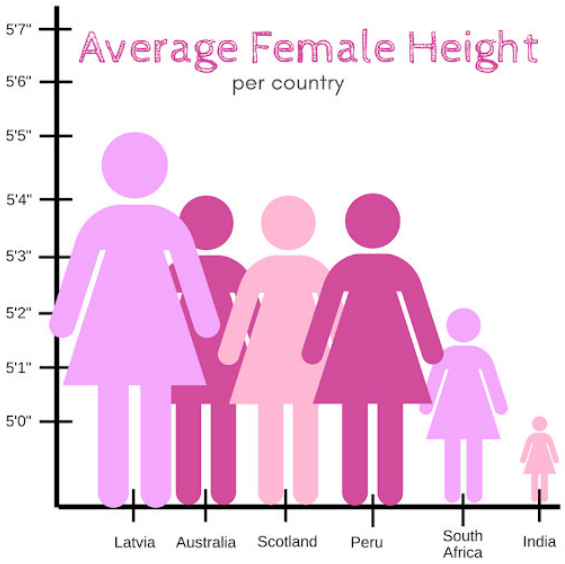
MATH 013: 4/16 WORKSHEET
MISLEADING GRAPHS

It is common to summarize data graphically. Intentionally or otherwise, how this is done can be misleading. It is useful to be able to notice when this is going on.

An egregious example.



(Source unknown.)

What are the ways in which this data visualization is misleading?

Truncating axes.

One way a graph can be misleading is by the choice of range of values for the vertical or y-axis and the horizontal or x-axis.

- Read through

  [https://web.stevenson.edu/mbranson/m4tp/version1/fake-news-misleading-graphs.html]

  and look at their examples of misleading graphs. What are their arguments for why these are misleading? What is their proposed fix?
- Argue against these authors. Make a case for why axis truncation might be a neutral or reasonable choice for a graph.
- Can you go even further against them? Can you argue that the author's preferred graphs are themselves misleading? How so?

A typology of misleading graphs.

In 2023 a group of overly online scientists at University of Utah wrote a paper about misleading graphs on social media during the covid pandemic.

[`https://sci.utah.edu/~vdl/papers/2023_chi_misleading.pdf`]

In this paper they categorize the graphs by different potential ways in which they might be misleading.

- Look at Figure 3 (p. 5) for a summary of the different visualization and reasoning errors. Look at Figures 6 (p. 8) and 7 (p. 9) for a more detailed breakdown of how common each type of error was.
- Section 4.2 (pp. 9–16) discusses the different types of potential errors, with examples. Read through this section. Along the way, discuss with a classmate: What is the error being looked at, and why is it a problem? Do you personally think the examples are misleading?