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DRESDEN LEIPZIG

CENTER FOR SCALABLE DATA ANALYTICS
AND ARTIFICIAL INTELLIGENCE

TOPIC Plotting Data with Seaborn

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GEFÖRDERT VOM

Bundesministerium
für Bildung
und Forschung

SACHSEN

Diese Maßnahme wird gefördert durch die Bundesregierung aufgrund eines Beschlusses des Deutschen Bundestages.
Diese Maßnahme wird mitfinanziert durch Steuermittel auf der Grundlage des von den Abgeordneten des Sächsischen Landtags beschlossenen Haushaltes.

TECHNISCHE UNIVERSITÄT DRESDEN

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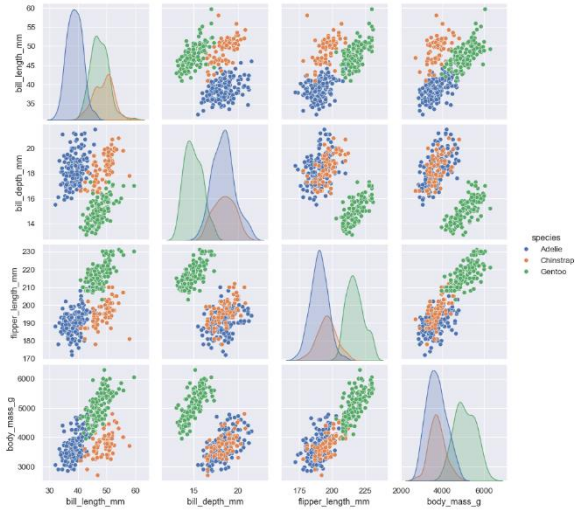
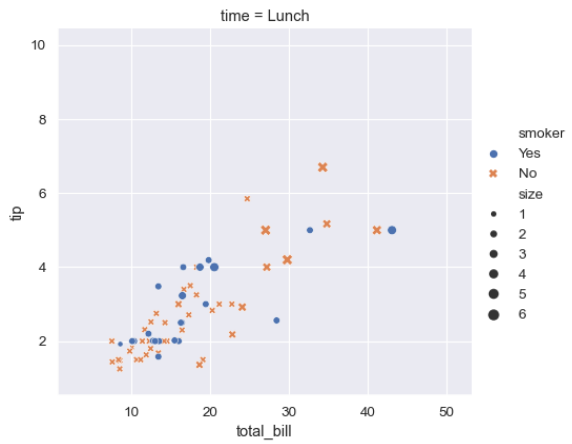
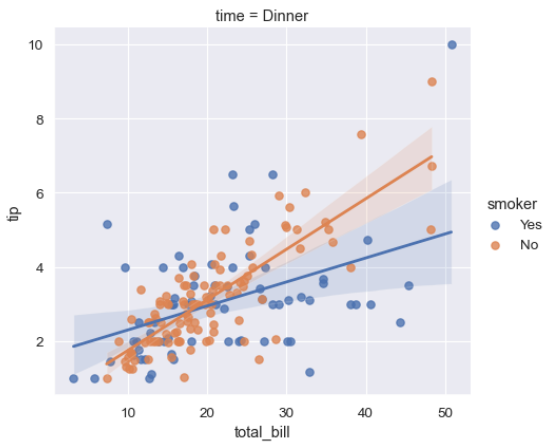
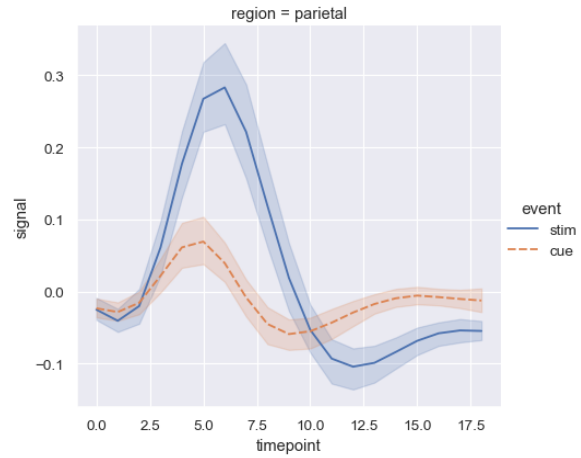
What is Seaborn?

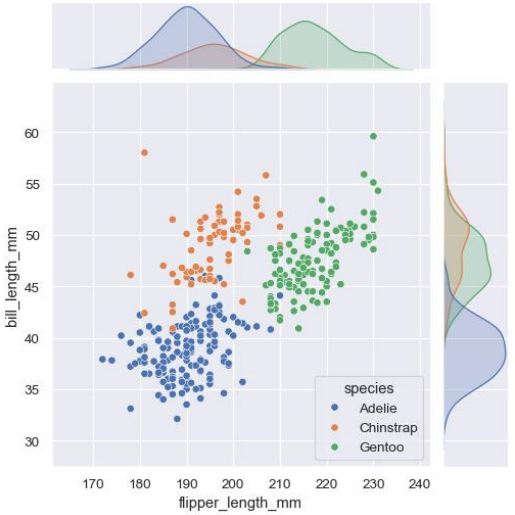
- Powerful Python plotting library for **statistical data graphics**
- Built on top of **Matplotlib**
- Other primary libraries used by Seaborn: Numpy, Pandas, Scipy











Seaborn documentation, BSD-3-Clause License, © Copyright 2012-2024, Michael Waskom
https://seaborn.pydata.org/tutorial/introduction.html

Seaborn vs. Matplotlib

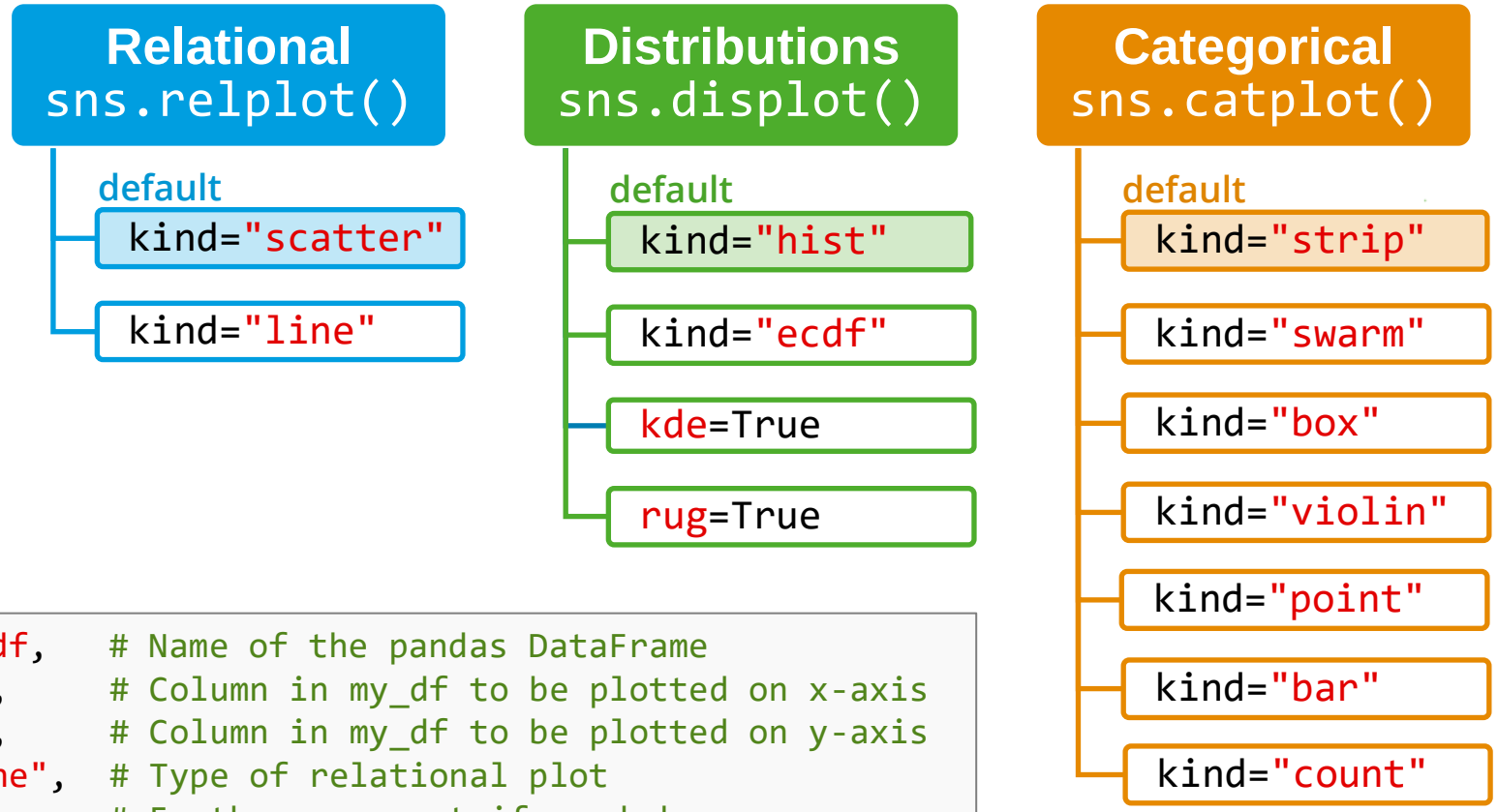
- Both Python visualization/plotting libraries
- **Matplotlib**:
  - oldest Python plotting library
  - inspired by MATLAB, grown as an open-source project
  - incredibly powerful, highly customizable
  - complex syntax, two parallel interfaces
    → structures appear sometimes inconsistent
  - *imperative* plotting: "**how** to plot"
- **Seaborn**:
  - beginner-friendlier
  - structures appear more logical
  - built on top of Matplotlib
    → Seaborn calls Matplotlib functions under the hood
  - *declarative* plotting: "**what** to plot"

Matplotlib documentation, BSD License, © Copyright 2012-2024,
Matplotlib Development Team, https://matplotlib.org/stable/gallery/index.html

Why Seaborn?

- Provides a **high-level API** (Application Programming Interface)
  → user-friendly and simplified syntax, yet flexible approach
- **Automates** functionalities
  → beginner-friendly
- Integrates **closely with pandas**
  → intuitive visualization of complex data structures
- Aggregates **statistical features**
  → uncover underlying patterns and relationships for statistical analysis
- Provides a variety of **built-in themes** and color palettes
  → beautiful plots with minimal code

Basic Seaborn figure-level functions




```
sns.relplot(data=my_df,    # Name of the pandas DataFrame
            x="col1",      # Column in my_df to be plotted on x-axis
            y="col2",      # Column in my_df to be plotted on y-axis
            kind="line",   # Type of relational plot
            ...=...,       # Further argument if needed
            ...=...)       # Further argument if needed
```

jupyter

Where to get help when you‘re lost?

- **Don’t panic**, everyone gets stuck!
- Have a look at the **documentation** of the library
  → https://seaborn.pydata.org/api.html
- Untangle your **error message**
  → long error message ≠ big problem!
- **Google** your problem / error message
  → the coder community is huge, e.g., stackoverflow
  → someone has certainly encountered the same issue
- Ask **ChatGPT**, it’s good at coding!
  → tell what you want to achieve in which programming language
  → prompt your code and your error message