

PHASE 2: INNOVATION

INTRODUCTION

In Phase 1, we defined our problem statement and applied design thinking to outline our approach to analyse COVID-19 cases and deaths data in the EU/EEA region using IBM Cognos. In this phase, we will detail the steps to transform our design into an actionable plan.

TRANSFORMATION STEPS

1. DATA PREPARATION

- Download and organize the COVID-19 data from the provided dataset link: <https://www.kaggle.com/datasets/chakradharmattapalli/covid-19-cases>.
- Clean the data to handle missing values and inconsistencies.
- Ensure data is in a format compatible with IBM Cognos.

2. IBM COGNOS SETUP

- Install and configure IBM Cognos Analytics on the chosen server or environment.
- Set up necessary connections to the prepared COVID-19 data source.

3. DEFINE ANALYSIS OBJECTIVES

Reiterate the analysis objectives to ensure clarity:

- Compare mean values and standard deviations of COVID-19 cases and deaths per day and by country in the EU/EEA.

4. CREATE ANALYSIS FRAMEWORK

Establish the framework for analysis by defining key metrics:

- Mean Daily Cases
- Mean Daily Deaths
- Standard Deviation of Daily Cases
- Standard Deviation of Daily Deaths

5. DATA MODELLING

Design data models in IBM Cognos to facilitate analysis:

- Create data packages for daily COVID-19 cases and deaths.
- Establish relationships and hierarchies for countries, dates, and metrics.

6. ANALYSIS IMPLEMENTATION

Utilize IBM Cognos to perform the following analyses:

- Calculate mean values for daily COVID-19 cases and deaths by country.
- Calculate standard deviations for daily COVID-19 cases and deaths by country.
- Generate time series line plots for each country to visualize daily cases and deaths over time.
- Create bar charts to compare the mean values of daily cases and deaths for different countries.
- Use error bar charts to visualize standard deviations, showing variability around the mean.
- Create a geospatial map to display the geographical distribution of mean case and death rates across EU/EEA countries.
- Data segmentation by time periods and countries is a crucial aspect of COVID-19 data analysis. It allows for a more granular examination of trends and patterns, providing deeper insights into the dynamics of the pandemic. Here's how we can incorporate this segmentation effectively:

Time Segmentation:

1. **Daily Trends:** Analyse COVID-19 data on a daily basis to identify short-term fluctuations, spikes, or trends. This can help in pinpointing sudden outbreaks or rapid declines in cases.
2. **Weekly Averages:** Calculate weekly averages to smooth out daily variations and reveal broader trends over time. Weekly data can be useful for tracking the overall trajectory of the pandemic.
3. **Monthly Aggregates:** Aggregate data on a monthly basis to highlight longer-term trends, such as seasonal variations or changes in the effectiveness of public health measures.

4. Custom Date Ranges: Allow users to define custom date ranges for analysis, enabling them to focus on specific periods of interest, such as the onset of vaccination campaigns or the impact of lockdowns.

Country Segmentation:

1. Regional Comparisons: Group countries by regions (e.g., European regions or neighbouring countries) to compare how different areas are affected by the pandemic. This can help identify regional disparities and inform targeted interventions.

2. High-Risk Countries: Create a category for countries with a high incidence of COVID-19 cases or a significant increase in cases. Highlighting these countries can inform travellers and policymakers about areas of concern.

3. Demographic Analysis: Consider demographic factors like population density, age distribution, and healthcare infrastructure. Segment countries based on demographics to understand how these factors influence COVID-19 outcomes.

4. Economic Impact: Assess the economic impact of the pandemic by categorizing countries into groups based on economic indicators. Analyse how economic factors correlate with COVID-19 trends.

7. INTERPRETATION AND INSIGHTS

Analyse the visualizations to draw meaningful insights:

- Identify patterns, variations, and correlations in the data.
- Provide recommendations or actionable insights based on the analysis.
- Consider the dynamic nature of COVID-19 and propose a system for continuous monitoring and regular analysis updates to track changes over time.

CONCLUSION

This transformation plan outlines the steps to turn our design into a practical approach for analysing COVID-19 cases and deaths in the EU/EEA using IBM Cognos. It ensures that the analysis is well-structured, actionable, and capable of providing valuable insights for informed decision-making and continuous monitoring of the COVID-19 situation.