

# Spatio-Temporal Analysis of Ethnic Conflicts and Human Rights Violations in Africa and the Middle East

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*Our entry to the SBP-BriMs 2016 Data Challenge focuses on the studies of Ethnic conflicts and Human Rights violations, and their relations with socio-economic factors and/or unstable governments in certain countries of the African continent and the Middle-East.*

Ethnic heterogeneity is a characteristic feature observed in most countries and regions worldwide. However, ethnic conflicts are comparatively more frequent in certain regions and rare elsewhere. Ethnic heterogeneity does not necessarily breed war and its absence does not ensure peace. Even today, ethnic wars continue to be globally the most common form of armed conflicts, but the mechanisms that lead a society down the path of ethnic conflict are yet to be fully understood. What is more intriguing is the connection between democratization and the occurrence of ethnic conflict. While stable democracies are unlikely to wage war with other democracies, a country that is on an uncertain path towards a new social order may very well find conflicts between groups with opposing interests [1]. Human rights are internationally agreed values, standards or rules regulating the conduct of states towards their own citizens and towards non-citizens. The violation of human rights appears more associated with ethnic conflicts than abuses of economic and social rights [2]. Other political, economic and social preconditions may also influence the causes of ethnic conflicts, and the conscious promotion by the political actors of any polarizing dimension based on these factors is sufficient to lead to conflict. Therefore, spatio-temporal analyses of regional conflict formations and political dynamics, and the statistical studies of the different variables are crucial.

We focus our attention only on certain countries from Africa and the Middle East, with the following objectives:

1. Spatio-temporal distributions of ethnic conflicts and human rights violations,
2. Statistical analyses of GDP, GNI and HDI and correlations with the media reports of ethnic conflicts and human rights violations,
3. Trends and impact of ethnic conflicts and human rights violations from media reports.

**Datasets 1. GDELT Event Database** We have extracted sums of the number of articles with event codes pertaining to ethnic conflict, human rights

violations and leadership and regime type changes in countries of Africa and Middle-East from 1980-2014. We normalised this data with the total number of articles per year and country.

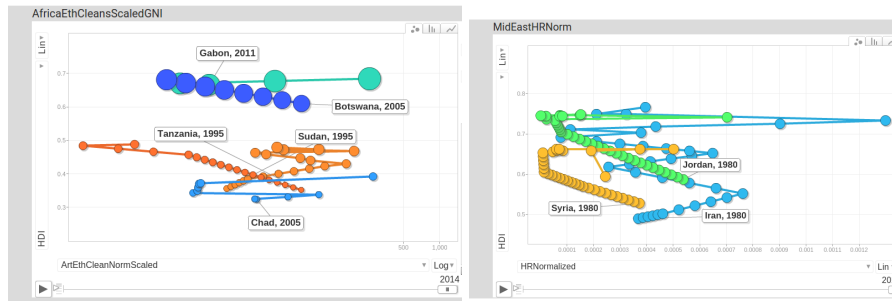
**2. Human Development Index** We have taken HDI data for countries from United Nations Development Programme [4] for multiple years in the period 1980-2014.

**3. Gross National Index** We have taken GNI data for countries from United Nations data portal [5] for multiple years in the period 1990-2014.

**Methodology and analyses:** For the analysis we have use iFuse [6], our visual analytics platform fusion of data from different sources using Bayesian Graphical Models. The platform provides rich interactive visualizations, such as motion charts, parallel coordinates and map-based charts as well as intuitive visual interfaces for value-imputation or model-based predictions.

Figure 1 (a) shows the correlation between ethnic cleansing articles, HDI and GNI for certain African countries. We find a negative correlation between HDI, GNI and ethnic cleansing, as in Botswana and Tanzania. However, this is not the case with Chad and Sudan. Finally, a number of articles talk about ethnic cleansing in Gabon even with its high HDI and GNI. These are likely to have positive tone as Gabon is well known for its multiple peacefully co-existing ethnicities.

Figure 1 (b) shows the correlation between HDI and human rights violations in Middle East countries. We observe that with a significant increase in HDI, counts of human rights violations reduce. However, they tend to increase with marginal growth in HDI.



(a)

(b)

**Fig. 1.** (a) Correlation between Ethnic Cleansing, HDI and GNI for African Countries, (b) Correlation between HDI and Human Rights Violations in Middle East countries

## References

1. Judith Vorrath, Lutz Krebs and Dominic Senn, *Linking Ethnic Conflict & Democratization: An Assessment of Four Troubled Regions*, June 2007

2. Oskar N.T. Thoms & James Ron, *Do Human Rights Violations Cause Internal Conflict?*, Human Rights Quarterly 29, 674-705, 2007, Johns Hopkins University Press
3. National Sample Survey Office (NSSO) [http://mospi.nic.in/Mospi\\_New/site/inner.aspx?status=3&menu\\_id=31](http://mospi.nic.in/Mospi_New/site/inner.aspx?status=3&menu_id=31)
4. Human Development Index <http://hdr.undp.org/en/content/human-development-index-hdi>
5. Gross National Income [http://data.un.org/Data.aspx?d=WDI&f=Indicator\\_Code\%3ANY.GNP.PCAP.PP.CD](http://data.un.org/Data.aspx?d=WDI&f=Indicator_Code\%3ANY.GNP.PCAP.PP.CD)
6. iFuse <http://apps.web2labs.net/BDFusion/HomePage.html>