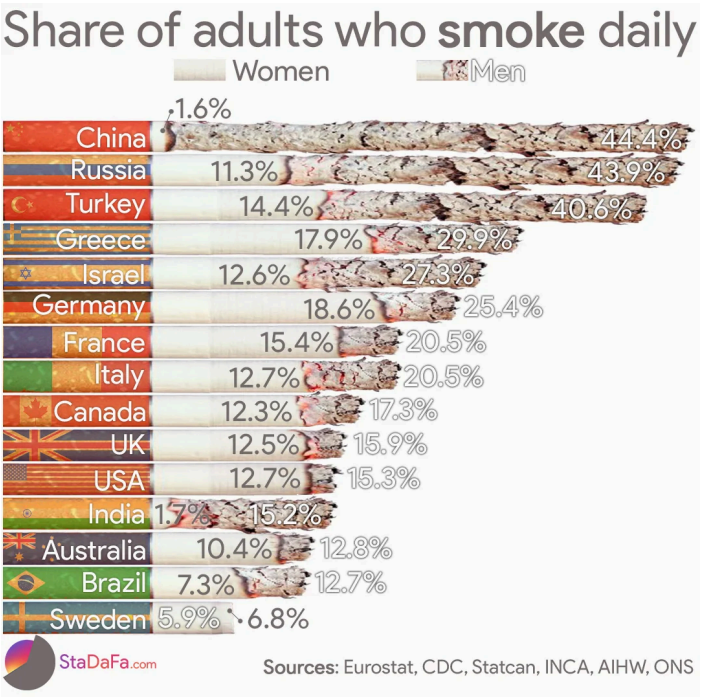
MXB262 Case Studies Project
Part A: Critical Analysis Report

Joseph Looi

Visualisation 1

https://www.stadafa.com/2021/11/share-of-adults-who-smoke-daily.html



Description, Audience and Intended Action

Visualisation 1 is a static horizontal grouped bar graph data visualisation depicting the proportion of adults who smoke daily between men and women in various countries, created by the owner of the blog site "Statistics_Data_Facts". Data was compiled from Eurostat, CDC, Statcan, INCA, AIHW, and ONS, updated from November 2021.

The target audience is the educated general public living in 2021. The intended action is for the audience to know what percentage of a country's population smokes daily, i.e., how popular smoking is in that country, and which has the highest percentage.

Structure Evaluation and Recommendations

Countries are represented by a category with two bars representing men and women starting from the vertical axis. Exact values are overlaid on top of the bars, or outside if the bar is too small, which positively clarifies exact values for the audience to read. Other major countries are absent, which could miscommunicate the story attempting to be told.

Women data is overlaid on top of men data, negatively causing the visualisation to appear as a stacked bar graph rather than a grouped bar graph, making bar lengths to appear contradictory to their actual values, or imply women are a subset of men. Additionally, male bars are obscured when exceeded by women, which is the case for Sweden. The **first recommendation** is for men and women to be graphed side by side, rather than on top of one another, embracing a grouped bar graph.

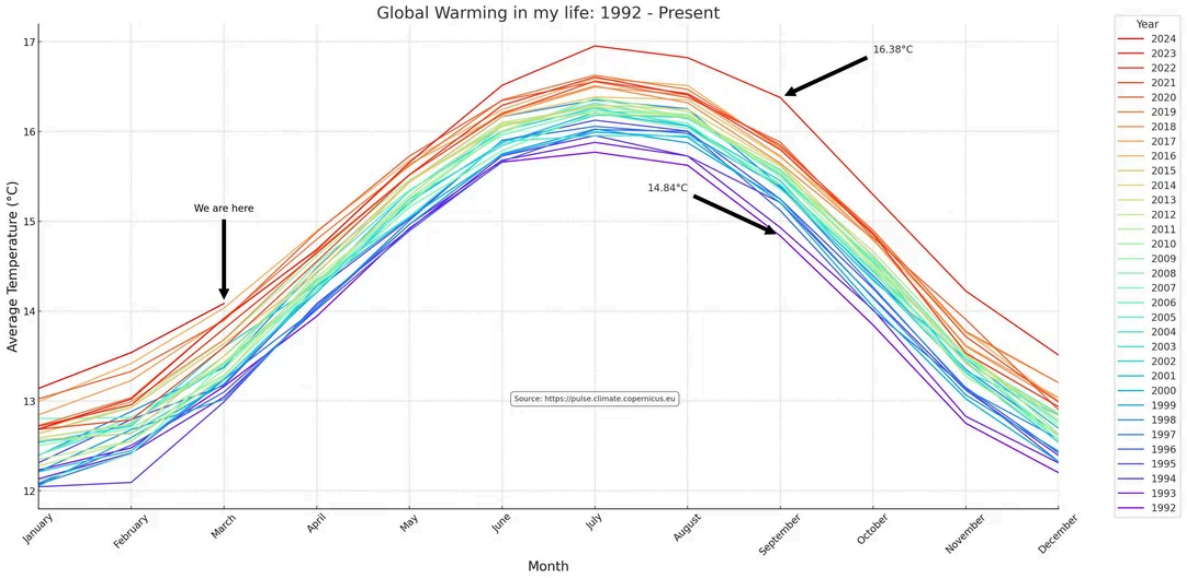
Aesthetics Evaluation and Recommendations

Country flags are displayed under their labels, improving recognition. Bars are realistic depictions of partially burnt cigarettes, where the unburnt portion represents women, and the entire cigarette represents men. This complicates visual interpretation, as the boundary dividing sexes is unclear. However, it could also invoke stronger feelings. The **second recommendation** is to simplify the bars. The two toned nature of a partially burnt cigarette implies either portion is independent from the other. It would be more intuitive for the unburnt section to represent non-smokers, and allow the whole cigarette to represent 100% of the population of that sex, paired with the first recommendation.

Grey is used for standard text and women data, which lacks contrast with burnt cigarettes, and blurs the distinction between the two. White text is used for men data and the background, which hinders readability when men values are displayed off the bars.
The **third recommendation** is to use a more intuitive colour map. For example, blue for men and pink for women would be semantically resonant, and a darker grey for general text would increase contrast and definition of text.

Visualisation 2

https://www.reddit.com/r/dataisbeautiful/comments/1brfk0v/oc_global_warming_in_my_lifetime_1992_present/?sort=qa



Description, Audience and Intended Action

Visualisation 2 is a static time series line plot data visualisation depicting the monthly global average surface air temperature from January 1992 to March 2024, created by u/IXMCMXCII on r/DataIsBeautiful. Data used comes from Climate Pulse.

The target audience is the educated general public in 2024. The intended action is for the audience to understand the effects of climate change on atmospheric temperature over the past 30 years, and motivate them to take action against it.

Structure Evaluation and Recommendations

Data is presented as a scatter plot connected by lines where the horizontal axis represents months of the year, and the vertical axis represents temperature. Years are separated into individual datasets and graphed on the same axes, allowing easy comparison between data occurring at the same time of each year. Data has been simplified to show monthly rather than daily values, emulating time series smoothing appropriately. The vertical axis is appropriately truncated to highlight the smaller changes in temperature.

All axes are labelled and titled, however the terms “global warming” and “average temperature” are vague in communicating the specific data being presented. The creator’s birth month in 1992 and 2023 is chosen to be labelled with its respective temperatures for easier comparison, assisting the audience in understanding the story of how temperatures have risen. The **first recommendation** is to clarify global surface air temperature in the titles, and specify the years in the two data labels to clarify which years are labelled without the need to check the key.

Additionally, the creator intended for the graph to span their lifetime (1992-present), however, displaying all data available (1940-present) would have communicated the intended action more effectively.

Aesthetics Evaluation and Recommendations

The colour map utilises every hue to display data. Perceivable changes of hue do not match the quantitative change of values, causing difficulty in identifying each year on the already crowded plot. This also creates the appearance of a rainbow, contradicting the bleak message being conveyed. The **second recommendation** is to use a sequential colour map of single hue, where greater lightness means lesser years, and vice versa. If more attention must be drawn to specific years to further drive the story (similar to the need for the first recommendation), a separate hue could be used for that year, as a preattentive attribute.

The key maps years to discrete colours, where hue increases as the year decreases, from red to violet. This overcomplicates labelling, and therefore, the **third recommendation** is to simplify this by using a gradient colour ramp with labels for only 2024 on top, and 1992 on the bottom.