Big Mountain Project Report

Target variable:

There is no difference between weekend tickets and weekday tickets for the resort in state of Montana, since there are more missing values for the weekday tickets in the data set, we choose weekend tickets to be our target variable.

Exploratory Data Analysis

After analyzing the correlation between features and our target variable, we find there are several features that have impact on the weekend tickets price for adult. The most important features that have impact on the tickets price are the vertical drop of the resort, area covered by snow making machine in acer, total number of chairs, number of fastQuads lifts, total number of runs, the length of the longest run, number of trams, the skiable terrain per acer. All these features have positive impact on the ticket price except number of trams and the skiable terrain per acer. The vertical drop of the resort has the biggest positive impact on the price. The area covered by snow making equipment is a strong positive as well. The skiable terrain area is negatively associated with ticket price. One of the possible reasons could be larger resorts can host more visitors at any one time and so can charge less per ticket. We may need more data such as the total visitor for a season to figure this out.

Models and predictions:

Currently Big Mountain charge $81 per adult for the weekend ticket. For Big Mountain's current facilities, it should charge $95.87 for each ticket based on our model prediction. Even with the expected mean absolute error of $10.39, this suggests there is room for an increase. But this prediction in the assumption that other resorts accurately set their prices according to what the market supports.

Based on our current best model, If Big Mountain install an additional chair lift which also adding a run, increasing the vertical drop by 150 feet, in this scenario, the predicted

ticket price can be increase by $1.99 and the seasonal revenue could be expected to increase $3,474,638.

To reduce cost, Big Mountain can choose to shut down some runs. Based on our model, closing one run makes no difference on the ticket price. Closing 2 and 3 successively reduces support for ticket price and so revenue. If Big Mountain closes 3 runs, it seems they may as well close 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.

Recommendations:

Based on our model, I would recommend Big Mountain to close a run and raise its ticket price to $86.99. Because Big Mountain is underpriced as our model predicted. Close of one single run will not affect the ticket price but can cut cost.

There is also another plan. Big Mountain can install an additional chair lift which also adding a run, increasing the vertical drop by 150 feet, in this case it can raise its ticket price to $88.99.

Need to do in the future:

As we all know, increase of price may cause the drop of the number of visitors, which could finally impact the total profit. Close of a run may not impact on the ticket price but could also have impact on the number of visitors and may lead to a decrease of revenue.

To give a more reliable recommendation, there are a lot of work to be done. We don’t know the current operating cost for each run and the popularity of each run to make decision about which runs to close and how many runs to close. We don’t know how much it will cost to install an additional chair lift, so we don’t know if the revenue increase can offset the extra cost. Also, we might need more data about the total visitor for a season to make our model more robust.