

Big Mountain Ticket Price Modeling

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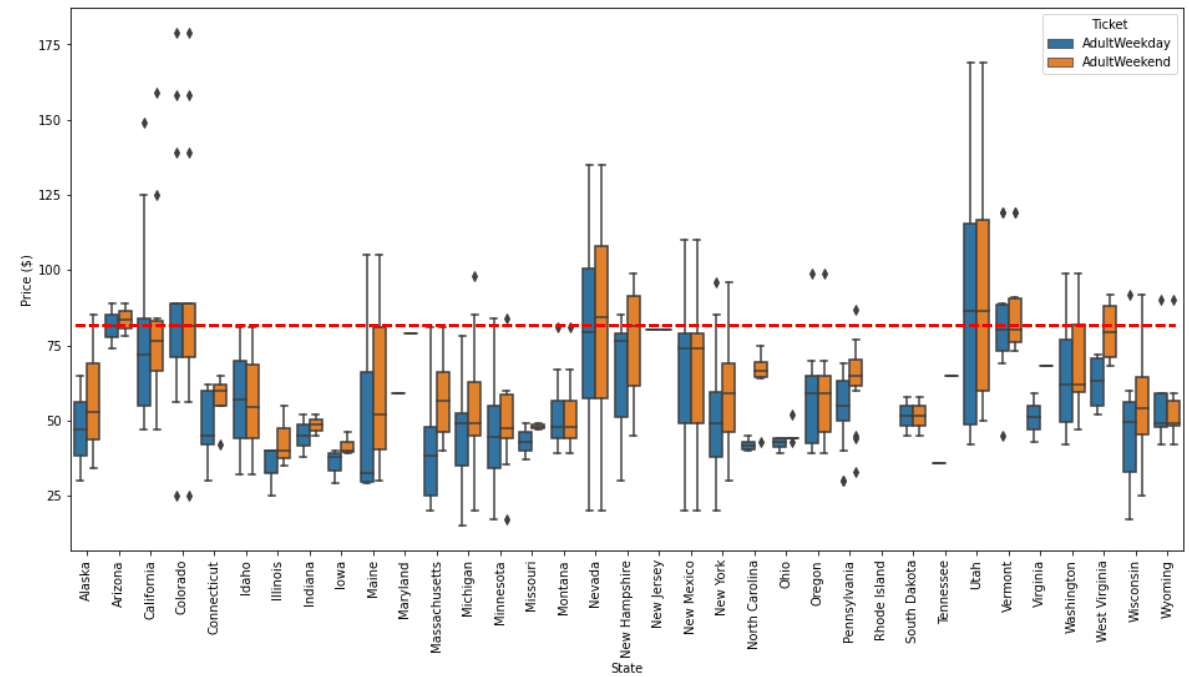
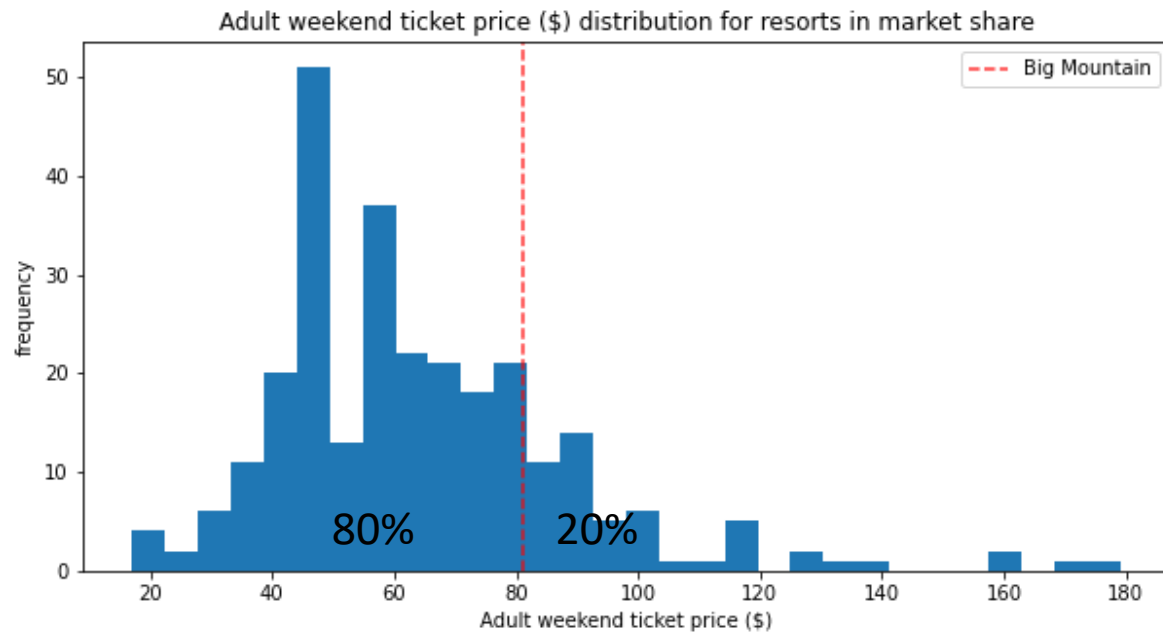
Questions to address

- Is Big Mountain competitively priced?
- Which proposed facility changes make the most sense financially?

Key findings

- Price-vs-facilities model predicts market support for adult weekend ticket price of \$96 (+/- \$10) without impacting ticket sales
 - Current price is \$81
- Extra \$1.99/ticket value if boost vertical drop by 150ft.
 - Price boost yields +\$3.5M revenue, vs \$1.54M extra lift operation costs
 - Additional snowmaking in support of this doesn't add perceived market value
- Closing 10 least-used runs reduces modeled ticket price by \$1.81
 - This ticket price drop reduces revenue by \$3.2M
 - Cost savings ??
- Increasing longest run length is revenue neutral by model

Current ticket price vs market




Selection of prediction model type and params

- Isolate 30% of resorts for independent validation (“test set”)
- Do following for both Linear Regression and Random Forest
 - For each set of evaluated model parameters
 - Train model on 80% of remaining 70% of data, predict on held-out 20%
 - Pick params with highest correlation between actual and predicted AdultWeekend ticket price for held-out 20%
 - With best-params model, predict prices for independent 30% test set
- Select model with lower average prediction error



Selecting model type and parameters

- Linear regression best model
 - Average price prediction error in test set +/- \$11.79
 - 8 features used
 - empty inputs replaced by median
- Random forest best model 
 - Average price prediction error in test set +/- \$9.54 (better)
 - n_estimators = 54
 - empty inputs replaced by median

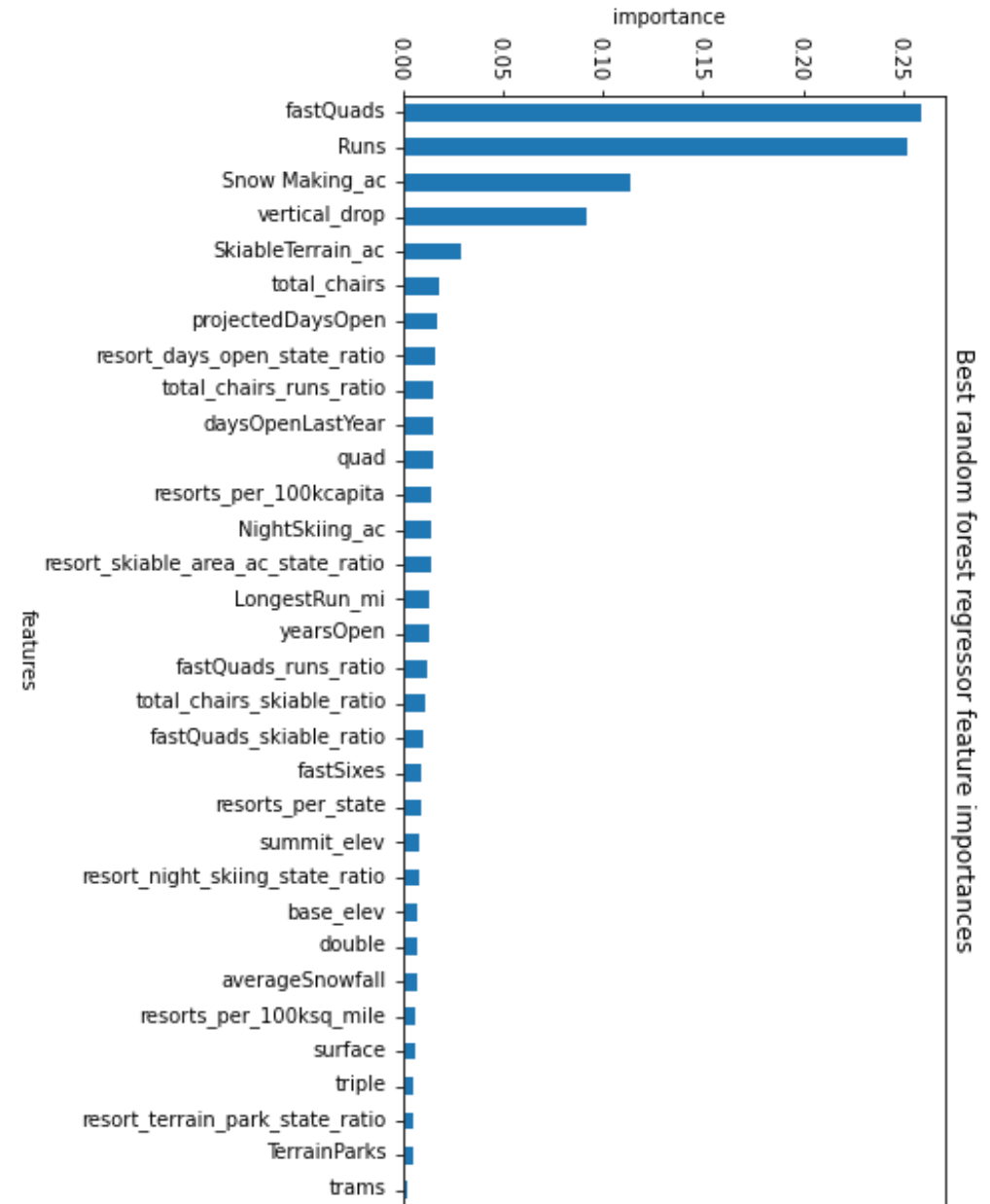
Final Model to predict Big Mountain ticket price

- Refit random forest model on all data except Big Mountain
 - same parameters as earlier
- Average price prediction error +/- \$10.39
 - Based on 5-fold cross validation
- Predict Adult Weekend ticket price with current facilities: \$95.87
 - Current price: \$81

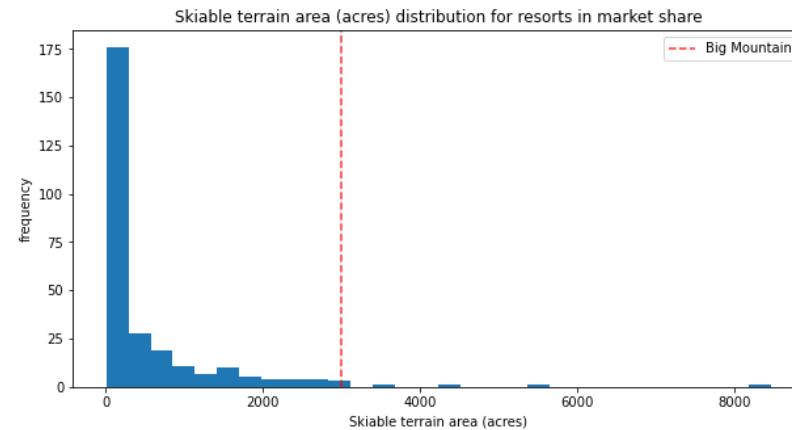
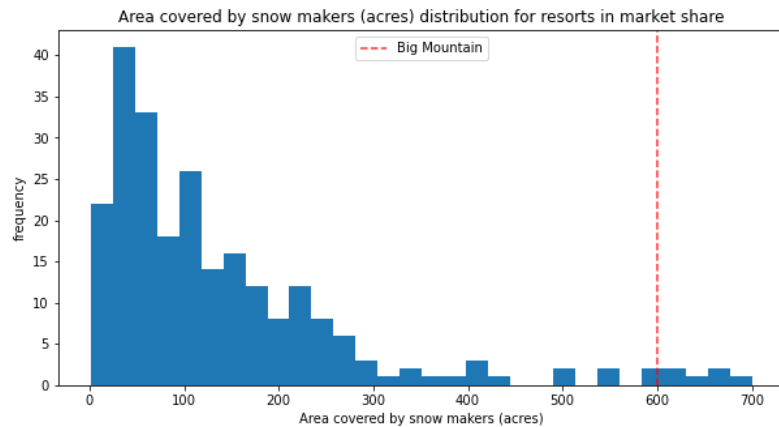
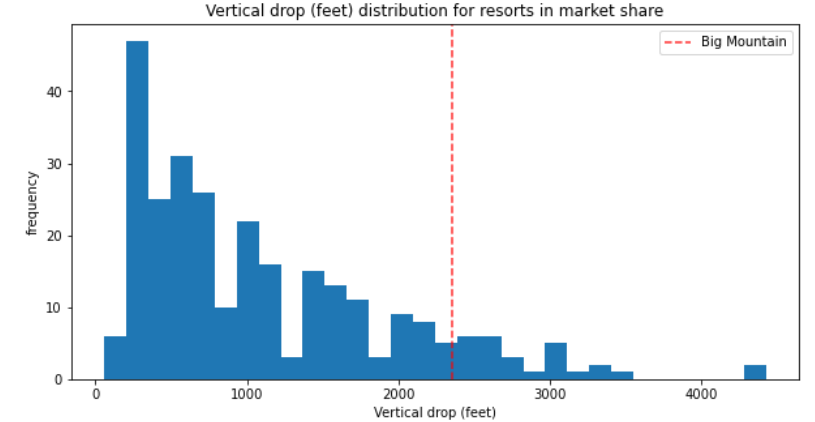
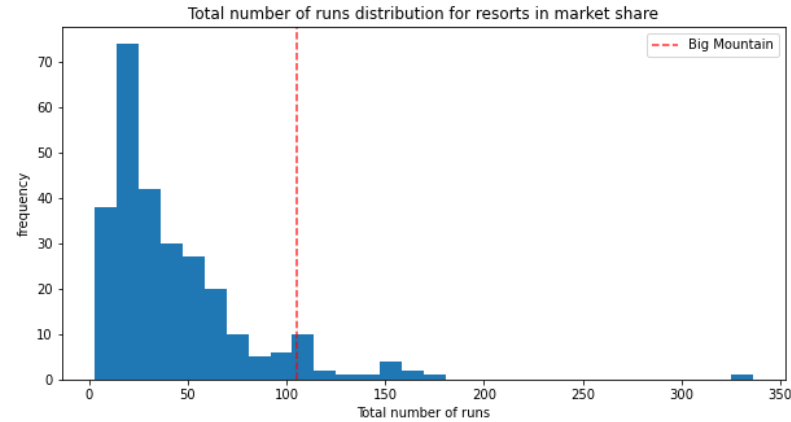
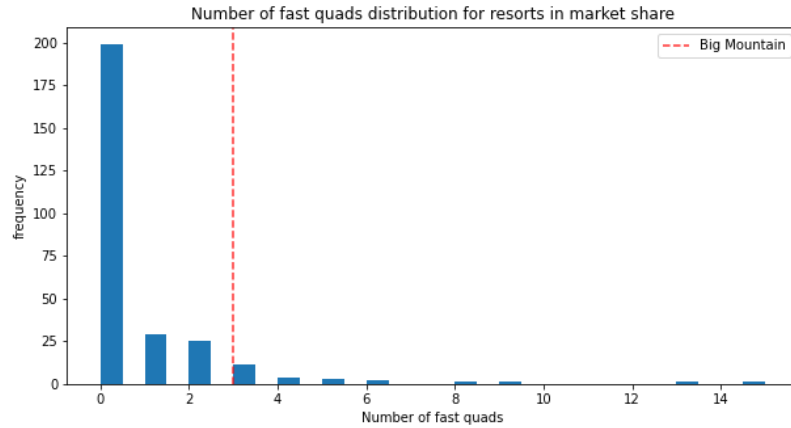


Most predictive features

- “Random Forest” model
- Relative importance of facilities in predicting market ticket price
- Alternate best linear regression model also includes top 4 features



Big Mountain vs others for key assets



Evaluating alternative scenarios

- Used same model to predict competitive ticket price if alter facility assets like
 - number of open runs
 - available vertical drop
 - longest run length
 - total snowmaking acres

Conclusions

- Since current ticket price appears undervalued, increasing ticket price is reasonable.
- Marketing increased vertical drop should easily justify increasing ticket price by at least \$2.
- Big Mountain predicted ticket price (and thus revenue) does not change if offset the reduction of 10 runs with additional vertical drop from a new lift. Change in profitability depend on relative operating costs of new lift vs maintaining 10 least-used runs.