5048 Assignment 2:Individual Part

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I. Non-visualisation Part

A. document management

In this group task, I was responsible for the document editing, typesetting and illustrations of Question 2, and made modifications according to the corresponding suggestions.

B. literature survey

I conducted an active and in-depth study on the classification results of Question 2, and tried to explain the reasons why the change trends in these countries are similar. Through such research, our group gained an in-depth understanding of the significant impact of development patterns and socio-political factors between countries on economic development and carbon dioxide emissions. For example, there are a lot of gaps in the data of some countries because these countries happened to be independent or went through the process of disintegration in the corresponding years. The trough changes in a country are due to these countries.

C. deriving visualization application

In the process of displaying the results of Q2 classification, I added many interactive operations to make the image more intuitive and obvious. For example, I adjust the filter in a line chart so that countries can be displayed individually or combined to show their changes. Also, I add interactive operations to the dashboard so that the map and line chart can change at the same time.

II. Visualisation Part

A. data selection

Initially, four indicators, CO2-GDP, CO2-GDP PPP, CO2-POP and CO2-TES, were used for analysis. However, our team has a dispute over whether to use CO2-TES as an indicator. I think this indicator also counts changes in carbon dioxide emissions with energy consumption, and in many cases, energy consumption has a strong correlation with social and economic development. However, others in the team believe that this relationship is not direct enough and cannot clearly reflect the changing trend of carbon dioxide emissions with socioeconomic factors. Therefore, in the end we did not choose this indicator to observe the study.

B. visual design

After the group determined the selected data, I initially planned to use scatter plot showed in Fig.1 to express the changing trends of each country, using different colors to represent different countries, using year as the horizontal axis, and three socioeconomic indicators as the vertical axis.

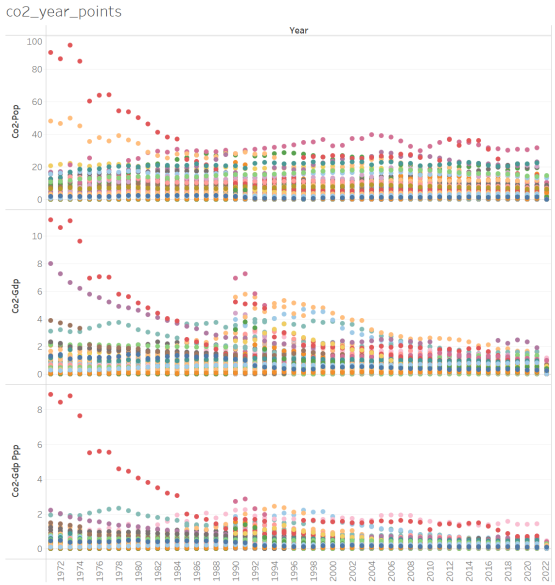

Fig. 1. scatter chart

However, after a simple attempt, it was found that the scatter plot can neither effectively display the carbon dioxide emission trend of a certain country, nor can it identify groups of countries with similar emission trends. Therefore, I switched to a line chart to express the trend. The coordinate axis remains unchanged and different colors are still used to represent different countries. In order to observe the changing trend of each country individually, I also added filters to the chart for better display. Trends in each country are clearly visible in the improved visualization. Groups of countries with similar trends can also be roughly distinguished in the figure.

Through further research on the country's changing trends and classification of different national conditions, I divided the overall countries into seven categories. In order to display the changing trends of the seven categories of countries separately, I set up multiple groups in Tableau and used this data to color

Fig. 2. one of 7 trends

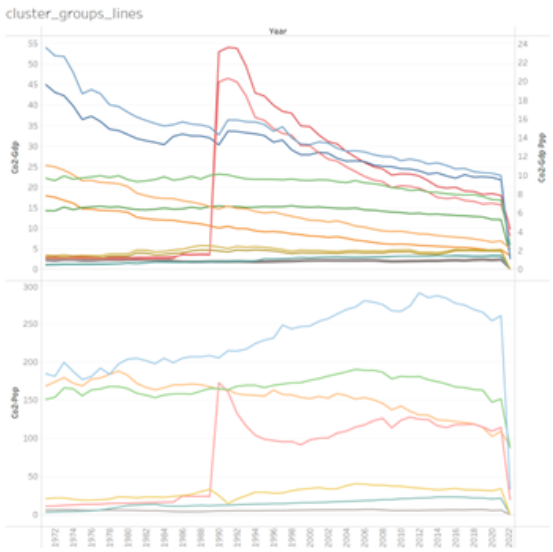

Fig. 3. 7 trends

the line chart to more clearly display the changing trends of different categories. The pictures are shown as Fig.2 and Fig.3.

C. evaluation process

I am responsible for the design of the questionnaire for this visualization, which is used to evaluate our visualization results. The main people for our questionnaire are the students around us, allowing them to evaluate our visualization effects in various aspects. We wanted to use the survey to see if our visualizations and interactive actions could make it easier for others to see patterns in their data. In addition, we also want to get ideas and suggestions for improvements from multiple perspectives. For this purpose, I designed 5 questions for the corresponding visualization of the three questions, four of which are closed questions, used to evaluate whether the visualization is intuitive and easy to understand, and the last one is an open question, used to collect specific details on modifying the visualization. suggestion.

After the team completed the survey, I summarized the survey results and obtained the final questionnaire results. We then each modified our visualization designs based on this survey.

D. improvement process

From the results of the questionnaire survey, we can find that although my line chart clearly shows the classification results and corresponding trends, it does not know which countries are classified into the same group. Therefore, to make it more obvious which category a country belongs to, I added a map showed as Fig.4 to the dashboard, colored the countries according to the category they belonged to, and added line charts and interactive actions on the map. By clicking on a category, the corresponding country location in the map and the discount trend below are highlighted at the same time, thus achieving the purpose of displaying the classification results clearly and intuitively.

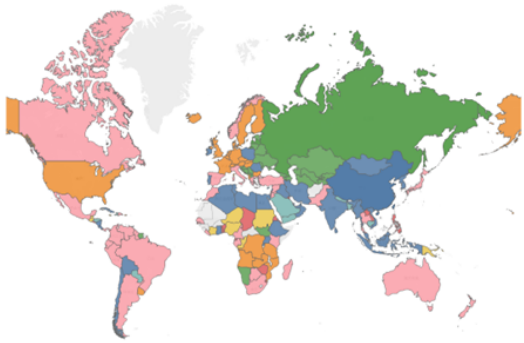

Fig. 4. map results

III. Conclusion

In this visualization group assignment, I not only skillfully used the visual design function of tableau explained in class, but also realized the importance of interactive visualization. When only showing multiple static visualization images to others, although I can express For the purpose of visualization, the images lack connection with each other, and it is not easy to observe the impact of different properties on each other. After adding interactive visualization, we can not only make our display clearer by linking multiple images, but also be able to handle the display of more content excellently, and also allow the audience to make their own discoveries through exploring the visualization.