Guided Capstone - Step 6 (Documentation)

Introduction:

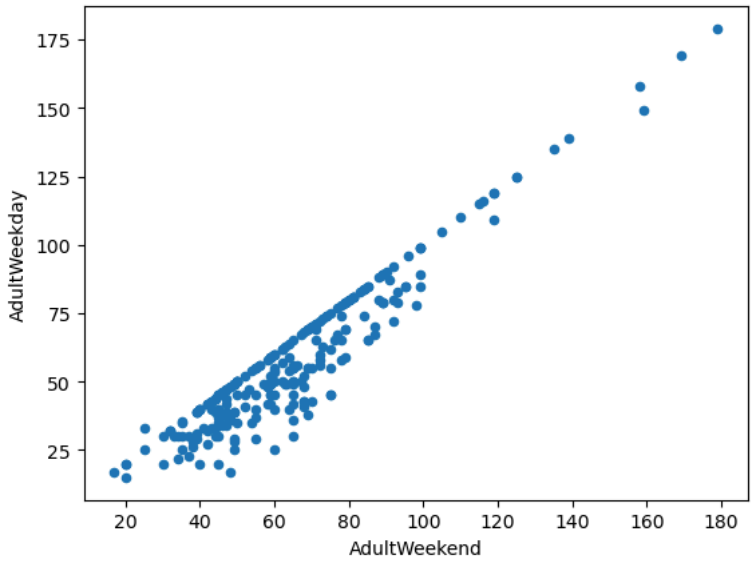
Big Mountain Resort is a ski resort in Montana, known for its scenic views and extensive trail system. It attracts approximately 350,000 visitors annually and offers a range of facilities catering to different skill levels, including lifts, T-bars, and a magic carpet. The resort has recently added a new chair lift, increasing its operating costs. The resort has traditionally set its ticket prices above the market average but is now looking to optimize its pricing strategy and overall operations to better leverage its facilities and potentially increase revenue.

Problem:

Big Mountain Ski Resort is in need of a new pricing strategy that is based on data from other ski resorts across the country. How can we create a pricing model that can determine a price that is competitive for customers and accurately reflects the significance of Big Mountain Resort's facilities?

Data Wrangling:

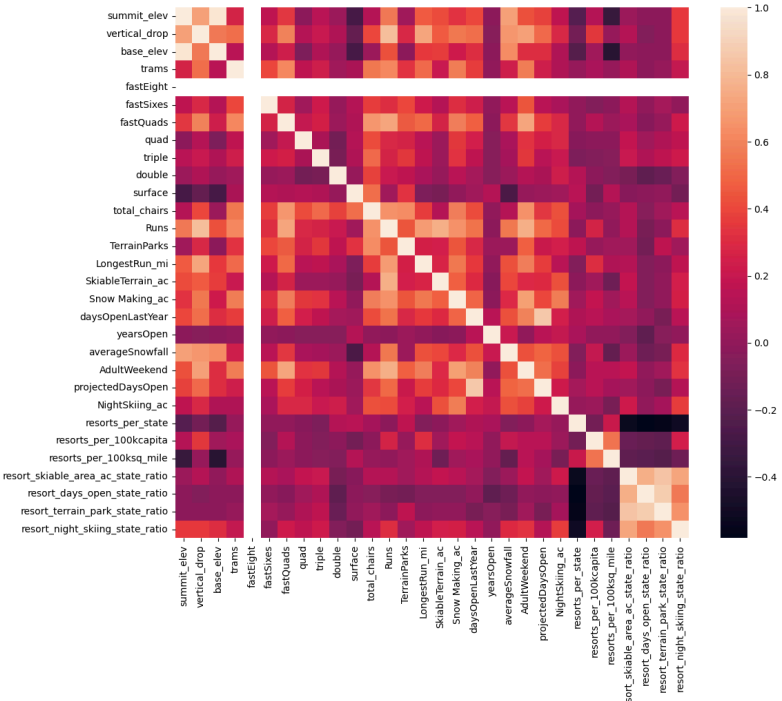
The data set included many important values like the total vertical drop, number of lift chairs, weekday/weekend price, and total number of runs for each resort. We inspected AdultWeekend vs. AdultWeekday price. Most of the states had the same price for both as seen by the chart below.



Exploratory Data Analysis:

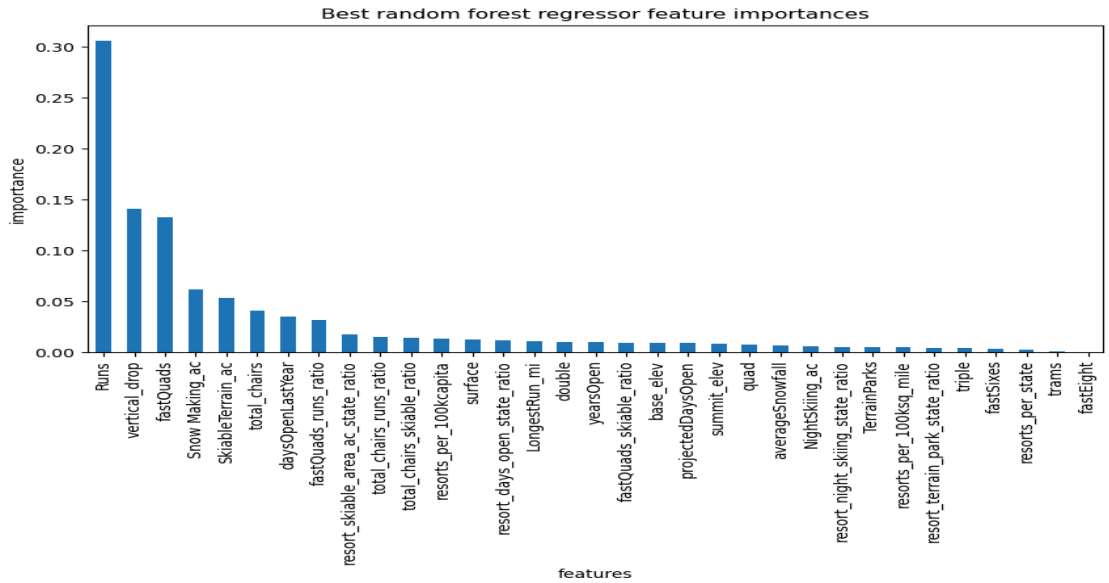
As you can see,AdultWeekend ticket price has quite a few reasonable correlations. Fast quads stood out, along with runs and snow making_ac. The last one is interesting. Visitors would seem to value more guaranteed snow, which would cost in terms of snow making equipment, which would drive prices and costs up. Of the new features, night skiing seems the most correlated with ticket price. If

this is true, then perhaps seizing a greater share of night skiing capacity is positive for the price a resort can charge. Take a look at the image below.



Pre-Processing and Training Data:

The next regression was based on a Random Forest Model. Encouragingly, the dominant top four features are in common with the linear model: fastQuads, Runs, Snow Making_ac Vertical_drop.



Modeling:

To determine a fair price, we needed to see where Big Mountain Resort ranked in the vertical drop and total chairs. The dotted red line represents Big Mountain Resort. As you can see, Big Mountain has amongst the highest number of total chairs and Big Mountain is doing well for vertical drop, but there are still quite a few resorts with a greater drop. Furthermore, we created two plots, side by side, for the predicted ticket price change for each condition (number of runs closed) in the scenario and the associated predicted revenue change on the assumption that each of the expected visitors buys 5 tickets. The model says closing one run makes no difference. Closing 2 and 3 successively reduces support for ticket price and so revenue. If Big Mountain closes down 3 runs, it seems they may as well close down 4 or 5 as there's no further loss in ticket price. Increasing the closures down to 6 or more leads to a large drop.