Analyzing the impact of Covid-19 Pandemic and the effect of quarantine in Argentina

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The Problem

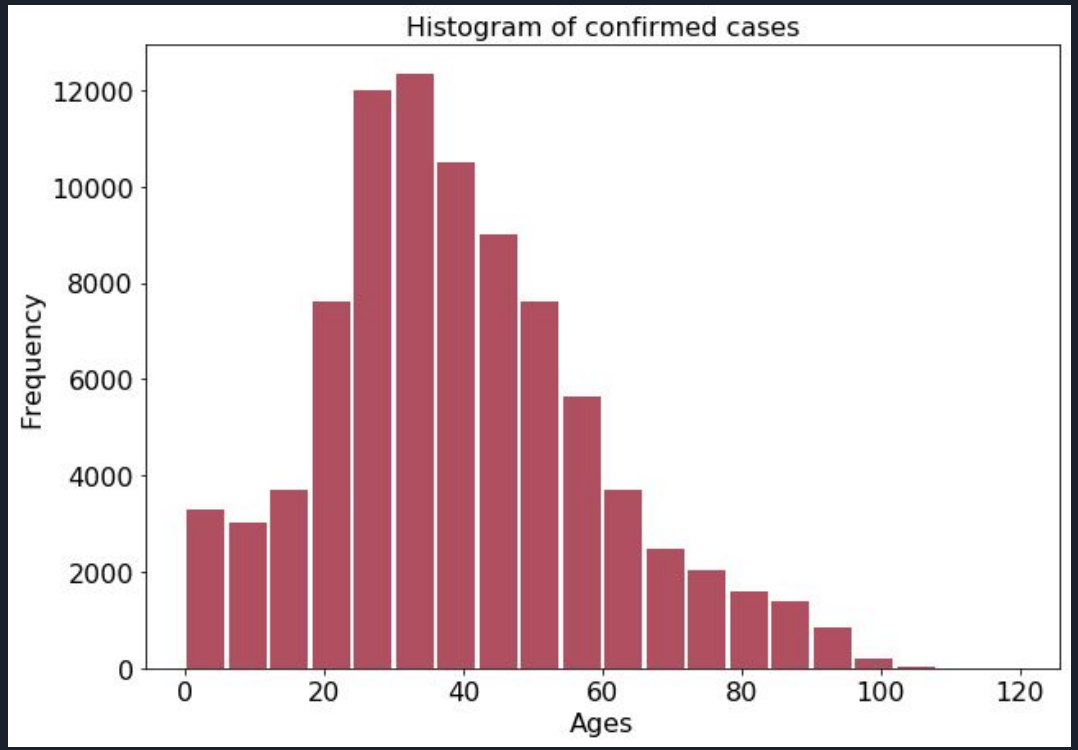
This study is focused in Covid-19 Pandemic on Argentina. First, statistical data of Covid-19 in Argentina will be analyzed: how numbers of cases are distributed in its geography and where are the most affected provinces. Then, the effect of quarantine in other areas (such like transport, industry, economic) will be studied and compared with the same period of the previous year.

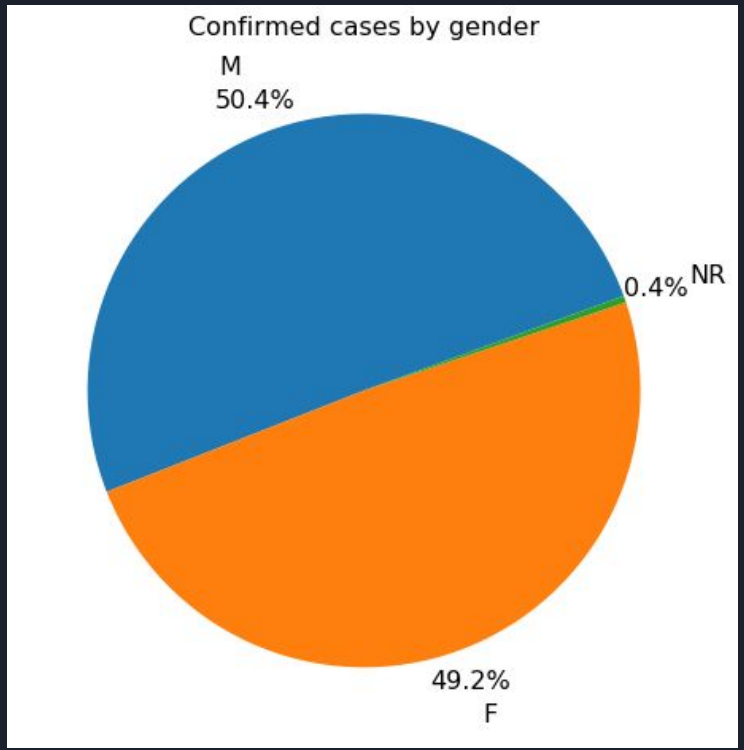
Data

Datasets used are:

- Covid dataset: holds information of all registered cases in Argentina
- Economic datasets: two dataset with Economic Activity Monthly Estimation for several activities
- Industrial dataset: holds information of Industrial Production Index of several activities in Argentina
- Transport dataset: holds information of train mobility in metropolitan region of Buenos Aires

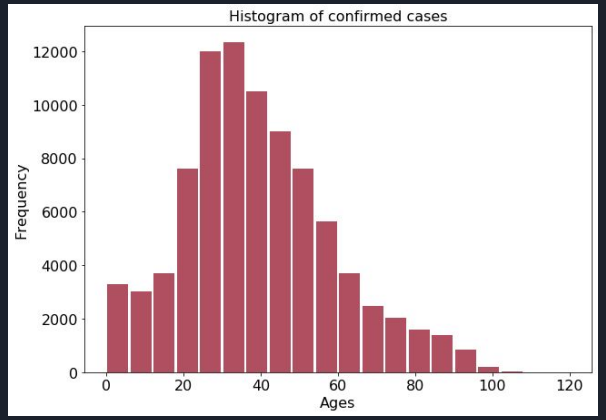
Analyzing Covid-19 cases in Argentina by age and gender

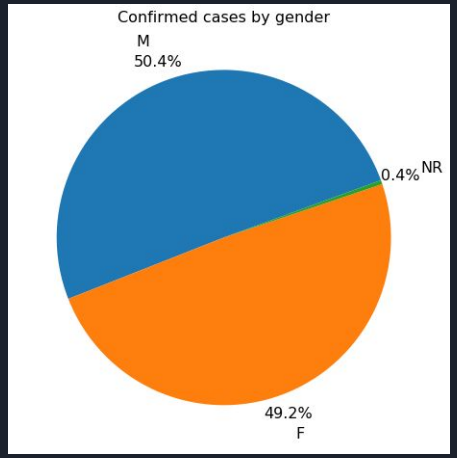




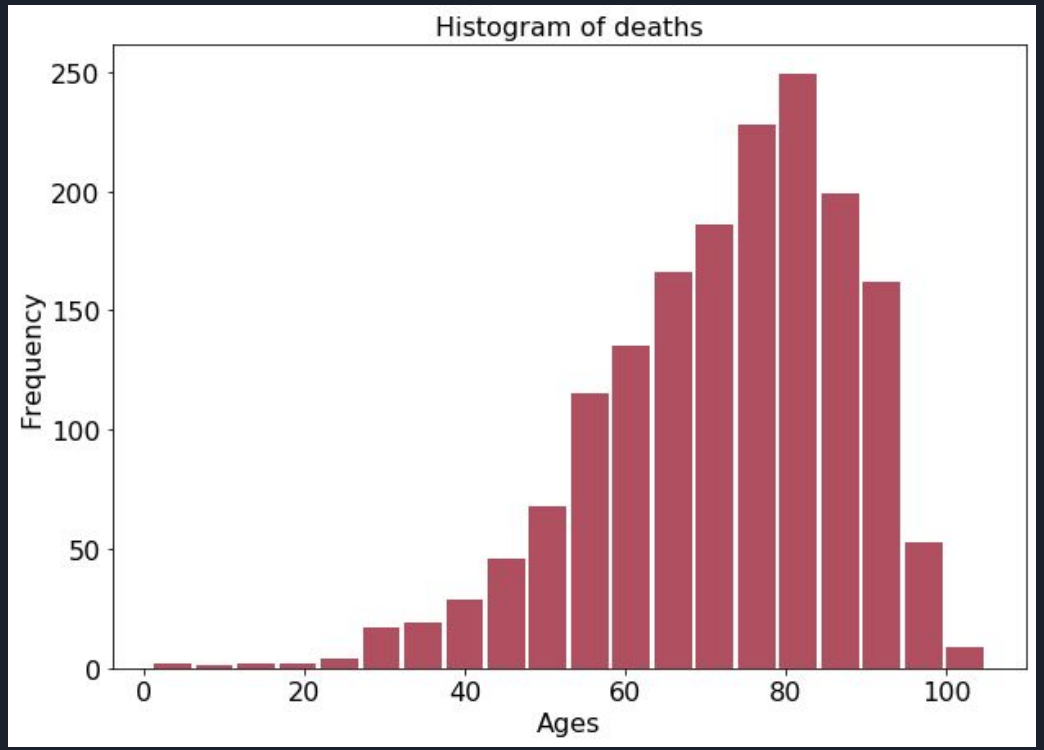
Analyzing Covid-19 cases in Argentina by age and gender

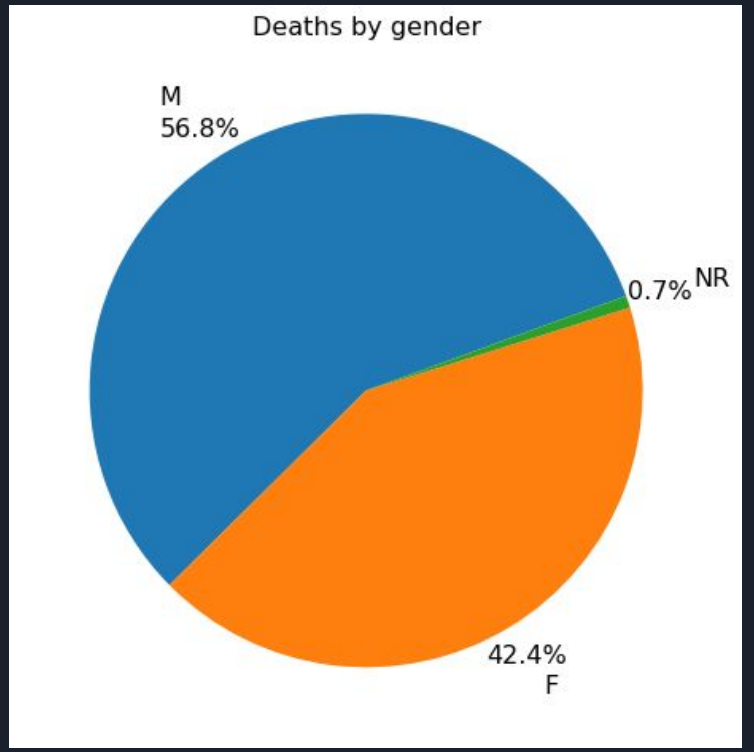
From the histogram, it can be seen that people between 20 and 60 are more likely to get infected, regardless of its gender. Moreover, this range of ages corresponds to people's "working age".





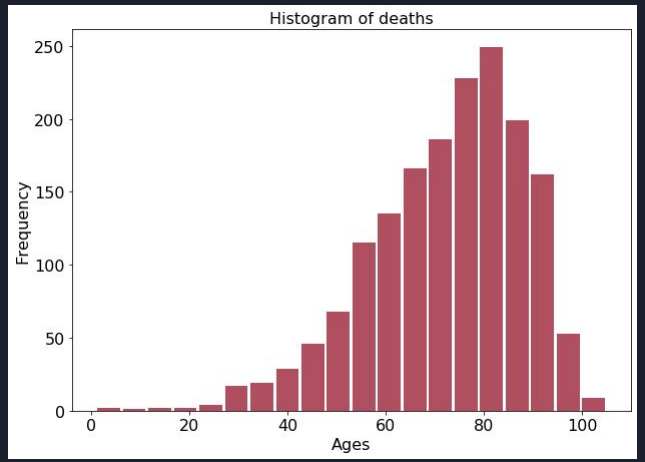
Analyzing Covid-19 deaths in Argentina by age and gender

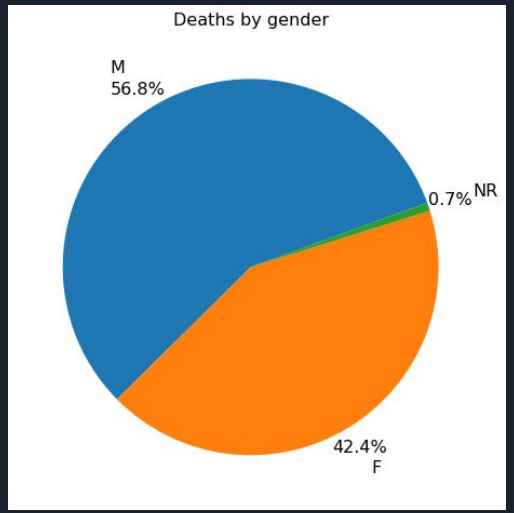




Analyzing Covid-19 deaths in Argentina by age and gender

From the Pie chart, we can see that infected men are more likely to die than other genders. Also, ages between 60 and 90 has higher death rates.

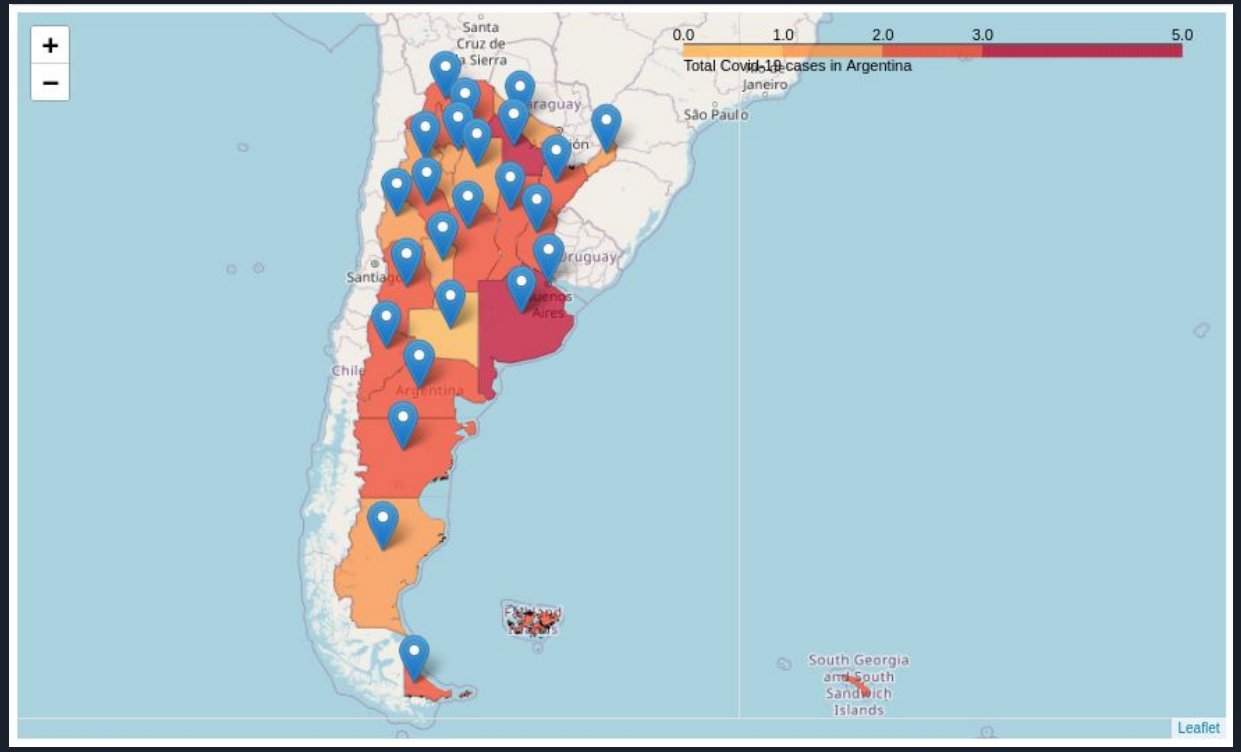




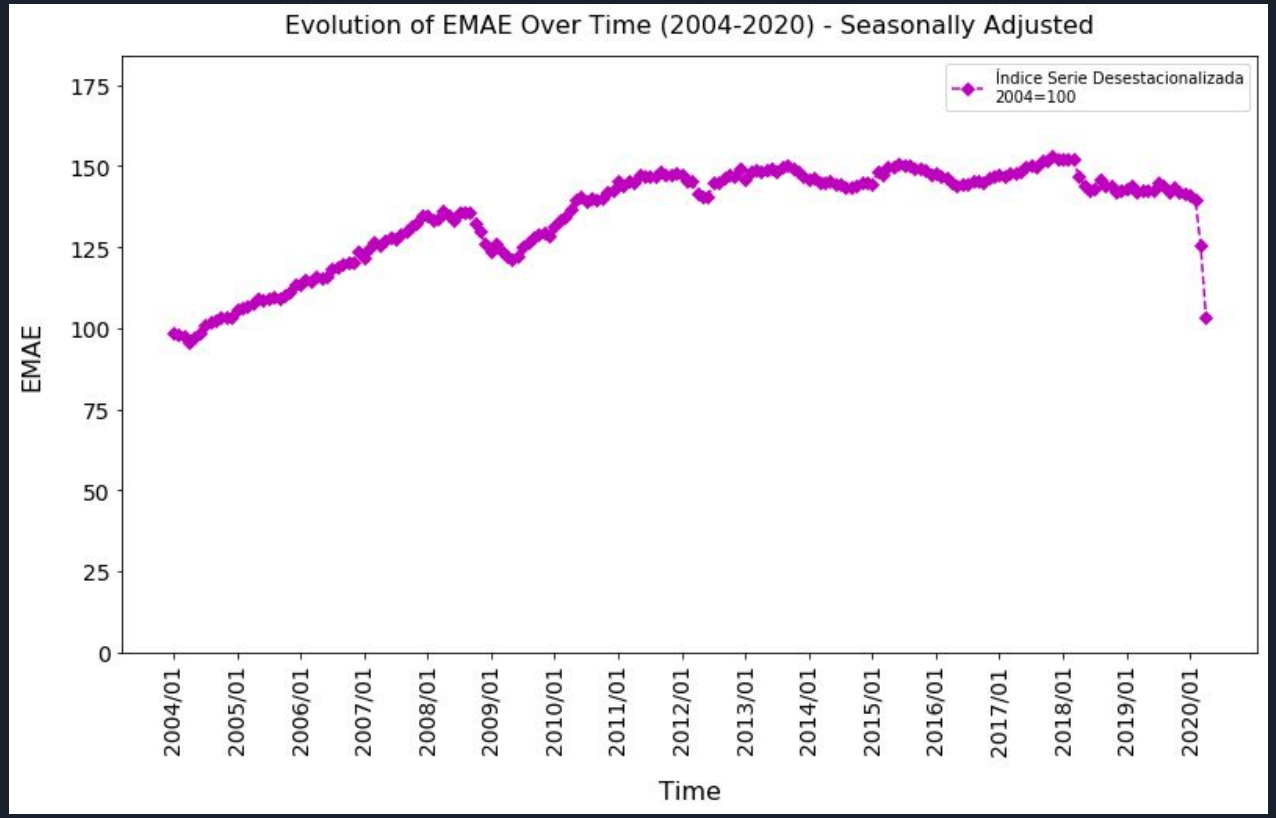
Distribution of cases in the country

In order to analyze distribution of cases on the territory, DataFrame must be grouped by Provinces. After that, “TotalCases”, “Latitude” and “Longitude” columns are added to DataFrame (last two columns are included using Nominatim from geopy.geocoders). With this done, an interactive Choropleth Map of Argentina can be made using folium:

Distribution of cases in the country



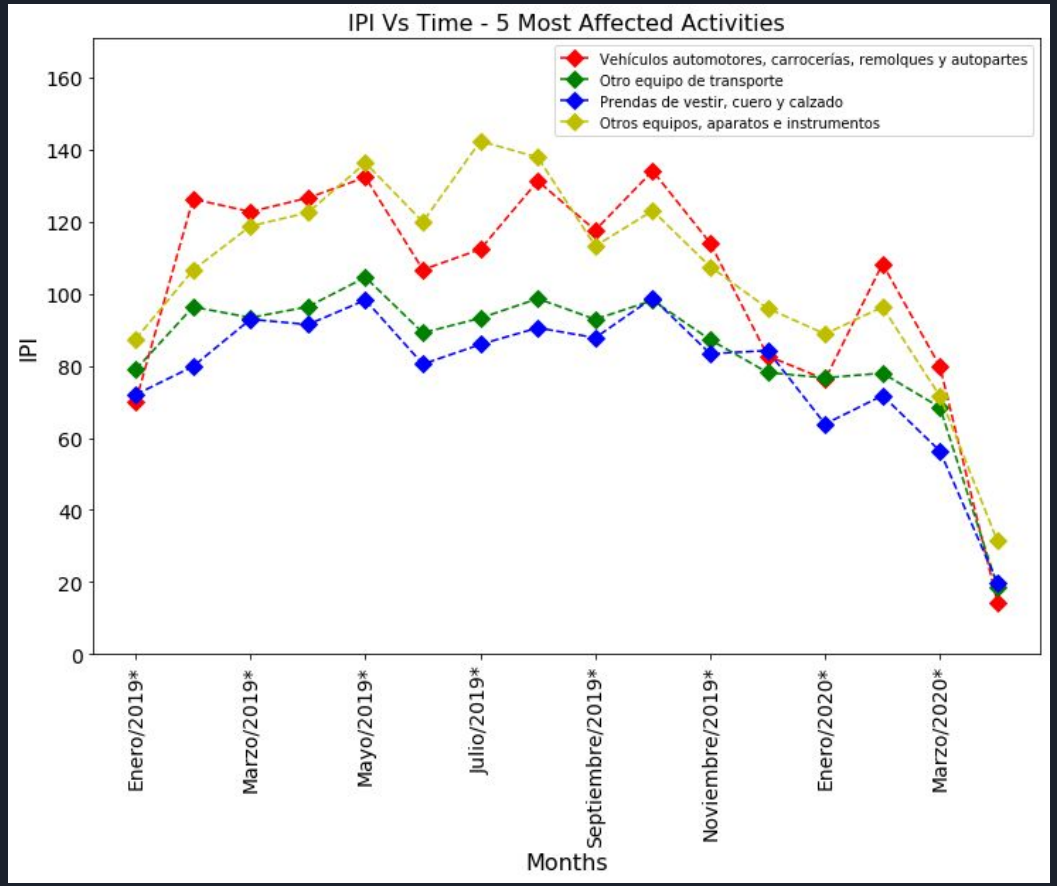
Economic Activity: steep drop in Economic Activity Monthly Estimation



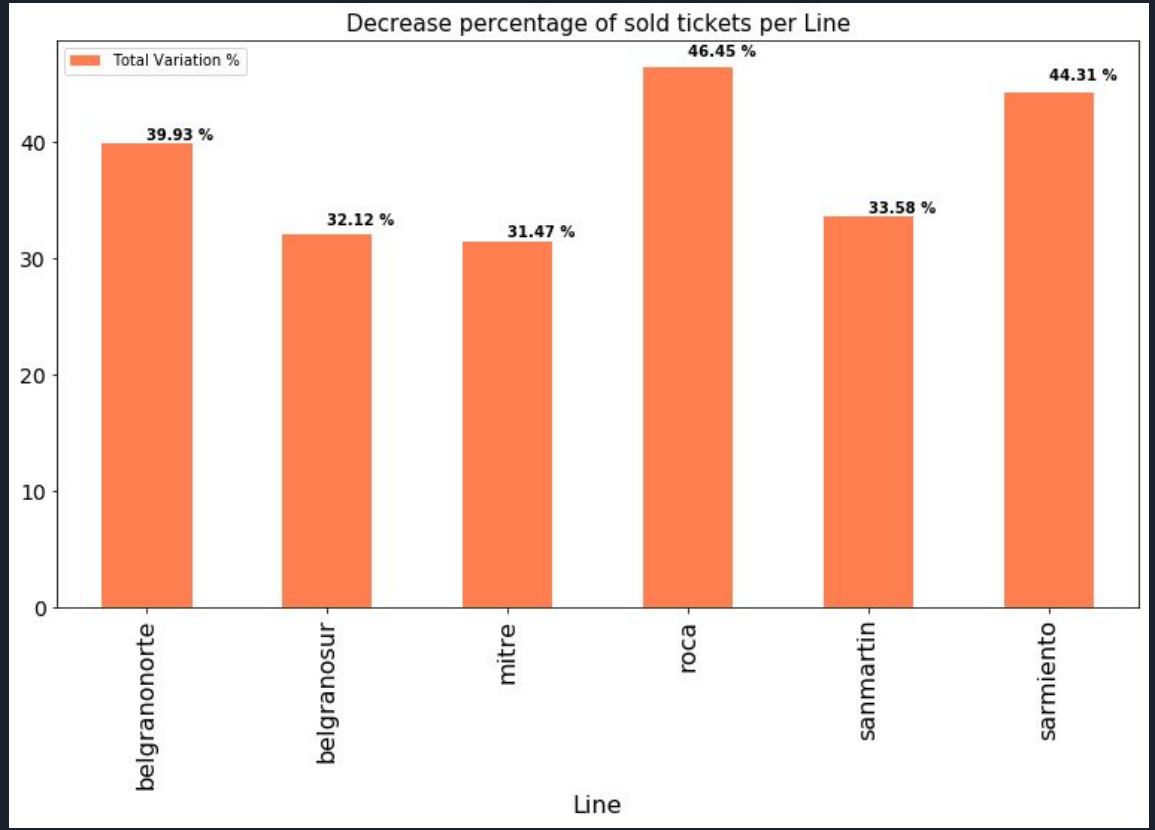
Economic Activity: steep drop in Economic Activity Monthly Estimation

The previous figure shows a steep drop in the Economic Activity Monthly Estimation. This could be the worst drop in Argentina's Economy in the last 15 years.

Industrial Activity: evolution over time of Industrial Production Index of most affected activities



Transport and mobility: variation percentage of train lines on first month of quarantine



Discussion and Conclusion

* Distribution of Covid-19 cases in Argentina is not homogeneous. A further analysis can be done here to understand where are the most dense zones, even inside Provinces (i.e., departments, neighborhoods, etc.)

* Cluster techniques can be applied to find similarities between cases. Features like age, gender, province, department, funding source, diagnosis date, symptoms onset date, among others, can be used to complete this study.

* A model could be inferred to predict deaths and cases in territory based on previous analysis.

* Industrial and Economic activities in general were affected in different ways. A deep analysis could be made here to take decisions and politics in order to help those sectors where Pandemic and Quarantine had been more damaging.

* Mobility study should be made to know how much people (and virus) are moving, specially in critical zones like Buenos Aires and CABA.