



July 13, 2020

Mr. Derek McGill
Transportation Authority of Marin
900 Fifth Ave., #100
San Rafael, CA 94901

Marin County COVID-19 Transportation Data Analysis

Dear Mr. McGill;

As requested, W-Trans has prepared a data summary of travel conditions and emissions changes caused by the COVID-19 pandemic in the County of Marin. The analysis examines changes in conditions by transportation mode.

Traffic Conditions

Vehicle Miles Traveled

County-wide vehicle miles traveled (VMT) for Marin county residents were significantly higher prior to the implementation of the COVID-19 shelter-in-place (SIP) order on March 16, 2020. According to Streetlight Data's estimates, average daily countywide VMT was 4,711,018 in January. By March 31, this number had dropped to 476,000, a 90% reduction in VMT. VMT levels have gradually increased since the beginning of April as detailed in Figure 1.

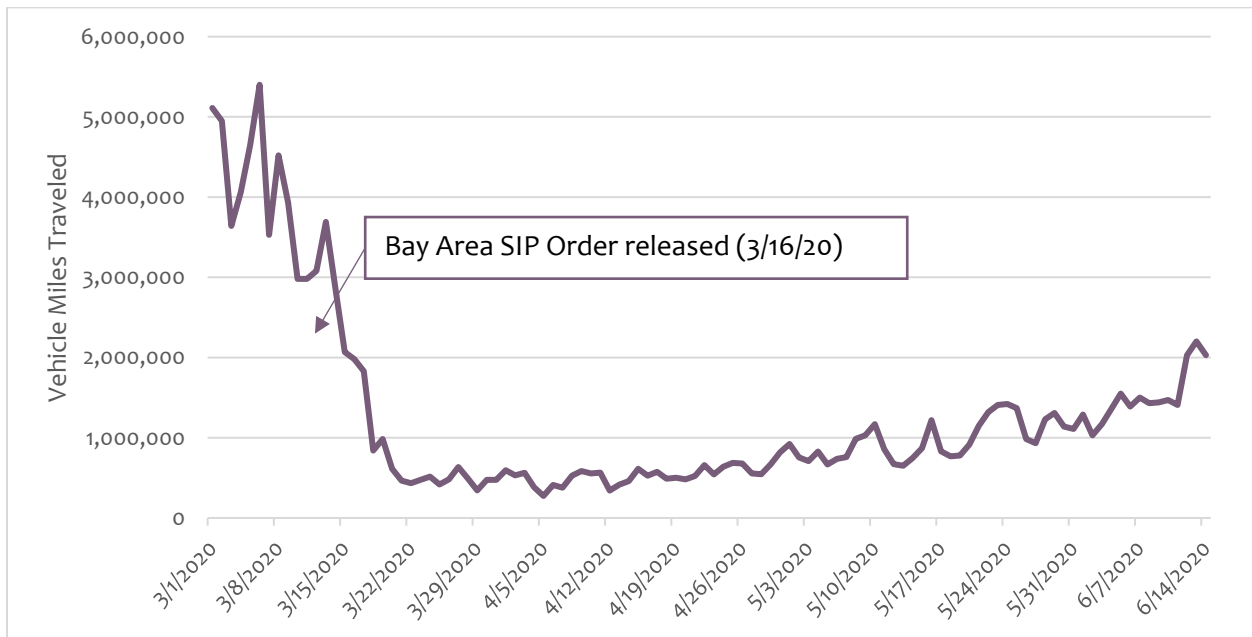


Figure 1 Daily Countywide VMT for Marin County Residents (Source: Streetlight Data)

Highway Traffic Volumes

According to Caltrans' Performance Monitoring System (PeMS), traffic volumes on Highway 101 measured near the Marin Civic Center on Tuesdays, Wednesdays, and Thursdays during peak morning (7-9 a.m.) and evening (4-6 p.m.) hours dropped dramatically following the implementation of the SIP order. Daily traffic volumes during commute hours fell an average of 38% from February to April. Meanwhile, traffic speeds increased an average of 9%, most noticeably in the southbound a.m. commute with average speeds increasing from 56 to 64 miles per hour (MPH). By contrast, traffic on Highway 37 at Black Point experienced a 27% average reduction in traffic volumes during this these same times with vehicle speeds remaining relatively constant. Figures 2 through 5 illustrate data for each highway from January to June.

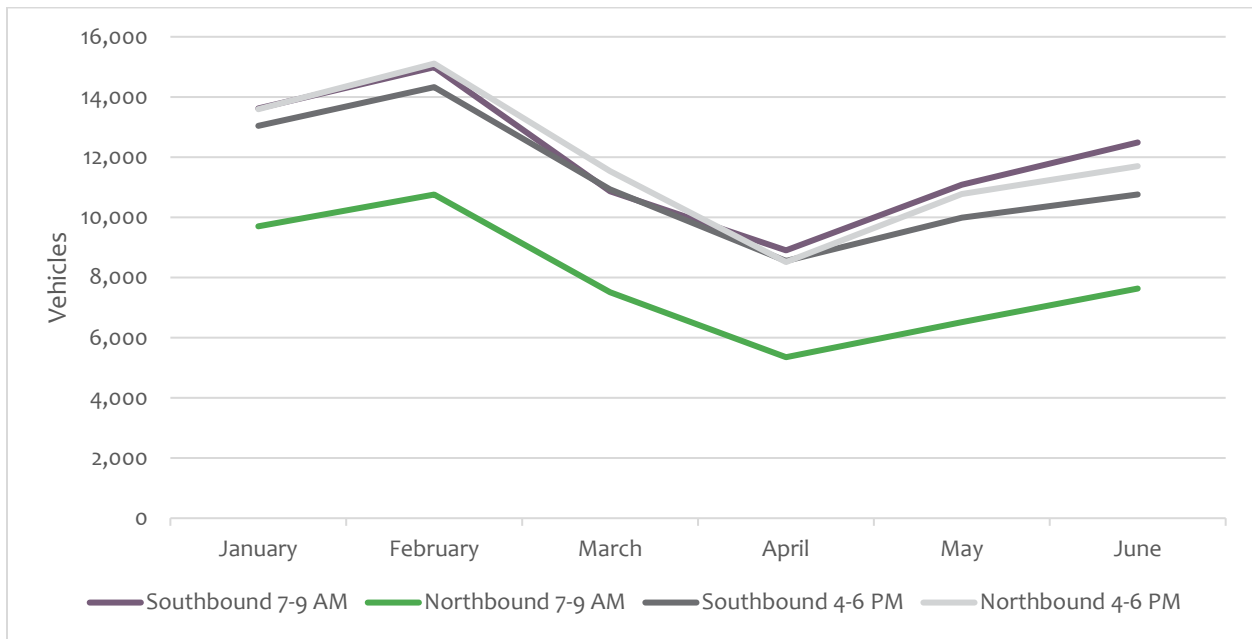


Figure 2 Daily Vehicle Volumes on Highway 101 at Civic Center (Source: PeMS)

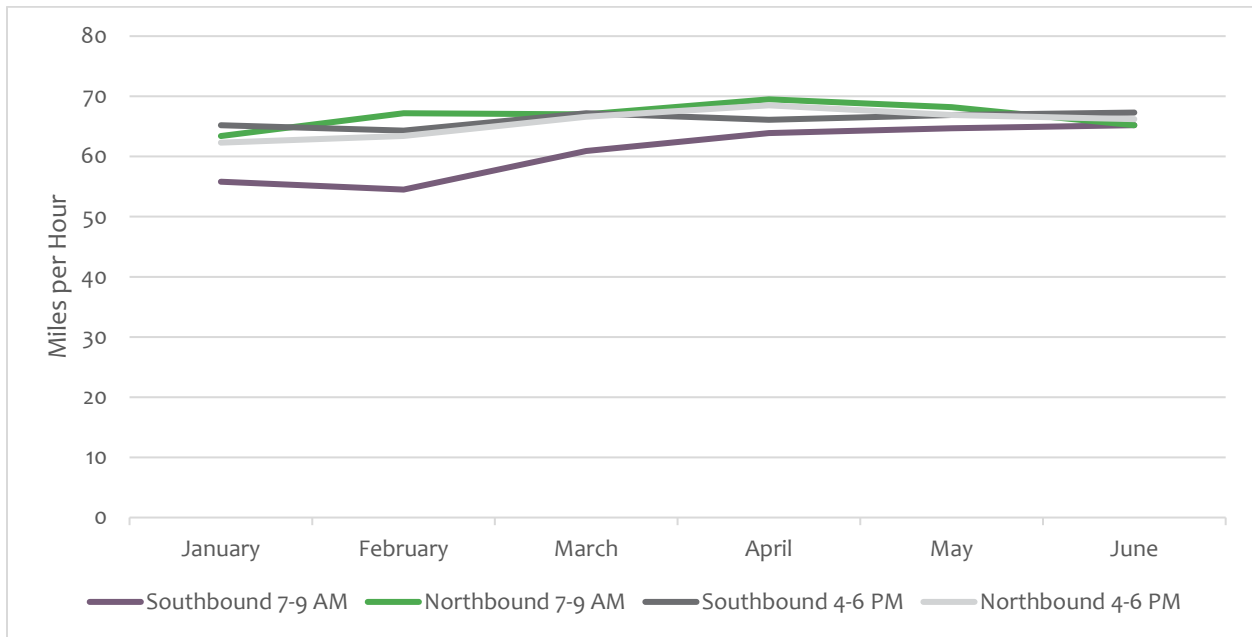


Figure 3 Average Vehicle Speeds on Highway 101 at Civic Center (Source: PeMS)

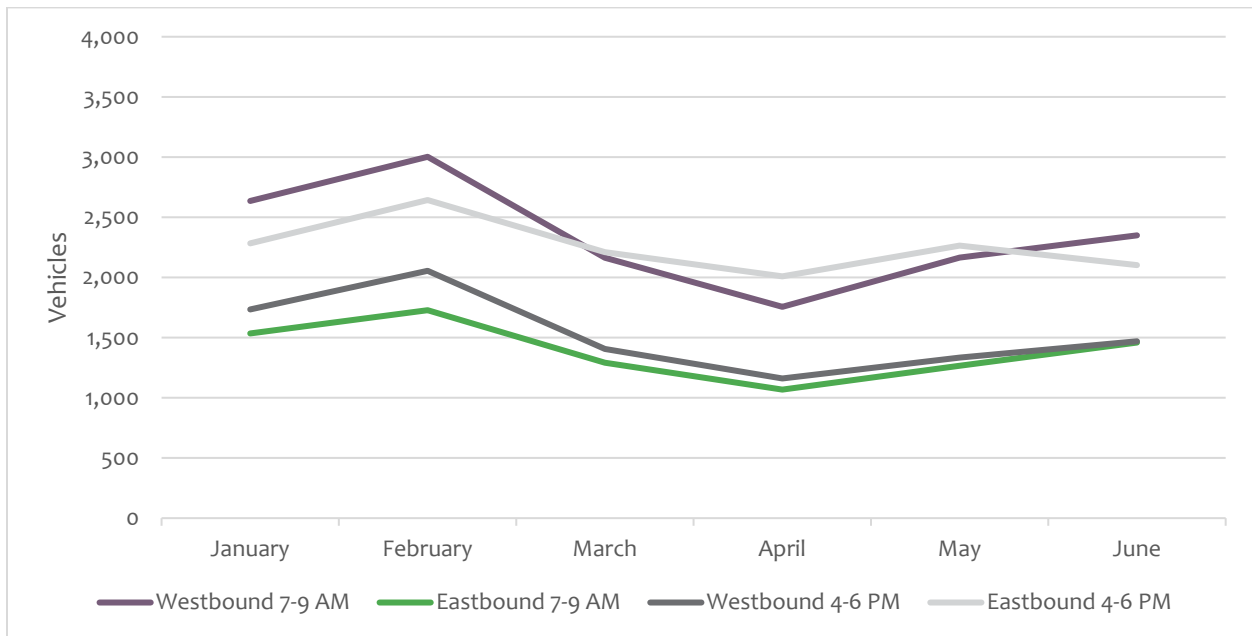


Figure 4 Monthly Vehicle Volumes on Highway 37 at Black Point (Source: PeMS)

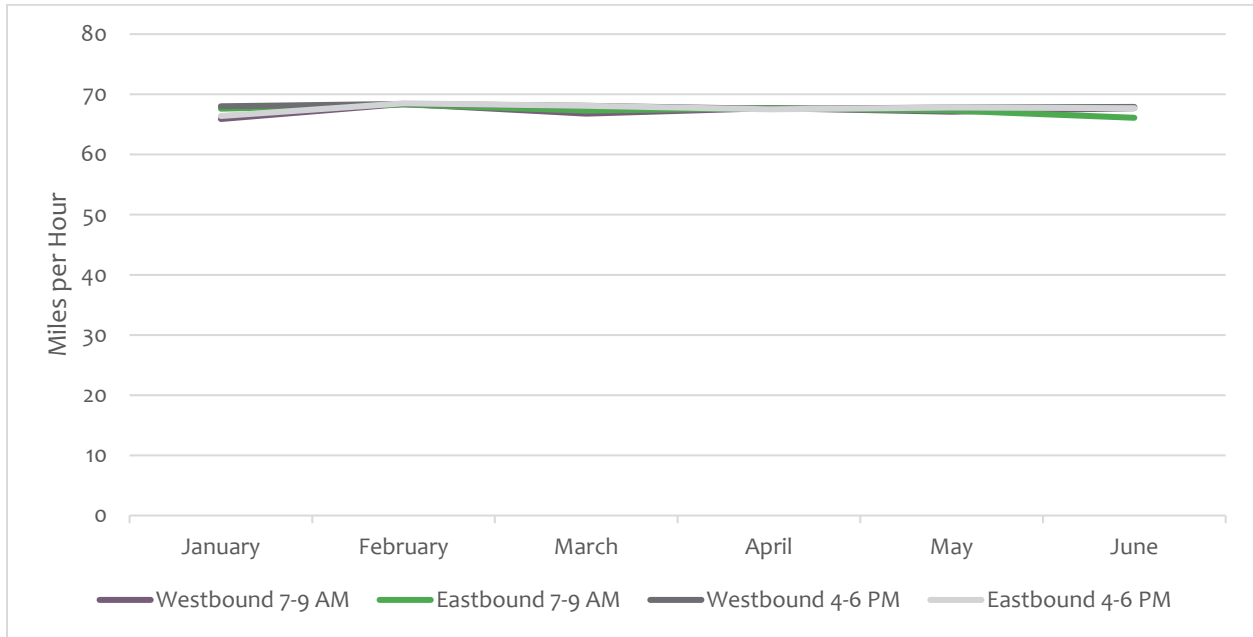


Figure 5 Average Vehicle Speeds on Highway 37 at Black Point (Source: PeMS)

Bridge Volumes

In addition to vehicular traffic volumes on Highway 101, there is also data regarding (one-way) vehicle and (two-way) bicycle volumes on the Richmond-San Rafael Bridge and (one-way) vehicle volumes on the Golden Gate Bridge. Figures 6 to 8 show that vehicle volumes on both bridges decreased significantly following the SIP order, but that bicycle volumes more than doubled from April to May on the Richmond San-Rafael Bridge.

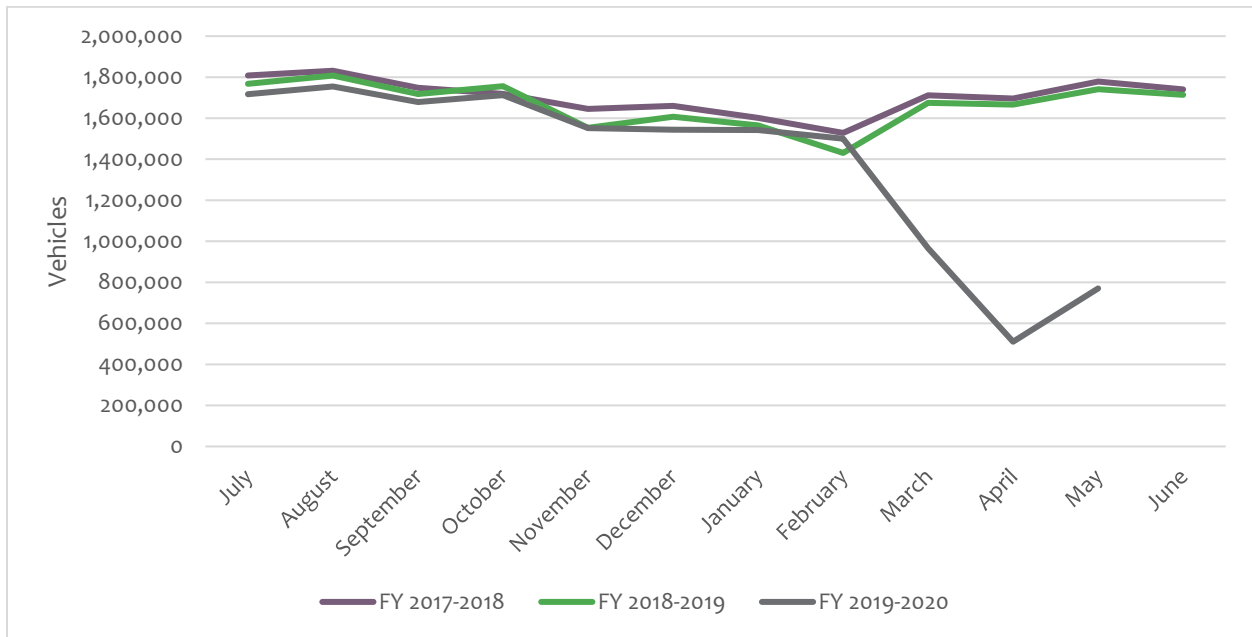


Figure 6 Golden Gate Bridge Southbound Vehicle Volumes (Source: Golden Gate Transit)

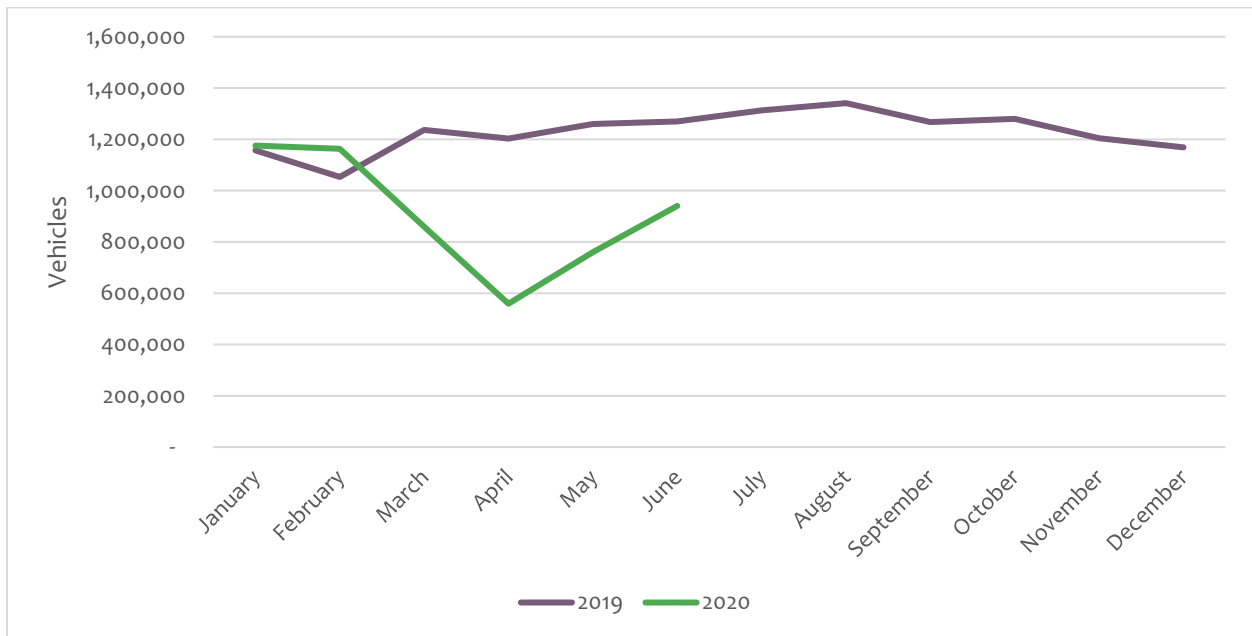


Figure 7 Richmond San Rafael Bridge Westbound Vehicle Volumes (Source: Bay Area Toll Authority)

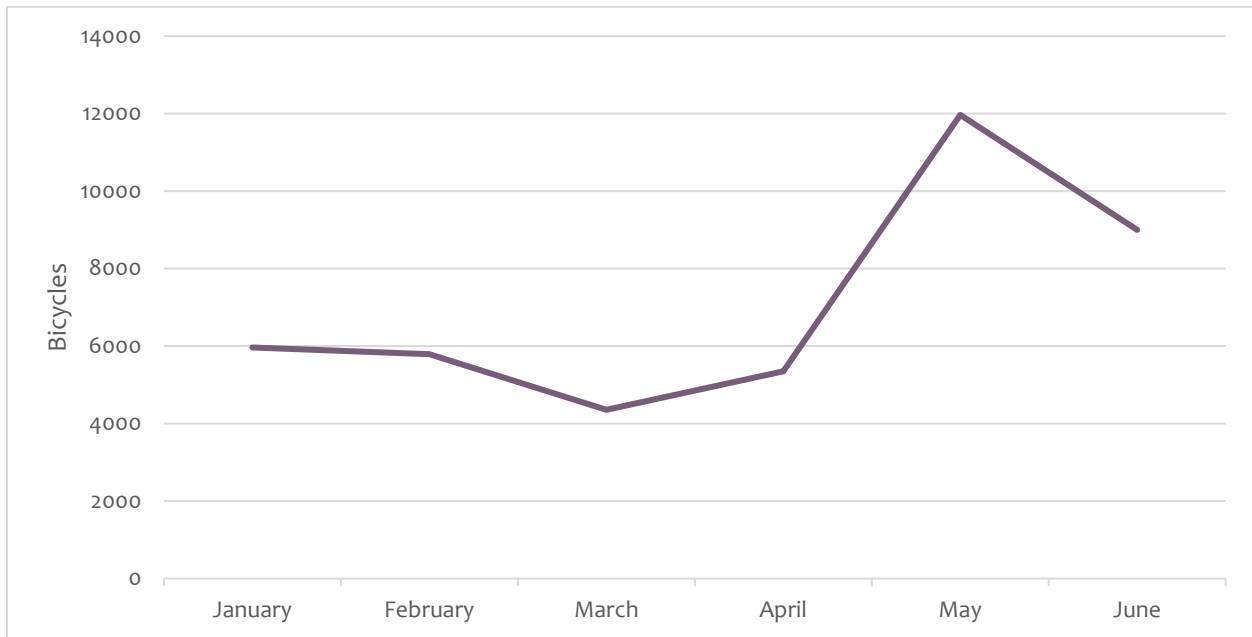


Figure 8 Richmond San Rafael Bridge Total Bicycle Volumes (Source: Metropolitan Transportation Commission)

Highway Safety

The number of incidents reported by the California Highway Patrol on Marin highways decreased with the reduction of traffic volumes into April, but rebounded sharply in May despite traffic volumes not returning to pre-SIP conditions. This is possibly due to the sustained higher speed levels of traffic. Figure 9 shows the number of monthly and daily incidents.

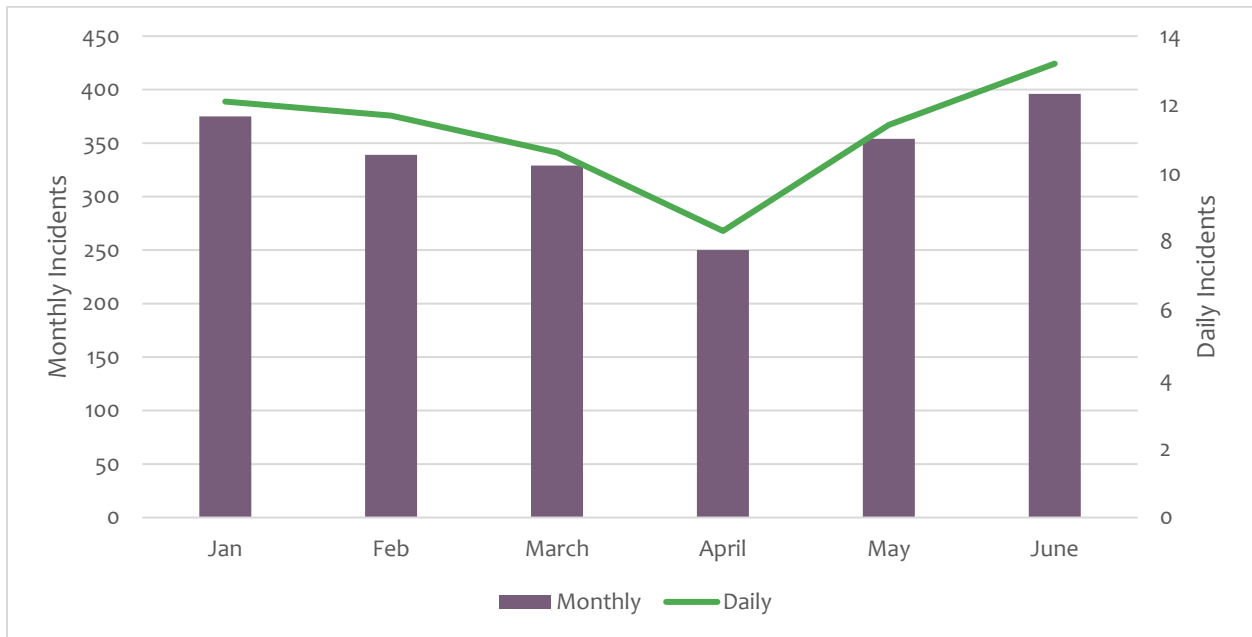


Figure 9 Monthly and Daily Marin County Highway Incidents (Source: PeMS)

Transit Ridership

Similar to vehicle travel, transit ridership decreased dramatically following the SIP order. Ridership declined across all major transit providers in Marin County, including Sonoma-Marín Area Rail Transit (SMART), Golden Gate bus and ferry, and Marin Transit. From February to May, average monthly ridership declined 94-percent on SMART, 83-percent on Golden Gate buses, 99-percent on Golden Gate ferries, and 74-percent on Marin Transit. Figures 10 to 13 illustrate these trends.

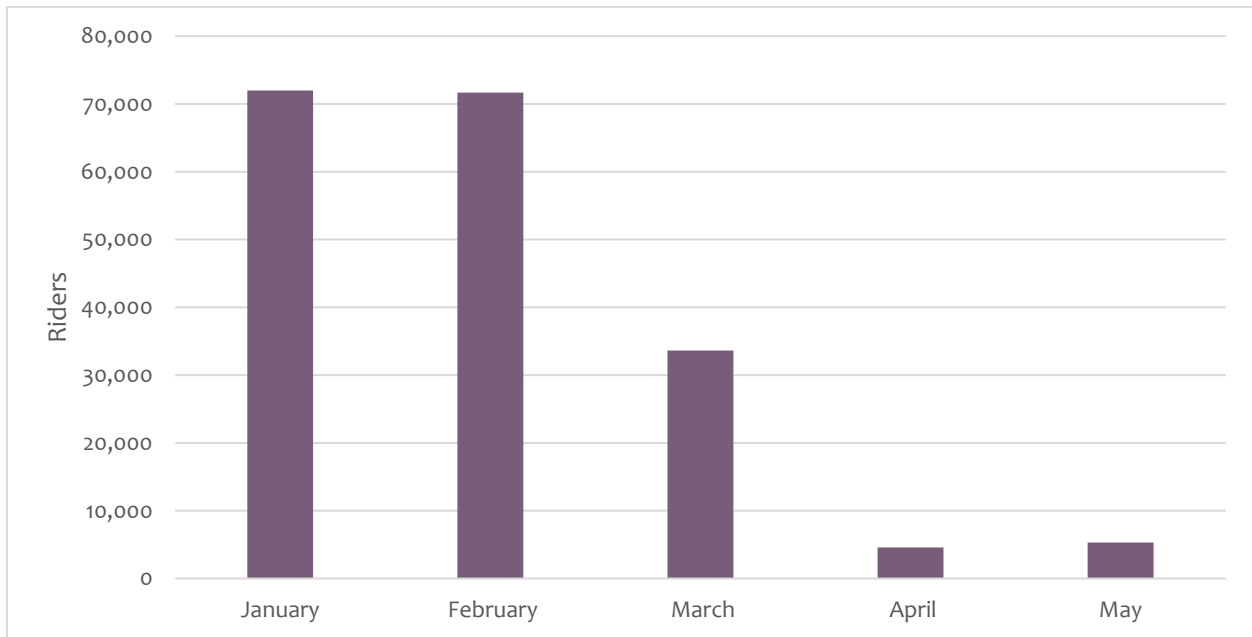


Figure 10 SMART Monthly Ridership (Source: SMART)

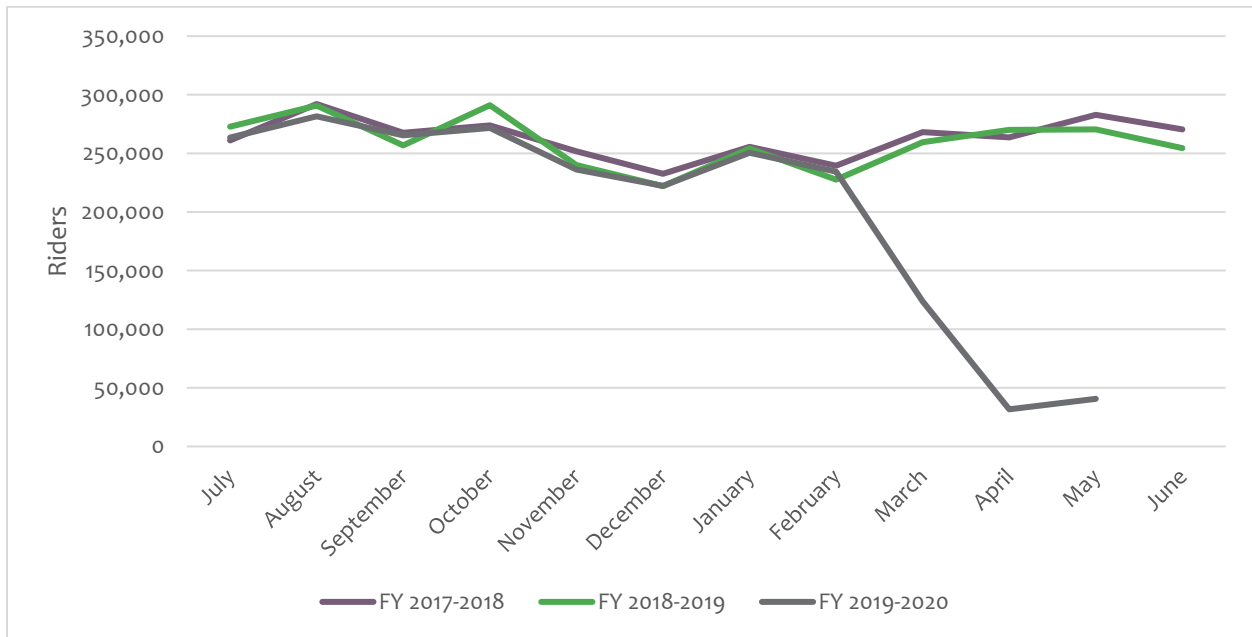


Figure 11 Golden Gate Bus Monthly Ridership (Source: Golden Gate Transit)

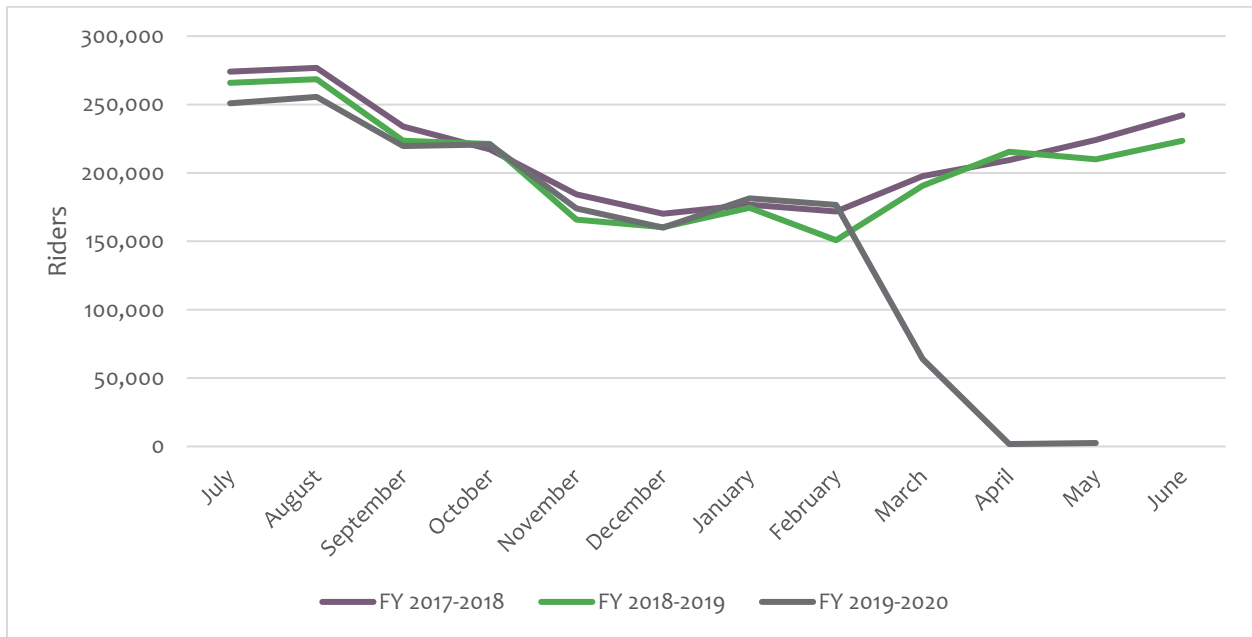


Figure 12 Golden Gate Ferry Monthly Ridership (Source: Golden Gate Transit)

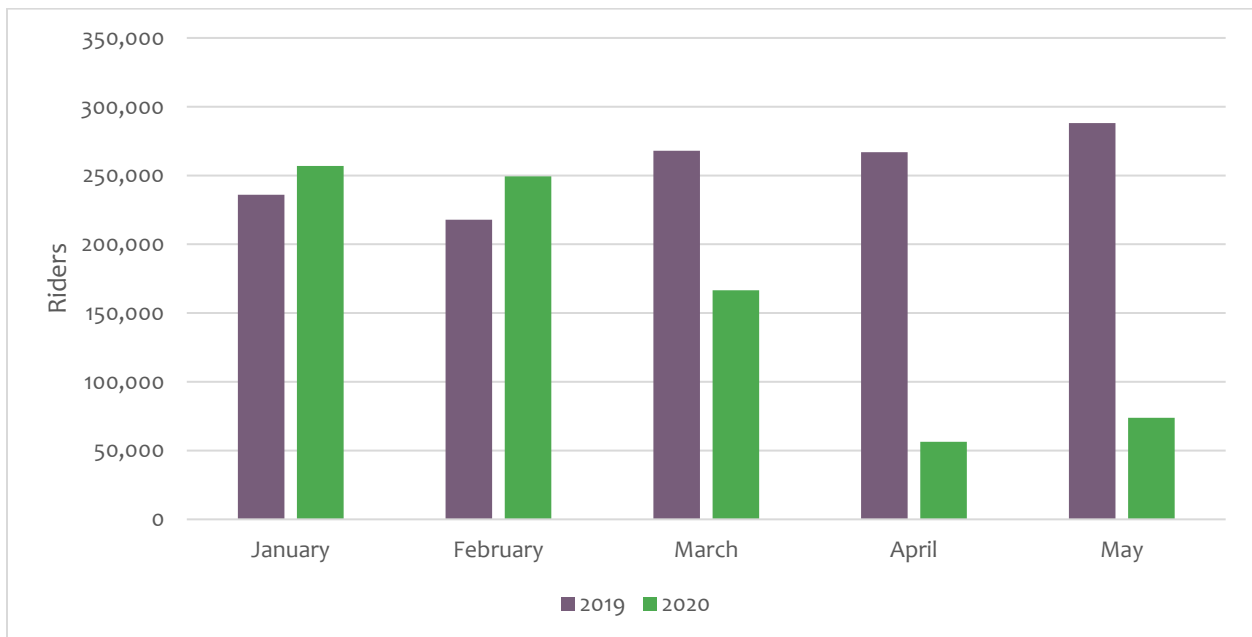


Figure 13 Marin Transit Monthly Fixed Route Ridership (Source: Marin Transit)

Emissions

The declines in vehicle and transit travel has produced a proportionate reduction in carbon dioxide (CO2) emissions. According to emissions factors from the California Air Resources Board, the average vehicle in the full fleet of vehicles operating in Marin produces 0.0004 tons (0.8 pounds) of CO2 per VMT. Based on

this average, CO2 emissions from Marin County residents declined from nearly 2,000 tons per day on March 1 to 191 tons by March 31. Figure 14 shows the county's daily emissions through mid-June.

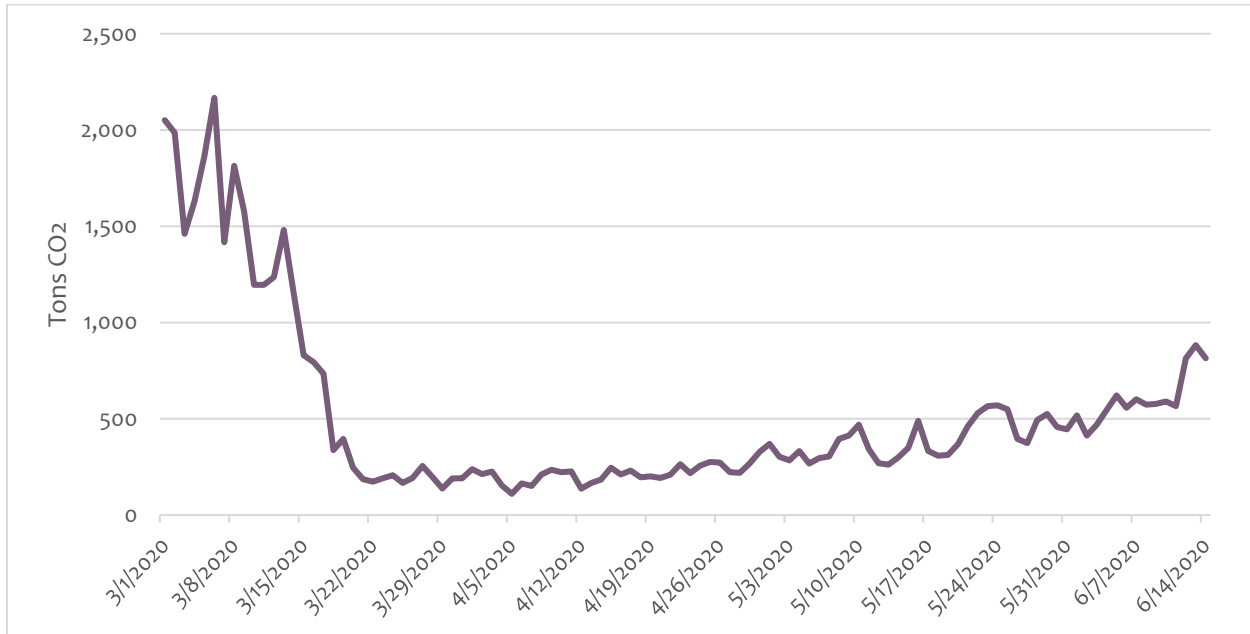


Figure 14 Daily Countywide CO2 Emissions (in Tons) (Source: CARB, Streetlight Data)

Conclusions

- Countywide VMT and emissions declined significantly following the SIP order, but have begun to increase, most notably in June as more Bay Area counties and businesses entered Phase II and were able to re-open.
- Highway traffic volumes similarly dropped dramatically after February, but have rebounded strongly since beginning in May.
- The daily number of highway incidents now exceeds the amount prior to implementation of the SIP order.
- Transit ridership, particularly for ferries, has dropped substantially like vehicle travel, but has experienced little recovery.
- Bicycle volumes on the Richmond-San Rafael Bridge more than doubled from April to May and declined slightly in June.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

Sincerely,

Brian Canepa
Principal