

Battling Food Waste in Retail-Stores

--Predicting Retail-Stores Demand based on date of
the year

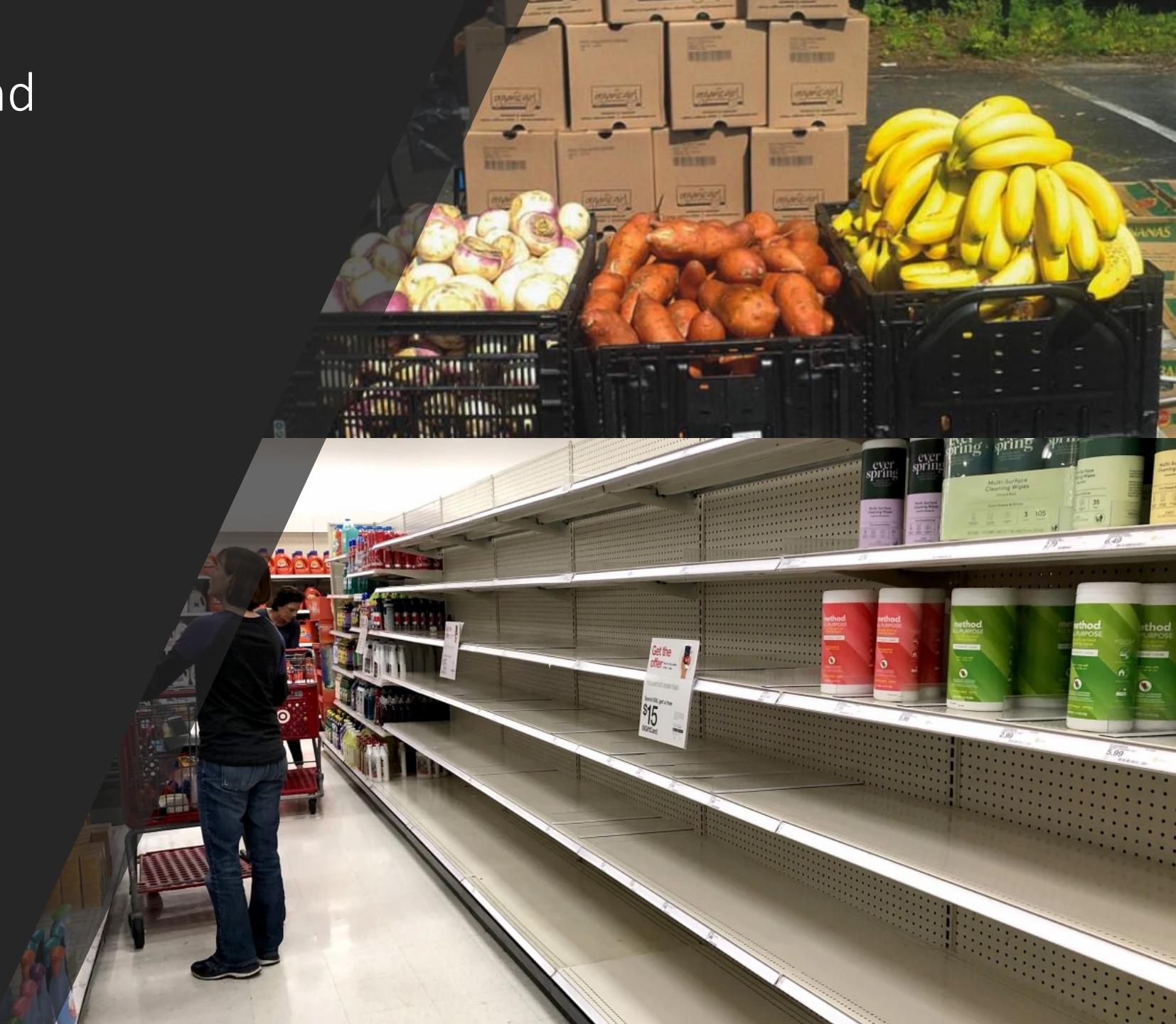


Team JSS

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Why Retail-Stores Demand Prediction Matter?

- Demand for different items varies at different points in time.
- Various external factors affect the demand, leading to food waste
- Most of the wastage comes from the perishable food being not consumed on time.
- Demand Forecasting helps in optimizing the inventory for maximum utilization.
- Reduction in waste has monetary and environmental benefits.
- 170 million metric tons of CO₂ emissions - 42 coal powered plants !



Demand Planning is the best solution!

- Retail stores have the biggest influence on food demand connecting producers and suppliers to consumers.

Annual Impact Potential *

-  Net Financial Benefit
\$ 5.19 billion
-  Food Waste Diversion
1.24M Tons
-  Emissions Reduction
2.78M Metric Tons CO2e
-  Water Savings
200B gallons
-  Jobs Created
1.88k

Data from <https://refed.org/>

Methodology

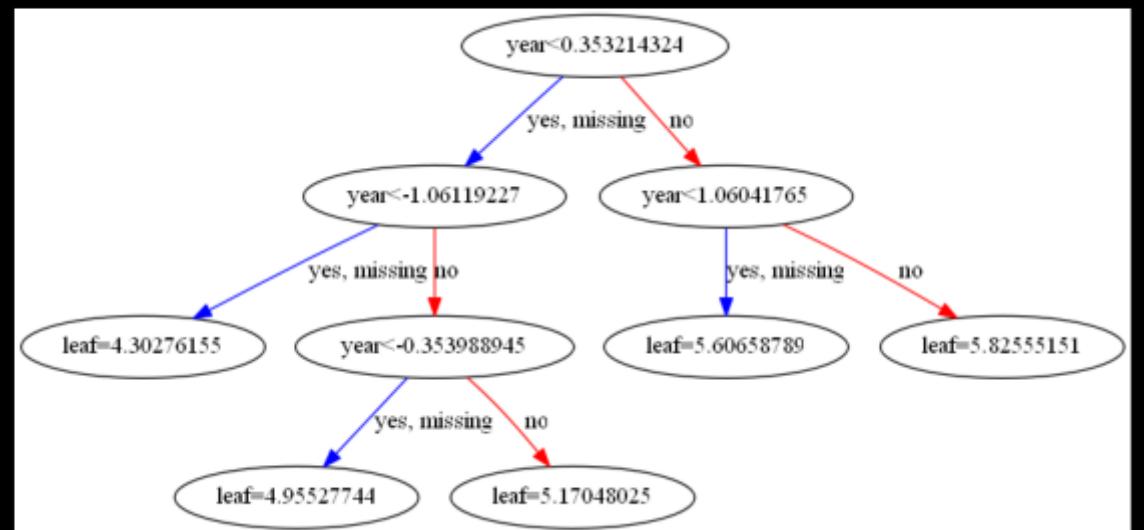
- Dataset:
- Data Source: Store Demand Forecasting from Kaggle
- Data Size: 931,000 entries
- Data Spread: 1st January 2013 to 31st December 2017

Methods:

- Visualization of test data; analyze possible trends
- Train test data to XGboost model

Result for the model

- XGboost RMSE: 8.35
- Weekly avg and monthly avg are most important when it comes to predicting sales values.



Social Impact and Feasibility

- Financial benefits : Government, Retailers and Consumers
- Food Security : Ensuring all people have access to food
- Environmental Benefits
- Stores have a lot of items but we target perishable food items as they are a major source of concern.
- Currently a lot of stores do inventory management manually making them hard which is hard to manage and scale.



Future Plans

- Using real time streaming data for accurate predictions
- Optimizing the model
- Targeting the food wastage at household level