

Predicting Ski Resort Visitation

Capstone Project – Lenore Perconti
Flatiron Data Science Bootcamp





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AGENDA

01 Business Understanding

02 Data Overview

03 Methods & Findings

04 Future Research

WINTER RESORTS

How many people will show up today?





The image features a 2x2 grid of puzzle pieces, each with a dark blue outline and rounded corners. The pieces are arranged in a square, with interlocking tabs and blanks. The top-left piece is labeled 'Multi-Day Pass', the top-right 'Season Pass', the bottom-left 'Day-Ticket', and the bottom-right 'OTHER'. The background is a light blue gradient with stylized clouds and a dark blue wave at the bottom.

Multi-Day
Pass

Season
Pass

Day-
Ticket

OTHER

WHAT DETERMINES VISITATION?



DAY OF WEEK?



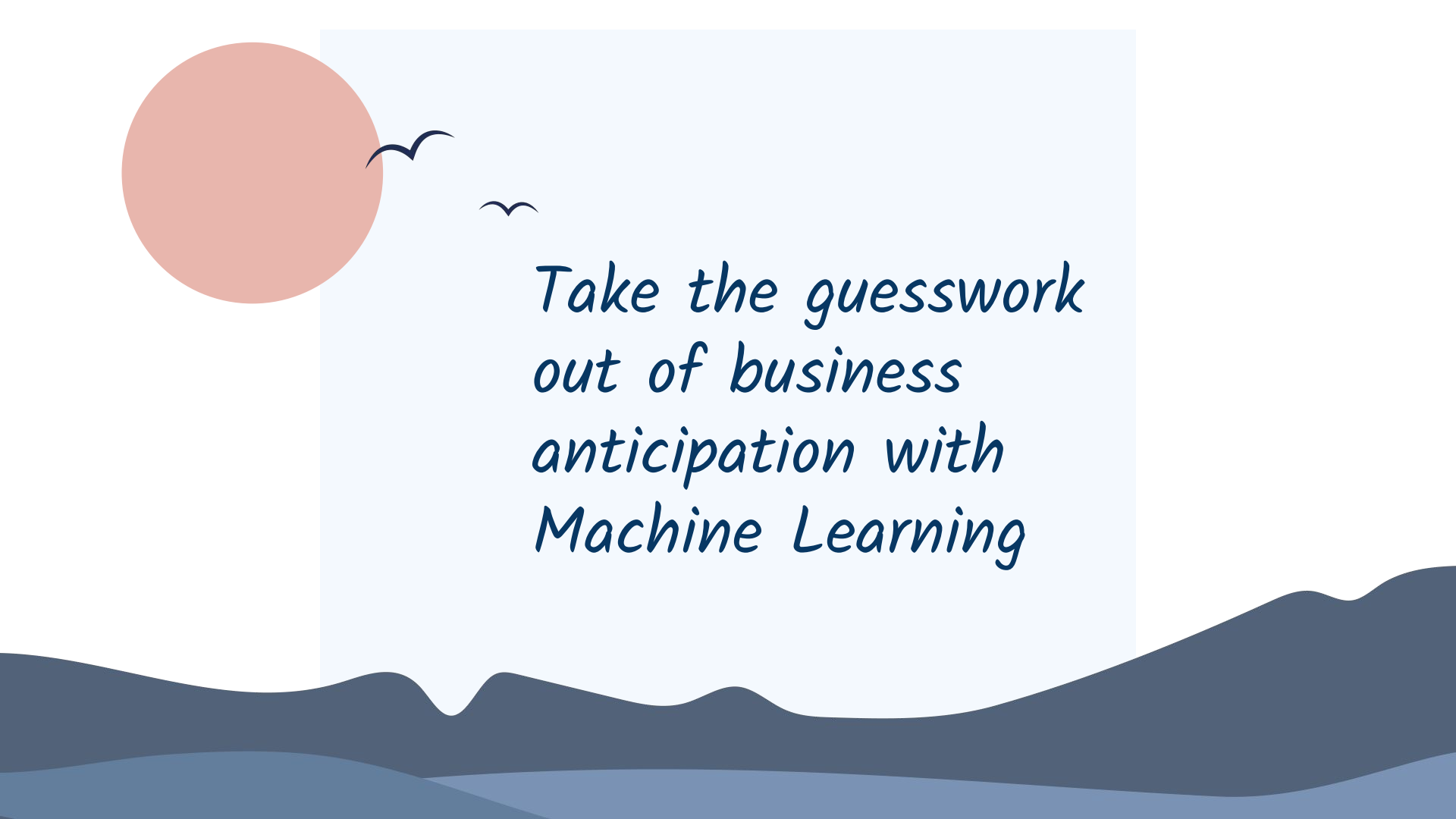
HOLIDAY?



WEATHER CONDITIONS?



SCHOOL OUT?



*Take the guesswork
out of business
anticipation with
Machine Learning*

The image is a title card for a 'Dataset Overview'. It features a large, semi-transparent reddish-orange circle in the center, resembling a sun or moon. The text 'DATASET OVERVIEW' is written in a dark blue, hand-drawn, uppercase font across the middle of this circle. Below the text is a thin, dark blue horizontal line. The background is a light blue sky with stylized, dark blue mountain peaks at the bottom and some light blue clouds on the left and right sides.

DATASET OVERVIEW

DATA



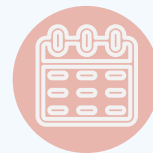
Visits

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



Local Weather

- Major Population Center
- Mountain Weather



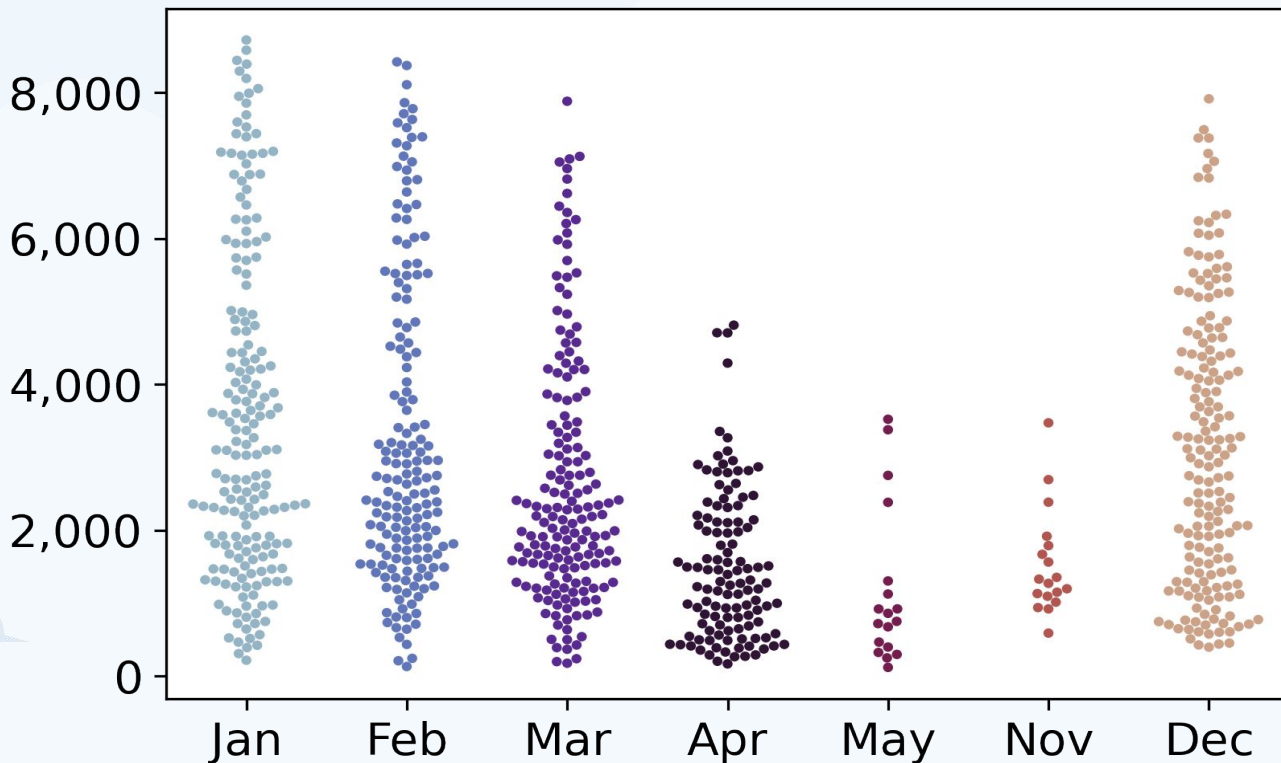
Events

- Holidays
- Day Of Week
- School Breaks

01

DAILY VISITS by MONTH

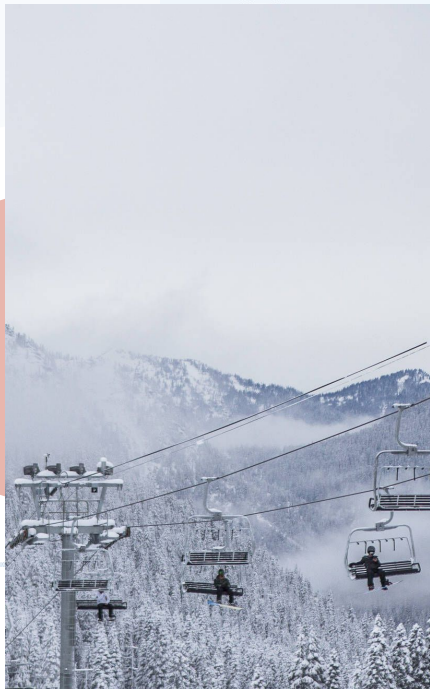
Visits per Day





METHODS

METHODS



PREPROCESSING

- 1 Gather
- 2 Clean
- 3 Explore



MODELING

- 1 Simple Model
- 2 Iterative Models to Improve Score

The background features a stylized landscape with dark blue and white jagged mountain peaks at the bottom. A large, semi-transparent red circle, resembling a sun or moon, is centered in the upper half. A thin dark blue horizontal line passes through the middle of the red circle. The sky is a light blue gradient, and there are small, stylized clouds on the left and right sides.

FINDINGS

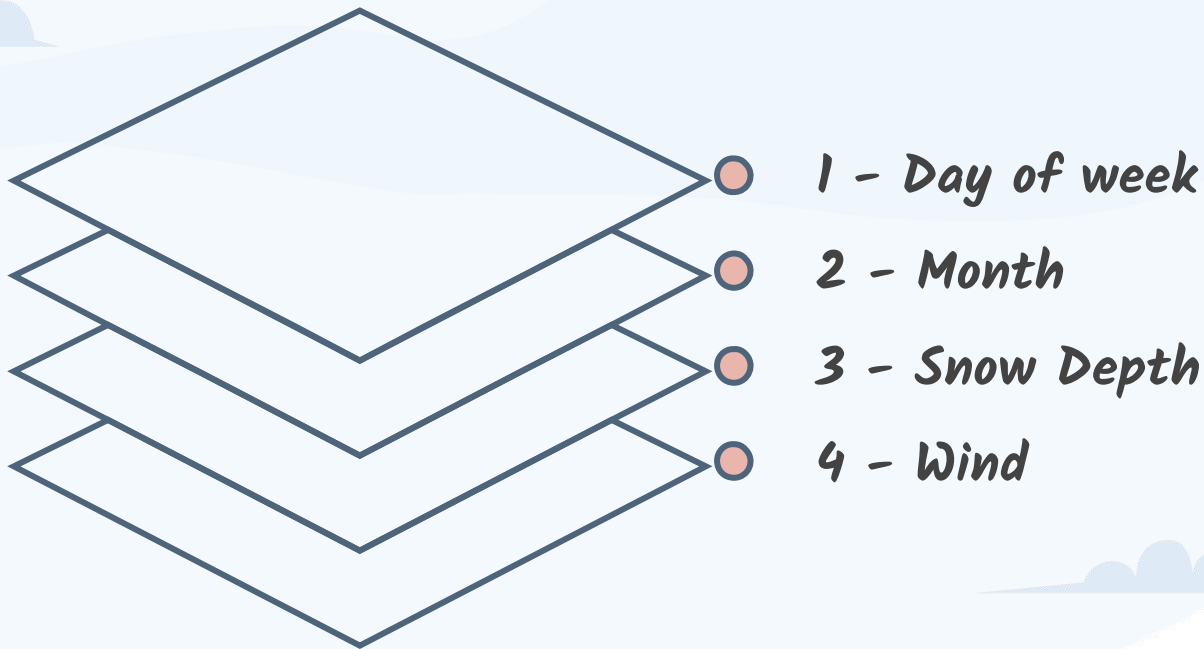
Gradient Boosting Regressor
Accounts for 75% of the
variance

THE MODEL



03

Most important features



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



Actual Visitors 1,349

Predicted Visitors 1,465

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



Predicted Visitors

1,632

Actual Visitors

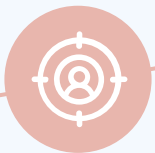
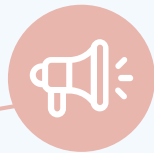
2,141



FUTURE RESEARCH

FUTURE RESEARCH

PRE-SALE INFO



Day Before Forecast
Info



Pre vs Post Pandemic





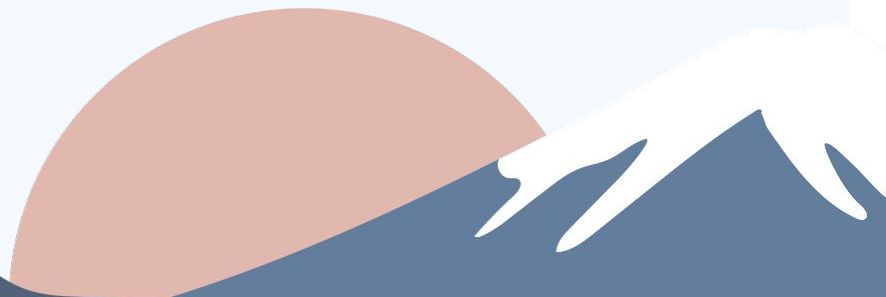
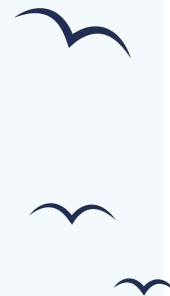
THANKS

Does anyone have any questions?

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CREDITS: This presentation template was created by **Slidesgo**, including icons by **Flaticon**, infographics & images by **Freepik**.



Appendix



Appendix: The Resort



CAPACITY

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



DAY-RESORT

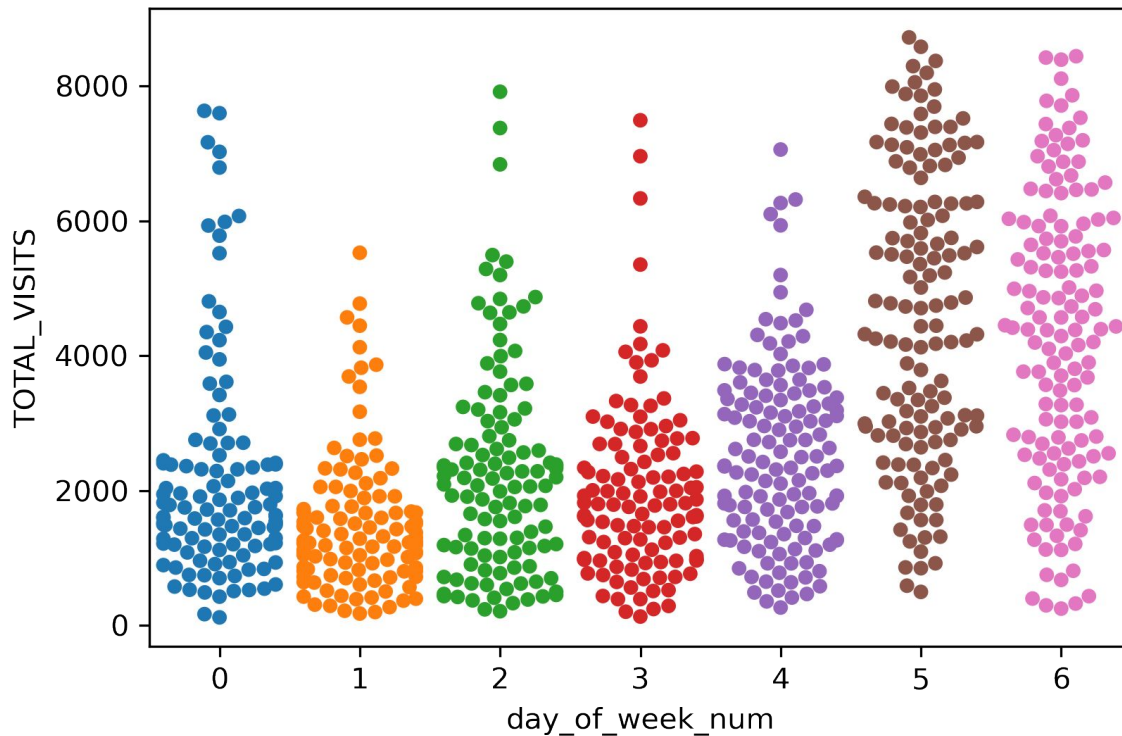
- No Overnight guests



SEASON

- Typically Nov – May

Appendix: Visits / Day of the week swarm plot



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



Predicted Visitors

5,320

Actual Visitors

7,164



Gradient Boosting Regressor Model Details

Hyperparameters:

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

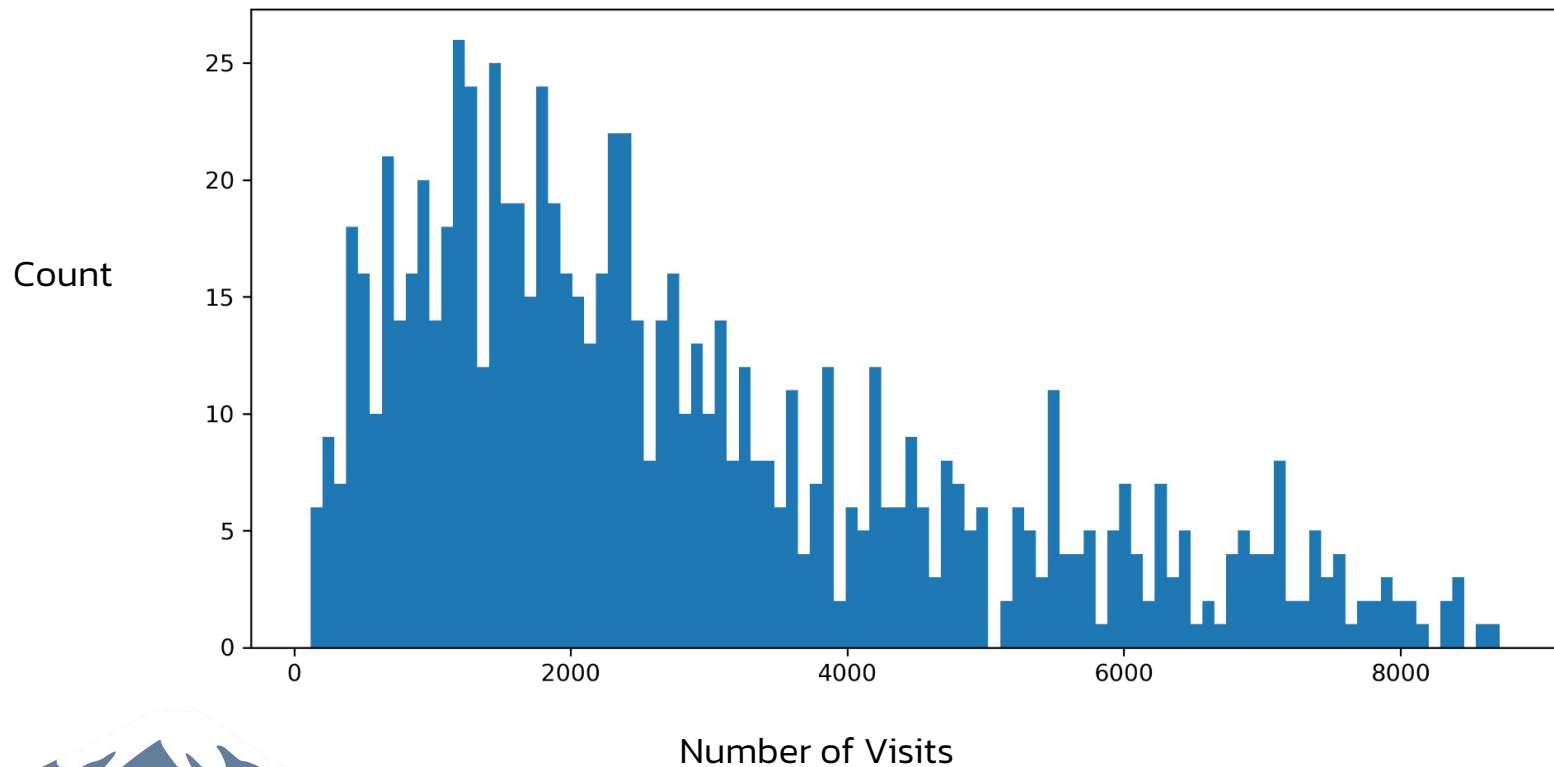
Mean Difference between predictions and actual

- 787 Visitors

Standard Deviation of



Appendix: Distribution of Visits



Appendix: Precipitation at the resort compared to visits

Precipitation:
Water
equivalent
Inches

