

---

# *Predicting Terror Attacks?* A Network Story

---

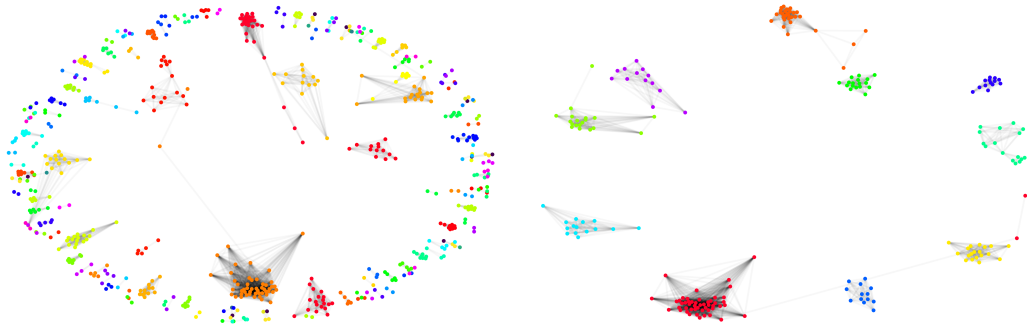
Enea Figini, Axel Nilsson, Nicolas Bollier, Elias Le Boudec  
Team 29

January 17, 2019

## 1 Introduction

## 2 Exploring the Data

### 2.1 Relationships Dataset



(a) Terror attacks location graph, colouring by component ID

(b) Ten biggest components from the terror attacks location graph

Figure 1: *Graphs analysed in the project*

## 3 Data Quality

### 3.1 Terror Attacks Dataset

Multiple issues regarding data quality have been found in this dataset:

**Broadness** The dataset comprises attacks ranging from 1969 to 1950 and spanning the entire globe. Simple and relevant explanations for the graph formation or properties are not likely to be found, since the mechanisms behind two different attacks can be entirely different.

**Structure** Half of the nodes are isolated, hence the topological information they carry in the graph is very limited. What is more, because of the transitivity relation described ?????, connected components are in most of the cases complete, hence isotropic.

**Reliability** Errors have been found in the data. For example nodes `Djibouti_Youth_Movement_1` and `Armed_Islamic_Group_19950711` have been connected, whereas the first attack took place in Djibouti [1]

## 4 Predictions

Table 1: *Prediction accuracy for different node distance weightings*

Weighting		Best skewness $\zeta$	Accuracy
Gaussian:	$w = e^{-d^2/\zeta} - e^{-1/\zeta}$	0.01	50.5 %
Log-Exponential:	$w = e^{-d} \log \left( \frac{1+\zeta}{d+\zeta} \right)$	0.1	50 %
Linear:	$w = 1 - d$	N.A.	47 %
Square:	$w = \begin{cases} 1 & d < \zeta \\ 0 & \text{otherwise} \end{cases}$	0.1	43 %

## 5 Conclusion

## References

- [1] Amnesty International Publications, 1 Easton Street, London. *Amnesty International Report 1991*, 1991.