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# Does youth resentment matter in understanding the surge of extremist violence in Burkina Faso?

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## Abstract

The paper aims to highlight the impact of youth resentment on violent conflicts in Burkina Faso. This work takes advantage of one of the latest nationwide UNICEF-sponsored surveys conducted in Burkina Faso before some parts of the country became inaccessible because of attacks. Among other information, this survey collected data on youth resentment towards the ability of their household to fulfill their needs. This resentment is closely related to perceived relative deprivation. We merge this survey into an original dataset that gathers 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. The results of an event count model show that youth resentment explains the occurrence of conflicts. Moreover, the presence of mining companies, the remoteness from infrastructures, ethnic diversity, and polarization also significantly affect violence against civilians.

## Keywords

Conflicts, Youth resentment, relative deprivation, Burkina Faso

## JEL Codes

D74 J13 O55

# 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>*

What motives drive individuals to engage in acts of rebellion by enrolling in an armed group? The outcome of the individual's choice may depend on many variables (see, for instance, (Humphreys & Weinstein, 2008)). Some motives such as ideology or social pressure arguably play a crucial role. This study, however, addresses this question from an economic standpoint that draws attention to economic grievances and perceived relative deprivation. We focus on young people who are the most likely to join armed groups (see, e.g., (Cachalia, Salifu, & Ndung'u, 2016) in the case of Africa). We assess the hypothesis according to which youth resentment regarding the ability of households to fulfill their economic needs incentivizes them to join violent armed groups. Our underlying assumption is that young people face a trade-off between the benefits and costs of violence: we hypothesize that whenever households unsatisfactorily meet the needs of young people, the latter is more likely to resort to violence, other things held equal. This approach is consistent with the literature according to which violent groups may also provide “services” to their members (see, e.g. (Dixit, 2004)). We test this hypothesis in the case of Burkina Faso that has experienced an increase in attacks by armed groups in recent years.

Terrorism in Burkina Faso is a multifaceted phenomenon, arguably fed by socioeconomic conditions and the Government's poor management (Savadogo, 2019). In this study, we take advantage of the latest nationwide UNICEF-sponsored survey (2018) before some parts of the country became inaccessible because of insecurity. This survey allows investigating the resentment of Burkina Faso's youth, which constitute the bulk of the population from which armed groups recruit. This survey offers a rare opportunity to quantitatively capture the youth's feelings on the ability of their household to fulfill their needs, namely to feed, clothe, heal them in case of sickness, and offer them gifts. Next, we econometrically assess our hypothesis while augmenting this survey with other relevant quantitative information. We specifically use data from the Armed Conflict Location and Event Data Project (ACLED), mining data from the MINEX project, and distance data

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

computed using Burkina Faso's roads information. Next, we implement an event count model, namely a negative binomial regression. This econometric methodology evidences that youth resentment has a positive and significant impact on conflicts targeting civilians. Moreover, the presence of mining companies, the remoteness from the city capital, ethnic diversity, and polarization also significantly affect violence against civilians.

We organize the rest of the article as follows. Section 2 describes the political context in Burkina Faso and the events that preceded an increase in terrorist attacks. Section 3 proposes a theoretical framework adapted to the reality of Burkina Faso to answer the question: why do young people rebel? Section 4 presents data and descriptive statistics. We discuss the results in section 5.

## 2 The terrorist attacks in Burkina Faso

The harmony reigning for hundreds of years within the Burkinabe population has long made this country famous. Burkina Faso counts more than 60 ethnic groups. 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 contributed to peace in the country, some secular conflicts still linger and are spread nationwide. Farmers' and herders' conflicts are such recurrent conflicts (see, e.g., the recent study conducted by (McGuirk & Nunn, 2020)).<sup>2</sup>

Climate conditions and the political developments since 2014 exacerbate these conflicts (Sanfo, Savadogo, Abalo, & Zampaligré, 2015). The year 2014 was historical for Burkina Faso, as an insurrection led to the departure of president Compaoré, who had been in office for 27 years. Two years after he left office, an unprecedented number of attacks are recorded almost daily 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, killing 30 people. This attack 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 an interview with the Belgian press, the newly elected president stated that the social peace Burkina Faso has been enjoying for years resulted from a deal between former president Compaoré and terrorist groups (Köpp & Quenum, 2019). As he refused to honor some engagement the former president had with terrorist groups,

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<sup>2</sup> The Burkinabe Ministry of Justice records other land conflicts such as those between landowners and the government, royal succession conflicts, and other miscellaneous conflicts such as interreligious and inter ethnics conflicts (Ministère de la Justice, 2015).

violence increased. Several observers share this point of view and attribute links between military dignitaries and Lyad ag Ghali, a known Malian jihadist who belongs to the GSIM (Group for the Support of Islam and Muslims) (Malagardis, 2018). The GSIM claimed the attack against the French embassy and the main military base in Ouagadougou in March of 2018, killing eight people (Le Monde, 2018). Alongside GSIM, several jihadist groups and Katiba operate in Burkina Faso and the three-borders zone (Mali, Burkina Faso, Niger). The Islamic State has its representation in the area with the Islamic State in West Africa Province (ISWAP), including the Islamic State in the Greater Sahara led by Abou Walid al-Sahraoui. In the first stages, attacks targeted foreign people, State representation such as military and police stations. The targets slowly changed into civilians, causing nearly a million internally displaced people in the country (United Nations Office for the Coordination of Humanitarian Affairs, 2020). The blame for this surge of violence was on the former political power and the Fulani ethnic group.

Blaming the former regime and its ties to terrorist organizations as the sole source of the security issues Burkina Faso had been dealing with seems to be a shortcut. Lately, the country has been experiencing homegrown terrorism fueled by inequalities and injustice in economic and social conditions. One common thing all these extremist groups share is their ability to exploit local tensions and distortions to thicken their lines. According to Savadogo (2019), if the jihadist group fighters were initially from the neighboring countries, the groups now recruit Burkina Faso's citizens, taking advantage of the absence of State representation in rural areas. It is easier to diffuse their radical speeches in these areas and accentuate the Government's poor perception. Several actions dug the ditch between the State and local populations. They are the industrialization of gold mining at the expense of artisanal mining, the selling of land, and the destruction of protected areas.

In some cases, villagers feel abandoned by the Government. For example, in Silgadji, Soum district, jihadists massacred all men a day of the market after instructing the village's population to comply with Islamic rules or face death. The villagers called the army to report these threats, but the Government did not hold the promise to deploy soldiers to the village (Le Faso.net, 2020). This Government's distrust also feeds the success of terrorist group's management strategy. They do not establish a base in the country but rather have remote control of the region, facilitated by the bright absence of Governmental forces (Savadogo, 2019). Another recent cause of defiance towards State representation is the exactions of military forces amid the terrorism fight. As the country tries to defend itself, some abuses reported by Human Rights Watch push young men, who are already frustrated by poverty, to radicalize (Human Rights Watch, 2018). On 2019 New Year's Eve, the Government declared a state of emergency in the country's northern parts, grappling with jihadist

attacks (The defense post, 2018). Thus, the army had more room to search into houses, arrest, and investigate, which sometimes led to more abuses. In May 2018, Human Rights Watch stated that security forces were responsible for at least 14 alleged summary executions. Four other men died of alleged severe mistreatment in custody (Human Rights Watch, 2018). These executions targeted mainly Fulani young men whose ethnic group is held responsible for terrorism in Burkina Faso.

Blaming Fulani people for the terrorism in Burkina Faso is another shortcut. Several radicalization biographies showed that most young people joining jihadist groups in Burkina Faso, Mali, and Niger are Fulani (de Bruijn M. , 2018). The question might be why this ethnic group is over-represented in armed groups. According to de Bruijn (2018), extremist groups exploit the intra-community tensions within the Fulani. They are rooted in the hierarchical organization in castes or clans. Fulani are either *Dimo* or *Rimbe* (free men) or *Nyeenybe* (people of the caste). *Maccudo* and *Riimaaybe* constitute the category of “slaves” (Tamari, 1991). Even though slavery no longer exists, people with *Riimaaybe* or *Maccudo* origin are still less considered than others (de León Cobo & Rodríguez González, 2020). The cleavage between the Fulani “masters” descent and the *Riimaaybe* from slave descent is still present in the Sahel regions. The former cast is richer, most respected, and higher in society when the latter is more impoverished and socially low.

Henceforth, jihad is presented by armed groups as a channel of social promotion by breaking down the traditional order and creating an order in which faith is above social groups and castes (Thiam, 2017). Ansaroul Islam founded by the Burkinabè preacher Malam Dicko,<sup>3</sup> a native of the Sahel region, has been responsible for many attacks against civilians. He argued that the organization of the Fulani’s in the North and the marginalization based on castes are contrary to Islam. Dicko further denounced the chieftdom organization of the society and the cleavage between Fulani masters' descent and the Riimaaybe (Roux, 2019). He advocated for equality between the population and the end of marabout families’ enrichment at the expense of the poor.<sup>4</sup> When Ansaroul Islam started their operations, they stayed in line with their speeches. Their exactions include the assassination of the leaders of this aristocratic society, such as spiritual guides, teachers, and government workers. Between 2016 and 2018, a report of Human Rights Watch (HRW) argues that most of the victims of “execution-style” killings by Islamist armed groups were village chiefs and local officials in the Sahel region (Human Rights Watch, 2018). The organization also attacks state representation. The first one is the attack of the police station in Nassoumbou that killed twelve soldiers in December 2016 (International Crisis Group, 2017). Like the one of Dicko, speeches echoed

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<sup>3</sup> He has been allegedly killed in 2017, but his death has never been confirmed.

<sup>4</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).

perfectly to unemployed and socially rejected young men who joined the cause. Hence, according to HRW, some Fulani community leaders were since 2015 concerned about the Islamists' exploitation of young people's frustration with poverty, corruption of the Government, abusive behavior of security forces, and the Fulani clan leadership (Human Rights Watch, 2018). Another factor contributing to the reinforcement of Fulani young men into radicalization is the Government's response to terrorism that sometimes leads to abuses, as stated in the previous paragraph. Also, ethnic militia sometimes seeks revenge for the attacks they face by doing justice themselves. 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 adequately investigated (Le Faso.net, 2020). This lack of justice and desire for revenge make it easier for armed groups to recruit Fulani young people (de León Cobo & Rodríguez González, 2020).

Several causes may explain the surge in terrorist attacks. However, young men's frustrations regarding their social status and fulfilling their basic needs deserve careful attention.

### 3 Why do youth rebel?

Black (1972) reviewed Gurr's book entitled "Why men rebel."<sup>5</sup> He argues that the process that leads men to violence goes through three stages. The rebellion begins with frustration and discontent. Then, these feelings undergo a political transformation that can, in turn, lead to violence. Discontentment arises from the gap between what an individual thinks s/he deserves and what s/he believes s/he will get, given her/his living standard. This process gives perceived relative deprivation (Gurr, 2015, p. Chapter 2).<sup>6</sup> (Yitzhaki, 1982) defines deprivation as a loss of utility due to lack of commodity. This deprivation is relative to a reference group. There is a vast literature on relative deprivation (Smith & Pettigrew, 2014) and, in particular, on its link with the revolts (Power, Madsen, & Morton, 2020). In particular, some work has sought to show the role of relative deprivation as a factor fueling socio-political instability (concerning the Arab Spring, see: (Korotayev & Shishkina, 2020). Siroky and al. (2020) assess how relative privation impacts collective violence. Kunst and Obaidi (2020) borrow the argument to explain extremism violence. The politicization and violence that stems from relative deprivation appear when people view the existing political regime as

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<sup>5</sup> The book was first published in the 60s and addressed the violence occurring in postcolonial states in Africa and Asia.

<sup>6</sup> There is a vast literature on the concept of relative deprivation that has been discussed within numerous disciplines. One seminal contribution dates back to (Merton, 1968) who analysed under which circumstances individuals or groups engage in deviant behaviors conducive to anomie.



unworthy of respect and legitimacy. Hence, they may see violence as an appropriate response to their problems. De Bruijn and Both argue that young people in Mali and Chad see the State authority as illegitimate (de Bruijn & Both, 2017). They seek a new legitimacy worthy of their trust and respect, which they think they will find in ethnic militias or armed groups.

It is striking that most of the arrested fighters are often young in the three-borders zone. The question may be, why? Childhood and adolescence are two sensible stages individuals go through. Faith and enthusiasm often characterize childhood, whereas adolescence is instead a period of skepticism and identity seeking (Merelman, 1972). During puberty (12 to 17 years), people are more impressionable and subject to influence. At that age, young people are increasingly conscious of their social, economic, and political environment. They start having ideological thoughts (Peterson & Somit, 1982). Impatience and willingness to change things can also characterize this period, sometimes leading to violence. It is therefore not surprising that this age is the main target for rebel group recruitment. In Somalia, Botha and Abdile (2014) were able to conduct a study in Mogadishu. They interviewed former members of Al Shabaab, which means “the youth.” Their work showed that only 9% of interviewees joined the group after their 30s, majority of them joined before their 18<sup>th</sup> birthday. In West Africa, Central Mali has also been dealing with the radicalization of its youth. Secular marginalization and impoverishment of some parts of the population were the main drivers. Nomads of the Fulani ethnic group started back in 2013 to de-solidarize themselves from their elites, who were supposed to bridge them to the State. When realizing that neither the traditional elites nor the State were doing anything tangible, 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 living standards. However, other factors contribute to violence. Among the most important are ethnic diversity, natural resource endowment, and the availability of infrastructures.

Firstly, ethnic diversity could undermine the provision of public goods (Habyarimana, Humphreys, Posner, & Weinstein, 2007). When some may think ethnic diversity is detrimental to economic growth, Alesina and La Ferrara (2005) suggest that ethnic diversity can be beneficial at higher levels of development. Therefore, complementarities can emerge due to ethnic diversity. One plausible explanation is that rich countries have better institutions that maintain order. They also deter ethnic conflicts or dampen their effects when they occur. However, Africa is well known for its ethnic diversity and its insufficient institutional entities. The literature finds a negative impact of diversity on socioeconomic conditions that can lead to conflicts. Hence, according to Easterly and Levine (1997), highly fragmented societies are more prone to disputes, given that fragmentation reduces

growth. Collier and Hoeffler (1998) disagree somehow and argue that the impact of ethnographic and linguistic fragmentation is non-linear. Therefore, very homogeneous countries have similar probabilities of conflict occurrence compared to strongly heterogeneous societies. In most cases, the conflict resides in polarized societies where there is a quasi-equal distribution of two ethnic groups. Indeed, in this situation, the coordination costs of rebel groups are at their minimum; hence, the risk of civil war is maximum. Montalvo and Reynal-Querol (2005) also claim that ethnic polarization matters more than fractionalization.

Secondly, natural resource endowment may act as a cause of conflicts. The literature dealing with this subject is vast (see among others: (Hinkkainen Elliott & Kreutz, 2019), (Lujala, Gleditsch, & Gilmore, 2005) (Weinstein, 2005). According to Collier and Hoeffler (1998), if the rebellion motive is secession, the endowment of a specific region in natural resources and its representation in the Government is likely to be the driving forces (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. On the one side, rebel groups are willing to capture the proceeds of the natural resource. On the other side, the financial resources of the country rise. Governments can pay for military expenditures whereby ensuring the country's security (Collier & Hoeffler, 1998). In subsequent work, the same authors show that a State dependence on natural resources has a significant impact on the occurrence of civil separatist wars (Collier & Hoeffler, 2004). However, Fearon and Laitin (2003) challenged this result while using the same indicator of natural resource endowment. They found no significant effect of the ratio of primary commodity exports over GDP on civil war. Other studies found mixed results (Elbadawi & Sambanis, 2002). Natural resources may have an impact, but depending on the model used (Ross, 2004). Bodea and al. (2016) eventually argue that the effect of natural wealth on conflicts is conditional on the size and the allocation of government spending, namely for welfare or the military.

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 primary exploited resource, with 95% of exploitation by industrial companies (ITIE, 2017). Alongside industrial production, artisanal gold mining has been practiced since the '80s and provides a 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 in measuring the production of artisanal gold mining sites, the INSD's study found that the production of gold was approximately 9 tons in 2016. The sector employs more than a hundred and forty thousand people

(Institut National de la Statistique et de la Démographie, 2017). These substantial 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” (International Crisis Group, 2019). According to Ouoba (2019), armed groups want 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 suitable grounds for recruiting people and training them for future actions (Ouoba, 2019). For example, in November 2019, a Canadian gold mining company convoy has been attacked, killing 40 employees (International Crisis Group, 2019).

Thirdly, infrastructures, but more precisely the remoteness from road infrastructures, are also key drivers. Raleigh and Hegre (2009) assumed that civil conflicts occur in regions far from the country's city capital in central Africa. Indeed, these regions are not easily accessible to government military forces. When differences in local public investments cause civil conflicts, insurgencies might happen in areas far from the city capital that attracts the most infrastructures. Therefore, rebel groups convert people easier, especially the youth (Raleigh and Hegre, 2009). In the same vein, Alesina and Spolaore (2003) argue that public goods produce economies of scale so that individuals will benefit from these goods within a limited perimeter. When inhabitants leave far from the main cities, they do not feel the effect of these public goods.

## 4 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 information regarding the proximity of a mining site. We present descriptive statistics in Table 7 in Appendix.

### 4.1 Violent events in Burkina Faso

We do not have individual data on youth recruitment into armed groups. The only information available is the occurrence of attacks. ACLED data gather information from 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. The counts also record violent events associated with the use of explosive devices such as IED (Improvised Explosive Device). Armed groups (State forces, rebel groups, militias) can also intentionally inflict violence on 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 that is 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 abduction.

We base this work on an essential part of the violence in Burkina Faso, which is 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 Norbert Zongo's assassination, 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 began to target Burkina Faso. When we compare the violence against civilians caused by any actor and the violence against civilians caused by armed groups, we can see that the two graphs are close. This violence reflects sexual assaults, attacks, abduction or forced disappearance, assassination, etc. The year 2019 was unprecedented when it comes to this particular violence. Nearly 40% of events recorded are violence against civilians. In this total number, armed groups were responsible for almost three-quarters of this violence. Ethnic militia, soldiers, and police officers were involved in the other violent events. Since 2019, domestic instead of foreign groups are deemed responsible for violence (Dowd & Raleigh, 2013).

#### **Insert figure 1**

Map 1 presents the location of events since 1998 in Burkina Faso. Events are recorded nationwide, with a predominance of protests and riots disseminated across the country. When focusing on violence against civilians, we can see that there is a slight difference. Even if this type of violence outbreaks all over the country, their perpetrators are located in specific areas.

#### **Insert map 1**

Map 2 (see below, section 9) shows the location of violent events against civilians since 1997. We can see that violence committed by armed groups is located mainly in the northern and eastern parts of the country and near the borders the country shares with Mali and Niger.

## Insert map 2

### 4.2 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 and May 7, 2018. The UNICEF (United Nations Children Fund) undertook and financed this nationwide survey to assess children's physical, emotional and sexual wellbeing. To the best of our knowledge, this is one of the two last national surveys before some regions became inaccessible due to insecurity.<sup>7</sup> The survey concerns children of 0 to 17 years old. The parents<sup>8</sup> answered questions on behalf of their 0 to 11 years old children. 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, therefore, embeds 5,504 people who answered the questions. The three following questions allow us to build three variables of interest:

- "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"

Therefore, the outcome variable will be a binary variable that takes the value of 1 if the answer is yes, and 0 otherwise. The youth would likely judge its situation relative to its reference group. It is, therefore, a measure of perceived relative (non)deprivation. The descriptive statistics show that most of them are satisfied with the first two items, and only 28% are with the last item.

Figure 2 presents the rate of adolescents that answered "No" to the above questions. The age bracket of 15 to 17 years old is the most pessimistic. These children consider their household is not able to fulfill their needs. They are also much closer to adult life, and therefore, can have the more

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<sup>7</sup> The latest nationwide work on population was the National survey in December 2019. It was not able to reach all districts.

<sup>8</sup> In Burkina Faso, it is forbidden to ask questions directly to children under 11.

significant potential of radicalization. Between the three items, the majority consider their households cannot afford gifts and vacations for them.

**Insert figure 2**

Other demographic variables include the gender index that equals 1 if the respondent is a female. The marital status index takes the value of 1 if the adolescent has never been married and 0 otherwise. It assesses 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 also holds for the inclusion of educational variables. The secondary school attendance index equals 1 if the adolescent has attended secondary school and 0 otherwise. We use the secondary school level because a 12 to 17 years old child in Burkina Faso should typically be in secondary school. Finally, we include ethnic diversity variables relying on two indexes measured at the district (commune) level. The first one is the Ethno Linguistic Fractionalization (*ELF*) index widely used in the literature. *ELF* measures the likelihood of two randomly 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 0, whereby the district is perfectly homogeneous. On the contrary, the district is heterogeneous when the index is equal to 1. 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 somewhat fragmented in terms of ethnicity.

Following Montalvo and Reynal-Querol (2005), 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 comprises 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 1 when almost all people in the district are of different ethnic groups. The latter will nearly

be equal to 1 when a district comprises two ethnic groups, each with 50% of the population (Mavridis, 2015). Using this index, Montalvo and Reynal-Querol (2005a) found that ethnic polarization exacerbates conflicts. This index better explains conflicts than the fractionalization index (Mavridis, 2015).

### 4.3 Mining activities and road network

We draw on a third database provided by the MinEX Consulting on industrial mines. Several variables allow us to disentangle the role of natural resource endowments as drivers of violence. MinEX Consulting estimates that the database covers 99% of worldwide giant-sized deposits, 95% of major deposits, 70% of moderate's ones, and 50% of minor deposits since 1950 (Ahlerup, Baskaran, & Bigsten, 2019). The database reports information such as the geographical location (longitude and latitude coordinates) and size of the site, the discovery year, the mine startup year, the nature of the ore exploited, and the exploitation statuses. In Burkina Faso, five industrial gold mines have been effectively operating between 2011 and 2013. According to the mining law in Burkina Faso, an exploitation permit is granted to companies for 20 years. It is renewable every five years until the depletion of the ore.<sup>9</sup>

Lastly, using geographically localized information (latitude and longitude coordinates) on the road network, we compute the distances to borders and two types of roads: trunk and primary roads. Trunk roads 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 the location to the central political power. We compute these two variables while taking the distance from the centroid of a specific location to the roads. We also calculate distances to the nearest border using the main practicable roads to compute the exact distance to reach the border.<sup>10</sup>

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<sup>9</sup> In Burkina Faso, TAPARKO (Centre Nord), BOMBORE (Plateau central), YUGA (Centre Est), and INATA (Sahel) are major size deposits (deposits superior or equal to 2.24 million of ounces). ESSAKANE (Sahel) and MANA (Boucle du Mouhoun) are classified as giant size gold deposits (deposits superior or equal to 11.18 million of ounces).

<sup>10</sup> Burkina Faso shares borders with Mali, Niger, Ivory Coast, Ghana, the Republic of Benin and Togo.

## 5 Econometric analysis

Our dependent variable counts the number of violent events by district or “communes,” suggesting a count regression strategy. The Poisson estimator is not relevant. Indeed, one crucial assumption of this estimator is that the mean of the dependent variable is equal to its variance. This assumption does not hold in our case because the mean is 1.32 while the variance is 19.38. We then resort to using the negative binomial regression that is deemed more suitable for overdispersed data. The likelihood ratio test of the dispersion parameter ( $\alpha$ ) that is significantly different from zero in the specifications corroborates our choice. Moreover, we control unobservable spatial heterogeneity with village fixed effects.<sup>11</sup>

### 5.1 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 negatively impacts the occurrence of violent events. Hence, being satisfied decreases the occurrence of violent events by one unit. We cannot, therefore, reject our central hypothesis that relative deprivation fosters armed conflict. Of course, this result does not mean that most discontented young men do join rebel groups. On the one hand, the lack of data on recruitment makes it impractical to conclude this topic. On the other hand, participation in an armed group is a kind of “public good” and subject to the free-rider or Olson’s paradox of collective action (Olson, 1971). Hence, many discontented young people will therefore decide not to take violent action.

#### Insert table 1

Moreover, when the commune is highly polarized, this has a 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. This result may seem surprising in the case of Burkina Faso.

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<sup>11</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> accessed May 29th, 2020).



However, the actions of terrorist groups may exacerbate ethnic tensions whereby fueling mistrust between communities.

When introducing variables on mining in Table 2, we can see that 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 result is interesting since, on average, the nearest industrial mine is 72 kilometers away from the commune, which is close. Therefore, the proximity of the industrial mine goes beyond its actual establishment in the commune. It 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, armed groups target them to capture their proceeds. The distance to the industrial mine distance can also somehow capture artisanal gold mining sites.

#### **Insert table 2**

The proximity to borders favors the action of armed groups (Table 3). In these areas, they coordinate better and fall back in the nearest countries, especially in Mali and Niger, where the borders with Burkina Faso are blurred. The distance to the “trunk” road type has a positive effect, whereas the “primary” road type has a negative one. We interpret both as remoteness from cities and infrastructures. In fact, for the former, the result shows that the remoteness from highway roads, mainly found in the main cities, has a positive impact on conflicts, which is understandable. The latter has a negative effect, meaning that conflicts are more frequent when the commune lies near primary roads. We explain this result as follows. Primary roads are mainly found in rural areas and are often of poor quality due to potholes, where armed groups place IEDs. In brief, 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.

#### **Insert table 3**

## **5.2 Heterogeneity analysis**

We investigate here the 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 conflicts, presumably because they are the preferred targets of armed group recruiters (Table 4).

**Insert table 4**

Table 5 then presents complementarities between the different indices of youth satisfaction. We think that satisfied people in two separate items will be even less prone to violent action.

**Insert table 5**

Table 6 presents the results when looking at the subpopulation of males and females. We show that the impact of these different satisfactions is higher for male youth than for females, other things held equal. We understand this result in so far as armed groups preferably recruit young males. Females are less engaged in these activities, and when they are, they are not primarily recruited as fighters.

**Insert table 6**

## 6 Concluding remarks

Burkina Faso has been making international headlines these past years because of the terrorist context the country has known. So many lines and so many military expenditures, but the fight is not over yet. A military solution alone seems not to be adequate to the situation, as stated by Bakary Sambe:

“Military solutions have 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 radicalization of the young people who continue to join Boko Haram and the Islamic State in the Greater Sahara.” (Sambe, 2019).

We address these structural problems in this paper. We focus this study on the role played by economic grievances and relative deprivation perceived by youths. We argue that youth resentment towards the ability of their households to fulfill several needs is a crucial determinant of the occurrence of violence in their districts. Results show that wherever young people are satisfied with the ability of their households to afford food, education, clothes, and other extra items, there is less

probability for an attack against civilians. This result is more noticeable in the 15-17 years old age group that is crucial in children's development. It also highlights the importance of considering the feelings of young people towards their living conditions to avoid their radicalization.

Our results hold while considering other drivers such as industrial mines in the vicinity, the ethnic fractionalization and polarization, the remoteness from the cities, and the proximity of the borders with countries characterized by insecurity. These other factors imply looking at the terrorist phenomenon in Burkina Faso from several angles, even if the role of living conditions is essential. Therefore, the fight against terrorism in the Sahel requires implementing policies that are both repressive and preventive. This recommendation is even stronger in Burkina Faso and other Sahelian countries, of which adolescents and young adults represent more than 30% of the country's population. The aim is to dry up recruitment sources for terrorist groups by improving young people's material and psychological situation. Education is one way of doing this alongside development projects explicitly targeting young people.<sup>12</sup> In addition, a targeted youth employment policy must be a priority for national governments.<sup>13</sup> It is, therefore, essential to encourage policies that aim to invest in remote areas and reinforce the sense of belonging of young citizens to their homeland. All these initiatives are part of a broader project aiming to enhance young adults' and adolescent's health and wellbeing (Patton, et al., 2016).

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<sup>12</sup> See for instance, the Positive Youth Development framework.

<sup>13</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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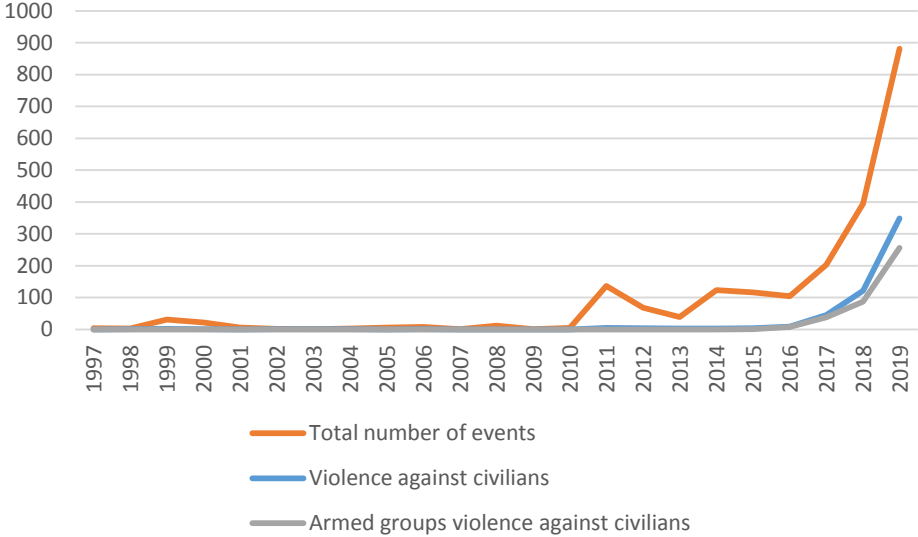
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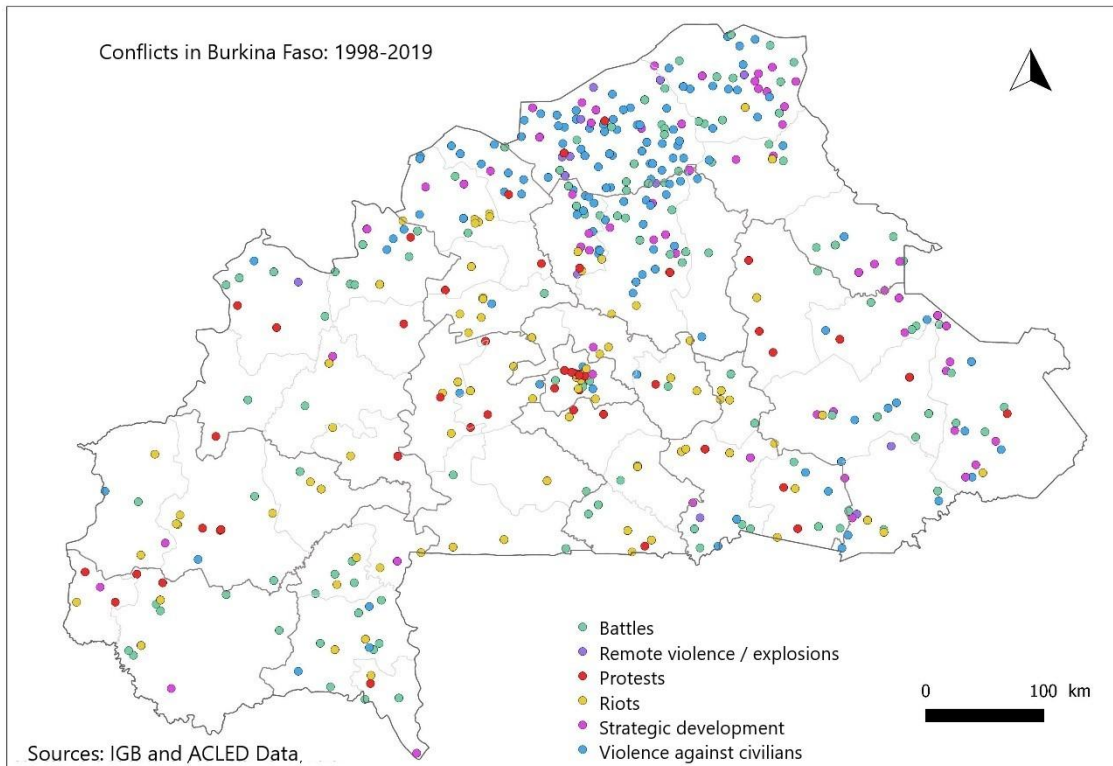
8 Figures and maps

Figure 1. Evolution of violent events in Burkina Faso



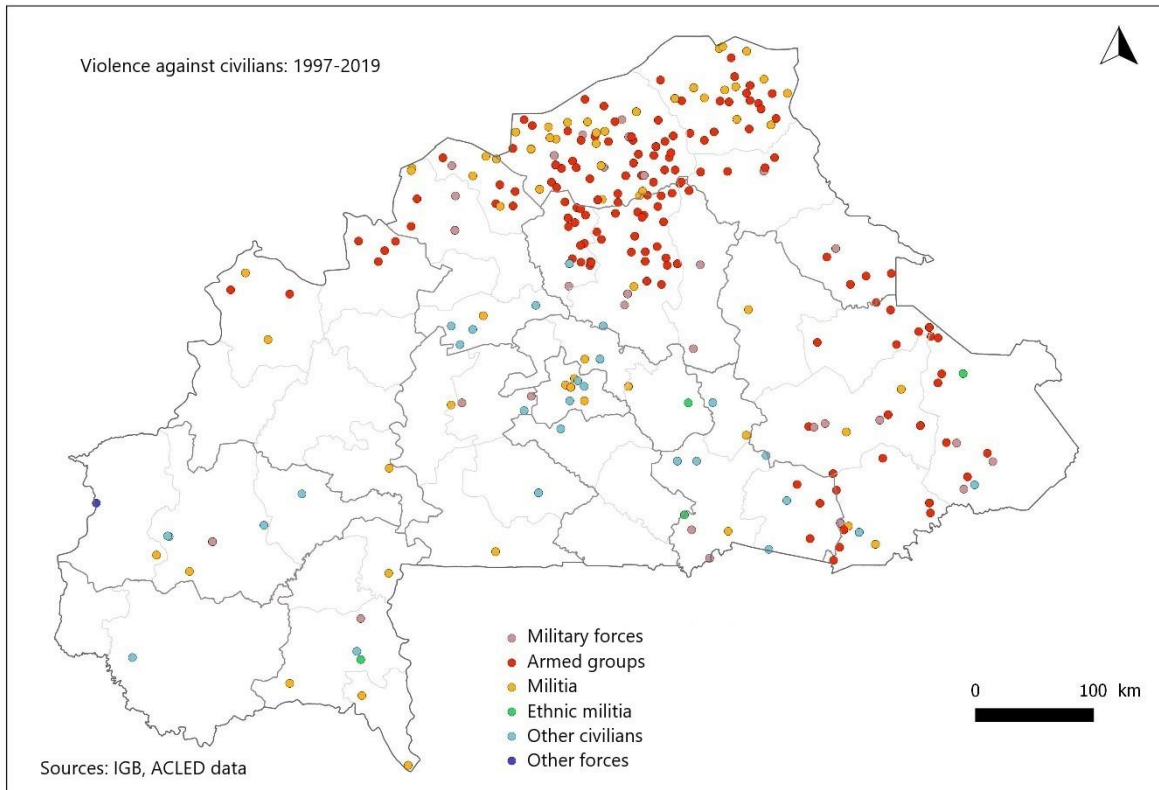
Source: ACLED Database (2019) and author’s calculations

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



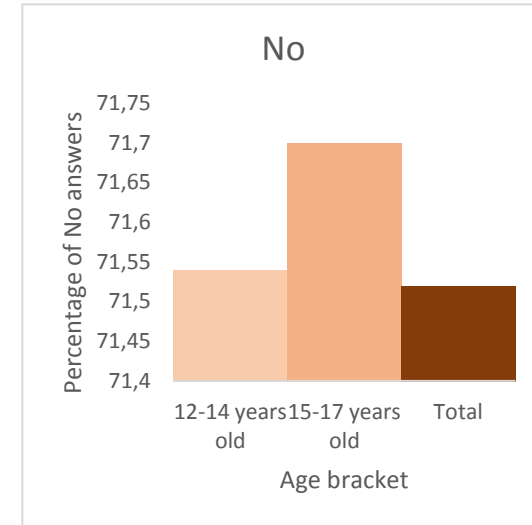
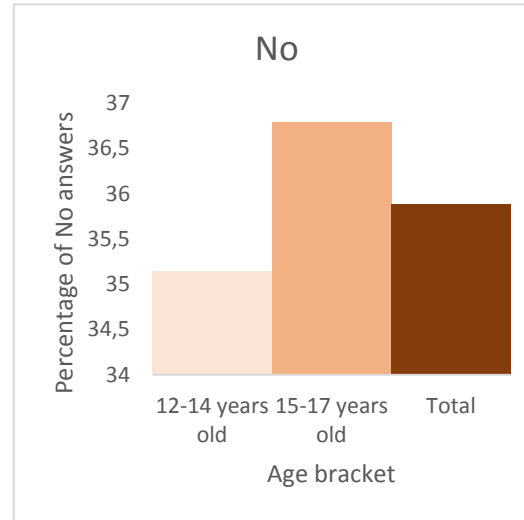
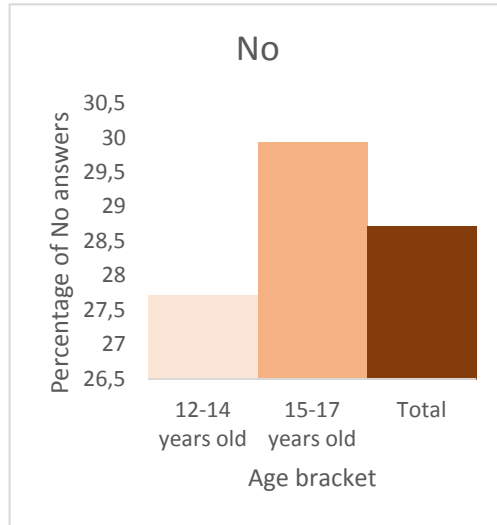
Source: ACLED data and authors' calculations.

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



Source: ACLED Data and authors' calculations

**Figure 2. 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 essential 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

## 9 Tables

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

|                  |                       |                       |                      |                      |                      |                      |
|------------------|-----------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|
| Satisfaction_1   | -1.160 ***<br>(0.032) |                       |                      | -1.153***<br>(0.032) |                      |                      |
| Satisfaction_2   |                       | - 1.195***<br>(0.040) |                      |                      | -1.191***<br>(0.041) |                      |
| Satisfaction_3   |                       |                       | -0.993***<br>(0.062) |                      |                      | -1.04***<br>(0.068)  |
| <i>POL</i>       | 3.791***<br>(0.260)   | 3.809***<br>(0.254)   | 3.837***<br>(0.261)  |                      |                      |                      |
| <i>ELF</i>       |                       |                       |                      | 3.609***<br>(0.268)  | 3.664***<br>(0.267)  | 3.646***<br>(0.269)  |
| Marital_Status   | -1.269 **<br>(0.029)  | -1.284**<br>(0.029)   | -1.277**<br>(0.109)  | -1.269**<br>(0.029)  | -1.285**<br>(0.030)  | - 1.273**<br>(0.030) |
| Secondary_status | -1.230 ***<br>(0.038) | -1.251**<br>(0.038)   | - 1.253**<br>(0.039) | - 1.242**<br>(0.041) | - 1.264**<br>(0.041) | - 1.262*<br>(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

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

**binomial estimator**

|                        |                      |                      |                       |                      |                      |                       |
|------------------------|----------------------|----------------------|-----------------------|----------------------|----------------------|-----------------------|
| Satisfaction_1         | -1.157***<br>(0.032) |                      |                       | -1.168***<br>(0.033) |                      |                       |
| Satisfaction_2         |                      | -1.192***<br>(0.041) |                       |                      | -1.204***<br>(0.041) |                       |
| Satisfaction_3         |                      |                      | -0.980***<br>(0.062)  |                      |                      | - 0.996***<br>(0.063) |
| Industrial Mine        | 2.151***<br>(0.340)  | 2.096***<br>( 0.327) | 2.271***<br>(0.363)   |                      |                      |                       |
| Log (Distance to mine) |                      |                      |                       | 0.102*<br>(0.0530)   | 0.102*<br>(0.0535)   | 0.0694<br>(0.0544)    |
| Polarization           | 3.783***<br>(0.262)  | 3.804***<br>(0.256)  | 3.832***<br>(0.263)   | 3.782***<br>(0.256)  | 3.799***<br>(0.250)  | 3.822***<br>(0.259)   |
| Marital Status         | -1.271**<br>(0.029)  | -1.286**<br>(0.029)  | -1.281**<br>(0.031)   | -1.273**<br>(0.029)  | - 1.288**<br>(0.030) | - 1.281**<br>(0.031)  |
| Secondary_status       | -1.231***<br>(0.039) | -1.251**<br>(0.039)  | - 1.254**<br>( 0.040) | -1.232**<br>(0.039)  | -1.254**<br>(0.039)  | - 1.255**<br>(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.

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

|                         |            |           |            |            |           |           |           |           |           |
|-------------------------|------------|-----------|------------|------------|-----------|-----------|-----------|-----------|-----------|
| Satisfaction_1          | - 1.163*** |           |            | -1.159***  |           |           | -1.164*** |           |           |
|                         | (0.0766)   |           |            | (0.0829)   |           |           | (0.0762)  |           |           |
| Satisfaction_2          |            | -1.178*** |            |            | -1.201*** |           |           | -1.184*** |           |
|                         |            | (0.0728)  |            |            | (0.0803)  |           |           | (0.0737)  |           |
| Satisfaction_3          |            |           | - 1.021*** |            |           | -0.982*** |           |           | -1.085*** |
|                         |            |           | (0.0815)   |            |           | (0.0852)  |           |           | (0.0785)  |
| Industrial Mine         | 2.315***   | 2.318***  | 2.399***   | 1.762*     | 1.715     | 1.876**   | 5.377***  | 5.376***  | 5.107***  |
|                         | (0.156)    | (0.156)   | (0.155)    | (0.167)    | (0.165)   | (0.169)   | (0.171)   | (0.169)   | (0.165)   |
| Polarization            | 2.823***   | 2.810***  | 2.873***   | 4.062***   | 4.074***  | 4.104***  | 4.368***  | 4.362***  | 4.338***  |
|                         | (0.301)    | (0.293)   | (0.299)    | (0.251)    | (0.247)   | (0.255)   | (0.314)   | (0.300)   | (0.312)   |
| Marital status          | -1.272*    | -1.293    | -1.277*    | -1.275**   | -1.288**  | - 1.284** | -1.284**  | -1.300*   | -1.281**  |
|                         | (0.0876)   | (0.0988)  | (0.0883)   | (0.127)    | (0.129)   | (0.117)   | (0.0838)  | (0.0843)  | (0.0781)  |
| Secondary level         | -1.231**   | -1.254**  | -1.248*    | - 1.239*** | - 1.259** | -1.264**  | - 1.236** | -1.256**  | - 1.247** |
|                         | (0.0640)   | (0.0637)  | (0.0653)   | (0.0704)   | (0.0700)  | (0.0705)  | (0.0621)  | (0.0614)  | (0.0631)  |
| Log(distance to border) | -0.322***  | -0.323*** | -0.306***  |            |           |           |           |           |           |

|                                |          |          |          |           |           |           |          |          |          |
|--------------------------------|----------|----------|----------|-----------|-----------|-----------|----------|----------|----------|
|                                | (0.0315) | (0.0317) | (0.0317) |           |           |           |          |          |          |
| Log(distance to primary roads) |          |          |          | -0.131*** | -0.127*** | -0.126*** |          |          |          |
|                                |          |          |          | (0.0372)  | (0.0370)  | (0.0376)  |          |          |          |
| Log(distance to trunk roads)   |          |          |          |           |           |           | 0.300*** | 0.305*** | 0.283*** |
|                                |          |          |          |           |           |           | (0.0331) | (0.0328) | (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.



**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*** | 129.753*** | 130.131*** | 130.052*** | 116.413*** | 137.816*** |
|                          | (72.544)   | (60.958)   | (61.104)   | (58.513)   | (50.337)   | (64.810)   |
| Polarization             | 2.875***   | 2.394***   | 2.783***   | 2.462***   | 2.858***   | 2.384***   |
|                          | (0.433)    | (0.392)    | (0.422)    | (0.403)    | (0.423)    | (0.405)    |
| Marital Status           | -1.218     | -1.388     | - 1.257    | - 1.396    | - 1.224    | -1.397     |
|                          | (0.038)    | (0.041)    | (0.037)    | (0.046)    | (0.035)    | (0.043)    |
| Secondary status         | -1.147*    | -1.369     | -1.191*    | -1.373     | -1.161*    | -1.383     |
|                          | (0.050)    | ( 0.039)   | (0.04)     | (0.043)    | (0.048)    | (0.039)    |
| Log (Distance to border) | -0.326***  | -0.162***  | -0.319***  | -0.146**   | -0.307***  | -0.163***  |
|                          | (0.0505)   | (0.0525)   | (0.0496)   | (0.0568)   | (0.0484)   | (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*** | 122.205*** | 65.344*** |
|                          | (14.664)  | (41.681)   | (24.744)  |
| Polarization             | 3.140***  | 2.752***   | 3.009***  |
|                          | (0.381)   | (0.331)    | (0.389)   |
| Marital Status           | 1.245**   | 1.244      | 1.259     |
|                          | (0.0470)  | (0.027)    | (0.029)   |
| Secondary level          | 1.241     | - 1.198**  | 1.256     |
|                          | (0.023)   | (0.031)    | (0.030)   |
| Log (Distance to border) | -0.150*** | -0.246***  | -0.176*** |
|                          | (0.0435)  | (0.0384)   | (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*** | -1.102*** |            |           |           |           |
|                         | (0.0976)  | (0.125)   |            |           |           |           |
| Satisfaction_2          |           |           | - 1.237*** | - 1.111** |           |           |
|                         |           |           | (0.0959)   | (0.114)   |           |           |
| Satisfaction_3          |           |           |            |           | -1.042*** | -0.966**  |
|                         |           |           |            |           | (0.114)   | (0.125)   |
| Industrial Mine         | 3.474***  | 1.873**   | 3.433***   | 1.864**   | 3.884***  | 1.855*    |
|                         | (0.273)   | (0.193)   | (0.279)    | (0.189)   | (0.272)   | (0.185)   |
| Polarization            | 2.405***  | 3.152***  | 2.390***   | 3.147***  | 2.360***  | 3.313***  |
|                         | (0.428)   | (0.419)   | (0.420)    | (0.410)   | (0.418)   | (0.432)   |
| Marital status          | -1.334    | - 1.163** | -1.371     | -1.157*   | -1.354    | - 1.144** |
|                         | (0.190)   | (0.125)   | (0.180)    | (0.143)   | (0.152)   | (0.134)   |
| Secondary level         | - 1.308   | - 1.116** | -1.333     | - 1.139*  | -1.315    | - 1.153   |
|                         | (0.0877)  | (0.107)   | (0.0867)   | (0.105)   | (0.0906)  | (0.105)   |
| Log(distance to border) | -0.403*** | -0.248*** | -0.407***  | -0.245*** | -0.399*** | -0.217*** |
|                         | (0.0437)  | (0.0464)  | (0.0430)   | (0.0472)  | (0.0436)  | (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

## 10 Appendix

**Table 7. Descriptive statistics**

| Variable  | Nb<br>Obs. | Description  | Mean | St.Dev | Min | Max | Source            |
|---|------------|--|------|--------|-----|-----|-------------------|
| Violent Conflicts   | 354        | Nb of conflicts<br>in 2019   | 1.33 | 4.42   | 0   | 33  | ACLED<br>Database |
| Satisfaction_1<br><br>Of which:<br><br>12_14<br><br>15_17 | 5,331      | Equals 1 if the<br>young person is<br>satisfied<br>regarding basic<br>items                    | 0.71 | 0.45   | 0   | 1   | UNICEF Survey     |
| Satisfaction_2<br><br>Of which:<br><br>12_14<br><br>15_17 | 5,323      | Equals 1 if the<br>young person is<br>satisfied<br>regarding school<br>health, and<br>clothing | 0.64 | 0.48   | 0   | 1   | UNICEF Survey     |
| Satisfaction_3<br><br>Of which:<br><br>12_14<br><br>15_17 | 5,084      | Equals 1 if the<br>young person is<br>satisfied<br>regarding extra<br>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 "Trunk" road type " | 5,504 | Distance to the nearest "trunk" type road                     | 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 or <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                |