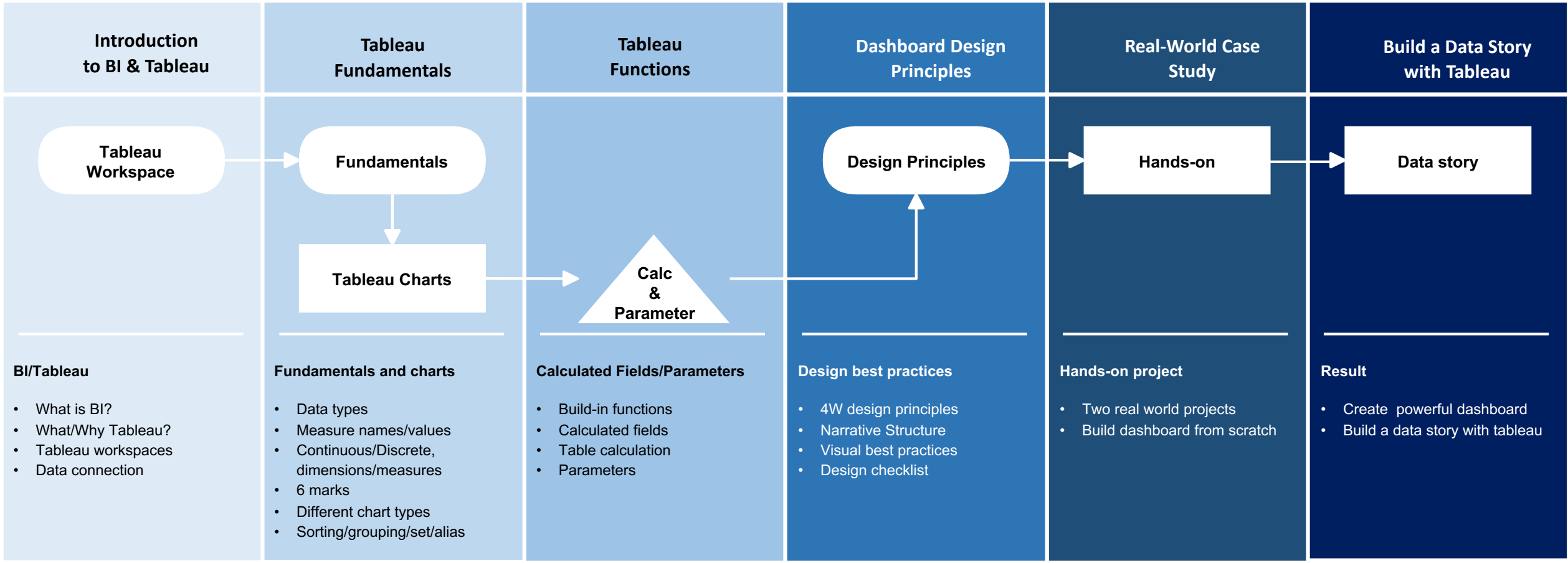
Data Visualization and Analytics with Tableau

COURSE AGENDA



Goals

- **Learn Tableau functionality** to analyze data sets efficiently
- **Understand design principles** to create effective artistic dashboard
- **Build dashboards with powerful insights** to address business questions

Data Visualization and Analytics with Tableau

PART 1: Introduction

What is BI?

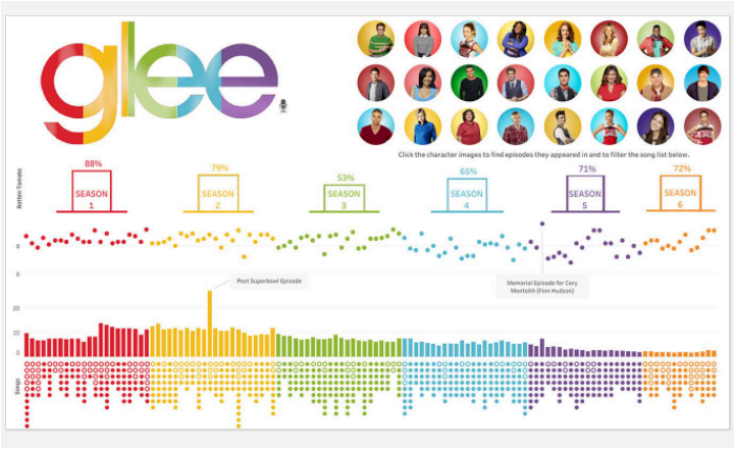
Business intelligence (BI) combines business analytics, data mining, **data visualization**, data tools and infrastructure, and best practices to help organizations to make more data-driven decisions.
Business intelligence has evolved to include more processes and activities to help improve performance. These processes include:

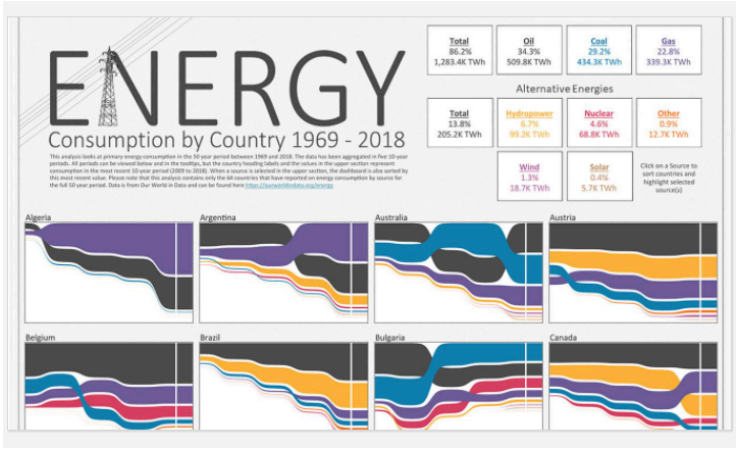
- **Data mining**: Using databases, statistics and machine learning to uncover trends in large datasets.
- **Reporting**: Sharing data analysis to stakeholders so they can draw conclusions and make decisions.
- **Performance metrics and benchmarking**: Comparing current performance data to historical data to track performance against goals, typically using customized dashboards.
- **Descriptive analytics**: Using preliminary data analysis to find out what happened.
- **Querying**: Asking the data specific questions, BI pulling the answers from the datasets.
- **Statistical Analysis**: Taking the results from descriptive analytics and further exploring the data using statistics such as how this trend happened and why.
- **Data visualization**: Turning data analysis into visual representations such as charts, graphs, and histograms to more easily consume data.
- **Visual analytics**: Exploring data through visual storytelling to communicate insights on the fly and stay in the flow of analysis.

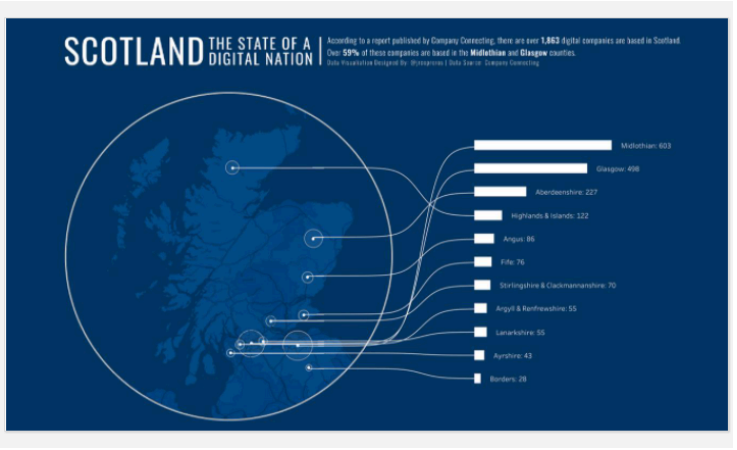
PART 1: Introduction

What is Tableau?

Tableau is an **interactive visualization software**, designed for the individual but scaled for the enterprise. From connection through collaboration, Tableau provides secure and flexible end-to-end analytics platform.



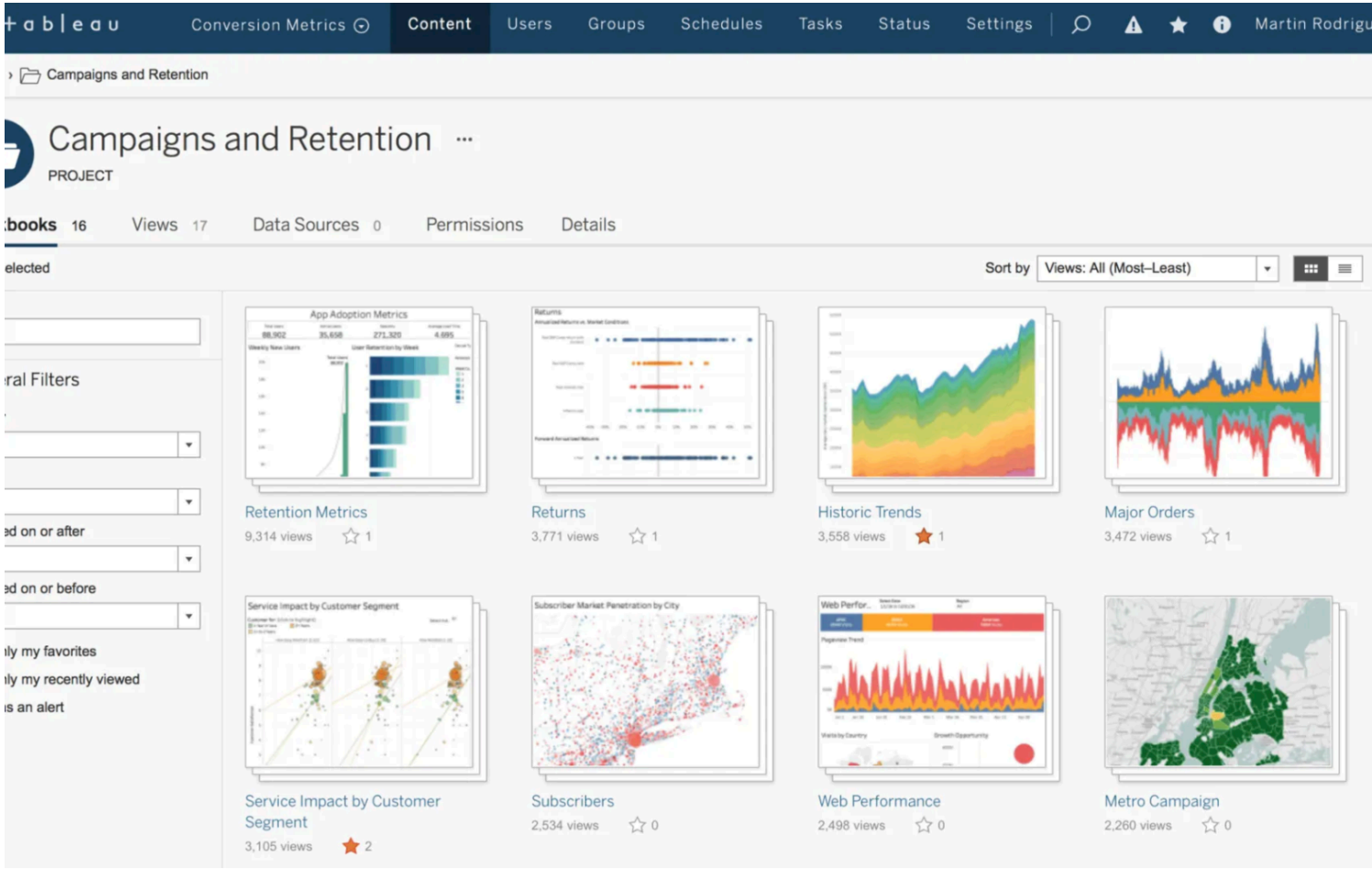




PART 1: Introduction

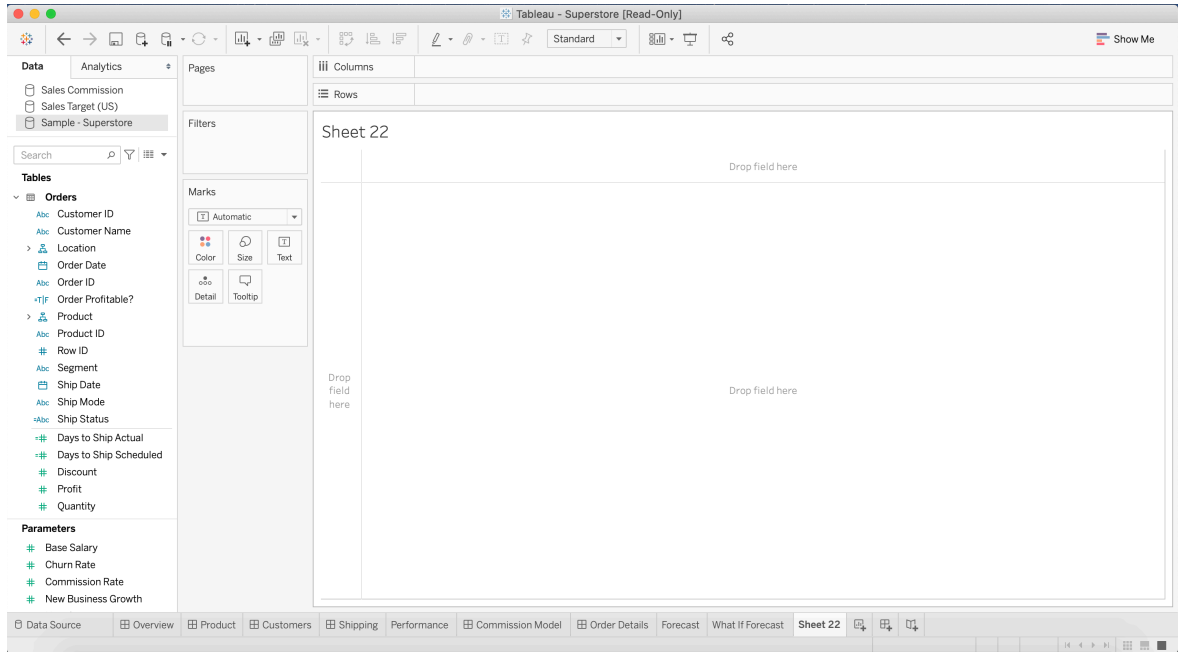
Why Tableau?

1. Intuitive User Experience
2. Powerful Analytics
3. Collaboration



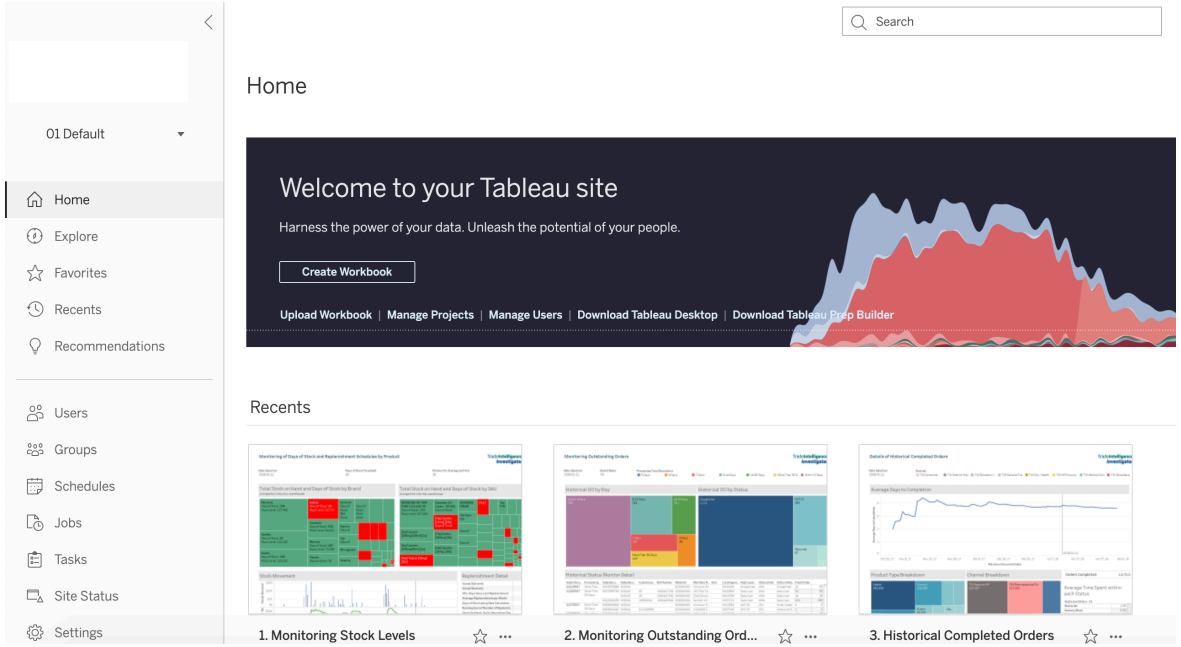
PART 1: Installation

Tableau Desktop



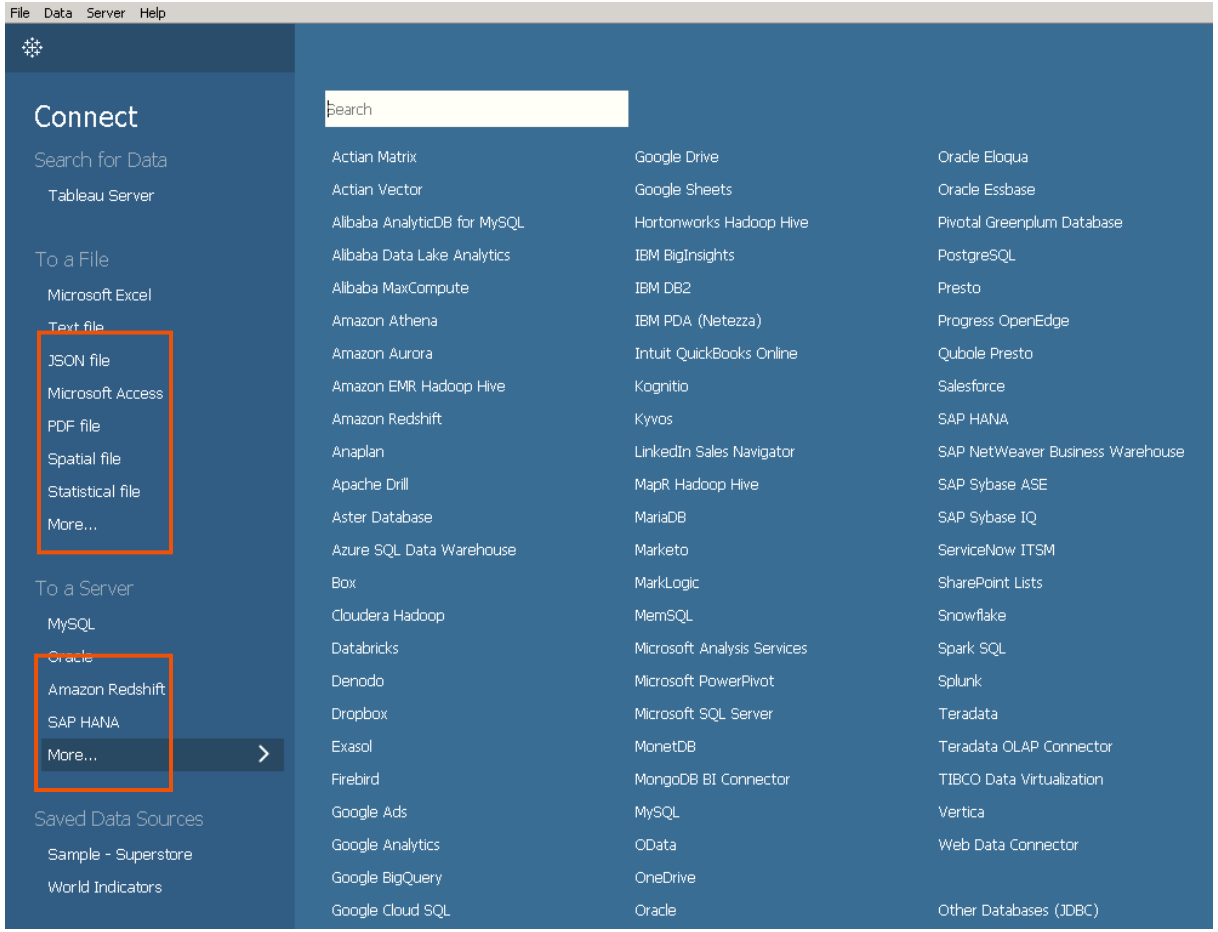
+ Create worksheets, dashboards
+ Share work locally

Tableau Server



+ Share dashboards across organization
+ Publish dashboards
+ Collaborate with others

PART 1: Data Connection



Flat Files

.xls **Excel**

.csv **Text**

.json **JSON**

Database

MSSQL

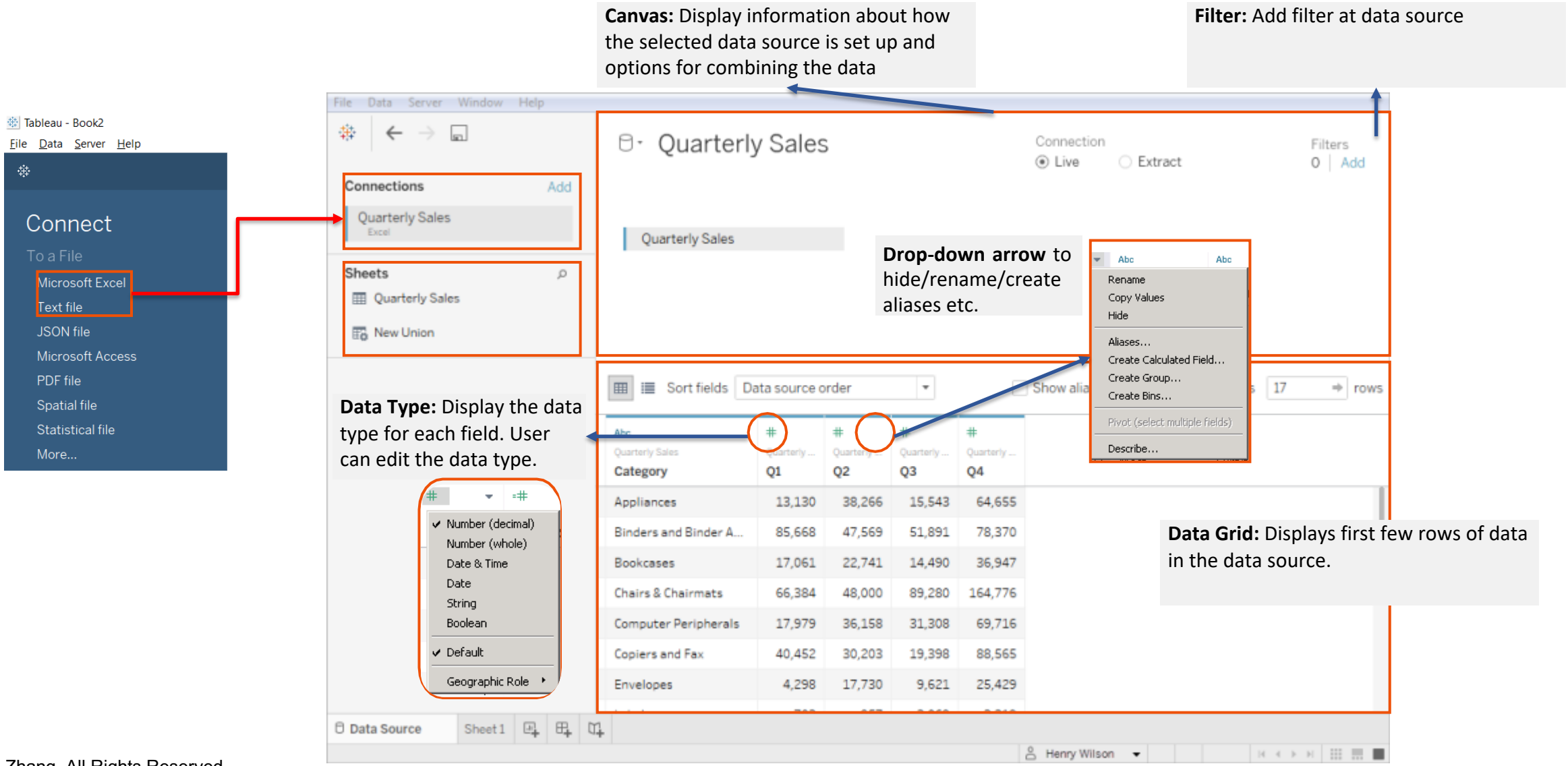
MySQL

SAP HANA

PostgreSQL

Tableau Server

PART 1: Connection – Flat File



PART 1: Connection – Database

1. Click on **More**
2. Search **PostgreSQL/SAP HANA/Presto…**
3. Click on **PostgreSQL**
4. Input the log-in credentials

- Server Host, Port
- Database Name
- Authentication method: Integrated Authentication or Username and password

5. Select Schema
6. Select Table or Add New Custom SQL

PART 1: Extract vs Live

TWBX: tableau packaged workbook

- Package of files "compressed" together, which include a data source file, TWB and any other file used to produce the workbook (including images).
- **This format is intended for sharing as it does not link to the original file source, instead contains a copy of the data that was obtained when the file was created.**
- TWBX files usually used as reports and can be viewed as Tableau viewer
- This is good if your dataset is using flat files (CSV / Excel) that is relatively small in size (<1Gb)

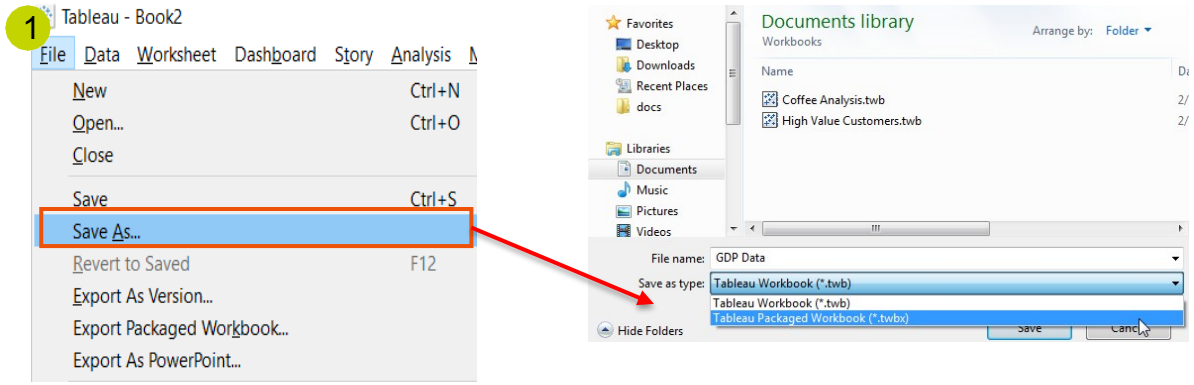
	Extract	Live Connection
ADVANTAGE (+)	• Extracts are snapshots of data optimized for aggregation and loaded into system memory to be quickly recalled for visualization. • Tend to be faster, especially in more complex visualizations with large data sets, filters, calculations, etc.	• Convenience of updates, with and changes to the data source reflected in the Tableau whenever there's an update in the worksheet.
DISADVANTAGE (-)	• Extract needs to be refresh to receive updates from the original data source, whether local or online server data	• Database not always optimized for fast performance as only as fast as the database itself. • Every time a new field is used, it takes a while to pull the data, especially if the data base is big.

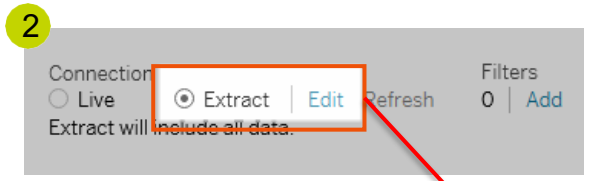
TWB: tableau workbook file

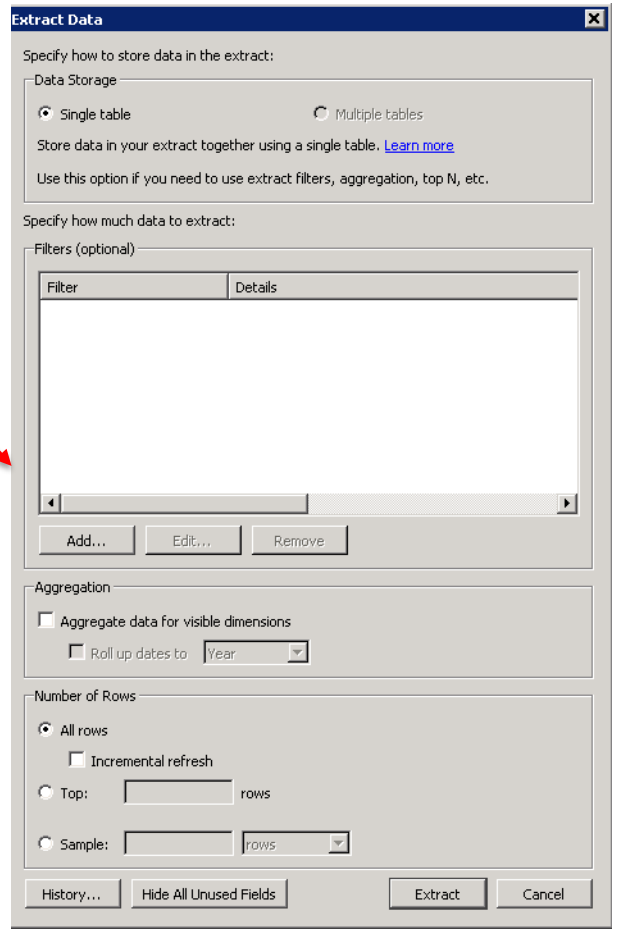
- Contains information about your sheets, dashboards and stories.
- This references a data source file such as excel, and when you save the TWB file, it is linked to the source.
- **TWB file do not contain any data, hence if users want to share the workbook, the TWB file and the data source file must both be sent together.**
- This is good if you are using a *live* connection to a shared database that you and your colleagues have access to.

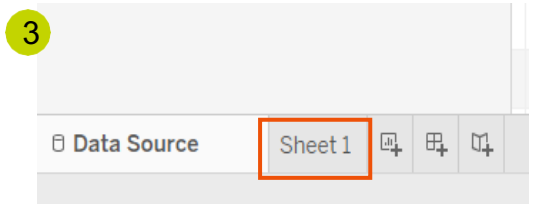
PART 1: Create Extract

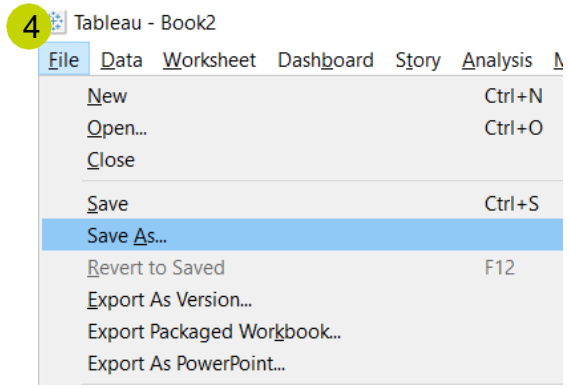
1. Select File > **Save As** > Specify File name > Select (under Save as type) Tableau Packaged Workbooks(.twbx) > Click **Save**
2. Following which, go back to data source page, Click **Extract**, then click the **Edit** link to open the Extract Data dialog box.
3. When finished, click OK. Click the sheet tab. Clicking the sheet tab initiates the creating of the extract.
4. Save again











PART 1: Tableau Workspace

Start Page
Where users can start to connect to a data source

Workbook name
A workbook contains sheets, which can be a worksheet, dashboard or story..

Toolbar
Use the toolbar to access commands and analysis and navigation tools.

Sidebar – Data
Displays the current data source(s)

Cards / Shelves Drag fields to these areas to add data to your

Sidebar Contains the data grouped into dimensions and measures based on the data type.

Parameters are created using the data.

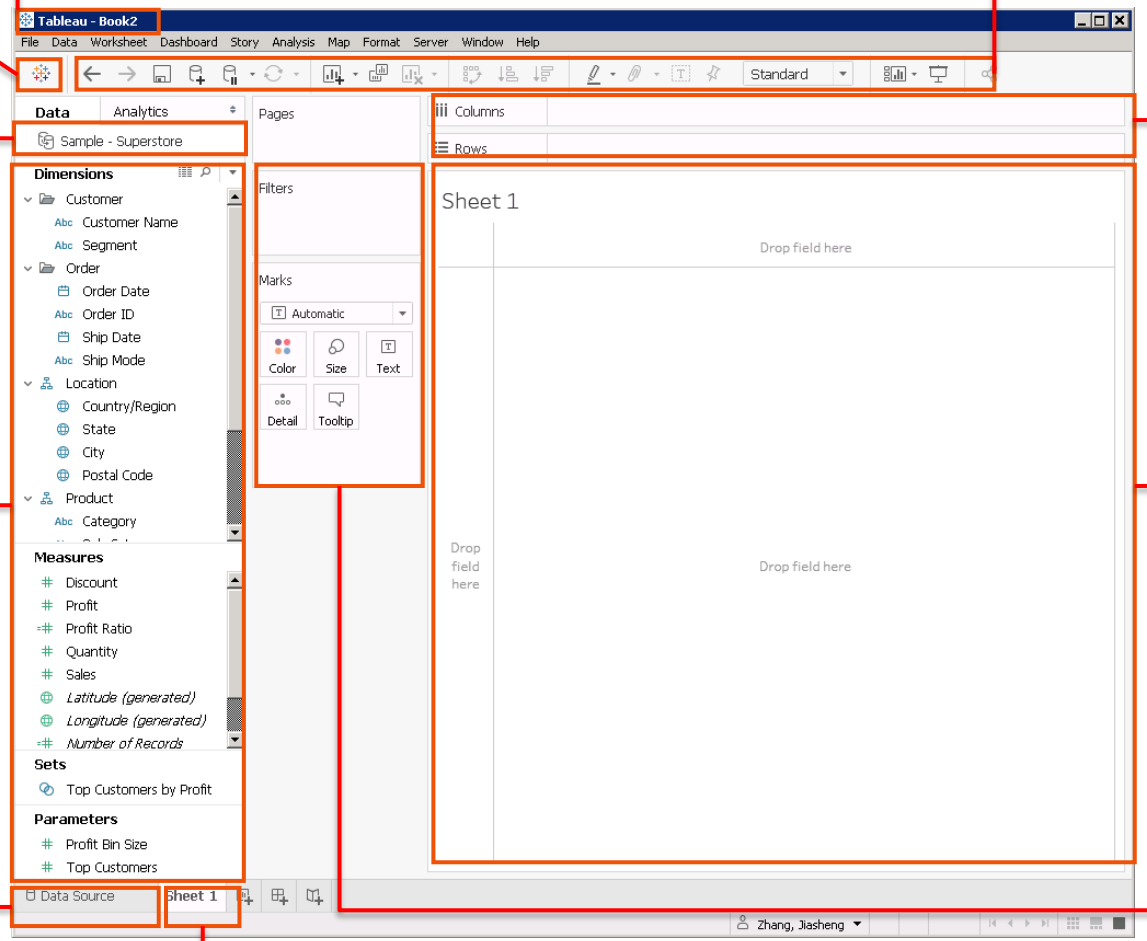
All fields here are available throughout the workbook

View
This is the canvas in the workplace where you can create a visualization.

Filters and Marks
Marks card allows users to add different properties such as context and details. Filter shelf allows specification of data to include and exclude.

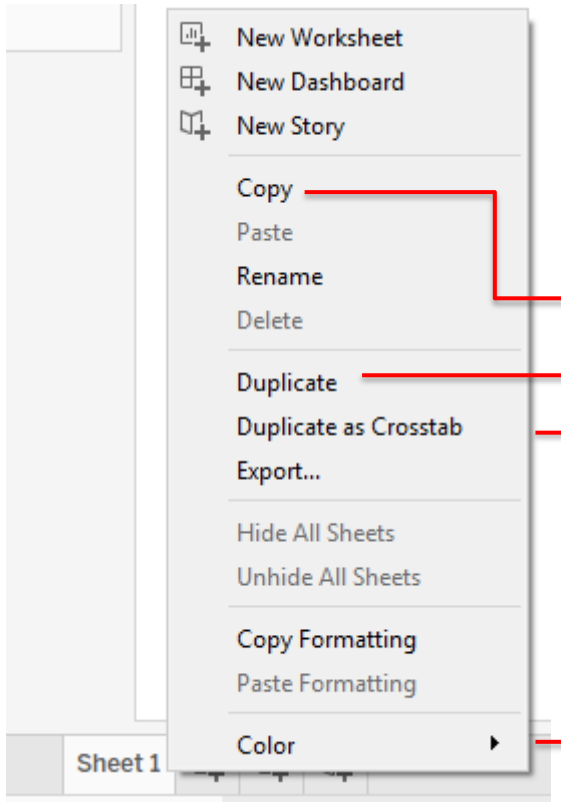
Data source This is to view your data or change or include a new data source.

Sheet Tabs Tabs represent each sheet.



PART 1: Tableau Workspace

Tableau Sheet Bar



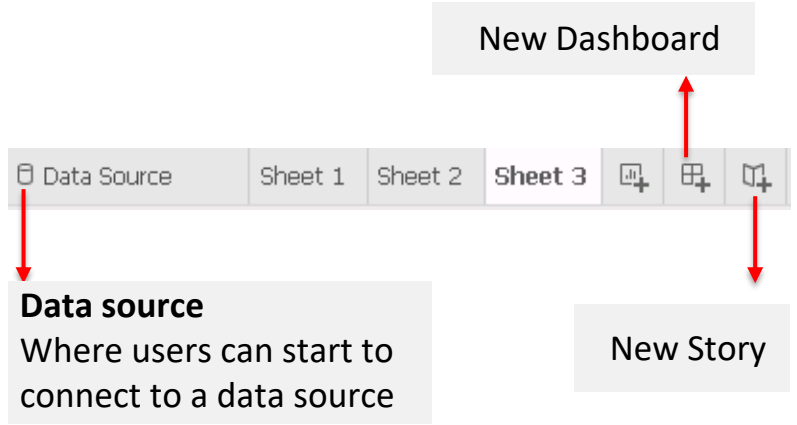
Most of the options are self-explanatory. Here is some additional info that might be useful for you

Copy: To Copy the worksheet, including all the calculations, parameters, and data source that is related to that sheet if pasted to a different workbook

Duplicate: Create a new worksheet with exact same settings on the same workbook. Very useful to do some debugging without ruining an existing chart

Duplicate as Crosstab: Sometimes the original chart is non-tabular, and it will be easier to debug if we see it in a tabular format. This option allows to copy the chart onto tabular format.

Color is useful to identify worksheets that are in a same group

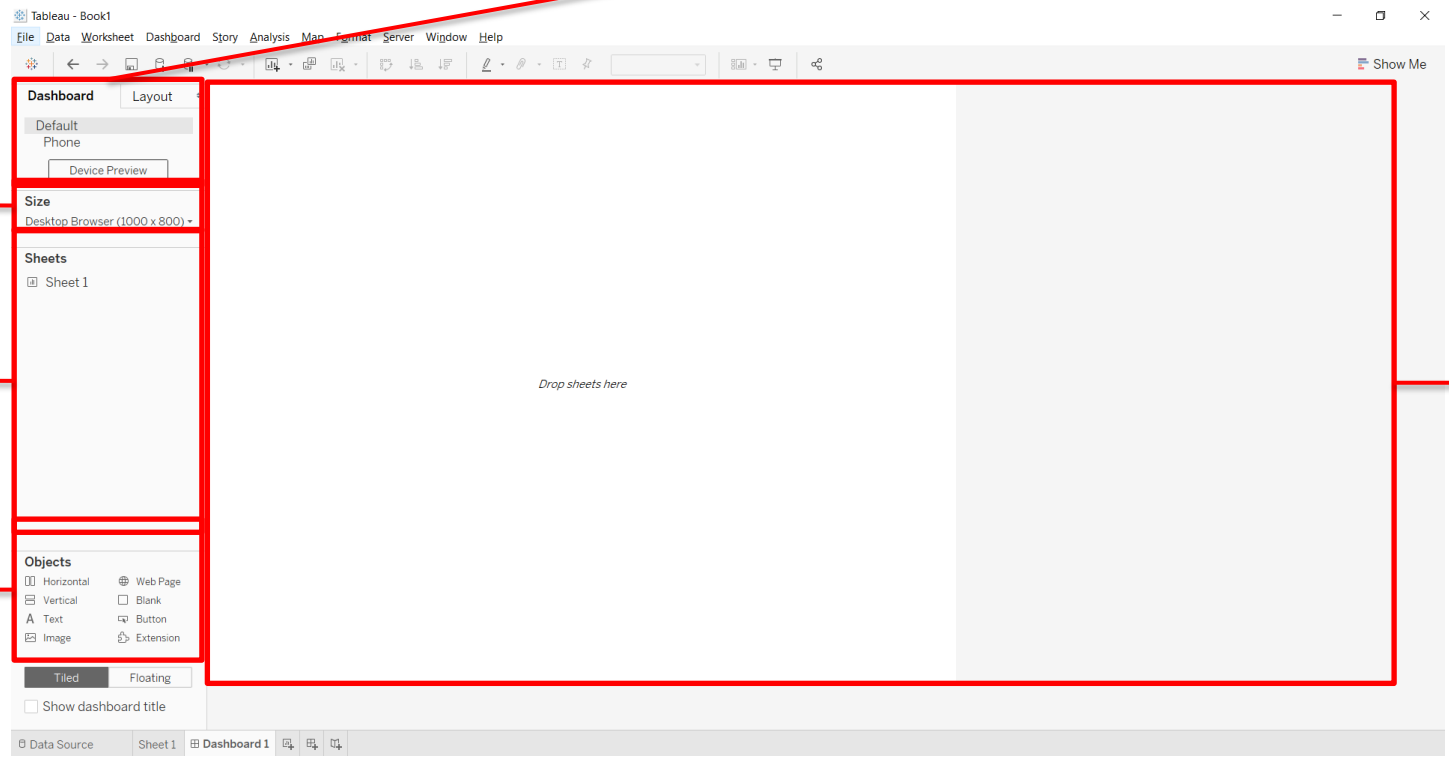


PART 1: Tableau Workspace

Tableau Dashboard

Dashboard Display Mode

Users are able to select the type of dashboard to craft the dashboard such as: Default (computer screen), Phone, Tablet



Screen Size

Changing the resolution size of the desktop when default is selected as the dashboard display mode.

Sheet Pane

Displays the existing sheets created to be added and combine in the dashboard

Objects Pane

Options of adding different objects into the dashboard to add more interactivity.

Display pane

Sheets can be dropped here and where editing and preview of the layout of the dashboard is done, including formatting, structuring and addition of objects located in the objects pane.