La Guardia Community College

DATA 203
DATA VISUALIZATION USING TABLEAU

Class 5

LEARNING OBJECTIVES

1. Filters
2. Calculations
3. Parameters
4. Sets

PARAMETERS

PARAMETERS

- User generated values that are not attached to a dataset.
- Allows you to provide your audience with the power of limiting whatever data they want to aid in slicing and dicing data sets.
- Improves audience engagement with the dashboard
- Improves retention and sharing of insights.

PARAMETERS

HOW DO PARAMETERS WORK?

1. Dataset consist of Food Items, Weight and Calories

Q1- How many calories are in 100g of a food item

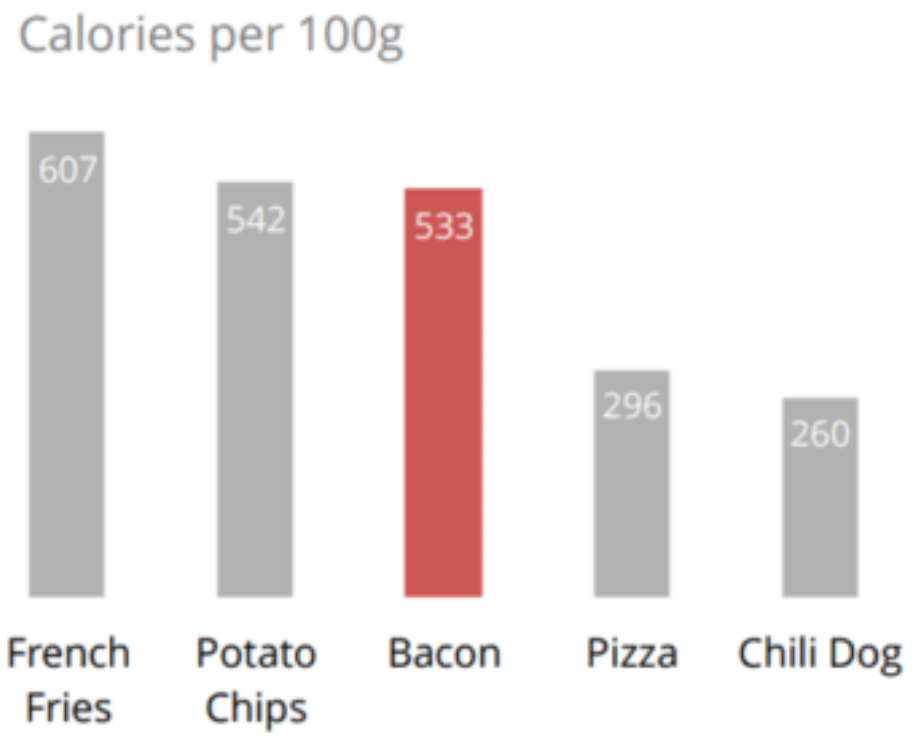
1. Parameter = @FoodItem - let your users select the Food Item.
2. Calories = 100 * **@FoodItem**

- **@FoodItem = French Fries**

  Calories = 100 * French Fries = 607 Calories

- **@FoodItem = Bacon**

  Calories = 100 * Bacon = 533 Calories



PARAMETERS Create A Parameter

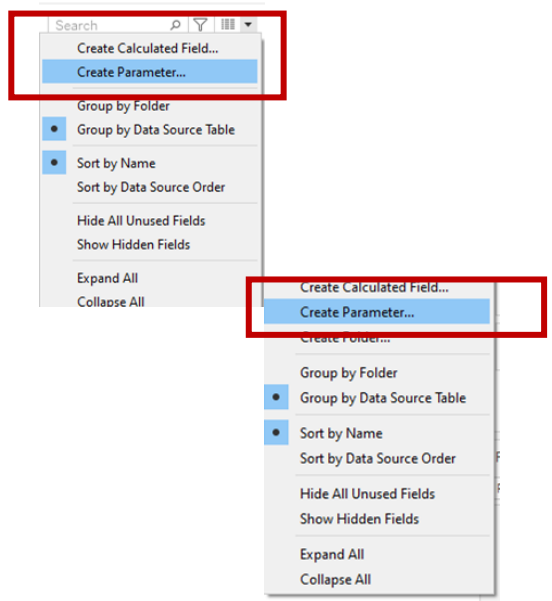
HOW TO CREATE A PARAMETER?

There are three ways to create a parameter:

Click on the down arrow in the Data Pane

Click right in the empty space in the Data Pane

Right click on a field and select Create > Parameter



PARAMETERS Create A Parameter

1. Create Parameter for the following Data Types
    1. Float - numbers with decimals
    2. Integer - whole number (no decimals)
    3. String - text
    4. Boolean - True or False
    5. Date - date without a timestamp
    6. Date Time - date with a timestamp

2. Allowable Values
    1. All
    2. List - Select **ALL** values for the selected field or **Define** values
    3. Range - Define a Max and Min

PARAMETERS Create A Parameter

HOW TO CREATE A PARAMETER?

1. Open a new worksheet and name it Parameter 1.

1. We will create a Parameter with two values: Region and Rep

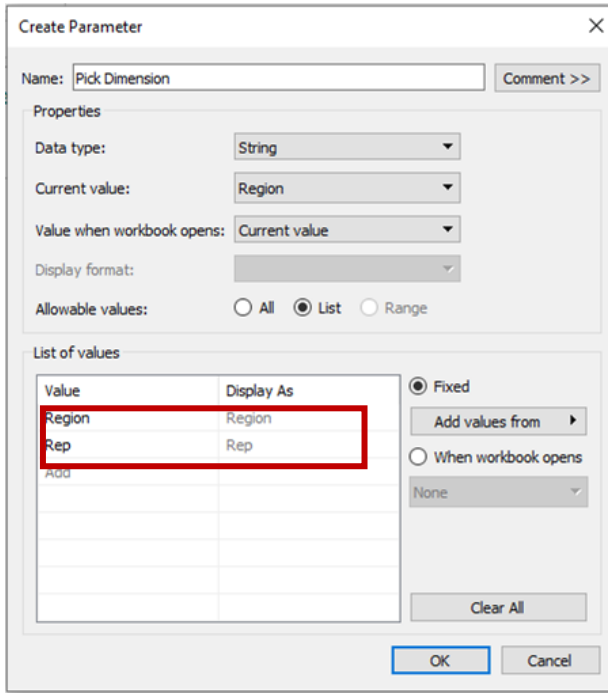
   - Region - your chart will show corresponding data for the Regions
   - Rep – your chart will show corresponding data for the Reps

PARAMETERS
Create A Parameter 1

CREATE A PARAMETER

Right Click on Region > Create > Parameter
Name it “Pick Dimension”
Under the section **List of All Values**
Click on Clear All
Type in two values: Region, Rep

These values will be shown to your user as parameters



PARAMETERS Create A Parameter 1

CREATE A PARAMETER

- Parameters they are dependent.
- On their own, they cannot do much
- You have to provide Tableau with instructions on what each of the parameter inputs should do
- This is accomplished through a Calculated Field.

PARAMETERS Create A Parameter

2. CREATE A CALCULATED FIELD

We will create a Calculated Field that will tell Tableau which values to display based on the parameter value selected.

1. Create a Calculated Field called Show Dimension.
2. Click on Create Calculation under Analysis.
3. We will add an **“IF ELSE END”** statement

PARAMETERS Create A Parameter 1

2. CREATE A CALCULATED FIELD

What is an "IF/ELSE" statement?

1. They are a series of IF Statements.
2. The IF Statement get evaluated in order until one of the expression is true or the END of the IF/ELSE statement is reached
3. If the end of the IF/ELSE statement is reached without a true expression, then that code block is not executed.

PARAMETERS Create A Parameter 1

- **CREATE A CALCULATED FIELD**
- **What is an "IF/ELSE" statement?**

- When you have **more than 2** IF Statements
- **IF** X = 1 **THEN** ACTION A **ELSE**
- **IF** X = 2 **THEN** ACTION B **ELSE**
- **IF** X = 3 **THEN** ACTION C
- **END**

- When you have only 2 IF Statements
- **IF** X = 1 **THEN** ACTION A **ELSE**
- ACTION B
- **END**

PARAMETERS
Create A Parameter 1

2. CREATE A CALCULATED FIELD

IF ([Pick Dimension] = 'Region’) **THEN**

([Region])

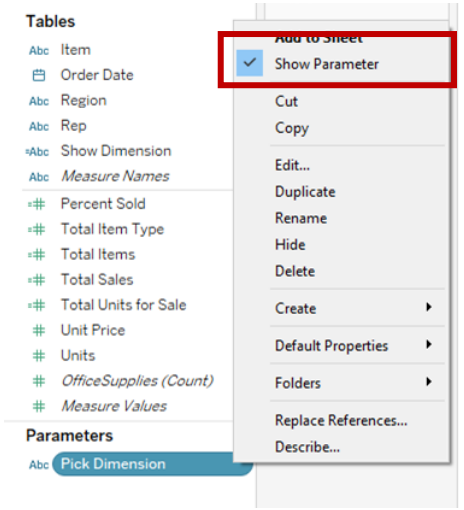
ELSE

([Rep])

END

PARAMETERS
Create A Parameter 1

3. **Provide Access to the Parameter**
   1. Right Click on the Pick Dimension Parameter
   2. Select Show Parameter.
   3. Move the Parameter Selector from the Upper Right corner to below the Marks Card.

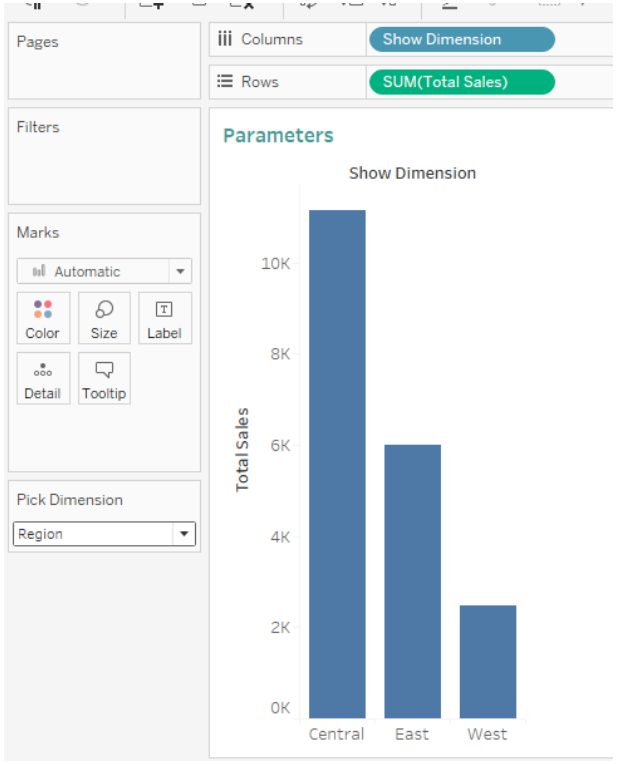


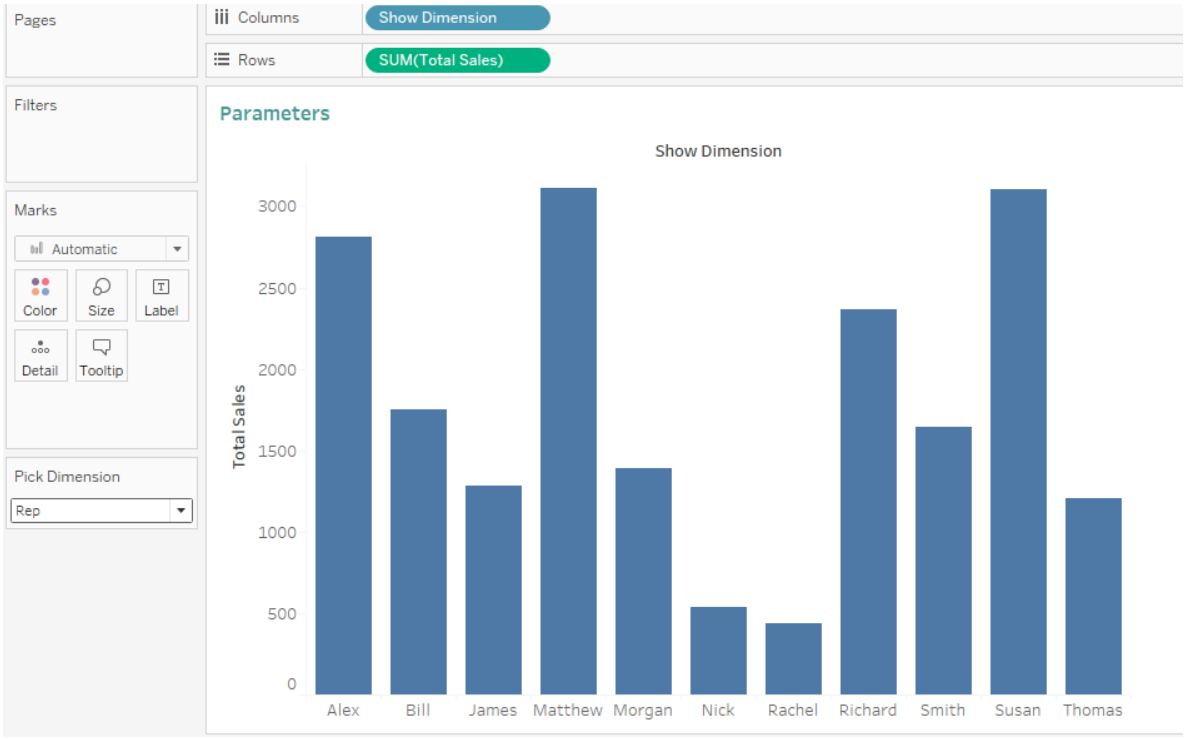
PARAMETERS Create A Parameter 1

4. CREATE A CHART

1. Column Shelf - Add Show Dimension
2. Row Shelf - Add Total Sales
3. Select Region from the Pick Dimension parameter
4. Select Rep from the Pick Dimension parameter

PARAMETERS Create A Parameter 1





PARAMETERS Create A Parameter 2

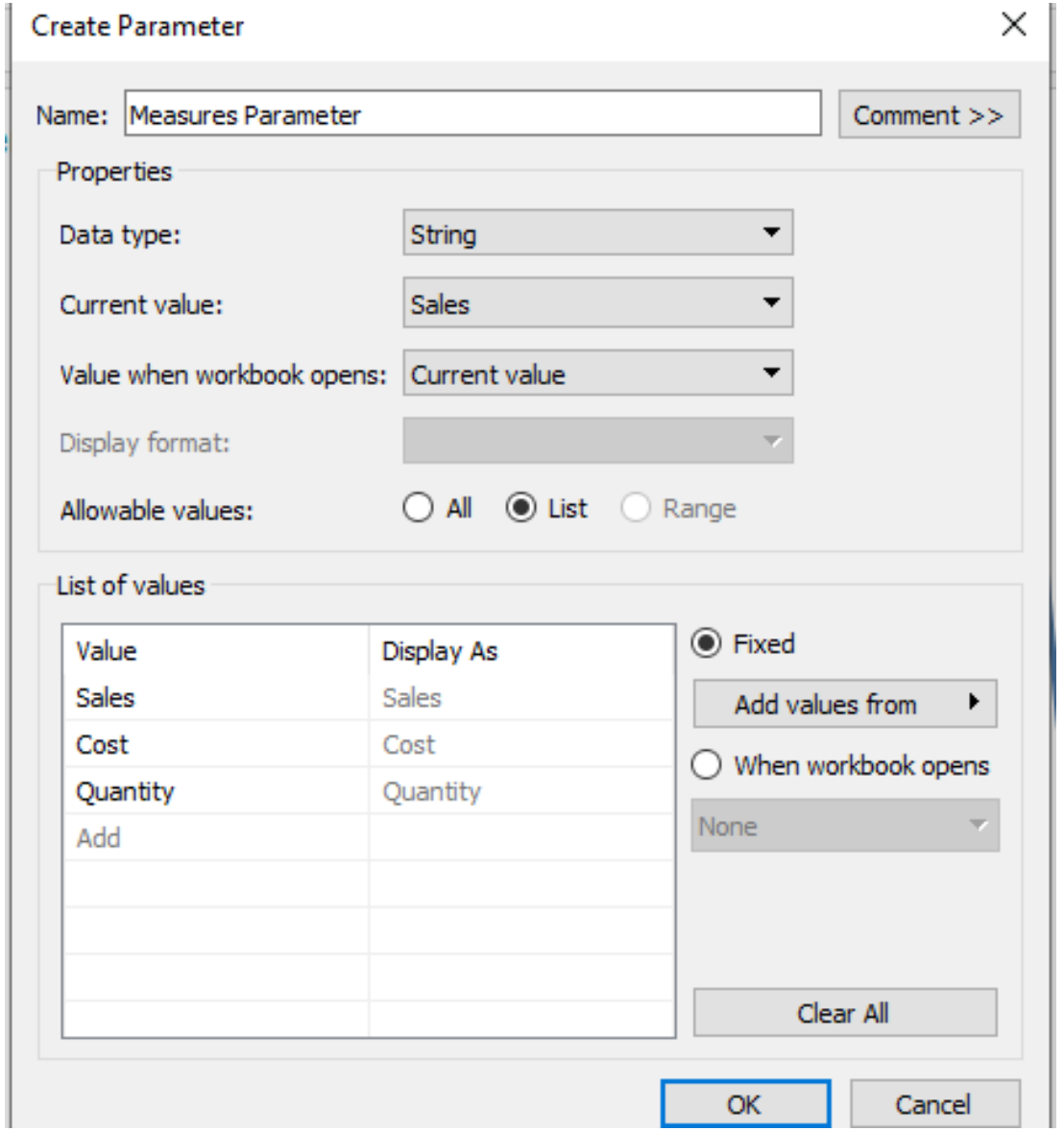
1. **CREATE A PARAMETER TO CHOOSE BETWEEN DIMENSION & MEASURES**

1. Use Parameter to decide which Dimension or Measures are displayed on your views.
2. Allow you to keep your analyses focused
3. Helps save real estate on the Dashboard

PARAMETERS
Create A Parameter 2

1. CREATE A MEASURES PARAMETER

1. Open a new Worksheet and name it Parameter2
2. Open a Create Parameter window and name it Measures Parameter
3. Parameter
    1. String
    2. List
    3. Measures - Sales, Cost, Quantity



PARAMETERS Create A Parameter 2

2. CREATE A CALCULATE MEASURE

1. The parameter allows users to choose one of the three measures.

1. We need to tell Tableau which measure out of the three measures to display based on the parameter value selected.

1. Use a **CASE Statement**

PARAMETERS Create A Parameter 2

2. CREATE A CALCULATE MEASURE

1. What is a **CASE Statement?**
   - CASE Statement goes through the conditions and returns a value when the first condition is met.
   - Once a condition is true, it will stop reading and return the results.
   - If no conditions are true, then it will return the value in the ELSE statement.
   - If there is no ELSE statement and no conditions are true, then it returns NULL

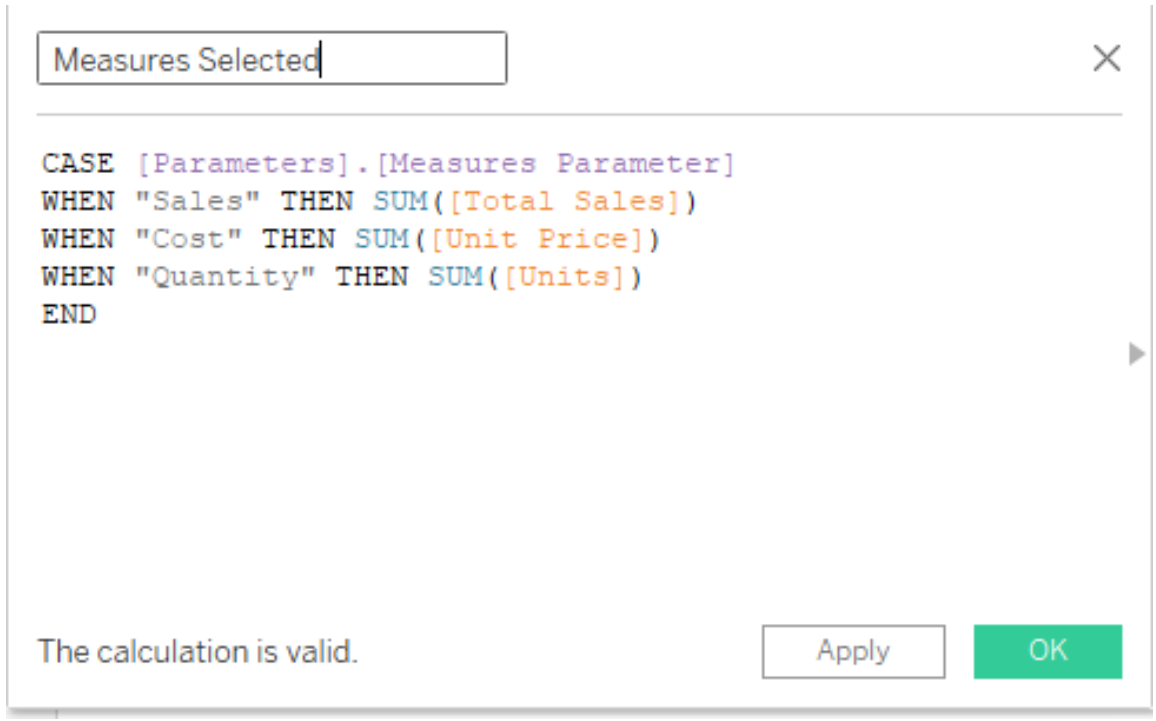
```
CASE
    WHEN condition1 THEN result1
    WHEN condition2 THEN result2

    ...

    ...

    ...
    WHEN conditionN THEN resultN
    ELSE result
END;
```

PARAMETERS
Create A Parameter 2

2. CREATE A CALCULATE MEASURE

1. Create a calculated measure called Measures Selected.
2. Case Statement will be

```
CASE [Measures Parameter]
WHEN "Sales" THEN SUM([Total Sales])
WHEN "Cost" THEN SUM([Unit Price])
WHEN "Quantity" THEN SUM([Units])
END
```



PARAMETERS Create A Parameter 2

3. Provide Access to the Parameter

1. Right Click on Measures Parameter

1. Select Show Parameter

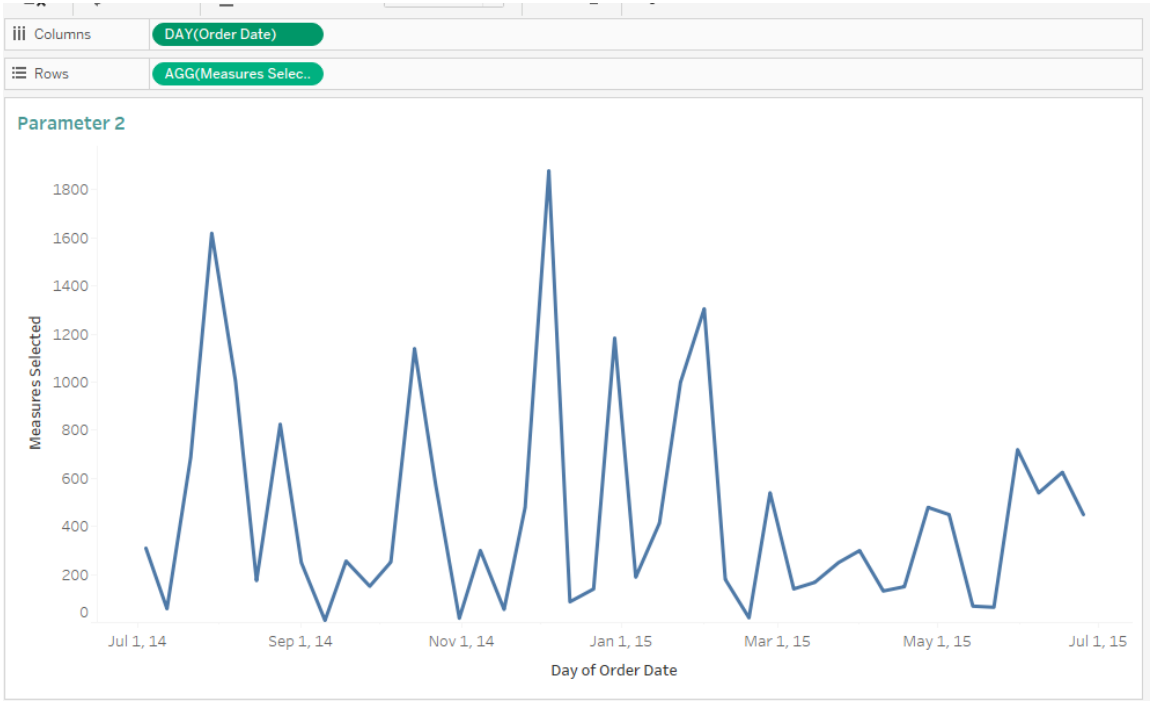
1. Move the Parameter Selector window below the Marks Cards

PARAMETERS
Create A Parameter 2

4. CREATE A CHART

1. Column Shelf - Order Date
   - Go Granular to the Day Level
   - Change the Chart to Continuous Lines

2. Row Shelf - Measures Selected
3. Trend Line for whatever measure is showing

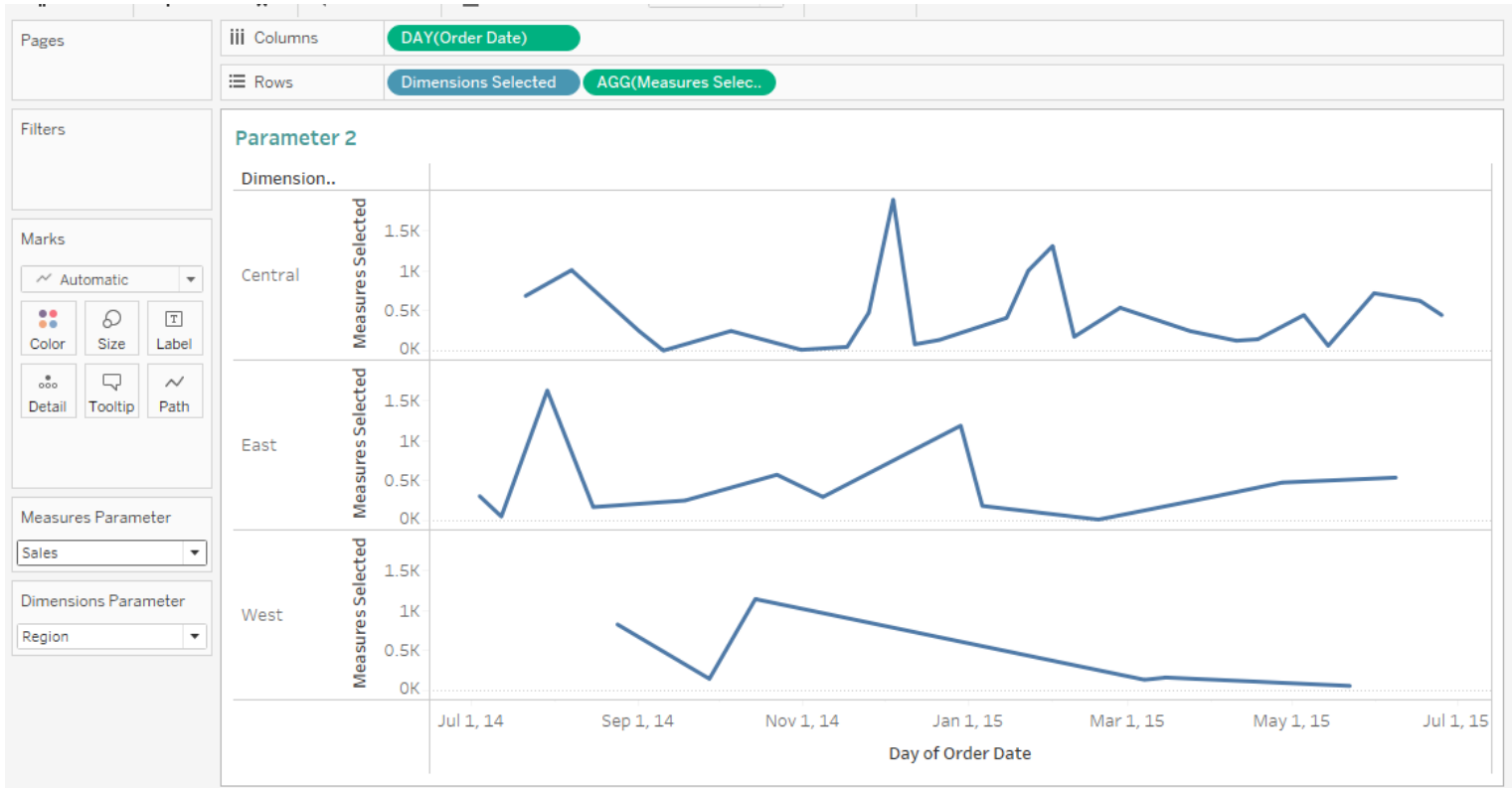


PARAMETERS Create A Parameter 2

CLASS HANDS ON EXERCISE

1. Create a Parameter called Dimension Parameter
    1. Set it to String, List and Dimensions: Region, Rep, Item
2. Create a Calculated Field Called Dimension Selected
    1. The CASE Statement will be similar to Measure Selected except there will be no aggregation.
3. Provide Access to the Dimension Parameter
4. To the Chart add Dimension Measure in the Row Shelf (Parameter2 worksheet)

PARAMETERS
Create A Parameter 2



SETS

1. Custom fields used to hold the subset of data based on a given condition.

2. For example, a set can be created for having a subset data of top 10 customers with the highest sales

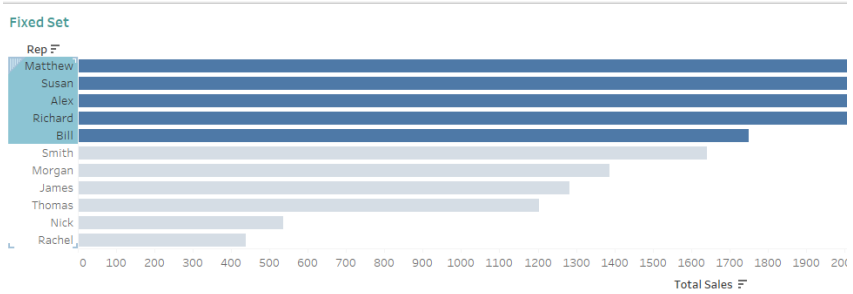
3. Fixed and Dynamic Sets
    1. Fixed Set - One or multi dimensions.

        They **will not change** unless you edit the set and either add or remove dimension members

    2. Dynamic Set - Single dimension only

        The values change when the underlying value change.

SETS - CREATE A SET

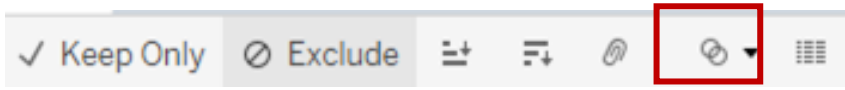


Create a FIXED SET

1. Open a new worksheet and name it Fixed Set

2. Create a Chart for Total Sales by Rep, horizontal and sorted descending

3. Select the first five Rep (use the SELECT KEY and highlight row 1 to 5).

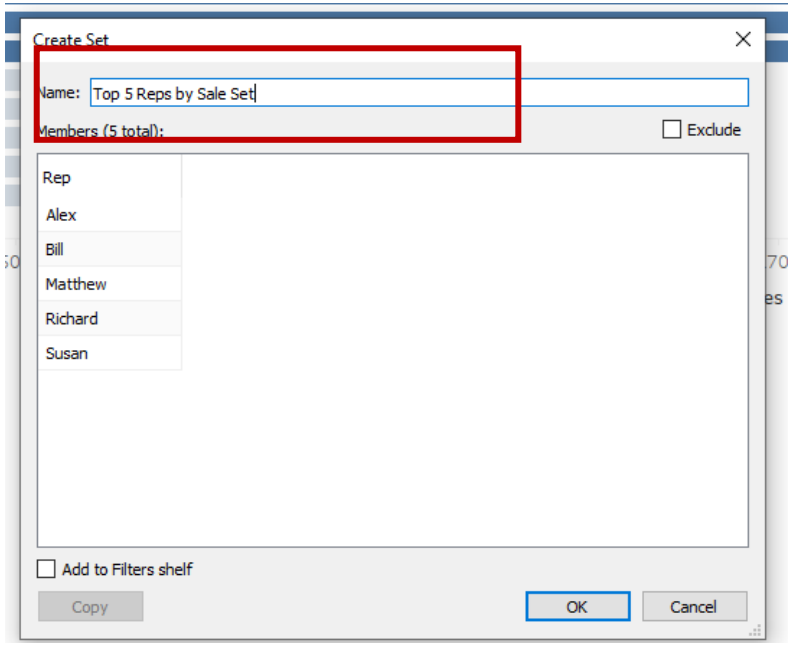


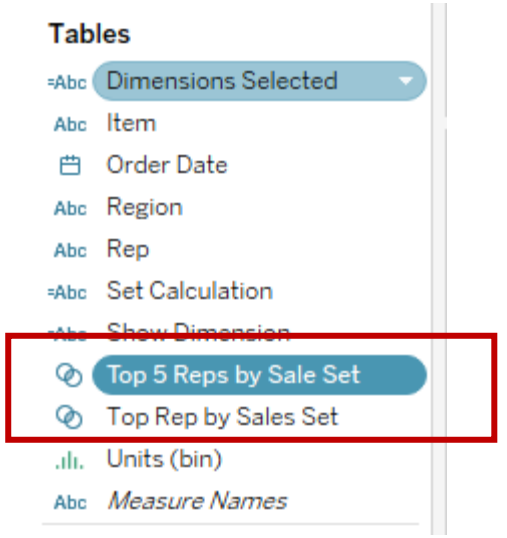
4. Click on Venn Diagram and select Create Set

SETS - CREATE A SET

Create a FIXED SET

1. Name: Top 5 Reps by Sales Set
2. Select the first five Rep (use the SELECT KEY and highlight row 1 to 5).
3. Select the Venn Diagram in the popup window
4. You see the new set appear under the Dimensions area of the Data pane.

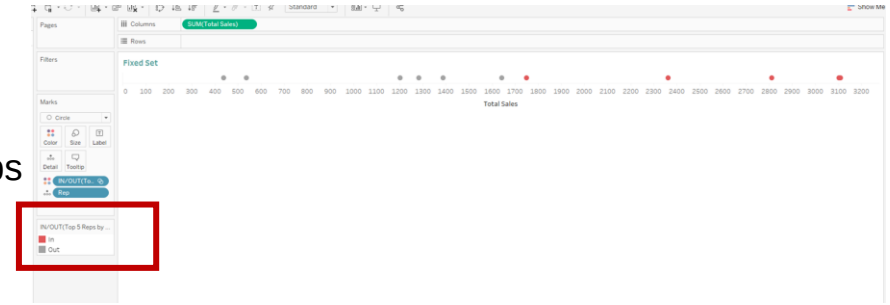




SETS - CREATE A SET

Create a FIXED SET

1. Columns : Total Sales
2. Marks Detail Card: Reps
3. Marks Color Card: Top 5 Reps by Sale set
4. Marks Chart Type: Circles



What you See-

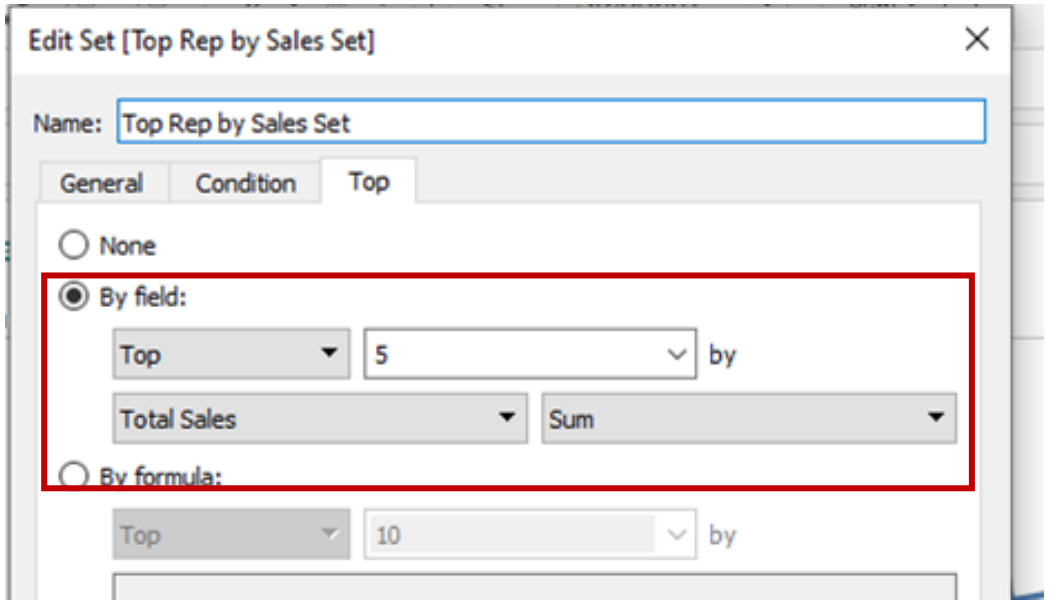
In - **Reps in** the Top 5 Rep by Sales set

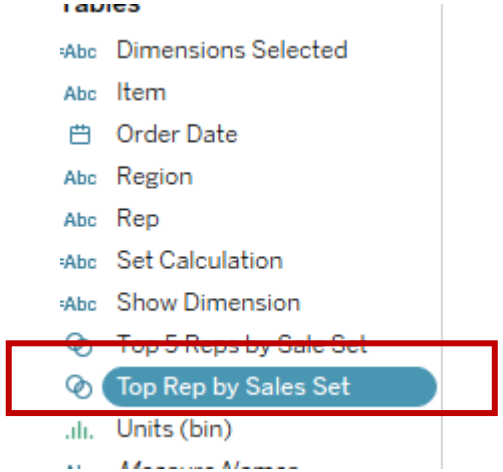
Out - **Reps not in** the Top 5 Rep by Sales Set

SETS - CREATE A SET

Create a Dynamic Set

1. Duplicate the Fixed Set worksheet and name it Dynamic Set
2. Select dimension Rep > Create > Set
3. Name : **Top Rep by Sales Set**
4. Click on the tab Top > By Field
5. Select Top . Enter 5
6. Select Total Sales and Sum
7. You see the new set appear under the Dimensions area of the Data pane.



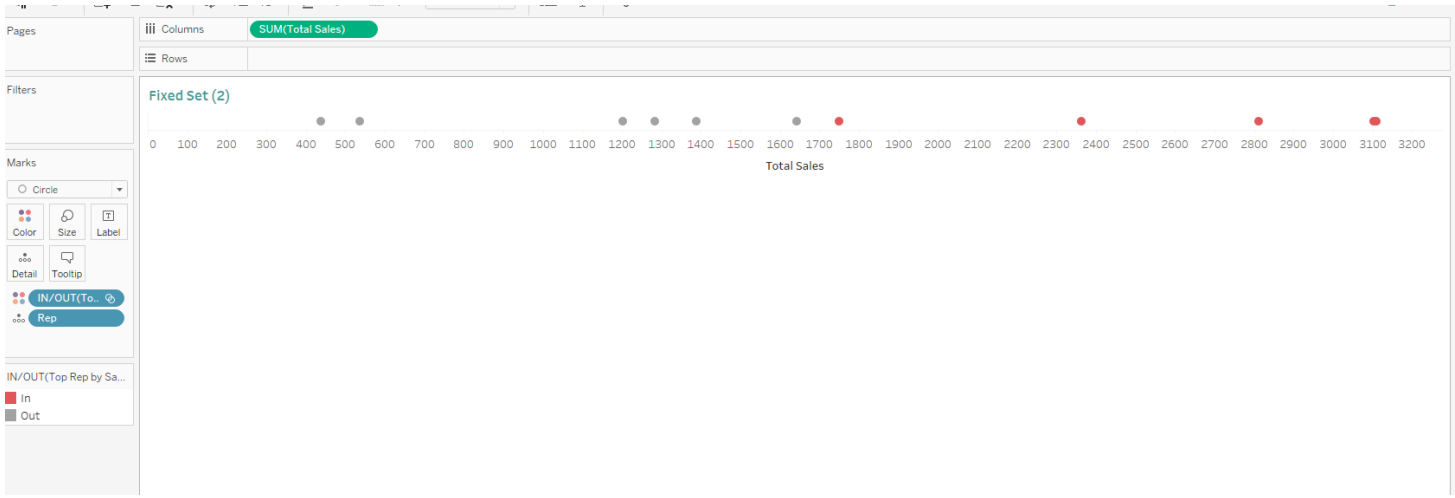


SETS - CREATE A SET

Create a DYNAMIC SET

1. Replace the set in the Mark Color Card
2. Add the Top Rep by Sales Set

The Chart for the Dynamic Set is the same as the Fixed Set since both sets are the same – Top 5 Rep



SETS - CREATE A SET

Difference between Fixed Set and Dynamic Sets

Dynamic Sets

1. Set: Top Reps for Sales
2. Add Order Date to the Filter
3. Select Month > April & September
4. From the Month Filter, Add Context

Add Context – that is the first filter that is applied to the dataset.

1. Filtering Sales for April and September
2. Selects Tops Reps for Sales

Fixed Sets

1. Set: Top 5 Reps for Sales
2. Add Order Date to the Filter
3. Select Month > April & September
4. From the Month Filter, Add Context

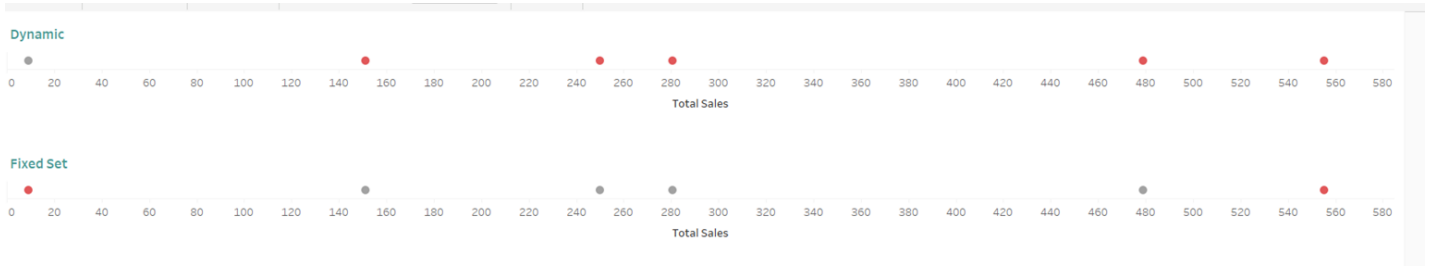
Add Context – that is the first filter that is applied to the dataset.

1. Filtering Sales for April and September
2. Selects Tops Reps for Sales from the fixed list that was predefined.

SETS - CREATE A SET

Difference between Fixed Set and Dynamic Sets

1. Create a Dashboard and name it Fixed vs Dynamic
2. Add the Dynamic worksheet on the top and the Fixed Worksheet on the bottom.

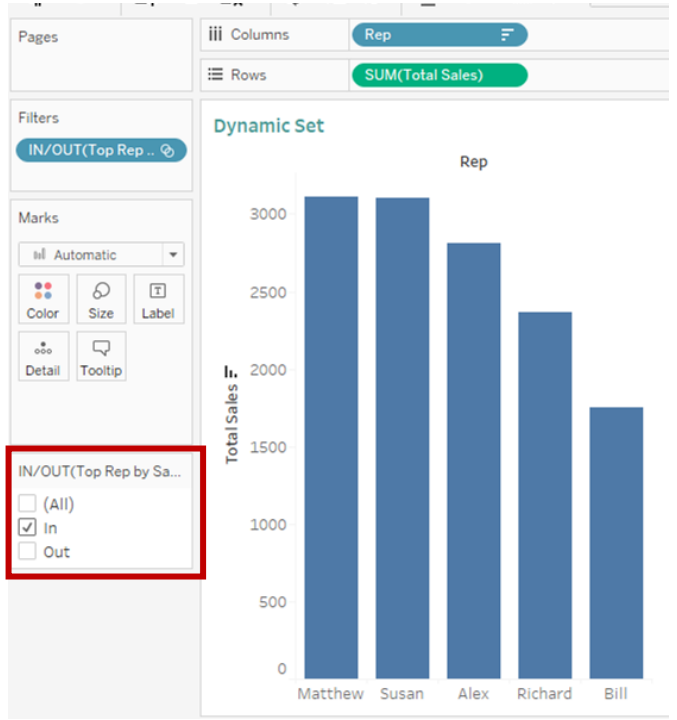


Fixed worksheet did not update because it is still looking for the same dimension members that we set before.

SETS
Create A SET - HOW TO USE

1. **AS A FILTER**

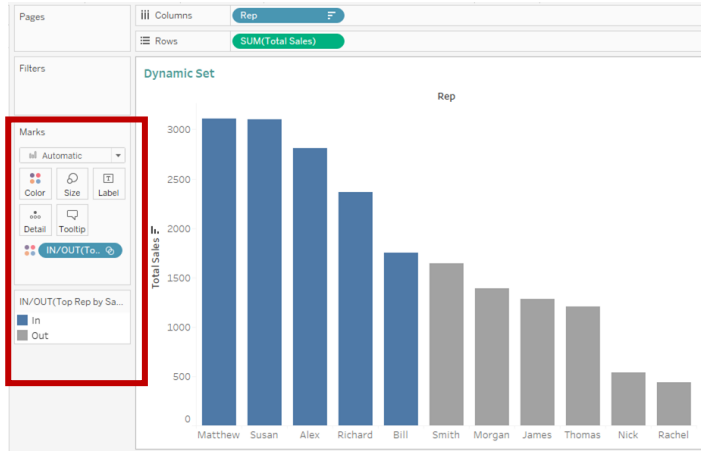
1. Open a new worksheet and name it Dynamic as Filter
2. Right Click the Top Rep by Sales set. Choose Show as Filter.
3. Move Filter Selector below Marks Card.
4. Create a Chart showing Totals Sales by Rep. Sort Descending.
5. Play with the Set Filter
    1. In - Top 5 Reps by Sales
    2. Out – not Top 5 Reps by Sales



SETS
Create A SET - HOW TO USE

2. **To Encode Marks**

1. Duplicate Dynamic as Filter worksheet.
2. Rename it Dynamic as Mark Color
3. Move the Set into the Color Marks Card
4. Move Color Selector below Marks Card.
5. Set Color
    1. In - Top 5 Reps
    2. Out – not the Top 5 Reps

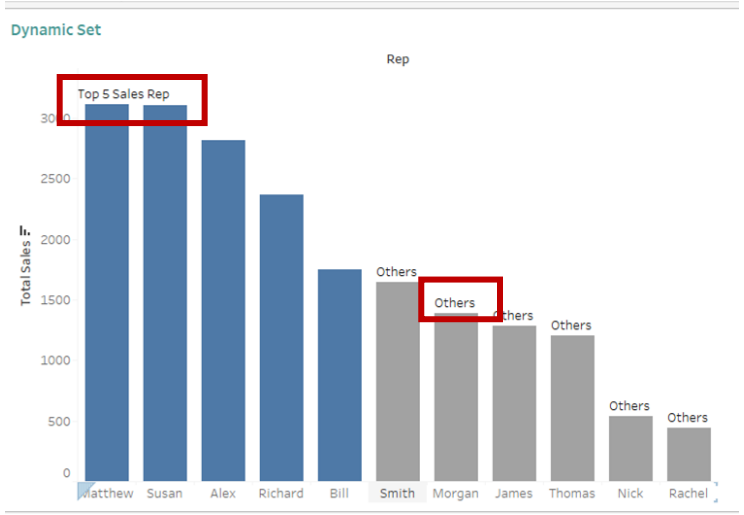


SETS
Create A SET - HOW TO USE

3. **As a Calculations**
1. Duplicate Dynamic as Filter worksheet.
2. Rename it Dynamic as Calc
3. Sets can be used in a calculated fields just as Dimensions or Measures
4. Create a Calculated Field called Set Calculation

```
IF [Top Rep by Sales Set] THEN
"Top 5 Sales Rep"
ELSE "Others"
END
```

5. Add Set Calculations in the Labels Mark Card



CLASS HANDS ON

Dataset: TFL Bus Safety

1. Create one Parameter to Choose between Dimension and Measure to address a question
2. Create one Set to address a question
3. Provide a short data analysis for each of the above

MID TERM PROJECT

1. Use a dataset that is not used in class
2. Address a simple idea or problem for your analysis.
3. Ask 4 to 6 questions to help address your simple idea.
4. Create a worksheet to address each question
5. Create an Interactive Dashboard using all the worksheets
6. Include an element of Calculated Field, Filter, Parameter and Set.
7. Submit your project as a Tableau workbook along with your dataset on the Midterm Project Folder in Google Classroom.

Points: 100

Due Date: mm/dd/yyyy