BUSINESS STRATEGY REPORT

Problem Identification

Problem Statement:

How can Big Mountain Resort increase revenue by 5% by the end of the fiscal year by charging a premium above average ticket price for resort facilities and reducing annual operational costs without undermining ticket price?

1. Context

Big Mountain Resort is a Montana ski resort that offers spectacular views of Glacier National Park and Flathead National Forest with access to 105 trails. Every year about 350,000 people come to ski or snowboard at Big Mountain. The resort offers facilities such as 11 lifts, 2 T-bars and 1 magic carpet to accommodate skiers and riders of all levels and abilities. Recently, they installed an additional chair lift to help increase the distribution of visitors across the resort. This increases their operating costs by $1.54 million this season. Big Mountain has expressed a desire to understand how to select a better value for their ticket price that capitalizes on all its facilities. They are also considering cost-cutting measures that will either cut costs without undermining the ticket price or will support an even higher ticket price.

2. Criteria for Success

- Increase revenue by 5% by capitalizing on all their facilities, especially those that are doing well by making them more accessible and convenient. Adding a chair lift will increase the distribution of customers across the resort.

3. Scope of Solution Space

The specific items Big Mountain will focus on exclusively include:

- Conduct market research on ticket prices for all facilities in order to have a good sense of how important some facilities are and how to create a price structure for all facilities. Research will focus on 330 ski resorts in the US.
- Scale back annual maintenance cost expenditure of chairlifts by monitoring expenditure logs to identify redundancies such as frequency of maintenance.

4. Constraints with Solution Space

- Missing important information such as operating costs of maintaining the resort facilities
- Economic and geographical factors that may interfere with the customer's willingness to pay the premium price.
- Price structure should reflect market conditions and be competitive but not overly competitive.

5. Stakeholders to provide key insight

- Jimmy Blackburn - Director of Operations
- Alesha Eisen - Database Manager

6. Key Data Sources

- Metadata file from a single CSV file containing information from 330 resorts in the US are considered part of the same market share including Big Mountain Resort from the database manager

RECOMMENDATION AND KEY FINDINGS

I would recommend a combination of scenarios 1 and 2. Scenario 1 shows us that we can close one run and not affect the predicted ticket price/revenue. But closing one run may also have an operational cost-saving measure that can be applied to the bottom line. Modifying a run when considering scenario 2 to add to the vertical drop of 150 ft supports an increase in ticket prices/revenue. This scenario will require additional investigation into the cost of adding more vertical drop, and possible redirection of a run due to any geographic limitations in order to test the viability of adding to the vertical drop.

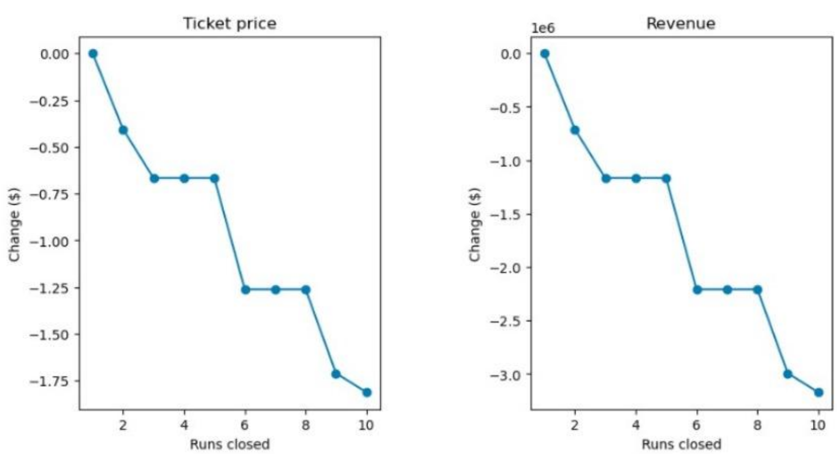
SCENARIO 1

Permanently close down up to 10 of the least used runs. This doesn't impact any other resort statistics.

SCENARIO 2

Increase the vertical drop by adding a run to a point 150 ft lower down but requiring the installation of an additional chair to lift and bring skiers back up, without additional snow making coverage. Making the total vertical drop 2503 ft.

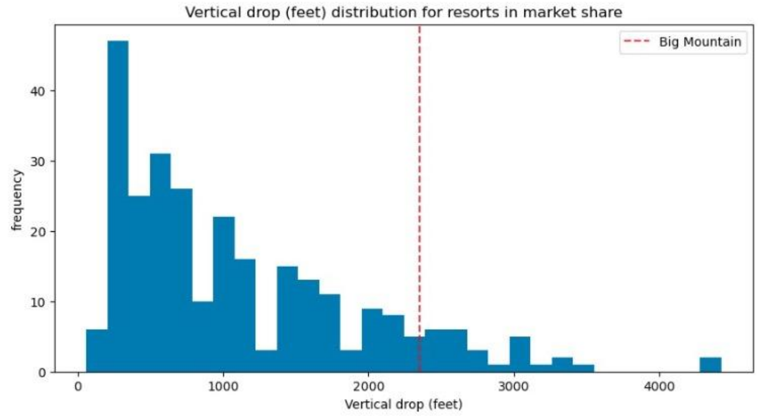
SCENARIO 1



The model says closing one run makes no difference. Closing 2 and 3 successive runs reduces support for ticket price and revenue. The model shows a couple of plateaus where closures of a certain number of runs have the same effect. For example, if Big Mountain closes down 3 runs, they may as well close down 4 or 5 as there's no further loss in the ticket price. This would lead to a loss of $0.66 per ticket. However, increasing the closures up to 6, 7, 8, or more leads to a large drop in revenue about $1.26 per ticket.

SCENARIO 2

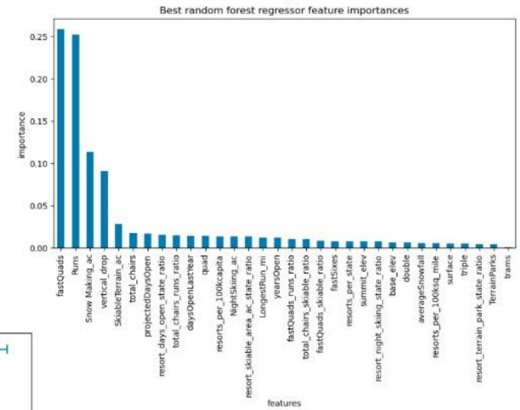
Scenario 2 increases support for ticket price by $1.99. Over the season, this could total an expected amount of $3,474,638. The question to be asked here is does added revenue offset the cost of extending a run by 150 ft and including a new lift chair? Additionally, are there geographic limitations to extending the run that would affect the viability of this scenario?



MODELING RESULTS AND ANALYSIS

MODELING COMPARISON

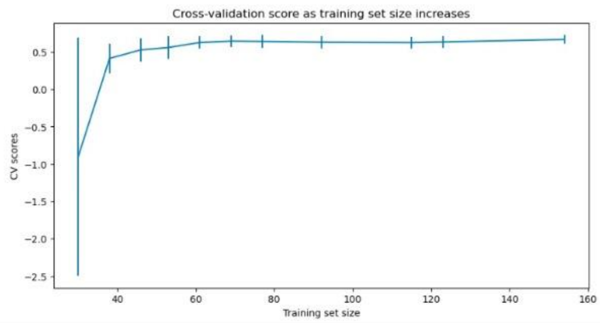
Random Forest Regression Model



Linear Regression Model

```
vertical_drop          10.767857
Snow Making_ac          6.290074
total_chairs            5.794156
fastQuads               5.745626
Runs                    5.370555
LongestRun_mi           0.181814
trams                  -4.142024
SkiableTerrain_ac      -5.249780
dtype: float64
```

Cross-Validation Score



MODELING ANALYSIS

The final linear regression model performance yielded an MAE of 11.793 whereas the random forest regression model yielded an MAE of 9.537. With this information, the random forest model was chosen on the basis that it has a lower cross-validation mean absolute error by almost $1 and exhibits less variability. Verifying performance on the test set produces performance consistent with the cross-validation results. From these results, the random forest model was chosen for the business problem to help guide important business decisions.

SUMMARY

SUMMARY REPORT

Taking into account that:

- The expected number of visitors each season is 350,000.
- On average visitors bought 5 tickets for the 5 days they would be skiing.
- Assuming the data provided includes the additional lift Big Mountain recently installed.

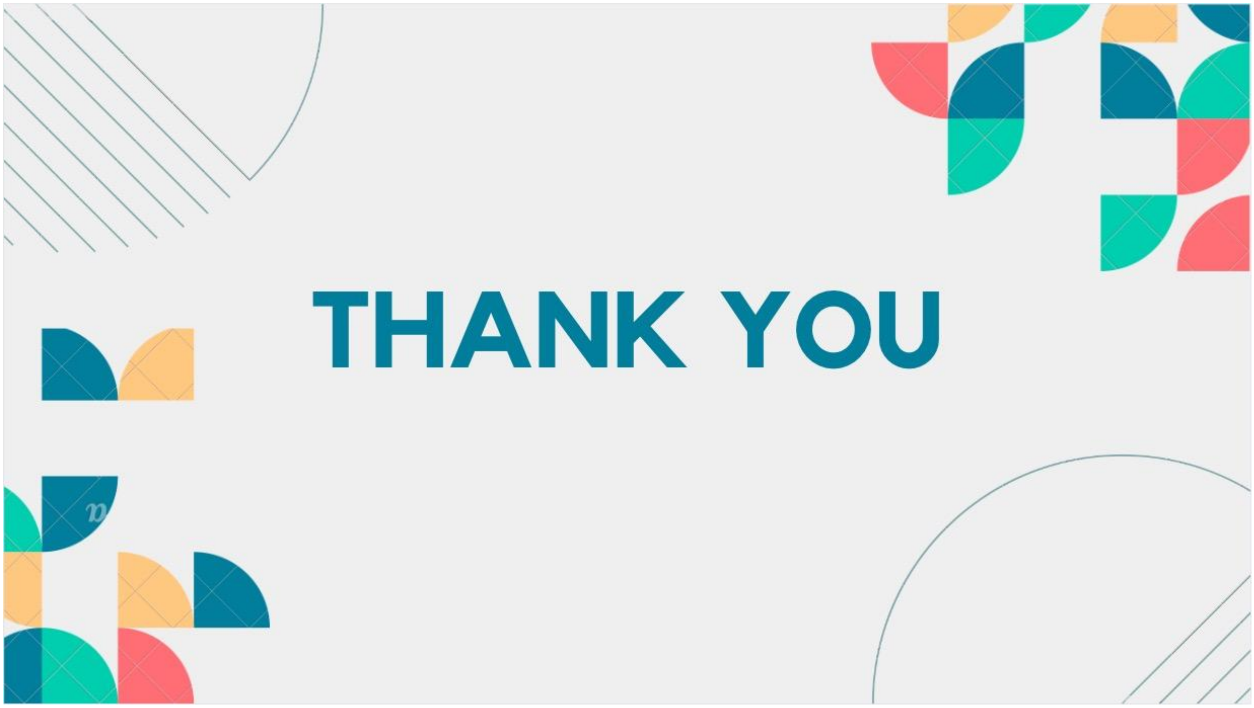
I would recommend a combination of scenarios 1 and 2.

• Scenario 1

- Permanently closing one run makes no difference to the ticket price. Closing 2 to 3 runs would lead to a loss of $0.66 per ticket. Closing more runs would lead to a significant drop in revenue.

• Scenario 2

- Increasing the vertical drop by adding a run to a point 150 ft but requiring the installation of an additional chair lift to lift and bring skiers back up without making additional snow coverage would increase revenue by $1.99 per ticket.


THANK YOU