

# Power BI Assignment 2 – DAX & Data Visualization

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Topic Name: E-Commerce Sales Analysis using Power BI

## Calculated Columns:

### Create a Calculated Column for 'Category Type':

1 Category Type = 'Order Details'[Category] & " - " & 'Order Details'[Sub-Category]

| Order ID | Amount  | Profit    | Quantity | Category    | Sub-Category     | Profit Margin | Category Type                  |
|----------|---------|-----------|----------|-------------|------------------|---------------|--------------------------------|
| B-25601  | ₹ 1,275 | 1,148 - ₹ | 7        | Furniture   | Bookcases        | -90.0392      | Furniture - Bookcases          |
| B-25601  | ₹ 8     | 2 - ₹     | 3        | Clothing    | Hankchief        | -25           | Clothing - Hankchief           |
| B-25601  | ₹ 66    | 12 - ₹    | 5        | Clothing    | Stole            | -18.1818      | Clothing - Stole               |
| B-25601  | ₹ 80    | 56 - ₹    | 4        | Electronics | Electronic Games | -70           | Electronics - Electronic Games |
| B-25602  | ₹ 2,617 | ₹ 1,151   | 4        | Electronics | Phones           | 43.9817       | Electronics - Phones           |
| B-25602  | ₹ 119   | 5 - ₹     | 8        | Clothing    | Saree            | -4.2017       | Clothing - Saree               |
| B-25602  | ₹ 561   | ₹ 212     | 3        | Clothing    | Saree            | 37.7897       | Clothing - Saree               |
| B-25602  | ₹ 168   | 111 - ₹   | 2        | Electronics | Phones           | -66.0714      | Electronics - Phones           |
| B-25602  | ₹ 424   | 272 - ₹   | 5        | Electronics | Phones           | -64.1509      | Electronics - Phones           |
| B-25603  | ₹ 180   | ₹ 5       | 3        | Clothing    | Trousers         | 2.7778        | Clothing - Trousers            |
| B-25603  | ₹ 193   | 166 - ₹   | 3        | Clothing    | Saree            | -86.0104      | Clothing - Saree               |
| B-25603  | ₹ 12    | ₹ 1       | 2        | Clothing    | Hankchief        | 8.3333        | Clothing - Hankchief           |
| B-25603  | ₹ 116   | ₹ 16      | 4        | Clothing    | Stole            | 13.7931       | Clothing - Stole               |
| B-25603  | ₹ 107   | ₹ 36      | 6        | Clothing    | Stole            | 33.6449       | Clothing - Stole               |
| B-25603  | ₹ 1,355 | 60 - ₹    | 5        | Clothing    | Trousers         | -4.428        | Clothing - Trousers            |
| B-25603  | ₹ 38    | ₹ 18      | 1        | Clothing    | Kurti            | 47.3684       | Clothing - Kurti               |
| B-25603  | ₹ 24    | 30 - ₹    | 1        | Furniture   | Chairs           | -125          | Furniture - Chairs             |
| B-25604  | ₹ 157   | ₹ 5       | 9        | Clothing    | Saree            | 3.1847        | Clothing - Saree               |
| B-25604  | ₹ 65    | ₹ 17      | 2        | Clothing    | T-shirt          | 26.1538       | Clothing - T-shirt             |
| B-25605  | ₹ 75    | ₹ 0       | 7        | Clothing    | Saree            | 0             | Clothing - Saree               |
| B-25606  | ₹ 87    | ₹ 4       | 2        | Clothing    | Shirt            | 4.5977        | Clothing - Shirt               |

Calculated Column named “Category Type” added in Orders Details Table by combining both ‘Category’ and ‘sub-category’ column using Dax Formula

**Category Type = 'Order Details'[Category] & " - " & 'Order Details'[Sub-Category]**

### Calculate Revenue per Order in Order Details Table:

1 Revenue = 'Order Details'[Amount]\*'Order Details'[Quantity]

| Order ID | Amount  | Profit    | Quantity | Category    | Sub-Category     | Profit Margin | Category Type                  | Revenue |
|----------|---------|-----------|----------|-------------|------------------|---------------|--------------------------------|---------|
| B-25601  | ₹ 1,275 | 1,148 - ₹ | 7        | Furniture   | Bookcases        | -90.0392      | Furniture - Bookcases          | 8925    |
| B-25601  | ₹ 8     | 2 - ₹     | 3        | Clothing    | Hankchief        | -25           | Clothing - Hankchief           | 24      |
| B-25601  | ₹ 66    | 12 - ₹    | 5        | Clothing    | Stole            | -18.1818      | Clothing - Stole               | 330     |
| B-25601  | ₹ 80    | 56 - ₹    | 4        | Electronics | Electronic Games | -70           | Electronics - Electronic Games | 320     |
| B-25602  | ₹ 2,617 | ₹ 1,151   | 4        | Electronics | Phones           | 43.9817       | Electronics - Phones           | 10468   |
| B-25602  | ₹ 119   | 5 - ₹     | 8        | Clothing    | Saree            | -4.2017       | Clothing - Saree               | 952     |
| B-25602  | ₹ 561   | ₹ 212     | 3        | Clothing    | Saree            | 37.7897       | Clothing - Saree               | 1683    |
| B-25602  | ₹ 168   | 111 - ₹   | 2        | Electronics | Phones           | -66.0714      | Electronics - Phones           | 336     |
| B-25602  | ₹ 424   | 272 - ₹   | 5        | Electronics | Phones           | -64.1509      | Electronics - Phones           | 2120    |
| B-25603  | ₹ 180   | ₹ 5       | 3        | Clothing    | Trousers         | 2.7778        | Clothing - Trousers            | 540     |
| B-25603  | ₹ 193   | 166 - ₹   | 3        | Clothing    | Saree            | -86.0104      | Clothing - Saree               | 579     |
| B-25603  | ₹ 12    | ₹ 1       | 2        | Clothing    | Hankchief        | 8.3333        | Clothing - Hankchief           | 24      |
| B-25603  | ₹ 116   | ₹ 16      | 4        | Clothing    | Stole            | 13.7931       | Clothing - Stole               | 464     |
| B-25603  | ₹ 107   | ₹ 36      | 6        | Clothing    | Stole            | 33.6449       | Clothing - Stole               | 642     |

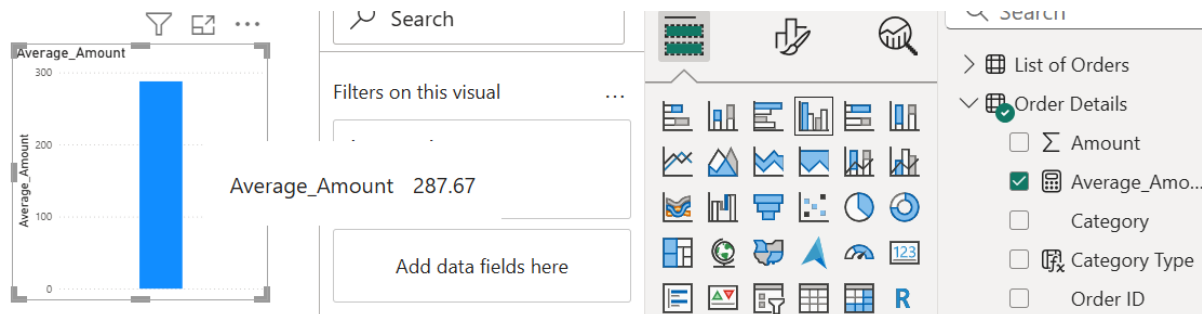
Calculated Column named “Revenue” Created in Orders Details Table Using DAX Formula

**Revenue = 'Order Details'[Amount]\*'Order Details'[Quantity]**

## Create a Calculated Column to Categorize Sales:

1 Sales Category = IF('Order Details'[Amount]>288, "Above Average", "Below Average")

| Amount  | Profit   | Quantity | Category    | Sub-Category     | Profit Margin | Category Type                  | Revenue | Sales Category |
|---------|----------|----------|-------------|------------------|---------------|--------------------------------|---------|----------------|
| ₹ 1,275 | 1,148 -₹ | 7        | Furniture   | Bookcases        | -90.0392      | Furniture - Bookcases          | 8925    | Above Average  |
| ₹ 8     | 2 -₹     | 3        | Clothing    | Hankерchief      | -25           | Clothing - Hankерchief         | 24      | Below Average  |
| ₹ 66    | 12 -₹    | 5        | Clothing    | Stole            | -18.1818      | Clothing - Stole               | 330     | Below Average  |
| ₹ 80    | 56 -₹    | 4        | Electronics | Electronic Games | -70           | Electronics - Electronic Games | 320     | Below Average  |
| ₹ 2,617 | ₹ 1,151  | 4        | Electronics | Phones           | 43.9817       | Electronics - Phones           | 10468   | Above Average  |
| ₹ 119   | 5 -₹     | 8        | Clothing    | Saree            | -4.2017       | Clothing - Saree               | 952     | Below Average  |
| ₹ 561   | ₹ 212    | 3        | Clothing    | Saree            | 37.7897       | Clothing - Saree               | 1683    | Above Average  |
| ₹ 168   | 111 -₹   | 2        | Electronics | Phones           | -66.0714      | Electronics - Phones           | 336     | Below Average  |
| ₹ 424   | 272 -₹   | 5        | Electronics | Phones           | -64.1509      | Electronics - Phones           | 2120    | Above Average  |
| ₹ 180   | ₹ 5      | 3        | Clothing    | Trousers         | 2.7778        | Clothing - Trousers            | 540     | Below Average  |
| ₹ 193   | 166 -₹   | 3        | Clothing    | Saree            | -86.0104      | Clothing - Saree               | 579     | Below Average  |
| ₹ 12    | ₹ 1      | 2        | Clothing    | Hankерchief      | 8.3333        | Clothing - Hankерchief         | 24      | Below Average  |
| ₹ 116   | ₹ 16     | 4        | Clothing    | Stole            | 13.7931       | Clothing - Stole               | 464     | Below Average  |
| ₹ 107   | ₹ 36     | 6        | Clothing    | Stole            | 33.6449       | Clothing - Stole               | 642     | Below Average  |
| ₹ 107   | 60 -₹    | 5        | Clothing    | Trousers         | -4.428        | Clothing - Trousers            | 6775    | Above Average  |
| ₹ 38    | ₹ 18     | 1        | Clothing    | Kurti            | 47.3684       | Clothing - Kurti               | 38      | Below Average  |



Calculated Column named “Sales Category” added in the order details that categorizes each order as ‘Above Average’ or ‘Below Average’ using DAX Formula

Average Amount is 287.67, i.e.) 288.

**Average\_Amount = AVERAGE('Order Details'[Amount])**

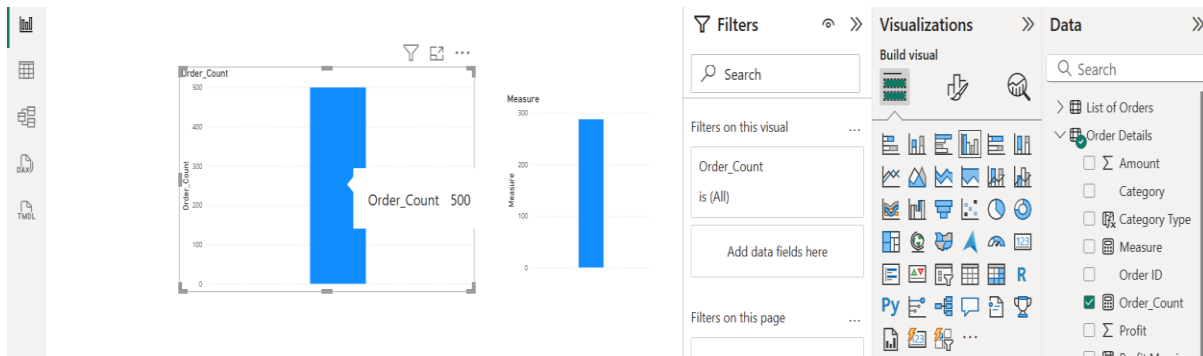
**Sales Category = IF('Order Details'[Amount]>288, "Above Average", "Below Average")**

## Calculated Measures:

### Calculate Order Count:

1 Order\_Count = DISTINCTCOUNT('List of Orders'[Order ID])

| Amount  | Profit | Quantity | Category | Sub-Category | Profit Margin | Category Type    | Revenue | Sales Category |
|---------|--------|----------|----------|--------------|---------------|------------------|---------|----------------|
| ₹ 561   | ₹ 212  | 3        | Clothing | Saree        | 37.7897       | Clothing - Saree | 1683    | Above Average  |
| ₹ 119   | 5 -₹   | 8        | Clothing | Saree        | -4.2017       | Clothing - Saree | 952     | Below Average  |
| ₹ 193   | 166 -₹ | 3        | Clothing | Saree        | -86.0104      | Clothing - Saree | 579     | Below Average  |
| ₹ 157   | ₹ 5    | 9        | Clothing | Saree        | 3.1847        | Clothing - Saree | 1413    | Below Average  |
| ₹ 75    | ₹ 0    | 7        | Clothing | Saree        | 0             | Clothing - Saree | 525     | Below Average  |
| ₹ 25    | 5 -₹   | 4        | Clothing | Saree        | -20           | Clothing - Saree | 100     | Below Average  |
| ₹ 43    | ₹ 0    | 3        | Clothing | Saree        | 0             | Clothing - Saree | 129     | Below Average  |
| ₹ 160   | 59 -₹  | 2        | Clothing | Saree        | -36.875       | Clothing - Saree | 320     | Below Average  |
| ₹ 1,603 | ₹ 0    | 9        | Clothing | Saree        | 0             | Clothing - Saree | 14427   | Above Average  |
| ₹ 353   | ₹ 90   | 8        | Clothing | Saree        | 25.4958       | Clothing - Saree | 2824    | Above Average  |
| ₹ 534   | ₹ 0    | 3        | Clothing | Saree        | 0             | Clothing - Saree | 1602    | Above Average  |
| ₹ 149   | 87 -₹  | 4        | Clothing | Saree        | -58.3893      | Clothing - Saree | 596     | Below Average  |

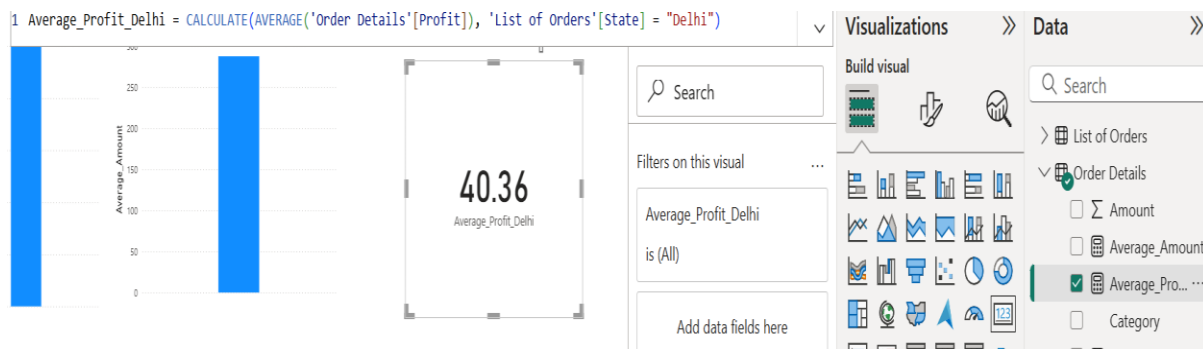


Order Count for total number orders is calculated using new measure using DAX Formula

**Order\_Count = DISTINCTCOUNT('List of Orders'[Order ID])**

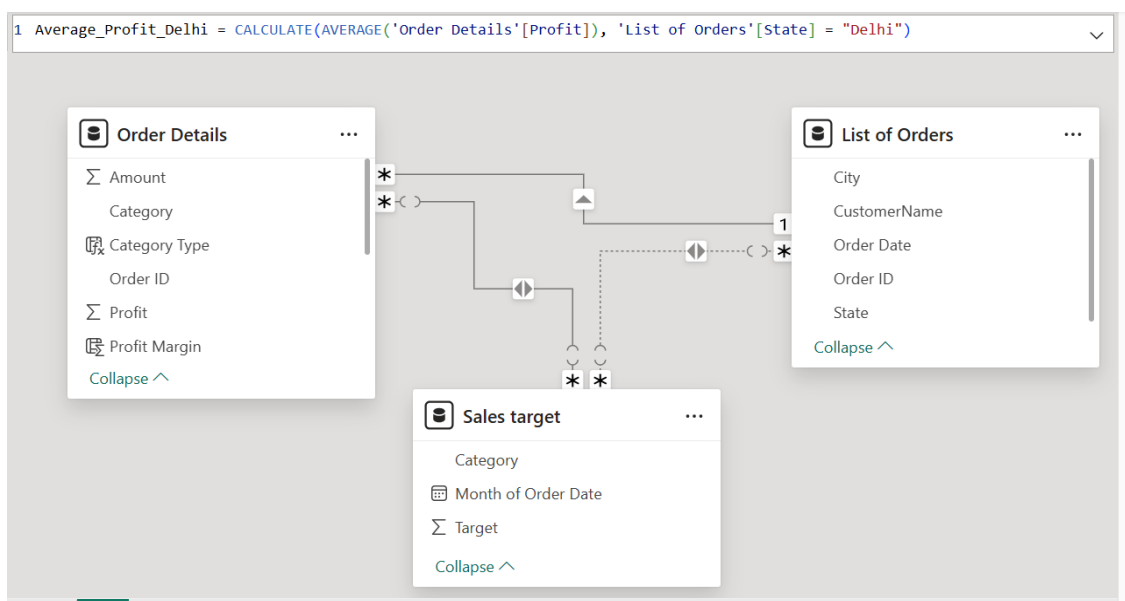
And measure visualised using Card in report View. Order Count is 500.

### Calculate Average Profit in Delhi:



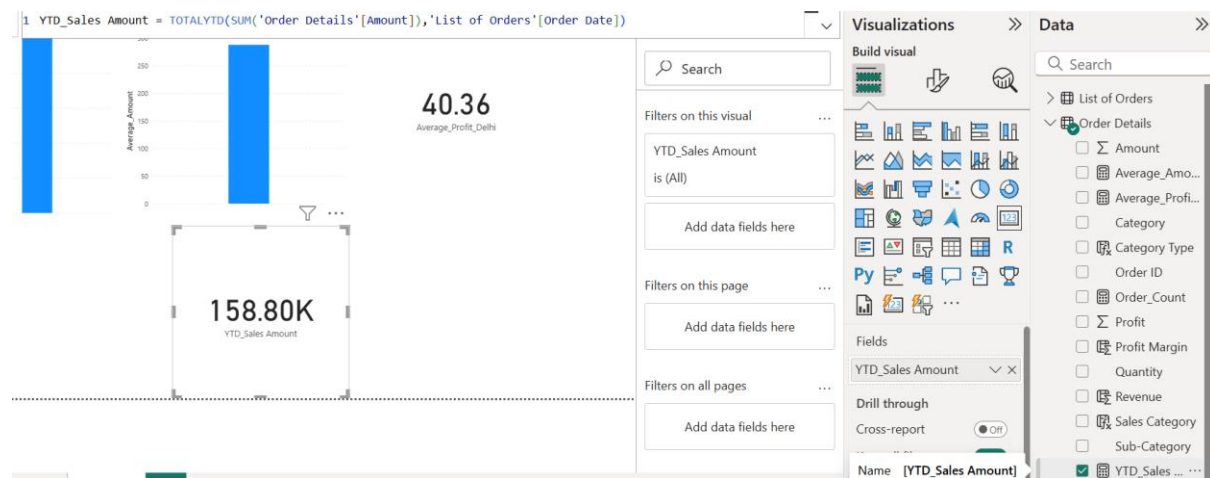
Average Profit for orders placed in Delhi calculated using New measure Using DAX Formula

**Average\_Profit\_Delhi = CALCULATE(AVERAGE('Order Details'[Profit]), 'List of Orders'[State] = "Delhi")**



Formula used after creating the Relationship for 'List of Orders' and 'Order Details' table in model view.

### Calculate Year-to-Date (YTD) Sales:



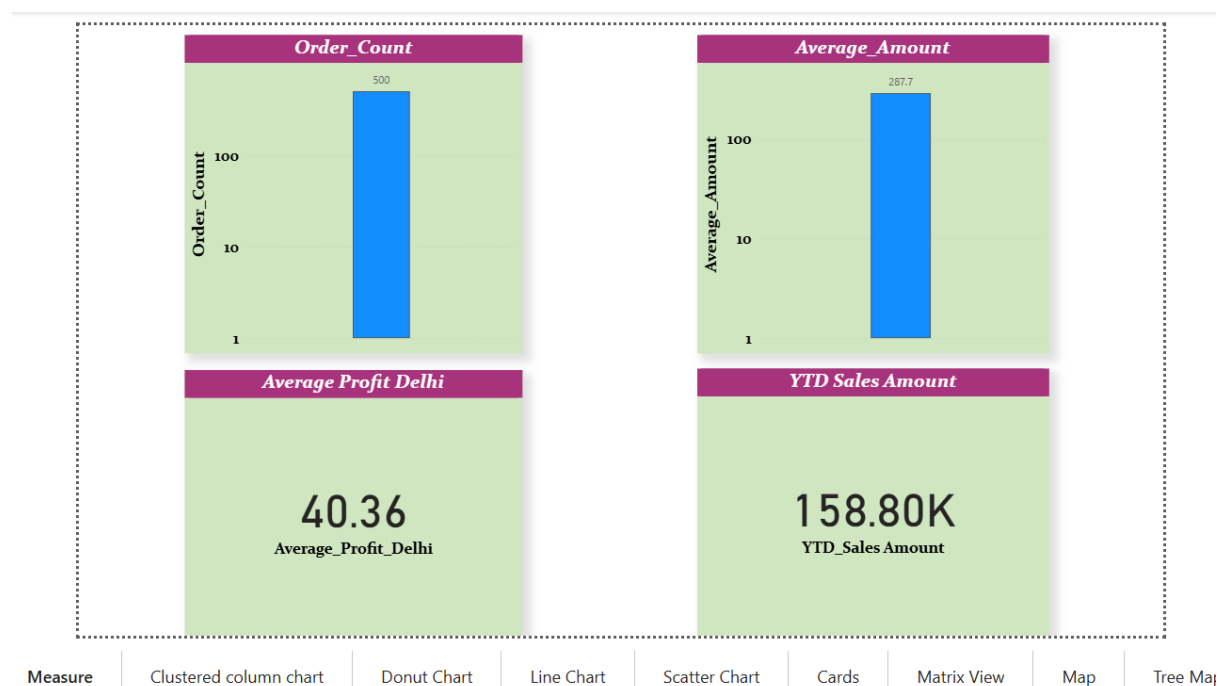
Year to Year (YTD) Sales Amount Calculated using New Measure using DAX Formula

$$\text{YTD\_Sales Amount} = \text{TOTALYTD}(\text{SUM}('Order Details'[Amount]), 'List of Orders'[Order Date])$$

YTD Sales Amount is 158.80K

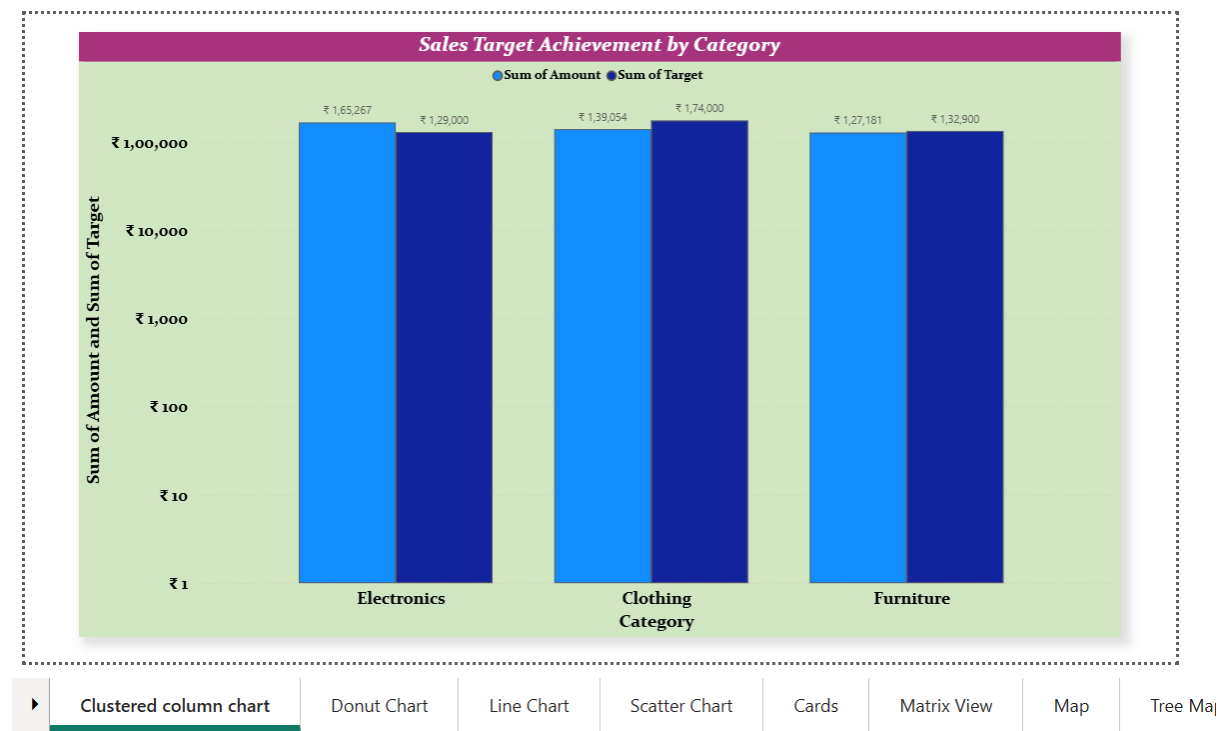
### Data Visualization:

### Measures:



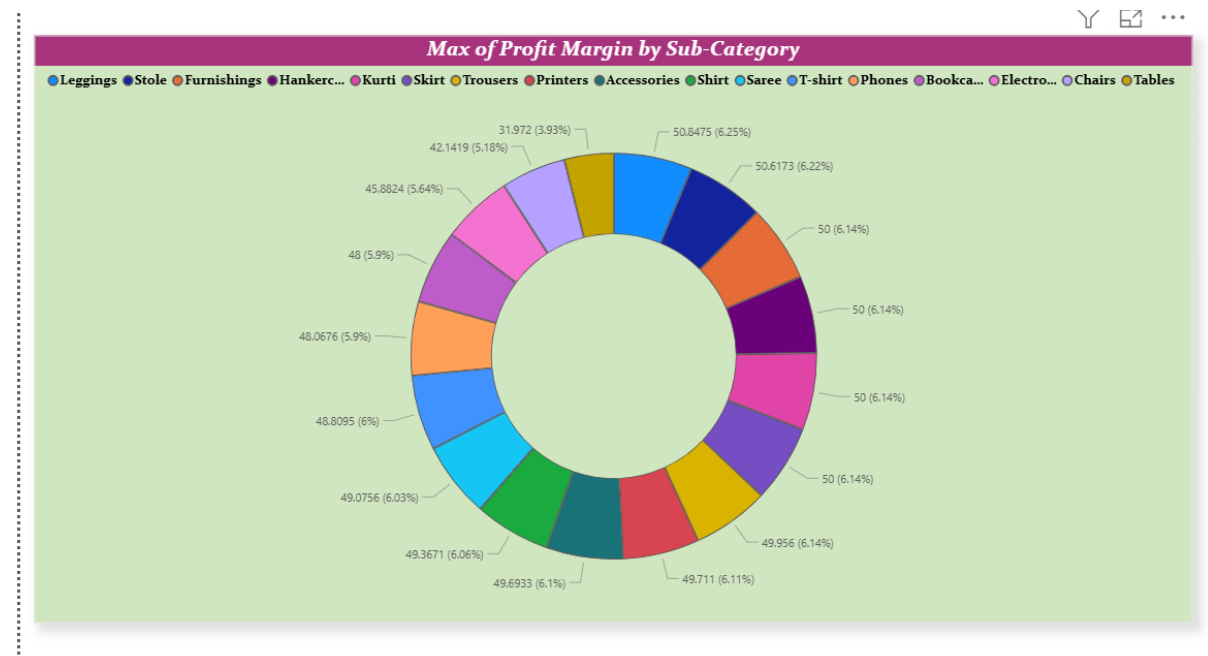
Measures used for above and upcoming Analysis.

## Sales Target Achievement by Category:



Comparison of Actual Sales with Sales Target by category using Clustered Column Chart. Based on the analysis Actual Sales Not Exceeded the Target.

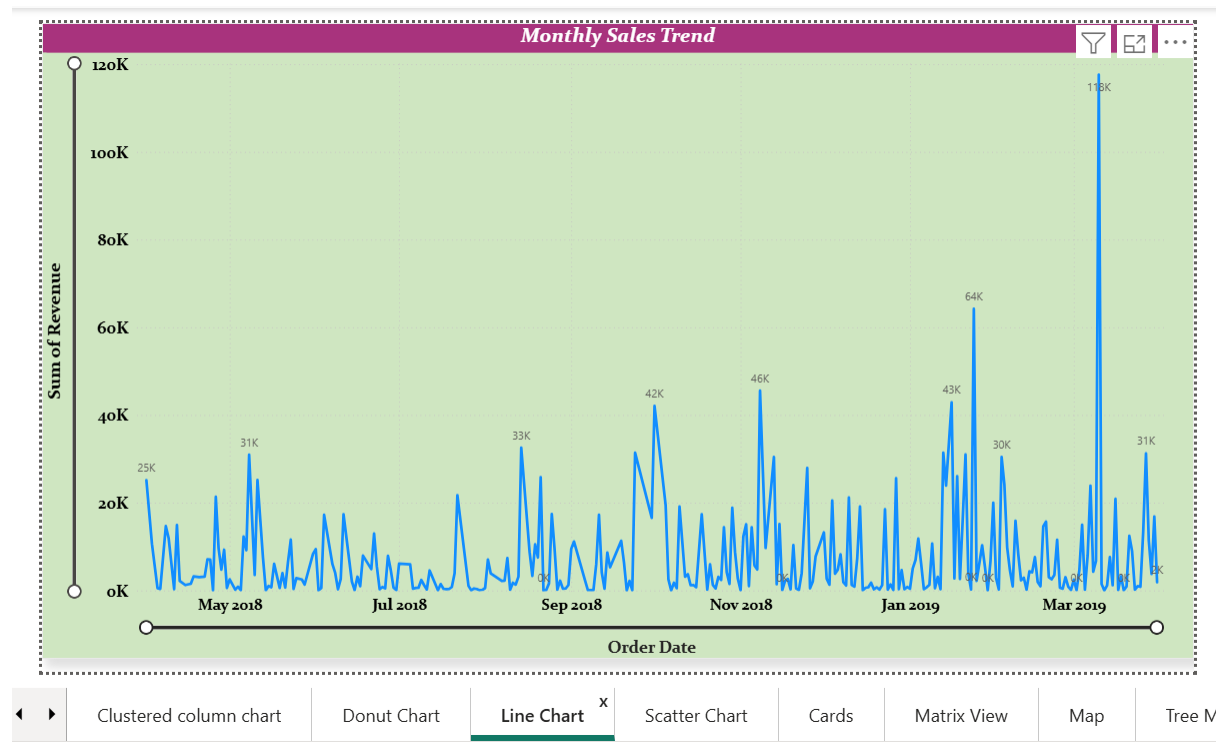
## Max Profit Margin by Sub-Category:



Analysis of maximum profit margin for each sub-category of products using a donut chart.

Highest Profit Margin: 50.85 (6.25%), Sub- Category : Leggings

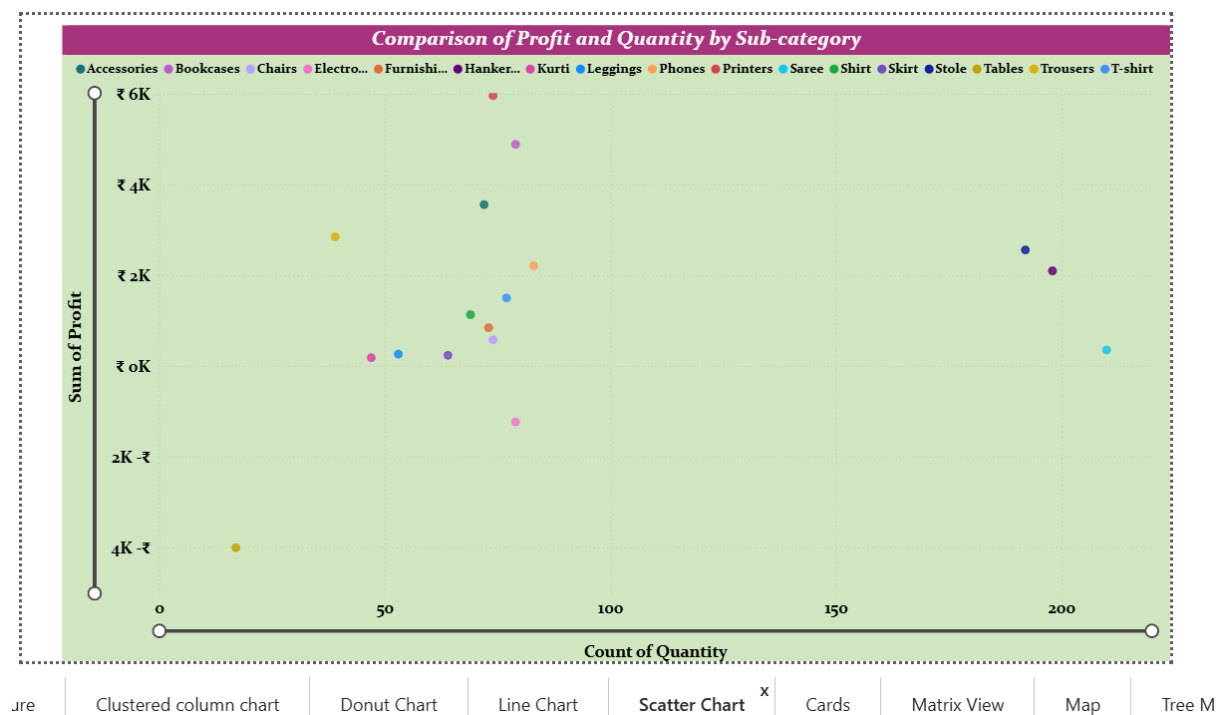
## Monthly Sales Trend:



Analysing the trend of monthly sales over time using line chart.

Highest sales occurred on 10<sup>th</sup> March 2019, Sum of Revenue : Rs.1,17,601

## Comparison of Profit and Quantity by Sub-Category:

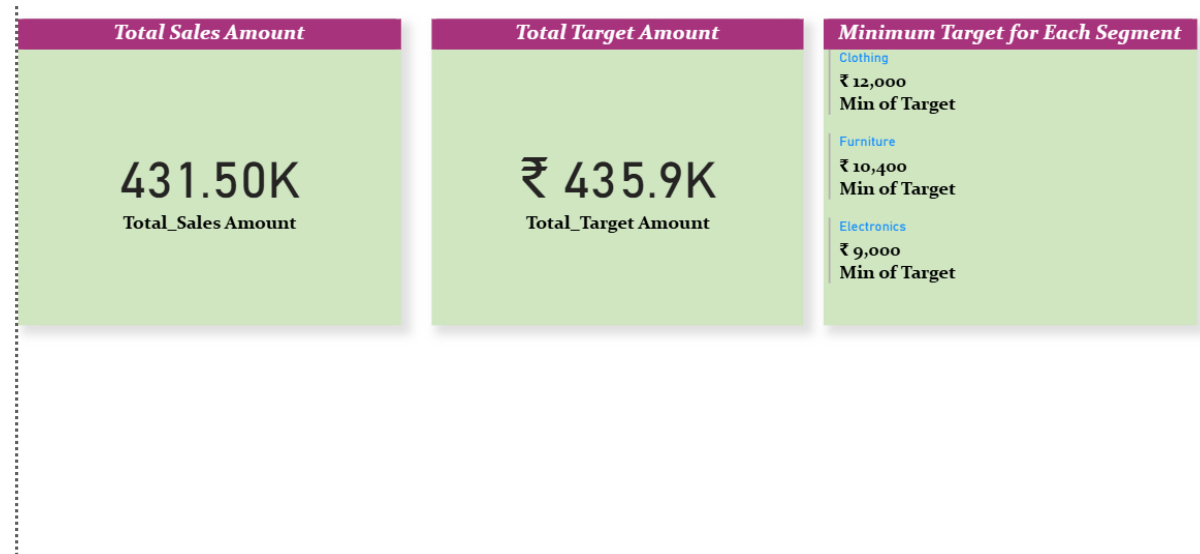


Compared the relationship between Profit and quantity sold for different Sub-Categories using scatter Chart.

Printers Sold for highest Profit Rs.5964 by selling quantity of 74 printers. Saree sold highest numbers with profit Rs.352.

### Comparison of Total Sales Amount and Target:

The following cards displays the comparison of total sales amount alongside the sales target. also, a multi-row card displays the minimum target for each segment.



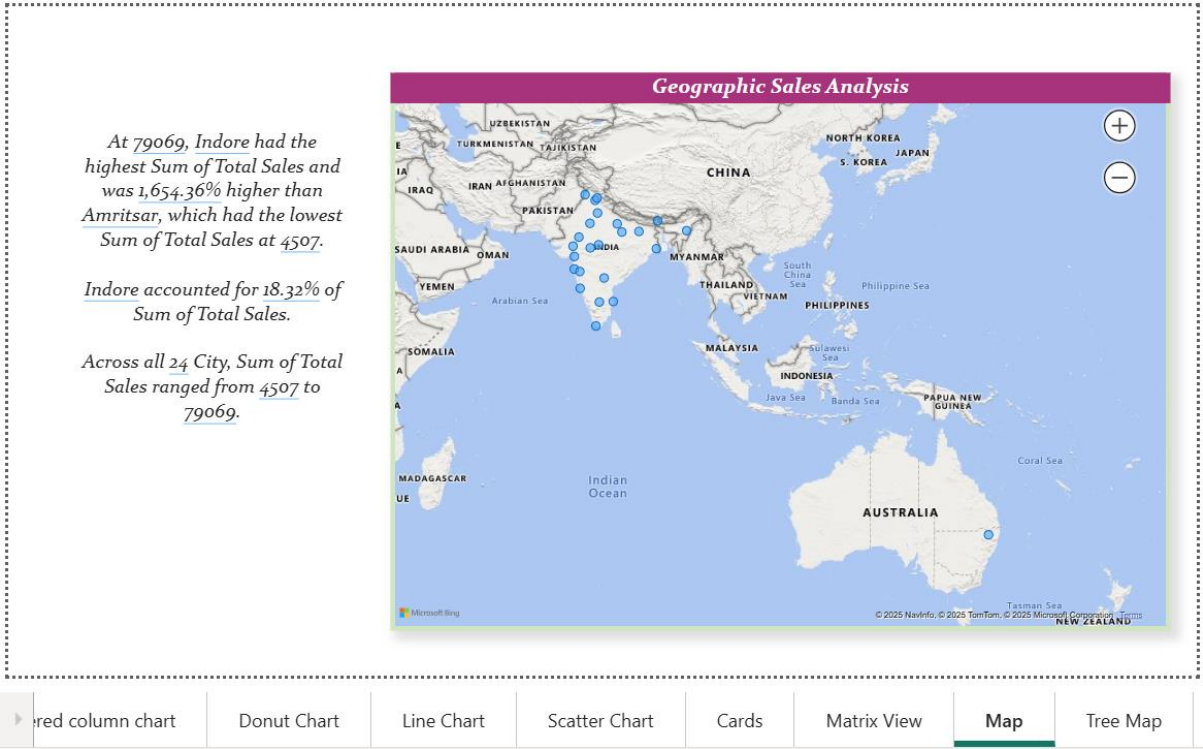
### Sales Performance Matrix:

| Sales Performance Matrix |           |               |               |               |               |               |               |               |               |
|--------------------------|-----------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Category                 |           | Clothing      |               | Electronics   |               | Furniture     |               | Total         |               |
| Year                     | Month     | Sum of Amount | Sum of Target | Sum of Amount | Sum of Target | Sum of Amount | Sum of Target | Sum of Amount | Sum of Target |
| 2018                     | December  | ₹ 1,39,054    | ₹ 16,000      | ₹ 1,65,267    | ₹ 9,000       | ₹ 1,27,181    | ₹ 11,400      | ₹ 4,31,502    | ₹ 36,400      |
|                          | November  | ₹ 1,39,054    | ₹ 16,000      | ₹ 1,65,267    | ₹ 9,000       | ₹ 1,27,181    | ₹ 11,300      | ₹ 4,31,502    | ₹ 36,300      |
|                          | October   | ₹ 1,39,054    | ₹ 16,000      | ₹ 1,65,267    | ₹ 9,000       | ₹ 1,27,181    | ₹ 11,100      | ₹ 4,31,502    | ₹ 36,100      |
|                          | September | ₹ 1,39,054    | ₹ 14,000      | ₹ 1,65,267    | ₹ 9,000       | ₹ 1,27,181    | ₹ 11,000      | ₹ 4,31,502    | ₹ 34,000      |
|                          | August    | ₹ 1,39,054    | ₹ 14,000      | ₹ 1,65,267    | ₹ 9,000       | ₹ 1,27,181    | ₹ 10,900      | ₹ 4,31,502    | ₹ 33,900      |
|                          | July      | ₹ 1,39,054    | ₹ 14,000      | ₹ 1,65,267    | ₹ 9,000       | ₹ 1,27,181    | ₹ 10,800      | ₹ 4,31,502    | ₹ 33,800      |
|                          | June      | ₹ 1,39,054    | ₹ 12,000      | ₹ 1,65,267    | ₹ 9,000       | ₹ 1,27,181    | ₹ 10,600      | ₹ 4,31,502    | ₹ 31,600      |
|                          | May       | ₹ 1,39,054    | ₹ 12,000      | ₹ 1,65,267    | ₹ 9,000       | ₹ 1,27,181    | ₹ 10,500      | ₹ 4,31,502    | ₹ 31,500      |
|                          | April     | ₹ 1,39,054    | ₹ 12,000      | ₹ 1,65,267    | ₹ 9,000       | ₹ 1,27,181    | ₹ 10,400      | ₹ 4,31,502    | ₹ 31,400      |
|                          | Total     | ₹ 1,39,054    | ₹ 1,26,000    | ₹ 1,65,267    | ₹ 81,000      | ₹ 1,27,181    | ₹ 98,000      | ₹ 4,31,502    | ₹ 3,05,000    |
| 2019                     | March     | ₹ 1,39,054    | ₹ 16,000      | ₹ 1,65,267    | ₹ 16,000      | ₹ 1,27,181    | ₹ 11,800      | ₹ 4,31,502    | ₹ 43,800      |
|                          | February  | ₹ 1,39,054    | ₹ 16,000      | ₹ 1,65,267    | ₹ 16,000      | ₹ 1,27,181    | ₹ 11,600      | ₹ 4,31,502    | ₹ 43,600      |
|                          | January   | ₹ 1,39,054    | ₹ 16,000      | ₹ 1,65,267    | ₹ 16,000      | ₹ 1,27,181    | ₹ 11,500      | ₹ 4,31,502    | ₹ 43,500      |
|                          | Total     | ₹ 1,39,054    | ₹ 48,000      | ₹ 1,65,267    | ₹ 48,000      | ₹ 1,27,181    | ₹ 34,900      | ₹ 4,31,502    | ₹ 1,30,900    |
|                          | Total     | ₹ 1,39,054    | ₹ 1,74,000    | ₹ 1,65,267    | ₹ 1,29,000    | ₹ 1,27,181    | ₹ 1,32,900    | ₹ 4,31,502    | ₹ 4,35,900    |

Actual sales compared to sales targets across different categories and months using Matrix.

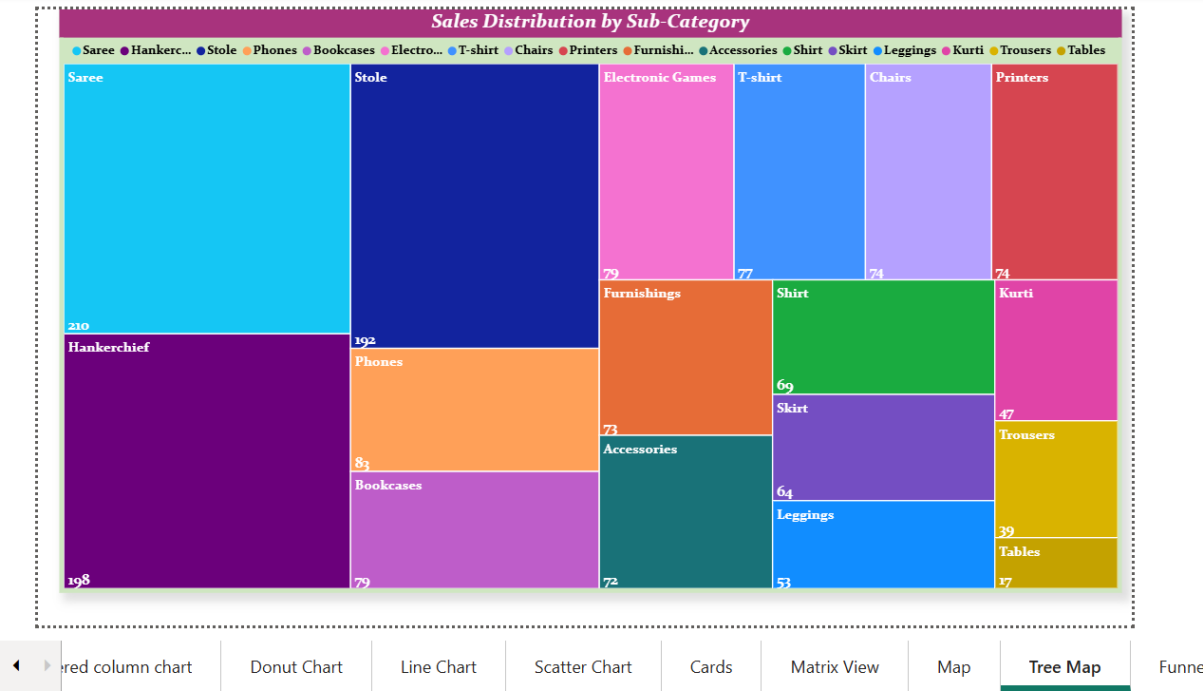
Actual Sales: Rs.4,31,502, Target: Rs.4,35,900. Actual sales not exceeded the target.

Geographic Sales Analysis:



At 79069, Indore had the highest Sum of Total Sales and was 1,654.36% higher than Amritsar, which had the lowest Sum of Total Sales at 4507. Indore accounted for 18.32% of Sum of Total Sales. Across all 24 City, Sum of Total Sales ranged from 4507 to 79069.

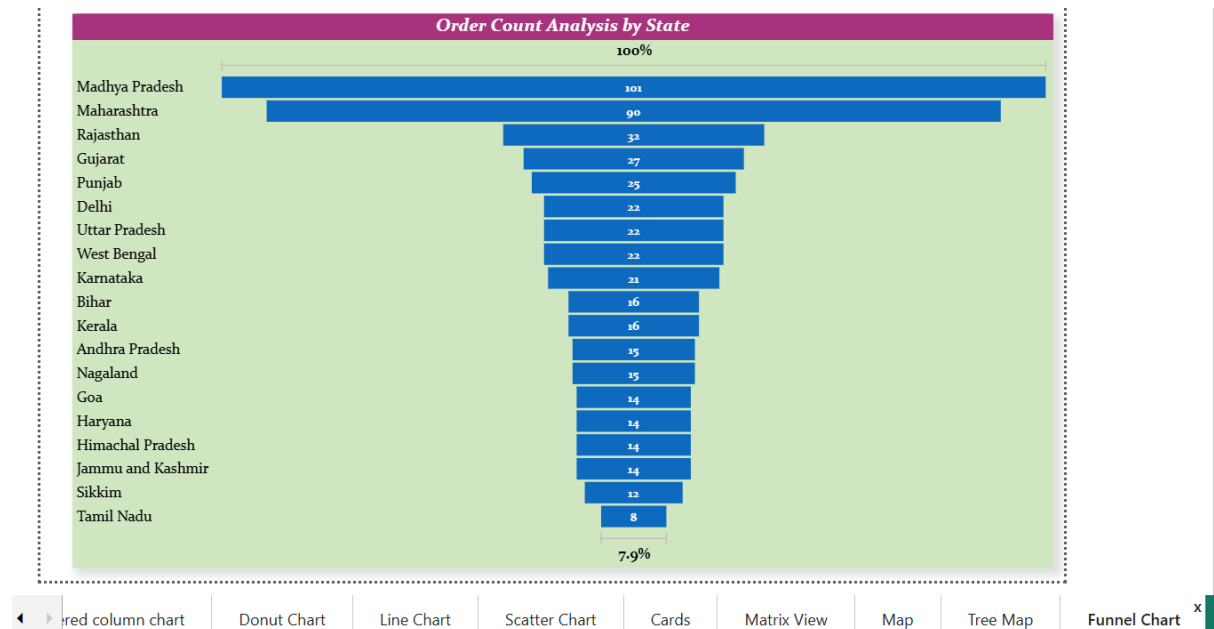
Sales Distribution by Sub-Category:





The above picture Representing the sales distribution across different sub-categories using a Treemap. Saree holding the highest distribution and Tables holding less distribution among other sub-Categories.

### Order Count Analysis by State:



visualizing the distribution of order counts across different states using funnel chart.

Madhya Pradesh holding highest distribution of 100% and Tamil Nadu holds less distribution of 7.92% compared with first.

### Data Modeling:

