Name: Ryan G. Tjakrakartadinata
Email: rgtjakrakartadinata@dons.usfca.edu
Website: https://tjakrak.github.io/projects/plastic-on-earth/

Background and Motivation

Global warming is a regular topic that has been discussed for the past decades. Although a lot of organizations call for immediate actions, many people would acknowledge the issue but continue with the same way of living. Ironically, I have been one of those people. However, after experiencing the new daily highest temperature (116F) in California on Sept 5th, 2022, I couldn't help but start thinking what will happen 20 years from now if we did not try to address this problem. Therefore, I would like to contribute to this cause by creating a story with data, specifically addressing one of the key contributors to global warming - plastic pollution.

Project Objectives

The key objective of this project is to bring a sense of urgency to everyone about plastic pollution, which is one of the key contributors to global warming. Specifically, the following data will be addressed and analyzed:

1. Global plastics production per year
2. Plastic use in 2019 per category
3. Percentage of plastic that are recycled vs not recycled
4. Amount of plastic waste emitted to the ocean per capita for different countries
5. Gas emission caused by plastic production
6. Impact of plastic on marine animals

Data

Statistics will be collected from:

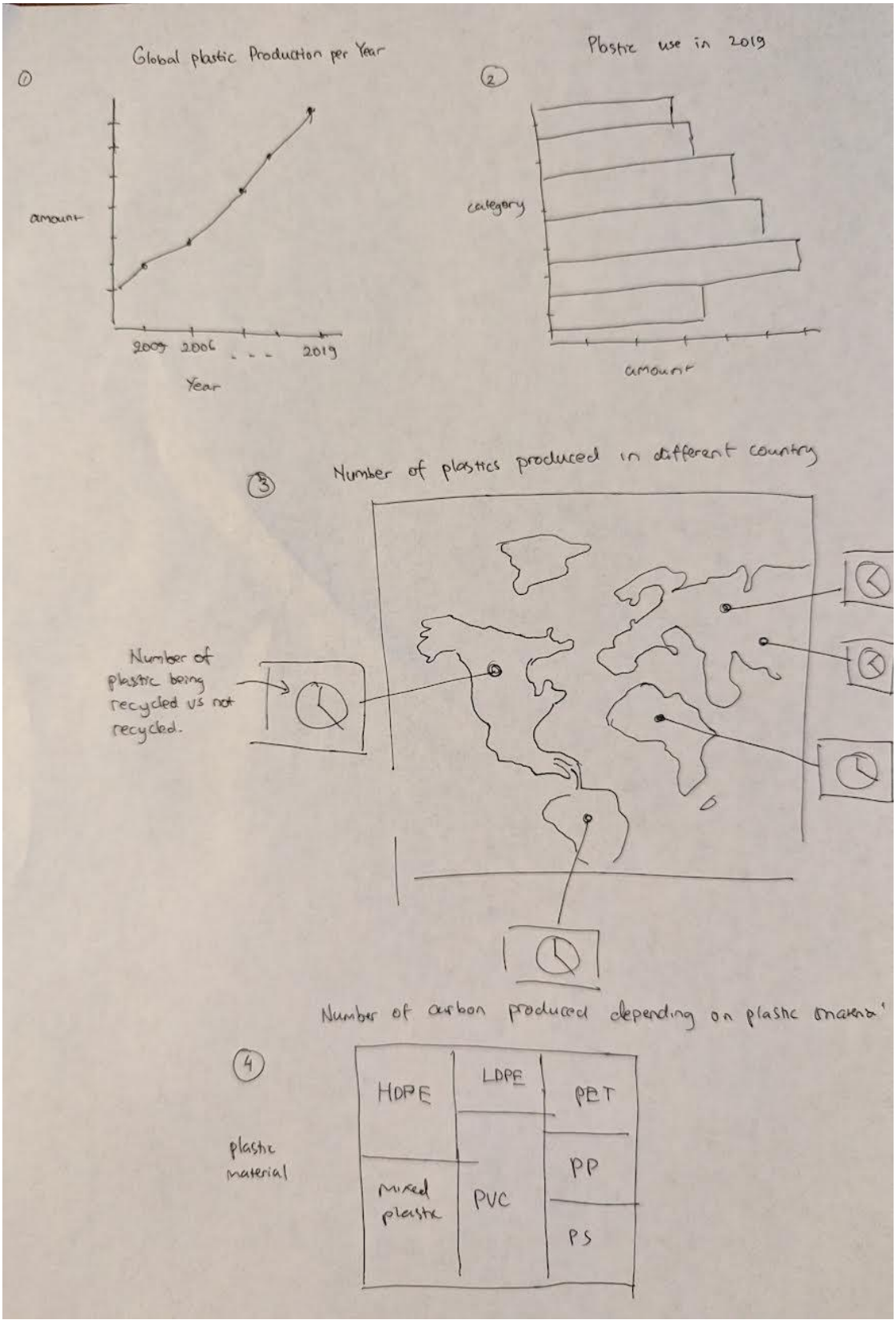
- https://ourworldindata.org/
- https://stats.oecd.org/index.aspx?datasetcode=OCEAN#
- https://wesr.unep.org/article-category/browse-topic

Data Processing

Majority of data that will be derived from **ourworldindata.org** has been processed, therefore data processing on my end will be completed through Microsoft Excel.

On the other hand, data that will be derived from **stats.oecd.org** and **wesr.unep.org** will require further processing. Python will be the main method to extract and process the data using the following libraries: pandas, requests and json. The processed data will then be exported to csv file.

Visualization Design



Must-Have Features

- Project Objective 1
  - Line chart showing global production per year
  - Hovering on the circle will give the actual value
- Project Objective 2
  - Bar chart to show plastic usage per category
- Project Objective 3 & 4
  - A map chart of the world
  - Click on the countries to show a pie chart showing percentage of plastics that are recycled and not recycled
- Project Objective 5
  - A tree map showing the number of carbon produced by different types of plastic materials
- Project Objective 6
  - Only facts on impact will be listed, no data visualization

Optional Features

- Using density contour to show where the trash can be found in the ocean
- Create a scatterplot to show correlation between the temperature and the number of plastic produced

Project Schedule

Tasks	10/7	10/10	10/15	10/17	10/20	10/27	10/31	11/14	12/5
Proposal									
Revised Proposal									
Create basic charts in the must-have features in d3									
Integrate charts to a web page – Alpha release									
Add description/ story to each chart									
Add interactions to the graphs – Beta Release									
Create presentation slides & present									
Project report draft									

Related Work

- https://resourcewatch.org/dashboards/ocean-watch

- https://www.weforum.org/agenda/2022/01/plastic-pollution-climate-change-solution/#:~:text=In%202019%2C%20the%20CIEL%20estimated,or%20615%20coal%20plants'%20worth.
- https://www.oecd-ilibrary.org/sites/f5670a8d-en/index.html?itemId=/content/component/f5670a8d-en
- https://ourworldindata.org/plastic-pollution
- https://worldpopulationreview.com/country-rankings/plastic-pollution-by-country

Alpha Release

Overview

This project goal is to educate myself and other people to learn the facts about plastic. To achieve this, I will create graphs from a list of data that collected from various sources. The graphs will show how many tones of plastics we have produced so far, the number of different types of plastics, the number of plastic pollutions per country and the carbon created from plastic productions.

Features from the Proposal that has been Completed

- Line chart showing global production per year
- Bar chart to show plastic usage per category
- A map chart of the world
- A tree map showing the number of carbon produced by different types of plastic materials

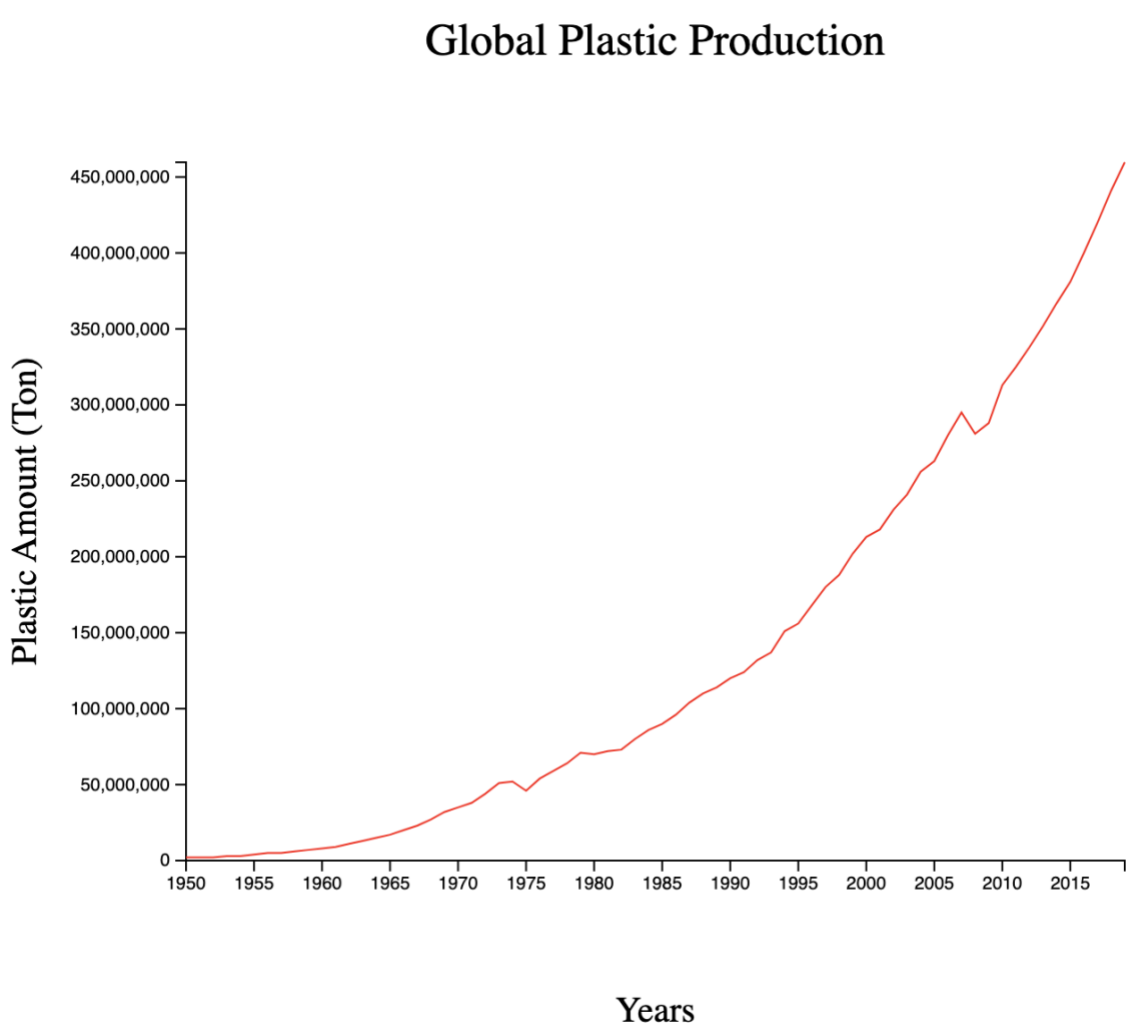
Upcoming Immediate Milestone

- Add hover functionality
- Add story and description to each graphs
- Integrate the d3 graphs to my website

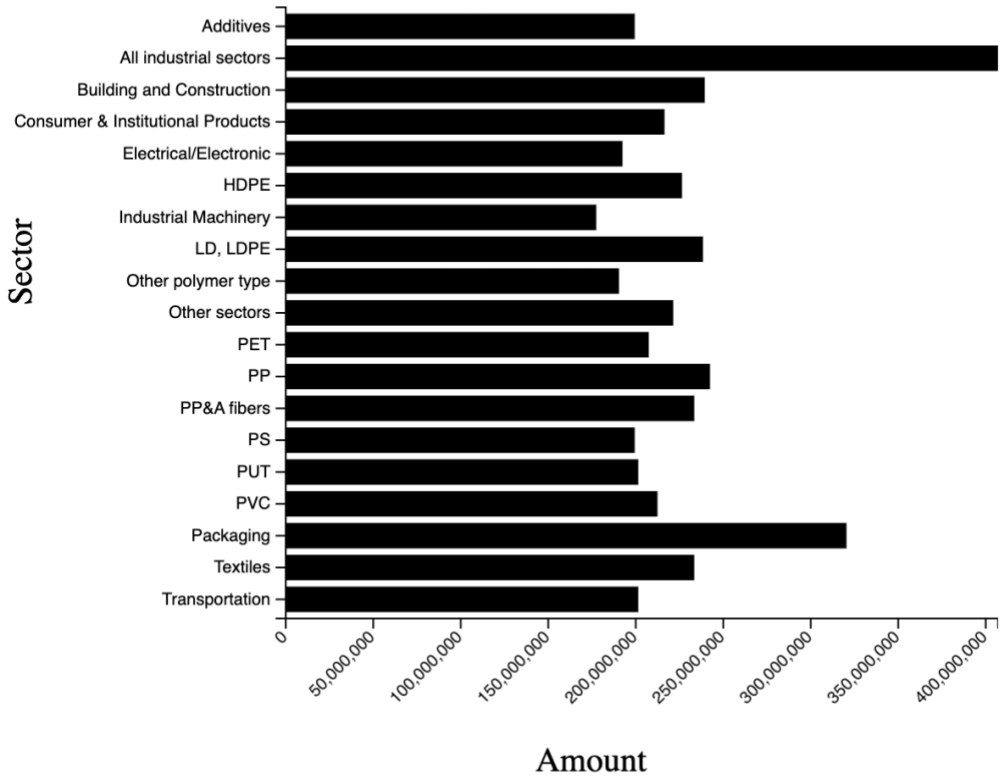
Roadblocks

N/A

List of graphs created by D3


Global Plastic Production
Plastic Amount (Ton)
450,000,000
400,000,000
350,000,000
300,000,000
250,000,000
200,000,000
150,000,000
100,000,000
50,000,000
0
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
Years

Plastic Production per Sector



Plastic Pollution per Country

Plastic Carbon Production