

Data Analytics for Management

Week 7: Tableau: Basics & Data Visualization

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- 5 Computer lab learning by doing activity

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KSS survey

- Your feedback is important. Please fill out this survey:
 - <https://forms.gle/6zSoykj76vz2gmE97>

Midterm exam

- Take-home exam
- Individual-base assignment
- Due to time: I will give you a full assignment (instructions, questions and data)

Previous Group work presentations: Excel data communication

- It would be counted as your Assignment #1 (Week 4)

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Understanding Boxplots¹

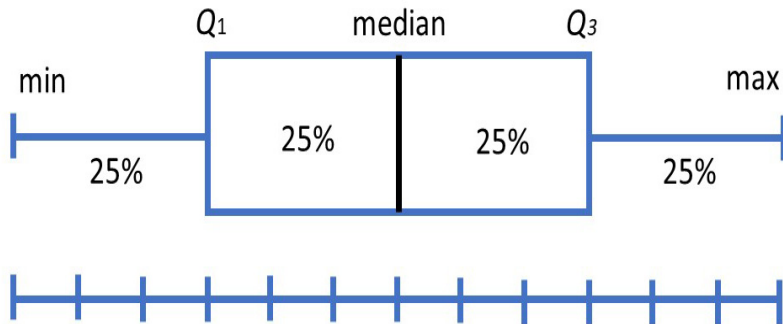


Figure 1: A boxplot is a standardized way of displaying the distribution of data based on a five number summary (“minimum”, first quartile [Q₁], median, third quartile [Q₃] and “maximum”).

¹from <https://builtin.com/data-science/boxplot> and <https://www.simplypsychology.org/boxplots.html>

Understanding Scatter Plots²

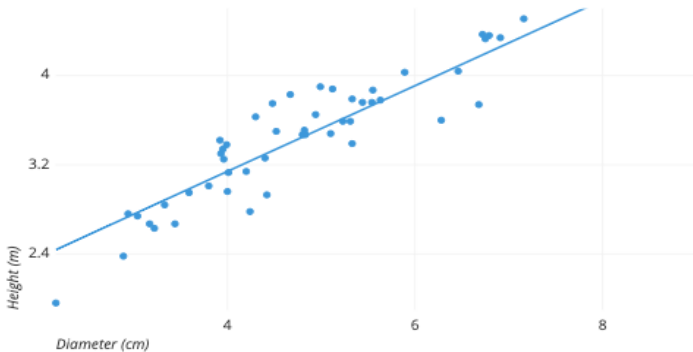


Figure 2: A scatter plot (aka scatter chart, scatter graph) uses dots to represent values for two different numeric variables. The position of each dot on the horizontal and vertical axis indicates values for an individual data point. Scatter plots are used to observe relationships between variables. It is common to add a trend line to the plot showing the mathematically best fit to the data.

²from <https://chartio.com/learn/charts/what-is-a-scatter-plot/>

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Overview

- Check out the video ([link](#))
- What is Tableau ? Explained in under 10 mins! ([link](#))

Tableau Features³

Speed of Analysis - As it *does not require high level of programming expertise*, any user with access to data can start using it to derive value from the data.

Self-Reliant - Tableau *does not need a complex software setup*. The desktop version which is used by most users is easily installed and contains all the features needed to start and complete data analysis.

Visual Discovery - The user explores and analyzes the data by using visual tools like colors, trend lines, and graphs. There is *very little script* to be written as nearly everything is done *by drag and drop*.

Architecture Agnostic - Tableau works in all kinds of devices where data flows. Hence, the user *need not worry about specific hardware* or software requirements to use Tableau.

³all Tableau-related materials and info taken from https://www.tutorialspoint.com/tableau/tableau_overview.htm

Tableau Features (cont)

Blend Diverse Data Sets - Tableau allows you to blend different relational, semistructured and raw data sources in real time, without expensive up-front integration costs. The users don't need to know the details of how data is stored.

Real-Time Collaboration - Tableau can filter, sort, and discuss data on the fly and embed a live dashboard in portals like SharePoint site or Salesforce. You can save your view of data and allow colleagues to subscribe to your interactive dashboards so they see the very latest data just by refreshing their web browser.

Centralized Data - Tableau server provides a centralized location to manage all of the organization's published data sources. You can delete, change permissions, add tags, and manage schedules in one convenient location. It's easy to schedule extract refreshes and manage them in the data server.

Prerequisites

- Although not much knowledge is required to use Tableau, it is still *ideal if you have a fundamental understanding* of the various types of *graphs*, including bar graphs, line charts, histograms, etc.
- However, having a *basic grasp of database management* (datatypes, joins, drill down, drill up, etc.) *will be helpful*. Even if you don't have any, there's no need to worry because there are many guidelines that address all of these concepts

Installation

- Option 1. Tableau Desktop (free trial for 14 days or free for 1 year for students/teachers).
- Option 2. Tableau Public (free but with limitations).
 - <https://www.tableau.com/products/public/download>
- Option 3. Tableau Online (accessible from everywhere)
 - <https://sso.online.tableau.com/public/idp/SSO>
- I use a public version.

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Getting Started

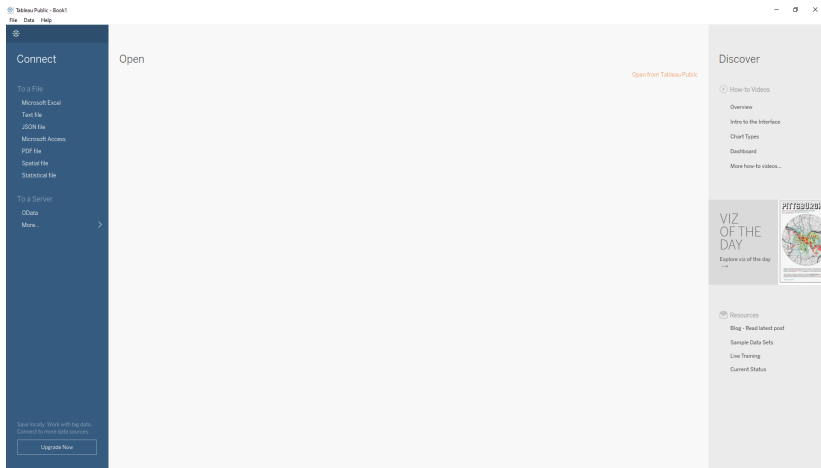


Figure 3: So we are here (a screen view of Tableau Public)

Uploading data: the Excel file of Gapminder data (1)

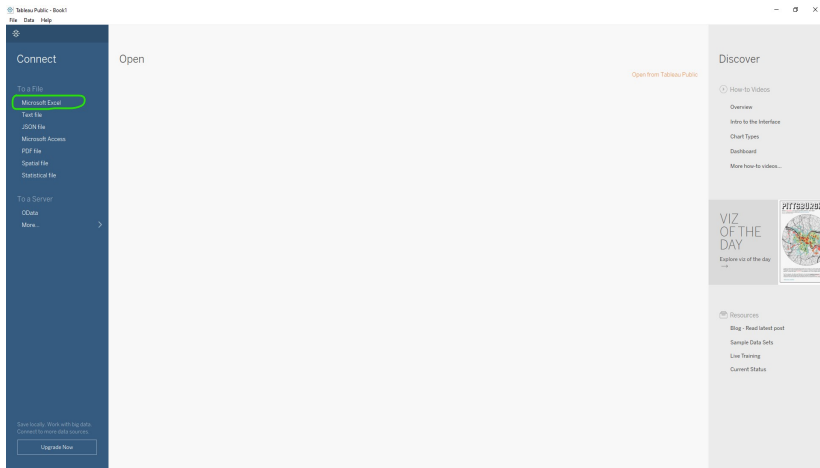


Figure 4: Choose Microsoft Excel (other menu if data file has different format)

Uploading data: the Excel file of Gapminder data (2)

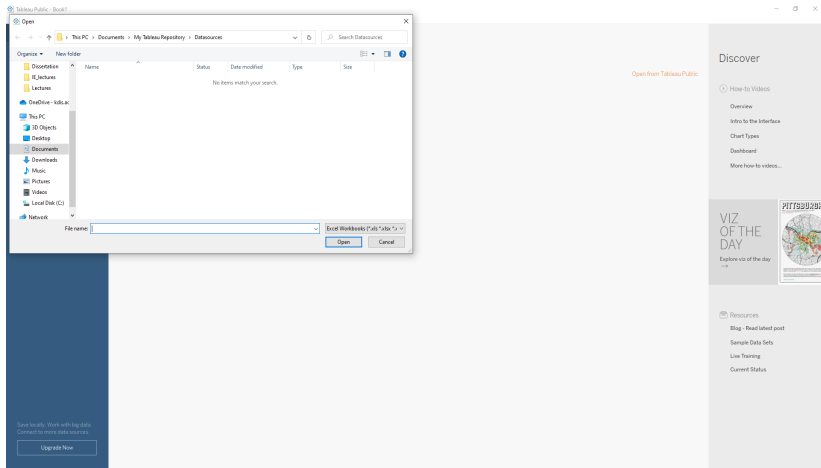


Figure 5: Upload the Excel file

Checking data: the Excel file of Gapminder data (1)

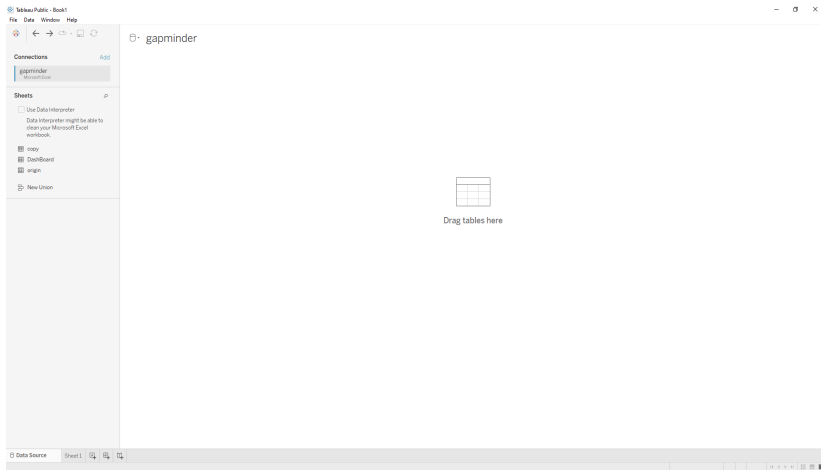


Figure 6: We have our data in. Now just drag an Origin (or any needed) sheet to the mid of the screen...

Checking data: the Excel file of Gapminder data (2)

Tableau Public - Book1

File Data Window Help

Connections

gapminder
Microsoft Excel

Sheets

Use Data Interpreter
Data Interpreter might be able to clean your Microsoft Excel workbook.

copy
Dashboard
origin
New Union

origin (gapminder)

origin

Need more data?
Drag tables here to relate them. [Learn more](#)

origin 6 fields 1704 rows 300 rows

Name
origin

Fields

Type	Field Name	Physical Table	Remote Field No.
Country	origin	country	
Continent	origin	continent	
Year	origin	year	
Life Exp	origin	lifeExp	
Pop	origin	pop	
Gdp Percap	origin	gdpPercap	

Country	Continent	Year	Life Exp	Pop	Gdp Percap
Afghanistan	Asia	1952	28.8020	8,425,333	779.45
Afghanistan	Asia	1957	30.3320	9,240,934	820.85
Afghanistan	Asia	1962	31.9970	10,267,083	853.10
Afghanistan	Asia	1967	34.0200	11,537,966	836.20
Afghanistan	Asia	1972	36.0680	13,079,460	739.98
Afghanistan	Asia	1977	38.4380	14,880,372	786.11
Afghanistan	Asia	1982	39.8540	12,881,816	976.06
Afghanistan	Asia	1987	40.8220	13,867,957	852.40
Afghanistan	Asia	1992	42.6760	16,307,923	649.34
Afghanistan	Asia	1997	41.7630	22,227,415	635.34

Go to Worksheet

Data Source Sheets

Figure 7: to see the structure of the Origin sheet like this

Checking data: the Excel file of Gapminder data (2)

The screenshot shows the Tableau Public interface with the 'origin (gapminder)' data source selected. A blue circle highlights a message that says 'Need more data? Drag tables here to relate them. Learn more'. Below this message, a table of data is displayed, showing various fields for Afghanistan.

Type	Field Name	Physical Table	Remote Field No.
Country	origin	country	
Continent	origin	continent	
Year	origin	year	
Life Exp	origin	lifeExp	
Pop	origin	pop	
Gdp Percap	origin	gdpPercap	

Figure 8: if we want to add more data, we use the highlighted option

Visualizing data: the Excel file of Gapminder data (1)

Tableau Public - Book1

File Data Window Help

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Microsoft Excel

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Use Data Interpreter
Data Interpreter might be able to clean your Microsoft Excel workbook.

Copy
Dashboard
origin

New Union

origin (gapminder)

Filters
0 | Add

Need more data?
Drag tables here to relate them. [Learn more](#)

origin 6 fields 1704 rows 300 rows

Name	Type	Field Name	Physical Table	Remote Field No.
Country	origin	country		
Continent	origin	continent		
Year	origin	year		
Life Exp	origin	lifeExp		
Pop	origin	pop		
Gdp Percap	origin	gdpPercap		

Country	Continent	Year	Life Exp	Pop	Gdp Percap
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Go to Worksheet

Data Source

Figure 9: To start out work we click on the highlighted SHEET 1...

Visualizing data: the Excel file of Gapminder data (2)

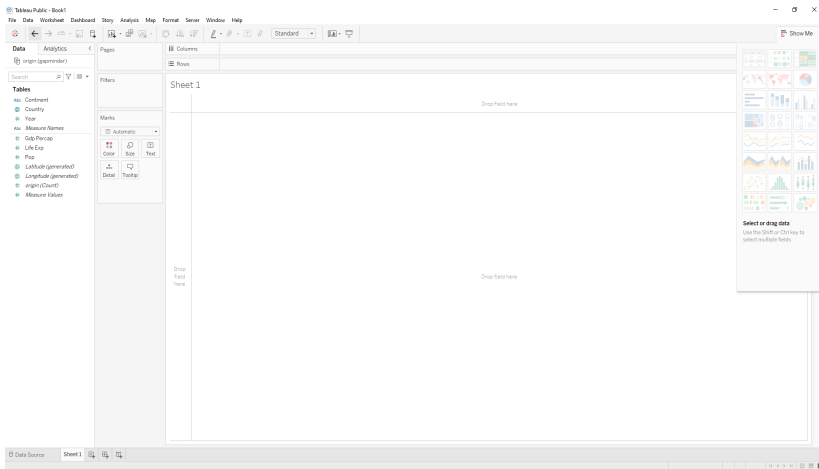


Figure 10: to finally end up here -> the main working window

Visualizing data: the Excel file of Gapminder data (3)

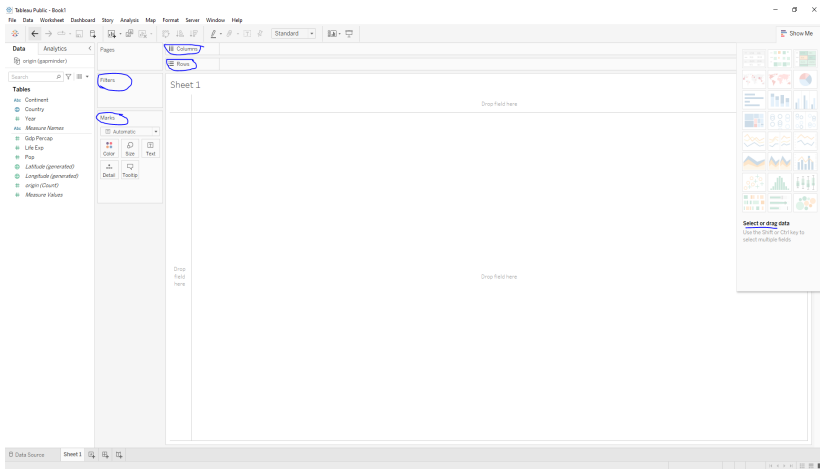


Figure 11: Main working fields and options highlighted. Remember - drag, drop and choose

Visualizing data: the Excel file of Gapminder data (4)

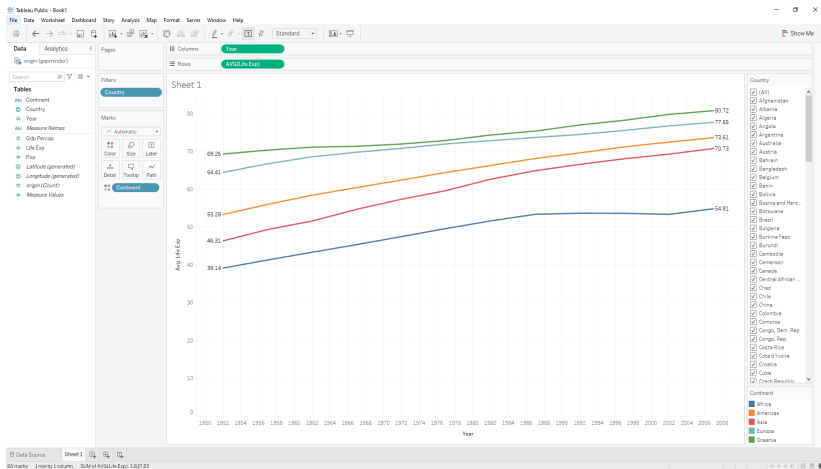


Figure 12: ...to get this kind of basic illustration...

Visualizing data: the Excel file of Gapminder data (5)

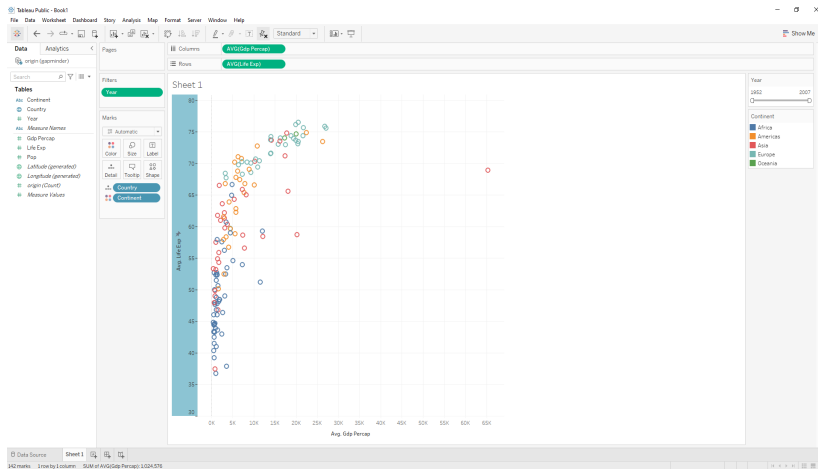


Figure 13: ...or something like this if we play more

Visualizing data: the Excel file of Gapminder data (6)

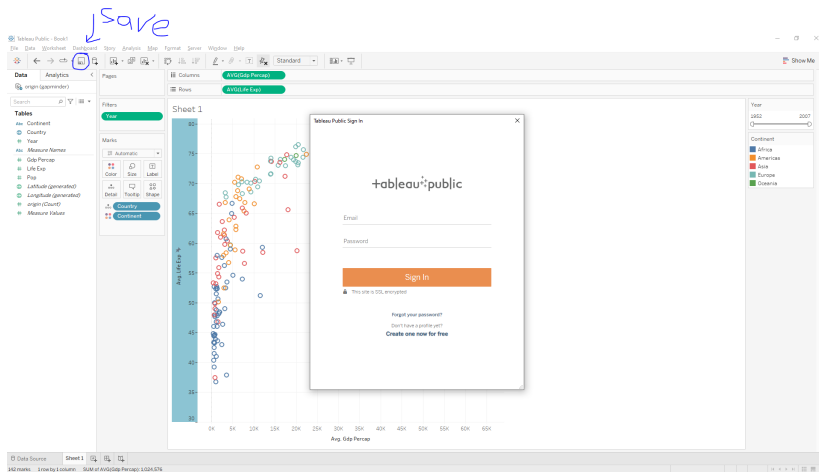


Figure 14: ...click the Save button. You may be asked to register.

Visualizing data: the Excel file of Gapminder data (7)

Group activity (1)

- Now please use the Gapminder file to do your own illustration.

Supplement materials

- Tableau for Beginners – Data Visualisation made easy ([link](#))
- A Step by Step Guide for Data Visualization using Tableau ([link](#))
- How to Install Tableau and Create First Visualization | Tableau Tutorials for Beginners ([link](#))

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Group activity (2)



Please do the flowing:

- Upload the file “Most Profitable Hollywood Stories.csv” to Tableau.
- Explore the data. What do you have there?
- Do the visualization to illustrate most profitable films by genre, year, score, etc.
 - use grouping, averaging, etc.
- Save and upload your work to the System.
- Please remember to indicate all your teammates full names and IDs.

Thank you!

- Have a nice day!