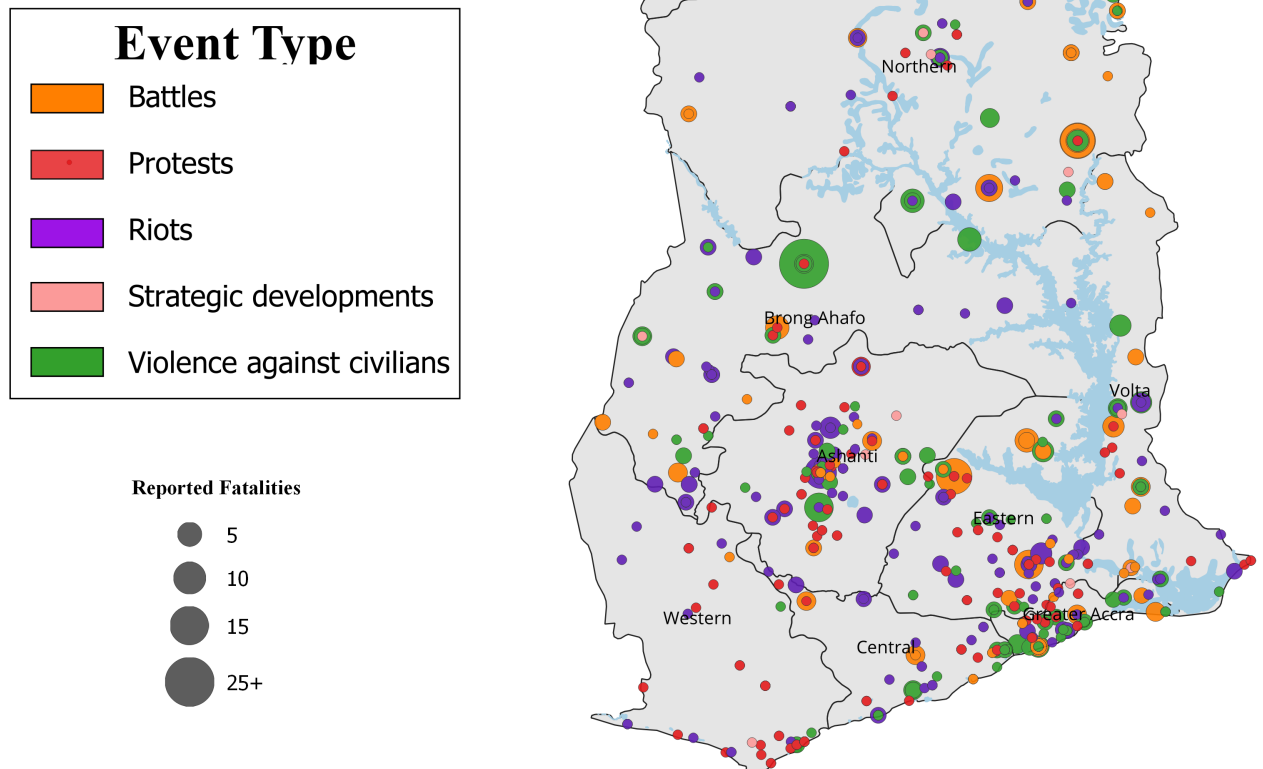# Empirical Conflict Assignment

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**Political & Conflict Events in Ghana (2010 - 13 nov 2021)**

Event Type

- Battles
- Protests
- Riots
- Strategic developments
- Violence against civilians

Reported Fatalities

- 5
- 10
- 15
- 25+

From 2010 to today a total of 1276 events was reported in ACLED data. The majority of events take place in Greater Accra, and in the center of the country, no conflict at the borders with neighboring countries. Most events are *Protest*, 38% of event, following by *Riots*, 27% of event, *Violence against civilians*, 19% of event, *Battles*, 13% of event and *Strategic developments*, 3% of event.

Total repoted fatalities by year

Political violence & protest events in Ghana (2010 - 13 nov 2021)
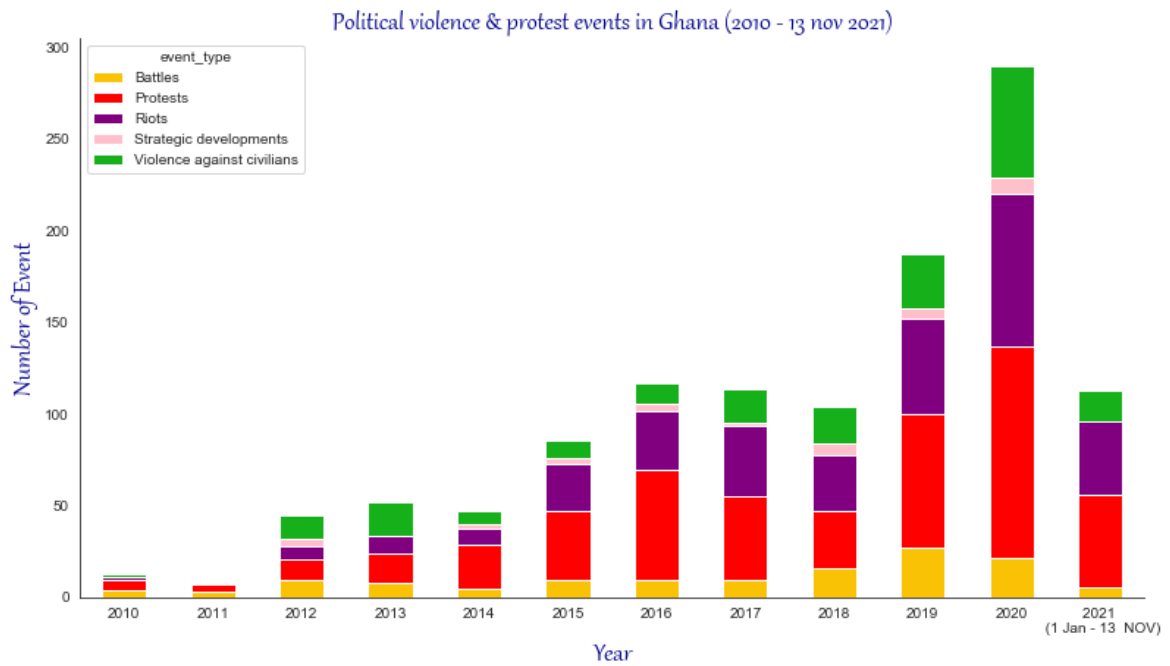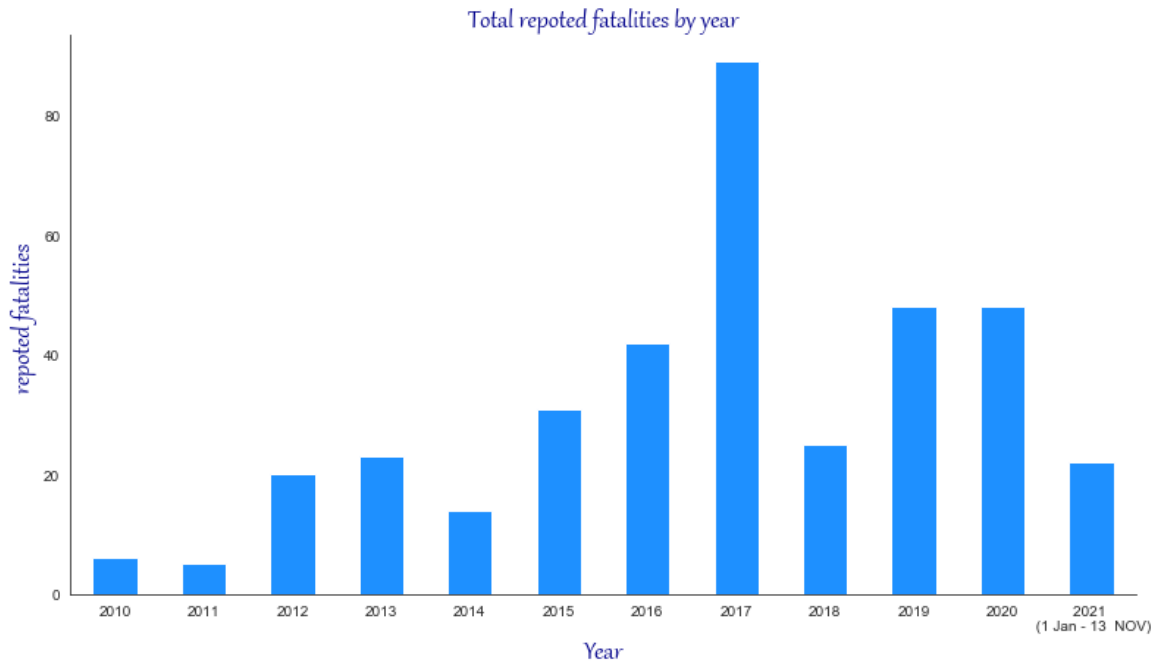
From the two figure above, three year can hold our attention, (2017, for it higher number of reported fatalities) and (2019,2020 , for their higher number of event). Most of the events are protests and riots, and most of them occurred in 2020. This many protest show that citizen are not agree with decision making and want to change thing by protest which usually end in riots.

Total repoted fatalities by Event type and Interaction in 2017
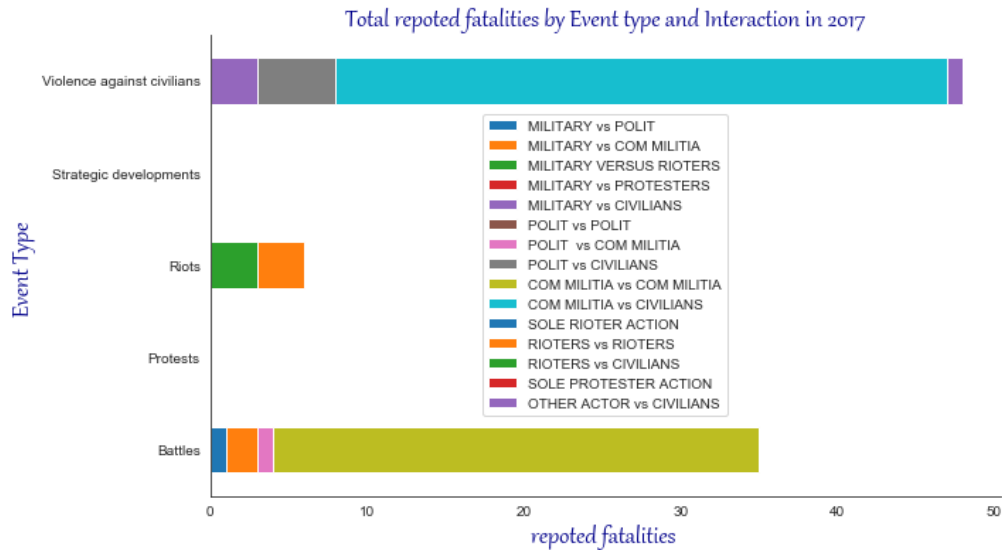
Zoom in in year 2017, Battles and Violence against civilians cause the most death. Looking at the legend we can see that it's the interaction between communal militia against communal militia who cause the most death in Battles and also the most death of civilians is perpetrator by communal militia. This show that , communal militia cause more than 85% of the total reported fatalities in 2017.

Looking over the past ten years, in Battles, we can see that the most of battles each year are communal militia against communal militia (inter and intra communal violence), except in 2010 and 2011.

Interaction in Battles events (2010 - 13 nov 2021)
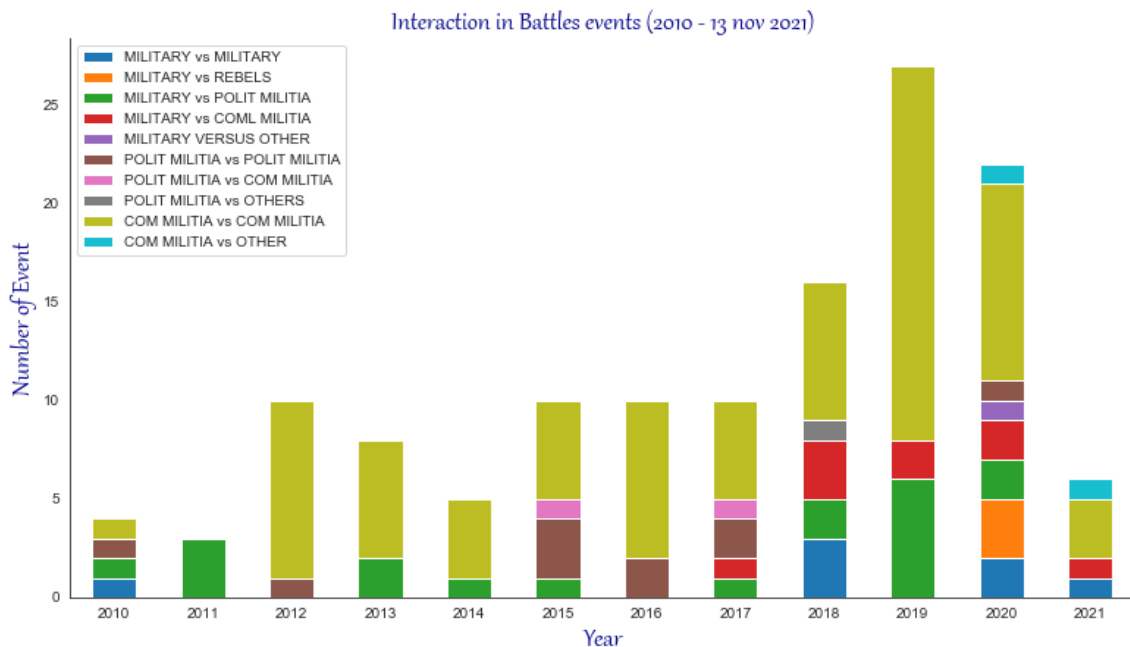
This show instability in the country at local level. The multitude of ethnic armed clash each year is not negligible when Ghana country, compared to many other African countries, has been described as a peaceful and stable country.

Ethnic conflicts - Top 20 actor involved
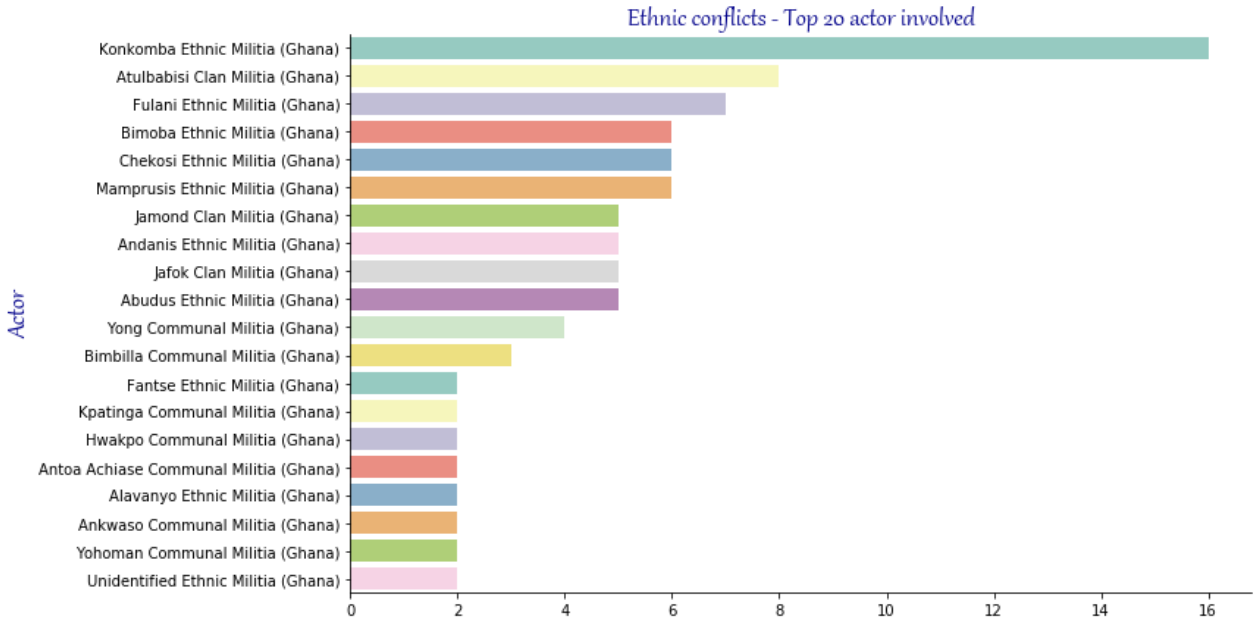
Edward and Felix (2013) in their article mention that there are several ethno-political and religious conflicts some of which have been ongoing in the country for several years. "The conflicts could be broadly categorized as inter - and intra - ethnic conflicts". Taking for instance **Konkomba Ethnic Militia**, their are the most involved in ethnic conflict, inter as intra ethnic conflicts. One inter conflict implied Konkomba Ethnic Militia is on 17 and 21 June 2016 "*Clashes between Fulani and Konkombas herdsmen on 17 and 21 June killed four Fulanis and a Konkomba in the Afram Plains South District. The initial clash is said to have taken place when a Konkomba man confronted the Fulanis as their cattle had strayed on his farm and damaged his crops, which led to his death. Four Fulanis were killed in reprisal attacks by the Konkombas.*" Also one intra conflict was recently happened "*On 6 May 2021, two Konkomba ethnic militias clashed at Tingban village near Saboba village (Saboba, Northern). One person was killed.The motive of the clash was due to a land dispute between clans.*"

Konkomba ethnic is classified as a minority ethnic in Ghana, Having religious leaders rather than paramount chiefs, they have limited political power and land rights. Mayoral & Ray (2021) show that a smaller group has a greater incentive to engage in conflict when the prize is private. And looking at the top 20 actor involved in ethnic conflict we notice that those ethnics militias are a minority ethnic group in Ghana. And since they have limited political power and land rights, they are more incentive in conflict to gain or to have more power and land rights, what we can consider as private prize.

Does Ghana Minority ethnic groups have greater incentive to engage in conflict?

Hypothesis, Methodologies & Data

To answer this question, We construct a dataset that has the structure of a raster grid: the units of observation are grids cells of 0.2 degree of latitude × 0.2 degree of longitude (approximately 22km × 22km). Our analysis is at the cell level. Our main dependent outcome is *ethnic_conflict*, a binary indicator, that is equal to 1 if there are at least one violent ethnic conflict in cell i. This variable is coded based on the ACLED dataset, discussed above. A conflict is an inter or intra ethnic conflict if the *Interaction = 44*
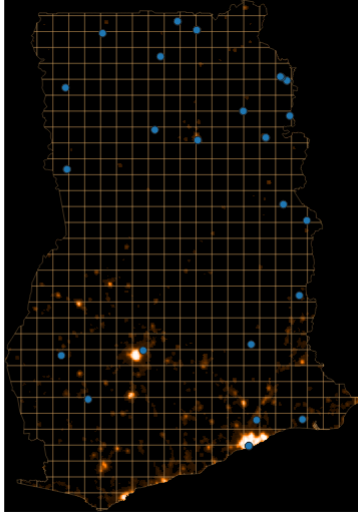
Ethnic groups

To be able to distinguish minority ethnic groups, we use like Mayoral & Ray (2021) the sample of ethnic groups from the dataset "Geo-Referencing of Ethnic Groups", or GREG (see (Weidmann et al., 2010). GREG is based on the Atlas Narodov Mira or ANV (Bruk and Apenchenko, 1964), created with the aim of locating and charting ethnic groups worldwide. It provides information on the homelands of 929 groups and employs a uniform classification of ethnicity that is consistent across state borders. We filter for Ghana, and found 12 ethnic groups. According to Halvard & Jan (2006), Assuming that the ethnicity in the capital is the majority ethnicity in the country, we define deviating regions as having a minority ethnic groups. Base on that we can observe that Akan group is the majority ethnic group and also large spread in Ghana. We have generated a dummy variable signifying whether the majority of the population in each cell does not belongs to Akan groups as the majority of the population in the capital city Accra. *Ethnicity* equal 1 if minority groups in cell i. With GREG, we have be able to generate *Ethnic_border* equal 1 if a cell i contain an ethnicity border.

Also we have generated three relevant explanatory controls variables that have values specific to each cell i. The first one is nighttime light intensity indicator, code *Light*. The data comes on a scale from 0 to 63, with higher values implying more intense nighttime light. Roland and Paul (2014) use nighttime light intensity as measure of economic shocks. Henderson et al. (2012) find a high correlation between changes in nighttime light intensity and GDP at the country level, and Hodler and Raschky (2014) document a similar relationship at the level of sub-national administrative regions. Several influential studies claim that the most prominent and robust factor associated with the occurrence of civil war is poverty. We use nighttime light intensity as proxy of regional development of Ghana. The variable $Light_i$ corresponds to the average nighttime light intensity of the pixels in cell i. The hypotheses is : H1: Nighttime light is negatively associated with the risk of ethnic conflict.

The second variable is cropland. Cropland include areas use for production of adapted crops for harvest. This is an importante variable since in Sub-Saharan Africa, the majority of the population is dependent on agriculture. Edward and Felix (2013) put out as one of the causes of ethno-political conflict in Ghana, the claims of ownership of land. The variable $Crop_i$ corresponds to the average cropland percentage in cell i. The hypotheses is H2: Cropland is positively associated with the risk of ethnic conflict

According to Halvard & Jan (2006) a government is less able to maintain control of the hinterlands because of the sheer distance from the center of state power, because of inferior knowledge of local conditions. Moreover, remote regions are harder to reach by government forces and are therefore ideal for organizing a rebellion. We generate $Husdist$, who gives distance (km) from the centroids of each cell i to the capital city (here Accra). The hypotheses is H3: Distance from the capital is positively associated with the risk of ethnic conflict.
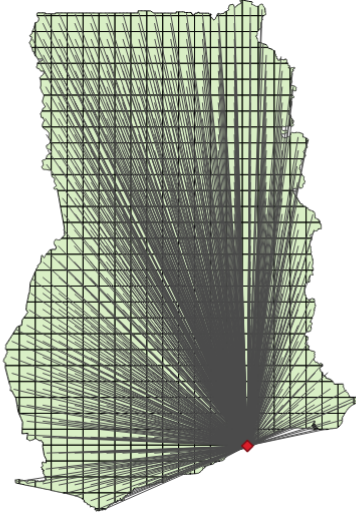
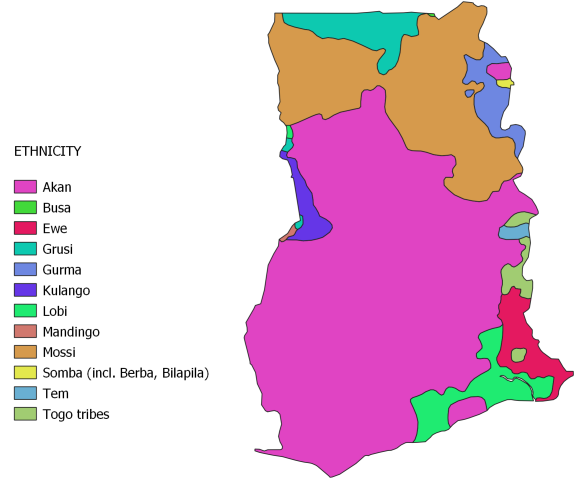In all, the dataset under study contains 557 observations.

Ghana Nighttime light in 2000 & Ethnic
Conflict
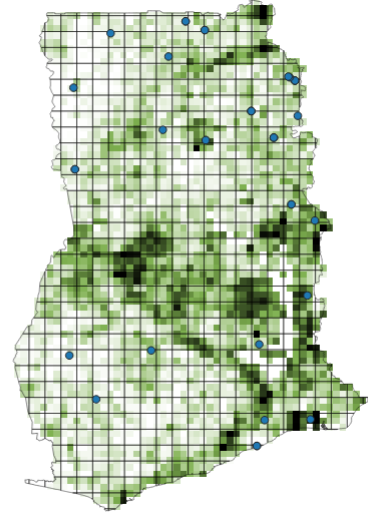
Ghana Cropland in 2000 & Ethnic
Conflict

Distance from the Capital Accra to the
centroids of each cell i

Ghana ethnic groups

The specification of the model is:

$$ethnic\_conflict_i = \beta_0 + \beta_1 Ethnicity_i + \beta_2 Ethnic\_border_i + \beta_3 Light_i + \beta_4 Crop_i + \beta_5 Husdist_i + \varepsilon_i$$

We evaluate the performance of the independent variables in a multivariate setting. The results from logit analyses of ethnic conflict are presented in Tables 3. We run a logit model since our dependent variable is a dummy variable. This dummy variable is preferred to using a count measure of the total number of conflict in each cell since the reasons why conflicts break out may be different even if happens in the same cell i

Result

Table 1: Summary Statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Light	557	0.893	3.818	0	0	0.4	56
Crop	552	0.263	0.193	0.000	0.116	0.366	0.987
HubDist	557	330.442	161.760	2.092	202.624	458.064	663.679
ethnic_conflict	557	0.077	0.267	0	0	0	1
Ethnic_border	557	0.266	0.442	0	0	1	1
Ethnicity	557	0.409	0.492	0	0	1	1

Table 2: Comparison of sample means: conflict and no-conflict cells

	ethnic_conflict	
	Yes	No
Crop	0.308390	0.258738
Light	3.005346	0.716827
Hubdist	348.967278	328.892194
Ethnic_border	0.465116	0.249027
Ethnicity	0.651162	0.389105
N	43	514

What separates peaceful areas from those that provided grounds for ethnic conflict in last ten year in Ghana? Descriptive statistics of the data (Table 2) show that grid cells with ethnic conflict are, on average further away from the capital, more develop, have main crop and more likely to contain an ethnic border and minority ethnic group than cells without ethnic conflict in the period.

Table 3: Logistique Regression Results

	(1)	(2)	(3)	(4)
	Dependent Variable: Ethnic Conflict			
	ethnic_conflict			
Ethnicity	1.0752***		1.0057***	0.7704**
	(0.3331)		(0.3784)	(0.3843)
Ethnic_border				0.7059*
				(0.3644)
Light		0.1074***	0.1028***	0.1084***
		(0.0285)	(0.0280)	(0.0295)
Crop		2.0456***	1.6286**	1.5410**
		(0.6945)	(0.7219)	(0.7721)
HubDist		0.0027**	0.0015	0.0018
		(0.0012)	(0.0012)	(0.0012)
(Intercept)	−3.0413***	−4.1263***	−4.1084***	−4.3294***
	(0.2648)	(0.5889)	(0.5699)	(0.6156)
Observations	557	552	552	552
Log Likelihood	−145.8985	−142.7108	−138.8081	−136.8426
Akaike Inf. Crit.	295.7969	293.4216	287.6162	285.6853

Note: *p<0.1; **p<0.05; ***p<0.01

Models (1),(3) and (4) provide similar evidence that minority ethnic group more involved in ethnic conflict in Ghana country. All coefficients are significant at the 5% level.

Model (2) show that our controls variables are very relevant for explain ethnic conflict since the coefficients are significant at the 5% level. The coefficients of *Light* and *Crop* are positive and statistically significant in model(3) and(4). In contrast The coefficient of *Hubdist* is not statistically significant .

Adding *ethnic_border* in model(4), we found the corresponding coefficient is positive and statistically significant at 10%.

Base on Akaike Inf, the best model is our specification model(4). Then, an increase in average nighttime light intensity by 1 unit, increase the risk of ethnic conflict by 0.11, which corresponds to an increase in this risk from around 7% to around 18% in an average cell. This mean more the Ghana country will develop higher will be the risk of having ethnic conflict. An increase in cropland percentage will increase as well the risk of ethnic conflict by 1.5%.

Be close to an ethnic border increase the risk of ethnic conflict and also be part of the minority ethnic groups.

Actor involved in Battles conflicts - Frequent words (400 sample)

Notes in Batlles Event- Frequent words (400 sample)

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