Guided Capstone Project: Big Mountain Ski Resort

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Problem Identification

Primary Goal: Cover the $1.54 million cost for new chairlift in Big Mountain Ski Resort

Possible Business Strategies:

1. Calculate necessary ticket price increase to cover $1.54M.
    a. Use data to infer a model - do our facilities compared to those from other companies support this increased ticket price?
2. Close least profitable runs - up to 10
3. Add a run that increases our vertical drop by 150 m
4. Add snow making equipment
5. Increase length of our longest ski run

Data: 330 US Ski Resorts

Snippet Preview:

	Name	Region	state	summit_elev	vertical_drop	base_elev	trams	fastEight	fastSixes	fastQuads	...	LongestRun_mi	SkiableTerrain_ac	Snow Making_ac	daysOpenLastYear
0	Alyeska Resort	Alaska	Alaska	3939	2500	250	1	0.0	0	2	...	1.0	1610.0	113.0	150.0
1	Eaglecrest Ski Area	Alaska	Alaska	2600	1540	1200	0	0.0	0	0	...	2.0	640.0	60.0	45.0
2	Hilltop Ski Area	Alaska	Alaska	2090	294	1796	0	0.0	0	0	...	1.0	30.0	30.0	150.0
3	Arizona Snowbowl	Arizona	Arizona	11500	2300	9200	0	0.0	1	0	...	2.0	777.0	104.0	122.0
4	Sunrise Park Resort	Arizona	Arizona	11100	1800	9200	0	NaN	0	1	...	1.2	800.0	80.0	115.0

Data continued

daysOpenLastYear	yearsOpen	averageSnowfall	AdultWeekday	AdultWeekend	projectedDaysOpen	NightSkiing_ac
150.0	60.0	669.0	65.0	85.0	150.0	550.0
45.0	44.0	350.0	47.0	53.0	90.0	NaN
150.0	36.0	69.0	30.0	34.0	152.0	30.0
122.0	81.0	260.0	89.0	89.0	122.0	NaN
115.0	49.0	250.0	74.0	78.0	104.0	80.0

Key Recommendations

1. **Increase Ticket Price by $0.88**
    a. Covers $1.54 M (expected 350,000 customers, 5 tickets per customer)
    b. Current Ticket Price: $81
    c. Model Ticket Price: $95.81
2. Close **5** Least profitable runs
3. Investigate cost of adding run and chairlift that extends vertical drop by 150 m
    a. Results in $3.47 M modeled revenue
4. Do not increase snow making equipment or longest run length

About the Model

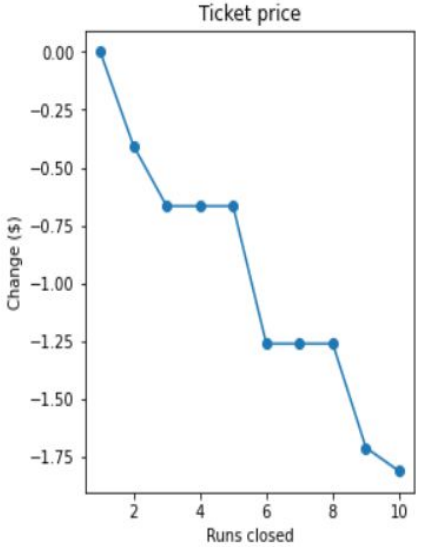
- Random Forest Regression Model
- Data is split into training set and testing set; model trained on testing set and evaluated for performance on testing set
- Model takes numerical features of a ski resort and predicts a ticket price for that ski resort
- Result: Big Mountain Model Ticket Price = $95.81 +/- 10.39
    - Supports increase in ticket price of $0.88 up from $81

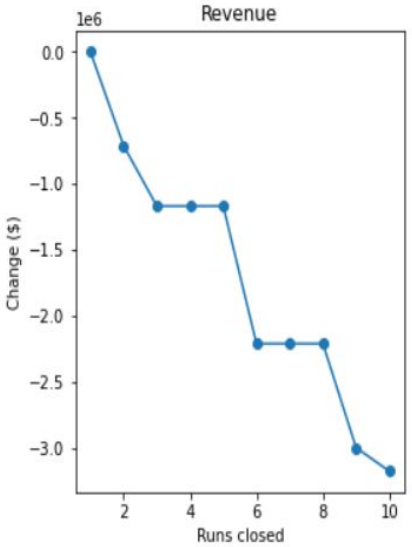
Why is Big Mountain Model Price so high?

- Most Important Features:
  - Fast Quads
  - Number of Runs
  - Snow Making area covered
  - Vertical Drop
- Big Mountain Ski Resort ranks very highly in all four of these features compared to other ski resorts. Vertical Drop shows some room for improvement.

Four Proposed Business Scenarios

1. Remove up to 10 least useful runs
    a. Recommendation: Drop 5 runs - lose $0.67 in modeled ticket price





Four Proposed Business Scenarios (cont.)

2. Add a run that increases vertical drop by 150 m

According to model, results in ticket price increase by $1.99, Overall Revenue of $3.47M

More Information Needed - cost of adding and maintaining run?

3. Add a run that increases vertical drop by 150 m and increase snow making area by 2 acres - $0.00 ticket price increase, negligible difference

4. Increase longest run by 0.2 miles, guarantee snow coverage by adding 4 acres of snow making - $0.00 ticket price increase, negligible difference

Summary of Recommendations

1. Increase Ticket Price by $0.88
2. Close **5** Least profitable runs
3. Investigate cost of adding run and chairlift that extends vertical drop by 150 m