**COVID-19 Healthcare Capacity in Monterrey, MEX**

1. **INTRODUCTION**

When the COVID-19 pandemic led to a mandatory shelter, many countries weren’t prepare for what was coming. With the first weeks, the response to the contingency was coming late, the president of Mexico were ambiguous and with out the public health care needed for what’s coming. How is the healthcare Capacity in the City of Monterrey and surroundings .

1. **Data Acquisition and cleaning**

**2.1 Data Source**

For the analysis above I used the following data. Until 7/26/2020 this was the current data of covid in Mexico(All the 32 states). Also I used the second link to extract the # of towns/cities in Nuevo Leon Mexito

<https://coronavirus.gob.mx/datos/#DownZCSV>

<https://es.wikipedia.org/wiki/Anexo:Municipios_de_Nuevo_Le%C3%B3n>

Using above said data I will obtain the nearest hospital and also its latitude and longitude using Foursquare API

**2.1 Data Cleaning**

**OFICIAL GOVERNMENT DATA:** This cvs contains the info daily for each city in the 32 states in Mexico, and we only needed the NL. We only need the column: “nombre=”, “poblacion” and we need to sum the daily data to know the current covid infected.

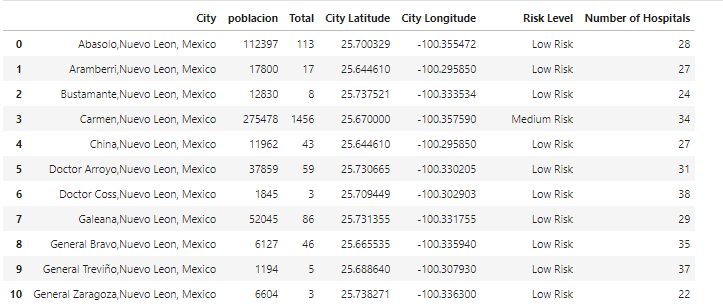
**Wikipedia Data** :-In the table it consists of 7 columns which are ‘ Clave Inegi’ , “Municipio ” so

**3. Analyze**

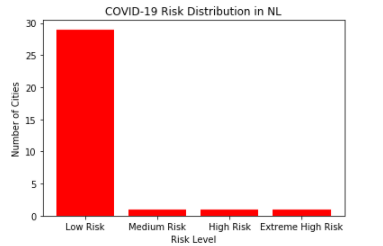
Cluster and Visualize the Healthcare Hardship[¶](https://render.githubusercontent.com/view/ipynb?commit=0e8ce5c1ddc48dcb155ad7d5f2b8b171274cf622&enc_url=68747470733a2f2f7261772e67697468756275736572636f6e74656e742e636f6d2f676973742f6a63732d6e656d6f2f39343061623664343937383631353839376437663630356631623831613138632f7261772f306538636535633164646334386463623135356164376435663262386231373132373463663632322f434f5649442d3139253230696e2532304f43253230416e616c797369732e6970796e62&nwo=jcs-nemo%2F940ab6d4978615897d7f605f1b81a18c&path=COVID-19+in+OC+Analysis.ipynb&repository_id=102791193&repository_type=Gist#10.-Cluster-and-Visualize-the-Healthcare-Hardship) According to Hardship Index, we now can cluster cities into different catagories. We use K-means clustering to divide this categories

1. **Result**

With the following table we use the KNN clusters based on Hospitals reach near each of the cities

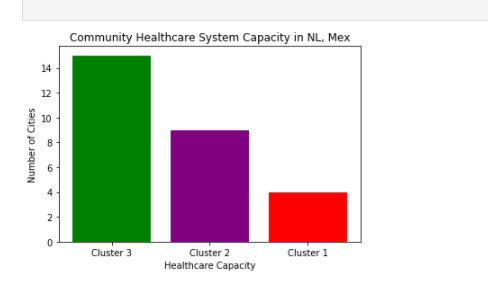


Using K/means clustering on the Total Cases for the 32 cities/Towns we can see that there is only 3 cities that fell in Extreme ,High, Medium Risk; Monterrey,Guadalupe and Carmen

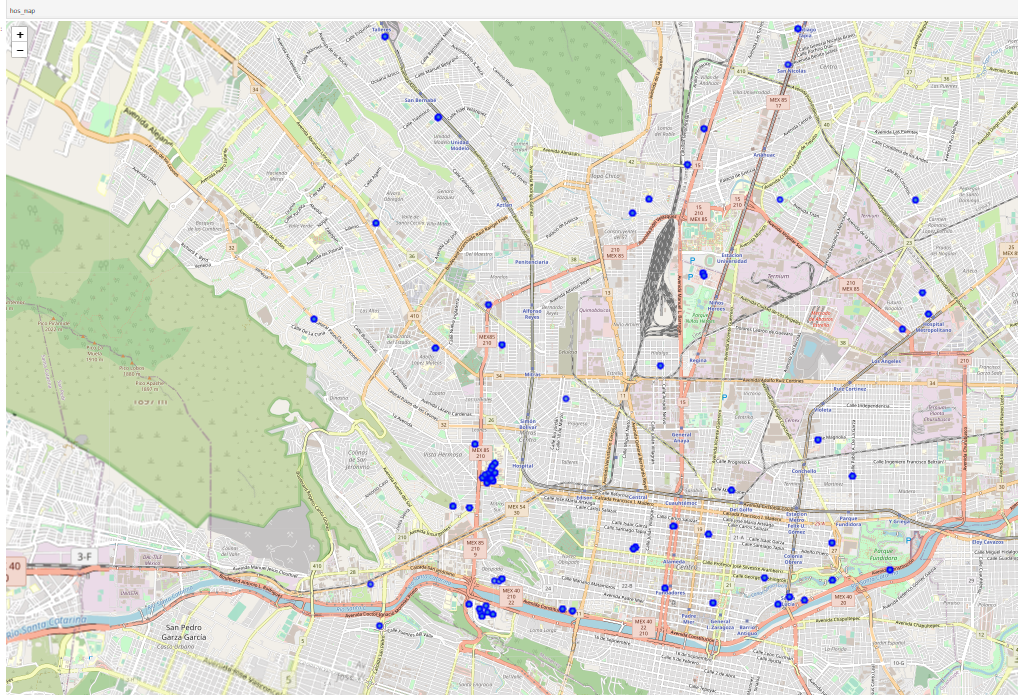




Bar chart to visualize the overall healthcare system capacity in Monterrey Surroundings . The following graph shows the clusters in the area.



We can visualize all the hospitals in the Area



**Conclusion**

We can see that there is a deficient system, with the current hospitals/cases covid, not even we still don’t have the capacity of each of this hospitals and not all the hospital accept patients with covid-19, with this data missing we could be more accurate on how each of the cities will be available to manage the cases.