



# Designing Introductory Visual Programming Assignments for Computer Science Students



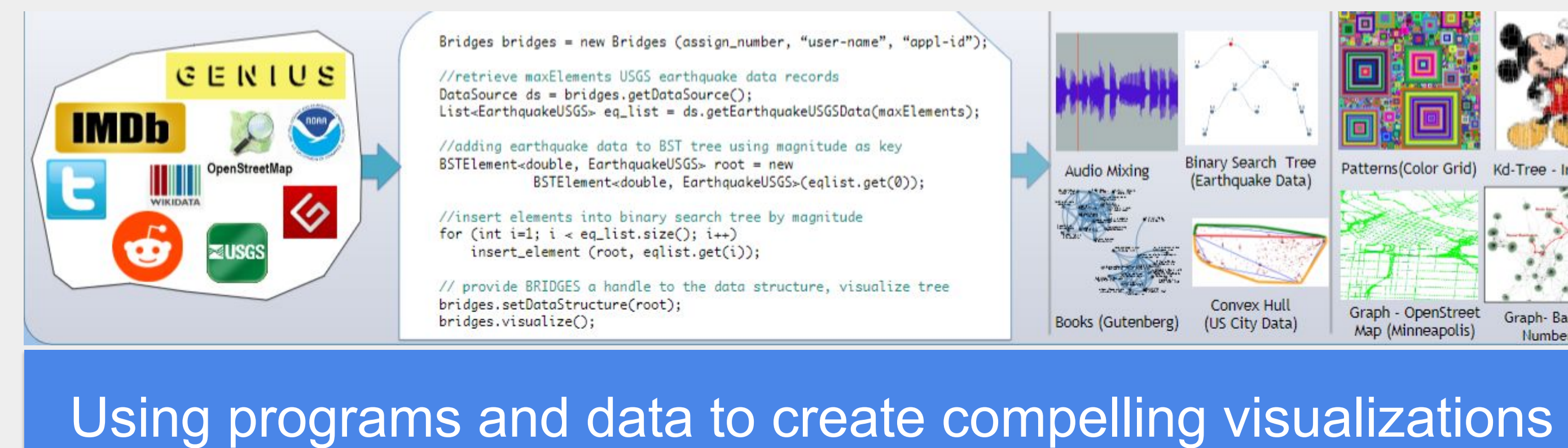
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## The Problem

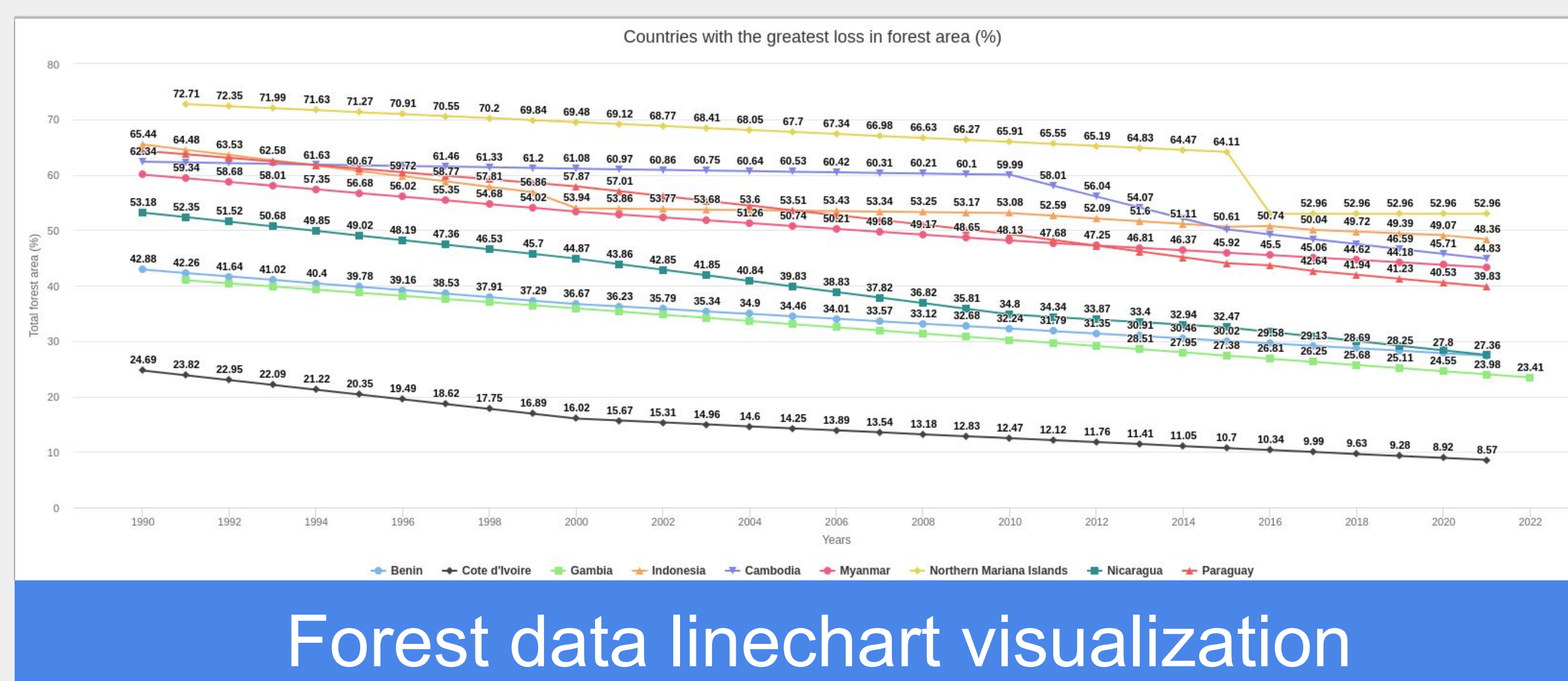
- ❖ Large influx of students coming into computer science.
- ❖ The field can seem quite daunting to people who have never programmed before.
- ❖ Students and programmers alike need supplemental learning material in between their courses/learning experiences.

## What is BRIDGES?



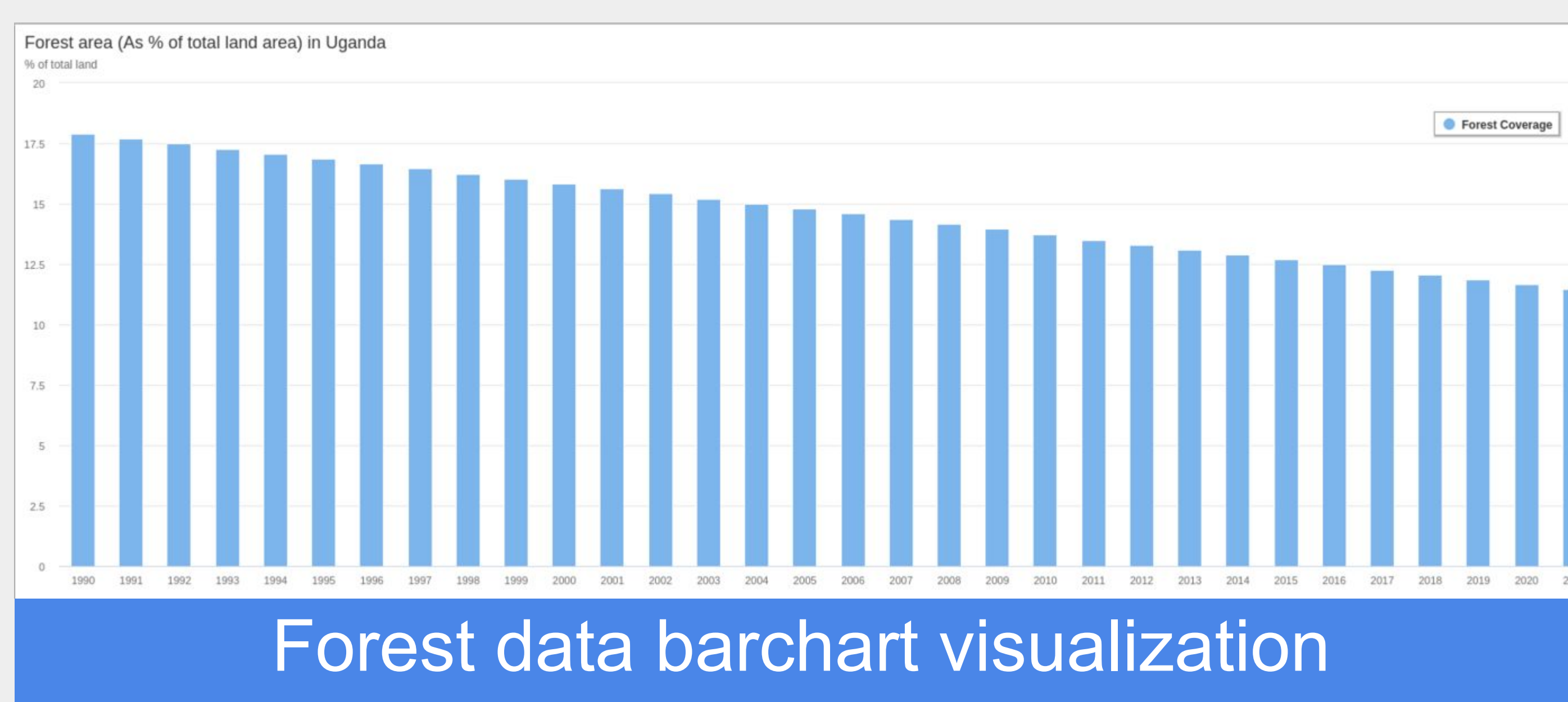
## Project Contributions

- ❖ Created easy to pick up assignments that can help reinforce early level computer science concepts.
- ❖ Modified previous assignments to broaden their approachability.
- ❖ Left groundwork and prototyping done for future research opportunities for research students in the program.



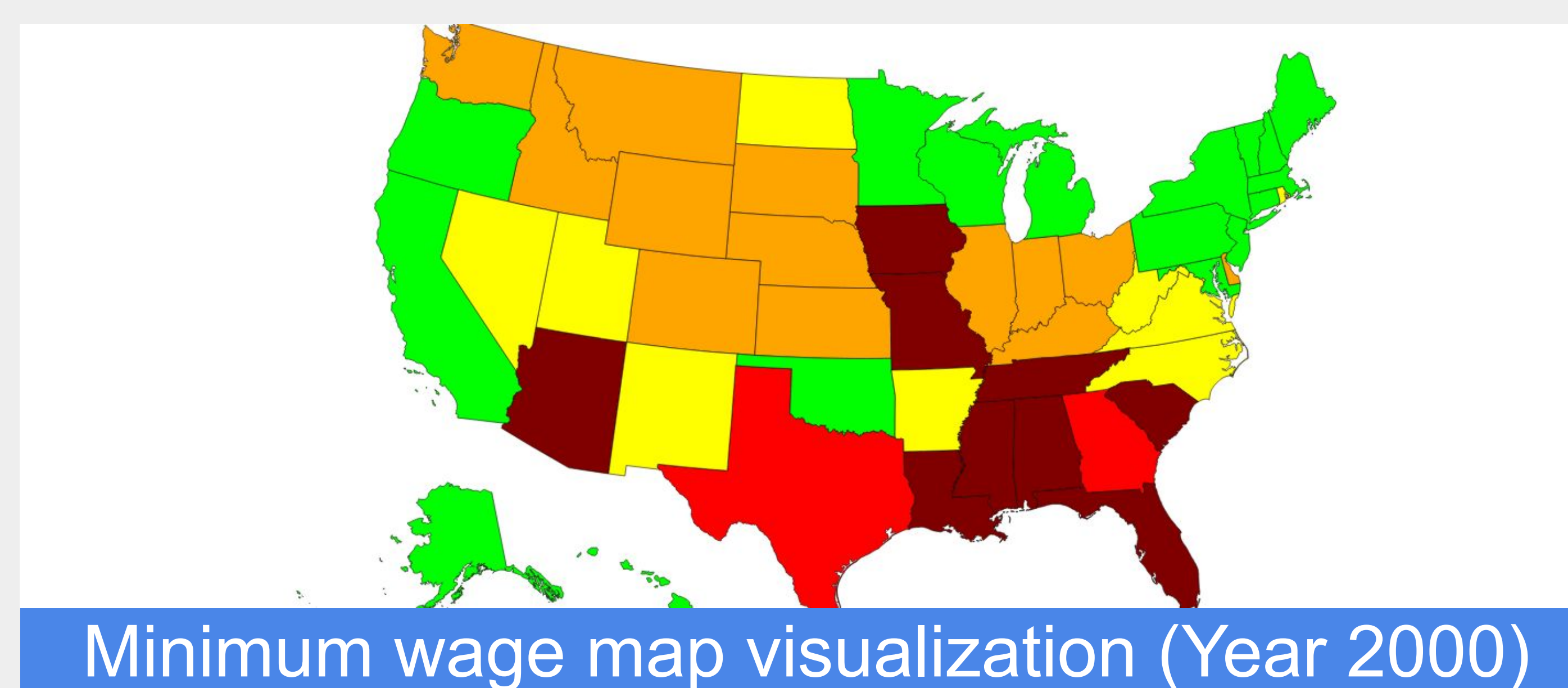
- ❖ Pulls forest data from a specific dataset.
- ❖ Sorts the data based on countries with the greatest loss in forest area.
- ❖ Utilizes the BRIDGES API to simplify visual creation process.
- ❖ Displays the data in visually compelling way through a line chart to convey major forest loss over time.

- ❖ This data is showing us that over time there are a lot of countries that are losing quite a large percentage of their forests over not a super long span of time.
- ❖ Deforestation is happening at quite a rapid rate in many parts of the world, and is happening at a much faster rate than some people may think.



- ❖ Pulls forest data from a specific dataset
- ❖ Grabs user entry specific data based off what they requested.
- ❖ Utilizes the BRIDGES API to simplify visual creation process.
- ❖ Data is displayed in a bar chart to show accurate change over time of the specified country.

- ❖ While some countries that are losing lots of forest area by percentage, they can be quite small by area, Uganda is quite big.
- ❖ Uganda is losing lots of forests, even though it may not be conveyed just by sheer percentage.
- ❖ The barchart is incredibly useful because it allows you to single out any country from the entire dataset.



- ❖ Pulls minimum wage data from a specific dataset.
- ❖ Reorganizes the data based on state and each year.
- ❖ Utilizes the BRIDGES API to simplify visual creation process.
- ❖ Displays a visual heatmap of states' minimum wage by year (Year 2000 is shown).

- ❖ Some states have a very good minimum wage (green), while others might not even have a state mandated minimum wage at all (maroon).
- ❖ It can be hard to compare large amounts of data that is just put right in front of you, but when its given in visualizations, it's much more digestible.