

MOTIVATION

- The Forest Service is a division of the United States Department of Agriculture (USDA)
- Their mission is to "make and keep current a comprehensive inventory and analysis of the present and prospective conditions of and requirements for the renewable resources of the forest and rangelands of the US" (fs.usda.gov).
- Each student was tasked with reading a research paper that uses FIA data and in order to learn about the FIA and what we wanted our project to be.
- Our team originally split into groups each working on their own projects.
 - Group 1 focused on Data Processing and understanding the density of trees in the subalpine ecosystem.
 - Group 2 focused on Data Visualization to model different statistics using FIA data, to make this data more accessible for the average person.
- We decided to consolidate our team into one group for our final project.
 - Our final project is a web page that uses Power BI to visualize statistics and plot information using data from the FIA database.

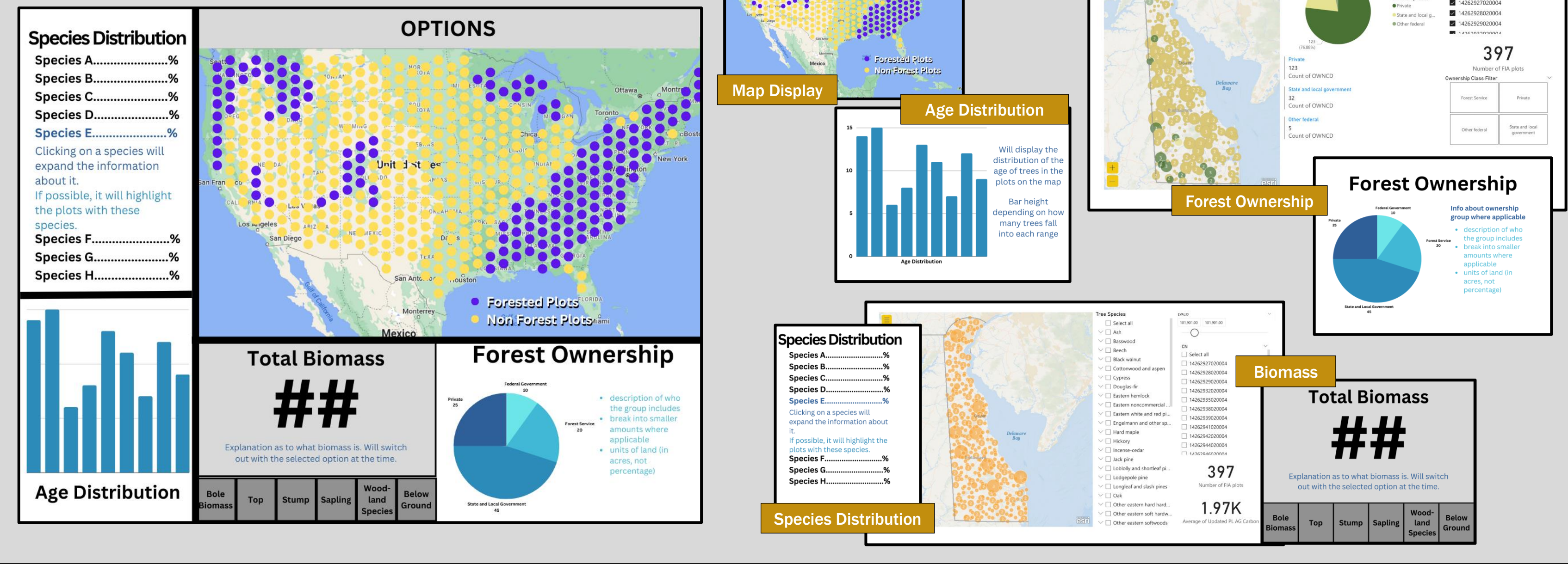
15,049,549,878

Data Points in the FIA Database

WHAT WE WANT TO SHOW

The goal of this project was to show different visualizations using data from the FIA database. Included are some of the sketches of what we imagine it will look like upon completion, and (where applicable) the actual visualizations.

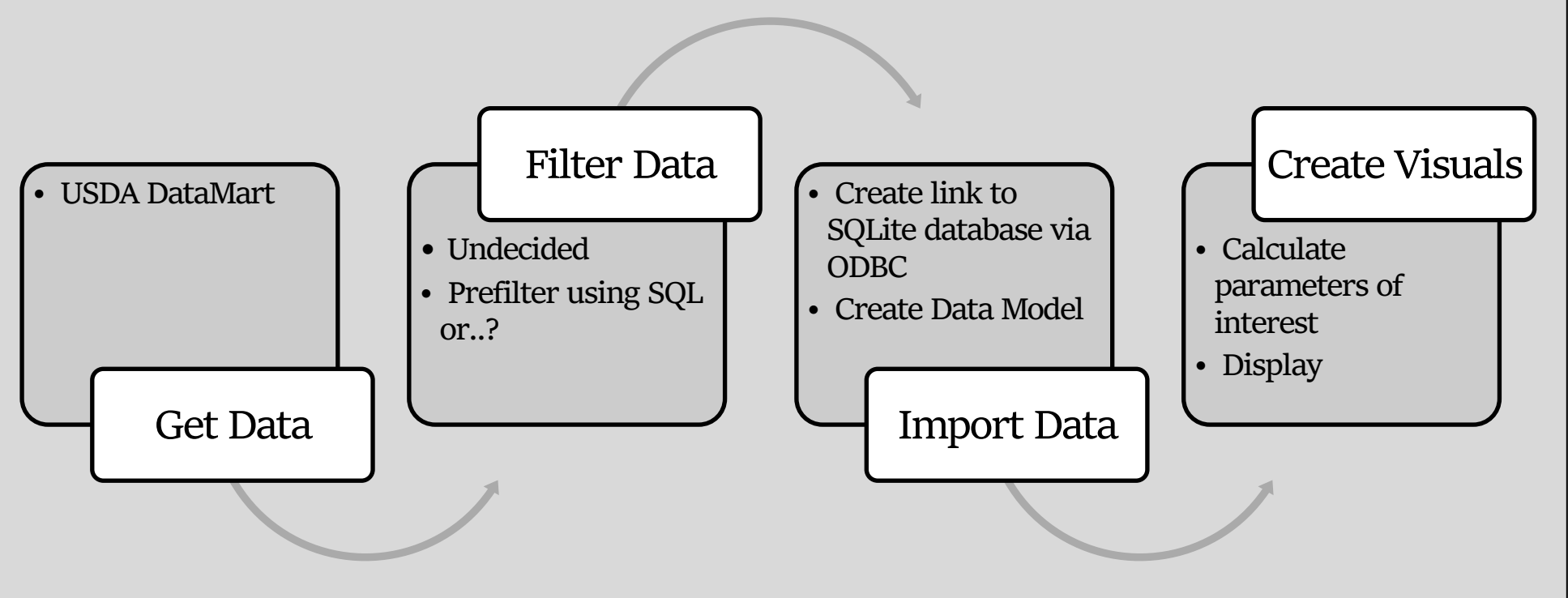
Things that we would like to/have already visualized.



POWER BI

Analytics tool developed by Microsoft to help create visuals and drive decision making.

- Hosts ArcGIS maps; dynamic visualization tools such as charts, pie charts, and histograms; and the ability to dynamically filter data to fit the needs of the user.
- Steps to Implement Power BI
 - USDA FIA data is downloaded from the FIA publicly available database, called the DataMart.
 - This data is filtered and then ingested into Power BI. The connections and relations between the database tables are created using a data model.
 - Using the imported data, the parameters of interest are calculated. Plot-level summaries of the data are then dynamically calculated and displayed using various visualizations based on the filters the user selects.



Power BI Data Mapping Model



LOOKING FORWARD

Looking Forward: The Future of Our Research

We have made significant progress in visualizing the USDA FIA's Forestry Inventory data using Power BI, but there is much more to be done. Our future goals include:

- Deploying the Power BI file to a usable website to increase accessibility and ease of use for stakeholders and researchers.
- Collaborating with the FIA to publish our code and share our visualization tool with a wider audience.
- Continuing to improve the user experience by incorporating feedback from users and incorporating additional features and functionality.
- Exploring additional ways to leverage the power of data visualization to inform policy decisions and drive positive change in the forestry industry.

As we look to the future, we are excited about the potential impact of our work and are committed to continuing to innovate and improve our visualization tools.