

## Guided Capstone – Project Report

Big Mountain Resort is located in northwestern Montana. The resort originally opened in 1947 with an annual snowfall of 333 inches and 3,000 acres of skier and rider accessible terrain. Big Mountain Resort offers access to 105 named trails and vast bowl and tree skiing. All these are serviced by 11 lifts, 2 T-bars and 1 magic carpet for novice skiers. The longest run is named Hellfire and is 3.3 miles in length. The base elevation is 4,464 feet, and the summit is 6,817 feet with a vertical drop of 2,353 feet.

Big Mountain Resort has recently installed an 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. We are asked with a question, how much price we need to rise to compensate the operational cost and what are the recommendations that help to achieve the profit

To answer this question, we used a dataset consisting details of 330 resorts which includes the location, summit elevation, vertical drop, base elevation, average snowfall, weekend price.

We built a machine learning model that predicts the adult weekend price. Here prediction is done for Sunrise Park Resort. The actual adult weekend price of the Sunrise Park Resort is 78 dollars. And the model predicted a value of 77.99 dollars. The explained variance of this model is 0.71. And the mean absolute error value is 6.50.

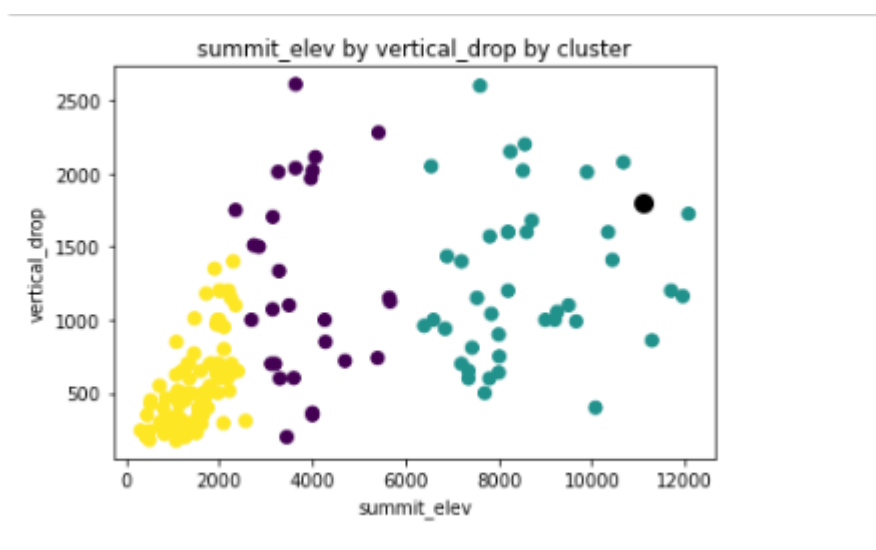


Figure 1

Figure 1: Here we can see that the resorts are clustered into three groups first one having small summit elevation and vertical drop, next one having the middle range and the third cluster having the large summit elevation and vertical drop. And the Sunrise Park resorts falls into the third category.

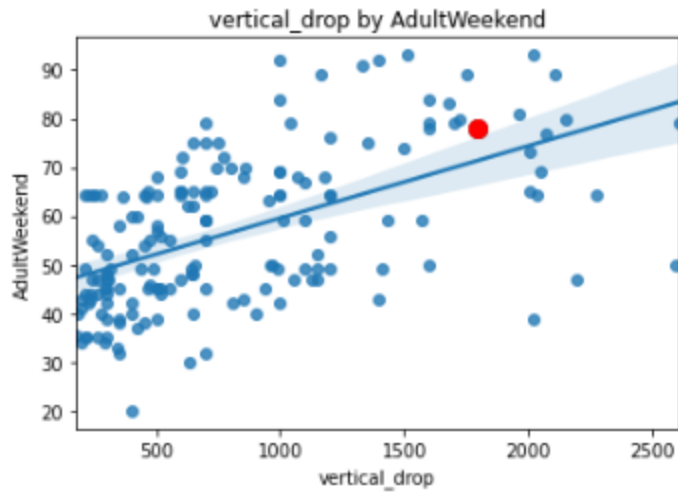
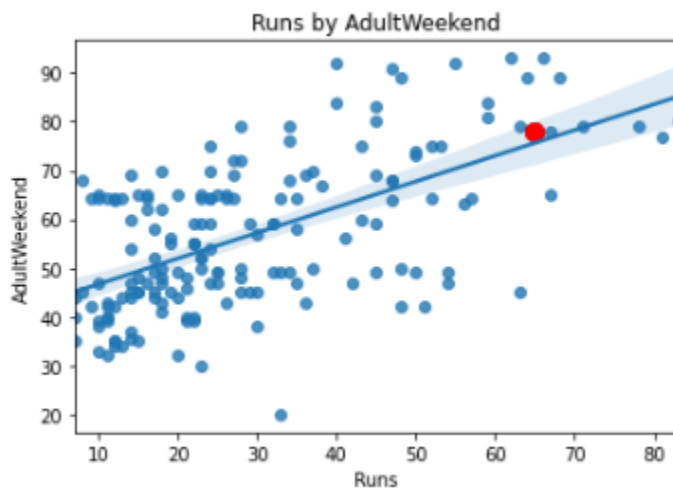
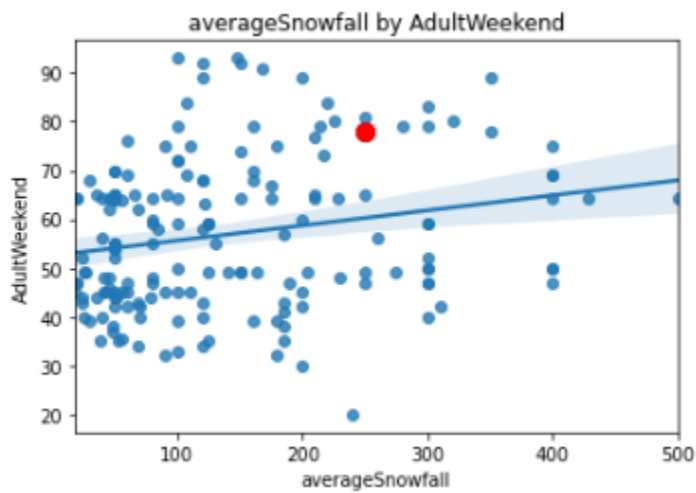


Figure 2

Figure 2: As we can see the adult weekend price increases with the increase in vertical drop value.



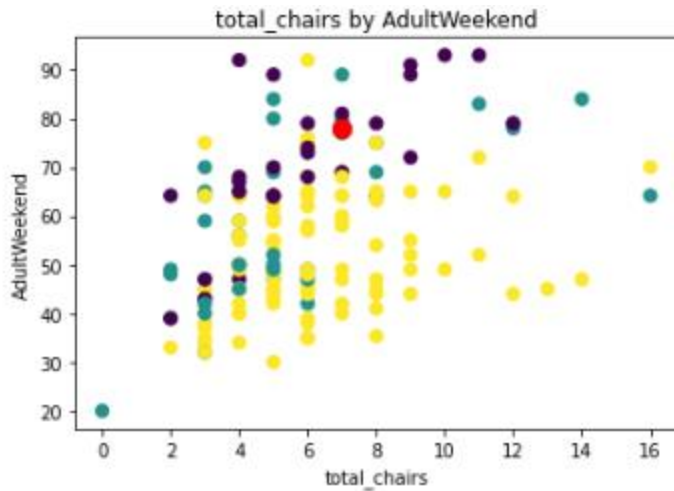


Figure 3

Figure 3: From the above scatter plot we can observe the increased adult weekend price with increase in the count of total chairs but when the total no of chairs is equal to 16 the adult weekend price is not higher it lies between 60 and 70 which is not the highest weekend price. Since this is an additional chair lift this will not attract more visitors. But an additional chair lift reduces the crowd and distribution of visitors over the mountain. This will make the visitors relaxed. And the visitors would prefer the Resort. But this increase in adult weekend price will not fully compensate the operational cost as we see there is less response between the features and the response variable. Therefore, to compensate the investment in this equipment, resort should consider opportunities in decreasing the maintenance cost of the chair lifts.