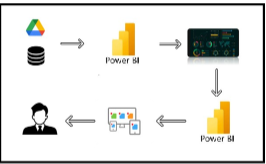
***Power BI Inflation Analysis: Journeying Through Global Economic Terrain***

Inflation, a critical economic indicator, profoundly impacts businesses, consumers, and policymakers worldwide. In this scenario, a multinational corporation operating in diverse markets seeks to optimize pricing strategies, mitigate risks, and make informed investment decisions. Leveraging Power BI's analytical prowess, we delve into inflation data to offer tailored recommendations aligned with each market's unique economic conditions.  
  
Our approach involves data collection, preparation, and modeling to build a robust analysis framework. Through insightful visualizations and strategic recommendations, we aim to equip stakeholders with actionable insights for informed decision-making. Our deliverables include an interactive Power BI dashboard showcasing inflation trends and a comprehensive report summarizing analysis findings and recommendations.  
  
***Scenario 1:*** Lack of Data Integration and Standardization  
In the context of "Power BI Inflation Analysis: Journeying Through Global Economic Terrain," a key problem might be the lack of standardized data sources and integration methods. Different regions and organizations may report inflation data differently, leading to inconsistencies and challenges in aggregating and analyzing global inflation trends effectively within Power BI. This lack of standardization hampers the ability to provide accurate and comprehensive insights into inflation dynamics worldwide.  
  
***Scenario 2:*** Limited Historical Data Accessibility   
Another challenge could be the limited accessibility to historical inflation data across various countries and regions. This scarcity of historical data poses a significant obstacle in building robust predictive models within Power BI for forecasting inflation trends accurately. Without a comprehensive historical dataset, analysts may struggle to identify long-term patterns and correlations necessary for making informed decisions and projections.  
  
***Scenario 3:*** Complex Economic Interdependencies   
The intricate interdependencies among global economies pose a complex challenge in "Power BI Inflation Analysis: Journeying Through Global Economic Terrain." Fluctuations in one country's inflation rate can have ripple effects across other regions, making it difficult to isolate and analyze the drivers of inflation within individual economies. Effectively capturing and analyzing these interdependencies within Power BI requires sophisticated modeling techniques and access to diverse datasets, which may not be readily available or easily integrated into the analysis platform.

***Technical Architecture:***



***Project Flow:***

To accomplish this, we have to complete all the activities listed below,  
1)   Data Collection  
o    Collect the dataset,  
o    Connect Data with Power BI  
2)       Data Preparation  
o    Prepare the Data for Visualization

3)        Data Visualizations  
o    Visualizations  
4)      Dashboard  
o    Responsive and Design of Dashboard  
5)        Report  
o   Report Creation  
6)        Performance Testing  
o    Amount of Data Rendered to DB  
o    Utilization of Data Filters  
o    No. of Calculation fields  
o    No. of Visualizations/Graphs  
7)     Project Demonstration & Documentation  
o    Record explanation Video for project end to end solution  
o    Project Documentation-Step by step project development procedure

***Data Flow:***

***Milestone-1: Data collection & Extraction from database.***

Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, evaluate outcomes and generate insights from the data.

***Activity 1.1: understanding the data:***

Data contains all the meta information regarding the columns described in the CSV files.

***Dataset link:*** <https://www.kaggle.com/datasets/sazidthe1/global-inflation-data>

***Column Description of the Dataset:***

1. Country\_name: Name of the Country.
2. indicator\_name: Type of inflation indicator.
3. Year : Year of the inflation.
4. Inflation\_rate: Average Inflation Rate.

***Milestone-2: Data Preparation.***

Data preparation is a critical stage in the data analysis process, encompassing activities aimed at cleaning, transforming, and organizing raw data into a structured format suitable for analysis. This process involves identifying and addressing issues such as missing values, outliers, inconsistencies, and inaccuracies in the dataset, ensuring data quality and reliability.

***Activity-1: Preparation the data for visualizations:***

Data preparation is a critical stage in the data analysis process, encompassing activities aimed at cleaning, transforming, and organizing raw data into a structured format suitable for analysis. This process involves identifying and addressing issues such as missing values, outliers, inconsistencies, and inaccuracies in the dataset, ensuring data quality and reliability.

**Data Loading:** <https://drive.google.com/file/d/1JMjR4fSZBcwvlb_fxA7BnGbaShkfmKFC/view?usp=drive_link>  
  
**Data Cleaning:** <https://drive.google.com/file/d/1D0oNnWfUduM-vVHNTeElYErzsYsgIrK7/view?usp=drive_link>

To prepare data for visualizations in Power BI, specifically for inflation analysis across countries and years, followed these steps:

**1. Import Data into Power BI**

* **File**: Imported global inflation data from an CSV or database file into Power BI.
  + Go to **Home** > **Get Data** > Choose file format (e.g. CSV).
  + Load the data into Power BI.

**2. Clean the Data (Remove Nulls, Duplicate Data)**

* Go to **Transform Data** (Power Query Editor) to clean the data.
* **Remove Nulls**: Select columns with inflation rates and filter out null values.
  + In Power Query, select the column > Click on the **Filter** icon > Uncheck **null** to remove them.
* **Remove Duplicates**: If there are duplicate rows, remove them by:
  + Go to **Transform** > **Remove Duplicates**.
* **Rename Columns**: Ensure column names are consistent and clear (e.g., country\_name, indicator\_name, year, inflation\_rate).
* **Change Data Types**:
  + Ensure that columns like Year are formatted as **Whole Numbers** and Inflation\_rate is formatted as a **Decimal**.
  + Done this in Power Query or directly in Power BI by selecting the column in the Data View and changed the data type.

**3. Unpivot Year Columns :**

The data has inflation rates spread across multiple year columns (e.g., 1980, 1981, 1982), should **unpivot** these columns so that each year and inflation rate appear as separate rows. This will allow better flexibility in visualizations (like heatmaps, line charts, etc.).

* In **Power Query Editor**, selected all year columns (1980, 1981, etc.).
* Right-click and choose **Unpivot Columns**.

Renamed the generated column (usually Attribute) to Year and the other one (usually Value) to Inflation\_rate.

**4. Save Data Preparation Steps:**

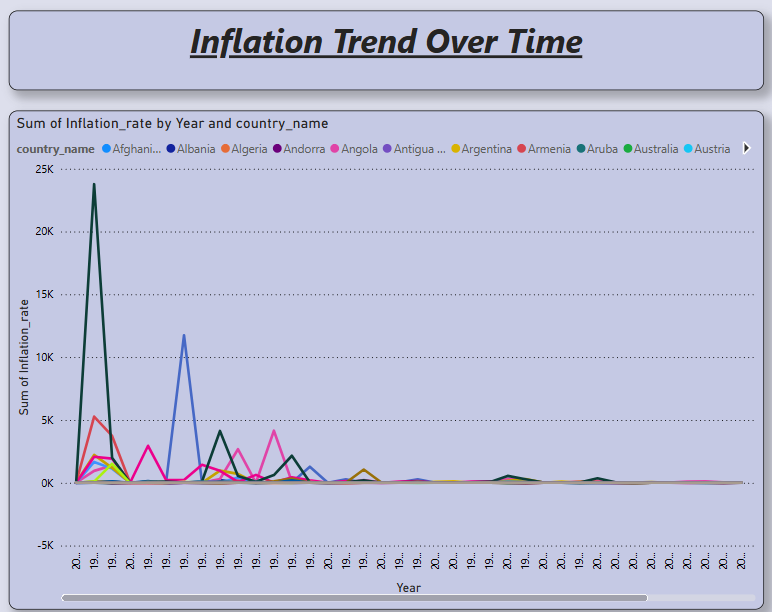
Once cleaned, transformed, and unpivoted your data, click **Close & Apply** in the Power Query Editor to load changes into Power BI.

***Milestone-3: Data Visualization:***

Data visualization is the process of creating graphical representations of data to help people understand and explore the information. The goal of data visualization is to make complex data sets more accessible, intuitive, and easier to interpret. By using visual elements such as charts, graphs, and maps, data visualizations can help people quickly identify patterns, trends, and outliers in the data.

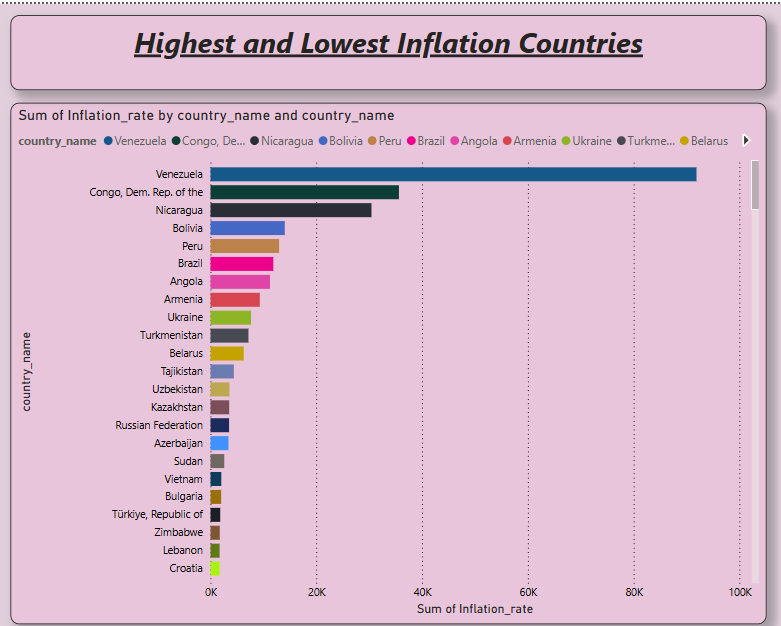
***Activity-1.1:* Line Chart**

* **X-Axis**: Year
* **Y-Axis**: Inflation\_rate
* **Legend**: Country\_name



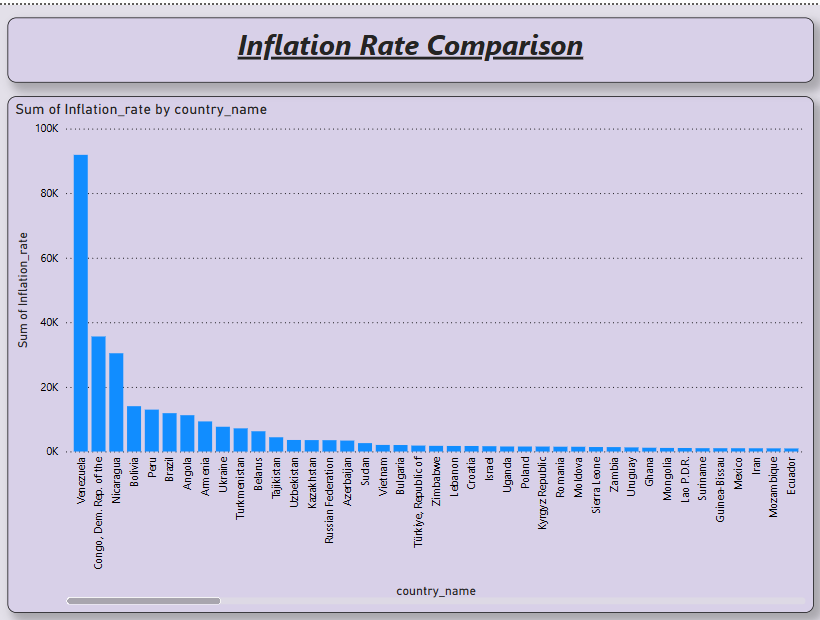
***Activity-1.2:* Bar Chart**

* **X-Axis**: Country\_name
* **Y-Axis**: Average of Inflation\_rate



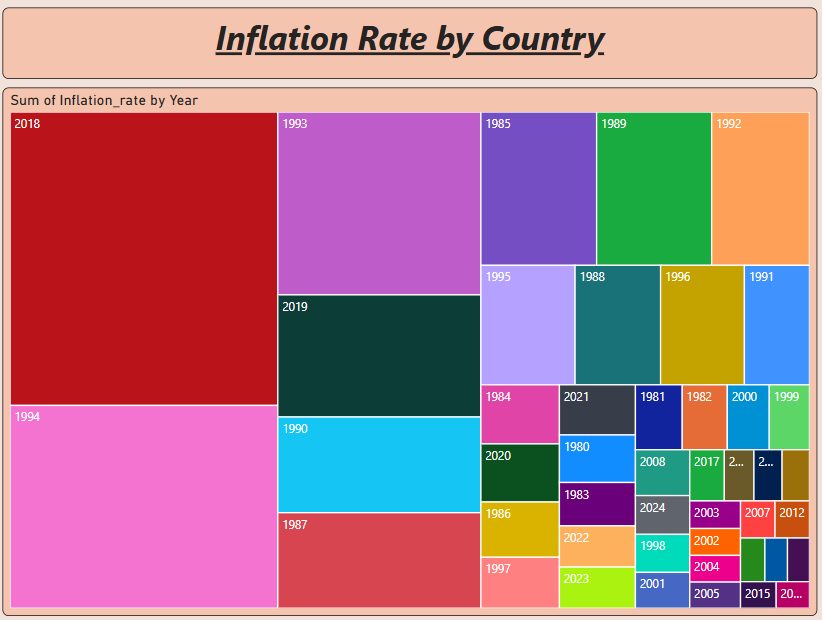
***Activity-1.3:* Clustered Column Chart**

* **X-Axis**: Country\_name
* **Y-Axis**: Inflation\_rate
* **Legend**: Year



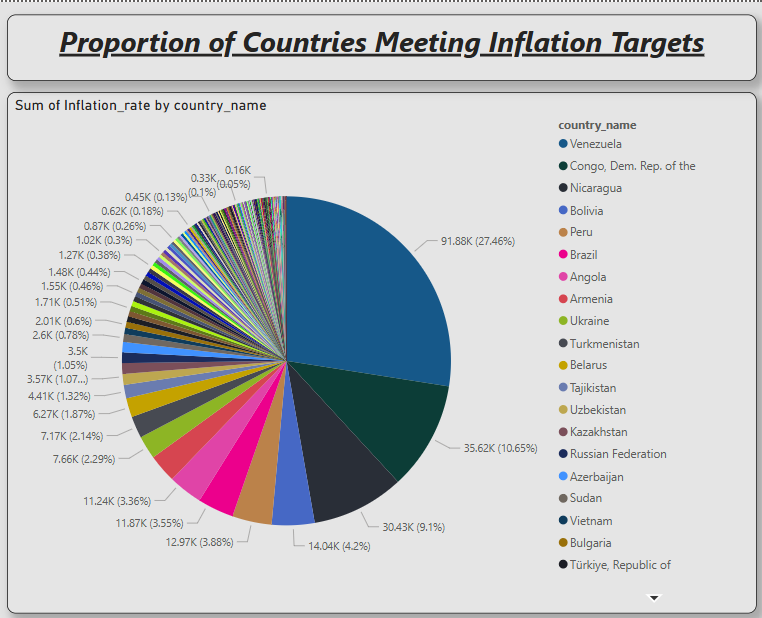
***Activity-1.4:* Treemap**

* **Group**: Country\_name
* **Values**: Inflation\_rate



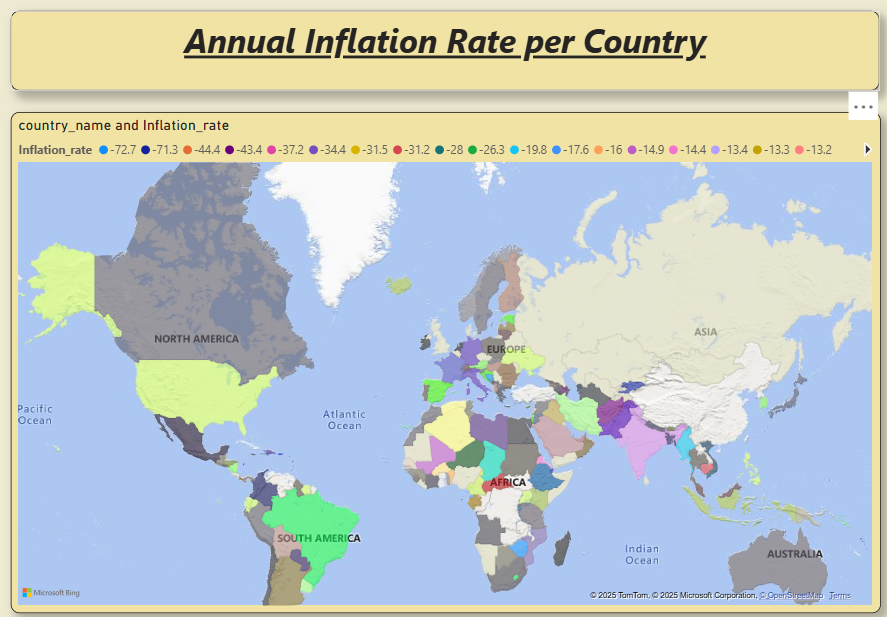
***Activity-1.5:* Pie Chart**

* **Legend**: Country\_name
* **Values**: Count of countries where Inflation\_rate



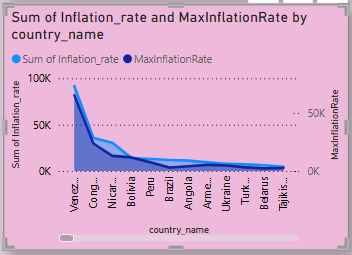
***Activity-1.6:* *Filled Map***

* **Location**: Country\_name
* **Values**: Inflation\_rate



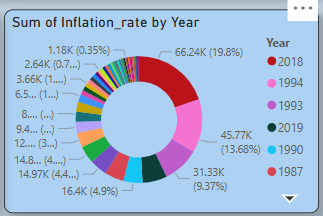
***Activity-1.7: Area Chart***

* **X-Axis**: Country\_name
* **Y-Axis**: Inflation\_rate

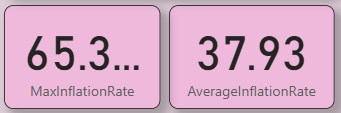


***Activity-1.8:* Donut Chart**

* **Legend**: Year
* **Values**: Inflation\_rate



***Activity-1.9: Cards***



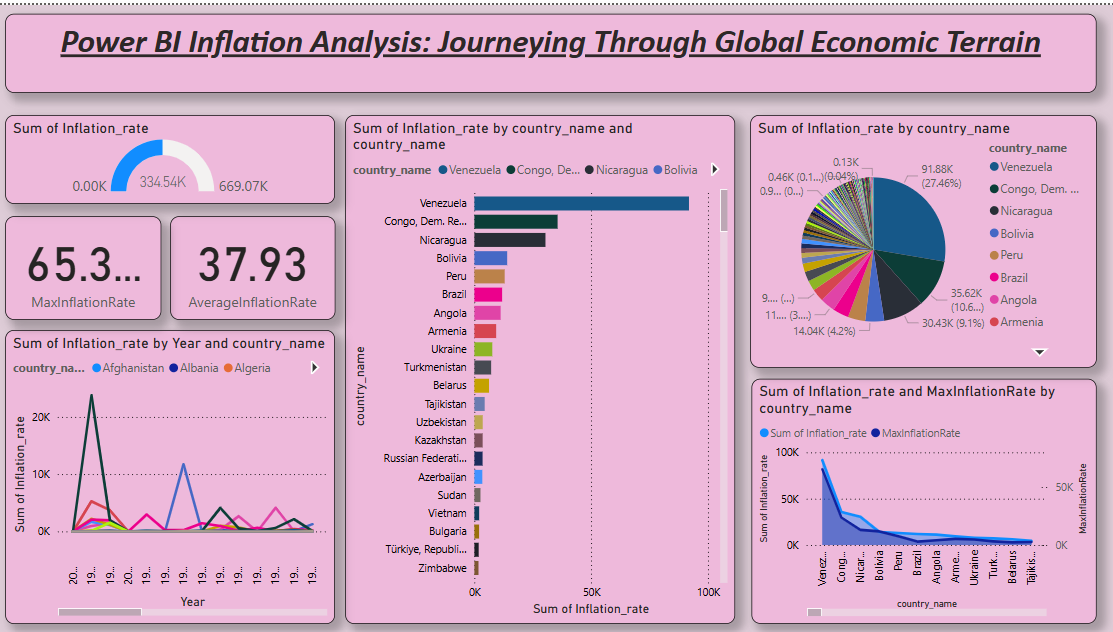
***Milestone-4: DashBoard***

A dashboard is a graphical user interface (GUI) that displays information and data in an organized, easy-to-read format. Dashboards are often used to provide real-time monitoring and analysis of data and are typically designed for a specific purpose or use case. Dashboards can be used in a variety of settings, such as business, finance, manufacturing, healthcare, and many other industries. They can be used to track key performance indicators (KPIs), monitor performance metrics, and display data in the form of charts, graphs, and tables.

***Activity-1: Responsive and Design of Dashboard:***

Created a responsive and well-designed dashboard in Power BI is key to effectively communicating of data insights***.***

***Explanation video link:*** <https://drive.google.com/file/d/1v2m9eFcbaSJk92iyFY1V8GrfYMBRA-2N/view?usp=drive_link>



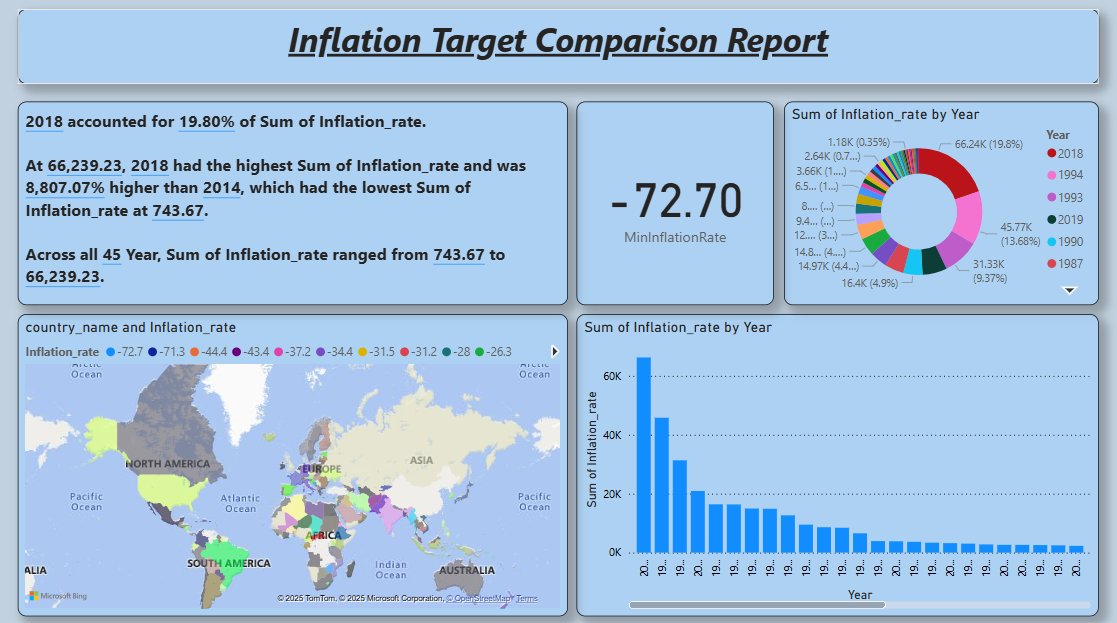
***Milestone-5: Report***

A report is a comprehensive document that provides a detailed and structured account of data analysis, findings, and insights. It is typically used for in-depth analysis, documentation, and communication of results. Reports are suitable for a diverse audience, including decision-makers, analysts, and stakeholders who need a comprehensive understanding of the data.

***Activity-1: Design of report:***

Designing a report in Power BI involves connecting to data sources, creating visualizations like charts and graphs, customizing their appearance and interactivity, organizing them logically on the canvas, formatting elements for consistency and clarity, and optionally creating dashboards for a summarized view. Throughout the process, it's essential to consider the audience's needs and ensure the report effectively communicates insights from the data. Finally, iterate based on feedback to continually improve the report's design and usefulness.

***Explanation video link:*** <https://drive.google.com/file/d/1NdQopnklRDKJJJ7xuIsyQaQZxfe0b3vQ/view?usp=drive_link>

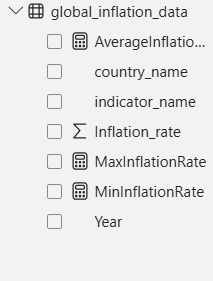


***Milestone-6: Performance Testing***

Performance testing is a critical component of software development aimed at evaluating the speed, responsiveness, and stability of an application under varying load conditions. By simulating real-world scenarios, such as heavy user traffic or high data volumes, performance testing helps identify potential bottlenecks, weaknesses, and areas for optimization within the system.

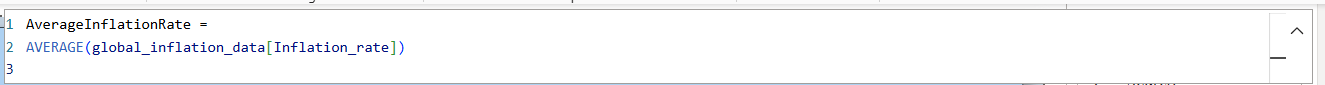
***Activity-1:*  Amount of data loaded:**

"Amount of Data Loaded" refers to the quantity or volume of data that has been imported, retrieved, or loaded into a system, software application, database, or any other data storage or processing environment. It's a measure of how much data has been successfully processed and made available for analysis, manipulation, or use within the system.

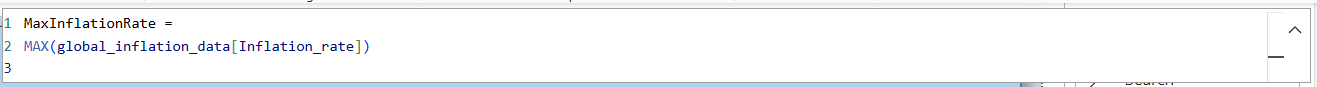


***Activity-3:*  No of calculation fields:**

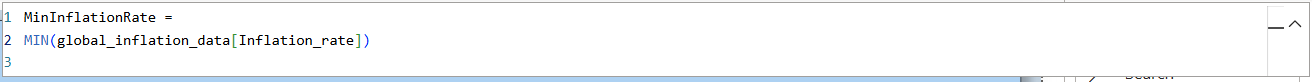
***Activity-3.1:* Average Inflation Rate**



***Activity-3.2:* Max Inflation Rate**

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***Activity-3.3: MinInflationRate***

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***Activity-4: No of Visualizations:***

1.Line Chart

2.Bar Chart

3.Clustered Column Chart

4.Treemap

5. Pie Chart

6.Filled Map

7.Area Chart

8.Donut Chart

9.Cards