

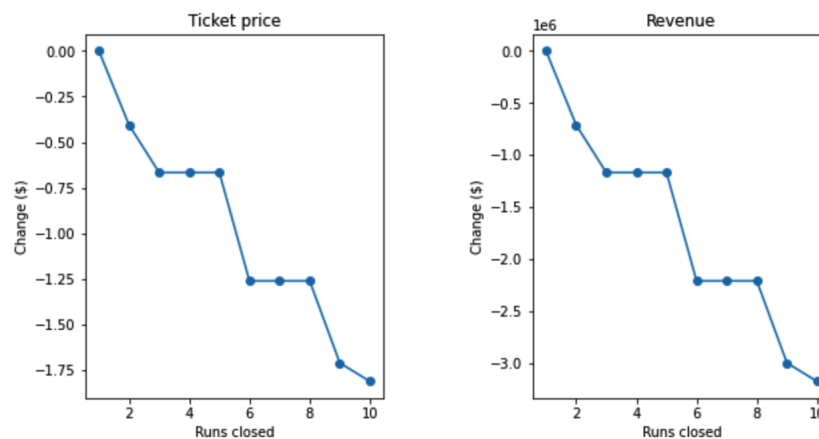
What opportunities exist for Big Mountain Resort to increase profits by cutting costs without undermining ticket price or making investments that support a higher ticket price?

Data wrangling shows us that the target feature to predict is “AdultWeekend” ticket prices, and exploratory data analysis comparing with statewide features shows that it makes sense to treat all states equally and work towards building a pricing model that considers all states together. Applying and comparing two machine learning techniques, we find that random forest regression is more accurate than linear regression and has better consistency between cross-validation results and performance on the test set.

We are able to model the four following scenarios corresponding to business strategies shortlisted by the business:

1. permanently closing down up to 10 of the least used runs
2. increasing the vertical drop by adding a run to a point 150 ft 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 miles to boast 3.5 miles length, requiring an additional snow making coverage of 4 acres

Big Mountain currently charges \$81 for an AdultWeekend ticket. According to my modeling, a ticket price of \$95.87 could be supported in the marketplace by Big Mountain’s facilities. The additional operating cost of a new chair lift is \$1,540,000, but per ticket it is less than \$1 because installing it, opening a new run, and increasing the vertical drop by 150 feet supports a price increase of \$1.99 that would account for an increase in revenue of \$3,474,638. Therefore scenario 2 should definitely be taken into further consideration for future improvements.



Also, it may be possible to cut costs by closing runs without losing too much revenue. From the data, it is not obvious what are the operational costs associated with features other than chair lifts, but if the reduction in operating costs from closing runs more than compensates for reduced revenue from a lower market price for the tickets, it may also be worth it to take into consideration scenario 1.