DEMAND FOR BIKE RENTALS: A report to the management of Capital Bike Share

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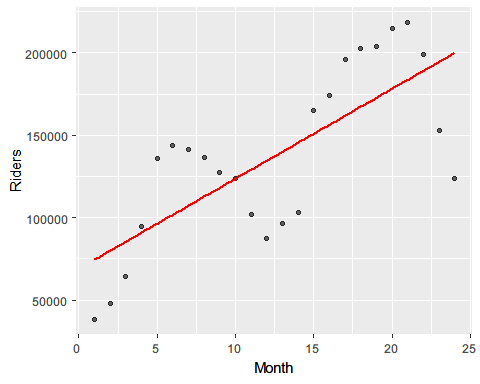
2 March 2021

# Introduction

To be written at later date

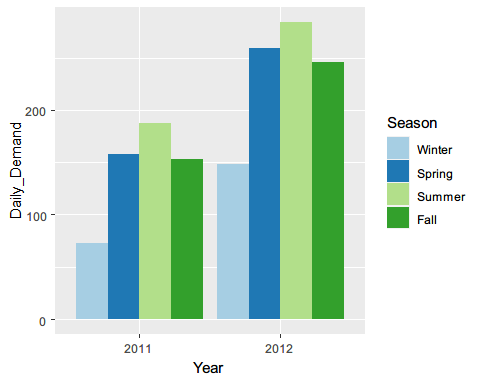
# Overall Trends in Bike Rental Demand

Question 1 - Anthony & Carl General trend - positive over the years

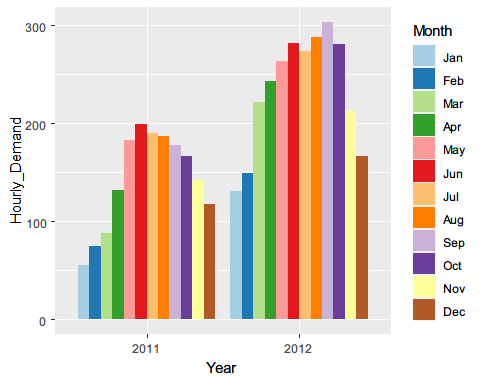


# Trends by Season

Looking at the overall seasonal impact on hourly demand, it is clear that the Winter is a time of depressed demand likely related to the cold temperatures, which will be addressed later. The Spring and Fall are quite similar in demand terms only trailing summer by a small margin on an hourly basis. The seasonal trends in hourly demand are consistent between the two years of data, which indicates it is a continuing trend.

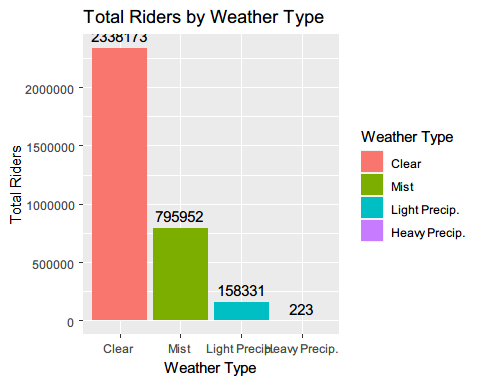


When the seasons are split into the individual months, there is a more gradual transition into and out of the Winter depressed demand period. The overall trend of seasonality affecting demand holds and January’s demand being 40% of that in June, the peak month. Once again the monthly trend holds consistent between the two years in the dataset.

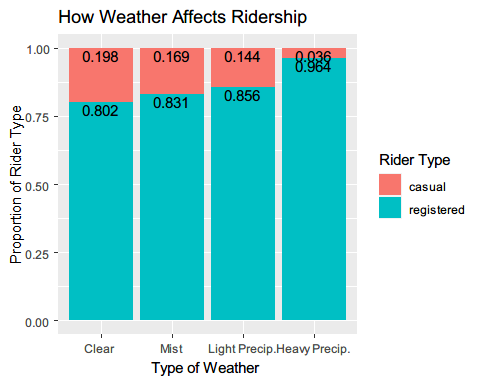


# Further Trends: Looking at Weather and Rider Type

Hourly weather conditions were documented within the dataset and categorized as Clear, Mist, Light Precipitation, and Heavy Precipitation. As weather conditions worsen, there is a steep decrease in overall ridership. Though there are more registered riders than casual riders, this decrease in ridership holds true when looking at both subsets of rider type.



As weather conditions worsen, casual riders make up a decreasing proportion of total ridership. This suggests that casual riders may be more influenced by the weather, and are more likely to choose other modes of transportation when weather conditions are unpleasant or uncomfortable.



# Predicting Total Bike Rental Demand

### Daily Temperature

Question 5 - Fit a linear model predicting the total bike rental demand from daily temperature. What kind of insights can you generate? (make sure to write the linear model and interpret it in the context of the data)

### Daily Feeling Temperature

Question 6 - Fit another linear model predicting total daily bike rentals from daily feeling temperature. Write the linear model, interpret the slope, etc.

### Which is the better predictor?

Part of Question 6: Is the temperature or feeling temperature a better predictor of bike rentals?

# Correlation between Rental Demand and Typical Office Hours

### Is there a “rush hour” for bike rentals?

Hypothesis: There must be high demand during office timings. Early morning and late evening can have different trends (cyclist) and low demand from 10:00pm to 4:00am. Do you agree?

### Workdays vs. Weekends/Holidays

Hypothesis: Registered users demand more bike on weekdays compared to the weekend or holiday. Do you agree?

# Recommendations and Conclusions

Question 7 - What is your overall recommendation about the demand for bike rentals for the Capital Bike Share management? Share your insights with the company based on your analysis.

# Appendix