BIG MOUNTAIN RESORT

Ticket Price Modeling

PROBLEM IDENTIFICATION

- Big Moutain Resort provides a premium ski experience (excellent views, runs, chairs, etc.)

- Ticket Price Increase?

- Reduce Operating Costs?

- Constraint: provide same premium service

KEY FINDINGS

Ticket price increase up to $95 (+/- $10) supported by model

NB: Big Mountain Resort already highest priced ticket in Montana

Adult weekend ticket price ($) - Montana only distribution for resorts in market share
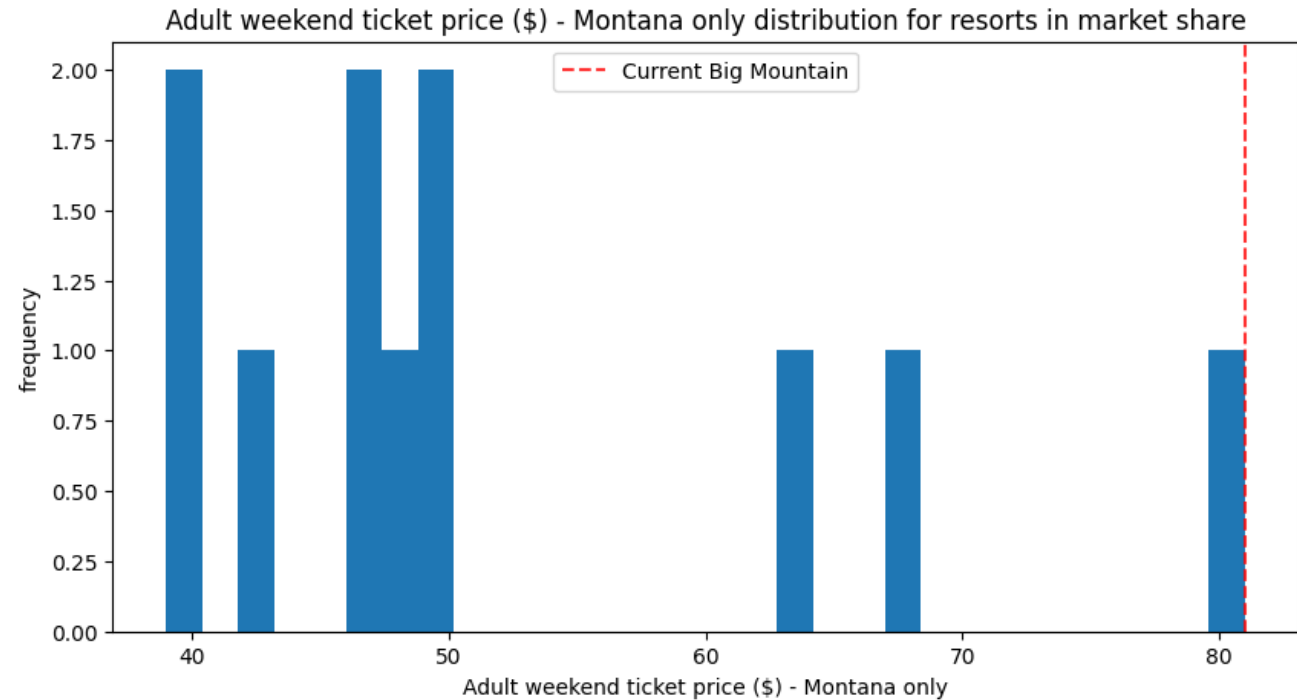
KEY FINDINGS

Key drivers of price (in the available data) are:

- Number of fast quads
- Number of runs
- Snow making area
- Vertical drop

Best random forest regressor feature importances
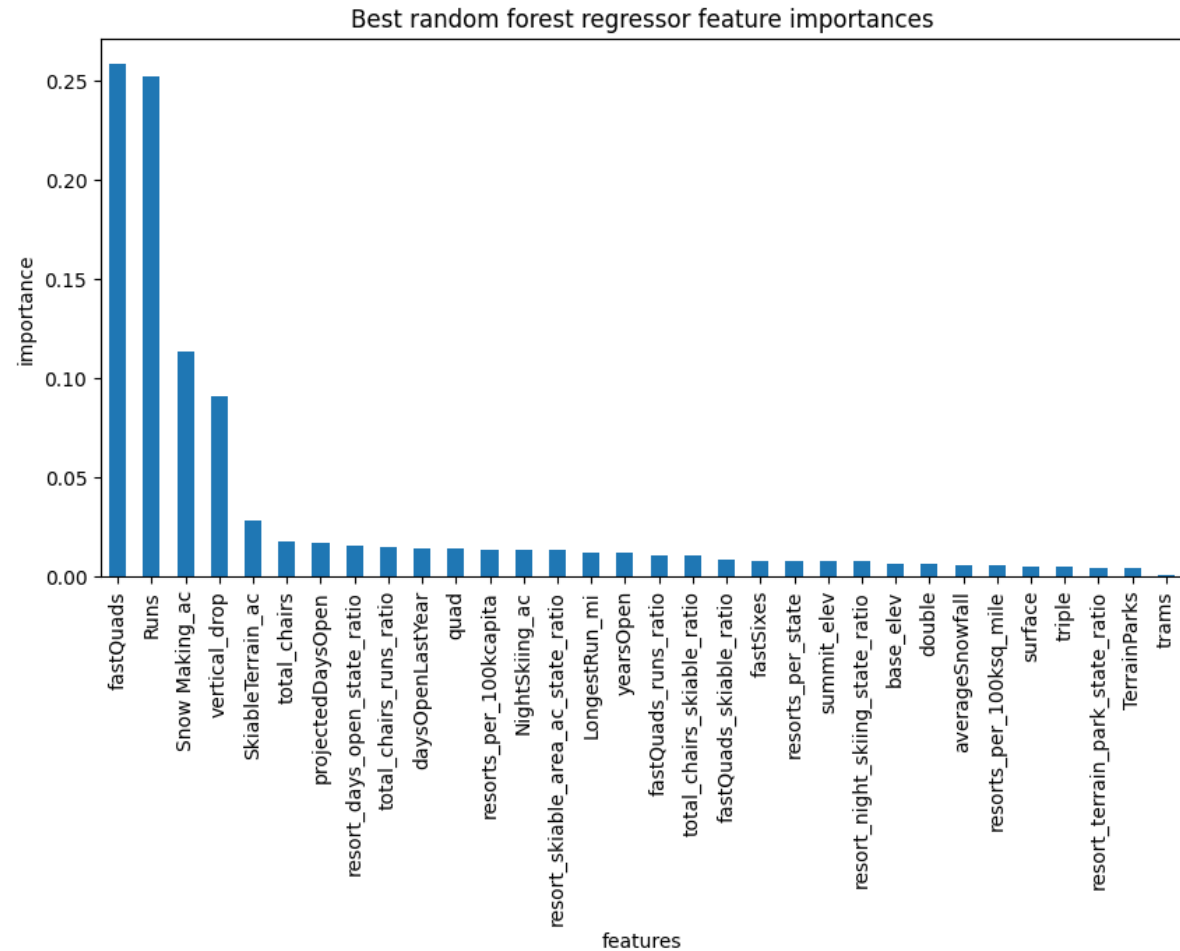
KEY FINDINGS

Closing one run has no impact on price

Closing 3, 4, or 5 runs has the same impact on price

Ticket price
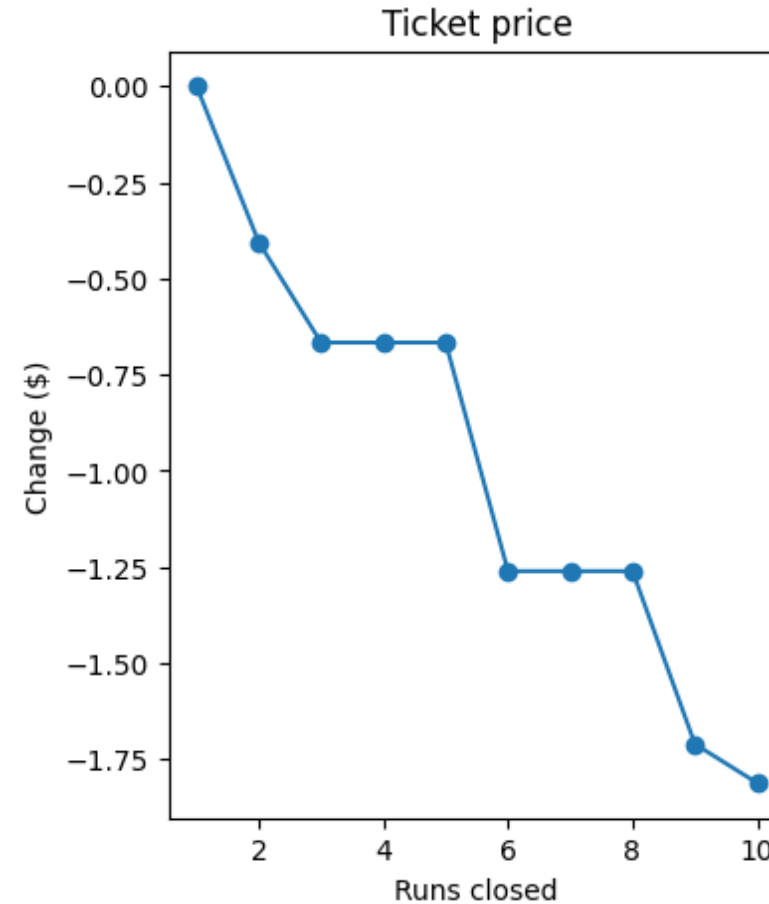
KEY FINDINGS

New services unlikely to be profitable if they need a new chairlift

(e.g. increasing vertical drop, number of runs)

NB: Latest chair cost $1.5M last season

RECOMMENDATIONS

- Increase price incrementally over several seasons with final target ticket price of $90
  - Track visitors, revenue
- Close one run, and perhaps up to 5 depending on remaining run coverage and possible cost optimization
  - Track run usage

MODELING RESULTS – BEST MODEL

- Best Model is Random Forest model
  - Best Params: N=69; replace missing prices with median price
  - Ticket price $95.97; Mean absolute error $10.39

- Benefits of Random Forest:
  - Reports feature importance; allows management "gut check"
  - Allows future models to use categorical data
  - Easily made available to run new operation scenarios

MODELING RESULTS – SCENARIOS

Scenario	Result
1. Close up to 10 runs	Closing 1 run: no impact on ticket price Closing 2 runs: -$0.40 Closing 3-5 runs: -$0.67
2. Add 1 run, increase vertical drop 150 ft, add chair	Increase ticket price $1.99 Additional revenue unlikely to offset cost of new chair
3. Same as 2, but add 2 acres of snow making	No additional ticket price lift (i.e. same as scenario 2)
4. Increase run length 0.2 mi, Increase snow making area 4 acres	No impact

MODELING RESULTS – LIMITATIONS

- All states pooled – Are higher-cost states good comparison to Montana? (e.g. California, New York)

- No revenue/visitor information – Operational scenarios only estimate revenue impacts

ADDITIONAL DATA?

- Historical data to quantify impacts of service & price changes

- Visitors

- Operational costs of services (e.g. chairs, run maintenance, quads, trams, etc.)

- Installation costs of new services

SUMMARY AND CONCLUSIONS

- Recommendations
  - Increase ticket price to $90 per day, close 1-5 runs
- Incorporate management feedback and revise model?
- Release final model to management team
- Incorporate additional data?
  - Historical data, visitors, operational costs