

# Pharmaceutical Supply chain Management

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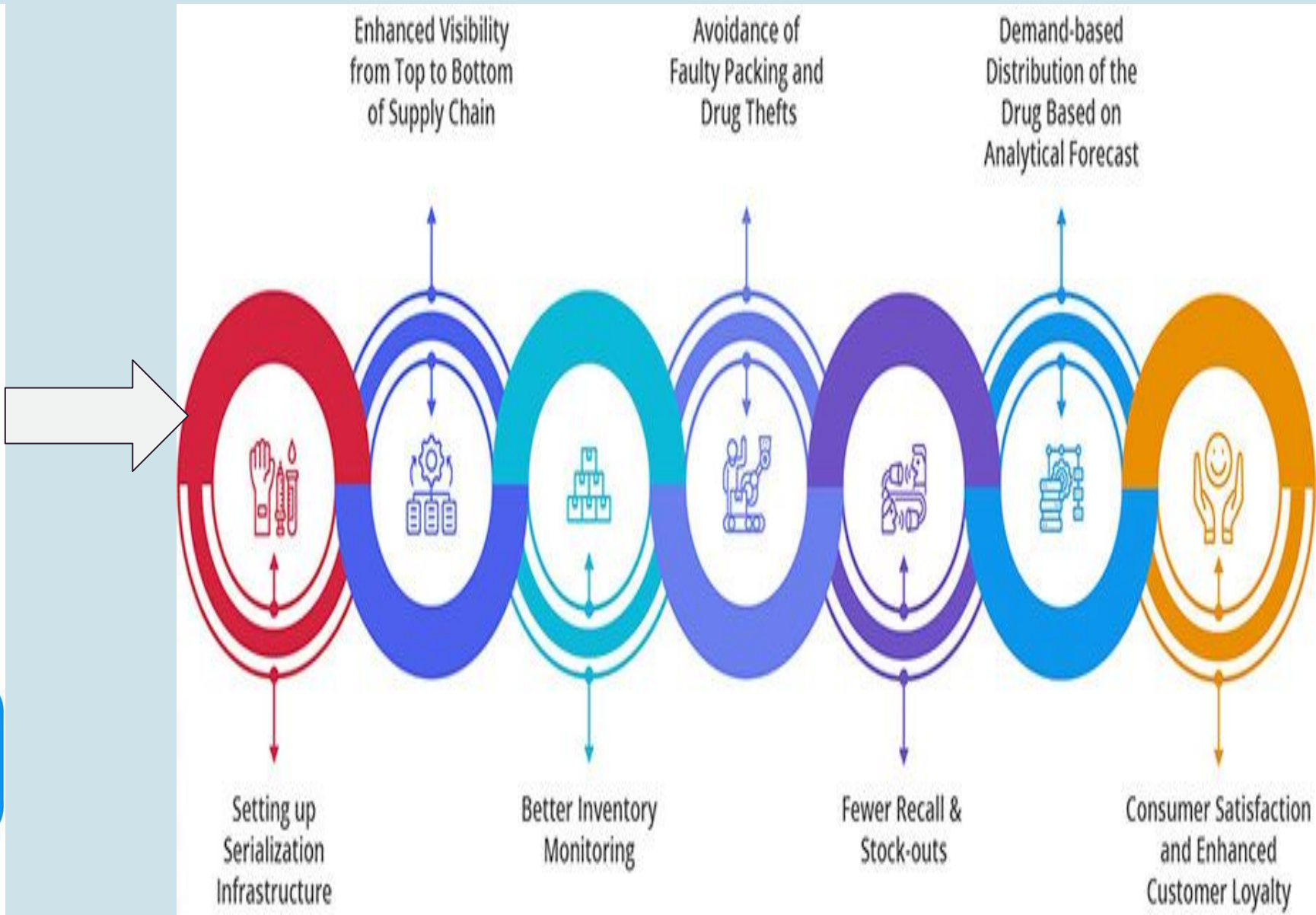


# Introduction

## Problems Encountered



## Remedies

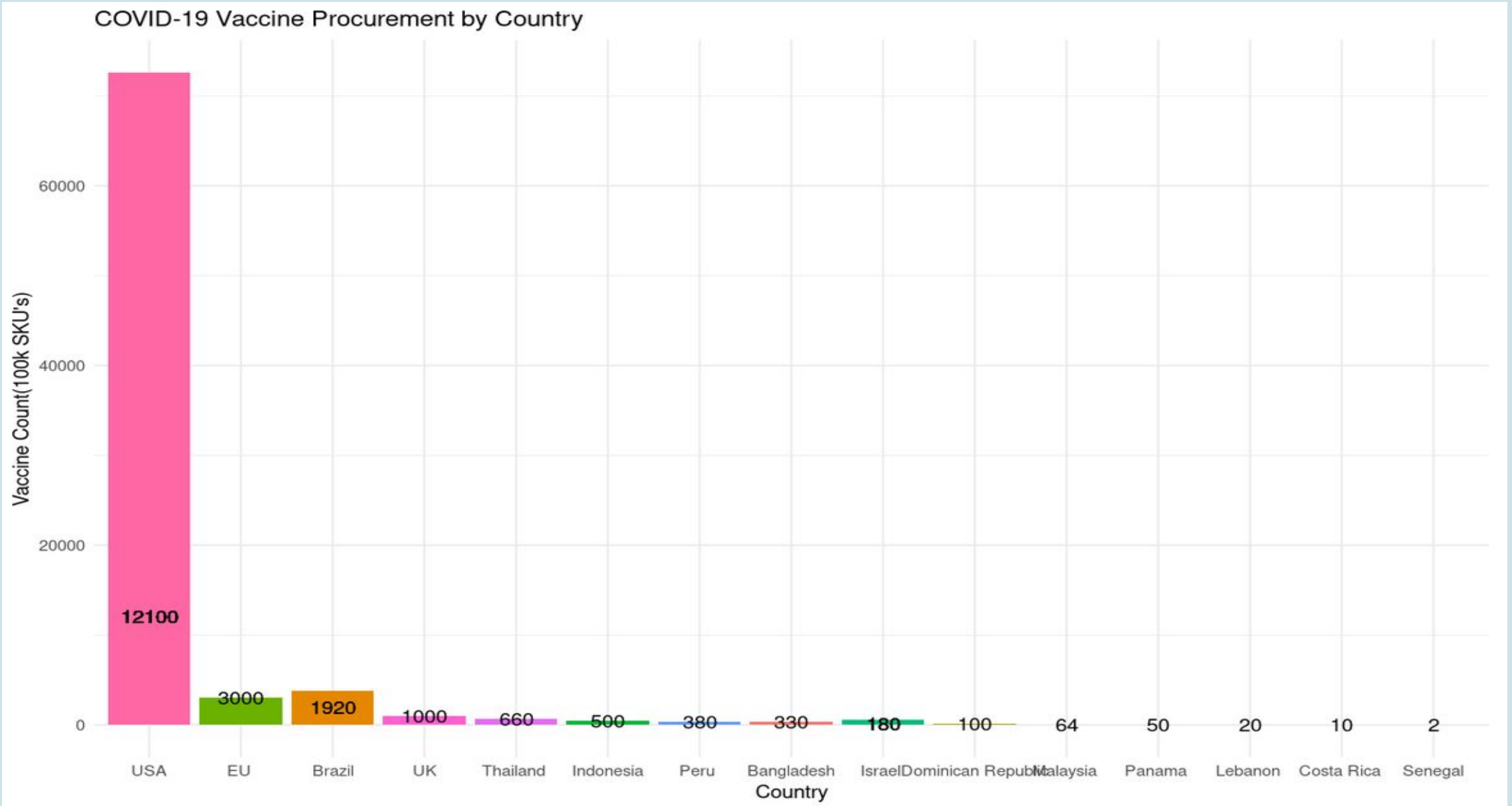




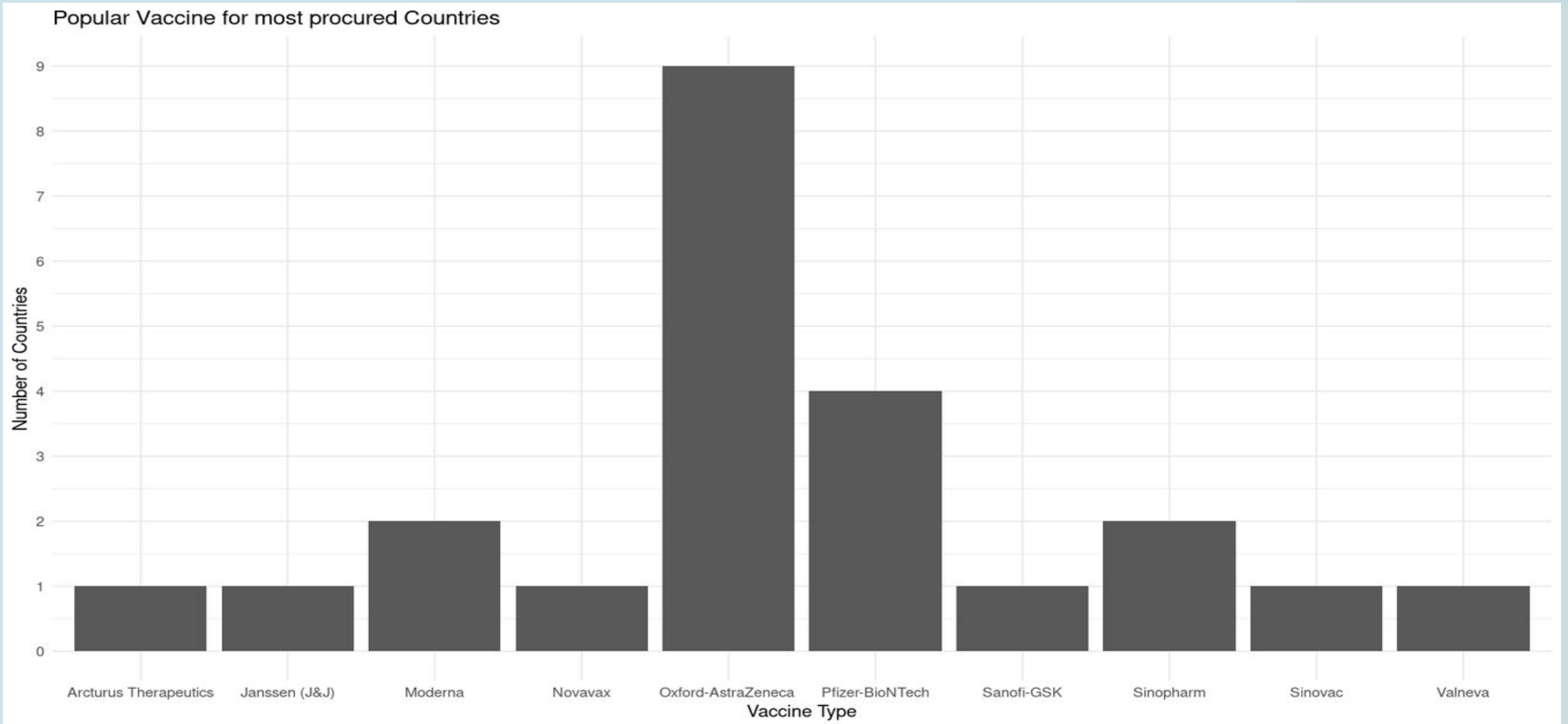
**Performance in  
Operations and value  
chain in  
Pharmaceutical**



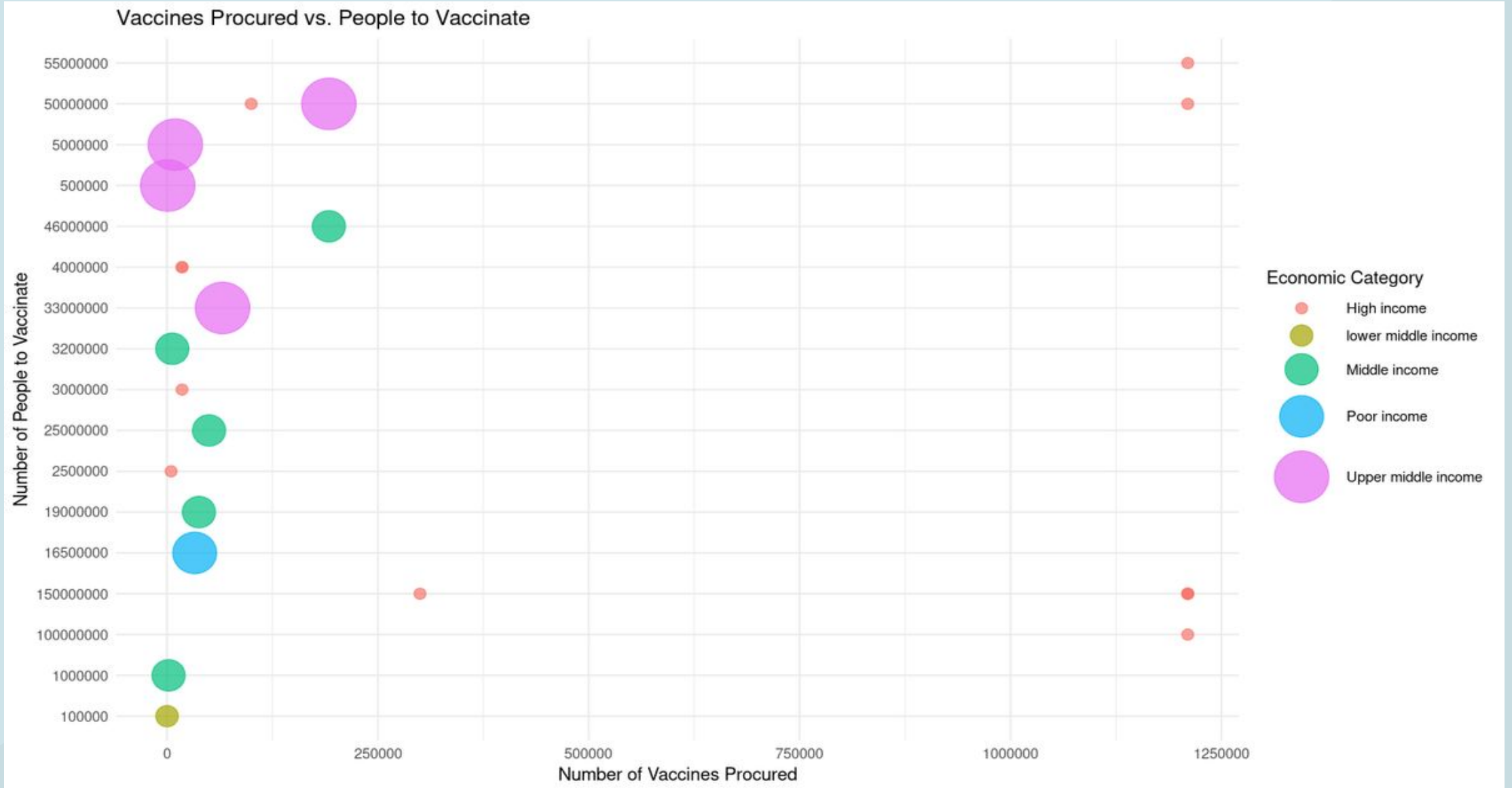
# Which countries were able to procure the most Covid-19 vaccines?



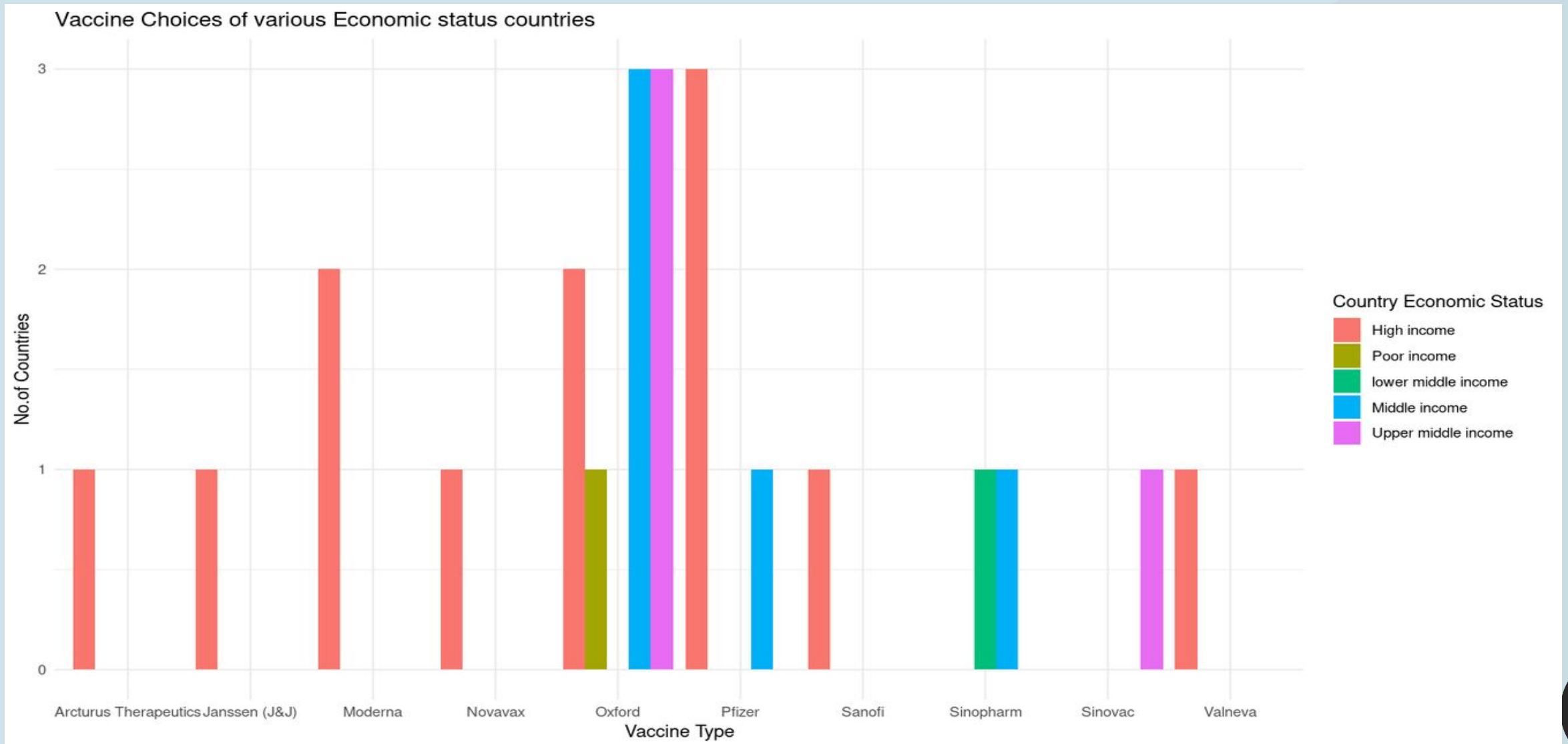
**Which vaccines were popular among the top 20 countries that were able to procure the maximum number of vaccines?**



# How does the ability of the countries to procure the vaccine and vaccinate their citizens vary depending on their economic status?



# How does delivery feedback for the store vary based on order region and order Type?

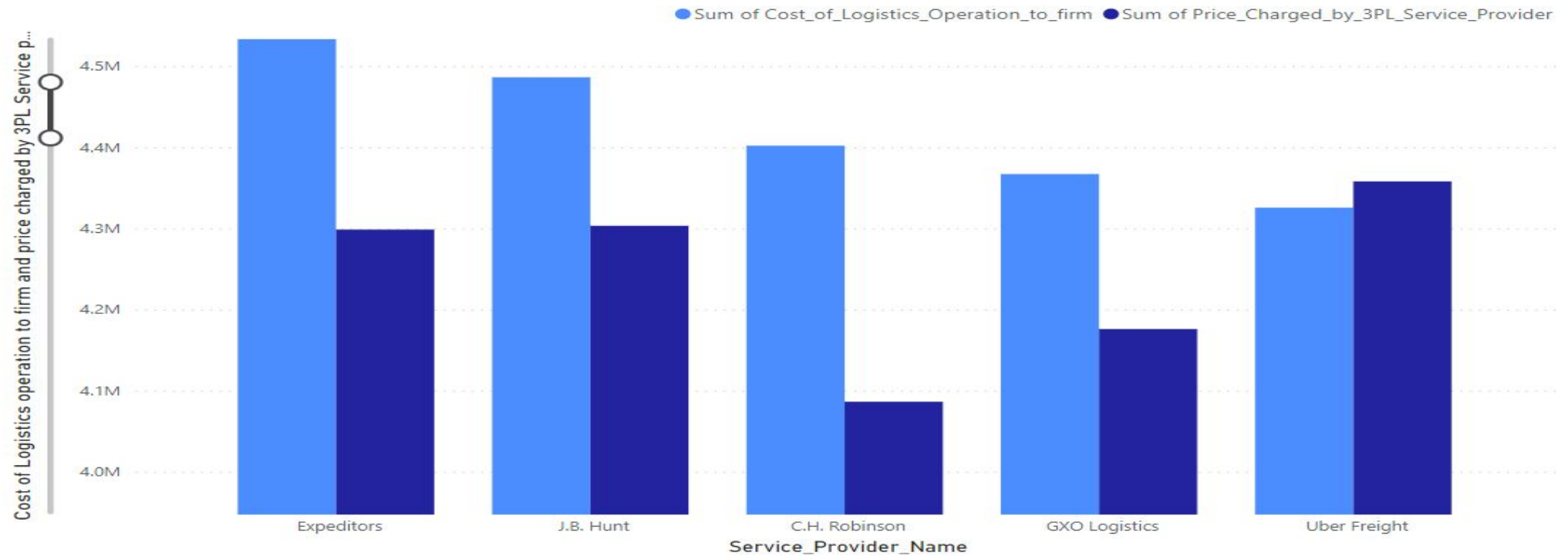


# **Resource Planning System in Pharmaceutical**

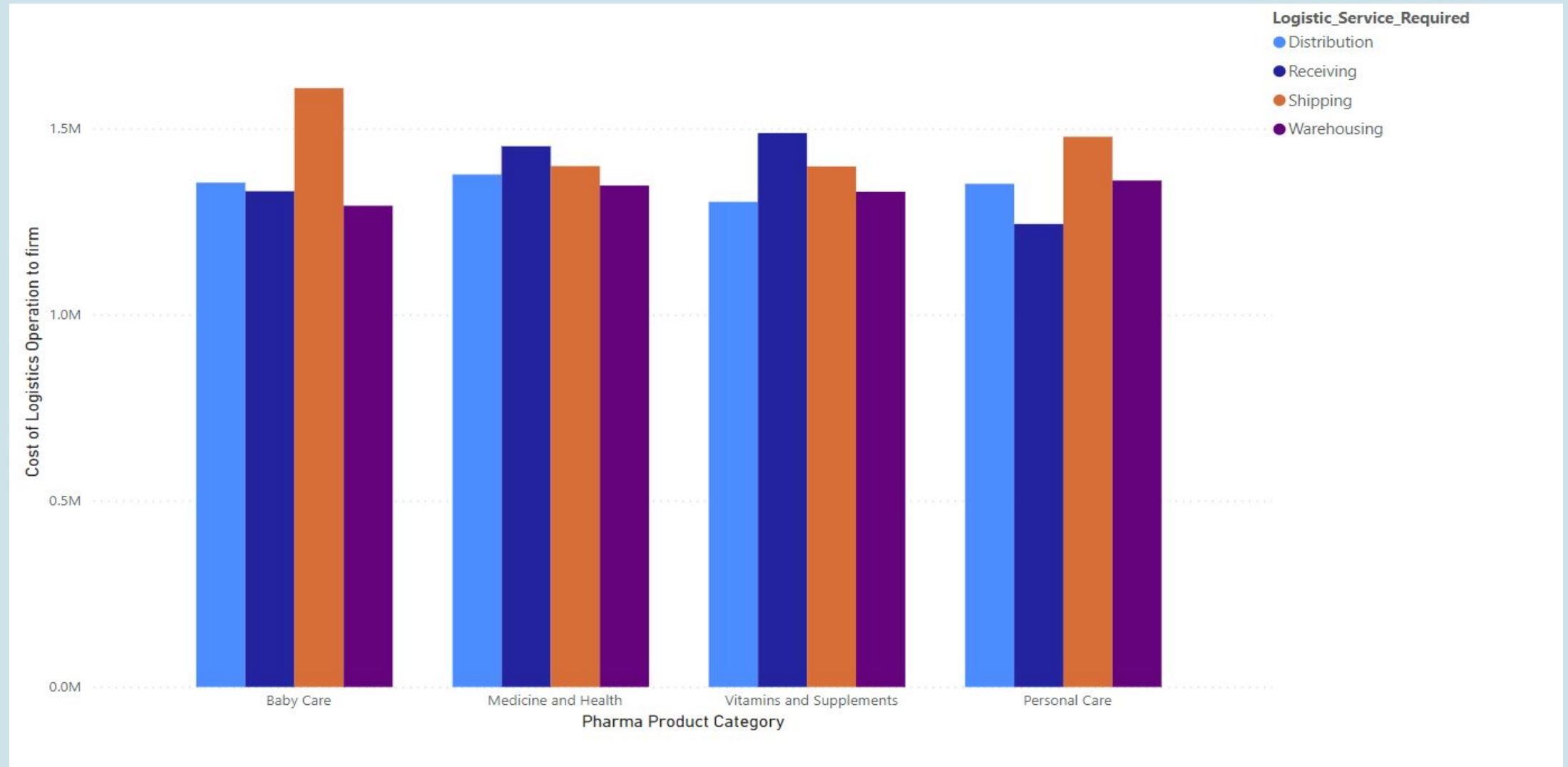




*Does the firm need to outsource the logistic activities to the 3PL service provider for the relevant logistic service requirements?*

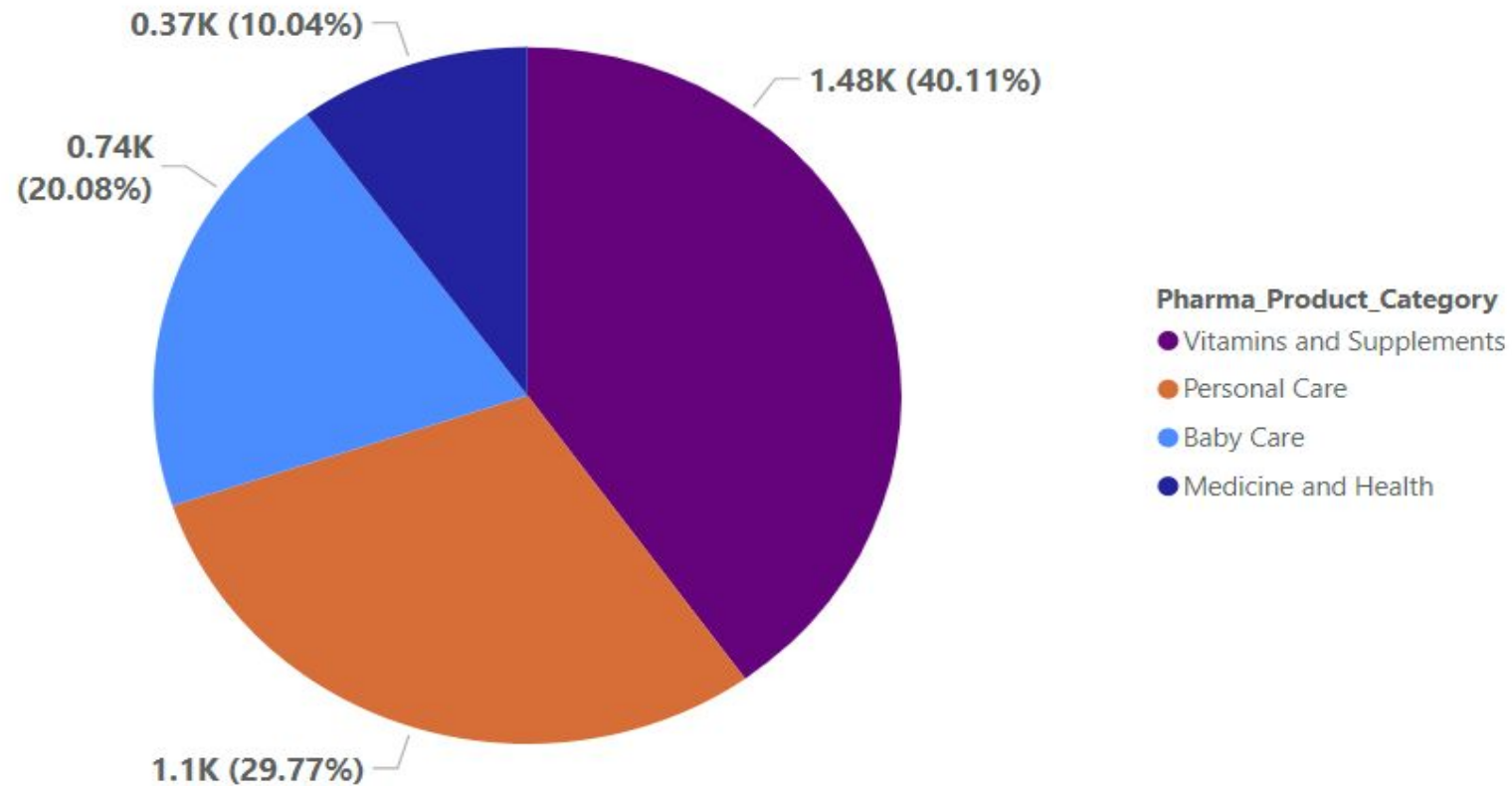


*How does the logistic service choose varies across different pharma product categories or sub-categories?*



*Which logistic service is chosen by the firm a maximum number of times for different pharma product categories or sub-categories?*

Logistic\_Service\_Required by Pharma\_Product\_Category

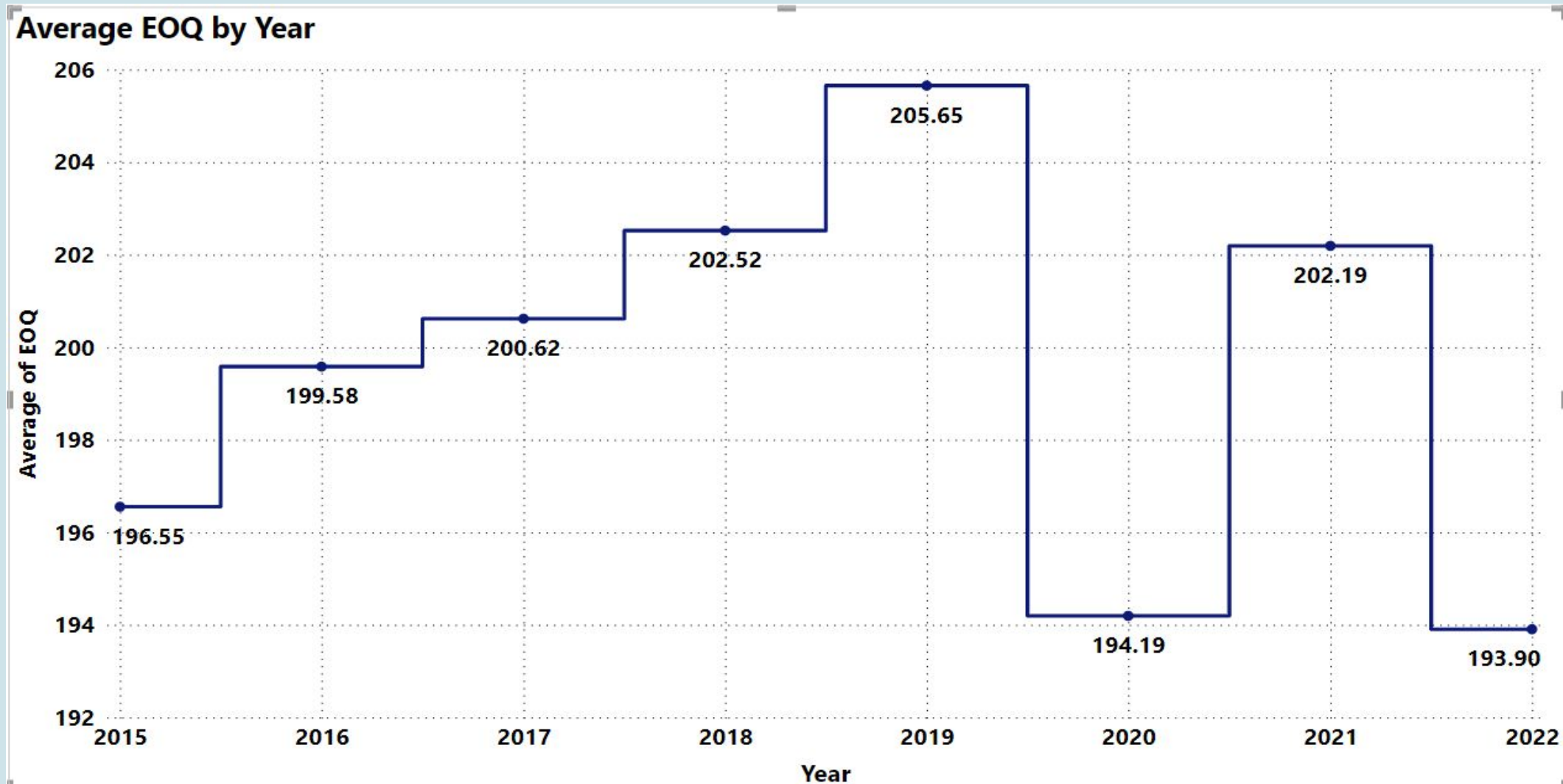




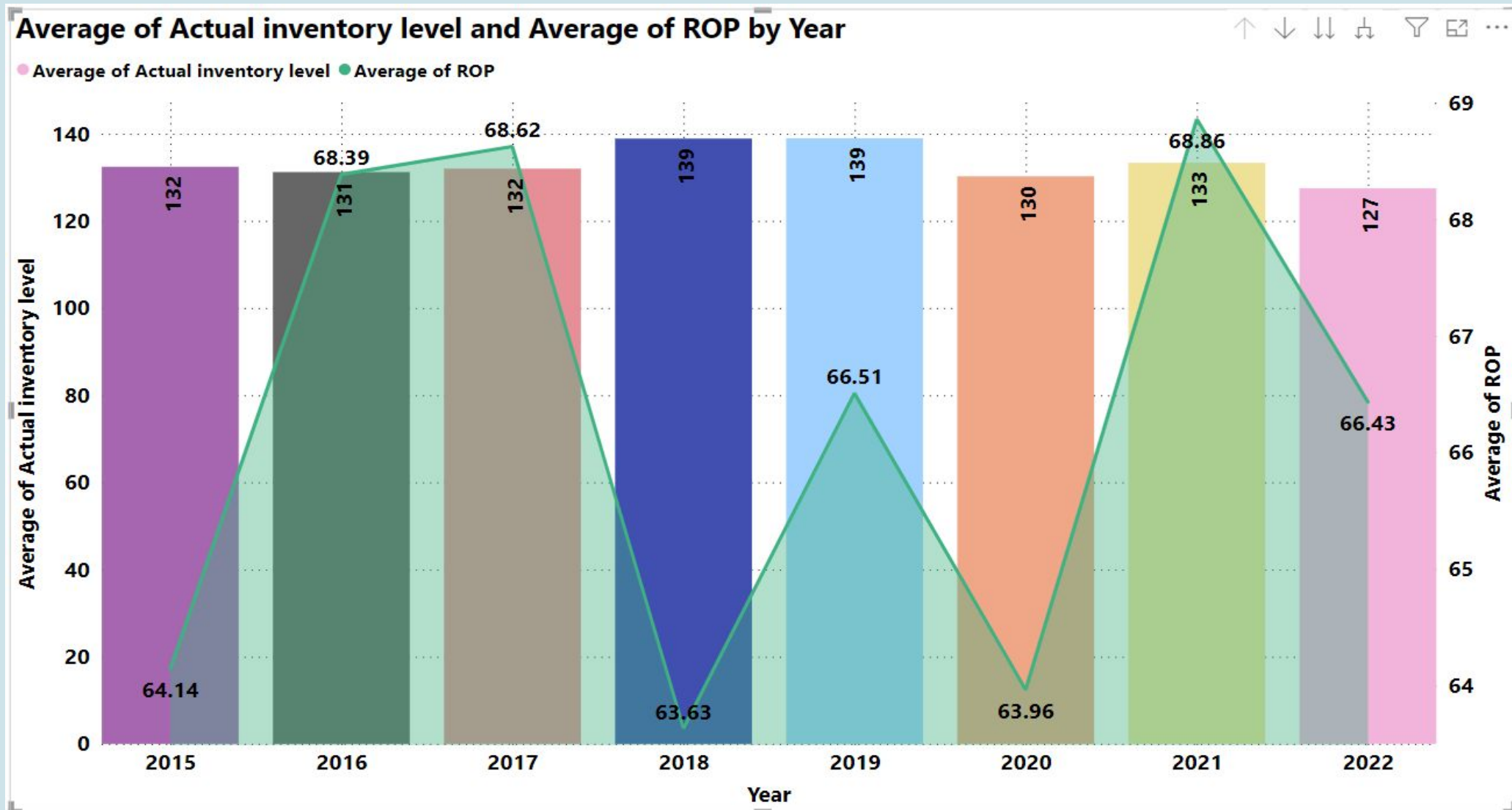


## **Inventory Management in pharmaceutical**

**What is the optimal inventory level (optimal EOQ) that needs to be managed by the firm for each year from 2015 to 2022?**



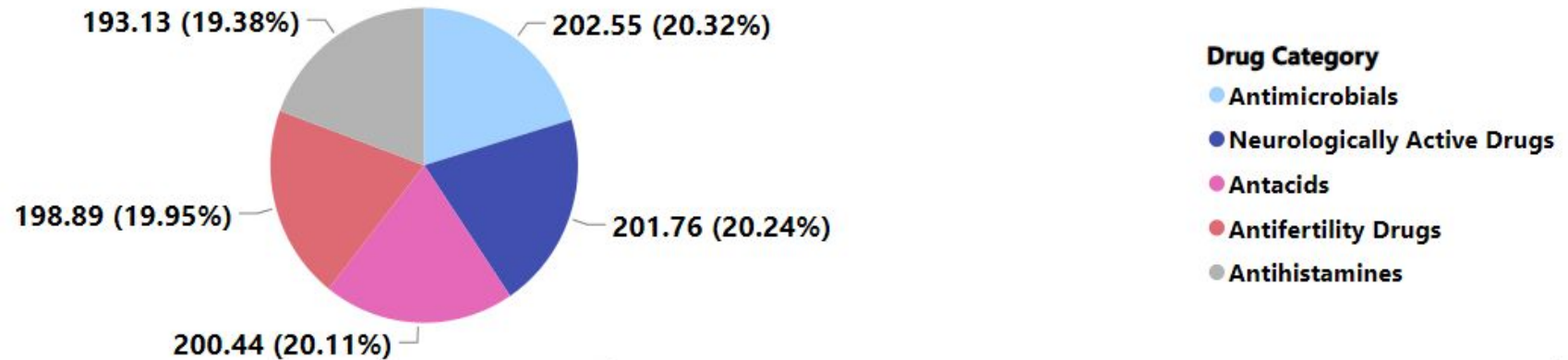
# What is the inventory level at which the goods need to be reordered (optimal ROP) to avoid stockouts



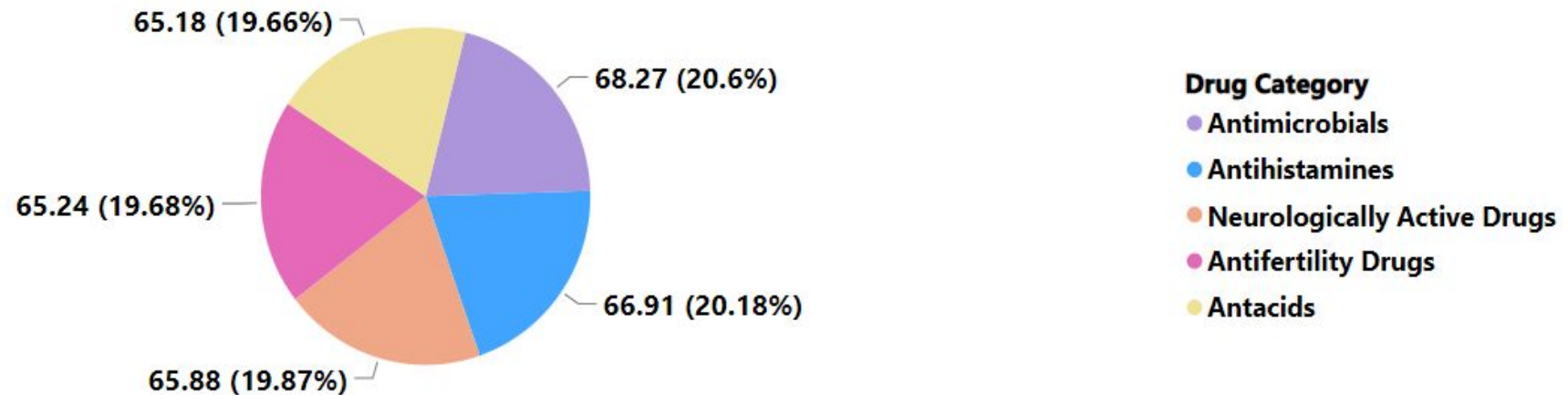


# How do the optimal inventory level and reorder point vary across different drug categories sold by the firm?

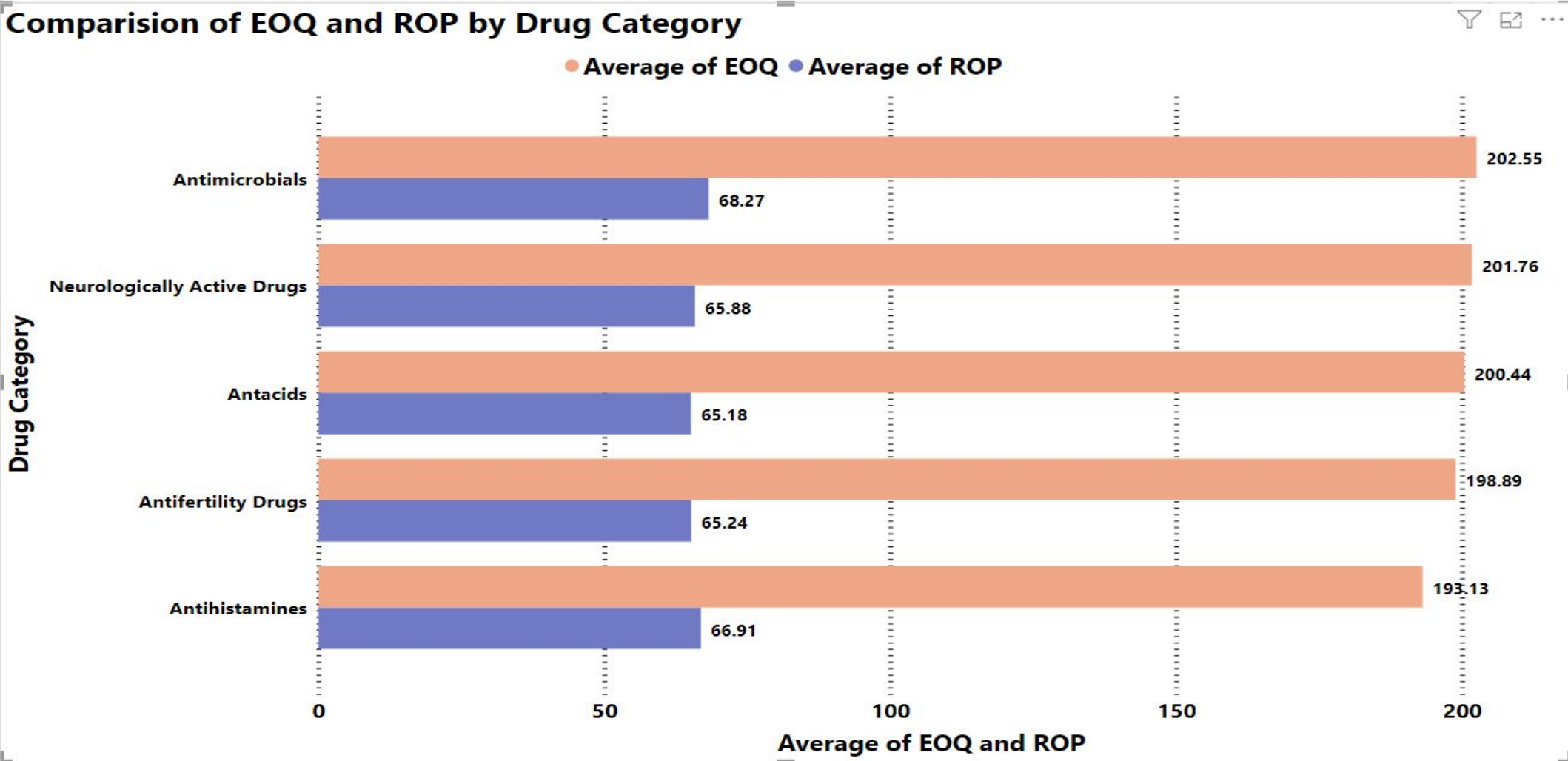
## Average EOQ Drug Category



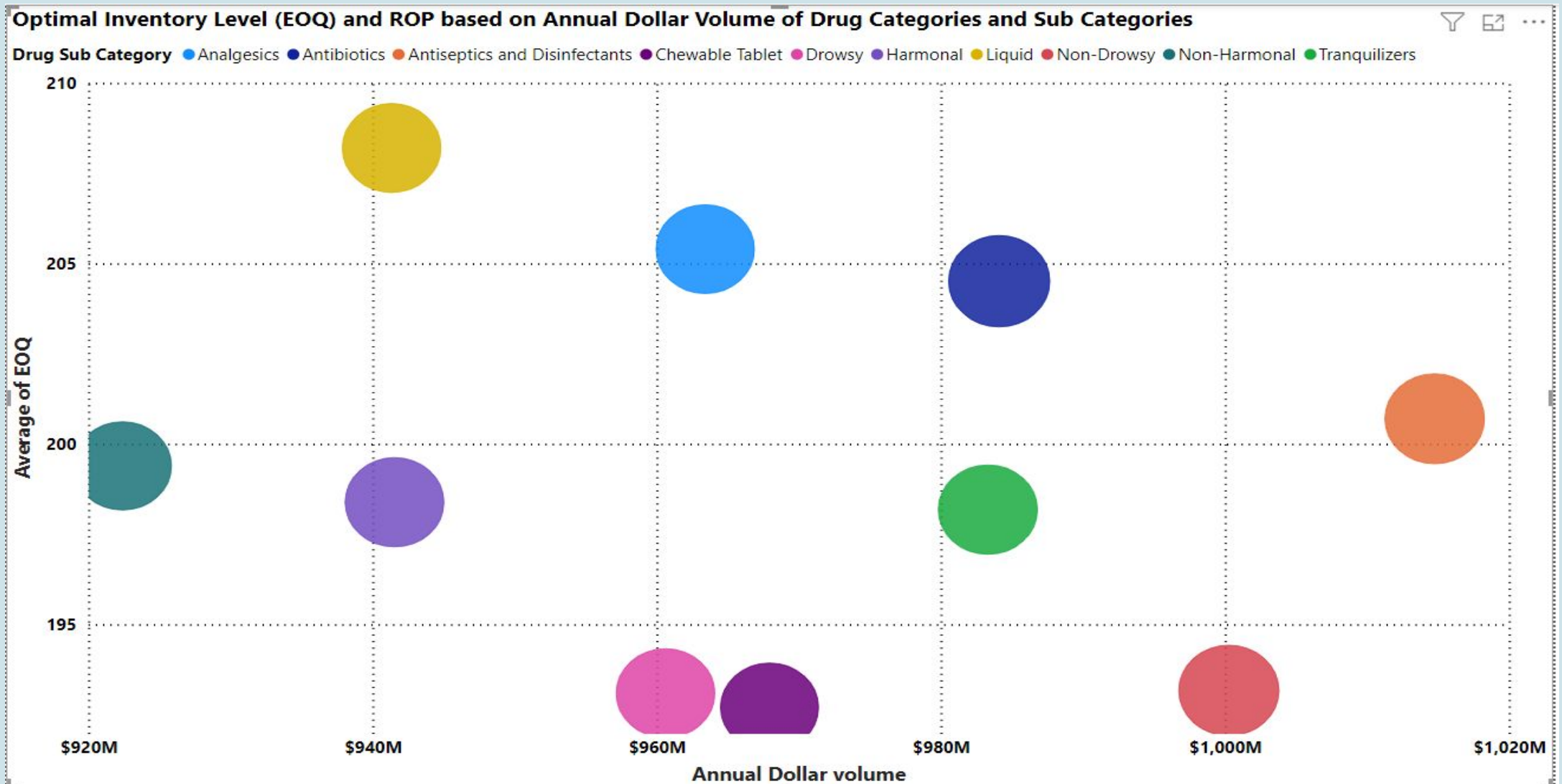
## Average ROP by Drug Category



# How do the optimal inventory level and reorder point vary across different drug categories sold by the firm?



# How do the optimal inventory level and reorder point vary based on the annual dollar volume of different drug categories sold by the firm?

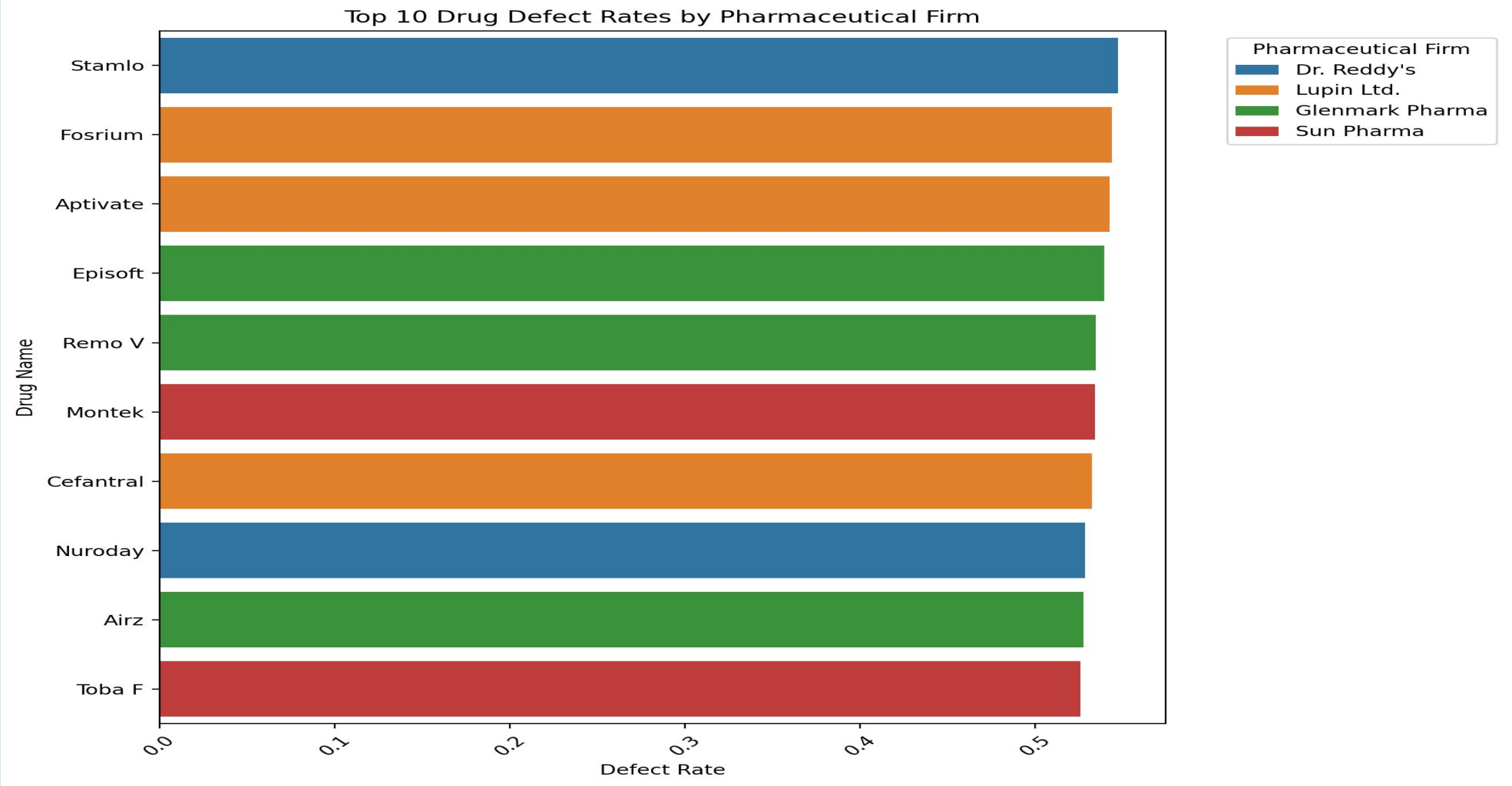




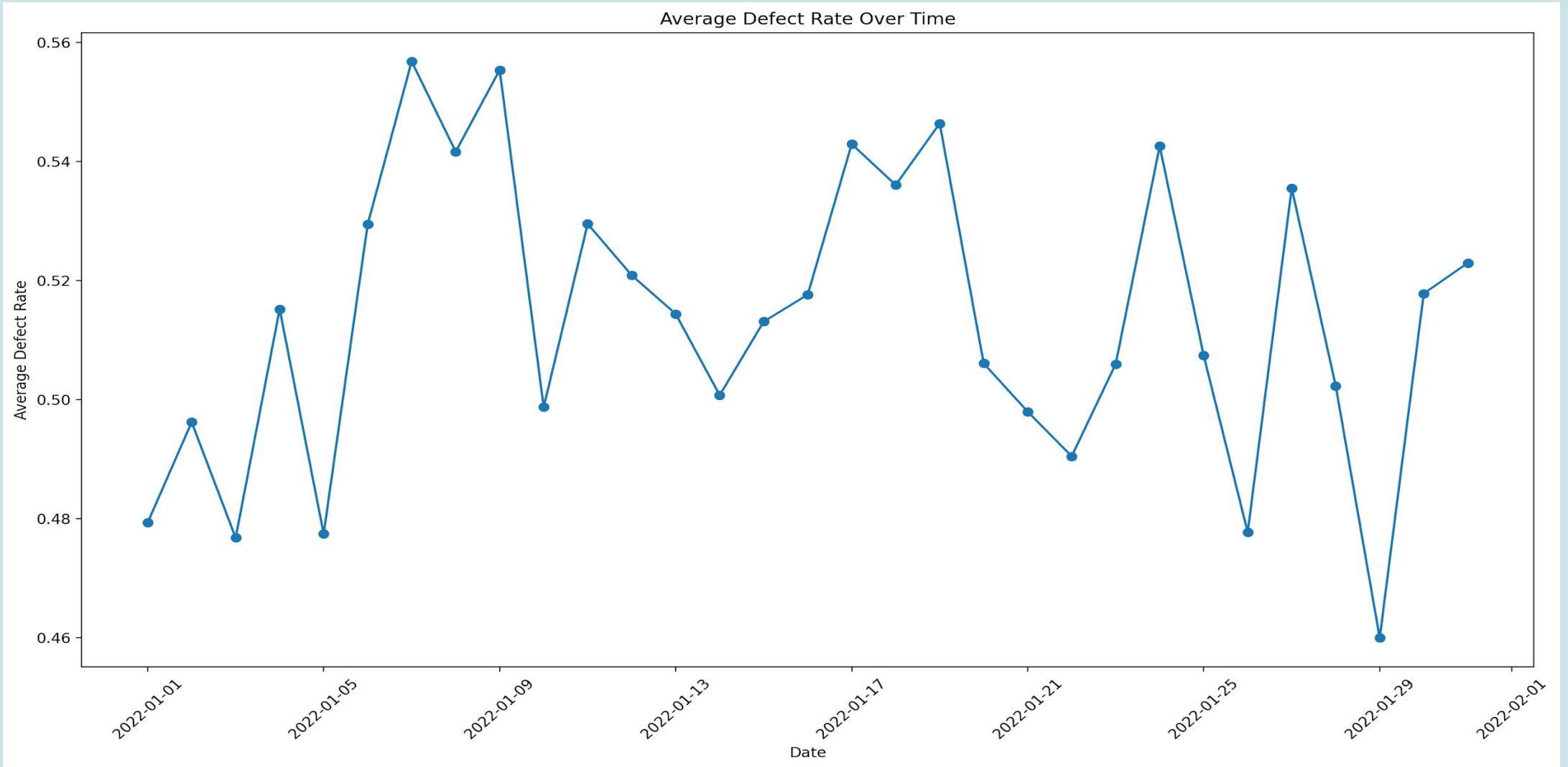
## Lean Six sigma Strategies in pharmaceutical



# What is the rate of manufacturing defect for each drug produced by different pharmaceutical firms?

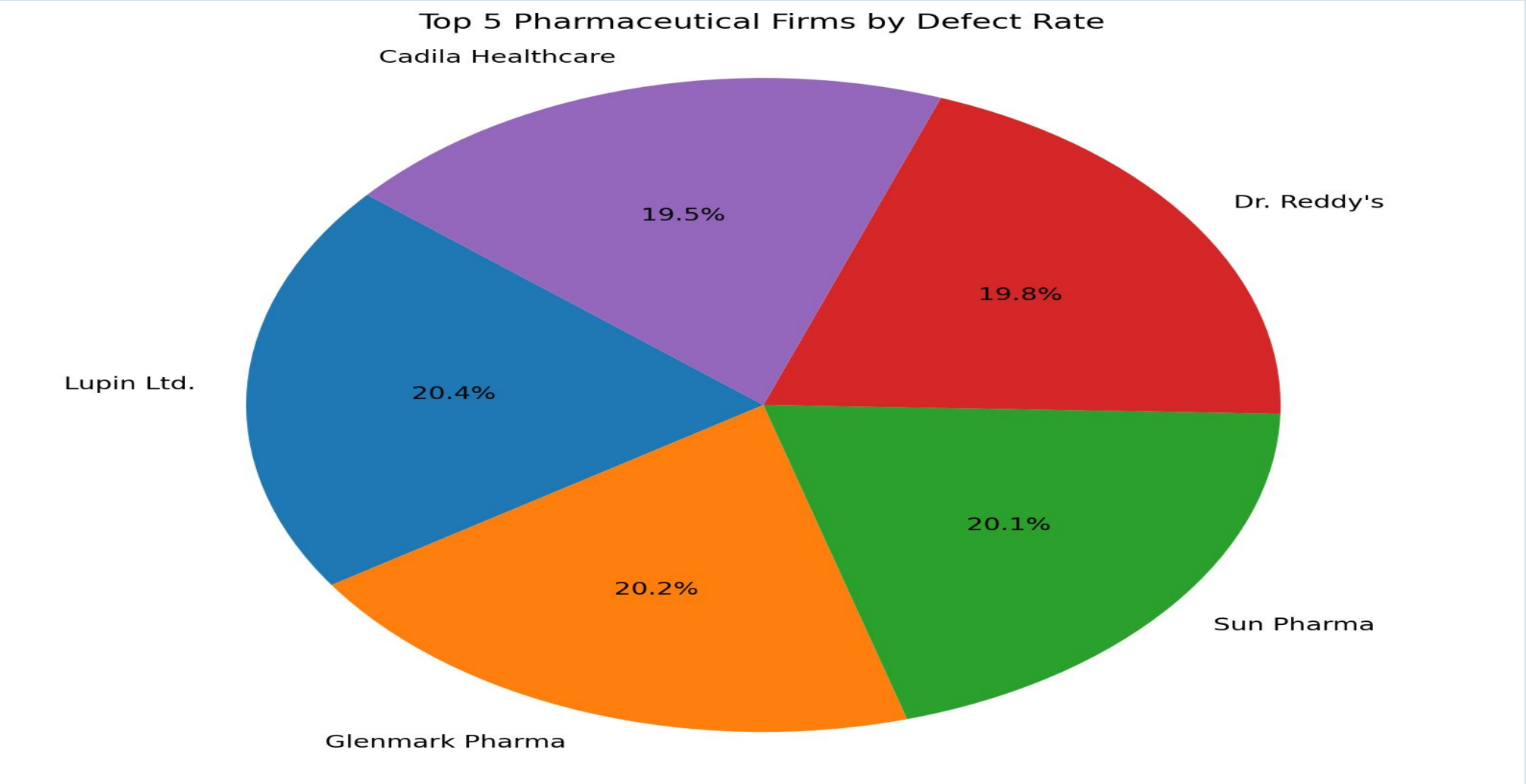


# How does the rate of manufacturing defect change over time from day 1 to the last day of the month?





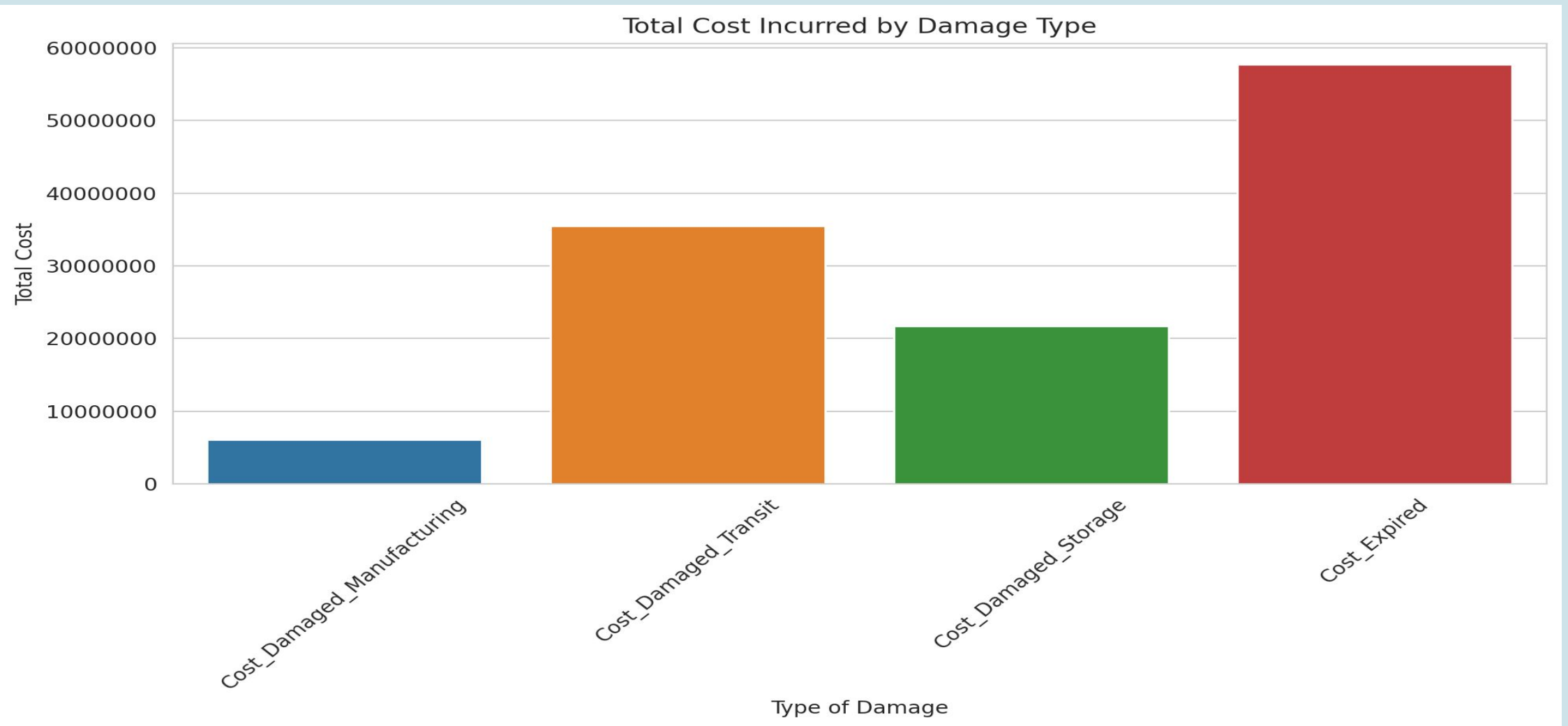
# Which pharmaceutical firm has the highest rate of manufacturing defect for the period concerned?



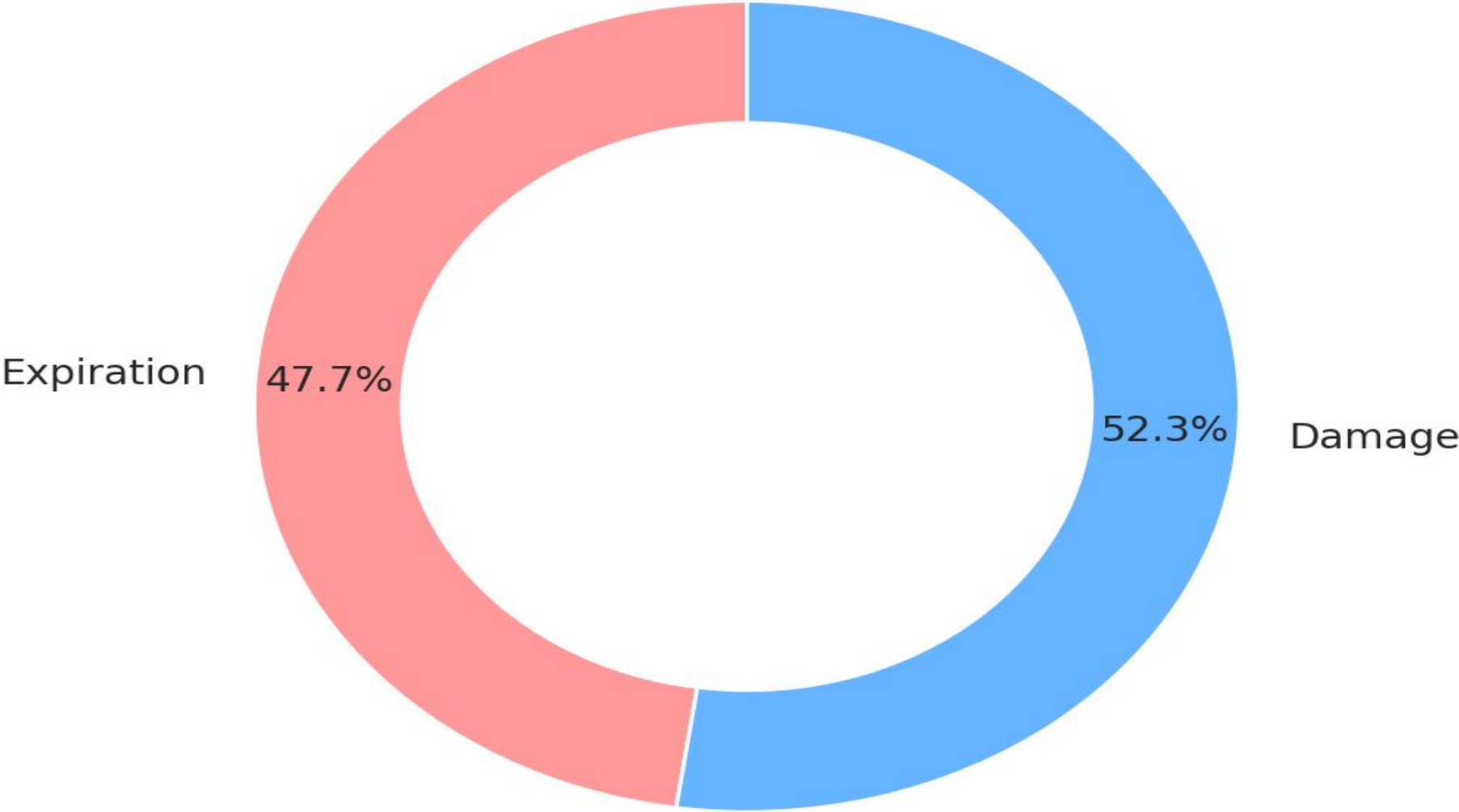
# Performance measurement along supply chain in pharmaceutical



# What is the cost incurred by the firm due to the losses caused by the expiration or damage during manufacturing, transit, or storage?

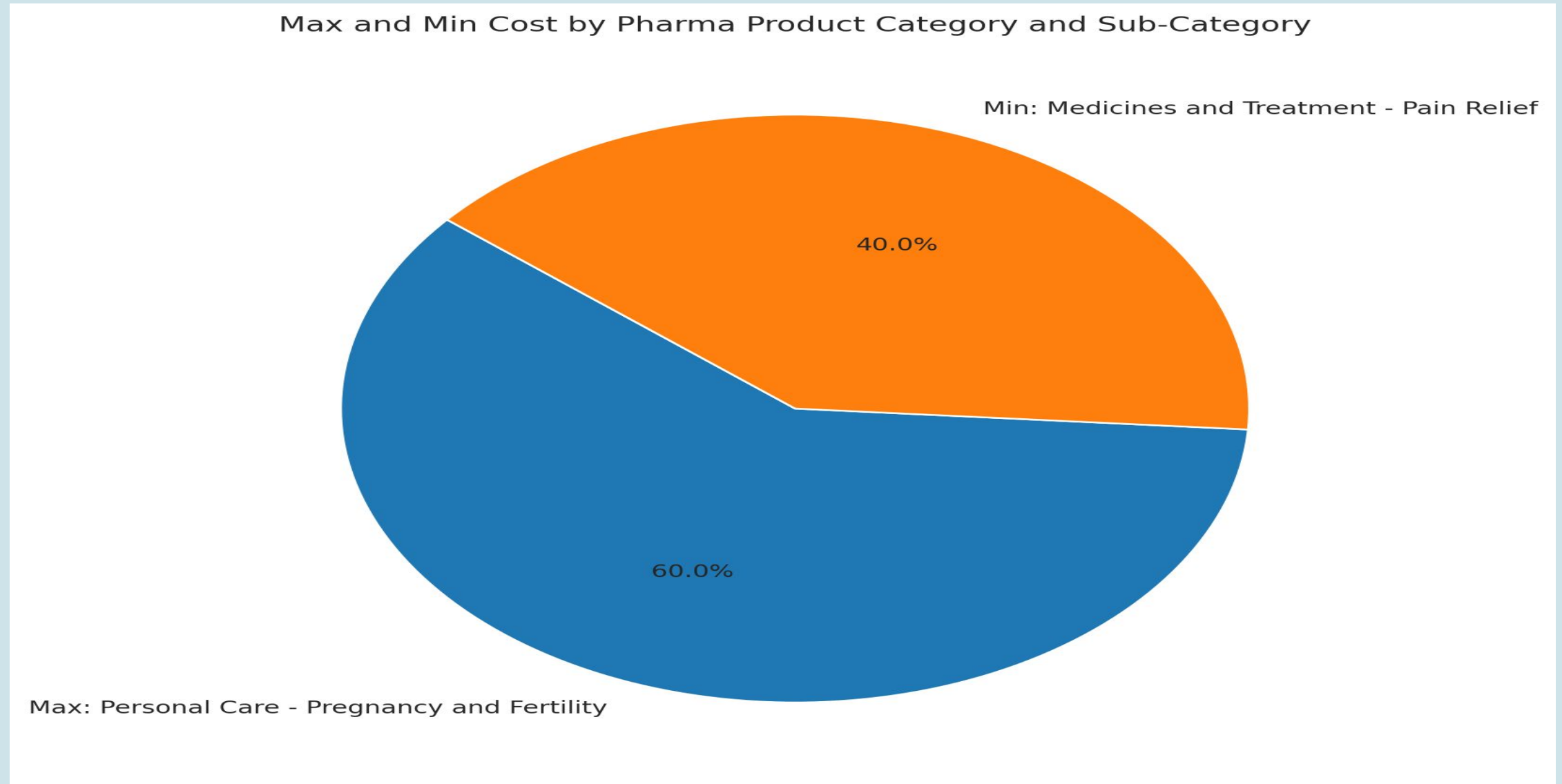


Which of the following causes more loss to the firm, expiration of medicines, or damage during manufacturing, transit, or storage?

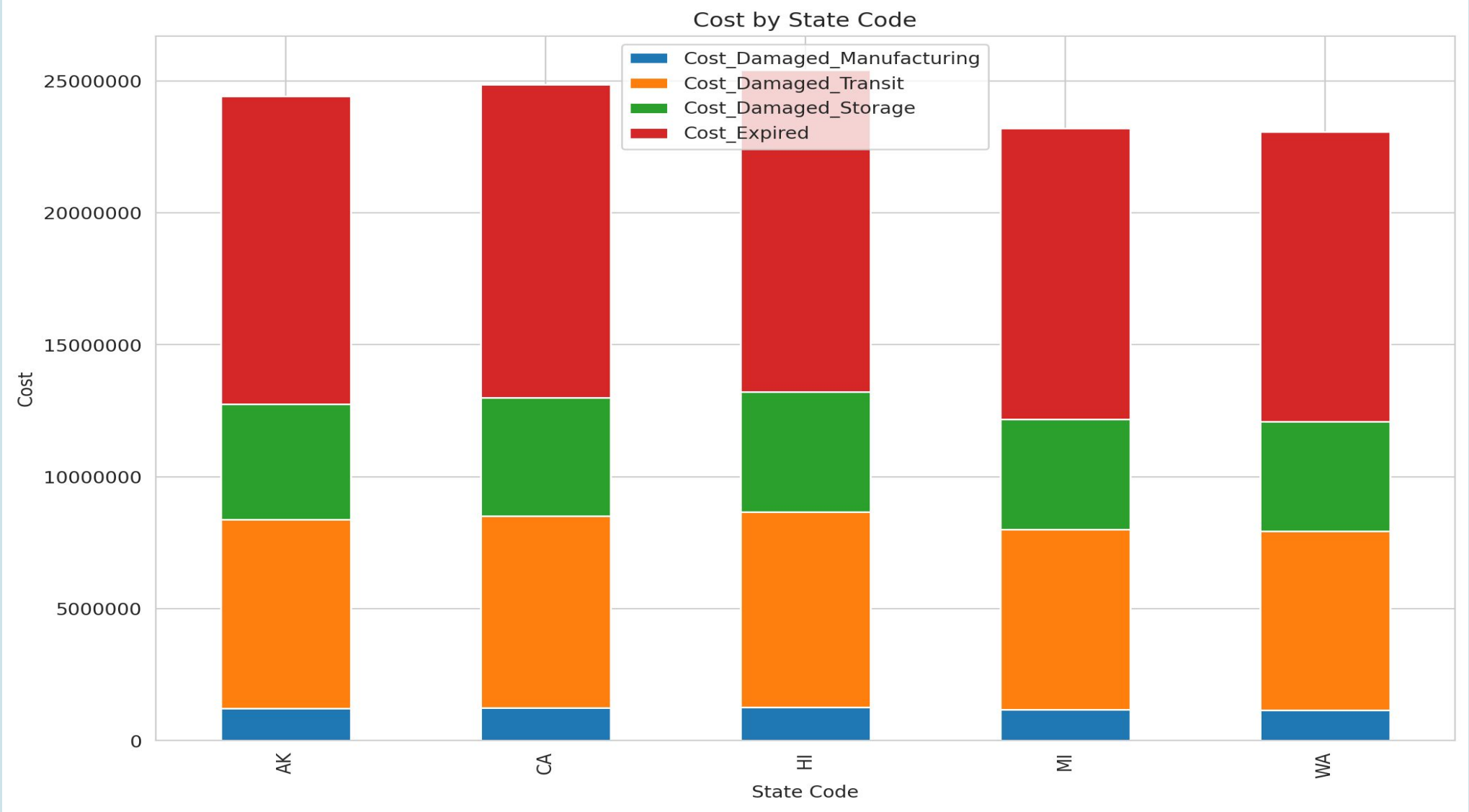




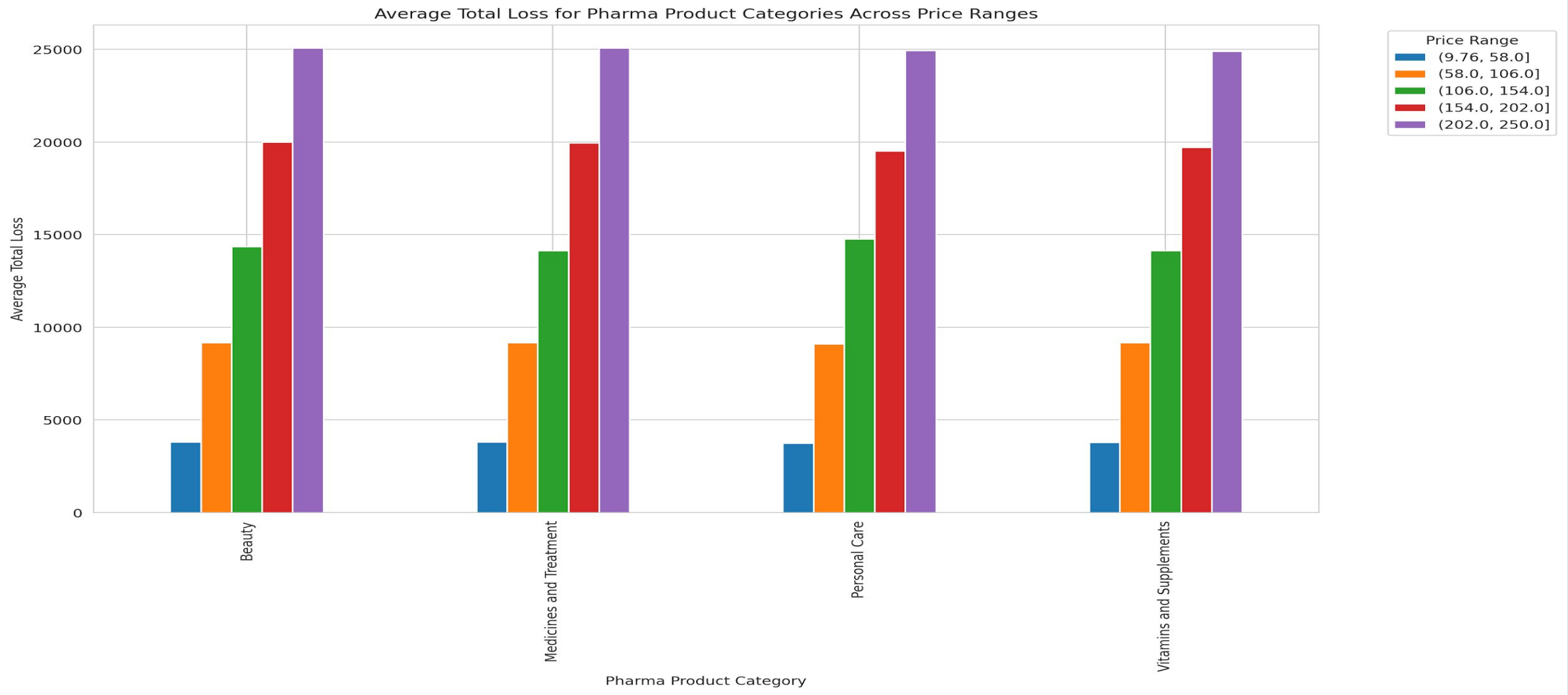
# For which pharma product category and sub-category, is the cost maximum and minimum?



# How does the cost to the firm vary across different states in which the firm sells its products?



# How do the losses to the firm for different pharma product categories vary for different price ranges?



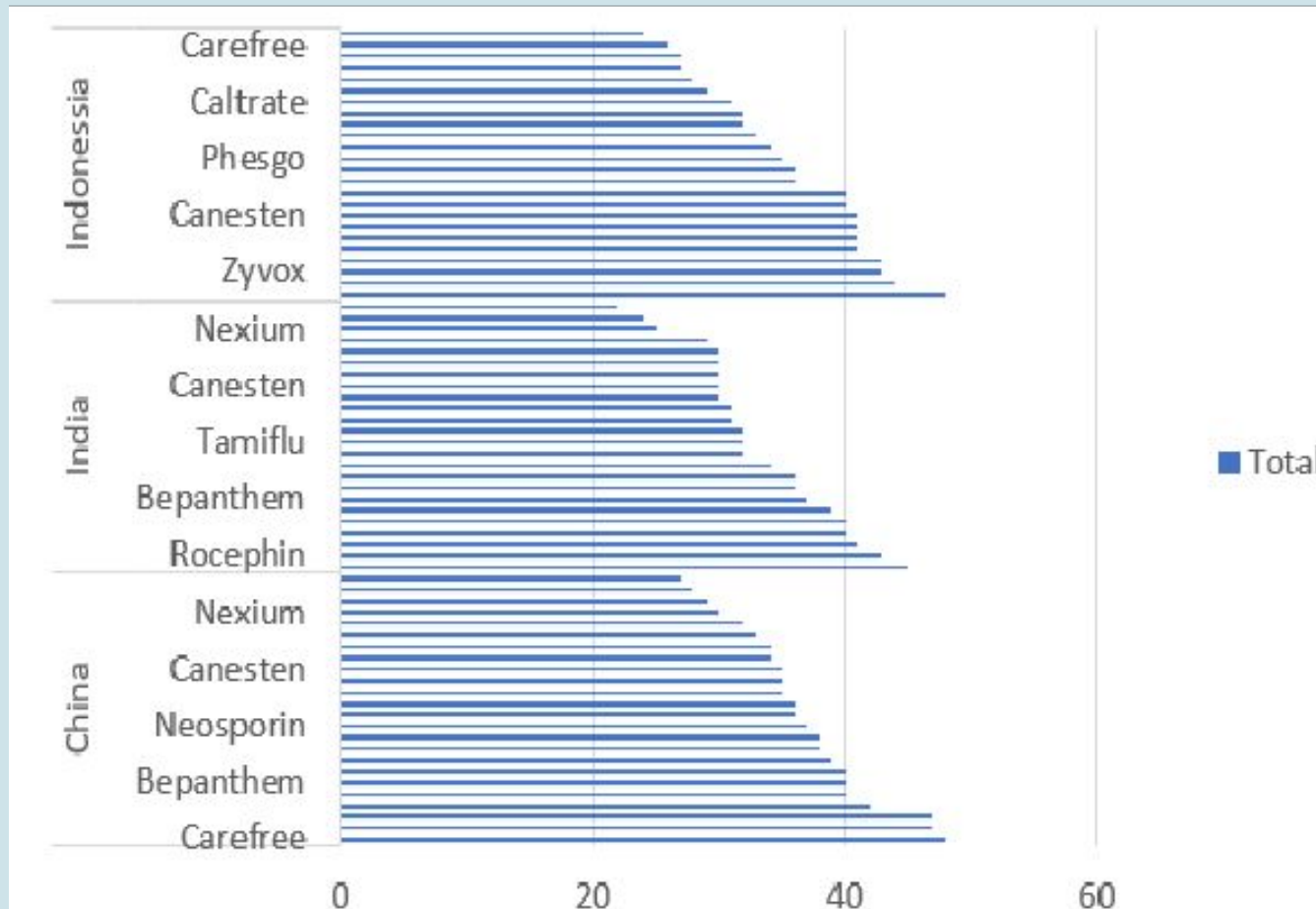
# Domestic, US and Global logistics in pharmaceutical





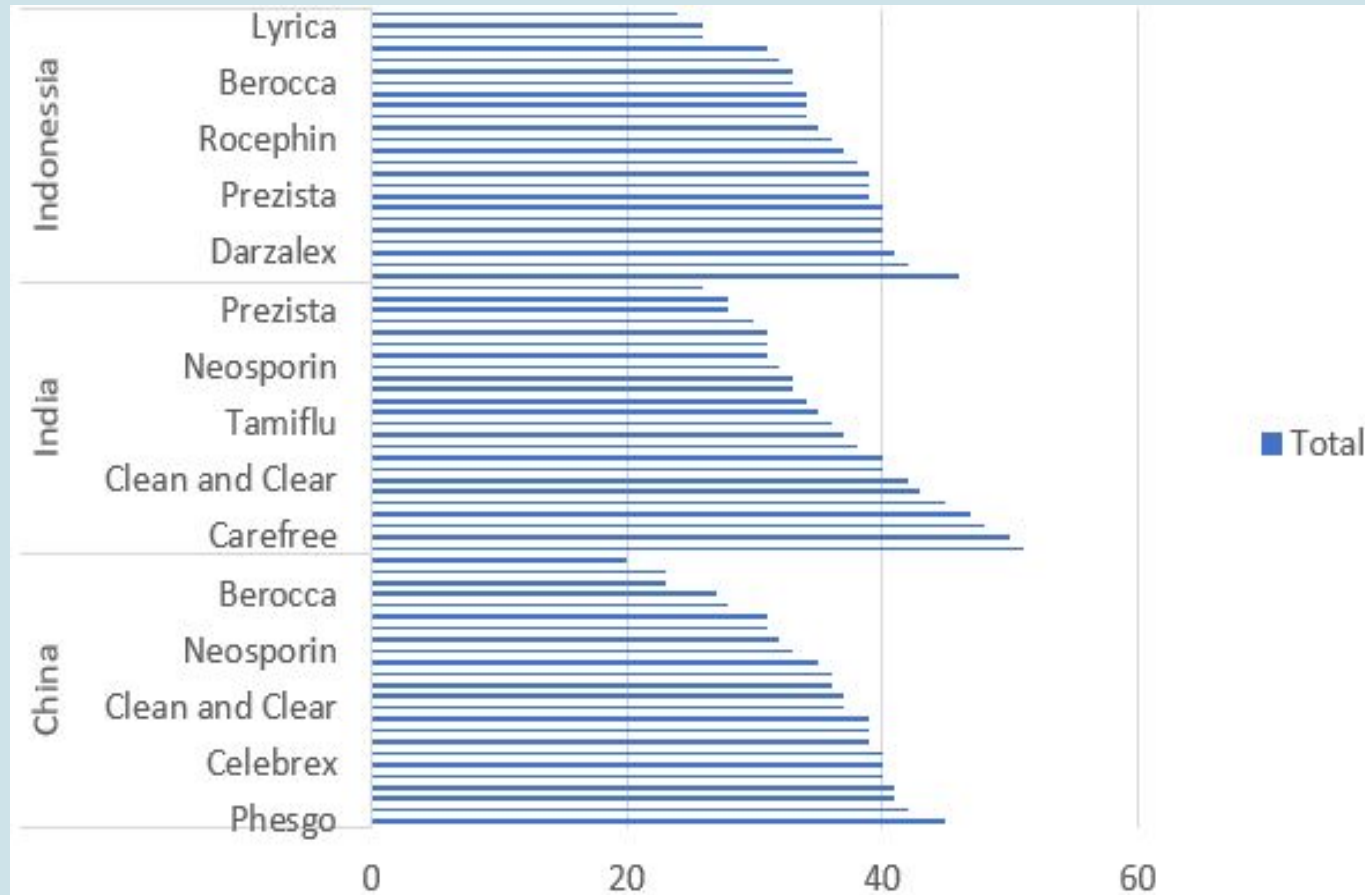
# What is the shipping time required to successfully ship different pharma products from the source country to the destination country?

## Top 5 fastest shipped products from Canada to destination countries



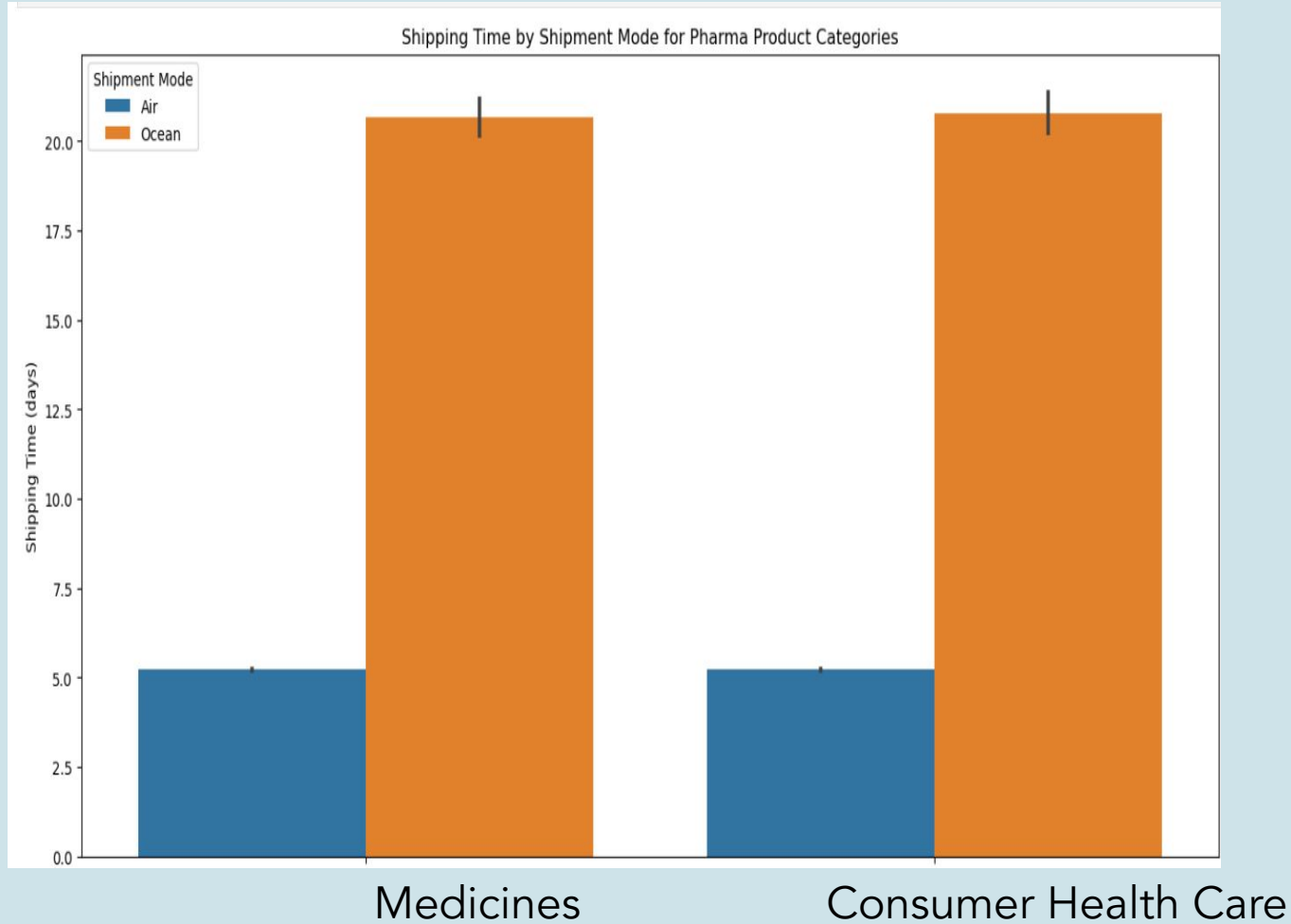
- Indonesia:  
Carefree product takes the least shipment time of about 26 hours compared to Zyvox which takes about 43 hours to ship to Indonesia from Canada.
- India:  
Nexium takes about 25 hours whereas Rocephin takes about 43 hours to ship to India from Canada.
- China:  
Nexium takes about 25 hours and Carefree takes about 41 hours to ship to China from Canada.

## Top 5 fastest shipped products from USA to destination countries



- **Indonesia:**  
Lyrica product takes the least shipment time of about 26 hours whereas Darzalex takes about 41 hours to ship from the USA to Indonesia.
- **India:**  
Prezista takes about 28 hours and Carefree takes about 50 hours to ship from the USA to India.
- **China:**  
Berocca takes about 27 hours and Phesgo takes about 45 hours to ship from the USA to China.

## (b) What is the appropriate shipment mode that minimizes the shipping time for different pharma product categories?



- Air shipment takes an average of about 5 days for Medicines and Consumer Health Care products to reach their destinations.
- Ocean shipment takes an average of about 20 days for Medicines and Consumer Health Care Products to reach their destinations.

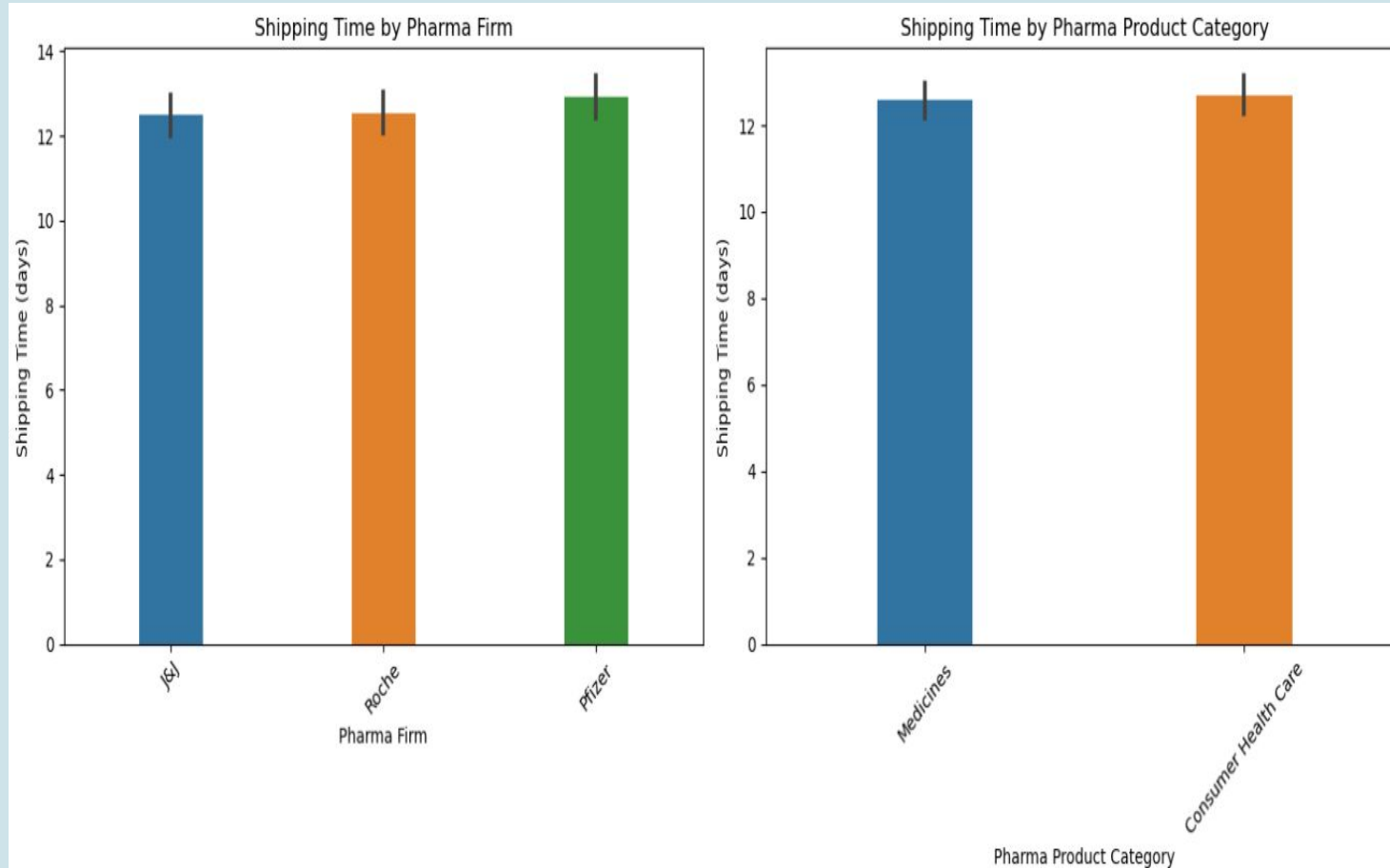
## How does the shipping time vary across the different shipping companies shipping the products?



- Shipping company 1 makes the longest run of about 20 days for product shipment.
- Shipping company 2 takes an average of about 9 days for shipment.
- Shipping company 3 takes the least shipment time of about 5 days to reach their destination.



## For which pharma firm the shipping time is the highest and for which pharma product category?



- Pfizer pharma firm has slightly higher shipping time than Roche and J&J with an average of about 13.5 days to ship to their destination.
- Consumer Health Care has a slightly higher shipping time than Medicines.

