The Effect of COVID-19 on Utah Traffic Volumes

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Abstract

This is where the abstract should go.

Keywords: COVID-19, Traffic volumes, ATSPM

1. Question

Since December 2019, the COVID-19 pandemic has affected life around the world in an unprecedented manner. Mask mandates, social distancing, and stay-at-home orders have changed the way society lives, works, and interacts. With these safety precautions have come less interaction, traveling, and driving on roads and highways. Recent research has confirmed that the COVID-19 pandemic has led to a decrease in traffic volumes across the United States and the world.

Although this is a recent event, the topic has already been researched in many states and countries (**???**), but has not been specifically looked at for Utah and Salt Lake Counties in Utah, USA. These counties also contain signal specific traffic volume detectors, which provide a detailed insight into the variation of the effect of COVID-19 on traffic volumes in different locations. The research question therefore is:

- What was the effect of COVID-19 on traffic volumes in Utah and Salt Lake Counties?

2. Methods

UDOT provided volume data for many signals, but for the purposes of this research, significantly fewer signals were actually analyzed. Data was collected from traffic volume detectors in Provo, Orem, and Cottonwood Heights, Utah and then processed through UDOT's Automated Traffic Signal Performance Measures (ATSPM) system. Data was provided for downtown Provo, Orem State Street, University Avenue, Orem 800 N, and Fort Union Boulevard in Cottonwood Heights for the years 2017-2020, but many of the data were plagued by detector issues. Common issues ranged from shifting of the data up or down considerably and then shifting back after a period of time, missing data, or lack of data in general. Only four signals from Fort Union Blvd and three signals from Orem 800 N were ultimately deemed as complete and consistent enough to be used in the analysis.

Three models were created to evaluate the effect of COVID-19 on volume in the aforementioned corridors. The first was a base model which controlled for variation in volumes at each signal. The second was our base model, but additionally controlling for the effects of COVID-19. The third was the second model, but also controlled for day of the week and month. To divide the Pre COVID-19 time period from the COVID-19 time period, a separation date was chosen. In Utah, on March 12, 2020, Governor Cox announced that gatherings over 100 people should be canceled, as well as many of the universities in the state making the formal announcement that they would transition to online school for the remainder of the semester. These announcements were one of the first events of the pandemic that directly affected the lives of the public in Utah, hence it being chosen as the separation date.

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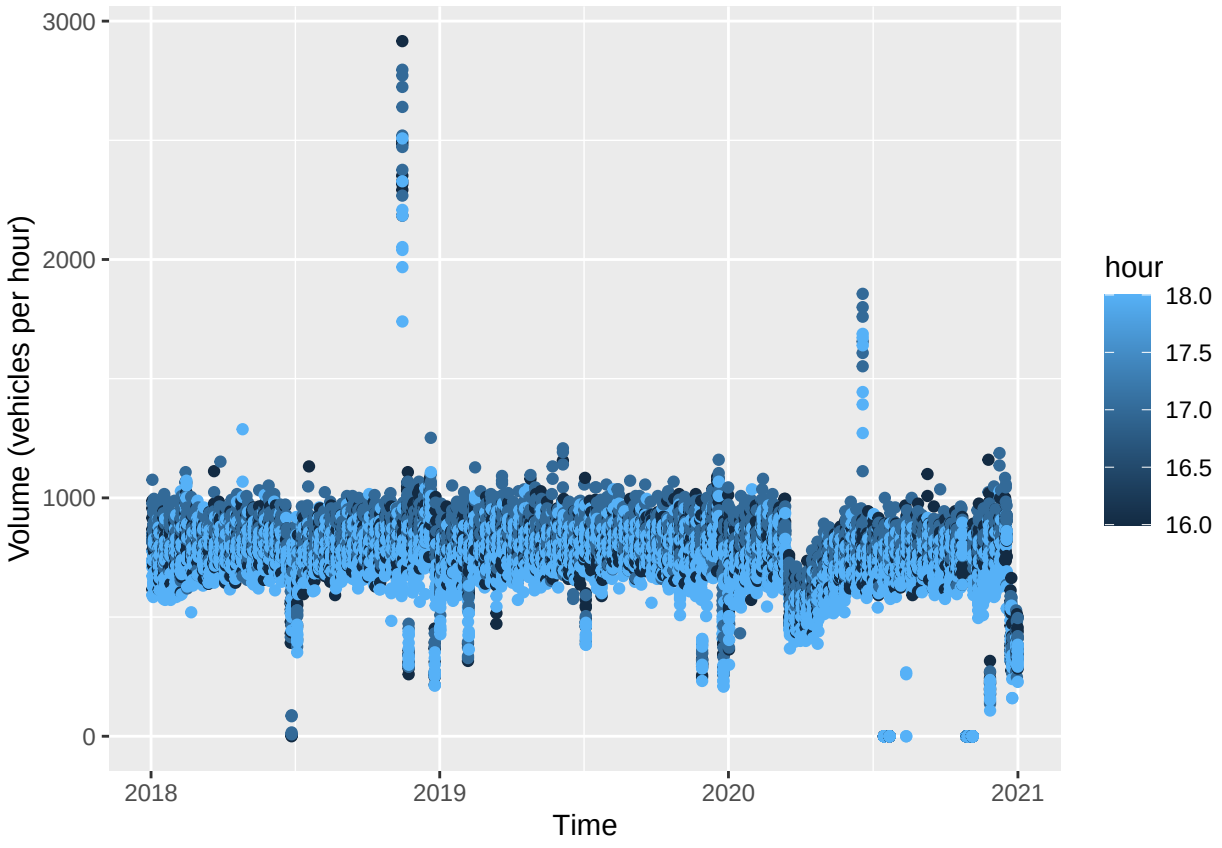

Figure 1: Traffic volumes at State St and 800 N in Orem, UT before and during the COVID-19 pandemic.