Project report (Group 2)

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1 Introduction

problem setting *asdf*

1.1 Goals

analysis goals bla bla

- Are acts of terror dependent on the weather?
- Do terror attacks influence founding/splitting of metal bands? Vice versa?
- Does the population influence the number of existing metal bands?
- Do terror attacks have an influence on the population?
- Which main genre has the most terror events?

2 Sources

The following sources were used for this project:

- Global Terrorism 1970 - 2017
  - URL: `https://www.kaggle.com/START-UMD/gtd`
  - Dimensions: 181'691 rows x 135 columns
  - Size: 162.8 MB
  - Format: CSV
- Metal bands 1964 - 2016
  - URL: `https://www.kaggle.com/mrpantherson/metal-by-nation#metal_bands_2017.csv`
  - Dimensions: 5000 rows x 7 columns
  - Size: 264 KB
  - Format: CSV
- World Population 1960 - 2015
  - URL: `https://www.kaggle.com/mrpantherson/metal-by-nation#world_population_1960_2015.csv`
  - Dimensions: 264 rows x 57 columns
  - Size: 125 KB
  - Format: CSV
- Weather Data

- URL: `ftp://ftp.ncdc.noaa.gov/pub/data/ghcn/daily/`
- Inventory
  * Dimensions: 65236 rows x 6 columns
  * Size: 26.9 MB
  * Format: TXT
- Daily
  * Dimensions: ~10M rows x 35 columns
  * Size: 2.9 GB
 * Format: DLY

2.1 ER

3 Integrated Schema

A new Population Entity replaces the year attribute in Country. Some of the Terror data is outsourced to new Entities, as some attributes are listed data points. A new entity TerrorLocation is created to simplify relations with countries and weather data.

3.1 ER

3.2 Logical Schema

- Country (countryName)
- MetalBand (bandName, formed, origin, split)
- MetalStyle (SID, bandName, style)
- Population (PID, country, year, population)
- TerrorAttack (AID, EID, attackTypeID, attackType)
- TerrorEvent (EID, eventDate, approxDate, extended, resolution, LID, summary, crit1, crit2, crit3, doubtterr, alternativeID, alternative, multiple, success, suicide, nkill, nkillus, nkillter, nwound, nwoundus, nwoundte, property, propextentID, propextent, propvalue, propcomment, addnotes, weapdetail, gname, gsubname, gname2, gsubname2, gname3, gsubname3, motive, guncertain1, guncertain2, guncertain3, individual, nperps, nperpcap, claimed, claimmodeID, claimmode, claim2, claimmode2ID, claimmode2, claim3, claimmode3ID, claimmode3, compclaim, ishostkid, nhostkid, nhostkidus, nhours, ndays, divert, country, ransom, ransomamt, ransomamtus, ransompaid, ransompaidus, ransomnote, hostkidoutcomeID, hostkidoutcome, nreleased, scite1, scite2, scite3, dbsource, INT_LOG, INT_IDEO, INT_MISC, INT_ANY)
- TerrorLocation (LID, countryID, country, regionID, region, provstate, city, latitude, longitude, specificity, vicinity, location)
- TerrorRelation (RID, EID, related)
- TerrorTarget (TID, EID, targTypeID, targType, targSubtypeID, targSubtype, corp, target, nationalityID, nationality)
- TerrorWeapon (WID, EID, weapTypeID, weapType, weapSubtypeID, weapSubtype)
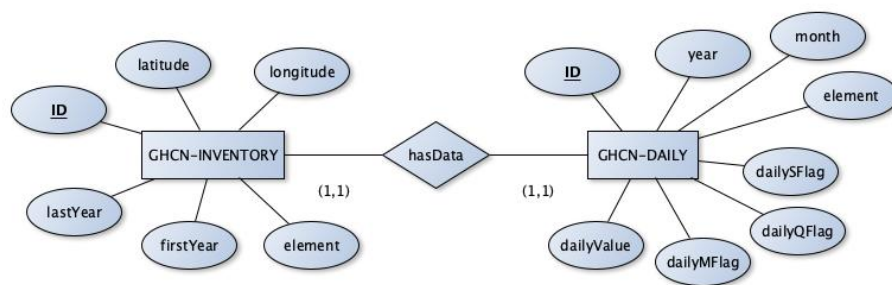- Weather (LID, weatherDate, rain, temperature, station)
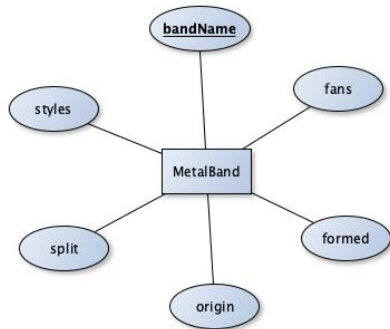
(a) Metal
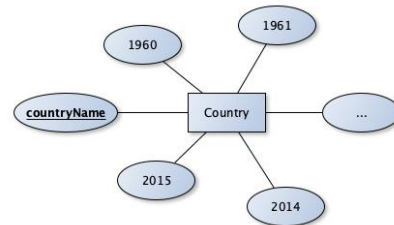
(b) Country
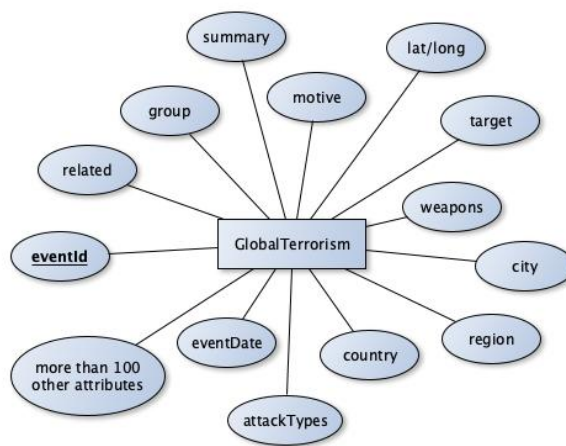
(c) Terrorism

(d) Weather

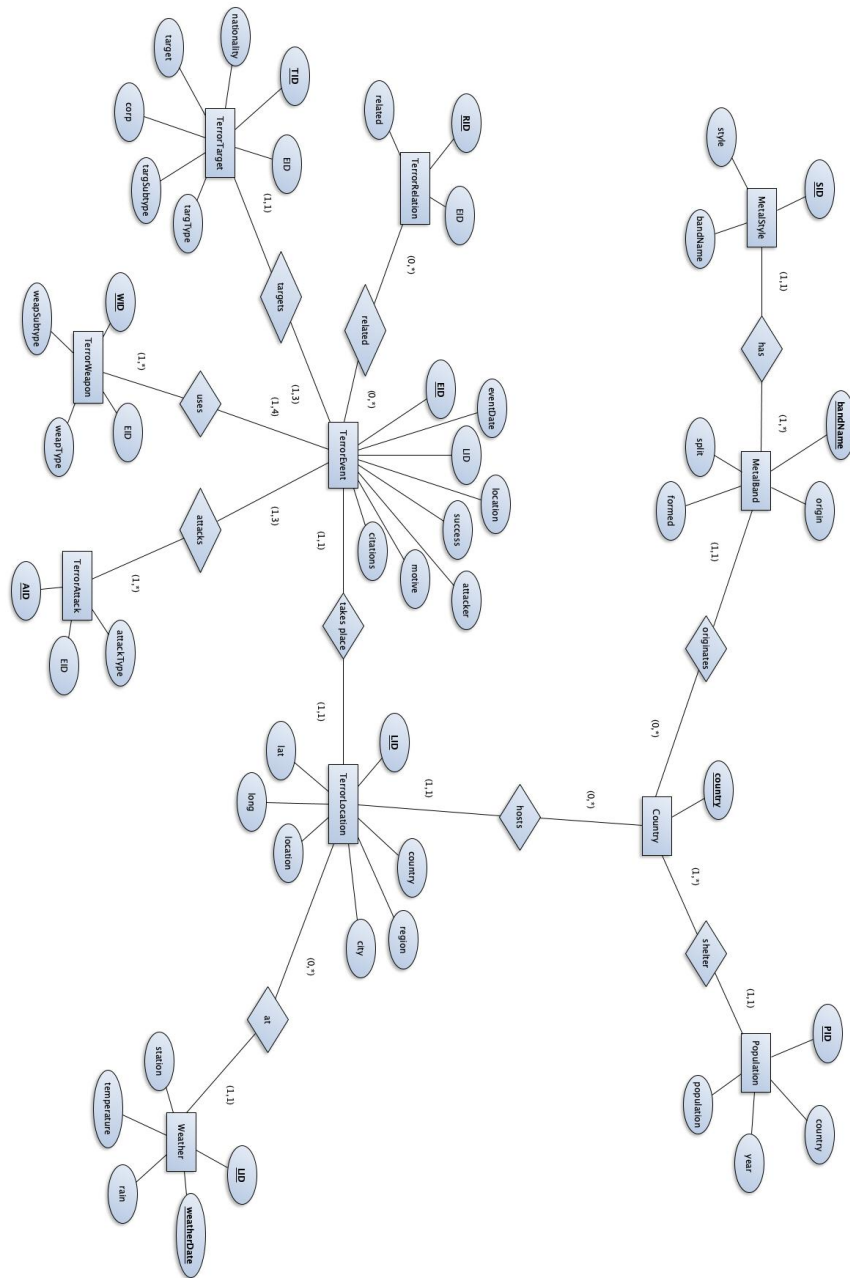Fig. 1: Entity-Relation diagrams of single sources

Fig. 2: Entity-Relation diagram integrated schema

4   Methods & Results

4.1   Data Integration

4.2   Results

The posed questions are answered by creating visualizations of the integrated data. Each visualization is designed to show if there is a correlation between the inspected attributes.

Are terror events dependent on the weather? Here, the influence of the weather on terror events is inspected. The visualizations show the number of events that took place under the specified conditions. The weather influence is measured by observing the distribution of terror events for different conditions.

The weather data contains information about the daily mean temperature and daily precipitation. The temperature is split into intervals of $10°$C beginning with $< -10°$C and ending with $> 30°$C. The daily precipitation is mapped to types of rain, namely: no rain, light rain, moderate rain, heavy rain and very heavy rain.

For the terror events, three aspects are chosen:

- Types of terror attacks
- The targets of attacks
- The used weapons in the attacks

These three aspects are represented by the tables `TerrorAttack`, `TerrorTarget` and `TerrorWeapons`, for which only the most significant attributes are chosen, if the total number of them is too large.

Weather - Attack Types There are nine distinct attack types, which are all displayed in the visualization. Bombing is the most frequent one for each weather condition, followed by armed assault.

The influence of rain on attack types is very low, as the different types are proportionally similar for each type of rain.
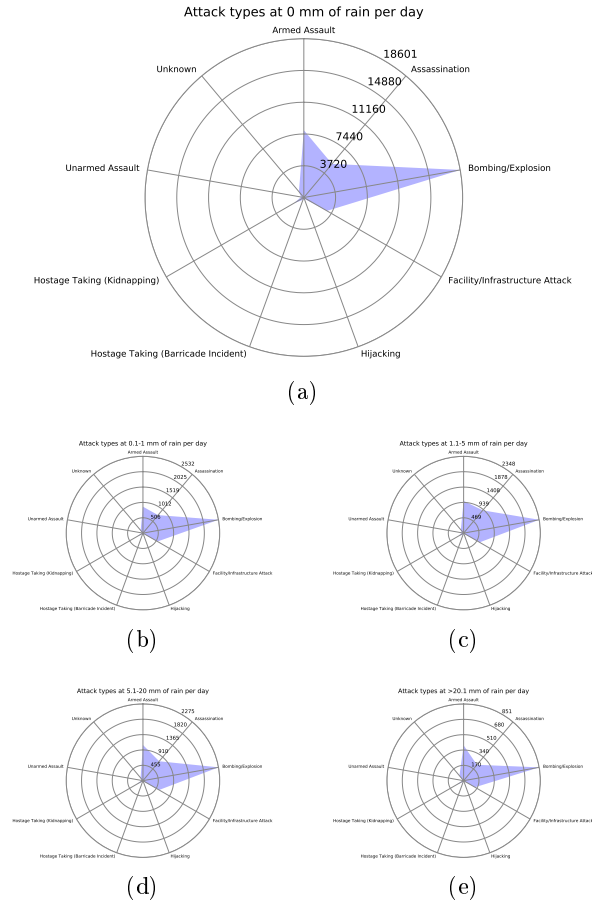
(a)

(b)

(c)

(d)

(e)

Fig. 3: Influence of rain on terror attack types

The temperature has a greater influence on attack types. It can be observed that more armed assaults take place when the temperature rises.
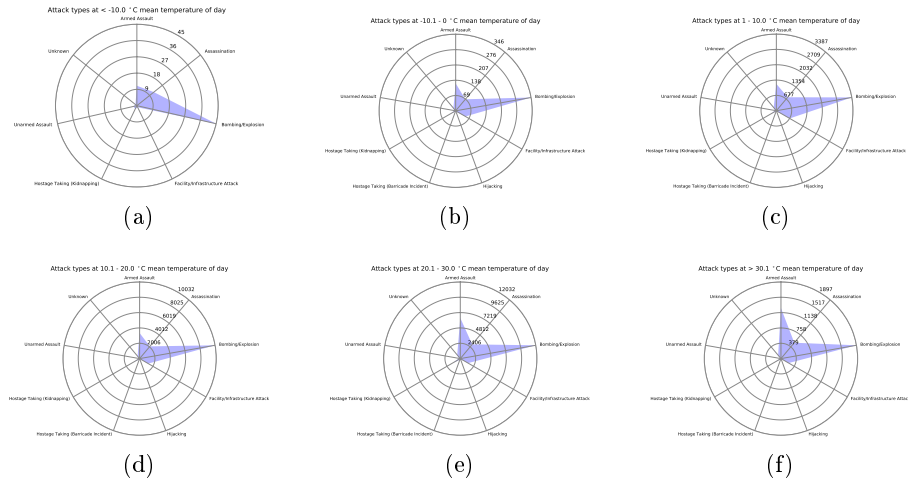
Fig. 4: Influence of temperature on terror attack types

Weather - Attack Targets The number of distinct target types is quite large, since they can be very specific (e.g. Priest). For the analysis, the ten most representative attributes have been chosen. Different to the attack type, the target types vary more for the different conditions.

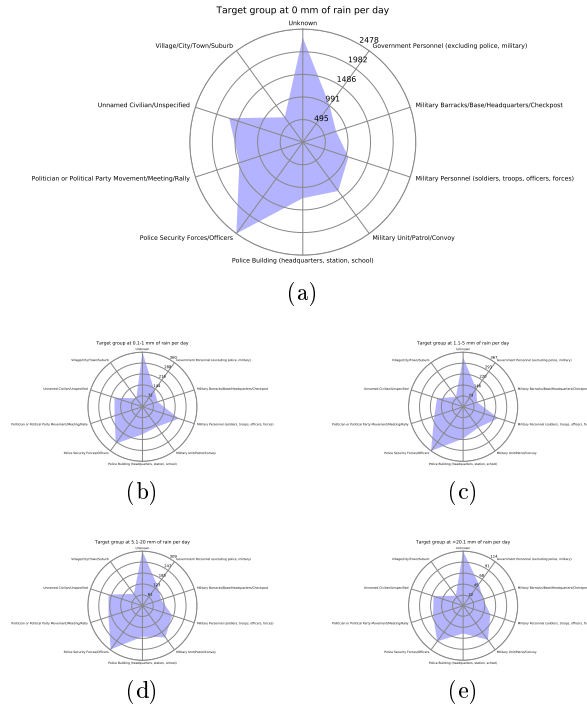It can be observed, that heavier rain results in a bigger number of attacks on military units, patrols and convoys.

(a)

(b)

(c)

(d)

(e)

Fig. 5: Influence of rain on attack targets

(a)

(b)

(c)

(d)

(e)

(f)
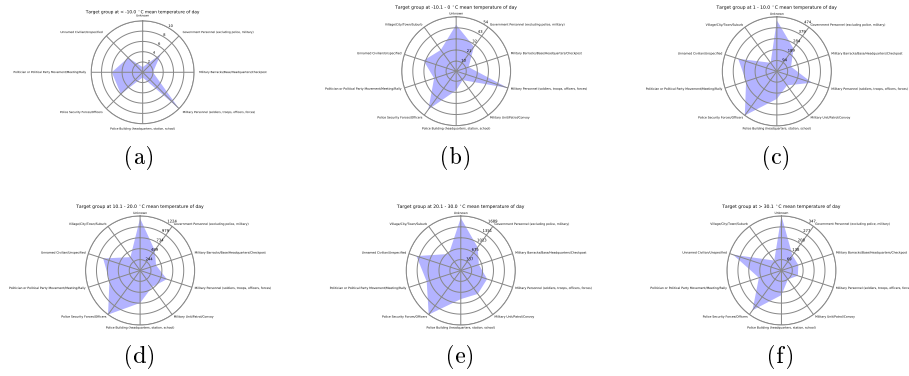
Fig. 6: Influence of temperature on attack targets

Lower temperatures have a high number of attacks on military personnel. With increasing temperature, this shifts towards civilians. Therefore, with higher temperature, more civilians but less military personnel are attacked.

Weather - Attack Weapon There are, like attack targets, many distinct attack weapons. Again, the ten most representative attributes have been chosen. The weapons have a high correlation to the attack types, seen by the attributes `Bombing/Explosion & Unknown explosive type` and `Armed assault & Unknown gun type`.
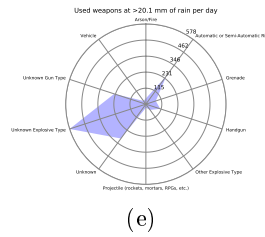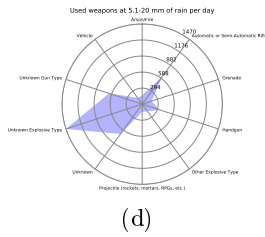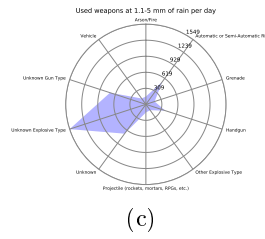

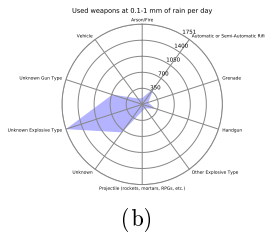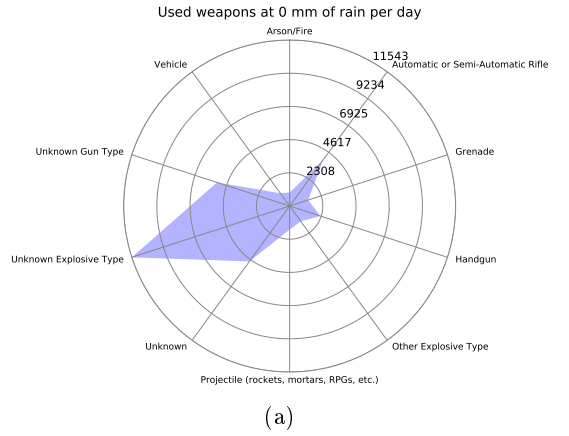(a)

(b)

(c)

(d)

(e)

Fig. 7: Influence of rain on terror attack weapons

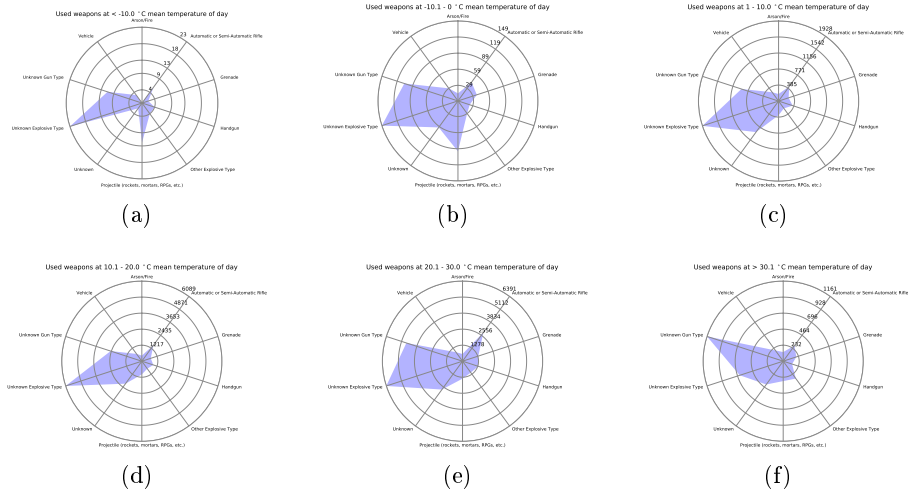Similar to the attack types, the influence of rain on the used weapons can hardly be seen.

Fig. 8: Influence of temperature on terror attack weapons

As the armed assaults increase with temperature, the number of guns used increases as well.

5 Lessons Learned

Describe your lessons learned.