

Covid-19 Analysis in Germany

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Introductions:

The New Coronavirus, also known as Covid-19 is an infectious disease caused by SARS-CoV-2. It is a new strain from the coronavirus family that has not been identified in humans before.

Coronaviruses are a large group of viruses that infect animals. According to the US Centers for Disease and Control Prevention, they are referred to zoonotic which means in rare cases they can be transmitted from animals to humans. Coronaviruses are known to cause respiratory illnesses that range from mild illnesses like the common cold, to more severe and lethal diseases such as Severe Acute Respiratory syndrome (SARS) and Middle East Respiratory Syndrome (MERS).

Covid-19 can cause pneumonia-like symptoms. Those infected with the virus will encounter symptoms such as dry coughs, fever, lost sense of taste or/and smell, and breathing difficulties. However, the symptoms can vary depending on the patient's immune system and their underlying health conditions. While some will experience common cold- like symptoms and recover in a matter of 2 weeks, other extreme cases it may result in organ failure and death.

Though the past outbreak of the SARS virus is more deadly with 15% fatality rate, the new coronavirus is far more transmissible and has already claimed more lives. Since the outbreak was first detected in Wohan, China in December 2019.

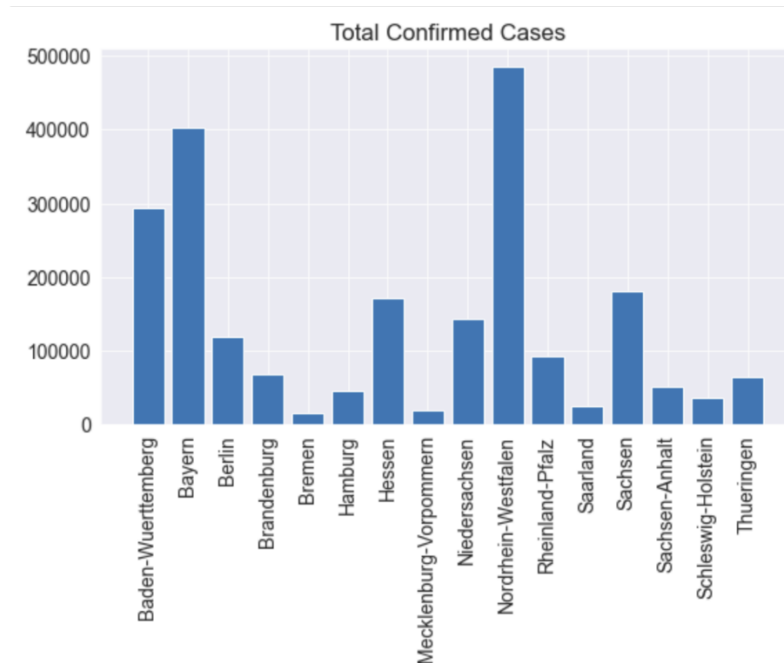
The outbreak was declared a global pandemic by the World Health Organization (WHO) in March 2020, affecting 219 countries and territories around the world. As a global problem with millions of people sick and many new cases daily, it is realistic to encounter issues gathering such an enormous number of data, and even more so to get accurate data. It is important to consider that many countries lack the medical supplies for a wide range of tests to achieve an accurate number of active cases. Not to mention all the people that were sick and did not get tested it is practically impossible to gather accurate data.

In all that uncertainty, to have a good look at the bigger picture you need to apply some analysis using statistical tools that are widely available these days to be used by any professionals in any field to help them to get an overview or insights from their data to be able to take decisions in the future with some level of efficiency and accuracy and minimize wrong decision as much as possible.

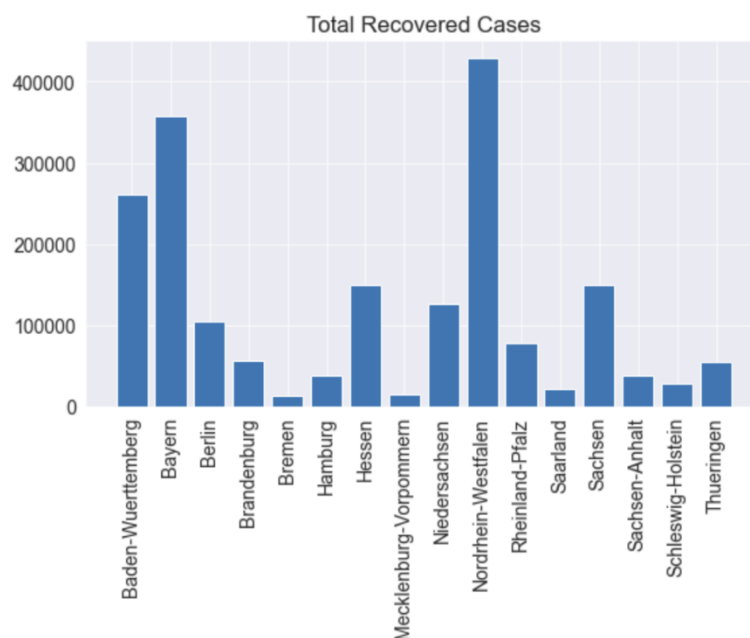
Therefore, in this project I have taken the analysis approach to get some insights on the dataset that Robert Koch-Institute collected after almost one year from the first outbreak in Germany.

Starting with how many cases have been recorded since the patient zero, we reached a very scary number 2,221,971 spread across all Germany with different percentage between all 16 federal states.

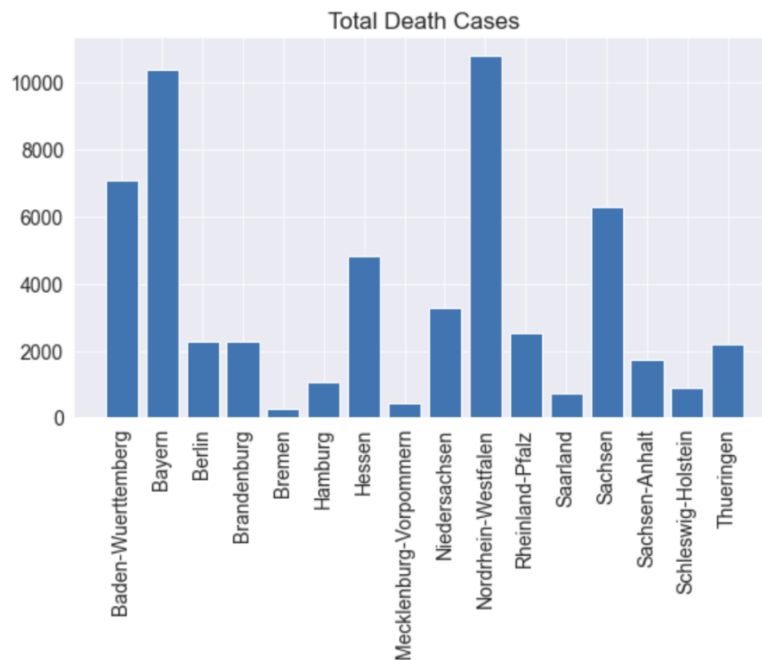
We can see from the chart below the spread of cases it comes at first place Nordrhein-Westfalen with 485964 cases and Bremen comes last with 15988 cases.



Fortunately, more than 87% have recovered already and went back to their normal life (or the new normal) as we say nowadays, we can see from the chart below the spread of the recovered cases across of the states with no surprise Nordrhein-Westfalen comes at first place with 429715 recovery -which more than 88% recovery rate- as it has the most confirmed cases, with same pattern Bremen comes last with 14032 recovery which is more than 87% recovery rate.



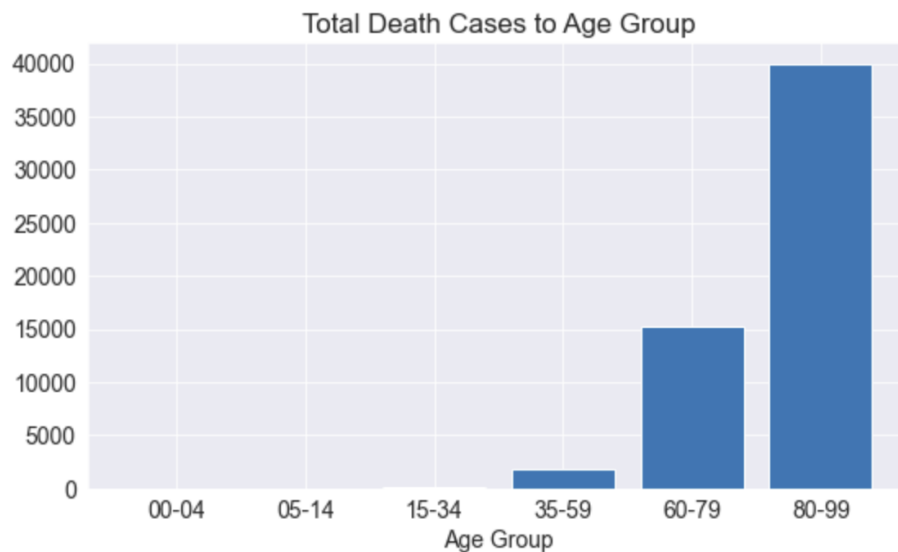
On the other hand, here is the unfortunate side of the pandemic with many people loses their lives or lose some they love, from the chart below we can see how the death rate which is more than 2.5% is spread across Germany, we can the same here as before Nordrhein-Westfalen is leading with 10815 cases, this time Bayern comes really close with 10391 cases and Bremen comes last with 268 Cases.



Now we are going to have a look at the pervious result from another perspective which is the age factor and how its affected by the virus, from the chart below we can conclude that the most confirmed cases is between 15-34 years old and 35-59 years old with 645224 and 843111 confirmed cases respectively, as its obvious these categories are the most active people, and they move around t he most.



Nevertheless, the most affected people are not from the previous two categories, but it is from the 60-79 years old and 80-99 years old with 15218 and 39955 death cases, both combined have more than 96% from all the death cases -what a surprise- going back to the first two categories 15-34 and 34-59 years old, they have combined 3.3% of the whole death cases, and can see that displayed clearly in the below chart.



On the other hand, as expected the most recovered age groups would be the one who has the most cases (15-34 and 35-59 years old), we see that clearly from the chart below as both combined have 1043297 recovered cases which is 54% of all the recovered cases.



Finally, we collect all the confirmed case, recovered cases and the death cases together for comparison to check the overall percentage between them. Starting with the total number of confirmed cases at the time of writing this report is 2217889 cases, secondly, the total number of recovered cases is 1931955 recovery with 87% recovery rate, thirdly the total number of death cases would be

57087 death cases with more than 2.5% which would leave the rest as 228847 active cases which is 10.3% from all the confirmed cases.



Summary:

We fully realized how powerful charts and insights and the value they brought to understand the whole picture and reach a precise conclusion that we can always use in making decision in the future that could help us avoid such and tragic situation or at least minimize its effect if it ever happens again, it was a pleasure working on that project, I am sure there would be always room for improvements, therefore, I would love to hear from you if you have any constructive feedbacks on any details in the project or the code that comes with it.

Resources:

<https://en.wikipedia.org/wiki/Coronavirus>

<https://coronavirus.dc.gov/page/what-covid-19>

<https://www.theguardian.com/world/2020/feb/27/what-is-covid-19>

<https://edition.cnn.com/2020/01/20/health/what-is-coronavirus-explained/index.html>

<https://news.abs-cbn.com/news/multimedia/infographic/01/29/20/mers-cov-vs-sars-vs-2019-ncov-fatality-rates>