

# MATH361 Rough Draft

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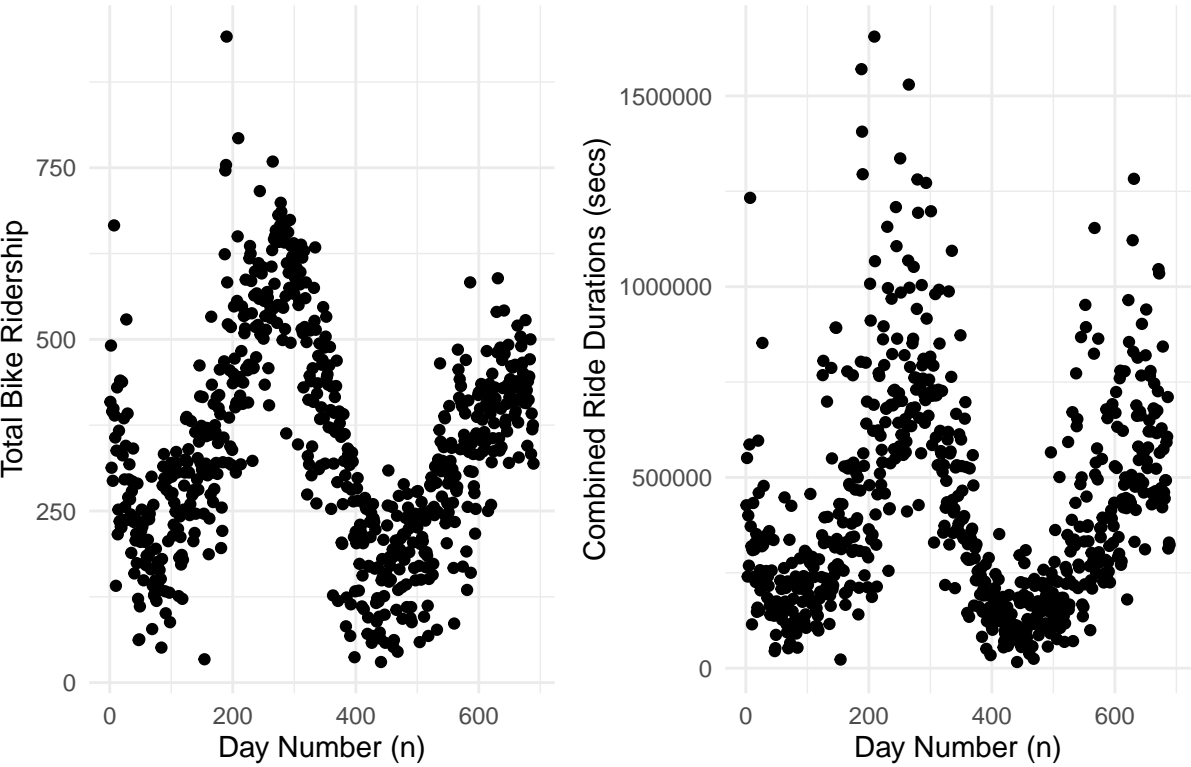
## Introduction

A bike share system – or simply bike share – is a service available to residents and tourists of many North American cities. Bike share connects riders with bikes which they can rent and ride from their smartphone. People choose ride share for commuting and for leisure; along with other modes like private car, ride share, mass- and micro- transit, bike share is one option within a suite of transportation options, designed by planners and engineers to get people where they need to go.

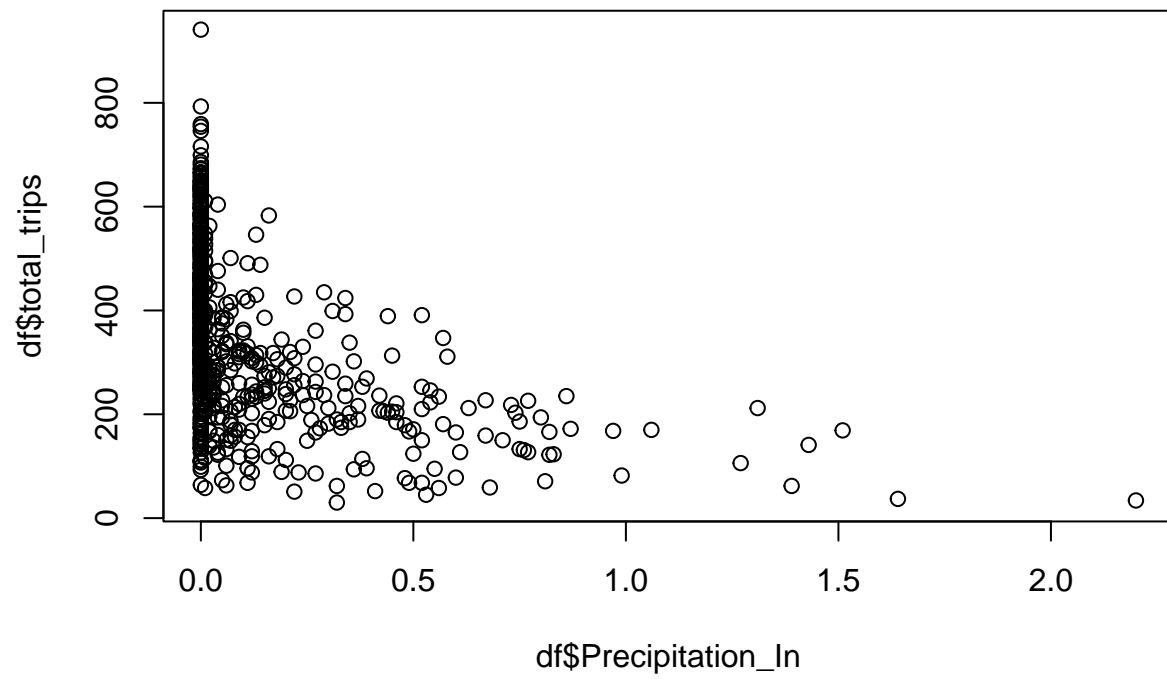
The interaction between weather and ridership is intuitive. Favorable weather is marked by sunshine, warm temperatures, moderate humidity, and low wind speed. Humanity’s proclivity for the outdoors is highest when the weather is uneventful. When the weather outside is frightful – think freezing temperatures, gusty, and rainy conditions – we prefer the indoors. Especially in the United States with its auto-centric development patterns, poor weather often justifies a “mode-shift” for those who own a car. When the weather is poor and the infrastructure allows for it, why not drive!?

In this paper, we will fit a regression model to several variables describing the weather in order to predict daily bicycle ridership by trip. We will later consider trip duration as our dependent variable. Seattle has a reputation as a rainy city, and it’s for good reason. There were 287 rainy days between 10/13/2014 and 08/30/2016, a total of 689 days! Yet bike share was active in Seattle over those 689 days, totaling 236,044 trips across the system.

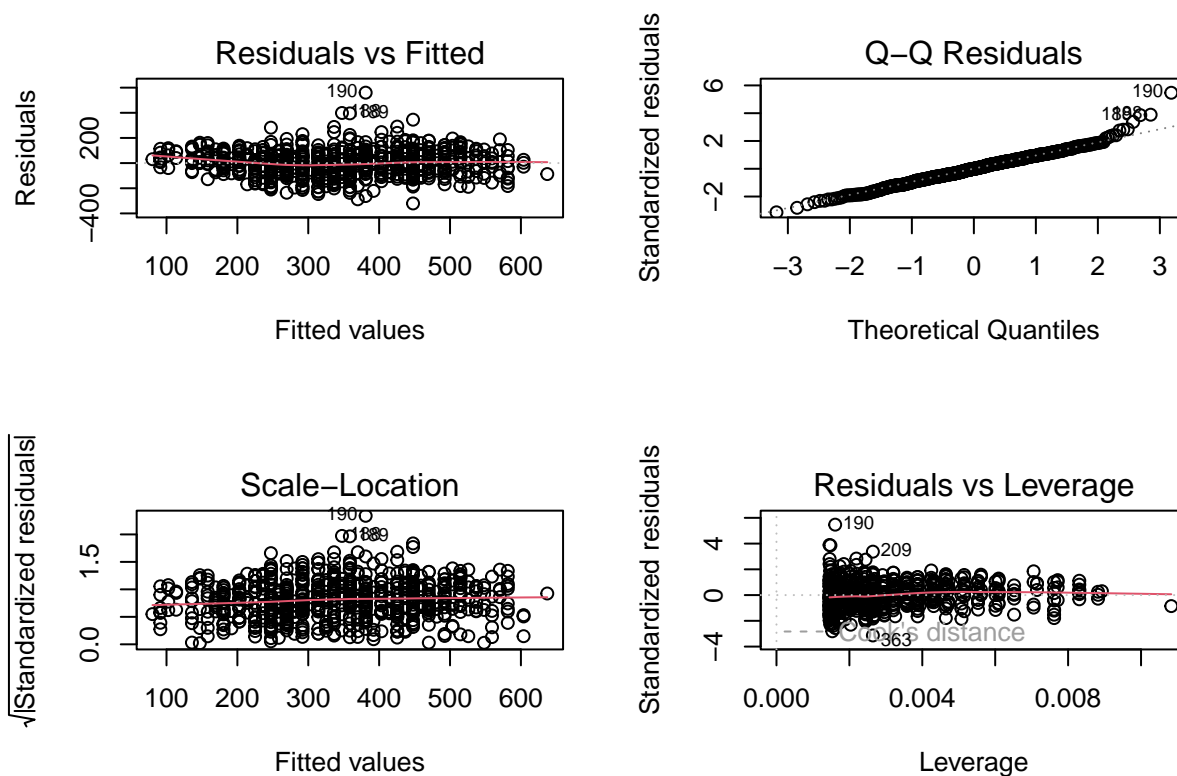
Bike Ridership in Seattle beginning 13 October 2014



## Methods/ Analysis



```
## [1] -0.4397587
```



```
##
## Call:
## lm(formula = total_trips ~ Mean_Temperature_F, data = df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -320.82  -64.18   -0.20   66.33   560.02
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -287.4165    21.6101  -13.30  <2e-16 ***
## Mean_Temperature_F  11.1399     0.3756   29.66  <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 102.5 on 686 degrees of freedom
## (1 observation deleted due to missingness)
## Multiple R-squared:  0.5618, Adjusted R-squared:  0.5612
## F-statistic: 879.6 on 1 and 686 DF, p-value: < 2.2e-16
```

## Conclusion/Discussion

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When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document.