Data-Driven Recommendations for Big Mountain Ski Retreat

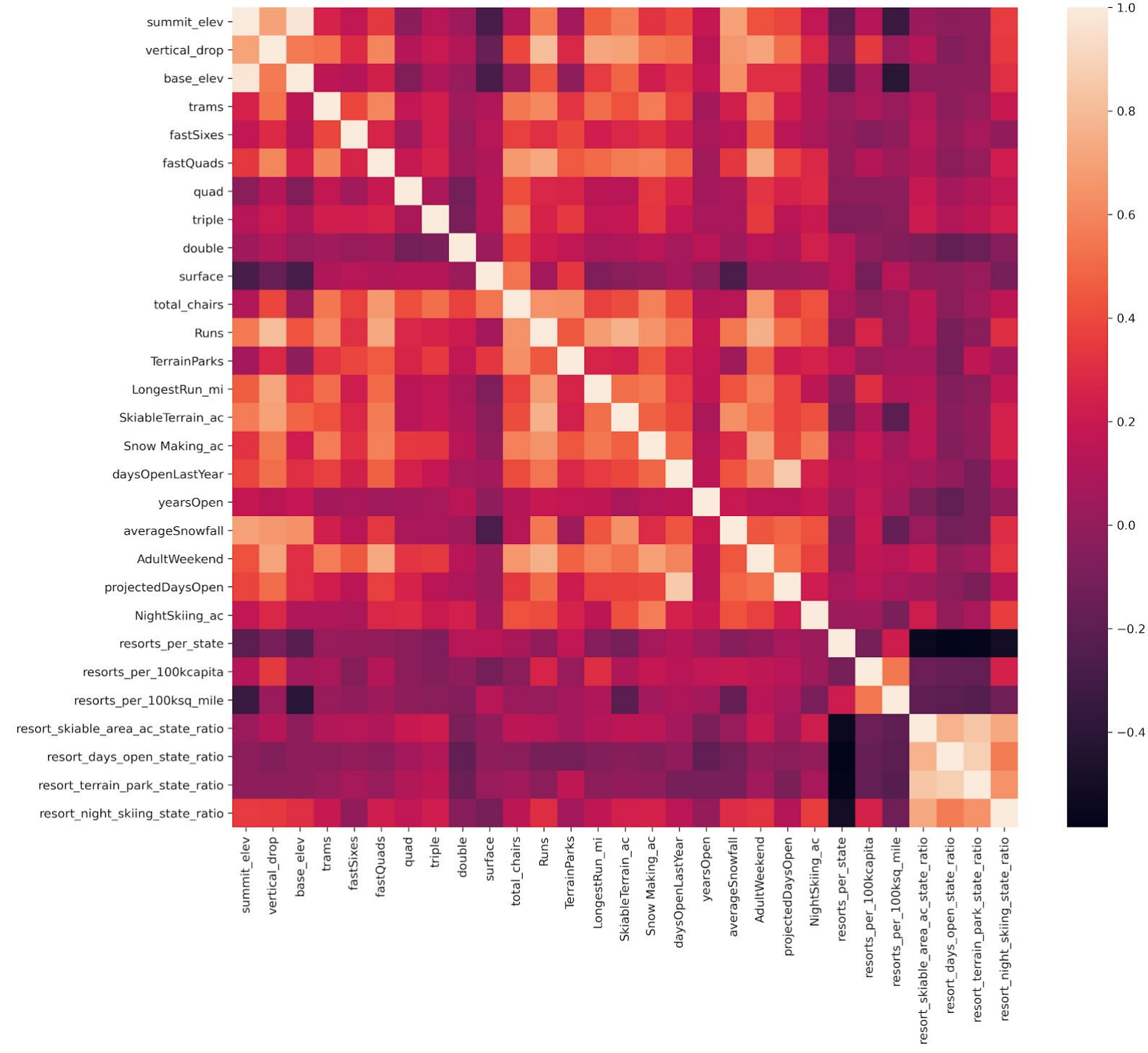
Big Mountain Ski Retreat in Montana draws an estimated 350,000 visitors each ski season. Among all resorts with a similar market share, Big Mountain is one of the best options for vertical drop, snow making area, total number of chairs, number of fast quads, number of runs, longest run, and skiable terrain area. These high quality features allow the resort to charge premium prices for adult tickets. The cost of weekday and weekend tickets at Big Mountain is $81.00, which is $14.00 more than the next most expensive resort in Montana (Red Lodge Mountain at $67.00 per weekend ticket).

Big Mountain's management recently invested in a chair lift, costing an additional $1.54 million in operational costs. This investment is expected to increase revenues, but is the benefit of shorter wait times due to having an additional chair lift enough for customers to be willing to pay more? If so, how much more are customers willing to pay? Are there other features that customers value more that should be invested in instead? What features are not so important that could be removed or reduced?

We set out to discover what opportunities exist for Big Mountain Ski Resort to generate an additional $2 million in revenue by the end of this ski season through capitalizing on its facilities, cutting operational costs, and/or increasing ticket prices.

After exploring the data, we found that the state does not have a meaningful impact on ticket price. Therefore, the fact that Big Mountain is $14.00 more expensive than the next most expensive resort in Montana should not be a hindrance to increasing ticket prices further.

We did find correlations between ticket prices and the number of fast quads, the length of the longest run, the total number of runs, acres covered by snow-making machines, total chairs, night skiing availability, and vertical drop, as shown in the heatmap below:


summit_elev
vertical_drop
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trams
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quad
triple
double
surface
total_chairs
Runs
TerrainParks
LongestRun_mi
SkiableTerrain_ac
Snow Making_ac
daysOpenLastYear
yearsOpen
averageSnowfall
AdultWeekend
projectedDaysOpen
NightSkiing_ac
resorts_per_state
resorts_per_100kcapita
resorts_per_100ksq_mile
resort_skiable_area_ac_state_ratio
resort_days_open_state_ratio
resort_terrain_park_state_ratio
resort_night_skiing_state_ratio
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.4

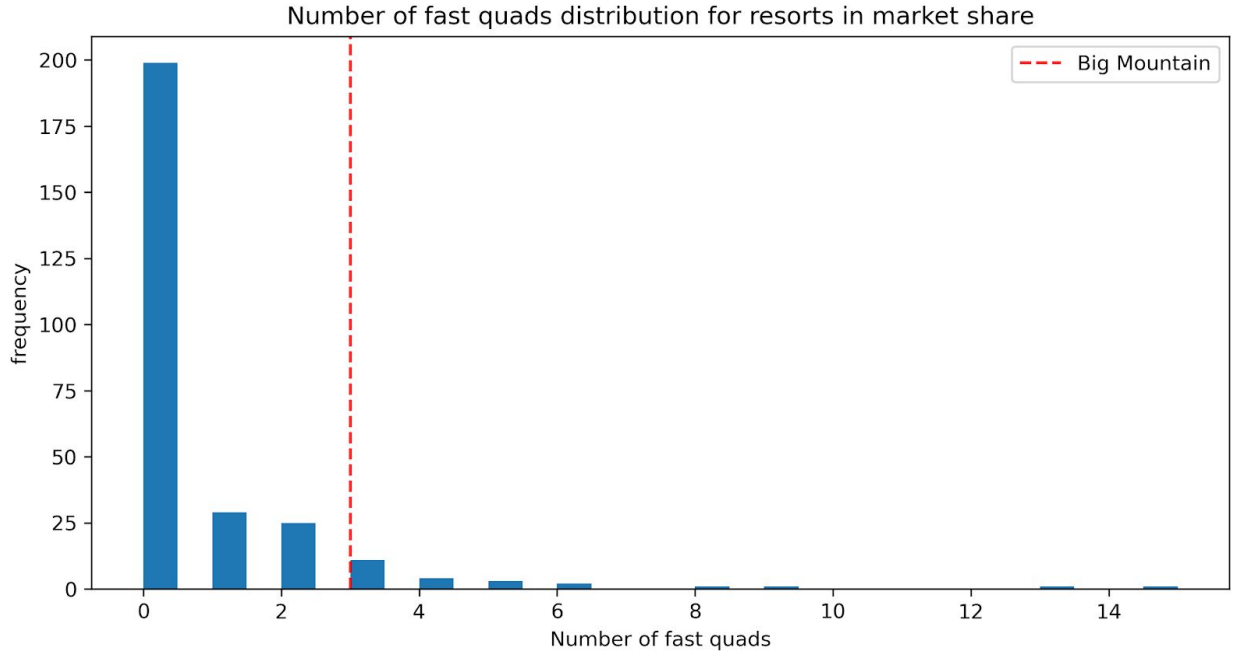
With these initial correlations established, we set out to build a model based on all the data available from resorts with the same market share to examine what effect adjusting some of these stand-out features would have on ticket price.

Our model uncovered that Big Mountain Resort's tickets are actually underpriced. Based on the features other resorts provide and their ticket prices, our model predicted Big Mountain could be charging as much as $95 per ticket.

We also found that of the seven features shown to be highly correlated with ticket price in the heat map, these five were the most impactful:

1. The number of fast quads
2. The number of runs
3. Acreage covered by snow-making machines
4. Height of the vertical drop
5. Total number of chairs

Big Mountain is already an industry leader with regards to the number of fast quads it offers. Though there are some resorts with more, these are rare as shown in the chart below. Investing in more fast quads is unlikely to be able to justify an increase in ticket prices.

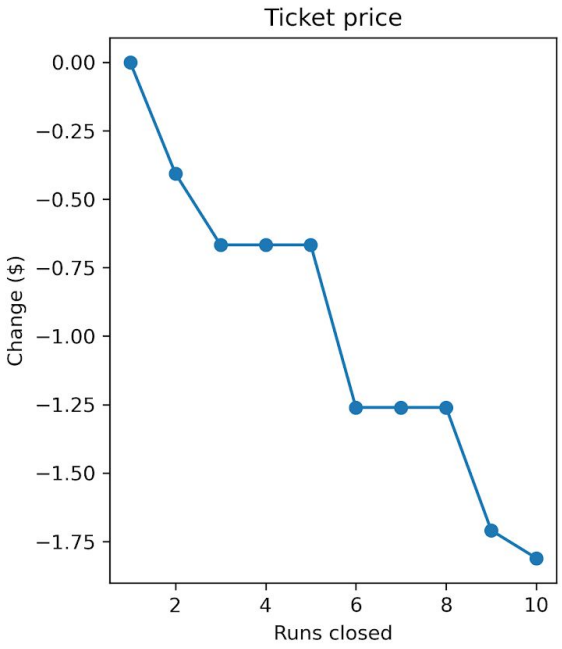


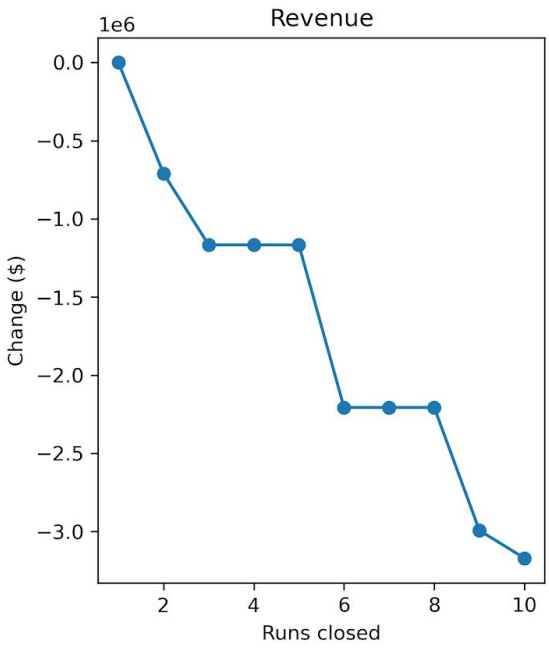
We modeled four scenarios in which the remaining four features are adjusted to determine what further improvements could be made to Big Mountain's facilities in order to reduce operational costs or increase revenue.

Scenario 1

We could reduce operational costs by closing up to 10 of the least used runs.

If we remove only 1 run, ticket prices can remain the same. If we remove up to 5 runs, ticket prices should be reduced by $0.60. Removing between 6 and 8 runs would require a decrease in ticket price of $1.26, and removing all 10 least-used runs would require ticket prices to be reduced by $1.81.





Further analysis should be done to determine if the decrease in operational costs from removing runs makes this decrease in ticket price and therefore revenue worthwhile.

Scenario 2

In scenario 2, we add a run, increase the vertical drop by 150 feet, and install an additional chair lift. These additional features support an increase of $1.99 in ticket price. Over the season, this will amount to an expected increase in revenue of $3,474,638.00. Further analysis should be done on the operational costs of adding these features to determine if the additional revenue covers the costs.

Scenario 3

Scenario 3 is the same as the previous scenario, with an additional 2 acres of snow making. Our model shows that this would have no effect on ticket prices. Ticket prices should still only see an increase of $1.99.

Scenario 4

In scenario 4, we focus on increasing the length of our longest run. We add 0.2 miles to our run of 3.3. miles, to boast a longest run of 3.5 miles. An additional 4 acres of snow making ability is essential to cover this additional 0.2 miles These additions were found to have no effect on ticket prices.

Recommendations

The investment in the additional chair lift cost $0.88 per projected ticket sold. Ticket prices should be increased by at least $0.88 to cover this additional operating cost. Our model shows that this can be done and retain the same amount of ticket sales without adding any additional features.

The changes modeled in scenarios 1 and 2 should also be under consideration. For scenario 1, at least one run should certainly be removed, since one run can be removed without affecting ticket price at all. More runs can be removed if the reduced operational cost of managing less runs is more than the projected loss in revenue from having less runs.

For scenario 2, we know that adding an additional chair lift costs $1.54 million, so the profit from the projected increase of $3.47 million in revenue will be less than $2 million. The operational cost of increasing the vertical drop and adding a run must be factored in as well to determine if these changes will be profitable.

Big Mountain Resort is already a leader in the ski resort market, yet there are still many ways in which the resort can improve its investment strategy, reduce operational costs, and generate more revenue with higher ticket prices. Implementing the recommendations provided in this summary will help Big Mountain fulfill its highest potential.