

The business wants to select a better value for the ticket price and hope to either cut costs without undermining the ticket price or will support an even higher ticket price.

With data wrangling, the fastEight column is dropped in its entirety. About 14% of the rows having no price data (AdultWeekend, AdultWeekday) are also removed. Features that came as interesting are TerrainParks, SkiableTerrain_ac, daysOpenLastYear and NightSkiing_ac. The distribution for weekday and weekend prices in Montana seemed equal. Weekend prices have the least missing values of the two, so the weekday prices are dropped and then just the rows that have weekend prices are kept. Primary target response feature would be weekend ticket prices.

After data wrangling, exploratory data analysis was done. There is no any clear grouping for state labels but there is potentially relevant state data in features most likely to be relevant to the business use case. AdultWeekend ticket price has reasonable correlations with fastQuads along with Runs and Snow Making_ac. Of the new features, resort_night_skiing_state_ratio seems the most correlated with ticket price. Runs, total_chairs is quite well correlated with ticket price. The vertical drop seems to be a selling point that raises ticket prices as well. Summit and base elevation are quite highly correlated. There is some positive correlation between the ratio of night skiing areas with the number of resorts per capita. (see figure 1 below for all correlations).

In the preprocessing and training part, data was fitted and trained with linear model and random forest model. The dominant top four features in both the models are: fastQuads, Runs, Snow Making_ac and vertical_drop. (see figure 2 below)

The scenario on which modelling could be feasible was this:

Increase the vertical drop by adding a run to a point 150 feet lower down but requiring the installation of an additional chair lift to bring skiers back up, without additional snow making coverage. This scenario increases support for ticket price by 1.99 dollars. Over the season, this could be expected to amount to 3474638\$. Also, they may consider closing one used run since closing one used run doesn't make any difference on revenue or the ticket price. (see figure 3 below).

Possible business uses for the model include exploring pricing strategies and potential revenue impacts, evaluating return on investment (ROI) for new infrastructure like the chair lift and supporting strategic planning with data-backed forecasts. To make the model accessible it can be deployed as an interactive dashboard using tools like Tableau, Power BI, etc. Data visualizations can be included to show predicted outcomes based on inputs. Model logic can be documented clearly so analysts understand limitations and assumptions

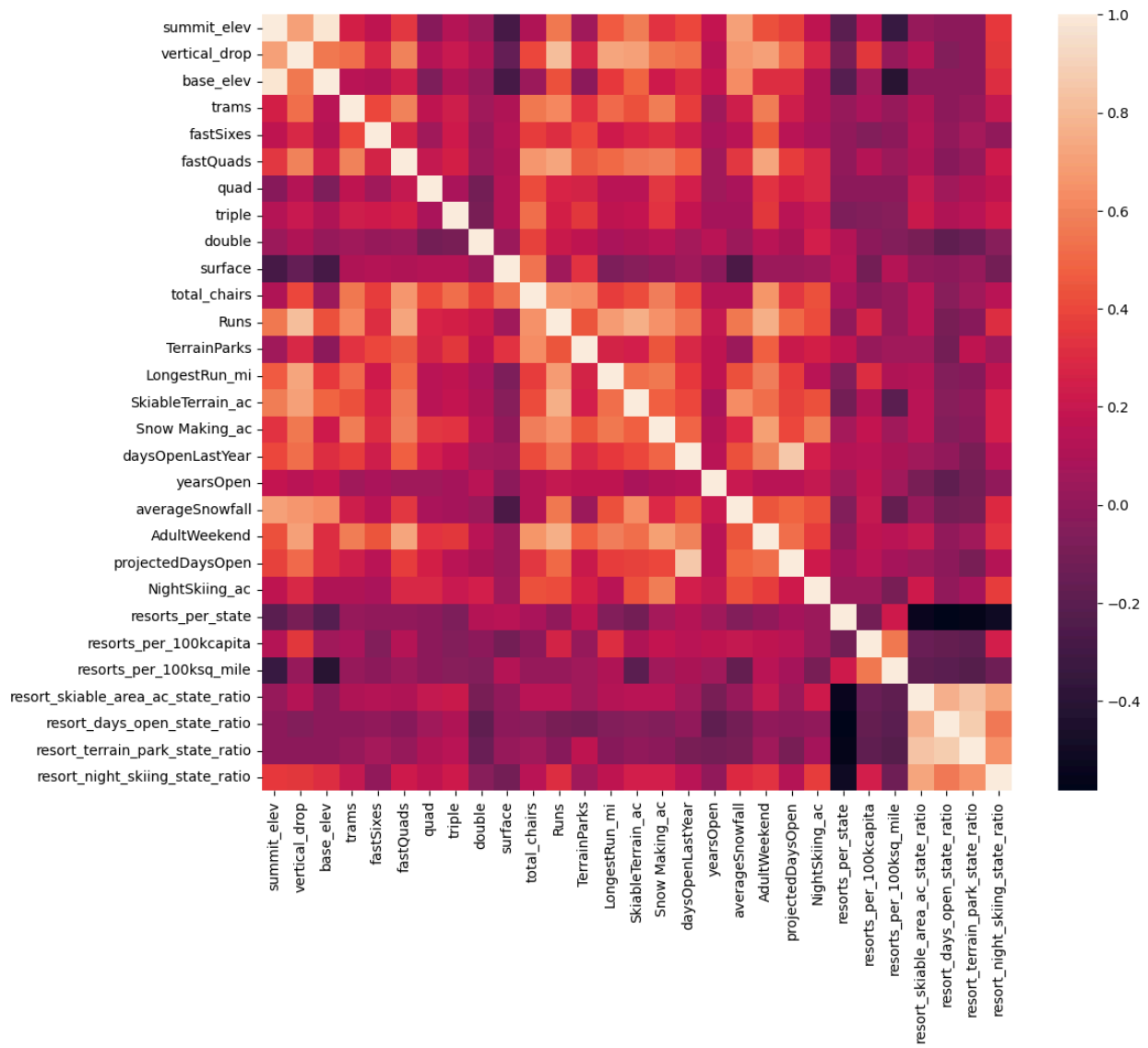


figure 1

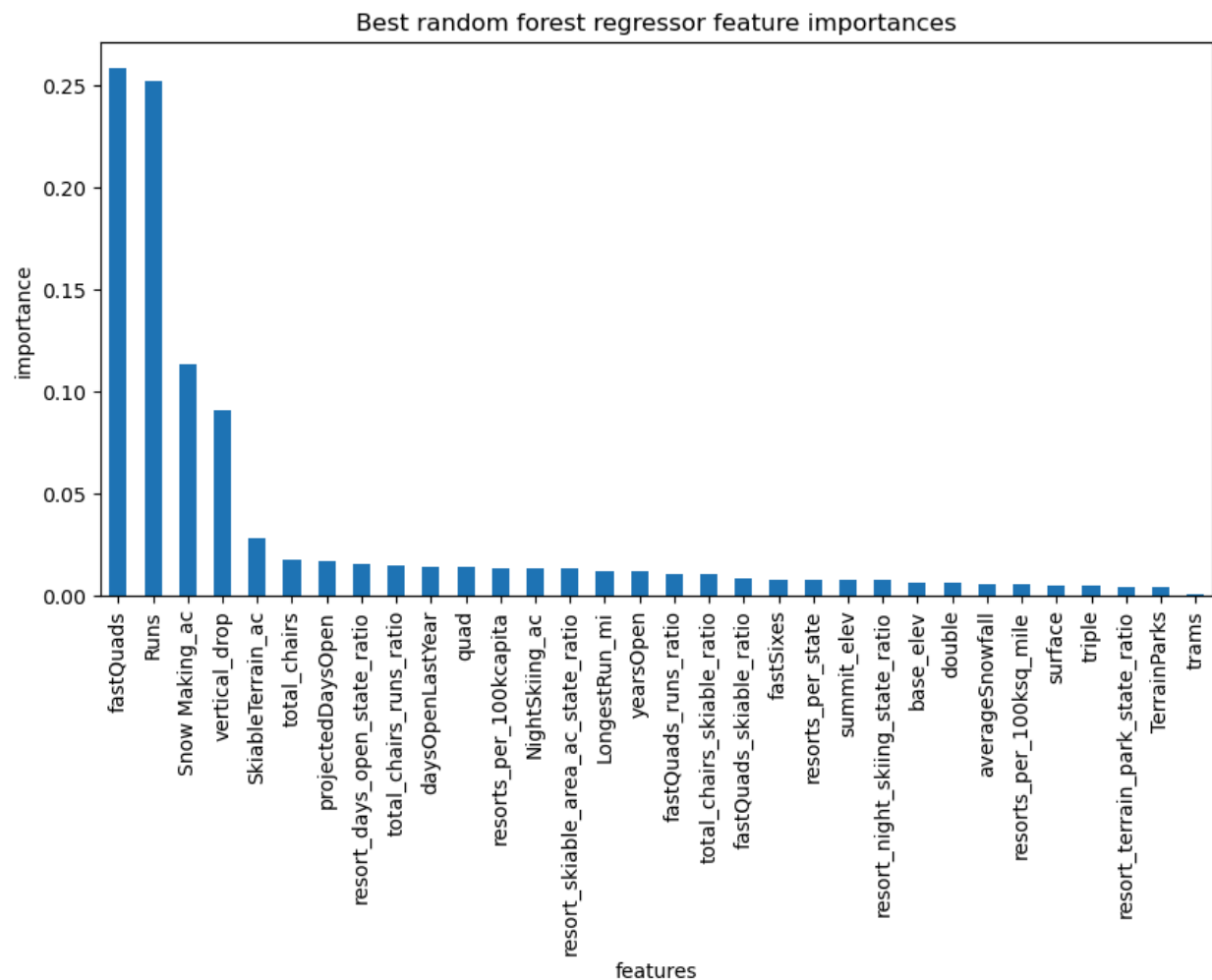


figure 2

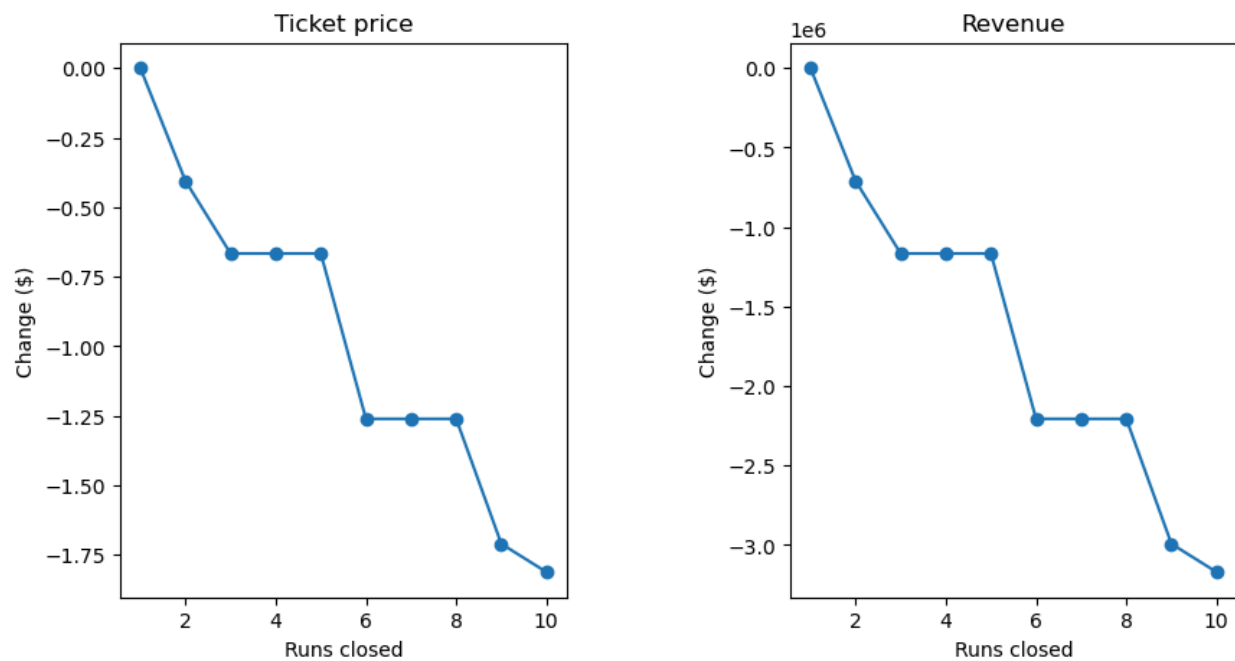


figure 3