# The Battle of the Neighborhoods

Applied Data Science Capstone by IBM/Coursera

# The Problem

Introduction

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- This project aims to select the safest streets in Barcelona based on the total accidents, explore the districts of that neighbourhood to find the most accidental streets in each neighbourhood and finally cluster the districts using k-mean clustering.

- This report will be targeted to people such as myself who are looking to the safest routes for driving. In order to choose a neighborhood to drive, safety is considered as a concern when moving around my city. The accidents statistics will provide an insight into this issue.

# Scouting for a data set

**Data Acquisition:** Data sets from the Open Data BCN portal, the Ajuntament de Barcelona's open data service.

Open Data BCN, a project that was born in 2010, implementing the portal in 2011, has evolved and is now part of the Barcelona Ciutat Digital strategy, fostering a pluralistic digital economy and developing a new model of urban innovation based on the transformation and digital innovation of the public sector and the implication among companies, administrations, the academic world, organizations, communities and people, with a clear public and citizen leadership.

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# Data Exploration and Cleaning

- Our data set contains the list of accidents handled by the local police in the city of Barcelona. Incorporates the number of injuries by severity, the number of vehicles and the point of impact.

| | Id | District Name | Neighborhood Name | Street | Weekday | Month | Day | Hour | Part of the day | Mild injuries | Serious injuries | Victims | Vehicles involved |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 2017S008429 | Unknown | Unknown | Número 27 ... | Friday | October | 13 | 8 | Morning | 2 | 0 | 2 | 2 |
| 1 | 2017S007316 | Unknown | Unknown | Número 3 Zona Franca / Número 50 Zona Franca ... | Friday | September | 1 | 13 | Morning | 2 | 0 | 2 | 2 |
| 2 | 2017S010210 | Unknown | Unknown | Litoral (Besòs) ... | Friday | December | 8 | 21 | Afternoon | 5 | 0 | 5 | 2 |
| 3 | 2017S006364 | Unknown | Unknown | Número 3 Zona Franca ... | Friday | July | 21 | 2 | Night | 1 | 0 | 1 | 2 |
| 4 | 2017S004615 | Sant Martí | el Camp de l'Arpa del Clot | Las Navas de Tolosa ... | Thursday | May | 25 | 14 | Afternoon | 1 | 0 | 1 | 3 |

- Some accidents occurred are informed as 'Unknown' District and Neighborhood Name. These will require a cleaning task.
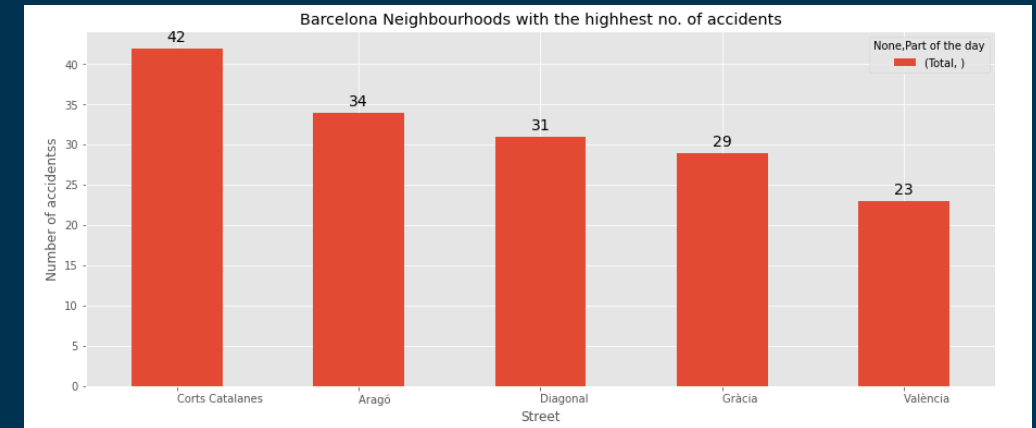
# Methodology

## Summary of accidents

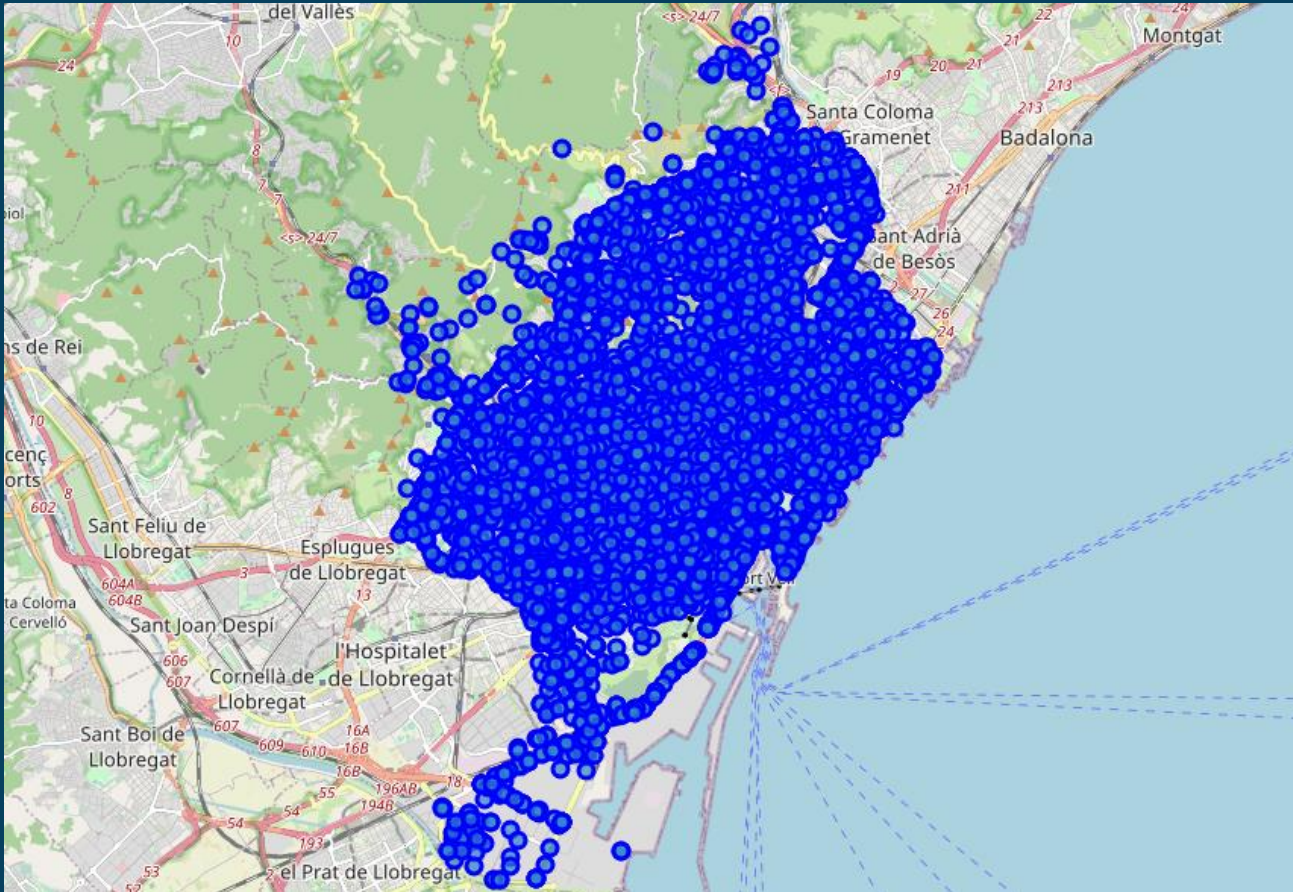| | Neighborhood Name | Friday | Monday | Saturday | Sunday | Thursday | Tuesday | Wednesday | Total |
|---|---|---|---|---|---|---|---|---|---|
| 52 | la Dreta de l'Eixample | 202 | 175 | 166 | 115 | 231 | 240 | 239 | 1368 |
| 48 | l'Antiga Esquerra de l'Eixample | 127 | 106 | 61 | 40 | 90 | 137 | 119 | 680 |
| 61 | la Sagrada Família | 72 | 64 | 52 | 51 | 81 | 77 | 60 | 457 |
| 59 | la Nova Esquerra de l'Eixample | 68 | 50 | 55 | 32 | 92 | 90 | 67 | 454 |
| 16 | Sant Gervasi - Galvany | 72 | 67 | 44 | 29 | 77 | 80 | 77 | 446 |

- Summary of top 5 nenighborhoods with most accidents by days of the week.

## Graphic description



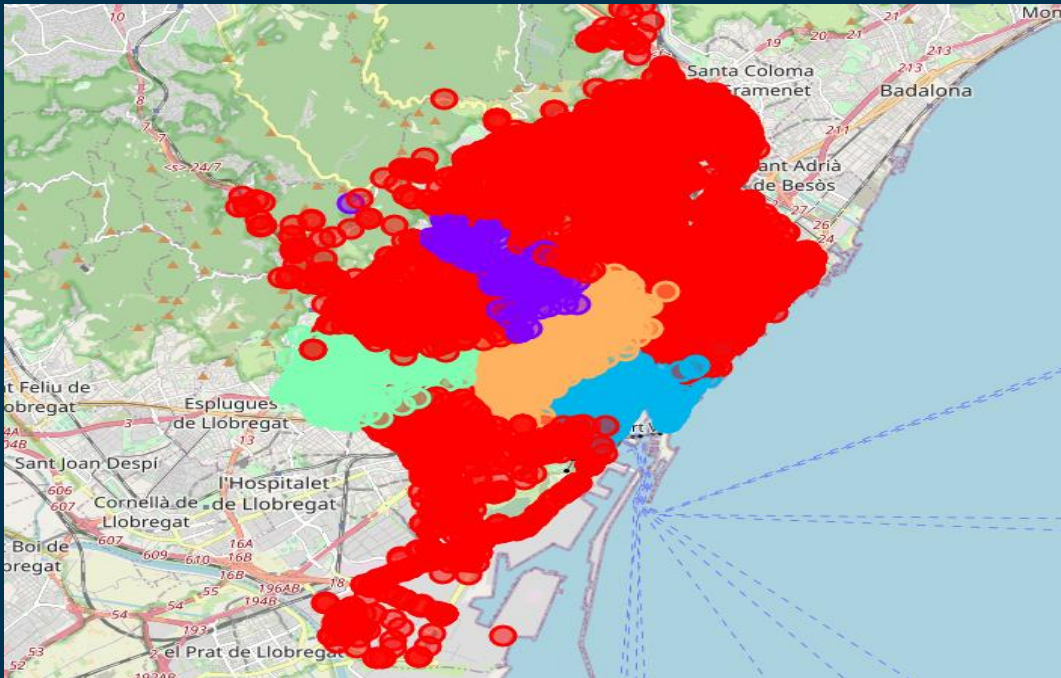- Top 5 streets in Barcelona with most accidents.

# Analysis



- This is the map where the all the accidents happened.
- We will proceed to create clusters in order to distinguish the different type of areas.

# Results and discussion

## Clustering Barcelona



- This is the clustering map for k=5 that show us the different areas according to how 'accidentals' those have been.

## Interpretation

- The clusters suggest that crossing the city through its insides, like Diagonal Street, or all the way up, from or towards the Port, is potentially more risky compared to the other routes around. In case you drive from outside the city, it might seem relevant to choose from which side to approach instead of reaching the city from the middle and then reroute.

# Conclusion

The aim of this project is to help people who want to drive at the less accidental streets in Barcelona.

This project helps any driver to get a better understanding of the traffic inside the city of Barcelona and how important it is, not only taking the fastest route, but the potentially safest for the passengers.

# Thanks