

Medical Inventory Optimization

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Business Problem

Business Problem: Bounce rate is increasing significantly leading to patient dissatisfaction

Business Objective: minimize bounce rate

Business Constraint: Minimize inventory cost

Success Criteria:

- Business Success Criteria: Reduce bounce rate by at least 30%
- Economic Success Criteria: Increase revenue by at least 20 lacs INR by reducing bounce rate

Project Overview and Scope

- Medical Inventory experience increased bounce rate. This project aim is to minimize the bounce rate and Maximize the Inventory cost.
- This Project reduce bounce rate by at least 30% and Increase revenue by at least 20 lacs INR by reducing bounce rate
- Project scope:
 - Perform EDA and Descriptive Analytics to identify the necessary reasons for increased bounce rate
 - Share the results with stake holders

Data Dictionary

- Data Dictionary contains :
 - Numerical variable:
 - Quantity: quantity of purchase
 - Return Quantity: Quantity of Return products
 - Final_Cost: Total Cost of items
 - Final_sales: Total sales of each items
 - Charactergorical variables:
 - Typeofsales: contains 2 values Sales and Return
 - Patient_id: contains patient id information
 - Specialisation: contains specialisation information
 - Dept: contain Department information
 - Dateofbill: contains bill purchase date
 - DrugName: contains name of the Drugs
 - SubCat: contains subcategory which Drugs comes under
 - Subcat1: contains another subcategory which Drugs comes under
 - Formulation: contains formulation information

Exploratory Data Analysis [EDA]

Statistical Insights

	Quantity	Final_Sales
count	14218.000000	14218.000000
Mean	2.231748	234.038300
Std	5.132043	671.261572
Min	0	0
25%	1.000000	47.815000
50%	1.000000	86.424000
75%	2.000000	181.000000
Max	150.000000	39490.000000

Business Insights

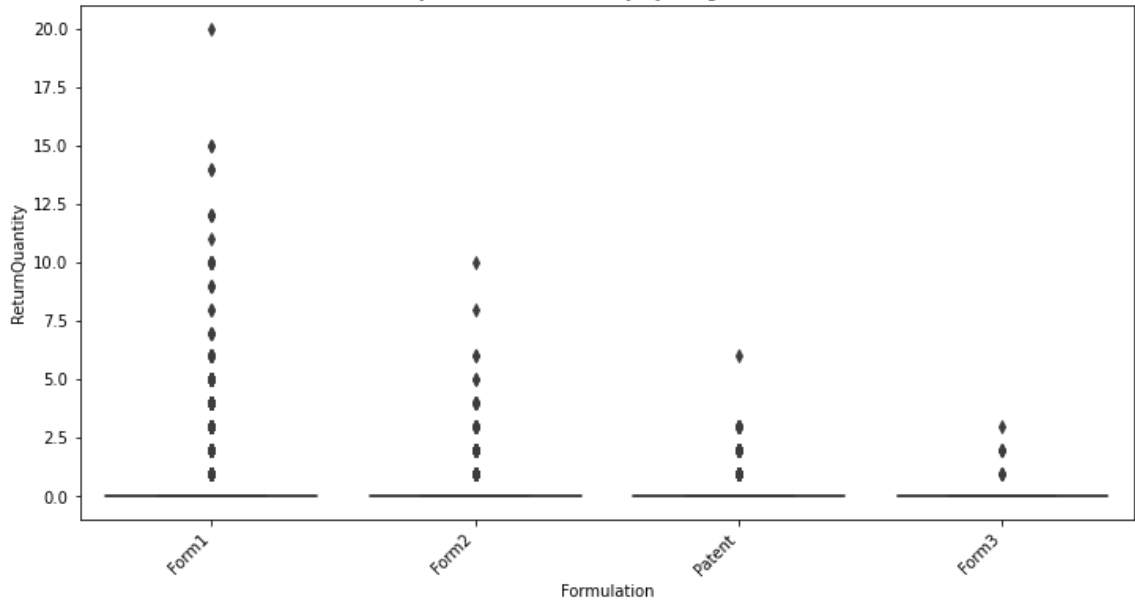
- From Sub category Injections,tablets and IV fluids, electrolytes,TPN has highest number of returns
- Department 1 has highest average returns and specialization41 has highest average sales
- Department 1 contains highest average sales in department compared to other two departments
- Form1 has more return quantity , form3 has lowest return quantities
- In sales we can see dec month has highest sales compared to other months

Data Preprocessing

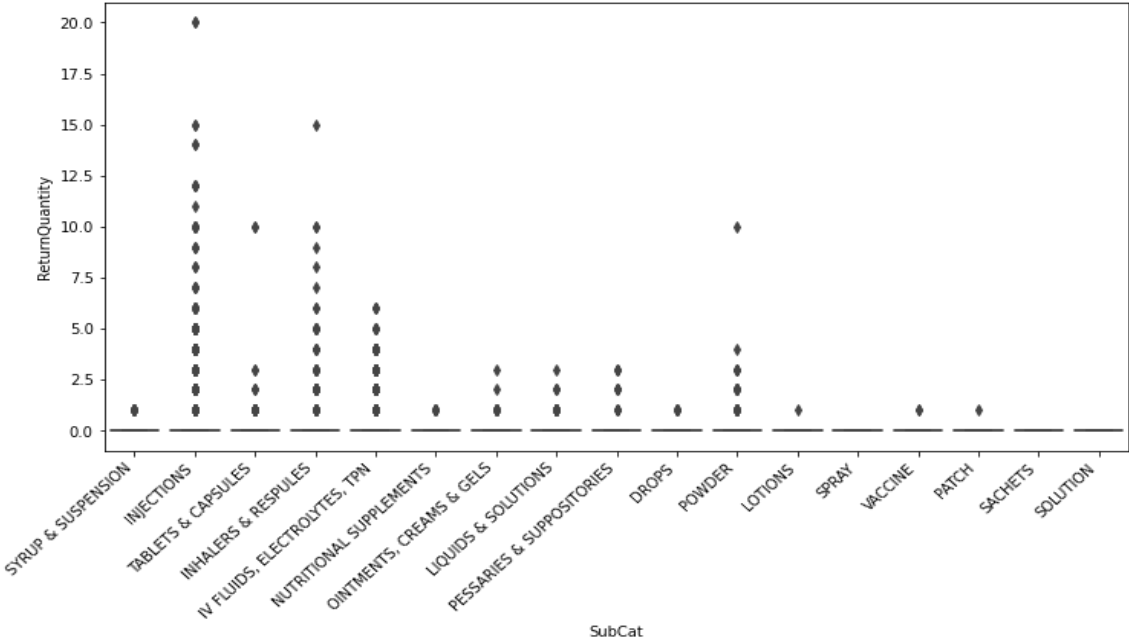
- Data Contains total of 14218 rows in 14 columns
- Column Formulation, DrugName, SubCat, SubCat1 contains null values.
- Formulation column contains total of 653 null values.
- DrugName column contains total of 1668 null values
- SubCat column contains total of 1668 null values
- SubCat1 column contains total of 1692 null values
- Replacing null values with NA. So the sum will remain same
- We can see some inconsistency in date format, so I replace the date format uniformly and change the m/d/y format to d/m/y
- I also add new column month to dataframe by extracting month from date so we can do some analysis on month column

Data Visualization

Analysis of Return Quantity by Drug Formulation



Differences in Return Quantity across Subcategories



Univariate Chart for Month and Sales

