CAPSTONE PROJECT: Forecasts for Product Demand

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About Dataset Context

- The dataset contains historical product demand for a manufacturing company with footprints globally.
- The company provides **thousands of products** within **dozens of product categories**.
- There are **four central warehouses** to ship products within the region it is responsible for.
- Since the products are manufactured in different locations all over the world, it normally takes more than one month to ship products via ocean to different central warehouses.
- If forecasts for each product in different central with reasonable accuracy for the monthly demand for month after next can be achieved, it would be beneficial to the company in multiple ways.

Content

Historical Product Demand.csv - CSV data file containing product demand for encoded product id's
Acknowledgements
This dataset is all real-life data and products/warehouse and category information encoded.
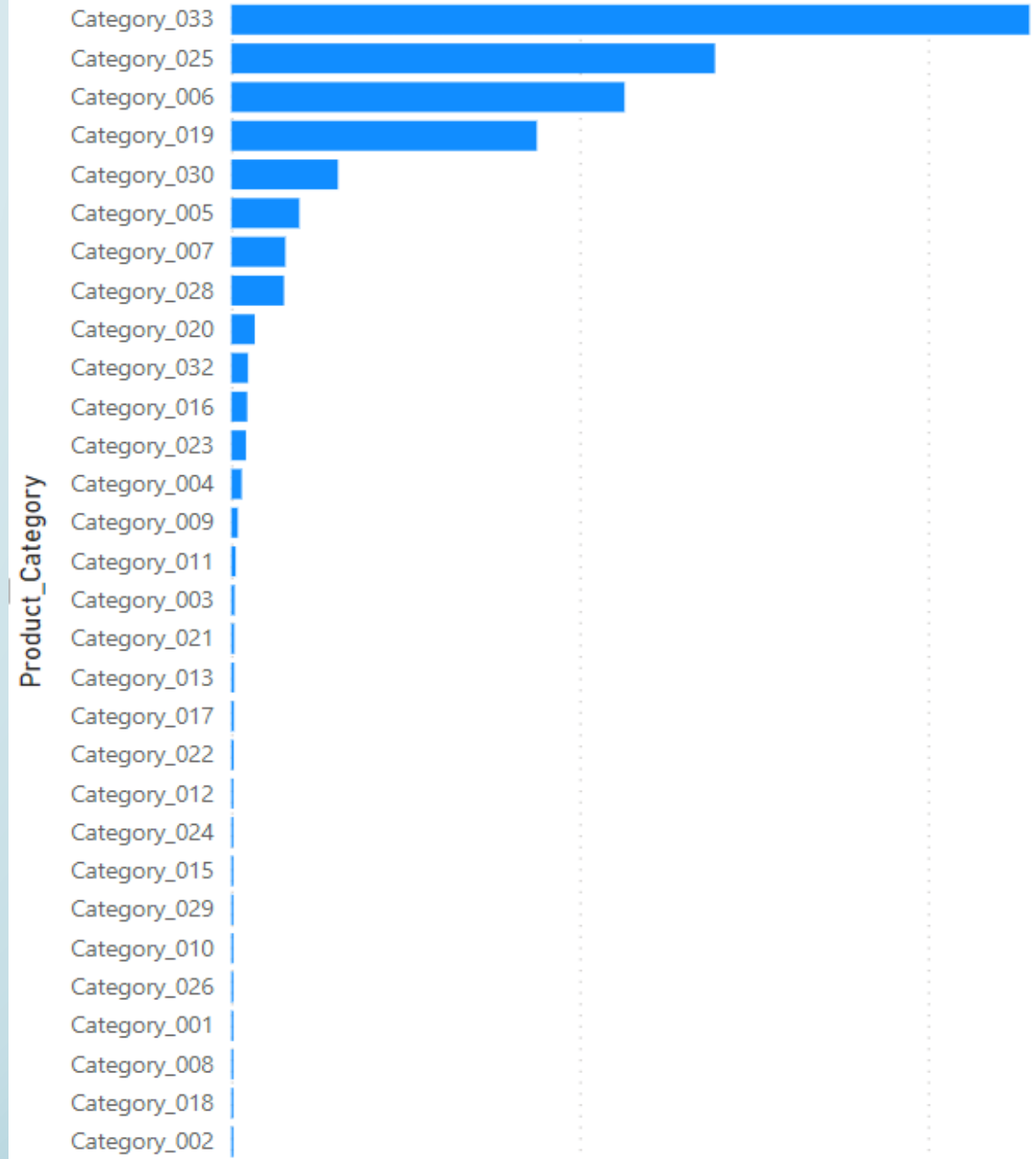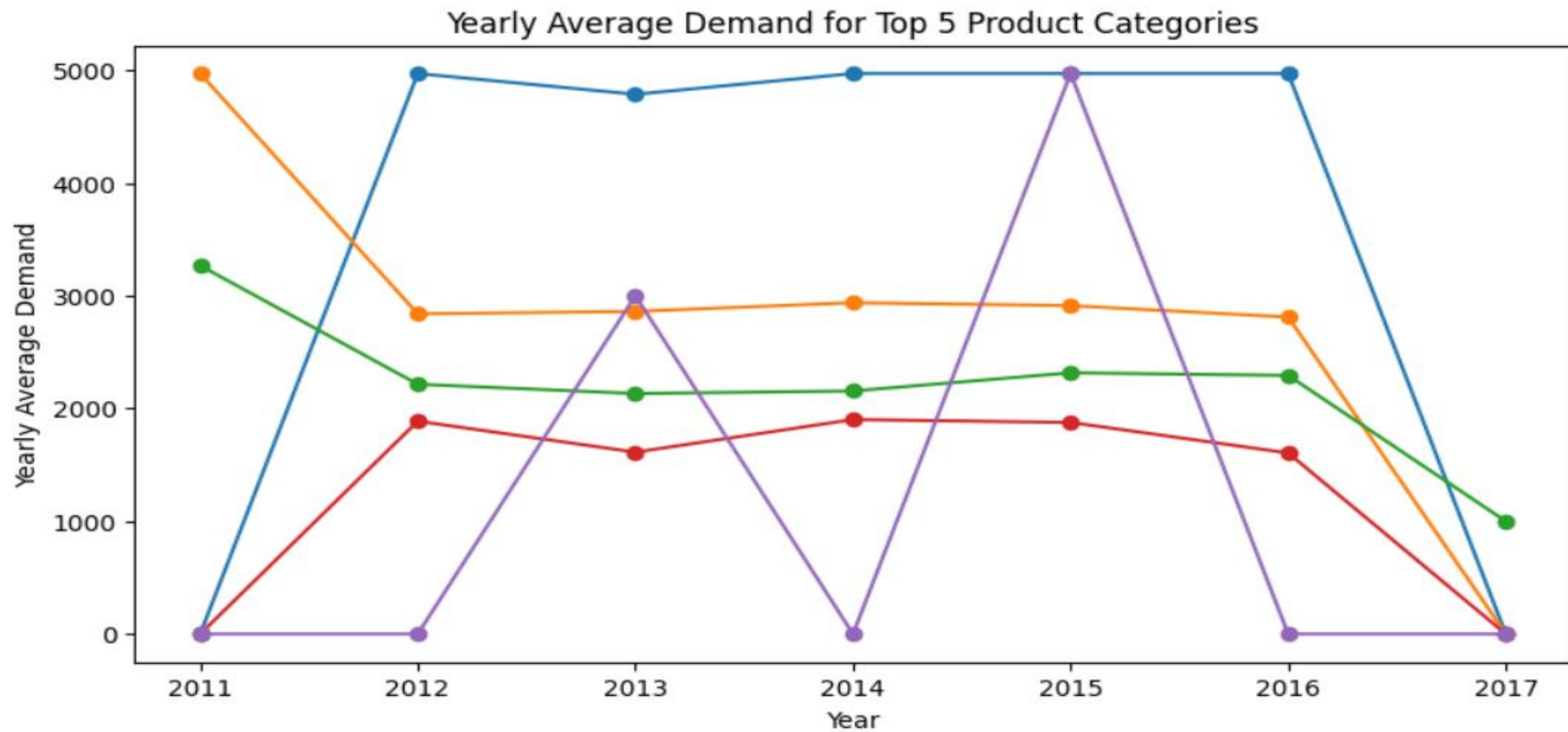
Observation 1:
This graph is the ranking of the average Order demanded by different warehouses.

This analysis clearly reveals that the product category '**Category_033**' ranks as the highest Avg Order Demanded, outperforming all other categories in terms of demand.

1. **We need to maintain the order demand of top 9 Categories.**

2. **We need to increase or work on rest of the categories as they are not performing well.**

Average of Order_Demand by Product_Category

Yearly Average Demand for Top 5 Product Categories

Observation 6:
The displayed graph provides insight into the yearly demand patterns of the top 5 Product Categories.

1. **Category_025** exhibits a perplexing performance marked by fluctuations and unpredictable demand trends.

2. **Category_033** stands out with the highest recorded performance, showcasing remarkable consistency in its demand over the years.

Count of Product_Category by Year
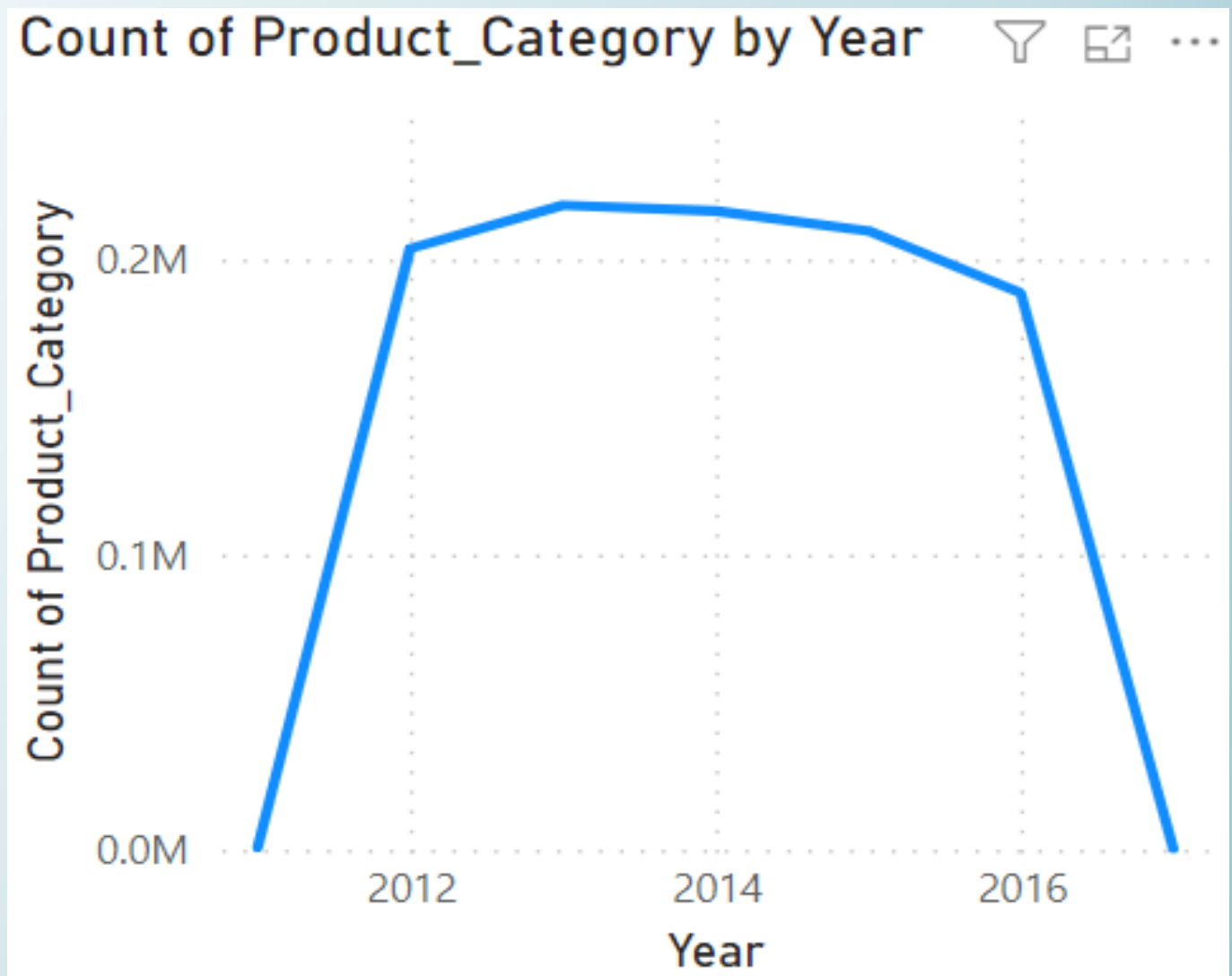
Observation 2:

Warehouse-J holds the distinction of having the highest maximum order demand, followed by Warehouse-S, Warehouse-C, and Warehouse-A, in descending order of their maximum demand levels.

1. **We need to observe the Whse_A and see what is the reason this warehouse is not performing well.**

2. **And see what we can do to improve its performance.**
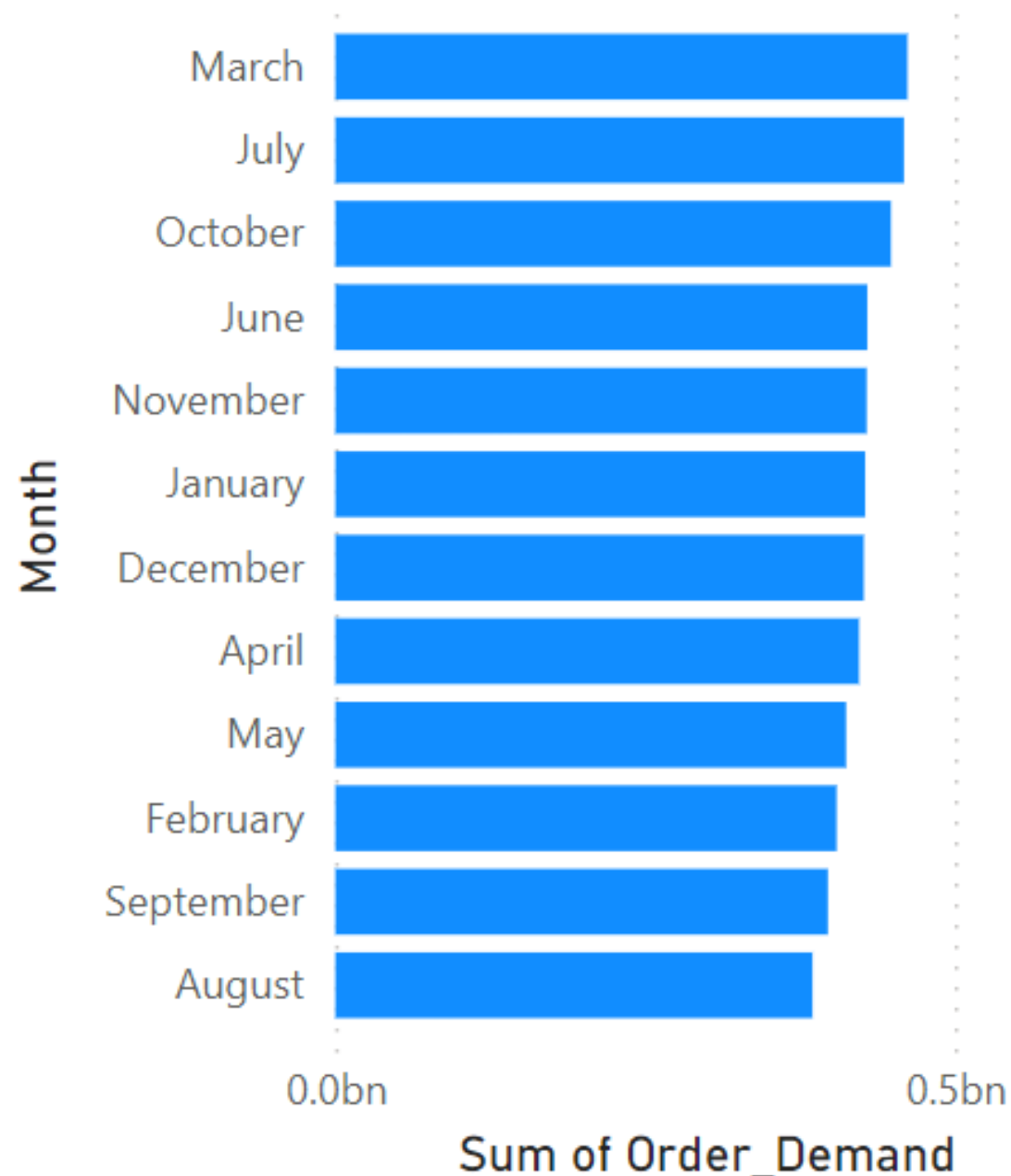

Sum of Order_Demand by Warehouse

Warehouse ● Whse_J ● Whse_S ● Whse_C ● Whse_A

0bn (2.81%)
1bn (11.4%)
1bn (20.26%)
3bn (65.53%)
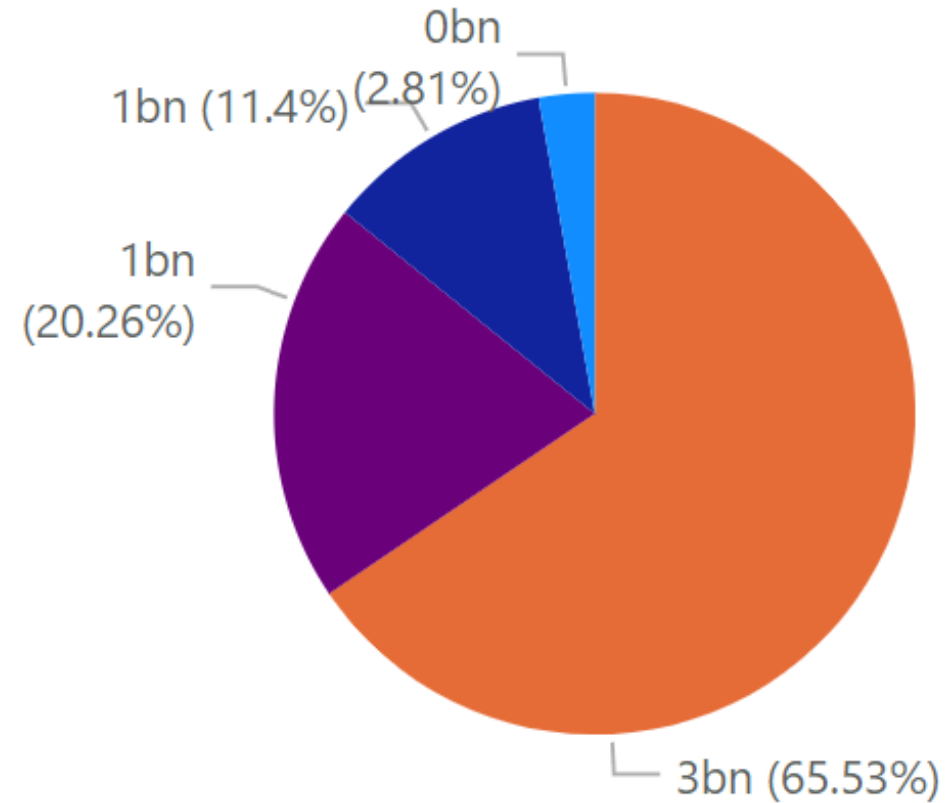
Observation 4:
The graph clearly illustrates that March experiences the highest demand for different Product Categories, while August records the lowest demand throughout the observed period.
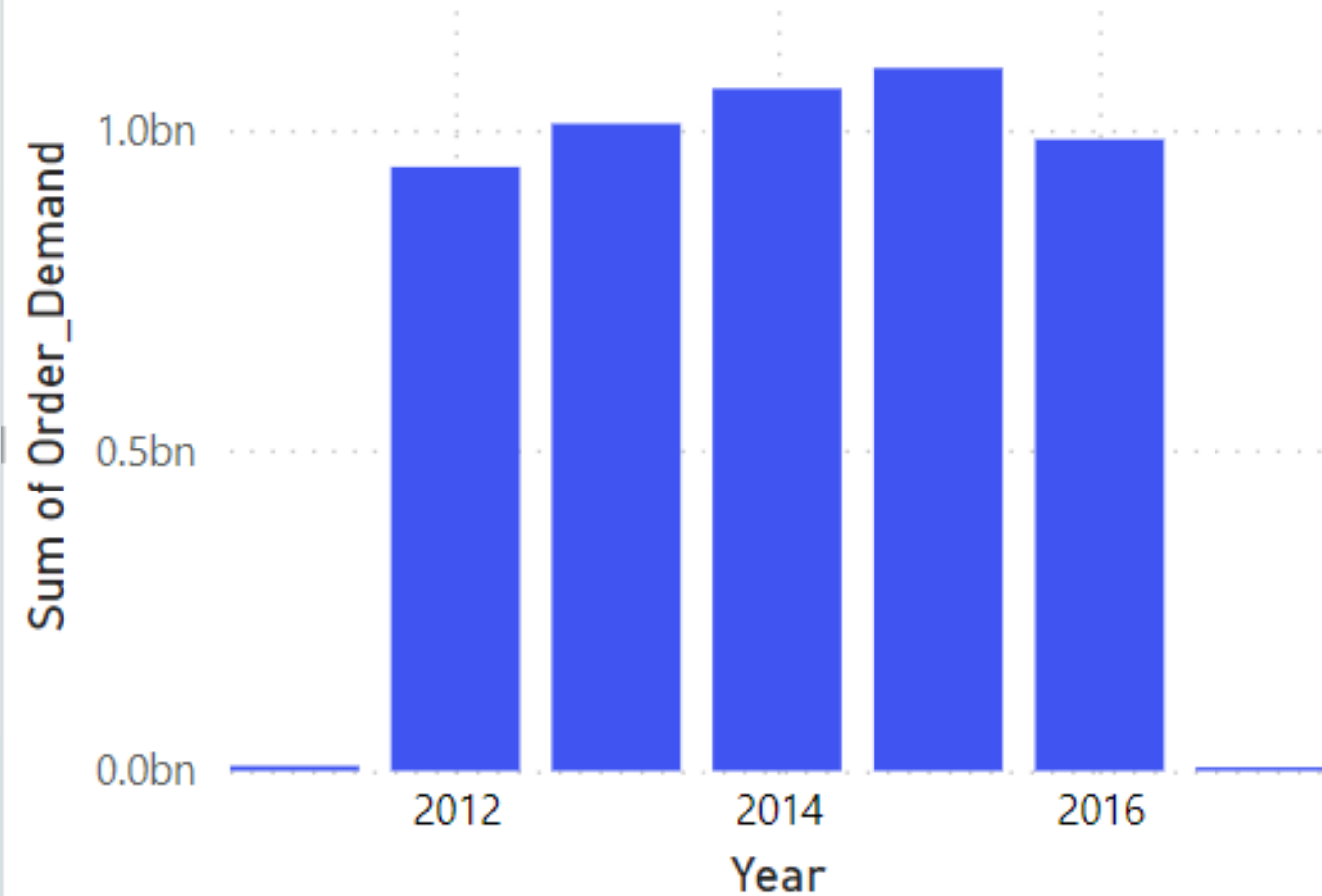

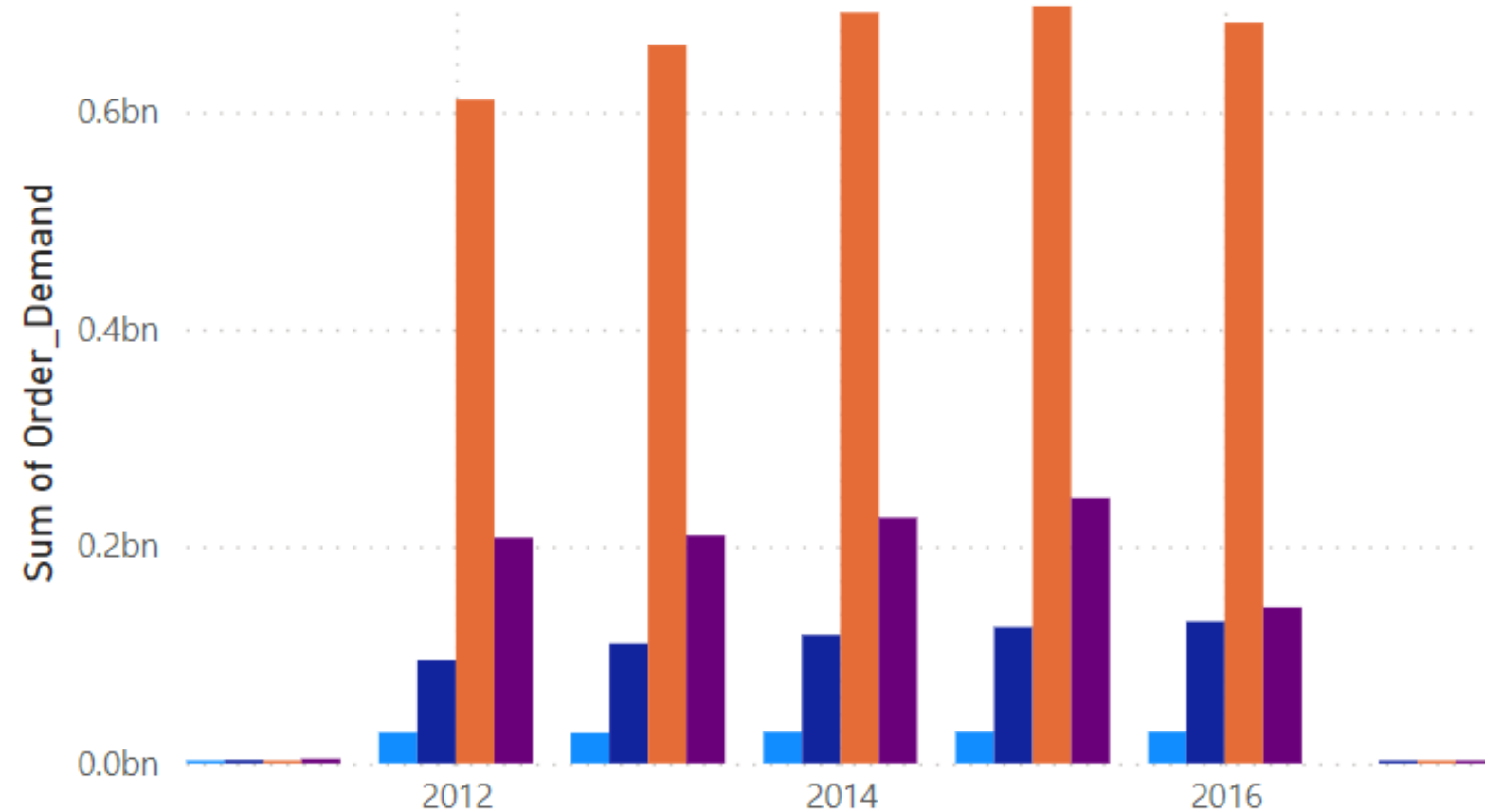Sum of Order_Demand by Month

Observation 5:
It is evident from the data that the year 2015 stands out with the highest Order Demand compared to all other years, indicating a peak in demand during that particular year.

Sum of Order_Demand by Year

Sum of Order_Demand by Year and Warehouse

Observation 8:
Warehouse-J exhibits a significantly higher order demand in contrast to Warehouse-A, which records the lowest demand among all the warehouses. Most notably, all the warehouses achieve their peak operational capacity in the year 2013.

Thank You