

# Introduction to Tableau

MDB | 2018

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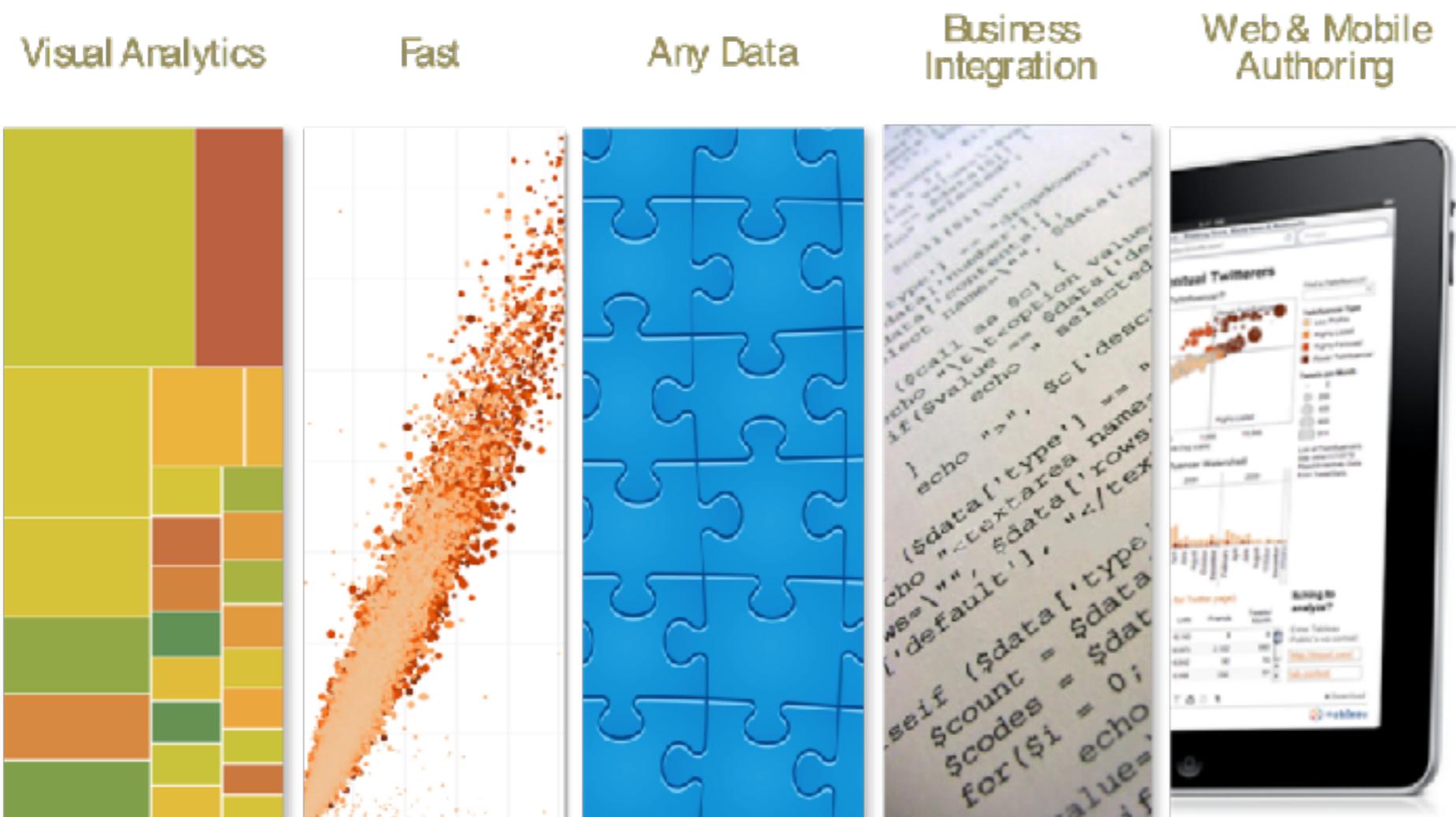
# Outline

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



# Introduction to Tableau

# What is Tableau



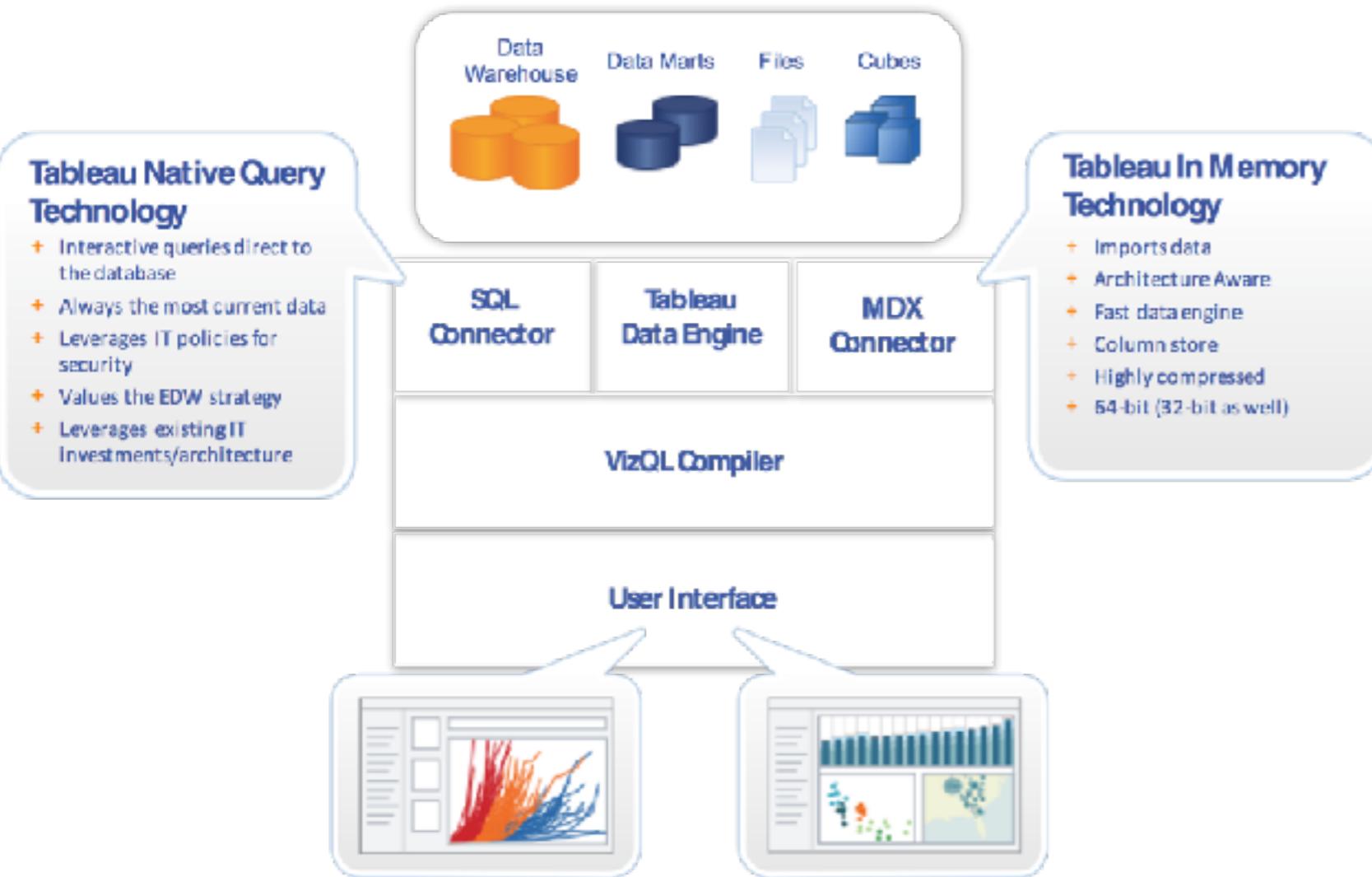
- Visual Analytics tool
- In-memory capabilities
- Multiple connectors
- Embedded BI
- Multi-device

# Approach



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

# Architecture



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

# Can I install Tableau Desktop?

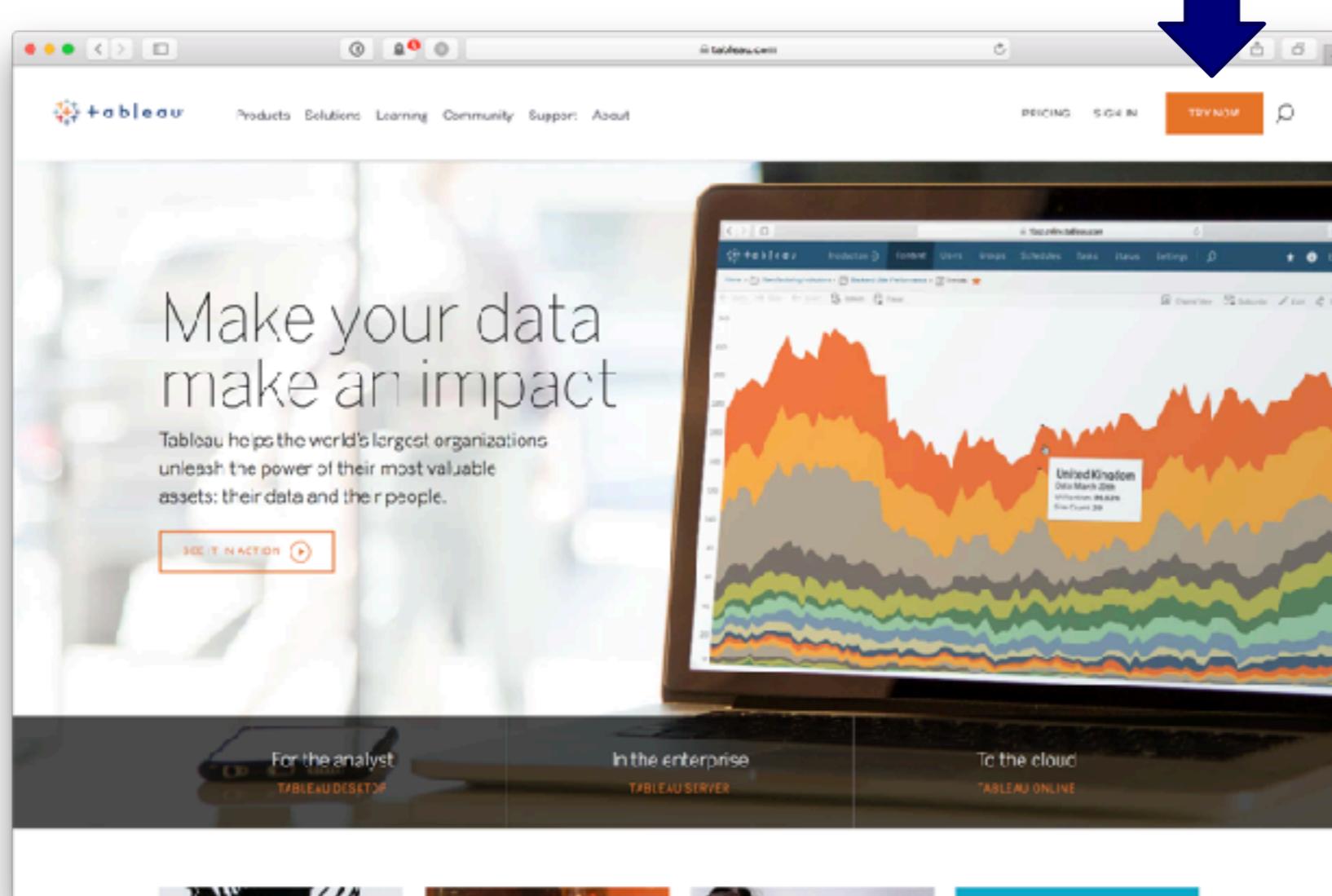
## Windows

- 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

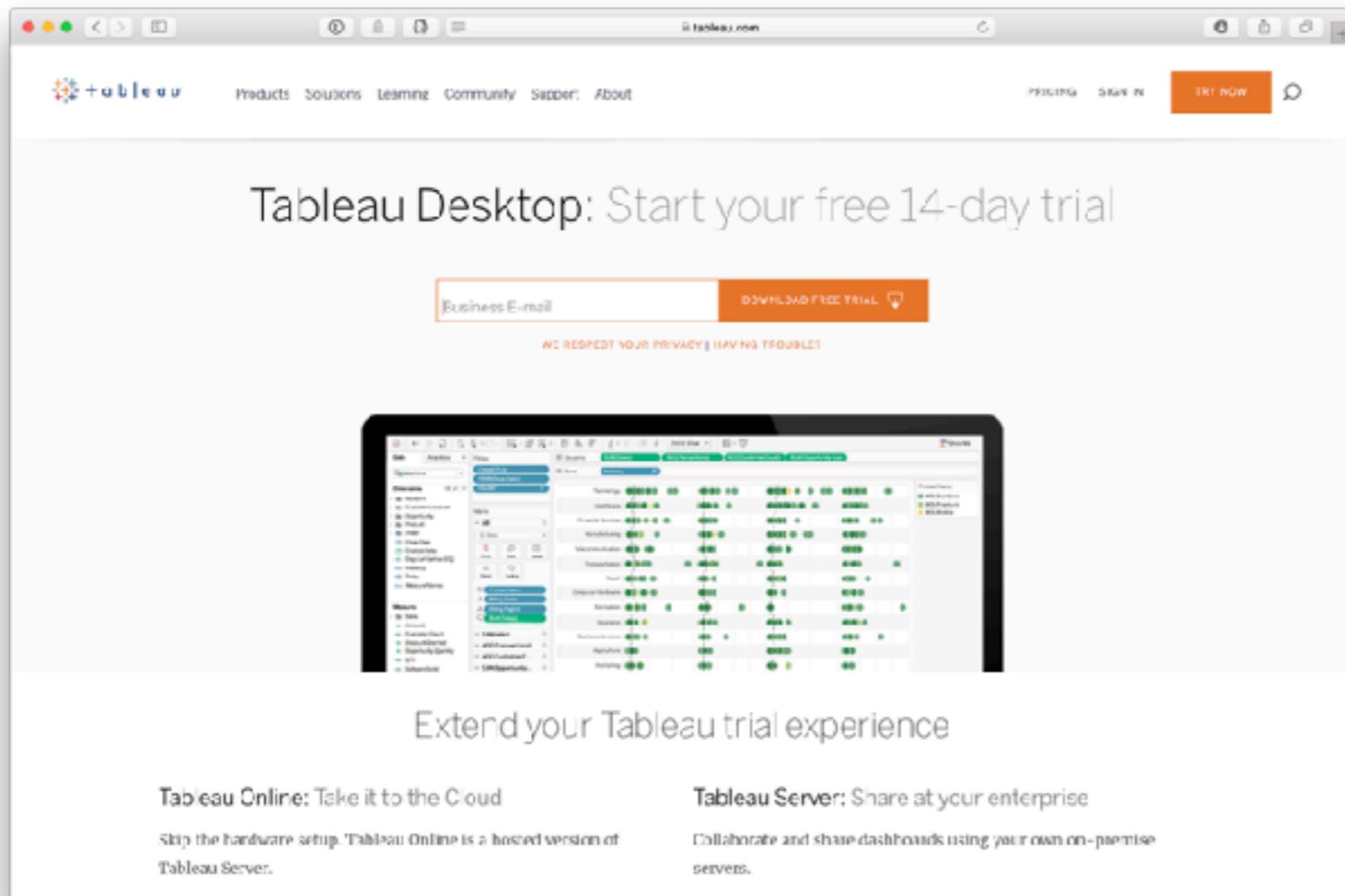
# Installation Process (I)



- Go to: [https://  
www.tableau.com](https://www.tableau.com)
- Press **Try Me**

Note: web page may appear different.

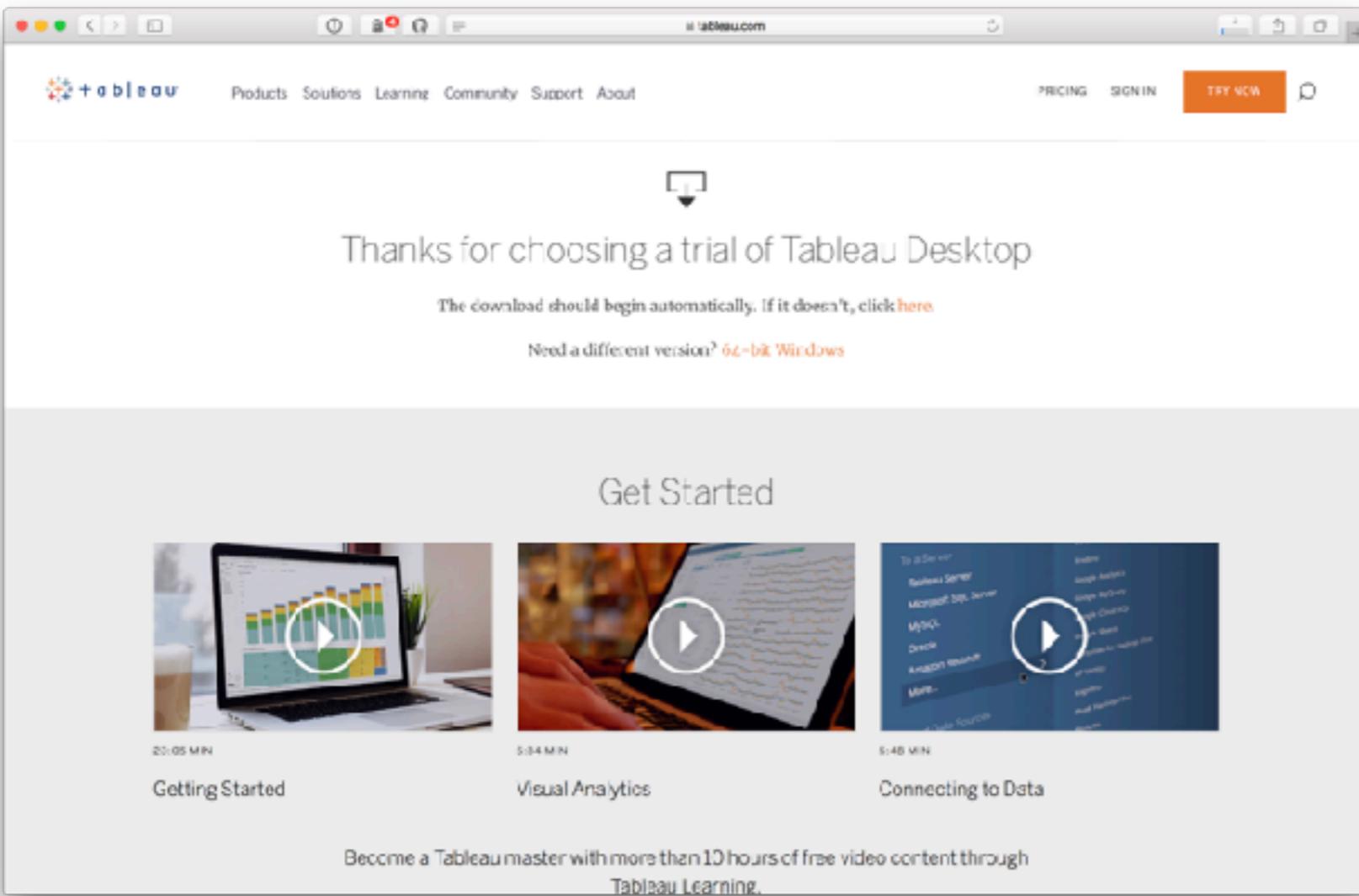
# Installation Process (II)



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

Note: web page may appear different.

# Installation Process (III)



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

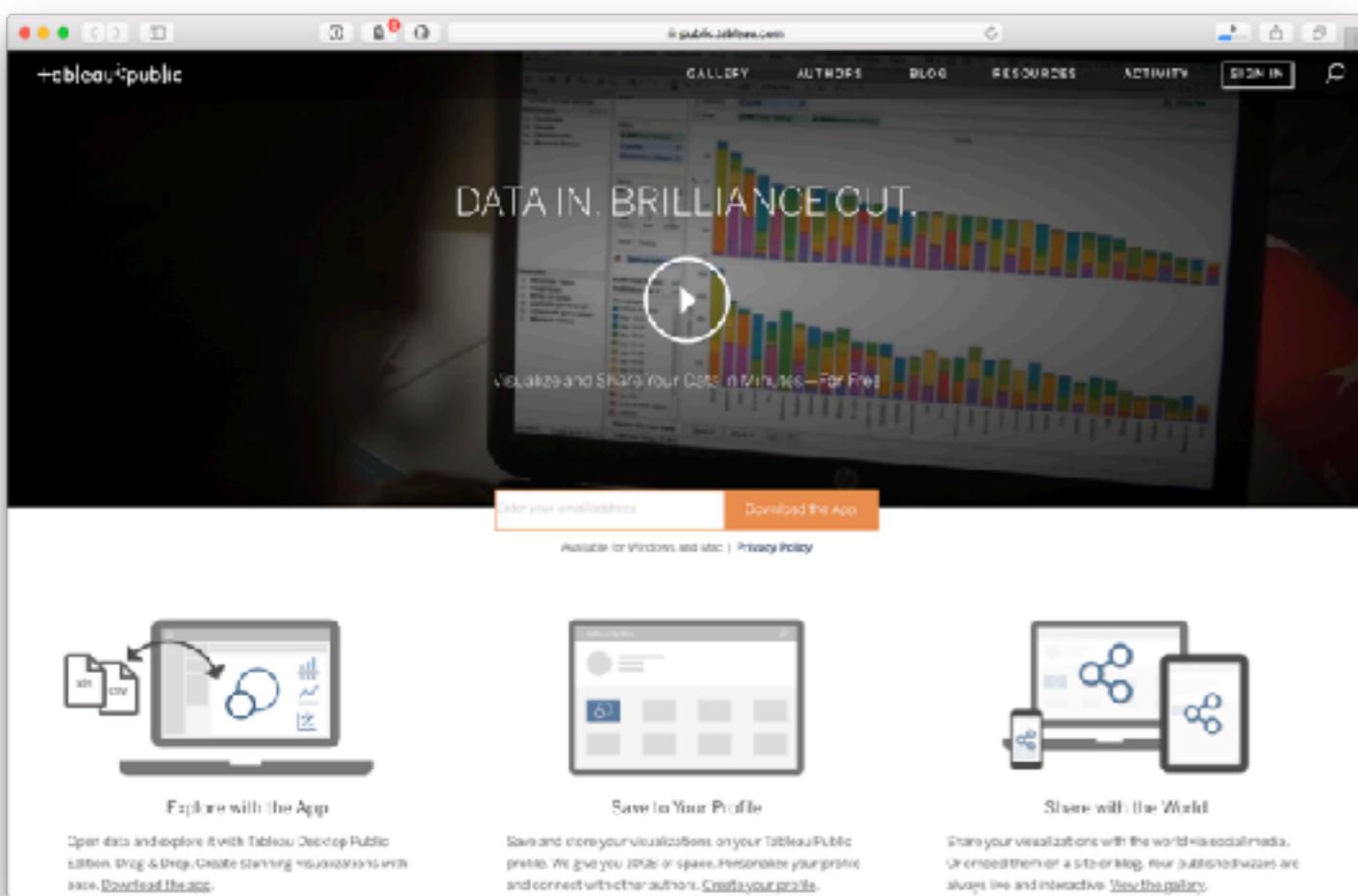
Note: web page may appear different.

# 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

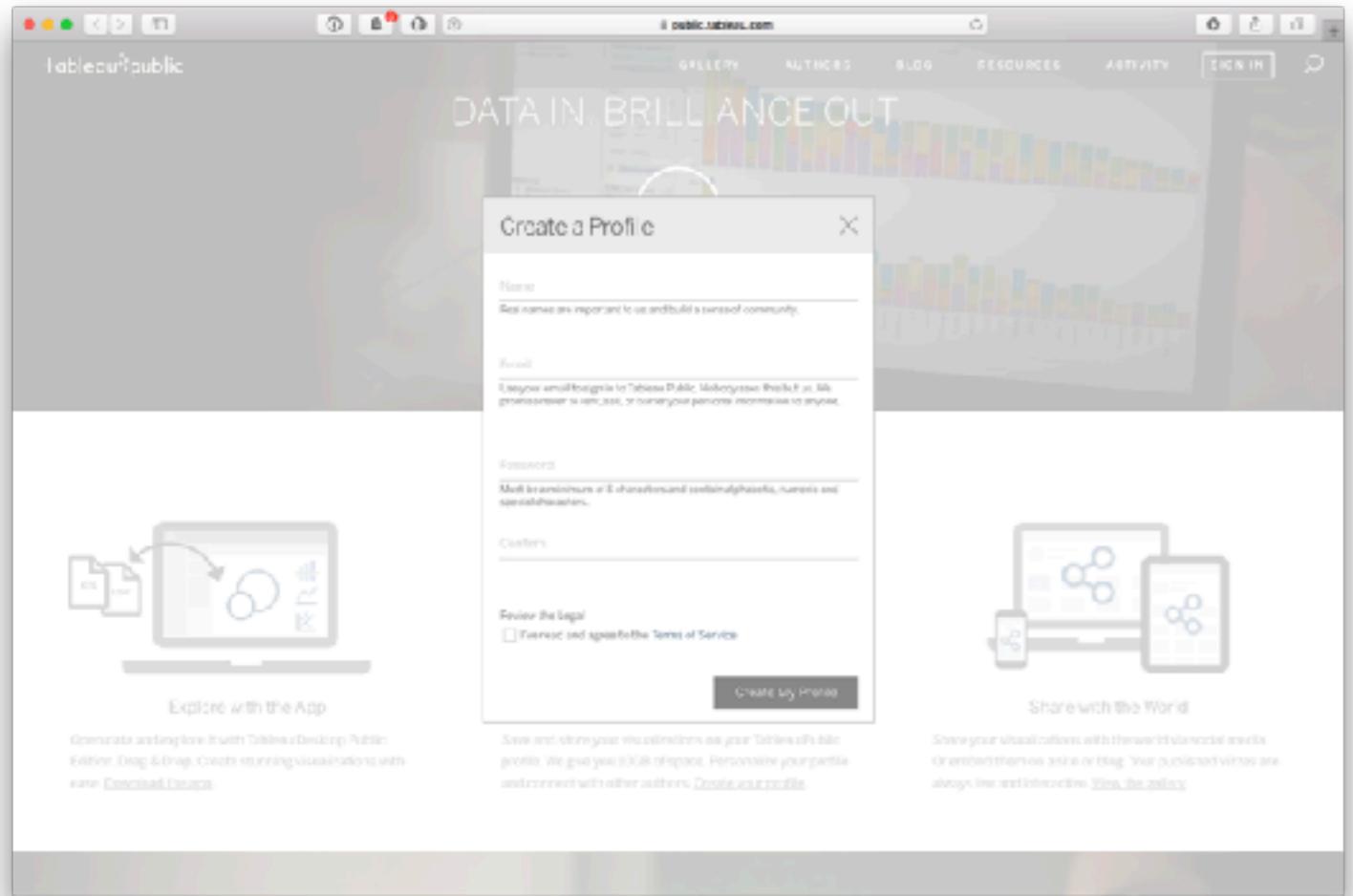
# Other: Tableau Public (I)



- 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.

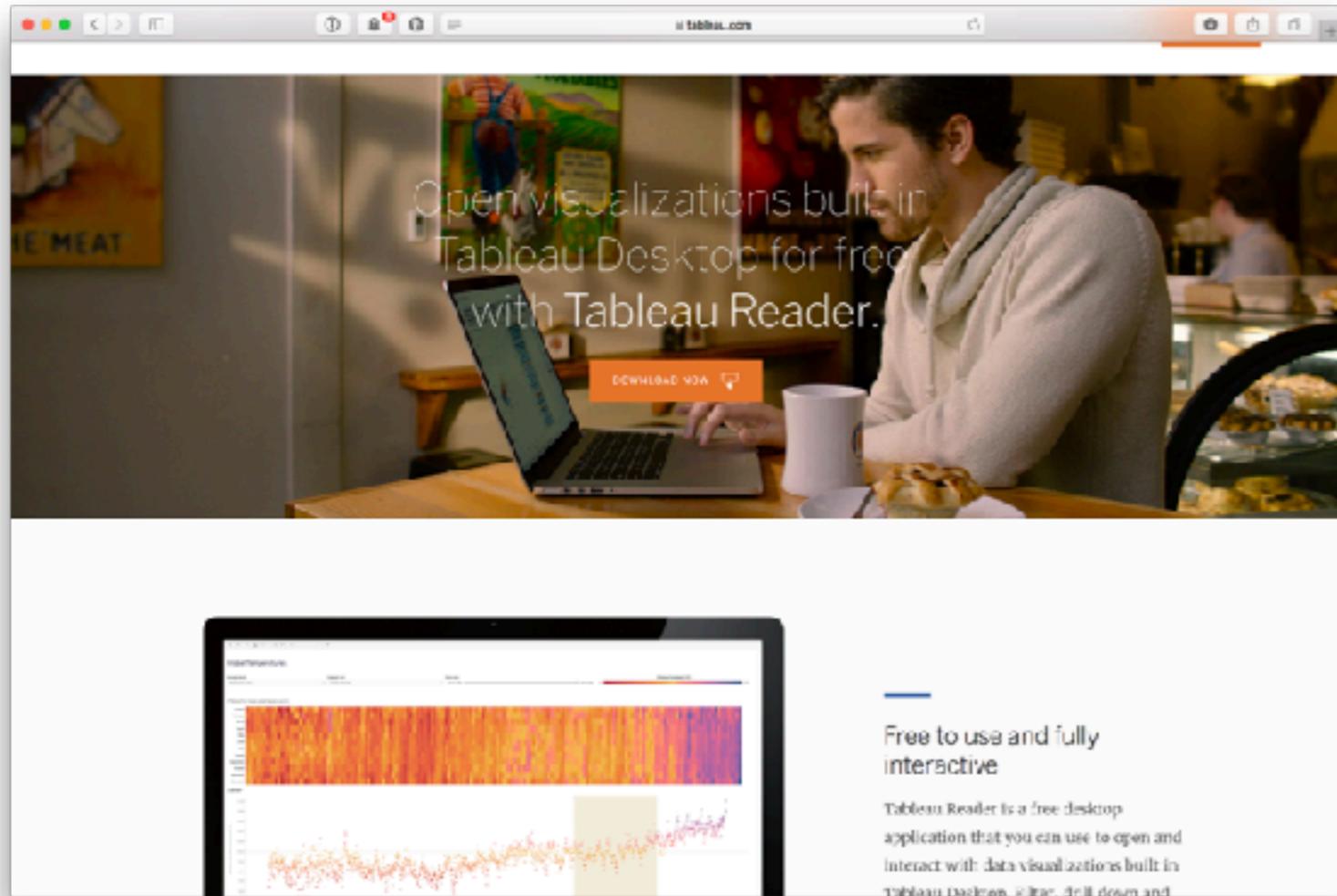
# Other: Tableau Public (II)



- 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

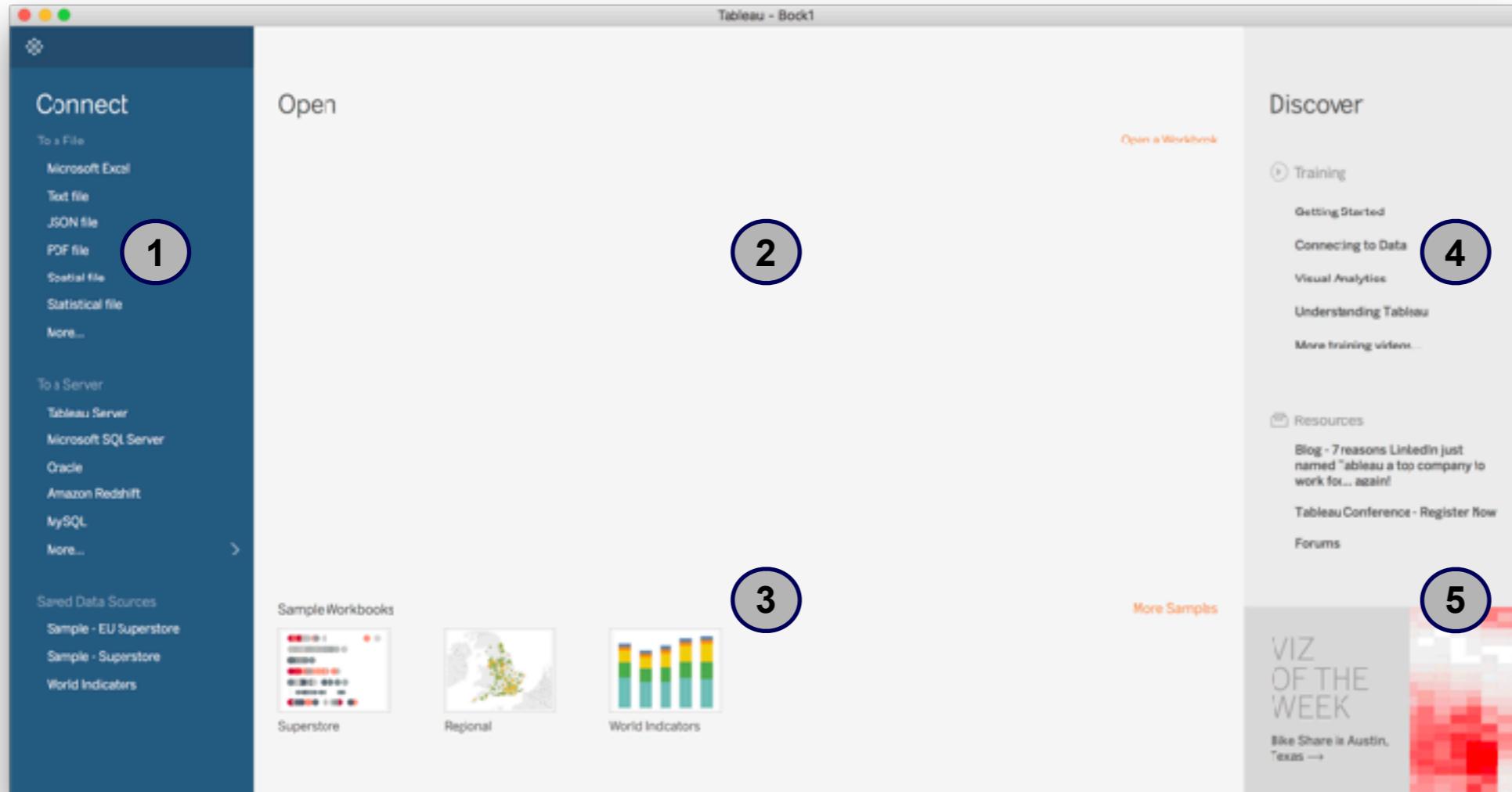


- Go to: <https://www.tableau.com/products/reader>
- Read-only tool
- **No edition capabilities**

Note: web page may appear different.

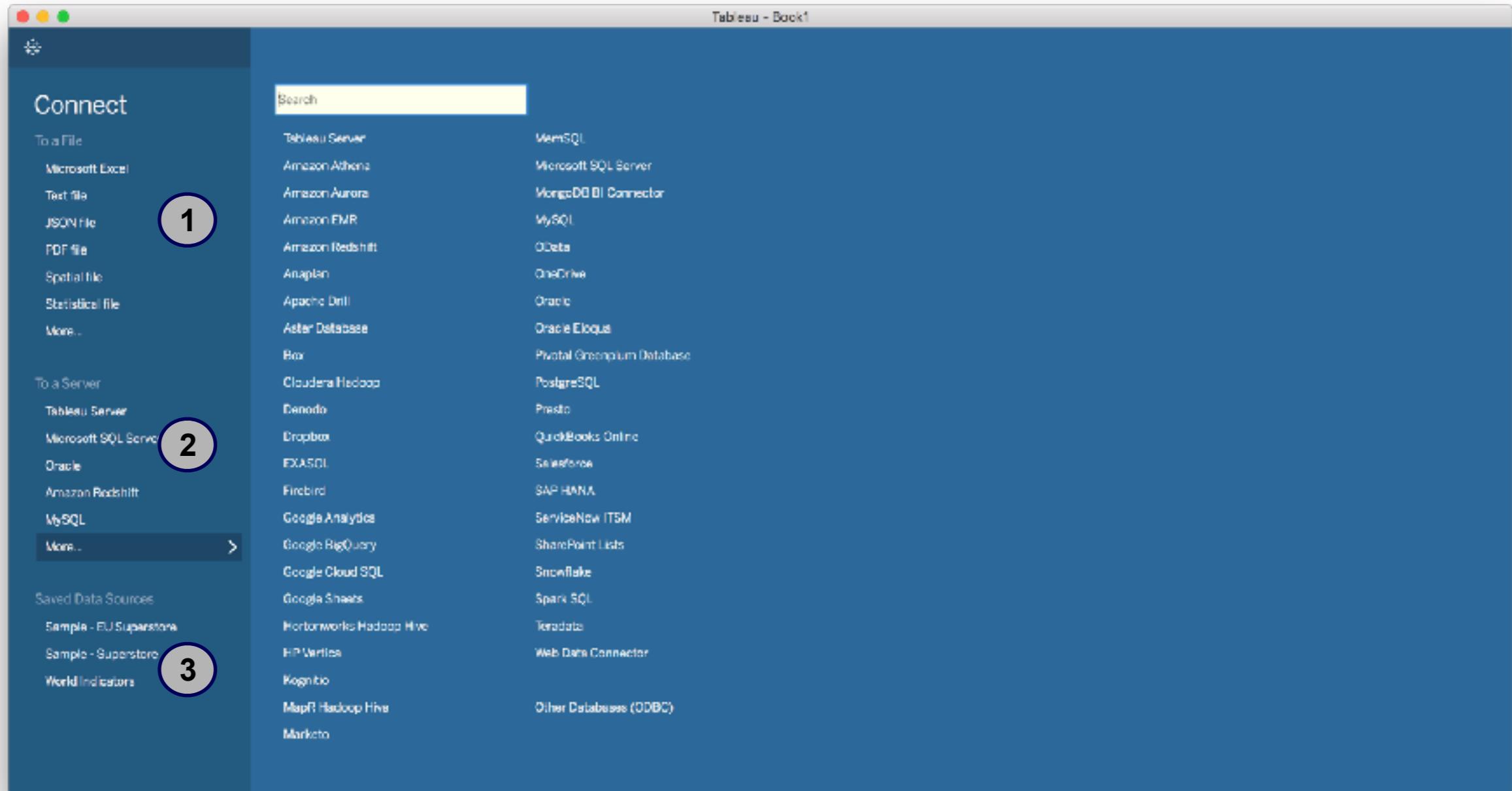
# Loading and processing data

# Tableau interface



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

# Data Connectors



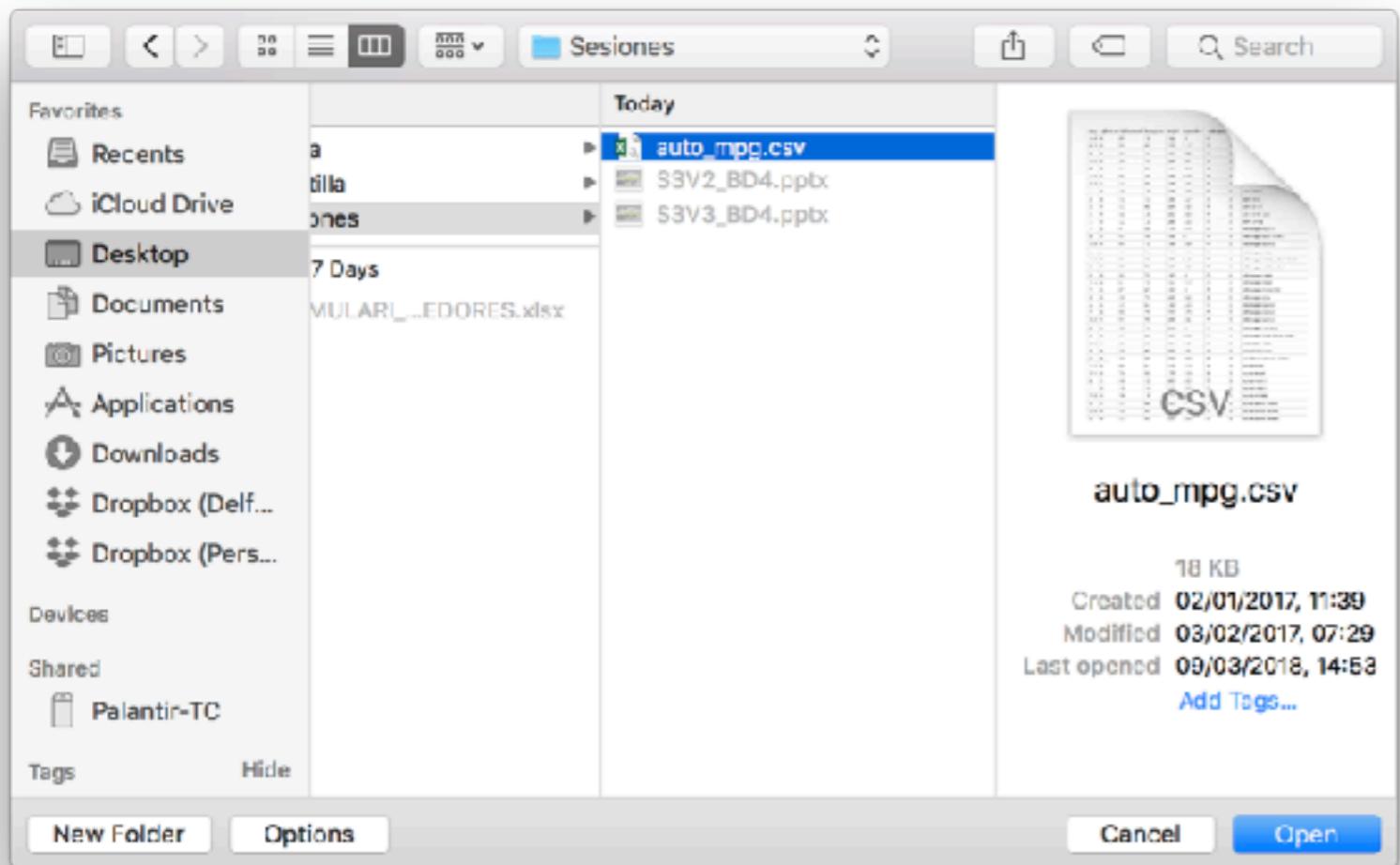
Types of  
connectors:

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' connection. The interface is divided into several sections:

- Connections:** Shows the 'auto MPG' connection (marked with a circled 1).  
- Sub-section: 'auto MPG' (marked with a circled 1).
- Files:** Shows the 'auto MPG.csv' file (marked with a circled 2).
- New Union:** Shows a union operation (marked with a circled 2).
- Table View:** Displays the data from the 'auto MPG.csv' file. The columns are:
  - Mpg
  - Cylinders
  - Displacement
  - Horsepower
  - Weight
  - Acceleration
  - Model Year
  - Origin
  - Car NameEach row represents a car model with its respective values. A specific row (the 5th row) is highlighted with a circled 5.
- Top Right:** Connection type (Live or Extract) (marked with a circled 3), Filters (marked with a circled 4), and a 'Rows' dropdown set to 392.

After the data  
is loaded:

1 Connection

2 Files & Data Interpreter

3 Connection type

4 Filters

5 Data

# Data Processing (I)

A	B	C		E	F
John					
Mike					
Lisa					
Pat					
Linda					

Combination

A	B	C
John		
Mike		
Lisa		
Pat		
Linda		

Union

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

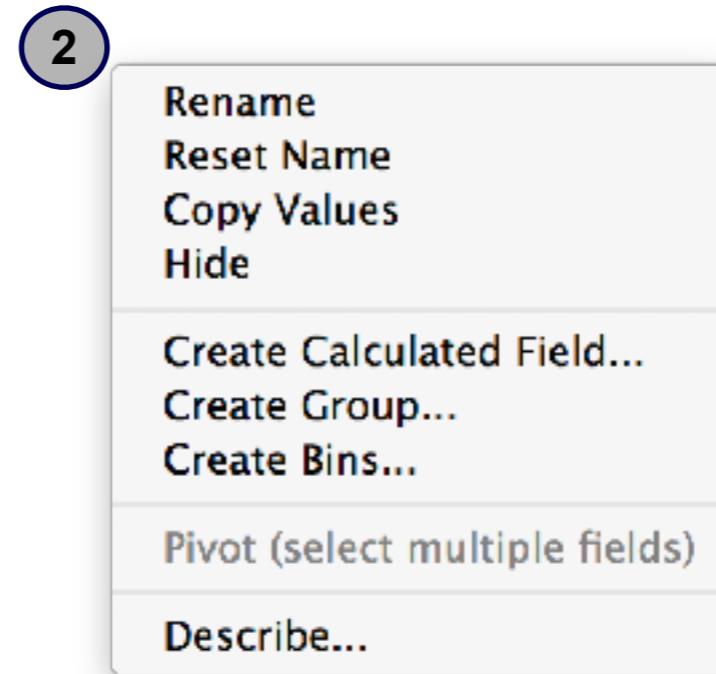
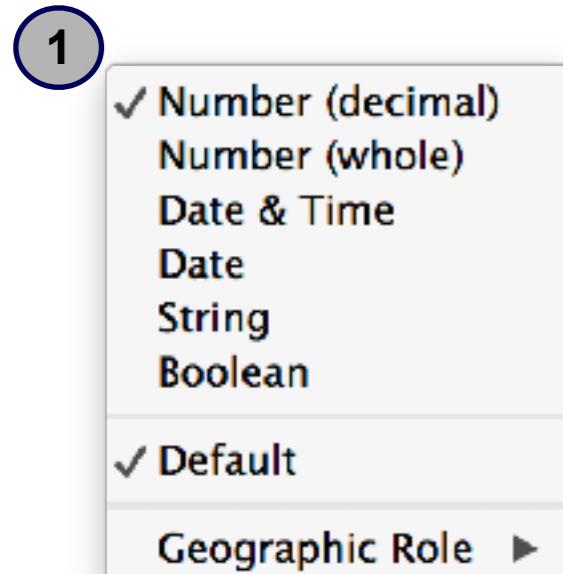
Pivot

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

Unpivot

# Data Processing (II)

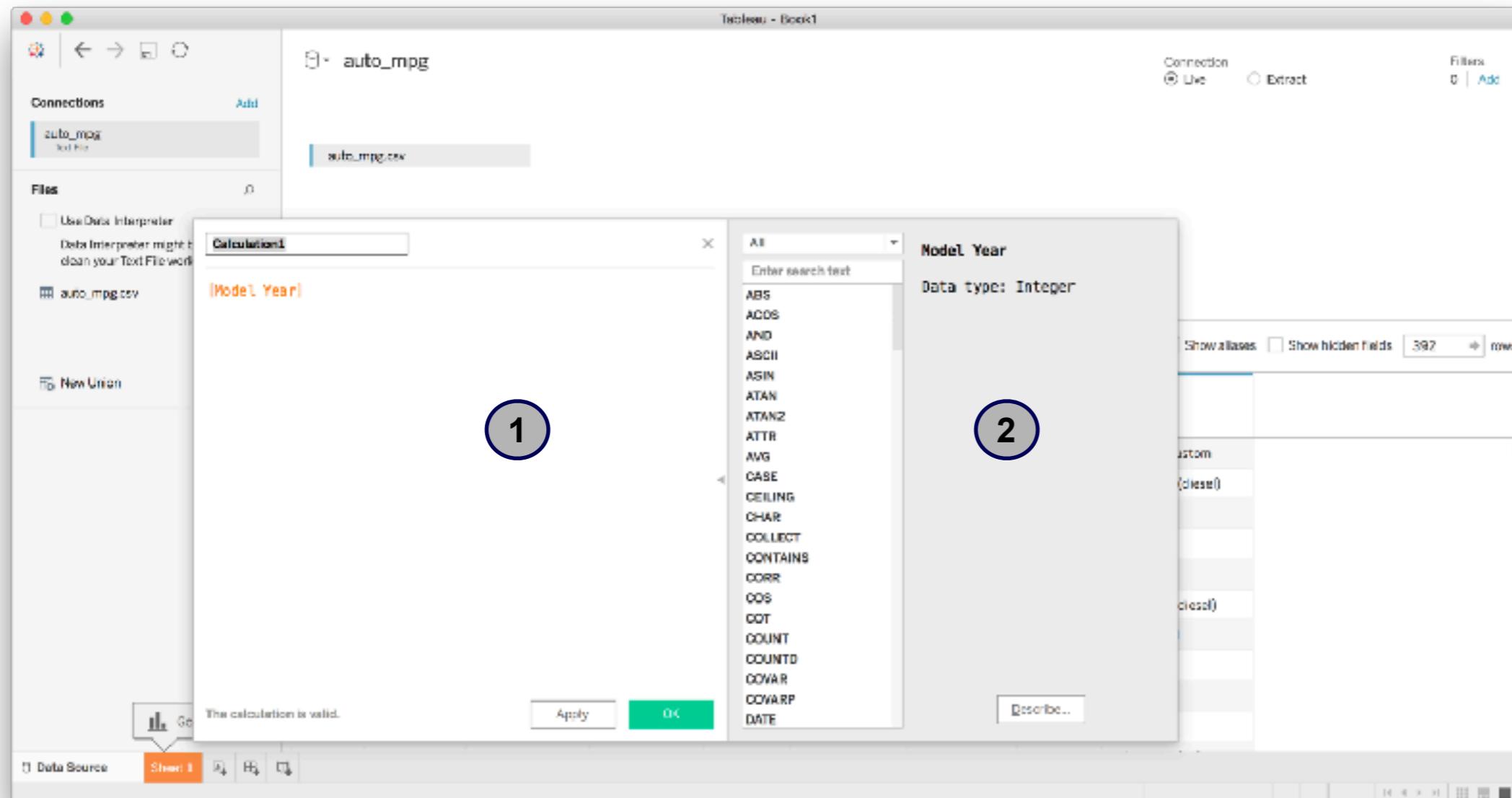
Every data column has two menus: data type and properties



1 **Changing the data type**

2 **Change metadata or 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
```

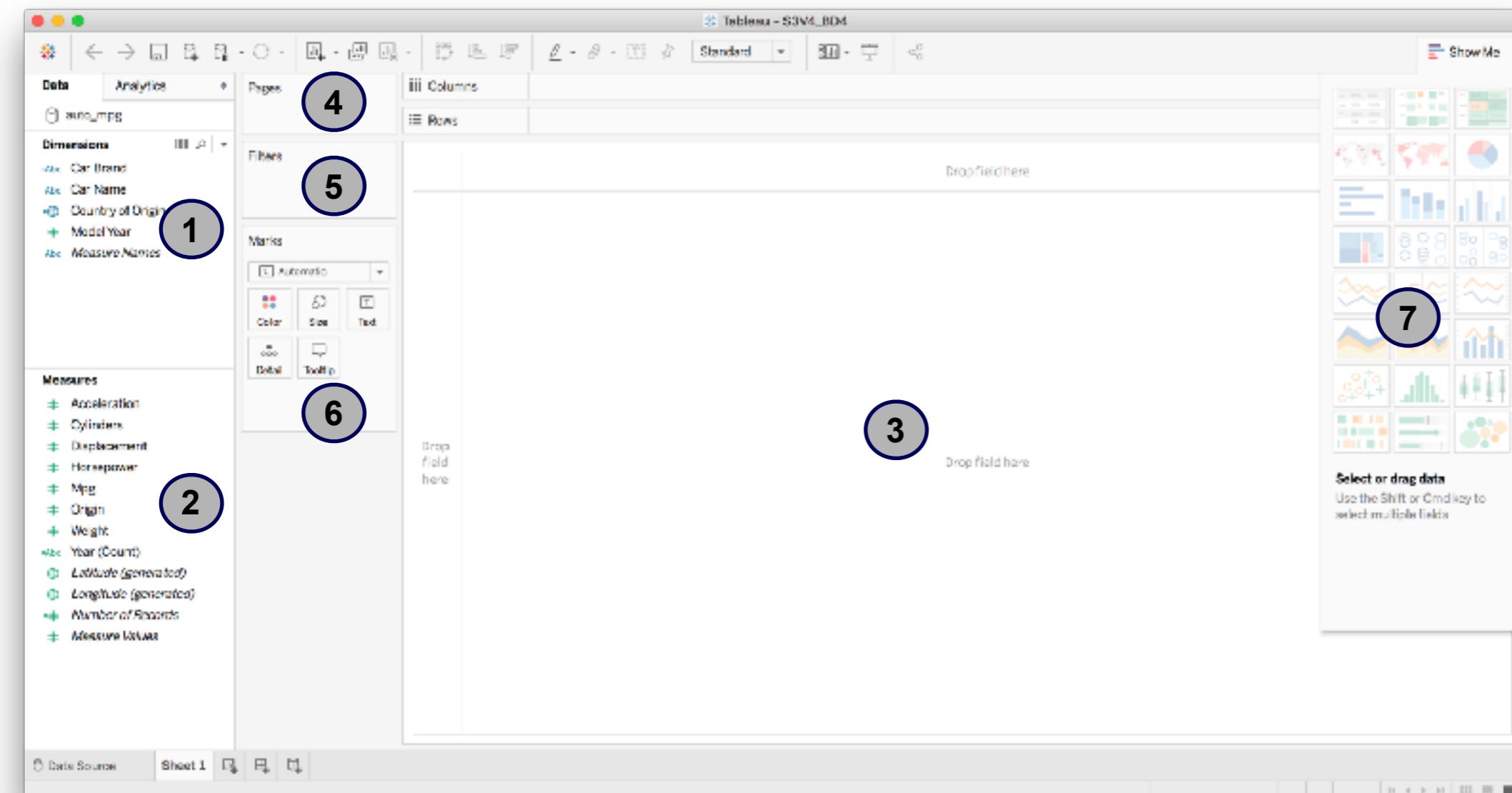
- Create "**Year**" from "Model Year" using *calculated field*:  
  
**STR([Model Year] + 1900)**
- Create "**Brand**" applying *split* to "Car Name"
- Change *Geographic Role* > Country/Region to "**Country of Origin**" using data type menu

- 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**

# Visualization: from charts to dashboards

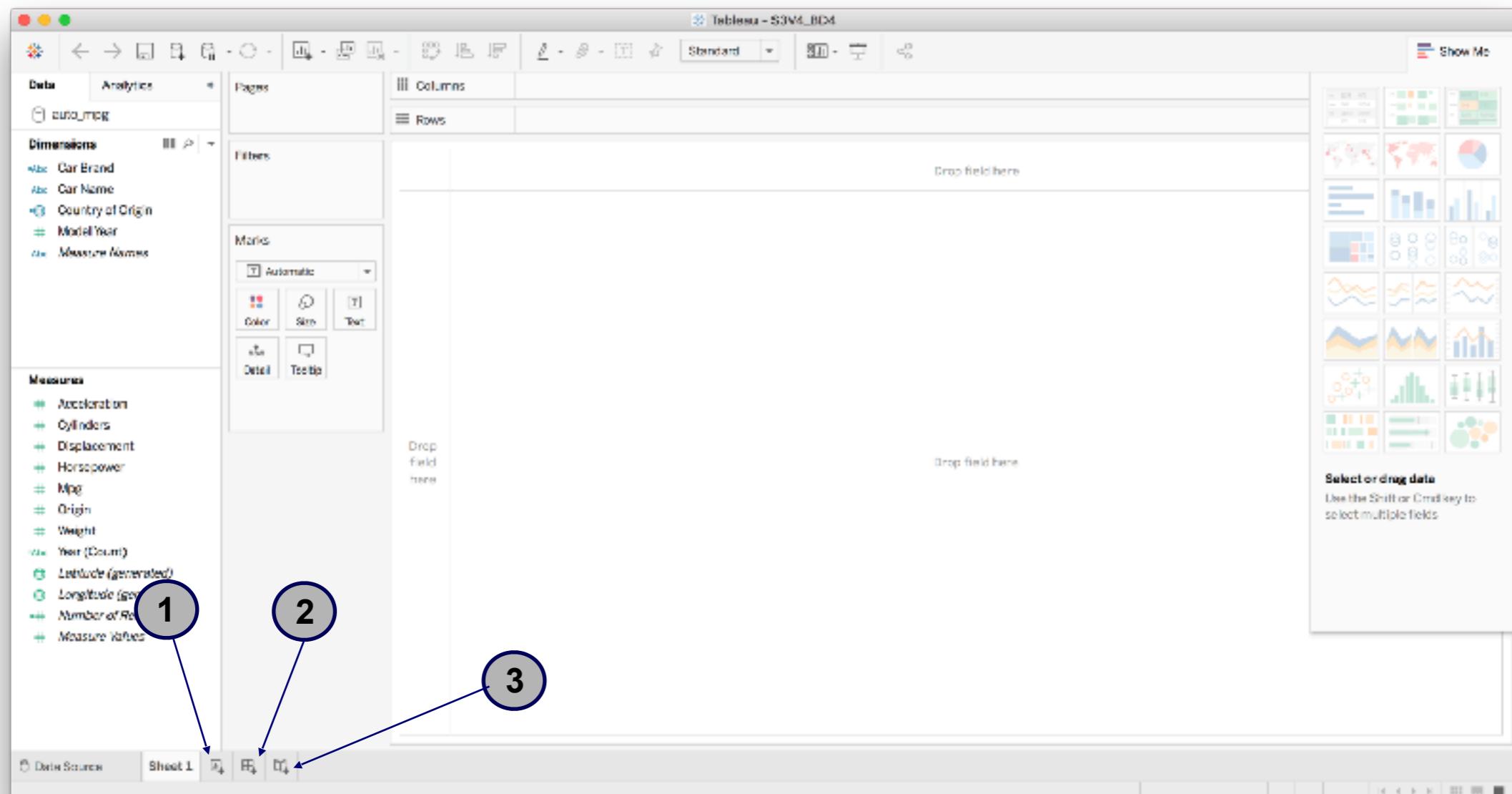
# EDA interface (I)

Main sections:



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

# EDA interface (II)



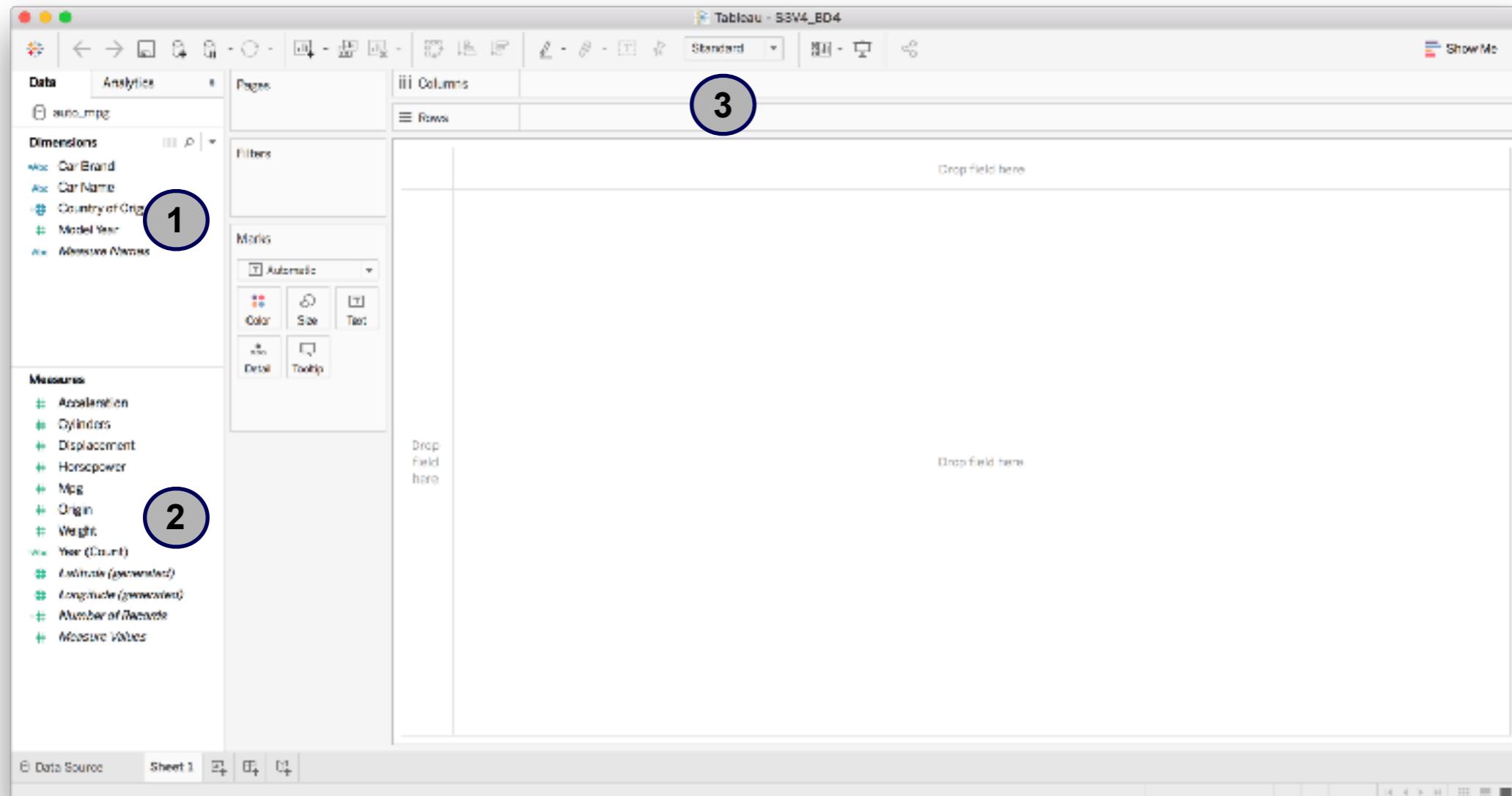
Creating  
New  
elements:

1 Worksheet

2 Dashboard

3 Data Story

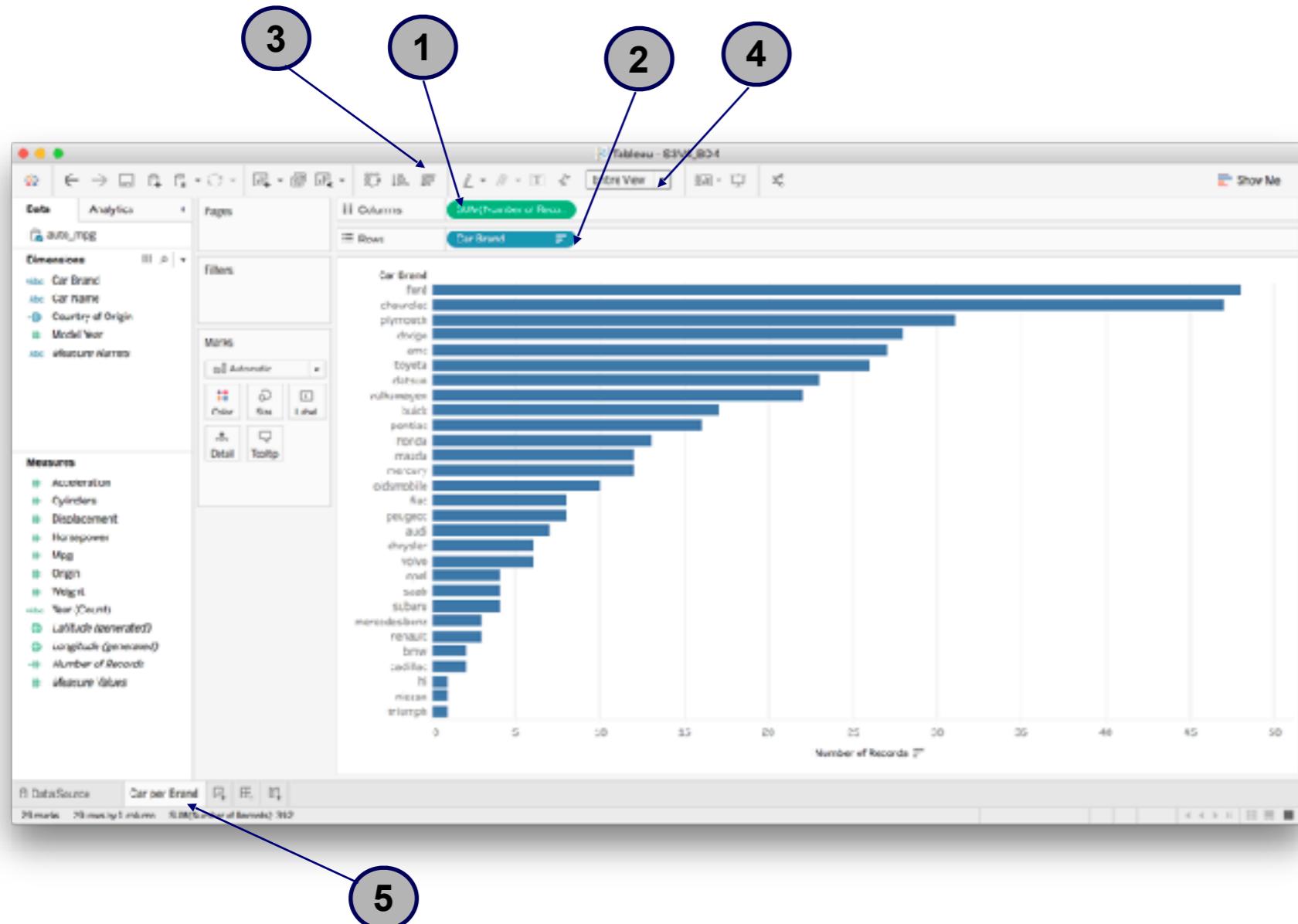
# EDA: cars by brand (I)



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

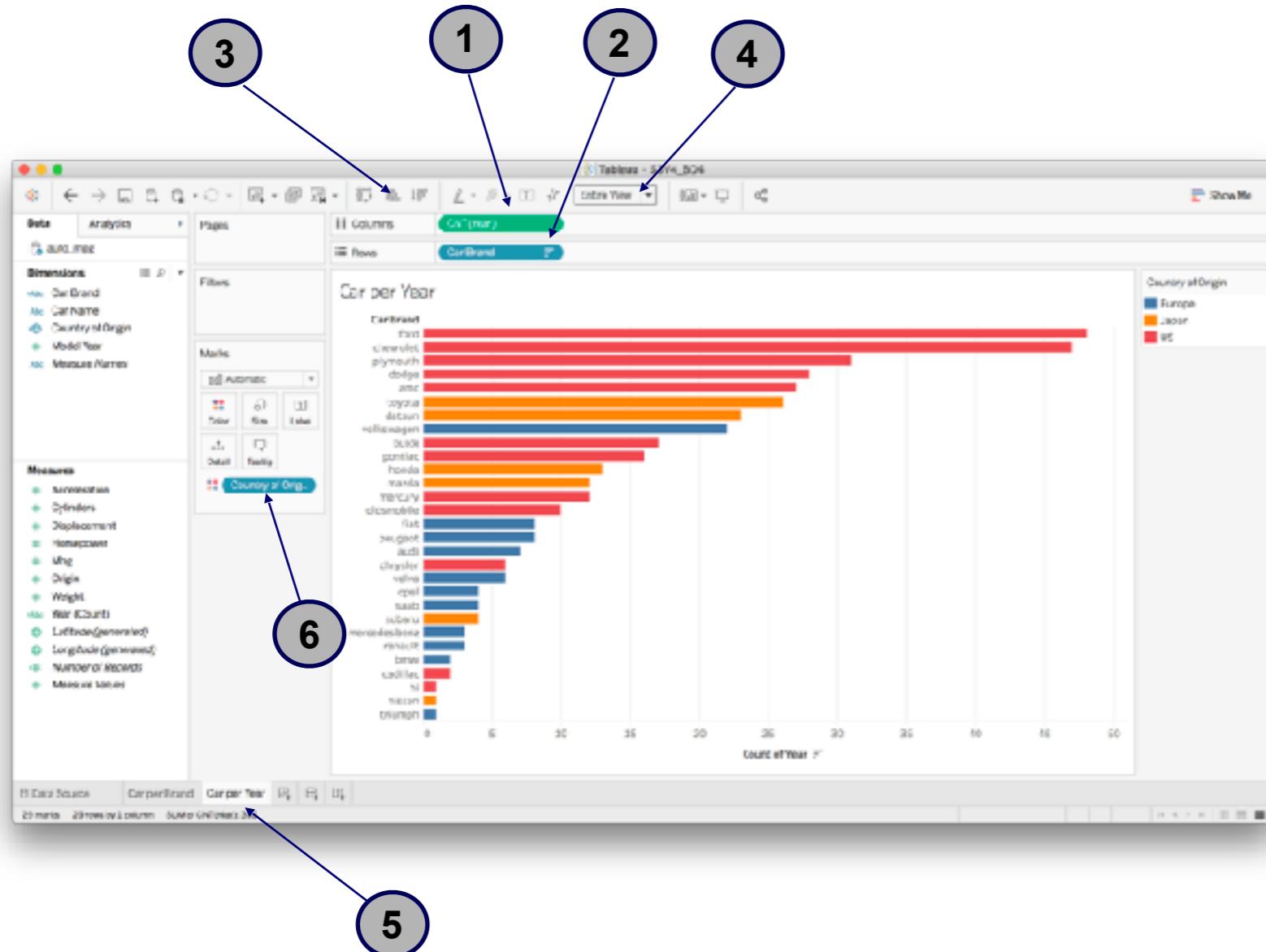
We will use one dimension and one metric and we will drag them into columns and rows.

# 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

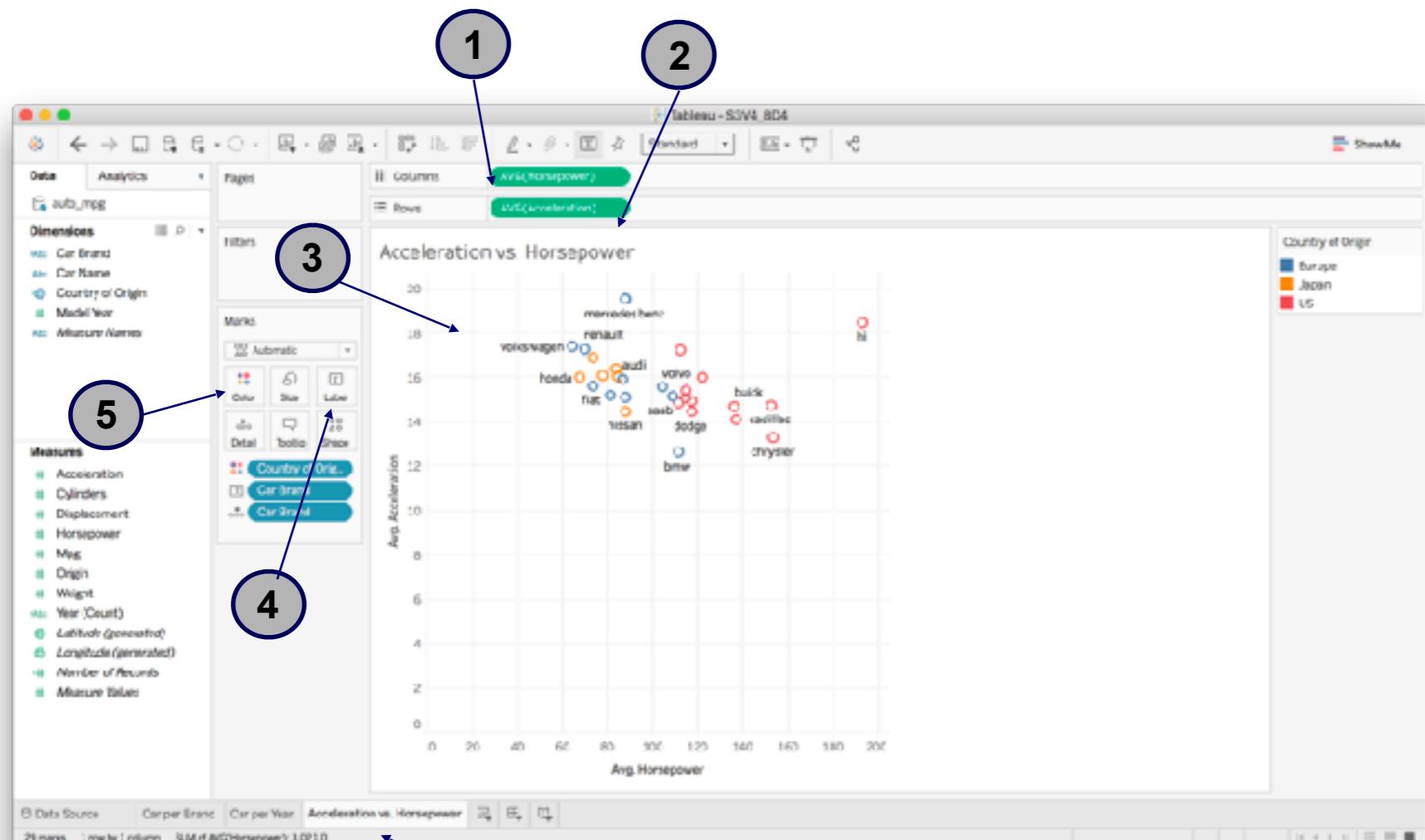
# EDA: cars by year



- 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.

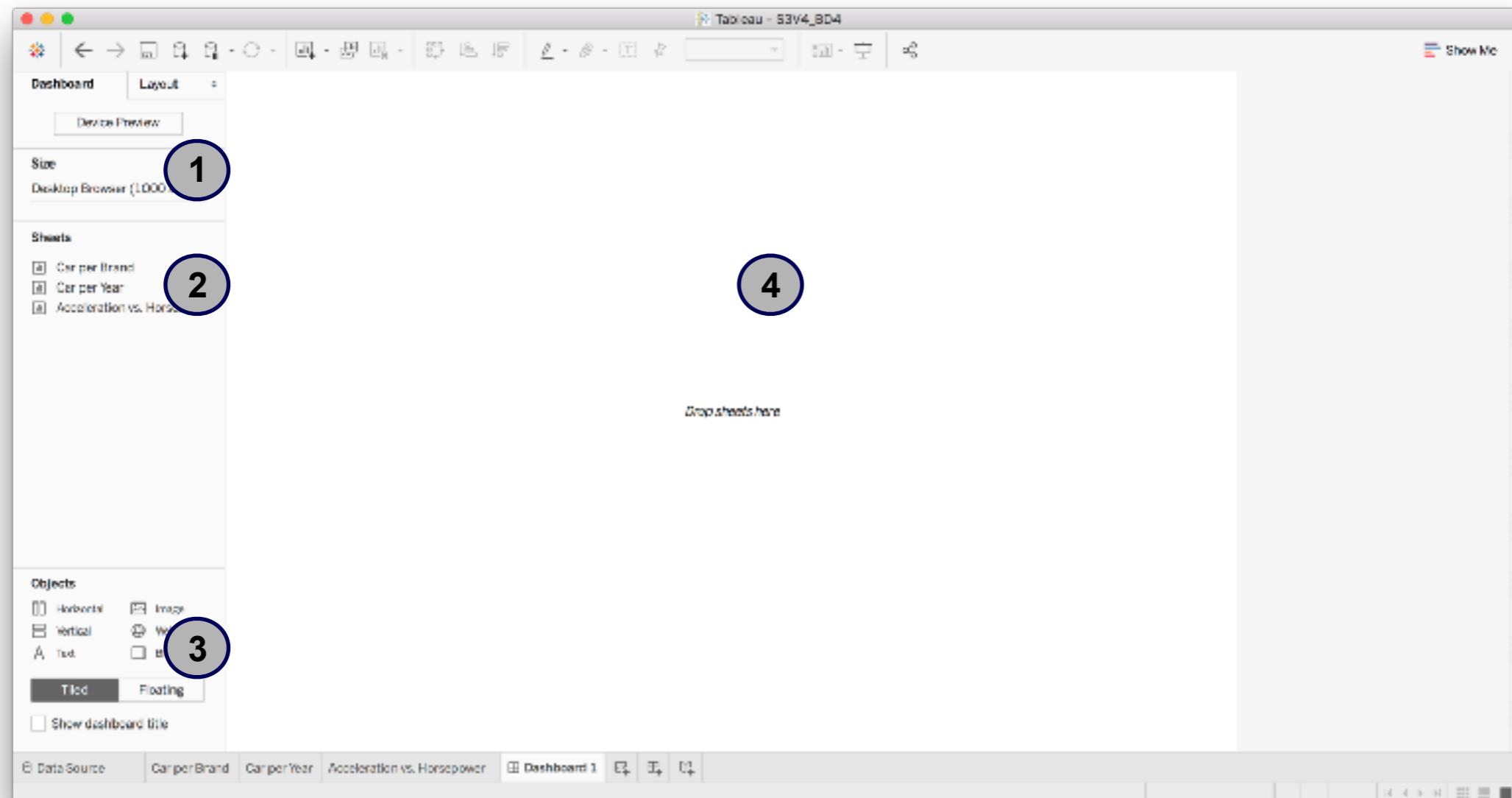
# EDA: Acceleration vs. Horsepower



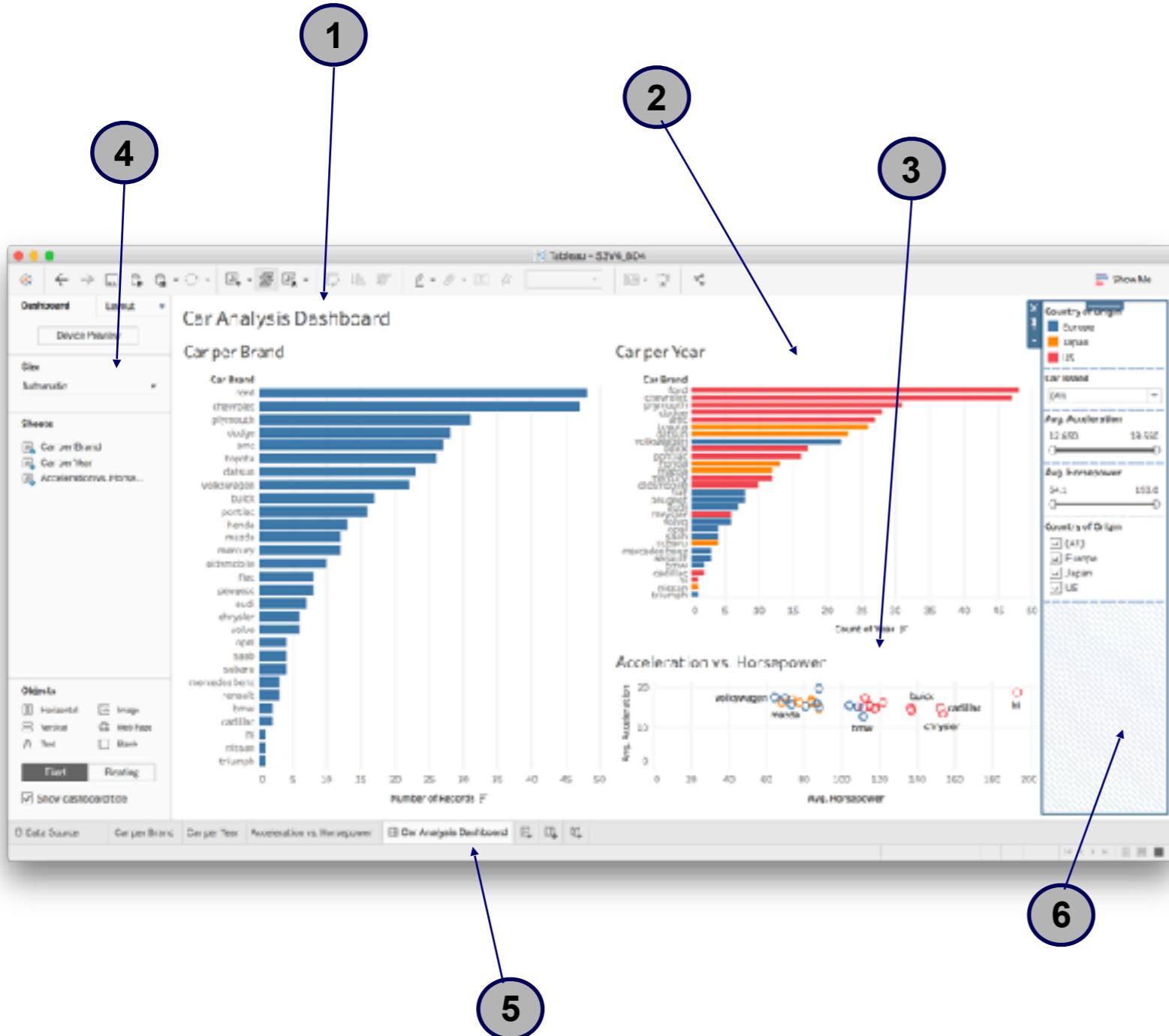
- Drag **Horsepower** to columns and change measure to **AVG**
- **Drag Acceleration** to files and change measure to **AVG**
- Drag **car brand** to the centre of the chart
- Drag **car brand** to Marks > label
- Drag **Country of origin** to Marks > color
- Change **title** to **Acceleration vs. Horsepower**

# Dashboard interface (I)

Main elements:



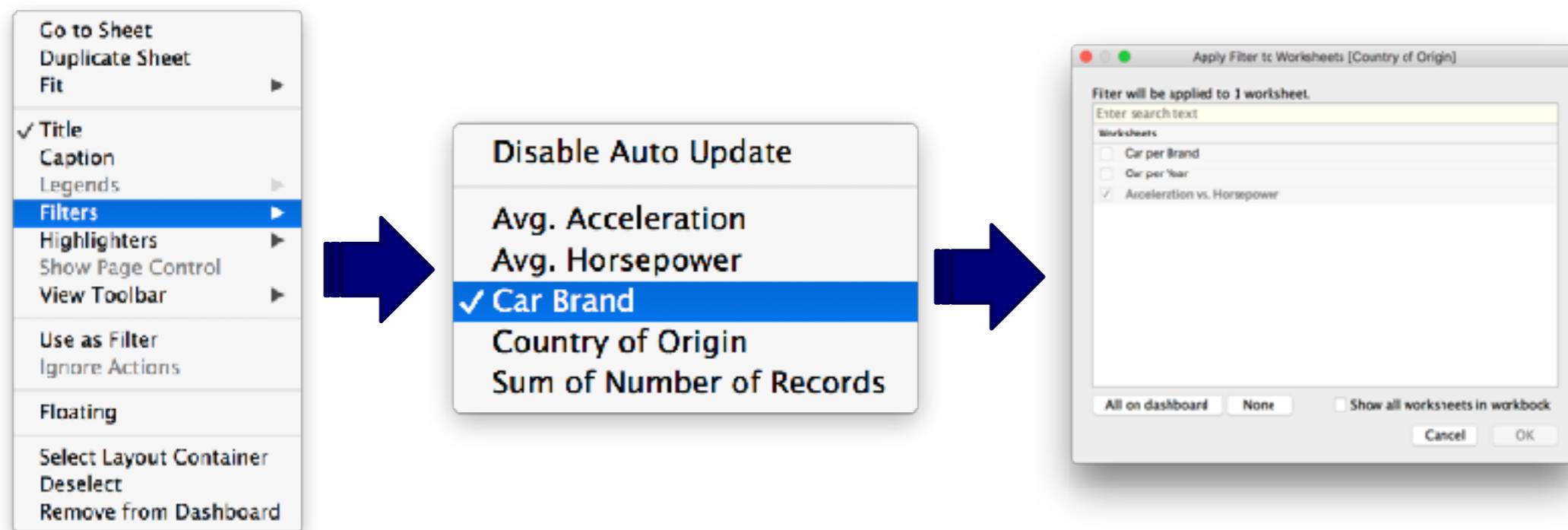
# Creating a dashboard (I): elements



- 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

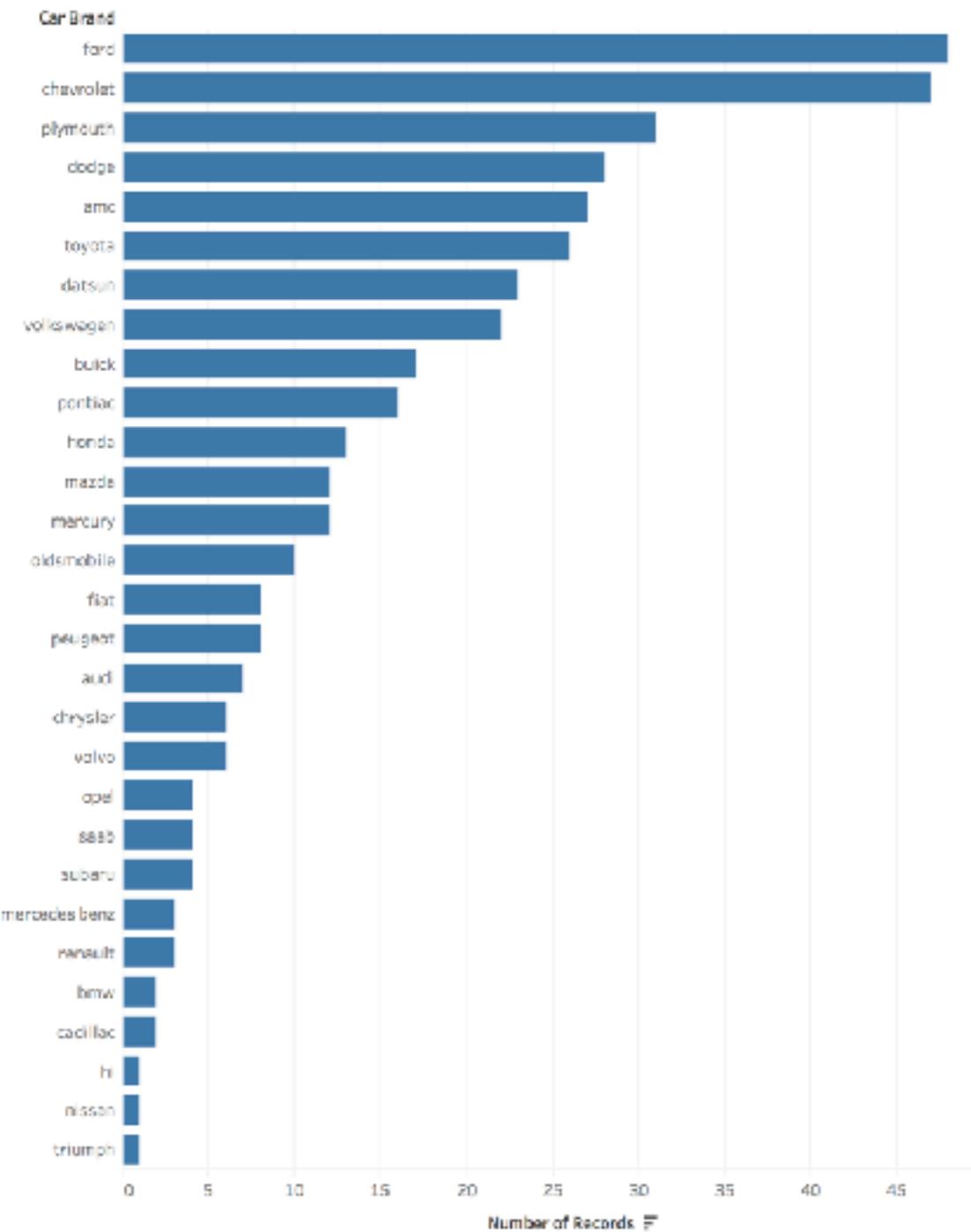
We can add **filters** based on attributes- The filters can be applied to a chart, some or all of them. We are choosing the level of interaction.



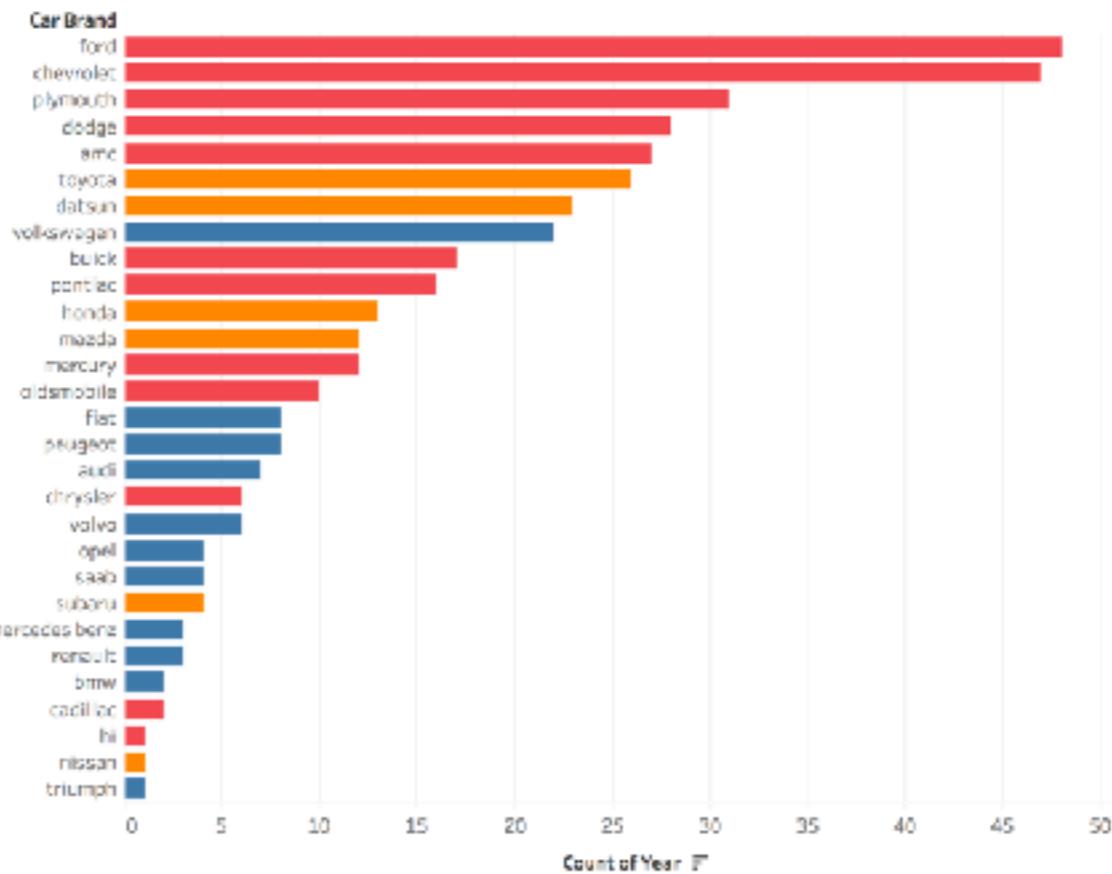
# Creating a dashboard (III): final composition

Car Analysis Dashboard

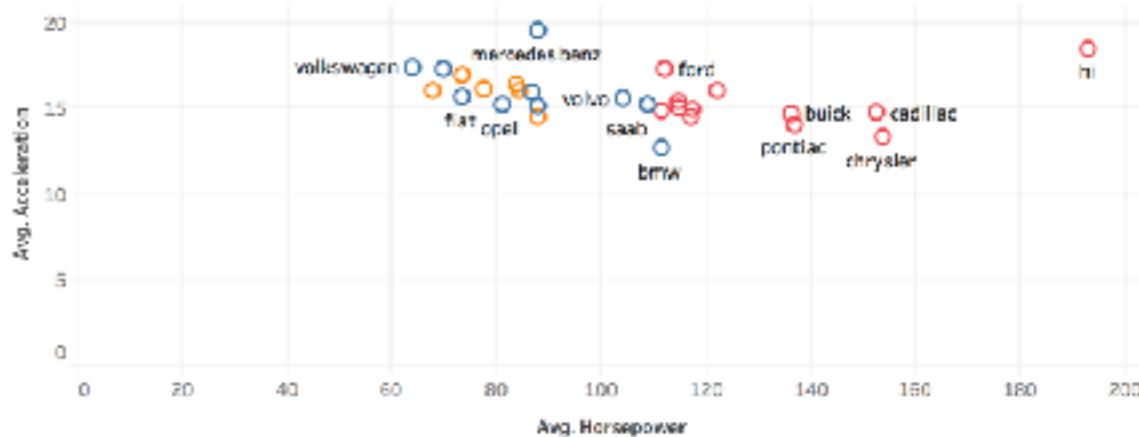
Car per Brand



Car per Year

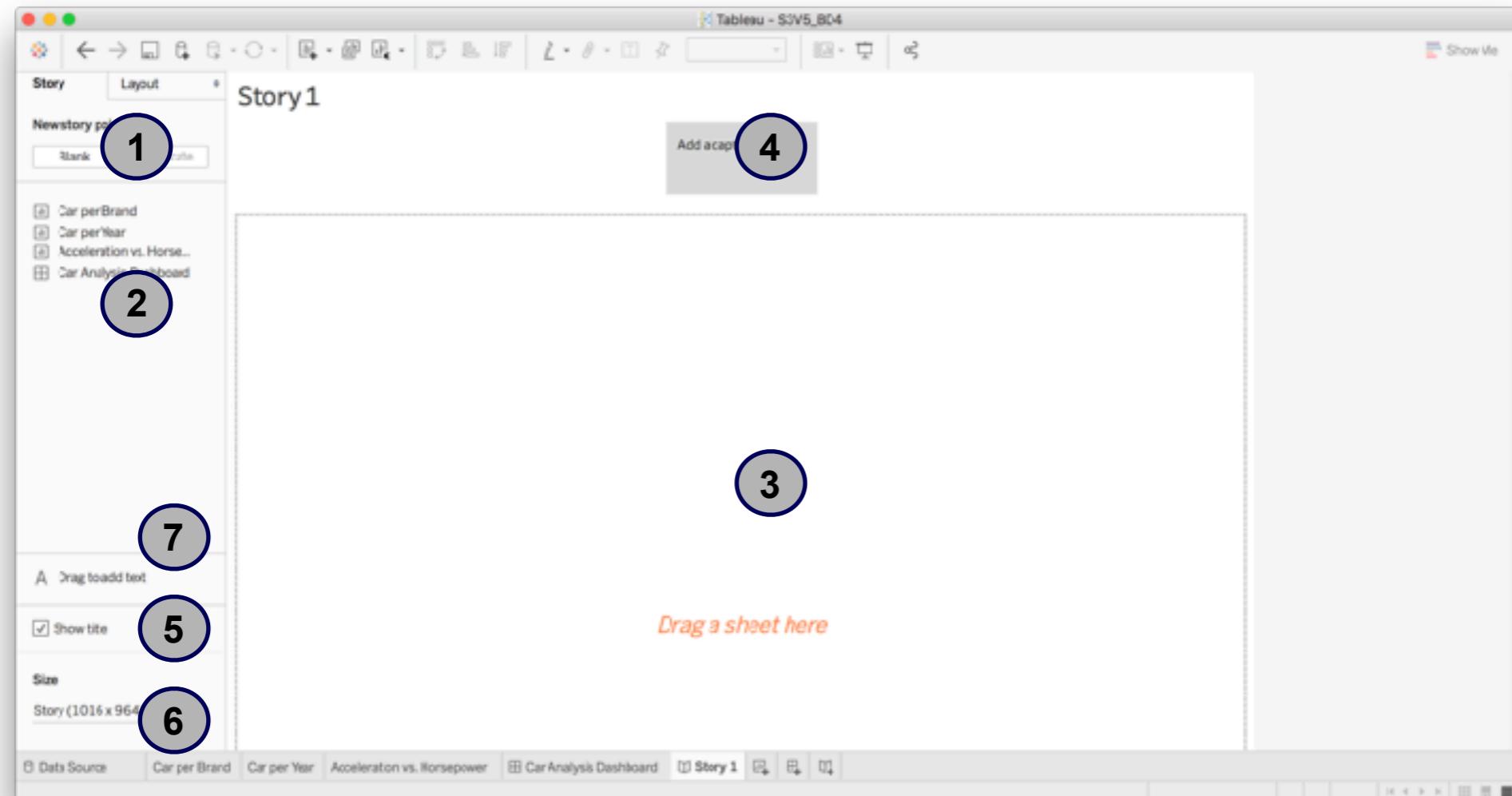


Acceleration vs. Horsepower



# Data Storytelling

# Data Stories Interface



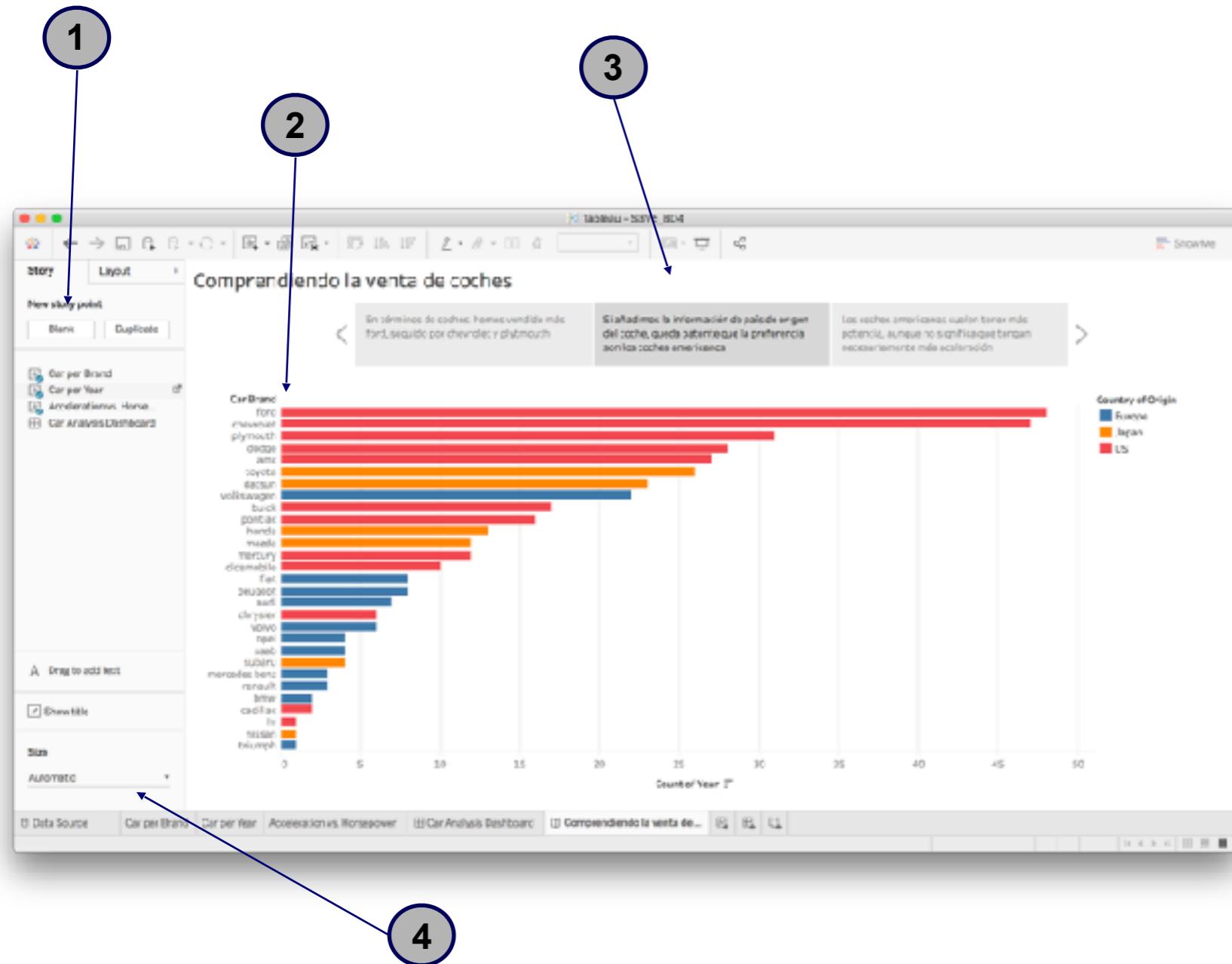
- 1 Story points
- 2 Available elements
- 3 Working area
- 4 Caption/Explanation
- 5 Title
- 6 Size
- 7 Text

# How to create a story (I)



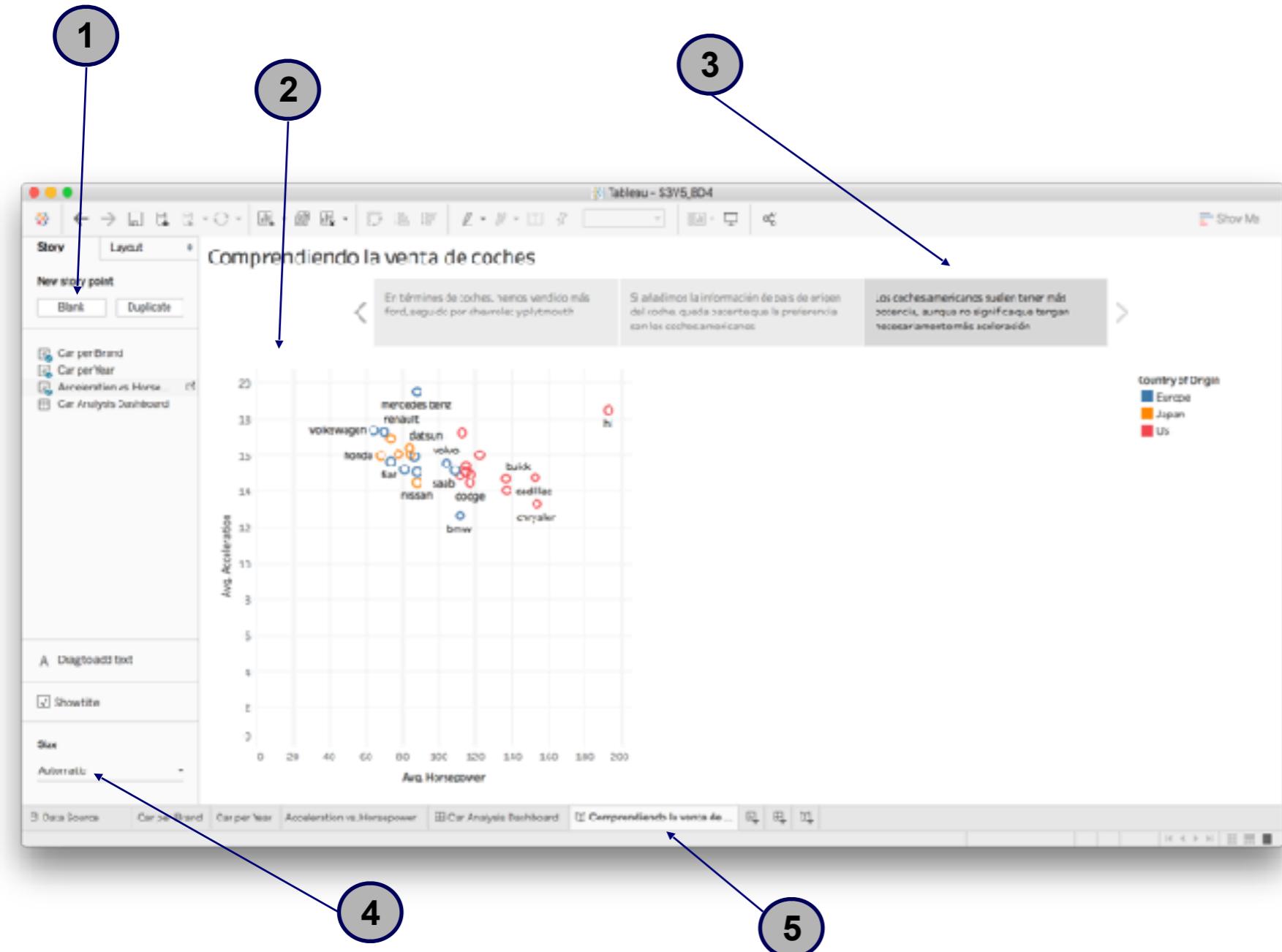
- A story is a collection of data points
- Let's create the first data point!
- Drag **card per brand** to working area
- Change **caption** with the proper explanation
- Change size to **automatic**

# How to create a story (II)



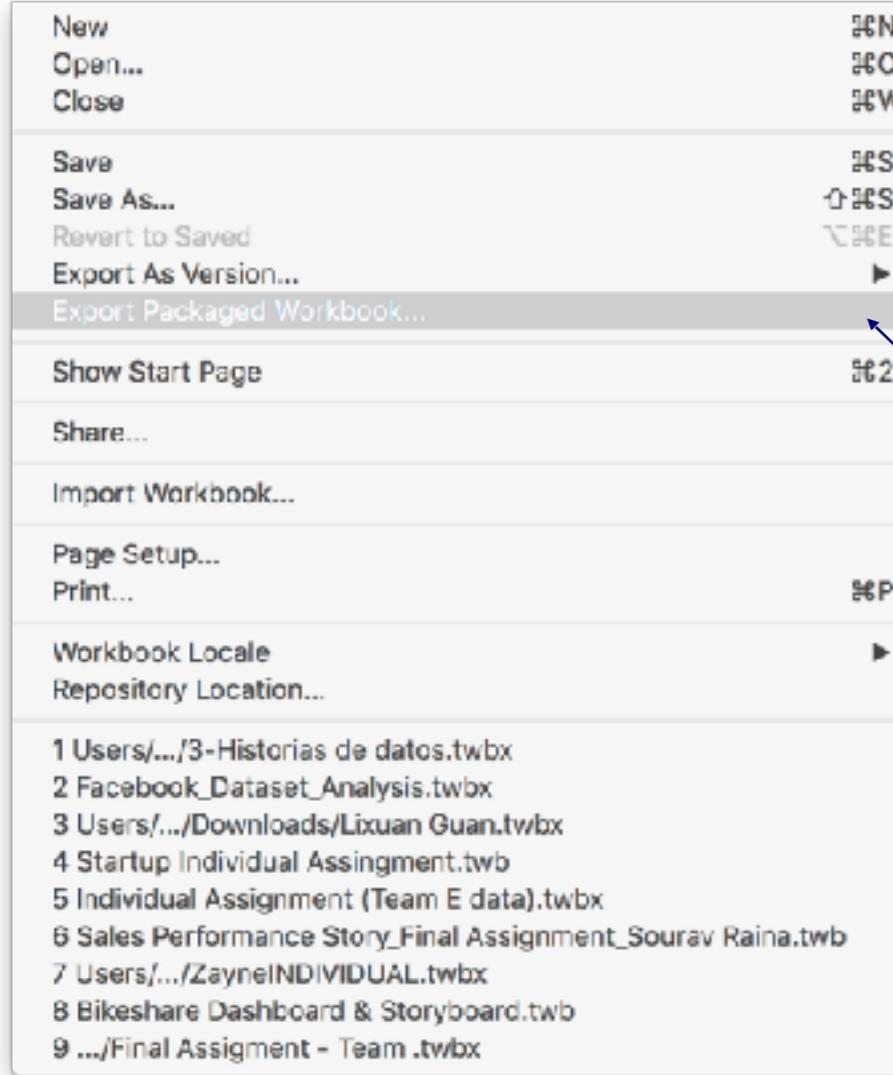
- Let's create the second data point
- Press **blank**
- Drag **card per year** to working area
- Change **caption** with the proper explanation
- Change size to **automatic**

# 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.**



