

Springboard Project 20.1B (Ultimate Take-home Challenge)

This project is a sample take-home assignment designed as practice for the interview process for data-science jobs. The project comprises three parts: exploratory data analysis (EDA), experiment and metrics design, and predictive modeling. I started with EDA, checking for missing values and then resampling the time-series data into 15-minute intervals for further analysis. I found that usage increases over the course of the week, hitting a high on Saturdays. Overall usage is higher on weekends, too. I also produced hourly and daily aggregations.

The next part of this project entails answering several questions about the design of an experiment to assess the effectiveness of an incentive program for Ultimate's drivers. In doing so, I covered two primary topics: identifying a key measure of success in encouraging drivers to serve both cities of interest, and designing a practical experiment – including implementation, statistical tests, and interpretation of results – to compare the effectiveness of the proposed change and make appropriate recommendations.

Finally, I built a predictive model to evaluate important factors associated with user retention. After data wrangling and some more EDA, I used a random forest (with tuned parameters) to identify such factors and then assessed model performance with precision and recall. The last step was to produce the ten most valuable features and their Gini coefficients.