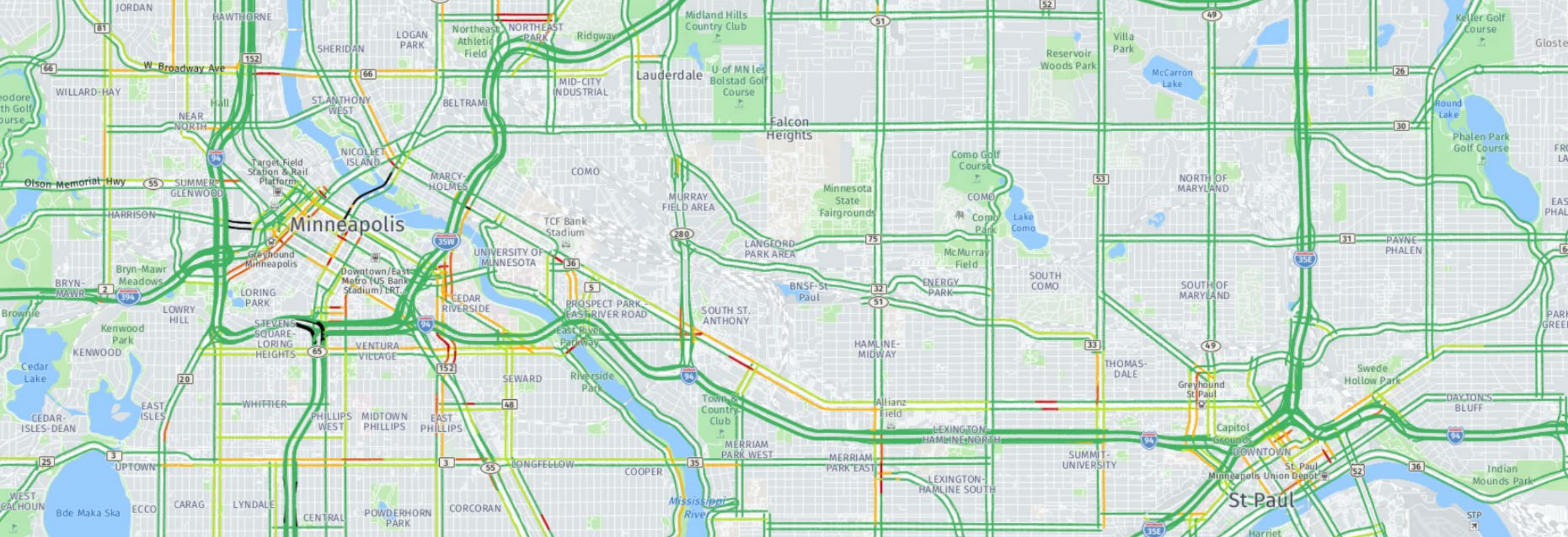




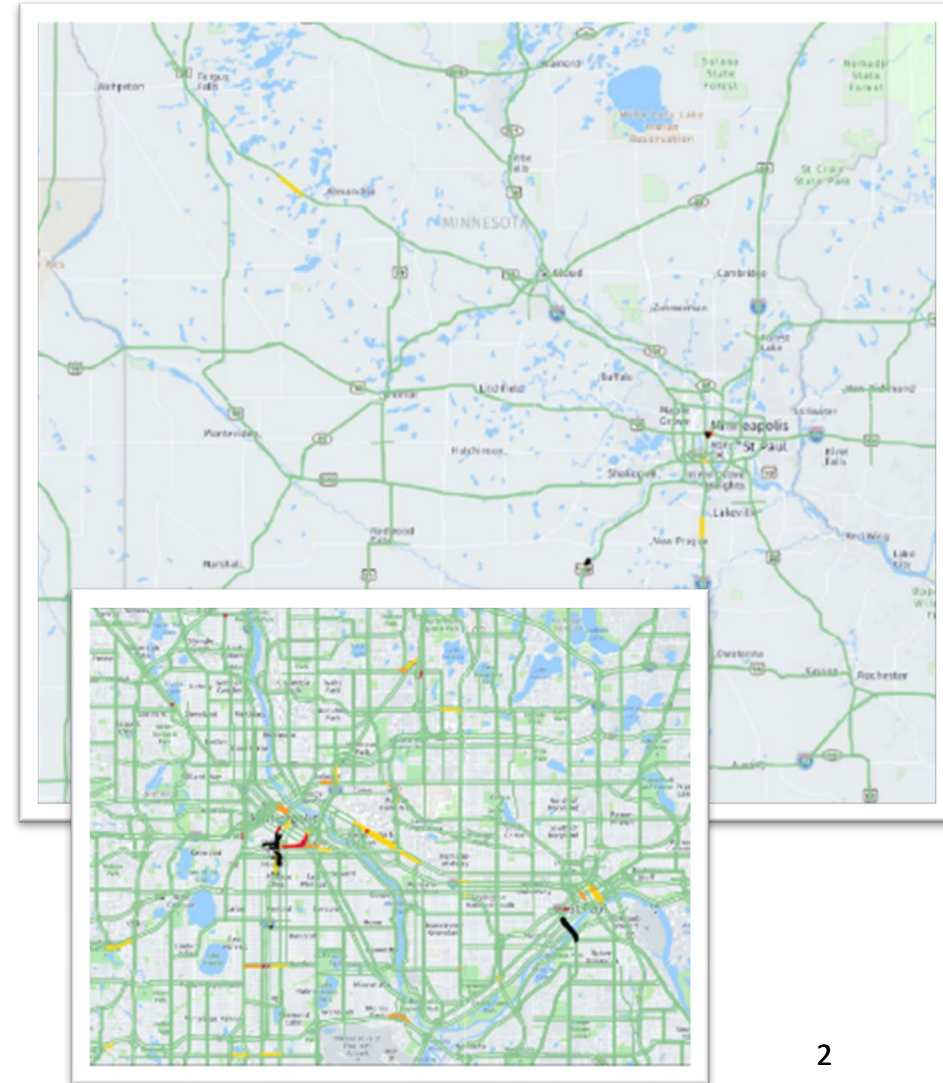
Using Iteris ClearGuide with HERE Probe Data

Brian Kary | RTMC Director of Traffic Operations

Joe DeVore | KLJ Project Manager and Traffic Engineer

ClearGuide with HERE Data

- Real-time traffic speed data provided by HERE
 - Data within 5-minutes
 - All state highways
 - Some major county and local roads in urban areas
 - Provides historical data back to January 2018
- ClearGuide reporting tool provided by Iteris
 - Average speeds, travel time, buffer time index, planning time index
 - Animations and congestions reports
- Annual cost of \$300,000.



StreetLight Versus ClearGuide

- StreetLight

- Used for Origin/Destination Patterns (includes bike/ped and transit data)
- Provides basic level of travel time data for a corridor at 15-minute intervals
- Up to a month lag time in getting data
- Excellent planning tool but data isn't real-time and not refined enough for operations

- ClearGuide

- Used for monitoring travel speeds, travel times, and delays.
- Real-time data within minutes
- Data is provided in 5-minute intervals and 1 mile segments.



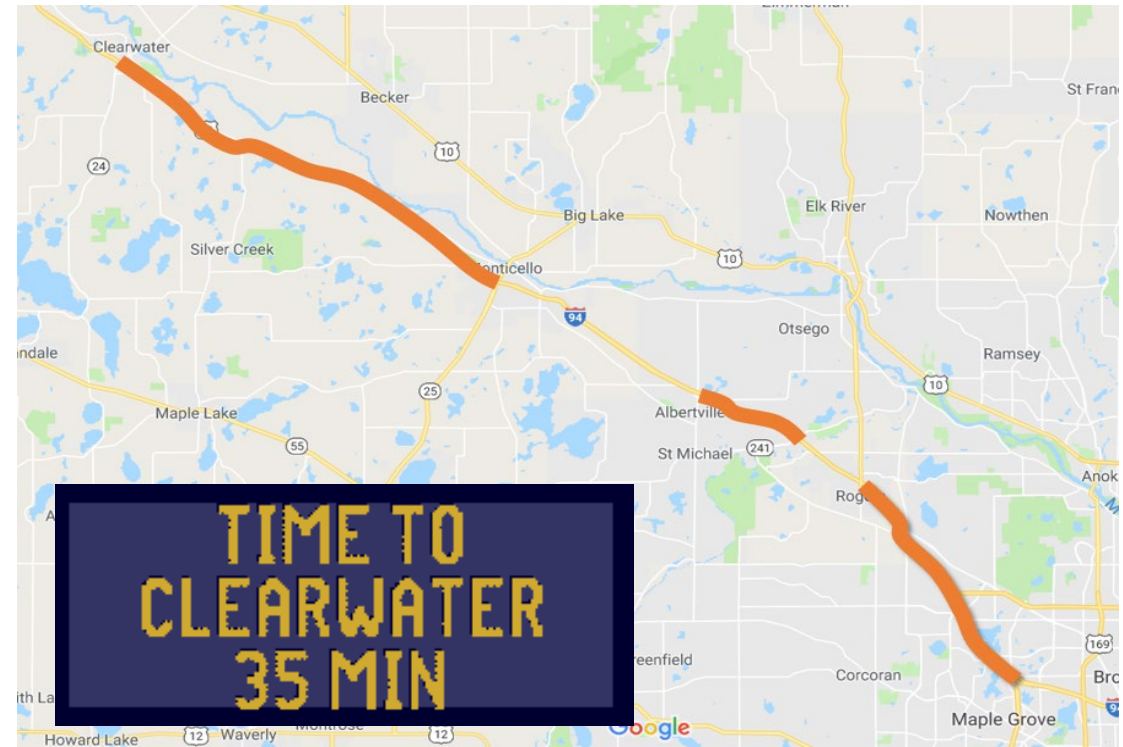
How does MnDOT use Iteris ClearGuide?

- Identifying locations of recurring congestion caused by bottlenecks or poor signal timing
- Tracking delays due to work zones both within the work zone and on detour routes
- Conducting before and after studies of signal retiming projects to measure benefits
- Measuring delays due to traffic incidents or weather



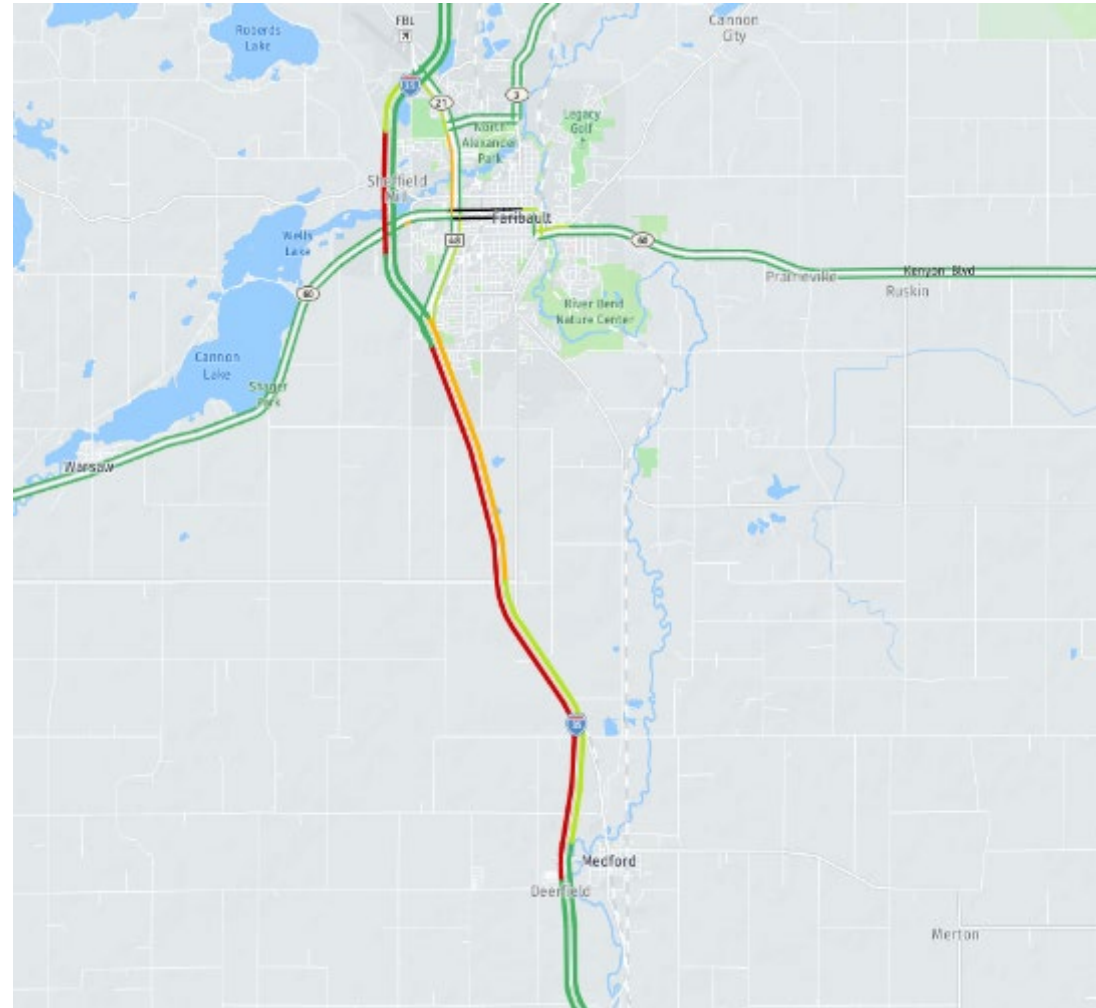
Real-Time Applications for ClearGuide

- Integration with IRIS
- Potential use cases
 - Arterial Travel Times
 - Rural Route Travel Times
 - Hwy 61 in Two Harbors
 - Hwy 10 in District 3
 - Work Zone Travel Times
 - Plan to use for part of the travel time system for the Twin Ports Interchange saving the project \$75,000 in temporary detection costs.
 - Potential use for Hwy 52 projects saving up to \$300,000 in temporary detection costs.



Traffic Incident Management

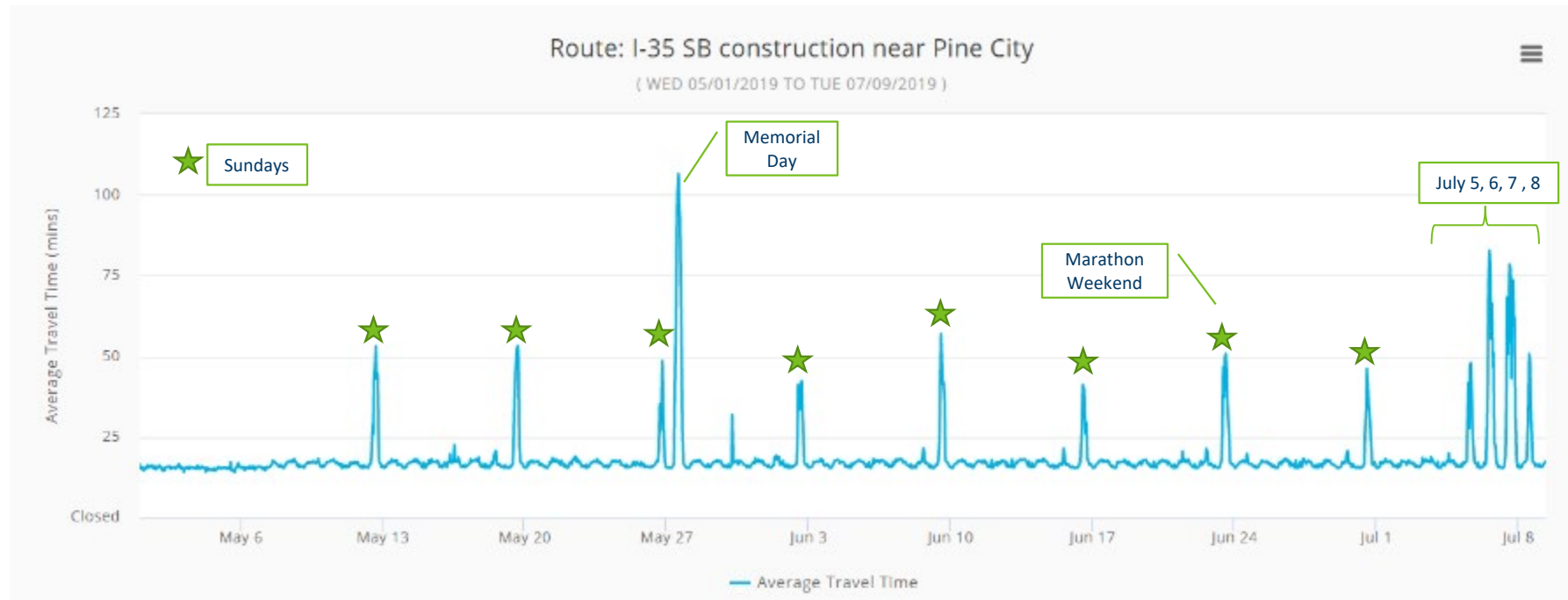
- June 13, 2019 @ 2PM
- SB I-35 south of Faribault, MN
- Crash involving a mowing crew
- Used map to show animation of congestion



Work Zones – I-35 Construction

Travel Times – SB I-35 from Pine City to Harris from May 1st to July 9th

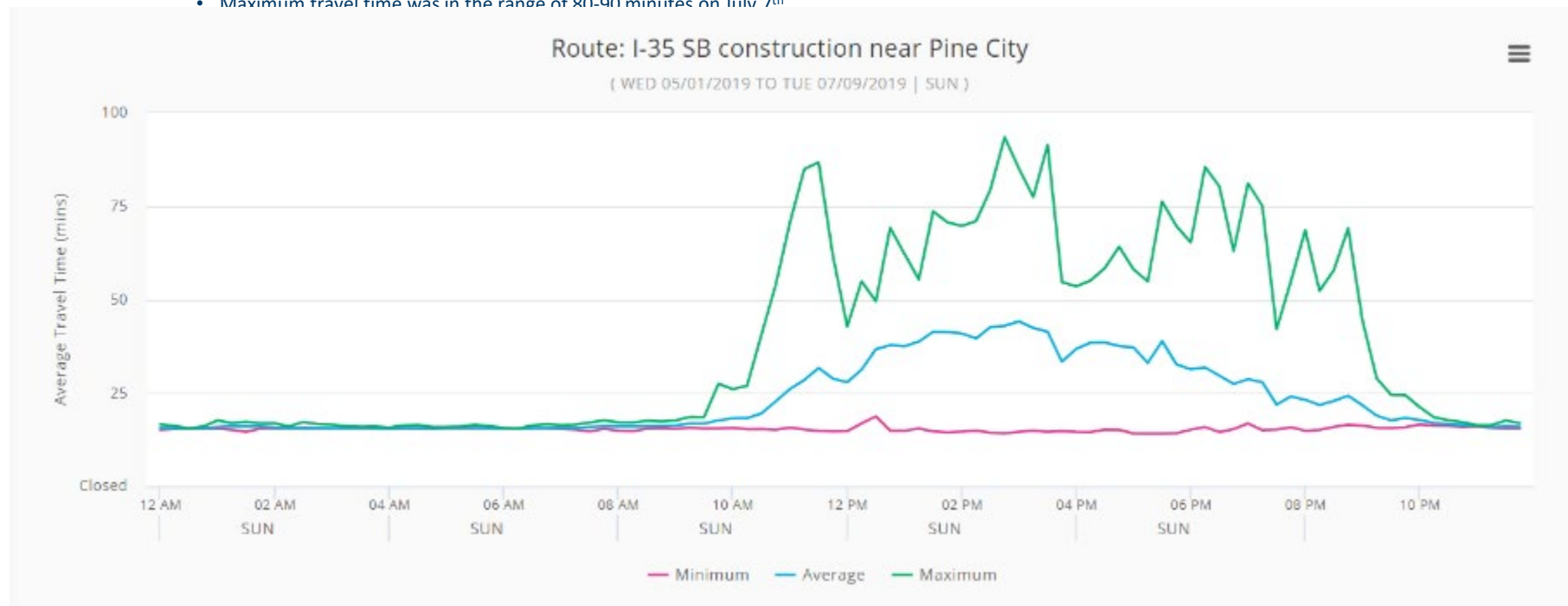
- Chart shows travel times from May 1 through July 4th weekend
- Free flow travel time 15-16 minutes to cover 18 miles
- Typical weekdays are operating with minimal to no delay.
- Sundays are showing consistent delays – more on next slide
- Most significant delays were on Memorial day and the 4 days post July 4th.



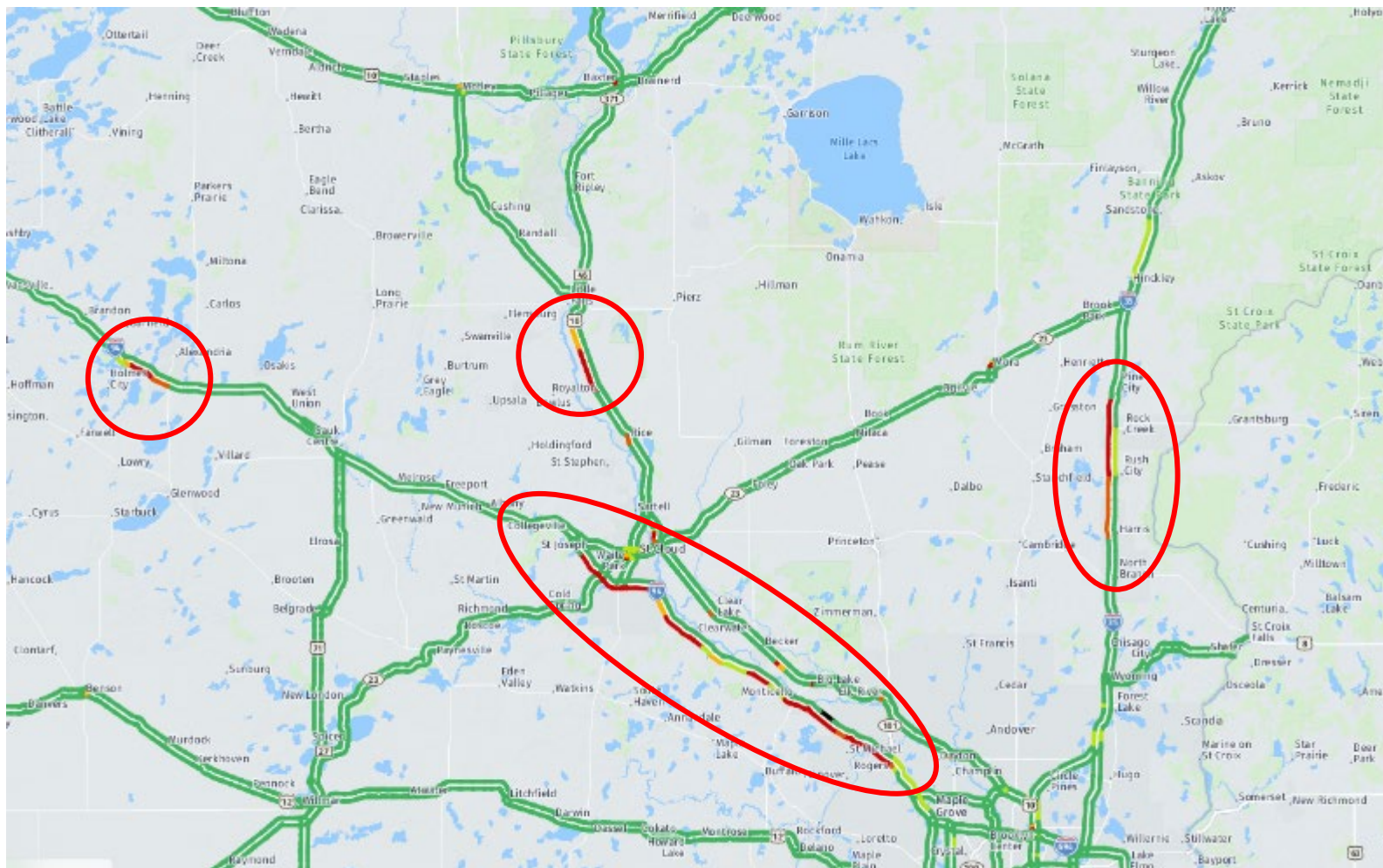
Work Zones – I-35 Construction

SUNDAY Travel Times – SB I-35 from Pine City to Harris from May 1st to July 9th

- This chart shows minimum, average, and maximum travel times from May 1 through June 30th
- Free flow travel time 15-16 minutes to cover 18 miles
- Average peak travel time on Sundays excluding July 7th is 40 minutes.
- Delays occur between 10AM and 9PM.
- Maximum travel time was in the range of 80-90 minutes on July 7th



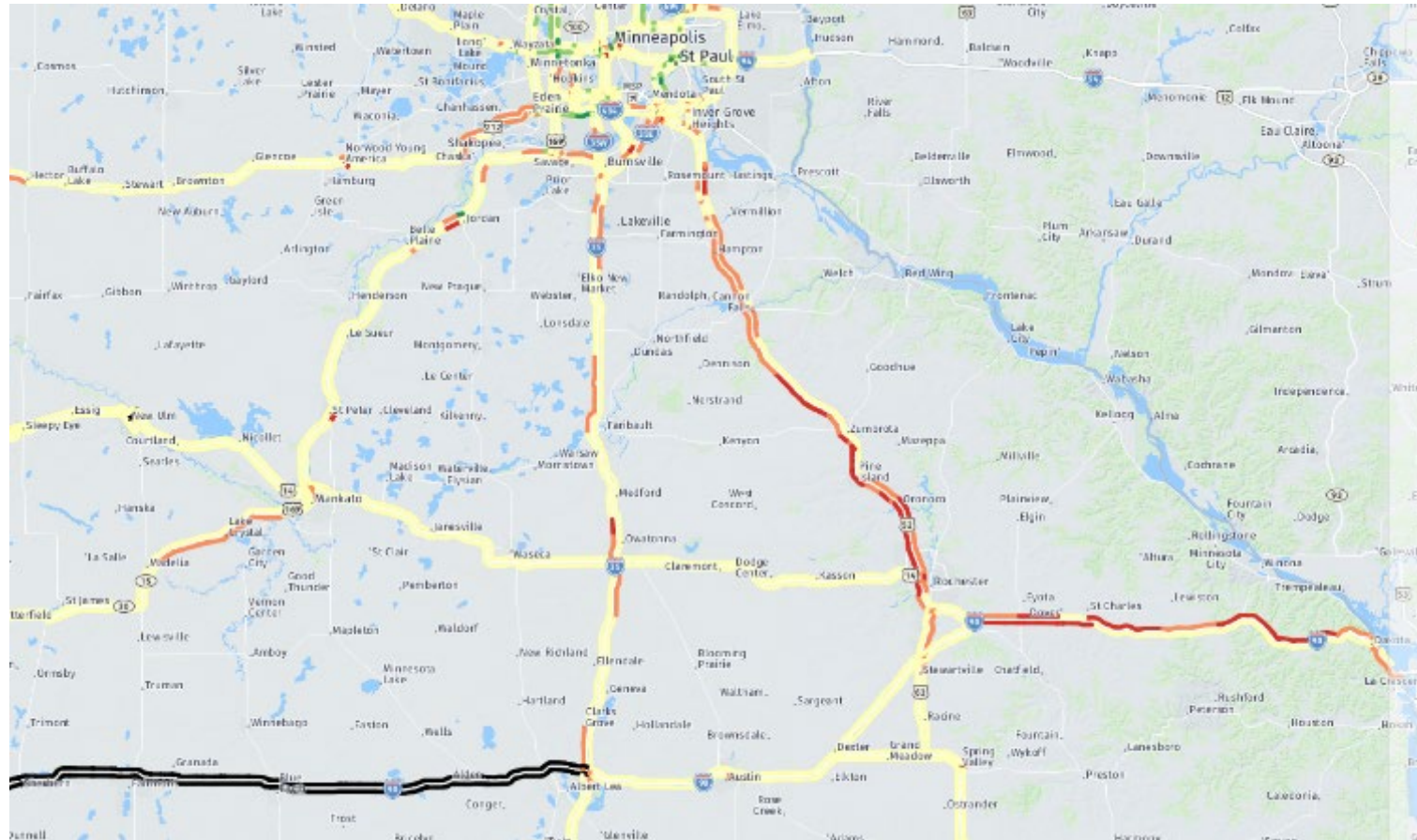
2019 Memorial Day Migration to Metro



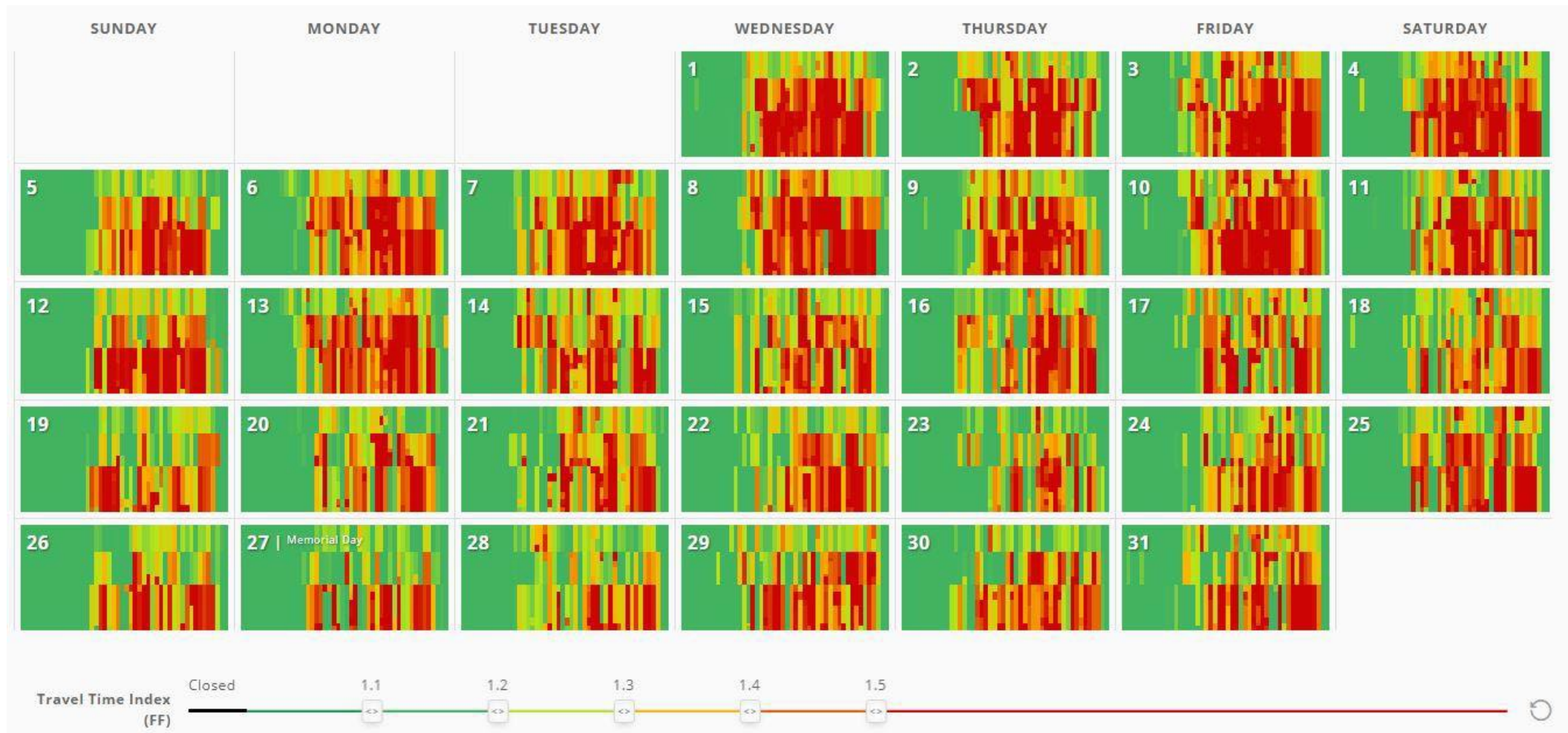
Impacts of Winter Weather

Blizzard on Feb 24th, 2019

Showed speed anomalies on traffic map to show impacts of blizzard conditions



Hwy 14 Signal Operations



KLJ Clear Guide Projects

- TH 77 Congestion Mitigation and TH 61 Two Harbors projects
 - Freeway Reliability - How many days in a year have congestion? What is the cause of that congestion?
 - Travel Time Analysis – What are the impacts throughout the week? What does the average travel time increase by?
 - Latent Demand Analysis – Can we identify Latent Demand based on average travel time increase? Can we Calibrate our VISSIM models to this delay if we run a 24-hour model?

Covid Volumes Review

How is Covid-19 impacting Hwy 77?

- Metro Freeways still show a 15%-20% decrease before the most recent “dial back”
- Hwy 77 matches this during off-peak
- Hwy 77 peak directions have seen a 30%-45% decrease

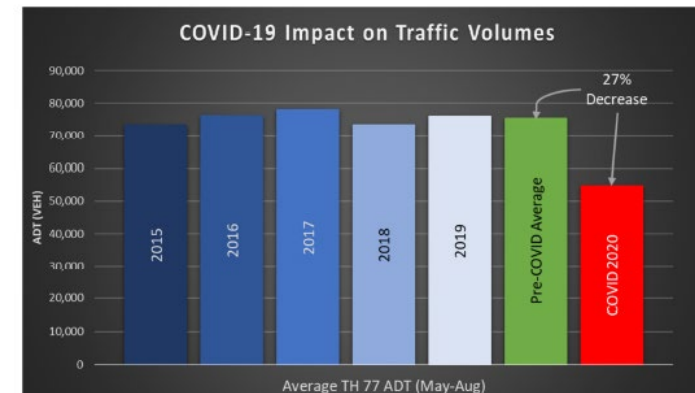
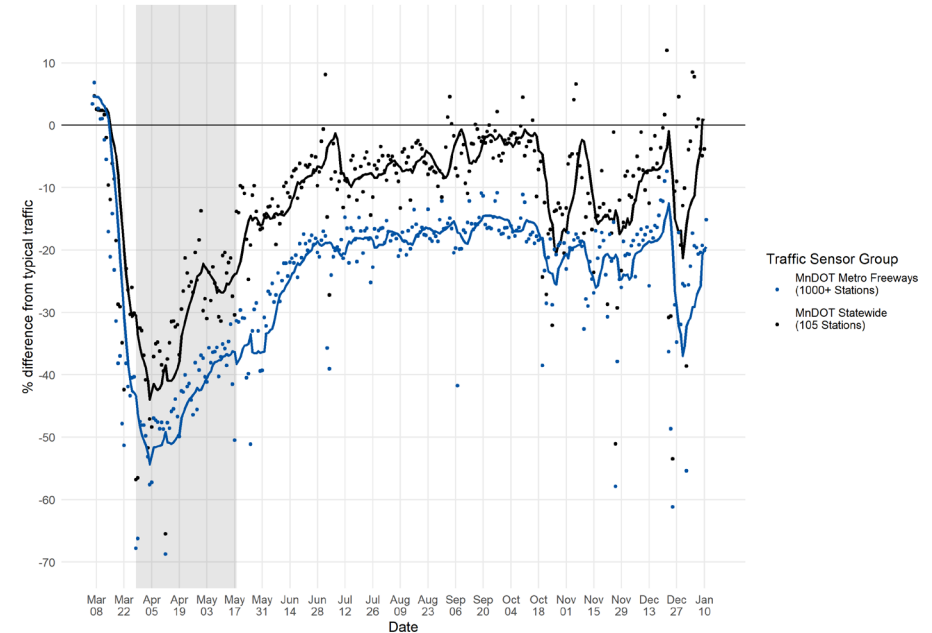
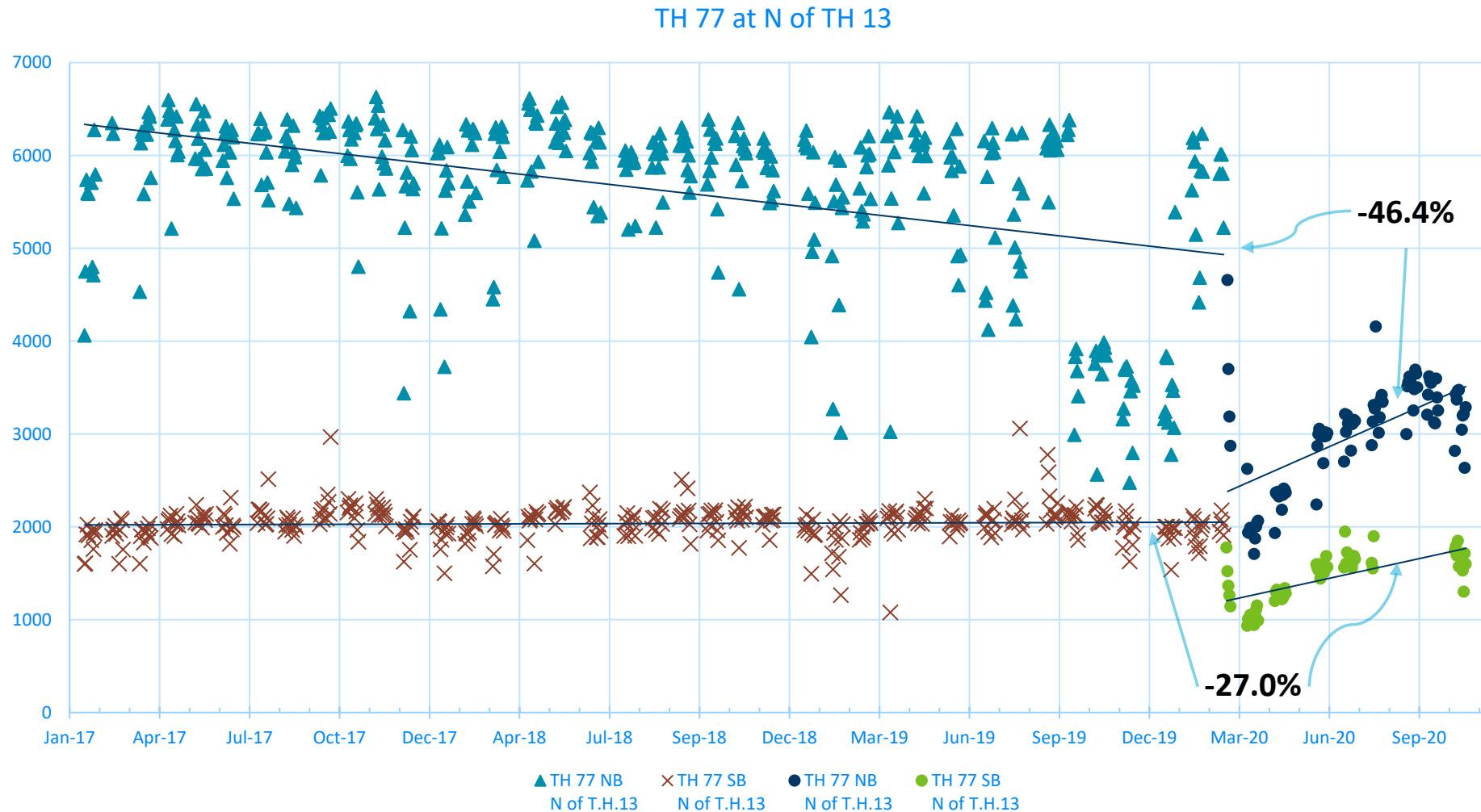


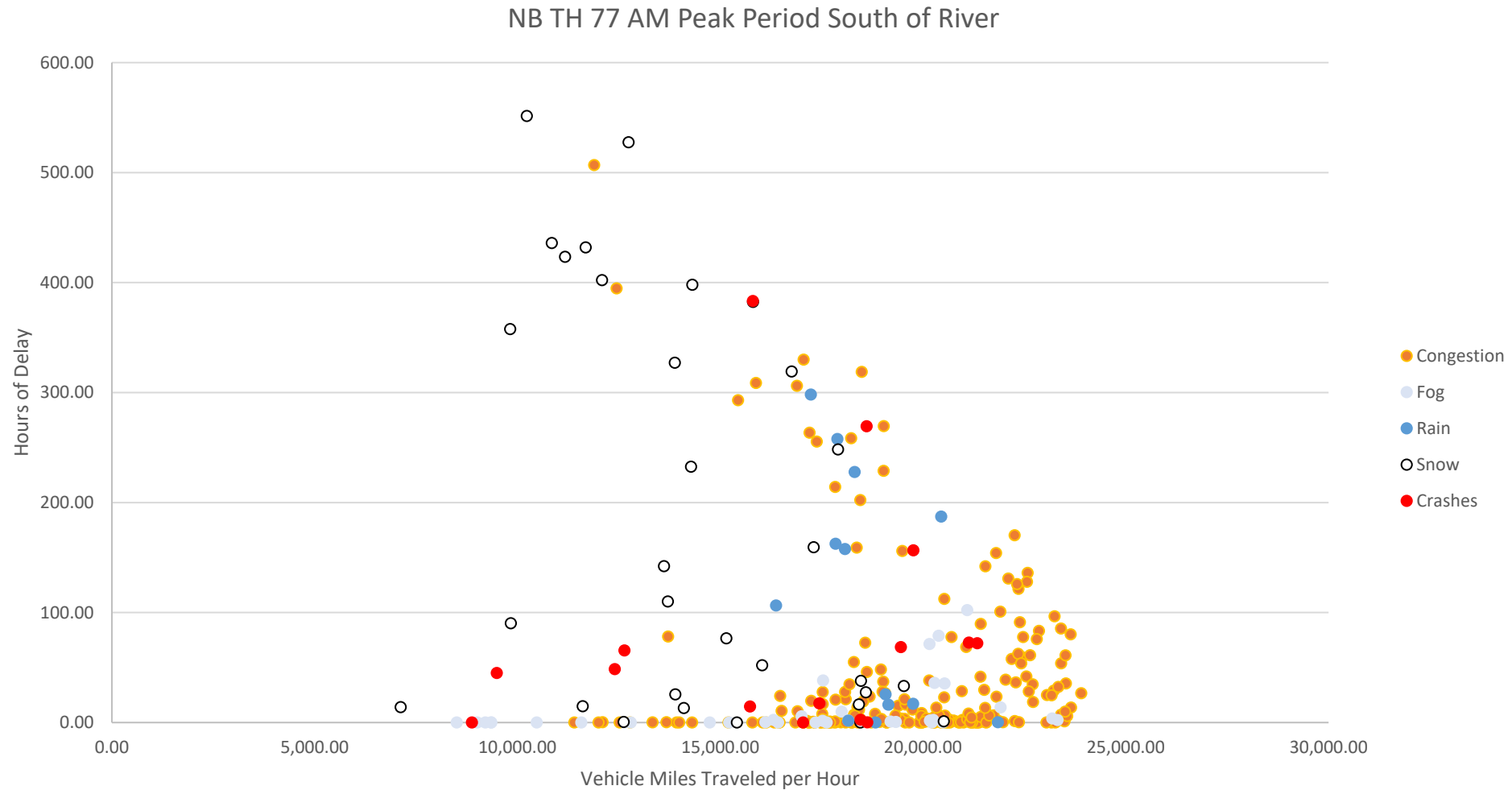
Figure 3: COVID-19 Volume Impacts

Source: MnDOT's Data Extract Tool

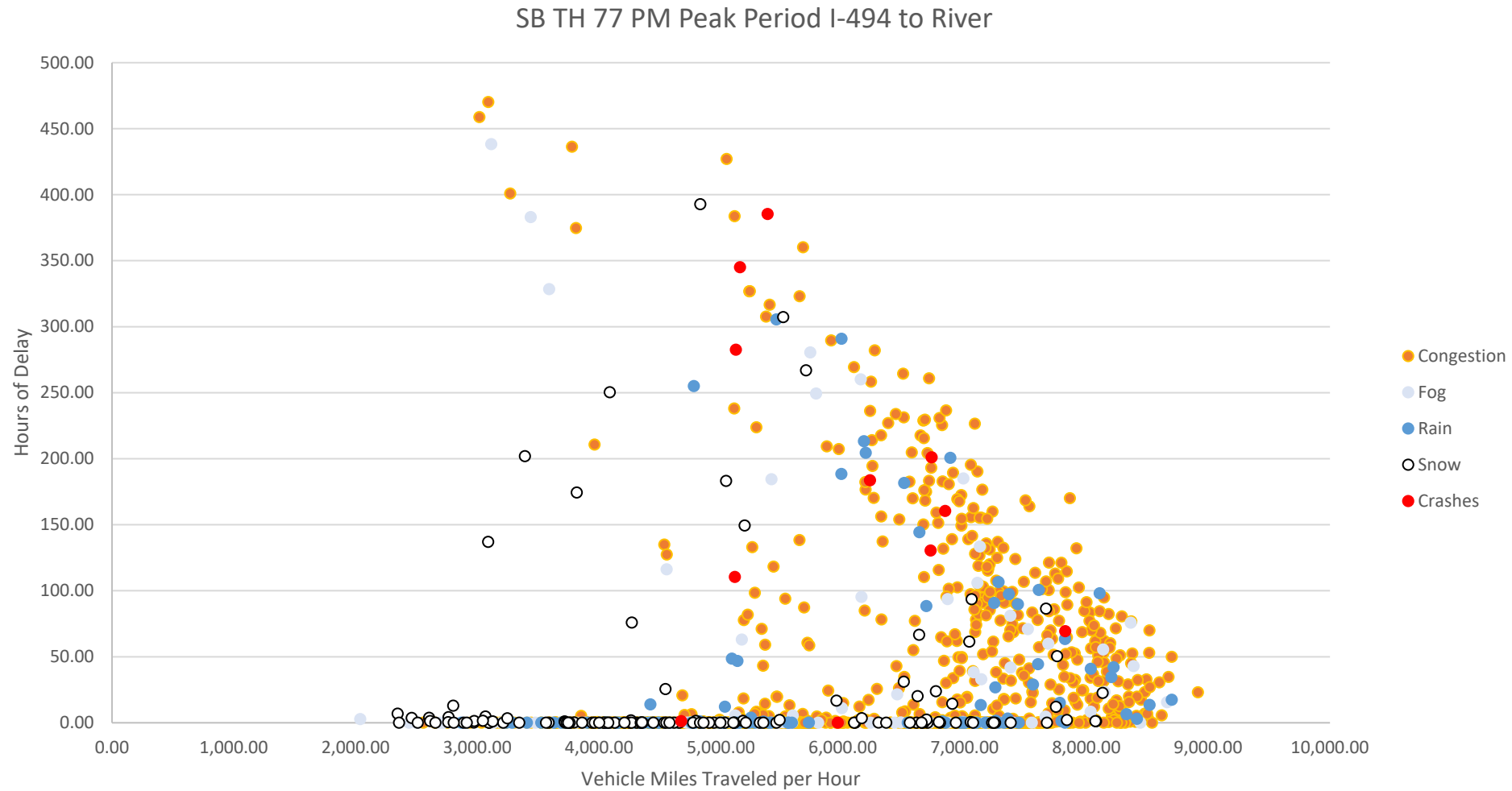
TH 77 at N of TH 13 (AM)



2019 Reliability NB TH 77

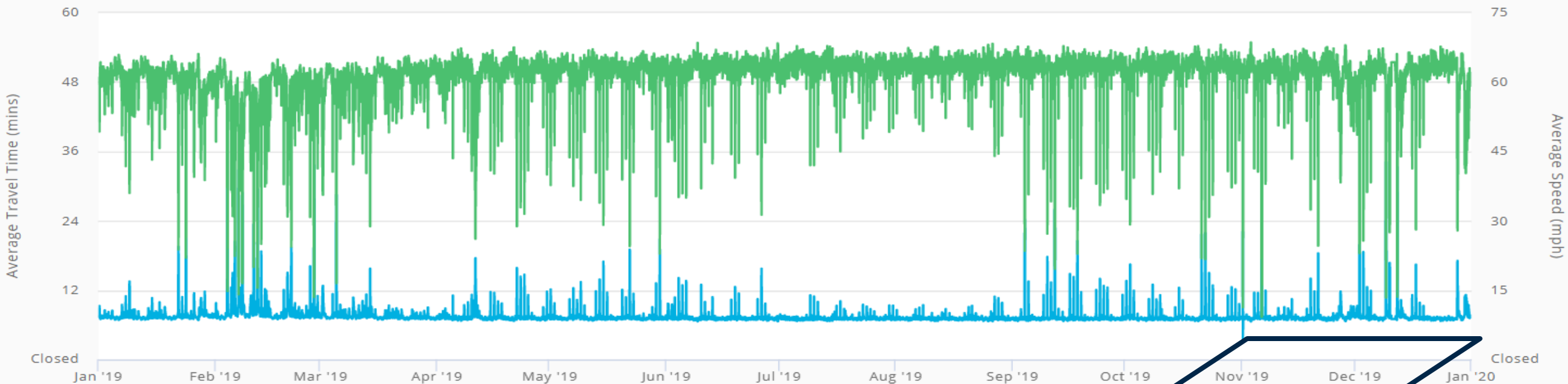


2019 Reliability SB TH 77



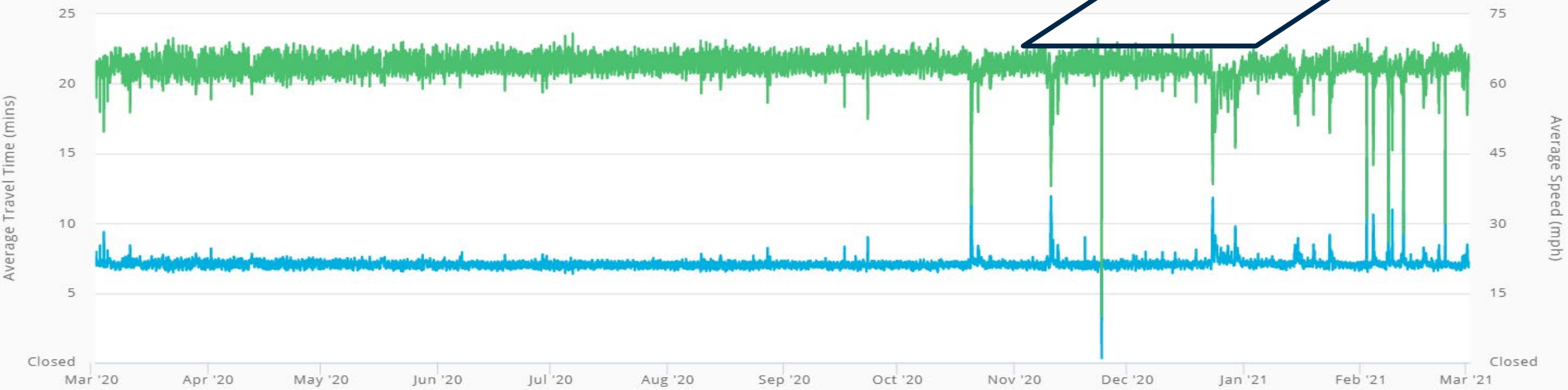
Route: MN-77 NB

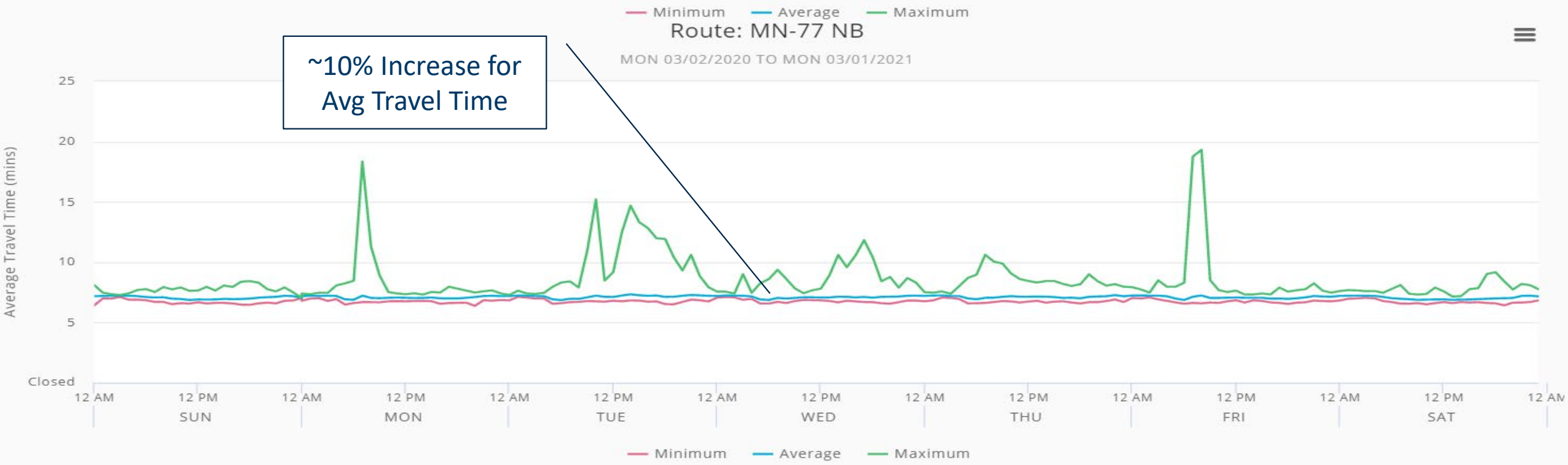
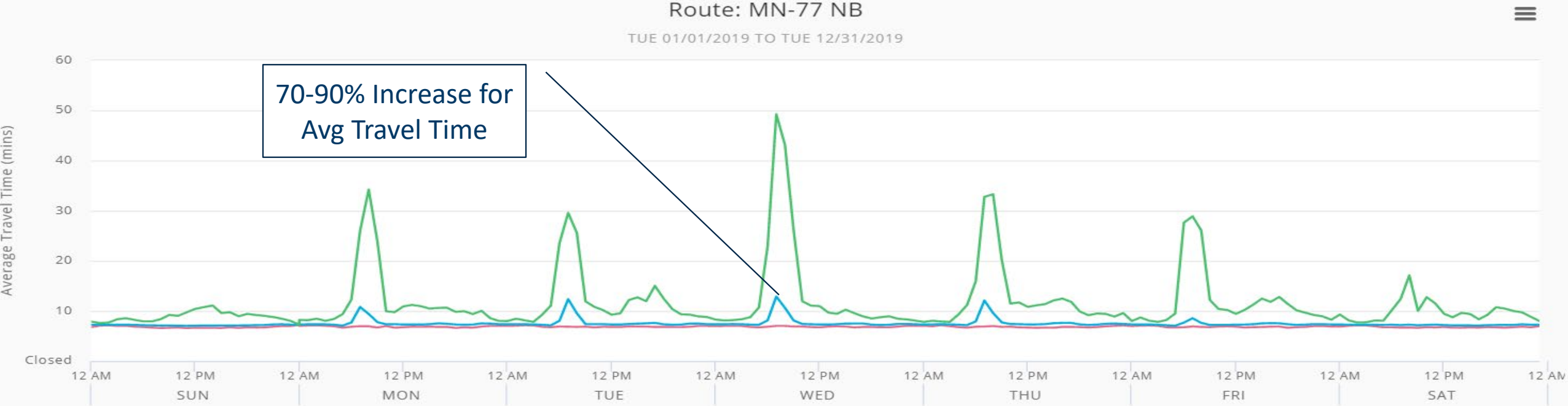
TUE 01/01/2019 TO TUE 12/31/2019



Route: MN-77 NB

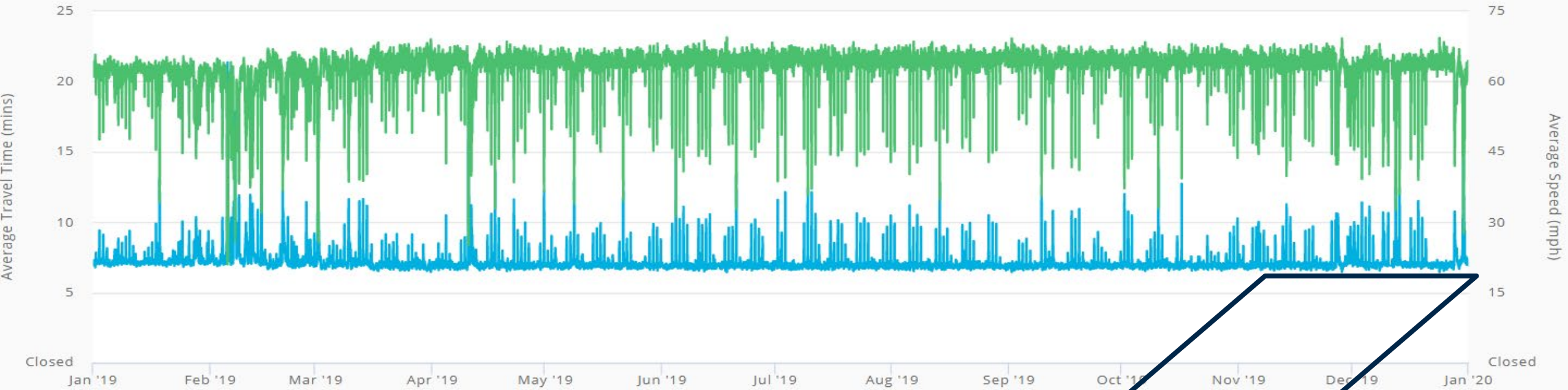
MON 03/02/2020 TO MON 03/01/2021





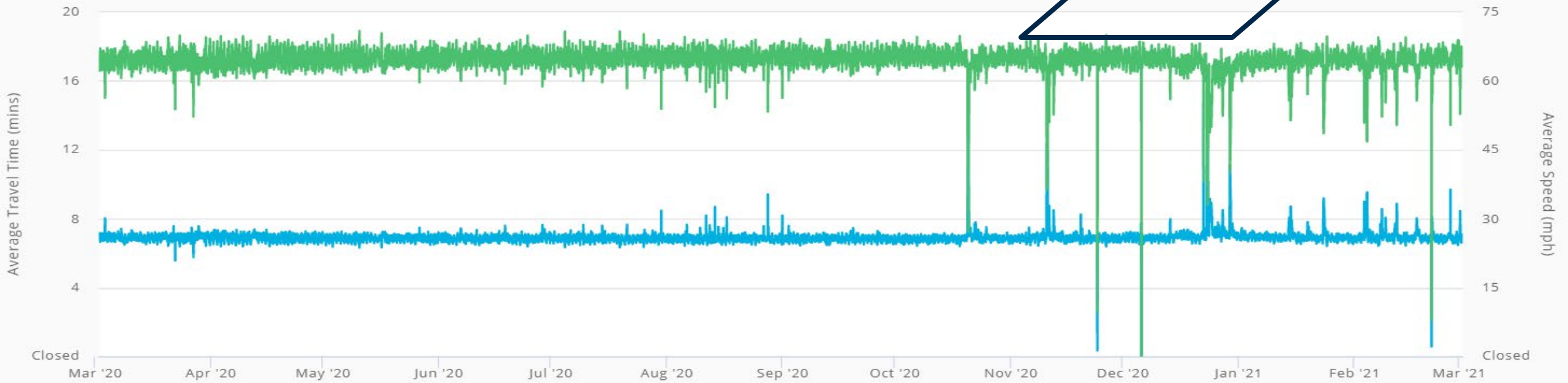
Route: MN-77 SB

TUE 01/01/2019 TO TUE 12/31/2019

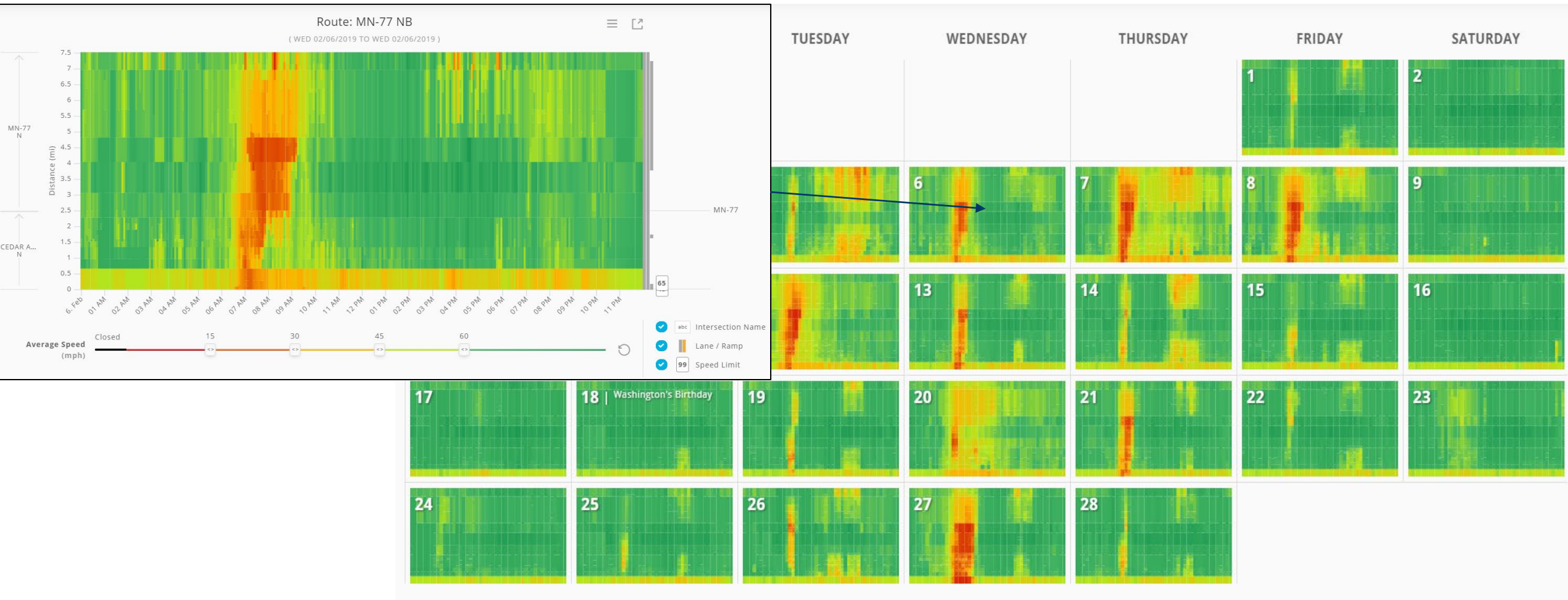


Route: MN-77 SB

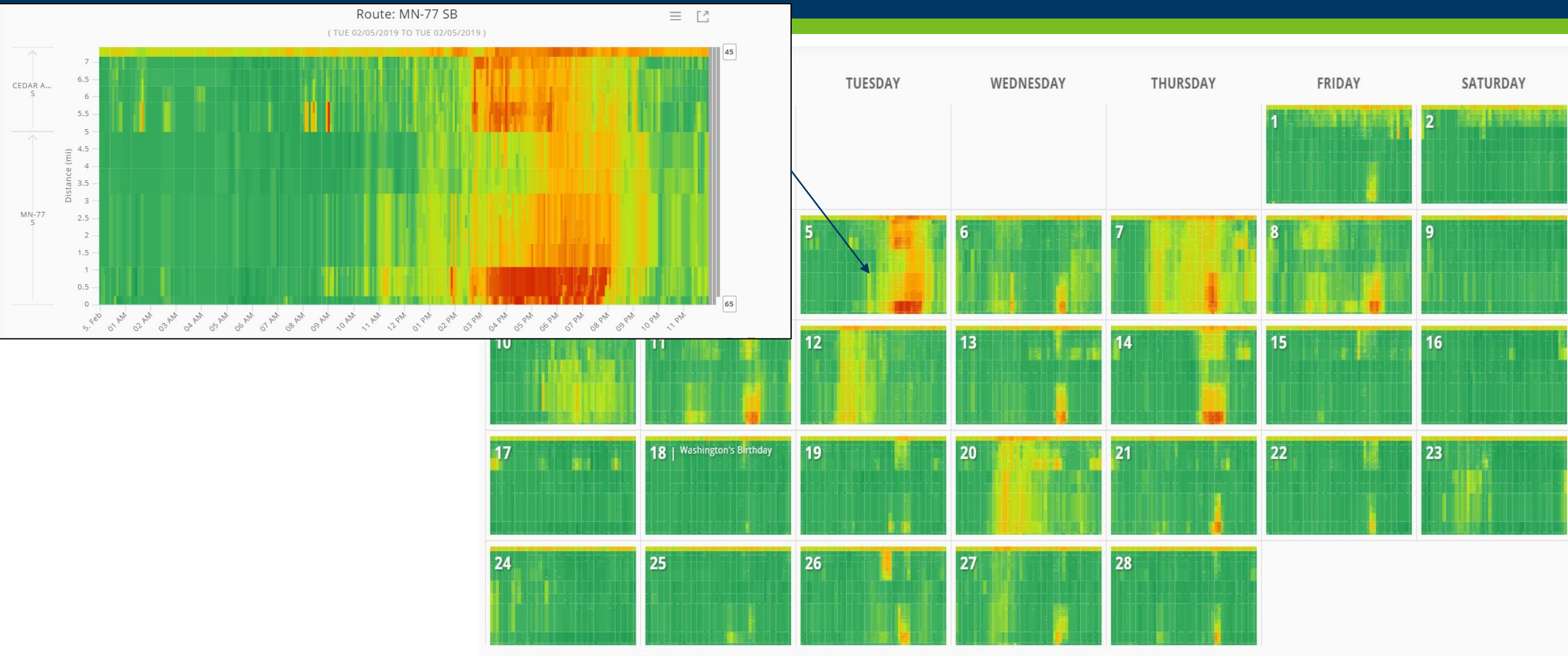
MON 03/02/2020 TO MON 03/01/2021



NB TH 77 Speed Contours in Feb 2019



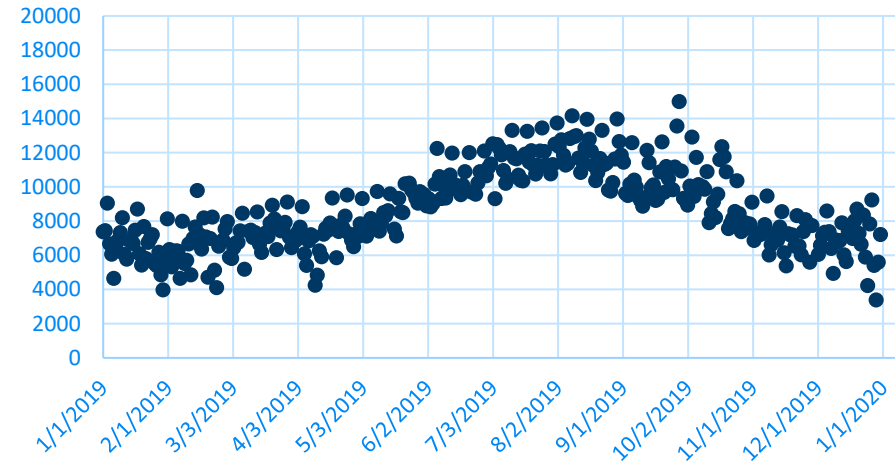
NB TH 77 Speed Contours in Feb 2019



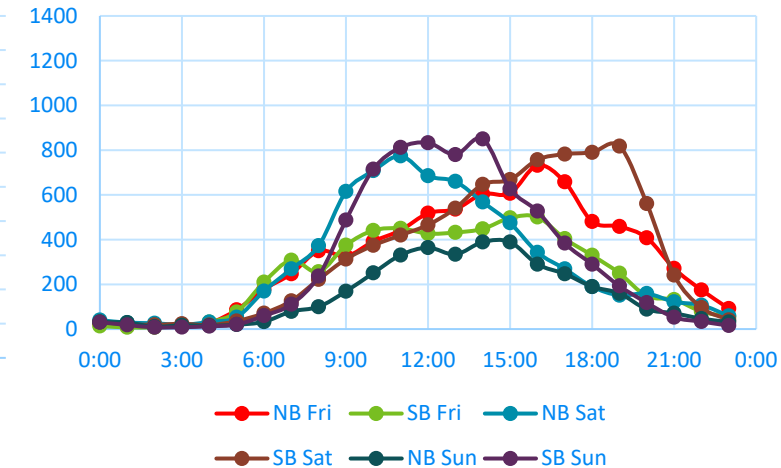
TH 61 Two Harbors

- Is the pandemic making traffic worse?
 - Seasonal Daily Peak Volumes **increased by 30%**
 - Increased Peak Flattening
 - More Sat AM Traffic
 - Later Sun PM Traffic

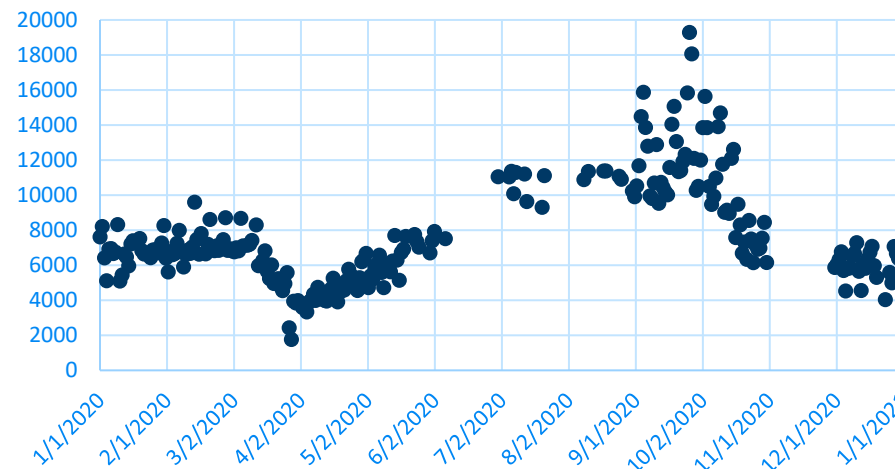
2019 ADT



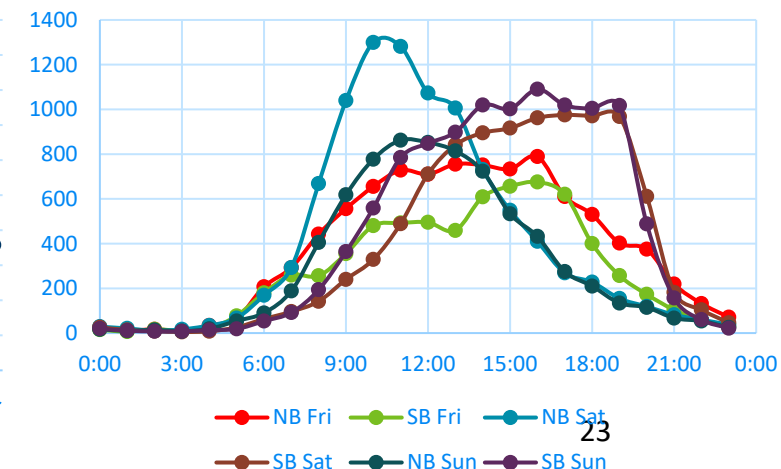
2019 Sept Peak Time of Day (Vol/hr)



2020 ADT

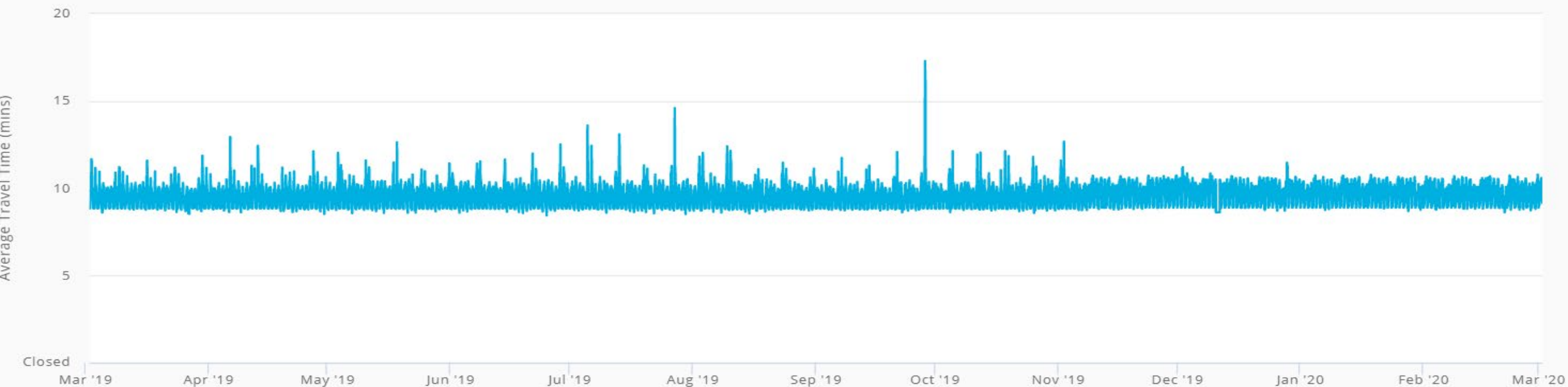


2020 Sept Peak Time of Day (Vol/hr)



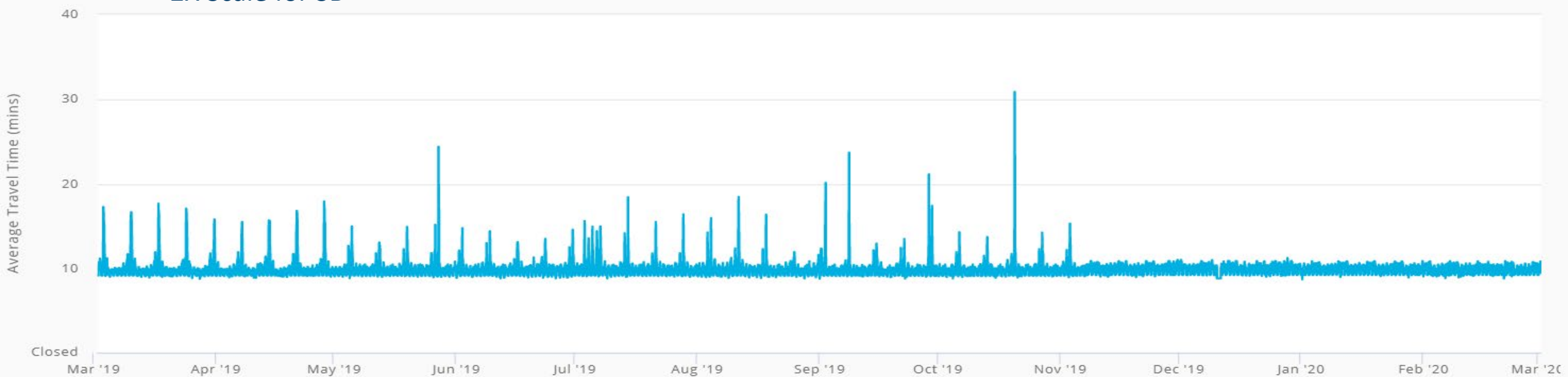
Route: MN-61 NB Two Harbors

SAT 03/02/2019 TO SUN 03/01/2020



Route: MN-61 SB Two Harbors

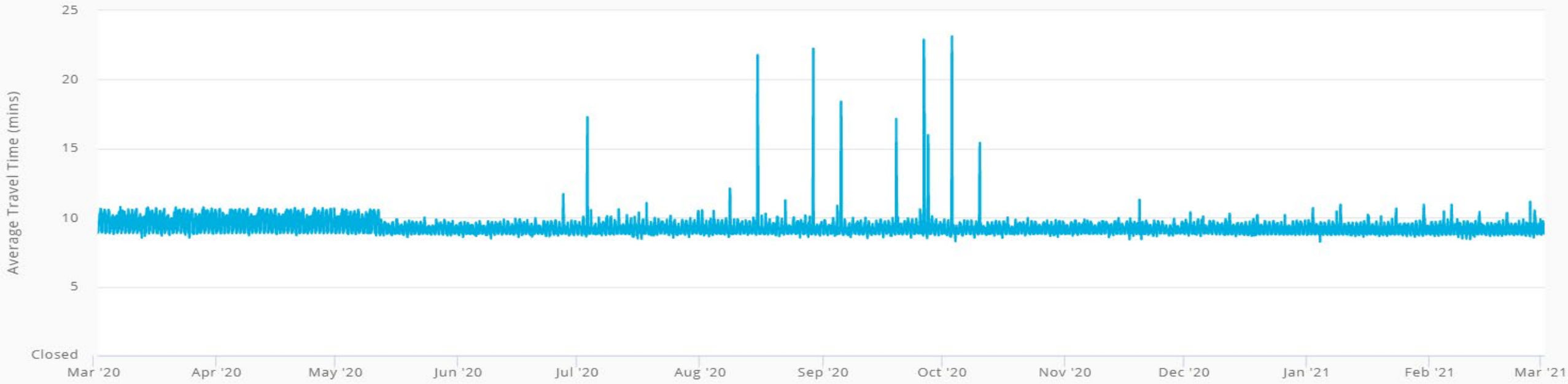
SAT 03/02/2019 TO SUN 03/01/2020



2X Scale for SB

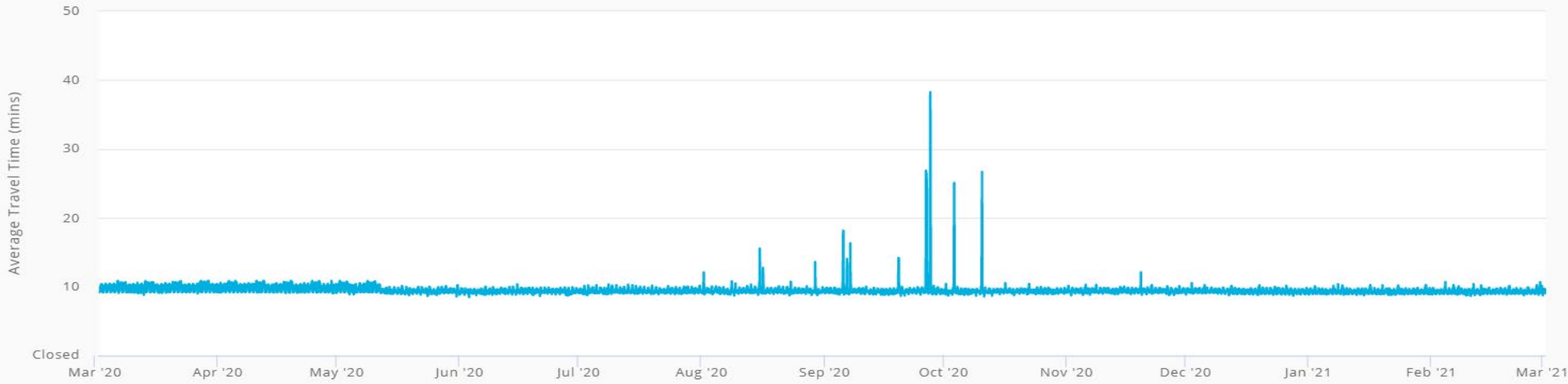
Route: MN-61 NB Two Harbors

MON 03/02/2020 TO MON 03/01/2021

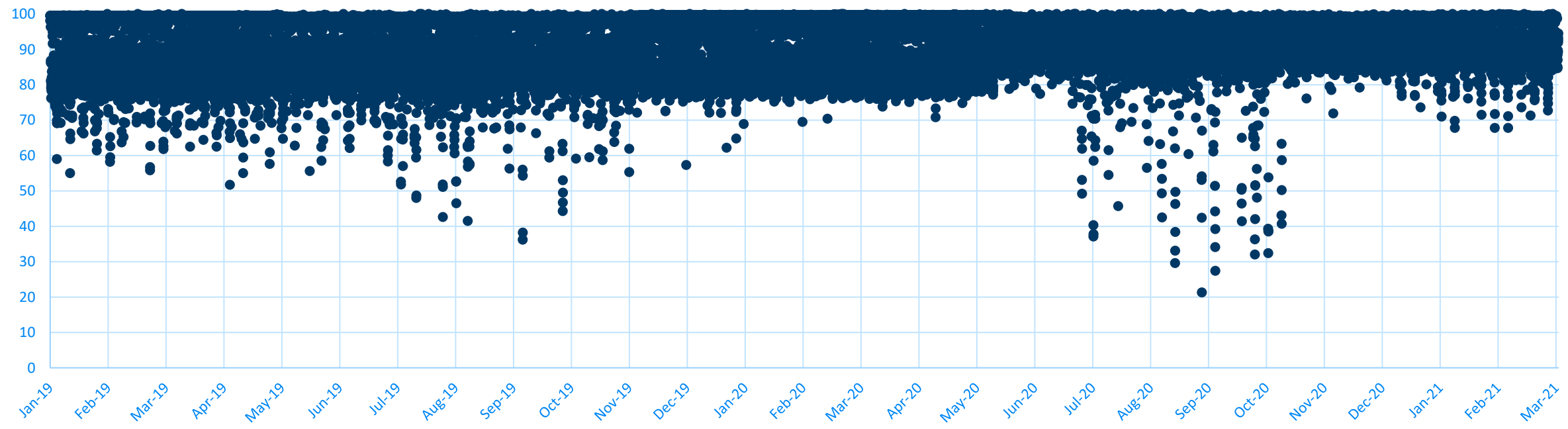


Route: MN-61 SB Two Harbors

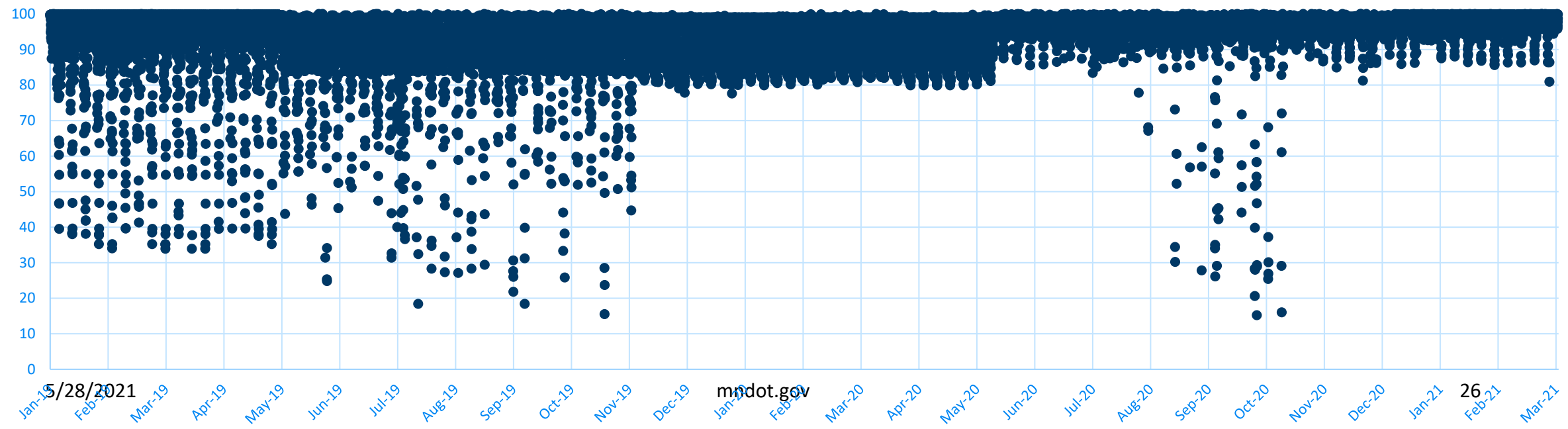
MON 03/02/2020 TO MON 03/01/2021



TH 61 Northbound - Average Percent of Free Flow Speed by Hour

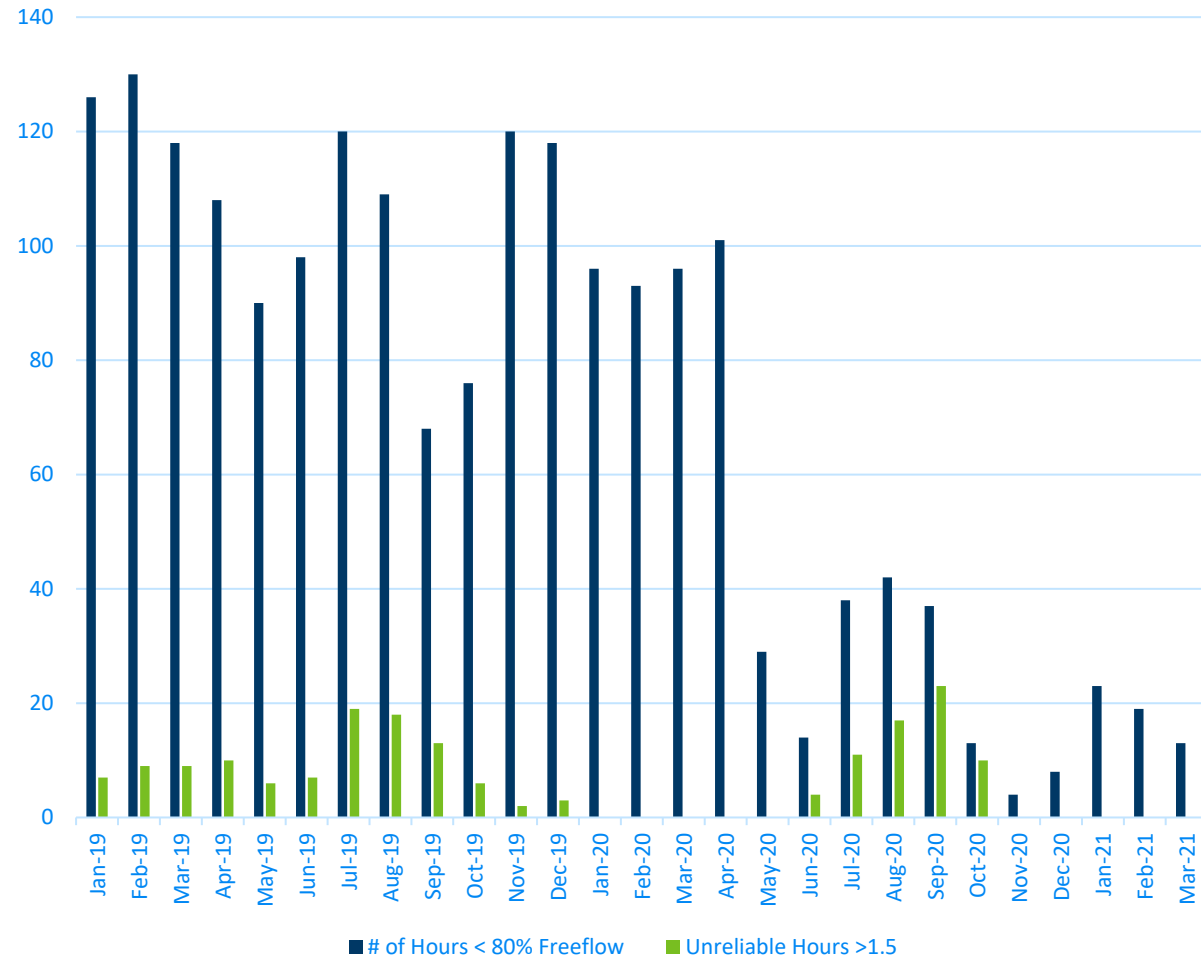


TH 61 Southbound - Average Percent of Free Flow Speed by Hour



Travel Time Reliability

NB Number of Hours of Deficient Operations



SB Number of Hours of Deficient Operations

