



# Business Intelligence Intermediate – Unit 2

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Xccelerate - Data Science Immersive



# Agenda

## TABLEAU:

- Data Join and Data Blending
- Creating bins, parameters, sets
- Data Preparation in Tableau
- Walkthrough Exercises
- Practice makes perfect (Part 2)



Walkthrough Exercises:

## Data Joining

### Agenda:

- Joining Data in Tableau
- Understanding different types of Join

Connect Tableau to the Excel file provided:

*BI\_Intermediate\_Unit2\_Data\_Join.xlsx*

*BI\_Intermediate\_global\_superstore\_2016.xlsx*



# Data Joining:

## JOIN TYPES WITH UNION

**Joining tables** is a way of combining information from multiple tables on a field they share.

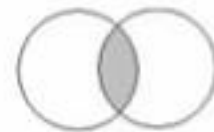
**Joins** are always made on a specific field (or fields)

| Name    | # of Siblings |
|---------|---------------|
| Taylor  | 2             |
| Alex    | 3             |
| Shannon | 0             |
| Tracy   | 1             |

| Name   | Eye Color |
|--------|-----------|
| Taylor | Blue      |
| Alex   | Brown     |
| Morgan | Brown     |

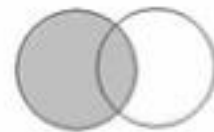
Inner Join

| Name   | # of Siblings | Eye Color |
|--------|---------------|-----------|
| Taylor | 2             | Blue      |
| Alex   | 3             | Brown     |



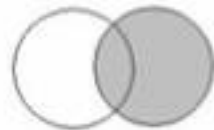
Left Join

| Name    | # of Siblings | Eye Color |
|---------|---------------|-----------|
| Taylor  | 2             | Blue      |
| Alex    | 3             | Brown     |
| Shannon | 0             | null      |
| Tracy   | 1             | null      |



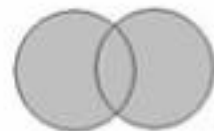
Right Join

| Name   | Eye Color | # of Siblings |
|--------|-----------|---------------|
| Taylor | Blue      | 2             |
| Alex   | Brown     | 3             |
| Morgan | Brown     | null          |



Outer Join

| Name    | # of Siblings | Eye Color |
|---------|---------------|-----------|
| Taylor  | 2             | Blue      |
| Alex    | 3             | Brown     |
| Shannon | 0             | null      |
| Tracy   | 1             | null      |
| Morgan  | null          | Brown     |



**Union** follows the behavior “Union all” even if there are duplicate values for some rows.

**Union** appends new rows AND new columns if the shared field don't match across the unioned data sources

| Name  | # of presentations |
|-------|--------------------|
| Kai   | 10                 |
| Piper | 3                  |
| Lien  | 4                  |

| Name  | # of presentations |
|-------|--------------------|
| Kai   | 10                 |
| Tori  | 7                  |
| Clair | 4                  |

Union

| Name  | # of presentations |
|-------|--------------------|
| Kai   | 10                 |
| Piper | 3                  |
| Lien  | 4                  |
| Kai   | 10                 |
| Tori  | 7                  |
| Clair | 4                  |

| Name  | # of presentations | Expenses |
|-------|--------------------|----------|
| Kai   | 10                 | \$3,761  |
| Piper | 3                  | \$287    |
| Lien  | 4                  | \$1,008  |

| Name  | # of presentations | Expense report |
|-------|--------------------|----------------|
| Kai   | 10                 | \$4,024        |
| Tori  | 7                  | \$2,930        |
| Clair | 4                  | \$987          |

Union

| Name  | # of presentations | Expenses | Expense report |
|-------|--------------------|----------|----------------|
| Kai   | 10                 | \$3,761  | null           |
| Piper | 3                  | \$287    | null           |
| Lien  | 4                  | \$1,008  | null           |
| Kai   | 10                 | null     | \$4,024        |
| Tori  | 7                  | null     | \$2,930        |
| Clair | 4                  | null     | \$987          |

# Data Joining (Exercise):



Tableau Public - Book3

File Data Window Help

Connections [Add](#)

BI\_Intermedia...perstore\_2016  
Microsoft Excel

Sheets

☐ Use Data Interpreter  
Data Interpreter might be able to clean your Microsoft Excel workbook.

Orders  
People  
Returns

New Union

Orders+ (BI\_Intermediate\_global\_superstore\_2016)

Filters  
0 | [Add](#)

Sort fields Data source order

☐ Show aliases ☐ Show hidden fields 1,000 rows

| #<br>Orders<br>Row ID | Abc<br>Orders<br>Order ID | 📅<br>Orders<br>Order Date | 📅<br>Orders<br>Ship Date | Abc<br>Orders<br>Ship Mode | Abc<br>Orders<br>Customer ID | Abc<br>Orders<br>Customer Name | Abc<br>Orders<br>Segment | 🌐<br>Orders<br>Postal Code | 🌐<br>Orders<br>City | 🌐<br>Orders<br>State |
|-----------------------|---------------------------|---------------------------|--------------------------|----------------------------|------------------------------|--------------------------------|--------------------------|----------------------------|---------------------|----------------------|
| 30191                 | IN-2012-PB19210127...     | 12/16/2012                | 12/19/2012               | First Class                | PB-19210127                  | Phillip Breyer                 | Corporate                | null                       | Taipei              | Taipei City          |
| 30190                 | IN-2012-PB19210127...     | 12/16/2012                | 12/19/2012               | First Class                | PB-19210127                  | Phillip Breyer                 | Corporate                | null                       | Taipei              | Taipei City          |
| 25438                 | IN-2015-JH158207-4...     | 5/16/2015                 | 5/18/2015                | Second Class               | JH-158207                    | John Huston                    | Consumer                 | null                       | Melbourne           | Victoria             |
| 32648                 | CA-2014-AS10045140...     | 3/29/2014                 | 4/1/2014                 | First Class                | AS-100451408                 | Aaron Smayling                 | Corporate                | 22204                      | Arlington           | Virginia             |
| 29629                 | IN-2014-LC168857-41...    | 4/18/2014                 | 4/19/2014                | First Class                | LC-168857                    | Lena Creighton                 | Consumer                 | null                       | Sydney              | New South            |
| 30267                 | ID-2013-AB1001527-...     | 6/14/2013                 | 6/17/2013                | First Class                | AB-1001527                   | Aaron Bergman                  | Consumer                 | null                       | Wuhan               | Hubei                |
| 15162                 | ES-2015-RA1994545-...     | 8/2/2015                  | 8/3/2015                 | First Class                | RA-1994545                   | Ryan Akin                      | Consumer                 | null                       | Le Petit-Quevilly   | Normandy             |
| 30187                 | IN-2012-PB19210127...     | 12/16/2012                | 12/19/2012               | First Class                | PB-19210127                  | Phillip Breyer                 | Corporate                | null                       | Taipei              | Taipei City          |
| 18990                 | ES-2014-JF15295120-...    | 10/12/2014                | 10/12/2014               | Same Day                   | JF-15295120                  | Jason Fortune-                 | Consumer                 | null                       | Valencia            | Valenciana           |
| 24361                 | IN-2014-NM1844527-...     | 6/10/2014                 | 6/10/2014                | Same Day                   | NM-1844527                   | Nathan Mautz                   | Home Office              | null                       | Shenzhen            | Guangdong            |
| 24363                 | IN-2014-NM1844527-        | 6/10/2014                 | 6/10/2014                | Same Day                   | NM-1844527                   | Nathan Mautz                   | Home Office              | null                       | Shenzhen            | Guangdong            |

Data Source Top N parameter ShippingCostcutoff TopN ProductwithSet Dashboard 1 Sheet 4

Vandana 3:34 PM



Walkthrough Exercises:

## Data Blending

### Agenda:

- Blending Data in Tableau
- Understanding when to blend data

Connect Tableau to the Excel file provided:

*BI\_Intermediate\_Unit3\_Exercise\_Clustering.xlsx*

*BI\_Intermediate\_Unit3\_Exercise\_US\_Population.csv*

# Data Blending:

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## What is data bending

Data blending: method for combining data that supplements a table of data from one data source with columns of data from another data source.

For ex, you have transactional data stored in Salesforce and quota data stored in an Excel workbook. The data you want to combine is stored in different databases, and the granularity of the data captured in each table is different in the two data sources, so data blending is the best way to combine this data.

## When to use data bending

- ✓ You want to combine data from different databases that are not supported by cross-database joins
- ✓ Data is at different levels of detail
- ✓ Data needs cleaning (that is, rename columns, change column data types, create groups, use calculations, etc.)
- ✓ Joins cause duplicate data
- ✓ You have lots of data

## Pre-requisites of data bending

- ✓ Data blending requires a primary data source and at least one secondary data source
- ✓ Defined relationship between the primary and secondary data sources (linking field)

**Note:** When you blend on a field with a high level of granularity, for example, date instead of year, queries can be slow.



# Data Blending:



Tableau Public - Book2

File Data Window Help

Connections [Add](#)

- BI\_Intermedia...se\_Clustering  
Microsoft Excel
- BI\_Intermedi...S\_Population  
Text file

Files

☐ Use Data Interpreter  
Data Interpreter might be able to clean your Text file workbook.

☒ BI\_Intermedia...opulation.csv

☒ New Union

Sheet1+ (Multiple Connections)

Filters 0 | [Add](#)

Sheet1 BI\_Intermediate\_Unit3\_Exer...

Join

Inner Left Right Full Outer

Data Source BI\_Intermediate\_Unit3...

City = City (BI Intermediat...

[Add new join clause](#)

Sort fields Data source order

☐ Show aliases ☐ Show hidden fields 159 rows

| #         | BI_Intermediate_Unit3_Exer... | BI_Intermediate_Unit3_Exer... | #             | BI_Intermediate_Unit3_Exer... | BI_Intermediate_Unit3_Exer... | BI_Intermediate_Unit3_Exer... | BI_Intermediate_Unit3_Exer... | BI_Intermediate_Unit3_Exer... | #        |
|-----------|-------------------------------|-------------------------------|---------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|----------|
| 2015 Rank | City (BI Intermedi...         | State (BI Intermed...         | 2015 Estimate | 2010 Census                   | Change                        | 2014 Land Area                | 2010 Population D...          | Location                      | Store ID |
| 15        | Columbus                      | Ohio                          | 850,106       | 787,033                       | 0.0801                        | 217.2 sq mi                   | 3,624 per sq mi               | 39.9848°N 82.9850°W           | 128      |
| 54        | Aurora                        | Colorado                      | 359,407       | 325,078                       | 0.1056                        | 154.1 sq mi                   | 2,110 per sq mi               | 39.7082°N 104.8235°...        | 94       |
| 89        | Glendale                      | Arizona                       | 240,126       | 226,721                       | 0.0591                        | 60.0 sq mi                    | 3,780 per sq mi               | 33.5331°N 112.1899°...        | 145      |
| 98        | Richmond                      | Virginia                      | 220,289       | 204,214                       | 0.0787                        | 59.8 sq mi                    | 3,415 per sq mi               | 37.5314°N 77.4760°W           | 63       |
| 100       | San Bernardino                | California                    | 216,108       | 209,924                       | 0.0295                        | 59.2 sq mi                    | 3,546 per sq mi               | 34.1393°N 117.2953°...        | 45       |
| 101       | Spokane                       | Washington                    | 213,272       | 208,916                       | 0.0209                        | 59.2 sq mi                    | 3,526 per sq mi               | 47.6736°N 117.4166°...        | 3        |
| 102       | Birmingham                    | Alabama                       | 212,461       | 212,237                       | 0.0011                        | 146.1 sq mi                   | 1,453 per sq mi               | 33.5274°N 86.7990°W           | 7        |
| 103       | Modesto                       | California                    | 211,266       | 201,165                       | 0.0502                        | 36.9 sq mi                    | 5,456 per sq mi               | 37.6609°N 120.9891°...        | 22       |
| 104       | Des Moines                    | Iowa                          | 210,330       | 203,433                       | 0.0339                        | 80.9 sq mi                    | 2,516 per sq mi               | 41.5739°N 93.6167°W           | 133      |
| 105       | Rochester                     | New York                      | 209,802       | 210,565                       | 70.36%                        | 35.8 sq mi                    | 5,885 per sq mi               | 43.1699°N 77.6169°W           | 125      |
| 105       | Rochester                     | New York                      | 209,802       | 210,565                       | 70.36%                        | 35.8 sq mi                    | 5,885 per sq mi               | 43.1699°N 77.6169°W           | 10       |

Data Source Sheet1

Vandana

4:15 PM





Walkthrough Exercises:

## **Exercise 1:**

### **Maps, Scatterplots, and Dashboard**

#### **Agenda:**

- Creating a Map, working with Hierarchies

Connect Tableau to the Excel file provided:

*BI\_Intermediate\_Unit2\_Ex1\_Map\_ofOEurope\_Scatterplot.xlsx*

# Walkthrough Exercises:



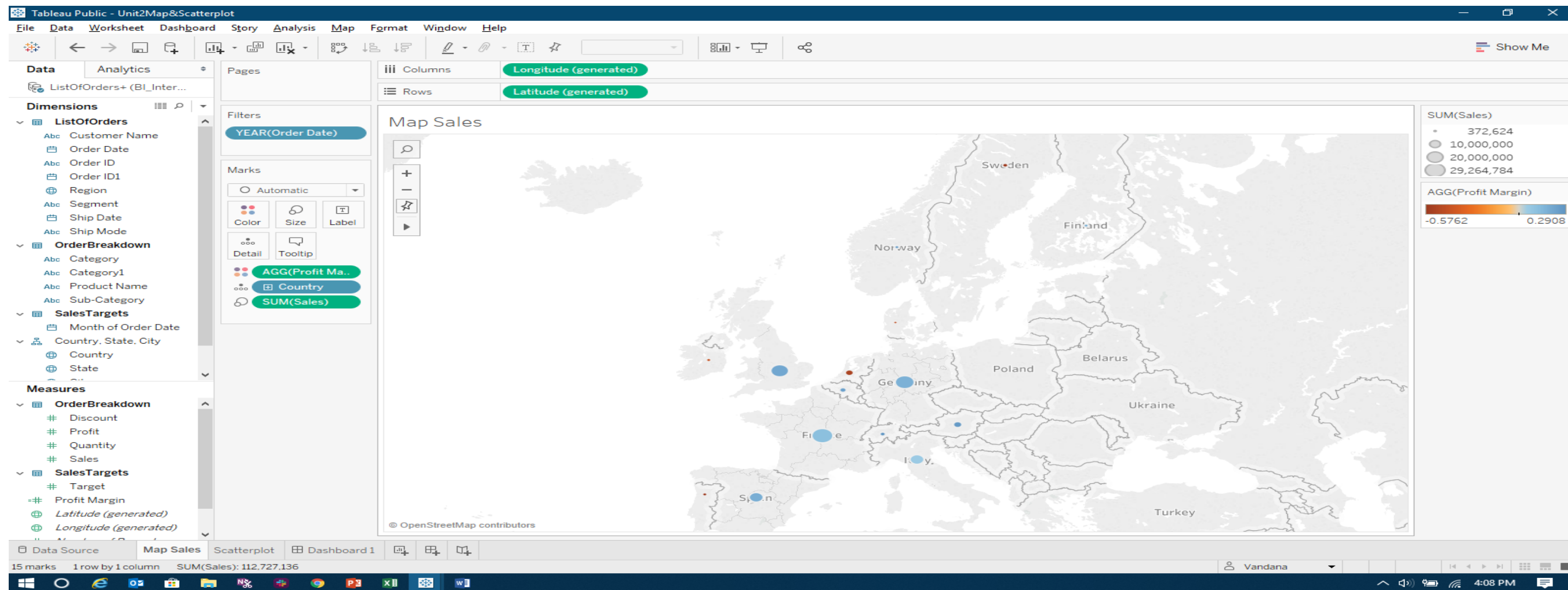
Instructions:

Creating a **MAP**:

Create a MAP of Europe, showcasing the Sales per Country / State / Region.

Add a calculated field and visualize it on the map:

Profit Margin = Sum of profit / Sum of sales



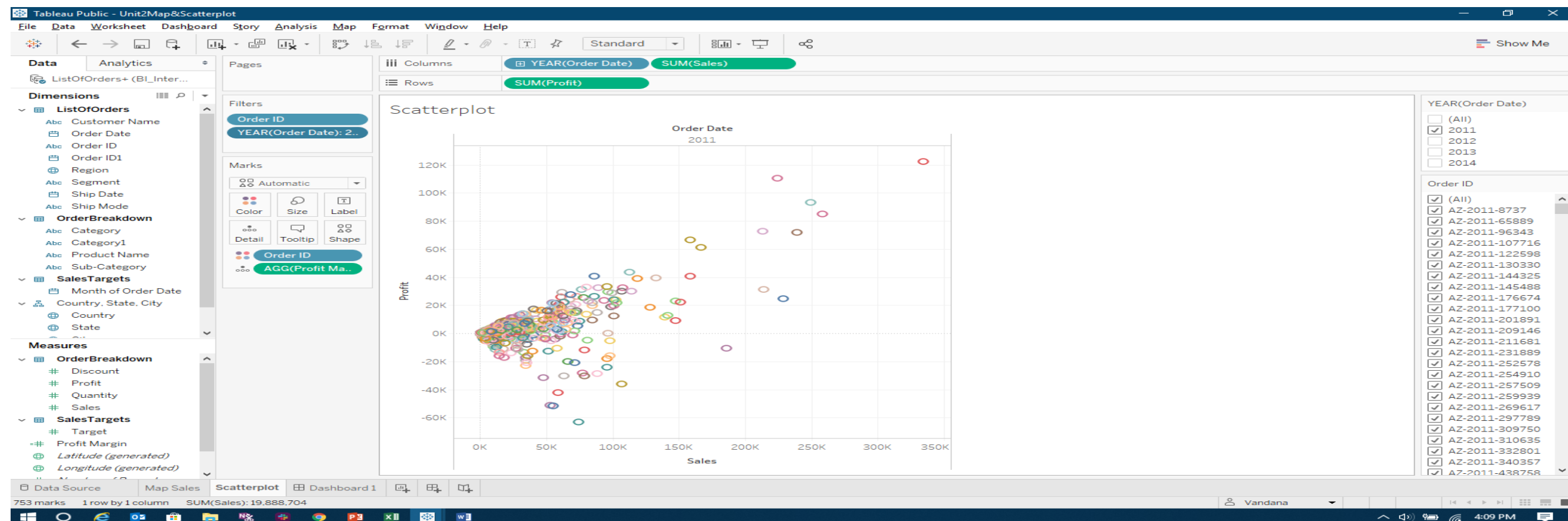
# Walkthrough Exercises:



## Instructions:

### Creating a Scatterplot

- 1) Plot the customer Scatterplot with:
  - SUM of Sales in Columns
  - SUM of profit in Rows
- 2) Add a filter by Year
- 3) Add your Profit Margin calculated field to add more detail to the scatterplot



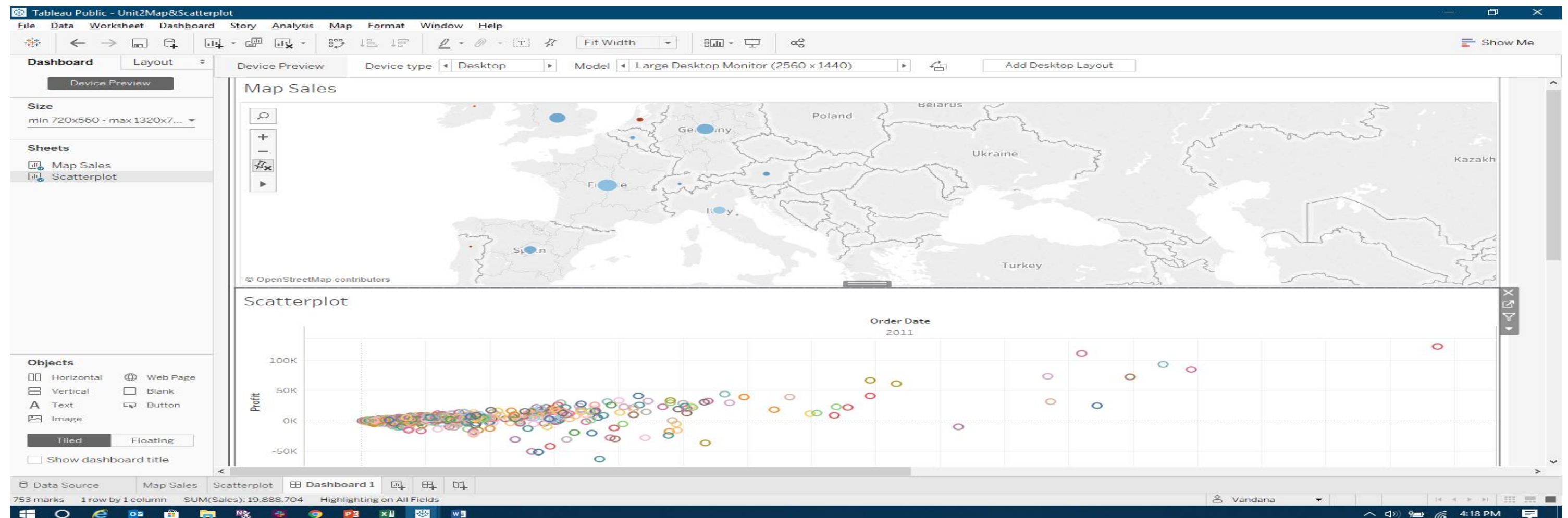
# Walkthrough Exercises:



Instructions:

Create your first **Dashboard**:

- 1) Create an unified view of your analysis in a dashboard with your MAP and Scatterplot visualizations.
- 2) Add an interactive action: Filter
- 3) Add an interactive action: Highlighting



# Walkthrough Exercises:

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Adding Interactive action to your Dashboard:

## **Filter:**

Filter actions send information between worksheets. Typically, a filter action sends information from a selected mark to another sheet showing related information. Behind the scenes, filter actions send data values from the relevant source fields as filters to the target sheet.

To create Action filter or Highlight in your Dashboard:

- Select Dashboard → Actions
- In the Actions dialog box, click Add action and select Filter or Highlight.
- Or select an existing action and choose Edit.

# Walkthrough Exercises:

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## Exercise 1 Review:

MAP:

- 1) You need to create hierarchies in Tableau when there are hierarchies present in the Dimension and Tableau needs to know about them for you to build your visualization.



## Walkthrough Exercises: **Exercise 2:**

### **Create a Customer Segmentation Dashboard**

#### **Agenda:**

- Creating table Calculation
- Creating bins and Distributions
- Learn about parameters
- Analyse your Segmentation Dashboard

Connect Tableau to the CSV file provided:  
*BI\_Intermediate\_Unit2\_Ex2\_Segmentation\_Dashboard.xlsx*



# Mapping Geographical Roles:



Sometimes Tableau does not do a proper job at identifying locations.  
Follow the following process to fix this problem and learn about location mapping.

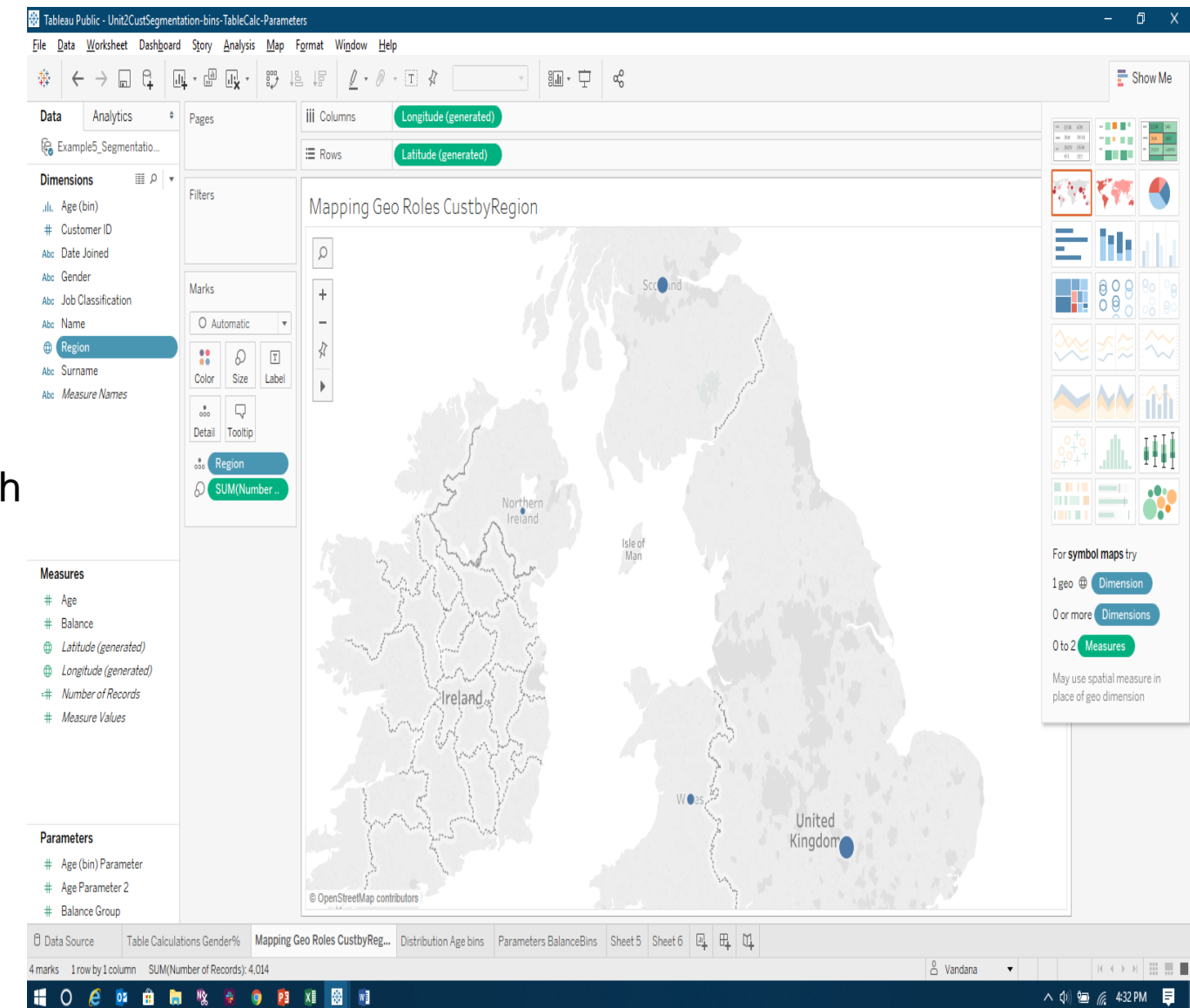
1) Right click on the Region field → Geographic Role → State/Province  
Tableau recognize region as a Geographic Data Type.

2) Drag your region field into your Canvas.  
You can see a map of the world but nothing else.

3) On the bottom right you can see Unknown.  
You have 4 unknown values in this Geographic classification.

4) To fix this, click on Unknown → Edit Locations  
You need to specify Tableau which country you are working with  
In your drop down menu for Country/Region, choose UK  
Click OK

Now Tableau has matched your locations.



# Quick intro to Table calculations:

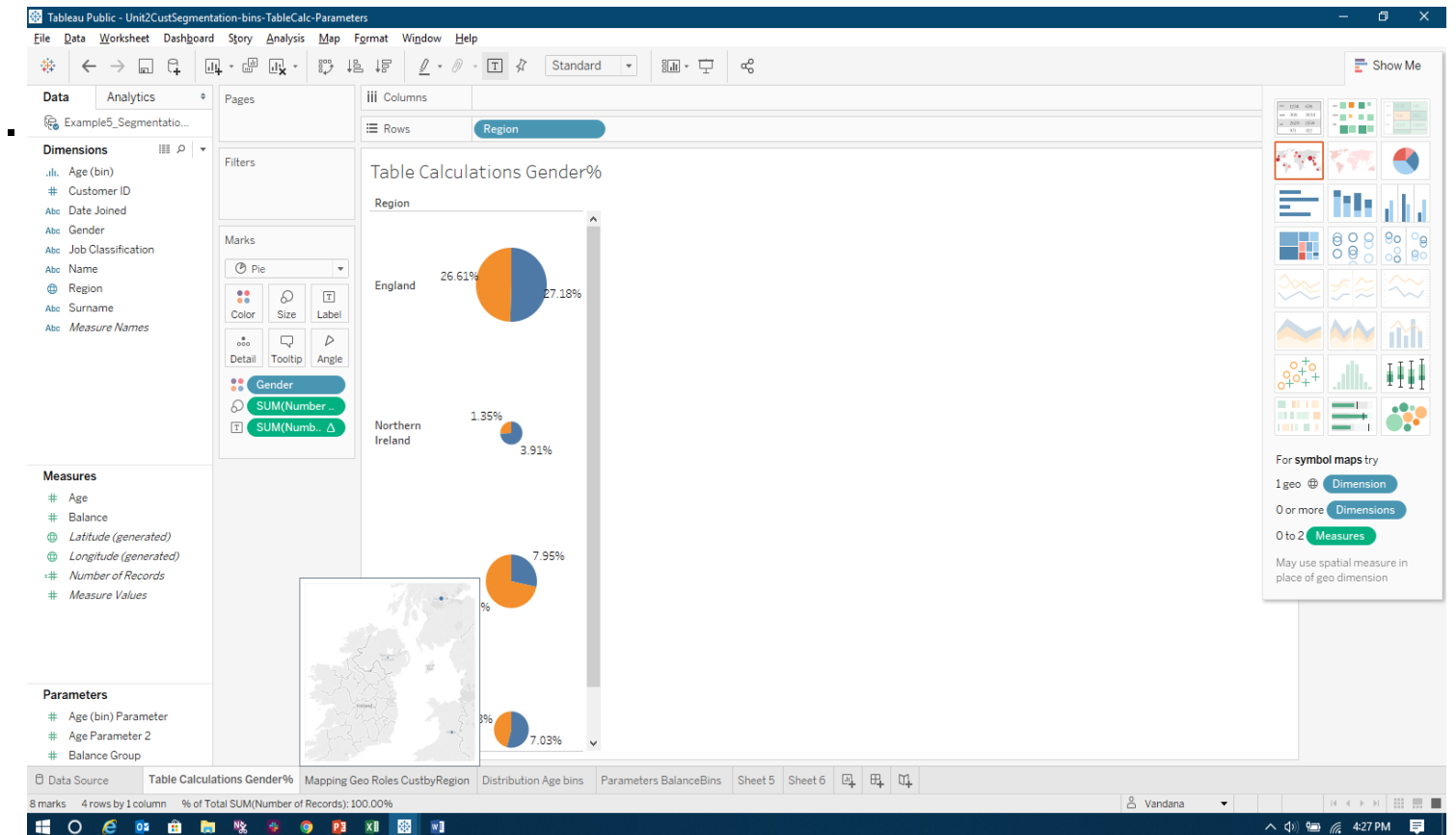


- A table calculation is a transformation you apply to the values in a visualization. Table calculations are a special type of calculated field that computes on the local data in Tableau.

In our Pie chart, we want to display a Percentage of customers by gender rather than the number of customer by gender.

To do so, we have to use a table calculation.

- Right click onto the field that you used to label you chart  
(here SUM(number of records))  
→ Quick Table Calculation  
→ Select Percent of Total



In depth table calculations: [https://onlinehelp.tableau.com/current/pro/desktop/en-us/functions\\_functions\\_tablecalculation.htm](https://onlinehelp.tableau.com/current/pro/desktop/en-us/functions_functions_tablecalculation.htm)

# Creating Bins And Distributions:



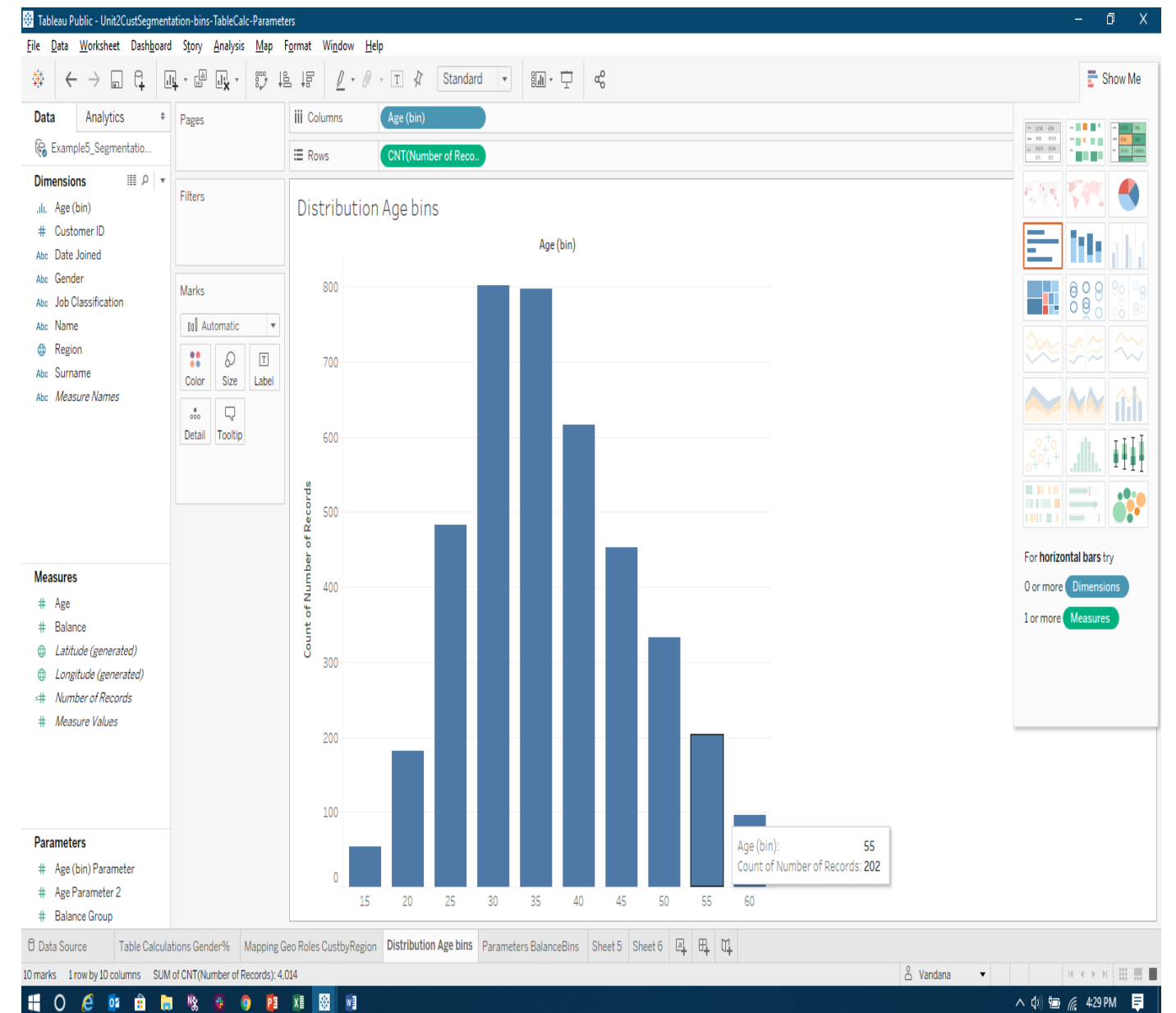
We want to create a distribution of number of customers across ages.  
We don't want to see the distribution across each year, instead we want to create 5 year bins distribution.

Bins can be created only on a Measure field (variable).

To create bins for the age field :  
Right click onto Age → Create → Bin  
Size of bin → select 5

You just created a new categorical variable,  
Age(bin) should appear into your Dimensions.

You can now create your Distribution  
by using this new field.



# Creating Parameters:

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A parameter will allow you to provide a value to pass into Tableau. Parameters allow you to come up with scenarios or options that are not available in your data and create these values to put into your visualization

Here we want to create a parameter that will allow the user to adjust the size of the bins in the visualization.

To create this parameter:

1) Right click onto Measures → Create parameter

Your parameter window:

- Name your parameter (ex: balance group)
- Change Data type to Integer
- Current value : 10,000
- Allowable value : click on Range
- Minimum: 50000 – Maximum: 25000 – Step size: 5000



## UNIT 2:

# DATA PREPARATION IN TABLEAU

In this section, we will discuss how to prepare and clean our data. We will understand how Tableau reads Data and finally we will have a look at some of Tableau features for Data Preparation



# Data Preparation



➤ What Format Your data should be in Tableau ?

Those 3 pictures provide 3 different views in Excel of the same Dataset.

| Age               | Gender | Period | Unemployed |
|-------------------|--------|--------|------------|
| 16 to 19 years    | Men    | Jan-05 | 91000      |
| 20 to 24 years    | Men    | Jan-05 | 175000     |
| 25 to 34 years    | Men    | Jan-05 | 194000     |
| 35 to 44 years    | Men    | Jan-05 | 201000     |
| 45 to 54 years    | Men    | Jan-05 | 207000     |
| 55 to 64 years    | Men    | Jan-05 | 101000     |
| 65 years and over | Men    | Jan-05 | 33000      |
| 16 to 19 years    | Women  | Jan-05 | 38000      |
| 20 to 24 years    | Women  | Jan-05 | 90000      |
| 25 to 34 years    | Women  | Jan-05 | 142000     |
| 35 to 44 years    | Women  | Jan-05 | 180000     |
| 45 to 54 years    | Women  | Jan-05 | 157000     |
| 55 to 64 years    | Women  | Jan-05 | 71000      |
| 65 years and over | Women  | Jan-05 | 82000      |
| 16 to 19 years    | Men    | Feb-05 | 90000      |
| 20 to 24 years    | Men    | Feb-05 | 154000     |
| 25 to 34 years    | Men    | Feb-05 | 176000     |
| 35 to 44 years    | Men    | Feb-05 | 184000     |
| 45 to 54 years    | Men    | Feb-05 | 186000     |
| 55 to 64 years    | Men    | Feb-05 | 98000      |
| 65 years and over | Men    | Feb-05 | 38000      |
| 16 to 19 years    | Women  | Feb-05 | 54000      |
| 20 to 24 years    | Women  | Feb-05 | 114000     |
| 25 to 34 years    | Women  | Feb-05 | 119000     |

|                   | Jan-05 |        | Feb-05 |        | Mar-05 |        | Apr-05 |        | May-05 |        | Jun-05 |        | Jul-05 |        |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Age               | Men    | Woman  | Men    | Woman  | Men    | Woman  | Men    | Woman  | Men    | Woman  | Men    | Woman  | Men    | Woman  |
| 16 to 19 years    | 91000  | 38000  | 90000  | 54000  | 114000 | 53000  | 86000  | 53000  | 87000  | 44000  | 74000  | 47000  | 79000  | 39000  |
| 20 to 24 years    | 175000 | 90000  | 154000 | 114000 | 137000 | 113000 | 125000 | 114000 | 106000 | 99000  | 109000 | 73000  | 110000 | 72000  |
| 25 to 34 years    | 194000 | 142000 | 176000 | 119000 | 195000 | 102000 | 191000 | 151000 | 183000 | 149000 | 162000 | 114000 | 139000 | 156000 |
| 35 to 44 years    | 201000 | 180000 | 184000 | 170000 | 211000 | 141000 | 206000 | 172000 | 173000 | 144000 | 146000 | 114000 | 164000 | 115000 |
| 45 to 54 years    | 207000 | 157000 | 186000 | 173000 | 223000 | 152000 | 181000 | 160000 | 159000 | 178000 | 171000 | 150000 | 181000 | 123000 |
| 55 to 64 years    | 101000 | 71000  | 98000  | 94000  | 115000 | 101000 | 93000  | 90000  | 87000  | 74000  | 64000  | 58000  | 56000  | 81000  |
| 65 years and over | 33000  | 82000  | 38000  | 85000  | 32000  | 72000  | 31000  | 80000  | 22000  | 71000  | 37000  | 89000  | 36000  | 86000  |

| Age               | Period | Men    | Woman  | Total  |
|-------------------|--------|--------|--------|--------|
| 16 to 19 years    | Jan-05 | 91000  | 38000  | 129000 |
| 20 to 24 years    | Jan-05 | 175000 | 90000  | 265000 |
| 25 to 34 years    | Jan-05 | 194000 | 142000 | 336000 |
| 35 to 44 years    | Jan-05 | 201000 | 180000 | 381000 |
| 45 to 54 years    | Jan-05 | 207000 | 157000 | 364000 |
| 55 to 64 years    | Jan-05 | 101000 | 71000  | 172000 |
| 65 years and over | Jan-05 | 33000  | 82000  | 115000 |
| 16 to 19 years    | Feb-05 | 90000  | 54000  | 144000 |
| 20 to 24 years    | Feb-05 | 154000 | 114000 | 268000 |
| 25 to 34 years    | Feb-05 | 176000 | 119000 | 295000 |
| 35 to 44 years    | Feb-05 | 184000 | 170000 | 354000 |
| 45 to 54 years    | Feb-05 | 186000 | 173000 | 359000 |
| 55 to 64 years    | Feb-05 | 98000  | 94000  | 192000 |
| 65 years and over | Feb-05 | 38000  | 85000  | 123000 |
| 16 to 19 years    | Mar-05 | 114000 | 53000  | 167000 |
| 20 to 24 years    | Mar-05 | 137000 | 113000 | 250000 |
| 25 to 34 years    | Mar-05 | 195000 | 102000 | 297000 |

Human Readable format

Tableau Preferred Format

Separate columns for every dimension that you have.  
“Pivoted view” of your data.

# Data Preparation

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## ➤ What Format Your data should be in Tableau ?

To better interpret your data, Your source file should not contain any design formatting option (Titles in Bold, Colors for Headers...) and should present a pivoted view of your data.

Your dataset should be empty of any formula (ex: Total)

Before connecting your data source to Tableau, sometimes you will have to make the transformations in Excel directly and prepare the data to be imported later into Tableau.

Tableau however can help us interpret our data, it has some useful functionalities that will help us to transform our Data Source Format directly into Tableau.

Those functionalities are:

- The Data Interpreter
- The Pivot function
- The Splitting function



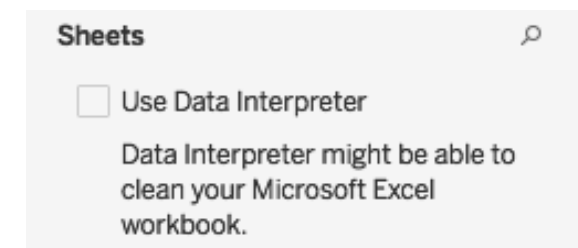
# Data Preparation



## ➤ THE DATA INTERPRETER

As you can see, the data is completely messed up. We have null values everywhere, random column names...

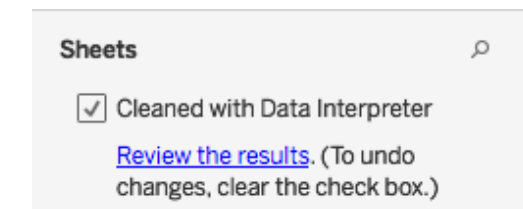
3) Select Use Data Interpreter (Top left of your Connection Manager window in Tableau.)



4) As you can see, the data has changed, Tableau has done a pretty good work at interpreting our data, even if it is not perfect.

- Names of the columns are correct
- The numbers are not incorrect
- We still have the totals, which is not good.

5) Let's try to understand what happened here. Click on review the results. A new spreadsheet is opened for us.



# Data Preparation



## ➤ THE DATA INTERPRETER

6) Go to the second tab of your spreadsheet, it is a description of what Tableau saw.



| REGIONS/COUNTRIES      | Estimated figures |           |           |           |           |           |           |           |           |           | Header |
|------------------------|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|
|                        | 2005              | 2006      | 2007      | 2008      | 2009      | 2010      | 2011      | 2012      | 2013      | 2014      |        |
| EUROPE                 |                   |           |           |           |           |           |           |           |           |           | Data   |
| EU 28 countries + EFTA |                   |           |           |           |           |           |           |           |           |           | Data   |
| EU 15 countries + EFTA |                   |           |           |           |           |           |           |           |           |           | Data   |
| AUSTRIA                | 307,915           | 308,594   | 298,182   | 293,697   | 319,403   | 328,563   | 356,145   | 336,010   | 319,035   | 303,318   | Data   |
| BELGIUM                | 480,088           | 526,141   | 524,795   | 535,947   | 476,194   | 547,340   | 572,211   | 486,737   | 486,065   | 482,939   | Data   |
| DENMARK                | 148,819           | 156,936   | 162,686   | 150,199   | 112,454   | 153,858   | 170,036   | 170,763   | 182,086   | 189,051   | Data   |
| FINLAND                | 148,161           | 145,700   | 125,608   | 139,669   | 90,574    | 111,968   | 126,123   | 111,251   | 103,455   | 106,236   | Data   |
| FRANCE                 | 2,118,042         | 2,045,745 | 2,109,672 | 2,091,369 | 2,302,398 | 2,251,669 | 2,204,229 | 1,898,760 | 1,790,456 | 1,795,885 | Data   |
| GERMANY                | 3,319,259         | 3,467,961 | 3,148,163 | 3,090,040 | 3,807,175 | 2,916,259 | 3,173,634 | 3,082,504 | 2,952,431 | 3,036,773 | Data   |
| GREECE                 | 269,728           | 267,669   | 279,745   | 267,295   | 219,730   | 141,501   | 97,680    | 58,482    | 58,694    | 71,218    | Data   |
| IRELAND                | 18,060            | 17,129    | 15,942    | 9,033     | 2,113     | 3,106     | 5,038     | 7,902     | 7,274     | 9,536     | Data   |
| ITALY                  | 2,244,108         | 2,335,462 | 2,494,115 | 2,161,359 | 2,159,465 | 1,961,580 | 1,749,740 | 1,403,010 | 1,304,648 | 1,360,293 | Data   |
| LUXEMBOURG             | 48,517            | 50,837    | 51,332    | 52,359    | 47,265    | 49,726    | 49,881    | 50,398    | 46,624    | 49,793    | Data   |
| NETHERLANDS            | 465,196           | 483,999   | 504,300   | 499,980   | 387,699   | 482,531   | 555,812   | 502,544   | 416,717   | 387,835   | Data   |
| NORWAY                 | 109,907           | 109,164   | 129,195   | 110,617   | 98,675    | 127,754   | 138,345   | 137,967   | 142,151   | 144,202   | Data   |
| PORTUGAL               | 206,488           | 194,702   | 201,816   | 213,389   | 161,013   | 223,464   | 153,404   | 95,309    | 105,921   | 142,826   | Data   |
| SPAIN                  | 1,528,877         | 1,634,608 | 1,614,835 | 1,161,176 | 952,772   | 982,015   | 808,051   | 699,589   | 722,689   | 855,308   | Data   |
| SWEDEN                 | 274,301           | 282,786   | 306,794   | 253,982   | 213,408   | 289,684   | 304,984   | 279,899   | 289,599   | 303,948   | Data   |
| SWITZERLAND (+FL)      | 266,770           | 269,421   | 284,674   | 288,525   | 266,018   | 294,239   | 318,958   | 328,139   | 307,885   | 301,942   | Data   |
| UNITED KINGDOM         | 2,439,717         | 2,344,864 | 2,404,007 | 2,131,795 | 1,994,999 | 2,030,846 | 1,941,253 | 2,044,609 | 2,264,737 | 2,476,435 | Data   |
| EUROPE NEW MEMBERS     | 1,056,340         | 1,140,956 | 1,305,088 | 1,308,842 | 864,307   | 846,145   | 827,224   | 794,622   | 789,162   | 899,693   | Data   |
| BULGARIA*              | 25,956            | 36,455    | 43,521    | 45,143    | 22,869    | 16,257    | 19,250    | 19,419    | 19,352    | 20,359    | Data   |
| CROATIA                | 70,541            | 78,775    | 82,664    | 88,265    | 44,918    | 38,587    | 41,561    | 31,360    | 27,802    | 33,997    | Data   |
| CYPRUS                 | 17,687            | 18,639    | 22,878    | 22,241    | 14,981    | 14,088    | 13,480    | 10,123    | 7,000     | 7,794     | Data   |
| CZECH REPUBLIC         | 151,699           | 156,686   | 174,456   | 182,554   | 167,708   | 169,580   | 173,595   | 174,009   | 164,736   | 192,314   | Data   |
| ESTONIA                | 19,640            | 25,363    | 30,912    | 24,579    | 9,946     | 10,295    | 17,070    | 19,424    | 19,694    | 20,861    | Data   |
| HUNGARY                | 198,982           | 187,676   | 171,661   | 153,278   | 60,189    | 43,476    | 45,094    | 53,059    | 56,139    | 67,476    | Data   |
| LATVIA                 | 10,467            | 14,234    | 21,606    | 22,217    | 7,515     | 7,970     | 13,234    | 10,665    | 10,636    | 12,452    | Data   |
| LITHUANIA              | 16,602            | 25,582    | 32,771    | 19,831    | 5,367     | 6,365     | 10,980    | 12,165    | 12,163    | 14,503    | Data   |
| MALTA                  | 6,552             | 6,745     | 6,240     | 5,423     | 5,894     | 4,056     | 5,428     | 5,884     | 5,749     | 6,451     | Data   |
| POLAND                 | 207,007           | 224,728   | 277,427   | 319,190   | 276,220   | 315,855   | 277,427   | 272,719   | 289,913   | 327,709   | Data   |
| ROMANIA                | 214,967           | 247,411   | 312,533   | 285,506   | 116,016   | 94,441    | 81,709    | 66,436    | 57,710    | 70,172    | Data   |
| SLOVAKIA               | 56,916            | 59,084    | 59,700    | 70,040    | 74,717    | 64,033    | 68,203    | 69,268    | 66,000    | 72,249    | Data   |
| SLOVENIA               | 59,324            | 59,578    | 68,719    | 71,575    | 57,967    | 61,142    | 60,193    | 50,091    | 52,268    | 53,296    | Data   |

7) Let's help Tableau by transforming the data in Excel so that it can interpret it better.

→ Open your Excel file and do the following:

→ Create a new column on the left of your table

→ Name this column Regions

→ Fill in this column with the Region names

→ Get rid off all your total rows

→ Save your work



| NEW PC REGISTRATIONS OR SALES |                   |                   |           |           |           |           |           |           |           |           |           |
|-------------------------------|-------------------|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| REGIONS                       | COUNTRIES         | Estimated figures |           |           |           |           |           |           |           |           |           |
|                               |                   | 2005              | 2006      | 2007      | 2008      | 2009      | 2010      | 2011      | 2012      | 2013      | 2014      |
| EUROPE                        | AUSTRIA           | 307,915           | 308,594   | 298,182   | 293,697   | 319,403   | 328,563   | 356,145   | 336,010   | 319,035   | 303,318   |
| EUROPE                        | BELGIUM           | 480,088           | 526,141   | 524,795   | 535,947   | 476,194   | 547,340   | 572,211   | 486,737   | 486,065   | 482,939   |
| EUROPE                        | DENMARK           | 148,819           | 156,936   | 162,686   | 150,199   | 112,454   | 153,858   | 170,036   | 170,763   | 182,086   | 189,051   |
| EUROPE                        | FINLAND           | 148,161           | 145,700   | 125,608   | 139,669   | 90,574    | 111,968   | 126,123   | 111,251   | 103,455   | 106,236   |
| EUROPE                        | FRANCE            | 2,118,042         | 2,045,745 | 2,109,672 | 2,091,369 | 2,302,398 | 2,251,669 | 2,204,229 | 1,898,760 | 1,790,456 | 1,795,885 |
| EUROPE                        | GERMANY           | 3,319,259         | 3,467,961 | 3,148,163 | 3,090,040 | 3,807,175 | 2,916,259 | 3,173,634 | 3,082,504 | 2,952,431 | 3,036,773 |
| EUROPE                        | GREECE            | 269,728           | 267,669   | 279,745   | 267,295   | 219,730   | 141,501   | 97,680    | 58,482    | 58,694    | 71,218    |
| EUROPE                        | IRELAND           | 18,060            | 17,129    | 15,942    | 9,033     | 2,113     | 3,106     | 5,038     | 7,902     | 7,274     | 9,536     |
| EUROPE                        | ITALY             | 2,244,108         | 2,335,462 | 2,494,115 | 2,161,359 | 2,159,465 | 1,961,580 | 1,749,740 | 1,403,010 | 1,304,648 | 1,360,293 |
| EUROPE                        | LUXEMBOURG        | 48,517            | 50,837    | 51,332    | 52,359    | 47,265    | 49,726    | 49,881    | 50,398    | 46,624    | 49,793    |
| EUROPE                        | NETHERLANDS       | 465,196           | 483,999   | 504,300   | 499,980   | 387,699   | 482,531   | 555,812   | 502,544   | 416,717   | 387,835   |
| EUROPE                        | NORWAY            | 109,907           | 109,164   | 129,195   | 110,617   | 98,675    | 127,754   | 138,345   | 137,967   | 142,151   | 144,202   |
| EUROPE                        | PORTUGAL          | 206,488           | 194,702   | 201,816   | 213,389   | 161,013   | 223,464   | 153,404   | 95,309    | 105,921   | 142,826   |
| EUROPE                        | SPAIN             | 1,528,877         | 1,634,608 | 1,614,835 | 1,161,176 | 952,772   | 982,015   | 808,051   | 699,589   | 722,689   | 855,308   |
| EUROPE                        | SWEDEN            | 274,301           | 282,786   | 306,794   | 253,982   | 213,408   | 289,684   | 304,984   | 279,899   | 289,599   | 303,948   |
| EUROPE                        | SWITZERLAND (+FL) | 266,770           | 269,421   | 284,674   | 288,525   | 266,018   | 294,239   | 318,958   | 328,139   | 307,885   | 301,942   |
| EUROPE                        | UNITED KINGDOM    | 2,439,717         | 2,344,864 | 2,404,007 | 2,131,795 | 1,994,999 | 2,030,846 | 1,941,253 | 2,044,609 | 2,264,737 | 2,476,435 |
| EUROPE NEW                    | BULGARIA*         | 25,956            | 36,455    | 43,521    | 45,143    | 22,869    | 16,257    | 19,250    | 19,419    | 19,352    | 20,359    |
| EUROPE NEW                    | CROATIA           | 70,541            | 78,775    | 82,664    | 88,265    | 44,918    | 38,587    | 41,561    | 31,360    | 27,802    | 33,997    |
| EUROPE NEW                    | CYPRUS            | 17,687            | 18,639    | 22,878    | 22,241    | 14,981    | 14,088    | 13,480    | 10,123    | 7,000     | 7,794     |
| EUROPE NEW                    | CZECH REPUBLIC    | 151,699           | 156,686   | 174,456   | 182,554   | 167,708   | 169,580   | 173,595   | 174,009   | 164,736   | 192,314   |
| EUROPE NEW                    | ESTONIA           | 19,640            | 25,363    | 30,912    | 24,579    | 9,946     | 10,295    | 17,070    | 19,424    | 19,694    | 20,861    |
| EUROPE NEW                    | HUNGARY           | 198,982           | 187,676   | 171,661   | 153,278   | 60,189    | 43,476    | 45,094    | 53,059    | 56,139    | 67,476    |
| EUROPE NEW                    | LATVIA            | 10,467            | 14,234    | 21,606    | 22,217    | 7,515     | 7,970     | 13,234    | 10,665    | 10,636    | 12,452    |
| EUROPE NEW                    | LITHUANIA         | 16,602            | 25,582    | 32,771    | 19,831    | 5,367     | 6,365     | 10,980    | 12,165    | 12,163    | 14,503    |
| EUROPE NEW                    | MALTA             | 6,552             | 6,745     | 6,240     | 5,423     | 5,894     | 4,056     | 5,428     | 5,884     | 5,749     | 6,451     |
| EUROPE NEW                    | POLAND            | 207,007           | 224,728   | 277,427   | 319,190   | 276,220   | 315,855   | 277,427   | 272,719   | 289,913   | 327,709   |
| EUROPE NEW                    | ROMANIA           | 214,967           | 247,411   | 312,533   | 285,506   | 116,016   | 94,441    | 81,709    | 66,436    | 57,710    | 70,172    |
| EUROPE NEW                    | SLOVAKIA          | 56,916            | 59,084    | 59,700    | 70,040    | 74,717    | 64,033    | 68,203    | 69,268    | 66,000    | 72,249    |
| EUROPE NEW                    | SLOVENIA          | 59,324            | 59,578    | 68,719    | 71,575    | 57,967    | 61,142    | 60,193    | 50,091    | 52,268    | 53,296    |
| RUSSIA, TURK                  | ALBANIA           | 800               | 800       | 1,600     | 1,600     | 1,600     | 1,600     | 2,100     | 2,300     | 2,300     | 2,500     |
| RUSSIA, TURK                  | ARMENIA           | 11,000            | 12,000    | 6,000     | 4,000     | 4,000     | 4,000     | 4,000     | 5,000     | 5,000     | 5,200     |
| RUSSIA, TURK                  | BELARUS           | 9,000             | 13,000    | 20,000    | 22,000    | 12,000    | 15,000    | 15,000    | 20,000    | 15,000    | 22,300    |
| RUSSIA, TURK                  | BOSNIA            | 10,000            | 10,000    | 15,000    | 13,000    | 12,000    | 10,000    | 10,000    | 10,000    | 9,800     | 8,900     |
| RUSSIA, TURK                  | GEORGIA           | 1,500             | 2,000     | 6,000     | 8,000     | 1,000     | 4,000     | 3,000     | 4,000     | 4,000     | 4,300     |
| RUSSIA, TURK                  | MACEDONIA         | 9,300             | 10,000    | 10,200    | 10,500    | 6,800     | 8,600     | 8,500     | 5,000     | 2,000     | 2,700     |
| RUSSIA, TURK                  | MOLDAVIA          | 4,000             | 5,000     | 7,000     | 11,000    | 5,000     | 5,000     | 5,000     | 5,000     | 5,000     | 5,600     |
| RUSSIA, TURK                  | RUSSIA            | 1,520,225         | 1,911,240 | 2,514,920 | 2,897,459 | 1,465,742 | 1,912,794 | 2,653,688 | 2,755,384 | 2,649,181 | 2,286,877 |
| RUSSIA, TURK                  | SERBIA            | 21,683            | 25,610    | 32,772    | 36,177    | 30,000    | 28,951    | 22,880    | 23,000    | 23,000    | 23,900    |
| RUSSIA, TURK                  | UKRAINE           | 438,687           | 173,948   | 167,465   | 305,968   | 369,818   | 406,784   | 493,416   | 658,780   | 664,661   | 687,191   |



# Data Preparation

## ➤ THE DATA INTERPRETER

8) Open the newly updated Excel File into Tableau.

We have a much better result right away.

That is how the data interpreter works, it can save you some time, it cuts out this headers for you, ignores blank rows and so on. It doesn't do all the work but at the same time it can help to go in the right direction if you import and check the results of your data interpreter.

| Sort fields: Data source order |             |              |           |           |           |           |           |           |           |           |           |
|--------------------------------|-------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| REGIONS                        | COUNTRIES   | 2005         | 2006      | 2007      | 2008      | 2009      | 2010      | 2011      | 2012      | 2013      | 2014      |
| EUROPE                         | AUSTRIA     | 307,916.00   | 306,594   | 298,182   | 293,697   | 319,403   | 328,563   | 356,145   | 336,010   | 319,035   | 303,318   |
| EUROPE                         | BELGIUM     | 480,088.00   | 526,141   | 524,795   | 535,947   | 476,194   | 547,940   | 572,211   | 486,737   | 486,065   | 482,939   |
| EUROPE                         | DENMARK     | 148,819.00   | 156,936   | 162,686   | 150,199   | 112,464   | 153,855   | 170,036   | 170,763   | 182,086   | 189,061   |
| EUROPE                         | FINLAND     | 148,161.00   | 145,700   | 125,608   | 139,669   | 90,574    | 111,968   | 126,123   | 111,251   | 103,455   | 106,236   |
| EUROPE                         | FRANCE      | 2,118,042.00 | 2,045,745 | 2,109,672 | 2,091,369 | 2,302,398 | 2,251,669 | 2,204,229 | 1,898,760 | 1,790,456 | 1,795,885 |
| EUROPE                         | GERMANY     | 3,319,259.00 | 3,467,961 | 3,148,163 | 3,090,040 | 3,807,175 | 2,916,269 | 3,173,634 | 3,082,504 | 2,952,431 | 3,036,773 |
| EUROPE                         | GREECE      | 269,728.00   | 267,669   | 279,745   | 267,295   | 219,730   | 241,501   | 97,680    | 58,482    | 58,694    | 71,218    |
| EUROPE                         | ICELAND     | 18,060.00    | 17,129    | 15,942    | 9,033     | 2,113     | 3,106     | 5,038     | 7,902     | 7,274     | 9,536     |
| EUROPE                         | IRELAND     | 171,742.00   | 178,484   | 186,325   | 151,607   | 57,453    | 88,446    | 89,911    | 79,458    | 74,367    | 96,344    |
| EUROPE                         | ITALY       | 2,244,108.00 | 2,335,462 | 2,454,115 | 2,161,359 | 2,159,465 | 1,961,580 | 1,749,740 | 1,403,010 | 1,304,648 | 1,360,293 |
| EUROPE                         | LUXEMBOURG  | 48,517.00    | 50,837    | 51,332    | 52,359    | 47,265    | 49,726    | 49,881    | 50,398    | 46,624    | 49,793    |
| EUROPE                         | NETHERLANDS | 465,196.00   | 483,999   | 504,300   | 499,980   | 387,699   | 482,531   | 553,812   | 502,544   | 416,717   | 387,835   |
| EUROPE                         | NORWAY      | 109,907.00   | 109,164   | 129,195   | 110,617   | 98,675    | 127,754   | 198,345   | 187,967   | 142,151   | 144,202   |
| EUROPE                         | PORTUGAL    | 206,488.00   | 194,702   | 201,816   | 213,389   | 161,013   | 223,464   | 153,404   | 95,309    | 105,921   | 142,836   |
| EUROPE                         | SPAIN       | 1,528,877.00 | 1,634,608 | 1,614,835 | 1,161,175 | 952,772   | 982,015   | 808,051   | 699,589   | 722,689   | 855,308   |
| EUROPE                         | SWEDEN      | 274,301.00   | 282,766   | 306,794   | 253,982   | 213,408   | 289,684   | 304,984   | 279,899   | 269,599   | 303,948   |





# Data Preparation

## ➤ THE PIVOT FUNCTION

If we look at our previous file imported into Tableau, we know that Tableau did a good job at interpreting the result, especially after a little bit of transformation into Excel.


However, as discussed earlier, we can see that this source is still not perfect for being machine readable.

Each year is in a separate column.

Ideally we would like to have 4 columns in total:  
REGIONS / COUNTRIES / YEAR / SALES

In order to achieve this result, we will need to create a pivot view.

Tableau provide us this tool and it is very easy to perform.



| REGIONS | COUNTRIES   | 2005         | 2006      | 2007      | 2008      | 2009      | 2010      | 2011      | 2012      | 2013      | 2014      |
|---------|-------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| EUROPE  | AUSTRIA     | 307,915.00   | 308,594   | 298,182   | 293,697   | 319,403   | 328,553   | 356,145   | 336,010   | 319,035   | 303,318   |
| EUROPE  | BELGIUM     | 480,088.00   | 526,141   | 524,795   | 536,947   | 476,194   | 547,340   | 572,211   | 486,737   | 486,065   | 482,939   |
| EUROPE  | DENMARK     | 148,819.00   | 156,936   | 162,686   | 150,199   | 112,454   | 153,898   | 170,036   | 170,763   | 182,086   | 189,061   |
| EUROPE  | FINLAND     | 148,161.00   | 145,700   | 125,608   | 139,669   | 90,574    | 111,968   | 126,123   | 111,251   | 103,465   | 106,236   |
| EUROPE  | FRANCE      | 2,118,042.00 | 2,045,745 | 2,109,672 | 2,091,369 | 2,302,398 | 2,251,669 | 2,204,229 | 1,898,760 | 1,790,456 | 1,795,885 |
| EUROPE  | GERMANY     | 3,319,259.00 | 3,467,961 | 3,148,163 | 3,090,040 | 3,807,175 | 2,916,259 | 3,173,634 | 3,082,504 | 2,952,431 | 3,036,773 |
| EUROPE  | GREECE      | 268,728.00   | 267,669   | 279,745   | 267,295   | 219,730   | 141,501   | 97,680    | 58,482    | 58,694    | 71,218    |
| EUROPE  | ICELAND     | 18,060.00    | 17,129    | 15,942    | 9,033     | 2,113     | 3,106     | 5,038     | 7,902     | 7,274     | 9,536     |
| EUROPE  | IRELAND     | 171,742.00   | 178,484   | 186,325   | 151,607   | 57,453    | 88,446    | 89,911    | 75,458    | 74,367    | 96,344    |
| EUROPE  | ITALY       | 2,344,108.00 | 2,335,462 | 2,494,115 | 2,161,359 | 2,159,465 | 1,961,580 | 1,749,740 | 1,403,010 | 1,304,648 | 1,360,293 |
| EUROPE  | LUXEMBOURG  | 48,517.00    | 50,837    | 51,332    | 52,359    | 47,265    | 49,726    | 49,881    | 50,398    | 46,624    | 45,793    |
| EUROPE  | NETHERLANDS | 465,156.00   | 483,999   | 504,300   | 499,980   | 387,699   | 482,531   | 555,812   | 502,544   | 416,717   | 387,835   |
| EUROPE  | NORWAY      | 109,907.00   | 109,164   | 129,195   | 110,617   | 98,675    | 127,754   | 138,345   | 137,967   | 142,151   | 144,202   |
| EUROPE  | PORTUGAL    | 206,488.00   | 194,702   | 201,816   | 213,389   | 161,013   | 223,464   | 153,404   | 95,309    | 105,921   | 142,826   |
| EUROPE  | SPAIN       | 1,528,877.00 | 1,634,608 | 1,614,835 | 1,161,176 | 952,772   | 982,015   | 808,051   | 699,589   | 722,689   | 855,308   |
| EUROPE  | SWEDEN      | 274,301.00   | 282,766   | 306,794   | 253,982   | 213,408   | 289,684   | 304,984   | 279,899   | 269,599   | 303,948   |



# Data Preparation

## ➤ THE PIVOT FUNCTION

To create a pivot in Tableau:

- 1) Select all the column you want to pivot. Here the columns 2015 to 2014. Right click and select → Pivot.

A screenshot of a Tableau data table. The columns are labeled '2005', '2006', '2007', '2008', '2009', '2010', '2011', '2012', '2013', and '2014'. The rows are grouped by 'REGIONS' (EUROPE) and 'COUNTRIES' (AUSTRIA, BELGIUM, DENMARK, FINLAND, FRANCE, GERMANY, GREECE, ICELAND, IRELAND, ITALY, LUXEMBOURG, NETHERLANDS, NORWAY, PORTUGAL, SPAIN, SWEDEN). A red arrow points from the text 'Right click and select → Pivot.' to the right-click context menu that appears over the 2014 column header, with 'Pivot' highlighted.

| REGIONS | COUNTRIES   | 2005         | 2006      | 2007      | 2008      | 2009      | 2010      | 2011      | 2012      | 2013      | 2014      |
|---------|-------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| EUROPE  | AUSTRIA     | 307,915.00   | 308,594   | 298,182   | 293,697   | 319,403   | 328,563   | 356,145   | 336,010   | 319,035   | 303,3     |
| EUROPE  | BELGIUM     | 480,088.00   | 526,141   | 524,795   | 535,947   | 476,194   | 547,340   | 572,211   | 486,737   | 486,066   | 462,3     |
| EUROPE  | DENMARK     | 148,819.00   | 156,936   | 162,686   | 150,199   | 112,454   | 153,958   | 170,036   | 170,763   | 182,086   | 189,0     |
| EUROPE  | FINLAND     | 148,161.00   | 145,700   | 125,608   | 139,669   | 90,574    | 111,968   | 126,123   | 111,251   | 103,465   | 106,2     |
| EUROPE  | FRANCE      | 2,118,042.00 | 2,046,745 | 2,109,672 | 2,091,369 | 2,302,398 | 2,251,689 | 2,204,229 | 1,898,760 | 1,790,466 | 1,795,885 |
| EUROPE  | GERMANY     | 3,319,259.00 | 3,467,961 | 3,148,163 | 3,090,040 | 3,807,175 | 2,916,259 | 3,173,634 | 3,082,504 | 2,952,431 | 3,036,773 |
| EUROPE  | GREECE      | 269,728.00   | 267,669   | 279,745   | 267,295   | 219,730   | 141,501   | 97,680    | 56,482    | 58,694    | 71,218    |
| EUROPE  | ICELAND     | 18,060.00    | 17,329    | 15,942    | 9,033     | 2,113     | 3,106     | 5,038     | 7,902     | 7,274     | 9,536     |
| EUROPE  | IRELAND     | 171,742.00   | 178,484   | 186,325   | 151,607   | 57,453    | 88,446    | 89,911    | 79,498    | 74,367    | 96,344    |
| EUROPE  | ITALY       | 2,244,108.00 | 2,335,462 | 2,494,115 | 2,161,359 | 2,159,465 | 1,961,580 | 1,749,740 | 1,403,010 | 1,304,648 | 1,360,293 |
| EUROPE  | LUXEMBOURG  | 48,517.00    | 50,837    | 51,332    | 52,359    | 47,255    | 49,726    | 49,881    | 50,398    | 46,524    | 49,793    |
| EUROPE  | NETHERLANDS | 465,196.00   | 483,999   | 504,300   | 499,980   | 387,699   | 482,531   | 555,812   | 502,544   | 416,717   | 387,835   |
| EUROPE  | NORWAY      | 109,907.00   | 109,164   | 129,195   | 110,617   | 98,675    | 127,754   | 138,345   | 137,967   | 142,151   | 144,202   |
| EUROPE  | PORTUGAL    | 206,488.00   | 194,702   | 201,816   | 213,389   | 161,013   | 223,464   | 153,404   | 95,309    | 105,921   | 142,826   |
| EUROPE  | SPAIN       | 1,528,877.00 | 1,634,608 | 1,614,835 | 1,161,176 | 952,772   | 982,015   | 808,051   | 699,589   | 722,689   | 855,308   |
| EUROPE  | SWEDEN      | 274,301.00   | 282,766   | 306,794   | 253,982   | 213,408   | 289,684   | 304,984   | 279,899   | 269,599   | 303,948   |

- 2) Simple, easy and quick. Now you have Regions / Countries / Pivot field names (year) / pivot field values (Sales)

A screenshot of the same Tableau data table after pivoting. The columns are now 'REGIONS', 'COUNTRIES', 'Pivot Field Names', and 'Pivot Field Values'. The 'Pivot Field Names' column contains the year '2005' for all rows. The 'Pivot Field Values' column contains the sales values for the year 2005. A red arrow points from the text 'Now you have Regions / Countries / Pivot field names (year) / pivot field values (Sales)' to this table.

| REGIONS | COUNTRIES   | Pivot Field Names | Pivot Field Values |
|---------|-------------|-------------------|--------------------|
| EUROPE  | AUSTRIA     | 2005              | 307,915.00         |
| EUROPE  | BELGIUM     | 2005              | 480,088.00         |
| EUROPE  | DENMARK     | 2005              | 148,819.00         |
| EUROPE  | FINLAND     | 2005              | 148,161.00         |
| EUROPE  | FRANCE      | 2005              | 2,118,042.00       |
| EUROPE  | GERMANY     | 2005              | 3,319,259.00       |
| EUROPE  | GREECE      | 2005              | 269,728.00         |
| EUROPE  | ICELAND     | 2005              | 18,060.00          |
| EUROPE  | IRELAND     | 2005              | 171,742.00         |
| EUROPE  | ITALY       | 2005              | 2,244,108.00       |
| EUROPE  | LUXEMBOURG  | 2005              | 48,517.00          |
| EUROPE  | NETHERLANDS | 2005              | 465,196.00         |
| EUROPE  | NORWAY      | 2005              | 109,907.00         |
| EUROPE  | PORTUGAL    | 2005              | 206,488.00         |
| EUROPE  | SPAIN       | 2005              | 1,528,877.00       |
| EUROPE  | SWEDEN      | 2005              | 274,301.00         |



# Data Preparation

## ➤ SPLITTING FUNCTION

The SPLIT features allows you to split one column into multiple columns.

Can be handy in some situation, for example if you have customer data and you have the full name of the customers into one column and you want to create two separate column of First and Last name.

As the pivot function, the split function is very easy to use. Just click on the little icon right next to your column name, select custom split.

A pop up window appear and ask you how you would like to split your column

| #<br>Orders<br>Row ID | Abc<br>Orders<br>Order ID | Abc<br>Orders<br>Ship Mode | Abc<br>Orders<br>Customer ID | Abc<br>Orders<br>Customer Name |
|-----------------------|---------------------------|----------------------------|------------------------------|--------------------------------|
| 40098                 | CA-2014-AB1001514         | First Class                | AB-100151402                 | Aaron Bergma                   |
| 26341                 | IN-2014-JR162107-4        | Second Class               | JR-162107                    | Justin Ritter                  |
| 25330                 | IN-2014-CR127307-4        | First Class                | CR-127307                    | Craig Reiter                   |
| 13524                 | ES-2014-KM1637548         | First Class                | KM-1637548                   | Katherine Mur                  |
| 47221                 | SG-2014-RH9495111         | Same Day                   | RH-9495111                   | Rick Hansen                    |
| 22732                 | IN-2014-JM156557-4        | Second Class               | JM-156557                    | Jim Mitchum                    |
| 30570                 | IN-2012-TS2134092         | First Class                | TS-2134092                   | Toby Swindell                  |
| 31192                 | IN-2013-MB1808592         | Standard Class             | MB-1808592                   | Mick Brown                     |
| 40099                 | CA-2014-AB1001514         | First Class                | AB-100151402                 | Aaron Bergma                   |
| 36258                 | CA-2012-AB1001514         | First Class                | AB-100151404                 | Aaron Bergma                   |
| 36259                 | CA-2012-AB1001514         | First Class                | AB-100151404                 | Aaron Bergma                   |
| 28879                 | ID-2013-AJ107801-4        | First Class                | AJ-107801                    | Anthony Jacob                  |
| 45794                 | SA-2012-MM726011          | Second Class               | MM-7260110                   | Magdelene M                    |
| 4132                  | MX-2013-VF2171518         | Same Day                   | VF-2171518                   | Vicky Freymar                  |

Custom Split

How should this data be split?

Use the separator

Split off  1



# Data Preparation

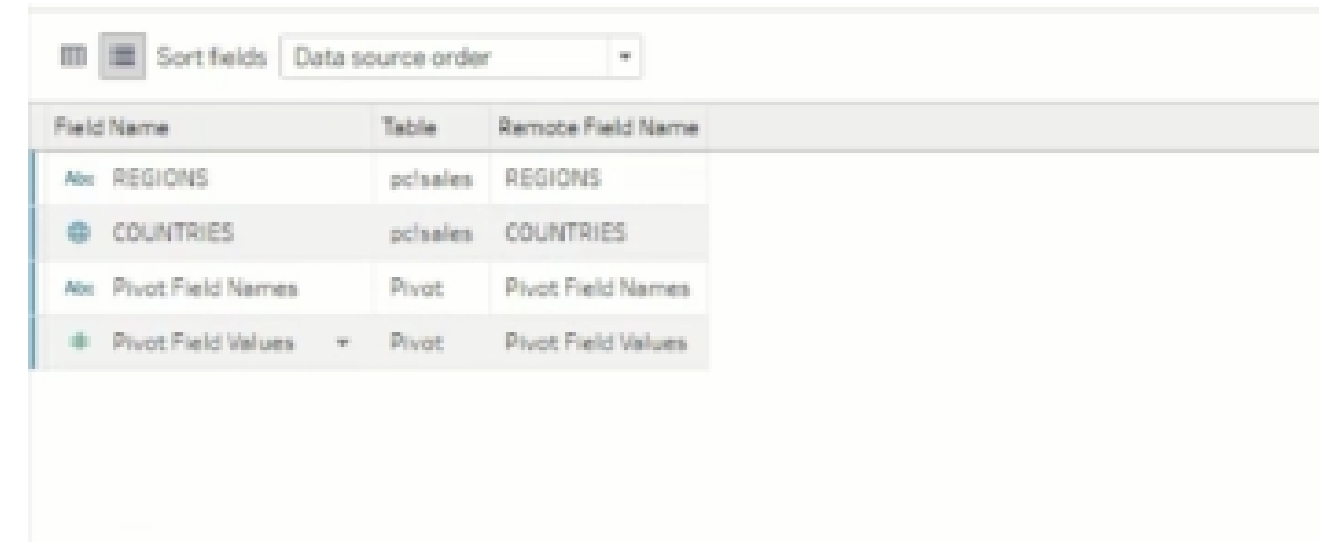
## ➤ METADATA GRID

Use it to have a look at the Metadata of your datasets.  
You can use this view and perform some few adjustment.

Let's rename our columns that comes from our Pivot created previously.

- 1) Click on the metadata grid icon.
- 2) Double click on each field you want to rename.  
Rename each field with their proper column name.

You can do a lot of other things, don't hesitate to explore further.



| Field Name            | Table    | Remote Field Name  |  |
|-----------------------|----------|--------------------|--|
| Abc REGIONS           | pc/sales | REGIONS            |  |
| 🌐 COUNTRIES           | pc/sales | COUNTRIES          |  |
| Abc Pivot Field Names | Pivot    | Pivot Field Names  |  |
| 📈 Pivot Field Values  | Pivot    | Pivot Field Values |  |



| Field Name      | Table    | Remote Field Name  |  |
|-----------------|----------|--------------------|--|
| Abc Region      | pc/sales | REGIONS            |  |
| 🌐 Country       | pc/sales | COUNTRIES          |  |
| Abc Year        | Pivot    | Pivot Field Names  |  |
| 📈 Vehicles Sold | Pivot    | Pivot Field Values |  |





# PRACTISE MAKES PERFECT – EXERCISE1

## **Create a Customer Segmentation Dashboard**

Connect Tableau to the CSV file provided:

*BI\_Intermediate\_Unit2\_Ex2\_Segmentation\_Dashboard.csv*

# Practice Makes Perfect

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## Instructions:

- 1) Create a Map that displays the number of Customers per region.  
Hint: use the “Number of Records” field to display the number of customers in your visualization
- 2) Create a Pie chart that display the number of customers by gender.  
Use table calculation to change your labels from numbers of customers to percentage.
- 3) Create a Distribution (histogram) of number of customers by age.  
Create age bins to showcase the number of customers distributed across a 5 years bins.

*More on the next slide*

# Practice Makes Perfect

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## Instructions:

- 4) Create a new Distribution of your number of customers by balance.
  - Create balance bins of 10,000.
  - Use table calculation to display your number of records as Percentages.
  - Create a parameter that will allow the user to adjust the size of the bins in the visualization.
  
- 5) Create a parameter on your distribution of number of customers by age.  
This time create a list of values, not a range.  
List should be 1, 5 and 10.  
Don't forget to link the parameter to your Age(bin) field)
  
- 6) Create a Tree Map that showcase number of records of your customers by job classification
  
- 7) Create A Customer Segmentation Dashboard using the 5 previous graphs.  
Make sure your parameters appears and are connected to your 2 distribution charts.  
Enhance your dashboard, Create title, format you charts with useful color scales.

# Practice Makes Perfect

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## Instructions:

8) Make your Dashboard Interactive.

Create Action filters for all your graphs.

9) Analyse your Customer Dashboard.

What is happening in your different regions of UK?



# PRACTISE MAKES PERFECT – EXERCISE2

**Create a Dashboard for Company's performance**

Connect Tableau to the excel file provided:  
*Global Superstore Dataset*

# Practice Makes Perfect (Dashboard)

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## Exercise: Time for analysis

Given your **Global Superstore Dataset**:

You are asked to create a Dashboard and Storyline to provide insights about the company's key Performance worldwide for the 2016 period.

You will have to create multiple charts and graphs and provide an interactive visual analysis that yields insights.

Based on your analysis and Dashboard, create a storyline for presentation and provide business recommendations.

You will be asked to present your Analysis to the Top Management.

This Visual analysis should focus on High level Performance of the company worldwide.

Your findings/visualizations may be shared internally, hence it is important to strive for clarity, simplicity and consistency.