PHASE 3: DEVELOPMENT PART 1

ANALYSIS OBJECTIVES:

The objective is to assess and highlight variations in the daily COVID-19 cases and deaths within the European Union and European Economic Area (EU/EEA) member countries. This analysis aims to compare and contrast the mean values to identify regional trends and disparities, while also examining standard deviations to understand the extent of data variability, severity, and trends of COVID-19 in different EU/EEA countries.

PREPROCESSING OF DATASET AND CLEANING THE DATA:

Cleaning a dataset involves the process of preparing data for analysis by identifying and rectifying inconsistencies, errors, and missing values. This procedure is essential for accurate and reliable data-driven insights. Cleaning ensures that the dataset is structured and consistent, making it ready for further analysis and modelling. This crucial step guarantees that data-driven decisions are based on reliable, high-quality information.

Dataset : https://www.kaggle.com/datasets/chakradharmattapalli/covid-19-cases

==============**PYTHON CODE(JUPYTER NOTEBOOK)**===============

COVID-19 Cases Analysis

In [1]:

```
# Reading the Excel file into a Pandas DataFrame
import pandas as pd
file_path = r'C:\Users\sankar\Desktop\Covid_19_cases4.xlsx'

# Load the Excel file into a Pandas DataFrame
data = pd.read_excel(file_path)
print(data)
```

```
        dateRep  day  month  year  cases  deaths countriesAndTerritories
0    2021-05-31   31      5  2021    366       5                 Austria
1    2021-05-30   30      5  2021    570       6                 Austria
2    2021-05-29   29      5  2021    538      11                 Austria
3    2021-05-28   28      5  2021    639       4                 Austria
4    2021-05-27   27      5  2021    405      19                 Austria
...         ...  ...    ...   ...    ...     ...                     ...
2725 2021-03-06    6      3  2021   3455      17                  Sweden
2726 2021-03-05    5      3  2021   4069      12                  Sweden
2727 2021-03-04    4      3  2021   4884      14                  Sweden
2728 2021-03-03    3      3  2021   4876      19                  Sweden
2729 2021-03-02    2      3  2021   6191      19                  Sweden

[2730 rows x 7 columns]
```

In [2]:

```
# Creating copy of original data
cdata=data.copy()
```

In [3]:

```
# Structure of the dataset
cdata.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2730 entries, 0 to 2729
Data columns (total 7 columns):
 #   Column                   Non-Null Count  Dtype         
---  ------                   --------------  -----         
 0   dateRep                  2730 non-null   datetime64[ns]
 1   day                      2730 non-null   int64         
 2   month                    2730 non-null   int64         
 3   year                     2730 non-null   int64         
 4   cases                    2730 non-null   int64         
 5   deaths                   2730 non-null   int64         
 6   countriesAndTerritories  2730 non-null   object        
dtypes: datetime64[ns](1), int64(5), object(1)
memory usage: 149.4+ KB
```

In [4]:

```
# Summary of numerical variables
summary_num = cdata.describe()
print(summary_num)
```

```
           day    month     year     cases   deaths
count 2730.000 2730.000 2730.000  2730.000 2730.000
mean    16.000    4.011 2021.000  3661.011   65.292
std      8.766    0.819    0.000  6490.510  113.957
min      1.000    3.000 2021.000 -2001.000   -3.000
25%      8.000    3.000 2021.000   361.250    2.000
50%     16.000    4.000 2021.000   926.500   14.500
75%     24.000    5.000 2021.000  3916.250   72.000
max     31.000    5.000 2021.000 53843.000  956.000
```

In [5]:

```
#Summary of categorical variables
summary_cate = cdata.describe(include = "O")
print(summary_cate)
```

```
       countriesAndTerritories
count                     2730
unique                      30
top                    Austria
freq                        91
```

In [6]:

```
# Removing duplicate records
cdata.drop_duplicates(keep='first',inplace=True)
```

In [7]:

```
# Check for missing values
cdata.isnull()
print('Data columns with null values:\n', cdata.isnull().sum())
```

```
Data columns with null values:
 dateRep                    0
day                        0
month                      0
year                       0
cases                      0
deaths                     0
countriesAndTerritories    0
dtype: int64
```

In [8]:

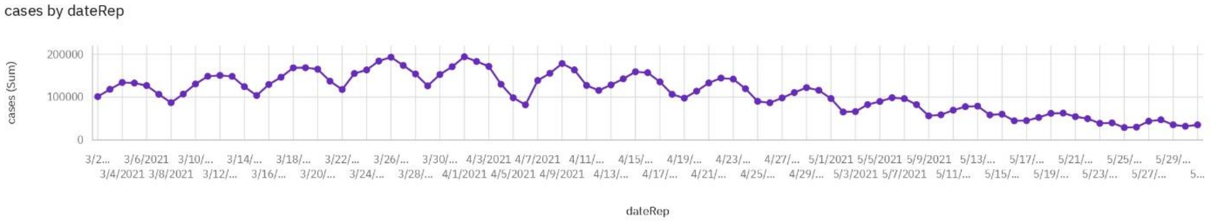
```
# Calculate Mean Daily Cases
mean_daily_cases = cdata['cases'].mean()
print("Mean Daily Cases:", mean_daily_cases)

# Calculate Mean Daily Deaths
mean_daily_deaths = cdata['deaths'].mean()
print("Mean Daily Deaths:", mean_daily_deaths)

# Calculate Standard Deviation of Daily Cases
std_daily_cases = cdata['cases'].std()
print("Standard Deviation of Daily Cases:", std_daily_cases)

# Calculate Standard Deviation of Daily Deaths
std_daily_deaths = cdata['deaths'].std()
print("Standard Deviation of Daily Deaths:", std_daily_deaths)
```

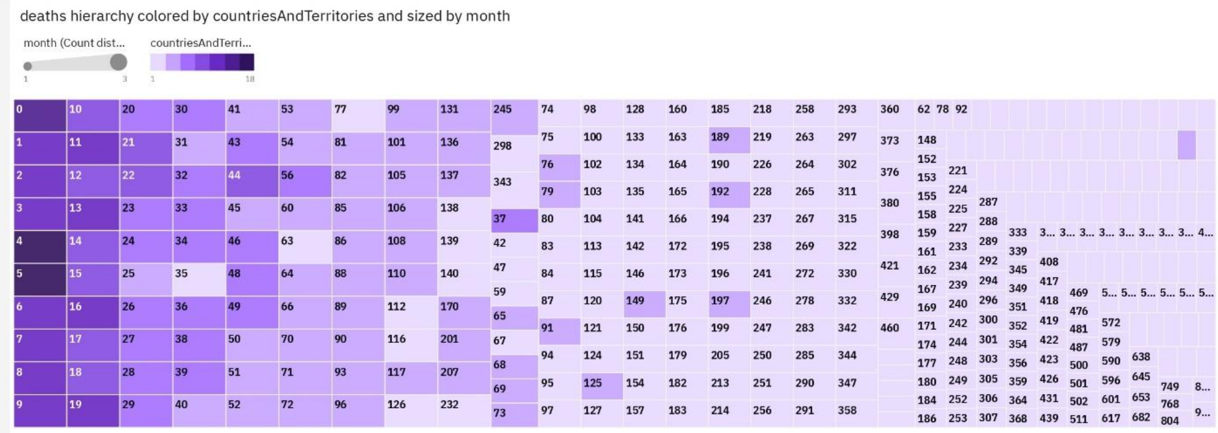
```
Mean Daily Cases: 3661.010989010989
Mean Daily Deaths: 65.29194139194139
Standard Deviation of Daily Cases: 6490.510073102111
Standard Deviation of Daily Deaths: 113.95663405806982
```

```
========================**END OF THE CODE**===============================
```

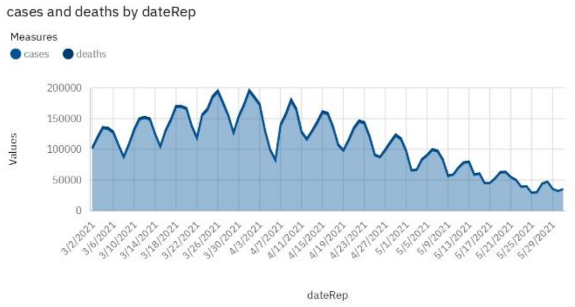
OVERVIEW OF VISUALIZATION OF COVID-19 CASES AND DEATHS IN IBM COGNOS:

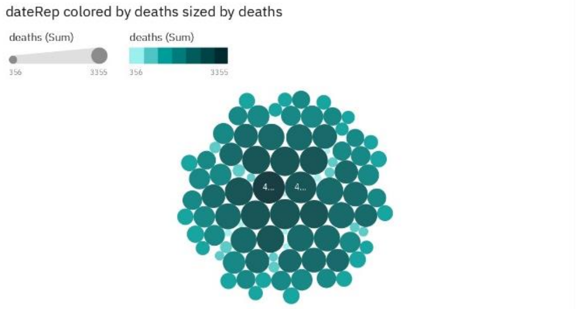
ANALYSIS OF CASES:

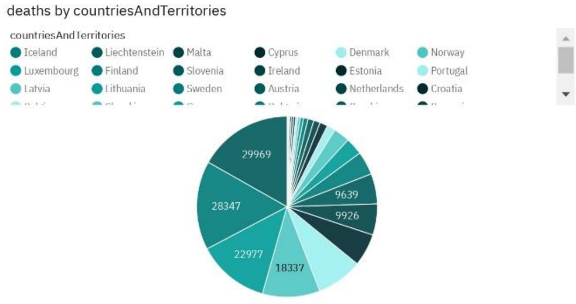

cases by dateRep

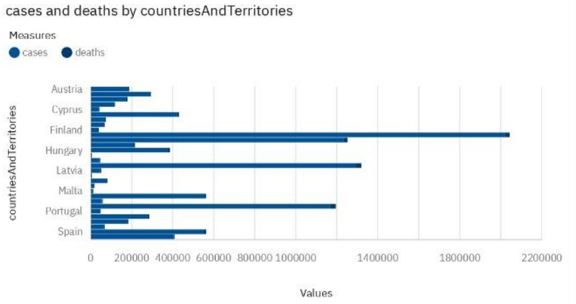

deaths hierarchy colored by countriesAndTerritories and sized by month

ANALYSIS OF CASES AND DEATHS:

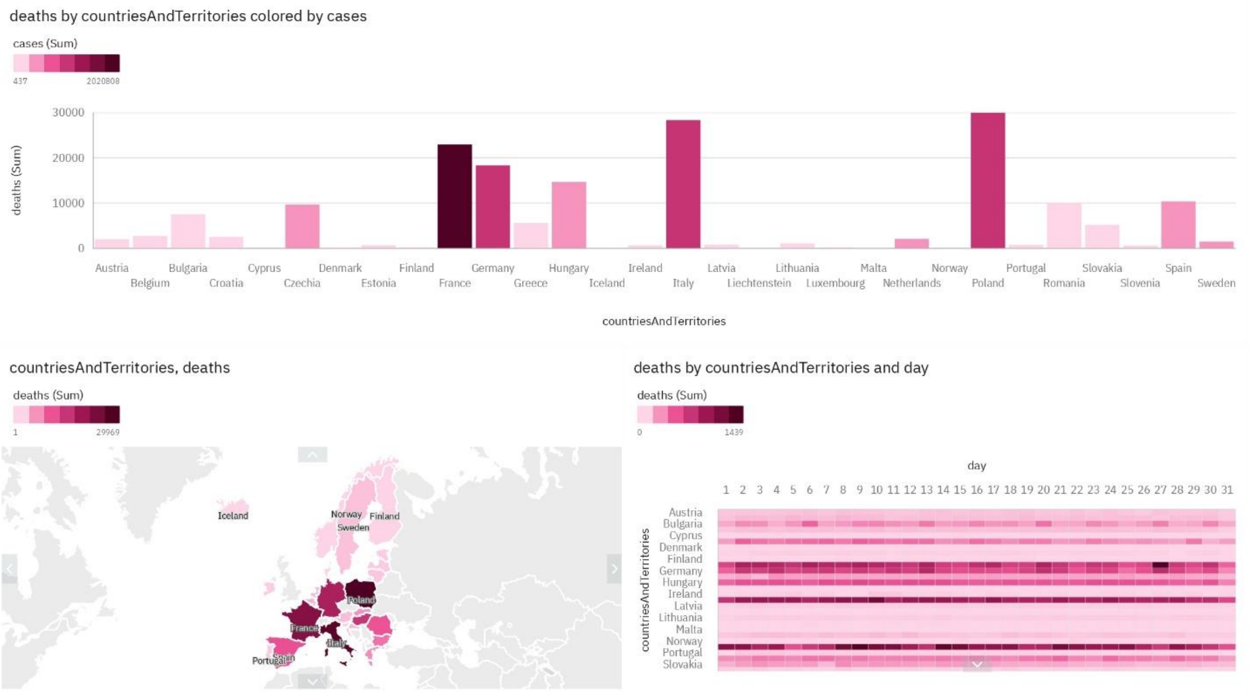

cases and deaths by dateRep


dateRep colored by deaths sized by deaths


deaths by countriesAndTerritories


cases and deaths by countriesAndTerritories

ANALYSIS OF DEATHS:



CONCLUSION:

In this phase, we initiated the development of our COVID-19 cases analysis project. We outlined our objectives, which involve leveraging IBM Cognos for visualization, providing a powerful platform for data exploration and presentation. The initial focus was on data preprocessing and cleaning to guarantee the data's accuracy and reliability. Also, we had an overview on visualization of the cases and deaths using IBM Cognos with various types of visualizations charts.