

PROGRAM 1

Demonstrate Tableau measure names and measure values on the given dataset

A multinational retail chain is planning to launch its retail store. The chairman needs to analyze products currently being sold by the company. He should be able to quickly filter the data to examine various aspects of Product sales. Create a highlight table with year, subcategory, and all the measures. Answer the following questions: a) what is the overall sales of the East region in 2021? b) What is the aggregated profit ratio for Binders in 2023 in the Central region?

OVERVIEW:

- Create a highlight table with year, subcategory, and all the measures.
- Enable color legends per measure.
- Apply a quick filter on measure names.

INSTRUCTIONS:

1. Open **Tableau** (You can go to Start Menu -> All Programs -> Tableau).
2. From the home page, connect to the saved **Sample - Superstore** dataset.
3. From Dimensions, drag **Order Date** and **Sub-Category** to Rows shelf.
4. From Dimensions, drag **Measure Names** to Columns shelf.
5. From Measures, drag **Measure Values** to Text shelf and Color Shelf to Marks card.
6. To convert the view to a Highlight Table, change the Mark type to **Square**.
7. To enable quick filter, right-click the **Measure Names** field in the Columns shelf and select **Show Quick Filter**.
8. Uncheck **Number of Records** and **Discount** in the quick filter control.
9. To enable color legends per measure, right click on Measure Values in Color shelf and select **Use Separate Legends**.
10. Rename the worksheet as **Program 1**.

PROGRAM 2

Demonstrate Calculated Fields on the given dataset using Tableau.

A retail company is planning to launch a new sales strategy. As you are a regional manager, you are asked to create a sales goal based on historical performances. The company wants to increase sales by 20% in all states where they have achieved a certain level of penetration: a minimum of 100 customers. For the remaining states where they have less than hundred customers each, you must calculate sales that would result if they had 100 customers in that state. Create visualization in Tableau using a bullet chart. The chart should show the states, number of customers, and actual vs sales goal. Analyze the view and answer the following questions: a) Which State has the lowest customer count and what is the count? B) How many states have customer count at least 100?

OVERVIEW:

- Create a set to show states with 100 or more customers.
- Create a calculated field to show average sales per customer.
- Create a calculated field to show sales goal.
- Create a calculated field to show emerging and developing states.
- Create a view using the bullet chart.

INSTRUCTIONS:

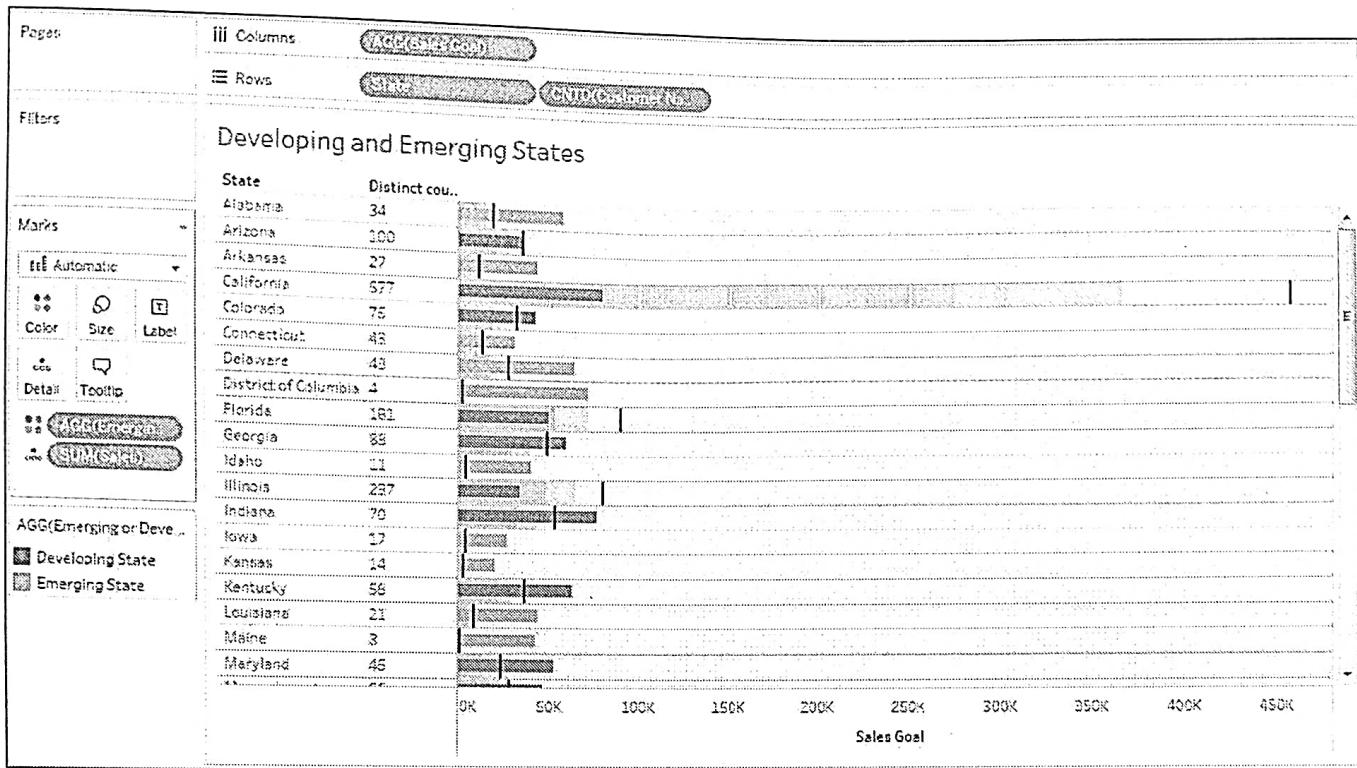
1. Open Tableau 10 (You can go to Start Menu -> All Programs -> Tableau 10).
2. From the home page, connect to the saved Sample - Superstore dataset.
3. From Dimensions, locate and right click Customer Name.
4. To create a set, select **Create > Set**.
5. In the Create Set window, enter name as **States with 100+ Customers**.
6. Navigate to the **Condition** tab.
7. Select **By field**.
8. Apply condition as **Count (Customer Name) >= 100**.
9. Click **OK**.
10. To determine average sales by customer, create a **calculated field**.
11. Go to **Analysis > Create Calculated Field**.
12. Enter name as **Average sales per customer**.
13. Type this formula: **AVG({ INCLUDE [Customer Name]:SUM([Sales])})**
14. Click **OK**.
15. Create one more calculation to determine **Sales Goal** using the set and the previously created calculated field.
16. Type the formula below:
IF ATTR ([States/Province]) IN [States
with 100+ Customers])
THEN SUM ([Sales])*1.2

```
ELSE (100* [Average sales per  
customer]END
```

17. Click OK.
18. Create a calculated field to find emerging and developing states.
19. Open the calculation editor.
20. Enter name as **Emerging or Developing State**.
21. Enter the formula below:

```
IF COUNTD([Customer Name])>=100 THEN "Developing  
State" ELSE "Emerging State"  
END
```
22. Create a view.
23. From Measures, drag **Sales Goal** onto Columns.
24. From Dimensions, drag **State** to Rows.
25. From Dimensions, drag **Customer Name** next to State.
26. Select aggregation as **Count Distinct**.
27. Now, right click the **Customer Name** pill, and from context menu, select **Discrete**.
28. Drag the **Sales** measure to Columns.
29. Open **Show Me**.
30. Select **Bullet Chart**.
31. To bring Sales Goal to column, right click the **Sales axis** and select **Swap Reference LineFields**.
32. From Measures, drag and drop the **Emerging or Developing** calculated field to **Color**.
33. Rename the worksheet as **Program 2**

EXPECTED OUTPUT:



ANALYSIS:

- Which State has lowest customer count and what is the count?
- Wyoming and the count is 1.
- How many states have customer count of at least 100?
- 12

INSTRUCTIONS:

1. Open Tableau 10 (You can go to Start Menu -> All Programs -> Tableau 10).
2. From the home page, connect to the saved Sample - Superstore dataset.
3. From Dimensions, locate and right click Customer Name.
4. To create a set, select Create > Set.
5. In the Create Set window, enter name as **States with 100+ Customers**.
6. Navigate to the Condition tab.
7. Select By field.
8. Apply condition as Count (Customer Name) ≥ 100 .
9. Click OK.
10. To determine average sales by customer, create a calculated field.
11. Go to Analysis > Create Calculated Field.
12. Enter name as **Average sales per customer**.
13. Type this formula: **AVG({ INCLUDE [Customer Name]:SUM([Sales])})**
14. Click OK.
15. Create one more calculation to determine **Sales Goal** using the set and the previously created calculated field.
16. Type the formula below:
IF MIN ([States with 100+ Customers]) = TRUE THEN
SUM ([Sales])*1.3
ELSE 100* [Average sales per customer]END
17. Click OK.

18. Create a calculated field to find emerging and developing states.
19. Open the calculation editor.
20. Enter name as Emerging or Developing State.
21. Enter the formula below:

```
IF COUNTD([Customer Name])>=100 THEN "Developing State" ELSE  
"Emerging State"  
END
```
22. Create a view.
23. From Measures, drag Sales Goal onto Columns.
24. From Dimensions, drag State to Rows.
25. From Dimensions, drag Customer Name next to State.
26. Select aggregation as Count Distinct.
27. Now, right click the Customer Name pill, and from context menu, select Discrete.
28. Drag the Sales measure to Columns.
29. Open Show Me.
30. Select Bullet Chart.
31. To bring Sales Goal to column, right click the Sales axis and select Swap Reference LineFields.
32. From Measures, drag and drop the Emerging or Developing calculated field to Color.
33. Rename the worksheet as Program 2

PROGRAM 3

Illustrate the concept of Parameters on the given dataset using Tableau

A leading retail chain wants to analyze its performance in terms of sales, profit, and profit ratio. For this, the manager needs to view these various measures at different levels, such as Sub-Category, Region, and Customer Name. In addition to this, the manager should be able to select various measures dynamically. Looking at a view, answer the following questions:

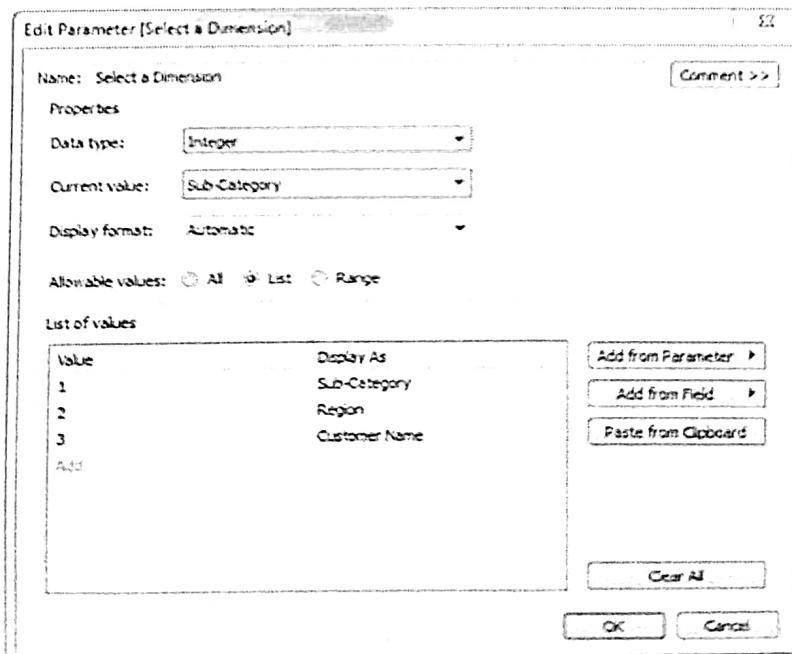
- Which Sub-Category has the lowest profit?
- Which Customer has generated the highest sales?

OVERVIEW:

- Create a parameter to dynamically change Dimensions in a view
- Create a parameter to dynamically change Measures in a view
- Create the calculated fields using these parameters
- Create a view using these calculated fields

INSTRUCTIONS:

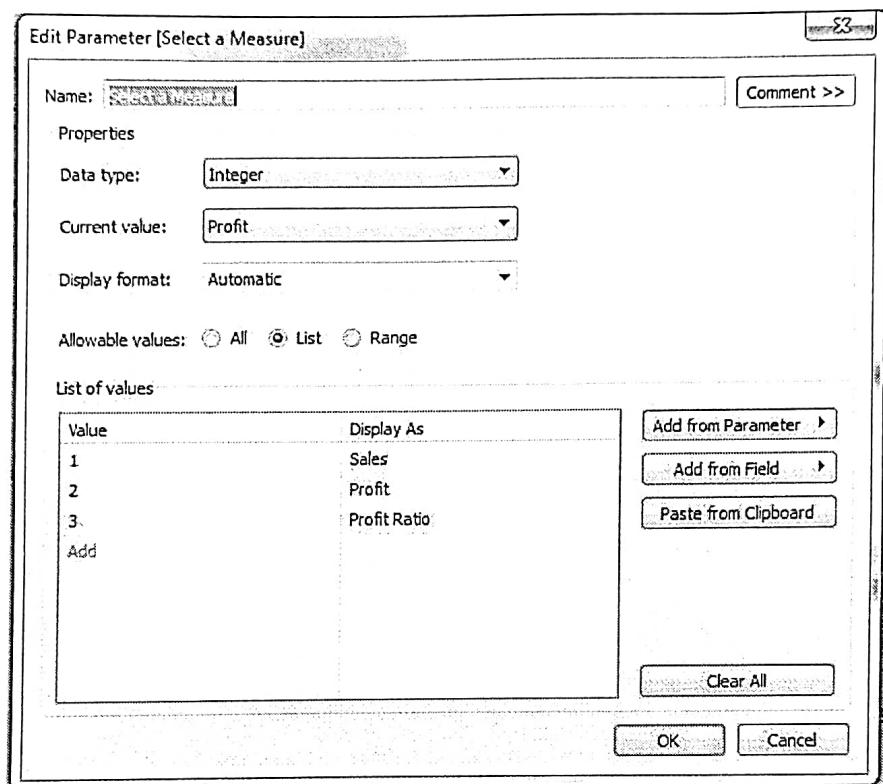
1. Open Tableau 10 (You can go to Start Menu -> All Programs -> Tableau 10).
2. From the home page, connect to the saved Sample - Superstore dataset.
3. Create a parameter called "Select a Dimension."
4. In the parameter editor, select the Data Type as Integer.
5. Select the List radio button.
6. Enter the list as below:



7. Create a Calculated Field "Dimension" using a case statement with the Dimensions Parameter.

```
CASE [Select a Dimension]
WHEN 1 THEN [Sub-Category]
WHEN 2 THEN [Region]
ELSE [Customer Name]
END
```

8. To create another parameter, repeat steps 3 to 5. Name this parameter as Select a Measure. Ensure that your output looks like the image below.



9. Create another calculated field using this parameter.

10. Name this calculation Measure and enter this formula:

```
CASE [Select a Measure]
WHEN 1 THEN SUM([Sales])
WHEN 2 THEN SUM([Profit])
ELSE [Profit Ratio]
END
```

11. Click OK.

12. To create a view, drag the Dimension calculated field to Rows and Measure to Columns.

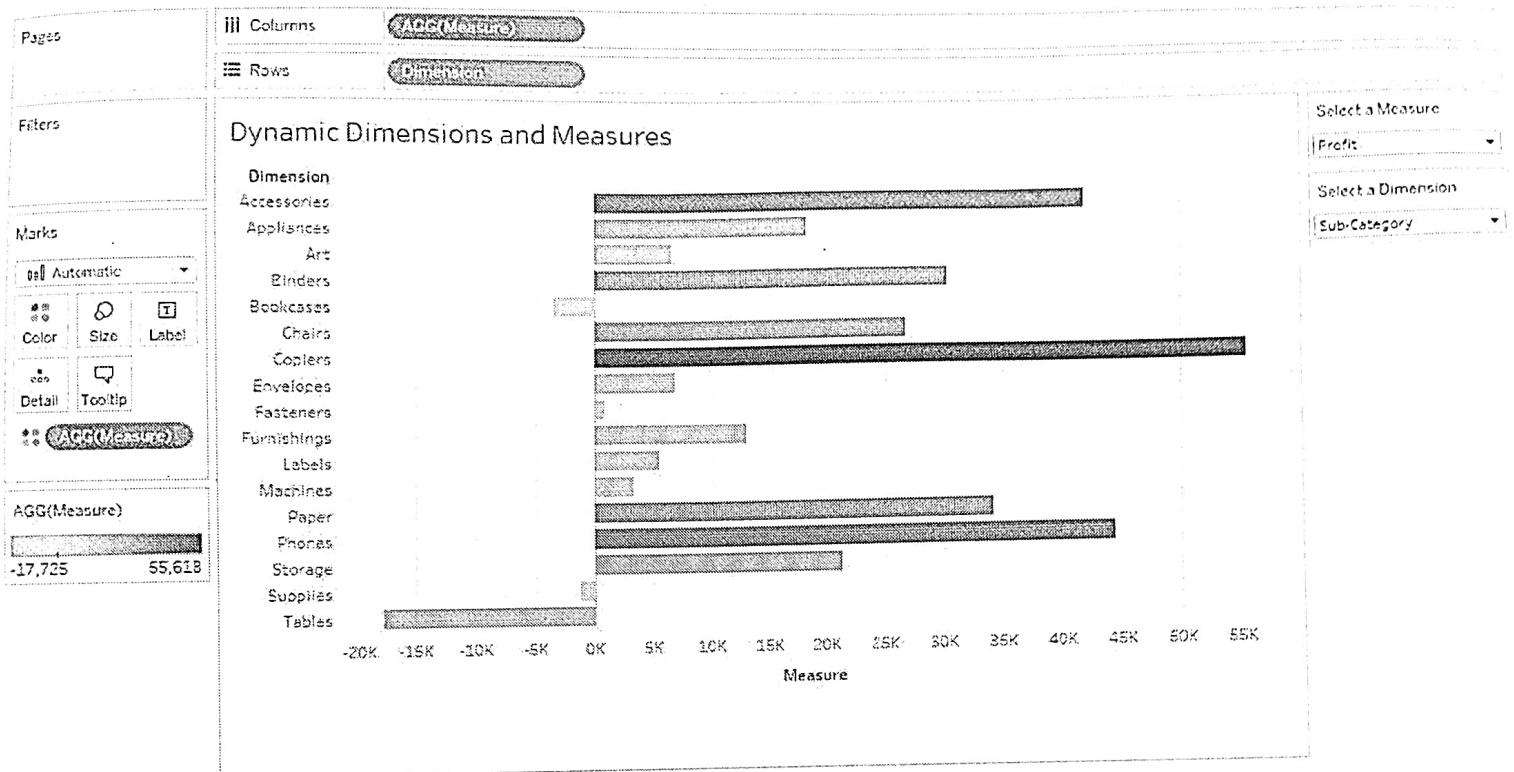
13. To show parameter control, right click the parameters and select Show Parameter Control.

14. To color the marks, drag the Measures calculated field to Color.

15. Rename the sheet as Dynamic Dimensions and Measures.

16. Save the worksheet as **Program 3**

EXPECTED OUTPUT:



ANALYSIS:

Based on the view, these are the answers to the questions in the problem statement:

- Which Sub-Category has lowest profit?

Answer – Tables

- Which Customer has generated highest sales?

Answer – Sean Miller

PROGRAM 4

Illustrate Joins and Data Extract on the given dataset using Tableau

Rollin Ford, the regional manager of a retail chain, is in process of re-designing distribution and production strategies. He wants to look at profit for each state along with names of managers. He also wants to see the number of products returned by customers in each state. Combine the data that is stored across different tables and create a visualization to satisfy the above requirement. In order to enhance the performance, create an extract for this data source. Rollin wants refresh to be happen incrementally based on date.

Using the view, answer the following questions:

- Which is the least profitable state?
- Customers from which state have returned the highest number of products?

OVERVIEW:

- Combine the Orders, Returns, and People tables.
- Use inner join to combine Orders and People table.
- Use left join between Orders and Returns table.
- Create the required view.
- Enable mark labels.
- Create an incremental refresh extract using the order date field.

INSTRUCTIONS:

1. Open Tableau 10.(You can go to Start Menu -> All Programs -> Tableau 10).
2. On the home page, under Connect, under To a file, click Excel.
3. Browse and connect to the Sample - Superstore Excel file.
4. Drag and drop Orders and People tables to the canvas area.
5. Make sure inner join is selected.
6. Next, place Returns table in the canvas area and select Left Join.
7. To create a view, go to Sheet 1.
8. From Dimensions, locate State and Person and place on rows.
9. From Measures, locate Profit and place on columns.
10. On toolbar, use the Sort icon to sort the view in descending order.

11. To count the number of orders placed, locate Order ID (Returns) from Dimensions and place on columns.

12. Select aggregation as Count Distinct.

(Right click on Order ID (Returns) in Columns -> Measure -> Count Distinct)

ANALYSIS:

- Which is the least profitable state?
- Customers from which state have returned the highest number of products?

Based on the view, these are the answers to the questions in the problem statement:

Answer - Texas

Answer – California

PROGRAM 5

Demonstrate Data Filtering on the given dataset using Tableau

The general manager of an e-commerce company is planning to create a list of customers who have returned most of the orders they had placed. To take substantial measures for upcoming orders, he needs to create a list visualization for customers who have returned more than half of their distinct orders in each region.

Create a visualization and answer the following questions:

- Which region has the highest number of products returned by the customers?
(Hint: Change the view to text)
- How many customers do you have on your list?

OVERVIEW:

- Use a left join between Orders and Returns tables.
- Create a List of Customer Name.
- Apply a filter on Customer Name with the formula

$\text{COUNTD}([\text{Order ID (Returns)}]) \geq \text{COUNTD}([\text{Order ID}])/2$.

- Use Order ID in the text shelf with Distinct Count aggregation.
- Sort the view in descending order of count of orders.

INSTRUCTIONS:

1. Open Tableau 10 (You can go to Start Menu -> All Programs -> Tableau 10).
2. On the home page, under Connect, under To a file, click Excel.
3. Browse and connect to the Sample - Superstore Excel file.
4. Drag and drop Orders and Returns table to the canvas area.
5. Change the join type to Left join.
6. Go to Sheet 1.
7. Place the Customer Name dimension in the Rows shelf.
8. Place the Customer Name dimension in the Filters shelf.
9. Go to the Condition tab.

10. Click the By formula radio button and enter the formula:
 $\text{COUNTD}([\text{Order ID (Returns)}]) \geq \text{COUNTD}([\text{Order ID}])/2$
11. Click OK.
12. In the Data pane, drag Order ID to the Text shelf and change the aggregation function to Distinct Count.
13. Sort the view in descending order of count of orders.
14. From Dimensions, place the Region field in color.
15. Rename the sheet as Filtering.
16. Save the worksheet as Program 5.

Based on the view, these are the answers to the questions in the problem statement:

- Which region has the highest number of products returned by the customers?

Answer- West

- How many customers do you have on your list?

Answer – 10

PROGRAM 6

Demonstrate Grouping, Alias and Sets on the given dataset using Tableau.

The sales manager of a leading retail company wants to launch an end-of-season sales initiative to encourage the sale of products. As a part of this initiative, she wants to examine the combined sales for envelopes, labels, and papers. In addition to this, she wants to view the combined top 2 and bottom 2 sub-categories based on sales. Create a view showing the accumulated sales for paper products and answer the following questions:

- Which are the bottom 2 products?
- What is the profit ratio for supplies?

OVERVIEW:

- Create a view with Sub-Categories and Sales.
- Create a group called Paper Products, including Envelopes, Labels, and Paper.
- Create two sets to represent the top 2 and bottom 2 products.
- Combine those sets and place it on Color.
- Label the view by Profit Ratio.

INSTRUCTIONS:

1. Open Tableau 10 (You can go to Start Menu -> All Programs -> Tableau 10).
2. From the home page, connect to the saved Sample - Superstore dataset.
3. To create a view, in Sheet 1, drag Sub-Category to the Rows shelf and Sales to the Columns shelf.
4. Holding the Control key, select Envelopes, Labels, and Paper sub-categories.
5. To group these items, click on the paper clip icon on the toolbar and select SubCategory.
6. Right-click on the Envelopes, Labels, Paper field in the view, and select Edit Alias.
7. Name the group as Paper Products.
8. Click OK.
9. To create a set, right click Sub-Category(Group) and select Create > Set.
10. Enter the name Top 2 Subcategories.
11. Navigate to the Top tab.
12. Select By field, make sure Top is selected, and enter value as 2.

ANALYSIS:

- a) Which are the bottom 2 products based on Sales? - Art and Fasteners
- b) What is the profit ratio for supplies? - 3%

PROGRAM 7

Illustrate plotting pie charts on Map using Tableau

Eva Rodger, a sales manager, needs to analyze the sales generated by the states that are not doing as expected. This will help her improve the sales strategies. For this, she needs to create a map visualization with pie charts, which will display the percent to total contribution of sales of each segment across all regions.

- Which state has the highest percent contribution of Sales?

(Hint-Remove state and State, and change the graph type)

- What is New York's Profit Ratio for the corporate segment?

(Hint-Drag profit ratio to Tooltips shelf)

OVERVIEW:

- Create a filled map with State dimension, and Color it by Region.
- Create a dual axis map.
- Change the second map to a symbol map.
- Size the Marks by Percent contribution of Sales, and Color by Segment.
- Change the mark type to Pie.

INSTRUCTIONS:

1. Open Tableau 10 (You can go to Start Menu -> All Programs -> Tableau 10).
2. From the home page, connect to the saved Sample - Superstore dataset.
3. Create a filled map with the State dimension.
4. Drag the Region dimension to the Color shelf.
5. Drag another instance of Latitude (generated) to the Rows shelf.
6. Under the Marks card for the second Latitude (generated), select the Mark type Pie. Drag the Segment dimension to the Color shelf and the Sales measure to the Size shelf. Click the Color shelf to change the color accordingly.

7. To show percent contribution of Sales, right click the Sales measure in the Marks card and select Quick Table Calculation > Percent of Total.
8. Right-click the second Latitude (generated) pill in the Rows shelf and select Dual Axis.
9. Rename the sheet as Program 7

PROGRAM 8

Illustrate Reference line, Trend line, and Forecasting on the given dataset using Tableau.

The CEO of a retail company is preparing for the annual meetings. He needs to show the sales trend of his company. He also wants to view future values for sales and a line representing overall average sales. Based on this analysis, answer the following questions:

- What is the R-Squared value for an Exponential Trend model?
- What is the P value for a Polynomial Trend model with Degree 3?

OVERVIEW:

- Create a line chart with continuous Order Date at month level and Sales.
- Add a Reference Line and customize the label.
- Add forecasting to the view.
- Add a trend line excluding the forecasted values.
- Show labels only for minimum and maximum values, excluding the forecasted values.

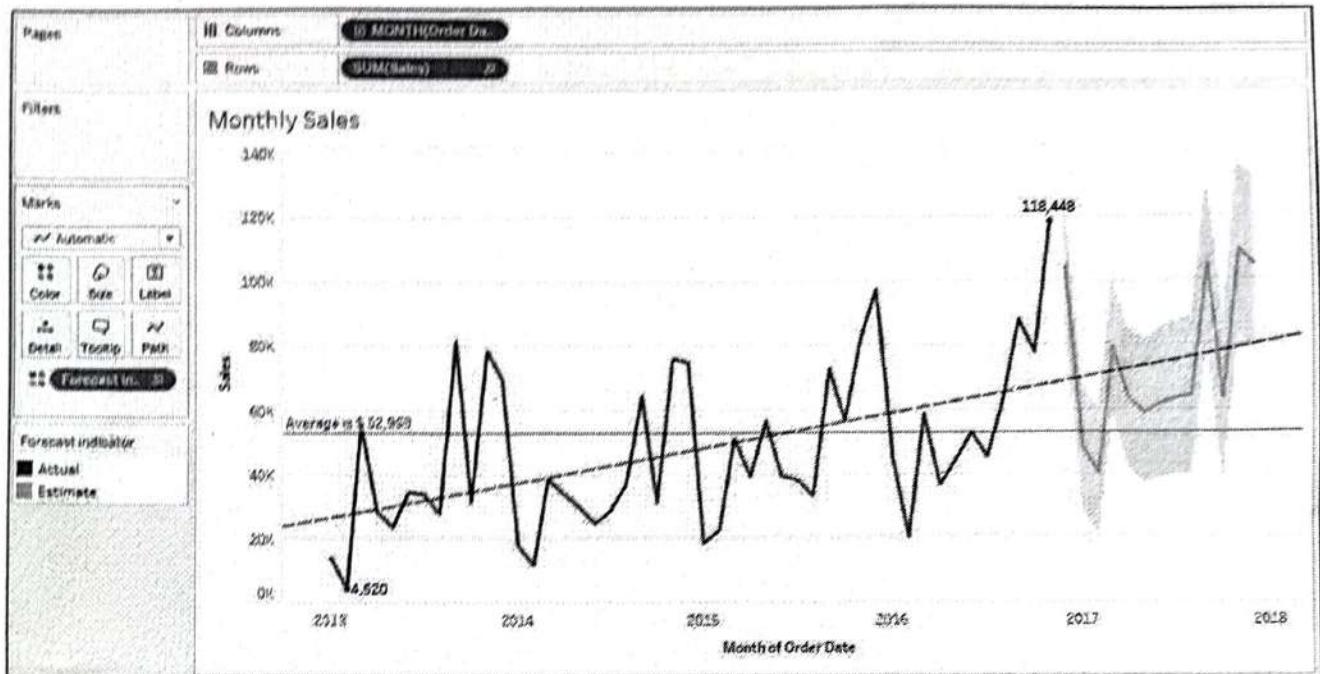
INSTRUCTIONS:

1. Navigate to a new sheet. Use the **Sample – Superstore** saved data source.
2. Create a line chart with **Order Date** at month level and **Sales**.
3. To achieve this, drag the **Order Date** dimension to Columns and the **Sales** measure to Rows.
4. Right-click the **Year Order Date** pill and change it to **Continuous Month**.
5. Right-click the view, navigate to Trend Lines, and select **Show Trend Lines**.
6. To enable the forecast option, right-click the view and select **Forecast > ShowForecast**.
7. To modify the trend line, right click the Trend Line and select **Edit TrendLines**.
8. To display a single trend line, in the trend Lines options window, exclude **Forecast Indicator**.
9. To disable confidence bands, un-check the **Show Confidence Bands** option.
10. Click **OK**.
11. To add a reference line, right click the **Sales** axis and select **Add ReferenceLine**.
12. Set the scope as **Table**, and under the value section, select **Sum(Sales)**
13. To customize the label, select **Custom** in the Label drop-down.
14. Click the drop-down arrow, select **Computation**, type is \$, and select **Value**. The Custom text should look like this: <Computation> is \$<Value>
15. Click **OK**.
16. To display labels, click **Label** on the Marks card.
17. Select **Show Mark Labels**.

18. To show minimum and maximum values, in the Marks to Labels option, select Min/Max.

19. Rename this sheet as **Program 8**

EXPECTED OUTPUT:



ANALYSIS:

a) What is the R-Squared value for an Exponential Trend model?

0.352608

b) What is the P value (significance) for a Polynomial Trend model with

Degree3?

- **0.0001**

PROGRAM 9

Illustrate clustering on the given dataset using Tableau.

A well-known travel company wants to expand its customer base. The branding manager of the company needs to devise an effective scheme to appeal to potential customers. For this, he needs to analyze life expectancy and population of each country so that it can help the company identify the countries where there the right kind of clientele is present. Create a visualization to answer: a) which cluster will you choose and why?

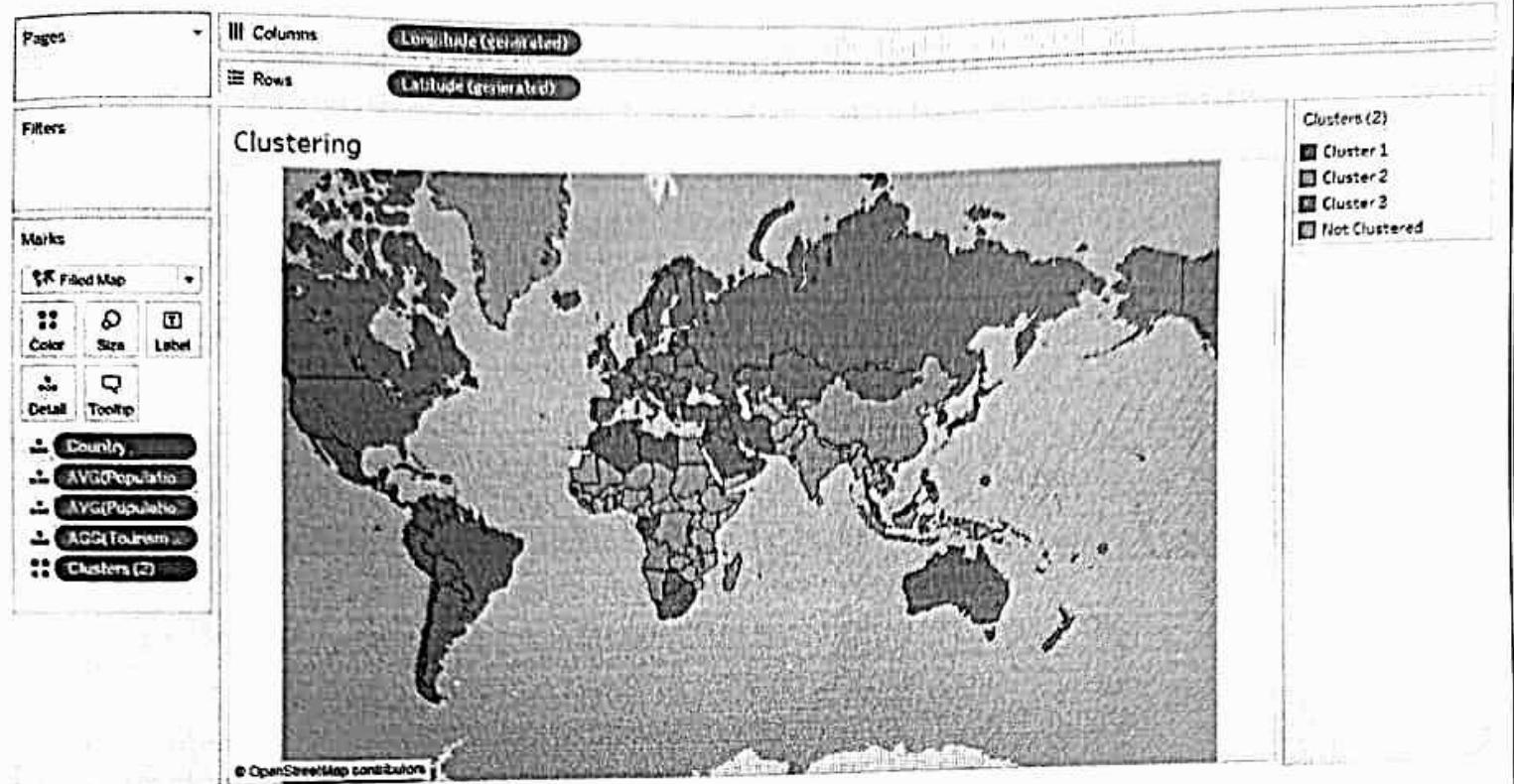
OVERVIEW:

- Use the saved World Indicators data source.
- Create a filled map view.
- Create a calculated field to show the money that people of a country spend annually on international travel.
- Add a cluster to the view.
- To see the information, select describe clusters.

INSTRUCTIONS:

1. Open Tableau 10 (You can go to Start Menu -> All Programs -> Tableau 10).
2. Connect to the World Indicators sample data source.
3. From Dimensions, double-click on **Country**.
4. Using the Marks card, change the mark type to **Filled Map**.
5. Go the Analysis menu and select **Create Calculated Field**.
6. Name this calculation as **Tourism Per Capita**.
7. In the formula window, enter formula as:
SUM([Tourism Outbound])/SUM([Population Total])
8. From Measures, drag **Population Urban**, **Population 65+**, and **Tourism Per Capita** to Detail.
9. Make sure the average aggregation is selected for the first two measures.
10. To cluster the data points, navigate to the **Analytics Pane**.
11. Drag **Cluster** from the **Analytics pane** and drop it in the view. Tableau displays the Cluster dialog box and adds the measures in the view to the list of variables
12. Close the Clusters dialog box by clicking the X in the upper-right corner.
13. Click the **Clusters** field on the **Marks card** and choose **Describe Clusters**.
14. Close the **Describe Clusters** dialog box.
15. Rename this sheet as **Program 10**.

EXPECTED OUTPUT:



ANALYSIS:

- a) Which cluster will you choose and why?
- Cluster 3. It has highest values in all the aspects.

PROGRAM 10

Demonstrate Building Dashboards and dashboard actions

A retail company is strategizing to improve business in low performing areas as well as to extend its services in areas that contribute the maximum toward sales and profit. For this, John Douglas, CEO of the company, needs to keep an eye on region, state, category, subcategory, sales, profit ratio, and profit. This will help him determine the regions and states eligible for attractive discount strategies. Answer the following questions.

- What is the overall profit of the Central region?

(Hint: Add Subtotal)

- In the South Region, which subcategory recorded the lowest sales?

(Hint-Select the South Region in the Region and State Analysis sheet.)

OVERVIEW:

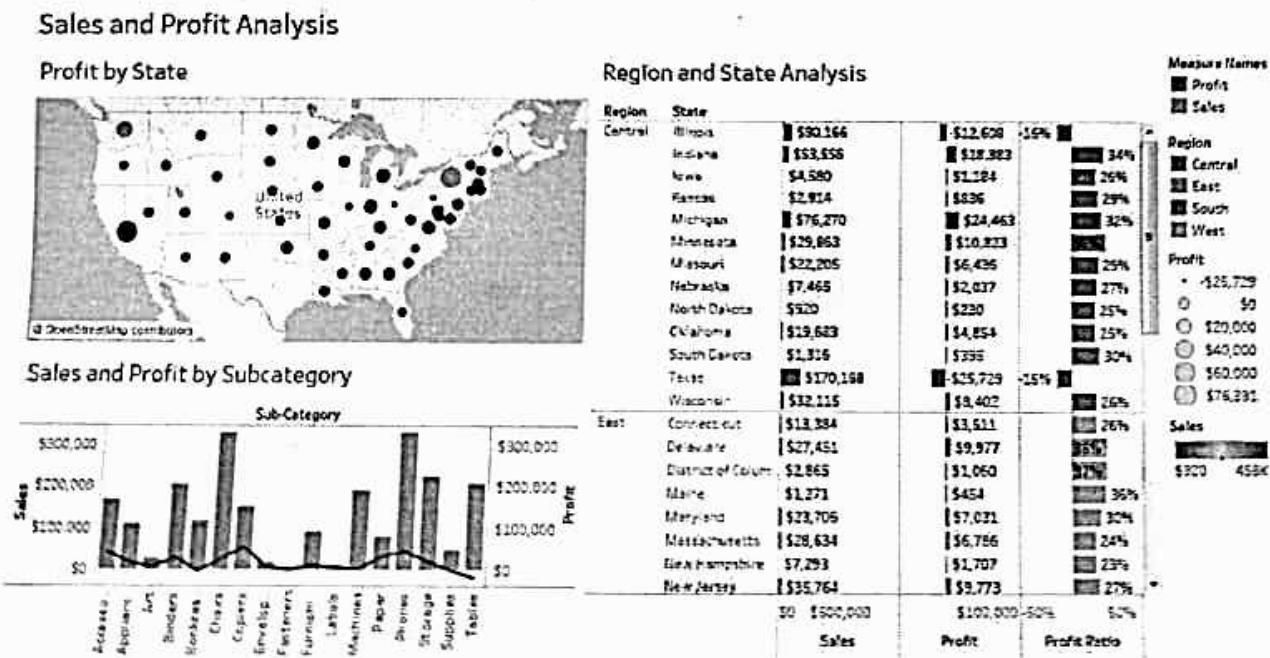
- Design the required sheets.
- Create a dashboard using these sheets in the workbook.
- Add a Filter action on the Region and State Analysis sheet.

INSTRUCTIONS:

1. Open Tableau 10 (You can go to Start Menu -> All Programs -> Tableau 10).
2. Connect to the saved Sample - Superstore data source.
3. To create a view, drag Region and State dimensions to Rows, and Sales, Profit, and Profit Ratio measures to Columns.
4. Color all the measures by Region.
5. Enable labels using Marks Card.
6. Rename the sheet as Region and State analysis.
7. To create a view, navigate to a new sheet.
8. Create a symbol map with the State dimension.
9. Drag the Sales measure to Color.
10. Drag the Profit measure to Size.
11. To change the color, click Color > Edit Colors.
12. From the Edit Colors palette, select Orange-Blue Diverging.
13. Click OK.
14. Rename sheet as Profit by State.
15. Create a new sheet.
16. Create a dual axis combination chart with Sub-Category, Sales, and Profit.
17. Drag the Sub-Category dimension to Columns.

18. Drag the Sales and Profit measures to Rows.
19. Right Click on SUM (Profit) pill and check Dual Axis.
20. To synchronize the axis scale, right click the Profit axis and select Synchronize Axis.
21. To change the mark type, select the Sales axis; from the Marks Card, select Bar.
22. Repeat the above process for Profit and select Line.
23. In the All marks, drag Category to Tooltip.
24. Rename the sheet as Program 10
25. Create a New Dashboard.
26. Set the Size of the dashboard to Automatic.
27. To enable the dashboard title, click Show dashboard title.
28. Drag the sheets to the dashboard area.
29. Resize the sheets.
30. To add a filter action, click Dashboard > Actions.
31. In the Actions window, select Add Action > Filter.
32. In Add Filter Action, name this action as Select to Filter.
33. Below Source Sheets, set source as Region and State analysis.
34. To trigger this action, choose run action on Select.
35. Below Target Sheets, un-check Region and State analysis.
36. Click OK.
37. Select any state on the Region and State analysis sheet to run the filter action 38.

EXPECTED OUTPUT:



ANALYSIS:

Based on the view, these are the answers to the questions in the problem statement:

- What is the overall profit of the Central region?

Answer – \$39,706

- In the South Region, which subcategory recorded the lowest sales?

Answer – Fasteners