

Visualisation Narrative

The website concept is to inform the readers of the **impact of plastic pollution**. It is important to promote the idea of reducing plastic pollution, as it is affecting not only biodiversity but the whole **ecosystem**, including us. Especially after conducting some extra research and noticing this issue may turn out to **appear in our dinner**.

Teenagers and young adults (people around 14 - 29) are the main target audience. This is because they are the least active recycling age group (Gould, 2020). Lack of education is potentially one of the reasons (Ross, 2023). Thus, to **raise their awareness** of the importance of recycling plastic, highlighting the consequences of plastic pollution and **biodiversity loss** is vital.

As I am designing the website to target **youngsters**, it would be more attractive if the story is more **interesting and casual**. Thus, when I am selecting the data, I tend to search for data that is more related to our daily life, for instance, **what we eat**.

To ensure the whole story flow is smooth, I also looked into data that shows marine species and fishes are heavily impacted by plastic pollution. In short, the website's insight is focusing on **marine species and biodiversity**, and the story is linked to **plastic pollution**. Especially when plastic is something that we always use, this makes the readers more connected to the issue. Compared to other types of charts, "**geo map**" has more **interactive** options. Youngsters are more likely to engage with websites that have more interaction. Therefore, I tend to develop the visualisation of plastic pollution using it. For example, allowing them to look at **different countries'** amounts of mismanaged plastic waste.

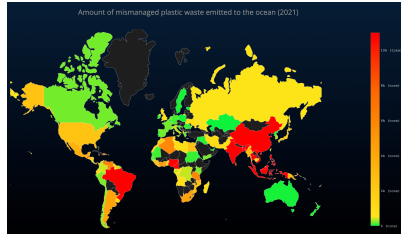
Based on the **feedback from A1**, I have further screened the population trend data of the marine species. To ensure the concept is cohesive, I **filtered the trend data** into marine species that are specifically affected by waste pollution. This avoids the key message being **distracted** by other data, which fixes the concept issue raised from A1 feedback.



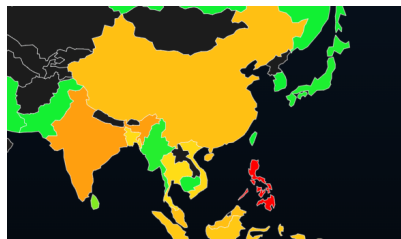
After applying the feedback from A1, I created a prototype and carried out testing with 4 users, aged 18 to 35. This is because I want to ensure the story of the website is appealing to my target audience. This session focused on the **general narrative** and **prototype structure** (click [here](#) to view) which I created in Figma. The results showed that the story flow and design architecture were suitable. Thus, I started creating the website based on the prototype. To improve its engagement, I added **parallax effects** that are related to the narrative into the design as well. This is significantly helpful to make the website more interesting and **attract** teenagers to continue reading.

Usability Testing

A total of two iterations of usability testing were conducted. I interviewed 9 different participants and received 13 questionnaire responses on the final iteration.

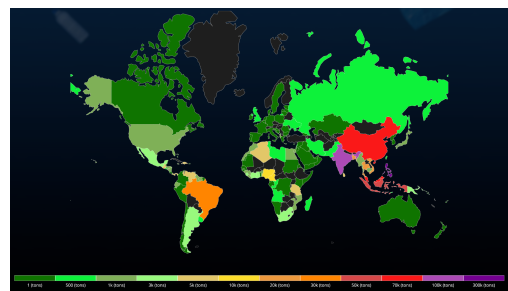


The first iteration was tested with the same group of users as the prototype. It was conducted after applying the in-tutorial feedback from the tutors (Alex & Drew). Alex reflected that the **blur effect** of the parallax object was laggy. Thus, to ensure all testers can test the prototype smoothly, I removed the effect before the test session.



Both tutors added that the mismanaged plastic waste map (see top left image) is **not clear** enough to show the highest pollution country as I scaled them down to ensure all countries have proper colour. Based on their suggestions, I created another chart below which focuses on the amount of pollution in **Southeast Asia**.

However, the result was unsatisfactory. Most participants agreed that the Southeast Asia pollution should be better presented, but they felt **repetitive** in the **way of presenting**. To address the colour scale issue of the map, I created a **colour bar** instead of using the default one from Plotly. Additionally, they encountered difficulties when testing the threatened species part. They were not familiar with the Plotly function and so they did not know they can filter the groups by clicking the legend. Therefore, I built the **checkboxes** from scratch. Finally, the prediction line was not clear enough. This results in unclear storytelling. So, I modified the prediction lines into dotted lines for better differentiation.



Which colour palette do you think represents the order of **LEAST** (left) and the **MOST** (right) mismanaged plastic waste emitted to the ocean best



☐ Option 1



☐ Option 2

The second iteration involves questionnaires and interviews. Questionnaires (click [here](#) to view) were sent out once after the refinement. The website was hosted with **GitHub**, so participants can test it remotely. Most of the testers were aged between 19 to 29, which is within the target age group. They were asked to compare the **colour palettes**. This helps me to find out the colour palette that most users agreed with. Based on the

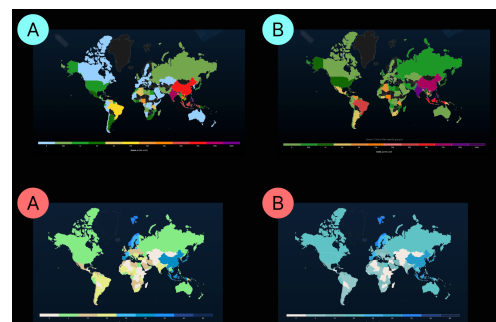
result, I changed the **seafood consumption's colour bar** to blue but with different saturation and darkness. This idea was suggested as users thought it makes more sense for seafood, which creates better **external consistency** and usability.

The questionnaire also involves questions that users have to count **the time it takes** for them to complete the tasks (see questionnaire session 3). These questions allow me to

understand their **difficulties** and whether the data is presented. The results showed that an instruction text should be added above the colour to indicate to users that they can click and hover to filter the countries, especially when the **target audience** may not be familiar with this kind of chart. Besides, a limit of the geo map was identified, which the country user hover is not obvious. I tried to create a new chart on top with geo json to highlight the hover country, but this will block the main chart below. Thus, this issue was not fixed in the end. In the last session, participants were asked to fill out a set of SUS questions, and the **average usability score is 83**, which is a satisfactory result.

After that, follow-up interviews were conducted with the same group of participants from the first iterations. There were 5 more interviewees invited after having their consent from the questionnaire. One of the interviewees has **5 years of experience** in usability testing and is an **expert in website design**. This improves the validity of the result.

An **A/B testing** with the new colour palettes was carried out to ensure its effectiveness. The testers agreed that "green is an acceptable colour, yellow for warning, red and purple as danger" and "blue colour gradation helps the visualisation". Therefore, B colour designs for both charts were selected.



They added that the website's overall storytelling is **engaging and compelling**. Also, they really enjoy the parallax effects, which are **cohesive** and make the message impressive. The interviewees revealed that this website helps them to better understand the impacts of plastic pollution and has raised their **awareness of biodiversity** (the prediction trend of threatened species).

The only refinement suggestion was the **formatting** of the large portions of text. One of the users added that adding some font-weight to emphasise the key message would help. As a result, some of the text was changed with a **different colour** and with **bold formatting** in the final design. This makes the paragraphs more readable.

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