



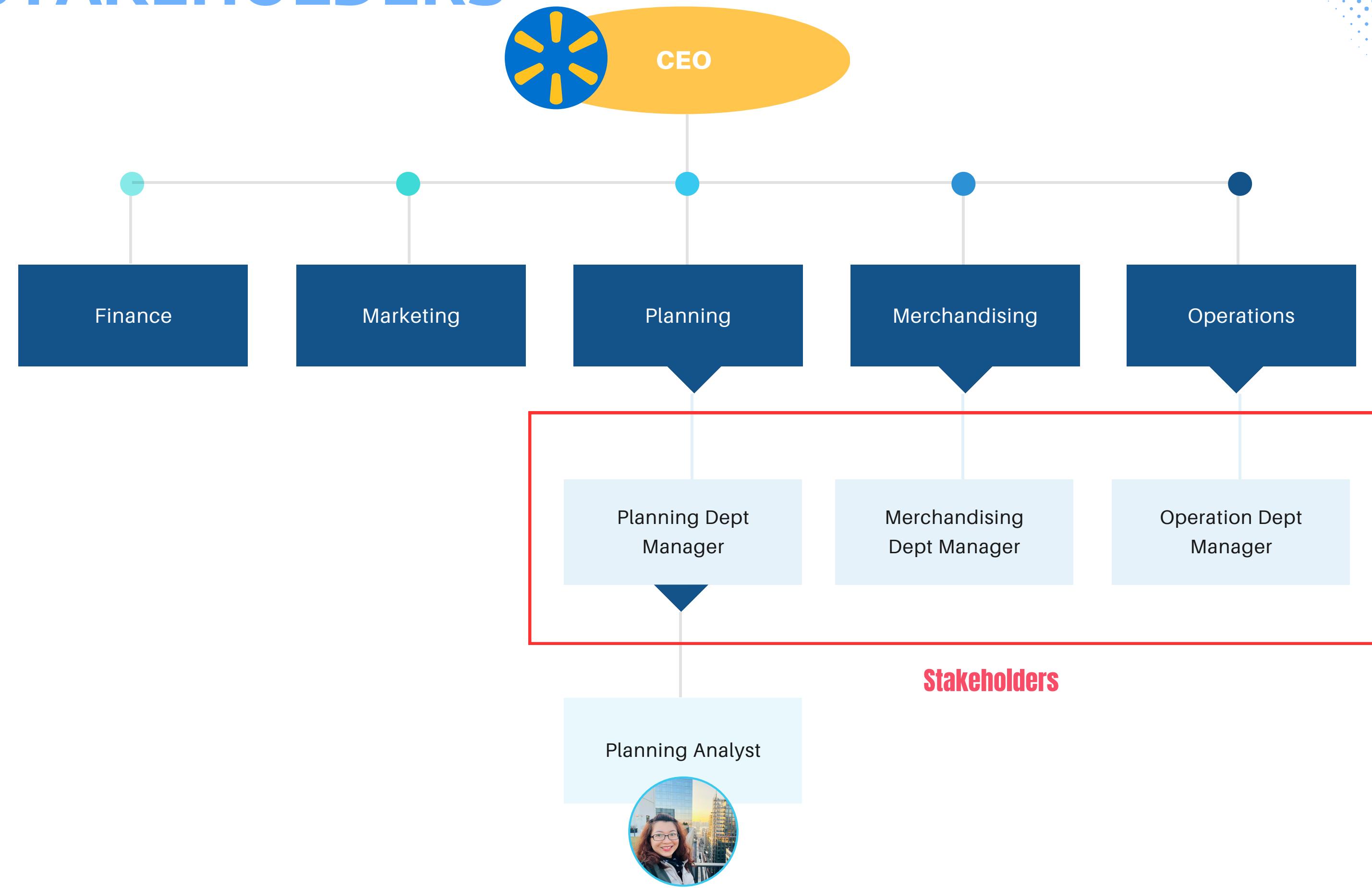
# SALES FORECAST TOOLS



Date: Jul 14th 2023

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# STAKEHOLDERS



# BUSINESS PROBLEM

How to generate sales forecasts quickly and at any time with a certain level of accuracy?

STORES

45

DEPT

99

*Quick*  
*At any time*

WEEKLY SALES  
FORECAST

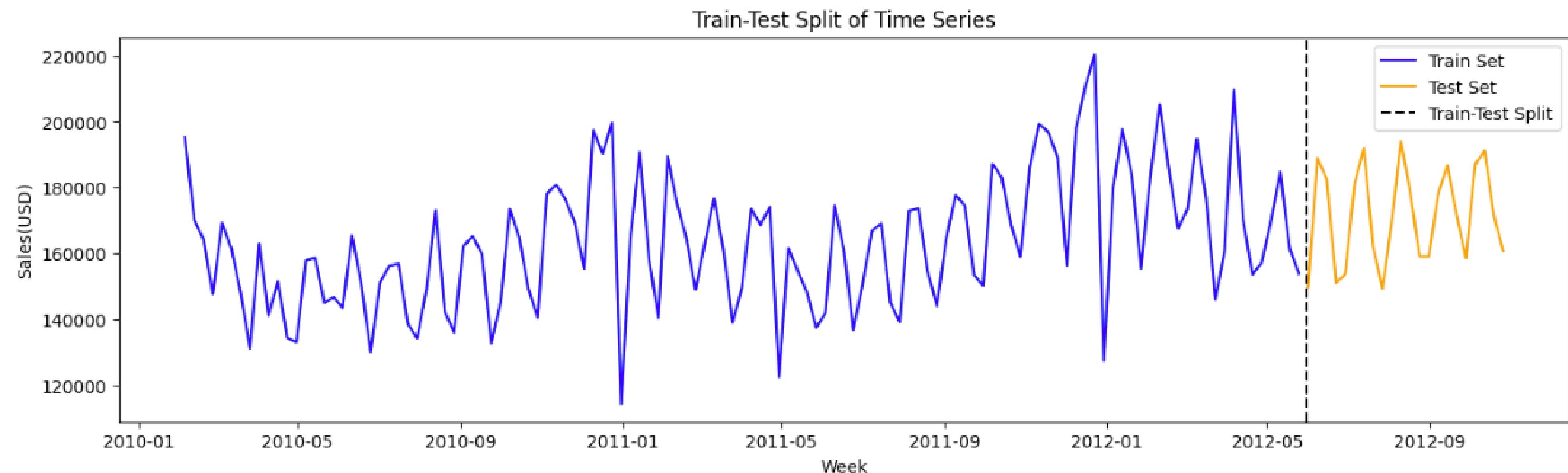


STORE-DEPT

# DATA

**Number of observation (weeks):**

- Total: 143
- Train: 121
- Test: 22



# TIME SERIES MODELS

CLASSICAL TIME SERIES  
MODEL

ARIMA

SARIMAX

Analyze + Modeling

STORES

20<sup>TH</sup>

DEPT

92<sup>TH</sup>

MACHINE LEARNING  
MODEL

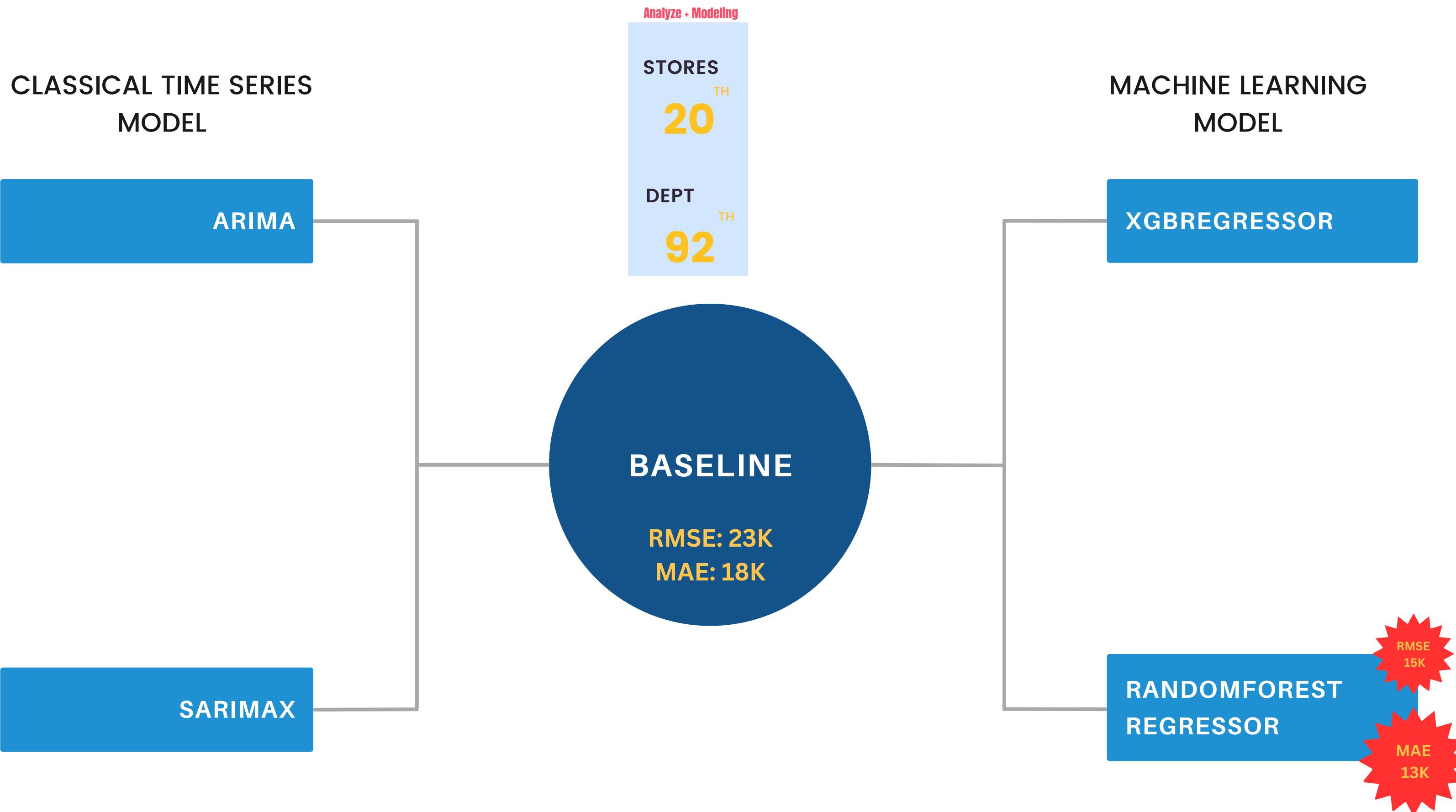
XGBREGRESSOR

RANDOMFOREST  
REGRESSOR

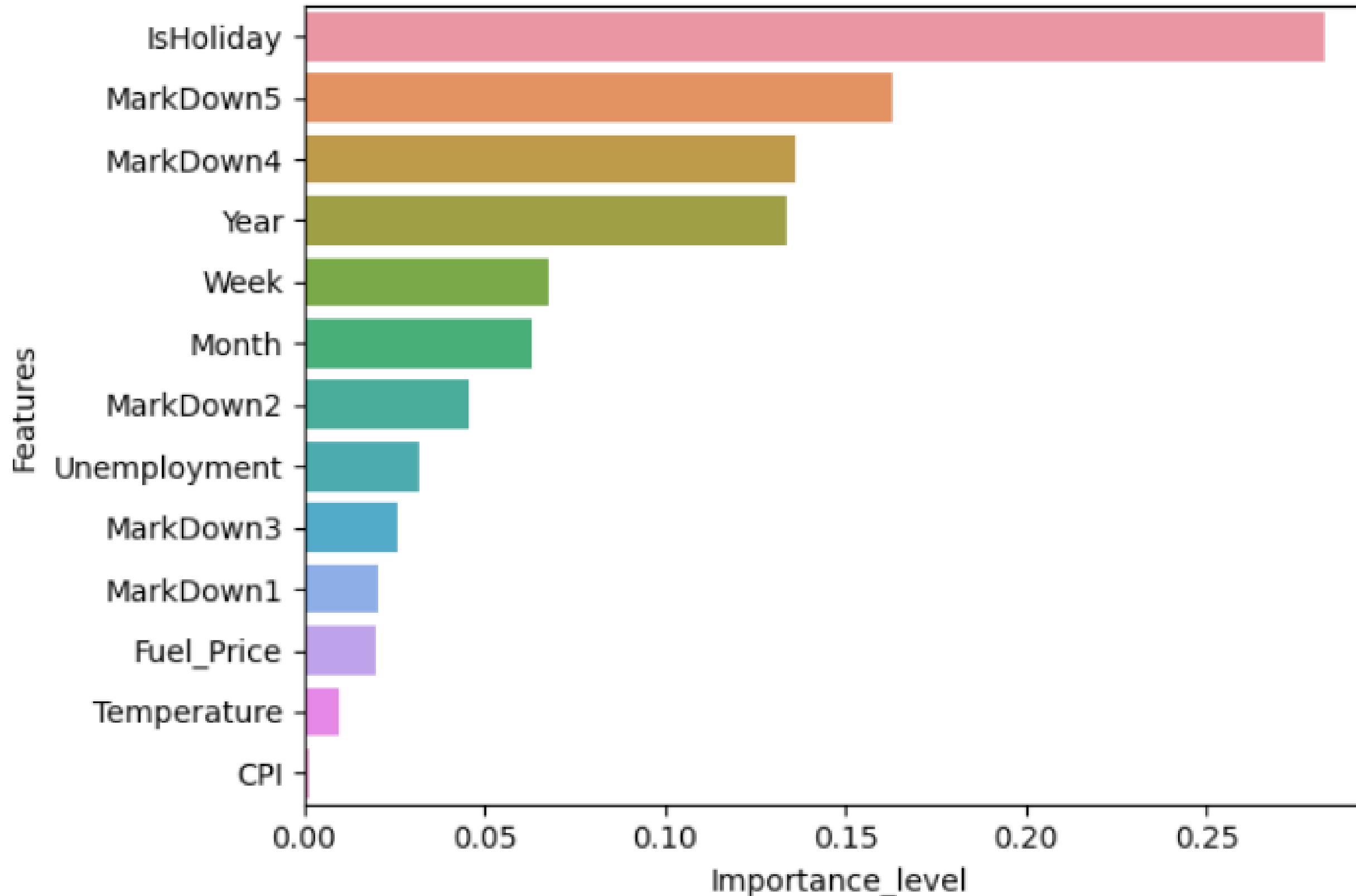
BASELINE

RMSE: 23K  
MAE: 18K

# TIME SERIES MODELS

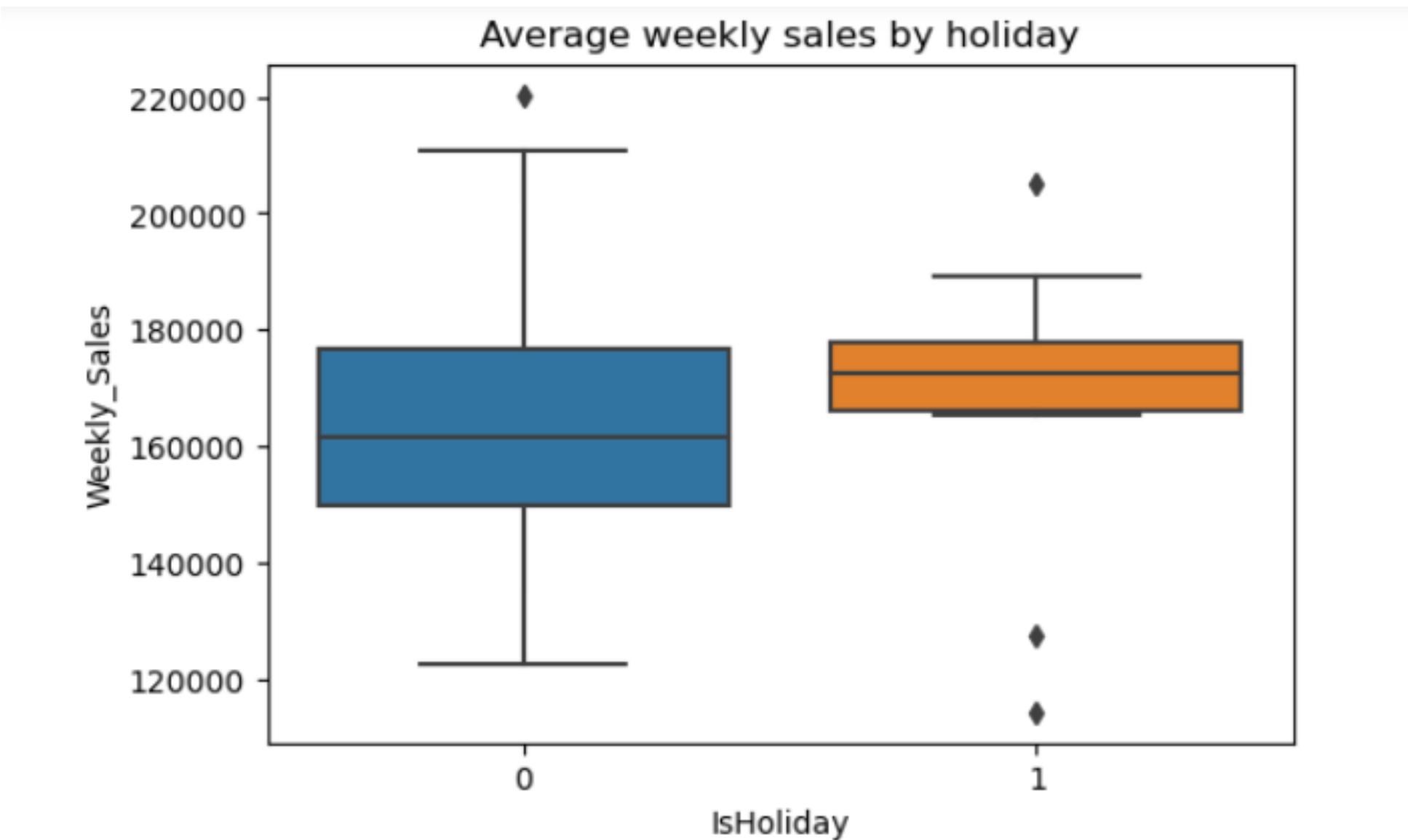


# FEATURE IMPORTANCES



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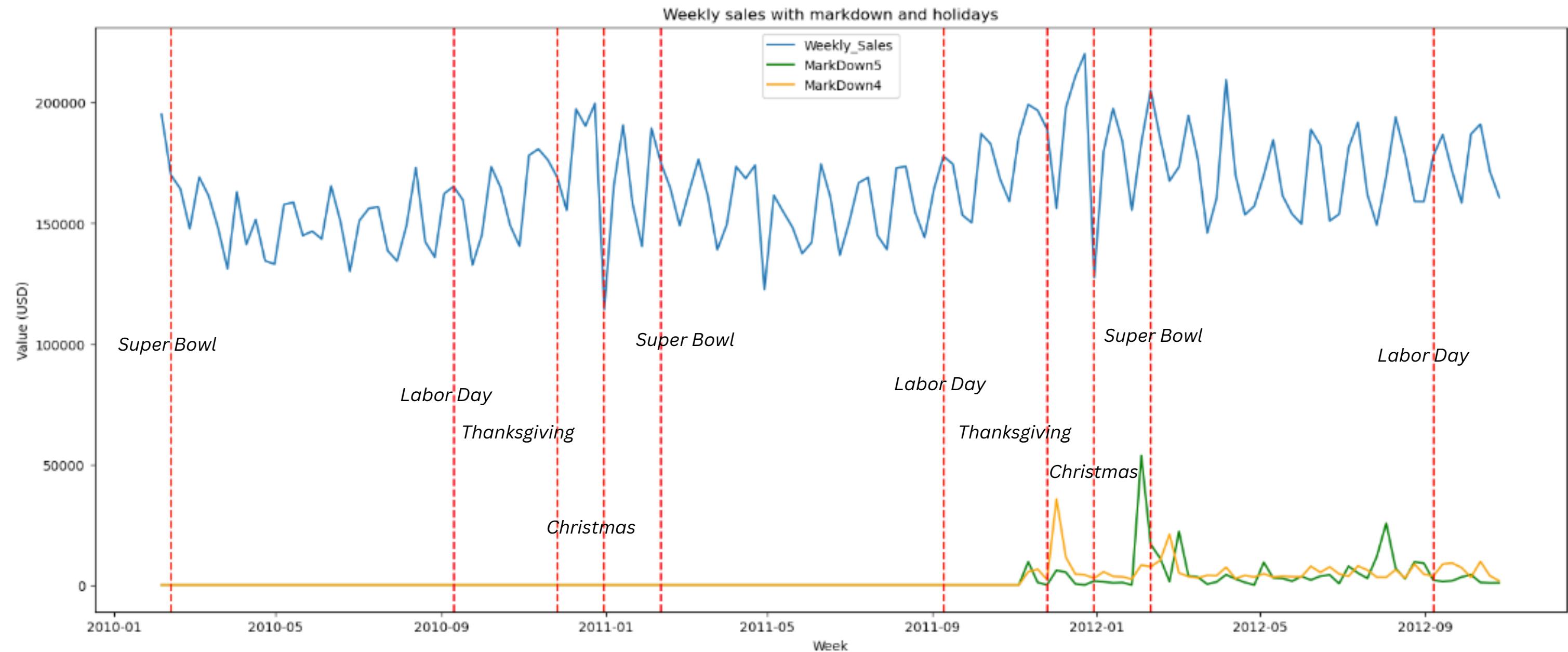
Holiday



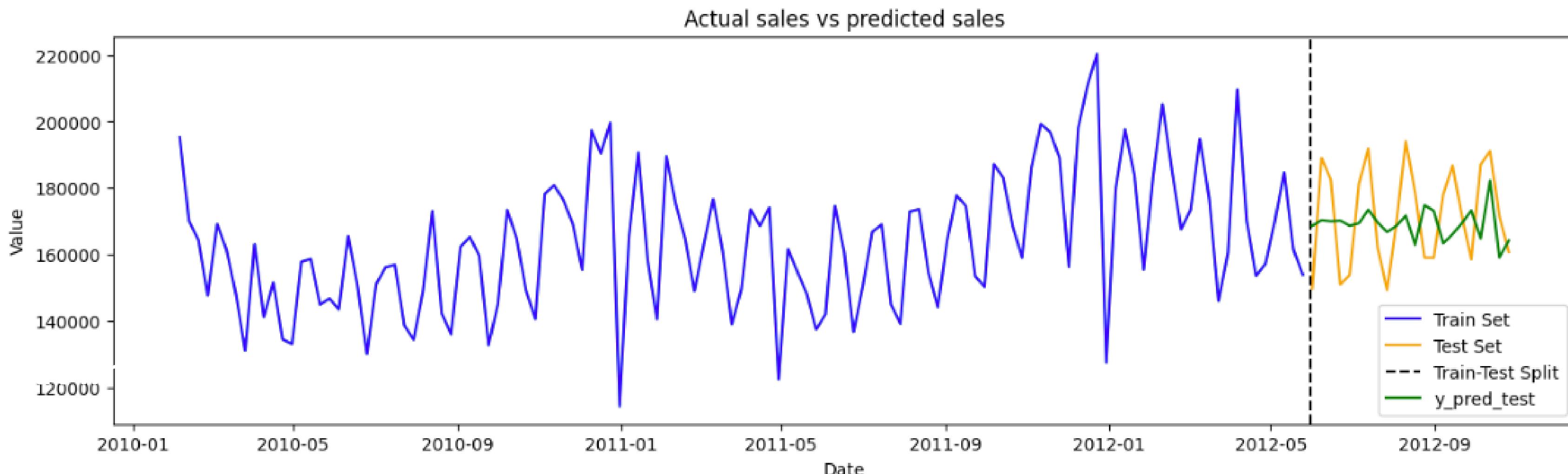
# FEATURE IMPORTANCES

Holiday

Markdown



# ACTUAL SALES VS PREDICTED SALES



# RECOMMENDATION

## Holiday

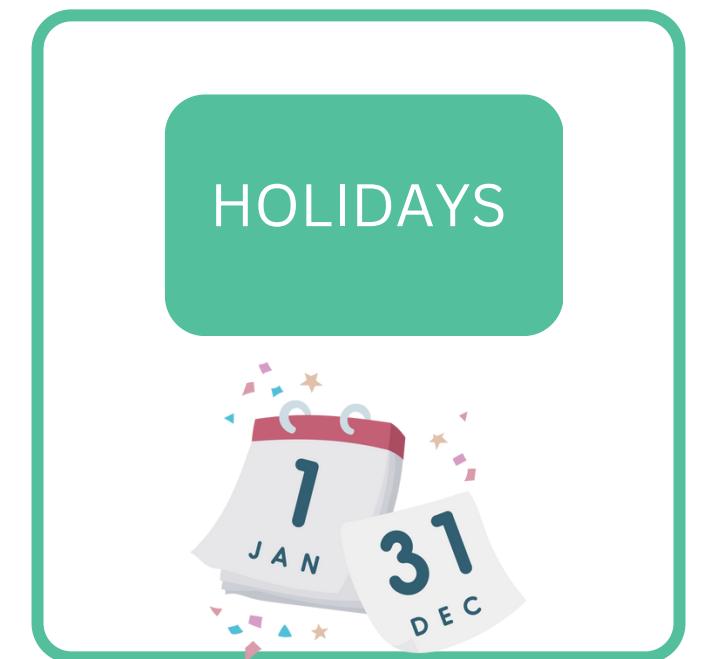
- Current: status True/False
- Recommend: Incorporate a comprehensive collection of annual holidays and categorize them into broader classifications, such as big, medium, and small, based on their duration.

## Sale event

- Current: Missing
- Recommend: adding yearly sale events with categorizing different levels (mega, big, medium, small, flash,etc.)

## Error analysis

- Recommend: Review weekly sale forecast every month/quarter to find out with factors impacting on the errors and make adjustments.



# LIMITATIONS

- Limited dataset with less than 3 years
- Not enough information of existing features

# NEXT STEP

- Adding more data to analyze the trends and seasonality for more than 3 years.
- Add more features to the models (sale events, holidays, weather, etc.) to improve the forecast accuracy.



# QUESTIONS?

# THANK YOU!



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