Statistical Modeling on Big Mountain

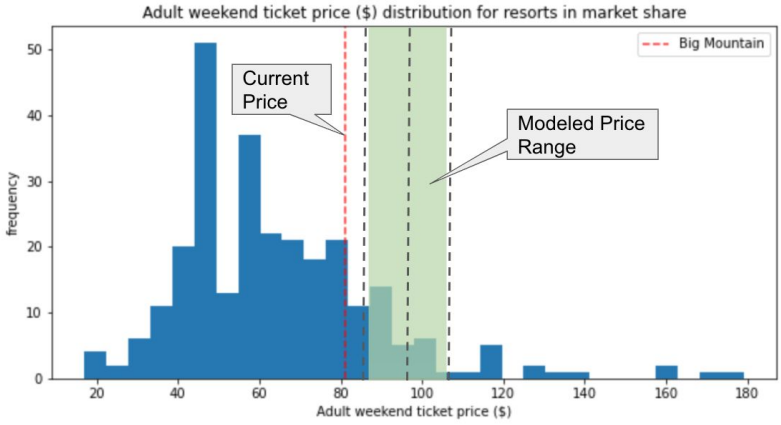
Pricing, Investigating, and Cost Controlling Strategies

Introduction

Currently, Big Mountain Resort wants some guidance on selecting a better value for their ticket price. The Business is also considering a number of changes that they hope will either cut costs without undermining the ticket price or support an even higher ticket price.
The statistical model predicts the increase in the adult weekend ticket price and so revenue. Besides, the model is available to test any new combination of parameters in a scenario, including investigating and cutting cost.

Analysis

- **Modeled Adult Weekend Price**
  - A random forest model suggests Big Mountain's adult weekend ticket price is **$95.75**.
  - Even with the expected mean absolute error of $10.39, there is room for an increase.



- **Expected Revenue Growth**

  Based on the predicted price and the expected number of visitors (350.000 visitors per season and five days per visit), the revenue increase is about **$25.8 mn**, which will cover the additional operating cost, $1.54mn, of the newly installed chair lift.

- **The Valuable Investigation**

  Some of the features came up as important in the modeling(the highlight items in the following table are evaluated as the most valuable features by the random forest model), most of which put Big Mountain high up amongst all the resorts with the same market share.

The model is available to test any new combination of parameters in a scenario.

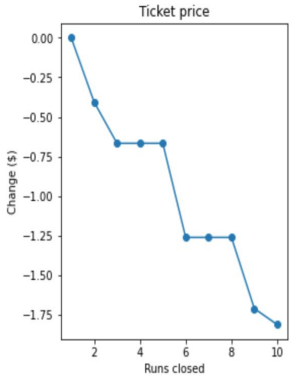
Investigating	Features								Estimated Change	
	Vertical Drop (feet)	Snow Making Area (ac)	Fast four-person chair	Runs	Total Chairs	Longest Run (mile)	Trams	Skiable Terrain (ac)	Ticket Price ($)	Revenue ($)
Curent Status	2353	600	3	105	14	3.3	0	3000		
Scenario 1	+150			+1	+1				+1.99	+3474638
Scenario 2	+150	+2		+1	+1				+1.99	+3474638
Scenario 3		+4				+0.2			0	0

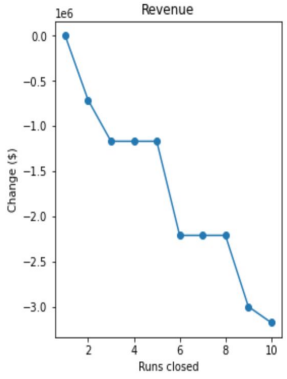
- **Cutting Costs with Impact on Revenue**

  The model can be used to evaluate cost down strategy by calculating the impact on the ticket price and revenue, e.g., closing up to 10 of the least used runs(the number of runs is the only parameter varying).

Cutting Costs	Features								Estimated Change	
	Vertical Drop (feet)	Snow Making Area (ac)	Fast four-person chair	Runs	Total Chairs	Longest Run (mile)	Trams	Skiable Terrain (ac)	Ticket Price ($)	Revenue ($)
Scenario 1				-1					0	0
Scenario 2				-2					-0.41	-710,144
Scenario 3				-3,-4,-5					-0.61	-1,666,666
Scenario 4				-6					-1.26	-2,20,6521

1. Closing 1 run makes no difference.
2. Closing 2 and 3 runs reduce support for ticket price and so revenue.
3. If closing down 3 runs, there's no further impact on the ticket price to close down 4 or 5 runs.
4. Increasing the closures down to 6 or more leads to a large drop.





Conclusion

- The result of random forest modeling supports the ticket price increase. The predicted price is $95.75±10.39.
- The estimated revenue growth is about $25.8 million on average, which will cover the additional operating cost of the newly installed chair lift.
- The model is available to test any new combination of parameters in a scenario, including investigating and cutting cost.