

Big Mountain Ski Resort

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The Question

How can Big Mountain Resort **increase** revenue by \$1.68 million next season to cover the operational cost of the new chair lift and maintaining the current profit margin?

- \$1.54 million operating cost of new chairlift
- Maintain 9.2% profit margin.

The Data

Data from 330 resorts in the US, (12 from Montana)

- Location - region, state
- Size - acres of skiable terrain, number of runs, longest run length, number of chairlifts
- Elevation - base, summit, total drop
- Season - average snowfall, days open last year, projected days open next year
- Price - Adult Weekday ticket, Adult Weekend ticket

Recommendation

Primary recommendation

Increase weekday and weekend rates to \$86.

- \$1.75 million in additional revenue assuming 350,000 customers

Alternative proposal

Increase weekend rates to \$87; leave weekday rates at \$81

- 250,000 weekend customers - \$1.5 million
- 300,000 weekend customers - \$1.8 million

Data Processing

Missing data - 13 of 27 columns contained missing data

- Filled with 0 if 'None' was a likely response
- Filled with column mean elsewhere

Outliers were analyzed and maintained

- Half of the resorts had at least one outlying value
- One 'yearsOpen' value changed from 2019 to 1

Dropped Region column - duplicates state information

K-means analysis - 3 clusters

Modeling

Separate models for **weekday** and **weekend** prices
 Linear regression model

Model Performance Measures

Model	Weekday		Weekend		Features dropped
	EVS	MAE	EVS	MAE	
1	0.9353	5.2027	0.9413	4.8545	
2	0.9171	5.5386	0.9340	5.1694	state
3	0.9185	5.5315	0.9362	5.1068	state summit_elev

Model 3 Results

	Weekday	Weekend
Prediction	\$76.41	\$87.57
Actual	\$81	\$81

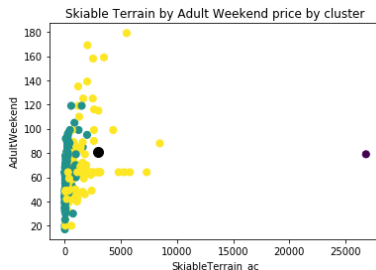
Table: Actual and predicted ticket prices

	Weekday		Weekend	
	Factor	Coefficient	Factor	Coefficient
1	AdultWeekend	20.900254	AdultWeekday	20.049070
2	clusters	2.297560	clusters	2.622573
3	Snow Making_ac	1.742646	vertical_drop	2.011784
4	averageSnowfall	1.262723	triple	1.380078
5	Runs	1.210851	daysOpenLastYear	1.241385

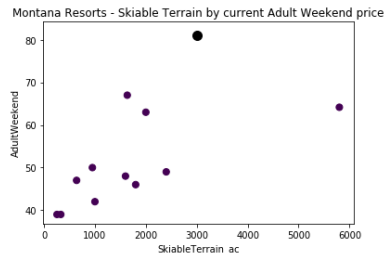
Table: Top 5 predictive features and coefficients

Weekend price by Resort size (acres of skiable terrain)

All US Resorts



Montana Resorts



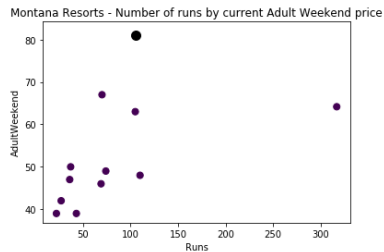
Current **weekend** ticket price by acres of skiable terrain for all US ski resorts (left) and for ski resorts in Montana (right). The larger black dot represents Big Mountain Resort.

Weekend price by Resort size (number of runs)

All US Resorts



Montana Resorts



Current **weekend** ticket price by number of runs for all US ski resorts (left) and for ski resorts in Montana (right). The larger black dot represents Big Mountain Resort.

Conclusions

- In Montana - current Big Mountain price is highest; second largest resort with many runs
- Nationally - current weekend prices are below model predictions.
- Raising weekend ticket prices to \$86-\$87 would bring in sufficient additional revenue to cover the operating cost of the new chairlift.