

Tech Saksham

Case Study Report

Data Analytics with Power BI

“Global Terrorism Dataset Analysis Using Power BI”

“SRI KUMARA GURUBARA SWAMIGAL ARTS AND SCIENCE COLLEGE”

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ABSTRACT

This research project delves into the Global Terrorism Dataset, employing Power BI for comprehensive analysis. By leveraging interactive visualizations and advanced analytics, we seek to elucidate intricate patterns and trends within the dataset. Our investigation aims to discern underlying drivers of global terrorism, offering actionable insights for decision-makers and researchers to inform strategic interventions and policy formulations

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CHAPTER 1

INTRODUCTION

"Power BI is a powerful tool for analyzing and visualizing data. Analyzing the Global Terrorism Dataset using Power BI can provide valuable insights into trends, patterns, and factors contributing to terrorism worldwide. In your introduction, you can outline the importance of studying terrorism data, the goals of your analysis, and how Power BI will be utilized to achieve those objectives. Additionally, you may want to briefly mention the scope of the dataset and any specific questions or hypotheses you aim to address through your analysis.

Problem Statement:

Geographic distribution of terrorist attacks.
Trends over time, including yearly and monthly patterns.
Types of attacks and their frequency.
Perpetrator groups involved in terrorist activities.
Casualty analysis, including fatalities and injuries.
Impact of terrorism on different regions or countries.
Any other relevant insights or correlations present in the data.
Your analysis should be presented in an informative and visually appealing manner using Power BI, with interactive dashboards and visualizations that allow stakeholders to explore the data and understand the findings effectively.

Proposed Solution:

Using Power BI for analyzing the Global Terrorism Dataset sounds like a robust solution. You could start by importing the dataset into Power BI, then create visualizations such as maps, charts, and graphs to analyze trends, patterns, and correlations within the data. Additionally, you can use Power BI's interactive features to drill down into specific regions, time periods, or types of terrorist incidents for deeper insights. Don't forget to utilize Power BI's built-in functionalities like filters, slicers, and measures to enhance your analysis and make it more dynamic. Finally, consider creating a dashboard to present your findings in a clear and concise manner.

Feature:

1. **Real-Time Analysis:** The Power BI dashboard will provide real-time analysis of terrorist attack data.
2. **Attack Segmentation:** It will segment terrorist attacks based on various parameters such as location, attack type, casualty count, etc.
3. **Trend Analysis:** The dashboard will identify and display trends in terrorist attack patterns over time.
4. **Predictive Analysis:** It will utilize historical data to predict potential future terrorist attack hotspots or trend

Advantages:

1. **Data-Driven Decision Making:** Governments and security agencies can make informed decisions based on real-time analysis of terrorism data, enhancing national security.
2. **Proactive Counterterrorism Measures:** Understanding terrorist attack patterns and trends can help authorities proactively implement counterterrorism strategies and allocate resources effectively.
3. **Enhanced Public Safety:** By identifying high-risk areas or potential targets, security measures can be strengthened to mitigate the threat of terrorism and ensure public safety.
4. **International Collaboration:** Sharing and analyzing terrorism data through Power BI can facilitate collaboration between countries and international organizations in combating terrorism on a global scale.

Scope:

"The scope of this project encompasses comprehensive analysis of global terrorism incidents, aiming to provide actionable insights for policymakers, security agencies, and researchers. The project will leverage Power BI to explore trends, patterns, and hotspots in terrorism activities worldwide. Additionally, it can be extended to incorporate diverse data sources, including socio-economic indicators, conflict zones, and geopolitical factors, to enhance the understanding of terrorism dynamics. Advanced analytics techniques, such as predictive modeling and correlation analysis, will be employed to uncover hidden patterns and forecast future trends. Furthermore, the project has the potential to be adapted for other domains, such as national security, humanitarian aid, and conflict resolution, where insights into terrorism are essential. Ultimately, this project contributes to global efforts in counterterrorism, promoting data-driven decision-making, and enhancing security measures worldwide."

CHAPTER 2

SERVICES AND TOOLS REQUIRED

2.1 Services Used

- **Data Collection and Storage Services:** Ensure you have the Global Terrorism Dataset in a format compatible with Power BI. If it's stored in a storage service like Microsoft OneDrive, Google Drive, or Azure Blob Storage, make sure you have the necessary permissions to access it.
- **Data Processing Services:** Using Power BI for analyzing the Global Terrorism Dataset can provide insightful visualizations and trends. Are you looking for assistance with data processing services specifically tailored for Power BI integration?

2.2 Tools and Software used

Tools:

- **PowerBI:** Install Power BI Desktop from the official Microsoft website if you haven't already.
- **Power Query:** Access to the Global Terrorism Dataset, which could be in various formats such as CSV, Excel, or a database. Power Query allows you to connect to different data sources.

Software Requirements:

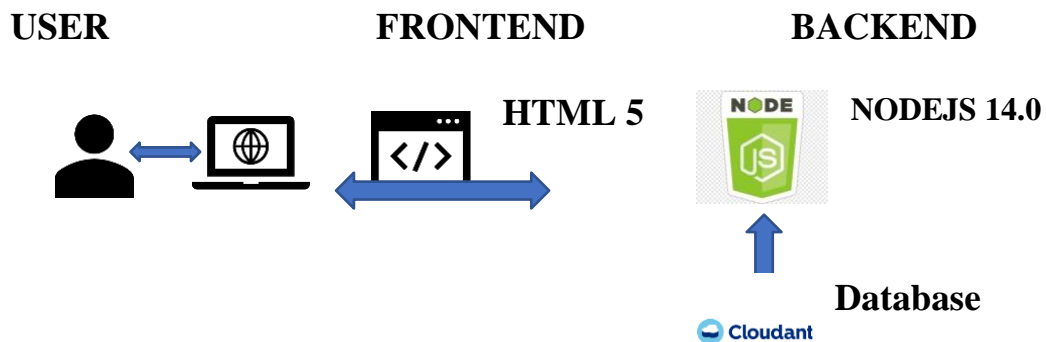
- **PowerBI Desktop:** If you haven't already, download and install Power BI Desktop from the official Microsoft website.

- **PowerBI Service:** You'll need a Power BI service account to access reports from the Power BI cloud service. This is where your reports are hosted.
- **PowerBI Mobile:** This is a mobile application that you can use to access your reports and dashboards on the go.

CHAPTER 3

PROJECT ARCHITECTURE

Architecture



1. ***Data Collection:*** The global terrorism dataset is collected from reputable sources such as the Global Terrorism Database (GTD) or governmental agencies. This data includes information on terrorist incidents, perpetrators, targets, and casualties, and is gathered through extensive research and reporting mechanisms.
2. ***Data Preparation and Transformation:*** Upon collection, the dataset undergoes rigorous preprocessing to address inconsistencies, missing values, and outliers. This ensures the data is clean and formatted correctly for analysis in Power BI. Transformation steps may include data normalization, feature engineering, and merging with supplementary datasets for enriched insights.
3. ***Data Modeling:*** The preprocessed dataset is imported into Power BI Desktop for further analysis. Data modeling techniques are employed to establish relationships between different tables within the dataset, enabling seamless navigation and exploration. Measures and calculated columns are defined to derive meaningful metrics and insights from the data.

4. ***Data Analysis and Visualization:*** Utilizing Power BI's suite of visualization tools, the global terrorism dataset is analyzed to uncover trends, patterns, and correlations. Visualizations such as heat maps, time series charts, and geospatial maps are employed to effectively communicate key findings. Interactive features such as filters and slicers enable users to drill down into specific regions, time periods, or attack types for deeper analysis.

5. ***Advanced Analytics (Optional):*** For enhanced insights, advanced analytics techniques such as clustering, sentiment analysis, or time series forecasting may be applied within Power BI. Integration with external tools or programming languages like R or Python allows for custom analytics and machine learning models to be incorporated into the analysis pipeline.

6. ***Deployment and Sharing:*** The finalized dashboards and reports are published to the Power BI service for online access. Stakeholders and decision-makers can securely access the analysis from any device using Power BI Desktop, Power BI Service, or Power BI Mobile app. Granular access controls ensure that sensitive information is protected and only accessible to authorized users.

This architecture provides a robust framework for analyzing the global terrorism dataset using Power BI, enabling stakeholders to gain valuable insights into terrorist activities worldwide. However, it's essential to adapt the architecture to specific project requirements, existing infrastructure, and compliance with relevant data privacy and security regulations.

CHAPTER 4

MODELING AND RESULT

Power Query Editor interface showing a table with columns: eventid, iyear, imonth, iday, approximate, extended. The table contains 24 rows of data. The right sidebar shows the 'Query Settings' pane with 'Properties' and 'Applied Steps' sections.

	eventid	iyear	imonth	iday	approximate	extended
1	1.97E+11	1970	7	2		
2	1.97E+11	1970	0	0		
3	1.97001E+11	1970	1	0		
4	1.97001E+11	1970	1	0		
5	1.97001E+11	1970	1	0		
6	1.97001E+11	1970	1	1		
7	1.97001E+11	1970	1	2		
8	1.97001E+11	1970	1	2		
9	1.97001E+11	1970	1	2		
10	1.97001E+11	1970	1	3		
11	1.97001E+11	1970	1	1		
12	1.97001E+11	1970	1	6		
13	1.97001E+11	1970	1	8		
14	1.97001E+11	1970	1	9		
15	1.97001E+11	1970	1	9		
16	1.97001E+11	1970	1	10		
17	1.97001E+11	1970	1	11		
18	1.97001E+11	1970	1	12		
19	1.97001E+11	1970	1	12		
20	1.97001E+11	1970	1	13		
21	1.97001E+11	1970	1	14		
22	1.97001E+11	1970	1	15		
23	1.97001E+11	1970	1	19		
24						

Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply New Source Recent Sources Enter Data Data source settings Manage Parameters Refresh Preview Advanced Editor Choose Columns Remove Columns Keep Rows Remove Rows Split Column Group By Data Type: Whole Number Use First Row as Headers Replace Values Merge Queries Append Queries Combine Files Text Analytics Vision Azure Machine Learning AI Insights

Queries [1] = Table.TransformColumnTypes(#"Promoted Headers",{{"eventid", Int64.Type}, {"iyear", Int64.Type}, {"imonth", Int64.Type}, {"city", Text.Type}, {"provstate", Text.Type}, {"region", Text.Type}, {"country_txt", Text.Type}})

	country_txt	region	region_txt	provstate	city
1	58 Dominican Republic	2 Central America & Caribbean			Santo Domingo
2	130 Mexico	1 North America	Federal		Mexico city
3	160 Philippines	5 Southeast Asia	Tarlac		Unknown
4	78 Greece	8 Western Europe	Attica		Athens
5	101 Japan	4 East Asia	Fukouka		Fukouka
6	217 United States	1 North America	Illinois		Cairo
7	218 Uruguay	3 South America	Montevideo		Montevideo
8	217 United States	1 North America	California		Oakland
9	217 United States	1 North America	Wisconsin		Madison
10	217 United States	1 North America	Wisconsin		Madison
11	217 United States	1 North America	Wisconsin		Baraboo
12	217 United States	1 North America	Colorado		Denver
13	98 Italy	8 Western Europe	Lazio		Rome
14	217 United States	1 North America	Michigan		Detroit
15	217 United States	1 North America	Puerto Rico		Rio Piedras
16	499 East Germany (GDR)	9 Eastern Europe	Berlin		Berlin
17	65 Ethiopia	11 Sub-Saharan Africa	Unknown		Unknown
18	217 United States	1 North America	New York		New York City
19	217 United States	1 North America	Puerto Rico		Rio Grande
20	217 United States	1 North America	Washington		Seattle
21	217 United States	1 North America	Illinois		Champaign
22	218 Uruguay	3 South America	Montevideo		Montevideo
23	217 United States	1 North America	Washington		Seattle
24					

135 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 13:59

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Type here to search

PROPERTIES
Name
Power BI Powered Global Terrorism Data
All Properties

APPLIED STEPS
Source
Promoted Headers
X Changed Type

Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply New Source Recent Sources Enter Data Data source settings Data Sources Manage Parameters Refresh Preview Advanced Editor Choose Columns Remove Columns Keep Rows Remove Rows Sort Split Column Group By Data Type: Any Use First Row as Headers Replace Values Merge Queries Append Queries Combine Files Text Analytics Vision Azure Machine Learning

Queries [1] Table.TransformColumnTypes(#"Promoted Headers",{{"eventid", Int64.Type}, {"iyear", Int64.Type}, {"imonth", Int64.Type}, {"id", Int64.Type}, {"gname", Text.Type}, {"gsubname", Text.Type}, {"gname2", Text.Type}, {"gsubname2", Text.Type}})

	A ^B natly3_txt	A ^B gname	A ^B gsubname	A ^B gname2	A ^B gsubnar
1		MANO-D			
2		23rd of September Communist League			
3		Unknown			
4		Unknown			
5		Unknown			
6		Black Nationalists			
7		Tupamaros (Uruguay)			
8		Unknown			
9		New Year's Gang			
10		New Year's Gang			
11		Weather Underground, Weathermen			
12		Left-Wing Militants			
13		Unknown			
14		Left-Wing Militants			
15		Armed Commandos of Liberation			
16		Commune 1			
17		Eritrean Liberation Front			
18		Black Nationalists			
19		Strikers			
20		Black Nationalists			
21		Black Nationalists			
22		Tupamaros (Uruguay)			
23		Black Nationalists			
24					

135 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 13:59

Query Settings

PROPERTIES

Name
Power BI Powered Global Terrorism Data

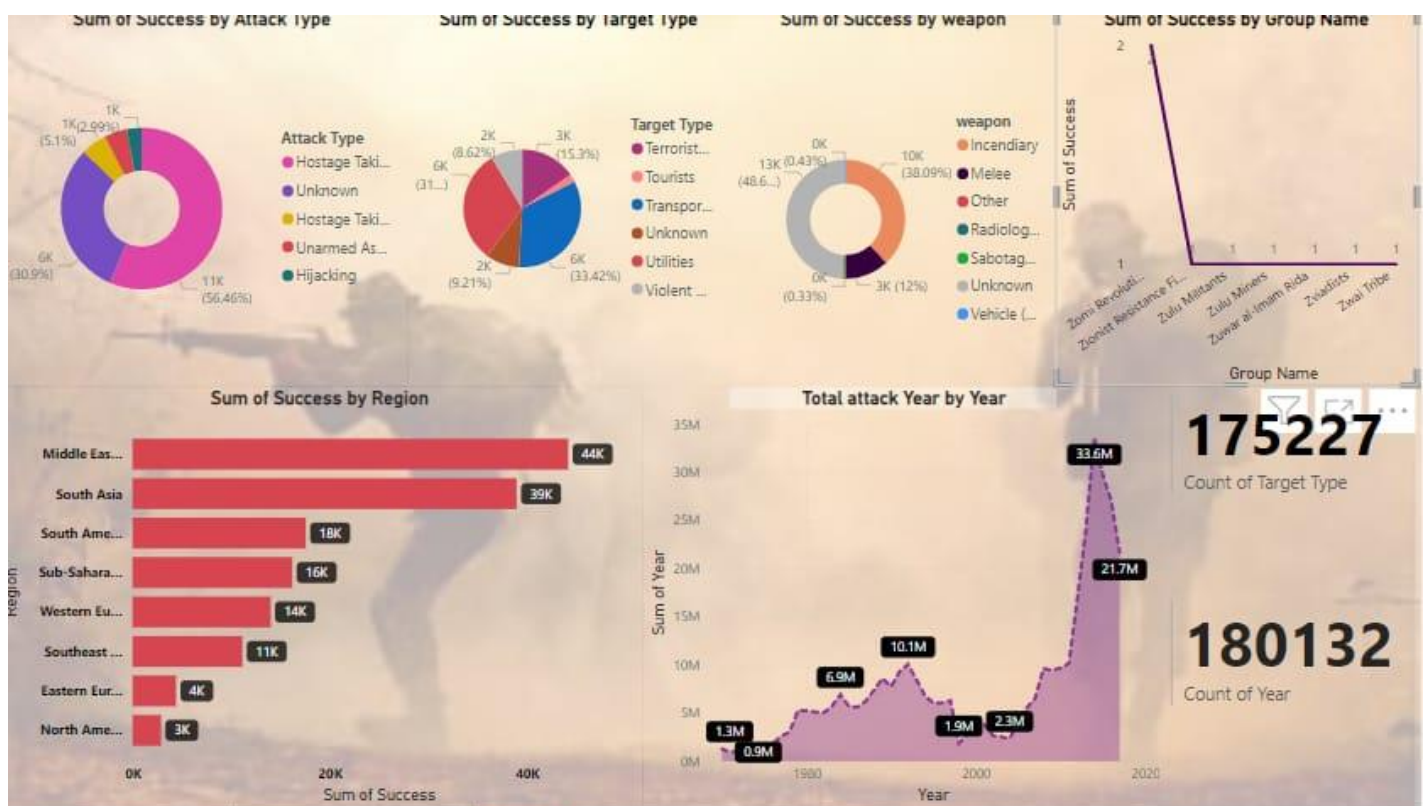
APPLIED STEPS

Source
Promoted Headers
X Changed Type

Type here to search

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Dash board



CONCLUSION

"In conclusion, the analysis of the Global Terrorism Dataset using Power BI has provided valuable insights into patterns, trends, and hotspots of terrorism worldwide. This analysis can inform policymakers, security agencies, and researchers in making informed decisions and strategies to combat terrorism effectively. Additionally, it underscores the importance of leveraging data visualization tools like Power BI to understand complex phenomena such as terrorism comprehensively.

FUTURE SCOPE

"Data import and transformation: Importing the dataset into Power BI and performing necessary data cleaning and shaping operations.

Visualization: Creating interactive visualizations like maps, charts, and graphs to represent trends, patterns, and relationships in the data.

Geographic analysis: Utilizing maps to visualize the geographical distribution of terrorist incidents.

Time-series analysis: Examining trends over time to identify temporal patterns in terrorist activities.

Descriptive statistics: Calculating summary statistics to understand the characteristics of terrorist incidents, such as frequency, severity, and duration

REFERENCE

https://youtu.be/wwa9S5YlMcg?si=Oi5w3z_XO6kGuxmD

LINK

<https://github.com/Seetha-2003/Power-BI-Global-Terrorism-Dataset-Analysis->