

GUIDED CAPSTONE PROJECT REPORT

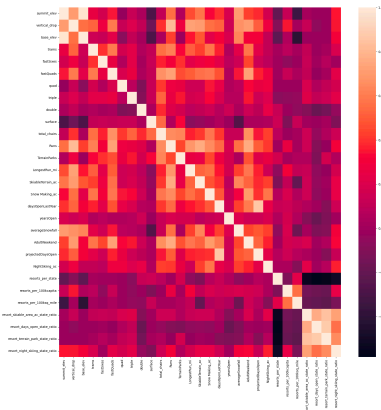
Dear Jimmy Blackburn,

I would like to extend my gratitude for entrusting us with this project once again. We have thoroughly analyzed the problem, defined success criteria, and focused on finding a solution. With the assistance of Alesha Eisen, we gathered extensive data from across the United States. Thanks to Alesha, we received well-organized data, which was pivotal for our analysis.

We initially worked with data from 330 resorts, encompassing 27 different features. Our goal was to identify the most influential factors on ticket prices and to build a predictive model for ticket prices

based on state and other features. Due to missing key information such as ticket prices, we had to exclude 23 resorts from our dataset. After cleaning and organizing our data, we performed feature engineering by adding ratios such as the resort skiable area to total state skiable area and the resort terrain park count to total state terrain park count.

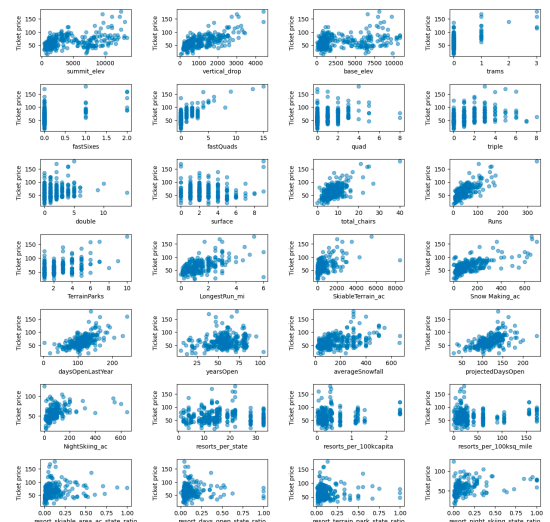
Using a correlation heat-map (on the left), we identified positive and negative correlations between features, including ticket price. This provided valuable insights into the impact of each feature on the target price.



We applied multiple models to analyze and evaluate the data. Initially, we used Linear Regression, followed by the Random Forest algorithm. The Random Forest algorithm yielded clearer and more accurate results. Here are the key findings:

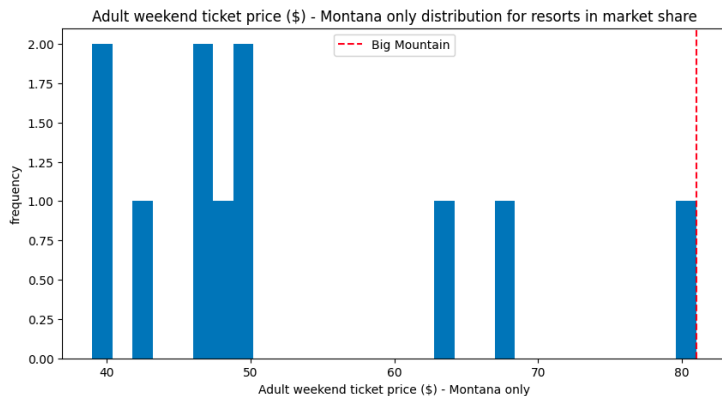
Most Influential Features on Ticket Prices for Ski Resorts:

- Vertical Drop
- Area covered by Snow Making Machines
- Total Chairs
- Fast Quads
- Runs
- Longest Run
- Number of trams
- Total Skiable area



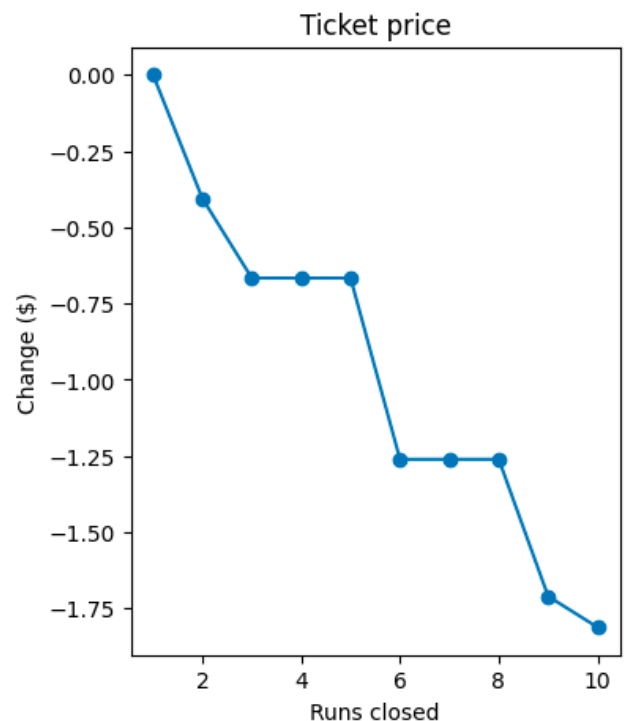
Key Insight for Big Mountain Resort:

Big Mountain Resort currently leads its region with an \$81 ticket price. Our research indicates that, based on the provided services and features, the ticket price should be \$85.58, with a \$10.39 absolute error. In the worst-case scenario, Big Mountain Resort can increase the ticket price by \$4.58. With an expected 350,000 guests and an average 5-day stay per visitor annually, this could boost revenue by \$8,015,000. This increase could easily cover the cost of a new chairlift.



The left graphic shows the price distribution in Montana, highlighting that Big Mountain Resort is significantly ahead of its closest competitor. If a price increase is not feasible, we discovered an alternative solution:

The right graphic illustrates the effect of closing runs on ticket prices. Closing one run would still allow maintaining the current price. To better understand the potential savings from closing runs, we need to determine the cost of each operation. With this information, we can provide more precise recommendations for cost reductions based on specific operational changes.



Conclusion:

We believe these insights will be highly beneficial for Big Mountain Resort's pricing strategy and operational efficiency. After gathering operational costs for each operation, we can delve deeper and identify the best strategy for maximizing benefits for Big Mountain Resort. We look forward to your feedback and are ready to assist with any further analysis or implementation.

Best regards,

Emre Yuce