Big Mountain Resort, Montana
Predictive Modelling of Ticket Price

Guided Capstone Project
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problem identification

context

- Big Mountain Resort (BMR) is uncertain about whether its current pricing scheme representatively reflects the facilities it has to offer, specifically with respect to other resorts in its market segment.
- BMR has recently made a significant financial investment to install a new chairlift.
- BMR management has indicated the need for increased revenue in the coming year, i.a. to cover the increased operating costs of the new chairlift.

problem statement

What opportunities exist for Big Mountain Resort (BMR) to **increase revenue by 15%** in the coming year (2021) with respect to last year (2020) by cutting operating costs and/or improving its facilities to support an increased ticket price?

GOALS

1. Evaluate whether BMR's current ticket price is in line with its market segment.
2. Predict how potential future changes in the facilities offered by BMR will impact the supported ticket price.

recommendation & key findings

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- Given its facilities, BMR's current ticket price is below market average. Our model predicts an increase in single-day adult ticket price of $2.50. Given 350,000 annual visitors who each ski 5 days on average, this results in **$4.35mln additional revenue**.
- Closing one run is a quick-win: it will reduce operating costs without impacting the supported ticket price. Further run closings will have to be evaluated carefully by comparing operating costs to reduced ticket income.
- Adding 1 run + increasing the vertical drop by 150 ft. + adding 1 chairlift will support a further increase of the adult single-day ticket price of $2.00 resulting in another $3.5mln additional revenue.
- Data on related operating and installation costs is currently not available but should be incorporated in decision-making.

modelling results & analysis

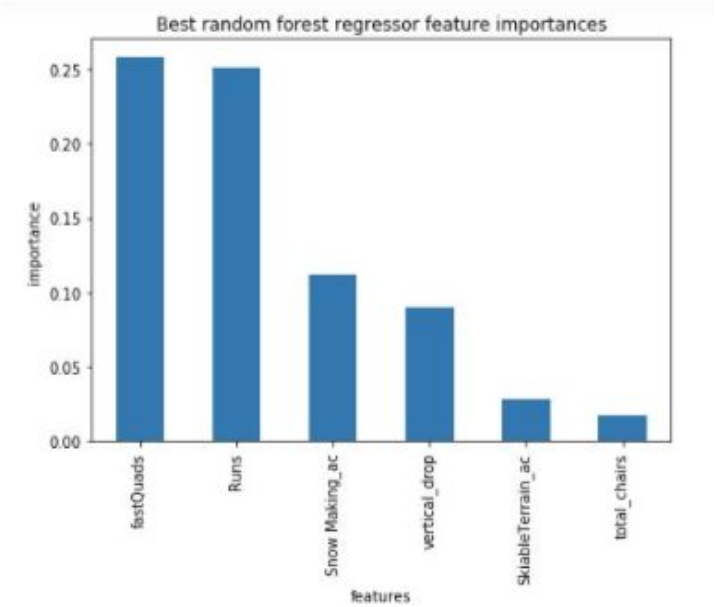
model selection

- Two models were trained and tested on the available data:
    a. Linear Regression
    b. Random-Forest Regression
- Both models performed better than simply estimating the average.
- The Random-Forest Regression model outperforms the Linear Regression model in terms both of variance explained (over 70%) and mean absolute error ($10.40) and is therefore our model of choice for the analysis.

most important features

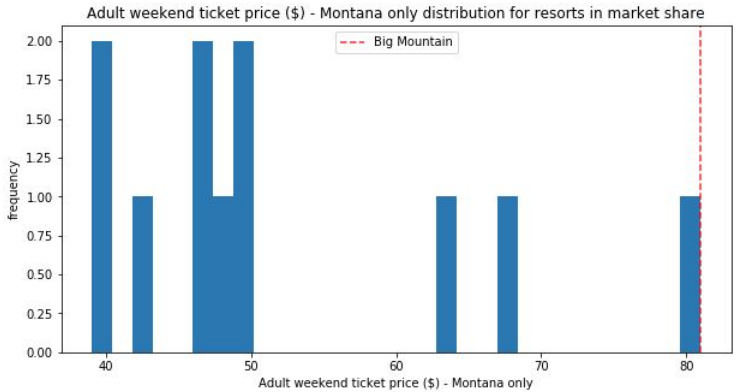
The model indicates the following features as the most important in determining supported ticket price, in order of decreasing importance:

- Number of Fast Quad lifts
- Number of Runs
- Area covered by Snow-making machines
- Vertical drop



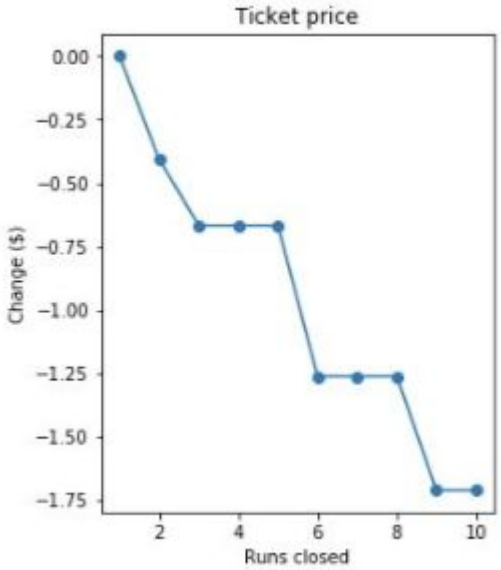
current ticket price evaluation

- BMR's current adult ticket price is $81.00
- Our model indicates that BMR's facilities support a ticket price of just over $94.00 per adult, with a mean absolute error of $10.40
- This indicates a supported increase in ticket price of at least $2.5, leading to a potential increase of $4.35mln
- NB: BMR is currently already the most expensive resort in the state of Montana. Marketing team should advise on feasibility of further increasing the ticket price.



Impact of future facility alterations

- Closing one run is a quick-win that does not reduce supported ticket price while reducing operating costs. Test with the closure of 1 run before proceeding to close more.
- Adding one run, increasing vertical drop by 150ft, and adding one chair lift increases supported ticket price by $2, resulting in potential $3.5mln additional revenue (not considering operating or installation costs).
- Further scenarios with alternative alterations can be run independently by the Business Analyst team.



summary & conclusion

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- Based on its facilities alone, Big Mountain Resort can support an increase in ticket price of $2.50 per adult daily ticket, resulting in a potential increase of $4.35mln in revenue.
- Closing one run is a quick-win solution to reducing operating costs without endangering ticket revenue.
- Adding a run, increasing the vertical drop by 150ft. and adding a new chairlift will support a further increase in ticket price of $2.00 per ticket but has to be offset against operating and installation costs.
- Further analysis by Operations and Marketing Teams essential before final decision-making.