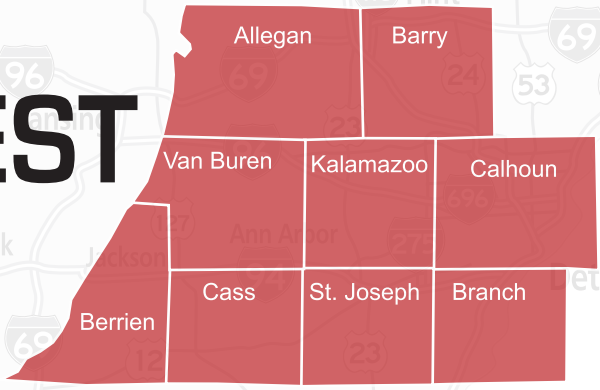
MDOT
Michigan Department of Transportation

2014 Congestion & Mobility Report

Chapter 6
SOUTHWEST REGION
SUMMARY



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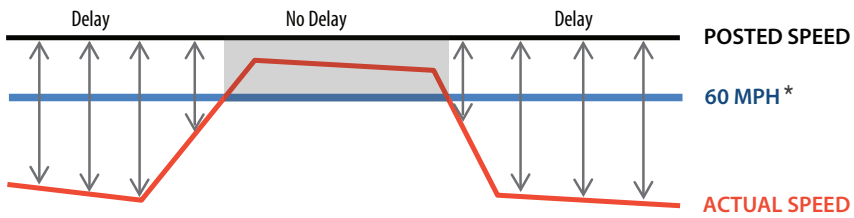
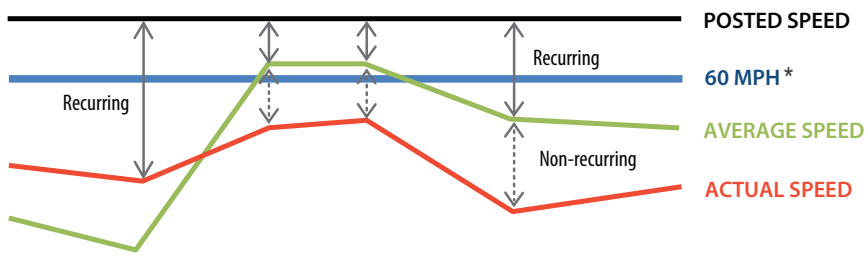
Performance Measures Definitions



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.



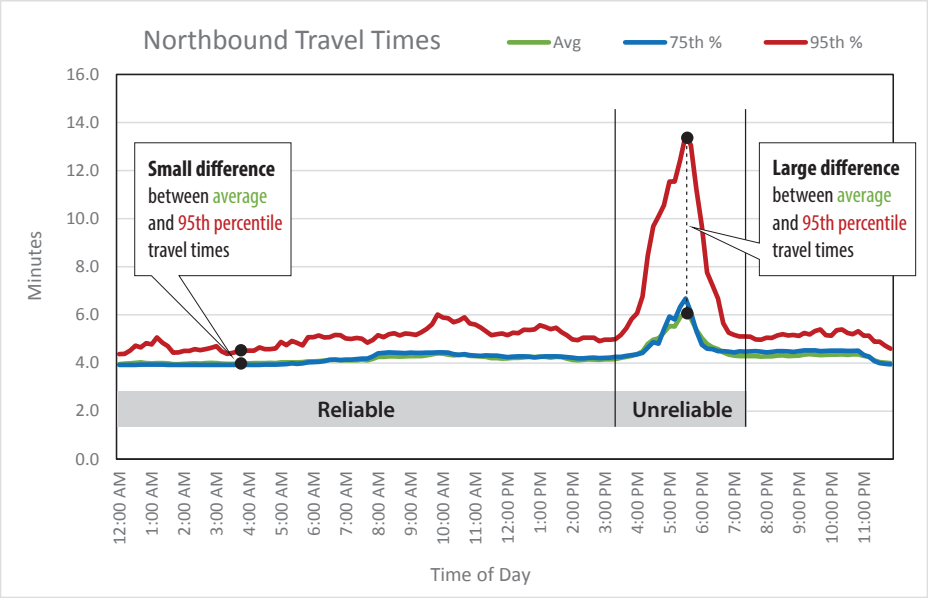
User Delay Cost > User Delay Costs (UDC) is calculated by multiplying delay x hourly volume per hourly user cost. Delay is calculated by taking the difference between actual speeds when they fall below 60 mph and the posted speed limit. Hourly volumes are derived from Average Daily Traffic (ADT) and 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). A TMC is a standard for delivering real-time traffic information. They vary from tenths of a mile long to several miles long.

Weighted Congestion > Number of congestion hours multiplied by the segment length. Congestion along longer segments will get more consideration than congestion along shorter segments.

*** 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. 2014 Southwest Region user delay cost per mile

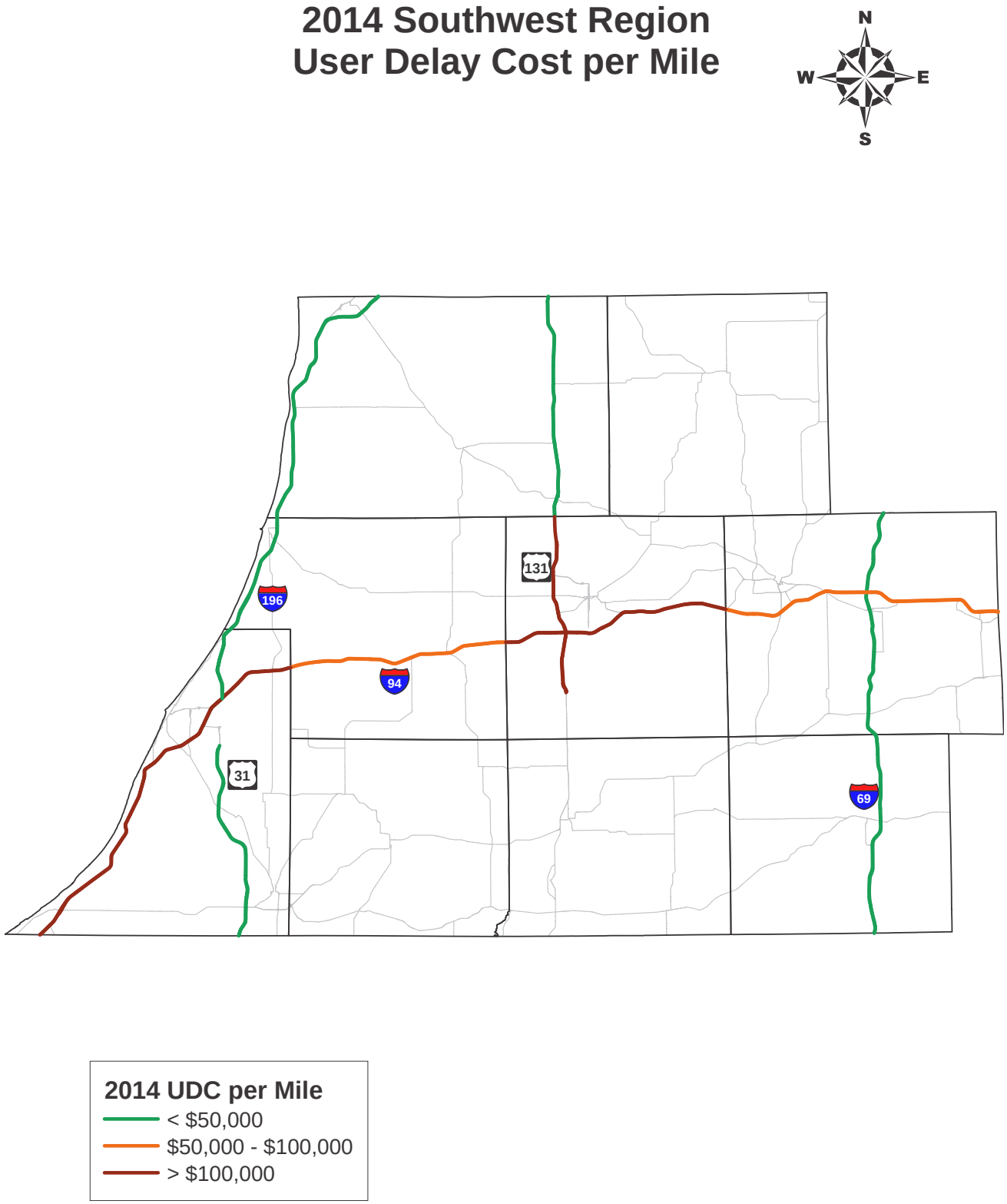


Figure 2. 2014 Southwest Region congestion hours northbound/eastbound

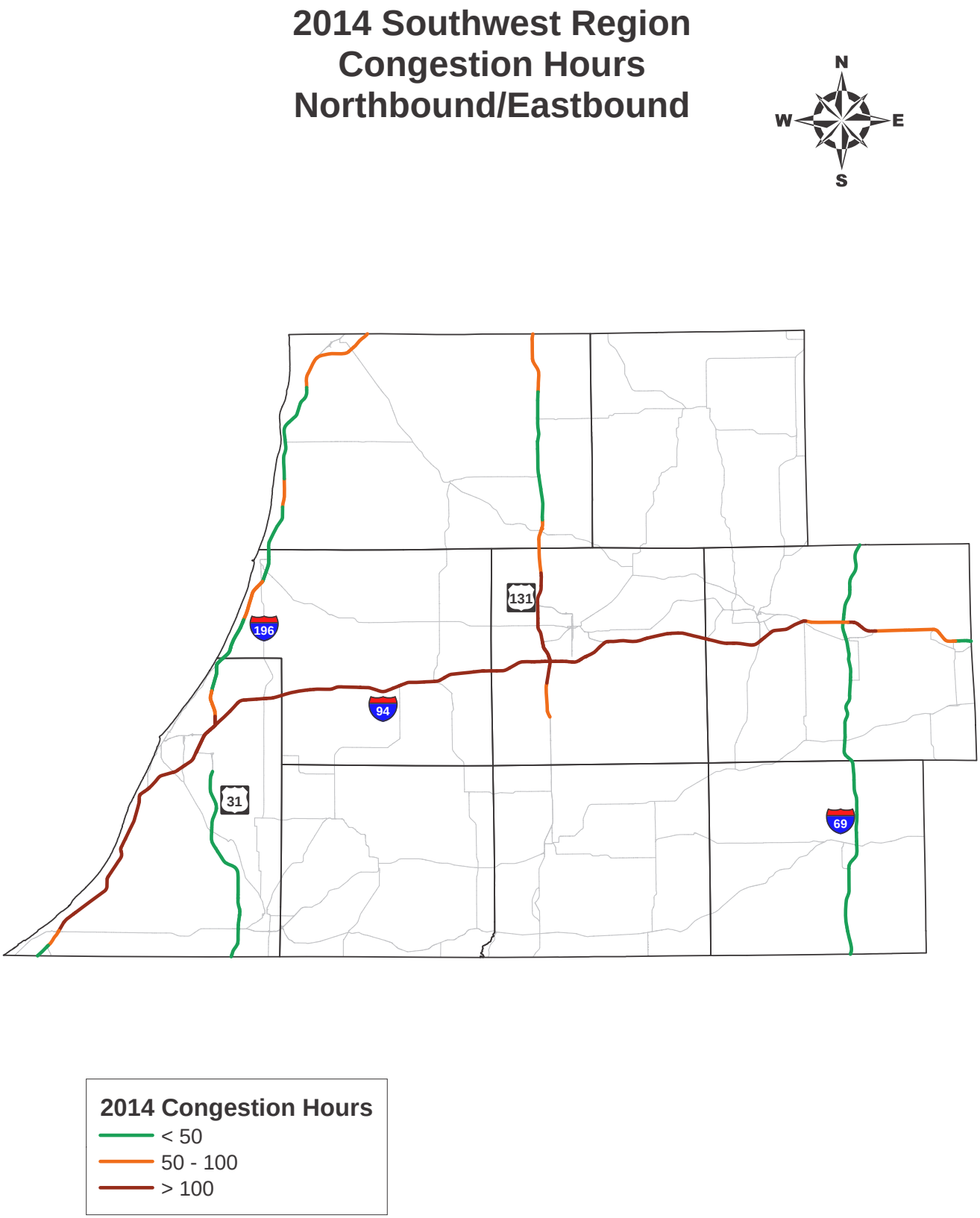


Figure 3. 2014 Southwest Region congestion hours southbound/westbound

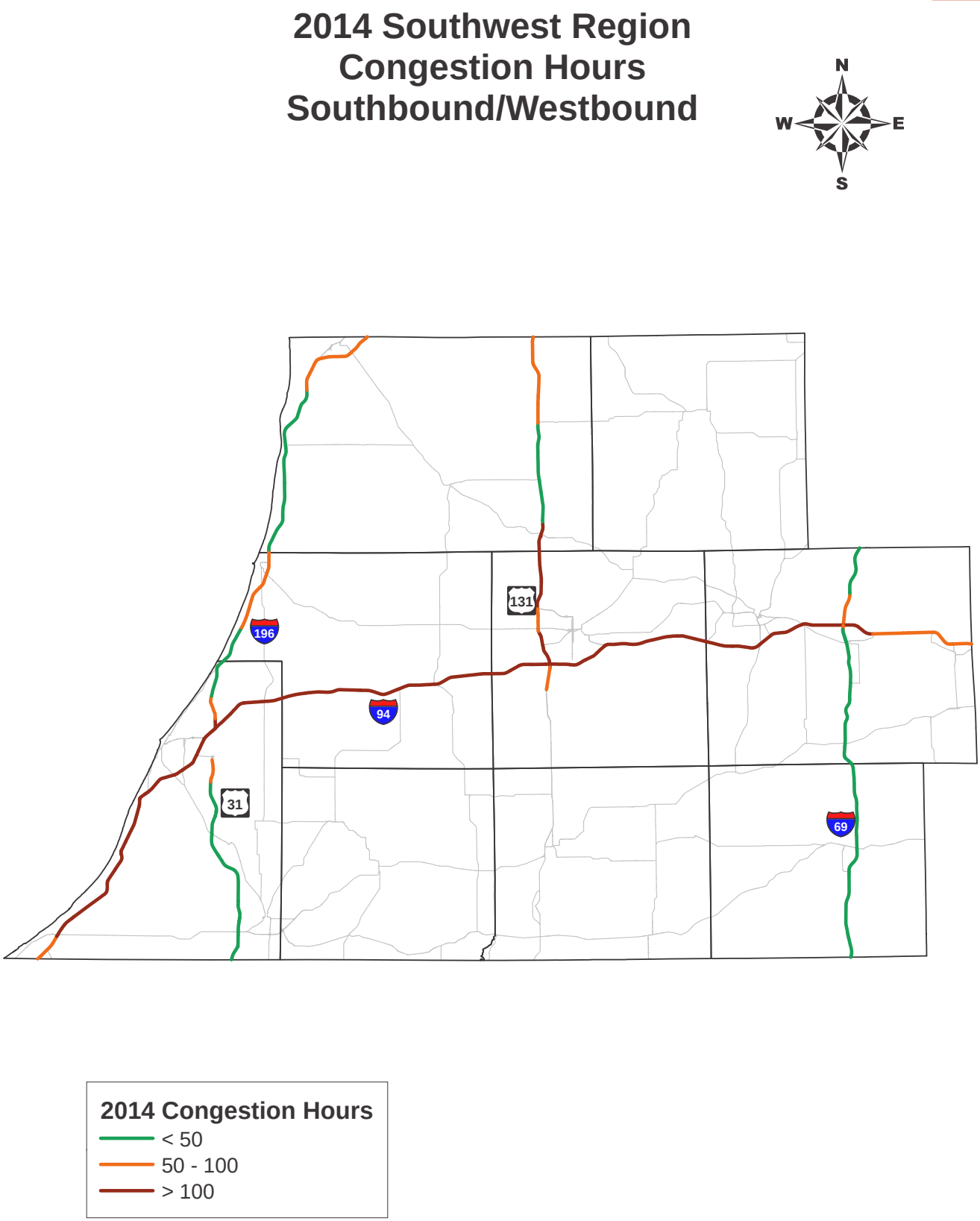


Figure 4. Ranked UDC by location

	2012-2013 Average	
Rank	UDC Per Mile	Location (Route, County)
1	$100,008	US-131 Kalamazoo Co.
2	$97,506	I-94 Kalamazoo Co.
3	$95,126	I-94 Berrien Co.
4	$70,470	I-94 Calhoun Co.
5	$59,397	I-196 Allegan Co.
6	$49,788	US-131 Allegan Co.
7	$46,151	I-94 Van Buren Co.
8	$37,510	I-196 Berrien Co.
9	$23,128	I-196 Van Buren Co.
10	$22,063	I-69 Branch Co.
11	$20,930	I-69 Calhoun Co.
12	$20,257	US-31 Berrien Co.

	2014	
Rank	UDC Per Mile	Location (Route, County)
1	$122,398	US-131 Kalamazoo Co.
2	$120,722	I-94 Kalamazoo Co.
3	$112,788	I-94 Berrien Co.
4	$80,901	I-94 Calhoun Co.
5	$74,260	I-94 Van Buren Co.
6	$49,499	US-131 Allegan Co.
7	$41,194	I-196 Allegan Co.
8	$32,361	I-196 Van Buren Co.
9	$29,208	I-196 Berrien Co.
10	$20,825	I-69 Branch Co.
11	$20,351	I-69 Calhoun Co.
12	$18,520	US-31 Berrien Co.

	2012-2013 Average	
Rank	Total UDC	Location (Route, County)
1	$8,656,471	I-94 Berrien Co.
2	$5,070,321	I-94 Kalamazoo Co.
3	$4,721,502	I-94 Calhoun Co.
4	$3,504,396	I-196 Allegan Co.
5	$2,800,228	US-131 Kalamazoo Co.
6	$2,769,048	I-94 Van Buren Co.
7	$2,688,547	US-131 Allegan Co.
8	$1,297,664	I-69 Calhoun Co.
9	$1,012,767	I-196 Berrien Co.
10	$972,340	US-31 Berrien Co.
11	$970,779	I-69 Branch Co.
12	$693,838	I-196 Van Buren Co.
Total =	**$35,157,901**	

	2014	
Rank	Total UDC	Location (Route, County)
1	$10,263,717	I-94 Berrien Co.
2	$6,277,533	I-94 Kalamazoo Co.
3	$5,420,382	I-94 Calhoun Co.
4	$4,455,578	I-94 Van Buren Co.
5	$3,427,144	US-131 Kalamazoo Co.
6	$2,672,938	US-131 Allegan Co.
7	$2,430,469	I-196 Allegan Co.
8	$1,261,754	I-69 Calhoun Co.
9	$970,834	I-196 Van Buren Co.
10	$916,279	I-69 Branch Co.
11	$888,974	US-31 Berrien Co.
12	$788,613	I-196 Berrien Co.
Total =	**$39,774,215**	

Chapter 6

Corridor

Interstate 69: **Branch and Calhoun**

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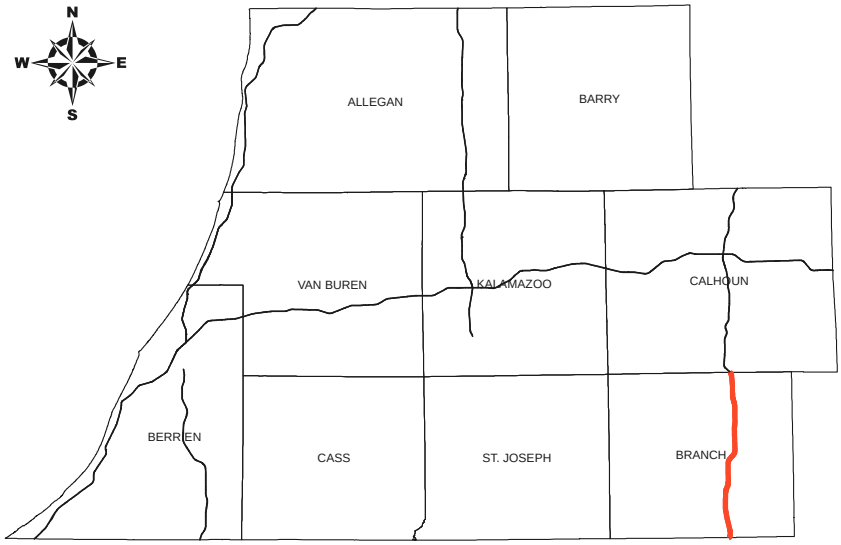
Interstate 196: **Berrien, Van Buren, and Allegan**

US-31: **Berrien**

US-131: **Kalamazoo and Allegan**

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



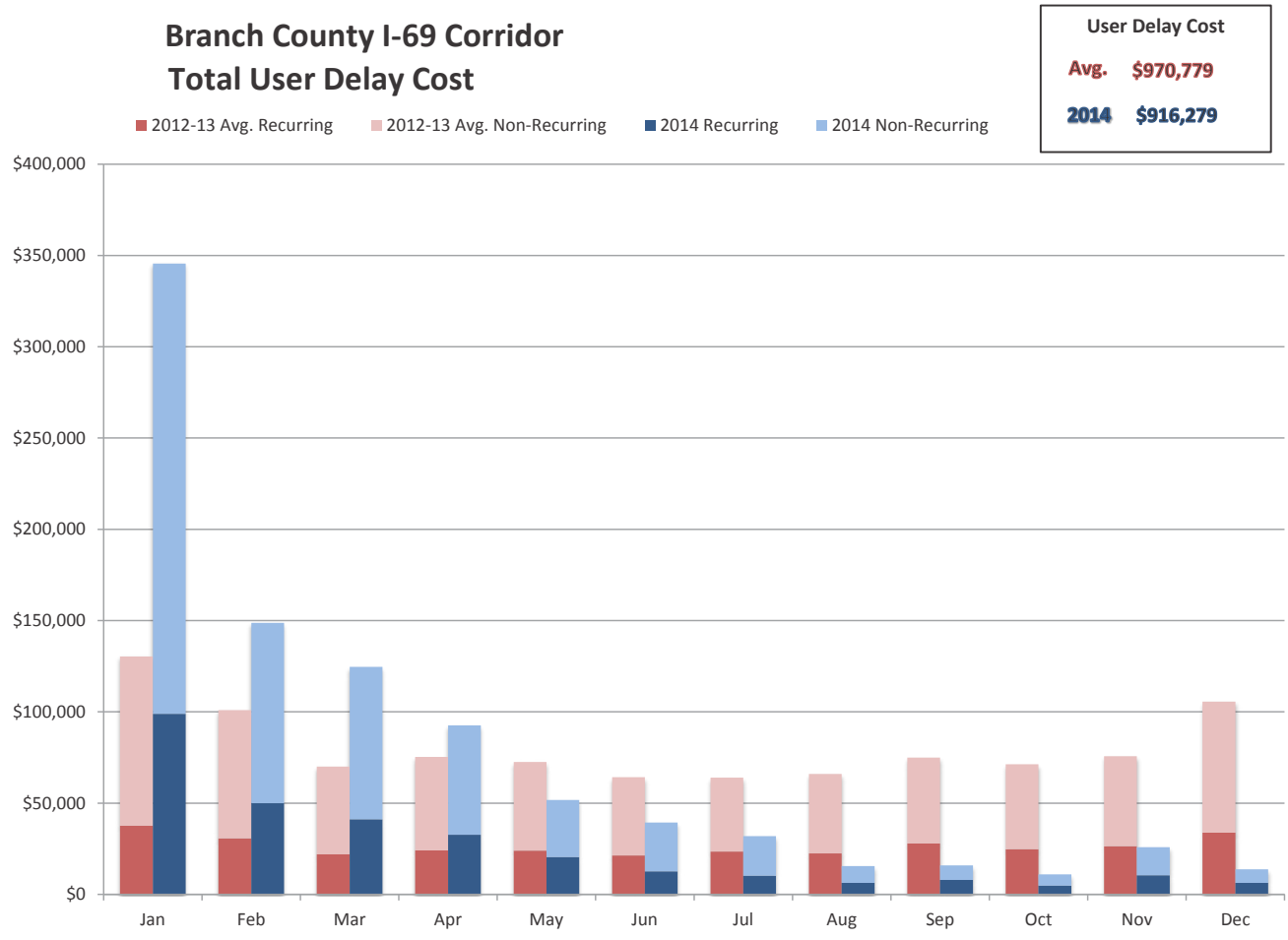
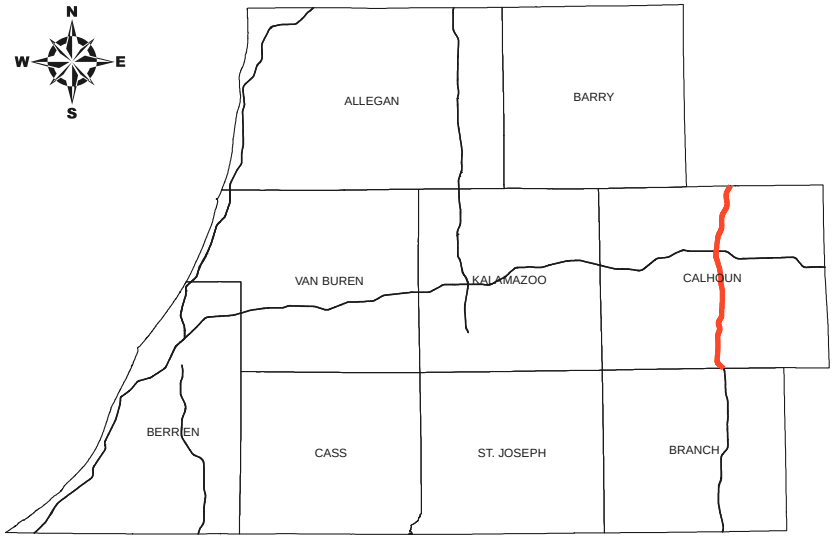


Figure 6. Calhoun County I-69 Corridor total user delay cost



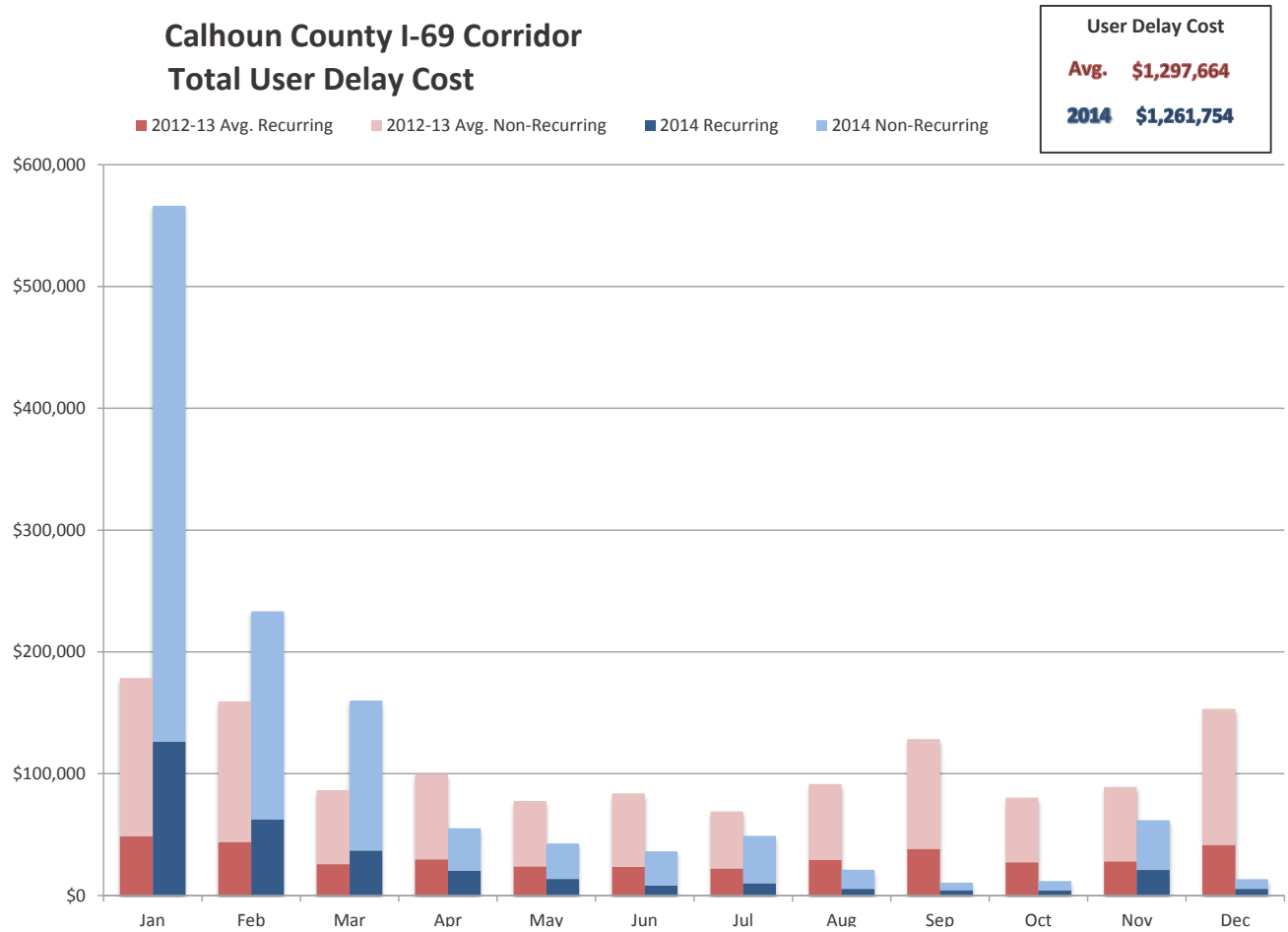


Figure 7. Southwest Region I-69 northbound

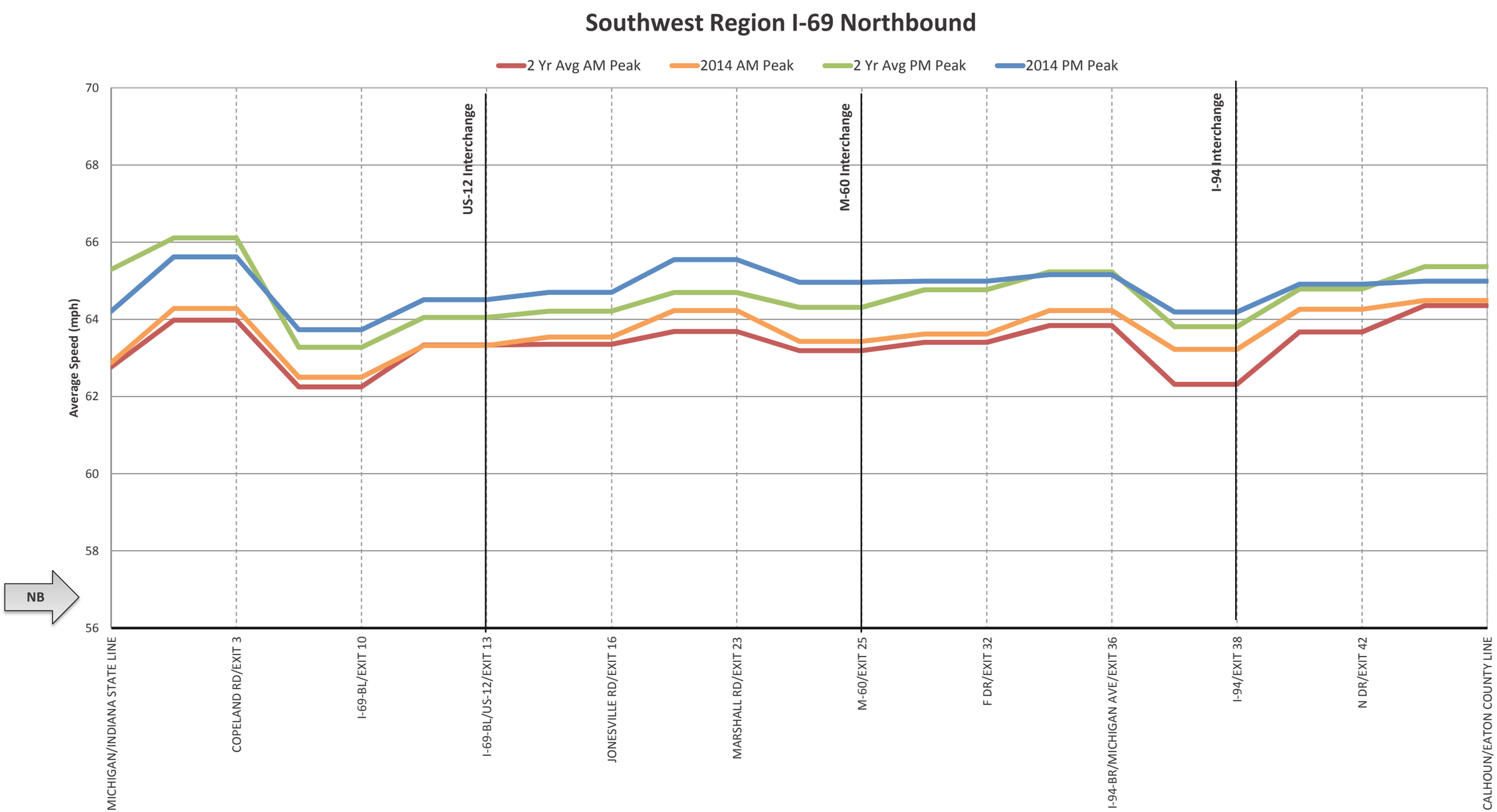
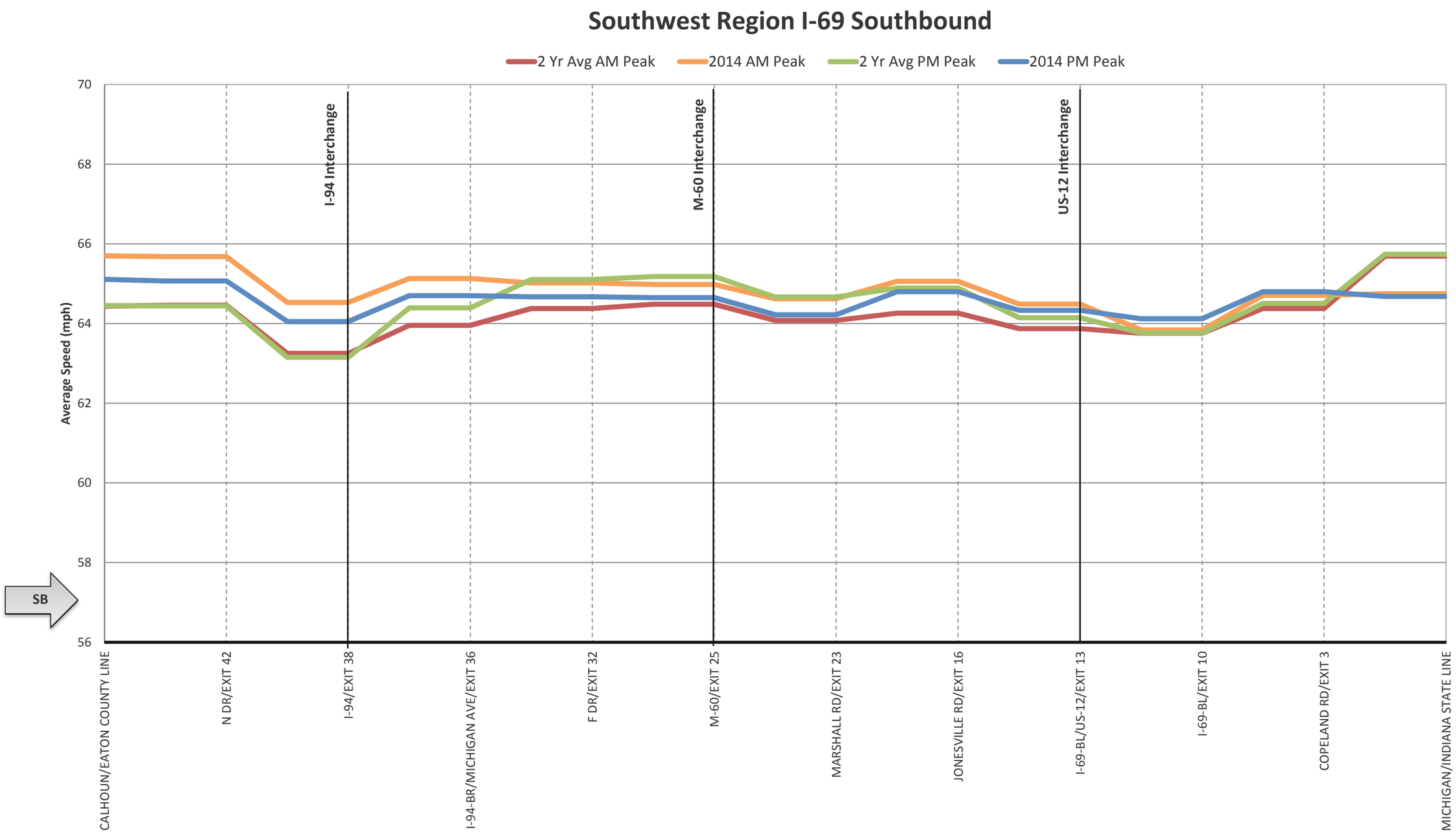


Figure 8. Southwest Region I-69 southbound



Chapter 6

Corridor

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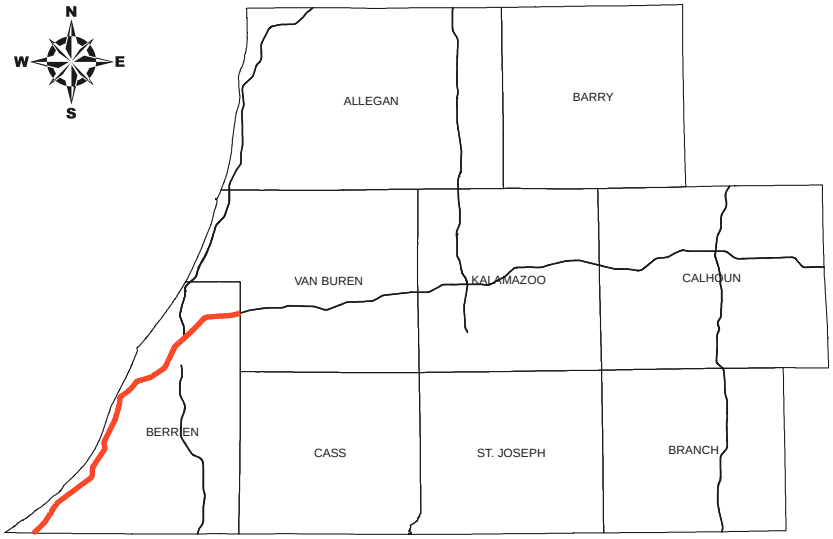
US-31: **Berrien**

US-131: **Kalamazoo and Allegan**

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



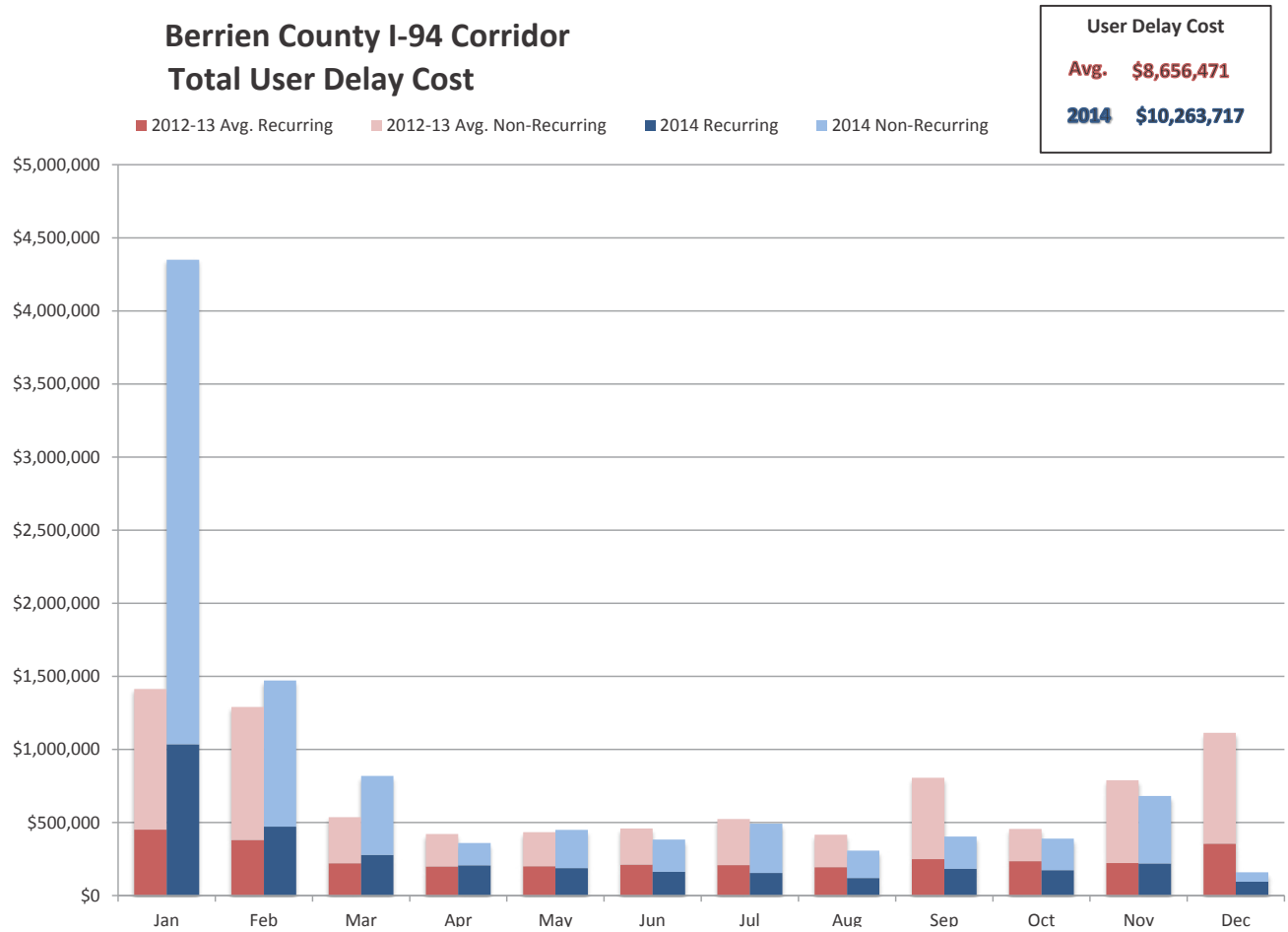


Figure 10. VanBuren County I-94 Corridor total user delay cost

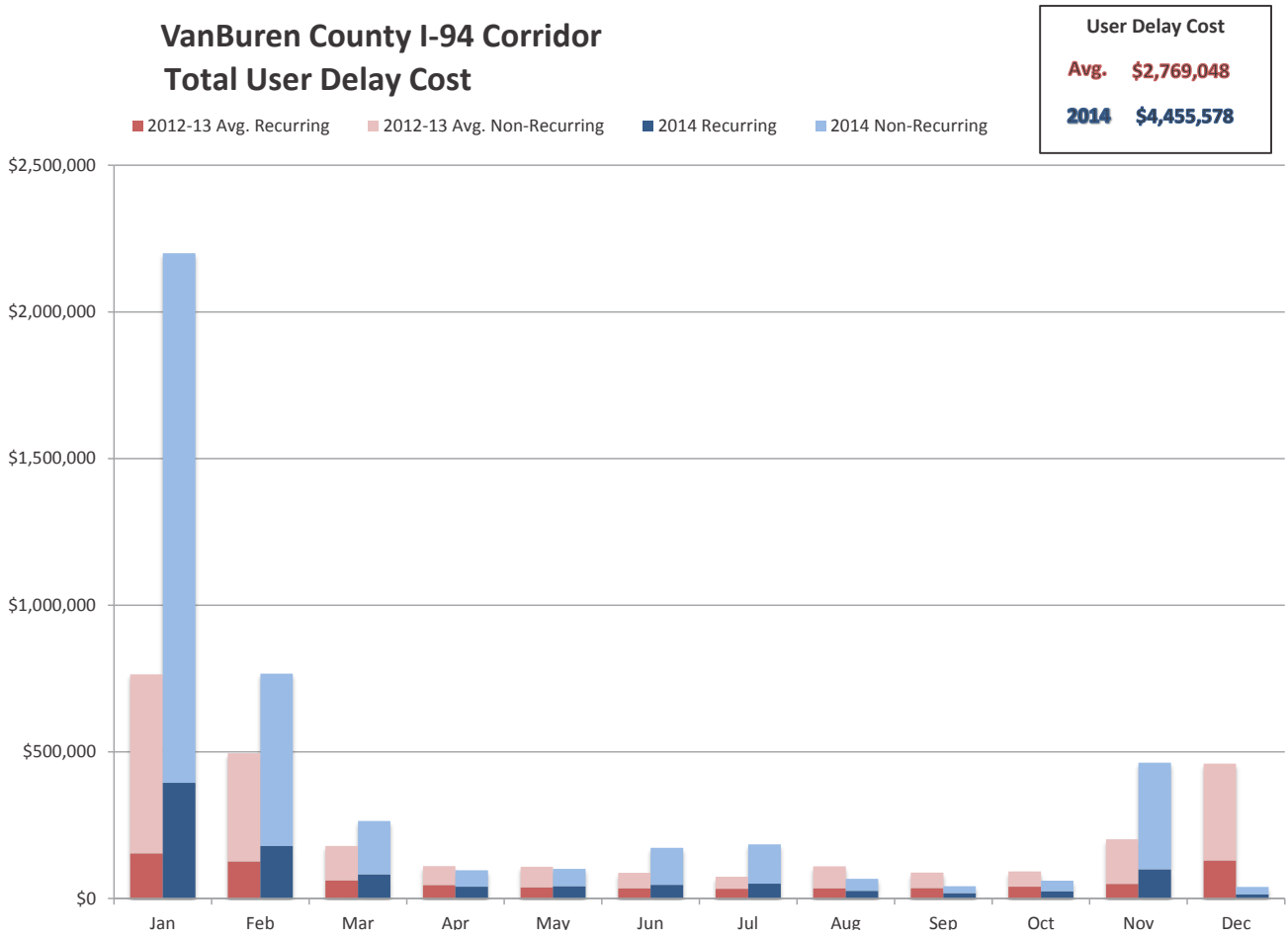


Figure 11. Kalamazoo County I-94 Corridor total user delay cost

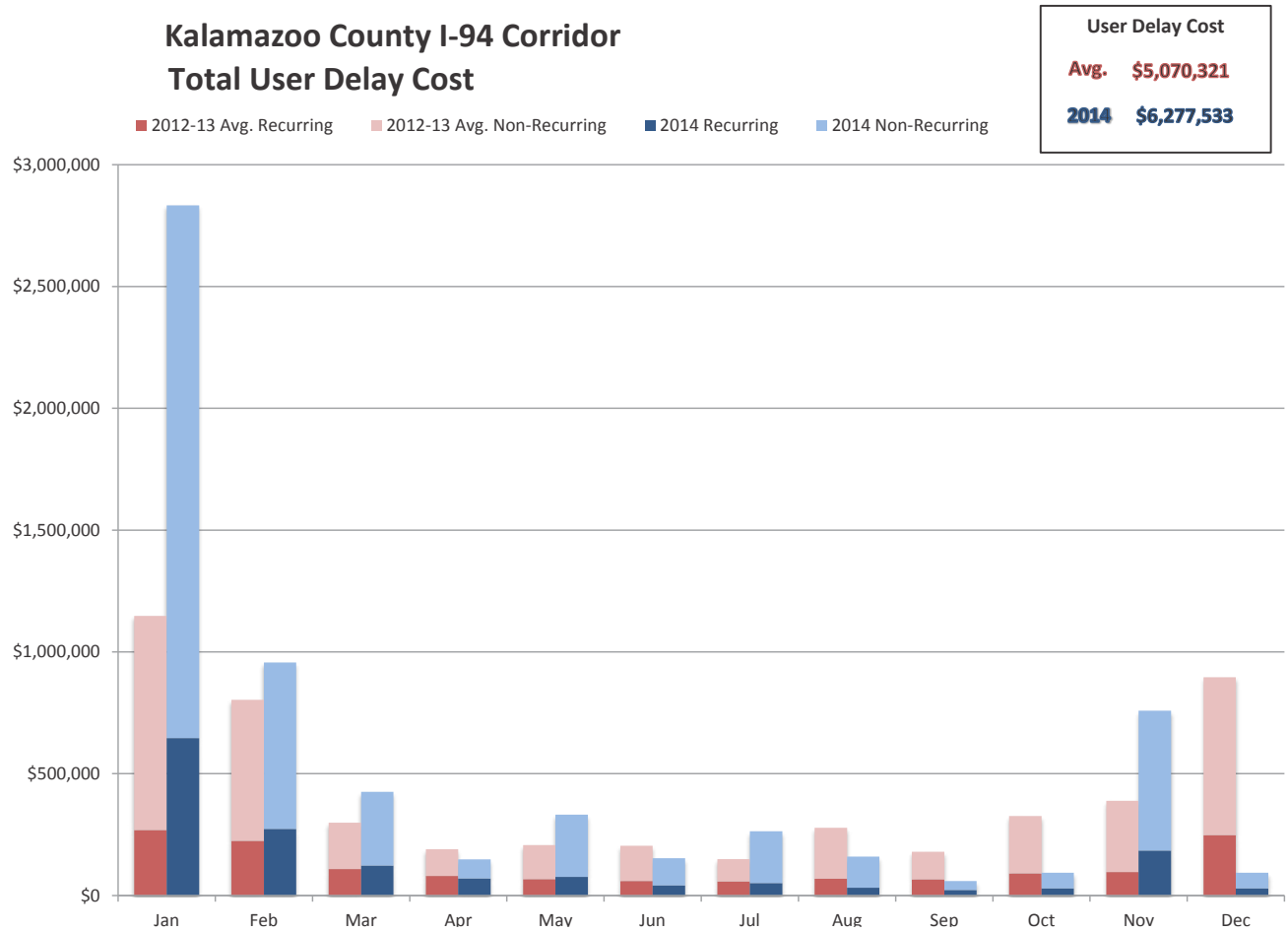


Figure 12. Calhoun County I-94 Corridor total user delay cost

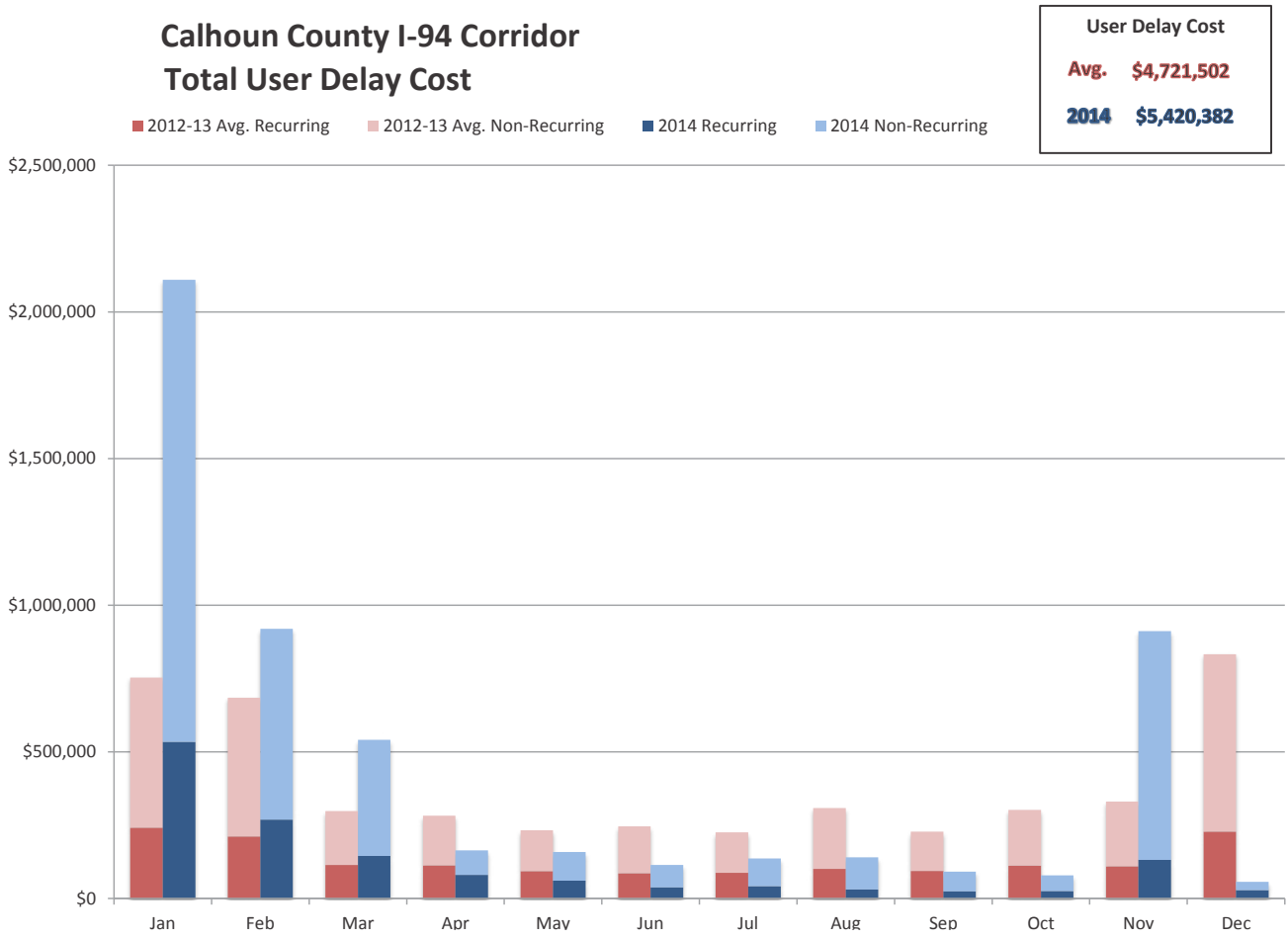


Figure 13. Southwest Region I-94 eastbound

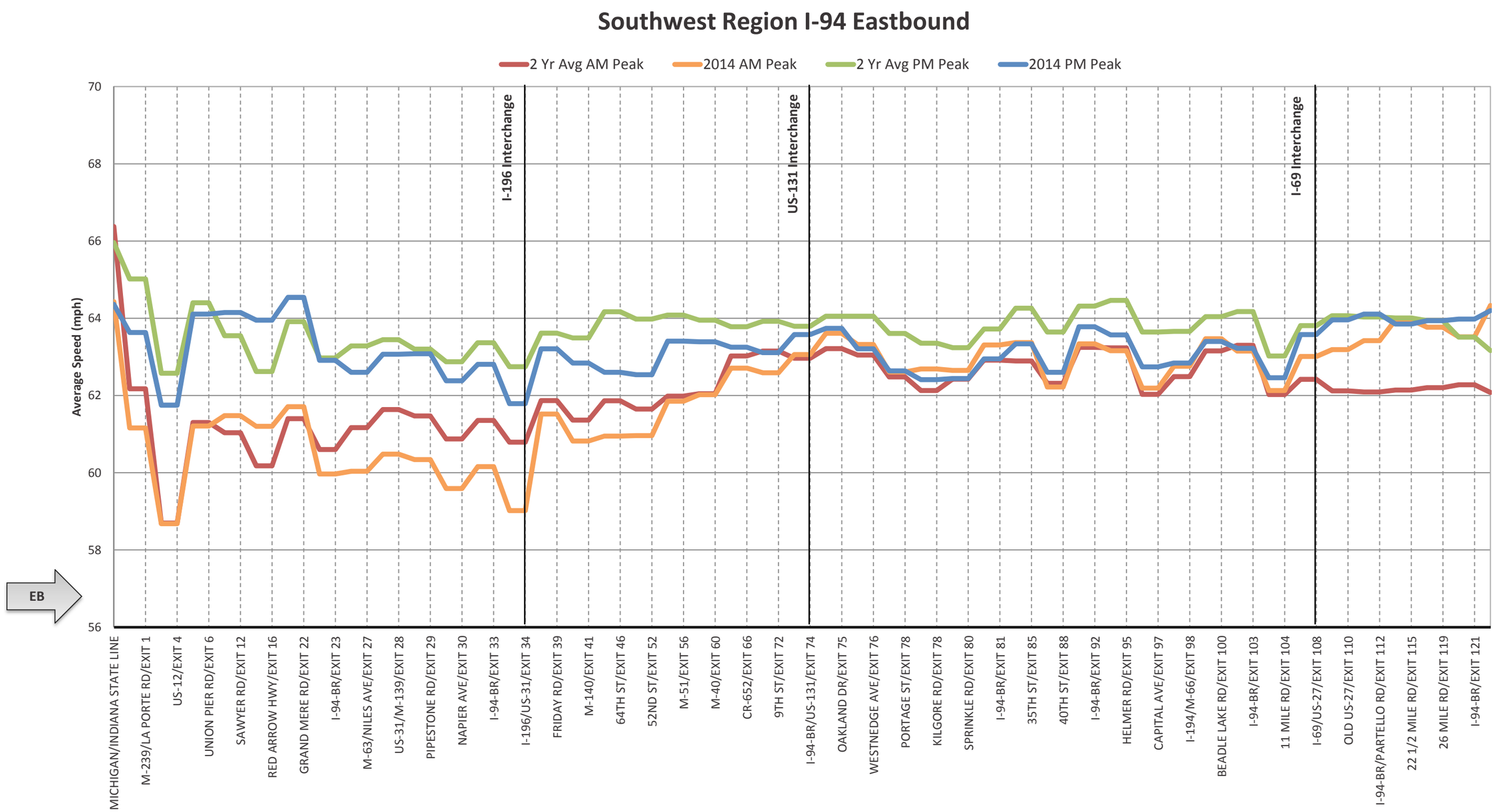
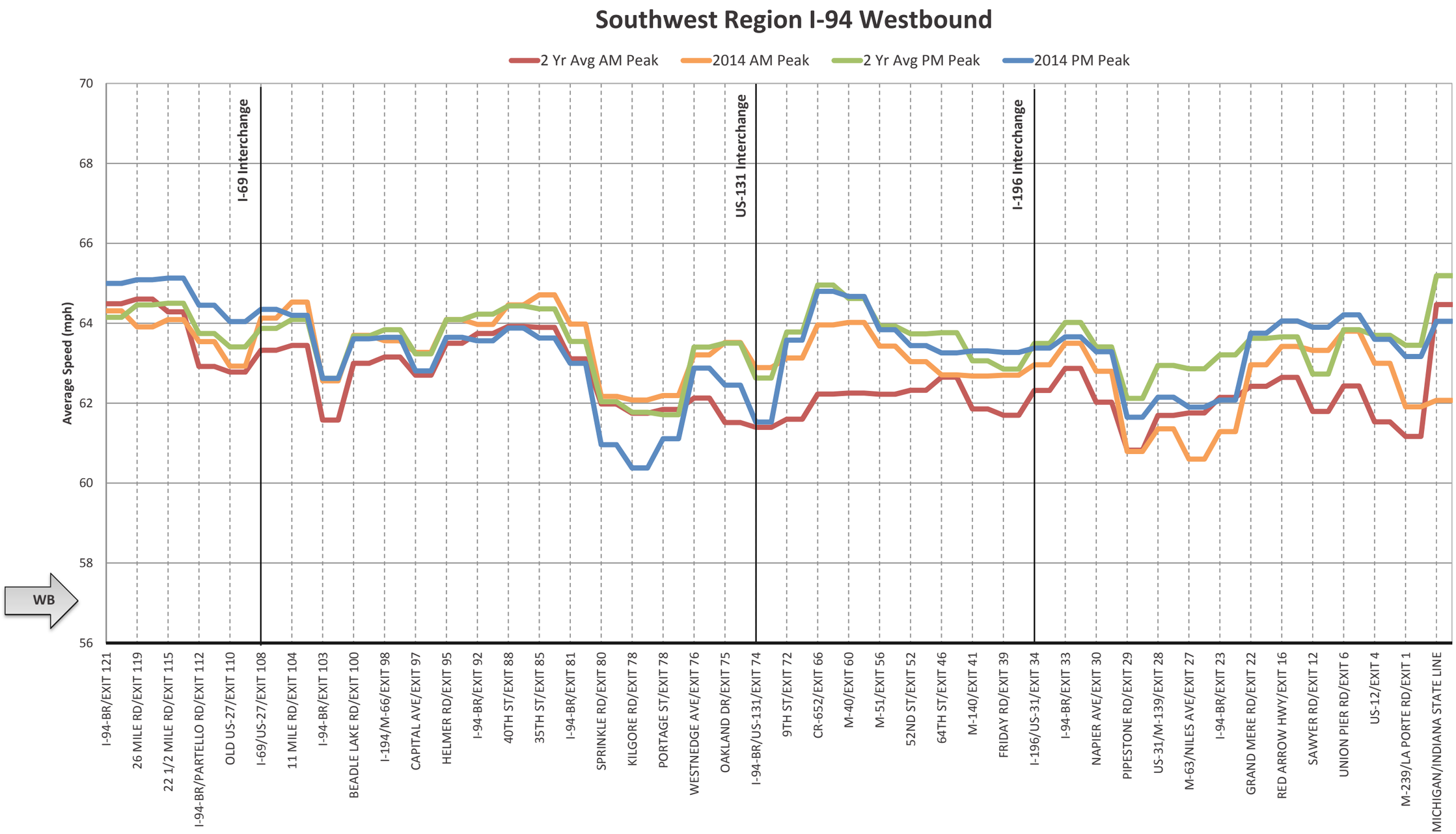


Figure 14. Southwest Region I-94 westbound



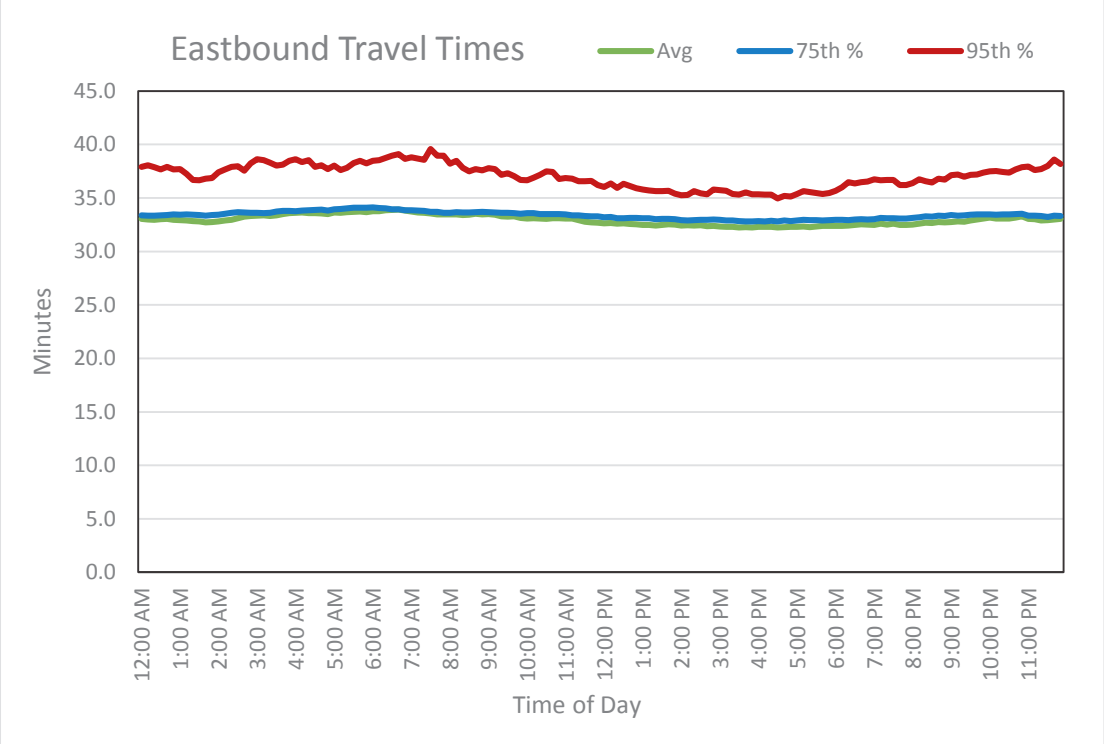
Travel Time Reliability

Figure 15. Travel time reliability I-94

Figure 16. Segment 1- I-94 between Michigan/Indiana State Line and I-196/US-31

Segment 1

Travel time (minutes) for I-94 between Michigan/Indiana State Line and I-196/US-31/Exit 34



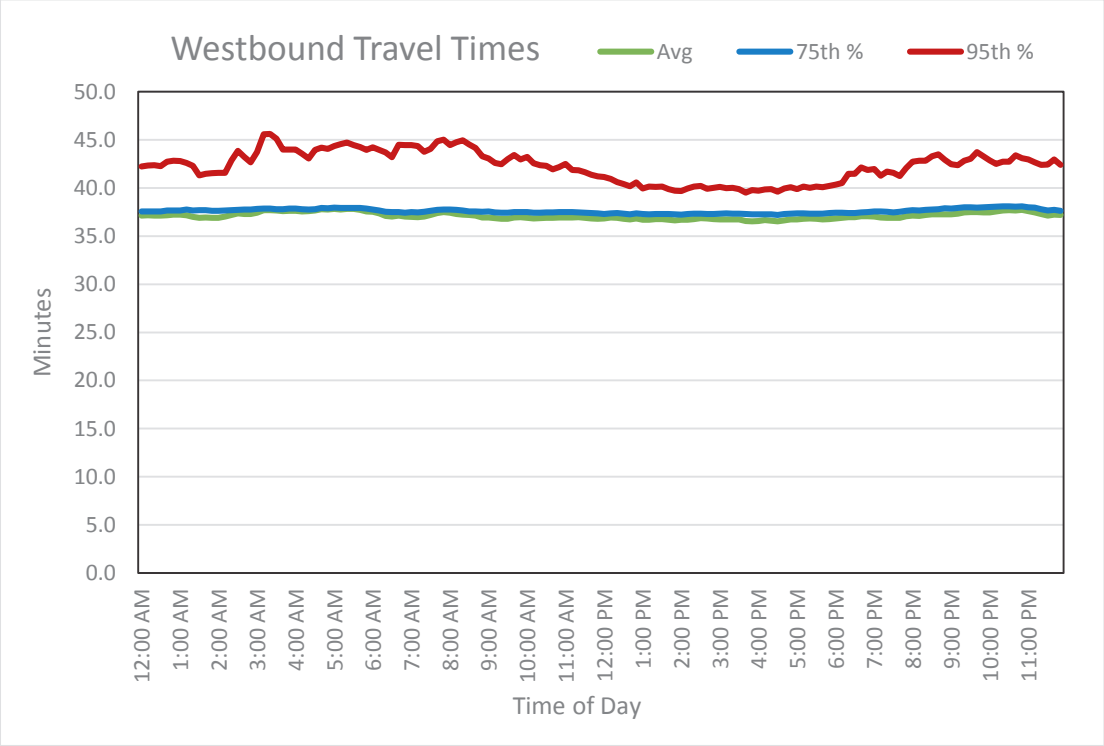
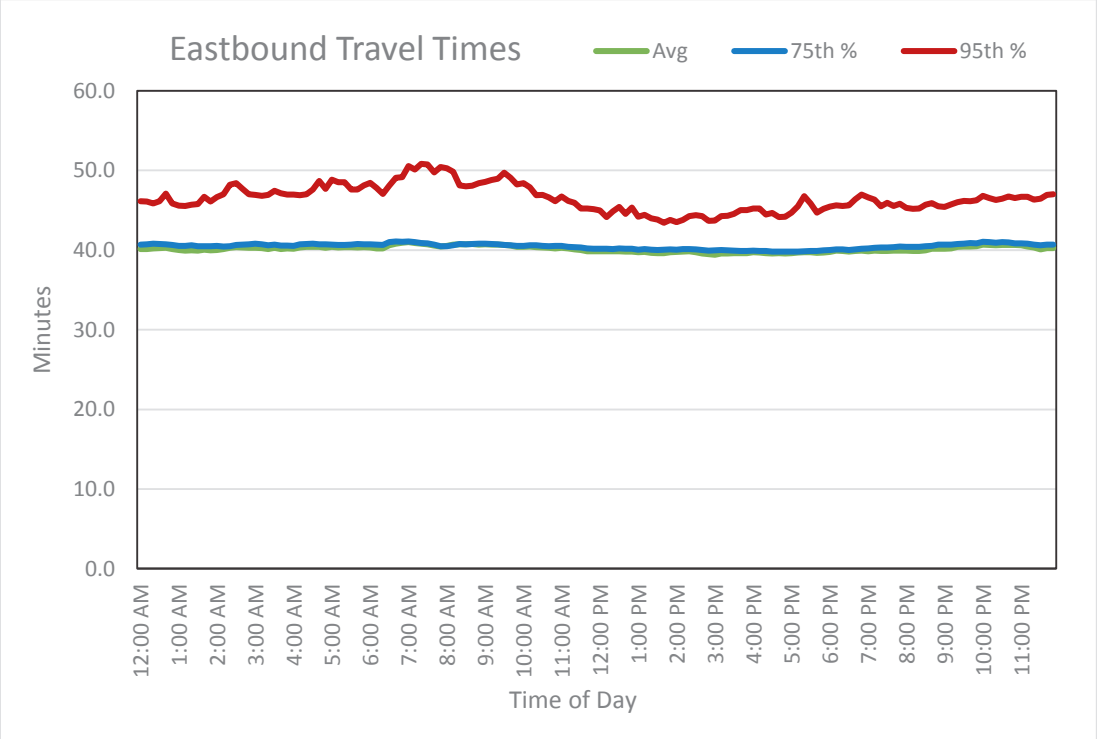


Figure 17. Segment 2- I-94 between I-94-BR/US-131 and I-196/US-31

Segment 2

Travel time (minutes) for I-94 between I-94-BR/US-131/Exit 74 and I-196/US-31/Exit 34



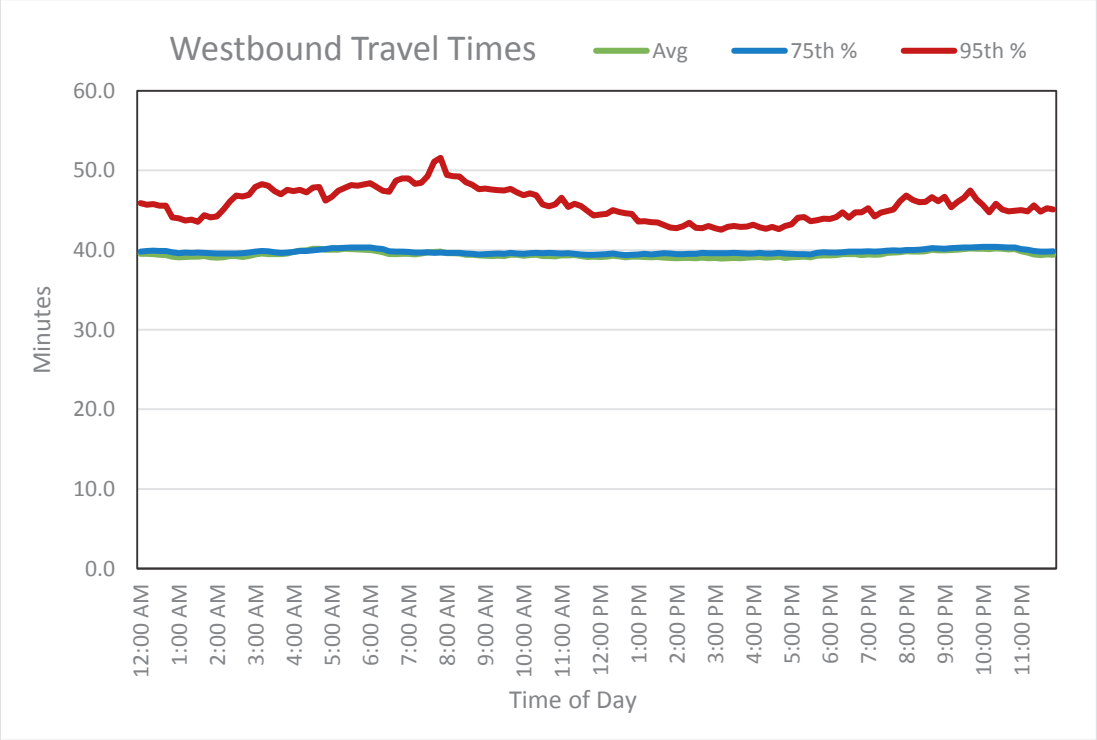
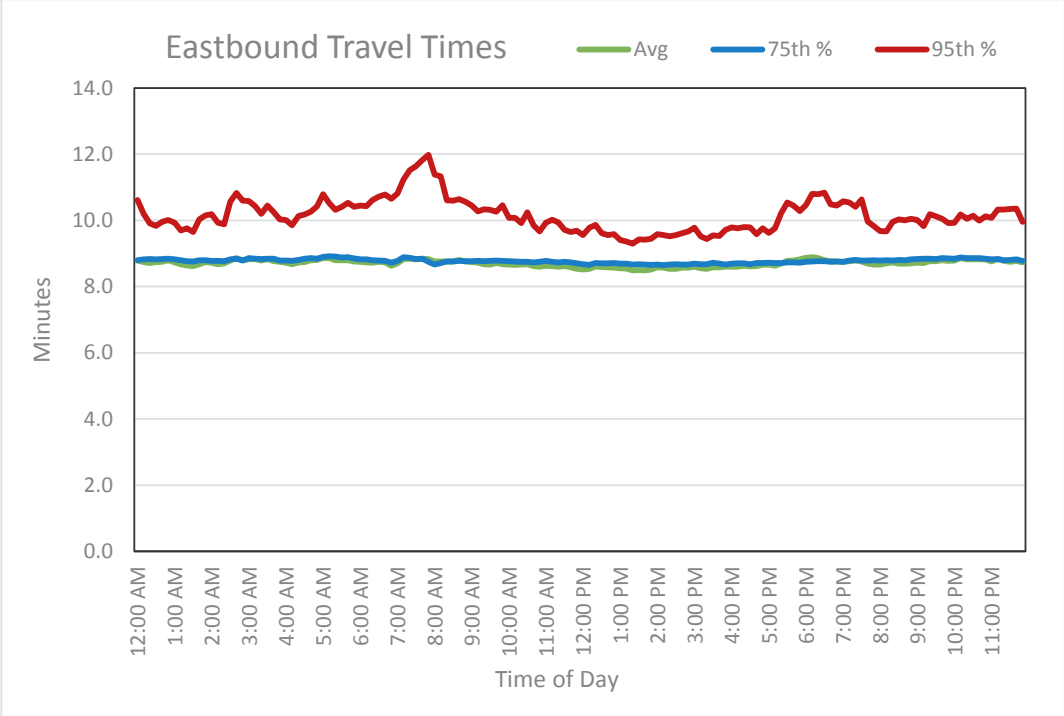


Figure 18. Segment 3- I-94 between I-94-BR/US-131 and I-94-BR

Segment 3

Travel time (minutes) for I-94 between I-94-BR/US-131/Exit 74 and I-94-BR/Exit 81



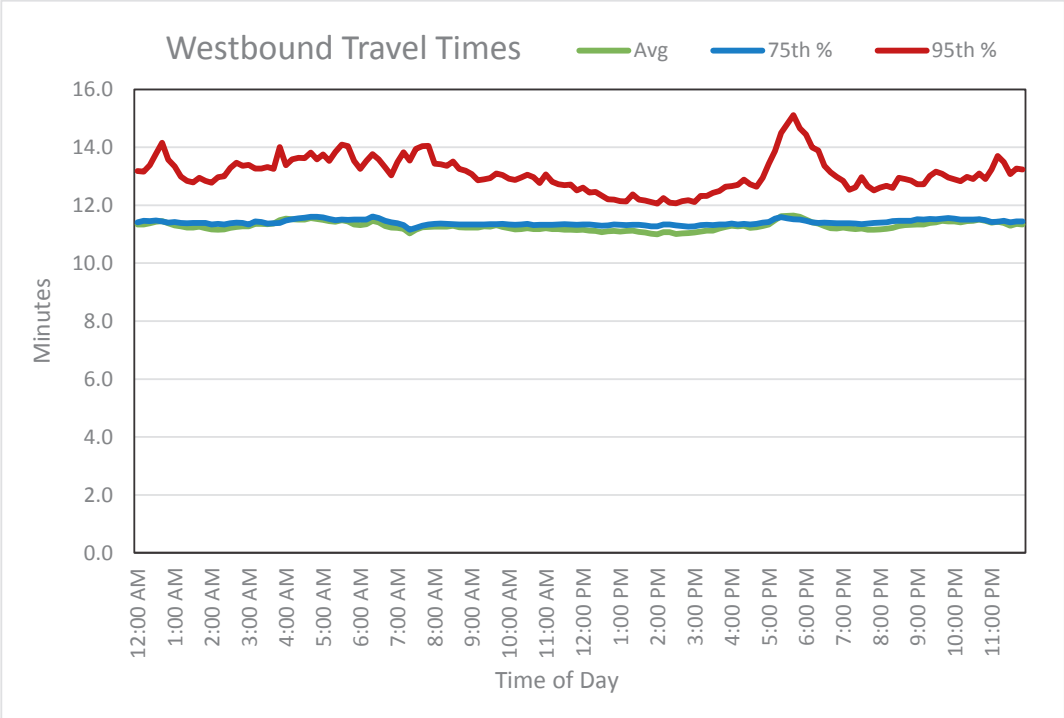
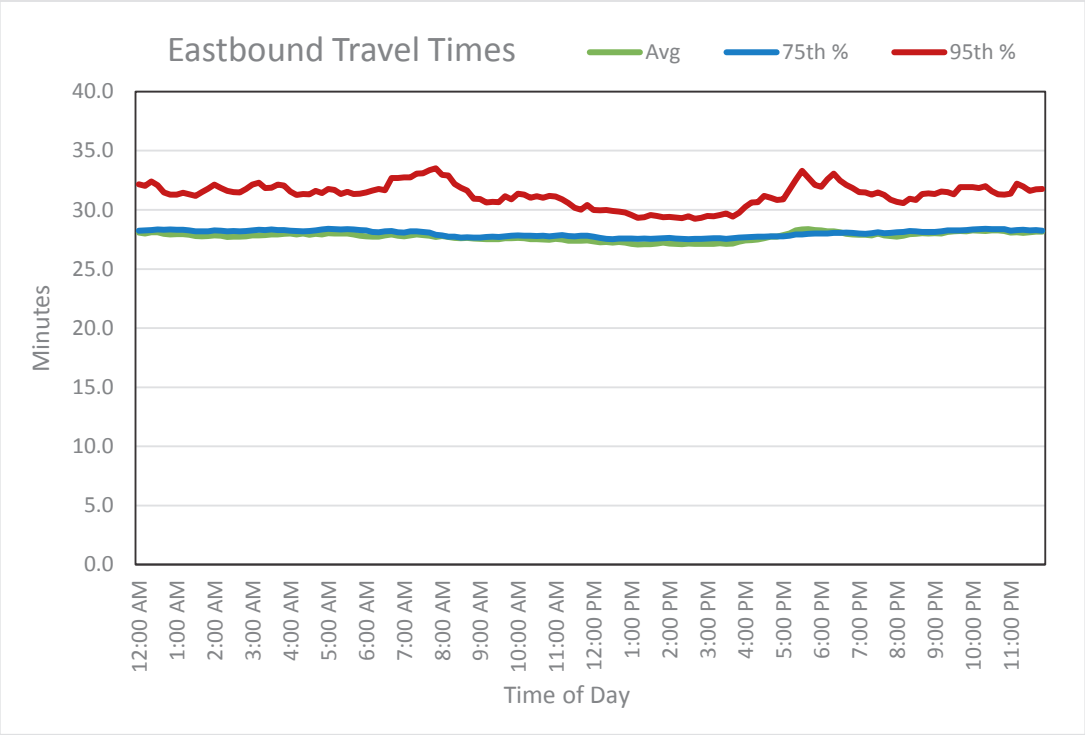
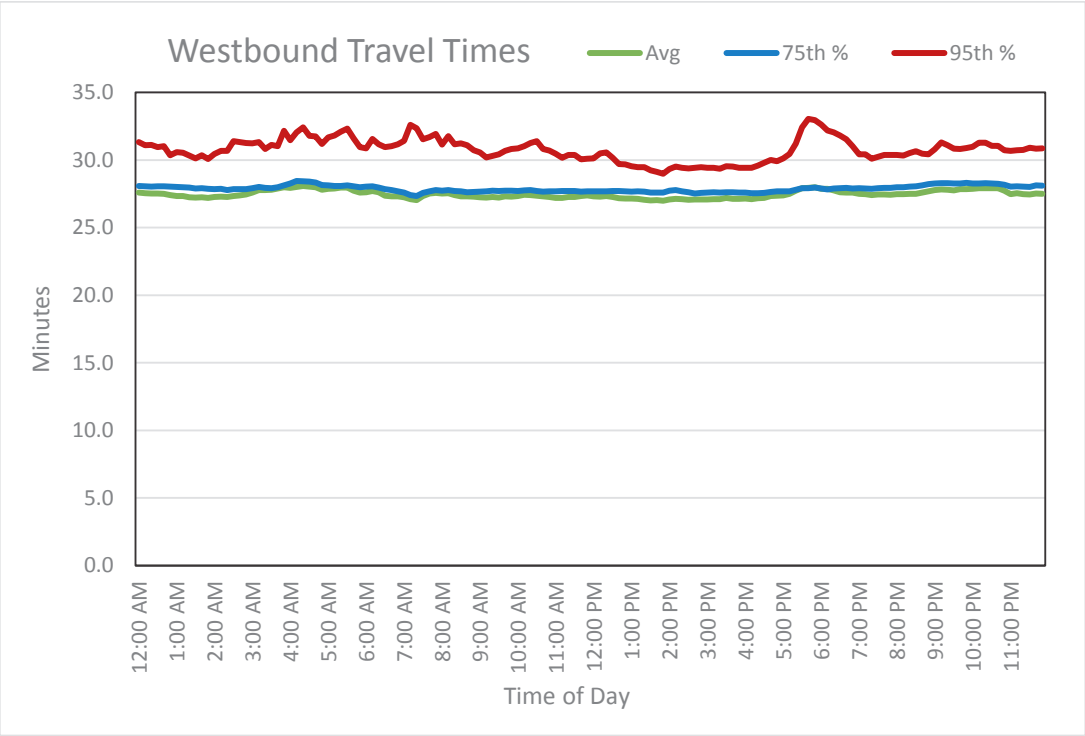


Figure 19. Segment 4- I-94 between I-69/US-27 and I-94-BR

Segment 4

Travel time (minutes) for I-94 between I-69/US-27/Exit 108 and I-94-BR/Exit 81





Chapter 6

Corridor

Interstate 69: **Branch and Calhoun**

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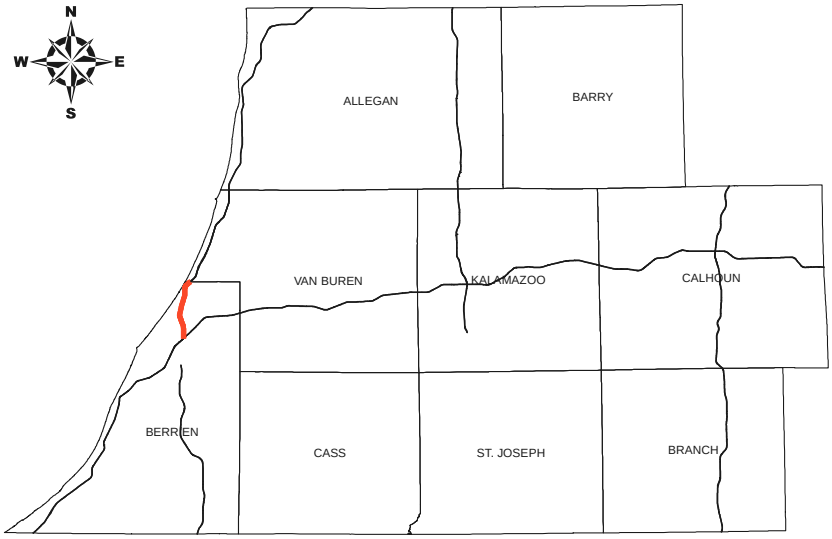
Interstate 196: **Berrien, Van Buren, and Allegan**

US-31: **Berrien**

US-131: **Kalamazoo and Allegan**

Figure 20. Berrien County I-196 Corridor total user delay cost



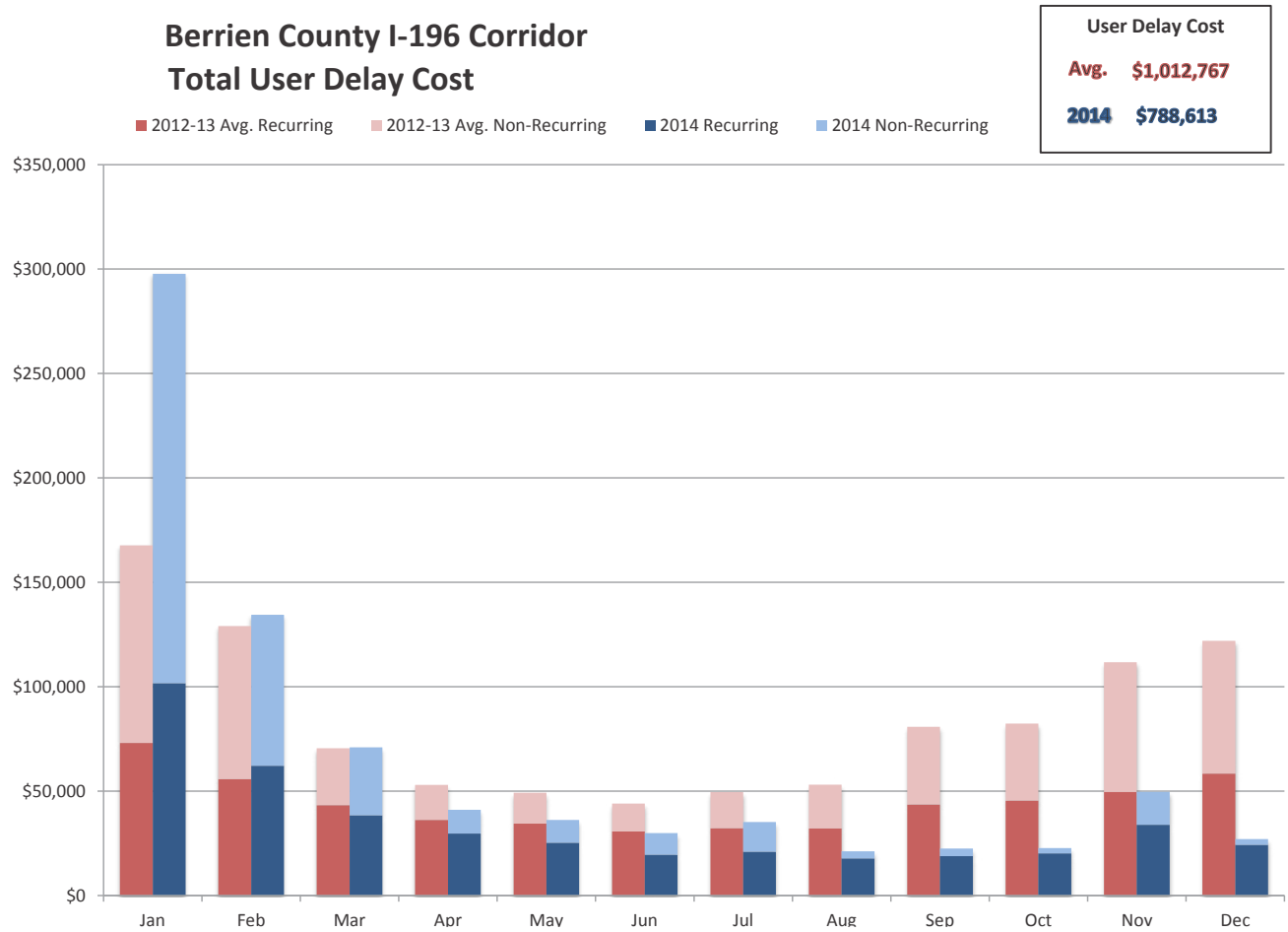
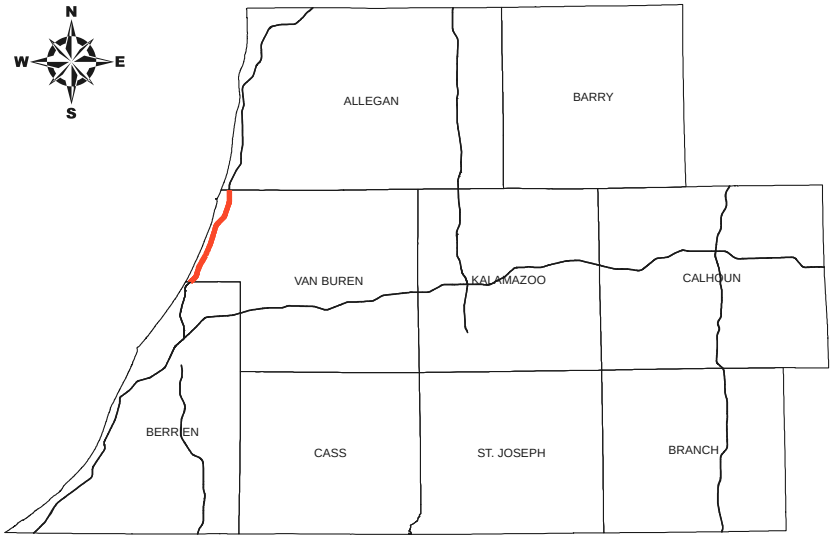


Figure 21. VanBuren County I-196 Corridor total user delay cost



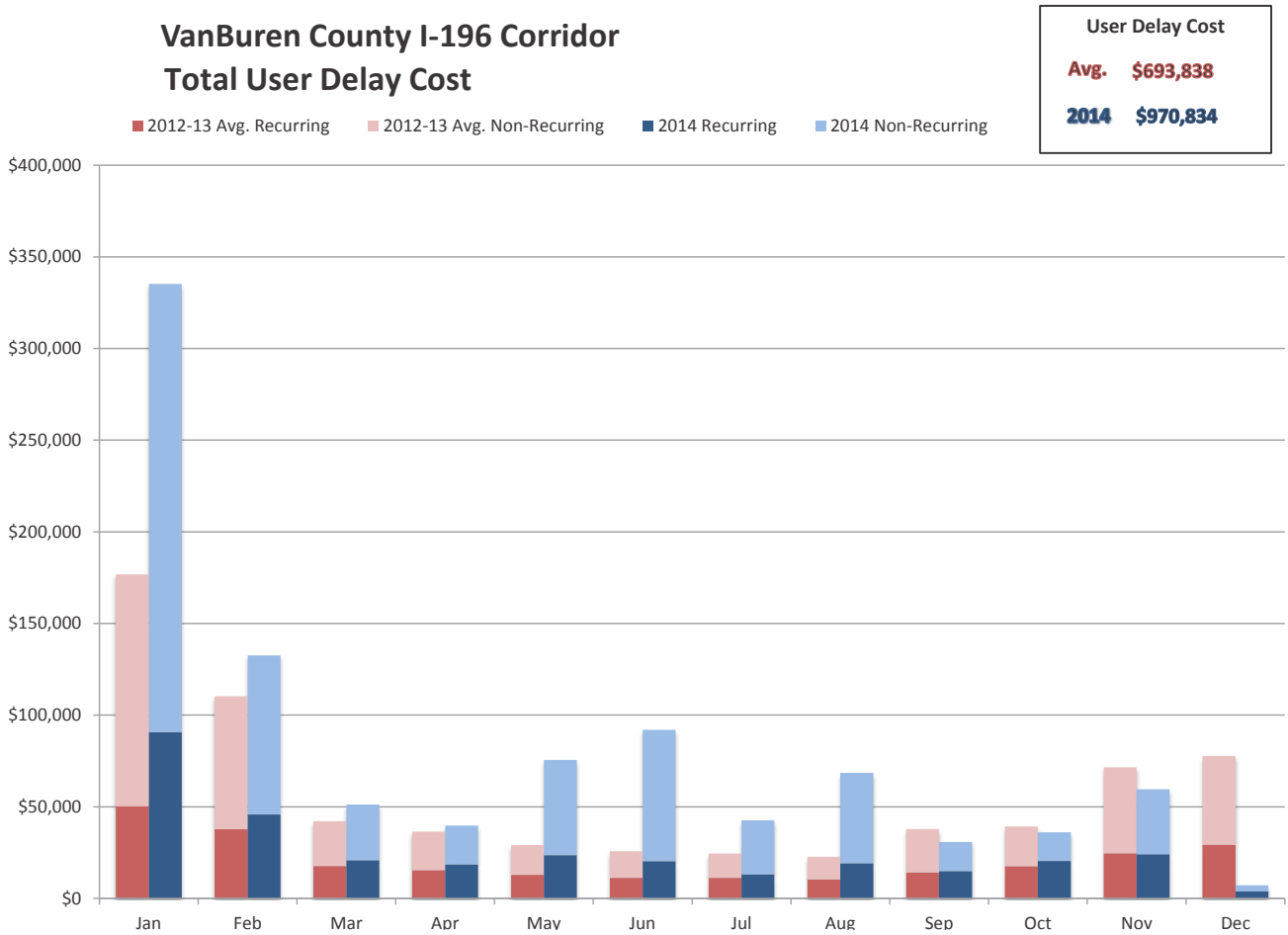
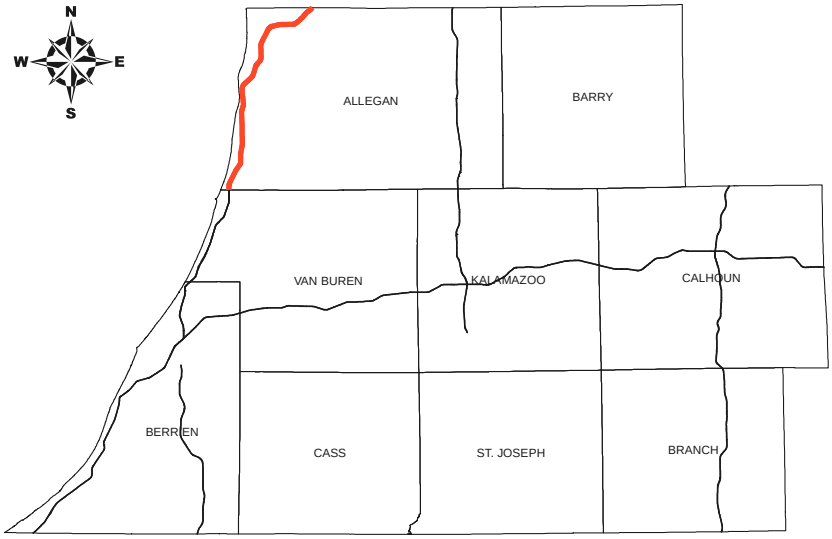


Figure 22. Allegan County I-196 Corridor total user delay cost



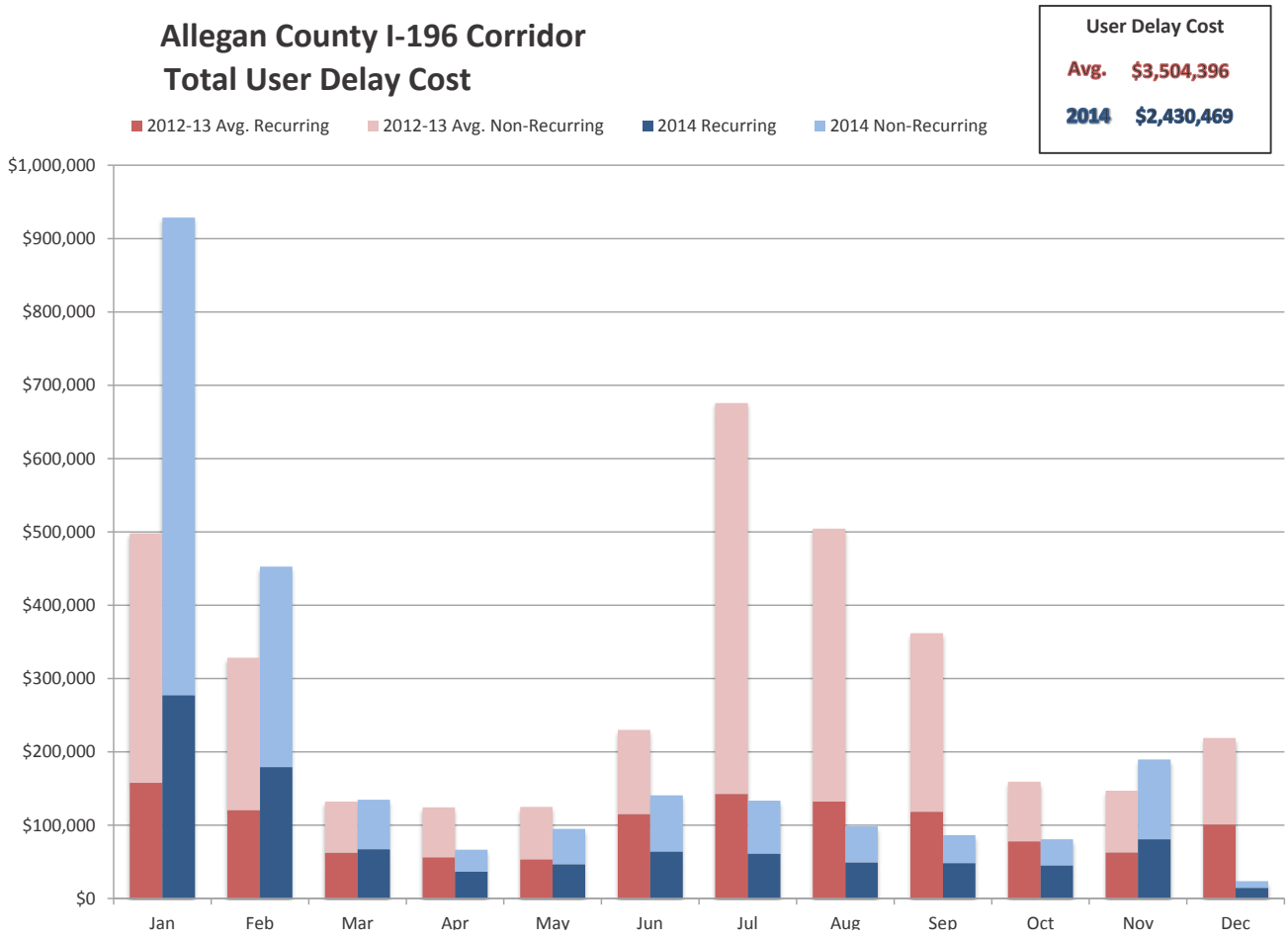


Figure 23. Southwest Region I-196 northbound

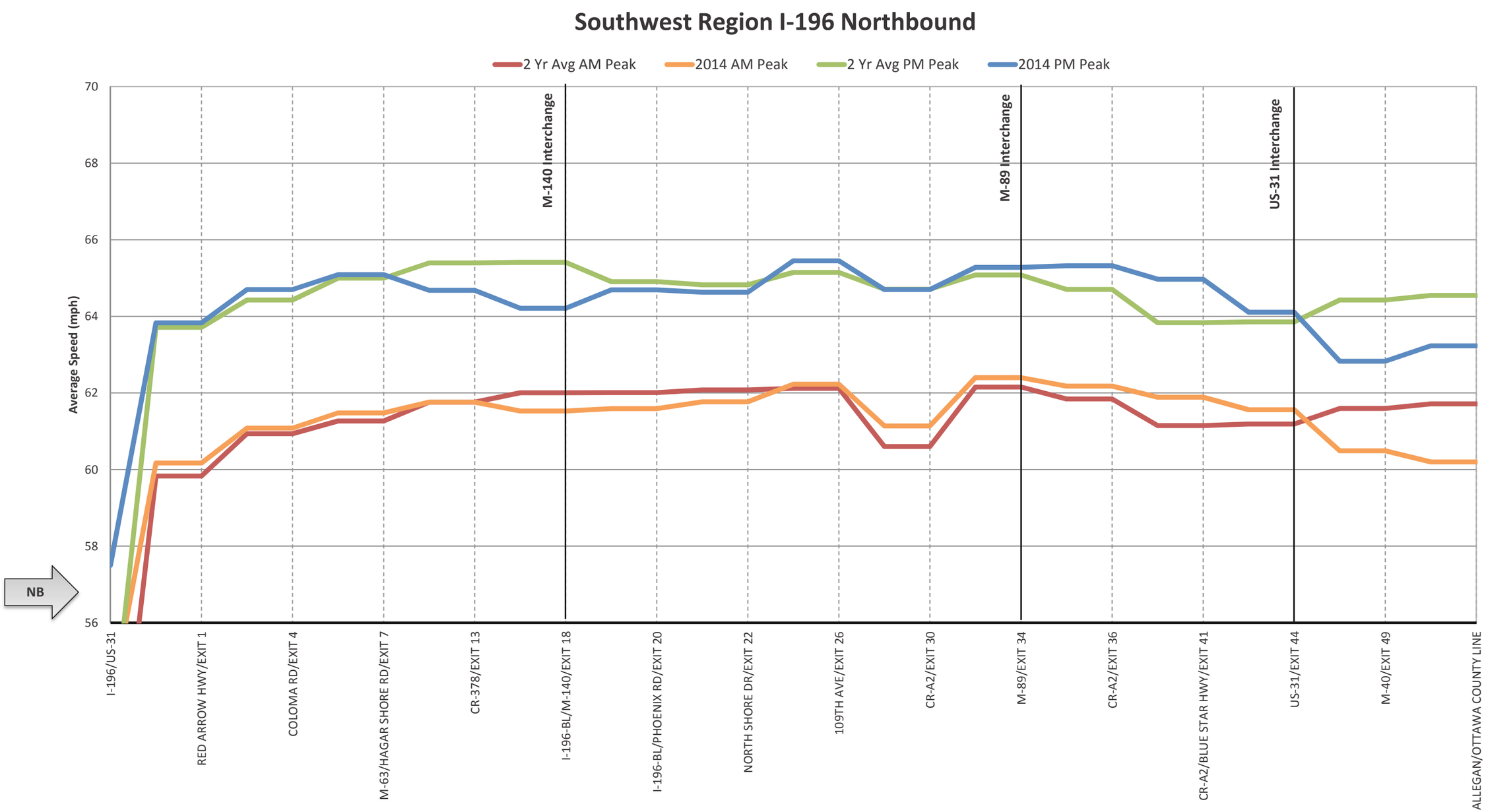
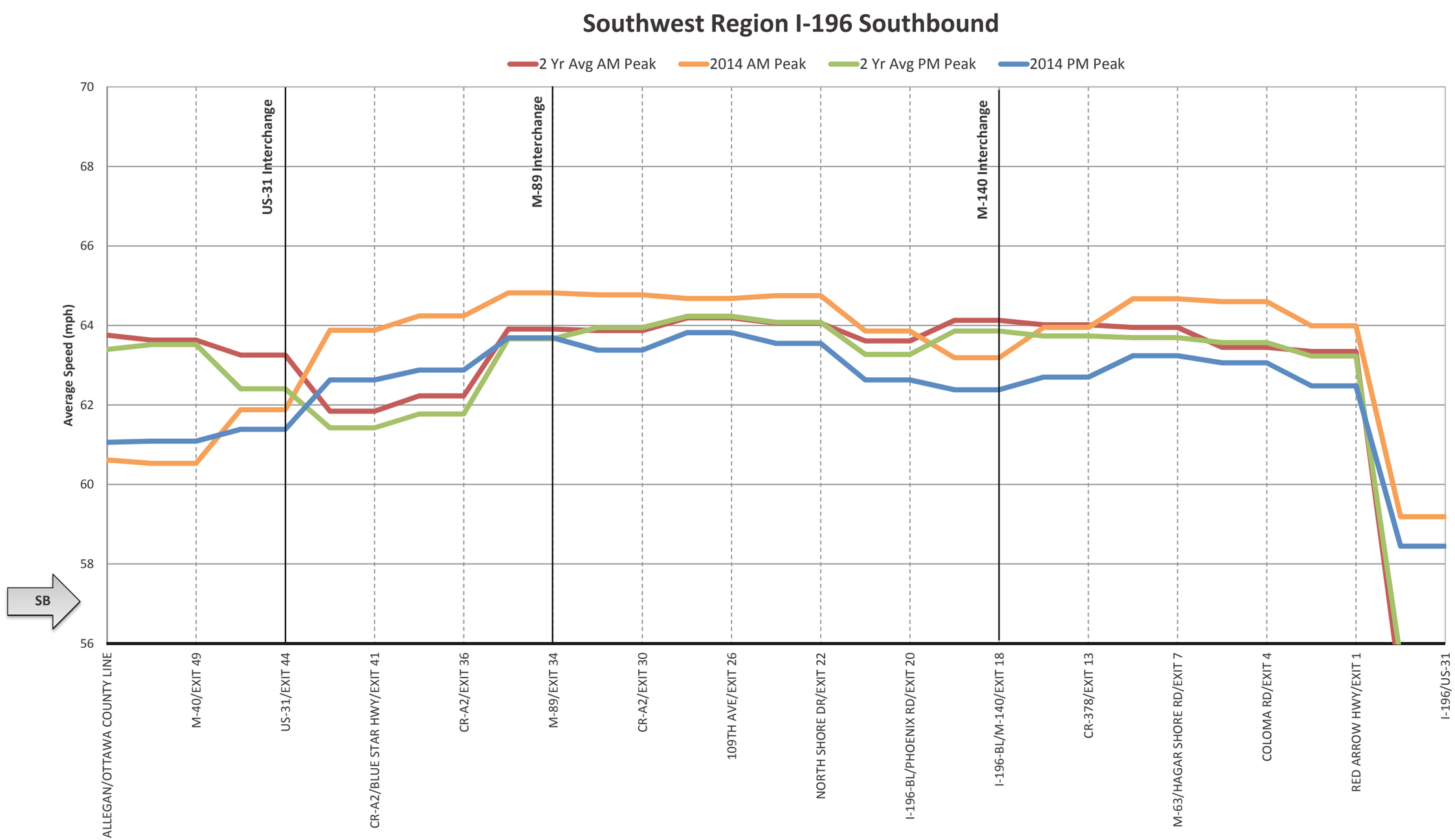


Figure 24. Southwest Region I-196 southbound



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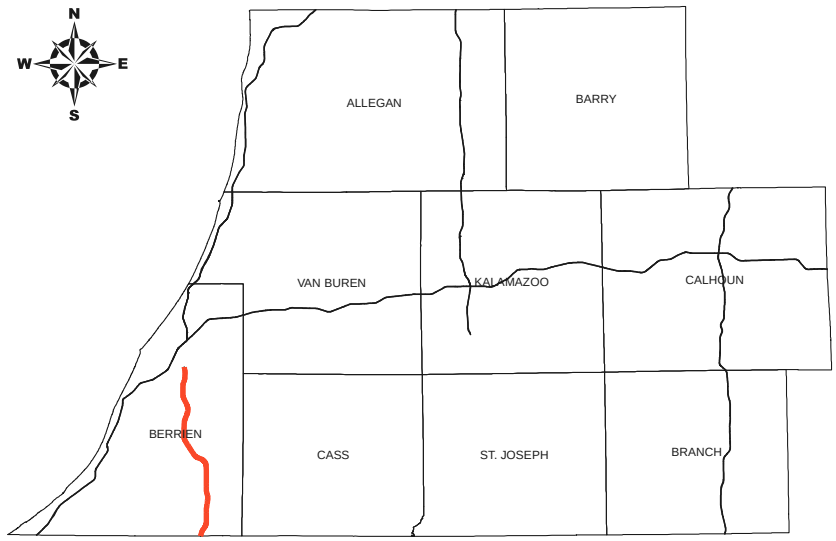
US-31: **Berrien**

US-131: **Kalamazoo and Allegan**

Figure 25. Berrien County US-31 Corridor total user delay cost



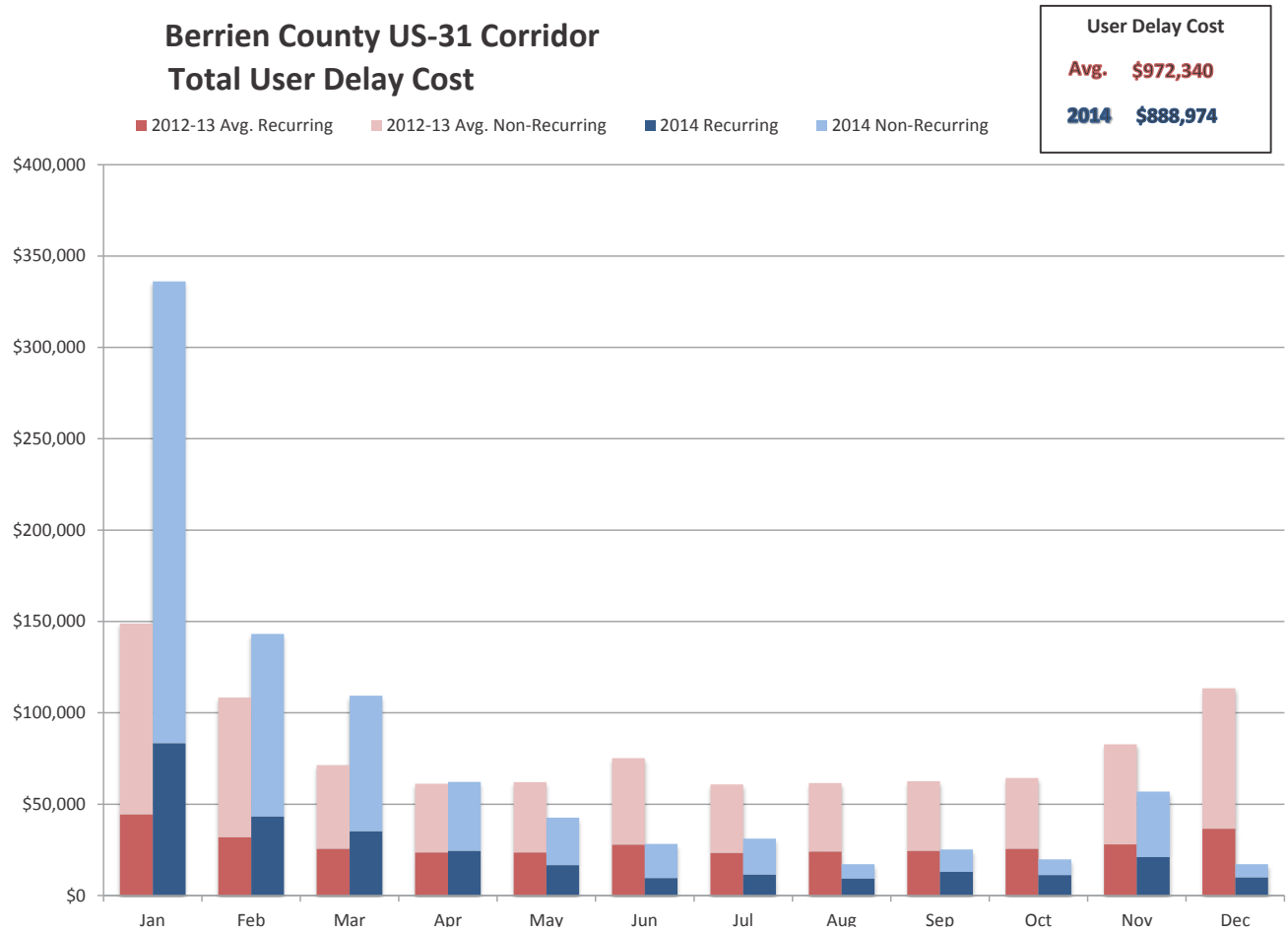


Figure 26. Southwest Region US-31 northbound

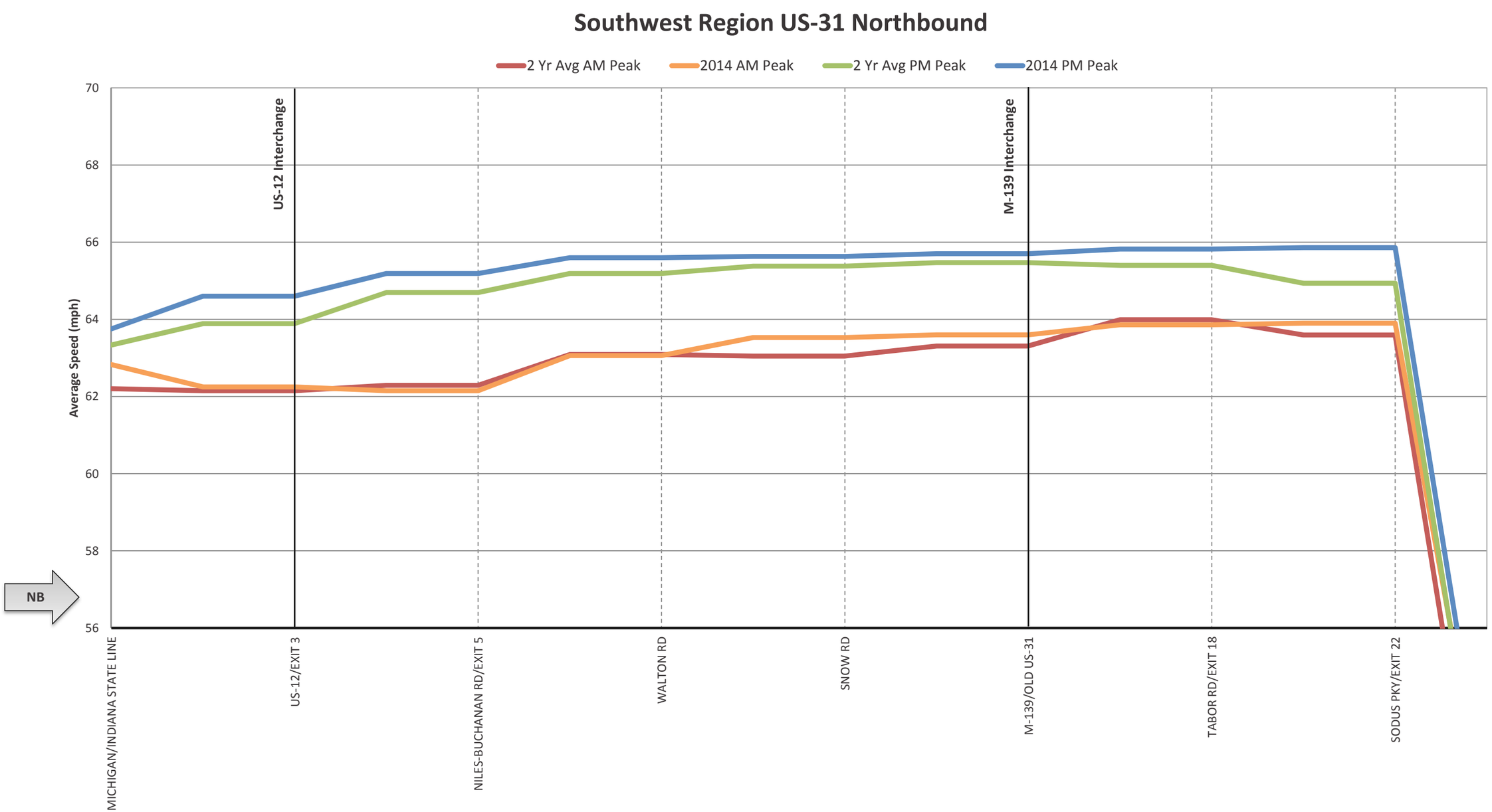


Figure 27. Southwest Region US-31 southbound

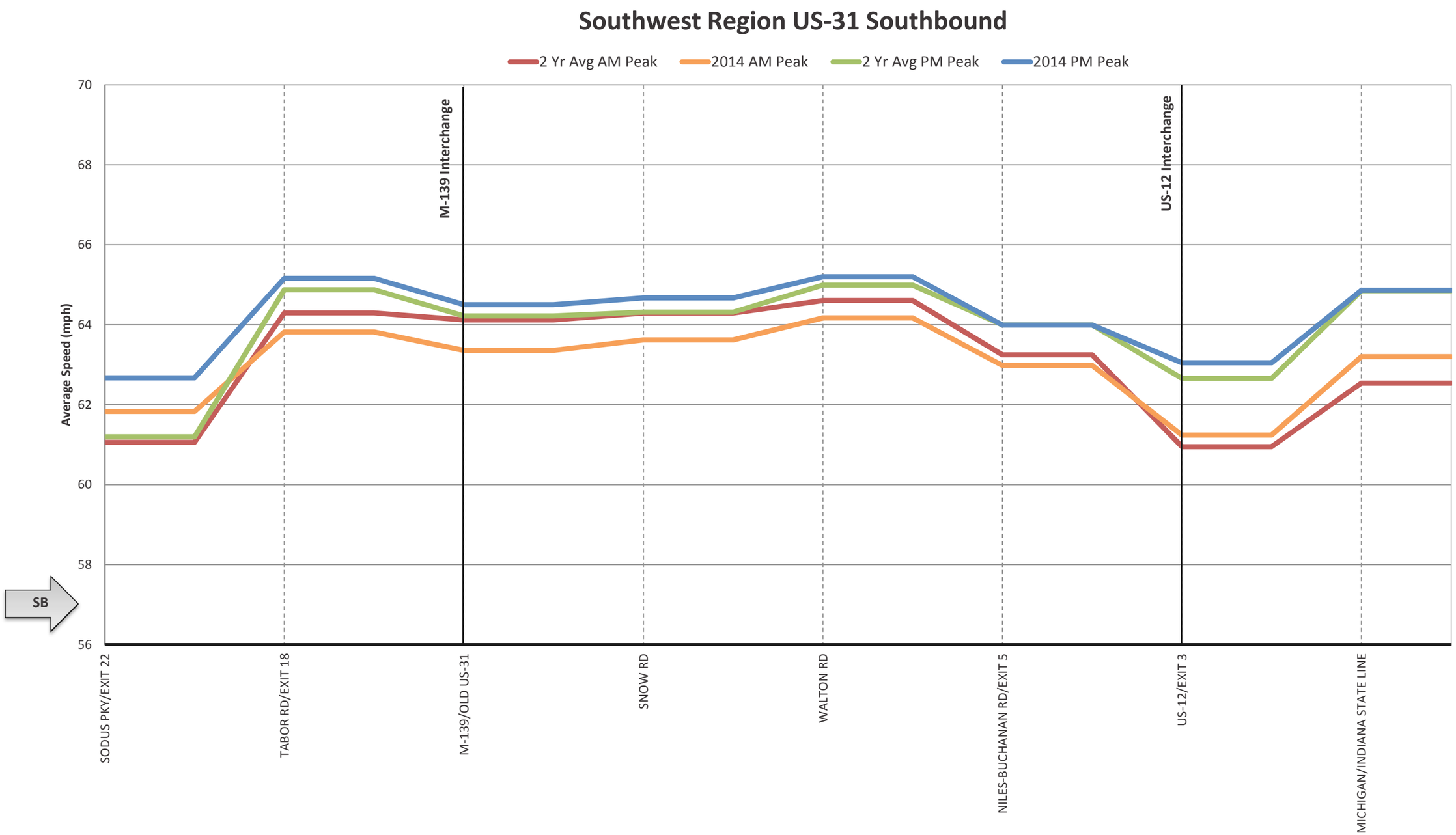


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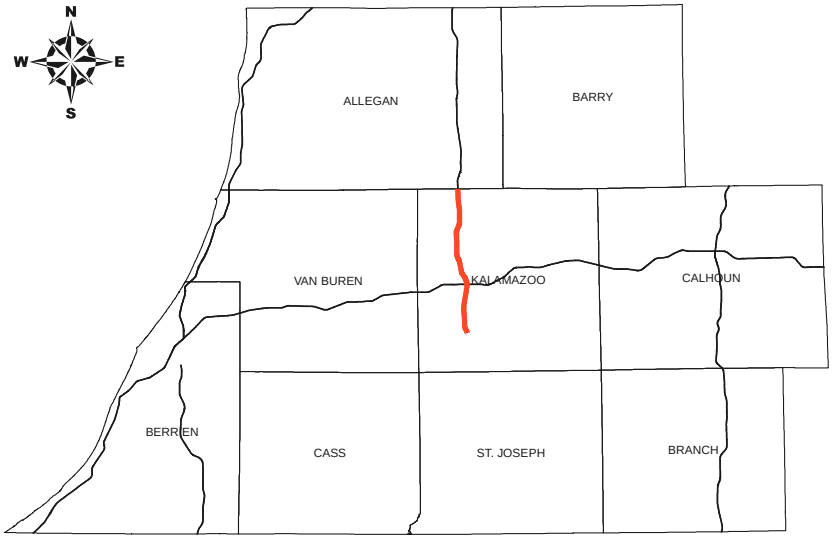
Figure 28. Kalamazoo County US-131 Corridor total user delay cost



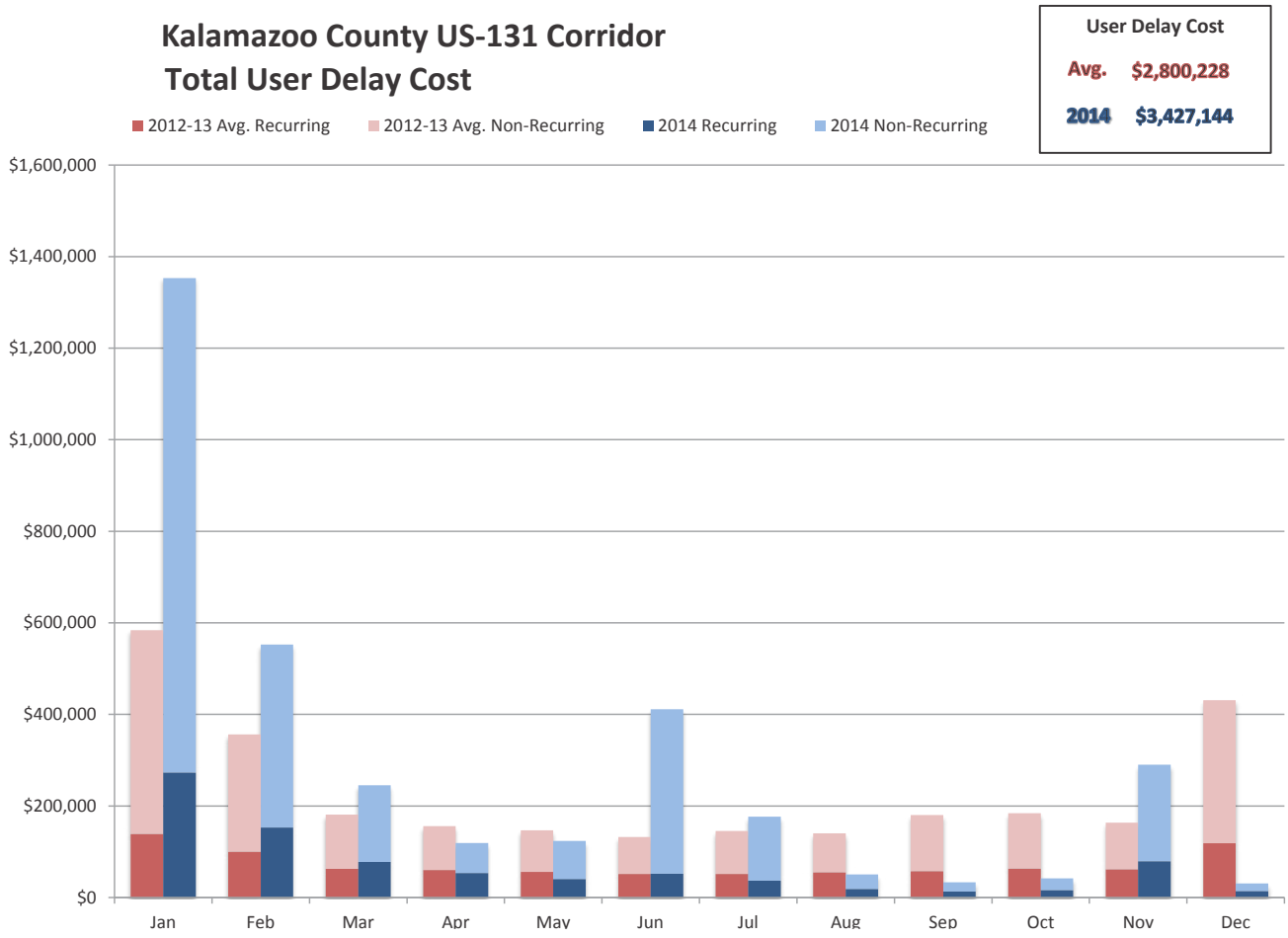
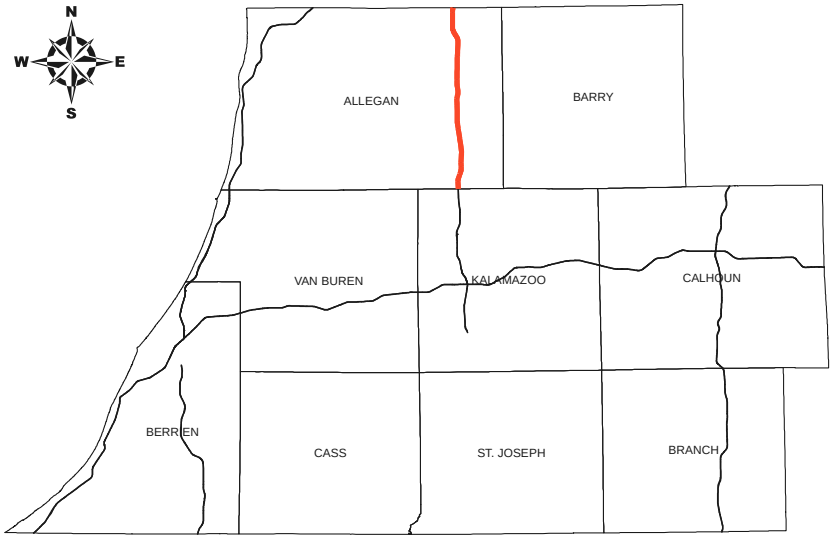


Figure 29. Allegan County US-131 Corridor total user delay cost



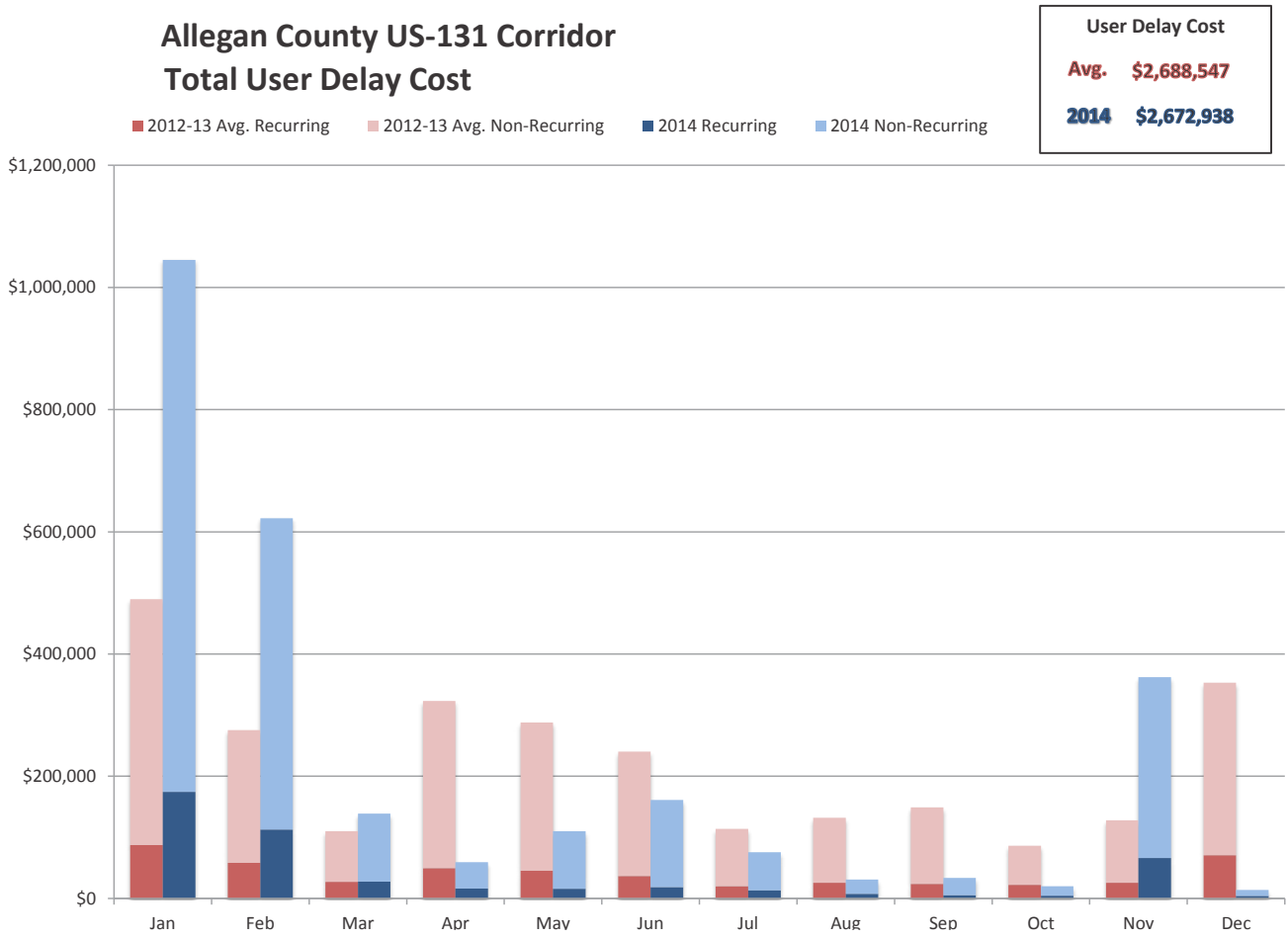


Figure 30. Southwest Region US-131 northbound

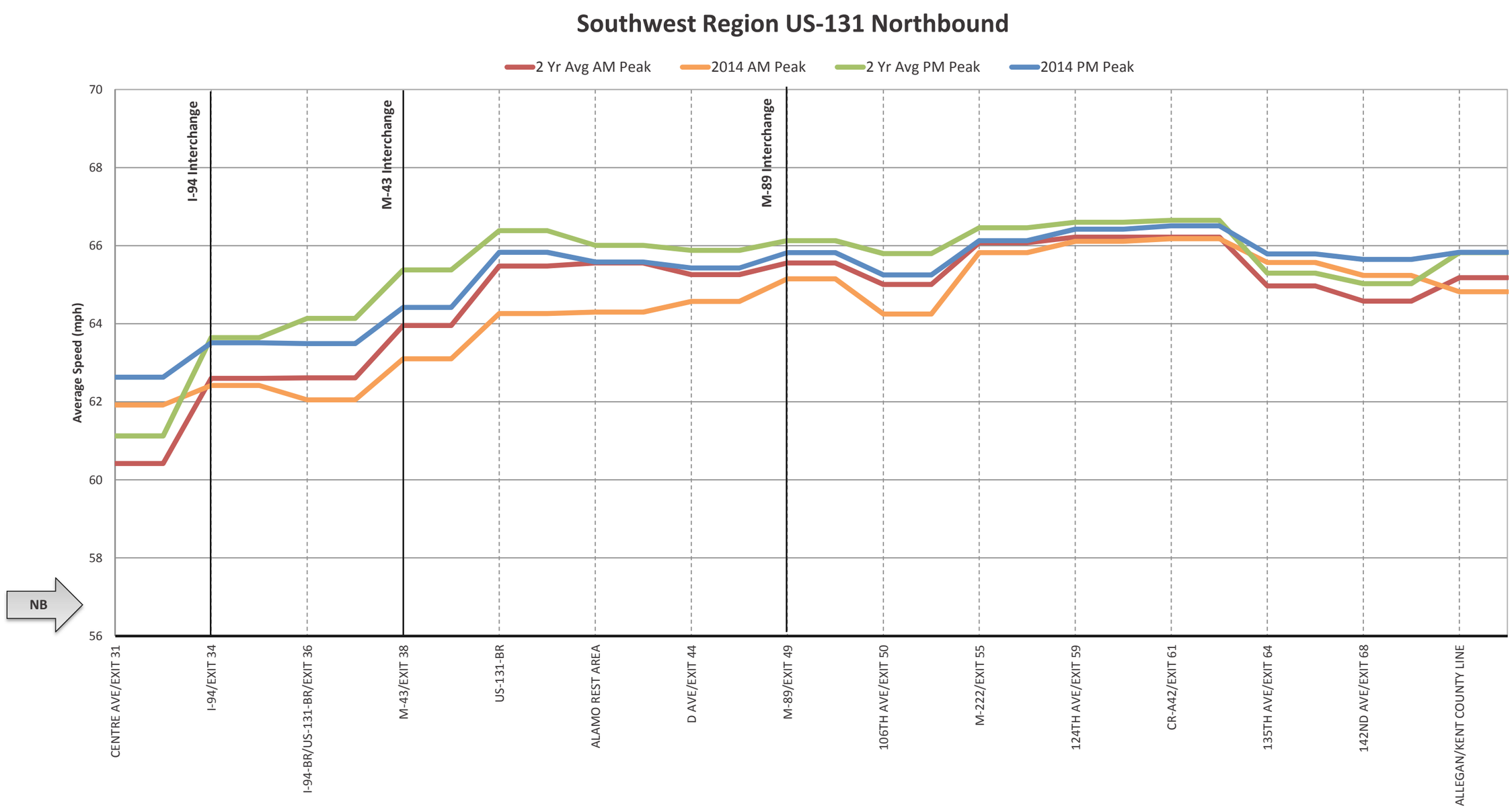
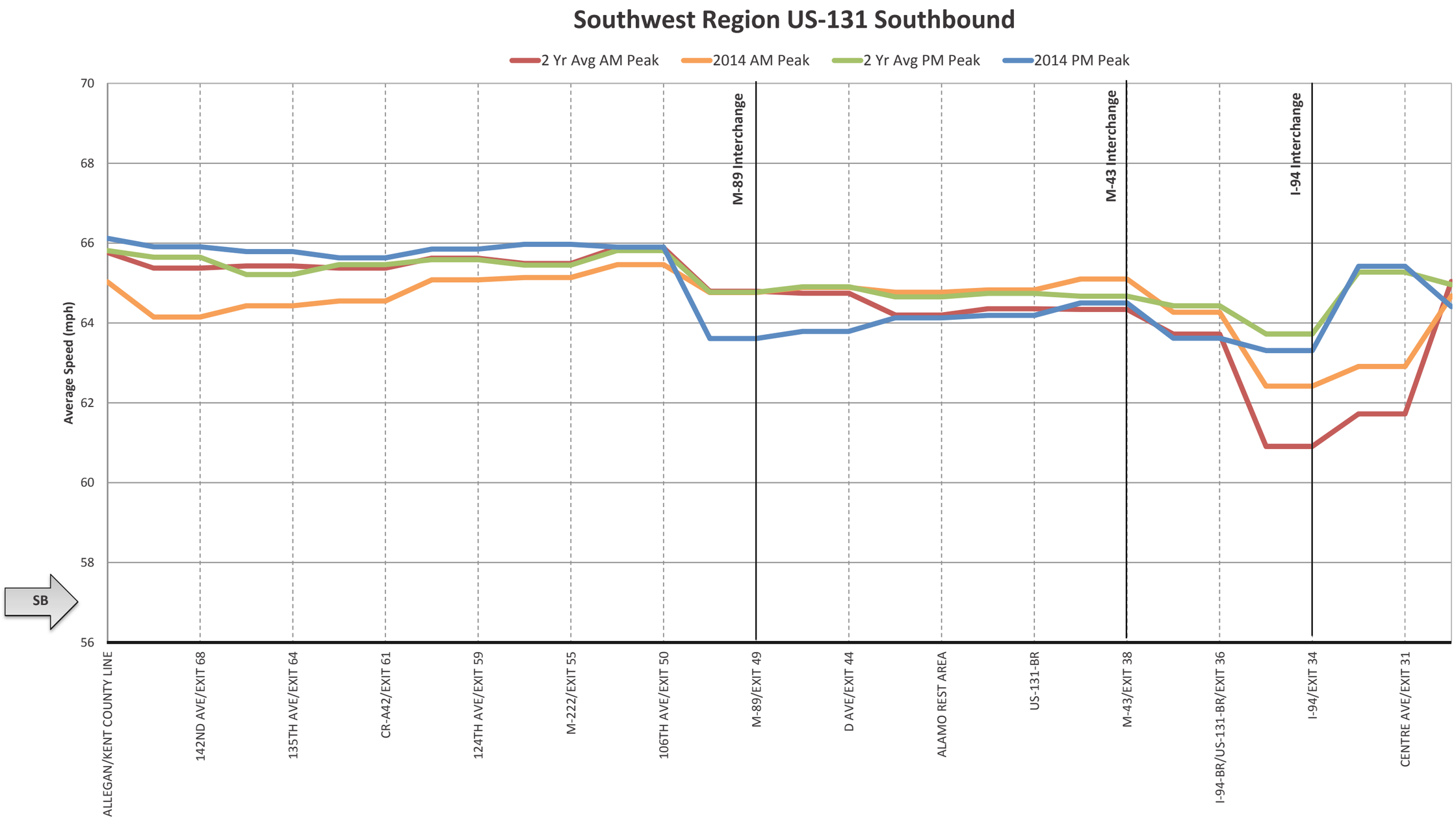


Figure 31. Southwest Region US-131 southbound



Travel Time Reliability

Figure 31. Southwest Region US-131 southbound

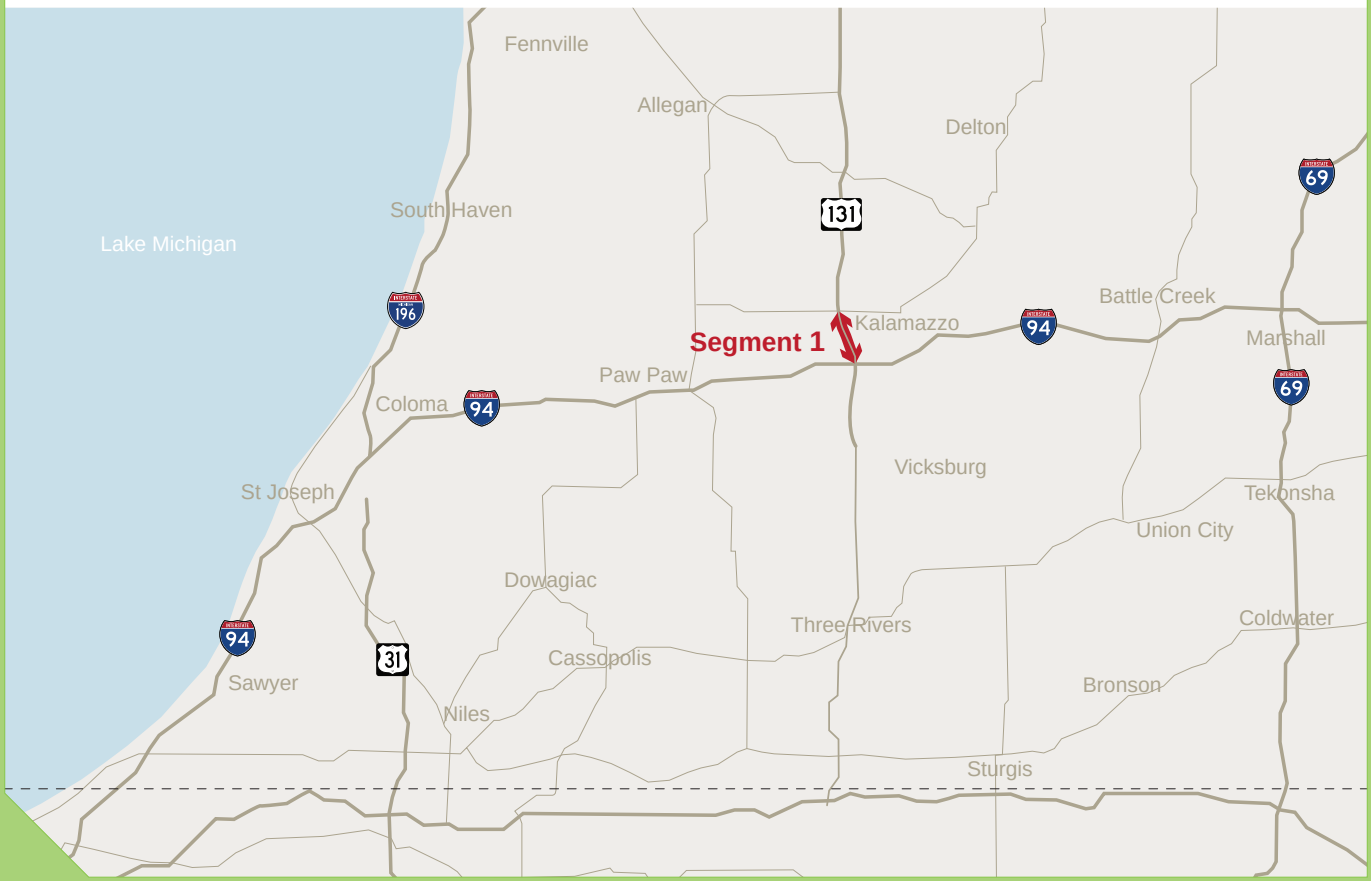
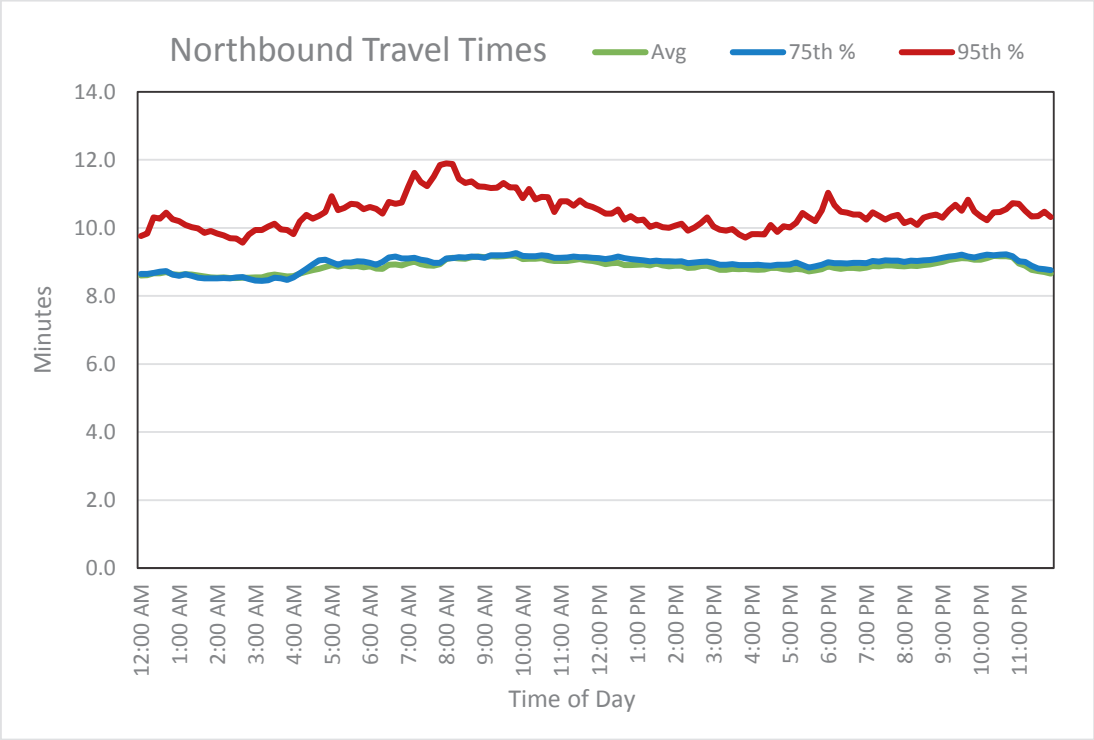
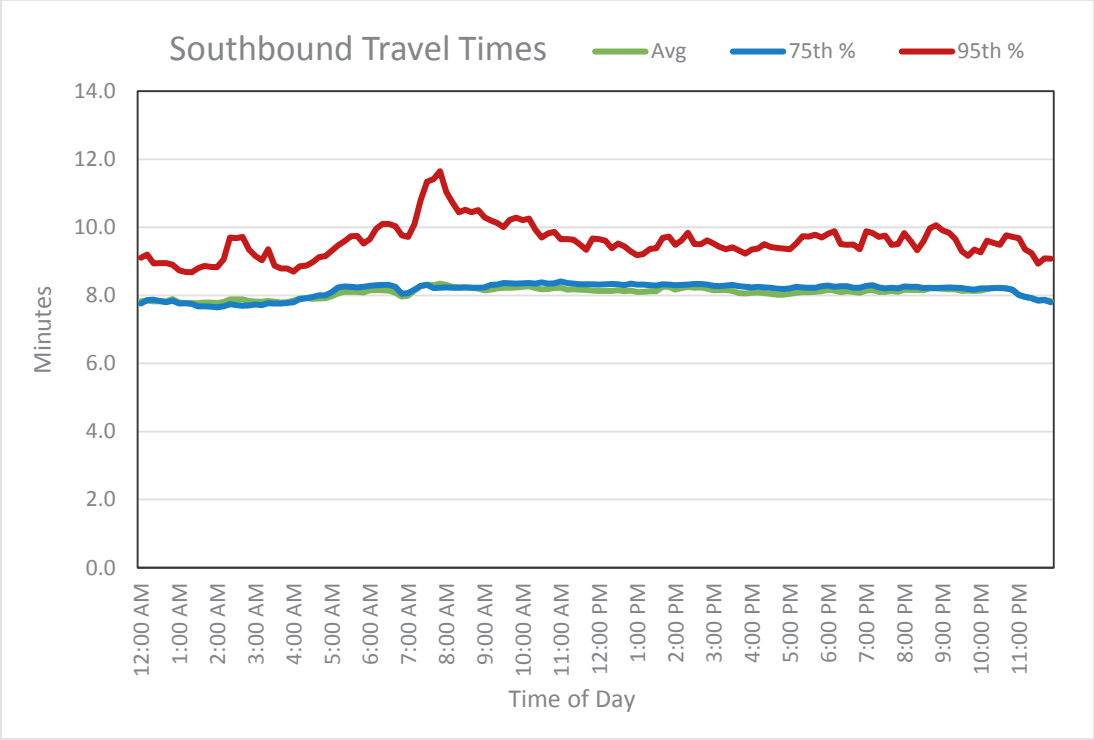


Figure 33. Segment 1- US-131 between I-94 and US-131-BR

Segment 1

Travel time (minutes) for US-131 between I-94/Exit 34 and US-131-BR





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