DATA ANALYTICS BY TABLEAU

Tracing the Growth of the Global Community:

A Population Forecasting Analysis

1. INTRODUCTION

1.1 OVERVIEW

The basic challenges of human civilization lie in its overloaded population growth. There exists a close and reciprocal relationship between population growth and economic development in a country. The population in one way constitutes a source of labor that could be utilized to boost the country's production. On the other hand, it could also be seen as a consumer group that uses and exhausts a large number of the country's resources. However, certain economists from earlier times have pointed out that the increase in population and the rapid growth of the population in a country is tied to its economy. But the opinion of some other economists is that although the population can grow rapidly in a country, its natural and physical resources are limited, and therefore this situation could prove to be an obstacle to the economic development of the country. During these arguments, the demographic transition theory attempts to clarify the relationship between population growth and economic development. In the past economists and demographers considered the inter-relationship between population growth and economic development from both an optimistic perspective as well as from a pessimistic perspective. Those who viewed it optimistically adopted a benign attitude towards population increase; that is, they considered it not necessary to control the population growth of a country. According to them, the growth of the population does not bring bad results. The pessimists look at it differently and assert that if a country is to attain a higher state of development, the rate of population

growth should be reduced. That is, they claim that during the process of economic development population growth should be controlled. All pessimists believe that a higher fertility rate and the resulting rapid population growth act as a damper on economic development.

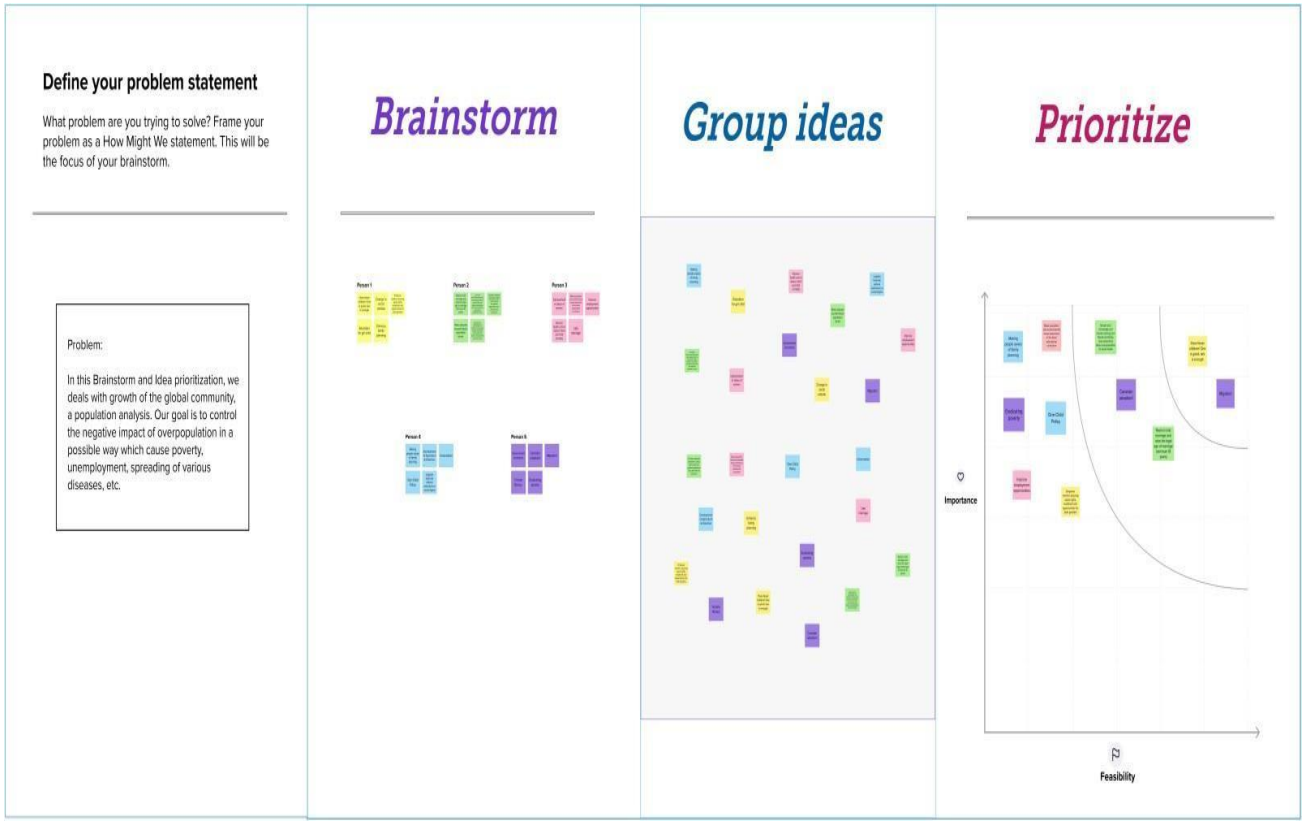
1.2 PURPOSE

The main objective of this project is to create a big data analysis of literature on the growth of the population over the world by using Tableau. Tableau Desktop is our primary tool for creating data visualizations. Tableau is a data visualization and business intelligence tool that enables users to connect, visualize and share data in a highly interactive and intuitive way. It allows users to quickly analyze and explore large and complex datasets using a drag-and-drop interface without requiring coding or programming skills. Tableau provides a wide range of chart types and visualization options, such as line charts, bar charts, maps, scatter plots, and many more. Tableau can connect to various data sources, including databases, spreadsheets, big data platforms, and cloud services. It also allows users to perform data cleaning and transformation tasks, create custom calculations, and generate insights using advanced analytics features. Tableau provides a suite of products, including Tableau Desktop for creating and publishing visualizations, Tableau Server for sharing and collaborating on data and visualizations across an organization, and Tableau Prep for preparing and cleaning data before analysis. With its user-friendly interface and powerful visualization capabilities, Tableau has become popular for businesses and organizations looking to make data-driven decisions. By using Tableau, we can achieve a lot of visualizations that are connected to users easily as large data in a simple way.

2. PROBLEM DEFINITION AND DESIGN THINKING

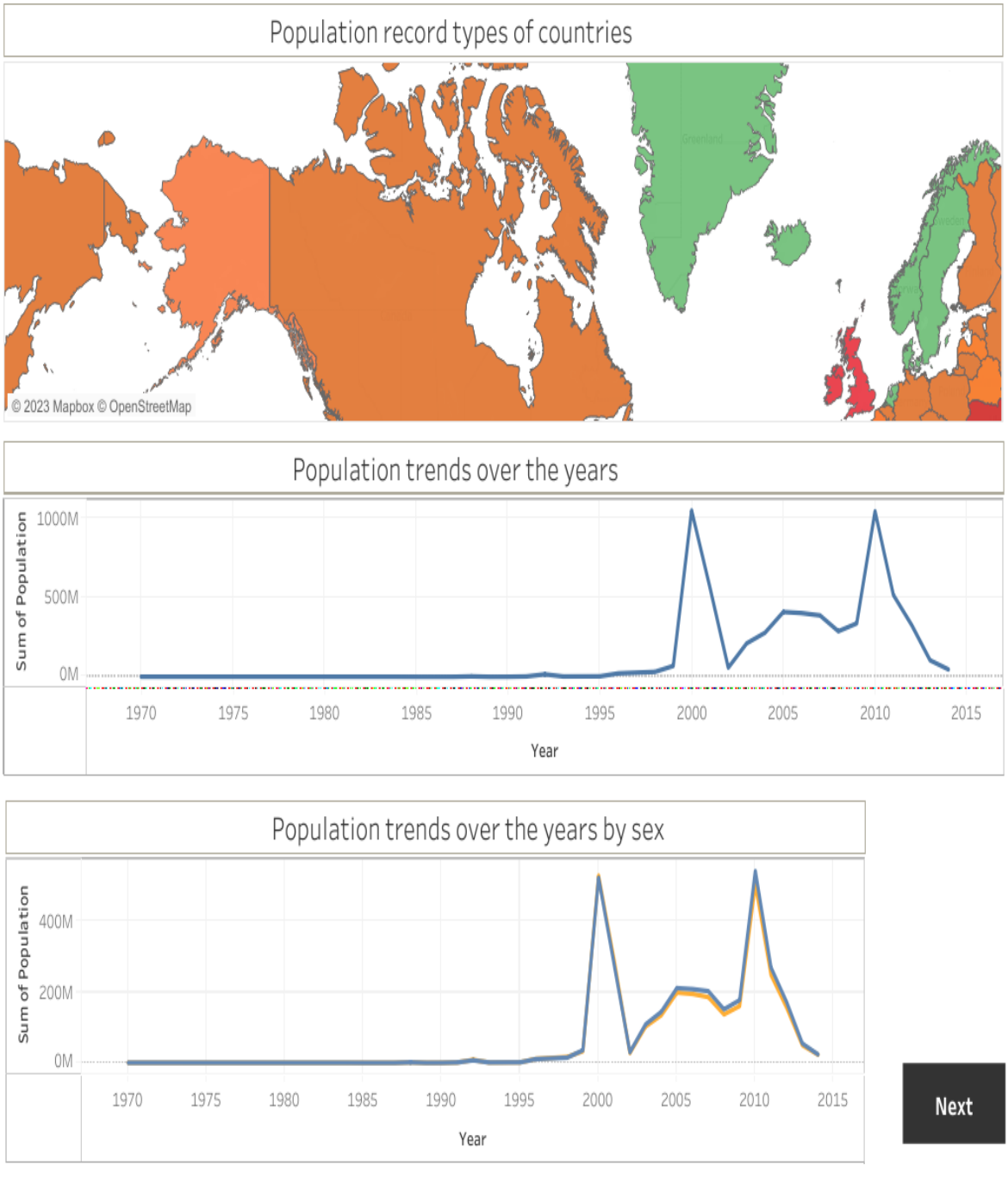
2.1 EMPATHY MAP

2.2 IDEATION & BRAINSTORM MAP



3. RESULT

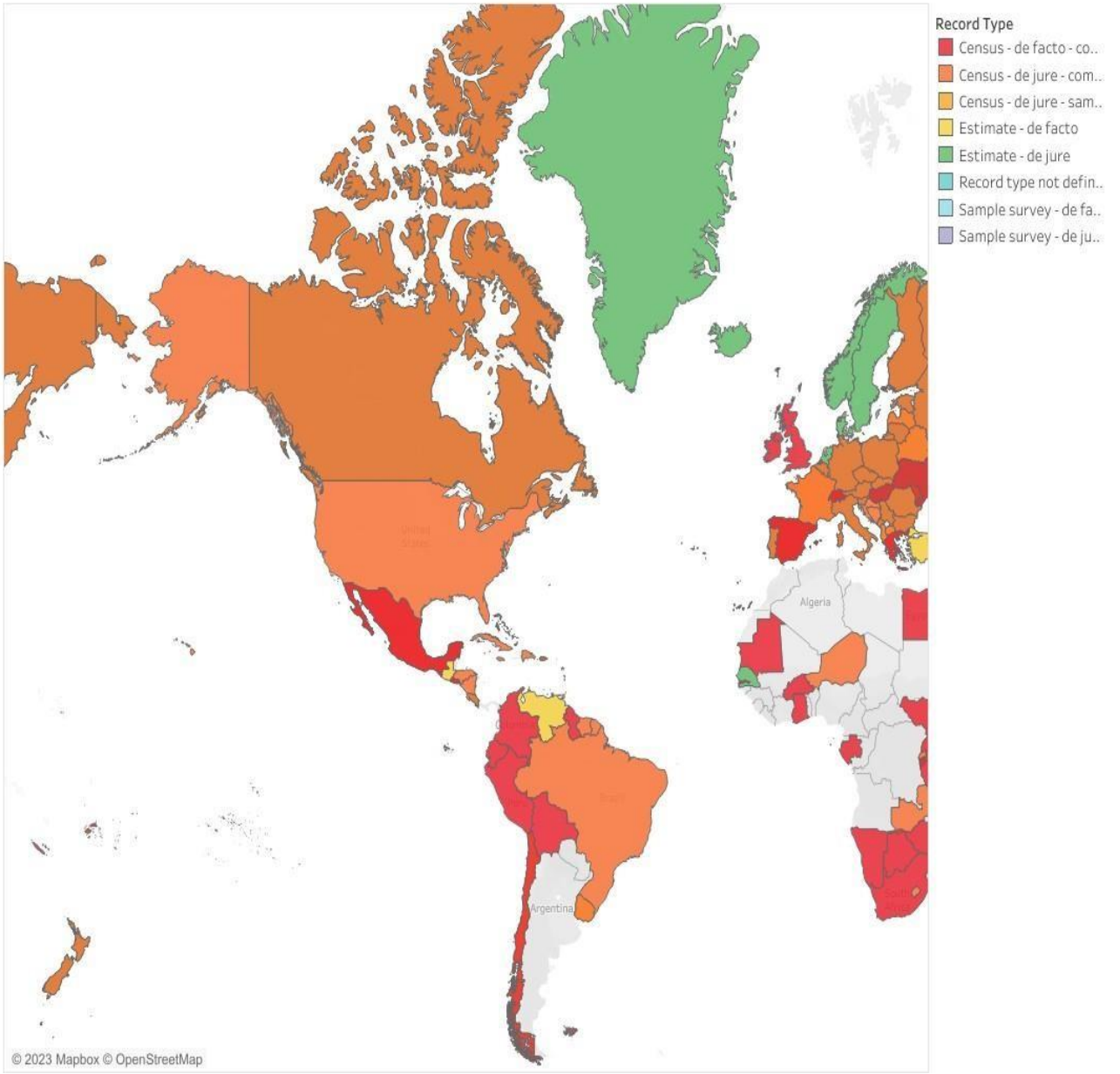
3.1 DASHBOARD



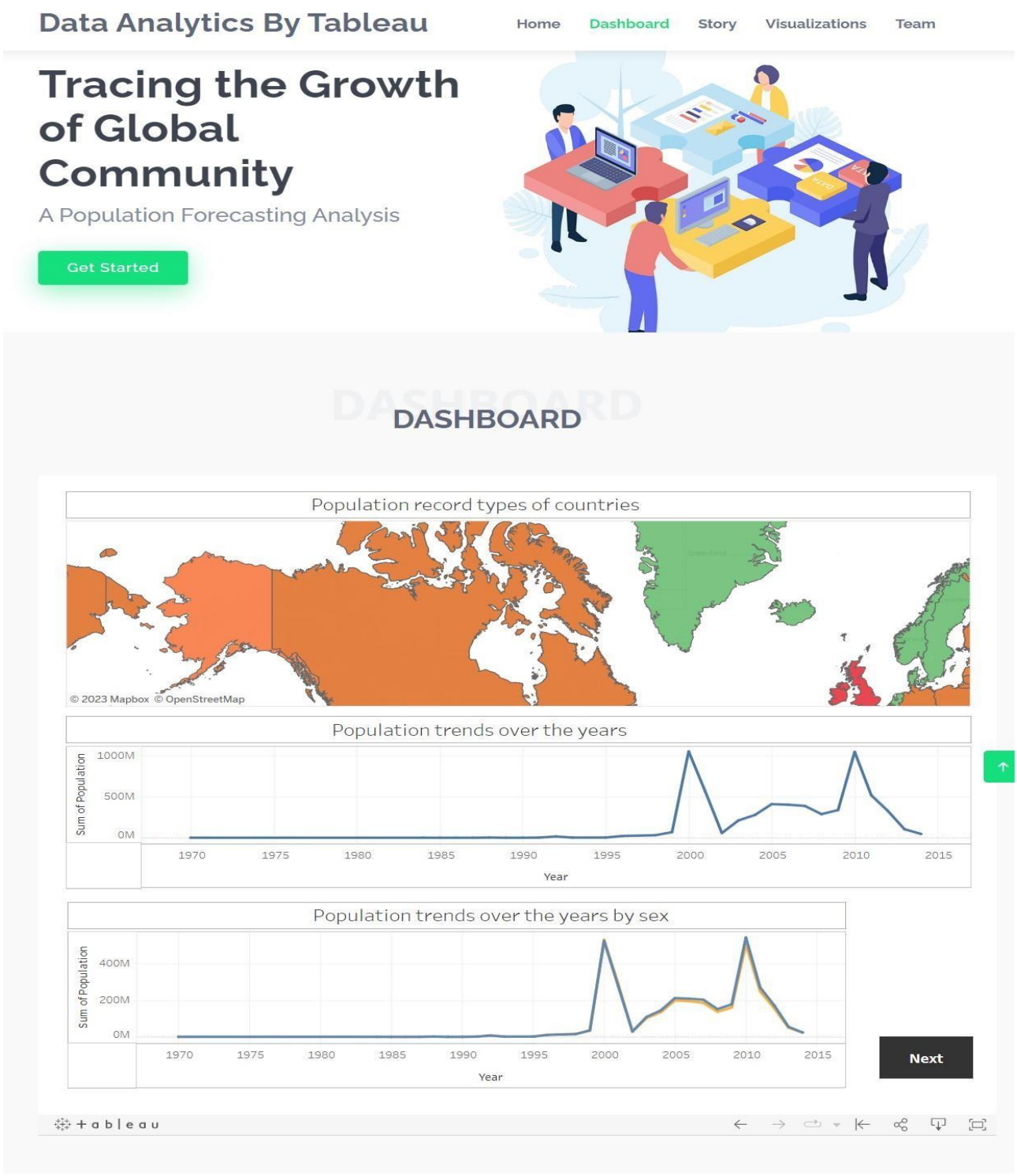
3.2 STORY

Story 1

This is a geographic map which shows all t..	This continous line chart visualises years..	This continous line chart visualises both ..	This bar graph shows average population o..	This tree map shows countries with highes..	This pie chart shows sum of population by ..	This text tables show..



3.3 Dashboard and Story embed with UI With Flask

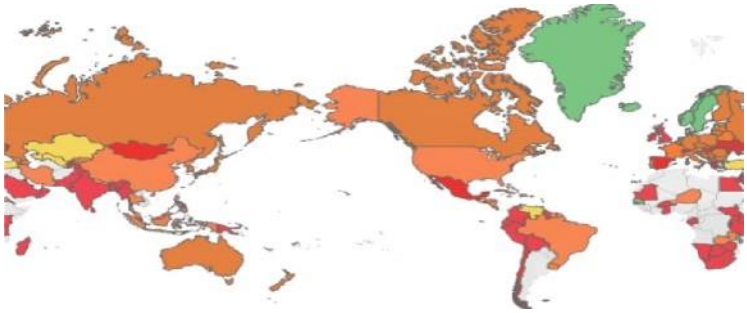


STORY

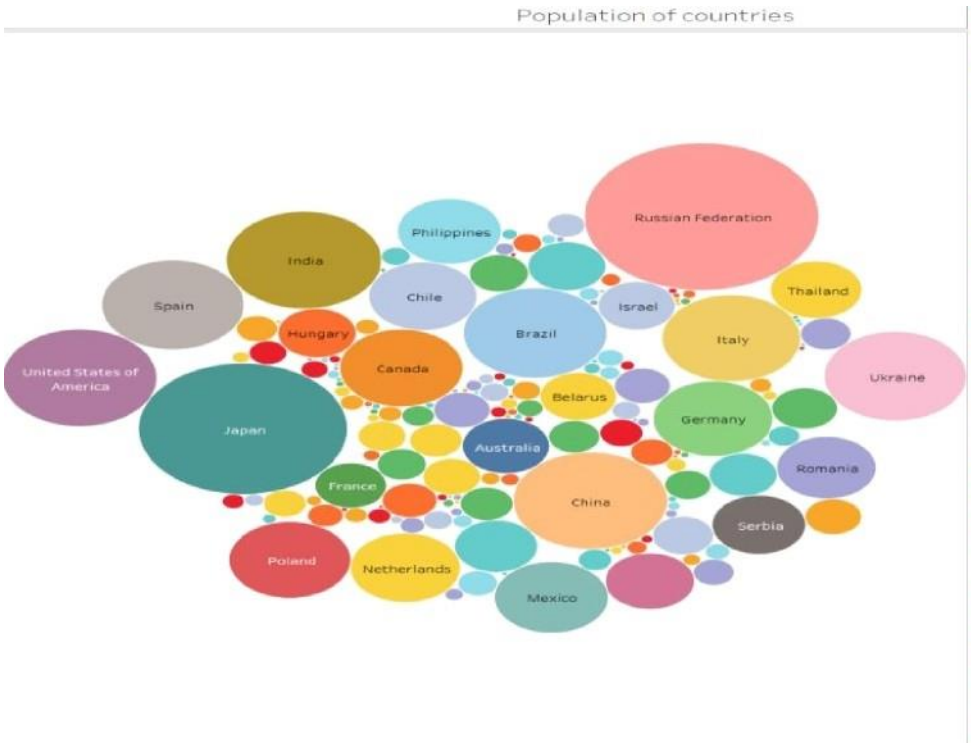
Story 1

This is a geographic map which shows all the countries in the

This pie chart shows sum of population by city type.



Record Type
- Census - de facto - co...
- Census - de jure - co...
- Census - de jure - se...
- Estimate - de facto
- Estimate - de jure
- Record type not defi...
- Sample survey - de f...
- Sample survey - de ju...



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4. ADVANTAGES AND DISADVANTAGES

4.1 ADVANTAGES

- Through this project, we gain data visualization capabilities. Tableau is well-known for its advanced data visualization capabilities. It offers a wide range of charts, graphs, and other visualizations, making it easy to explore and communicate data.
- Tableau provides flexibility regarding data sources, allowing users to connect to a wide range of data sources, including cloud-based data platforms which enable this project to create a large data analysis.
- Tableau offers a high level of customization, allowing users to customize the appearance and functionality of their reports and dashboards to fit their needs which enables this project to the next level with effective and innovative ideas that can be shared with different users around the world.
- Tableau has a large and active community of users who share tips, resources, and best practices, making it easy to get help and learn from others. This was the greatest advantage of this project.
- Tableau can be easier to learn than other tools, especially for beginners or those without a technical background.

4.2 DISADVANTAGES

- Tableau can be expensive, especially for larger organizations that need multiple licenses or access to more advanced features. Tableau Desktop can be available only with 14 day (about 2 weeks) trial. This can be a little hard to finish these days.
- Tableau may have performance issues with large data sets or complex calculations, which can slow the analysis process.
- Tableau may not be as effective in handling real-time data or streaming data sources as other tools designed specifically for real-time data processing.

5. APPLICATIONS

The applications of data analytics are broad. Analyzing big data can optimize efficiency in many different industries. Improving performance enables businesses to succeed in an increasingly competitive world.

- ✓ One of the earliest adopters is the financial sector. Data analytics has an important role in the banking and finance industries, used to predict market trends and assess risk. Credit scores are an example of data analytics that affects everyone. These scores use many data points to determine lending risk. Data analytics is also used to detect and prevent fraud to improve efficiency and reduce the risk for financial institutions.
- ✓ The use of data analytics goes beyond maximizing profits and ROI, however. Data analytics can provide critical information for healthcare (health informatics), crime prevention, and environmental protection. These applications of data analytics use these techniques to improve our world.
- ✓ Though statistics and data analysis have always been used in scientific research, advanced analytic techniques and big data allow for many new insights. These techniques can find trends in complex systems. Researchers are currently using machine learning to protect wildlife.

- ✓ The use of data analytics in healthcare is already widespread. Predicting patient outcomes, efficiently allocating funding, and improving diagnostic techniques are just a few examples of how data analytics is revolutionizing healthcare. The pharmaceutical industry is also being revolutionized by machine learning. Drug discovery is a complex task with many variables. Machine learning can greatly improve drug discovery. Pharmaceutical companies also use data analytics to understand the market for drugs and predict their sales.
- ✓ The Internet of Things (IoT) is a field that is used alongside machine learning. These devices provide a great opportunity for data analytics. IoT devices often contain many sensors that collect meaningful data points for their operation. Devices like the Nest thermostat track movement and temperature to regulate heating and cooling. Smart devices like this can use data to learn from and predict your behavior. This will provide advanced home automation that can adapt to the way you live.
- ✓ Data analytics helps individuals and organizations make sense of data. Data analysts typically analyze raw data for insights and trends. They use various tools and techniques to help organizations make decisions and succeed.
- ✓ The applications of data analytics are seemingly endless. More and more data are being collected every day — this presents new opportunities to apply data analytics to more parts of the business, science, and everyday life

6. CONCLUSION

The project **"Tracing the Growth of the Global Community: A Population Forecasting Analysis"** which can be accomplished by **"Data Analytics by Tableau"** has various milestones. **Milestone 1** was completed by creating **Empathy Mapping**, **brainstorming, and Idea prioritization** by using **Mural** which is a system that offers a workspace to collaborate and contribute innovative ideas as teamwork and uploaded in **GitHub** which is an internet hosting service for software development and version control using Git. **Repositories** can be created and uploaded files into it. **Milestone 2** was completed by collecting the **dataset**, storing the **database** in **My SQL Workbench,** and connecting the database with **Tableau**. **Milestone 3** was completed by preparing the data for visualization involves cleaning the data to remove irrelevant or missing data, transforming the data into a format that can be easily visualized, exploring the data to identify patterns and trends, filtering the data to focus on specific subsets of data, preparing the data for visualization software, and ensuring the data is accurate and complete. This process helps to make the data easily understandable and ready for creating visualizations to gain insights into our analysis. **Milestone 4** is **Data Visualization** which is the process of creating graphical representations of data to help people understand and explore information. This involves **No of Unique Visualizations** are **Population records by type of countries, Population trends over the years, Population trends over the years by sex, Cities with highest average populations, Countries with highest average population from 2000-2014, Population by city type and finally, Population of citied by year**. **Milestone 5** is to respond and design **Dashboard**.

Milestone 6 was completed by creating **No of Scenes of Story**. A data story is a way of presenting data and analysis in a narrative format, intending to make the information more engaging and easier to understand. A data story typically includes a clear introduction that sets the stage and explains the context for the data, a body that presents the data and analysis logically and systematically, and a conclusion that summarizes the key findings and highlights their implications. Data stories can be told using a variety of mediums, such as reports, presentations, interactive visualizations, and videos. The number of scenes in a storyboard for a data visualization analysis of population growth across the cities will depend on the complexity of the analysis and the specific insights that are trying to be conveyed. A storyboard is a visual representation of the data analysis process, and it breaks down the analysis into a series of steps or scenes. **Milestone 7** is to accomplish **performance testing** which includes the amount of data rendered to Data Base, utilization of Data Filters, No of Calculation Fields, and No of Visualizations or Graphs. **Milestone 8** was completed by doing **Web Integration**. The first step is to **publish the dashboard, story and reports to the Tableau public**. The next step is to **embed Dashboard and Story with UI With Flask**. **Milestone 9** was completed by recording an explanation **Video for the project's** end-to-end solution and making **Project Documentation-** Step by step project development procedure. This project concludes that large data of the population over the world can be easily analyzed by Data Analytics with Tableau.

7. FUTURE SCOPE

- ✓ Data governance is the process of ensuring that data is trustworthy, accurate, available, and usable. It describes the actions people must take, the rules they must follow, and the technology that will support them throughout the data life cycle.
- ✓ The initial phase in data analysis is called data exploration. It involves looking at and visualizing data to find insights right away or pointing out regions or patterns that need further investigation. Users may more quickly gain insights by using interactive dashboards and point-and-click data exploration to better understand the broader picture.
- ✓ Data integration is the process of combining information from several sources to give people a cohesive perspective. The fundamental idea behind data integration is to open up data and make it simpler for individuals and systems to access, use, and process.