Bike Sharing Demand: Prediction of Bike Share Counts by Hour

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Abstract

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Bike Sharing Demand: Prediction of Bike Share Counts by Hour

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# [Heading 1]: Sample

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Bike Sharing Demand: Prediction of Bike Share Counts by Hour1

Bike sharing systems enable renting bicycles where the process of obtaining membership, rental, and bike return is automated via a network of kiosk locations throughout a city. Using these systems, people are able rent a bike from a one location and return it to a different place on an as-needed basis.

The data generated by these systems makes them attractive for researchers because the duration of travel, departure location, arrival location, and time elapsed is explicitly recorded. Bike sharing systems therefore function as a sensor network, which can be used for studying mobility in a city.

For this study, we attempted to predict the count of bike rentals using statistical inference methods. We began with creating a linear model, given that this is a standard basic model. From there we used validation techniques in order to determine the strength of the model. We then used ANOVA to understand the variability of the counts to the different predictors. Next, we used the non-parametric methods, particularly the Mann-Wilcoxon-Whitney and the Kruskal-Wallis tests to understand the independence of the response against the predictors. From all the findings, we created the optimized GAM model.

# Capital Bike Share Data: Observations

xxx

## [Heading 2]

xxx

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[Heading 5]. Xxx

# Creating the Linear Model

xxx

# Validating the Linear Model

# ANOVA

# Non-Parametric Methods to Determine Predictor Independence

We relied on non-parametric methods to determine the dependence of each predictor on bike rentals. Using the Mann-Wilcoxon-Whitney test and the Kruskal-Wallist test, we gained that the following predictors were critical in predicting the data:

* Day
* Hour
* Weather
* Season
* Temperature
* Adjusted Temperature
* Humidity
* Windspeed

## Mann-Wilcoxon-Whitney Test.

# The Optimized Model

References

Last Name, F. M. (Year). Article Title. *Journal Title*, Pages From - To.

Last Name, F. M. (Year). *Book Title.* City Name: Publisher Name.

Footnotes

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Tables

Table 1

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