**Guided Capstone Project Report**

Big Mountain Resort has implemented a new chair lift costing ~1.54MM, and wants to maintain its profit margins of 9.2% over the next season in spite of this investment. Our objective is to determine the ideal price point of the weekend and weekday tickets, allowing annual revenue to increase such that profit margins remain the same. We recognize this is one of several methods leadership likely intends to implement in the coming weeks.

As a lot of data is missing (e.g. current prices, amount needed to reach annual revenue, etc.), our review is based off of data from other resorts.

In cleaning the data, we note the significance of removing the 4th and 1st quartiles to remove outliers, dramatically changing our dataset. Per discussion with our team, we refused to remove the outliers in order to maintain the accuracy of our assessment, given the small sample size we are working with. We applied a linear regression, an ARD regression, and an ElasticNet. Further research on the efficacy and value of each of these models on the data is needed. According to the Mean Absolute Error (our goal is to look for the lowest possible MAE), the ARD Regression is the most accurate model, at 5.10, as opposed to our first and third models, which have MAEs of 10.59 and 10.30, respectively. Looking at the ARD Regression, we learned that the mean price value for the resorts (outliers excluded) is ~$56.79/person. The features most heavily correlated with that price are Runs, number of four-chair lifts, and the base elevation. Seeing as we can only control the former two, management should be mildly assured that their investment in a new chair lift rightly ties to better prices and, likely, better attendance.