Guided Capstone Project Report

Background :

Big Mountain Resort has been reviewing potential scenarios for either cutting costs or increasing revenue (from ticket prices). Ticket price is not determined by any set of parameters; the resort is free to set whatever price it likes. However, the resort operates within a market where people pay more for certain facilities, and less for others. Being able to sense how facilities support a given ticket price is valuable business intelligence. This is where the utility of our model comes in.

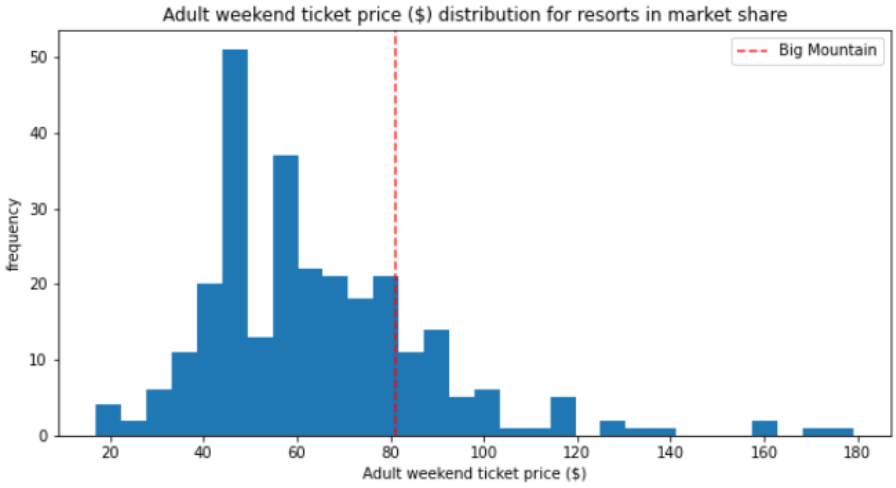

Fig 1 : Adult weekend ticket price ($) distribution

Features that came up as important in the modeling included:

- vertical_drop
- Snow Making_ac
- total_chairs
- fastQuads
- Runs
- LongestRun_mi
- Trams
- SkiableTerrain_ac

The business has shortlisted some options with following assumptions :

1. The expected number of visitors over the season is 350,000 and, on average, visitors ski for five days
2. Assume the provided data includes the additional lift that Big Mountain recently installed.

   Scenario 1 : Permanently closing down up to 10 of the least used runs. This doesn't impact any other resort statistics.

   Finding :

   1. Big Mountain compares well for the number of runs. There are some resorts with more, but not many. Refer Fig 2

2. 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. Refer Fig 3

Recommendation : Close 1 run to keep the same ticket price. If Operational cost needs to be reduced on the runs then close 5 runs

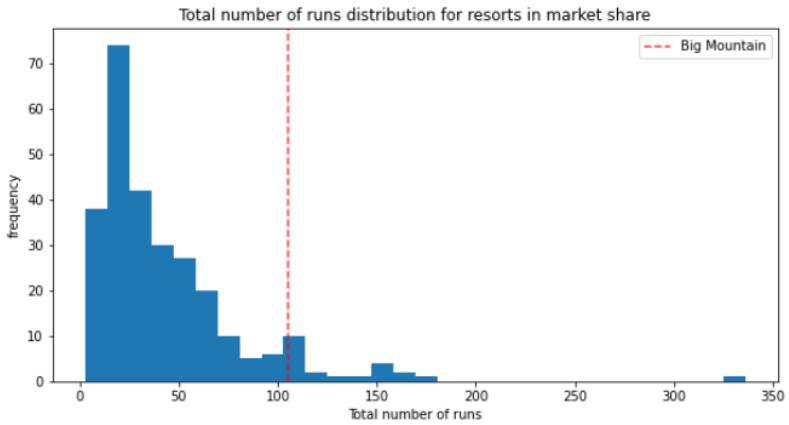

Fig 2 : Total number of distribution runs

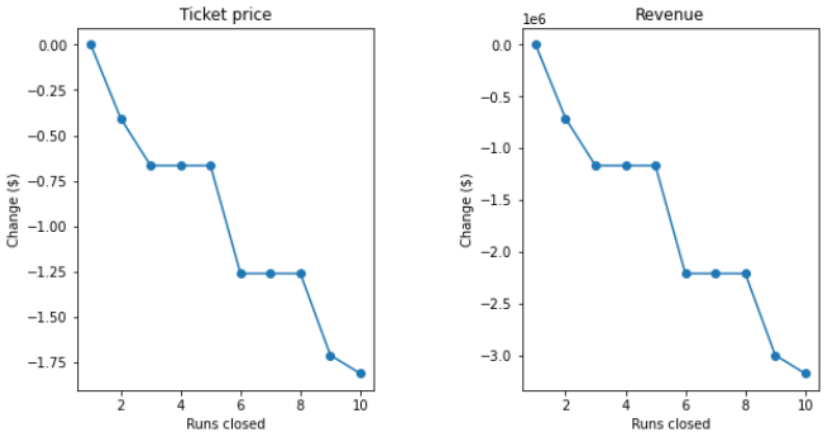

Fig 3 : Ticket price vs Revenue

Scenario 2 : 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

Finding :

1. Big Mountain is doing well for vertical drop, but there are still quite a few resorts with a greater drop.

2. This scenario increases support for ticket price by $8.61. Over the season, this could be expected to amount to $15065471

Recommendation : Implement scenario 2

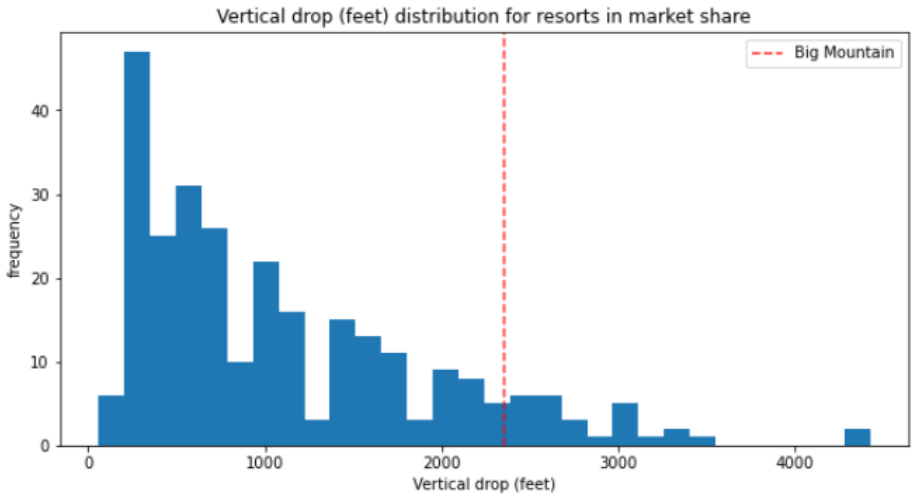

Fig 4 : Vertical drop (feet) distribution

Scenario 3: Same as number 2, but adding 2 acres of snow making cover

Finding :

1. Big Mountain is very high up the league table of snow making area.
2. This scenario increases support for ticket price by $9.90. Over the season, this could be expected to amount to $17322717

Recommendation : Such a small increase in the snow making area makes no difference!

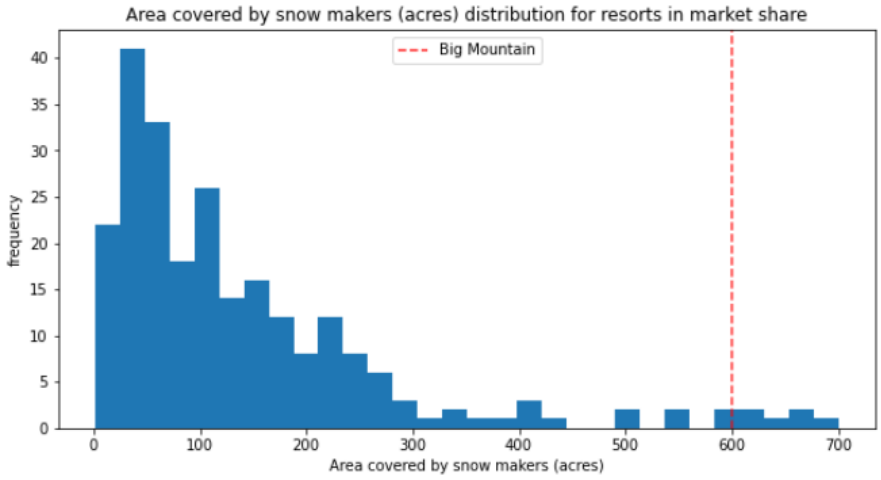

Fig 5 : Area covered by snow markers

Scenario 4 : Increase the longest run by 0.2 mile to boast 3.5 miles length, requiring an additional snow making coverage of 4 acres

Finding :

1. Big Mountain has one of the longest runs. Although it is just over half the length of the longest, the longer ones are rare.
2. No difference whatsoever. Although the longest run feature was used in the linear model, the random forest model (the one we chose because of its better performance) only has longest run way down in the feature importance list.

Recommendation : Do not increase longest run by 0.2 mile

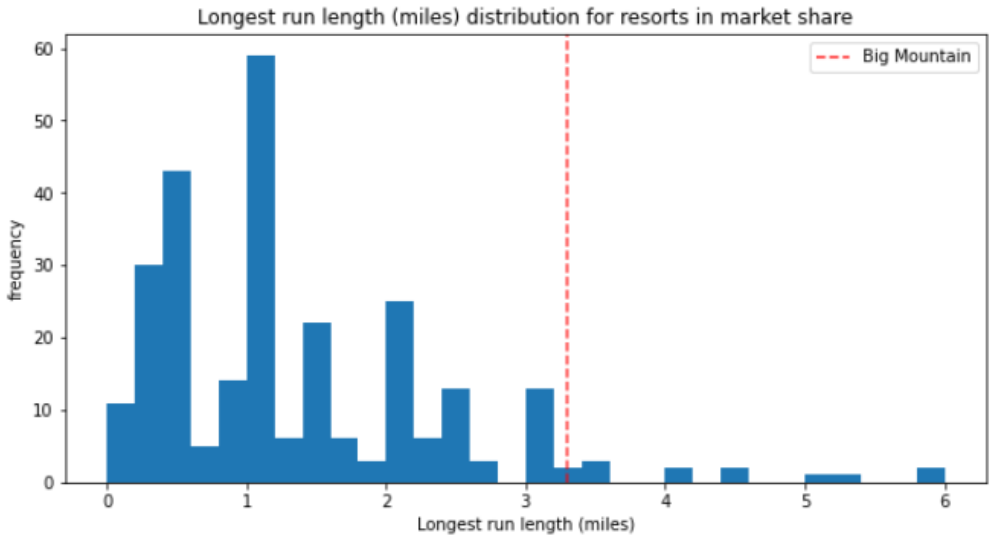

Fig 6: Longest Run length (miles)

Final Recommendation Summary :

Close 1 run, 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 increasing snow coverage