Usability Testing

My usability testing was conducted in two stages. The first stage of usability testing was conducted after creating a mock-up of my site using Figma. This testing informed design decisions which were incorporated into a working prototype. The second round of usability testing was then applied to this prototype of the site to ensure the website was achieving its purpose.

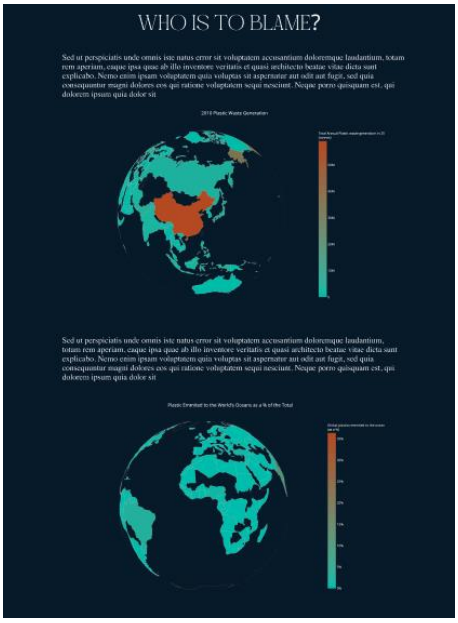
First round

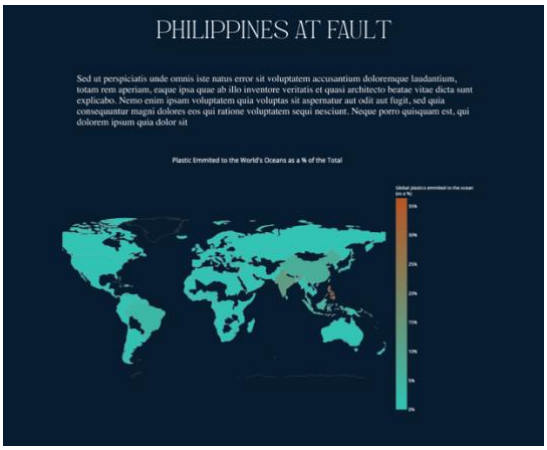
In the first round of usability testing, five participants were given the following tasks (in order):

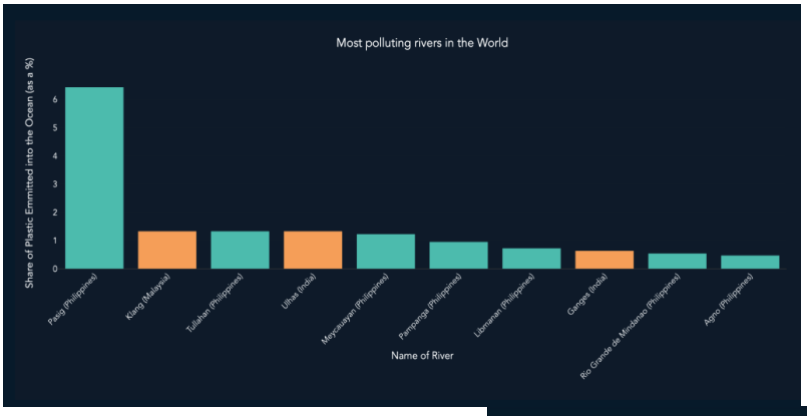
- Analyse which countries are responsible for the most plastic waste in the ocean.
- Ascertain which Filipino rivers are polluting a lot of plastic.

The test objective supported by these two tasks was to assess whether the visualisations chosen, coherently expressed the Philippines as the major contributor to plastic waste in the ocean and supported this through intuitive data visualisation. First of all, almost all users found the fact that there were two different choropleth maps confusing. Although they were each titled individually, they fell under a large umbrella section about who is to blame. It seemed the nuance of producers of plastic vs emitters of plastic to the ocean was overcomplicated. Therefore, the first map was eliminated. Users also preferred a 'flat' projection of the map to inspect all countries at once.

The bar graph of the top 10 most plastic-polluting rivers in the world also seemed to confound some users. First of all, the y-axis scale did not contain % points. This was added. Furthermore, users struggled to identify which rivers were in the Philippines, given each bar had a long label, and users were unsure about what the colour code represented. To remedy this, the country labels were removed from the axis and were added on top of each bar to make it clearer.





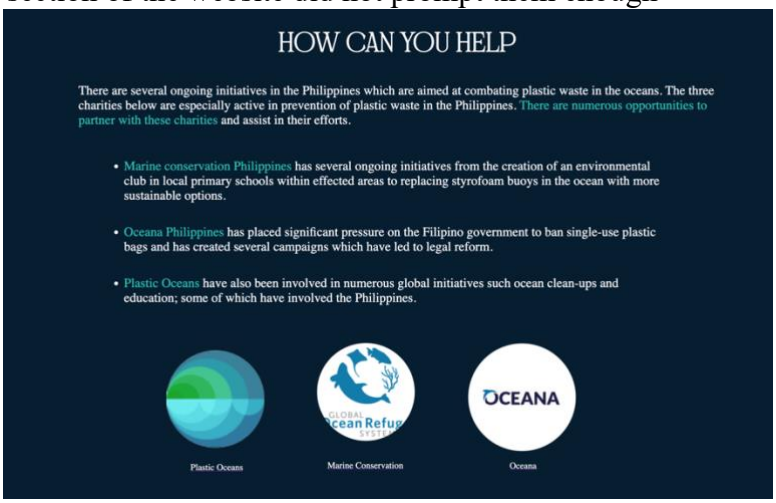


Second round

In the second round of usability testing, another five participants were given the following tasks:

- Use this website in order to take informed action against the problems it addresses. Describe what actions you are taking.
- Evaluate what the website will discuss from the landing page.

The test objectives of these tasks were to assess whether users were able to immediately engage in the content of the website, and whether they felt it was easy to take actionable steps after digesting the content of the site. The second round of usability testing found that upon landing on the site, users felt like they needed to be more emotionally stimulated. In response, subtle animations were added upon landing on the page with a suitable quote about plastic in the ocean. Secondly, users felt that the last section of the website did not prompt them enough to act on the information. A small paragraph was added between the title and the charities to inform users more thoroughly about how and why to act.



Narrative

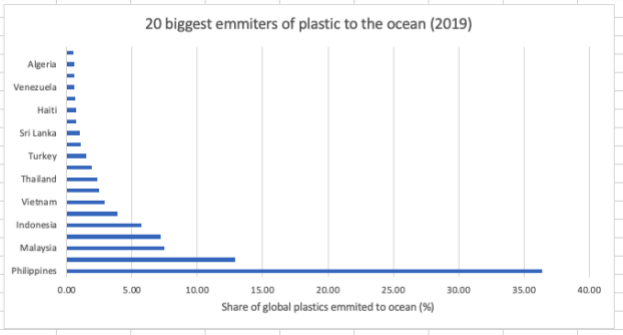
Intro

It has been long-established that plastic waste in the ocean is a significant threat to aquatic biodiversity. However, it is overwhelming to address this issue given the scale and lack of accountability implicated in this problem. As such, my website aims to inform ethically minded investors and entrepreneurs to where funding could be targeted towards the most effective solution.

Exploration

Through exploring extensive data online, it became clear that the Philippines was a clear outlier in the amount of plastic waste in has emitted/emits to the world's oceans. This was revealed through data pertaining to both the share of plastic emitted to the world's oceans by country and the top 10 most plastic-polluting rivers in the world (7 of which are in the Philippines). This exploration led me to focus more on the specifics of where this plastic pollution is occurring, and what the future of the problem looks like.

Top 20	Share of global plastics emmited to ocean (%)
Philippines	36.38
India	12.92
Malaysia	7.46
China	7.22
Indonesia	5.75
Brazil	3.86
Vietnam	2.88
Bangladesh	2.52
Thailand	2.33
Nigeria	1.90
Turkey	1.46
Cameroon	1.09
Sri Lanka	0.99
Guatemala	0.73
Haiti	0.71
Dominican Republic	0.64
Venezuela	0.61
Tanzania	0.59
Algeria	0.59
Panama	0.53



Pre-processing data

History of plastic production/ plastic in the ocean: Three separate datasets were downloaded and combined into a single csv, before plotting a single graph with three overlayed lines. Projections of future waste were also eliminated from the data given their irrelevance in this section.

Choropleth map: Grouped regions such as Asia or North America were removed from the dataset before graphing the data.

Map of metro Manilla: Waste generation numbers in 2020 was subtracted from the projections for 2025 in each area of the metro Manilla map. This was represented as a percentage for each area and mapped accordingly.

	A	B
1	City	% Change in waste generation between 2020-2025
2	TAGUIG CITY	19.5
3	CITY OF PASIG	14.09
4	CITY OF PARANAQUE	13.71
5	CITY OF MANDALUYONG	11.32
6	QUEZON CITY	10.35
7	CALOOCAN CITY	10.2
8	CITY OF MUNTINLUPA	9.8
9	CITY OF VALENZUELA	8.37
10	CITY OF LAS PIÑAS	7.46
11	CITY OF MAKATI	7.18
12	PASAY CITY	5.39
13	CITY OF MARIKINA	4.73
14	CITY OF MANILA	3.96
15	PATEROS	3.54
16	CITY OF NAVOTAS	2.64
17	CITY OF MALABON	2.51
18	CITY OF SAN JUAN	1.24

Analysis

The analysis and subsequent insights of my data revealed that a significant amount of the plastic waste emitted to the oceans in the Philippines is washed through the Pasig River and other rivers in the Metro Manilla area. This led me to inspect data from the Filipino government relating to the future of waste production in the areas surrounding the Pasig River. Relating to Ben's feedback (my tutor) from Assignment 1 to "craft more attention-grabbing sub-headings… shocking users", I aimed to implement this through sub-headings such as "Philippines at Fault" and "Plastic Pouring from the Pasig". I also aimed to put more emphasis on the biodiversity aspect of the website (another piece of feedback) through the animated dolphin jumping and the count of mammal deaths from plastic each year.

Mapping of data justifications

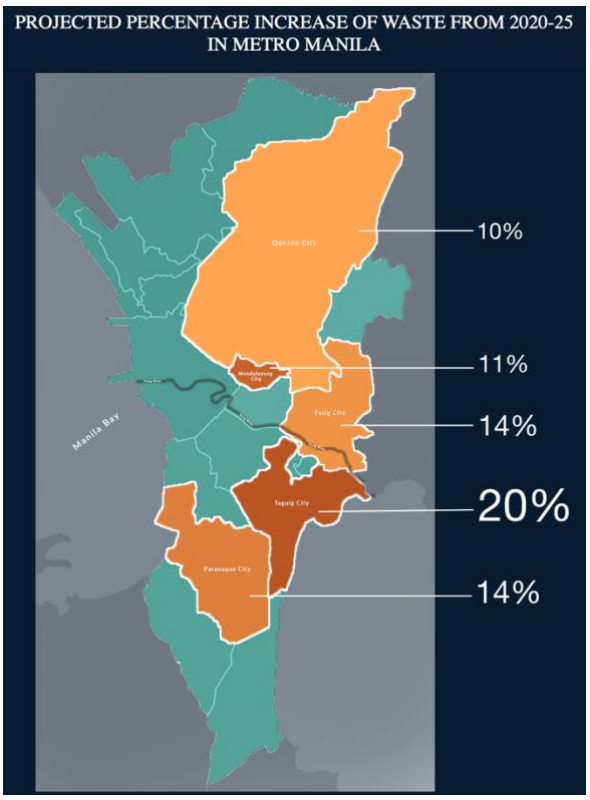
Plastics over time: The line graph emphasises the steep rise of plastic production and micro/macro plastic in the world's oceans.

Ocean mammal deaths: Mapping this using a count-up animation seeks to provide some perspective to the sheer scale of the number and tragedy caused by plastics in the ocean.

Choropleth map: This visualisation seeks to isolate Philippines as the clear outlier through the highly contrasted colours.

Bar graph: This bar graph indicates the scale of plastic pollution in the Pasig River. The use of colour aims to highlight the Philippines as the biggest culprit.

Metro Manila map: The use of a spatial visualisation is primarily to assist entrepreneurs and investors seeking to direct their efforts to the most at-risk areas.



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