Milestone 2

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1 Core features

Our visualization will revolve around a map of Barcelona, divided into 10 districts. We want the user of the website to be able to easily check for a particular data concerning Barcelona in its entirety or for a particular district, and also be able to compare statistics between years or districts. We thought of two core features, or two ways of interacting with the map in order to visualize the data in two manners for different purposes.

1.1 Overall and Per-District statistics

Our first core feature consists of various d3.js graphs representing the overall data, that will be plotted below our map. We have access to data about births, deaths, life expectancy, population, unemployment, immigrants, and we can therefore have a single graph for each of these features, displaying the evolution over time.
On click on a particular district on the map, the website will update the various graphs to filter data in order to only show statistics for the particular district.
We will also show some summary information about the district the user clicked on such as the population, population density, the area, and the list of neighborhoods.

Figure 1: Draft of the main layout

1.2 Choropleth Map and Cartogram

The second core feature consists of different visualizations of maps, allowing the user to select different views such as a Choropleth map, an Anamorphic map, or a Bubble map. The user will be able to select a particular statistic (for example population, or unemployment) and the map will be updated consequently. We could also add sliders in order to let the user visualize data only within a certain period in time.

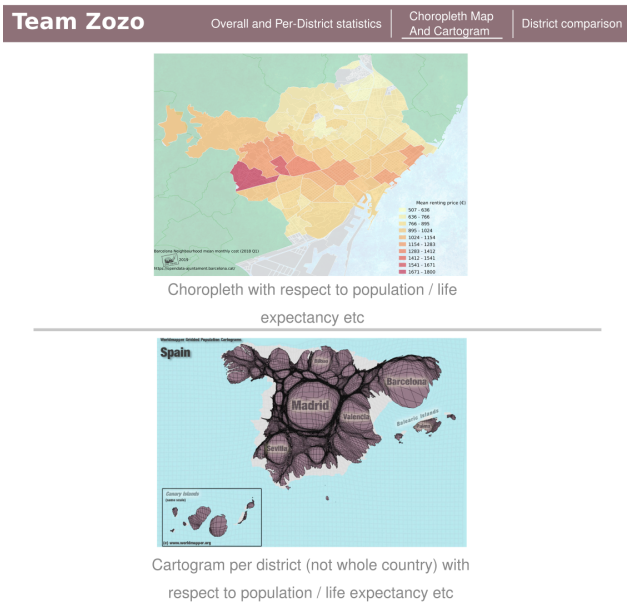

Figure 2: Draft of the choropleth map layout

Such visualizations will allow the user to easily compare data between districts, and be able to see if a particular district stands out compared to the others for a particular data. With the first visualization presented in 1.1 this would be more difficult to see, as the user would have to switch between districts and check the numbers for a particular data in order to compare between them, making it way less convenient.

2 Tools

D3.js – Main visualizations library

Leaflet – Drawing the map, and polygons on top

Bootstrap – Page layout

jQuery – Dependency of Bootstrap

Lodash – Data aggregation and manipulation

Popper – Dependency of Bootstrap

Range Slider – Double ended range slider

The lectures which will be the most useful will be the Maps, Interactive d3js and color perception lectures.

3 Extra Ideas

3.1 District comparison

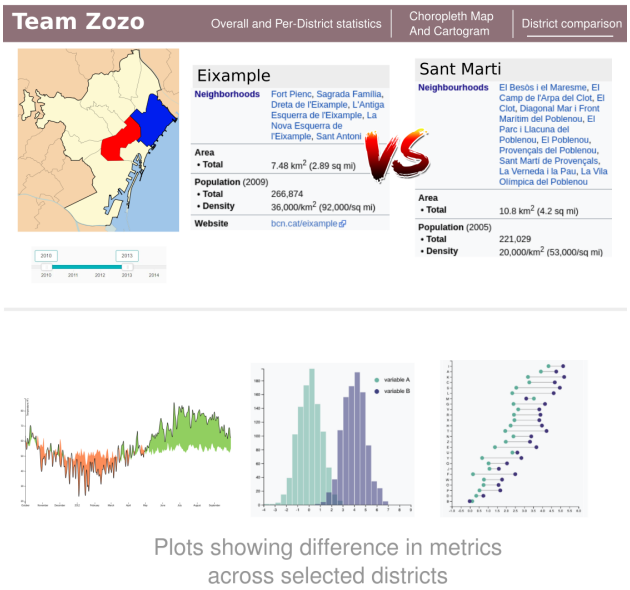

Figure 3: Draft of the District Comparison layout

One of our extra ideas is being able to compare two selected districts to get a better insight of the data. This also allows the plotting of specific graphs made for comparing two different groups as we can see in the figure above.

3.2 Marker clustering

Our dataset gives us access to data that is localized with coordinates and not just by district, such as accidents or bus stops. We would like to display this type of data on a map using markers. However the amount of bus stops or accidents is so big that the map would become unreadable with markers everywhere.
We could use clustering to avoid this issue. The idea would be to show only a few markers on the map, displayed with a number corresponding to the quantity of data (for example the number of accidents) in the corresponding cluster. Then when the user zooms on the map, smaller clusters appear in the area the user zoomed in. And when the map is zoomed enough we could display all markers in the area.

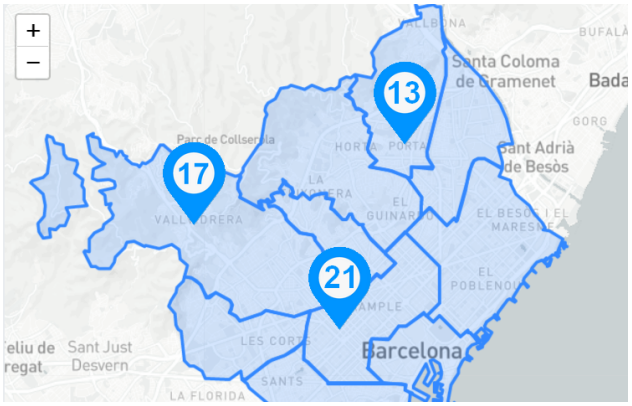

Figure 4: Map with marker clusters before zooming in

Figure 5: Map with marker clusters after zooming in

4 Functional prototype

Our functional prototype is available here.
Please keep in mind that it may be updated after the Milestone since it is hosted on github pages, and updates at each commit, so we will show some plots to represent the current state. You can also access a frozen state using the github release, but it won't be rendered.

4.1 Home

The homepage shows the Per District comparison. By scrolling down, we get a view of statistics about the overall city. Then, by clicking on a district on the map, the visualizations update to show statistics about the particular district. For now we only have bar plots, but we will add other visualizations to match the draft shown before.

Figure 6: Homepage of the skeleton

4.2 Choropleth and Cartogram

This section will show the on-map statistics. For now, we simply have a selector on a feature, and only a choropleth map, but we will refine it over time.

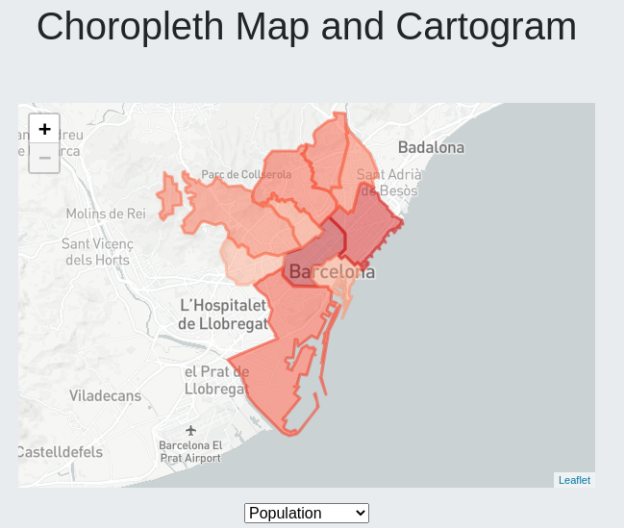

Figure 7: Choropleth map of the skeleton

4.3 District and Comparison

This section will show the District statistics comparison. For now, we only have the population statistics, but we will update the table. It is an extra-idea in the sense that we will provide the basic functionality, but add comparison graphs if we have enough time.

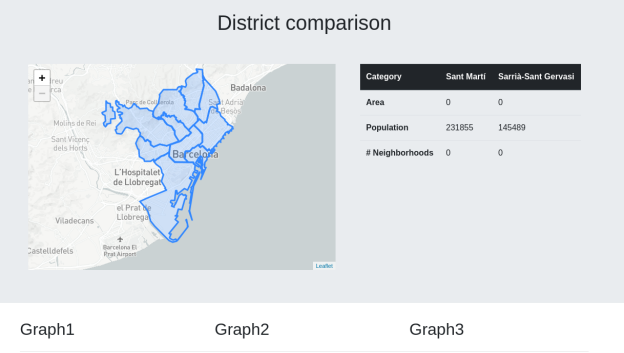

Figure 8: District comparison of the skeleton