+‡‡+ tableau®
SOFTWARE

Dr. Pattabiraman. V

VIT University – Chennai Campus

pattabiraman.v@vit.ac.in

VIT
UNIVERSITY
(Estd. u/s 3 of UGC Act 1956)
VELLORE ■ CHENNAI
www.vit.ac.in

Fast Analytics for
Everyone
Tableau Desktop

Business Intelligence
Tableau Server

Storytelling on the
Web
Tableau Digital

What's New in
Tableau 7.0
Game-changing features

Outline

- About Tableau
- Tableau Architecture
- Connecting to Data
- Building basic views
- Data manipulations and Calculated fields
- Creating a reports
- Creating a Tableau Dashboard

Tableau Software

VIT
UNIVERSITY
(Estd. u/s 3 of UGC Act 1956)
VELLORE ■ CHENNAI
www.vit.ac.in

Tableau Software is an American computer software company headquartered in Seattle, Washington. It produces a family of interactive data visualization products focused on business intelligence.

The company was founded in Mountain View, California in January, 2003 by Chris Stolte, Christian Chabot and Pat Hanrahan.

+ableau Founders

Chris Stolte   Christian Chabot   Pat Hanrahan

+ableau
S O F T W A R E

What is Tableau?

Tableau : *A group of models or motionless figures representing a scene from a story or from history*

   Tableau is business intelligence software that allows anyone to easily connect to data, then visualize and create interactive, sharable dashboards.

It's easy enough that any Excel user can learn it, but powerful enough to satisfy even the most complex analytical problems. Securely sharing your findings with others only takes seconds.

What is Business Intelligence?

Business intelligence (BI) is a technology-driven process for analyzing data and presenting actionable information to help corporate executives, business managers and other end users make more informed business decisions.

Importance of Tableau..

With instantaneous and powerful data visualization techniques, Tableau Software easily connects to any data source (Corporate Data Warehouse, Microsoft Excel or other).

It supports quicker drop-and-down interface processes for **creating visual reports of massive amounts of data**. The best part is that all data in Tableau from various sources is created equally irrespective of the data type.

Introduction to Tableau

❖ Tableau is very easy to learn and easy to use with drag and drop technology. It is a user friendly interface that creates reports that look great right of the gate. This encourages business users to create their own reports.

❖ Stores data In-Memory(which stores the data in RAM or Flash memory). Processing speed will be much faster than stored in Disks

❖ More than 10,000 organizations get rapid results with Tableau in the office and on-the-go.

❖And tens of thousands of people use Tableau Public to share data in their blogs and websites.

❖ Tableau visualizations are automatically streamlined for mobile devices (iPad, Android Tablets) thus enabling the mobility where the data and reports can be accessed from anywhere.

❖Connect data in two ways Live Connect or Extract.

Tableau Software offers three main products:

Tableau Products

Tableau Desktop

+ explore, visualize, and analyze data
+ answer any question
+ blazing speed against massive data
+ create dashboards to consolidate views
+ share interactive data experiences

Tableau Server

+ web-based business intelligence platform
+ rapid-fire analytics and dashboarding
+ secure information and metadata management
+ integration with portals and applications
+ enterprise collaboration

Tableau Reader

+ Tableau reader is a free viewing application that lets you read and interact with packaged workbooks created by Tableau desktop.
+ on-the-fly web applications with no programming
+ tell stories, create conversations
+ scales to millions of users
+ Tableau Public - companion free product

VIT
UNIVERSITY
(Estd. u/s 3 of UGC Act 1956)
VELLORE ■ CHENNAI
www.vit.ac.in

Tableau Public	To create interactive graphs, dashboards, maps and tables from virtually any data and embed them on website or blog in minutes. No language to learn, no Flash, no plug-ins, no API required.
Tableau Online	This is nothing but Tableau Public Premium. Public Premium is nothing like needs to purchase it in place of server. It is cloud based hostage service we can purchase how much memory we need and we no need to install server or no need to maintain the server. Everything is done by Tableau.
Tableau Desktop Professional	Tableau Desktop is the rapid-fire authoring environment used to create and publish views, reports and dashboards to Tableau Server. Using Tableau Desktop, a report author can connect to multiple data sources, explore relationships, create dashboards, modify metadata, and publish a completed workbook or data source to Tableau Server.
Tableau Server	Tableau Server is an enterprise-class business analytics platform that can scale up to hundreds of thousands of users. It offers powerful mobile and browser-based analytics and works with a company's existing data strategy and security protocols.

SOFTWARE

System Requirements

Windows

Microsoft® Windows® 8.1, 8, 7, Vista, or XP sp3; or Server 2012 R2, 2012, 2008, or 2003 (on x86 or x64 chipsets)

32-bit or 64-bit versions of Windows[2]
Minimum of an Intel Pentium 4 or AMD Option processor[3]

2 GB memory

250 megabytes minimum free disk space

32-bit color depth recommended

Mac

iMac (Mid 2007 or newer)

Mac Book (Late 2008 Aluminum, or Early 2009 or newer)

Mac Book Pro (Mid/Late 2007 or newer)

Mac Book Air (Late 2008 or newer)

Mac mini (Early 2009 or newer)
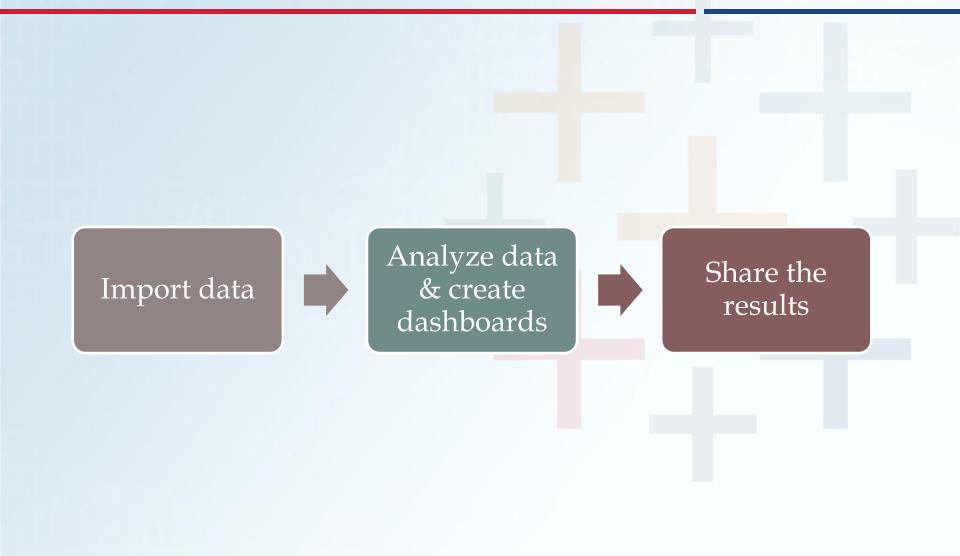
OS X 10.8.1 or later (10.8.6 or later recommended)
2 GB memory

500 MB available disk space

Three main stages of Tableau..

Import data → Analyze data & create dashboards → Share the results

How does Tableau Works
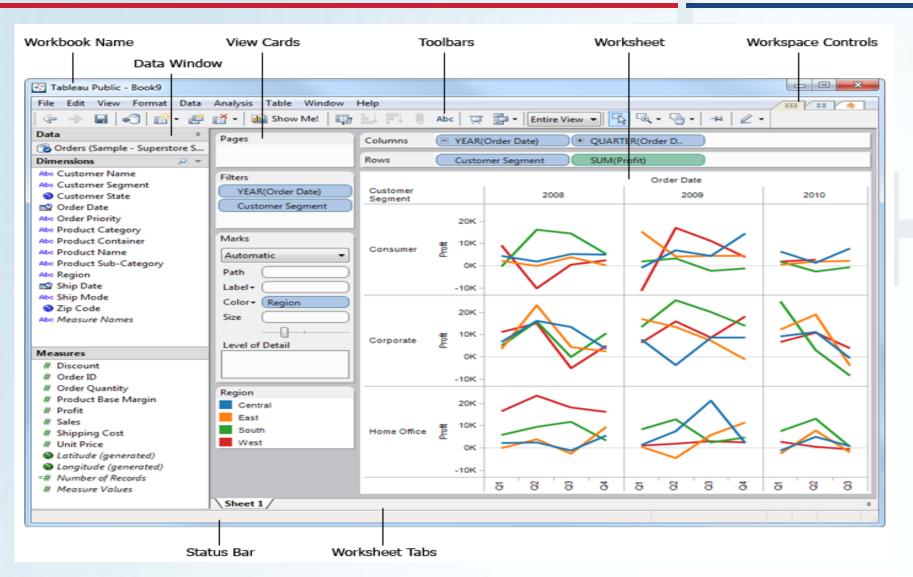
❖ Tableau is based on three simple concepts.

❖ **Connect:** Connect Tableau to any data source that you want to analyze.

❖ **Analyze:** Analyze the data the way you want, I mean filter it, sort it, perform aggregations on it, summarize it and so on.

❖ **Share**: You can share results with others either by sharing workbooks with other tableau users, by pasting results into applications such as Microsoft Office ,printing to PDF or by using Tableau Server to publish or embed your views across your organization.

Tableau Workspace
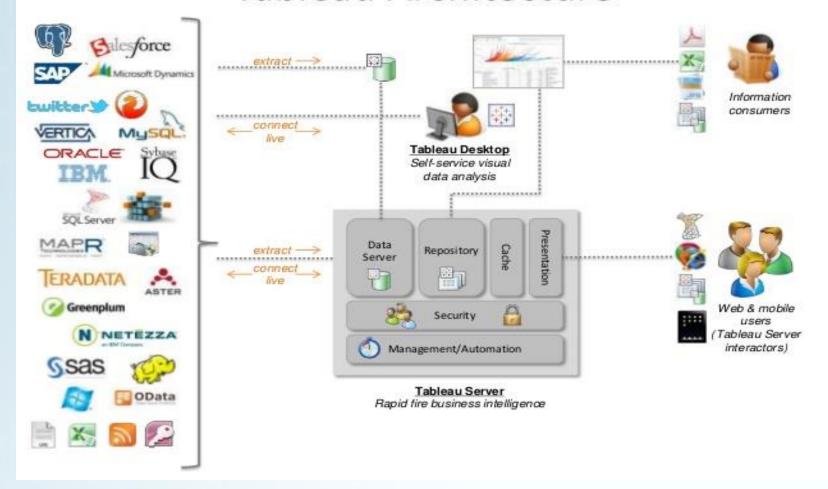
Workbook and worksheets

- 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
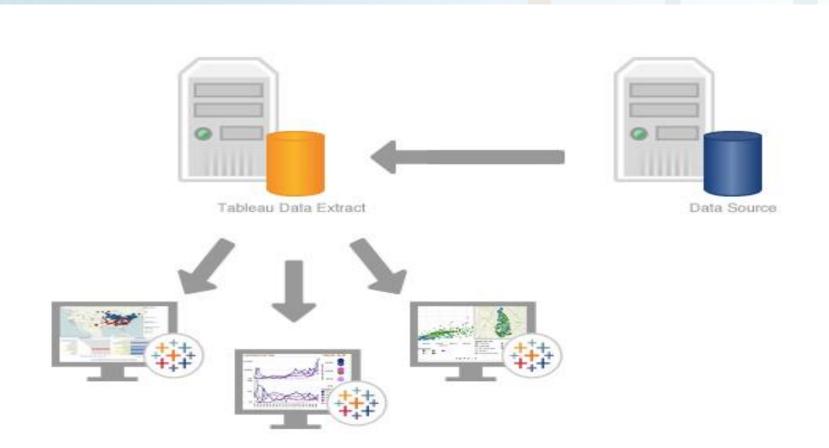
Data into Tableau
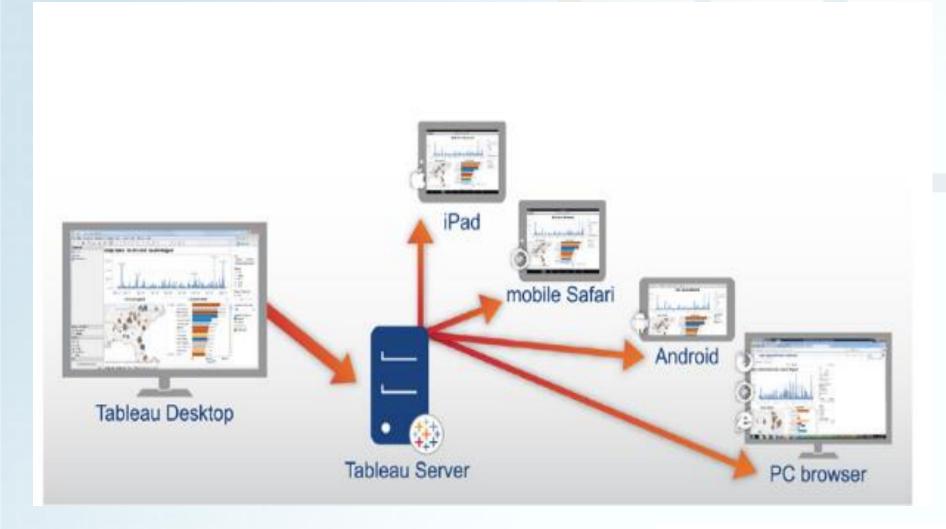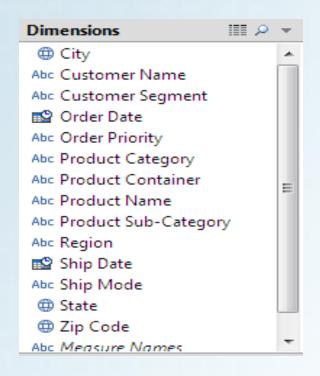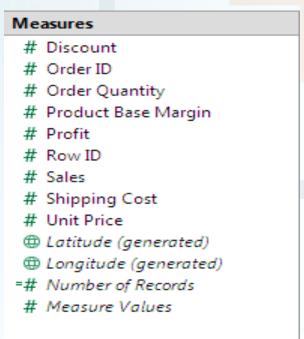
Data Roles

Dimensions- Tableau treats any field containing qualitative, categorical information as dimension. It include, for instance, any field with text or dates values. All dimensions are indicated by "Blue" color.

Measures- Tableau treats any field containing numeric (quantitative) information as a measure. All measures are indicated by "Green" color.

Data Types

Icon	Description
Abc	Text values
	Date values
	Date & Time values
#	Numerical values
T/F	Boolean values (relational only)
	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.

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.
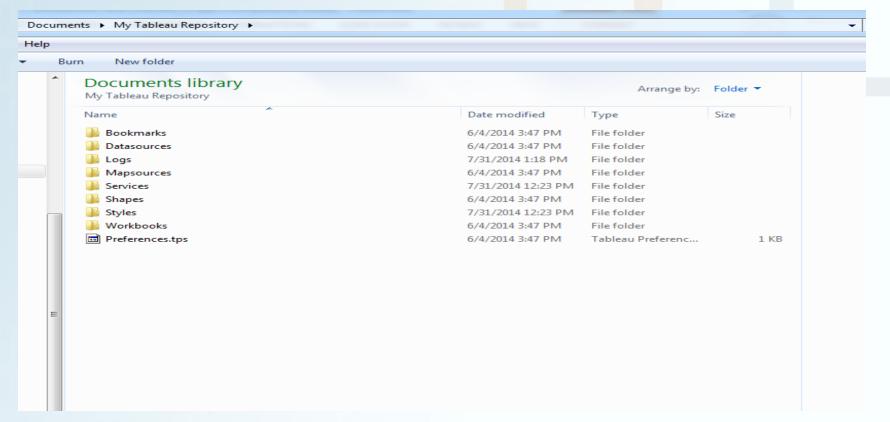
Tableau files and it types

◈ 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 it types

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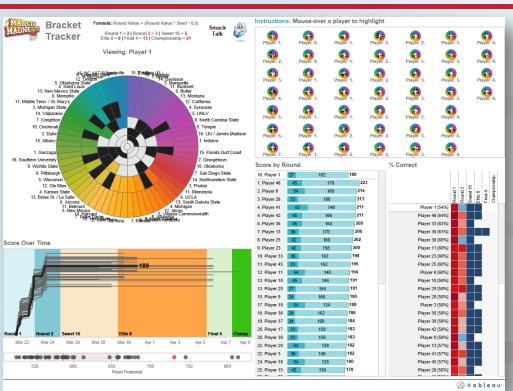
◈ Tableau data extract files have the .tde file extension and are marked with the extract icon. Extract files are a local copy of a subset or entire data source that you can use to share data, work offline, and improve database performance.

◈ 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.

Sample Tableau dashboards
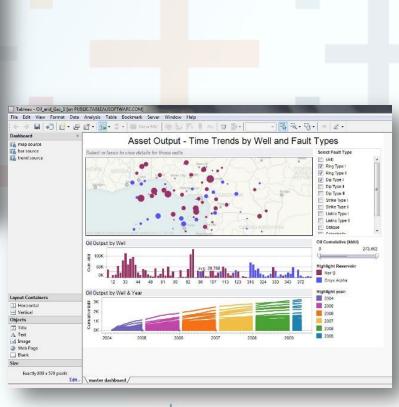
Tableau demo
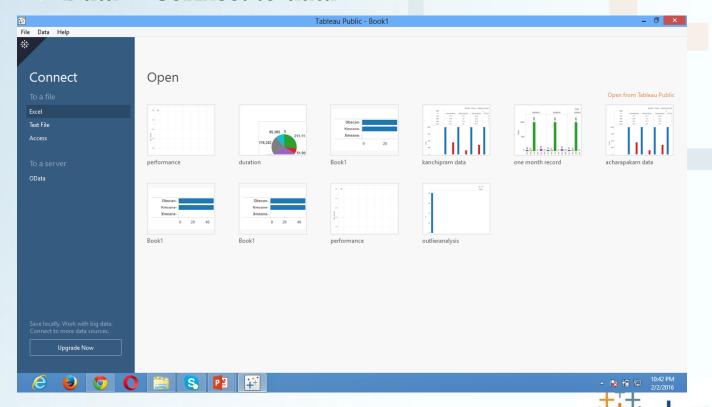
◈ Starting Tableau

◈ Open a new workbook

◈ Adding additional sheets

◈ Data connection tab

◈ Various data connection options

◈ Adding a new dash board

◈ Various graph options

Tableau Basics – Connecting data
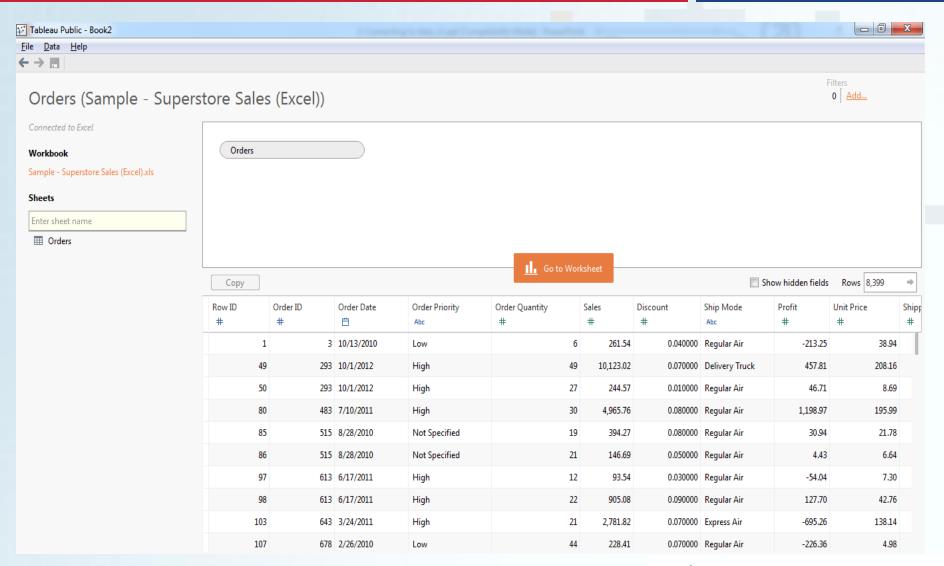
- Opening a new sheet
  - File>>New
- Connect to data
  - Data>>Connect to data

Connecting with filters
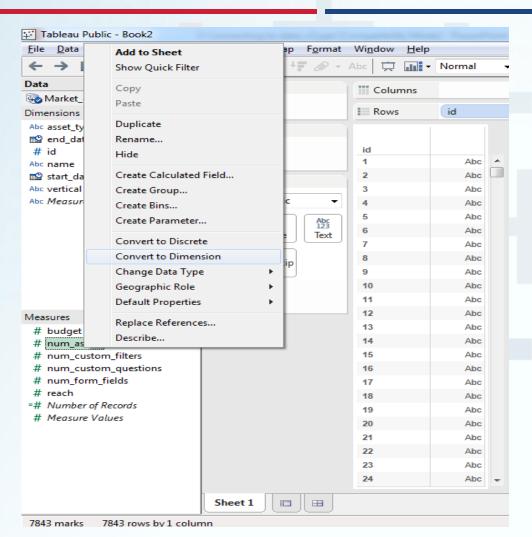
Converting measures to dimensions

- Converting id to dimension

- Converting num_assests to dimension
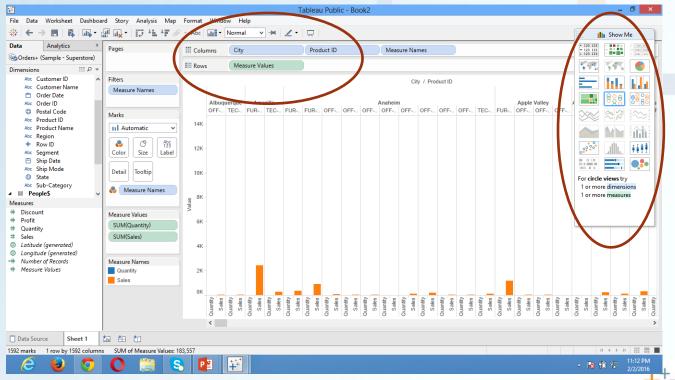
Basic Views

◇ Superstore data

  ◇ Sum of order quantity by product category

  ◇ Sum of order quantity by month & year

  ◇ Changing the graph type
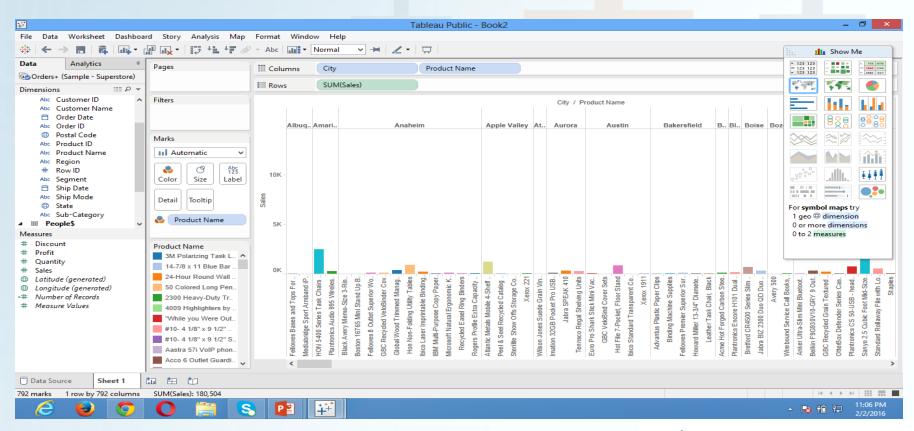
Basic Views

- Connect to Price Web Data(Price_web_data.csv)

- Draw a bar graph to show total sales(count of rows) by brand
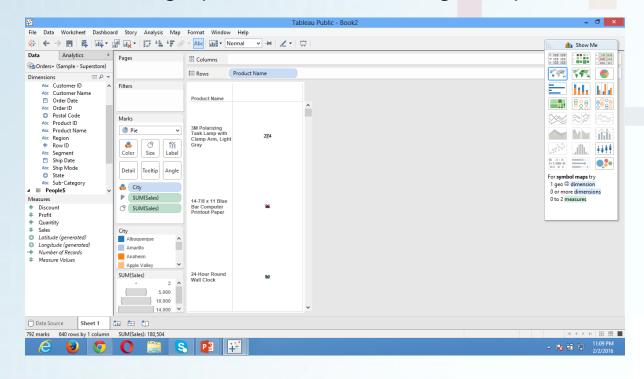
Views

◈ 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
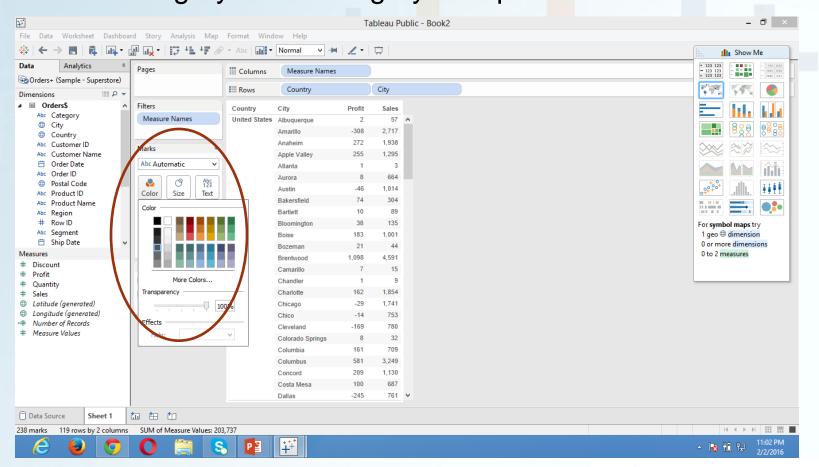
Formatting the graphs-Color and size

◈ Representing Average unit price & total ordered quantity per Product category & subcategory in superstore data
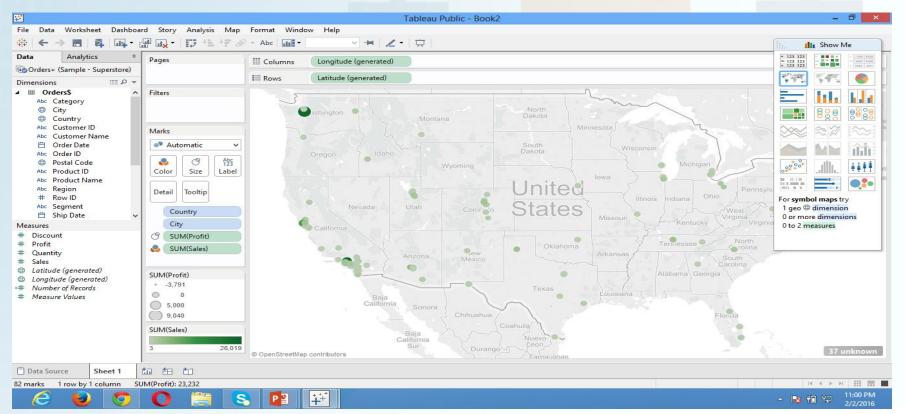
Demo: GIS graphs

◇ City wise bill on the map
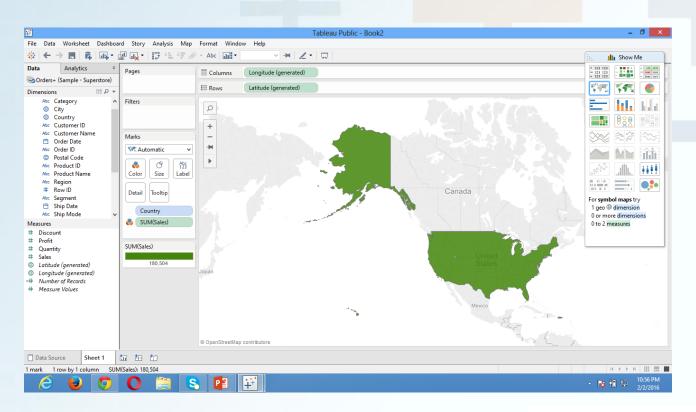
　　◇ Count if accounts as size

　　◇ Total Bill as colour

Demo: GIS graphs

◇ Connect to Sales_by_country_v1.csv(inside super store folder)

   ◇ Show number of units sold for each county

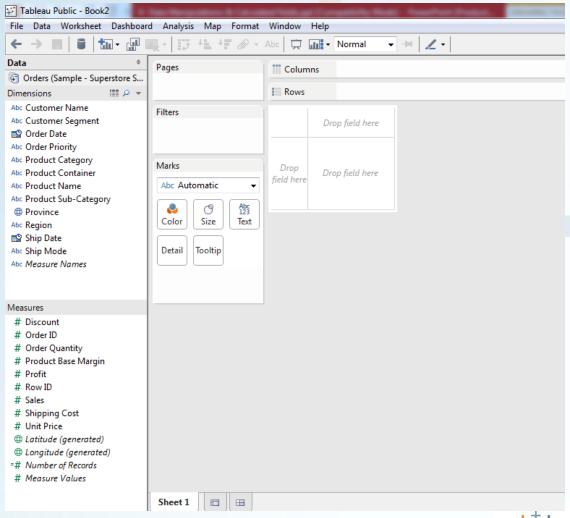   ◇ Draw a fill map fill graph

Demo: Data manipulations and Calculated fields

◈ Calculated fields

◈ Working with dates

◈ Logic statements

◈ Working with filters

Calculated fields

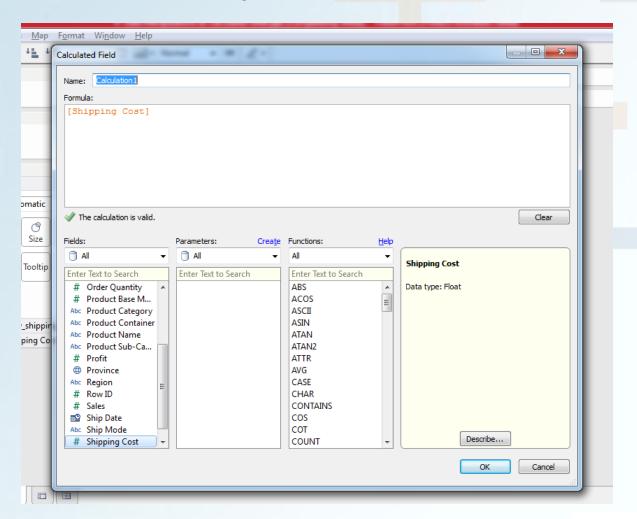◈ Connect to excel>>Sample-Superstore data>>>orders
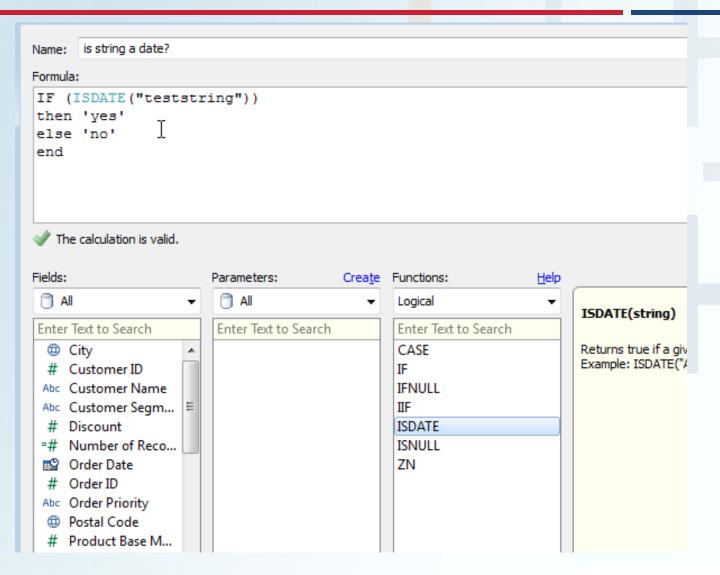
Calculated fields

◈ New reduced shipping cost to 50%

Logic statements

Demo: Logic statements
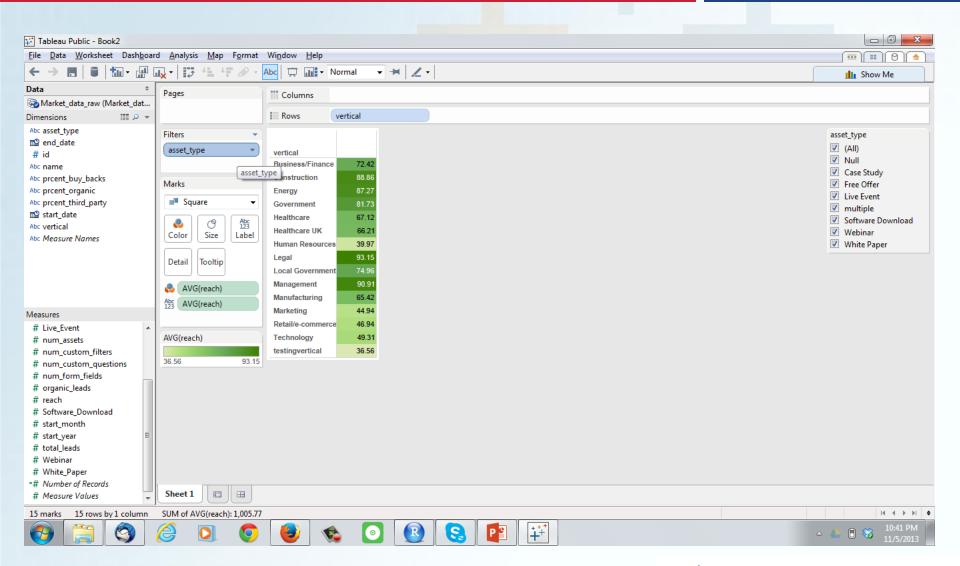
◈ Market data, high, medium, low reach

Working with filters

Chart Types

1. Map Chart
2. Tree Maps
3. Packed Bubbles
4. Bullet Chart
5. Heat Map
6. Scatter plot
7. Funnel Chart

8. Water Fall Chart
9. Pareto Chart
10. Highlight table
11. Bar
12. Line
13. Pie
14. Gantt
15. Bubble

Global Map

Tree Map

VIT UNIVERSITY
(Estd. u/s 3 of UGC Act 1956)
VELLORE ■ CHENNAI
www.vit.ac.in

- To show lot of information in a very small amount of area
- Useful when we have different measures and dimensions and when we want to see the most important ones
- Above chart depicts how much of profit was contributed by different product categories across different regions. Left to right the profit % reduces and regions are grouped by color.

+ableau
SOFTWARE

Bubble Chart

- Similar to Tree Maps which is useful in depicting lot of information in a very small amount of area
- Size & Color of the bubbles highlight the top performing product categories.
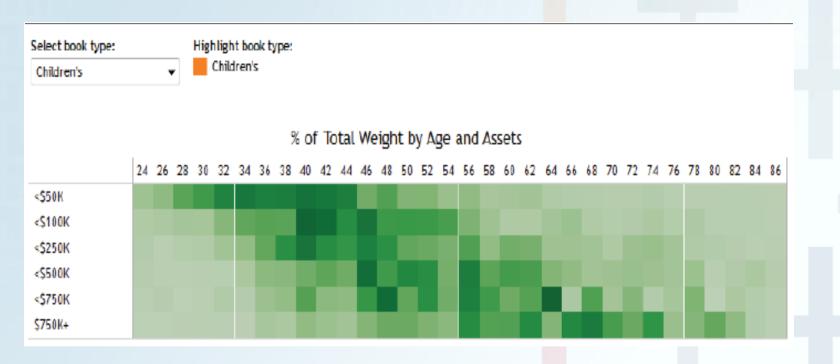- **Status, Technology & Experience**

Bullet Charts

- Bullet graphs compare a primary measure to one or more other measures and presents this in the context of defined performance metrics. Bullet graph tells us instantly how the primary measure is performing against overall goals.
- **Based on the technology we can find the employees worked on which companies**
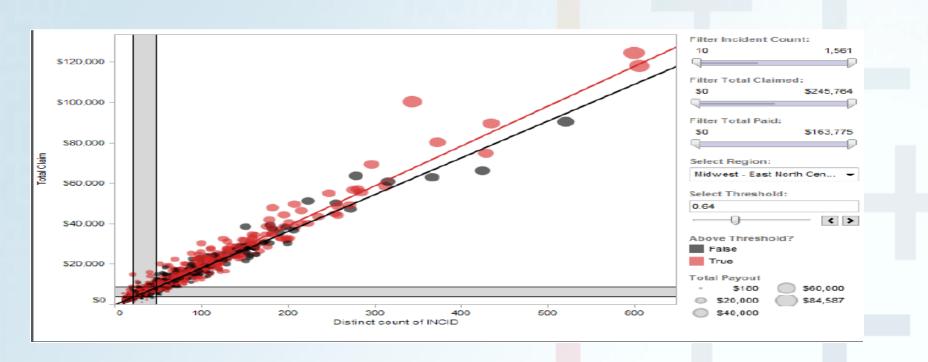
Heat Map

- Heat maps are a great way to compare data across two categories using color. The effect is to quickly see where the intersection of the categories is strongest and weakest
- **Inference : To find strong and week employee based on the selected technologies**
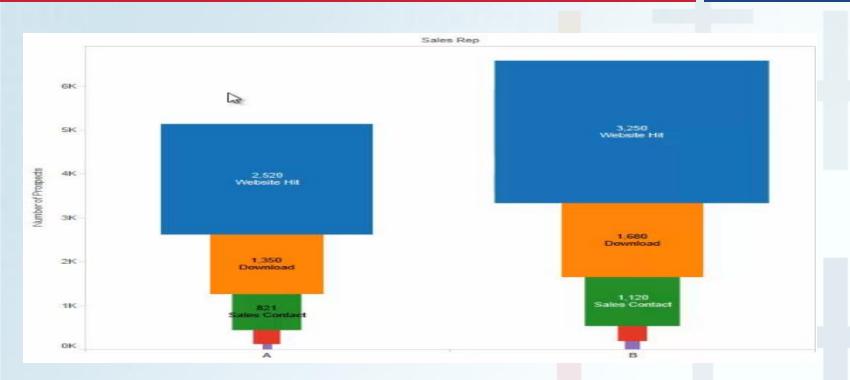- **X-Axis: experience**
- **Y-Axis : Employee**

Scatter Plot

- Scatter plots are an effective way to give us a sense of trends, concentrations and outliers that will direct to where we want to focus our investigation efforts further.

Funnel Chart

VIT UNIVERSITY
(Estd. u/s 3 of UGC Act 1956)
VELLORE ■ CHENNAI
www.vit.ac.in

- Funnel charts are a type of chart, often used to represent stages in a sales process and show the amount of potential revenue for each stage. This type of chart can also be useful in identifying potential problem areas in an organization's sales processes.
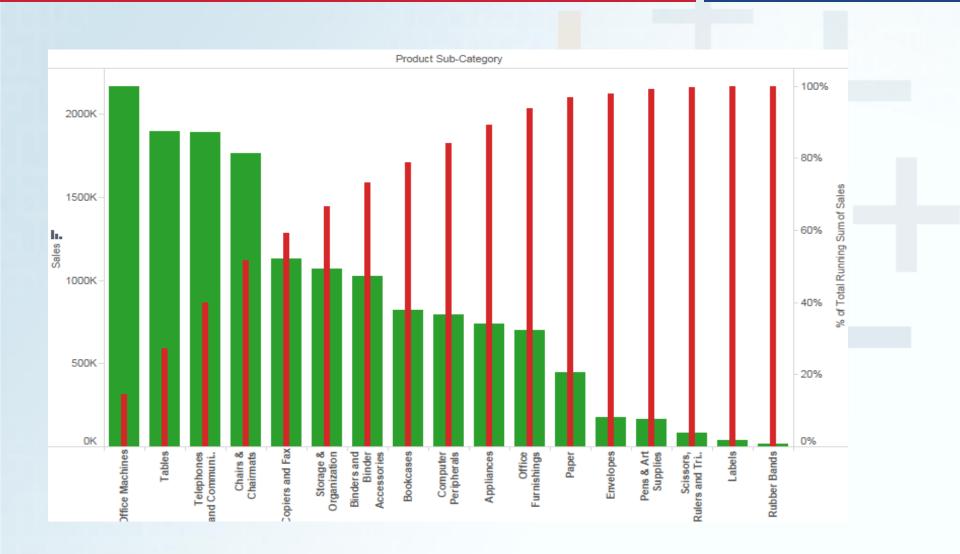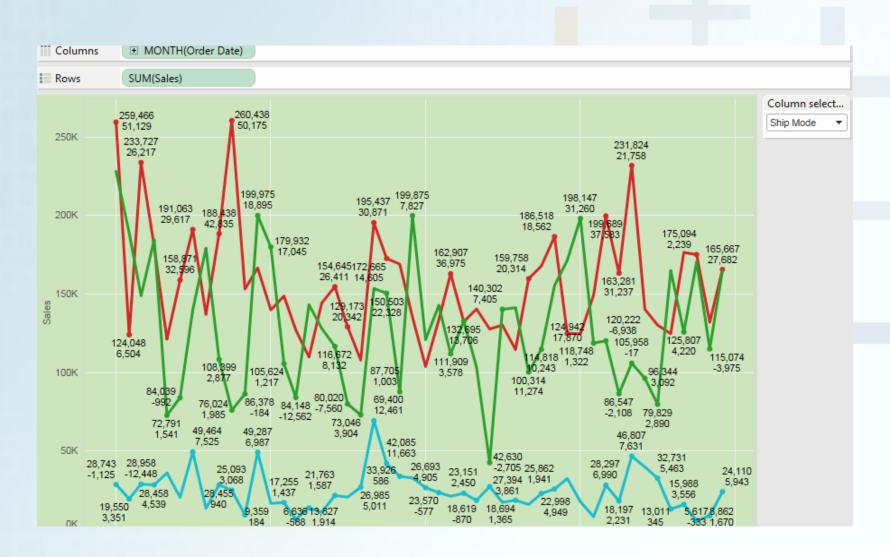
Waterfall Chart

Pareto Chart

Bar Chart

Line Chart

Difference between .twb and .twbx

❖ The .twb file alone is not enough to perform any analysis because it only contains Tableau's instructions for interacting with a datasource.

❖ In actuality, .twb files are XML files specially tailored to interact with datasources. They are custom built to make the awesome visualizations that Tableau generates. Here you can see a picture of a .twb file opened in Notepad++:

❖ A.twbx file is a Tableau Package.

❖ .twbx files can be considered analogous to specialized zip files, in which these "zip" files contain all the information necessary to work in Tableau.d Workbook.

❖ The primary advantage to using .twbx files is that analysis can be performed without network/internet connections to your data because your data is already present on your computer in this packaged file.

Publish to Tableau Server

Publish to Tableau Server :

Publish views of your data to Tableau Server by publishing a workbook. When you publish a workbook you can add it to a server project, hide some of the sheets, add tags to enhance searchability, specify permissions to regulate access to the workbook on the server, and choose to embed database passwords for automatic authentication on the web.
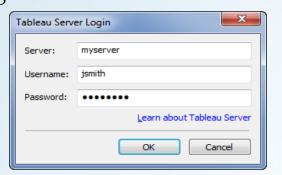
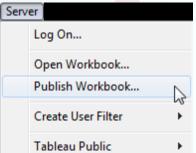How to Publish Workbooks to the Server:

After you create a workbook, you can publish to Tableau Server by following the steps below.

To publish a workbook to Tableau Server:

1.Select Server > Publish Workbook.

2. If you are not already logged in to Tableau Server, you see the Tableau Server Login dialog box.
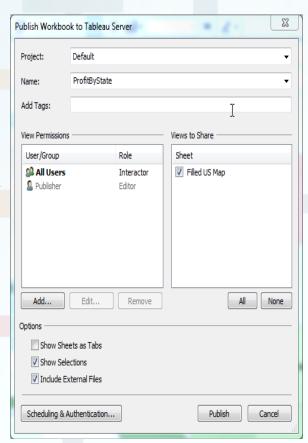
VIT
UNIVERSITY
(Estd. u/s 3 of UGC Act 1956)
VELLORE ■ CHENNAI
www.vit.ac.in

Type the following into the Tableau Server Logon dialog box:

✓Server: The server name or URL (for example, sales_server, or https://sales_server)
✓User Name: Your user name. If Tableau Server is configured to use Active Directory,
✓type your Windows user name (the domain is not required--except in multi-domain environments where the user is not in the default domain); otherwise, type your Tableau Server user name.
✓Password: Your password.

3. You now see the Publish Workbook to Tableau
    Server dialog box.
Specify the following:
✓Project: A project is like a folder that can contain workbooks and data sources.
✓The default project on Tableau Server is named Default. All workbooks must be published into a project.
✓Name: Provide a name for the workbook in the Name text box.

Publish Workbook to Tableau Server

Project:	Default
Name:	ProfitByState
Add Tags:	

View Permissions

User/Group	Role
All Users	Interactor
Publisher	Editor

Views to Share

Sheet
☑ Filled US Map

Add... Edit... Remove   All None

Options
☐ Show Sheets as Tabs
☑ Show Selections
☑ Include External Files

Scheduling & Authentication...   Publish   Cancel

tableau
SOFTWARE

You can use the drop-down list to select an existing workbook on the server. In this case, the workbook on the server is overwritten. To do this, you must have the Write permission for the workbook on the server.

Add Tags: You can type one or more keywords that describe the workbook into the Tags text box. Tags help users find related workbooks when browsing the server. Multiple tags should be separated using either a comma or a space. If any of the tags contains a space, use quotations (e.g., "Sales Quotes").

4. You can specify permissions to allow or deny access to the workbook on the server. By default all users can interact with the workbook and you, as the publisher, have all permissions.
See Setting Permissions for details, and see Permissions for information on the different permissions you can assign to users and groups.

5. Select the sheets you want to share on Tableau Server under Views to Share. Any sheets that are not selected are hidden on the server.
Showing and hiding worksheets is useful when you want to publish a complete dashboard without publishing the worksheets that make up the dashboard.

When you publish extracts to the server you can schedule them to be refreshed automatically. That way you don't have to republish the workbook every time the underlying data has updated and you can still get the performance of a data extract.

Go to Publish Work book and select authentication and scheduling to create a new schedule as desired.

With the Performance Recording feature in Tableau, you can record performance information about key events as you interact with workbooks. You then view performance metrics in a performance workbook that Tableau creates automatically.

Use performance workbooks to analyze and troubleshoot performance issues for below items.

- Query execution
- Geocoding
- Connections to data sources
- Layout computations
- Extract generation
- Blending data
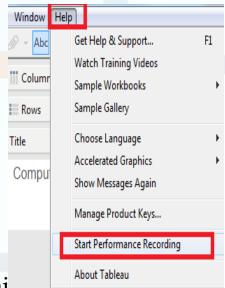- Server blending (Tableau Server only)

To start recording performance, follow this step in Tableau
Desktop:
Help > Start Performance Recording
To stop recording, and then view a temporary workbook containing
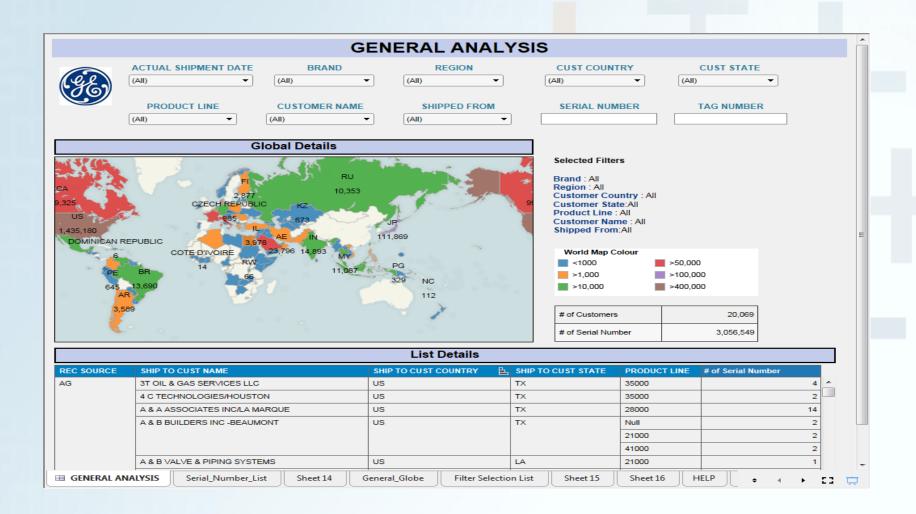results from the recording session, follow this step:
Help > Stop Performance Recording
You can then save this workbook as a packaged workbook (.twbx)
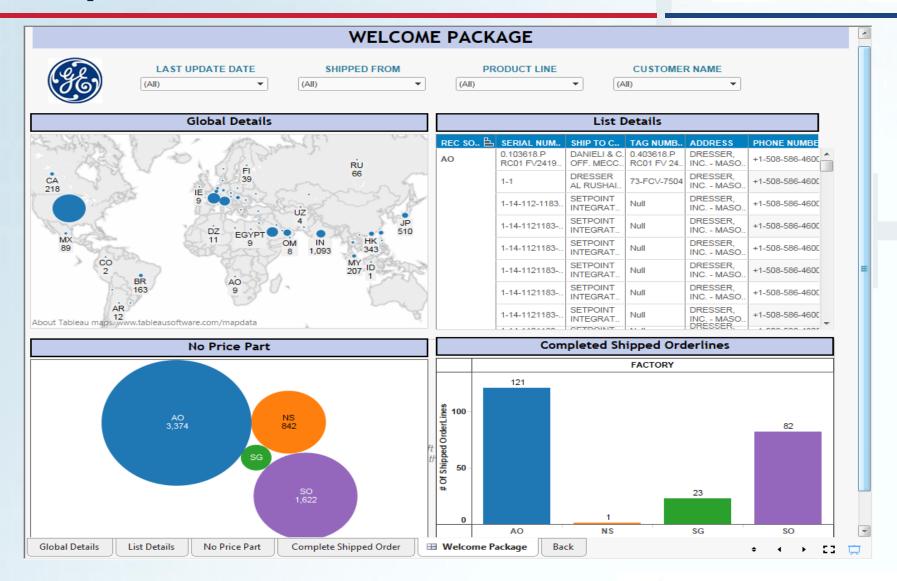file, and send it to Tableau support.

Sample Dashboards

Sample Dashboards

Sample Dashboards