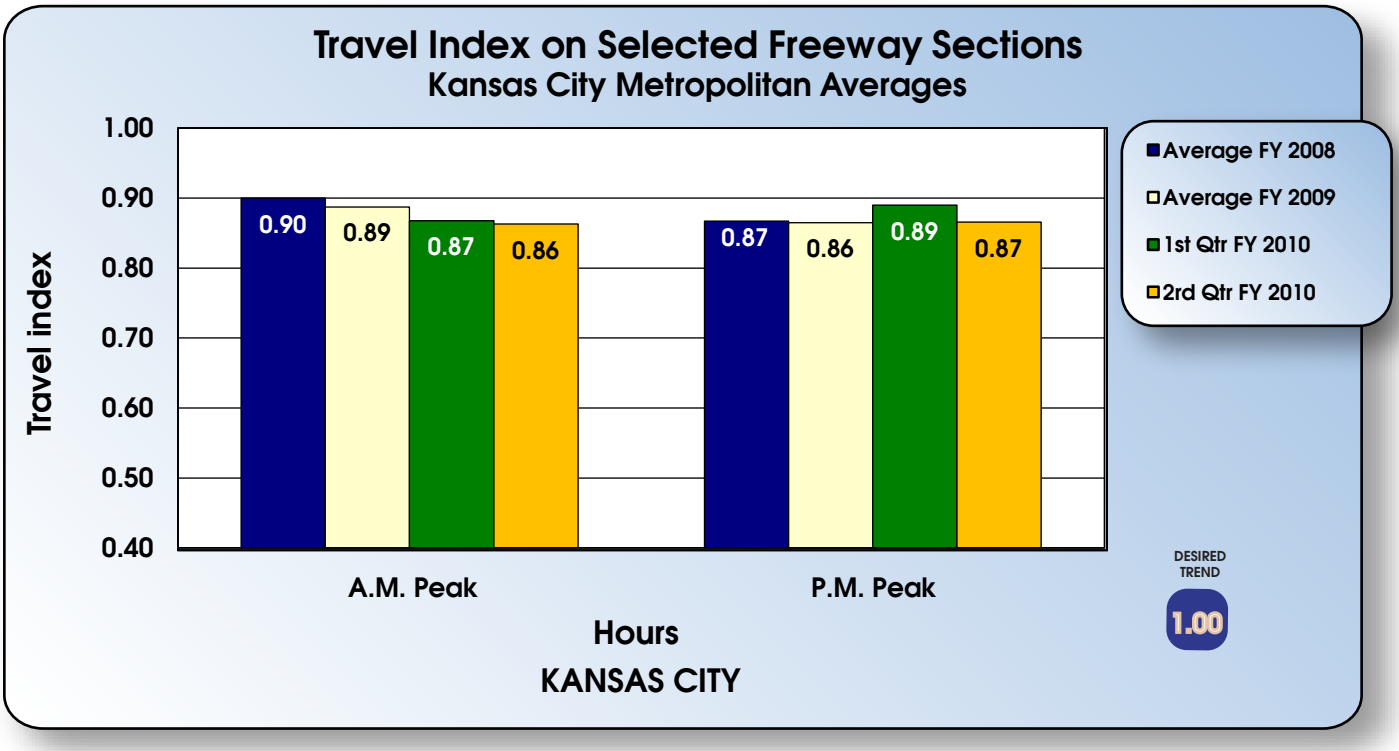
As shown on the graph, the freeway systems in the St. Louis region are performing in the 90-percentile range in the morning and the 80-percentile range in the evening for this quarter. The morning peak travel index increased from 0.87 last quarter to 0.90 in the second quarter of fiscal year 2010. The evening peak travel index decreased slightly from 0.81 to 0.80.

The amount of incidents (crashes, work zones, and special events) for this quarter was slightly higher than the previous quarter. However, the average duration and time within a lane for all incidents was almost identical to first quarter FY10. Due to the fact that incidents are responsible for about half of all delay in urban areas, and because there were no significant changes in traffic volume in St. Louis, it can be inferred that these are the reasons for the travel index to be very similar to first quarter FY10 (only a .03 difference in the AM peak, and a .01 difference in the PM peak). The closure of a portion of I-64 was the major traffic impact until December 7, 2009, when it was fully opened. Traffic patterns were significantly changed throughout the area near the I-64 closure, but these changes may not have been fully realized due to the roadway opening so late in the quarter. It is expected the change in travel index, if any, will be most noticeable in the third quarter FY10 data.

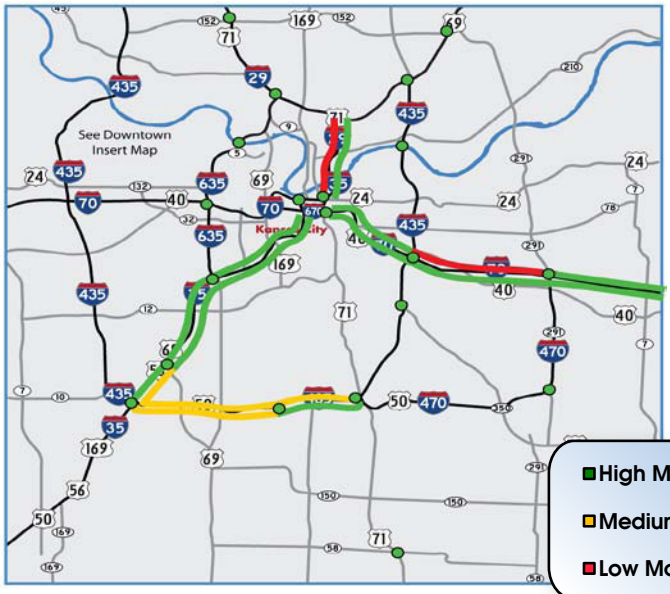
Statewide:

The statewide average speed on rural routes continues to perform efficiently, recorded at 69.60 miles per hour for this quarter, which is a slight decrease from last quarters reading of 69.77. We experienced equipment problems at three of our eight sensored locations. I-29 at Mound City and I-44 at Waynesville had equipment problems in October, resulting in no data to report for this month. The data for November 2009 for I-435 in Kansas City is only for the southbound side due to equipment problems that caused the northbound side on this site to become 'county' only in November.

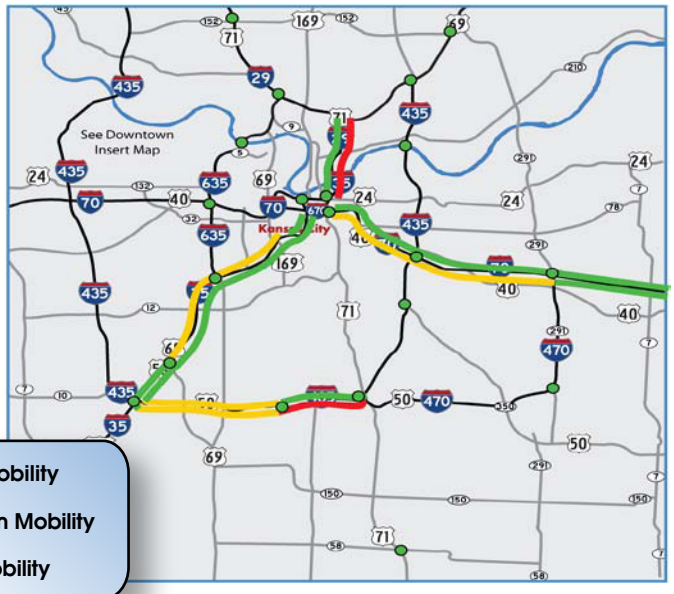
Expect several resurfacing projects on rural interstates this upcoming construction season funded both from traditional sources as well as from the American Recovery and Reinvestment Act. A list project activities can be found at www.modot.org.



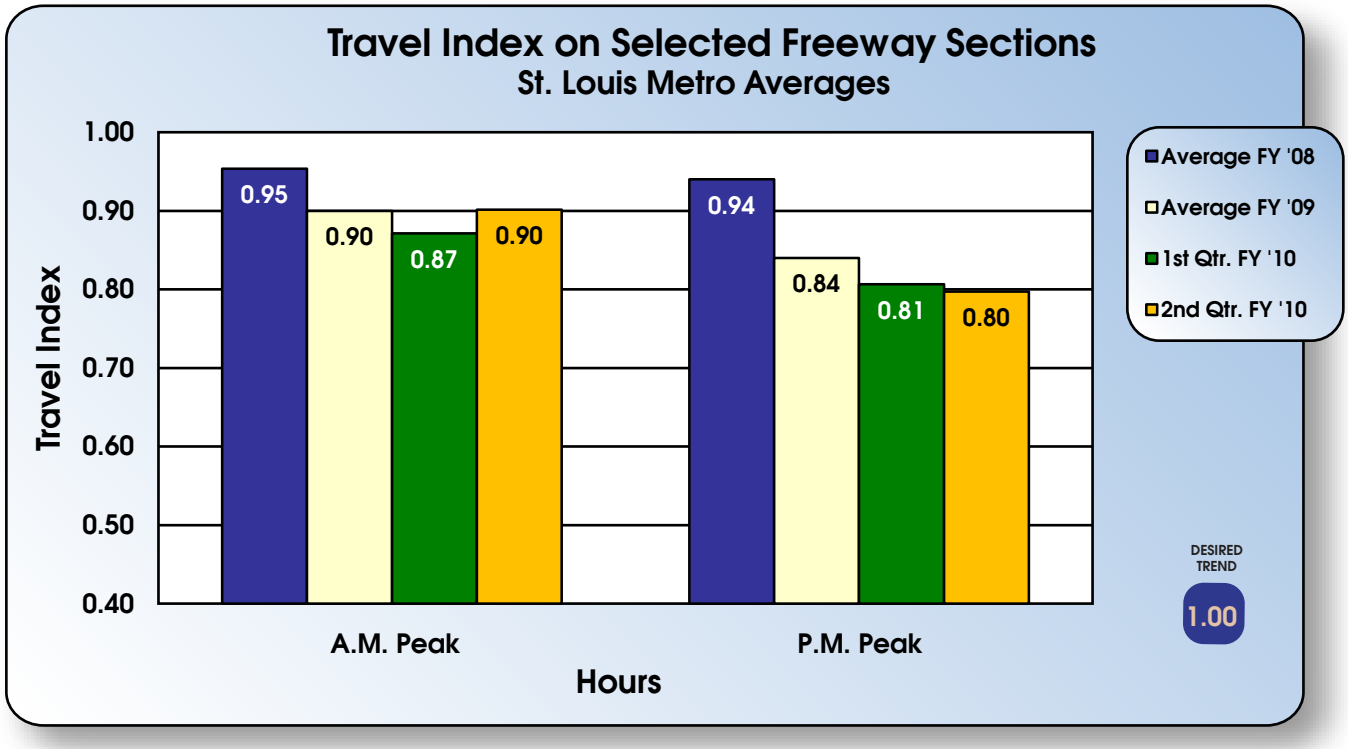
AM – Regional Mobility



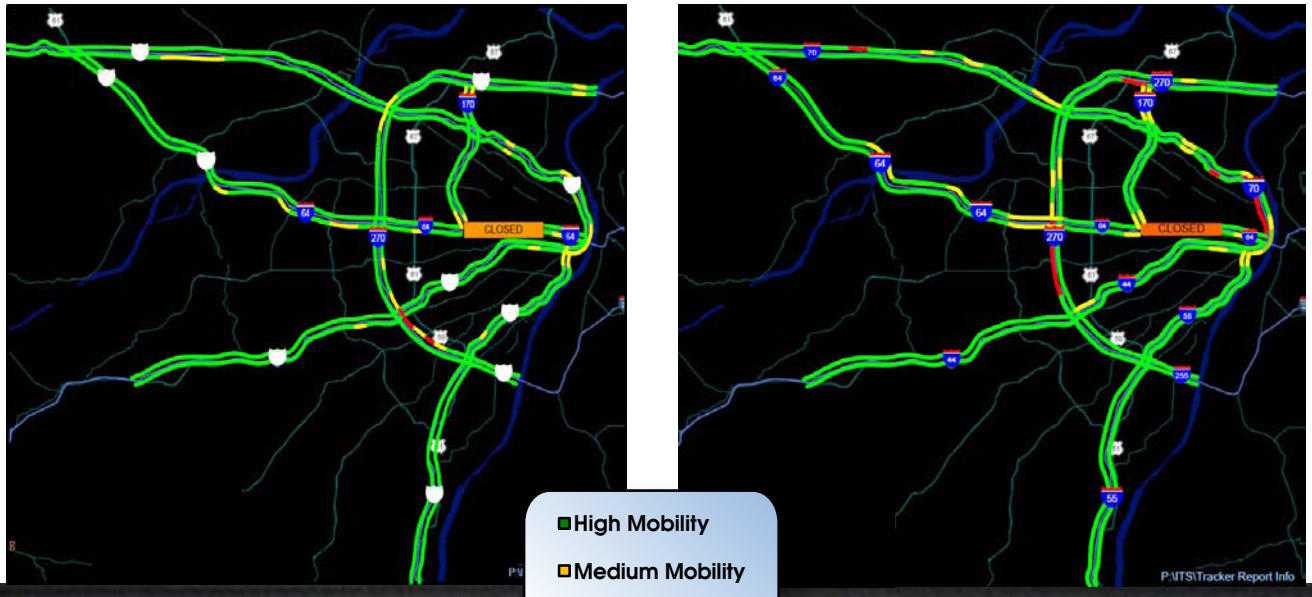
PM – Regional Mobility

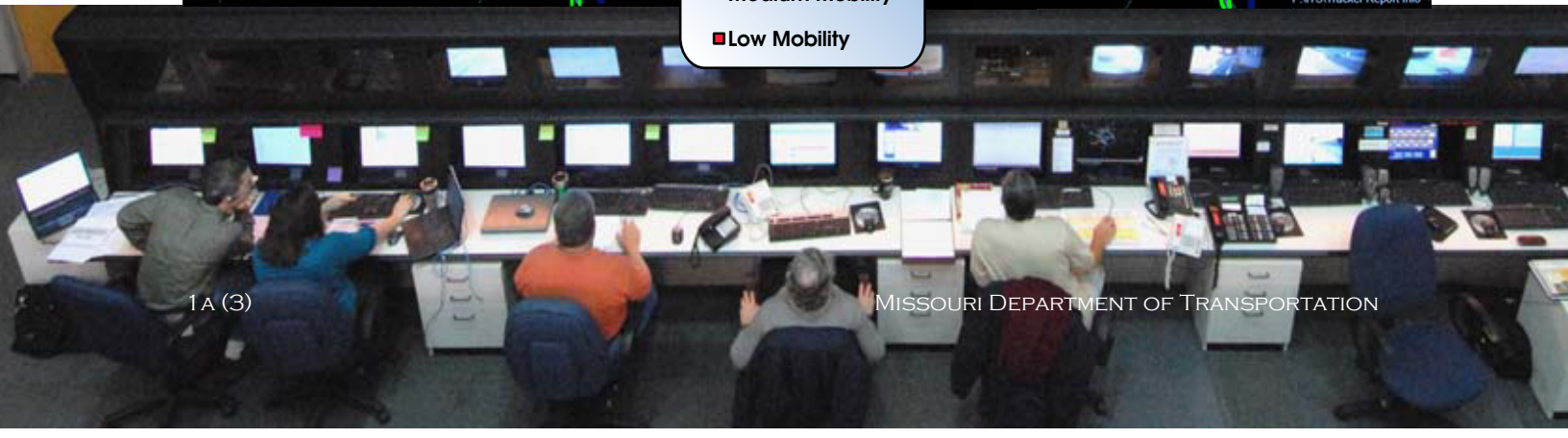


High Mobility
Medium Mobility
Low Mobility



AM – Regional Mobility ST. LOUIS PM – Regional Mobility





Average rate of travel on selected signalized routes -1b

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.

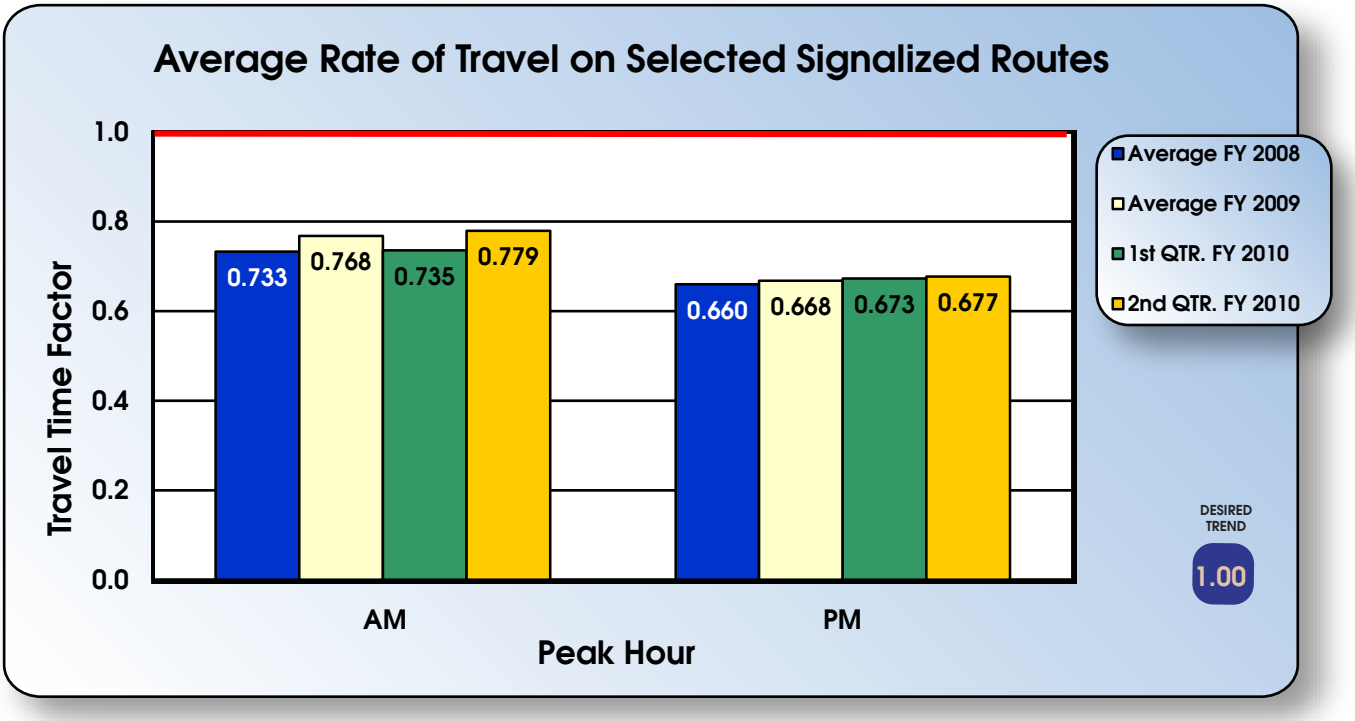
Measurement and Data Collection:

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. Data for this measure is updated quarterly.

Improvement Status:

For second quarter fiscal year 2010, the average statewide travel time factor for a.m. peak is 0.779 and p.m. peak is 0.677. Overall performance is 0.728. The a.m. peak travel time factor is approximately 10 percent higher than p.m. peak travel time factor. Second quarter data shows the a.m. peak for arterials and p.m. peak for arterials operating higher than the average for fiscal year 2008 and the average for fiscal year 2009. For second quarter fiscal year 2010, the a.m. peak travel time factor and the p.m. peak travel time factor is approximately two percent higher than the second quarter fiscal year 2009 a.m. and p.m. peak travel time factors, respectively.

The average rate of travel on selected signalized routes has changed due to construction, weather conditions, variations in traffic flow, timing changes, and installation of a traffic adaptive system.



Average time to clear traffic incident-1c

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:

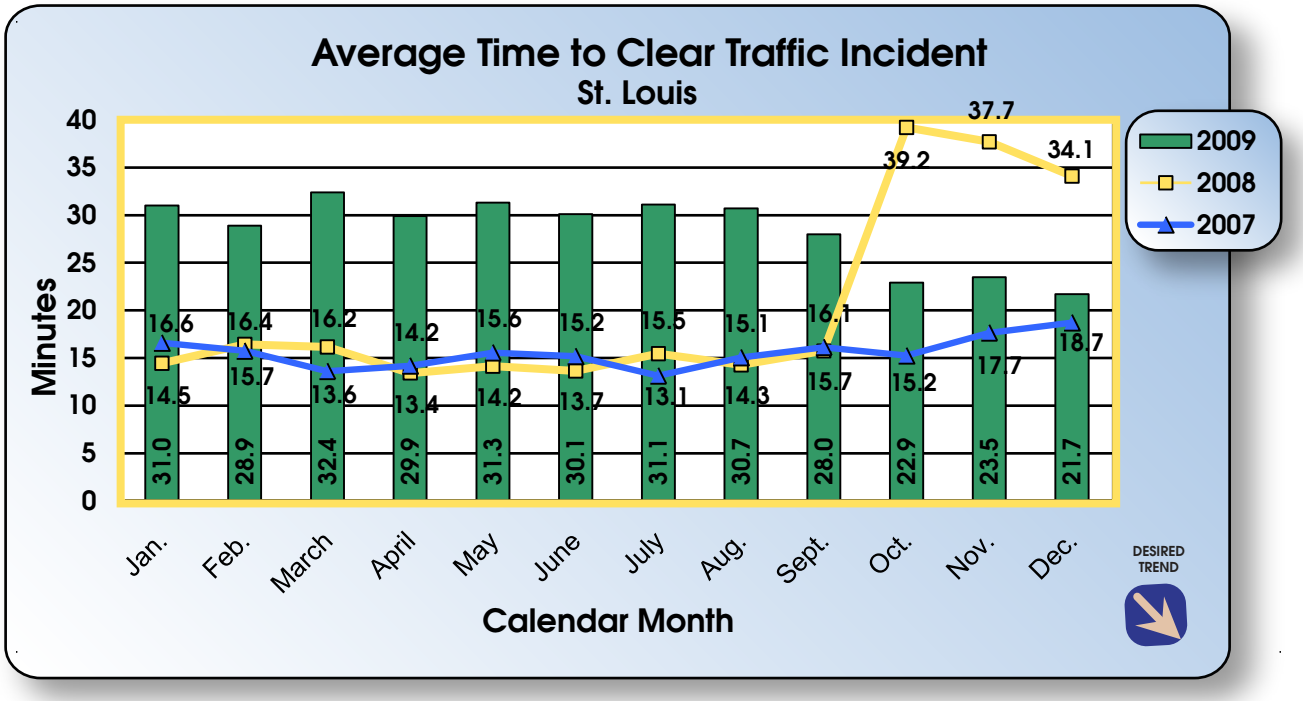
Advanced Transportation Management Systems (ATMS) are used by both the Kansas City and St. Louis traffic management centers to record "incident start time" and the time for "all lanes cleared." In October of 2008, St. Louis switched from using motorist assist arrival times as the "incident start time" to utilizing the time the incident was confirmed in the ATMS usually via CCTV, prior to any responder arriving on the scene, as the "incident start time." Average time to clear traffic incidents is calculated from these times. In January of 2009, about 20 additional miles of I-70, I-470, and I-435 were added and became operational in the Kansas City urban area.

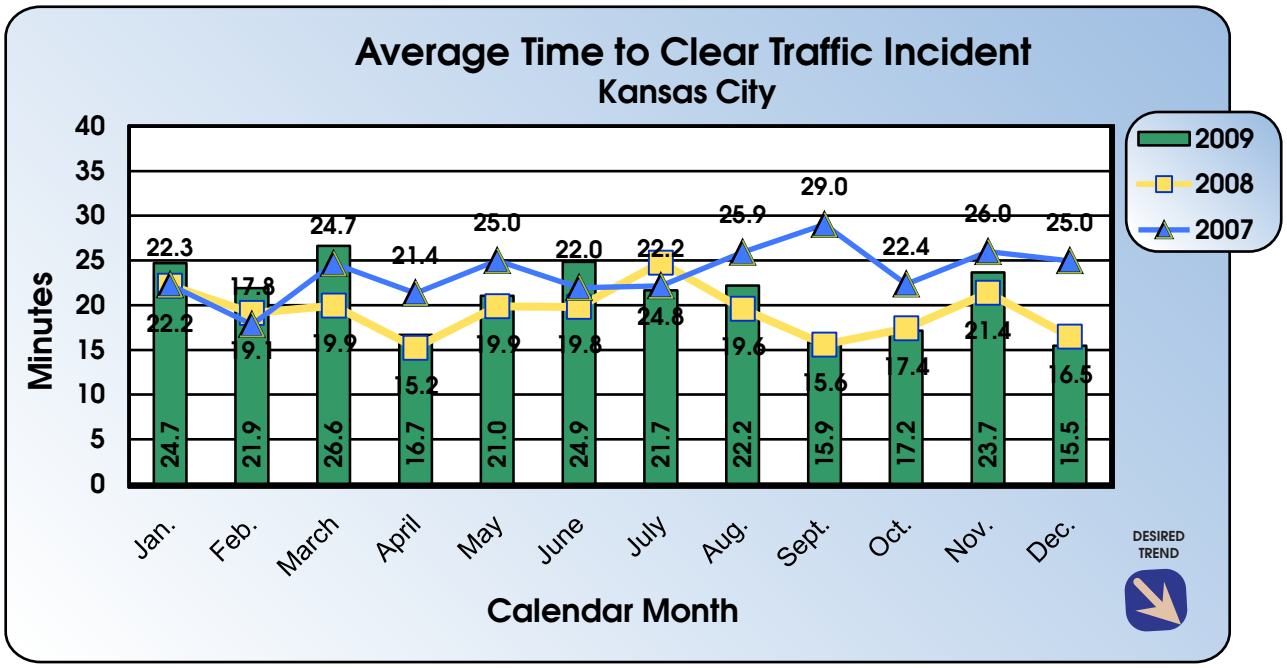
On September 1, 2009, Kansas City moved to a new software and hardware platform, (TranSuite and SQL), giving them the ability to do more detailed tracking of time to clear incidents, Motorist Assist activities and interoperability with Operation Greenlight and the arterial signal systems.

Improvement Status:

St. Louis recorded 691, 530, and 661incidents respectively for the months of October, November and December utilizing ATMS. St. Louis' data includes considerably more incidents because St. Louis monitors more freeway miles than the Kansas City area.

Kansas City collected data on 446, 406, and 733 incidents respectively for the months of October, November and December. On November 30, 2009, a semi truck overturned on the Paseo Bridge that closed both the northbound and southbound directions of travel. The northbound lanes were closed for 13.5 hours and the southbound lanes were closed for nine hours.


Average Time to Clear Traffic Incident
St. Louis
Minutes
Calendar Month
Jan. Feb. March April May June July Aug. Sept. Oct. Nov. Dec.
2009
2008
2007
DESIRED TREND


Average Time to Clear Traffic Incident
Kansas City
Minutes
Calendar Month
Jan. Feb. March April May June July Aug. Sept. Oct. Nov. Dec.
2009
2008
2007
DESIRED TREND

Average time to clear traffic backup from incident-1d

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:

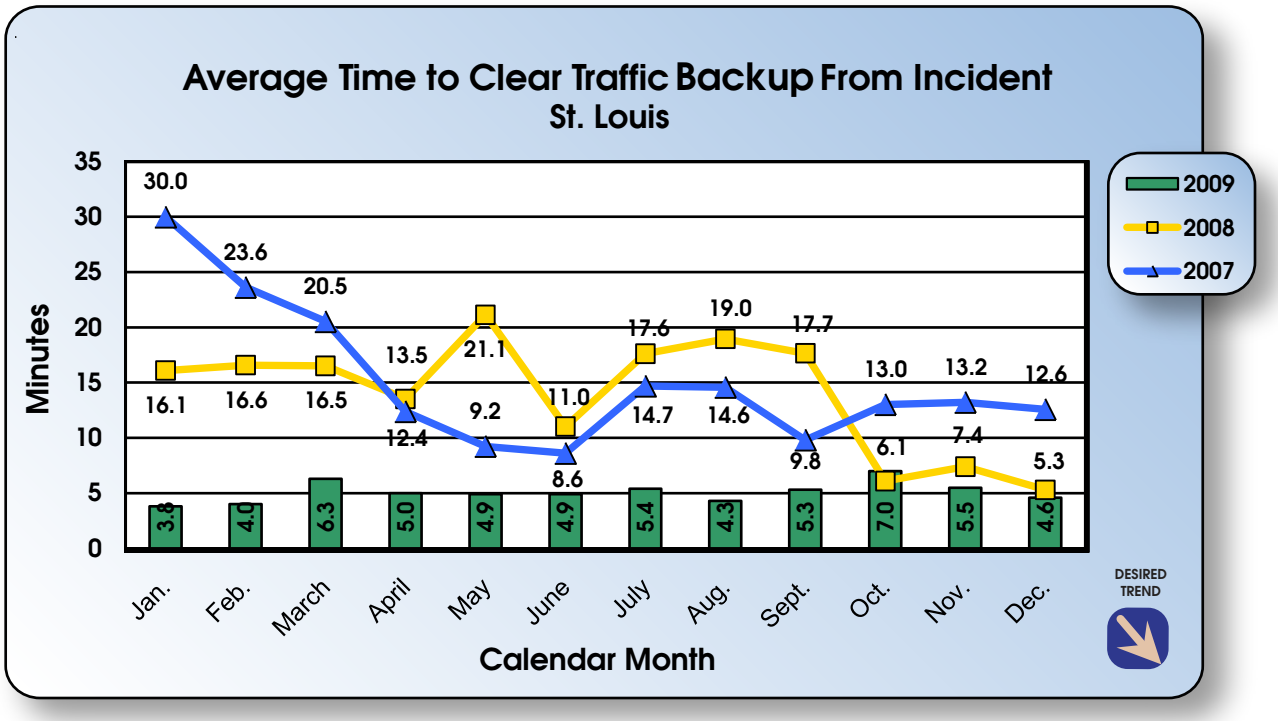
"All lanes cleared" and "clear backup" times are being recorded by MoDOT's Traffic Management Centers in Kansas City and St. Louis. Average times to clear traffic backups are calculated from these recorded times. Kansas City reports capture when a backup is relieved as an automated process. The Kansas City area has devices to collect data along portions of interstates 435 and 70. In October 2008, St. Louis began using advanced transportation management system (ATMS) devices to collect data. The number of incidents that data is collected on in St. Louis has gone from approximately 50 to 500.

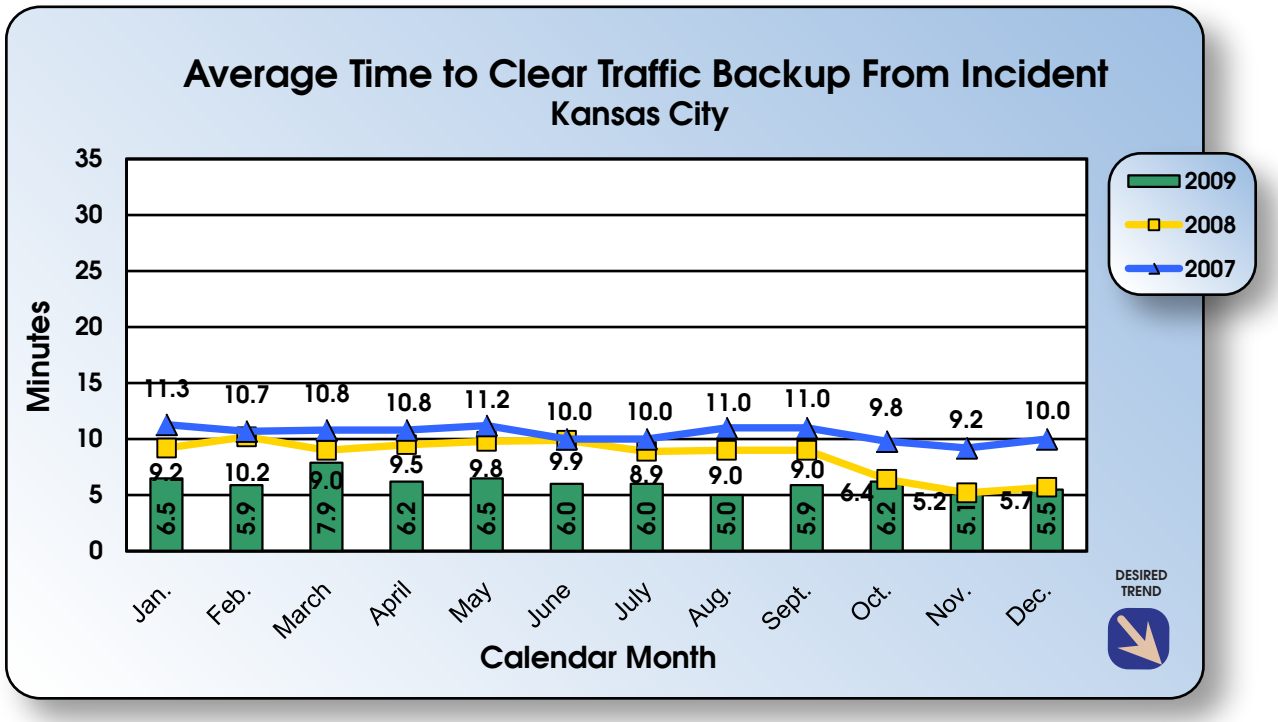
Improvement Status:

St. Louis area routes have larger traffic volumes that create more significant congestion problems than in Kansas City.

St. Louis' times to clear traffic backup continue to show a marked decrease from previous years. This is due to the increase in the number of incidents for which data is being reported. Prior to October 2008, the only incidents for which data was available were those incidents the TMC could monitor by camera. As a result of the increase in data collected due to the improvements to the ATMS system, St. Louis shows a much lower average time to clear traffic backup. In October, there were 13 reported incidents with a time to clear the backup of over 60 minutes, with one incident having a backup clearance time in excess of 160 minutes. Most of these incidents occurred during rain events, which likely contributed to the higher time to clear backup. These incidents increased the average for the month of October.

Kansas City continues to have fairly consistent times to clear backup from an incident. 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.


Average Time to Clear Traffic Backup From Incident
St. Louis
Minutes
35
30
25
20
15
10
5
0
30.0
23.6
20.5
13.5
21.1
11.0
17.6
19.0
17.7
13.0
13.2
12.6
16.1
16.6
16.5
12.4
9.2
8.6
14.7
14.6
9.8
6.1
7.4
5.3
3.8
4.0
6.3
5.0
4.9
4.9
5.4
4.3
5.3
7.0
5.5
4.6
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Calendar Month
2009
2008
2007
DESIRED TREND


Average Time to Clear Traffic Backup From Incident
Kansas City
Minutes
35
30
25
20
15
10
5
0
11.3
10.7
10.8
10.8
11.2
10.0
10.0
11.0
11.0
9.8
9.2
10.0
9.2
10.2
9.0
9.5
9.8
9.9
8.9
9.0
9.0
6.4
5.2
5.7
6.5
5.9
7.9
6.2
6.5
6.0
6.0
5.0
5.9
6.2
5.1
5.5
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Calendar Month
2009
2008
2007
DESIRED TREND

Number of customers assisted by the Motorist Assist program -1e

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. Kansas City operators patrol approximately 105 freeway miles. In October 2008, St. Louis added a 22-mile section of I-55 to their patrol route, which brings the total freeway miles St. Louis operators patrol to approximately 192.

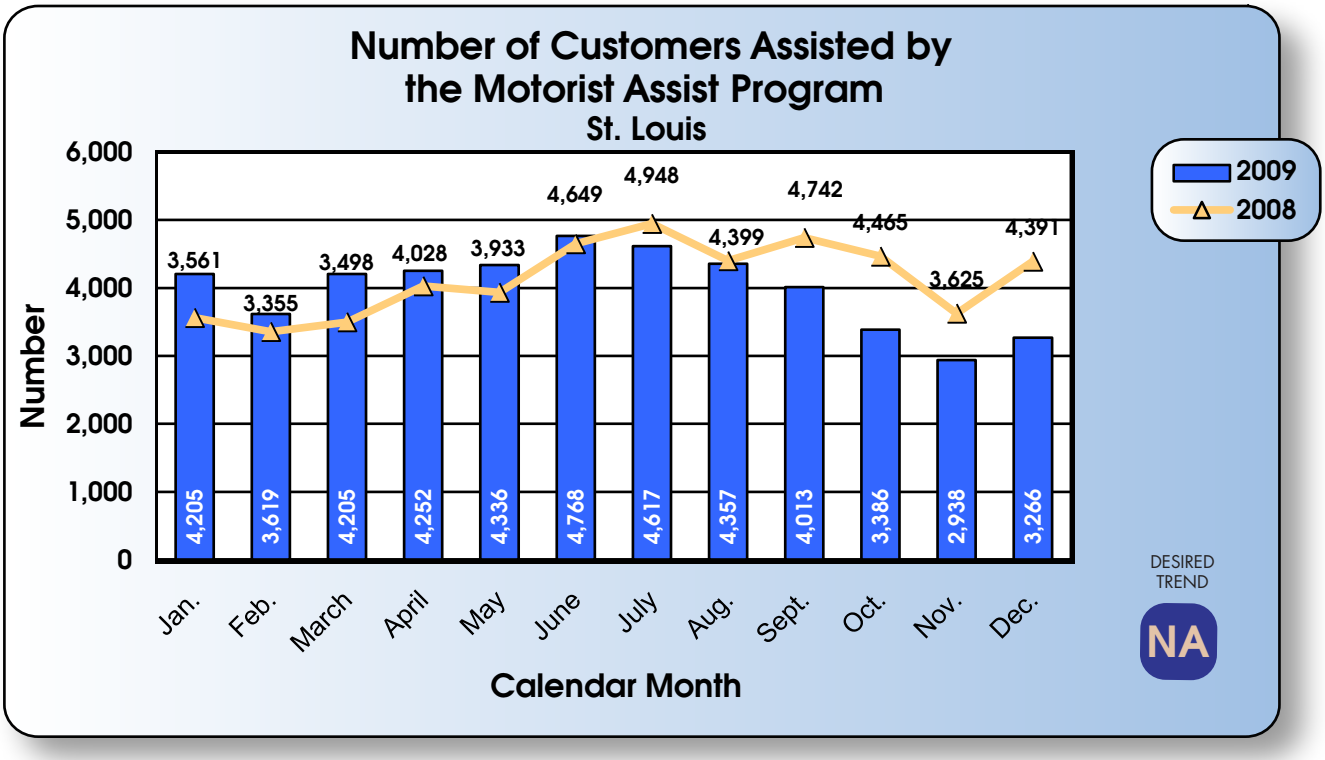
In January 2008, MoDOT partnered with St. Louis County to develop the Interstate 64 Traffic Response Service Patrol to ease congestion created by the reconstruction on the I-64 corridor. The I-64 Traffic Response Service Patrol provides similar services to motorists as the MoDOT Motorist Assist program 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. Due to the completion of the I-64 project, the Interstate 64 Traffic Response Service Patrol was discontinued December 12, 2009. In the nearly 2 -year time span of the program, 31,812 assists were provided.

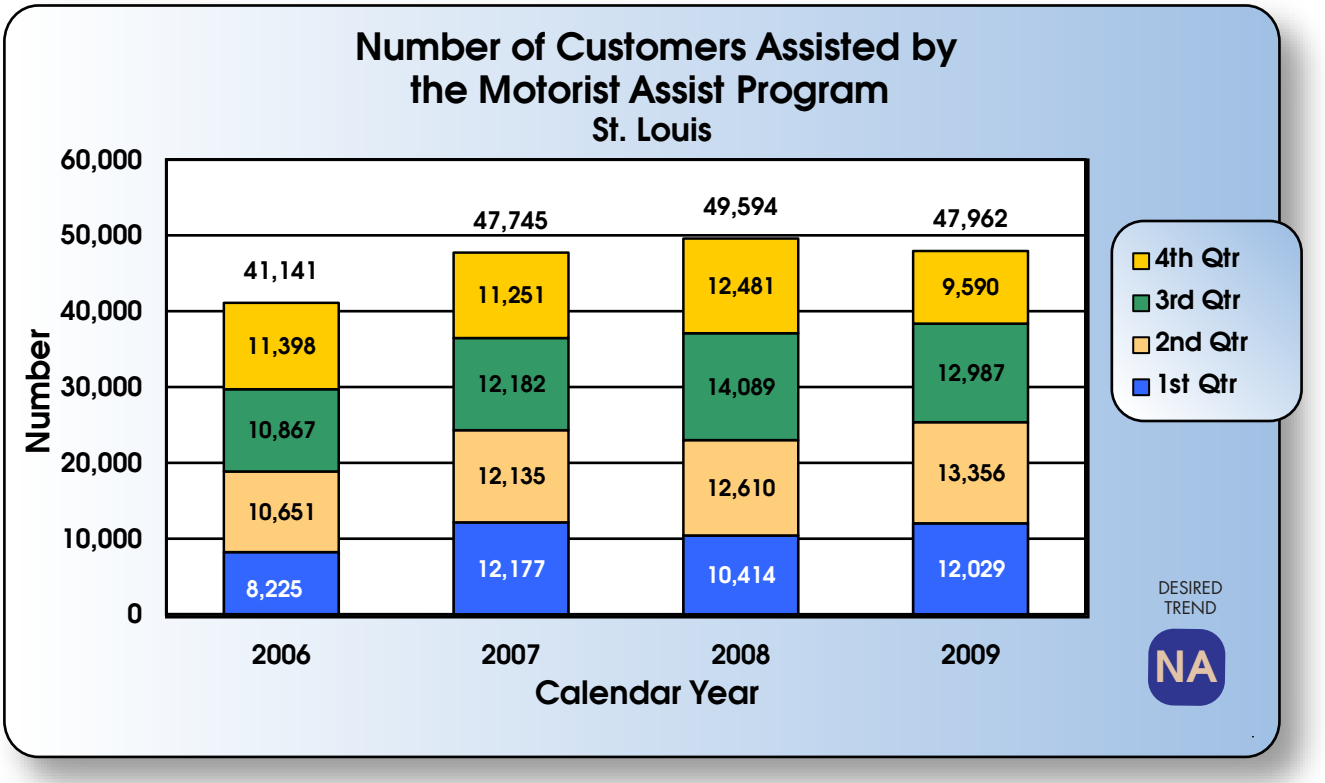
Improvement Status:

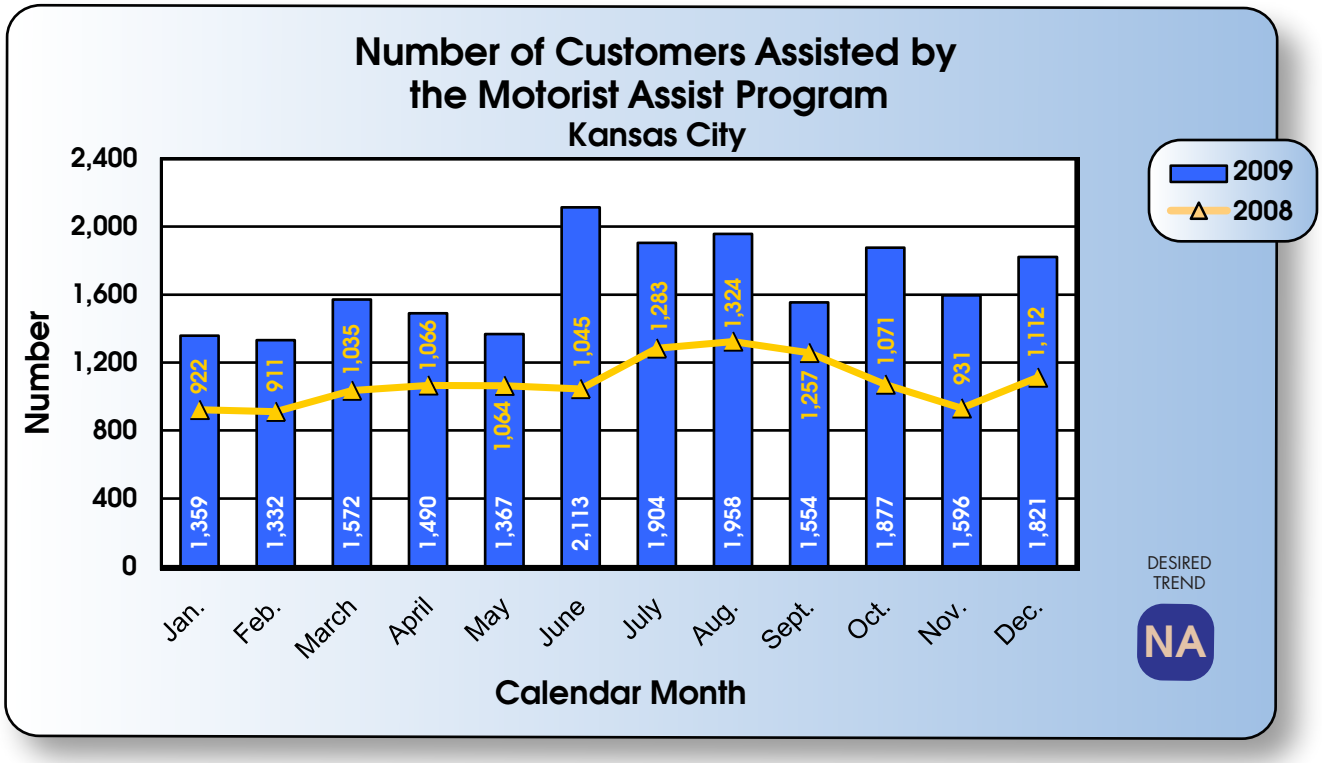
This data demonstrates that the Motorist Assist program in both St. Louis and Kansas City continue to provide a valuable service to motorists on the urban freeways in both metropolitan areas.

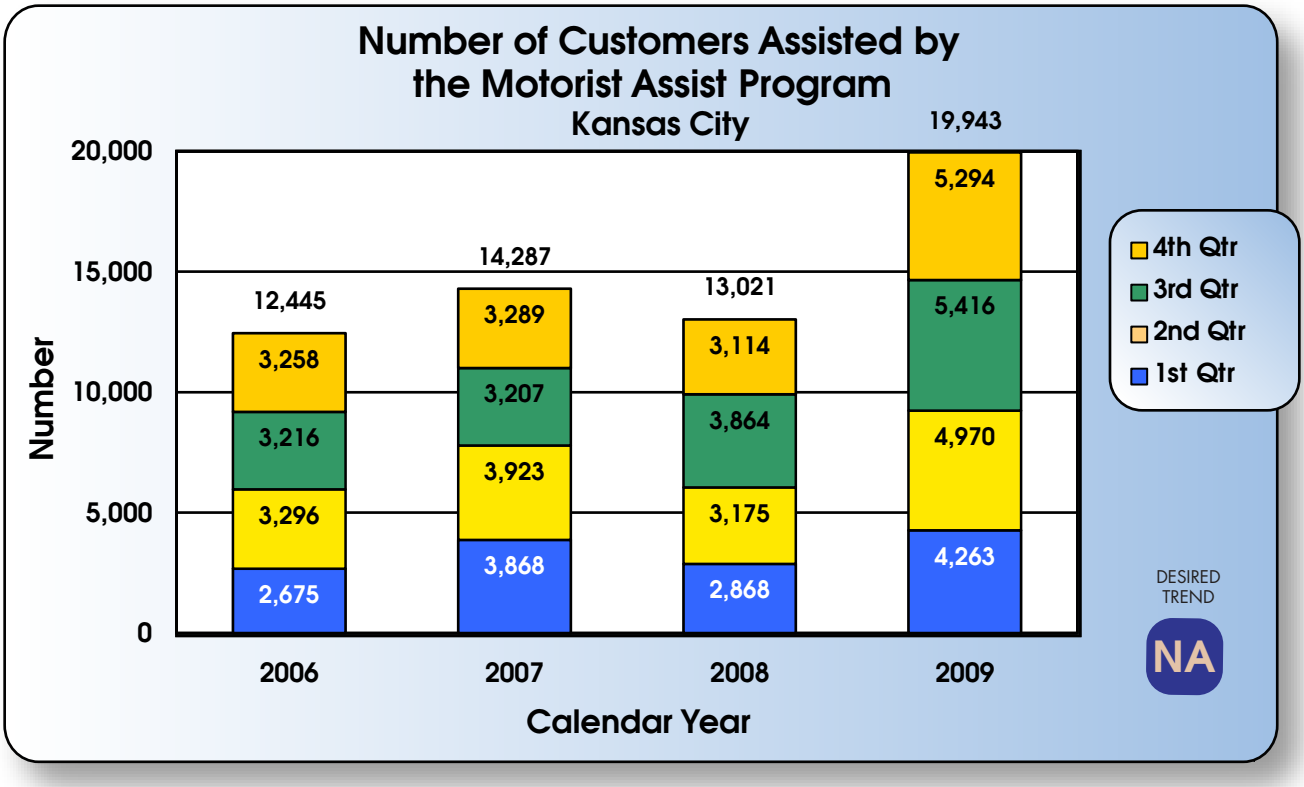
In St. Louis, the trend line for the last quarter is consistent with previous years, holiday season and winter months. However, the decline in assists for the past two quarters and yearly total is reflective of declining staffing levels since July. For the fourth quarter, Motorist Assist operators would assume responsibility for the I-64 Traffic Response routes in the event that organization was shorthanded. This was a commitment made by the district to provide a fully functioning operation for the I-64 Traffic Response. Unfortunately, this left three designated Motorist Routes being covered by adjacent Motorist Assist operators. These manhour shortages contributed to the reduced overall number of assists for the Motorist Assist organization.

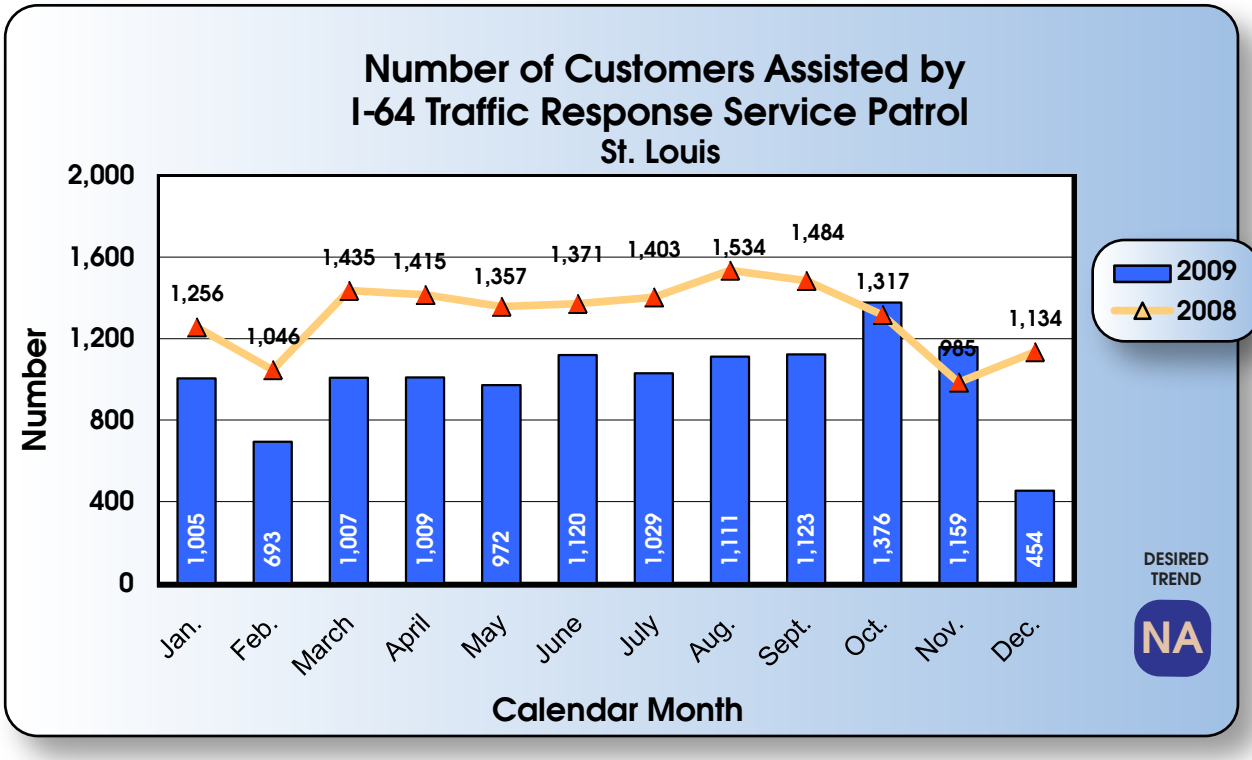
Over the last year, the motorist assist program in Kansas City has expanded coverage to seven days a week. This has resulted in a marked increase in the number of assists provided.


Number of Customers Assisted by
the Motorist Assist Program
St. Louis
Number
6,000
5,000
4,000
3,000
2,000
1,000
0
3,561
3,355
3,498
4,028
3,933
4,649
4,948
4,399
4,742
4,465
3,625
4,391
4,205
3,619
4,205
4,252
4,336
4,768
4,617
4,357
4,013
3,386
2,938
3,266
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Calendar Month
2009
2008
DESIRED TREND
NA


Number of Customers Assisted by
the Motorist Assist Program
St. Louis
Number
60,000
50,000
40,000
30,000
20,000
10,000
0
41,141
47,745
49,594
47,962
11,398
10,867
10,651
8,225
11,251
12,182
12,135
12,177
12,481
14,089
12,610
10,414
9,590
12,987
13,356
12,029
2006
2007
2008
2009
Calendar Year
4th Qtr
3rd Qtr
2nd Qtr
1st Qtr
DESIRED TREND
NA


Number of Customers Assisted by the Motorist Assist Program
Kansas City
Number
2,400
2,000
1,600
1,200
800
400
0
2009
2008
1,359
1,332
1,572
1,490
1,367
2,113
1,904
1,958
1,554
1,877
1,596
1,821
922
911
1,035
1,066
1,064
1,045
1,283
1,324
1,257
1,071
931
1,112
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Calendar Month
DESIRED TREND
NA


Number of Customers Assisted by the Motorist Assist Program
Kansas City
Number
20,000
15,000
10,000
5,000
0
4th Qtr
3rd Qtr
2nd Qtr
1st Qtr
12,445
3,258
3,216
3,296
2,675
14,287
3,289
3,207
3,923
3,868
13,021
3,114
3,864
3,175
2,868
19,943
5,294
5,416
4,970
4,263
2006
2007
2008
2009
Calendar Year
DESIRED TREND
NA


Number of Customers Assisted by
I-64 Traffic Response Service Patrol
St. Louis
Number
2,000
1,600
1,200
800
400
0
1,256
1,046
1,435
1,415
1,357
1,371
1,403
1,534
1,484
1,317
985
1,134
1,005
693
1,007
1,009
972
1,120
1,029
1,111
1,123
1,376
1,159
454
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Calendar Month
2009
2008
DESIRED TREND
NA


Guide
www.gatewayguide.com
I-64
www.thenewi64.org
I-64 TRAFFIC RESPONSE
511
MoDOT
18-5103M
18-4649M

Percent of Motorist Assist customers who are satisfied with the service-1f

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:

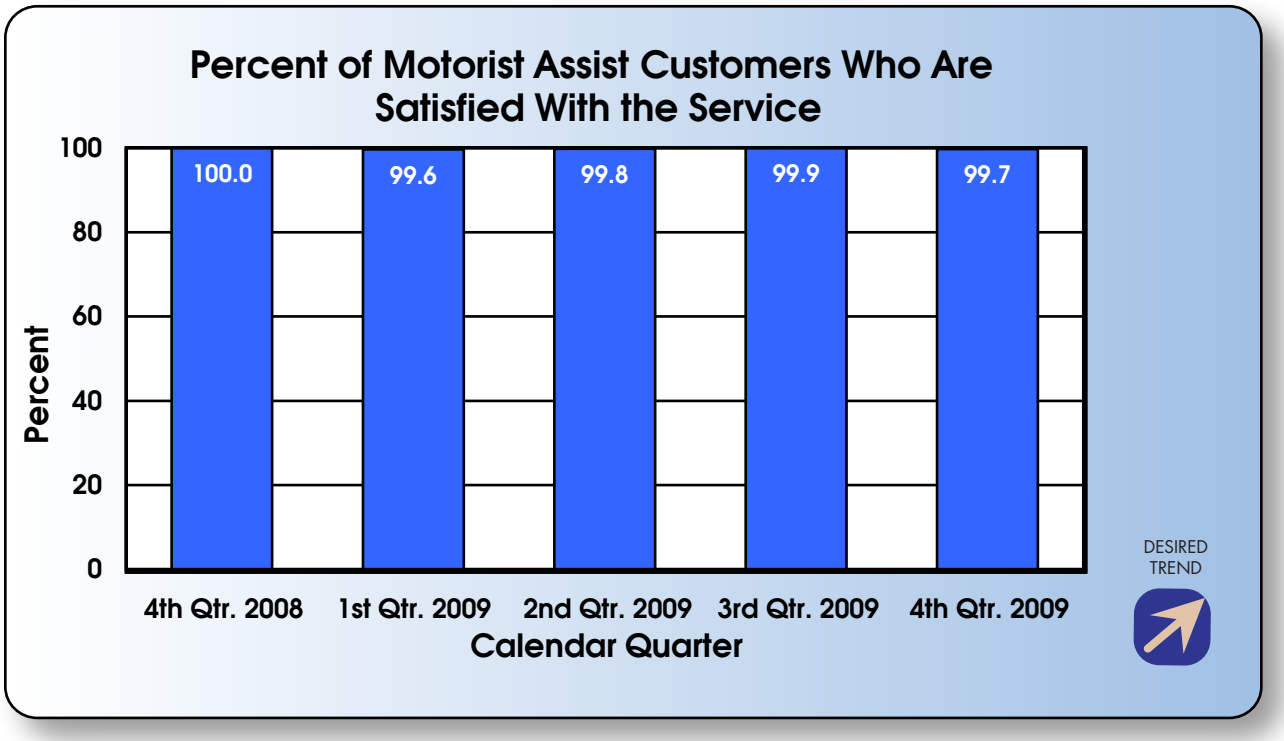
Motorist Assist operators distribute survey cards to customers. Data from the cards is compiled and tabulated by Heartland Market Research, LLC. Surveys with selections identifying that the service was "probably" or "definitely" valuable were tabulated as "satisfied" for this measure.

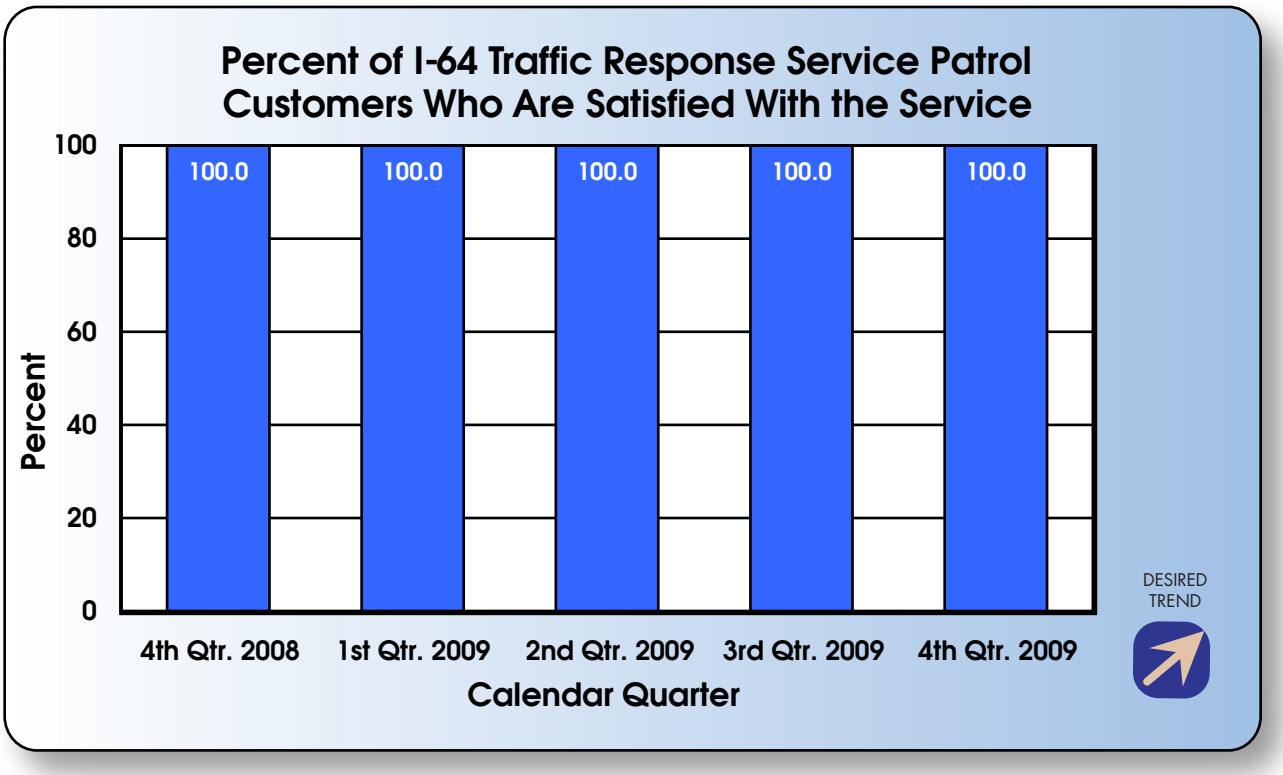
In January 2008, MoDOT partnered with St. Louis County to develop the Interstate 64 Traffic Response Service Patrol to ease congestion created by the reconstruction on the I-64 corridor. The I-64 Traffic Response Service Patrol provides similar services to motorists as the MoDOT Motorist Assist program, 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. Upon completion of the I-64 project, the Interstate 64 Traffic Response Service Patrol was discontinued December 12, 2009.

Improvement Status:

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

- Fourth Quarter 2008,
  - 1,366 Motorist Assist surveys received
  - 142 I-64 Traffic Response surveys received
- First Quarter 2009,
  - 1,413 Motorist Assist surveys received
  - 126 I-64 Traffic Response surveys received
- Second Quarter 2009,
  - 1,504 Motorist Assist surveys received
  - 124 I-64 Traffic Response surveys received
- Third Quarter 2009,
  - 1,592 Motorist Assist surveys received
  - 164 I-64 Traffic Response surveys received
- Fourth Quarter 2009,
  - 1,010 Motorist Assist surveys received
  - 153 I-64 Traffic Response surveys received


Percent of Motorist Assist Customers Who Are Satisfied With the Service
Percent
100
80
60
40
20
0
100.0
99.6
99.8
99.9
99.7
4th Qtr. 2008
1st Qtr. 2009
2nd Qtr. 2009
3rd Qtr. 2009
4th Qtr. 2009
Calendar Quarter
DESIRED TREND


Percent of I-64 Traffic Response Service Patrol Customers Who Are Satisfied With the Service
Percent
100
80
60
40
20
0
100.0
100.0
100.0
100.0
100.0
4th Qtr. 2008
1st Qtr. 2009
2nd Qtr. 2009
3rd Qtr. 2009
4th Qtr. 2009
Calendar Quarter
DESIRED TREND

Percent of work zones meeting expectations for traffic flow -1g

Result Driver: Don Hillis, Director of System Management
Measurement Driver: Dan Smith, Traffic Management & Operations Engineer

Purpose of the Measure:

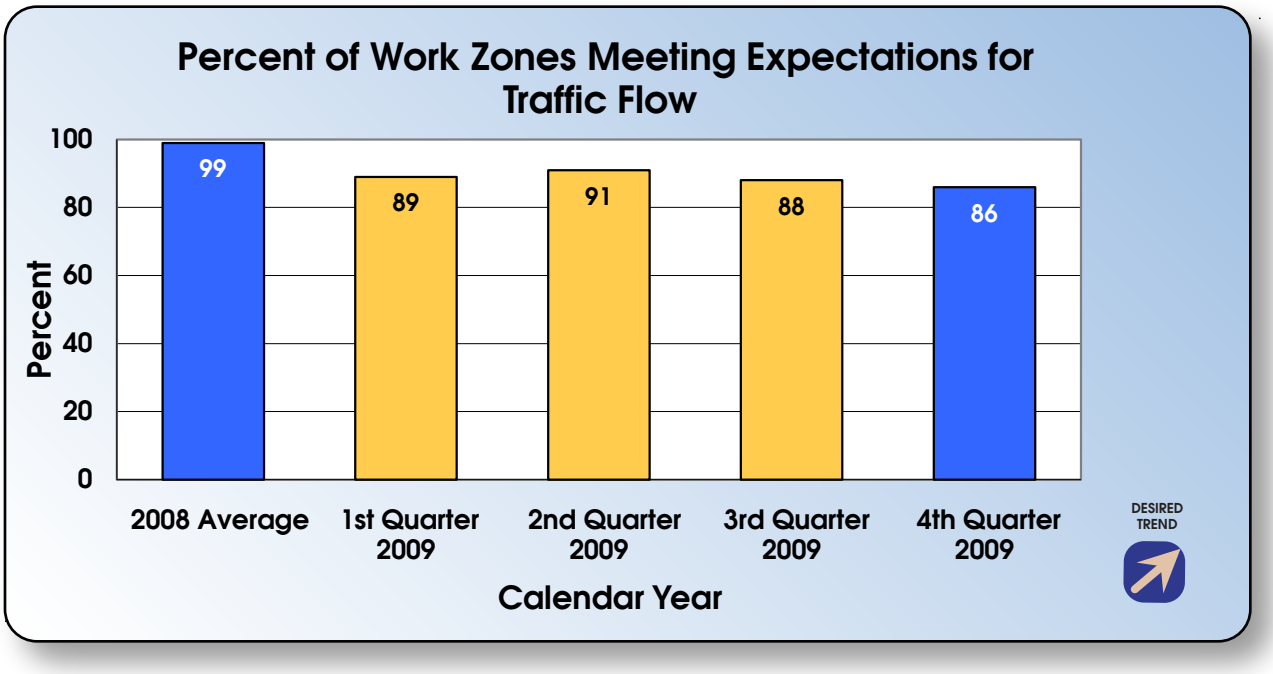
An important factor in evaluating the department's performance in temporary traffic control design, deployment, operation and maintenance is the measurement of work zones' affect on the mobility of highway users. This measure tracks how well the department meets customer expectations of traffic flow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

Measurement and Data Collection:

On January 1, 2009, MoDOT provided a Work Zone Customer Survey for the traveling public to provide evaluation of the mobility in work zones across the state. Each survey has several questions that address the sign and flagger instructions, speed limit, travel time, and travel safety. The evaluator assigns a yes, no, or n/a rating to each of the questions. The overall ratings are compiled quarterly and reported via this measurement. The survey is on the MoDOT website at the following address: http://www.modot.gov/workzones/Comments.htm.

Improvement Status:

Compilation of the 2,172 surveys completed by the traveling public and MoDOT staff between January and December of this calendar year resulted in a decrease of positive satisfaction rating from 88 to 86 percent for work zone traffic flow. Since this is the first year the traveling public has had an opportunity to provide formal feedback on work zones, no historical data is available. For comparison purposes, the 2008 yearly average results of our technical staff inspections are included. The revised evaluation technique will allow MoDOT to align our priorities with that of our customers.



Time to meet winter storm event performance objectives on major and minor highways-1h

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. 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 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. Data collection for this measure runs from November through March of each winter season, and is updated in the January and April Tracker reports. The time in hours is the statewide average for the entire winter season.

Improvement Status:

The average time, to date, to meet the performance objectives on the major highways is 1.0 hour more than the previous winter. The average time to meet the performance objectives on the minor highways is 1.4 hours more than last winter. The time to meet the performance objectives will vary based on the amount of snow received, the duration and the intensity of the storm. This winter has produced several major storms with near blizzard conditions requiring additional time to meet the objectives. Strategies to improve these numbers include implementing best practices, pursuing equipment enhancements, testing new materials and continued training of snow removal employees.