The COVID-19 data used in the analysis was obtained from Johns Hopkins' Centre for Systems Science and Engineering. It is a real data set that contains daily COVID-19 information such as deaths and conformation cases for each state in the United States from June 1 to June 7, 2020 ("cd0601"- "cd0607") and for the day before the study period ("cd0531"). There is also regional data from the United States Census that can be used to compare geographical characteristics and understand regional differences in COVID-19 spread and management. The main objective of this data analysis is to determine the effect of COVID-19 in Delaware. To assess how the COVID-19 pandemic affects factors such as deaths in Delaware and to compare Delaware's performance to neighbouring states and the whole region in response to the pandemic. Finally, use the findings of the analysis to guide the efficient allocation of healthcare resources.

The following is a summary table of COVID-19 statistics covering four key outcomes on June 1 and June 7, 2020, based on data provided for the state of Delaware:

**The total number of COVID-19 tests, confirmed cases, hospitalizations, and deaths on June 1 and June 7, 2020, in Delaware**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time | Tests | Confirmed cases | Hospitalizations | Deaths |
| June 1,2020 | 62447 | 9605 | . | 368 |
| June 7, 2020 | 68997 | 9942 | . | 398 |

“.” Indicating a missing value.

The table shows that between June 1 and June 7, 2020, the number of people tested increased from 62447 to 68997, the number of confirmed cases increased from 9605 to 9942, and the number of deaths increased from 368 to 398. The increase in tests and confirmed cases could be attributed to increased test capacity, resulting in more tested people being confirmed. The increase in deaths indicates that the COVID-19 virus's impact in Delaware is worsening. We cannot draw conclusions because the number of hopsitializations is missing.

To gain an understanding of the COVID-19 impact on Delaware, the main focus should be on deaths. This is an important measure because it reflects both the impact on the community and the effectiveness of public health interventions. Examining the trend in deaths can also provide insight into the sufficiency of healthcare services as well as the effectiveness of the state's policies in dealing with the pandemic. Data on Delaware daily deaths during the study period obtained using the table and graphs shown below:

**New cases of deaths from June 1 to June 7, 2020, in Delaware**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Date | June 1 | June 2 | June 3 | June 4 | June 5 | June 6 | June 7 |
| New cases | 2 | 5 | 2 | 11 | 2 | 2 | 8 |

**Plot of New cases of deaths from June 1 to June 7, 2020, in Delaware**

A graph of covid-19 death

Description automatically generated

The table and plot show that the number of new cases of deaths varies over the course of seven days. There was a peak in the middle of the study period, but the numbers did not show a consistent increase or decrease, implying that daily reported figures vary. This could be due to a variety of factors, including changes in the pandemic's impact on the population during that week. In summary, the number of new deaths was daily increasing but it did not follow a consistent upward or downward trend throughout the week, but rather fluctuated.

It is critical to compare deaths not only within Delaware, but also to regional averages to truly assess how the state is performing in comparison to its neighbours. The average number of deaths in the south region at the beginning and end of the study were obtained and is shown in the table below.

**Average number of deaths in South region of US on June1 and June 7, 2020**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Number of States | Mean | Std deviation | Min | Max |
| 17 | 1058.65 | 916.49 | 76 | 2801 |
| 17 | 1136.82 | 976.60 | 84 | 2936 |

At the start of the study period, the region in which Delaware is located had an average of 1,058.65 deaths, compared to Delaware's significantly lower count of 368 deaths. By the end of the study, Delaware's total death toll had risen to 398, while the regional average had risen to 1,136.82. Notably, Louisiana had the highest number of deaths in the region, while West Virginia had the lowest. These figures favour Delaware, with deaths number that is not only lower than the regional average but also shows a smaller increase over the course of the study. This result suggests that Delaware's approach to pandemic management is yielding relatively positive results it also appears that Delaware is in a relatively good position, with lower death rates indicating a potentially effective response to the pandemic.

To sum up, Delaware's COVID-19 death rates are lower than average, indicating that current health measures are effective. However, it is critical to continue investing in the healthcare system, particularly in areas where infections or hospitalisations are on the rise, to ensure hospitals are well-equipped. Also, it is important to keep the public informed and to encourage preventive practices such as mask-wearing and social distancing. In terms of potential future outbreaks, developing strategies to protect public health and the economy is extremely important.