Predicting Ski Resort Visitation

Capstone Project – Lenore Perconti
Flatiron Data Science Bootcamp

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Data Science Student

AGENDA

01 Business Understanding

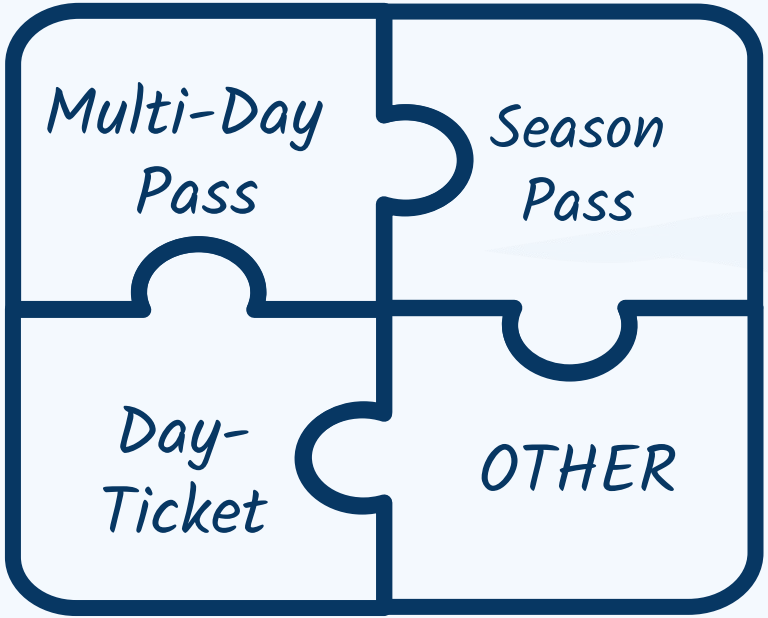
02 Data Overview

03 Methods & Findings

04 Future Research

WINTER RESORTS

How many people will show up today?


Multi-Day Pass
Season Pass
Day-Ticket
OTHER

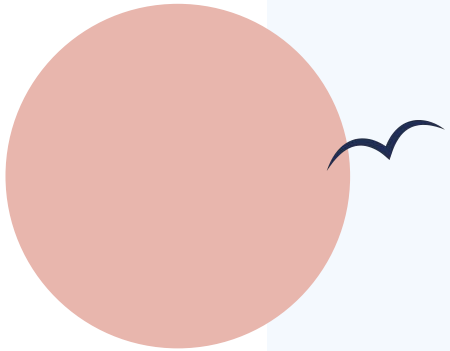
WHAT DETERMINES VISITATION?

DAY OF WEEK?

HOLIDAY?

WEATHER CONDITIONS?

SCHOOL OUT?



Take the guesswork out of business anticipation with Machine Learning

DATASET OVERVIEW

01

DATA

Visits

- Daily Visit Counts
- One resort in the PNW
- 5 year's worth of data

Local Weather

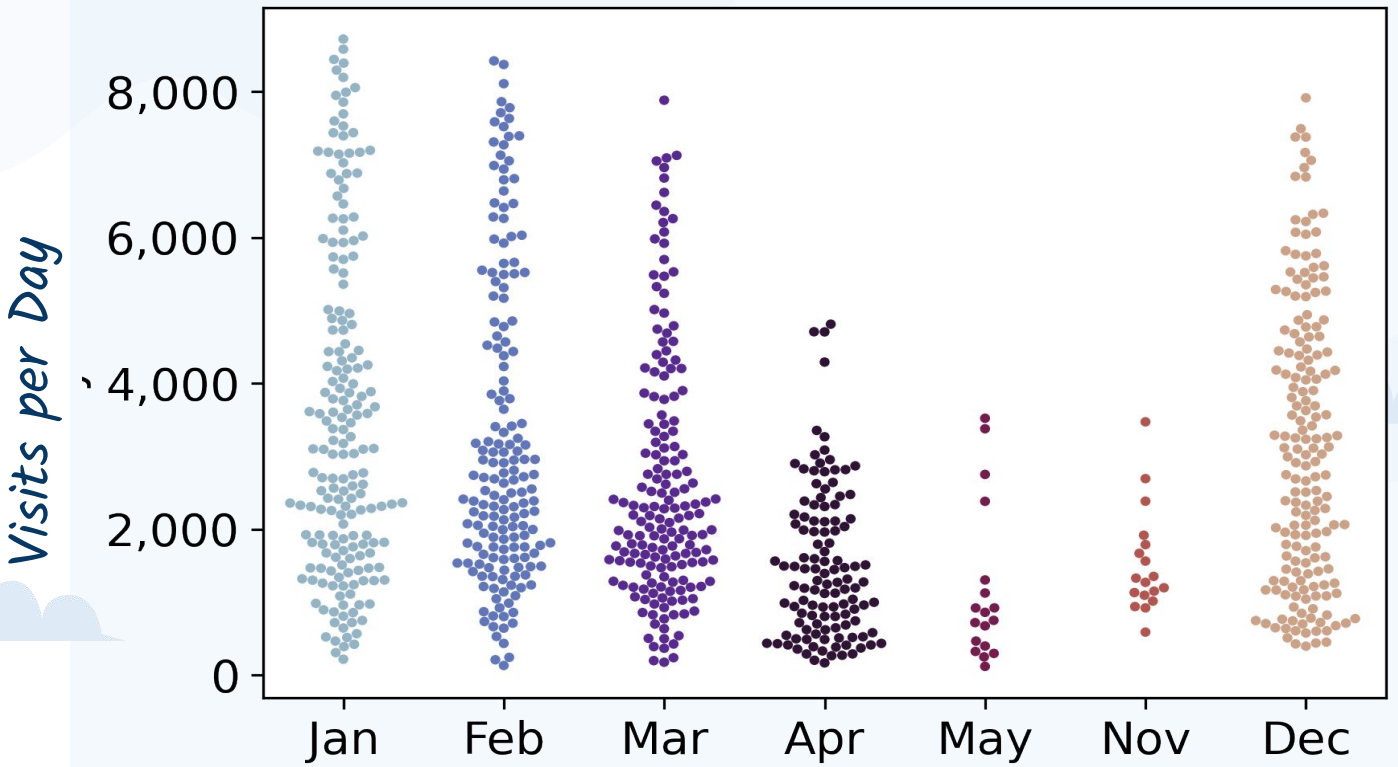
- Major Population Center
- Mountain Weather

Events

- Holidays
- Day Of Week
- School Breaks

01

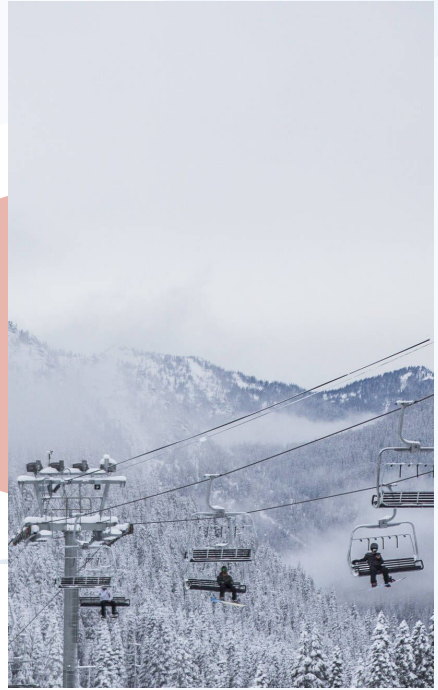
DAILY VISITS by MONTH



METHODS

02

METHODS



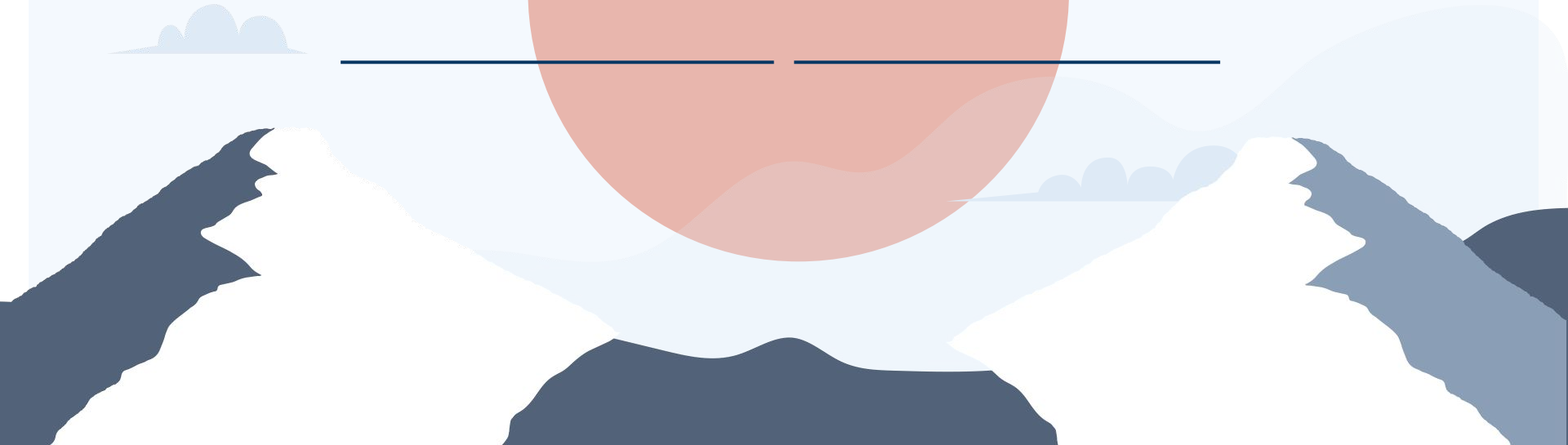
PREPROCESSING

1. Gather
2. Clean
3. Explore

MODELING

1. Simple Model
2. Iterative Models to Improve Score

FINDINGS

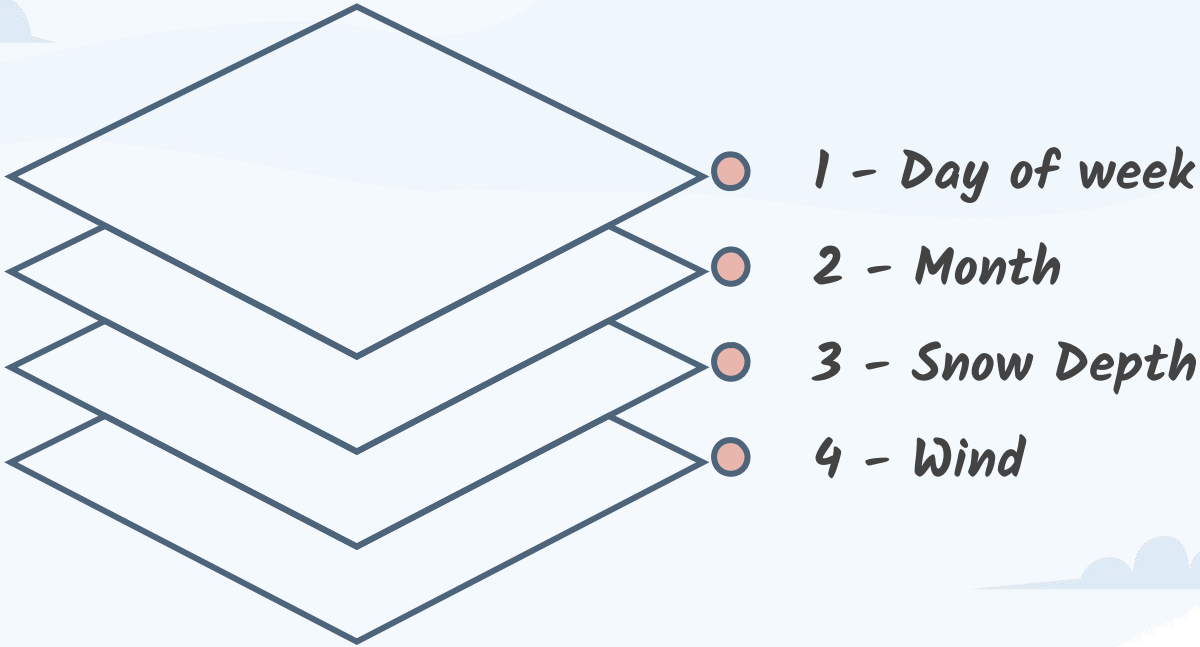


THE MODEL

Gradient Boosting Regressor
Accounts for 75% of the variance

03

Most important features



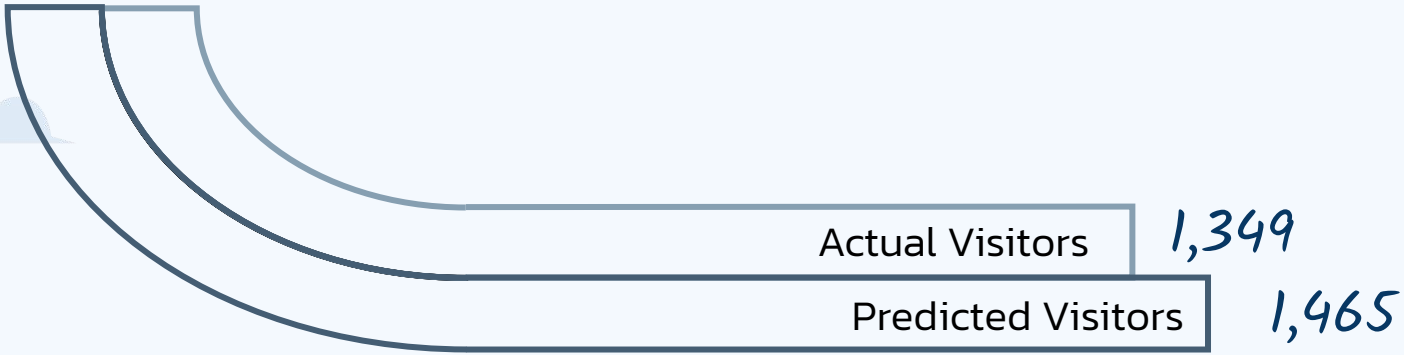
1 - Day of week

2 - Month

3 - Snow Depth

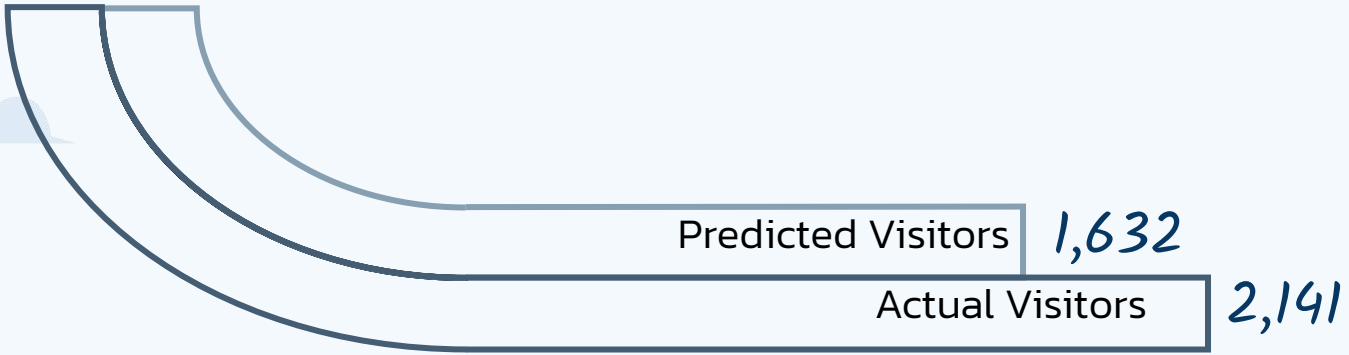
4 - Wind

- Monday,
- February,
- No Precipitation,
- Good Snow Depth
- No wind



03

- Friday in April
- 10 inches of snow
- 32* on the mountain (heavy snow)
- Moderate Winds
- Great snow coverage



FUTURE RESEARCH

FUTURE RESEARCH

PRE-SALE INFO

Day Before Forecast Info

Pre vs Post Pandemic

THANKS

Does anyone have any questions?

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Appendix

Appendix: The Resort

CAPACITY

- 8,000 visitors max
- Standard Deviation of daily visitors = 2,014

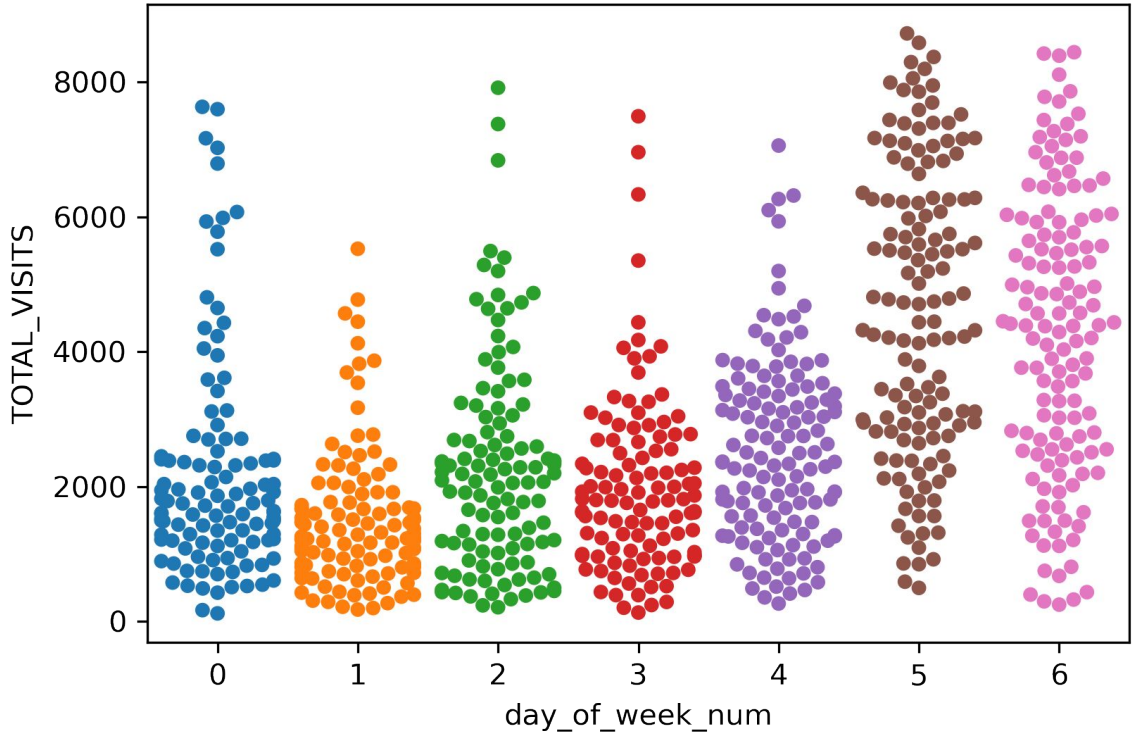
DAY-RESORT

- No Overnight guests

SEASON

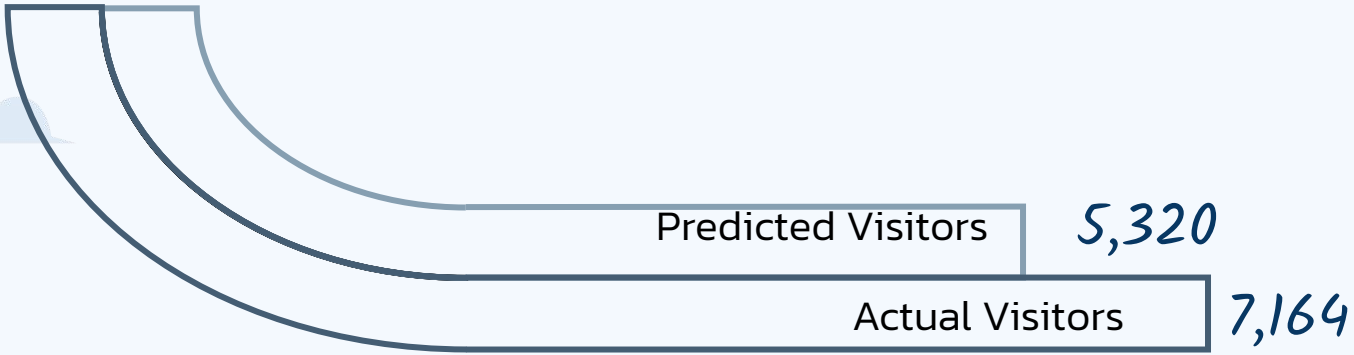
- Typically Nov – May

Appendix: Visits / Day of the week swarm plot



03

- Holiday, Monday
- December
- 0.2 in Snow
- Medium Snow Depth
- Low Wind



Gradient Boosting Regressor Model Details

Hyperparameters:

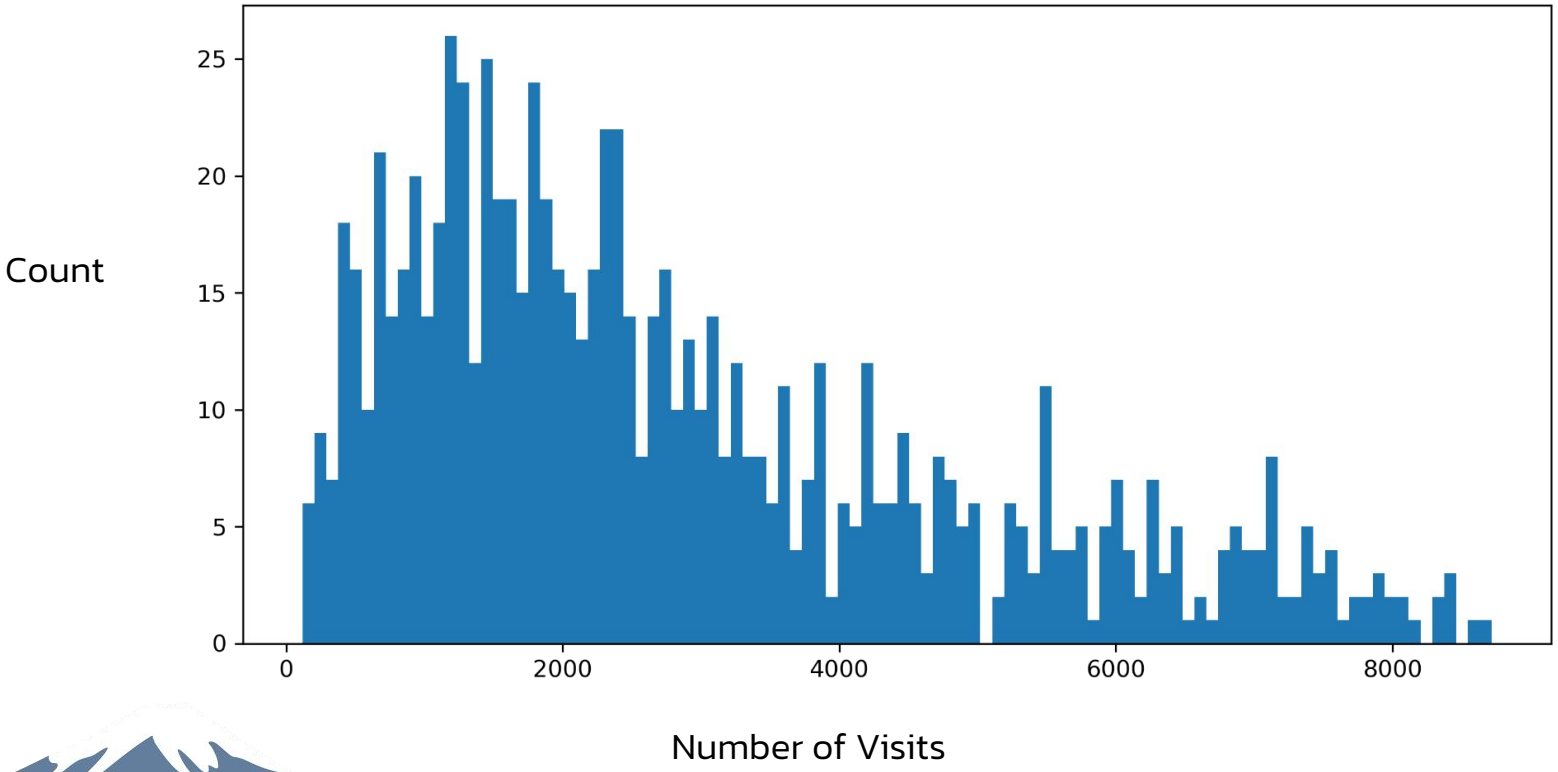
- `criterion`= 'friedman_mse',
- `n_estimators`= 300,
- `min_samples_split`= 2

Mean Difference between predictions and actual

- 787 Visitors

Standard Deviation of

Appendix: Distribution of Visits



Appendix: Precipitation at the resort compared to visits

Precipitation: Water equivalent Inches