

## Introduction

- Accurate and timely traffic flow information is critical for individual travelers, business sectors, and government agencies.
- Traffic flow prediction heavily depends on historical and real-time traffic data collected from sensor sources such as: highway, traffic, and intersection sensors.
- Interstate 15 travels along the west side of the Las Vegas Strip corridor and just west of downtown Las Vegas.

## Research Goal

- Design a dashboard to visualize historical traffic measurements (speed, occupancy, and flow) and display prediction of future conditions using Python.



## Method

- Real-time traffic measures broadcast each minute via MQTT (IoT communication protocol) from 61 sensors along I-15 North.
- Create dashboard to collect traffic measurements into GeoPandas Dataframe using Streamz .
- Visualize time-series data through Flask and Dash by plotting incoming data vs. the date and time it was received.

## Results

- Created a web dashboard that displays a map and 3 timeseries plots.
- The map shows the location of all 61 sensors located using longitude and latitude.
- The timeseries plots present the data received from 41 sensors on occupancy, speed, and volume (flow).
- Upon clicking on a point the plots of occupancy, speed and flow will update.

## Conclusions

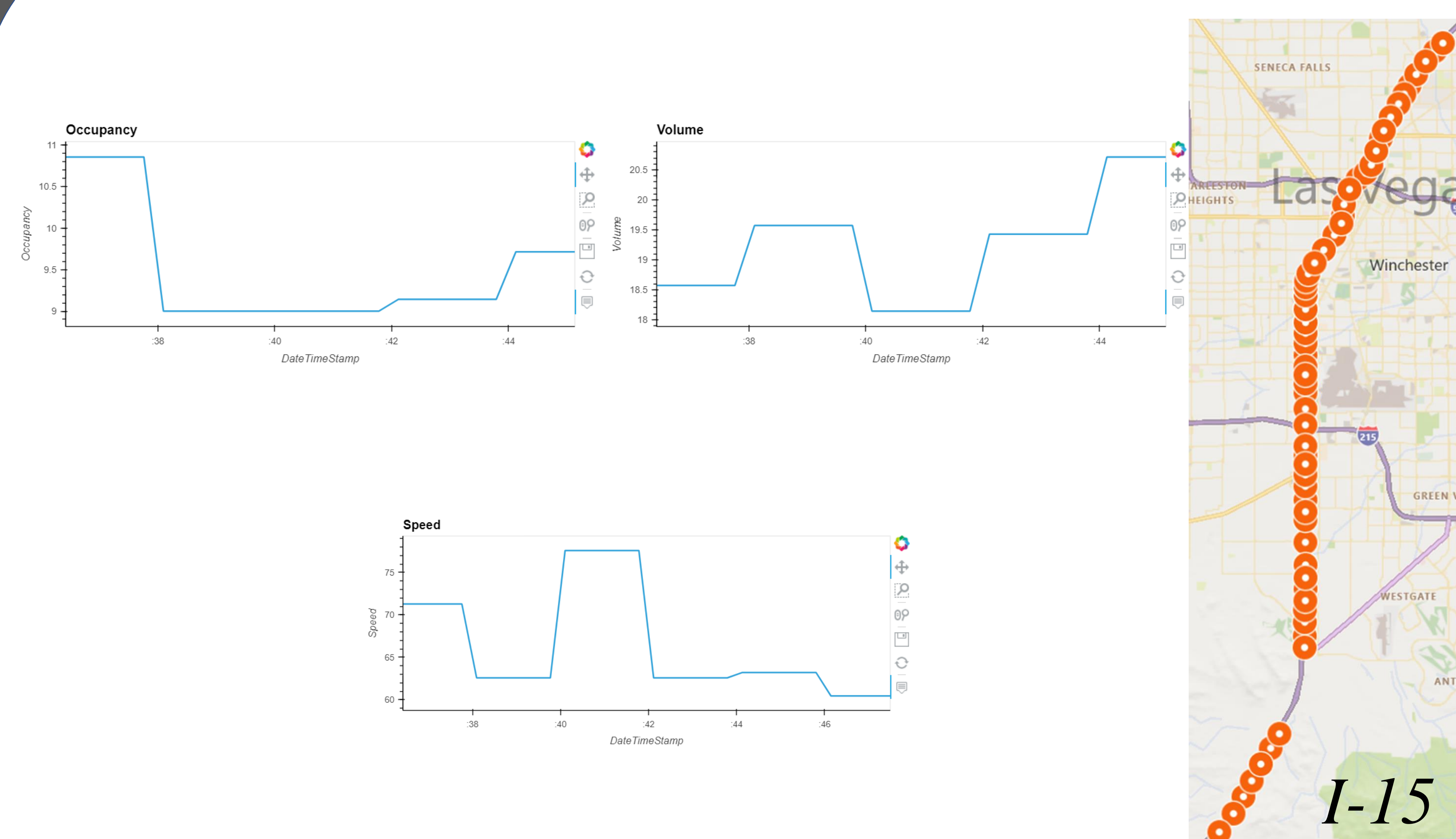
- The created dashboard shows the location of 41 sensors along I-15 and the real-time data received.
- This research was done to document and showcase traffic activity along Interstate 15 in terms of occupancy, speed and volume.

## Future Work

- A more detailed map better showing the locations of the sensors along I-15
- Continuing the timeseries data plots to show the predictions created by algorithm.
- Linking the map and timeseries plots together to increase interactivity.

## Acknowledgements

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The above is a created dashboard showing the location of highway sensors along Interstate 15 and documents the occupancy, speed, and volume as it is received (every minute).