

Final Project

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Executive Summary

The following charts show the terrorist attacks in three countries--Iraq, Turkey, and the United States--from 1970 to 2010. The charts compare overall trends in the number of terrorist attacks, and highlight some of the major contributing factors to these trends. They also look at the variety of attack types as they vary from country to country. Finally, we can see the terrorist attacks occurring in each country overlaid with one another to get a sense of comparison. While we see an obvious uptick in the amount of terrorist attacks in Iraq during the War on Terror, we see what types of attacks are most popular. We also look at the surprising number of terrorist acts in the United States during the 1970s.

Data Background

The initial dataset was extremely large and contained terrorist data from every country from 1970 until today. The data included the type of attack, the country it occurred in, the state and region the attack occurred in, the home nation of the attacker, date of the attack, etc. Needless to say, there were a lot of potential routes that could have been taken cleaning and working with this data. I decided to limit the data to just a few countries and compare trends in terrorist attacks that occurred within them.

Loading the Libraries

```
library(tidyverse)
library(forcats)
library(lubridate)
```

Data Cleaning

I originally chose all Middle Eastern nations: Iraq, Iran, Syria, Turkey, and Afghanistan. However, the trends were very similar and only varied in frequency. I decided to add the United States as a matter of personal curiosity and only leave the Middle Eastern nations that had the highest incidences of terrorism. I initially decided to limit the timeframe as well, and first chose the 1980s and 1990s, although eventually decided to include all the way back to the 1970s, in order to encapsulate more terrorist acts that occurred in the United States, and also bring the time frame forward into the 2000s to capture the War on Terror.

```

terrorism_raw <- read_csv("globalterrorismdb_0617dist.csv")

terrorism_clean <- terrorism_raw %>%
  rename(year = `iyear`,
         geo_country = `country_txt`,
         geo_region = `region_txt`,
         attack_type = `attacktype1_txt`) %>% mutate(terror_country =
recode(geo_country, Turkey = "Turkey", Iraq = "Iraq", `United States` =
"United States", .default = "Other")) %>% filter(!(terror_country %in%
"Other"))

country_count <- terrorism_clean %>%
  count(year, terror_country, attack_type) %>%
  filter(year >= 1970, year <= 2010)

```

Individual Figures

Point Plot

I chose the point plot as my first one just to get an initial read on trends in terrorism in these countries during this time period. We can clearly see the impact of the War on Terror beginning in the early 2000s, but the bump in terrorism in the United States in the 1970s gave me something to look into.

```

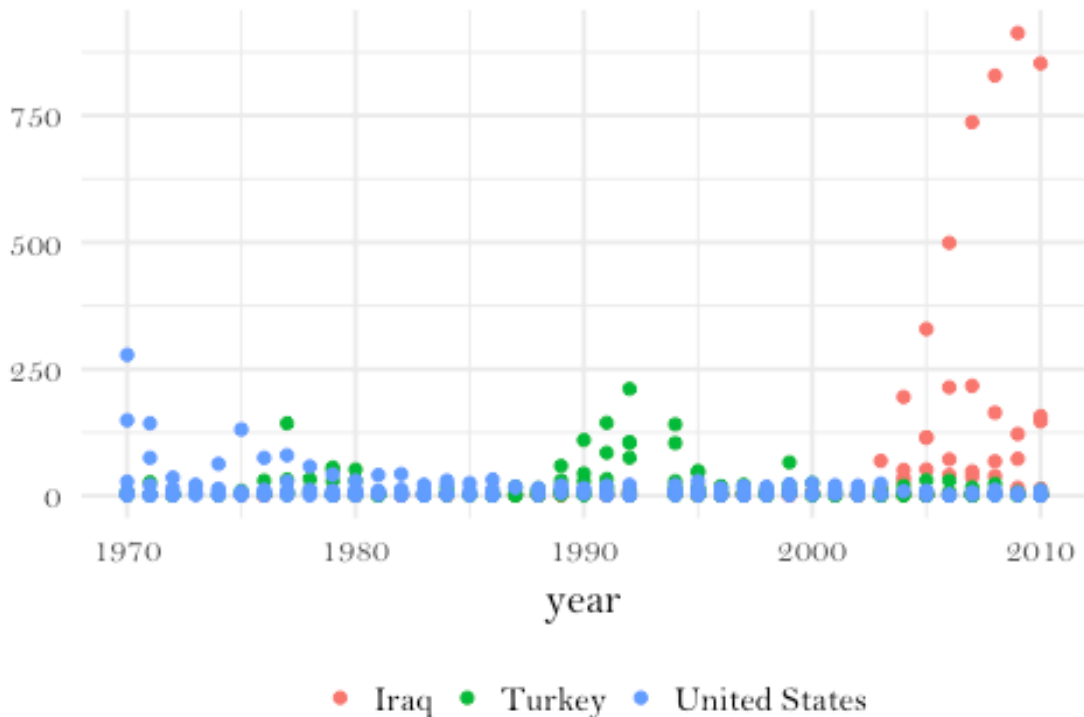
plot_1 <- ggplot(country_count) + geom_point(aes(x = year, y = n, color =
terror_country)) + theme_minimal(base_size = 14, base_family = "Bell MT") +
labs(title = "Terrorist Attacks by Country, 1970 - 2010", subtitle = "Iraq
Sees Major Surge in Terror from 2005 on") + theme(legend.position = "bottom")
+ labs(y = NULL, color = NULL)

```

```
plot_1
```

Terrorist Attacks by Country, 1970 - 2010

Iraq Sees Major Surge in Terror from 2005 on



Lollipop Plot

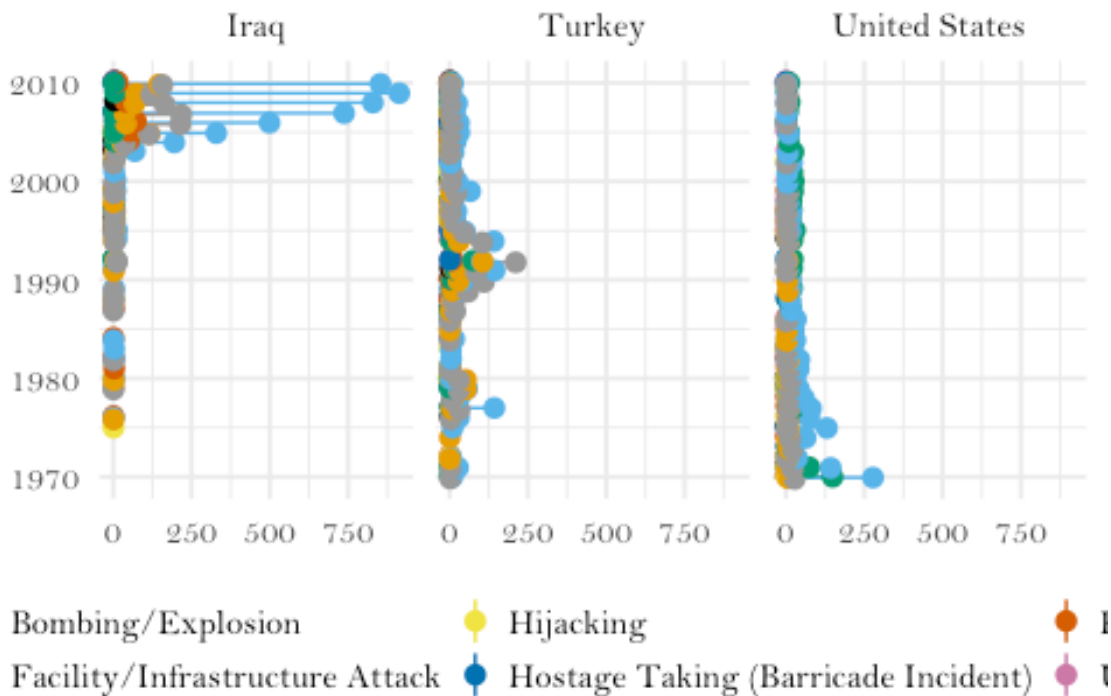
After looking at the general trends, I wanted to see what types of terrorist acts were the most popular and if they varied by country. As we can see, bombings/explosions are the most popular across the board, however, hostage taking and hijacking are almost exclusively seen in Iraq during this period.

```
plot_2 <- ggplot(country_count, aes(x = year, y = n, color = attack_type)) +  
  geom_pointrange(aes(ymin = 0, ymax = n), position = position_dodge(width =  
0.5)) +  
  coord_flip() +  
  labs(x = NULL, y = NULL) +  
  theme(legend.position = "bottom") + theme_minimal(base_size = 14, base_family  
= "Bell MT") +  
  scale_color_manual(values = c("#999999", "#E69F00", "#56B4E9", "#009E73",  
"#F0E442", "#0072B2", "#D55E00", "#CC79A7", "#000000")) +  
  facet_wrap(~ terror_country) + labs(title = "Terrorist Attacks by Country,  
1970 - 2010", subtitle = "Iraq Sees Major Surge in Terror from 2005 on")  
+ theme(legend.position = "bottom")
```

plot_2

Terrorist Attacks by Country, 1970 - 2010

Iraq Sees Major Surge in Terror from 2005 on

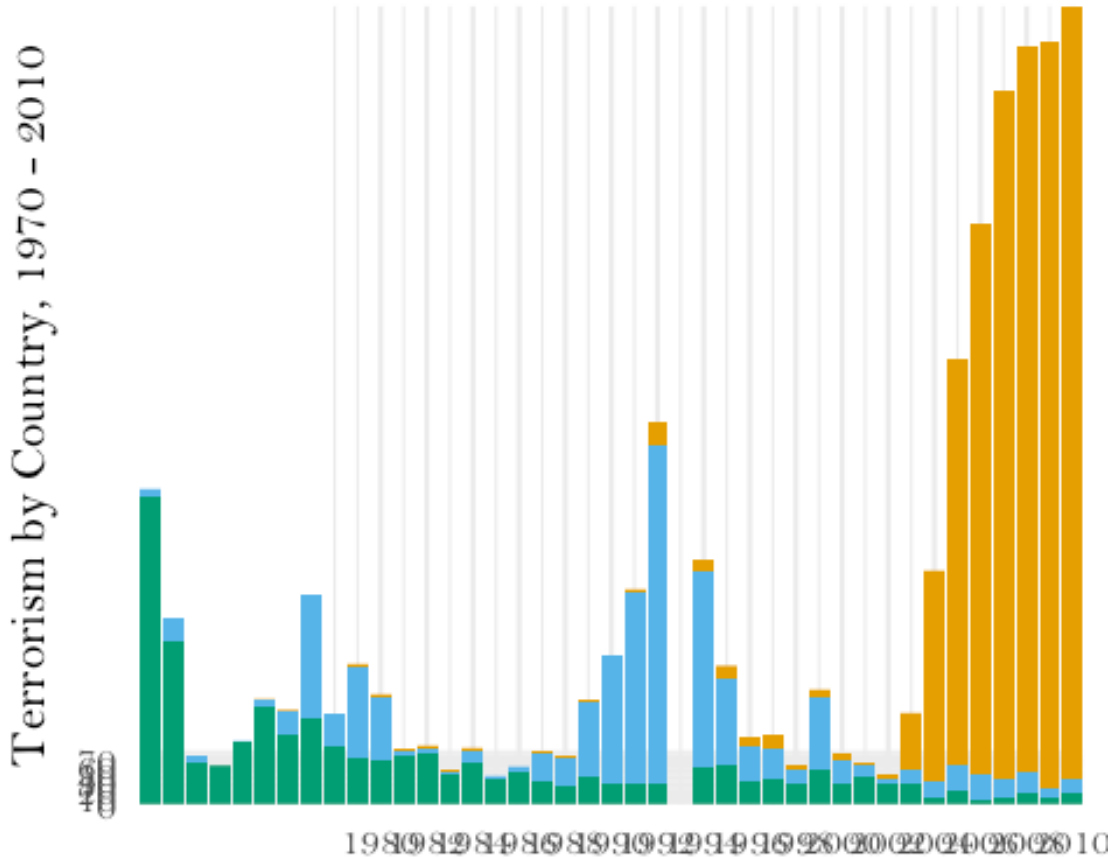


Column Plot

Finally, I liked this column plot because it overlaid the terrorist acts happening in these countries at the same time. While the point plot gives us the same general shape and gives us an idea about the number of attacks happening, this column plot shows us what was happening simultaneously. For example, we can see that terrorist acts started occurring regularly in Iraq long before the War on Terror began. Conversely, when terrorism really spikes in Iraq in 2005 - 2010, we see almost zero terrorist acts in the United States and Turkey; far lower numbers than they had had since 1970.

```
plot_4 <- ggplot(country_count, aes(x = year, y = n, fill = terror_country))  
+  
  geom_col() +  
  scale_fill_manual(values = c("#E69F00", "#56B4E9", "#009E73", "#D55E00")) +  
  scale_x_continuous(breaks = seq(1980, 2010, 2), expand = c(0, 0)) +  
  scale_y_continuous(breaks = seq(0, 70, 10), expand = c(0, 0)) +  
  guides(fill = FALSE) +  
  labs(y = "Terrorism by Country, 1970 - 2010", x = NULL, fill = "bottom") +  
  theme_minimal(base_size = 16, base_family = "Bell MT")
```

plot_4



Let's save some charts

```
ggsave(plot_1, filename = "Plot 1.png", width = 10,
height = 8, type = "cairo", dpi = 300)
ggsave(plot_1, filename = "Plot 1.pdf",
width = 11, height = 8, units = "in", device = cairo_pdf)
```

```
ggsave(plot_2, filename = "Plot 2.png", width = 10,
height = 8, type = "cairo", dpi = 300)
ggsave(plot_2, filename = "Plot 2.pdf",
width = 11, height = 8, units = "in", device = cairo_pdf)
```

```
ggsave(plot_4, filename = "Plot 4.png", width = 10,
height = 8, type = "cairo", dpi = 300)
ggsave(plot_4, filename = "Plot 4.pdf",
width = 11, height = 8, units = "in", device = cairo_pdf)
```

Final Figure

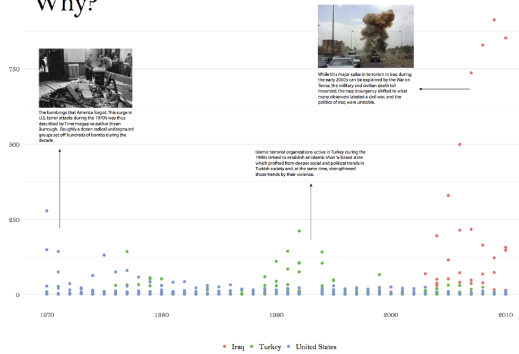
I chose this layout for my final figure because I think that it looks like a magazine spread, like something you'd see in Time magazine. It introduces the topic with the headline and

the intro paragraph, then starts with the basic point plot trends and identifies the reasons behind each spike in terrorism. The next plot shows which countries had terrorist acts at the same time, and finally, it shows trends in the actual type of attack, which changes with country and time. I believe that it gives a reader a snapshot into a complicated topic, and provides a lot of information in a very short amount of space.

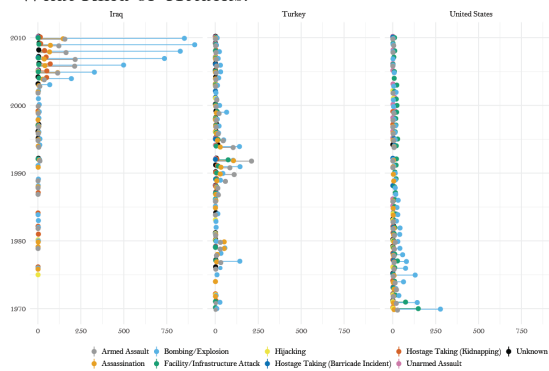
Trends in Terrorism, 1970 - 2010

The following charts show the terrorist attacks in three countries, Iraq, Turkey, and the United States, from 1970 to 2010. The charts compare overall trends in the number of terrorist attacks, and highlight some of the major contributing factors to these trends. They also look at the variety of attack types as they vary from country to country. Finally, we can see the terrorist attacks occurring in each country overlaid with one another to get a sense of comparison. While we see an obvious uptick in the amount of terrorist attacks in Iraq during the War on Terror, we see what types of attacks are most popular. We also look at the surprising number of terrorist acts in the United States during the 1970s.

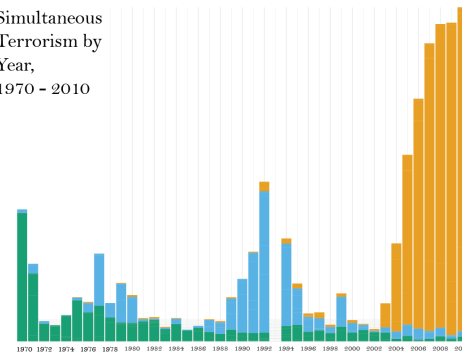
Why?



What Kind of Attacks?



Simultaneous Terrorism by Year, 1970 - 2010



Final Figure