**Big Mountain Resort**

**Summary of Findings and Recommendations**

In this capstone project, our main objective was to come up with a price model to estimate skiers’ willingness to pay for various facilities of Big Mountain Resort and how the resort can change their pricing based on our findings. The resort also had expended around $1.5M to install a new lift chair, so our other objective was to find an optimum price where this capex could be offset.

The results provide an estimation of which facilities/features are of value (the impact on price) and how much more skiers are willing to pay for a lift ticket. Some of these factors were: vertical drop, snow making area, total number of chairs**,** number of fast quads, total number of runs, longest-run length in miles, number of trams and skiable terrain area in acres. These features were deemed particularly important since they can be controlled by the resort’s management with some limitations and depending on the costs.

The analysis results were based on 276 ski resorts (not including BM resort) across 34 states after data clean-up. We have compared the application of two algorithms to predict the price and concluded that random forest provided us better results. The random forest model had a lower cross-validation mean absolute error (by almost $1) and root mean squared error (by almost $3) compared to the linear regression method. It also exhibited less variability. Finally, performance on the train and test set produced consistent cross-validation results. Once we applied the RF algorithm, we predicted Big Mountain Resort’s modelled price as $95.87 compared to the actual price of $81.00. Even with the expected mean absolute error of $10.39, this suggested there was room for an increase. Overall, the ski resort features account for about 70% of the variation in the price of ticket.

Reviewing potential scenarios for either cutting costs or increasing revenue (from ticket prices), we have looked at a few options including adding a new chair lift. We assumed 350K expected number of visitors for the season and on average people will have paid for 5 days of pass. Firstly, we looked at adding or closing runs and closing one run made no difference. Closing 2 and 3 successively reduced support for prices, but after that closing more runs, provided no further loss in ticket price until after closing six runs which caused a large drop. In the second scenario, adding a run, increasing the vertical drop by 150 feet, and installing an additional chair lift increased the support for ticket price by $2. In the third scenario,, we concluded that a small increase in the snow making area made no difference. In the fourth scenario, we increased the longest run by 0.2 miles and added 4 acres of snow making capability which resulted in no difference. Finally, we tested adding only one chair supported an increase of $0.30 in ticket price which would contribute to about $507K in revenue. However, the cost of adding a chair was $1.5M, so the increase should be three times that per ticket price which is recommended at about $1 increase.

Even though the Big Mountain resort was placed fairly high among the other resorts based on the important features contributing to its price, the current price seems a lot lower than what it is supposed to be as our model suggests. We have informed the business executives of the important features and different scenarios of changes in the facility features and their effects. Considering the cost of implementing these scenarios, we may need further brainstorming to come up with the best strategy moving forward. However, increasing the ticket price is definitely recommended for the immediate future at least within the range of $1-2 to cover the cost of the new chair lift.

With regards to future research, we could be looking at improving our data in a number of ways. Since about 30% of the variation of ticket prices are unexplained, it will be necessary to include some additional variables into the price model. For instance, operating costs of facilities, marketing and advertising costs to the price model could be useful. However, collection of this data may be hard to accomplish. Also, there are many other intangible characteristics of ski resorts that could prove to be useful if they were included in the model such as expert/survey ratings for resort charm, facility services, resort reputation and scenery. Again, these are rather difﬁcult to quantify and acquire.