

Traffic Geolocation Case Study

Case Scenario

O'Donnell's Driving School offers a range of services for its clients of all skill levels, including group and individual driving lessons. Driving lessons take place with certified instructors and are conducted within one of several O'Donnell's-designed "learning routes" - designated networks of residential streets and highways in the area that O'Donnell's has identified as most amenable to conducting driving lessons with student drivers. Once a year, O'Donnell's planning committee meets to map out and approve the learning routes its instructors may use for their classes in the coming year. This year, the committee members would like to add a data-driven focus to the route approval process, and they have hired your team as temporary analytics consultants to help them achieve this end.

One of the committee members heard from a colleague in another state that their driving school had invested in a traffic geolocation data service and that a team of analysts used this data to help them identify routes for their driving lessons. They have done a little resource gathering and provided you with some information from the data vendor that they are leaning towards using. They would like your team to take a look at the data and visualization samples provided by the vendor and put together some ideas on its potential use and a recommendation for whether this would be a valuable resource for the O'Donnell's committee.

Data Description

The geolocation data is sourced from Automated Traffic Recorders (ATR) located across the metropolitan area which collect vehicle counts and average speeds in 10-minute intervals. Each ATR has a unique four-digit ID number, which identifies the geographic location and traffic direction for the data recording.

You may assume that the data service can also provide basic supplementary information based on the ATR ID and/or location, such as posted speed limit, etc. You can also consider what other data sources might exist that could be integrated with the traffic data set. For example, US Census data can provide population, population growth, median housing value, and many other socioeconomic variables by location.

Data Dictionary: Columns and Definitions

	Column_Name	Definition
1	ATR_ID	Unique ID for Automated Traffic Recorder (ATR)
2	LON	Location of ATR - Longitude
3	LAT	Location of ATR - Latitude
4	ALT	Location of ATR - Altitude
5	DIR	Compass direction of traffic
6	YR	Two-digit year of date of data recording
7	MO	Month of date of data recording
8	DY	Day of date of data recording
9	HH	Hour of start time of time interval of data recording (24-hour time)
10	MM	Minutes of start time of time interval of data recording
11	SPD	Average speed (mph) of vehicles collected during time interval of data recording
12	VOL	Sum of count of vehicles collected during time interval of data recording

Data Samples

This page contains four data samples provided by the vendor, showing all of the columns and a small subset of the rows of the data set. The illustrations below will allow you to get an idea of what the raw data looks like, but it is not a large enough dataset for you to do any statistical or modeling work.

Sample 1

ATR_ID	LON	LAT	ALT	DIR	YR	MO	DY	HH	MM	SPD	VOL
1420	-78.89974	42.90583	232.62	N	2021	6	14	8	5	45.22	104
1420	-78.89974	42.90583	232.62	N	2021	6	14	8	10	45.89	100
1420	-78.89974	42.90583	232.62	N	2021	6	14	8	15	42.40	101
1420	-78.89974	42.90583	232.62	N	2021	6	14	8	20	41.05	90
1420	-78.89974	42.90583	232.62	N	2021	6	14	8	25	40.84	82

Sample 2

ATR_ID	LON	LAT	ALT	DIR	YR	MO	DY	HH	MM	SPD	VOL
1420	-78.89974	42.90583	232.62	N	2021	6	14	11	35	64.11	65
1420	-78.89974	42.90583	232.62	N	2021	6	14	11	40	62.08	70
1420	-78.89974	42.90583	232.62	N	2021	6	14	11	45	63.47	61
1420	-78.89974	42.90583	232.62	N	2021	6	14	11	50	62.51	60
1420	-78.89974	42.90583	232.62	N	2021	6	14	11	55	62.31	71

Sample 3

ATR_ID	LON	LAT	ALT	DIR	YR	MO	DY	HH	MM	SPD	VOL
1788	-79.04159	43.15293	193.03	E	2021	6	14	15	50	38.37	20
1788	-79.04159	43.15293	193.03	E	2021	6	14	15	55	36.95	17
1788	-79.04159	43.15293	193.03	E	2021	6	14	16	0	40.94	25
1788	-79.04159	43.15293	193.03	E	2021	6	14	16	5	36.34	15
1788	-79.04159	43.15293	193.03	E	2021	6	14	16	10	42.32	19

Sample 4

ATR_ID	LON	LAT	ALT	DIR	YR	MO	DY	HH	MM	SPD	VOL
1788	-79.04159	43.15293	193.03	W	2021	6	14	15	50	40.13	10
1788	-79.04159	43.15293	193.03	W	2021	6	14	15	55	35.32	16
1788	-79.04159	43.15293	193.03	W	2021	6	14	16	0	43.77	11
1788	-79.04159	43.15293	193.03	W	2021	6	14	16	5	40.64	8
1788	-79.04159	43.15293	193.03	W	2021	6	14	16	10	44.84	16

Visualization Samples

The vendor also provided some sample visualizations using their geolocation data source. The sample visualizations are from a range of use cases created by the vendor.

Exhibit 1

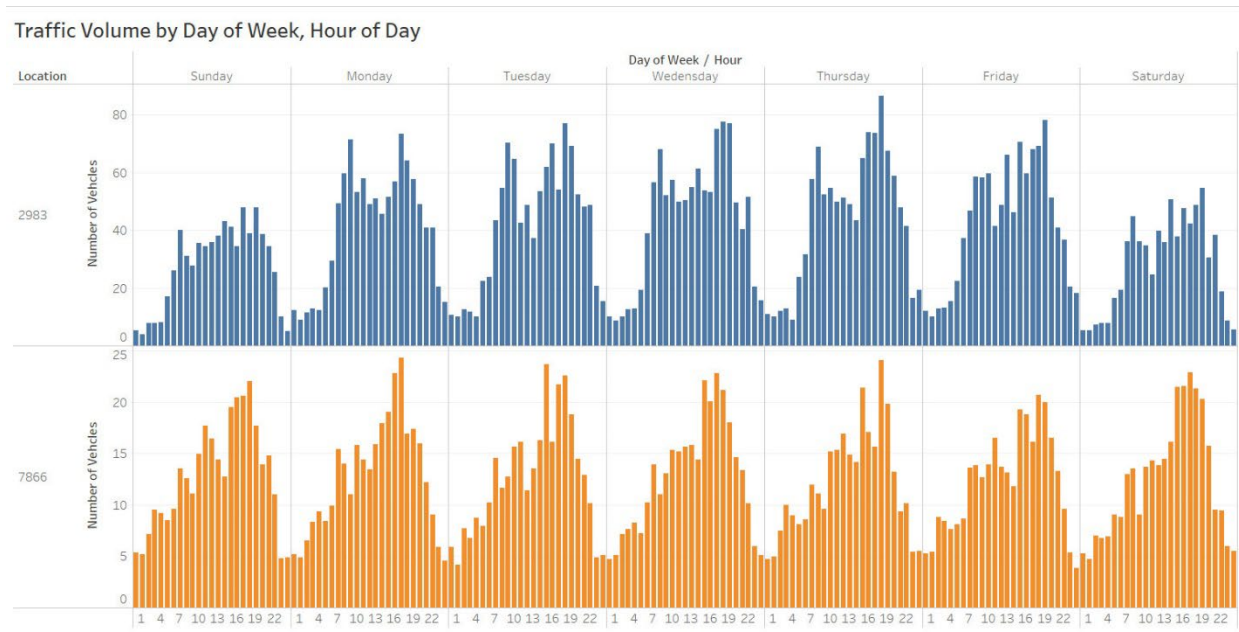


Exhibit 2

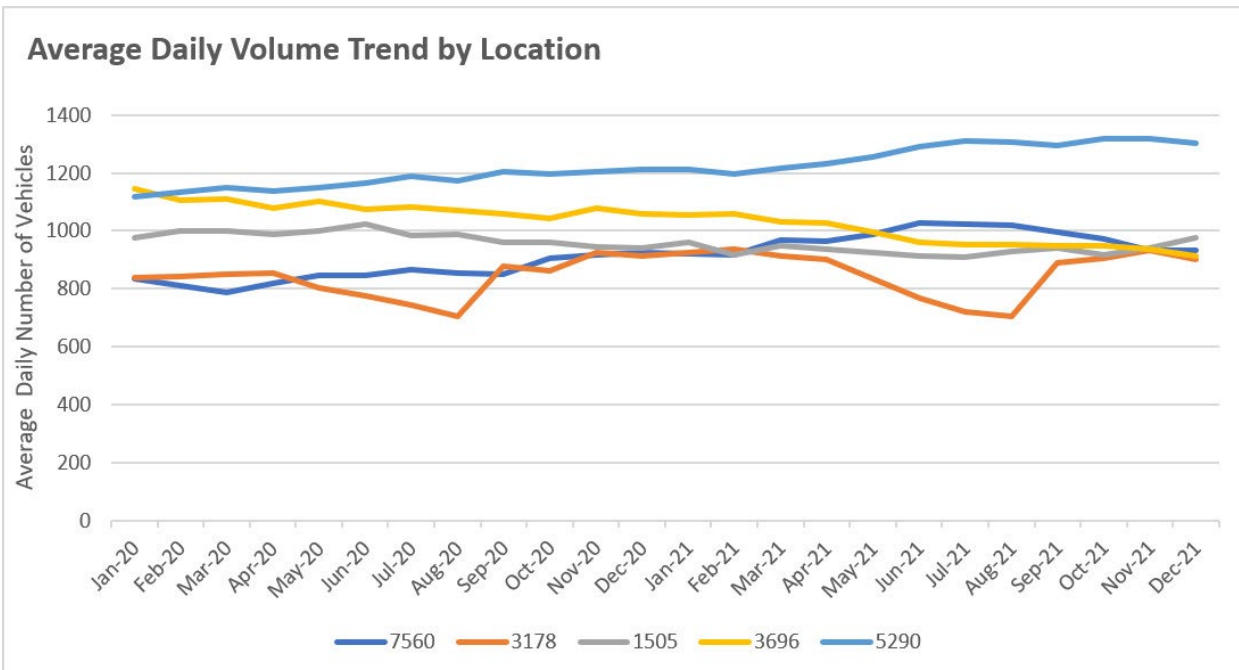


Exhibit 3

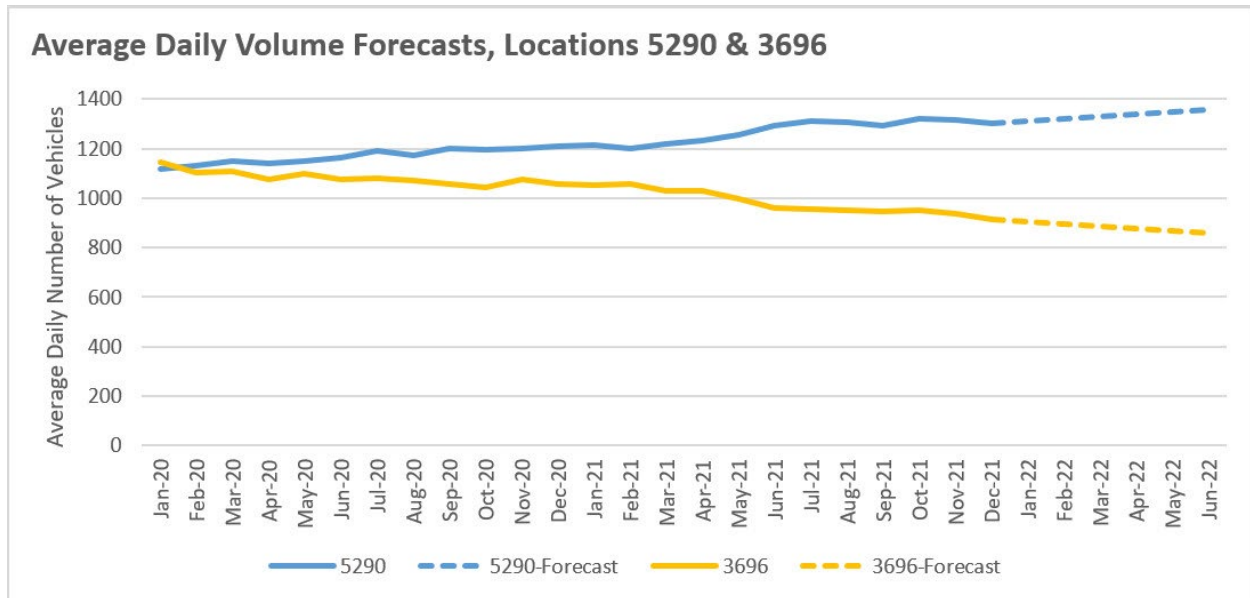


Exhibit 4

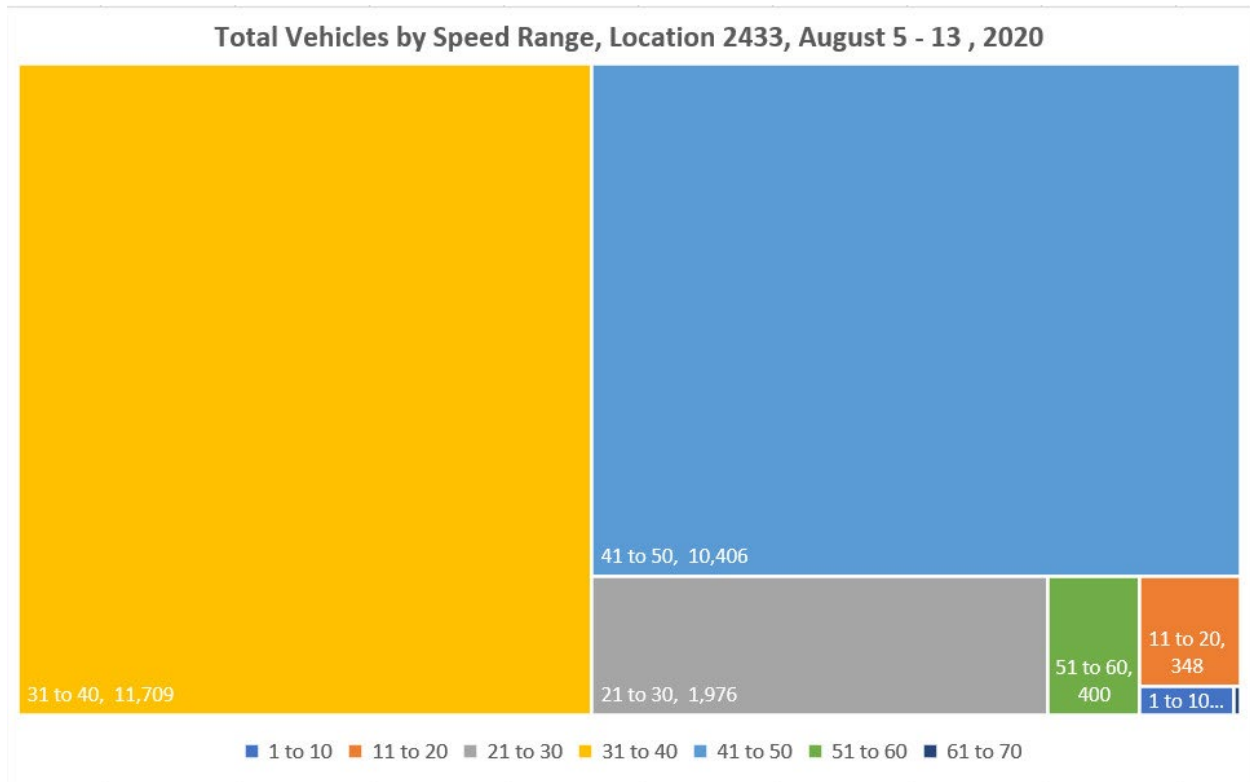


Exhibit 5

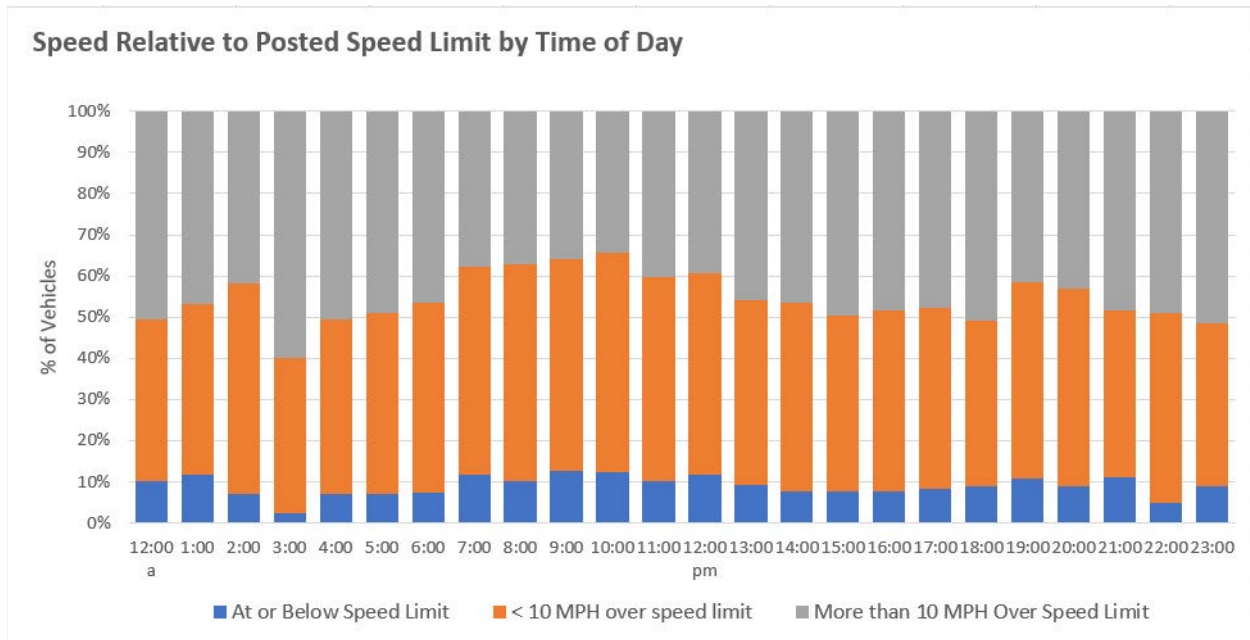


Exhibit 6

