Can NFL game winners be predicted with machine learning based on weather?

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Selected Topic

- Machine learning model to predict outcomes of NFL games based on weather data.
- Includes use of data measurements, such as:
  - Teams playing
  - Winner/loser
  - Location of stadium
  - Susceptibility of stadium to elements
  - Temperature
  - Humidity
  - Wind speed

Reason topic was selected

- Collective interest among team members
- Large amounts of data available
- Several variables to measure
- Able to assess validity using historical data

Description of the source of data

- Kaggle
- https://www.kaggle.com/datasets/tobycrabtree/nfl-scores-and-betting-data)
- NFL scores from 1966 to 2022
- Prior to cleaning, original dataset provided information on 13,232 NFL games

Questions the team hopes to answer with the data

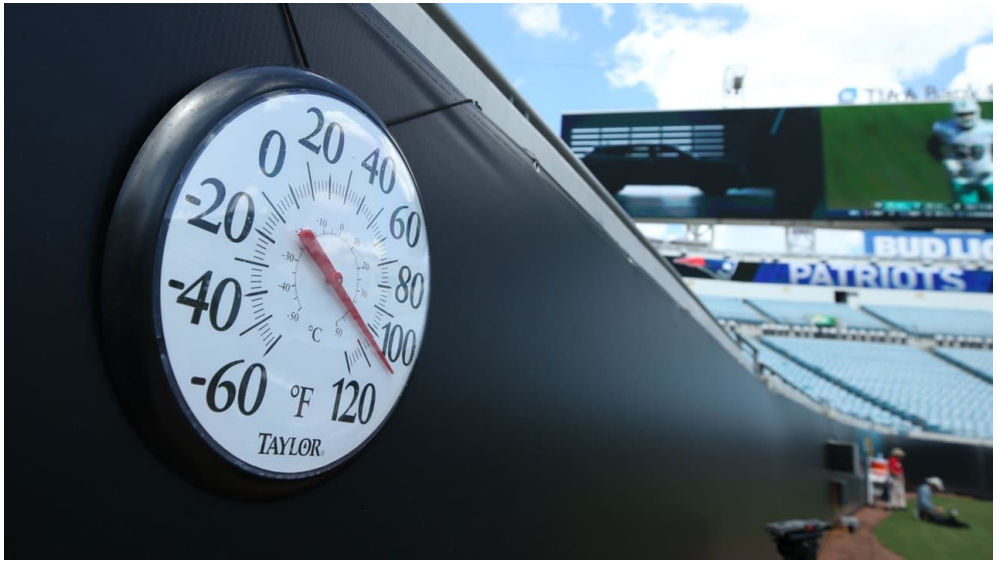
- Does weather affect the outcome of a given NFL game?
- If so, what effect does it have?
- Are the machine learning findings consistent with predictions from historical data?

Description of the data exploration phase of the project

- Dropping columns/excluding data
- Assigning new values to domes/covered stadiums
- Rain-or-not: dealing with vague variables
- Eliminating null values
- Creating a key to combine tables
- Verified matching variables between data sets (stadium names)

Description of the analysis phase of the project

- Linear regression
- Dashboard visualizations
- Relationships we expected to find but didn't



Technologies, languages, tools, and algorithms used throughout the project

- Jupyter Notebook
- Postgres
- Python
- Tableau

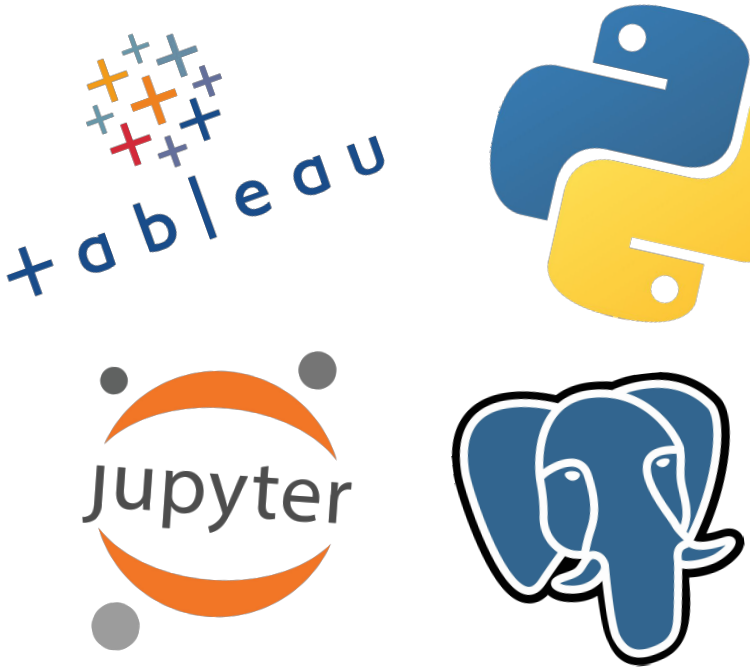
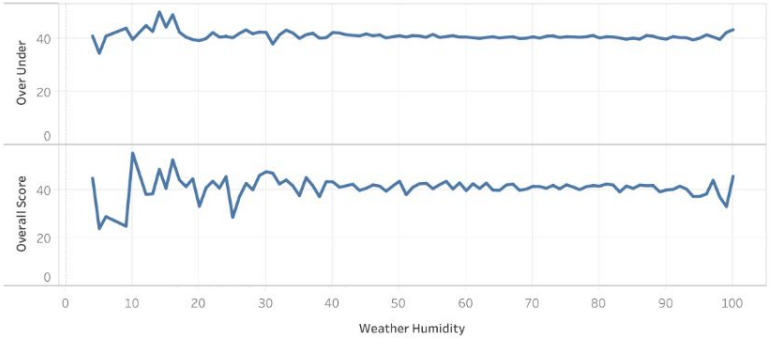
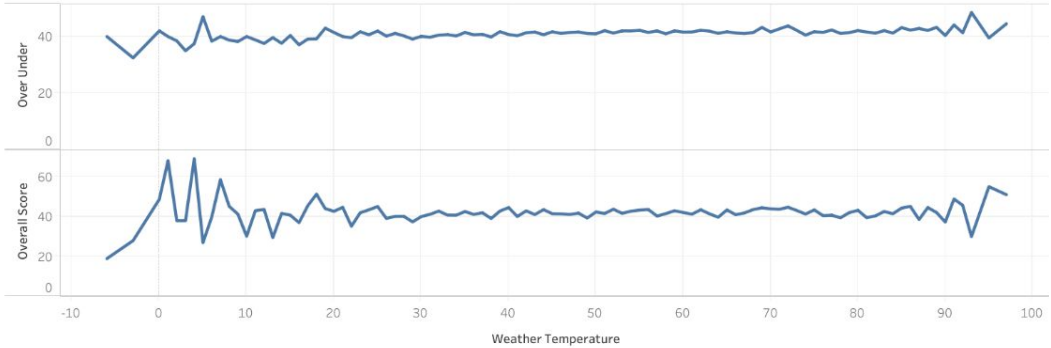


Tableau Dashboard

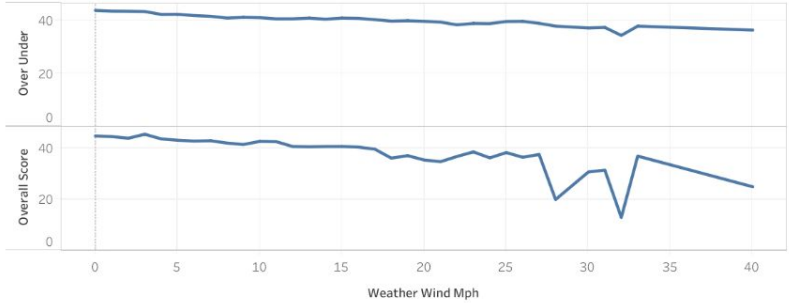
Average Over/Under and overall score by Humidity



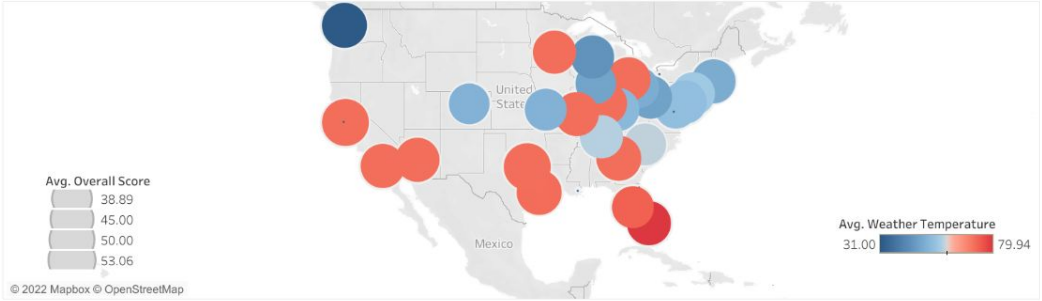
Average Over/Under and overall score by Temperature



Average Over/Under and overall score by Wind MPH



NFL Stadiums - Avg overall score by Temperature



Thank you!