Design for an Audience: Takeaways

Syntax

- Creating a bar plot using matplotlib's OO approach:

```
fig, ax = plt.subplots(figsize)
ax.bar(x, height, width, color)
plt.show()
```

- Removing all the four spines of a plot named ax:

```
for location in ['left', 'right', 'bottom', 'top']:
    ax.spines[location].set_visible(False)
```

- Hiding and modifying ticks:

```
ax.tick_params(top=False, left=False)
ax.tick_params(axis='x', colors='grey')
```

- Moving the x-ticks on top:

```
ax.xaxis.tick_top()
```

- Configuring ticks and tick labels:

```
ax.set_xticks([0, 150000, 300000])
ax.set_xticklabels(['0', '150,000', '300,000'])
```

- Adding text on a plot:

```
ax.text(x, y, s, ymin, color, size, weight)
```

- Adding a vertical line on a plot:

```
ax.axvline(x, ymin, c, alpha)
```

Concepts

- Depending on the graph's audience, we have two kinds of data visualization:
    - Exploratory data visualization: we create graphs for ourselves to better understand and explore data
    - Explanatory data visualization: we create graphs for others to inform, make a point, or tell a story
- Design principles help us in two ways:
    - They generate design options
    - They help us choose among those options
- The familiarity principle says that we should choose what our audience is most familiar with.
- The device your readers are using to see your graph is important — if you expect them to use a mobile device, then your graph should have mobile-friendly proportions.
- If we know that a large part of our audience will read the article on a mobile. This means that our graph needs to have mobile-friendly proportions.

- Generally, a graph has three elements:
    - Data elements: the numbers and categories represented and the relationships between them.
    - Structural elements: the axes, the ticks, the legend, the grid, etc.
    - Decorations: extra colors, shapes, artistic drawings etc.
- From the total amount of ink used for printing a graph, some of the ink goes to show the data — that is the data-ink.
- Maximizing the data-ink ratio enables us to build graphs where readers focus more on the data. To maximize data-ink, we can do the following:
    - Erase non-data ink
    - Erase redundant data-ink
- Be mindful of people's reading direction. When it comes to a graph, people usually start looking from top left and follow a zigzag pattern until they reach bottom right.
- Generally, the title must be data ink. If we need to give structural explanations in text, we can use the subtitle. That's because the title is always so noticeable, and we need to leverage that to show more data (and also maximize the data-ink ratio).

Resources

- The Visual Display of Quantitative Information — Edward Tufte
- The Lifecycle of a Plot
- Matplotlib Gallery