Information Visualization
Checkpoint IV

Checkpoint IV: First Prototype

Group: G09
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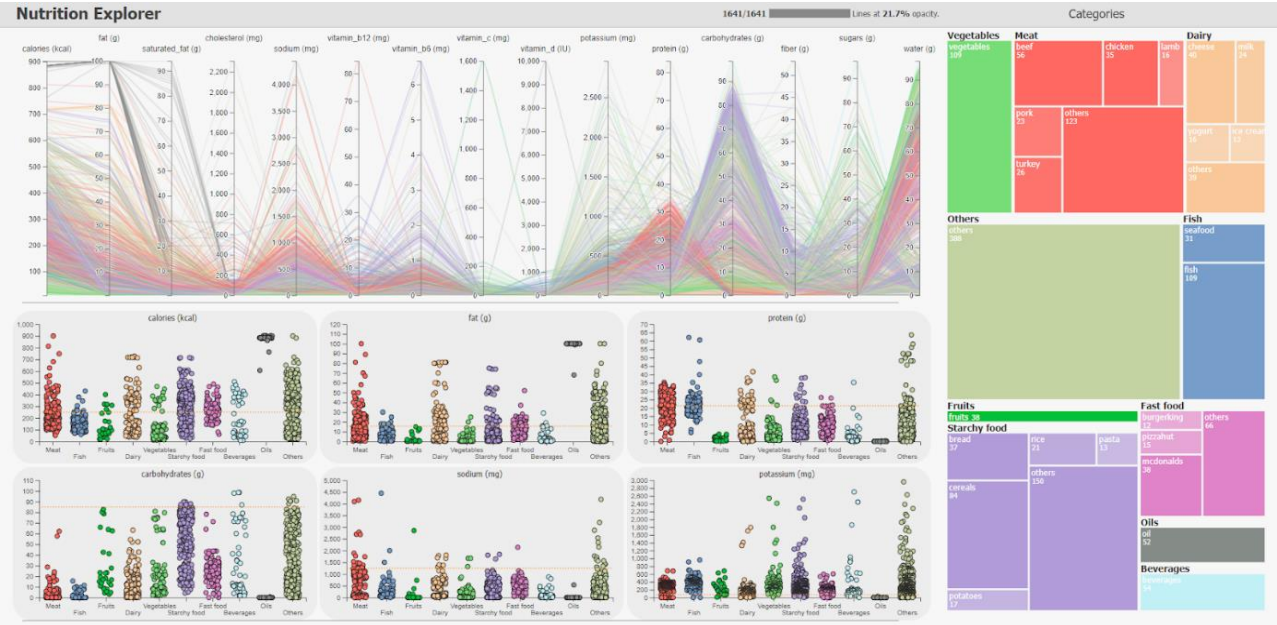
Layout



On the top of the first prototype interface, we have the **header** of the page with the title of our project (Nutrition Explorer), a counter and bar showing the number of the items currently visible and a header for the Treemap.

Underneath, we have our first idiom: the **Parallel Coordinates plot** that shows all the items that respect its filters. The items are encoded by lines that cross every attribute column.

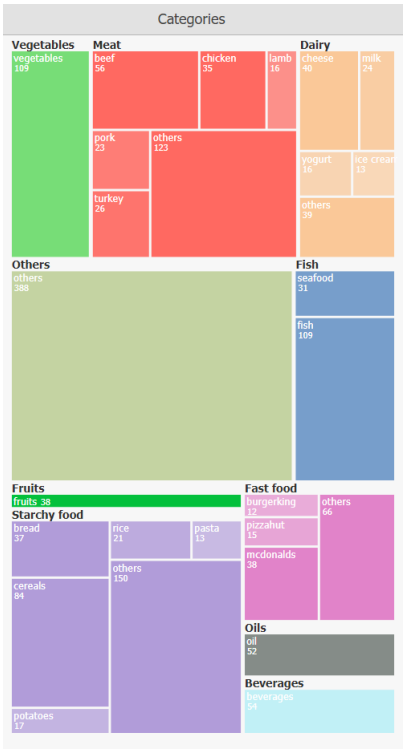
On the right, there is the **Treemap**. The user can observe 10 rectangles with sub rectangles representing each Category and its Types. The size of the rectangles is proportional to the quantity of items in the Category/Type present in the dataset. The types are grouped per category and have the same color hue.

Lastly, we have **six Jitter plots**, each one comparing the items of the 10 Categories by a specific attribute. Every plot shows the recommended daily intake of that attribute per serving, i.e. 100g, using a dashed orange line.

These idioms will be all linked and can be updated, modified or filtered using the other idioms as we are going to explain further on.

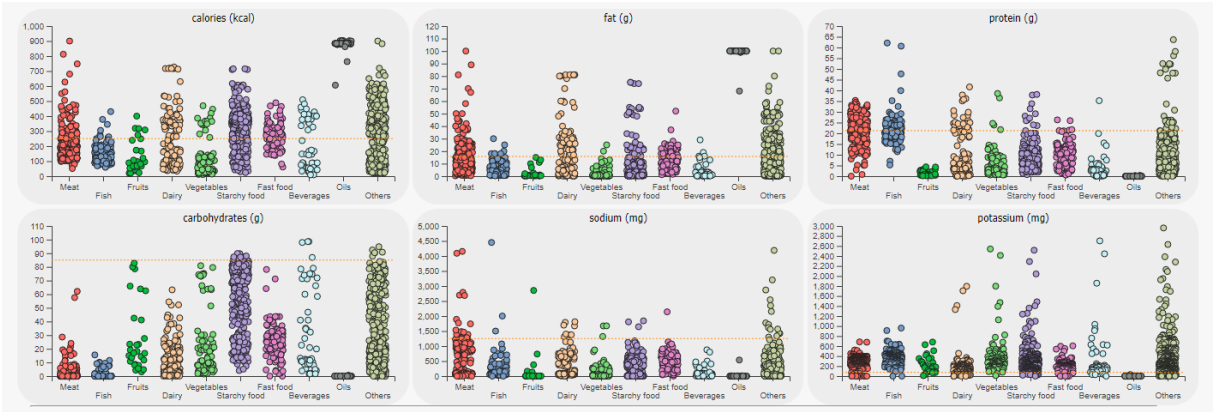
Visual Encoding

Despite being designed and working, the **Parallel Coordinates** plot isn't yet fully implemented. Although it is already filtering all the food items, it has yet no interactivity with the other idioms.



The **Treemap** shows the composition of the dataset by dividing it per categories. Each category is represented with a **rectangle mark** and its **channel, size**, represents their affluence in the dataset. Each category is encoded by a **unique color hue** in every idiom. When the user **hovers over** a rectangle it shows a gray border. The user can **press** a rectangle that corresponds to a Category and that **selection propagates** to all the Jitter plots highlighting that category columns and blurring the non-selected ones. The user can also **select multiple categories** in order to filter the ones that he pretends to analyze. When a Category is selected a darker border appears on its rectangle to mark the selection.

For the **six Jitter plots**, we chose to represent one plot for each of these attributes: *calories, fat, protein, carbohydrates, sodium and potassium* since all of them have a **reference value** on the reference table. Each plot has all the Categories encoded in the **x-axis** and shows the distribution of the items given their quantity of that attribute in the **y-axis**. Each Category has its **unique color hue**, the same as its color in the other two idioms. When the user **hovers over a circle** of selected Category, the item is **highlighted** in every Jitter plot and **its name is shown** near the cursor. If the **Category is not selected**, it shows a **hint** asking the user to select the Category first. The user can also **select or unselect a Category** on the Jitter plots by **clicking** on it. These **changes propagate** through all the idioms, including the Treemap.



In the initial state of these idioms, all the categories are **unblurred in the Jitter plots** and **unselected in the Treemap**, i.e, there are no default selections and the idioms show **all the items.**

Implementation of Linking Mechanism

In terms of interactivity between these idioms:

- When a **category is chosen** by **clicking** on one rectangle of the **Treemap,** the **Jitter plots** update, **highlighting** the category and **blurring** the **non-selected** ones. The user can opt to select multiple categories and consequently have **more than one category highlighted** in the Jitter plots.
- The user can also **select or unselect** categories by **clicking on its column** in every **Jitter plot**.
- When the cursor **hovers over** a point from a selected Category in the **Jitter plots**, the item is **highlighted** by thickening its border. The color hue of the border is the item's category color hue. It also shows the name of that food item.
- The **Parallel Coordinates** plot, when fully functional, can also be **filtered by the Treemap**, i.e., if the user selects a category, it will **only be shown items of that Category** in the plot and in the **List** next to it.
- The **filtered items** in the **Parallel Coordinates** will also have impact in the other idioms. The Jitter plots, for instance, will only present the items that respect the filter of the Parallel Coordinates for the selected categories.
- When **hovering over** an item in the **Parallel Coordinates**, we pretend to **highlight** that particular item too.
- When **clicking** on an item in the **Jitter plots**, the Category of that item is **selected** and the **Parallel Coordinates is filtered** to show only the items for that chosen Category.
- If possible, we also plan to add an **animation** to the **Treemap**. When a category is selected, all the types would then appear instead of our current model where they are all showing. We still do not know if this is a viable option or even if it would significantly benefit our visualization.