## **Final Assignment**

1) **Domain**: The research topic for this assignment is derived from the health domain. The data sets are Covid 19 and Vaccination data sets obtained from the website([Link](https://ourworldindata.org/coronavirus))

2) **Research question**: The research analysed the effect of vaccination on the mortality rate. The mortality rate is the number of deaths to the number of cases multiplied by an n where n is the number of people. In this assignment, I used n =100.i.e mortality rate in 100 people.

3) **Data storage and processing**. The data was downloaded in CSV format. All the data processing was done using Python and its libraries.

4)**Data visualization and analysis**: Data analysis is done in two parts. A)Part 1 did exploratory data analysis of Covid data and as a result, an app was made showing different variables of corona in different locations. The variables are :a)total\_cases b)total\_deaths c)total\_cases\_per\_million d)total\_deaths\_per\_million

Map

Description automatically generated

Figure 1. Showing total deaths of the world

Chart, bar chart

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Figure 2. Countries with most deaths in Europe

Chart, bar chart

Description automatically generated

Figure 3 Countries with most deaths in Europe and Asia

B)In part 2, the research compared the mean of 16 weeks mortality rate before week50 to the mean of 16 weeks mortality rate after week50. **Week 50** is defined as the week in which the people vaccinated per hundred reaches 50 .i.e.the week in which out of 100 people, 50 people received at least one dose of vaccination. Finally, paired t-test was performed to check whether the mean mortality rate after week 50 reduced compared to the mean mortality rate before week50. Statistical analysis was performed using Pingouin and Stats library.   
1) Line plot. This plot is generated by the function **vaccplot** and shows new deaths in one y axis, vaccination on second y axis with x axis being the time.

Chart, histogram

Description automatically generated

2)Scatterplot and Line plot : The scatter plot and line plot are obtained form the function **vaccmorplot.** The scatter plot shows the country name versus the week 50 . The line plot is plotted by concatenating the 16 weeks mortality rate before and after week50

A picture containing chart

Description automatically generated

Chart, line chart

Description automatically generated

3)Boxplot and slopechart for statistics test: These plots were obtained from the fuction **statprocess** and **slopechart**. Boxplot shows the information of mortality rate before and after week 50 for all countries in Europe . The slope chart shows the mean mortality rate of 16 weeks before week50 and the mean mortality rate of 16 weeks after week50 for each country. The slopechart also shows the decrease in mortality rate.

Chart, box and whisker chart

Description automatically generated

Chart, line chart

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