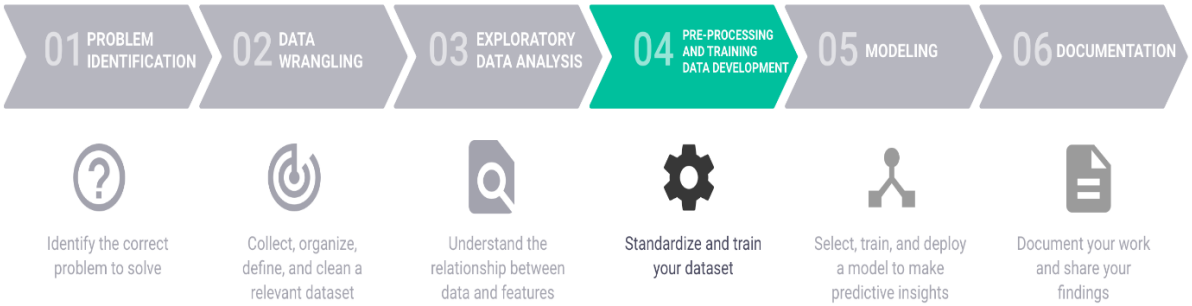
Summarize recommendations for Big Mountain Resort:

Big Mountain Resort, a ski resort located in Montana. Every year about 350,000 people ski at Big Mountain. The company that operates Big Mountain Resort invested in additional chair lift to help increase the distribution of visitors across the mountain. This additional chair increases their operating costs by $1,540,000 this season. The company want to maximize it profits but need more data to decide in how to do it, by increasing the tickets price (above average already) or by reducing cost by closing some facilities.

Methodology :

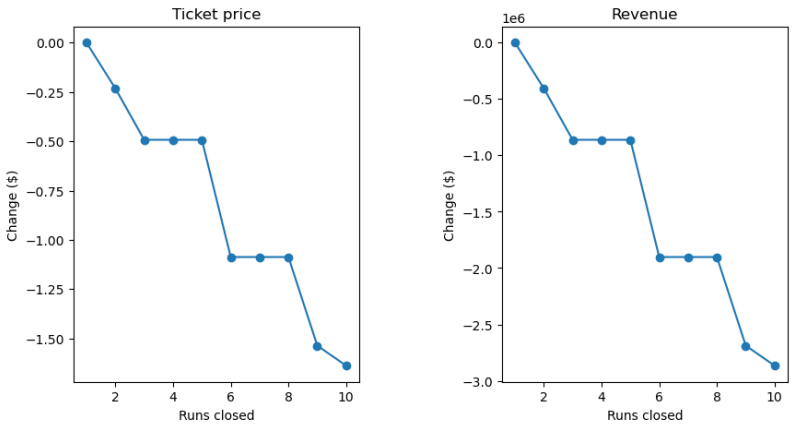


Recommendation :

Using our mode we found out that the ticket price for Big Mountain Resort modelled price is $96.84, when the actual price is $81.00.

We also developed 4 models:

1) Close up to 10 of the least used runs. The number of runs is the only parameter varying.



The model says closing one run makes no difference. Closing 2 and 3 successively reduces support for ticket price and so revenue. If Big Mountain closes down 3 runs, it seems they may as well close down 4 or 5 as there's no further loss in ticket price. Increasing the closures down to 6 or more leads to a large drop.

2) In this scenario, Big Mountain is adding a run, increasing the vertical drop by 150 feet, and installing an additional chair lift.

    - This scenario increases support for ticket price by $1.99 Over the season, this could be expected to amount to $3474638

3) In this scenario, you are repeating the previous one but adding 2 acres of snow making.

- This scenario increases support for ticket price by $1.99 Over the season, this could be expected to amount to $3474638
- No difference whatsoever.

4) This scenario calls for increasing the longest run by .2 miles and guaranteeing its snow coverage by adding 4 acres of snow making capability.

- No difference whatsoever. Although the longest run feature was used in the linear model, the random forest model (the one we chose because of its better performance) only has the longest run way down in the feature importance list.

We found that scenario 2 is the most likely to support an increase of ticket price and this scenario needs to be further analyzed by the marketing team.