

Fundamentals of Visualization with Tableau

1) Why is data visualization important? What makes a good data visualization?

1. Connect to the audience instantly
2. Spot patterns
3. Make decisions faster
4. Improve understanding
5. Bridge gap between info and actionable insights

2) T/F Your brain process visuals 60,000 times faster than text.

True.

3) Give an example of a good Tableau dashboard.

Johns Hopkins COVID-19 dashboard

4) How can Tableau help identify trends and patterns?

1. Time-series charts
2. Moving averages
3. Forecasting tools

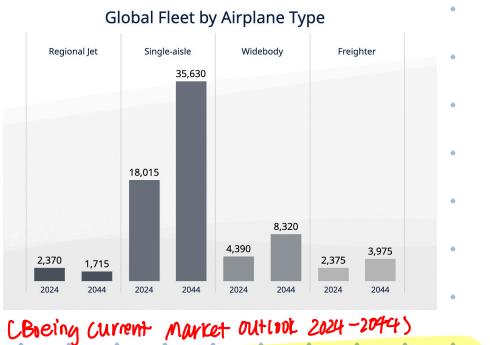
5) How can you test hypotheses with Tableau?
compare findings using before treatment vs after

6) Why are outliers considered?

Help identify problem or opportunity

7) What is an example of a dashboard that draw comparisons?

Which aircraft type will see the most demand over next 20 years?



Boeing Current Market Outlook 2024-2044

8) What does driving decision-making mean?

Help people take the right next steps

9) Who pioneered the field of data visualization?

Professor Edward Tufte (ET)

Know your audience.

1) If it's for executives, _____.
quick takeaways

2) If it's for analysts, _____.
deep dive

3) If it's for general audience, _____.
more context

2) T/F Simple charts are better.
True

Reference: Data Visualization with Tableau Specialization
UC Davis Coursera

Misconceptions of Data Visualization

1) To maximize data visualization, what else would you also need to master?

1. Design choice
2. Structuring data
3. Story tell your data
4. Using the tool very well

Resources

1. Where can you find 10 best data visualization examples from History & Today?
Data is Beautiful

2. Where can you learn more about principles of clear and effective visual communication?

Envisioning Information by ET

3. Where can you learn to use different charts effectively?

Data Viz Project

4. Where can you learn how to spot misrepresented data?

How to Spot Data Lies by Nathan Yau

Getting to Know Tableau

1) What are the two different Tableau options?

Public and Desktop

(a) Which one has the paid license?

Desktop (subscription required)

2) Differences between public and desktop.

public	desktop	features
X	✓	connect to databases, cloud platforms, live data sources, and spreadsheet
✓	✓	connect to local files excel or CSV
X	✓	unlimited row count
✓	✓	15 million row count
X	✓	dashboards can be private and shareable to selective people
X	✓	schedule updated data
X	✓	who's viewing dashboard and performance

3) What is the file type of CSV?

- (A) Text file
- (B) JSON
- (C) Spatial
- (D) Statistical

A, Text file

Charts

1) What are bar charts, line charts, scatter plots used for?

bar charts for comparisons; line charts for trends; scatter plot for relationships

4) What do each section: left pane, canvas, data grid, and meta data grid do?

left pane "connections panel": you can see the connected data source and other details

Canvas: view data source and create relationships between sources

data grid: gives preview of first 10,000 rows of data

metadata grid: displays the fields in your data source as rows

5) T/F Tableau automatically assigns types to fields (aka features). Sometimes, you may need to adjust them.

True

6) What are the data type icons in Tableau?

Data type icons in Tableau

Icon	Data type
ABC	Text (string) values
Date	Date values
Time	Date & Time values
#	Numerical values (integer or decimal)
True/False	Boolean values (relational only)
*	Geographic values (used with maps)
Image	Image role (used with image link URLs)
Cluster Group	Cluster Group (used with Find Clusters in Data)

7) What is saved when you save your workbook on Tableau public as .twb? structure, connections, and visualizations (without the data!)

7a) What is .twb best for?

- live connections to external databases

8) What is saved when you save your workbook as .twtx?

workbook and any local data sources

8a) What is .twtx ideal for?

sharing with others

9) What is the difference between dimension and measure?

Dimensions, quantitative data: Current Education, Entrepreneurial Study, Gender, Student ID, Age, High School GPA, Job Offers, SAT Scores, Starting Salary, University Rank, Work Experience, education_career_success, Student Name

Measures, quantitative data: Current Education, Entrepreneurial Study, Gender, Student ID, Age, High School GPA, Job Offers, SAT Scores, Starting Salary, University Rank, Work Experience, education_career_success, Student Name

10) Display the count of genders. Then, also display the total.

Sheet 1

Gender	Count
Female	2,350
Male	2,458
Other	192
Grand Total	5,000

11) Create a bar chart of the different fields sorted from largest to smallest.

Sheet 2

Field of Study	Count
Arts	749
Mathematics	745
Law	719
Business	719
Engineering	701
Medicine	695
Computer Science	670

12) What is PII?

Personally Identifiable Information, any data that can be used to identify a specific individual.

12a) Give examples.

names, addresses, social security number, email address

12b) T/F You should hide PII data.

True

12c) If the sample size of gender was low, how can you display the data to hide PII?

Make it into percentages → calculate percentage total with dropdown.

13) T/F The best practice for combining views per dashboard is 2-3 views.

True

14) Make the average starting salary for each field as a bar chart.

Avg StartingSalary

Field of Study	Avg StartingSalary
Arts	\$51,422.33
Business	\$50,262.17
Computer Science	\$50,777.16
Engineering	\$50,416.55
Law	\$50,081.16
Mathematics	\$50,725.91
Medicine	\$50,219.16

(5)

The screenshot shows the Tableau dashboard editor interface. On the left, there's a sidebar with 'Dashboard' and 'Layout' tabs, 'Default Phone' device preview, 'Size' settings (min 420x560 - max 650x8...), and a 'Sheets' section containing three sheets: 'gender counts', 'field of study', and 'average salary'. Below these are sections for 'Objects' (Horizontal Container, Vertical Container, Text, Extension, Pulse Metric, Image, Blank, Workflow, Mock Data) and 'Containers' (Tiled, Floating). A checkbox for 'Show dashboard title' is also present. Handwritten notes include 'Canvas' in pink at the top center of the canvas area and 'aka layout containers' with a bracket pointing to the 'Containers' section.

(6) what is the difference between tiled and floating containers?

tiled containers click in place while floating containers can be dragged freely.

(7) Make a dashboard for all three visualizations

using horizontal and vertical containers.

Steps to do simple Data Visualizations

1. Download the data set.
2. Open Tableau and load the dataset.
 - A. When loading a **csv** file, what should you select for file type?
 - a. "Text File"
3. T/F You should always check the data types for correctness.
 - A. True

Vertical Bar Chart

List the steps to make a vertical bar chart Employees by Employment Type.

1. Drag Employee Type to Row shelf
2. Drag Count to the Columns shelf
3. Label your Count by placing Count also on the Label Mark
4. Rename y-axis as "# Employees"
5. Title sheet as "Employment type"

Horizontal Bar

List the steps to make a horizontal bar chart Average Satisfaction Score by Start Date

1. Drag Start Date to the column shelf
2. T/F Tableau default to displaying year.
 - A. True
3. Drag Satisfaction Score to the Row shelf.
4. Click on the downward arrow on SUM(Satisfaction Score) and change to AVG(Satisfaction Score)
5. T/F Tableau defaults to a line chart.
 - A. True
6. How can you swap Line for Bar?
 - A. Navigate to Marks Panel and select Line.

What are some questions to ask about your visualizations?

1. Which employee type has the most employees?
2. Which start year has the greatest employee satisfaction score?
3. Can you tell which year had the most employees start?