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# Violent Conflict and Hostility Towards Ethnoreligious Outgroups in Nigeria

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## ABSTRACT

This study examined the effect of exposure to violent conflict on hostility towards ethnic and religious outgroups among Nigeria's population and among its two major religious groups (i.e., Christians and Muslims). Violent conflict had a robust positive effect on outgroup hostility among the Nigerian population and among Christians. A plausible mechanism behind this finding is that the threat posed by violent conflict strengthens ingroup cohesion, erodes trust in outgroup members, and makes intergroup boundaries salient. This is especially so when the opposite party to the conflict constitutes a distinct cultural outgroup. The main conflict affecting Christians involves nomadic pastoralists of Fulani ethnicity, who are Muslims. Among Muslims, violent conflict rather had a weak positive effect on outgroup hostility that was not robust to alternative operationalizations of outgroup hostility. The null effect might be because the main conflict affecting Muslims—the Boko Haram insurgency—does not involve Christians. A significant number of Muslims are also affected by conflicts involving nomadic Fulani pastoralists.



## KEYWORDS

Violent conflict; conflict exposure; outgroup hostility; ethnicity; religion; Nigeria

## Introduction

A cursory look at Nigeria reveals that it has a dyadic structure comprising a predominantly Christian Southern Region and a predominantly Muslim Northern Region. Although there are some overlaps between the two regions, the contrast between them is quite stark. The overlap between religion and ethnicity makes the fault line between the two regions even more salient.<sup>1</sup> This North-South bifurcation is apparent when one looks at Nigeria through the lens of the nine civilizations into which Samuel Huntington divided the world: Nigeria's Northern Region was associated with Islamic civilization, while the Southern Region was associated with African civilization.<sup>2</sup>

This cultural divide has historical roots. Islam first came to Northern Nigeria between the eleventh and fourteenth centuries through the trans-Saharan trade between the Hausa people of Northern Nigeria and merchants from the Maghreb states. Besides the exchange of tangible commodities, there was also a diffusion of cultural and religious values.<sup>3</sup> Islam gained a stronger foothold in the region between 1804 to 1808, when a cleric of Fulani ethnicity, Usman dan Fodio, launched a jihad against the rulers of the Hausa kingdoms. The jihad led to the establishment of the Sokoto Caliphate, which consisted of several emirates. The caliphate was in existence for a century until its conquest by British forces at the beginning of the twentieth century.<sup>4</sup> Although Christianity in Nigeria can be traced to the fifteenth century when Portuguese slave traders visited Nigeria's southernmost parts, it was not until the 1840s that the religion started to gain a foothold, propagated by freed slaves from Sierra Leone and missionaries from the West.<sup>5</sup>

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Christian missionary evangelization was concentrated in Southern Nigeria because the Muslim rulers in the Northern Region, in an effort to preserve their religious way of life, forbade Christian proselytization in the region.<sup>6</sup> The British government did not change much in Northern Nigeria after capturing it. They appropriated the existing institutions and even used the local Hausa language in administering the Northern protectorate. Conversely, the policies of Westernization and Christianization were pursued fervently in the Southern Protectorate because its population was more open to Western influence.<sup>7</sup> After Nigeria's independence from British colonial rule in 1960, it remained divided along ethnic and religious lines. Commenting on the Northern-Southern dichotomy, Coleman observed: "Certain basic underlying differences in history, culture, temperament, and levels of development and acculturation provided the classical setting for intergroup friction."<sup>8</sup>

Nigeria's historical timeline is punctuated by ethnoreligious conflicts as evidenced by the Hausa-Igbo riots of 1945,<sup>9</sup> the Kano riots of 1953 between Northerners and Southerners,<sup>10</sup> the pogroms of 1966 against members of the Igbo ethnic group, which led to the Biafran War from 1967 to 1970,<sup>11</sup> the Kafanchan riots in Kaduna between Christians and Muslims in 1987,<sup>12</sup> the Kano riots of 1991 between Christians and Muslims,<sup>13</sup> the Shariah Crisis in Kaduna between Christians and Muslims in 2000,<sup>14</sup> the 2011 post-election violence, which had a religious undertone,<sup>15</sup> and the recurrent clashes between Christians and Muslims in Jos,<sup>16</sup> amongst others. Ethnoreligious conflicts are not peculiar to Nigeria; they occur in several countries around the world. Examples include the conflict between members of the Sinhalese and Tamil ethnic groups in Sri Lanka,<sup>17</sup> the conflict between Muslims and Buddhists in Myanmar,<sup>18</sup> the violent clashes between Hindus and Muslims<sup>19</sup> and those between the Assamese and Bengalis,<sup>20</sup> both in India, the Nagorno-Karabakh conflict between Armenians and Azerbaijanis,<sup>21</sup> the Malay-Chinese conflicts<sup>22</sup> and the disputes between Muslims and non-Muslims,<sup>23</sup> both in Malaysia, amongst others.

Ethnoreligious conflicts can lead to segregation, which in turn solidifies intergroup boundaries.<sup>24</sup> Some studies have recommended segregation as a strategy for mitigating interethnic conflicts because separating the conflicting groups eliminates the existing threat.<sup>25</sup> Bollig has conducted a study among nomadic tribes in Kenya where he finds that interethnic ties via marriage and friendships does not lead to conflicting loyalties, but neither does it attenuate the risk of interethnic conflict.<sup>26</sup> Using a game theoretic approach, Larson has shown that interethnic cooperation could increase the risk of conflict, especially when cooperation is underpinned by the threat of retaliation.<sup>27</sup> She points out that the speed of retaliation depends on the density of a group's network: Information flows quickly within dense networks, and this makes it easy for retaliation to be meted out for misbehavior, which in turn makes the threats made by groups with dense networks credible. Conversely, groups characterized by sparse networks where information spreads slowly, find it hard to make credible threats because the slow diffusion of information within the network constrains group mobilization. This is problematic because it makes conflicts intractable. For instance, when a peace agreement between conflicting groups has been reached, it might take longer for this development to spread through a sparse network; attacks after the agreement could be interpreted as unwarranted, which then triggers a new wave of violence. She cautions that "uncareful efforts to promote peace by imposing cross-group ties can do more harm than good, especially if they are aimed at the most peripheral members of both groups." (470).

Some studies argue that intergroup contact is crucial in reducing ethnic conflicts. For instance, Eke has conducted a qualitative study in the city of Jos in Nigeria's Middlebelt Region where he finds that when mutual distrust is present and ethnic groups perceive each other as threats, interethnic violence is likely to erupt even when both groups are completely segregated.<sup>28</sup> This is because segregation "eliminate[s] opportunities for post-conflict reconciliation" and hinders the rebuilding of interethnic trust. Furthermore, he asserts that even though partial segregation does not entirely eliminate the perceived threat from the outgroup, it nonetheless creates avenues for contact between the rival groups

which serve as conduits for establishing trust and averting future conflict. Another key finding of his study is that when the leaders of the different groups engage in dialogue, this signals to the group members that the ethnic outgroup is not so threatening and disputes can be resolved amicably without recourse to violence. Rydgren et al. have conducted a study in Iraq where they find that people who spend time in ethnic heterogeneous spaces are more likely to develop friendship ties across ethnic boundaries, are more tolerant towards people of other ethnic groups, and report higher levels of interethnic trust.<sup>29</sup> Similarly, Kanas et al., relying upon large-N survey data collected from Muslim and Christian students in the Philippines and Indonesia, have found that interreligious friendships reduce hostility towards religious outgroups.<sup>30</sup> These findings are congruent with the argument of Allport who contends that “separateness” heightens the risk of conflict because it leads to the exaggeration of intergroup differences.<sup>31</sup>

Present-day Nigeria remains polarized along ethnic and religious lines.<sup>32</sup> Nigerians define their identity “by affiliation to religious and ethnic groups rather than the Nigerian state.”<sup>33</sup> The two major conflicts that have ravaged Nigeria during the past two decades—i.e., the Boko Haram insurgency and the violent clashes between nomadic pastoralists and resident communities—have taken a religious turn because of the distinct ethnoreligious identities of the conflict actors. Despite the persistence of violent conflicts in Nigeria, no study, to the best of my knowledge, has examined how these conflicts influence hostility towards ethnic and religious outgroups using representative survey data for Nigeria’s population and econometric techniques. Moreover, no study has examined the heterogeneous effects of violent conflict on outgroup hostility among Nigeria’s two major religious groups—i.e., Christians and Muslims. This study does so.

To measure outgroup hostility, I developed an additive indicator by combining the responses to two survey items probing the respondents’ willingness to have people from a different religion and people from a different ethnic group as neighbors. To measure exposure to violent conflict, I drew buffers with a radius of thirty kilometers around the respondents’ dwellings using QGIS software and counted the total number of violent conflicts within them. I was able to do that because I relied on data obtained from Afrobarometer<sup>34</sup> and the Armed Conflict Location and Events Database (ACLED),<sup>35</sup> both of which are georeferenced. Causal identification stemmed from instrumenting conflict exposure with forest cover. The regression results show that among the Nigerian population and among Christians, exposure to violent conflict has a positive effect on outgroup hostility. A plausible mechanism behind this finding is that the threat of violent conflict strengthens ingroup cohesion, erodes trust in outgroup members, and makes intergroup boundaries salient. This is especially so when the opposite party to the conflict constitutes a distinct cultural outgroup. The main conflict affecting Christians involves nomadic pastoralists of Fulani ethnicity, who are Muslims. Among Muslims, violent conflict had a weak positive effect on outgroup hostility that was not robust to alternative operationalizations of outgroup hostility. A possible reason for the null effect among Muslims is that the main conflict affecting them—the Boko Haram insurgency—does not involve Christians. Many Muslims have also been affected by conflicts involving nomadic Fulani pastoralists.

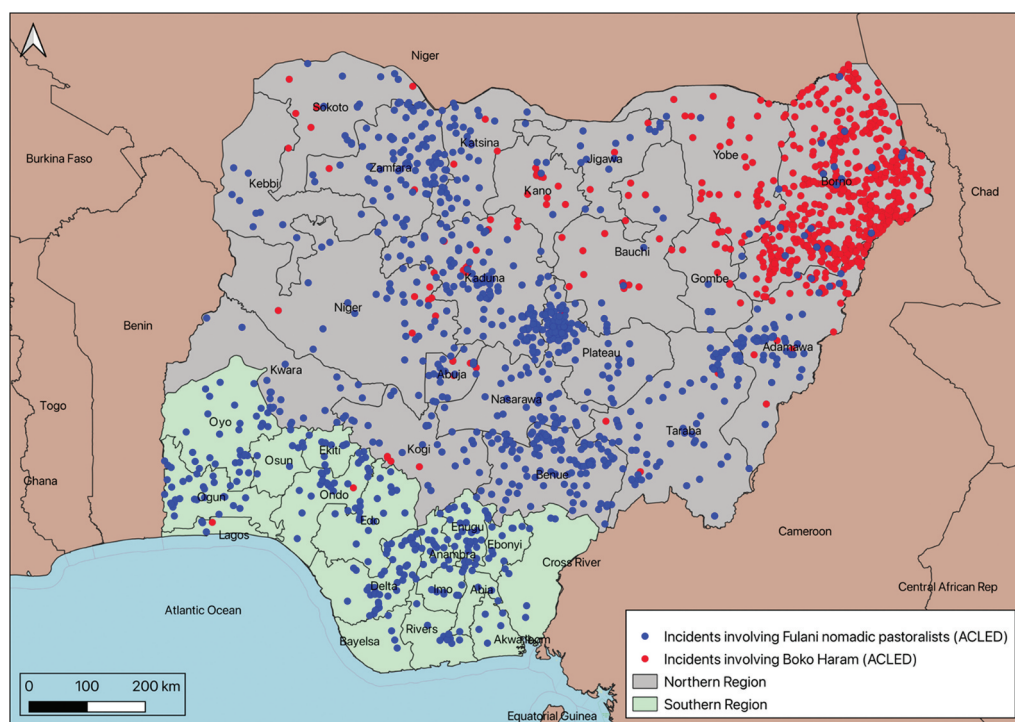
This study contributes to the broader literature on intergroup relations in the shadow of violent conflict.<sup>36</sup> The subsequent sections are organized as follows: In the second section, I discuss the trend of violent conflicts in Nigeria, after which I review the literature on the nexus between conflict and social cohesion. Next, I operationalize the variables that will be used to estimate the regression models and discuss the empirical strategy; I then present the regression results and discuss them, after which I summarize the paper and conclude.

## **Violent conflicts in Nigeria**

Nigeria has witnessed a lot of violent conflicts during the past two decades. Data from ACLED<sup>37</sup> shows that Nigeria had a total of 18,781 incidents between 1997 to 2022, which makes it the country with the third highest incidence of violent conflict in Africa.<sup>38</sup> Only Somalia and the Democratic Republic of Congo performed worse. These incidents caused 98,877 fatalities. The distribution of violent conflict

incidents varies across Nigeria's two regions: 68 percent of them occurred in Northern Nigeria while the remaining 32 percent occurred in the Southern Region. The conflicts are also spread unevenly across the years, with 9 percent of them occurring between 1997 to 2008, and the remaining 91 percent occurring between 2009 to 2022.

The two major conflicts affecting Nigeria are the Boko Haram insurgency and the violent clashes between Muslim nomadic pastoralists of Fulani ethnicity and resident communities (especially those involved in crop cultivation). A report by the Institute of Economics and Peace noted: "In Nigeria, terrorist activity is dominated by Fulani extremists and Boko Haram. Together, they account for 78 percent of terror-related incidents and 86 percent of deaths from terrorism."<sup>39</sup> (p. 21) The incidence of violent conflict in Nigeria can roughly be broken down into two epochs: pre- and post-Boko Haram eras. The pre-Boko Haram era covers the period from 1997 to 2008 before the radical Islamist group, Boko Haram, started its insurgency. The post-Boko Haram era covers the years from 2009 onwards after Boko Haram launched its first attack. The Boko Haram insurgency ushered Nigeria into a phase of violence it had never witnessed. The ACLED data shows that between 2009 to 2022, there were 4,776 incidents where at least one of the parties to the conflict was Boko Haram. These incidents caused a total of 43,019 fatalities. Because Boko Haram attacks are concentrated in Northeastern Nigeria where the population is predominantly Muslim (see [Figure 1](#)), most of the fatalities from these attacks are Muslims.



**Figure 1.** Incidents involving Boko Haram and nomadic Fulani pastoralists (1997–2022). The figure shows the administrative boundaries of the states that constitute Nigeria's Northern and Southern Regions. The red dots show the geolocations of conflicts where at least one of the actors is Boko Haram. The blue dots show the geolocations of conflicts where at least one of the actors is a "Pastoralist" or belongs to the "Fulani" ethnic group. Virtually all the actors defined as pastoralists in the ACLED dataset are identified as "Fulani Ethnic militia," which makes the two terms almost synonymous. Although Northern Nigeria has a predominantly Muslim population, there are a few states there like Benue and Plateau, where the population is predominantly Christian and Muslims constitute a minority. These two states, which were not captured by the Muslim jihadists in the early nineteenth century, have the highest incidence of conflicts involving nomadic Fulani pastoralists. The shapefiles containing Nigeria's administrative boundaries was developed by UNOCHA.

Nigerians tend to associate Muslims with extremism. The Round 7 Afrobarometer survey conducted in 2017, and which is representative for Nigeria's population, had a question where respondents were asked about the degree to which they thought Muslims supported extremist groups.<sup>40</sup> 26 percent of them chose the "none" response category, 37 percent chose the "some of them" response category, 24 percent chose the "most of them" response category, 7 percent chose the "all of them" response category, while the remaining 6 percent refused to answer the question. This suggests that 68 percent of Nigerians associate Muslims with extremism at least to some degree. Disaggregating the data based on religious affiliation revealed that compared to Muslims, Christians are more likely to associate Muslims with extremism: 84 and 48 percent of Christians and Muslims respectively associated Muslims with extremism at least to some degree.

The violent clashes between nomadic Fulani pastoralists and resident communities are the second major conflict affecting Nigeria. This conflict, which is primarily caused by increased competition over land and water resources due to droughts, has quickly taken a religious turn because of the distinct ethnic and religious identities of the opposing parties. Some reports have portrayed conflicts involving pastoralists as attacks on Christians by Muslims because the pastoralists are Muslims and most of the communities where these conflicts are concentrated have predominantly Christian populations.<sup>41</sup> Relying on large-N survey data collected from Kaduna, the state with the third highest incidence of farmer-pastoralist conflicts in Nigeria, Tuki found that Christians and Muslims view the conflict differently: 52 percent of Christians agree that farmer-pastoralist conflicts are caused by religion; only 17 percent of Muslims hold this view.<sup>42</sup> The ACLED data shows that between 1997 to 2022, there were 2,416 violent conflicts where at least one of the actors was a pastoralist or belonged to the Fulani ethnic group. These incidents caused a total of 15,333 fatalities. As shown in [Figure 2](#), incidents involving nomadic Fulani pastoralists, unlike Boko Haram attacks, are spread across all of Nigeria's thirty-six states. This is due to the migratory nature of pastoralists in search of pasture for their livestock.

## Theoretical considerations

Some studies have shown that exposure to violent conflict could foster social cohesion among ingroup members. In a study conducted in Nepal, Gilligan et al. found that communities exposed to violent conflict had higher levels of ingroup trust and prosocial behavior than those that were not.<sup>43</sup> The mechanism behind this finding was that community members who were not socially oriented fled the conflict zone leaving behind those who were more socially oriented. Moreover, the common threat posed by conflict prompted community members to band together so they could better cope. Calvo et al. conducted a study in Mali where they found that conflict exposure had a positive effect on prosocial behavior.<sup>44</sup> Although they acknowledged that social cohesion could foster post-conflict recovery, they pointed out that in the case of Mali this was problematic because increased social participation was observed only in family and ethnically homogenous associations—i.e., "inward-looking associations." This reinforced kinship ties, made ethnic fault lines salient, and heightened the risk of further conflict. Rohner et al. had a similar finding in a study conducted in Uganda where they found that conflict exposure strengthened cohesion within ethnic ingroups.<sup>45</sup>

Conflict has also been found to erode social cohesion. Weidmann and Zürcher (3) found that violent conflict fostered divisions in Afghan communities because it "could introduce shifting loyalties to the fighting parties and thus introduce new internal cleavages."<sup>46</sup> Relying on survey data collected from members of the Tamil ethnic group in Sri Lanka, Greiner and Filsinger found that men who had been victims of sexual violence during the Sri Lankan Civil War were distrustful of both members of their ethnic group and the ethnic outgroup—i.e., the Sinhalese.<sup>47</sup> Conversely, women who had been victims of sexual violence were distrustful of their ethnic ingroup and had higher levels of trust in the ethnic outgroup. They explained the erosion of ingroup trust on the grounds that "the conflict was characterized by a climate of distrust due to denunciations and betrayal within Tamil communities with harmful consequences for in-group cohesion" (2). Using representative survey data for Pakistan,



Ahmad and Rehman found that exposure to terrorist attacks negatively correlated with interpersonal trust.<sup>48</sup> Rohner et al. had a similar finding in Uganda where they found that conflict exposure reduced generalized social trust.<sup>49</sup> In a study conducted in Nigeria, Tuki showed that exposure to conflicts involving nomadic Fulani pastoralists led to distrust in both members of the Fulani ethnic group and Muslims.<sup>50</sup> This was because the Fulani pastoralists were Muslims and the population conflated Fulani ethnicity with being Muslim. Similarly, Kanas et al., in a study conducted among Muslim and Christian students in Indonesia and the Philippines found that the experience of interreligious violence leads to hostility towards religious outgroups.<sup>51</sup>

When the perpetrators of violence belong to a distinct cultural outgroup (e.g., based on ethnicity or religion), ingroup members might associate the entire outgroup with violence even if only a few of them were involved in the act, a phenomenon that Hall et al. referred to as the “better safe than sorry approach.”<sup>52</sup> This is associated with the concept of prejudice which Allport (7) defined as “an aversive or hostile attitude towards a person or group, simply because he belongs to that group, and is therefore presumed to have the objectionable qualities ascribed to the group.”<sup>53</sup> In a similar vein, Lickel et al. developed a theory to explain the psychological mechanisms underlying retributive violence.<sup>54</sup> Vicarious retribution, they observed, “occurs when a member of a group commits an act of aggression toward members of an outgroup for an assault or provocation that had no personal consequences for him or her, but did harm a fellow ingroup member.”<sup>55</sup> They pointed out that when an act of aggression occurred, people who were not directly involved in the conflict tried to make sense of it by construing it in terms of the broader ingroup-outgroup dichotomy between the conflict actors. If an ingroup-outgroup distinction was salient, they would then interpret the event in a way that was favorable toward their ingroup and encouraged retaliation against members of the outgroup. However, when ingroup-outgroup distinctions could not be extrapolated from the initial act of aggression, people were likely to interpret it as a personal dispute between two individuals. This reduced the likelihood of retaliation.

Ahmed has shown how the terrorist attack that occurred in the U.S. on September 11, 2001 altered perceptions towards British Muslims in the U.K.<sup>56</sup> The ensuing “War on Terror” policy shifted the British government’s focus from the diverse Asian identity of British Muslims to their religious identity, which portrayed them as a “suspect community” and associated them with terrorism. As she concisely put it, “it is the Muslim in British Muslim which now shapes the concrete policies which govern British Muslims.”<sup>57</sup> Ferwerda et al. conducted an experimental study in the U.S. where they found that the association of Muslim refugees with terrorism reduced support for refugee resettlement both within the U.S. and within the communities where the participants resided.<sup>58</sup> Their analysis also showed that exposing subjects to counter frames that challenged the portrayal of refugees as threats had no statistically significant effect on support for refugee resettlement. This indicates that negative attitudes towards cultural outgroups, once formed, tend to persist.

In a study conducted in Kenya, Schutte et al. found that indiscriminate violence caused fear of religious outgroups, strengthened ingroup cohesion, and led to increased calls for residential segregation along religious lines.<sup>59</sup> Moreover, they found that attacks perpetrated by Islamist insurgents led to distrust in Muslims. In another study conducted in India, Schutte et al. found that conflict not only caused prejudice towards religious outgroups and strengthened ingroup cohesion, but also increased support for extremist activities perpetrated by ingroup members.<sup>60</sup> Using experiments, Obaidi et al. have shown that the perceived cultural threat posed by Muslims leads to increased support for the persecution of the Muslim outgroup among the Swedish and Danish populations.<sup>61</sup> They also found a similar effect among Muslims who view Western culture as decadent and a threat to Islam. Conversely, Whitt et al. conducted an experimental study in Syria, Bosnia and Kosovo where they found that hostile attitudes towards outgroups tend to change following productive interactions between the two groups.<sup>62</sup> This is consistent with the premise of the contact hypothesis put forth by Allport, which asserts that intergroup contact, conditional upon cooperation towards a common goal and equality between the groups, reduces prejudice.<sup>63</sup>

Returning to the Nigerian case, I expect conflict exposure to have a positive effect on outgroup hostility, especially because of how polarized the country's population is along ethnic and religious lines, coupled with the huge importance that Nigerians attach to their ethno-religious identities. This facilitates the construction of ingroups and outgroups. However, there might be heterogeneous effects among Christians and Muslims: Among Muslims, it is likely that exposure to violent conflict would have no effect on hostility towards ethno-religious outgroups. This is because the main conflict affecting Muslims—i.e., the Boko Haram insurgency—does not involve Christians. Moreover, a significant number of Muslims are affected by the violent clashes involving nomadic Fulani pastoralists who are also Muslims. The common religion of Islam between the conflict actors thus makes it difficult for Muslims to establish ingroup-outgroup distinctions. Among Christians, however, conflict exposure is likely to have a positive effect on outgroup hostility because the major conflict affecting them involves nomadic Fulani pastoralists who are Muslims. Because the conflict actors belong to different religious groups, it becomes easy to establish ingroup-outgroup distinctions. Moreover, nomadic Fulani pastoralists tend to be perceived as a “suspect community” with a high predisposition toward violence.<sup>64</sup> I will test the following hypotheses:

**Hypothesis 1:** Among Nigerians, conflict exposure leads to hostility towards ethno-religious outgroups.

**Hypothesis 2:** Among Christians, conflict exposure leads to hostility towards ethno-religious outgroups.

**Hypothesis 3:** Among Muslims, conflict exposure has no effect on hostility towards ethno-religious outgroups.

## Data and methodology

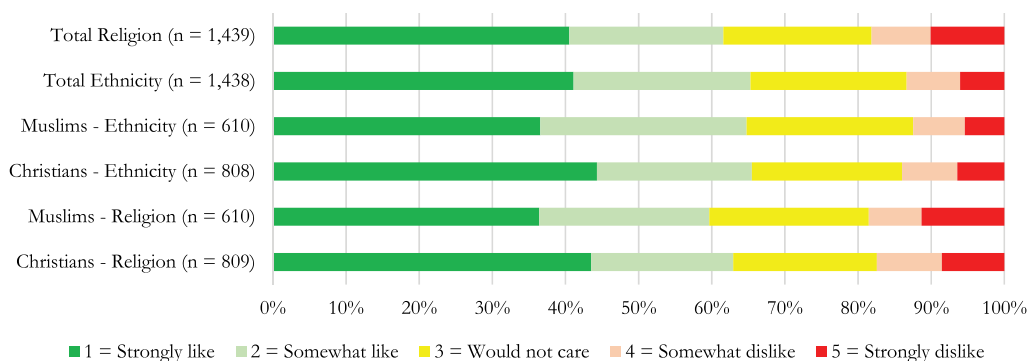
This study relies on the Round 7 Afrobarometer survey data<sup>65</sup> collected in 2017.<sup>66</sup> The dataset consists of 1,600 observations and is representative for Nigeria's population. Respondents were drawn from each of Nigeria's thirty-six states and the federal capital territory—Abuja. Of Nigeria's 774 local government areas (LGAs) (i.e., municipalities), data were collected from 147 of them. Respondents were at least eighteen years old, with males and females equally represented in the sample. [Table A1](#) in the [appendix](#) reports the summary statistics of the variables that were used to estimate the regression models.

## Operationalization of the variables

### Dependent variable

**Outgroup hostility.** This is an additive indicator that measures the respondents' willingness to have people from other religions and other ethnic groups as neighbors. It was derived by combining the responses to the following two questions: “For each of the following types of people, please tell me whether you would like having people from this group as neighbors, dislike it, or not care: (a) People of a different religion? (b) People from other ethnic groups?” The responses were measured on a five-point ordinal scale ranging from “1 = strongly like,” to “5 = strongly dislike.” The additive indicator ranges from 2 to 10, with higher values denoting a higher level of outgroup hostility and vice versa.<sup>67</sup> I treated the “don't know” and “refused to answer” responses as missing observations. I applied this rule to all variables derived from the Afrobarometer survey.





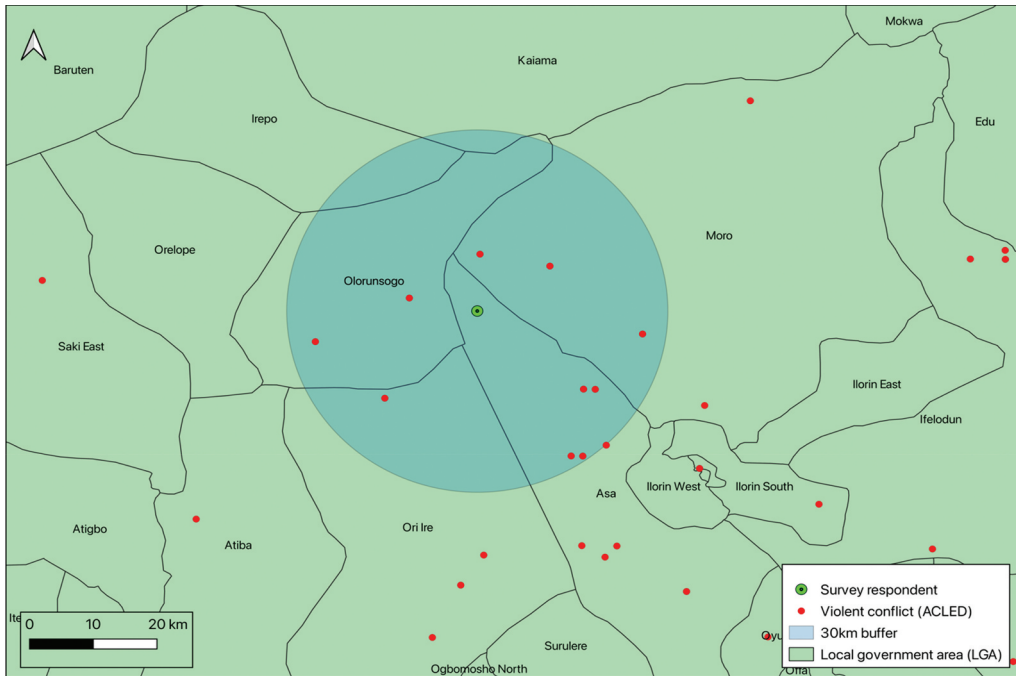
**Figure 2.** Hostility towards ethnic and religious outgroups. The y-axis shows the total number of respondents in the full sample, and the number of Muslim/Christian respondents who had answered the relevant questions regarding their willingness to have people from a different religion and ethnic group as neighbors. The x-axis shows the percentage of respondents who chose a particular response category.

The two survey items had a Cronbach Alpha statistic of 0.84, which shows internal reliability. The two items also had a correlation of 0.72, which highlights the close association between ethnicity and religion in Nigeria. As shown in the first two bar charts from the top of Figure 2, Nigerians have a slightly higher level of hostility towards religious outgroups than ethnic outgroups. Christians are slightly more hostile towards people of a different ethnic group than Muslims. Muslims are slightly more hostile towards people of a different religion than Christians. Both Christians and Muslims are more hostile towards people of a different religion than people of a different ethnic group.

### **Explanatory variable**

**Violent conflict.** This measures the total number of violent conflict incidents within the thirty-kilometer buffer around the respondents' dwellings. I developed the buffers using QGIS software. This was possible because I relied upon data obtained from Afrobarometer<sup>68</sup> and ACLED,<sup>69</sup> both of which are georeferenced. Based on the ACLED dataset, I define a violent conflict as any incident that falls under any of the following three categories: Battles, Violence against civilians, and Explosions/Remote violence.<sup>70</sup> Although the ACLED dataset is available starting from 1997 and is updated in real time, I excluded conflict incidents that occurred after 2016. This lags the explanatory variable since the dependent variable is measured in 2017. I considered all the conflict incidents within the buffer from 1997 to 2016 because I am particularly interested in the cumulative effect of violent conflict. Some studies have shown that memories from past conflicts tend to persist and could shape action in the present.<sup>71</sup>

Buffers are a more efficient way of measuring exposure to violent conflict than the LGA administrative boundaries. This is because the spatial area occupied by each buffer is unique for each respondent and allows for more variation in the conflict exposure variable. If I had measured conflict exposure at the LGA level, I would have associated all the respondents residing within a particular LGA with the total number of conflict incidents there, which presumes that all respondents residing within a particular LGA are exposed to the same level of violent conflict. This would have been inefficient because incidents in a contiguous LGA might be nearer to a respondent's dwelling than those in the particular LGA where he/she resides. As shown in Figure 3, the respondent resides in Asa LGA, yet conflicts in Moro, Olorunsogo, and Ori Ire LGAs are closer to his/her dwelling than some incidents in Asa LGA. Another challenge that comes along with working with Nigeria's administrative boundaries (especially those at the lower levels) is that they are not clearly defined. In fact, there were a few observations where respondents residing close to Nigeria's national border were more exposed to conflicts in the contiguous



**Figure 3.** Measuring exposure to violent conflict. Using a single respondent for a demonstrative purpose, the figure shows the thirty-kilometer buffer around his/her dwelling. It also shows the geolocations of the violent conflicts and the local government area (LGA) (i.e., municipality) administrative boundaries.

countries of Cameroon, Chad, Benin, and Niger than incidents within the particular Nigerian state or LGA where they reside. The use of buffers, which disregards administrative boundaries, attenuates these problems. Ninety-six percent of the respondents had at least one violent conflict incident within the thirty-kilometer buffer around their dwellings. Thirty-one percent of them had at least fifty incidents.

### *Control variables*

I considered some control variables for socioeconomic condition, population size, the respondents' educational level and their demographic attributes. I discuss the control variables and the rationale for their inclusion in the regression models below:

**Population size.** This measures the total number of people residing within the thirty-kilometer buffer around the respondents' dwellings in 2016. I controlled for population size because it could confound the relationship between violent conflict and outgroup hostility. The dispersion pattern of a population could influence the risk of conflict. When the population is scattered along the edges of a country rather than being concentrated in an area, for instance due to a rough geographical terrain, this limits the capacity of the state to exert control over the polity, which in turn increases the risk of conflict.<sup>72</sup> The size of the population might also be proxying the level of urbanization. Some studies have found that populations in urban centers have a higher level of outgroup trust than those in rural areas.<sup>73</sup> Since the raw population dataset is gridded, I computed the relevant statistic for the buffers using QGIS software. The raster data for the population variable was obtained from Worldpop at the University of Southampton.<sup>74</sup>

**Nighttime light.** This measures the mean annual nighttime light pixels within the thirty-kilometer buffer around the respondents' dwellings in 2016.<sup>75</sup> This variable, which proxies the level of economic activity, is often used when sub-national accounting data is unavailable.<sup>76</sup> Slow economic growth has

been found to increase the risk of conflict.<sup>77</sup> Economic decline and rising inequality have also been found to negatively correlate with outgroup trust. This is because people become risk averse and associate interactions with outgroup members with higher risk.<sup>78</sup> I computed the relevant statistic for the buffers using QGIS software because the raw nighttime light dataset is gridded. The pixel range for this variable is from 0 to 63, with higher values denoting a higher level of economic activity and vice versa. Source: Earth Observation Group database.<sup>79</sup>

**Prevalence of stunting.** This measures the proportion of children under the age of 5 within the thirty-kilometer buffer around the respondents' dwellings who were classified as stunted in 2013.<sup>80</sup> The prevalence of stunting reflects the inability of the households residing within the buffer to access nutritious food, potable drinking water, and the other necessities that are required to live decent and healthy lives. Some studies have shown that poverty increases the risk of conflict by reducing the opportunity cost of joining a rebel group.<sup>81</sup> Poverty has also been found to negatively correlate with social trust.<sup>82</sup> This might be because financial pressures crowd out prosocial behavior, thus instigating opportunistic behavior among poor people. Moreover, in situations where a host community is poor, outgroup members, say migrants for instance, might be perceived as potential competitors for the limited resources, opportunities, and social protections provided by the state, which then leads to hostility towards the outgroup. Moreover, the host population might attribute blame to outgroup members for their poor socioeconomic condition, as has been the case with the xenophobic violence directed toward migrants in South Africa.<sup>83</sup> Since the raw dataset is gendered and also gridded, I computed the relevant statistic within the buffers for both males and females using QGIS software and then took the average. Unlike the datasets for violent conflict, nighttime light, and population size, which are available for Nigeria and the contiguous countries bounding it, the prevalence of stunting dataset is available for only Nigeria. This implies that for the 120 respondents (i.e. 7.5 percent of the 1600 observations) whose buffers encroached into the contiguous countries, I computed the relevant statistic for only the buffers' spatial area within Nigeria's administrative boundary. Source: Worldpop Development and Health Indicators database.<sup>84</sup>

**Household deprivation.** This is an additive indicator that measures the socioeconomic status of the household to which the respondent belongs. It was derived by adding the responses to the following five questions: "Over the past year, how often, if ever, have anyone in your family: (a) Gone without food to eat? (b) Gone without enough clean water for home use? (c) Gone without medicines or medical treatment? (d) Gone without fuel to cook your food? (e) Gone without cash income?" The responses were measured on a scale with five ordinal categories ranging from "0 = never" to "4 = always" The additive indicator ranges from 0 to 20, with higher values denoting a higher level of deprivation. The five items had a Cronbach Alpha statistic of 0.81, which shows internal reliability. The mechanisms through which household deprivation influences violent conflict and outgroup hostility are akin those enumerated for the "prevalence of stunting" variable. What distinguishes these two variables is the level of aggregation.<sup>85</sup>

**Educational level.** This measures the educational attainment of the respondents on a nine-point ordinal scale ranging from "0 = no formal schooling" to "9 = postgraduate." People who are educated might be more accommodating towards outgroups than their uneducated counterparts because education exposes them to diverse ideas.<sup>86</sup> Education could reduce the risk of violent conflict by increasing the opportunity cost of rebel participation.<sup>87</sup>

**Demographic covariates.** This includes the age, gender, and religious affiliation of the respondents. Religious affiliation is measured using a dummy variable that takes a value of 1 if the respondent identifies as Christian and 0 if Muslim. I derived the binary variable by collapsing the various Christian and Muslim denominations into singular categories. Gender is measured using a dummy variable that takes the value of 1 if the respondent is male and 0 if female.

## Empirical strategy

The general form of the model to be estimated could be expressed thus:

$$y_t = \beta_0 + \beta_1 \text{Violent conflict}_t + \beta_2 X'_t + e_t \quad (1)$$

Where  $y_t$  is the dependent variable which measures hostility towards ethnic and religious outgroups at time  $t$ ,  $X'_t$  is a vector of control variables that have been discussed in the preceding section,  $\beta_0$  is the intercept,  $\beta_1$  and  $\beta_2$  are the coefficients of the explanatory and control variables respectively, and  $e_t$  denotes the error term.

While the model estimates the effect of conflict exposure on outgroup hostility, the reverse is also possible: People with a high level of outgroup hostility might be those who are exposed to violent conflict. This leads to the problem of reverse causality. To mitigate this problem, I have lagged the explanatory variable by considering only conflict events that occurred before 2017 since the dependent variable is measured in 2017. However, omitted variable bias might still be a problem because there might be some variables in the error term that influence outgroup hostility which I may not have controlled for in the regression model. To address this problem, I adopted an instrumental variable approach and estimated the model using two-stage least squares (2SLS) regression.

I used forest cover as an instrumental variable for violent conflict. I expect that forest cover would plausibly not directly influence hostility towards ethnic and religious outgroups, except through the mechanism of violent conflict. Some studies have shown that forest cover could increase the risk of conflict by providing strategic military advantages to insurgent groups.<sup>88</sup> In the state of Borno, which is located in Northeastern Nigeria, the Sambisa Forest has served as a fortress for Boko Haram insurgents. In 2014, Boko Haram insurgents kidnapped over 200 girls from a boarding school in the town of Chibok and held them captive in the forest.<sup>89</sup> In 2021 gunmen abducted about 300 girls from a boarding school in the state of Zamfara and held them hostage in the forest. The girls were later released after negotiations between the state government and the abductors.<sup>90</sup>

To measure forest cover, I computed the proportion of land area within the thirty-kilometer buffer around the respondents' dwellings that consists of forests. More specifically, I derived the forest cover variable by dividing the total forest pixels within the thirty-kilometer buffer by the total land cover pixels. The raw dataset was obtained from the Global Land Cover (GlobCover) dataset, which classifies the land area across the globe into twenty-two categories.<sup>91</sup> I define forests as pixels ranging from classes 20 to 120. I relied on the 2009 version of the GlobCover dataset, which is the most recent. Since the raw dataset is gridded, I computed the relevant statistics for the buffers using QGIS software.

## Results and discussion

### First-stage regressions

Table 1 presents the results of ordinary least squares (OLS) regression models examining the relationship between forest cover and violent conflict. In model 1, forest cover was significant at the one percent level and carried a negative sign. This result is incongruent with my a priori expectation that forest cover increases the risk of conflict. However, this *anomalous* finding might not necessarily be wrong, especially when Nigeria's topography and the distribution of violent conflicts across the country are considered. As was mentioned in the second section, over two-thirds of all violent conflicts that occurred in Nigeria between 1997 to 2022 were in the Northern Region, while the remaining one-third were in the Southern Region. The Northernmost part of Nigeria is proximate to the *Sahara Desert* and has a dry climate. The land there is also arid with sparse vegetation. The southernmost part of Nigeria is contiguous to the Atlantic Ocean, and a large swathe of the land area there falls within the rainforest vegetation zone. The amount of rainfall and vegetation cover in Nigeria increases as one moves southwards from the north.

**Table 1.** Association between forest cover and violent conflict

	(1)	(2)	(3)	(4)	(5)
Violent conflict <sup>#Φ</sup>	All data	North	South	All data	All data
Forest cover <sup>#</sup>	−34.281*** (11.983)	44.645*** (15.742)	−222.468*** (17.276)		339.491*** (58.777)
(Forest cover) <sup>2#</sup>				−42.075*** (10.254)	−327.394*** (50.43)
Constant	88.418*** (7.658)	13.732 (8.593)	249.504*** (12.366)	85.069*** (4.963)	−1.74 (15.812)
<b>Observations</b>	1592	772	820	1592	1592
<b>R-squared</b>	0.005	0.01	0.169	0.01	0.031

Φ is the dependent variable, standard errors are in parenthesis, \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.10. # denotes variables measured using buffers with a radius of thirty kilometers. All models are estimated using ordinary least squares (OLS) regression.

Given this background, the negative correlation between forest cover and the incidence of conflict in model 1 should not be surprising. The forests in Northern Nigeria might be more hospitable for insurgents because they are not as dense as those in Southern Nigeria. If this logic holds, then I should find a positive correlation between forest cover and violent conflict when I estimate a model using the subsample of respondents residing in Northern Nigeria. Conversely, I should find a negative correlation between forest cover and violent conflict when I estimate a model using the subsample of observations in Southern Nigeria because the denseness of the forests in the Southernmost parts of the region would make them inhospitable for insurgent groups. As shown in model 2 which was estimated using the subsample of respondents in Northern Nigeria, forest cover carried a positive sign and was significant at the one percent level. In model 3, which was estimated using the subsample of observations in Southern Nigeria, forest cover carried a negative sign and was also significant at the one percent level.

Given the above patterns, it is possible that a quadratic specification might better capture the relationship between forest cover and violent conflict. This is because both vegetation extremes—its total absence and abundance—pose a military disadvantage to insurgent groups, which in turn reduces the risk of violent conflict. If this is indeed the case, then the square of forest cover should carry a negative sign when violent conflict is regressed against it. This suggests an inverse quadratic relationship akin to an inverted “U.” As shown in model 4, this is the case. This finding is consistent with that of Chow and Han.<sup>92</sup> I estimated a final model where I included both forest cover and its square in the same model. As shown in model 5, the negative sign accompanying the square of forest cover persists. Taking into consideration Nigeria’s climate, vegetation cover, and the spatial distribution of violent conflicts across the country, I use both forest cover and its square as instrumental variables.<sup>93</sup>

## Second-stage regressions

Table 2 reports the second-stage regression results of models examining the effect of conflict exposure on hostility towards ethno-religious outgroups. In model 1—the baseline model—I included only the explanatory variable and fixed effects for all the ethnic groups.<sup>94</sup> Violent conflict was significant at the five percent level and carried the expected positive sign. This supports **Hypothesis 1**, which states that among the Nigerian population, exposure to violent conflict leads to hostility towards ethnoreligious outgroups. This is likely because Nigeria’s population is polarized along ethnic and religious lines, coupled with the huge importance that they attach to their ethnic and religious identities. Moreover, conflict exposure fosters ingroup cohesion, erodes trust in outgroup members, and makes ingroup-outgroup boundaries salient.

In model 2 where I added the control variables, violent conflict retained its positive sign and its significance level increased to 1 percent. The effect size also increased from 0.004 to 0.025. To check whether endogeneity was indeed present, I conducted a test. The Durbin and Wu-Hausman statistics

**Table 2.** Effect of violent conflict on outgroup hostility I (Full sample & religious subsamples)

	Full sample		Religious subsamples		
	(1)	(2)	(3)	(4)	(5)
Outgroup hostility <sup>Φ</sup>			Xtian	Muslim	Muslim
Violent conflict <sup>#</sup>	0.004** (0.002)	0.025*** (0.007)	0.046*** (0.012)	0.007 (0.009)	0.002* (0.001)
Nighttime light <sup>#</sup>		-0.429*** (0.117)	-0.857*** (0.204)	-0.099 (0.117)	-0.037 (0.034)
Prevalence of stunting <sup>#</sup>		3.734*** (1.221)	-3.007 (1.89)	4.49* (2.376)	3.318*** (0.989)
Household deprivation		0.022 (0.016)	0.014 (0.022)	0.04* (0.022)	0.041* (0.024)
Log Population size <sup>#</sup>		-0.01 (0.134)	0.245 (0.209)	-0.069 (0.25)	0.047 (0.137)
Educational level		-0.188*** (0.038)	0.00 (0.057)	-0.196*** (0.051)	-0.181*** (0.044)
Religious affiliation		0.395* (0.235)			
Gender		-0.339*** (0.13)	0.043 (0.175)	-0.899*** (0.177)	-0.905*** (0.182)
Age		-0.009 (0.005)	-0.008 (0.007)	-0.005 (0.008)	-0.003 (0.006)
Constant	4.828*** (0.127)	3.768** (1.737)	1.99 (3.378)	4.394* (2.554)	3.394* (1.82)
<b>Estimation method</b>	2SLS	2SLS	2SLS	2SLS	OLS
<b>Observations</b>	1437	1406	806	600	600
<b>R-squared</b>	0.132			0.177	0.193
<b>Durbin statistic</b>	9.235***	12.954***	16.806***	0.312	
<b>Wu-Hausman statistic</b>	9.1***	12.721***	16.44***	0.3	
<b>Sargan statistic</b>	0.092	0.002	1.773	3.103*	
<b>Basmann statistic</b>	0.09	0.002	1.702	3.0*	

Φ is the dependent variable, # denotes variables measured using buffers with a radius of thirty kilometers, standard errors are in parenthesis, \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.10. All models are estimated using two-stage least squares (2SLS) regression, except for model 6 which is estimated using ordinary least squares (OLS) regression. All models contain fixed effects for the respondents' ethnic groups.

were both significant at the 1 percent level, which indicates that the use of an instrumental variable estimation technique was appropriate. To check for the suitability of the instrumental variables, I conducted a test for over-identifying restrictions—since I have two instrumental variables and only one endogenous variable, which makes the model over-identified. Both the Sargan and Basmann statistics were statistically insignificant, which suggests that the instrumental variables are appropriate.

To check for heterogeneous effects based on religious affiliation, I estimated models using the Christian and Muslim subsamples of respondents. As shown in model 3 which was estimated using the Christian subsample of respondents, violent conflict carried a positive sign and was significant at the 1 percent level. This is consistent with **Hypothesis 2**, which states that among Christians, exposure to violent conflict leads to hostility towards ethnoreligious outgroups. A plausible reason for this finding is that the major conflict affecting Christians involves nomadic Fulani pastoralists who are Muslims. Because the parties to the conflict belong to different religious groups, it becomes easy for ingroup-outgroup distinctions to be made. Put differently, the existence of a religious cleavage makes the “othering” of Muslims easy. This explains why conflicts involving nomadic Fulani pastoralists are often viewed through a religious lens.<sup>95</sup> Moreover, the Round 7 Afrobarometer survey dataset shows that compared to Muslims, Christians are more likely to associate Muslims with extremism. Such perceptions catalyze polarization and make Christians hesitant to have people of a different ethnicity and religion as neighbors. The size of the coefficient in model 3 is larger than that in model 2, which suggests that conflict exposure has a larger effect on outgroup hostility among Christians



compared to the larger Nigerian population. A point worth re-emphasizing is that the operationalization for outgroup hostility employed in this study does not imply violence towards cultural outgroups, but rather the willingness to have members of the outgroup as neighbors. In model 4, which was estimated using the Muslim subsample of respondents, violent conflict was statistically insignificant. A closer inspection of the results shows that the Durbin and Wu-Hausman statistics were both insignificant. This suggests the absence of endogeneity. Moreover, both the Sargan and Basman statistics were significant at the 10 percent level, which indicates the unsuitability of the instrumental variables. Ordinary least squares (OLS) regression would thus be more befitting for estimating the relevant relationship using the Muslim subsample of respondents than 2SLS regression. As shown in model 5, which was estimated using OLS regression, violent conflict carried a positive sign and was significant at the 10 percent level. However, the effect size was very small compared to that in model 3 which is based on the Christian subsample of respondents. This suggests that the bulk of the positive effect of conflict exposure on outgroup hostility found among the Nigerian population (i.e., models 1 and 2) is driven by Christians. The weak positive effect among Muslims might be because the main conflict affecting them—the Boko Haram insurgency—does not involve Christians. A significant number of Muslims are also affected by the violent clashes involving nomadic Fulani pastoralists who are also Muslims. The common religion of Islam shared by the parties to the conflict makes it difficult for ingroup-outgroup boundaries to be established. Moreover, since the major conflicts affecting Muslims does not involve Christians, it thus becomes illogical for Muslims to be hostile towards Christians. Put differently, the absence of a religious cleavage between the conflicting parties makes “othering” and the attribution of blame to an outgroup difficult, hence the weak effect of violent conflict on outgroup hostility among Muslims.

### **Robustness check**

It is possible that the positive effect of violent conflict on outgroup hostility among the Nigerian population (i.e., models 1 and 2 in [Table 2](#)) is influenced by the way the dependent variable was operationalized. To check whether conflict exposure influences hostility towards ethnic and religious outgroups differently, I disaggregated the dependent variable and estimated models using its respective components. [Table 3](#) reports the results. Models 1 and 2 examine the effect of violent conflict on hostility towards religious outgroups only. In model 1—the baseline model—violent conflict carried a positive sign and was significant at the 5 percent level. This suggests that among the Nigerian population, exposure to violent conflict leads to hostility towards religious outgroups. In model 2 where I added the control variables, violent conflict retained its positive sign and its significance level increased to 1 percent.

Models 3 and 4 examine the effect of violent conflict on hostility towards ethnic outgroups only. In model 3—the baseline model—violent conflict carried a positive sign and was significant at the five percent level. This indicates that among Nigerians, exposure to violent conflict leads to hostility towards ethnic outgroups. In model 4 where I added the control variables, violent conflict retained its positive sign and its significance level increased to one percent. The effect size of violent conflict on hostility towards religious and ethnic outgroups are identical (at least in the baseline models), which might be because of the close association between ethnicity and religion in Nigeria.

I conducted another robustness check where I estimated some models using the religious subsamples of respondents and the ethnic and religious components of outgroup hostility. [Table 4](#) reports the results. In models 1, 2, and 3, the dependent variable measures hostility towards religious outgroups only. In model 1 which was estimated using the Christian subsample of respondents, violent conflict carried a positive sign and was significant at the one percent level. This indicates that among Christians, conflict exposure leads to the hostility towards people of a different religion. Moreover, this provides further support for **Hypothesis 2**. In model 2, which was estimated using the Muslim subsample of respondents, violent conflict was statistically insignificant. The Durbin and

**Table 3.** Effect of violent conflict on outgroup hostility II (Full sample)

Outgroup hostility <sup>φ</sup>	Religion		Ethnicity	
	(1)	(2)	(3)	(4)
Violent conflict <sup>#</sup>	0.002** (0.001)	0.014*** (0.004)	0.002** (0.001)	0.011*** (0.004)
Nighttime light <sup>#</sup>		-0.236*** (0.066)		-0.194*** (0.059)
Prevalence of stunting <sup>#</sup>		2.149*** (0.687)		1.618*** (0.62)
Household deprivation		0.007 (0.009)		0.015* (0.008)
Log Population size <sup>#</sup>		-0.006 (0.076)		-0.00 (0.068)
Educational level		-0.098*** (0.022)		-0.092*** (0.02)
Religious affiliation		0.176 (0.132)		0.22* (0.119)
Gender		-0.217*** (0.073)		-0.124* (0.066)
Age		-0.006** (0.003)		-0.003 (0.003)
Constant	2.552*** (0.072)	1.98** (0.977)	2.286*** (0.065)	1.738** (0.882)
<b>Estimation method</b>	2SLS	2SLS	2SLS	2SLS
<b>Observations</b>	1439	1408	1438	1407
<b>R-squared</b>	0.116		0.118	
<b>Durbin statistic</b>	9.083***	12.01***	6.578**	9.91***
<b>Wu-Hausman statistic</b>	8.95***	11.787***	6.470**	9.711***
<b>Sargan statistic</b>	0.317	0.05	0.018	0.163
<b>Basman statistic</b>	0.311	0.049	0.018	0.158

φ is the dependent variable, # denotes variables measured using buffers with a radius of 30 kilometers, standard errors are in parenthesis, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . All models are estimated using two-stage least squares (2SLS) regression. All models contain fixed effects for the respondents' ethnic groups. Only the second-stage regressions are reported here.

Wu-Hausman statistics were both insignificant, which suggests that endogeneity was not present and the use of an instrumental variable approach to estimate the model was inappropriate. I thus re-estimated the model using OLS regression. As shown in model 3, violent conflict remained statistically insignificant. This suggests that among Muslims, conflict exposure has no effect on hostility towards people of a different religion. This is consistent with **Hypothesis 3**.

In models 4, 5, and 6, the dependent variable measures hostility towards ethnic outgroups only. In model 4 which was estimated using the Christian subsample of respondents, violent conflict carried the expected positive sign and was significant at the one percent level, which indicates that among Christians, exposure to violent conflict has a positive effect on hostility towards ethnic outgroups. The size of the coefficient does not differ much from that in model 1, which further highlights the close association between ethnicity and religion in Nigeria. In model 5, which was estimated using the Muslim subsample of respondents, violent conflict was statistically insignificant. Because the Durbin and Wu-Hausman statistics were both statistically insignificant, I re-estimated the model using OLS regression. As shown in model 6, violent conflict remained statistically insignificant, which indicates that among Muslims, conflict exposure has no effect on hostility towards ethnic outgroups. This supports **Hypothesis 3**.

## Conclusion

This study examined the effect of exposure to violent conflict on hostility towards ethnoreligious outgroups among the Nigerian population and among its two major religious groups (i.e., Christians and Muslims). Causal identification stemmed from instrumenting conflict

**Table 4.** Effect of violent conflict on outgroup hostility III (Religious subsamples)

Outgroup hostility <sup>φ</sup>	Religion			Ethnicity		
	(1) (Xtian)	(2) (Muslim)	(3) (Muslim)	(4) (Xtian)	(5) (Muslim)	(6) (Muslim)
Violent conflict <sup>#</sup>	0.025*** (0.007)	0.004 (0.005)	0.001 (0.001)	0.021*** (0.006)	0.003 (0.005)	0.001 (0.001)
Nighttime light <sup>#</sup>	-0.464*** (0.113)	-0.05 (0.067)	-0.02 (0.022)	-0.393*** (0.105)	-0.051 (0.061)	-0.018 (0.02)
Prevalence of stunting <sup>#</sup>	-2.17** (1.044)	2.738** (1.356)	2.163*** (0.623)	-0.836 (0.972)	1.807 (1.235)	1.182** (0.565)
Household deprivation	-0.001 (0.012)	0.022* (0.013)	0.023* (0.013)	0.015 (0.011)	0.019* (0.011)	0.019* (0.012)
Log Population size <sup>#</sup>	0.111 (0.115)	-0.039 (0.143)	0.018 (0.079)	0.134 (0.108)	-0.027 (0.13)	0.035 (0.072)
Educational level	0.019 (0.031)	-0.109*** (0.029)	-0.102*** (0.025)	-0.02 (0.029)	-0.089*** (0.026)	-0.081*** (0.022)
Gender	-0.019 (0.097)	-0.514*** (0.101)	-0.517*** (0.102)	0.062 (0.09)	-0.39*** (0.092)	-0.393*** (0.092)
Age	-0.005 (0.004)	-0.005 (0.004)	-0.004 (0.004)	-0.003 (0.004)	-0.00 (0.004)	0.001 (0.004)
Constant	1.262 (1.866)	2.269 (1.458)	1.777* (1.041)	0.729 (1.737)	2.079 (1.326)	1.546 (0.945)
<b>Estimation method</b>	2SLS	2SLS	OLS	2SLS	2SLS	OLS
<b>Observations</b>	807	601	601	806	601	601
<b>R-squared</b>		0.187	0.198	0.008	0.124	0.142
<b>Durbin statistic</b>	14.998***	0.23		13.32***	0.329	
<b>Wu-Hausman statistic</b>	14.639***	0.221		12.973***	0.316	
<b>Sargan statistic</b>	1.232	4.236**		1.958	1.142	
<b>Basmann statistic</b>	1.182	4.103**		1.88	1.1	

φ is the dependent variable, # denotes variables measured using buffers with a radius of thirty kilometers, standard errors are in parenthesis, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . All models are estimated using two-stage least squares (2SLS) regression, except for models 3 and 6 which are estimated using ordinary least squares (OLS) regression. All models contain fixed effects for the respondents' ethnic groups. Only the second-stage regressions are reported here.

exposure with forest cover. The regression results showed that among the Nigerian population and Christians, conflict exposure had a robust positive effect on outgroup hostility. A plausible explanation for this finding is that the threat of violent conflict fosters cohesion within ingroup members, erodes trust in outgroup members, and makes intergroup boundaries salient. This is especially so when the opposite party to the conflict constitutes a distinct cultural outgroup. Because the main conflict affecting Christians involves nomadic Fulani pastoralists who are Muslims, it becomes easy for ingroup-outgroup distinctions to be established. Among Muslims, violent conflict had a weak positive effect on outgroup hostility that was robust to different operationalizations of outgroup hostility. This null effect among Muslims is likely because the main conflict affecting them—i.e., the Boko Haram insurgency—does not involve Christians. Moreover, a significant number of Muslims are affected by conflicts involving nomadic Fulani pastoralists. The common religion of Islam shared by the parties makes the establishment of ingroup-outgroup boundaries arduous, and makes it illogical for Muslims to be hostile towards Christians.

The regression results also showed that religion is closely associated with ethnicity in Nigeria, and the population tends to conflate the two. This is problematic because it makes intergroup boundaries more salient, which in turn heightens the risk of conflict. If the Nigerian government intends to reduce violent conflict and outgroup hostility, it would have to adopt a policy that tackles these two factors simultaneously because each one reinforces the other. For instance, the government could reduce the incidence of violent conflict by equipping its security agencies with the requisite skills and equipment needed to respond promptly and effectively to conflict situations, while simultaneously pursuing policies that foster social cohesion and elevate a shared national identity over ethnic and religious

identities, e.g., by encouraging inter-ethnic and inter-religious dialogue. However, I must also acknowledge that the latter recommendation might be difficult to achieve because it is not uncommon for the Nigerian elites to exploit the ethnic and religious divisions among the population for political gain.

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## Disclosure statement

No potential conflict of interest was reported by the author(s).

## Data availability statement

The data underlying this study are available in the Harvard Dataverse. <https://doi.org/10.7910/DVN/0WOK6X>

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## Notes

1. Although Nigeria has 250 ethnic groups, it has three major ones: The Hausa/Fulani who are predominantly Muslim and mainly reside in Northern Nigeria. The Igbo and the Yoruba constitute the major ethnic groups in Southern Nigeria. The Igbos are predominantly Christian, while the Yoruba is evenly split between Muslims and Christians (D. D. Laitin, *Hegemony and Culture: Politics and Religious Change Among the Yoruba* (Chicago: University of Chicago Press, 1986).
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## Appendix

**Table A1.** Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Outgroup hostility <sup>Φ</sup>	1437	4.389	2.351	2	10
Outgroup hostility (religion)	1439	2.261	1.331	1	5
Outgroup hostility (ethnicity)	1438	2.13	1.202	1	5
Violent conflict <sup>#</sup>	1592	67.886	106.807	0	475
Nighttime light <sup>#</sup>	1592	3.1	5.191	0	20.104
Prevalence of stunting <sup>#</sup>	1592	0.331	0.147	0.136	0.634
Household deprivation	1440	4.935	4.11	0	20
Log Population size <sup>#</sup>	1592	14.032	1.116	11.536	16.39
Educational level	1445	4.513	2.155	0	9
Religious affiliation	1428	0.569	0.495	0	1
Gender	1448	0.501	0.5	0	1
Age	1447	32.658	12.428	18	80
Forest cover	1592	0.599	0.223	0.056	0.985
(Forest cover) <sup>2</sup>	1592	0.408	0.26	0.003	0.969

Φ is the dependent variable which is derived by adding "Outgroup hostility (religion)" and "Outgroup hostility (ethnicity)," # denotes variables measured using buffers with a radius of thirty kilometers. Although the Afrobarometer dataset has 1,600 potential observations, the variables in the table contain fewer observations because not all respondents were asked the relevant questions. Also, I treated "don't know" and "refused to answer" responses as missing observations which may have exacerbated the problem of listwise deletion.

**Table A2.** Ethnic distribution of respondents

Ethnic group	Frequency (n)	Percent
Hausa	322	22.24
Igbo	251	17.33
Yoruba	328	22.65
Fulani	49	3.38
Ibibio	35	2.42
Kanuri	35	2.42
Ijaw	33	2.28
Tiv	26	1.80
Ikwere	25	1.73
Efik	24	1.66
Ebira	20	1.38
Idoma	19	1.31
Nupe	18	1.24
Igala	16	1.10
Isoko	10	0.69
Edo	10	0.69
Gwari	9	0.62
Kalabari	9	0.62
Jukun	7	0.48
Urhobo	4	0.28
Biom	3	0.21
Shuwa-Arab	1	0.07
Others	194	13.41
<b>Total</b>	<b>1,448</b>	<b>100.00</b>

Based on the Round 7 Afrobarometer survey data collected in 2017.

**Table A3.** Correlation between the variables

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Outgroup hostility	1.000													
(2) Outgroup hostility (religion)	0.938	1.000												
(3) Outgroup hostility (ethnicity)	0.925	0.736	1.000											
(4) Violent conflict	-0.118	-0.126	-0.092	1.000										
(5) Nighttime light	-0.168	-0.172	-0.140	0.837	1.000									
(6) Prevalence of stunting	0.098	0.109	0.072	-0.374	-0.397	1.000								
(7) Household deprivation	0.049	0.030	0.062	-0.048	-0.068	-0.066	1.000							
(8) log population size	-0.078	-0.086	-0.059	0.643	0.768	-0.500	-0.094	1.000						
(9) Educational level	-0.158	-0.150	-0.144	0.250	0.270	-0.378	-0.102	0.332	1.000					
(10) Religious affiliation	-0.038	-0.045	-0.024	0.141	0.207	-0.649	0.058	0.358	0.369	1.000				
(11) Gender	-0.074	-0.083	-0.052	-0.002	-0.011	0.011	0.028	-0.012	0.096	-0.042	1.000			
(12) Age	-0.007	-0.025	0.013	0.013	-0.017	0.009	0.040	0.007	-0.175	-0.028	0.124	1.000		
(13) Forest cover	-0.100	-0.094	-0.093	-0.094	-0.084	-0.318	0.060	0.054	0.079	0.298	0.003	0.056	1.000	
(14) (Forest cover) <sup>2</sup>	-0.113	-0.107	-0.103	-0.120	-0.096	-0.301	0.042	0.075	0.062	0.289	0.000	0.069	0.982	1.000