Uninterrupted Traffic Flow

Tangible Result Driver – Don Hillis,
Director of System Management

Missouri drivers expect to get to their destinations on time, without delays. Traffic, changes in weather, work zones and highway incidents can all impact their travel. MoDOT works to ensure that motorists travel as efficiently as possible on the state system by better managing work zones, snow removal and highway incidents, and by using the latest technology to inform motorists of possible delays and available options. Better traffic flow means fewer crashes.

Uninterrupted Traffic Flow

Average travel indices and speeds on selected freeway sections

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

Purpose of the Measure:
This measure tracks the average travel index values and average speeds on various freeway sections. The desired trend is for the travel index to remain at or near a value of 1.00. 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

Average speeds are taken from sensor data. The free-flow speed is constant and is equal to the highest hourly average speed for any hour in that data set.

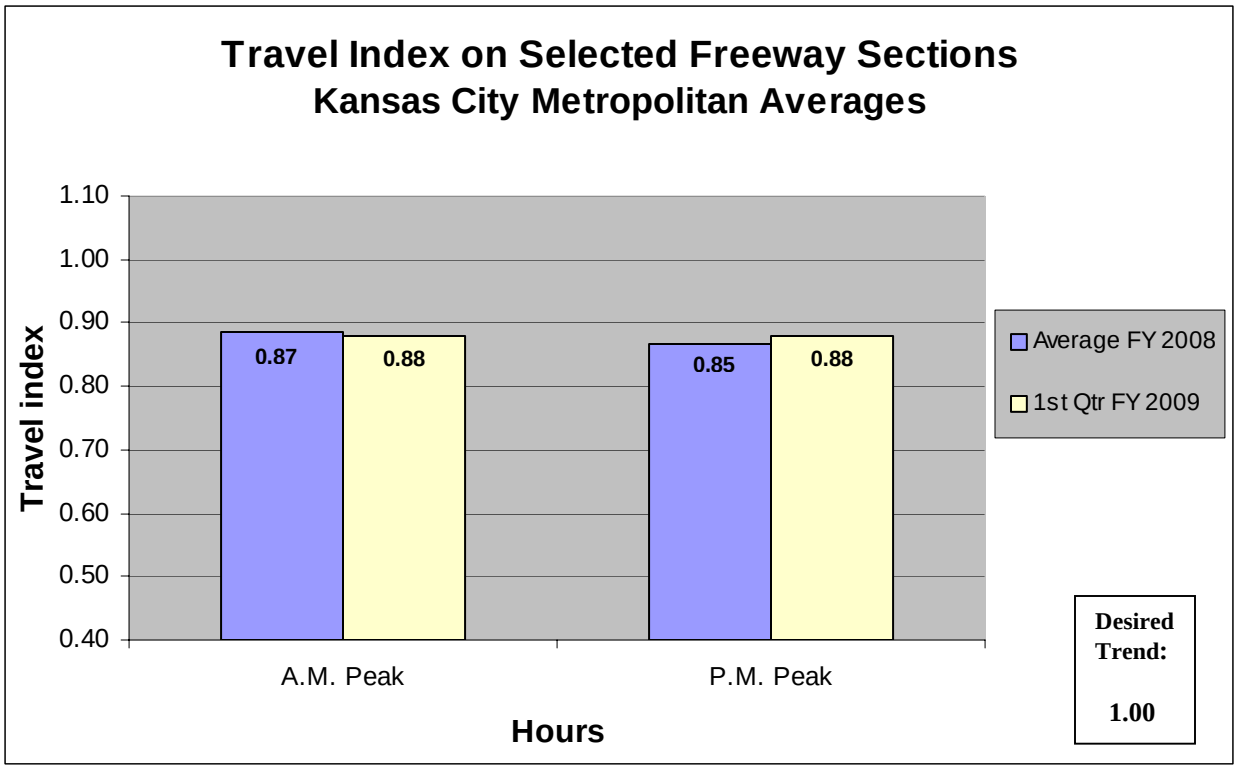
Measurement and Data Collection:
Data from the St. Louis and Kansas City regions are provided by MoDOT's traffic management centers. Information about the St. Louis traffic management center, Gateway Guide, can be found at http://www.gatewayguide.com and information about the traffic management center in Kansas City, KC Scout, can be found at http://www.kcscout.net/. Data for the St. Louis region is also provided through a partnership with *Traffic.com*. Data for each location is updated quarterly.

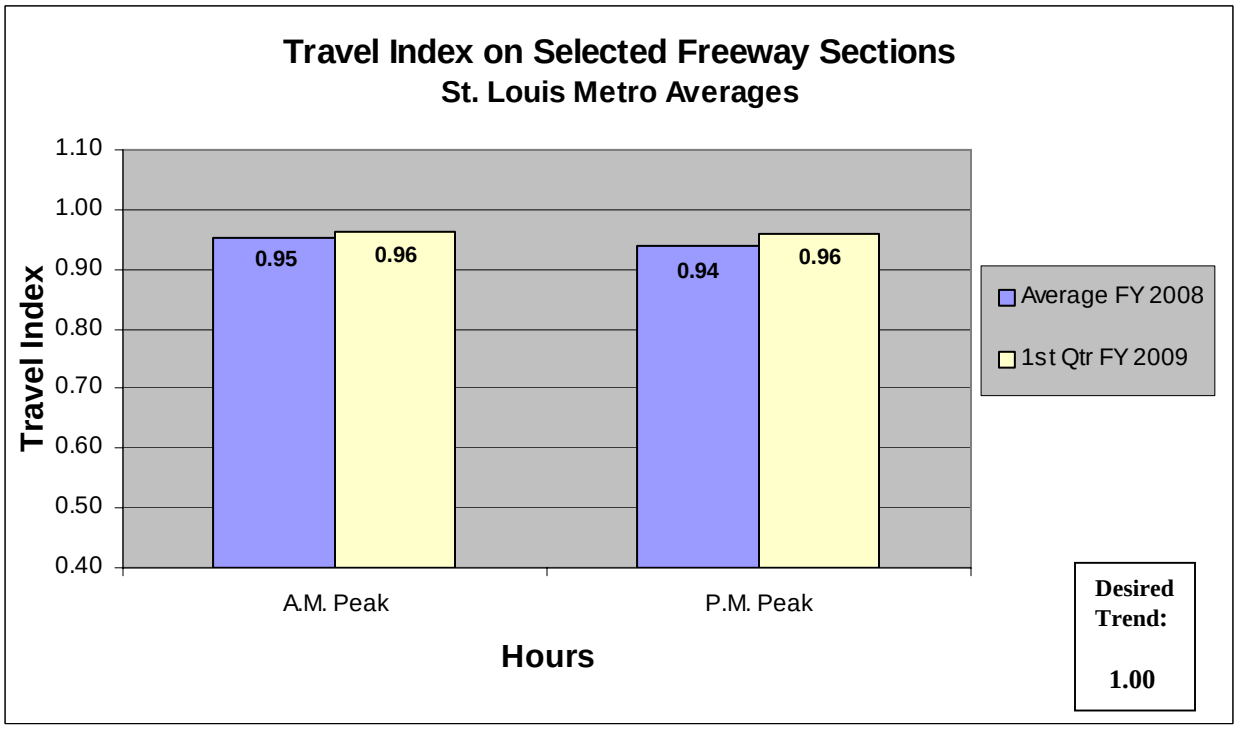
Improvement Status:

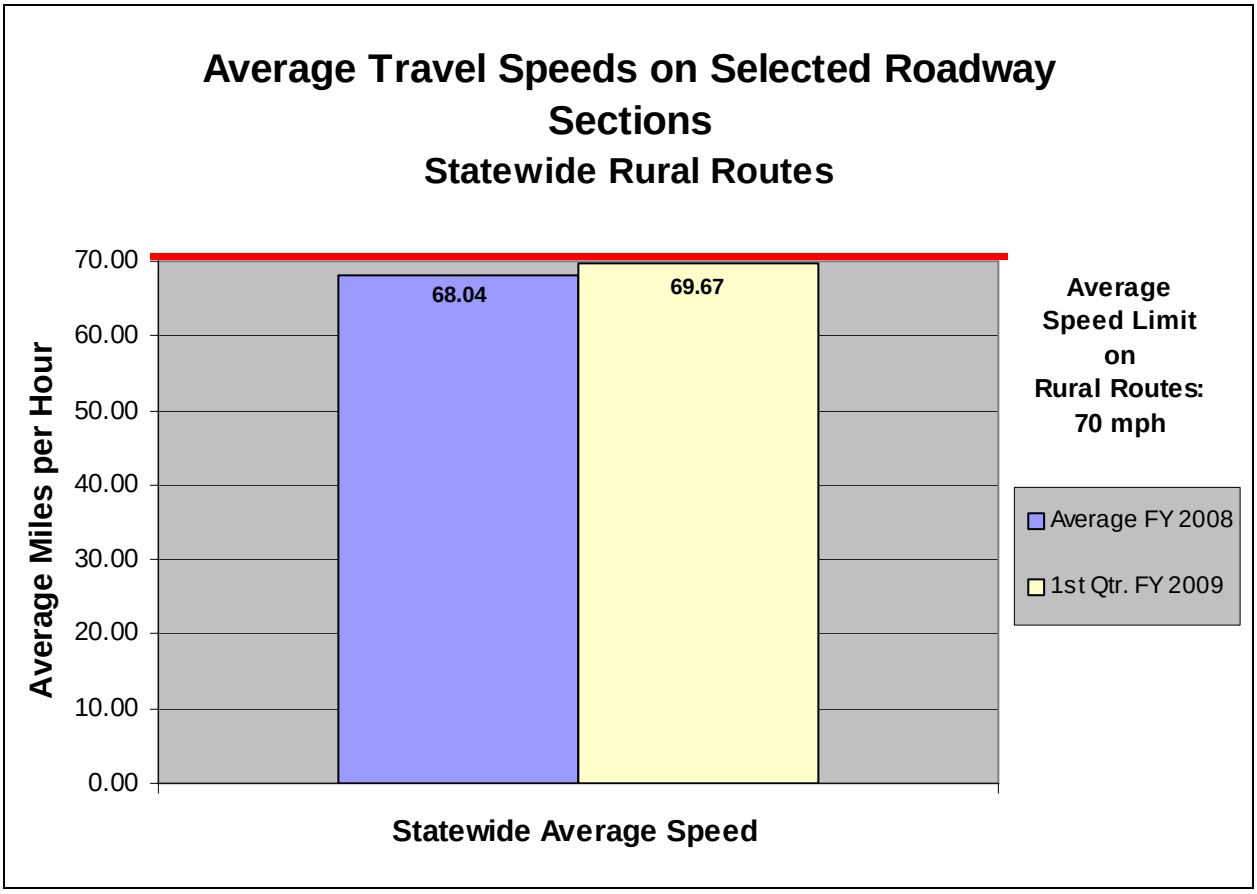
Kansas City metropolitan region:
As shown on the graph, the freeway systems in the Kansas City region are performing in the mid to upper 80 percentile range during the peak hours, as compared to the free-flow condition. The morning and evening peak Travel Index increased slightly at 0.88, as compared to the previous fiscal year average of 0.87 and 0.85, respectively. Most of the Kansas City region has been free from significant work zone impacts. However, bridge work and resurfacing jobs are being conducted at the Paseo Bridge causing some slow downs in the morning commute southbound into downtown. This should see some dramatic slow downs over the next few years due to the KC ICON bridge replacement project. Additional information on the construction activities along I-29/35 can be found at www.kcicon.org.

St. Louis metropolitan region:
Data in the St. Louis region shows a slight increase in the morning and evening peak travel indices. The morning peak Travel Index increased from 0.95 to 0.96. The evening peak travel index increased from 0.94 to 0.96 for the first quarter fiscal year 2009, as compared to the average fiscal year 2008 peak indices. This quarter is the third of four quarters impacted by the closure of the western portion of I-64. Additional information on the construction activities along I-64 can be found at www.thenewi64.org.

Statewide:
The statewide average speed on rural routes for this quarter is 69.67 mph, which is an increase from last fiscal year's average report of 68.04 mph. Historically, we have seen an increase in average speeds in the first and fourth quarters of the fiscal year. First quarter fiscal year 2008 Average Speed was 68.08 mph. Improvements continue to be made to the rural interstate corridors. CCTV cameras will be installed on I-70, I-44, I-55, I-29, I-34, I-55 and US-60 by the fall of 2009.


Travel Index on Selected Freeway Sections
Kansas City Metropolitan Averages
Travel index
1.10
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.87
0.88
0.85
0.88
A.M. Peak
P.M. Peak
Hours
Average FY 2008
1st Qtr FY 2009
Desired Trend:
1.00


Travel Index on Selected Freeway Sections
St. Louis Metro Averages
Travel Index
1.10
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.95
0.96
0.94
0.96
A.M. Peak
P.M. Peak
Hours
Average FY 2008
1st Qtr FY 2009
Desired Trend:
1.00


Average Travel Speeds on Selected Roadway Sections
Statewide Rural Routes
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Average Miles per Hour
68.04
69.67
Average Speed Limit on Rural Routes: 70 mph
Average FY 2008
1st Qtr. FY 2009
Statewide Average Speed

Uninterrupted Traffic Flow

Average rate of travel on selected signalized routes

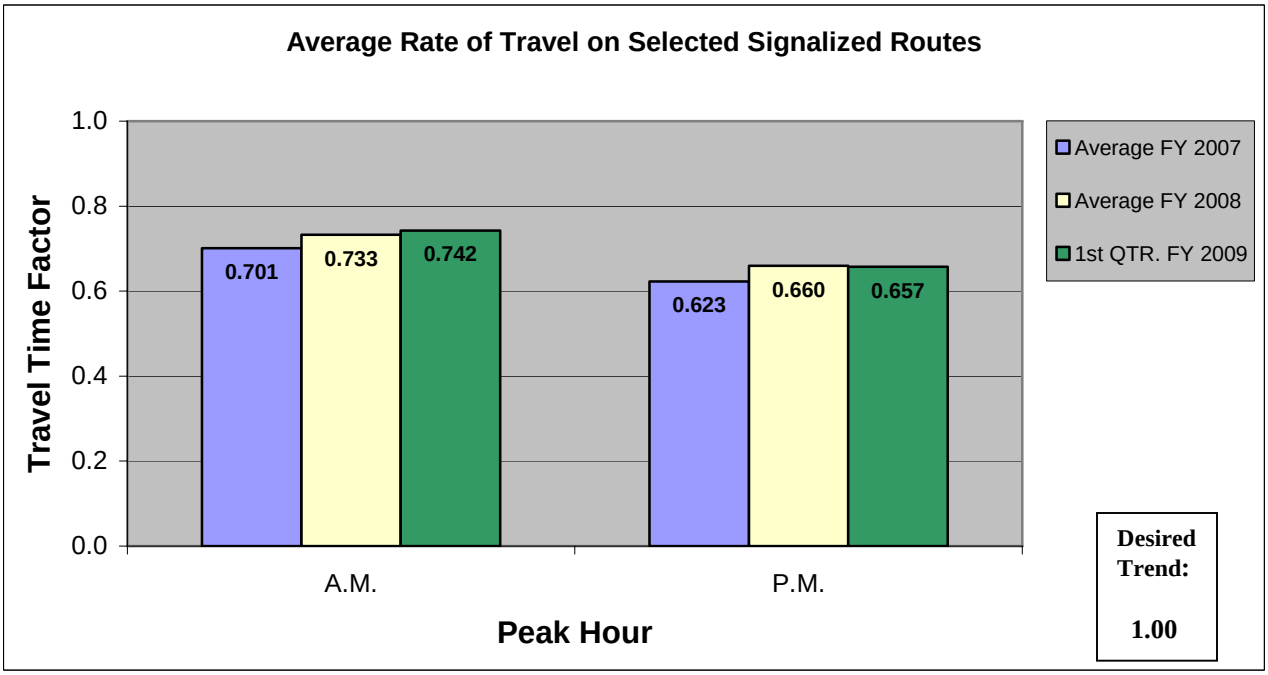
Result Driver: Don Hillis, Director of System Management
Measurement Driver: Julie Stotlemeyer, Traffic Liaison Engineer

Purpose of the Measure:
This measure indicates how well selected arterials across the state are operating during peak traffic times. As improvements are made, such as signal timing or access management, this measure will show the effects of those efforts and decisions on the arterial system.

Measurement and Data Collection:
Travel times are measured on various arterials. Data is collected from driving each route twice during a.m. and p.m. peak times and timing how long it takes to traverse the route. The travel time is compared to the speed limit and the travel time factor determined. As the travel time factor approaches 1.00, traffic is moving at the speed limit. Data collection began in the second quarter of fiscal year 2007. This is a quarterly measure.

Improvement Status:
For first quarter fiscal year 2009, the average statewide travel time factor for a.m. peak is 0.742 and p.m. peak is 0.657. Overall performance is 0.700. The a.m. peak travel time factor is nine percent higher than p.m. peak travel time factor. First quarter data shows the a.m. peak for arterials operating higher than the average for fiscal year 2007 and 2008 while the p.m. peak for arterials operates higher than the average for fiscal year 2007 but lower than 2008. For first quarter fiscal year 2009, the a.m. peak travel time factor is five percent higher and the p.m. peak travel time factor is two percent higher than the first quarter fiscal year 2008 a.m. and p.m. peak travel time factors, respectively.

The average rate of travel on selected signalized routes has improved due to increased retiming of signals, optimization of signal phasing and system upgrades.



** The average FY 2007 data is from the last three quarters in FY 2007. The 1st quarter FY 2007 is unavailable.*

Uninterrupted Traffic Flow

Average time to clear traffic incident

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

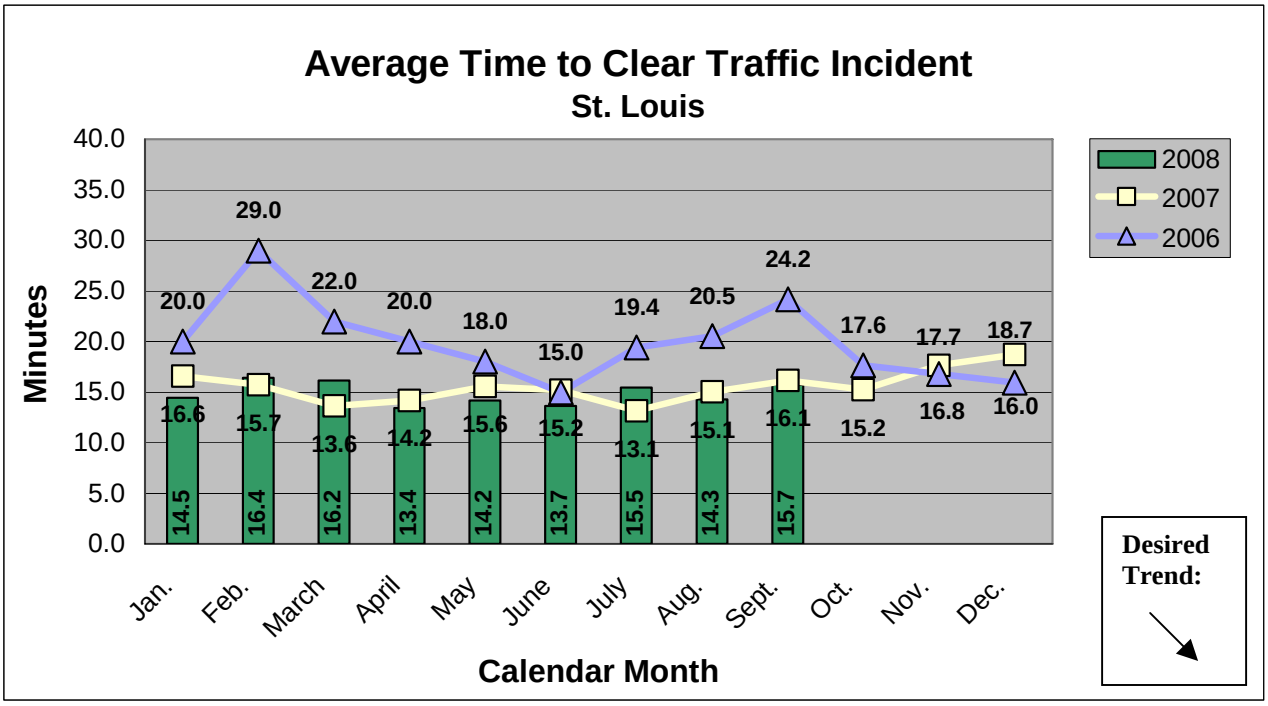
Purpose of the Measure:
This measure is used to determine the trends in incident clearance on the state highway system. A traffic incident is an unplanned event that creates a temporary reduction in the number of vehicles that can travel on the road. The sooner an incident is removed, the sooner the highway system returns to normal capacity. Therefore, responding to and quickly addressing the incidents (crashes, flat tires and stalled vehicles) improves system performance.

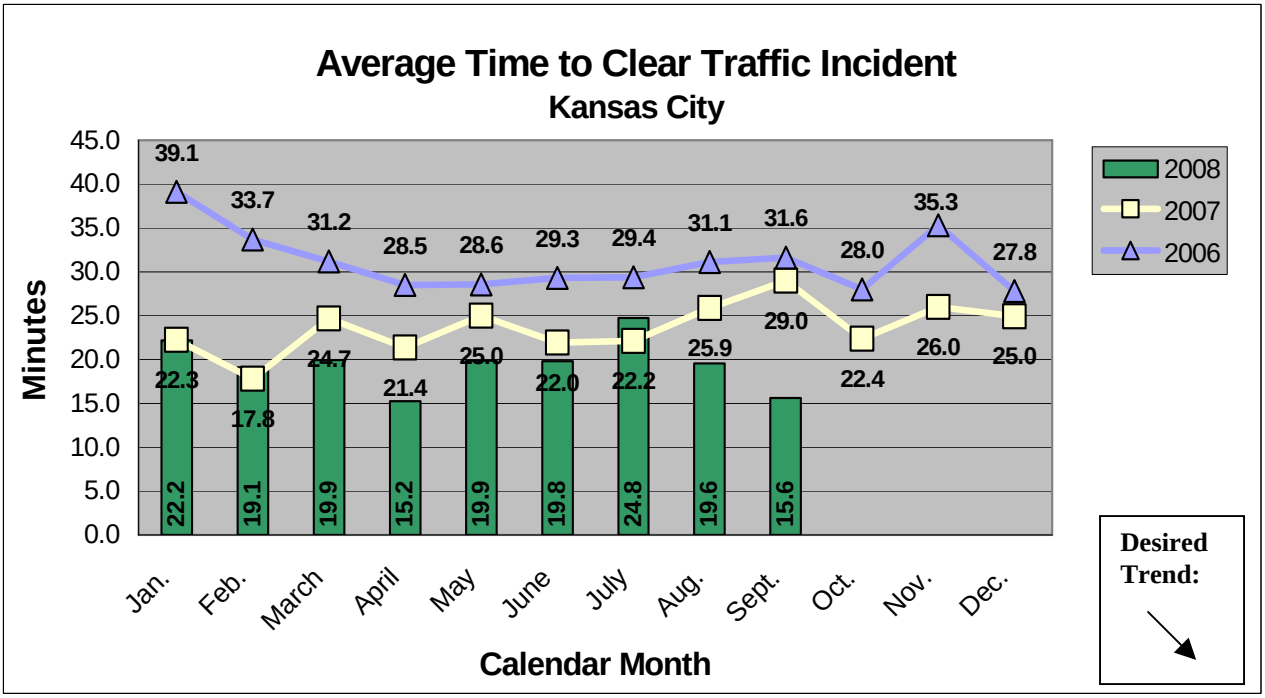
Measurement and Data Collection:
Traffic Management Center staff record "incident start time" and the time for "all lanes cleared." Average time to clear traffic incidents is calculated from these times.

Improvement Status:
The Kansas City area continues to experience incident clearance times at or near those for the same time period last year. Kansas City collected data on 187, 167, and 183 incidents respectively for the months of July, August, and September. July experienced a significantly higher average clearance time due to a 27 percent increase in intermediate duration incidents over June.

St. Louis recorded 872, 733, and 890 incidents respectively for the months of July, August, and September. The overall time to clear incidents remains fairly consistent. St. Louis' data includes considerably more incidents because St. Louis monitors more freeway miles than the Kansas City area.

This data consists of only those incidents from which the TMC was able to collect data.


Average Time to Clear Traffic Incident
St. Louis
Minutes
Calendar Month
2008
2007
2006
Desired Trend:
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
20.0
29.0
22.0
20.0
18.0
15.0
19.4
20.5
24.2
17.6
17.7
18.7
16.6
15.7
13.6
14.2
15.6
15.2
13.1
15.1
16.1
15.2
16.8
16.0
14.5
16.4
16.2
13.4
14.2
13.7
15.5
14.3
15.7


Average Time to Clear Traffic Incident
Kansas City
Minutes
Calendar Month
2008
2007
2006
Desired Trend:
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
39.1
33.7
31.2
28.5
28.6
29.3
29.4
31.1
31.6
28.0
35.3
27.8
22.3
17.8
24.7
21.4
25.0
22.0
22.2
25.9
29.0
22.4
26.0
25.0
22.2
19.1
19.9
15.2
19.9
19.8
24.8
19.6
15.6

Uninterrupted Traffic Flow

Average time to clear traffic backup from incident

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

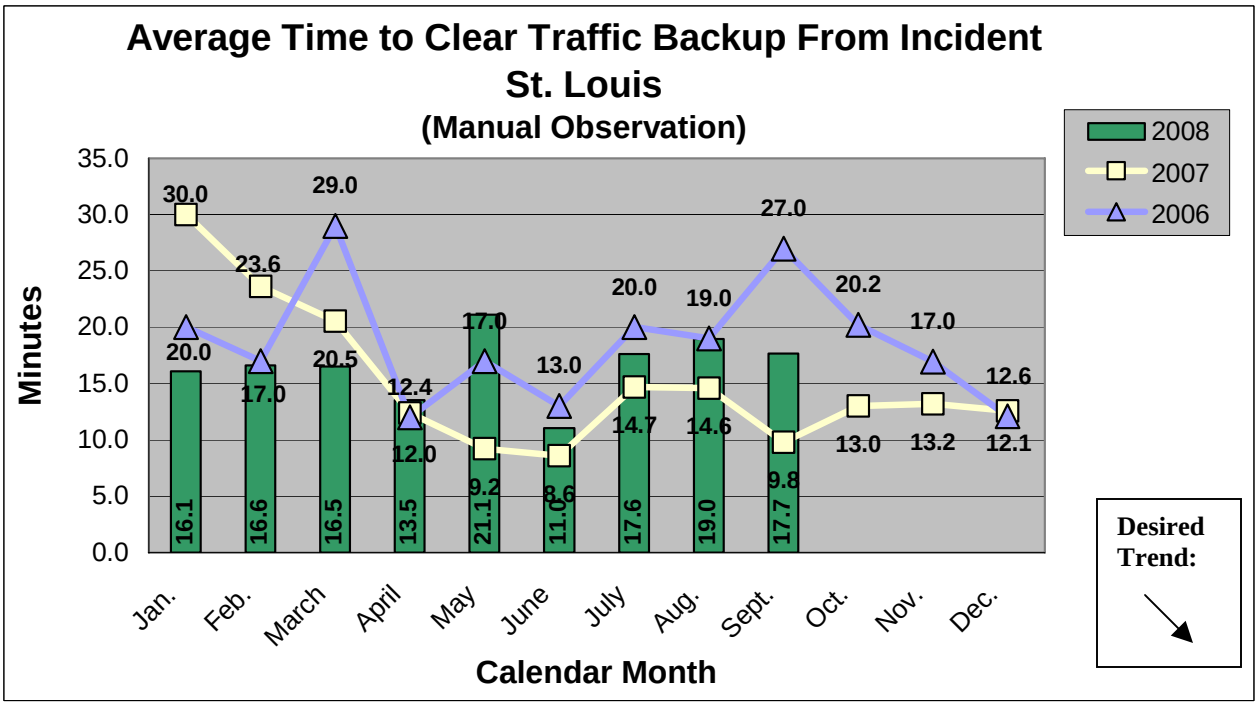
Purpose of the Measure:
This measure tracks the amount of time it takes to return traffic flow back to normal after a traffic incident. A traffic incident is any unplanned event that creates a temporary reduction in the number of vehicles that can travel on the road.

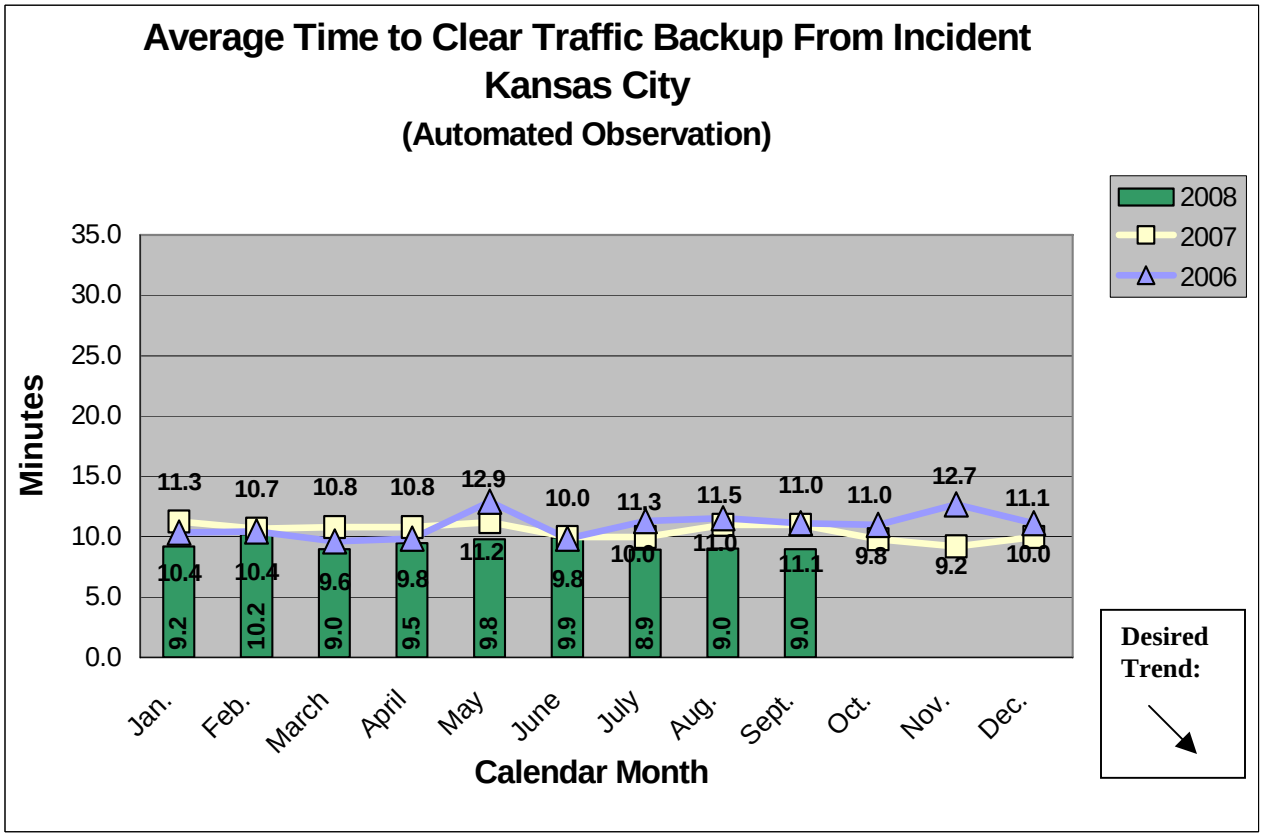
Measurement and Data Collection:
"All lanes cleared" and "clear backup" times are being recorded by MoDOT's Traffic Management Centers in Kansas City and St. Louis. Average times to clear traffic backups are calculated from these recorded times. Kansas City reports capture when a backup is relieved as an automated process. The Kansas City area has devices to collect data along portions of interstates 435 and 70. St. Louis collects data manually using video equipment and verification from Motorist Assist operators. St. Louis continues to record "clear backup" times when they perceive traffic to be back to "normal" conditions. They will use advanced transportation management system devices and software when they become available.

Improvement Status:
The Kansas City data includes all detected incidents on the KC Scout instrumented routes. The St. Louis data only includes a portion of major incidents on the St. Louis freeway network that can be monitored by operators in the traffic management center or by Motorist Assist and emergency response personnel on the scene. The St. Louis data does not necessarily capture short-term incidents that clear before a Motorist Assist operator can get to the scene. St. Louis area routes also have larger traffic volumes that create more significant congestion problems than in Kansas City.

The average time to clear traffic backup in both Kansas City and St. Louis has remained fairly consistent due to the effectiveness of travel-time systems on dynamic message signs and drivers having real-time information to make informed decisions about detouring away from extended backups and secondary accidents.

Renewed efforts in developing long-term partnerships with local agencies and law enforcement have increased the awareness of MoDOT's expectations for quick clearance and open roadways.


Average Time to Clear Traffic Backup From Incident
St. Louis
(Manual Observation)
2008
2007
2006
Minutes
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
30.0
23.6
20.5
12.4
12.0
9.2
13.0
14.7
14.6
9.8
13.0
13.2
12.1
20.0
17.0
29.0
17.0
20.0
19.0
27.0
20.2
17.0
12.6
16.1
16.6
16.5
13.5
21.1
11.0
17.6
19.0
17.7
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Calendar Month
Desired
Trend:


Average Time to Clear Traffic Backup From Incident
Kansas City
(Automated Observation)
2008
2007
2006
Minutes
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
11.3
10.7
10.8
10.8
12.9
10.0
11.3
11.5
11.0
11.0
12.7
11.1
10.4
10.4
9.6
9.8
11.2
9.8
10.0
11.0
11.1
9.8
9.2
10.0
9.2
10.2
9.0
9.5
9.8
9.9
8.9
9.0
9.0
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Calendar Month
Desired
Trend:

Uninterrupted Traffic Flow

Number of customers assisted by the Motorist Assist program

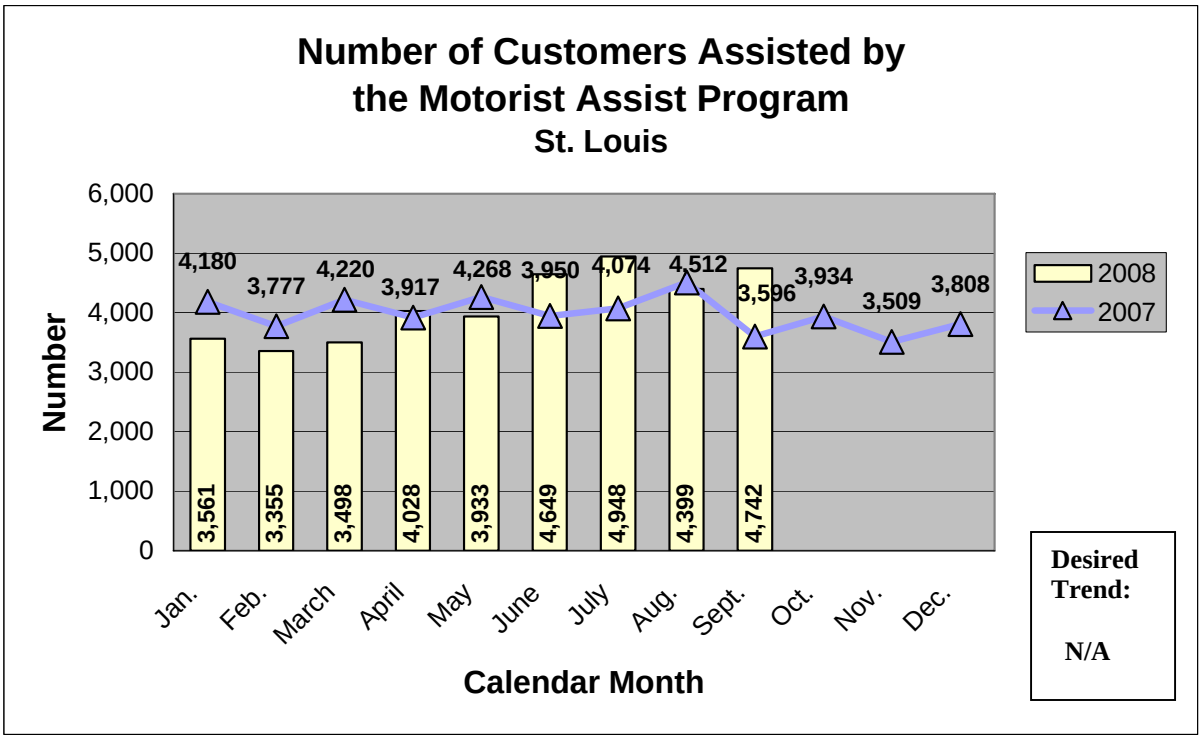
Result Driver: Don Hillis, Director of System Management
Measurement Driver: Rick Bennett, Traffic Liaison Engineer

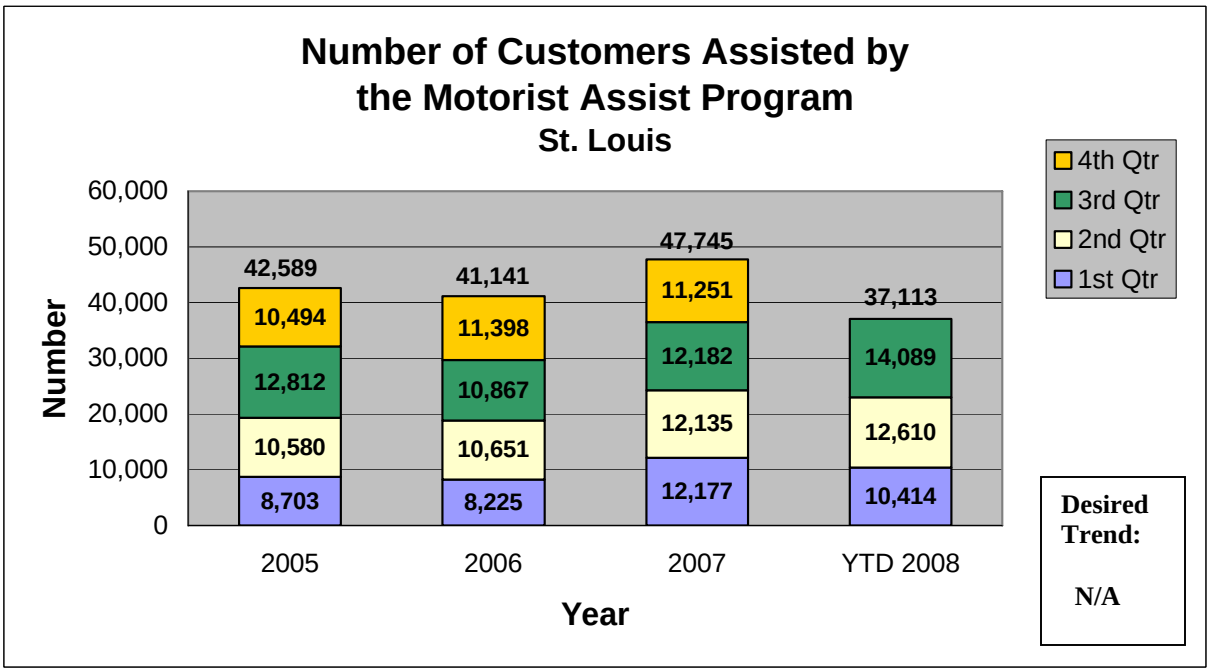
Purpose of the Measure:
This measure is used to gauge the use of the Motorist Assist programs on our state roadways, because traffic incidents impact Missouri's transportation system capacity. An incident is any unplanned event that creates a temporary reduction in roadway capacity that impedes normal traffic flow. The sooner an incident is removed, the sooner the highway system returns to normal capacity. Therefore, responding to and quickly addressing the incidents (crashes, flat tires and stalled vehicles) improves system performance. MoDOT's Motorist Assist operators are able to respond to nearly every incident, major or minor, in the areas they cover.

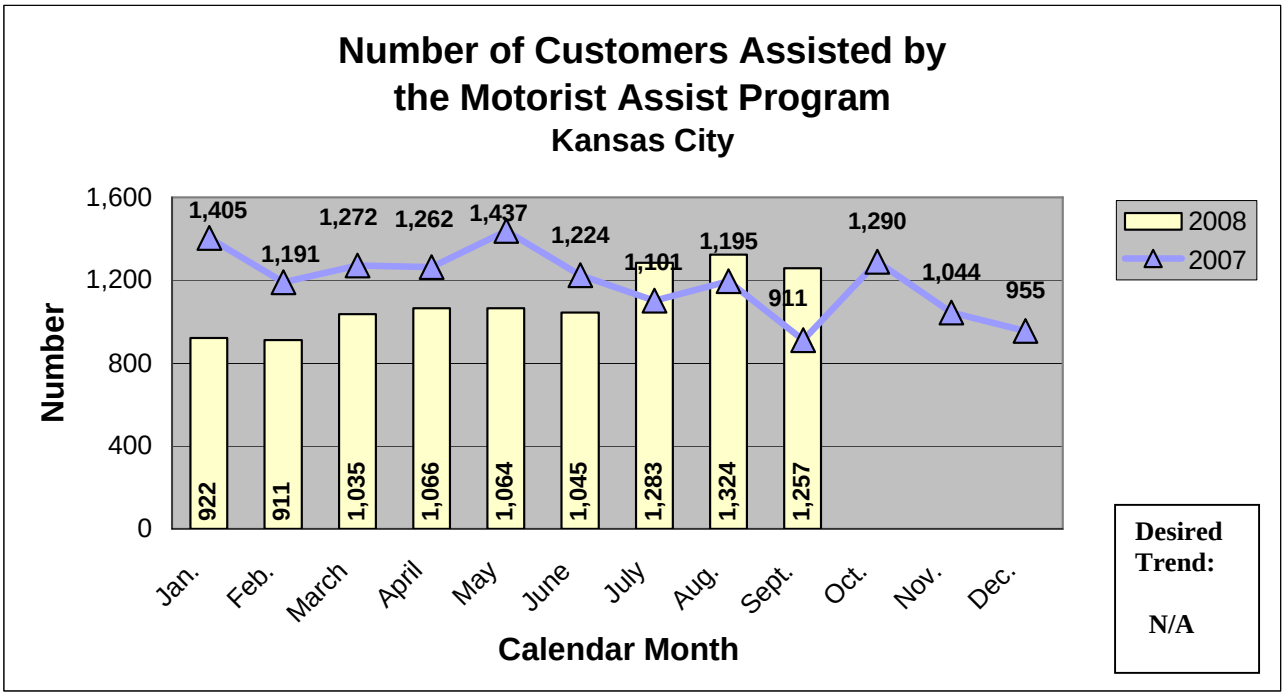
Measurement and Data Collection:
The Motorist Assist operators record each assist and then prepare a monthly summary. St. Louis operators patrol approximately 170 freeway miles, while Kansas City operators patrol approximately 105 freeway miles.

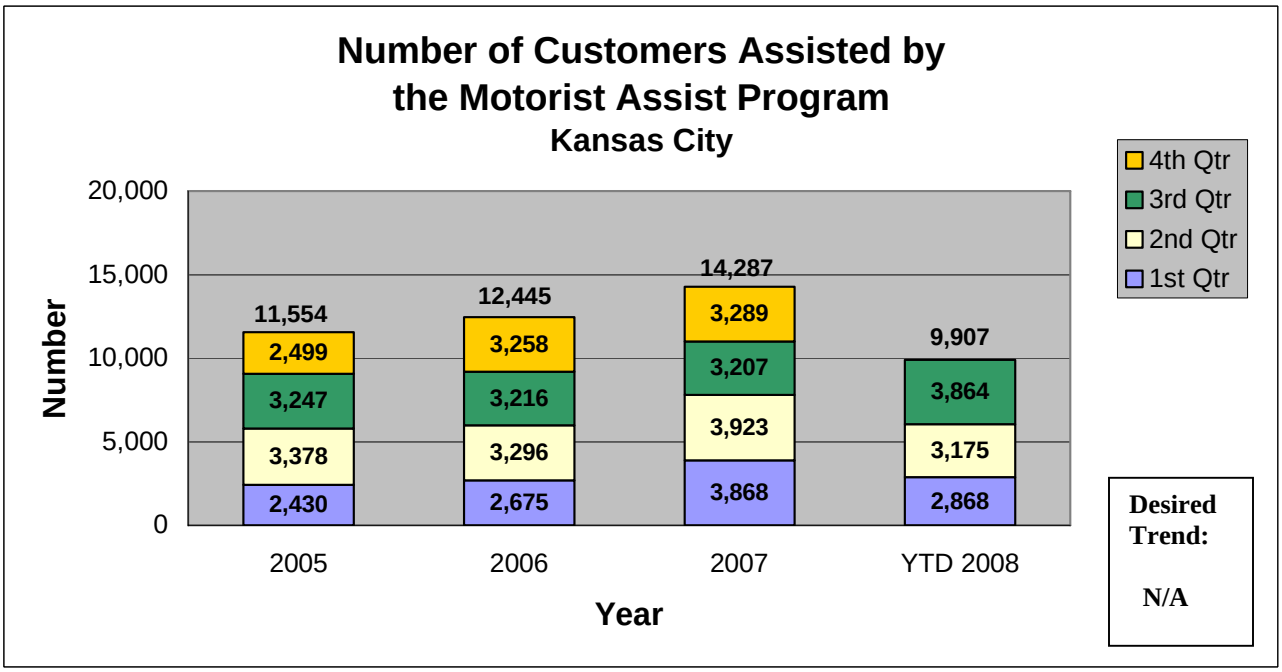
In January 2008, MoDOT partnered with St. Louis County to develop the Interstate 64 Traffic Response Service Patrol to ease congestion created by the reconstruction on the I-64 corridor. The I-64 Traffic Response Service Patrol provides similar services to motorists as the MoDOT Motorist Assist program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

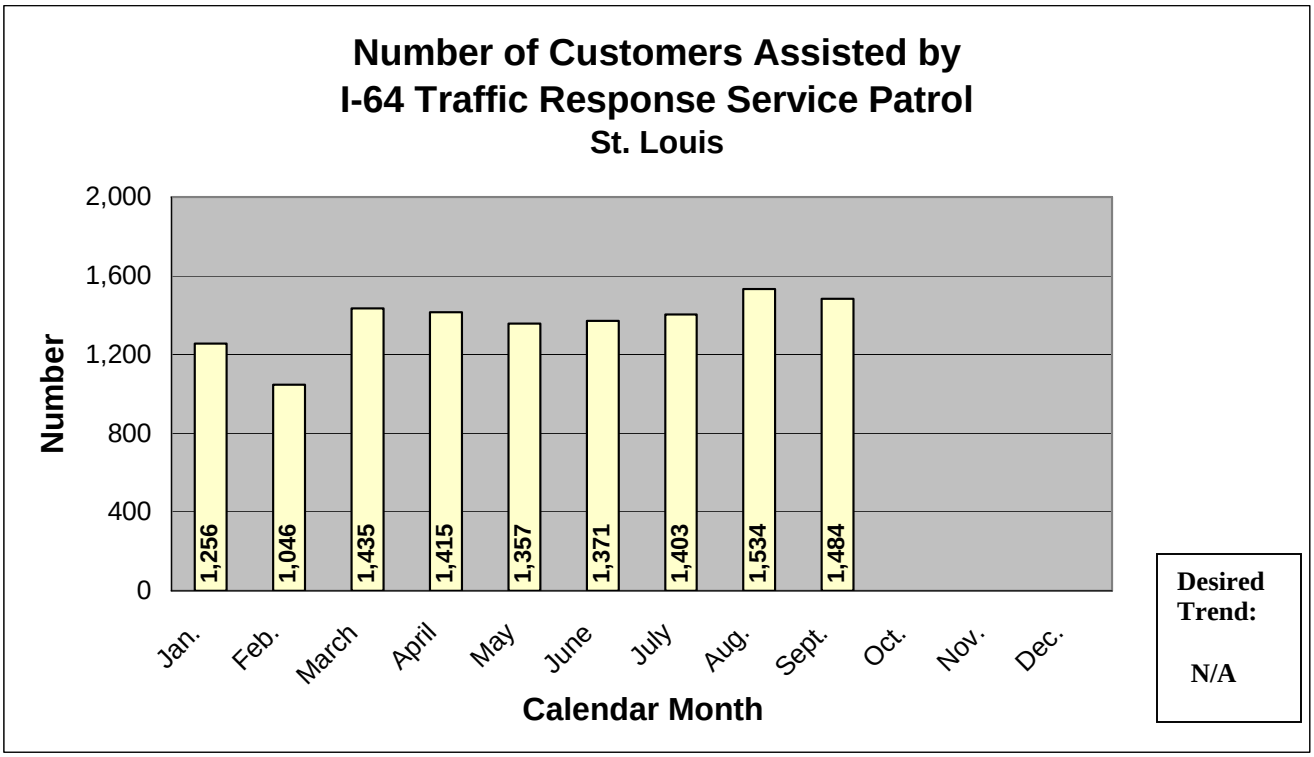
Improvement Status:
This data demonstrates that the Motorist Assist program in both St. Louis and Kansas City continue to provide motorists assistance on the urban freeways in both metropolitan areas.


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
4,180
3,777
4,220
3,917
4,268
3,950
4,074
4,512
3,596
3,934
3,509
3,808
3,561
3,355
3,498
4,028
3,933
4,649
4,948
4,399
4,742
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Calendar Month
2008
2007
Desired Trend:
N/A


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
42,589
10,494
12,812
10,580
8,703
41,141
11,398
10,867
10,651
8,225
47,745
11,251
12,182
12,135
12,177
37,113
14,089
12,610
10,414
2005
2006
2007
YTD 2008
Year
4th Qtr
3rd Qtr
2nd Qtr
1st Qtr
Desired Trend:
N/A


Number of Customers Assisted by
the Motorist Assist Program
Kansas City
1,600
1,200
800
400
0
Number
1,405
1,191
1,272
1,262
1,437
1,224
1,101
1,195
911
1,290
1,044
955
922
911
1,035
1,066
1,064
1,045
1,283
1,324
1,257
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Calendar Month
2008
2007
Desired Trend:
N/A


Number of Customers Assisted by
the Motorist Assist Program
Kansas City
20,000
15,000
10,000
5,000
0
Number
11,554
2,499
3,247
3,378
2,430
12,445
3,258
3,216
3,296
2,675
14,287
3,289
3,207
3,923
3,868
9,907
3,864
3,175
2,868
2005
2006
2007
YTD 2008
Year
4th Qtr
3rd Qtr
2nd Qtr
1st Qtr
Desired Trend:
N/A


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
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

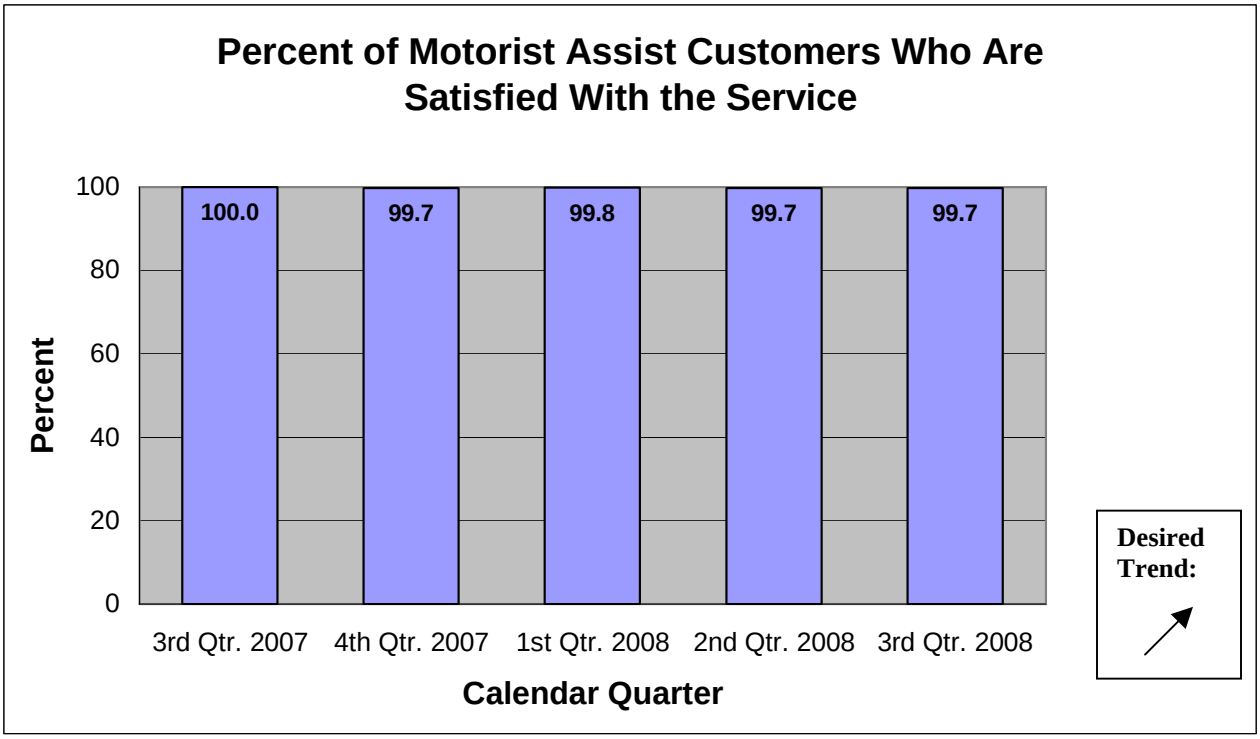
Purpose of the Measure:
This measure helps evaluate services provided through MoDOT's Motorist Assist Program, specifically, whether the customers who use the program are satisfied with the service. Information received provides direction on how to better serve our customers and keep traffic moving safely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

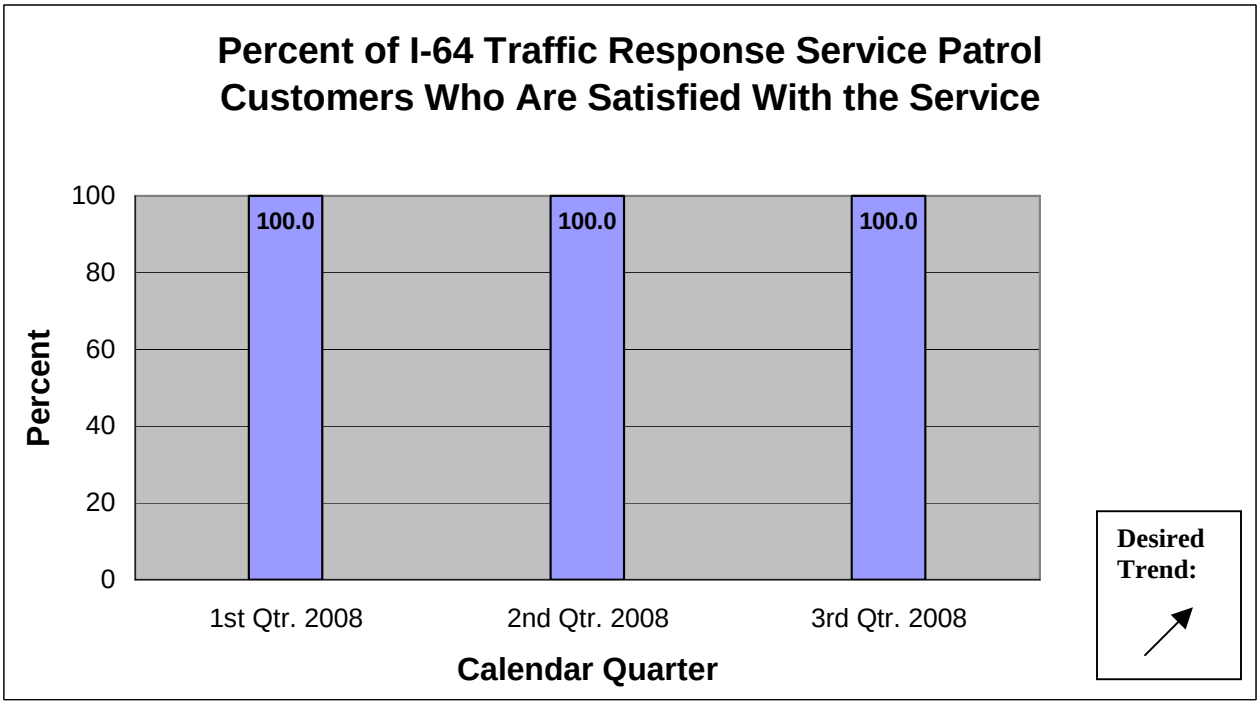
Measurement and Data Collection:
Motorist Assist operators distribute survey cards to customers. Data from the cards is compiled and tabulated by Heartland Market Research, LLC. Surveys with selections identifying that the service was "probably" or "definitely" valuable were tabulated as "satisfied"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

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

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

- Third Quarter 2007, 851 surveys received
- Fourth Quarter 2007, 688 surveys received
- First Quarter 2008,
    - 568 Motorist Assist surveys received
    - 119 I-64 Traffic Response surveys received
- Second Quarter 2008,
    - 1,117 Motorist Assist surveys received
    - 323 I-64 Traffic Response surveys received
- Third Quarter 2008,
    - 1,410 Motorist Assist surveys received
    - 228 I-64 Traffic Response surveys received


Percent of Motorist Assist Customers Who Are Satisfied With the Service
100
80
60
40
20
0
Percent
100.0
99.7
99.8
99.7
99.7
3rd Qtr. 2007
4th Qtr. 2007
1st Qtr. 2008
2nd Qtr. 2008
3rd Qtr. 2008
Calendar Quarter
Desired Trend:


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

Uninterrupted Traffic Flow

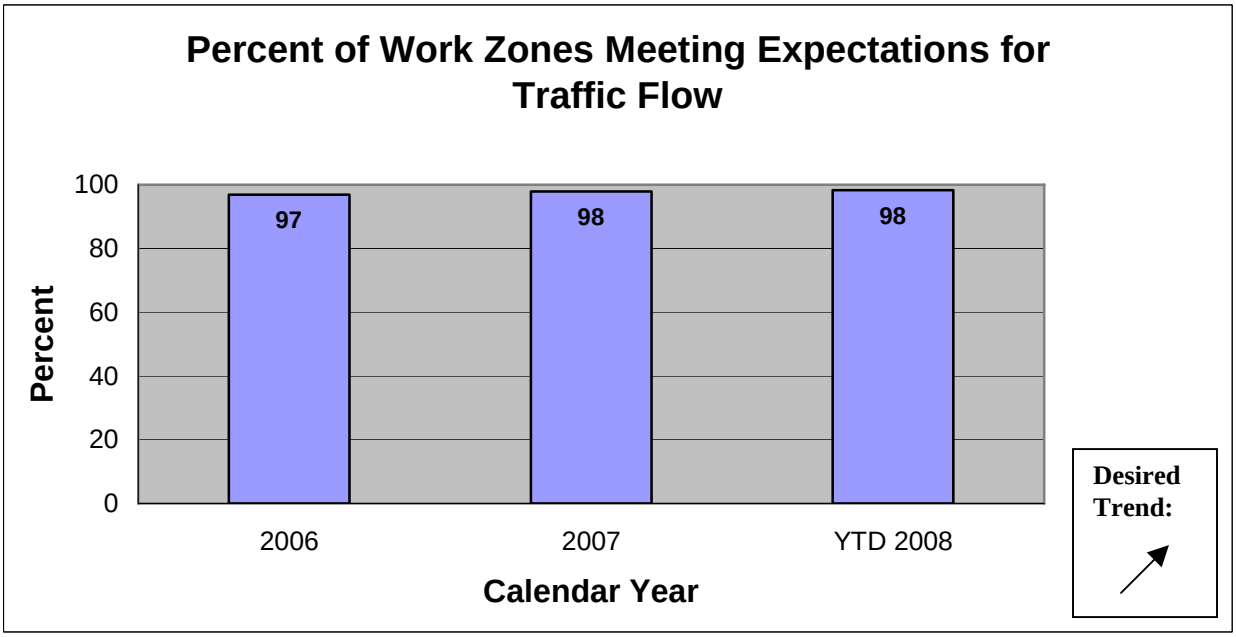
Percent of work zones meeting expectations for traffic flow

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

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

Measurement and Data Collection:
Using a formal inspection worksheet, Central Office and district employees evaluate mobility in work zones across the state. Each evaluation consists of a subjective assessment of engineered and operational factors affecting traffic flow. The evaluator assigns a pass, fail, or n/a rating to each of these individual factors and a pass or fail rating for their overall perception of traffic flow in, around and through the work zone. The overall perception ratings are compiled quarterly and reported via this measurement.

Improvement Status:
Compilation of the 3,291 evaluations performed by MoDOT staff between January and September of this calendar year resulted in a 98 percent satisfaction rating for work zone traffic flow (i.e., a negative perception of traffic flow was recorded in 2 percent of the evaluations). This rating is consistent with the previous calendar year's rating. Such progress is attributable to MoDOT's emphasis on creating exemplary work zones by minimizing work zone congestion and delays despite increased traffic demand and volume of work zones in Missouri.



Uninterrupted Traffic Flow

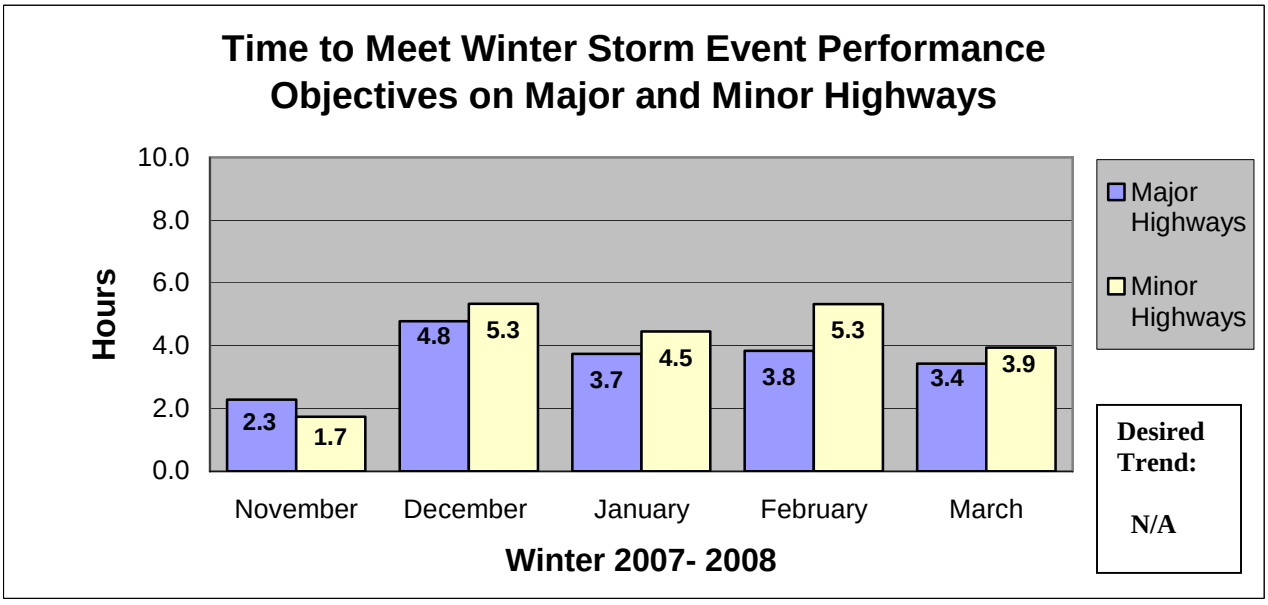
Time to meet winter storm event performance objectives on major and minor highways

Result Driver: Don Hillis, Director of System Management
Measurement Driver: Tim Jackson, Maintenance Liaison Engineer

Purpose of the Measure:
This measure tracks the amount of time needed to perform MoDOT's snow and ice removal efforts.

Measurement and Data Collection:
This data is collected in the winter event database. This measurement tracks the actual time involved in this process so improvements can be made. After each winter event, such as a snow or ice storm, area maintenance personnel submit a report indicating how much time it took to clear snow from the major and minor highways. Data collection for this measure runs from November through March of each winter season. After a storm ends, the objectives are to restore the major highways to a clear condition as soon as possible and have the lower-volume minor highways open to two-way traffic and treated with salt and/or abrasives at all critical areas such as intersections, hills and curves as soon as possible. The end of the storm is defined as when freezing precipitation stops accumulating on the roadways, either from falling or drifting conditions. This data is updated in the January and April Tracker reports. The time in hours is the statewide average for each month.

Improvement Status:
The average time to meet the performance objectives on the major highways varied from 3.4 to 3.8 hours over the reporting period. The average time to meet the performance objectives on the minor highways varied from 3.9 to 5.3 hours. February was the harshest month in terms of snowfall, which resulted in the slightly higher numbers for that month. The time to meet the performance objectives will vary based on the amount of snow received, the duration and the intensity of the storm. Strategies to improve these numbers include pursuing equipment enhancements, testing new materials and continued training of snow-removal employees.



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