# Learning Tableau-Step by step guide

Venkat Reddy Konasani

#### Contents

- Step-1 Tableau Introduction
- Step-2 Connecting to Data
- Step-3 Building basic views
- Step-4 Data manipulations and Calculated fields
- Step-5 Tableau Dashboards
- Step-6 Advanced Data Options
- Step-7 Advanced graph Options

#### Prerequisites

- Bit of data base knowledge
- Basic idea on visualizations and dash boards
- Windows OS with minimum 2 GB RAM
- Latest version of Tableau public or Tableau Trail

## Step-1 Tableau Introduction

#### Contents

- Why Tabeau
- Introduction to Tableau
- Tableau workspace and various options
- Navigating in tableau
- Tableau Repository

## Oil Consumption Data

,100 rows 💠 🔽 Sh	ow Aliases										
Country	Production\$_Country	Region	Reserves\$_Year Year Shown	Year	Importer/Exporter	Absolute Balance	Consumption per Pop	ulation Exported Crude Bar	Exports (Crude)	Exports (Refined)	) Importe
Algeria	Algeria	Africa	2000.00 Null	2000	Net Exporter	803.30		6.78 Null	809.46	523.51	Null
Angola	Angola	Africa	2000.00 Null		Net Exporter	694.53		2.82 Null	694.53	12.14	1 Null
Benin	Benin	Africa	2000.00 Null	2000	Net Exporter	0.69		1.72 Null	0.69	0.56	Null
Botswana	Botswana	Africa	2000.00 Null	2000	Net Exporter	0.00		8.31 Null	0.00	0.00	Null
Burkina Faso	Burkina Faso	Africa	2000.00 Null	2000	Net Exporter	0.00		0.65 Null	0.00	0.00	Null
Burundi	Burundi	Africa	2000.00 Null	2000	Net Exporter	0.00		0.39 Null	0.00	0.00	Null
Cameroon	Cameroon	Africa	2000.00 Null	2000	Net Exporter	55.00		1.48 Null	55.00	14.08	Null
Cape Verde	Cape Verde	Africa	2000.00 Null	2000	Net Exporter	0.00		3.50 Null	0.00	0.00	Null
Central African Republic	Central African Republic	Africa	2000.00 Null	2000	Net Exporter	0.00		0.55 Null	0.00	0.00	Null
Chad	Chad	Africa	2000.00 Null	2000	Net Exporter	0.00		0.17 Null	0.00	0.00	Null
Comoros	Comoros	Africa	2000.00 Null	2000	Net Exporter	0.00		1.11 Null	0.00	0.00	Null
Congo (Brazzaville)	Congo (Brazzaville)	Africa	2000.00 Null	2000	Net Exporter	272.22		1.42 Null	272.22	3.47	7 Null
Congo (Kinshasa)	Congo (Kinshasa)	Africa	2000.00 Null		Net Exporter	24.58		0.27 Null	26.00	0.09	Null
Cote dIvoire (IvoryCoast)	Cote dIvoire (IvoryCoast)	Africa	2000.00 Null	2000	Net Importer	50.24		1.95 Null	8.40	38.89	Null
Djibouti	Djibouti	Africa	2000.00 Null	2000	Net Exporter	0.00		16.74 Null	0.00	0.02	Null
Egypt	Egypt	Africa	2000.00 Null	2000	Net Exporter	220.00		8.48 Null	220.00	85.68	Null
Equatorial Guinea	Equatorial Guinea	Africa	2000.00 Null	2000	Net Exporter	166.00		3.12 Null	166.00	0.00	Null
Eritrea	Eritrea	Africa	2000.00 Null	2000	Net Exporter	0.00		0.99 Null	0.00	0.00	Null
Ethiopia	Ethiopia	Africa	2000.00 Null		Net Exporter	0.00		0.35 Null	0.00	0.00	Null
Gabon	Gabon	Africa	2000.00 Null	2000	Net Exporter	300.00		9.82 Null	300.00	6.72	Null
Gambia, The	Gambia, The	Africa	2000.00 Null	2000	Net Exporter	0.00		1.31 Null	0.00	0.04	Null
Ghana	Ghana	Africa	2000.00 Null	2000	Net Importer	15.00		1.87 Null	0.00	5.95	Null
100 rows	how Aliases Exported Oil (Crude or R	efined)	Imported Oil (Crude or Refin	ed) Ex	ported Refined Bar	Imports (Crude)	Imports (Refined)	Imports, Exports, and Balar	nce Number of Re	cords Oil Cons	sumptio
Null		809.46	6	5.16 Nu	ıll	6.16	0.12	803	.30	1	206.1
Null		694.53	(	0.00 Nu	ıll	0.00	3.42	694	.53	1	29.2
Null		0.69	(	0.00 Nu	ıll	0.00	11.08	0	.69	1	11.3
Null		0.00		0.00 Nu		0.00			.00	1	13.9
Null		0.00		0.00 Nu		0.00			.00	1	7.48
Null		0.00		0.00 Nu		0.00			.00	1	2.64
Null		55.00		0.00 Nu		0.00			.00	1	22.7
Null		0.00		0.00 Nu		0.00			.00	1	1.5
									.00		
Null		0.00		0.00 Nu		0.00				1	2.2
Null		0.00		0.00 Nu		0.00			.00	1	1.3
Null		0.00		0.00 Nu		0.00			.00	1	0.6
Null		272.22		0.00 Nu		0.00		272		1	4.4
		26.00		.42 Nu		1.42		24		1	14.1
Null		8.40	58	3.64 Nu	ااد	58.64	8.25	50	.24	1	32.9
Null Null						0.00	11 22	0	00	4	44.0
		0.00	(	0.00 Nu	ıll	0.00	11.22	0	.00	1	11.2
Null		0.00 220.00		0.00 Nu 0.00 Nu		0.00		220		1	552.8

## Oil Consumption Data

Refined Oil Consumption (N)	Oil Reserves (N)	Oil Production	Population	Exports - Imports	Production\$_Year	Refining Nations	Renewable Energy Production	Reserve Years with Internal Use	Reserves (thousand barrels)	Reserves
206.18	9.200	1,483.03	30.43	803.30	2,000.00000	17.20	0.053	122.25 years	9,200,000 thousand barrels	9.200
29.26	5.412	746.11	10.38	694.53	2,000.00000	1.17	0.903	506.77 years	5,412,000 thousand barrels	5.412
11.37	0.008	0.69	6.62	0.69	2,000.00000	0.08	0.002	1.98 years	8,210 thousand barrels	0.008
13.97	0.000	0.00	1.68	0.00	2,000.00000	0.00	0.000	. years	thousand barrels	0.000
7.48	0.000	0.00	11.59	0.00	2,000.00000	0.00	0.097	. years	thousand barrels	0.000
2.64	0.000	0.00	6.82	0.00	2,000.00000	0.00	0.098	. years	thousand barrels	0.000
22.73	0.400	85.06	15.34	55.00	2,000.00000	0.92	3.408	48.2 years	400,000 thousand barrels	0.400
1.50	0.000	0.00	0.43	0.00	2,000.00000	0.00	0.000	. years	thousand barrels	0.000
2.20	0.000	0.00	3.98	0.00	2,000.00000	0.00	0.083	. years	thousand barrels	0.000
1.34	Null	0.00	7.94	0.00	2,000.00000	0.00	0.000	Null	Null	Null
0.64	0.000	0.00	0.58	0.00	2,000.00000	0.00	0.002	. years	thousand barrels	0.000
4.40	1.506	291.91	3.10	272.22	2,000.00000	1.12	0.292	937.64 years	1,505,910 thousand barrels	1.506
14.16	0.187	26.02	51.85	24.58	2,000.00000	0.00	5.939	36.19 years	187,000 thousand barrels	0.187
32.90	0.100	12.36	16.88	-50.24	2,000.00000	2.30	1.746	8.33 years	100,000 thousand barrels	0.100
11.21	0.000	0.00	0.67	0.00	2,000.00000	0.03	0.000	. years	thousand barrels	0.000
552.80	2.948	793.34	65.16	220.00	2,000.00000	1.31	13.690	14.61 years	2,947,560 thousand barrels	2.948
1.53	0.012	167.50	0.49	166.00	2,000.00000	0.00	0.002	21.47 years	12,000 thousand barrels	0.012
4.16	0.000	0.00	4.20	0.00	2,000.00000	0.00	0.000	. years	thousand barrels	0.000
22.73	0.000	0.00	64.16	0.00	2,000.00000	0.00	1.635	.05 years	430 thousand barrels	0.000
12.14	2.499	314.79	1.24	300.00	2,000.00000	5.44	0.802	563.83 years	2,499,000 thousand barrels	2.499
1.79	0.000	0.00	1.37	0.00	2,000.00000	0.03	0.000	. years	thousand barrels	0.000
36.96	0.017	7.13	19.75	-15.00	2,000.00000	0.30	6.544	1.22 years	16,510 thousand barrels	0.017
8.21	0.000	0.00	8.35	0.00	2,000.00000	0.00	0.406	. years	thousand barrels	0.000
2.30	0.000	0.00	1.28	0.00	2,000.00000	0.00	0.000	. years	thousand barrels	0.000
56.80	0.000	-0.05	30.51	-41.00	2,000.00000	0.16	1.929	. years	thousand barrels	0.000
1.40	0.000	0.00	1.92	0.00	2,000.00000	0.00	0.288	. years	thousand barrels	0.000
2.94	0.000	0.00	2.60	0.00	2,000.00000	0.01	0.000	. years	thousand barrels	0.000
210.28	29.500	1,469.35	5.13	1,110.00	2,000.00000	27.86	0.000	384.35 years	29,500,000 thousand barrels	29.500
12.13	0.000	0.07	15.74	-7.78	2,000.00000	0.04	0.540	. years	thousand barrels	0.000
5.26	0.000	0.00	11.80	0.00	2,000.00000	0.00	1.023	. years	thousand barrels	0.000
3.84	0.000	0.00	10.62	0.00	2,000.00000	0.00	0.233	. years	thousand barrels	0.000
23.76	Null	-0.09	2.50	-19.45	2,000.00000	0.00	0.032	Null	Null	Null
19.88	0.000	0.00	1.19	0.00	2,000,00000	0.00	0.095	. years	thousand barrels	0.000

#### Aim is to understand

That oil consumption data shows below details

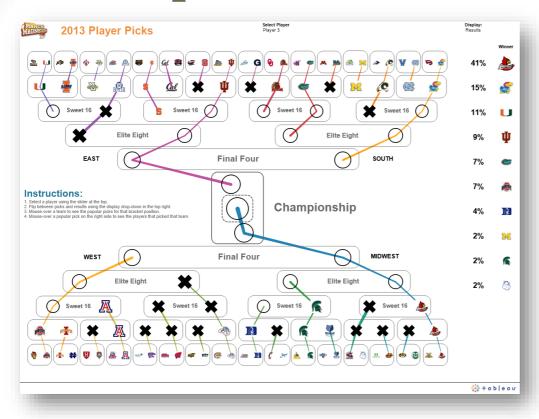
- Cure Oil, refined oil imports and Exports by country also weighted by population
- Reserves left by country and by region
- Consumption by population over the time

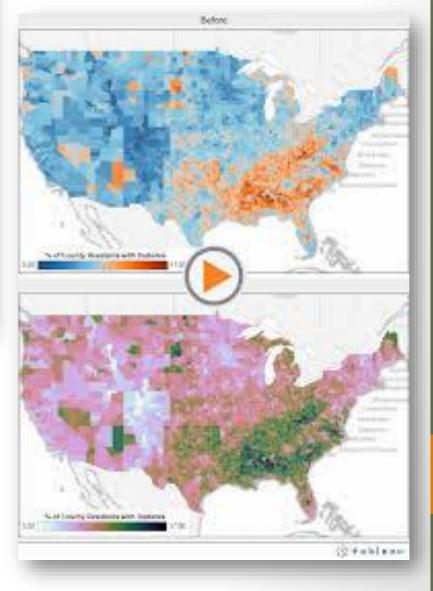
Really??? Is it easy to get the picture?

#### What is Tableau

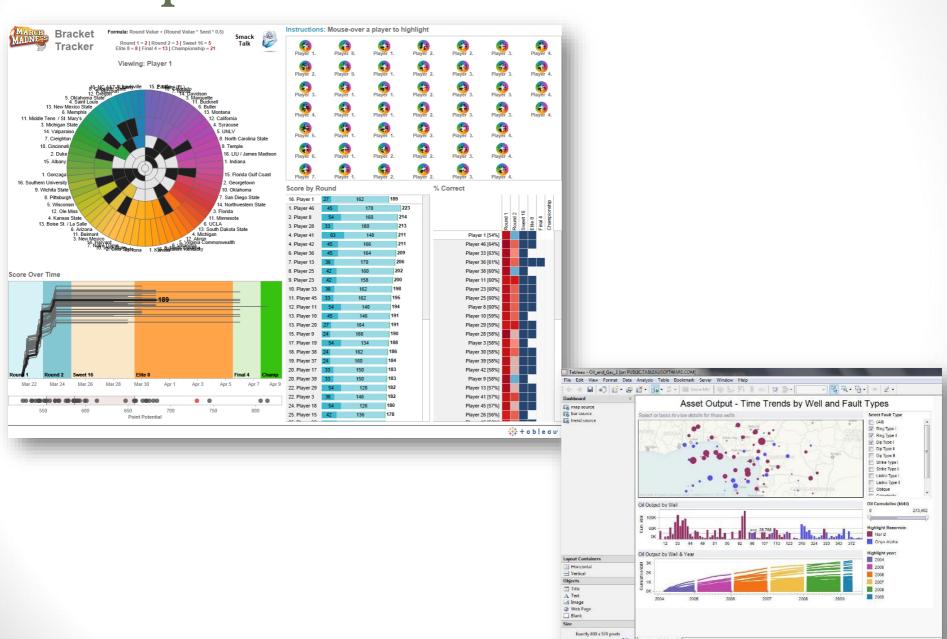
- Tableau is a <u>rapid</u> BI software
- Great visualizations: Allows anyone to connect to data, visualize and create interactive, sharable dashboards in a few clicks
- Ease of use: It's easy enough that any Excel user can learn it, but powerful enough to satisfy even the most complex analytical problems.
- Fast: We can create parallelized dashboards, quick filters and calculations

## Sample Tableau dashboards





## Sample Tableau dashboards



#### **Tableau Products**

#### **Tableau Desktop**

#### Create



- + ad hoc analytics, dashboards, reports, graphs
- + explore, visualize, and analyze your data
- + create dashboards to consolidate multiple views
- + deliver interactive data experiences

#### **Tableau Server**

#### Share - Web



- business intelligence solution scales to organizations of all sizes
- + share visual analytics with anyone with a web browser
- + publish interactive analytics or dashboards
- + secure information and manage metadata
- + collaborate with others

#### **Tableau Reader**

#### **Share - Local**



- + share visualizations & dashboards on the desktop
- + filter, sort, and page through the views
- + "Acrobat for Data"
- + free download

#### **Tableau Public**

#### **Share - Everyone**



- + create and publish interactive visualizations and dashboards
- + embed in websites and blogs
- + free download and free hosting service

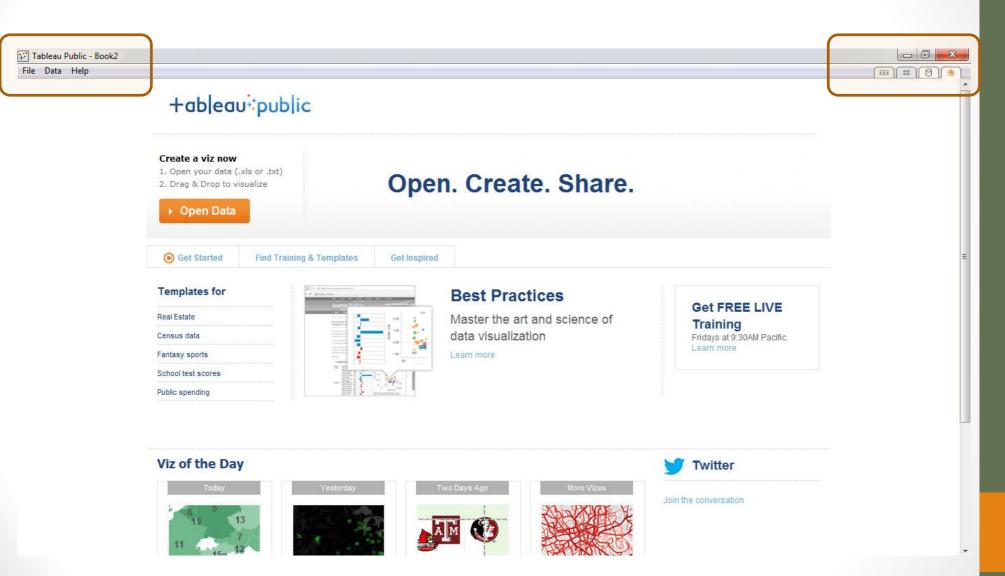
#### Tableau Public

- Can connect to Microsoft Excel, Microsoft Access, and text files
- It has a limit of 100,000 rows of data that is allowed in any single connection
- You can not save your work using Tableau public

## Three main stages



## Opening Screen



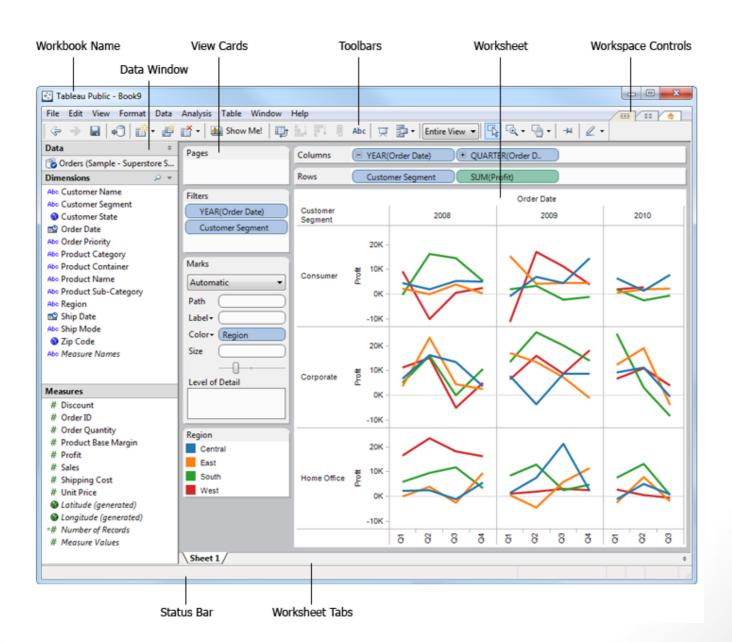
#### **Basics**

- Opening a new sheet
  - File>>New
- Connect to data
  - Data>>Connect to data

#### Demo

- Starting Tableau
- Open a new workbook
- Adding additional sheets
- Data connection tab
- Various data connection options
- Adding a new dash board
- Various graph options

## Tableau Workspace



#### Workbook and worksheets

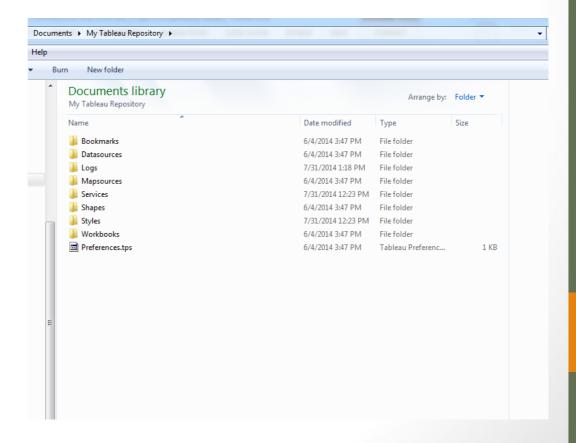
- Each workbook can contain worksheets and dashboards.
- Worksheet is where you build views of your data by dragging and dropping fields onto shelves
- A dashboard is a combination of several worksheets that you can arrange for presentation or to monitor
- The sheets, whether worksheets or dashboards, display along the bottom of the workbook as tabs

#### Lab

- Start Tableau
- Open a new workbook
- Add one additional sheet
- Identify data connection tab
- Can we connect to MySQL server?
- Can we connect to txt file?
- How to go back to workbook from connect to data window?
- Add a new dashboard
- Where are various types of graphs options available?
- Can we draw pie chart using Tableau?

## Tableau Repository

- The Tableau repository holds Workbooks Bookmarks and data sources.
- located in a folder called My Tableau Repository inside of your My Documents folder.



## Tableau Files and File types

#### Workbooks

 Tableau workbook files have the .twb file extension and are marked with the workbook icon. Workbooks hold one or more worksheets and dashboards.

#### Bookmarks

 Tableau bookmark files have the .tbm file extension and are marked with the bookmark icon. Bookmarks contain a single worksheet and are an easy way to quickly share your work.

#### Packaged Workbooks

 Tableau packaged workbooks have the .twbx file extension and are marked with the packaged workbook icon. Packaged workbooks contain a workbook along with any supporting local file data sources and background images. This format is the best way to package your work for sharing with others who don't have access to the data.

## Tableau Files and File types

#### Data Extract Files

 Tableau data extract files have the .tde file extension and are marked with the extract icon. Extract files are a local copy of a subset or entire data source that you can use to share data, work offline, and improve database performance.

#### Data Connection Files

 Tableau data connection files have the .tds file extension and are marked with the data connection icon. Data connection files are shortcuts for quickly connecting to data sources that you use often.

# Step2-Connecting to Data

Venkat Reddy

#### Contents

- Connecting to flat files
- Connecting to DB files
- Connecting to server
- Conditional importing
- Editing a Connection

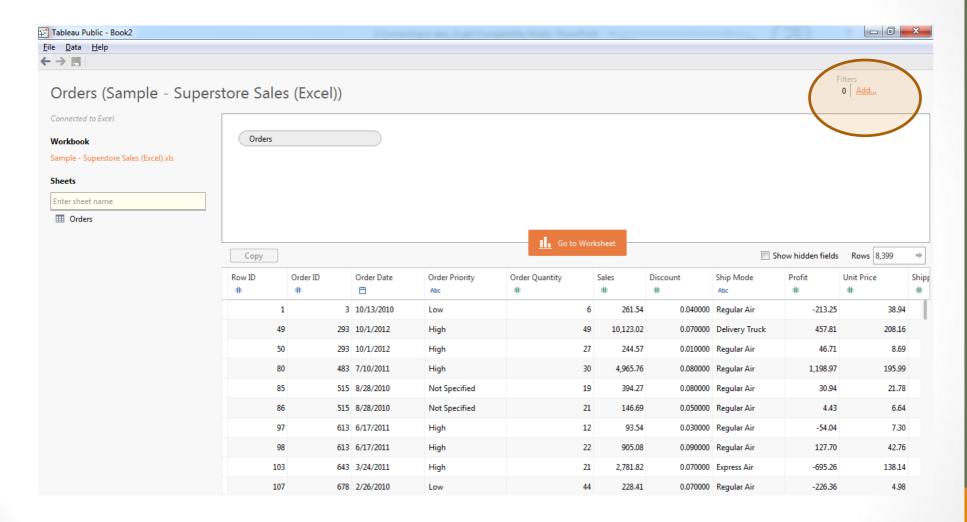
#### Demo: Connecting to Desktop files

- Connecting to excel file
  - Connecting to superstore sales in sales data folder
- Snapshot view of the data
- Connecting to txt file
  - Connecting to survey data
- Connecting to access file
  - Connecting to survey data

# Lab: Connecting to Desktop files

- Download the online sales data.csv
- Snapshot view of the data
- Connect to healthcare database
- Connect to survey data
- Create a table for client
- Create a table for clinet\_manager

## Connecting with Filters



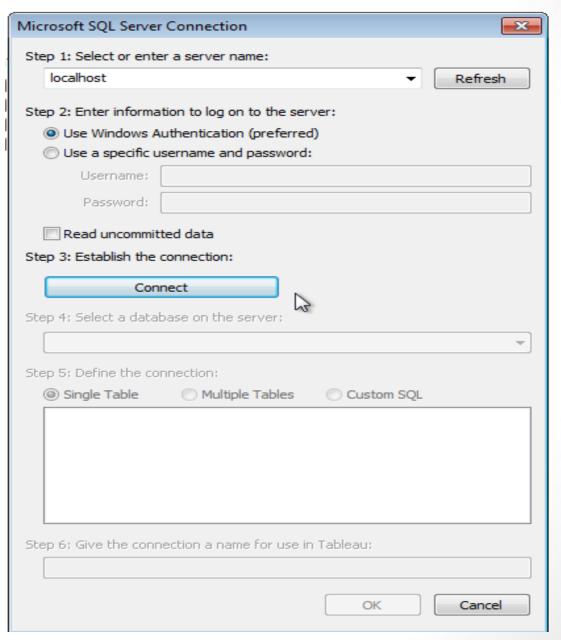
#### Demo: Customized data import

- Import sales by country data
  - Where sales channel="Online"

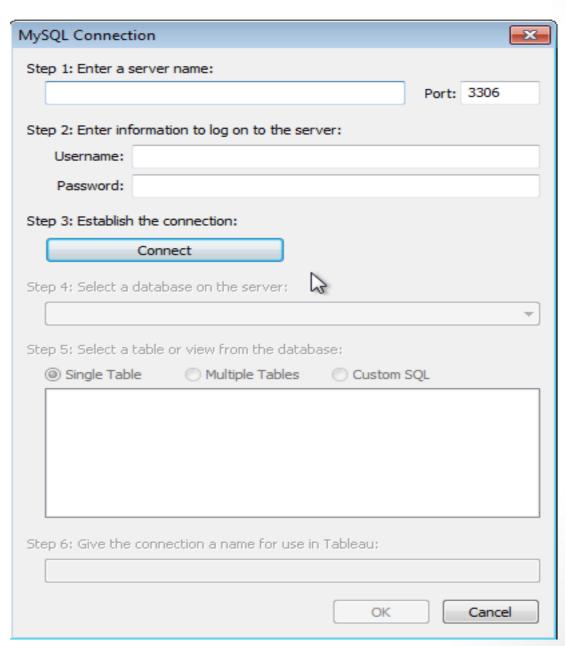
## Lab: Customized data import

- Download data using filters from survey DB
  - Only data where overall rating =5 and client level is more than 7 from S2012 table(Client id more than 70,000,000)
- Download data using filters from healthcare data(health claim.csv)
  - Only data where days admitted is atleast 6 and claim amount is more than 10,000

0	MapR Hadoop Hive
0	Microsoft Analysis Services
0	Microsoft PowerPivot
0	Microsoft SQL Server
0	MySQL (1)
0	OData
0	Oracle
9	Oracle Essbase



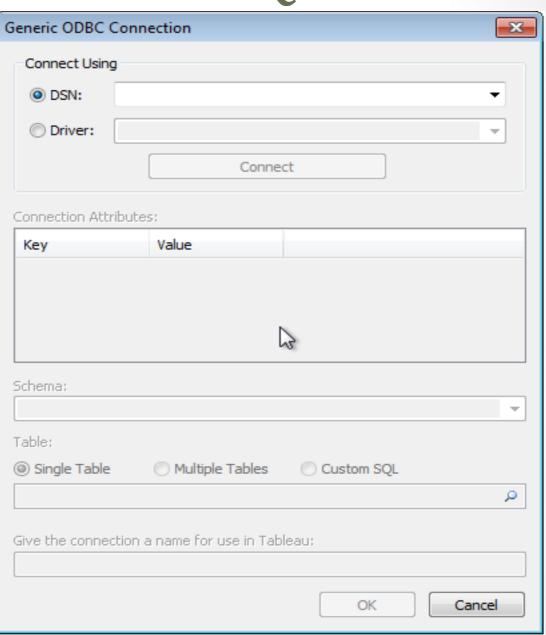
0	Microsoft PowerPivot
0	Microsoft SQL Server
0	MySQL
0	OD&h)
0	Oracle
0	Oracle Essbase



0	Microsoft SQL Server
0	MySQL
0	<u>OData</u>
0	Ora( <sup>lh</sup> )
0	Oracle Essbase
0	ParAccel
9	PostareSOL







#### Data roles

- Dimensions:
  - Qualitative, categorical information is a dimension
    - Gender : Male & Female
    - Region
    - Marital Status
- Measures
  - Numeric variables / Quantitative values
    - Age
    - Income
    - Credit score

#### Data Types

Icon	Description
Abc	Text values
	Date values
	Date & Time values
#	Numerical values
<b>T</b> / <sub>F</sub>	Boolean values (relational only)
<b>③</b>	Geographic values (used with maps)

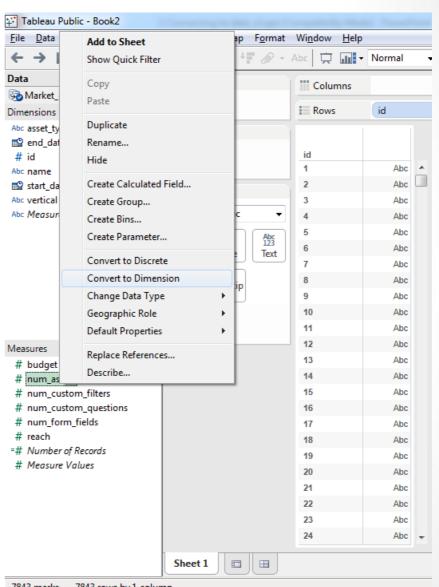
- Sometimes Tableau may identify a field with a data type that is incorrect.
- For example, a field that contains dates may be identified as an integer rather than a date.
- You can change the data type in Tableau by right-clicking the field in the Data window, selecting Change Data Type, and then selecting the appropriate data type.

#### Lab: Data Roles

- What are the measures and dimensions in TV commercials data (spot data sheet)
- What are the measures and dimensions in world bank data

#### Demo Converting measures to dimensions Tableau Public - Book2

- Converting id to dimension
- Converting num\_assests to dimension



7843 marks 7843 rows by 1 column

# LAB: Converting measures to dimensions

- Import TV commercial spot data
  - Convert HH ratings to Dimension
  - Convert unique key to Dimension
- In health care data
  - Patient id into dimention

## Editing the connection

- Connect to cars data>>>Edit data source>>Hide Origin Field
- Show hidden fields to get back and then unhide

#### LAB: Edit Connection

- Edit survey data connection and hide the two fields response and quality
- Edit survey data connection and add a filter on communication
   >=3

#### Renaming the connection

- Edit Connection >>.Change the name of connection
- Cars data to cars\_2014

## LAB: Renaming the connection

- Rename survey data to customer survey
- Connect to market data one and rename it to market campaign data

# Other Data connection related operations

- Duplicating connection
- Close Connection

# Step-3: Building basic views

#### Demo: Basic views

- Superstore data
  - Sum of order quantity by product category
  - Sum of order quantity by month & year
  - Changing the graph type

#### Lab: Basic views

- Connect to Price Web Data(Price\_web\_data.csv)
- Draw a bar graph to show total sales(count of rows) by brand
- Which brand sold the most number of items
- Change it to pie chart
- Sort the bargraph
- Which are the top two brands based on list price
  - Draw graph that shows average list price for each brand

#### Demo: Trend chart

Price web data day wise count of products

#### Lab: Trend Chart

- Import market one data
  - Draw a time series chart of number of campaigns by date
  - Draw a time series chart of number of campaigns by month
  - Draw a time series chart for budget and identify the month with maximum budget

#### LAB: Other Charts

- Import cars data, create a tree map chart for make vs items sold(count ids)
- Import TV commercials spot data, create a vertical bar chart for network id vs average spot cost. Change the chart for vertical to horizontal
- Import telecom bill data, show average bill(current charges)
  and count of customers(Del number) in each customer
  segment. Identify the best segment (which customer segment
  has very high bill and very high number of customers)

# Demo: Formatting the graphs-Color and size

 Representing Average unit price & total ordered quantity per Product category & subcategory in superstore data

# Lab: Formatting the graphs-Color and size

- Identify the best rated brand from online sales data(price web)
  - Draw a graph(other than bubble chart) on online sales data to show
    - Review count as size
    - Average rating as color for each brand
- Import Market campaign data
  - Identify the top 5 verticals. A vertical with significant budget and significant number of campaigns(rows).
  - Identify the most productive vertical in market campaign data. A vertical that has highest reach with least budget is the best vertical
- Identify the best car make in cars data(low MSRP and high horse power)
- Identify the most profitable customer segment from telecom bill data
  - Draw bubble chart on billing data by each customer segment
    - Size of the bubble is average bill(Current charges)
    - Color of bubble as count of accounts

#### Adding Reference lines

Adding reference line average age to age in healthcare data

# Lab: Adding reference line

- In price web data, what are the brands that got above average ratings? Add a reference line
- Add average list price reference line in price web data-Avg list price by brand
- Add a mean reference line to days admitted in health care data

# Demo: GIS graph

- City wise bill on the map
  - Count if accounts as size
  - Total Bill as colour

# Lab: GIS graph

- Connect to Sales\_by\_country\_v1.csv(inside super store folder)
  - Show number of units sold for each county
  - Draw a fill map fill graph
- Connect to world bank data(data by country tab)
  - Create a GIS graph to show GDP by country
  - Create a GIS graph to show total population by country

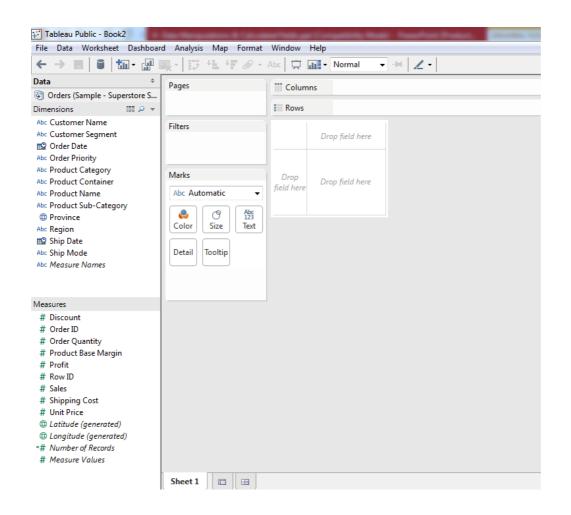
Step-4: Data manipulations and Calculated fields

#### Contents

- Calculated fields
- Working with dates
- Logic statements
- Working with filters

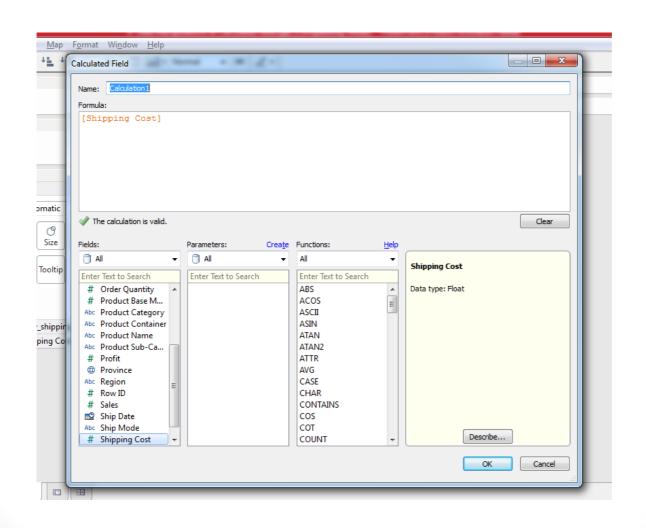
#### Demo: Calculated fields

Connect to excel>>Sample-Superstore data>>>orders



#### Demo: Calculated fields

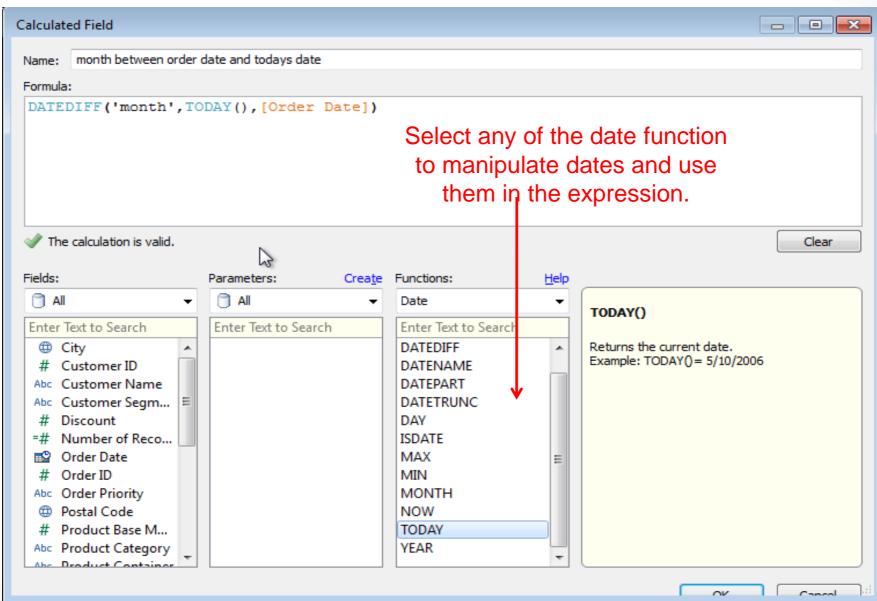
New reduced shipping cost to 50%



#### Lab: Calculated fields

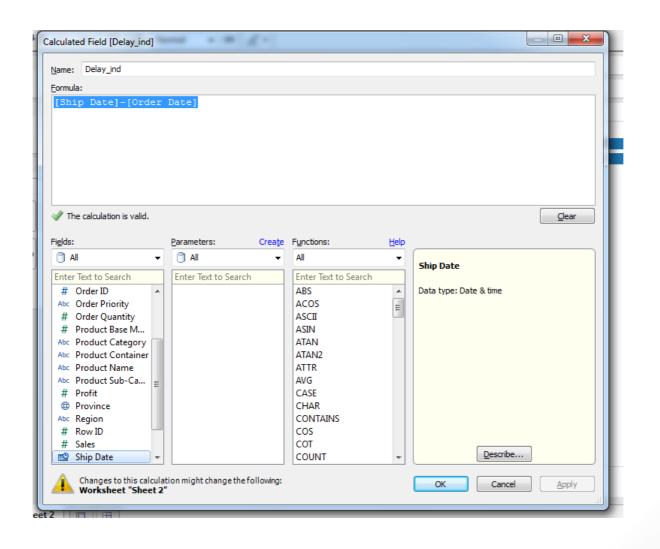
- Connect to Sample-Superstore data excel file
- Create a new discounted unit price from actual unit price field.
   Reduce the price by 10% and create a new field as disc\_price
- Create a new shipping cost. Reduce the shipping cost by by 30% and create a new field new\_ship\_cost
- Create a new field "final\_price" which is sum of disc\_price & new\_ship\_cost
- What is the average final price?

# Working with dates



# Demo: Working with dates

Delay indicator in Super store data [Ship Date]-[Order Date]



# Lab: Working with dates

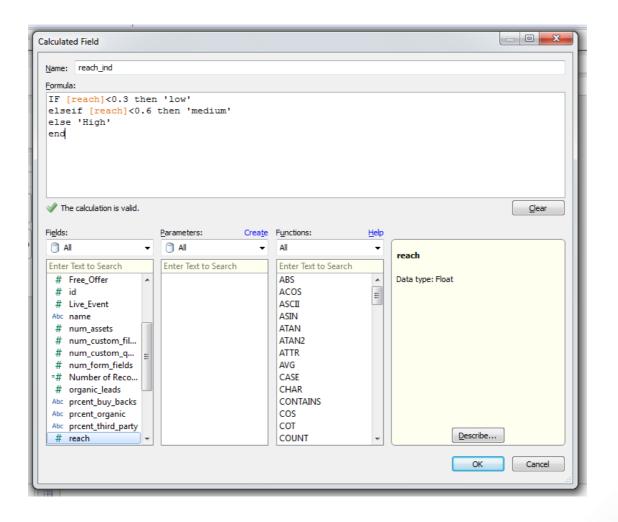
- Connect to Telco\_Bill\_data\_v1 in telecom data folder
  - Calculate age of account in moths, today-account active date
  - Draw a graph that shows Del number & age on network. Sort it by age
- Connect to Market\_data\_raw.xls in Market\_data folder
  - Calculate the interval of campaign (end date –start date)
  - Convert id into dimension and draw a graph between id & interval

## Logic statements

Name: is string a date?					
Formula:					
IF (ISDATE("teststring")) then 'yes' else 'no'					
The calculation is valid.					
Fields:	Parameters:	Create	Functions:	<u>H</u> elp	
☐ All ▼	☐ All	~	Logical	▼	ISDATE(string)
Enter Text to Search	Enter Text to Search		Enter Text to Search		DUATE(String)
# Customer ID  Abc Customer Name  Abc Customer Segm  # Discount  =# Number of Reco  © Order Date  # Order ID  Abc Order Priority  Postal Code  # Product Base M			CASE IF IFNULL IIF ISDATE ISNULL ZN		Returns true if a giv Example: ISDATE("/

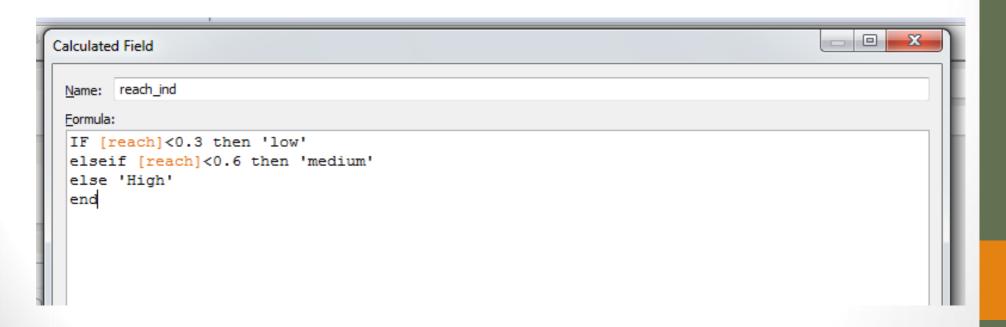
#### Demo: Logic statements

Market data, high, medium, low reach

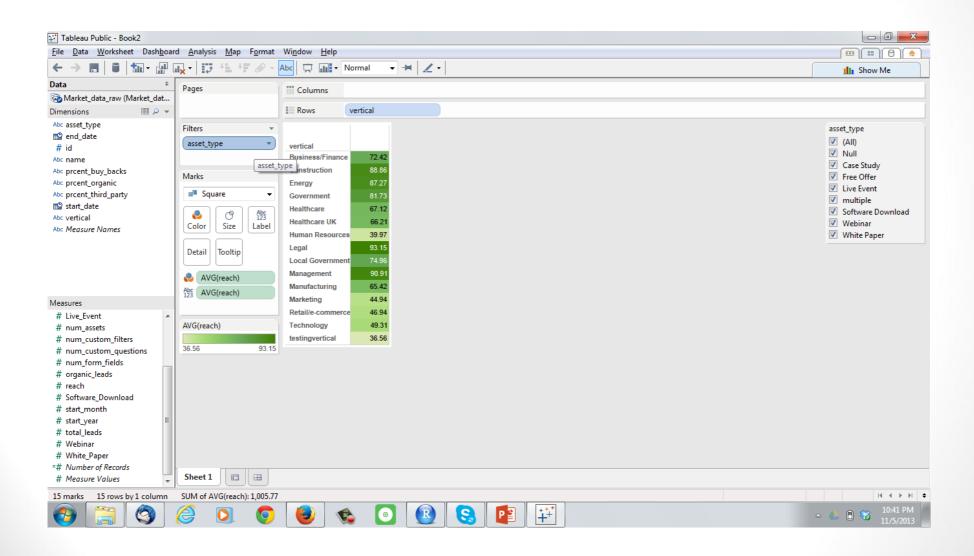


## Lab: Logic statements

- In the market data, Create a new field budget indicator
  - If budget is less than 50,000 then "low"
  - 50,000 to 100,000 then "medium"
  - Else high budget
- Create a bar chart budget\_ind vs count of campaigns(ids)



# Working with filters



# Demo: Working with filters

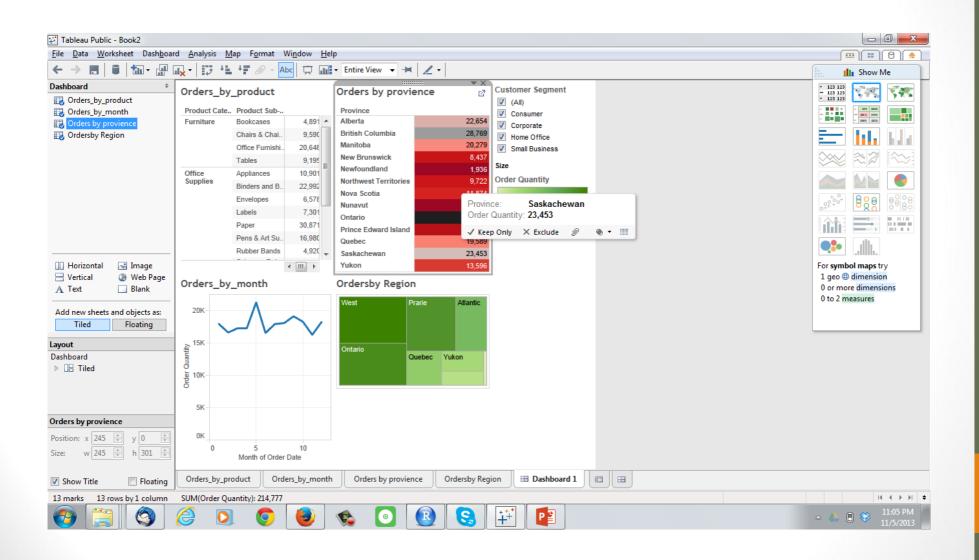
- Reach by vertical in market data
  - Add asset type as filter

# Lab: Working with filters

- Connect to sales data (Sample Superstore Sales (Excel).xls)
  - Create graph for order quantity (sum) by product sub category
  - Add province as filter, show quick filter
  - Add customer segment as second filter show quick filter
  - Change them to single value dropdown
- Connect to price web data
  - Crate a time series graph for number of items sold per day
  - Use site name and brand as filters
  - Change the filter type to multiple value drop down for brand
  - Single value drop down for site
  - Change the filter type to global and local

# Step-5 Tableau Dashboards

#### Dashboards



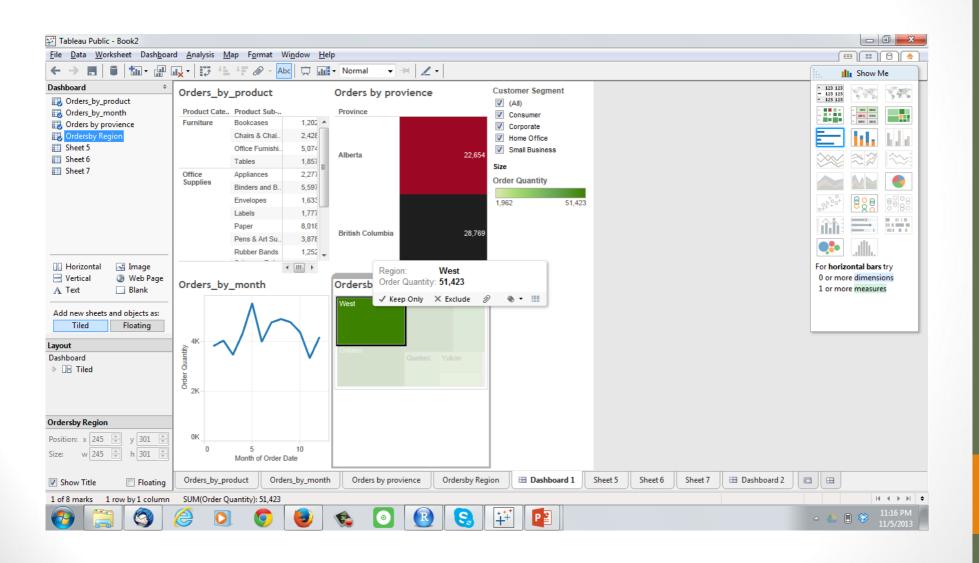
# Demo: Creating a Dashboard

- In superstore data
  - Orders by product, by province, by month & by region

# Lab: Creating a dashboard

- Connect to Market\_data\_one.csv
  - Create a graph that shows budget by each vertical
  - Create a graph that average budget by each vertical
  - Create a graph that shows average reach by each vertical
  - Create a graph that shows the relation between number of form fields & reach(use id)
  - Create a dashboard with all the above graphs
- Connect to 2.2 Health\_claim.xlsx
  - Create a graph for average claim amount by days admitted
  - Create a graph for average claim amount by Month
  - Create a graph for average claim amount by age(convert age into bins)
  - Create a scatter plot for distance from clinic vs claim amount(use patient id also)

# Demo: Using a graph as filter



# Step-6: Advanced Data Options

#### Contents

- Clipboard data
- Connecting two data sources
- Joining data sources
- Creating hierarchies
- Measure values and Measure names
- Number of records

# Copying Data from clipboard

- Demo:
  - Copy air travel data to clipboard
  - Worksheet>>Data>>paste data

### LAB: Copying Data from clipboard

- Copy petrol consumption data and crate a data connection by pasting it; Change the connection name to petrol consumption data
- Copy data from Price\_web\_data Analysis.csv and paste it in tableau; Change the connection name to price web data

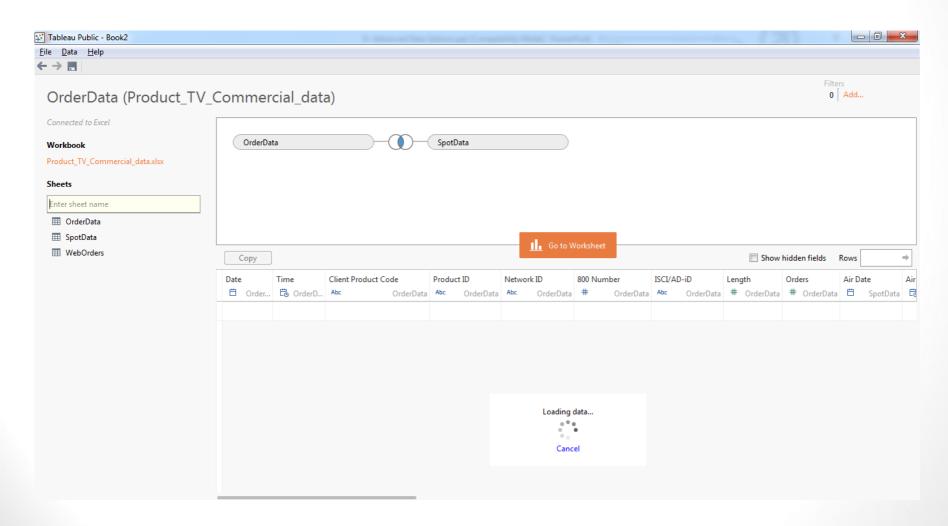
# Connecting two data sources

#### Demo:

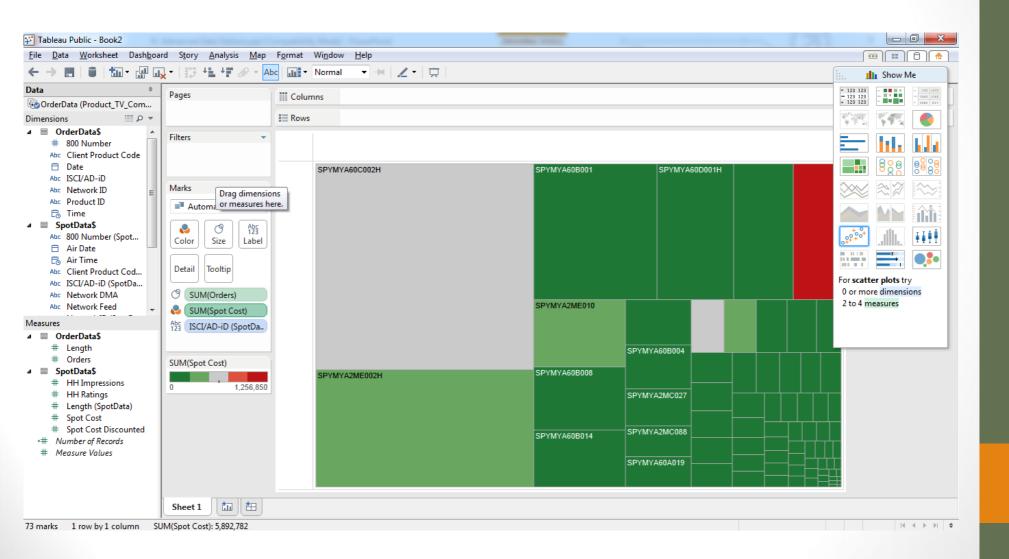
- In TV commercial data, we have orders data and commercial spot data.
- We want to draw an are graph to see whether the spot really effects the order quantity. Do you think if the spot cost is high the number of orders are also high

# Joining two tables

Joining spot cost and orders tables in TV commercial data



## Creating a graph with joined tables



# LAB: Joining two tables

- In TV commercial data, connect orders to spots based on ISCI/ AD-iD
  - Draw a graph time(date from orders table) vs spot cost
  - Draw a graph that shows total orders and average spot cost for each network
- Connect market one and market raw data
  - Draw a scatter plot between budget(raw data) and reach(market one)

# Creating a Hierarchy

- For example, a data source may have fields for Country, State, and City. These fields could be grouped into a hierarchy called Location.
  - Right-click one or more selected fields in the Data window and select Create Hierarchy
  - In the Data window, drag and drop a field directly on top of another field.

# Demo: Creating Hierarchy

- In superstore data drag and drop customer name on customer segment
- Create a graph using customer segment hierarchy vs orders

# LAB: Creating Hierarchies

- Import superstore data create below hierarchies
  - Product category
  - Product sub category
  - Product name
  - Draw a graph to show profit by product hierarchy
- Import cars data
  - Crate hierarchy for make and model
  - Draw a graph to show average price by make model hirarchy
  - What if we create a hierarchy for model and make??

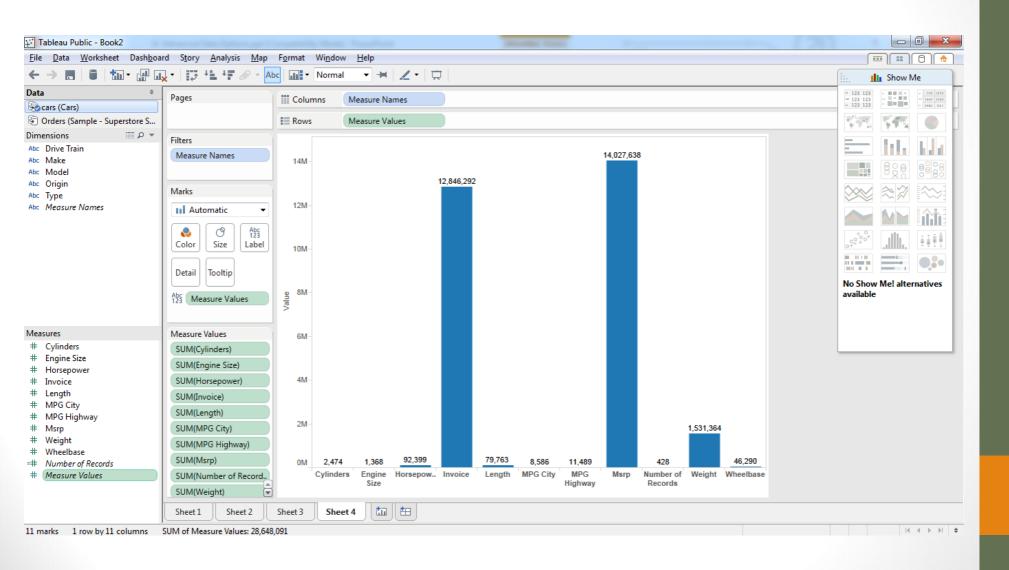
# LAB: Removing Hierarchies

Remove all the hierarchies that are created

#### Measure Values and Measure Names

- The Data window contains a few fields that are not part of your data source, two of which are Measure Names and Measure Values
- Measure Values: All the measures of your data source collected into one field.
- Measure Names: Contains all the names of the measures collected into a single dimension.

# Demo Measure Values and Measure Names

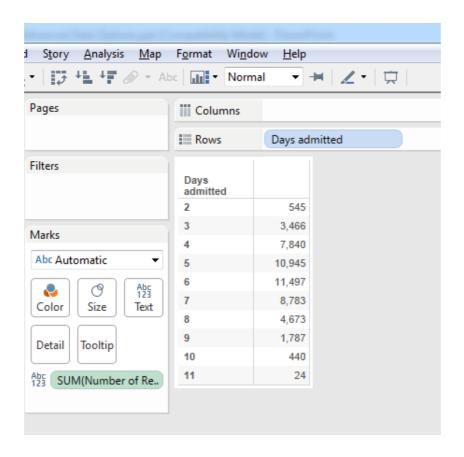


# LAB: Measure Values and Measure Names

- Import health claim data
  - Draw a graph measure names against measure values
  - Can we recreate the input data table using measure values and measure names?

#### Number of Records

- Number of Records field that is also not part of the underlying data source.
- This field represents the number of rows in the data source.
- Demo days admitted vs. number of records



#### LAB: Number of records

- Find the frequency of each brand in cars data
- Find the frequency of each brand in price web data

# Latitude and Longitude

- Tableau automatically geocodes your data and includes
   Latitude (generated) and Longitude (generated) fields. You can
   use these fields to overlay your data on live maps.
- Lat & Long for province in superstore data

# Step-7: Advanced graph Options

#### Contents

- Sorting
- Groups
- Sets
- Actions
- Parameters

# Sorting

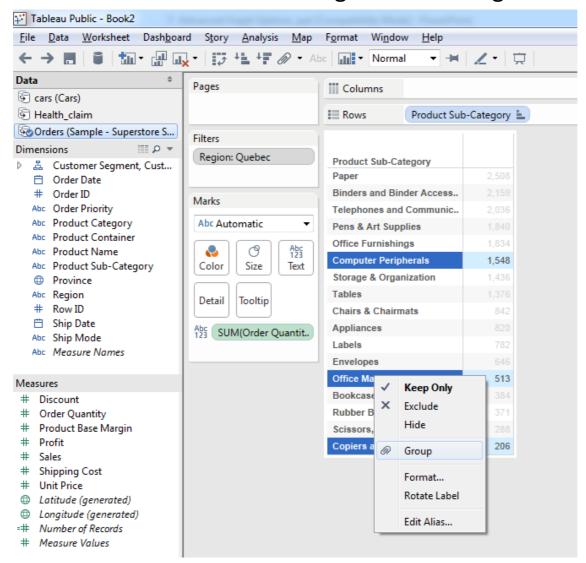
 Display your data in ascending or descending order based on other fields or custom formulas using computed sorts.

# LAB: Sorting

- Create a graph for price web data, brand vs average list price,
   sort the result by average list price
- Create a graph for telecom bill data; customer segment vs average bill. Sort it by bill amount

# Groups

Combine dimension members into higher level categories.



# Lab Groups

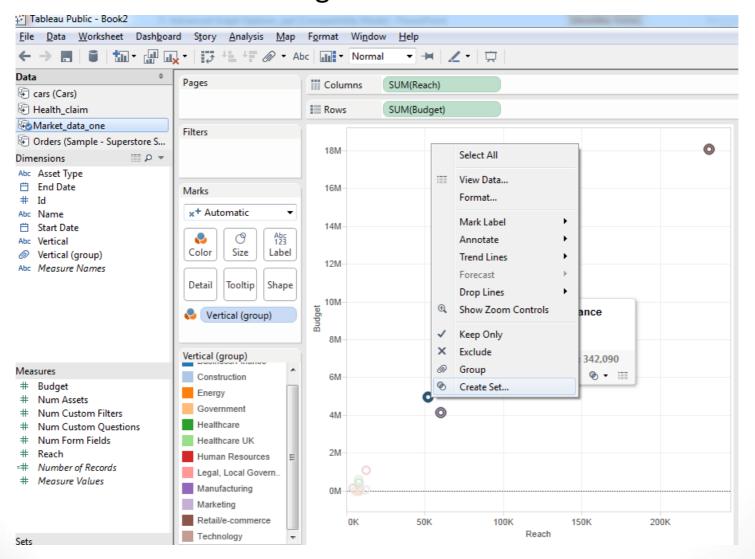
- Import market\_one.csv
  - Create a table for vertical vs sum of number of records
  - Combine last four verticals as a single group
- Import price web data
  - Create a table for brand vs count of records
  - Combine the last 10 brands

#### Sets

- Set is almost like a dynamic subset.
- Sometimes we may want to crate a subset by collecting all the data points of our interest
  - Outliers
  - Points falling in a certain region

#### Demo

Vertical vs reach vs budget



#### LAB: Sets

- Create a graph for claim amount vs distance from clinic. There
  is a higher chance in case of patients travelling more than 100
  kms(100K meters); Select all such cases and create a different
  set
- Create a graph for telecom billing data
  - Bar chart for Customer segment vs average bill(Current Charges)
  - Sort them based on average current changes
  - Create a set based on last five groups
  - What is the count of accounts and average bill for the subset?

#### Actions –Filter Action

- Worksheet >>Actions
- Demo: Cars data
  - MSRP vs MPG vs Make
- Add action

#### LAB: Action

- Import Telecom billing data
  - Create a bar graph to show the average of current charges in each customer segment. Add filter action
  - Remove filter action and add highlight action, what is the difference?
- Import TV commercial spot data
  - Create a graph to show network name along with average spot cost.
  - Add URL action , redirect the highlighted part to google.com

## Outliers

- Mean
- Median
- Quartiles
- Outliers

# Box Plots to identify outliers

 Draw a boxplot to identify the outliers in claim amount vs patient id

# Boxplots and outliers

- Draw a boxplot to identify the outliers in claim amount vs patient id
  - Remove outliers and recreate the box plot(use filter on claim amount)
- Draw a boxplot to identify the outliers in current charges in telecom bill data (use del number as id)
- Draw a boxplot to identify the outliers in age of patients in health claim data. Are there any outliers?

### Thank You