**Analyzing COVID-19 cases and deaths data**

**Problem Definition:**

The project involves analyzing COVID-19 cases and deaths data using IBM Cognos. The objective is to compare and contrast the mean values and standard deviations of cases and associated deaths per day and by country in the EU/EEA. This project encompasses defining analysis objectives, collecting COVID-19 data, designing relevant visualizations in IBM Cognos, and deriving insights from the data.

**1. Functionality:**

* **Data Import and Integration**: IBM Cognos allows you to import data from various sources, including databases, spreadsheets, and cloud services. This is crucial for integrating COVID-19 data from different health departments and organizations.
* **Data Cleaning and Transformation**: Once the data is imported, it can be cleaned and transformed to ensure consistency and accuracy. This might involve dealing with missing values, outliers, or errors in the data.
* **Descriptive Statistics**: IBM Cognos can calculate various descriptive statistics such as mean values and standard deviations for COVID-19 cases and deaths. This helps in understanding the central tendency and dispersion of the data.
* **Data Visualization**: You can create interactive dashboards and reports with charts, graphs, and maps to visualize the spread of COVID-19. This helps in identifying trends, patterns, and hotspots.
* **Predictive Analytics**: IBM Cognos can use machine learning algorithms to predict future trends based on historical data. This can be useful for forecasting the number of cases or deaths in the future.
* **Sharing Insights**: The insights derived from the analysis can be shared with others through reports, dashboards, or automated alerts. This is crucial for informing decision-making processes related to public health.

**2. User Interface:**

* **Dashboard**: The main screen would be a dashboard displaying various visualizations of the COVID-19 data. [This could include graphs, charts, and maps showing the number of cases and deaths, testing rates, vaccination progress, and other relevant metrics](https://github.com/Shubhu-Kotkar2020/Covid-19-Analytics-Using-IBM-Cognos).
* [**Data Filters**: Users can filter the data by geographic location, time periods, demographic factors, and other variables to gain deeper insights into the impact of COVID-19](https://github.com/Shubhu-Kotkar2020/Covid-19-Analytics-Using-IBM-Cognos).
* [**Interactive Visualizations**: The dashboard offers a user-friendly interface with interactive visualizations that allow users to explore the data from different angles and perspectives](https://github.com/Shubhu-Kotkar2020/Covid-19-Analytics-Using-IBM-Cognos).
* [**Geospatial Analysis**: The dashboard may include maps with color-coded regions to represent the severity of COVID-19 cases, allowing users to understand the geographical distribution of the virus](https://github.com/Shubhu-Kotkar2020/Covid-19-Analytics-Using-IBM-Cognos).
* [**Comparative Analysis**: Users can compare COVID-19 statistics across different countries, states, or cities to identify variations and trends](https://github.com/Shubhu-Kotkar2020/Covid-19-Analytics-Using-IBM-Cognos).

**3. Natural Language Processing (NLP):**

* [**Natural Language Insights**: IBM Cognos Analytics 11.2.4 introduced Natural Language Narrative Insights](https://community.ibm.com/community/user/businessanalytics/blogs/rodrigo-de-andrade/2022/12/16/cognos-natural-language-insights-whats-new-in-cogn). [This feature allows dashboard creators to visualize insights that help explain the data, find outliers, and key drivers that facilitate and accelerate data analysis](https://community.ibm.com/community/user/businessanalytics/blogs/rodrigo-de-andrade/2022/12/16/cognos-natural-language-insights-whats-new-in-cogn). [These insights are auto-generated and can even use data from outside the visualization to draw conclusions, explain and highlight potential drivers or underlying causes, or further breakdown data](https://community.ibm.com/community/user/businessanalytics/blogs/rodrigo-de-andrade/2022/12/16/cognos-natural-language-insights-whats-new-in-cogn).
* **Data Interpretation**: NLP can be used to interpret unstructured data such as social media posts, news articles, or clinical reports related to COVID-19. This can provide additional context to the structured case and death data.
* **Sentiment Analysis**: NLP techniques can be used for sentiment analysis to understand public sentiment towards COVID-19 policies, vaccines, etc., which can be valuable for policymakers.
* **Chatbots and FAQs**: NLP can power chatbots or FAQ systems to provide information about COVID-19 from the analyzed data.
* **Predictive Modeling**: NLP can be used in predictive modeling by considering textual data for predictions.

**4. Responses:**

* **Data Import and Integration**: The first step is to import and integrate the COVID-19 data from various sources into IBM Cognos. This could include data from health departments, hospitals, testing centers, and other relevant sources.
* **Data Cleaning and Preparation**: Once the data is imported, it needs to be cleaned and prepared for analysis. This could involve dealing with missing values, outliers, or inconsistencies in the data.
* **Data Analysis**: The next step is to analyze the data. This could involve calculating descriptive statistics such as mean values and standard deviations of COVID-19 cases and deaths, identifying trends and patterns, and comparing data across different regions or time periods.
* **Data Visualization**: The analyzed data can then be visualized using IBM Cognos’s powerful visualization tools. This could include creating dashboards with interactive charts, graphs, and maps to represent the data in a visually appealing and easy-to-understand manner.
* **Predictive Modeling**: IBM Cognos also allows for predictive modeling, which can be used to forecast future trends based on the current data. This could be particularly useful for predicting future COVID-19 cases or deaths.
* **Reporting and Sharing Insights**: Finally, the insights derived from the analysis can be shared with others through reports or presentations created within IBM Cognos.

**5. Testing and Improvement:**

* **Functionality Testing**: Test all functionalities of the dashboard to ensure they are working as expected. [This includes filters, interactive visualizations, real-time data updates, predictive modeling, and so on](https://www.bing.com/aclk?ld=e8yr3apJg7eedQM-KeU3Fw_DVUCUy-b5AzFowccRZW4PuPoH5p3P2sfQOMP6wOHv6YnSWUjiaWBrdFXcVv1NlT908Oa-wPo__yE-BNZeRHR8NRGGN3yEGP5J4lOKVcYuod1bu6OU2aTC2TrY_vmkA6eYvzwzsKY0dn4OQYQpdYxJBR0B2h&u=&rlid=32fd130534021b3e816676138dd39995).
* **User Testing**: Have end-users test the dashboard to ensure it meets their needs and is easy to use. [Collect feedback from users about their experience using the dashboard](https://www.bing.com/aclk?ld=e8yr3apJg7eedQM-KeU3Fw_DVUCUy-b5AzFowccRZW4PuPoH5p3P2sfQOMP6wOHv6YnSWUjiaWBrdFXcVv1NlT908Oa-wPo__yE-BNZeRHR8NRGGN3yEGP5J4lOKVcYuod1bu6OU2aTC2TrY_vmkA6eYvzwzsKY0dn4OQYQpdYxJBR0B2h&u=&rlid=32fd130534021b3e816676138dd39995).
* **Performance Testing**: Test the performance of the dashboard under different conditions. [This could involve testing how quickly the dashboard loads, how well it handles large amounts of data, and so on](https://www.bing.com/aclk?ld=e8yr3apJg7eedQM-KeU3Fw_DVUCUy-b5AzFowccRZW4PuPoH5p3P2sfQOMP6wOHv6YnSWUjiaWBrdFXcVv1NlT908Oa-wPo__yE-BNZeRHR8NRGGN3yEGP5J4lOKVcYuod1bu6OU2aTC2TrY_vmkA6eYvzwzsKY0dn4OQYQpdYxJBR0B2h&u=&rlid=32fd130534021b3e816676138dd39995).
* [**Security Testing**: Ensure that the dashboard is secure and that sensitive data is protected](https://www.bing.com/aclk?ld=e8yr3apJg7eedQM-KeU3Fw_DVUCUy-b5AzFowccRZW4PuPoH5p3P2sfQOMP6wOHv6YnSWUjiaWBrdFXcVv1NlT908Oa-wPo__yE-BNZeRHR8NRGGN3yEGP5J4lOKVcYuod1bu6OU2aTC2TrY_vmkA6eYvzwzsKY0dn4OQYQpdYxJBR0B2h&u=&rlid=32fd130534021b3e816676138dd39995).