

# **REDUCING TRAFFIC CONGESTION BY URBAN PLANNING IMPROVEMENT**

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## **DATA ANALYSIS**

The datasets used in this project were gathered from two repositories, the Chicago Data Portal and the venue location service provided by Foursquare. From the Chicago Data Portal, a dataset containing historical congestion estimated by region, obtained through the Chicago traffic tracker service, were downloaded and covered information since 2018. Information about the location of cities venues and facilities was obtained through the Foursquare API.

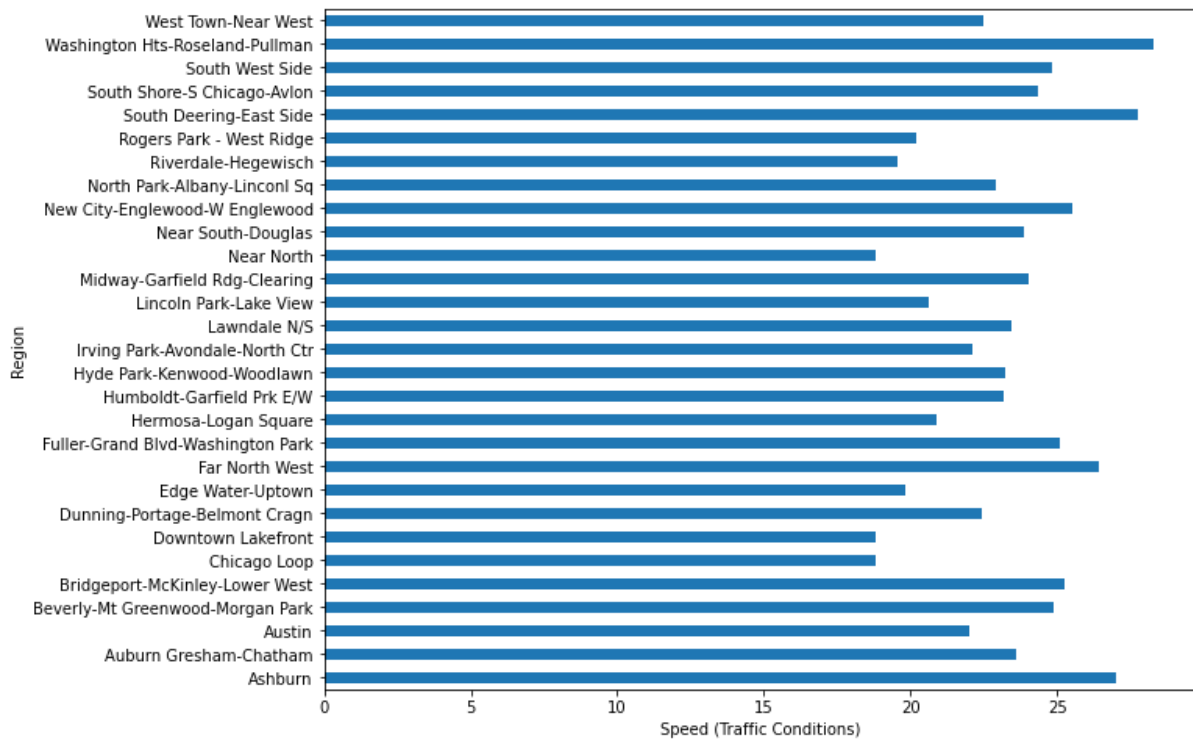
While Foursquare's data was obtained only by a specific data request using the API, the Chicago Traffic Tracker dataset was previously downloaded, allowing its analysis. This dataset contained information about 29 traffic regions, that was used to estimate traffic congestion by monitoring and analyzing GPS traces received from Chicago Transit Authority buses. The variables were identification and description of the city regions (ID, REGION and DESCRIPTION), the identification, characteristics and timestamp of the reading (TIME, BUS\_COUNT, NUM\_READS, HOUR, DAY\_OF\_WEEK, MONTH, RECORD\_ID), localization data (WEST, EAST, SOUTH, NORTH, NW\_LOCATION, SE\_LOCATION), and the congestion indicator, the average traffic speed (SPEED). Although it can fluctuate, the speed average for street segments can provide a good understanding of the actual traffic condition. It is important to emphasize that the lower the speed, the greater the congestion in a given region and the worst its traffic condition.

Graphic 1 provides information about the regions existing in the dataset and the average speed (or traffic conditions) from 2018 until nowadays. The Covid-19 pandemic brought outstanding changes in society's behaviour. And Graphic 2 provides a better understanding of the evolution over the years considered the obtained dataset.

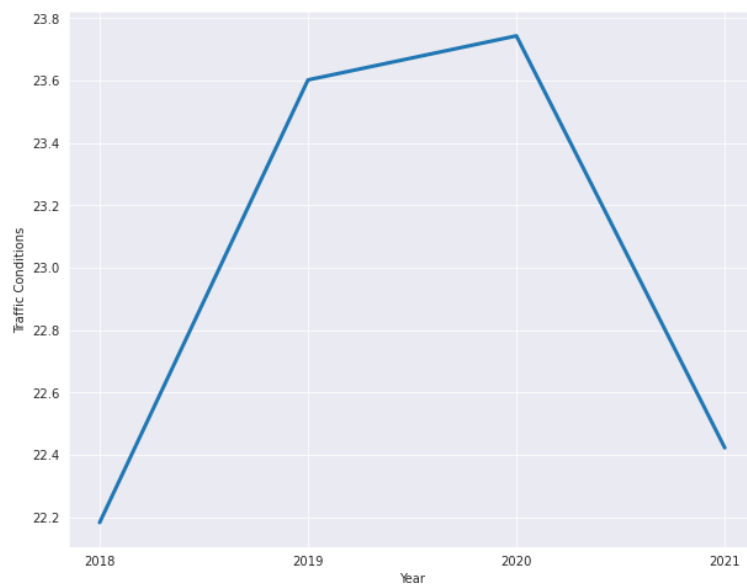
Note that traffic conditions improved in 2020 (the average speed increased), probably caused by some circulation restrictions imposed by the health authority. The current year of 2021 is incomplete for analysis and modelling purposes.

Apparently, 2019's average traffic conditions could be an outlier. Although more information is necessary to affirm this statement, 2020 is certainly an outlier and 2019's average is highly similar to its one. Consequently, all project analyses were performed in 2018.

Graphic 1 - Traffic conditions in each Chicago's region, from 2018 until nowadays.



Graphic 2 - Evolution of traffic conditions



Map 1 shows the location of all Chicago's regions analyzed in this project, with information about the traffic conditions contained in the Chicago Traffic Tracker dataset.

Map1 - Chicago's regions analyzed in the project.

