Tableau Day 2

Bharat Bhushan Verma

Agenda

Day 2

Calculation

- Create Calculated Field
- Shelf Calculation
- Table Calculation
- Logical Functions

Parameter

- Filter By Parameter
- Top N Analysis
- Add Calculation to Parameter
- Reference Line
- Dynamic View

Agenda

Level of Expression

- Level of Expression (LOD)
- Fixed LOD
- Include LOD
- Exclude LOD

Analytics

- Average Line
- Trend Line
- Forecast
- Clustering

Map

- Map Basics
- Map Services
- Integrating Mapbox Styles to Map

Exercise Files

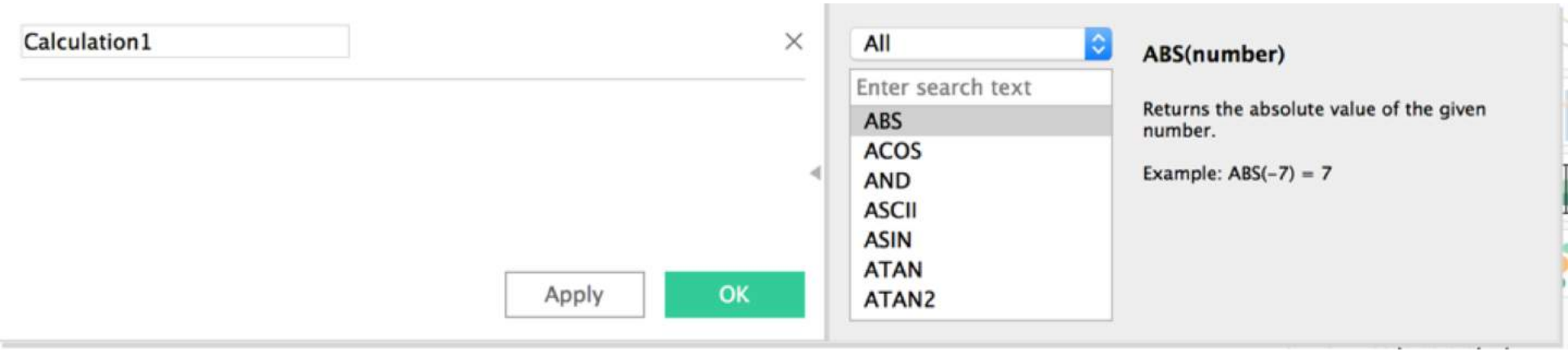
Please download the exercise files below

https://github.com/dearbharat/tableauIntermediate

Calculation

Calculated Field

- Analysis -> Create Calculated Field
- Right click the left panel and add Calculated Field
- Click the caret to show the built in functions



Mathematical Operators

+	addition and concatenation
-	subtraction and negation
*	multiplication
/	division
%	modular division
^	exponents

Shelf Calculation

- Can directly key calculation on ROW and COLUMN field
- Right Click and Edit in Shelf

Eg

SUM([Sales]-[Profit])

Number Functions

Functions used for numeric calculations such as:

CEILING(number)
POWER(number, power)
ROUND(number, [decimals])

String Functions

String Functions are used for string manipulation such as:

LEN(string)
LTRIM(string)
REPLACE(string, substring, replacement)
UPPER(string)

Date Functions

Date functions to carry out calculations involving dates such as :

DATEADD(date_part, increment, date)
DATENAME(date_part, date, [start_of_week])
DAY(date)
NOW( )

Logical Functions

Logical functions evaluate some single value or result of an expression and give a boolean output such as :

IFNULL(expression1, expression2)
ISDATE(string)

Aggregate Functions

Aggregate functions compute aggregates such as :

AVG(expression)
COUNT(expression)
MEDIAN(expression)
STDEV(expression)

Ex: Calculated Field

- Connect to ProductsCustomersOrders.xlsx
- Create Calculated Field - Revenue
- Enter the formula [Quantity] * [Price]
- Plot Revenue vs Product Category
- If Revenue > 100000, say "Good", else "Bad"

Time: 10 mins

Table Functions

Table Functions apply to calculation to entire table. Eg

- Running Total
- Difference
- Percent Difference
- Percent of Total
- Rank
- Percentile
- Moving Average
- Year to Date (YTD) Total
- Compound Growth Rate
- Year over Year Growth
- Year to Date (YTD) Growth

Apply Table Function

STEP 1 Select the measure on which the table calculation has to be applied and drag it to column shelf.

STEP 2: Right click on the measure and choose the option Quick Table Calculation.

STEP 3: Choose one of the table functions options to be applied on the measure.

Ex: Table Calculation

- Connect to global_superstore_2016.xls
- Show the RUNNING TOTAL of profit for different product categories

Time: 5 mins

Logical Functions and Operators

IF THEN ELSE Syntax

IF <expr>
THEN <then>
ELSEIF <expr2>
THEN <then2>
...
END

Comparison Operators

==	equal
>	greater
<	smaller
>=	greater or equal
<=	smaller or equal
!=	not equal
<>	not equal

Logical Operators

AND
OR
NOT

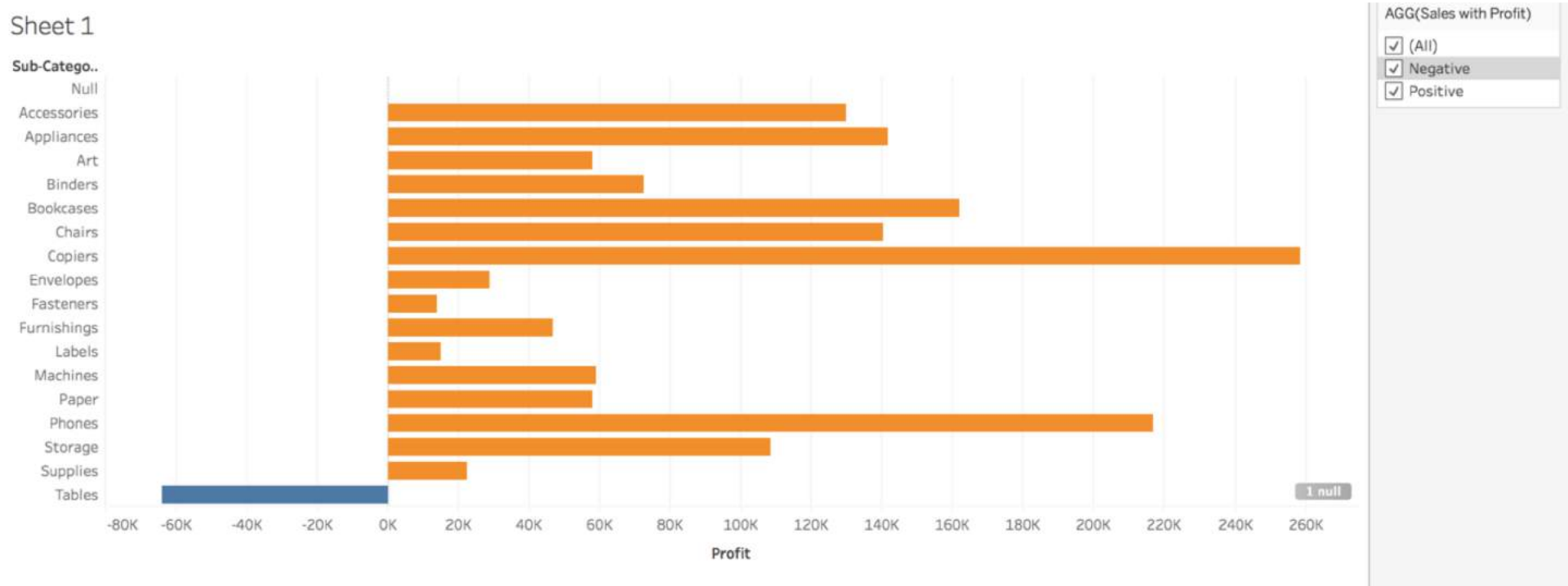
IF THEN ELSE Examples

IF [Sales] >= 5000 THEN “Large Order”
ELSEIF [Sales] >= 1000 THEN “Medium Order”
ELSE “Small Order” END

IF SUM([Profit])>0
THEN "Positive"
ELSE "Negative"
END

IF THEN ELSE Examples

- Connect to global_superstore_2016.xls
- Create a Calculated Field "Sales with Profit" and use for color on Profit vs Subcategory



Ex: If-Then-Else

Plot Quantity vs Order ID. Create a calculated field for quantity.

If quantity > 10 then show "A lot"
If quantity > 5 then show "some"
else show "not many":

Time: 5 mins

CASE Syntax

CASE <expr>
WHEN <value1>
THEN <return1>
WHEN <value2>
THEN <return2>
...
ELSE <else>
END

CASE Examples

```
CASE [Region]
WHEN "West" THEN 1
WHEN "East" THEN 2
ELSE 3
END
```

Ex: Case

Plot Order ID vs Order Priority.

When Order Priority is "Low" Or "Medium", indicate "Not Urgent"
When Order Priority is "High" or "Critical:, indicate "Urgent"

Time: 5 mins

Hint to Exercise

CASE [Order Priority]
WHEN "Low" THEN "Not Urgent"
WHEN "Medium" THEN "Not Urgent"
WHEN "High" THEN "Urgent Order"
WHEN "Critical" THEN "Urgent Order"
END

IIF Syntax

IIF(test, then, else)

IIF Examples

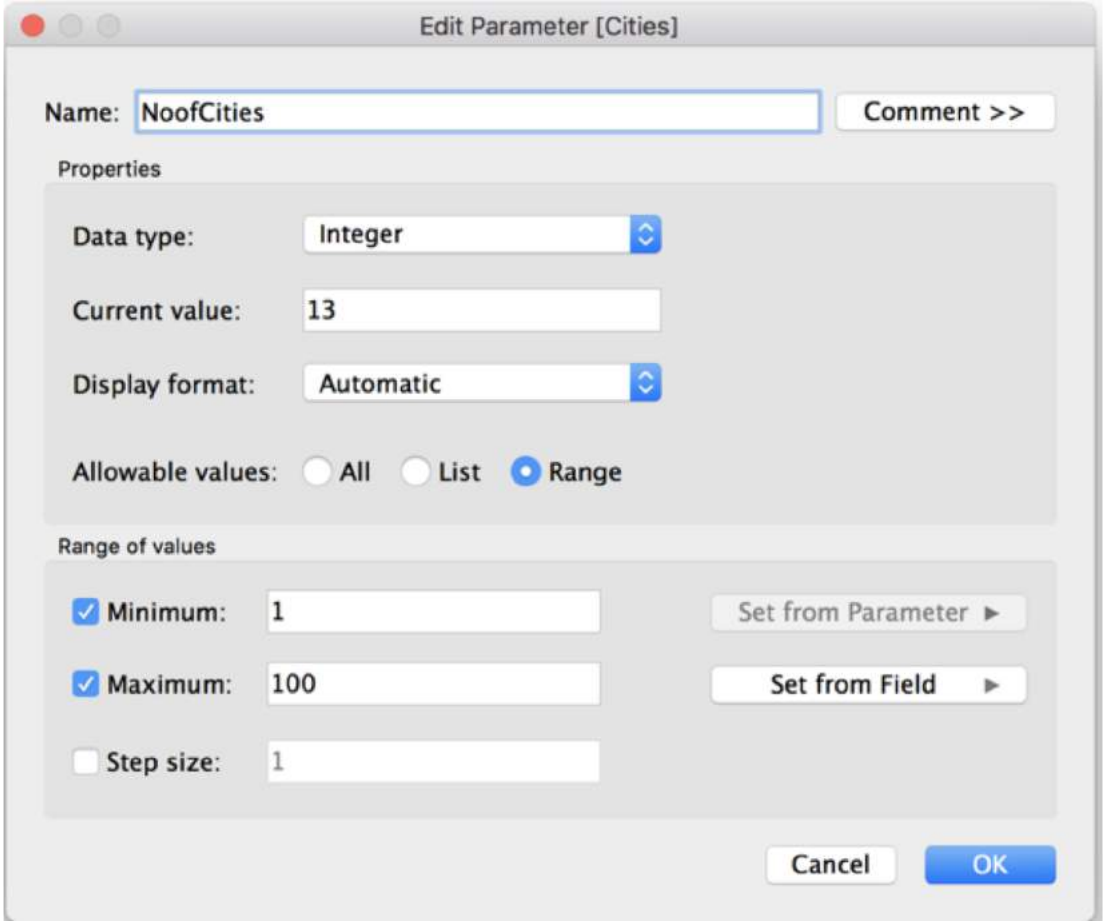
IIF([Cost]>[Budget Cost], "Over Budget", "Under Budget")

IIF([Budget Sales]!=0,[Sales]/[Budget Sales],0)

Parameter

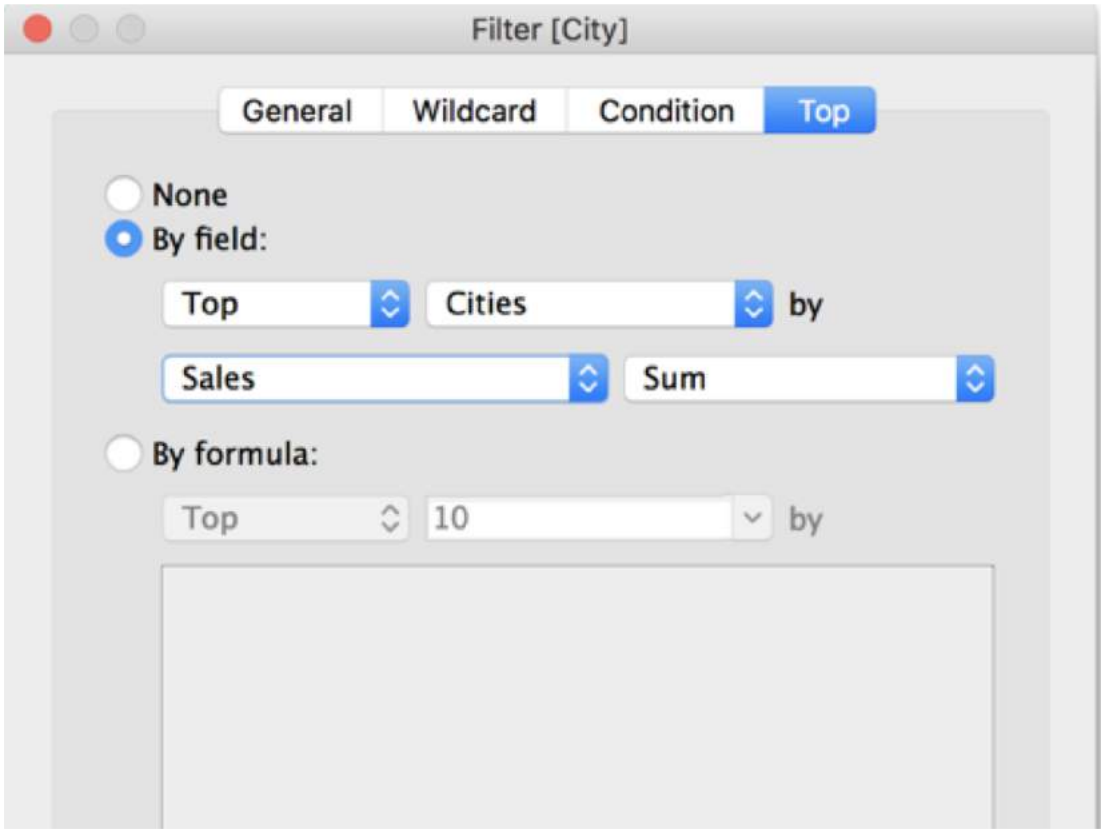
Filter by Parameter

- Create a parameter NoOfCity
- Choose Range to be Min:1 and Max: 100



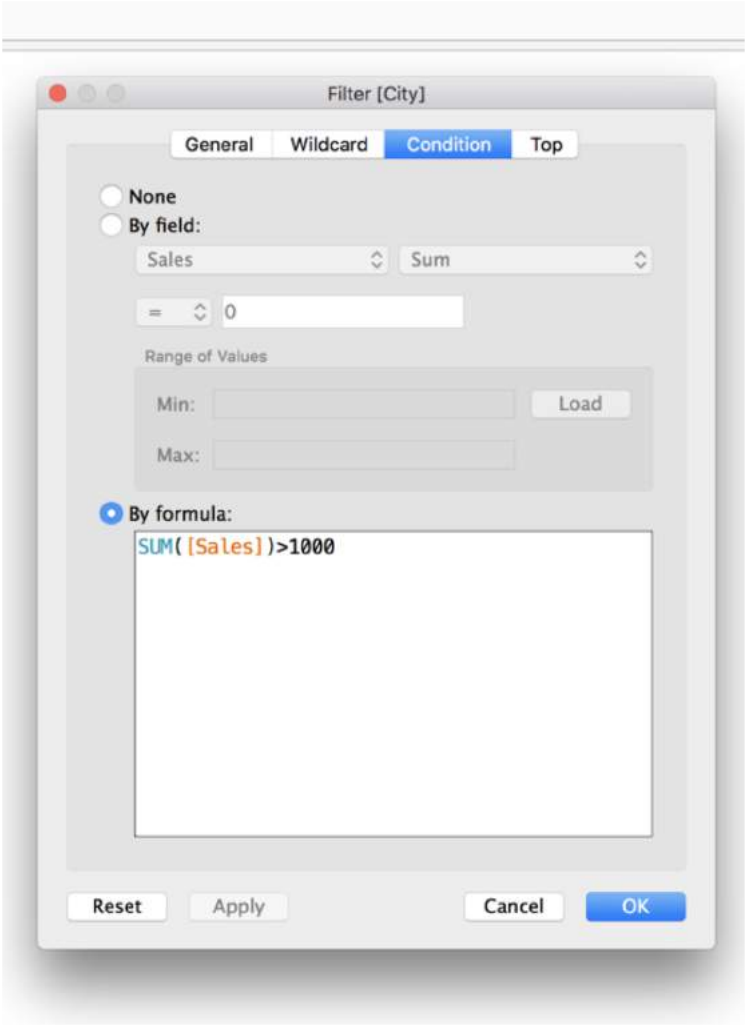
Filter by Parameters

- Show the NoOfCity Parameter
- Create a City Filter - filter by Top [NoOfCity]



Apply Calculation to Filter

- Right click on the dimension
- Select Condition
- Select By Formula
- Enter the formula



Ex: Parameter

- Connect to global_superstore_2016.xls
- Plot Sales vs Cities
- Create a parameter Sales Threshold
- Show cities with sales above the Sales Threshold

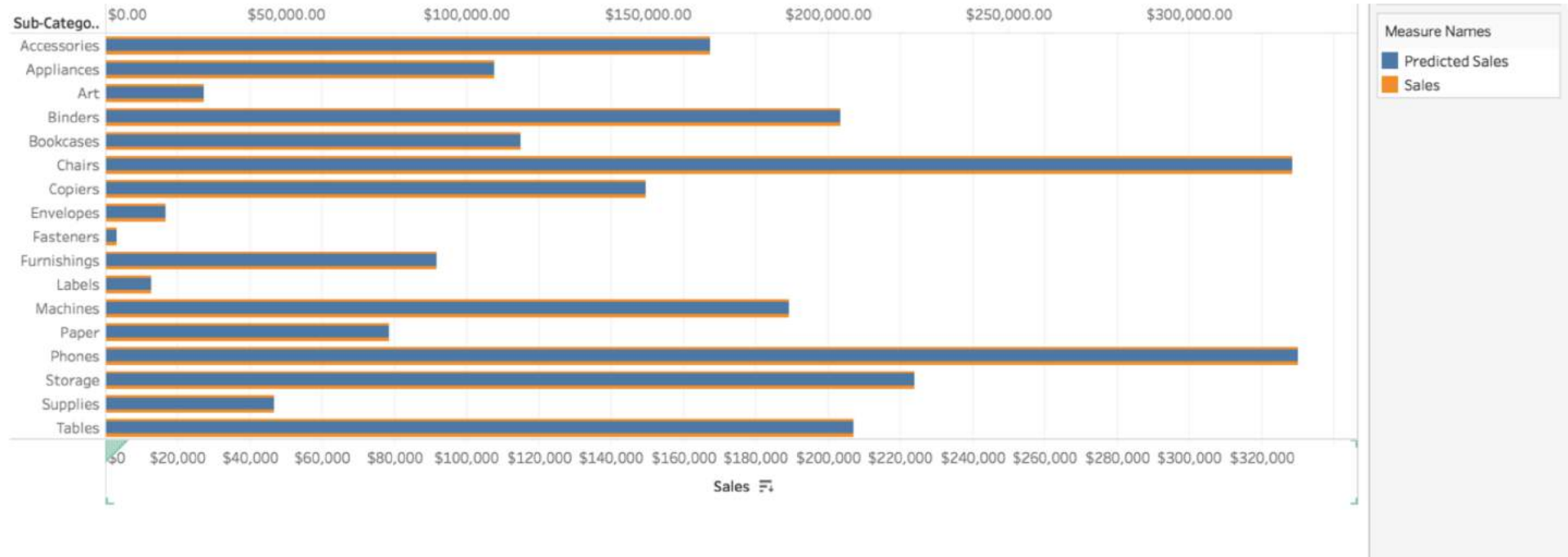
Time : 5 mins

Calculation by Parameters

- Connect to global superstore 2016.xls
- Create a parameter (Percent Change), choose Percent, min=-1,max=+1,step=0.05 -> Show Parameter
- Change the format to Percentage
- Add calculation to parameter (Predicted Sales) *SUM([Sales]) * (1+[Percent Change])*

Calculation by Parameters

- Add Predicted Sales to Chart. Change Number format to Currency.
- Change to Dual Axis. Change to Bar charts, and sync both axis
- Make the Predicted Sales chart smaller.



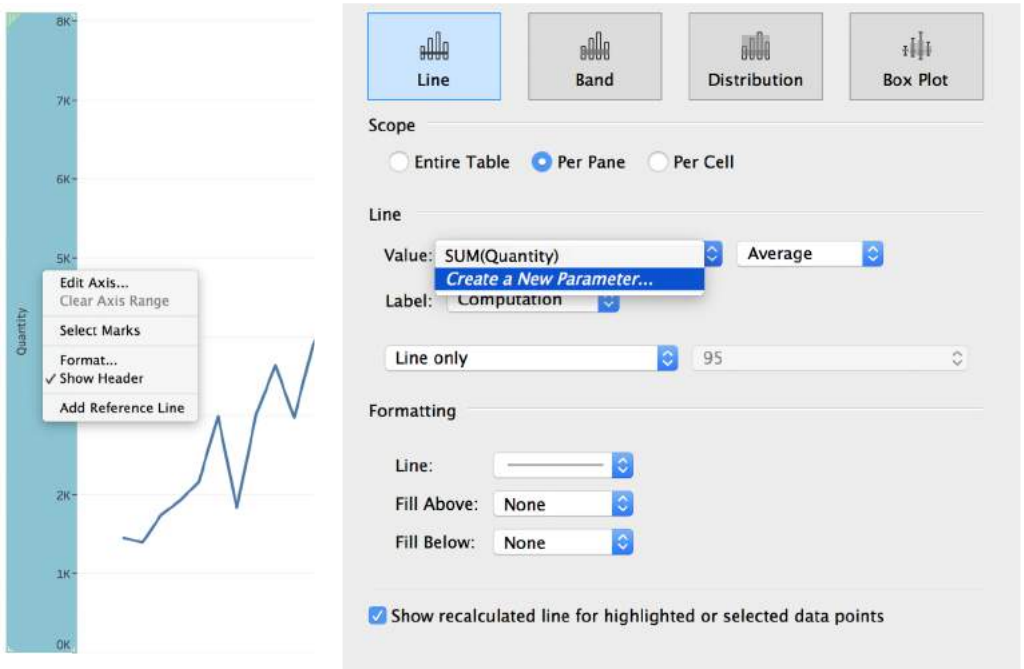
Ex: Calculation by Parameter

Plot predict profit vs market, overlay with profit vs market

Time: 5 mins

Reference Line

- Connect to global superstore 2016.xls
- Plot Quantity vs Week
- Add a Reference Line
- Create a Parameter for Value. Set to Integer and range from 1 to 1000



Dynamic View - Add Parameter

- Connect to global superstore 2016.xls
- Add a Parameter - Selected Dimension
  - Set to String with List - Region, Category, Segment
  - Show the parameter

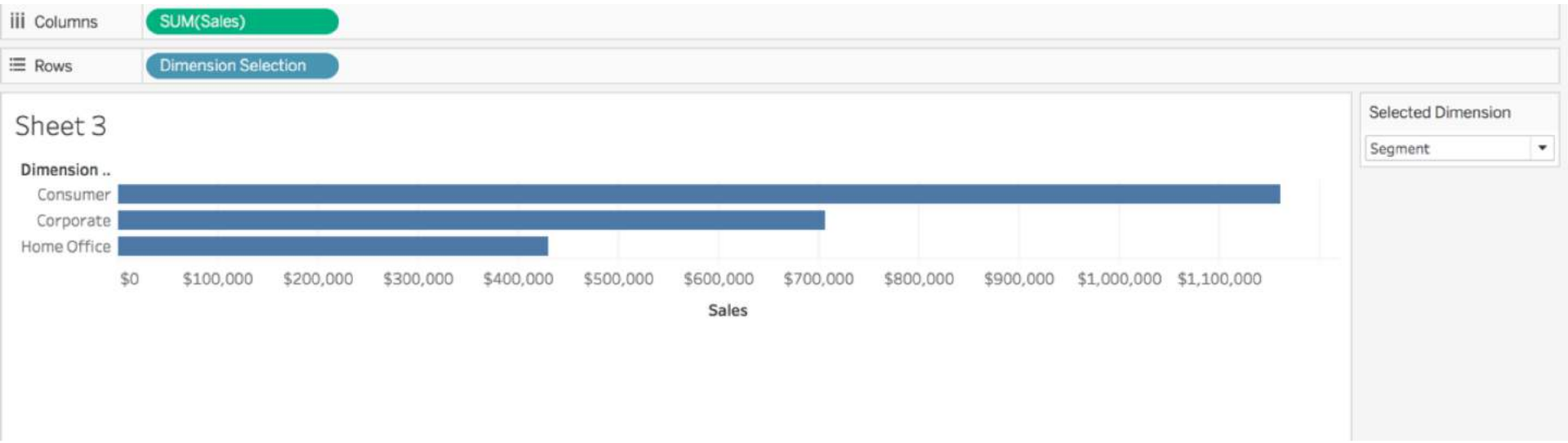
Dynamic View - Add Calculated Field

Add a Calculation Field - Dimension Selection

```
CASE [Selected Dimension]
WHEN 'Region' THEN [Region]
WHEN 'Category' THEN [Category]
WHEN 'Segment' THEN [Segment]
END
```

Dynamic View - Plot

Plot Sales vs Dimension Selection



Challenge: Dynamics View

- Open global_superstore_2016.xls
- Create a parameter to allow the user to plot monthly sales, profit, or quantity

Time: 5 mins

Module 8
Level of Expression

Level of Detail (LOD) Expression

Level of Detail expressions are also called LOD expressions in Tableau. They are used to run complex queries involving many dimensions at the data source level instead of bringing all the data to Tableau interface

Types of LOD Expression

There are three main types of LOD expressions.

- **FIXED LOD**: This expressions compute values using the specified dimensions without reference to any other dimensions in the view.
- **INCLUDE LOD**: This level of detail expressions compute values using the specified dimensions in addition to whatever dimensions are in the view.
- **EXCLUDE LOD**: These levels of detail expressions subtract dimensions from the view level of detail.

LOD Expression Syntax

{ Keyword [Dimension] : Aggregate([Expression]) }

Keyword can be FIXED, INCLUDE, EXCLUDE

Eg
{FIXED [Customer ID] : SUM([Sales])}

LOD

[Profit] - {AVG([Profit])}

FIXED LOD Expressions

{FIXED [Region] : SUM([Sales])}

{FIXED [State] : SUM([Sales])}

Region	State	
Canada	Alberta	66,928 6,551
	British Columbia	66,928 9,544
	Manitoba	66,928 2,018
	Newfoundland	66,928 103
	Nova Scotia	66,928 382
	Ontario	66,928 35,450
	Quebec	66,928 10,924
	Saskatchewan	66,928 1,956

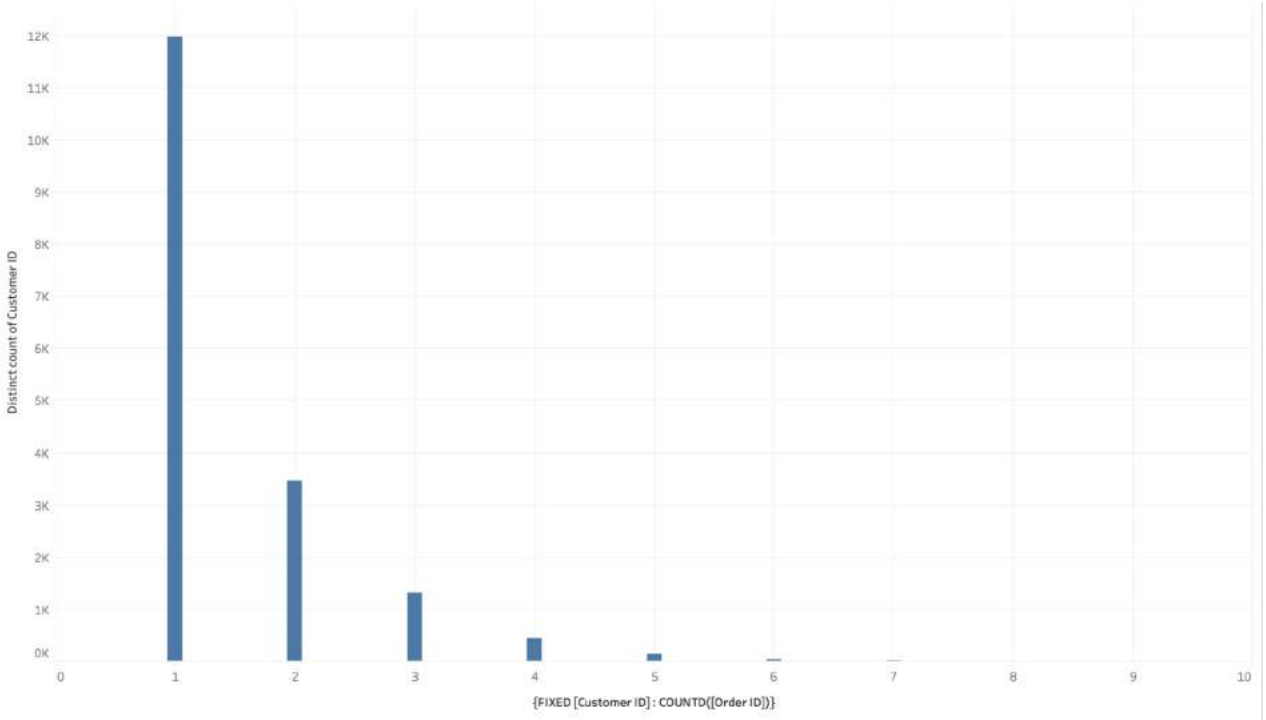
Ex: LOD

- Connect to global_superstore_2016.xlsx
- How many customers have made 1, 2, 3, N orders?

Hint to Exercise

Column: {FIXED [Customer ID] : COUNTD([Order ID])}

Row: COUNTD([Customer ID])



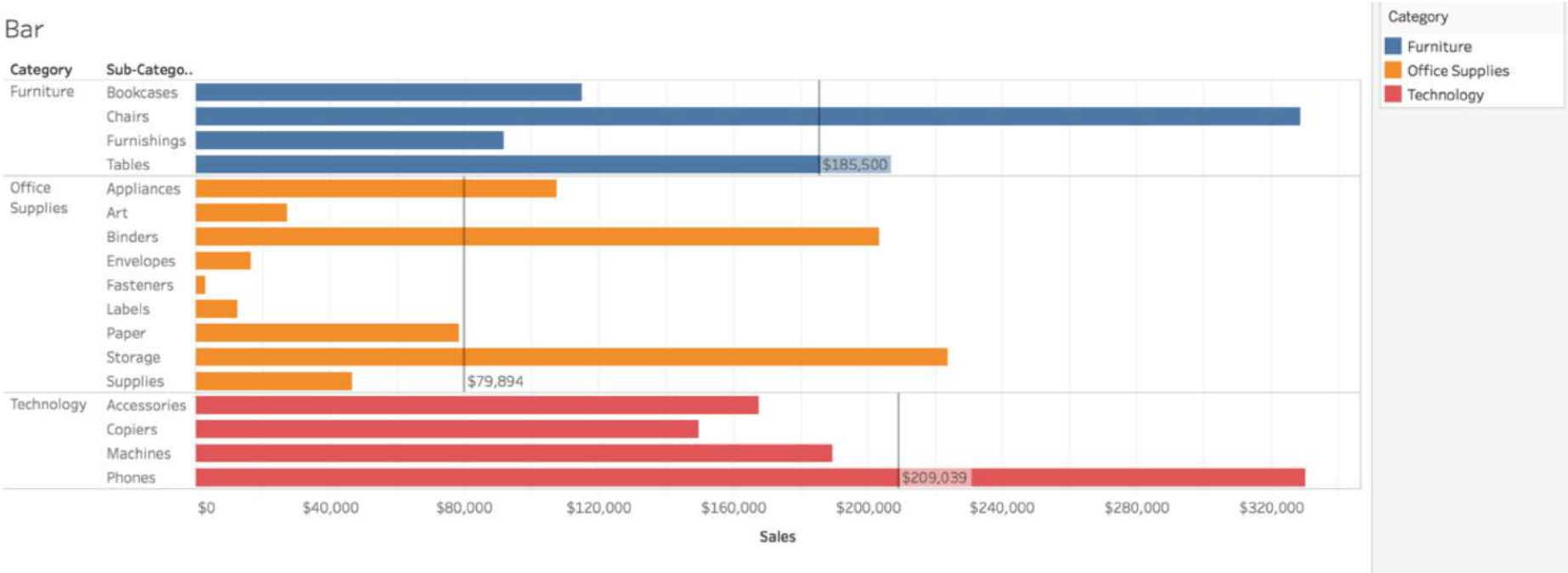
Analytics

Tableau Analytics

- Average Line
- Trend Line
- Forecasting
- Clustering

Average Line

- Connect to global_superstore_2016.xlsx
- Plot Sales vs Category, Sub-category
- Select Analytics Pane
- Drag Average Line to the plot
- Choose Panes

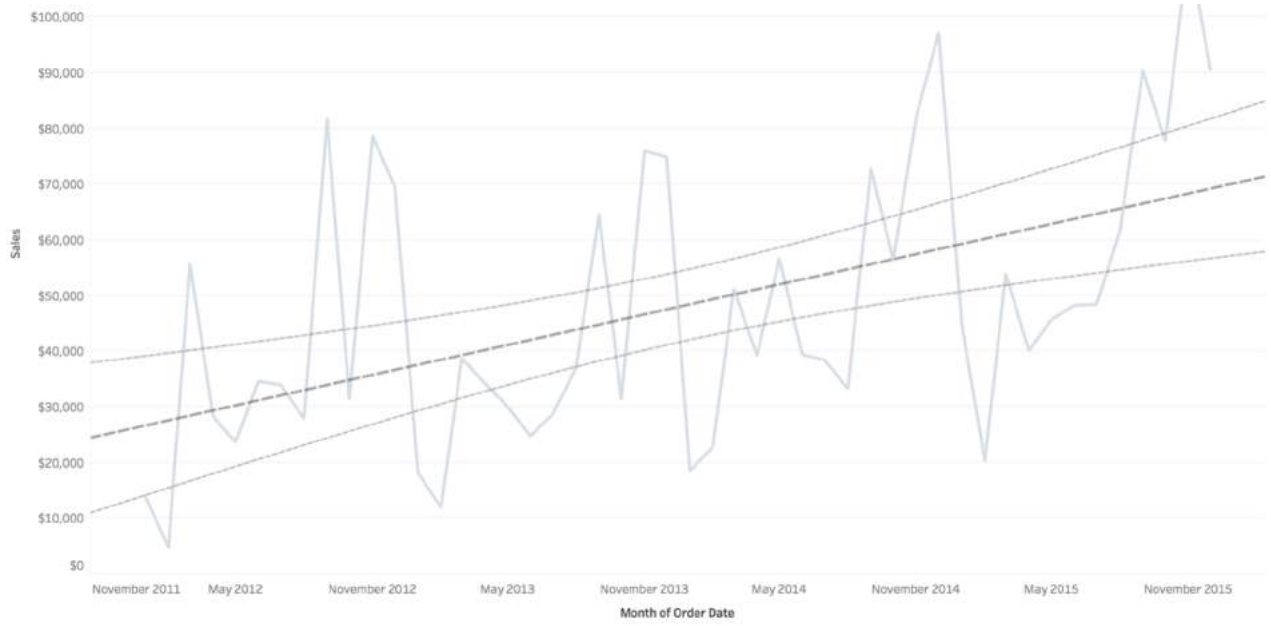


Ex: Average Line

- Connect to global_superstore_2016.xlsx
- Plot Sales vs Market, Region
- Add average lines to the plot

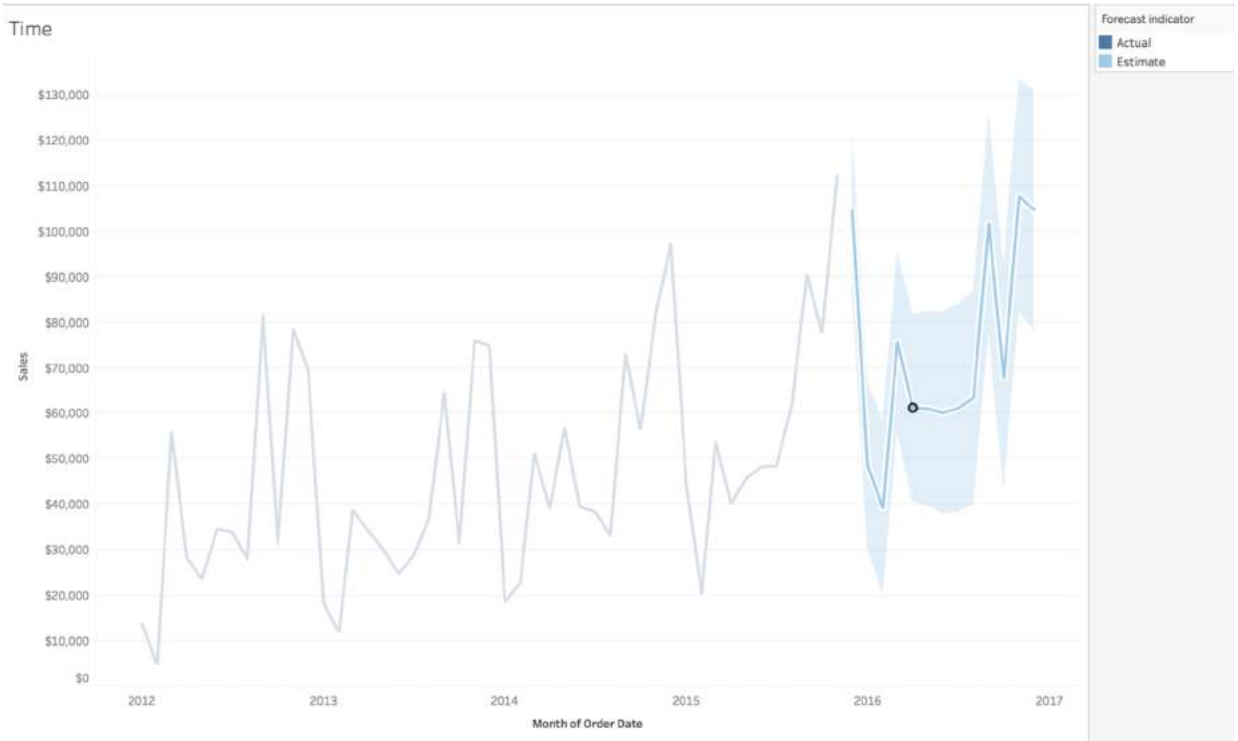
Trend Line

- Connect to global_superstore_2016.xlsx
- Plot Sales vs Month
- Select Analytics Pane
- Drag Trend Line to the Plot
- Chose Linear



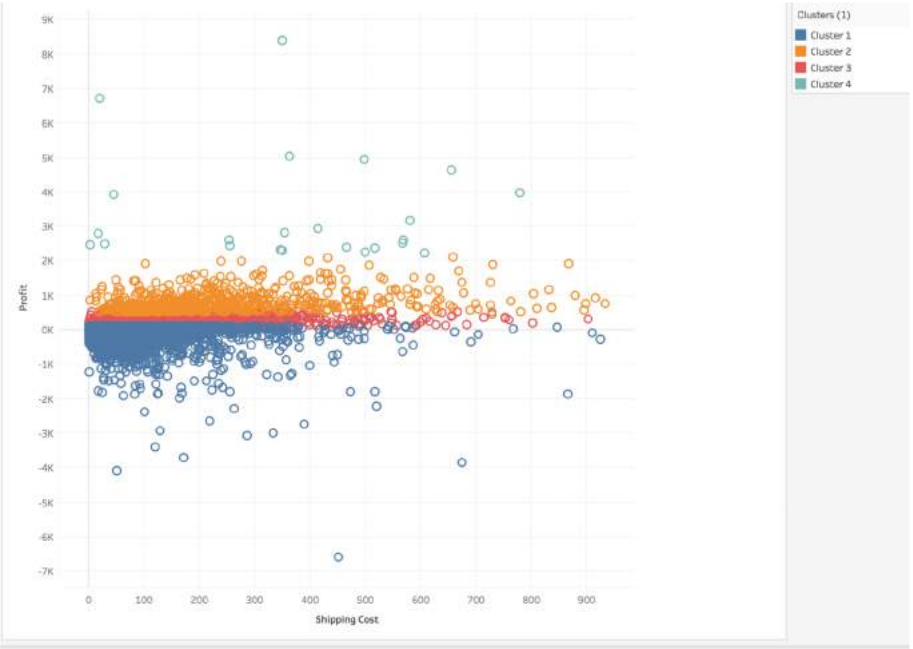
Forecast

- Connect to global_superstore_2016.xlsx
- Plot Sales vs Month
- Select Analytics Pane
- Drag Forecast to the plot



Clustering

- Connect to global_superstore_2016.xlsx
- Plot Profit vs Shipping Cost. Remove Aggregates
- Select Analytics Pane
- Drag Cluster to the plot. Specify the number of clusters



Map

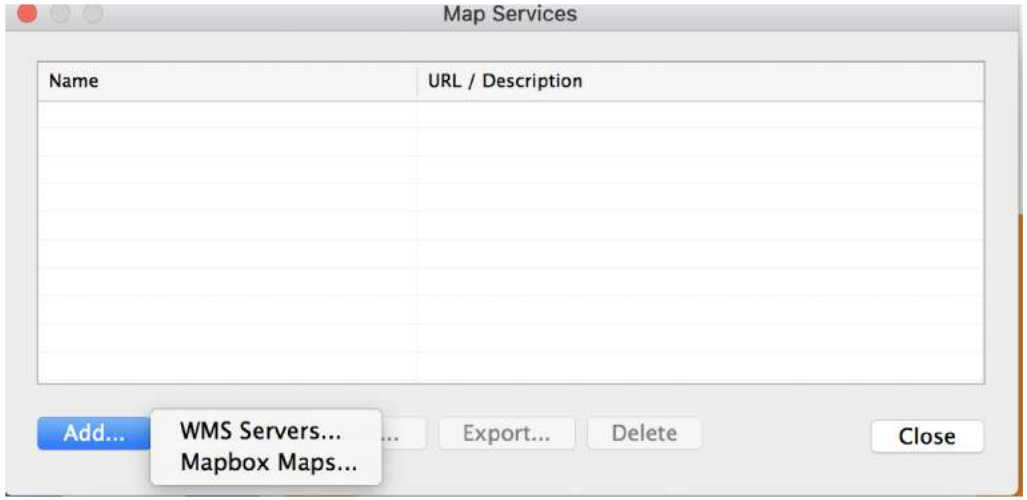
Ex: Map

- Connect to global_superstore_2016.xls
- Create a sales map

Map Services

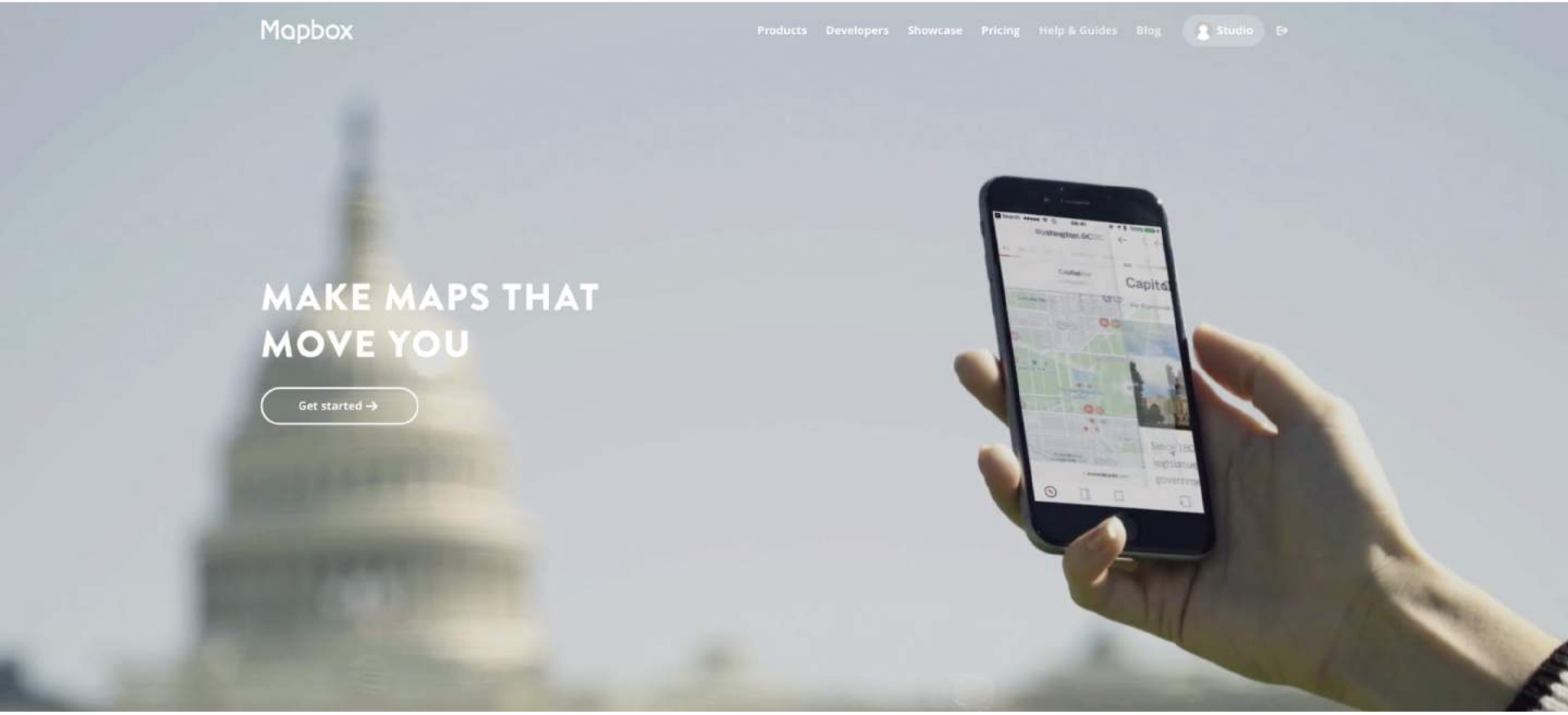
Tableau Desktop includes a connection to Tableau's map server, which provides an extensive selection of maps optimized for use with Tableau

- WMS Servers
- Mapbox Maps



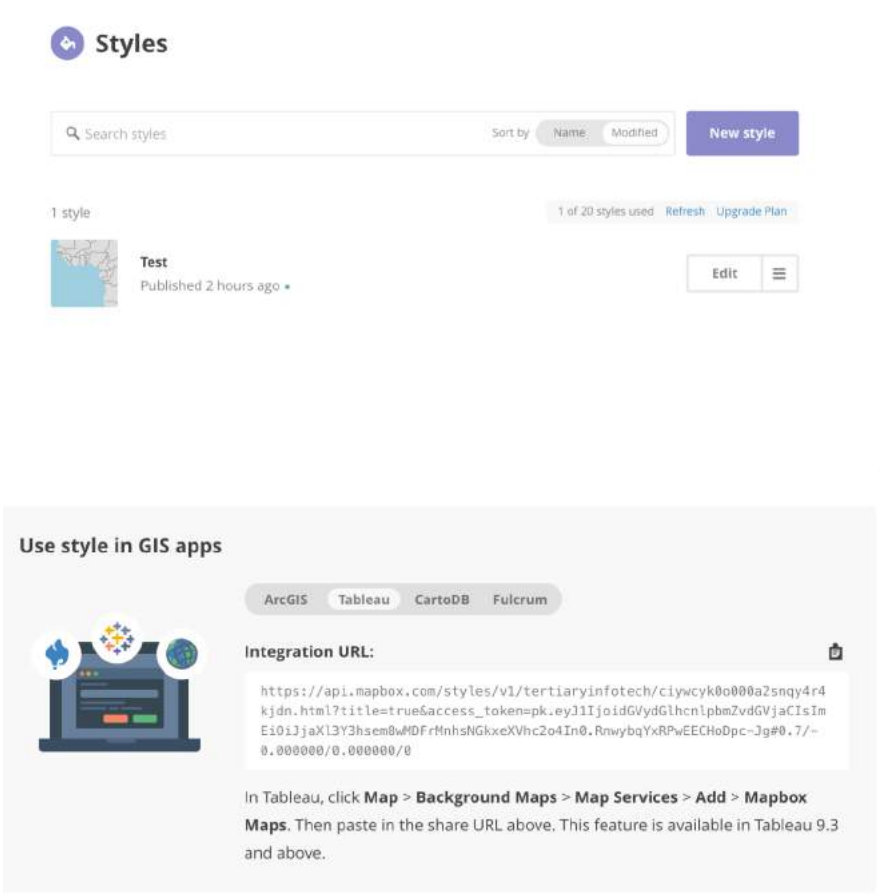
Mapbox

https://www.mapbox.com/



Add Mapbox Map

Paste the code to URL, API token, username and layer ID will be auto populated



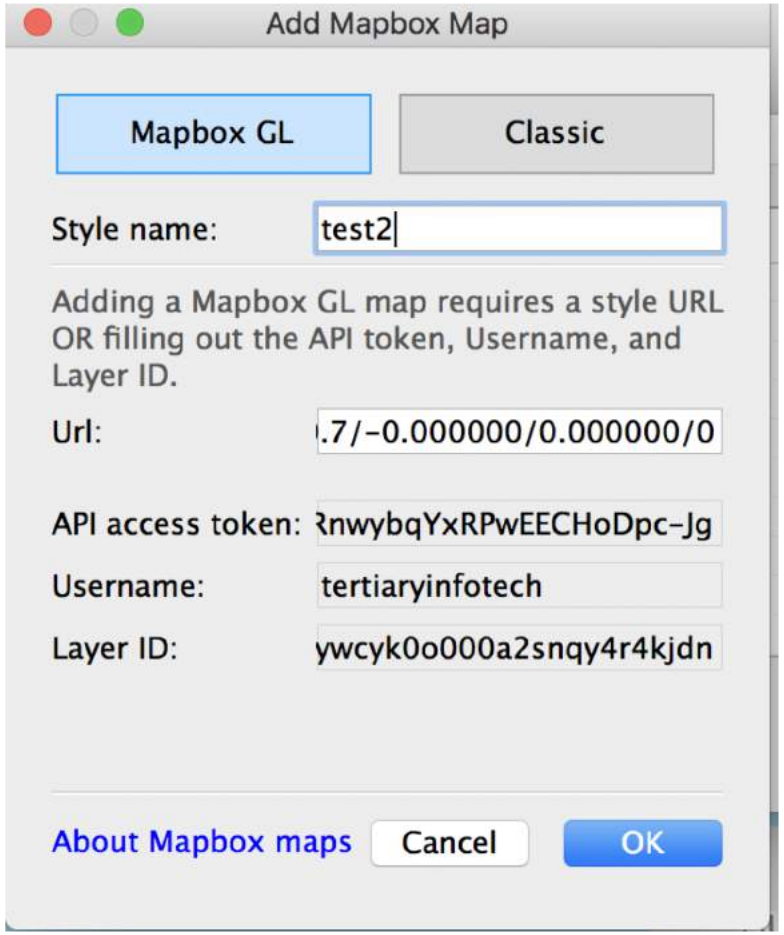
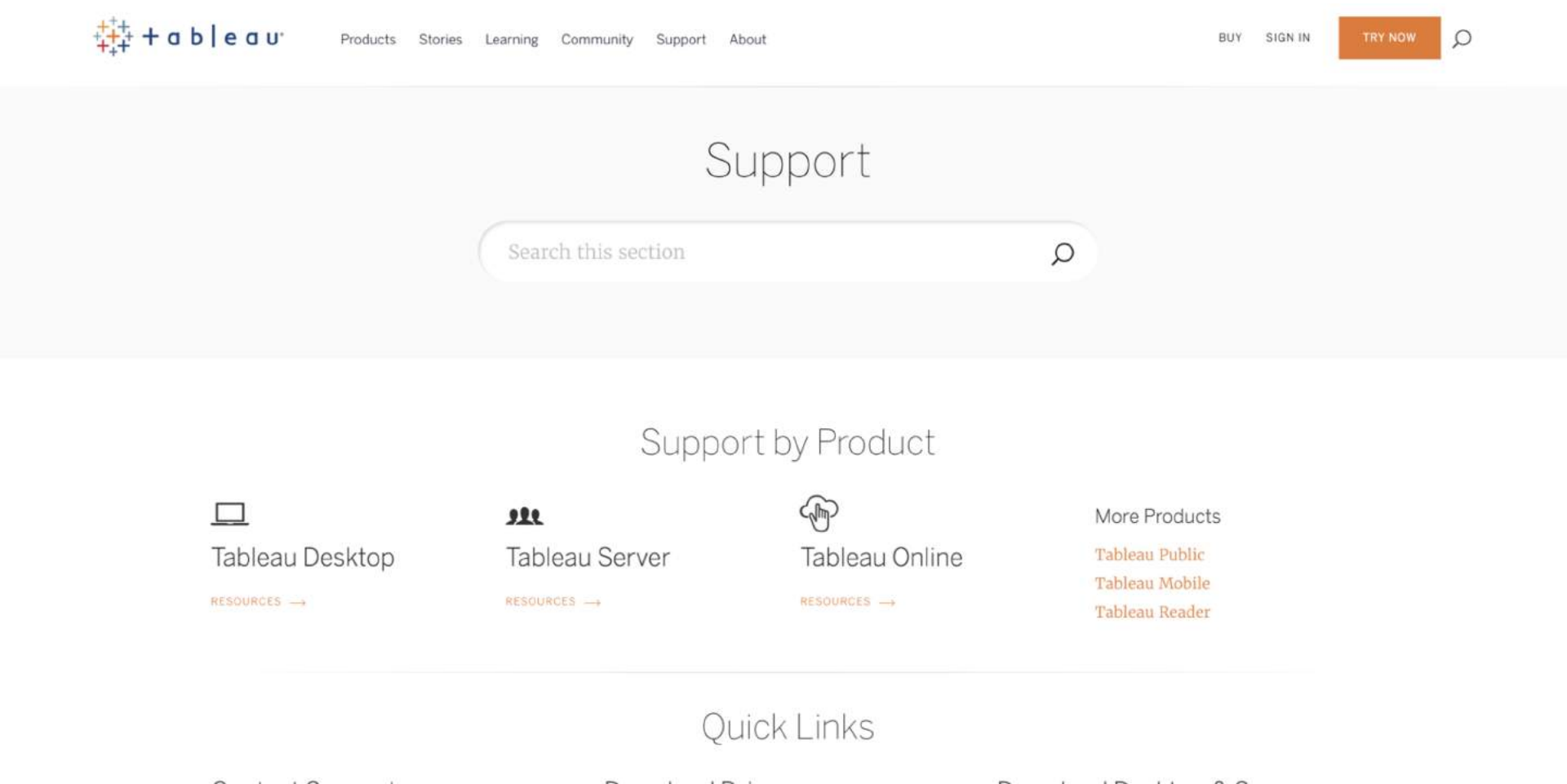


Tableau Support

http://www.tableau.com/support



Resources

Tableau Desktop http://www.tableau.com/products/desktop
Tableau Online https://online.tableau.com/
Tableau Server http://www.tableau.com/products/server
Tableau Public https://public.tableau.com/s/

Tableau Tutorial http://www.tableau.com/learn
Tableau Help http://www.tableau.com/support
Tableau Drivers https://www.tableau.com/support/drivers

Thank You!