

# **E-Commerce Shipping Industry**

**Project Presentation- 2024**

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# Project Overview

Leverage on shipping data to;

- Optimize its logistics,
- Enhance customer satisfaction,
- Improve overall operational efficiency

## Business Problem

- Limitations of understanding key shipping performance indicators,
- Predicting delivery times accurately,
- Resource optimization



# Research Objectives

- Identify the factors influencing shipping delays,
- Identify reliable delivery routes,
- Examine cost effective shipping methods,
- Predict future delivery timelines



# Key Questions

- What are the key determinants of shipping delays?
- How do customer demographics and product preferences influence delivery experiences?
- How can we minimize our shipping cost without compromising any service level?
- How do we forecast the delivery times accurately?

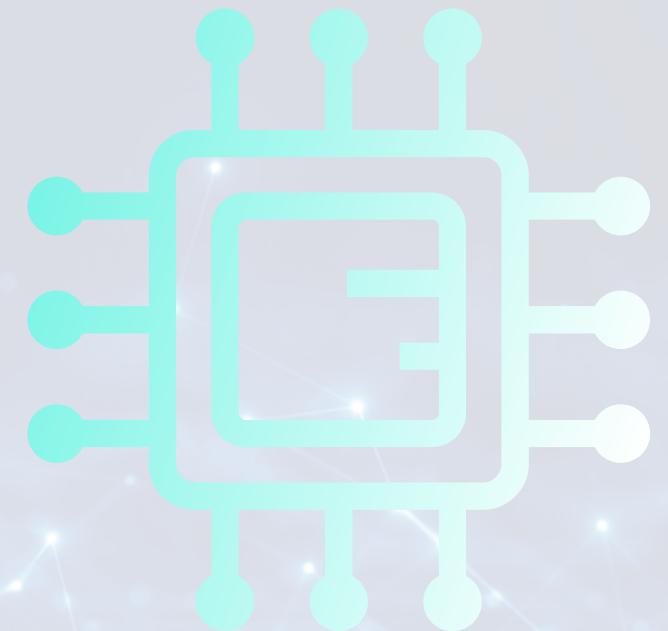


# The Data

## Data Understanding

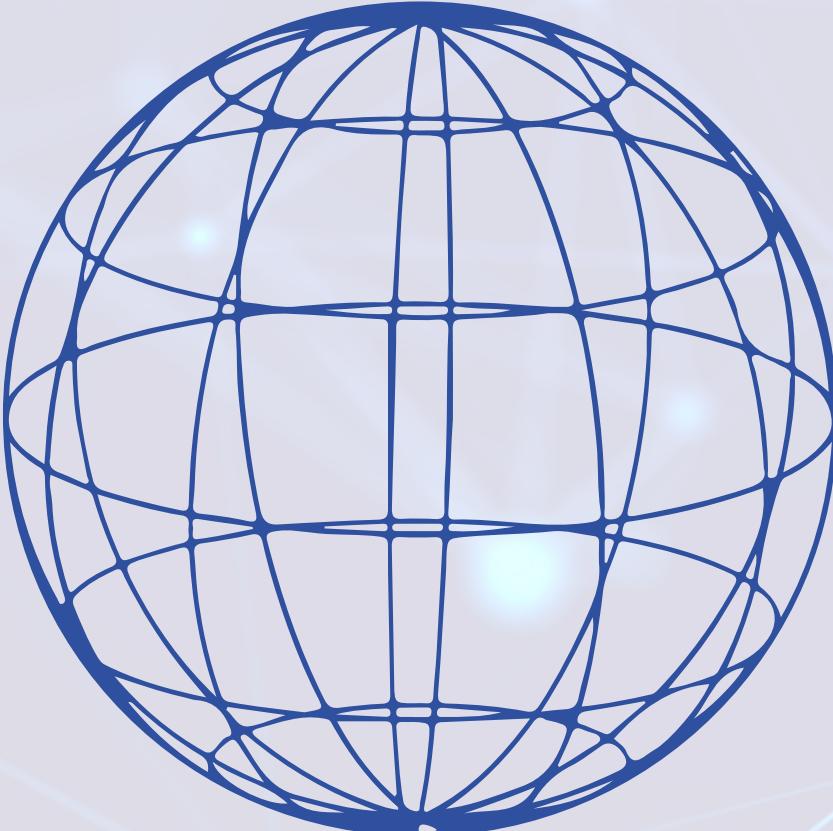
E-Commerce Shipping Dataset from Kaggle.com

- Contain warehouse blocks, shipping modes, customer ratings and other details



# Limitations

- The data lacks demographic details about its users, such as age, gender, or location, making it difficult to identify the audience behind the ratings.
- The data lacks shipping costs to accurately analyze cost effective shipping modes and routes
- It lacks date variable which important in analyzing time series trends
- Outcome of the research is limited to the data extract under analysis

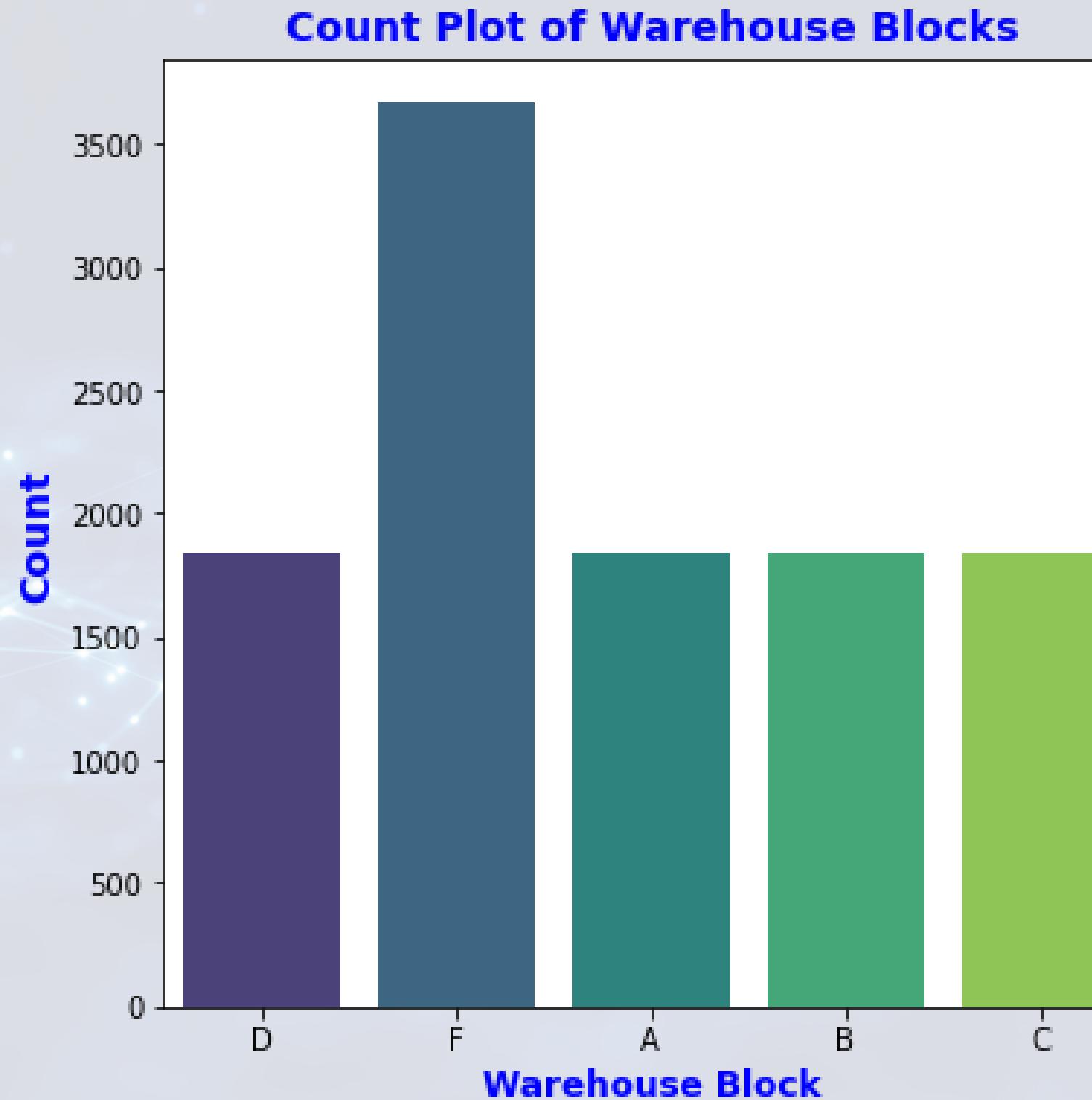


# Data Analysis

Data Analysis Approaches:

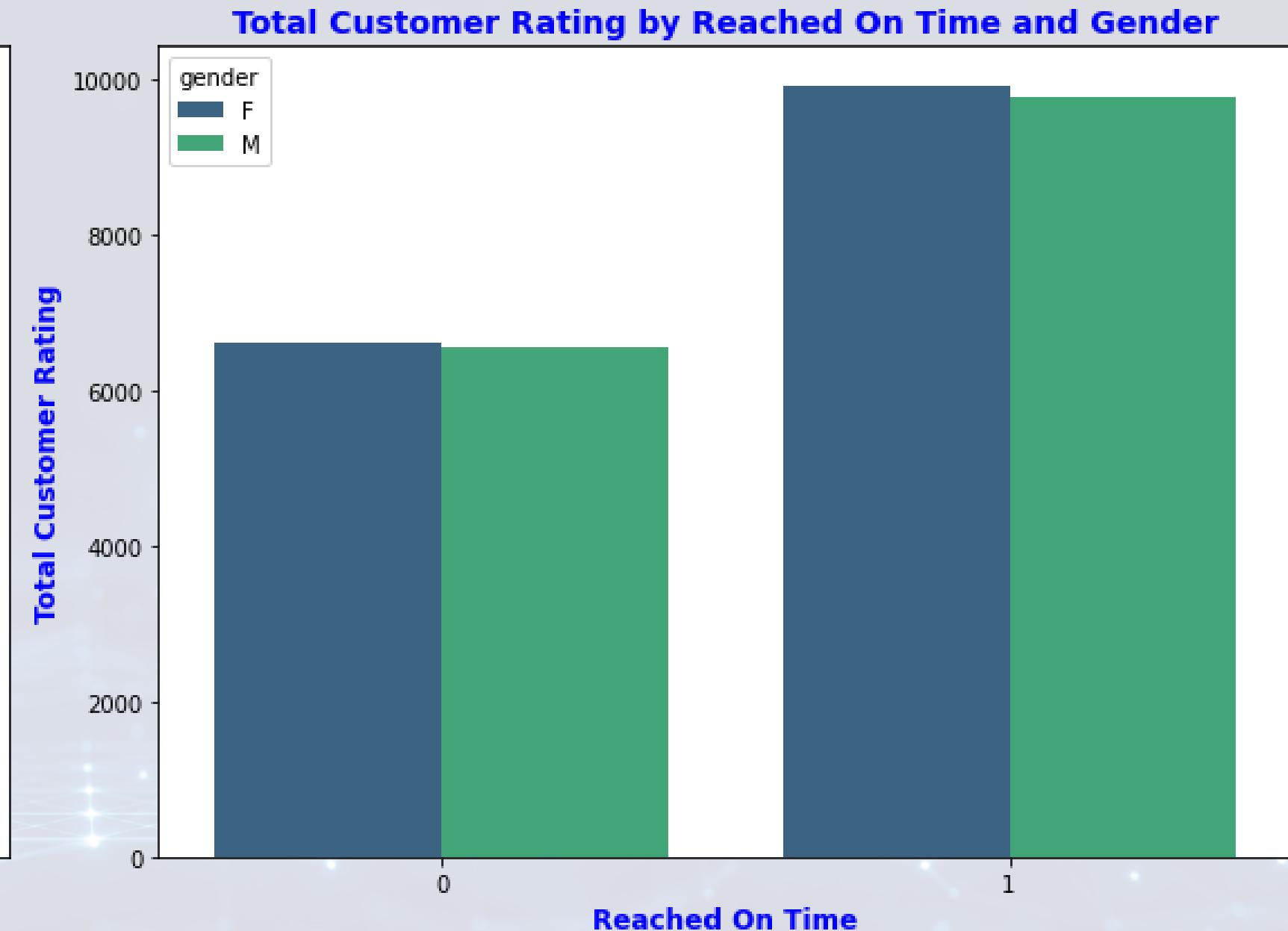
- Univariate Analysis: Understanding single variables distribution.
- Bivariate Analysis: Relationships between gender and ratings/preferences.
- Multivariate Analysis: Combining factors (warehouse\_block, cost\_per\_order and mode of shipment).

# Data Visualizations



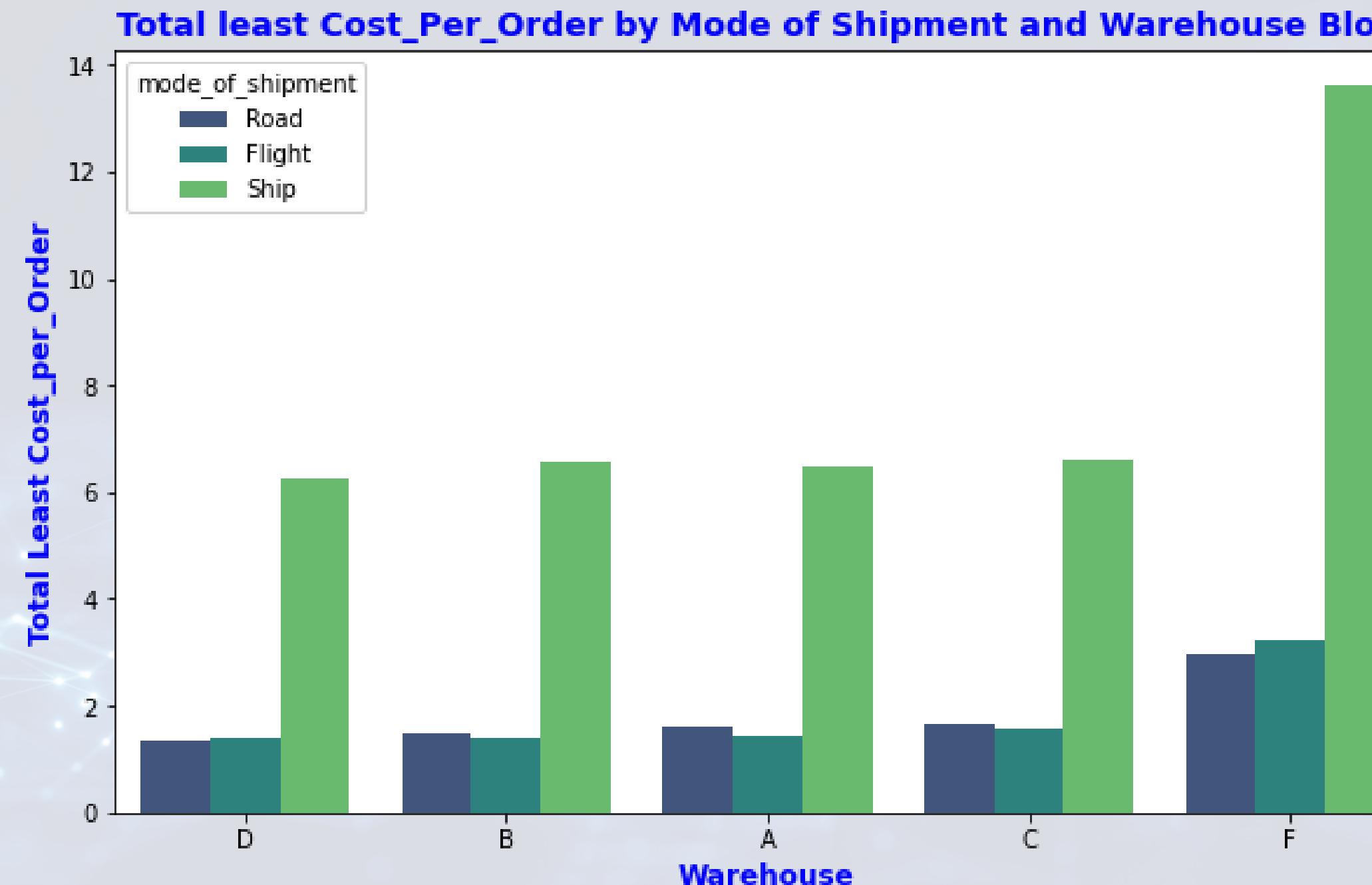
The company dispatches shipments more through block F

# Plots of preferences,ratings by gender and delivery time



The higher the customer ratings and prior purchases(product preferences) for both genders led to delivery on time.

# Plots of the Total least Cost\_Per\_Order by Mode of Shipment and Warehouse Block



The top three cost effective routes is shipping through block D by Road, block B by Flight and block D by Flight respectively

# Conclusions

**Main factors contributing to shipping delays:** Warehouse block F, Mode of shipment,- movement of shipment by sea(ship)

**Customer demographics and product preferences:** Higher customer preference and ratings possibly is as a result of being satisfied with delivery service.

**Cost effective shipping mode and routes:** Shipment by Road and Flight, top three block D by Road, block B by Flight and block D by Flight respectively.

**Best predictive model to deploy:** An optimized Decision Tree Classification model

# Recommendations

- Optimize warehouse operations especially block F as it is major source of delays
- Improve on performance of sea shipment or explore faster modes like road or air.
- Based on analysis of the data, the company to maintain and expand the most cost effective shipping modes and routes
- Deploy Decision Tree Model to forecast delays and improve on route decisions



**Thank You**

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