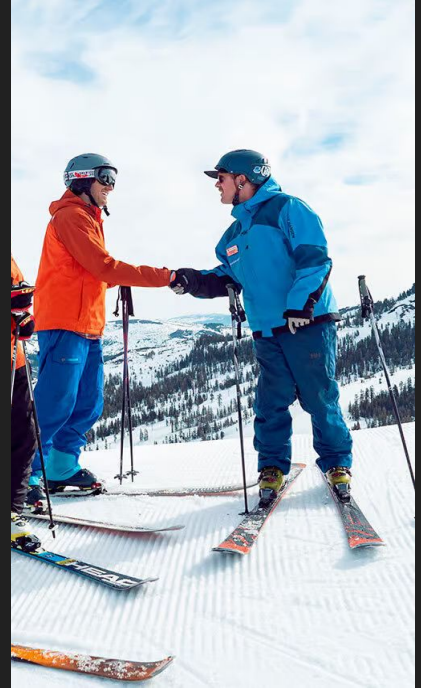# Big Mountain's Big Problem

And an Even Bigger Solution

Big Mountain's Revenue Streams

- Lodging
- Classes
- Memberships
- Amenities

- How do we set these prices?
  - Operating Cost
 - Value
  - Market Demand
  - Data-Driven Approach

The Big Problem? Arbitrary Pricing

- Failure to capitalize on our most accessible Revenue Stream:

    TICKET PRICE

- Current Strategy
    - Average Ticket Price in our Market Share ($63)
    - Arbitrary Premium ($18)
    - Total Price: $81

- Treat like any other Revenue Stream
    - Operating Cost
    - Value
    - Market Demand
    - Much, much more difficult to determine…
- Data-Driven Approach!

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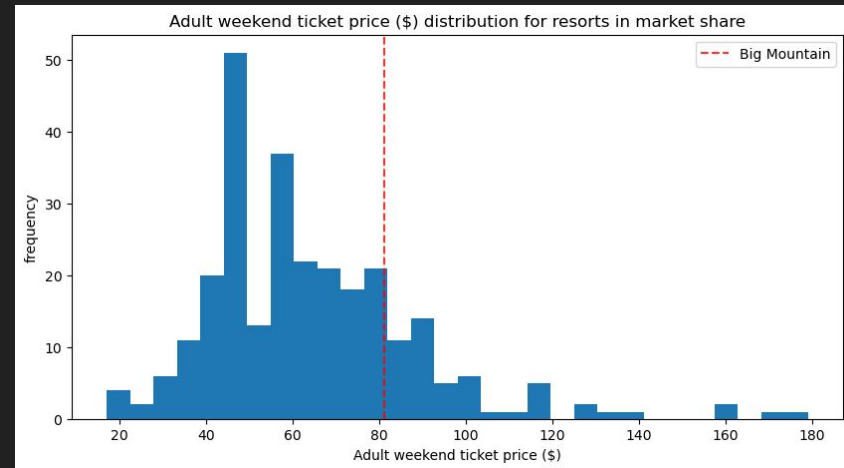
Investment Strategy

Recognize Revenue Drivers	Make Appropriate Decisions	Lead the Market

Recognize Revenue Drivers
- Skiable Terrain
- Longest Run
- Average Snowfall
- Snow-making acreage
- Night-skiing availability

Make Appropriate Decisions
- Investment and Renovation
- Facility Closures and Cut Costs
- Avoid blind or "intuitive" decisions

Lead the Market
- Respond to the market well enough - ultimately lead the market
- Improve customer experience

Data Driven Approach

What Does the Data Say?

- Current Price: $81
- Price Predicted by the Model: $95
- Potential Revenue Increase: **$26 Million**
- Driving Features:
    - Total Chairs - Fast Quads
    - Total Runs
    - Snow-Making Acreage
    - Vertical Drop

Best random forest regressor feature importances
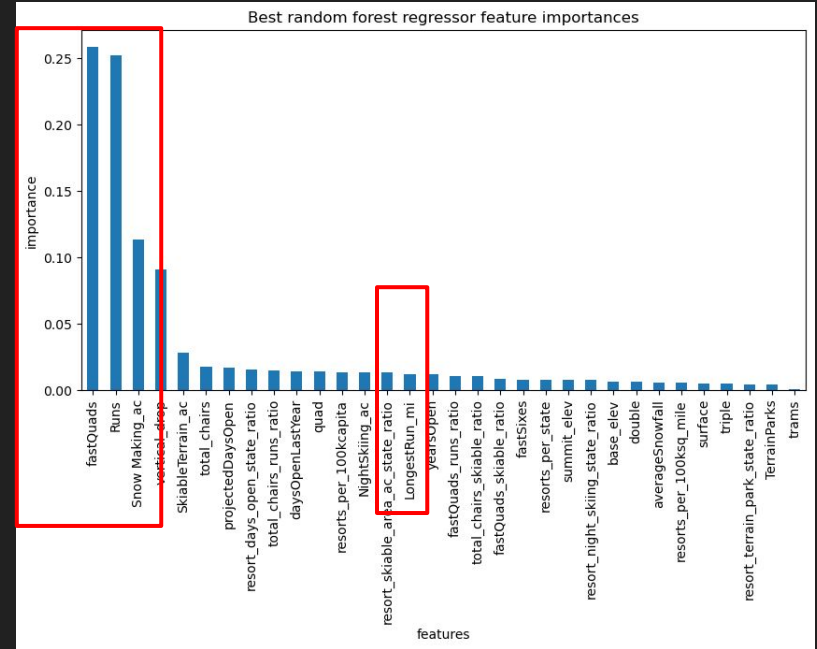
Suggested Course of Action

- Additions
  - 1 run + Vertical Drop 150 ft
  - 1 Chairlift - FastQuad preferred
- Closures
  - 3 existing runs
- Ticket Price
  - Increase to **$87.16**
- Projected Revenue Increase: **$10.7 Million**
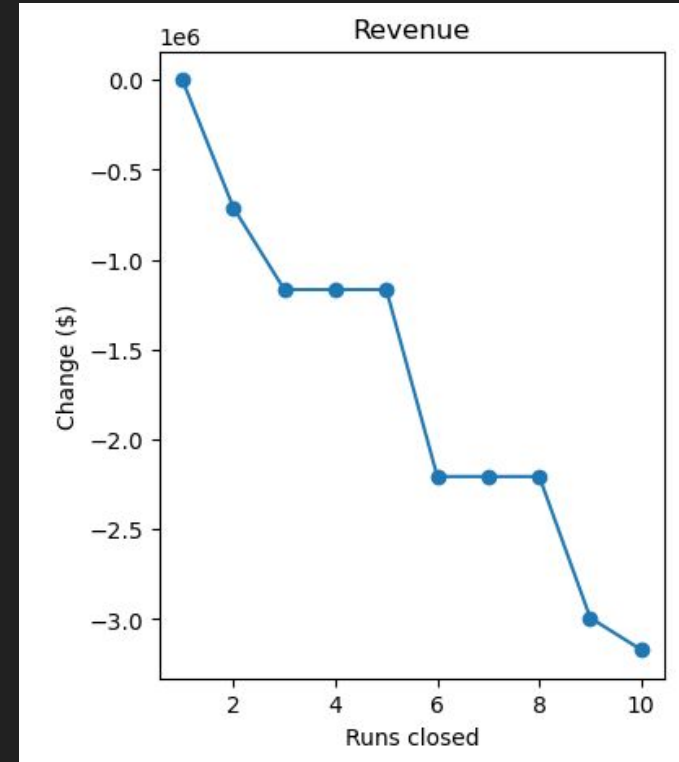
How Did We Get There?

- Began with 330 different resorts

- Wrangling
  - Buying ingredients
- Exploratory Data Analysis
  - Preparing the food
  - 277 resorts left
- Preprocessing & Modeling
  - Serving the meal

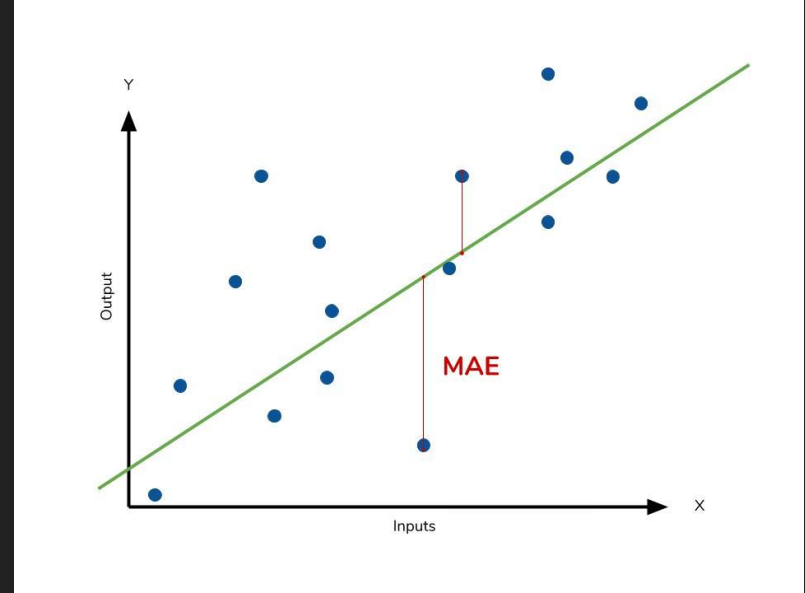|			
Name	Big Mountain Resort	Snow Making_ac	600.0
Region	Montana	daysOpenLastYear	123.0
state	Montana	yearsOpen	72.0
summit_elev	6817	averageSnowfall	333.0
vertical_drop	2353	AdultWeekend	81.0
base_elev	4464	projectedDaysOpen	123.0
trams	0	NightSkiing_ac	600.0
fastSixes	0	resorts_per_state	12
fastQuads	3	resorts_per_100kcapita	1.122778
quad	2	resorts_per_100ksq_mile	8.161045
triple	6	resort_skiable_area_ac_state_ratio	0.140121
double	0	resort_days_open_state_ratio	0.129338
surface	3	resort_terrain_park_state_ratio	0.148148
total_chairs	14	resort_night_skiing_state_ratio	0.84507
Runs	105.0	total_chairs_runs_ratio	0.133333
TerrainParks	4.0	total_chairs_skiable_ratio	0.004667
LongestRun_mi	3.3	fastQuads_runs_ratio	0.028571
SkiableTerrain_ac	3000.0	fastQuads_skiable_ratio	0.001

"The Model"

- Set of numeric guidelines that can help make predictions
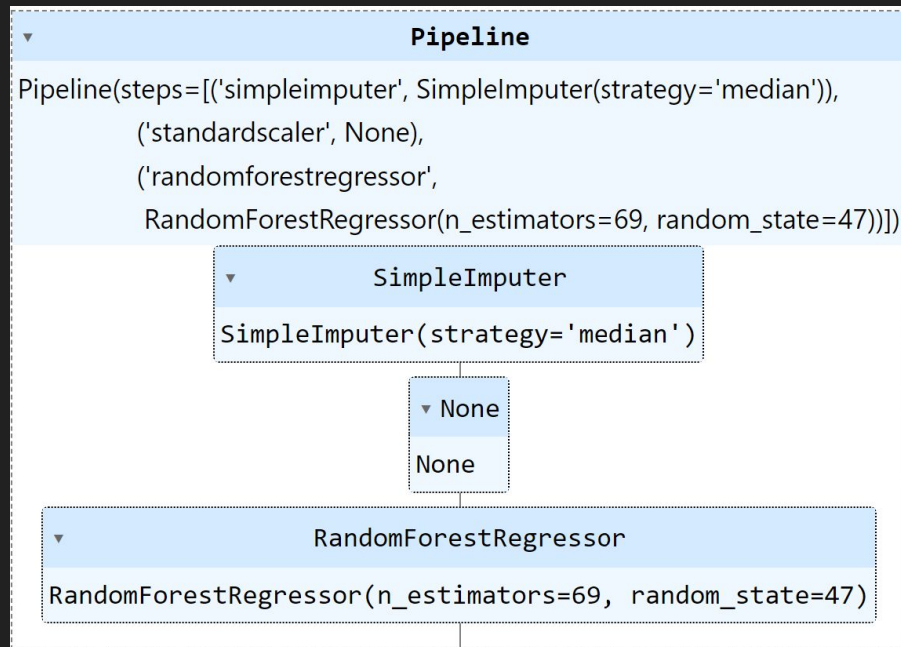- Where do the guidelines come from? What predictions?

Resort	Feature 1	Feature 2	Target Feature
Crystal Mountain	335	12	$99
Park City	290	11	$78
Big Mountain	228	15	$76
Whitetail	250	10	$65
Ashwood	238	19	$95

TRAINING SET

TESTING SET

A Tale of Two Models

- Linear Regression
- Random Forest Regression
- Evaluating and Optimizing
  - Cross Validation
  - Parameter Grids
  - Reduce Mean Absolute Error
- The Winner: **Random Forest Regression**

Big Mountain's Features

Pipeline

```
Pipeline(steps=[('simpleimputer', SimpleImputer(strategy='median')),
                ('standardscaler', None),
                ('randomforestregressor',
                 RandomForestRegressor(n_estimators=69, random_state=47))])
```

SimpleImputer

```
SimpleImputer(strategy='median')
```

None

```
None
```

RandomForestRegressor

```
RandomForestRegressor(n_estimators=69, random_state=47)
```

Q: Is Big Mountain really that good compared to other resorts?

$95.87, MAE $10.39
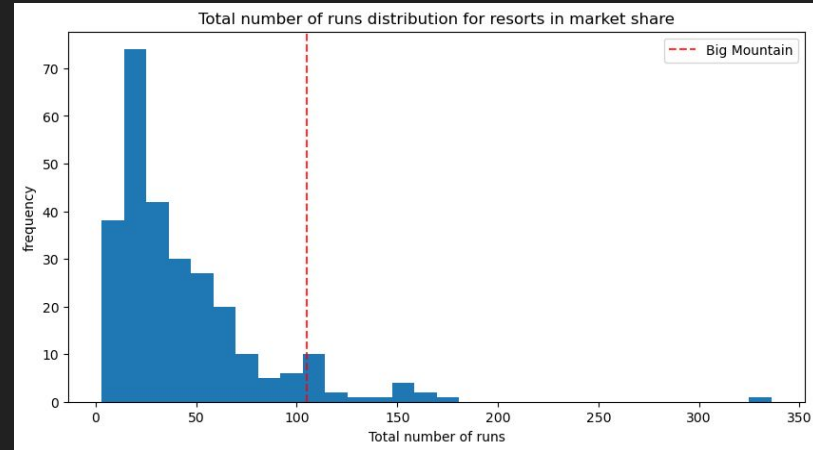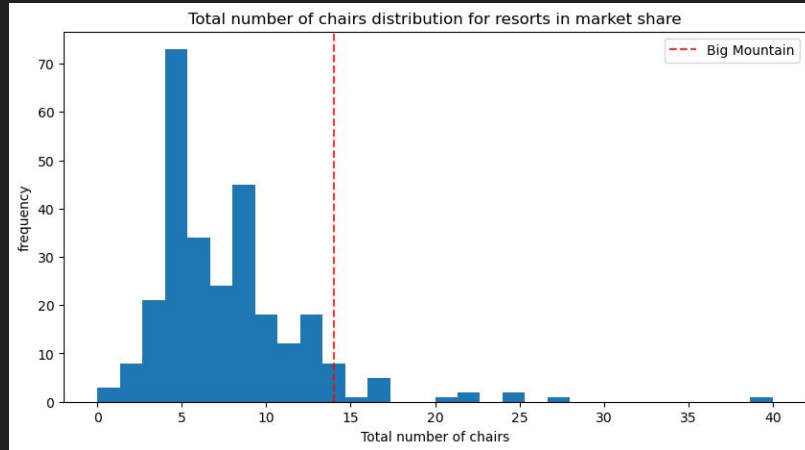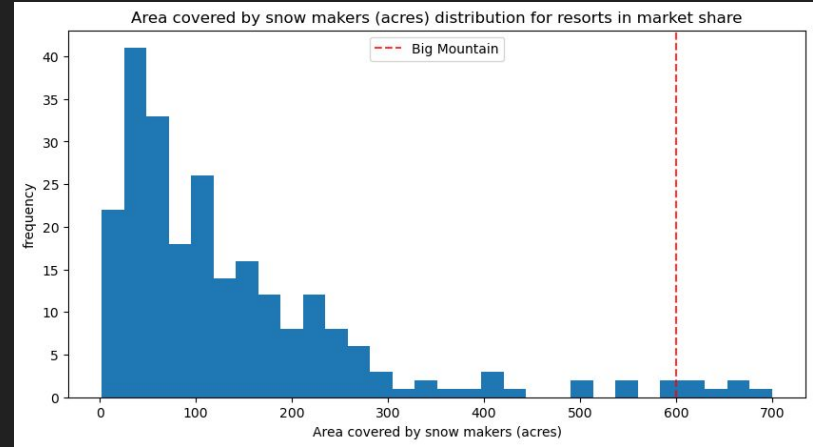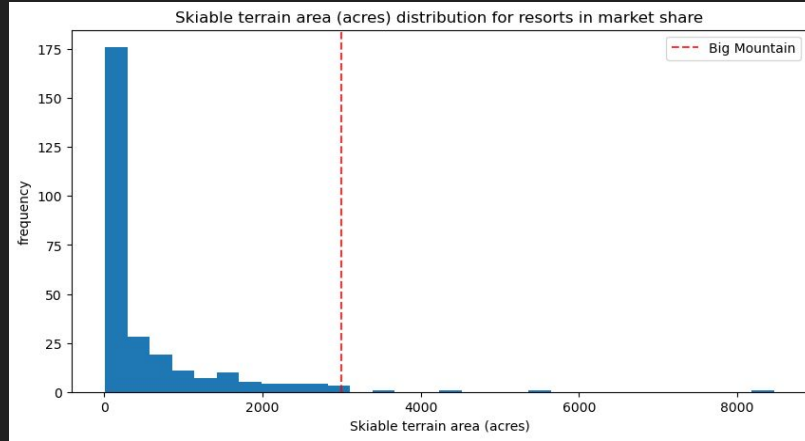
Big Mountain Is Worth More

- Introduce New Features
  - 1 New Chairlift
  - 1 New Run
  - 150 ft Vertical Drop
- Cut Costs
  - 3 Run Closures
- Increase ticket price to **$87.16**
  - Stepwise Increase to $95 by 2027

$10.7M

2025 Revenue

Thank You!