Terrorism Map
Group 7

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1 Introduction

After Paris attacks in November 2015, besides fear, terrorism leaves people lots of questions. When and how is the organization ISIS generated and why do they choose certain place? The goal of our project is to visualize the evolution of terrorism in a world map based on the data offered by Global Terrorism Database (GTD).

The graph made by Tableau gives a clear image about the change of terrorist events including happening area, result, victim, etc. In addition, information about terrorist organizations chosen is shown for further knowledge or specialized research.

The first part of report introduces the data source and principles of filtering related data. Then the next part explains each graph including its goal, form and realization. It also justifies the graph based on data visualization theory.

2 Data

As mentioned, data source for this project is GTD (from University of Maryland), which is an open-source database including information on over 140,000 terrorist attacks around the world from 1970 to 2014.

The information contained is comprehensive. In this project we try to use representative and expressive data and filter redundant one. Here 'expressive' means attribute of statistics. For 'representative', we mean that selected data should be able to describe important attribute of object, say terrorism. For example, we choose 'people killed' as main data presented in visualization, which can show the degree of perpetration. Other useful information includes date, incident location, weapon type, target/victim information, perpetrator information, etc. And details about each organization in the last graph are collected from Wikipedia.

3 Visualization

The visualization consists of three parts, terrorist events overview, terrorism evolution and detail for some group. Each part doesn't limit to information about one aspect, but contains several small sheets which are interactive. Users can choose interesting information freely to view details. Besides, between each two collections, a common feature is used to make them related and coherent.

3.1 Terrorist Events Overview

The first collection gives a measure of spatio-temporal behavior of terrorist events.

Since the data includes geographic geometry and quantitative attributes per region, the best way to express it can be choropleth map. The main graph use a world map to show the total casualties of each country or continent in interval. Luminance is used to order the number of people killed in chosen area. The sheets at bottom give the distribution of casualties along time for different areas and the distribution of main weapon types. Weapons are

classified into different categories and mapped to stacked bar chart with different colors, which gives readers a image about how much it occupies in whole.

Besides, the whole collection is interactive. Users can use brush to choose an interval. Also, an area, year or even a kind of weapon type can be chosen to show information related, while all sheets will change with users' choice.

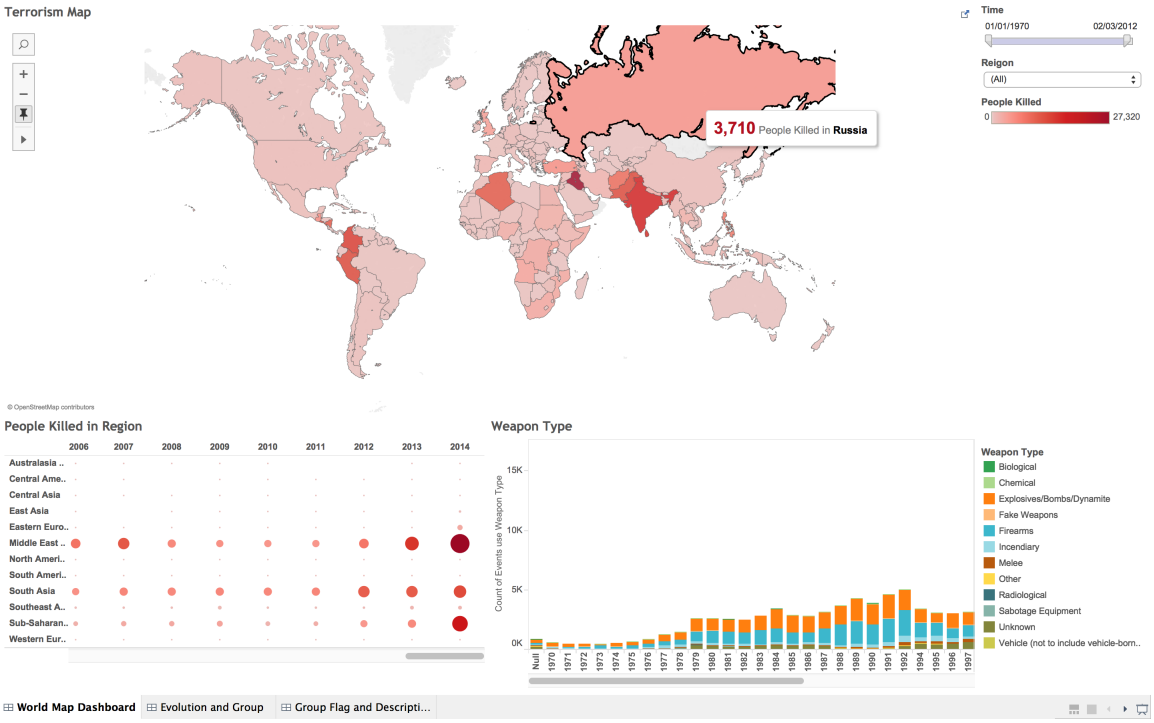

Figure 1: Terrorist Events Overview

3.2 Terrorism Evolution

The idea of this graph is to give readers an image about how terrorist organizations evolve these years.

In this collection, world map is given to show active areas. Choosing one group, the main graph dynamically shows people killed in different areas. Since terrorism is changing all the time, it makes not sense to show developing process of all groups. So based on people killed by certain group, we rank them and try to give more information about them by stacked bar chart.

For a pie chart, it is distributed by different groups with colors to present the level of perpetration in whole, which improves readability.

3.3 Detail for Organizations

As we have known from the former part, different terrorist organizations have different crime time, target types and crime zones, which illustrate completely different criminal tendency. In order to explore features of specific organization, this part of visualization integrate details about it. Line chart is applied to give the information about terrorist organizations' crime trend by showing the number of casualties in the terrorist attacks they launched through the years and filled map is used to give the information about its active area. Through this collection, users get more detailed understanding of the ten most notorious terrorist organizations.

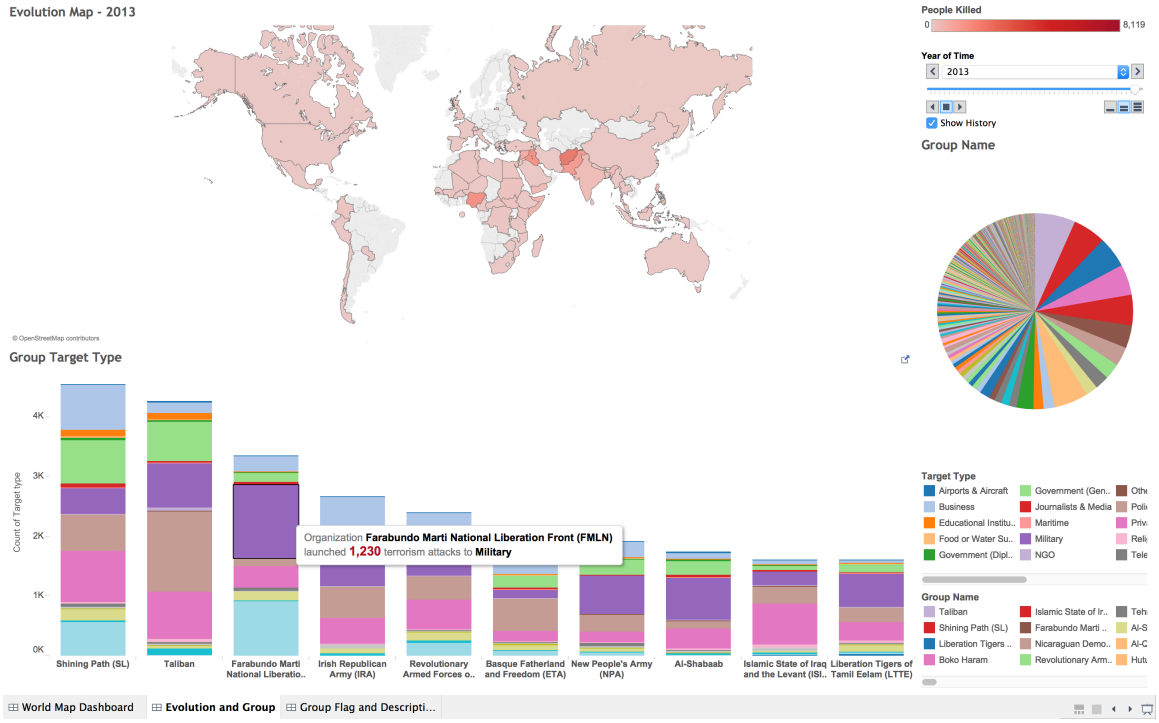

Figure 2: Terrorism Evolution

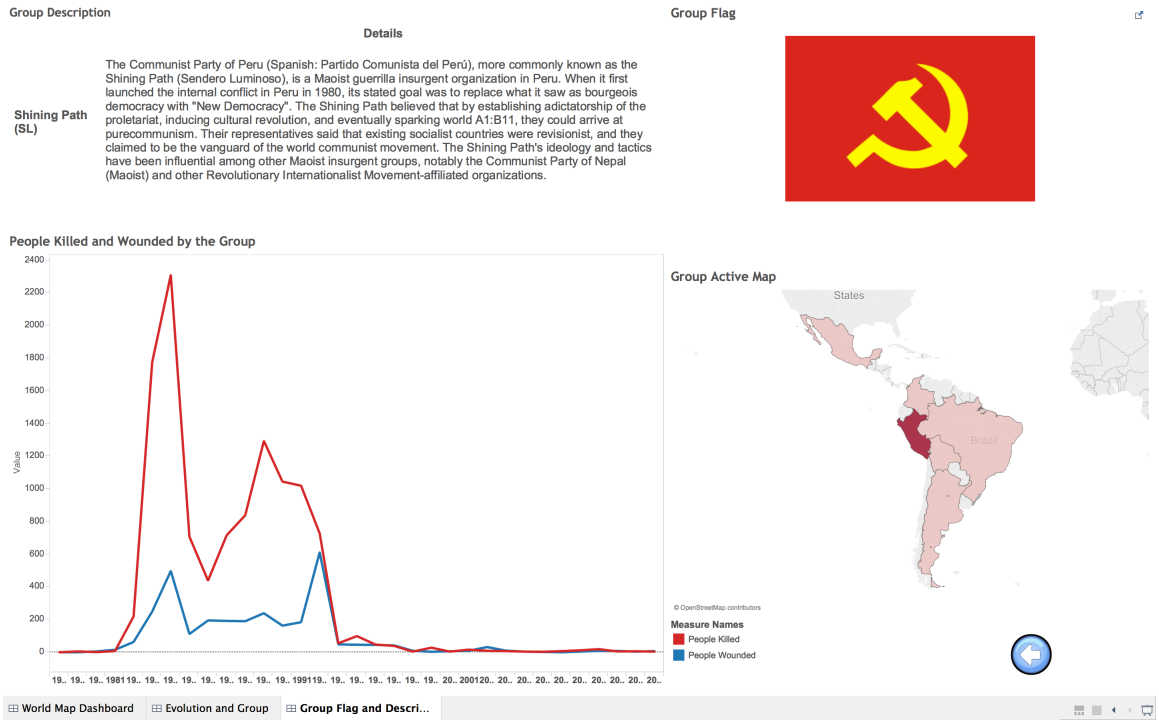

Figure 3: Detail for Organizations

4 Conclusion

With attributes in GTD, three collections are made to visualize the terrorism attacks for over 40 years. The work is useful for different groups. It can give people a direct impression on terrorism while it can also be an auxiliary

material for specialists. The tool, Tableau, is direct for statistical graph. After practice, even new users can play with it. However with the progress of project, we find some deficiencies. For example, interaction and graph animation is not fluent and flexible enough. And functions are limited into range, which means users can hardly extend. We make some suggestions and expect for new improvment.