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Data Visualization

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**Project Proposal - Revised**

For my final project, I will explore trends in global terrorism attacks over the last 50 years. For this analysis, I will use the Global Terrorism Database[1] compiled by the University of Maryland. This dataset provides a comprehensive catalog of terrorist activities from 1970-2017. My plan is to explore how the locations, types of attacks, and frequency of terrorism activities has changed over time. My guiding research question is: How has terrorism changed over time? For instance, how have the types of attacks changed, or have the locations where terrorism occurs changed? I will answer these questions in my research, with a goal of explaining these trends in the data set by examining the effect of world events and global policy decisions on terrorism. For instance, what effect did the War on Terror have on location and frequency of attacks? Did the UN’s 2006 Global Terrorism Strategy have a noticeable effect on combating attacks [2]? I plan to study previous research on trends in terrorist activity as well as anything I can find on cause-effect relationships between global events and terrorism. I am hoping to create visualizations that can demonstrate these relationships.

The first step of this project was to perform EDA on the Global Terrorism Dataset. I have completed this step with a Jupyter notebook exploring the different features of interest and analyzing different views of the data. I have looked for spikes in terrorist activity and changes in the types of attacks over time. For an example of the kind of trend I am looking to confirm: I know that airplane hijackings are much less prevalent forms of terrorism than they used to be, and I would guess this is in large part due to increased levels of airport security, so I’ll be on the lookout for data to confirm that hypothesis. I’m keeping the trends I’ve identified during this EDA in mind during my research to identify if they are correlated to any global events or policies of interest. I have started to conduct research on terrorism causes and read other people’s analysis of trends in terrorism over time. It is a heavily studied topic, so I imagine to gain considerable insight over the course of this research. This process of research and EDA continues to be iterative, with new EDA leading to new research, and vice versa.

The next step will be to clearly define the main thesis of the paper and outline how I would like to structure my paper. This will be the step where I plan out my visualizations, though I have already begun to do so. I liked the format in this class of sketching possible visualizations before actually creating them, so I plan to do that for this project as well. Once outlined, I will begin writing the paper and creating the visualizations. I’ve learned a lot about creating effective visualizations in this course, so that will be my primary focus during this phase. I know that I want to use a map visualization to demonstrate the locations where terrorist attacks have occurred, and I plan to use Tableau to create this map. To show how the types of attacks have changed over time, I will likely create a scatter plot using the Bokeh library in Python. I plan to include at least a third visualization, likely using Python libraries to develop and customize it. I am hoping that I’ll be able to enrich the dataset as I continue to research global events / causes of attacks. My goal is to create visualizations that display both the terrorism events themselves and potential causes, perhaps using a tool tip to display causes overlaying spikes in activity. With strong visualizations the actual writing of the paper will be relatively straightforward. I have set about three weeks for creation of these visualizations and writing the paper, with an additional week for revisions.

On the next page is a tentative timeline with each of the steps needed for successful project completion:

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| **Activity** | **Estimated Duration** | **Goal Completion Date** |
| EDA | 1 week (more as research dictates) | 3/31 (but this will be continual as new questions arise) |
| Proposal Revision | 2 days | 4/7 |
| Research | 2 weeks | 4/13 (with more time as needed while working on the paper) |
| Literature survey | 1 week (concurrent with research) | 4/13 |
| Thesis / Outline | 1 week | 4/15 |
| Sketch Visualizations | 1 week (concurrent with outline) | 4/15 |
| Create Visualizations | 3 weeks (concurrent with writing paper) | 5/3 |
| Write first draft of paper | 3 weeks | 5/3 |
| Finalize paper | 1 week | 5/10 |

[1] https://www.kaggle.com/START-UMD/gtd

[2] <https://www.un.org/counterterrorism/un-global-counter-terrorism-strategy>