Data Analytics

Lesson 03.

Visualizing and Exploring data

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Scholar: https://scholar.google.com/citations?user=kHZvlTkAAAAJ&hl=en&oi=ao

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Learning materials

- Textbook
  - Evans, J. (2016) Business Analytics. 2nd edn. Pearson.
  - Runkler, T. (2016) Data Analytics: Models and Algorithms for Intelligent Data Analysis. 2nd edn. Vieweg+Teubner Verlag.

- Online reference materials
  - archive.ics.uci.edu/ml/
  - powerbi.microsoft.com
  - https://github.com/topics/data-analysis-python
  - https://media.pearsoncmg.com/ph/esm/esm_evans_eba3e_20/tools/eba3e_analytic_solver.html
  - https://data.imf.org/

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Agenda

- Lesson 1: Understanding Data Analytics Terminologies.
- Lesson 2: Foundation of Business Analytics
- Lesson 3: Visualizing and Exploring data
- Lesson 4: Applying Descriptive Analytic Techniques
- Lesson 5: Data Modeling
- Lesson 6: Predictive Analytics
- Lesson 7: Regression, Classification and Clustering
- Lesson 8: Forecasting Techniques
- Lesson 9: Investigating Predictive Analytic Techniques
- Lesson 10: Introduction to Data Mining
- Lesson 11: Demonstrating Prescriptive Analytic Methods
- Lesson 12: Recap and advanced topics

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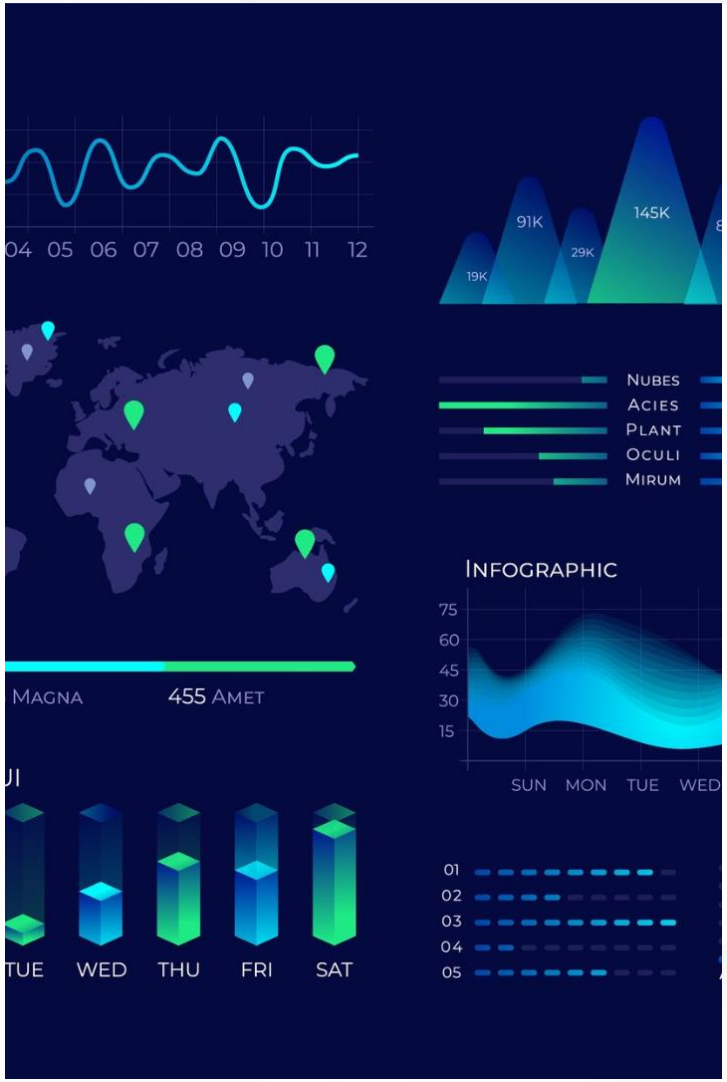

Welcome to the world of visualizing and exploring data! In this presentation, we'll dive into the importance of data visualization, different techniques, choosing the right visualization, tools, challenges, best practices, and successful case studies.

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Importance of Data Visualization

Communicate Insights

Data visualization helps to convey complex information in a visual format that is easily understood and absorbed by the audience.

Identify Patterns

By visualizing data, patterns, trends, and relationships become more apparent, allowing for better decision-making and problem-solving.

Engage and Persuade

Visuals captivate attention and evoke emotions, making data more compelling and persuasive to stakeholders and decision-makers.

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Choosing the Right Visualization for Your Data

1 **Understand Your Data**

Analyze the type, structure, and purpose of your data to determine the most effective visualization technique.

2 **Consider the Audience**

Align the visualization with the audience's preferences, familiarity, and level of data understanding.

3 **Highlight Key Insights**

Choose a visualization that emphasizes the key findings and insights you want to convey.

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Common Challenges in Data Visualization

1 Data Quality

Dealing with incomplete or inaccurate data that can impact the reliability and integrity of visualizations.

2 Choosing the Wrong Visualization

Using a visualization technique that does not effectively represent or communicate the intended message.

3 Visual Clutter

Overloading a visualization with unnecessary elements or information, making it difficult to interpret.

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Best Practices for Effective Data Visualization

Simplify

Remove clutter and unnecessary elements to focus on the essential information.

Use Appropriate Colors

Choose colors that enhance readability and highlight patterns without overwhelming the viewer.

Provide Context

Include titles, axis labels, and legends to provide necessary context and aid in interpretation.

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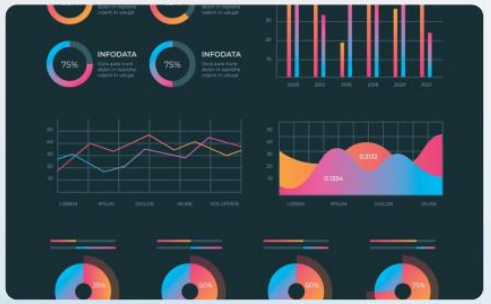
Case Studies and Examples of Successful Data Visualization Projects

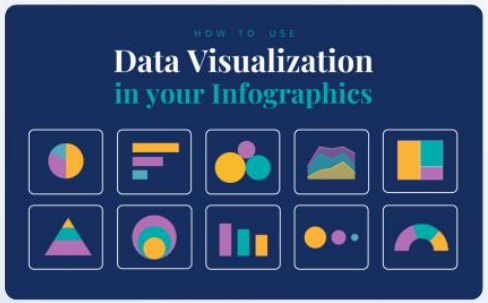
COVID-19 Dashboard

A real-time interactive dashboard visualizing COVID-19 data to track cases, deaths, and recoveries worldwide.



Netflix Recommendation System

Data visualizations help Netflix deliver personalized recommendations based on user preferences and viewing history.



Weather Forecasting

Visualizations aid meteorologists in analyzing and predicting weather patterns for accurate forecasts.

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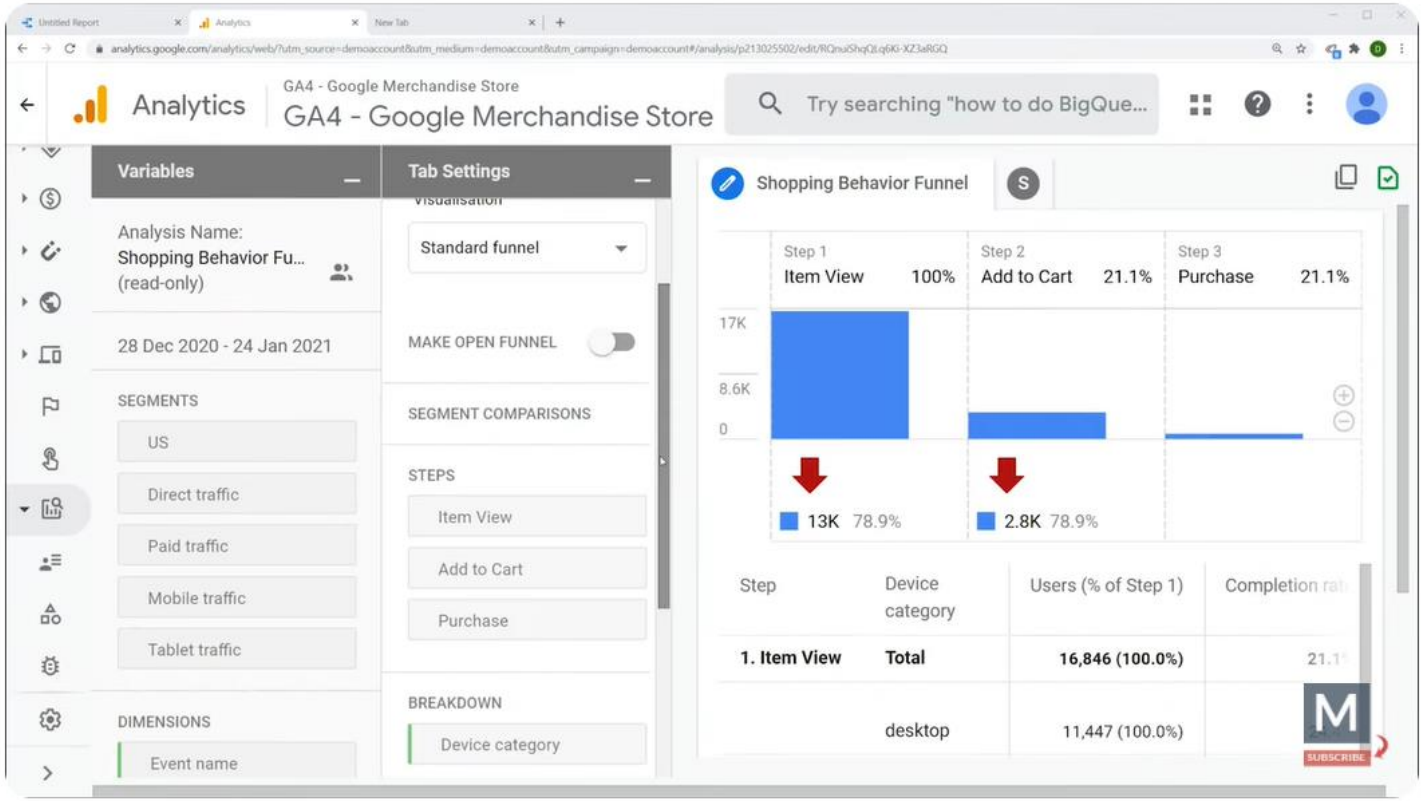
Step 1 - Sign In to Google Data Studio.
Step 2 – ????
Step 3 - Create a ??????
Step 4 - Choose ???? and data controls
Step 5 - A Template (Optional)
Step 6 - Add Data.
Step 7 – ??????????
Step 8 - ??????? Your Report.

- https://www.youtube.com/watch?v=IN6VsMUGPW8



Google Data Studio Explained in 100 seconds

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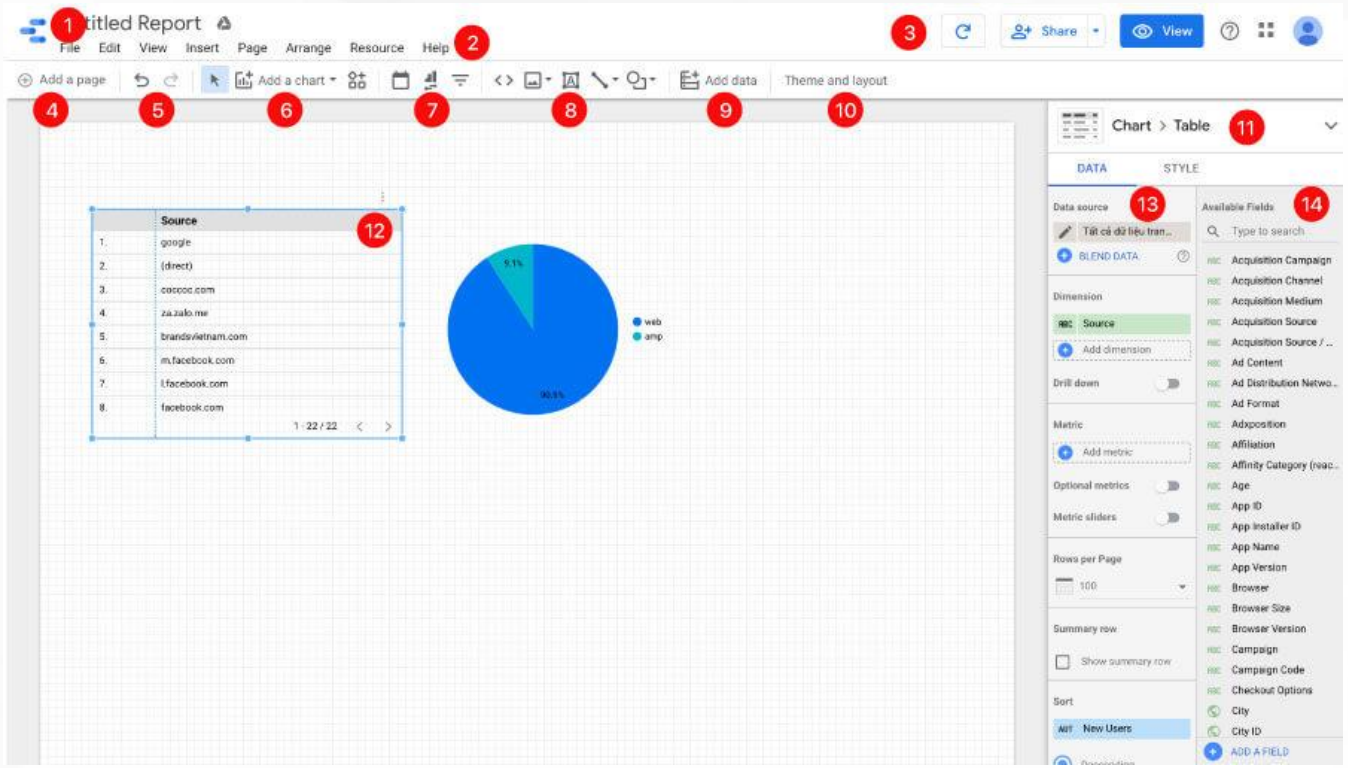

Google Data Studio report creation page interface

Activity: Associating Numbers with Text through Proper Number Assignment.

??.Logo, you can click to return to the Data Studio home page

??. Menu bar: many functions you can also quickly access here

???Edit chart type

12. Select a chart to display the property sheet for that chart.

??Configure the data properties of the selected chart

Fields available. You can drag dimensions and metrics to the data attribute table.

From left to right:

- Refresh data
- Share reports
- Preview the report
- Get help from Google or feedback
- Quickly access other Google products
- Account management

Add text, draw lines and shapes to the report

Add a data source to the report

Open the themes and layouts panel

Manage reporting pages

Mode selection: undo or redo

Add charts to your report

Add interactive controls (data display time selection, filters...)

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Google classroom task

Title

Assignment: Google Data Studio and Looker Studio comparison.

Instructions (optional)

1. View the Allotted YouTube Video Here: Watch the allocated YouTube video first, which compares and summarizes Looker Studio with Google Data Studio.
2. Look Up Further Sources: Although the video is a good place to start, learn more about Looker Studio and Google Data Studio by doing further study.
3. Write a thorough comparison and contrast between Looker Studio and Google Data Studio.

Conviction Write no more than 250 words, please.

Looker Studio vs Google Data Studio

YouTube video • 1 minute

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- Identify the name of chart:

1. **Bar Chart:** Common for comparing values across different categories.
2. **Line Chart:** Ideal for showing trends or changes over a continuous interval or time.
3. **Pie Chart:** Useful for displaying parts of a whole or proportions.
4. **Scatter Plot:** Great for visualizing the relationship between two numerical variables.
5. **Histogram:** Illustrates the distribution of a single variable.
6. **Area Chart:** Similar to a line chart but emphasizes the magnitude of change over time.
7. **Bubble Chart:** Displays three dimensions of data with circles of varying size.

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- Identify the name of chart:

8. **Box Plot (Box-and-Whisker Plot):** Shows the distribution and variability of a dataset.
9. **Tree map:** Useful for visualizing hierarchical data structures and proportions.
10. **Waterfall Chart:** Demonstrates how an initial value is affected by sequentially introduced positive or negative values.
11. **Gantt Chart:** Illustrates project schedules, showing tasks and their durations.
12. **Heatmap:** Uses colors to represent values in a matrix, suitable for showing correlations.
13. **Radar Chart:** Displays multivariate data in the form of a two-dimensional chart.
14. **Pareto Chart:** Combines both bar and line charts to highlight the most significant factors.
15. **Donut Chart:** Similar to a pie chart but with a hole in the center, allowing for better data labeling.

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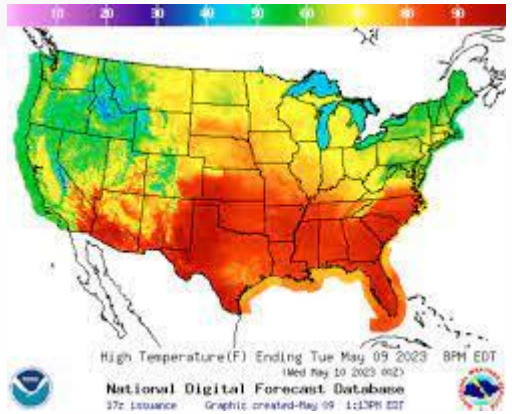
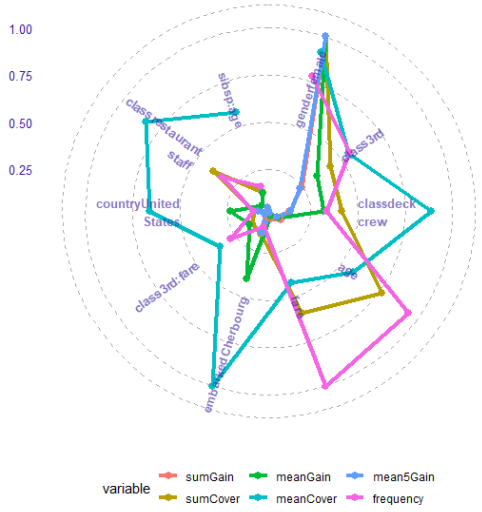
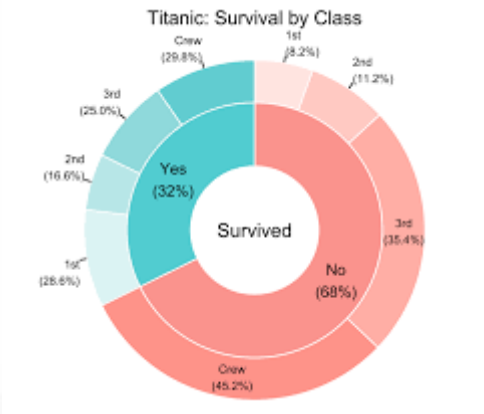
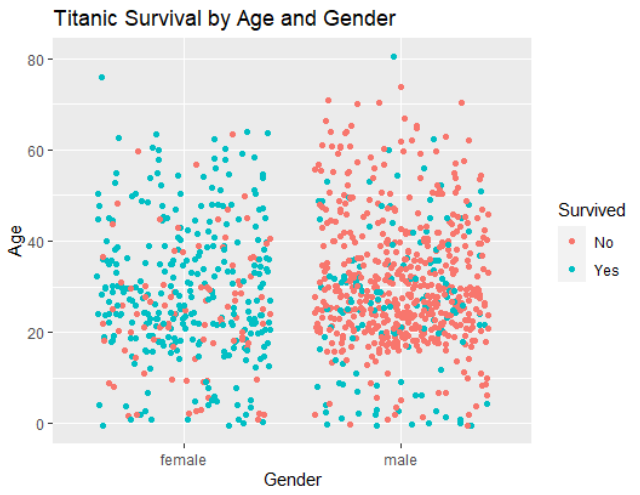
- Identify the name of chart:
  - Pareto
  - Heat Map
  - Pie-Donut
  - Scatter Plot
  - ?????









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Learning Mission

30 mins

Reading Business Analytics textbook: Chapter 3, page 53 – 94.

Discussion and answer:

Make a brief side glossary table using terms below:

1. Area chart
2. Bar chart
3. Bubble chart
4. Column chart
5. Contingency table Cross-tabulation
6. Cumulative relative frequency
7. Cumulative relative frequency distribution
8. Dashboard

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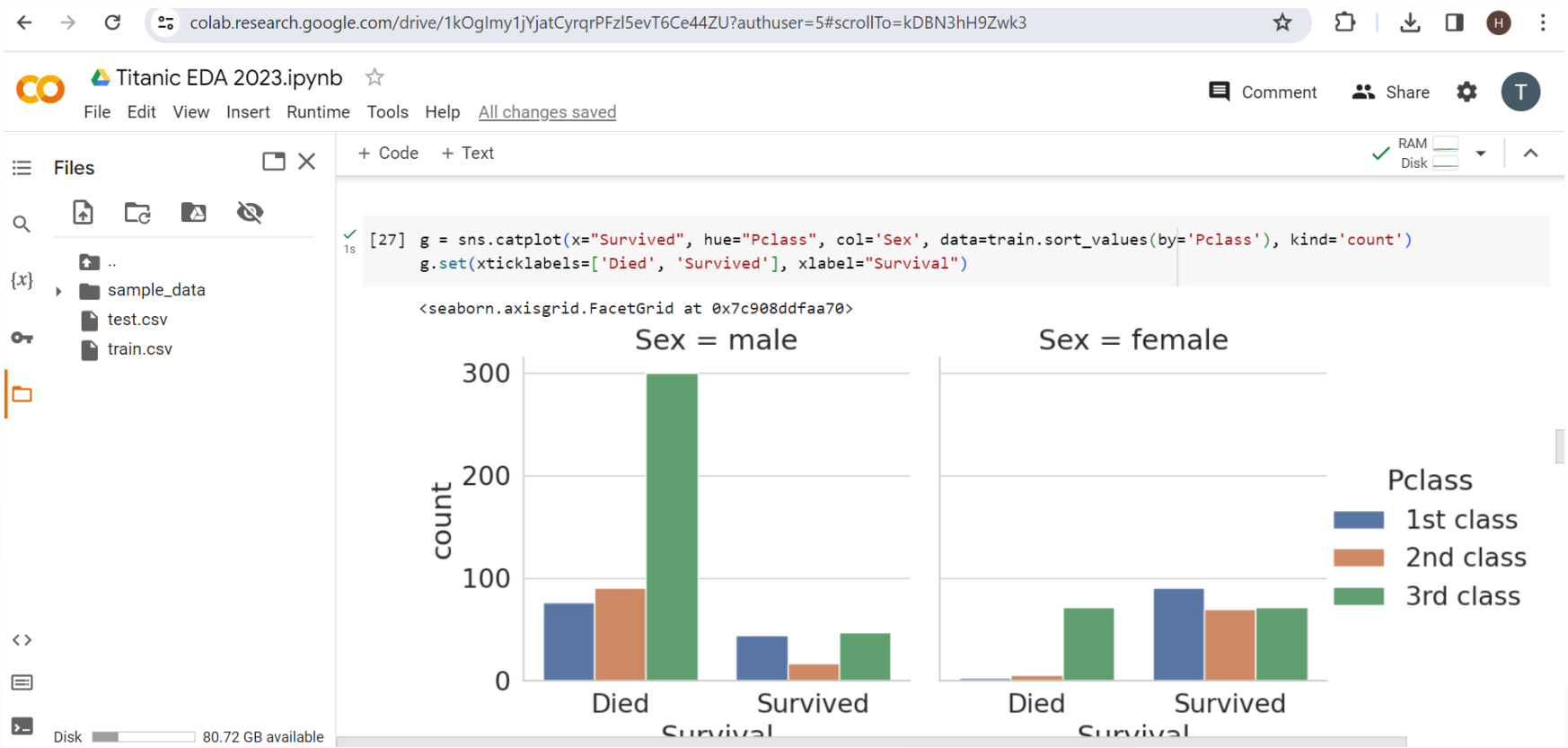
- Self Practice:



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Thank you