

Introduction to Tableau Desktop

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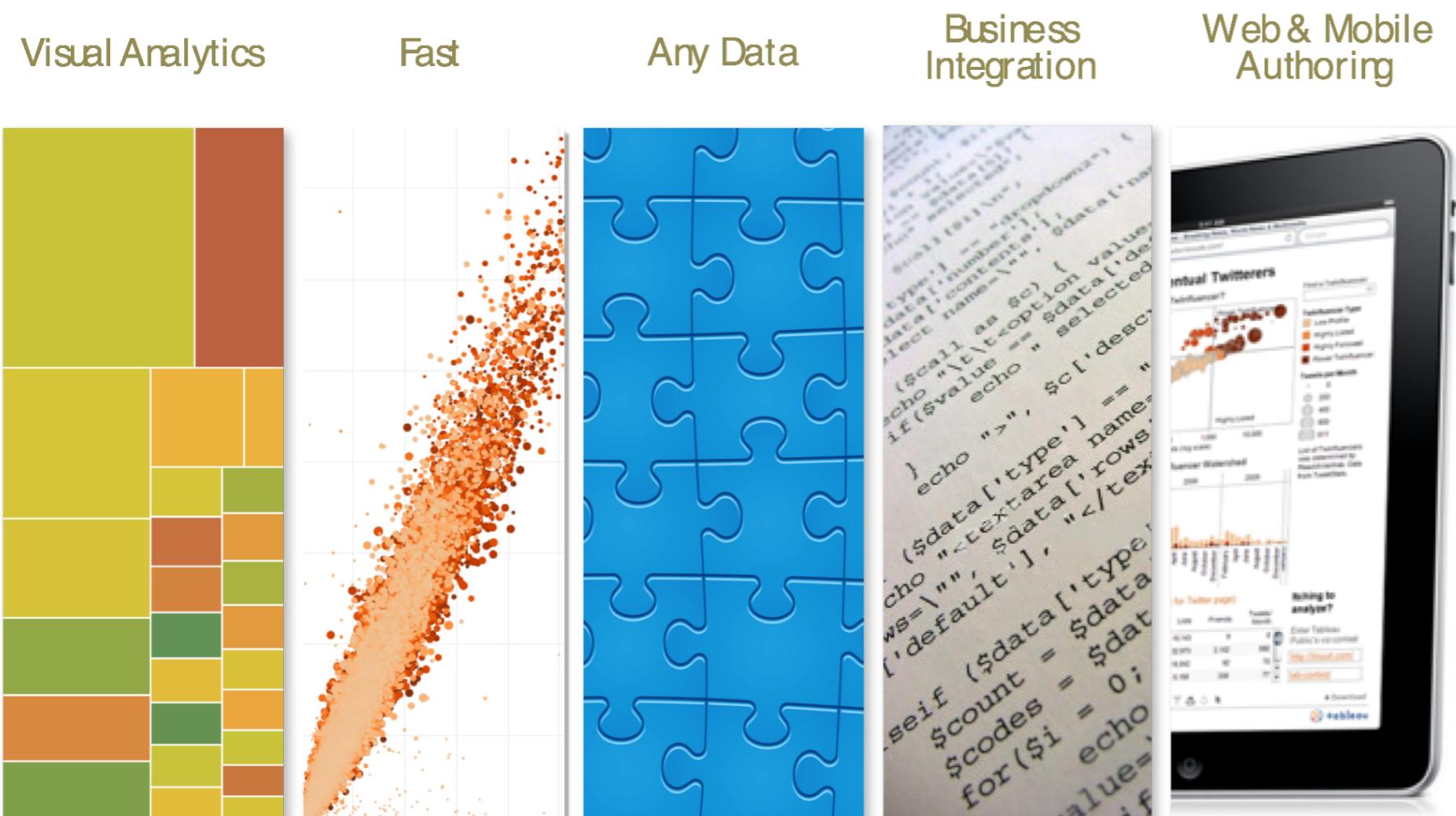
Outline

- Introduction to Tableau
- Generic Installation Process
- Loading and processing data
- Visualization: from charts to dashboards
- Data Storytelling



Introduction to Tableau

What is Tableau

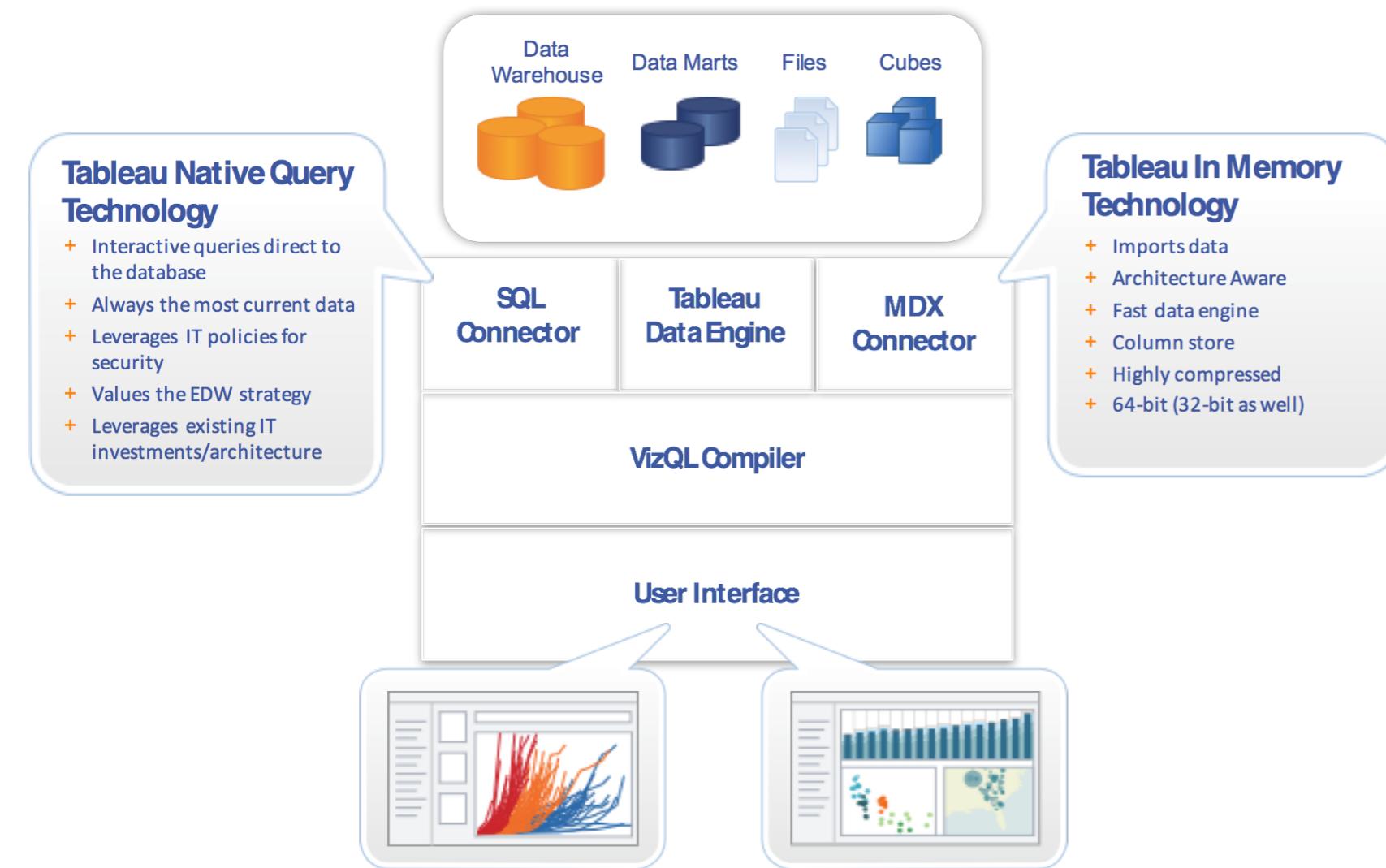
- 
- Visual Analytics tool
 - In-memory capabilities
 - Multiple connectors
 - Embedded BI
 - Multi-device

Approach



- User-friendly
- Business-ready
- Embedded data visualisation principles
- Advanced visual capabilities
 - Exploratory Data Analysis
 - Dashboards
 - Data Storytelling
- Minimal capabilities: data preparation

Architecture (for companies)



We are going to use only Tableau Desktop

- One Corporate Server
- Three desktop tools:
 - Tableau Desktop (developer)
 - Tableau Public (open data)
 - Tableau reader (data consumer)

Can I install Tableau Desktop?

Windows

- Windows 7 or newer (64 bit)
- Intel Pentium 4 or AMD Opteron processor or newer
- 2 GB memory
- 1.5 GM minimum free disk space

Mac

- iMac/MacBook computers 2009 or newer
- OSX 10.10 or newer
- 1.5 GM minimum free disk space

If you are not able to install Tableau Desktop, contact the professor

Instructions for Students (by Tableau)

1. [Download Tableau Desktop and Tableau Prep here](#)
2. Select each product download link to get started. When prompted, enter your school email address for Business E-mail and enter the name of your school for Organization.
3. Activate with your product key:
TCDI-4669-6A00-7259-2C66

Are your students new to Tableau? Share our free [Data Analytics for University Students guide](#) to help them get started.

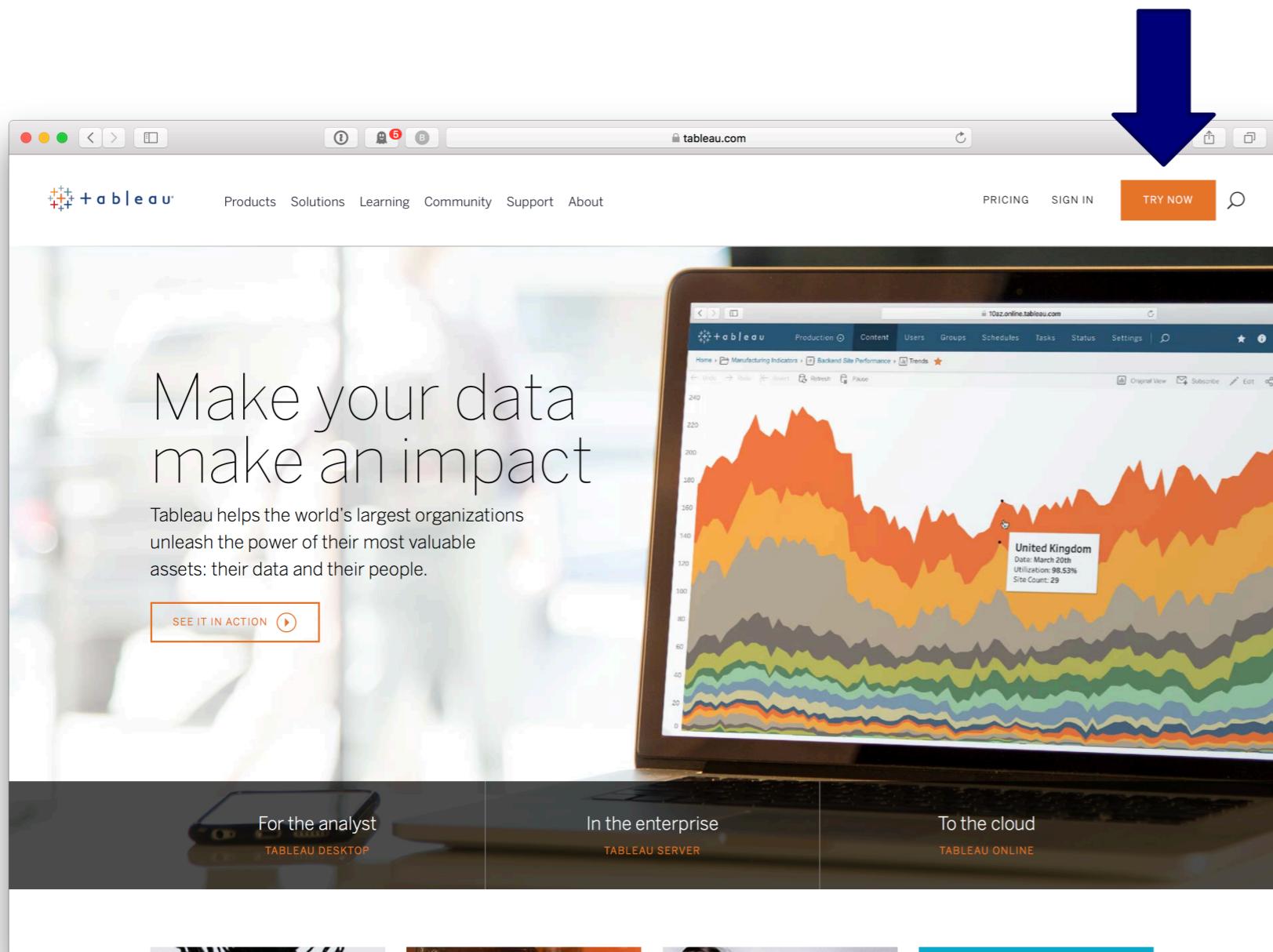
Students can continue using Tableau after the class is over by individually requesting their own one-year license through the [Tableau for Students program](#).

Need additional help? Check out the [FAQs](#).

If you are not able to install Tableau Desktop, contact the professor

Generic Installation Process

Installation Process (I)



- Go to: <https://www.tableau.com>
- Press **Try Me**

Note: web page may appear different. Not required for the students of this course

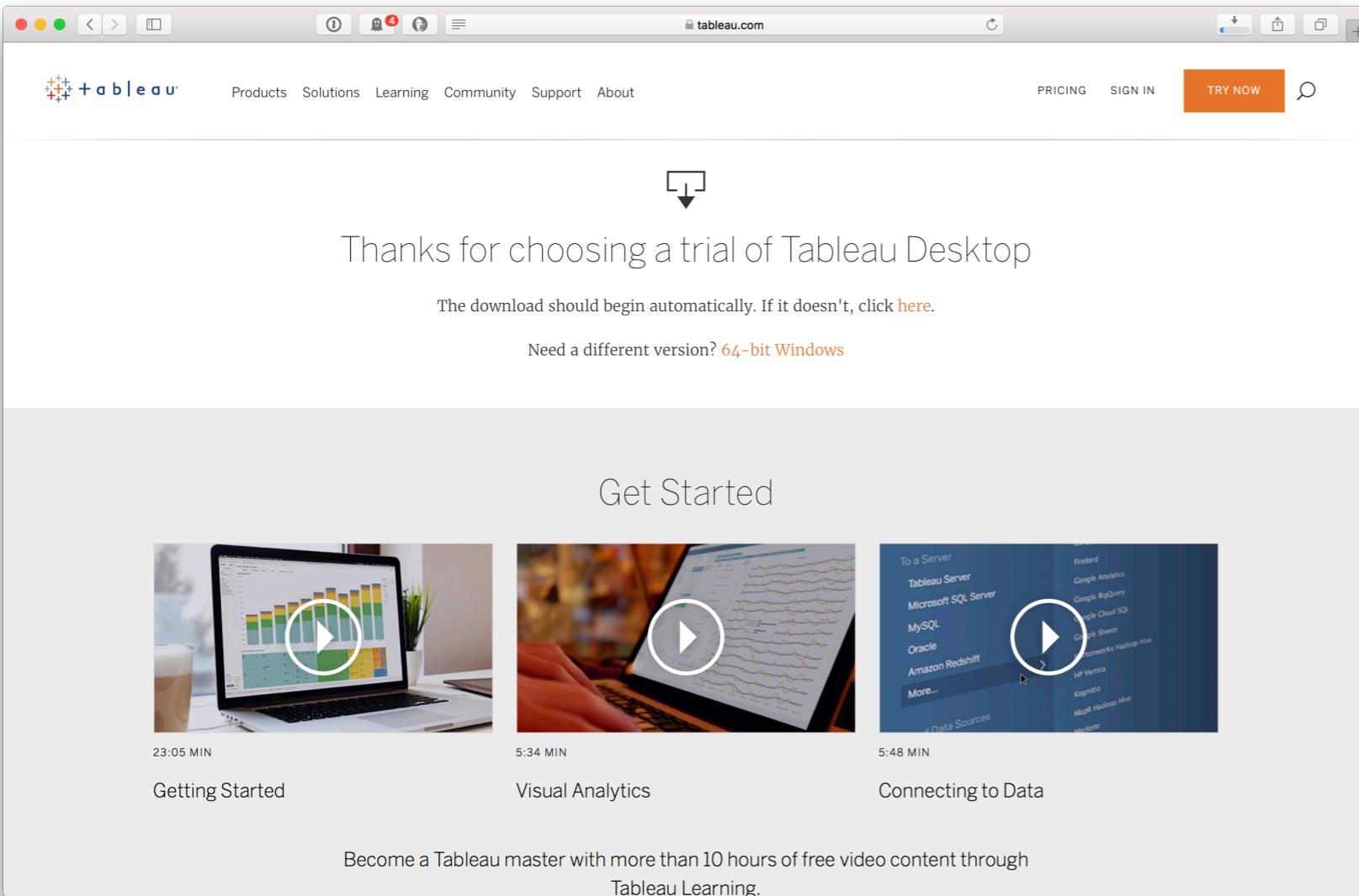
Installation Process (II)

The screenshot shows the Tableau website at <https://www.tableau.com/products/trial>. The page features a large call-to-action button labeled "TRY NOW". Below it, there's a section for "Tableau Desktop: Start your free 14-day trial" with a "Business E-mail" input field and a "DOWNLOAD FREE TRIAL" button. A note below the button says "WE RESPECT YOUR PRIVACY | HAVING TROUBLE?". To the right, there's a preview of the Tableau desktop interface showing a complex data visualization. Below the preview, text reads "Extend your Tableau trial experience". At the bottom, there are sections for "Tableau Online: Take it to the Cloud" and "Tableau Server: Share at your enterprise".

- At: <https://www.tableau.com/products/trial>
- Complete student email and press **DOWNLOAD FREE TRIAL**

Note: web page may appear different. Not required for the students of this course

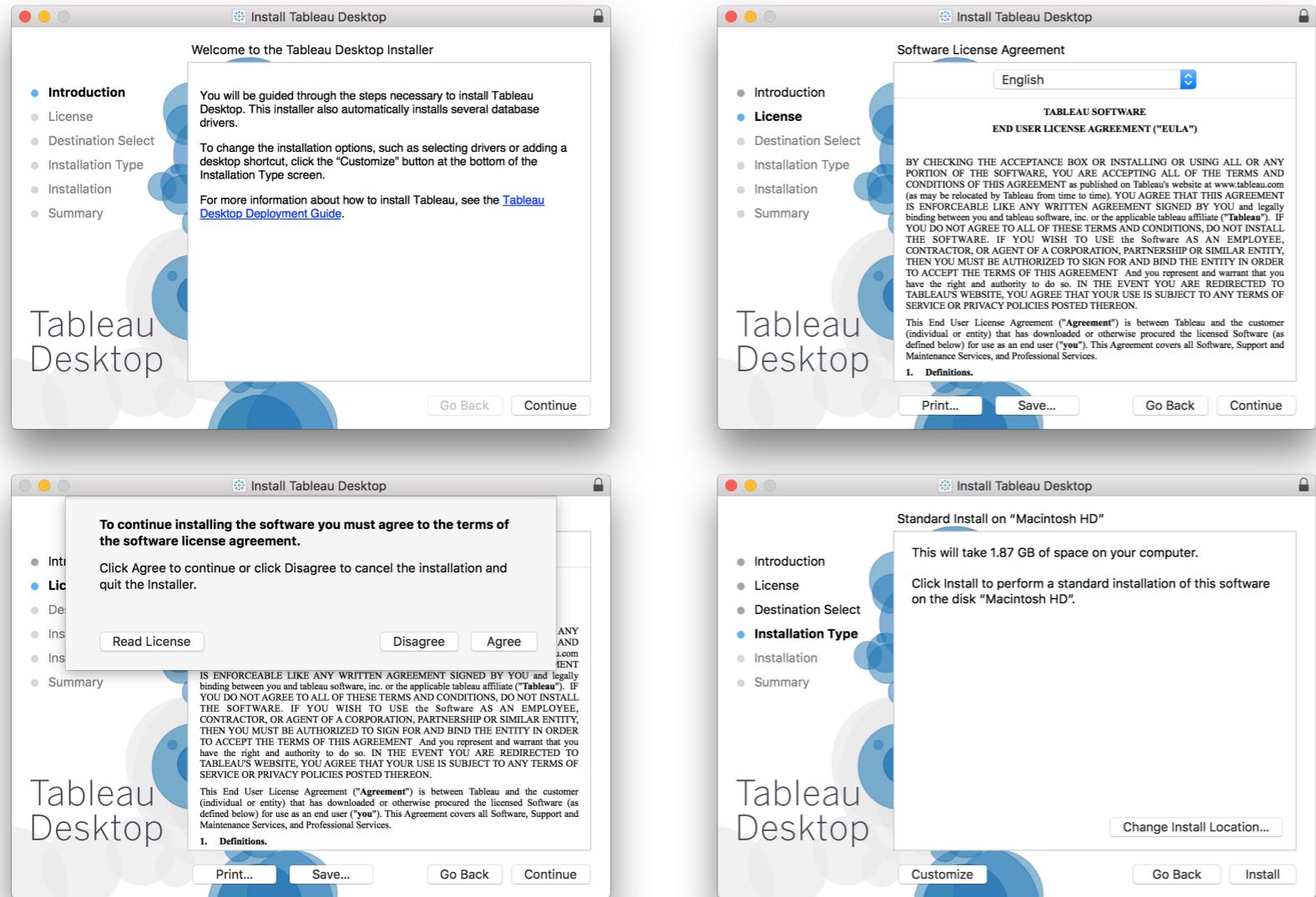
Installation Process (III)



- Download process must start automatically
- It will be more or less faster depending on your internet connection

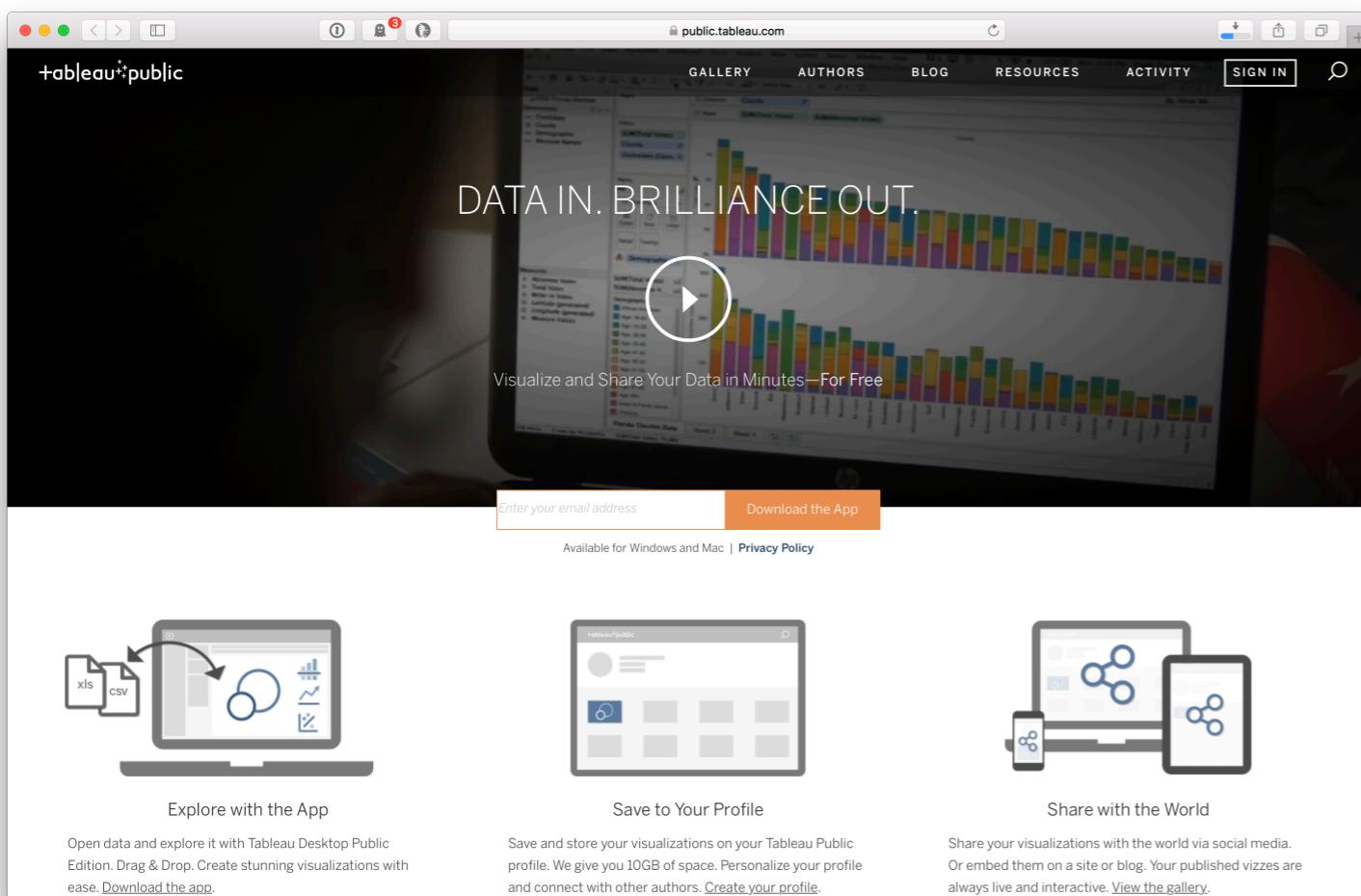
Note: web page may appear different. Not required for the students of this course

Installation Process (IV)



- When we install the program we have 14 days trial period
- Later we will use our academic license
- Just follow the different steps on the screen

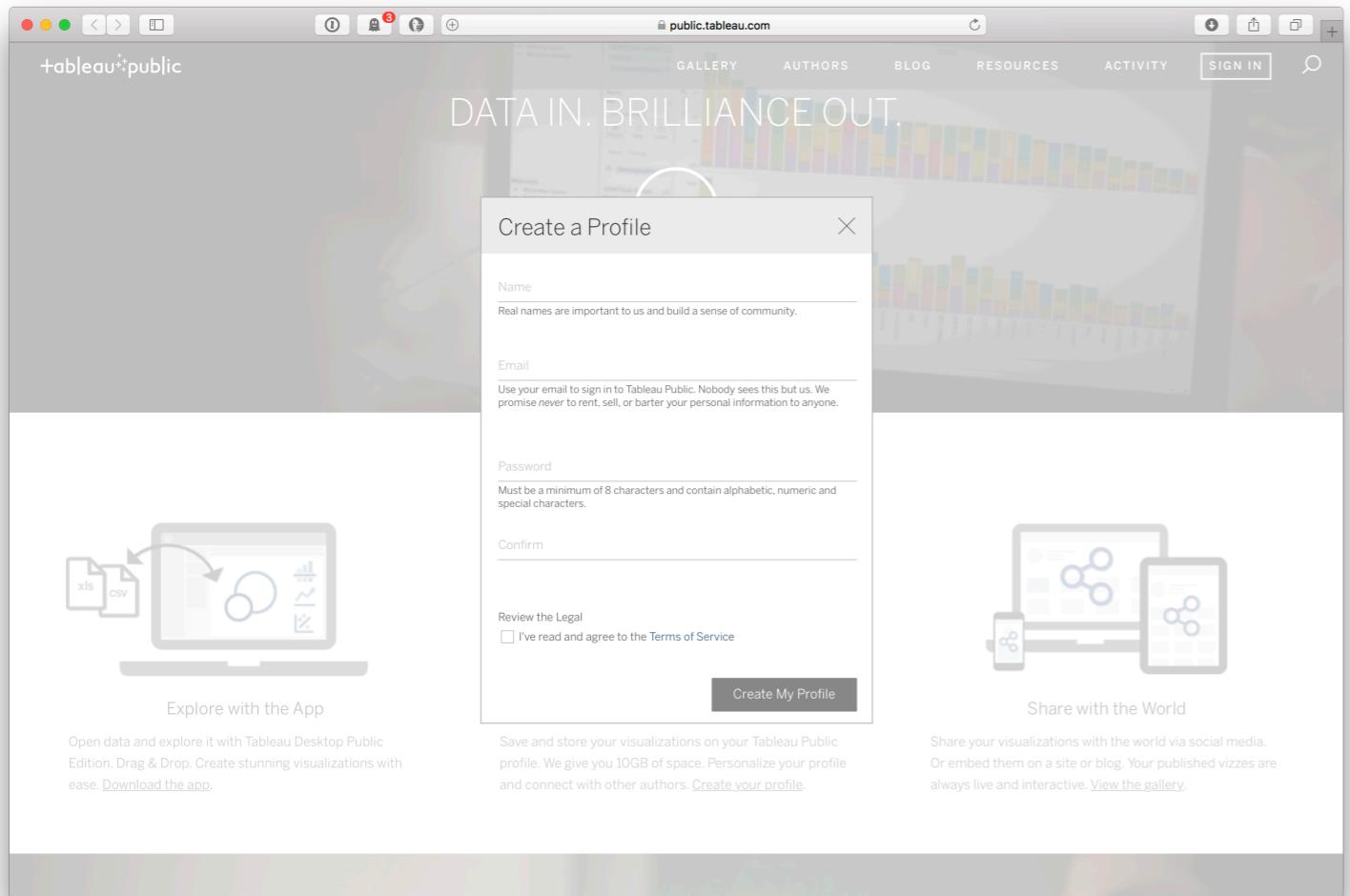
Other: Tableau Public (I)



- Go to <https://public.tableau.com/s/>
- Complete your email and press **Download App**
- Follow the installation process (no trial, data and analysis stored in a public cloud)

Note: web page may appear different.

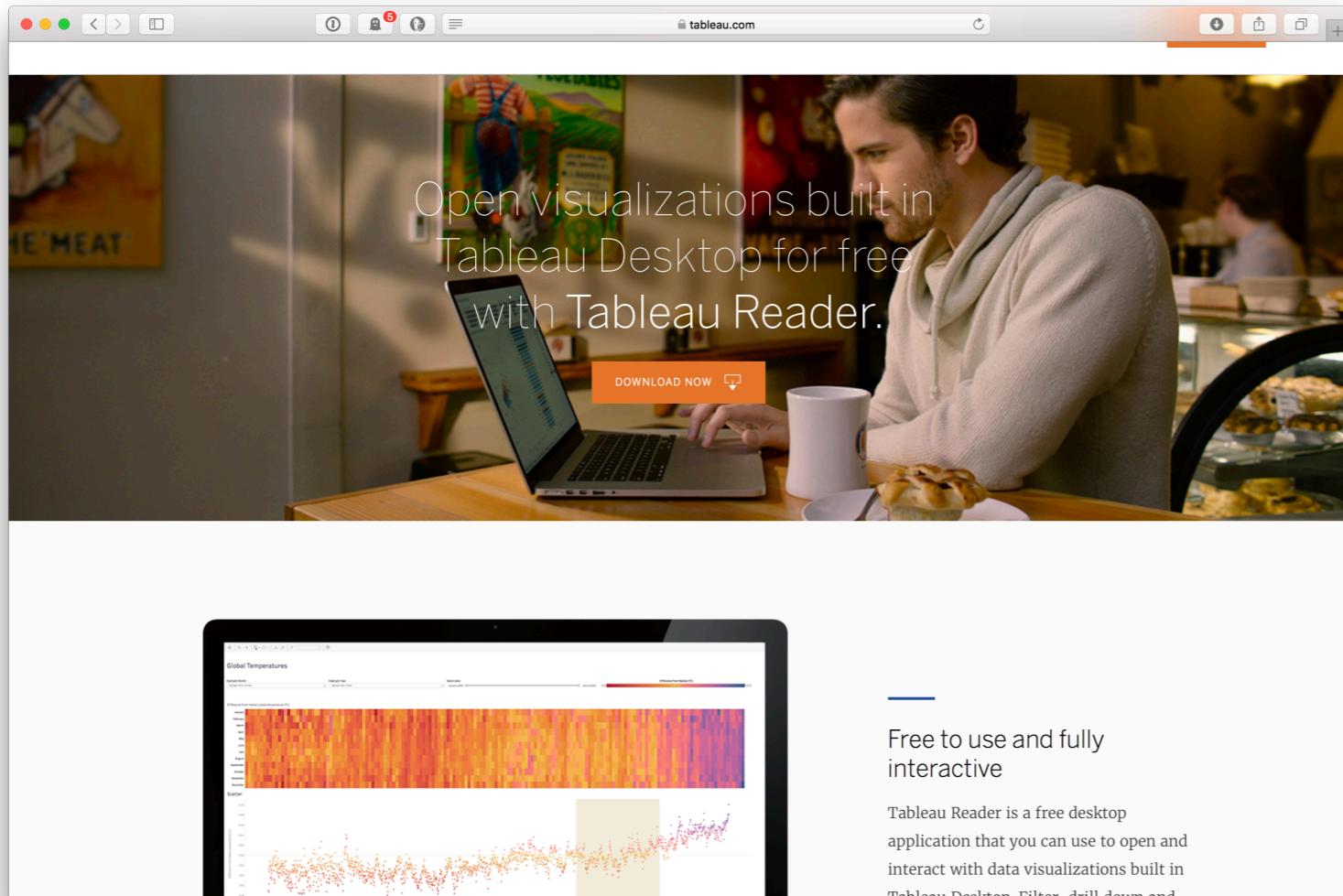
Other: Tableau Public (II)



- We can create workbooks, but we need to store them in the cloud (Tableau Public)
- To use **Tableau Public** we need to create a profile

Note: web page may appear different.

Other: Tableau Reader

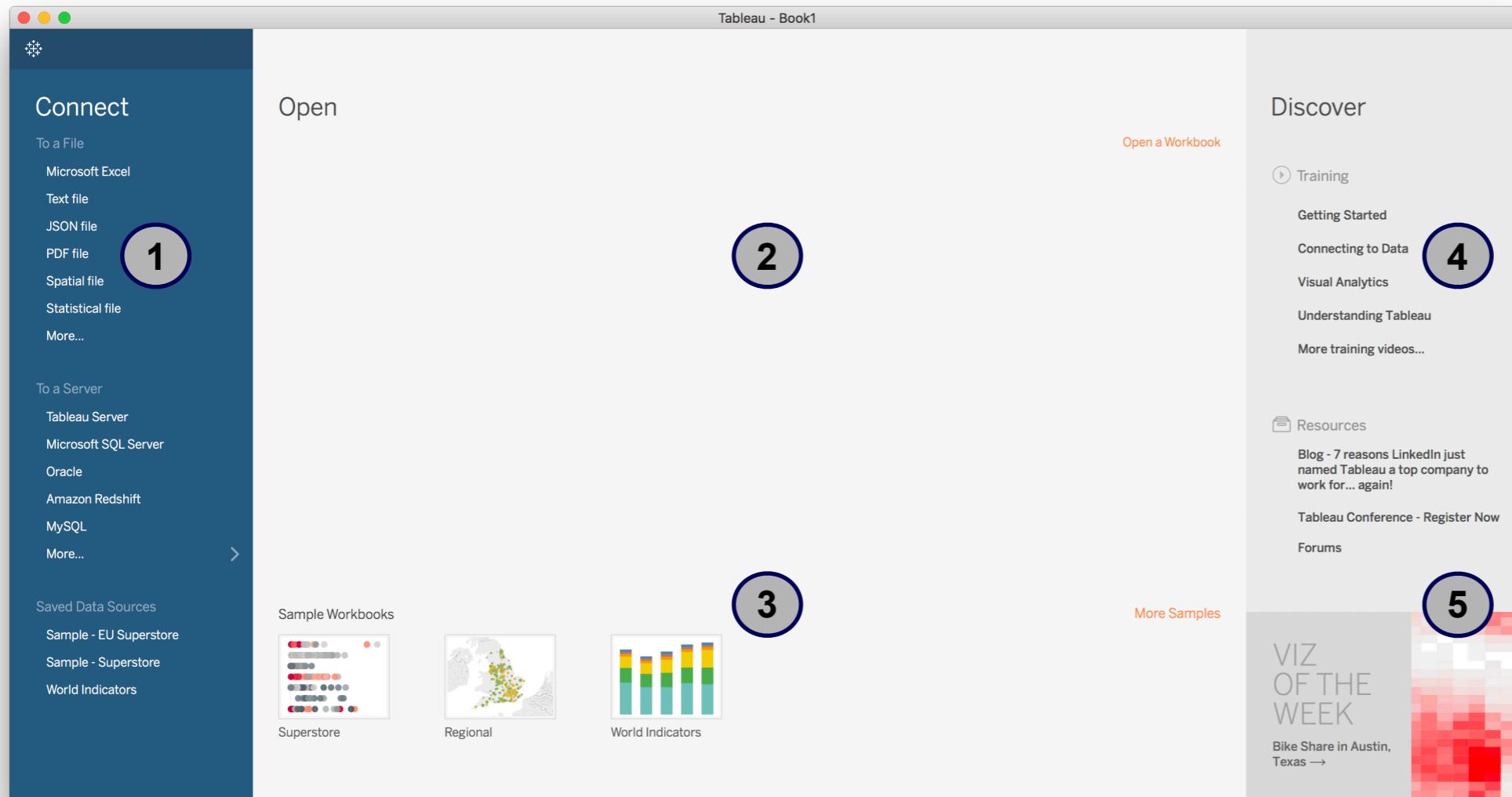


- Go to: <https://www.tableau.com/products/reader>
- Read-only tool
- **No edition capabilities**

Note: web page may appear different.

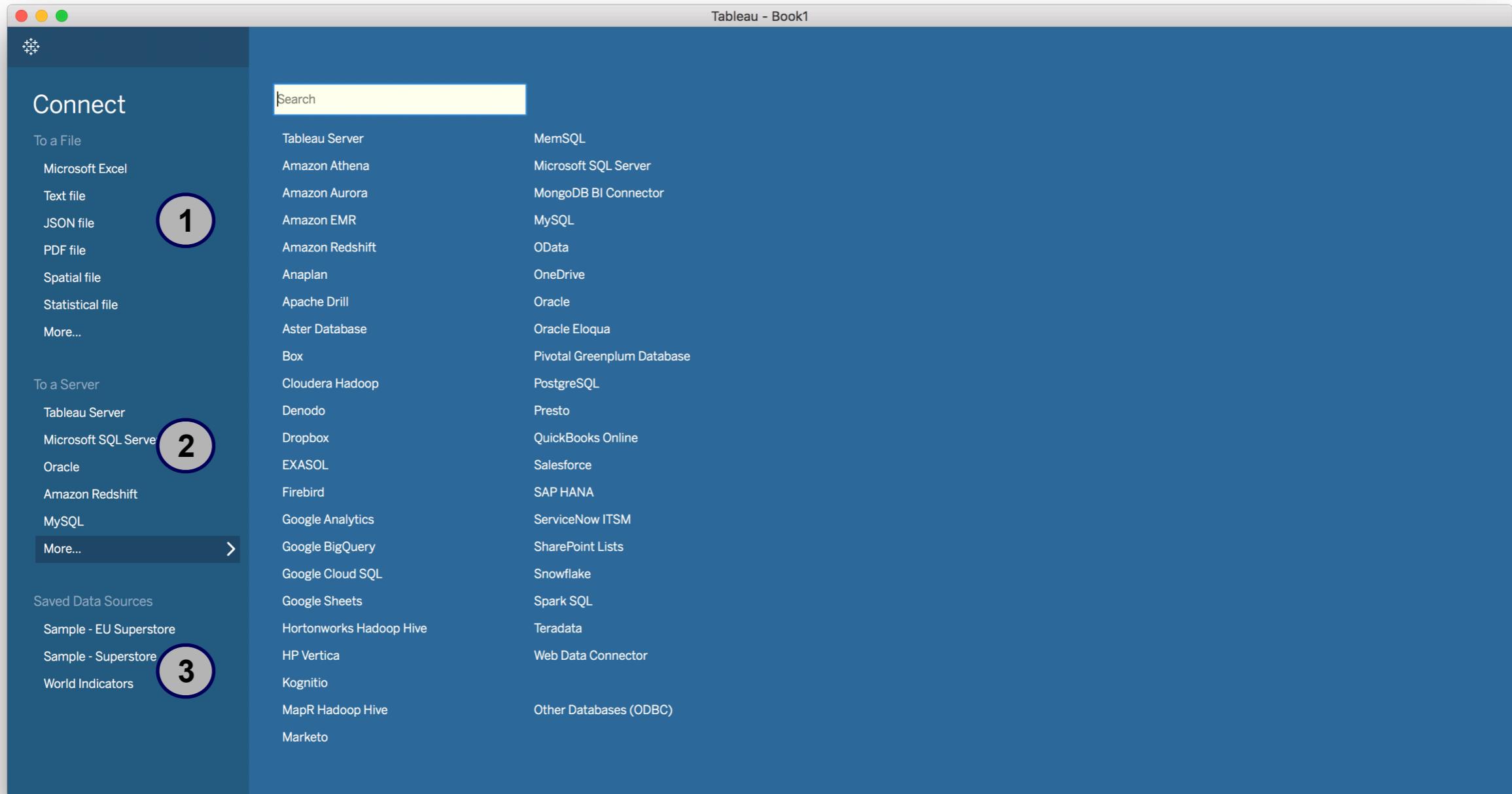
Loading and processing data

Tableau interface



- 1** **Connections**
- 2** **Previous workbooks**
- 3** **Samples**
- 4** **Training resources**
- 5** **Announcements**

Data Connectors



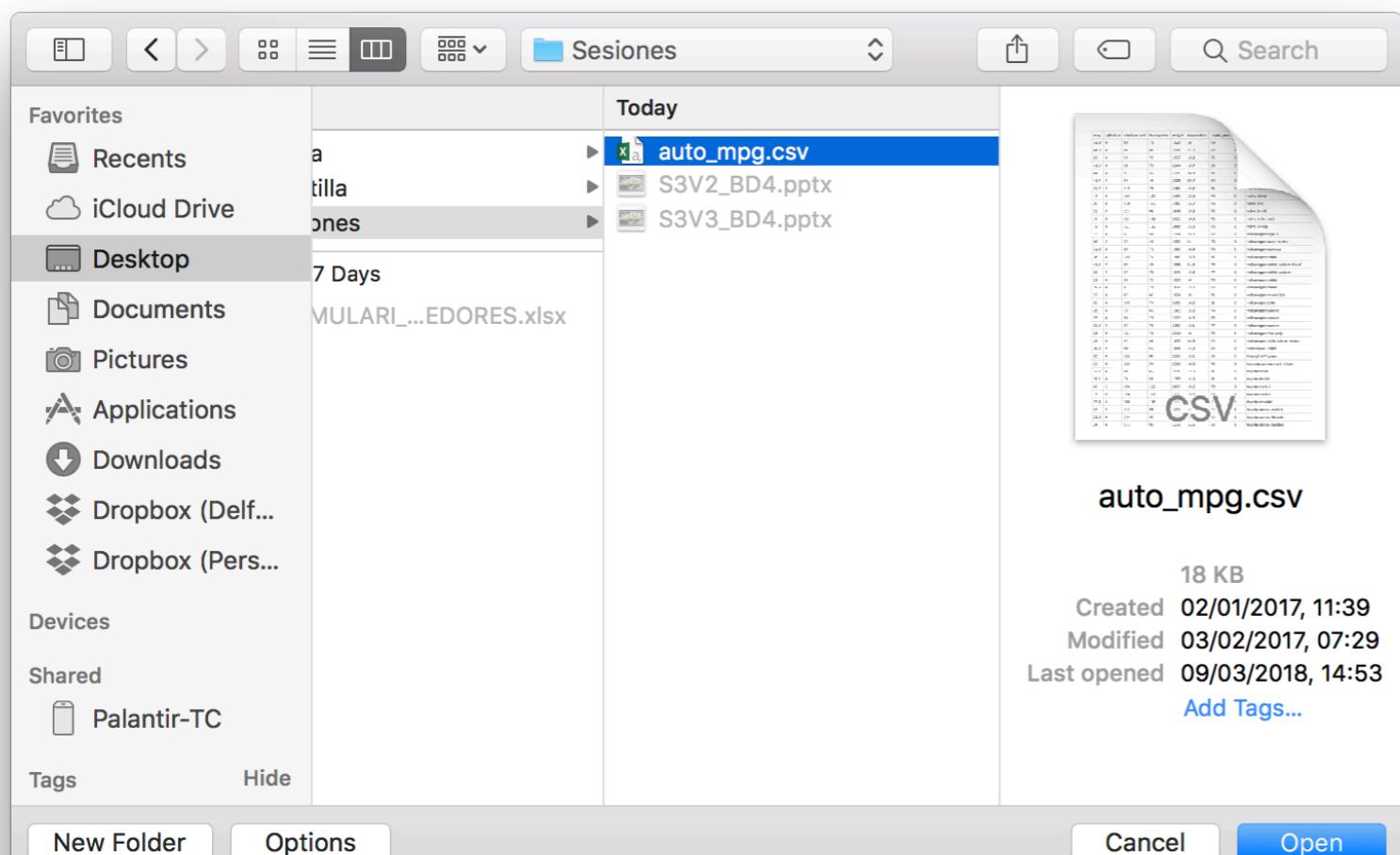
Types of connectors:

1 Files

2 Databases & Servers

3 Tableau data files (tde/hyper)

Data Access & Extraction (I)



We will discuss an example.

- We select the **text file connector**
- We select the file **auto_mpg.csv**

Data Access & Extraction (II)

The screenshot shows the Tableau Data Source interface for the 'auto_mpg' dataset. The interface is divided into several sections:

- Connections:** Shows one connection named 'auto_mpg' (Text File). A circled '1' is placed here.
- Files:** Shows the file 'auto_mpg.csv'. A circled '2' is placed here.
- New Union:** Shows the union of the 'auto_mpg.csv' file. A circled '3' is placed here.
- Filters:** Shows 0 filters. A circled '4' is placed here.
- Data View:** Displays the data in a grid format. The columns are: #, Mpg, Cylinders, Displacement, Horsepower, Weight, Acceleration, Model Year, Origin, and Car Name. A circled '5' is placed over the 'Horsepower' column header.

After the data
is loaded:

1 Connection

2 Files & Data Interpreter

3 Connection type

4 Filters

5 Data

Data Processing (I)

The diagram illustrates the combination of two tables. On the left, a blue-bordered table has columns A, B, and C, containing rows for John, Mike, Lisa, Pat, and Linda. To its right is a green-bordered table with columns D, E, and F, containing rows for John, Mike, and Lisa. An arrow points to the right, leading to a larger table with columns A, B, C, E, and F. This resulting table contains all the rows from both original tables, with column E being empty for the first five rows and column F being empty for the last three rows.

A	B	C	D	E	F
John					
Mike					
Lisa					
Pat					
Linda					

Combination

The diagram illustrates the union of two tables. On the left, a blue-bordered table has columns A, B, and C, containing rows for John, Mike, Lisa, Pat, and Linda. To its right is a green-bordered table with columns A, B, and C, containing rows for Pat and Linda. An arrow points to the right, leading to a larger table with columns A, B, and C. This resulting table contains all the rows from both original tables, with column A being blue for the first five rows and green for the last two rows.

A	B	C
John		
Mike		
Lisa		
Pat		
Linda		

Union

The diagram illustrates a pivot operation. On the left, a table with columns A, B, and C has rows for John, Mike, and Lisa. Column A is highlighted in yellow, column B in blue, and column C in green. An arrow points to the right, leading to a new table with columns A, D, and E. Column A is yellow, column D is blue, and column E is green. The data is rearranged such that each row now has three entries: the first entry is the value from column A, the second from column B, and the third from column C.

A	B	C
John		
Mike		
Lisa		

Pivot

The diagram illustrates an unpivot operation. On the left, a table with columns A, D, and E has rows for John, Mike, and Lisa. Column A is yellow, column D is blue, and column E is green. An arrow points to the right, leading to a new table with columns A, C, and B. Column A is yellow, column C is blue, and column B is green. The data is rearranged such that each row now has three entries: the first entry is the value from column A, the second from column D, and the third from column E.

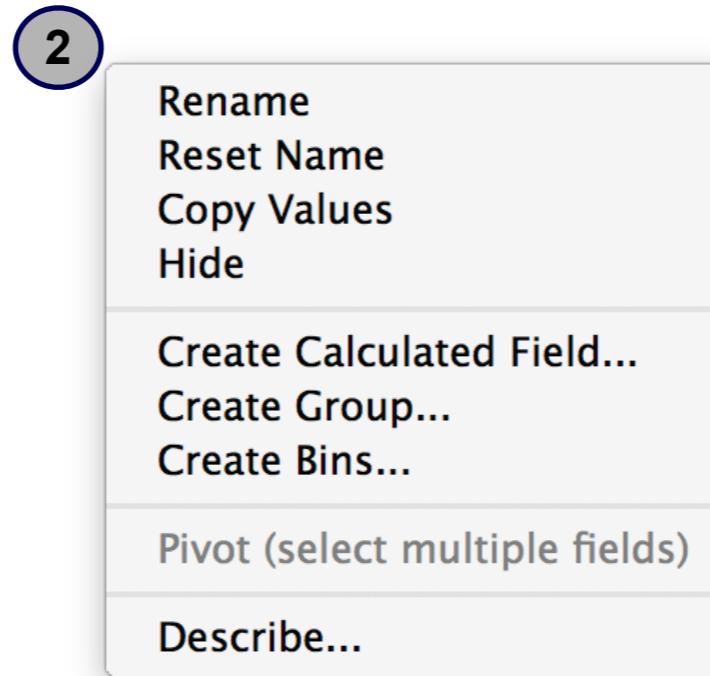
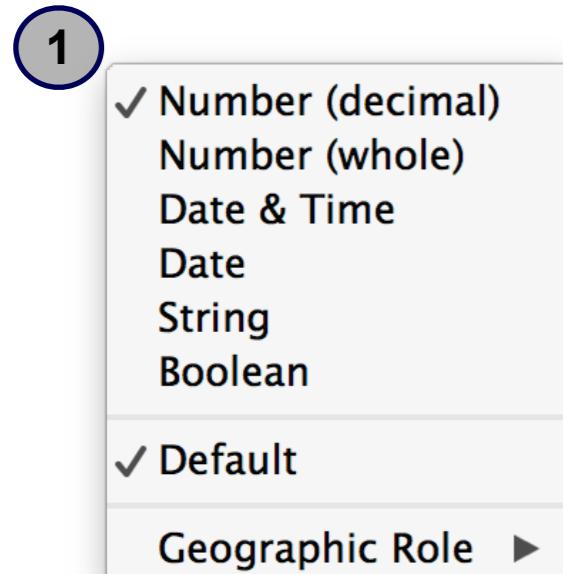
A	D	E
John	B	
Mike	B	
Lisa	B	
John	C	
Mike	C	
Lisa	C	

Unpivot

Available options to combine data sources

Data Processing (II)

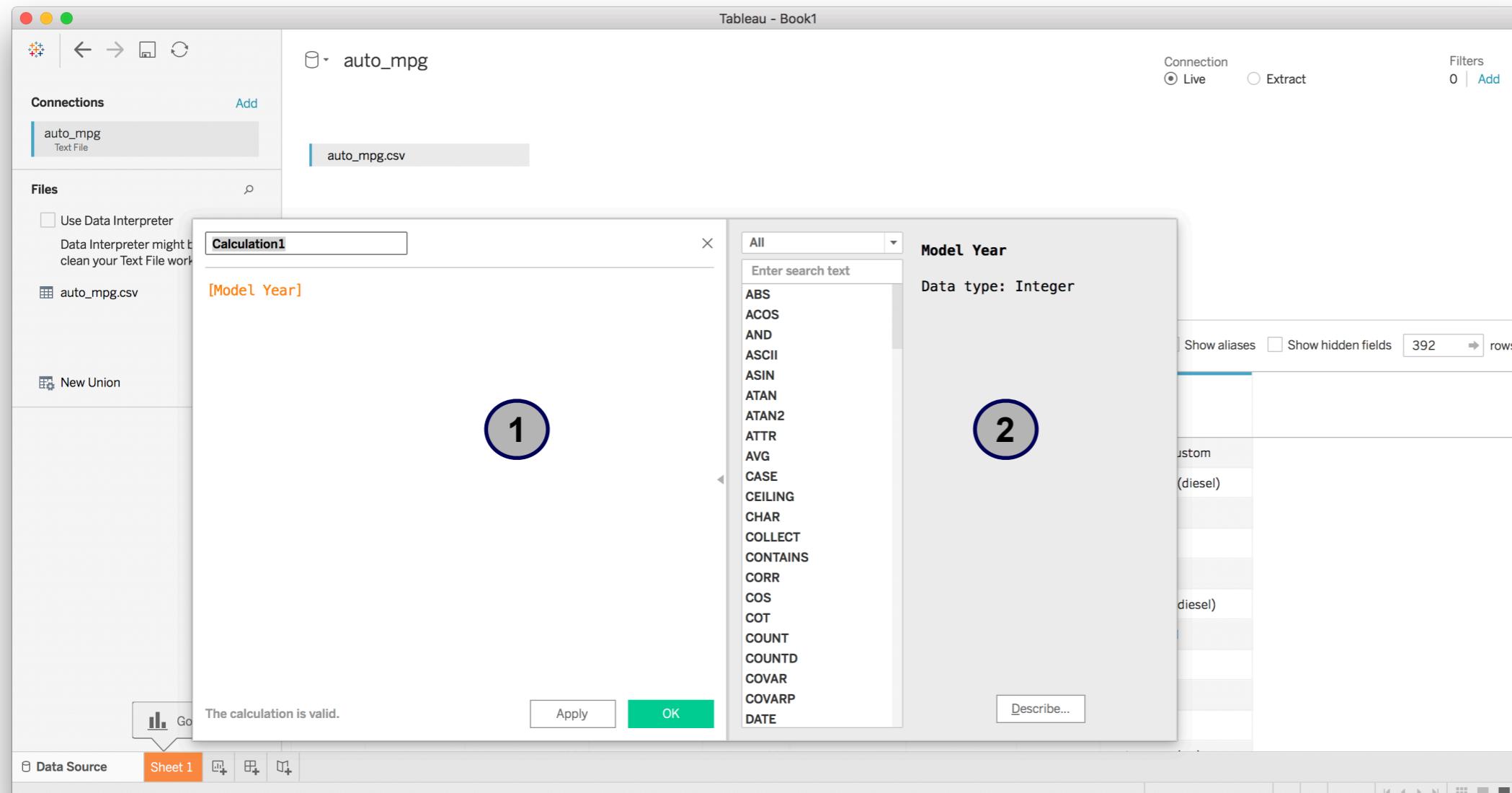
Every data column has two menus: data type and properties



1 **Changing the data type and, if it applies, the geographic role**

2 **Change metadata, create groups and bins, and create calculated fields**

Data Processing (III)



Calculated Field: let us create a new field

1 Working area

2 Help

Data Processing: example

- Access to **auto_mpg.csv** using Tableau
- Generate "**Country of Origin**" creating a *calculated field* from origin:

```
IF [Origin]=1  
THEN 'US'  
ELSEIF [Origin]=2  
THEN 'Europe'  
ELSE 'Japan'  
END
```

- Create "**Year**" from "Model Year" using *calculated field*:

STR([Model Year] + 1900)
- Create "**Brand**" applying *split* to "Car Name"
- Change *Geographic Role* > Country/Region to "**Country of Origin**" using data type menu

- Create "**Card Brand**" from **brand** using *calculated field*:

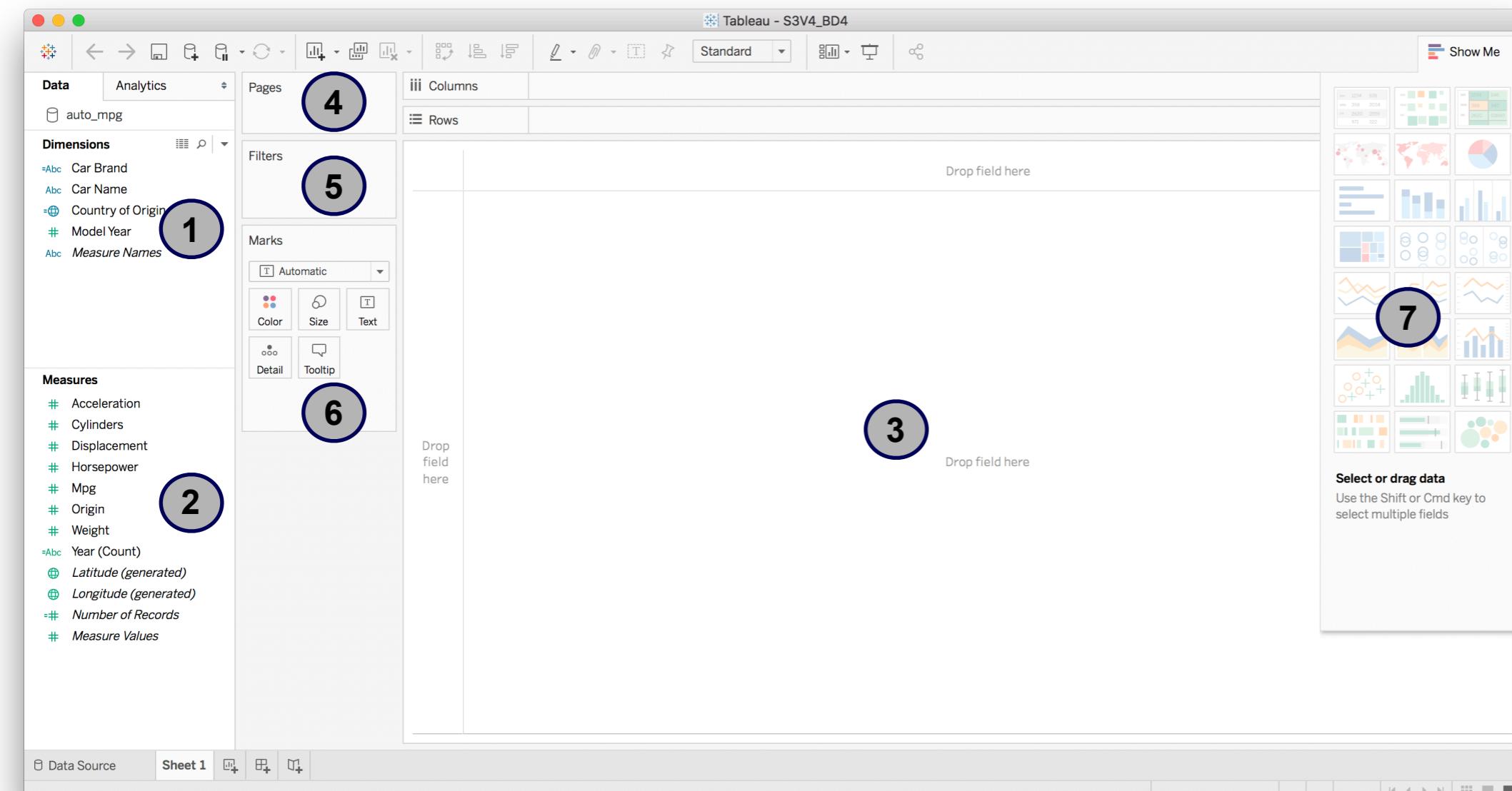
**if ([Brand]='toyouta') THEN
'toyota'
ELSEIF ([Brand]='mercedes') THEN
'mercedes benz'
ELSEIF ([Brand]='mercedes-benz')
THEN
'mercedes benz'
ELSEIF ([Brand]='maxda') THEN
'mazda'
ELSEIF ([Brand]='chevy') THEN
'chevrolet'
ELSEIF ([Brand]='chevroelt') THEN
'chevrolet'
ELSEIF ([Brand]='vw') THEN
'volkswagen'
ELSEIF ([Brand]='vokswagen') THEN
'volkswagen'
ELSEIF ([Brand]='capri') THEN
'mercury'
ELSE [Brand]
END**

A calculated field is similar to a macro, check the help pdf for more information

Visualization: from charts to dashboards

EDA* interface (I)

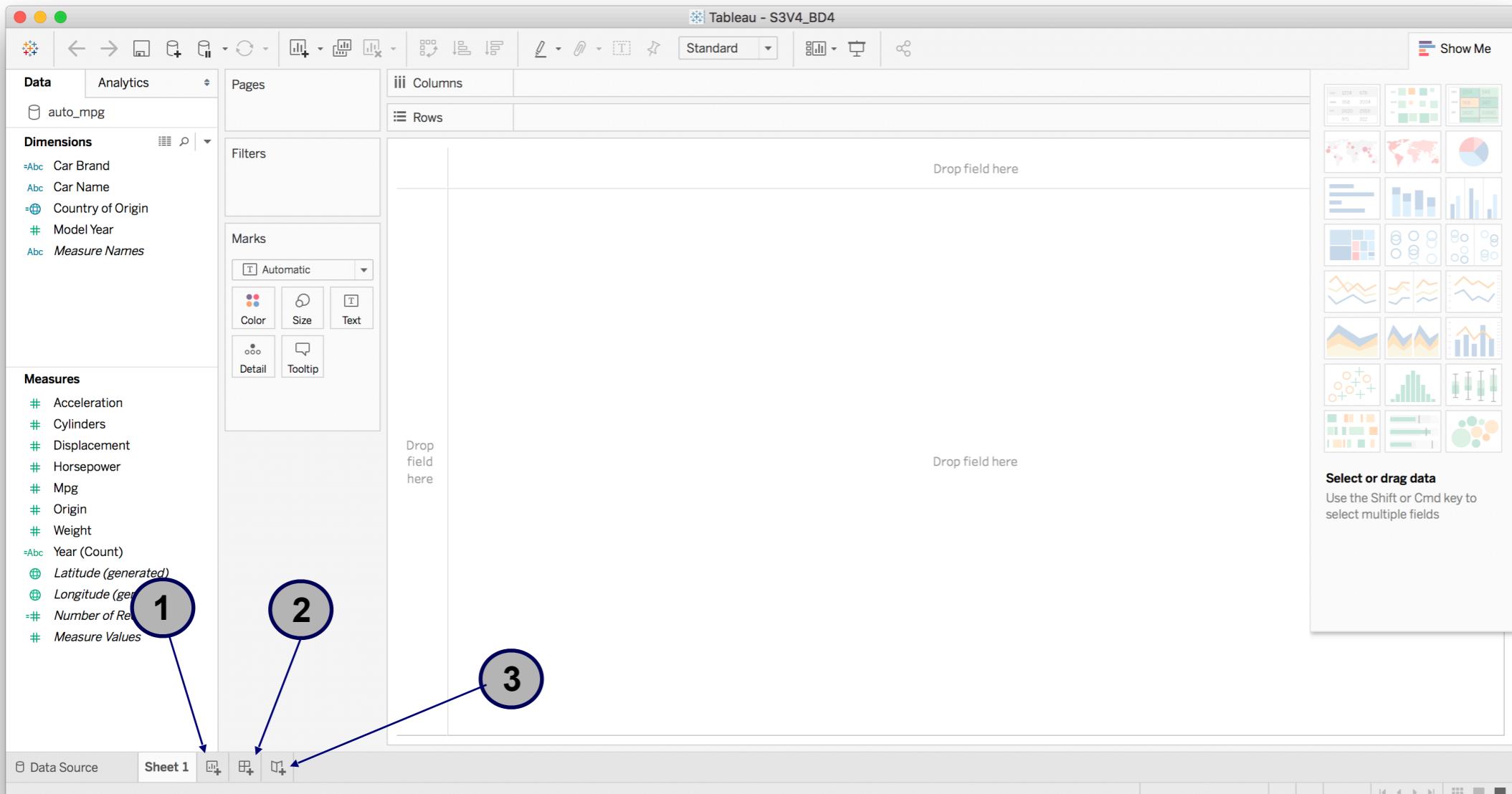
Main sections:



- 1 Dimensions
- 2 Metrics
- 3 Working area
- 4 Pagination
- 5 Filters
- 6 Marks
- 7 Show Me

* EDA means Exploratory Data Analysis

EDA interface (II)



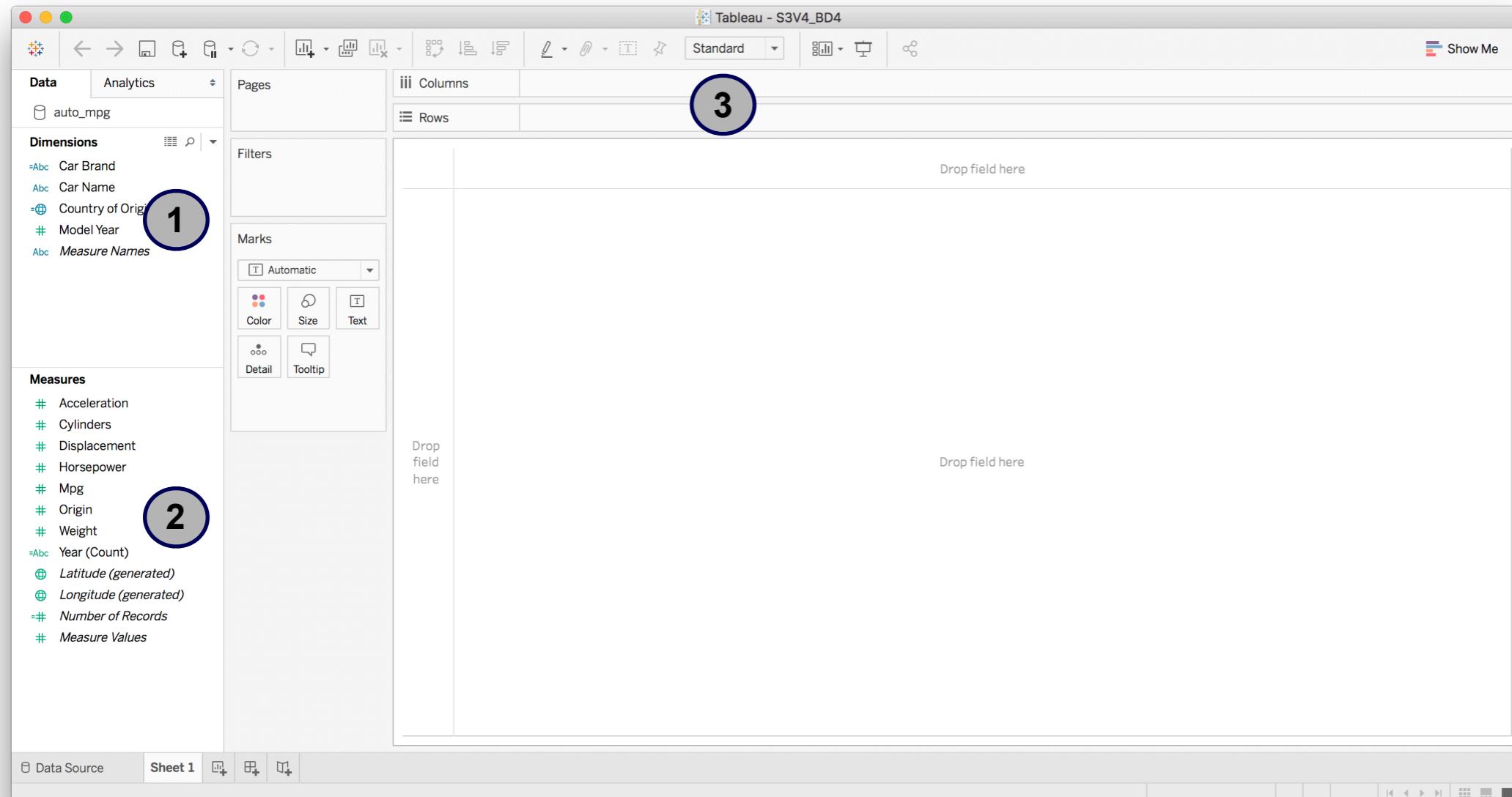
Creating
New
elements:

1 Worksheet

2 Dashboard

3 Data Story

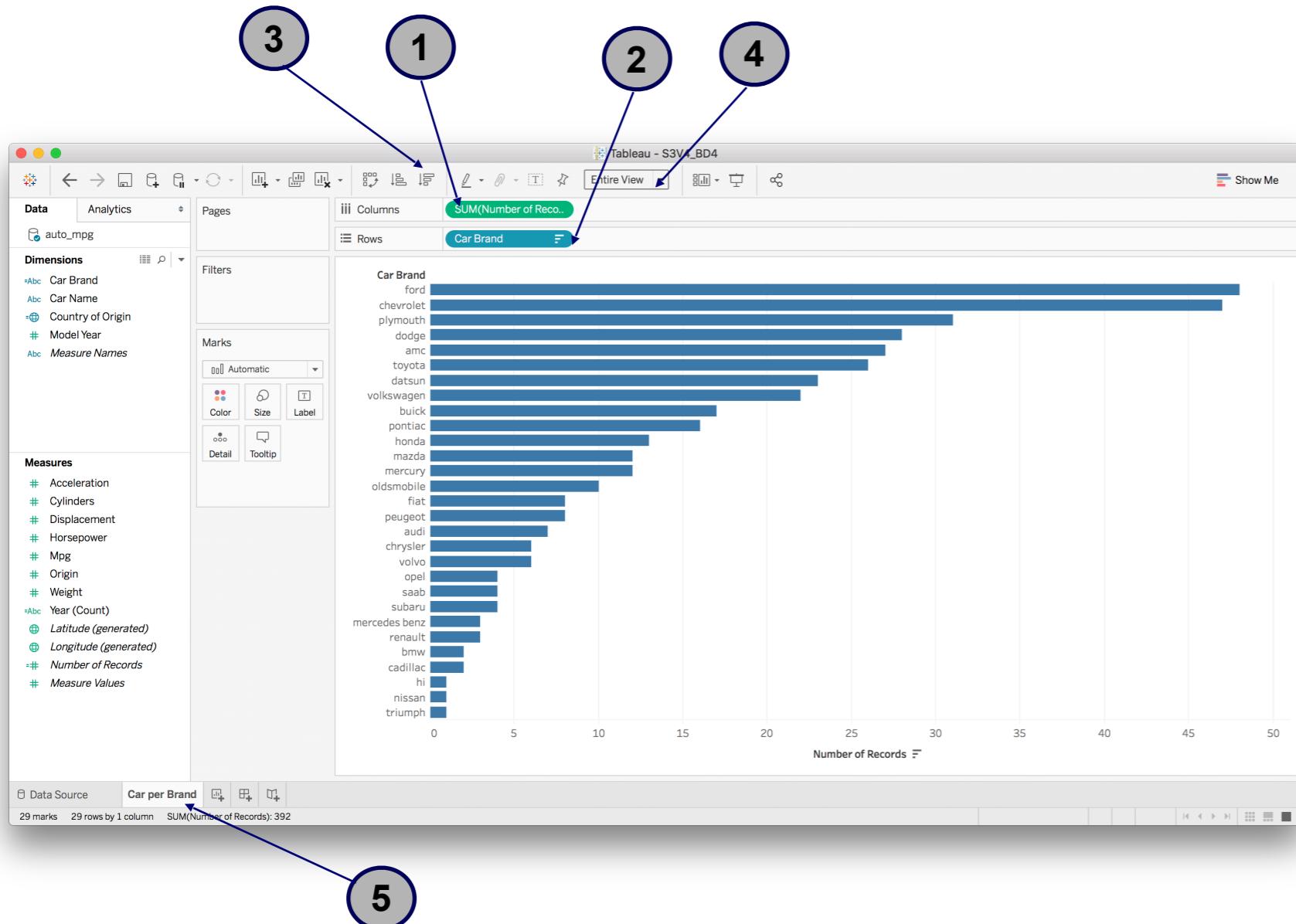
EDA: cars by brand (I)



- 1 Car Brand
- 2 Number of records
- 3 Selection of dimensions

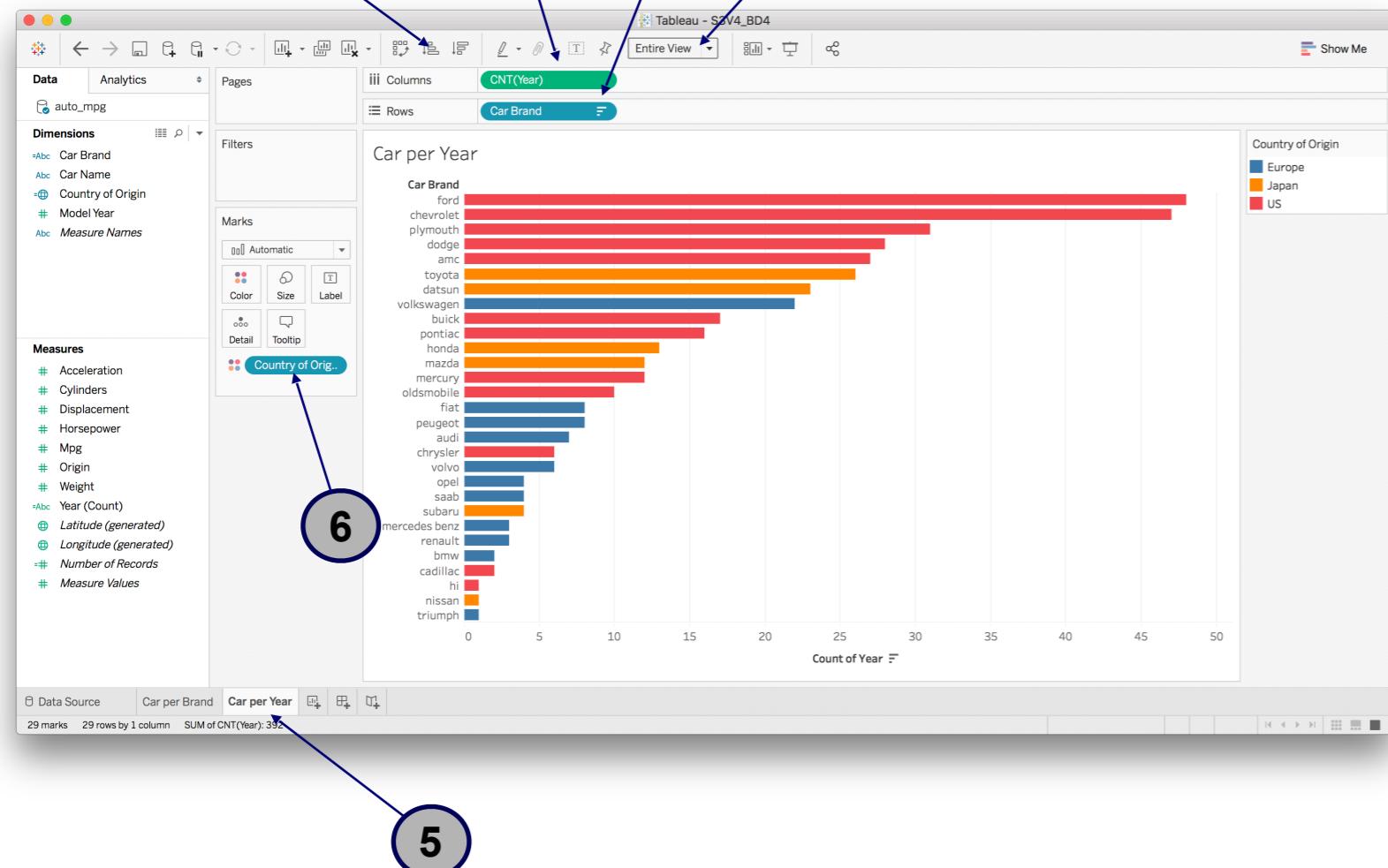
We will use one dimension and one metric and we will drag them into columns and rows.

EDA: cars by brand (II)



- Drag number of records to columns
- Drag card brand to rows
- Sort values desc
- Adjust chart size to entire view
- Change worksheet title

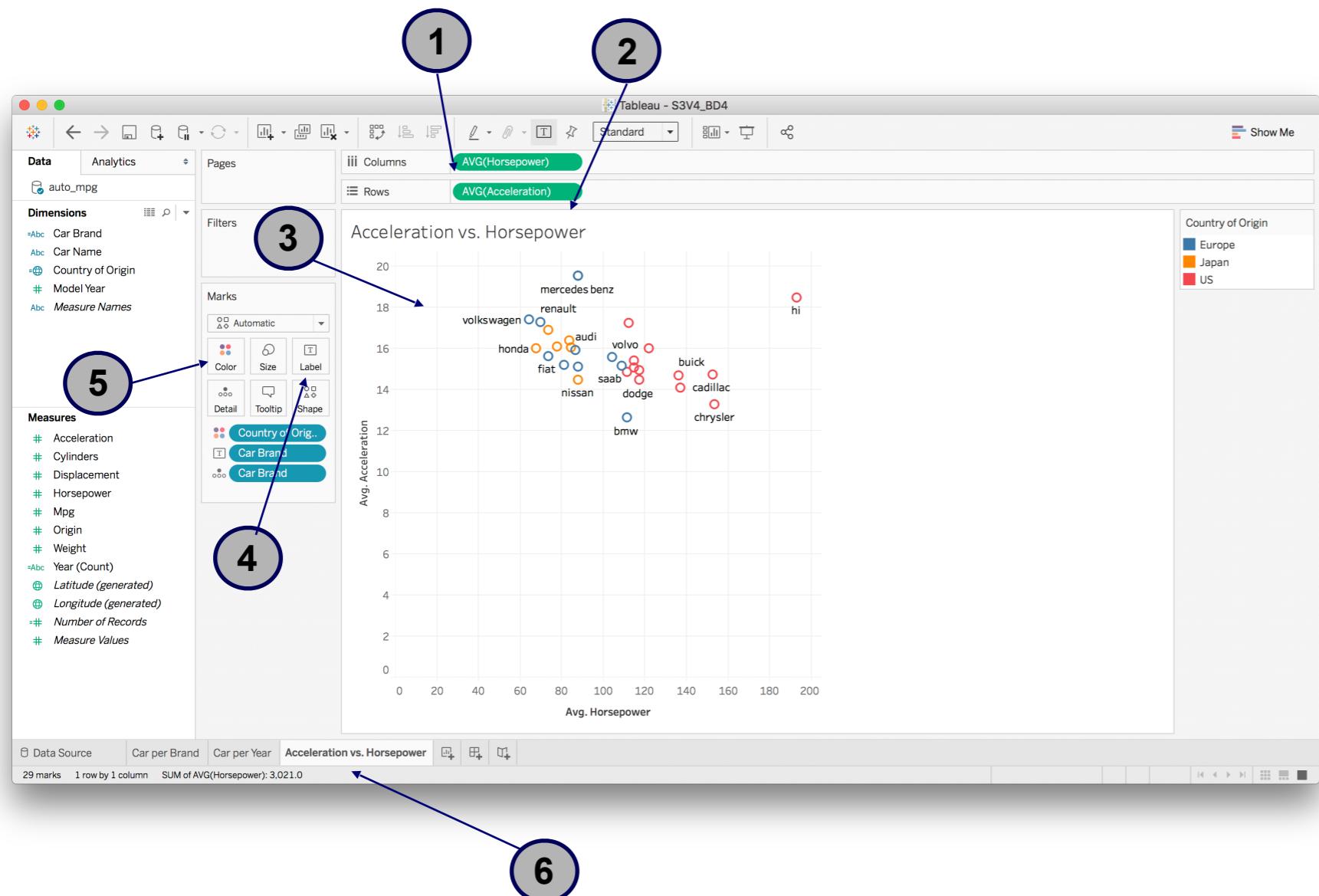
EDA: cars by year



- Drag **year(count) records** to columns
- Drag **card brand** to files
- Sort values desc
- Adjust chart size to **entire view**
- Change worksheet title to **Car per Year**
- Drag Country of origin to **Marks > Color**

We will use one dimension and one metric and we will drag them into columns and rows.

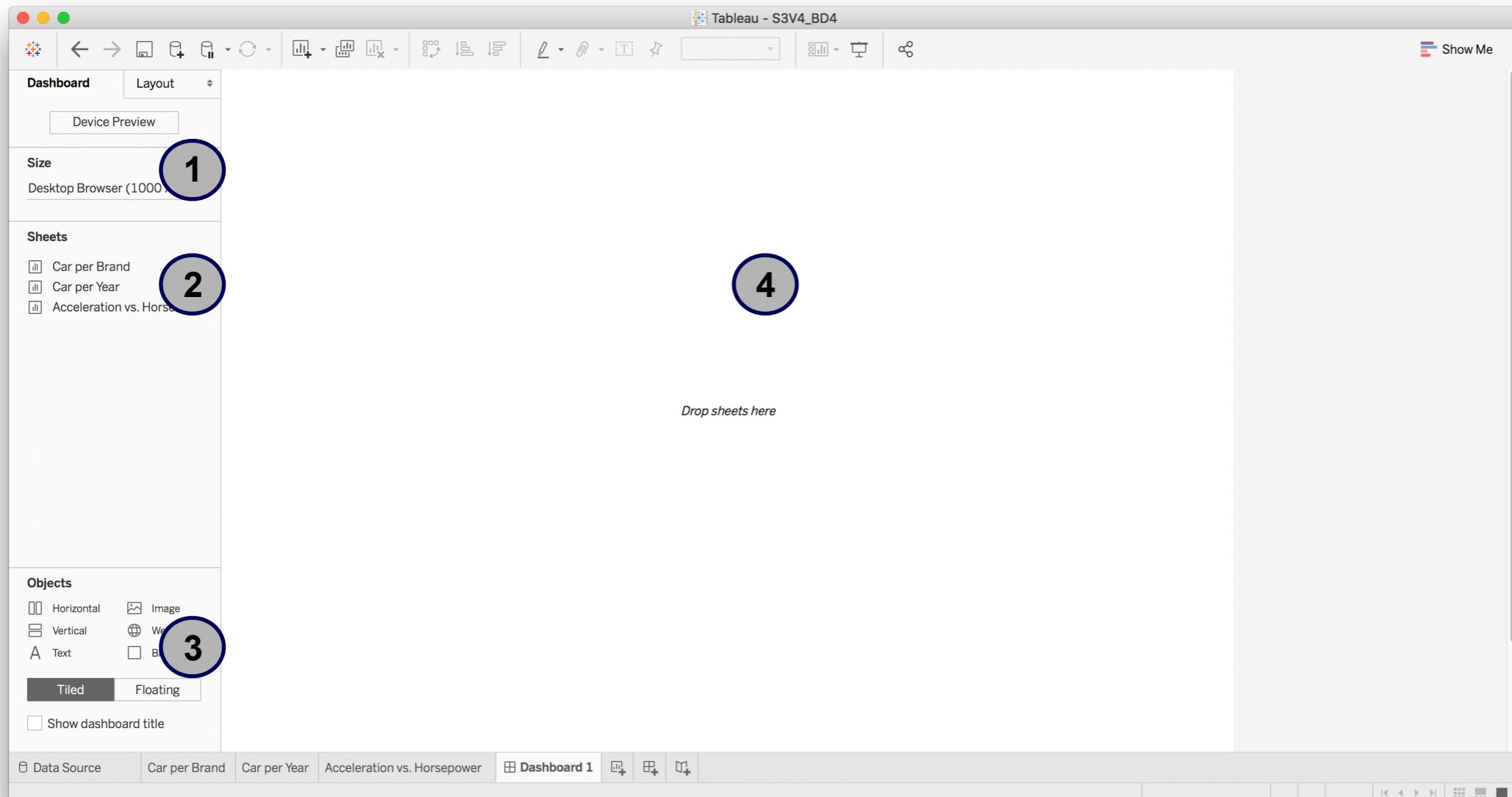
EDA: Acceleration vs. Horsepower



- Drag **Horsepower** to columns and change measure to **AVG**
- **Drag Acceleration to files and change measure to AVG**
- Drag **car brand** to the centre of the chart
- Drag **car brand** to Marks > label
- Drag **Country of origin** to Marks > color
- Change **title** to **Acceleration vs. Horsepower**

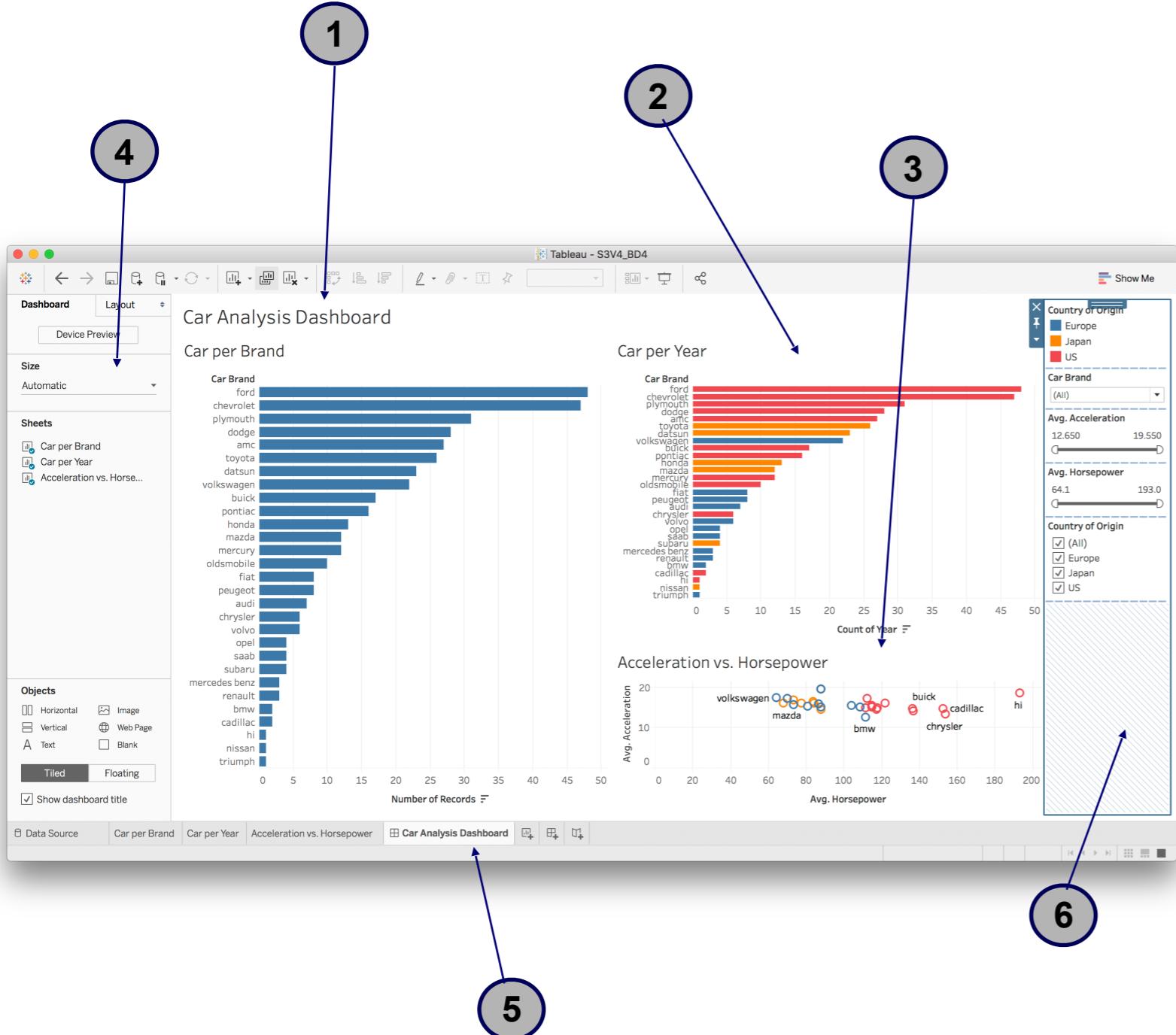
Dashboard interface (I)

Main elements:



- 1** **Size**
- 2** **Available analysis**
- 3** **Elements**
- 4** **Work area**

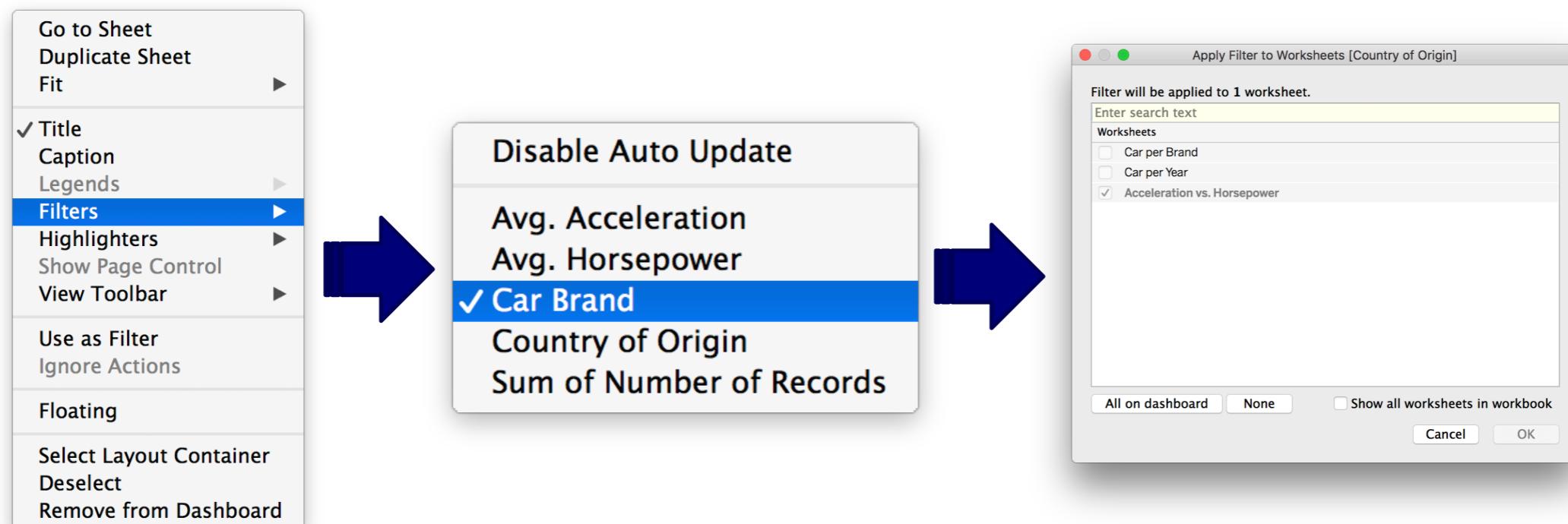
Creating a dashboard (I): elements



- Drag **card per brand** to the work area (left)
- Drag **card per year** to the work area (right)
- Drag **Acceleration vs. Horsepower** to work area (left, bottom)
- Adjust size dashboard to automatic
- Change title to **Car Analysis Dashboard** and add
- Add filters

Creating a dashboard (II): interaction

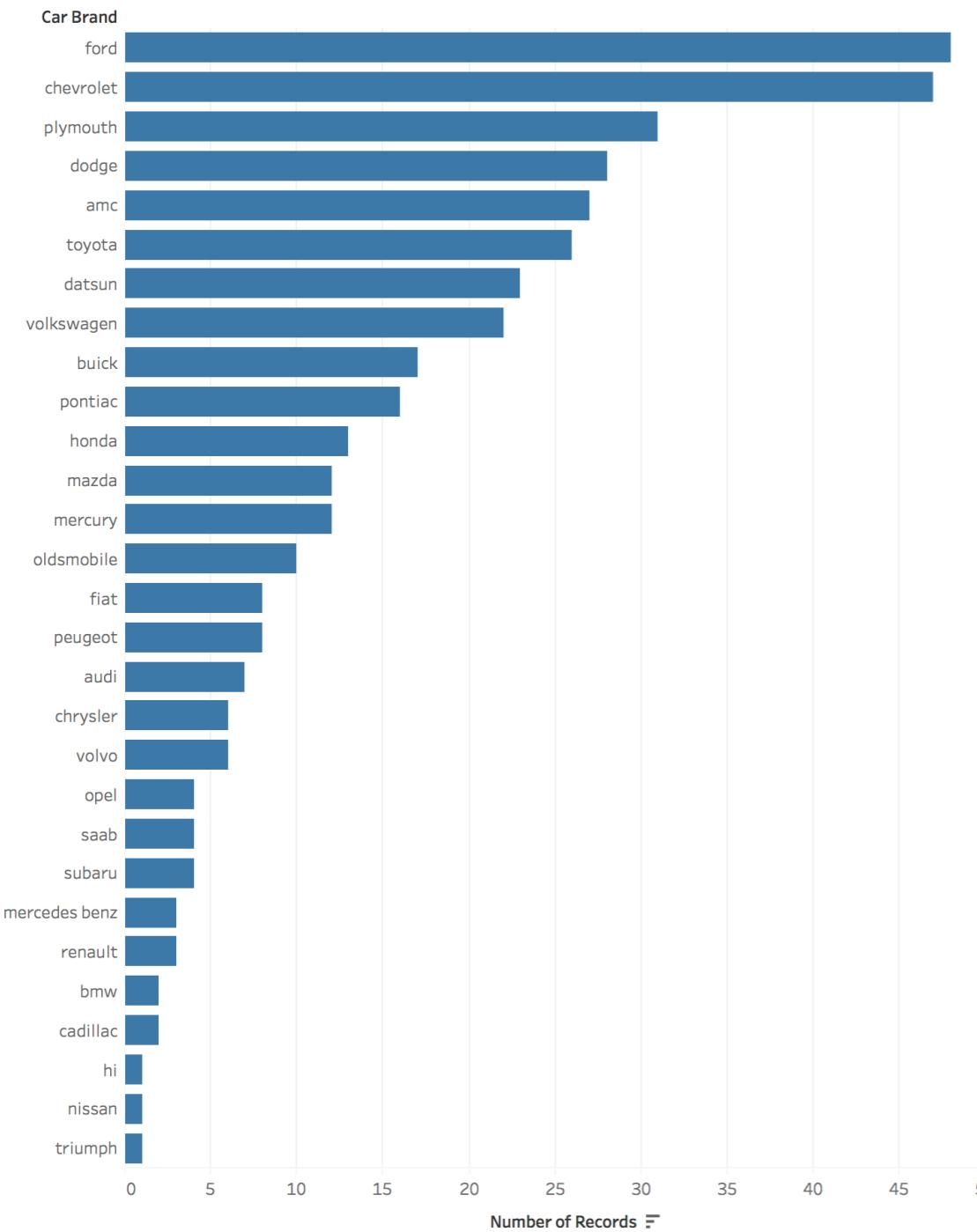
We can add **filters** based on attributes- The filters can be applied to a chart, some or all of them. We are choosing the level of interaction.



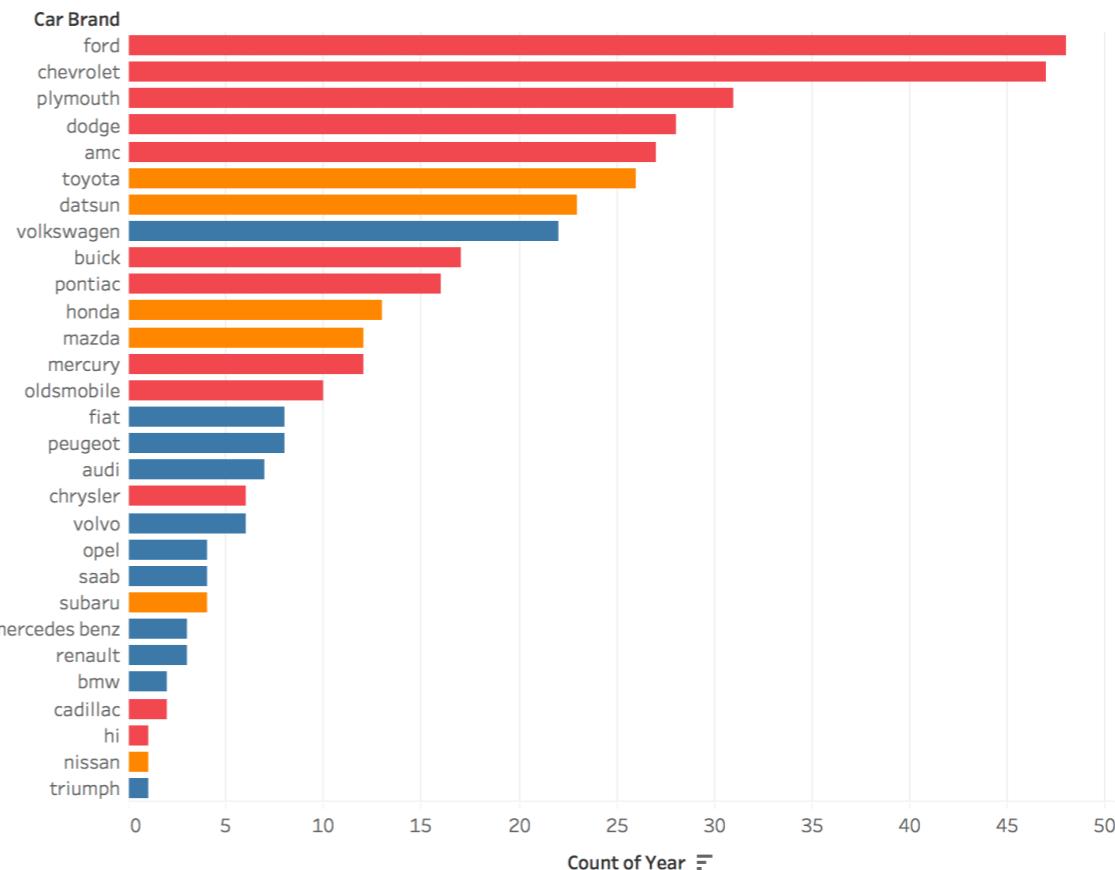
Creating a dashboard (III): final composition

Car Analysis Dashboard

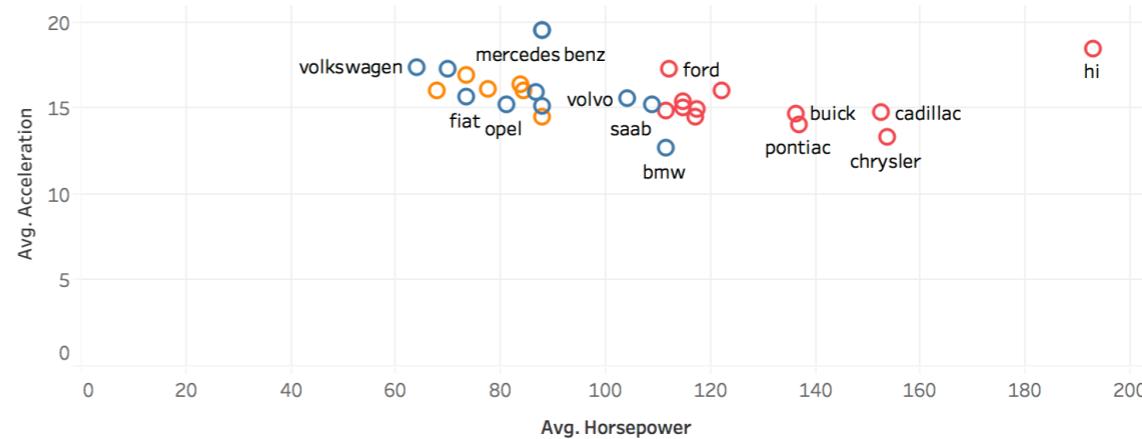
Car per Brand



Car per Year

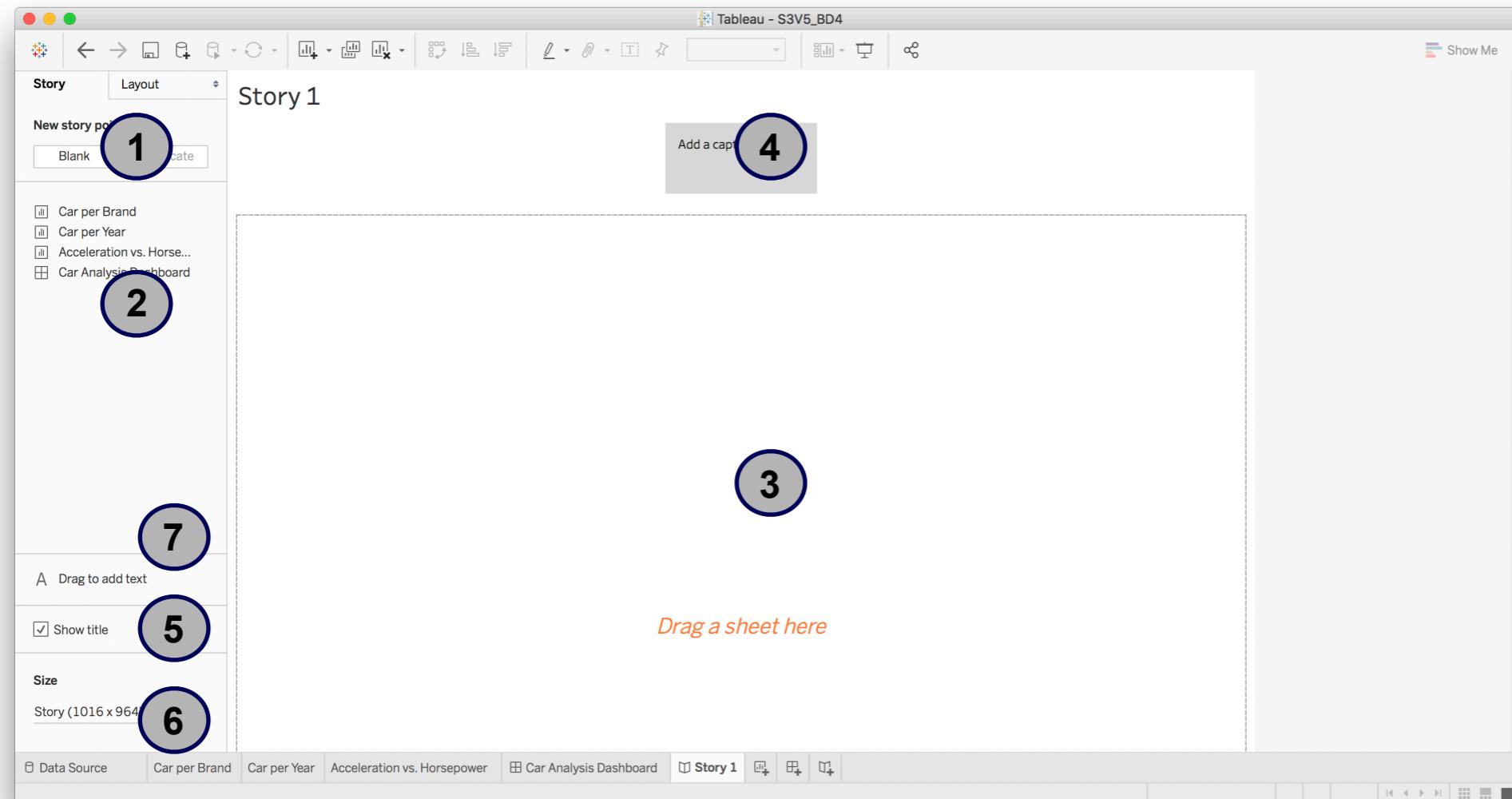


Acceleration vs. Horsepower



Data Storytelling

Data Stories Interface



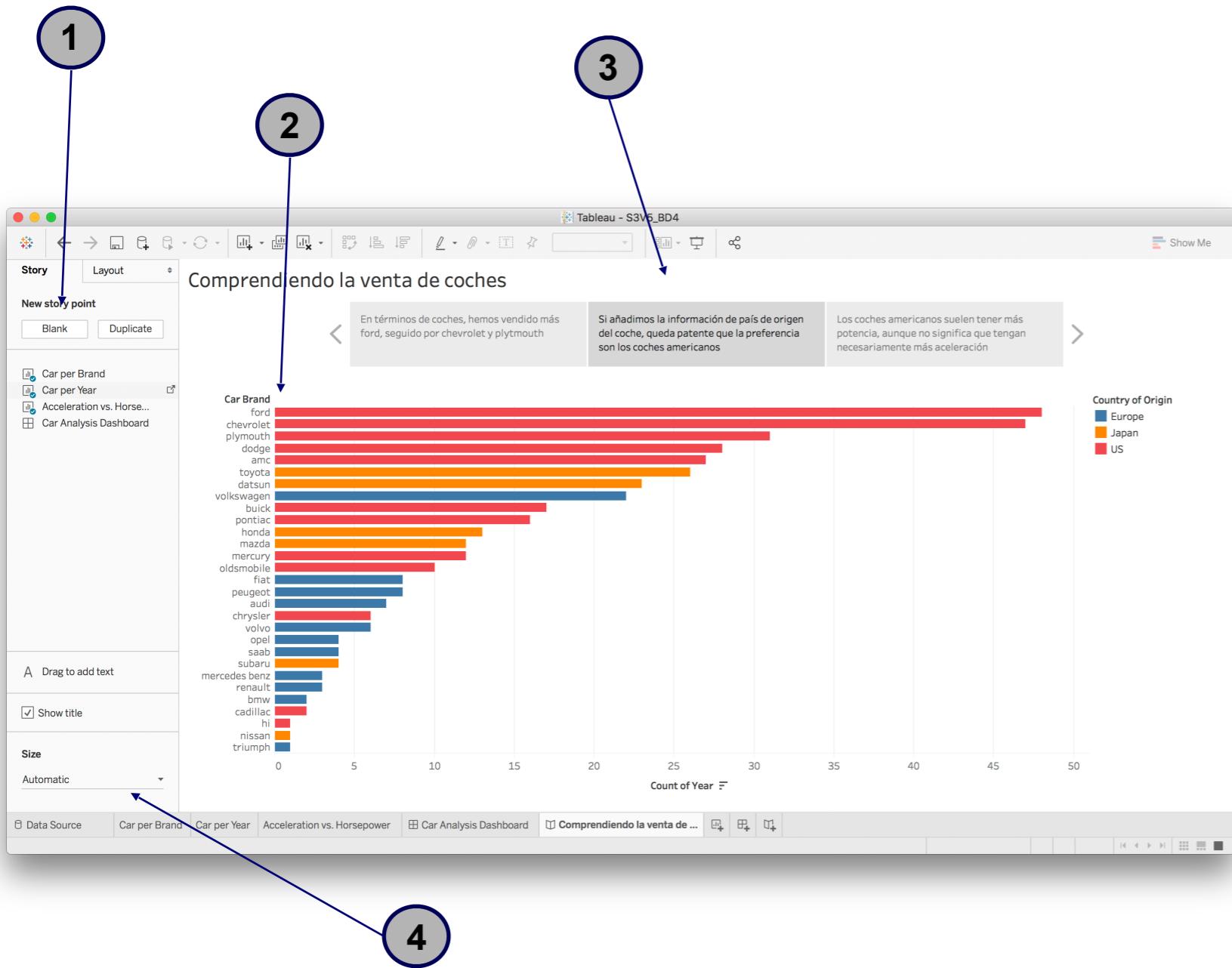
- 1 Story points
- 2 Available elements
- 3 Working area
- 4 Caption/Explanation
- 5 Title
- 6 Size
- 7 Text

How to create a story (I)



- A story is a collection of data points
- Let's create the first data point!
- Drag **card per brand** to working area
- Change **caption** with the proper explanation
- Change size to **automatic**

How to create a story (II)



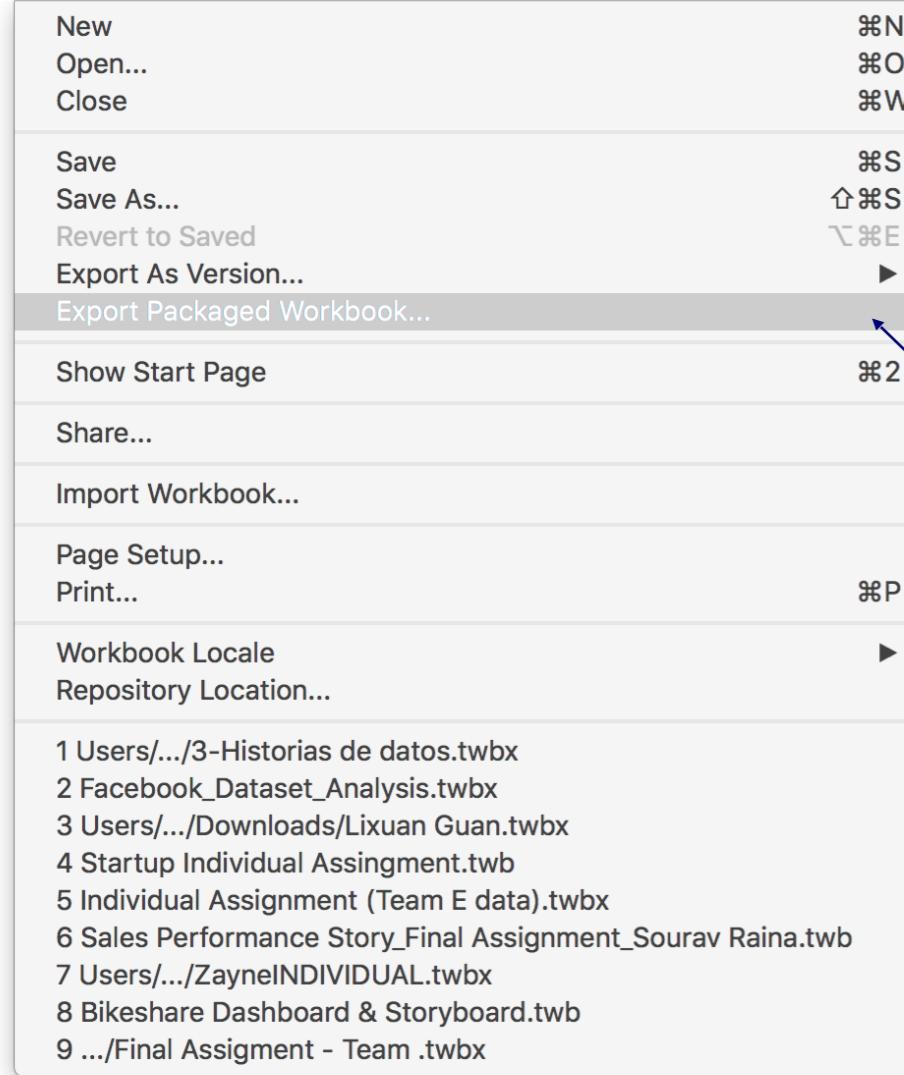
- Let's create the second data point
- Press **blank**
- Drag **card per year** to working area
- Change **caption** with the proper explanation
- Change size to **automatic**

How to create a story (III)



- Let's create the third and final data point
- Press **blank**
- Drag **Acceleration vs. Horsepower** to working area
- Change **caption** with the proper explanation
- Change size to **automatic**
- Add **title**

How to save our work



- In **File** menu we will find several options.
 1. **Export as Packaged Workbook**
 2. **Save**
 3. **Save as**
 4. **Others**

For the assignment, it is recommended to export as Packaged Workbook and extract the data (as hyper).



