Big Mountain Resort – Recommendation

We iterated through three models to identify the best fit for the data in this project. Each model included the splitting of data into training and test data (75/25) and using linear regression models. As we progressed through the models, certain features were removed to understand their impact to the model. See below a summary of each model followed by a table highlighting their performance:

▶ **1st Model (including all features)**

    ▶ Strong fit with 0.928 explained variance

    ▶ States had the top 10 strongest coefficients of all features in this model

    ▶ Provides little value to support action for Big Mountain Resort so removed from model

▶ **2nd Model (without 'state')**

    ▶ Strong fit with 0.922 explained variance

    ▶ Summit elevation and base elevation were in Top 3 strongest coefficients of all features in this model

    ▶ Provides little value to support action for Big Mountain Resort so removed from model

▶ **3rd Model (without states or elevations)**

    ▶ Strong fit with 0.924 explained variance

    ▶ Provides model similar to previous but with different top 10 coefficients

Model	Explained Variance	Mean Absolute Error	Features Dropped
Model 1.	0.928	5.35	-
Model 2.	0.922	5.54	'state'
Model 3.	0.924	5.53	'state','summit_elev','base_elev'

Based on the above, we identified the 3rd Model as the best mode as it maintained high explained variance and similar mean absolute error compared to alternative models while also containing more relevant and actionable features than alternative model (see coefficient table below).

Feature	Coefficient
AdultWeekday	19.893397

averageSnowfall	1.982708
Runs	1.665804
quad	1.578662
triple	1.380822
vertical_drop	1.291189
surface	1.266572
daysOpenLastYear	0.829641
fastQuads	0.771395
clusters	0.766623

We then ran the model on Big Mountain Resort data to allow it to predict suggested pricing based on features included in model. **This suggested that Big Mountain resort should be charging a price of $88.77 for Adult Weekend tickets, +$7.77 higher than existing price of $81.**

The data also suggest that there may be an opportunity to increase price further in the future if the number of days the resort was open increase (see graph below).