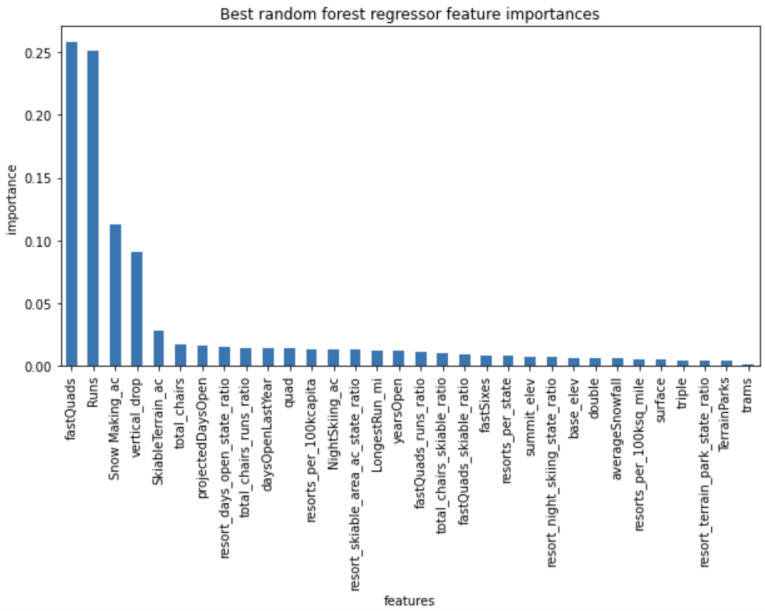
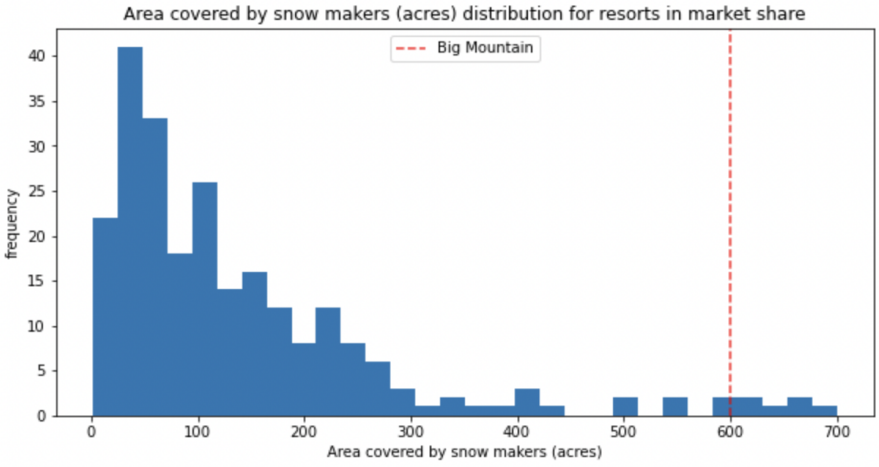
Big Mountain Resort - Report on Increasing Ticket Price Based on Available Features at the Resort

The model that was found to best predict the data was a random forest model using 69 estimators, no standard scaling, and a medium imputer strategy. The features that were found to be most important are shown in figure 1. Fast quads, number of runs, snow making area, and vertical drop scored the highest. Big Mountain ranks very high in these features. The figure below shows the distribution of snow making area (in acres) displayed by the dataset; the red line indicates where Big Mountain Resort falls on the distribution. Big Mountain's standing on the other distributions is very similar, on the high end. This supports the idea that Big Mountain is not effectively capitalizing on their available facilities, and could be charging more for each ticket. The random forest model was used to estimate an acceptable increase in ticket price.





The random forest model, with the aforementioned parameters, predicted that Big Mountain's ticket price would be $95.87. The mean absolute error for this prediction is $10.39, however, fully accounting for this error would still indicate that Big Mountain could raise their ticket price from $81.00 to $85.48. This is an increase of $4..48! Taking the yearly visitors estimate of 350,000 and the average stay per visitor of 5 days, this would be an increase of

revenue of nearly $7.9 million. This is quite a large increase in revenue and may not be the simple solution for Big Mountain.

Big Mountain has made suggestions on paths forward: closing down the ten least used runs, increasing vertical drop, total chairs, and with and without additional snow making area, and increasing the longest run by 0.2 miles. The last option of increasing the longest run showed little promise, as the model predicted that it would have no change on ticket price at all. The first option of decreasing the number of runs produced interesting results. Getting rid of one run had no effect on ticket price/revenue. However, as more runs were removed, the ticket price/revenue began to drop sharply, as shown in the figure to the right. It should be noted that the runs removed here were not necessarily the ten least used, as that data was not part of the dataset. The second option of increasing the vertical drop and number of chairs was also promising. The model predicted that this would increase the price of tickets by $1.99, which would increase revenue by almost $3.5 million. Adding the additional snow making coverage to cover the new development would not affect this increase either positively or negatively. Therefore, my recommendation to Big Mountain Resort would be to shut down operation of the least used run as this will not affect revenue, as well as moving forward on the plan to increase the vertical drop, but without the additional snow making area. Big Mountain has recently added a new chair lift that increased operation costs by close to $1.5 million. Assuming the additional chair lift required by my suggestion will increase costs by a similar amount, the remaining profit would be $500,000, without accounting for the decreased operation costs from shutting down one of the runs.