Introduction

At Disney World, the entrance for each ride has an officially estimated wait time for the ride. We aim to predict the posted wait time for rides in Disney on a future day using historical posted wait time data.This will allow park goers to make better plans when going to Disney. Our data set for posted wait times was provided by TouringPlans. We processed the data into time windows to allow for better comparison with historical data.

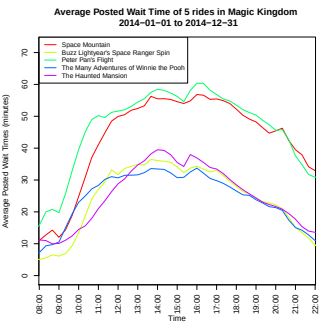

Figure 1: Wait Time Shapes

Figure 2: Posted Wait Time at Toy Story Mania

Predictive Model

We built a predictive linear regression model with the focus on rides in Magic Kingdom to predict the wait times seven days in advance. We prepared our data by:

- Adding historical information on the wait times of the ride we are predicting and other similar rides
- Adding categorical variables to capture calendar effects throughout the year.
- Transforming the time variable as each park has a distinct shape for wait times, as shown in the graph on the left.

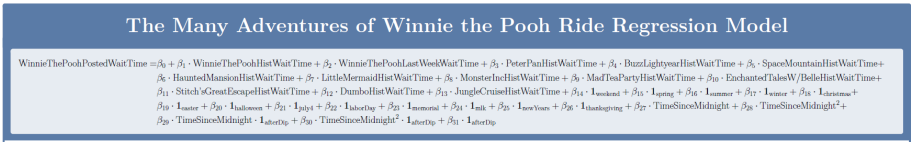

Figure 3: Example of Time Transformed Predictive Regression Model

Findings

- Winnie the Pooh Regression Model
  - (i) Seasons summer, winter, and spring represent a $2.5 - 3.5$ minutes increase in posted wait time as compared to fall.
  - (ii) Christmas, July 4, New Year, and Thanksgiving can each increase posted wait time by ~ 10 minutes as compared to a normal day.
  - (iii) A 10 minute increase in Stitch's Great Escape's Historical Wait Time will represent a 3.3 minute increase for Winnie the Pooh's Wait Times.
- Most of our data is in 2013-2015. Even then, the data is not evenly distributed and may be sparse for large chunks of time.

Future Work

- We are in the process of gathering new data to further validate the regression models.
- Do network level analysis on wait times for multiple rides in a park

Acknowledgments

Many thanks to the following for their support and guidance:

Faculty Mentors: Alessandro Arlotto and Yehua Wei, Decision Sciences, Fuqua School of Business

Project Manager: Andrew Frazelle, Ph.D. Candidate, Decision Sciences

Data+ Team: Paul Bendich, Ariel Dawn, Katherine Peterson, Rhonda Stanfield, and Ashlee Valente

Data Provider: TouringPlans.com

This material is based upon work supported by the National Science Foundation under CAREER Award No. 1553274.