Whitefish Mountain Ski Resort

aka Big Mountain Ski Resort

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Report by: Jeremy Silva

***Note: Big Mountain recently changed their name to Whitefish Mountain Resort. We will refer to them by their new name, Whitefish Mountain.

The Problem

Whitefish Mountain Resort has recently installed a new ski lift which has increased their operating cost by $1.5 MM per year. They need to find a way to increase revenue such that they maintain their 9.2% profit margin.
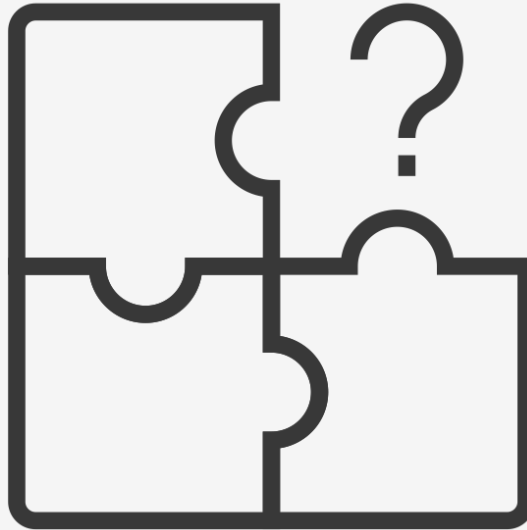
The Plan

Identify ways in which Whitefish Mountain can increase their revenue this year without further increasing their operating cost.
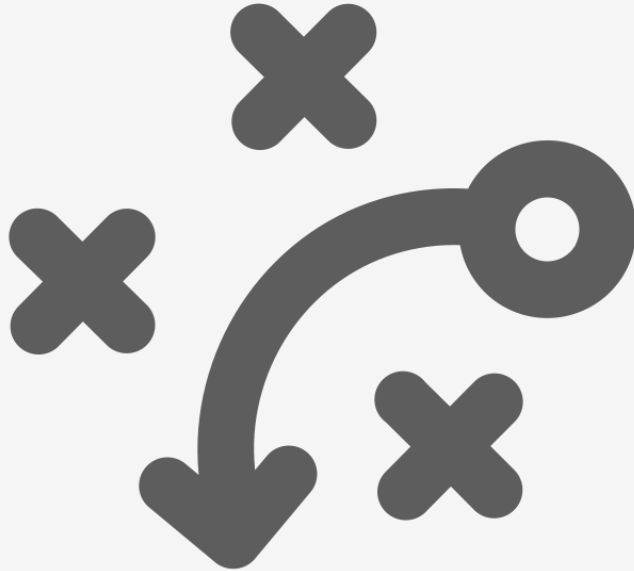
The Plan in Action

We took a dataset that contained info on 26 different variables from 330 different ski resorts across the country and through exploratory data analysis, K-Means Clustering, and linear modeling identified potential points of leverage for Big Mountain Resort.

Here is a snapshot of the data as it was provided...

|	Name	Region	state	summit_elev	vertical_drop	base_elev	trams	fastEight	fastSixes	fastQuads	...	LongestRu
0	Alyeska Resort	Alaska	Alaska	3939	2500	250	1	0.0	0	2	...	1.0
1	Eaglecrest Ski Area	Alaska	Alaska	2600	1540	1200	0	0.0	0	0	...	2.0
2	Hilltop Ski Area	Alaska	Alaska	2090	294	1796	0	0.0	0	0	...	1.0
3	Arizona Snowbowl	Arizona	Arizona	11500	2300	9200	0	0.0	1	0	...	2.0
4	Sunrise Park Resort	Arizona	Arizona	11100	1800	9200	0	NaN	0	1	...	1.2

Key Finding and Recommendation

Based on all their features Whitefish Mountain has underpriced their Adult Weekend
Lift Ticket by roughly $7 compared to other resorts with similar features.

	Pred AdultWeekend	Real AdultWeekend	Difference	Name
151	88.123474	81.0	7.123474	Whitefish Mountain Resort

Modeling

We clustered the data into 3 clusters using K-Means...
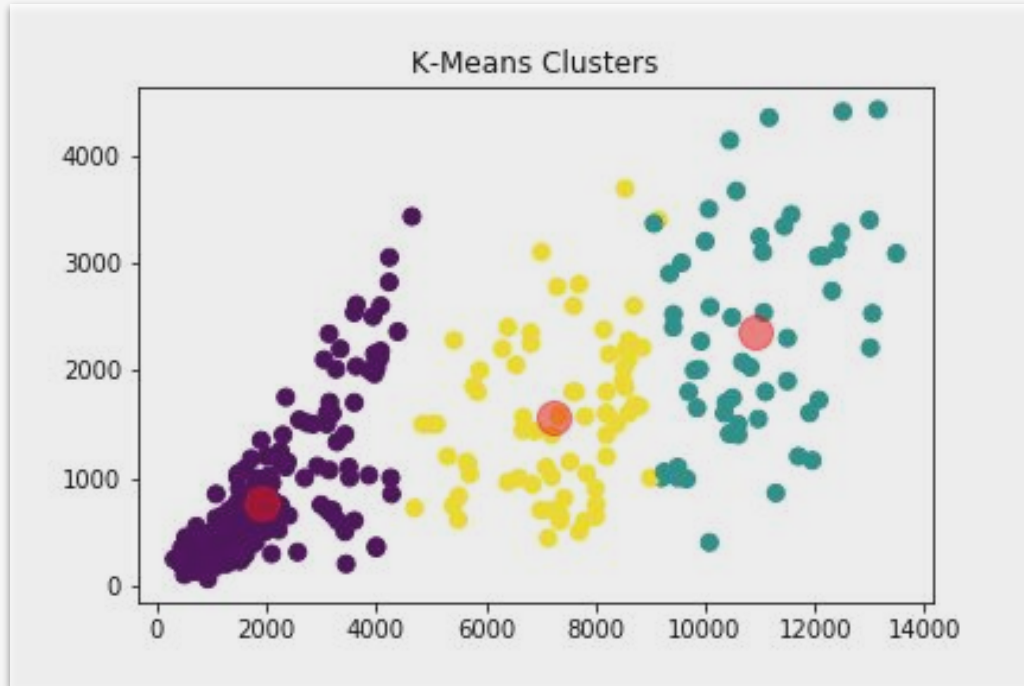
Modeling

We chose to focus on Adult Weekend Ticket Price as our response variable partly because it is one of the easiest features to change.

We ran 3 different models to compare their performance in predicting Adult Weekend Ticket Price based on all the features of a resort.

|	Model	Explained Variance	Mean Absolute Error	Features Dropped
0	Model 1	0.934069	5.087039	none
1	Model 2	0.925488	5.466749	state
2	Model 3	0.931092	5.266469	state, summit_elev, base_elev

Model Selection
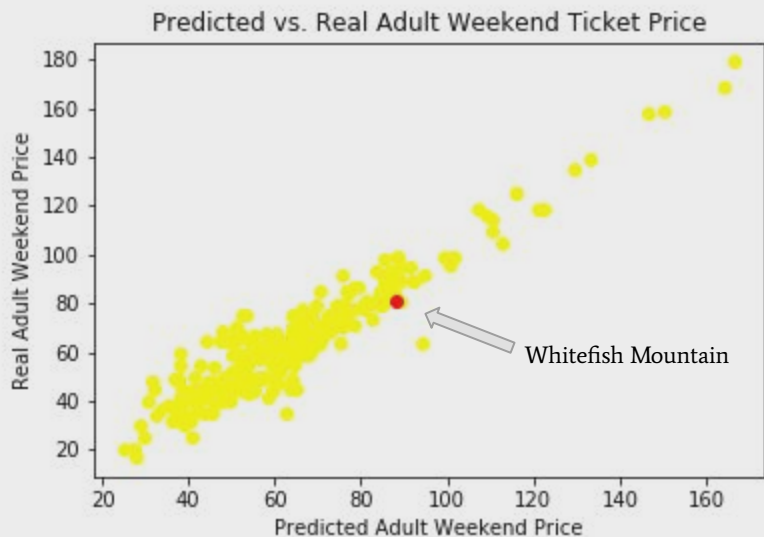
We went with Model 3 for 2 primary reasons:
1) It had a strong EVS of 0.93
2) It's top contributing features made more sense than other models.
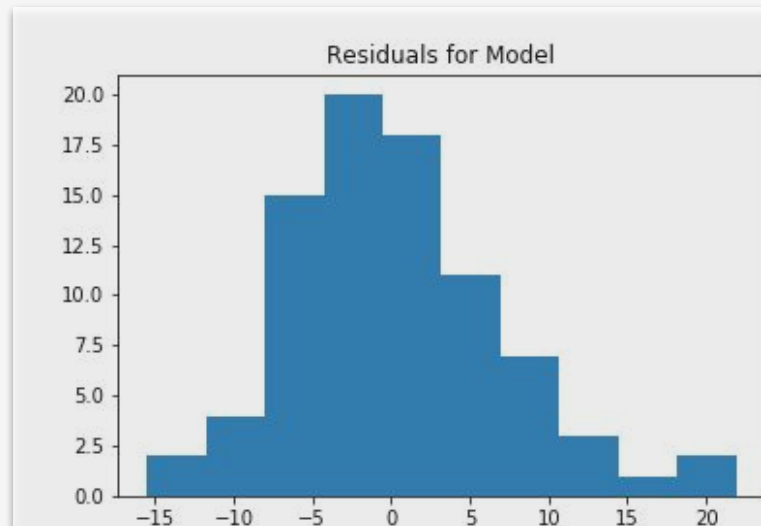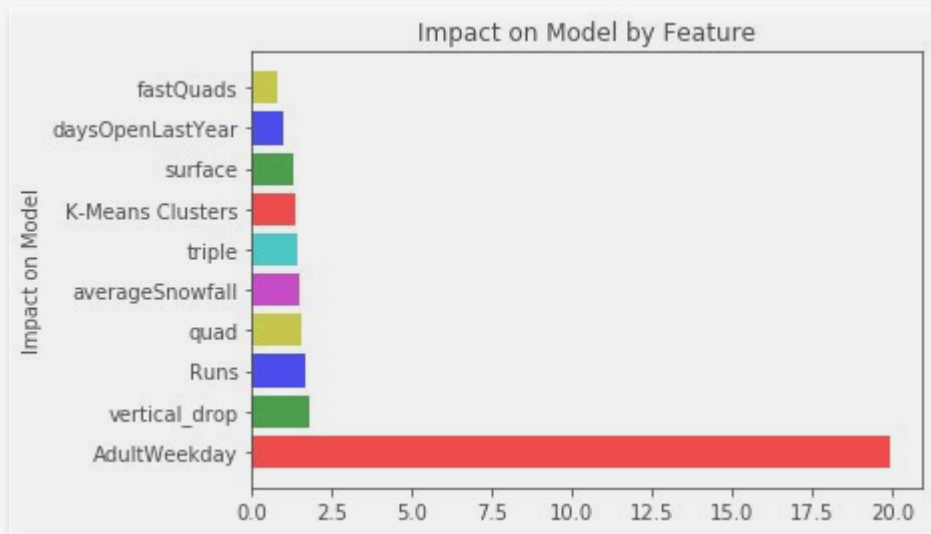
Model Analysis

The average error for our model, the difference between Predicted and Real Adult Weekend Ticket Price, is only $-0.09!

Predicted vs. Real Adult Weekend Ticket Price — Whitefish Mountain

Model Accuracy
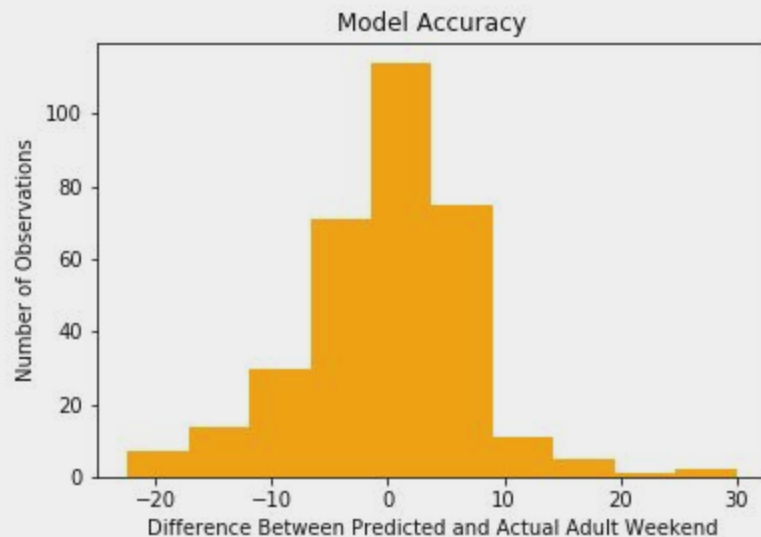
Summary and Conclusion

Whitefish Mountain Resort has underpriced their Adult Weekend Ticket Price by $7 and thus can increase their Adult Weekend Price from $81 to $88 without pricing themselves out of the market.

This will allow them to capture more revenue over the course of 2020 without increasing their operating cost at all!