Non State Actor (NSA) Mass Atrocities

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Research Question

Given that a non state actor commits mass atrocity, what conditions make it worse?

The recent surge in rebel conflicts such as those by Islamic State in Iraq and Syria (ISIS) has led to an urgent need in examining their characteristics for policy research in politics and international relations. Armed conflicts often take place in heavily populated areas and can significantly affect the cultural, economic and social conditions of a region. Understanding the behavior of these groups can be of significant help to policy interventions in conflict resolution, peace negotiations and humanitarian relief. Using a data driven approach, our project aims to answer some key research questions pertaining to these nonstate actor mass atrocities.

Basic Terminologies and Data Description

Non State Actor : In political science and international relations, a state actor is an individual or an entity that is officially recognized or supported by a sovereign government. For example, the United States Government or the FBI or CIA are state actors.

A non state actor is an individual or an entity which has considerable political influence but is not official supported by a sovereign government. Notable examples of non state actors include terrorist organizations like ISIS and Al Qaeda.

Mass Atrocity : There is no universally accepted definition of a mass atrocity but it generally refers to large scale and deliberate attacks on civilian population.

Data

The source of our data is the Non-State Actor Mass Atrocities dataset (Dataset's Homepage) compiled by Dr. Cyanne E. Loyle, an assistant professor at IU's Political Science department [1]. The dataset contains 501 observations on 36 variables related to NSA conflicts. Because there is no universally accepted definition of NSAs, the original creator of the dataset has defined a nonstate actor as rebel groups and pro-government militias (PGMs) only. Additionally, the dataset includes only those groups that have been formed between 1 January 1989 to 31 December 2007. Our variables of interest from the dataset are divided into three categories:

I. IDENTIFICATION VARIABLES

- **UCDPID** (ucdpid): UCDP (Uppasala Conflict Data program) ID for the conflict in which a group was involved.
- **Country** (country): Country name in which the armed conflict is taking place.
- **Regime Type** (regime_type): Regime type for the country in which the armed conflict is taking place, averaged over the groups lifespan. 0 = Democracy, 1 = Anocracy, 2 = Autocracy.
- **Region** (region): Within which region does conflict occur? 1 = Europe, 2 = Middle East, 3 = Asia, 4 = Africa, 5 = Americas, Semi-official (refers to disputed territories)
- **Total Civilian Deaths** (deaths_civilians): Estimated number of civilian deaths attributed to NSA group

II. GROUP CHARACTERISTICS

- **PGM** (pgm): Codes whether or not the group is a pro-government militia. 0= No, 1= Yes

- **Rebel** (rebel): Codes whether or not the group is a rebel group. 0= No, 1= Yes
- **Group Duration** (group_duration): Records how many years between 1989 and 2007 a group is active.
- **Islamist** (islamist): Codes whether or not a group expresses an islamist ideology. 0= No, 1= Yes.
- **Ethnic Membership** (ethnic_membership): Records whether or not the group recruits ethnically. 0= No, 1= Yes
- **Political Party Link** (pol_party_link): Codes whether or not the group has a link to an existing political party. 0= Group not linked to a political party, 1= Group is linked to a political party

III. CONFLICT CHARACTERISTICS

- **Incompatibility** (incompatibility): What is the primary incompatibility of the conflict. 1 = Incompatibility concerning territory, 2 = Incompatibility concerning government
- **Battle Deaths** (battle_deaths_total): How many total battle deaths occurred in the conflict between 1989 and 2007(continuous). This variable was found to be right skewed and hence was log transformed.
- **Rebels in Conflict** (rebels_in_conflict): Total number of rebel groups in the armed conflict in which a NSA group is active

Univariate Summaries

A quick summary of our data based on the group and conflict characteristics is given below:

Country Wise Statistics

Country	Deaths
Democratic Republic of Congo (Zaire)	35235
Yugoslavia	28647
Iraq	13982
Liberia	12807
Sierra Leone	8206
India	7555
Sudan	7412
Congo/Zaire	4657
Rwanda	4548
Angola	4369

Group and Conflict Variable Summaries

Variable	Value	Deaths
Islamist	No	126795
Islamist	Yes	30291
Political Party Link	No	135330
Political Party Link	Yes	21756
Ethnic Membership	No	23481
Ethnic Membership	Yes	133605
Incompatibility Type	territory	44246
Incompatibility Type	government	112840
Regime Type	Democracy	18596
Regime Type	Anocracy	56553
Regime Type	Autocracy	81937
PGM Group	No	98933
PGM Group	Yes	58153
Rebel Group	No	58153

Variable	Value	Deaths
Rebel Group	Yes	98933

The results line up with facts and conventional wisdom. The mass atrocities committed by nonstate actors between 1989 and 2007 took place during four major conflicts: (a) the international war in the Democratic Republic of Congo (Zaire), (b) The breakup of former Yugoslavia (c) conflict in Iraq and (d) the civil war in Liberia. It seems that most of the conflicts took place in Asia, Africa and the Middle East.

The group and conflict characteristics also reveal some important insights. Ethnic Membership seems to be an important factor contributing to mass atrocities. Most of the atrocities seem to happen in autocracies (dictatorships) and this correlates with the deaths associated by incompability type due to government.

Response Variable

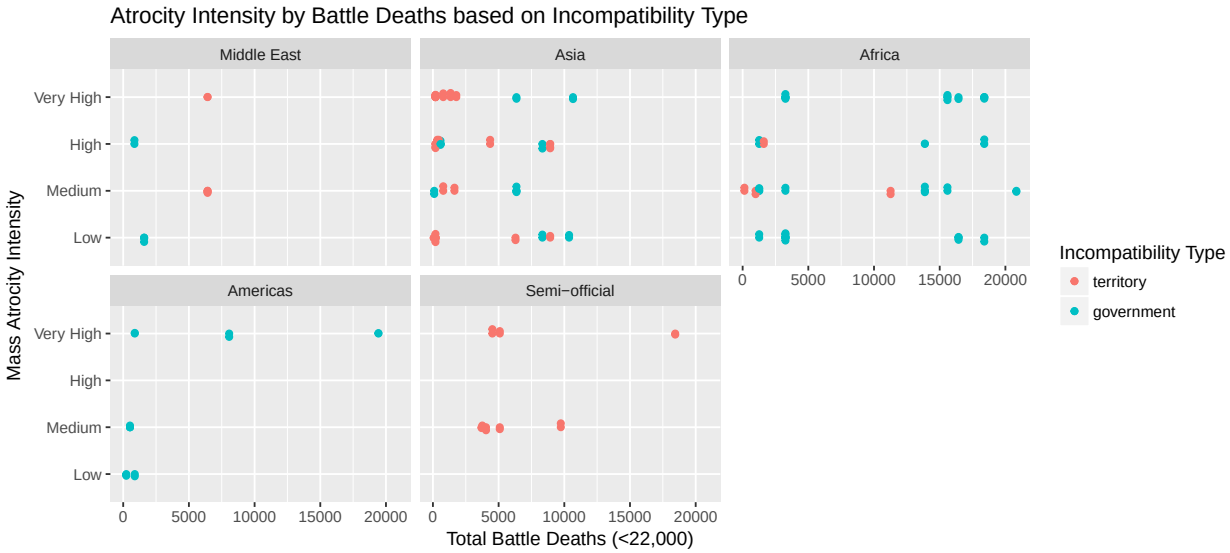
We define our resoponse variable as **Mass Atrocity Intensity** (death_civilian_cat) which is constructed from *deaths_civilians* as follows:

- **Low**: Civilian Deaths less than 50
- **Medium**: Civilian Deaths between 50 and 200
- **High**: Civilian Deaths between 200 and 500
- **Very High**: Civilian Deaths greater than 500

After preprocessing our data, we study the 119 observations of non state actor mass atrocities. The response variable is summarized below:

Atrocity Intensity	Observations
Low	28
Medium	32
High	21
Very High	38

Graphical Summaries and Statistics



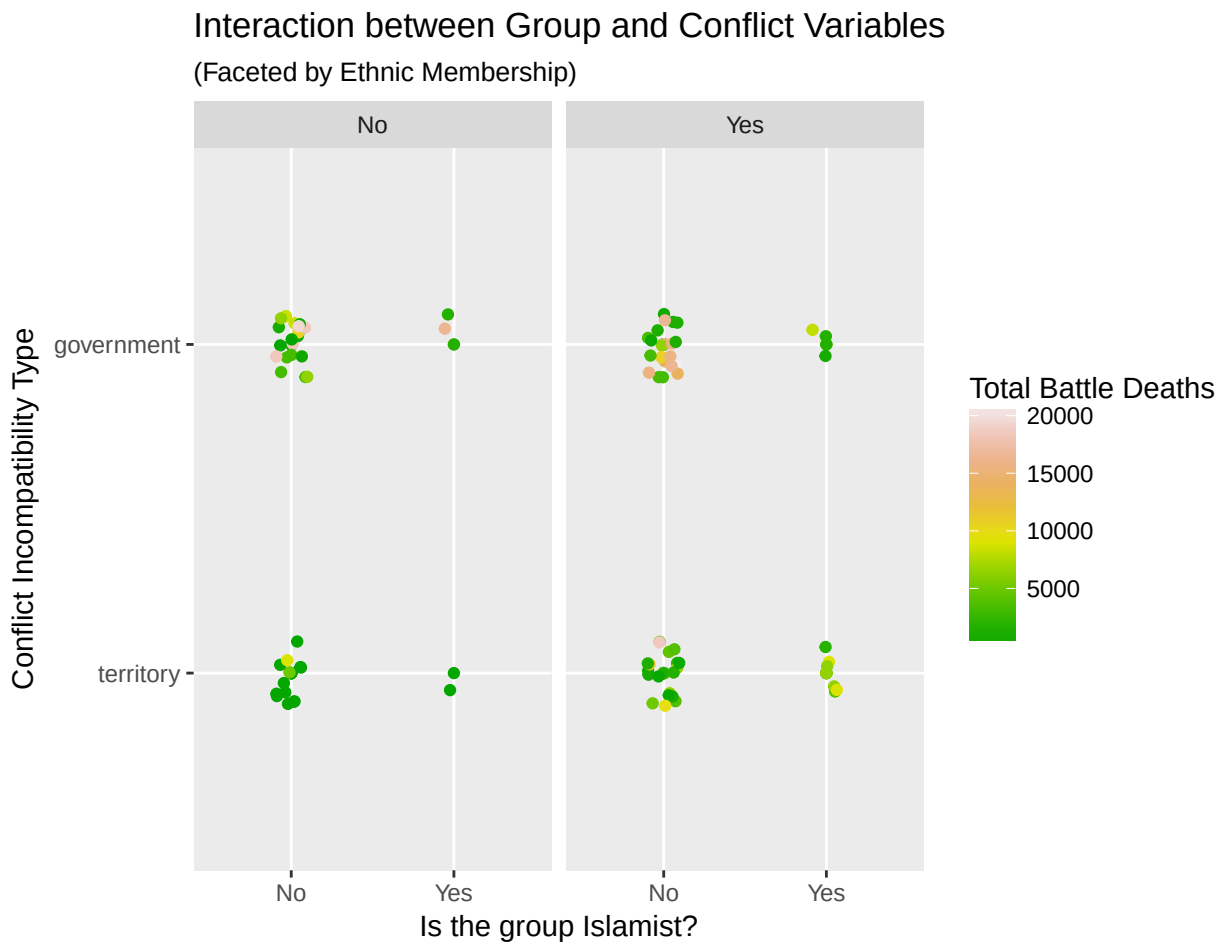
The above plot shows how atrocity intensity is affected by battle deaths and incompatibility types. Clearly, there is a difference in atrocity patterns across different regions. Atrocities in Asia and Africa are primarily due to groups conflicting with the government while those in semi official regions are unsurprisingly due to

territorial disputes.

The above plots reveal that there is a sharp difference in the patterns of atrocities committed by rebel and PGM (Pro Government Militia) groups. Most of the rebel groups in Asia, Africa and Middle East tend to hire based on ethnic membership while PGM groups don't. This aligns with the fact that most of the rebel groups (like ISIS) are primarily formed on the basis of some form of ethnic ideologies (Wahabbi Islam) with their primary motive being replacing the current government with their own type of governance.

Interaction between Group Characteristics and Conflict Characteristics

The figure on the next page shows the relationship between group and conflict variables. It seems that battle deaths are the highest when the group tends to hire by ethnic membership but is not islamist and the conflict is primarily due to issues with the government. Thus, it seems that while Islamist and Ethnic Membership might not be strongly correlatec (or somewhat), there is an interaction between these two with incompatibility type and battle deaths.

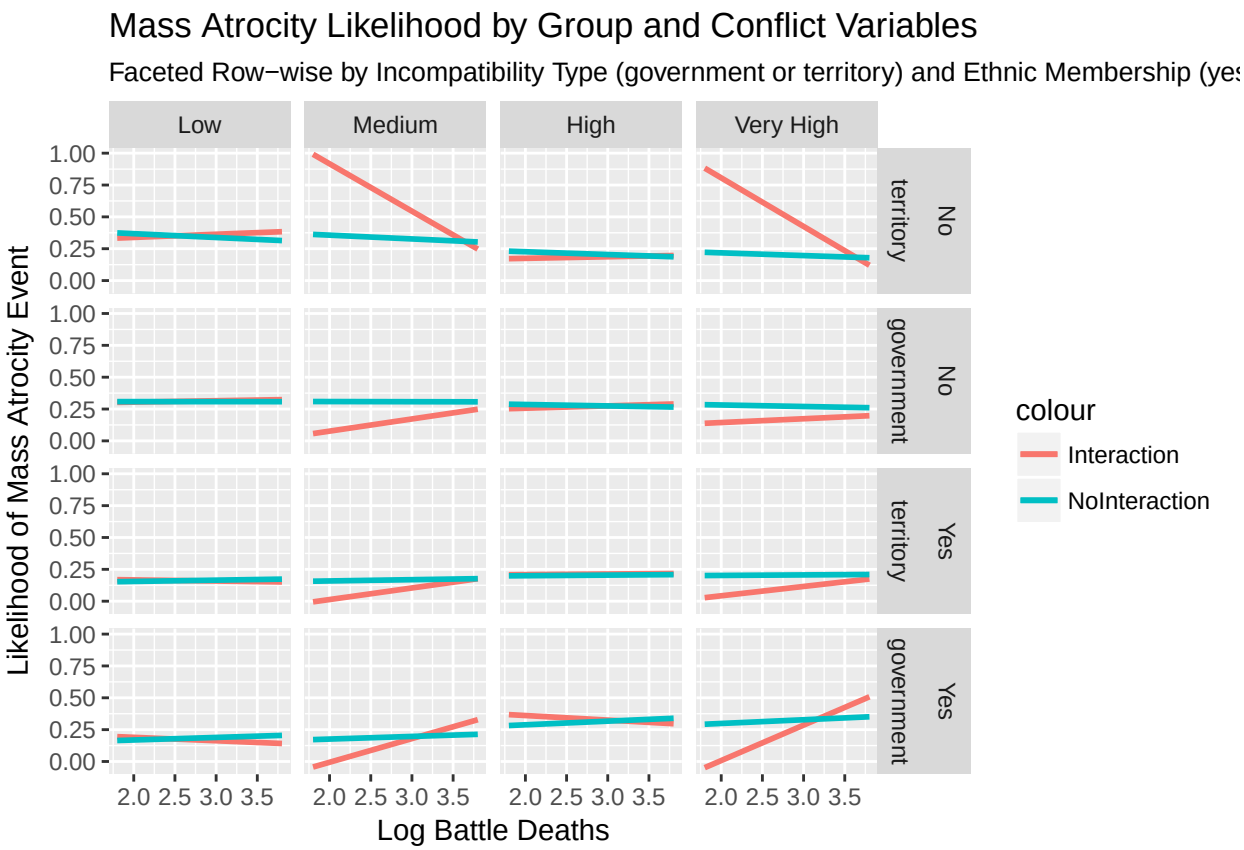


Predicting the likelihood of Mass Atrocity Event Intensity from Group and Conflict Characteristics

We now use **ordered logistic regression** to model the likelihood of an atrocity event due to group variables Islamist and Ethnic Membership and conflict variables Battle Deaths and Incompatibility. The variable Battle Deaths was log transformed due to right skewness. The model was considered on the full sample with distinguishing the groups as Rebel or PGMs.

The figure on the next page shows the fits for the models with and without interactions (between incompatibility, battle deaths and islamist variables). Row-wise, The plot is faceted by Incompatibility Type (government or territory) and Etnic Membership (Yes or No) while the columns indicate the atrocity intensity level.

Clearly, having an interaction makes a difference. The most noticable difference is when the atrocity event intensity is categorized as 'Very High'. It seems that the atrocity event has a probability of getting worse whenever a group recruits based on ethnic membership and the conflict is involved due to dispute with the government. Groups involved in conflicts due to territory don't necessarily tend to hire based on ethnic groups. In conditions where the civilian deaths are between 50 to 200 (medium), the atrocity intensity tends to get worse except when the conflict is involved with regards to a territory and the NSA group doesn't hire based on ethnic groups.



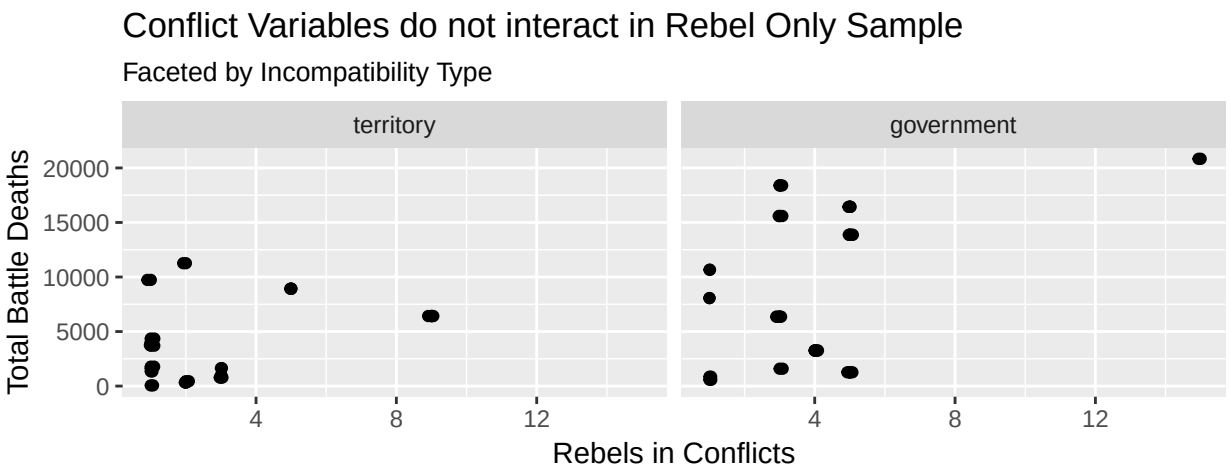
Mass Atrocity Event Characteristics for PGM and Rebel Groups

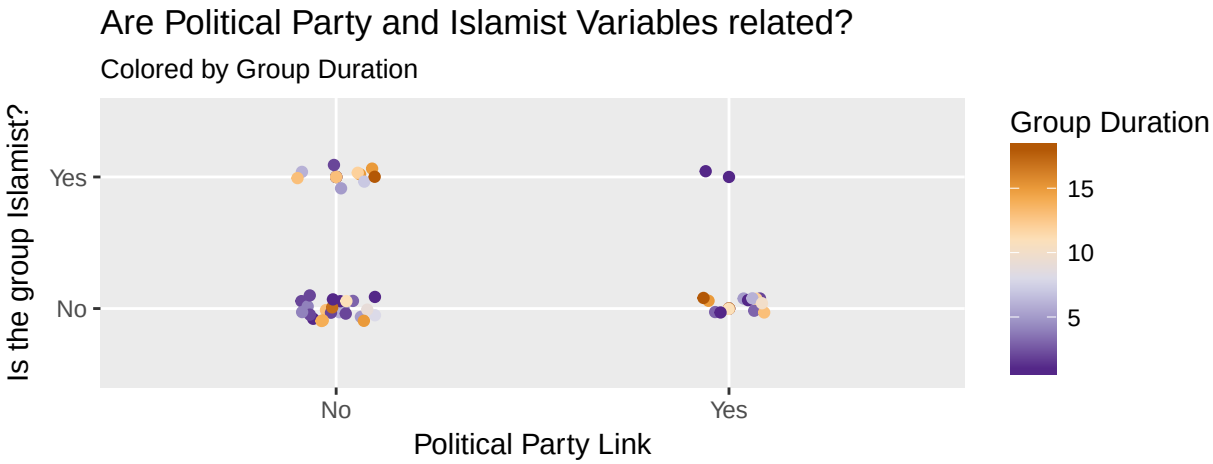
Our descriptive and graphical summaries revealed that there is a noticable difference in how PGM and Rebel groups conduct mass atrocities. We decided to dive deeper and investigate separate models for PGM and Rebel groups.

Rebel Only

Based on our exploration, we noticed that our variables of interest that fall in the conflict characteristics (Incompatibility, Battle Deaths and Rebels in Conflict) have no effect on the response variable for the rebel only sample. The model for atrocity event predicted by conflict characteristics for rebel only sample is provided in the Appendix for reference on this. In this section, We only consider the group characteristics (Islamist, Political Party Link and Group Duration) to predict our response variable.

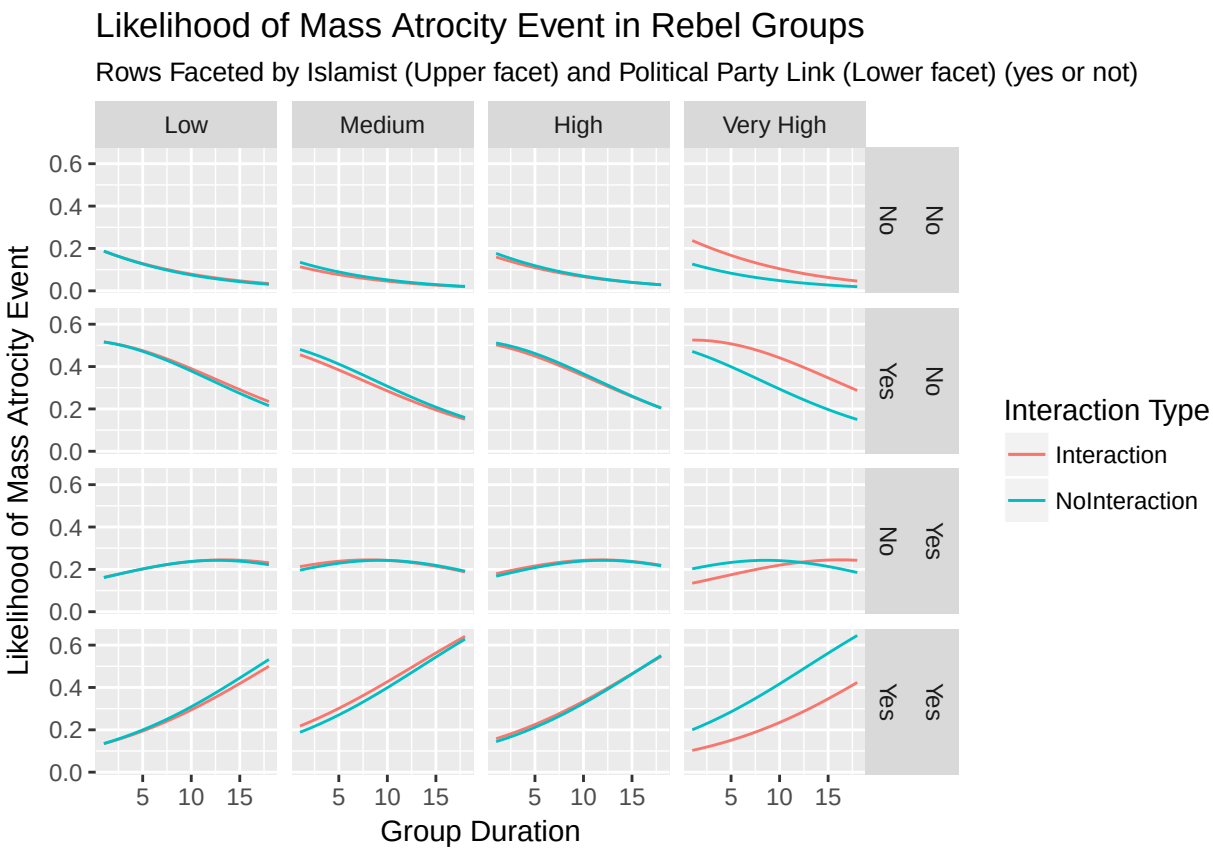
From the second plot on the next page, it is somewhat clear that Islamist parties tend to stay for longer years in the conflict when they are not linked with political parties and vice versa.





Predicting Mass Atrocity Intensity for Rebel Only Sample

We fit an ordered logistic regression model that predicts the mass atrocity likelihood based on the group characteristics for rebel only sample. The plot on the next page displays the fit of the model with and without interaction. The interaction makes a difference when atrocity deaths are greater than 500 (Very High). It seems that the atrocity events worsens when the group stays for a longer duration and is both an Islamist and linked to a political group. The atrocity events tends to not worsen when the group is not an islamist but is linked to a political party. This correlates with an important observation on Colombia's FARC (Revolutionary Armed Forces of Colombia) which started as a rebel group but later aligned with a poltical party to negotiate a peace deal.



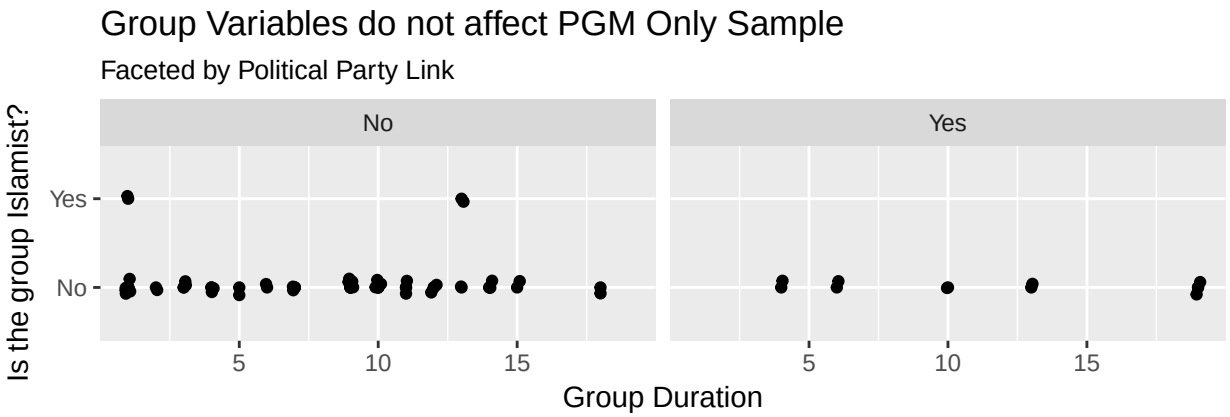
Pro Government Militias (PGM) Only

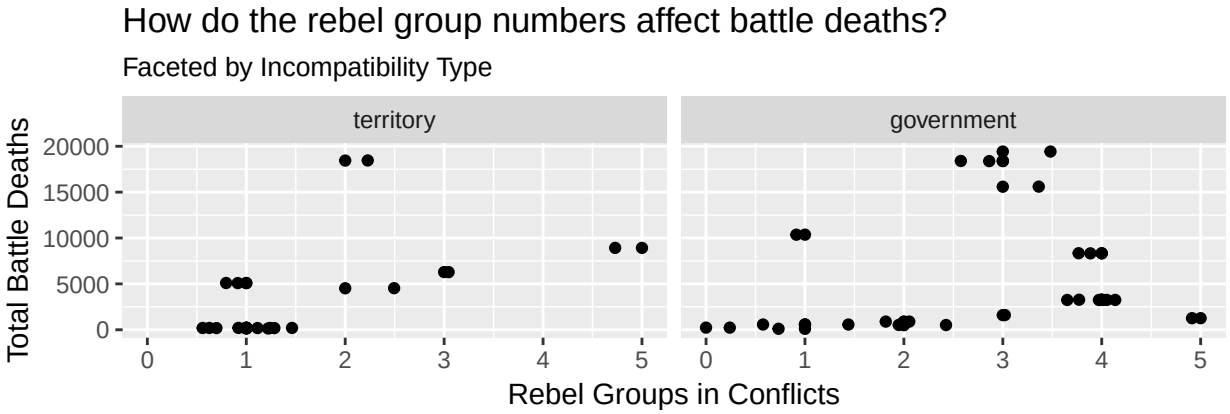
In contrast to Rebel only sample, the PGM only sample is significantly affected by conflict characteristics and not by group characteristics. Hence, We do not consider group variables in the model described in this section.

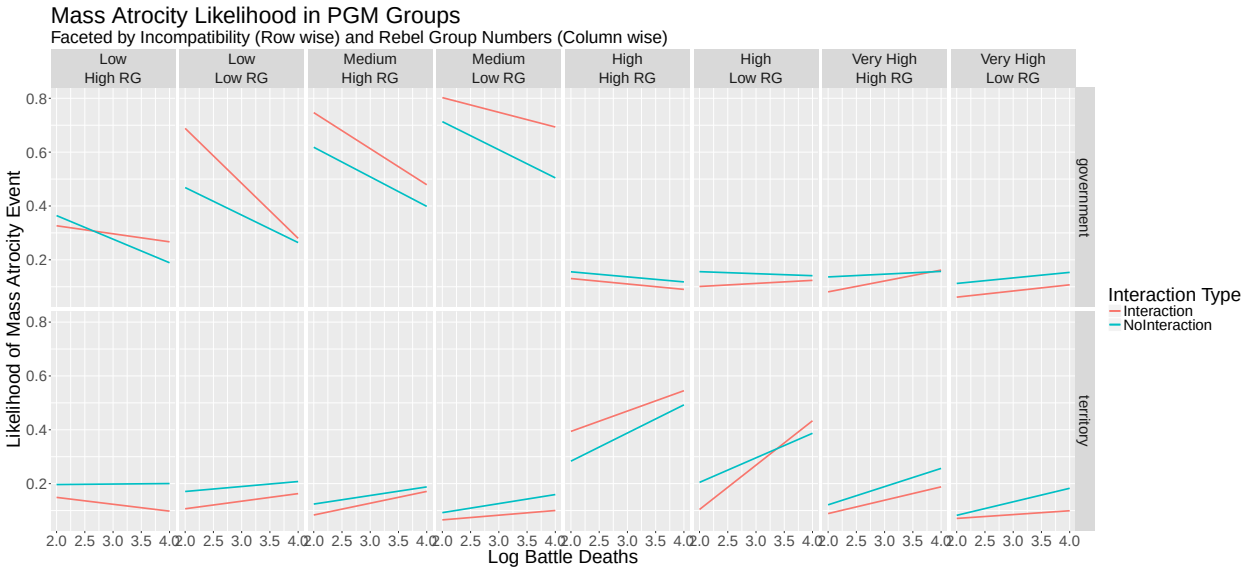
The second plot on the next page shows the relation between battle deaths and the number of rebels in conflict. Our reason to select the variable *rebels_in_conflict* (number of rebel groups in conflict) was that PGM groups and rebel groups tend to clash with each other during conflicts, this could be indicative of the atrocity event.

Predicting Mass Atrocity Intensity in PGM Only Sample

We fit an ordered logistic regression model that predicts the mass atrocity likelihood based on the conflict characteristics for PGM only sample. For the model, we converted the *rebels_in_conflict* variable to two categories (Low RG and High RG) based on it's value above or below the median. The third plot on the next page displays the fit of the model with and without interaction. Having an interaction doesn't really make any difference except for a few cases. For low and medium intensity atrocities related to incompatibility with the government, their likelihood surprisingly decreases as battle deaths increase. In case of territorial conflicts, the atrocity intensity increases slightly with battle deaths and rebel group numbers.


Group Variables do not affect PGM Only Sample
Faceted by Political Party Link
No
Yes
Is the group Islamist?
Yes
No
5
10
15
Group Duration


How do the rebel group numbers affect battle deaths?
Faceted by Incompatibility Type
territory
government
Total Battle Deaths
20000
15000
10000
5000
0
0
1
2
3
4
5
Rebel Groups in Conflicts


Mass Atrocity Likelihood in PGM Groups
Faceted by Incompatibility (Row wise) and Rebel Group Numbers (Column wise)
Low
High RG
Low
Low RG
Medium
High RG
Medium
Low RG
High
High RG
High
Low RG
Very High
High RG
Very High
Low RG
government
territory
Likelihood of Mass Atrocity Event
0.8
0.6
0.4
0.2
2.0 2.5 3.0 3.5 4.0
Log Battle Deaths
Interaction Type
Interaction
NoInteraction

Conclusion and Future Work

Conclusion

Given a mass atrocity happens, a number of unique factors tend to make it worse. Firstly, the intensity of mass atrocity events is significantly higher when the conflict is involved as a dispute with the government. While more analysis is needed, this could indicative of an observation that mass atrocities by non state actors happen where the government itself is conducting atrocities on civilian population.

Non state actors are clearly driven by group characteristics, especially ethnic memberships and islamist ideologies. NSA Groups that tend to hire based on ethnicity and certain ideologies have a significantly higher chance of making an atrocity worse, as evident by examples such as ISIS in Syria.

The atrocity behaviors of PGM and Rebel groups are signficantly contrasting. Rebel groups are formed with certain ideologies and tend to target the existing government while PGM groups are usually linked with political parties and tend to participate in territorial disputes.

Limitations and Future Work

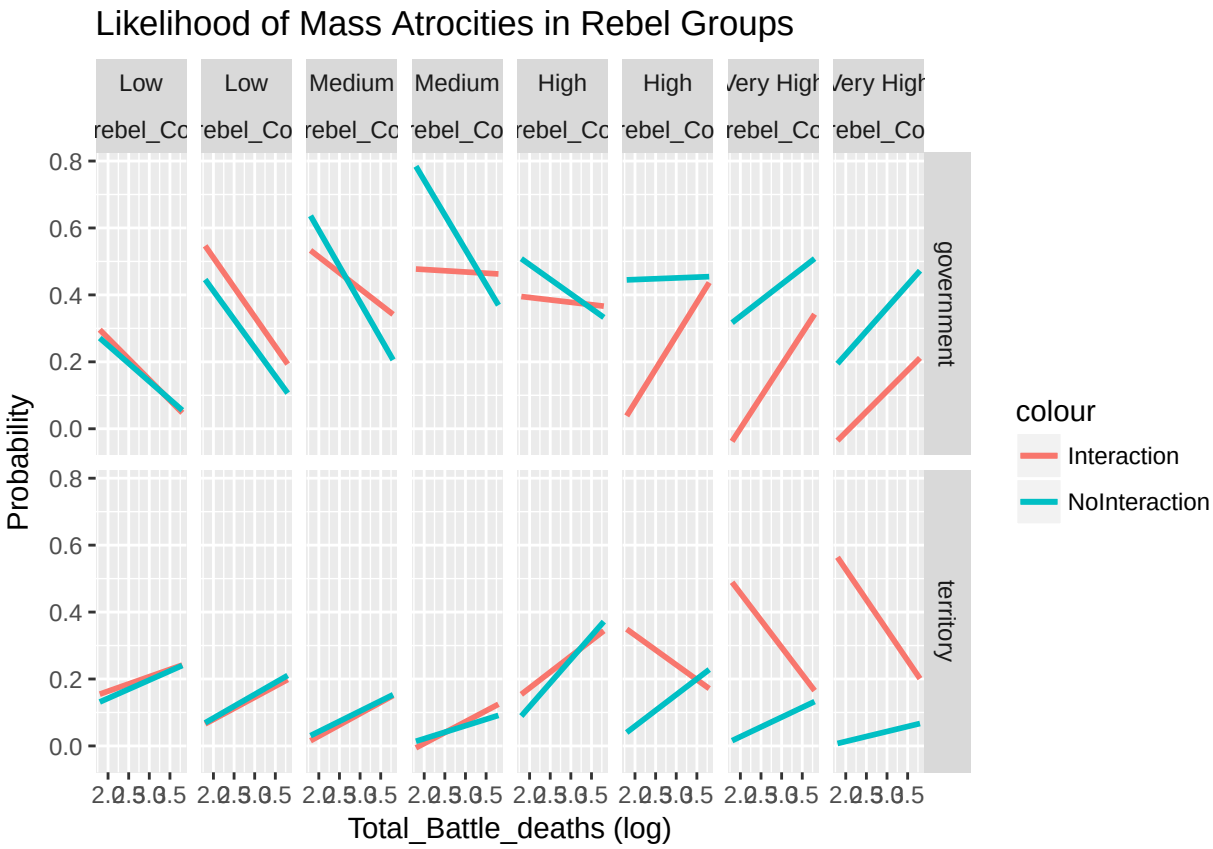
Our study was limited by the variables of interest we chose. We did not consider the region variable in the model since it correlated with every other variable and it would make greater sense to investigate models separately for each region. Additionally, the consideration of other group variables for PGM sample model (we considered only conflict variables for this) such as separatist might affect the model performance, similarly in case of considering other conflict variables in rebel group samples. Additional future work for the project includes examining separate models on death thresholds.

APPENDIX

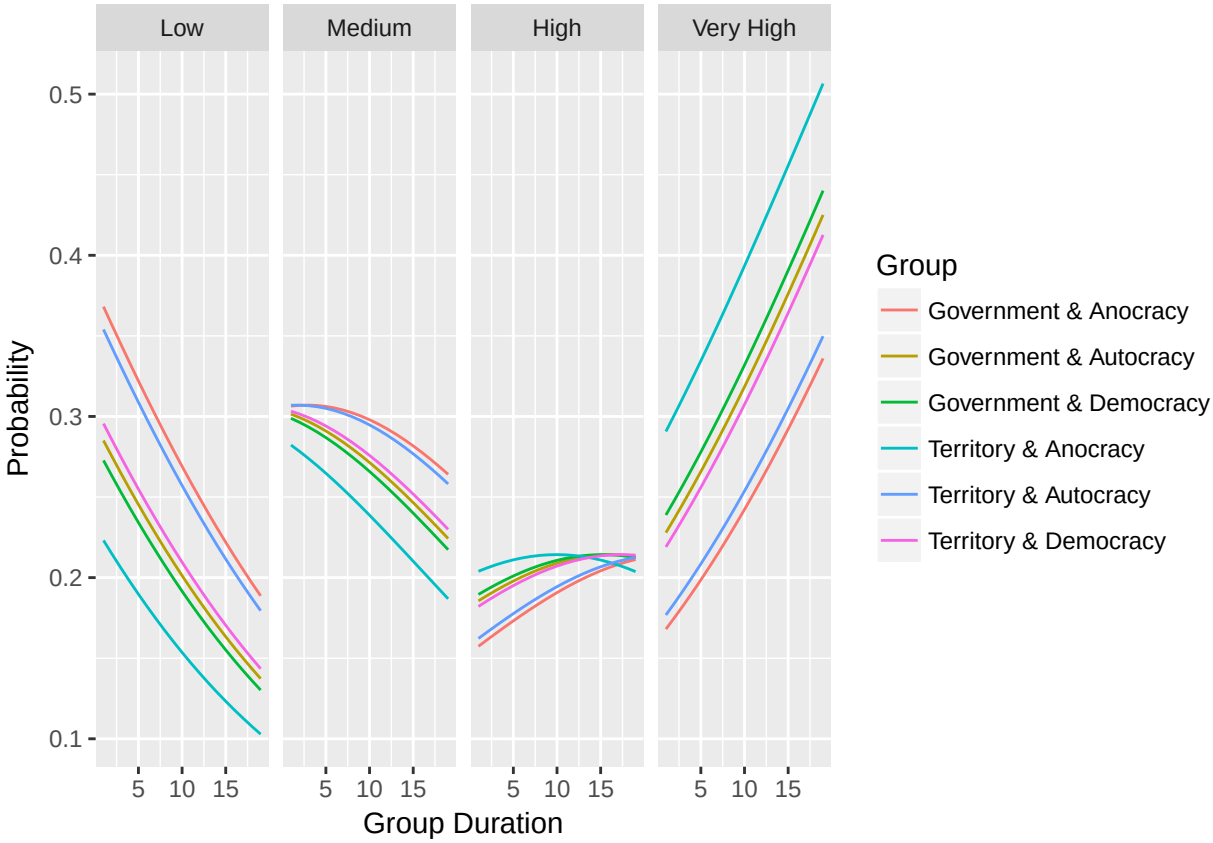
1. Model for Rebel Groups and Conflict Characteristics

```
## polr(formula = death_civilian_cat ~ incompatibility + battle_deaths_log +
##     rebels_in_conflict, data = nsa_rebel, Hess = TRUE)
##                     coef.est coef.se
## incompatibility.L    0.07     0.41
## battle_deaths_log    0.86     0.55
## rebels_in_conflict -0.19     0.11
## Low|Medium           0.13     1.86
## Medium|High          2.32     1.86
## High|Very High       3.29     1.88
## ---
## n = 47, k = 6 (including 3 intercepts)
## residual deviance = 117.4, null deviance is not computed by polr
```

```
## polr(formula = death_civilian_cat ~ incompatibility * battle_deaths_log *
##     rebels_in_conflict, data = nsa_rebel, Hess = TRUE)
##                                                          coef.est coef.se
## incompatibility.L                                         0.47     5.58
## battle_deaths_log                                         0.75     1.07
## rebels_in_conflict                                       -0.39     1.58
## incompatibility.L:battle_deaths_log                       0.31     1.52
## incompatibility.L:rebels_in_conflict                     -1.92     2.25
## battle_deaths_log:rebels_in_conflict                      0.04     0.41
## incompatibility.L:battle_deaths_log:rebels_in_conflict    0.41     0.59
## Low|Medium                                               -0.62     3.96
## Medium|High                                               1.80     3.94
## High|Very High                                            2.87     3.94
## ---
## n = 47, k = 10 (including 3 intercepts)
## residual deviance = 111.3, null deviance is not computed by polr
```



2. Model for regime type and type of conflict


Low
Medium
High
Very High
Probability
0.5
0.4
0.3
0.2
0.1
5
10
15
Group Duration
Group
Government & Anocracy
Government & Autocracy
Government & Democracy
Territory & Anocracy
Territory & Autocracy
Territory & Democracy