Economics of Asylum Countries

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1 Dataset Description

(a) **Refugee Dataset | (Link) :** United Nations High Commissioner for Refugees (UNHCR) dataset consists of records documenting the of refugees across the globe. It provides on statistics of refugees including their country of origin, the country they seek asylum in, and the country they departed from along with the year. This dataset is maintained by the UNHCR to enable the monitoring, analysis, and management of refugee populations worldwide. For our analysis, we focus on examining the country of origin and the destination country where individuals seek asylum.

(b) **Economy Dataset | (Link) :** The World Economic Outlook (WEO) Database serves as a valuable resource for assessing the economic conditions of countries. This database enables users to access a wide range of economic indicators, including Gross Domestic Product (GDP), employment and unemployment rates, and debt levels.

2 Significant Aspect

(a) **Refugee Dataset :** We primarily emphasize two key columns in our analysis, the country of origin and the country of asylum and the count for the same. As the UNHCR dataset exclusively contains outgoing refugee statistics, we have curated our own dataset to complement this data. That is, using this dataset we construct an incoming dataset to enable thorough analysis.

(b) **Economy Dataset :** Considering the WEO dataset, our analysis will primarily concentrate on the following aspects (the parenthesis consists the code based on WEO nomenclature):

i. Gross domestic product (GDP): Data Representing GDP of each country

ii. Per Capita Income for Current Prices (PPPC): Indicates the average income per person in each country in US Dollars.

iii. GDP based on Purchasing Power Parity (PPPGDP): Compares currency values based on purchasing power across countries.

iv. Debt as Percentage of GDP (GGXWDN_NGDP): Tracks the trend of debt relative to GDP.

v. Unemployment Rates (LUR): Shows the percentage of unemployed individuals in the labor force.

vi. Inflation Rate (PCPIPCH): Represents the rate of change in prices over time.

Note: The python notebooks for extracting the above data is in the `/data` directory, Within this directory, `/inputs` contains the original dataset, while `/outputs` contains the modified version that we are utilizing.

3 Visualizations

(a) **Geo-Map/Choropleth Map** The choropleth visualization of the world shows three different data for each country - number of incoming refugees, number of outgoing refugees, and the net difference in population due to it. The marks used in this visualization are the svgs for each country, and the channel used is the saturation - darker implies more number of refugees. There is an option of shifting to greyscale as well which uses luminance to show the same. A slider is provided to be able to choose the year for which one would want to see the data. This is useful as it can also be used to link these changes with major world conflicts. On hovering over a country, one can see the relevant statistics like country name, year, and the content type selected.

(b) **Country-Page** The country page offers a regional view specific to the country chosen from the GeoMap.

i. **Country Map** - A map of the country chosen (the mark) which uses channels like color saturation to show the data like number of incoming refugees, outgoing refugees and net difference in population from it. This visualization also uses a drop down menu to choose type of data and a slider to choose the year.

ii. **Bar Chart** - A bar chart, where the bars are the marks and the channels are the horizontal position to show year and length of bar to show value of the data selected. The drop down menu allows the user to choose the economic aspect to visualise like GDP, per capita income for current prices, etc. Hovering over a bar enables a tooltip to show the exact value.

iii. **Line Chart** - A line chart with three types of data shown simultaneously, unemployment rate, inflation rate, and debt as percentage of GDP. The marks for the line graph is the point corresponding to each data point and the line joining them. The channels used are color as categorical channel to identify which line is for which data, x position to show the year for the datapoint, and y position to show the value of the datapoint.

4 Visual Designs

Here are the chosen visual channels for presenting our data:

(a) **Geo-Map/Choropleth Map**

i. **Global Perspective:** Geo-Map offering a global perspective, making it easy for the historians to see how refugee populations are distributed across different regions of the world. This can help to highlight areas where refugee crises are most severe or where refugee populations are particularly large. This component of our visualization resides in the home page.

ii. **Regional Perspective:** A Country-Map provides a visual representation of data that allows the users like historians to quickly grasp patterns and trends for every country. By using the channel color saturation to represent changes in refugee populations, one can make it easy for the historians to see where refugee populations are increasing or decreasing over time. This component along with the remaining components of our visualization can be seen on clicking a particular country.

(b) **Bar chart:**

i. **Clear Comparison:** Bar charts make it easy to compare values across different years. Each bar represents a distinct time period, allowing the users like economists, foreign affair enthusiasts etc to quickly identify trends, peaks, and troughs in the data.

ii. **Suitability for Discrete Data:** Since years are discrete data points, bar charts are well-suited for representing this type of data. Each bar corresponds to a specific year, and there are clear separations between adjacent bars.

iii. **Emphasis on Individual Years:** Bar charts emphasize the values of individual years, making it straightforward to see how a specific parameter of the economy has changed over time.

(c) **Line chart:**

i. **Comparative and Correlation Analysis:** A line chart allows for easy comparison and correlations between multiple variables over time. By plotting all three indicators unemployment rates, inflation rate , debt as percentage of GDP on the same chart, economists, foreign affair enthusiasts etc can quickly see trends and patterns across different aspects of the economy changing over the years.Other visualizations such as bar charts or pie charts are less effective at comparing and correlating variables over time for multiple variables.

ii. **Visual Clarity and Trend Identification:** Line charts provide a clear visualization of trends and patterns over time. Each indicator can be represented by a different colored line, making it easy to distinguish between them. This clarity helps the user studying the visualization to understand the relationships and correlations between the variables.

iii. **Contextual Understanding:** Viewing multiple indicators together provides context for understanding economic conditions. For example, the economists,

foreign affair enthusiasts etc can see how changes in unemployment rates correspond to changes in inflation or debt levels, providing a more comprehensive understanding of the economic landscape.