# Milestone 2 [due May 5th 5pm]

Introduction

Our project will include multiple visualizations, our goal is to present precise data and for the audience to be able to explore the information. Our visualizations should enlighten the audience on some interesting patterns about earthquakes on earth.

Sketches of final product
Include sketches of the visualization you want to make in your final product.
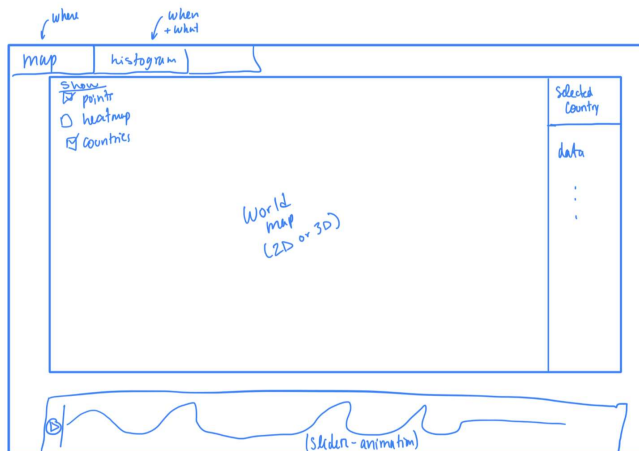
Ressources
List the tools that you will use for each visualization and which (past or future) lectures yousliwill need.

Our design requires us to do some research about different libraries we want to use and about design concepts we want to incorporate. Knowing we had to handle a lot of data coming potentially in multiple formats and that we would need a way to graph our data easily. We chose D3.js which is a svg graphing library, because it handles DOM updates for us. Also, for our interactive map we chose Leaflet. Leaflet is a Javascript library that enables us to do interactive 2d maps. Leaflet enables us to create multiple map layers. We can use multiple map backgrounds easily. We can also use it to create a svg layer that D3.js can manage. Which makes this combination of libraries the best for our use case. With this library combination we can make an interactive Choropleth Map.

Objectives
Break down your goal into independent pieces to implement.

1. World map with location of every earthquake of the dataset.
   Our first goal is to have an interactive map with the location of all earthquakes pinned. We should be able to zoom in and out of the map and move around with the mouse. The point's size should be a reflection of the earthquake's magnitude.

2. Animation of the earthquakes through time on the world map

a. Display the location of the earthquakes by month, to see the variation of the different regions.
   b. Adding an histogram of the total number of the earthquakes by month on the bottom of the world map with a slider which would change the values of the world map at the same time.

3. Visualization of earthquake by country
   Add a layer on the map with the border of each country to be able to see specific data on the country. When clicking inside a country, a pop-up should appear with specific information (i.e total number of earthquakes identified, average per month, highest magnitude identified etc..)

4. Add **interactions with explanations** to our visualizations that will guide the user to some insights
   - Earthquakes depend on location => because of tectonic plates
     Display regions on map
     User can see data from those regions
   - Earthquakes through times, are there more big ones now?
     Show time graph for all years
     Guide the user to a smaller period of time (past, and present)

Try to design a core visualization (minimal viable product) that will be required at the end.
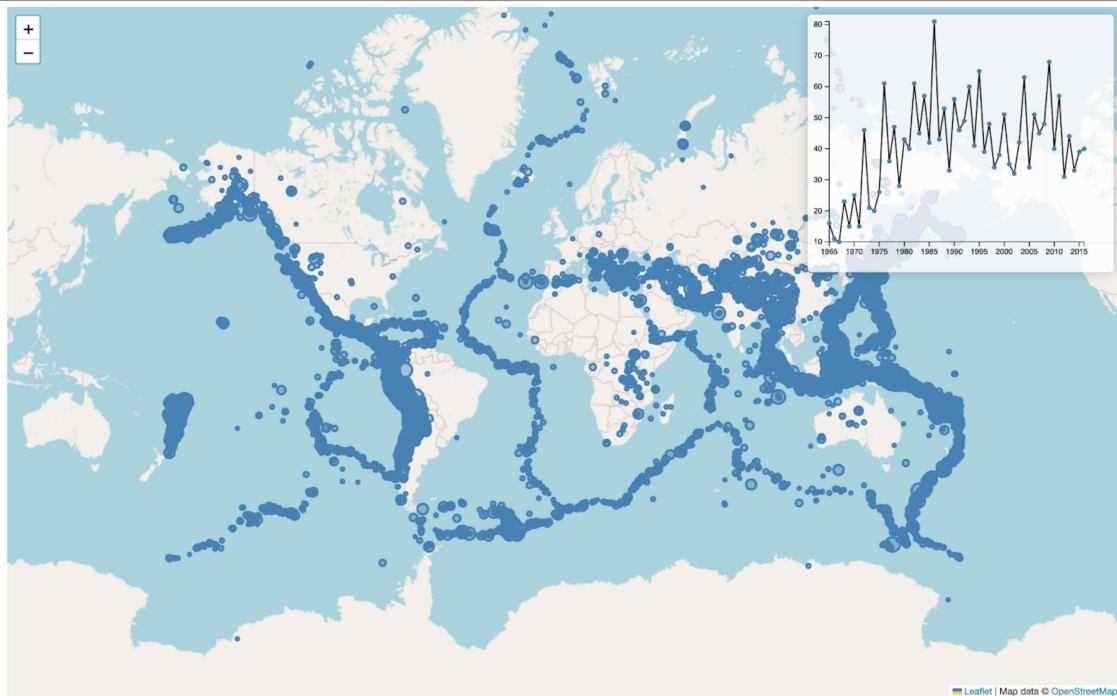
Then list extra ideas (more creative or challenging) that will enhance the visualization but could be dropped without endangering the meaning of the project.

1. Make the map 3D
   We would need to use another library to add this feature to our design. This will be challenging because it modifies the main part of our visualization. First we need to make it work, and then integrate it with other parts of our website which can cause many challenges.

2. Adding a heat map
   We would like to add a heat map of the numbers of earthquakes as an alternative to the points on the world map. One challenging part would be to add the time factor. The goal is to see the tectonic plate borders move through time. Since, we haven't worked with heat maps before we would need more time to implement this feature.

3. Add sound to the website.
   We want the audience to feel like they are part of the experience. We would like to add sound to our project to make it more immersive.

https://metoorising.withgoogle.com/

https://public.tableau.com/views/EarthquakesOnTheRise-Full/Earthquakestory?:showVizHome=no#1

https://miniature.earth/

More than 3 million refugees have been resettled in the US between 1975 and 2018
Brooklyn, Los Angeles, Chicago, Houston, and New York City have been some of the top destination cities

Data source: Dreher, A., Langlotz, S., Matzat, J., Parsons, C. and Mayda, A. (2020). Immigration, Political Ideologies and the Polarization of American Politics. CEPR Discussion Paper 15587. United States Department of Agriculture, National Geophysical Data Center / World Data Service (NGDC/WDS): Significant Earthquake Database. National Geophysical Data Center, NOAA.