Guided Capstone Project Report

Here, we take a ski resort ticket price model and use it to get some idea of what price Big Mountain facilities can actually support, as well as to explore the sensitivity of changes to various resort parameters. We can now use our model to gain insight into what Big Mountain's ideal ticket price could/should be, and how that might change under various scenarios.

Calculate expected Big Mountain ticket price from the model

- *Big Mountain Resort modelled price is $95.87, actual price is $81.00.*
- *Even with the expected mean absolute error of $10.39, this suggests there is room for an increase.*

This result should be looked at optimistically and doubtfully. The validity of our model lies in the assumption that other resorts accurately set their prices according to what the market (the ticket-buying public) supports. The fact that our resort seems to be charging that much less than what's predicted suggests our resort might be undercharging. But if ours is mispricing itself, are others? It's reasonable to expect that some resorts will be "overpriced" and some "underpriced." Or if resorts are pretty good at pricing strategies, it could be that our model is simply lacking some key data? Certainly, we know nothing about operating costs, for example, and they would surely help.

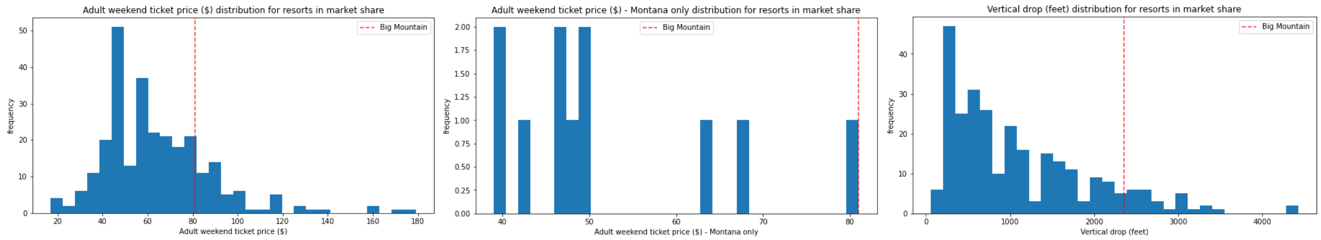
Big Mountain resort in market context

Features that came up as important in the modeling (not just our final, random forest model) included:

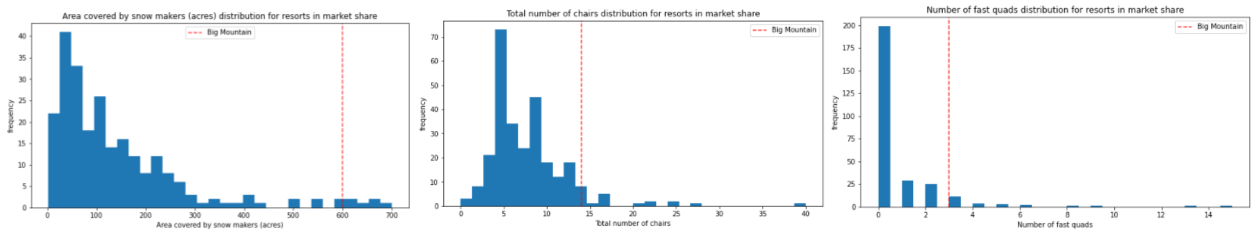
- vertical_drop
- Snow Making_ac
- total_chairs
- fastQuads
- Runs
- LongestRun_mi
- trams
- SkiableTerrain_ac

Some potentially relevant contextual information is that vertical drop, although nominally the height difference from the summit to the base, is generally taken from the highest lift-served point.

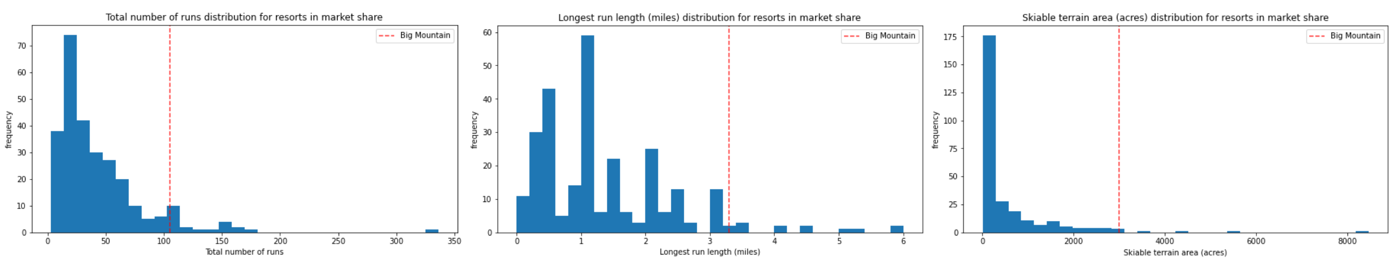
Look at where Big Mountain sits overall amongst all resorts for price and for just other resorts in Montana.



- Big Mountain has average price in the country and the highest price in Montana
- Big Mountain is doing well for vertical drop, but there are still quite a few resorts with a greater drop.



- Big Mountain is very high up the league table of snow making area.
- Big Mountain has amongst the highest number of total chairs, resorts with more appear to be outliers.
- Most resorts have no fast quads. Big Mountain has 3, which puts it high up that league table. There are some values much higher, but they are rare.



- Big Mountain compares well for the number of runs. There are some resorts with more, but not many.
- Big Mountain has one of the longest runs. Although it is just over half the length of the longest, the longer ones are rare.
- Big Mountain is amongst the resorts with the largest amount of skiable terrain.

Modeling scenarios

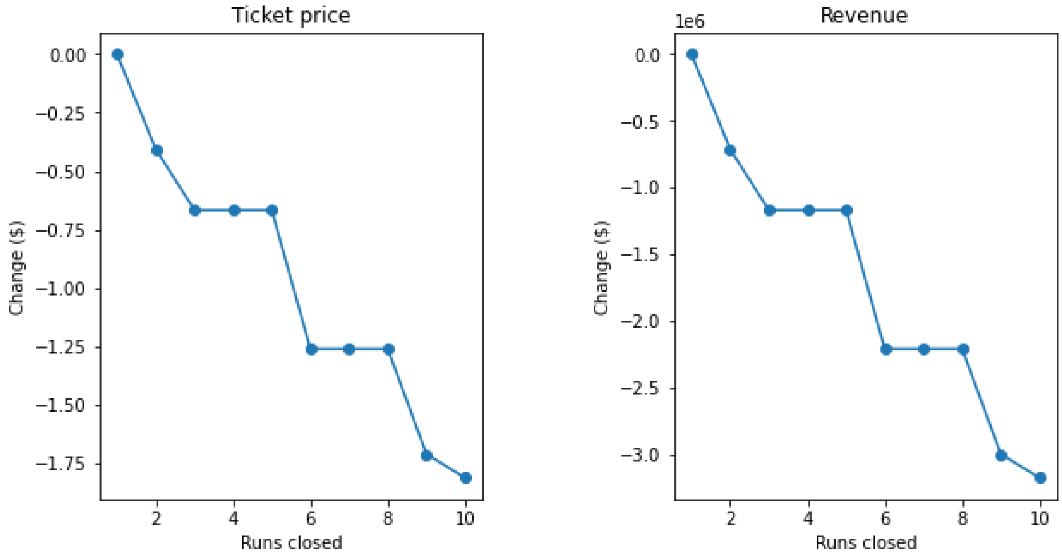
Big Mountain Resort has been reviewing potential scenarios for either cutting costs or increasing revenue (from ticket prices). Ticket price is not determined by any set of parameters; the resort is free to set whatever price it likes. However, the resort operates within a market where people pay more 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.

The business has shortlisted some options:

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

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
3. Same as number 2, but adding 2 acres of snow making cover
4. Increase the longest run by 0.2 mile to boast 3.5 miles length, requiring an additional snow making coverage of 4 acres

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



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.

If Big Mountain is adding a run, increasing the vertical drop by 150 feet, and installing an additional chair lift - this scenario increases support for ticket price by **$1.99**. Over the season, this could be expected to amount to **$3,474,638**.

Adding 2 acres of snow making makes no difference.

Increasing the longest run by .2 miles and guaranteeing its snow coverage by adding 4 acres of snow making capability also makes no difference.

Conclusion

From the foregoing, it follows that the second model should be chosen. Big Mountain Resort modelled price is $95.87, actual price is $81.00. Even with the expected mean absolute error of $10.39, this suggests there is room for an increase.