

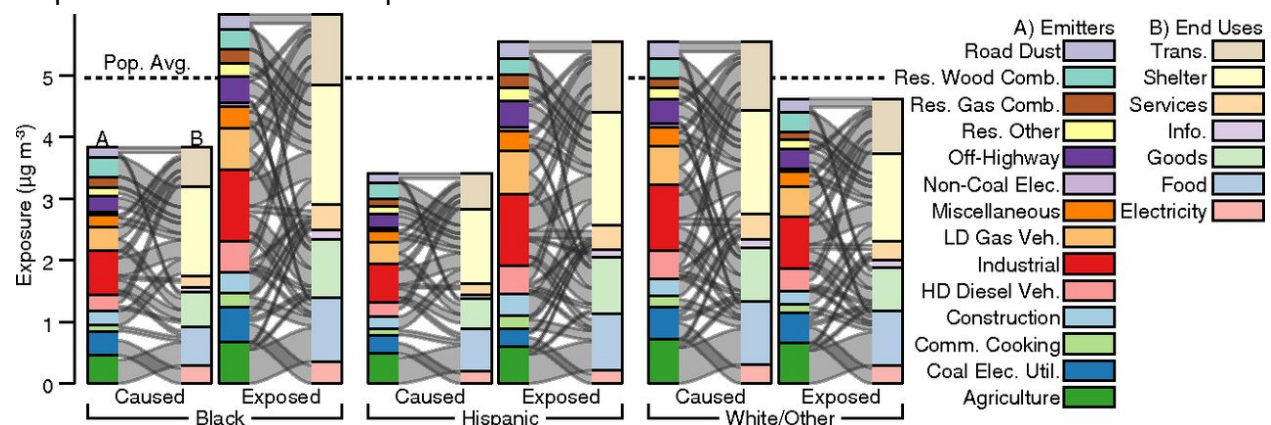
Prompt

Read Alberto Cairo's work, [Graphics Lies, Misleading Visuals](#)

Locate an example of a misleading visual that uses one or more of the mechanisms for misleading that Cairo outlines in his book chapter: (1) Hiding relevant data; (2) Displaying too much data and obscuring reality; (3) Distorting data through visual forms.

Please upload an image of this visual using a widely accessible graphic format (e.g., PDF, .jpg, .png)

Fig. 2 of study: Inequity in Consumption of Goods and Services Adds to Racial-Ethnic Disparities in Air Pollution Exposure



Average PM_{2.5} exposure experienced and caused by racial-ethnic groups. Total exposure to PM_{2.5} caused by population-adjusted group consumption ("caused," or Cg) and group exposure to PM_{2.5} caused by total personal consumption ("exposed," or Eg), stratified by racial-ethnic group. Pollution inequity is the percent difference between a group's "exposed" and "caused" bars. Each group of bars shows the (A) emitters and (B) end uses responsible for the exposure, with gray connecting lines showing relationships among emitters and end uses. Connecting lines representing $<0.04 \mu\text{g m}^{-3}$ are not shown.

Prompt

Briefly describe the context for the visual by addressing the following questions:

1. What is the source of the visual? (e.g., URL or bibliographic citation)
2. Who is the intended audience (i.e., decoders)? How do you know this?

This figure is included in a study titled "Inequity in consumption of goods and services adds to racial–ethnic disparities in air pollution exposure", which itself was referenced by a Washington Post article titled "Whites are mainly to blame for air pollution, but blacks and Hispanics bear the burden, says a new study".

study: <https://www.pnas.org/content/116/13/6001>

WaPo:

<https://www.washingtonpost.com/nation/2019/03/12/whites-are-mainly-blame-air-pollution-black-s-hispanics-bear-burden-says-new-study/>

The intended audience of the study is the employees of major journals and media outlets like the Washington Post, who profit from publishing stories on topics of race and racial guilt in America. The intended audience of the Washington Post article and any other article that carried this study is college-aged Americans who have had to sit through at least one lecture or seminar about racial guilt, if not whole courses/curriculums. I can deduce this much from the concluding lines of their abstract: "Our "pollution inequity" metric is generalizable to other pollution types and provides a simple and intuitive way of expressing a disparity between the pollution that people cause and the pollution to which they are exposed. Our results are timely, given public debate on issues relating to race, equity, and the regulation of pollution." If you are in need of a simple way to show someone that yet again "whites are mainly to blame" and "blacks and hispanics bear the burden" then the PNAS and WaPo have you covered.

Prompt

1. Identify the specific component(s) of the visual that is/are misleading
2. For each part(s) of the visualization that is/are misleading, identify the mechanism that is used: hiding relevant data to highlight what benefits us; displaying too much data to obscure reality; using graphic forms in inappropriate ways (distorting the data)
3. Explain how the mechanisms are used to mislead

As was discussed in this week's lectures, this figure looks absolutely overloaded with information. Each bar in this bar graph contains an additional cosmograph without any numbers or indication of any measurement besides boxes that vary in size. These cosmographs are color coded and the graph includes a legend with a long list of items.

The figure is certainly displaying too much data at once. The cosmographs could have been left out, since they are each just copies of a cosmograph displayed earlier in the study. The information of interest in this figure is what the publishers call Exposure, measured in micrograms per cubic meter. A vast majority of the "ink" in this figure is not useful to displaying this metric for each racial group.

I would posit that this and the first figure (Figure 1) serve to obfuscate the fact that the inequity in exposure to particulate matter in the U.S. is most directly a function of geography. The study begins with the intention of separating the racial groups in America into classes of polluters and sufferers of pollution. I do find this deceptive and misleading. In reality, a white, hispanic, or black person living in a large city will all receive and contribute very similar levels of pollution, and the same for any individual living in rural America.