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# Youth resentment and violence: evidence from Burkina Faso

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## Abstract

The paper aims to highlight the impact of youth satisfaction (or dissatisfaction) on the occurrence of violent conflicts in Burkina Faso. This work takes advantage of one of the latest nationwide UNICEF-sponsored survey conducted in Burkina Faso before some parts of the country became inaccessible because of attacks. Among other pieces of information, this survey collected data on youth resentment towards the ability of their household to fulfill their needs. Alongside data from the Armed Conflict Location and Event Data Project (ACLED), mining data from the MINEX project, and distances data computed using Burkina Faso's roads information are mobilized. Relying on the negative binomial regressor, our results show that youth resentment has a positive and significant impact on the occurrence of conflicts. Moreover, the presence of mining companies, the remoteness from infrastructures, ethnic diversity, and polarization also affect significantly the occurrence of violence against civilians.

## Keywords

Conflicts, Youth resentment, Burkina Faso

## JEL Codes

D74 J13 O55

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# 1 Introduction

“Of course there are Fulani among the jihadists ... But no more than in other ethnic groups. When armed groups offer young people in poverty and without education the chance to take up arms and get money, they are tempted. And it's not because he belongs to this or that group.”<sup>1</sup>

Burkina Faso has been known for the harmony reigning for hundreds of years between its entire population. The country counts more than 60 ethnic groups and one common feature they share is the “joking kinship” (“parenté à plaisanterie”) (Nyamba, 2001). This practice consists of making fun of another ethnic group, all in a joking way. Despite this social norm that has for time contributed to peace in the country, some secular conflicts still linger and are spread nationwide. Farmers and herders conflicts are the recurrent type of conflicts, followed by land conflicts, royal succession conflicts, and other miscellaneous conflicts such as interreligious and inter ethnics conflicts (Ministère de la Justice, 2015). These conflicts are exacerbated by climate conditions (Sanfo, Savadogo, Abalo, & Zampaligré, 2015), but also by the political developments since 2014. This year was historical for Burkina Faso, when an insurrection led to the departure of president Compaoré, who had been in office for 27 years. Since then, an unprecedented number of attacks are recorded almost on a daily basis throughout the country. On January 15, 2016, the country recorded its first ever large-scale terrorist attack, targeting a hotel and a restaurant mainly frequented by expatriates. This attack killed 30 people and intervened two days after the newly elected president Kaboré set up his government (Roger, 2016). For some, this might be a coincidence, but not for everyone. In fact, in an interview with the Belgian press the newly elected president stated that the social peace Burkina Faso has been enjoying for years, was the result of a deal between president Compaoré and terrorist groups (Köpp & Quenum, 2019). As he refuses to honor some engagement the former president had with terrorist groups, the resultant is a spurge of violence. This point of view shared by a certain number of observers might be due to the presence of a notable jihadist in Burkina Faso during Compaoré’s term. Iyad ag Ghali had resided previously in a prestigious hotel in Ouagadougou, and allegedly had strong ties with Compaoré’s military dignitaries such as Diendéré who has been judged for attempting a coup in 2015 (Malagardis, 2018). The former Burkina Faso’s friend became an enemy today, and his group, the GSIM (Group of support of Islam and Muslim) claimed the attack of the French embassy and the main military base in Ouagadougou in march of 2018 killing 8 people (Le Monde Afrique, 2018). Alongside GSIM several jihadist groups and katiba operate in Burkina Faso and in the region of the three borders (Mali, Burkina Faso, Niger). The infamous Islamic State has its representation in the region with the Islamic State in West Africa Province (ISWAP) that includes the

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<sup>1</sup> This citation emanates from a tribal chief of the Sahel region (Gonin, 2020).

Islamic State in the Greater Sahara led by Abou Walid al-Sahraoui. In the first stages, attacks were targeting foreign people, State representation such as military and police stations, but the targets slowly changed into civilians, causing nearly a million internally displaced people in the country (OCHA, 2020).

Blaming the former regime for the security issues Burkina Faso had been dealing with seems to be a shortcut. Lately, the country has been experiencing a homegrown terrorism, fueled by inequalities and injustice in economic and social conditions. One common thing all these extremist groups share is their abilities to exploit local tensions and distortions to thicken their lines. According to Sawadogo (2019) if the jihadist group fighters were from the neighboring countries at the beginning, the groups now recruit Burkina Faso's citizens, taking advantage of the absence of State representation in the rural areas. In these areas, it is easier to diffuse their radical speeches and accentuate the bad perception of the government. Industrialization of gold mining at the expense of artisanal mining, the selling of land, destruction of protected areas at the expenses of villagers, are some of the actions taken by government that dig the ditch between the State and the populations. In some cases, villagers feel abandoned by the State. For example, in the village of Silgadji, Soum district, jihadist massacred all men a day of market after urging the populations of the village to conform to Islamic rules or face death. Villagers called the army to report these threats, but after promising to urge soldiers in the village, no one ever showed up (Lefaso.net, 2020). This disavowal of government also feeds the success of terrorist group's management strategy who do not establish a base in the country, but rather have a remote control of the region, facilitated by the bright absence of state forces (Sawadogo, 2019). Another recent cause of defiance towards State representation is the exactions of military forces in the midst of terrorism fight. As the country tries to defend itself, some abuses reported by Human Right Watch push young men, who are already frustrated by poverty to radicalize. On 2019 New Year's Eve, the government declared the state of emergency in the northern parts of the country, grappling with jihadist attacks (The defense post, 2018). This gives more room to the army to search into houses, arrest and investigate more easily, which sometimes led to more abuses. In May 2018, Human Rights Watch stated that security forces were implicated in at least 14 alleged summary executions and four other men died of alleged severe mistreatment in custody (HRW, 2018). These executions were targeting mainly Fulani young men which ethnic group is accused of being responsible of terrorism in Burkina Faso. The well-known Yirgou drama where 46 Fulani people lost their lives (according to the government and 216 according to organizations) is yet to be investigated properly (LeFaso.net, 2020).

Blaming Fulani people is another shortcut took by some people. In fact, the Sahel region that is mainly populated by this ethnic group, records an important number of attacks committed by a local jihad. Ansaroul Islam, the group created by the Burkinabè preacher Malam Dicko, has been responsible of a tremendous number of attacks against civilians. He based his speeches on the unfair organization of the Fulani's in the North. The attack of the police station in Nassoumbou that killed twelve soldiers on December 2016 marked officially their debut according to Burkina Faso's military forces (International Crisis Group, 2017). Since then, the ideology and radicalization of Malam Dicko grew, benefiting from the hierarchical construction of the Sahel traditional society existing even before colonization. Between the 15<sup>th</sup> and the 18<sup>th</sup> century, Fulani herders from Niger Delta evicted farmers and established their domination with a hierarchical organization of the society with nobles, royal families, Muslim preachers or "marabouts", daily life people such as artisans, blacksmiths, weavers, griots, and slaves (International Crisis Group, 2017). The cleavage between Fulani "masters" descent and the "Rimaibé" from slave descent is still present in the Sahel regions. The former cast is the richer, most respected and is higher in the society, when the latter is poor and still very low in the society. Malam Dicko precisely denounced<sup>2</sup> or is denouncing this organization. He further denounced the chieftom organization of the society, and the cleavage between Fulani masters descent, and the Rimaibé (Roux, 2019), advocated for equality between the population, and the end of marabout families<sup>3</sup> enrichment at the expenses of the poor. Most of the of Malam Dicko and Ansaroul Islam's claims were based on the rejection of this socially constructed society and the rejection of marginalization based on the cast which is contrary to Islam. This kind of speeches of course echoed perfectly to unemployed and socially rejected young men who joined the cause. When the group started their operations, they stayed in line with their speeches, and their exactions includes assassination of the leaders of this aristocratic society, such as religious guides, teachers, and government workers.

Terrorism in Burkina Faso is therefore a multifaceted phenomenon, fed by socioeconomic conditions and a poor management of the government which response seems inadequate to the situation. This paper has two main contributions. Firstly, the resentment of Burkina Faso's youth, which constitute the bulk of the population from which armed groups recruit, is collected. This is made possible by the latest nationwide UNICEF-sponsored survey before some parts of the country became inaccessible because of insecurity. This survey is a rare opportunity to capture empirically the youth's feeling on the ability of their household fulfill their needs, namely to feed, to clothe, to heal them in case of sickness, and to offer them gifts. Secondly, using negative binomial estimators, it

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<sup>2</sup> He has been allegedly killed in 2017, but his death has never been confirmed.

<sup>3</sup> Being an Imam is inherited in this society due to history. New Muslim scholars such as Malam thought religious authority is not only for a selective few (International crisis group, 2017).

mainly appears that youth resentment has a positive and significant impact on the occurrence of conflicts targeting civilians. Moreover, the presence of mining companies, the remoteness from the city capital, ethnic diversity and polarization also affects significantly the occurrence of violence against civilians. The rest of the article is organized as follows. Section 2 seeks to answer the question: why do young people rebel? It mobilizes theoretical considerations and presents some key elements of conflicts in Burkina Faso. Section 3 presents data and descriptive statistics. The results are discussed in section 4. The last section is devoted to concluding remarks

## 2 Why do youth rebel?

In the review of Gurr's book, Black (1972)<sup>4</sup> argues that the process that leads men to violence goes through three stages, namely discontentment, a political transformation of that discontentment, and the action of violence that stems from that discontentment. Discontentment arises from the gap between what an individual thinks he should have, and what he thinks he will get, given his living standard. This is referred to as relative deprivation (Gurr, 2015, p. Chapter 2). The politicization and the action of violence that stems from it appear when men view the existing political regime as unworthy of respect and legitimacy. Hence, they may see violence as a good response to their problems. In a description of youth behavior in Sub-Saharan Africa, de Bruijn and Both (2017) argues that youth in Mali and Chad go through a process of delegitimation of the State authority and search of a new legitimacy worthy of their trust and respect that they can find in ethnic militias or armed groups.

In fact, in the region of three borders, when some fighters of armed groups are arrested, one remarkable thing is how young they often are. The question may be why? Childhood and adolescence are two sensible stages individuals go through. Childhood is mainly characterized by faith and enthusiasm, when adolescence, a phase of searching for an identity, is characterized by skepticism (Merelman, 1972). During puberty, (12 to 17 years), people are more impressionable and subject to influence. At that age, young people are more and more conscious of their social, economic and political environment, and start having ideological thoughts (Peterson & Somit, 1982). This age is also characterized by impatience and willingness to change things, using violence if needed. It is therefore not surprising that this age is a main target for rebel group recruitment. In the case of Somalia, Botha and Abdile (2014) were able to conduct a study in Mogadishu interviewing former member of Al Shabaab that literally means "the youth". Their work showed that only 9% of

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<sup>4</sup> The book was first published in the 60s and addressed the violence occurring in postcolonial states in Africa and Asia

interviewers joined the group after their 30s, majority of them joined before their 18<sup>th</sup> birthday. In West Africa, Central Mali has been also been dealing with the radicalization of its youth, fueled by secular marginalization and impoverishment of some parts of the population. Nomads of the Fulani ethnic group started back in 2013 to de-solidarize themselves from their elites who were supposed to be the bridge between them and the State. When realizing that neither the elites or the state were doing anything tangible for them, people especially youth became permeable to the speeches of jihadist groups coming from the Tuareg rebellion (de Bruijn & Both, 2017). The willingness of youth to join such radical groups is therefore undeniably linked to their socioeconomic conditions such as demographics, natural resource endowment, infrastructures, living standards, among other factors conducive to violence.

Firstly, regarding demographics, the literature showed that ethnic diversity plays an important role. When some may think ethnic diversity is detrimental to economic growth, Alesina and Ferrara (2005) suggest that ethnic diversity can be beneficial at higher levels of development. Therefore, complementarities can emerge due to ethnic diversity. This can be explained by the fact that rich countries are characterized by strong institutions that are capable of maintaining order and stop ethnic conflicts from happening or dampen their effects when they occur. However, in Africa, well known for its ethnic richness and poor institutional entities, the literature found a rather negative impact of diversity on socio economic conditions, that can lead to conflicts. Hence, according to Easterly and Levine (1997), highly fragmented societies are more prone to conflicts given the fact that fragmentation reduces growth. For Collier and Hoeffler (1998) the ethnographic and linguistic fragmentation do not have a straightforward impact. Fragmentation does not cause wars. Fragmentation rather paves the road for rebels to diffuse their message, and coordinate better. They also argue that the impact of fragmentation is non-linear. Therefore, very homogeneous countries have similar probabilities of conflicts occurrence compared to heterogeneous societies. The conflict resides in polarized societies where there is a quasi-equal distribution of two ethnic groups. The authors attribute this result to the coordination costs of rebel groups that may be too high. The hypothesis that ethnic polarization is more important than fractionalization is also defended by Montalvo and Reynal-Querol (2005).

Secondly, natural resource endowment is listed as a cause of conflicts. The literature dealing with this subject is vast (see among others: Lujala, Gleditsch, & Gilmore, 2005, Hinkkainen Elliot and Kreutz, 2019). According to Collier and Hoeffler (1998), if the rebellion motive is the secession, the determinants are to be searched in the endowment of a specific region in natural resources and the representation of that region in the government (Collier and Hoeffler, 1998). More precisely, the



authors found that well-endowed countries have a probability of war of 0.56 against 0.12 for countries with no natural resources. However, this effect is not linear. In fact, in the early stages, natural resources have a positive impact on the occurrence of war, but this effect declines over time. The first effect can be linked to the fact that rebel groups might want to capture some of the yields of the economic resource. After some time, the financial resources of the country will rise thanks to the natural resource, and consequently the military expenditures, that will help the state to defend itself (Collier and Hoeffler, 1998). Their following work show that a state dependence on a natural resource has a significant impact of the occurrence of civil separatist war (Collier and Hoeffler 2004). This result is however challenged by the work of Fearon and Laitin (2003) who used the same indicator of natural resource endowment, the ratio of primary commodity exports over GDP, found no significant impact on civil war. Other studies such as the one of Elbadawi and Sambanis (2002) found mixed results: natural resources may have an impact, but depending on the model used (Ross, 2004). Burkina Faso recently entered the club of gold producers, mainly because of industrial gold mining that started in 2008. Despite the richness of its subsoil, gold is the main exploited resource, with 95% of exploitation by industrial companies (ITIE, 2017). Alongside industrial production, artisanal gold mining has been practiced since the 80's, and provides livelihood for millions of people (Werthmann, 2017). A study of the National Institute of Statistics and Demography showed that out of the thirteen regions in the country, twelve are concerned by artisanal gold mining (INSD, 2017) and five by industrial mining (Chambre des mines 2016). Despite the difficulty to measure the production of artisanal gold mining sites, the INSD's study found that approximatively 9 tons of gold have been produced in 2016, and that the sector employs more than hundred and forty thousand people (Institut National de la Statistique et de la Démographie, 2017). These important amounts can attract some rebel groups as stated by the International Crisis Group, "armed groups have been seizing gold mining sites in areas where the state is weak or absent since 2016, attracted by the boom of artisanal gold mining in the Saharan region" (ICG, 2019 p.4). According to Ouoba (2019), armed groups wants to asphyxiate sahelian countries such as Burkina Faso, Mali and Niger, and get their hands on gold mining zones. They also argue that these zones are favorable grounds to recruit people, and train them for future actions (Ouoba, 2019). For example, in November 2019, a convoy of the Canadian gold mining company has been attacked, killing 40 employees (ICG, 2019).

Thirdly, infrastructures, but more precisely remoteness from infrastructures are important. When working on countries of central Africa, Raleigh and Hegre (2009) made assumptions that civil conflicts occur in regions that are far from the countries city capital. Indeed, these regions are not rapidly accessible to government military forces. When civil conflicts are caused by differences in state investments in regions, insurgencies might happen in regions far from the city capital were the most

infrastructures are located. Therefore, rebel groups will easily be able to convert people, especially youth to join their cause (Raleigh and Hegre, 2009). In the same vein, Alesina and Spolaore (2003) argue that public goods might benefit from economies of scale, so that at a certain perimeter, individuals will benefit from these goods. However, at a certain distance from the capital, people will not feel the effect of these public goods and therefore be prone to rebel.

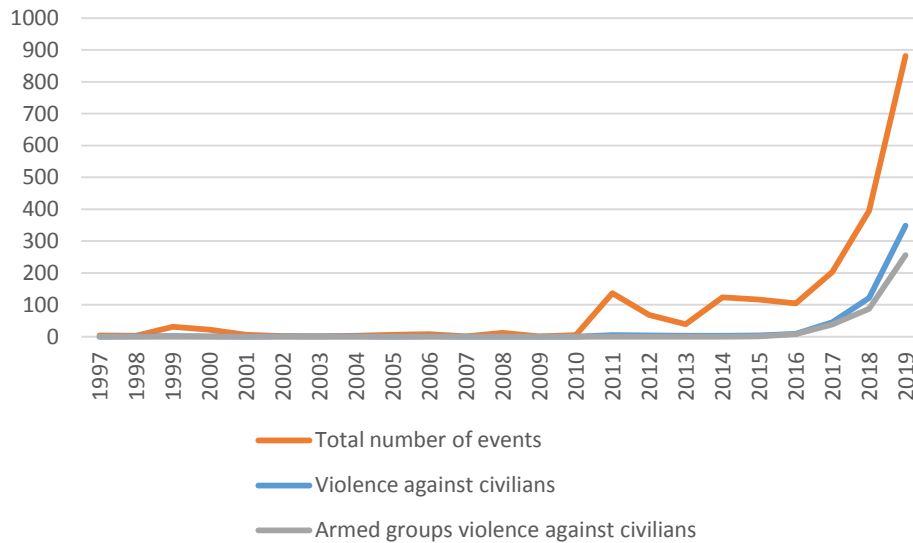
### 3 Data and descriptive statistics

This study gathers three databases: the conflicts data of the ACLED (Armed Conflict Location and Event Data) project that provides us with our dependent variable. The UNICEF-sponsored survey on youth conducted in 2018 allows us to construct our interest variable on youth resentment in Burkina Faso. The MINEX database on industrial mines provides us with pieces of information regarding the proximity of a mining site. Descriptive statistics are presented in Table 7 in Appendix.

#### 3.1 Violent events in Burkina Faso

ACLED data are based on international, regional, national and local reports on violent events, demonstrations and nonviolent events (ACLED, 2019)(Raleigh and al, 2010). Violent events result from battles between armed and organized groups including State forces. Violent events are also made of explosions or remote violence from armed groups relying on the use of explosive devices such as IED (Improvised Explosive Device). Armed groups (State forces, rebel groups, militias) can also intentionally inflict violence to unarmed people and civilians. Demonstrations are peaceful or non-peaceful protests and riots that are somehow violent with acts such as rock throwing and property destruction. Nonviolent actions comprise strategic development, which are not associated with violent events, but may trigger future violence. In Burkina Faso, this strategic development refers mainly to looting, schools and police station burning, intimidation, and tentative of abduction.

**Figure 1. Evolution of violent events in Burkina Faso**

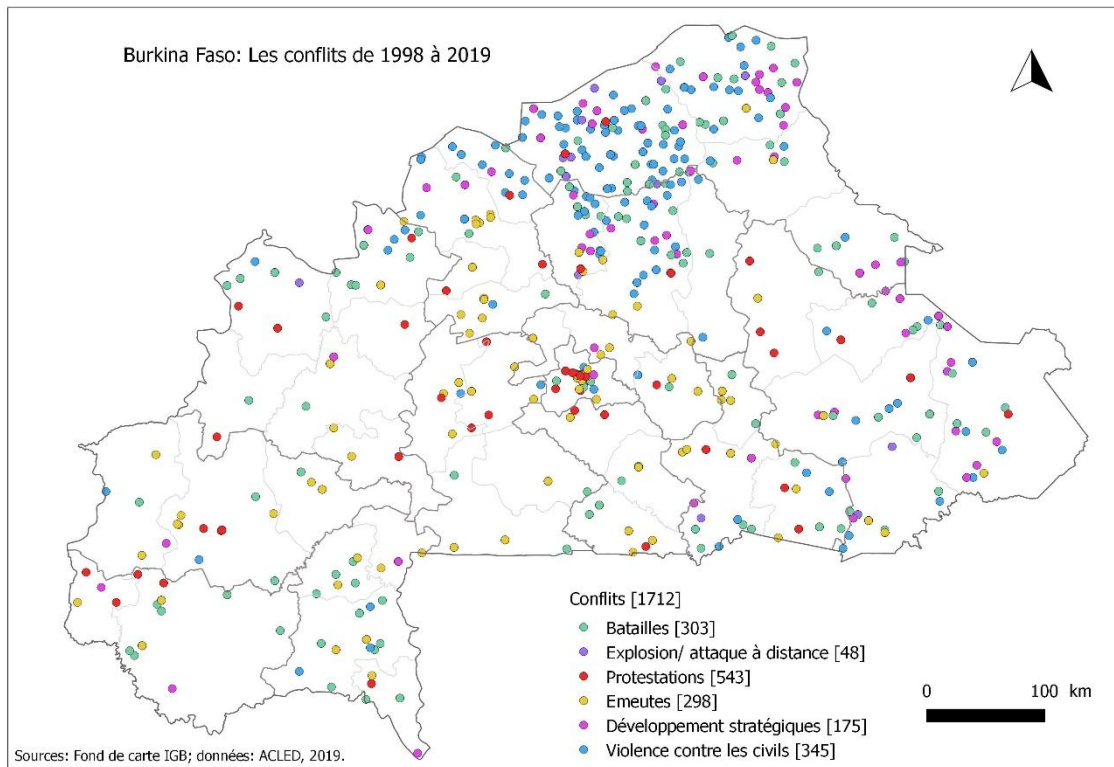


Source: ACLED Database (2019)

We base this work on an important part of the violence in Burkina Faso which are violence against civilians involving the responsibility of armed groups.

Figure 1 shows the evolution of all events in Burkina Faso since 1997. Between 1997 and 2010, the country was almost free of violent events, except in 1998 where the killing of Norbert Zongo a famous journalist caused indignation nationwide. Protests started to rise again in 2011 with soldiers' mutiny that caused a lot of looting. Since then, protests never really go down in Burkina Faso until 2014, with the popular insurrection. The focus of this work, which is the violence against civilians, really started in 2016 when armed groups started to target Burkina Faso. When we compare the violence against civilians caused by any actor and the violence against civilians caused by armed group, we can clearly see that the two graphs are close. This violence takes the form of sexual violence, attacks, abduction or forced disappearance, assassination and so on. The year 2019 was unprecedented when it comes to this particular violence. In fact, nearly 40% of events recorded are violence against civilians. In this total number, 73.3% was caused by armed groups, the rest by ethnic militia and the army and police that have been lately accused of abuse towards civilians. Before 2019 episodes of violence in the country were often attributed to cross-border activity, rather than domestic groups (Dowd & Raleigh, 2013).

**Map 1. Location of events in Burkina Faso since 1998**

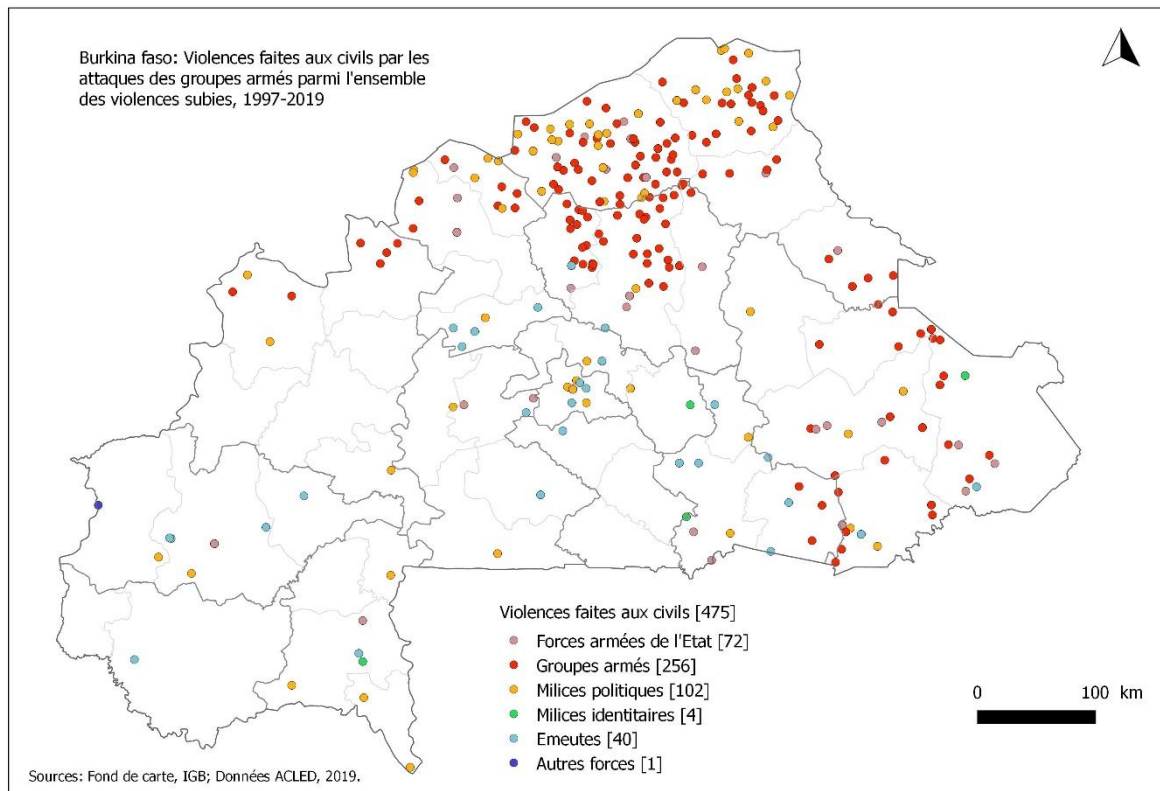


Source: ACLED data and authors calculations.

Map 1 presents the location of events since 1998 in Burkina Faso. We can clearly notice that events are recorded nationwide, with a predominance of protestations and riots that are spread across the country. When focusing on violence against civilians, we can see that there is a slight difference. Even if this type of violence is notices nationwide, their perpetrators are located in specific areas.

Map 2 shows the location of violent events against civilians since 1997. We can clearly see that violence committed by armed groups are located mainly in the northern and eastern parts of the country, and near the borders the country shares with Mali and Niger.

**Map 2. Location of violent event against civilians since 1997**



Source: ACLED Data and authors calculations

### 3.2 Assessing youth resentment in Burkina Faso

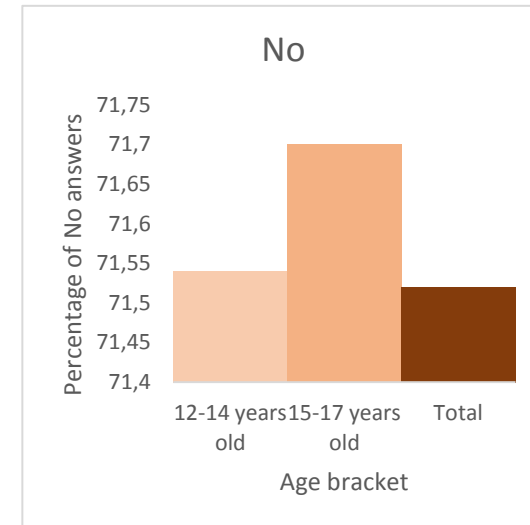
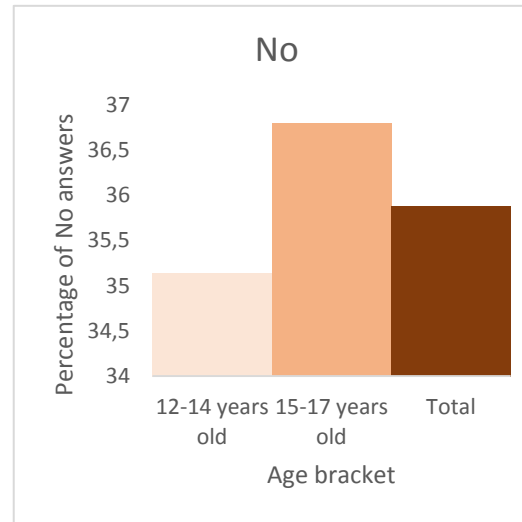
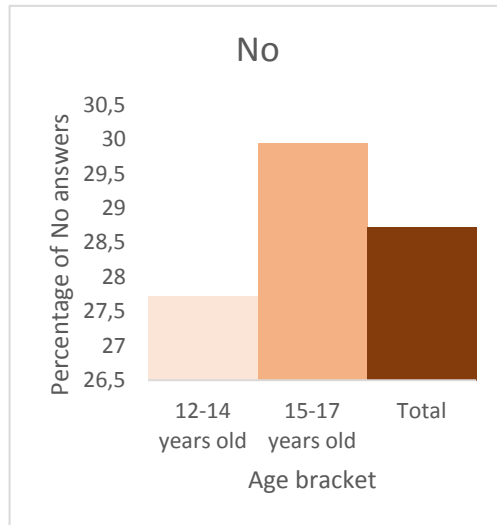
The second source of the data is a survey conducted in all thirteen regions, and forty-five districts of Burkina Faso between March 22<sup>nd</sup> and May 7<sup>th</sup> 2018. The aim of this survey was to assess children physical, emotional and sexual well-being. It was funded by UNICEF (United Nations Children Fund), and was nationwide. To the best of our knowledge, this is one of the two last nationwide survey before some regions became inaccessible due to insecurity. The latest nationwide work on population was the National survey that has been conducted in December 2019, and was not able to reach all districts of regions. The survey concerns children of 0 to 17 years old. The parents<sup>5</sup> of children between 0 and 11 years old were interviewed for questions regarding them, and the children from 12 to 17 years old responded directly to the questions with the consent of their parents. The subpopulation of 12-17 years' old represents 5,520 people and 16 young people refused to sign the informed consent. The sample is therefore constituted of 5,504 people who answered the questions. Three variables in the database are of interest. They are related to the following questions:

<sup>5</sup> In Burkina Faso, it is forbidden to ask questions directly to children under 11.

- “Do you think your household has enough money to afford basic items such as food?”
- “Do you think your household has enough money to buy important items such as clothes, health fees, and school?”
- “Do you think your household has enough money to offer you extra items such as toys and vacation?”

The outcome variable will therefore be a binary variable that takes the value of 1 if the answer is yes, and 0 otherwise. Descriptive statistics show that the majority of them are satisfied for the first two items, and for the last item, only 28% of them are satisfied.

**Figure 2. Subjective youth resentment in Burkina Faso**



“Do you think your household has enough money to afford basic items such as food?”

“Do you think your household has enough money to buy important items such as clothes, health and school fees?”

“Do you think your household has enough money to offer you extra items such as toys and vacation?”

Source: Authors’ calculations from the 2018’s survey on violence against children in Burkina Faso

Figure 2 presents the rate of adolescents that answered “No” to our main questions. Clearly, the age bracket of 15 to 17 years old is the most pessimistic, and generally consider their household are not able to fulfill their needs. These young people are also much closer to adult life, and therefore, can have the greater potential of radicalization. Between the three items, majority of the adolescents consider their households were not able to purchase gifts and vacation for them.

Other demographic variables include gender, that equals 1 if the respondent is a female, marital status that takes 1 if the adolescent has never been married and 0 otherwise. This is to assess if forced marriage is still a practice in the locality as people of their age are not supposed to be married. We think that this variable will also help to apprehend the presence and the control of government structures. This explanation holds also for the inclusion of educational variables. Secondary school attendance is a variable that takes the value 1 if the adolescent has attended secondary school and 0 otherwise. We use the secondary school level because a child being between 12 and 17 years old in Burkina Faso should normally be in secondary school. Finally, we include ethnic diversity variables through two indexes. The first one is the Ethno Linguistic Fractionalization (*ELF*) index widely used in the literature. *ELF* measures the likelihood of two random chosen people to be from different ethnic groups (Easterly & Levine, 1997):

$$ELF = 1 - \sum_{i=1}^N \pi_i^2 = \sum_i \pi_i (1 - \pi_i)$$

Where  $\pi_i$  is the proportion of people who belong to the ethnic group  $i$ , and  $N$  is the number of ethnic groups. When all people in a district belong to the same ethnic group, the index equals zero, whereby the district is perfectly homogeneous. When the index equals 1, the district is, therefore, completely heterogeneous. Though Burkina Faso counts more than 60 ethnic groups, 10 ethnolinguistic groups only are accounted for in surveys. The average value of the indicator is 0.30 which means that districts are fairly fragmented in terms of ethnicity.

Following (Montalvo & Reynal-Querol, 2005a), we also compute the polarization index *POL* as follows:

$$1 - \sum_{i=1}^N \left( \frac{\frac{1}{2} - \pi_i}{\frac{1}{2}} \right)^2 \pi_i$$

The index captures the fact that a district is composed of two ethnic groups, which is the underlying fuel for conflicts. The difference with the fractionalization index is that the former will increase and be near to 1 when almost all people in the district are of different ethnic group. The



latter will nearly be equal to 1 when a district is composed of two ethnic groups, each with 50% of the population (Mavridis, 2015). By using this index, (Montalvo & Reynal-Querol, 2005a) found that ethnic polarization exacerbate conflicts, and better explains conflicts in a society than fractionalization index (Mavridis, 2015).

### 3.3 Mining activities and road network

The third database is from a private mining consulting company, MinEX Consulting on industrial mines to disentangle the role of natural resources endowments as drivers of violence. The company estimates that they cover 99% of worldwide giant sized deposits, 95% of major deposits, 70% of moderate's ones and 50% of minor deposits since 1950 (Ahlerup et al, 2019). They report information such as the geographical location (longitude and latitude coordinates) and size of the site, the discovery year, the mine startup year, the metal exploited and the exploitation statuses. In Burkina Faso, five gold industrial mines have been effectively operating between 2011 and 2013. According to the mining law in Burkina Faso, an exploitation permit is given to companies for 20 years, renewable every five years until the depletion of the ore. Major size deposits (deposits superior or equal to 2.24 million of ounces) mine such as TAPARKO (Centre Nord), BOMBORE (Plateau central), YUGA (Centre Est), and INATA (Sahel), and giant size gold deposit (deposits superior or equal to 11.18 million of ounces) such as ESSAKANE (Sahel) and MANA (Boucle du Mouhoun).

Lastly, using geographically localized information (latitude and longitude coordinates) on road network, we compute the distances to borders and two types of roads which are trunk and primary roads. Trunk roads are essentially important roads. They are found mainly in cities such as the political capital namely Ouagadougou. Primary roads are national roads generally leading to rural areas. Those two variables proxy the distance and the remoteness of location to the central political power. More precisely, we take the distance from the centroid of a specific location to the roads. Regarding borders, we use distances to the nearest border using the main practicable roads to compute the exact distance to reach the border<sup>6</sup>.

## 4 Econometric analysis

Our dependent variable counts the number of violent events by district or “communes”, suggesting a count regression strategy. The Poisson model is based on the assumption that the mean

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<sup>6</sup> Burkina Faso shares borders with Mali, Niger, Ivory Coast, Ghana, the Republic of Benin and Togo.

of the dependent variable is equal to its variance. This assumption does not hold in our case: the mean is 1.32 while the variance is 19.38. We then resort to use the negative binomial regression that is deemed more suitable for over dispersed data. The likelihood ratio test of the dispersion parameter (alpha) that is significantly different from zero in the specifications corroborates our choice. Moreover, unobservable spatial heterogeneity is controlled with village fixed effects.<sup>7</sup>

#### 4.1 Main results

Table 1 reports our baseline results relying on the negative binomial estimator. They show that youth satisfaction towards the three items cited above has a negative impact on the occurrence of violent events. Hence, being satisfied decreases the occurrence of violent event of 1. When the commune is highly polarized, this has very significant impact on conflicts. The table also reports the results using two different measures of ethnic diversity, namely polarization (*POL*) and Ethno Linguistic Fractionalization (*ELF*). Both have the expected positive effect on the occurrence of violence.

**Table 1. Determinants of violent events – Marginal effects - Baseline negative binomial estimator**

Satisfaction_1	-1.160 *** (0.032)			-1.153*** (0.032)		
Satisfaction_2		- 1.195*** (0.040)			-1.191*** (0.041)	
Satisfaction_3			-0.993*** (0.062)			-1.04*** (0.068)
<i>POL</i>	3.791*** (0.260)	3.809*** (0.254)	3.837*** (0.261)			
<i>ELF</i>				3.609*** (0.268)	3.664*** (0.267)	3.646*** (0.269)
Marital_Status	-1.269 ** (0.029)	-1.284** (0.029)	-1.277** (0.109)	-1.269** (0.029)	-1.285** (0.030)	- 1.273** (0.030)
Secondary_status	-1.230 *** (0.038)	-1.251** (0.038)	- 1.253** (0.039)	- 1.242** (0.041)	- 1.264** (0.041)	- 1.262* (0.041)
R.Squared	0.367	0.364	0.3642	0.349	0.3461	0.3454
Observations	5,331	5,323	5,084	5,331	5,323	5,084

Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Village fixed effects are introduced in each equation

<sup>7</sup> Given the important number of zeros reported for the dependent variable, we could have used zero-inflated regression models. However, it was difficult to find an adequate variable to make a distinction between “real peace” in the commune, and a “fake peace” because the event was not reported. Existing studies analyzing the determinants of conflicts with zero-inflated regression models use cross-country database where disentangling fake and real events seems making more sense (Dunne & Tian, 2016). In addition, there is no consensus on using zero-inflated models (see e.g. the debate between Allison and Greene <https://statisticalhorizons.com/zero-inflated-models> acceded May 29<sup>th</sup>, 2020)

When introducing variables on mining in Table 2, we can see that the presence of an industrial mine in the commune has a positive impact on the occurrence of conflicts of approximately 2 counts. As an alternative measure to the presence of mines, we introduce the distance to the nearest mine site, which still has a positive effect though it is less significant and of lower magnitude. This is an interesting result, as on average, the nearest industrial mine is 72 kilometers away from the commune, which is really close. The proximity of the industrial therefore goes beyond its actual presence in the commune, and expands to its geographical proximity. In Burkina Faso, artisanal gold mining is widespread and develops around industrial gold mining sites. As stated in section 3, they are a target for armed groups, who try to capture their proceeds. This result on the distance to the industrial mine can also in a way capture the impact of the presence of artisanal gold mining sites.

**Table 2. Determinants of violent events with mining activities– Marginal effects - Negative binomial estimator**

Satisfaction_1	-1.157*** (0.032)			-1.168*** (0.033)		
Satisfaction_2		-1.192*** (0.041)			-1.204*** (0.041)	
Satisfaction_3			-0.980*** (0.062)			- 0.996*** (0.063)
Industrial Mine	2.151*** (0.340)	2.096*** ( 0.327)	2.271*** (0.363)			
Log (Distance to mine)				0.102* (0.0530)	0.102* (0.0535)	0.0694 (0.0544)
<i>POL</i>	3.783*** (0.262)	3.804*** (0.256)	3.832*** (0.263)	3.782*** (0.256)	3.799*** (0.250)	3.822*** (0.259)
Marital Status	-1.271** (0.029)	-1.286** (0.029)	-1.281** (0.031)	-1.273** (0.029)	- 1.288** (0.030)	- 1.281** (0.031)
Secondary_status	-1.231*** (0.039)	-1.251** (0.039)	- 1.254** ( 0.040)	-1.232** (0.039)	-1.254** (0.039)	- 1.255** (0.040)
R.Squared	0.3679	0.3644	0.3648	0.3681	0.3647	0.3646
Observations	5,331	5,323	5,084	5,331	5,323	5,084

Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 Village fixed effects are introduced in each equation.

Concerning distances, the proximity to borders favors the action of armed groups (Table 3). In these areas, they coordinate better and can fall back in the nearest countries especially in Mali and Niger where the borders with Burkina Faso are blurred. The distance to road type “trunk” has a positive impact, when the road type “primary” has a negative impact. They both can be interpreted as a remoteness from cities and infrastructures. In fact, for the former, the result show that the remoteness from highway roads, mainly found in the main cities have a positive impact on the occurrence of conflicts, which is clearly understandable. The latter have a negative impact, meaning

that when the commune are located near primary roads, the occurrence of conflicts is higher. This is also understandable as primary roads are mainly found in rural areas, and are sometimes damaged by potholes, where armed groups place IEDs. Put differently, these results emphasize that violent conflicts are more frequent in rural (remote) areas and less frequent in the main cities where security forces are more likely to counteract armed groups intrusions.

**Table 3. Determinants of violent events with mining activities and distance to borders and roads – Marginal effects - Negative binomial estimator**

Satisfaction_1	- 1.163*** (0.0766)			-1.159*** (0.0829)			-1.164*** (0.0762)		
Satisfaction_2		-1.178*** (0.0728)			-1.201*** (0.0803)			-1.184*** (0.0737)	
Satisfaction_3			- 1.021*** (0.0815)			-0.982*** (0.0852)			-1.085*** (0.0785)
Industrial Mine	2.315*** (0.156)	2.318*** (0.156)	2.399*** (0.155)	1.762* (0.167)	1.715 (0.165)	1.876** (0.169)	5.377*** (0.171)	5.376*** (0.169)	5.107*** (0.165)
<i>POL</i>	2.823*** (0.301)	2.810*** (0.293)	2.873*** (0.299)	4.062*** (0.251)	4.074*** (0.247)	4.104*** (0.255)	4.368*** (0.314)	4.362*** (0.300)	4.338*** (0.312)
Marital status	-1.272* (0.0876)	-1.293 (0.0988)	-1.277* (0.0883)	-1.275** (0.127)	-1.288** (0.129)	- 1.284** (0.117)	-1.284** (0.0838)	-1.300* (0.0843)	-1.281** (0.0781)
Secondary level	-1.231** (0.0640)	-1.254** (0.0637)	-1.248* (0.0653)	- 1.239*** (0.0704)	- 1.259** (0.0700)	-1.264** (0.0705)	- 1.236** (0.0621)	-1.256** (0.0614)	- 1.247** (0.0631)
Log(distance to border)	-0.322*** (0.0315)	-0.323*** (0.0317)	-0.306*** (0.0317)						
Log(distance to primary roads)				-0.131*** (0.0372)	-0.127*** (0.0370)	-0.126*** (0.0376)			
Log(distance to trunk roads)							0.300*** (0.0331)	0.305*** (0.0328)	0.283*** (0.0325)
R.squared	0.3843	0.3808	0.3796	0.3698	0.3662	0.3666	0.3849	0.3819	0.3796
Observations	5,331	5,323	5,084	5,331	5,323	5,084	5,331	5,323	5,084

Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Village fixed effects are introduced in each equation.

## 4.2 Heterogeneity

We test for heterogeneous effect of satisfaction according to the age of the respondents. The coefficients of the age group between 15 and 17 years are the highest whatever the question. The satisfaction of the oldest individuals has a higher impact on the occurrence of conflicts, presumably because they are the preferred targets of armed group recruiters (Table 4). Table 5 then presents complementarities between the different indices of youth satisfaction. The idea being that people who are satisfied in two different items will be even less prone to violent action. Table 6 presents the results when looking at the subpopulation of males and females. The main result here is that the impact of these different satisfactions is higher for male youth than for females. This result is understandable given the fact that male youth are the target of recruitment for armed groups. Female are less engaged in these activities and when they are, they are not primarily recruited as fighters.

**Table 4. Determinants of violent events depending on the age of the respondents – Marginal effects - Negative binomial estimator**

Satisfaction_1_12-14	-1.162** (0.045)					
Satisfaction_1_15-17		-1.301*** (0.044)				
Satisfaction_2_12-14			-1.199** (0.045)			
Satisfaction_2_15-17				-1.292** (0.056)		
Satisfaction_3_12-14					-1.039*** (0.068)	
Satisfaction_3_15-17						-1.121*** (0.087)
Industrial Mine	149.304*** (72.544)	129.753*** (60.958)	130.131*** (61.104)	130.052*** (58.513)	116.413*** (50.337)	137.816*** (64.810)
<i>POL</i>	2.875*** (0.433)	2.394*** (0.392)	2.783*** (0.422)	2.462*** (0.403)	2.858*** (0.423)	2.384*** (0.405)
Marital Status	-1.218 (0.038)	-1.388 (0.041)	-1.257 (0.037)	-1.396 (0.046)	-1.224 (0.035)	-1.397 (0.043)
Secondary status	-1.147* (0.050)	-1.369 (0.039)	-1.191* (0.04)	-1.373 (0.043)	-1.161* (0.048)	-1.383 (0.039)
Log (Distance to border)	-0.326*** (0.0505)	-0.162*** (0.0525)	-0.319*** (0.0496)	-0.146** (0.0568)	-0.307*** (0.0484)	-0.163*** (0.0527)
R.Squared	0.5071	0.4626	0.5020	0.4561	0.4992	0.4576
Observations	2,933	2,398	2,931	2,392	2,786	2,298

Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 Village fixed effects are introduced in each equation.

**Table 5. Determinants of violent events testing complementarities with satisfaction motives -- Marginal effects - Negative binomial estimator**

Satisfaction_total	-1.095*** (0.032)		
Satisfaction_1_2		-1.157*** (0.033)	
Satisfaction_1_3			-1.003*** (0.050)
Industrial Mine	46.040*** (14.664)	122.205*** (41.681)	65.344*** (24.744)
<i>POL</i>	3.140*** (0.381)	2.752*** (0.331)	3.009*** (0.389)
Marital Status	1.245** (0.0470)	1.244 (0.027)	1.259 (0.029)
Secondary level	1.241 (0.023)	- 1.198** (0.031)	1.256 (0.030)
Log (Distance to border)	-0.150*** (0.0435)	-0.246*** (0.0384)	-0.176*** (0.0381)
R.Squared	0.4938	0.4777	0.4799
Observations	2,945	4,590	2,839

Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Village fixed effects are introduced in each equation.

**Table 6. Determinants of violent events testing gender effects -- Marginal effects - Negative binomial estimator**

Satisfaction_1	-1.224*** (0.0976)	-1.102*** (0.125)				
Satisfaction_2			- 1.237*** (0.0959)	- 1.111** (0.114)		
Satisfaction_3					-1.042*** (0.114)	-0.966** (0.125)
Industrial Mine	3.474*** (0.273)	1.873** (0.193)	3.433*** (0.279)	1.864** (0.189)	3.884*** (0.272)	1.855* (0.185)
Polarization	2.405*** (0.428)	3.152*** (0.419)	2.390*** (0.420)	3.147*** (0.410)	2.360*** (0.418)	3.313*** (0.432)
Marital status	-1.334 (0.190)	- 1.163** (0.125)	-1.371 (0.180)	-1.157* (0.143)	-1.354 (0.152)	- 1.144** (0.134)
Secondary level	- 1.308 (0.0877)	- 1.116** (0.107)	-1.333 (0.0867)	- 1.139* (0.105)	-1.315 (0.0906)	- 1.153 (0.105)
Log(distance to border)	-0.403*** (0.0437)	-0.248*** (0.0464)	-0.407*** (0.0430)	-0.245*** (0.0472)	-0.399*** (0.0436)	-0.217*** (0.0470)
Gender M	Yes	No	Yes	No	Yes	No
Gender F	No	Yes	No	Yes	No	Yes
R.squared	0.4037	0.3723	0.4024	0.3672	0.3983	0.3690
Observations	2,814	2,517	2,813	2,510	2,700	2,384

Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Village fixed effects are introduced in each equation

## 5 Concluding remarks

Burkina Faso has been making international headlines these past two years because of the terrorist context the country has been battling with. So many lines written and so many military expenditures made, but the fight is yet to be won. Military solution seems not to be the adequate to the situation as stated by Bakary Sambe “Military solutions have clearly not been successful in the fight against terrorism in the Sahel. The lessons of America’s war in Afghanistan should have forced the international community to face facts: Kalashnikovs alone cannot defeat ideology nor solve the structural problems feeding the radicalisation of the young people who continue to join Boko Haram and the Islamic State in the Greater Sahara.” (Sambe, 2019). These structural problems are addressed in this paper tried in the context of Burkina Faso, by using the feelings of youth. Results show that the resentment of youth towards their living standards is an important determinant on the number of violent events recorded in the commune they are living in. Moreover, the presence of an industrial mine, the ethnic fractionalization and polarization, and the remoteness from the cities are favoring the occurrence of conflicts.

The fight against terrorism in the Sahel therefore requires the implementation of policies that are not only repressive but also preventive. This is even more true in Burkina Faso and other Sahelian countries of which adolescents and young adults represent more than 30% of country population. The aim is to dry up the sources of recruitment for terrorist groups by improving the material and psychological situation of young people in particular. Education is one way of doing this alongside with development projects specifically targeting young people. <sup>8</sup> In addition, a targeted youth employment policy must be a priority for national governments. <sup>9</sup> It is, therefore, important to encourage policies that aim to invest in remote areas, and reinforce the sense of belonging of young citizens to their homeland whereby preventing flourishing extremist groups. All these initiatives are part of a broader project aiming at enhancing young adults and adolescence health and well-being (Patton, et al., 2016).

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<sup>8</sup> See for instance, the Positive Youth Development framework.

<sup>9</sup> See for instance, the recent statements issued by the United Nations Security Council on counter-terrorism in Africa: <https://www.un.org/press/en/2020/sc14140.doc.htm>



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## 7 Appendix

**Table 7. Descriptive statistics**

Variable	Nb Obs.	Description	Mean	St.Dev	Min	Max	Source
Violent Conflicts	5,504	Nb of conflicts in 2019	1.33	4.42	0	33	ACLED Database
Satisfaction_1 Of which: 12_14 15_17	5,331	Equals 1 if the young person is satisfied regarding basic items	0.71	0.45	0	1	UNICEF Survey
Satisfaction_2 Of which: 12_14 15_17	5,323	Equals 1 if the young person is satisfied regarding school health, and clothing	0.64	0.48	0	1	UNICEF Survey
Satisfaction_3 Of which: 12_14 15_17	5,084	Equals 1 if the young person is satisfied regarding extra items like gifts	0.28	0.45	0	1	UNICEF Survey
Mine in commune	5,504	Equals 1 if there is an industrial mining site in the commune	0.24	0.15	0	1	MINEX Database
Never married	5,504	Equals 1 if the young person was never married	0.98	0.15	0	1	UNICEF Survey
Secondary level	5,504	Equals 1 if the young person ever attended secondary school	0.62	0.48	0	1	UNICEF Survey
Nearest border	5,504	Distance to the nearest border	98.22	68.43	0	249.51	UNICEF Survey and OpenstreetMap

							Data
Distance to the road type "Trunk"	5,504	Distance to the nearest road of type "Trunk"	66.94	74.03	0	315.67	UNICEF Survey and OpenStreetMap Data
Distance to the road type "primary"	5,504	Distance to the nearest road type "primary"	15.37	21.76	0	118.73	UNICEF Survey and OpenStreetMap Data
Distance to Industrial Mine	5,504	Distance to the nearest industrial Mine	72.87	43.87	0	248.06	UNICEF Survey and MINEX Data
Fractionalization <i>ELF</i>	5,504	Fractionalization of ethnic groups index	0.30	0.25	0	0.81	UNICEF Survey
Polarization or <i>POL</i>	5,504	Polarization of ethnic groups index	0.43	0.32	0	1	UNICEF Survey