Building Inclusive Data Visualizations

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One of the ways that there is a continuing genocide against American Indians/Alaska Natives is through data. When we are invisible in the data, we no longer exist. When I see an asterisk that says "not statistically significant," or they lump us together with Pacific Islanders and Asian Americans, you can't lump racial groups together. That is bad data practice.

— Abigail Echo Hawk, Urban Indian Health Institute


Question for the Viewers

Have you ever seen a chart that seemed problematic or made you question its accuracy in relation to your understanding of the topic?

A. Yes  
B. No  
C. I’m not sure

NOTE: If you answered "Yes," please share details in the chat box.
Exercise

Task: Take a brief moment to open your web browser and complete an image search for the term "CEO."
We'll return to your results later in the presentation.

CEO

Data is Real Life

Data represents real life. It is a snapshot of the world, in the same way that a picture catches a small moment in time...

— Georgia Lupi, "Data Humanism, the Revolution will be Visualized"

Quote source: http://giorgialupi.com/data-humanism-the-revolution-will-be-visualized
Data in Real Life

Data try to represent **but are not** real people, places, or things.

**What do we do to data?**

- Clean
- Wrangle
- Normalize
- Prepare
- Tidy

**Survey Design Example: United States**

How is race defined in the US?
Consider someone who is Middle Eastern.

Source: U.S. Census Bureau - "Race". [https://www.census.gov/topics/population/race/about.html](https://www.census.gov/topics/population/race/about.html)
There is a long history of excluding categories like 'Arab' or 'Middle Eastern and North African' from government surveys... See, if you exclude those groups from the US Census, a lot of Arabs might feel like there's no choice but to tick the 'white' box, helping to artificially increase those numbers for political gain.

— Mona Chalabi


Identifying “Other”: Racial Minorities in Washington


...non-binary gender and data represents complicated terrain for computational applications for numerous reasons. But we have an ethical and empirical imperative to tackle this complexity.

— Catherine D'Ignazio

Source: A Primer on Non-Binary Gender and Big Data, MIT Center for Civic Media, June 3, 2016, https://civic.mit.edu/2016/06/03/a-primer-on-non-binary-gender-and-big-data/
Identifiable Data

When making data decisions, find a balance between being inclusive but also not identifying individuals.
We Are Always Making Choices

- Collaborate with others to include multiple perspectives
- Be transparent in the decisions that you make when you collect, analyze, and visualize data
- Put care into how you speak about and represent the people who have contributed to your data
- Share data with the community that you are working with along the way
- Develop a custom dataset that pulls in non-Western, BIPOC-centered data sources, primary and secondary data, etc.
- Create a guide that explains the limitations of the data and what other sources to consider

Standards

- Legal standards
- Funders' standards
- Ethical standards

✓ Visualizing responsibly and empathetically
✓ Understanding outcomes vs. intentions
✓ Remembering that data is not neutral

Considerations for Presenting Data

Selecting a topic

- Why are you selecting it?
- Who benefits from your work on this topic? Who may be harmed?
- Are you the right person to be doing this work?
Considerations for Presenting Data

Getting the data

- Whose labor went into gathering the data?
- What biases impacted the collection process?
- Who has control over the data? Does this conflict with who the data belongs to?

Considerations for Presenting Data

Cleaning the data

- Who cleaned the data?
- How did they clean the data?
- Who is made invisible, erased, or prioritized?

Quote from Bridget Cogley

One struggle in how we talk about data visualization is how we understand it: that goals, abstraction, and numbers intersect to make a whole. It’s not just for the mathy types, but for anyone who seeks to understand their world through data. It’s an artifact, one curated, logged, manipulated via calculations and comparisons, and finally sent out to the world as a message.

— Bridget Cogley

Source: Data Viz Philosophy: Better than Bar Charts, TableauViz Blog, December 1, 2020
Inclusive Practices

Question for the Viewers

Think back to your image search for the term "CEO." Do the images in the search results reinforce stereotypes?

A. Yes
B. No
C. I'm not sure

NOTE: If you answered "Yes," please share your thoughts in the chat.

Inclusive Design Choices: Images

- Images and other visual representations of people are not immune from inequities in other parts of society.
- They can reinforce harmful stereotypes, so if you search for an image or use an image that isn't yours, think critically about where and how it is used.
Inclusive Design Choices: Language

- Accessible and inclusive language applies to titles, labels you use
  - Example: CNN's 2020 election coverage
- Word order also matters
  - What the viewer sees can set the benchmark for what they compare to other categories

Inclusive Design Choices: Order

- What are your readers/viewers seeing first?
- What they see first can set the benchmark upon which they compare other categories
- Alternatives to categorizing by size: alphabetically, by stakeholder
- Who isn't represented? Who is misrepresented? Who is over or underrepresented?

Example: Population Size

Example: Alphabetical


Example: Stakeholder Group


Example: COVID Black

In "Homegoing Stories," COVID Black uses the following inclusive design principles:

▪ Focuses on stakeholder group (Black Americans)
▪ Sorts names alphabetically
▪ Focuses on human elements
Inclusive Design Choices: Space and Color

- Are you creating visual divides in a way that excludes or prioritizes one group over another?
- How much space something takes up and its color in a visualization can correlate to perceived importance or value
  - Example: Using grey to represent “other” devalues those in that group

Example: Impact of Color


Mapping, History, and Political Issues

- Who set the borders — both historically and in the design of the map?
- Who is missing in the labels?
- Who is made invisible?
Mapping, History, and Political Issues

"...I looked up multiple maps of India and have not yet had two sources show the same map. This is most likely in relation to the Kashmir conflict which has been ongoing for nearly seventy years now. I do not work for Tableau but I am not sure they as an organisation are going to be willing to take sides in this dispute. The maps that Tableau use come from OpenStreetMap..."

Source: Conversation in Tableau Community Forums (usernames not included for privacy), https://community.tableau.com/s/explore-forums

Accessibility

- Using "the least amount of ink on the page" can make it more difficult for screen readers
- Alternative text, color choices
- Designing around bandwidth
  - Example: Visualizations that require high bandwidth internet when your key population, community, or stakeholders do not have access to high bandwidth can make it difficult for them to access it

Accessibility: Color

How many times did you exceed your salary in January? "Help from a score-making perspective..."

Source: Mock data, chart created using Tableau
Key Takeaways

- Data and data processes do not always capture complexity and are not always inclusive.
- Whenever possible, work with your community on data collection and sharing processes.
- Mark any areas of uncertainty or data quality issues on a chart or in an accompanying note/guide.
- Consider the colors and language you use when creating charts. Are they inclusive? Do they prioritize or minimize any groups?
- Create more accessible charts by using multiple elements (such as shape and color) to communicate the information.
QUESTIONS?

Resources

Abigail Echo Hawk on the art and science of 'decolonizing data'
Crosscut article by Manola Secaira

Chartability (chart accessibility)
Frank Elavsky and Fizz Studio
[https://chartability.fizz.studio/](https://chartability.fizz.studio/)

COVID-19's Black's Homegoing Geographic and Category Data
Tableau Dataset by COVID Black
[https://public.tableau.com/app/profile/covid.black/viz/HomegoingGeographicandCategoryData/HomegoingStories](https://public.tableau.com/app/profile/covid.black/viz/HomegoingGeographicandCategoryData/HomegoingStories)

Data Feminism
Catherine D'Ignazio and Lauren F. Klein – The MIT Press
[https://datafeminism.mitpress.mit.edu/](https://datafeminism.mitpress.mit.edu/)

Data Humanism, The Revolution will be Visualized
Data Humanism – A Visual Manifesto by Giorgia Lupi

Indigenous Identity: More Than "Something Else"
Native Americans in Philanthropy