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Big Mountain Resort is a ski resort located in Montana. Currently, Big Mountain has installed a chair lift that increased operational costs by 1.54 million dollars this season. The business leadership of Big Mountain wants to know what solutions they can utilize to reduce costs and increase revenue by focusing on changes that will cut costs without undermining ticket price or support a higher premium ticket price.

To determine what solutions the business leadership of Big Mountain resort can utilize, a data set containing information on different ski resorts spread across the United States was assessed. Through the use of ‘Data Wrangling’ on the data set given by Big Mountain Resort, it was determined that the target feature in focus would be ‘Weekend Price’. After determining what target feature the business should focus on, we next needed to figure out if the ticket price was dependent on which state a ski resort was in. No clear relationship was determined between state and ticket price during the ‘Exploratory’ data analysis phase.

Moving forward to finding solutions for our business leadership, different models were created. ‘Average Price’, ‘Linear’, and ‘Random Forest Regressor’ models were trained. The ‘Average Price’ model was used to find the mean absolute error (MAE) which in this case was $19. The average ticket price should be around $19. Comparing the ‘Linear’ and ‘Random Forest Regressor’ models results from cross-validation showed that the ‘Random Forest’ model held truer and was used to guide important business decisions in our next steps. Using the ‘Random Forest Regressor’ model, the best features that influence ticket price were also noted.

A graph with blue and white text

Description automatically generated

Using the model Big Mountain resort should have a price of $95.87. The actual price per ticket currently is $81. Two histograms were created to compare Big Mountain across all the other resorts. One to show where Big Mountain’s ticket price was compared the market share in the United States, and the other to show where Big Mountain stood in Montana.

A graph of a number of tickets

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A graph with blue lines

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Four different scenarios were concocted as possible solutions to propose to the business leadership. Scenario one consisted of closing up to ten least used runs. The figures below show that closing one run did not make a difference.

A graph of a price change

Description automatically generated with medium confidence

Scenario two consisted of adding a run to Big Mountain, increasing the vertical drop by 150 feet, and installing an additional chair lift. This scenario supported an increase of the ticket price by $8.61. Over a season this would amount to $15,065,471. Scenario three consisted of repeating scenario two but adding two acres of snow making. This only supported the increase of $9.90 to the ticket price. Scenario four called for increasing the longest run by .2 miles and guaranteeing its snow coverage by adding 4 acres of snow making capability. This scenario influenced no increase of the ticket price.

The recommendation to the business leadership of Big Mountain would be to add a new chair lift as it positively impacts the ticket price. Additionally, the business leadership should add another run, and increasing the vertical drop by 150 feet.