GENDER 101 COURSE

Module 4: Gender Data Visualization

Overview

Data visualization is the graphic representation of data. The purpose of data is to elucidate ideas, transfer knowledge or insight, or extract meaning about the domain from which the data is drawn. Raw data is hard for our human brains to understand. The human eye is, however, exceptionally good at scanning to find outliers and abnormalities and recognizing patterns. Therefore, visualization is a key step in the data lifecycle.

What is gender data visualization?

Gender data visualization is the graphic representation of gender data. Gender data visualizations are crucial in order to communicate your analysis to others. Specifically, gender data visualizations have the power to convince stakeholders for support. In order to raise awareness of your gender data analysis, you must create compelling and accurate visualizations.

Connections to our Case Study

Dr. Lopez wants to effectively share her analysis with her colleagues and other stakeholders. She ultimately wants to garner support, financial and other, to address the gaps and inequalities. She will create a visualization for her city's COVID-19 gender data. As she moves forward, she needs to know:

- What is her audience for her visualization?
- What is her message she wants to get across?
- What tool will she use to visualize her data?
- What are some existing visualizations that

Frameworks

Introduction to Frameworks

In our data viz journey, it's important to remember that our brains are wired to be pattern-making machines. Because of that fact, when putting together your visualization, it's critical to question these connections. It helps you focus your visualization on the facts – the who, what, when, where, why, and how. Here are some questions to get you started:

- Who is your viewer?
- What types of decisions does your viewer make? What information do they need? How will your data visualization add value?
- What is your viewer's digital literacy?
- What is your viewer's prior experience with data visualization?

Tufte's Rules

Ask not how a particular visualization medium can best display the data. Instead, analyze the datasets you have, first. Discover the story that it tells before you choose a visualization platform, which runs the risk of pre-specifying certain narratives of the data. Knowing what is important about the data to you, and, especially, to your audience, is perhaps the most critical step in developing a data visualization.

Here are his ten rules for data visualization:

- Show Your Data
- Use Graphics
- Avoid Chartjunk
- Utilize Data-ink
- Use Labels
- Utilize Micro/Macro

- Separate Layers
- Use Multiples
- Utilize Color
- Understand Narrative

Watch the video: https://youtu.be/RK0TSg6BU5s

Schwabish's Core Principles

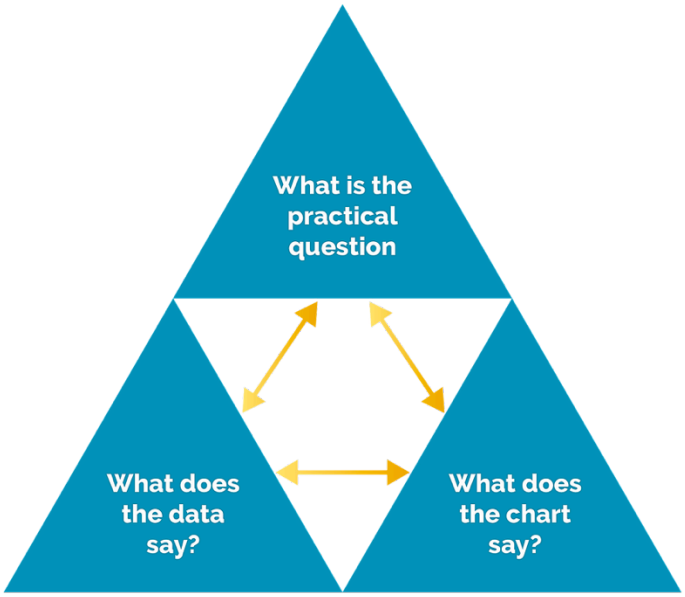
Jonathan Schwabish is a senior fellow at the Income and Benefits Policy Center at the Urban Institute. As an economist, he also specializes in data visualization and presentation design as a member of the communications team. He also hosts the PolicyViz Podcast, which focuses on data, open data, and data visualization. Download the Policy Viz PDF Cheat Sheet here.

Junk Charts Trifecta

The Junk Charts Trifecta Checkup is a general framework for data visualization criticism. It serves to organize the thinking behind data viz pieces by addressing three points of investigation:

- What is the QUESTION?
- What does the DATA say?
- What does the VISUAL say?

Junk Charts Trifecta Checkup



Ideally, the answer to these questions should be the same. Shared answers can be augmented by reducing noise and removing errors or transformations.
A data viz project needs a worthy and honorable cause. Create an interesting question for you audience, provoke their thoughts, and get their brains thinking about the story you are telling. But make it clear, try not to clog up the visual.

The data itself, as well as the visual elements, should be relevant to the question you've addressed above. In a clear and concise manner, let the data and the visual speak for your question.

Drawing from what we've learned from Tufte, the Junk Charts Trifecta recognizes the possibility of selecting the wrong graph or visual for your data because it doesn't answer your question. In using this framework, try to begin at the top, and work counter-clockwise. Learn more about this Trifecta!

Tools

Excel

With an estimated user base of 500 million people worldwide, many of us use Excel at work and personally for home budgets, projects, to-do lists, and more. That's because Excel makes it super easy to store, analyze, clean, and quickly visualize data.

Here is a link to a cheat sheet we put together for visualizing data in Excel

Other resources

- How to beautifully visualize M&E results in Microsoft Excel - https://www.ictworks.org/2015/01/26/how-to-beautifully-visualize-me-results-in-microsoft-excel/
- How to Make a Chart or Graph in Excel [With Video Tutorial]: https://blog.hubspot.com/marketing/how-to-build-excel-graph
- Beginner
    - Insert a line chart: https://www.youtube.com/watch?v=EDw1DS7Mvq0
    - Insert a bar or column chart: https://www.youtube.com/watch?v=mVayKprxtU8
    - Insert a stacked bar chart: https://www.youtube.com/watch?v=g4Z_Hgivg0U
    - Adjusting your bar chart's spacing: https://annkemery.com/adjusting-bar-chart-spacing/
- Intermediate & Advanced
    - Attractive Charts in Excel Every Time With Chart Templates: http://aea365.org/blog/dvr-week-jennifer-bain-on-creating-attractive-charts-in-excel-every-time-with-chart-templates/
    - Creating timelines with line charts: http://aea365.org/blog/angie-ficek-on-creating-timelines-with-line-charts/

- Visualizing descriptive statistics with dot plots: http://aea365.org/blog/angie-ficek-on-visualizing-descriptive-statistics-with-dot-plots/

Piktochart

Piktochart is a platform that generates beautiful, intuitive, and clean visuals for your data.

Canva

Canva is a simplified graphic design tool and website that allows those of us without much design sense to pass as graphic artists. It uses a drag-and-drop format and provides access to photographs, vector images, graphics, and fonts. It is used by non-designers as well as professionals. The tools can be used for both web and print media design and graphics.

Infogram

Infogram is a web-based data visualization and infographics platform. It allows people to make and share digital charts, infographics, and maps. Infogram offers an intuitive editor that converts users' data into infographics that can be published, embedded, or shared.

Tools for Geo-data

Geodata is what we use to create maps, regardless of whether it's for print or for the web. What makes geodata unique from other kinds of data are the existence of two important features: latitude and longitude. In its most basic form, you may see a latitude and longitude column in your tabular dataset, perhaps depicting addresses or other important points to add to a map.

kepler.gl

kepler.gl is a data-agnostic, high-performance web-based application for visual exploration of large-scale geolocation data sets. Built on top of deck.gl, kepler.gl can render millions of points representing thousands of trips and perform spatial aggregations on the fly.

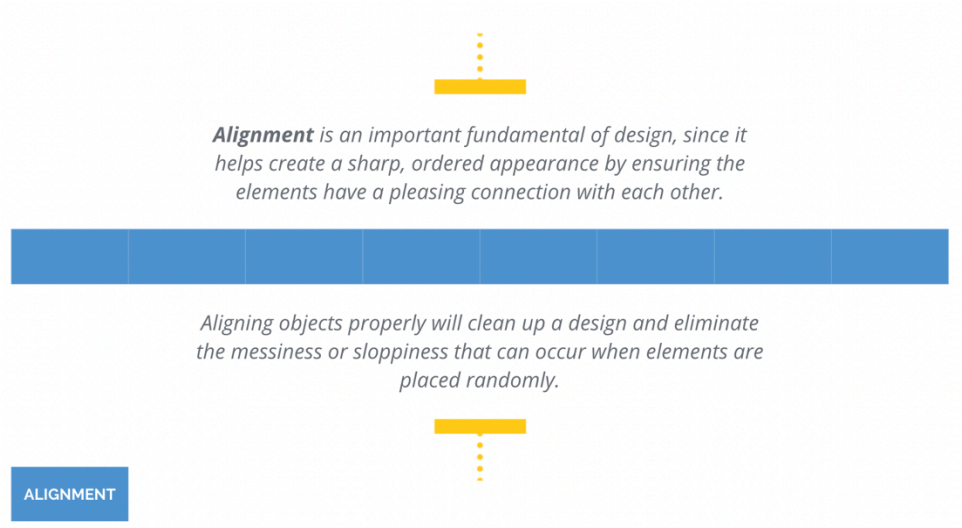
CARTO

CARTO is a software-as-a-service (SaaS) cloud computing platform that provides GIS, web mapping, and spatial data science tools. The company is positioned as a location intelligence platform due to tools with an aptitude for data analysis and visualization that do not require previous GIS or development experience.

Gender Data Visualization Design

This section explores techniques to employ for strong visuals. First, we will cover Gestalt's Principles, key elements to pay attention to when designing a visualization. Second, we will cover basic color theory. Lastly, we will go over fonts.

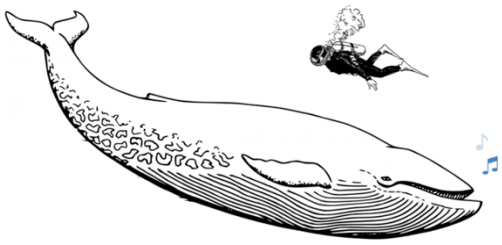
Gestalt's Principles



An attention-grabbing headline can do a lot for you

*But when you have multiple elements in a design, you want to make sure you're giving extra weight visually to your most important message. This is called **hierarchy** and it can be accomplished in a variety of ways—larger or bolder fonts, placing your most important message physically higher than other pieces of information, or using shapes to frame the focal point.*

A quote or highlight style might look like this.

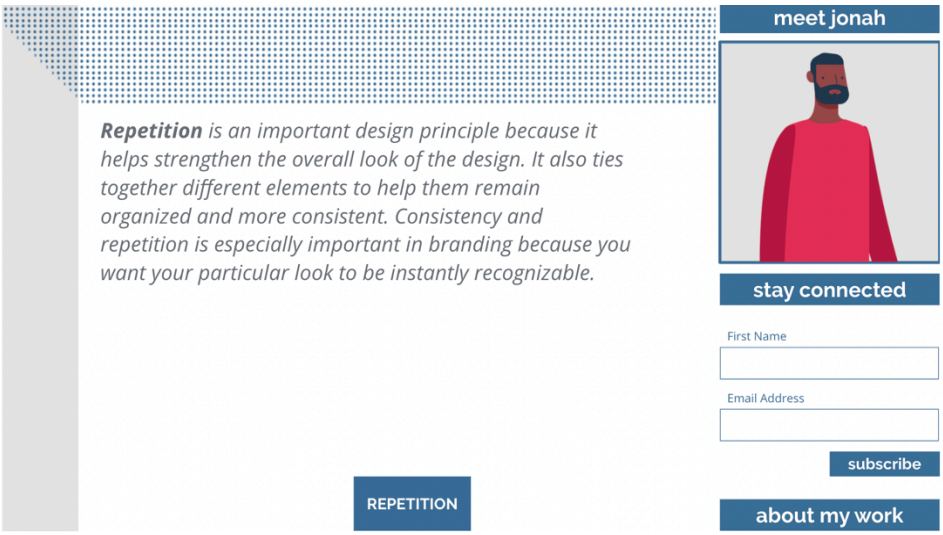


HIERARCHY

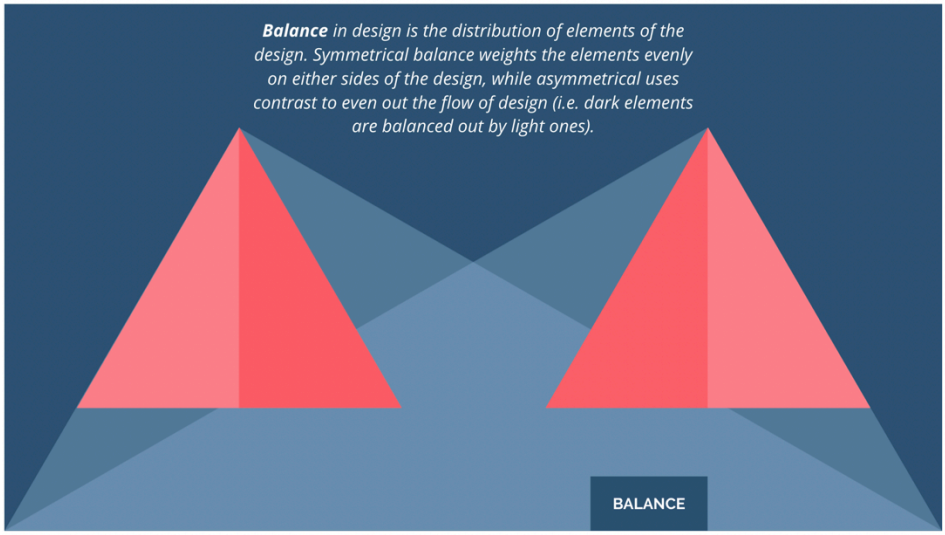
***Contrast** happens when two design elements are in opposition to each other, like black and white, thick and thin, or modern and traditional.*

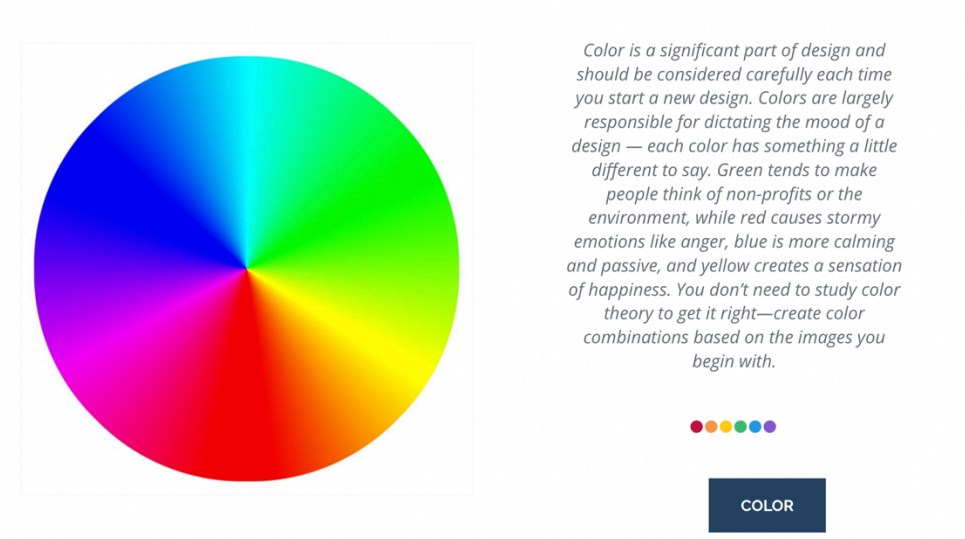
***Contrast** is an important principle of design because it lets you draw out the most important elements of a design and add emphasis.*

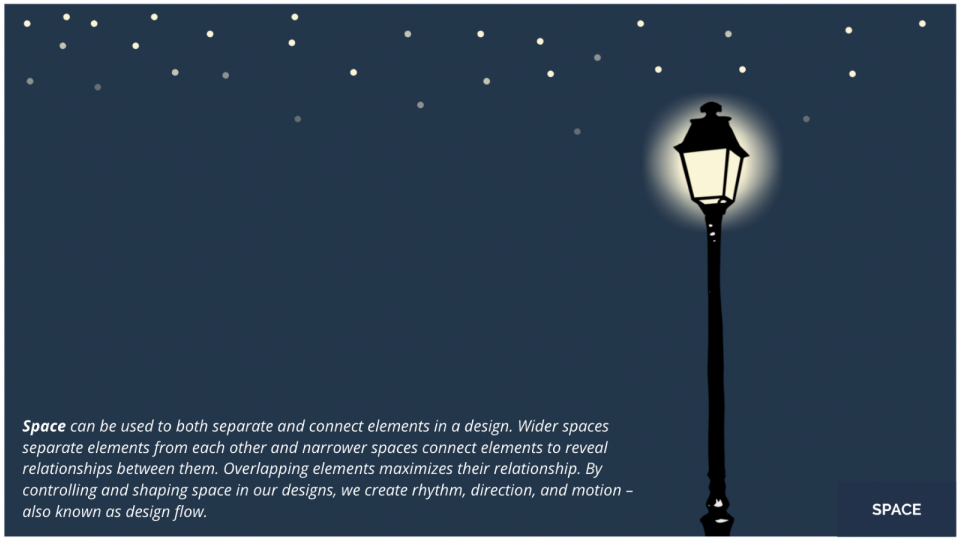
CONTRAST


meet jonah
Repetition is an important design principle because it helps strengthen the overall look of the design. It also ties together different elements to help them remain organized and more consistent. Consistency and repetition is especially important in branding because you want your particular look to be instantly recognizable.
stay connected
First Name
Email Address
subscribe
REPETITION
about my work


The principle of proximity is simply the process of ensuring related design elements are placed together. Any unrelated items should be spaced apart. Close proximity indicates that items are connected or have a relationship to each other. They become one visual unit, which helps to organize or give structure to a layout. White space is important to emphasize important elements, as on this business card.
Design
Design Learning Studio
Graphic Design
+ Art Direction
Jonah Techchanger
Tel 555.867.5309
jonah@designlearningstudio.org
designlearningstudio.org
Learning
Studio
PROXIMITY


Balance *in design is the distribution of elements of the design. Symmetrical balance weights the elements evenly on either sides of the design, while asymmetrical uses contrast to even out the flow of design (i.e. dark elements are balanced out by light ones).*
BALANCE


Color is a significant part of design and should be considered carefully each time you start a new design. Colors are largely responsible for dictating the mood of a design — each color has something a little different to say. Green tends to make people think of non-profits or the environment, while red causes stormy emotions like anger, blue is more calming and passive, and yellow creates a sensation of happiness. You don't need to study color theory to get it right—create color combinations based on the images you begin with.
COLOR

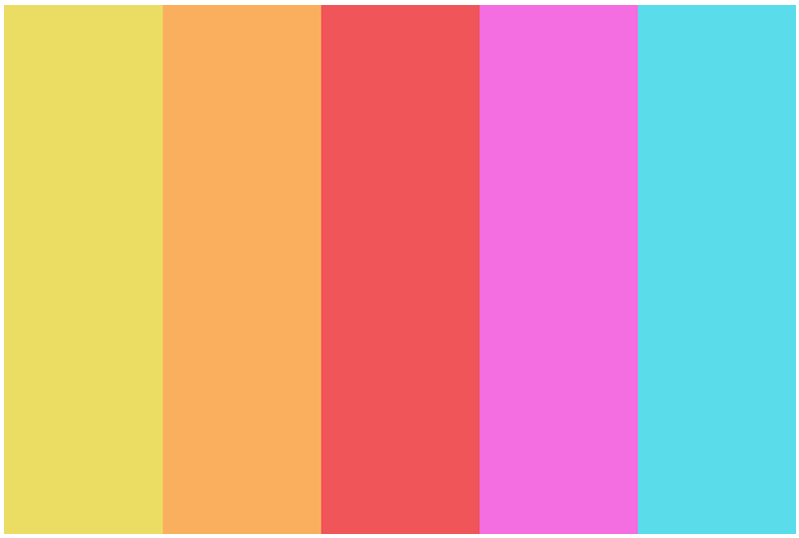


Color

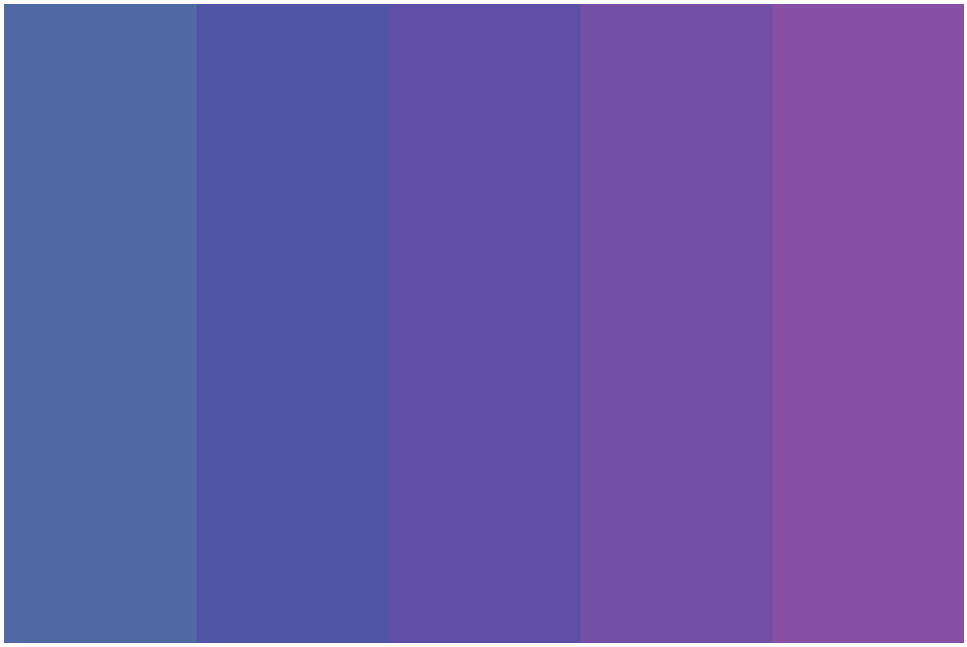
Visual variables are “the differences in map elements as perceived by the human eye” (wiki.gis.com).

Jacques Bertin proposed color recommendations for different data types.

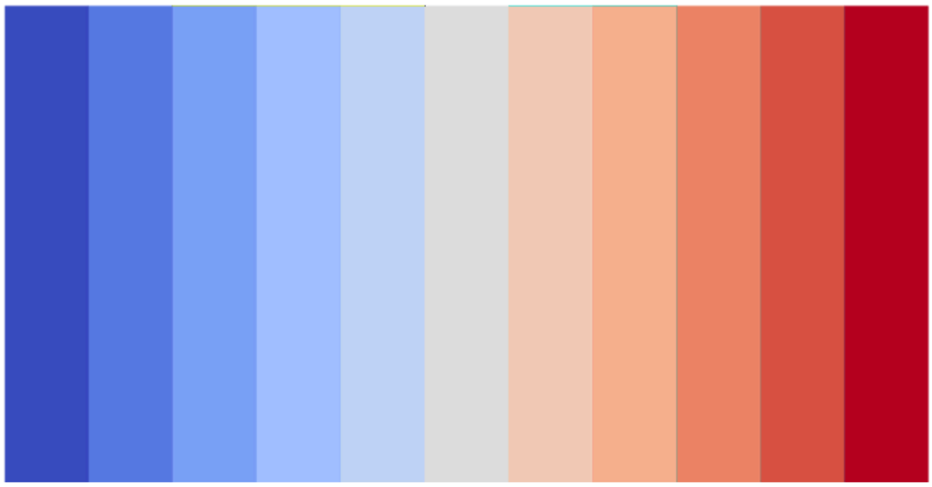
Hue naturally encodes categorical data:



Contrast/saturation can encode both ordinal and quantitative data:



And, putting both together, we can encode quantitative data with what's known as a divergent scale, where there's a central value (often 0), and values on either side of it have meaning.



In addition to basic design principles, it is also important to make informed color choices.

Recommended resource: [An alternative to pink & blue: Colors for gender data]

https://youtu.be/QLIPVOYg9Ws

Activities

COVID-19 Visualization Critique

1. Watch the video below with Dr. Joel Selanikio on Truth, Lies, and Data Visualization in the Era of Coronavirus.
2. Read An alternative to pink & blue: Colors for gender data
3. Choose a visualization (just one chart, graph, etc.) from the following sources:
    a. UN Women's COVID-19 Gender Indicator Dashboard
    b. UNHCR's COVID-19 deepens threats for displaced women and children
    c. United States Vaccine Dashboard
    d. Choose your own!
4. Answer the following questions:
    a. What does the data visualization(s) do well? Many of the examples have more than one visualization, please be specific in your answer.
    b. Choose a framework: Tufte's Framework, Schwabish's Core Principles, Junk Chart's Trifecta, write 3-6 sentences about how the visualization incorporates or doesn't incorporate the elements of the framework.
    c. What is one thing you could do to improve the visualization?

Final Project Brainstorm

Recall that in order to receive your course certificate, you must complete a final project. Your final project could be any of the options provided in the orientation session. This is also the first time we're able to offer this unique, never-before-seen gender case study from Career Nub with open data from the World Bank Data Bank that supports

data.org's gender-centered approach for people who identify as women working in the DSI ecosystem.

This course is meant to be as applicable to your day-to-day work as possible. Therefore, the final project options are meant to be open ended. Additionally, there is no limit to final project partners you may have.

In the discussion thread, you may optionally post the following to hold yourself accountable, receive feedback from peers, and/or find final project partners to complete the course together.

- What type of final project do you plan on completing?
- Please detail your desired plan in 2-5 sentences.
    - Would you like to a partner or partners to complete it with? What are you looking for in a project partner (consider background, timezone, and compatibility in course goals).
- Any additional information (e.g. contact information).