

Exercise: Graph Design (Networks)

[Last revision: Apr. 2020]

In this assignment, you have to design visualization solutions for questions related to the AidData dataset. This dataset contains information about financial transactions for aid purposes between two countries. Given the data structure and analytical questions presented below, your goal is to sketch views that would help an analyst to obtain the answer for those questions.

Dataset

In the AidData dataset, each row represents a financial transaction between two countries. The dataset contains the following attributes:

- **Year:** year of the commitment
- **Donor:** country providing the financial resource
- **Recipient:** country or organization receiving the money
- **Commitment Amount:** the total amount of financial resources provided
- **Coalesced Purpose Name:** the purpose of the transaction

Below is an example of the data:

Year	Donor	Recipient	Commitment Amo...	Coalesced Purpose Name
1996	United States	Peru	19,085,570	Radio/television/print media
1996	United States	Brazil	272,863,443	Energy generation and supply, purpose unspeci...
1996	United States	Argentina	34,107,930	Power generation/non-renewable sources
1996	United States	Argentina	68,215,861	Power generation/non-renewable sources
1996	United States	Argentina	73,788,687	Power generation/non-renewable sources
1996	United States	Argentina	102,323,791	Power generation/non-renewable sources
1996	United States	Argentina	115,966,963	Power generation/non-renewable sources
1996	United States	Bolivia	27,286,344	Power generation/non-renewable sources
1996	United States	Bolivia	150,074,894	Power generation/non-renewable sources

**Note: The full dataset has many more columns and it also includes international organizations other than countries. The description here focuses only the attributes and entities (countries) relevant for the assignment.*

You can find a (simplified and reduced) copy of the data here:

https://drive.google.com/open?id=1YiuHdfZv_JZ-igOemKJMRaU8dkucfmHxOP6Od3FraW8

You can find the full dataset with descriptions here:

<https://www.aiddata.org/data/aiddata-core-research-release-level-1-3-1>

Goal

Your goal is to create 3 independent visualizations of the same data set, each one with the intent of answering the questions stated below. For each numbered visualization, you should be able to create a data visualization that answers **all** of the questions specified.

- **Visualization 1:** Create an overview of the relationships between countries so that it is possible to see who donates to whom and how much. The main question one should be able to answer is: who are the major donors and to which countries do they donate the most and how much? And conversely, who are the major receivers and which countries do they receive from the most and how much? We only care about the top 10 recipients and the top 20 donors over time for this question.
- **Visualization 2:** Considering only the top 5 purposes of donation, how does the relationship between countries look like in terms of purposes? What composition of purposes do the donations between each pair of countries have? Are there countries that donate to a given country using multiple purposes? Or do countries always donate using one single purpose when donating to another country? The same as the previous question, we only care about the top 10 recipients and the top 20 donors here.
- **[OPTIONAL] Visualization 3:** For this last exercise you have to extend the analysis above to see how the patterns of donations change over time. Focusing again on the top 10 recipients and top 20 donors how do the patterns of donations (who donates to whom and how much) change over time? Are there sudden changes? Are there countries that always donate to other countries? Are there major shifts (say a country used to donate to a specific set of countries and then it changes to other countries)?

Instructions

For this assignment, your goal is to come up with effective visualization designs to answer the questions posed and to communicate their answers found in the data.

Your coded solutions must use D3 and not other visualization libraries. Also, your final submission **will not be on Observable**. Instead, you will make a website using HTML, CSS, and D3 + JavaScript. You can find a project template in the [info-vis-project-template GitHub repository](#).

Submissions for the mini-projects are split between two weeks.

Week 1:

- Submit one or more sketches that show your thinking about these problems. You can hand draw your sketches or use some drawing software.
- For each visualization problem you are encouraged to submit more than one solution. When you do that make sure to explain what are advantages and disadvantages of the proposed solutions.
- If you submit only one sketch then add only a single justification for your design and why you think it works for the problem assigned.
- NOTE: if you feel comfortable submitting draft solutions in D3 at this stage already it is totally fine to submit them in place of sketches.

Week 2:

- Submit a screenshot for each visualization you developed in D3.
- Note it is still ok in this final phase to submit more than one solution for a given visualization problem if you think there are some competing solutions that work well.
- Together with the screenshot, submit a zip file containing the code for your website.