Tableau

Data Visualization

Data Visualization is one of the most important part of data analysis.

It has always been important to present the data in an understandable and visually appealing format.

Data visualization is one of the skills that Data Scientists have to master in order to communicate better with the end users.

Data is the word here.

Data Visualization

Data visualization allows data scientists to converse with their end users.

The outcome of data analysis is not immediately comprehensible to the people who do not directly deal with data.

Data visualization bridges that gap and makes people appreciate the possibility of data analysis..

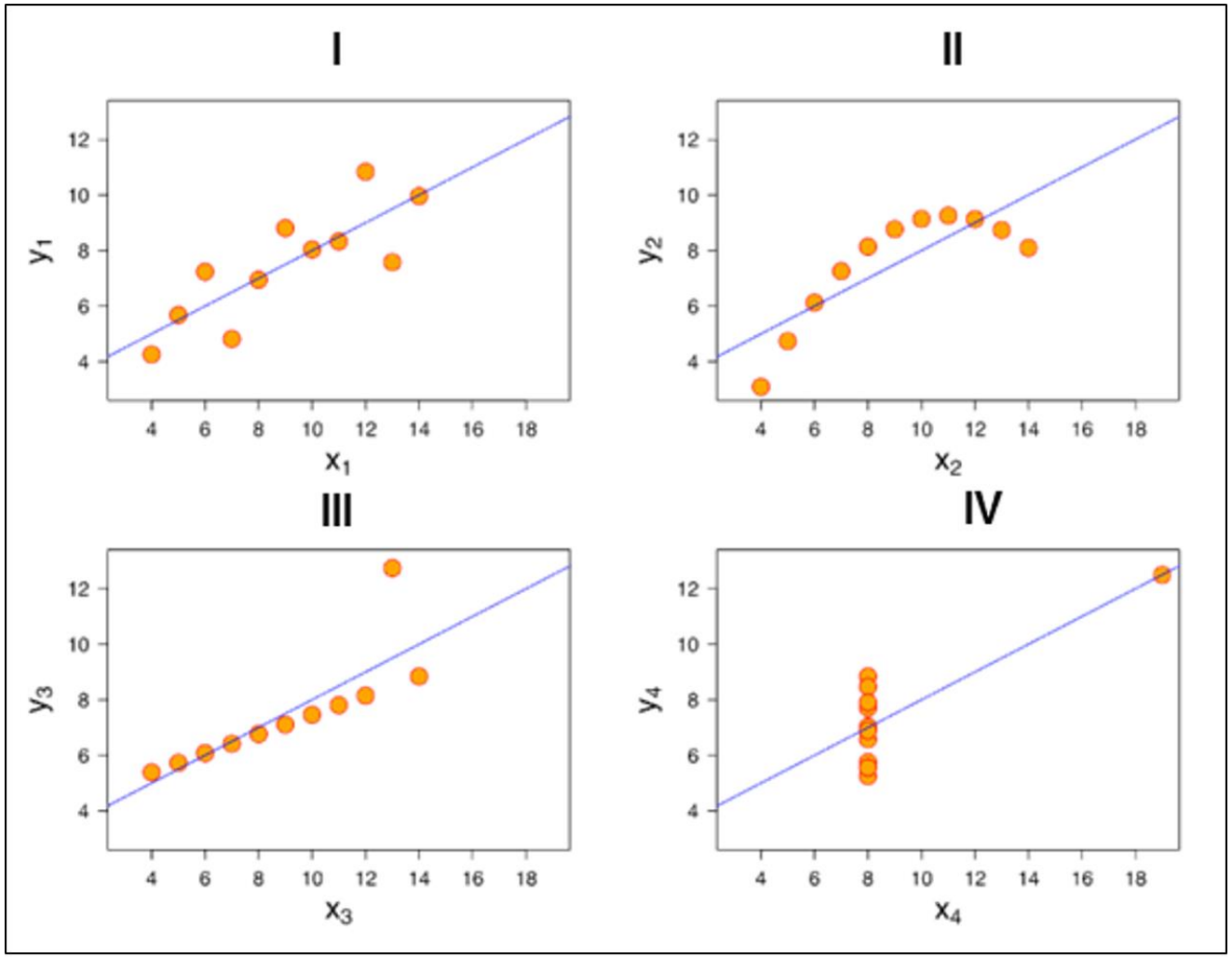
Example

Let us consider the following example to understand this:

I		II		III		IV	
X	Y	X	Y	X	Y	X	Y
10	8,04	10	9,14	10	7,46	8	6,58
8	6,95	8	8,14	8	6,77	8	5,76
13	7,58	13	8,74	13	12,74	8	7,71
9	8,81	9	8,77	9	7,11	8	8,84
11	8,33	11	9,26	11	7,81	8	8,47
14	9,96	14	8,1	14	8,84	8	7,04
6	7,24	6	6,13	6	6,08	8	5,25
4	4,26	4	3,1	4	5,39	19	12,5
12	10,84	12	9,13	12	8,15	8	5,56
7	4,82	7	7,26	7	6,42	8	7,91
5	5,68	5	4,74	5	5,73	8	6,89
99,00	82,51	99,00	82,51	99,00	82,50	99,00	82,51
9,00	7,50	9,00	7,50	9,00	7,50	9,00	7,50
3,32	2,03	3,32	2,03	3,32	2,03	3,32	2,03

Example

So, now take a look at the image below when we plot these points in our graph:



Data Visualization Tools

Tableau

Qlikview

Domo

Microsoft power BI

Excel

Tableau

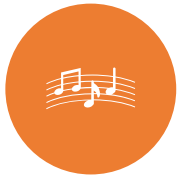
Basic version of Tableau data visualization tool is free which can perform regular tasks such as:

Sales data analysis

User density monitoring

Consumer segmenting

Tracking budgeting expense



Categorizing and sub-categorizing data

Excel

You can actually do some pretty complex things with Excel, from ‘heat maps’ of cells to scatter plots. As an entry-level tool, it can be a good way of quickly exploring data, or creating visualizations for internal use, but the limited default set of colors, lines and styles make it difficult to create graphics that would be usable in a professional publication or website.

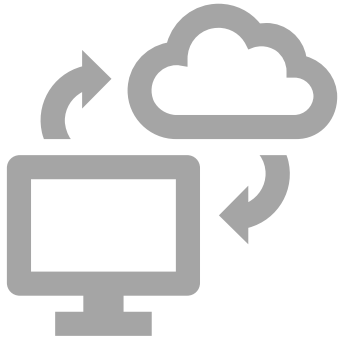
Microsoft Power BI

Microsoft Power BI is a cloud-based business intelligence and analytics service that provides a full overview of your most critical data.

Connecting to all of your data sources, Power BI simplifies data evaluation and sharing with scalable dashboards, interactive reports, embedded visuals and more.

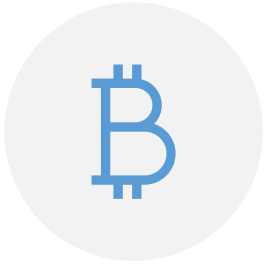
Domo

Domo is designed to be available for all business users, regardless of technical expertise, to help them make better business decisions.



Domo recently launched Business Cloud, the world's first open, self-service platform to run an entire organization. Business Cloud brings together the data, the people and the insights users need to find answers to critical business questions and make faster, better-informed decisions to improve performance.

QlikView



The QlikView business discovery platform is one of a few visual analytics tools offered by Qlik. QlikView can't create the same elegant visualizations that the other tools offer, but the software's dynamic model means that you can quickly analyze your data in multiple dimensions. In addition, QlikView is able to work off of data in memory instead of off your disk, allowing for real-time operational BI environments (like monitoring financial transactions).

QlikView is able to work with a wide variety of data sources, including SAP, Oracle, Salesforce.com and other legacy data files like Excel spreadsheets. What's more, QlikView can combine these disparate data sources into a single visualization or dashboard.

Why Tableau?

Tableau Features:

1. Apt visualizations:

Tableau connects to many different data sources and can visualize larger data sets than Power BI can. Once in Tableau, a dashboard shows the basics of the users' data. The user can then drill down into data sets by downloading a worksheet. From there, they can apply various visualizations to the data.

In Tableau, you select the data and switch between visualizations on the fly. It's easier to jump between visualizations in Tableau.

Tableau visualizes data from the start, allowing you to see the significance right away. Tableau differentiates correlations using color, size, labels and shapes, giving you context as you drill down and explore on a granular level.

2. Depth of discovery:

The features of Tableau gives users ways to answer questions as they investigate data visualizations. The solution can show basic trends as predictions, use "what if" queries to adjust data hypothetically, and visualize components of data dynamically for comparisons.

Tableau Features

3. Implementation:

- Tableau provides a variety of implementation and consulting services. For enterprise-level deployment, there's a four-step process spanning weeks, and for smaller-scale deployments, there are quick-start options that can complete setup in a matter of hours.
- Tableau provides a variety of implementation and consulting services. For enterprise-level deployment, there's a four-step process:
  - ✓ Phase 1 – This phase involves IT planning, architecture consulting, pre-install checkup, server installation and verification, and validation of security configuration.
  - ✓ Phase 2 – Phase 2 involves working with data and data migration, including data modeling, data mining, data extraction, data sources and business workflow.
  - ✓ Phase 3 – In Phase 3, there's a two-day classroom training covering Tableau Fundamentals, hands-on advanced coaching, and building and formatting visualizations.
  - ✓ Phase 4 – This final phase helps companies expand Tableau usage across their business. It includes implementation workshops where topics such as evaluating action plans and defining measurable outcomes are discussed.

Tableau Features

4. Automation functionality:

Tableau is a little more intuitive with creating processes and calculations. For example, when creating calculations in a tabular format, the formula can be typed once, stored as a field and applied to all rows referencing that source. This makes it easier to create and apply recurring processes. Tableau's flexibility also allows users to create custom formulas that aren't available in most of the tools.

5. Data source connectors:

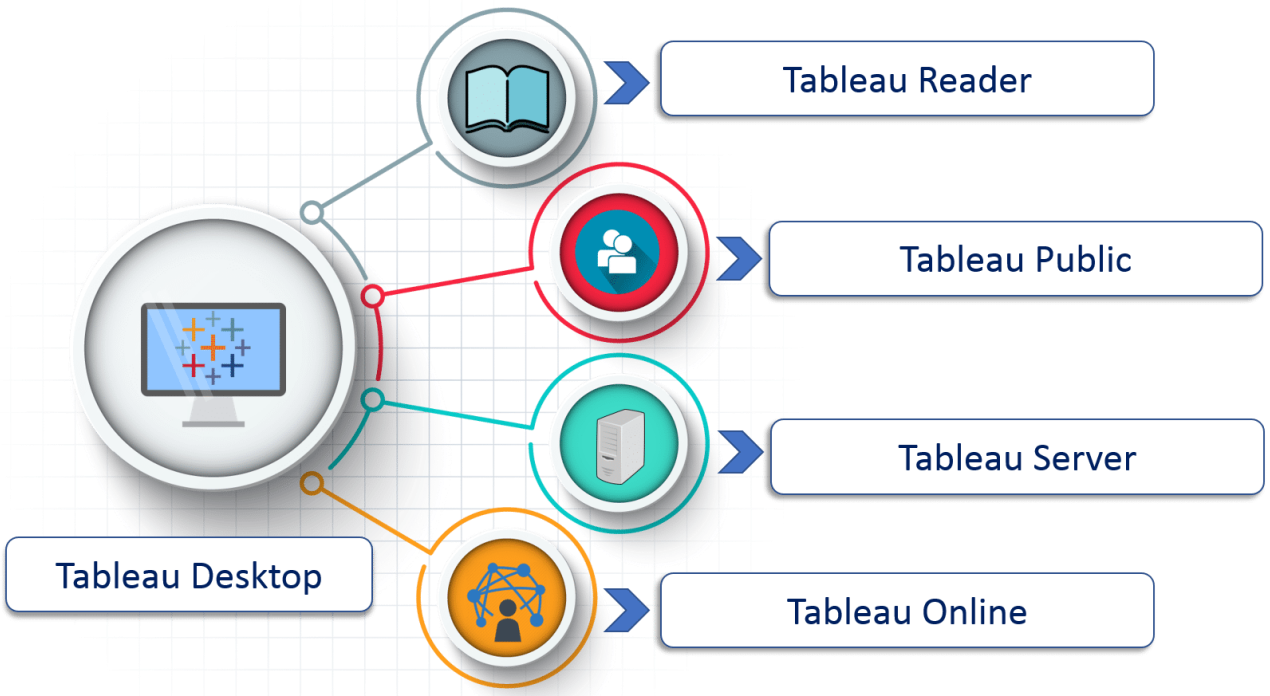
Tableau offers hundreds of native connectors to easily pull, cleanse and correlate data from practically any source without having to create custom code.

Tableau extracts large data sets from sources for quick, ad-hoc analysis using two different methods: Live Connection and In-memory.

Both adapt to your local database and, based on the size and capacity, sync data quickly by extracting the relevant data to a query.

It also has a general Open Database Connectivity (ODBC) connection for any connections that don't have a native connector provided.

Tableau Product Family



1. Tableau Desktop:

It is a self service business analytics and data visualization that anyone can use. It translates pictures of data into optimized queries. With tableau desktop, you can directly connect to data from your data warehouse for live upto date data analysis. You can also perform queries without writing a single line of code. Import all your data into Tableau's data engine from multiple sources & integrate altogether by combining multiple views in a interactive dashboard.

2. Tableau Server:

It is more of a enterprise level Tableau software. You can publish dashboards with Tableau Desktop and share them throughout the organization with web-based Tableau server. It leverages fast databases through live connections.

3. Tableau Online:

This is a hosted version of Tableau server which helps makes business intelligence faster and easier than before. You can publish Tableau dashboards with Tableau Desktop and share them with colleagues.

4. Tableau Reader:

It's a free desktop application that enables you to open and view visualizations that are built in Tableau Desktop. You can filter, drill down data but you cannot edit or perform any kind of interactions.

5. Tableau Public:

This is a free Tableau software which you can use to make visualizations with but you need to save your workbook or worksheets in the Tableau Server which can be viewed by anyone.

Tableau Desktop vs Tableau Public vs Tableau Reader

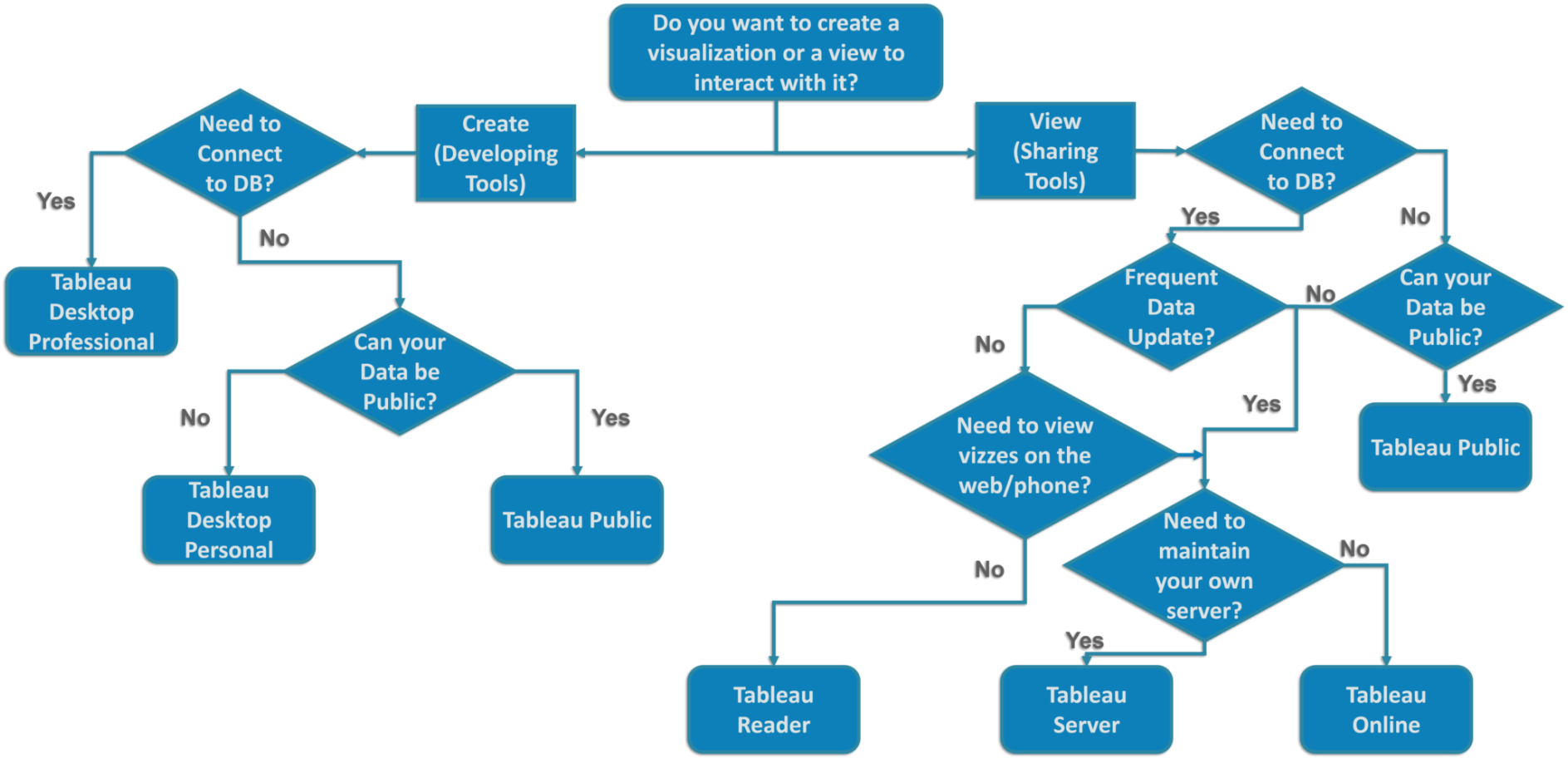


Tableau Desktop vs Tableau Public vs Tableau Reader

Tableau Desktop

- Data visualization software that lets you see and understand data in minutes.
- The professional version of this can transform, process and store huge volumes of data which is responsible for all the data-driven decision making of an organization.

Tableau Public

- Free version of Tableau visualization software.
- Allows you to use most of the software functions.
- You can create visualizations and connect to CSV, Text and Excel documents.
- Does not allow you to save your workbooks locally.

Tableau Reader

- Read the Tableau file types.
- Without the reader, you may need to share it publicly or convert the workbook into a PDF format.

Can you create Visualization?

Tableau Desktop

You can create beautiful visualizations using this App.

Tableau Public

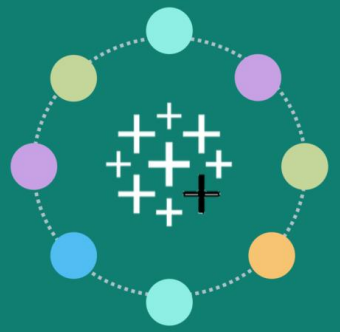
You can create beautiful visualizations using this App.

Tableau Reader

You cannot create/edit visualizations using this App.

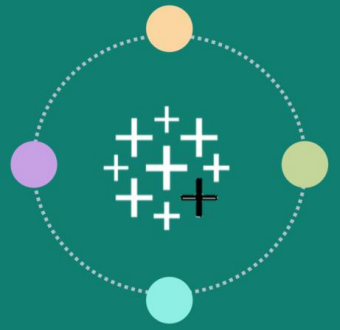
What sources can you Connect to?

Tableau Desktop



All listed data sources can be connected to using this App.

Tableau Public

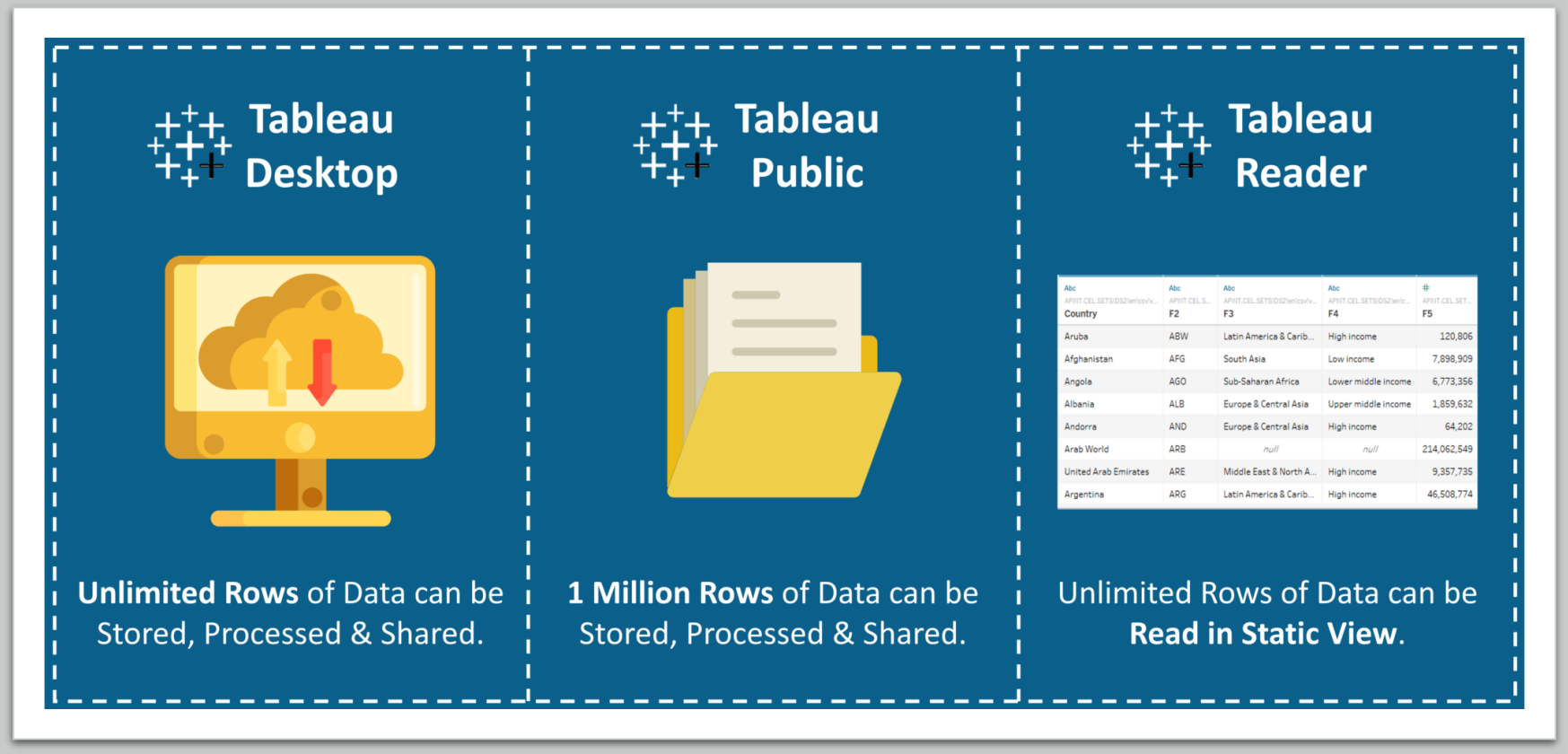


Only Excel and text files can be connected to using this App.

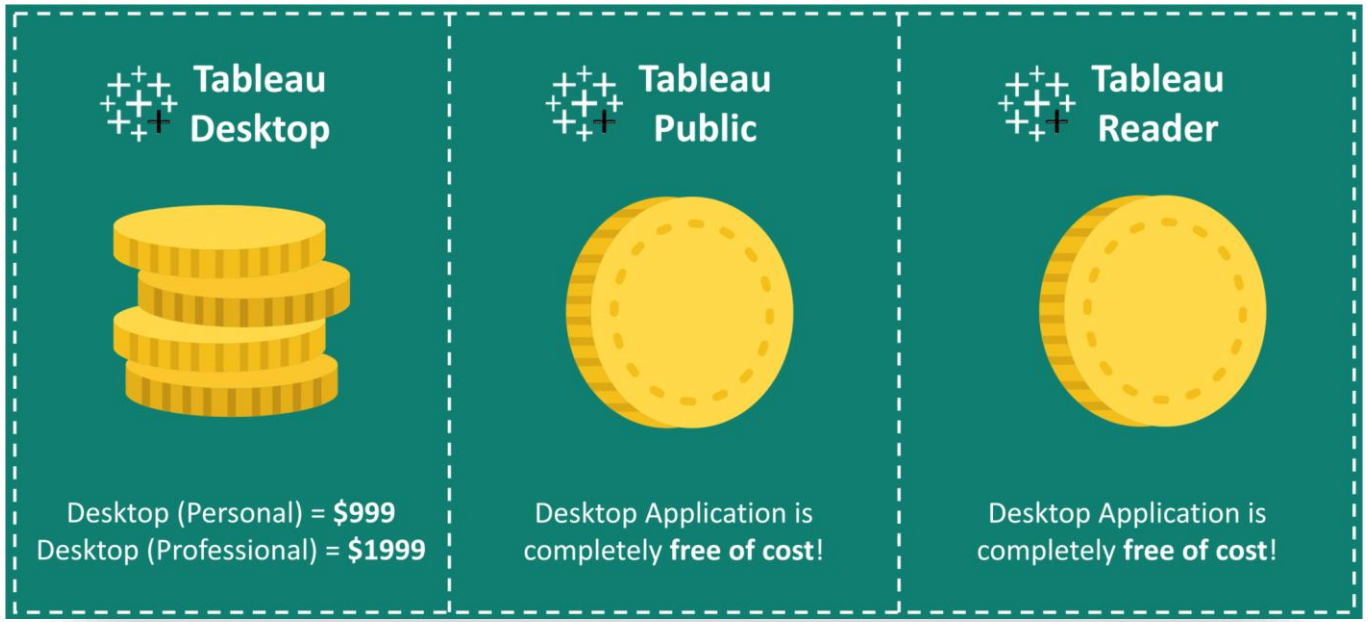
Tableau Reader

Does not need to connect to a Data Source.

How Secure is your Data?



How much data can you store?



How much does it cost?

Note : For latest price visit www.tableau.com

Where is your Data Stored?

- **Tableau Desktop**

  Reports published can be stored on your **Local Drive** as well as on the **Tableau Server**

- **Tableau Public**

  Reports published can only be saved on the **Tableau Server**.

- **Tableau Reader**

  Reports **cannot be published**.

Who is the Target Demographic?

Tableau Desktop

Data Scientists, BI Developers & BI professionals.

Tableau Public

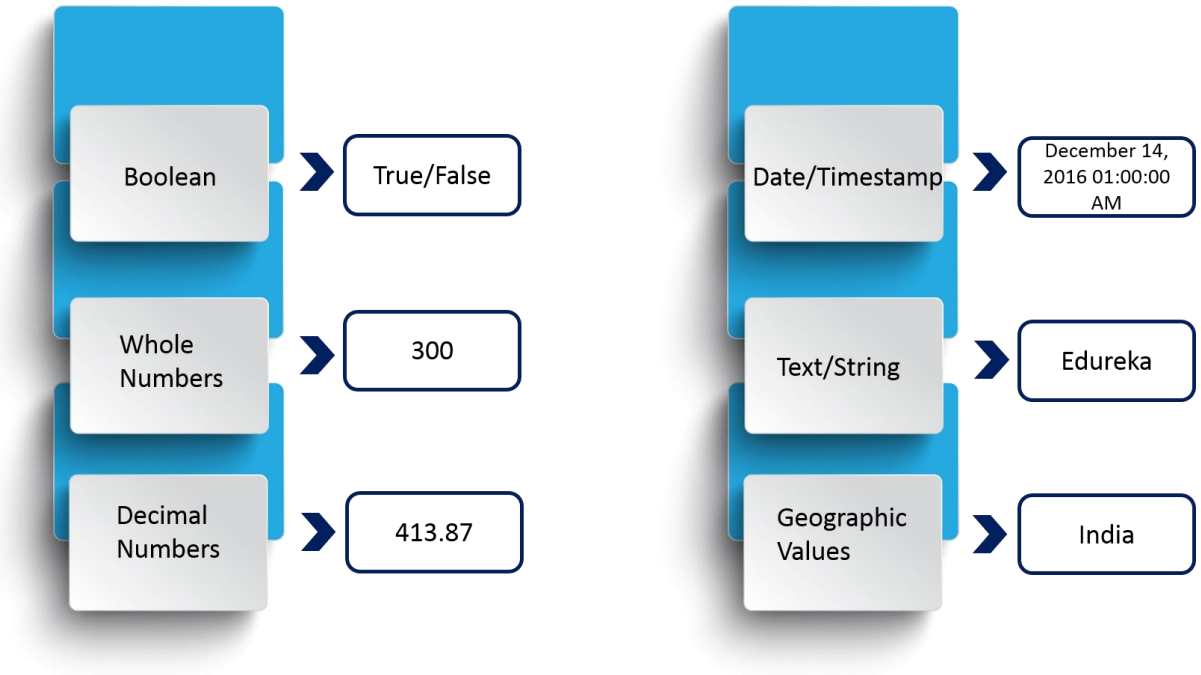
Beginners in the field of Data Analysis & BI Enthusiasts.

Tableau Reader

CxO level Professionals who only need to Read Data.

Understanding Tableau

Let us start by taking a look at the datatypes that Tableau supports. Refer to the diagram below which shows all the compatible data types of Tableau.



Understanding Tableau

The previous diagram shows you the data types that Tableau supports with respective examples.

Now, the data types that we are dealing with can also be categorized broadly into two categories and they are:

- Measures
- Dimensions

Refer to the diagram in next slide to understand the differences between Dimensions and Measures.

Dimensions

Abc

A Dimension is a field that is an independent variable.

A dimension is usually text

Measures

A Measure is a field that is a Dependent Variable and its value is a function of one or more Dimensions.

A measure is usually a number

Understanding Tableau

Understand the differences between Dimensions and Measures.

How To use Tableau?

You just need to follow the below 3-step mantra to use Tableau:

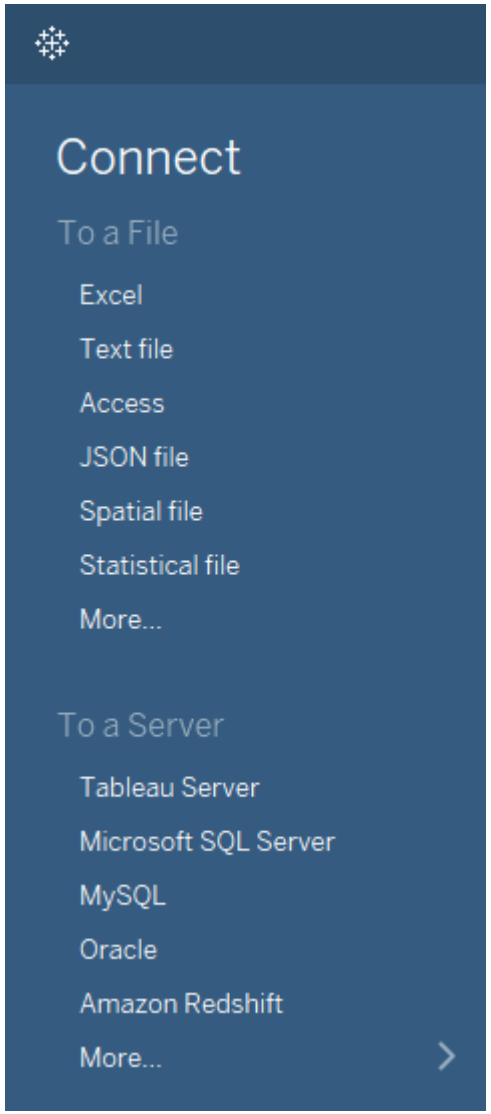
- Connect to data
- Play around with the UI
- Create visualizations

Connect To Data

The first thing to do in Tableau is to connect to your data.

There are mainly two types of connections-

Connecting to your local file or connecting to a server.



Connect To Data

Tableau can connect to any local file or database such as-

Excel

Text File

Access

Statistical File, or

Other Database file.

Local connection gives the maximum speed of data processing.

Connect to Data Server

Tableau can connect to your data server too.

It can connect to almost any type of data server.

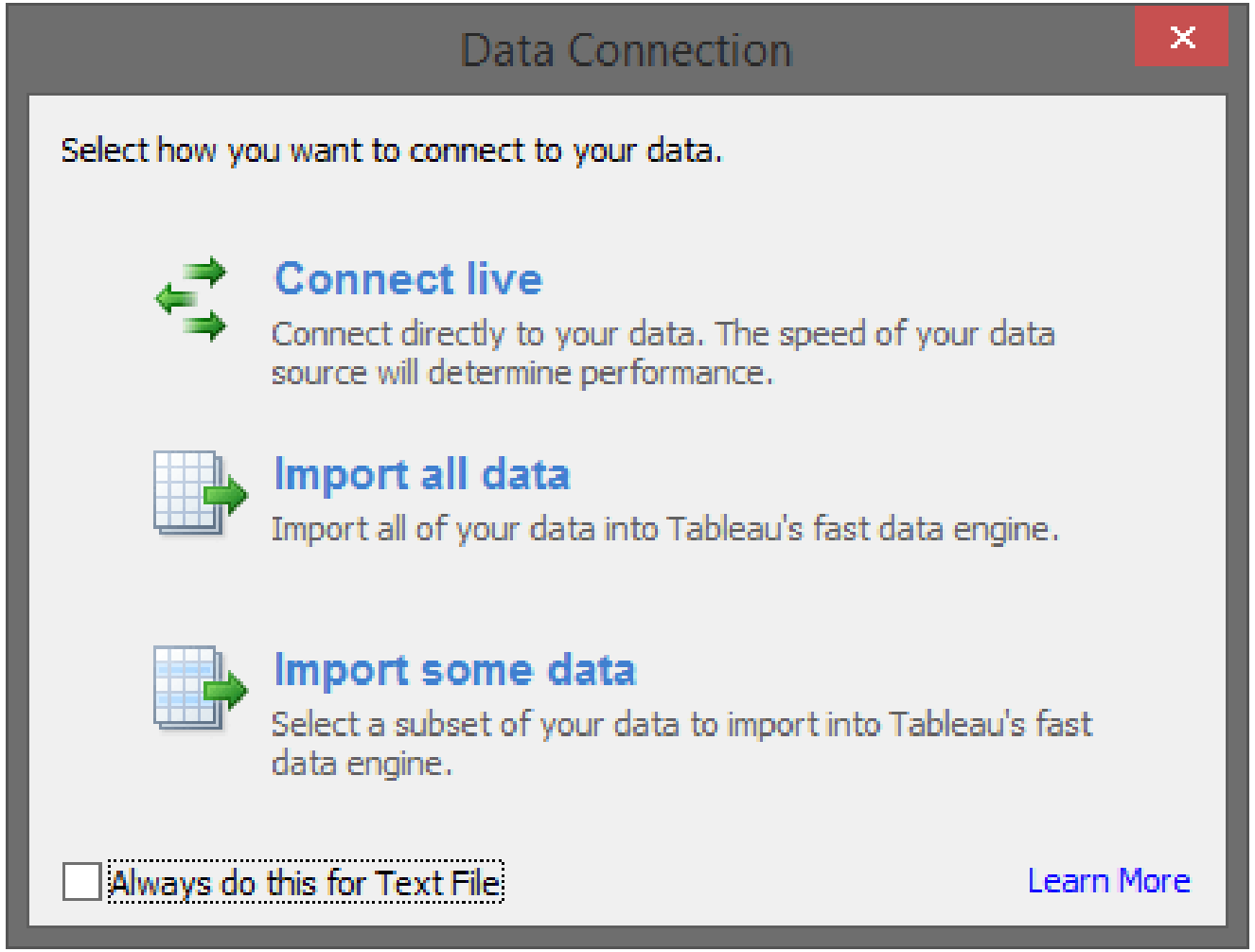
Below are some of the most popular databases that Tableau can connect:

- Tableau Server
- Google Analytics
- Google BigQuery
- Hortonworks Hadoop Hive
- MapR Hadoop Hive
- IBM DB2
- IBM BigInsights
- IBM Netezza
- Microsoft SQL Server
- Microsoft Analysis Services
- Oracle
- Oracle Essbase
- MySQL
- PostgreSQL
- SAP

Connect to Data Server

While working on Tableau, data can have Live Connection where any change in the source data will be automatically updated in Tableau.

On the other hand, data can be Extracted to Tableau repository so that any change made here will not affect the original source data.

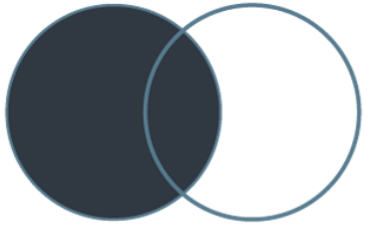


Data Joins

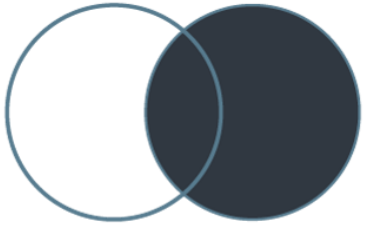
You can also integrate different data-sets together to link up and produce better insights.

There are different ways to join data-sets.

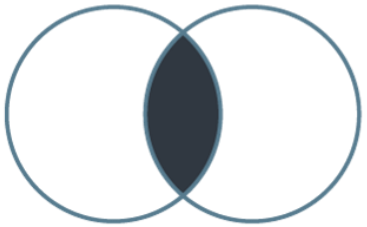
Refer to the diagram below to understand them all.



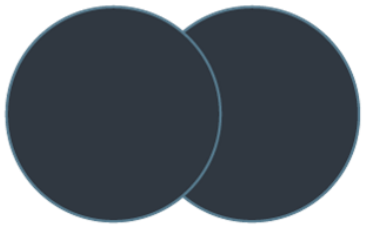
Left Join



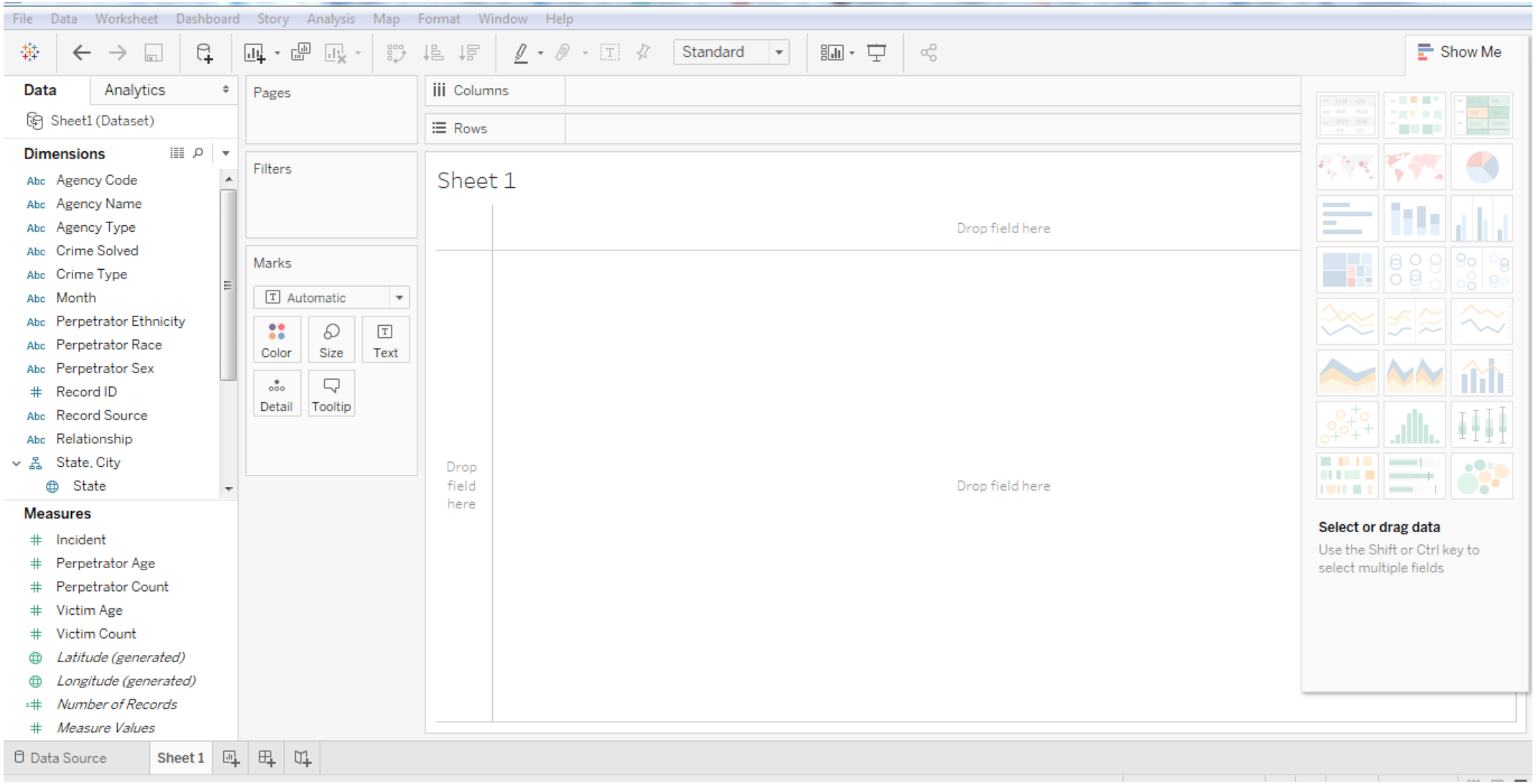
Right Join



Inner Join



Full outer Join



Play around with the UI

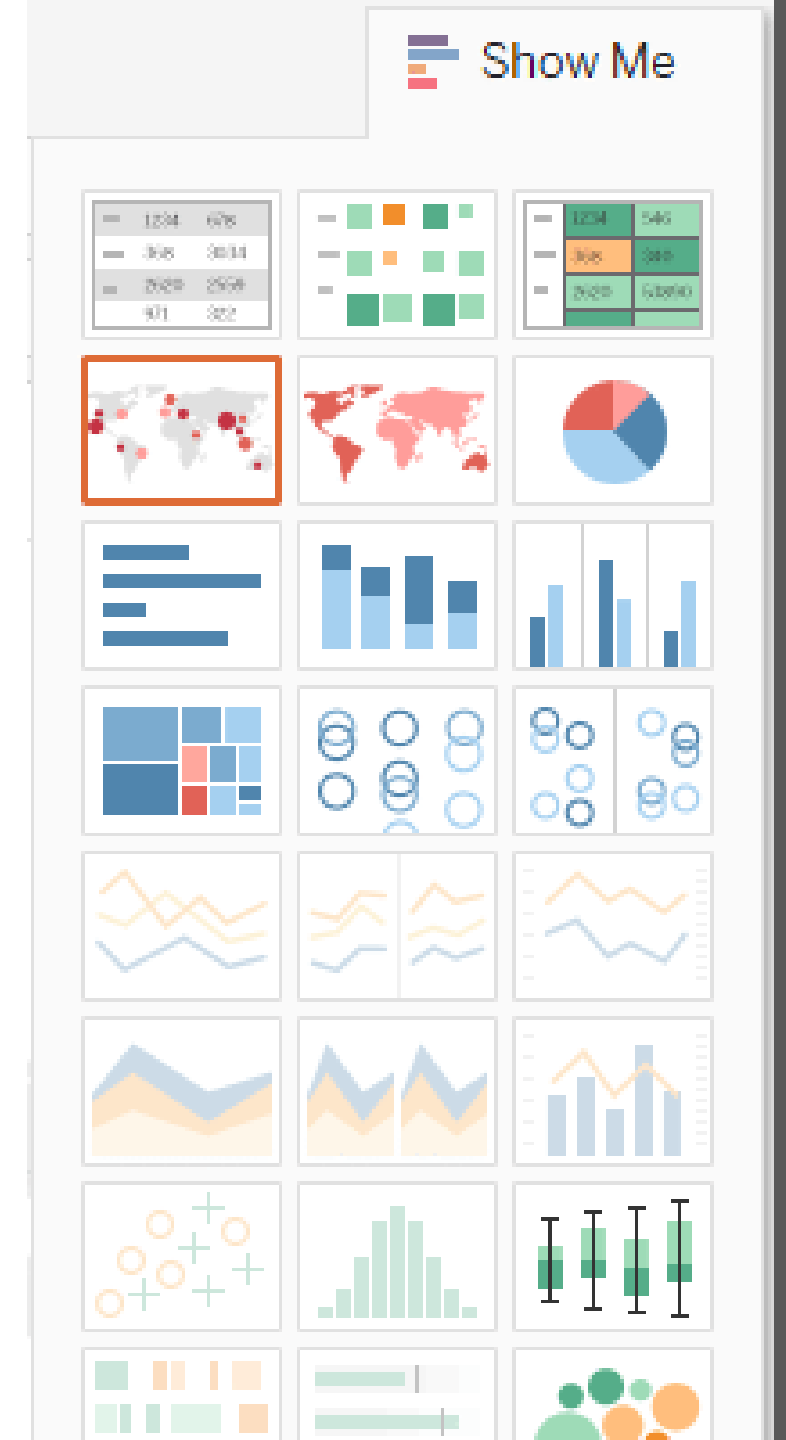
UI- Show me the data

This is the pane with which you can create visualizations.

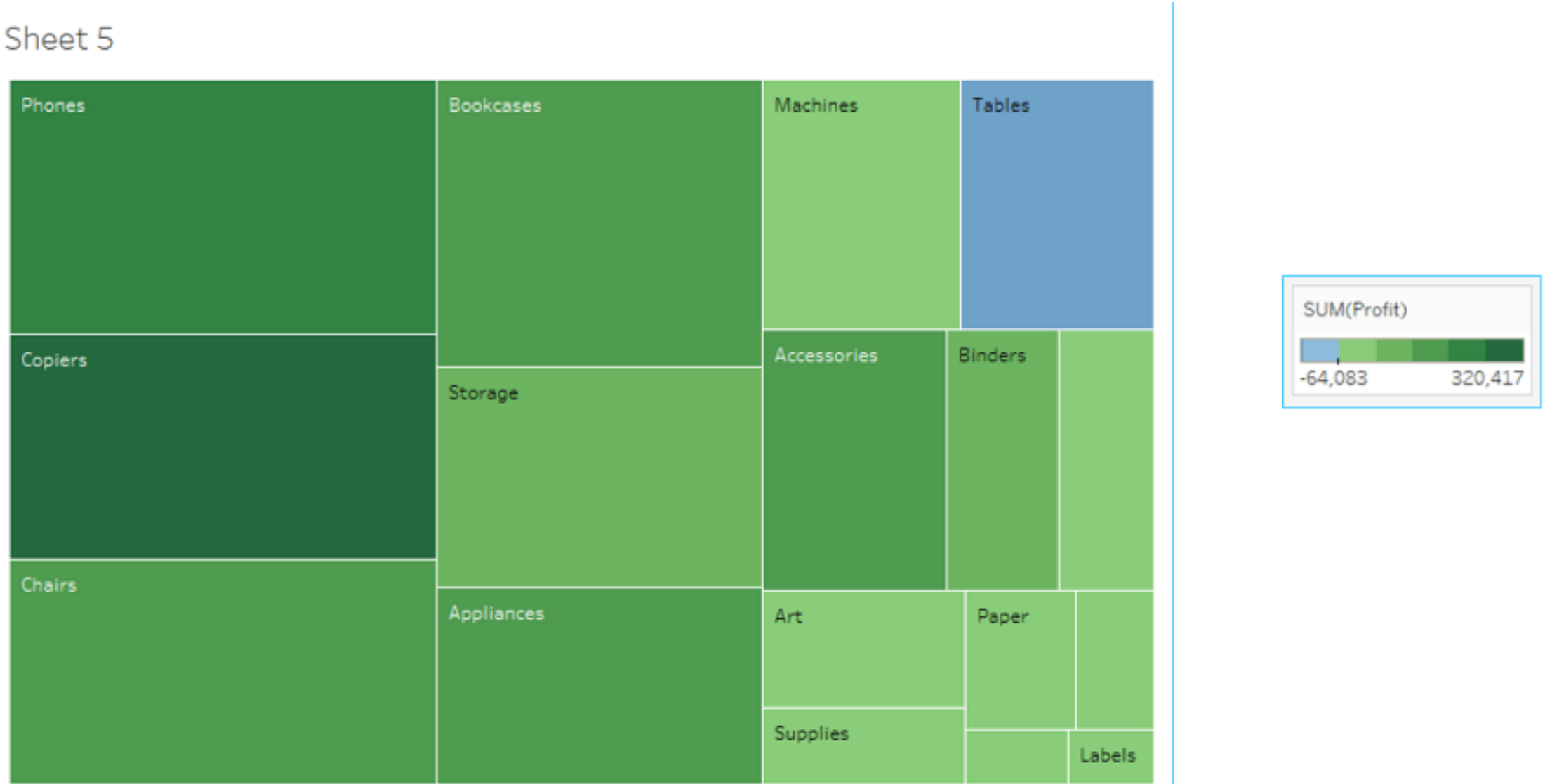
You can create different visualization in order to

represent your dataset.

The diagram below shows the ‘show me’ data pane:



Most popular visualizations used widely in Tableau:



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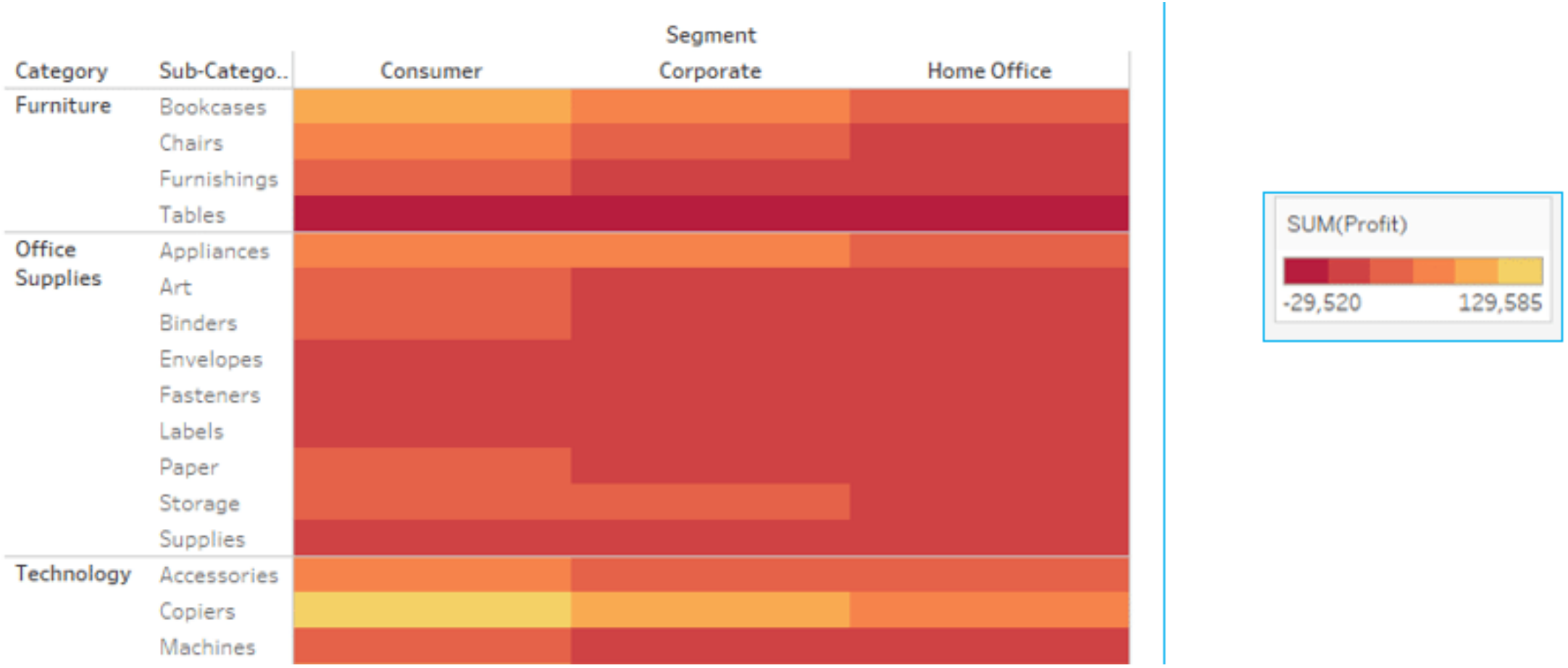

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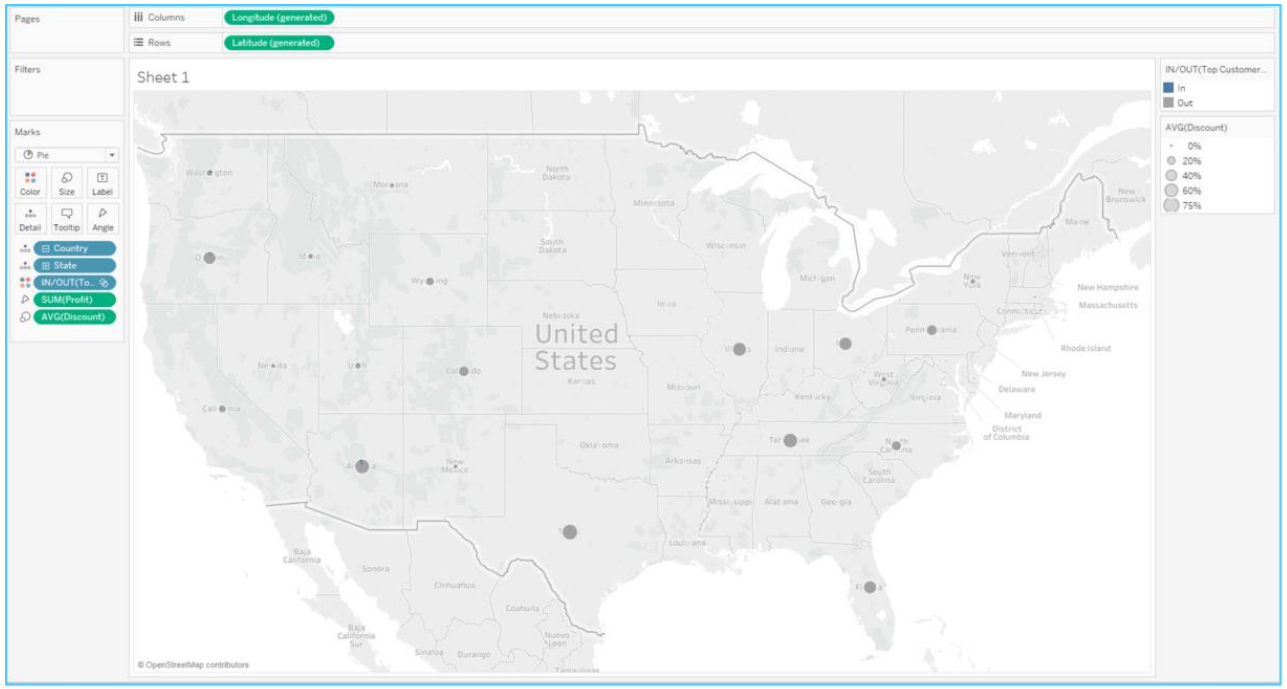
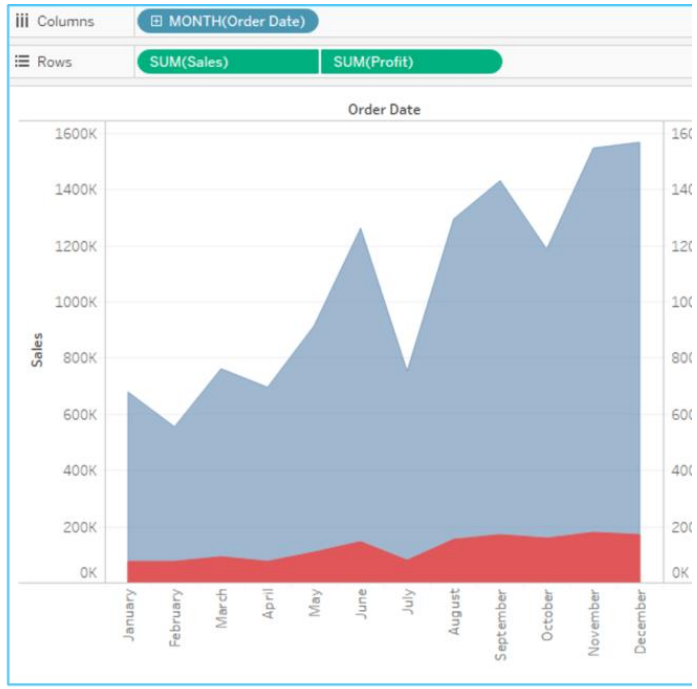
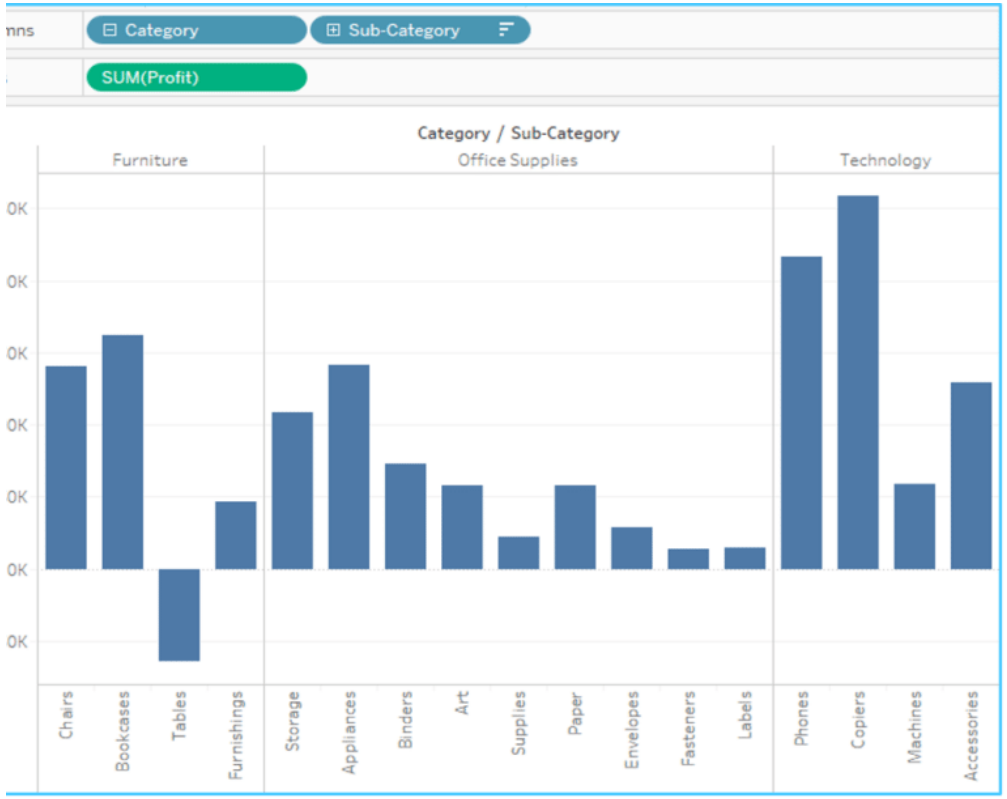


Geographical Graph

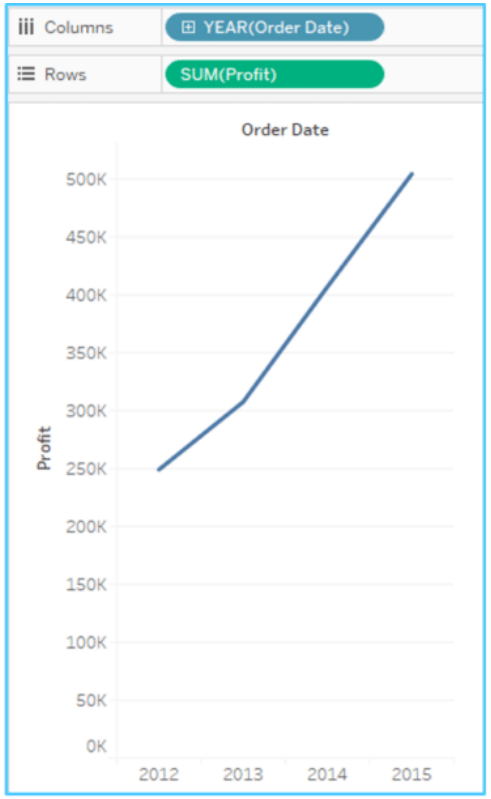


Area Graph with Dual Axes

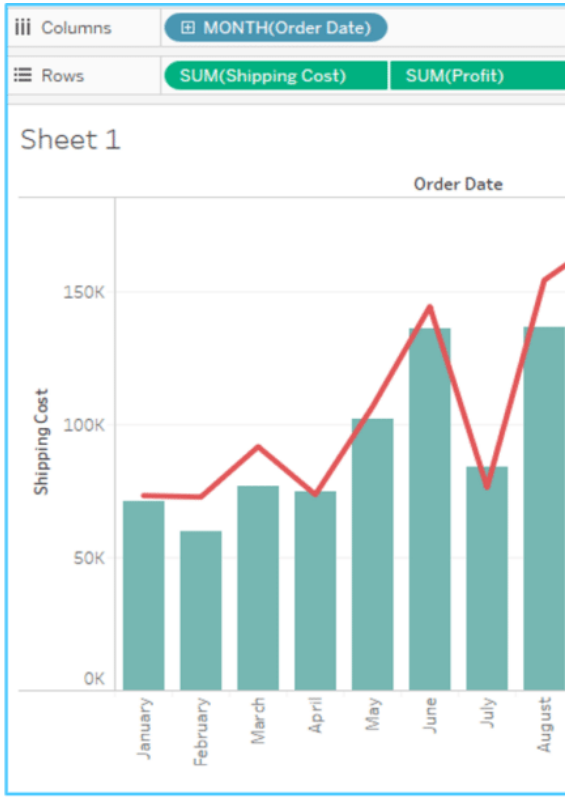
Most popular visualizations used widely in Tableau:



Bar Graph



Line Graph



Dual Axis Gr