

Machine Learning

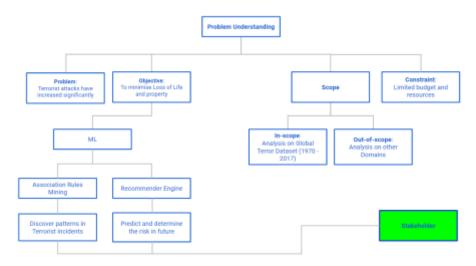
Unsupervised Learning 2

MEMBER	PGID	
Anjali Rathore	12120089	
Bhargavi Peddapati	12120067	
Chiraag Kumar	12120055	
Parmarth Matta	12120077	
Raktim Srivastava	12120044	

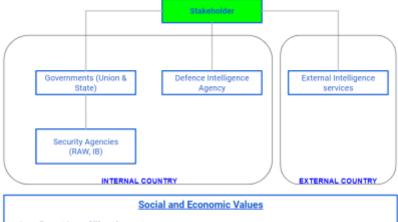
Terrorism



Objective



Stakeholder



- Prevent Loss of life and property. Predict the chances of an unknow
- in terror attack in the future.
- Prevent Loss of taxpayers money.

 Better education and healthcare in the frequently targeted areas (eg Kashmir and North Eastern States).
- Ensure National integrity and prosperity
- Help other countries to reduce and negate Terror activities on their soil.

- Boost tourism and hospitality industry.

 Reduce communal friction.

 Increase the happiness quotient in the country by reducing distress over Terrorist activities.

Dataset

The Global Terrorism Database (GTD) is an open-source database including information on terrorist attacks around the world from **1970** through **2017**. The GTD includes systematic data on **domestic** as well as **international** terrorist incidents that have occurred during this time period and includes more than 180,000 attacks.

The database is maintained by researchers at the National Consortium for the Study of Terrorism and Responses to Terrorism (START), headquartered at the **University of Maryland**.

Content

Geography: Worldwide

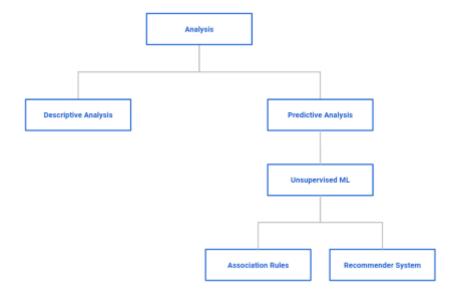
Time period : 1970-2017, except 1993

Unit of analysis: Attack

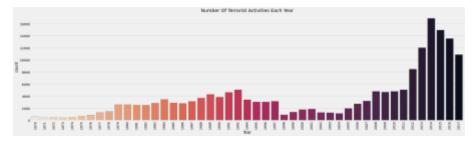
Variables: >130 variables on location, tactics, perpetrators, targets, and outcomes

Sources: Unclassified media articles

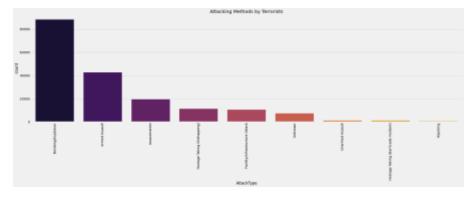
Analysis Flow



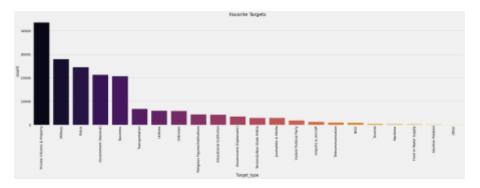
Descriptive Analysis



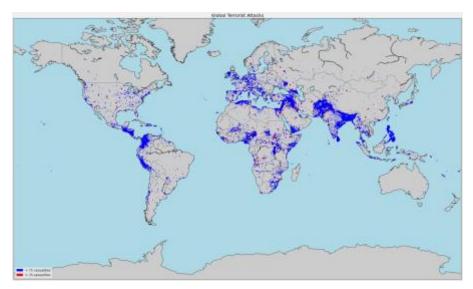
1 - The number of Terrorist activities have increased sharply post 2000.

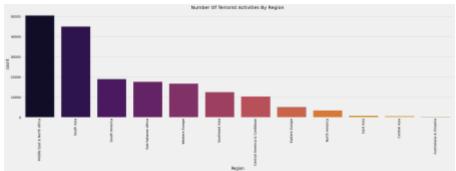


2 - Bombing, Armed Assaults, Assassination, Kidnapping are some of the commonly employed methods utilized by these terror groups.

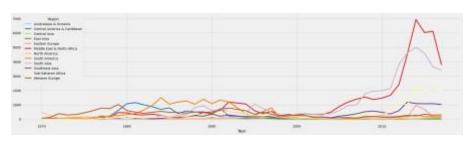


3 - Citizens & property, Military, Police and Government are usually the hot targets for the Terrorist Groups.

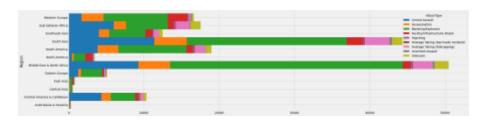




4 - Middle East & North Africa along with South Asia are the most affected regions in the world.

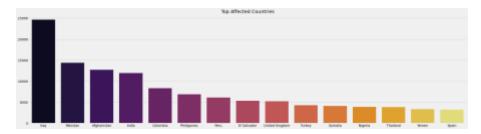


5 - Trend shows sharp increase in terror activities post 2003 in Middle East & North Africa along with South Asia.

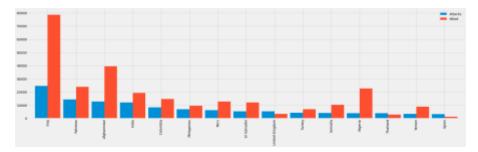


6 - The plot shows the Attack Type of the Terror Organisations in various regions throughout the globe.

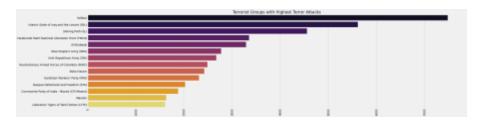
 $Bombing\ and\ Armed\ assaults,\ are\ the\ most\ prominent\ types\ of\ Attack\ irrespective\ of\ regions.$



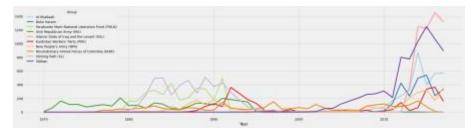
7 - The top affected countries are Iraq, Pakistan, Afghanistan followed closely by India. One thing to observe are these countries have high population densities (thus naturally, these attacks claim more lives).



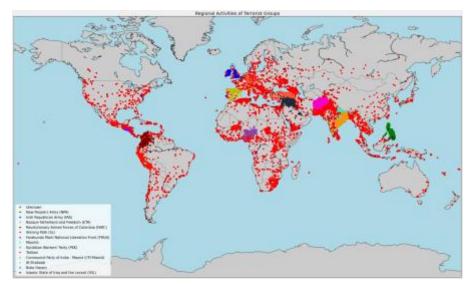
8 - Observe the Killed bar for Iraq. It is almost thrice the number of attacks. Thus, densely populated theory holds good.

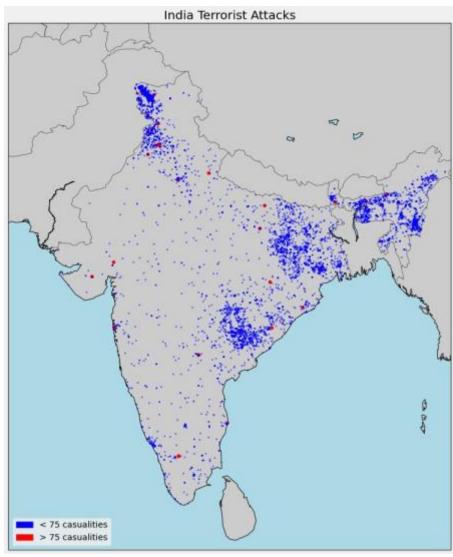


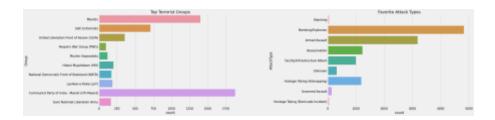
 ${\it 9}$ - Taliban, Islamic State of Iraq and Levant followed by Shining Path are the most notorious groups.



10 - Taliban, Islamic State of Iraq and Levant have increased their activities sharply post 2010.





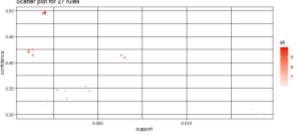


Predictive Analysis

Association Rules Mining

Factors: 1. Terror group 2. Target Type 3. Attack Type 4. suicide (Yes/No) 5. killed 6. Weapon Type **User Input:** Terror group: *ISIL* (set as RHS) Support: **0.001** Confidence: **0.3** Minimum Length: **2**





Recommender System

Country: India **Factors:** 1. Terror group 2. Target Type 3. Attack Type 4. city 5. number of kill **User Input:** 1. Terror group: *Sikh Extremists* 2. city: *Bombay*

Country Filter: India				
UBCF	IBCF	SVD	POPULAR	
Predict the highest risk City on the basis of user input Terrorist Group and no of kills				
Mumbal	Anand	Banabari	Mumbai	
Chingavaram	Bengaluru	Bathe-Lakshmanpur	Banabari	
Chadisinghpoora	Chennai	Chingavaram	Ranibodii	
Predict most probable Attack Type on the basis of user input City and no of kills				
Hostage Taking (Kidnapping)	Hostage Taking (Barricade Incident)	Hostage Taking (Barricade Incident)	Hostage Taking (Barricade Incident)	
Facility/Infra.	Hostage Taking (Kidnapping)	Hostage Taking (Kidnapping)	Hostage Taking (Kidnapping)	
	Facility/Infra.	Facility/Infra.	Facility/Infra.	
Predict most probable Target Type on the basis of user input City and no of kills				
Journalists & Media	Food or Water Supply	Maritime	Military	
Non-State Militia	Journalists & Media	Military	Religious Figures	
Military	Religious Figures	Telecommunication	Maritime	

Conclusion and Inferences

The "Association Rules Mining" can help us to provide suggestions or recommendations to "Stakeholders" on a particular terrorist group's most frequent patterns.

- **ISIL:** From the top five patterns based on confidence, we can see that the use of weapon type "Explosives", attack type "Bombing/Explosion", mostly targeted one is "Military" 'turns out to be the most frequent pattern with relatively high lift value. It is also interesting to note that, the attacks on civilians are observed in top 5.
- Taliban: From the top five patterns based on confidence, we can see that the use of 'weapon type "Firearms", attack type "Armed Assault", mostly targeted "Police" 'this turns out to be the most frequent pattern with relatively high lift value.
- Boko Haram: From the top three patterns based on confidence, we can see that the use of 'weapon type "Explosion", attack type "Bombing/Explosion", mostly targeted one is "Civilians" 'turns out to be the most frequent pattern with relatively high lift value.

We have selected India as a country for our analysis. The "Recommendation System" can help us to provide great value in terms of specific geographical area with specific targeted one and attack type to "Stakeholders".

• The most at risk **geographical area (city)** is "Mumbai", **targeted ones** are "Journalists & Media", "Military", "Maritime", "Religious Figures" and **attack type** are "Hostage Taking (Barricade Incident), Facility/Infra." is from the "Sikh Extremists" **terrorist group**.

