PROCESS BOOK

PART 1 :- PROPOSAL

Basic Info

Title - Global Terrorism Visualization

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Link https://github.com/tejashs/GlobalTerrorismVisualization

Background and Motivation

16 years after the horrifying attack on the twin towers, the fight against terrorism continues and this global menace lingers to plague the world. Many questions still remain unanswered. We try to answer some of these questions through our visualizations using some interesting correlations and design choices.

Project Objectives:

1. To find if US involvement in the Middle East impacted Global Terrorism
2. To find if increase in population of a specific religion in a country increased terrorism in that country
3. To find if US involvement in the Middle East has caused increase in terrorism in that country
4. Correlating factors like GDP growth, literacy etc. with increase in terrorism and pinpointing what factors might have caused this.

Data

The Global Terrorism Database (GTD). The Dataset is available on Kaggle. This dataset contains information about worldwide terrorism events back to 1970, including location, circumstances, number of casualties, weapons used, etc.

The link to the dataset - **https://www.kaggle.com/START-UMD/gtd/data**

Data Processing

We plan to use Pandas to manipulate data to extract relevant features. This data is complex in terms of the number of missing values. We plan to deal with this by either predicting the missing values or eliminating data points with substantial missing information.

Visualization Design

This is described in Design.pdf

Must-Have Features

It includes the following,

- The World map and US map showing terror attacks.
- A line Graph with nodes for events representing US' involvement in Middle East showing increase or decrease in number of terror attacks after a major event.
- Selecting a node (e.g. US invades Iraq 2003) provides drill down of Heat map of attacks before and after 2003.
- A bar chart showing Global terror attacks based on the religion of perpetrator.
- Word cloud based on Weapons used, attack type etc.

Optional Features

It includes the following,

- Charts for correlating metrices like GDP, literacy rates, etc. with terrorism. This largely depends on different datasets related to our main dataset.
- An Alexa voice based interface to interact with the visualization using the Alexa API.

Project Schedule

We have 6 weeks to project submission, this is what we plan to do

Week1 - Data cleaning and feature extraction

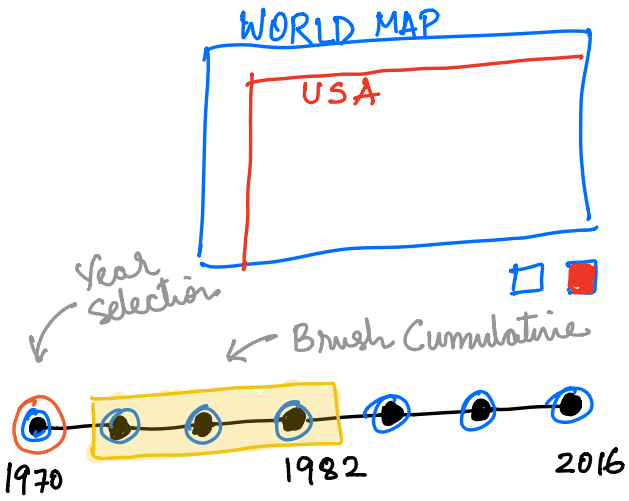
Week2 – Layout(Tejas), World Map(Giorgi) and US map(Akshay) along with brush(Tejas)

Week 3,4,5 - Line Chart with Nodes(Akshay), Heat Maps(Giorgi), Bar Charts(Tejas) with their respective interactions

Week 5,6 – Making All Interactions work together and taking care of styling, positioning to tie the whole thing together

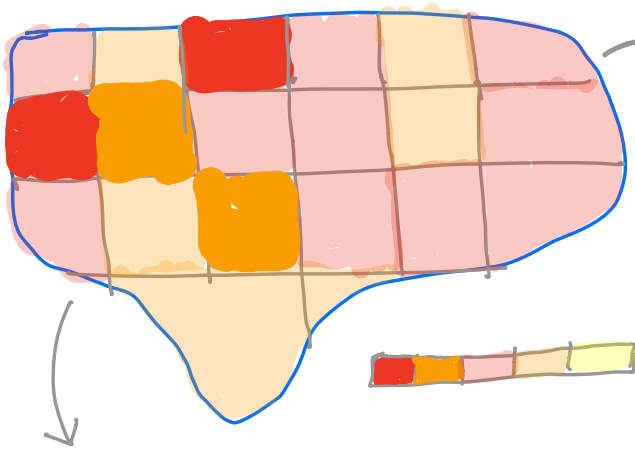
PART 2 :- PROJECT DESIGN

1970 - 2016



INTERACTION

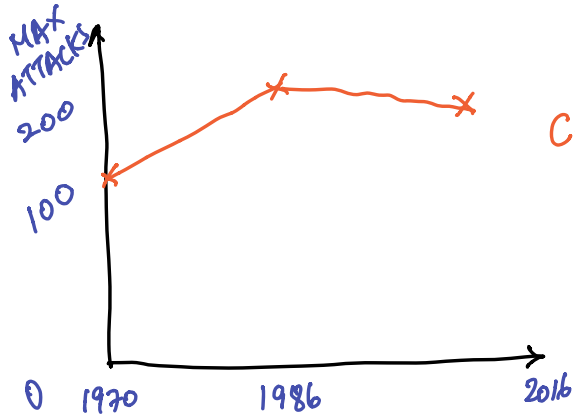
* Clicking on legend buttons Changes Map from World Map to USA.
* Clicking on Countries in World Map and clicking on States in USA Map offers drill down



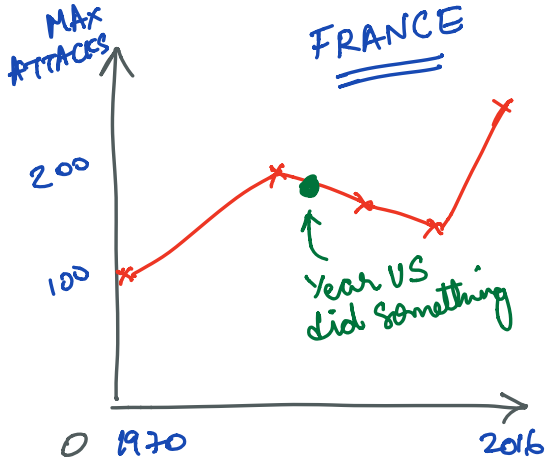
WILL BE GRADIENT (DIDNT HAVE SO MANY COLORS)

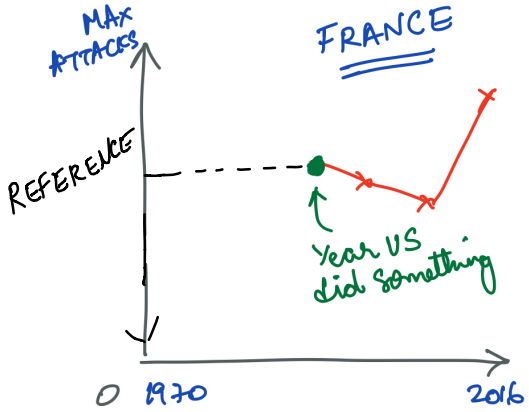
World Map

INTERACTABLE

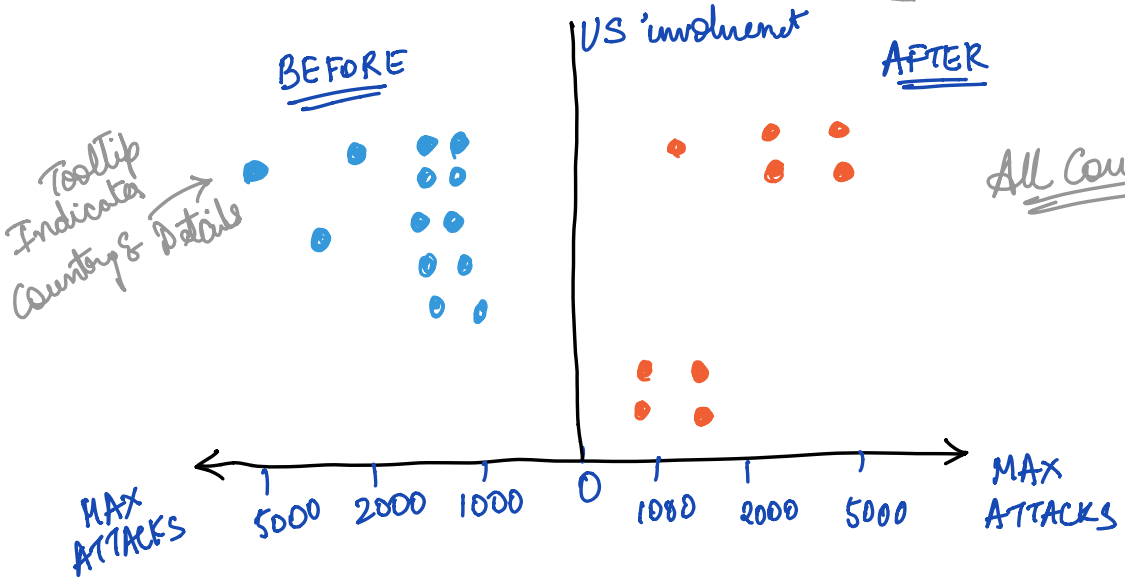


CALIFORNIA



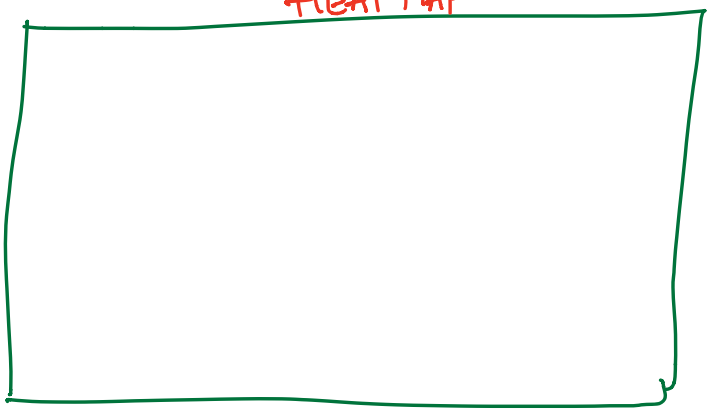


⇒ Did US involvement affect the number of terror attacks in the Country.



WORLD MAP (BEFORE 2003) → US Invade IRAQ

HEAT MAP



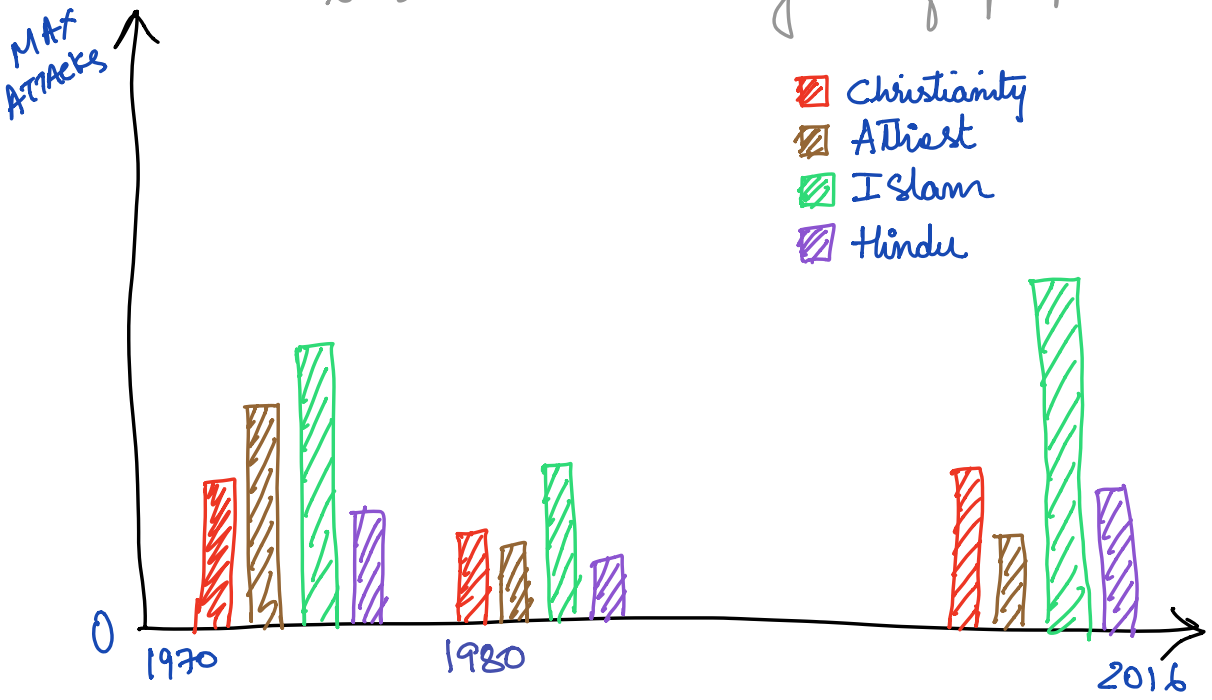
Shows terror attacks globally before 2003

WORLD MAP (AFTER 2003)

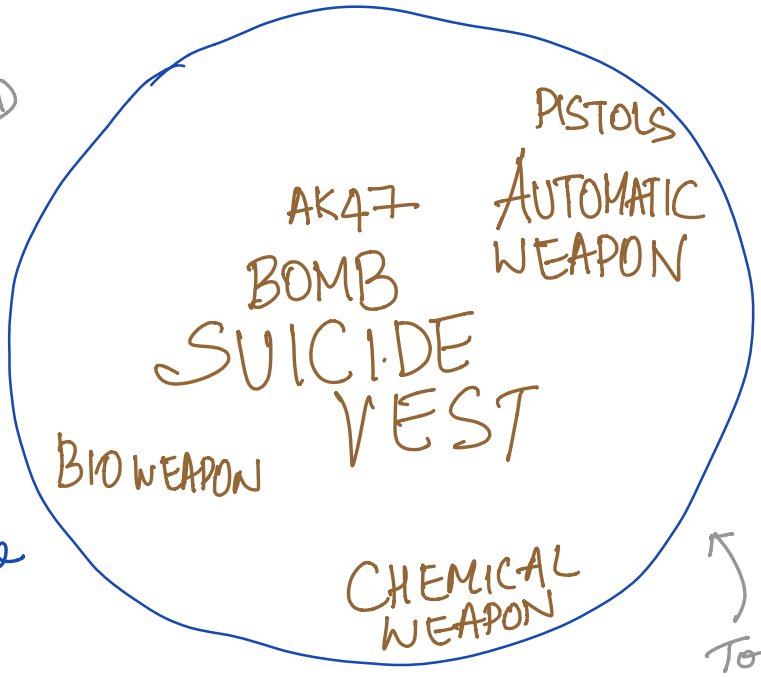
HEAT MAP

Shows terror attack globally after 2003

Global terror attacks per year based on the religion of perpetrator



↳ Use similar bar graphs / line charts for correlating other metrics like GDP, literacy rates of countries etc. (Atleast another 6-8 charts) i.e CASUALTIES etc.



WORD CLOUD

↓

Based on Weapons used, attack type etc.

↑

Tooltip for Countries with years

2-3 WORD CLOUDS

1] We are planning to do a lot of interaction for all the charts, maps and graphs.

2] Allow drill down for most of the Countries, States (US) for all the charts.

3] Brushing, filters, for charts wherever applicable.

PART 3 :- PEER REVIEW

- Differentiate terrorist attacks from mass shootings? (Mohammed)

Answer: We are currently planning to only visualize terrorist attacks. But if time permits we would be correlating data of terrorist attacks in the USA with the data of mass shootings in the USA.
The data set we could be using for mass shootings would be :

https://www.kaggle.com/zusmani/us-mass-shootings-last-50-years

- Estimating religious affliation of victims using the country's population data would be inaccurate. An obvious way to address this would be to get specific details religious affliation of victims for various incidents/attacks (Ram)

Answer: The correlation between religious affiliation vs country's population is done so that we can find trends between the the religious affiliations of perpetrators and the religious affiliations of affected population.
We can draw trends corresponding to religious groups being targeted in a certain country for instance.

- In the "before" and "after" chart showing scatter plots of attacks, if we need to compare a particular country "before" and "after" US involvement, it doesn't seem to be convenient to do so. First, I need to hover over a point on the "before" side to see what country it represents and in order to check out the same country on the "after" side, based on the design shown, we would need to hover over each point to find that particular country we are looking for - this inconvenience is a side affect of using tooltips. You could link the points across so that hovering on one country in the "before" part highlights the associated point for the country in the "after" part (Mohammed)

Answer: The before and After US involvement in scatter plots is to distinguish between the number of attacks a country has had before and after a certain event. Tool tips are to indicate the number and details of the attack. The scatter plot graph is per country and not overall. The behavior indicated in the comment seems to be misunderstood.

- The color codes shown on the map seem to be based on the number of attacks, how about also considering the outcome of attacks (i.e. casualty count) for deciding the color code? (Ram)
Answer: Yes. The graphs will be color coded based on the number of attacks. It would be a gradient.
However there are graphs like heat map that would be based on other attributes as well.

- For a selected Country or state, depict the ranking of attackers based on appropriate metrics (Mohammed)
Answer: There is not enough data or appropriate metrics to "rank" attackers. The metrics used would be misleading.

- Details of specific (or major) attacks based on user selection of country/state on world/US map (Ram)
Answer: There would be summary of the attacks shown as tooltips. This would provide details and specifics of the attacks.