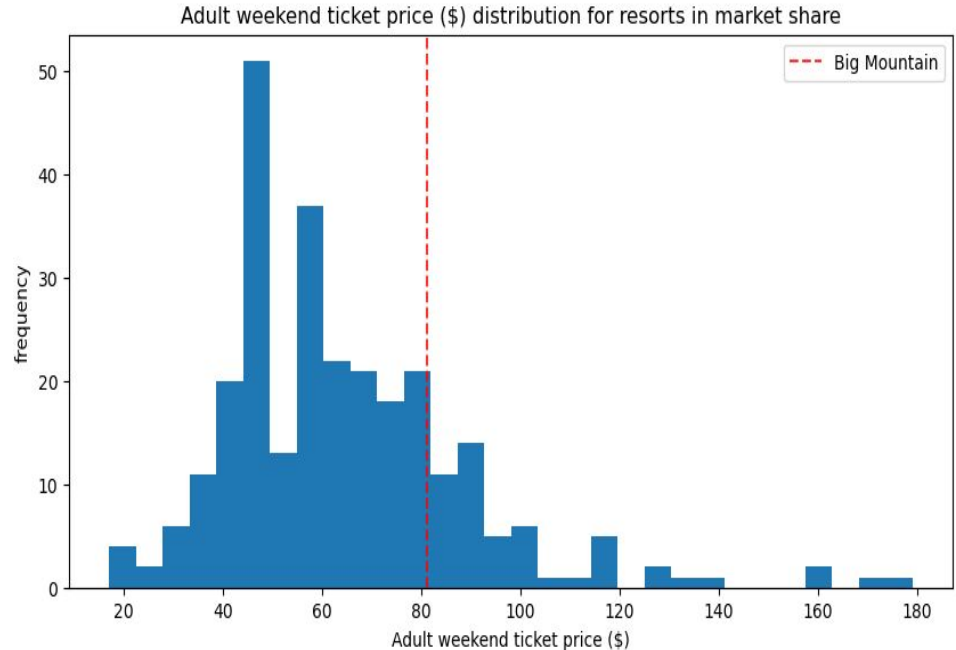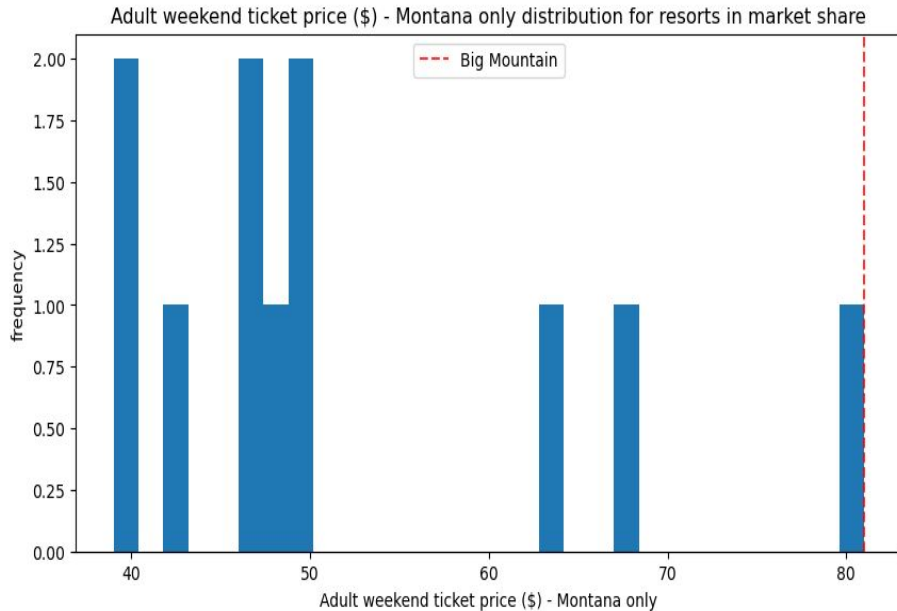# Big Mountain Resort, Montana
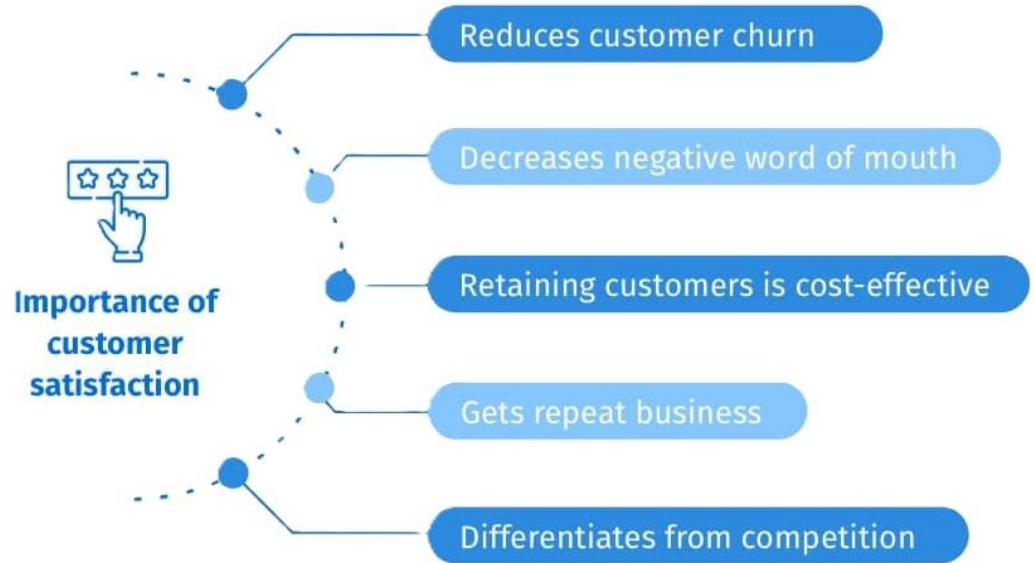
Current Situation and Challenges

- Big Mountain Resort currently charges $81.00 per ticket.
- Recent addition of a new chair lift increased operating costs by $1,540,000 this season.
- Need to optimize ticket pricing to maximize revenue and cover new costs.

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

Adult weekend ticket price ($) distribution for resorts in market share

Objectives and Criteria for Success

- Achieve a 10% increase in total revenue by the end of the current ski season.
- Fully offset the additional operating costs of $1,540,000 for the new chair lift within six months.
- Develop and implement a dynamic pricing model.
- Maintain or improve customer satisfaction levels.

Importance of customer satisfaction

- Reduces customer churn
- Decreases negative word of mouth
- Retaining customers is cost-effective
- Gets repeat business
- Differentiates from competition

Recommendations and Key Findings

- Increase ticket price to $95.87 based on model suggestions.
- Important features: vertical drop, snowmaking area, total chairs, fast quads, runs, longest run, trams, skiable terrain.
- Scenario analysis suggests focusing on increasing vertical drop and adding a new chair lift.

Best random forest regressor feature importances
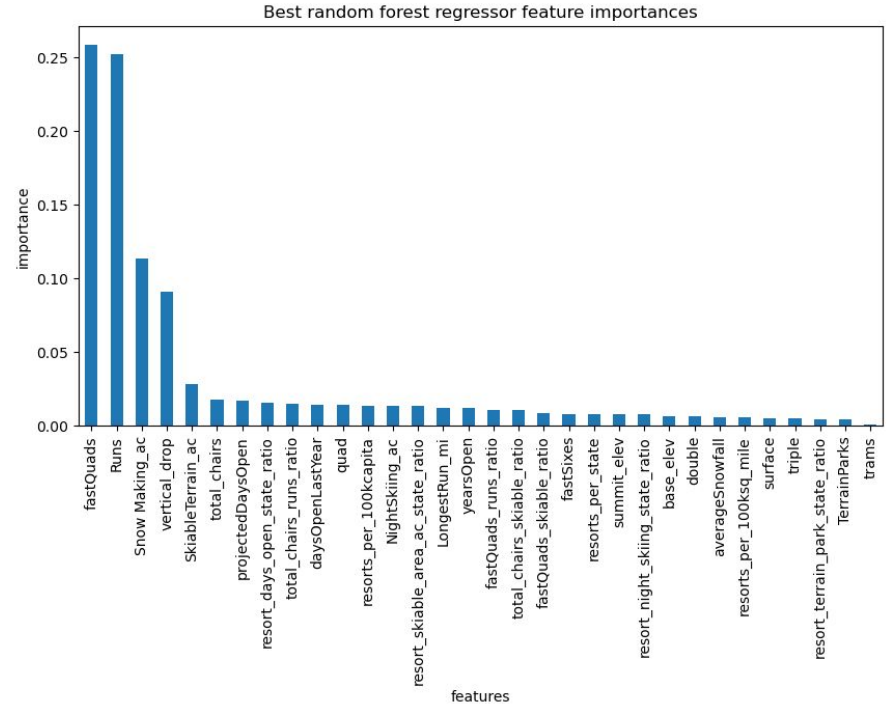
Data Wrangling and EDA

- Initial dataset: 330 rows, 27 columns.

- Addressed missing data and ensured data integrity.

- Exploratory Data Analysis (EDA) findings.

|	count	%
fastEight	166	50.303030
NightSkiing_ac	143	43.333333
AdultWeekday	54	16.363636
AdultWeekend	51	15.454545
daysOpenLastYear	51	15.454545
TerrainParks	51	15.454545
projectedDaysOpen	47	14.242424
Snow Making_ac	46	13.939394
averageSnowfall	14	4.242424
LongestRun_mi	5	1.515152
Runs	4	1.212121
SkiableTerrain_ac	3	0.909091
yearsOpen	1	0.303030
total_chairs	0	0.000000
Name	0	0.000000
Region	0	0.000000
double	0	0.000000
triple	0	0.000000
quad	0	0.000000
fastQuads	0	0.000000
fastSixes	0	0.000000
trams	0	0.000000
base_elev	0	0.000000
vertical_drop	0	0.000000
summit_elev	0	0.000000
state	0	0.000000
surface	0	0.000000

Baseline Model and Linear Regression

- Established baseline using average price.
- Linear regression model with key features.
- Limitations of the linear model.
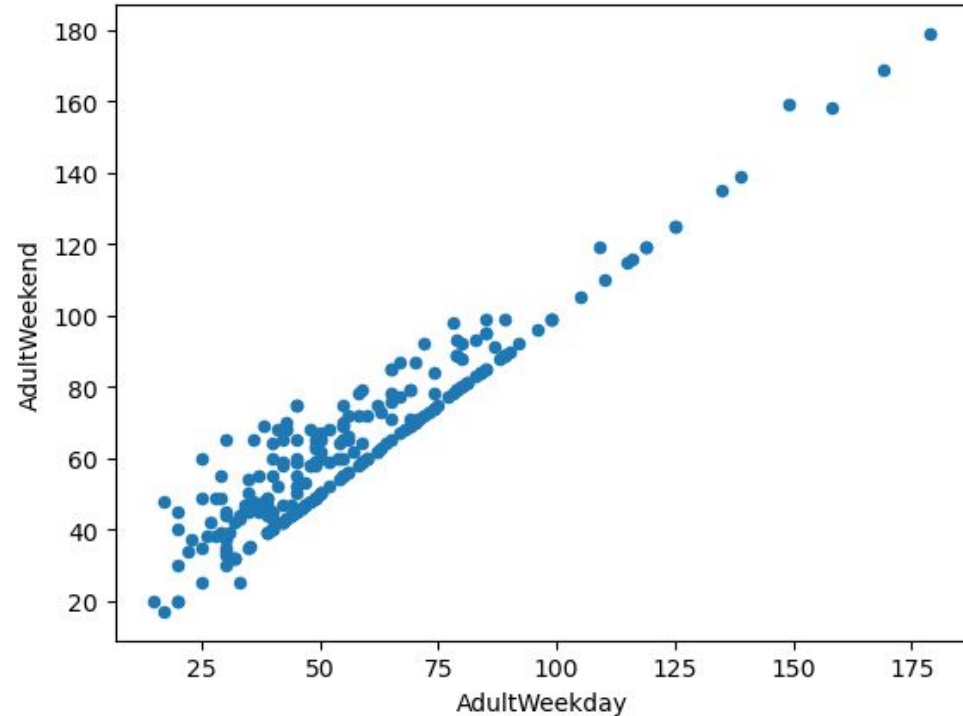
Random Forest Model

- Development of the random forest regressor.

- Lower mean absolute error and less variability.

- Consistent test set performance.

Best random forest regressor feature importances
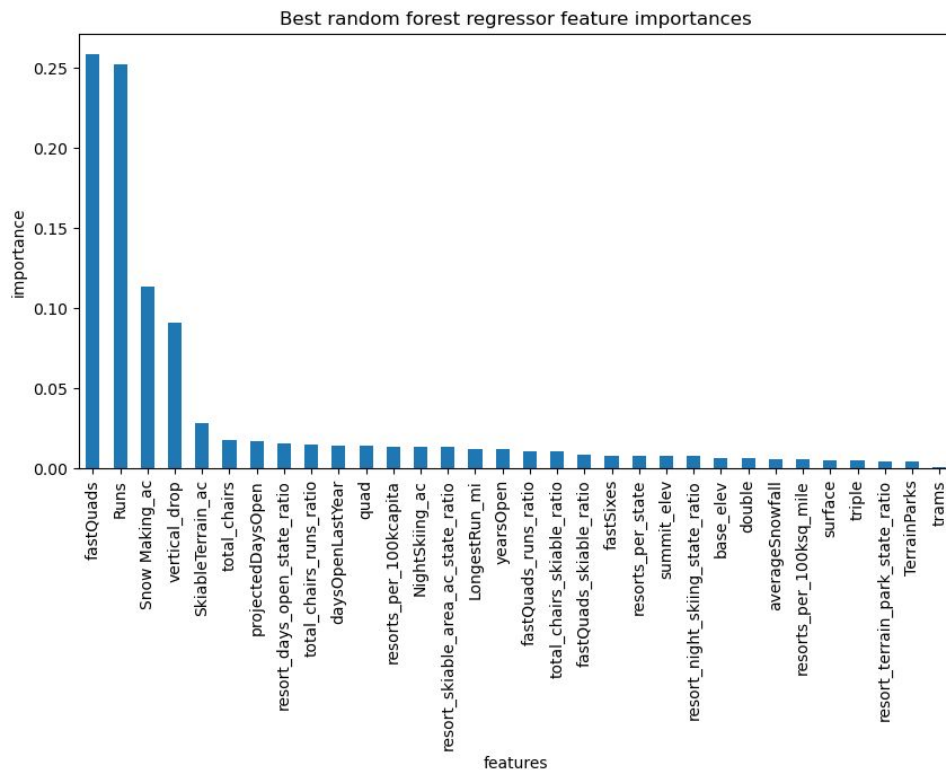
Scenario Analysis

- Analysis of scenarios for cost-cutting or revenue increase.

- Key findings for each scenario.

- Recommendations for future improvements.
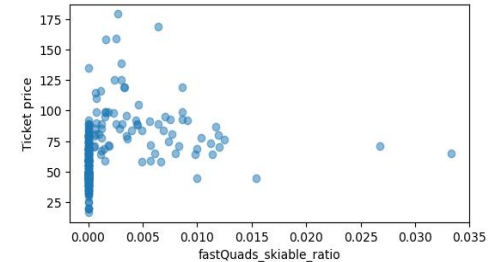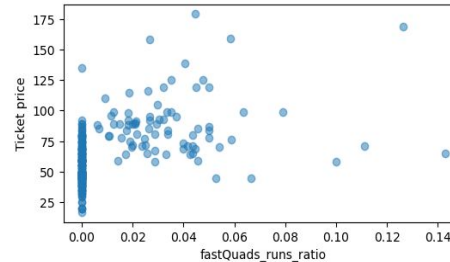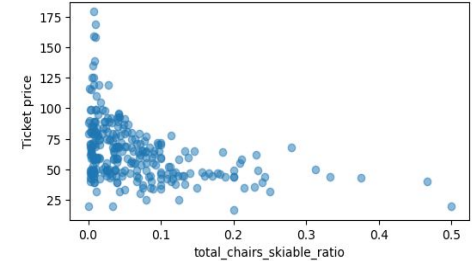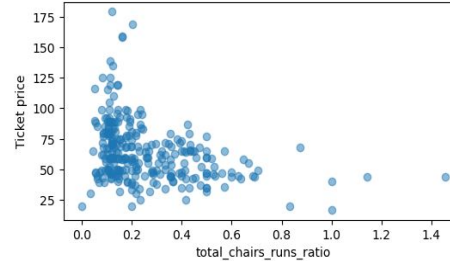
Summary and Conclusion

- Summary of the journey from baseline model to random forest model.

- Key recommendations and rationale.

- Importance of the chosen model for business decisions.