

# ¿Move to Barcelona?



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*Data Visualization*  
**COM-480**

This is why you should or should not live in Barcelona

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# Introduction to Barcelona



**Barcelona is a city on the coast of northeastern Spain. It is the capital and largest city of the autonomous region of Catalonia, and also the second most populous city in Spain.**

Being ranked very high on the list of best places to live in Europe, Barcelona represents an attractive location for people all around the world when it comes to residential choices, holidays, personal and business meet-ups, conferences, etc. Having beautiful architecture, wonderful food, excellent public transportation, and amazing weather, it hosts around seven million visitors annually and organizes more than 1000 events. With all daily news, that is presented outside Spain, normally going in this direction, most people started associating Barcelona only with previously mentioned points, which has consequently ensured its steady development and growth over the last 20 years. However, little could be read about the big immigration it has, as well as about the number of accidents and deaths happening. Moreover, an insignificantly small number of studies has been conducted so far, trying to find correlations between different events that happened and the city organization itself (e.g. the number of accidents in different neighborhoods to increase the safety of the population), in order to improve its structure and make changes.





# Mission

Our mission was to design interactive and interesting visualizations for our users that would help them in deciding whether or not to move to Barcelona.



## Goals

Give proper overview of the public transport in Barcelona for different means of transport and all the stations.

Demonstrate and discuss the safety of 10 different districts of Barcelona.

Show all the necessary information that a potential immigrant to Barcelona would request.

Provide conclusions about migration information in the city of Barcelona.

## Visualizations Design

### Data

The data used for creation of our visualization is taken from Kaggle's Barcelona data sets that could be found at the following link <https://www.kaggle.com/datasets/xvivancos/barcelona-data-sets>. The sets include information about the accidents, population, population density, air quality, public transport, etc.

### Ideas

We wanted to provide all the needed information that someone can use when deciding to move to Barcelona. We started thinking what we want to know about a city we want to call home. Some of the most important facts that are in our interest are the number of accidents that happened in a district, the connections with public transport, and the migration.

### Visualization weapons

All the visualization techniques that we were using are taken from the JavaScript D3 and Leaflet libraries. We opted for the usage of pie charts, bubble charts, circular packing, and sankey diagram. Furthermore, our visualization would not be complete without interactive maps, so we included one for the accidents and one for the transports.

# Info about population



Circular packing for making population statistics more interesting

The unusual circular packing that we provide allows users to easily get information about how many people lived in each Barcelona neighborhood in different years from 2017 to 2013. Users could spot easily which neighborhood was the most crowded for the chosen year by looking at the size of the bubble. On the right side, there is a colorful legend displaying which color represents which district. Moreover, users could also get information about the exact statistics of the neighborhood by dragging over a respective bubble.



Check the situation for different years



Spot easily which district and which neighborhood were populated the most



Have fun by playing around with bubbles



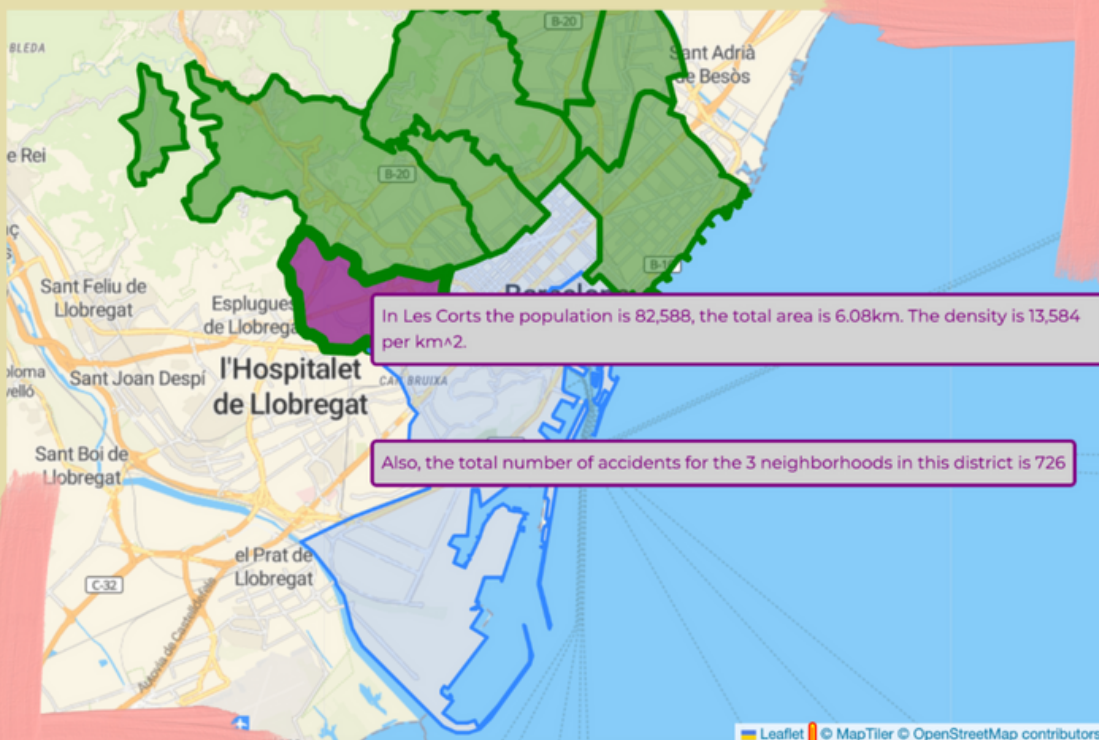
# Interactive Barcelona map

## OPTIONS

- Hover over different districts
- Zoom in and out
- Color differently the districts that you have already visited

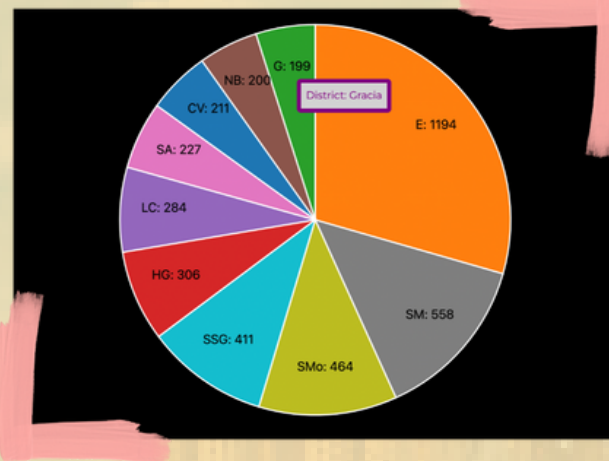
## INFORMATION SHOWN

- Area
- Population
- Population density
- Number of neighborhoods
- Total number of accidents



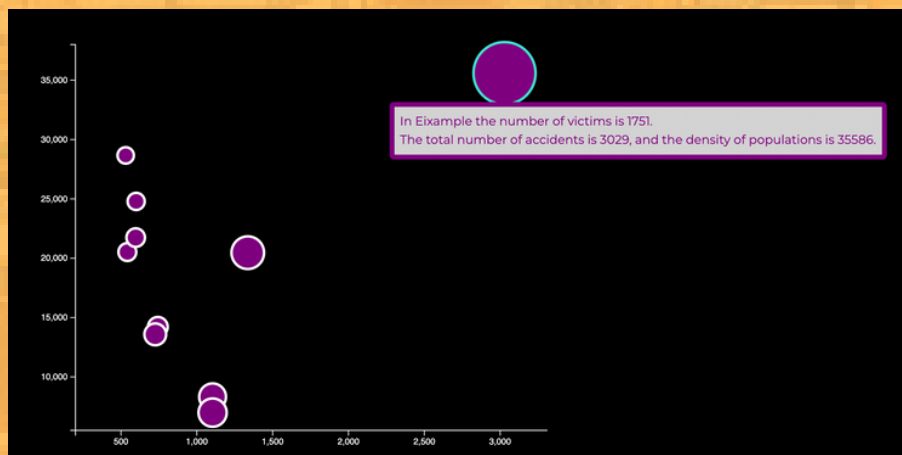
# Pie chart

We designed a very simple pie chart that shows the information about the number of accidents that occur in every district. Also, the user can choose whether he likes to see the number of morning, afternoon, or night accidents. However, since the district names are given in codes, hovering over the text will give the user the full name of the district.

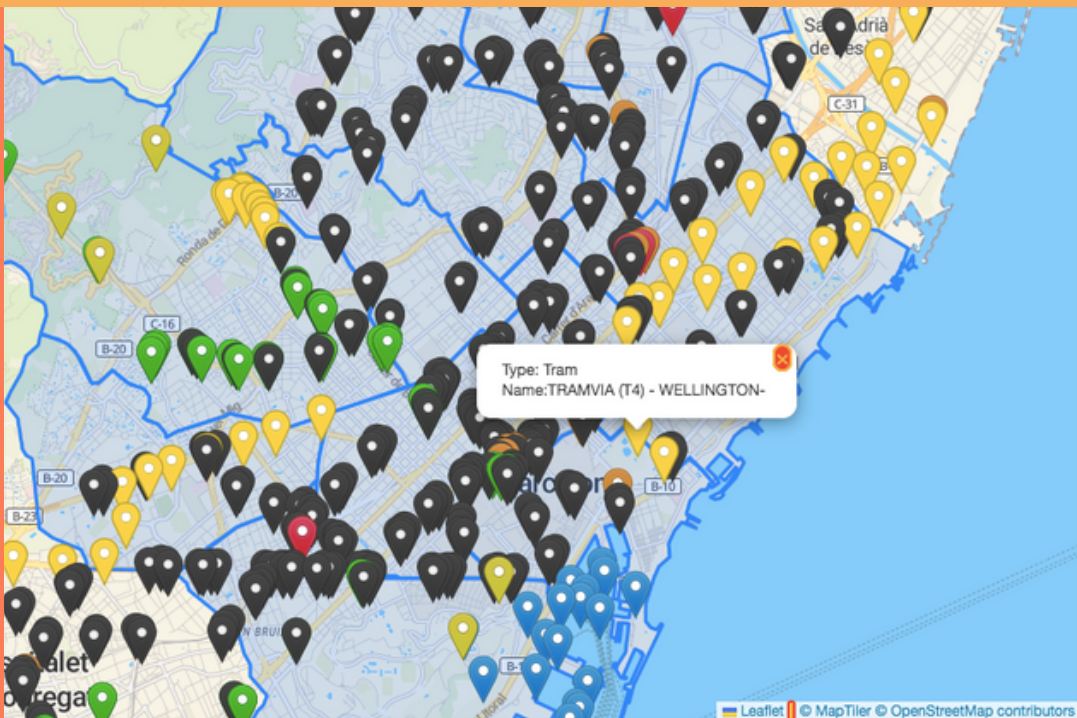


# Bubble chart

On the bubble chart, the x-axis represents the number of accidents that occurred in a district, while the y-axis highlights the population density of the district. Based on that information, we created bubbles that show the number of victims for every district. The size of the bubbles is proportional to the number of victims. Hover action over



# Public transport map



Since the public transport proximity is in most cases at the top of the list when choosing between different places, we wanted to give our users the opportunity to check what public transports are available in different Barcelona districts. To visualize them better, different colors were used to display 8 types of public transportation available in Barcelona. By clicking on each pin, users can easily get information about the type of transportation and the station name.



Zoom in and zoom out  
for clearer view



Districts easily  
noticeable



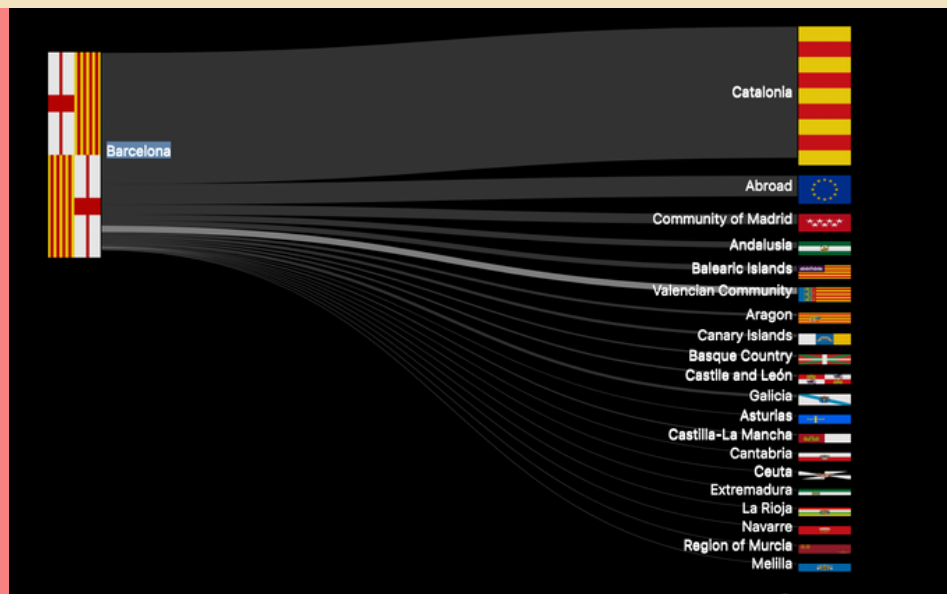
Differentiate easily  
between different types of  
public transport following  
the colors

# Migration sankey diagram



Get the migration information about Barcelona

On the sankey diagram below, you can observe the information where most people leave when going from Barcelona. It is expected that most people from Barcelona leave for other parts of Catalonia, followed by the other countries of the European Union. Furthermore, the top 3 regions of Spain from where migrants from Barcelona come are Community of Madrid, Andalusia, and the Balearic islands. Hovering over a part of a diagram you can get the exact number of people that left.





# Main challenges

While designing our visualizations, some of the main challenges and obstacles we had to overcome were:

- Learning how to draw the district boundaries (Shoutout to Manoel, the TA! :))
- Adding the hover effects of the map with transport stations
- Placing the text right on the pie chart
- Creating an insightful and meaningful bubble chart
- Making the transitions for different years on the circular packing graph

## What did we learn?

This project helped us learn something that could be easily taken as granted. Telling a data story in a proper and clever way, with designing interesting, insightful visualizations is no joke. Combining HTML, CSS, JavaScript, D3.js, Leaflet.js, etc. into one project with a detailed plan takes a lot of consideration for details, careful code formatting, and a lot of patience. In the end, we believed that our story could really help someone to decide whether to move to Barcelona or not, and that is why we were here!

## What to do better?

Our website is not completely responsive, so it could be something to work on in the future. Also, it is not meant to work on different zoom settings in browsers. Usually, all the visualizations work best at 100%.

## Contributions

ZORAN



- Process book, content
- Website structure, initial design, and interactivity elements
- Bubble chart
- Pie chart
- Interactive Barcelona map
- Support on transport map
- Screencast

JOVANA



- Process book, content, design and data story
- Data wrangling and adaptation of datasets for visualizations
- Circular packing
- Transport map
- Support on interactive accidents Barcelona map
- Screencast

TIKHON



- Proof reading the website
- Migration Sankey Diagram
- Process book revision

¡Adiós!