

Data Visualization Project Report

on

Global Terrorism Data Visualization

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Abstract

Terrorist Attacks are the main cause of concern for common people & government organizations. There are a lot of terrorist attacks happening around the world, which compel us to collect global terrorism data, visualize the data and analyze the patterns from the data. Lack of knowledge & awareness about terrorism provides different opinions & misunderstandings among the civilians. The global terrorism dataset has over 181k incidents of terrorism from across the world. The dataset provides us the information about the latitude & longitude which gives the accurate location of attacks which will be helpful in visualization. With different features available one can get the intensity of the attack by region in a particular year. The temporal trends in the attacks and the relationship between types of attacks can also be found. The different weapons used for the attacks can also be identified from the dataset. Analysis of different terrorist trends would help many Government Organization, Terrorism Control Organization to enhance security & produce better strategies to control the terrorism activities.

Keywords: Temporal Trends, latitude, longitude, Terrorist Control Organization

Introduction & Background

Terrorism can be defined as the usage of indiscriminate violence intending to create fear, terror against people for religious, ideological, or political purposes. Terrorist attacks whether international or domestic is always a topic of concern for most people around the world. People around the world have created awareness about Terrorism in the last decade. Yet, there is the existence of terrorism. In recent times there has been a drastic increase in terrorism-related articles & public interest about this matter. The main reason for this is that there are no data available & already existing are not presented & organized well.

The Global Terrorism database is one of the important sources, which is an open-source database containing the terrorist event information from 1970 to 2019. It also contains information about various terrorist attacks from the year 1979 to 2019. The data is managed by the National Consortium for the Study of Terrorism and Responses to Terrorism (START). The GTD data was collected from researchers who recorded different types of events using Foreign broadcast information services. This research has been updating the data for the past 5 years. The Global terrorism website has 36,000 visitors per month [1]. This report introduces interactive visual exploration tools like Tableau & D3 that deal with this Terrorism data. The tools demonstrate the use of some of the charts like map, bar chart, heatmap, bubble chart, stacked bar chart, line chart, scalar plot. These tools provide insights that make data approachable and explanatory.

In this era of globalization, more information about the topic can help to strengthen counter-terrorism attacks, enhance security & provide better policies to control the terrorism act. From this analysis government officials can draw insights and take necessary steps to provide safety for citizens. Analysts can use this to know how terrorism impacts the social & economic

aspects of a country. The visualization can further be used by different international organizations to find different patterns & trends of attacks.

Related Work

Visualization helps to interpret or understand what's been visualized just by looking at it. Visualization is amazing, even for the people with little domain knowledge, representation of data with charts helps them understand and get to know the data better. Visualization can be done using different charts, graphs, geo-maps, tree-maps. Prior to designing the visualization, existing articles and websites were explored that address similar visualization problems. The related works include to visualize intersecting data sets, various tasks related to the Global Terrorism Database, and analysis of geographic data also, there understanding different chart development using D3. In this project I am making use of several visualization specifically maps to demonstrate the story of global terrorism. Using D3 state-of-art javascript library to develop a barchart which will allow to show different trends in Terrorism activities.

Visualizing Terror: The Global Terrorism Database: A World of Terror examines the activities of the top 25 most effective terrorist organizations in the world. It establishes the modus operandi of each of these organizations by quantifying the types of attacks attributable to each group. A World of Terror also shows how the terrorist organizations are dispersed across the globe. It also explores different methods of showing number of deaths, number of injured, number of incidents, year or incident and month of incident in a small, concise visualization [2].

Understanding Human Development Index: The HDI was created to emphasize that people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone. The Human Development Index (HDI) is a summary measure of average achievement in key dimensions of human development: a long and healthy

life, being knowledgeable and have a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions. Using this data to check the trend in different countries [3].

Understanding Global Terrorism Index: The Global Terrorism Index (GTI) is a comprehensive study analysing the impact of terrorism for 163 countries covering 99.7 per cent of the world's population. The GTI is based on the Global Terrorism Database (GTD). The GTI produces a composite score so as to provide an ordinal ranking of countries on the impact of terrorism. The GTI ranks 163 countries based on four indicators weighted over five years. A country's annual GTI score is based on a unique scoring system to account for the relative impact of incidents in the year. The four factors counted in each country's yearly score are: g total number of terrorist incidents in a given year g total number of fatalities caused by terrorists in a given year g total number of injuries caused by terrorists in a given year g a measure of the total property damage from terrorist incidents in a given year [4]. Each of the factors is weighted between zero and three, and a five year weighted average is applied in a bid to reflect the latent psychological effect of terrorist acts over time.

Project Description & Requirements

The project visualizes global terrorism data having the incidents recorded over 35 years in the Global Terrorism Database (GTD) and examines patterns & Trends about these various attacks and incidents.

❖ Description of the Data Sources

The primary data source used in this project includes the Global Terrorism Database (GTD) which is the comprehensive unclassified database of various terrorism activities around the world. This database is managed by National Consortium for the Study of Terrorism and

Responses to Terrorism (START), with an effort to provide understanding about terrorist violence and defeat it. It includes more than 200,000 terrorism attacks from 1970 to 2019. For every event in the dataset, the information about location& date of the terrorist incident, different weapons used, their targets, the total number of fatalities& injuries occurred and identified group or individual responsible for the attacks, extent to which property is damaged, motive, nationality of target.

The characteristics of this terrorism database:

- Consists of information about 200,000 terrorist attacks all over the world.
- It is at present the most comprehensive unclassified database on terrorist attacks in the world.
- It contains information on more than 20,000 assassinations, 15,000 kidnappings ,95,000 bombings & hostage incidents from 1970.
- It has information on 45 variables for each of the cases, with more recent incidents including information about 120 variables.
- To collect incident data from 1970 to 2019 alone, more than 4,000,000 news articles and 25,000 news resources were used.

❖ **Data Collection Methodology**

The process of data collection was initiated with a diverse set of media sources from all over the world for recognizing & documenting the terrorist events to be included in GTD. There are more than 2 million articles published on daily basis. The Natural language processing Technique, named entity extraction, and machine learning technologies are used to identify the articles containing information about terrorist attacks, as and when new events are recorded it gets updated in the database. The definitions, sources & workflows are the key factors that

impact the contents of the database. For instance, the source materials availability was best when the data collection process had the shortest lag with the real-time incidents. Due to advanced technology & internet enhanced the accessibility of resources.

❖ **GTD Inclusion Criteria**

The present GTD consists of several phases of data collection relying on publicly available data, unclassified source materials which in addition contains media articles, e-news articles & archives, already existing datasets, books & journals, legal documents.

In real-time to include an incident in GTD it should satisfy the following criteria:

- The incident should be intentional where the perpetrator is conscious about his actions.
- The incident should entail a few levels of violence or threat of violence which includes property violence, violence against people.
- The attackers of the incidents must be sub-national actors which this database does not include information about state terrorist activities.

In addition, the following criteria must be satisfied:

Criterion 1: The act must be aimed to attain a social, political, economic, religious goal.

Criterion 2: There must be proof of an intention to intimidate, or convey some other message to a large audience than immediate targets.

Criterion 3: The action must be outside the context of legitimate warfare activities.

❖ **Attribute Description**

- **GTD ID and Date** - GTD ID is a numeric variable represented as a 12 digit Event ID system, where the first 8 numbers are the date recorded “yyyymmdd” & the last 4 numbers are sequential case numbers for the given day (0001, 0002, etc).For Instance, an incident in the GTD occurring on 25 July 1993 would be

numbered as “199307250001”. It further contains the information about the approximate date & Extended incident date where this field applies the duration of an incident extended more than 24 hours.

- **Incident Information** - This field has subfields which include the Incident Summary field describing the narrative summary of the incident pointing to the when, where & how the incidents occur. Inclusion Criteria field contains the information about different criteria like whether the incident happened because of political, social, religious & economic purpose or it is an act to intimidate or publicize audience or it's a criterion outside humanitarian law. In addition, it also includes information about whether it's a part of multiple incidents.
- **Incident Location** - This field contains various subfields like country name, region, province or state, city, latitude & longitude of the terrorist attacks.
- **Attack Information** - It contains information about various attack types like Assassination, Hijacking, Kidnapping, Armed Assault, Unarmed Assault, Barricade Incident, Bombing/Explosion, Facility/Infrastructure attack. These attacks are represented with value one or zero for each of the attack types. Some of the attack types were unknown as there was no information about those attacks.
- **Weapon Information** - It contains Information of up to four types and subtypes of the weapons used in an attack , recorded for each case, in addition, information on specific weapon details is reported. The different weapons reported include Biological,Chemical,Radiological,Nuclear,Firearms,Explosives,Fake weapons,Incendiary,Melee,Vehicle,sabotage equipment.

- **Targets and Perpetrator** - It contains information about different terrorist groups & their targets. The various target types are Business, Government, Police, Military, Abortion related, Airports & Airlines, Government, Educational institutions, food or water supply & Journalists & Media, Private Citizens, NGOs, etc along with these it also contains the information about target nationality. The Perpetrator Information has different terrorist organization groups like the Taliban, Al-Qaida, Shining Path, Islamic Terrorist Group, etc responsible for attacks.
- **Casualties & Consequences:** This field stores the number of totals confirmed fatalities for the incident. The number includes all victims and attackers who died as a direct result of the incident. It contains additional information about the number of perpetrator fatalities, Number of people injured, number of wounded, number of perpetrators wounded, The value of property damaged in US dollars, Ransom demanded, Ransom amount paid & Ransom notes.
- **Additional Information:** It contains the additional notes on different sources used to retrieve the information & data collection effort.

❖ Other Data Sources

- **Global Terrorism Index Report 2020, Institute for Economics & Peace:**
Public Release Data: The Global Terrorism Index (GTI), as published by Institute for Economics and Peace (IEP), provides a comprehensive summary of the key global trends and patterns in terrorism. It produces a composite score to provide an ordinal ranking of countries on the impact of terrorism. The GTI is based on data from the Global Terrorism Database (GTD) which is collected and

collated by the National Consortium for the Study of Terrorism and Responses to Terrorism (START) at the University of Maryland [10]. Some of the attributes used in this project include Country Name, GTI Rank, GTI Score

- **Human Development Report 2020, United Nations Development Program(UNDP):** It is a measure of human development. It measures a broader definition of well-being and provides a composite measure of three basic dimensions of human development: a long and healthy life, access to knowledge, and a decent standard of living, which are used to rank countries into four tiers of human development [3]. The HDI was developed by the UNDP. Some of the attributes used in this project include Country Name, HDI Rank, HDI Score

❖ Objective

The main goal of this project is to visualize global terrorism data having the incidents recorded over 35 years in the Global Terrorism Database (GTD) and examine patterns & Trends about these various attacks and explore the data and draw inferences from the data set, also develop a comprehensive and visual storyline for the project. In addition, the following questions are answered during the process of analysis.

- How is the Global Terrorism Trend?
- How does the World look like?
- Are some countries more affected by Terrorist attacks?
- How big is the problem of Terrorism?
- What are the Weapons, Attacks & Target Types?
- Who is responsible for the attacks?
- What does the global Trend look like?

- Does terrorism affect the development of countries?

❖ **Scope of the Project**

The scope of the project is to analyze and create a dashboard & a story using different visualization tools like Tableau & d3 javascript. The different charts like Bubble chart, Bar chart, Heatmap, Line graph, Stacked bar graph, maps, scatter plot, horizontal bar chart, vertical bar chart are used to analyze various patterns from the data.

Using this analysis various government organizations can take necessary steps to provide safety for citizens of country. Data Analysts can use this to know how the act of terrorism impacts the economy of a country. The visualization in addition can be used by different organizations to find different trends in attacks.

System Design

The large dataset is used to create visualizations. To create a highly interactive visualization system, Tableau Desktop (Version 2021.3.3), is used. I have used javascript libraries to create D3 Visualizations.

Observation about dataset:

- Month and Day columns have 0 as values which is an unacceptable representation of the exact date of the event.
- Multiple Target and Weapon type/Subtype columns which are redundant.
- “Unknown” values in each row will have to be dealt with.
- The record of incidents for the year 1993 is missing in the dataset.
- Group/Individual responsible and Motive for the attack is not known for many incidents.

❖ Data Visualization

Tableau Desktop is a flexible platform for analyzing data and identifying more valuable information for any organization. Tableau Desktop is part of Tableau Software apps and is one of the most advanced platforms for data analytics and data visualization. In an ever-changing world, it is crucial that our decisions be based on relevant, real, and accurate information [6]. That is why Tableau Desktop is one of the most powerful tools we need to understand the data and extract exactly the information we need to make the right decisions. Tableau Desktop helps users easily identify patterns, behaviors and build forecasts for future activities [11].

Tableau transforms the way people are used to create data analysis. The visual capabilities and features available to users contribute to a better understanding of how different activities are carried out. Exploring data with Tableau Desktop encourages users to ask as many questions as they can about the data they have available and to make the right decisions based on it [11]. Tableau Desktop is part of the Tableau Creator license and is a desktop installed product that allows you to connect to multiple data sources cloud or on premise like Microsoft Excel, .CSV files, Microsoft SQL Server, Oracle, create workbooks, dashboards, and stories, and publish them to Tableau Server or Tableau Online[7].

D3 stands for Data-Driven Documents. It is an open-source JavaScript library developed by Mike Bostock to create custom interactive data visualizations in the web browser using SVG, HTML, and CSS. With the massive amount of data being generated today, communicating this information is getting difficult. This tool provides insight to experts while making the data approachable and informative [5]. Making the visualization light-weight and universally accessible was one of the main concerns. Since this is a web-based tool, there are certain challenges and limitations to the approach.

Some of the features of D3 are :

- D3 is a visualization tool to create interactive data visualizations. It exploits the modern web standards: SVG, HTML, and CSS to create data visualization.
- D3 is data driven. It can use static data or fetch it from the remote server in different formats such as Arrays, Objects, CSV, etc to create different types of charts.
- D3 allows you to manipulate the Document Object Model (DOM) based on your data.
- It empowers your data to dynamically generate elements and apply styles to the elements.
- With D3, there are no standard visualization formats. But it enables you to create anything from an HTML table to a Pie chart, from graphs and bar charts to geospatial maps[8].

❖ **Visualization Implementation**

The project is implemented by designing various charts using Tableau & D3. The story is created to analyze the Terrorism trend from 1970 to 2019. To create a story various data sources like Global Terrorism Database, Global Terrorism Index Report, Human Development Index Report are used. The main requirement to create a story is collecting the data related to Terrorism History, Terrorism spread across regions, various attacks, weapons & targets, Terrorist Organizations, understand development of countries around the world. The various questions are answered through the Story.

● **How is the Global Terrorism Trend?**

The first dashboard contains the Bar Chart which is designed using D3. The chart employs conventional margins and a number of D3 features:

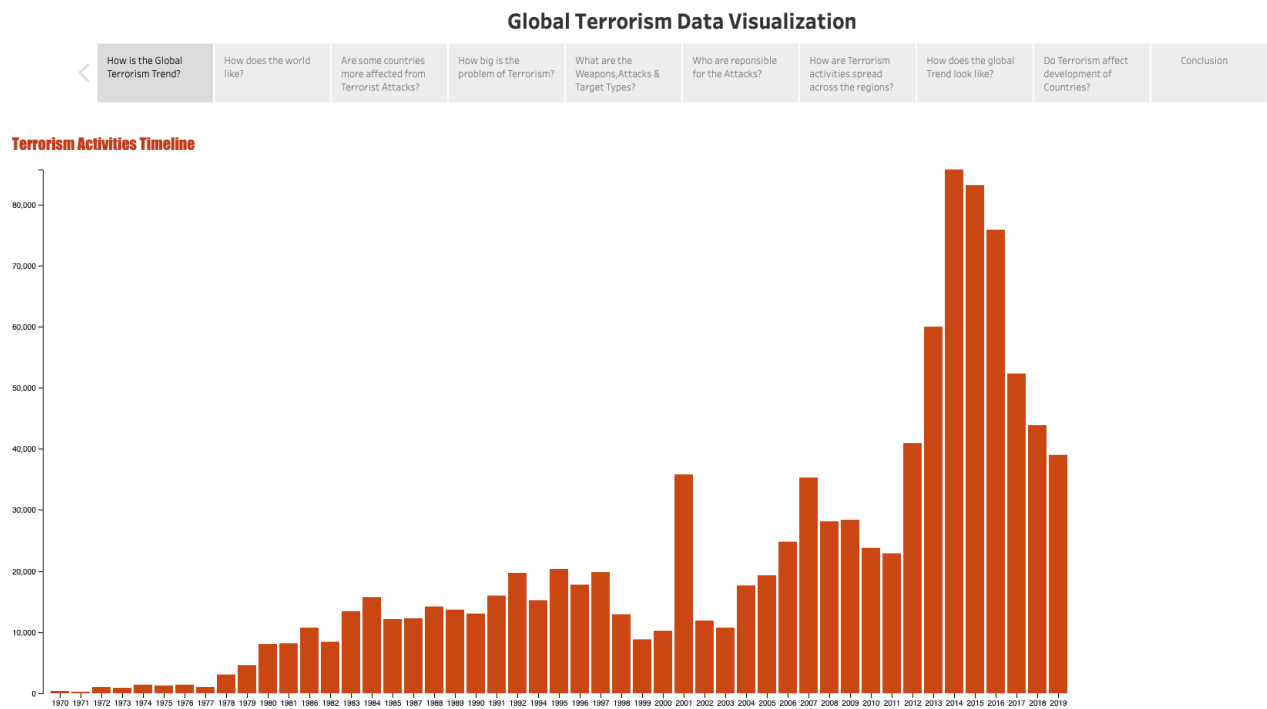
- d3-dsv - parse tab-separated values
- d3-format - number formatting

- d3-scale - position encodings
- d3-array - data processing
- d3-axis - axes

It represents the Terrorism Activities Timeline from 1970 to 2019. The graphs represents terrorist attacks carried over the years. The number of terrorist attacks are increasing over the years. There is a spike in the year 2014 where the number of attacks was more than 16,000. After 2014, there is a drastic decrease in a number of attacks carried out.

Figure 1

Global Terrorism Trend



- **How does the World look like?**

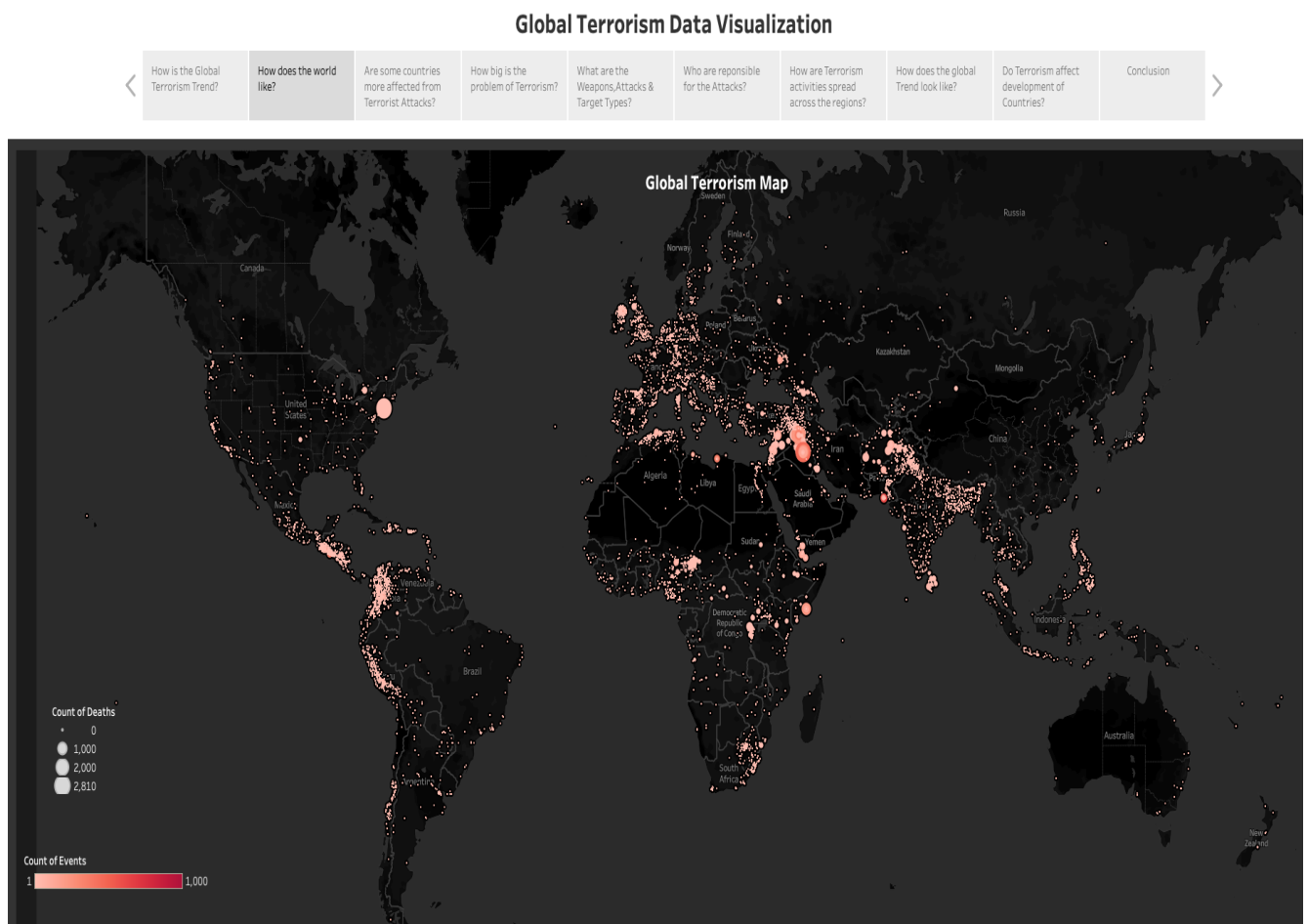
The chart below represents the visualization number of people who died in each country due to terrorism which is denoted by the bubble size.

Using the global terrorism map, it is easy to see the shift in the terrorism related casualties over the decades. The red dots in the global map represents different regions attacked by terrorist. The proportion of fatalities are different for different regions. Larger red dots indicate more number of fatalities. From the map, we can see that The Middle East & North Africa, and South Asia are the most dangerous places on the planet currently. On the other hand, Central America & the Caribbean region has become safer.

Note: Hover on the bubbles to view information about casualties.

Figure 2

Global Terrorism Map



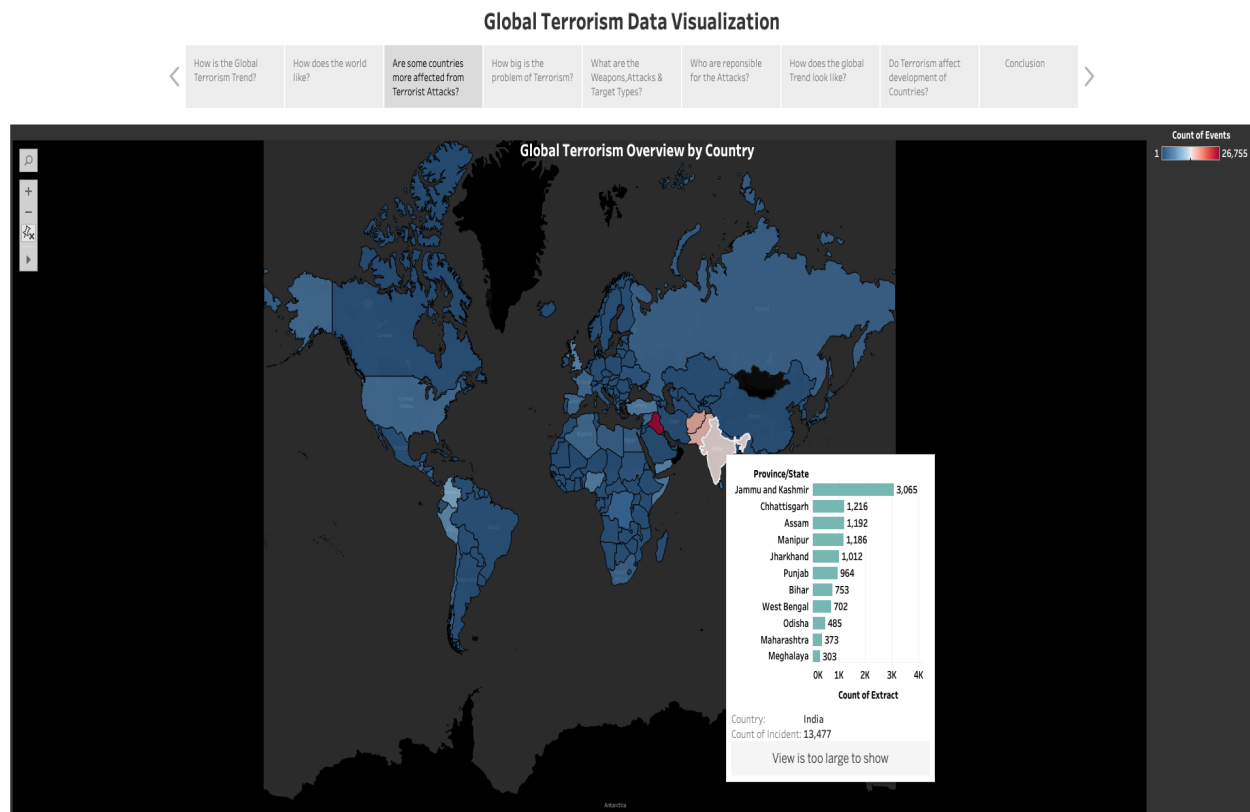
- **Are some countries more affected by Terrorist attacks?**

The Global terrorism Overview by country map shown in the bottom, we can see that some of the countries are more attacked compared to other countries. The graph also shows the number of terrorist attacks state/province type. The graph shows Iraq, India, Afghanistan & Pakistan are the top affected countries by terrorist attacks. If we hover a particular country we can see the terrorist attack by province/state. For Instance, if we select India, we can see that Jammu & Kashmir State has the highest attack count with 3605 attacks, similarly, we can find different state attacked. We can also see that Baghdad state in Iraq is the state having the highest number of attacks all over the world.

Note: Hover on the Countries to view information about attacks by state/province level.

Figure 3

Global Terrorism Overview by Country



- **How big is the problem of Terrorism?**

The below dashboard contains the History of the Worst Terrorist incidents from 1970 to 2019 and also the Timeline of Terrorism events highlighting the important facts. The different events and the total casualties associated with that particular events are highlighted. The legend indicates whether the event was a suicide attack or not. The size of the bubble indicates the number of casualties. In this graph, we can see that a larger red bubble with 1385 people dead & 10,385 people injured was the 9/11 attack in New York city, USA one of the deadliest terrorist attacks in history. Similarly, there are many incidents like Attack at Sinjar city in Iraq, Qahtaniya Suicide bomb Attack, etc.

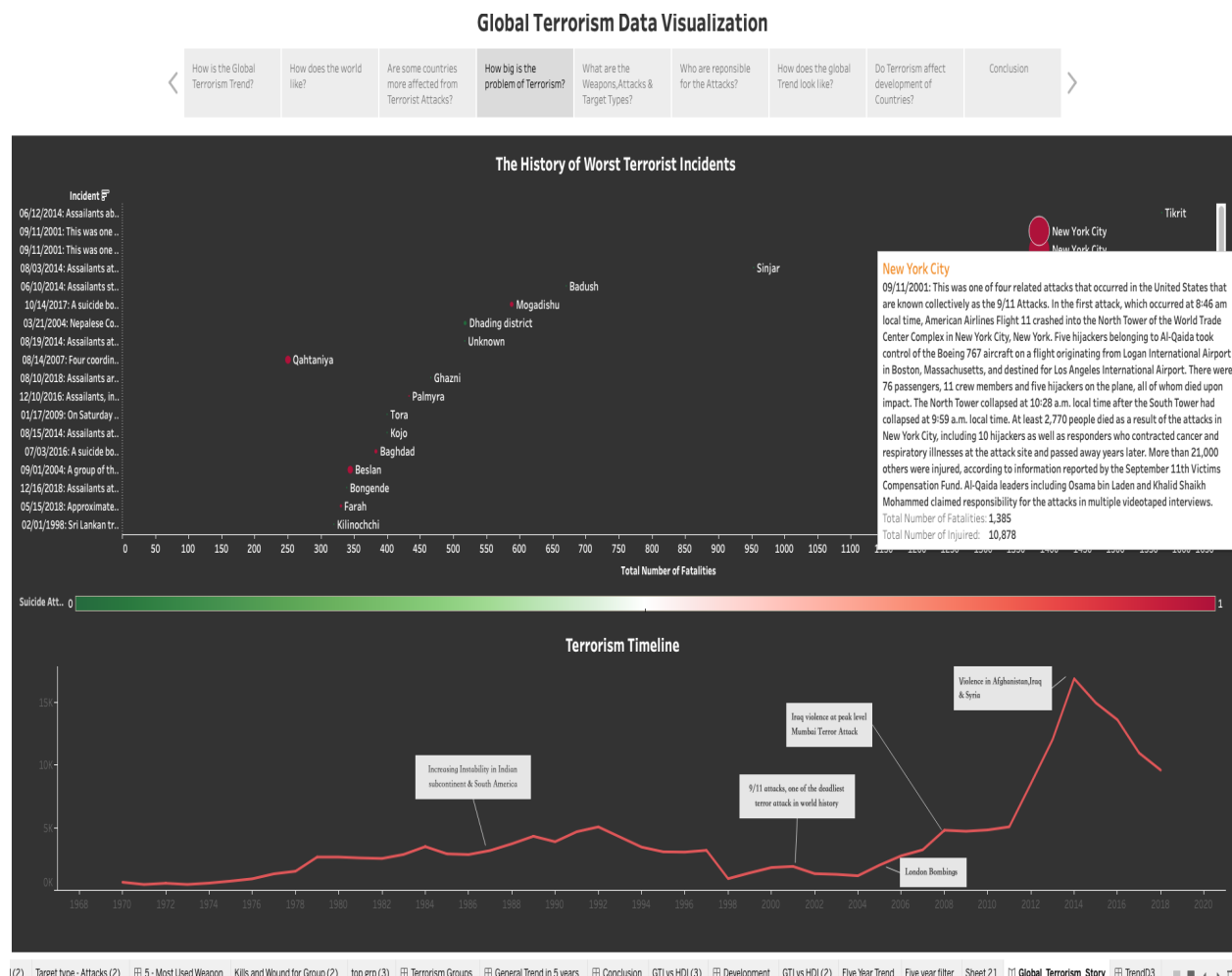
The Terrorism Timeline highlights various events taken place from 1970 to 2019. From the timeline we can see that , from 1980 to 1990 there is increasing instability in the Indian subcontinent & South America & in the year 2011 Iraq violence reached at peak level, also the terrorism has drastically increased in the year 2014. This increasing trend started in 2011 with the emergence of post-Arab uprising conflicts in Syria, Libya, Yemen, and Egypt. Meanwhile, the conflict in Iraq saw a significant escalation that coincided with the rise of the Islamic State terrorist group.

In addition, during this time, the conflict in Afghanistan and Pakistan also saw increasing levels of terrorist activities. The level of terrorism in Iraq peaked in 2014 with over 3300 incidents which coincided with the peak in the economic impact of global terrorism. The period after 2014 has seen a significant decline in global terrorist incidents and casualties. The decline in terrorism is mainly due to the localisation of the Syrian conflict that led to a reduction in

conflict-related deaths, the defeat of the Islamic State by the coalition of Iraq and the international community, and the decline in terrorist activities in Pakistan and Nigeria.

Figure 4

History of Worst Terrorist Events



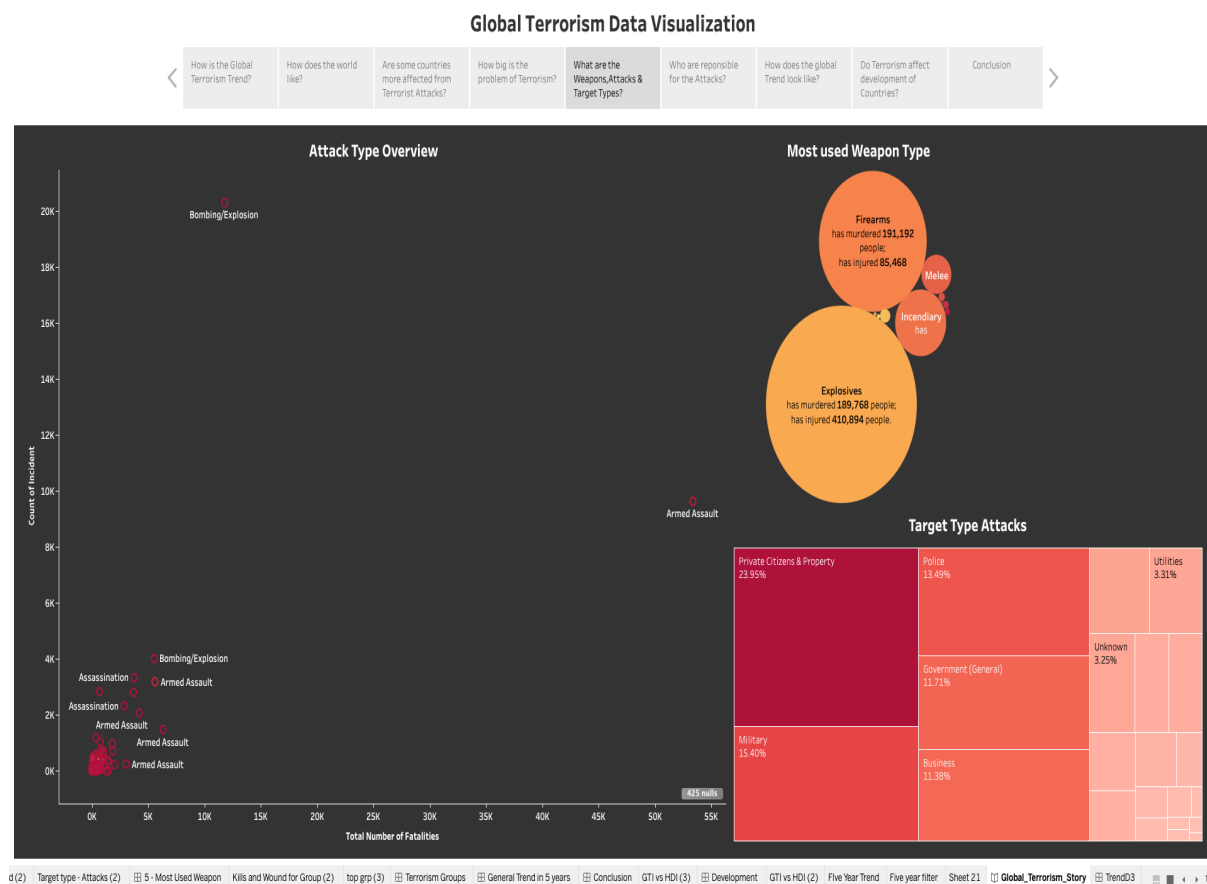
- **What are the Weapons, Attacks & Target Types?**

This Dashboard represents various weapons, Attacks & Target Types used by Terrorists. The scatter plot shows various weapons used to carry out the attacks. From the graph we can see that Bombing Explosion & Armed Assault are most widely used attacks by terrorists. Selecting the bubble on the graph shows details about the weapons used, how the attack

was carried out, number of fatalities & number of injured people by the attacks. The bubble chart here shows the different weapons used, where the larger size bubble of weapon indicates that a particular weapon is used many number of times. It shows the distribution of attacks done by using different weapons each for the category of type of the target. From the graph we can get the overview that usage of explosives murdering 189,768 people and injuring 410,894 people and then firearms murdering 191,192 people & injuring 85,468 people. The heatmap in the dashboard shows the most favorite targets for Terrorist groups, when we analyze the graph Private Citizens & Property are most targeted with 23.95% attacked by terrorist, then we have Military groups that are targeted the most.

Figure 5

Attacks, Weapons & Targets



- **Who is responsible for the attacks?**

The stacked bar chart shows the trend of different terrorist organization from 1970 to 2019, For Instance if we select Taliban Terrorist organization we can see the trend that these groups were active from the year 2008 to 2019 ,also there were most active in the year 2016. The horizontal bar chart represents the top terrorist groups like Taliban, Islamic State of Iraq & Levant, Shining Path ,Al-Shabaab & Farabundo Marti National Liberation Front involved in the attacks.

The bar chart here shows the terrorist organizations which led numerous attacks in all over the world. Around 50% of cases in the GTD are not attributed to the actual group who led the attack, Hence, they are named "Unknown". This happens due to the "Organizational linking problems" & "Attribution problems".

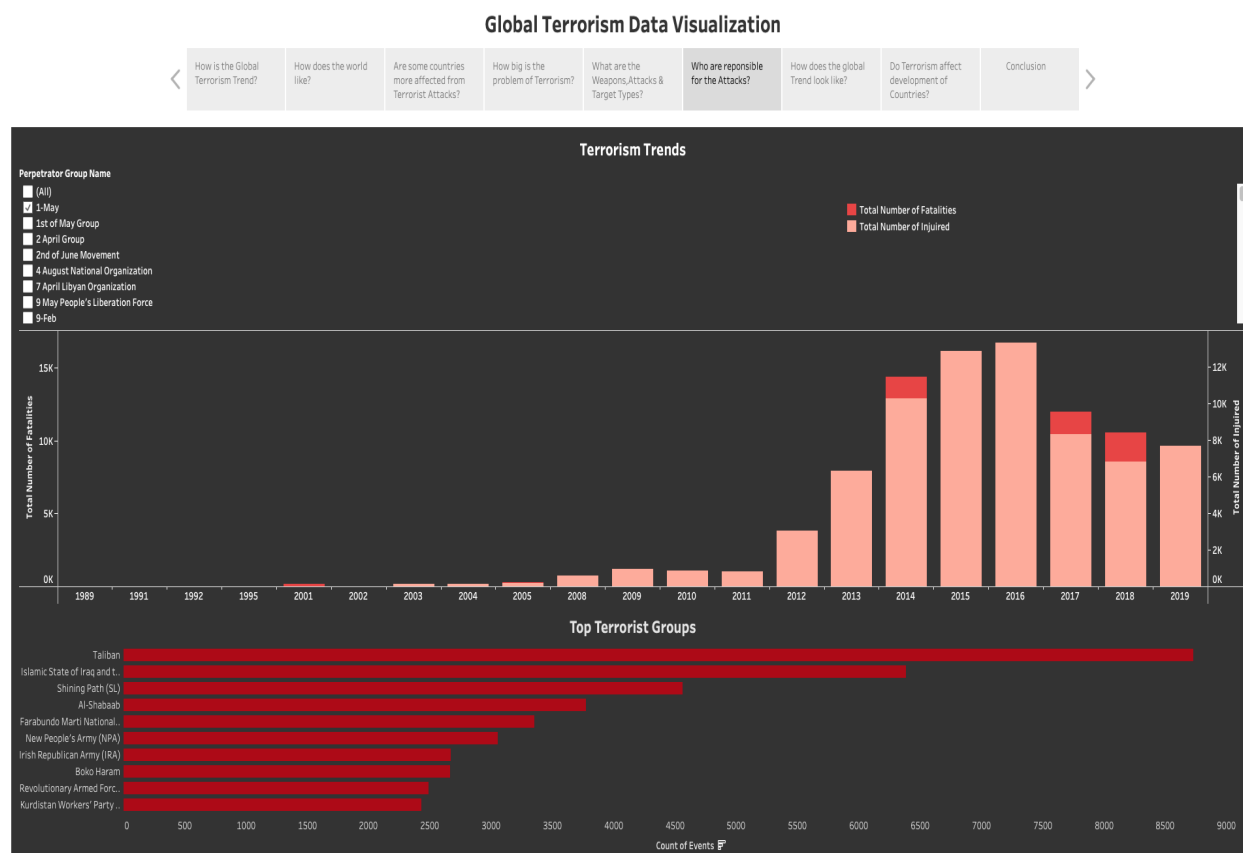
- **Organizational linking problems:** Since, many terrorist organizations actively seek publicity for their attacks, it is sometimes easier to attribute responsibility to perpetrators of terrorist attacks than it is for perpetrators of more ordinary types of crime, such as murder and robbery, where offenders often seek anonymity. However the two most challenging problems are how to link up the activities of the same organization described in various ways and how to address the constant evolution of organizations over time. At the most basic level, a terrorist organization's name may have multiple variations or spellings. This is especially common for group names that are translated or transliterated from one language or script into another. For example, the Peruvian group "Sendero Luminoso" translates from Spanish into "Shining Path" in English. Likewise, "al Qaeda"

is transliterated from Arabic, and has appeared in English in many other forms, including “al-Qaida,” “al Qaeda,” “al-Qaeda,” and “al-Qai’da.”

- **Attribution Problems:** In addition to the challenges of linking attacks to organizations, an equally challenging problem is how to attribute responsibility for an attack to a specific perpetrator group. As mentioned above, just over half of the cases in the GTD are not attributed to a specific organization. This is typically due to the fact that the original news articles describing an attack did not include the identity of the perpetrator group or specifically stated that the perpetrator of the attack was unknown. For many cases, very few original sources are available and little is initially known about the perpetrators.

- **What does the global Trend look like?**

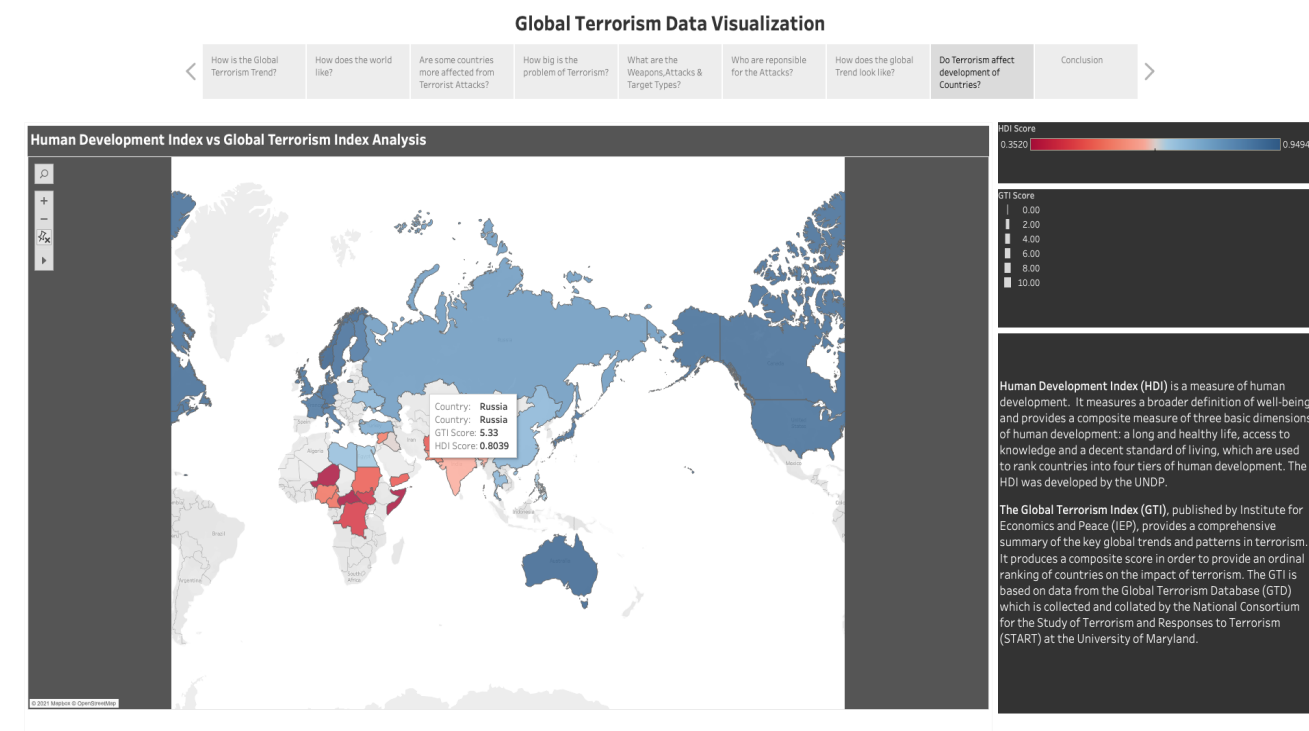
The Next Dashboard shows Trend in incidents, Fatalities & Injuries over the past years. The bar chart shows from 1970 to 1980 the Total Number of Fatalities are 11,518 & Total Injuries is 11,700 & count of Incident is about 12,570. Western Europe region has highest attacks & Eastern Europe region are least attacked by terrorist. From 1981- 1990, South America regions are highly attacked with Total Number of Fatalities are 70,826 & Total Injuries is 51,270 & count of Incident is about 32,381. In 1991-2000, Middle East & North Africa are more attacked with 13,535 attacks on this region where Total Number of Fatalities are 62,315 & Total Injuries is 78,574 & count of Incident is about 26,700. In the Year 2011 to 2019 we can see that South America is least attacked with 853 attacks. Therefore the trend shows the South America Region has been successful in countering terrorist attacks.

Figure 6*Global Terrorism Trend*

- **Does terrorism affect the development of countries?**

This Dashboard uses Global Terrorism Index Report 2020 and the 2020 HDR Report for a sample set of countries. As can be seen clearly, the developed world has a better HDI score while the developing world is still on low to average HDI scores, security being one of the factors affecting development. Due to incidents in the past few years, countries like France, United States and United Kingdom are on a lower GTI ranking. The top 5 countries which have high GTI score are Iraq, Nigeria, Afghanistan, Pakistan, Syria.

Figure 7

HDI VS GTI**Discussions**

- Highest number of attacks in the world happened in the year 2014 with 16,908 attacks where Iraq is affected the most by terrorist attacks.
- Middle East, North Africa, South Asia & South America are most prone to terrorist attacks.
- The highly targeted bodies for attacks with rapid growth rate are Military, Private & Citizens Property.
- In most of the attacks carried out Armed assaults are highly used tactic, then bombing attacks.

- The terrorism timeline shows there is a drastic decrease in terrorism all over the world from the year 2014, due to destruction of Islamic Terrorist group in Iraq.
- The Islamic State, Taliban & Shining Path is the most violent Terrorist organizations.
- Explosives are the common used weapon type for most of the attacks accounting 70,486 incidents and firearms are second which accounts 35,947 incidents.
- Countries located in Asia region mostly have higher GTI scores than other countries. The countries with highest GTI scores include Iraq(10), Afghanistan(9.444), Nigeria(9.01), Pakistan(8.40) & Syria(8.62).

Conclusion

The visualizations that we included helps the audience to understand how Terrorism evolved through years. Several countries have been affected of terrorism, both internal and international over the past 4 decades, which has led to many problems for millions of people around the world. Terrorism is a global problem now, and touches every nationality and region. Developing countries have been affected of terrorism, which has led to a multitude of problems for millions of civilians. In recent years, we have seen the effects percolate to the developed world as well.

Not just direct consequences, terrorism affects countries indirectly as well by reducing the quality of life, impacting tourism, FDI, business and displacement of people. Terrorism is a global problem now, and touches every nationality and region. The fact that terrorist groups exist and populate areas in developing countries in this day and age is a problem that must not be overlooked.

Future Work

Visualizations with the help of interactive story maps further illustrate a narrative around those visualizations and help to convey a story with everyone can connect and understand. As we all everyone connects to stories and stories makes them believe and remember the good and worst part about it. I made use of D3 to create a visualization of various terrorist attack trends. The future work would be to explore ArcGIS and used it to the fullest for our visualizations by using Web Maps, Story Maps, Using Heat Maps etc.

The story gave an interactive scrolling experience for the users to have a visual experience. In future, I would certainly want to create a visual wonder by making use of story maps to the fullest. Finding the right data is the key for any of the visualizations, if the data isn't proper then the visualizations won't make much sense. I would like to dig deep into various other data sources to analyze the terrorism trend in several aspects. I would also want to work with different visualization using Tableau & Integrate with ArcGIS, Therefore the future work involves to select different sources & visualize them to fill in the gaps to form complete story of Terrorism Evolution.

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