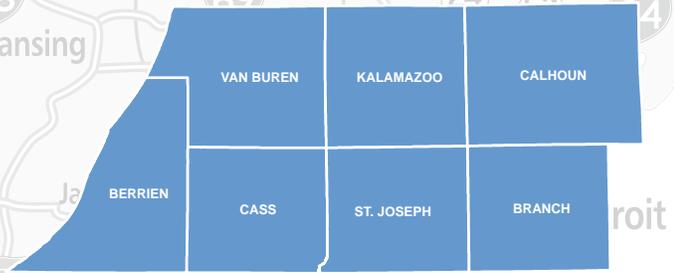


# Congestion & Mobility Report



## Chapter 6 SOUTHWEST REGION SUMMARY





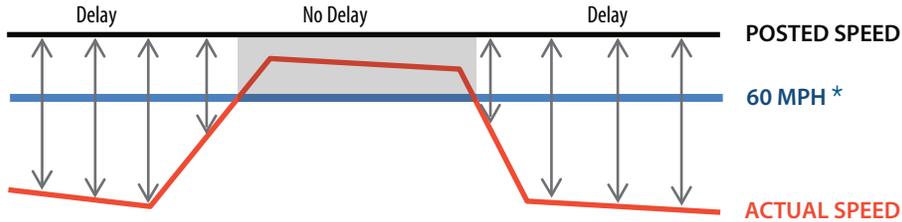
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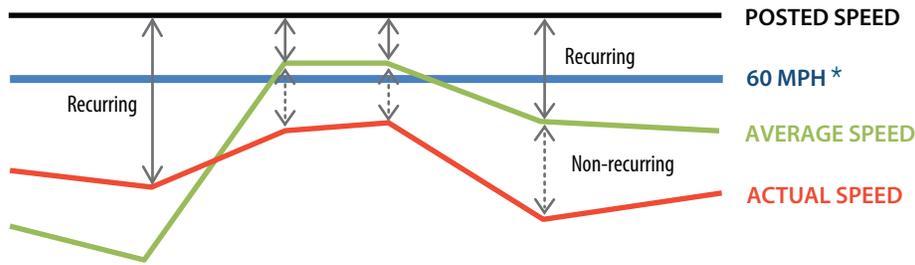
# Performance Measures Definitions



**Total delay** > Delay is calculated by taking the difference between actual speeds when they fall below 60 mph and the posted speed limit for freeways posted at 70 mph. This is to take out the delay caused by the lower average speeds from commercial vehicles.

**Total delay per mile** > Delay per mile is calculated by taking the total delay and dividing it by the length of the freeway. This was performed for each route in each county.

**Non-recurring/recurring delay** > Non-recurring delay is calculated by taking the difference between the actual speed (any time the speed falls below 60 mph) and the average speed. Recurring is measured by taking the difference of the total delay and non-recurring delay.

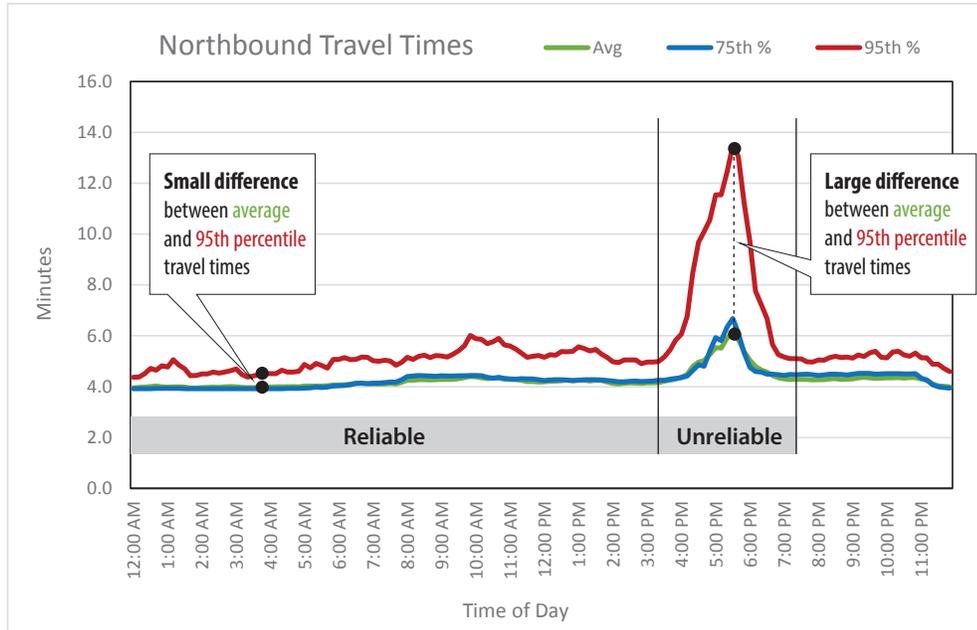


**User Delay Cost** > User Delay Costs (UDC) is calculated by multiplying delay x hourly volume per hourly user cost. Delay is calculated by taking the difference between actual speeds when they fall below 60 mph and the posted speed limit. Hourly volumes are derived from Average Daily Traffic (ADT) and Commercial Average Daily Traffic (CADT). Hourly user costs are based on Federal Highway Administration (FHWA) publication number FHWA-SA-98-079, "Life-Cycle Cost Analysis in Pavement Design."

**Congestion** > Congestion is calculated as the number of hours below 45 mph per Traffic Message Channel (TMC) segment. A TMC segment is a standard for delivering real-time traffic information. They vary from tenths of a mile long to several miles long.

\* On segments with a speed limit of 55 mph, delay is calculated when speeds fall below 55 mph.

# Performance Measures Definitions



**Travel Time Reliability** > A measure of travel time consistency over a period of time. When travel times are unreliable, customers are more likely to experience unexpected delays. Travel times are shown to be reliable when the 95th percentile travel time remains close to the average travel time.

**75th Percentile Travel Time** > The amount of time a customer should budget to be on-time three out of four days (75% of the time).

**95th Percentile Travel Time** > The amount of time a customer should budget to be on-time nineteen out of twenty days (95% of the time). The 95th percentile travel time is also known as the planning time.

Figure 1. 2015 Southwest Region user delay cost per mile

# 2015 Southwest Region User Delay Cost per Mile

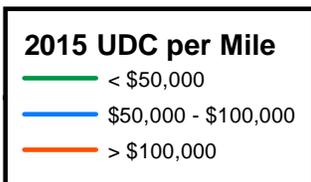
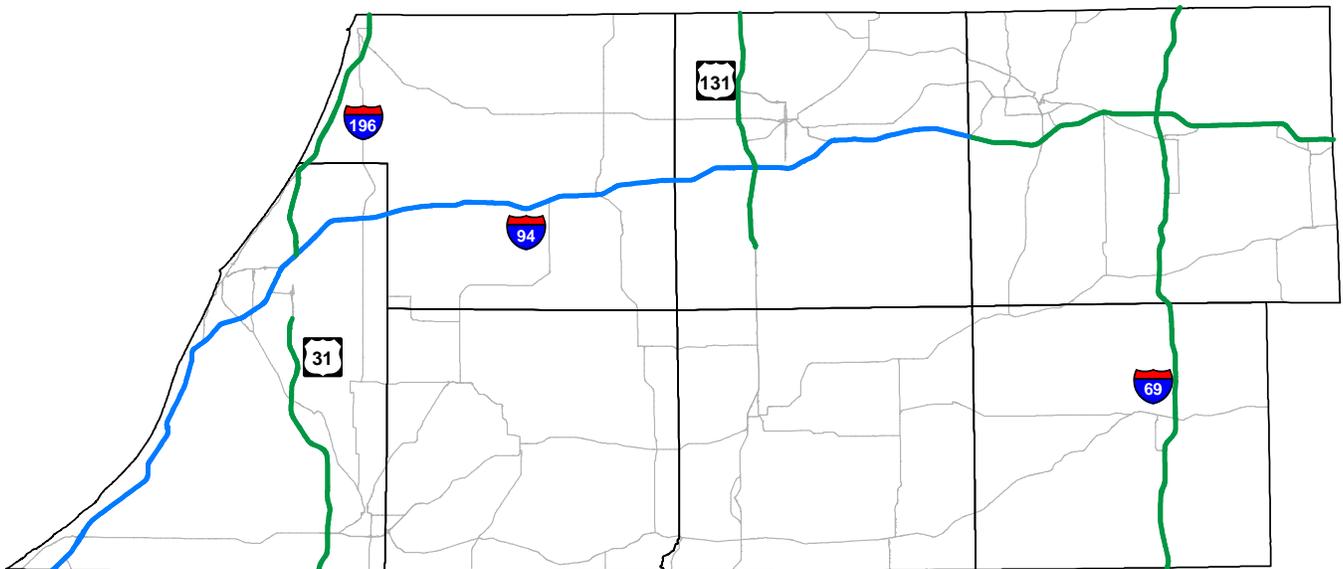
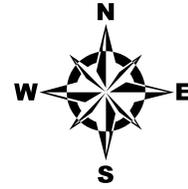


Figure 2. 2015 Southwest Region congestion hours northbound/eastbound

# 2015 Southwest Region Congestion Hours Northbound/Eastbound

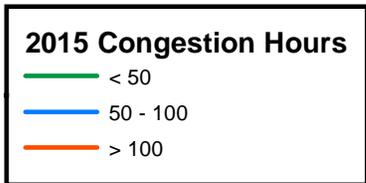
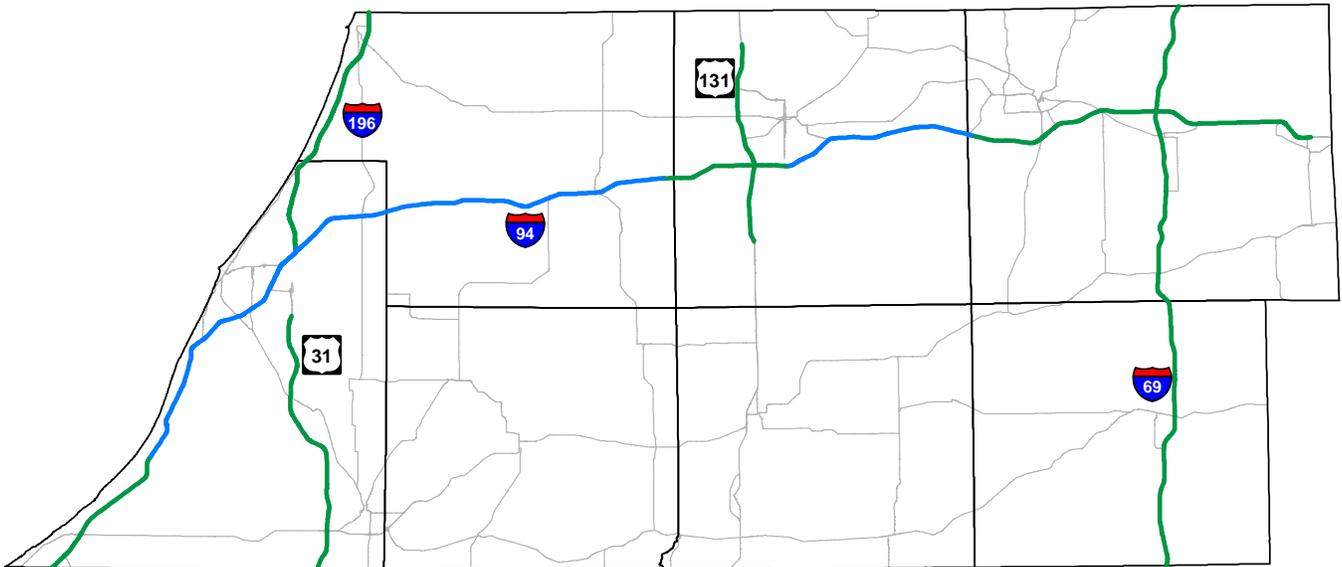
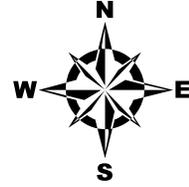


Figure 3. 2015 Southwest Region congestion hours southbound/westbound

# 2015 Southwest Region Congestion Hours Southbound/Westbound

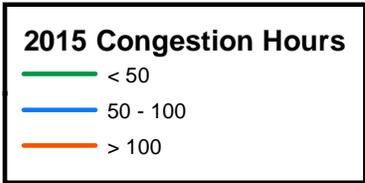
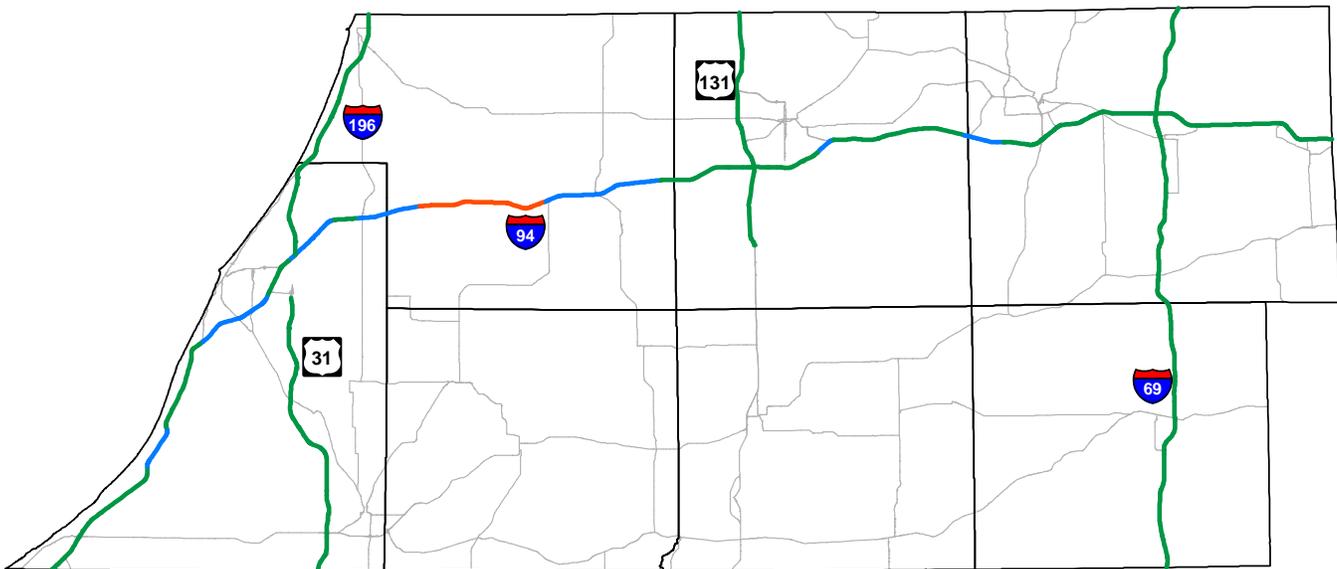
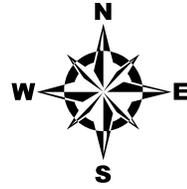


Figure 4. 2015 Southwest Region UDC Data

2012-2014 Average		
Rank	UDC Per Mile	Location (Route, County)
1	\$107,471	US-131 Kalamazoo Co. (70 mph Section)
2	\$105,245	I-94 Kalamazoo Co.
3	\$101,013	I-94 Berrien Co.
4	\$73,947	I-94 Calhoun Co.
5	\$55,520	I-94 Van Buren Co.
6	\$34,743	I-196 Berrien Co.
7	\$26,206	I-196 Van Buren Co.
8	\$21,650	I-69 Branch Co.
9	\$20,737	I-69 Calhoun Co.
10	\$19,678	US-31 Berrien Co. (70 mph section)

2015		
Rank	UDC Per Mile	Location (Route, County)
1	\$75,335	I-94 Kalamazoo Co.
2	\$69,192	I-94 Berrien Co.
3	\$62,585	I-94 Van Buren Co.
4	\$42,087	US-131 Kalamazoo Co. (70 mph Section)
5	\$35,872	I-94 Calhoun Co.
6	\$18,280	I-196 Van Buren Co.
7	\$14,654	I-196 Berrien Co.
8	\$9,577	US-31 Berrien Co. (70 mph section)
9	\$6,800	I-69 Branch Co.
10	\$6,710	I-69 Calhoun Co.

2012-2014 Average		
Rank	Total UDC	Location (Route, County)
1	\$9,192,219	I-94 Berrien Co.
2	\$5,472,725	I-94 Kalamazoo Co.
3	\$4,954,462	I-94 Calhoun Co.
4	\$3,331,225	I-94 Van Buren Co.
5	\$3,009,200	US-131 Kalamazoo Co. (70 mph Section)
6	\$1,285,694	I-69 Calhoun Co.
7	\$952,612	I-69 Branch Co.
8	\$944,552	US-31 Berrien Co. (70 mph section)
9	\$938,049	I-196 Berrien Co.
10	\$786,170	I-196 Van Buren Co.
Total =		\$30,866,908

2015		
Rank	Total UDC	Location (Route, County)
1	\$6,296,475	I-94 Berrien Co.
2	\$3,917,439	I-94 Kalamazoo Co.
3	\$3,755,101	I-94 Van Buren Co.
4	\$2,403,421	I-94 Calhoun Co.
5	\$1,178,449	US-131 Kalamazoo Co. (70 mph Section)
6	\$548,403	I-196 Van Buren Co.
7	\$459,718	US-31 Berrien Co. (70 mph section)
8	\$416,030	I-69 Calhoun Co.
9	\$395,671	I-196 Berrien Co.
10	\$299,216	I-69 Branch Co.
Total =		\$19,669,922



# Corridor



Interstate 69: **Branch and Calhoun**



Interstate 94: **Berrien, Van Buren, Kalamazoo, and Calhoun**



Interstate 196: **Berrien and Van Buren**

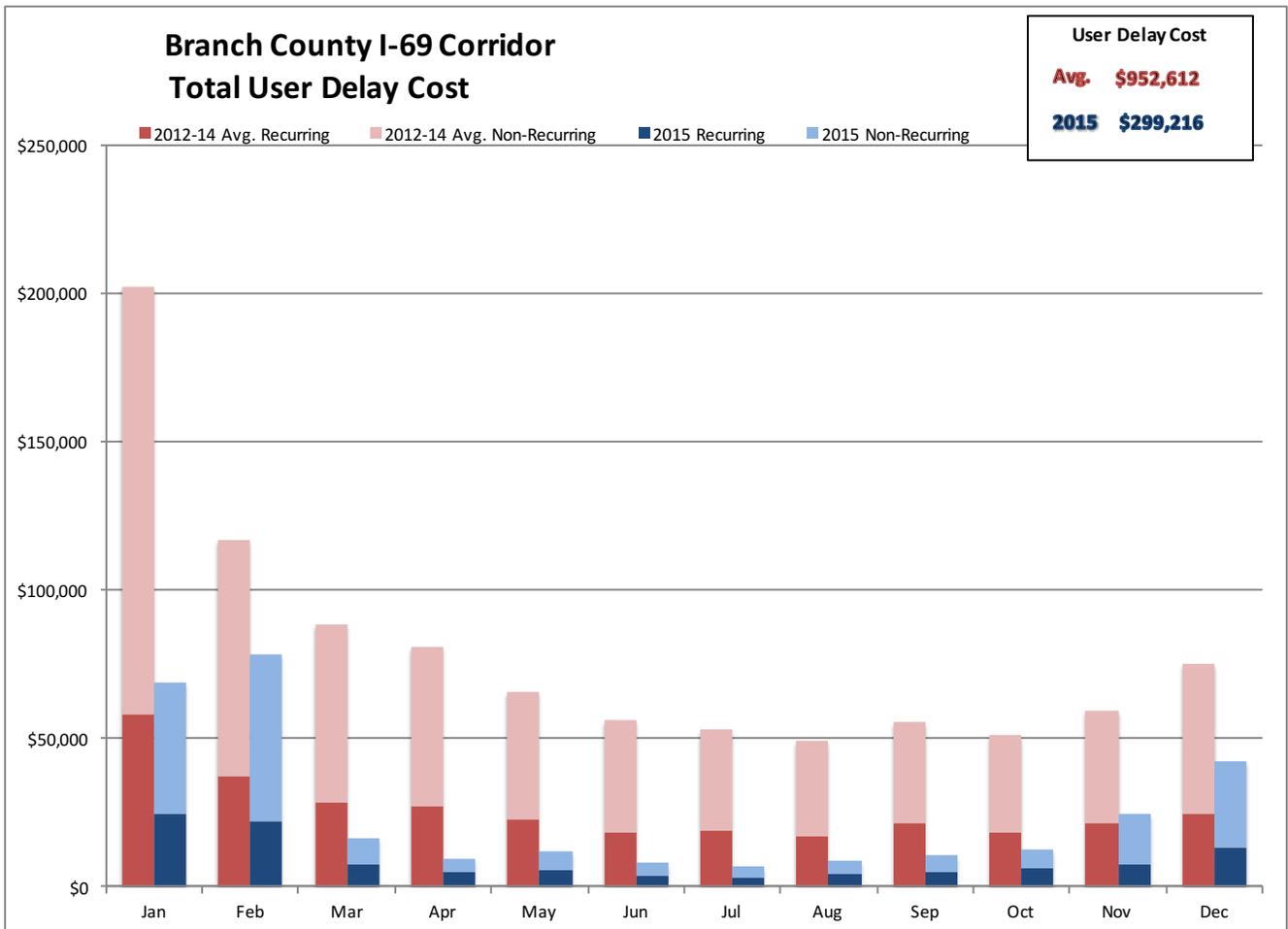
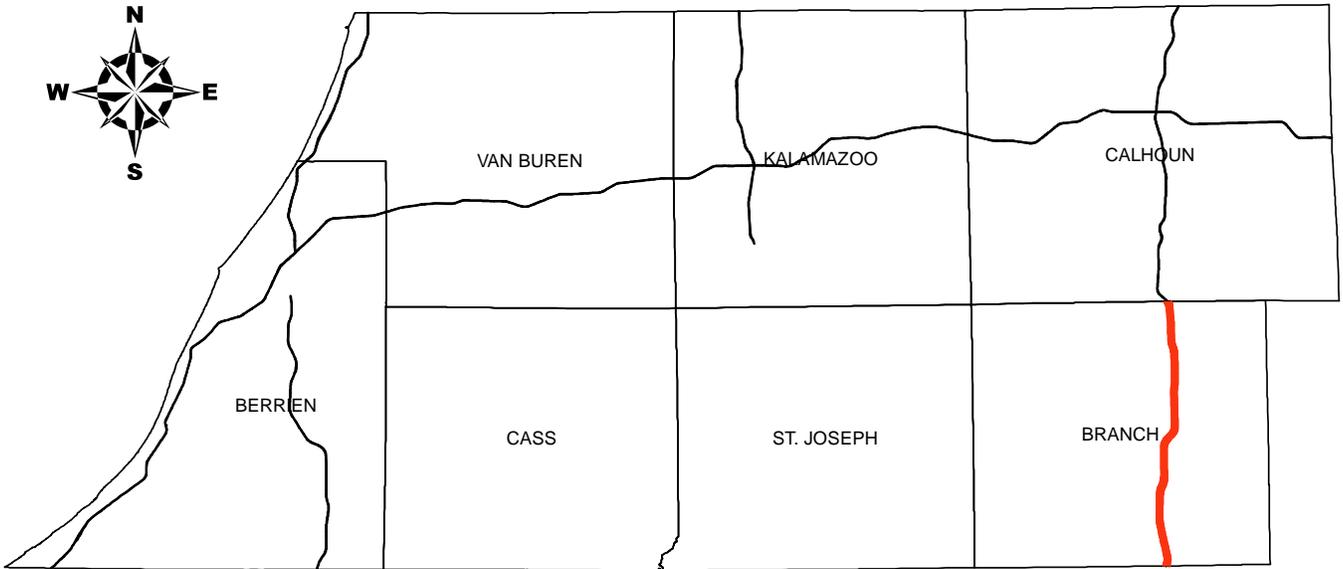


US-31: **Berrien**



US-131: **Kalamazoo**

Figure 5. Branch County I-69 Corridor total user delay cost



**Figure 6.** Calhoun County I-69 Corridor total user delay cost

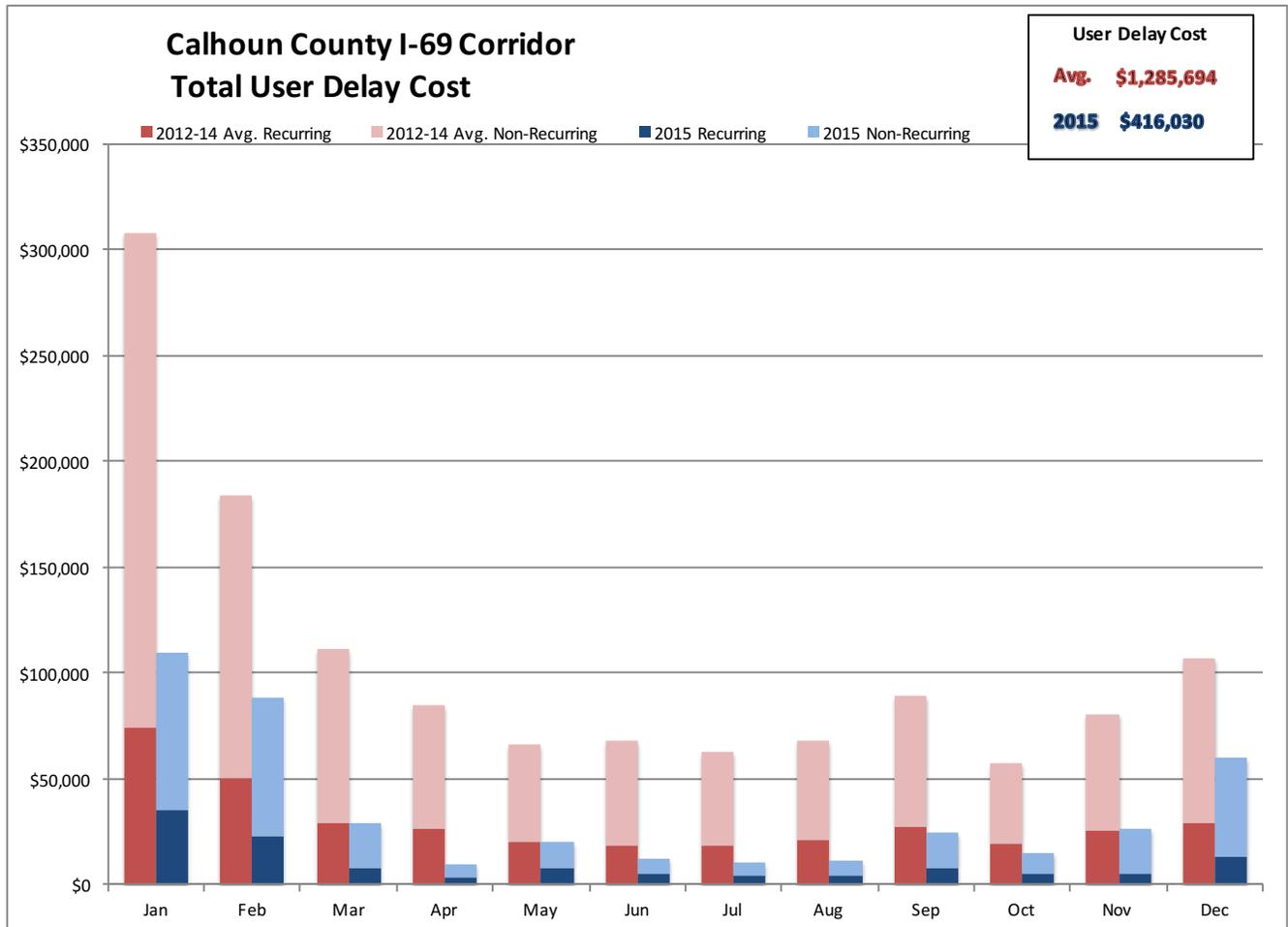
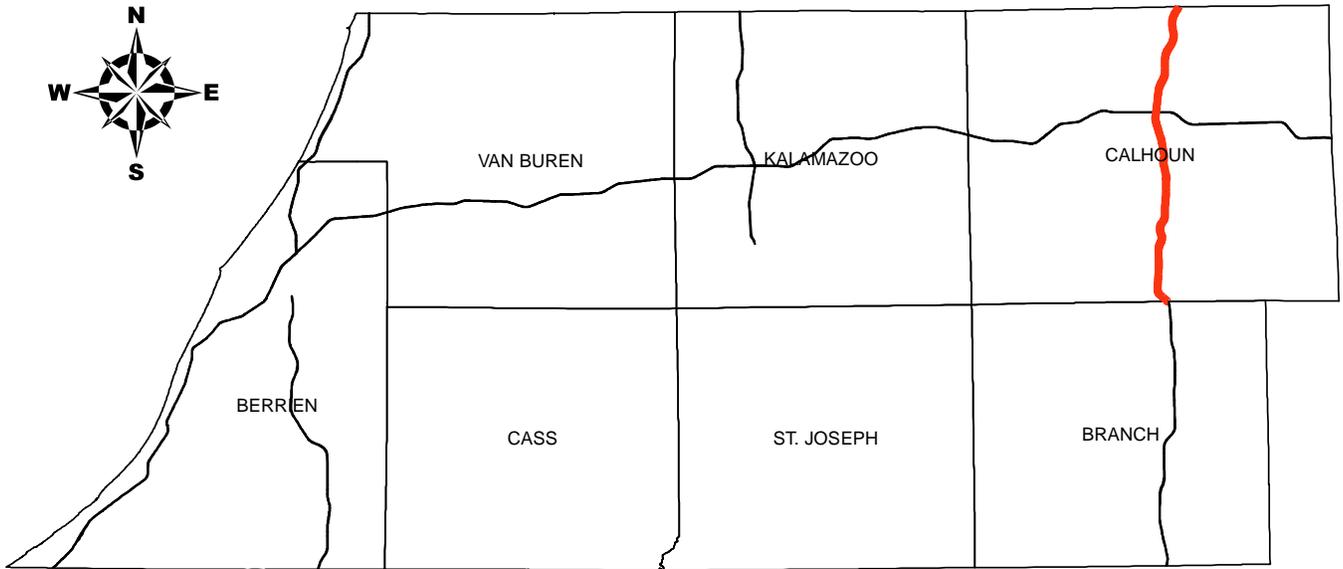


Figure 7. Southwest Region I-69 northbound

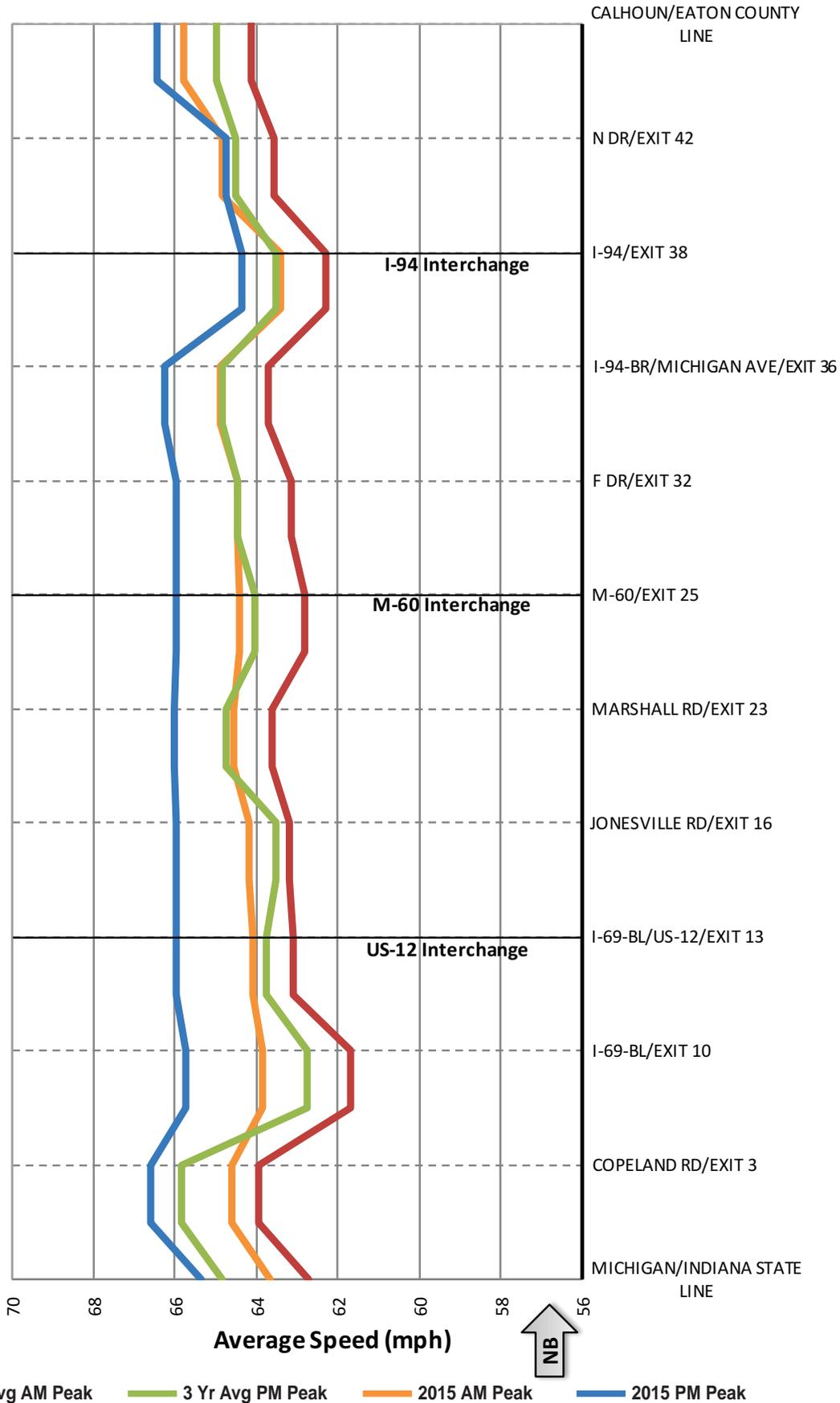
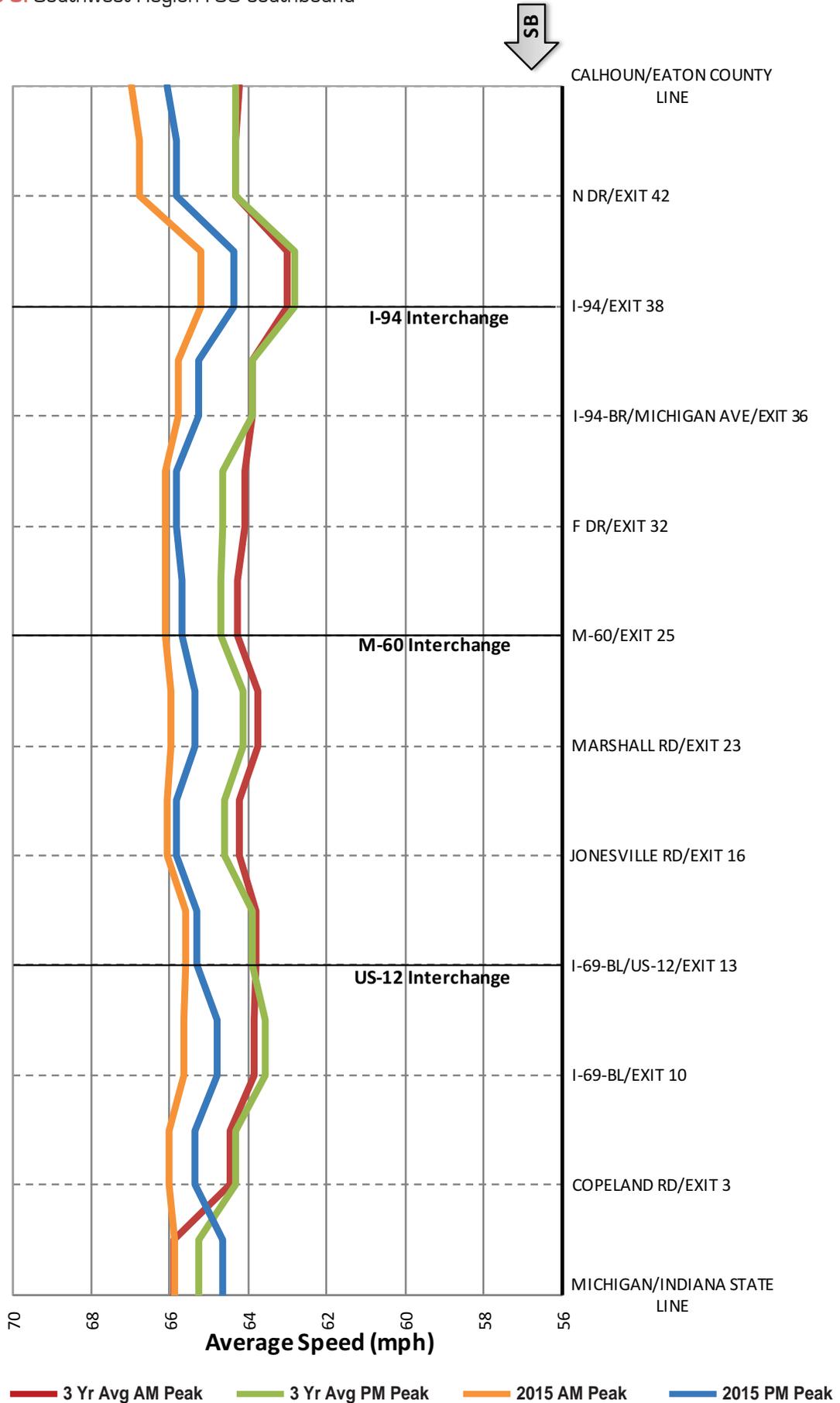


Figure 8. Southwest Region I-69 southbound





# Corridor



Interstate 69: **Branch and Calhoun**



Interstate 94: **Berrien, Van Buren, Kalamazoo, and Calhoun**



Interstate 196: **Berrien and Van Buren**



US-31: **Berrien**



US-131: **Kalamazoo**

Figure 9. Berrien County I-94 Corridor total user delay cost

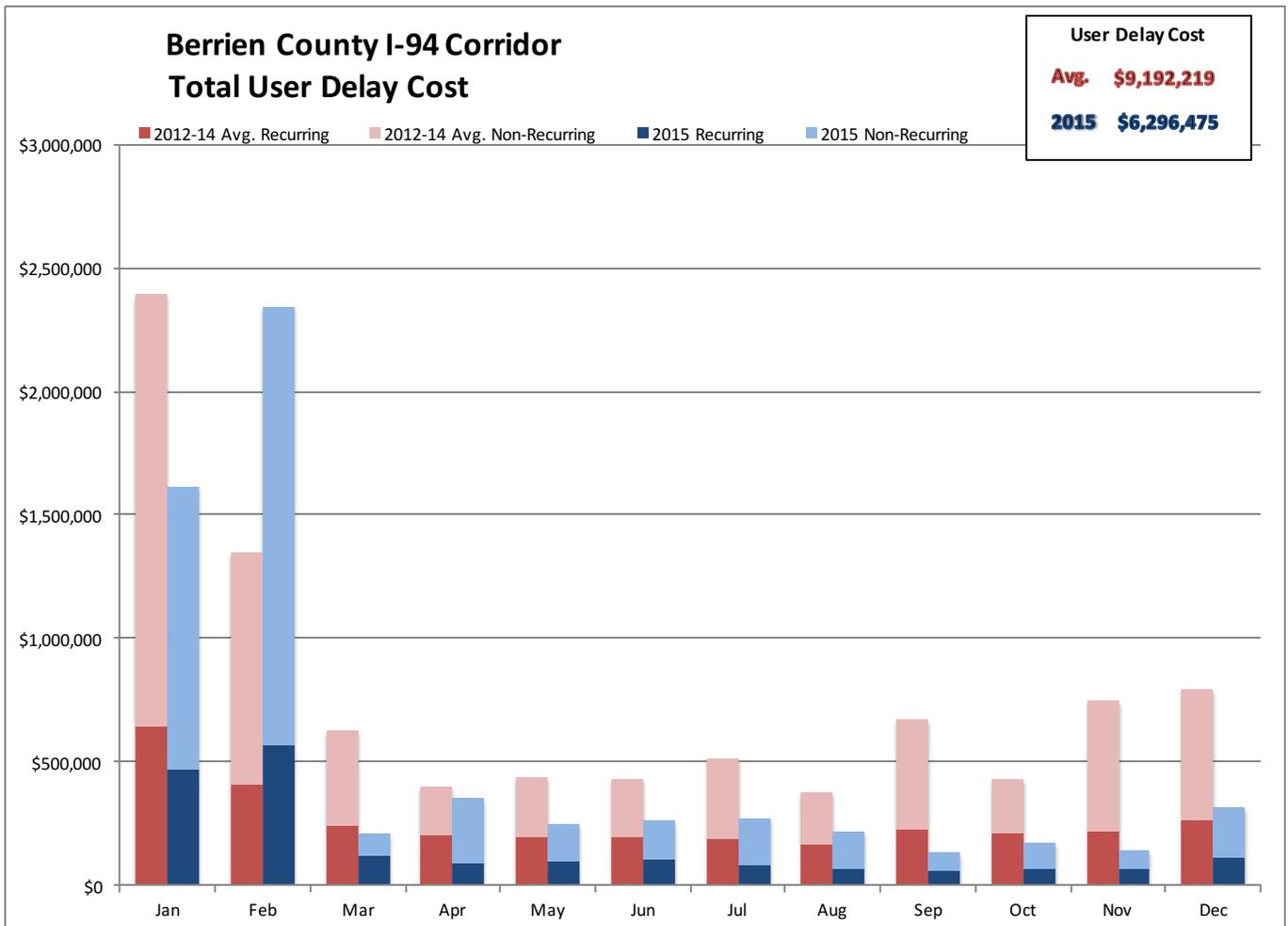
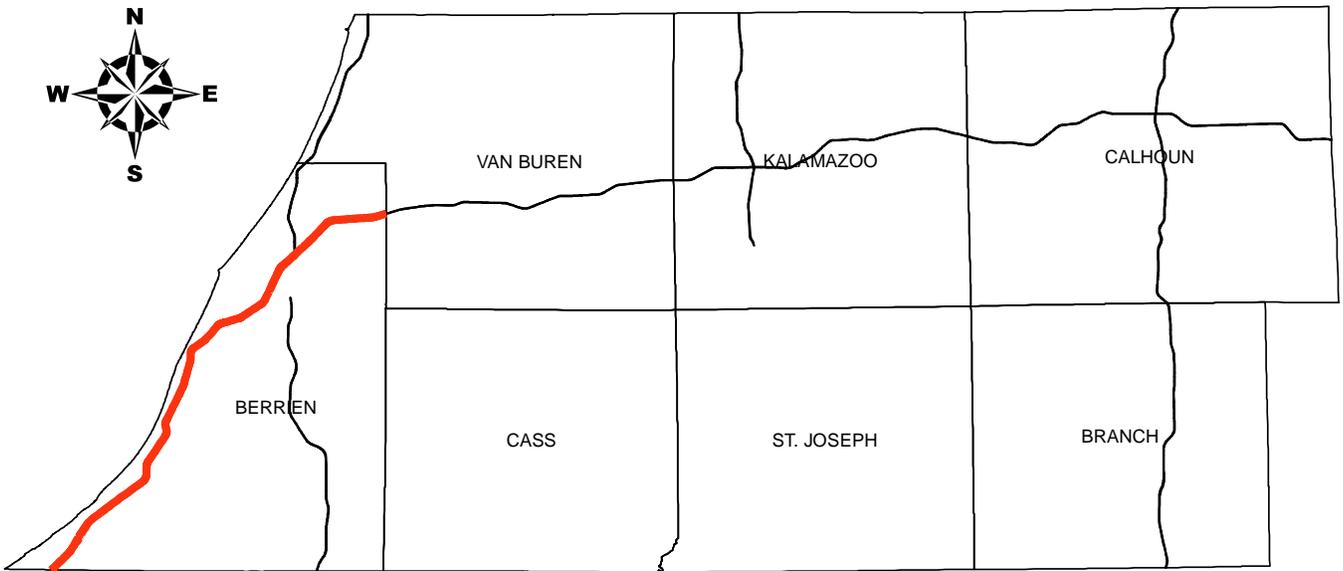


Figure 10. Van Buren County I-94 Corridor total user delay cost

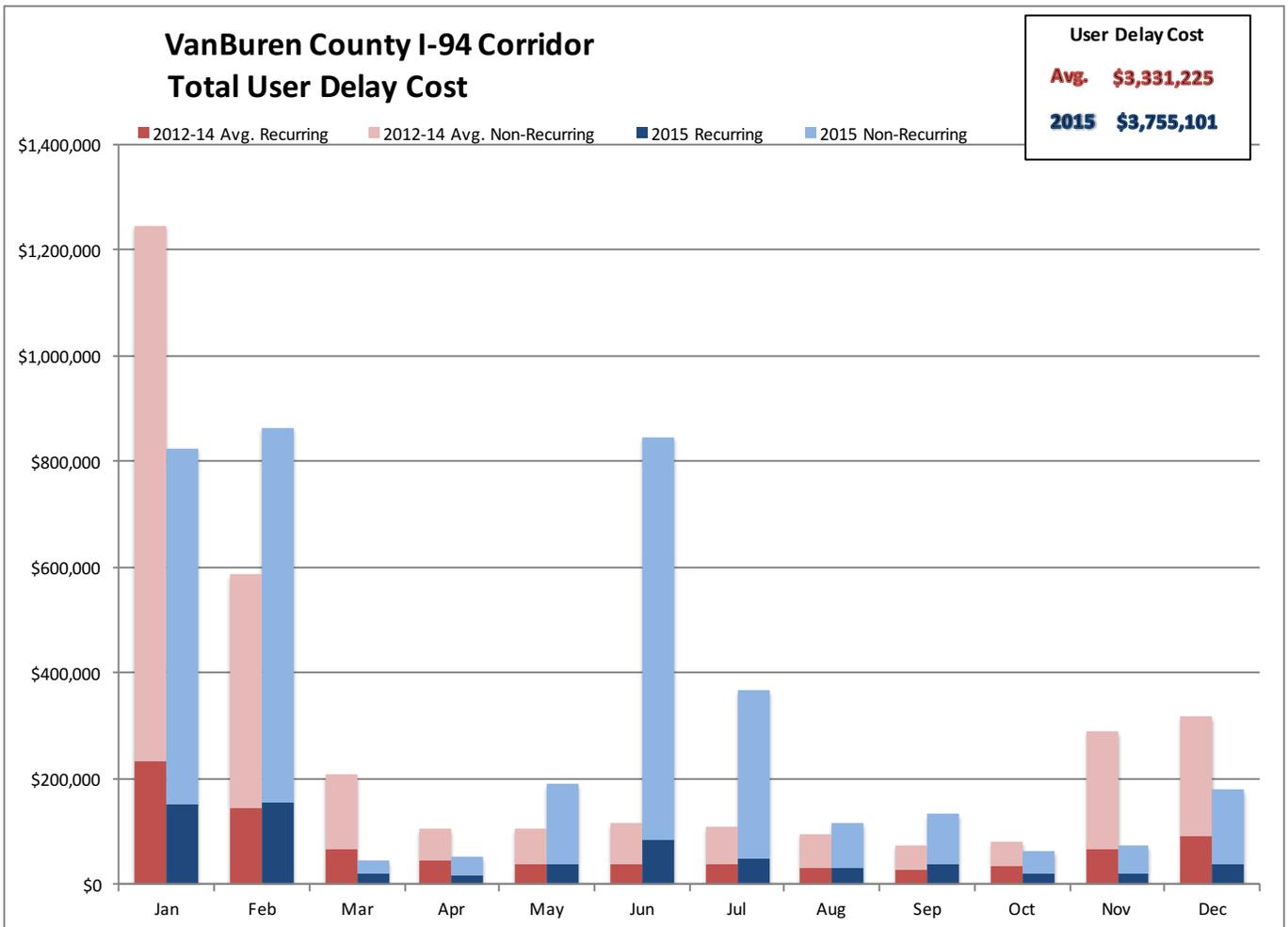
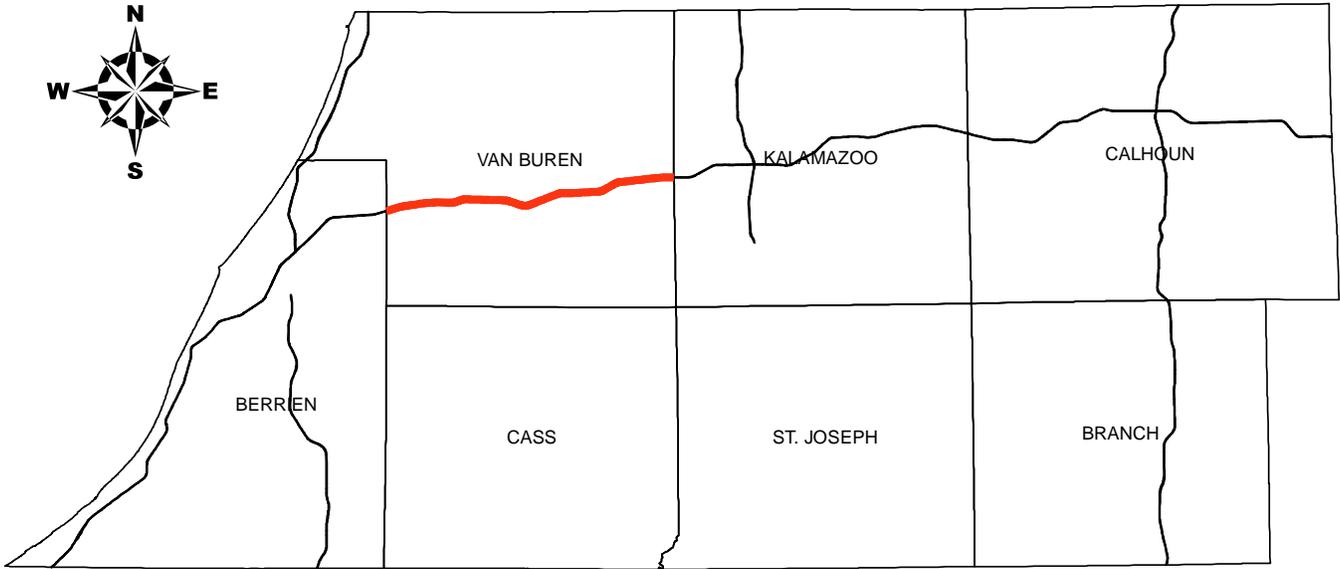


Figure 11. Kalamazoo County I-94 Corridor total user delay cost

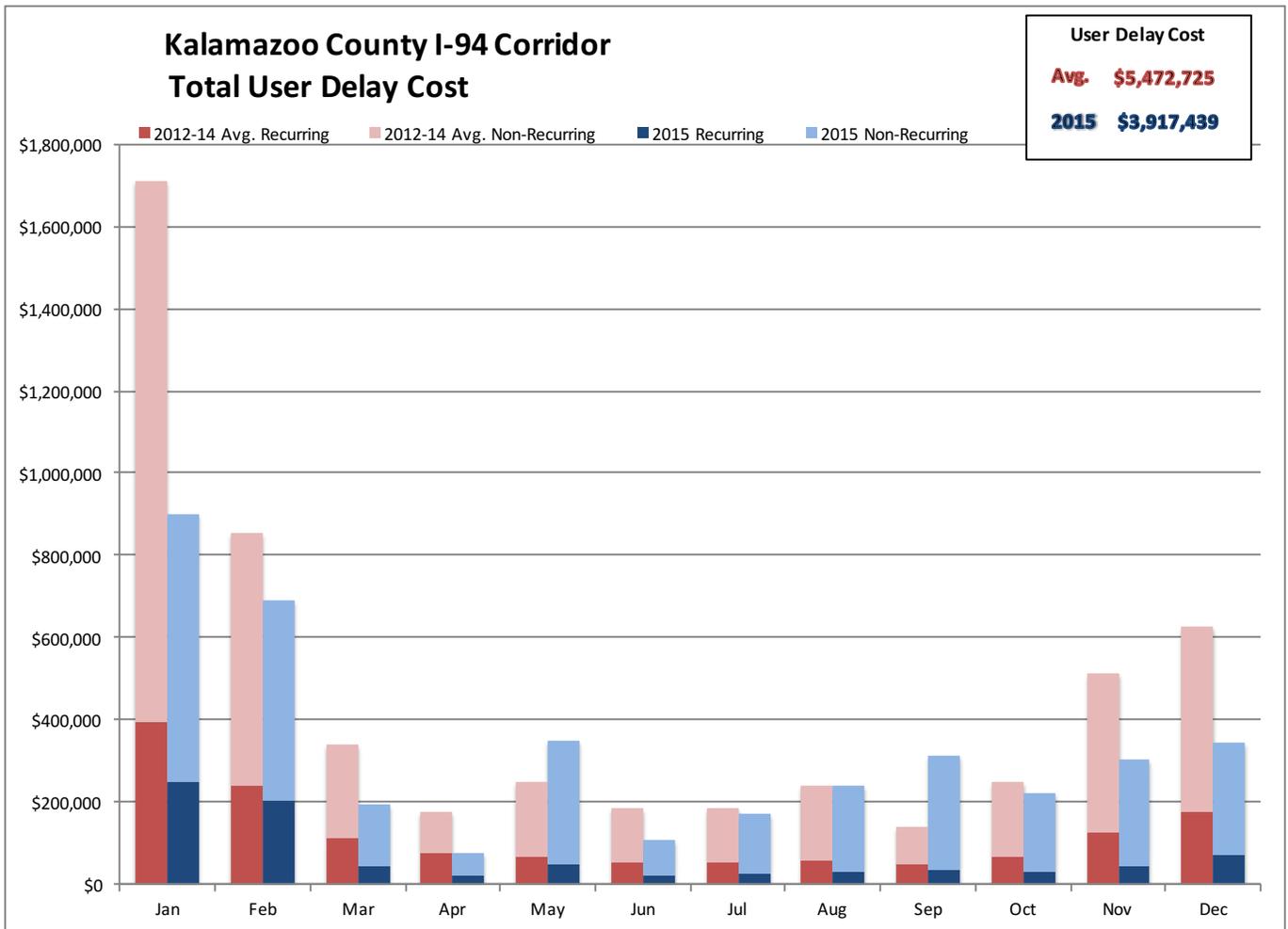
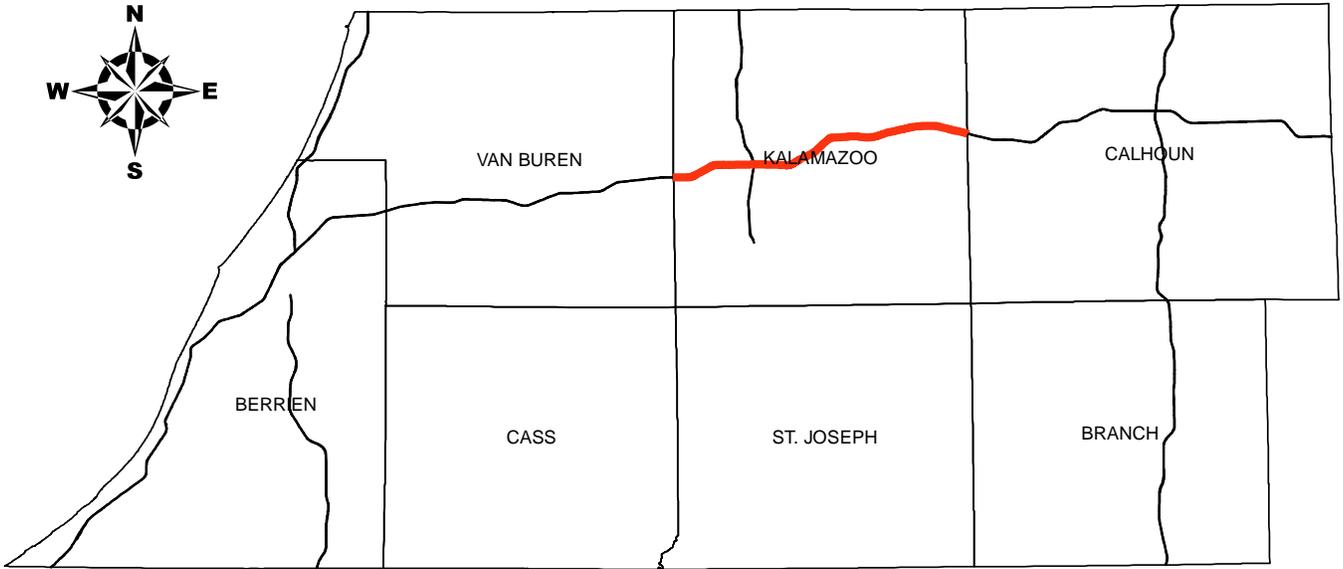


Figure 12. Calhoun County I-94 Corridor total user delay cost

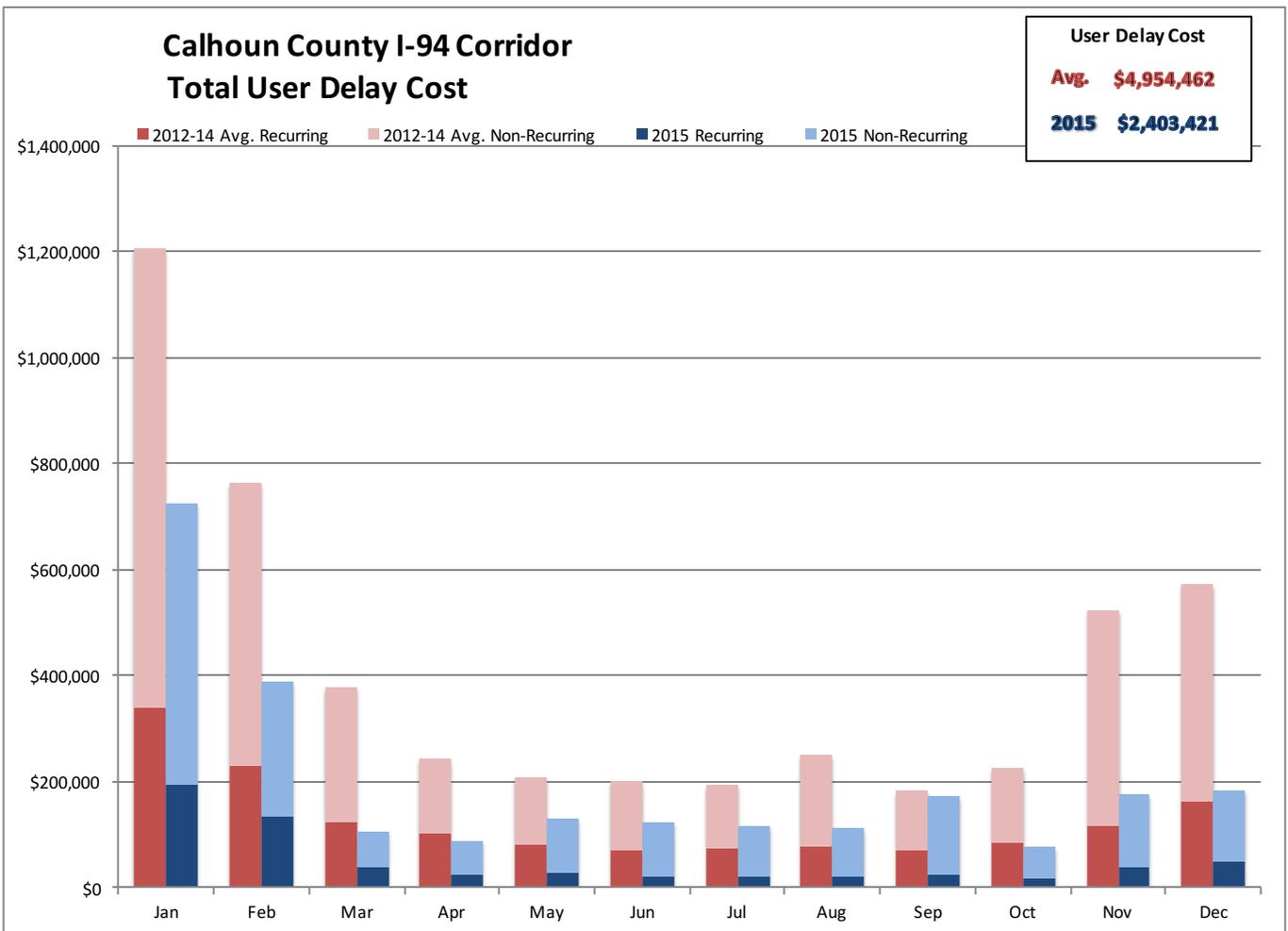
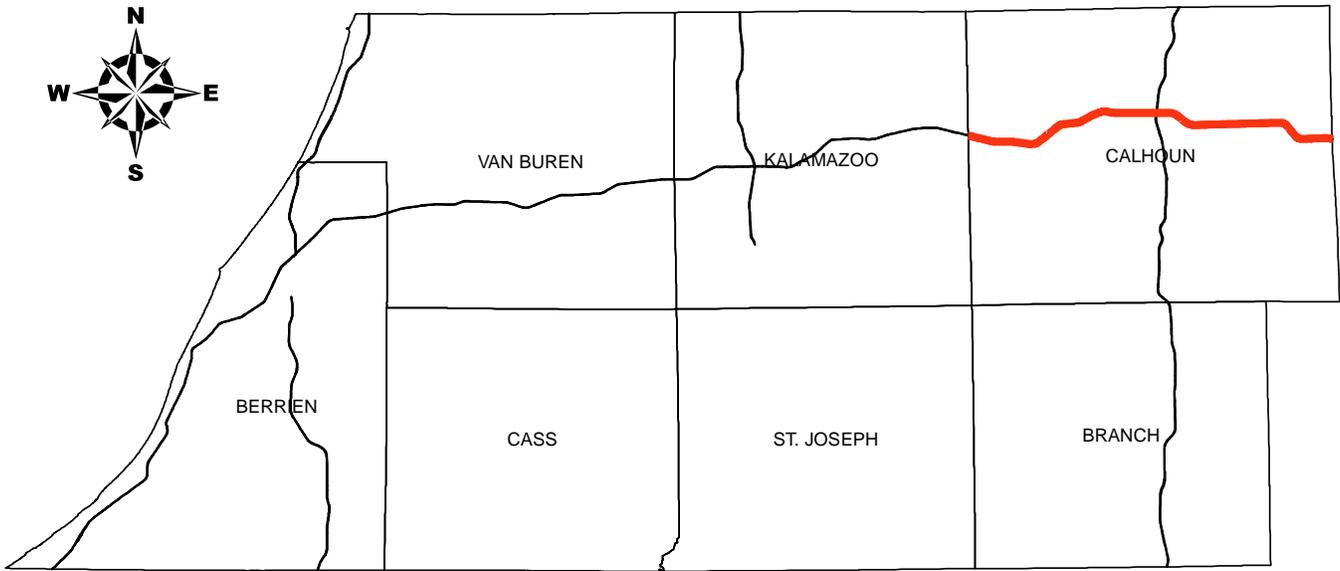


Figure 13. Southwest Region I-94 eastbound

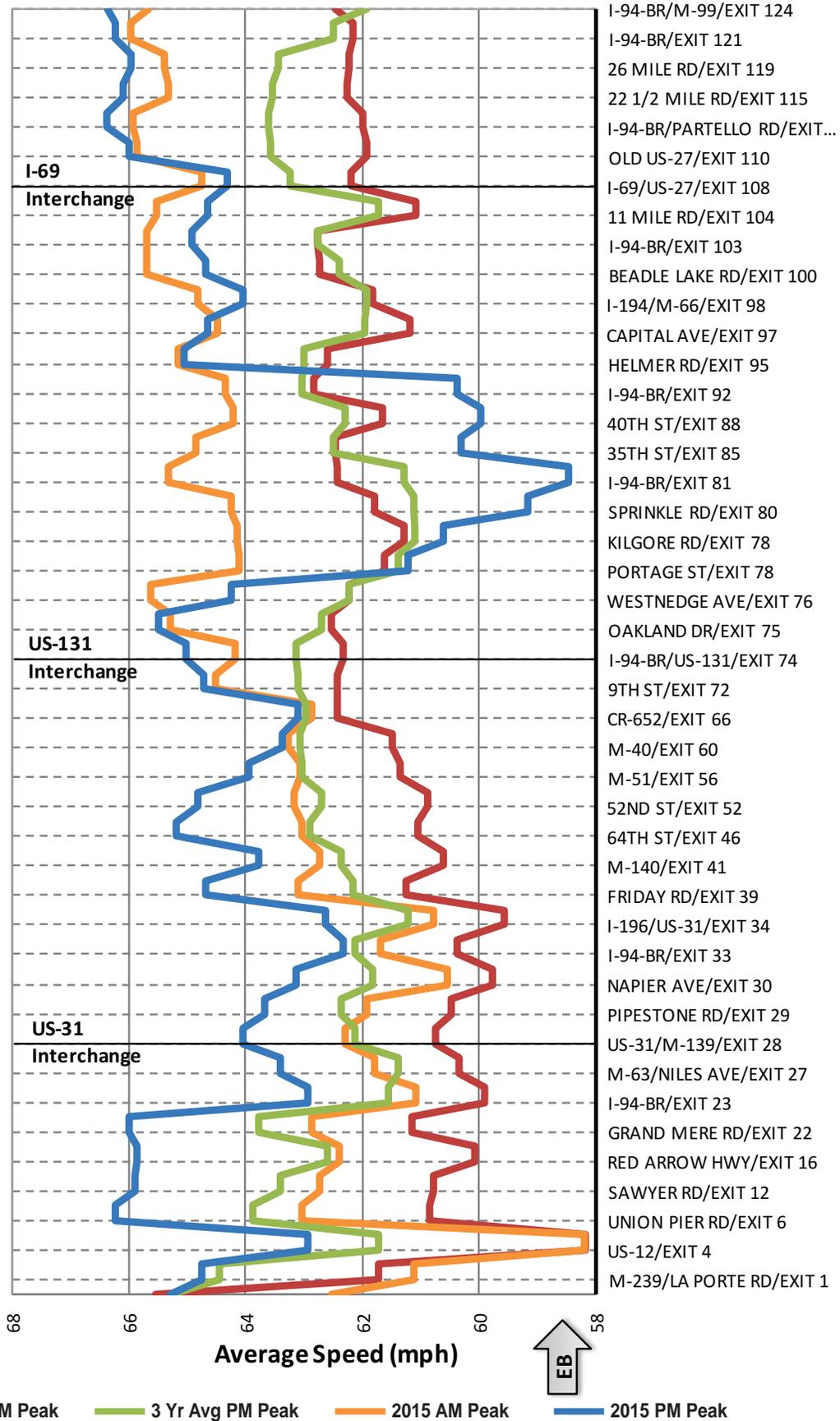
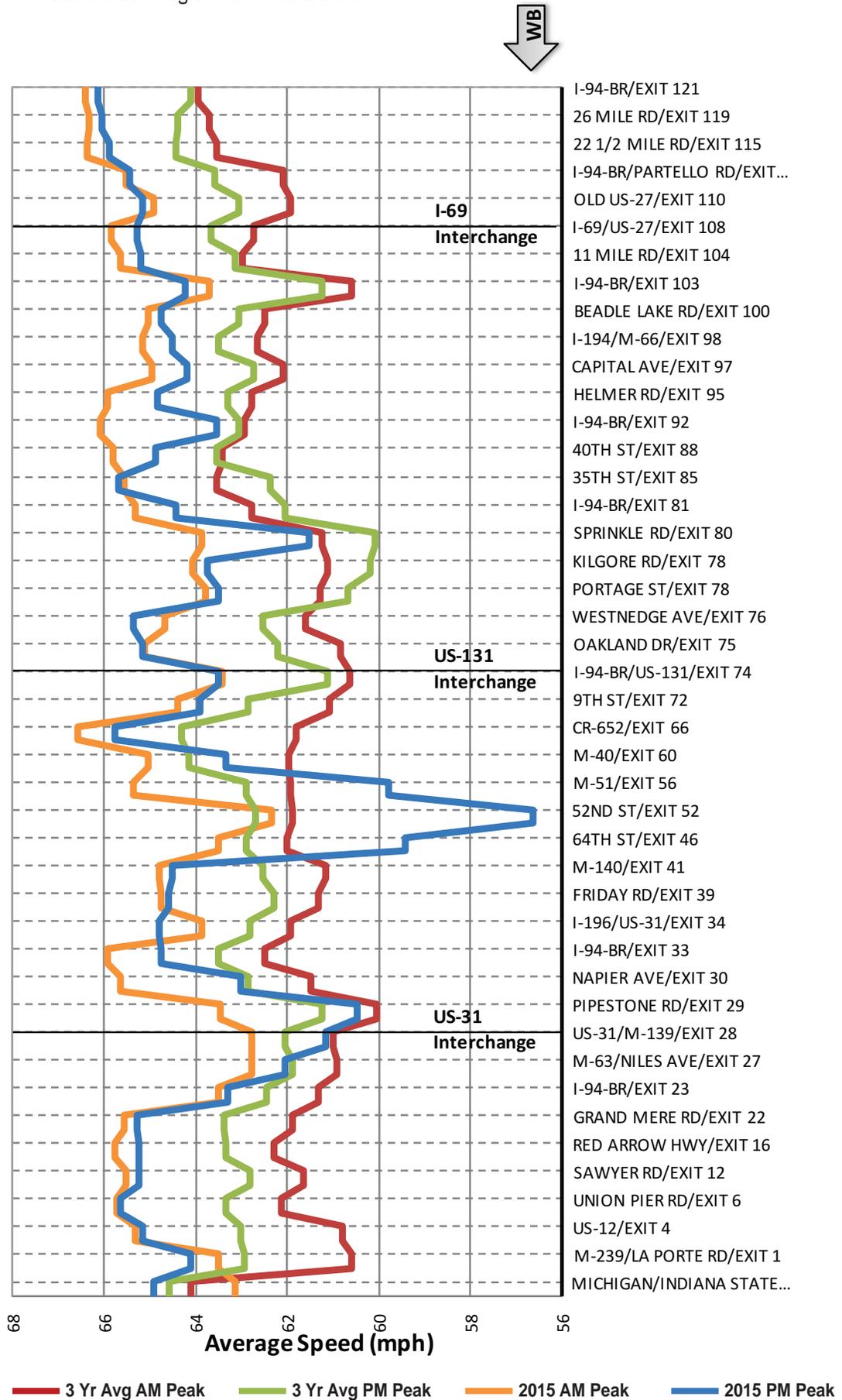
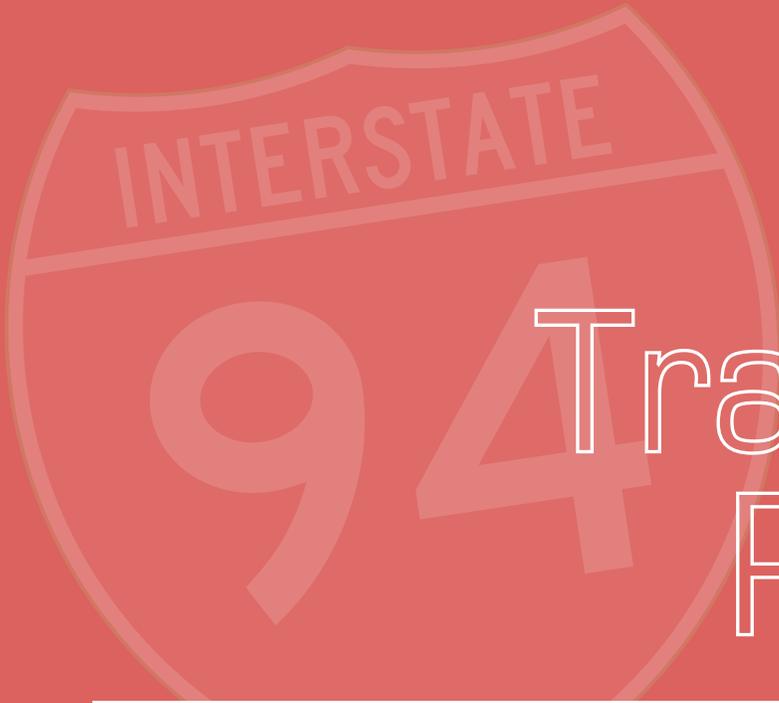


Figure 14. Southwest Region I-94 westbound



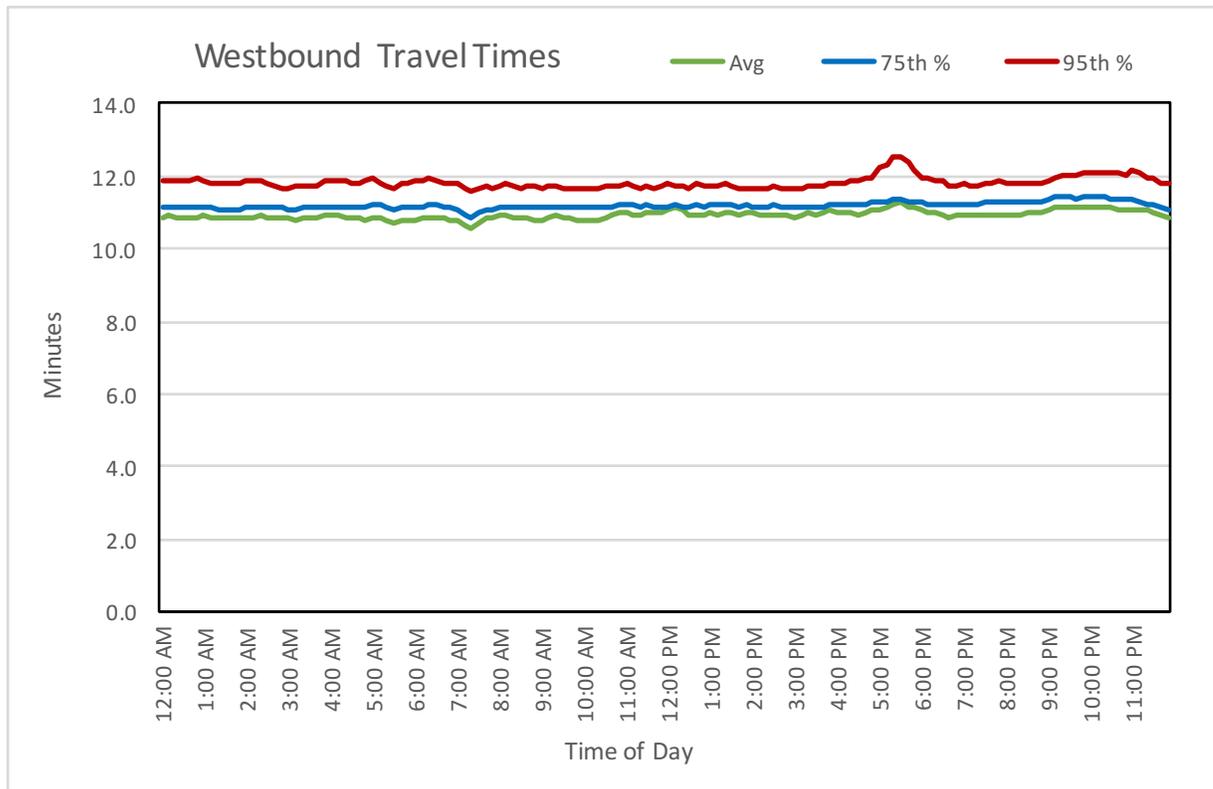
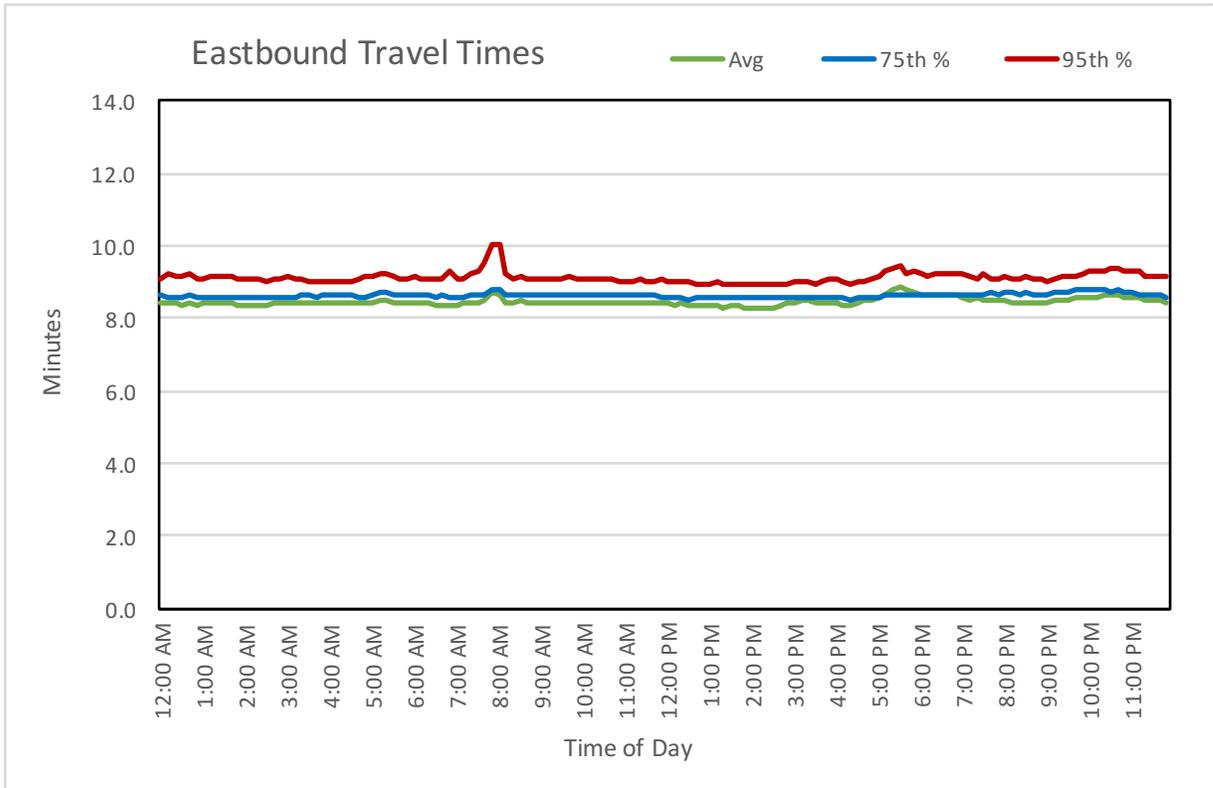


# Travel Time Reliability

Figure 15. Travel time reliability 1-94



Figure 16. Segment 1- I-94 between I-94-BR/US-131 and I-94-BR





# Corridor



Interstate 69: **Branch and Calhoun**



Interstate 94: **Berrien, Van Buren, Kalamazoo, and Calhoun**



Interstate 196: **Berrien and Van Buren**

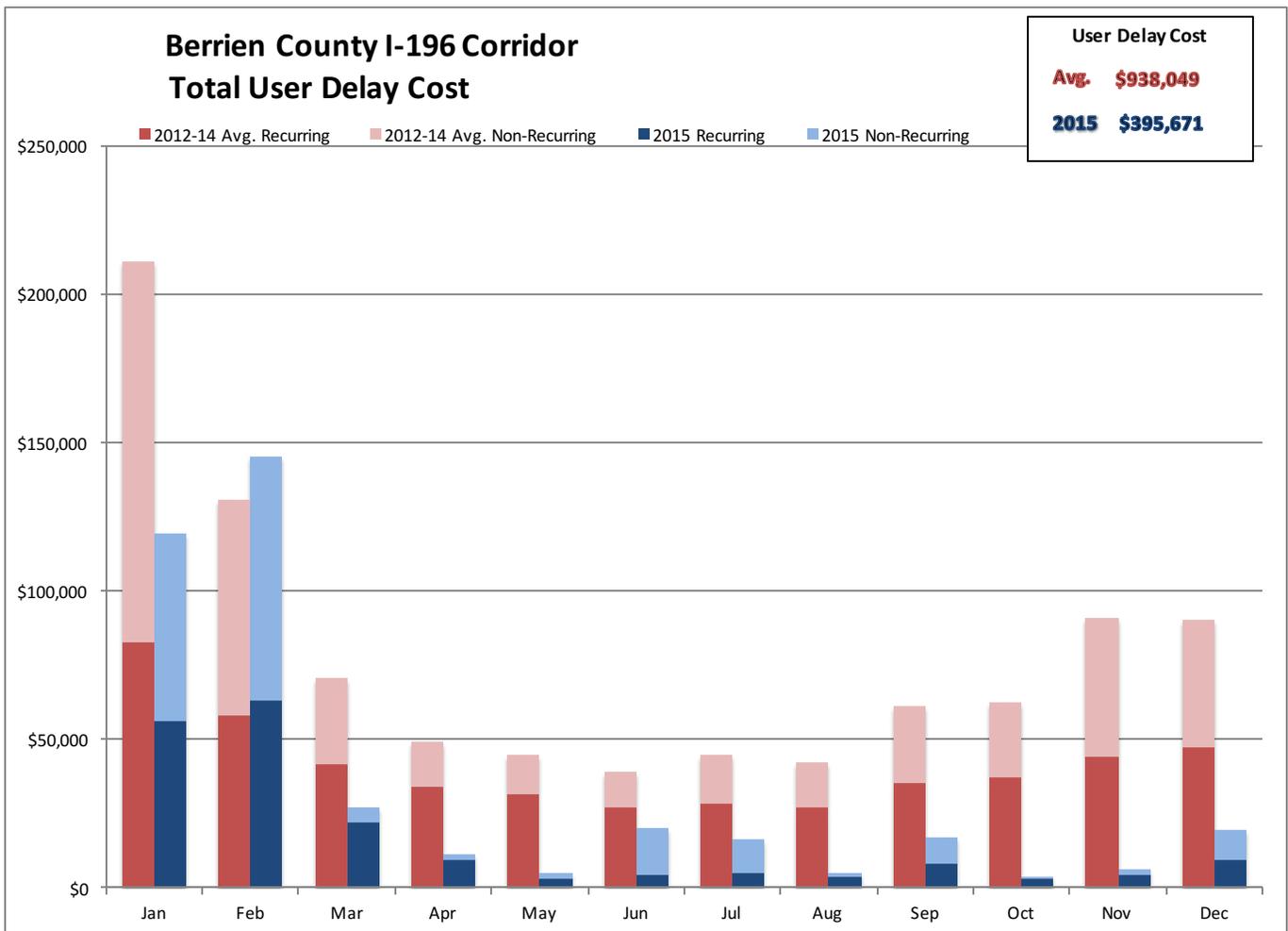
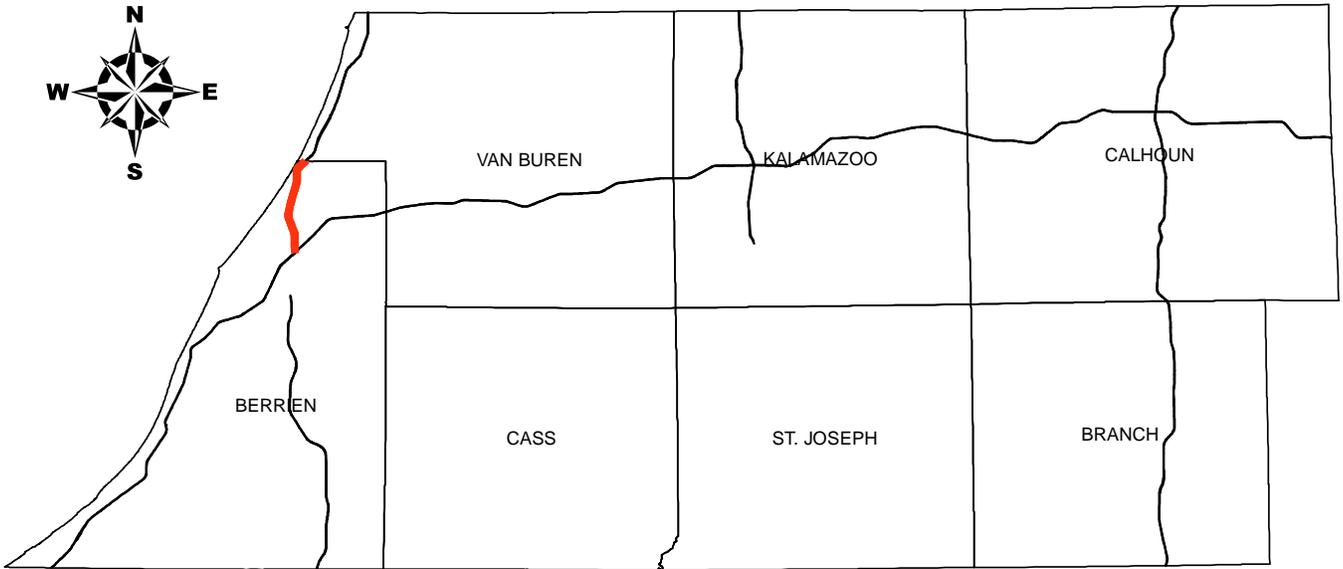


US-31: **Berrien**



US-131: **Kalamazoo**

Figure 17. Berrien County I-196 Corridor total user delay cost



**Figure 18.** Van Buren County I-196 Corridor total user delay cost

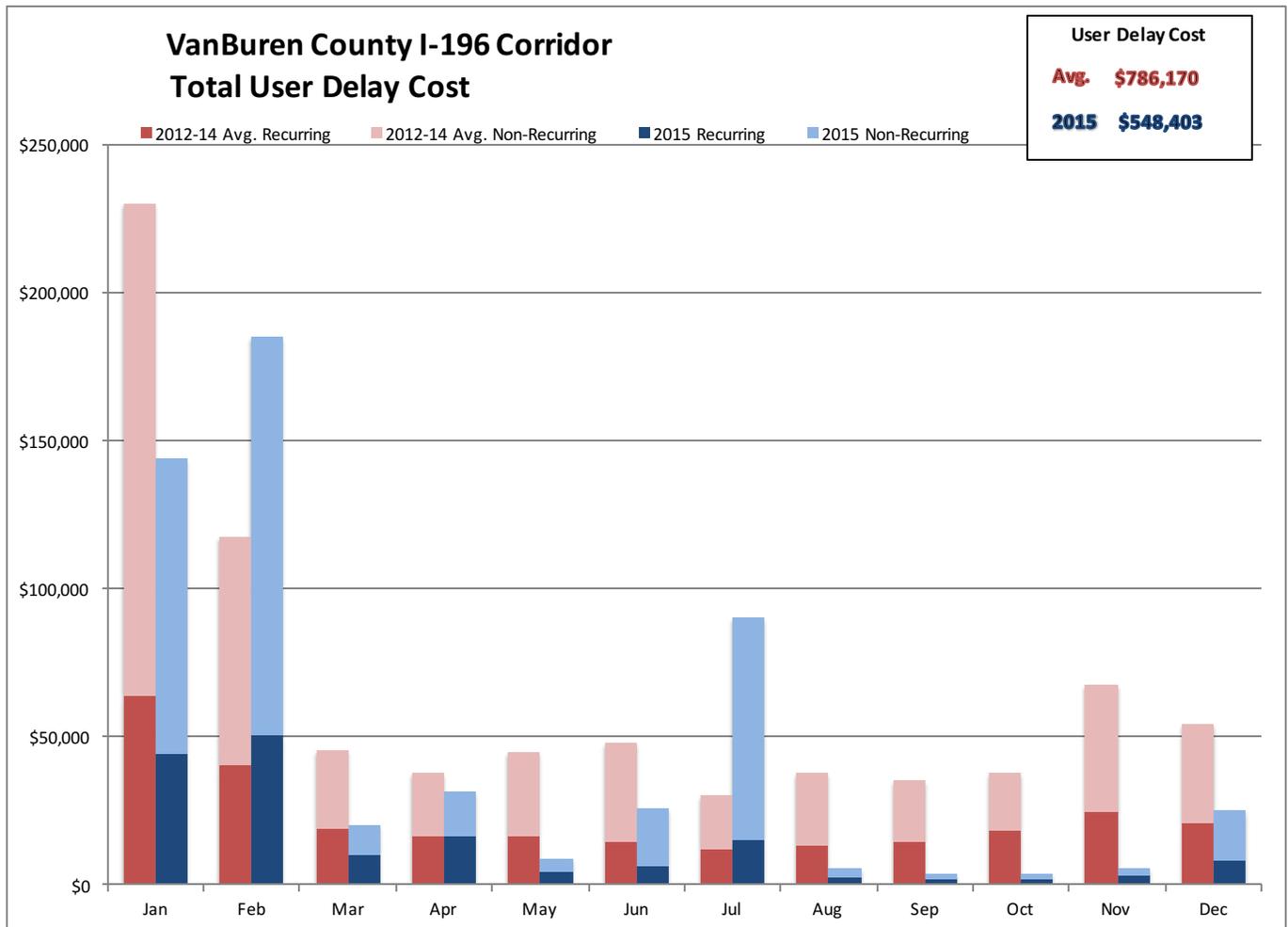
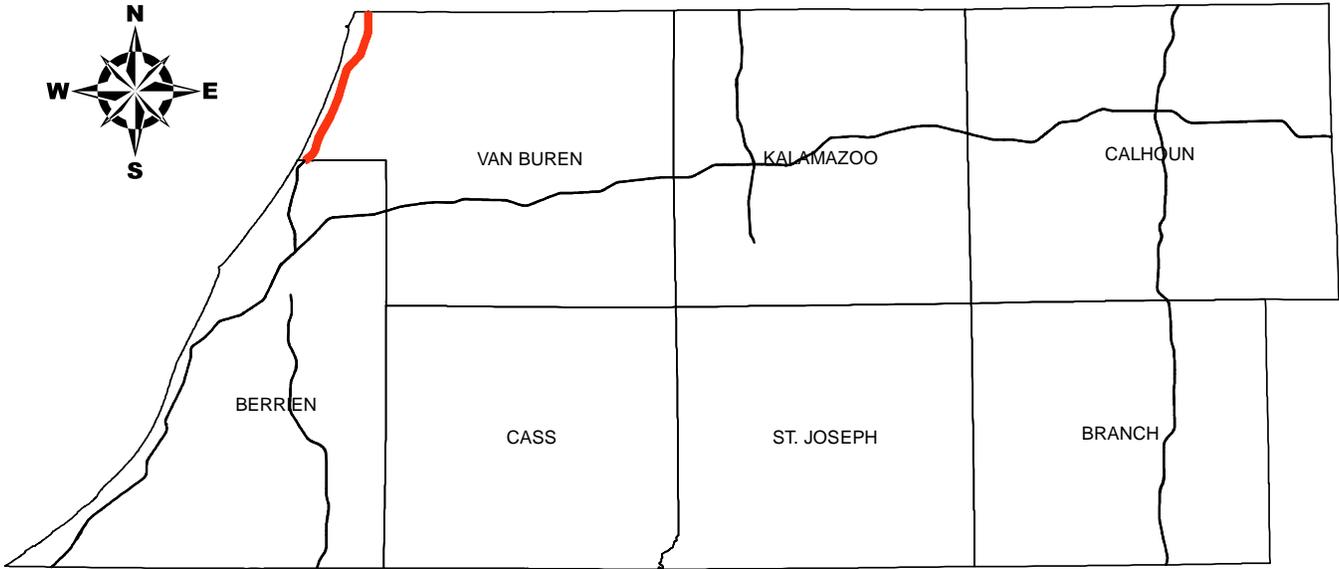


Figure 19. Southwest Region I-196 northbound

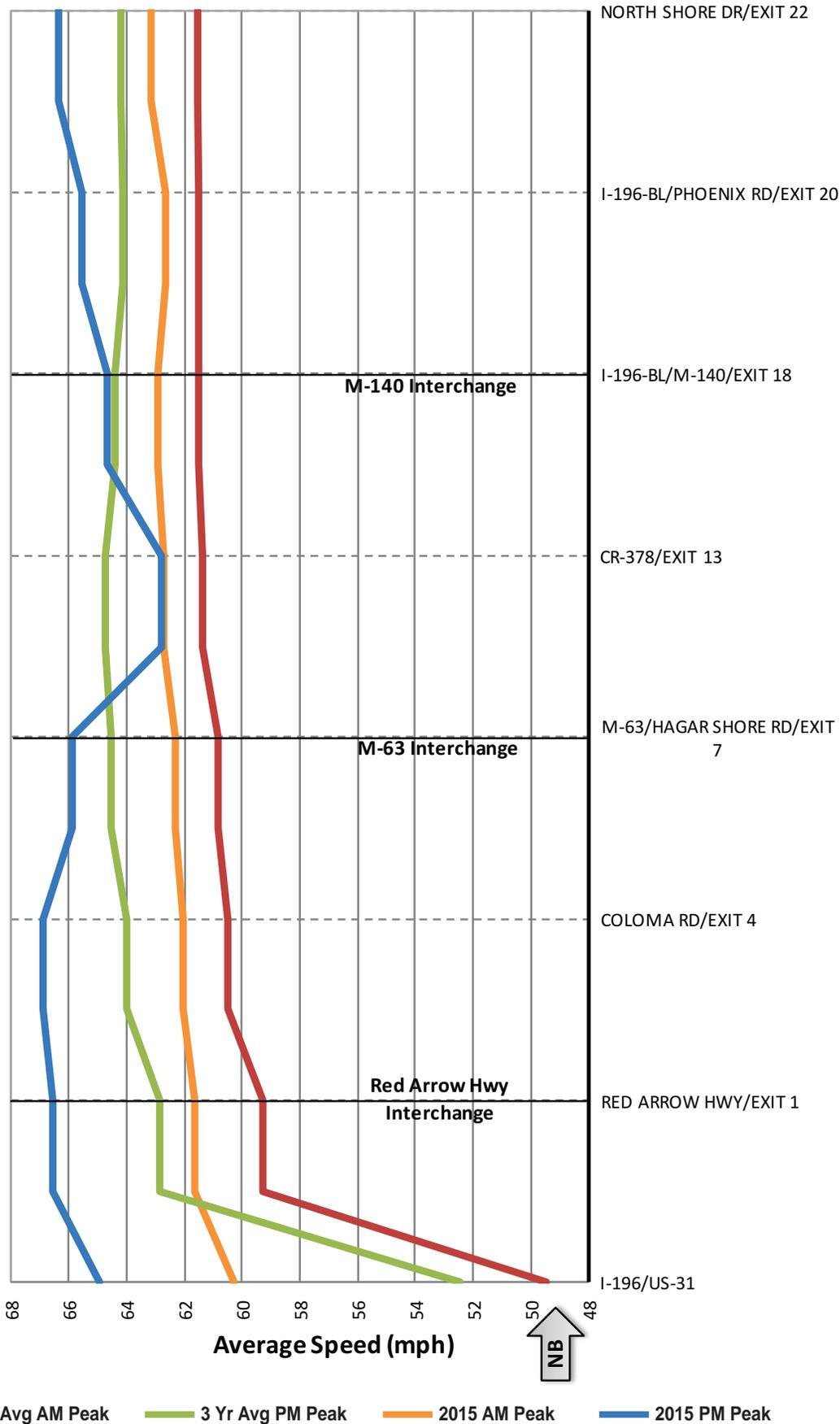
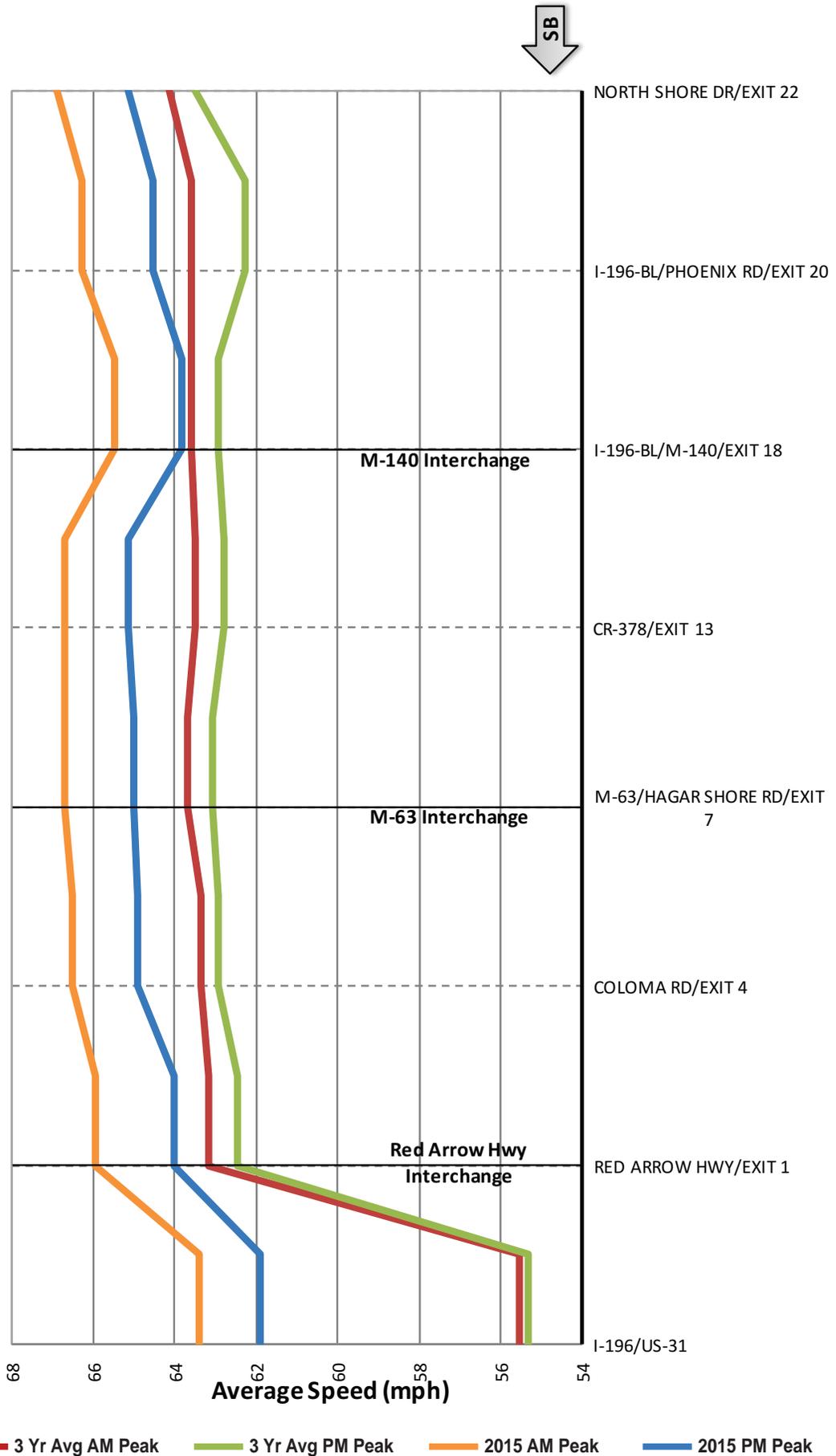


Figure 20. Southwest Region I-196 southbound





# Corridor



Interstate 69: **Branch and Calhoun**



Interstate 94: **Berrien, Van Buren, Kalamazoo, and Calhoun**



Interstate 196: **Berrien and Van Buren**



US-31: **Berrien**



US-131: **Kalamazoo**

**Figure 21.** Berrien County US-31 Corridor total user delay cost

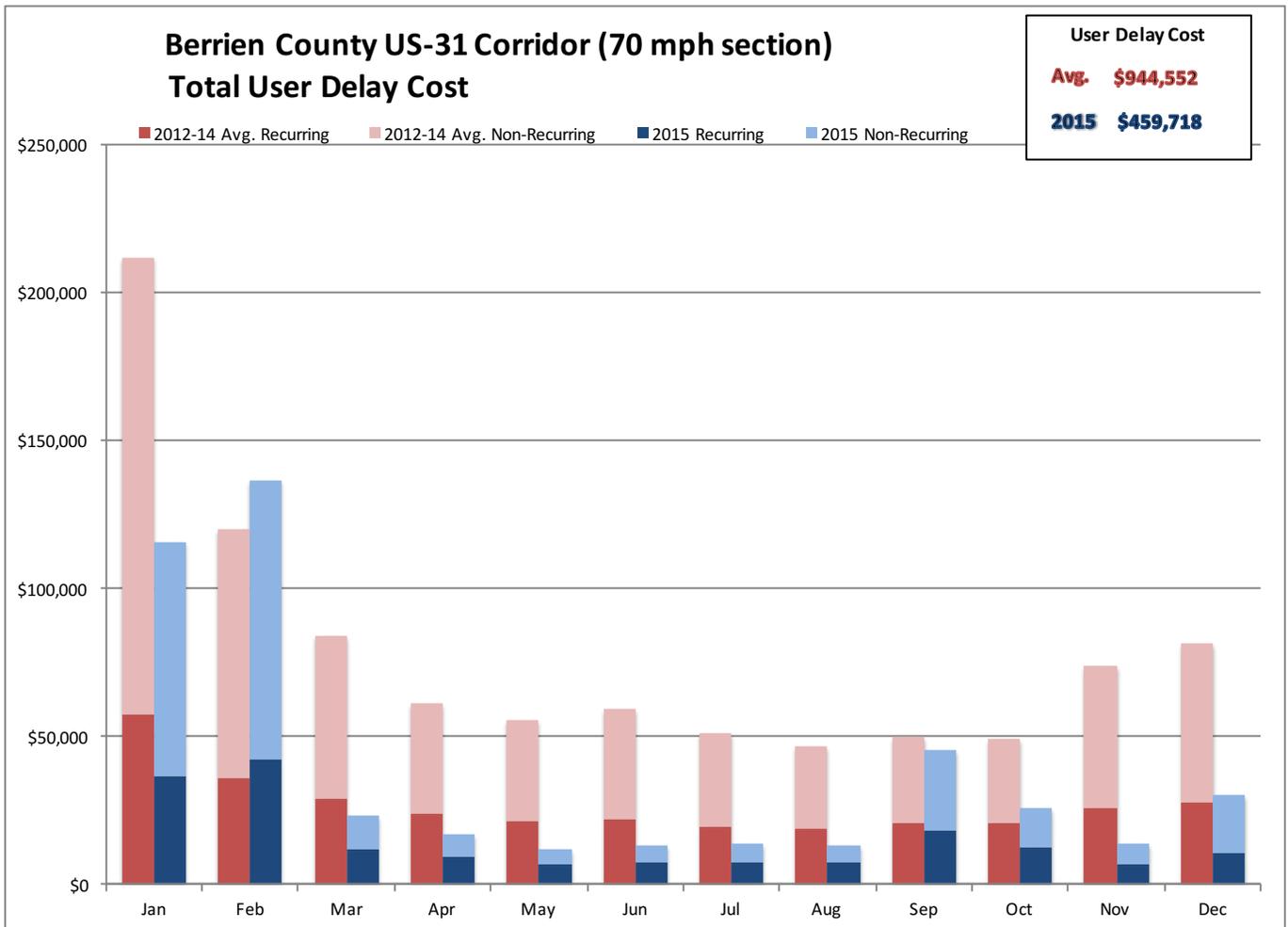
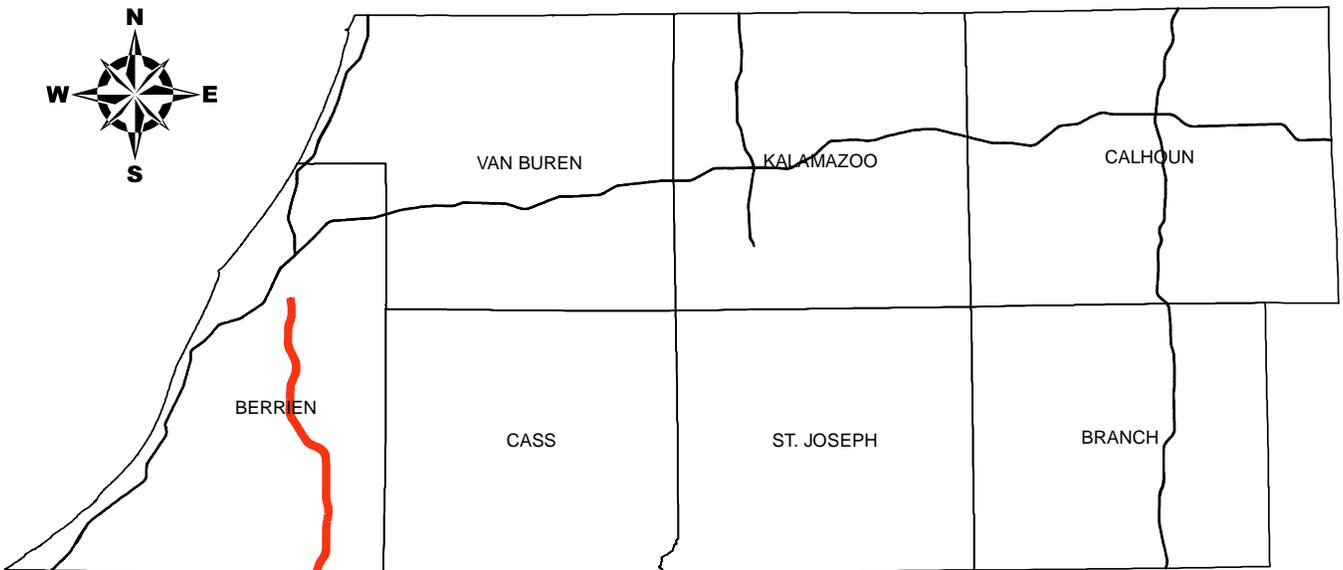


Figure 22. Southwest Region US-31 northbound

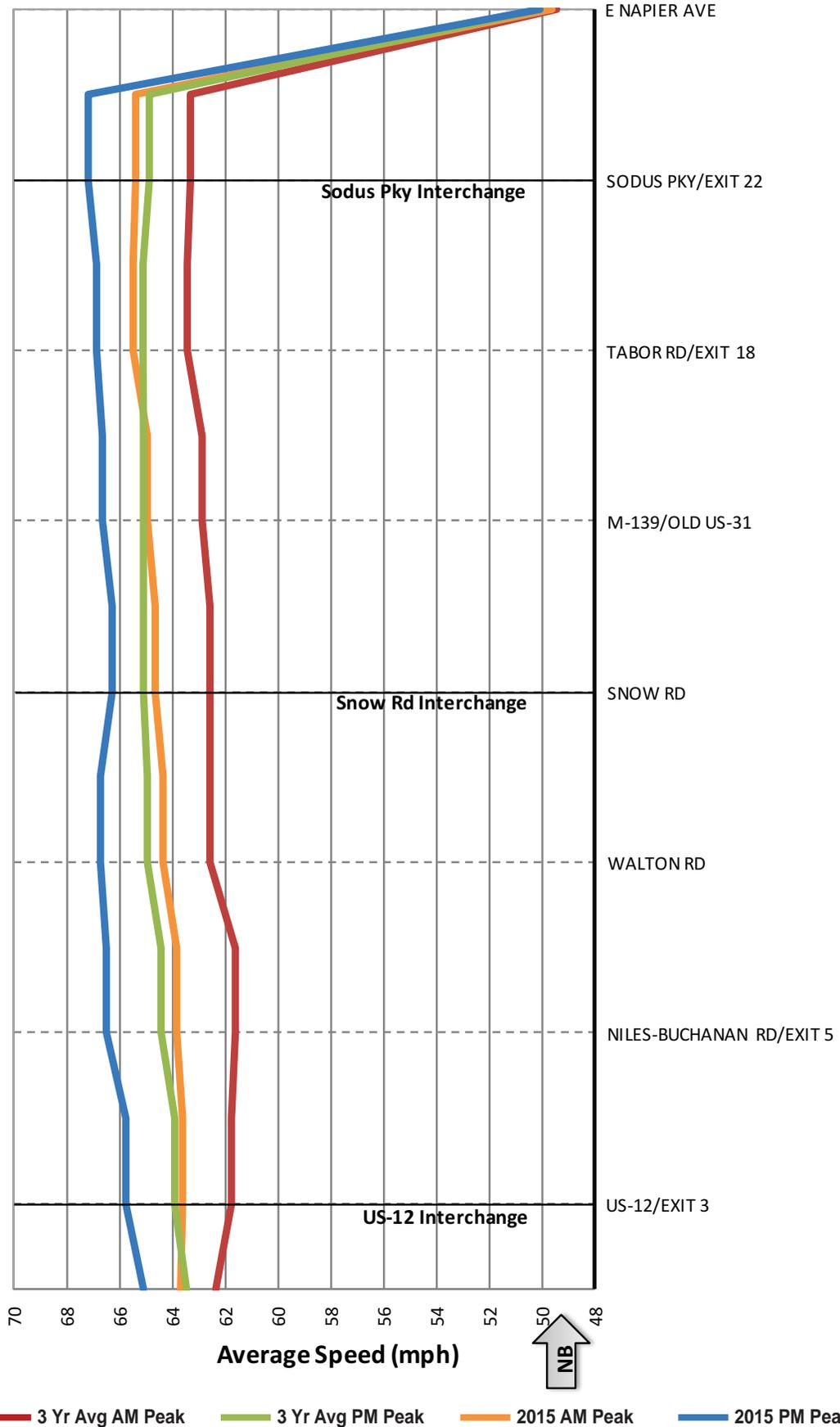
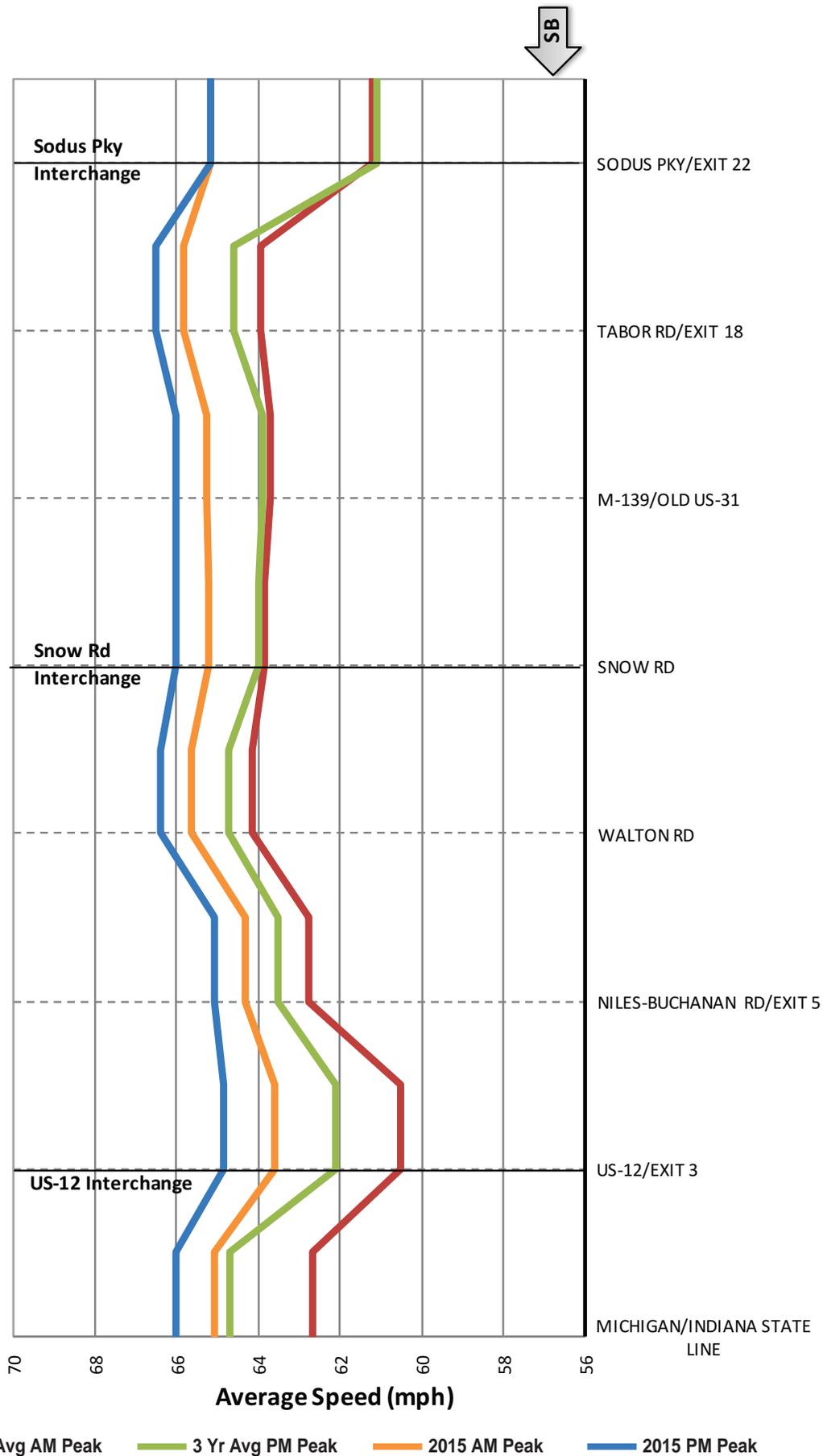


Figure 23. Southwest Region US-31 southbound



# Corridor



Interstate 69: **Branch and Calhoun**



Interstate 94: **Berrien, Van Buren, Kalamazoo, and Calhoun**



Interstate 196: **Berrien and Van Buren**



US-31: **Berrien**



US-131: **Kalamazoo**

Figure 24. Kalamazoo County US-131 Corridor total user delay cost

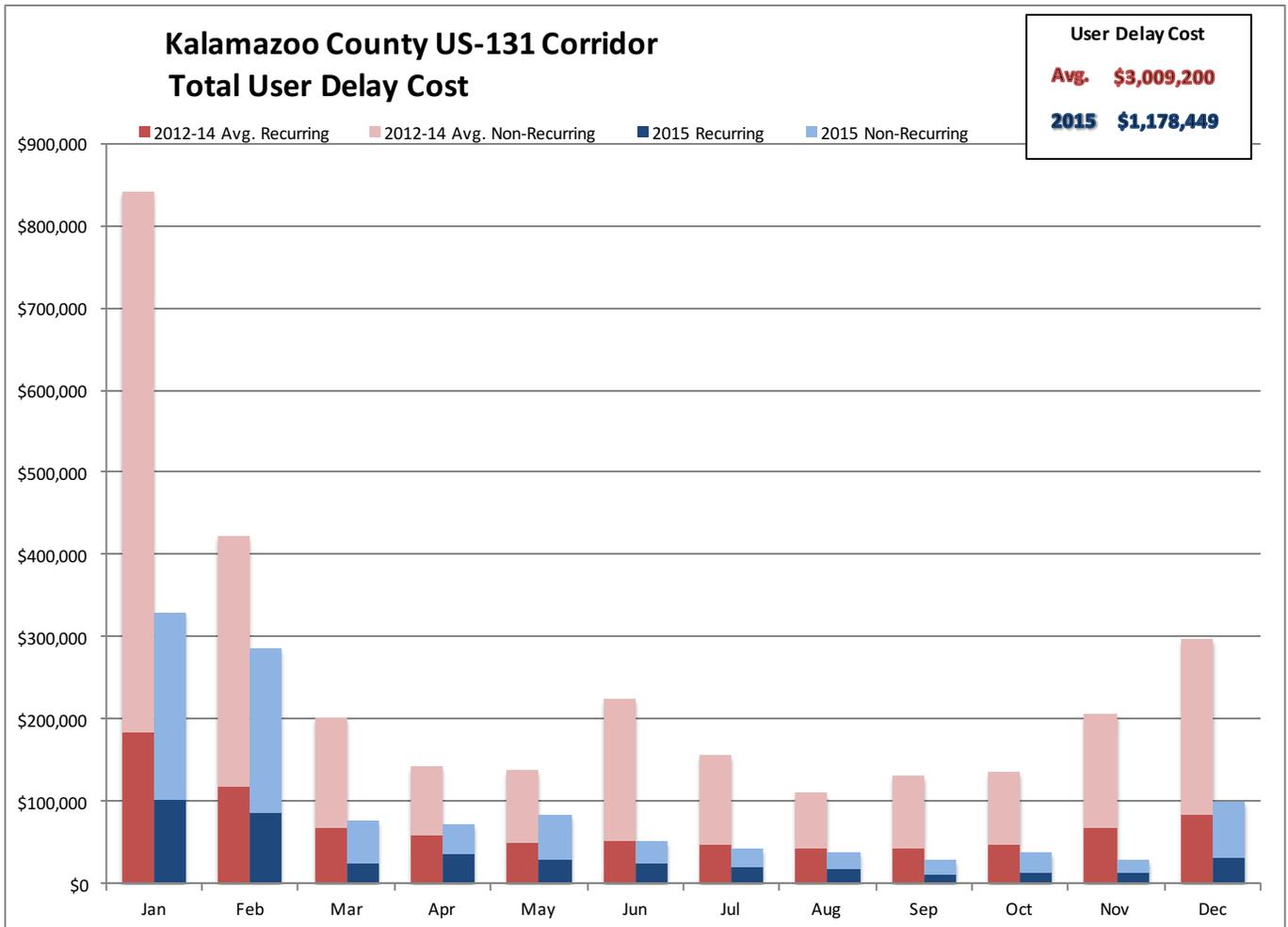
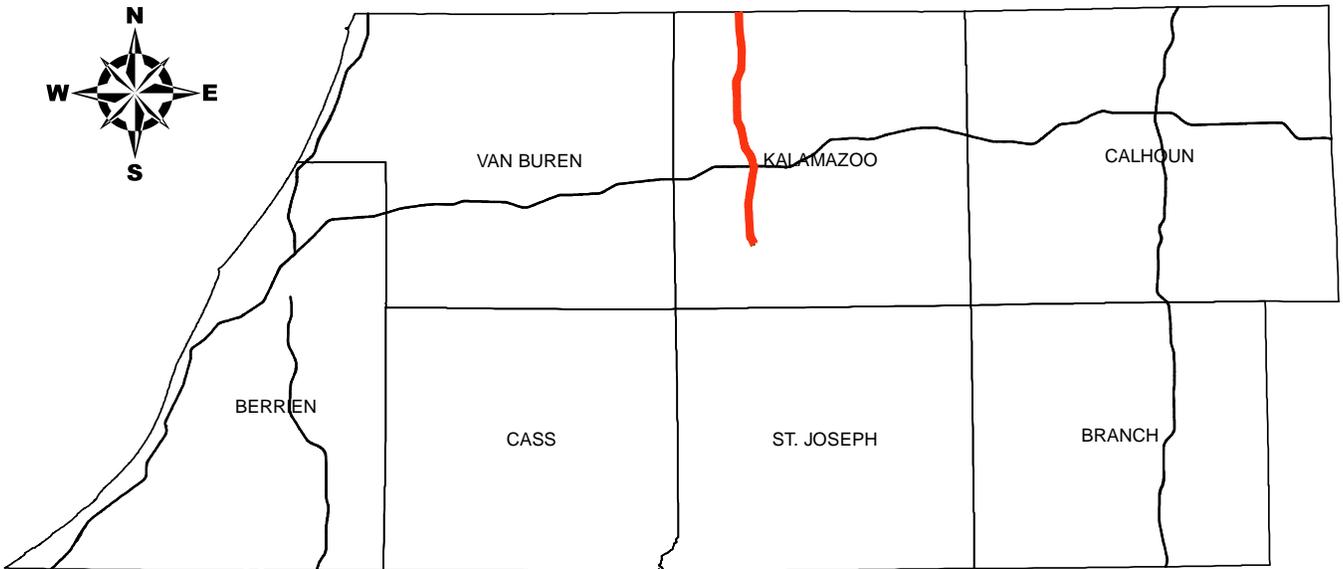


Figure 25. Southwest Region US-131 northbound

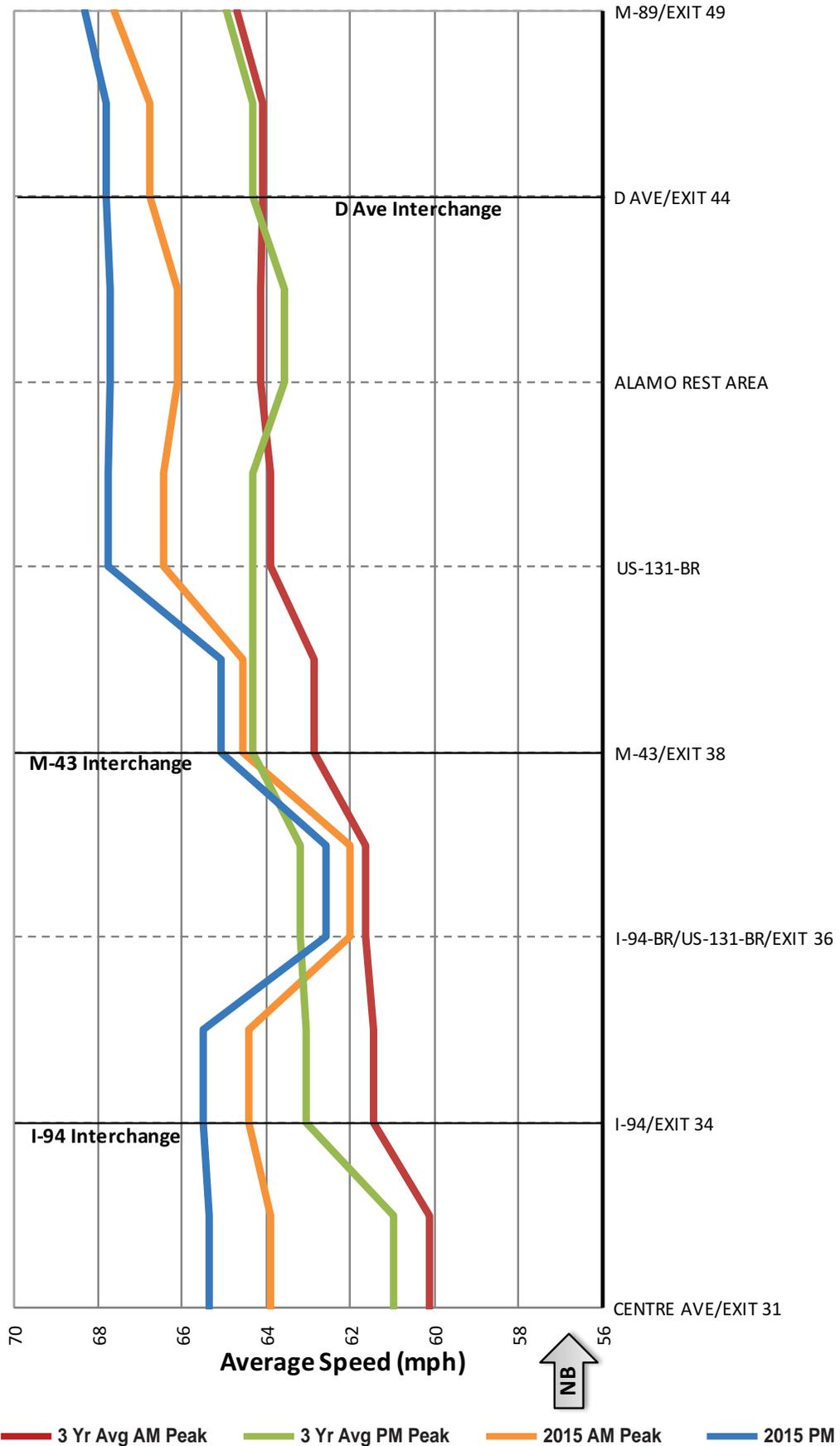
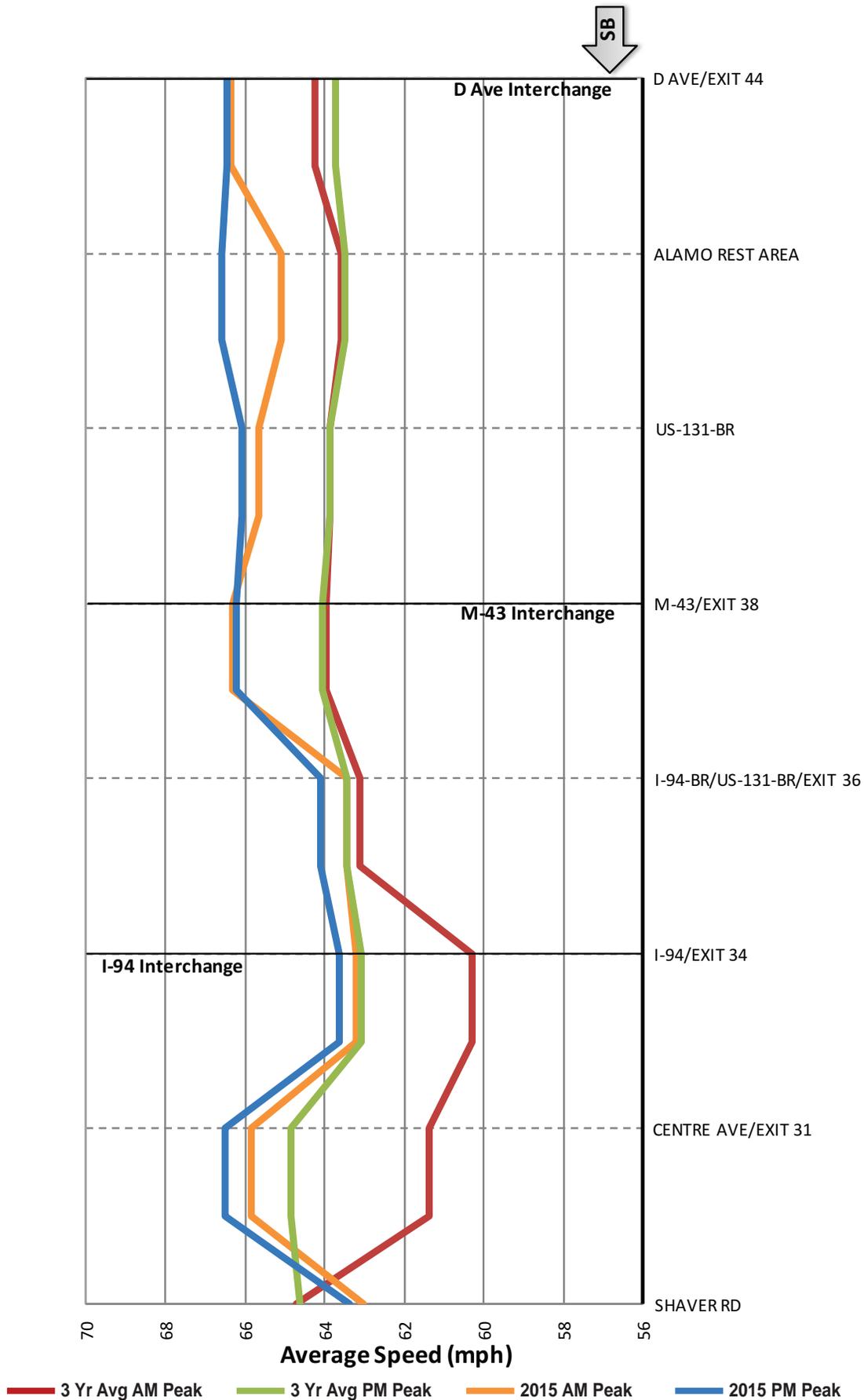


Figure 26. Southwest Region US-131 southbound





# MIDOT

Michigan Department of Transportation

