Data Visualization Evaluation

DEUTSCHE WELLE: FLOODING, HEAT WAVES, AND SEVERE STORMS: CAN CITIES ADAPT?

01. Overall story:

Cities face greater challenges from environmental issues like floods, heat waves, and storms compared to rural areas, due to factors such as dense populations, impermeable infrastructure, and poor planning. Vulnerable regions, especially in the Global South, and low-income communities are hit hardest, as they often have weaker infrastructure and fewer resources to cope with these growing threats. Solutions like green infrastructure and improved urban planning offer potential ways to address these issues. The essential message is that by acting now and focusing on sustainability, cities can ensure greater safety and readiness for the future.

02. Overall design of the resource:

The article effectively uses data visualization techniques to support its points, creating a clean and professional presentation, though there are a few areas for improvement. To evaluate the visualizations, I will apply the "CRAP" Principles (Contrast, Repetition, Alignment, and Proximity). Since the visualizations aren't numbered in the article, I will place them on the right side for easy reference and focus on specific elements as we go.

- **Contrast** ★★★★½

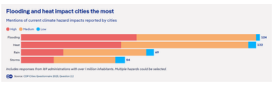
Size:
Circle sizes are used to highlight the differences in the amounts of various attributes, such as city population (Viz. 2, 3) and the total number of people affected (Viz. 4).

Color:
Different colors represent various categories, such as continents (Viz. 3, 4), number of additional days over 35˚C (Viz. 2), levels of impact (Viz. 1), types of hazards (Viz. 5), and socioeconomic status (Viz. 6). It is particularly helpful for quickly identifying the continent each country belongs to in Viz. 4, as the countries are spread out across the visualization instead of being clustered together as in Viz. 3.

Position:
Higher levels/numbers are positioned at the top, and lower levels/numbers are placed below (Viz. 3, 4, 5, 6).

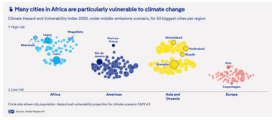
Saturation:
Saturation is used in Viz. 1 (interactive mode) and Viz. 5, with particularly effective use in Viz. 5 to highlight the highest-mentioned group (low-income households).

Viz 3 employs black circle borders to emphasize certain chosen countries.

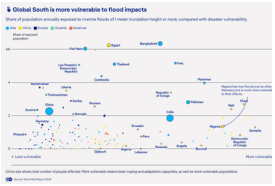


Viz. 1

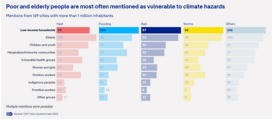
Viz. 2



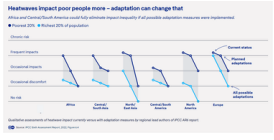
Viz. 3



Viz. 4



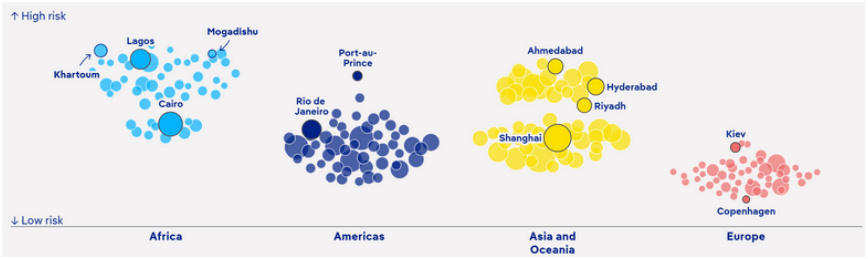
Viz. 5



Viz. 6

Improvement idea:

Although I'm not sure why these specific countries below are highlighted (using black circle borders and their names displayed) instead of others, I can see that the contrast is most noticeable for Africa and Asia & Oceania only. I would recommend using saturation in this case.



• Repeat

The overall design is cohesive, with consistent use of Deutsche Welle's color scheme. Fonts, font sizes and alignments are also uniform throughout the article.

However, there are inconsistencies in color usage for countries in Viz. 3 and 4, as listed in table below:

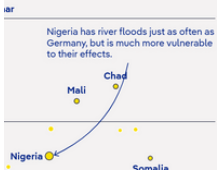
	Asia	Africa	Europe	America	Oceania
Viz. 3	yellow	blue	red	dark blue	yellow
Viz. 4	blue	yellow	dark blue	red	green

• Alignment

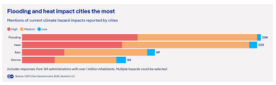
-The text is consistently aligned to the left margin.
-Visuals are well-proportioned and fit seamlessly within the layout.
-The alignment scheme remains consistent throughout.
-The order of information follows a clear and uniform structure: headline, short description, legend, graph, comment, logo and source.

• Proximity

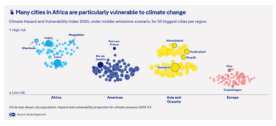
-Labels and explainers are placed close to their corresponding areas, ensuring clarity.

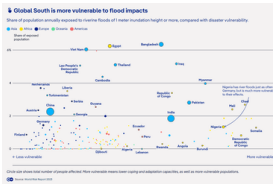


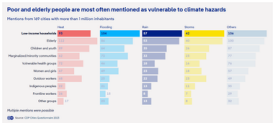
-There is sufficient whitespace between the groups, allowing for a clean and organized layout.

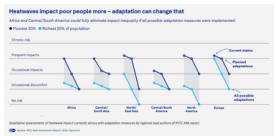

Viz. 1


Viz. 2


Viz. 3


Viz. 4


Viz. 5


Viz. 6

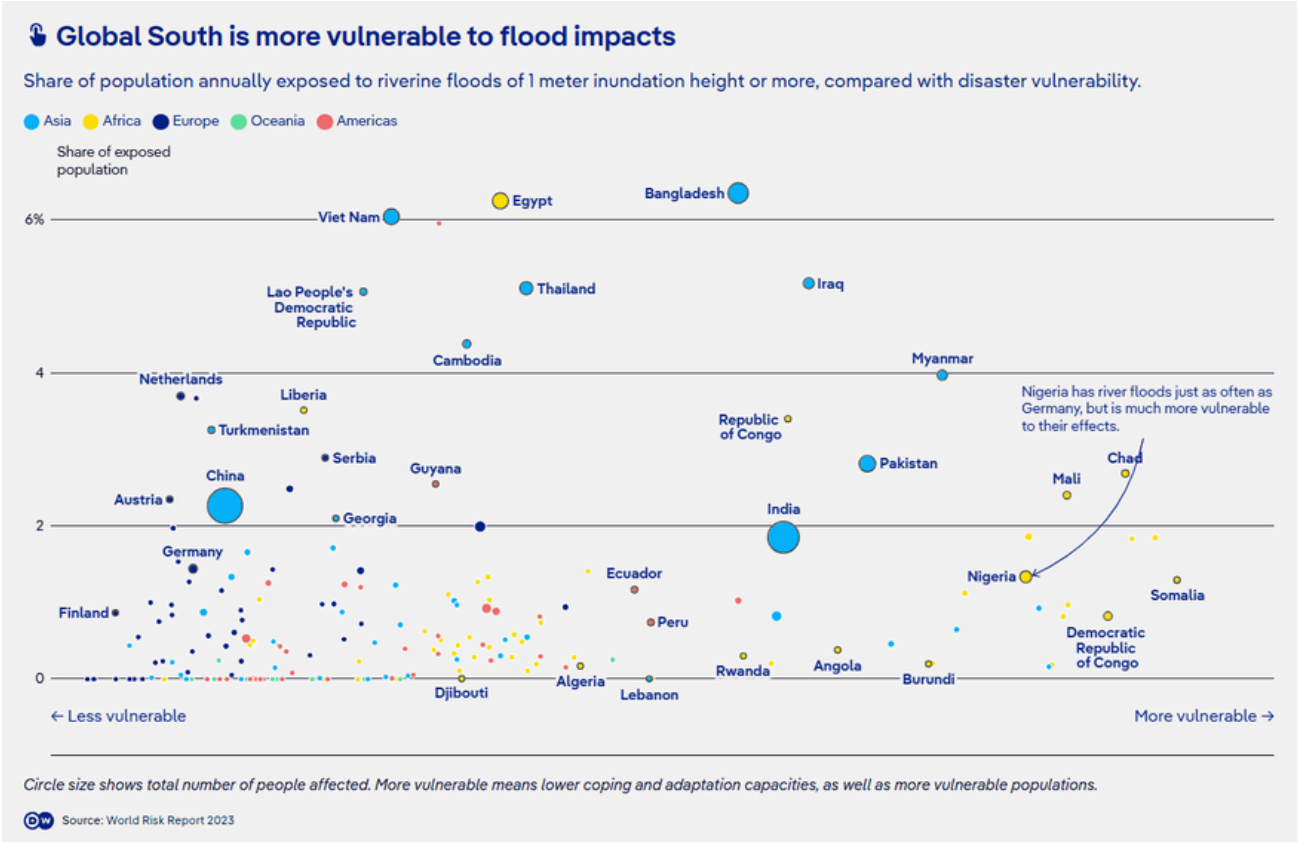
Additional comments:

- There is a symbol to indicate the interactive visualization, which is very considerate.

  Many cities Global South

- This is more content-related: To effectively communicate which groups are most vulnerable to climate hazards, it would be more informative to use data derived from research on real-world conditions, rather than relying on survey mentions like in Viz 5. For instance, providing statistics on how many low-income households were/will be unable to withstand climate hazards due to their conditions being below a certain threshold would be more impactful.

03. Specifically to vizualization 3*:



*The original vizualization is interactive.

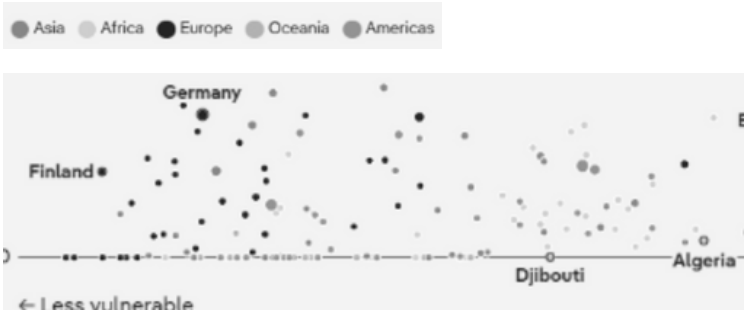
a) This visualization concludes that the Global South is more vulnerable than other regions when examining the relationship between disaster vulnerability and the share of the population annually exposed to riverine floods of 1 meter or more in inundation height.

b)

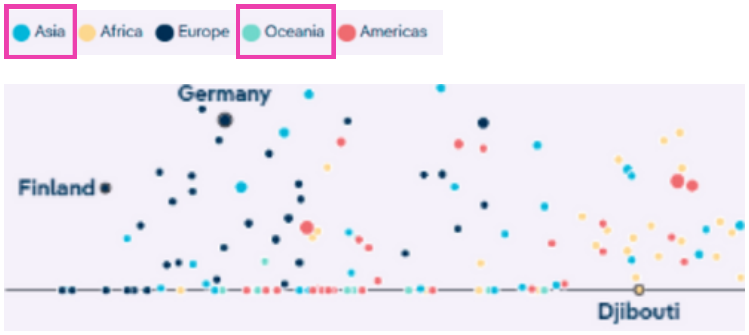
- The visualization does attempt to focus attention on clusters of countries based on their vulnerability scores. However, the method used does not stand out enough for me (as detailed below in section c).
- In my opinion, there is no clutter in terms of the content displayed on the visualization. My only issue lies with how the elements are presented.
- The visualization uses text sparingly, ensuring it is displayed only where space allows, while other details can be uncovered via tooltips in the interactive mode.

- The design aligns well with the CRAP principles, as noted earlier.
- For color-blind individuals without corrective lenses, this visualization could be highly problematic. The points are very small, making it challenging to distinguish between the similar colors. Here are some significant examples:

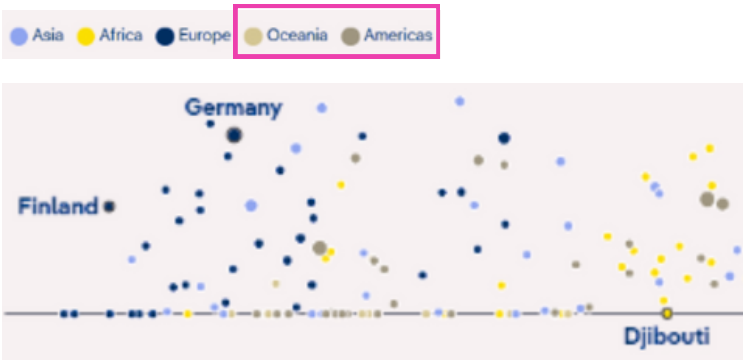
For people with Monochromacy/Achromatopsia:



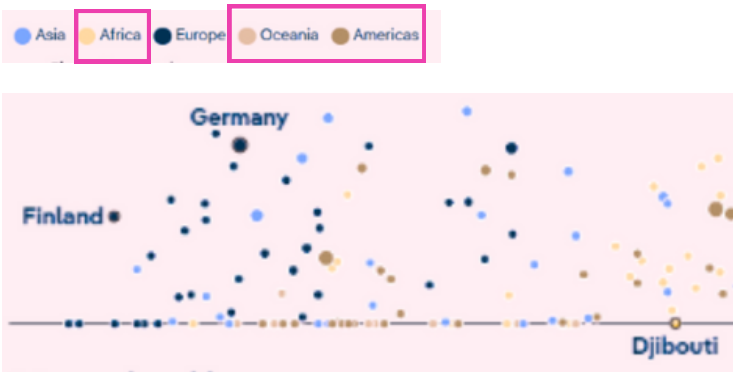
For people with Blue-Weak/Tritanomaly:



For people with Read-Blind/Protanopia:



For people with Green-Blind/Deuteranopia:



c) Overall, I don't think the visualization is bad, but when focusing on the message "Global South is more vulnerable to flood impact", I find it quite difficult to identify where the Global South and Global North are located within the visualization for verification.

Rather than categorizing the countries by continent, I think it would be better to use just two categories: Global South and Global North, using two clearly distinguishable, color-blind-friendly colors.

Moreover, for users who want to find their specific country, which is not labeled, it could take a lot of time. I recommend adding a filter list to the visualization (since it is already interactive anyway) so viewers can easily search for and highlight specific countries.