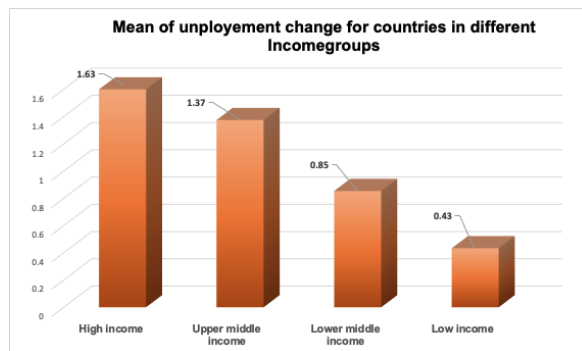Discussion

Overall, our project topic is about what leads to the countries' economics affected differently by covid-19.

First, through the first question we found that there precisely exists a moderate correlation between the Covid cases rate and the unemployment rate change, which means, in general, a higher Covid cases rate will lead to a higher unemployment rate increase for a country. We verification this connection by calculating their correlation coefficient 0.58 based on the statistic formula and applying it in SQL, and we also refer to some economic reports. For example, a news report shows that the covid crisis would push global unemployment over 200 million marks in 2022, which could also state a positive correlation property (UN News, 2021). After we confirmed this relation, we have tried to explore how the unemployment change for countries in different income groups to determine how the Covid-19 affects countries with different economic levels. After we analyze and graphic the database. We have found that the higher-income countries have more unemployment rates which is an exciting result. Then we investigated and researched that in higher-income countries, the workspace contains a large part of unskilled laborer with high demand elasticity. In other words, these workers have an increased risk of losing their job when the market is fulfilled or under the recession of economics. This may lead the unemployment rate in high-income countries to a marked rise when the country's economy decreases. We found this theory could explain what we have discovered during the analysis. In the next step, we

Mean of unployement change for countries in different Incomegroups

Country	Total Cases Per Million	2019 Unemployment Rate	2020 Unemployment Rate	Unemployment Rate Change
China	62.743	4.6	5	0.4
Japan	617.293	2.4	2.97	0.57
Germany	3223.41	3.14	4.31	1.17
Canada	3760.013	5.66	9.48	3.82
Italy	4877.987	9.95	9.31	-0.63
India	3846.375	5.27	7.11	1.84
United Kindom	5685.06	3.74	4.34	0.6
France	6567.687	8.44	8.62	0.18
United States	20316.052	3.67	8.31	4.64
Brazil	21147.89	11.93	13.67	1.74

analyze the detailed data for the countries with the top 10 GDP worldwide. After the calculate and research, we found that these countries contain the same relation as the correlation between the unemployment rate change and covid cases for these countries is still a moderate correlation. However, some particular countries also show d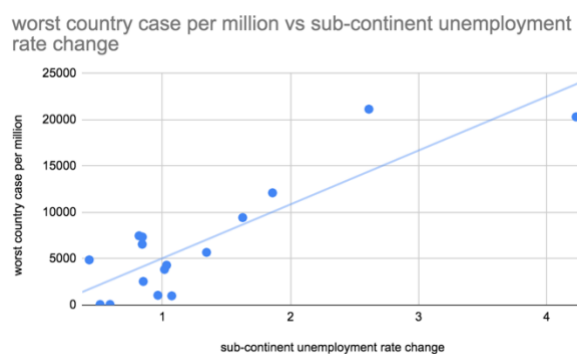ifferent results as we explore. For instance, Chine is the country with the second-highest GDP but with a bit of unemployment change, and Italy even has a decreased unemployment change. We determine that other element also affect the countries inflected by the pandemic from these exceptional cases.

Secondly, in the second question we tried to explore more factors includes the HDI (Human Development Index) and medical level and their connection with covid cases. Then we have found that the HDI also has a positive correlation property with the covid instances when the medical group does

not have. Then we have compared the countries' influent under the pandemic with the degree of HDI and income level and find that the income level could help us judge the influence level for countries under the pandemic better. In other words, the countries' economic
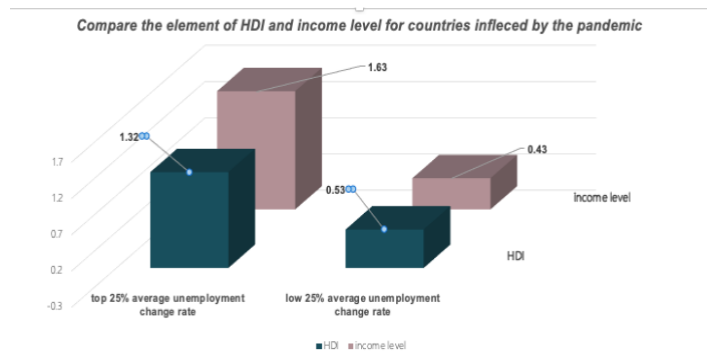

Compare the element of HDI and income level for countries infleced by the pandemic

situation could inflect how it affects the pandemic than other elements, and high-income countries have become the biggest victim of the pandemic.

For our third question, we are interested in the relationship between a region's worst affected country's covid status and that region's unemployment rate change. Our research found that a large country's covid situation might also impact their nearby countries (Lisa, 2021). We picked the country with the highest covid cases for each region (continents and subcontinents). Then, we investigated the relationship between that country's total covid cases per million and that region's average change in the unemployment rate. When we group by based on the continents, we got a correlation coefficient of 0.7596 which means a robust positive association between these two variables. When we grouped by based on the subcontinents, we got a correlation coefficient of 0.8042 which means a stronger association between these two variables.

Overall, our result confirms our hypothesis that the worst impacted country for each region will also affect its neighboring countries' unemployment rate. Since the correlation coefficient is positive, when the country has a higher infection rate, there will be more impact on the unemployment rate for the region. For example, the United States has a very high covid infection rate, affecting the unemployment rate for North America as a whole. Based on this result, we came up with a few possible explanations. Firstly, it is hard for countries to close their land borders. Therefore, this disease can spread rapidly on the land. Countries close to countries with high covid infection will also be infected very quickly, secondly, from our background knowledge in economics. There exists a strong connection between the economies and their regions. For example, West Europe is an economy that includes all countries in that region. If the pandemic influences one country, it will cause a ripple effect over that region. Overall, the governments can't be safe without factors in their surroundings countries' covid condition. Therefore, sharing vaccines with other countries is crucial, as it will both help own country's covid situation and country's economy.

In conclusion, this project has explored that, in general, there is a moderate correlation between the Covid cases rate and the unemployment rate change. We could determine how the country-inflected the pandemic by their GDP. Also, other factors could make some countries perform differently from other countries, such as the HDI and its location. Those large country's covid situation might also impact their nearby countries. Government should take action due to their economic situation, and trying to share vaccines with other countries is crucial, which could help their own country's covid situation and country's economy.

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