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Guided Capstone Project Report [Big Mountain Resort]

Objective

The objective of this project was to improve Big Mountain Resort's gross profit by either increasing revenue, decreasing costs, or a combination of both.

Exploratory Data Analysis

We began this project by first performing exploratory analysis to familiarize ourselves, gain intuition about the dataset and to develop a hypothesis. We decided in this step to model using data from all states.

Processing and Training

In this step we developed the proposed model which was built on the foundation of the bootstrap aggregating ensemble method. Our proposed model uses resort specific features to predict ticket price more accurately by approx. $9 compared to taking the average of all ticket prices. The difference in ticket pricing accuracy using our model compared to current methods, accounts for around $15,750,000 per year.

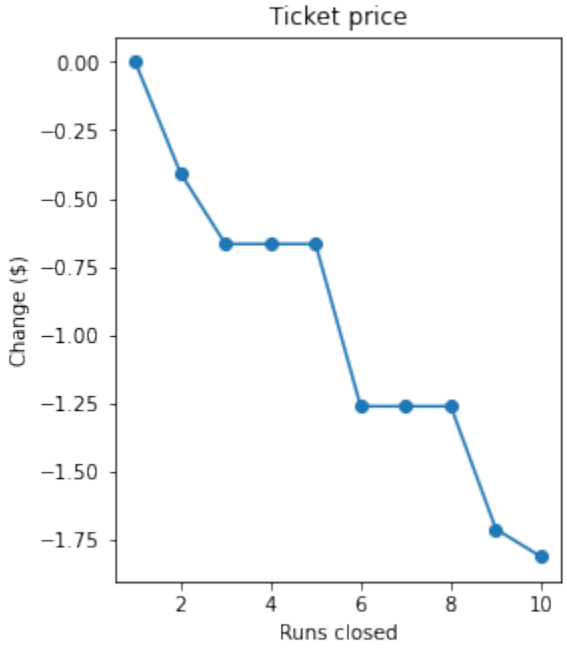
Modelling

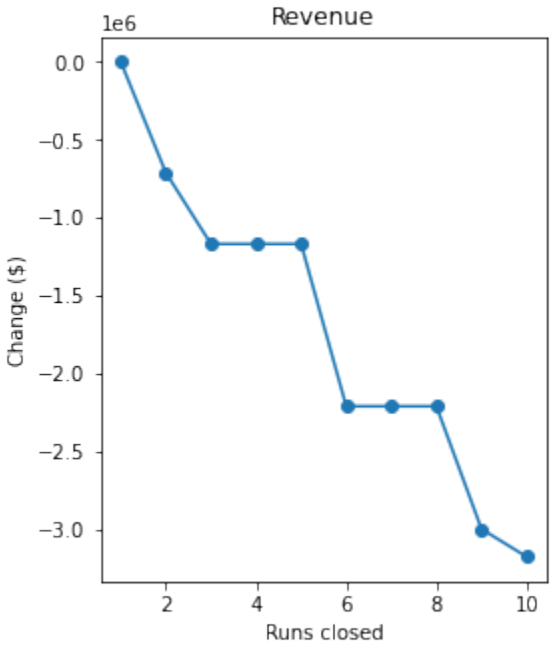
We used our model to simulate and predict the outcome of a few hypotheses which were believed to improve Big Mountain Resort's bottom line. We evaluated methods to increase revenue generation, such as the addition of another run, 150 added feet to vertical drop, and up to 4 additional acres of snow making. We also observed our model's prediction for reducing costs by removing runs.

Outcome

Our model predicted the addition of another run would justify increasing Big Mountain Resort's ticket price by $1.99, or roughly $3,500,000 in revenue per season. Subtracting the operating cost of a new chair, $1,540,000 from this would leave around $1,960,000 in seasonal profit.

Assuming each run's operating cost is $1,540,000; removing just two runs would save approximately $3,080,000 per season and only reduce ticket price by 30 cents, or $750,000 seasonal revenue, netting $2,330,000 in seasonal profit. Removing between three to five chairs would save Big Mountain Resort between $4,620,000 and $7,700,000 per season, reduce ticket price by 70 cents, or $1,200,000 per season, and net between $3,420,000 to $6,500,000 in seasonal profit (see charts below).





Conclusion

Ultimately, our model predicts a conservative approach to be best for Big Mountain Resort's gross profit margin. Removing between two and five runs would surpass the addition of one run in terms of gross profit margin.