MigrationViz

Our path

Our journey begins with a brainstorming session, during which we collectively agree on three attention-grabbing themes: human migration, carbon emissions (and others related pollution), and waste management.

After imagining different directions we may take to tackle the subjects, we start a **thorough search for datasets**. To produce a **qualitative data story,** one needs **reliable and interesting data**, allowing for a technically feasible, reasonable, and attractive project for each member of the team.

For this reason, **we settle on the topic of human migration**: we find qualitative and diverse data sources coming from NGO's, government and international organization. We are aware that **migration is a polarized topic with uncountable human tragedies** involved and discussed within the team to ensure everyone feels comfortable about this topic choice.

As a next step **we focus on** three migration data sets. No dataset required scraping, saving us precious time. The first one comes from the **United Nations Department of Economic and Social Affairs (UNDESA)** and compiles general global migration data. The second dataset is from **United Against Refugee Deaths (United)**, an NGO recording migrant deaths with their geographic localisation at EU borders. We obtained from United their consent to use the data for visualization purposes.

The third one is taken from the **State Secretariat for Migration of the Swiss Confederation (SEM)** and compiles asylum statistics specific to Switzerland from 1994 to 2023. The UNDESA and the SEM datasets were publicly available, however, due to time constraints, **we chose to leave out of the project the Swiss dataset**.

With our chosen datasets, we now asks ourselves the question : **how did other people visualize migration data?** We set out to look at related works to get inspired by, both online and in print. Border Forensics, The New York Times, "*Atlas des Migrations dans le Monde*" and the IOM World Migration Report were the most memorable of those we stumbled upon. We can only encourage the reader to take a look at them. The UNDESA visualization was for example heavily inspired by the World Migration Report. .

The website we develop **aims to show the scope of migration at a global scale**, while reminding our visitors that **behind every "data point"** of our website, **there are humans**. To us it is an essential aspect that we tried to emphasize. This is where the discovery of the hand-drawn illustration library of people, called **"Open Peeps"**, gives a different dimension to our project.

The illustrations consist of an infinite combination of beautiful, simple and sober hand-drawn people. It seemed perfect **to show the diversity and humanity** we want to emphasize through our project. This reason also explain the choice for the hero animation showcasing a diverse crowd of moving people. Even more so, "Open Peeps" brings to our project a **cohesive design** throughout the website and the process book. It is completed with font and colors chosen to give the website a sober and rather light touch to counterbalance the seriousness of the subject

We **intentionally used the same illustrations** for the hero animation, the refugees' deaths shown in the United visualization and for us authors, **to highlight that although individual, we are all human**. We hope you enjoy and perhaps recognize people you know in the characters you will meet along our project.

The website display data via **three visualizations** with their contextual panel. They are interconnected via a scrolling animation for smooth navigation. The starting visualization is a **Sankey diagram** based on UNDESA data. It provides a light-weight introduction to a heavy thematic, hopefully catching the attention of the visitor. The second visualization represents **raw numbers via a world map** also based on UNDESA data. The user can explore the number of refugees worlwide along with the percentage of migrants compared to total population. Finally, the ending visualization is the heaviest one and **adress deaths of people on the migration road to Europe**, based on data provided by United.

Challenges

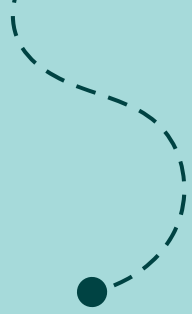**Data management and manipulation**

Raw data, which we obtained via institutions' websites and NGOs, requires processing. It allows us to extract only essential information, but also to structure it in order to be used for the visualizations. **The challenge consisted of keeping true to the data, even though we manipulated them** to work for the visualization.

Choosing how to represent the information is not a trivial choice. We encountered this challenge when working on the UNDESA map. The map borders are based on data from Natural Earth, an open-source mapping project, but have been manually modified to correspond to how the United Nation dataset divides the world. UNDESA differentiates often much more than Natural Earth.

An example therefore are the French territories. We could have decided to merge all territories and overseas departments into one entity, like the original Natural Earth map. But this would mean loosing interesting aspects of the data. The Réunion overseas department illustrates this well. Although almost a million people live in the Réunion, there are less than five refugees in the overseas department. Apart from obvious geographic reasons, are there political reasons also at play?

These sort of finer-grained observations wouldn't have been possible if we had mindlessly merged the data. It is a question you need to ask yourself when manipulating data: **Do I distort the overarching message of the data by my modifications?** Is it worth the work to for example adapt the map to the data? In many cases there is no black and white answer.

Choices of representation

The **technical implementation** of the planned visualizations was a key challenge and we are proud of the result. For most of the team the use of JavaScript, CSS and HTML was completely new. In this process, we realized at a later stage that it would be smarter to **encapsulate visualizations** using classes. However, due to time reasons, we only managed to successfully change it in the second visualization. We also did implement using topojson instead of geojson, which would **improve loading times**.

Another encountered challenge was knowing when to stop. Hours and days can be spent trying to improve or optimize the visualizations, or try different visual renderings of the website. In addition to that, the scope of the subject is such that it was possible to go in many directions. We focused our attention on well-defined objectives, as to produce a viable website. As you may have understood, time constraints prevented us from using the Switzerland dataset. **We chose to refine our 3 visualizations, instead of lowering the overall quality to produce a fourth visualization**.
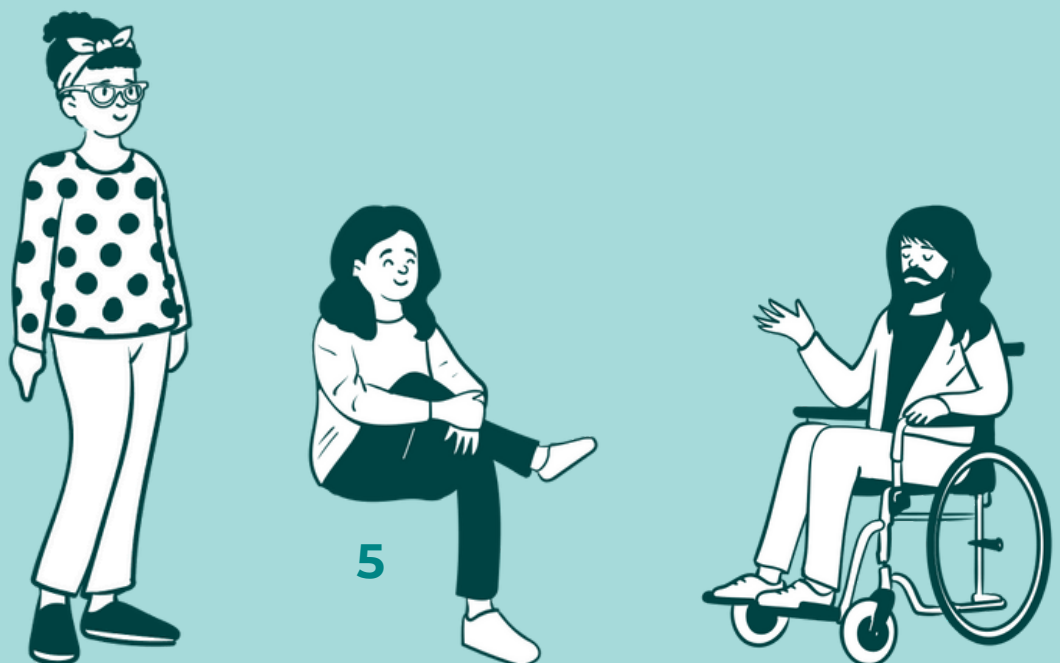
Sketches

Sankey

When addressing the subject of human migration at a global scale, **numbers are such** that they **become ungraspable**. Sankey diagram appeared as an interesting design choice: it is **simple to read and understand** at first sight, making it a good introduction to the subject. However, it allows for a **deeper exploration** for those who want to go beyond. Integration of time through the interactive timeline gives depths to a visualization that would have otherwise been quite simple.
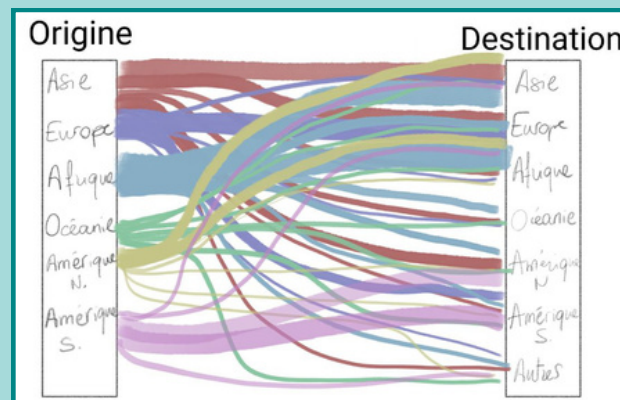

Refugees World map

The second visualization is an interactive map based on UNDESA data. It shows country-wise the number of refugees and the percentage of migrants. The aim is to make the visitor **reflect upon worldwide geographic distribution of migrants and refugees**. The map gives an easy-to-digest global overview, while allowing the visitor to switch between data sets or to get further information through the tooltip functionality if interested. The tooltip always shows information for the closest country, allowing also small entities like Monaco or the Reunion islands to be explored. We used **the Winkel-Tripel projection**, as it was mentioned in course that is one of the **most accurate representations**.
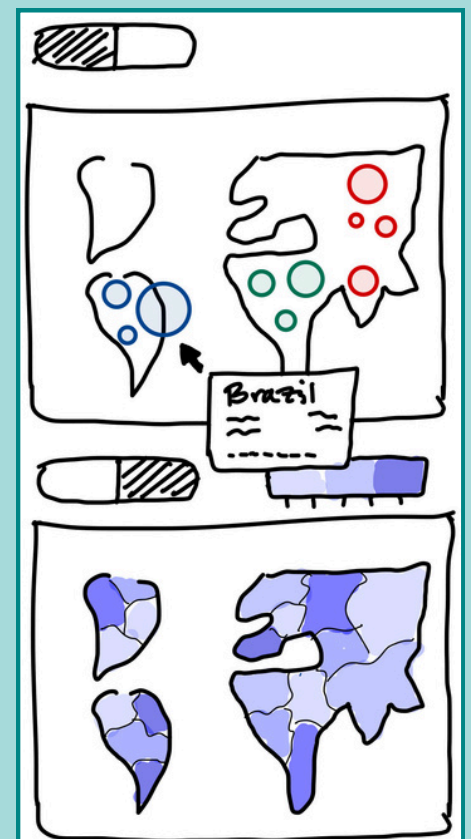
The last visualization of our website is the **most complex one**, based on data collected by the NGO 'United against refugee deaths'. It consists of a **map of the Mediterranean region** showing each **recorded event of migrant(s) death(s) for over 30 years**. It is paired with an interactive timeline and an information panel that allow for deep exploration of the data. It is possible to **focus on specific regions** or **time periods** to display information about a person's death. This information is displayed in an info panel right to the visualization. Various characters created with Opeeps and randomly displayed are highlighting the human behind the data. The info panel aims **to help to remember and consider** the **people dying on the migration road to and inside of Europe**.

Its place as the last visualization is a design choice : It tackles a heavy subject, and **we actively wanted it** to be the **last visual information given** to the public.
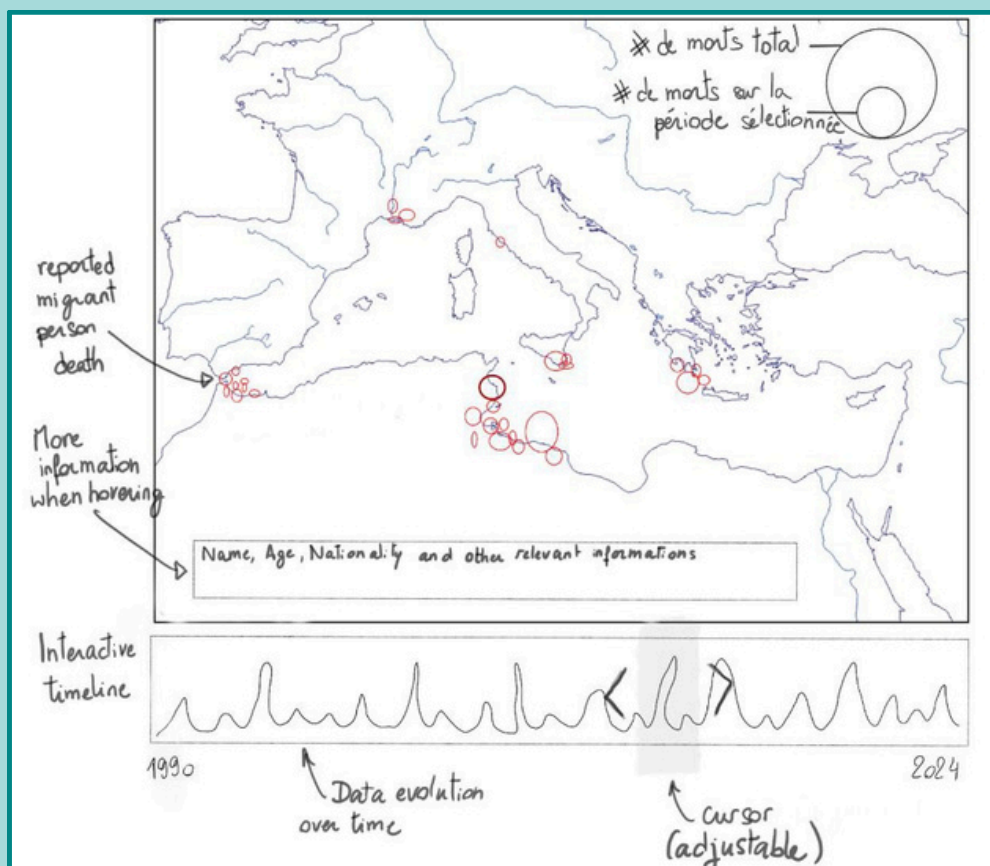
Peer assessment

We made the choice to start working on the project consistently and early in the semester. All the design decisions, organization and important choices were made together during our weekly meetings.

Lola mainly worked on the Sankey diagram while Casimir worked on the world map displaying UNDESA data. Stefanie developed the map of 'United against refugee deaths' and Nicolas created the basic design and structure of the website. He also helped all of us to chase some tough errors. However, we supported each other in all our tasks and were able to draw on the knowledge of the others in the group when difficulties arose.

Casimir implemented the welcome page while Lola worked on the process book content and design with help from Stefanie. In parallel, Nicolas adjusted the website to reach its final version and produced the screencast. We all tried to implement classes into our code but we met different outcomes...

Sources

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