

# Life in Melbourne as depicted by Pedestrians

Karnesh Jain

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# Introduction

## Motivation

- Essential part of modern cities.
- Can help in deciding the place to open new business.
- Gives idea about the night life of people in the city.

Also, one can combine pedestrian data with other datasets to obtain useful information

- Weather data to study whether people go out on a rainy day
- Restaurant data to investigate the number of pedestrian vs popularity of restaurants

# Data

- Obtained from automated pedestrian counting sensors located across the city.
- Sensors provide pedestrian counts for the previous hour at the given location.

**Rows - 2.51M**

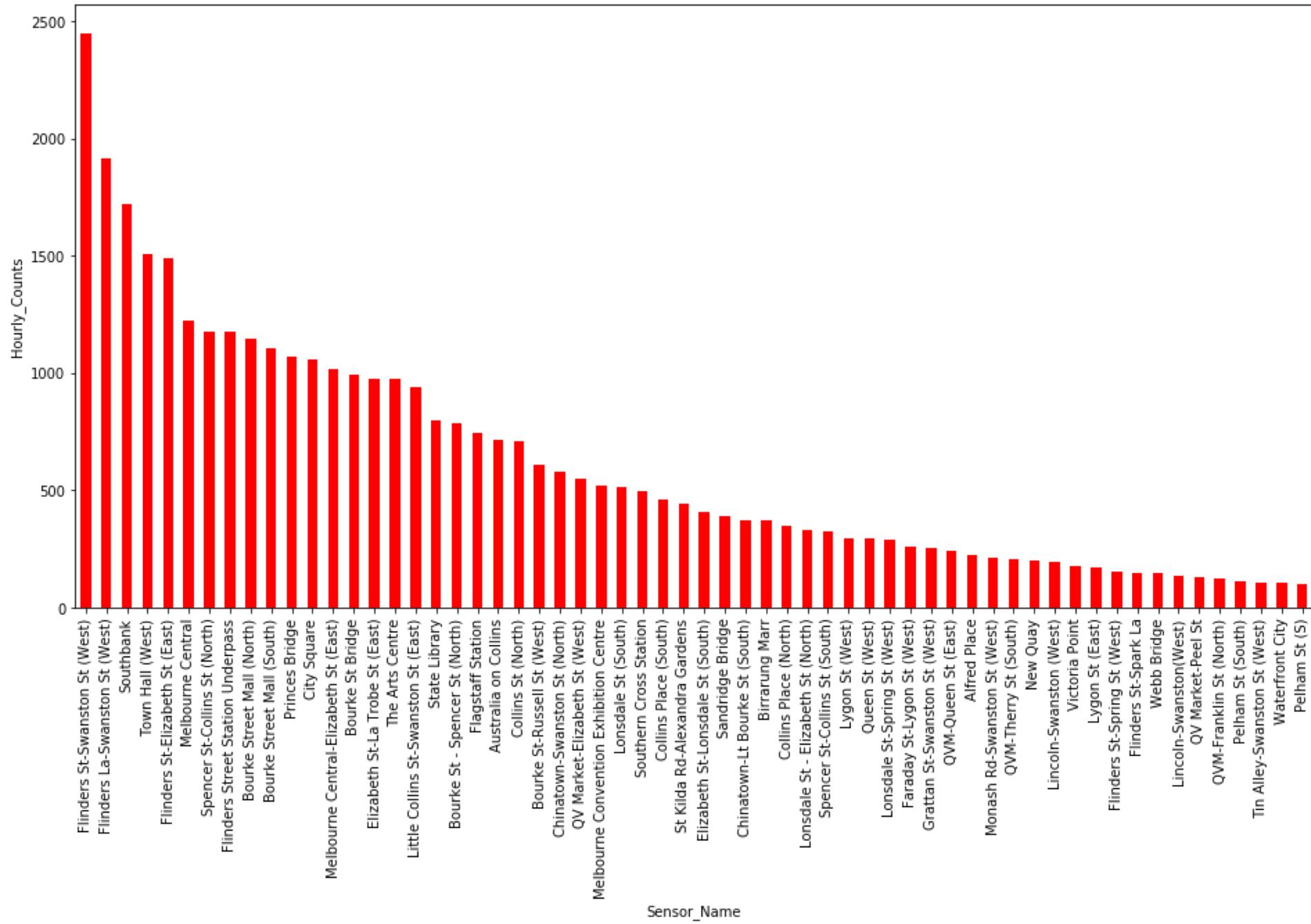
**Columns - 10**

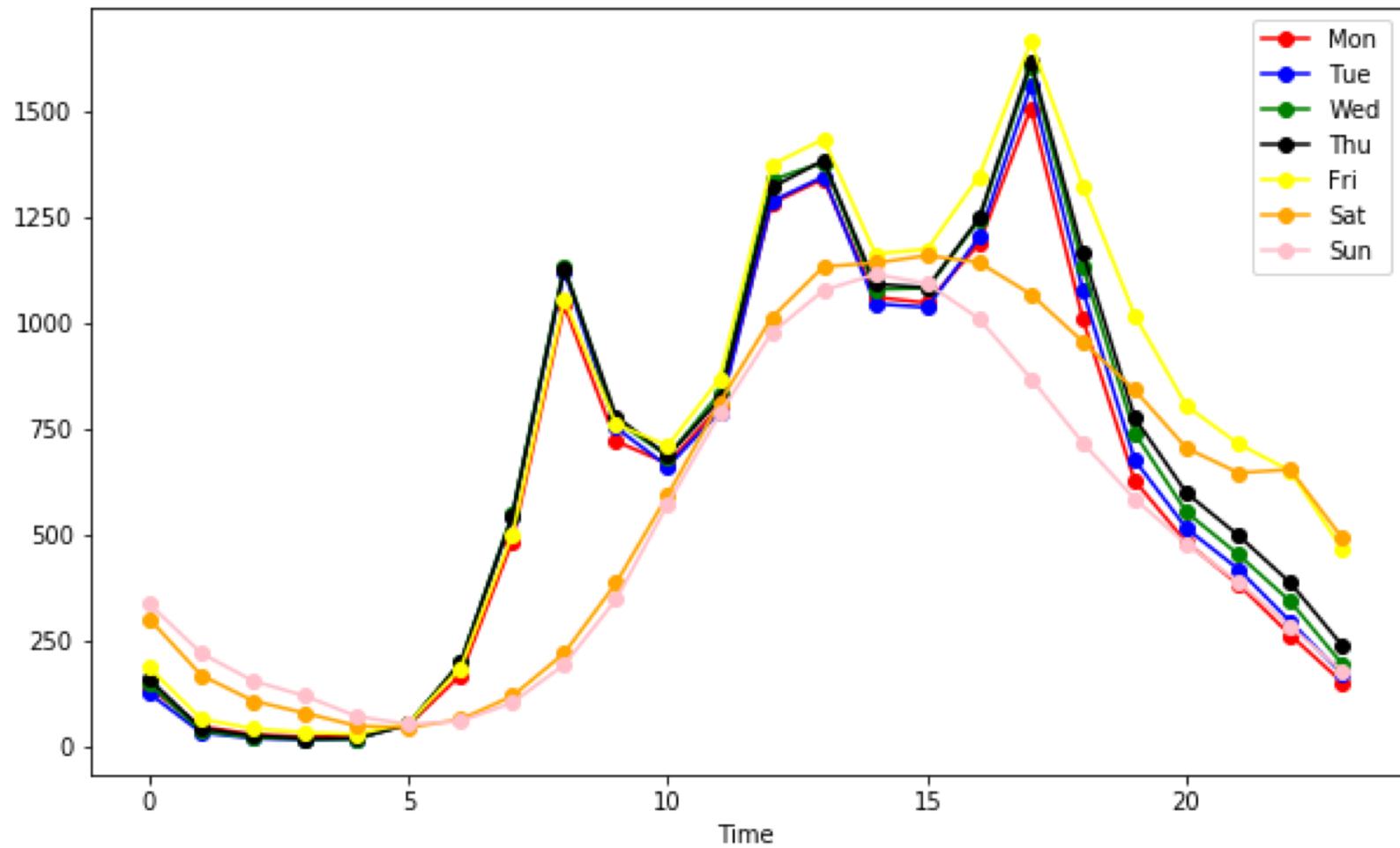
| Date_Time | Year | Month | Mdate | Day      | Time | Sensor_ID | Sensor_Name                          | Hourly_Counts |
|-----------|------|-------|-------|----------|------|-----------|--------------------------------------|---------------|
| 5/1/09    | 2009 | May   |       | 1 Friday | 0    | 1         | Bourke Street Mall<br>1(North)       | 53            |
| 5/1/09    | 2009 | May   |       | 1 Friday | 0    | 2         | Bourke Street Mall<br>2(South)       | 52            |
| 5/1/09    | 2009 | May   |       | 1 Friday | 0    | 4         | Town Hall (West)                     | 209           |
| 5/1/09    | 2009 | May   |       | 1 Friday | 0    | 5         | Princes Bridge                       | 157           |
|           |      |       |       |          |      | 6         | Flinders Street Station<br>Underpass | 139           |
| 5/1/09    | 2009 | May   |       | 1 Friday | 0    | 6         | Underpass                            | 139           |

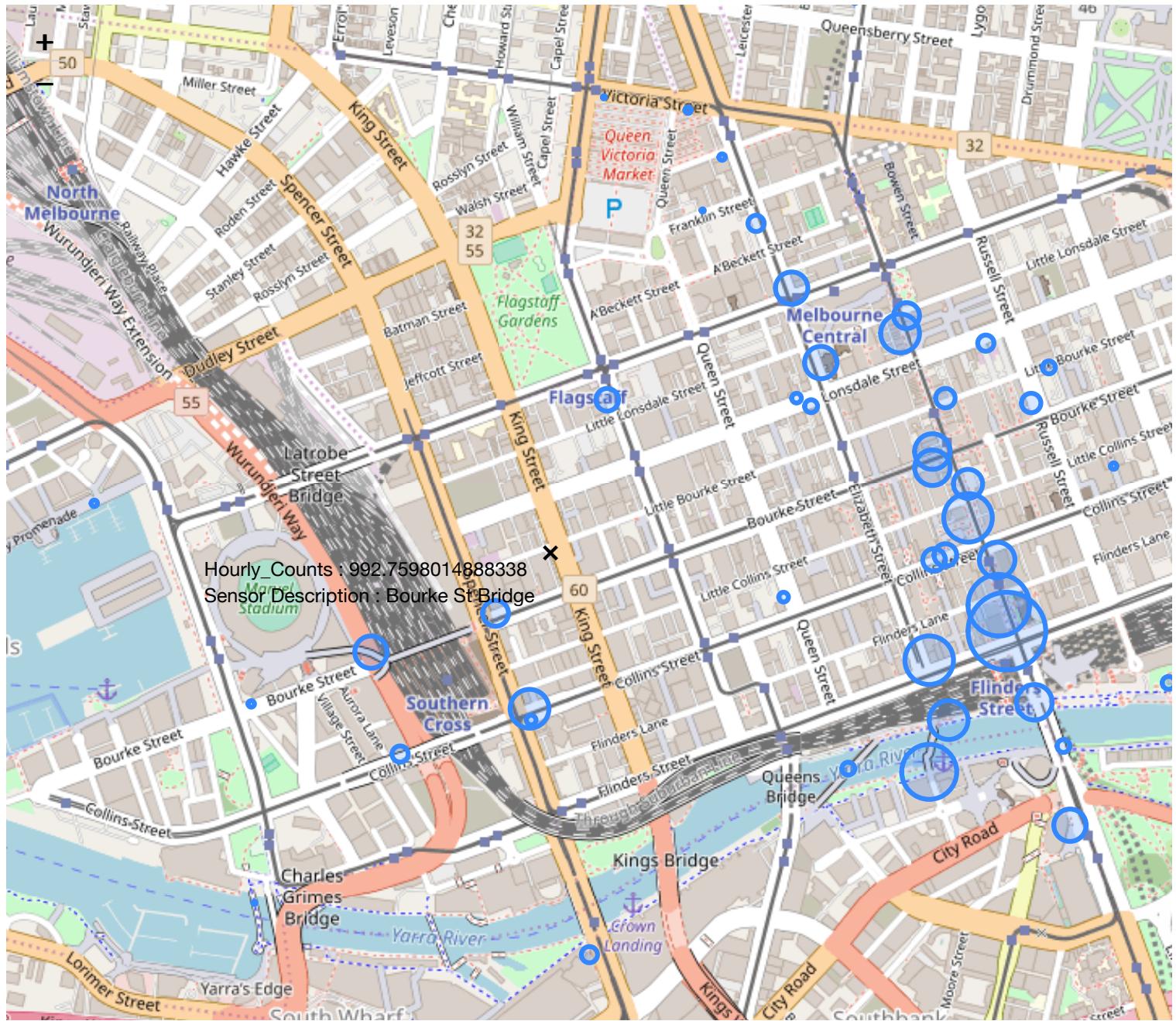
## After merging with geographical data

| Date_Time | Year | Month | Mdate | Day      | Time | Sensor_ID | Sensor_Name                     | Hourly_Counts | Year<br>Installed | Latitude   | Longitude  |
|-----------|------|-------|-------|----------|------|-----------|---------------------------------|---------------|-------------------|------------|------------|
| 5/1/09    | 2009 | May   |       | 1 Friday | 0    | 1         | Bourke Street Mall<br>1 (North) | 53            | 2009              | -37.813494 | 144.965153 |
| 5/1/09    | 2009 | May   |       | 1 Friday | 1    | 1         | Bourke Street Mall<br>1 (North) | 43            | 2009              | -37.813494 | 144.965153 |
| 5/1/09    | 2009 | May   |       | 1 Friday | 2    | 1         | Bourke Street Mall<br>1 (North) | 10            | 2009              | -37.813494 | 144.965153 |
| 5/1/09    | 2009 | May   |       | 1 Friday | 3    | 1         | Bourke Street Mall<br>1 (North) | 5             | 2009              | -37.813494 | 144.965153 |
| 5/1/09    | 2009 | May   |       | 1 Friday | 4    | 1         | Bourke Street Mall<br>1 (North) | 25            | 2009              | -37.813494 | 144.965153 |

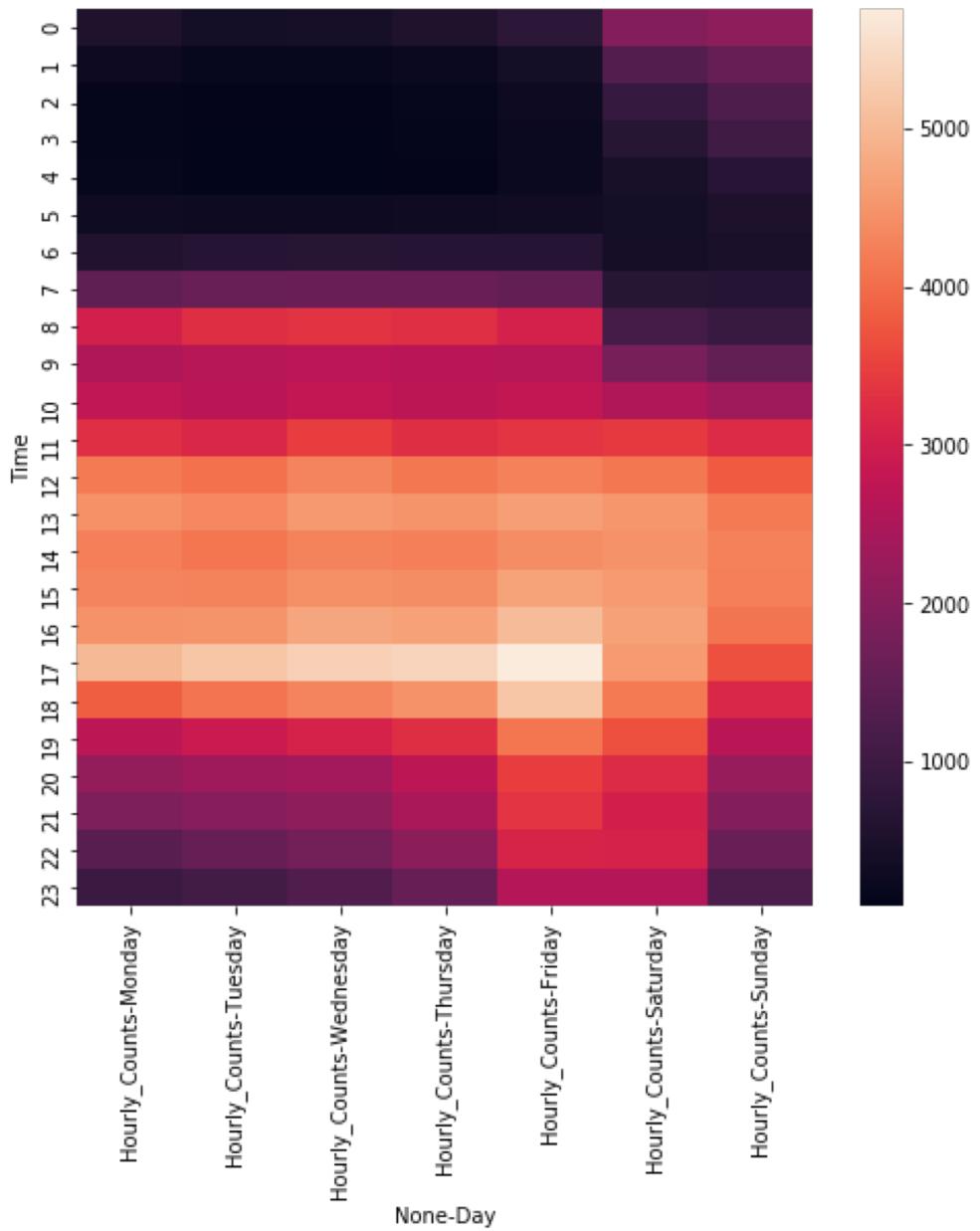
# Exploratory data analysis



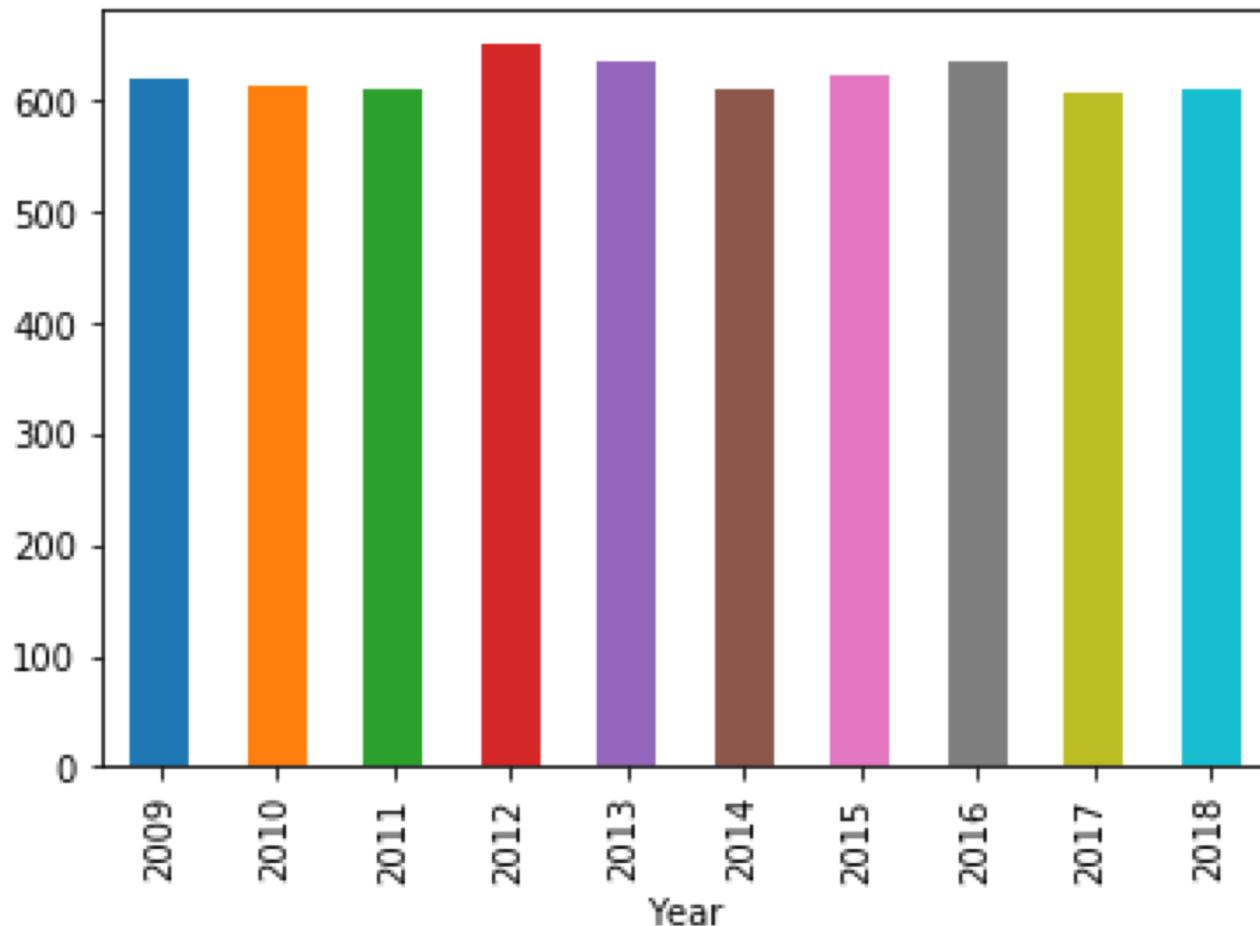




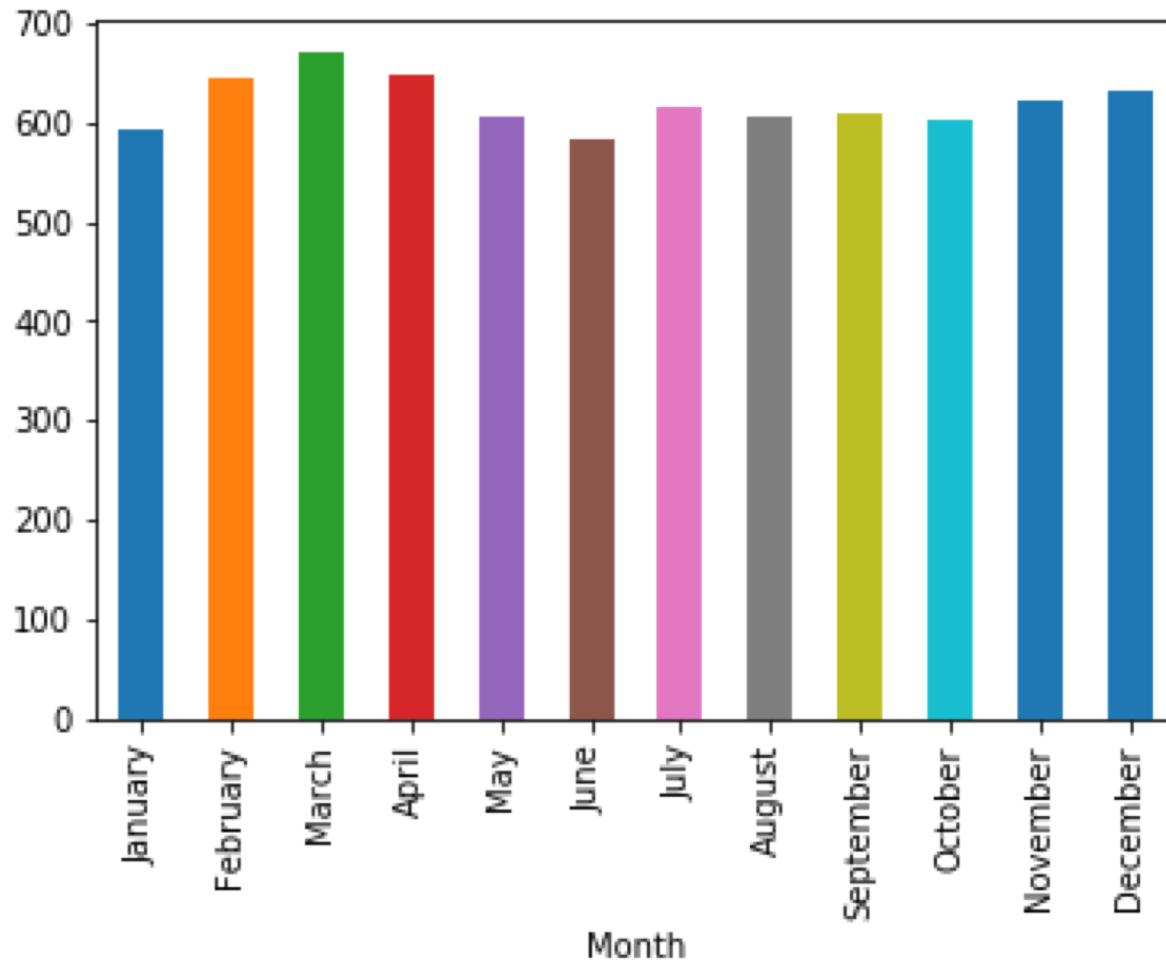
Heat Map for Flinders St-Swanston St (West) Sensor

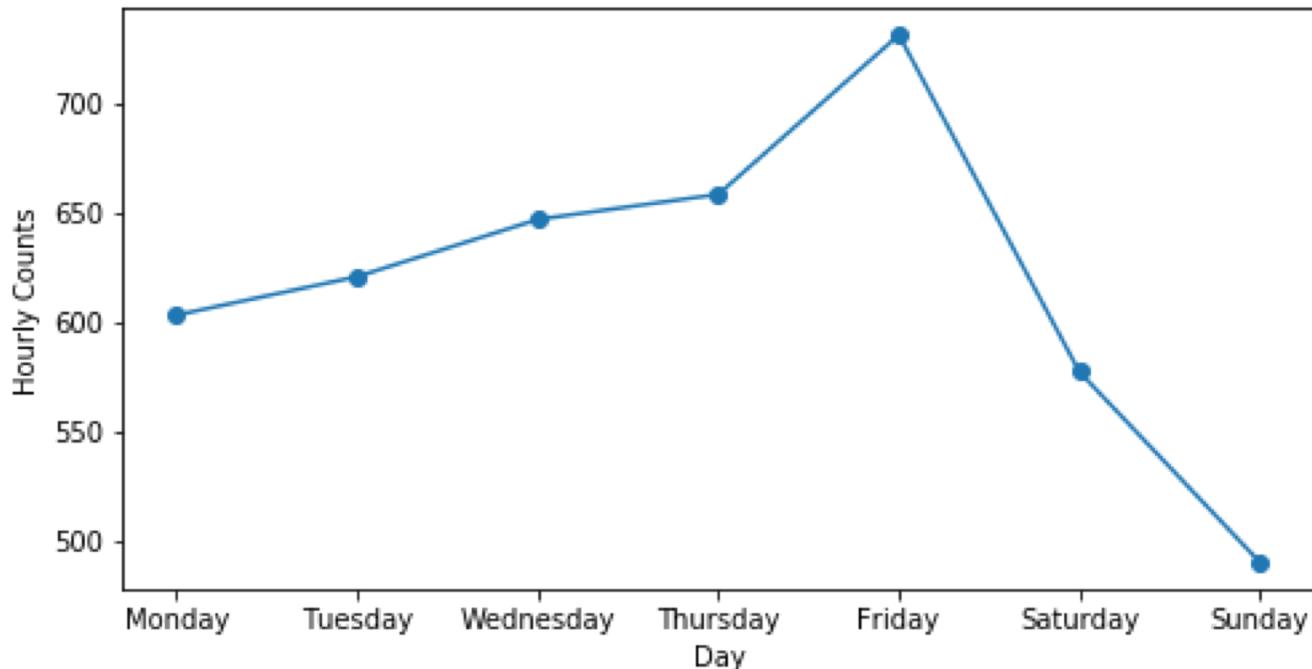


## Mean Hourly Counts grouped by Year



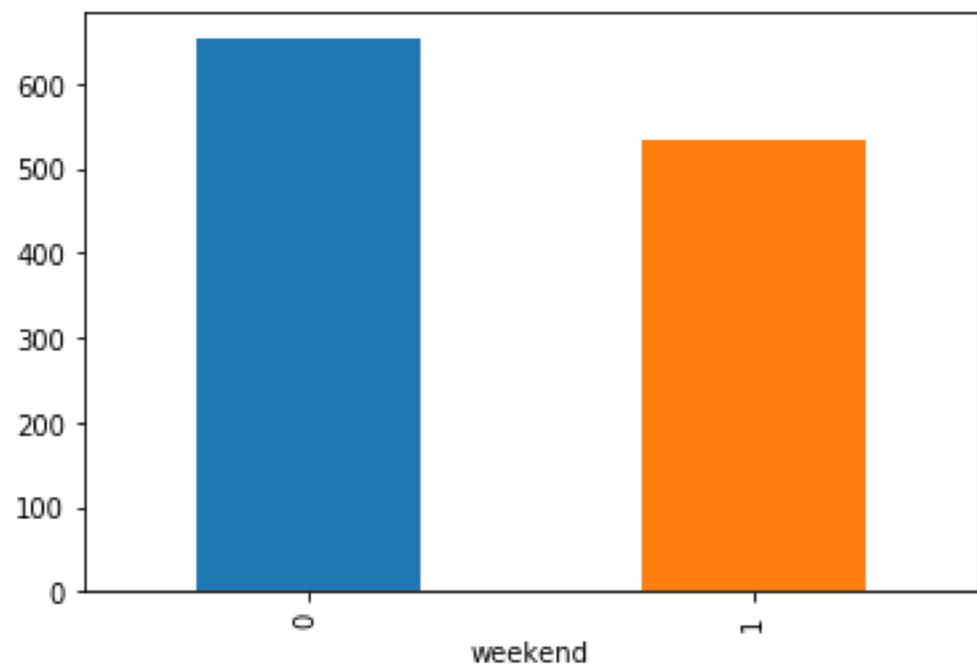
## Mean Hourly Counts grouped by Month





Mean Hourly Counts  
grouped by day

Mean Hourly Counts  
grouped by  
weekend (1) or weekday (0)



## Future Directions

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- ❖ Examine Correlations with other data
  - Weather data (Will scrape from wunderground)
  - Restaurant data (Will scrape from yelp or Zomato)
  - Crime data (<https://www.crimestatistics.vic.gov.au/crime-statistics/historical-crime-data>)
- ❖ Forecasting future predictions and comparing different models such as
  - ARIMA
  - LSTM
  - Investigate whether weekend and weekday trends will require different model
- ❖ More sophisticated analysis and investigation of data such as
  - Increase in pedestrian count on Friday and Saturday night
  - Effect of Public Holidays