Guided Capstone Project Report

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Big Mountain Ski Resort features 3000 acres of skiable terrain, 105 ski trails, 11 lifts, a magic carpet and a run that is 3.3 miles. On average Big Mountain sees about 350,00 skiers a year.

Recently, the resort invested in new infrastructure that rose their operation and maintenance cost. Big Mountain, thus, would like guidance on pricing their lifts tickets competitively in order to cover operational costs, improve probability and offer competitive pricing in the market.

In order to carry out data analysis and experimentation we were given a CSV file containing data for 330 ski resorts by Alesha Eisen.
Information such as, resort amenities(lifts, runs). And other key performance metrics. We will used this data to figure out which features are the mont influential when dicing pricing for lift tickets at Big Mountain and other similar resorts.

Information results will be presented to the following stake holders within Big Mountain Ski Resort:
Jimmy Blackburn - director of operations
Alesha Eisen - Database Manager.
Executive Leadership Team

Problem statement:
On the first step of our data analysis we identified that Big Mountain must strategically update ticket pricing in order to cover recent operational cost increases. One of the expenses incurred was a new chairlift that added 1.54 million in operational cost. We found that in order to cover these expenses Big Mountain must increase revenue by at least 10% by the end of the year. The resort must also adhere to costumer happiness.

In order to achieve this we were provided with a data sheet containing pricing and amenities information from another 330 similar resorts.

Data Wrangling:
The purpose of this analysis is to come up with a ticket pricing model that will benefit Big Mountain. In order to develop this model we focused on amenities offered by Big Mountain it its competitors to see what visitors value the most. Within this we also focused on amenities that costumers would not mind paying more for.

Exploratory Data Analysis:
In order to carry out EDA we used the following data sets: ski_data and state_summary data. Within these data frames we had 25 and 8 columns of information necessary for this analysis. Information in these data frames was numerical and categorical, and it included information such as snowfall, tickets prices skiable acreage and chair lifts. During EDA we found out that Colorado has the biggest skiable area by the state.

3.5.1.4 Total skiable area

File display

```
state_summary_newind.state_total_skiable_area_ac.sort_values(ascending=False).head()
```

state	state_total_skiable_area_ac
Colorado	43682.0
Utah	30508.0
California	25948.0
Montana	21410.0
Idaho	16396.0

Model Preprocessing with feature engineering: In model preprocessing we used the Linear regression model and Random Forest regression model. A liner regression model to identify key predictions that contributed to higher ticket prices. We found that vertical drop was a feature that had a positive impact.

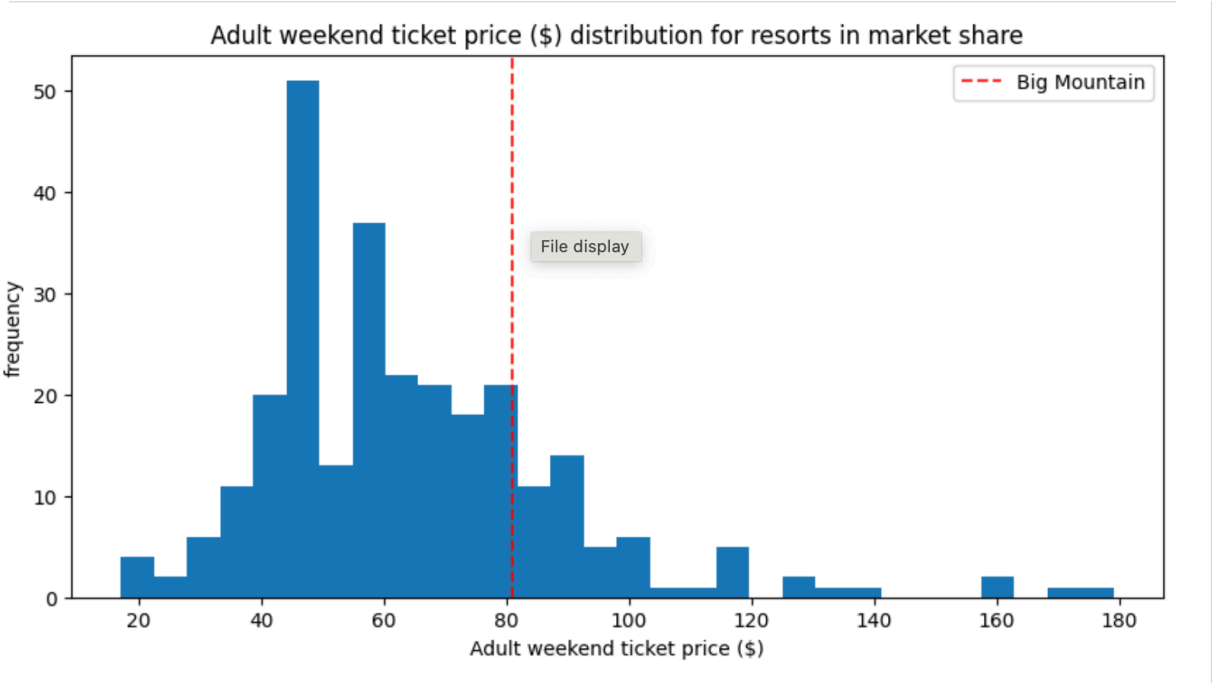
Given its superior performance and consistency between cross-validation and test results, the

This shows that you seem to have plenty of data. There's an initial rapid improvement in model scores as one would expect, but it's essentially levelled off by around a sample size of 40-50.

Random Forest Regressor was chosen for the next stage of analysis.

Algorithms used to build the model with evaluation metric:

Big Mountain currently prices their tickets at $81.00 but after exploring our data we can see that the modeled price for the resort based on other competitors and similar amenities is $95.87. This is a $14.87 price increase.



Pricing recommendation:
In this section we only focused on ticket pricing for Big Mountain, but the resort could deploy other methods to maximize profits and cut back on spendings. Some of these factors include permanently closing down 10 of the least used runs, which would not impact any other resort statistic. The resort could also stretch it's longest run by .2 miles in light, but this would require an additional 4 acres of snowmaking.

Conclusion: Our Data exploration in this unit shows that Big Mountain is currently underpricing their ticket prices. Big Mountain currently prices their tickets at $81.00, but our model suggest they could increaser their prices by $14.87 to $95.87 without compromising costumer satisfaction and covering all expenses incurred by the recent developments carried out.

Data showed that some of the biggest factors on ticket pricing increase justifications are influenced by snow-making capabilities, skiable terrain, and a resorts vertical drop. We should further explore the data in order to better understand what other features might affect competitive pricing. In order to do this, the resort could implement a dashboard where data can be tested under different scenarios.

Future scope of work:
Big Mountain should consider further analysis into ticket pricing in order to avoid demand drops if they decide to increase ticket prices. The resort could further explore seasonal closures for low-traffic runs in order to increase profit and reduce maintenance cots.