Big Mountain Resort, Montana

A solution to stay above the 9% profit margin under increased operating costs.

Dr. Lisa Hahn-Woernle, April 24, 2020

Big Mountain Resort

since 1947

- Base elevation 4,464 ft, summit elevation 6,817 ft, vertical drop 2,353 ft
- Annual snowfall 333 in
- 3000 ac accessible terrain, 105 named trails, longest trail 3.3 mi
- 11 lifts, 2 T-bars and 1 magic carpet

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since 1947

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➡ ***But***: Newly installed chair lift increases operating cost by

$1,540,000

Business recommendations

How the 9.2% profit margin can be secured

- Data analysis has shown that the **adult weekend prices** could be **increased by $ 8.80** while staying competitive.
- While no data about annual visitors at the other resorts was available, visitor number and therefore revenue could be increased by **extending the season by 2 weeks.**

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⭐ *Future investigation should focus on **attracting more divers visitors** (e.g. hikers and nature spectators) to remain competitive given the rapidly changing trends and climate.*

Basis for recommendations

Data analysis techniques and results

Data Set: 330 US ski resorts with 26 features

1. Data is cleaned from outliers and missing data
2. Collinear features (high similarity) are excluded
3. Data is clustered to identify 3 groups that are similar in 22 of their features (* in table)
4. Linear regression model is trained with 75% of the data set and performance tested with the remaining 25%

Column		Description
Name		The name of the ski resort.
Region		The region within the United States where the resort is located.
state		The state name where the resort is located.
summit_elev	*	Elevation in feet of the summit mountain at the resort.
vertical_drop	*	Vertical change in elevation from the summit to the base in feet.
base_elev		Elevation in feet at the base of the resort.
trams	*	The number of trams.
fastEight	*	The number of fast eight person chairs.
fastSixes	*	The number of fast six person chairs.
fastQuads	*	The number of fast four person chairs.
quad	*	Count of regular speed four person chairlifts.
triple	*	Count of regular speed three person chairlifts.
double	*	Count of regular speed two person chairlifts.
surface	*	Count of regular speed single person chairlifts.
total_chairs	*	Sum of all the chairlifts at the resort.
Runs	*	Count of the number of runs on the resort.
TerrainParks	*	Count of the number of terrain parks at the resort.
LongestRun_mi	*	Length of the longest run in the resort in miles.
SkiableTerrain_ac	*	Total skiable area in square acres.
Snow Making_ac	*	Total area covered by snow making machines in acres.
daysOpenLastYear	*	Total number of days open last year.
yearsOpen	*	Total number of years the resort has been open.
averageSnowfall	*	Average annual snowfall at the resort in inches.
AdultWeekday	*	Cost of an adult weekday chairlift ticket.
AdultWeekend	*	Cost of an adult weekend chairlift ticket.
projectedDaysOpen	*	Projected days open in the upcoming season.
NightSkiing_ac	*	Total skiable area covered in lights for night skiing.

Basis for recommendations

Data analysis techniques and results

Error analysis for **adult weekend price** shows **high accuracy** for model predictions:

- Mean Square Error: 0.15
  (0: no error, 1: no predictability)
- Explained Variance: 0.84
  (0: variance not modeled, 1: variance captured)

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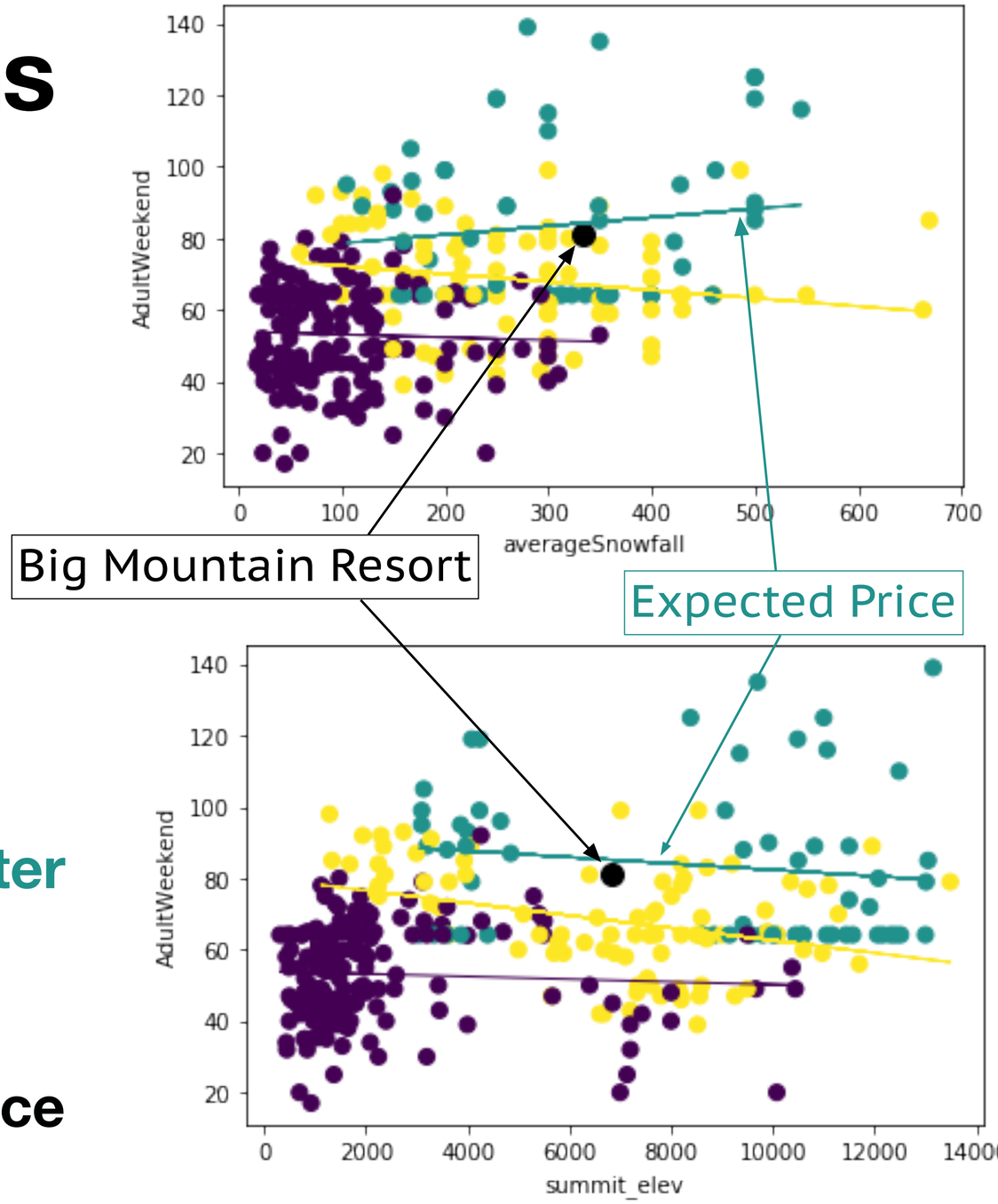
Clustering allows to identify groups:

- Big Mountain Resort belongs to **green cluster**
- Given the average snowfall and the summit elevation, the adult weekend price at Big Mountain Resort is **below the expected price**



Basis for recommendations

Data analysis techniques and results

Predicted price for adult weekend ticket based on Linear Regression Model:

$ 89.80 (previously $ 81.00)

+ $ 8.80

If **50% of the visitors** come during weekends, this increase of ticket prices would **cover the $ 1,540,000** operating costs of the new chair lift.

Predicted length of season based on another Linear Regression Model:

139 days (previously 123 days)

+ 16 days

Similar US resorts usually open their lifts more than 2 weeks longer. Big Mountain resort should consider doing the same.

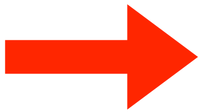
Basis for recommendations

Data analysis techniques and results

Predicted price for adult weekday ticket
based on a 3rd Linear Regression Model:

$ 77.20 (previously $ 81.00)

- $ 3.80



Increasing the adult weekday price bears the risk of loosing visitors to the competition and is **not recommended**.

Take-home messages

- **The 9.2% profit margin can be maintained despite the increased operating costs with a save increase of weekend ticket prices to $ 89.80.**

- Extending the season by 2 weeks potentially increases the number of visitors and makes the margin more robust to fluctuations in the tourist industry.

Take-home messages

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- Extending the season by 2 weeks potentially increases the number of visitors and makes the margin more robust to fluctuations in the tourist industry.

Based on our gained insight, we suggest to further investigate the potentials of increasing the scope of your target group and attracting more divers visitors.

HW Consulting thanks you for your trust in our competence and remains at your service for further questions and future market investigations.