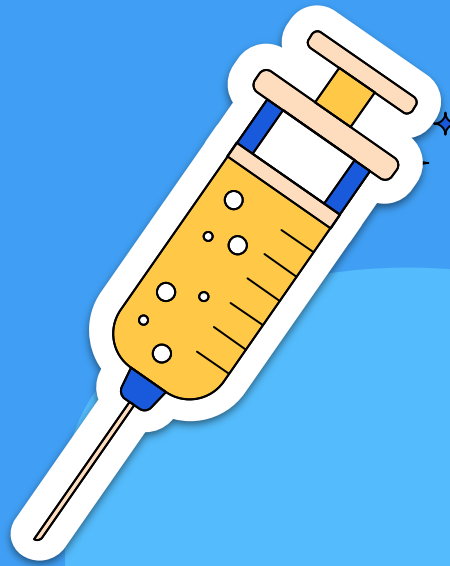
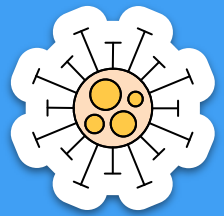
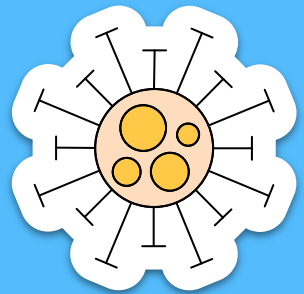
COVID-19 Vaccine Analysis







INCLUDLING DEFINING ANALYSIS OBJECTIVE,OBTAINING DATA,AND ENSURING DATA ACCURACY

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01
ANALYSIS OBJECTIVES

Start by defining clear objectives for your COVID-19 analysis. For example, you might want to analyze the trends of cases and deaths over time, compare data across different regions, or predict future cases based on historical data.

02
DATA SOURCE

To get COVID-19 cases and deaths data, you can consider various sources, such as government health department websites, public datasets, or APIs. Ensure that the data is up-to-date and well-documented.

03
DATA FORMAT

Import the data into IBM Cognos or your preferred data analysis tool.

04
DATA LOADING

A new coronavirus designated 2019-nCoV was first identified in Wuhan, the capital of China's Hubei province

05
DATA EXPLORATION

Using data exploration, I took a subset of the COVID-19 Deaths and Vaccination data to see what statistics or patterns could be found.

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06
DATA CLEANING AND PREPROCESSING

data cleansing, particularly in big data continues to remain a challenge because of its high & increasing volume, variety & velocity of data in numerous applications.

07
DATA AGGREGATION

Data on the number of steps per day from over 740,000 individuals around the world were analyzed.

08
CALCULATE KEY METRICS

when in public places, especially if they are having symptoms such as cough, fever etc. to avoid direct droplet contact.

09
DATA QUALITIY ASSURANCE

Verify that the data up-to,and preform checks to conform its assurance.

10
DATA MODULES & DOCUMENTATION

Create a data model in cognos that defines the relation between the data elements

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OBLIGATIONS UNDER THE IHR (2005) OVER SEQUENTIAL PHASE

Pre-detection: zoonotic phase with animal human spillover
Detection: cryptic spread and emergency of clinical cases of phenomenon of unknown region.
Assesment and reporting
Early global alert and information sharing
Post- PHEIC: accelerated global speed

OBJECTIVE OF FUTURE HIGH IMPACT RESPIRATIVE PATHOGENS

Improve multi sectoral zoonotic risk reduction and assignment
Enhance detection of high impact respiratory pathogens
Enhance rapid and comprehensive notification of the state parties.
Develop and clean global alert system.
Ensure comprehensive and evidence based glonal responses.

ANALYSIS OF COVID-19

BACKGROUND

The pandemic corona virus disease 2019 is the timely reminder of nature and impact of public health emergency of international concern

METHOD

The conduct a mixed method study to understand the heterogenous of cases and death due to covid19 pandemic

RESULTS

We have found that regions and country with high human development index haves a high cases and death per million populatin due to covid19

CONCLUSION

Covid19 pandemic demonstrates that every country reminds vulnerable to a public health emergency

OBJECTIVES

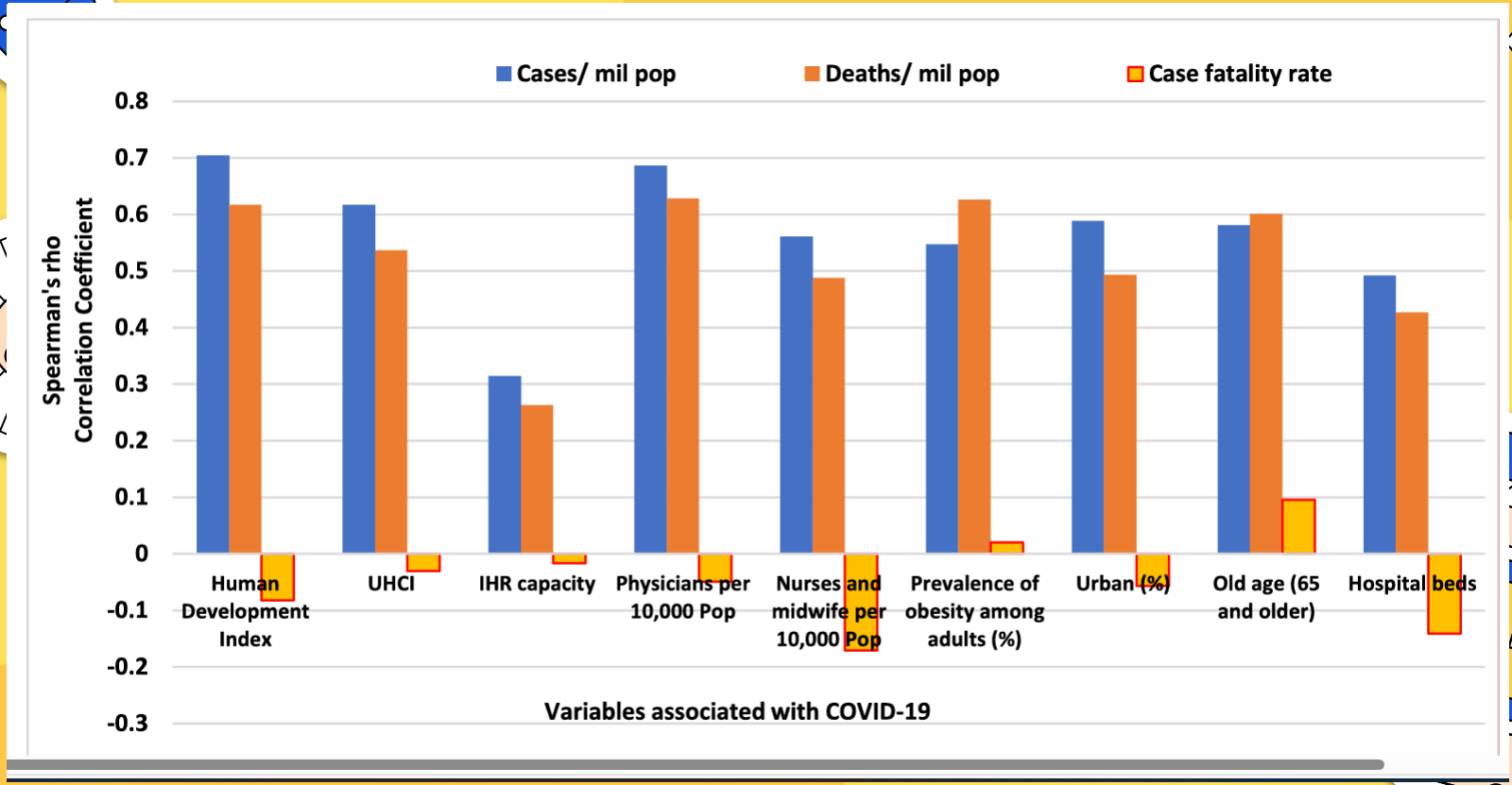
The pandemic of Coronavirus Disease 2019 (COVID 19) is a timely reminder of the nature and impact of emerging infectious diseases that become Public Health Emergency of International Concern (PHEIC) [1] The COVID-19 pandemic takes variable shapes and forms in how it affects communities in different regions and countries [2, 3]. As of 12 January, 2022, there were over 314 million cases and over 5.5 million deaths notified around the globe since the start of the pandemic. The number of cases per million population ranged from 7410 in Africa to 131,730 in Europe while the number of deaths per mil lion population ranged from 110 in Oceania to 2740 in South America. Case-fatality rates (CFRS) ranged from 0.3% in Oceania to 2.9% in South America [4, 5]. Regions and countries with high human development index (HDI), which is a composite index of life expectancy, education, and per capita income indicators (6), are affected by COVID-19 more than regions with low HDI, North America and Europe together account for 55 and 51% of cases and deaths, respectively. Regions with high HDI are affected by COVID-19 despite their high universal health coverage index (UHCI) and Global Health Security index (GHSI) [7].This seems to be a paradox (against the established knowledge that countries with weak (public) health systems capacity will have worse health outcomes) in that the countries with higher UHCI and GHSI have experienced higher burdens of COVID-19 [7]. The paradox can partially be explained by variations in testing algorithms, capacity for testing, and reporting across different countries. Countries with high HDI have health systems with a high testing capacity; the average testing rate per mil- lion population is less than 32, 000 in Africa and 160,000 in Asia while it is more than 800, 000 in HICs (Europe) and North America). This enables HICs to identify more confirmed cases that will ostensibly increase the number of reported cases [3].

METHOD

We conducted an explanatory mixed-methods study to understand and explain the heterogeneity of the pan- demic around the world. The study integrated quantitative and qualitative secondary data. The following steps were included in the research process: (1) collecting and analysis quantitative epidemiological data, (ii) conducting literature review of qualitative secondary data and (iii) evaluating countries' pandemic responses to explain the variability in the COVID-19 epidemiological out- comes. The study then illuminated specific factors that were vital towards an effective and sustainable epidemic response.

RESULT

Heterogeneity of COVID-19 cases and deaths around the world: what can explain it? Table 1 indicates that the pandemic of COVID-19 is heterogeneous around regions of the world. Figure 1 also shows that there is a strong and significant correlation between HDI and global (with an increase in trade and tourism as proxy indicators) and a corresponding strong and significant correlation with COVID-19In addition, countries with high HDI may be more significantly impacted by COVID-19 due to the higher proportion of the elderly and higher rates of non-communicable diseases. Figure 1 shows that there is a strong and significant correlation between HDI and demographic transition (high proportion of old-age population) and epidemiologic transition (high proportion of the population with non-communicable diseases). Countries with a higher proportion of people older than 65 years and NCDs (compared to communicable diseases) have higher burden of COVID-19 [16-20]. Evidence has consistently shown a higher risk of severe COVID-19 in older individuals and those with underlying health conditions [21- 25], CFR is age-dependent; it is highest in persons aged >85 years (10 to 27%), followed by those among persons


Cases/ mil pop
Deaths/ mil pop
Case fatality rate
Spearman's rho Correlation Coefficient
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
Human Development Index
UHCI
IHR capacity
Physicians per 10,000 Pop
Nurses and midwife per 10,000 Pop
Prevalence of obesity among adults (%)
Urban (%)
Old age (65 and older)
Hospital beds
Variables associated with COVID-19

Patient medical history

MALE	65.39%
FEMALE	31.39%
TRANSGENDER	8.34%
DOSE 1	72.3%
DOSE 2	54.45%
BOOSTER	32.33%

2021
VACCINATED:70.5%

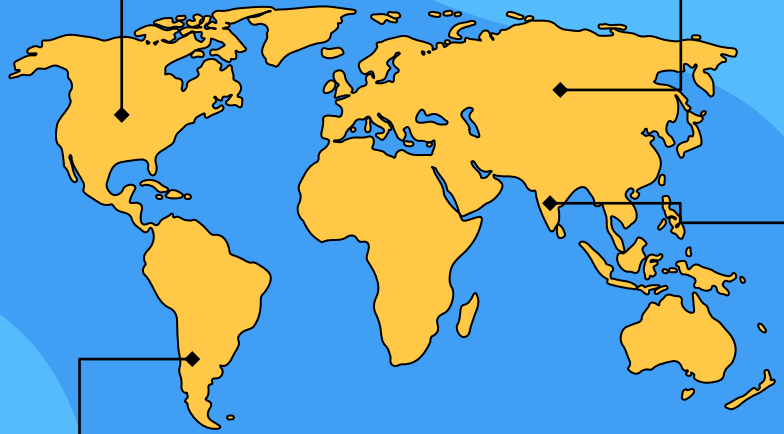
2020
VACCINATED:80.9%

6,866,733

World Wide Recovery

Map of cases Affected rate

NORTH AMERICA (97 MILLION)



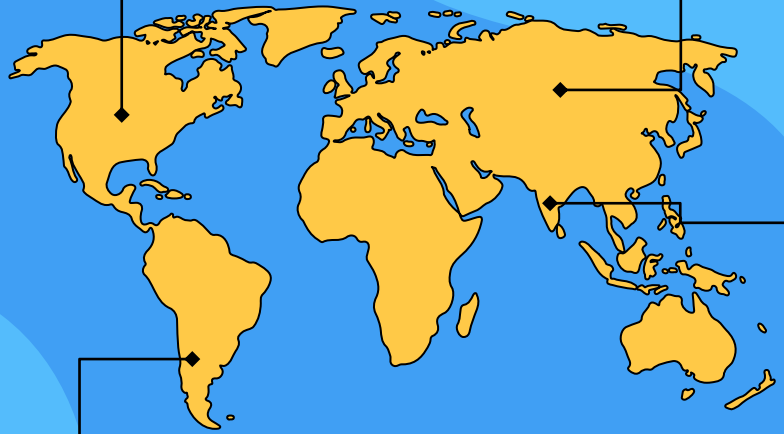
CHINA (503,302)

INDIA(44,999,561)

SOUTH AMERICA (67,331,547)

Map of cases death rate

NORTH AMERICA (1.4 MILLION)



CHINA (5272)

INDIA(531,930)

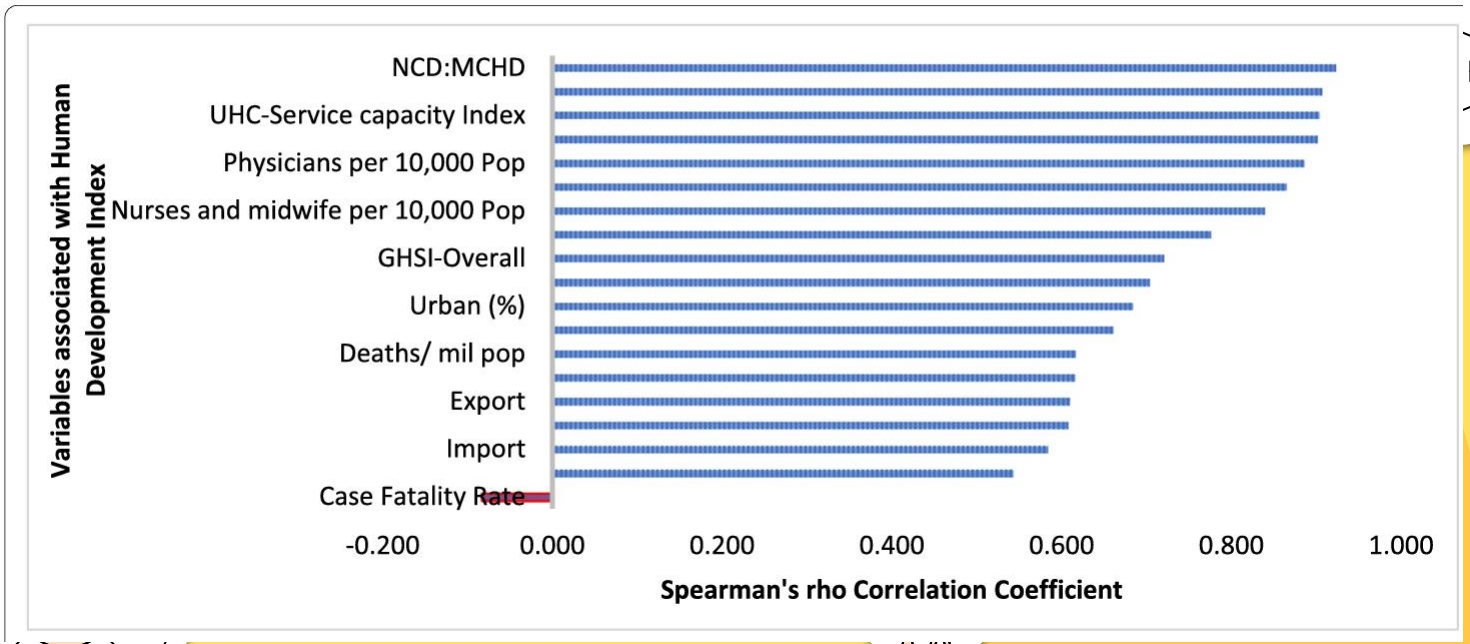
SOUTH AMERICA (1,344,031)

Table 1 COVID-19 cases, deaths and case-fatality rates in six regions of the world

Regions	Cases per mil pop	Deaths per mil pop	Total cases (%)	Total deaths (%)	Tests per mil pop	Case-fatality rate[a]
Europe	131,730	2082	31%	28%	2,379,478	1.6%
North America	125,015	2121	24%	23%	1,587,217	1.7%
South America	95,342	2740	13%	22%	436,876	2.9%
Oceania	32,673	110	0.4%	0.1%	149,348	0.3%
Asia	18,813	272	28%	23%	372,822	1.4%
Africa	7410	167	3%	4%	64,564	2.3%
World	**40,295**	**708**	**100%**	**100%**	**519,312**	**1.8%**

Source: worldometer- COVID-19 coronavirus pandemic: https://www.worldometers.info/coronavirus/

[a] Case-fatality rate is calculated as a percentage of reported deaths out of reported cases of COVID-19


Variables associated with Human Development Index
NCD:MCHD
UHC-Service capacity Index
Physicians per 10,000 Pop
Nurses and midwife per 10,000 Pop
GHSI-Overall
Urban (%)
Deaths/ mil pop
Export
Import
Case Fatality Rate
-0.200
0.000
0.200
0.400
0.600
0.800
1.000
Spearman's rho Correlation Coefficient

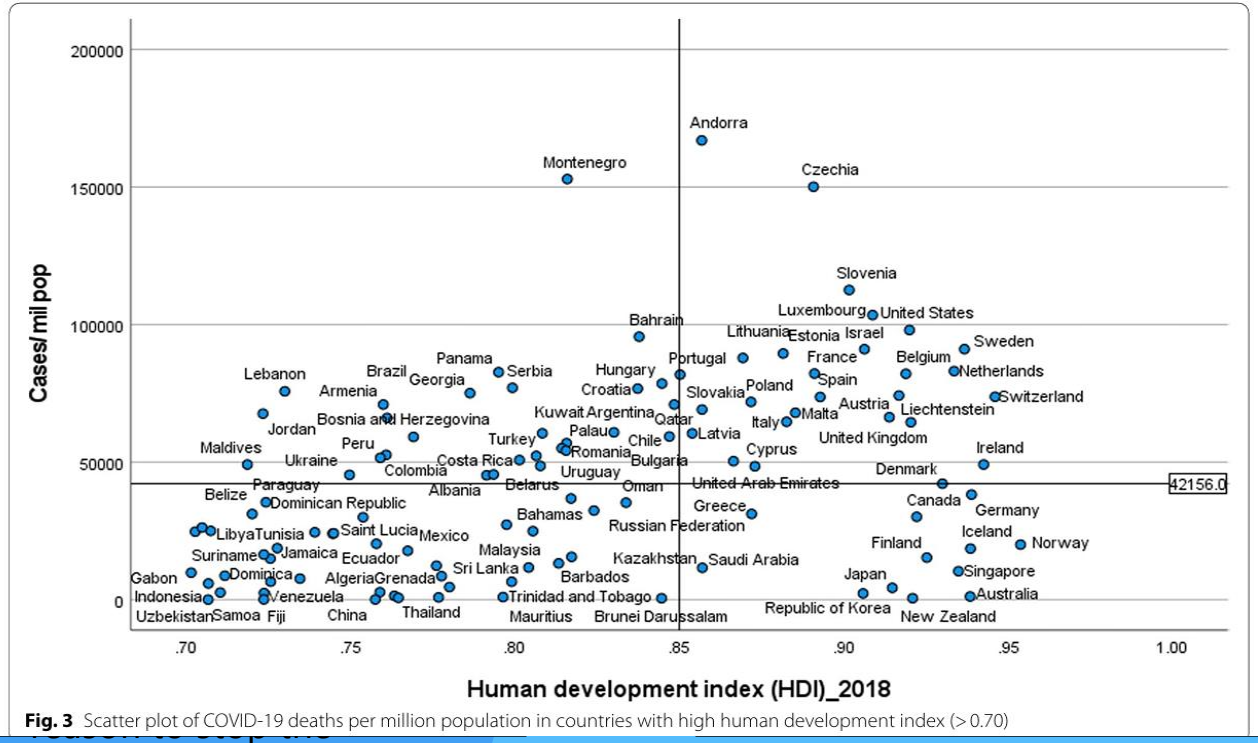


Fig. 3 Scatter plot of COVID-19 deaths per million population in countries with high human development index (> 0.70)

Thanks!