

DS102 DS104 :
Final Project Presentation

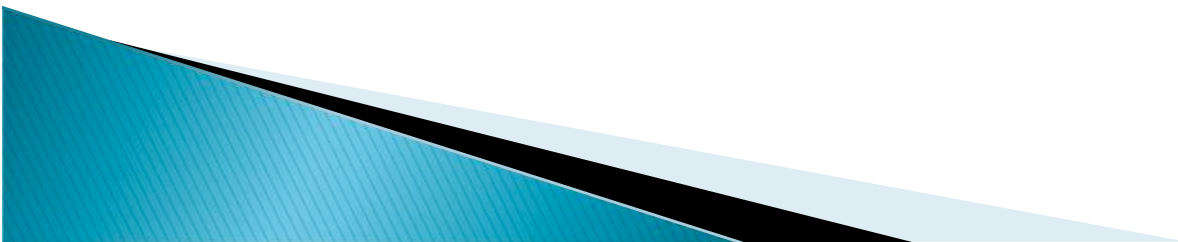
World Cyber Attacks (2005 – 2020)

(Source: <https://www.kaggle.com/fireballbyedimyrnmom/2020-cyber-incidents>)

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Agenda

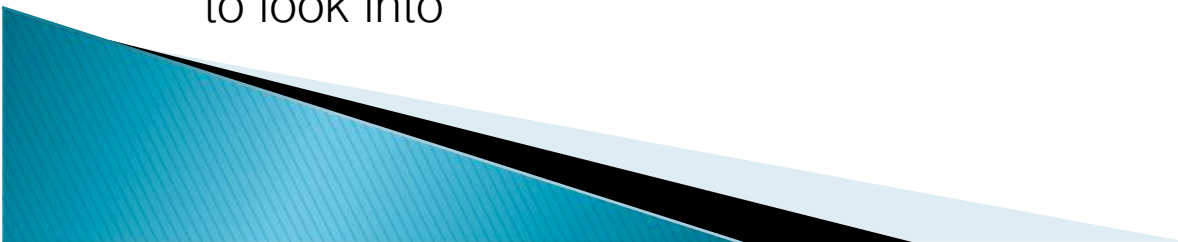
1. Problem Statement
2. Data Cleaning
3. Data Insights



Problem Statement

What is the most affected area by cyber-attack in the world for the past 15years?


1. The country and the economy sector where the most hit of cyber attacks
2. The cyber- attack type to the country & sector
3. Which month in a year have the highest rate of attack
4. The attackers that responsible to most of the cyber-attack around the world.
5. The attackers and their attack type.
6. The attackers and the targeted country & sector
7. The forecast of future cyber-attack direction & recommend vulnerable area to look into



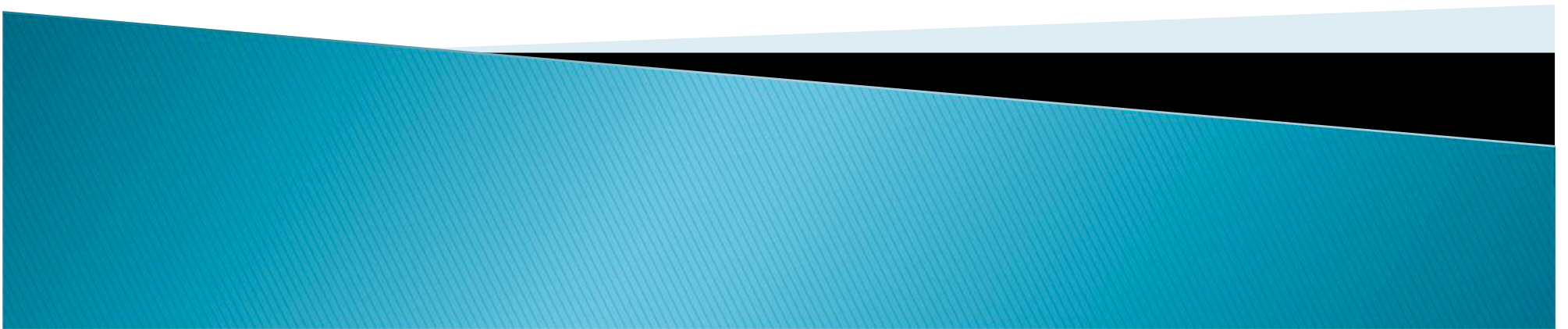
Data Cleaning

Dataset used: Cyber-operations-incidents.csv

Data Cleaning Process:

- ▶ Change “Date” column to datetime format
 - ▶ Create new “Month” & “Year” columns
 - ▶ Create new “Victim Countries” column from “Victim” column
 - ▶ Replace for NaN values with “Unknown”
 - ▶ Delete un-used columns: *'Title', 'Response', 'Sources_1', 'Sources_2', 'Sources_3', 'Affiliations', 'Victims'*
 - ▶ Removing non-relevant records/rows
 - ▶ Split 'Category', 'Victim Countries' column by commas
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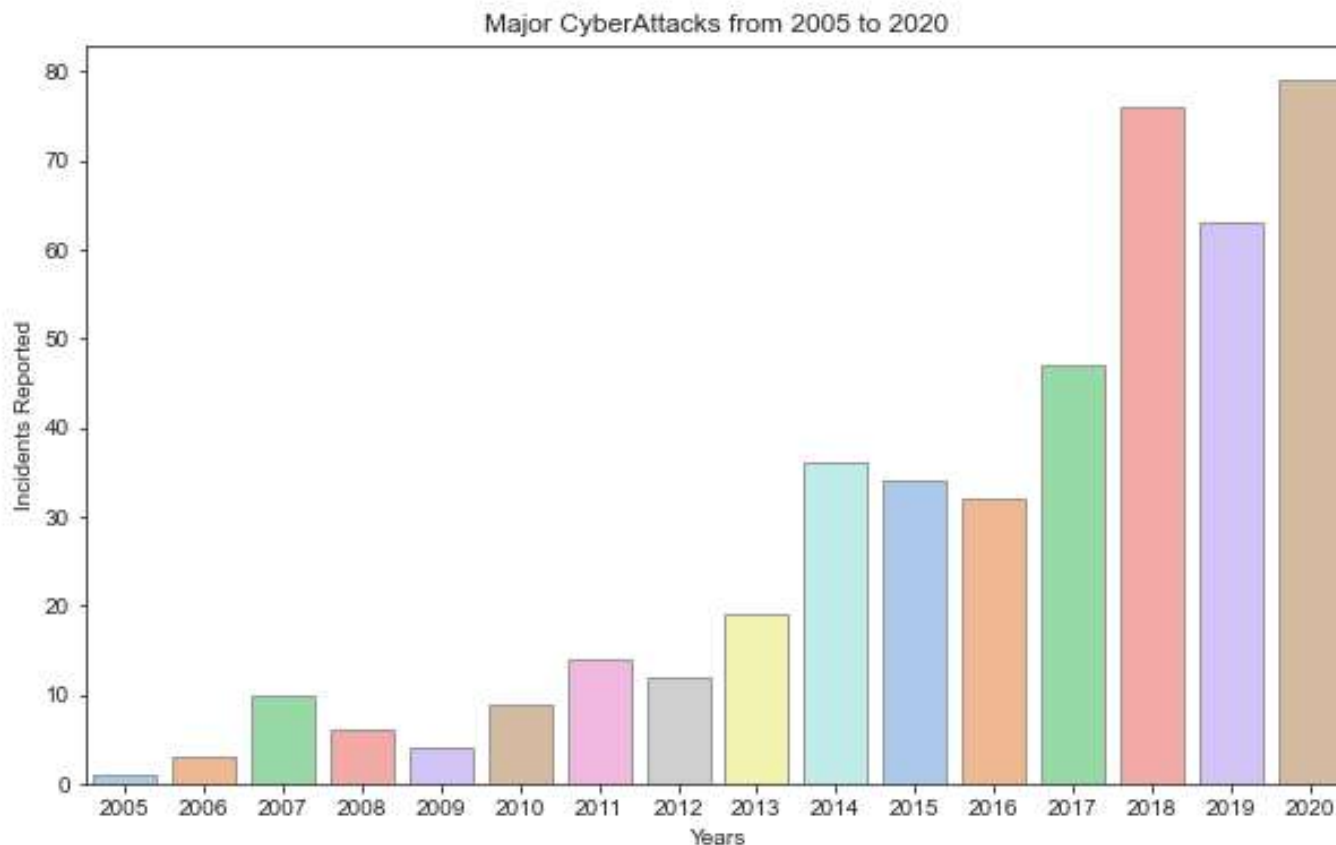
Data Insights



Major Cyber-Attack Trend Around the World (2005 to 2020)

Total 445 incidents reported for the past 15 years.

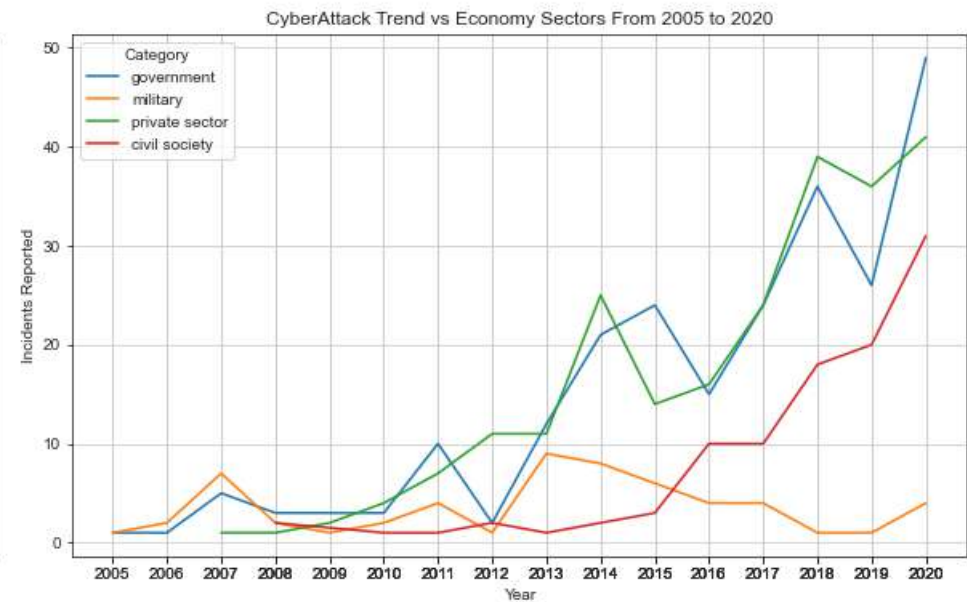
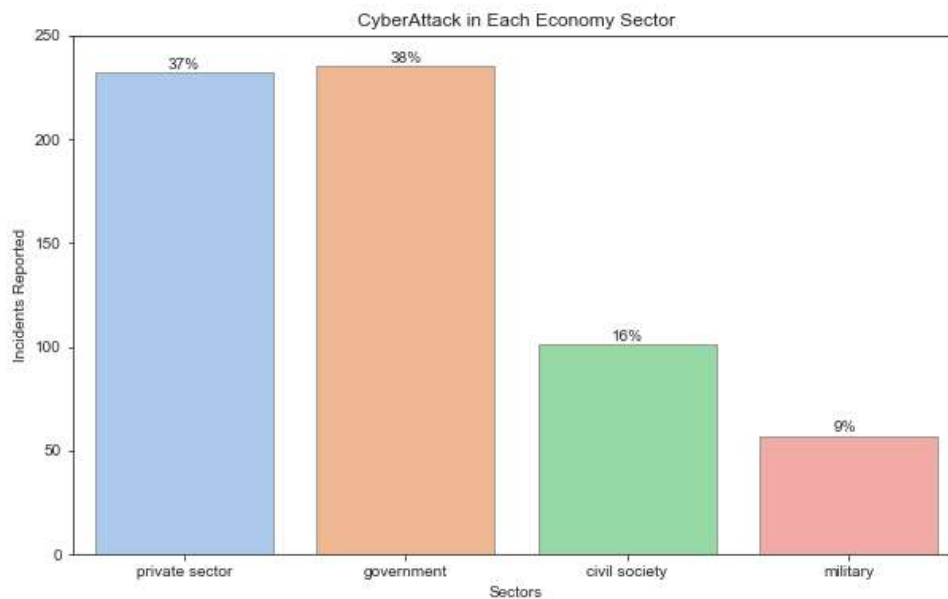
There was a increase of 80times in Cyber-Attacks since 2005.



Cyber-Attack in Economy Sector

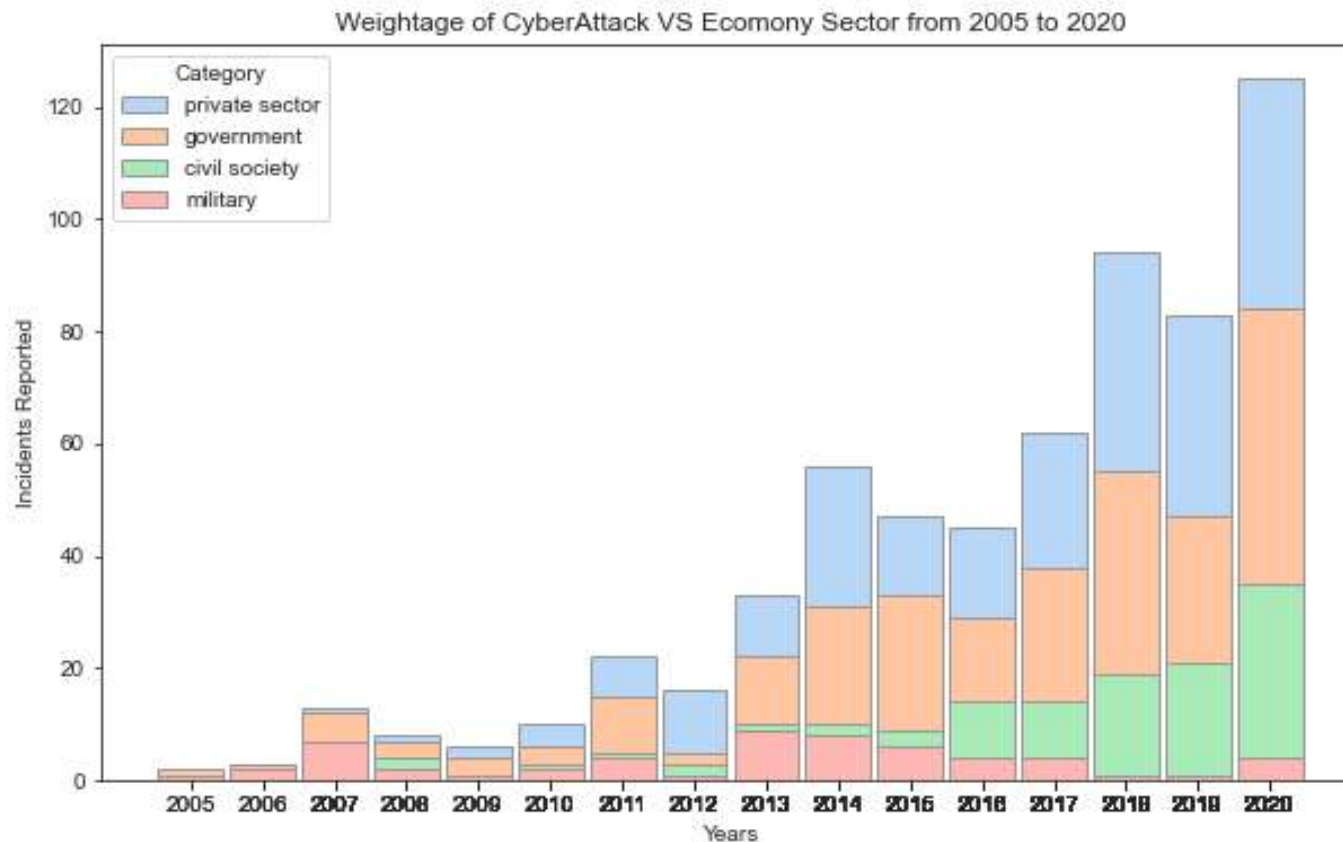
Majority attacks(75%) targeted on Private & Government sectors.

Can see that global growth of Cyber-Attack was also due to attacks to Private & Government Sectors



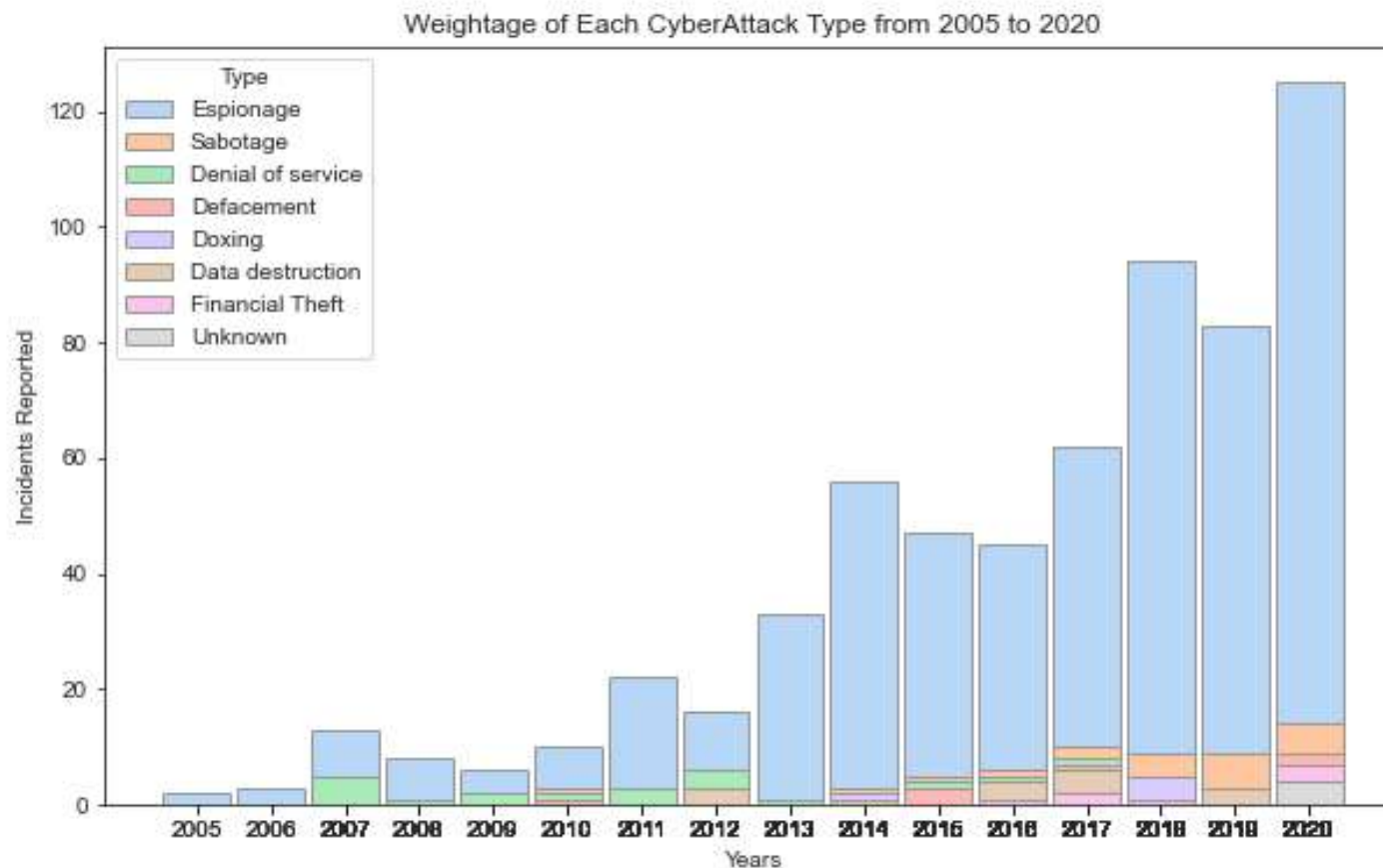
Cyber-Attack in Economy Sector

Attacks to the private & government sectors appeared in the past 15years seems to be increasing.



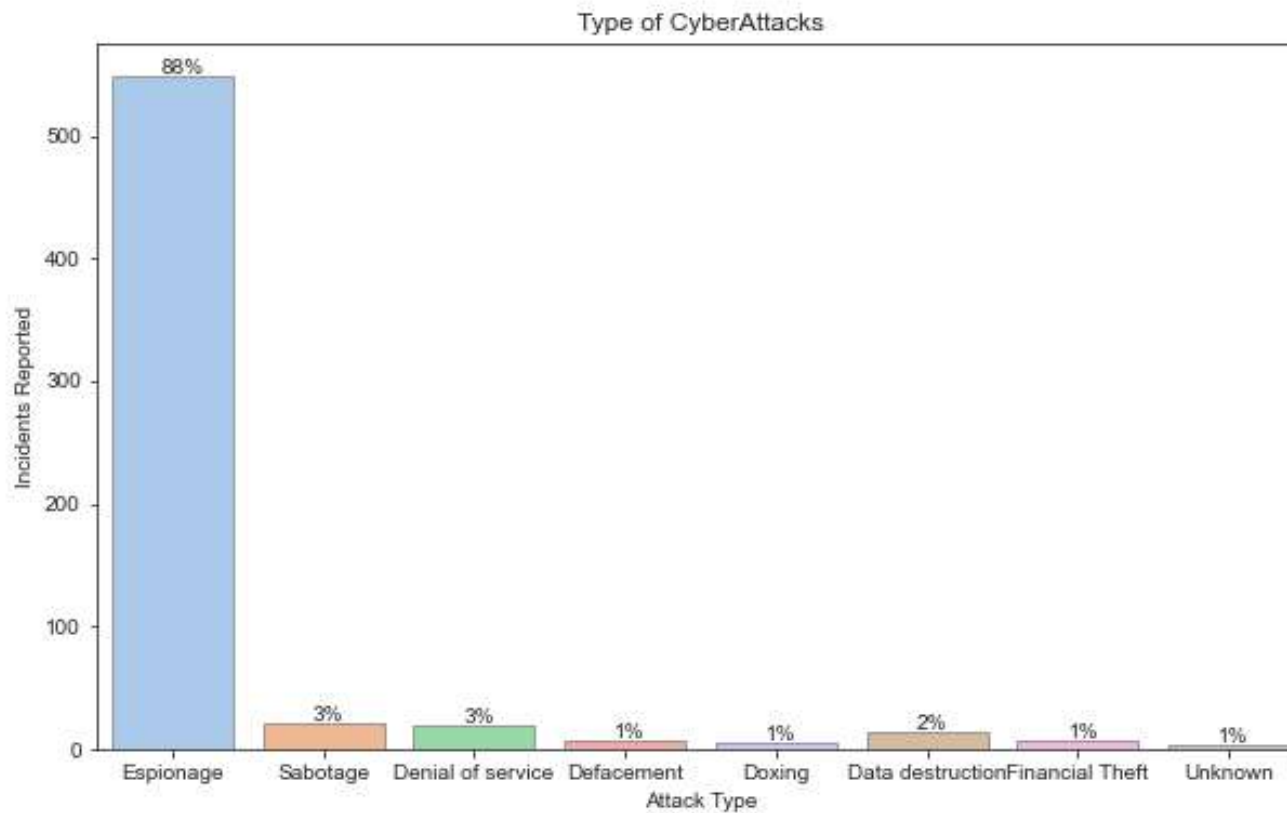
Types of Cyber-Attacks

Espionage form majority of the cyber-attack from 2005 to 2020.



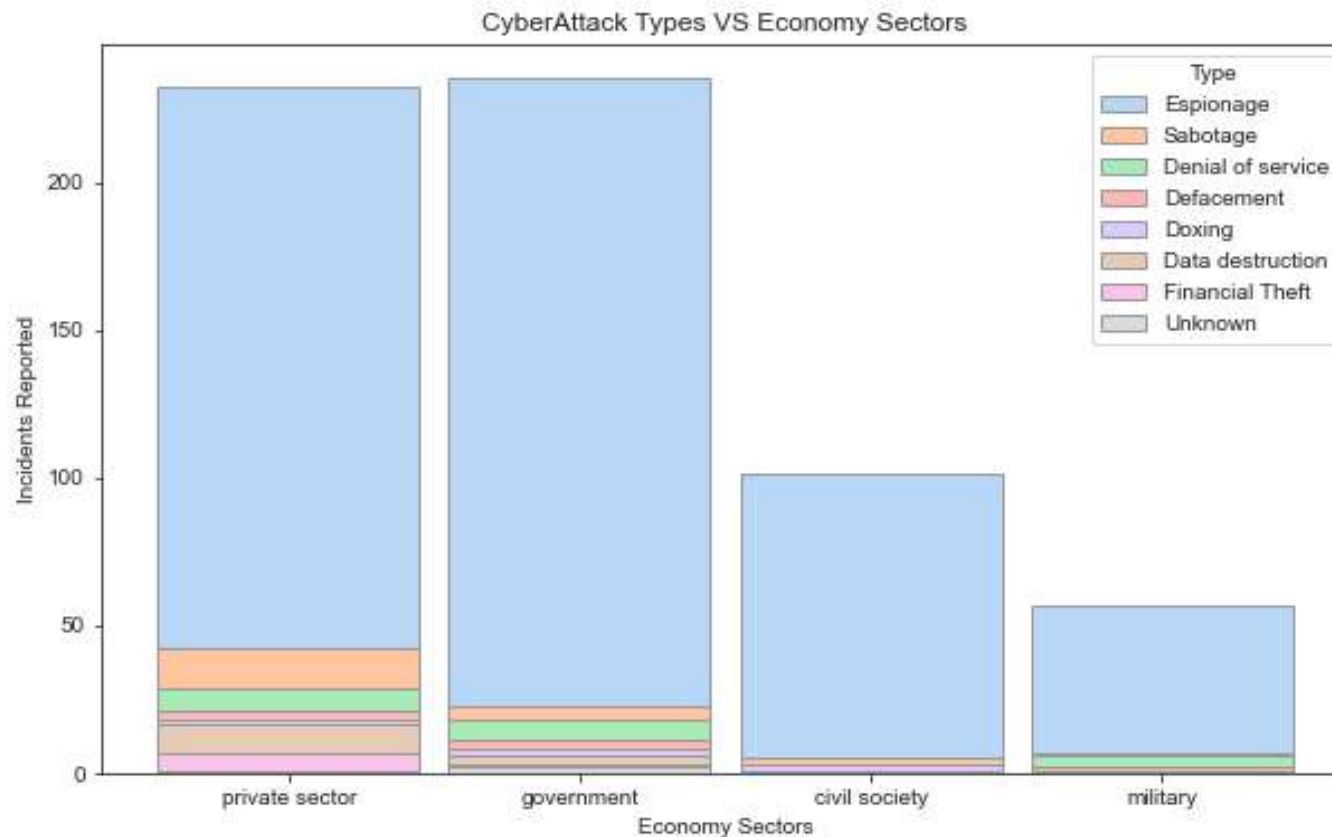
Types of Cyber-Attacks

88% of the Cyber-Attacks involved Espionage



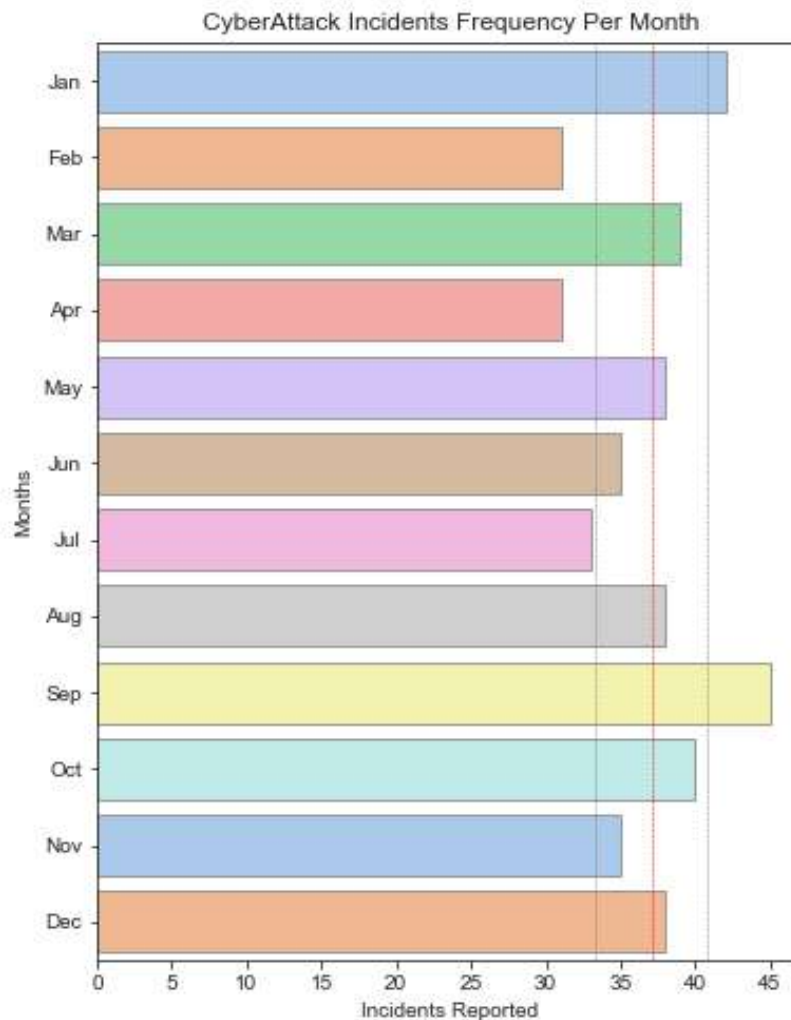
Types of Cyber-Attacks

Majority of the cyber-attack type found to be Espionage in all Economy Sectors.



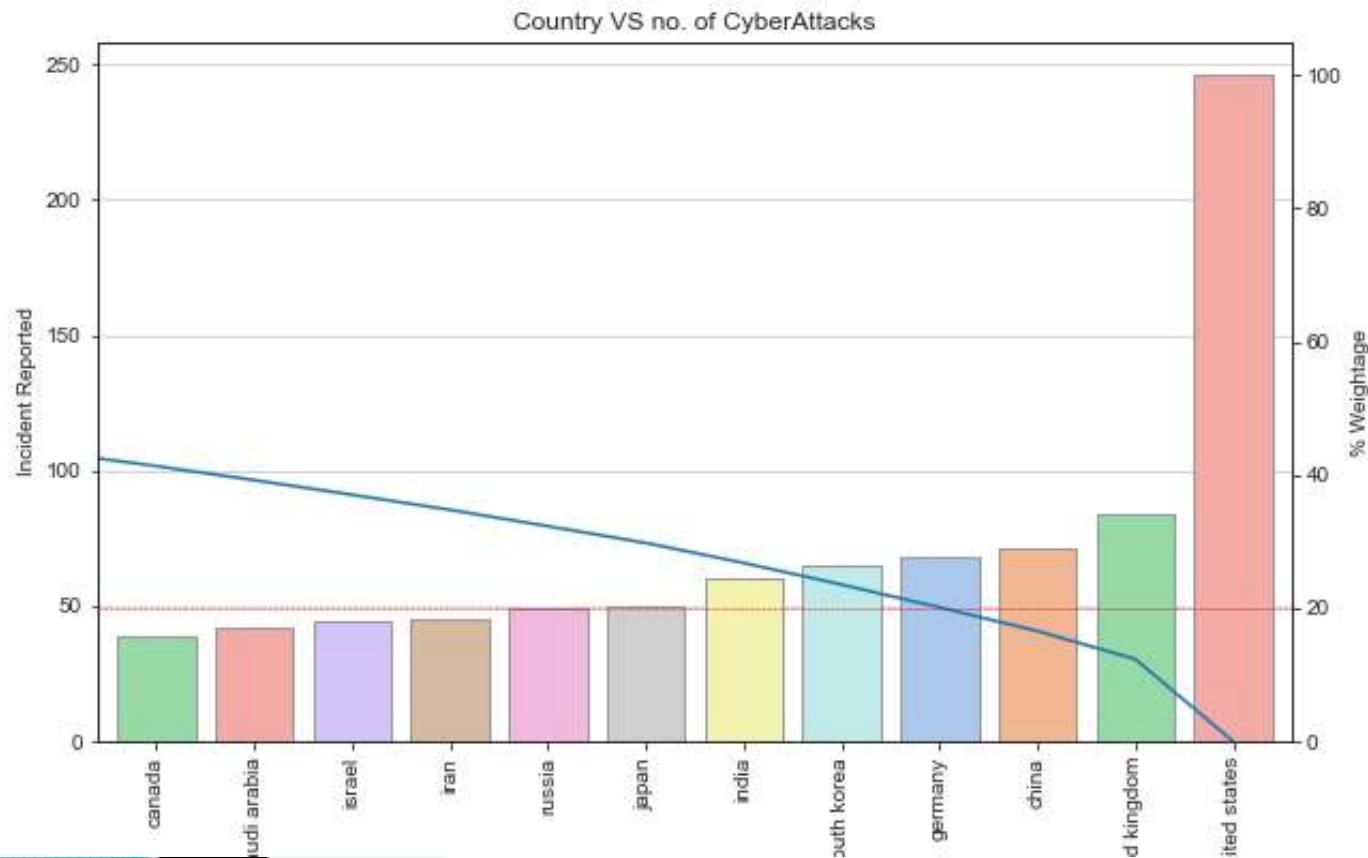
Cyber-Attack Frequency Per Month

Average 38 cyber-attacks a months throughout a year.



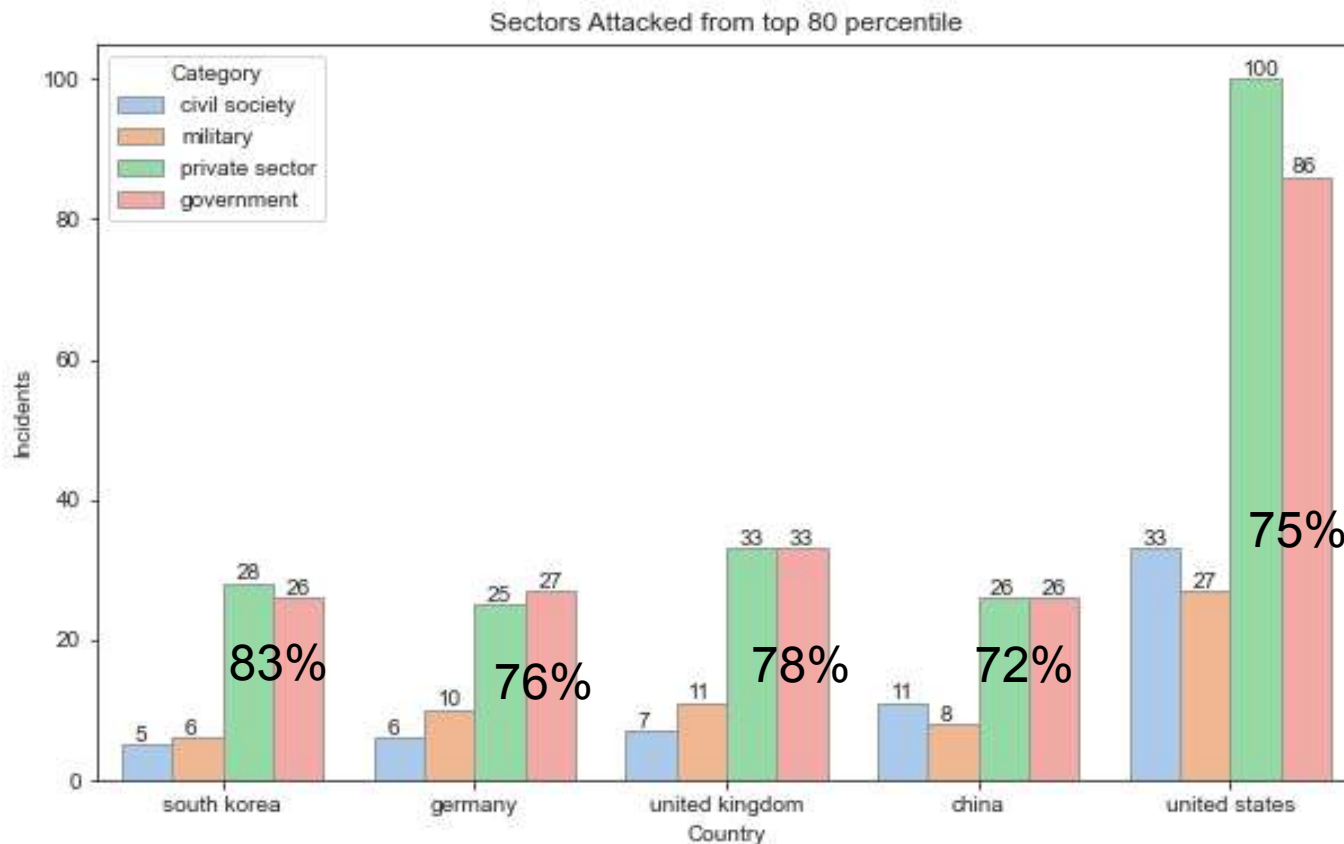
Country VS no. of CyberAttacks

80% of the Cyber-attacks targeted United States, United Kingdom & China.



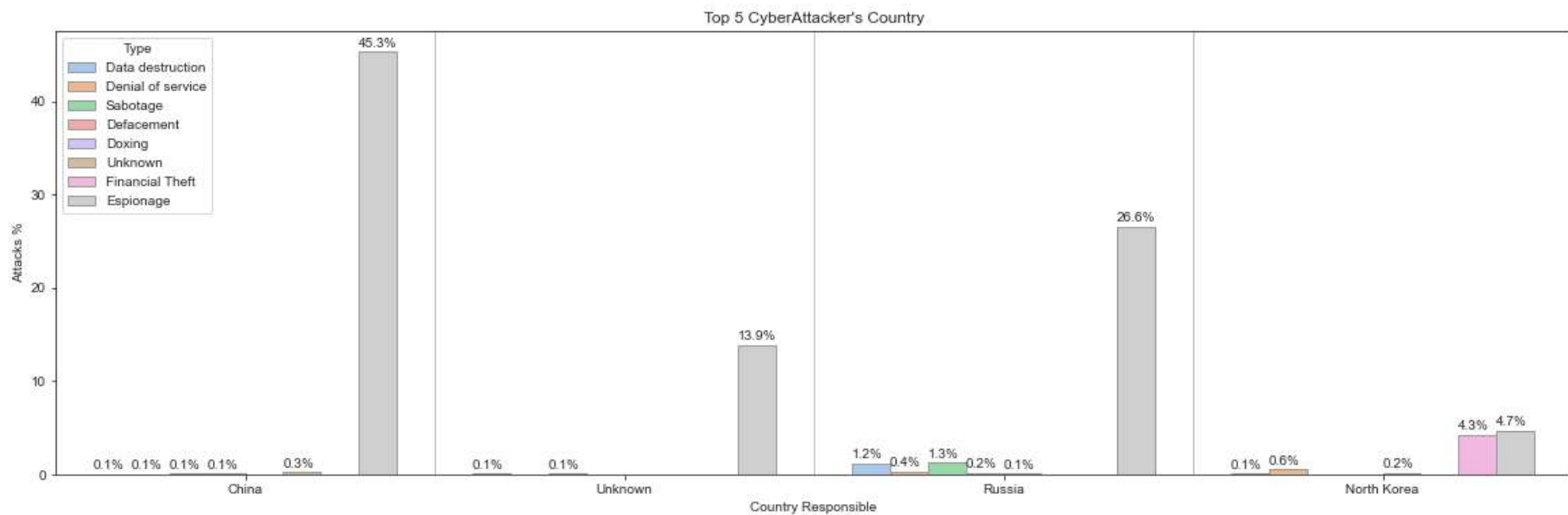
Country VS no. of CyberAttacks

Graph show that consistency of around ~75% attacks targeted on Private and Government Sector to the top 5 countries that contribute to 80% of the global cyber-attack incidents.



Top 5 Attackers (Country)

Graph shown that majority attacks were Espionage type from all 5 countries.



Word Cloud From the Top Attacker

From Word cloud that attacks mostly related to **stealing of data/information** on **defense**, **technology**, **personal accounts** by deploying **malware**, **phishing** email and attacking to **network** to **company/firm** or **military**



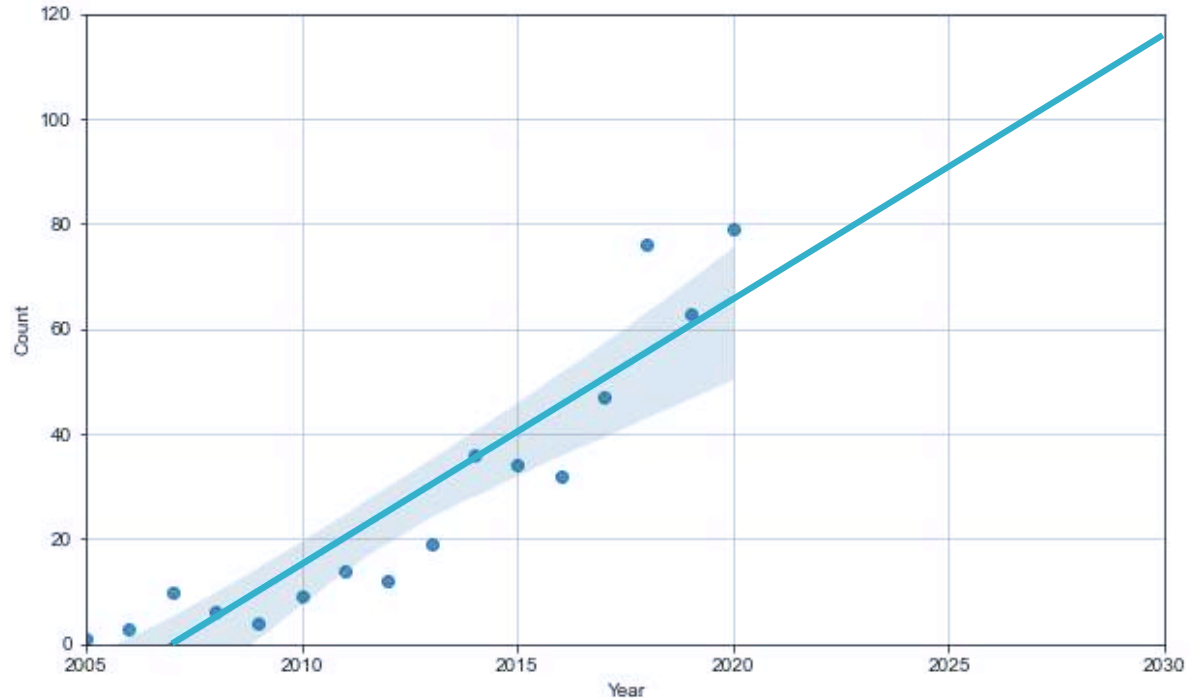
Cyber-Attack Forecast

Based on regression plot,
Cyber-attack forecast to
increase by 43% by 2030.

Attacks to Private &
Government sectors will
also increase from 235 to
336 as it proportional to the
growth of total cyber-attacks

88% of the attacks will be
Espionage

Average attacks per month
will increase to 54 from 38



Due to the growth of cyber attacks and based on the dataset, companies & militaries in government & private sector should look into improving their cyber protection from espionage attacks from other countries. Protecting data on defense, new technology, personal info from phishing, malware and improving/upgrading network infrastructure

Thank You!

GitHub link to project: <https://github.com/jiayang243/CyberAttacks>

