Tableau for Technical Users

Learner Handout

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Tableau Product Overview

Tableau is software designed for visualisation and the desktop product is where data vizzes are designed, often to be shared via the wider ecosystem of Tableau. The product is developed by Tableau software Ltd, based in Seattle and was founded in 2003. Since 2019, the company has been owned by Salesforce. For more information about the components of the product ecosystem in Tableau, you can explore their [website](#).
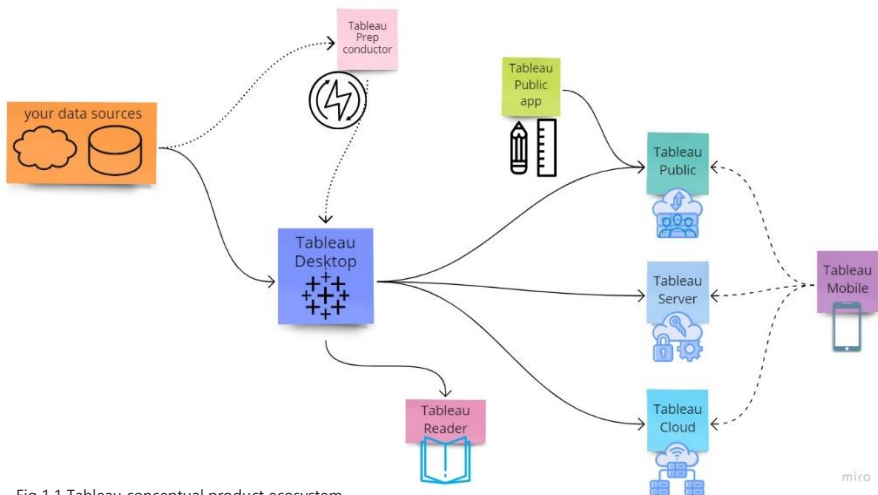

Fig 1.1 Tableau conceptual product ecosystem

This course focuses on Tableau Desktop, although you will learn a little about the other products in the eco system, and you will have to choose how you will share the visualisations you have created. Tableau desktop is data source agnostic – this means you can connect to a host of different types of data sources from Tableau including files (csv, pdf, excel, json) and systems or databases. The desktop product is installed on your local computer, while the data source can be anywhere in the web or contained in a server inside your organisation. What you will need are the credentials and

network settings to access those systems and then you can connect to the data from Tableau.

- The ways to share your visualisations are shown on the right of fig 1.1:

- Tableau Public is the free, public version of the product, an extensive online community portal of open-source data, dashboards, infographics, and plots.

- Tableau Server is a dedicated company portal for sharing visualisations, dashboards, data sources within the organisation, including access control.

- Tableau Cloud is a hosted version of Tableau Server.

- Tableau Reader is a free application, installed on a local machine, allowing a user to interact with a saved tableau workbook – but not save changes.

Tableau Desktop Concepts

Although there are variations depending on the architecture and requirements of an organisation, the general workflow in Tableau involves four steps:

1. Connect to a data source or sources.

2. Using the data source options, configure the data source and relationships.

3. Create viz, one per worksheet, using the canvas, shelves, and cards.

4. Combine those visualisations into dashboards and/or stories to share.
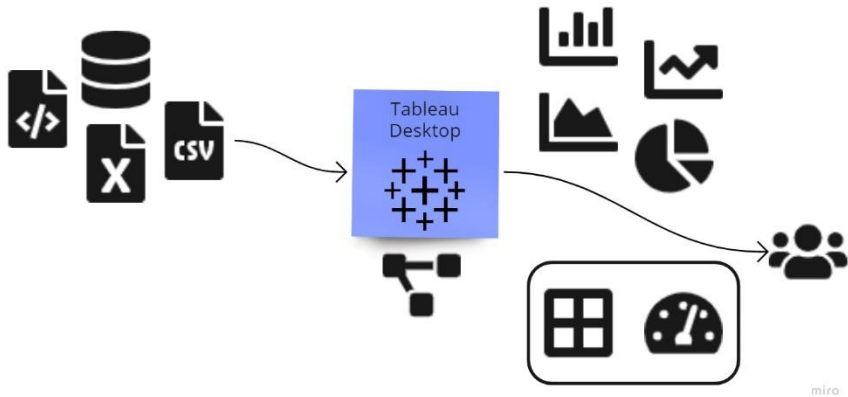
Fig 1.2 Tableau workflow data to visuals to audience

Tableau workbooks are collections of visualisations (worksheets, dashboards, stories) and can be built from one or many data sources, for the purposes of one or many projects. These workbooks, created in tableau desktop, are saved with either the file extension twbx or twb – the former contains an extract of the data source, zipped up inside the file, whereas the latter is just the visual xml code and requires whoever you are sharing the workbook with to also have access to the same data. This is a secure way of sharing your data and insights inside an organisation.
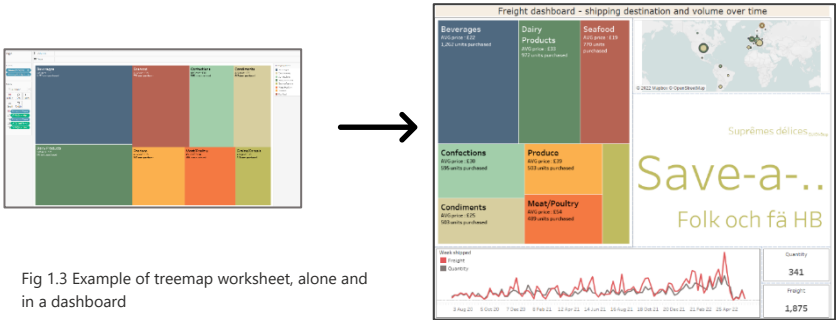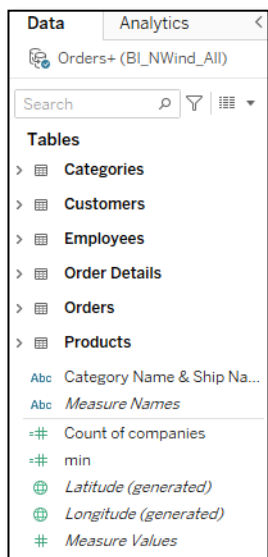

Fig 1.3 Example of treemap worksheet, alone and in a dashboard

Main Features of Tableau Desktop

In the Tableau worksheet you will see 6 key elements – which can all play their part in the way a viz is structured and formatted.

Your data tables, or data pane, on the left side of your view, contains all the data, attributes, and values, from your data source, arranged into collapsible tables if you have used multiple sources. Note that there are some system-created fields (in italics), while there may also be some user created fields (denoted by the = symbol in front of the field name).

Also note that there are two different colours being used to denote the behaviour of fields, which we will spend more time examining later. Tables supports drag and drop as well as right click actions. You can make some configuration changes in here, such as changing the name of the fields, creating hierarchies, setting default behaviour changing the role of a field.
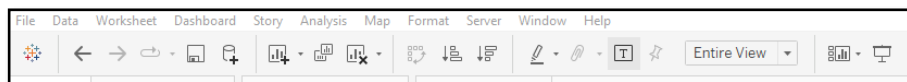
The Marks card, Pages shelf, Filters shelf, Rows, and Columns shelves determine the structure and the appearance of the viz, plus how an end user will interact with it.

The mark type on the marks card is very useful – changing this will
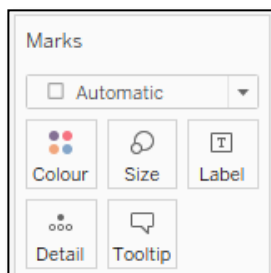
change a bar chart to a line chart, for example.

The toolbar – if you are unsure what any icon does, just hover over it with your mouse and an explanation will pop up. For more features and functionality, there are drop down menus above the toolbar. All features appear in more than one place which can be overwhelming at first, so you can stick to the toolbar.

One of the most useful tools in Tableau is on this toolbar – the fit drop-down menu determines how much screen real estate you give to your viz – you can choose to fit width, height, or entire view.

Your canvas is your play area to create the viz. As you can see you can drag fields into the middle, onto the rows or columns.
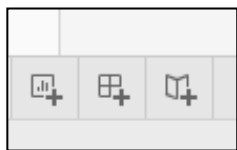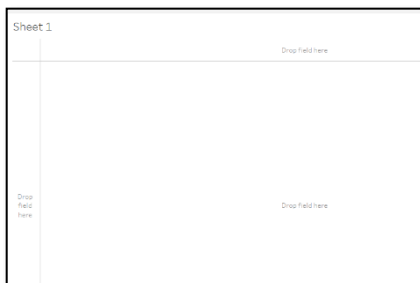
Along the bottom of the sheet for navigation you can see the icons for sheets, dashboards, and stories.

Although not necessarily used for all vizzes, the Show Me menu is a great optional tool to help you get started with and build confidence in using Tableau – revealing some of the most popular chart types, what types of fields they require to populate and any optional configurations. If your Show Me menu is greyed out, select a few fields in the data pane on the left (Ctrl+ select windows, Command + select mac) to see which of these common charts are possible based on your selections.

It is important to be aware that the Show Me menu and mark type on the marks card do not form an exhaustive list of the possible visualisation types you can build in Tableau. If you look at Tableau public you will see many more variations of visual designs, including complex chart types, which can all be built in Tableau once you have gained some familiarity with the core functionality of the software. To get an idea of what's possible beyond Show Me, you can look at this Tableau viz cookbook

You can bring the Show Me menu up for inspiration at any time using the shortcut Ctrl+1 (Windows) or Command+1 (Mac).

You will find different features, menus, and configuration options when you are in Dashboard or Story Mode, most of these options are available from the left-hand side pane.
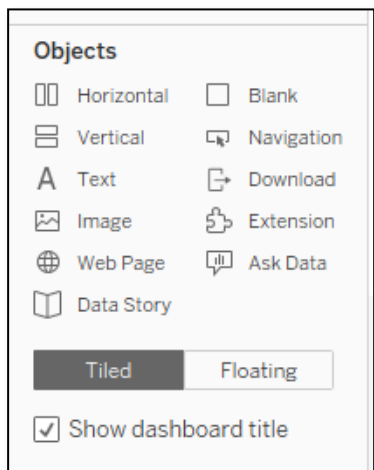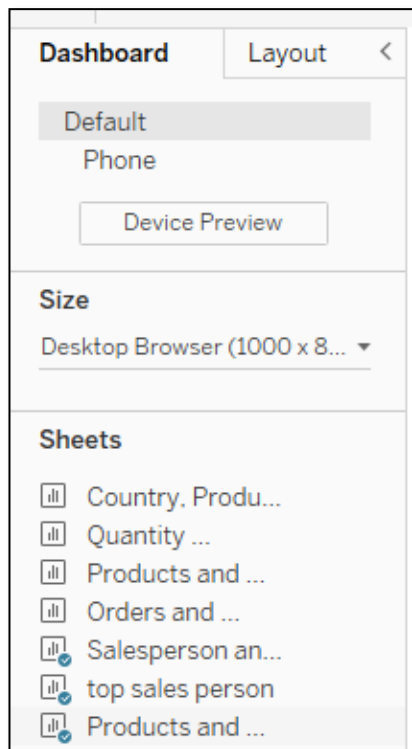

In Dashboard mode these include a worksheet selector (worksheets have a blue tick to indicate they have been chosen for this dashboard).

You will also have access to design objects to shape and frame the dashboard including configuration options, layout containers, images, text and blank spaces, navigation, and visual formatting such as borders, background, padding and size.
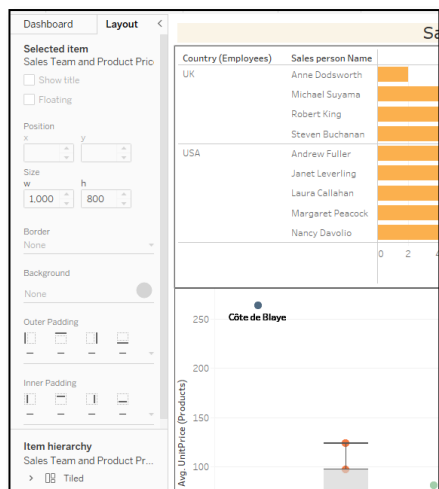
If you want to learn more about what any of these features do in Tableau, you can go to the Help page, accessible from the drop-down menu, and type in the item name you are puzzled over. Searching the terms "Dashboard + Padding" will take you to help articles for all padding related queries with examples, images of the tool in use and guided exercises to follow.
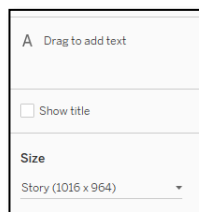
In Story mode there are fewer options because in this stage you will be combining sheets and dashboards which are already built and are saving variations of them with deliberate user

interactions and annotations relevant to the insights you want to share. You also get a small number of navigation and design features.
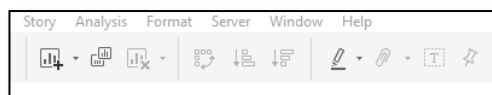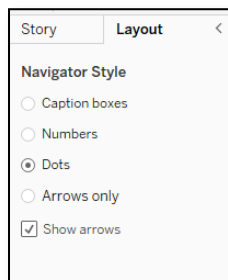
In these modes, you may also notice that some icons on the toolbar are greyed out because they are not appropriate to this type of content.

Terminology

Dimensions v Measures

Dimensions contain qualitative values (such as names, dates, or geographical data). You can use dimensions to categorize, segment, and reveal the details in your data. Dimensions affect the level of detail in the view.

Measures contain numeric, quantitative values that you can measure. Measures can be aggregated. When you drag a measure into the view, Tableau applies an aggregation to that measure (by default).

Discrete and Continuous

Discrete (blue) fields are list-like, categories, which can be thought of like buckets – into which a row of data can fall. That row can only fall into one bucket! So, a record can be either belong to location =UK or location =France – it cannot sit in both buckets., the label is finite. The behaviour of discrete fields in Tableau reflects in the drop down, list or button like filters, create categorical headers in vizzes, can create maps and can be used on pages as transitional elements.

Continuous (green) fields are the other side of the coin and are generally understood to be numeric fields, values, quantities, decimals, and integers. However, any dimension can be converted to a continuous field by creating a count or count distinct of the attribute values. In this way a string (naturally discrete) can become continuous. A continuous field presents in an axis or scale when used in Tableau vizzes, naturally lending to a range/ slider when used as a filter.

Continuous fields can be presented as a mark type text too, used for any continuous aspect like size and a gradual colour scale.

Typically, dimensions are blue and measures green, this is not an absolute rule.

Date type symbols

Icon	Data type
Abc	Text (string) values
🗓	Date values
🗓	Date & Time values
#	Numerical values
T|F	Boolean values (relational only)
🌐	Geographic values (used with maps)
📊	Cluster Group (used with Find Clusters in Data ↗)

Data types are assigned when data is brought into Tableau – the symbols denote the role of each column.

Aggregations
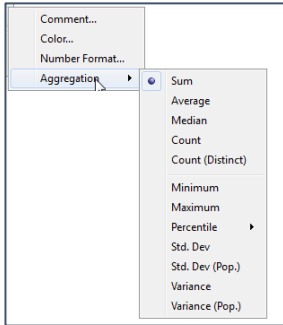
Measures are aggregated – by default every value is summed in Tableau, though you can change the default aggregation behaviour of a measure.

When using measures, you can choose which aggregation type to use.

Most useful Tableau hot keys

| Purpose	Windows	Mac
Save file	Ctrl+S	Command+S
Revert workbook to last saved state	F12	Option+Command+E
Switch in and out of Presentation Mode	F7, Ctrl+H	Option+Return
Show Me!	Ctrl+1, Ctrl+Shift+1	Command+1
Add the selected field to the sheet. (Only works with a single field.)	Enter or double-click	Return or double-click
Open the Drop Field menu	Right-click+drag to shelf	Option+drag to shelf
Copy a field in the view and place it on another shelf or card	Ctrl+drag	Command+drag
Toggle dashboard grid on and off	G	G
Toggle between Dashboard and Layout tabs	T	T

Case study for the course

Independent Book Shop

- Aim: attract more customers...
- Business questions:
    - Which are the best sellers?
    - Which new titles should we stock?
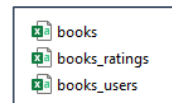   - Which authors are popular now?


Data sources collected
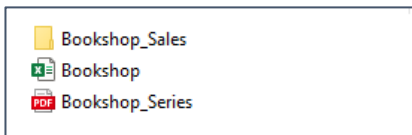
- Artificial data for a 'bookstore'
- 4 quarterly sales files
- Multiple related tables
- Book series (partial data)

- 3 related tables on book ratings
- Real book titles and authors

- Real book review data from social media and online purchasing and review platforms
- Literary award information
- Leeds library – reference popularity
- Bestseller lists
- Scraped twitter data
- Sample from bookstore 'competitor' with sales
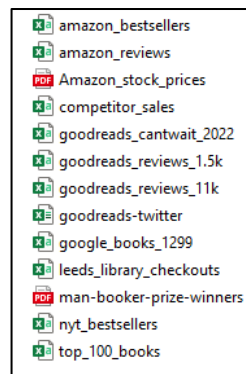
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