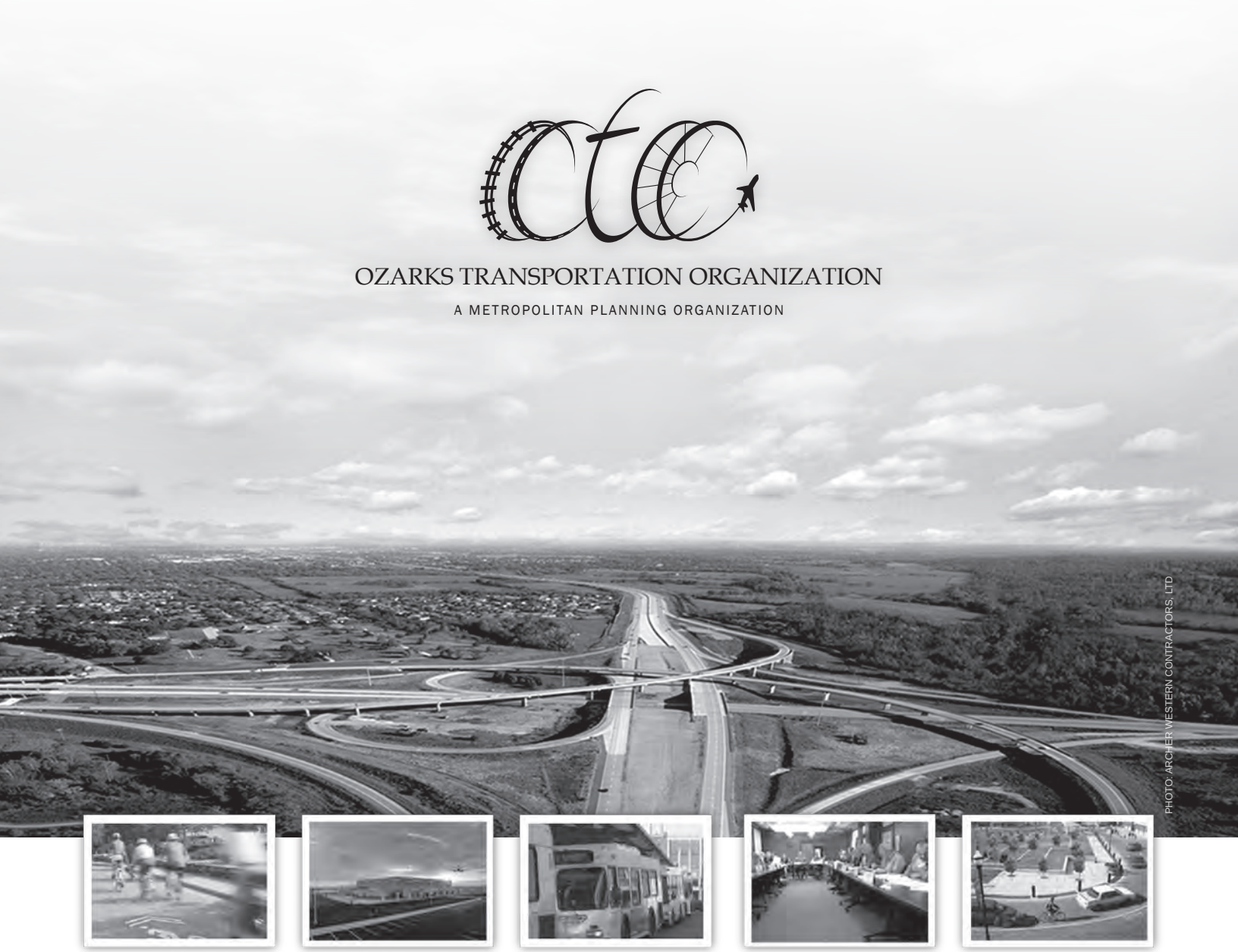
OZARKS TRANSPORTATION ORGANIZATION

A METROPOLITAN PLANNING ORGANIZATION



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Congestion Management Process

CONGESTION MONITORING

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SERVING AS THE SPRINGFIELD, MO - AREA MPO

OZARKS TRANSPORTATION ORGANIZATION

A METROPOLITAN PLANNING ORGANIZATION

Congestion Management Process
Congestion Monitoring

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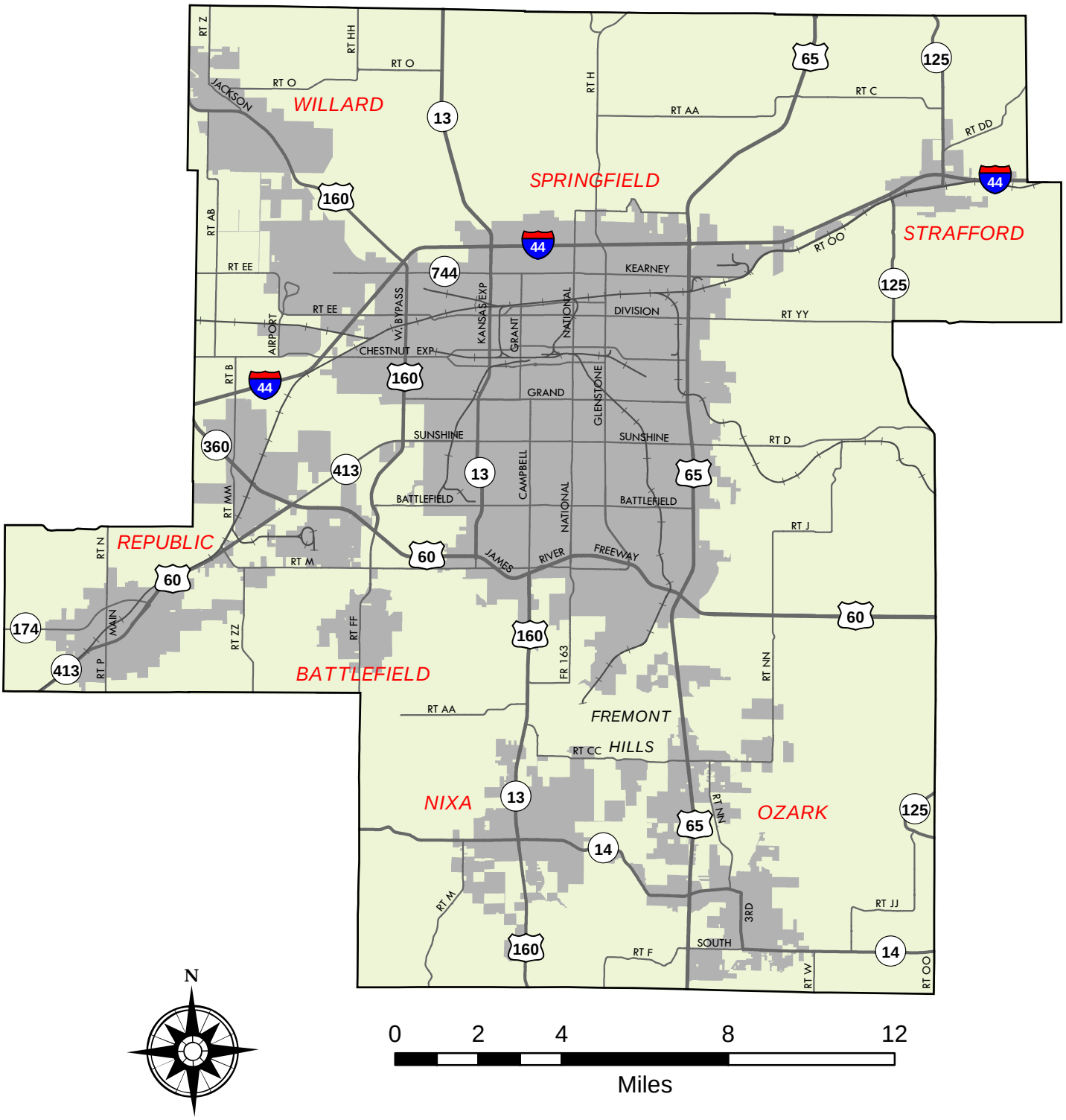
Map 1

Metropolitan Planning Area Boundary



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Map 2

Congestion Management System Defined

Introduction

The Congestion Management Process (CMP) is a systematic approach to addressing congestion within the Ozarks Transportation Organization's (OTO) planning area. The process was developed through a collaborative effort involving area jurisdictions and technical experts. The intent of the CMP is to improve the efficiency and effectiveness of both the existing and future transportation system through the implementation of Transportation System Management (TSM), which includes Intelligent Transportation Systems (ITS) and Travel Demand Management (TDM) techniques.

Overview of Previous Phases

The CMP consists of three main parts. Phase I is a methodology to identify congestion and designate specific strategies to address congestion. Phase II is the identification of where congestion is occurring or is expected to occur during the 20-year plan horizon and the implementation of identified strategies. Phase III is the development of a monitoring program to determine if selected strategies are effective in dealing with congestion at identified locations, and if not, identify other strategies to alleviate congestion. This 2012 Congestion Monitoring report is an update to the Phase III and should be updated every three to five years.

Network Redefined

Phase I and II of the CMP identified the CMP network as OTO-area roadways that are part of the National Highway System (NHS). In Phase III the network was redefined to add several arterial roads that are not part of the NHS. Please see **Map 2** on page 2 for identification of the CMP.

Congestion Monitoring

The following four measures are the indicators that the Ozarks Transportation Organization has elected to monitor in order to determine where congestion is occurring. Those measures are Volume-to-Capacity Ratio, Accident Rates, Average Travel Speed and Intersection Level of Service. These measures are defined in this congestion monitoring report.

1. Volume-to-Capacity Ratio

The first factor OTO utilizes to monitor congestion is peak hour volume-to-capacity ratio. Peak hour traffic volumes that are used in the ratios can be found on **Map 3.1**. These volumes are identified on the CMP which includes freeways and arterials. The freeway system includes I-44, US60/MO360 and US65. US 65 is the only 6 lane freeway in the OTO area. It has 6 lanes from the I-44 and US 65 interchange to the US 60 and US 65 interchange. The arterial system includes one new section of 6 lane expressway and is part of Campbell Avenue (US 160) running from Republic Road to East Lakewood Street. The arterial system includes those identified roads that are not part of the NHS.

Map 3.1 shows sections of the CMP with small increased and decreased volumes. However the Vehicle Miles Traveled (VMT) per capita continues to decline and is currently at 15.66 VMT per capita in 2012. This indicator shows an overall reduction. A number of factors could be suspected for this reduction of VMT, a slow economy, which reduces employment opportunities and increased fuel cost are likely contributors to declining VMT.

Vehicle Miles Traveled (VMT)

The data table below shows the VMT for the OTO area is fluctuating in a downward trend. Data shows the VMT reduction of (108,998) or 2.15 percent of VMT from 2008 to 2012. This table further shows a decline of VMT per capita of (1.28 miles per capita) or 7.55 percent despite an OTO population growth of about 5.5 percent in a 5 year period.

Table 1: OTO Vehicle Miles Traveled

Year	VMT	OTO Population	VMT per Capita
2012	4,954,024	*316,298	15.66
2011	4,931,037	*312,126	15.80
2010	5,010,884	310,283	16.14
2009	4,969,336	*303,720	16.36
2008	5,063,022	*298,910	16.94

*Census Estimate

Listed below are those roads that have increased or decreased in peak hour volumes.

Increased Peak Hour Volumes

Chestnut Expressway (4 Lane Expressway)
- Broadview Place to Airport Boulevard
- Glenstone Avenue to US 65
- Kansas Expressway to National Avenue

I-44 (4 Lane Freeway)
- Chestnut Expressway to US 160
- Glenstone Avenue to US 65

James River Freeway (MO 360) (4 Lane Freeway)
- Sunshine Street (MO413) to I-44
- West Bypass to Sunshine Street (MO 413)
- US 65 to Glenstone Avenue
- (5 Lane) US 60 from MO 174 to West Avenue

Sunshine Street (4 Lane Expressway)
- West Bypass to Kansas Expressway

US 160 (2 Lane Rural)
- From about I-44 to Jackson Street

US 60 (4 Lane Expressway)
- James River Freeway (MO 360) to Route M/MM
- MO 125 to US 65
- Route M/MM to MO 174

US 65 (6 Lane Freeway)
- (4 Lane Freeway) US 60 to Route CC/Route NN
- Battlefield Road to US 60
- Kearney Street to Division Street
- North OTO boundary to I-44
- Sunshine Street to Battlefield Road

West Bypass (4 Lane Expressway)
- Sunshine Street to James River Freeway (US 60)

Decreased Peak Hour Volumes

I-44 (4 Lane Freeway)
- MO 13 to Glenstone Avenue
- US 65 to Mulroy Road (Farm Road 199)

James River Freeway (4 Lane Freeway)
- Glenstone Avenue to National Avenue
- Kansas Expressway to West Bypass

Kansas Expressway (4 Lane Expressway)
- Battlefield Road to James River Freeway (US 60)
- Division Street to Chestnut Expressway
- Grand Street to Sunshine Street
- Sunshine Street to Battlefield Road

Sunshine Street (4 Lane Expressway)
- West Bypass (US 160) to MO 360

US 65 (4/6 Lane Freeway)
- (4 Lane Freeway) Route CC/Route NN to south OTO boundary
- (6 Lane Freeway) I-44 to Kearney Street

West Bypass (4 Lane Expressway)
- Chestnut Expressway to Sunshine Street

Map 3.2 interprets the volumes into a ratio comparing what percentage of available capacity is being utilized. Any roadway in which traffic is utilizing 86 percent or LOS E or greater of available capacity is shown in red and considered to be over a desired capacity.

The three lists below include peak hour Volume-to-Capacity Ratios that have either increased or decreased in LOS or continue to be over the desired capacity for 2008 and 2012. The current LOS is indicated in parentheses.

Peak Hour Level of Service Capacity Scale:

0-77 percent LOS A, B, C (green is below capacity)
78-85 percent LOS D (yellow is nearing capacity)
86 + percent LOS E (red is at or above capacity)

Improved Level of Service from Level E

Battlefield Road (5 Lane)
- Campbell Avenue to about Market Street (LOS A,B,C)
- Fremont Avenue to Glenstone Avenue (LOS A,B,C)
- Ingram Mill Road to Lone Pine Avenue (LOS D)

Campbell Avenue (5 Lane)
- Battlefield Road to Walnut Lawn Street (LOS A,B,C)
- James River Freeway to Primrose Street (LOS A,B,C)

Kansas Expressway (5 Lane)
- I-44 to Walmart entrance turn lane (LOS A,B,C)

Kearney Street (5 Lane)
- Kansas Expressway to Summit Avenue (LOS A,B,C)

Kansas Expressway (4 Lane)
- Battlefield Road to Walnut Lawn Street (LOS D)
- Division Street to Grand Street (LOS D)
- Kearney Street to High Street (LOS A,B,C)

Route CC (2 Lane Urban)
- Cheyenne Rd to Main Street (LOS A,B,C)

Sunshine Street (Route D) (5 Lane)
- US 65 to Blackman Road (LOS A,B,C)
- Fremont Avenue (LOS A,B,C)

US 160 (2 Lane Rural)
- MO 14 to the south OTO boundary (LOS A,B,C)
- I-44 to Jackson Street (LOS A,B,C)

US 60 (3 Lane)
- West Avenue to City of Republic west boundary at 2 lane road reduction (LOS A,B,C)

US 65 (6 Lane Freeway)

- Chestnut Expressway to US 60 and US 65 interchange (LOS A,B,C)

Decline in Level of Service to Level E

Battlefield Road (5 Lane)

- (2 Lane Urban) Battlefield Road from US 65 to Blackman Road
- Campbell Avenue to Kimbrough Avenue
- Ingram Mill Road to US 65
- Kansas Expressway to Scenic Avenue

Campbell Avenue (5 Lane)

- Battlefield Road to Sunshine Street
- Primrose Street to Walnut Lawn Street

Chestnut Expressway (4 Lane Expressway)

- Benton Avenue to Sherman Avenue

Glenstone Avenue (5 Lane)

- (4 Lane/4 Lane Expressway) Sunset Street to Barataria Street/Battlefield Mall entrance
- Glenstone Avenue from Evergreen Street/Stewart Avenue to Sunset Street

Kansas Expressway (4 Lane Expressway)

- Battlefield Road to Grand Street
- Division Street to Atlantic Street
- James River Freeway to Walnut Lawn Street
- Kearney Street to Talmage Street

Kearney Street (2 Lane Urban)

- LeCompte Road to Mulroy Road (North Farm Road 199)

MO 14 (2 Lane Urban)

- MO 14 from Main Street to US 65
- (3 Lane) Route M to Main Street
- (3 Lane) US 65 to 3rd Street

National Avenue (5 Lane)

- James River Freeway (US 60) to Chestnut Expressway

Route CC (2 Lane Urban)

- Cheyenne Rd to US 65

Sunshine Street (5 Lane)

- Fremont Avenue to Fort Avenue
- US 65 to Fremont Avenue

US 160

- (4 Lane Expressway) Route CC to Plainview Road (Farm Road 182)

US 60

- (4 Lane Expressway) Hamilton Street to Republic Road (Route M)
- (4 Lane Freeway) US 65 interchange just west of Kansas Expressway

US 65 (4 Lane Freeway)

- US 60 to Evans Road (Farm Road 188)

Continued Level of Service E or Greater

Battlefield Road (5 Lane)

- Campbell Avenue to Kimbrough Avenue
- Ingram Mill Road to US 65

Campbell Avenue (5 Lane)

- Battlefield Road to Sunset Street
- Primrose Street to Walnut Lawn Street

Glenstone Avenue

- (5 lane/4 Lane Expressway) Glenstone Avenue from Evergreen Street/Stewart Avenue to the Battlefield Mall entrance on Glenstone Avenue

Kansas Expressway (4 Lane Expressway)

- Battlefield Road to Grand Street
- from Division Street to Atlantic Street
- James River Freeway (US 60) to Walnut Lawn Street
- Kearney Street to Talmage Street

Kearney Street (2 Lane Urban)

- LeCompte Road to Mulroy Road (North Farm Road 199)

MO 14 (3 Lane)

- (2 Lane Urban) Main Street to US 65
- Route M to Main Street
- US 65 to 3rd Street

National Avenue (5 Lane)

- James River Freeway (US 60) to Trafficway Street

Route CC (2 Lane Urban)

- Cheyenne Rd to US 65

Sunshine Street (5 Lane)

- Fremont Avenue to Fort Avenue
- US 65 to Fremont Avenue

US 60 (4 Lane Freeway)

- US 60 and US 65 interchange to Campbell Avenue

Volume to Capacity Level of Service Summary

Compared to 2008, the 2012 Level of Service has moderately improved. This is evident by the overall miles of roadway that are over capacity during the peak hour LOS. In 2008, 57.8 miles were identified as over capacity. In 2012, 54.8 miles were identified as over capacity. This represents a 3.4 mile overall improvement.

2. Accident Rates

The roadway segment accident rate is calculated by using the formula below. **Map 4** identifies the accident rates for the CMP system; accident rates for segments of less than 1 mile might be artificially inflated. The MPO freeway average accident rate used is 234.34 and the arterial average accident rate used is 648.34. The freeway system has improved showing no area where the accident rate is 150 percent or higher than the MPO average rate. In many segments of the freeway system the accident rate is less than 50 percent of the MPO average rate. The arterial system has significantly improved showing sixteen sections of roadways where the accident rate has decreased to medium or low. However, there are two areas that have increased to higher than the MPO average and are listed below. **Map 4** indicates the accident rate by the following criteria:

Formula for Accident Rates:

$$\text{Segment Crash Rate} = \frac{\text{Number of Crashes} \times 100{,}000{,}000}{5 \text{ Years} \times 365 \times \text{Weighted Average AA DT} \times \text{Miles}}$$

Low: A road segment is considered to have a low accident rate if the three-year average accident rate is 50.0 percent or less of the MPO average accident rate.

Medium: A road segment is considered to have a medium accident rate if the three-year average accident rate for that segment is between 50.1 percent and 150.0 percent of the MPO's average accident rate.

High: A segment of road is considered to have a high accident rate if the three-year average accident rate for that segment exceeds 150.0 percent of the MPO's average accident rate.

Accident Rate Increased

Kearney Street

- West Bypass to 5500 West Kearney (Expedia) increased from medium (yellow) to high (red)

MO 14

- Tiffany Boulevard to US 160 increased from medium (yellow) to high (red)
- West of Route M is identified as high (red)
- East of the US 65 intersection is identified as high (red)

I-44

- MO 125 to the MPO east border increased from low (green) to medium (yellow)

Accident Rates Decreased from high (red) to medium (yellow) at the following locations:

Glenstone Avenue

- Chestnut Expressway to Battlefield Road
- I-44 to Kearney Street

James River Freeway

- Glenstone Avenue to US 65
- Kansas Expressway (MO 13) to National Avenue

Kansas Expressway

- Chestnut Expressway to Sunshine Street

Route CC
- Route CC and US 65 intersection to west of US 65

US 65
- I-44 to Kearney Street

Accident Rates Decreased from medium (yellow) to low (green) at the following locations:

Chestnut Expressway
- West Bypass to I-44

I-44
- US 160 to Mulroy Road (North Farm Road 199)

James River Freeway
- National Avenue to Glenstone Avenue
- West Bypass (US 160) to Kansas Expressway (MO 13)

West Bypass
- Sunshine Street to James River Freeway (US 60)

US 160
- US 160 and I-44 intersection to northwest of I-44

US 60
- US 60 from US 65 to MO 125

US 65
- Chestnut Expressway to Sunshine Street
- Evans Road to MO 14

Accident Rate Summary

Compared to 2008 the 2012 accident rates have seen an overall reduction from the High (red) levels. Most freeways have received a rate of low (green). The arterial roadways specifically Glenstone Avenue and Campbell Avenue have reduced in accident ratings. Only two roadways have increased to a level of high (red) accident rates, which includes Kearney Street and MO 14.

3. Average Travel Speed

Travel time runs were conducted on all roadways comprising of the CMP network utilizing Global Positioning System (GPS) units. These units collected data to determine the average time it takes to travel a corridor. This data was used to determine segments in which the average speed was at least 20 mph below the posted speed limit. These segments are identified in red as AM peak time and PM peak time on **Maps 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7** and **5.8.**

Average Travel Speed Scale:

(Green) Above the speed limit to 4.9 mph
(Yellow) 5.0 to 9.9 mph below the speed limit
(Orange) 10.0 to 19.9 mph below the speed limit
(Red) 20.0 + mph below the speed limit

The 2012 average freeway travel speed for (I-44 and US 65) was identified at a green level. The US 60 (James River Freeway) in certain areas was reduced to an orange and green levels. All arterials within

the CMP network experienced at least one point of significant delay in which the average speed was at a level of red (20+ mph below the posted speed limit).
Due to roadway construction significant travel speed reduction is identified at the US 60 and US 65 interchange. The reduction in speed includes:

- AM westbound from Hwy NN/J to US 65,
- PM eastbound from National Avenue to US 65
- PM westbound from US 65 to Glenstone Avenue

Table 2 identifies the average peak hour travel time delays in miles per hour by direction of travel. It is important to note that the CMP was expanded in 2008 to include additional arterials and would have an effect on the 2008 data. In 2008, the average mph below the posted speed limits was 9.09. This number decreased to 8.77 in 2012. In both years the greatest delay was in the PM Northbound and Southbound directions.

Table 2: Average Delay-MPH Below the Posted Speed Limit

Peak Hour / Direction	2005	2008	2012
	Average Delay per Lane Mile	Average Delay per Lane Mile	Average Delay per Lane Mile
AM Eastbound	5.69	5.03	7.86
AM Westbound	5.73	8.23	7.26
AM Northbound	6.51	9.93	7.06
AM Southbound	7.58	8.62	7.68
PM Eastbound	6.31	8.43	8.76
PM Westbound	6.57	8.87	8.53
PM Northbound	9.11	12.42	11.89
PM Southbound	9.95	11.21	11.14
Average	7.19	9.09	8.77

Source: Data from OTO Travel Time Runs

Travel Speed Summary

The 2012 average delay per lane mile column shows less than an 8 mph delay for all AM directions and greater than an 8 mph for all PM directions. The PM northbound shows the highest delay of 11.89 mph below the posted speed limit. Compared to 2008 the average delay for this direction has improved. Both, the AM and the PM eastbound directions show a slight increase in delay despite the overall average delay reduction. All other directions indicate an improvement in delay. The average delay has slightly improved from 9.09 mph below the posted speed to 8.77 mph below the posted speed.

4. Intersection Level of Service (LOS)

Intersection level of service is a function of delay. Accordingly, an intersection with LOS A would have a shorter delay than an intersection with LOS F. The longer traffic is delayed at a particular intersection, the lower/worse the level of service for that intersection. **Maps 6.1, 6.2, 6.3** and **6.4** show an improved LOS at many intersections. Intersection upgrades have been made throughout the CMP system showing an overall improvement to the system.

Level OF Service Scale:
LOS A, B, C (Green)
LOS D (Yellow)
LOS E (Orange)
LOS F (Red)

Improved to LOS A,B,C during peak AM

- Battlefield Road and Delaware Avenue (Springfield)
- Campbell Avenue and Republic Road (Springfield)
- Campbell Avenue and Walnut Lawn Street (Springfield)
- Glenstone Avenue and McClemon Street (Springfield)
- Glenstone Avenue and Chestnut Expressway (Springfield)
- Glenstone Avenue and Commercial Street (Springfield)
- Glenstone Avenue and Kearney Street (Springfield)
- Glenstone Avenue and North Stewart Avenue/East Evergreen Street (Springfield)
- Kansas Expressway (MO 13) and Battlefield Road (Springfield)
- Kansas Expressway (MO 13) and Division Street (Springfield)
- Kansas Expressway (MO 13) and James River Freeway (US 60) (Springfield)
- Kearney Street and National Avenue (Springfield)
- MO 13 and West Norton Road (Springfield)
- National Avenue and Battlefield Road (Springfield)
- National Avenue and Grand Street (Springfield)
- Sunshine Street and Fremont Avenue (Springfield)
- Sunshine Street and Fort Avenue (Springfield)
- Sunshine Street and National Avenue (Springfield)
- US 160 and Miller Road (Willard)
- US 160 and Route CC (Springfield)

Improved to LOS A,B,C during peak PM

- Battlefield Road and Delaware Avenue (Springfield)
- Battlefield Road and Ingram Mill Road (Springfield)
- Battlefield Road and Jefferson Avenue (Springfield)
- Glenstone Avenue and McClemon Street (Springfield)
- Glenstone Avenue and Peele Street (Springfield)
- Glenstone Avenue and Commercial Street (Springfield)
- Glenstone Avenue and Independence Street (Springfield)
- Glenstone Avenue and James River Freeway (Springfield)
- Glenstone Avenue and McClernon Street (Springfield)

- Glenstone Avenue and North Stewart Avenue/East Evergreen Street (Springfield)
- Glenstone Avenue and Primrose Street (Springfield)
- Glenstone Avenue and Sunset Street (Springfield)
- Kansas Expressway (MO 13) and Norton Road (Springfield)
- Kansas Expressway and Battlefield Road (Springfield)
- Kansas Expressway and Walnut Lawn Street (Springfield)
- Kearney Street and Delaware Avenue (Springfield)
- Kearney Street and US 65 (Springfield)
- Mt. Vernon Street and Kansas Expressway (Springfield)
- National Avenue and Sunset Street (Springfield)
- South Street (Route 14) and South 19th Street (Ozark)
- Sunshine Street and Fort Avenue (Springfield)
- Sunshine Street and Zimmer Road (Farm Road 129) (Springfield)
- US 160 and Aldersgate Drive/Kathryn Street (Nixa)
- US 60 and Farm Road 193 (Republic)
- US 60 and Hines Street (Republic
- US 60 and MO 174 (Republic)
- West Bypass and Sunshine Street (Springfield)

Improved to LOS D during peak AM

- Chestnut Expressway and US 65 (Springfield F to D)
- Division Street and Glenstone Avenue (Springfield F to D)
- National Avenue and Chestnut Expressway (Springfield E to D)
- Sunshine Street and Scenic Avenue (Springfield E to D)
- US 160 and Plainview Road (Springfield E to D)
- US 160 and Tracker Road (Nixa E to D)
- US 60 and MO 125 (Greene County F to D)

Improved to LOS D during peak PM

- Campbell Avenue and Battlefield Road (Springfield E to D)
- Campbell Avenue and Plainview Road (Springfield E to D)
- Campbell Avenue and Primrose Street (Springfield E to D)
- Chestnut Expressway and Glenstone Avenue (Springfield E to D)
- Chestnut Expressway and National Avenue (Springfield E to D)
- Glenstone Avenue and Battlefield Road (Springfield E to D)
- Glenstone Avenue and Division Street (Springfield F to D)
- Glenstone Avenue and Sunshine Street (Springfield E to D)
- Kansas Expressway and Sunshine Avenue (Springfield E to D)
- MO 14 and US 160 (Ozark F to D)
- National Avenue and Battlefield Road (Springfield E to D)
- National Avenue and Sunshine Street (Springfield E to D)
- Sunshine Street and Scenic Avenue (Springfield F to D)
- US 60 and MO 125 (Greene County E to D)

Declining to LOS D during peak AM

- MO 14 and 3rd Street (Ozark A,B,C to D)
- Sunshine Street (Route D) and US 65 (Springfield A,B,C to D)
- US 60 and Route M (Republic A,B,C to D)
- West Bypass and Chestnut Expressway (Springfield A,B,C to D)
- West Bypass and Mt Vernon Street (Springfield A,B,C to D)

Declining to LOS D during peak PM

- Campbell Avenue and James River Freeway (Springfield A,B,C, to D)
- Chestnut Expressway and Barns Avenue (Springfield A,B,C to D)
- Chestnut Expressway and Benton Avenue (Springfield A,B,C to D)
- Chestnut Expressway and College Street (Springfield A,B,C to D)
- Chestnut Expressway and Haseltine Road/Broadview Place (Springfield A,B,C to D)
- Chestnut Expressway and West Bypass (Springfield A,B,C to D)
- Kearney Street and National Avenue (Springfield A,B,C to D)
- Kearney Street and West Bypass (Springfield A,B,C to D)
- MO 14 and 6th Avenue (Ozark D to E)
- MO 14 and Gregg Road (Ozark A,B,C to D)
- National Avenue and Cherry Street (Springfield A,B,C to D)
- West Bypass and Battlefield Road (Springfield A,B,C to D)

No Change LOS D peak PM

- Battlefield Road and Fremont Avenue
- Battlefield Road and Lone Pine Avenue
- Campbell Avenue and Republic Road
- Campbell Avenue and Sunset Street
- Chestnut Expressway and Grant Avenue
- Chestnut Expressway and Kansas Expressway
- Division Street and Kansas Expressway
- Glenstone Avenue and Bennett Street
- Glenstone Avenue and Cherry Street
- Glenstone Avenue and Republic Court
- Kearney Street and Glenstone Avenue
- Kearney Street and Kansas Expressway
- National Avenue and Grand Street
- National Avenue and Primrose Street
- National Avenue and Republic Road
- National Avenue and Walnut Lawn Street
- Sunshine Street and Campbell Avenue
- Sunshine Street and Fremont Avenue

No Change in LOS E peak PM

- Campbell Avenue and Walnut Lawn Street
- National Avenue and Montclair Street

No Change LOS F peak AM

- MO 14 and Route M (Nixa)
- US 65 and Route CC/NN (Ozark)

No Change LOS F peak PM

- Glenstone Avenue and Seminole Street (Springfield)
- MO 14 and 17th Street (Ozark)
- MO 14 and 3rd Street (Ozark)
- MO 14 and Route M (Nixa)
- US 65 and Route CC/NN (Ozark)

Intersection LOS Summary

There are only five areas remaining with intersections performing at a LOS of F. Two are identified as AM peak hour and three are identified as PM peak hour. Targeted timing and geometric improvements have made significant impacts to the LOS. The A.M intersections identified with a LOS F include MO 14 and Route M in Nixa and US 65 and Route CC/NN in Ozark. Including the two area identified in the AM peak hour three additional areas are identified during the PM peak hour, Glenstone Avenue and Seminole Street in Springfield, MO 14 and 17th Street in Ozark and MO 14 and 3rd Street in Ozark.

Congested Facilities

Maps 7.1 and 7.2 identify facilities in which three congestion indicators were met. These facilities are considered to be "congested" and are identified in the **Map 7.1** and **Map 7.2**.

Map 7.1 evaluates the congested facilities specific to "Accident Rate Higher than 150% of the MPO Average", along with V/C ratio and average speed.

Congested facilities include:

Chestnut Expressway
- Sherman Avenue to Boonville Avenue

Glenstone Avenue
- Kearney Street to Division Street
- At Chestnut Expressway
- At James River Freeway (US 60)

Kansas Expressway
- At Kearney Street (Route 744)

Route 14
- At Route M
- At US 160
- At US 65

Map 7.2 evaluates the congested facilities specific to "Intersections Level of Service (LOS) E of F" along with V/C and average speed. Many congested facilities have increased to a LOS of C or better. Strategy 1 identifies key improvements to interchanges and intersections. Intersection improvements include upgrades such as turn lanes and coordinating signal timing. See listed improvements starting on page 14.

Congested facilities include:
- National Avenue at Montclair Street
- Route 14 at Route M
- Glenstone Avenue at Seminole Avenue
- Sunshine Street at Deeswood Avenuet
- US 65 at Route CC

Implementation Strategies

Phase I of the adopted Congestion Management Process outlined 5 main strategies on which to focus the OTO Congestion Management Process. Strategies which have been implemented between 2008 and 2012 are listed below along with system improvements, policy changes and encouragements to reduce demand at peak travel times.

Strategy #1: Improve Roadway Operations

- **Intersection Geometric Improvements:** The following interchange and intersection improvements were made to improve overall efficiency and operation.

Interchange Improvements

- Chestnut Expressway at US 65 new diverging diamond interchange (MoDOT)
- Glenstone Avenue at James River Freeway (US 60) relocated eastbound ramp signal to Harvard Street (MoDOT)
- Kansas Expressway at I-44 new diverging diamond interchange (MoDOT)
- MO 125 at I-44 north outer road in Strafford signal improvements and turn lanes (MoDOT)
- MO14 at US 65 relocated signal and improved interchange capacity (MoDOT)
- National Avenue at James River Freeway (US 60) converted to diverging diamond interchange (MoDOT)
- US 60 at US 65 eliminated at-grade R/R crossing and added directional flyover and flyover ramp (MoDOT)

Intersection Improvements

- Campbell Avenue at El Camino Alto Drive/Cardinal Street intersection widening to 6-lanes (MoDOT)
- Campbell Avenue at Lakewood Avenue intersection widening to 6-lanes (MoDOT)
- Glenstone Avenue at Battlefield Road added turn lane storage (MoDOT)
- Glenstone Avenue at Republic Court widened to 3 lanes northbound and southbound (MODOT)
- Glenstone Avenue at Valley Water Mill added turn lane (MoDOT)
- Kansas Expressway at Division Street replaced R/R overpass w/ minor intersection improvements (MoDOT)
- Kansas Expressway at Norton Road diverging diamond interchange improvements (MoDOT)
- Kansas Expressway at Sunset Street left turn lane extension (MoDOT)
- Kansas Expressway at Walmart/Golden Plaza (MoDOT)
- Kimbrough Avenue and Walnut Street intersection improvements (Springfield-Off CMP)
- MO 14 at 20th Street intersection widening (MoDOT)
- MO 14 at Route NN new turn lane added (MoDOT)
- MO 14 at US 65 ramp intersection widening (MoDOT)
- National Avenue and East Trafficway intersection improvements (Springfield)
- National Avenue and Grand Street intersection improvements (Springfield)
- National Avenue and Seminole Street intersection improvements (Springfield)
- Sunshine Street and Fort Avenue intersection improvements (Springfield)
- Sunshine Street and Fremont Avenue intersection improvements (Springfield)

- Sunshine Street at Eastgate Street intersection realignment / turn lane improvements) (MoDOT)
- US 160 at Division Street upgraded to offset left turn lane (MoDOT)
- West Bypass and Mount Vernon Street intersection improvements (Springfield)

Capacity Improvements

- Packer Road – Three lane expansion from railroad tracks to Division (Springfield)
- Fremont Avenue – Three lane expansion from Sunshine to Cherokee (Springfield)
- Constructed three-lane section from West Bypass to Suburban (Springfield)

Turn Lanes

- Campbell Avenue at Sunset Street added northbound right turn lane (Springfield)
- Eastgate Avenue at Sunshine Street added eastbound right turn lane(Springfield)
- Glenstone Avenue at Battlefield Road added eastbound turn lane storage (MoDOT)
- Glenstone Avenue at McClernon Street turn lane improvement (MoDOT)
- Glenstone Avenue at Peele Street added right turn lane (MoDOT)
- Glenstone Avenue at Valley Water Mill added turn lane (MoDOT)
- Kansas Avenue and Battlefield Road northbound left turn lane (Springfield)
- Kansas Expressway and Norton Road westbound dual left turn lanes (Springfield)
- Kansas Expressway and Republic Road eastbound dual left turn lanes (Springfield)
- Kansas Expressway at Sunset Street left turn lane extension (MoDOT)
- MO 14 at Route NN new turn lane added (MoDOT)
- Mount Vernon Street and West Bypass southbound right turn lane and northbound left turn lane extension, eastbound separate right turn lane, extended the left turn lane.
- National Avenue and Primrose Street dual left turn lanes plus channelized right turns all directions (Springfield)
- National Avenue and Monroe Street eastbound dual left turn lanes, eastbound channelized right turn lane (Springfield)
- National Avenue and Walnut Lawn Street added eastbound right turn lane (Springfield)
- Sunshine Street and Fort Avenue added westbound right turn lane, northbound separate left and right turn lanes, and southbound separate left turn lane (Springfield)
- US 160 at Gregg Road added turn lane improvement (MoDOT)
- US 160 at Mt Vernon Street added turn lane improvement (MoDOT)
- Walnut Lawn Street at National Avenue added eastbound right turn lane (Springfield)

- **Intersection Signalization Improvements:** Improving signal operations through re-timing signal phases, adding signal actuation, etc.

New Signals (Off CMP Network)

- Route EE at Alliance Avenue(MoDOT)
- Route M at Route ZZ (MoDOT)

New Signals (On CMP Network)

- Glenstone Avenue at Commercial Street added pedestrian signal (MoDOT)
- Glenstone Avenue at I-44 (MoDOT)
- Glenstone Avenue at I-44 (MoDOT)

- Glenstone Avenue at Valley Water Mill signal improvement (MoDOT)
- Kansas Expressway at Atlantic Avenue upgraded signal detection equipment (MoDOT)
- Kansas Expressway at Bennett Street changed signal to protected left turn phasing (MoDOT)
- Kansas Expressway at Elfindale Street (MoDOT)
- Kansas Expressway at Evergreen (MoDOT)
- Kansas Expressway at Grand Street changed signal to protected left turn phasing (MoDOT)
- Mo 14 at 18th Street (MoDOT)
- MO 14 at 25th Street (MoDOT)
- US 160 at Jackson Street in City of Willard (MoDOT)
- US 60 at Oakwood Avenue (MoDOT)

Signal Phasing/Actuation Changes

City of Springfield network phasing changes, removed protected permissive from:

- Chestnut Expressway at Airport Boulevard change left turn phasing (MoDOT)
- Chestnut Expressway at Cedarbrook Avenue change left turn phasing (MoDOT)
- Chestnut Expressway at I-44 change left turn phasing (MoDOT)
- Chestnut Expressway at Patterson Avenue change left turn phasing (MoDOT)
- College Street westbound (Springfield)
- Grand Street and Holland Avenue removed the split phasing (Springfield)
- Grant Avenue westbound (Springfield)
- Kansas Expressway and Republic Road installed protected dual left turn lanes (Springfield)
- Kimbrough Avenue northbound and southbound (Springfield)
- National Avenue at Kearney Street changed left turn signal phasing (MoDOT)
- Trafficway Street northbound and southbound (Springfield)
- US 160 At M/FF changed left turn signal phasing (MoDOT)
- US 160 at Mt Vernon Street signal improvement (MoDOT)
- US 160 at Northview Road change signal phasing- remove split phasing (MoDOT)
- US 160 at Tracker Road Change signal phasing – remove split phasing (MoDOT)
- US 60 at Hamilton Street changed signal phasing (MoDOT)

Off CMP Network

All timing plans including: AM Peak, AM Off, Noon, and PM Peak and Off Peak Early & Late, the following have been retimed for Springfield:

- Central Street (Springfield)
- Division Street (Springfield)
- Grand Street (Springfield)
- Grant Avenue (Springfield)
- Kimbrough Avenue (Springfield)
- Republic Road (Springfield)

Weekend and holiday timing plans were implemented in the Battlefield Retail Area. These timing plans encompass the entire weekend and holiday plans were in place on the weekends from Black Friday through Christmas Day. This plan includes:

- Fremont Avenue (Springfield)
- Primrose Street (Springfield)

- Primrose Street and Delaware Traffic Signal Installation (Springfield)

ON CMP Network

Implemented new am off, noon, school dismissal timing, the am off time period occurs between 8:30 AM and 11:00 PM The noon timing plan begins at 11:00 AM and ends at 2:00 PM, the school dismissal timing plan is in place from 2:00 PM until 3:45 p.m:

- Battlefield Road (Springfield)
- Campbell Avenue (Springfield)
- Chestnut Expressway (Springfield)
- Glenstone Avenue (Springfield)
- Kansas Expressway (Springfield)
- Kearney Street (Springfield)
- National Avenue (Springfield)
- Sunshine Street (Springfield)

Weekend and holiday timing plans were implemented in the Battlefield Retail Area. These timing plans encompass the entire weekend and holiday plans were in place on the weekends from Black Friday through Christmas Day for Springfield. This plan includes:

- Battlefield Road (Springfield)
- Campbell Avenue (Springfield)
- Glenstone Avenue (Springfield)
- National Avenue (Springfield)

- **Coordinated Intersection Signals:** Improve traffic signal progression along identified corridors. The following signalized corridors were improved by installing new fiber optic connections between signal controllers to obtain better progression along the arterial system.

Signal Retiming

- Battlefield Road and Kansas Avenue signalization (Springfield)
- Division Street and Packer Road signalization (Springfield)
- MO 14 at 25th Street to route NN-new time of day plans (MoDOT)
- MO 14 at from Gregg Road-new timing plan (MoDOT)
- National Avenue and Cherry Street signal improvements (Springfield)
- National Avenue and Monroe Street signal installation (Springfield)
- Re-timed nighttime signal flashing operations city-wide(Springfield)
- US 160 from route AA (Guin Rd) to South Street-new time of day plans (MoDOT)

Signal Removed

- Chestnut Expressway at Fremont Avenue eliminated median mounted signal pole (MoDOT)
- Jefferson Avenue and Saint Agnes Cathedral pedestrian crossings (Springfield)
- Kimbrough Avenue and McDaniel Street (Springfield)
- Sunshine Street and Delaware Avenue (Springfield)

Fiber Optic Connections

- Installed conduit and fiber from the Busch Municipal Building to the new Greene County Public Safety Center (PSC) to provide network connection between the Transportation Management Center of the Ozarks (TMC) and the Public Safety Center (PSC).
- Installed interconnect conduit and fiber on Campbell Avenue from a point north of Battlefield Road to the Cherokee Street intersection and brought onto the Ozarks Traffic Network.
- Installed interconnect fiber on Battlefield Road from Stewart Avenue to Moulder Avenue, through the existing Centurytel Conduit and Fiber Sharing Agreement, and brought onto the Ozarks Traffic Network.

- **Incident Management - Detection, Response & Clearance**: Utilize traveler radio, travel alert notification (via e-mail, fax, text, etc.), and general public outreach to enhance incident-related information dissemination. MoDOT has provided the list below of their incident management activities:
  - Assist in opening roadways for traffic flow with as few delays as possible.
  - Assist with snow removal operations.
  - Help in traffic control operations during emergency situations and keep traffic flowing as smoothly as possible during periods of non-emergency.
  - Help with emergency situations such as flooding, tornadoes, and other emergencies where the Incident Coordinator needs our assistance.
  - Inspect end terminal guardrail heads for damage, visibility and post attachment, notify the proper inspector for replacement if necessary
  - Keep the roadways clear of any objects that may interfere with traffic flow
  - Monitor all routes everyday for any situations that could interfere with a smooth motoring experience
  - Monitor traffic flows, volumes, and tendencies to assure a safe driving experience
  - Provide assistance to the motoring public with vehicle breakdowns
  - Repair and replace delineators along the I-44 corridor and various routes in the Springfield Metropolitan area
  - Repair and replace mile marker signs along the I-44 corridor
  - Repair and replace signs on the I-44 corridor at emergency turnaround points
  - Repair guard cable hits along the I-44 corridor and outer roads
  - Respond to all incidents and emergencies on the I-44 corridor and other routes as instructed by the Incident Coordinator for MoDOT's Southwest District
  - Trim grass and weeds around both permanent and movable message boards so good visibility is maintained for the motoring public
  - Utilize our equipment to repair guardrail hits where there is only minor damage, thereby avoiding the need for complete guardrail replacement

- **Bus Turnout Construction:** Currently there are 36 bus turnouts on the CU transit system. The CU Transit services utilize these turnouts 55 times on scheduled routes. All turnouts were constructed prior to 2009 except for 1 new location at Orchard Crest Avenue and Chestnut Expressway location (Northbound constructed Feb 10, 2010). The City Utilities has discontinued the construction of future turnouts due to transit service delays caused by reentry of buses into traffic flow.

Strategy #2: Reduce Vehicle Miles Traveled (VMT) At Peak Travel Times

- **Land Use Policies/Regulations:** The following land use policies and regulations are in place in order to encourage more efficient patterns of commercial and residential development and to decrease both the total number of trips and overall trip lengths, as well as making transit use, bicycling and walking more viable:
  - All OTO jurisdictions have implemented future land use plans to encourage more efficient growth patterns.
  - All OTO jurisdictions have implemented regulations that require the construction of sidewalks in new subdivisions.
  - Greene County has adopted a new zoning district that allows for lots as small as 6,000 square feet. Previously the smallest lot size was 10,000 square feet.
  - OTO jurisdictions utilize developer incentives to encourage infill development.
  - The City of Nixa has decreased the minimum lot size for residential development.
  - The City of Ozark has decreased the minimum lot size for residential development.
  - The City of Springfield has developed regulations that allow for and encourage higher density infill developments including Planned Unit Development Ordinances and Zoning Overlay Districts.
  - The Republic School District has built a new high school in a location that discourages traffic within the City of Republic.

- **Employer Flextime Benefits/Compressed Work Week:** Encouraging employers to consider allowing employees to maintain a flexible schedule - thus allowing the employee the option to commute during non-peak hours.
  - MoDOT allows flextime
  - OTO allows flextime
  - Greene County allows for a compressed work week
  - City of Springfield allows for a compressed work week
  - City Utilities allows flextime
  - Area school districts offset starting times in order to utilize the same buses for different schools
  - Hospital shifts area set as off-peak times

Strategy #3: Shift Trips from Automobile to Other Modes

This strategy includes improvements beyond those made adjacent to roadways that are included in the Congestion Management Process network. Improvements made anywhere in the OTO study area that encourage people to use alternative modes may lessen the impacts of traffic system area wide.

- **Fleet Expansion/Bus Service Expansion:**
  - Bus service expansions and modifications include the following:

October 4, 2010: Line 8 was extended on west Kearney Street to serve Expedia. Line 6 inline transfer point was changes to Grand Street and Scenic Avenue and Saturday service to Catalpa Street was discontinued.

January 3, 2011: Line 1 was extended one time per hour north to the Fulbright Springs development, this was discontented on May 3, 2011

January 18, 2011: Line 14 was extended one time per hour south to Calhoun Street near Drury University, this was discontinued on May 23, 2011

May 2011: Line 12 was changed to travel north on Jefferson Avenue between Powell Street and Battlefield Road, instead of Campbell Avenue

July 2011: Line 10 and 15 morning peak service was reduced from 30 minute service to 60 minute service making these routes 60 minute service all day

October 8, 2012: Line 1 was extended north to Fulbright Springs development on a trial basis at 7:12 AM, 7:42 AM, 3:42 PM and 4:12 PM

October 31, 2012: Line 5 inbound to Transfer Station, at Kimbrough Avenue continue west on St. Louis Street left on Jefferson Avenue, and right on McDaniel Street

October 31, 2012: Line 5 at Harvard Avenue and Independence Street turn left to Glenstone Avenue and continue north on Glenstone Avenue on regular route

November 23, 2012: Line 1 extension to Fulbright Springs Development was discontinued due to lack of ridership

January 7, 2013: Line 16 was put into service and Line 1 was reconfigured into lines 14 and line 2.

April 7, 2013: Line 11 will begin at 8:56 AM and end at 5:25 PM; Line 9 will have an extra hour of 30 minute service in the afternoon until 6:00 PM; lines 4 and 13 will have 30 minute service from 2:35 until 5:05 PM; line 16 will be in service an extra hour on weekdays until 6:45 PM at the Battlefield Mall

- **Improved/Expanded Bicycle Network:**
  - The following improvements have been made to the bicycle network:

- The City of Springfield has signed more than 60 miles of designated bike routes and is enhancing the system with additional pavement markings and signs.

- 2.1 miles of street were restriped with bike lanes including:
  - Benton Avenue from Commercial Street to Central Street (Springfield)
  - Boonville Avenue from Division Street to Chestnut Expressway (Springfield)
  - Division Street from Lyon Avenue to Benton Avenue was restriped to include bike shared-lane symbols in the outside lane (Springfield)
  - Division Street from Broadway Avenue to Lyon Avenue (Springfield)

- John Q. Hammons Parkway from East Trafficway to Harrison Street (0.55 mile) was signed and marked for the Link including signs and markings for bike shared lanes

- 6.7 miles of street were restriped with bike lanes including:
  - Austin Avenue from Sunset Street to Battlefield Road (Springfield)
  - Bennett Street from Barnes Avenue to Glenstone Avenue (Springfield)
  - Cherry Street from Dysart Avenue to west of Barnes Avenue (Springfield)
  - Fort Avenue from Broadmoor Street to Battlefield Road (Springfield)
  - Fremont Avenue from Chestnut Expressway to Saint Louis Street
  - Grant Avenue from Walnut Street to Grand Street (Springfield)
  - Ingram Mill Avenue from Battlefield Road to Greeley Street (Springfield)
  - Jefferson Avenue from Woodland Street to Montclair Street (Springfield)
  - National Avenue from Talmage Street to Evergreen Street (Springfield)
  - Stewart Avenue and St. Louis Street from East Trafficway to Dysart Avenue (Springfield)
  - Sunset Street from Austin Avenue to west of Fort Avenue (Springfield)

- 7.8 miles of street were marked with bicycle shared-lane decals including:
  - 2.7 miles of other streets on the signed bike route system
  - A route on and near Fort Avenue from Weaver Avenue at Seminole Street to Deerfield Street at Kansas Avenue (Springfield)
  - Broadway Avenue from Nichols Street to Grant Avenue (Springfield)
  - Grant Avenue from Grand Street to Fassnight Trail (Springfield)
  - Main Avenue from Grand Street to Fassnight Trail (Springfield)
  - Normal Street from Grand Street to Fassnight Trail (Springfield)
  - Sunset Street from Grant Avenue to west of Fort Avenue (Springfield)
  - Talmage Avenue from Summit Avenue to National Avenue (Springfield)
  - Tampa Street from Nichols Street to Grant Avenue (Springfield)
  - The Link from Summit Avenue at Kearney Street to Sherman Avenue at Central Street (Springfield)

- **Bicycle Storage Systems:** The following improvements have been made with regard to bicycle storage systems, 30 bike racks 66 bicycle parking spaces were installed including:
  - 6 in bike corral on South Avenue south of Walnut Street (12 bike parking and five motorcycle / motor scooter parking spaces) (Springfield)
  - 17 additional bike racks on Park Central Square, Park Central East and Park Central West (Springfield)
  - 4 racks and 6 lockers at Busch Municipal Building (Springfield)
  - 3 new racks at 233 Commercial Street (at Drury University design facility)
  - 3 bike racks and 6 bicycle parking spaces were installed, one new racks at 233 Commercial Street (at Drury University design facility) (Springfield)

- 2 new bike racks on southeast corner of Walnut Street and Jefferson Avenue (Springfield)

- **Improved/Expanded Pedestrian Network:** The following sidewalk and greenway trail improvements have been made:

Greenway Trails

Other sustainable transportation programs include the completion of 105 miles of greenways, 15 streetscape projects in the Center City that provide improved pedestrian and bicycle linkages, a road diet program that reduced the number of automobile lanes to provide for bicycle lanes

- Fassnight Creek Trail between Grant Avenue and Campbell Avenue including grade-separated crossings at Grant Avenue and Campbell Avenue constructed as part of storm drainage project
- Wilson's Creek south of Hattiesburg Hills consists of one mile of Wilson's Creek Trail from Farm Road 150 to Farm Road 156
- South Dry Sac Trailhead consists of a parking lot in David Murray Park and 0.41 miles of trail from David Murray Park to Ritter Springs Park

Sidewalks

The City of Springfield has constructed more than 40 miles of sidewalks to elementary schools based on priorities submitted by each school and has identified a goal of having a sidewalk on at least one side of every street within a half-mile of elementary schools

- Bennett Street from Kimbrough Avenue to Jefferson Avenue (Springfield)
- Boonville Avenue from Court Street to Division Street (Springfield)
- Campbell Avenue from Cherokee Street to Battlefield Road (Springfield)
- Campbell Avenue from Olive Street to Mill Street (Springfield)
- Commercial Street from Campbell Avenue to Lyon Avenue (Springfield)
- Holland Avenue from Portland Street to Sunshine Street (Springfield)
- Near Delaware Avenue and High Street (Springfield)
- Near Turner Street and Prospect Avenue (Springfield)
- Portland Street from National Avenue to Kimbrough Avenue (Springfield)
- Summit Avenue west side of Washington Park (Springfield)
- Walnut Street from Kimbrough Avenue to John Q. Hammons Parkway (Springfield)
- Walnut Street from Market Avenue to Campbell Avenue (Springfield)
- (2.5 miles) was signed and marked for the Link including signs and markings for bike shared lanes and sidewalk construction. Summit Avenue, Dale Street, Washington Avenue, Calhoun Street, and Sherman Avenue from Kearney Street to East Trafficway

Safety

- Boonville Avenue near Webster Street and near Nichols Street ramps and crosswalk improvement (Springfield)
- Fremont Avenue and Battlefield Mall Entrance ADA pedestrian improvements (Springfield)
- National Avenue and Woodland Street ADA pedestrian improvements (Springfield)
- Ramps and crosswalk on Boonville Avenue near Webster Street and near Nichols Street (Springfield)
- Replaced regulatory and warning signs to meet new federal requirements for retro reflectivity (Springfield)
- Sherwood Elementary – Beacons on Scenic Avenue adjacent to the school (Springfield)

- Sunshine Elementary – Beacons on Jefferson Avenue adjacent to the school (Springfield)
- US 160 at Route AA (added signal ahead of interactive warning signs) (MoDOT)

Strategy #4: Shift Trips from SOV to HOV Automobile/Van

- **Rideshare Matching Services:** On April 17, 2009 the Ozarks Transportation Organization implemented a web-based rideshare matching program (www.ozarkscommute.com) where commuters can register and search for commuting partners. The Ozarks Transportation Organization manages the web portal and phone line. Since the development of this program there have been a total of 578 registered users. The City of Springfield has accepted responsible for public awareness through promotional material distributed at local events. At these events registered users have reported that once a carpool is established the carpooling service is rarely accessed until an open seat becomes available.

- **Vanpool/Employer Shuttle Programs:** Several area employers and multifamily housing complexes have implemented vanpool or shuttle programs. Examples include: St. Johns Medical Center, TLC Properties, Missouri State University, and Prime Trucking.

- **Improved/Increased Park-and-Ride Facilities & Capital Improvement**s: There two known parking areas within the OTO area. A private truck parking facility and a MoDOT park-and-ride lots which is currently underutilized. Accordingly, expansion is not planned at this time.
  - 17 space overnight truck parking facility at East Evergreen Street in the City of Strafford
  - 50 space commuter parking at US 65 and Evans Road

Strategy #5: Add Capacity

- **Capacity Expansion:** The following capacity improvements have been completed:

On CMP Network Capacity Improvements

Campbell Avenue/US 160 from South Avenue to Plainview Road

- James River Freeway (US 60) widened Campbell Avenue to 6 lanes and added additional turn lanes all directions (MoDOT)
- Campbell Avenue at El Camino Alto Drive/Cardinal Street intersection widening to 6-lanes (MoDOT)
- Campbell Avenue at James River Freeway ramps intersection widening (MoDOT)
- Campbell Avenue at Republic Road intersection widening (MoDOT)
- Campbell Avenue at Weaver Road relocated & widened (MoDOT)

Glenstone Avenue from US 60 to Peele Street

- Independence Street widened to 3 northbound Lanes (MoDOT)
- James River Freeway (US 60) widened to 3 lanes northbound and southbound (MoDOT)
- Peele Street added right turn lane (MoDOT)

James River Freeway

- Added turn lane (6 lane freeway) from Campbell Avenue to National Avenue

US 65

- Improved to 6 lane freeway from the I-44 and US 65 interchange to the US 60 and US 65 interchange

Off CMP Network Capacity Improvements

Fremont Avenue

- Widening from Sunshine Street to Cherokee Street (Springfield)

Conclusion

This congestion monitoring report looks at the identified network and the efforts taken to address congestion. There have been extensive efforts undertaken in the past four years which are outlined in the implementation strategies section of the report. To summarize, there have been numerous geometric improvements including three diverging diamond interchanges and lane additions to include two roadways with six lanes. Extensive work has been done to better time the traffic signal system. Incident management remains a priority. Great strides have been made in new sidewalk and trail construction. Many miles of bicycle lanes have been signed and striped. All of these efforts have resulted in overall improvements.

The four indicators of congestion were all used to identify areas of significant congestion. The volume to capacity ratio indicated a moderate improvement in the overall miles of roadway that exceeded capacity. The accident rates showed an overall improvement. The average delay per lane mile indicated an overall improvement by less than a third of one mile per hour. The intersection level of service ratings were much improved. Only six signals in the entire signal system are now at a level of service F. This is improved from 16 that were at a level of service F in 2008.

The overall results indicate that there is limited congestion remaining. However, we are cautious to note that these results might be overly optimistic given the lower growth and high unemployment rates that have accompanied the Great Recession over the past several years. We are not optimistic that these trends will be sustainable. While, the region will continue to focus on the Implementation Strategies that have been outlined, a greater focus on the reduction in regional demand will be necessary. These strategies include the reduction in vehicle miles traveled through the shifting of trips to other modes and higher occupancy vehicles and reducing the demand at peak travel times through flexible hours and land use regulations.

Maps Include 2005, 2008 and 2012

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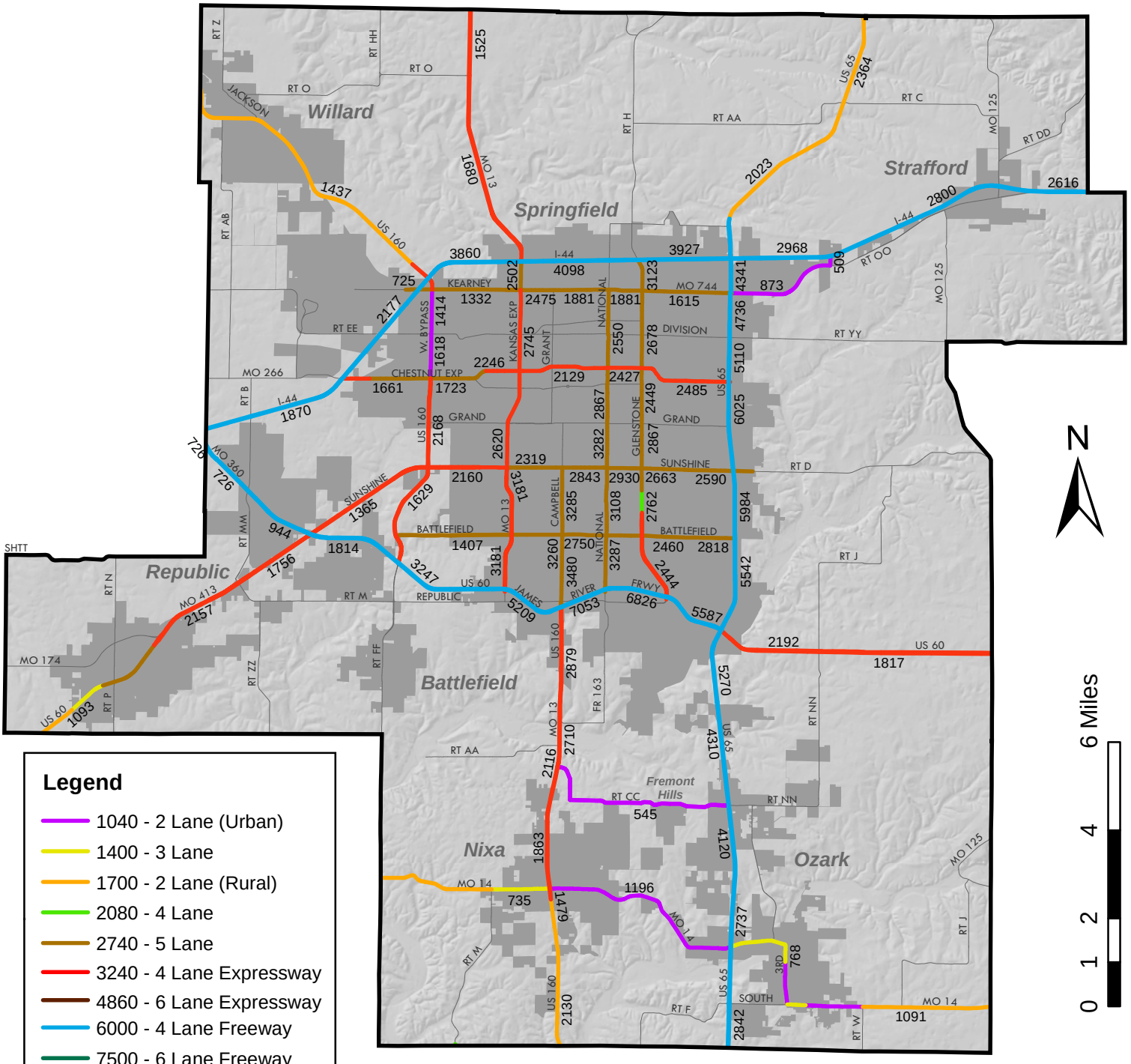
Traffic Volumes and Roadway Capacities



Legend

- 1040 - 2 Lane (Urban)
- 1400 - 3 Lane
- 1700 - 2 Lane (Rural)
- 2080 - 4 Lane
- 2740 - 5 Lane
- 3240 - 4 Lane Expressway
- 4860 - 6 Lane Expressway
- 6000 - 4 Lane Freeway
- 7500 - 6 Lane Freeway

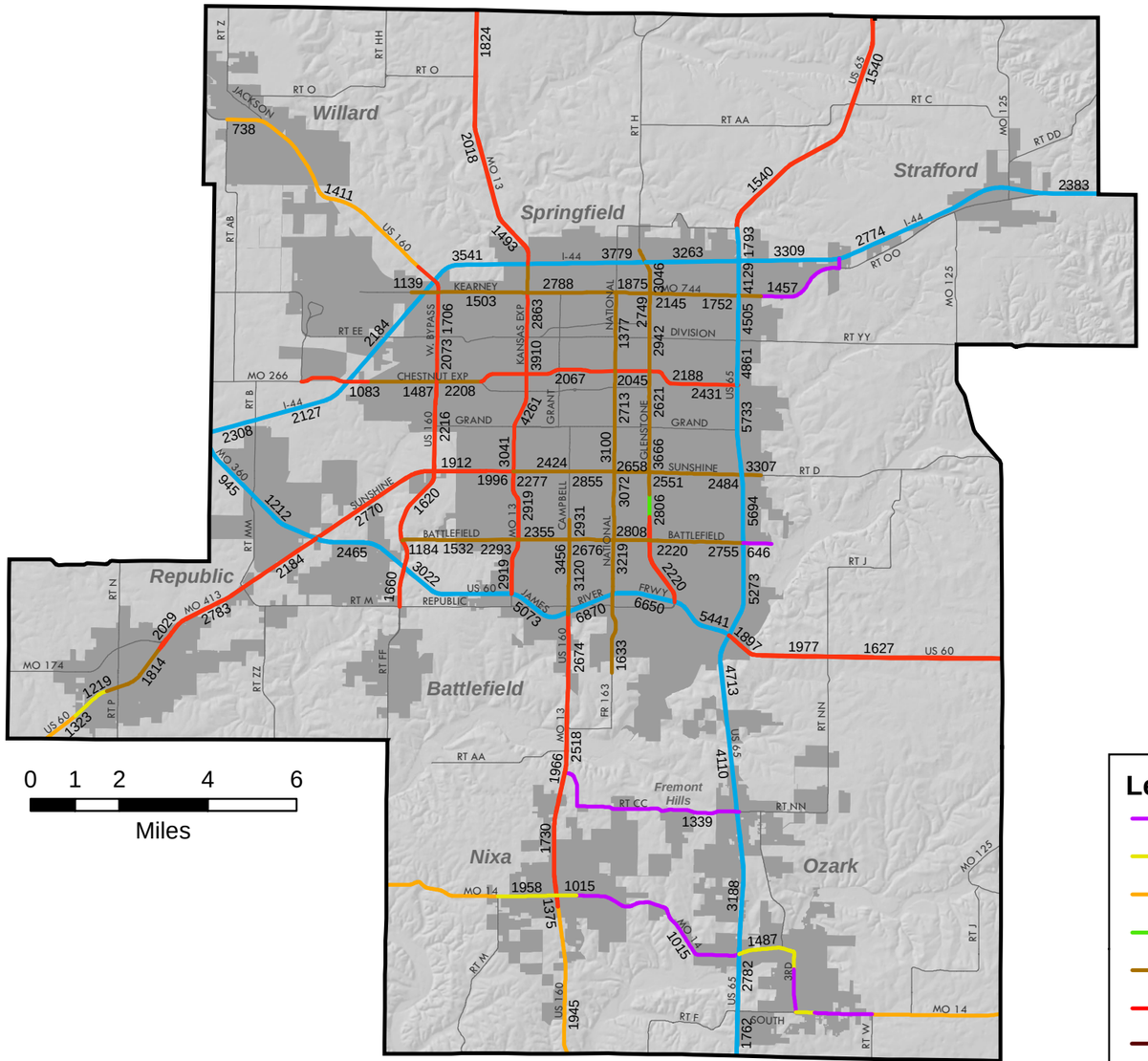
2005

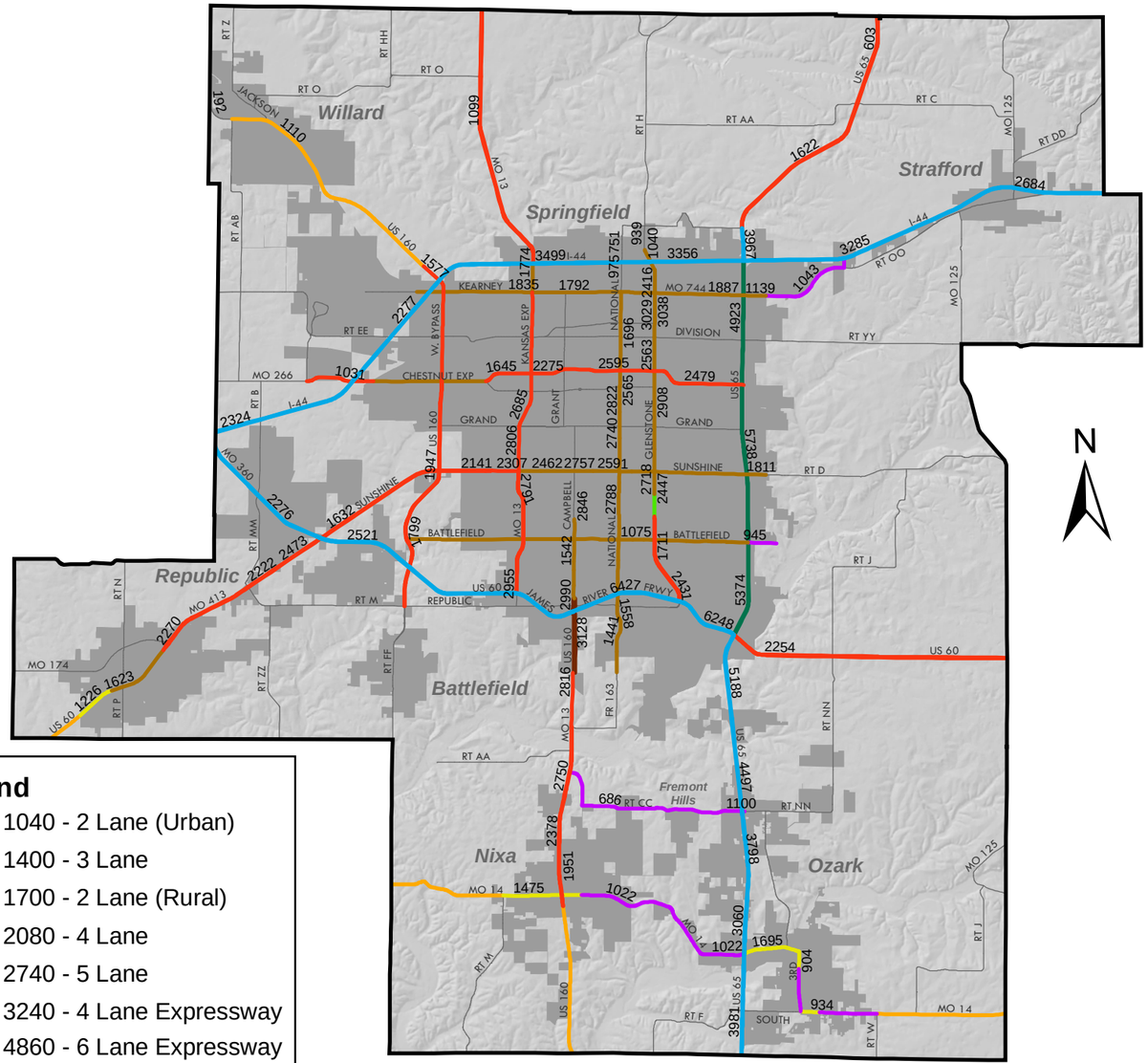
Source: City of Springfield
Missouri Dept. of Transportation

Map 3.1

Peak hour traffic volumes and roadway capacities

Traffic Volumes and Roadway Capacities





Legend

- 1040 - 2 Lane (Urban)
- 1400 - 3 Lane
- 1700 - 2 Lane (Rural)
- 2080 - 4 Lane
- 2740 - 5 Lane
- 3240 - 4 Lane Expressway
- 4860 - 6 Lane Expressway
- 6000 - 4 Lane Freeway
- 7500 - 6 Lane Freeway

2008

2012

Source: City of Springfield
Missouri Dept. of Transportation

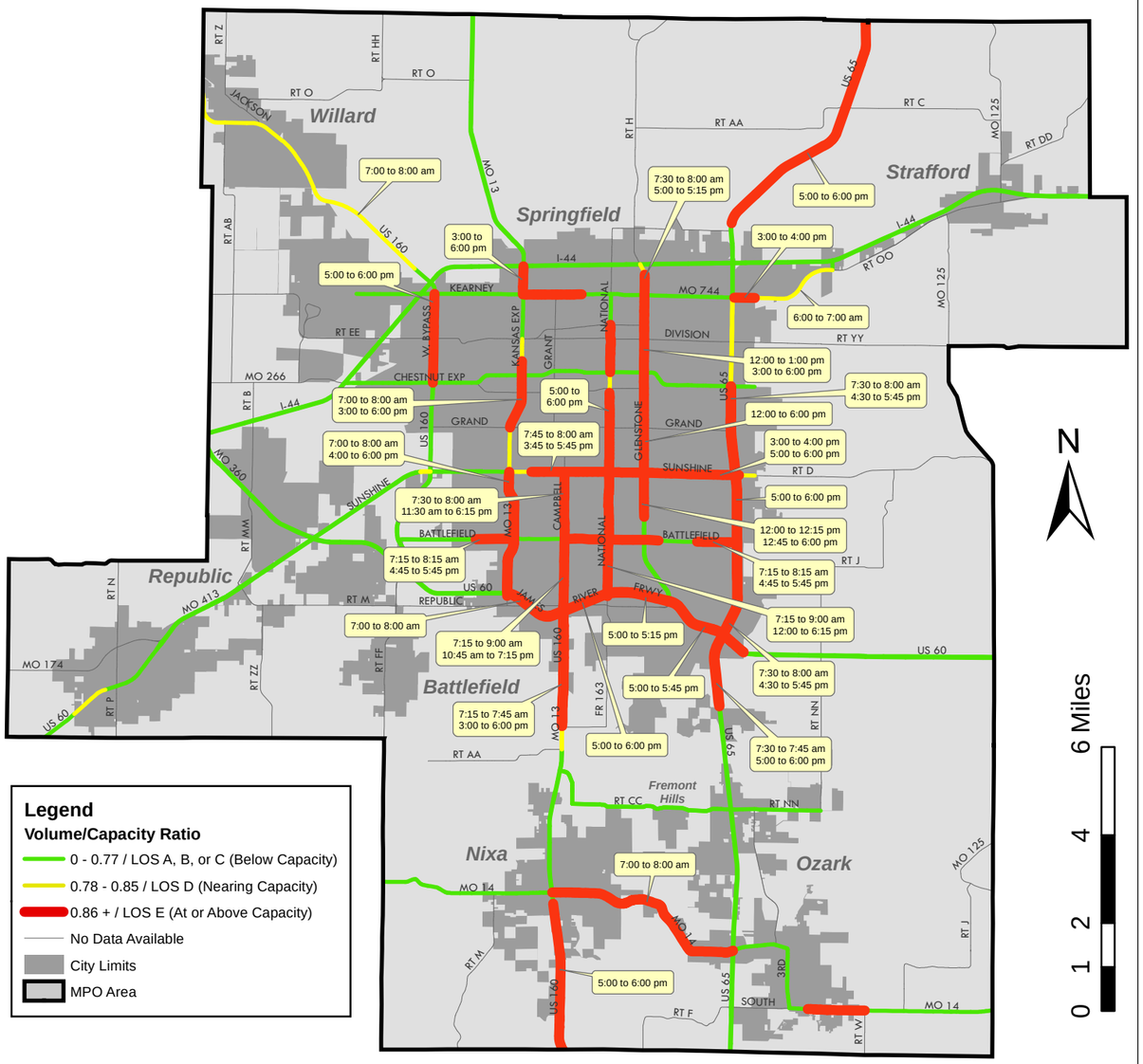
OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

Peak hour traffic volumes and roadway capacities

Map 3.1

Traffic Volumes and Roadway Capacities

Volume to Capacity Ratio



Legend

Volume/Capacity Ratio

- 0 - 0.77 / LOS A, B, or C (Below Capacity)
- 0.78 - 0.85 / LOS D (Nearing Capacity)
- 0.86 + / LOS E (At or Above Capacity)
- No Data Available
- City Limits
- MPO Area

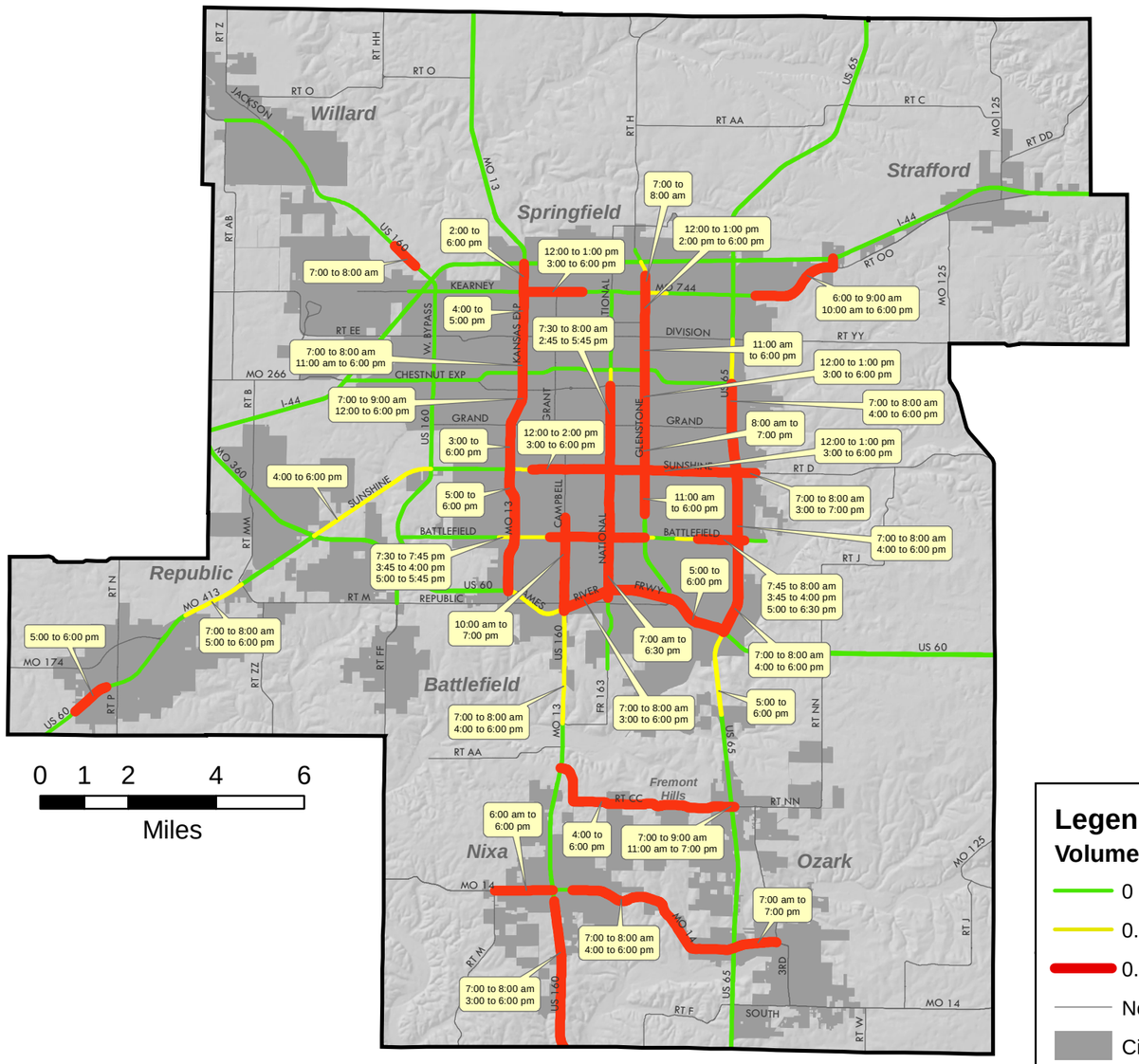
Source: City of Springfield
Missouri Dept. of Transportation

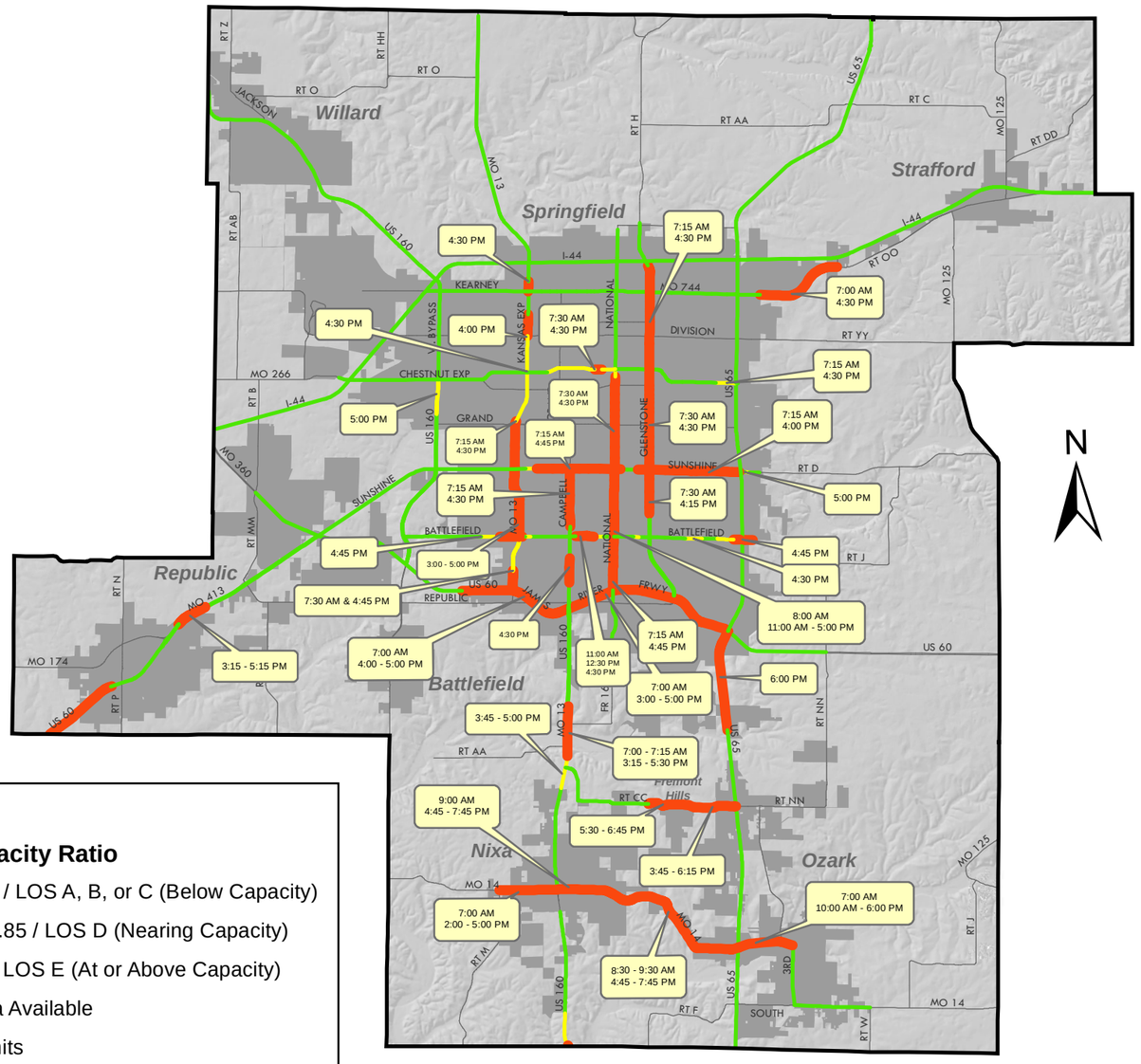
2005

Map 3.2

What facilities are congested during the peak hour?

Volume to Capacity Ratio





N

Legend

Volume/Capacity Ratio

- 0 - 0.77 / LOS A, B, or C (Below Capacity)
- 0.78 - 0.85 / LOS D (Nearing Capacity)
- 0.86 + / LOS E (At or Above Capacity)
- No Data Available
- City Limits
- MPO Area

2008

2012

Source: City of Springfield
Missouri Dept. of Transportation

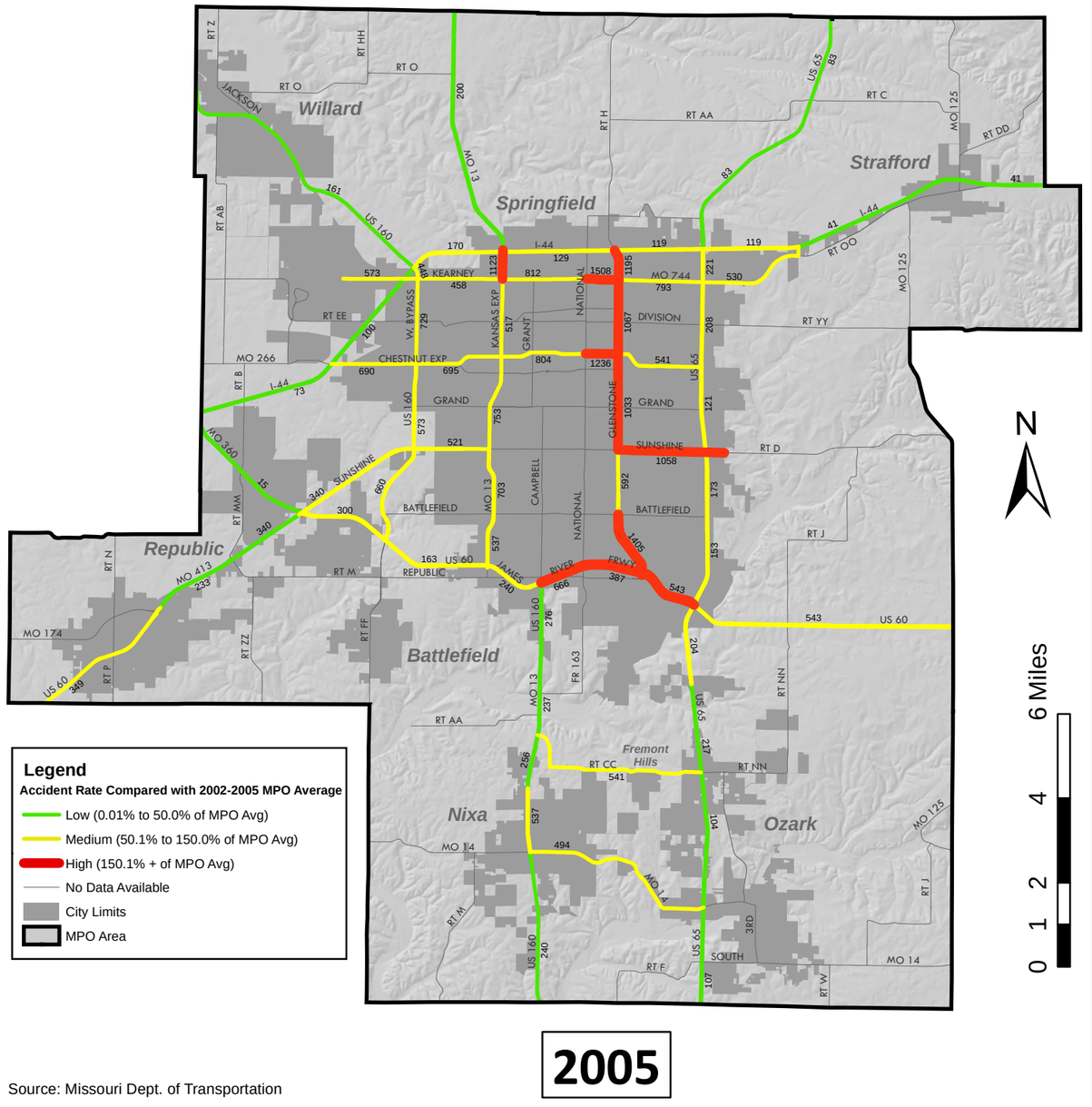
OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

What facilities are congested during the peak hour?

Map 3.2

Volume to Capacity Ratio

Accident Rates

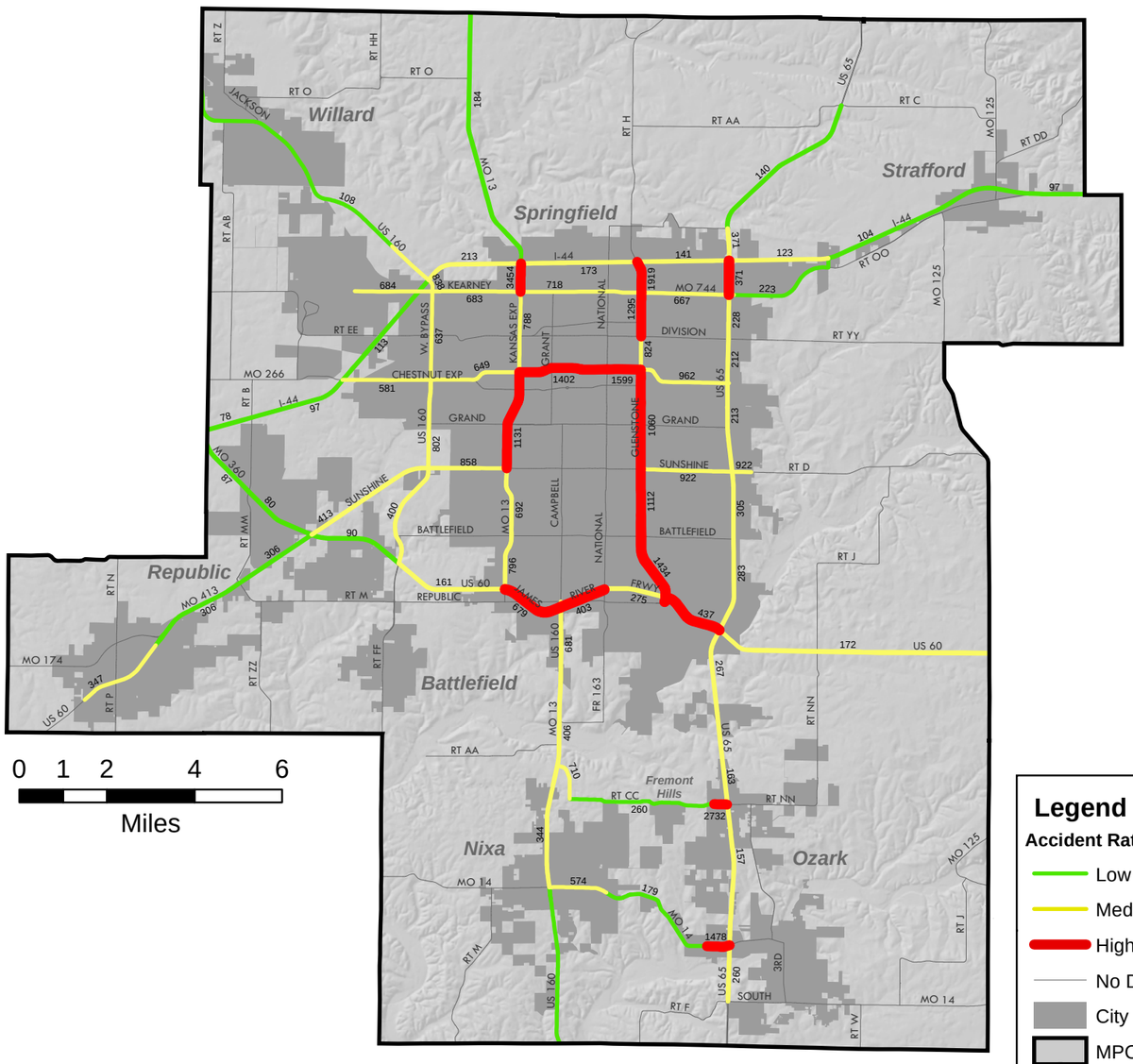


Source: Missouri Dept. of Transportation

Map 4

What is the impact of accidents on congestion?

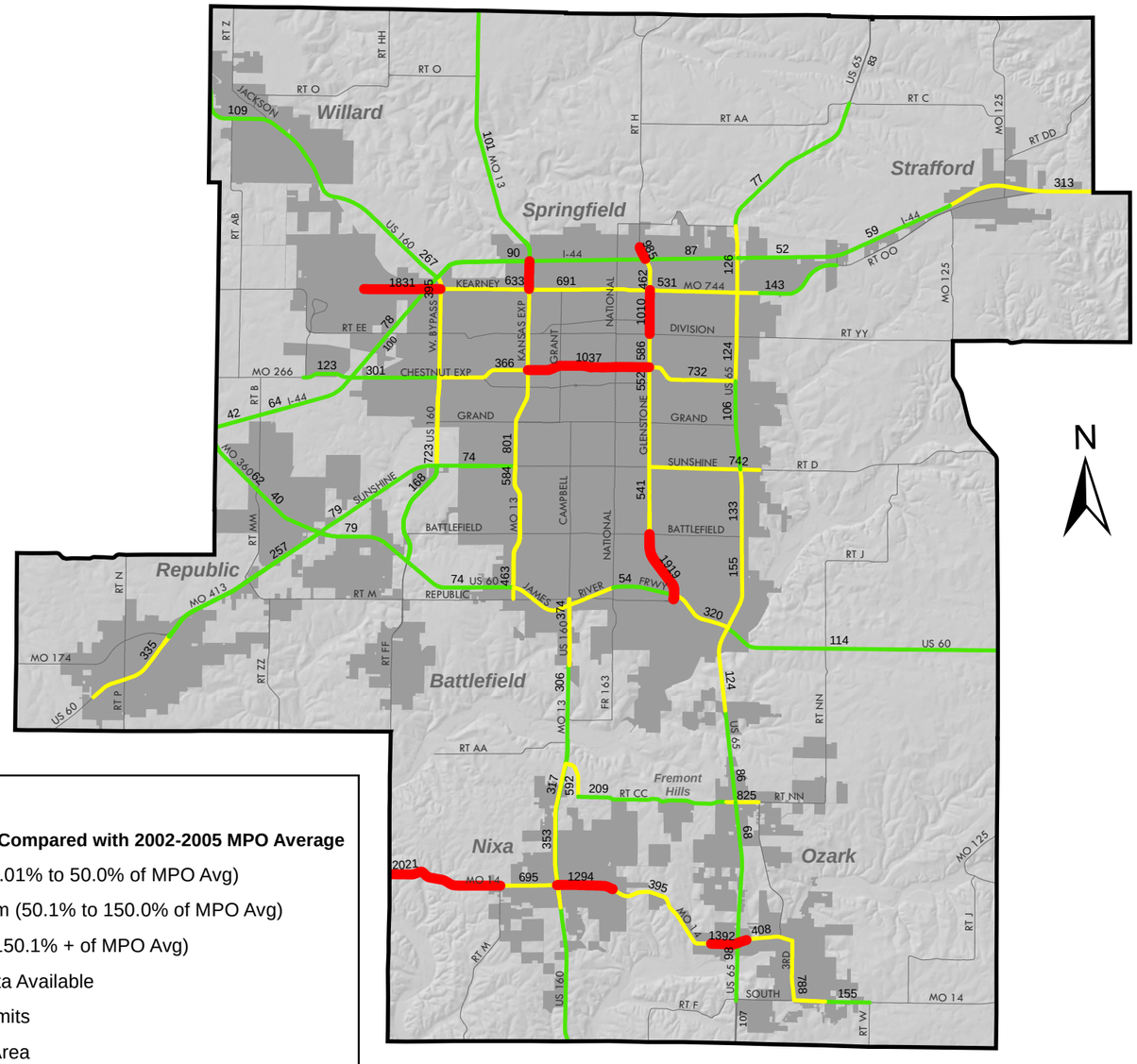
Accident Rates



0 1 2 4 6

Miles

2008



2012

N

Legend

Accident Rate Compared with 2002-2005 MPO Average

- Low (0.01% to 50.0% of MPO Avg)
- Medium (50.1% to 150.0% of MPO Avg)
- High (150.1% + of MPO Avg)
- No Data Available
- City Limits
- MPO Area

Source: Missouri Dept. of Transportation

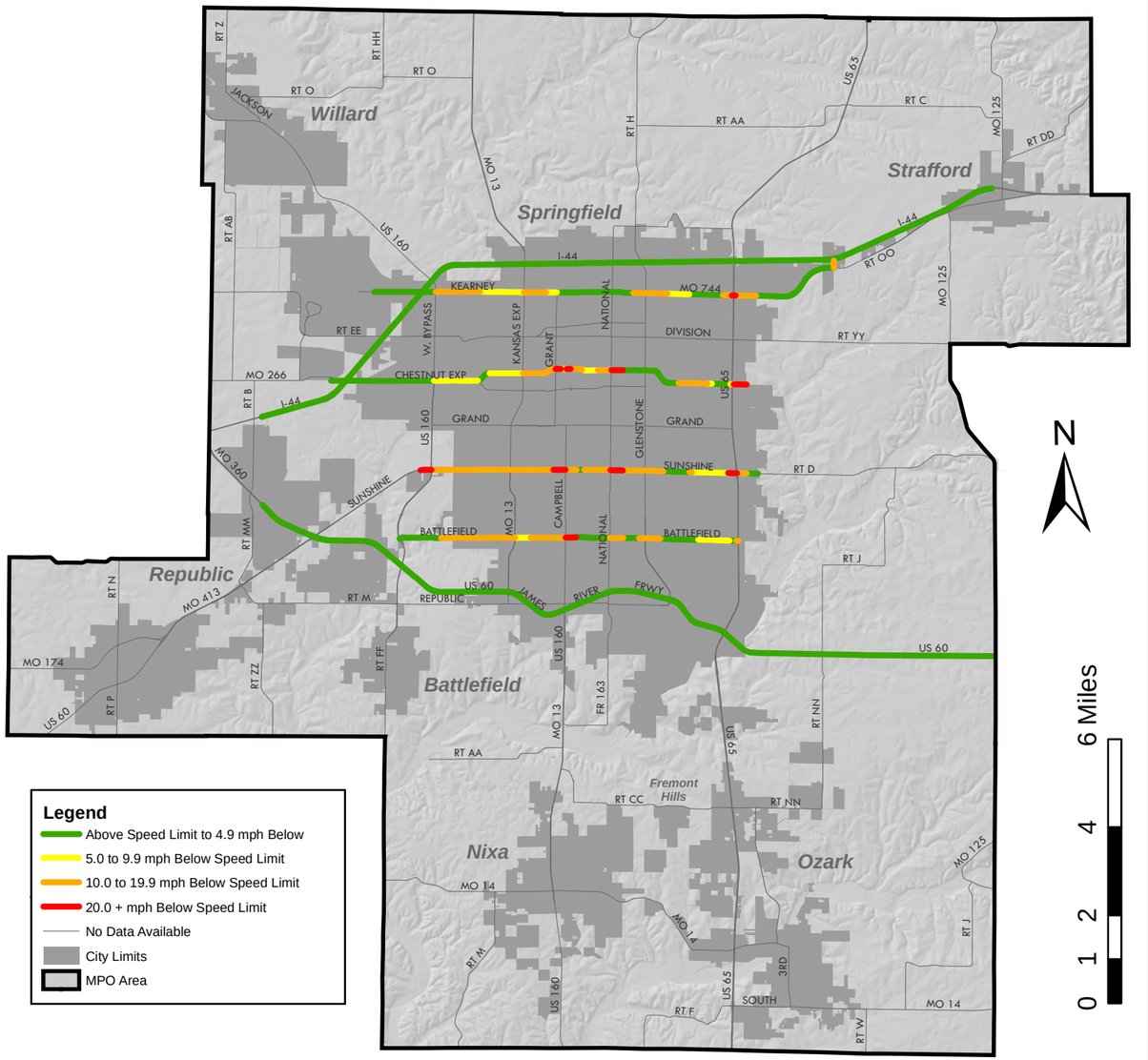
OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

What is the impact of accidents on congestion?

Map 4

Accident Rates

Average Travel Speeds
AM Peak Hour - Eastbound Lanes



Legend

- Above Speed Limit to 4.9 mph Below
- 5.0 to 9.9 mph Below Speed Limit
- 10.0 to 19.9 mph Below Speed Limit
- 20.0 + mph Below Speed Limit
- No Data Available
- City Limits
- MPO Area

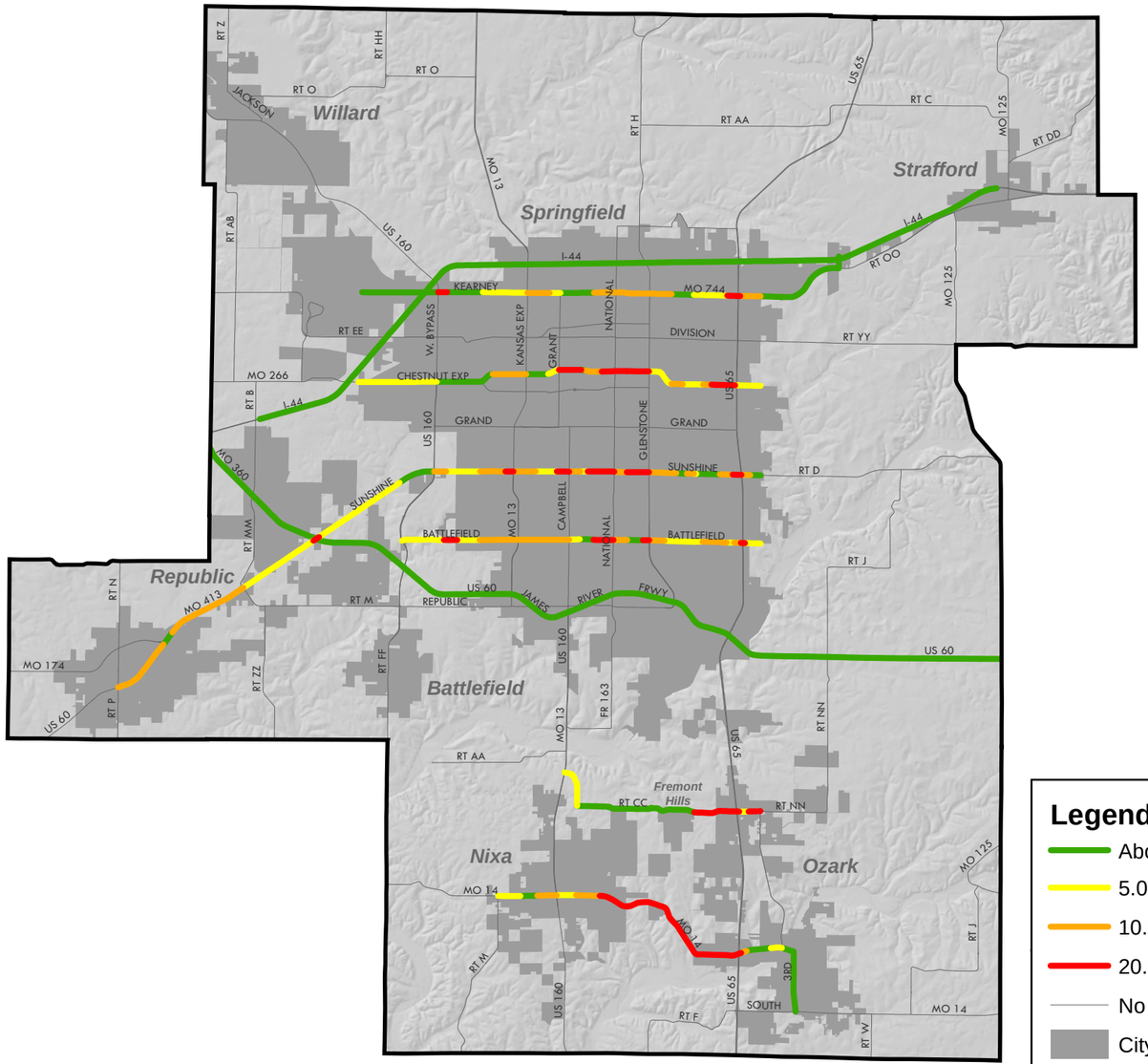
Source: CJW Transportation Consultants LLC

2005

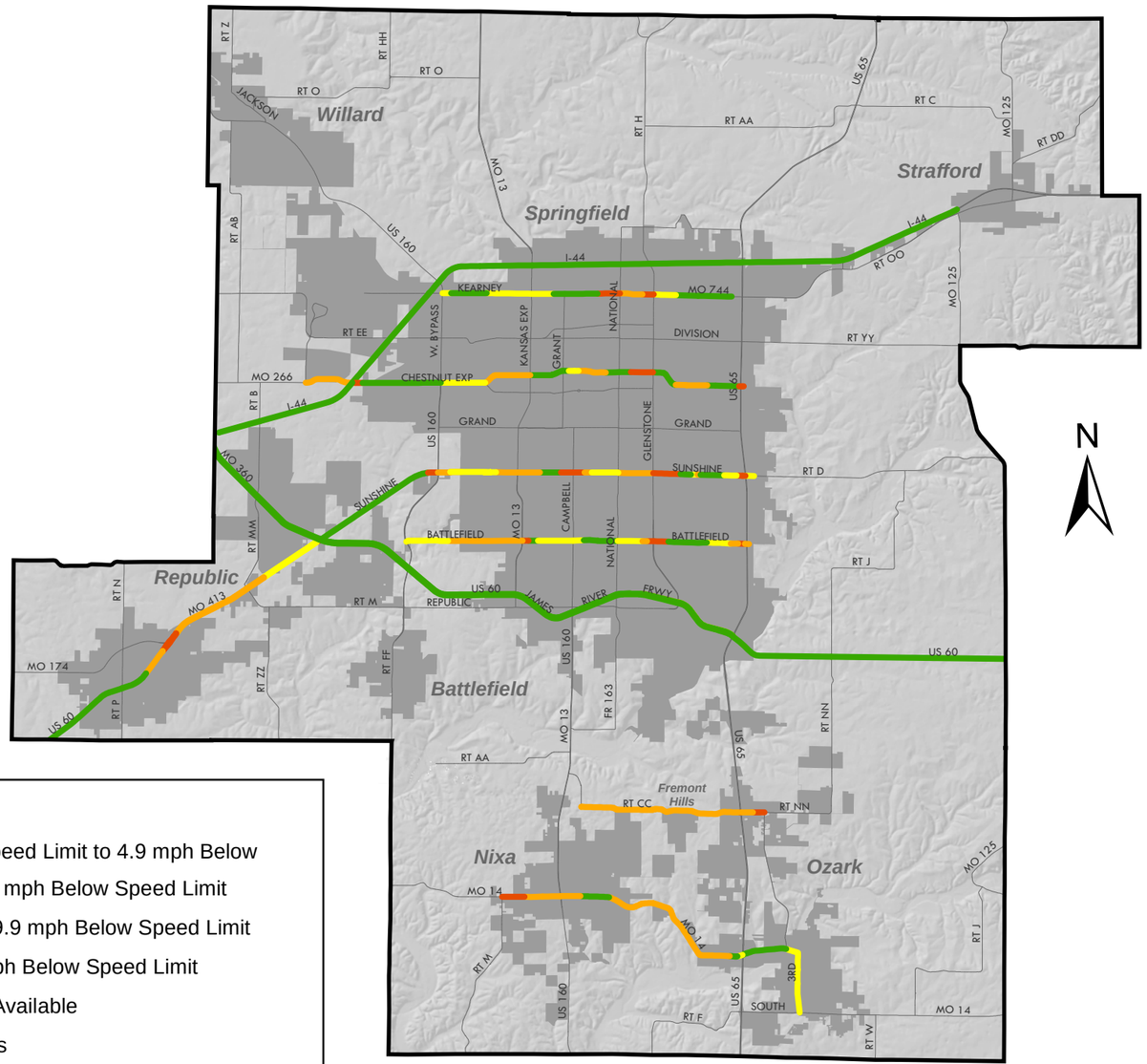
Map 5.1

How badly are travelers delayed?

Average Travel Speeds
AM Peak Hour - Eastbound Lanes



2008



2012

N

Legend

- Above Speed Limit to 4.9 mph Below
- 5.0 to 9.9 mph Below Speed Limit
- 10.0 to 19.9 mph Below Speed Limit
- 20.0 + mph Below Speed Limit
- No Data Available
- City Limits
- MPO Area

Source: CJW Transportation Consultants LLC

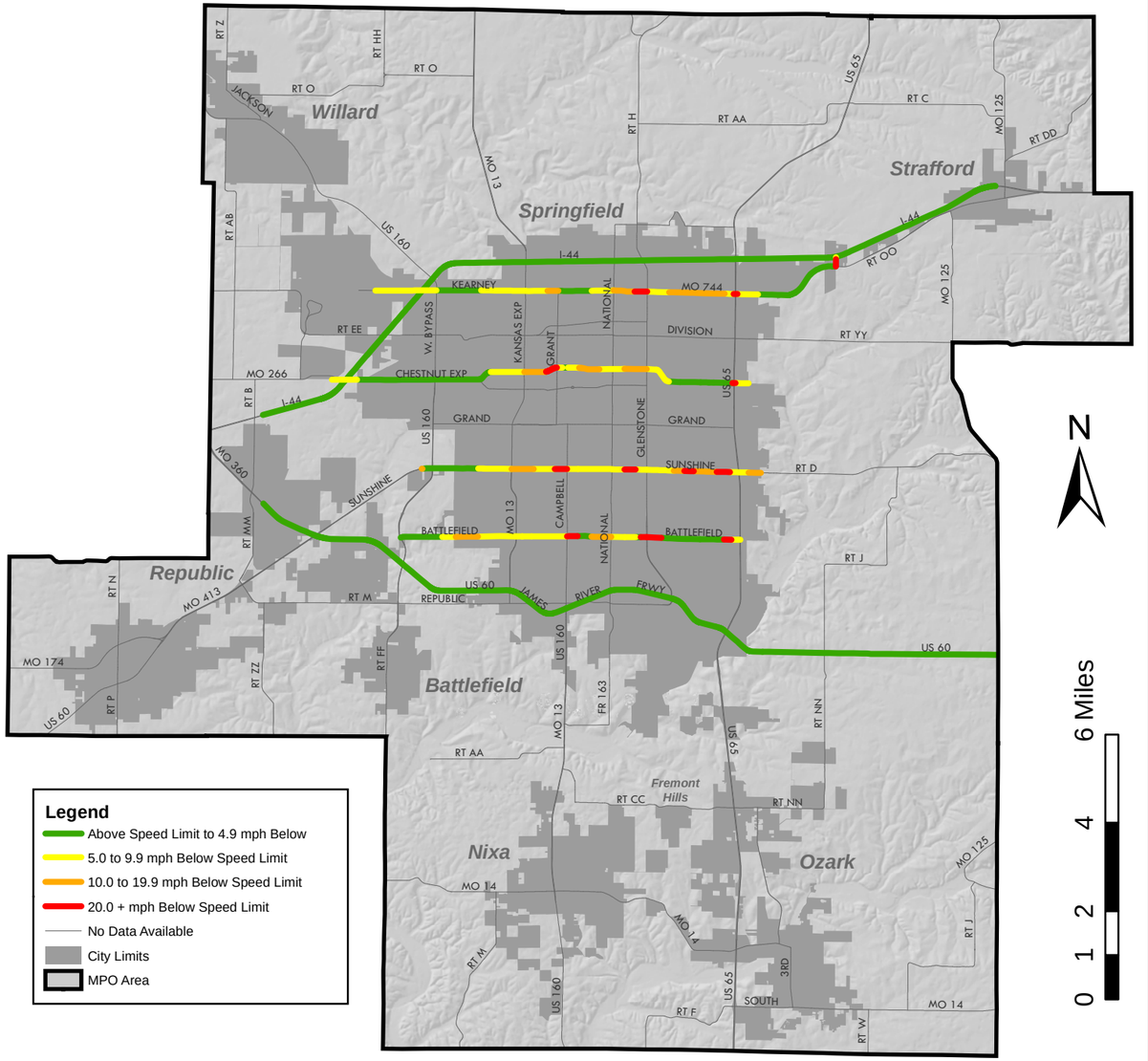
OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

How badly are travelers delayed?

Map 5.1

Average Travel Speeds
AM Peak Hour - Eastbound Lanes

Average Travel Speeds
AM Peak Hour - Westbound Lanes



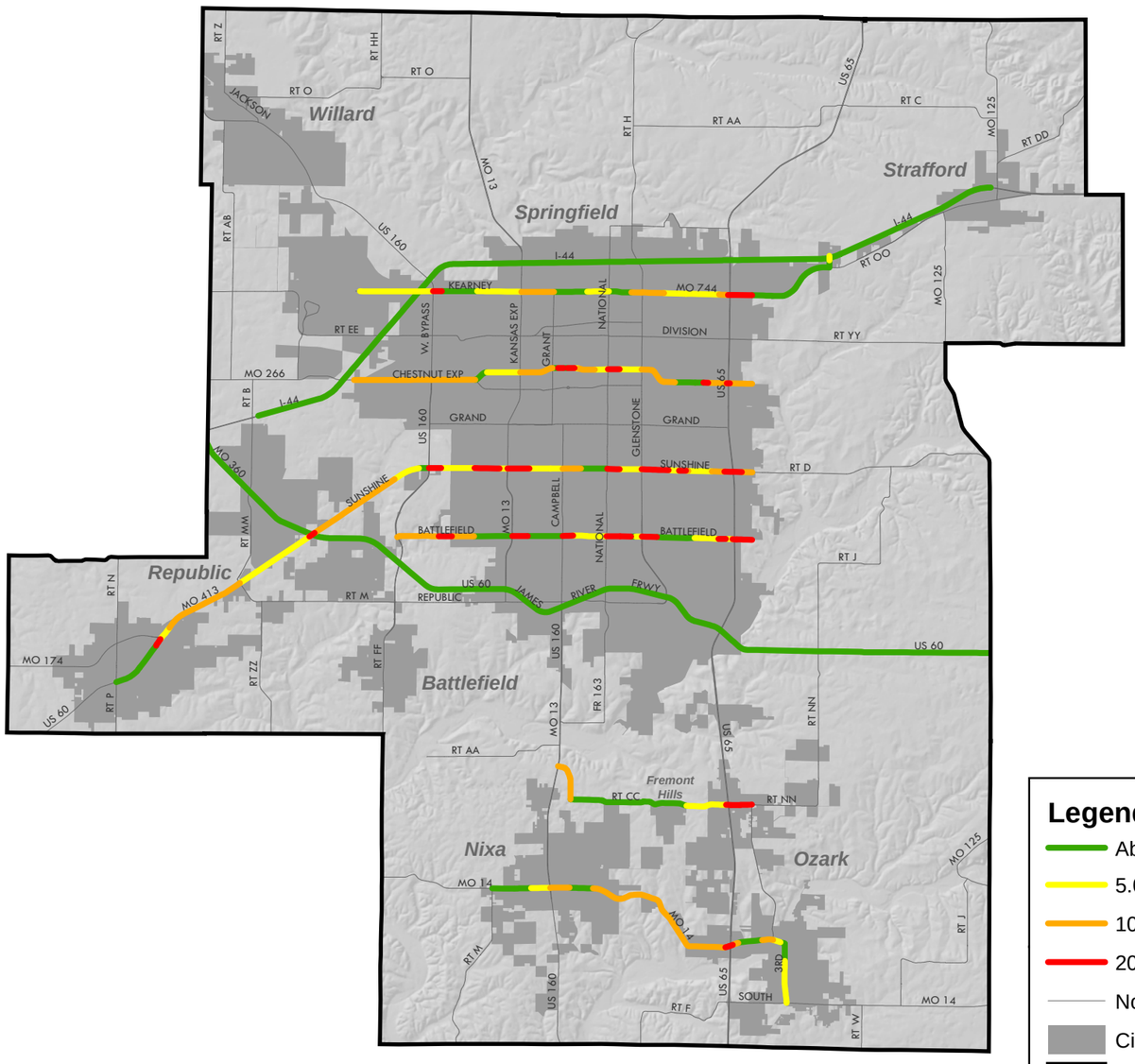
Source: CJW Transportation Consultants LLC

2005

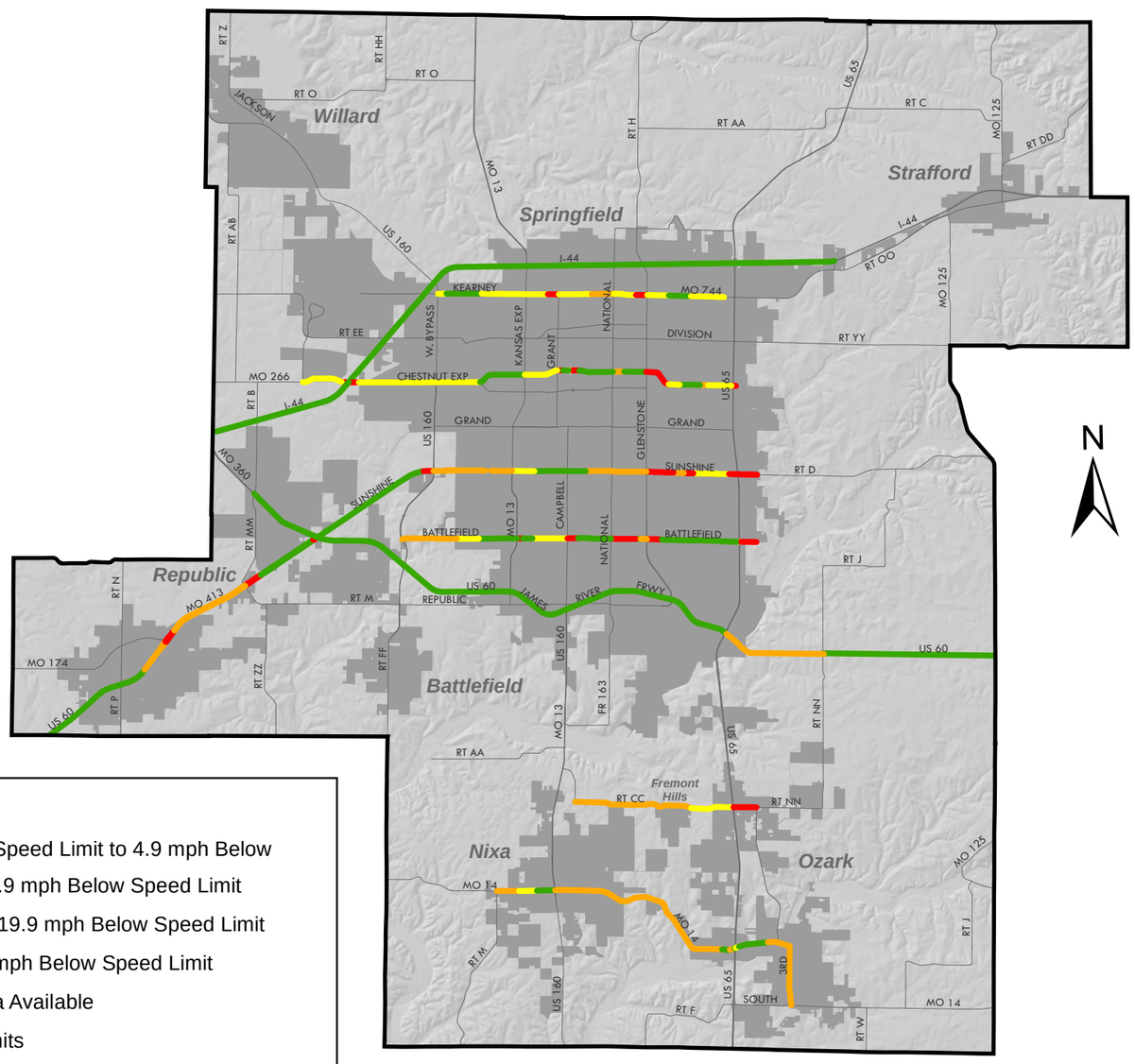
Map 5.2

How badly are travelers delayed?

Average Travel Speeds
AM Peak Hour - Westbound Lanes



2008



2012

N

Legend

- Above Speed Limit to 4.9 mph Below
- 5.0 to 9.9 mph Below Speed Limit
- 10.0 to 19.9 mph Below Speed Limit
- 20.0 + mph Below Speed Limit
- No Data Available
- City Limits
- MPO Area

Source: CJW Transportation Consultants LLC

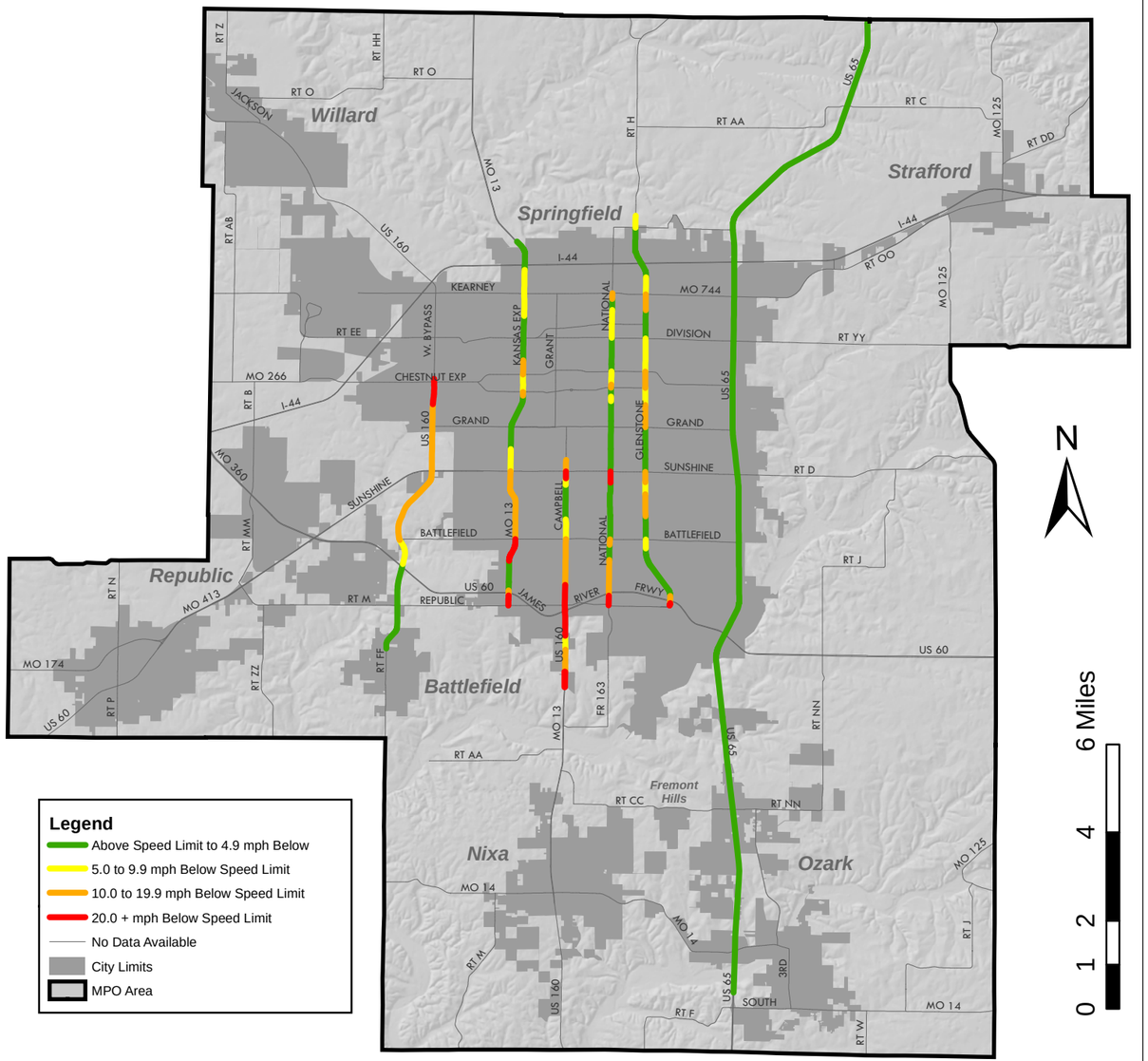
OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

How badly are travelers delayed?

Map 5.2

Average Travel Speeds
Am Peak Hour - Westbound Lanes

Average Travel Speeds
AM Peak Hour - Northbound Lanes



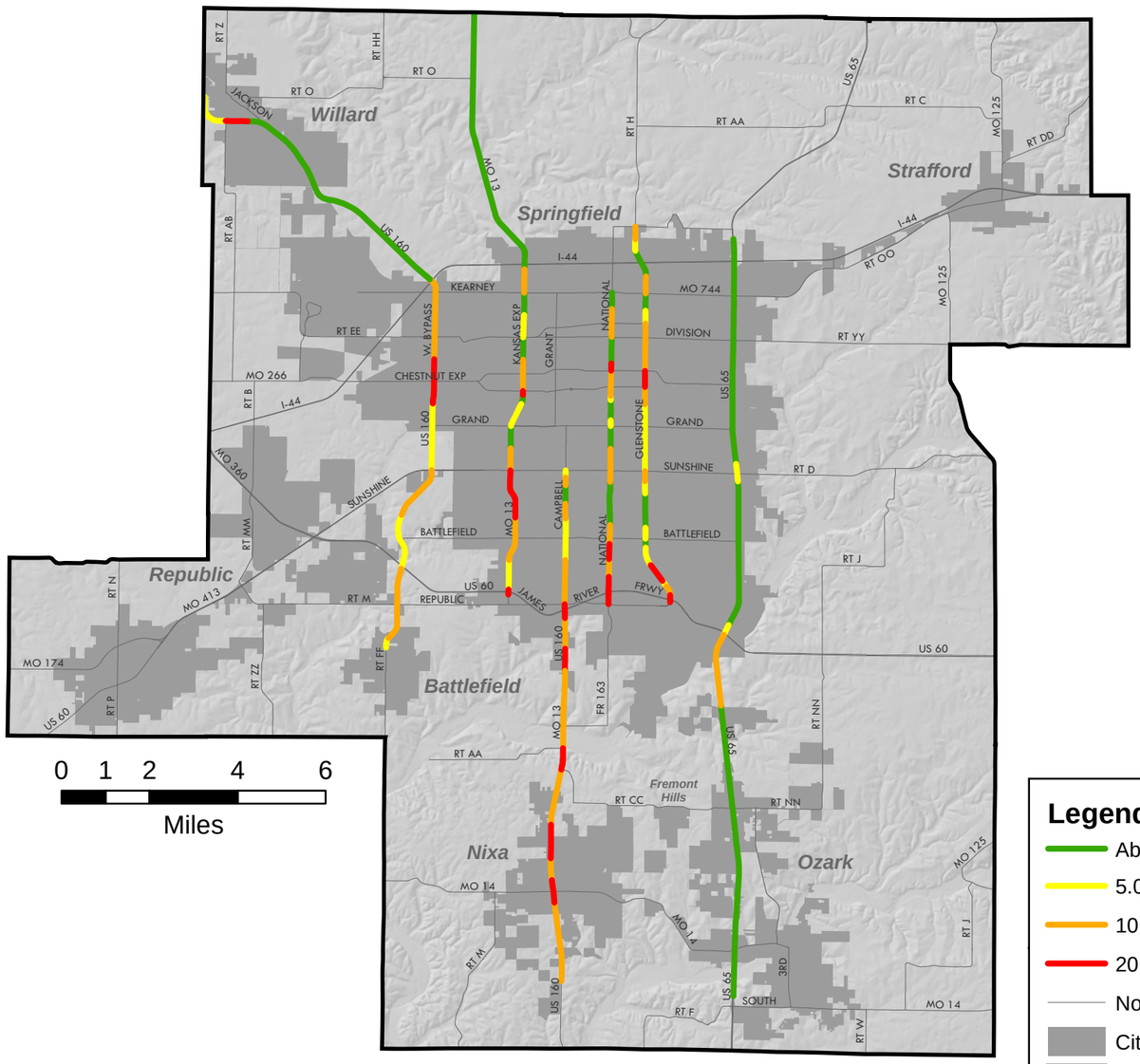
Source: CJW Transportation Consultants LLC

2005

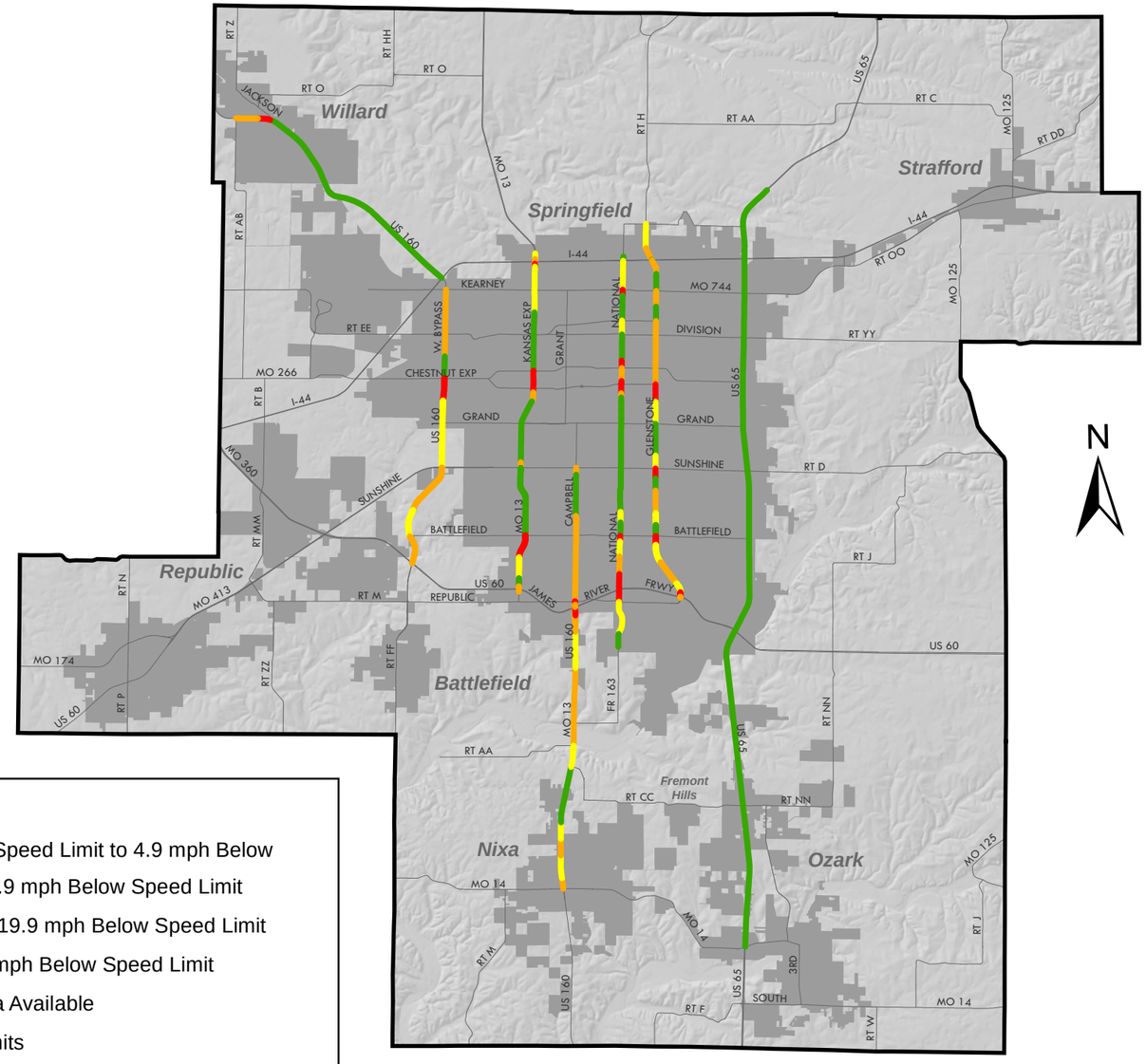
Map 5.3

How badly are travelers delayed?

Average Travel Speeds
AM Peak Hour - Northbound Lanes



2008



2012

Legend

- Above Speed Limit to 4.9 mph Below
- 5.0 to 9.9 mph Below Speed Limit
- 10.0 to 19.9 mph Below Speed Limit
- 20.0 + mph Below Speed Limit
- No Data Available
- City Limits
- MPO Area

Source: CJW Transportation Consultants LLC

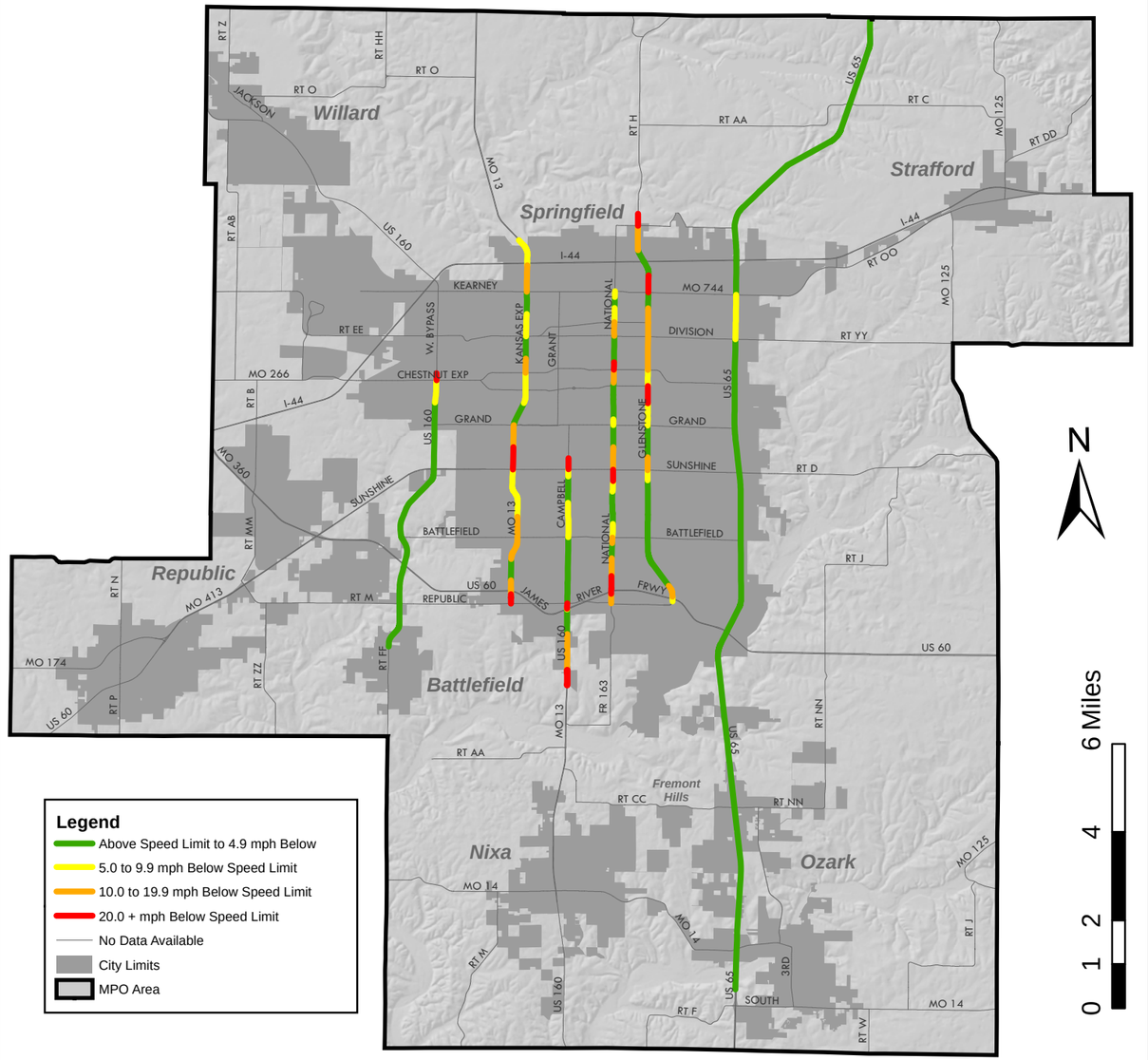
OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

How badly are travelers delayed?

Map 5.3

Average Travel Speeds
AM Peak Hour - Northbound Lanes

Average Travel Speeds
AM Peak Hour - Southbound Lanes



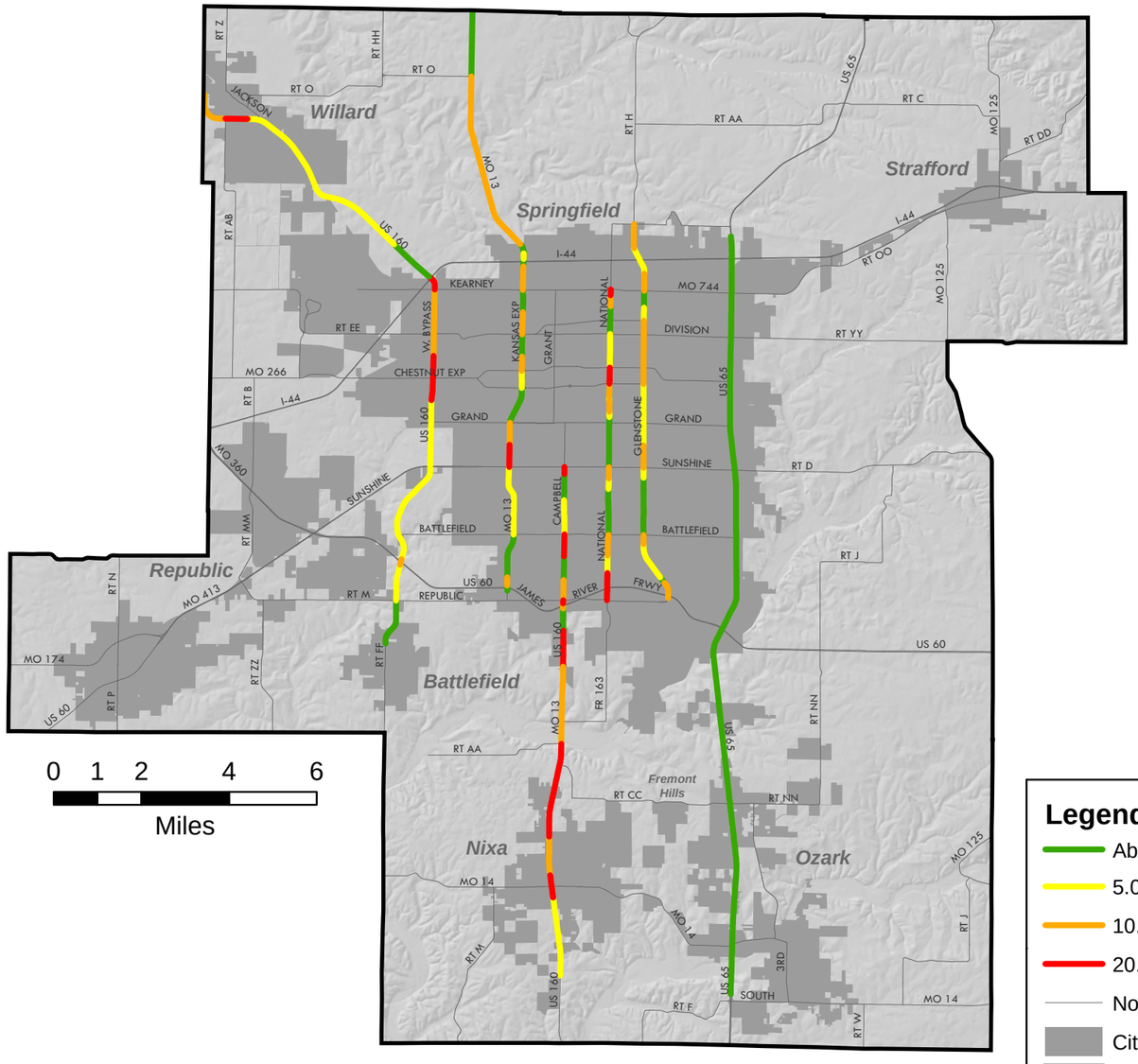
Source: CJW Transportation Consultants LLC

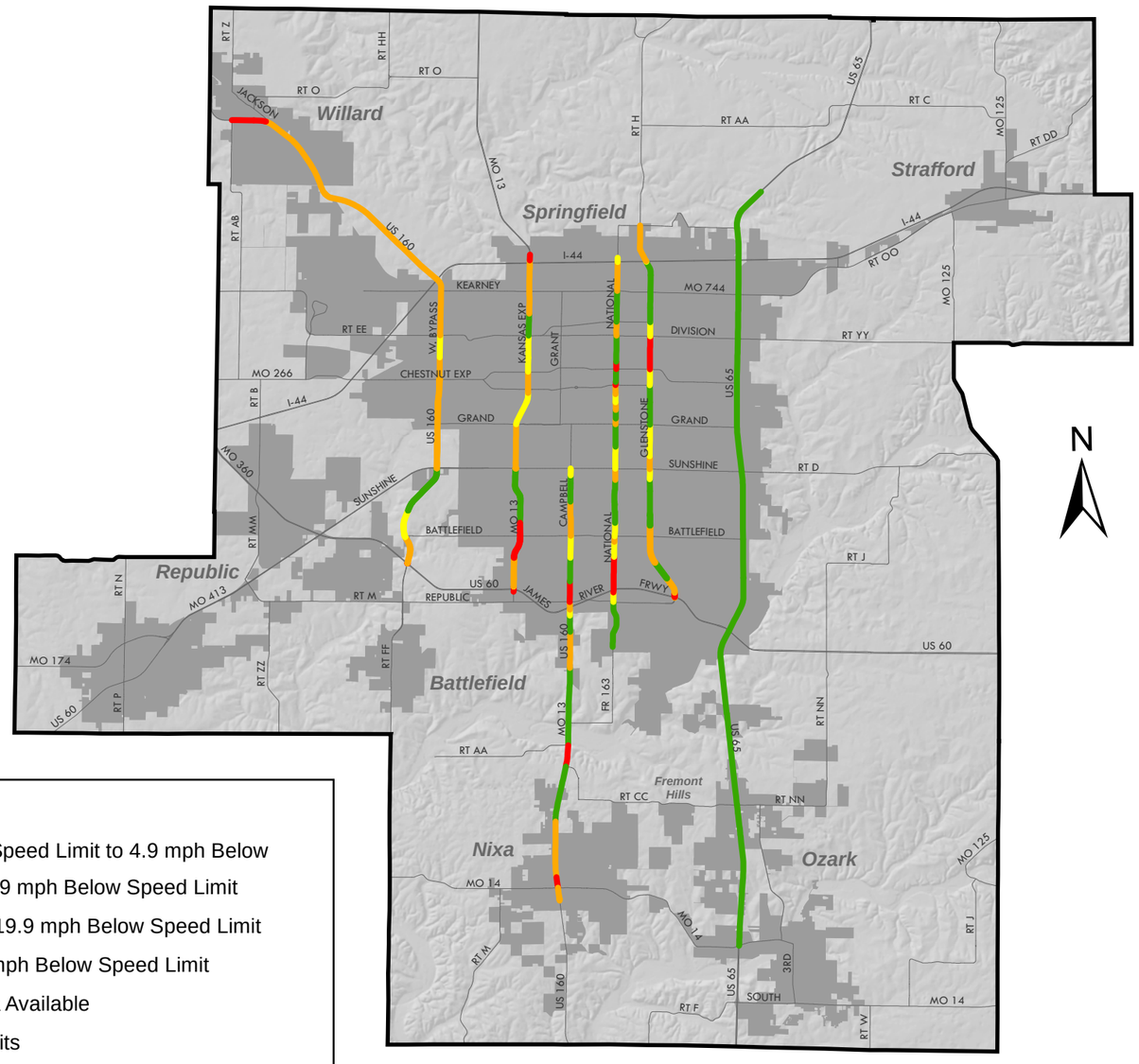
2005

Map 5.4

How badly are travelers delayed?

Average Travel Speeds
AM Peak Hour - Southbound Lanes





Legend

- Above Speed Limit to 4.9 mph Below
- 5.0 to 9.9 mph Below Speed Limit
- 10.0 to 19.9 mph Below Speed Limit
- 20.0 + mph Below Speed Limit
- No Data Available
- City Limits
- MPO Area

2008

2012

Source: CJW Transportation Consultants LLC

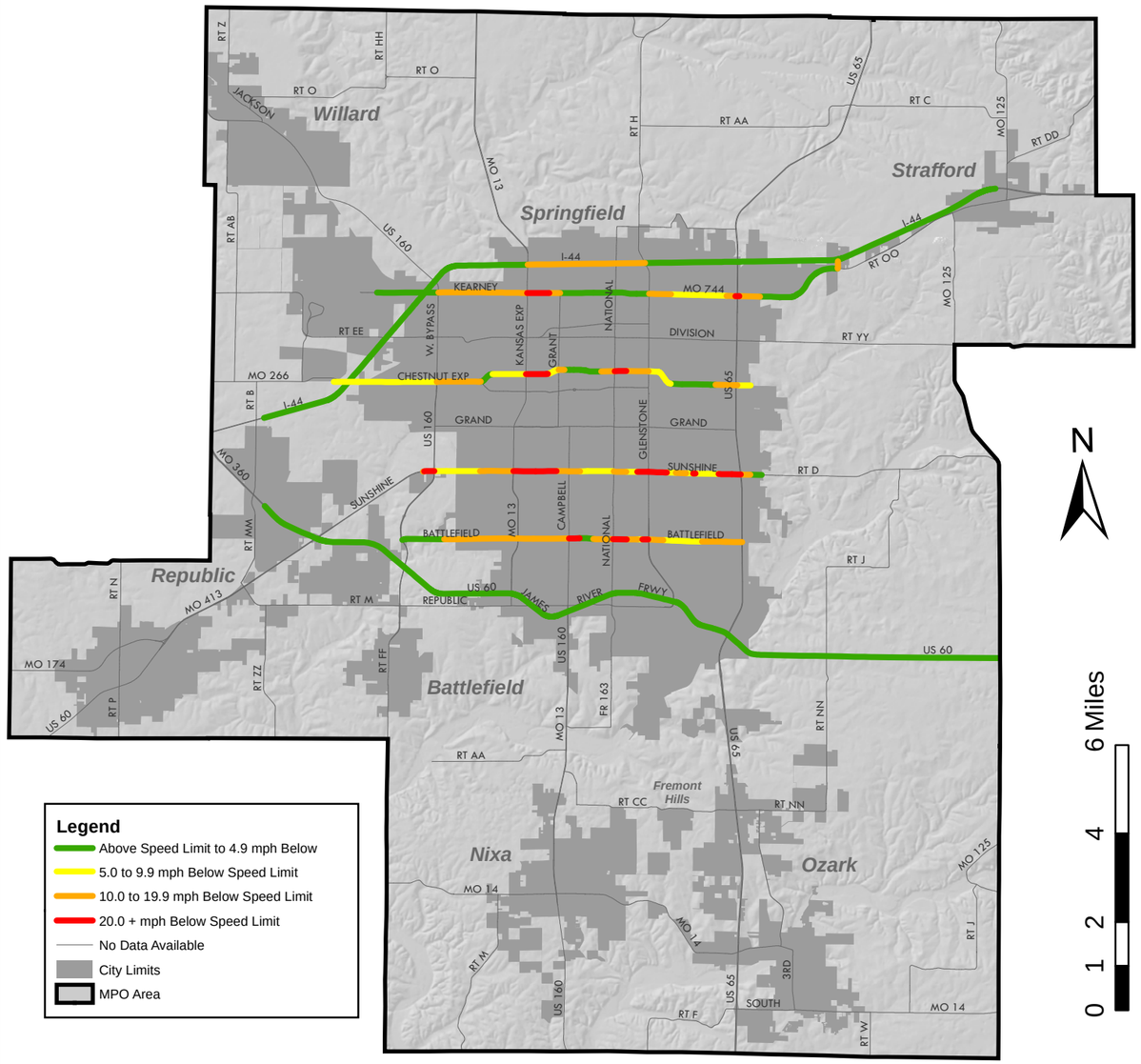
OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

How badly are travelers delayed?

Map 5.4

Average Travel Speeds
AM Peak Hour - Southbound Lanes

Average Travel Speeds
PM Peak Hour - Eastbound Lanes



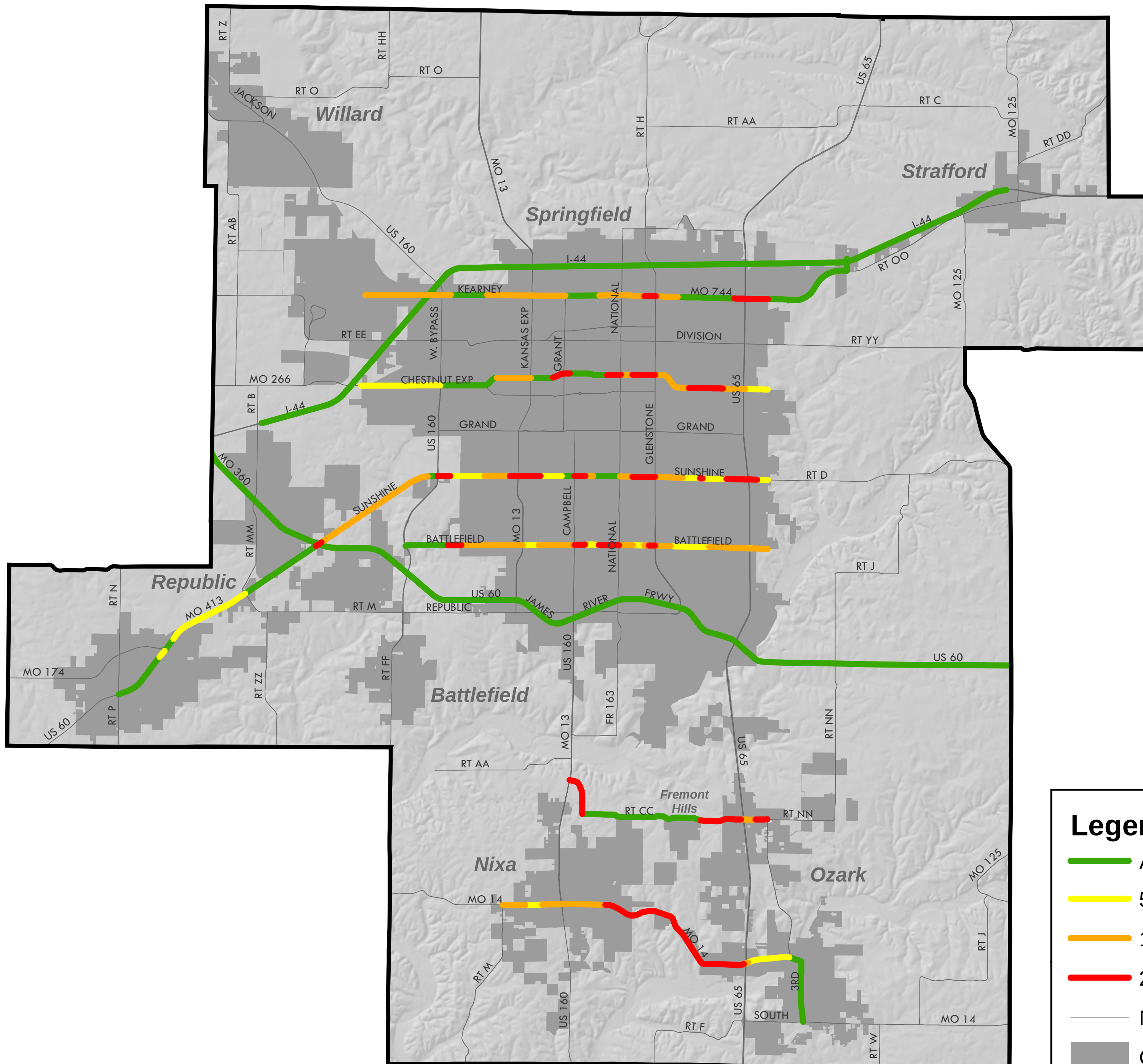
Source: CJW Transportation Consultants LLC

2005

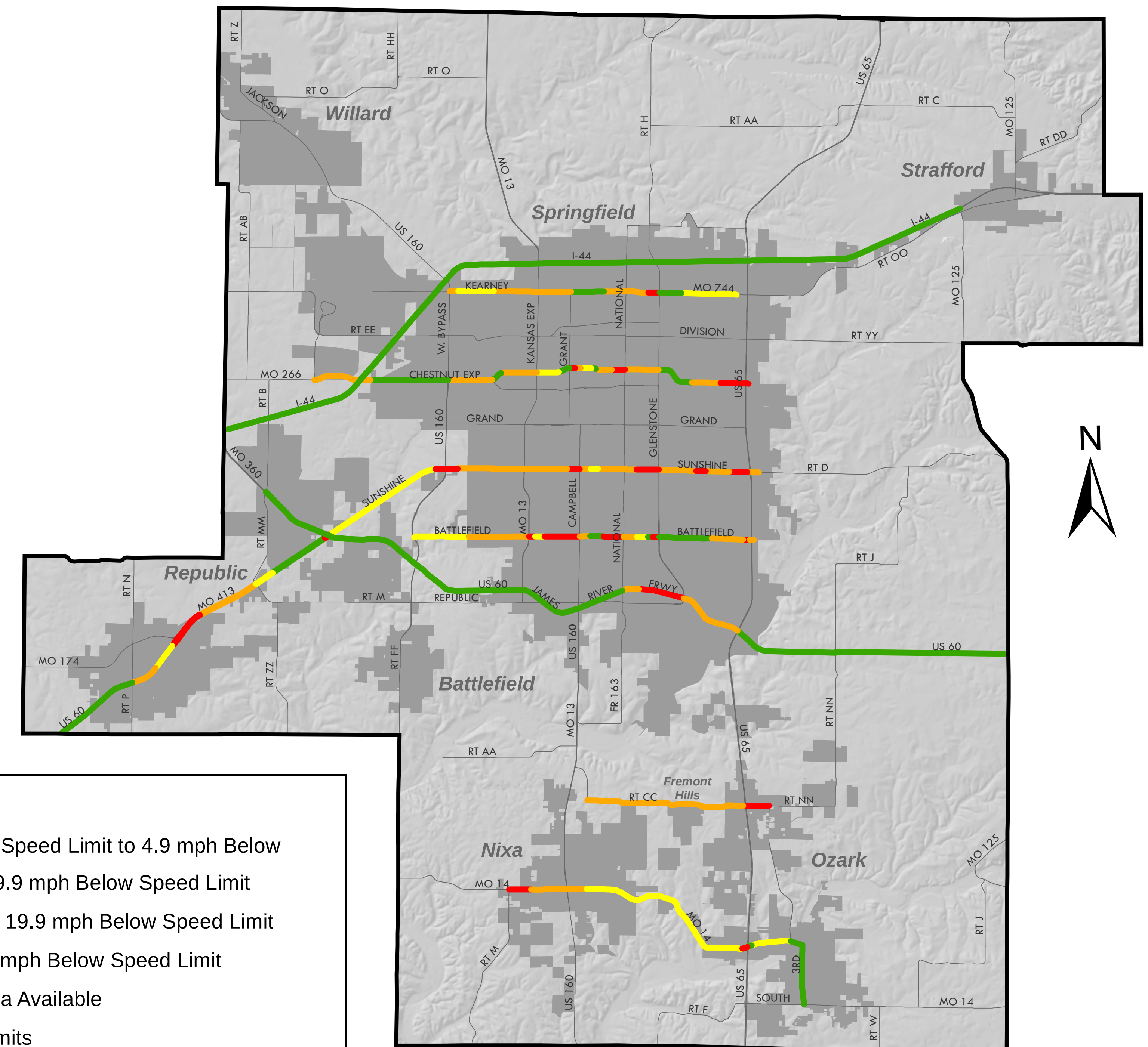
Map 5.5

How badly are travelers delayed?

Average Travel Speeds
PM Peak Hour - Eastbound Lanes



2008



2012

Legend
- Above Speed Limit to 4.9 mph Below
- 5.0 to 9.9 mph Below Speed Limit
- 10.0 to 19.9 mph Below Speed Limit
- 20.0 + mph Below Speed Limit
- No Data Available
- City Limits
- MPO Area

Source: CJW Transportation Consultants LLC

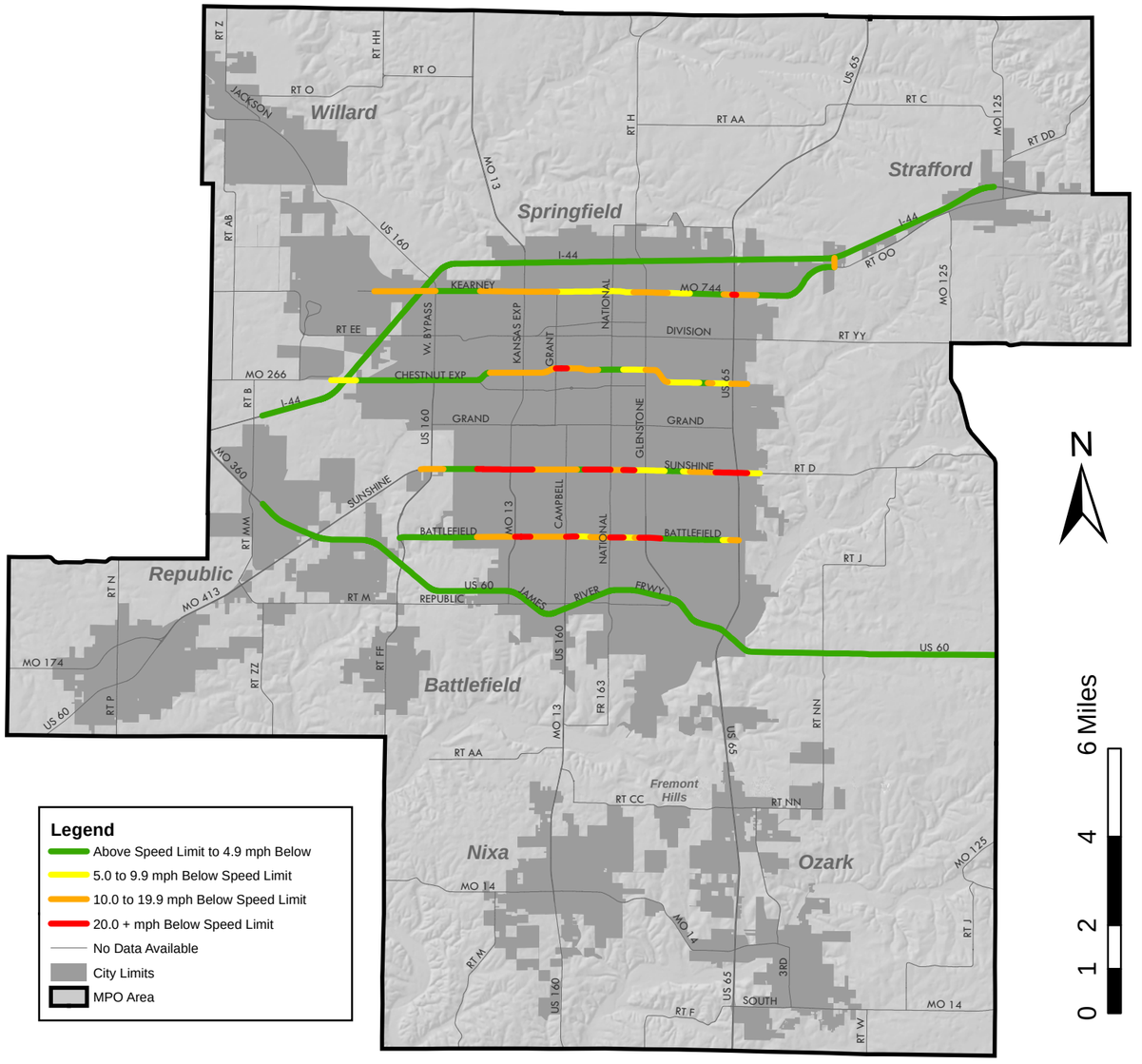
OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

How badly are travelers delayed?

Map 5.5

Average Travel Speeds
PM Peak Hour - Eastbound Lanes

Average Travel Speeds
PM Peak Hour - Westbound Lanes



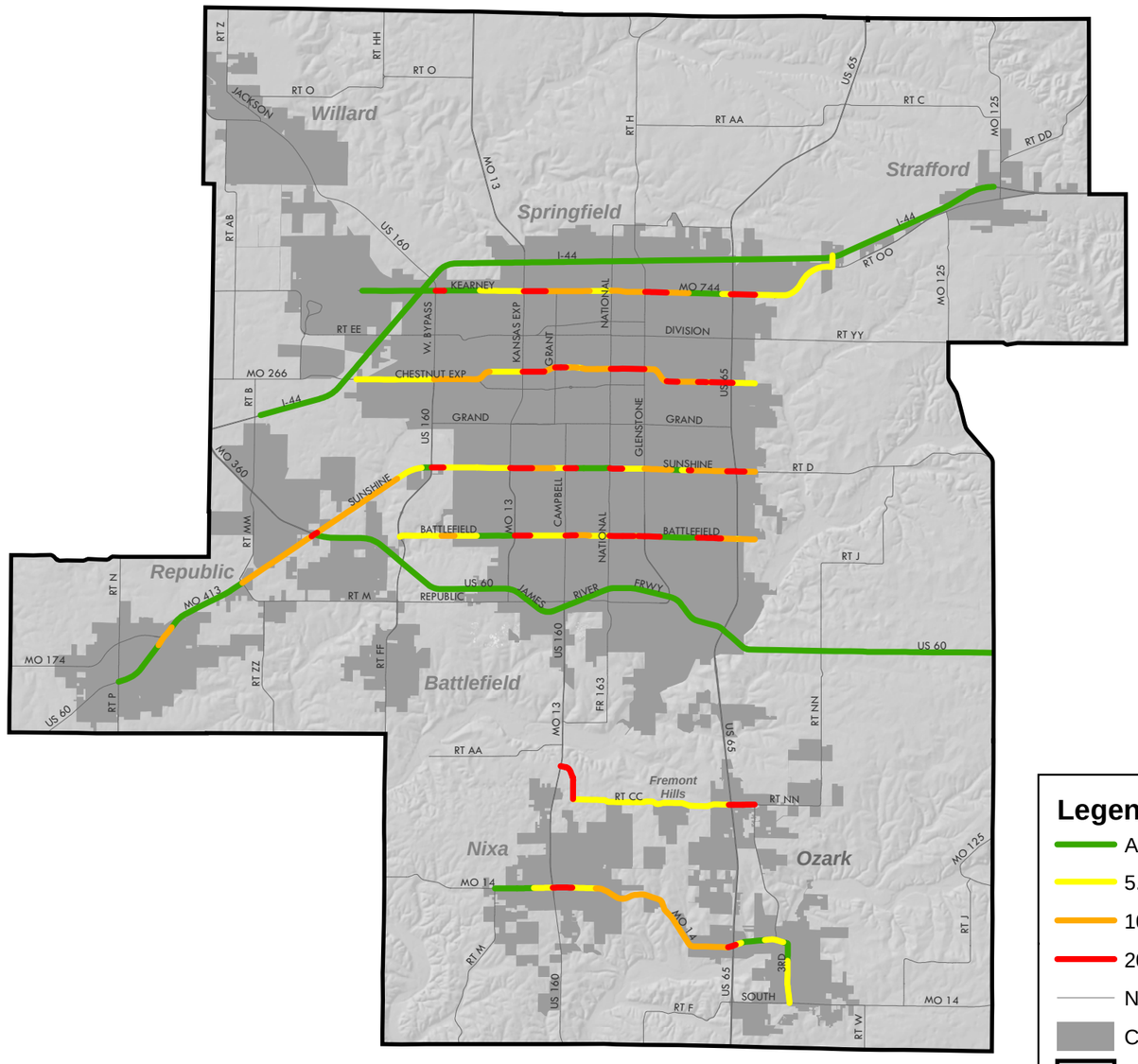
Source: CJW Transportation Consultants LLC

2005

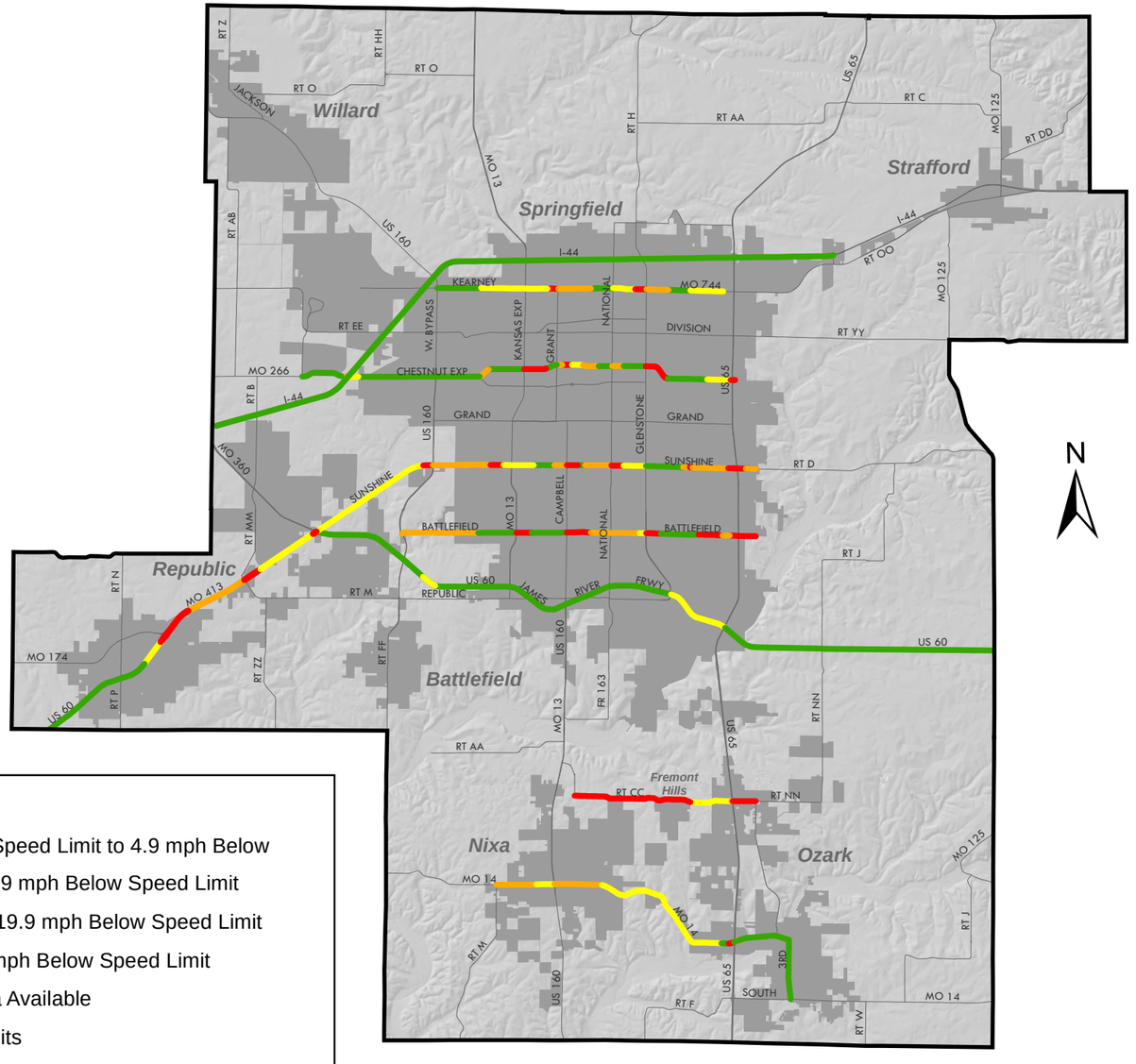
Map 5.6

How badly are travelers delayed?

Average Travel Speeds
PM Peak Hour - Westbound Lanes



2008



2012

N

Legend

- Above Speed Limit to 4.9 mph Below
- 5.0 to 9.9 mph Below Speed Limit
- 10.0 to 19.9 mph Below Speed Limit
- 20.0 + mph Below Speed Limit
- No Data Available
- City Limits
- MPO Area

Source: CJW Transportation Consultants LLC

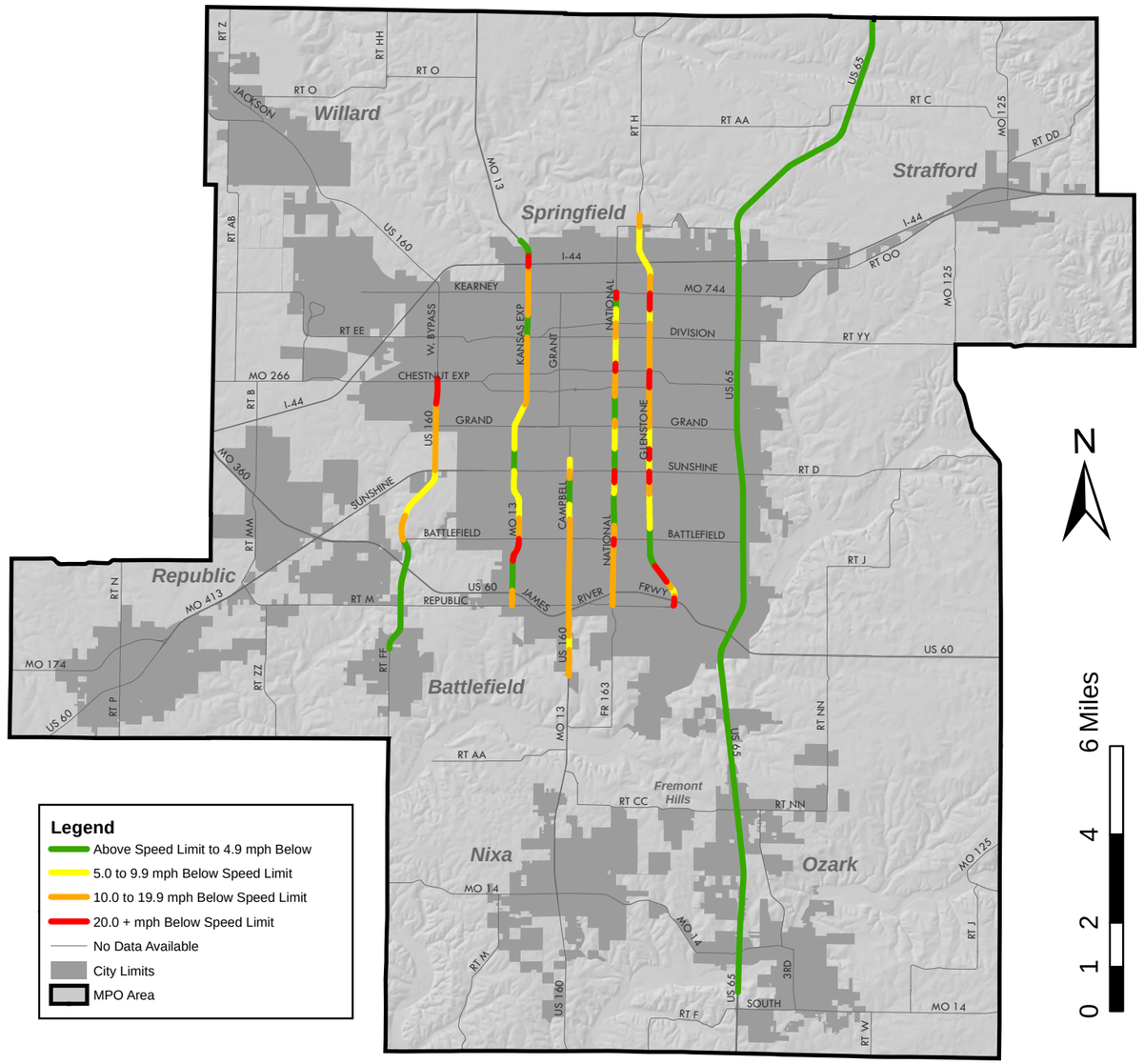
OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

How badly are travelers delayed?

Map 5.6

Average Travel Speeds
PM Peak Hour - Westbound Lanes

Average Travel Speeds
PM Peak Hour - Northbound Lanes



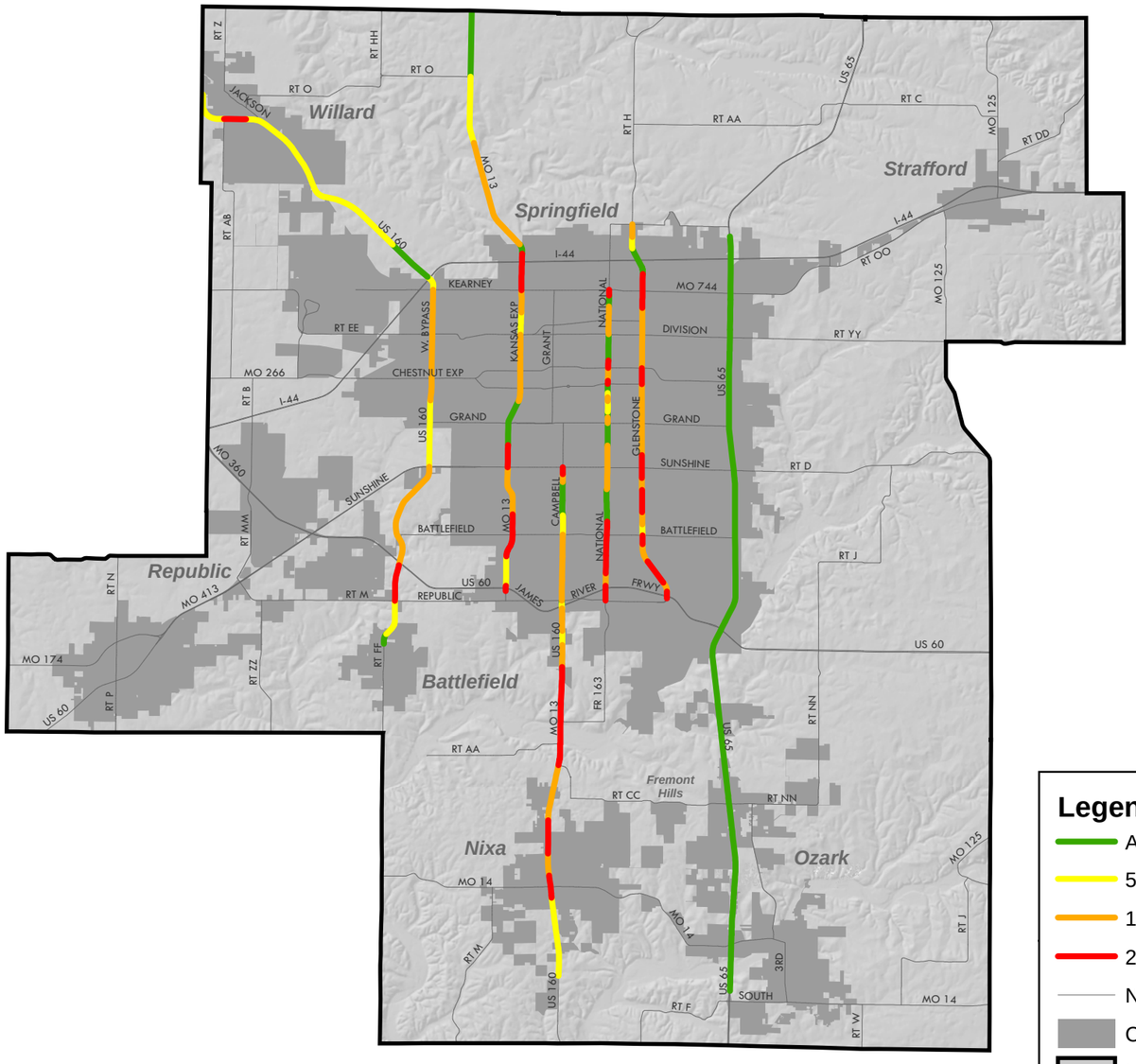
Source: CJW Transportation Consultants LLC

2005

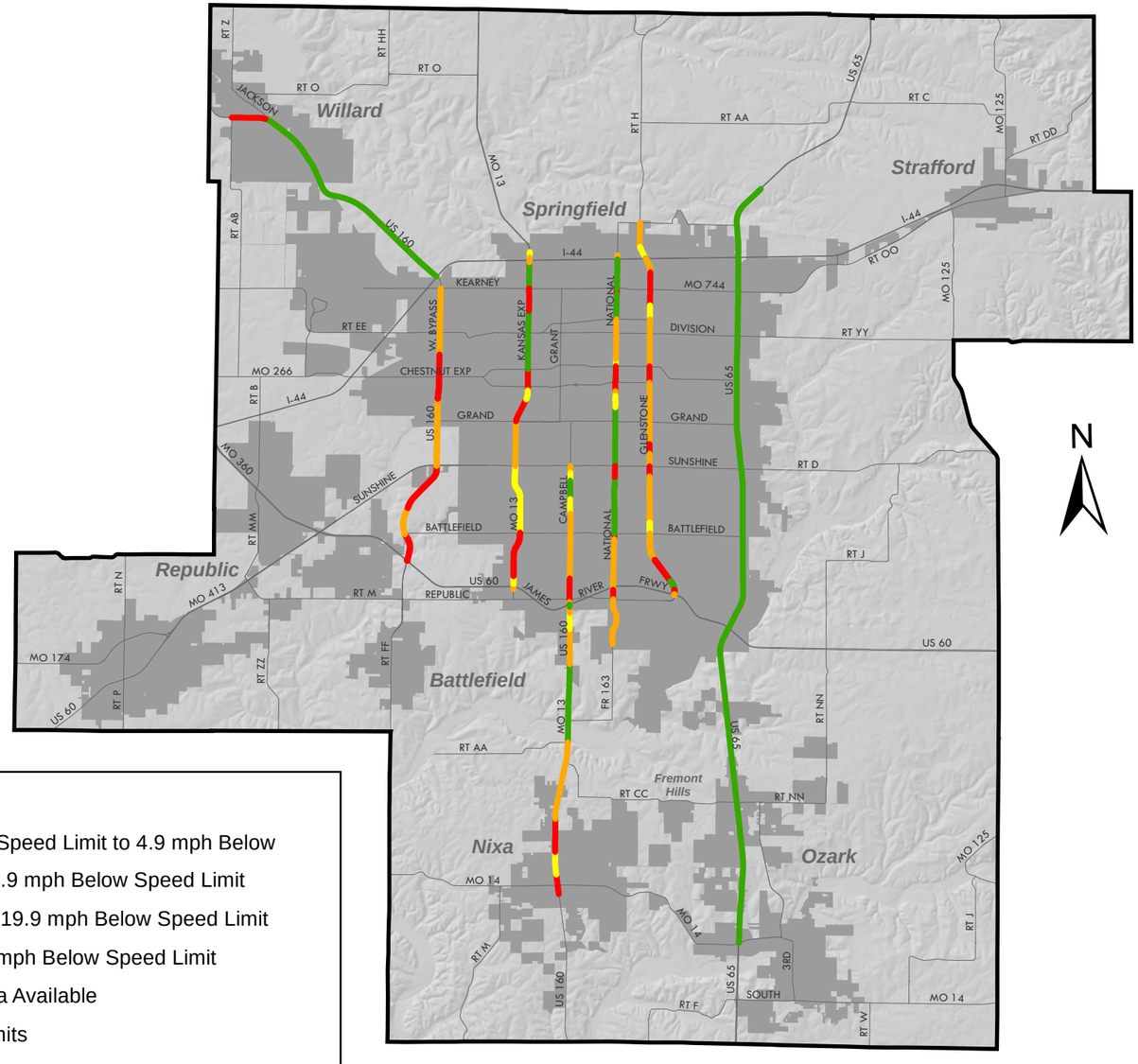
Map 5.7

How badly are travelers delayed?

Average Travel Speeds
PM Peak Hour - Northbound Lanes



2008



2012

N

Legend

- Above Speed Limit to 4.9 mph Below
- 5.0 to 9.9 mph Below Speed Limit
- 10.0 to 19.9 mph Below Speed Limit
- 20.0 + mph Below Speed Limit
- No Data Available
- City Limits
- MPO Area

Source: CJW Transportation Consultants LLC

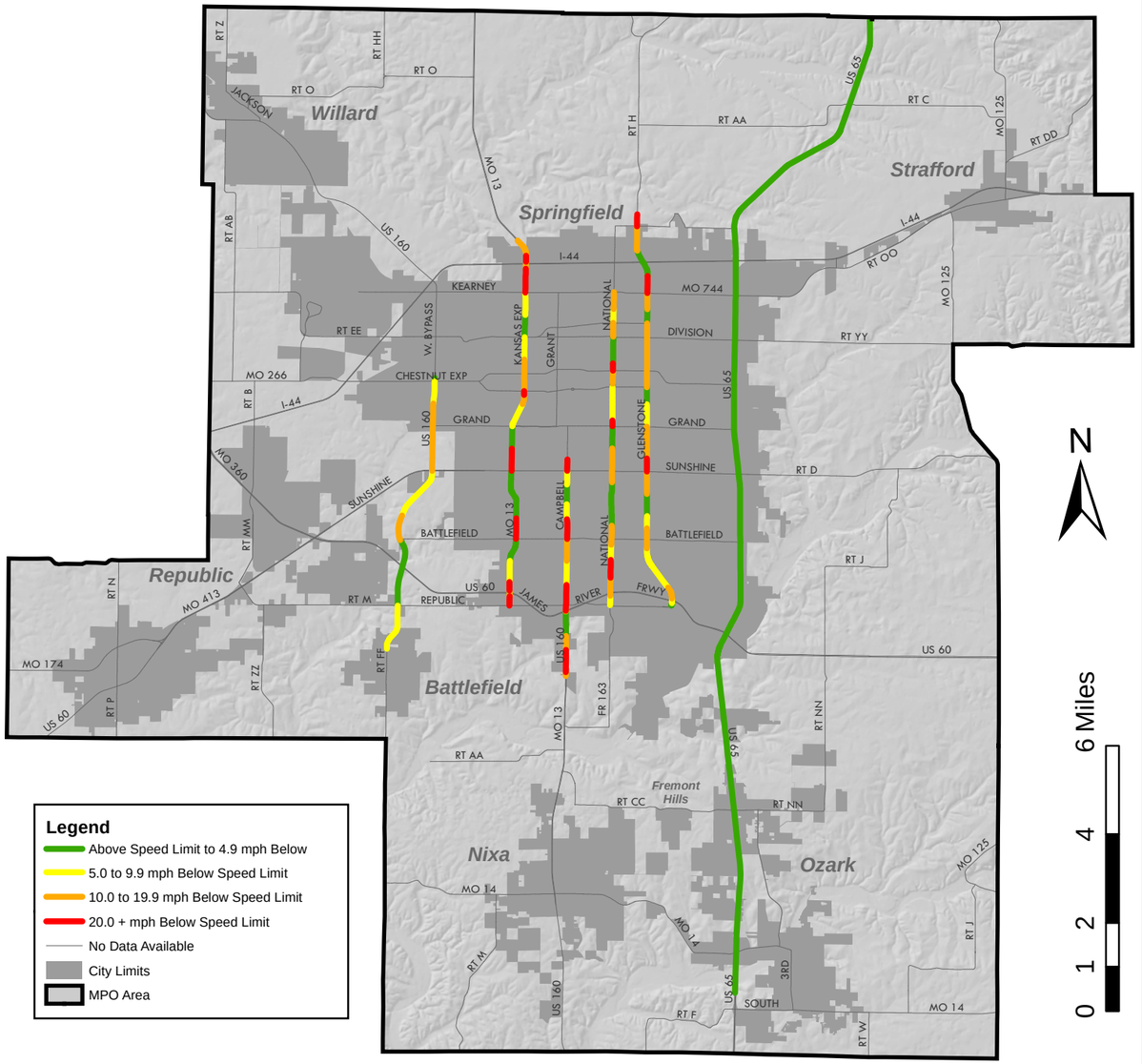
OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

How badly are travelers delayed?

Map 5.7

Average Travel Speeds
PM Peak Hour - Northbound Lanes

Average Travel Speeds
PM Peak Hour - Southbound Lanes



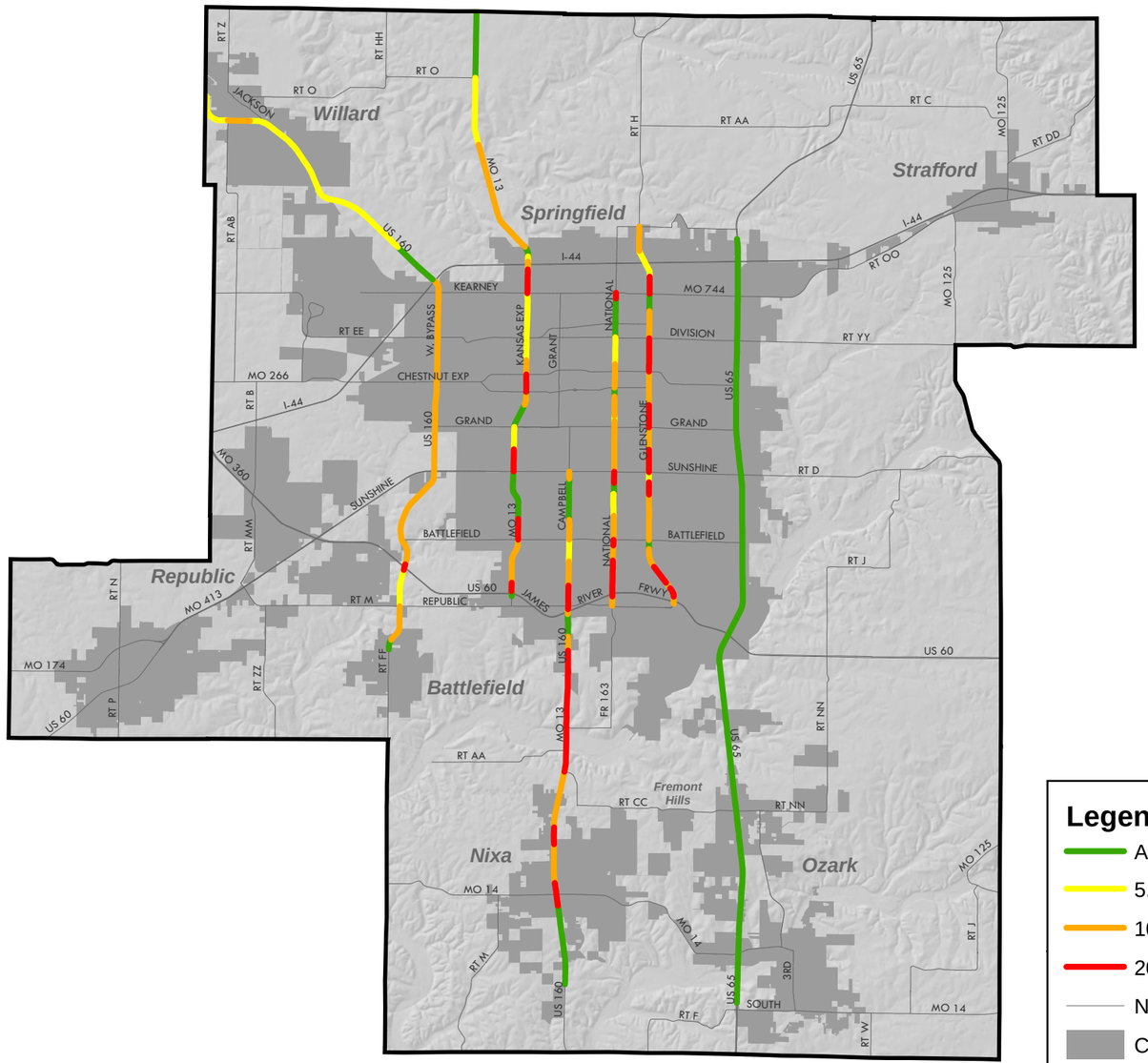
Source: CJW Transportation Consultants LLC

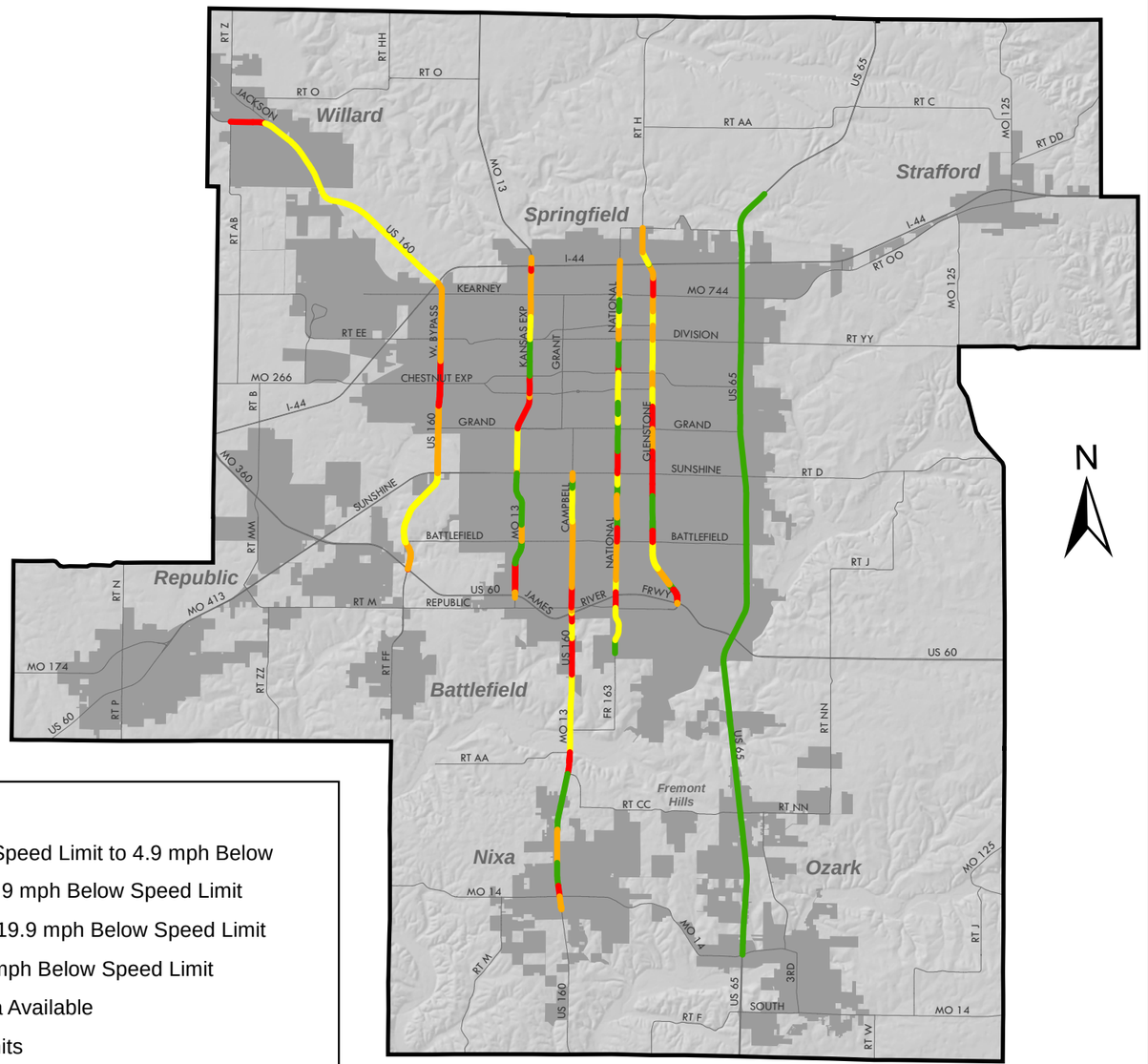
2005

Map 5.8

How badly are travelers delayed?

Average Travel Speeds
PM Peak Hour - Southbound Lanes





N

Legend

- Above Speed Limit to 4.9 mph Below
- 5.0 to 9.9 mph Below Speed Limit
- 10.0 to 19.9 mph Below Speed Limit
- 20.0 + mph Below Speed Limit
- No Data Available
- City Limits
- MPO Area

2008

2012

Source: CJW Transportation Consultants LLC

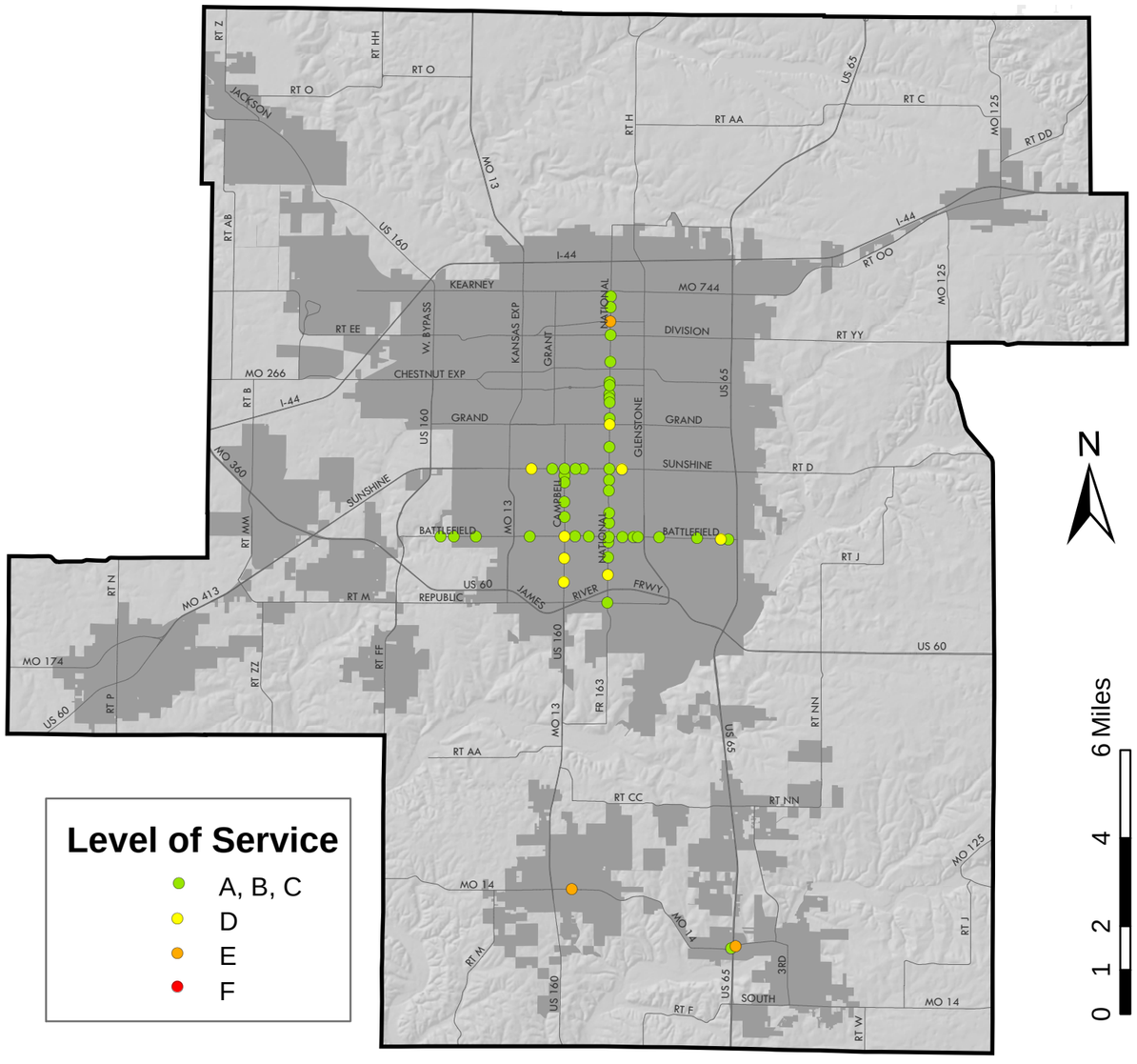
OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

How badly are travelers delayed?

Map 5.8

Average Travel Speeds
PM Peak Hour - Southbound Lanes

Intersection Level of Service
AM Peak



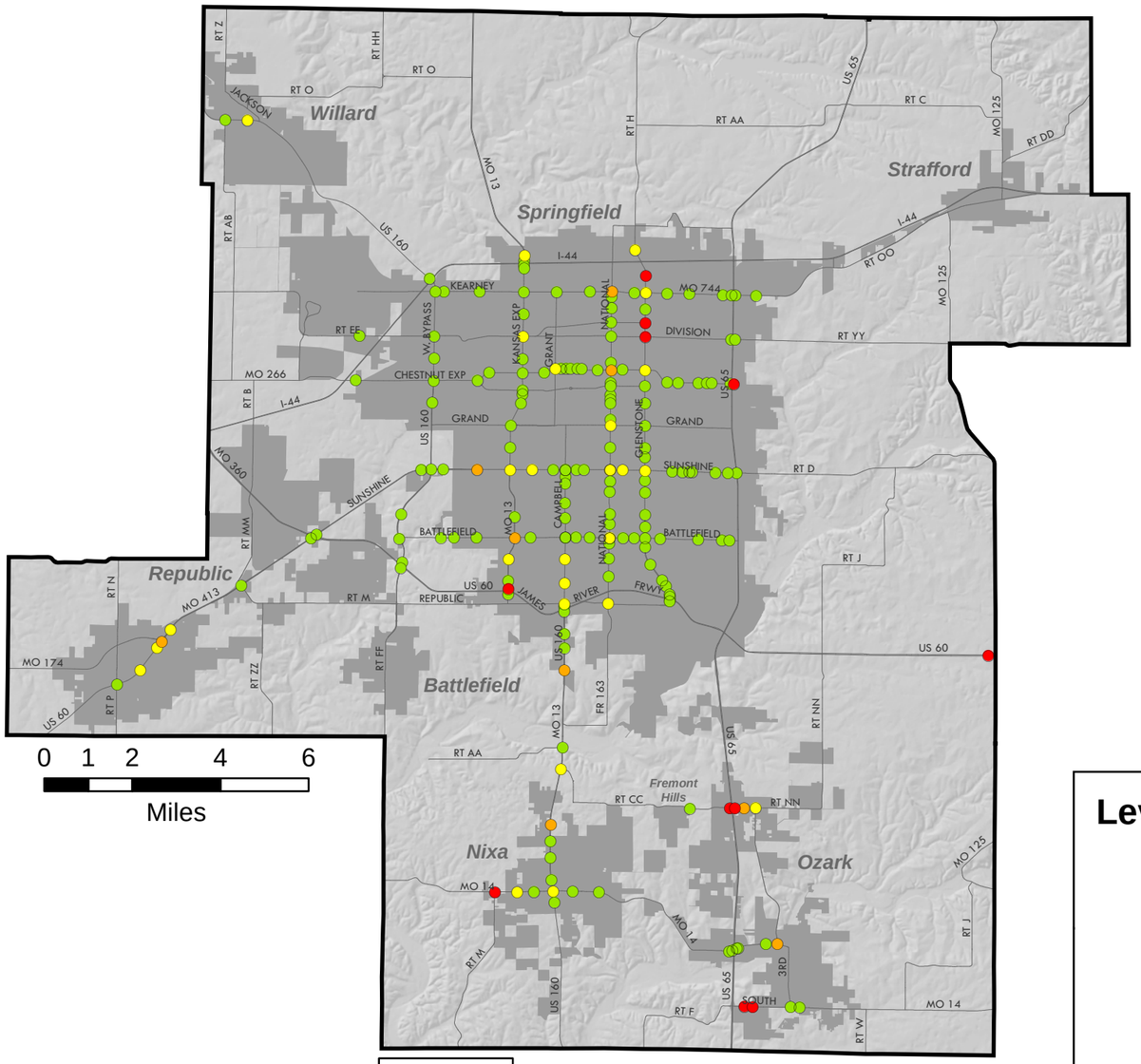
Source: City of Springfield
Missouri Dept. of Transportation

2005

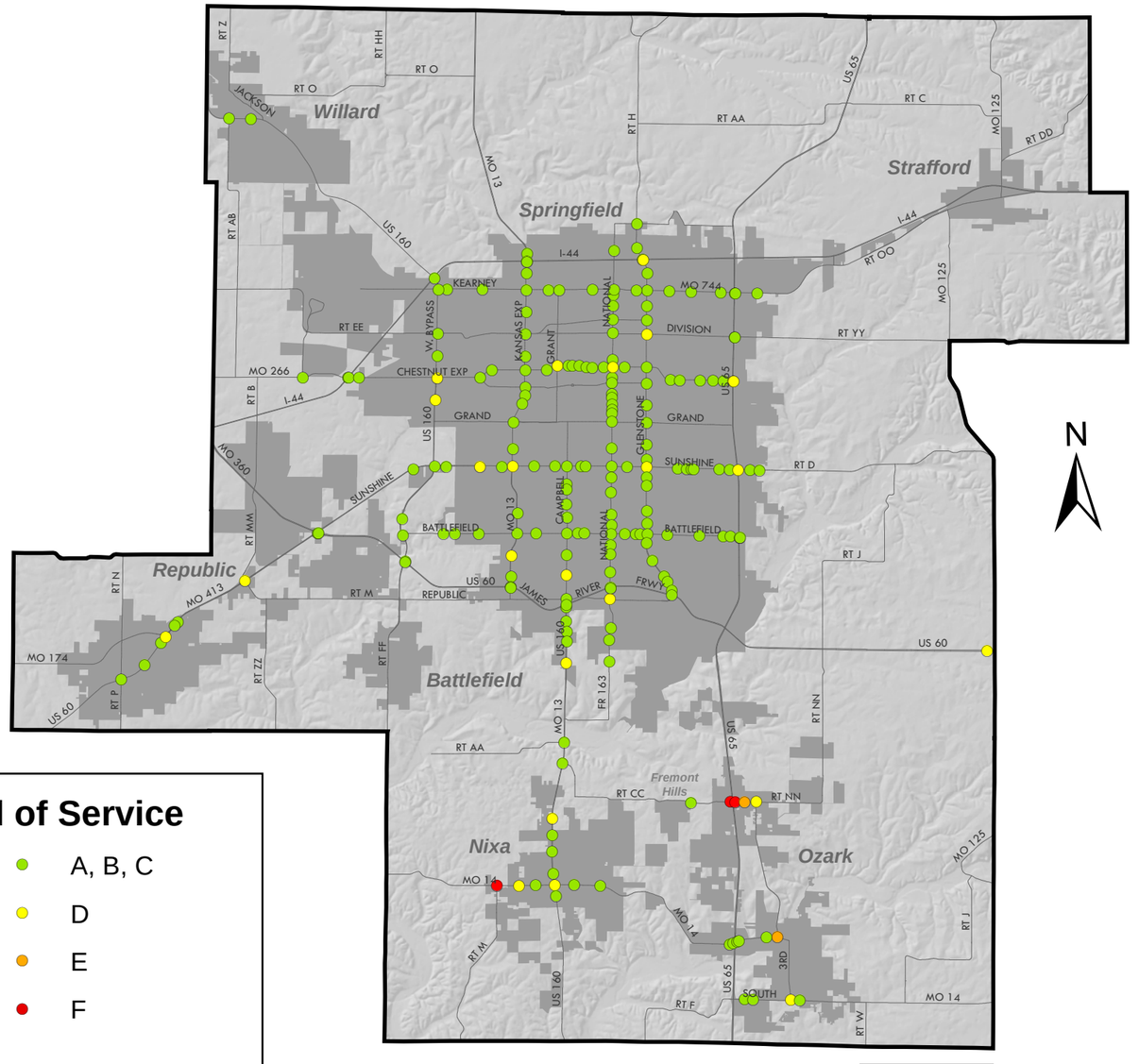
Map 6.1

What impact does intersection/interchange level-of-service play in determining regional congestion problems?

Intersection Level of Service
AM Peak



2008



2012

Level of Service

- A, B, C
- D
- E
- F

Source: City of Springfield
Missouri Dept. of Transportation

OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

What impact does intersection/interchange level-of-service play in determining regional congestion problems?

Map 6.1

Intersection Level of Service
AM Peak

Intersection Level of Service
AM Peak

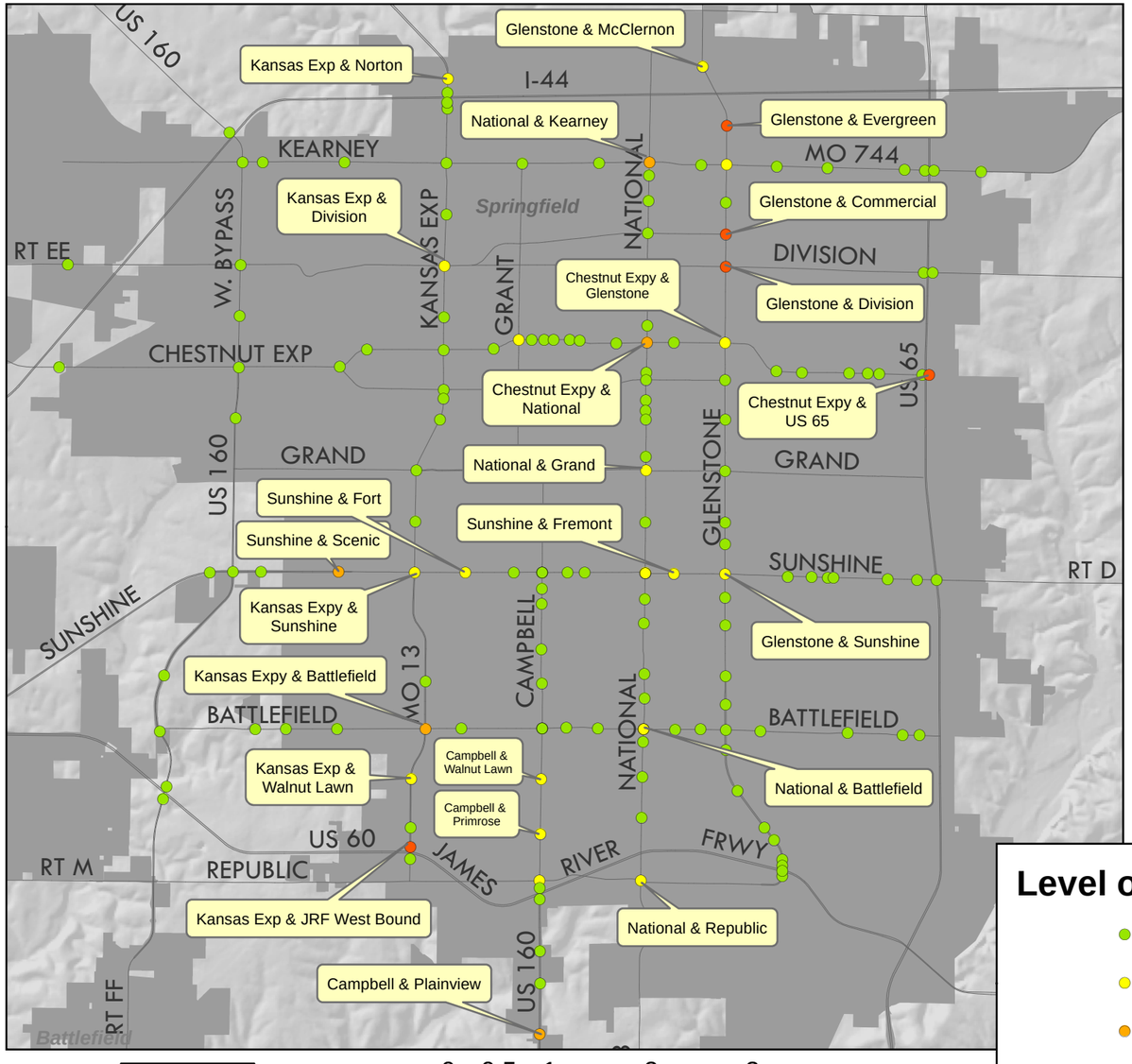
2005

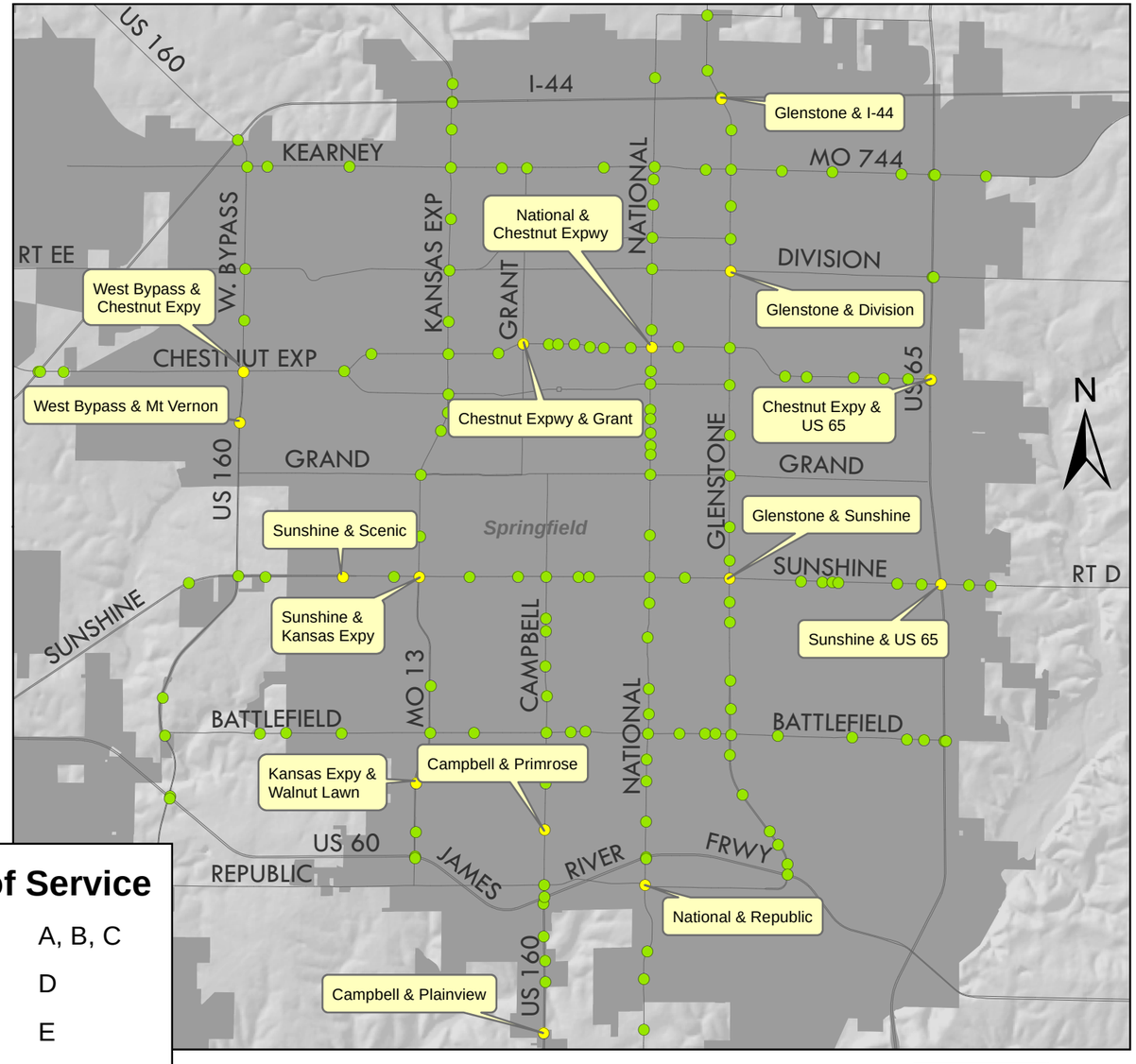
Source: City of Springfield
Missouri Dept. of Transportation

Map 6.2

What impact does intersection/interchange level-of-service play in determining regional congestion problems?

Intersection Level of Service
AM Peak





Level of Service

- A, B, C
- D
- E
- F

0 0.5 1 2 3
Miles

2008

2012

Source: City of Springfield
Missouri Dept. of Transportation

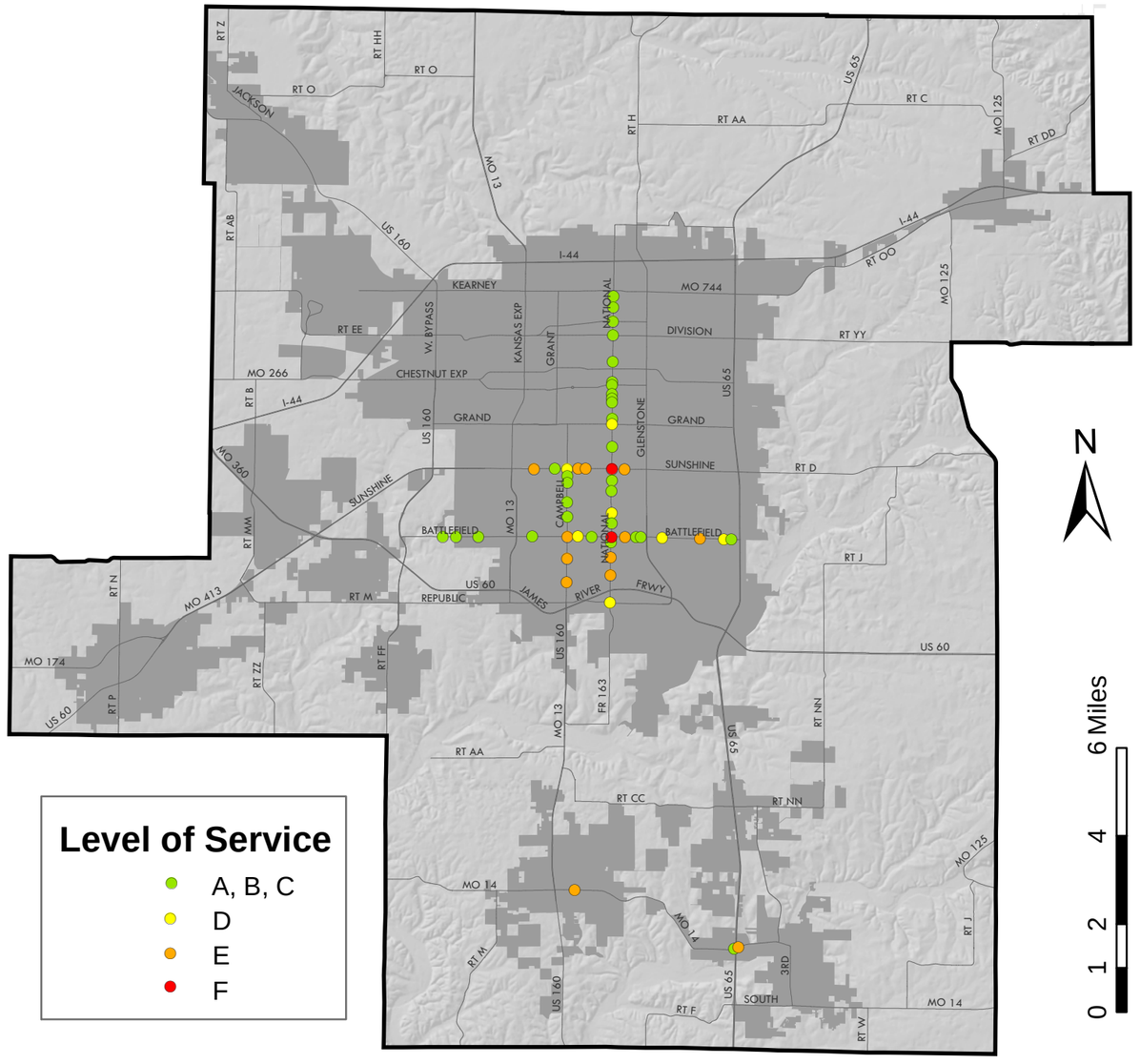
OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

What impact does intersection/interchange level-of-service play in determining regional congestion problems?

Map 6.2

Intersection Level of Service
AM Peak

Intersection Level of Service
PM Peak



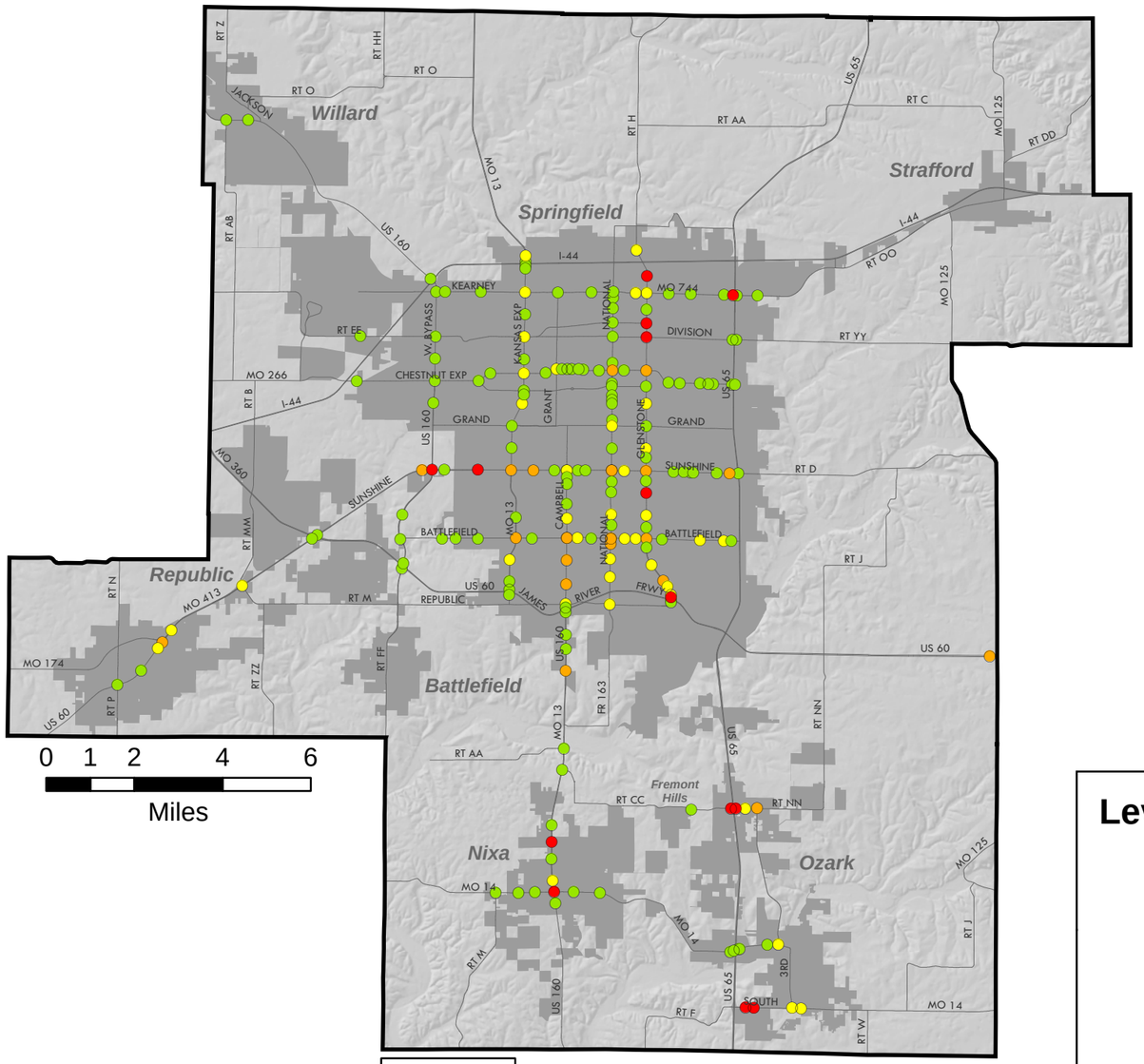
Source: City of Springfield
Missouri Dept. of Transportation

2005

Map 6.3

What impact does intersection/interchange level-of-service play in determining regional congestion problems?

Intersection Level of Service
PM Peak



0 1 2 4 6

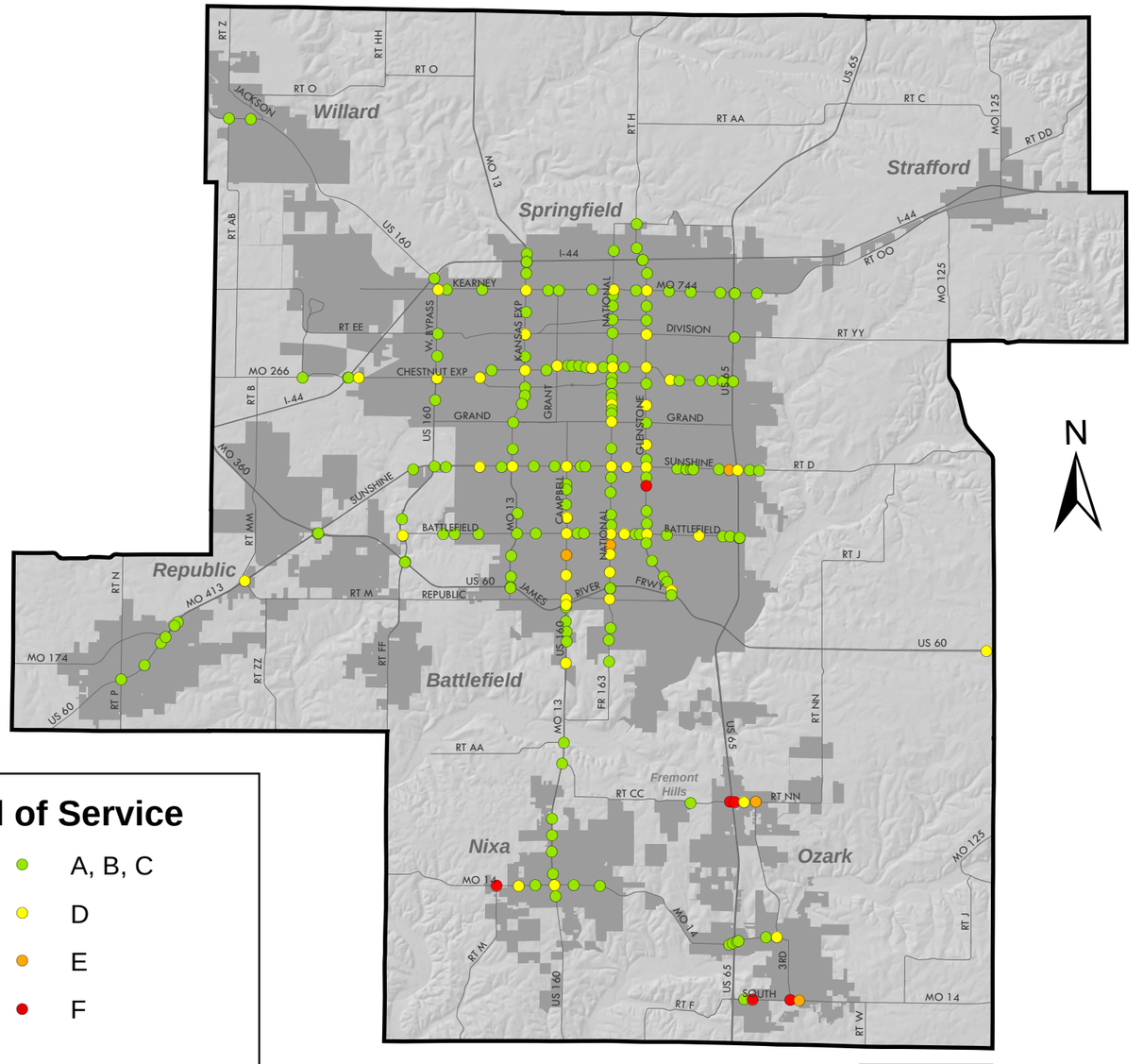
Miles

Source: City of Springfield
Missouri Dept. of Transportation

2008

Level of Service

- A, B, C
- D
- E
- F



N

2012

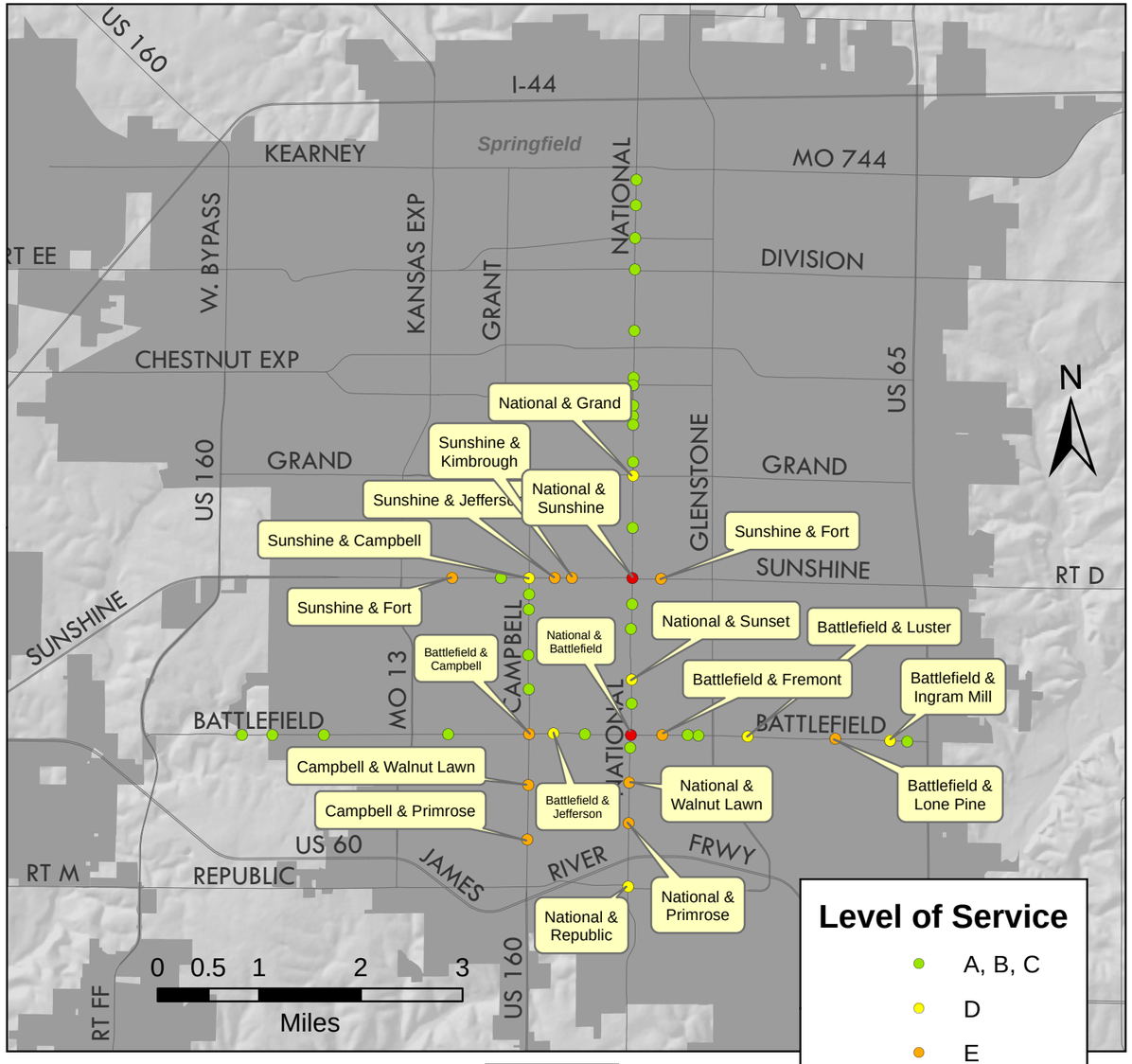
OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

What impact does intersection/interchange level-of-service play in determining regional congestion problems?

Map 6.3

Intersection Level of Service
PM Peak

Intersection Level of Service
PM Peak



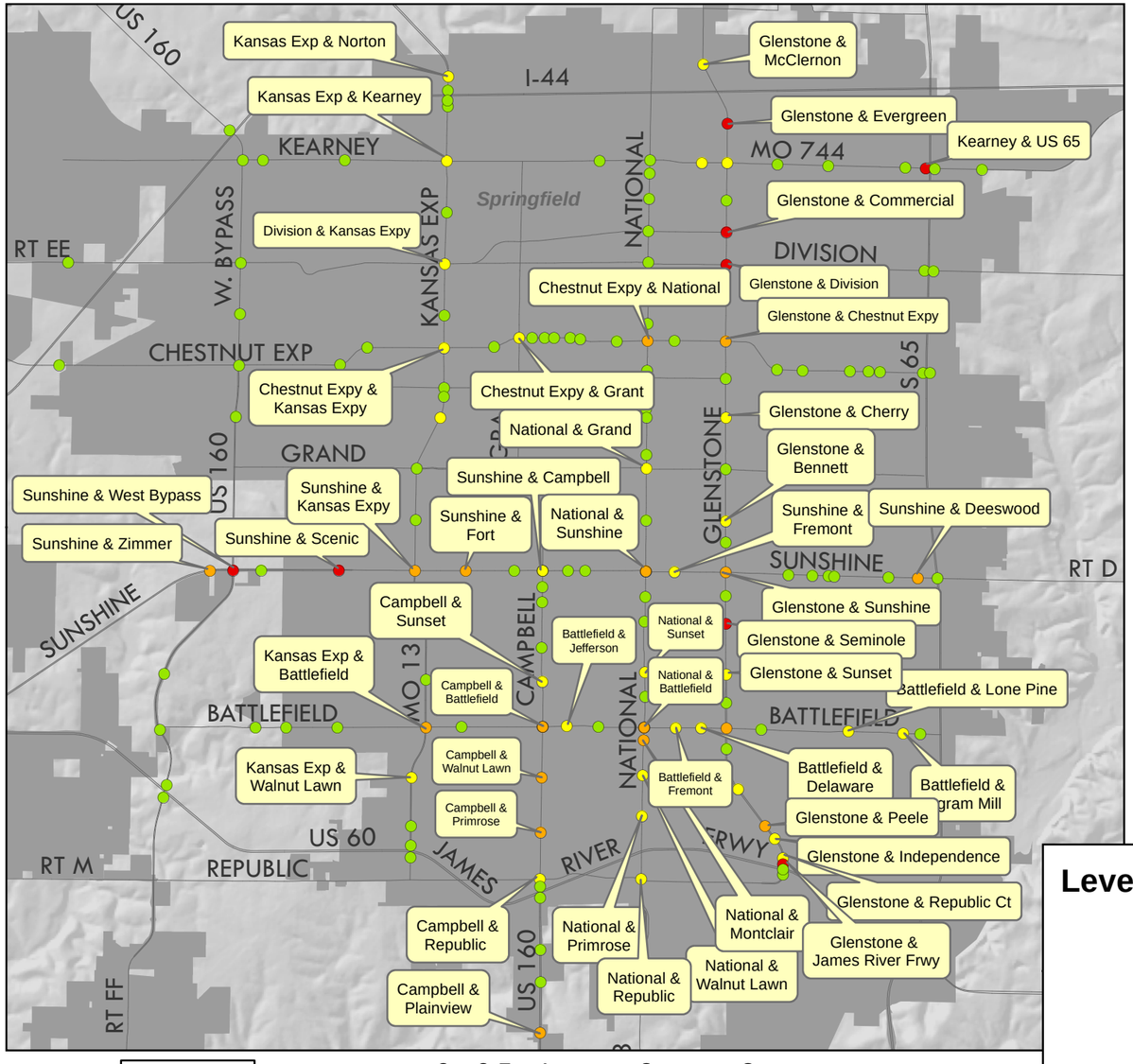
2005

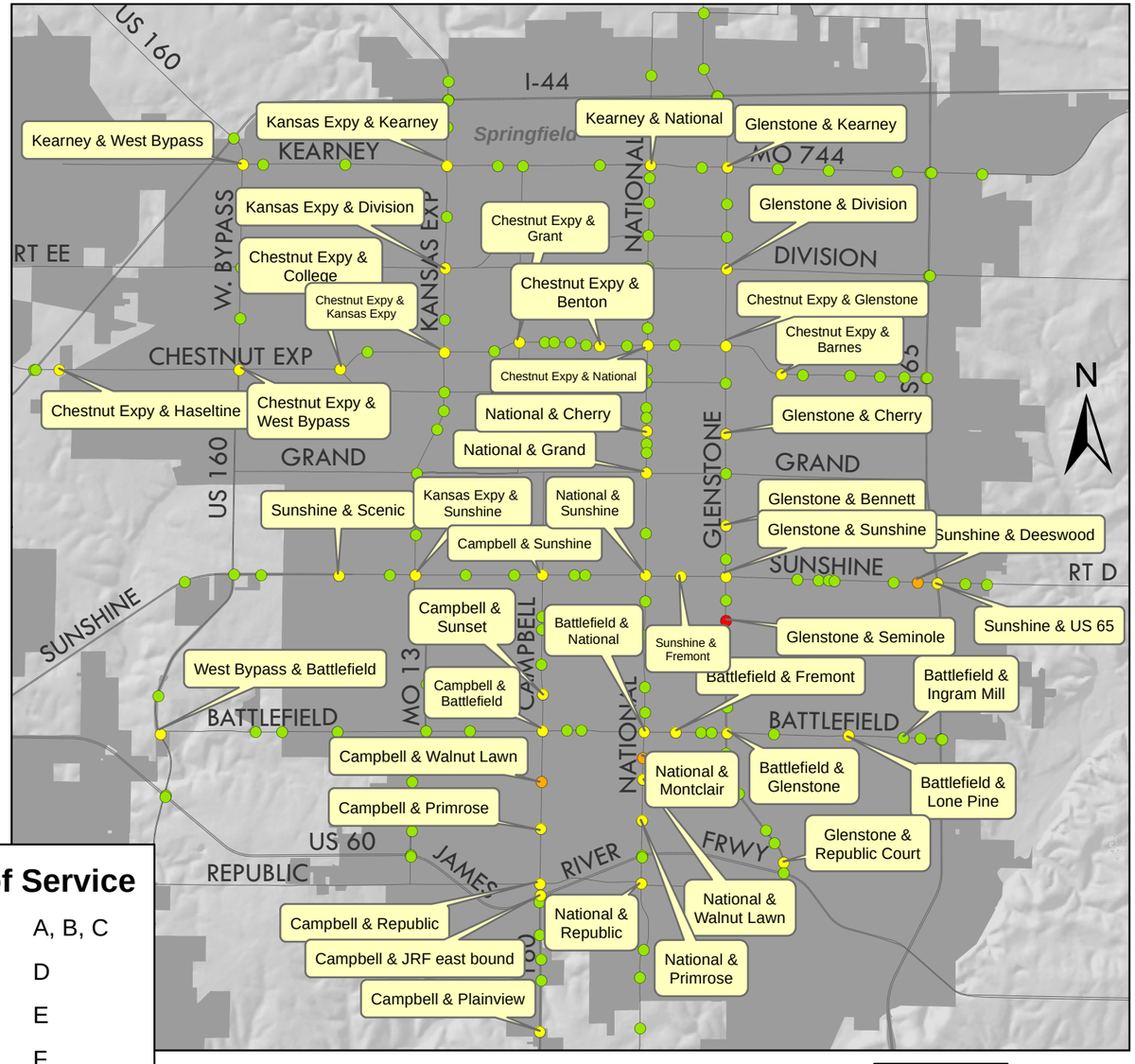
Source: City of Springfield
Missouri Dept. of Transportation

Map 6.4

What impact does intersection/interchange level-of-service play in determining regional congestion problems?

Intersection Level of Service
PM Peak





Level of Service

- A, B, C
- D
- E
- F

0 0.5 1 2 3

Miles

2008

2012

Source: City of Springfield
Missouri Dept. of Transportation

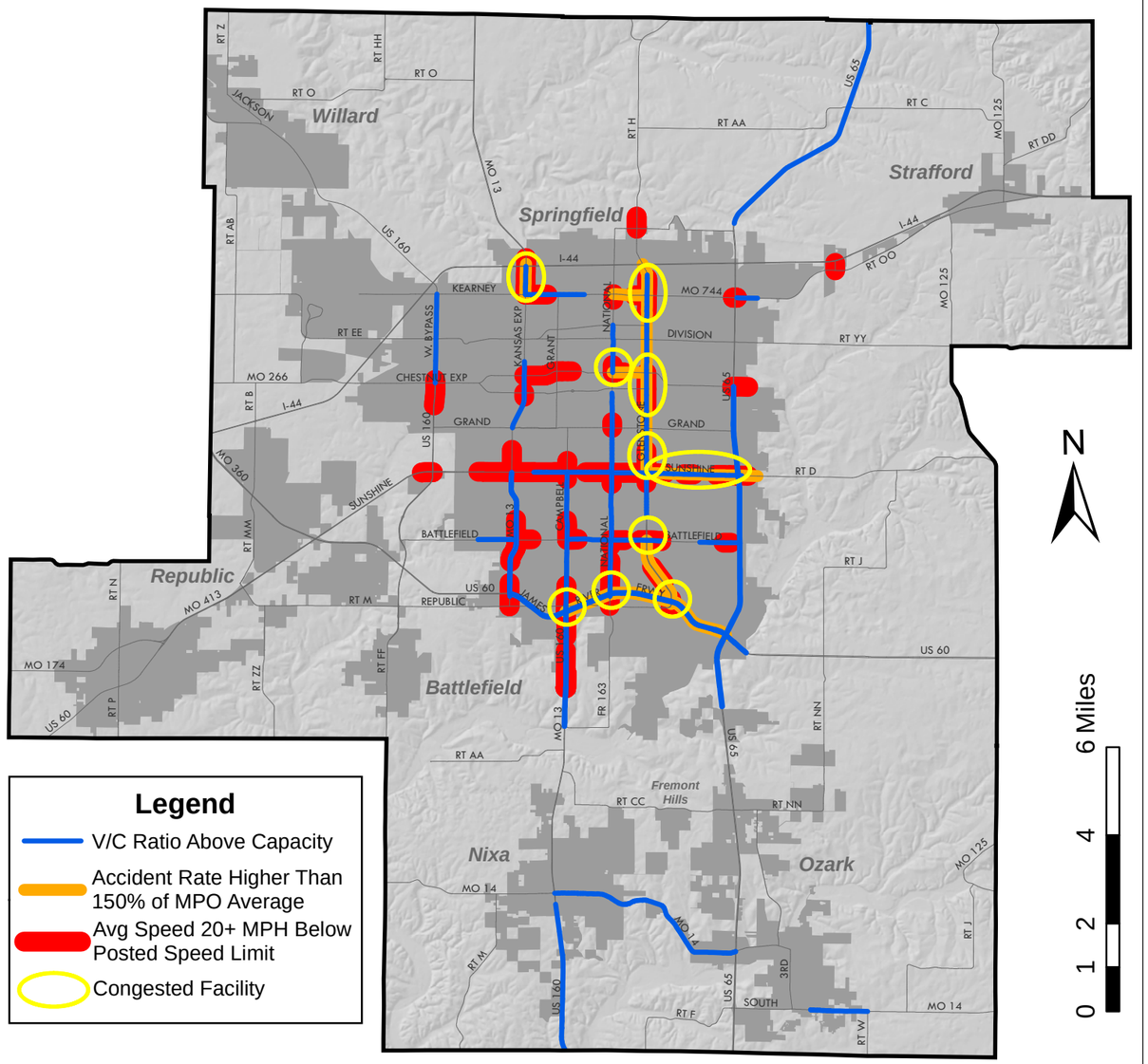
OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

What impact does intersection/interchange level-of-service play in determining regional congestion problems?

Map 6.4

Intersection Level of Service
PM Peak

Congested Facilities I



Legend

- V/C Ratio Above Capacity
- Accident Rate Higher Than 150% of MPO Average
- Avg Speed 20+ MPH Below Posted Speed Limit
- Congested Facility

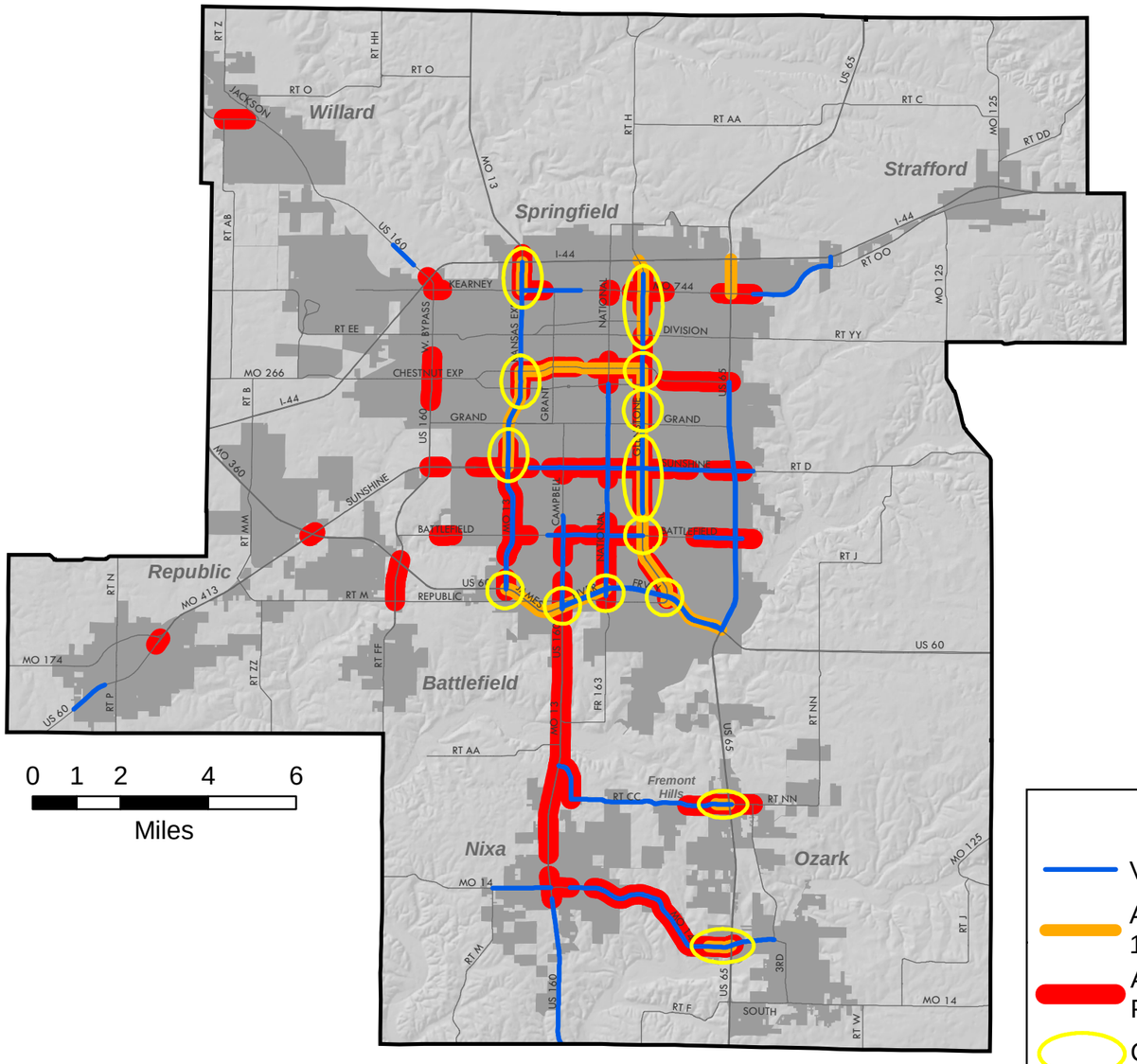
Source: City of Springfield
Missouri Dept. of Transportation
CJW Transportation Consultants LLC

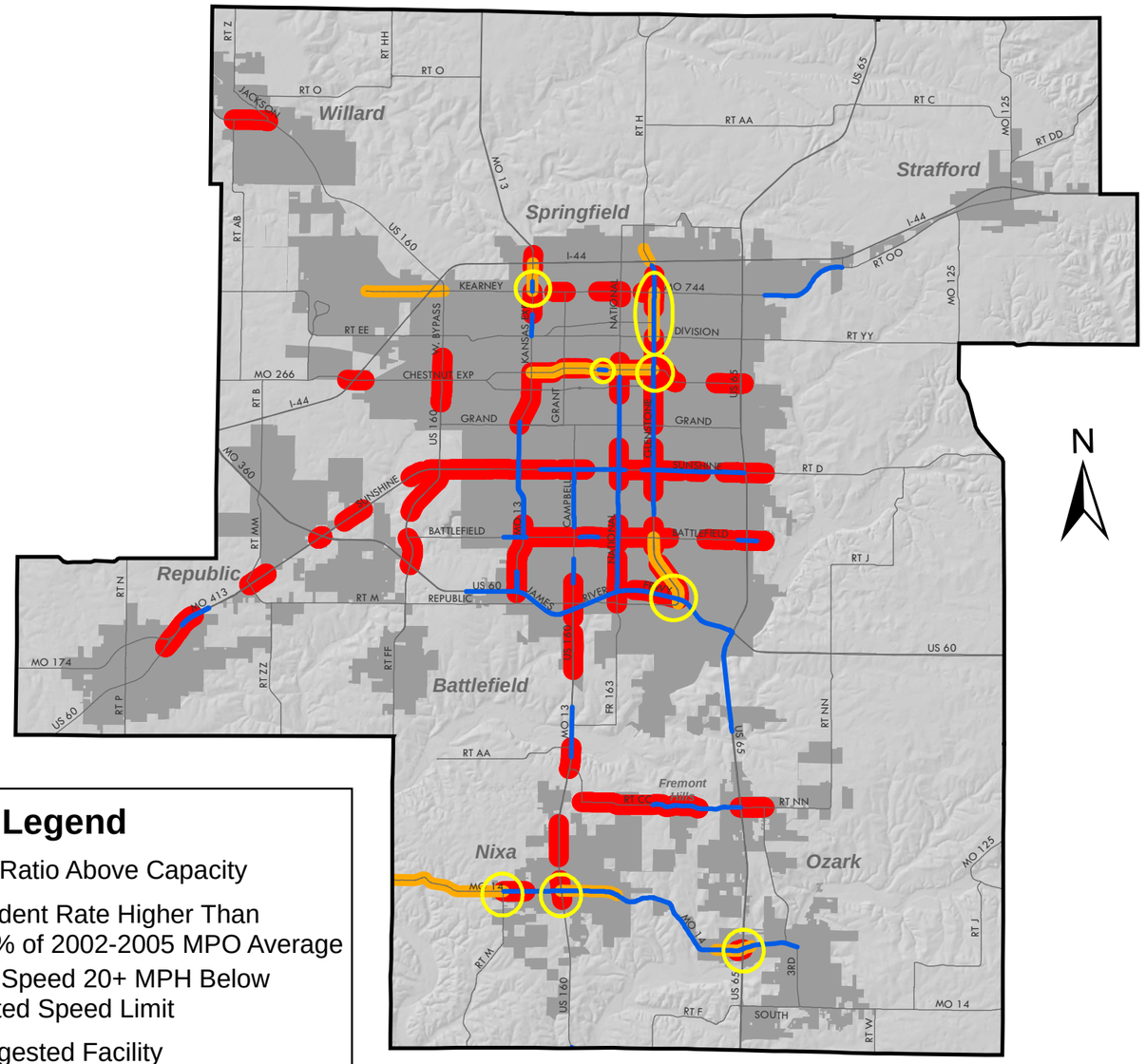
2005

Map 7.1

Roadways which have a significant travel delay, level of service E+ and high accident rate

Congested Facilities I





Legend

- V/C Ratio Above Capacity
- Accident Rate Higher Than 150% of 2002-2005 MPO Average
- Avg Speed 20+ MPH Below Posted Speed Limit
- Congested Facility

2008

2012

Source: City of Springfield
Missouri Dept. of Transportation
CJW Transportation Consultants LLC

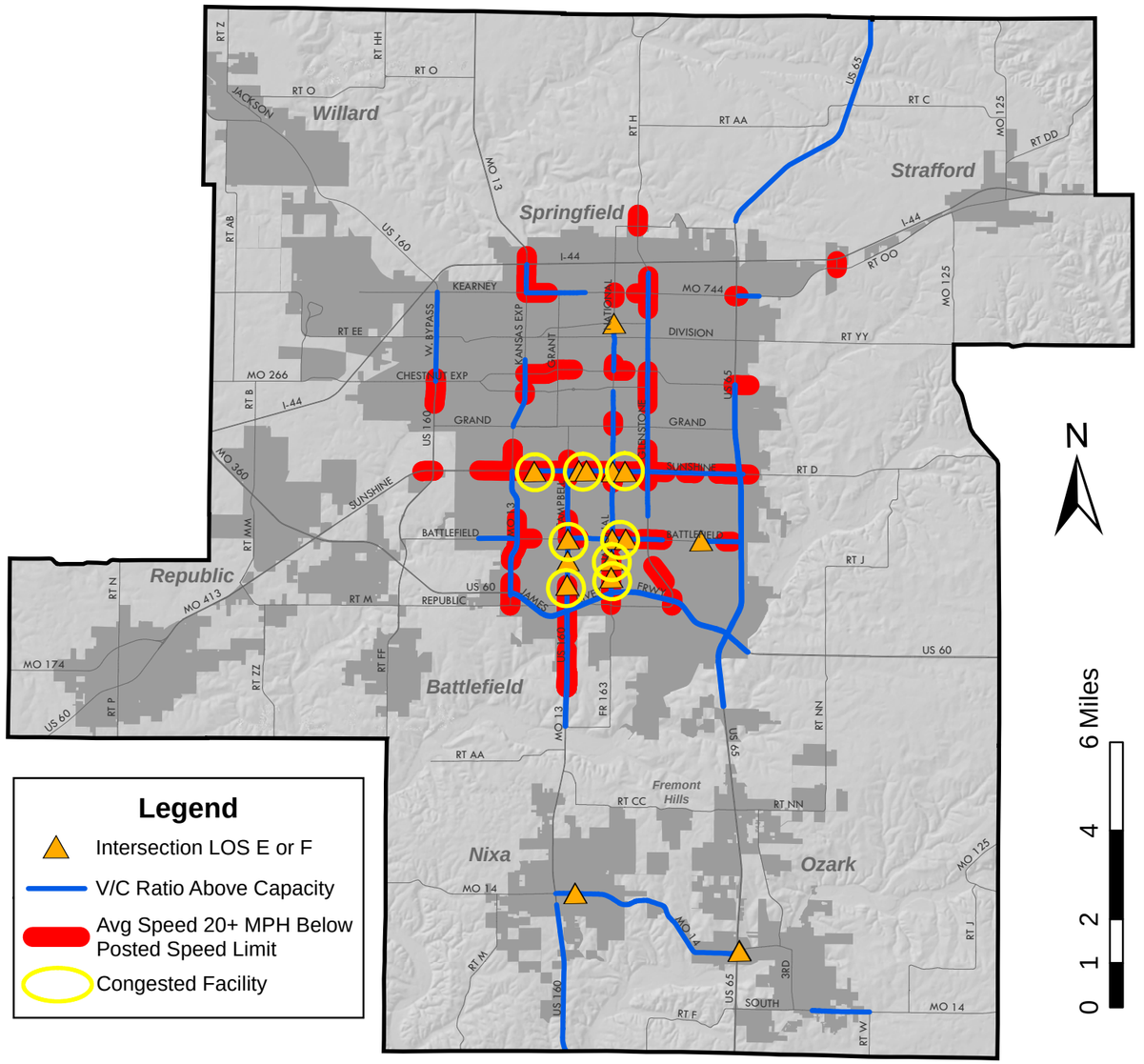
OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

Roadways which have a significant travel delay, level of service E+ and high accident rate

Map 7.1

Congested Facilities I

Congested Facilities II



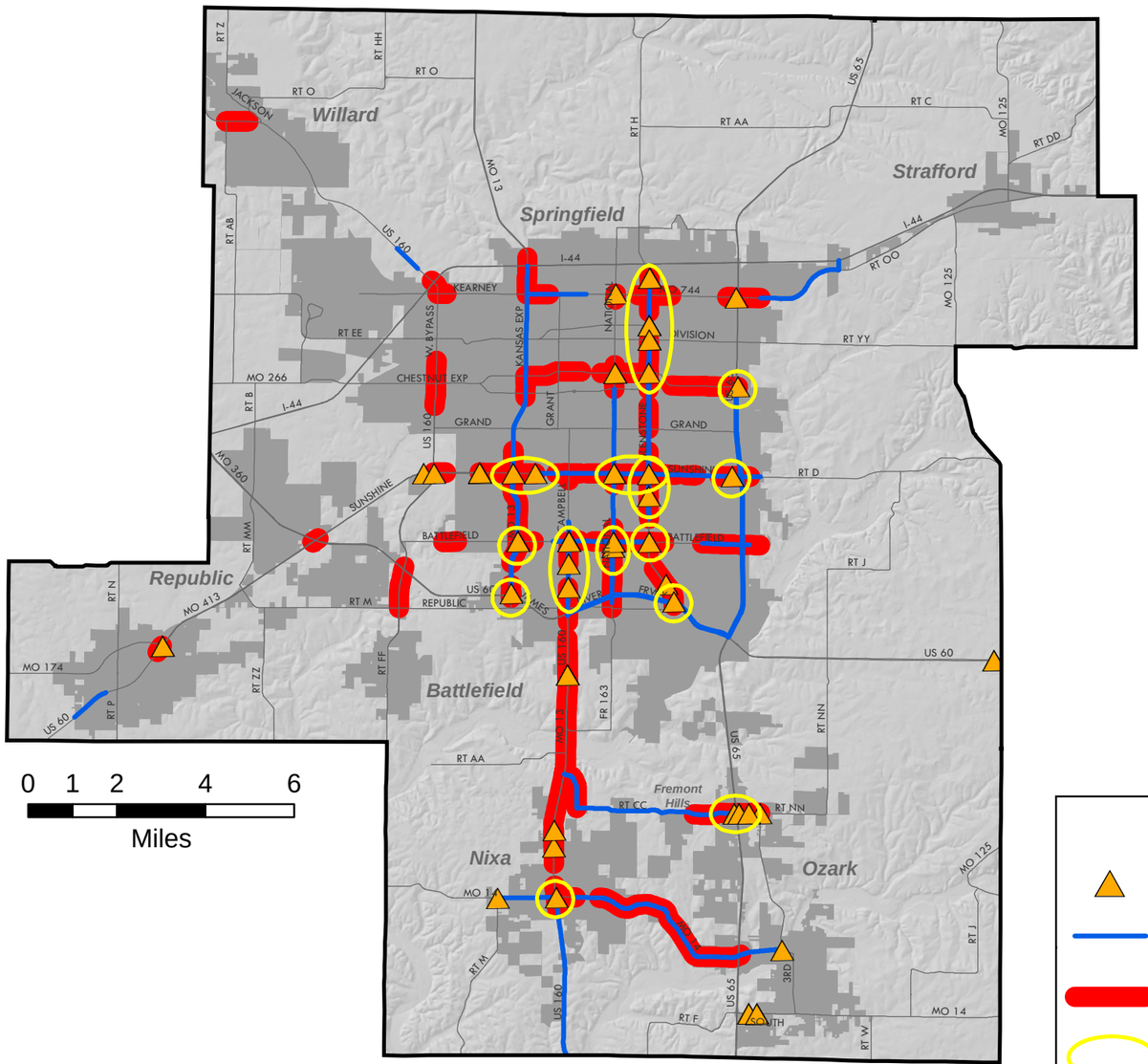
Source: City of Springfield
Missouri Dept. of Transportation
CJW Transportation Consultants LLC

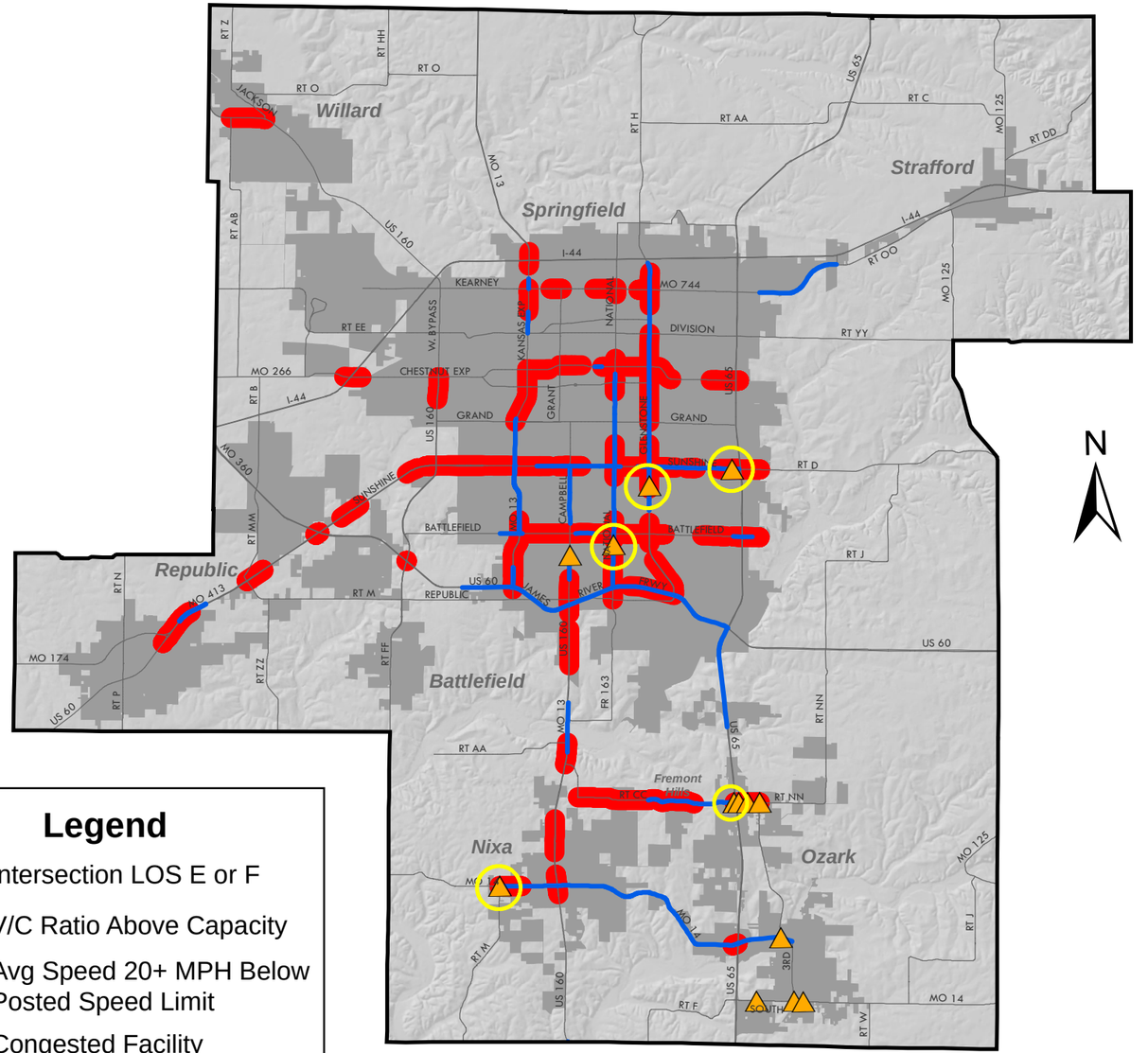
2005

Map 7.2

Roadways which have a significant travel delay, level of service E+ and intersection level of service E+

Congested Facilities II





Legend

- Intersection LOS E or F
- V/C Ratio Above Capacity
- Avg Speed 20+ MPH Below Posted Speed Limit
- Congested Facility

2008

2012

Source: City of Springfield
Missouri Dept. of Transportation
CJW Transportation Consultants LLC

OZARKS TRANSPORTATION ORGANIZATION
A METROPOLITAN PLANNING ORGANIZATION

Roadways which have a significant travel delay, level of service E+ and intersection level of service E+

Map 7.2
Congested Facilities II