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THESIS

**AN INFORMATIONAL APPROACH TO COUNTERING
COLLECTIVE VIOLENCE IN NIGERIA**

by

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December 2020

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**AN INFORMATIONAL APPROACH TO COUNTERING
COLLECTIVE VIOLENCE IN NIGERIA**

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Submitted in partial fulfillment of the
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ABSTRACT

Militaries globally now grapple with the best method to manage information transmitted through new technologies, especially during operations in the information environment aimed to defend the democracy of sovereign states. Through this study, an ethically acceptable approach is sought to counter hostile narratives in a segregated marketplace of ideas. Considering developing countries in Africa, like Nigeria that recently attained 21 years of uninterrupted democracy, how then can they counter the incessant collective violence inspired by new technologies? Building on previous research in this field that focused on quantitative analysis of social media data, I conduct statistical analysis to assess the effect that different forms of discourse may generate in increasing or reducing violence in Nigeria from 2013 to 2014. I find that unifying words and concepts shared on social media in Nigeria are associated with reduced occurrence of collective violence. In addition, I show how social network analysis can be used to provide in-depth visualization of the structure of the influence networks operating in the Nigerian information environment.

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LIST OF ACRONYMS AND ABBREVIATIONS

AFN	Armed Forces of Nigeria
BHT	Boko Haram Terrorist
CTCOIN	Counterterrorist counterinsurgency
FGN	Federal Government of Nigeria
ISWAP	Islamic State in West African Province
OIE	Operations in the Informational Environment
SNA	Social Network Analysis
VA	Visual Analytics
VEO	Violent Extremist Organization

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I. INTRODUCTION

Information sharing has existed from the earliest time and become more sophisticated as humans advance in technology and innovation. Modern means of sharing information has attained ubiquity through the internet, and social media, surpassing the traditional mass communication and social communication controlled by state actors.¹ While the omnipresent form of social media information has unquantifiable advantages, some undemocratic states and non-state actors like violent extremist organizations (VEOs) exploit new technologies to incite people. One growing trend is the trust built on social media information, primarily through Twitter, Facebook, Instagram, YouTube, and TikTok as against mass and social communication that could be quickly censored.² Social media technology has gained wide acceptance as the best form of synchronous and asynchronous communication supported by information sharing. The shift of trust stems from advancement in technology that creates a segregated marketplace of ideas that encourages division and, in the long run, violence, unlike a unified market place of ideas that appeals to broad audiences.³ Consequently, if social media influences information that creates a segregated marketplace of ideas, many countries are vulnerable to collective violence occasioned by disinformation.

The bias about the information shared on social media has set the right conditions for VEOs and proxies to increasingly use social media apps to conduct information warfare through narratives that can affect people's psychology. Scholars and state actors in developed countries grapple with identifying the constituents of persuasive information

¹ Peter Hirshberg, "First the Media, Then Us: How the Internet Changed the Fundamental Nature of the Communication and Its Relationship with the Audience," *OpenMind* (blog), accessed October 20, 2020, <https://www.bbvaopenmind.com/en/articles/first-the-media-then-us-how-the-internet-changed-the-fundamental-nature-of-the-communication-and-its-relationship-with-the-audience/>.

² "Is Social Media Now a Credible News Source? - GlobalWebIndex," GWI, October 29, 2019, <https://blog.globalwebindex.com/chart-of-the-week/who-are-news-networkers/>.

³ T Camber Warren, "Explosive Connections? Mass Media, Social Media, and the Geography of Collective Violence in African States," *Journal of Peace Research* 52, no. 3 (2015): 297–311.

created by VEOs, while efforts to develop the best counternarratives are highly desirable.⁴ In countering false information in a democracy, pertinent persuasive information influences people to adhere to indigenous citizens' moral and legal rights. Of course, tyrants, totalitarians, and demagogues use psychological operations and propaganda on their own citizens; and this sometimes results in such administration's implosion. Therefore, how can developing countries in Africa like Nigeria that recently attained 21 years of uninterrupted democracy, counter incessant collective violence that has threatened its unity? Building on previous research in this field that focused on collective violence in Africa and idioms of authority radicalization in Nigerian social communication.⁵ I begin by identifying anodyne words and information shared on social media peculiar to the influential ethnic, religious, and regional groups in Nigeria.⁶ I hypothesize that influential information has the potential to influence Nigerians to be patriotic and possibly shun violence. Furthermore, it is expedient that we know words and expressions that have the potential to create a collection of ideas that could incite a group to violence.

This study explores the evolving causes of violence and informational approaches to mitigating recurrent violence in Nigeria. With the successful application of information operations by the Armed Forces of Nigeria (AFN) in Kano State, the need to adopt a scientific approach for subsequent operations is required. This research seeks to answer the question, *how can influence in the information environment reduce collective violence in Nigeria?* Given the technology, this study aims to advance the knowledge of the AFN operations in the information environment through a quantitative analysis of social media data.

⁴ "How Extremist Groups Are Using Social Media to Spread Their Ideology, Recruit and Encourage Violence," accessed October 20, 2020, <https://www.securitymagazine.com/articles/93440-how-extremist-groups-are-using-social-media-to-spread-their-ideology-recruit-and-encourage-violence?v=preview>.

⁵ Warren T. Camber. 2017. "The Technology of Statecraft in The Age of Social Media: Idioms of Authority and Radicalization in Nigeria Social Communications." Naval Postgraduate School.

⁶ Warren, "Explosive Connections?"

II. LITERATURE REVIEW

A. SOCIAL MEDIA AND COLLECTIVE ACTION

Since social media's global acceptance, scholars and military strategists have tried to understand the nexus between collective violence and social media in some societies. After two decades of advancement in technology and innovations, social media apps now include Facebook, Instagram, WhatsApp, WeChat, YouTube, and Twitter, all configured with algorithms that support social networking that gather profiles of friends and affiliation in one service.⁷ Twitter stands out as the most relevant social media app for research based on its breadth and availability, which affords researchers the opportunity to analyze sentiments by "opinion mining," which refers to the use of Natural Language Processing to determine the attitude and opinions expressed in online media.⁸ On the one hand, some scholars posit using Twitter sentiment analysis could provide near-real-time predictions of events.⁹ Forecasts of events such as polls, elections, online activities, offline phenomena, and collective action increasingly make Twitter a valuable tool for analyzing state and non-state actors' sentiments.¹⁰ On the other hand, some scholars have argued that a combination of social media and other forms of communication like Global System for Mobile Communication (GSM), radio, and television transmission forms the best approach for analyzing state and non- state actors' behavior.¹¹

⁷ "Decoding The Social Media Algorithms In 2019. The Ultimate Guide," Ste Davies, February 19, 2019, <https://www.stedavies.com/social-media-algorithms-guide/>.

⁸ Warren T. Camber. 2017. "The Technology of Statecraft in The Age of Social Media: Idioms of Authority and Radicalization in Nigeria Social Communications." Naval Postgraduate School. 9 – 15.

⁹ Pablo Barberá and Gonzalo Rivero, "Understanding the Political Representativeness of Twitter Users," *Social Science Computer Review* 33, no. 6 (December 1, 2015): 712–29, <https://doi.org/10.1177/0894439314558836>.

¹⁰ Eytan Bakshy et al., "Everyone's an Influencer: Quantifying Influence on Twitter," in *Proceedings of the Fourth ACM International Conference on Web Search and Data Mining, WSDM '11* (Hong Kong, China: Association for Computing Machinery, 2011), 65–74, <https://doi.org/10.1145/1935826.1935845>.

¹¹ Catie Snow Bailard, "Ethnic Conflict Goes Mobile: Mobile Technology's Effect on the Opportunities and Motivations for Violent Collective Action," *Journal of Peace Research* 52, no. 3 (May 1, 2015): 323–37, <https://doi.org/10.1177/0022343314556334>.

With democracies globally attempting to reduce hard power approaches in countering violence, social media appears to be an increasingly effective soft power tool. This point is also noted by scholars who argue that soft power approaches in countering violence creates a stronger foundation for a long-lasting solution to violence than the kinetic approach.¹² Equally important is the state actors employment of soft power approach that involves mass communication and media with capacity to influence and control. Of note is Warren’s research, which states that “mass media infrastructure represents one of the most powerful forces for peace and stability in the modern world.”¹³ Furthermore, with a combination of Bayesian models, and a structural empirical approach combined with constructive theoretical concepts, he provided statistical evidence to show that mass media influences the population.¹⁴

Violence experienced in the world includes human activity up to the state level; however, collective violence involves groups and non-state actors that could be proxies against other non-state actors or states.¹⁵ Many scholars studying collective violence try to explain the fundamental reasons that elicit a collective response from people with shared identities regardless of the size. Statistics have shown that much of the collective violence witnessed in the world is directed toward the state by groups mobilized through grievances caused by omission or commission of the states.¹⁶ In the words of Lar B. Kasper, “There may not be definitive evidence as to whether the propensity to make war is innate, but there are strong intimations that recourse to collective violence is as old as human society itself.”¹⁷

¹² “What Is Soft Power?,” Soft Power, accessed February 10, 2020, <https://softpower30.com/what-is-soft-power/>.

¹³ T. Camber Warren, “Not by the Sword Alone: Soft Power, Mass Media, and the Production of State Sovereignty,” *International Organization* 68, no. 1 (January 2014): 113, <https://doi.org/10.1017/S0020818313000350>.

¹⁴ Warren, 115.

¹⁵ Roberta Senechal de la Roche, “Collective Violence as Social Control,” *Sociological Forum* 11, no. 1 (1996): 97–128, <https://www.jstor.org/stable/684953>.

¹⁶ Bailard, “Ethnic Conflict Goes Mobile.”

¹⁷ “Collective Violence - an Overview | ScienceDirect Topics,” 3, accessed March 24, 2020, <https://www.sciencedirect.com/topics/social-sciences/collective-violence>.

Previous works on social media and collective violence from the Naval Postgraduate School (NPS), like the works of Gregory R. Selph, Michael H. Crain, Andrew Anderson “Measuring Sentiment Response to Collective Violence Through Social Media”¹⁸ and Warren, “The Technology of Statecraft in the Age of Social Media: Idioms of Authority and Radicalization in Nigerian Social Communication,” demonstrate the use of social media technology in analyzing sentiments that cause collective violence in Nigeria.¹⁹ I will utilize some of the already established data and research in this field to develop my research on an informational approach to counter collective violence in Nigeria.

B. INFORMATIONAL STRATEGY FOR COUNTERING COLLECTIVE VIOLENCE

Strategies are essential for success in any domain, especially when an informational approach is required. This study explores suitable information strategies theories that support the application of the informational approach. From the military standpoint, Joint Concept of Operations in the Informational Environment (JCOIE) captures information as a requirement for the U.S./JCOIE to achieve its military end state.²⁰ To complete set missions, the military requires models that integrate the IE and the operational environment (OE). The information has to be transmitted, received, and understood by the target audience correctly, a challenge that has led to the improvement from the transmission-centric model to the sentient informational model.²¹ Besides, the sentient information model incorporates the role of machines in generating data for analysis that could be employed on social media for influence operations.²² Aside from the military approach to

¹⁸ Youngguae Bae and Hongchul Lee, “Sentiment Analysis of Twitter Audiences: Measuring the Positive or Negative Influence of Popular Twitterers,” *Journal of the American Society for Information Science and Technology* 63, no. 12 (2012): 2521–35, <https://doi.org/10.1002/asi.22768>.

¹⁹ Warren T. Camber. 2017. "The Technology of Statecraft in The Age of Social Media: Idioms of Authority and Radicalization in Nigeria Social Communications." Naval Postgraduate School. 9 – 15.

²⁰ “Joint_concepts_jcoie.Pdf,” accessed November 4, 2020, https://www.jcs.mil/Portals/36/Documents/Doctrine/concepts/joint_concepts_jcoie.pdf?ver=2018-08-01-142119-830.

²¹ “Joint_concepts_jcoie.Pdf.”

²² “Jp3-13-2.Pdf,” accessed October 23, 2020, <https://fas.org/irp/doddir/dod/jp3-13-2.pdf>.

information strategy, some scholars have contributed to the development of strategy for states and the militaries, especially during OIE's conduct.

In *Information Strategy and Warfare: A Guide to Theory and Practice*, John Arquilla and Doug Borer explain information strategies through three themes: “the rise of the information domain and its interplay with military affairs; the growing power of networked organizations; and the multidimensional nature of information operations themselves.”²³ Theories covered in Arquilla and Borer's study succinctly captured aspects that support this study. According to David Ronfeldt, seeing Al-Qaeda from the standpoint of religious zealots is incomplete, but exploring the nexus between globalization and tribalism allows us to understand how it mutated into a virulent predator.²⁴ Similarly, Anthony R. Pratkanis argues for a change in the way IO is conducted by application of “consistency and commitment,” social proof, and influence as tools in conducting OIE. He argues that consistency reinforces persuasion and guarantees the recipient of information, while commitment goes a step ahead to win the hearts, thereby influencing the target audience's behavior. Pratkanis also states that the center of gravity of influence campaigns has to be within ethical and legal boundaries, primarily when persuasive communication is directed toward a state's own citizens, it must not contain any form of psychological operations and propaganda.²⁵

The application of information for influence cuts across states and non-state actors who sometimes lack the capabilities to measure the effect of penetration and detect propaganda. For instance, Robinson Glenn discovered that Al-Qaeda is adept at information management and data security, and this leads to his suggestion that a “network-centric” approach is suitable if OIE is used for counterterrorism counterinsurgency (CTCOIN).²⁶ The argument from information strategists to invent effective means of persuasion for future application to match new technological advancements, are areas

²³ John Arquilla and Douglas A. Borer, *Information Strategy and Warfare: A Guide to Theory and Practice* (Routledge, 2007), 2.

²⁴ David Ronfeldt, “Al Qaeda and Its Affiliates: A Global Tribe Waging Segmental Warfare,” January 1, 2007, <https://www.rand.org/pubs/reprints/RP1371.html>.

²⁵ Arquilla and Borer, *Information Strategy and Warfare*, 56–80.

²⁶ Arquilla and Borer, 102–10.

scholars now increasingly research. For instance, Burton Whaley echoed the need for the first-class deception to employ other means, not the traditional leaflet drops, loudspeakers, and radio propaganda adopted in previous deception and information operation.²⁷ To build on the premise of diversifying approaches to target audiences, social media powered by the internet presents new ways of influencing audiences. While social media has more penetration in certain regions, economic barriers and internet availability are important challenges in getting social media information to remote areas except through a transfer of the same information through a social network of small groups. Social media also provides the information strategist the opportunity for measuring influence through the number of searches, likes, followers, messages, and shared links for small-scale blogs and large-scale platforms like Twitter and Facebook.²⁸

Globally the increase in information transfer through various medium is categorized by some scholars as a continuous process that require technological and nontechnological integrant. The strategist's overall goal is to have adroitness in understanding, creativity, and transmission of information to demoralize one's opponents in the right way. According to Borer's view, "identifying the right kind of knowledge needed for a particular conflict may be the most critical choice the information strategist makes."²⁹ He also considers that a "war of ideas" is an oxymoron, that persuasion rather than coercion is the order of the day.³⁰

C. PERSUASIVE INFORMATION

The medieval period's informal methods are different from modern times and will change based on societies and technological development. In considering the design of information for modern times and how to convey ideas, the knowledge that can influence human behavior is critical for success by the originator. According to Schramm Wilbur,

²⁷ "American_intelligence_journa.Pdf," accessed November 5, 2020, https://cdn.ymaws.com/cicentre.com/resource/resmgr/articles/american_intelligence_journa.pdf.

²⁸ James Kinniburgh and Dorothy Denning, "Blogs and Military Information Strategy," *IO Sphere*, June 1, 2006, 51, <https://doi.org/10.4324/9780203945636.ch9>.

²⁹ Arquilla and Borer, *Information Strategy and Warfare*, 250.

³⁰ Arquilla and Borer, *Information Strategy and Warfare*.

the ability to communicate effectively by coding and decoding information through the source, message, and destination principles of communication reduces the redundancy of transmitting too much information without getting the accurate message to the receiver.³¹ For every piece of information released, the effect must be taken into cognizance; whether it will persuade the target audience or create resentment. A critical aspect of information is the perception of biases. Emily Spencer states that mitigating individual and group decision-making errors by understanding the effects of cognitive biases includes simplified information processing strategies that influence the human mind, which cannot process extensive information.³² Cognitive biases can such as personal prejudices and optimism biases, can also be exploited. In his book “The Psychology of Persuasion,” Robert Cialdini explains how to influence people by analyzing human psychology, weapons of influence, then commitment, and consistency.³³

One of the critical aspects of ethics and emic behaviors is social proof, which leads to the pluralistic ignorance effect. People of the same ethnicity, tribe, religion, or association sometimes reify shared values and interest factors that motivate people to be influenced in a particular manner. For instance, societies with homogeneous identities, sacred values, and authority systems may be more easily influenced by the leaders of that society. According to Edward L. Bernays, persuasive information requires both art and science to control public minds to accept a particular idea or commodity. To Bernays, the essence of propaganda is to “regiment the public mind every bit as much as an army regiment their bodies.”³⁴ With divergent views about propaganda’s effect in the information disseminated, some take propaganda to connote negativity. In like fashion, propaganda is targeted at foreign states and adversaries, while some scholars take it as a means to garner the support of the people. For VEOs, propaganda is a key tool for

³¹ Elihu Katz, “The Process and Effects of Mass Communication. Wilbur Schramm,” *American Journal of Sociology* 61, no. 6 (May 1, 1956): 638–39, <https://doi.org/10.1086/221865>.

³² Emily Spencer, *Thinking for Impact: A Practical Guide for Special Operations Forces*, 2018, <https://www.deslibris.ca/ID/10098572>.

³³ “How to Use Cialdini’s 6 Principles of Persuasion to Boost Conversions,” *CXL* (blog), June 30, 2019, <https://cxl.com/blog/cialdinis-principles-persuasion/>.

³⁴ “Propaganda by Edward Bernays (1928),” accessed October 23, 2020, <http://www.historyisaweapon.org/defcon1/bernprop.html>.

information operations in mobilizing support from the people, while delegitimizing state actors. Conversely, states can defeat their adversaries by using propaganda as a function to advance statecraft policies that involve manipulation, subversion, cooperation, privatization, and creation of panic.³⁵

In recent times there has been an increase in disinformation and misinformation in cyberspace to create disorder. Some of the information disseminated in countries are PSYOPS, which could be from an adversary country that intends to use the intangible power of information to create discord. While the use of PSYOP and deception could be fashionable in some places, most democratic states discourage PSYOP on their own citizens, just as the U.S. Department of Defense prohibits propaganda and PSYOP on U.S. citizens.³⁶ However, the reality is that nation against nation, nation against people, and people against people now apply PSYOP and deception even when not in war. Tim Maurer also notes this point and argues that states, non-state actors, proxies, and mercenaries \ are essential tools for projecting conflicts to achieve national interests in the information environment.³⁷

D. SOCIAL MEDIA AND VIOLENT INFORMATION NETWORKS IN NIGERIA

Social media is now the fastest means of information sharing, supporting the transfer of knowledge and technology. Works of literature on information and narratives have argued that the power of information shared through social media could positively and negatively affect the target audience.³⁸ Social media platforms like peer-to-peer apps (P2P)—Twitter, Facebook, YouTube, Instagram, and Baidu—facilitate both information sharing across sovereign boundaries globally except countries with government

³⁵ Daniel Lerner, *Propaganda in War and Crisis*. (New York: Arno Press, 1972).

³⁶ “Jp3-13-2.Pdf.”

³⁷ Tim Maurer, *Cyber Mercenaries* (Cambridge University Press, 2018).

³⁸ “Disinformation Operations in Cyber-Space,” Cyber security info note, accessed March 25, 2020, <https://www.enisa.europa.eu/publications/info-notes/disinformation-operations-in-cyber-space>.

ensorship.³⁹ Wilson and Richard argued that cyber Jihad and cyber terrorists use a master narrative and sub narratives to conduct disinformation through the internet and social media platforms.⁴⁰ In these types of narratives, efforts geared toward radicalizing and mobilizing law-abiding citizens' support to revolt against a legally constituted government. Tim Maurer echoes this assessment by identifying the roles cyber proxies, which could be state and non-state actors, perform in the cyber domain to undermine nations' sovereignty and peace.⁴¹ Maurer further supports this point by elucidating false-flag operations and actors' sophistication to manipulate the population through social media platforms. The manipulation of the population against others of different religions and races through social media has led to violence witnessed in countries like Nigeria, Iraq, Syria, and Myanmar.⁴²

Identifying the actors that orchestrate violent information on social media has been a daunting challenge for many state actors; the advancement in technology and its attendant surge in human application of social media has paved the way for VEOs to disseminate extremist information unabatedly. With the sophistication attained by VEOs in the cyber domain and social media, it is necessary to formulate an approach in controlling the spread of VEOs' narratives in Nigeria.

Sitaram Asur and Bernardo A. Huberman, "Predicting the Future with Social Media," in *2010 IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology*, vol. 1, 2010, 492–99, <https://doi.org/10.1109/WI-IAT.2010.63>.

³⁹ Sitaram Asur and Bernardo A. Huberman, "Predicting the Future with Social Media," in *2010 IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology*, vol. 1, 2010, 492–99, <https://doi.org/10.1109/WI-IAT.2010.63>.

⁴⁰ "Cyber Warfare, Terrorist Narratives and Counter Terrorist Narratives: An Anticipatory Ethical Analysis - ProQuest," accessed February 21, 2020, <https://search.proquest.com/docview/2261017037?pq-origsite=gscholar>.

⁴¹ "(PDF) Cyber Mercenaries: The State, Hackers, and Power," ResearchGate, accessed September 25, 2020, https://www.researchgate.net/publication/327803948_Cyber_mercenaries_the_state_hackers_and_power.

⁴² "Ten Conflicts to Worry About in 2019," *ACLEDD* (blog), February 1, 2019, <https://acleddata.com/2019/02/01/ten-conflicts-to-worry-about-in-2019/>.

III. BACKGROUND

A. HISTORY OF INFORMATION INFLUENCING COLLECTIVE VIOLENCE IN NIGERIA

1. Location

Nigeria is located in West Africa on the Gulf of Guinea, known to be one of Africa's fastest-growing population and prospective economies.⁴³ Geographically Nigeria has 923,768 km² sharing boundaries with Benin, Cameroon, Niger, and Chad republics. The climate spans from the rain forest belt from the Atlantic Ocean to the Sahel savannah regions in northern Nigeria. In Nigeria, the demography includes over 200 million people in 36 states and a Federal Capital Territory sharing a diversity of cultures with over 240 ethnic groups and three major ethnic groups of Hausa, Yoruba, and Igbo.⁴⁴ Nigeria's heterogeneity and population is a source strength in the region; however, persistent incidents of collective violence right from the period after independence in 1960 have been the bane to its development. Some scholars attribute the sources of violence in Nigeria to poverty, ethnic hatreds, and religious bigotry.⁴⁵ This study examines the exogenous and endogenous factors that influence collective violence in states in Nigeria with recurrent collective violence among the population.

2. Colonial Era

The British pronouncement that heralded the abolishment of the slave trade was penultimate to the decision to control territories in southern Nigeria before the amalgamation of Southern and Northern protectorates in 1914 by Lord Frederick Lugard.⁴⁶

⁴³ "Nigeria Economy 2020, CIA World Factbook," accessed October 6, 2020, https://theodora.com/wfbcurrent/nigeria/nigeria_economy.html.

⁴⁴ "Africa :: Nigeria — The World Factbook - Central Intelligence Agency," accessed November 19, 2020, https://www.cia.gov/library/publications/resources/the-world-factbook/geos/print_ni.html.

⁴⁵ B Salawu, "Ethno-Religious Conflicts in Nigeria: Causal Analysis and Proposals for New Management Strategies" 13, no. 3 (2010): 9.

⁴⁶ Department Of History and Archaeology, Taraba State University, PMB 1167, Jalingo, Taraba State, Nigeria and Abdulsalami Muyideen, "Historical Background of Nigerian Politics, 1900-1960," *IOSR Journal Of Humanities And Social Science* 16, no. 2 (2013): 84–94, <https://doi.org/10.9790/0837-1628494>.

The British adopted the indirect rule system, but the system could not unite the salience of diversities in religion, ethnicity, and regionality as sources of violence in Nigeria.⁴⁷ From the pre-colonial period to the colonial system of governance, the major ethnic groups in Nigeria adopted different forms of administration. For instance, the Hausa and Yoruba ethnic groups practiced a centralized approach, while the Igbos adopted a more decentralized and acephalous structure. In particular, the Igbo precolonial system is chiefless, meaning it has no single recognized ruler like the Yoruba and Hausa systems, which efficiently worked for the British indirect rule.⁴⁸

During British rule, the first form of collective violence started with a protest in what is known as the “Women War,” also called the “Aba Women’s Riot of 1929,” staged by women from the southeastern region of Nigeria. The Aba Women’s Riot challenged draconian British laws and taxes imposed by unrecognized traditional rulers appointed by the British.⁴⁹ Since the Aba Women’s Riot, Nigeria witnessed increasing anti-British protests and ethnoreligious crises until Nigeria gained independence in 1960.

3. Post-colonial and Military Era

Before the Nigerian independence of 1960, the Nigerian people experienced violence fueled by false information from the various regions. For example, misleading information throughout the 1950s incited skirmishes, mainly misinformation that the British would relinquish political power to a particular ethnic group created suspicion and competition among the political elites.⁵⁰ For the Nigerian early political elite to control the central government, the political elites required a strong home base. The only feasible option of getting support was to resort to appeals based on ethnicity, religion, and resources

⁴⁷ “Amalgamation and the Crisis of Governance: The Nigeria Experience,” *Journal of Public Administration and Governance* 8 (July 16, 2018): 35, <https://doi.org/10.5296/jpag.v8i3.13390>.

⁴⁸ Chika Ogwa 7 months ago, “Summary of Igbo Pre-Colonial Political Administration | Pre-Colonial Political Systems,” Nigerian Scholars, accessed October 16, 2020, <https://nigerianscholars.com/tutorials/pre-colonial-political-systems/summary-of-igbo-pre-colonial-political-administration/>.

⁴⁹ Marissa Evans, “Aba Women’s Riots (November-December 1929),” March 27, 2009, <https://www.blackpast.org/global-african-history/aba-womens-riots-november-december-1929/>.

⁵⁰ Larry Diamond, “Class, Ethnicity, and the Democratic State: Nigeria, 1950-1966,” *Comparative Studies in Society and History* 25, no. 3 (1983): 457–89.

in each region with the possibility of a coalition with another area.⁵¹ Shortly after independence, the violence continued unabated as political office holders engaged in ethnic chauvinism, religious bigotry, and corruption, eventually leading to Nigeria's first coup d'etat' in 1966. The coup plotters claimed they wanted to purge Nigeria of nepotism and corruption. Still, they were equally guilty of the same crime by selectively executing only politicians from other ethnic groups, thus throwing Nigeria into a civil war from 1967 to 1970.⁵²

At the end of the Nigerian civil war, there was a clarion call for "One Nigeria" to reunite the various ethnic groups that fought in the war. Aside from the Nigerian civil war, the second time Nigeria's unity was threatened was the foremost religious violence that started as a peaceful protest in Kano State Nigeria in 1980. The demand for sharia law to be freely practiced in northern Nigeria was spearheaded by a group called Maitatsine, which means "one who damns" in Hausa.⁵³ The protest led to a civil disturbance with interminable ethnoreligious clashes in northern Nigeria; this threatened the return to democracy after 13 years of military rule after the civil war. With a coup d'etat' staged in 1985, the military obliterated Maitatsine, with some followers resurging in 2002 after Nigeria returned to another democratic dispensation.⁵⁴

4. Democratic Transition

Other groups involved in collective violence in Nigeria after the end of military rule in 2000 are the Niger Delta militants, the movement for the actualization of Biafra's sovereign state (MASSOB), and movement for the emancipation of Niger Delta

⁵¹ Department Of History and Archaeology, Taraba State University, PMB 1167, Jalingo, Taraba State, Nigeria and Muyideen, "Historical Background of Nigerian Politics, 1900-1960."

⁵² Françoise Ugochukwu, "The Nigerian Civil War and Its Media: Groping for Clues," *Media, War & Conflict* 3, no. 2 (August 1, 2010): 182–201, <https://doi.org/10.1177/1750635210360083>.

⁵³ Abimbola Adesoji, "Between Maitatsine and Boko Haram: Islamic Fundamentalism and the Response of the Nigerian State," *Africa Today* 57 (June 1, 2011): 98–119, <https://doi.org/10.1353/at.2011.0016>.

⁵⁴ "Nigeria: Palace Coup of 1985 By Dr. Nowa Omoigui," accessed December 6, 2020, http://www.waado.org/nigerdelta/nigeria_facts/militaryrule/omoigui/PalaceCoup-1985.htm.

(MEND).⁵⁵ From 2009 the country witnessed violent extremist groups such as “Jama’atu Ahlis Sunna Lidda’awati Wal-Jihad,” which in Arabic means “people committed to the propagation of the Prophets Teachings and Jihad” known as “Boko Haram,” and the Islamic State in West African Province (ISWAP).⁵⁶ Others are the indigenous people of Biafra (IPOB) and the Islamic movement in Nigeria (IMN), which was recently proscribed by the FGN for mobilizing followers from religious and ethnic affiliation to create collective violence against other Nigerians.⁵⁷

According to Record, “the guerilla can win simply by not losing, whereas the counterinsurgent power can lose by not winning.”⁵⁸ In the past nine years, the BHT has demonstrated to the world that the FGN has not defeated them; this is demonstrated by the sect adopting the outbidding strategy with the support it gets from Al Shabab, Al-Qaeda Al -Qaeda in the Maghreb (AQIM) and ISIS.⁵⁹ In 2015, the AFN regained control of all 15 LGA earlier captured by the BHT. This is the first time in Nigerian history apart from the civil war that parts of the country’s democracy and sovereignty were lost. With external VEOs support, BHT built capabilities in the cyberspace domain through the constant spread of misinformation, disinformation, hacking, and cybercrime. For instance, Eleni, a political scientist, argued that ISIS enjoyed sustained recruitment overseas through cyberspace activities.⁶⁰ The use of radicalized video clips to teach followers is frequently sent through the internet to recruit fighters. Similarly, being an Al-Qaeda affiliate, BHT

⁵⁵ Lysias Gilbert, “Ethnic Militancy in Nigeria: A Comparative Re-Appraisal of Three Major Ethnic Militias in Southern Nigeria,” *IOSR Journal of Humanities and Social Science (IOSR-JHSS)* 17. (November 30, 2013): 1–9, <https://doi.org/10.9790/0837-1760109>.

⁵⁶ Abimbola Adesoji, “Between Maitatsine and Boko Haram: Islamic Fundamentalism and the Response of the Nigerian State,” *Africa Today* 57 (June 1, 2011): 98–119, <https://doi.org/10.1353/at.2011.0016>.

⁵⁷ “Nigeria: Court Formally Proscribes IPOB, Designates It Terrorist Organisation - AllAfrica.Com,” accessed October 16, 2020, <https://allafrica.com/stories/201709210056.html>.

⁵⁸ Jeffrey Record, “Why the Strong Lose” (AIR WAR COLL MAXWELL AFB AL, January 2006), 8, <https://apps.dtic.mil/docs/citations/ADA490798>.

⁵⁹ “Split in ISIS-Aligned Boko Haram Group,” accessed November 6, 2019, <http://studies.aljazeera.net/en/reports/2016/10/split-isis-aligned-boko-haram-group-161027113247008.html>.

⁶⁰ “The Transformation of Islamic Terrorism Through Cyberspace: The Case of ISIS - ProQuest,” accessed February 9, 2020, <https://search.proquest.com/docview/2261006969?pq-origsite=gscholar>.

imitated the same strategy, using YouTube and social media to conduct propaganda, disinformation, financial crimes for funds, and recruitment.⁶¹

It is essential to mention the use of information by the proponents of violence in creating a cognitive bias of categorization among the various religious, ethnic groups in Nigeria. For instance, through information transmitted, the difference between the ethnic and religious groups are reinforced other than the citizens seeing Nigeria first. I hypothesize that the segregation and identities created can be removed with the transmission of unifying messages capable of suppressing the categorization created among Nigerians. Exploring the forms of anodyne information that reduces the salience of ethnic and ethnic categories with the capability to unite Nigerians is imperative for this study and sustenance of Nigerian democracy.

5. The Armed Forces of Nigeria Information Approach

The Nigerian state has attained 21 years of uninterrupted democracy despite daunting issues that have threatened its unity, which could have easily thrown it back to the dark days of coups and counter-coups d'état. The AFN has pledged its loyalty to the constitution and FGN to protect Nigerians even in the face of myriad collective violence incidents, and too sustain nascent Nigerian democracy from groups who want to secede on an ethnic basis like the IPBO/MASSOB and MEND who claim the Niger Delta oil resources. Other groups are the BHT and ISWAP demanding a caliphate be carved out of Nigeria for the complete practice of sharia laws. The AFN has contended with these forces since the current democratic transition.

To sustain Nigeria's unity, security, and sovereignty, several counterterrorism, counterinsurgency (CTCOIN), and counter violent extremism (CVE) approaches have been considered, with operations in the informational environment (OIE) forming a key part of the overall strategic plan. For instance, the FGN strategy of amnesty granted to MEND and Niger Delta Militants resolved a decade of insurgency around the oil rich

⁶¹ "The Nigerian Cyber Warfare Command: Waging War In Cyberspace," accessed February 20, 2020, <https://www.forbes.com/sites/kateoflahertyuk/2018/11/26/the-nigerian-cyber-warfare-command-waging-war-in-cyberspace/#126294e22fba>.

region of Nigeria.⁶² The amnesty, which is a non-kinetic approach, has paved way for peace in the Niger Delta region a strategy attributed to be successful in countering insurgency that would have plunged Nigeria into economic crisis.

Conversely, BHT, ISWAP, IPOB, and IMN sustain the fomentation of collective violence through various means of communication, especially in cyberspace where VEOs exploit social media's ubiquity in information sharing. While VEOs, like BHT, started building cyberspace capabilities through social media in 2010, the Nigerian Army (NA) commissioned its cyber command in 2018 to counter VEOs information warfare in cyberspace.⁶³ It is important to realize that the NA commenced OIE in 2011 through mass communication and social communication for CTCOIN operations while the AFN started building a social media presence. To share information with the general public through mass media, the AFN encouraged all commanders to leverage news media platforms on social media to broadcast counter-narratives to VEOs propaganda. For instance, VEOs know that if misinformation and disinformation narratives are not mitigated in cyberspace, the credibility of authentic information by the AFN will be eroded. To deny sources the ability to undermine cultural, societal, religious, and democratic values, AFN is leveraging all possible technologies to ensure its OIE achieves its objectives. One example is BHT applying propaganda against the FGN in an encrypted platform to spread narratives suggesting the AFN indulges in the indiscriminate killing of citizens on the frontline while ignoring the atrocities BHT commits.⁶⁴ In the same fashion, BHT/ISWAP destroyed a village and immediately released a video claiming the AFN killed innocent Nigerians, a form of information warfare aimed at defamation of the AFN, and aiming to pit the people against the FGN.⁶⁵

⁶² Iyabobola O. Ajibola, "Nigeria's Amnesty Program: The Role of Empowerment in Achieving Peace and Development in Post-Conflict Niger Delta," *SAGE Open* 5, no. 3 (July 1, 2015): 2158244015589996, <https://doi.org/10.1177/2158244015589996>.

⁶³ "The Nigerian Cyber Warfare Command: Waging War In Cyberspace."

⁶⁴ D. E. Agbibo and B. Maiangwa, "Nigeria United in Grief; Divided in Response: Religious Terrorism, Boko Haram, and the Dynamics of State Response," *African Journal on Conflict Resolution* 14, no. 1 (October 16, 2014): 63–97, <https://doi.org/10.4314/ajcr.v14i1>.

⁶⁵ Sunday O. Ogunlana, "Halting Boko Haram / Islamic State's West Africa Province Propaganda in Cyberspace with Cybersecurity Technologies," *Journal of Strategic Security* 12, no. 1 (2019): 72–106, <https://www.jstor.org/stable/26623078>.

The FGN, through the AFN, created the joint task force (JTF), the multinational joint task force (MNJTF), and the relationship with states in northeast Nigeria formed the civilian joint task force (CJTF).⁶⁶ Notably, in northwestern Nigeria, JTF OIE recorded a massive success following the practical application of a population-centric approach that included social media technologies in the operational plans. This was achieved by periodic press briefings at the JTF headquarters (HQ) in Kano, encouraging the news media to share information from JTF, primarily through their Facebook and Twitter accounts. Through JTF OIE in Kano and Katsina states, the JTF gained the population's support in countering collective violence inspired by BHT/ISWAP. While Kano State in 2012 had one of the highest rates of improvised explosive device (IED) incidents, the situation changed dramatically with the efforts of the JTF OIE, which led to reduction of IED incidents to the barest minimum in 2015.⁶⁷ Although the JTF defeated the VEOs in Kano State, the details of the mechanisms that convinced the diverse ethnic, religious groups and how to measure the effectiveness of the OIE, requires further study. If better understood, this method could be applied in other states in Nigeria and possibly other emerging democracies in the world.

⁶⁶ "Key Lessons for Global Counter-Insurgency from the Fight against Boko Haram," *ACCORD* (blog), accessed November 27, 2020, <https://www.accord.org.za/conflict-trends/key-lessons-for-global-counter-insurgency-from-the-fight-against-boko-haram/>.

⁶⁷ "TOWARDS POSITIONING KANO AS MEGA CITY," Kano, August 23, 2020, <https://www.kanostate.gov.ng/?q=towards-positioning-kano-mega-city>.

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IV. RESEARCH METHOD

A. HYPOTHESES

This research will leverage insights from existing works relating to social communication and collective violence conducted in Nigeria to further understand this field. The study examines the capabilities of information shared on social media to influence the population's behavior and to promote peace or lead to collective violence in Nigeria. To assess social media influence on behavior, I identify words associated with concepts such as "God," "unity," and "Nigeria," which may represent positive information that could promote peace in Nigeria. Conversely, I examine words associated with concepts such as "bomb" and "violence," which could incite collective violence. The period of study, from August 1, 2013, to July 31, 2014, is crucial for analysis because this time coincides with the period in which the Boko Haram Terrorist (BHT) group was mobilizing support in northeastern Nigeria through various informational operations.

Firstly, I hypothesize that spatio-temporal units with occurrence of violence in the previous months will more likely experience violence the current month (Hypothesis 1). Secondly, I hypothesize that spatio-temporal units with more positive discourse will more likely experience a lower level of violence (Hypothesis 2a). I further hypothesize that spatio-temporal units with more violent discourse will more likely experience a higher level of violence. (Hypothesis 2b). Finally, I hypothesize that the effect of some variables in the regression that will deepened on the level another variable. We should expect that the effect of "God" discourse will differ depending on other types of discourse that are present in the same spatio-temporal regions. In particular, I hypothesize that the effect of "God" discourse will depend on "unity" discourse (Hypothesis 3a), creating lower levels of violence when both forms of discourse are present. God is respected in Nigeria regardless of the religious beliefs particularly among worshippers of the two major religious beliefs in Nigeria, which are Islam and Christianity.⁶⁸ While "God" is a concept that can sometimes be interpreted in divisive ways, the "God" factor can also sometimes

⁶⁸ "Africa :: Nigeria — The World Factbook - Central Intelligence Agency."

drive prosocial cohesion in Nigeria. Even though there are noticeable differences in the practice of the major religions, a unifying factor is both religions trace their roots to the Abrahamic tradition. While VEOs like the BHT and ISWAP maintain their extremist narrative, a larger part of Nigerian society has evolved from fanatical beliefs to more liberal religious acceptance that fosters the inter-religious and cultural cohesion. Furthermore, I hypothesize that “unity” discourse will alter the effect of prior violence in Nigeria (Hypothesis 3b). With the evolution of inter-tribal and religious acceptance, the cultural perception in Nigeria has evolved from the illusions of asymmetric insights and misconceptions about groups. With more discourse about “unity” it is expected that the barriers of categories among Nigerians will be partially ameliorated which will reduce the effect of prior violence in the country, making it easier to transition from violence to peace. The unit of analysis for the research is a grid-cell width of approximately 50km by month. The measure of 50km affords this study the ability to track violence across state boundaries including Kano, Maiduguri, Lagos, and the most remote areas in Nigeria.

B. RESEARCH DATA

1. Describing the Variables

To provide evidence for these hypotheses, first, we need to know the baseline level of collective violence before testing the independent variables and control variables. The process starts with the data collected from the Armed Conflict Locator and Event Data (ACLED) database for an accurate analysis of conflict events located within Nigeria.⁶⁹ The independent and control variables are included to support the empirical investigation with data collected from online sources like NPS archived Twitter data and other open data sources relevant to analyze the relationship between influential information and collective Violence in Nigeria. In order to generate geospatial analysis in this study population and location, the Gridded Population of the World (GPW) and Socioeconomic Data and Application Center (SEDAC) were applied.⁷⁰ Others are the Geographically Based

⁶⁹ “ACLED,” ACLED, accessed October 2, 2020, <https://acleddata.com/>.

⁷⁰ “Gridded Population of the World (GPW), v4 | SEDAC,” accessed October 2, 2020, <https://sedac.ciesin.columbia.edu/data/collection/gpw-v4>.

Economic Data (G-Econ) used to generate the GDP and GDPP in Nigeria.⁷¹ For better visualization of the geospatial analysis, Nigerian shapefiles were added to the investigation.⁷² In Figure 1, the 36 states in Nigeria and the Federal Capital Territory are shown.

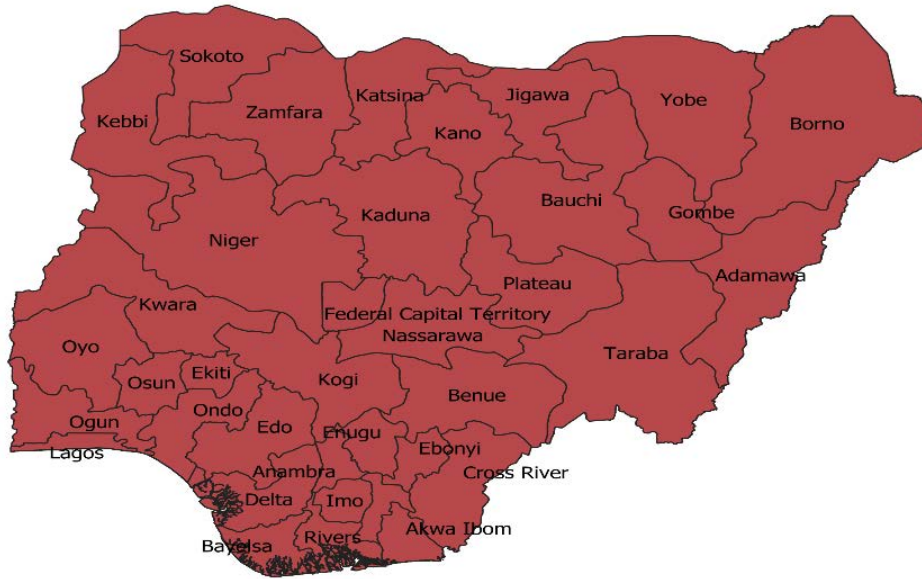


Figure 1. Map of Nigeria Showing the 36 States and Federal Capital Territory.⁷³

2. Dependent Variable

The dependent variable is generated from the ACLED database to measure the count of violent events producing fatalities against state and non-state actors from activities other than war in Nigeria.⁷⁴ ACLED provides this study the chance of analyzing events in the database by date of occurrence and area of interest that identifies the longitude and latitude within Nigeria. In Figure 2, ACLED is reduced to capture violent event occurrence in Nigeria from August 1, 2013, through July 31, 2014, to match the dates of the NPS

⁷¹ “Data and Documentation for G-Econ Project | Geographically Based Economic Data (G-Econ),” accessed October 2, 2020, <https://gecon.yale.edu/data-and-documentation-g-econ-project>.

⁷² “Download Nigeria Shapefile Free - Administrative Boundary, State, City Map -,” September 21, 2018, <https://www.igismap.com/download-nigeria-shapefile-free-administrative-boundary-state-city-map/>.

⁷³ “Adapted from Nigeria Shapefile Free - Administrative Boundary, State, City Map -.”

⁷⁴ “ACLED.”

Twitter dataset period for this research.⁷⁵ Similarly, in Figure 2, the recorded events from the ACLED data are plotted as blue points. For the dependent variable to reflect the unit of analysis of this study, the spatial points are converted to grid-cells through analytic grid processing, by counting the number of violent events and fatalities within each grid-cell-month unit. The grid-cells are color-coded red to yellow, where high red levels represent high fatalities, and low levels are yellow and white means no record of violence. From the plots in Figure 2, we can see that Borno State and Plateau states in the northeastern part of Nigeria have higher violent fatalities depicted by more concentration of dark brown and red in the grid-cells of that location than any other part of Nigeria. This is reflective of events in Nigeria at the time, owing to collective violence of BHT and the sectarian crisis in the Plateau states.

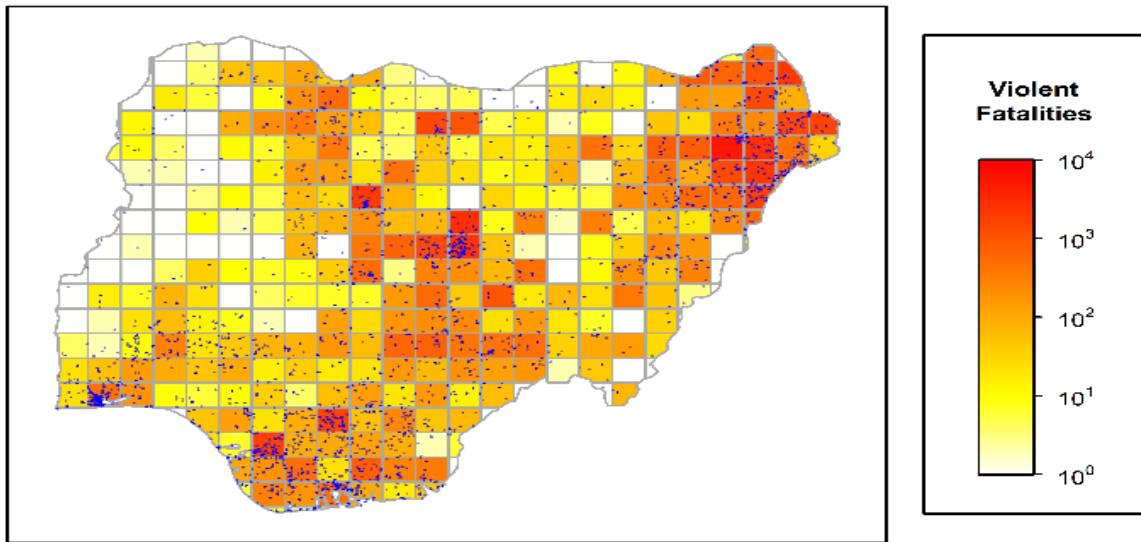


Figure 2. Violent Events and Fatalities in Nigeria, 2013–2014

⁷⁵ “Data Export Tool,” *ACLED* (blog), June 13, 2019, <https://acleddata.com/data-export-tool/>.

3. Independent Variables

a. Nigerian Population

The Nigerian population is recorded as one of the fastest-growing populations globally. To measure the relationship between population and violence, it is imperative to measure population density, which is the number of individuals per unit area. This study used the Gridded Population of the World (GPW) fourth version (GPWv4), that models the distribution of the human population (counts and densities) on a continuous global raster surface.⁷⁶ The GPW provides a spatially disaggregated population layer that is compatible with other social, economic, and remote sensing data sets within Nigeria. Raster grids measure population density consistent with national censuses and population registers, or alternative sources in rare cases where no census or record was available in Nigeria. All estimates of population density have also been nationally adjusted to population totals from the United Nation's World Population Prospects. The population density variable is log-transformed to account for diminishing marginal effects in areas with higher population distribution. Figure 3 shows the smoothed densities of the Nigerian population, showing areas with high-density population color coded red and low with yellow.

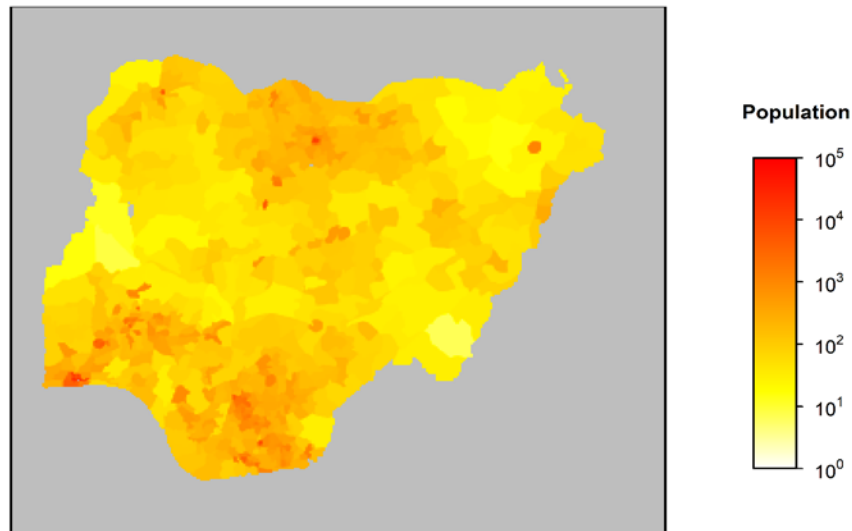


Figure 3. Nigerian Heat Map showing Population Distribution

⁷⁶ “Gridded Population of the World (GPW), v4 | SEDAC.”

b. Nigerian Wealth

The gross domestic product (GDP) variable for this study is used to measure whether the total value of goods and services produced in different regions of Nigeria will impact the level of violence. Leveraging previous studies that examined the correlation between wealth, poverty, and violence, I derived this variable from the G-Econ dataset, which provides a geophysical based data set on economic activity Nigeria and other countries in the world. The primary metric is the regional equivalent of gross domestic product per capita, and the gross cell product (GCP) is measured at a 1-degree longitude by 1-degree latitude resolution at a global scale.⁷⁷ The GDP independent variable is log-transformed to account for diminishing marginal effects in areas with higher GDP. In Figure 4, we can see from the plot that red implies more GDP per capita and reduces to light yellow, signifying the lowest GDP per capita by grid-cell. The plot has more areas with red at the southern and north-central regions of Nigeria, symbolizing higher average wealth with the brown to yellow scattered around other parts of the country that implies lower average wealth.

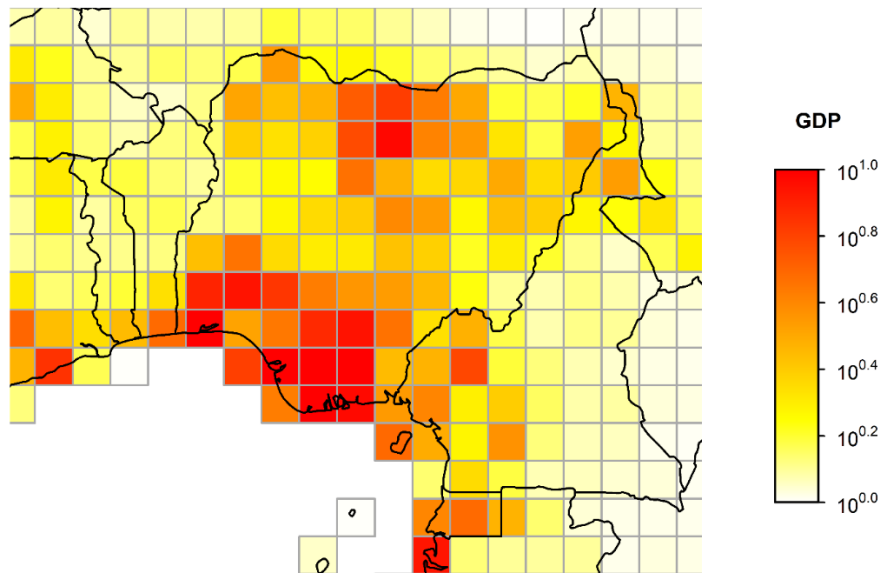


Figure 4. Nigerian GDP

⁷⁷ “Data and Documentation for G-Econ Project | Geographically Based Economic Data (G-Econ).”

c. *Social Media Analysis*

For this study I used aggregated counts of social media messages generated from the NPS Twitter archive, which were then transformed into grid-cell month units for analyzing the effect of information on violence (see Figures 5 and 6). The starting point for the analysis is a 10% random sample of all messages transmitted over the Twitter network between August 2013 and July 2014. To identify social media influence on behavior, words such as “unity,” “good,” “all,” and “God” were used to measure positive information that could promote peace in Nigeria. Conversely, words such as “bad,” “bomb,” and, more specific location mentions were used to measure negative information that could incite collective violence.

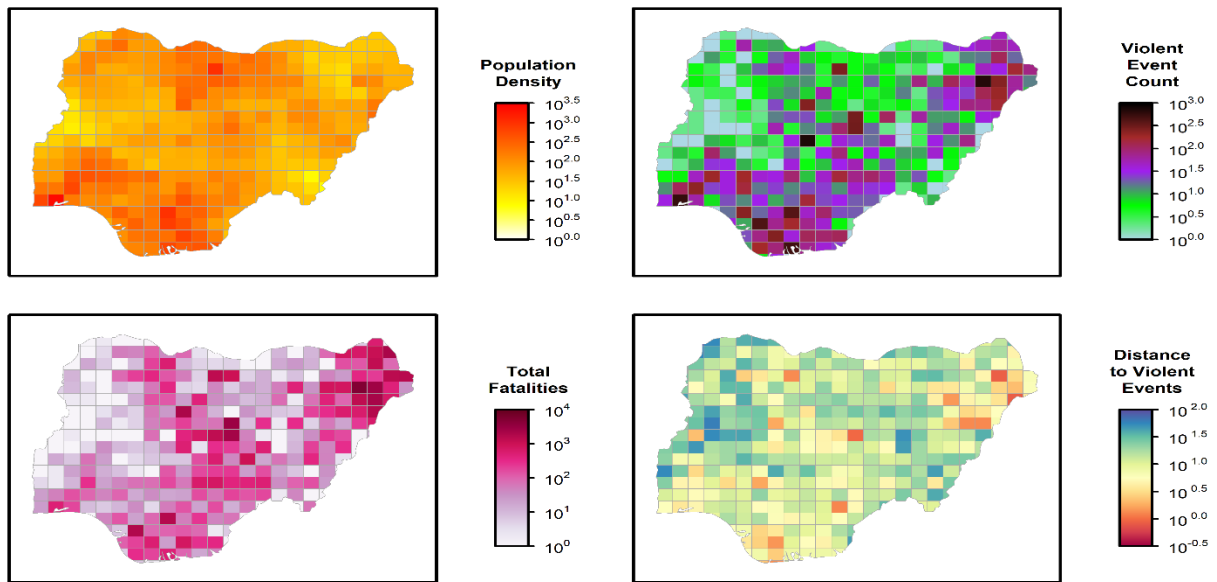


Figure 5. Population Density and Violence in Nigeria.

In addition, I include a key control variable measuring the total number of tweets by grid-cell-month in Nigeria over the study period. It is essential to control for overall communication by using the volume of the total tweets to test the integrity of additional effects seen for a specific style of discourse. This is to ensure that the results are not merely tracking fluctuations in aggregate messaging rates, but rather differences in the relative

rates of appearance of different forms of message content. In Figure 6, the total tweets in Nigeria are represented by grid-cell, with higher volumes in red and lower volumes in yellow.

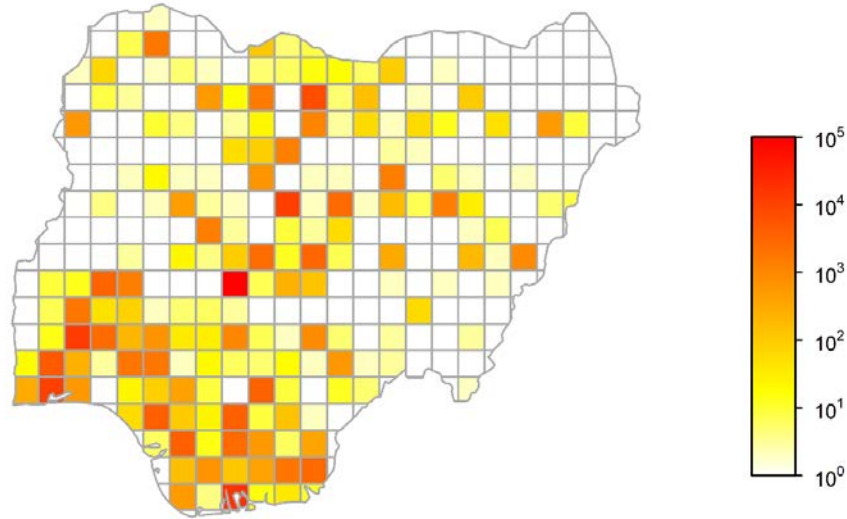


Figure 6. Social Media Traffic in Nigeria

The period from 2013 to 2014 is selected to capture the introduction of information in the operational environment by the FGN in countering collective violence. Based on previous studies in this field, we measured the causes of violence in Nigeria by running software that can make judgments of geographic location from unstructured text in Twitter user profiles. I relied on the NPS licensed Twitter archive, covering the period August 2013 to July 2014, with a database that consists of a 10 percent random samples of all Twitter messages (about 40 terabytes of textual data), which contains approximately three billion separate statements that can be searched for textual patterns. The derived counts enable this study to geospatially determine the tweets' location and correlate them with information about the occurrence of violent events in Nigeria.

4. Text Processing

The data mining commenced by compiling different search terms into a dictionary to be applied across the archive. To achieve this, a large bounding box across central Africa, which includes Nigeria and all its neighbors (longitude: -20 to 43, latitude: -7 to 30), is

generated. Then we recorded messages matching any of the search terms from the dictionary and its location and time. Counts of search terms matching any categories were recorded on a global grid of square latitude/longitude cells of 0.01 degrees. Finally, the data is aggregated into unique grid-cell-month units, using the 50km grid cells visualized above across Nigeria.

5. Concept Mining

I focused on discursive references to particular concepts that can be defined consistently across Nigeria's diverse cultures. These discourse categories are: (1) references to peace and unity in Nigeria, (2) references to violence, and (3) references to God, as these concepts are written in the main languages in Nigeria, to produce a multilingual dictionary of terms recognized by the majority of the ethnic groups in Nigeria. In particular, the official language taught and spoken in Nigeria is English, while French, Yoruba, Igbo, Hausa, and Arabic are either mandatory or optional in some academic institutions in Nigeria. Cultural heterogeneity can be a problem for communication in Nigeria, especially information that involves sacred values attached to ethnicity and religion. Therefore, I focused on the concepts of Igbo, Yoruba, and Hausa as well as God with mention of Christianity and Muslims in the basic search terms. The three major tribes have many residents across Nigeria, while God cuts across all tribes captured in this study. For instance, I identified five ways "God" is expressed in the five languages spoken in Nigeria which starts with the English expression of God, Allah, الله, Dieu, Chineke, and Ọlọrun the Yoruba version. The full list of terms and cross-translation can be found in Appendix A.

6. Lagged Variables

Lagged variables were also included in the models to capture the effects of events from previous time periods, in a given grid cell. Using data from the ACLED database, prior violence was measured in several different ways. First, "Violence (lag)," records the count of violent events in the previous grid-cell month. Second, "Violence (mean)," records the mean count of violent events over the previous six months. Finally, "Violent Deaths" records the total number of violent fatalities in a given grid cell over the previous three

years, while “Distance to Violence” records the distance to the nearest violent event over the previous three years. Lagged version of the social media variables were also included in some models, to clarify whether the effects of different forms of discourse arise prior to the outbreak of violence, or in response to violence. These variables record the same term counts, but from the previous grid-cell-month.

7. Research Question

How can influence in the information environment be used to reduce collective violence in Nigeria?

V. RESULTS

A. REGRESSION ANALYSIS

This study utilizes Poisson regression models based on geospatial analysis of variables that measure counts of events to determine the association between the dependent and independent variables. For this study, the regression models are designed to examine events from August 2013 to July 2014 in Nigeria. The unit of analysis for the regression model is set at the grid-cell level, with a grid-cell width of approximately 50 kilometers (0.5 degrees latitude/longitude). All independent variables were log-transformed to reduce the influence of extreme values.

Table 1 reports the regression results from five models, with Model 1 created as the baseline that shows the relationship between the dependent variable of violence and independent variables that include population density, distance to violence, deaths, GDP per capita, previous months' violence, and total tweets. While in Model 2, additional variables are included to capture the discourse categories of "Bomb," "Nigeria," "God," and "Unity," with this final category comprising counts of terms referring to unity, harmony, and/or peace. In Model 3, I include a multiplicative interaction term between "unity" discourse and the prior month's level of violence, and an interaction term between "unity" discourse and "God" discourse. Model 4 repeats the structure of Model 2, but instead uses lagged versions of the social media variables, and while Model 5 mirrors Model 3, but includes lagged versions of the social media variables along with the multiplicative interactions.

Table 1. Poisson Regression Nigerian Violence and Twitter Discourse

	<i>Dependent variable:</i>				
	Violence				
	(1)	(2)	(3)	(4)	(5)
Violence (Lag)	0.293 ^{***} (0.058)	0.276 ^{***} (0.057)	0.531 ^{***} (0.070)	0.263 ^{***} (0.058)	0.504 ^{***} (0.070)
“Unity”		-0.247 ^{***} (0.076)	0.066 (0.115)		
“Unity” (Lag)				-0.188 ^{**} (0.080)	0.332 ^{***} (0.123)
Violence (Lag) x “Unity”			-0.130 ^{***} (0.023)		
Violence (Lag) x “Unity” (Lag)					-0.120 ^{***} (0.022)
“God”		0.101 (0.072)	0.115 (0.074)		
“God” x “Unity”			-0.032 ^{**} (0.013)		
“God” (Lag)				0.156 ^{**} (0.074)	0.199 ^{***} (0.076)
“God” (Lag) x “Unity” (Lag)					-0.063 ^{***} (0.015)
“Nigeria”		0.297 ^{***} (0.046)	0.306 ^{***} (0.047)		
“Nigeria” (Lag)				0.187 ^{***} (0.050)	0.197 ^{***} (0.051)
“Bomb”		0.080 [*] (0.048)	0.136 ^{***} (0.049)		
“Bomb” (Lag)				0.046 (0.049)	0.122 ^{**} (0.051)
Total	0.029 (0.019)	-0.131 ^{***} (0.040)	-0.179 ^{***} (0.043)	0.006 (0.020)	-0.021 (0.020)
Total (Lag)	0.034 ^{**} (0.016)	0.010 (0.016)	0.010 (0.016)	-0.105 ^{***} (0.037)	-0.161 ^{***} (0.040)

	<i>Dependent variable:</i>				
	Violence				
	(1)	(2)	(3)	(4)	(5)
Population	0.002 (0.045)	0.033 (0.046)	0.086* (0.050)	0.023 (0.046)	0.086* (0.049)
GDP	0.171** (0.071)	0.116 (0.073)	0.121 (0.076)	0.145** (0.073)	0.161** (0.075)
Distance to Violence	-0.291*** (0.041)	-0.337*** (0.044)	-0.301*** (0.045)	-0.334*** (0.044)	-0.312*** (0.044)
Violent Deaths	0.218*** (0.020)	0.244*** (0.020)	0.235*** (0.021)	0.232*** (0.020)	0.226*** (0.021)
Violence (Mean)	1.011*** (0.087)	0.924*** (0.089)	0.928*** (0.089)	0.967*** (0.089)	0.931*** (0.089)
Constant	-1.748*** (0.219)	-1.565*** (0.234)	-1.950*** (0.248)	-1.567*** (0.230)	-1.938*** (0.243)
Observations	4,140	4,140	4,140	4,140	4,140
Log Likelihood	-2,373.834	-2,344.402	-2,323.839	-2,359.779	-2,333.243
Akaike Inf. Crit.	4,765.669	4,714.805	4,677.679	4,745.558	4,696.485
<i>Note:</i>				* p < 0.05	** p < 0.01

B. FINDINGS—POSITIVE DISCOURSE IS ASSOCIATED WITH REDUCED VIOLENCE

1. Model 1

From the estimates in Model 1, we can see that violence from the prior month, violence over the last six months, and violent deaths over the previous three years, each returned highly statistically significant positive coefficients ($p < 0.01$). This indicates that higher levels of these variables are associated with higher levels of violence in Nigeria, as expected in Hypothesis 1. Conversely, distance to prior violence had a highly statistically significant negative coefficient ($p < 0.01$) meaning the farther you are from the incidence of violence the likelihood violence will be reduced (see Figure 7). In addition, GDP and Total (lag) had significant positive coefficients ($p < 0.05$), indicating that violence in Nigeria tends to correlate with higher levels of wealth and activity.

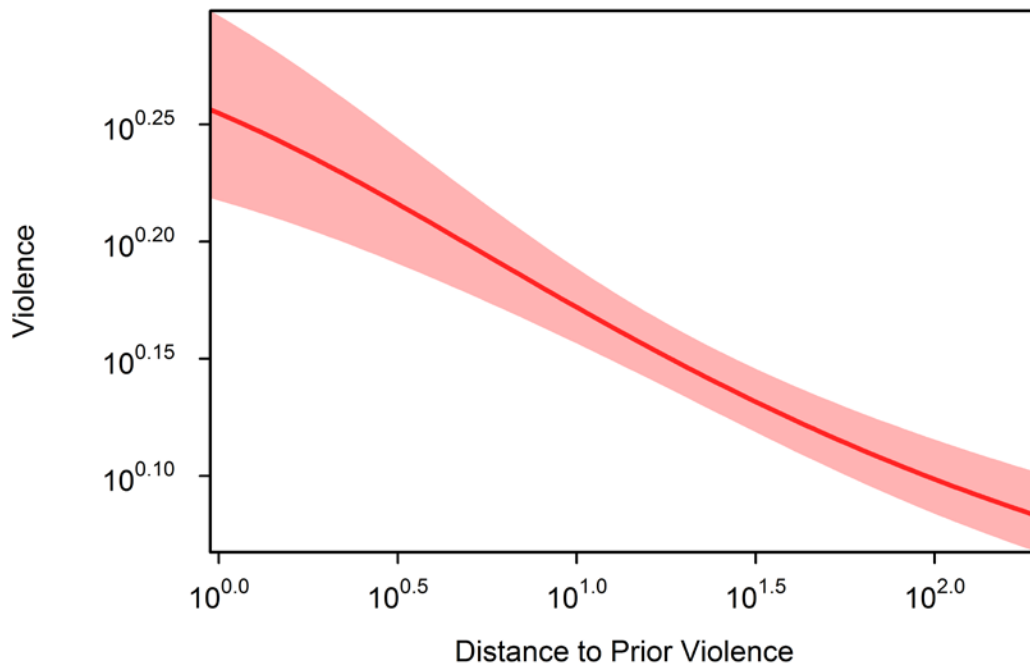


Figure 7. Effect of Distance to Prior Violence.

2. Model 2

In Model 2, social media variables are included for the current period, to capture the discourse categories of “Unity,” “Nigeria,” “God” and “Bomb.” In this model, the mention of “God” returned a statistically insignificant result, and “Bomb” had a moderately significant positive coefficient ($p < 0.1$), while “Nigeria” returned a highly statistically significant positive coefficient ($p < 0.01$). This means that the more messages about “Nigeria” the more violence is experienced in some parts of Nigeria (see Figure 8). In contrast, “Unity” returned a highly statistically significant negative coefficient ($p < 0.01$), which demonstrates that in regions with more messages about the concept of unity in Nigeria there is a reduction of the occurrence of violence, as predicted by Hypothesis 2a (see Figure 9).

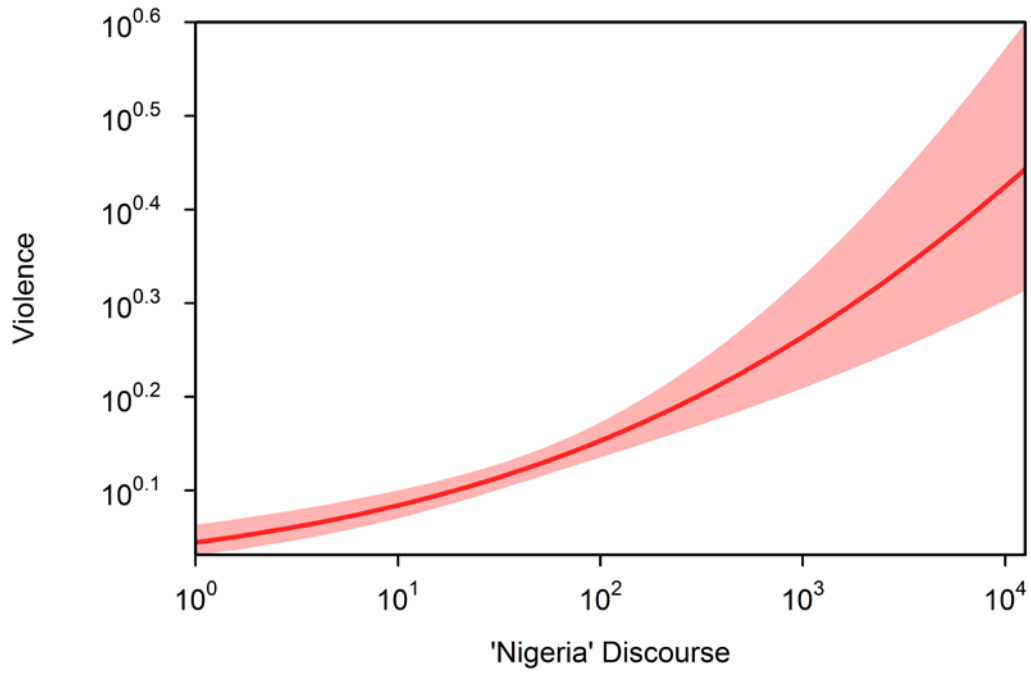


Figure 8. Effect of “Nigeria” Discourse

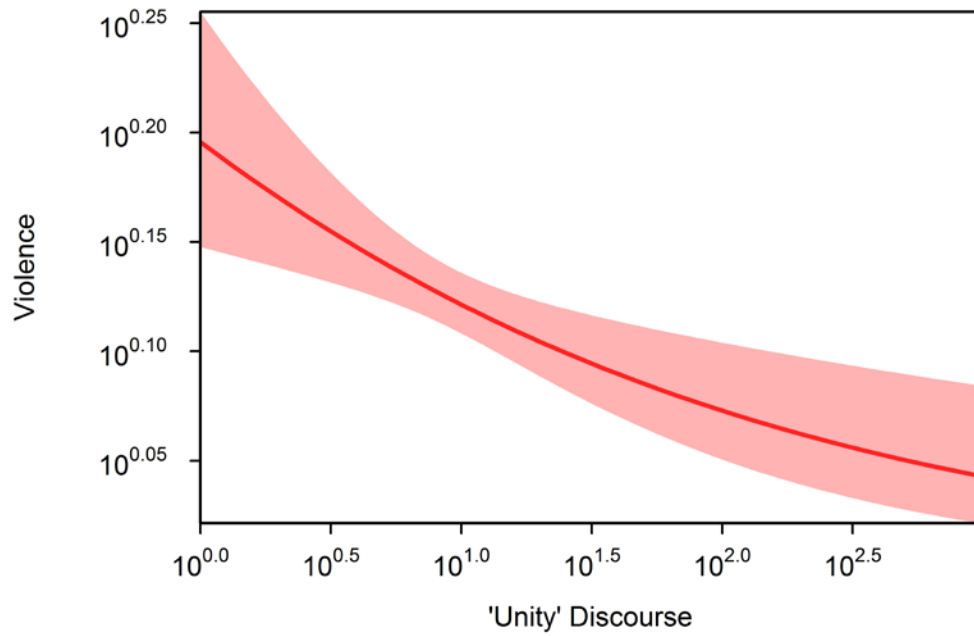


Figure 9. Effect of “Unity” Discourse

3. Model 3

Model 3 expands the specification to include the interaction terms. From the estimates, we can see that population becomes statistically significant ($p < 0.05$), while the distance to violence, violent deaths, the violence of the previous month, and the last six months, all report highly statistically significant coefficients ($p < 0.01$). These findings further support Hypothesis 1, demonstrating that prior violence is systematically associated with higher levels of subsequent violence, even when holding constant the effects of population, wealth, and communication. In addition, the positive coefficient for “Bomb” ($p < 0.01$) provides support for Hypothesis 2b, indicating that violent discourse is associated with violent behavior.

The results for the interaction terms of Violence (Lag) x “Unity” and “God” x “Unity” in the current month both returned highly statistically significant negative coefficients ($p < 0.01$). In Figure 10, the predicted effects from Model 3 are plotted, with the level of “God” discourse on the x-axis, and the level of “Unity” discourse shown on the color bar. Note that the line’s slope is changing as we change the level of “Unity”. This shows that “God” has different effects depending on the level of “Unity”. We can see that the effect of “God” on the x-axis, is reducing violence when unity discourse is at higher levels, but increasing violence when unity discourse is at zero. This supports Hypothesis 2a and Hypothesis 3a, by showing that more unifying discourse may be able to counteract the effects of religious rhetoric that would otherwise cause violence. Figure 8 shows the interaction between discourse in the current month and violence in the previous month. The results show a dampening effect of “Unity” discourse reducing violence. While the general understanding from the existing literature is that violence leads to more violence, the results from this model indicate that unifying discourse tends to limit this spiral of violence. Moreover, given the low AIC score for Model 3 compared with other models in Table 1, we can conclude that this model provides highest predictive accuracy, and therefore the best basis for testing our hypotheses.

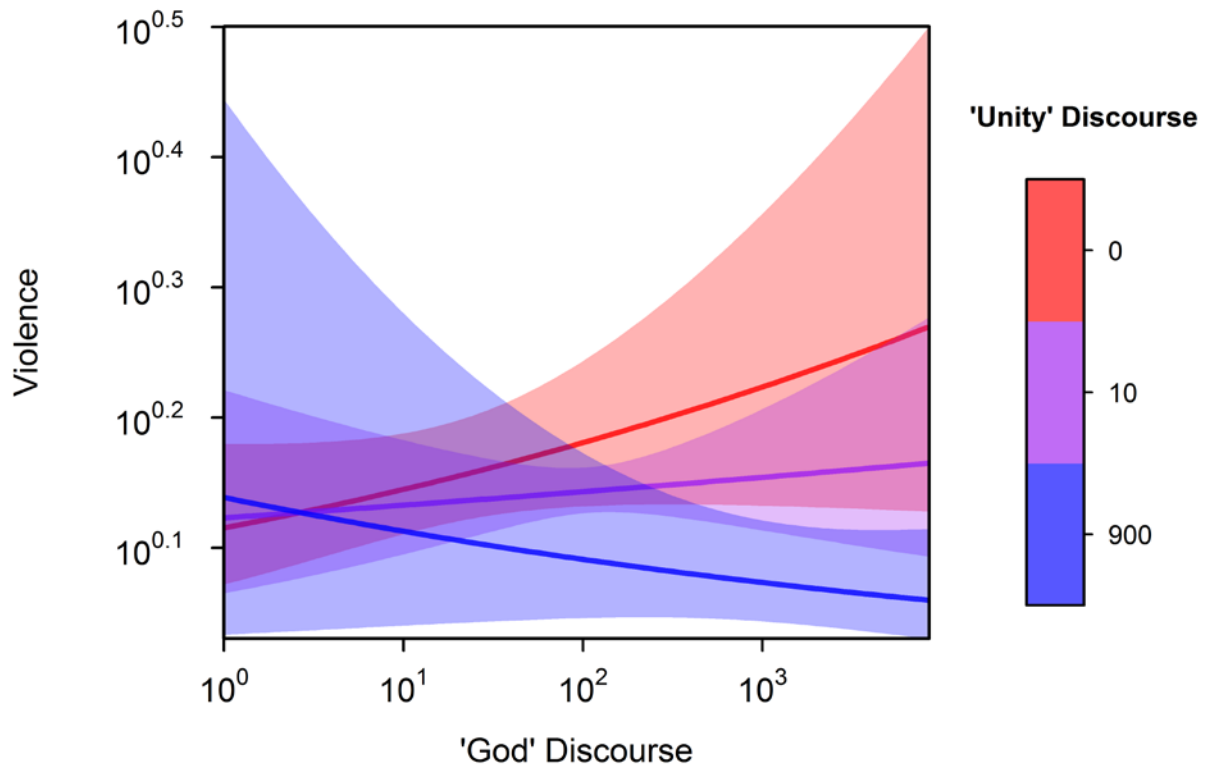


Figure 10. Interactive Effect of “God” and “Unity” Discourse

4. Models 4 and 5

One may be concerned that the results reported above could be driven by reverse causation. This means that it could be that violence is impacting discourse rather than discourse impacting violence. In an attempt to try to address the concern, I ran two additional models using lagged versions of the independent variables (lagged by one month), as reported in Models 4 and 5. When we see in the additional Models 4 and 5 that the lagged version of the coefficient remains statistically significant, this provides evidence that the level of discourse from last month is impacting the behavior for this month, which would not be expected if the results were driven entirely by reverse causation. Comparing Models 2 and 4, we see that “Unity” had a negative effect, both in the current period as well as in the lagged period. Similarly, comparing Models 3 and 5 (see Figures 10 and 11), we can see that the coefficients for the interaction between “Unity” and “God” and the interaction between “Unity” and last month’s violence, both remain negative and strongly

statistically significant ($p < 0.01$). These results provide additional evidence in support of Hypotheses 2 and 3b, by demonstrating that the associations between discourse and violence are unlikely to have been driven entirely by reverse causation.

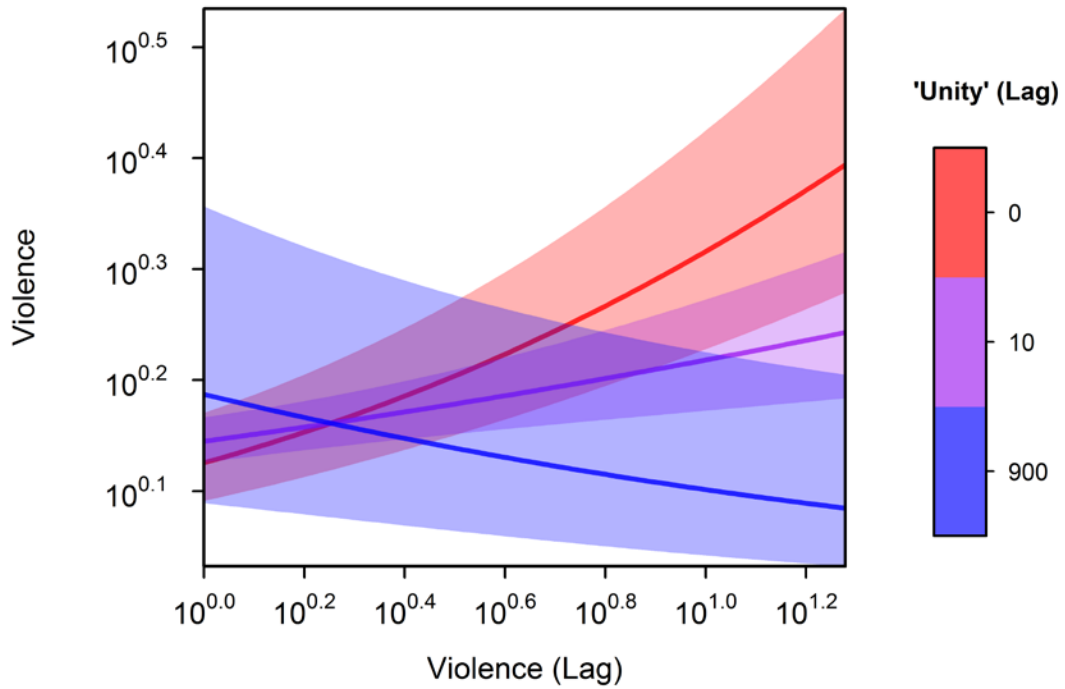


Figure 11. Interactive Terms between Violence Lag and Unity.

VI. VISUALIZING INFLUENCE NETWORKS IN NIGERIA

A. RESEARCH QUESTION

What can the structure of the conversation network in Nigeria reveal about key actors?

B. METHODOLOGY AND DATA

One of the methods suitable for analyzing network structure, actors, ties, and groups is through social network analysis (SNA). To analyze influence networks in Nigeria, I started with a Nigerian retweet network (NRN) dataset, gathered through the Twitter API. I then used SNA topographic metrics to better understand the network structure. Specific hashtags with reference to retweets conversations on ISWAP, BHT, and Nigeria, and others were searched.⁷⁸ The specific hashtags and Twitter accounts utilized are reported in Appendix A2. The data were pulled from the REST API by generating “timelines” of approximately 3,200 tweets for each account selected. While different edges like follows, mention, tweets, and retweets exist, this study limits its boundary to retweets of the selected search terms from January 1, 2015, to August 7, 2020. The nodes in the network represent actors, while the edges are the ties between the actors, which are the numbers of retweets. This study’s metrics focus on centrality, topography, and cohesive subgroups to give further insights into conversations that incite violent behaviors among citizens in Nigeria.

C. NETWORK STRUCTURE

1. Topographical Metrics

The NRN Nigeria VEO network is filtered by extracting the giant component from the main network. In Figure 12 below, the filtered NRN giant component network nodes are sized by degree centrality while the nodes and edges connecting the nodes are colored by the same measure.

⁷⁸ “Introduction to Tweet JSON,” accessed October 25, 2020, <https://developer.twitter.com/en/docs/twitter-api/v1/data-dictionary/overview/intro-to-tweet-json>.

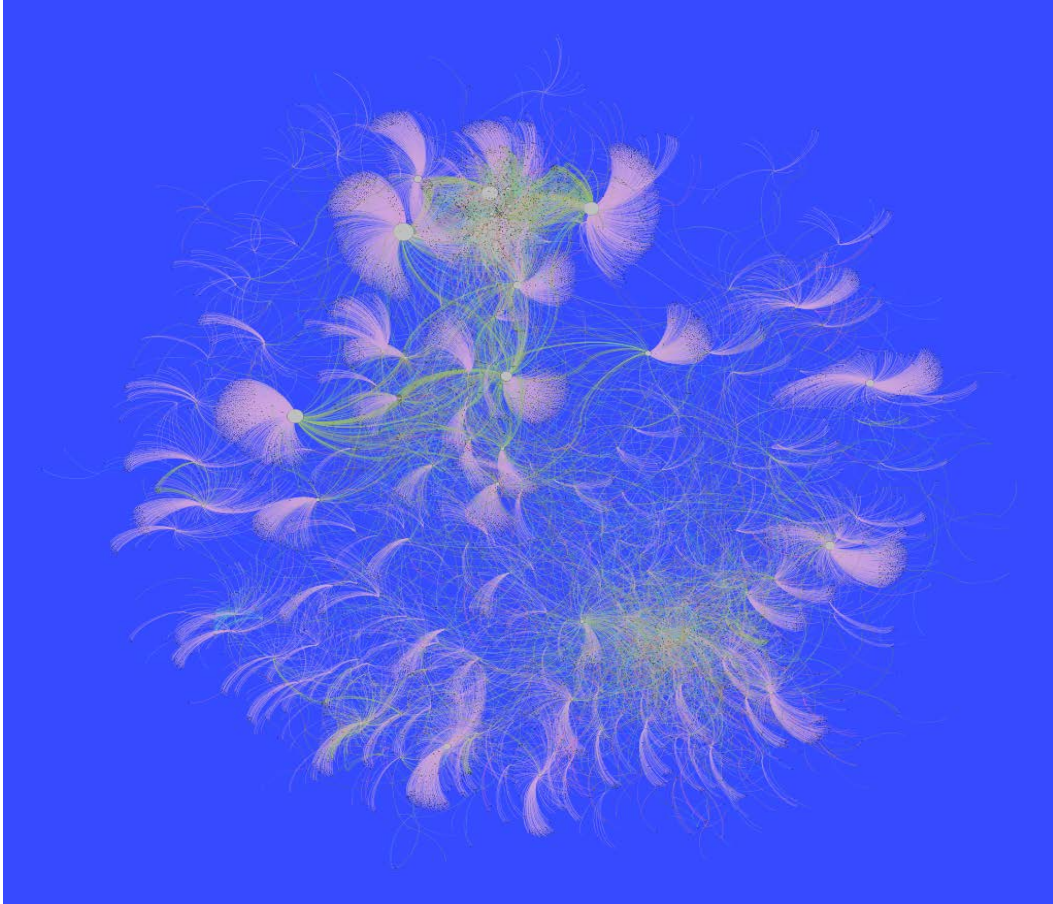


Figure 12. NRN Giant Component Nodes Sized by Degree Centrality

Table 2 further explains the network topography by looking at the giant component's network size, which is 17,291. The average degree calculates the connection among actors within the network; for this network, the average degree is 1.378 generated. This means that on average, there is at least one connection between every actor within the network analyzed. To give the analyst more understanding about the frequency of interaction analyzed through the edges in the network, the average weighted degree calculates that the average sum of the weights of edges connected to a node in NRN is 2.072. Next, the diameter of the NRN network is seven, which represents the number of steps from one end of the network to the other. Given that diameter refers to the longest geodesic and could indicate how dispersed a network is, most network diameters are a function of network size, suggesting a larger network will have a larger diameter and

smaller the same.⁷⁹ Going by the diameter score, this network could be relatively decentralized, given the number of steps it takes to get from one end to the other in the network. In addition, the average path length of the network is 1.562, meaning there is some form of clustering within the network that is shortening the overall path distance. This implies in the NRN we expect to see clusters of nodes within the network with the opportunities for further analysis of subgroups conversation. For this network, the average path length implies interconnectivity among actors that make the network tight and cohesive. Overall, the network looks relatively spread out, but the clustering drives the average path distance smaller, causing some dense areas within the network.

Table 2. Nigerian Violence Retweet Network Topography Scores

Network	Size	Average Degree	Average Path Length	Average weighed Degree	Diameter
Nigeria NRN	17291	1.378	1.562	2.072	7

1. Centrality Measures

Centrality measures are important to understand the relationship between the actors in the network and the ties. For the analyst to identify the central actor responsible for the flow of information in the NRN directed network, the adoption of indegree, outdegree, hubs and authority is employed to analyze the centrality of actors. As the name implies, indegree considers the actors that have direct incoming ties while outdegree accounts for actors that have direct outgoing ties.⁸⁰ For instance in Table 3 EdehAlexi had the highest

⁷⁹ “Understanding Dark Networks - By Daniel Cunningham & Sean Everton & Philip Murphy (Paperback) : Target,” 85–87, accessed October 25, 2020, <https://www.target.com/p/understanding-dark-networks-by-daniel-cunningham-sean-everton-philip-murphy-paperback/-/A-80823068>.

⁸⁰ “Understanding Dark Networks - By Daniel Cunningham & Sean Everton & Philip Murphy (Paperback) : Target,” 146.

in-degree score of 1469 and GameD with a score of 262 is the highest for out-degree. In addition to the centrality measures for this study, it is imperative to identify the sources of information disseminated on the NRN with algorithms that analyze the hubs and authorities, as originally designed by Jon Kleinberg to rank web pages. To start with, an actor's hub score is a function of how many pages the actor points to (like outdegree centrality), weighted by whether the actor points to high or low scoring authorities.⁸¹ Next is an actor's authority score is a function of how many choices the actor receives (like indegree centrality), weighted by whether those choices come from high or low scoring hubs.⁸²

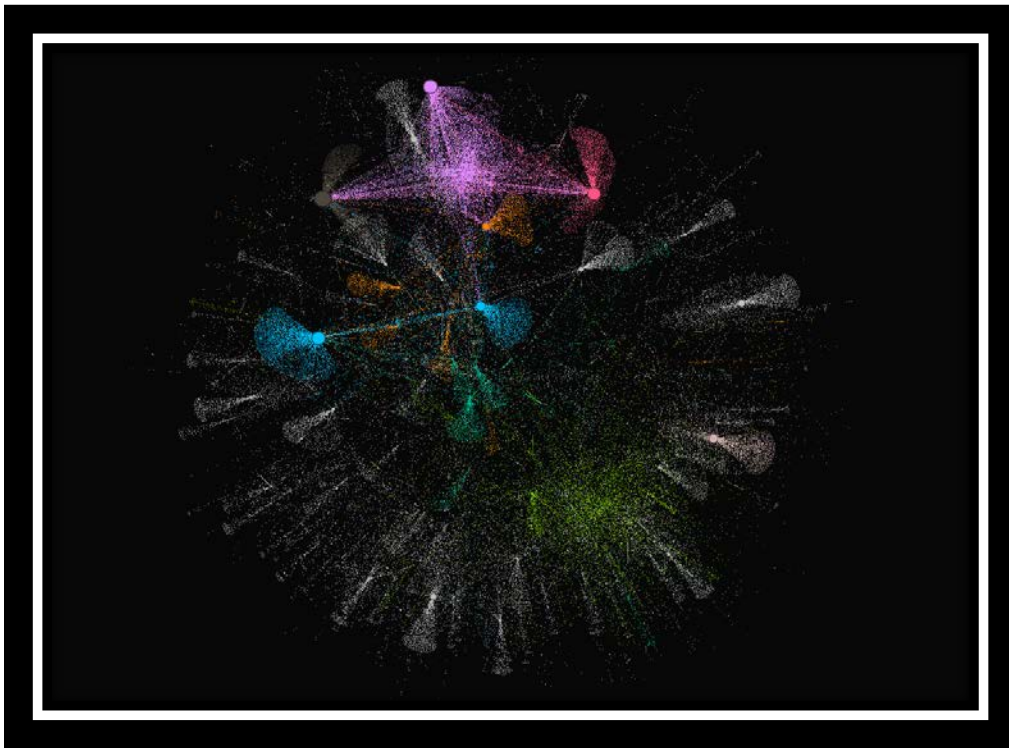


Figure 13. Network Nodes Colored by Modularity

⁸¹ Jon M Kleinberg, "Authoritative Sources in a Hyperlinked Environment," n.d., 34.

⁸² "HITS Algorithm - Hubs and Authorities on the Internet," accessed November 19, 2020, <http://pi.math.cornell.edu/~mec/Winter2009/RalucaRemus/Lecture4/lecture4.html>.

In the NRN, a good hub is an actor that points to many good authorities and a good authority is one that points to many good hubs. EdehAlexi for the second time scored the highest on the authority column with 0.6370, while Obi210 is the highest for the hubs (see Table 3).

Table 3. NRN Actors Ranked by Centrality Nigerian Retweets

Indegree	Outdegree	Hubs	Authority
EdehAlexi 1469	GameD 262	Obi210 0.07639	EdehAlexi 0.6370
Mazimoses 1156	Indeiga 129	Emeka4 0.07635	Mazimoses 0.5498
Chxta 1125	Ingare 63	Philio 0.07193	Mazinna 0.3047
Mazinna 1085	Emeka4 48	Jonik5 0.06363	Sahara 0.164
Chidiodin 788	Devmicr 47	Joyong 0.062104	Gabrielp 0.1506
Mohdrcd 712	Robinspot 47	Samyo 0.062029	Chinasa 0.1319
Sahara 582	Obi210 42	Sam7pb 0.061581	Maziemeka 0.1257
Khamenei 566	Johnyk5 37	Nwabaif 0.06127	Annu 0.1238

EdehAlexi appears to be a central actor in the NRN when the highest in-degree and authority scores are considered, indicating that he is an important source of information dissemination in the NRN. In this network, his conversation is more on BHT and IPOB activities. It is important to mention that Mazi Nnamdi Kanu (mazinna), officially known as the IPOB high priest, and founder is at fourth place on the in-degree metric and third in

authority. Next are Mohdrcd and Sahara, who focus on retweeting issues that affect Nigeria's unity and coexistence. For instance, the owner of Saraha Press was recently released from jail on bond for inciting civil disturbance by calling for a revolution through his influence on social media. In Figure 14, the NRN actors are labeled by the size measure of degree to show the prominent actor's location and the clusters around these actors within the network.

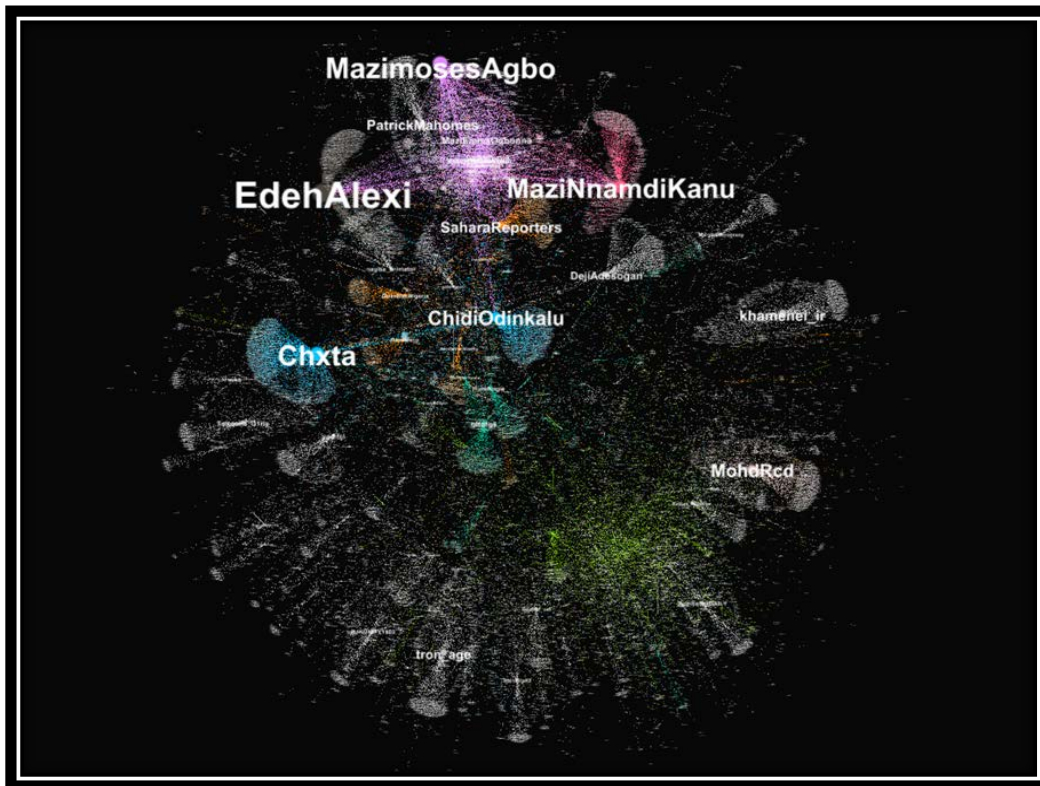


Figure 14. NRN Sized and Colored by Degree

2. Cohesive Subgroups

One important metric for analyzing cohesive subgroups is modularity, which focuses on community detection within a network by identifying clusters that show a pattern of internal interactions. The NRN has a modular network with modularity of 0.833 and 51 groups with the nodes connecting to sub-conversations that create different clusters, as shown in Figure 6 below.

D. TEXT ANALYSIS

The most effective method of identifying the conversation in each cluster is through topic modeling, which is an unsupervised form of machine learning that looks for underlying patterns in data. I utilized Latent Dirichlet Allocation (LDA) to identify hidden topics in the NRN that drives each cluster and the actors dominating such discussion. To identify the topics and themes that occur in the NRN, LDA models are used to gather patterns from a document. In each document, this approach identifies the important words based on reoccurrence, and subsequently, these words are grouped by percentages and topics.

Table 4. Topic Modeling

Modularity Class	Cluster Names	Topic Numbers and Assigned Labels
6	Moses Agbo	12 (BHT, Biafraexit) 29 (BHT Releases) 39 (Donald Trump & Nnamdi Kanu)
28	Human Angle	11 (Game Development) 28 (Indigenous Games)
12	Chidi Odinaka	33 (Welfare and Health) 47 (Covid-19 in Nigeria)
7	Edeh Alex	13 (President Buhari)
16	Sahara Reporters	46 (Ndume and BHT) 49 (Buhari's Administration)
4	Mazi Nnamdi Kanu	2 (USA Discourse) 12 (BHT, Biafraexit) 39 (Donald Trump Nnamdi Kanu)
9	Ottotgs/Humangle	17 (ISWAP News) 24 (BHT Videos)
13	Mohd RCD	26 (Muslim Festivals)
1	Khamenei_ir	34 (Unity in Nigeria)

Table 3 describes the modularity groups built around specific topics and the percentage that each topic composes of the messages in each modularity group. The nine largest modularity groups are selected for analysis of topics that dominate each individual

modularity group. The primary topics are included for each subgroup, which can have second and third topic attributes. In Table 3, the nine largest modularity groups are named after the actor with the highest degree score. For instance, in Figure 10, Mazi Moses Agbo is the actor with the highest degree in that modularity cluster. See Appendix A4 for the list of actors with the highest degree in each modularity class and their percentages. In Figure 15, the words on the y-axis show the top concepts for each topic.⁸³ Correspondingly, the x-axis “beta” shows the topic-word density which could be high or low depending on the frequency in the document. In addition, each modularity group focuses more on certain topics, ranked by percentages; for this study, a maximum of three topics were allowed for each modularity class. Details of the topics and the frequency of words contained in the group are in Appendix A3.

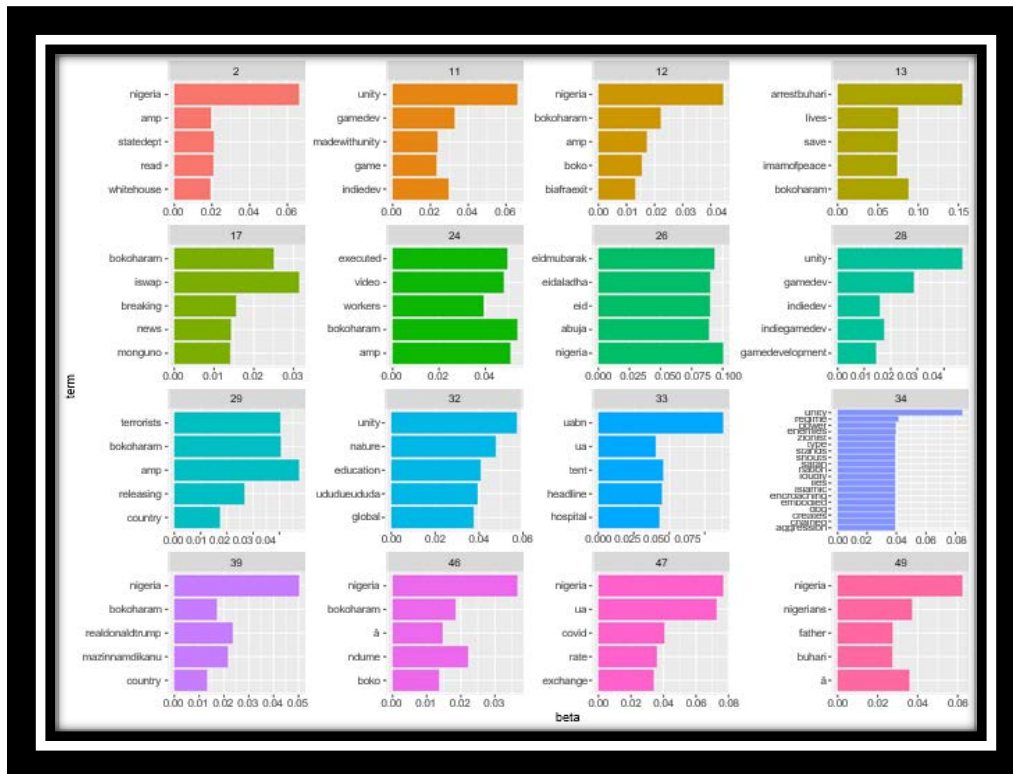


Figure 15. Latent Dirichlet Allocation Chart

⁸³ “Sklearn. Decomposition. Latent Dirichlet Allocation — Scikit-Learn 0.23.2 Documentation,” accessed November 19, 2020, <https://scikit-learn.org/stable/modules/generated/sklearn.decomposition.LatentDirichletAllocation.html>.

1. Subgroup Merged with Text

In Figure 16 Mazi Moses Agbo is identified as the most central actor in this subgroup based on the measure of average degree for every actor in this cluster. The nodes and edges are sized and colored by degree with different nodes having different colors based on individual degree scores. For instance, the actors reflected with the purple nodes all have a score of 56 percent higher than the nodes with dark Green that scored 1.63 percent from the degree scores of this subgroup. Mazi Moses's cluster topics are 12,29 and 39 that centered around BHT, the main terrorist group in Nigeria, and Biafra, exit a movement for the secession of Biafra from Nigeria. Other topics identified in this cluster includes topics on President Donald Trump and Mazi Nnamdi Kanu.

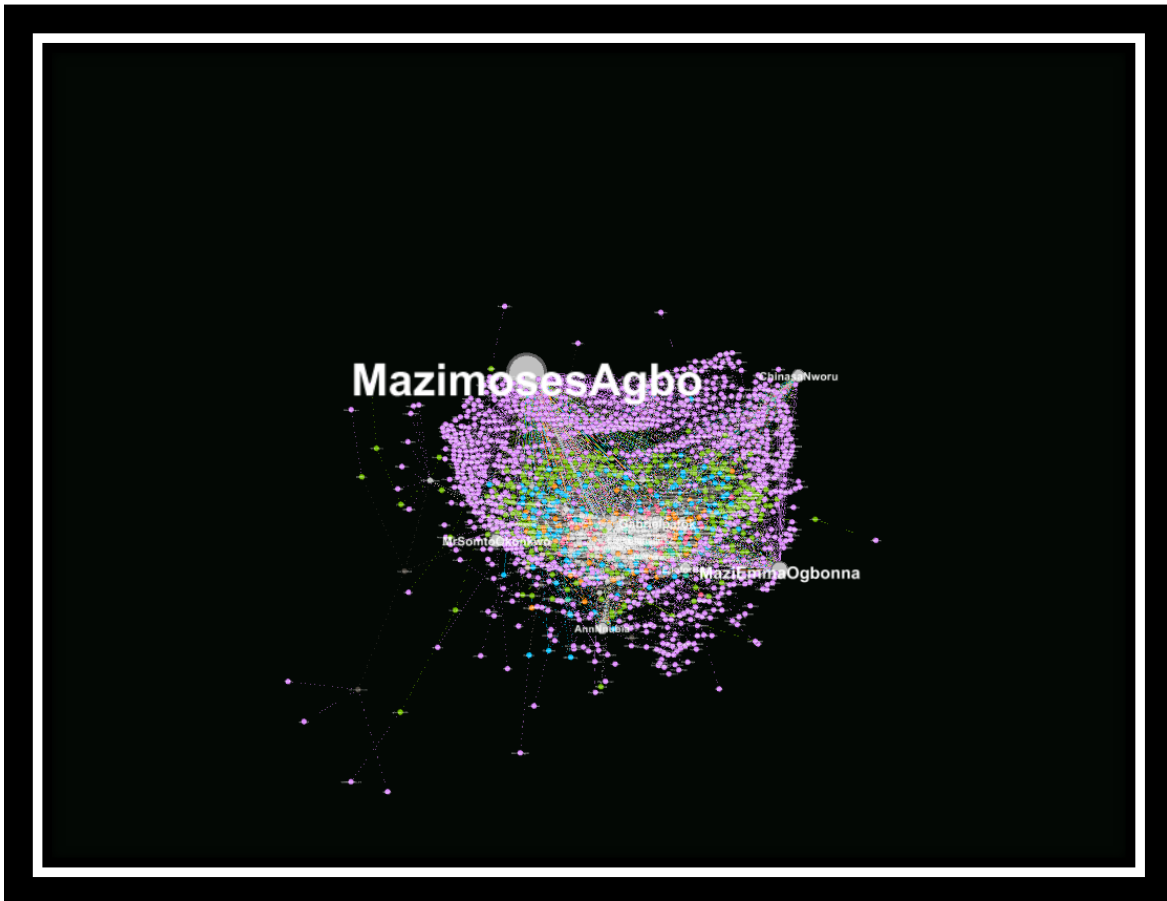


Figure 16. Mazi Moses Agbo Subgroup

Ottotgs and Humangle clusters could mean more to the analyst when considering the topics dominating the cluster. Before discussing the topics, the nodes are sized by average degree with the edges colors generated based on the nodes connections to topics discussed within the cluster. The LDA model identified two prominent topics that include 17 and 24 having conversations about BHT and ISWAP. This means that the actors in this subgroup are concerned about the activities of VEOs in Nigeria and possibly the counter measures.

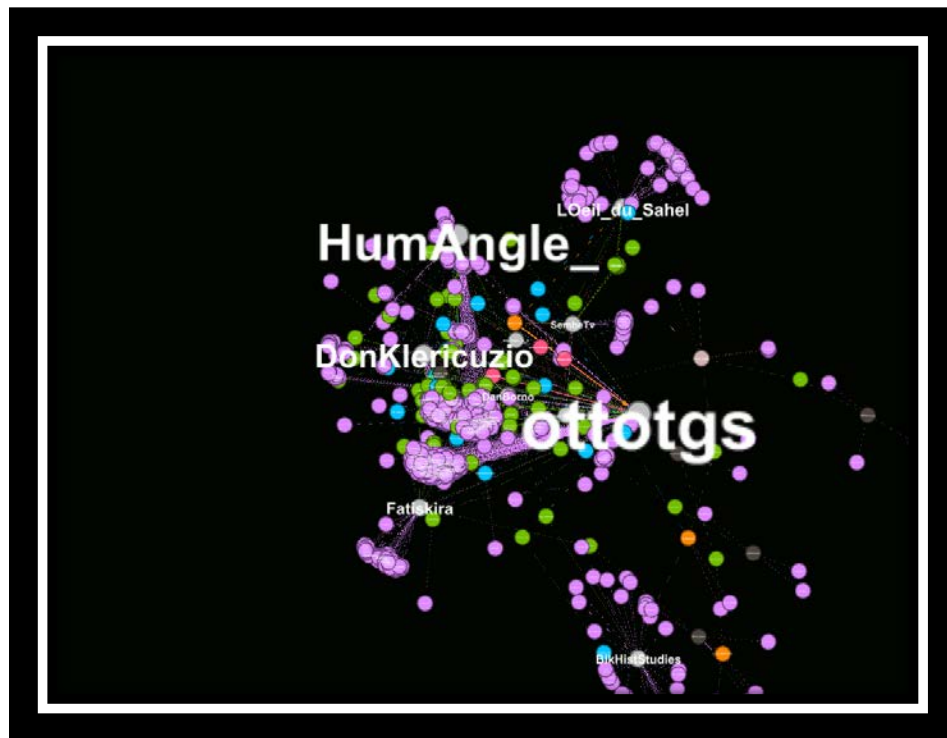


Figure 1. Ottotgs/Humangle Subgroup

In Figure 18 we see a cluster of media agencies in Nigeria apparently retweeting information from one another. Sahara Reporters dominates this subgroup following the assessment of the average degree of all the actors. Almost all the nodes have the same color because Sahara influences bulk of the information share within the cluster such as “revolutionnowNg” and “Yelesowore” are also connected to the same actor. The LDA model identified two main topics for this cluster: the first is 46 that focuses on Senator

Ndume and the second is 49 that focuses mainly on President Buhari’s administration. The conspicuous presence of certain groups such as “revolutionnowNg” in this subgroup provides the analyst an important visualization of the followers of this compagin.

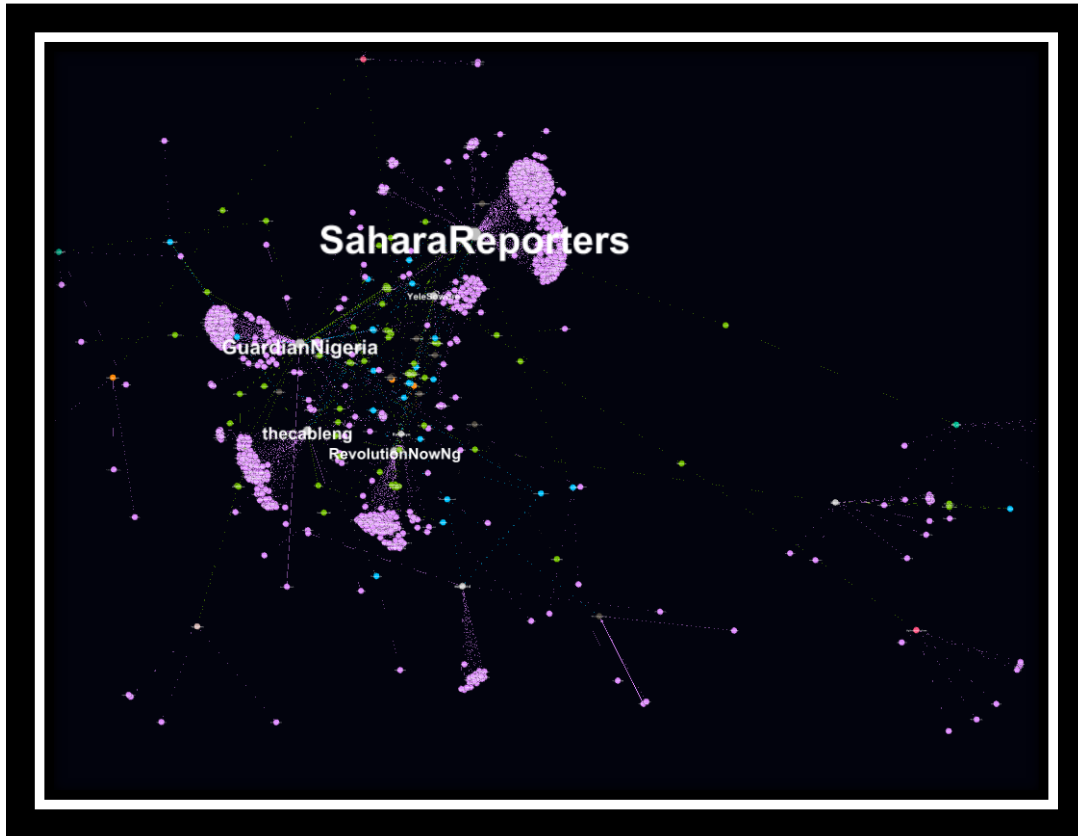


Figure 2. Sahara/Reporters Subgroup

Mazi Nnamdi Kanu is the leader of the proscribed IPBO wanted by the FGN. In Figure 19, we can see that almost all nodes apart from a few blue edges show that everyone in this subgroup are actively involved with the sharing of information with Kanu. The main topics in this subgroup are 2 (USA Discourse); 12 (BHT, Biafraexit); 39 (Donald Trump Nnamdi Kanu). The question that comes to mind is why would Nnamdi Kanu be very concerned about the USA and President Trump? One possible answer to attract international attention especially from the USA to recognize IPOB’s agitation toward secession from Nigeria. It is expedient to note that IPOB adopts a violent approach just like

the BHT and other VEOs that want to create an Islamic country out of Nigeria through collective violence. The leader IPOB knows the right thing to do is to channel this demand through the various states assembly to the Nigerian National Assembly then a referendum is deliberated to determine if the people truly want to remain in Nigeria or become an independent country.



Figure 3. Mazi Nnamdi Kanu Subgroup

E. SUMMARY

Through this analysis of social media networks in Nigeria, it was discovered that some actors and clusters are grouped based on the topics they discuss, which can be a form of affiliation. Violent topics point to the fact that disinformation and extremist information are widely shared in Nigerian social media. No doubt, social media is beneficial to humanity, but it comes with its attendant dangers such as exploitation by non-state actors like VEOs that challenge the sovereignty of states. In Nigeria, these actors can operate on

social media platforms as false flags and proxies while spreading disinformation and extremist doctrines, as well as psychological operations to recruit and sow discord among patriotic citizens. This exercise applied three SNA metrics in analyzing retweets from Nigeria that focus on particular VEOs. Insights derived from the SNA reveal that the network structure shows strong clustering and segregation between groups within the network and brings to fore the need for identifying elements of conversations that cause such clustering in online communications.

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VII. CONCLUSION AND FURTHER RESEARCH

A. CONCLUSION

To counter to collective violence in Nigeria requires knowing the key forms of influential information that can change the behavior of diverse ethnic groups. Building on previous research in this field, this study expanded the search to identify key concepts that the AFN can employ in OIE to counter collective violence. The results generated from this study provide evidence that discourse about “God” and “Unity” will reduce the occurrence of collective violence in Nigeria.

Several hypotheses were considered. The first hypothesis stated that spatio-temporal units with occurrence of violence in the previous months will more likely experience violence the current month (Hypothesis 1). Secondly, I considered that spatio-temporal units with more positive discourse will more likely experience a lower level of violence (Hypothesis 2a). I further hypothesized that spatio-temporal units with more violent discourse will more likely experience a higher level of violence. (Hypothesis 2b). More complex hypotheses were also included to test for interdependencies between variables in the regressions. In this way, I hypothesized that the effect of “God” discourse will depend on “unity” discourse (Hypothesis 3a). Furthermore, I hypothesized that “unity” discourse will dampen the effect of prior violence in Nigeria (Hypothesis 3b).

The results presented in the regression table provided clear evidence that mere discourse of “Nigeria” is associated with increases in the occurrence of collective violence in the country. In contrast, the results show that discourse about “God” and “unity” will reduce violence in Nigeria, when they occur together in high levels. Moreover, additional evidence showed that these variables also have strong lagged effects from prior months, to address potential concerns about reverse causation. Furthermore, the results showed that “unity” discourse reduces the impact of prior violence from the previous month, perhaps providing a means of escaping the frequent spiral of violence inducing violence.

To support the study of efforts to build influence capabilities in the information environment, SNA was applied to visualize discourse related to Nigerian VEOs on Twitter.

With the application of three SNA metric measures and topic modelling, the results show how clusters of actors are driven by clusters of topics. The key topics include discourse about politics, religion, welfare, and the development of new ideas within Nigeria. From the analysis conducted, we can see that some important subgroups are active in the dissemination of information with violent contents especially on BHT and ISWAP while other subgroups share more educative information. This approach, combined with the previous methods used to identify concepts in social media that incite violence and promote peace, provides the AFN with new opportunities to build counter narratives when conducting operations to generate influence in the information environment.

B. FURTHER RESEARCH

The areas that require further research includes the inclusion of additional discourse categories representing the diverse religious and ethnic groups in Nigeria. Results from these categories would provide more evidence about the areas not captured in this research. With the uneven distribution of wealth in Nigeria, the use of Twitter also appears to have some limitation in capturing the general effect of information shared throughout Nigeria. This means that future studies should consider the need to run analysis of other applications on social media such as Facebook, Instagram, and WhatsApp, considering the wide usage of these apps in Nigeria. Aside from social media, efforts should also be made to gather data from the mass communications media in Nigeria, such as the Nigerian Television Authority and radio stations, which could provide evidence of the effects of penetration of shared information.

It is also imperative that contiguous countries to Nigeria are considered in the analysis of countering collective violence through an informational approach. Particularly, given that the Lake Chad Basin Commission has been saddled with the responsibility to coordinate the Multi National Joint Task Force, the inclusion of Cameroon, Niger, Chad, and Benin Republic into the analysis could assist in defeating groups like BHT, ISWAP, and Al-Qaeda in the Maghreb known to promote collective violence in these countries.

This study combined two methodologies in an attempt to provide solutions for the AFN in conducting OIE. This method is not limited to Nigeria, as it has potential to support

any military of a state that desires to understand the historical build-up of information that results in violence and to leverage the potential of early warnings. As these capabilities advance, it may become more possible for state actors to effectively predict and counter collective violence before it occurs.

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APPENDIX

A. NIGERIAN MULTILINGUAL DICTIONARY OF “PEACE AND VIOLENCE”

Nigerian Peace and Violence Dictionary

Key, Term

Affectionate, Affectionate

Affectionate, Affectueux

Affectionate, ØÙ†ÙˆÙ†Ø©

Affectionate, ifá^{o1}

Affectionate, á»«há»¥nanya

Agreement, Agreement

Agreement, accord

Agreement, Ø§ØªÙ□Ø§Ù,

Agreement, Yarjejeniyar

Agreement, Adehun

Agreement, Nkweká»□rá»«ta

AirForce, Air Force

AirForce, forces aÃ©riennes

AirForce, Ø§Ù,,Ù,ÙˆØ§Øª Ø§Ù,,Ø-ÙˆÙšØ©

AirForce, Sojan Sama

AirForce, Agbara afá^{o1}fa^{o1}

AirForce, Ugbo elu

Army, Army

Army, ArmÃ©e

Army, Ø-ÙšØ´

Army, Sojoji

Army, Ogun

Army, Ndá»« agha

Asylum, Asylum

Asylum, Asile
 Asylum, Ø§Ù,,Ù,,Ø-Ù^Ø;
 Asylum, Matsakaici
 Asylum, Ibi aabo
 Asylum, Ebe nchekwa
 Bad, Bad
 Bad, mauvais
 Bad, Ø³ÙŠØ!Ø©
 Bad, mara kyau
 Bad, buburu
 Bad, ihe ojoo
 Beloved, Beloved
 Beloved, bien-aimÃ©
 Beloved, Ø§Ù,,ØØ-ÙŠØ^{..}
 Beloved, ÆTMaunataccen
 Beloved, olufá^{o1}
 Beloved, há»¥rá»¥ n'anya
 Beautiful, Beautiful
 Beautiful, beau
 Beautiful, Ø-Ù...ÙŠÙ,,Ø©
 Beautiful, kyakkyawa
 Beautiful, lá^{o1}wa
 Beautiful, mara oma
 Benevolent, Benevolent
 Benevolent, bienveillant
 Benevolent, Ø®ÙŠØ±
 Benevolent, Mai sabuntawa
 Benevolent, oninuure
 Benevolent, Na-emecha
 Better, Better

Better, meilleur
 Better, Ø£Ù□Ø¶Ù,,
 Better, mafi kyau
 Better, dara julá»□
 Better, ka mma
 Blissful, Blissful
 Blissful, bienheureux
 Blissful, Ù‡Ù†Ø§Ø¡
 Blissful, mai annashuwa
 Blissful, alarinrin
 Blissful, obi uto
 Bomb, Bomb
 Bomb, bombe
 Bomb, Ù,Ù†Ø·Ù,,Ø©
 Bomb, bam
 Bomb, gbamu
 Bomb, bá»□mbá»¥
 Brave, Brave
 Brave, courageux
 Brave, Ø´Ø–Ø§Ø¹
 Brave, jarumi
 Brave, onÃgboyÃ
 Brave, dimkpa
 Bright, Bright
 Bright, brillant
 Bright, Ù...Ø´Ø±Ù,
 Bright, mai haske
 Bright, didan
 Bright, nchapu
 Calm, Calm

Calm, calme
 Calm, Ù†Ø-Ù^Ø;
 Calm, kwantar da hankali
 Calm, tunu
 Calm, wetuo obi
 Careful, Careful
 Careful, prudent
 Careful, ØØ°Ø±
 Careful, hankali
 Careful, á¹£á»□ra
 Careful, kpachara anya
 Celebrate, Celebrate
 Celebrate, cÃ©IÃ©brer
 Celebrate, Ø§ØØªÙ□Ú,,
 Celebrate, bikin
 Celebrate, ayeye
 Celebrate, usá»□rá»□
 Cheerful, Cheerful
 Cheerful, de bonne humeur
 Cheerful, Ù...Ø±Ø
 Cheerful, na gaisuwa
 Cheerful, á»□yaya
 Cheerful, chá»«rá»« á»□chá»«
 Church, Church
 Church, Ã©glise
 Church, ÙfÙ†ÙŠØ³Ø©
 Church, coci
 Church, ijo
 Church, á»¥ka
 Coalition, Coalition

Coalition, coalition
 Coalition, Ø§Ù,,Ø§Ø!ØªÙ,,Ø§Ù□
 Coalition, hadin gwiwa
 Coalition, isokan
 Coalition, mmekorita
 Collective, Collective
 Collective, collectif
 Collective, Ø-Ù...Ø§Ø¹ÙŠ
 Collective, na gama kai
 Collective, collective
 Collective, mkpoká»□ta
 Comfortable, Comfortable
 Comfortable, comfortable
 Comfortable, Ù...Ø±ÙŠØ
 Comfortable, dadi
 Comfortable, itunu
 Comfortable, nke oma
 Conflict, Conflict
 Conflict, conflit
 Conflict, Ù†Ø²Ø§Ø¹
 Conflict, rikici
 Conflict, rogbodiyan
 Conflict, esemokwu
 Considerate, Considerate
 Considerate, prÃ©venant
 Considerate, ØªØ±Ø§Ø¹ÙŠ
 Considerate,
 Considerate, laibikita
 Considerate, ichebara echiche
 Cool, Cool

Cool, cool
 Cool, Ø·Ø§Ø±Ø´
 Cool, sanyi
 Cool, tutu
 Cool, idinwayo
 Cooperate, Cooperate
 Cooperate, coopÃ©rer
 Cooperate, Ù...ÙŠØ´ Ø§Ù†ÙŠ
 Cooperate, hadin kai
 Cooperate, ifá» □wá» □sowá» □pá» □
 Cooperate, rá»¥ká» □ta á» □rá»¥
 control, control
 control, contrÃ©le
 control, Ù...Ø±Ø§Ù, Ø´Ø©
 control, sarrafawa
 control, íá¹fakoso
 control, njikwa
 Dedicated, Dedicated
 Dedicated, dÃ©vouÃ©
 Dedicated, Ù...Ø®ØµØµØ©
 Dedicated, sadaukarwa
 Dedicated, igbá¹hin
 Dedicated, raara onwe ya nye
 Delightful, Delightful
 Delightful, dÃ©licieux
 Delightful, Ù...Ø³Ø¹Ø´
 Delightful, Yardar
 Delightful, adun
 Delightful, obi uto
 Dependable, Dependable

Dependable, sÃ»r

Dependable, Ø-Ø- ÛŠØ± Ø·Ø§Ù,,Ø«Ù,Ø©

Dependable, abin dogaro

Dependable, igbarale

Dependable, pá»¥rá»¥ á»«dabere

Development, Development

Development, DÃ©veloppement

Development, Ø§Ù,,ØªÙ†Ù...ÙŠÙ‡

Development, Ci gaba

Development, Idagbasoke

Development, Mmepè

Devote, Devote

Devote, consacrer

Devote, ØªÙfØ±ÙŠØ³

Devote, duÆ™uƒa

Devote, yÃ» sá»«tá»«

Devote, itinye oge

Easygoing, Easygoing

Easygoing, facile Ã» vivre

Easygoing, Ø¹ÙŠØ´Ø© Ø±Ø°ÙŠØ´Ø©

Easygoing, sauki

Easygoing, lo jeje

Easygoing, dá»« fechaa

Effective, Effective

Effective, efficace

Effective, Ù«Ø¹Ø§Ù,,

Effective, tasiri

Effective, munadoko

Effective, irÃ»

Equal, Equal

Equal, ǺǾgal
 Equal, Û...Ø³Ø§Û^
 Equal, daidai
 Equal, dogba
 Equal, ha nhata
 Excellent, Excellent
 Excellent, excellent
 Excellent, Û...Û...Ø³Ø§Ø²
 Excellent, kyau kwarai
 Excellent, o tayá»
 Excellent, magburu onwe ya
 Environment, Environment
 Environment, environnement
 Environment, Ø`ÛŠØ!Ø©
 Environment, muhalli
 Environment, ayika
 Environment, gburugburu ebe obibi
 Fair, Fair
 Fair, juste
 Fair, Û...Ø¹Ø±Ø¶
 Fair, gaskiya
 Fair, á¹wǺ
 Fair, dá»« mma
 Faithful, Faithful
 Faithful, fidǺ`le
 Faithful, Û...Ø@Û,,Øµ
 Faithful, masu aminci
 Faithful, oloootitá»
 Faithful, oloootitá»
 Federation, Federation

Federation, fÃ©dÃ©ration

Federation, Ø§ØªØ§Ø§Ø§Ø§

Federation, Tarayya

Federation, federation

Federation, ndi otu

Free, Free

Free, gratuit

Free, Ù...Ø-Ø§Ù†Ø§

Free, kyauta

Free, á» □ fá⁰¹

Free, n'efu

Freedom, Freedom

Freedom, libertÃ©

Freedom, ØØ±Ù§Ø©

Freedom, 'yanci

Freedom, ominira

Freedom, nnwere onwe

Friendly, Friendly

Friendly, amical

Friendly, Ù^Ø^-Ù^Ø^-

Friendly, abokantaka

Friendly, á» □ ÌÉrá⁰¹ Ì □

Friendly, enyi na enyi

Fun, Fun

Fun, amusement

Fun, Ù...Ø±Ø

Fun, nishadi

Fun, igbadun

Fun, á» □ chá»

Generous, Generous

Generous, gÃ©nÃ©reux
 Generous, ÙfØ±ÙŠÙ... - Ø³Ø®ÙŠ
 Generous, Kyautayawa
 Generous, oninurere
 Generous, na-emesapá»¥ aka
 Gentle, Gentle
 Gentle, doux
 Gentle, Ù,,Ø·ÙŠÙ□
 Gentle, Hankali
 Gentle, OnÃ©rá^olã^o
 Gentle, dá»< nro
 Grateful, Grateful
 Grateful, reconnaissant
 Grateful, Ù...Ù...ØªÙ†
 Grateful, godiya
 Grateful, o á¹feun
 Grateful, ekele
 God, God
 God, Dieu
 God, Ø§Ù,,Ù,,Ù†
 God, Allah
 God, á»Élã»□run
 God, Chukwu
 Good, Good
 Good, bien
 Good, ØØ³Ù†
 Good, kyau
 Good, dara
 Good, Keoma
 Government, Government

Government, gouvernement
 Government, ØÙfÙ^Ù...Ø©
 Government, gwamnati
 Government, ijá»□ba
 Government, ochichi
 Happy, Happy
 Happy, heureux
 Happy, Ø³Ø¹ÙŠØ⁻ Ø©
 Happy, farin ciki
 Happy, dun
 Happy, nwee obi uto
 Harmony, Harmony
 Harmony, Harmonie
 Harmony, Ø§Ù,,Ù^Ø|Ø§Ù...
 Harmony, Hadin kai
 Harmony, Ijá»□á¹£epá»□
 Harmony, Nkwekorita
 Hardworking, Hard-working
 Hardworking, travailleur
 Hardworking, Ø§Ù,,Ø¹Ù...Ù,, Ø§Ù,,Ø⁻Ø§Ø⁻
 Hardworking, mai aiki tukuru
 Hardworking, sise taratara
 Hardworking, uchu
 Hausa, Hausa
 Hausa, Hausa
 Hausa, Ø§Ù,,Ù‡Ù^Ø³Ø§
 Hausa, Hausa
 Hausa, Hausa
 Hausa, Ndi Hausa
 Heal, Heal

Heal, guÃ©rir
 Heal, Ø`Ù□Ø§Ø¡ - ÛŠØ`Ù□Ù%
 Heal, warkarwa
 Heal, wosan
 Heal, gwá»□á»□
 Heartwarming, Heart-warming
 Heartwarming, rÃ©confortant
 Heartwarming, ØªØ³Ø®ÙŠÙ† Ø§Ù,,Ù,Ù,,Ø`
 Heartwarming, wariyar zuciya
 Heartwarming, igbona
 Heartwarming, obi di oku
 Hearty, Hearty
 Hearty, copieux
 Hearty, Ù,Ù,,Ø`ÙŠ
 Hearty, zuciya
 Hearty, onigbagbo
 Hearty, obi
 Help, Help
 Help, Aidez-moi
 Help, Ù...Ø³Ø§Ø¹Ø`Ø©
 Help, taimako
 Help, Iranwo
 Help, Enyemaka
 Holy, Holy
 Holy, saint
 Holy, Ù...Ù,Ø`Ø³
 Holy, mai tsarki
 Holy, mimá»□
 Holy, Nsá»□
 Honourable, Honourable

Honourable, honorable
 Honourable, Ù...Ø´Ø±Ù□
 Honourable, mai daraja
 Honourable, á^oni-á»□lÃ;̃
 Honourable, nkwanye ugwu
 Hospitality, Hospitality
 Hospitality, hospitalitÃ©
 Hospitality, ØØ³Ù† Ø§Ù,,Ø¶ÙšØ§Ù□Ø©
 Hospitality, baÆ™unci
 Hospitality, aalejÃ²
 Hospitality, ile á»□bá»«a
 Igbo, Igbo
 Igbo, Igbo
 Igbo, Ø§Ù,,Ø¶ÙšØ·Ùˆ
 Igbo, Igbo
 Igbo, Igbo
 Igbo, Ndi Igbo
 Important, Important
 Important, important
 Important, Ù...Ù‡Ù...
 Important, mahimmanci
 Important, pataki
 Important, mkpa
 Infidel, Infidel
 Infidel, infidÃˆle
 Infidel, ÙfØ§Ù□Ø±
 Infidel, kafiri
 Infidel, alaignbagbá»□
 Infidel, onye na-ekweghá»« ekwe
 Influenced, Influenced

Influenced, influencÃ©
 Influenced, ØªØ£Ø«Ø±
 Influenced, rinjayi
 Influenced, nfa
 Influenced, ike
 Information, Information
 Information, Information
 Information, Ø§Ù,,Ù...Ø¹Ù,,Ù^Ù...Ø§Øª
 Information, bayani
 Information, alaye
 Information, ozi
 Inspire, Inspire
 Inspire, inspirer
 Inspire, Ø¥Ù,,Ù‡Ø§Ù...
 Inspire, yi wahayi
 Inspire, iwuri
 Inspiring, gbaa umei
 Integration, Integration
 Integration, l'intÃ©gration
 Integration, Ø¯Ù...Ø¬
 Integration, hadewa
 Integration, isá» □ dá» □ kan
 Integration, mwekota
 Interesting, Interesting
 Interesting, intÃ©ressant
 Interesting, Ù...Ø«ÙŠØ± Ù,,Ù,,Ø¥Ø¹Ø¬Ø§Ø¨
 Interesting, mai ban sha'awa
 Interesting, awon
 Interesting, na-akpali
 Join, Join

Join, joindre
 Join, Ø§Ù†Ø¶Ù...
 Join, shiga
 Join, darapo
 Join, sonyere
 Jointtaskforce, Jointtaskforce
 Jointtaskforce, Groupe d'intervention mixte
 Jointtaskforce, Ù□Ø±Ù,Ø© Ø¹Ù...Ù,, Ù...Ø´ØªØ±ÙfØ©
 Jointtaskforce, hadin gwiwa na aiki
 Jointtaskforce, apapá»□ íá¹£á¹¹ á¹£íá¹¹e
 Jointtaskforce, ndi oru mgbako
 Kano, Kano
 Kano, kano
 Kano, ÙfØ§Ù†Ù^
 Kano, kano
 Kano, kano
 Kano, kano
 Kano__peace, Kano peace
 Kano__peace, Kano paix
 Kano__peace, ÙfØ§Ù†Ù^ Ø§Ù,,Ø³Ù,,Ø§Ù...
 Kano__peace, Zaman lafiya Kano
 Kano__peace, Alaafia Kano
 Kano__peace, Udo diri Kano
 Kind, Kind
 Kind, gentil
 Kind, Ø·ÙšØ· Ø§Ù,,Ù,Ù,,Ø·
 Kind, kirki
 Kind, irÃ°
 Kind, á»¥dá»
 Lagos, Lagos

Lagos, Lagos
 Lagos, Ù,,Ø§Ø°Ù^Ø³
 Lagos, Legas
 Lagos, Eko
 Lagos, Lagos
 Lagos__peace, Lagos peace
 Lagos__peace, Lagos paix
 Lagos__peace, Ø§Ù,,Ø³Ù,,Ø§Ù... Ù,,Ø§Ø°Ù^Ø³
 Lagos__peace, Aminci a Legas
 Lagos__peace, Alaafia Eko
 Lagos__peace, Udo Lagos
 Like, Like
 Like, comme
 Like, Ù...Ø«Ù,,
 Like, kamar
 Like, fá^{o1}ran
 Like, dá»« ka
 Listen, Listen
 Listen, Ecoutez
 Listen, Ø§Ø³ØªÙ...Ø¹
 Listen, saurare
 Listen, gbá»□
 Listen, gee ntá»«
 Love, Love
 Love, amour
 Love, ØØ^o
 Love, soyayya
 Love, ifá^{o1}
 Love, ihunanya
 Loyal, Loyal

Loyal, fidã`le
 Loyal, Ù...Ø@Ù,,Øµ
 Loyal, biyaya
 Loyal, adã°rã³á¹£iná¹£in
 Loyal, iguzosi ike n'ihe
 Luck, Luck
 Luck, chance
 Luck, ØØ,
 Luck, sa'a
 Luck, oriire
 Luck, chioma
 Maiduguri, Maiduguri
 Maiduguri, maiduguri
 Maiduguri, Ù...Ø§ÙŠØ-Ù^Ø-Ù^Ø±ÙŠ
 Maiduguri, maiduguri
 Maiduguri, maiduguri
 Maiduguri, maiduguri
 Maiduguri__peace, Maiduguri peace
 Maiduguri__peace, paix de maiduguri
 Maiduguri__peace, Ø§Ù,,Ø³Ù,,Ø§Ù... maiduguri
 Maiduguri__peace, maiduguri zaman lafiya
 Maiduguri__peace, maiduguri alafia
 Maiduguri__peace, maiduguri udo
 Mediation, Mediation
 Mediation, MÃ©diation
 Mediation, Ø§Ù,,Ù^Ø³Ø§Ø·Ù‡
 Mediation, Matsakaici
 Mediation, Iá¹£alaye
 Mediation, gbugbu
 Merciful, Merciful

Merciful, misericordieux
 Merciful, Ø±ØÙŠÙ...
 Merciful, mai rahama
 Merciful, alaanu
 Merciful, na-eme ebere
 Message, Message
 Message, message
 Message, Ø±Ø³Ø§Ù,,Ø©
 Message, Sako
 Message, Ifiraná¹£á¹¹
 Message, Ozi
 Modest, Modest
 Modest, modeste
 Modest, Ù...ØªÙˆØ§Ø¶Ø¹
 Modest, suna fadin
 Modest, suna fadin
 Modest, obi umeala
 Mobilize, Mobilize
 Mobilize, mobiliser
 Mobilize, Ø³Ø¹ØˆØ¹Ø©
 Mobilize, shirya
 Mobilize, se koriya
 Mobilize, ijikota
 Mosque, Mosque
 Mosque, mosquÃ©e
 Mosque, Ù...Ø³Ø-Øˆ
 Mosque, masallaci
 Mosque, má» □ á¹£alaá¹£i
 Mosque, á»¥lá» □ alaká»¥ba
 Nigeria, Nigeria

Nigeria, Nigeria
 Nigeria, Ù†ÙŠØ–ÙŠØ±ÙŠØ§
 Nigeria, Najeriya
 Nigeria, NÃ Ã–jÃrÃÃ
 Nigeria, Naijeria
 Nigeria__Unity, NigerianUnity
 Nigeria__Unity, UnitÃ© nigÃ©riane
 Nigeria__Unity, Ø§Ù,,Ù^ØØ- Ø© Ø§Ù,,Ù†ÙŠØ–ÙŠØ±ÙŠØ©
 Nigeria__Unity, Hadin kan Najeriya
 Nigeria__Unity, Isokan NÃ Ã–jÃrÃÃ
 Nigeria__Unity, Nigeriandá»‹ n’otu Naijeria
 Nigeria__Peace, NigerianPeace
 Nigeria__Peace, Paix nigÃ©riane
 Nigeria__Peace, Ø§Ù,,Ø³Ù,,Ø§Ù... Ø§Ù,,Ù†ÙŠØ–ÙŠØ±ÙŠ
 Nigeria__Peace, Amincin Najeriya
 Nigeria__Peace, Alaafia Ilu NÃ Ã–jÃrÃÃ
 Nigeria__Peace, Udo Ugwu Naijeria
 Obedient, Obedient
 Obedient, obÃ©issant
 Obedient, Ù...Ø·ÙŠØ¹
 Obedient, biyayya
 Obedient, á¹£Ã“gbá»¼rÃ n
 Obedient, nrube isi
 Openminded, Openminded
 Openminded, ouvert d’esprit
 Openminded, Ù...Ù†ÙØ²Ø Ø§Ù,,Ø¹Ù,,Ù,,ÙŠØ©
 Openminded, saukin kai
 Openminded, okan lila
 Openminded, obi meghere emeghe
 Patient, Patient

Patient, patient
 Patient, ØμØ`Ù^Ø±
 Patient, mai haÆ™uri
 Patient, alasan
 Patient, ndidi
 Peace, Peace
 Peace, paix
 Peace, Ø³Ù,,Ø§Ù...
 Peace, zaman lafiya
 Peace, alafia
 Peace, udo
 Polite, Polite
 Polite, poli
 Polite, Ù...Ø³Ø`Ø`
 Polite, mai ladabi
 Polite, onÃwÃ -rere
 Polite, nsá»□pá»¥rá»¥
 Positive, Positive
 Positive, positif
 Positive, Ø¥ÙŠØ-Ø§Ø`ÙŠ
 Positive, tabbatacce
 Positive, rere
 Positive, nke oma
 Power, Power
 Power, Puissance
 Power, Ù,Ù^Ø©
 Power, iko
 Power, agbara
 Power, ike
 Protect, Protect

Protect, protÃ©ger
 Protect, ÙŠØÙ...ÙŠ
 Protect, kare
 Protect, dÃ¡;Ã bÃ²
 Protect, chebe
 Quench, Quench
 Quench, Ã©teindre
 Quench, ÙŠØ·Ù□Ø|
 Quench, yanke
 Quench, fi opin si
 Quench, imenyá»¥
 Quiet, Quiet
 Quiet, Silencieux
 Quiet, Ù‡Ø§Ø¯ Ø|
 Quiet, Shiru
 Quiet, Idaamu
 Quiet, Ná» □ já»¥á»¥
 Reconciliation, Reconciliation
 Reconciliation, RÃ©conciliation
 Reconciliation, Ø§Ù,,Ù...ØµØ§Ù,,ØÙ‡
 Reconciliation, Yin sulhu
 Reconciliation, Ilaja
 Reconciliation, Ndozighará»«
 Repair, Repair
 Repair, rÃ©paration
 Repair, ÙŠØµÙ,,Ø
 Repair, gyara
 Repair, tuná¹fe
 Repair, mmezi
 Reliable, Reliable

Reliable, fiable
 Reliable, Ù...Ù^Ø«Ù^Ù,
 Reliable, abin dogaro
 Reliable, gbá^o1ká^o1le
 Reliable, pá»¥rá»¥ á»<dabere
 Respect, Respect
 Respect, le respect
 Respect, Ø§ØØ^aØ±Ø§Ù...
 Respect, girmamawa
 Respect, á»□wá»□
 Respect, nkwanje ugwu
 Safe, Safe
 Safe, sÃ»r
 Safe, ØçÙ...Ù†Ø©
 Safe, lafiya
 Safe, lailewu
 Safe, nkeeweghinsogbu
 Solidarity, Solidarity
 Solidarity, SolidaritÃ©
 Solidarity, Ø§Ù,,Ø^aØ¶Ø§Ù...Ù†
 Solidarity, Hadin kai
 Solidarity, Isopá»□
 Solidarity, á»Šdá»< n'otu
 Stability, Stability
 Stability, StabilitÃ©
 Stability, Ø§Ù,,Ø§Ø³Ø^aÙ,Ø±Ø§Ø±
 Stability, Kwanciyar hankali
 Stability, duroá¹finá¹fin
 Stability, Obi ike
 Strong, Strong

Strong, fort
 Strong, Ù, Ù^Ùš
 Strong, mai Æ™arfi
 Strong, lagbara
 Strong, siri ike
 strike, strike
 strike, la grÃ`ve
 strike, Ø¥Ø¶||Ø±Ø§Ø`
 strike, yajin aiki
 strike, ká»□lu
 strike, iku aka
 Support, Support
 Support, soutien
 Support, Ø§Ù,,Ø` Ø¹Ù...
 Support, tallafi
 Support, atilá^o1yin
 Support, nkwado
 Suprise, Suprise
 Suprise, soutien
 Suprise, Ø§Ù,,Ø` Ø¹Ù...
 Suprise, tallafi
 Suprise, atilá^o1yin
 Suprise, nkwado
 Threat, Threat
 Threat, menace
 Threat, Ø§Ù,,ØªÙ‡Ø` ÙšØ`
 Threat, barazana
 Threat, irokeke
 Threat, iyi egwu
 Together, Together

Together, ensemble
 Together, Ø³Ù^ÙŠØ§
 Together, tare
 Together, papá» □
 Together, á» □ ná» ¥
 Tolerate, Tolerate
 Tolerate, tolÃ©rer
 Tolerate, ØªØÙ...Ù,,
 Tolerate, yi haÆ™uri
 Tolerate, faramo
 Tolerate, anabatanu
 Tranquility, Tranquility
 Tranquility, TranquillitÃ©
 Tranquility, Ø§Ù,,Ù‡Ø-Ù^Ø¡
 Tranquility, Natsuwa
 Tranquility, Irá» □run O
 Tranquility, bi iru ala
 Trust, Trust
 Trust, confidence
 Trust, Ø«Ù,Ø©
 Trust, dogara
 Trust, gbekele
 Trust, tá»¥kwasá»«ná»¥ obi
 Trouble, Trouble
 Trouble, difficultÃ©
 Trouble, Ù...Ø`ÙfÙ,,Ø©
 Trouble, matsala
 Trouble, wahala
 Trouble, nsogbu
 Unity, Unity

Unity, unitÃ©
 Unity, Ù^ØØ^- Ø©
 Unity, hadin kai
 Unity, isokan
 Unity, á»«dá»« n'otu
 Violence, Violence
 Violence, la violence
 Violence, Ø¹Ù†Ù□
 Violence, tashin hankali
 Violence, iwa-ipa
 Violence, ime ihe ike
 Watch, Watch
 Watch, regarder
 Watch, Ø±Ø§Ù,Ø´
 Watch, kallo
 Watch, wo
 Watch, lelee
 Willing, Willing
 Willing, prÃªt
 Willing, Ø±Ø§Ø°Ø´
 Willing, a shirye
 Willing, fá¹
 Willing, dá»« njikere
 Wrong, Wrong
 Wrong, faux
 Wrong, Ø®Ø·Ø£
 Wrong, ba daidai ba
 Wrong, ti ko tá»□
 Wrong, adighi nma
 Yoruba, Yoruba

Yoruba, Yoruba

Yoruba, Ø§Ù,,ÙŠÙ^Ø±Ù^Ø·Ø§

Yoruba, Yoruba

Yoruba, Yoruba

Yoruba, Yoruba

Youthful, jeune

Youthful, Ø´Ø·Ø§Ø·ÙŠ

Youthful, saurayi

Youthful, á»□dá»□

Youthful, ntorobá»«a

B. TABLE A2. HASHTAGS AND TWITTER ACCOUNTS SEARCHED

Serial	Name Search	Type
1	Ahmed Salkida	https://twitter.com/A_Salkida@A_Salkida
2	Sahara Reporters	https://twitter.com/SaharaReporters@SaharaReporters
3	Boko Haram Terrorist	#Bokoharam
4	Nigeria	#nigeria
5	Unity	#unity
6	Islamic State in West African Province	#iswap
7	WAZOBIA FM	#wazobiafm
8	Cool FM	#coolfmkano
9	Terrorsit	#terrorist

C. TABLE A 3. NRN TOPIC MODELLING TABLE

TOPIC	ASSIGNED LABEL	WORDS
2	USA Discourse	Nigeria, Amp, Statedept, Read, whitehouse
11	Game Development	Unity, gamedev, madewithunity, game, indie dev
12	BHT, Biafraexit	Nigeria, bokoharam, amp, boko, biafraexit
13	President Buhari	arrestbuhari, lives, save, imamofpeace, bokoharam
17	ISWAP News	Bokoharam, iswap, breaking, news, Moguno
24	BHT Videos	Executed, video, workers, bokoharam, amp
26	Muslim Festivals	eidmubarak, eidaladha, eid, abuja, Nigeria.
28	Indigenous Games	unity, gamedev, indie dev, indie gamedev, gamedevelopment
29	BHT Releases	Terrorists, bokoharam, amp releasing, country
32	Educational	unity nature education ududueududa, global
33	Welfare and Medicals	Tent, headline, hospital, ua, uabn

34	Politics in Nigeria	Unity, regime, power, enemies, zionist, type, stands, snouts, satan, nation, loudly, lies, Islamic, encroaching, embodied.
39	Donald Trump Nnamdi Kanu	Nigeria, bokoharam, realdonaldtrump, mazinnamdikanu, country
46	Ndume and BHT	Nigeria, bokoharam, a, ndume, boko
47	Covid-19 in Nigeria	Nigeria, ua, covid, rate, exchange
49	Buhari's Administration	Nigeria, Nigerians, father, Buhari, a

D. TABLE A 4. NRN TOPIC MODULARITY CLASS TABLE

Modularity class	Percentage	Names (By Degree)	Color
6	10.66%	Moses Agbo	Purple
28	9.83%	Human Angle	Green
12	9.52%	Chidi Odinaka	Blue
7	6.14%	Edeh Alex	Grey
16	5.67%	Sahara Reporters	Orange
4	5.23%	Mazi Nnamdi Kanu	Pink
9	4.51%	Mohd RCD	Dark Green
13	4.37%	Ottogs	Light Brown
1	3.53%	Khamenei_ir	Grey

Modularity Class	Cluster Names	Topic Number and Assigned Label
6	Moses Agbo	12(BHT, Biafraexit); 29(BHT Releases); 39(Donald Trump & Nnamdi Kanu)
28	Human Angle	11(Game Development); 28(Indigenous Games)
12	Chidi Odinaka	33(Welfare and Health); 47(Covid-19 in Nigeria)
7	Edeh Alex	13(President Buhari)
16	Sahara Reporters	46(Ndume and BHT); 49(Buhari's Administration)
4	Mazi Nnamdi Kanu	2(USA Discourse); 12(BHT, Biafraexit); 39(Donald Trump Nnamdi Kanu)
9	Mohd RCD	17(ISWAP News); 24(BHT Videos)
13	Ottogs	26(Muslim Festivals)
1	Khamenei_ir	34(Unity in Nigeria)

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