Mini Project 2 – AID DATA(TIME)

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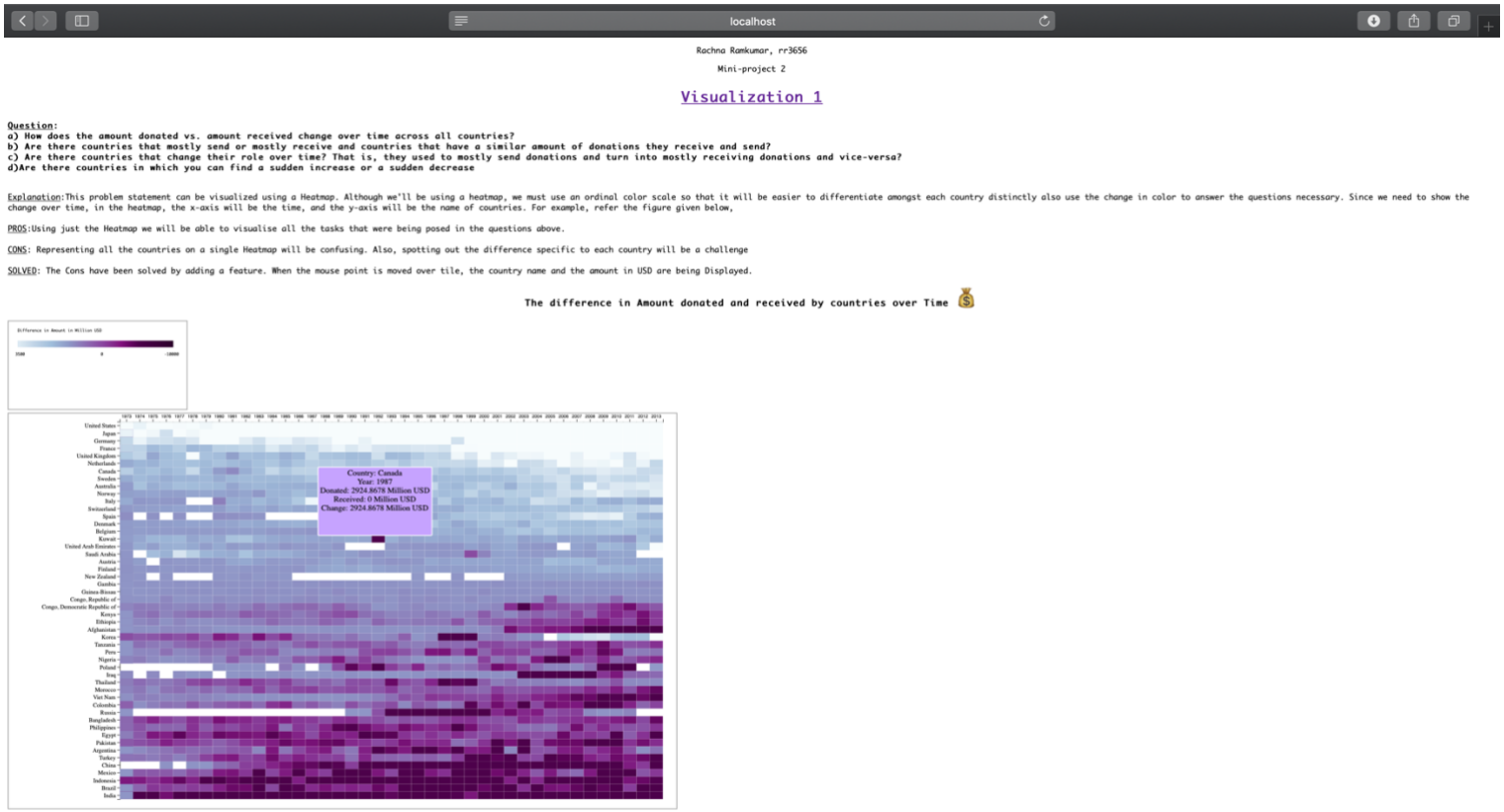
1. **a) How does the amount donated vs. amount received change over time across all countries?**
   b) Are there countries that mostly send or mostly receive and countries that have a similar amount of donations they receive and send?
   c) Are there countries that change their role over time? That is, they used to mostly send donations and turn into mostly receiving donations and vice-versa?
   d) Are there countries in which you can find a sudden increase or a sudden decrease

SOLUTIONS :

A.

This problem statement can be visualized using a Heatmap. Although we'll be using a heatmap, we must use an ordinal color scale so that it will be easier to differentiate amongst each country distinctly also use the change in color to answer the questions necessary. Since we need to show the change over time, in the heatmap, the x-axis will be the time, and the y-axis will be the name of countries. For example, refer the figure given below,



PROS : Using just the Heatmap we will be able to visualise all the tasks that were being posed in the questions above.

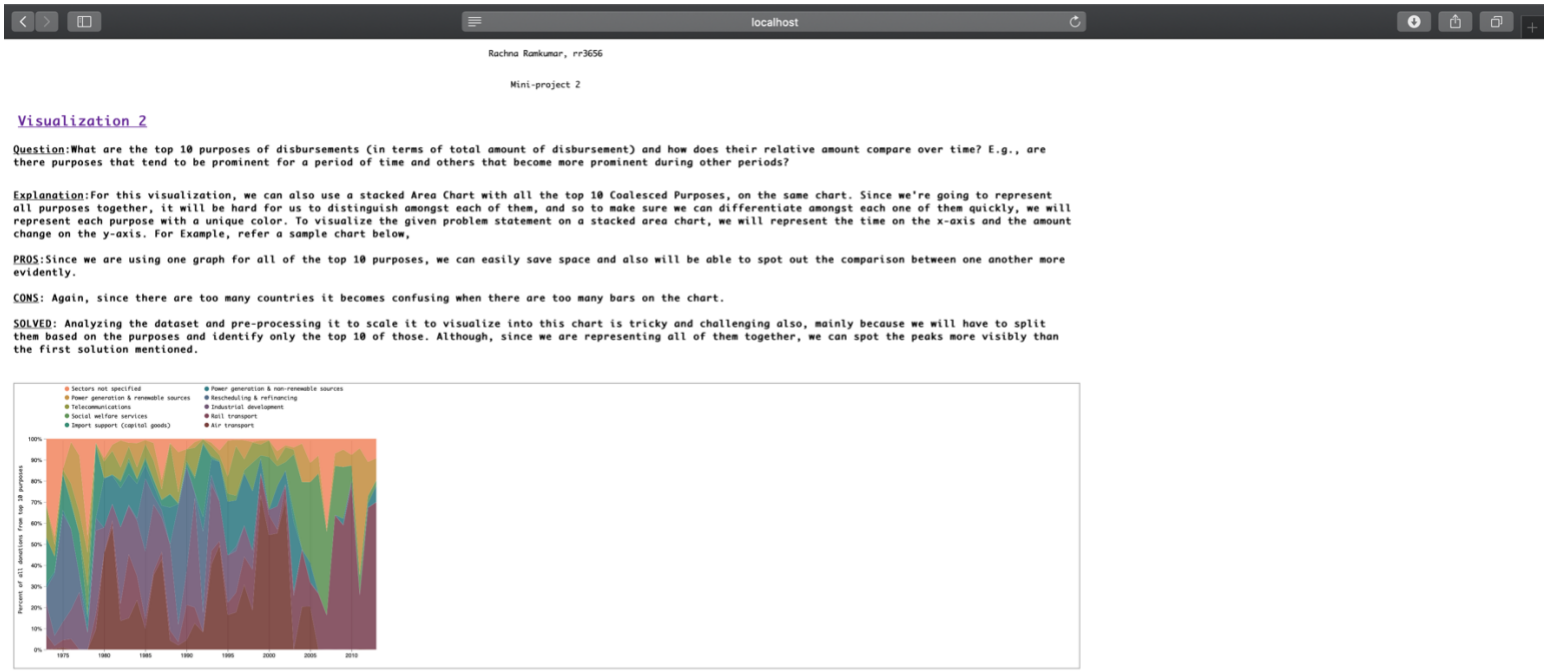
CONS : Representing all the countries on a single Heatmap will be confusing. Also, spotting out the difference specific to each country will be a challenge.

2. **Focus on the top 10 “Coalesced Purposes” of donations (in terms of amount of disbursement across all countries and all time). What are the top 10 purposes of disbursements (in terms of total amount of disbursement) and how does their relative amount compare over time? E.g., are there purposes that tend to be prominent for a period of time and others that become more prominent during other periods? Hint: looking at the graph one should be able to observe: “Ah! During these years donations were mostly about X but then there were way more donations about Y”.**

SOLUTIONS :

A)

For this visualization, we can also use a stacked Area Chart with all the top 10 "Coalesced Purposes," on the same chart. Since we're going to represent all purposes together, it will be hard for us to distinguish amongst each of them, and so to make sure we can differentiate amongst each one of them quickly, we will represent each purpose with a unique color. To visualize the given problem statement on a stacked area chart, we will represent the time on the x-axis and the amount change on the y-axis. For Example, refer a sample chart below,



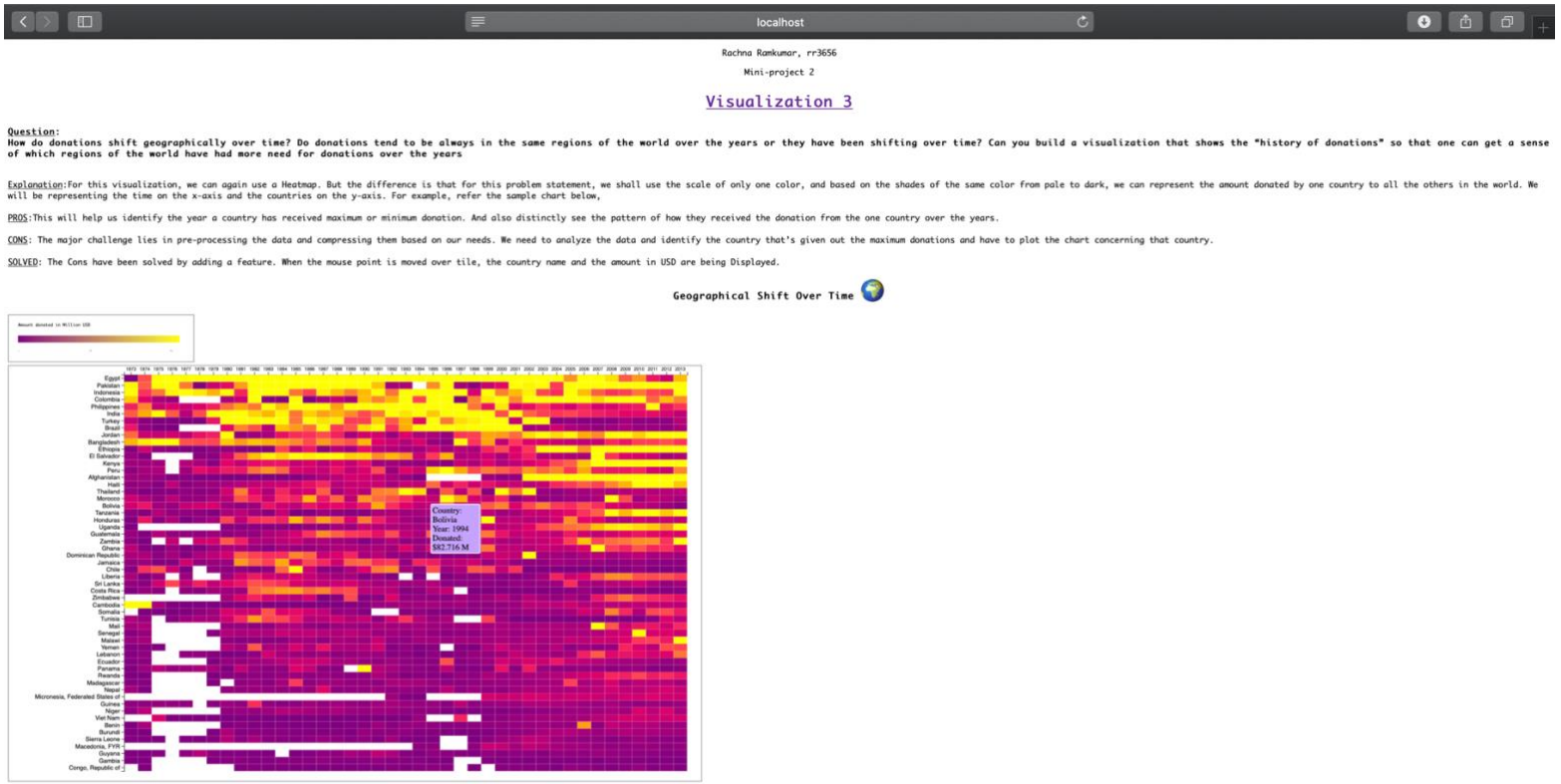
PROS : Since we are using one graph for all of the top 10 purposes, we can easily save space and also will be able to spot out the comparison between one another more evidently.

CONS : Analyzing the dataset and pre-processing it to scale it to visualize into this chart is tricky and challenging also, mainly because we will have to split them based on the purposes and identify only the top 10 of those. Although, since we are representing all of them together, we can spot the peaks more visibly than the first solution mentioned.

3. **Focusing exclusively on countries that receive donations, how do donations shift geographically over time? Do donations tend to be always in the same regions of the world over the years or they have been shifting over time? Can you build a visualization that shows the "history of donations" so that one can get a sense of which regions of the world have had more need for donations over the years? Note 1: for this visualization you can, if you wish, use interaction (but you don't have to). Note 2: For this exercise you may want to review the lecture on geographical visualization in which we explain how you can visualize geographical data over time. Note 3: if you want you can aggregate data over a few years (say, group together data at 5 year intervals).**

SOLUTIONS :

For this visualization, we can again use a Heatmap. But the difference is that for this problem statement, we shall use the scale of only one color, and based on the shades of the same color from pale to dark, we can represent the amount donated by one country to all the others in the world. We will be representing the time on the x-axis and the countries on the y-axis. For example, refer the sample chart below,



PROS : This will help us identify the year a country has received maximum or minimum donation. And also distinctly see the pattern of how they received the donation from the one country over the years.

CONS : The major challenge lies in pre-processing the data and compressing them based on our needs. We need to analyse the data and identify the country that's given out the maximum donations and have to plot the chart concerning that country.

References :

1. www.stackoverflow.com
2. https://www.d3-graph-gallery.com/heatmap
3. Observable Notebooks

NOTE : THE SCREENSHOTS ARE ATTACHED IN THE INDIVIDUAL FILES AS WELL.