Population Presentation

Dario: Good evening Instructors and fellow classmates, today we will share our website that we prepared that takes a deep dive into the worlds population. When choosing our topic, my group members and I wanted to find something that had a lot of information to draw from. Our plan was to create an interactive map that showed all the countries of the world along side a dropdown menu where the user could select from the top 10 countries of the world and obtain information on them. We used the website “worldometers.info”, “data.worldbank.org” and received inspiration from “worldpopulationreview.com”. Using these websites and methods we learned in class, we scrapped the data we needed in order to build our website. We used pandas, jupyter notebook and python code to scrape and organize the data in order to make it easily accessible for us to call to it when needed. Once the data was obtained and in easily accessible excel sheets, we then used “SQLiteDatabaseBrowser” to create our SQLite databases. “SQLiteDatabaseBrowser” was given to me by one of my tutors and came highly recommended. Once I learned how to use the program, creating databases were a breeze and I highly recommend other students use this method going forward. The program is easy to navigate, you simply import the excel files you wish to use and it creates all the tables based on the columns you have. You can make changes after, but I found it easier to do all the necessary cleanup to the columns on pandas prior to running them through this system to create the Databases. Once we had our databases it was on to the next step of creating our HTML and website as a whole.

Brett: Using the skills obtained in the previous module for mapping and geojson files, I created an interactive world map to appear. As you can see, when hovering over each country, an outline shows and the selected country is than gray'ed out. I acheived this visualization through the use of polygons for each "marker". I used a pre-existing geojson database for the coordinates of each country and created a tile layer for the world map, which as you can see, is located in the top right quadrant of the html webpage.

Since the pre-exisiting geojson library only contained the names of every country and the coordinates required to map the outline, I had to create a new database to retrieve other information required. I merged csv files using jupyter-notebook that were found online with the statistics for the categories we wanted to cover. Each countries' current population as well as feritility rate, median age, land area, yearly percentage population change and the net change of population. Once the dataframes were merged successfully, using SQLite/SQLAlchemy and flask api's by running a python file, all the world population data was ready to be accessed. The next step in our project was to create the drop down menu on the webpage.

Justin: Using the previously mentioned Databases, we started work on the drop down menu. The most difficult part in this step was visualizing the process needed to attach the correct data to the drop down menu. Conveniently the d3 Javascript library possesses all the needed functions and tools to do so. First a constant variable was set along with d3.select() to store the menu’s id which was held as a “select” element in our html code. Then a simple list was made to store the names of the top 10 most populous countries. Next, an arrow function was performed for each country in the list using .forEach() to append text of each option element in the html select elements, which are now the countries names. Finally the dropdown menu variable was given an event listener .on(‘change’) to perform the newChange() function, which is responsible for building charts and setting the population info based on the selected country or in other words a change to the drop down menu. Once the drop down was running, with the ability to call on whichever country the user selects, 3 visualizations were present. A bar graph, a line graph and a pie chart. We selected these visualizations for the fact that they create a very easily digestible method for interpreting the data. Some of the conclusions that came from analyzing the line graph are that due to the slowing down of China’s year over year population growth, as of the 2023 numbers India is now the worlds most populous country. This makes sense when we factor in that based on our data, China’s fertility rate has been in decline since 1965.Furthermore, the country with the highest relative population growth is Nigeria, shown with the strong positive curve in their data. Seeing that Nigeria is the only country on the top 10 list with a positive yearly percentage change in population above 2% since 2015 and has maintained a fertility rate above 5 since 1955 at least, we can infer with confidence as to why their population growth has been the way it is. To round off our visualizations, a well constructed bar graph and pie chart were designed.

Rebeca: In order to create the bar graph and pie chart, I first had to amend the size of the containers as well as the sequence of the demographics table on the top-left hand side of the webpage as well as the 3 visualizations that you see at the bottom of the page, that is the bar graph, line plot and the pie chart. This change was done through the HTML code, which once it was successfully altered, the layout of the webpage became as you see it before you. The biggest challenge I encountered was believe it or not making the thickness of the bar graph to one that was appropriate. But once I was able to get the bar graph and pie chart completed and all of the visualizations and datasets situated properly on the webpage, the data we were working with again became more easily digestible. Some of the conclusions I came to be looking at the visualizations are as follows. Our top 10 countries account for 57.2% of the world's total population. Just China and India alone account for 35.5%. It’s interesting to note however, that since the baby boom, the fertility rate has been on a steady decline. Thank you instructors and fellow classmates for listening to our presentation and we hope you learned something about world population data or maybe are now interested in looking more into our website to come to your own conclusions. We now open the floor for questions.