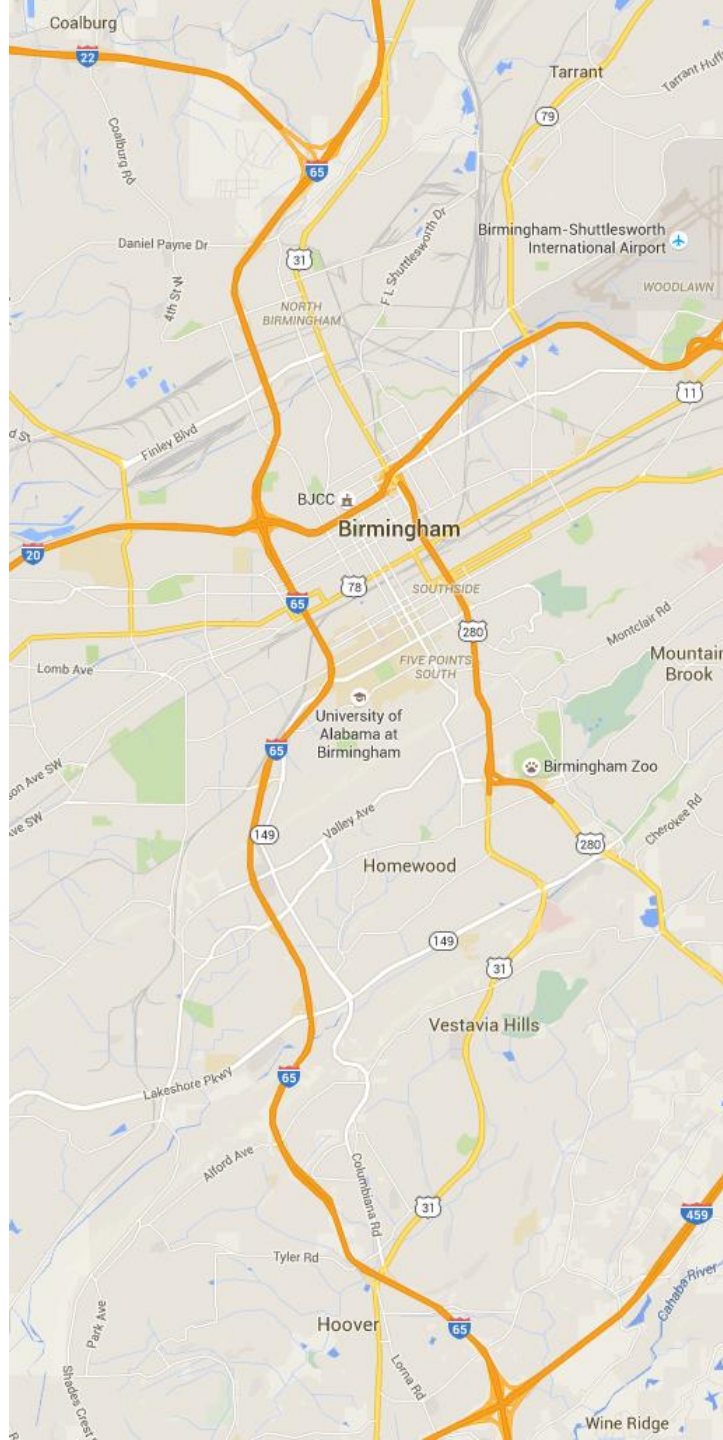


# Quarterly Congestion Report

April 26, 2017



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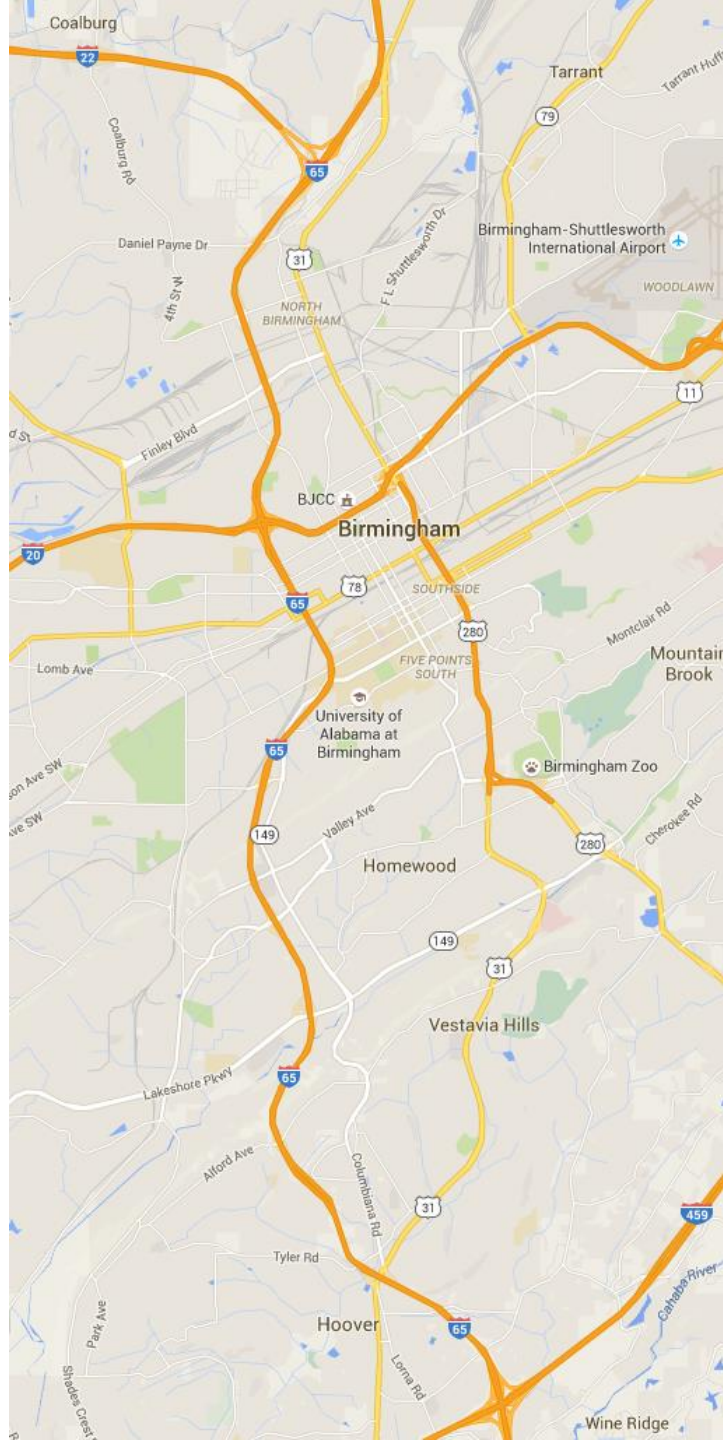
## Travel Time Index

# Travel Time Index

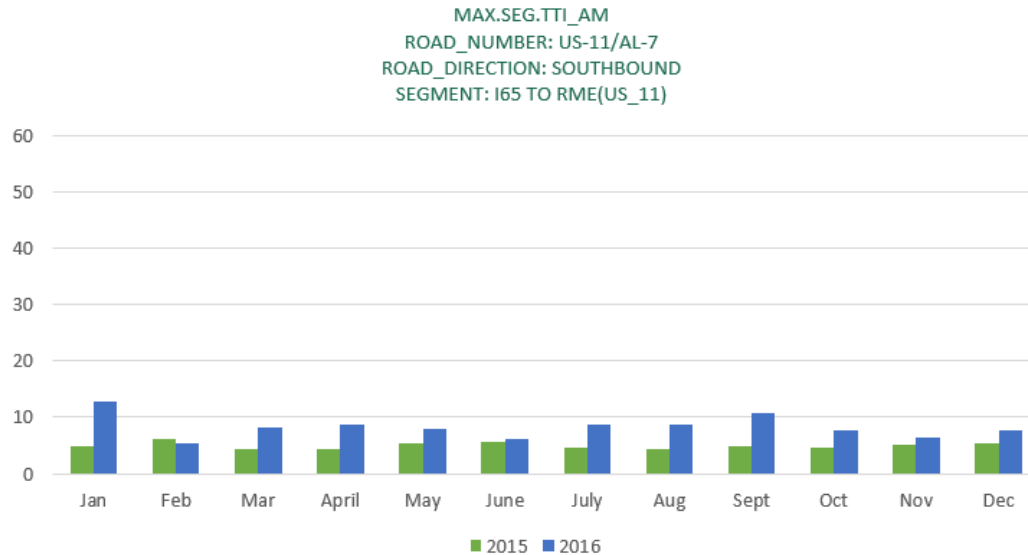
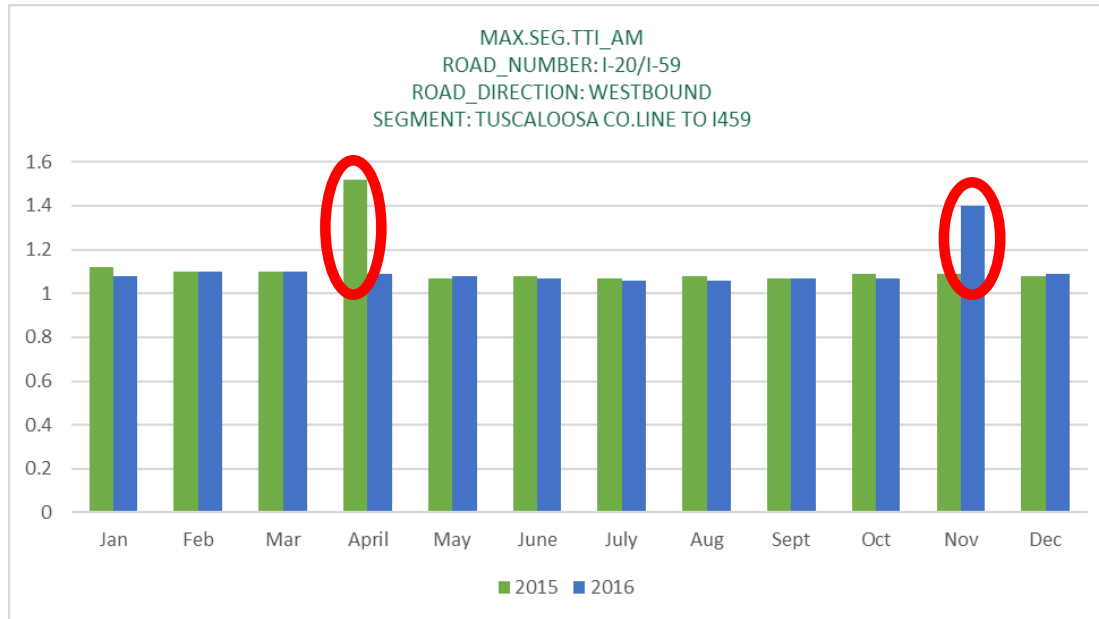
$$\text{Ratio} = \frac{\text{Measured Travel Time}}{\text{Free Flow Travel Time}}$$

For interstate routes:

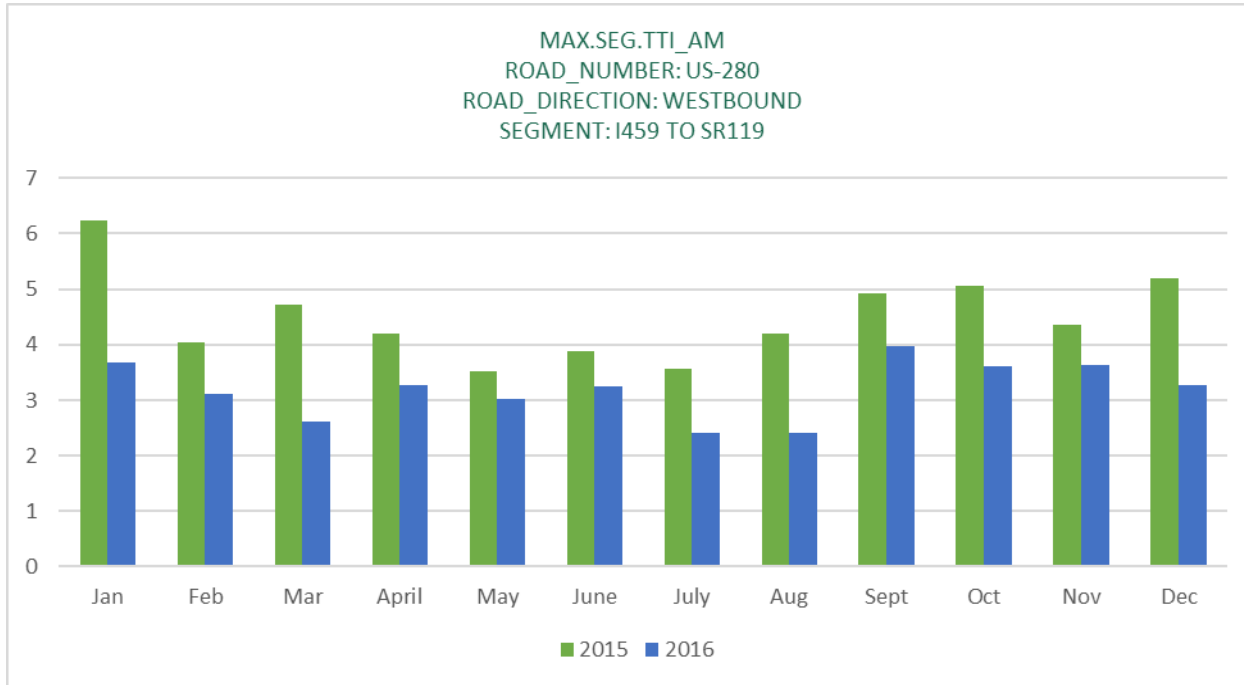
-  TTI < 1.1 (Little or no congestion)
-   $1.1 \leq \text{TTI} < 1.5$  (Moderate Congestion)
-   $1.5 \leq \text{TTI} < 2.0$  (Significant Congestion)
-  TTI > 2.0 (Severe Congestion)



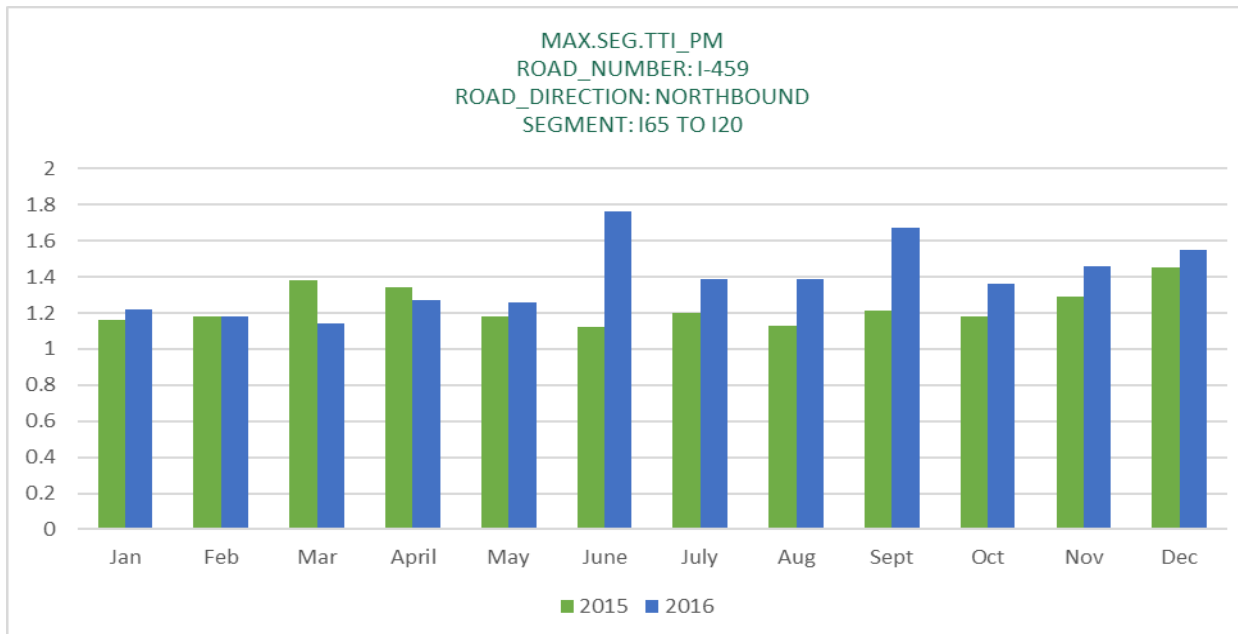
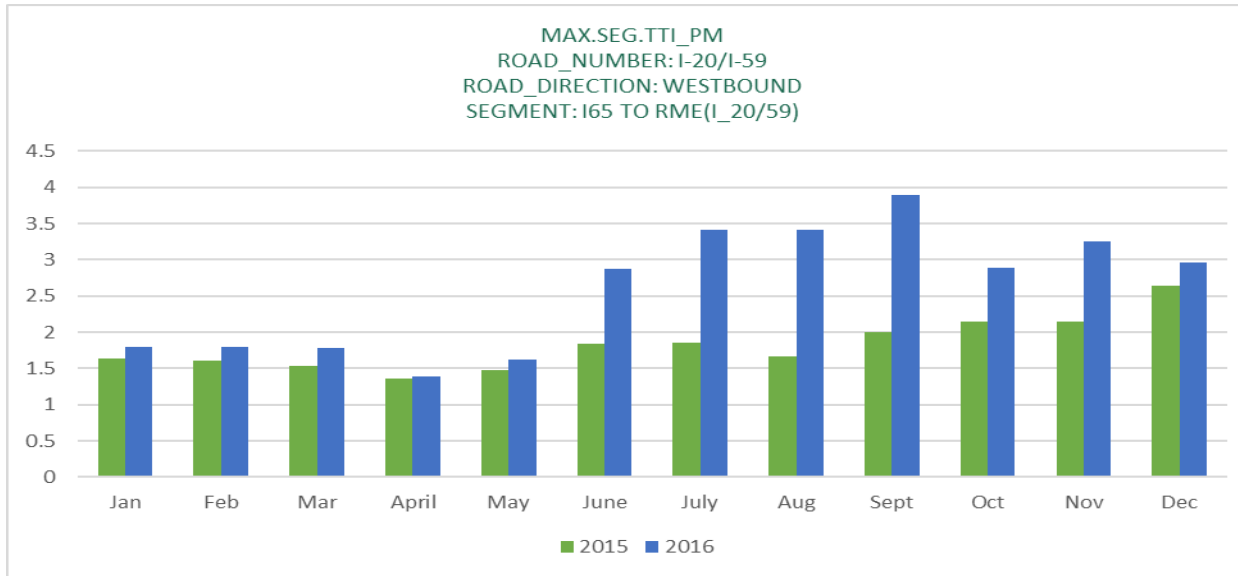
# AM Peak Period TTI for selected Segments



# AM Peak Period TTI for selected Segments



# PM Peak Period TTI for selected Segments



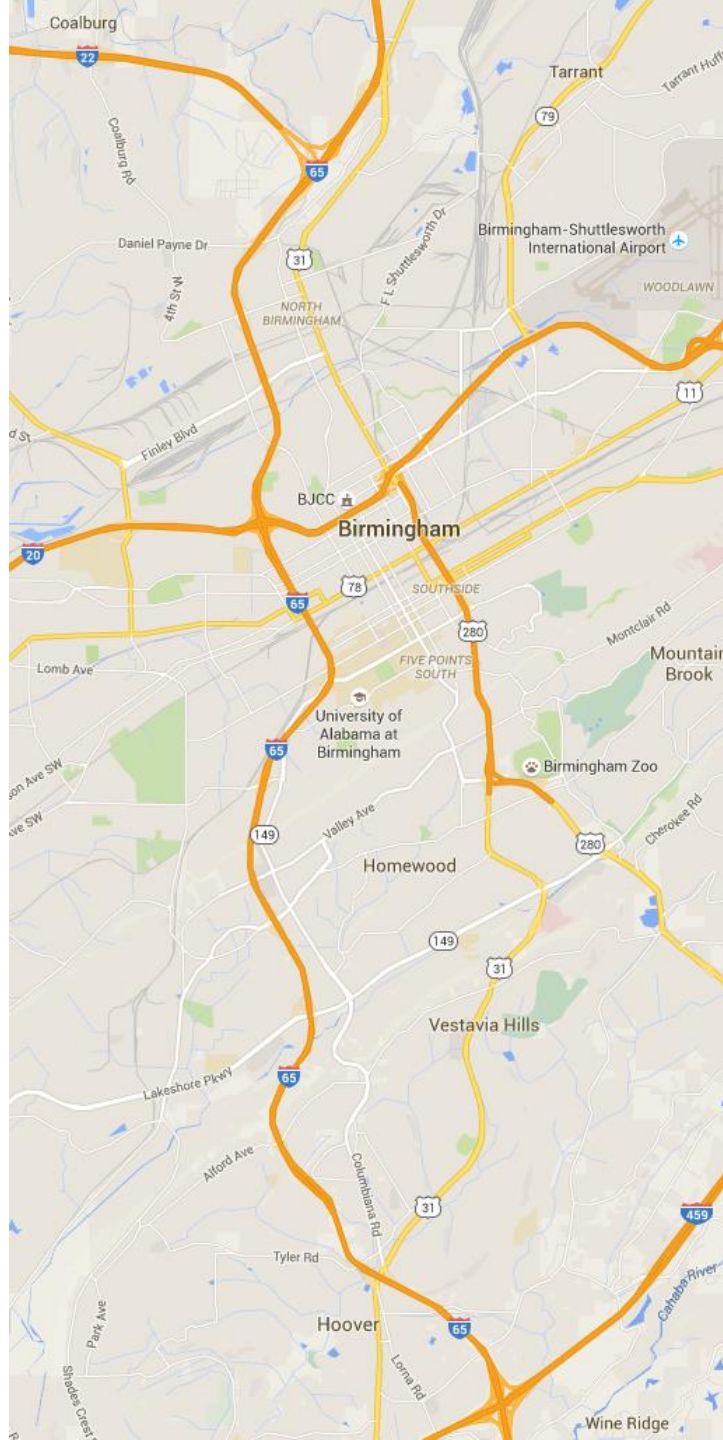
# Highway Segments with Significant Increases in TTI in 2016-17

## AM Peak

- US 11 between I-65 and Red Mt. Expressway
- US 280 WB between Rocky Ridge and RME

## PM Peak

- I-20/59 between I-65 and Red Mt. Expressway
- I-459 NB between I-20/59 and I-65
- I-459 NB/SB between I-65 and I-20
- I-65 SB between I-20/59 and I-459

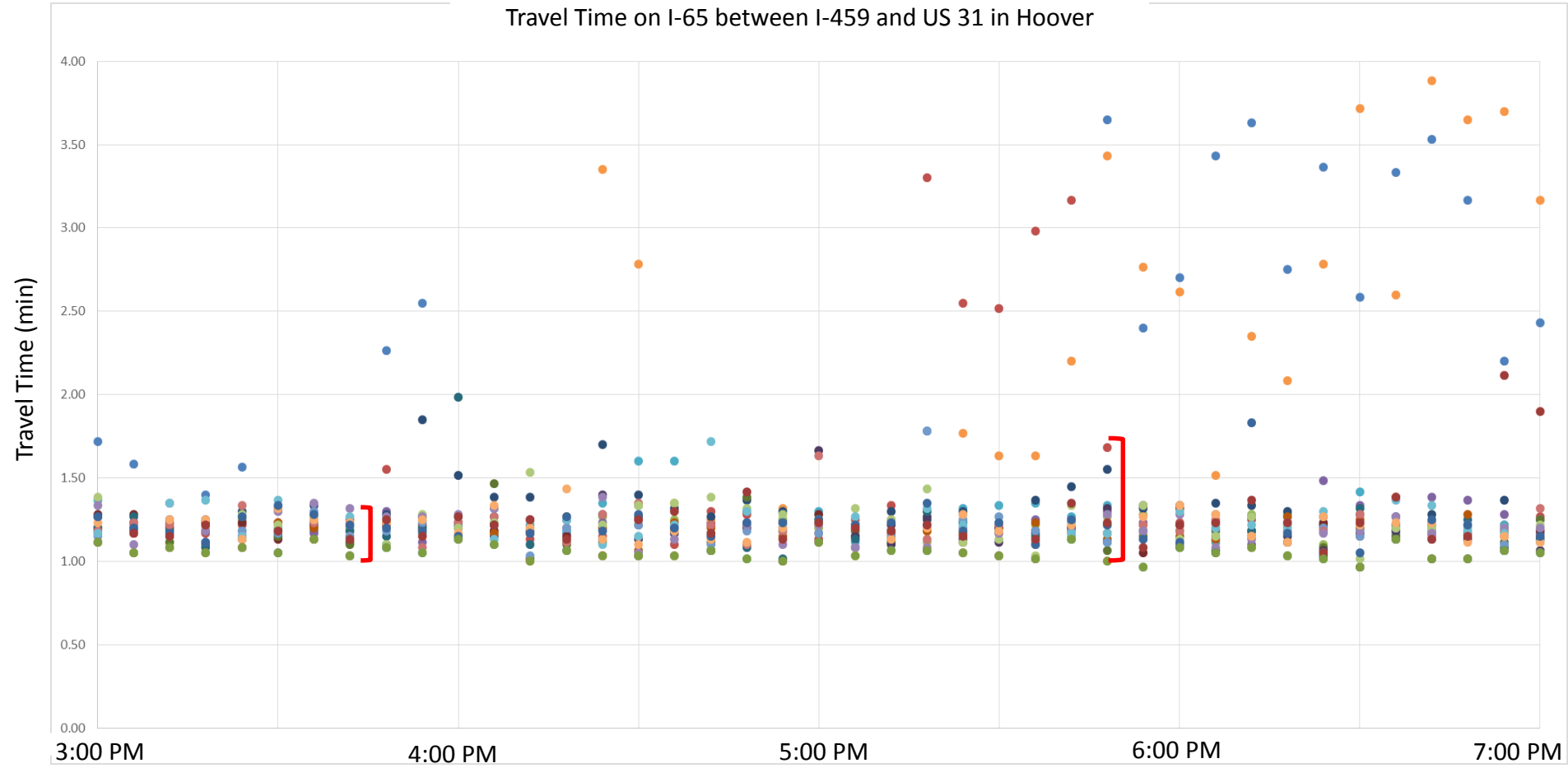


## Travel Time Reliability



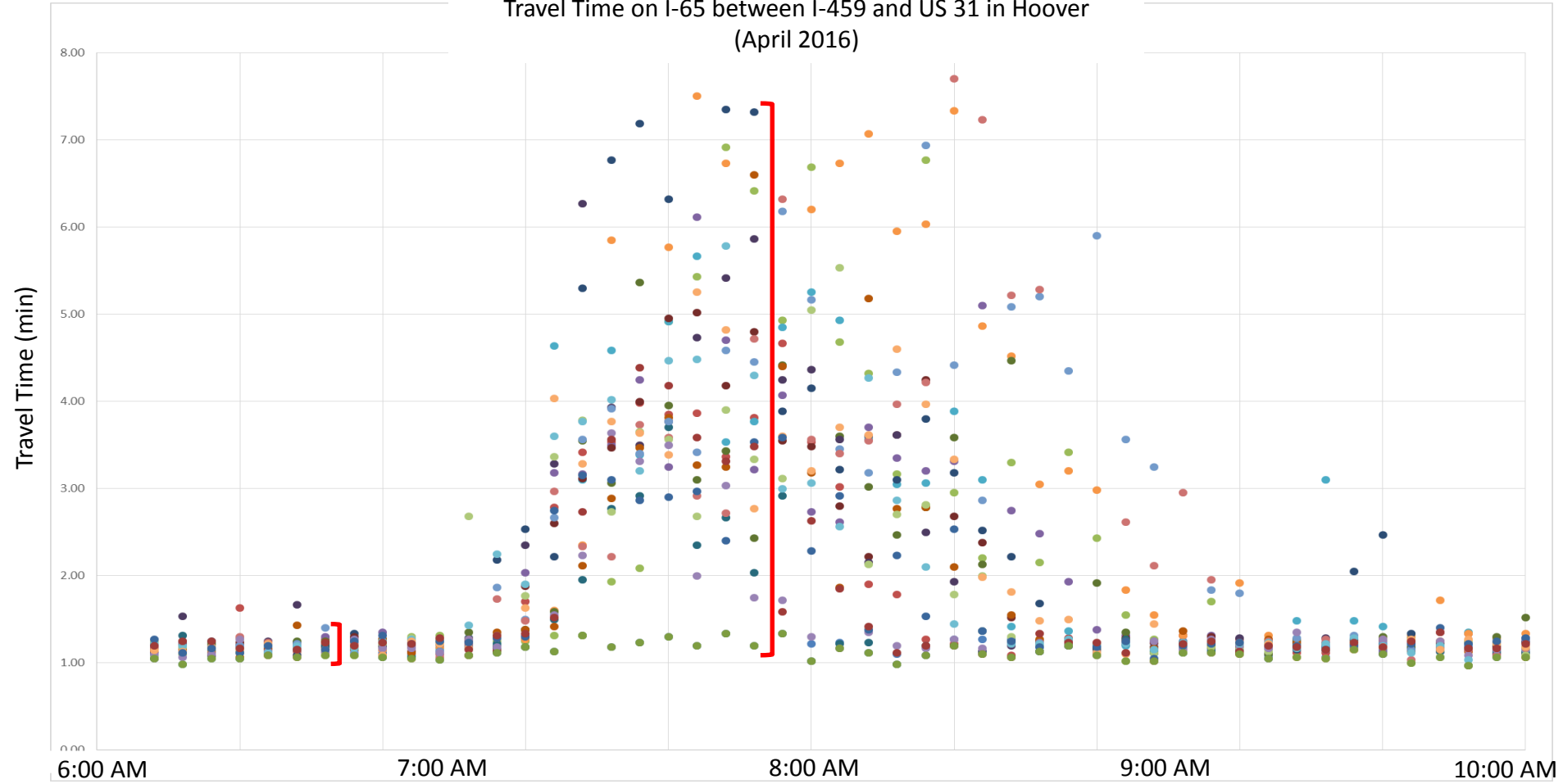
# Travel Time Reliability

Travel Time on I-65 between I-459 and US 31 in Hoover



# Travel Time Reliability

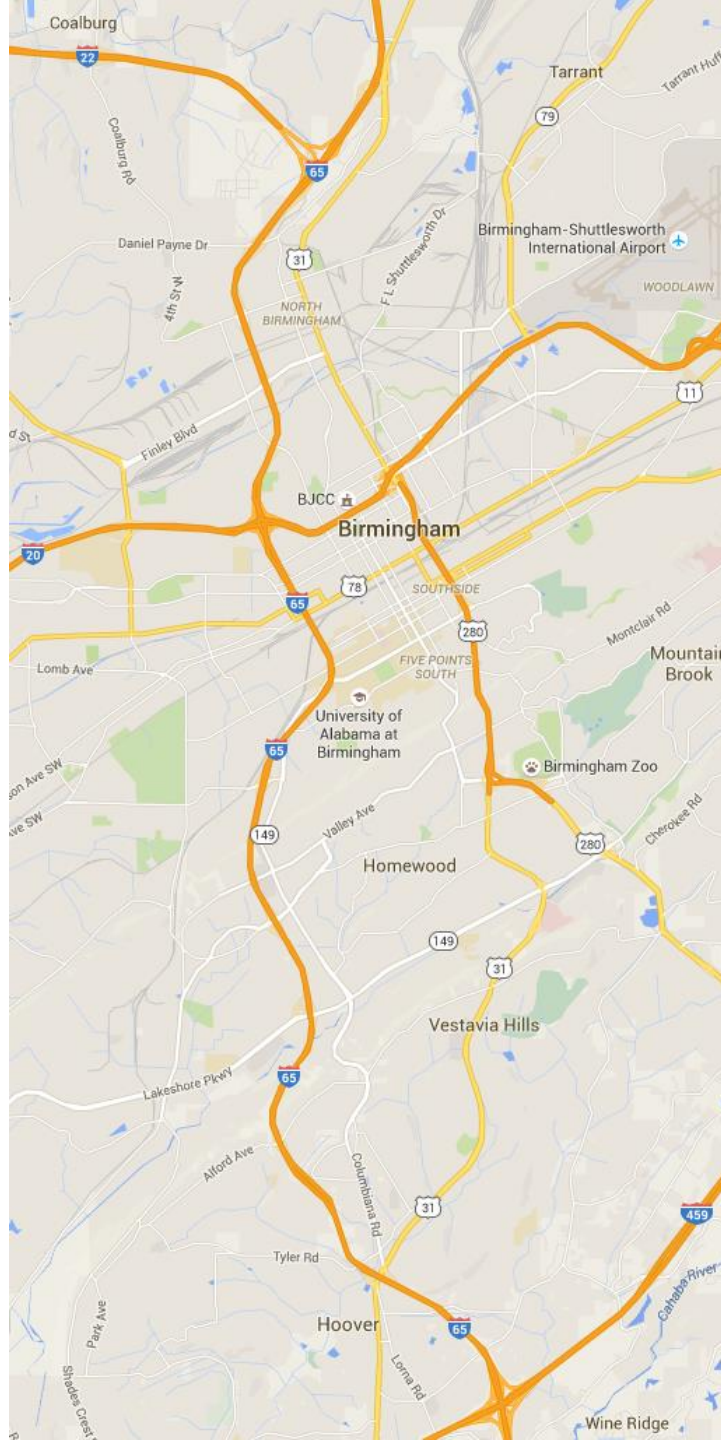
Travel Time on I-65 between I-459 and US 31 in Hoover  
(April 2016)



# Planning Time Index (PTI)

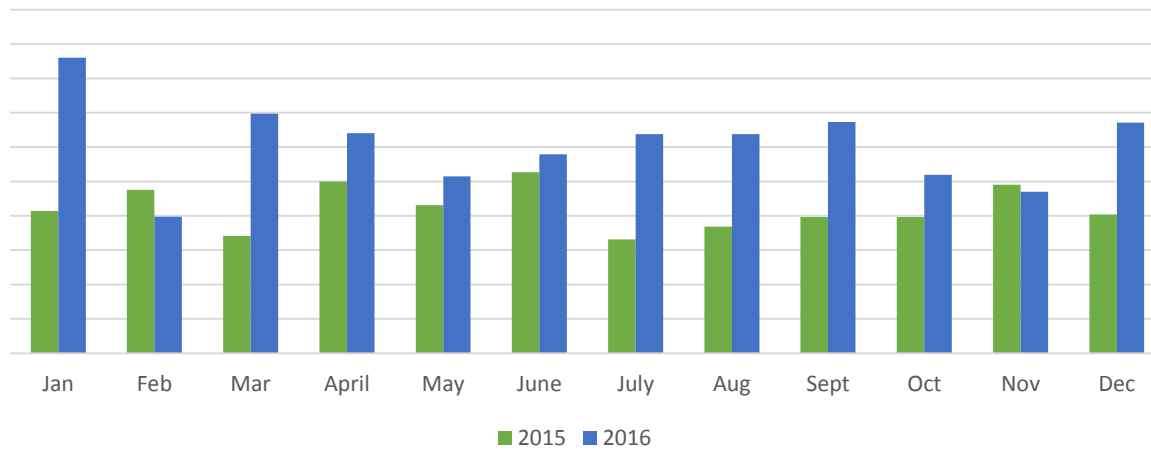
$$\text{Ratio} = \frac{\text{95th percetile travel time}}{\text{Free Flow Travel Time}}$$

For example, if a trip normally takes 15 minutes during off-peak times a PTI of 2.2 means 33 minutes should be allotted to be certain of arriving on time.

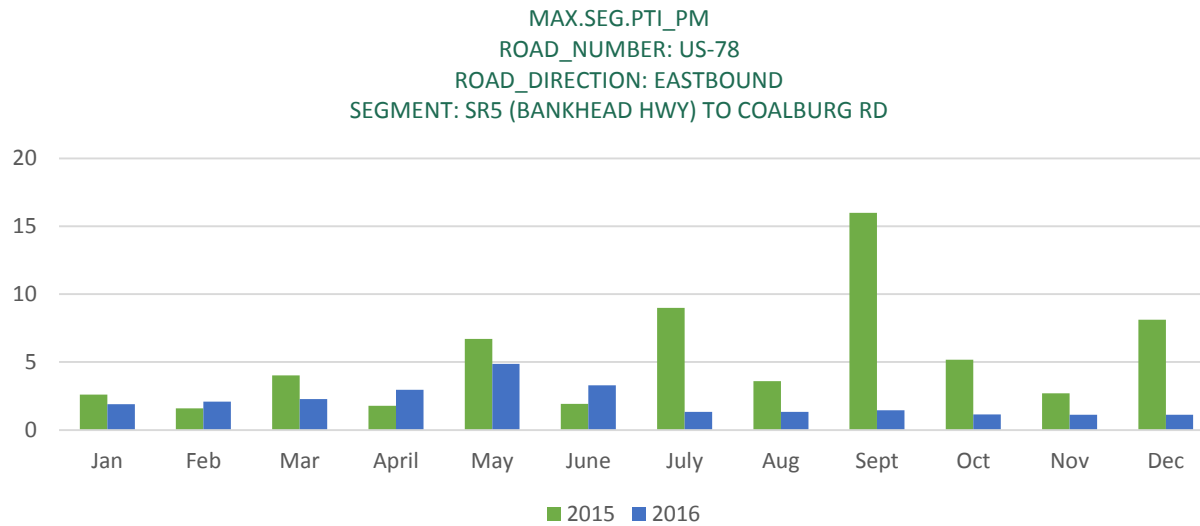
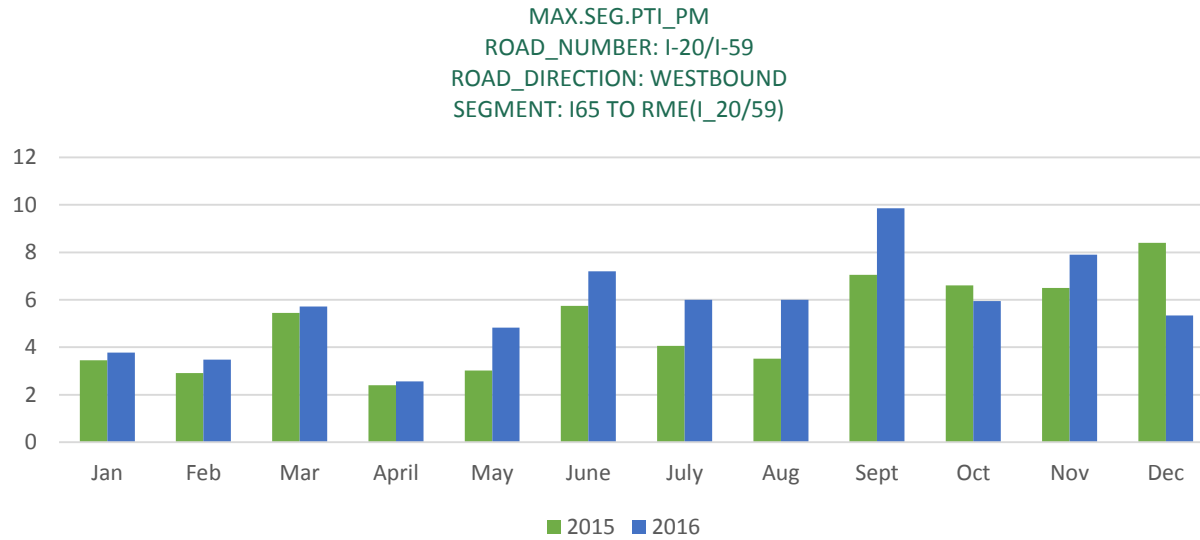


# AM Peak Period PTI for selected Segments

MAX.SEG.PTI\_AM  
ROAD\_NUMBER: US-11/AL-7  
ROAD\_DIRECTION: SOUTHBOUND  
SEGMENT: I65 TO RME(US\_11)



# PM Peak Period PTI for selected Segments



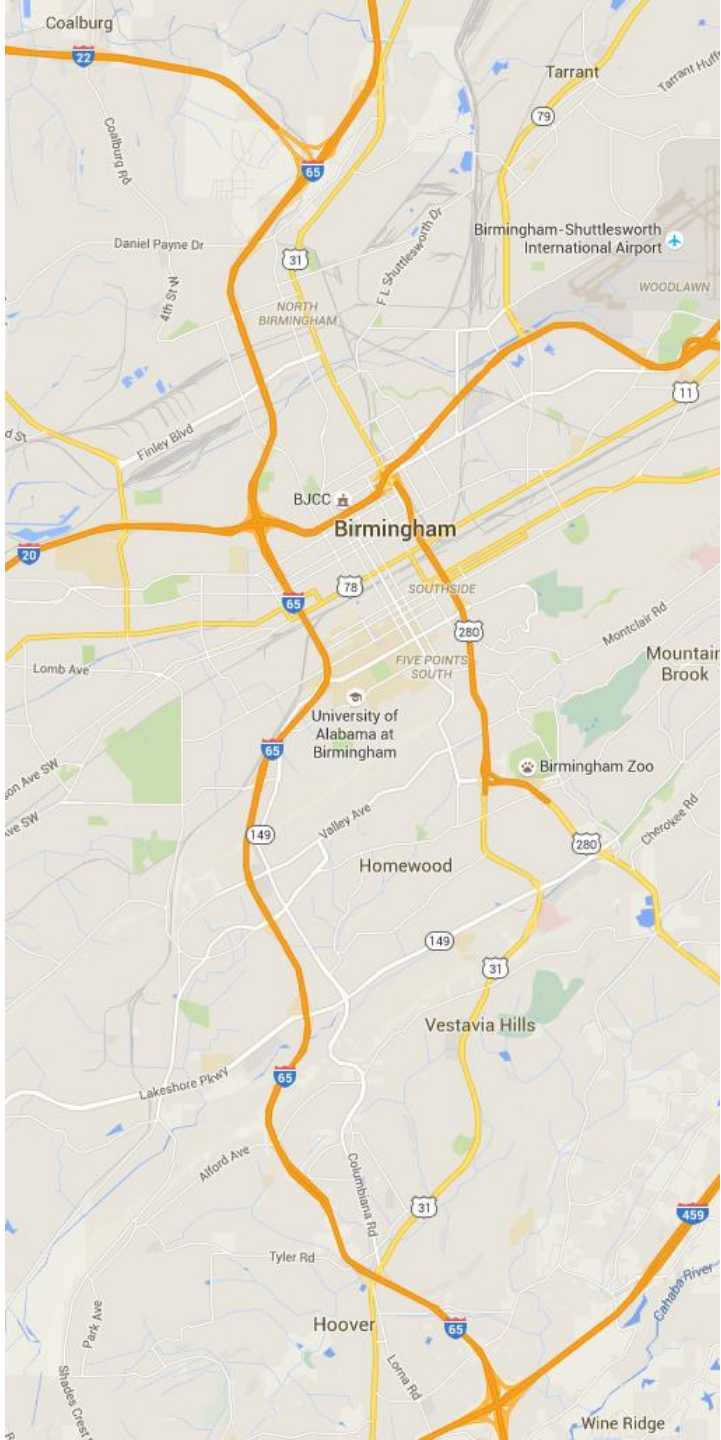
# Highway Segments with Significant Increases in PTI in 2016-17

## AM Peak

- I-20/59 between I-65 and Red Mt. Expressway
- US 11 between I-65 and Red Mt. Expressway
- US 280 WB between I-459 and Rocky Ridge

## PM Peak

- I-459 between I-65 and I-20
- I-20/59 between I-65 and Red Mountain Expwy.
- US 11 between I-65 and Red Mountain Expwy.
- US 31 between I-20/59 and I-65



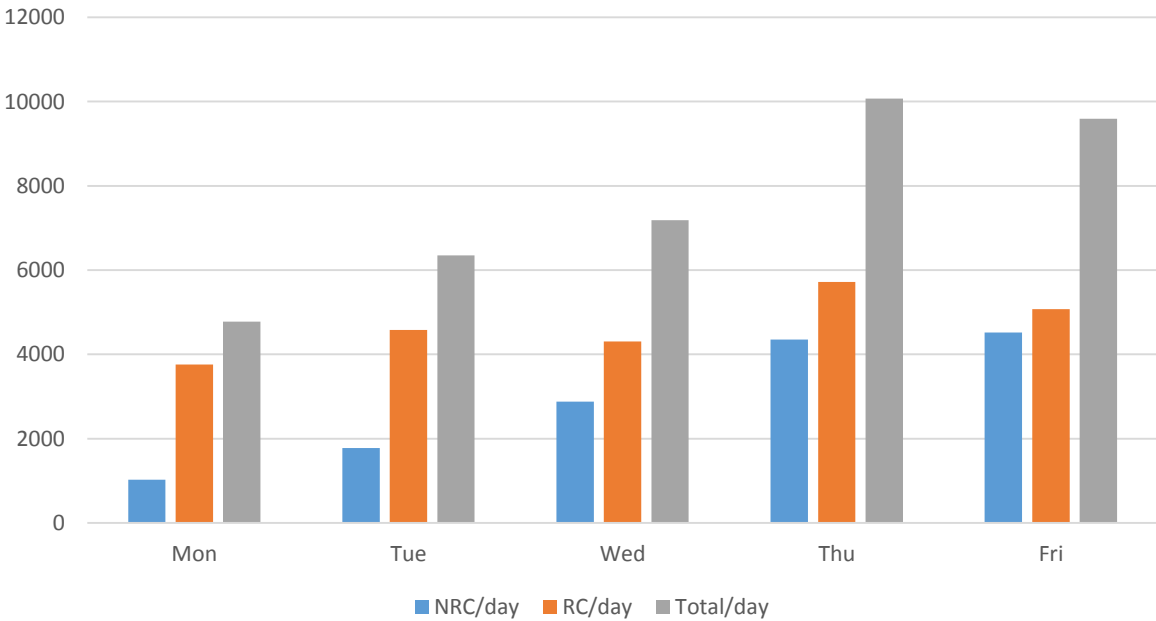
# Congestion Analysis

# Summaries for I-65 (peak periods only)



Month	Total Congestion (veh-hrs)	% RC	% NRC
Jan 2016	139,436	60	40
Apr 2016	140,743	56	44

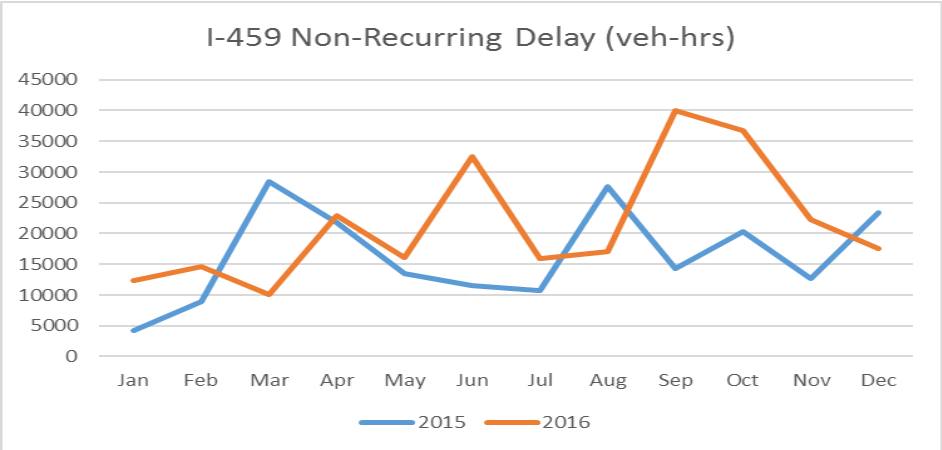
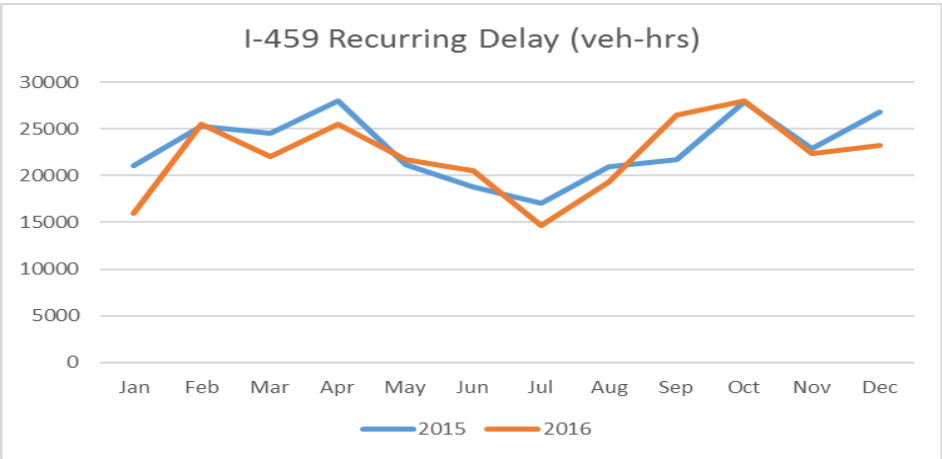
Congestion per Day (veh-hrs)





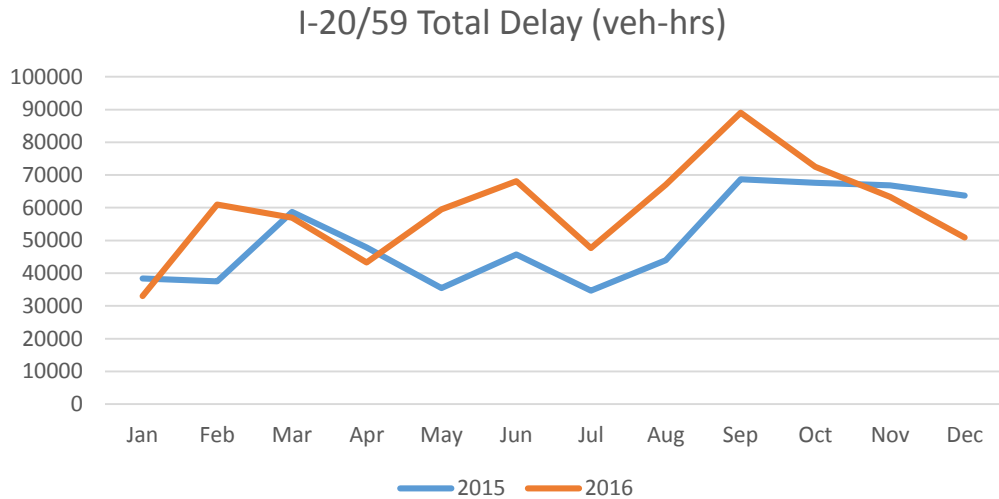
# Congestion on I-459 (full length)

Year	RC (veh-hrs)	NRC (veh-hrs)	Total Delay
2015	282,793	197,530	480,323
2016	256,526	258,256	514,782



# Congestion on I-20/59

Year	RC (veh-hrs)	NRC (veh-hrs)	Total Delay
2015	282,664	326,420	609,084
2016	369,416	332,855	702,271



Analysis of I-20/59 between I-65 and Red Mt. Expwy. found a 50+% increase in delay from 2015-2016 during peak months.



# Implications for Birmingham

1. The potential for TSMO projects to reduce delays and improve travel time reliability seems to be high
2. Track impacts of TSMO projects on:
  - TTI
  - PTI
  - Total Congestion
3. Assess impacts of construction projects and work zones on overall delay and travel time reliability

