

COMMON GROUND: ANALYZING THE RELATIONSHIP BETWEEN CONFLICT,  
CLIMATE AND POWER IN THE REPUBLIC OF NIGERIA

by

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## THESIS ABSTRACT

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Violence between identity groups over access to productive land in Nigeria has captured the attention of international media outlets over the last two decades. Analysts frame causes in various ways, but it is commonly held that global climate change is causing dramatic environmental degradation, putting herding and farming communities in competition over a diminishing resource base. This representation, however, does not account for social and political dynamics that disempower segments of society and exacerbate already-existing tensions that are a result of the politicization of identity over long periods of time. This thesis examines the relationship between conflict, climate and political power in a mixed-methods framework through textual analysis of historical narratives and statistical analysis of conflict, survey and remote sensing data. The analysis shows that political exclusion is more significantly associated with instances of violent conflict than with low vegetative productivity (a proxy for climate change).



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For Chase, whose love and kindness taught me what it means to truly live.

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## CHAPTER I

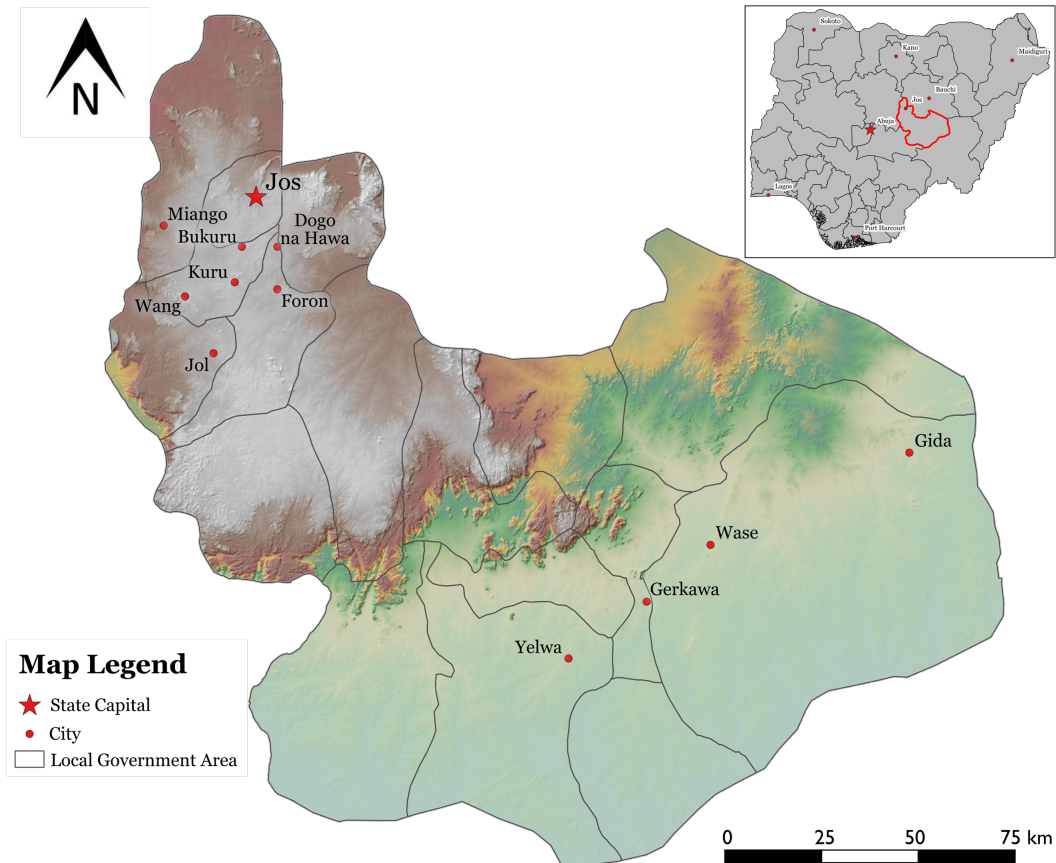
### INTRODUCTION

In January 2018, a group of Fulani pastoralists attacked a series of villages – largely inhabited by Berom farmers – killing 72 people and burning entire structures to the ground in the process. The attack was said to have been in retaliation for other attacks perpetrated against the Fulani by the Berom, in which people and cattle were killed for grazing illegally on Berom farmland. A similar series of attacks took place in 2014 when violence erupted in Jos and at least 30 people lost their lives in bomb attacks. Prior to that, in 2011 over 200 people died in a series of reprisal attacks centered on the city of Jos following a year of violence that left over 1,000 people dead (Human Rights Watch [HRW], 2011). In the first two decades of the twenty-first century, violent conflict between these communities has plagued the region and resulted in thousands of deaths, destruction of cropland and the killing of livestock in tit-for-tat fighting that continues unabated.

These events are manifestations of tensions that policymakers, journalists and scholars argue have grown between Muslim and Christian communities in the Middle Belt of Nigeria over what is essentially an issue of land access. According to Human Rights Watch, “Increased frequency of violent conflict has been linked to intense pressures on land because of expansion of commercially cultivated areas, corporate mining activities, and competitive overuse of common resources, such as forests, pastoral rangelands, and water sources, exacerbated by climate change (Nnoko-Mewanu, 2018).” While violence of this sort has taken place all over the Middle Belt region at various times, fighting in Plateau State has been particularly deadly. The city of Jos (see Figure



1), located at the northern end of Plateau State, and its surrounding villages have been an epicenter of conflict between so-called Muslim herders and Christian farmers.



**Figure 1:** Reference map of Plateau State.

The causes of this conflict are manifold and difficult to disentangle. Commentaries on the conflict variously blame religious difference, ethnic rivalry, incompatible subsistence systems or climate change (see e.g. Campbell & Harwood, 2013; Akinwotu, 2018; Ilo, Jonathan-Ichaver & Adamolekun, 2019), but many believe that exclusionary practices by administrative bodies at the substate and local levels play a critical role in perpetuating the violence as well (see e.g. International Crisis Group, 2018; Amnesty International, 2019; “How Nigeria’s Cattle War Is Fuelling Religious Tension,” 2018). While most observers of the ongoing situation in Middle Belt Nigeria

acknowledge this complexity, analyses generally trace the situation back to a decrease in environmental productivity, generally owing to global climate change (see e.g. Egbuta, 2018; Sayne, 2011). This tendency, in turn, has served to focus attention on the question of “who belongs where,” with many arguing that Fulani herder communities have migrated to the Plateau in ever-greater numbers, trespassing on locals’ land and destroying crops in the process.

Empirical evaluation of the various causal explanations for the conflict are necessary for deepening our understanding of which elements are most disruptive for resource-constrained communities that engage in violence. Without a clear understanding of the relative effects of climate degradation in the absolute sense versus ethnicity-based power disparities, it is difficult to formulate policy or aid responses that are positioned to most effectively alleviate violence in the region. The research presented in this thesis addresses the relationship between so-called ethnic conflict, climate change and long-term intergroup relations. First, I address the question: *what is the significance of historical intergroup processes in the Middle Belt and how are they manifest today?* Second, I ask: *to what extent is violent conflict in the Middle Belt region correlated with changes in vegetation indices over the last 10 years?* By addressing these questions together, I aim to evaluate the relative significance of a changing climate, on the one hand, and social-spatial processes, on the other, in the conflicts affecting the region – disentangling each effect from the narrative in which they are embedded.

Many scholars have attempted to explain the outbreak or ongoing existence of violent conflict in various ways. An oft-repeated line of thinking attributes conflicts in the

Third World<sup>1</sup> to the impact of increased environmental variability from climate change on historic weather patterns, resulting in unpredictable growing seasons and weather events that make subsistence lifestyles more difficult. While proponents of this theory acknowledge that societies can and do adapt to changing environmental conditions, those on the precarious margins of the social order are forced to make do with a smaller amount of natural resources. Finally, once the level of desperation reaches a threshold or critical mass, communities mobilize against each other for control of what little resources remain (Nordås & Gleditsch, 2007). In other words, the assumption is that groups will seek to command resources in the natural environment at the expense of others as scarcity intensifies and the carrying capacity of the land is reduced in an absolute sense.

Access to natural resources is not freely available to all members of society, of course, and social status, class, ethnicity, and other markers of identity can either enable or restrict who gets what. Those commentators who focus attention on such matters argue that the concept of “absolute scarcity” should be replaced by “relative scarcity,” positing that societies adapt to climate stress, but in often exclusionary ways. Climate crises may, in fact, justify new processes of accumulation by dispossession through supply-side control methods like water abstraction, formalized land titles and redistribution schemes. That is not to say that scarcity has little or no effect on the abundance or availability of resources; rather, human societies have been living in dynamic and ever-changing environmental conditions that have required adaptation and cooperation to ensure their

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<sup>1</sup> I take the historical meaning of this term, specifically states of the non-aligned movement during the Cold War. See Sheppard, E., Porter, P., Faust, D. & Nagar, R. (2009). *A World of Difference: Encountering and Contesting Development*. New York & London: The Guilford Press. pp. 19-20.

survival (see e.g. Orlove, 2005). Yet it is not always clear to what extent resource scarcity is a product of the changing environment or of less obvious social-spatial processes.

The absolute scarcity and distributive perspectives suggest different policy approaches as solutions to the problem of decreasing natural resources. The former argument suggests that so-called modernization is the best way forward. Supporters of this theory often attribute environmental degradation to unsustainable subsistence practices, high birth rates in rural areas and a lack of market processes that would rationalize the means of production. For example, Okpara, Stringer, Dougill & Bila (2015) claim that “it is the presence of severe demographic factors, weak justice and poor resource governance mechanisms and arrangements for establishing rights of resource access and use that differentiate locations facing similar environmental challenge in terms of whether conflict happens or not (p. 321).” The latter argument, on the other hand, suggests that vulnerable communities need more influence over the allocation process than they currently have. Bohle, Downing & Watts (1994) acknowledge this by concluding that “Feasible interventions to reduce vulnerability and ameliorate the impact of climate change [...] revolve around supporting the capacity of vulnerable groups to maintain resources and productive activities, efforts to enhance recovery from food crises [...], and promoting political economies that ensure access to resources and a safety net for the destitute (p. 48).” By including these communities in the decision-making process, society at large is better able to reach compromises that benefit everyone according to their needs.

Studies of violent conflict, though well-established in academic circles, often suffer from a state-based perspective that forces many scholars to focus on interstate,

formally declared wars. War, it has been said, “is the continuation of politics by other means<sup>2</sup>” and, as such, is a very formalized process of state violence. Wars are declared, battles are fought, diplomacy may happen behind the scenes and, ultimately, armistices are signed. Localized conflict, on the other hand, almost always takes place within states or across borders between non-state actors such as smuggling rings or terrorist groups. While an increase in data availability has shifted more focus to civil wars at the substate level, localized conflicts in which neither actor is the state are only now gaining attention from researchers. Civil war still bears many characteristics of interstate war in that there is usually a formal declaration followed by some sort of discrete conclusion. In other words, scholars are able to use these convenient time frames as bookends for the conflict under study, enabling all sorts of time- and distance-based analyses of where the war started, where it spread, and the conditions under which it concluded. For these reasons, it is difficult to apply the insights produced by much of the existing research on substate conflict to circumstances of communal conflict.

Substate violence that does not adhere to the formal rules of warfare poses a challenge to scholars of conflict for a number of reasons. First, there are often no clear temporal bounds of substate conflict. In many cases this violence is chronic and scattered, going dormant for long periods of time and flaring up periodically here and there. Analytical techniques that take stock of territorial control, base establishment, moving fronts, and other standard measures of a war’s progress often do not neatly apply (see e.g. Demmers, 2017). Second, while it is sometimes possible to generalize the motivations of

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<sup>2</sup> The original phrase reads, “War is a mere continuation of policy by other means (pp. 23),” and appeared as the heading for a section in: Von Clausewitz, C. (1918). *On War, vol 1*. (J. J. Graham, Trans.) London: Kegan Paul, Trench, Trubner & Co. (Original German work published 1832).

the various actors, it is difficult to divine clear objectives of either side. So-called communal violence may only seek reprisal for previous violent episodes, rendering moot traditional analytic methods that assume a war-like framework for a given conflict (e.g. diffusion, territory). Moreover, it is difficult to extract clear motivations of substate, non-civil war conflicts in the first place; events may be manifestations of ‘divine violence<sup>3</sup>,’ lacking any goal beyond the extreme expression of resentment and feelings of marginalization in response to perceived injustice. Moreover, the lack of centrality inherent in these sorts of conflicts means that demands or grievances are not communicated publicly or, to the extent that they are, only apply in specific geographic contexts.

The research presented in this thesis takes these different narratives and evaluates the relative significance of each of these proposed explanations as they relate to intergroup relations in Central Nigeria. The research is grounded in a mixed-methods framework that draws on spatial analysis and historical materialist tracing. Spatial analysis has been used in political geography and political science for decades, but only recently have researchers been able to bring GIS, remote sensing and statistical methods to bear on very large and spatially precise datasets (Linke & O’Loughlin, 2015). The increasing availability of spatially disaggregated data also allows researchers to analyze substate processes with more reliability than in the past. Nevertheless, exclusively quantitative research suffers from many drawbacks, and the post-positivist paradigm

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<sup>3</sup> Walter Benjamin distinguishes between “mythic” (lawmaking) and “divine” (law-destroying) violence. “As regards man, he is impelled by anger [...] to the most visible outbursts of a violence that is not related as a means to a preconceived end. It is not a means but a manifestation. [...] If mythic violence is lawmaking, divine violence is law-destroying; if the former sets boundaries, the latter boundlessly destroys them [...] (pp. 249-250). See Benjamin, W. (1996). *Critique of Violence* (S. Verlag, Trans.). In M. Bullock and M. W. Jennings (Eds.) *Walter Benjamin: Selected Writings Volume 1 1913-1926*. Cambridge: Harvard University Press. (Original work published 1921).

embraced by many scholars within the discipline of geography is intensely skeptical about the utility and accuracy of such research (see e.g. Sheppard, 2000; O’Loughlin, 2018; Secor, 2018; Kwan, 2002). There are, without a doubt, problematic assumptions and generalizations inherent in spatial and statistical analysis that require serious attention and some amount of skepticism. Yet quantitative analysis has much to add to our understanding of geographic processes. Instead, we can begin to think about ways in which we can combine quantitative and qualitative methods that could strengthen or qualify the results that might come from one or the other approach.

In the following chapter I sketch out the empirical background of the area under investigation. I trace the historical social, spatial and political processes that took place separately between the ethnic groups Berom and Fulani and, eventually, the impacts of their increasing interaction with one another. Next, I review the theoretical literature that deals with political and ethnic identity and the conditions for violent conflict in the third world. I then outline the theoretical framework I use to answer the research questions presented above. Finally, I outline the methodological approaches – both quantitative and qualitative – that I bring to bear on the research questions posed above. In this analysis I focus on the evolution of the historical social processes between ethnic groups at work in the greater Middle Belt region. I draw from and synthesize secondary historical sources in order to trace the dialectical movements between the Berom, the Fulani and the British, outlining the story up to the present. Geography is necessarily historical as modern social-spatial processes cannot be properly understood without paying attention to the critical moments in history, effects of which remain sedimented in place. I locate and analyze such moments through the lens of historical geographical materialism (see e.g.

Harvey, 1984; Cox, 2013), connecting them to later points in history and, ultimately, the present. I show that the modern relationship between Berom and Fulani is the product of a longer evolution of resistance, conquest and, ultimately, a monopolization of devolved political power in the unique context of the Nigerian federal system.

In the third chapter I address the climate-conflict narrative with a spatial-analytic approach that combines GIS and remote sensing data. Since quantitative analysis generally favors hypothesis testing over theory building (Luker, 2008), it is possible to offer discourse-based propositions that can then be checked against data available from various official and non-governmental sources. In this sense, I test the relationship between climate change, measured by proxy through MODIS vegetation analysis data, and the instance of violent conflict as quantified by the Uppsala Conflict Data Project Georeferenced Event Database (UCDP GED; Sundberg & Melander, 2013). I show that violent conflict is not significantly associated with decreasing photosynthetic activity at the substate scale and discuss the research implications of this finding.

In the fourth and final chapter, I discuss the merits and drawbacks of each methodological approach and the benefit that can be gleaned from using one to inform the other. I reflect on the challenges encountered while using this particular mixed-methods framework, and the challenges for researchers more generally when attempting to operationalize a similar approach. Despite the lacunae and contradictions in the academic literature on mixed-methods analysis and the intensity of the debate that continues between scholars using one or the other approach, it is possible to conceive of a way forward without abandoning either one entirely. Finally, I address the new questions and potential avenues for research on non-state violent conflict between ethnic groups in



Nigeria that can be pursued by viewing the conflict not as a product of climate change itself, but as a result of underlying tensions resulting from identity-based political exclusion from the state apparatus.

## CHAPTER II

### HISTORY OF ETHNIC RELATIONS IN PLATEAU STATE

Modern Nigeria has an incredible diversity of physical and social characteristics. Ecologically, it ranges from the arid Sahelian bush in the North to equatorial rainforest in the South. The Intertropical Convergence Zone (ITCZ) has significant influence on the region's weather and climate and it brings heavy rains to different parts of the country over the course of a year. Culturally, Nigeria is home to roughly 250 ethnicities (CIA World Fact Book, 2018). Christianity and Islam are the two most commonly practiced religions in the country, but there is a wide variety of traditional animist religions practiced as well. While English is the lingua franca of officialdom and much of the Nigerian elite, there are nearly as many languages spoken as there are ethnic groups in the country. There is even a diversity of ruling institutions, as Nigeria's constitution allows for the election or appointment of traditional rulers of older polities, like the Shehu of the Bornu Emirate or the Sultan of the Sokoto Empire<sup>4</sup>. Not only is Nigeria the very definition of the modern multinational state, it is so on a scale of dramatic proportions.

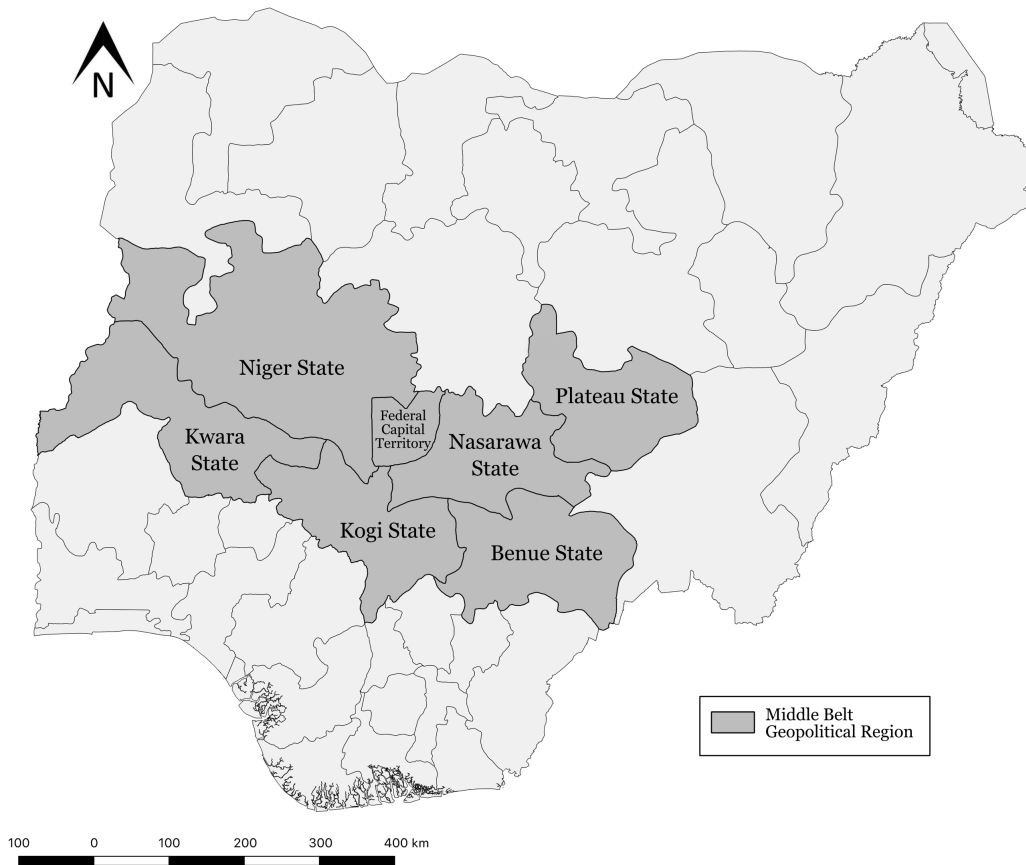
While many groups are geographically concentrated, as is the case regarding the north-south, Islamic-Christian<sup>5</sup> divide, there is considerable heterogeneity in the central part of the country. This area, known as the Middle Belt or North-Central Geopolitical Zone, is a cultural transition zone in which many societies coexist and interact on a daily

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<sup>4</sup> These titles are recognized by the state as having ceremonial roles, influence over civil society and some leadership capacity in the state- and LGA-level governance bodies. Their relative power varies from place to place but their authority does not generally supersede that of the secular government at the local and national levels.

<sup>5</sup> There is a considerably higher proportion of traditional animist belief systems in the south than most popular sources acknowledge, especially in the Southeast Igbo region.

basis. The Middle Belt consists of seven states and the Federal Capital Territory (see Figure 2). Jos, in Plateau State, is the largest city in the Middle Belt and is a centrally located hub of commerce and trade between the North and the South. As the name might suggest, Plateau State mostly encompasses a large plateau that is, in some places, quite rocky and sparse. Still, the milder climate on the Plateau allows for a more diverse mix of agriculture than the semiarid plains that surround it. It has long been a place of interest to people on the outside who sought to exploit it for slaves, crops and minerals.



**Figure 2:** Map of North-Central Geopolitical Zone in Nigeria, also known as the Middle Belt Region.

The history of the Plateau is a story of resistance and struggle. It is a space in which autonomous peoples lived for centuries in small-scale sociopolitical structures with

connections to the world beyond while not being dominated by any large-scale, centralized political unit. The Berom and Fulani engage one another as actors in the socio-spatial dialectic through which cultural and religious difference have become politicized social fault lines. Instead of being the product of a primordial antagonism between mutually opposed belief systems, the conflict is better understood as the product of a rapid conversion of social relations from those which were negotiated through periodic conflict and cooperation, to those which were directed and mediated from an external, colonial authority.

### Cultural and Political Evolution of the Region

Many histories of Nigeria begin sometime in the mid to late nineteenth century with the increasing pace of British colonization in Africa. Prior to British arrival, however, West Africa had been extensively colonized by Arab societies from the Arabian Peninsula and North Africa. As early as the seventh century CE (Nixon, 2009) Arabian caravans began traversing the continent, initially establishing small settlements throughout the Sahara and Sahel. Over time, the Arab population in sub-Saharan Africa grew and, with it, Islamic institutions and ideology spread. As Arabs and black Africans associated with one another and intermarried, West Africa became an active center of Islamic worship, education and politics around the fourteenth century CE (Johnston, 1967). Large-scale polities based on the tenants of Islam and Sharia Law absorbed smaller, pagan societies that had been historically based on tribal association and traditional rule (see e.g. Levtzion & Pouwels, 2000; Ware & Ware, 2014).

The Fulani played an important role in the spread of Islam and Islamic states in West Africa. The historical record suggests that the Fulani originally came from the area

on the Arabian Peninsula now known as Yemen (MacEachern, 2012). They travelled in a westerly direction across North Africa and down the west coast, settling for a time in the Senegambia region<sup>6</sup>. With a culture based in livestock rearing and pastoralism, the Fulani slowly migrated eastward, settling as far as the central Sudan by the eighteenth century.

An important theme in Fulani history is their relationship with the Hausa and their experiences in Hausaland generally. It is not within the scope of this paper to discuss the origins of the Hausa and the formation of their polities, but between the thirteenth and seventeenth centuries several city-states had come to occupy much of the Sahel region west of Lake Chad and east of the Songhai Empire. Over a dozen of such city-states were established by the seventeenth century and were led separately by chiefdoms based on hereditary succession. The rulers of these polities were “nominally Moslem (Johnston, 1967; p. 29),” but the ruling class did not seriously embrace the tenants of Sharia, often implementing policies that were in direct contradiction to Quranic teaching. This became a major concern for those who understood themselves as devout Muslims committed to Quranic teaching. The Islamic reformer Shehu Usman dan Fodio, a Fulani-Islamic spiritual leader who initiated a jihad against the Hausa rulers, wrote a blistering critique of the Hausa peasantry and ruling class in a book titled *Kitab al-Farq* in the early nineteenth century. “These can be classified into four unequal groups under the general headings of oppression, corruption, self-indulgence, and technical offences against the Islamic code (p. 30).”

In their long trek eastward from the Senegambia region, some Fulani settled in the Hausa States and became permanent members of their society. Importantly, many of the

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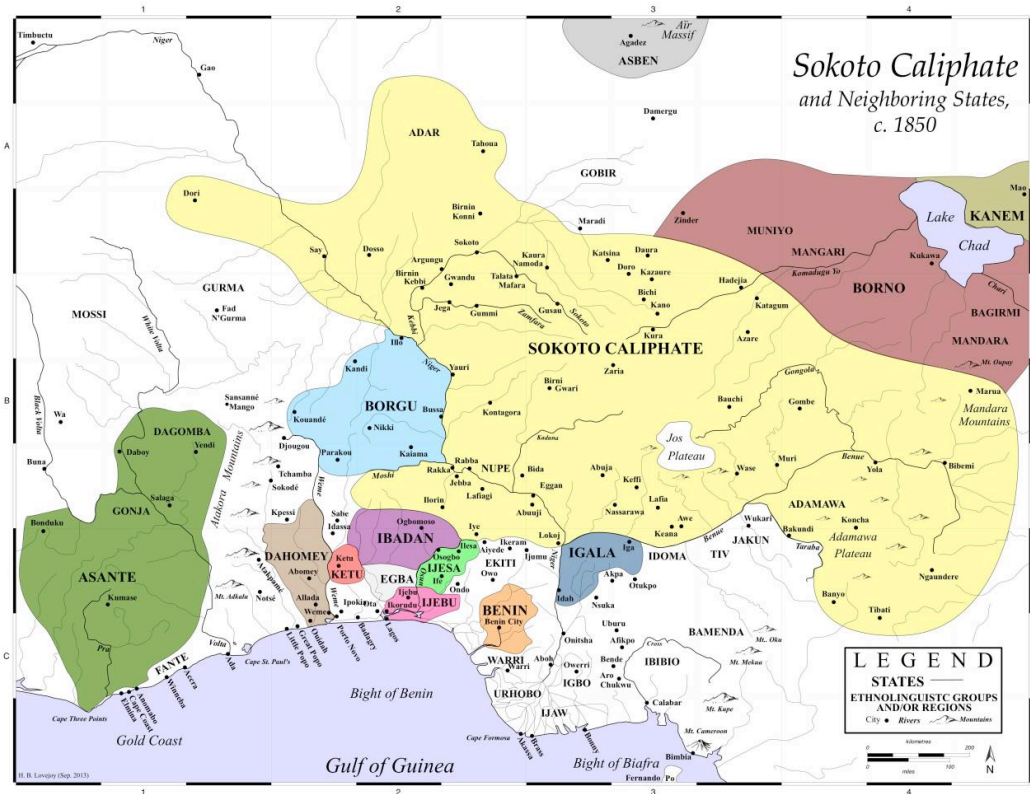
<sup>6</sup> Senegambia refers to the region that the two states now called Senegal and Gambia mostly occupy.

Fulani who settled in this region gave up nomadic cattle-herding and incorporated farming into their subsistence system alongside a more sedentary form of animal husbandry. Conversely, some moved further east to the Sudan region and continued on with their pastoral way of life. The settled Fulani, however, were active participants in Hausa society and came to value the practice of Islam and the stewardship of knowledge (Ibrahim, 1966). The Fulani that settled in the Hausa States are largely responsible for the cultural fusion between the groups that we observe today, and the hyphenated term Hausa-Fulani is commonly used in acknowledgement of this historical association.

In the early nineteenth century, the political map of West Africa was populated by several competing Islamic-based empires. These empires were composed of a number of city-states that paid tribute to a hereditary ruling class. Imperial power was gained mainly by means of conquest, and the nineteenth century was a period defined by active competition and expansion. In the northeast, the Kanem Empire, located north of Lake Chad, had recently failed in its attempt to reincorporate the breakaway Borno Empire to its southwest. The Bauchi and Zaria emirates were expanding and attempted to incorporate the peoples of the Bauchi Plateau<sup>7</sup> without much success.

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<sup>7</sup> This is the historical term for the region now called Plateau State.



**Figure 3:** The maximum extent of the Sokoto Caliphate during the nineteenth century. Note the exclusion of the Jos Plateau from the Caliphate’s territory (Source: Paul E. Lovejoy, *Jihad in West Africa during the Age of Revolutions* Athens: Ohio University Press, 2016).

The larger context for this expansion and military competition is the rise of a powerful Fulani leader in northern Hausaland and his eventual conquest and consolidation of polities in the region. Shehu Usman Dan Fodio sought to spread the teachings of Islam to all of Hausaland and restore Islamic law to what he saw as a corrupted and heretical society. A dedicated proselytizer, he built a following by travelling across the region and preaching the Koran. As his popularity grew, he became a target of the Hausa Chiefs of whom he was an active critic for their non-adherence to Islam and Sharia law (Johnston, 1967). By this time the followers of Dan Fodio came to represent a difficult-to-ignore Islamic reform movement that threatened the power of the

ruling class. Dan Fodio and his adherents eventually fled to the western edge of Hausaland where his following continued to grow in the village of Gudu. Threatened by a powerful Hausa Chief and intent on bringing to an end the corruptness of the extant ruling class in favor of a truer Islam, Dan Fodio and his followers initiated what would become one of the most consequential military campaigns in the history of the region. By the middle of the nineteenth century most of the hereditary chiefs of Hausaland had been deposed by Dan Fodio and his army (Johnston, 1967). The resulting Islamic state, the Sokoto Caliphate (see Figure 3), quickly extended across most of northern Nigeria and remained so until formal British colonization in the early twentieth century.

### The Jihad and Territorial Consolidation

During the wars of the nineteenth century, multiple attempts to conquer the Bauchi Plateau were undertaken by the various sultanates to its east and west. The peoples of the Plateau and its surrounding plains had, for centuries, limited contact with the peoples of the Hausa and Fulani states around them. Historically, the Plateau served as a refuge for its residents, allowing them to raid cattle from the surrounding plains without any major concern for serious retaliation. Their ability to retreat to the Plateau's rocky escarpments – as well as the lowland caliphates' general reluctance to commit fully to conquering the Plateau<sup>8</sup> – enabled these groups to live independent of the state formation process that was ongoing in the region during the nineteenth century. The

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<sup>8</sup> Zaria and Bauchi, the two Sokoto-aligned emirates immediately bordering the Plateau, were preoccupied with consolidating other conquered territories in the lowlands. “The Plateau was also fortunate in that it was sufficiently distant from the emirate capitals to be the last and most difficult part for any expedition to reach [and] it was already supplying captives [...] and engaging in some form of trade (Morrison, 1982; p. 147).”



Berom and other groups on the Plateau, then, remained socially, culturally and politically separate from the Sokoto Caliphate and its associated polities for much of their existence.

By the late-eighteenth century, the British had become interested in the region as a potential colony and were investigating the area thoroughly. “In 1787, the African Association was founded in England to explore the course of the River Niger (Falola, 1999, pp. 39-40).” Over the course of the following century, explorations were undertaken with the goals of assessing the value of the countryside, spreading Christianity and establishing political and economic relations with indigenous rulers.

Eventually, the British instituted a system of formal colonization through governance frameworks that established certain groups as the *de jure* rulers of the three large territorial blocks that would later become Nigeria. All of the territory north of the Benue and Niger Rivers was demarcated as a single administrative region, and the rulers of the Sokoto Caliphate were given authority over its local governance. The British colonial system of indirect rule often meant that previously unrelated or autonomous peoples and spaces became grouped together into a single territory, granting the more politically organized group total authority over local governance. “The military subjugation of the Plateau was inevitable; no colonial power can tolerate the presence of a free people (Isichei, 1982, p. 208).” The British were inclined to deal with existing large-scale political organizations, and the Fulani, having recently conquered and assimilated most of the North into the Sokoto Caliphate, were the most obvious choice for this role in colonial Nigeria. Despite the fact that the residents of the Bauchi Plateau had never truly been subjects of the Sokoto Empire, they were essentially made so overnight by way of imperial fiat.

While some British exploration of the Plateau had taken place during the nineteenth century, it was not until the early twentieth century that they began serious campaigns to ‘pacify’ the region. The groups on the Plateau were wary of the British presence and often refused to cooperate with colonial officials, though they were not alone in this regard. Resistance to British aggression was widespread, particularly in parts of the North where Muslims saw the invading colonists as Christian infidels and usurpers. There were some in the lowlands near the Plateau, however, who “manipulated their invader so that he would attack their local enemies (Isichei, 1982, p. 209)” and took advantage of the British drive for conquest of the region. Colonial administrators, frustrated by the Plateau residents’ unwillingness to be subjugated to colonial authority, enlisted the help of their allies in the Sokoto Empire in a series of military campaigns that eventually conquered all of the peoples of the Plateau. This was a decades-long process that resulted in the forcible replacement of many tribal leaders in the area (Isichei, 1982).

#### Tin Extraction and Political-Economic Transformation

The system of indirect rule was premised on the expectation that, in return for preserving the local rulership structure for one or more groups, the colonizers would have sole access to and authority over the extraction of natural resources in which they were interested. The main resource on the Plateau was tin. The British discovery of tin was somewhat late – groups on the Plateau had been mining and smelting tin for centuries prior to contact with the colonial administration. “For some time tin was mined and smelted on a limited scale by people on or near the Plateau. The discovery of tin beads smelted by the Nok people nearly 2000 years ago provides evidence that the industry was of considerable antiquity (Grace, 1982, p. 179). Around 1900, however, the British “were

beginning to take an interest in the potential wealth of the tin deposits on the Plateau (p. 181).” In a few short decades, colonial authorities had massively disrupted the traditional tin economy of the Bauchi Plateau and, in a way, set to work proletarianizing the local population in the service of industrial-scale tin mining.

The transformation of the tin mining and smelting industry was rapid and violent. The colonial administration expropriated all the productive tin fields and outlawed indigenous smelting by closing or destroying traditional furnaces. The impact this process had on the peoples of the Plateau were massive:

Most obvious was the destruction of the traditional tin industry. Before the advent of colonial rule this had adequately served local needs and had even provided a surplus for export, as the Royal Niger Company had discovered when it established its post on the Benue River. Yet to British eyes this industry was at best an anachronism which hindered the efficient extraction of a valuable metal; at worst local tin miners were regarded as pirates or thieves robbing the expatriates of their tin. Certainly the rights of colonial authorities who granted exclusive mining and prospecting leases to alien [British] companies, completely ignoring the prior claims of the local people (pp. 183-184).

This process of accumulation by dispossession (see e.g. Harvey, 2003) was accompanied by a brutal regime based upon an ethnicized division of labor. At the same time that the people of the Plateau were dispossessed of their means of production, they were forced to work in the newly reformed mining industry in order to conform to the system of taxation imposed by the British. Plateau residents were pushed off their traditional farmlands and had no choice but to excavate tin in order to meet their needs.

The system of taxation played an important role in constraining the options available to the residents of the Plateau. The taxes were oppressive, and the disciplinary methods through which they were enforced were doubly so. “If anyone failed to pay [them], his goats were seized and he himself was beaten by the chief’s representatives

(Isichei, 1982, p. 260).” At first taxes were collected in grain or livestock, but eventually only currency was accepted as payment. Plateau residents, like the Berom and Tiv, had very few options for earning cash wages. Most ended up working in the tin fields around Jos and elsewhere and were forced into a labor system in which they were at the bottom. The Hausa-Fulani, having been previously recognized as the group through which local rule was exercised, were placed above them in the wage and social structure. A Mwashavul<sup>9</sup> elder recalled the interaction between his people and the Hausa supervisors: “The people we met in control of the fields were Hausa. They treated us badly. They would get the soil and put it in our headpans, not minding our strength to carry it (p. 261).” The British also used corvee labor to construct roads and other lines of communication that connected the tin fields to extraction points like Lagos and Port Harcourt, which was organized along the same ethnic divisions as tin mining and at least as brutal.

### The Deeper Roots of the Cattle Grazing Issue

Conflict also developed in the early twentieth century between the Hausa-Fulani and the groups of the Plateau over the issue of cattle grazing in the region. As has been discussed earlier, the people of the lowlands surrounding the Plateau had never managed to exert social or political control over the groups on the Plateau. As Fulani pastoralists attempted to graze their cattle on the Plateau in the nineteenth century and earlier, Plateau residents responded aggressively and raided the cattle of any herder who got too close to their villages. With the imposition of colonial rule and the ‘pacification’ of the Plateau, this changed almost overnight.

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<sup>9</sup> One of the many groups indigenous to the Plateau region.

Extensive cattle grazing on the Plateau did not occur until the early twentieth century and was made possible by the British conquest of the region. Isichei (1982) cites another Mwahavul informant who says “The Fulani came from the same direction as the Europeans ... They could not come to our land earlier, because our people used to steal their cows and they were afraid to come near us (p. 264).” Results were mixed, as farmers benefitted from the new abundance of cattle manure but were incensed by the occasional trampling of their crops and the loss of farmland for grazing trails. The cattle population on the Plateau grew exponentially over the years, and in some parts overgrazing made it difficult to obtain enough grass for roof thatching.

Technological change in the form of livestock vaccinations complicate the picture further. While the population of cattle on the Plateau expanded dramatically, the cattle population of Nigeria more generally exploded in the second quarter of the twentieth century in ways that it would not have been able to without intervention. The Nigerian cattle population “expanded from four to ten million between 1925 and 1970,” and some herders went “so far as to infect their own herds with rinderpest in order to force the colonial government to inoculate them (p. 265).” This alteration of the political economy of the region, one that resulted in the rapid expansion of a subsistence practice that was previously quite limited in the local area, was unlikely to have occurred without some friction between the previously existing group and that which had just arrived.

### Indigeneity in the Nigerian Federal System

The relationship between ethnicity and political power has been a fundamental concern of modern Nigerian politics. The cataclysmic Nigerian Civil War, triggered by General Obasanjo’s declaration that the Southeast had formally declared independence,

was itself a response to the perceived domination of the state by the Hausa-Fulani. Since then, measures have been taken to give some level of autonomy to the many ethnicities within Nigeria's borders. A major tool in this process has been the creation of states in which each group indigenous to that region has some level of autonomy in local affairs. This indigeneity standard, or indigene status, has been criticized as undermining attempts for peace in heterogeneous parts of Nigeria like the Middle Belt (HRW, 2006; Adebani, 2009).

Indigeneity is particularly important to the groups in Nigeria that are not Hausa-Fulani, Igbo or Yoruba. The groups in the Middle Belt are all relatively small and have been particularly active in using the indigeneity principle to protect their cultural and economic interests against the larger national-level groups. Indigeneity is not exercised in the same way across states in Nigeria, and in many, the application for indigeneity is a formality and a fee. For groups such as the Berom – the most heavily represented group in the Plateau State government – indigene status is rather inflexible. Though indigeneity focuses on the origin of one's ethnic group, in practice applicants for indigeneity in Plateau State can be turned away for a number of reasons including being Muslim<sup>10</sup> (HRW, 2006).

The local autonomy granted to indigene groups in Nigeria has a tendency to result in lopsided or exclusionary social dynamics between neighboring groups. In the case of Plateau State, non-indigenes are generally excluded from government offices and jobs, the ability to vote, and places in local universities. Indigeneity is both an object of scorn

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<sup>10</sup> Non-Fulani Muslim societies have inhabited the Plateau for centuries and, on those grounds, could be eligible for indigeneity in the same way as Christian or animist groups with a longstanding presence in the region.

and a source of pride, depending on the composition of the population and who holds power. The Fulani are not recognized as indigenous to Plateau, though it has been home to many sedentary and nomadic Fulani for over a century. The effect of such exclusion is polarization between neighboring groups in the region. The system of indigeneity, though intended to reduce potential conflict between groups with power at the national level and those without, has instead resulted in cases of social exclusion and division. Alec Murphy (1989) articulates the nature of this contradiction:

Many nations lack autonomous states of their own, but substate administrative regions can also be powerful foci for ethnic identity. Administrative areas are more than important symbols. They can also serve both to classify objects and people on the basis of locational characteristics and to promote the spatial compartmentalization of issues and problems. These consequences come about because the creation of administrative regions introduces discontinuities in patterns of spatial interactions and provides a concrete basis for the conceptual and functional division of social and political life. When administrative regions based on ethnic criteria are created, the consequences may well foster increased social differentiation along ethnic lines (pp. 412-413).

While the system of indigeneity established in the most recent version of the Nigerian Constitution is intended to ameliorate concerns about ethnicity-based domination of the federal system, it allows – or rather, it expects – that in- and out-groups be defined and policed. The proliferation of new states and local government areas designated for particular groups has gradually diminished the ability of Nigerians to move freely and operate politically, economically and socially within the national space. In addition to the problematic power relations this policy creates, it also inhibits a recognition of close neighbors as having some level of commonality based on mutual association with the national project.

## Discussion

In this tracing of the historical development of modern-day Plateau State, three themes are apparent. First, the Plateau had remained politically independent of the pre-colonial states of the region for centuries. In the nineteenth century in particular, the residents of the high plateau had successfully resisted the jihad of the Sokoto Empire that had successfully incorporated the surrounding lowlands and most of the North. Second, the imposition of British colonial rule quickly and dramatically reorganized the power structure and political economy of the region, subjecting the people of the Plateau to the very forces they had previously resisted. The importance of tin extraction and the ethnicized labor structure upon which the British relied for its operation strained relations between groups that had only engaged in some conflict prior to its imposition. Finally, the migration that was enabled by British ‘pacification’ of the Plateau brought together herding and farming on a level that had not been previously experienced in the area. The relationship between these modes of production was further complicated by the dramatic expansion of the cattle population due to the introduction of new vaccines. Understanding these historical movements is vital to understanding important elements of the conflict in today’s Middle Belt.

To say that colonialism and British-style indirect rule inflicted long-term damage on social relations within a society does not provide any particularly novel insights. But the unique physical- and human-geographic patterning of the region made the resulting ethnicized social structure immediately polarized – the Plateau changed rapidly from a space of autonomy through resistance to a subject of the expansionist empire it had previously repelled. Additionally, the evolution of Nigeria’s federal system, which



provided limited local autonomy and control of the state on the basis of ethnicity, has enabled some ethnic groups to restrict access to the state apparatus, resulting in the escalation and perpetuation of tensions between groups that date back to colonial intervention. The concerns of ethnic political domination, of which indigene status is a result, are also a product of colonists drawing state boundaries around previously independent political units. The number of political units in West Africa that existed prior to the institution of formal colonization is underappreciated in the West, and the collapsing of such a heterogeneous political map into a single state is largely responsible for the conflictual nature of modern ethnic relations in Plateau State.

The relationship between the Fulani and the groups of the Plateau was not always amicable – Plateau residents fought to repel invasions from their surroundings and resisted political domination for most of the nineteenth century. But their relationship was negotiated and maintained through both contestation and means other than violence. Trade networks extended from the Plateau into the surrounding communities, and cultural-religious exchange often took place within the region. These insights call into question the primordialist view (see e.g. Antonsich, 2015) of ethnic difference that attributes identity and conflict to fundamental incompatibilities based on cultural characteristics handed down from some distant past. The danger of seeing identity-based conflict in this way suggests that there is no remedy to the situation short of segregation and disassociation. This is functionally accomplished by the indigeneity system that has become a justification for exclusion from the political process and access to resources in state territory. The trauma of colonialism and its disruption of social relations is only a few generations in the past, and there is little reason to believe that the upheavals caused

by the sudden reorganization of regional power dynamics could be overcome in such a short time relative to the wider scope of human history.

## CHAPTER III

### QUANTITATIVE STUDY OF COMMUNAL CONFLICT IN NIGERIA

The drivers of communal conflict in Nigeria are complex and many. It cannot be denied that global climate change has accelerated desertification of the Sahel and impacted resource availability in the absolute. In fact, Northern Nigeria has repeatedly recorded severe droughts since the beginning of the twentieth century, a reality that suggests locals have some familiarity with appropriate adaptive strategies. Michael Watts (1983) details such strategies of Hausa-Fulani farmers in Sahelian Nigeria in responding to drought, arguing that the change in the national political economy and the reformation of social relations plays a major role in how society responds to scarcity. He acknowledges that “each society has institutional, social and technical means for coping with risk (p. 463),” and he goes on to argue that “food shortage is, in this sense, grounded in the prevailing social relations of production. In pre-capitalist society, subsistence security can be understood in terms of the moral economy of the peasantry. The moral economy was distorted as new relations of production emerged and the cycle of reproduction was commoditized (p. 463).” In other words, it is not necessarily the case that years of drought result in wholesale deprivation, but that the nature of social relations of production result in disparate capacities to be flexible in response to perturbations in the climatic regime.

When dealing with climate, quantitative analysis can be a powerful tool in testing the strength of the relationship between different variables provided that the data is available and reliably compiled. Remotely sensed data from satellite and drone technology have been particularly useful in assessing environmental change over time in

remote areas in which it is difficult to maintain weather stations or monitor conditions regularly on the ground (see e.g. Linke & O’Loughlin, 2015). Satellite data, in particular, is especially prolific due a history of public funding for national space projects in Western countries such as the United States and France. Researchers currently have the freedom to access surface reflectance data from national-level clearinghouses free of charge, archives of which go back some 45 years.

Data related to social processes have become more available and more reliable in the past few decades as well. In particular, conflict event data is now easily accessible to the public and has allowed researchers to more accurately address questions that relate to where and when certain conflicts take place at higher resolutions than was previously possible. The number of professionally administered surveys has also become more available in the last two decades. While national censuses offer some of the most reliable data available to social scientists, that is not always the case. In many countries, including the United States, censuses are controversial, and their methods and resulting data has been called into question. “Census taking in a heterogeneous state like Nigeria has become a politicized exercise. Elite [*sic*] in respective states of Nigeria’s federation have come to believe that they need to inflate census figures to place them at an advantage over others in revenue sharing and political representation (Adele, 2009, p. 317).” Third-party survey data has become a common source of information for conducting research in states where census data has been deemed unreliable. Moreover, some of the most significant indicators are not always present in the national-level census. In the case of Nigeria, neither religion nor ethnicity are included in the census<sup>11</sup>.

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<sup>11</sup> It is not clear if this information is or is not collected, but it is not present in the census data available on the official Nigerian Data Portal website ([nigeria.opendataforafrica.org](http://nigeria.opendataforafrica.org)).

## Literature Review

Spatial analysis and quantitative research on the relationship between conflict and climate generally test a series of propositions or hypotheses about the relationship between the dependent or response variable – the presence or absence of violent conflict – and a set of independent or predictor variables which include climate indicators like temperature, precipitation and vegetation health. Linke, Schutte & Buhaug (2015) used a combination of Afrobarometer survey responses, remotely sensed Vegetation Condition Index (VCI) data and 6-month Standard Precipitation Index (SPI-6) data to test the relationship between drought, levels of local dialogue regarding environmental issues and levels of violent conflict in Kenyan second-order administrative regions. O’Loughlin et al. (2012) conducted a meta-analysis of the relationship between climate and conflict in East Africa, using a panel of 16 predictor variables that included climate data like precipitation, temperature and crop production indices as well as social and location-based indicators like the nature of local ethnic leadership and distance from borders. Hendrix and Salehyan (2012) focus on precipitation variation as the predictor variable by calculating precipitation deviation from the long-term average. In each of these studies, the response variable is quantified by geolocated conflict point data from either the Armed Conflict Location Event Database (ACLED) or the Uppsala Conflict Data Program Geo-Referenced Event Dataset (UCDP GED). Point locations from these datasets are intersected with the geographic enumeration units (e.g. at the country level or first-order administrative areas) to generate an event count value per unit.

The increasing availability and accuracy of geolocated data have allowed researchers to focus their analysis at finer scales than was previously possible. In the past,

data availability only allowed for extensive, continent-scale conflict analysis. O'Loughlin (1986) studied the extent to which wars cluster spatially and diffuse in a contagious manner to neighboring countries. Yoon (1997) empirically analyzed the conditions under which the United States is likely to intervene with regards to internal wars in the Third World, focusing on predictor variables like whether the USSR had intervened or whether one of the belligerents of the internal war identified as communist. Reiter (1999) applied an existing typology of military strategies to assess the relationship between warfighting doctrine and a state's likelihood to initiate or escalate international wars. In each of these studies, the units of analysis are states as actors within the international state system. The collapse of the Soviet Union, however, brought with it a proliferation of intrastate violent conflict and civil wars that called into question the relative significance of great powers competition that defined the Cold War Era. As a result, the conflict studies research agenda has recently focused more explicitly on conflict at the substate scale, made possible by newly available, spatially disaggregated datasets.

The availability of spatially disaggregated conflict data has allowed for the analysis of conflict scenarios beyond the practice of interstate war. Civil war and armed separatist movements have been the focus of much recent quantitative conflict analyses in political geography and its cognate fields since this shift. Linke and O'Loughlin's (2015) contribution to *Companion to Political Geography*, for example, used an analysis of separatist violence in the post-Soviet republics of the North Caucasus to demonstrate the use of statistical models and the influence of data aggregation methods for conflict analysis. Likewise, the study of climate effects on communal violence has also become more prevalent as researchers have been able to synthesize high-resolution point data

with both in situ and remotely sensed climate indicators. Hendrix and Salehyan (2012) use the UCDP GED and a combination of temperature and precipitation deviations from the long-term average in a meta-analysis of communal conflict in sub-Saharan Africa. Their approach departs from the previously mentioned studies in that it takes first-order substate areas as the units of aggregation, allowing for a large-n study of communal conflict across the continent.

### Theoretical Underpinnings and Propositions

The analysis presented here does not attempt to predict conditions under which future instances of violent conflict occur, but instead evaluates the causal relationship between the variables. According to Shmueli (2010):

In many scientific fields, and especially the social sciences, statistical methods are used nearly exclusively for testing causal theory. Given a causal theoretical model, statistical models are applied to data in order to test causal hypotheses. [...] Based on collaborative work with social scientists and economists [...] the type of statistical models used for testing causal hypotheses in the social sciences are almost always association-based models applied to observational data. Regression models are the most common example. The justification for this practice is that the theory itself provides the causality. In other words, the role of the theory is very strong and the reliance on data and statistical modeling are strictly through the lens of the theoretical model (p. 2).

I use this evaluative approach to quantitatively assess causal relationships that have been proposed in the conflict-climate literature in political geography and political science. I acknowledge from the outset that correlations in the data do not, in and of themselves, establish any sort of causal relationship and therefore do not validate or invalidate existing theoretical frameworks. They are, however, useful data points for guiding a future research agenda that will further the process of refining theory that attempts to explain causal relationships in the context of communal conflict in Nigeria.

Theoretical explanations for conflict in the Third World often emphasize the role of climate-related stressors as either primary or proximate causes of conflict. Gleick (2014) has argued that the Syrian Civil War was a result of water scarcity, a condition created by a combination of watershed mismanagement and decreased rainfall levels in the country. Hsiang, Burke and Miguel (2013), citing literature on Hindu-Muslim violence in India (see e.g. Bohlken & Sergenti, 2010; Hendrix & Salehyan, 2012), posit that “This relationship between intergroup violence and rainfall is primarily documented in low-income settings, suggesting that reduced agricultural production may be an important mediating mechanism, although alternative explanations cannot be excluded (p. 1235367-9).” By analyzing 50 quantitative studies, Hsiang and Burke (2014) conclude that “climate’s influence on security persists in both historical and modern periods, is generalizable to populations around the globe, arises from climatic events that are both rapid and gradual, and influences numerous types of conflict that range across all spatial scales (p. 52).” These theoretical formulations require empirical evaluation, leading to the first proposition of this research: *Climate change as measured by a reduction in photosynthetic activity correlates with increasing levels of communal conflict.*

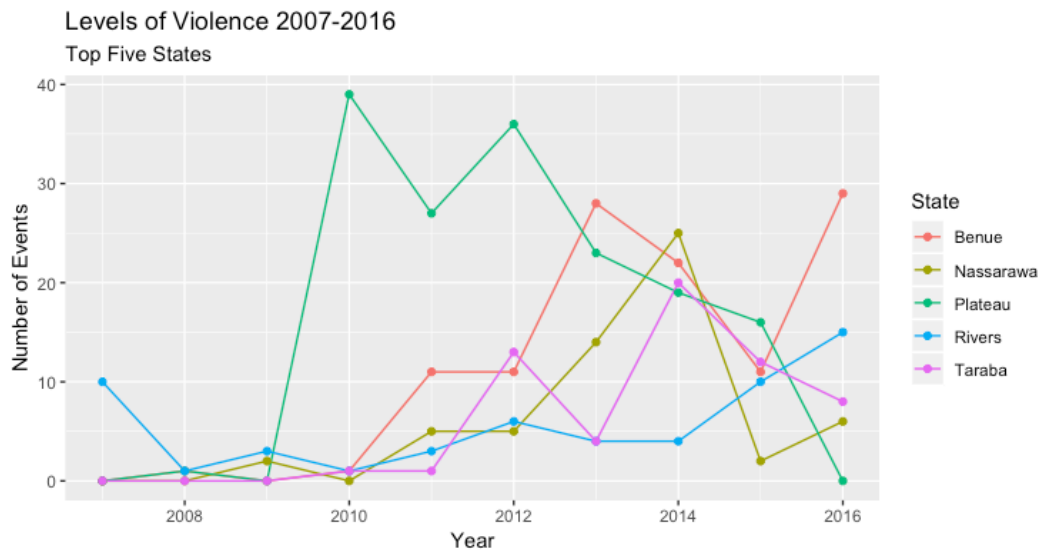
The theory that climate and conflict are strongly linked is not a settled matter, and many researchers have pushed back against this claim in various ways. The literature is so unsettled, in fact, that the field of conflict-climate research has been characterized as a “cacophony of different findings (Salehyan, 2014, p. 2).” Social and political institutions represent an alternative causal mechanism for which scholars across fields have advocated. Butler and Gates (2012) investigated the relationship between state-protected property rights for some groups and not others, concluding that “Using the analytical



framework of a contest success function (CSF), we formally demonstrate that conflict is generally increasing with resource abundance contingent on property rights bias (p. 32).” Likewise, Detges (2017) argues that “Droughts are unlikely to influence support for political violence unless they coincide with unfavourable social and political conditions (p. 95),” suggesting a more nuanced interaction between sociopolitical conditions and climate degradation with climate being a marginal aggravator rather than the main driver. Other researchers are somewhat agnostic on the issue, arguing that climate has some role while more research is needed to assess the degree to which variables relating to social and political power influence the outbreak of violent conflict. Raleigh (2010) stresses that “the present frameworks for incorporating environmental change into conflict patterns fail to appreciate how a group’s vulnerability is a function of political and economic relationships on the local and national level (p. 81).” In an effort to address that gap identified by Raleigh and others, this research tests two additional propositions. In order to assess the relevance of sociopolitical factors, I test the proposal: *Higher levels of self-reported feelings of political exclusion result in increasing levels of communal conflict.* Additionally, in order to assess the potential exacerbating effects of climate change in sociopolitical exclusionary contexts, I test the proposal: *The interaction between degrading climatic conditions and feelings of political exclusion correlates with increasing levels of communal conflict.*

Quantitative analyses are often limited in their ability to study social processes far into the past for reasons of data availability. Many datasets with social indicators, particularly those currently being used by researchers in the conflict-climate literature, only date back to the latter-half of the twentieth century. Sophisticated, remotely sensed

data suitable for smaller-scale vegetation analysis, much of which has only been available for the last 20 years, is a similarly limiting factor. Given these limitations, I focus my analysis on the ten-year time period from 2007-2016. This is a period in which many of the states in Nigeria saw an increase in the number of communal conflict events (see Figure 4), and it allows for a long enough time series of satellite data to generate a reliable climate indicator.



**Figure 4:** States with the highest average levels of recorded conflict in Nigeria. Plateau State, with the highest average level of conflict over the observation period, experienced a peak between 2010 and 2013 but the conflict has since decreased dramatically.

### Dependent Variable

In this study, the dependent variable is the presence or absence of conflict events taking place in a given geographic unit. Two major conflict point datasets are widely used by researchers in this area: the ACLED and the UCDP GED. The ACLED is a newer, highly detailed conflict point dataset that is most useful for general analysis of conflict that takes into account the various actors involved, initiating parties, secondary

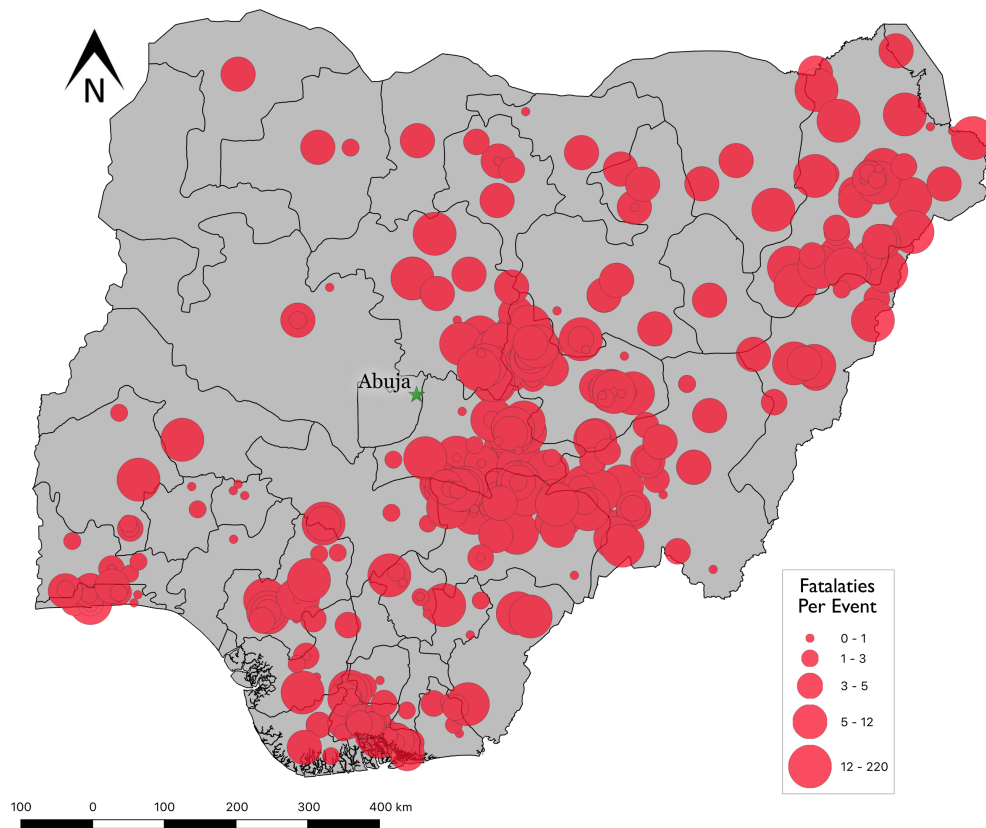
parties, gain or loss of territory, and the specific nature of each individual event<sup>12</sup>. The UCDP GED, on the other hand, is somewhat less detailed in the case of individual events but provides a more useful measure of general conflict type. The data are divided into three categories: 1) state-based violence, 2) non-state violence and 3) one-sided violence. These categories are then associated with specific ongoing conflicts. For example, a conflict event coded as non-state violence can be further identified as “Christian – Muslim” or “Supporters of ANPP – Supporters of PDP.” Relative to the ACLED, the indicators in the UCDP GED allow for more specific analysis of conflicts that can be understood as communal violence. The UCDP defines non-state conflict as “the use of armed force between two organized armed groups, neither of which is the government of a state, which results in 25 battle-related deaths in a year (Sundberg & Melander, 2013).”

In order to quantify the level of non-state conflict in a given space, I isolate all observations coded as non-state violence in the dataset (see Figure 5). Following the methodology used by Fjelde and Uexkull (2012), I use GIS to identify all first-order substate units in which at least one instance of non-state conflict occurred each year, coding the presence of conflict as 1 and absence as 0. In the resulting dataset there are 380 state-year observations for the period between 2007 and 2016. Visually, there is a clear spatial pattern of non-state conflict events that centers on northern Plateau State near the state capital of Jos. A kernel density map further illustrates this pattern and suggests that for all years in the time period conflict events occurred most frequently in this area, with smaller clusters in Rivers State around Port Harcourt and in Benue State around Makurdi (see Figure 6). Each of these clusters generally represent separate

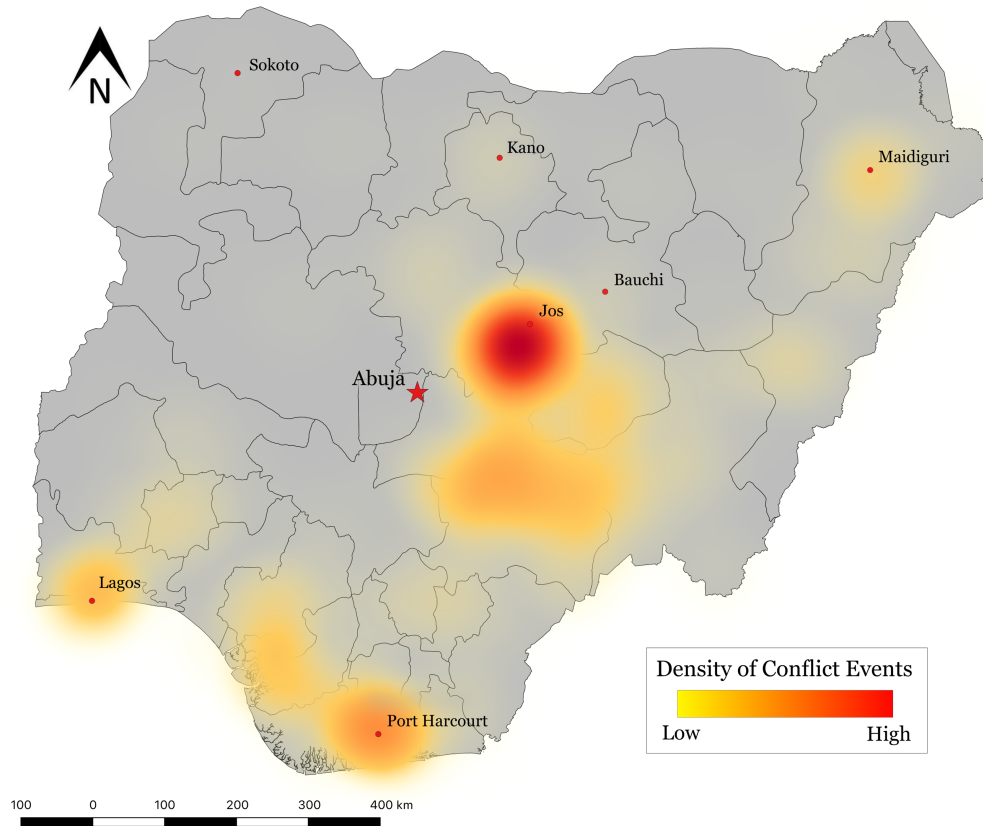
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<sup>12</sup> Each conflict event is categorized in specific terms like violence against civilians, violence against the government, terrorist activity, protests, and so on.

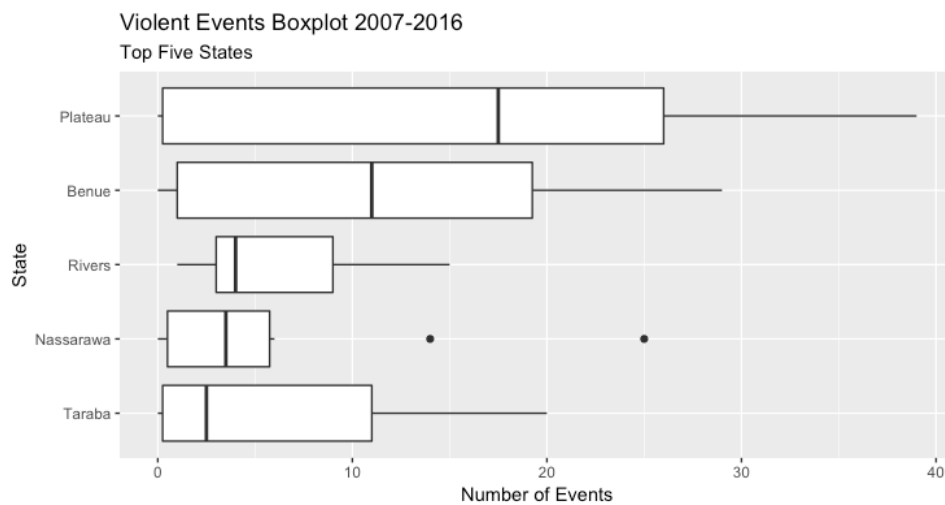
ongoing conflicts, with the conflicts near Jos being primarily between Berom and Fulani as categorized in the data. The annual trend for the number of Nigerian herder-farmer conflicts that take place in a given year shows that there has been a generally upward trend for the five states with the highest number of violent events over the ten-year time period of 2007-2016 (see Figures 7), most of which begin increasing around 2011.



**Figure 5:** Number of fatalities per event during the study period 2007-2016. Size of the symbol is proportionate to number of fatalities.



**Figure 6:** Kernel density map of conflict events during the study period 2007-2016. Highest number of events occurred in plateau state around Jos.



**Figure 7:** Boxplot of conflict events in the states with highest average levels of conflict. The outer edges of the box represent the first and third quartiles, while the line within the box represents the mean.

The UCDP GED has some limitations that must be considered before moving further with the analysis. First, the data are collected from news reports that originate from both within and without Nigeria, including All Africa, Reuters and Xinhua. A potential drawback of this methodology is that particularly remote conflict events may escape coverage by any media source, potentially misrepresenting the actual frequency of conflict in some cases. Another drawback is that the UCDP GED only records events that result in one or more death, and only counts conflicts as active if battle deaths exceeded 25 persons in a year. This potentially means that lower-scale conflicts that only result in injury or intentional destruction of infrastructure and resources (e.g. cropland) are excluded from the data which may subtract from active conflicts in all parts of the country. Finally, it may be the case that general data availability in the news has changed over time and under-represents conflict in the earlier days of the internet relative to the present.

#### Climate Indicator

The first predictor variable in this study is the strength of photosynthetic activity as detected through remote sensing methods. The MODIS Terra sensor was launched in 1999 and its imagery products became available beginning in early 2000. The sensor's spatial resolution is 250m x 250m. MODIS Terra carries a multispectral sensor that is a powerful tool for detecting vegetation health through the use of Normalized Difference Vegetation Indices (NDVI, see Figure 8).

$$NDVI = \frac{NIR - R}{NIR + R}$$

**Figure 8:** Normalized Difference Vegetation Index formula.

The sensor detects levels of radiation reflection in separate bands of the electromagnetic spectrum which can be combined to obtain a quantitative proxy measure of vegetation health on the earth's surface. NDVI values are based on the difference between the red and near-infrared bands and normalized on a scale of 0 to 1. All remotely sensed data is vulnerable to atmospheric interference, most significantly the presence of atmospheric moisture or cloud cover. In order to minimize this influence, the MODIS smoothed 7-day composite product was selected for this study. MODIS NDVI smoothed 7-day products use an “enhanced maximum-value composite (MVC) algorithm (Jenkerson, Maersperger & Schmidt, 2010)” which selects the maximum NDVI value of each pixel in the 7-day observation period with considerations for cloud cover, band quality, view angle and other sensor variables that might affect the data as recorded by the sensor.

A single NDVI image is simply a snapshot of absolute photosynthetic activity in a given time period. Single NDVIs are useful for comparing vegetation health in a single time period and for understanding where vegetation activity is most or least active relative to the rest of the area. Comparing individual NDVIs across time is not particularly useful in that any change in value does not account for the extent to which these values deviate from longer-term trends. The Vegetation Condition Index (VCI) uses a min-max transformation (see Figure 9) to compare pixel values across time periods, transforming the highest-value pixels in the time series to a value of 100 and the lowest-value pixels to 0 (Kogan 1995).

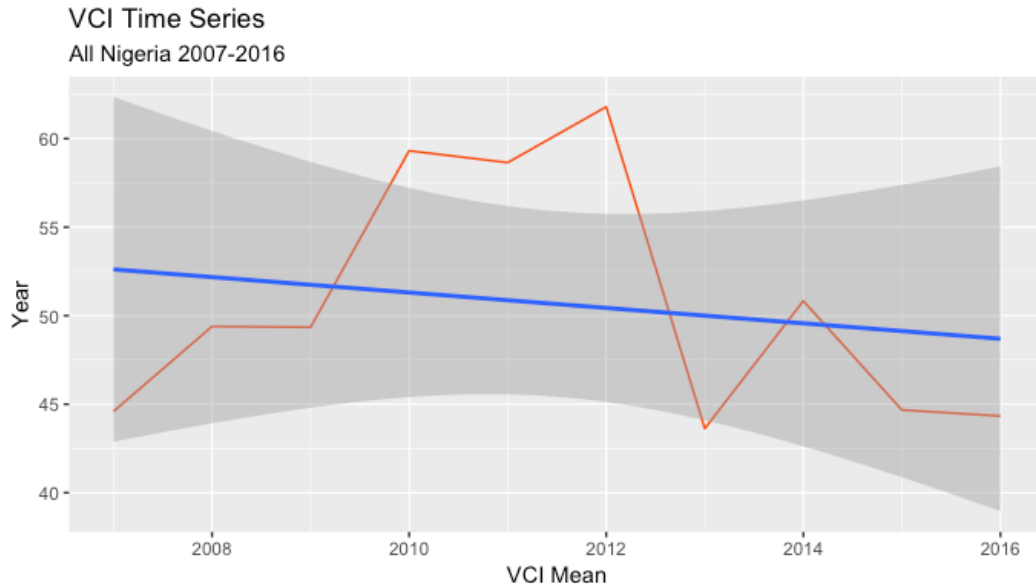
$$VCI_{ijk} = \frac{VI_{ijk} - VI_{i,min}}{VI_{i,max} - VI_{i,min}} * 100$$

**Figure 9:** Vegetation Condition Index formula.

VCI values, therefore, represent the level to which the observed pixel value deviates from the highest and lowest value for that same pixel across the time series. There is no objective threshold value in the VCI that indicates drought conditions, but a popular classification scheme designates stressed conditions as 0.35-0.5 and drought conditions as 0.34 or below (Kogan 1995). Some researchers reject the use of a classificatory scheme based on threshold values and take VCI values as a continuous quantitative indicator instead of making categorical assumptions (see e.g. Linke et al. 2015). This study takes the latter approach, focusing on the relationship between higher or lower values and the instance of violent conflict in a given first-order substate unit.

For the purposes of this analysis, the VCI is a proxy measurement primarily for agricultural productivity. In some cases, it would be appropriate to isolate farmland by using a data set such as the United Nations Food and Agriculture Organization's (FAO) Global Land Cover SHARE which designates dominant land cover types in a spatial framework. However, since one of the two primary actors in this conflict relies on non-agricultural vegetation for cattle grazing, it is helpful to include all areas of the VCI for a holistic measure of vegetation health (see Figure 10) as both farmed and non-farmed vegetation may each contribute to the nature of the conflict.





**Figure 10:** Time series graph of mean VCI values during the study period 2007-2016.

Considerations for when the data is collected must also be made when dealing with remote sensing of vegetation. Since most agricultural activity in Central and Northern Nigeria is rain fed and, therefore, takes place during the rainy season (see e.g. Odekunle, 2004), cloud cover can cause major interference in collecting accurate NDVI values. Remote sensing of agriculture under these conditions is most accurate when the data are collected late in the phenological cycle, after rainy conditions have subsided but before harvest. On the Plateau and other parts of North-Central Nigeria, “the wet season [extends] from May to October [...] allowing a 6-month growing season. Following the last rains, drying takes place rapidly and burning of the fields begins soon thereafter (Lee, 1972).” NDVI composites for this study, therefore, were collected in the last week of October between the years 2000 and 2016.

## Political Exclusion Indicator

Measuring political exclusion quantitatively is difficult and somewhat problematic. The few quantitative studies that have attempted to evaluate the relationship between conflict and political exclusion have largely relied on the Geo-Referencing Ethnic Power Relations (Geo-EPR) dataset that identifies ordinal levels of political power available to “politically relevant” groups in a given country. Fjelde and Uexkull (2012) and Cederman, Wimmer and Min (2010) convert group power status into a dummy variable that codes 1 for some level of minority inclusion in national-level politics (e.g. senior partner, junior partner) and 0 for those excluded (e.g. powerless, discrimination). This data, however, focuses on national-level political power which does not comport with the substate power dynamics being evaluated in this thesis. Additionally, the use of “politically relevant” groups constricts the number of ethnic groups included in the data for each country. Given the relationship between ethnicity and power at the substate level, political exclusion at the national level does not take into account power disparities within substate units in the case of Nigeria. The data’s focus on the national scale excludes politically relevant groups at smaller scales, meaning that it is not likely to be a robust measure of political exclusion for the purposes of this study.

Given the limitations of the Geo-EPR dataset, I have developed a novel indicator for measuring unequal access to power at the substate level in Nigeria. Rounds 4, 5 and 6 of the Afrobarometer survey include a question that, first, asks for the respondent’s self-identified ethnic group and, second, asks the respondent how frequently they believe the government treats their ethnic group unfairly. I group the responses first by state, then by ethnic group within each state and take the mean values of all responses for these

categories<sup>13</sup>. I then subtract the minimum value (“feels least oppressed”) from the maximum value (“feels most oppressed”) resulting in a single value for each state-year. It is reasonable to assume that the greater the difference between groups that feel most oppressed and groups that feel least oppressed, the greater the level of political exclusion will be perceived by one or more ethnic groups in a state. Should all groups respond with an equally high or equally low perception of marginalization, we might assume that exclusion within that state is the product of some other variable, like class or family ties.

There are limitations to the level of representativeness of this indicator. The question does not specify at what scale that exclusion is experienced. It could be that some respondents answer based on their perception of national-level politics, while others answer based on their perception of state- and local-level politics. The non-specificity of the question, however, allows for the possibility that respondents base their answers on their experience at the local level in ways that the Geo-EPR dataset does not.

Additionally, the number of ethnic groups included in this indicator is far greater than the number of ethnic groups in the Geo-EPR dataset. Another issue is that low sample sizes for some groups in some states may produce results that are not truly representative of the population. Data quality in population surveys and a lack of census data is an ongoing issue for quantitative research in Nigeria and is something that researchers continue to grapple with. I acknowledge this limitation, noting that other data attempting to quantify political exclusion have similar issues with representativeness.

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<sup>13</sup> For example, I average all responses in Plateau State from X ethnic group separately from Y ethnic group, resulting in a series of averages for each of the 37 states.

### Control Variables

Because the instance of communal violence may be affected by demographic and socioeconomic factors, I include a number of control variables that may correlate with the instance of violent conflict. Population is a standard control variable in studies on political violence (see e.g. Fjelde & Uexkull, 2012; Buhaug, Cederman & Ketil Rød, 2011; Ralieghe & Hegre, 2009), suggesting that a greater number of potential social interactions and outcomes play a role in whether or not those interactions become violent. Population numbers in this study come from the Nigerian Census. While I have acknowledged problems with veracity in the Nigerian Census, it is the most immediately available source of Nigerian population estimates and is relied upon by many other sources. Age is another indicator that may correlate with conflict incidence, as younger populations may be more likely to engage in violent conflict over resources relative to older populations that may rely more on a dialogue approach to resource constraint. Poverty may also correlate with conflict, as poorer populations may become desperate and resort to more extreme measures than people in relatively stable economic conditions. For age and poverty, this study uses geolocated responses from the Afrobarometer survey. For poverty, specifically, I focus on the question “Over the past year, how often, if ever, have you or anyone in your family gone without: Enough food to eat?” I code “several times” as 1, “many times” as 2 and “always” as 3, dropping “don’t know” and “refused to answer.” I omit gender from this analysis because the Afrobarometer methodology results in exact or nearly exact gender parity. See Table 1 for a summary of descriptive statistics for all variables in the final dataset.

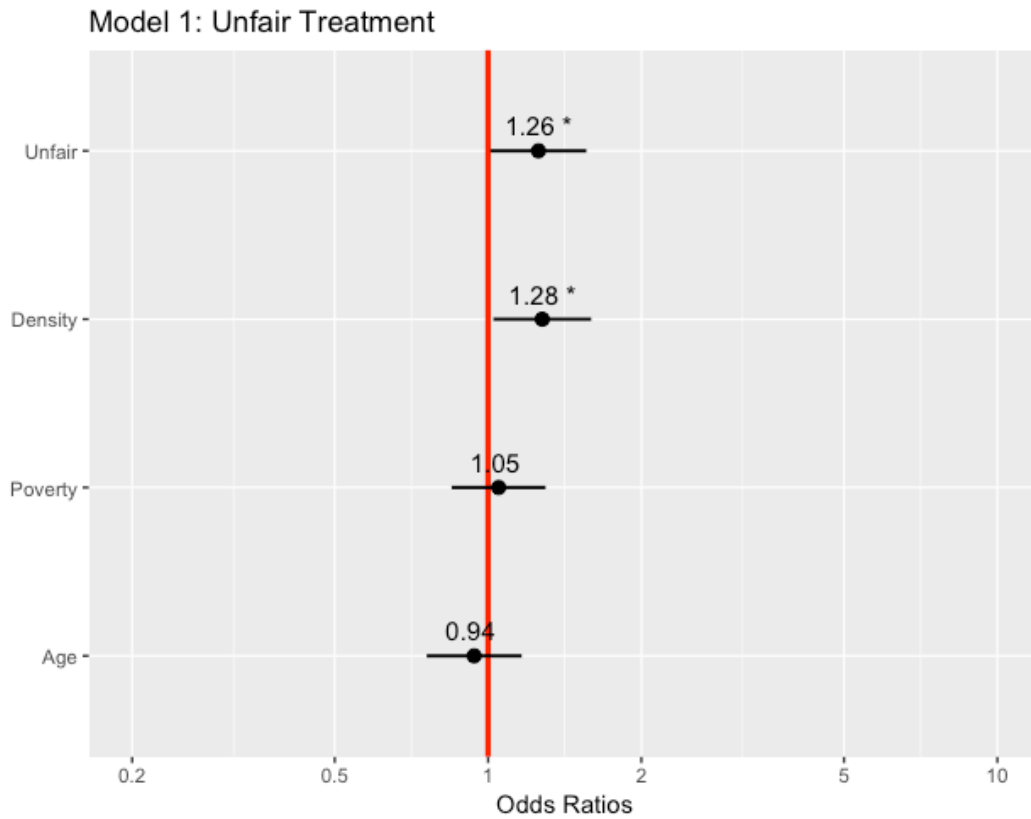
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Conflict Presence (Binary)	370	0.4	0.5	0	0	1	1
VCI	370	51.0	16.4	6.8	39.9	63.5	86.3
Unfair Treatment	370	2.1	0.6	0.7	1.7	2.7	3.0
Age	370	29.3	3.3	24	27	30	44
Poverty	370	0.5	0.2	0.04	0.3	0.6	1.2
Population Density	370	347.9	474.4	37.1	111.9	422.1	3,293.0

**Table 1:** Descriptive statistics of all variables in the primary dataset.

### Analysis

This study uses multivariate logistic regression to evaluate the relationship between conflict presence and indicators for climate and perception of political exclusion. Logistic regression is appropriate given that the response variable is binary, and the predictor variables are continuous (Rogerson, 2001). The first model evaluates the relationship between self-reported feelings of ethnicity-based unfair treatment by the government and the absence or presence of conflict in Nigerian states. The model indicates that there is a positive relationship between reports of unfair treatment and the presence or absence of violent conflict, and that the relationship is statistically significant with a p-value of 0.0395 (see Figure 11). These results suggest that increasing levels of perceived unfair treatment correlate with the presence of conflict, lending support for the proposition that higher levels of political exclusion result in increased levels of communal conflict. It is important to note that this measure does not take into account which group specifically reported high levels of exclusion, only the highest value across

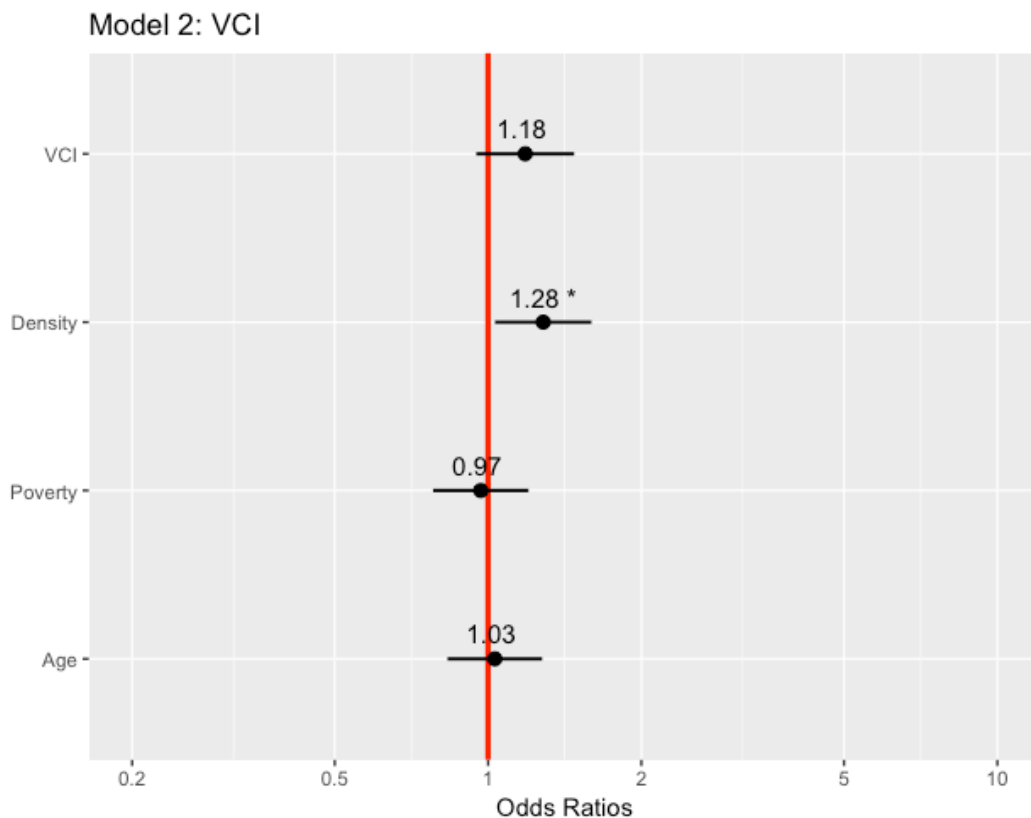
all ethnic groups that were surveyed in a given state. Still, the relationship between feeling unfairly treated by the government, in this analysis, shows a positive and statistically significant relationship between the variables.



**Figure 11:** Forest plot of Model 1 measuring the relationship between conflict and political exclusion indicators. Political exclusion indicator bears a statistically significant relationship with the conflict indicator at  $p=0.395$ . The vertical line represents the value where there is no statistically significant association. The horizontal lines represent the 95% confidence interval for each indicator in the regression. Relationships are statistically significant where the vertical line does not cross the horizontal line.

The second model evaluates the relationship between mean VCI values and the presence or absence of conflict in a state. The model indicates that there is a positive relationship between mean VCI values at the state level, which is not statistically significant with a p-value of 0.1373 (see Figure 12). In social science, a p-value of this level might suggest a relevant, though weaker, relationship between the dependent and

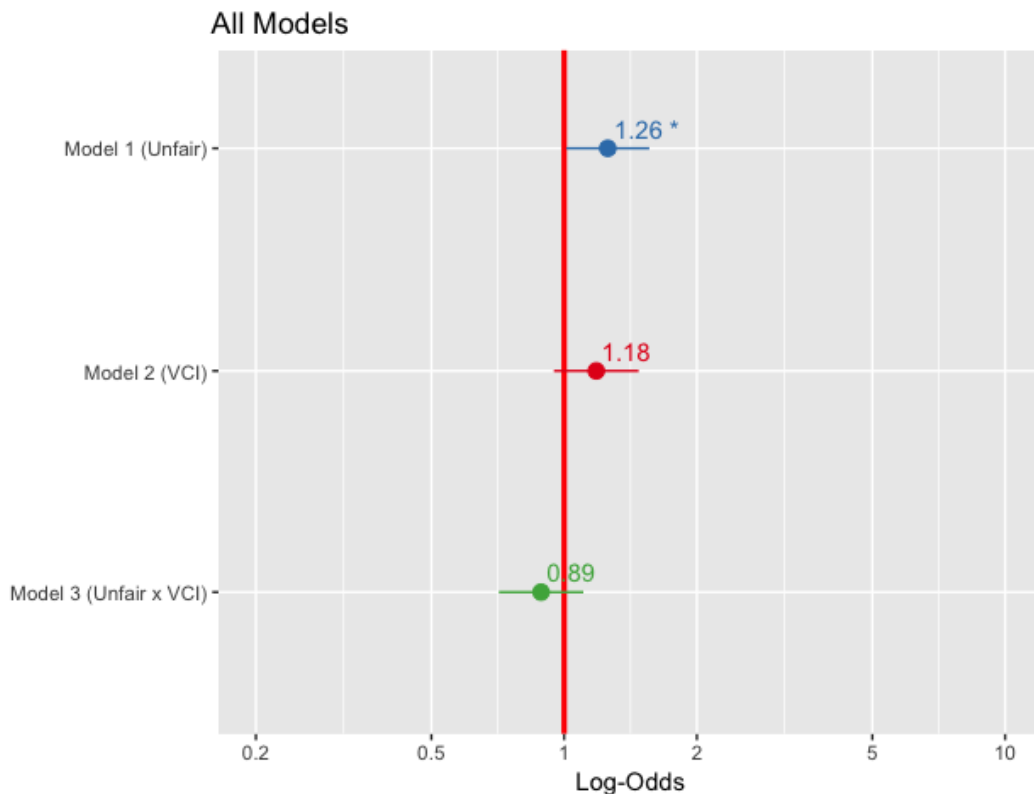
independent variables. This relationship being positive, however, contradicts the proposition that a reduction in vegetative activity results in increasing communal conflict. What the model suggests is that increasing levels of VCI, or higher levels of productivity in the time series, correlates with a presence, rather than absence, of conflict. This suggests that there is little support for the proposition that a reduction in vegetative activity results in increased communal conflict in Nigeria.



**Figure 12:** Forest plot of Model 2 measuring the relationship between conflict and climate indicators. Climate indicator does not bear a statistically significant relationship with the conflict indicator at  $p=0.1373$ . Also of note is that the relationship is positive, suggesting that increases in environmental productivity might see corresponding increases in violent conflict.

The third model evaluates the effect that interaction between unfair treatment and photosynthetic activity has on the presence or absence of conflict events in a given state.

It is helpful to understand if the interaction of these two variables is related to communal conflict, as it is often argued that climate change can aggravate already tenuous sociopolitical conditions in society. The relationship between these interacting variables and the presence or absence of conflict is positive, but not statistically significant with a p-value of 0.285 (see Figure 13). Again, in social science a p-value of this level might suggest weak support for the claim that the interaction of these variables is related to communal conflict in Nigeria, but the level of significance is weaker than both VCI and unfair treatment variables individually. The model, therefore, suggests that there is little support for the proposition that, in this case, degrading climate conditions aggravate sociopolitical tensions to the point of violence.



**Figure 13:** Forest plot of all models. Model 1 (exclusion) p-value is 0.0395, Model 2 (climate) p-value is 0.1373 and Model 3 (interaction) p-value is 0.285.



## Discussion and Conclusions

The results of this analysis challenge the theory that climate change is the primary driver of communal violence in Nigeria. Instead, they suggest that the relationship is more likely correlated with sociopolitical issues between ethnic groups and their interactions with the government at either the local, subnational or state level. The positive relationship between VCI and conflict is particularly interesting to note, as it suggests there is a correlation between higher levels of vegetative productivity and communal conflict in Nigeria, a conclusion that is opposite from that of many prevailing theories in the climate-conflict literature. In other words, the first model suggests that groups will engage in violence during times that are more productive than times that are less productive. These results suggest that communal conflict is more significantly associated with political exclusion, a position for which political geographers studying nationalism and ethnicity have advocated (see e.g. Raleigh, 2010; Le Billion, 2001). These results are in no way conclusive, but they suggest that more research is needed to refine our understanding of the environmental and political conditions that lead to communal conflict in Nigeria.

Quantitative studies of this type have not yet consistently established a strong relationship between violence in the third world and a changing climate. The results from this analysis contradict those established by Fjelde and Uexkull (2012), who observed that the occurrence of conflict strongly correlates with lower-than-average precipitation across all countries in sub-Saharan Africa. In contrast, I have found the relationship to be opposite when using VCI data instead of precipitation data as a measure of climate. They also suggest that political exclusion exacerbates the climate effects of conflict in their

study, but that it is not the most significant correlate (p. 452). On the other hand, Linke et al. (2015) find that the relationship between reports of drought and support for violence – an Afrobarometer indicator that has been shown to have some relationship with conflict diffusion (see e.g. Raleigh, 2014) – is not statistically significant, whereas the absence of inter-community dialogue institutions in the presence of drought is statistically significant (p. 42). Detges (2017) also finds that there is no statistically significant relationship between rainfall deviations in sub-Saharan African states but, contradictory to the findings in this paper, marginalization in the presence of decreased rainfall is significantly related with support for political violence (p. 95). Despite some contradictory results, however, this analysis supports the conclusion by some that climate is possibly not the most significant driver of conflict in sub-Saharan Africa.

## CHAPTER IV

### FINDINGS AND CONCLUSION

Interdisciplinary researchers in the social sciences have become increasingly aware and critical of the separation between quantitative and qualitative modes of analysis (see e.g. Yeager & Steiger, 2013; Todd, Nerlich, McKeown & Clarke, 2004). These different approaches to engaging with and evaluating theory and empirics are, in fact, quite distinct and are reflective of long histories of thoughtful debate and innovation. But the differences between qualitative and quantitative research has resulted in the unnecessary siloing off of methodologies within the already heavily siloed academy. This distinction appears tenuous at a time in which widespread recognition of the value of interdisciplinarity and holistic reasoning are increasingly breaking down the old Kantian order. Bridging the gap between quantitative and qualitative methodologies allows us to better acknowledge and address both the virtues and deficiencies of theoretical frameworks and empirical evaluations alike and is arguably the future of research in the social sciences.

Researchers that choose to engage in mixed-methods research face a number of challenges given the relative lack of existing literature that approaches questions in this way. There are, however, some potential avenues for exploring new analytic frameworks that scholars might consider. Though quantitative methods use theory as the basis for establishing correlative relationships within data, they can move beyond standard confirm-or-deny conclusions by following up with interviews or focus groups in order to say something more granular about such relationships. Likewise, qualitative research can address issues with reproducibility or generalizability by performing quantitative

analyses to demonstrate the empirical applicability of its results. These are, unfortunately, incomplete solutions to bridging the divide between quantitative and qualitative research. While these are things that practitioners of one or the other mode of research should, ideally, be doing separately and in dialogue with one another, that is generally not the case. The relationship between these methods is unduly antagonistic, with scholars on either side taking stances strongly in favor of their preferred approach. John O'Loughlin (2018) recently addressed the community of political geographers, arguing that the subfield has lost its identity as a result of the fragmented nature of methodological approaches. For O'Loughlin, the solution is, unsurprisingly, an embrace of quantitative methodology and an adherence to data transparency and reproducibility. Such a call for methodological homogeneity is unproductive, and I argue that researchers on both sides of this debate need to do the difficult work of understanding the virtues of the other more deeply. What unites geographers, ultimately, is the spatial perspective. A variety of methodologies is one of the field's many strengths, not one of its weaknesses.

Violent conflict between non-state actors in modern Nigeria is an acute and tragic problem that impacts the lives of many communities in rural and peri-urban parts of the country. While it is true that reports of these conflicts in local and international media are often sensationalized and politically motivated, the ongoing state of low-level conflict punctuated by major outbursts of violence results in up to thousands of untimely deaths per year. This crisis deserves serious attention paid to the devastation these affected communities frequently experience. It is, however, crucial that explanations of the conflict's origins acknowledge and emphasize the full spectrum of causal circumstances and their relative significance in the outcomes we observe directly. Specific causes

suggest specific solutions. Without a nuanced understanding of such causal mechanisms, powerful actors in society may respond to communal conflict in ways that are unlikely to resolve the problem, leading to prolonged fighting and unnecessary loss of life. In other words, one cannot meaningfully take steps to address the severity of the problem if one does not fully understand it.

### Relationship to Broader Work

In this thesis, I have called into question two popular narratives of the conflict that have been advanced by journalists and academics alike: that communal conflict in sub-Saharan Africa is a product of primordial religious and ethnic tensions, and that the conflict is a result of competition by desperate actors over diminishing natural resources in delicate ecosystems being affected by climate change. As regards the former, the notion that proximate communities divided by ancient grudges grounded in ethnic or religious difference are inevitably conflictual is dubious at best. The tenability of this argument rests upon a shaky foundation of problematic assumptions about how different identity groups engage with one another across space and over time. Such logic is perhaps somewhat reflective of Western Christian attitudes towards Islam in the context of the US-initiated Global War on Terror. Muslim and non-Muslim relations, even during the jihad of Dan Fodio in Central Nigeria prior to formal British colonization, entailed peaceful trading relationships and the willing adoption of religious teachings and practices (Bruce, 1982). From the perspective of political geography, conflict across lines of religion and identity are more often a product of power disparities that are a result of the logic of the modern state system (Murphy, 2013). By privileging one form of identity as the deserving beneficiary of the state apparatus at the expense of others, political-

territorial organizations lay the groundwork for marginalization, abuse, and, at times, violence.

The latter narrative offers a superficially attractive explanation for the conflict in an era of politicized debate around the effects of, and solutions to, global climate change. But it nevertheless suffers from questionable assumptions about how different societies across the world manage scarcity in the face of competing interests. The idea that societies are unable to adapt peacefully to changes in their local environmental conditions – the breakdown of social ties and peaceful coexistence in the face of environmental change – is hardly a given. As I have previously mentioned, Michael Watts (1983) pointed out that Hausa societies stored a surplus of grain for communal distribution in times of environmental scarcity. Linke et al. (2015) also find a negative correlation between violent conflict and inter-communal dialogue systems, suggesting that shrinking resources due to environmental degradation can be peacefully managed instead of violently contested.

Thomas Homer-Dixon (1991) is noteworthy in the climate-conflict literature for his claim that there is a direct causal relationship between environmental degradation and violent conflict in developing countries. The argument is complex, but it boils down to a series of interlinked causal pathways through which six types of environmental degradation result in four social effects: diminished agricultural production, economic decline, population displacement and disrupted institutions and social relations. For Homer-Dixon, the first three social effects all contribute to the disruption of institutions and social relations, which is the proximate cause of violent conflict in degrading ecosystems. He argues that:

The fourth social effect especially relevant to the connection between environment change and acute conflict is the disruption of institutions and of *legitimized, accepted, and authoritative social relations*. In many developing societies, the three social effects described above are likely to tear this fabric of custom and habitual behavior. A drop in agricultural output may weaken rural communities by causing malnutrition and disease, and by encouraging people to leave; economic decline may corrode confidence in the national purpose, weaken the tax base, and undermine financial, legal and political institutions; and mass migrations of people into a region may disrupt labor markets, shift class relations, and upset the traditional balance of economic and political authority between ethnic groups (pp. 97-98, emphasis added).

For the political geographer, this argument misses the point entirely. As I have shown earlier in this thesis, it was actually maldistribution of political power among ethnic groups as a result of Nigerian state formation that upset the traditional, negotiated balance of economic and political authority between ethnic groups in Nigeria. Seen this way, we can turn Homer-Dixon's argument on its head: the imposition of indirect rule upset the traditional balance of economic and political authority in Central Nigeria long before the manifestation of climate change-induced ecological consequences in the early twenty-first century. Resource availability became constrained for the politically disadvantaged group, which has become a flashpoint of great consequence as environmental productivity in the Sahel declines. The enmity observed today between different ethnicities, religions and subsistence practices, therefore, follow from the politicization of these markers of identity in a state system that grants territorial governing power to particular ethnic groups.

In the second chapter of this thesis I employed a historical analysis, drawing on secondary sources to illustrate the social-political transformations that took place over the course of pre- and post-colonial time periods in the Central Nigeria region centered on the Bauchi Plateau. I found that over the course of 200 years, the power relations between the groups that we now categorize as herders and farmers changed dramatically as the

units of political organization shifted from various empires and autonomous spaces to the singular territorial state. Traditional societies on the Plateau interacted with the Fulani and Hausa empires but were never politically dominated by them, resisting incorporation by repelling military advances from the surrounding plains. Once the British became fully committed to formalizing the colonial administrative structure of the region, they recognized the Sokoto Caliphate and Hausa States – political units that were most familiar to them – as the dominant political actors in the region. The policy of indirect rule coupled with the military ‘pacification’ of autonomous spaces resulted in a rapid transition to a subordinate power structure that the residents of the Plateau had not previously experienced. This transformation in the context of colonial extractive labor schemes complicated relations between these groups beginning in the end of the nineteenth century and continuing into the present. Issues like this in other parts of Nigeria contributed to a general concern about ethnic domination in politics, leading to the system of indigene status established in the most recent Nigerian Constitution. The various drivers of the conflict in Plateau State, particularly indigene status, can be traced back to the upending of the pre-colonial order which resulted in an ongoing competition between previously independent ethnic groups over control of a single state. By reframing the source of the conflict in this way, we can understand this type of conflict not as a product of the physical environment, but a product of ever-changing social relations.

In the third chapter, I used statistical methods to assess the tenability of theoretical frameworks that attempt to explain the relationship between climate and conflict in semiarid ecosystems of the Third World generally. By using climate, survey and conflict



data I found that there is a positive relationship between photosynthetic activity on the ground and instances of violent conflict within Nigeria. In other words, conflict correlates with an increase of vegetative productivity rather than a decrease, contradicting findings that proponents of many climate-conflict theories have suggested. On the other hand, I found that there is also a positive relationship between self-reported feelings of being treated unfairly as an ethnic group and the instance of violent conflict within a given state. This is contrary to the narrative that violent conflict increases as the climate degrades and suggests that greater attention should be paid to power relations between groups when attempting to explain the drivers of violent conflict in developing countries and formulate responses to them.

#### Future Directions

The ultimate goal of this mixed-methods framework is to establish multiple data points from different perspectives. The use of qualitative and quantitative methods in this way is intended to triangulate separate conclusions that point in similar directions. This thesis does not, in any way, establish a causal relationship between unequal access to state power and violent conflict in Nigeria, nor does it conclusively refute the theoretical link between climate and conflict. It does, however, contribute to the as-yet-unsettled climate-conflict debate and points to the need for a better incorporation of power and social relations into quantitative research. The value of mixing methods in this way is that one conclusion supports the other, lending more credibility to the claim that climate does not adequately explain violent conflict in Nigeria. A major limitation to all quantitative analyses of the climate-conflict link is data availability and data quality. Previously discussed limitations regarding the veracity and infrequency of the Nigerian Census and

low-resolution power relations datasets (e.g. Geo-EPR) point to the need for greater qualitative and quantitative data collection in instances where official data sources are unreliable, potentially allowing for more granular analysis of factors that might drive conflict in African societies. As a geographer, I must also point out the fact that many existing analyses of conflict in sub-Saharan Africa cited in this thesis are large-n studies that use observations at the subnational level for some twenty or more states at once. Such large areal extents may be conducive for data analysis generally but make it impossible to consider how effects vary by place. It is likely that different combinations of factors are experienced differently between societies, and that there is a multiplicity of pathways to conflict that have yet to be quantified in any appreciable way. Again, higher-resolution qualitative and quantitative data must be collected, and analysis at the national and subnational scale are necessary for scholars to better understand those conditions.

The conclusions of this research suggest that many scholars contributing to the climate-conflict literature do not place enough emphasis on social factors that do not appear to relate directly to changes in natural systems. While I have focused on political exclusion at the state level, understanding the relationship between conflict and identity-based party politics may help us better understand the effects of politicized group identification on the potential for violent outcomes. Additionally, a focus on the impact of different colonial practices, such as British-style indirect rule or French-style assimilation, would allow for a more historically- and geographically sensitive understanding of the process by which group identity becomes conflictual to the point of violence. Finally, the finding that the relationship between climate and conflict is positive suggests new indicators that might be included in future analyses of this region. It may be

the case that spaces of increased vegetative productivity bear a higher value than spaces of decreased productivity. There are different ways to understand the value of land and investigating the relationship between various quantitative and qualitative indicators for land value and conflict will contribute further to our understanding of the significance of social processes relative to climate change as regards communal violence in Nigeria.

There is an unfortunate lack of geographic specificity in the theoretical space around the issue of conflict in the third world. The general theory that a degrading climate drives conflict in sub-Saharan Africa and beyond is clearly ageographical, as is the theory that political exclusion drives the conflict. It is a very Western exercise to find such broad commonalities between, say, Nigeria and the Democratic Republic of the Congo, and expect the same theoretical framework to hold true for both of them. This is not a foreign concept, and geographers like Barnett and Adger (2007) acknowledge this, arguing that “The way climate change can and does undermine human security varies across the world because entitlements to natural resources and services vary across space, and the social determinants of adaptive capacity are similarly varied (p. 641).” In addition to more sophisticated and higher-resolution data, the academic community needs a more place-sensitive approach to conflict in the third world that does not collapse all of these societies, with their extensive pre-colonial histories and equally diverse colonial and post-colonial realities, into one. I have done my best to limit this analysis to as confined a geographic unit as possible – making claims limited solely to Nigeria – but even this level of aggregation has obvious drawbacks. Nigeria is far too geographically diverse in its social and political institutions and regional historical contexts to paint with such a broad brush. It is the geographer’s duty to advocate for a more nuanced

understanding of how place and process interact to create the outcomes that academics seek to better understand.

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