

Guided Capstone Project Report

Introduction

Big Mountain Resort, opened in 1947 offers spectacular views of Glacier National Park and Flathead National Forest, with an annual snowfall of 333 inches and 3,000 acres of skier and rider accessible terrain. It 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.

It has recently installed an additional chair lift to help increase the distribution of visitors across the mountain. This additional chair increases the operating costs by \$1,540,000 this season and the management wants to maintain the overall business profit margin at 9.2%. Every year about 350,000 people ski or snowboard at this resort.

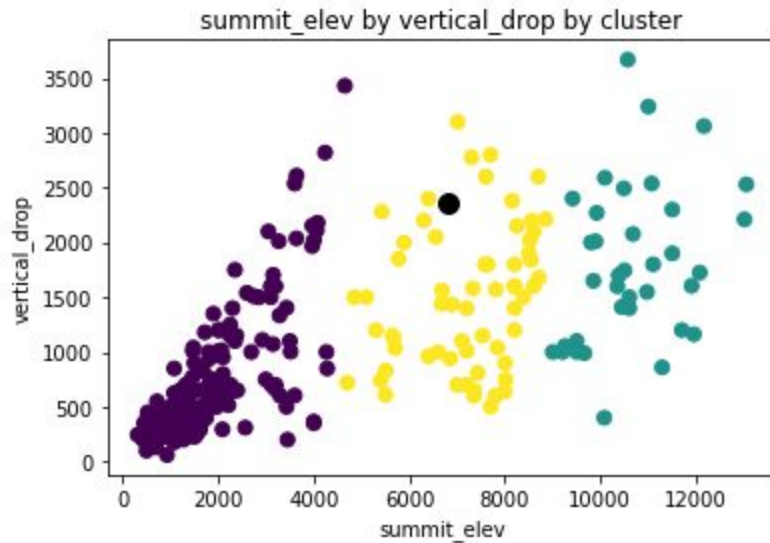
To maintain the required profits, a recommendation on recouping the increased operating costs from the new chair to be taken based on the data available from 330 resorts operating in the US with the same market share as the Big Mountain resort and to forecast the annual revenues generated based on the recommendations.

Information from dataset

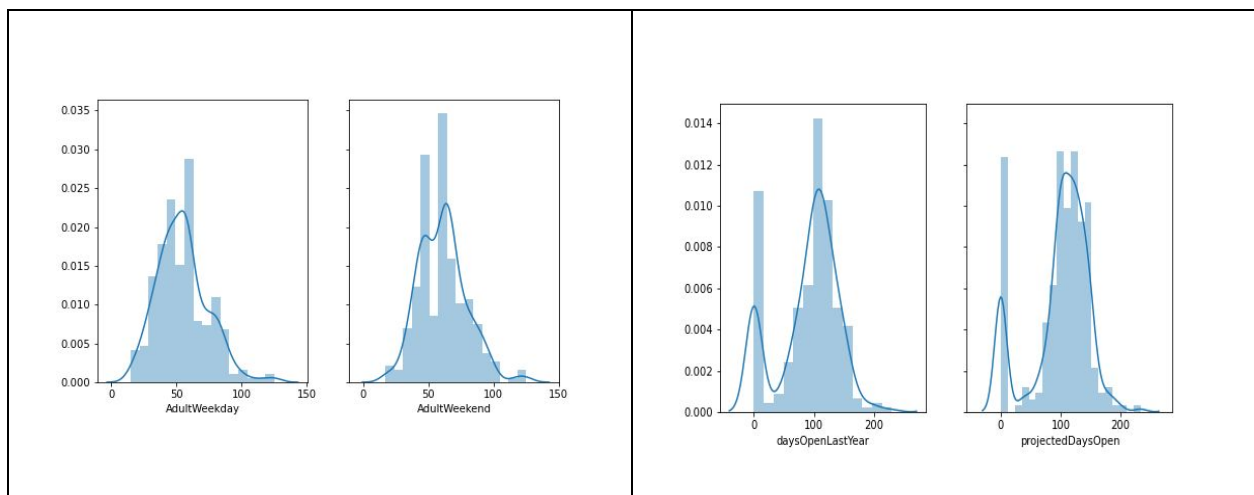
The business problem involves the study of data collected from 330 resorts across the US and to formulate a recommendation based on the information.

The dataset contains useful features, which would aid in generating the ideas/avenues for improving revenues. The features are the various types of chair lifts used in the resorts, their summit elevation, vertical change in elevation, base elevation, terrain parks, average days opened, chair lift ticket pricing and other facilities offered by the resorts.

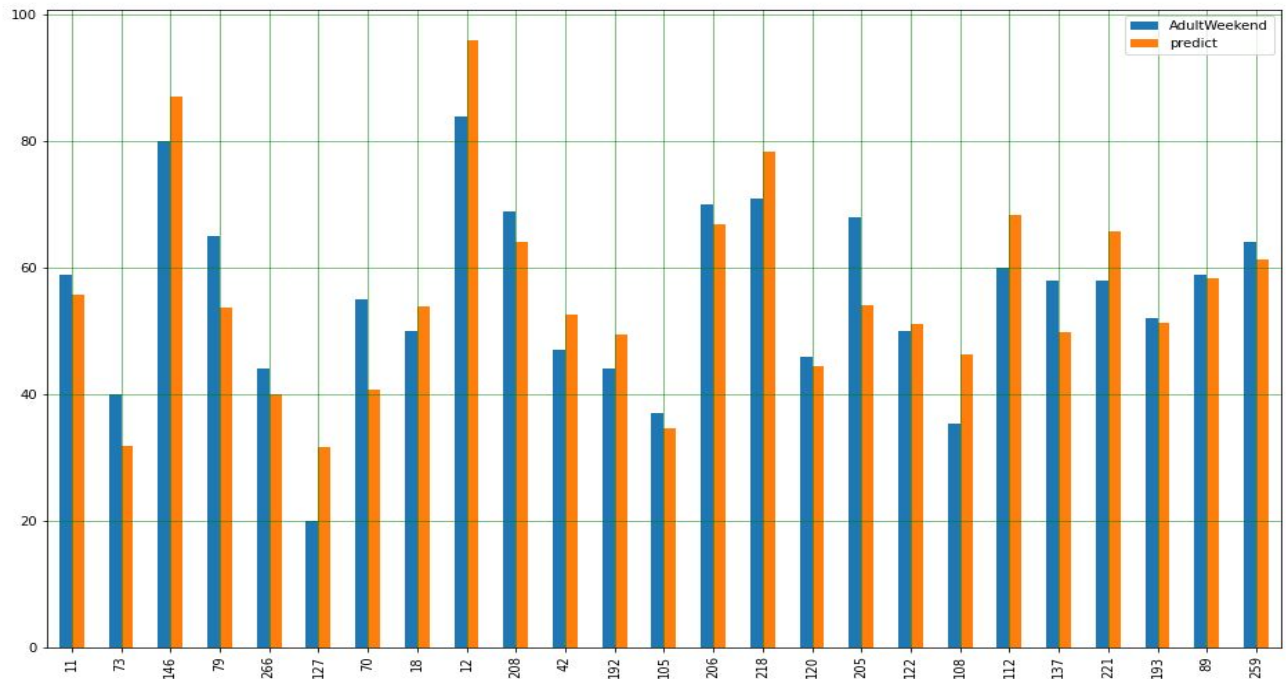
The dataset can be classified into three clusters based on the exploratory data analysis of the data which is visualized below:



The data was cleaned and explored for useful features that would help in deciding the response variable or dependent variable. we will focus on increasing revenue by increasing the lift ticket prices and the number of days the resort is open per year. In this case, we need to investigate the expected lift ticket price for Big Mountain based on all the other given resort characteristics. In addition, we want to predict the number of days the mountain is open each season. The AdultWeekend was selected as target variable for analysing further. The plots are below:



After preprocessing and training the data, the dataset is modeled on the multiple Linear Regression analysis for prediction of the chair lift ticket. The results of the actual chair lift tickets and predicted by the model are charted below:



Recommendations:

The performance metrics of the model are as follows:-

R2 Score	0.8304
Mean Absolute Error	6.425
Explained Variance Score	0.8306

The model achieved a performance of 83% and the predicted chairlift ticket to be priced at 130 USD for maintaining the profit margin at current rate.