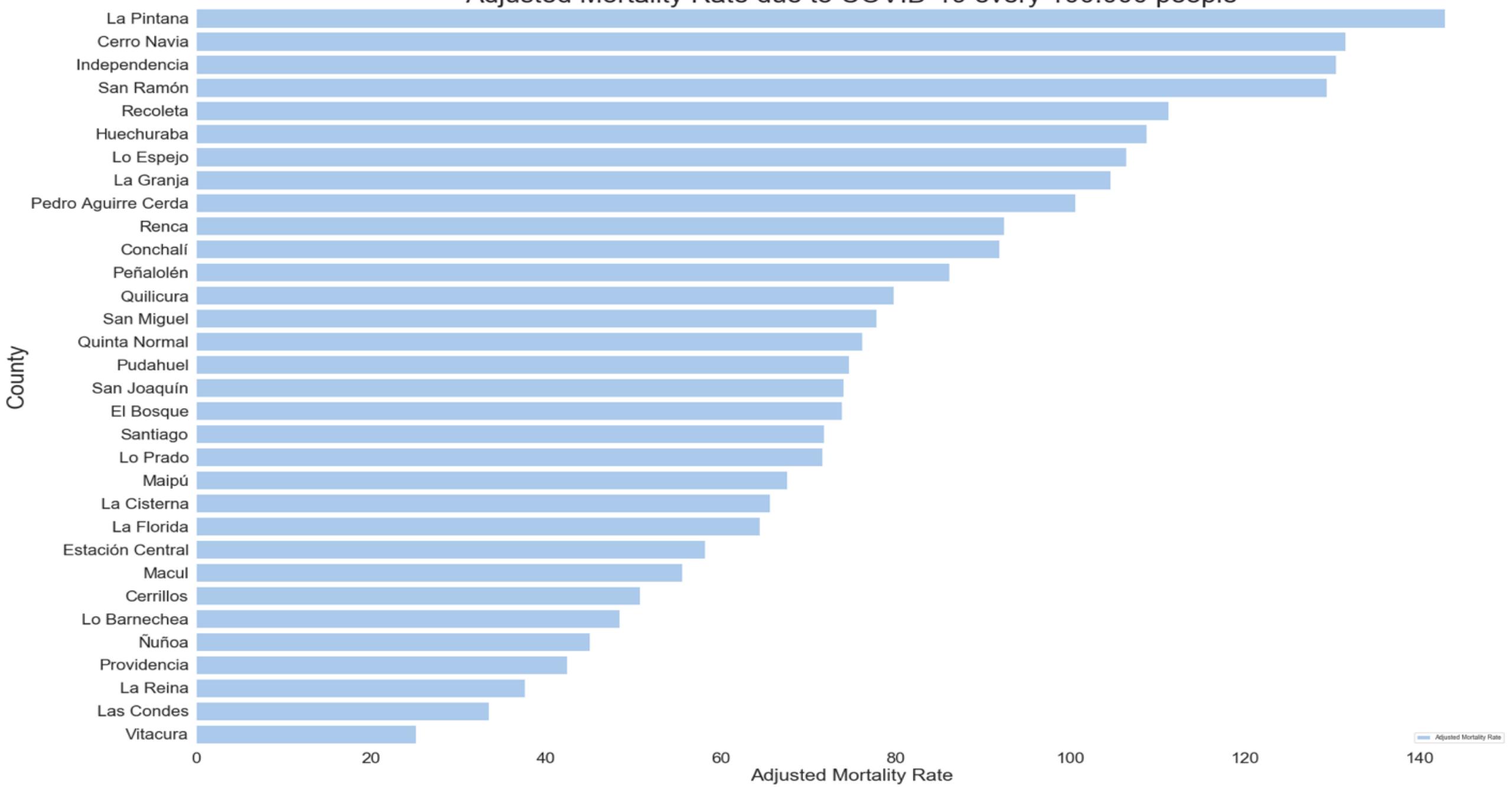
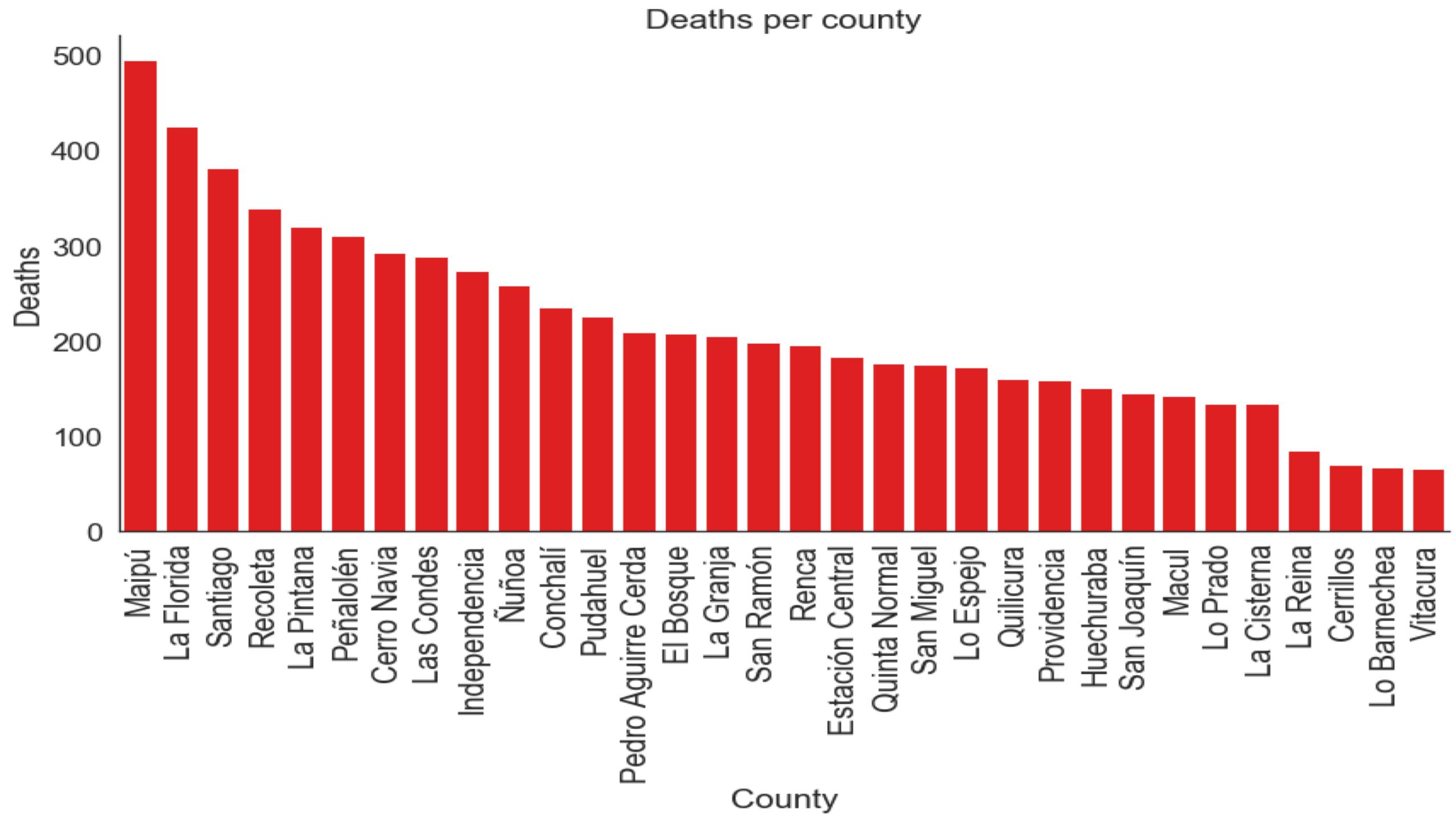


Selecting county to strengthen healthcare system.

Adolfo Alamos Mella

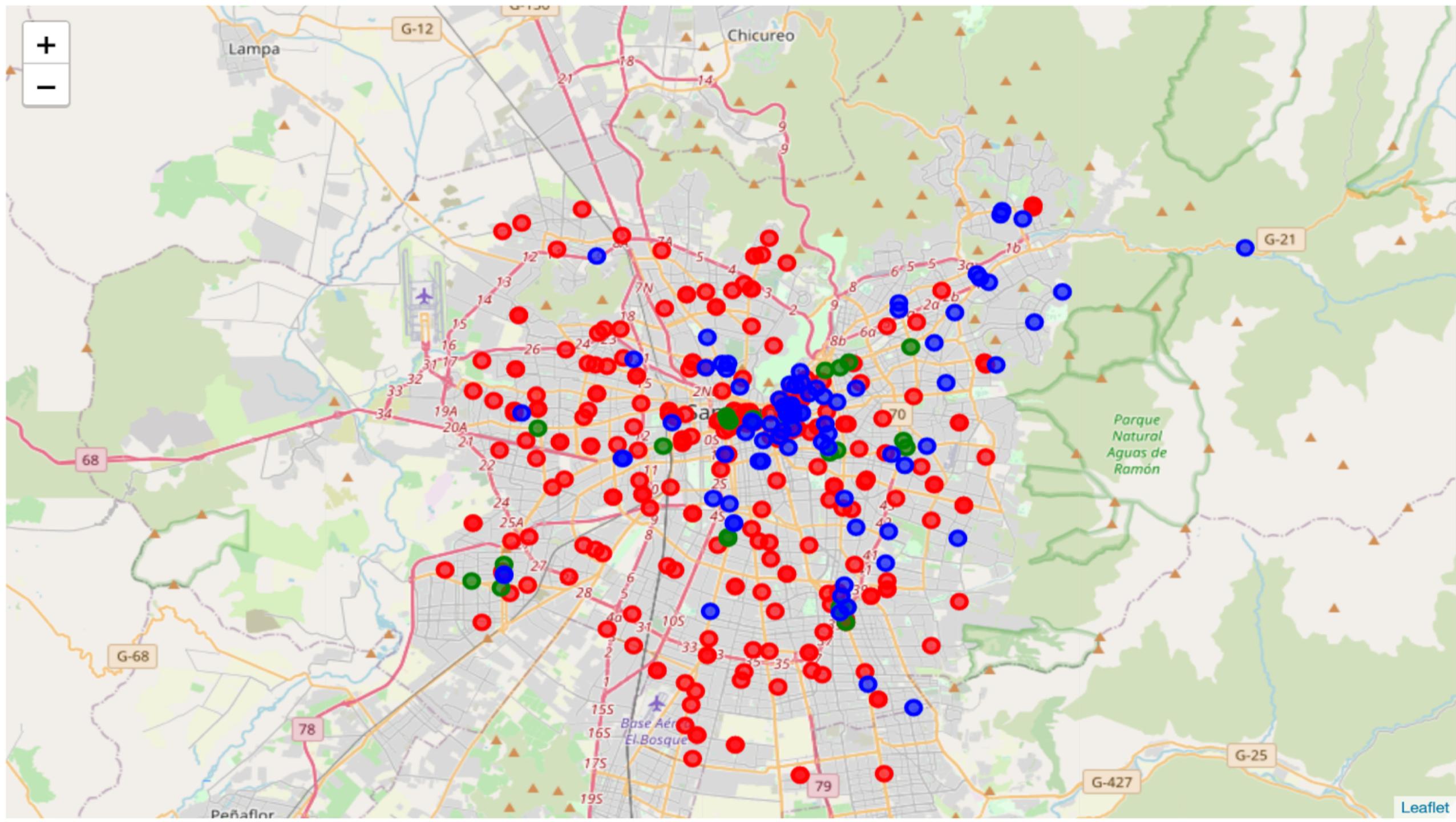
- We will explore the city of Santiago, the capital of Chile. This city is composed of 32 counties, where approximately 30% of the total population of the country resides
- We will use data analysis techniques to cluster the counties and find valuable insights to select which county should be priority in the efforts to reinforce the health system to face the advance of COVID-19.





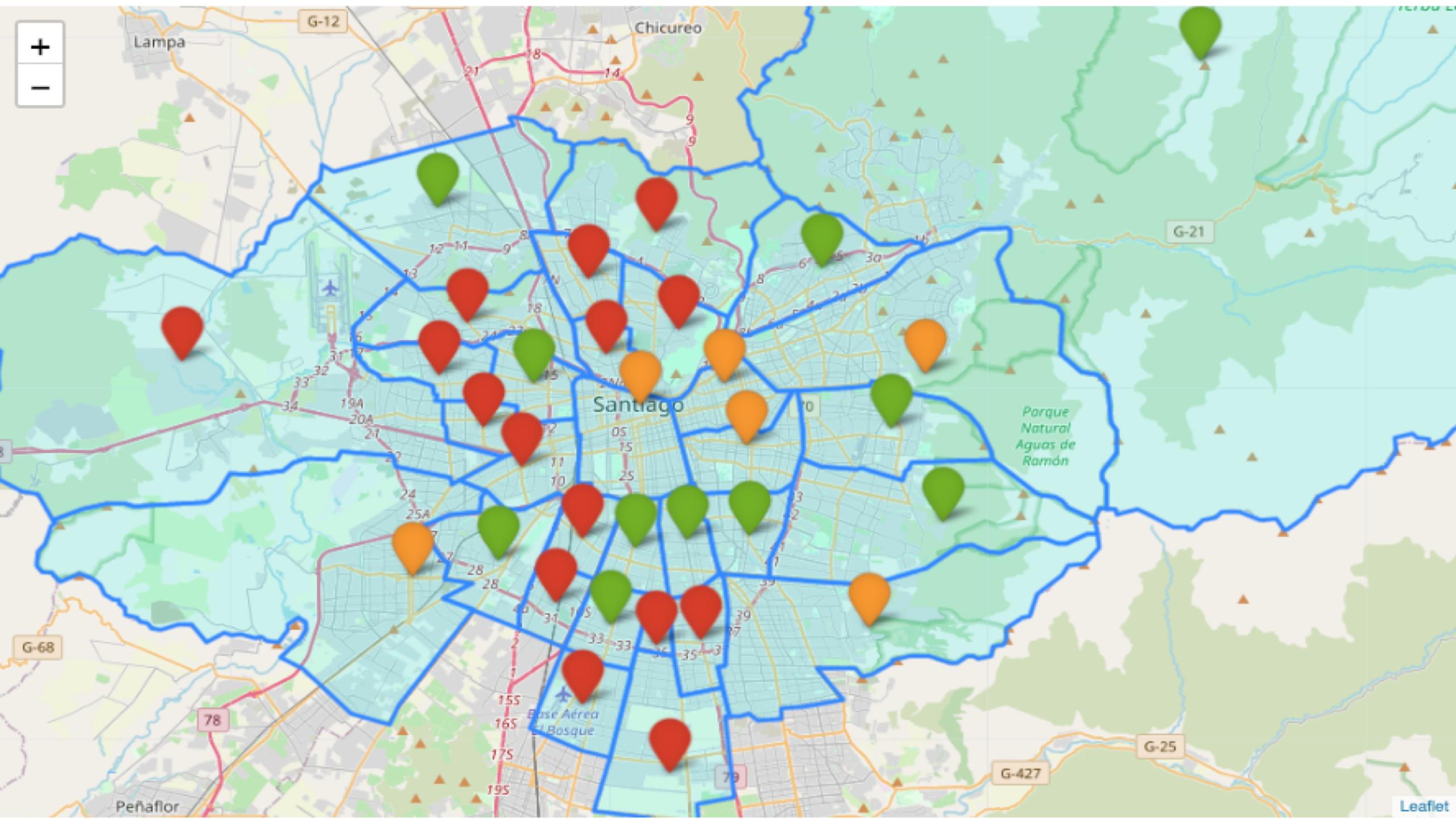
Healthcare levels of care

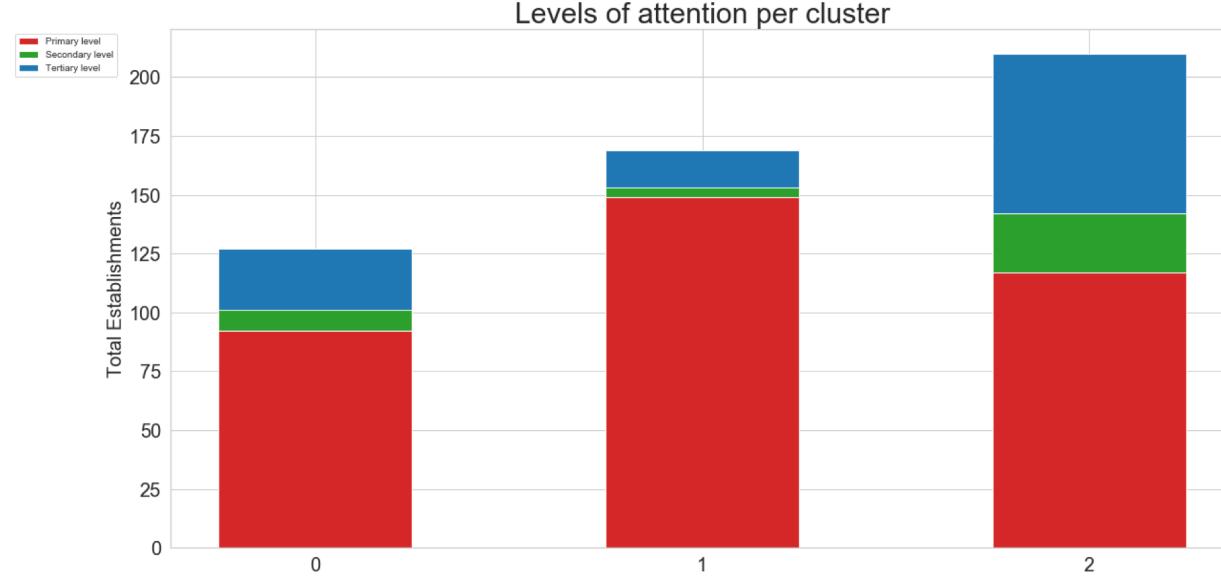
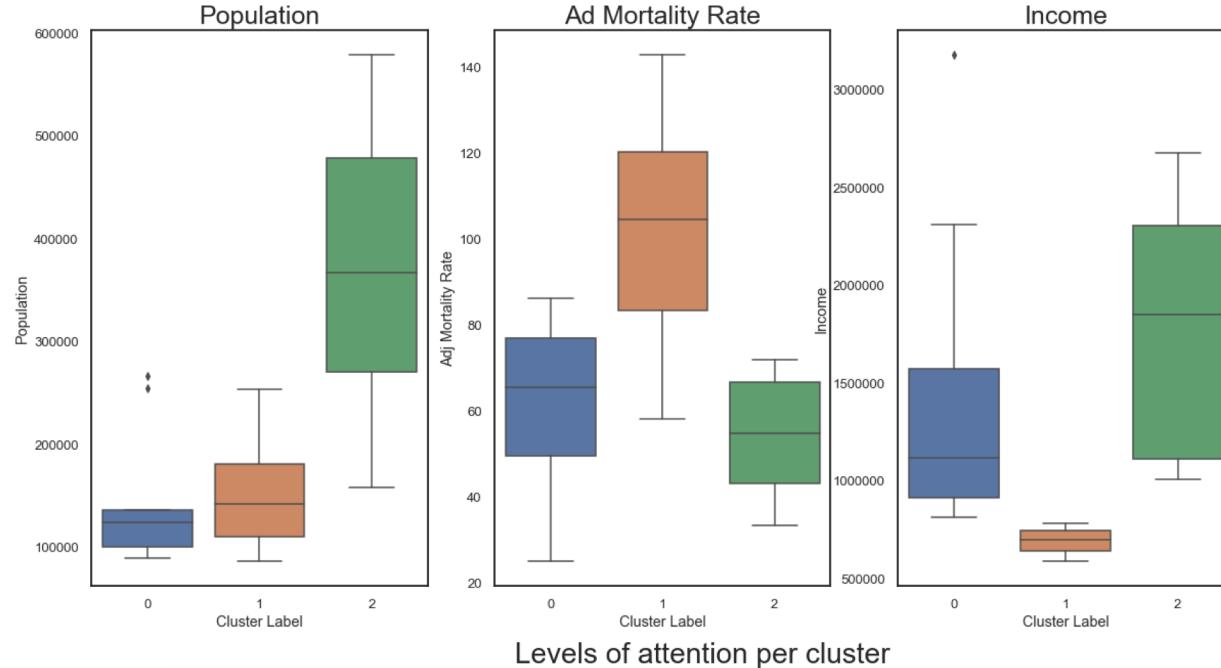
- - **Primary:** The first level is of low complexity, since it has general professionals and technicians, not specialists with equipment. It has an open type of care, that is, outpatient. It is from here that referrals are made at levels of greater complexity.
-
- - **Secondary:** They have medium coverage and medium complexity, that is, they serve a smaller number of people, but with a higher level of technology and specialized professionals. Outpatient care is provided.
-
- The patients who require more complex treatments are referred from primary or secondary care to the last level, which is the tertiary level.
-
- - **Tertiary:** It has low coverage and high complexity, that is, it serves a much smaller number of people, but with high technology and specialization. They perform open and closed care.



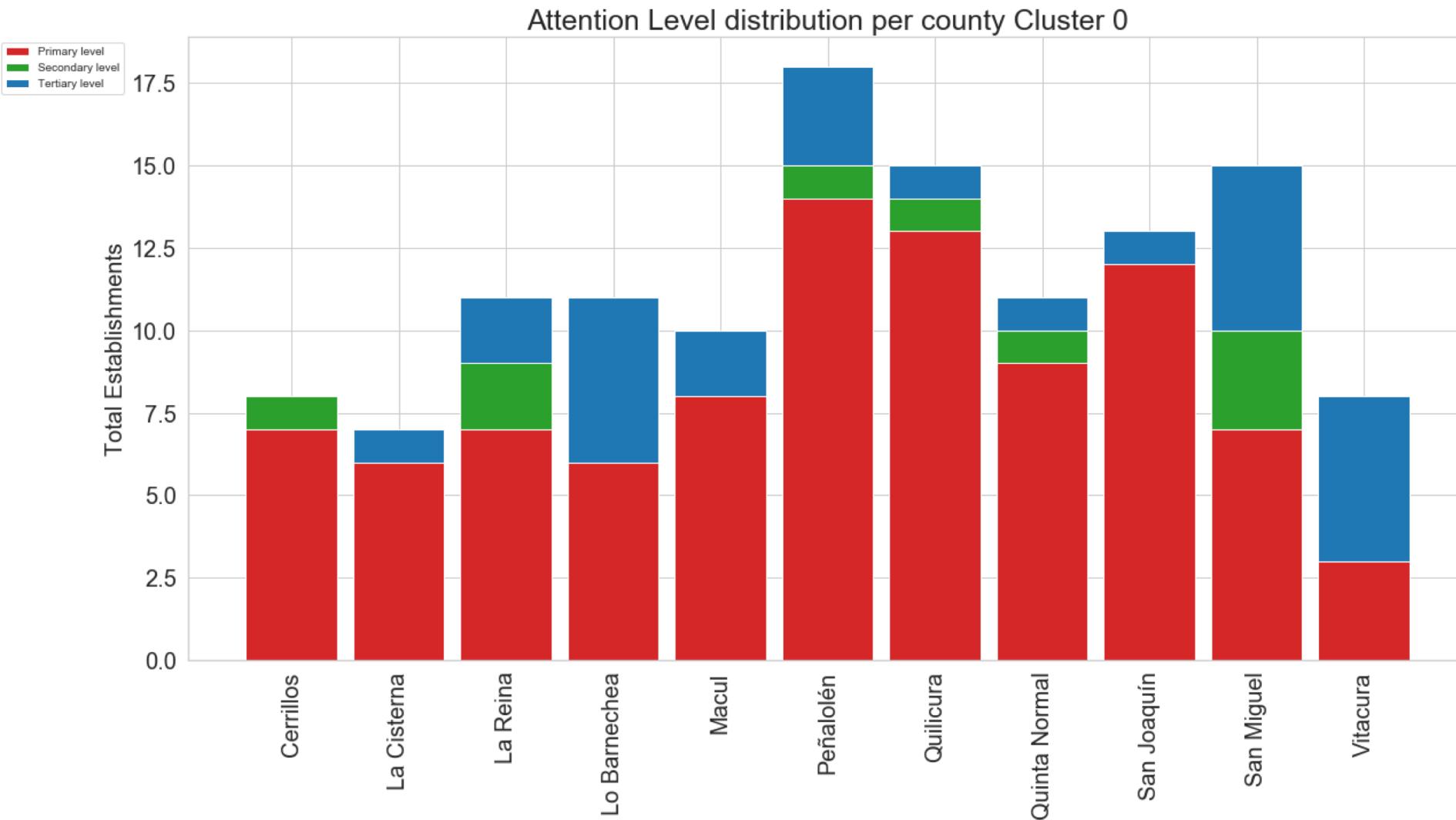
Clustering

- With the data collected, we used a clustering machine learning algorithm called K-means.
- K-means is a unsupervised machine learning algorithm, that make inferences from datasets using input vectors without referring to a known or labelled outcome.
- The objective of K-means is simple: group similar data is to group similar data points together and discover underlying patterns. Each cluster refers to a collection of data points aggregated together because of certain similarities.
- In this case, our objective is to cluster the similar counties into 3 clusters and find insights that leads us to select our main candidates to make our recommendation.

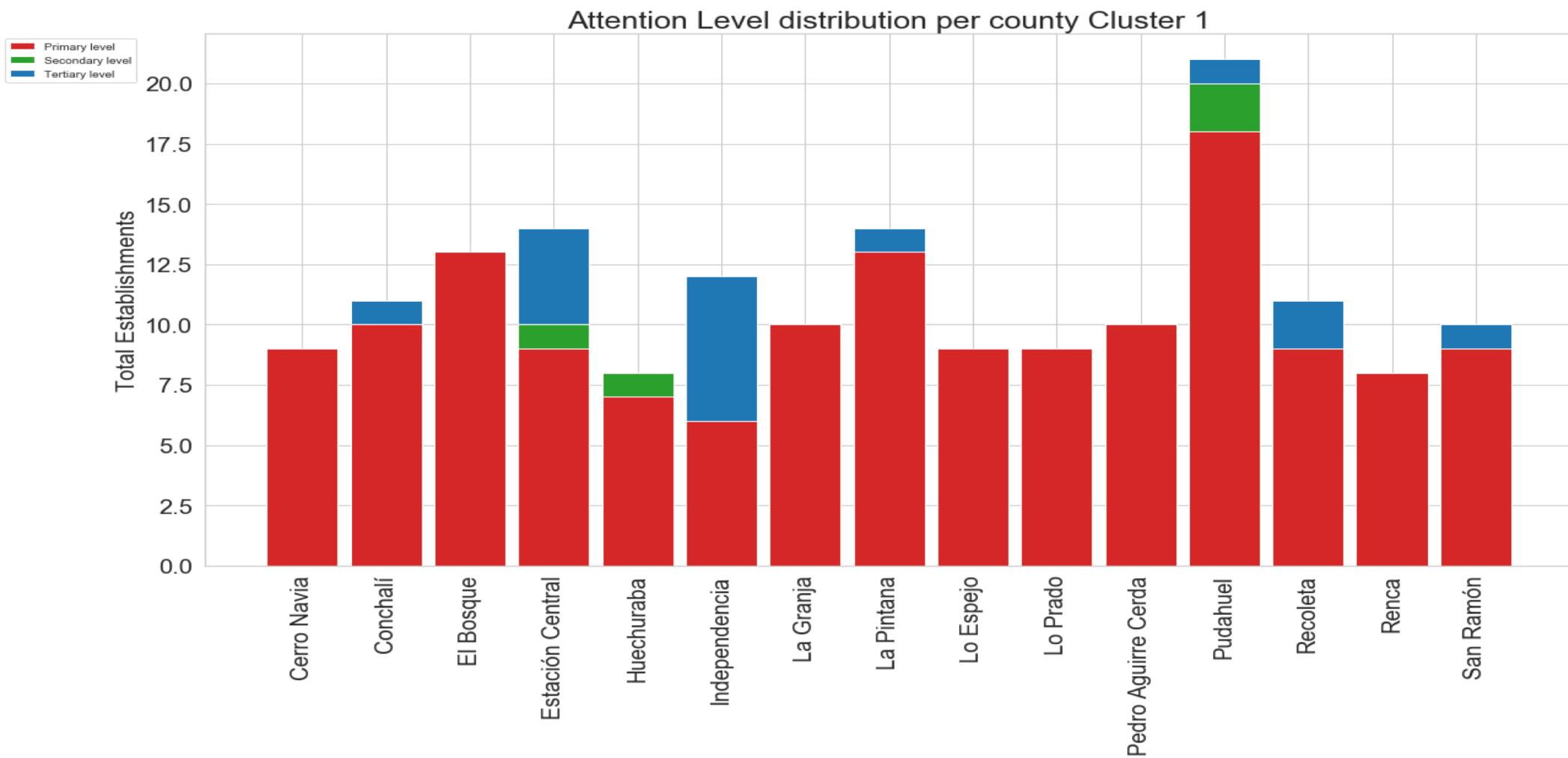




Cluster 0

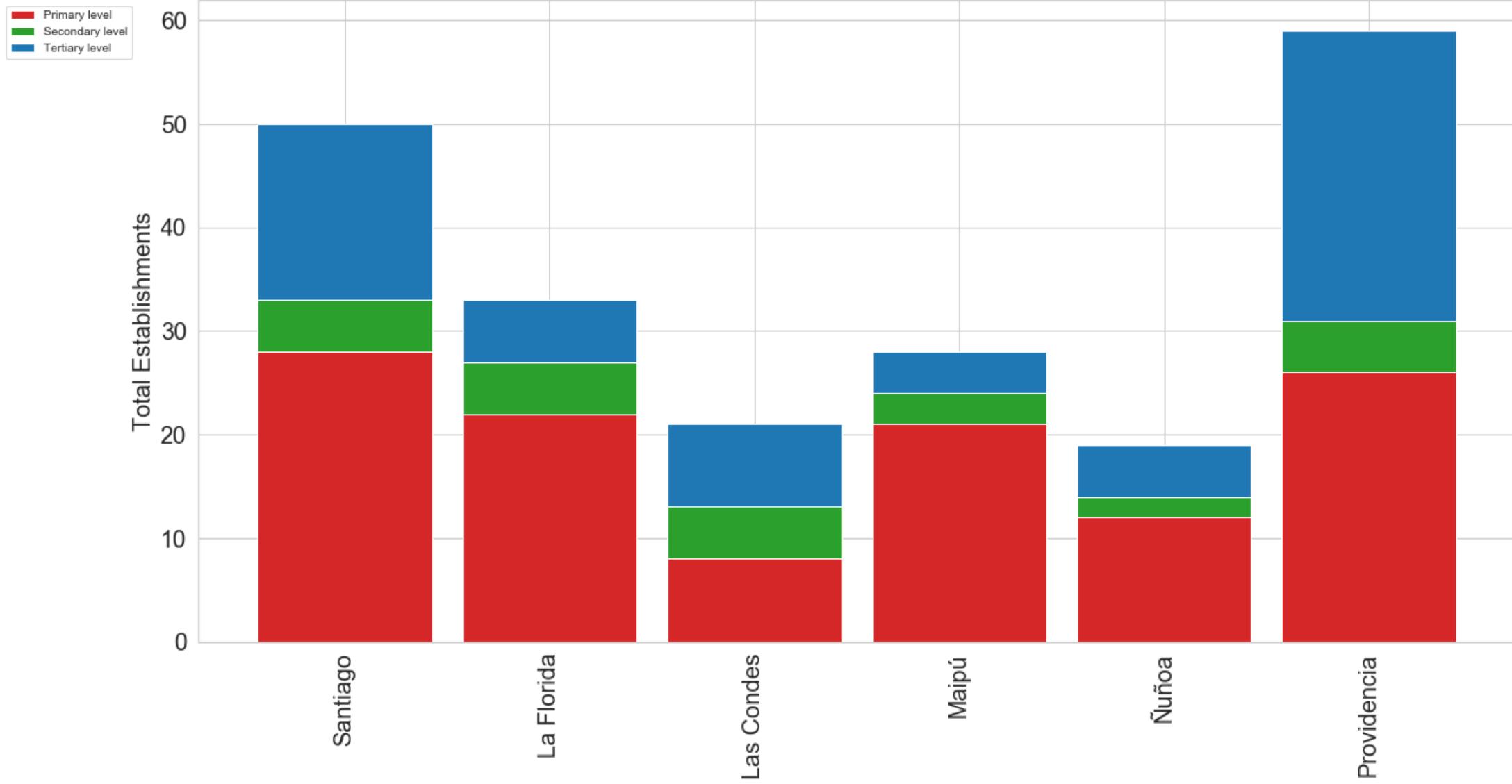


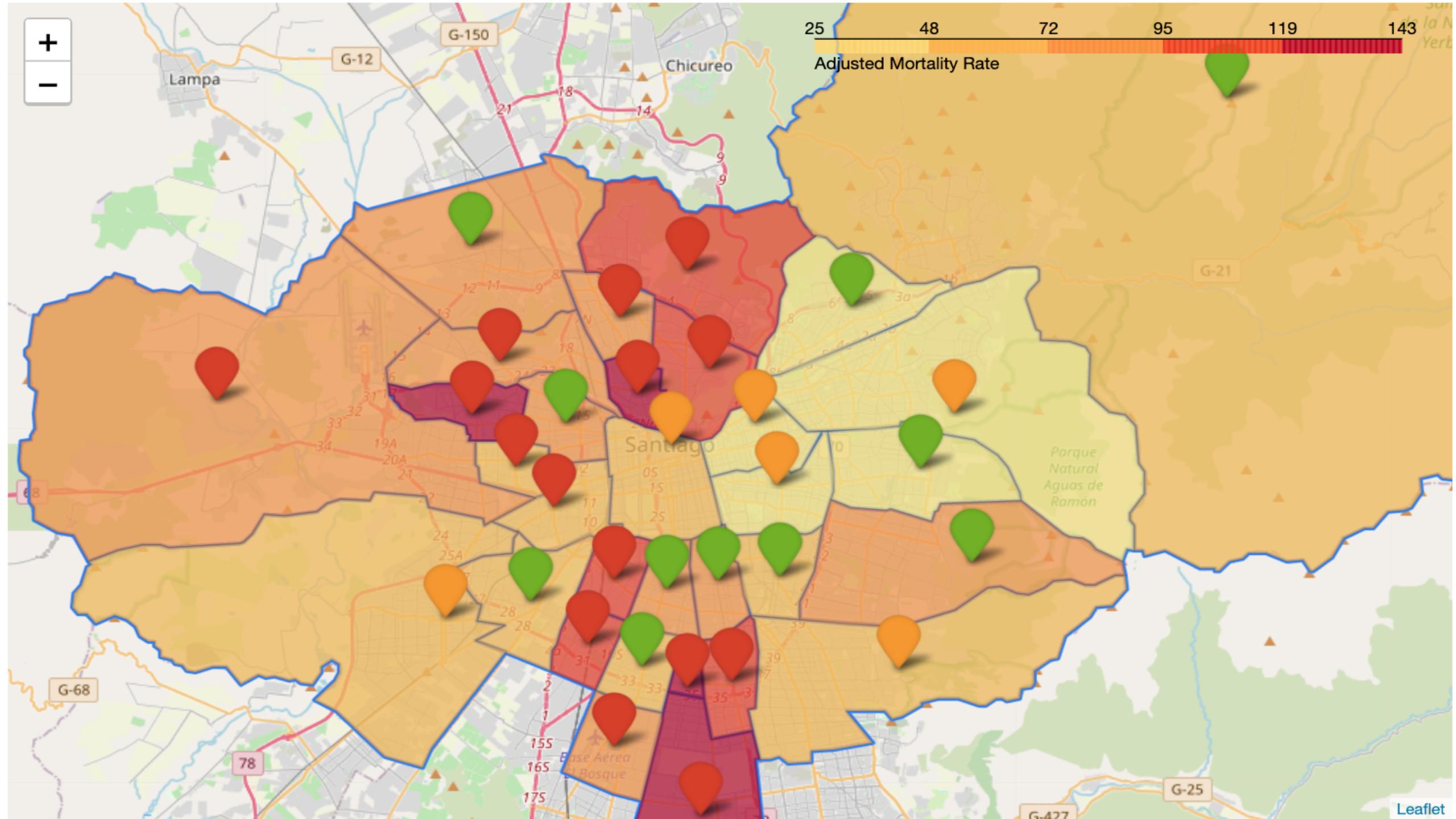
Cluster 1



Cluster 2

Attention Level distribution per county Cluster 2





RESULTS

In the context of a highly infectious virus as COVID-19 that is spread very fast among population, is an important fact to take into consideration that we want to avoid the population to move long distances to get healthcare in case of having symptoms, so reinforcing Cerro Navia would benefit this three counties, addressing their healthcare attention to this closer county.

Also, in general terms, Cerro Navia, posses the 2nd highest adjusted mortality rate among all the counties in Santiago, 4th highest poverty rate and low income level.

With that in mind, our conclusion is that the best location to reinforce the health system in Santiago, is the county of Cerro Navia.

A a strengthening of health systems in Cerro Navia would benefit the most in the actual scenario of the pandemic in the city of Santiago.