

**TRENDS OF TERRORISM ACTIVITY IN RELATION TO INTERNET
ACCESSABILITY THROUGHOUT THE SAHEL COUNTRIES OF AFRICA**

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ABSTRACT

For most of the developed world, the Internet plays an important role in everyday life. It is the primary infrastructure used for business, academics, social life, and many other societal institutions. However, many developing parts of the world, especially Sub-Saharan Africa, still lack reliable access to the Internet. Despite the Internet's many positive attributes, it provides a breeding ground for nefarious actors. Terrorists have successfully used the Internet to spread propaganda and recruit followers, primarily through social media. Research has shown a relationship between rates of Internet usage, and increased terrorist activity in the Western world. As vulnerable developing nations gain more accessibility to the Internet, terrorists will likely try to capitalize on the newfound access to these hard-to-reach audiences around the world.

This study seeks to identify what the effect increased Internet accessibility has on terrorist activity, as experienced in the Sahel region. Because access to the Internet is still extremely limited in most of the Sahel region, identifying trends early on may help defend against this threat as the Internet becomes more readily available to the region in the future. This quantitative analysis found that there was a **strong positive relationship** between these variables for the selected sample of Sahel countries analyzed. This information may be useful in educating policymakers on future threats that effective foreign policy and military aid can help proactively counter.

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INTRODUCTION

The expansion of Information and Communications Technology (ICT) and the growth in popularity of social media across the globe continues to provide a network of access for personal and business interactions between societies that previously lacked interconnectivity. Despite its relative infancy in the 21st century, the Internet has already played a crucial role in how people around the world interact with each other. Beyond just social applications, the Internet has changed the way many societal and global institutions operate. In particular, certain regions of Africa are currently witnessing major developments in their interconnectivity to the rest of the world. There is a vast amount of research looking into the sociological adaptations of these technological advancements, and ultimately scholars agree that “the landscape of African media is vibrant and continues to be transformed in response to the increasing availability of ICT and social media.”¹ Unfortunately, the building of infrastructure required for reliable and persistent Internet access is both challenging and costly for many lesser-developed regions of Africa. Currently, Sub-Saharan Africa has the lowest rate of Internet usage in the world, but even within its limited reach, over 75% of these users actively engage on various social media platforms.² As the infrastructure for this technology expands, it will continue to give populations in rural and lesser-developed regions the ability to communicate and interact with others around the world. Within just the past decade, this has helped facilitate and organize multinational protests that resulted in real-world political ramifications for many governments.

¹ Tilo Gratz, “New Media Entrepreneurs and Changing Styles of Public Communication in Africa [Special Section]” *Journal of African Cultural Studies* 25, no. 1 (2013): 9.

² Pew Research Center, “Internet Connectivity Seen as Having Positive Impact on Life in Sub-Saharan Africa” (2018).

Most notably in recent history, the Arab Spring movements in the early 2010's demonstrated the potential power and influence that the Internet and social media can provide for underrepresented and oppressed populations. The premise of the Arab Spring was an overwhelming show of solidarity and civilian dissent between the Middle East and North Africa (MENA) populous not having their voices heard against their oppressive regimes. Historically, many of these governments ruled under authoritarian governance plagued by classism and economic discrimination. The Arab Spring was fueled by "economic and political injustices" that were rooted in "non-democratic governance from triggers generated by economic factors, such as food price inflation and unemployment."³ Protests of this scale required communication, coordination, and support from many external elements and contributors, which previously were logistically unattainable. Social media and the Internet provided a platform for communication infrastructure that was widespread and accessible to the citizens of these countries to help organize protests of such a magnitude. Although research shows that social media did not actually cause the mass protests, it served as an important utility in facilitating discourse among otherwise government-censored populations.⁴ The Internet played an important role in the Arab Spring and continues to serve a purpose in helping democratize political discourse in countries "where government repression prohibits the meeting of certain political groups" and by "facilitating reporting from places to which traditional media has limited access."⁵ The events during the Arab Spring set a precedent

³ Michael Gordon, "Forecasting Instability: The Case of the Arab Spring and the Limitations of Socioeconomic Data" *The Wilson Center* (2018).

⁴ Taylor Dewey, Juliane Kaden, Miriam Marks, Shun Matsushima, Beijing Zhu, "The Impact of Social Media on Social Unrest in the Arab Spring" *Stanford University* (2012).

⁵ *Ibid.*

for MENA citizens and provided them the opportunity to collectively protest tyranny through successful collaboration by using online platforms.

The lasting impacts of the Arab Spring have changed how some Sub-Saharan populations view the dynamics of power and sparked a broad interest in political discourse. Increased access and use of the Internet have also shaped perceptions on conflict in the region. According to a Harvard University report, “social media could lead to a greater degree of clarity or veracity in reporting about various dimensions of conflict” and that it “could serve as a tool to galvanize transnational peace and social justice advocacy groups, even bringing a swifter end of conflicts.”⁶ Recent notable efforts utilizing the Internet to expand awareness and visibility include the Kony 2012 movement and the Save Darfur Coalition. These movements propagated through social media and gained international support from users that previously were unaware of the existence of these conflicts. The power of the Internet has also revolutionized how citizens of Sub-Saharan Africa remain in the minds of those in the international community.

Despite the positive utilities the Internet provides, terrorist groups have quickly capitalized on increased accessibility to audiences around the world. In especially vulnerable regions, terrorist organizations leverage multiple social media platforms to spread propaganda, recruit, radicalize, and coordinate attacks in almost all continents. Sub-Saharan Africa is one region that has several specific vulnerabilities that make its populations especially susceptible to extremist influence. Since there has been a large-scale shift away from Middle Eastern countries, many extremist groups have focused

⁶ Jason Warner, Gabrielle Ramaiah, “Four Ways Social Media Could Transform Conflict in Africa”, *Harvard University* (2012).

their expansion on Africa's Maghreb and Sahel regions.⁷ Current analysis argues that while groups like Boko Haram have not historically relied on the Internet to recruit and carry out attacks, this approach is now currently changing.⁸ According to a Georgetown University study, "the use of social media by ISIS and other militant groups in Africa, such as al-Shabaab and Boko Haram, corresponds with increased Internet access, penetrations, and literacy" which gives access to a "new pool of potential supporters who, through social media, could be recruited to join its effort."⁹ These terrorist groups are persistent in their recruitment tactics and have showed extreme determination in disseminating their ideologies and extremist beliefs to their followers on social media.

There is already research looking into the phenomenon of radicalization and recruitment through social media. Studies have analyzed patterns of radicalization online, and by which means social media users are most likely to succumb to extremist propaganda. Additionally, researchers conducted studies to gain insight into the personal experiences and psychology of those being radicalized on social media. Western countries used these areas of study to create counter-radicalization policies and programs to hamper the efforts of extremist recruitment based on the factors found to positively contribute to a user's susceptibility to influence.¹⁰ This existing research is helpful to governments in countering extremism online, but the overall success of the online counter-radicalization efforts has not been analyzed in these studies. This is because very little factual data currently exists exploring how many terrorist attacks have been directly

⁷ Global Terrorism Index, 2018 (52)

⁸ "Is Islamic State Shaping Boko Haram Media?" *BBC Monitoring* (2015)

⁹ Antonio Ward, "ISIS's Use of Social Media Still Poses a Threat to Stability in the Middle East and Africa" *Georgetown Security Studies Review* (2018).

¹⁰ Ines von Behr, Anais Reding, Charlie Edwards, Luke Gribbon, "Radicalization in the Digital Era" *RAND Europe* (2013)

tied to social media use in other regions. Although this is a challenging metric to measure, the ability to quantify how commonly social media played a roll in the planning and execution of these attacks may be beneficial to policymakers for the expansion of online counter-radicalization efforts, especially in currently developing regions.

Acknowledging the overall lack of qualitative data on this topic that may support causation, this study looks to draw correlations between Internet usage and incidences of terrorist activity. Many terrorist activities experienced by Western countries can be tied to social media, and have showed an increase in frequency because of the platform. If applied to other regions of the world, this principle may present similar results, therefore predicting similar increases in terrorism in developing nations. Since the populations of Sub-Saharan Africa, in particular the Sahel countries, are still relatively premature in their widespread online presence, identifying this trend may draw statistically significant correlations. Paired with further qualitative research, these findings could help influence implementation of counter-radicalization efforts early on based on analysis of similar data from other regions of the world. For this study, the research question is focused on the impact that increased Internet accessibility has on occurrences of terrorist activities in the Sahel region.

LITERATURE REVIEW

In general, the important role that the Internet and social media plays in terrorism and violent extremism across all geographic regions has received “scant scholarly attention” up until recently.¹¹ In a Congressional House Hearing before the Subcommittee on Counterterrorism and Intelligence in 2011, Congresswoman Jackie Speier contends that “what we do not know is how many people have actually been radicalized by viewing blogs, news feeds, and tweets by al-Awlaki and others like him that espouse violent ideology”.¹² Additionally, scholar Will McCants claimed in a testimony before the U.S. House of Representatives Homeland Security Subcommittee on Counterterrorism and Intelligence that “there is little research to go on, which is striking given how data-rich the Internet is” in reference to the lack of data correlating violent extremism and the Internet.¹³

Based on what research currently exists, some scholars agree that social media has had a real-world effect on behaviors and actions around the world in many forms, including terrorism. Alternatively, other scholars are skeptical of the significance of the Internet’s role in violent radicalization and argue that it cannot be a “substantive form of grassroots activism.”¹⁴ Despite the skepticism, recently, government, defense, and intelligence officials have called on social media companies to work harder at censoring extremist and terroristic content posted on their platforms.¹⁵ An article from the *Studies in*

¹¹ Maura Conway, “Determining the Role of the Internet in Violent Extremism and Terrorism: Six Suggestions for Progressing Research” *Studies in Conflict & Terrorism* 40, no. 1 (2017): 77-98

¹² Jackie Speier, “Jihadist Use of Social Media – How to Prevent Terrorism and Preserve Innovation” *Committee on Homeland Security, House of Representatives* (2011)

¹³ Maura Conway, “Determining the Role of the Internet in Violent Extremism and Terrorism: Six Suggestions for Progressing Research” *Studies in Conflict & Terrorism* 40, no. 1 (2017): 77-98

¹⁴ *Ibid.*

¹⁵ *Ibid.*

Conflict & Terrorism journal titled “Determining the Role of the Internet in Violent Extremism and Terrorism: Six Suggestions for Progressing Research” considered whether either side of the argument could be empirically proven. This study probed deeper into the correlation of the Internet with the rise of extremism and identified six primary suggestions to progress research on the topic. Due to the challenge involved in procuring data on this topic, the author recommends these suggestions may help expand the understanding of any correlation between the two variables.

The first suggestion is to *widen* the breadth of current research on extremism online beyond just Islamic extremism online activity, particularly disseminated by the Islamic State.¹⁶ The study suggests researching online trends from all types and variations of extremism, and then using those results to perform comparative analysis against the Islamic extremism to better understand how the strategies and techniques differ.¹⁷ The second suggestion is to broaden the categories used to compare extremism online. Despite the media focusing primarily on the Islamic State, there are many types of Islamic extremists throughout the world, and the comparisons should consider the specific groups, the countries in which they operate, the languages they speak, and the social media platforms they use.¹⁸ Since the Internet often is considered “inherently global in character, rather than geography playing a determining role”, emphasis on target locations of extremist activity online may not be relevant.¹⁹

The third suggestion is to deepen the level of research that currently exists. Utilizing a more qualitative approach rather than quantitative collection can yield

¹⁶ *Ibid.*

¹⁷ Maura Conway, “Determining the Role of the Internet in Violent Extremism and Terrorism: Six Suggestions for Progressing Research” *Studies in Conflict & Terrorism* 40, no. 1 (2017): 77-98

¹⁸ *Ibid.*

¹⁹ *Ibid.*

intangible data that may not be collected through statistics. Through subject interviews and other qualitative methods, a deeper insight into the brains behind online extremism can be explored. The fourth suggestion is to upscale the collected data into a more macro level picture. Since much of the currently collected data on online extremism is more micro in scale, it is harder to put the whole story together. By up scaling the data, “such analysis would provide, at a minimum, a big picture view of the contemporary violent online extremist scene and its various corners and allow us to identify areas in which to excavate further.”²⁰

The fifth suggestion is to use outreach during research to broaden the understanding of trends in the topic. By reaching out to scholars in both media and terrorism, one may be able to garner ideas and information otherwise unavailable. Conway argues that collaboration between professions such as social scientists and computer scientists should be more prevalent in this field of study. The sixth and final suggestion is to study gender as a construct of terrorism on social media. Historically, terrorism has been a male-dominated issue, but recently there has been more female oriented propaganda and recruitment efforts. There is a great deal of research that could be done about the recruiting trends of ‘jihadi brides’ and other cases of women falling into extremist paths.

Conway concludes by restating her main point that historically, all forms of popular media and entertainment have been used profusely throughout history to spread extremist propaganda, and thus “the internet is unlikely to be any different”.²¹ She argues that the impact of the Internet on terrorism is a difficult topic to research, but the

²⁰ *Ibid.*

²¹ Maura Conway, “Determining the Role of the Internet in Violent Extremism and Terrorism: Six Suggestions for Progressing Research” *Studies in Conflict & Terrorism* 40, no. 1 (2017): 77-98.

resources exist to gather impactful data. Due to the multifaceted use of the Internet, researchers must be creative in how they structure their studies and incorporate any or all her six suggestions to better understand the issues being faced. The major takeaway from Conway's study is that there is still unexplored research to be conducted on the link between extremism and the Internet. In order to accurately and comprehensively collect accurate data, future methods must be more involved in breadth.

One of the most comprehensive studies on the topic of online extremism in the United Kingdom was conducted by RAND Europe in 2013, titled *Radicalization in the Digital Era*. This study identifies that the Internet provides terrorists and extremists the ability to “communicate, collaborate, and convince” with citizens around the world on their ideologies and propaganda.²² The study also acknowledges that almost all national security investigations conducted in the United Kingdom involve the Internet, and that “terrorism cases in the UK without a ‘digital footprint’ are increasingly rare”.²³ The researchers identify that previous studies about social media and terrorism historically focus strictly on the specific content used in the recruitment and propaganda activities.

This RAND Europe study seeks to fill a research gap by looking at the solicitation process from the experience of the users that have been recruited into extremism through social media. To collect this data, the team conducted 15 primary source interviews with terrorists and extremists that were either identified as vulnerable to recruitment through a UK government intervention program or were convicted by a UK Counter Terrorism Unit. The study identified five hypotheses their findings could answer²⁴:

²² “Radicalisation in the Digital Era”. RAND Europe.

²³ *Ibid.*

²⁴ *Ibid.*

1. The Internet creates more opportunities to become radicalized.
2. The Internet acts as an ‘echo chamber’: a place where individuals find their ideas supported and echoed by other like-minded individuals.
3. The Internet accelerates the process of radicalization.
4. The Internet allows radicalization to occur without physical contact.
5. The Internet increases opportunities for self-radicalization.

Through their qualitative interviews, the resulting data supported the fact that the Internet *has* played an important role in the exacerbation of terrorism recently in the UK. The research supports the idea that the Internet “may enhance opportunities to become radicalized, as a result of being available to many people, and enabling connection with like-minded individuals from across the world 24/7.”²⁵ Additionally, they conclude that the Internet provides greater opportunity to confirm existing beliefs and potentially accelerates the radicalization process by acting as a method of facilitation.²⁶ Contrarily, their evidence did not support the idea that the Internet contributed to self-radicalization nor did it accelerate the actual process of radicalization.²⁷

One area this study highlights is the increased Internet usage rate within the UK and EU over recent a period of time. As of 2013 when this study was conducted, a majority of homes in the UK have access to the Internet in their homes. By 2012, access to the Internet had reached 87% of households in the UK and 76% of households in the EU and use of the Internet among individuals within the UK reached 89% and for the

²⁵ “Radicalisation in the Digital Era”. RAND Europe.

²⁶ *Ibid.*

²⁷ *Ibid.*

entire EU hovers around 75%.²⁸ This rate grew steadily from the early 2000s and continues to increase. At the same time, the study found that “this trend is matched by a massive increase in the number of Jihadist websites now available – rising from 12 in 1998 to 4,500 by 2006”.²⁹

Based on the previous research on this topic, scholars are still not certain that social media is directly related to terrorist activity. The studies referenced above suggest that social media makes the process of radicalization convenient and has created more opportunities to become radicalized. The Internet and social media can be tied to many specific incidences of terrorism in Western countries, in addition to an increased frequency of incidences. Applying the same principle to other parts of the world could yield similar results, thus predicting increased terrorism in those areas that are still growing their Internet infrastructure.

HYPOTHESIS AND METHODS

A gap in research currently exists in the connection between the gradual increase in accessibility to the Internet in vulnerable regions, compared to trends and occurrences of terrorist activity. Past research shows that the Internet and social media have influenced and radicalized many terrorists around the world. This study will explore quantitative gaps in research by looking at the frequency and occurrences of terrorist attacks in certain regions and correlate them to the corresponding historic rates of Internet accessibility. Specifically, within Africa, countries located in the Sahel region, a largely developing set of vulnerable nations, will be used as case studies. The five randomly

²⁸ *Ibid.*

²⁹ *Ibid.*

sampled Sahel region countries analyzed in this study are Algeria, Chad, Mali, Niger, and Sudan.

The hypothesis being tested is that there is a statistically correlated relationship between the increased use and accessibility of the Internet in the Sahel region, and the rate of terrorist attacks within the same timeframe. The results of this study will help determine any correlation between the two variables, and while supplemented with additional qualitative research, may help influence policy decisions by each affected government to employ programs and proactively target and defend against the spread of terrorism through social media in the future.

To test this hypothesis, data for each variable will be individually collected showing values during the period from 2000 to 2019, as available. The terrorism variable is the number of occurrences of terrorist attacks each year, per country, with the values input into a time-series table. The Internet accessibility variable is the percentage of each country's Internet user population, which is also input into the same time-series table. The results for each variable are visualized in a scatter plot, and a linear trend line represents the average rate of growth or regression for each variable over the two decades represented in the sample data.

Since the trend lines represent a bivariate relationship between two different sets of data, they cannot be compared on the same scale. In order to determine covariance between the two variables, the Pearson bivariate correlation coefficient normalizes the measurement and calculates the standardized correlation. The resulting correlation will fall between -1 (signifying a perfect negative linear relationship), 0 (signifying no linear

relationship), and +1 (signifying a perfect positive linear relationship).³⁰ The table below interprets the overall strength of the given correlation between each variable³¹:

<i>r</i> Value	Relationship
+ .70 or Higher	Very Strong Positive Relationship
+ .40 to + .69	Strong Positive Relationship
+ .30 to + .39	Moderate Positive Relationship
+ .20 to + .29	Weak Positive Relationship
+ .01 to + .19	No or Negligible Relationship
0	No Relationship
- .01 to - .19	No or Negligible Relationship
- .20 to - .29	Weak Negative Relationship
- .30 to - .39	Moderate Negative Relationship
- .40 to - .69	Strong Negative Relationship
- .70 or Lower	Very Strong Negative Relationship

The value of each correlation coefficient will tell what type of relationship exists between the variables for each country. Once all the data is collected, the mean of the *r* values for each of the five countries will be calculated to identify the average strength of relationship between accessibility of the Internet and terrorist activity for the Sahel region.

³⁰ SPSS Tutorials: Pearson Correlation. Kent State University
<https://libguides.library.kent.edu/SPSS/PearsonCorr>

³¹ Statistics How To. <https://www.statisticshowto.com/probability-and-statistics/correlation-coefficient-formula/#mean>

DATA

The data collected for these case studies comes from two primary reputable and recognized academic sources. The first resource is the Global Terrorism Database (GTD) that is published by the National Consortium for the Study of Terrorism and Responses to Terrorism (START) at the University of Maryland, College Park.³² This database provides the data used to show trends of terrorist activity in the five separate countries analyzed.

In addition to the Global Terrorism Database, the Global Terrorism Index editions from, 2002-2011, 2014, 2015, 2016, 2017, 2018, 2019, and 2020 provide further details about terrorist activity for each country. It contains comprehensive information regarding political, economic, and social factors that are contributing to terrorist activities in particular areas for the given timeframe. The GTI calculates a score for each country based on the relative impact that terrorism presents each year. The four factors considered in the calculation are: total number of terrorist incidents, total number of fatalities caused by terrorism, total number of injuries caused by terrorism, and the approximate level of total property damage from terrorist incidents in a given year.³³ For apparent trends in the case studies, this resource helps provide a wider perspective on notional increases or decreases in terrorist activity for each country compared to historic incidences.

Statistics regarding the prevalence and accessibility to the Internet in each individual country was collected from The World Bank, International Bank for Reconstruction and Development (IBRD). The data comes from the International

³² START, University of Maryland at College Park <https://www.start.umd.edu/baad-frequently-asked-questions>

³³ Global Terrorism Index, 2002-2011

Telecommunication Union (ITU) World Telecommunication/ICT Indicators Database.³⁴

For this data set, the World Bank calculates its numbers based on active users of the Internet through computers, mobile phones, personal digital assistants, game machines, digital TV's, and other technologies. The aggregated data is the weighted average of individual users who have utilized the Internet within three months of the given data timeframe. Although there are many targeted uses of the Internet in this data set, the high rates Internet consumers that regularly use social media accounts for a large percentage of this data.

FINDINGS

The following case studies draw on the data collected from the Global Terrorism Database, Global Terrorism Index, and World Bank sources. First, aggregation of all terrorism events between 2000-2019 identifies the trend line for each country's average rate of terrorism over twenty years. Plotting the data from the World Bank on Internet availability in these countries identifies the trend line for each country's average rate of online accessibility over the past twenty years. Calculating the Pearson correlation coefficient between the two variables provides the overall strength of correlation. The average of coefficients from all sampled countries then provides the mean correlation for the entire sample of the Sahel region.

³⁴ The World Bank, International Bank for Reconstruction and Development

Algeria

Algeria is a large Muslim country situated in Northern Africa and bordering the Mediterranean Sea, with the southernmost region situated in the Sahel region.

Throughout the late 20th Century, political tension existed between the National Liberation Front (FNL), Algeria's primary political party, and the Islamic Salvation Front (FIS), which led to extremely violent civil war throughout the country.³⁵ The violence ended in 1999 when Abdelaziz Bouteflika won the presidency and led the country until his resignation in 2019.

Despite an overall decrease in terrorism after the election of Abdelaziz Bouteflika, Algeria was still ranked 15th on the GTI for 2002-2011, which was a decrease from its previous 3rd ranking.³⁶ During this timeframe, the perpetrators of these attacks consisted of Al-Qa'ida in the Lands of the Islamic Maghreb (AQLIM), Salafist Group for Preaching and Fighting (GSPC), and various other Islamic extremist groups.³⁷ Trends in terrorism continued to decline throughout the following decade due to their efforts to "abate attacks" from the armed Islamist groups.³⁸

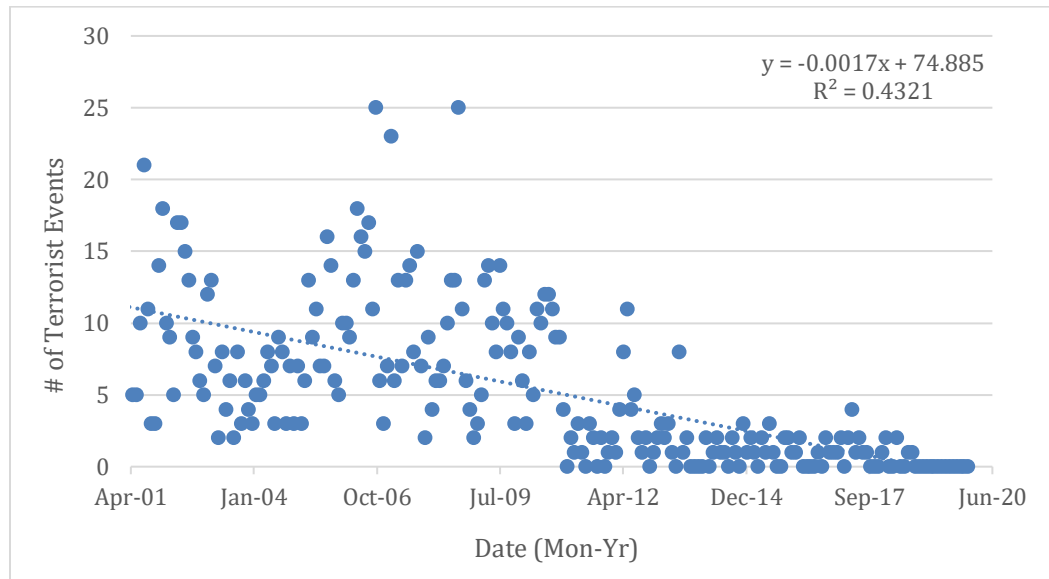
³⁵ CIA World Factbook, Algeria

³⁶ Global Terrorism Index, 2002-2011

³⁷ Global Terrorism Index, 2002-2011

³⁸ Global Terrorism Index, 2017

FIGURE 1: Occurrences of Terrorism in Algeria³⁹



Based on the data extracted from the Global Terrorism Database, the level of terrorist activity in Algeria did not substantially decrease until 2011. This is because Algeria experienced ripples of violence, armed conflict and terrorism following years of internal conflict post-1999.⁴⁰ Ultimately, Algeria had a substantial improvement in its ability to combat terrorism, falling in its score from 15th in 2002 to 65th in 2020, which is one of largest declines in for any country in the same period.⁴¹ Since 2000, the average annual decline of terrorism occurrences in Algeria was $y = -0.0017x + 74.885$ with a coefficient of determination $r^2 = 0.4321$.

Internet accessibility in Algeria has greatly increased over the past two decades. At the start of the century, only .492% of the population, about 152,716 citizens, had steady access to the Internet.⁴² By 2010, this amount rose to 12.5% of the total

³⁹ Global Terrorism Database, START, University of Maryland

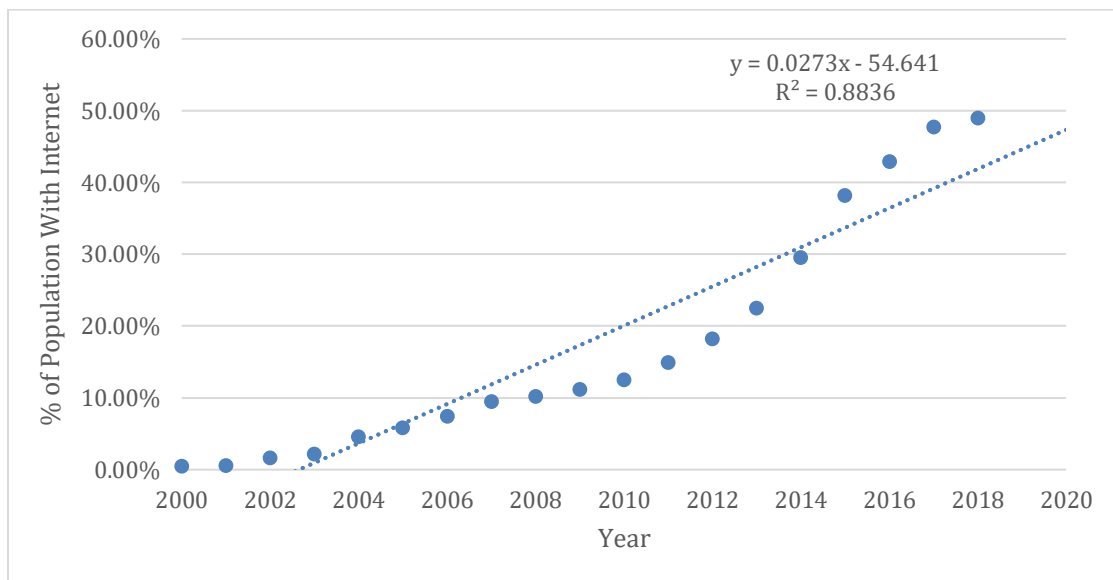
⁴⁰ Global Terrorism Index, 2019

⁴¹ Global Terrorism Index, 2020

⁴² The World Bank, International Bank for Reconstruction and Development

population, which was approximately 4.5 million citizens.⁴³ Finally, by 2018, 49.038% of the population, almost half, had access to the Internet, which accounts for approximately 20.7 million citizens.⁴⁴ Based on data collected from the World Bank, since 2000 the average annual growth in accessibility to the Internet in Algeria was $y = 0.0273x - 54.641$ with a coefficient of determination $r^2 = 0.8836$.

FIGURE 2: Access to Internet in Algeria (% of Population)⁴⁵



Over 20 years, the accessibility to the Internet expanded to almost half the population of Algeria. It is used for numerous applications, such as business, academics, news media, and social media. The online infrastructure is also continually improving as technology becomes more readily available in the region. The Algerian government is also working on strengthening its cyber security infrastructure to help alleviate the damage that regional hackers are causing. In 2020, a group of Moroccan hackers

⁴³ The World Bank, International Bank for Reconstruction and Development

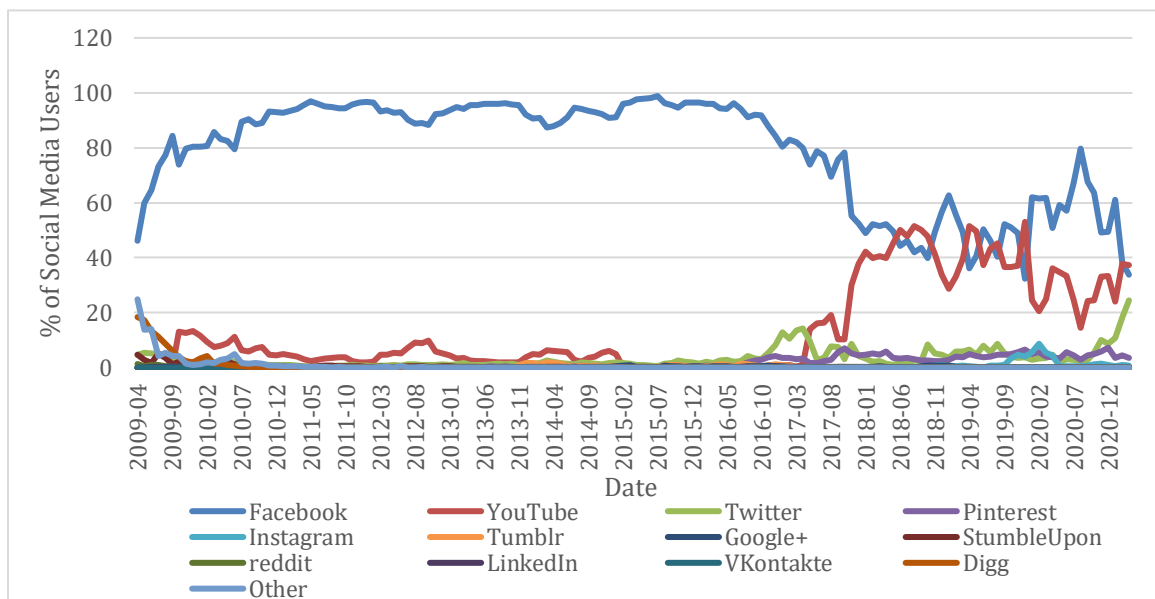
⁴⁴ *Ibid.*

⁴⁵ The World Bank, World Development Indicators

successfully intercepted numerous Algerian state-sponsored websites representing their national agencies.⁴⁶

Social media has proven to be an extremely important social tool in Algeria. As of March 2021, there are over 25.8 million Facebook users in Algeria, making it the country’s most popular social media platform.⁴⁷ Based on the figure below, it is evident that no other social media platforms have as much historic influence, and that most social media users in Algeria can be reached through Facebook, although since 2017, YouTube has significantly gained popularity and matched similar rates as Facebook.

FIGURE 3: Popularity of Social Media Platforms in Algeria (% of SM Users)⁴⁸



Using Facebook as a medium for free speech is crucial because while media pluralism still exists in official press, “there is still a situation of disrespect for

⁴⁶ Yahia Hatim, “Algerian Media Accuse Morocco of Hacking State-Owned Websites” Moroccan World News, 2020.

⁴⁷ NapoleonCat, Facebook Users in Algeria. <https://napoleoncat.com/stats/facebook-users-in-algeria/2021/03>

⁴⁸ StatCounter Global Stats

fundamental news values, media ethics and independence”.⁴⁹ Starting in early 2019, the ‘Hirak’ movement flooded through Algerian Facebook pages, leading to the resignation of Abdelaziz Bouteflika after his fifth presidential term.⁵⁰ These events represent the ability of to organize and execute mass social and political protests through Facebook’s large user base in Algeria. With these same capabilities, it is known that many terrorist groups are exploiting social media as a means of propaganda and recruitment around the region.

To determine if there is a correlation between the advancement in Internet accessibility and occurrences of terrorism in Algeria, both growth rates must be compared. Using the Pearson correlation coefficient for the data collected on Algeria, **$r = -0.814153532$** . Based on the correlation scale, there is a **very strong negative relationship** between the increased accessibility to the Internet in Algeria, and the frequency of terrorist attacks that have taken place in country since 2000.

Chad

Chad is Central African country with a history of instability and violent civil war. After three decades of internal conflict the government drafted a democratic constitution and Idriss Deby was elected president, where he presided until his death in 2021. Throughout the three decades of his presidency, Chad has been plagued by numerous challenges of terrorist extremism. Between 2006 and 2008, rebel campaigns initiated

⁴⁹ Laeed Zaghلامي. “Social Media as a New Source of Empowerment in Algeria.” *Social Media and Elections in Africa Studies in Conflict & Terrorism* Volume 2 (2020): 117-134

⁵⁰ Ines Osman. “Algeria: The Arab Spring’s Late Bloomer?” *The Tahrir Institute for Middle East Policy* (2021)

many attacks as well as a violent insurrection against the President.⁵¹ Presently, there are still numerous challenges, including widespread poverty and insurgencies led by rebel forces in Northern Chad, and by Boko Haram and Islamic State terrorists in the Lake Chad Basin region.⁵²

Between 2002-2011, Chad was ranked as 46th in the Global Terrorism Index, and during this time there was not a significant amount of terrorist activity occurring in the country.⁵³ For the first time in 2014, Boko Haram carried out its first attacks outside of Nigeria and killed six civilians in the capital of Chad, N'Djamena.⁵⁴ The following year in 2015, a suicide attack in N'Djamena carried out by Boko Haram took the lives of at least 53 civilians, which demonstrates the increasing lethality of their attacks. In fact, by 2015, Chad had the second highest lethality rate of all terrorist attacks worldwide, averaging 9.4 people killed per attack.⁵⁵ Due to the efforts of an international coalition of forces, by 2020, Chad witnessed some of the biggest improvements in Sub-Saharan Africa. Terrorism in Chad peaked in 2015, where 22 separate attacks killed 206 civilians, but in 2017, Chad only witnessed four separate attacks and only 13 civilians were killed.⁵⁶ Over the course of the selected period, Chad's ranking varied year to year, with an average ranking of around 34th.

⁵¹ CIA World Factbook, Chad

⁵² *Ibid.*

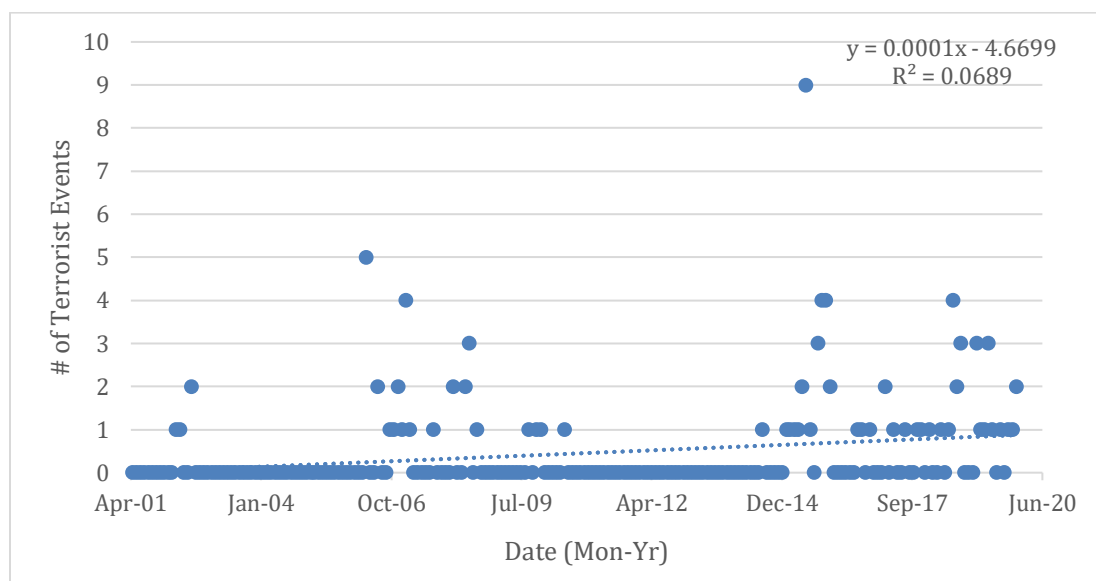
⁵³ Global Terrorism Index, 2002-2011

⁵⁴ Global Terrorism Index, 2015

⁵⁵ Global Terrorism Index, 2016

⁵⁶ Global Terrorism Index, 2018

FIGURE 4: Occurrences of Terrorism in Chad⁵⁷



Based on the data extracted from the Global Terrorism Database, Chad witnessed small bouts of terrorist activity between 2006-2010, but maintained relatively peaceful only up until recently. The peak of terrorist activity in Chad was in 2015 as a direct result of Boko Haram infiltrating its borders and inflicting lethal attacks in its capital region. There has recently been improvement in combatting terrorism through the strengthening of coalition forces, but Boko Haram remains the primary threat to the safety of Chadian citizens.

Since 2000, the average annual increase of terrorism occurrences in Chad was $y = 0.0001x - 4.6699$ with a coefficient of determination $r^2 = 0.0689$.

Internet accessibility in Chad has slowly increased over the past two decades. At the start of the century, only .036% of the population, about 3,008 citizens, had steady access to the Internet.⁵⁸ By 2010, this amount only increased to 1.7% of the total population, which was approximately 203,150 citizens.⁵⁹ Even by 2017, only 6.5% of the

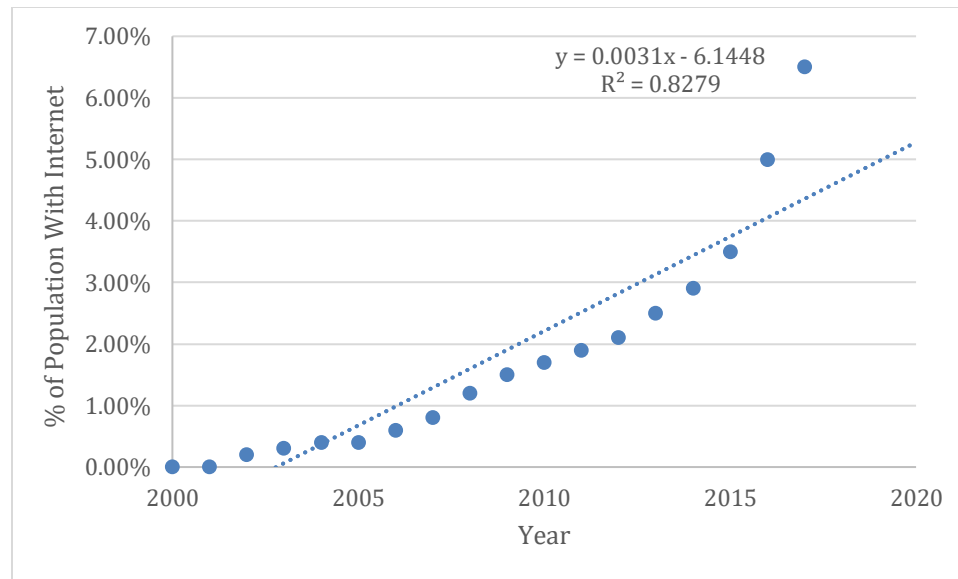
⁵⁷ Global Terrorism Database, START, University of Maryland

⁵⁸ The World Bank, International Bank for Reconstruction and Development

⁵⁹ *Ibid.*

population, had access to the Internet, which accounts for approximately 976,300 citizens.⁶⁰ Based on data collected from the World Bank, since 2000 the average annual growth in accessibility to the Internet in Chad was $y = 0.0031x - 6.1448$ with a coefficient of determination $r^2 = 0.8279$.

FIGURE 5: Access to Internet in Chad (% of Population)⁶¹



With such a small percentage of the Chadian population being Internet users, the overall importance of digital platforms may be negligible. Regardless, the Chadian government still uses the Internet to leverage its corruption against the population. In both 2016 and 2018, Chad experienced Internet shutdowns that prevented users from accessing even basic websites. First, in 2016, the government shutdown the Internet for eight months as a result of disputed presidential election results.⁶² Two years later, in 2018, President Idriss Deby ordered a social media blackout after refusing to restore term

⁶⁰ The World Bank, International Bank for Reconstruction and Development

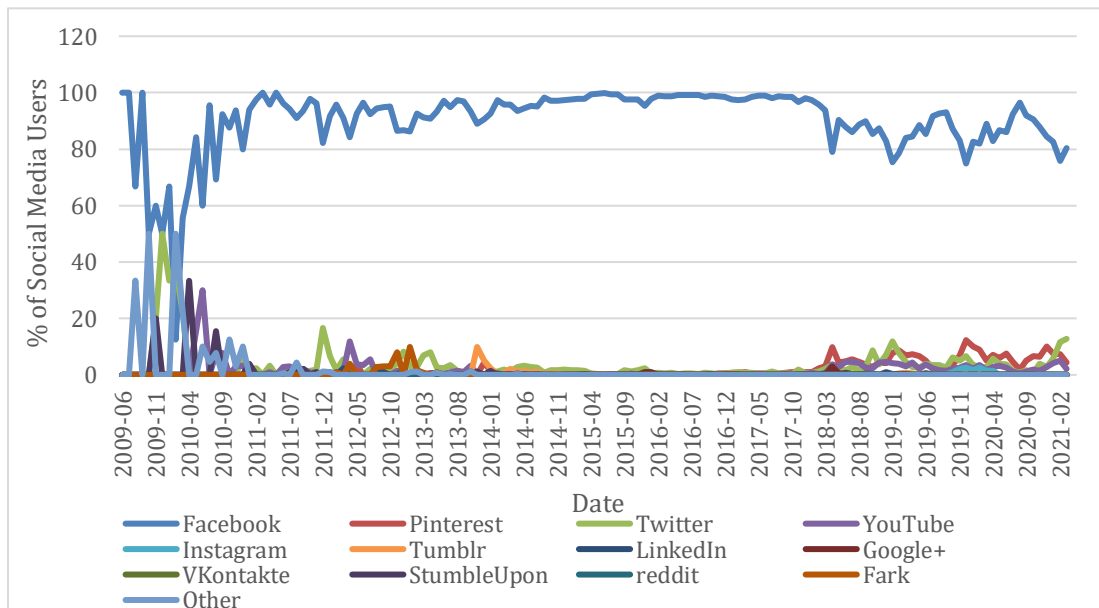
⁶¹ The World Bank, World Development Indicators

⁶² Aanu Adeoye, “Chadians Feel ‘Anger, Revolt’ as They Struggle Without Internet for One Year” CNN Africa.

limits and proposing a reform measure that would allow him to stay in power until 2033.⁶³

Optimistically, there is a small societal push to incorporate women and girls in the impending Internet revolution, challenging the widely accepted traditional Chadian cultural gender roles. Recently, a small emergence of tech jobs and coding classes in N’Djamena has appeared because of the younger generation, especially women, studying abroad and returning with ideas and motivation to expand the online infrastructure of their country.⁶⁴ The Internet is currently primarily used for social media and communication in Chad, with Facebook being the largest stakeholder of users. As Internet technology and infrastructure becomes more available, these innovators hope to expand its use to support the larger commercial sector and economy. The overwhelming disparity in popularity of social media platforms in Chad is shown in the figure below.

FIGURE 6: Popularity of Social Media Platforms in Chad (% of SM Users)⁶⁵



⁶³ Aanu Adeoye, “Chadians Feel ‘Anger, Revolt’ as They Struggle Without Internet for One Year” CNN Africa.

⁶⁴ “Women and Girls are Joining Chad’s Internet Revolution” Al-Jazeera, 2019.

⁶⁵ StatCounter Global Stats

To determine if there is a correlation between the advancement in Internet accessibility and occurrences of terrorism in Chad, both growth rates must be compared. Using the Pearson correlation coefficient for the data collected on Chad, $r = 0.306237428$. Based on the correlation scale, there is a **moderate positive relationship** between the increased accessibility to the Internet in Chad, and the frequency of terrorist attacks that have taken place in country since 2000.

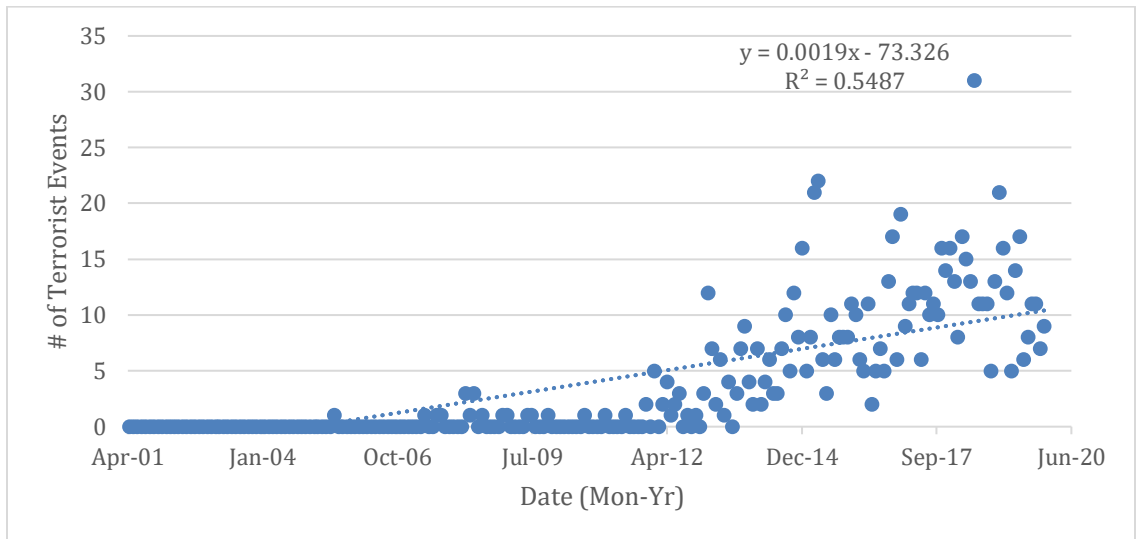
Mali

Mali is a Western African country with a relatively unstable political history over the past two decades, mostly involving tension with ethnic Tuareg populations. After almost twenty years of democratic rule, President Amadou Toure was ousted in a military coup that eventually resulted in a new president being elected.⁶⁶ Due to the coup, Islamic terrorists were able to engrain themselves into Northern Mali for a short period of time before a French-led military intervention reclaimed the northern territory in 2013, followed by a signed peace accord between them in 2015.⁶⁷ Despite this agreement, Mali still experiences an increased amount of terrorist attacks from other rogue terrorist groups that were not involved in the peace accord.

⁶⁶ CIA World Factbook, Mali

⁶⁷ *Ibid.*

FIGURE 7: Occurrences of Terrorism in Mali⁶⁸



Between 2002-2011, the Global Terrorism Index ranks Mali at 43rd, but by 2016, its ranking dropped due to frequent attacks by Al-Qa’ida in the Islamic Maghreb (AQIM) against civilians and members of the United Nations Multidimensional Integrated Stabilization Mission in Mali (MINUSMA).⁶⁹ Starting in 2015, Mali experienced the rise of the Front de Liberation du Macina (FLM), responsible for 12% of attacks, which recruited members of the Fulani ethnic group through the use of ethnoreligious narratives.⁷⁰ In 2017, violence in Mali spiked, with over 141 deaths, most of which were caused by a new group called Jamaat Nusrat al-Islam wal Muslimin (JNIM), which contained fighters from both AQIM and FLM.⁷¹ The following year in 2018, Mali reached its highest level of terrorism activity in history. This was a result of a massive influx of armed assaults performed by the Islamic State of Greater Sahara (ISGS). Mali

⁶⁸ Global Terrorism Database, START, University of Maryland

⁶⁹ Global Terrorism Index, 2016

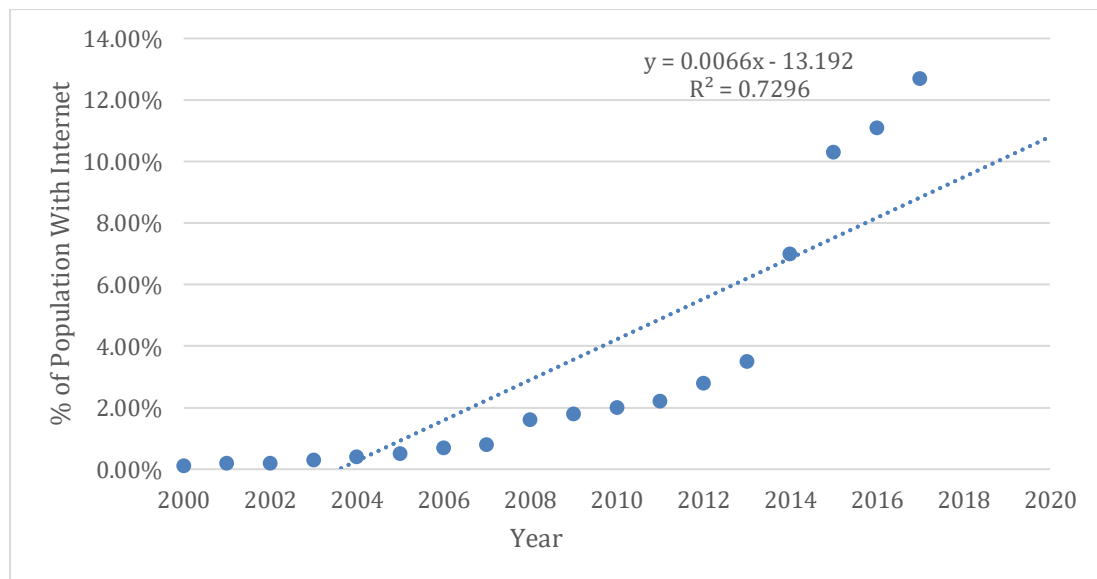
⁷⁰ Global Terrorism Index, 2017

⁷¹ Global Terrorism Index, 2018

continues to be a hotspot for terrorism and was ranked as 11th in 2020.⁷² Since 2000, the average annual increase of terrorism occurrences in Mali was $y = 0.0019x - 73.326$ with a coefficient of determination $r^2 = 0.5487$.

Internet accessibility in Mali has steadily increased over the past two decades. At the start of the century, only .134% of the population, about 14,673 citizens, had steady access to the Internet.⁷³ By 2010, this amount rose to 2% of the total population, which was approximately 301,000 citizens.⁷⁴ Even by 2017, only 12.721% of the population had access to the Internet, which accounts for approximately 2.35 million citizens.⁷⁵ Based on data collected from the World Bank, since 2000 the average annual growth in accessibility to the Internet in Mali was $y = 0.0066x - 13.192$ with a coefficient of determination $r^2 = 0.7296$.

FIGURE 8: Access to Internet in Mali (% of Population)⁷⁶



⁷² Global Terrorism Index, 2020

⁷³ The World Bank, International Bank for Reconstruction and Development

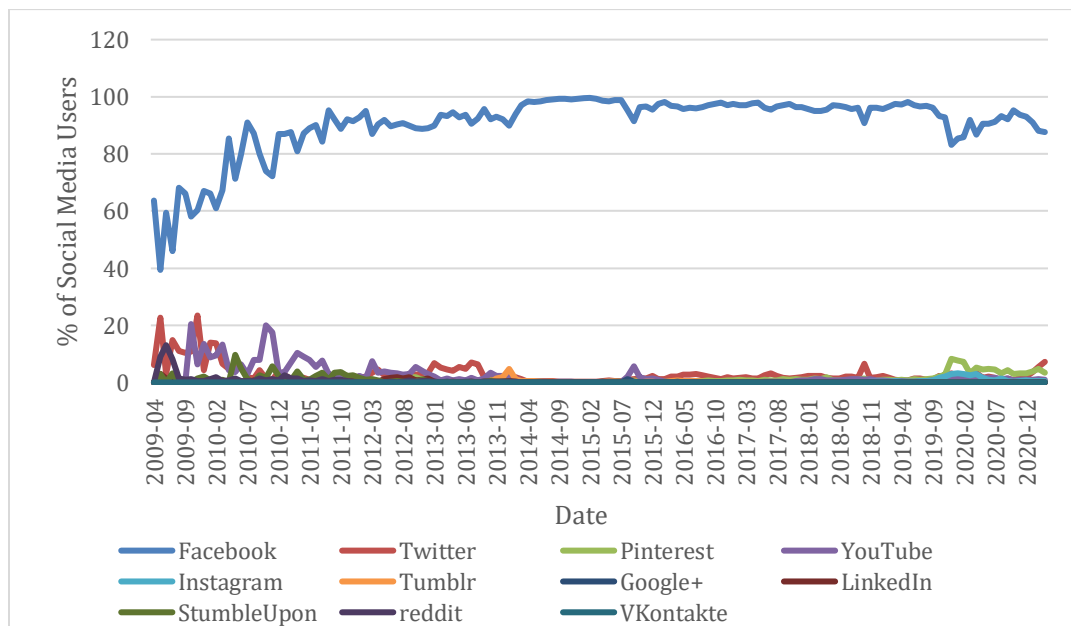
⁷⁴ *Ibid.*

⁷⁵ *Ibid.*

⁷⁶ The World Bank, World Development Indicators

Although the social media footprint in Mali is relatively limited, Facebook still represents an overwhelming majority among other platforms. Due to this monopoly, political social media campaigns have targeted Mali for propaganda purposes. In 2020, Facebook reportedly deleted numerous propaganda accounts promoting French foreign policy and criticizing Russia that targeted Mali user communities.⁷⁷ According to Facebook, the platform is being used by French and Russian networks of influence to discredit each other using these Malian user communities.⁷⁸ Even though access to the Internet is still relatively limited in Mali, foreign governments targeting its users for propaganda show the potential efficacy of influence. As the infrastructure expands, it could be used to spread messages and recruitment from terrorist organizations in the region as well.

FIGURE 9: Popularity of Social Media Platforms in Mali (% of SM Users)⁷⁹



⁷⁷ Quentin Velluet, “France/Russia: Propaganda War on Facebook Targets Mali & the CAR. *The Africa Report*.

⁷⁸ *Ibid.*

⁷⁹ StatCounter Global Stats

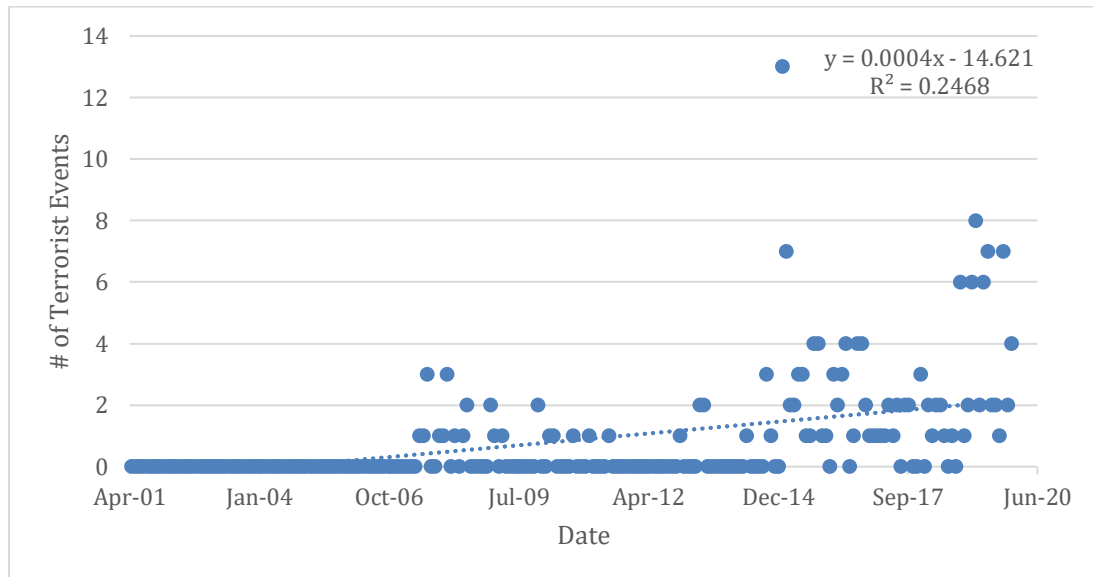
To determine if there is a correlation between the advancement in Internet accessibility and occurrences of terrorism in Mali, both growth rates must be compared. Using the Pearson correlation coefficient for the data collected on Mali, $r = 0.977827947$. Based on the correlation scale, there is a **very strong positive relationship** between the increased accessibility to the Internet in Mali, and the frequency of terrorist attacks that have taken place in country since 2000.

Niger

Niger has long been a developing nation located in Central Africa, plagued by a history of political instability and corruption. Aside from constitutional issues and military coups throughout the early 21st century, Niger remains one of the poorest countries in the world, as well as ranking last in the United Nations Development Program's Human Development Index.⁸⁰ Despite international efforts to assist in its growth, Niger has also suffered from terrorism as a result of harsh climate conditions, and also from the overflow of terrorism from the volatile neighboring countries.

⁸⁰ CIA World Factbook, Niger

FIGURE 10: Occurrences of Terrorism in Niger⁸¹



Between 2002-2011, the Global Terrorism Index ranked Niger as 44th in the world, due to smaller and more localized terrorism activity in hotspots around the country.⁸² Unfortunately in 2015, Niger reported the most serious deterioration, going from relatively low terrorism rates, to being among the top ten sufferers of terrorism.⁸³ Additionally, in 2015, terrorist attacks in Niger had the highest lethality rate in the world, averaging 19.7 people killed per attack.⁸⁴ More recently, much of the terrorism activity in Niger is focused around the Lake Chad Basin region, where Boko Haram is attempting to claim the limited natural resources left in the region due to climate change.⁸⁵ Despite multinational efforts to thwart attacks committed by Boko Haram and Islamic State affiliated groups, Niger remains ranked 24th on the Global Terrorism Index.⁸⁶ Since 2000,

⁸¹ Global Terrorism Database, START, University of Maryland

⁸² Global Terrorism Index, 2002-2011

⁸³ Global Terrorism Index, 2016

⁸⁴ *Ibid.*

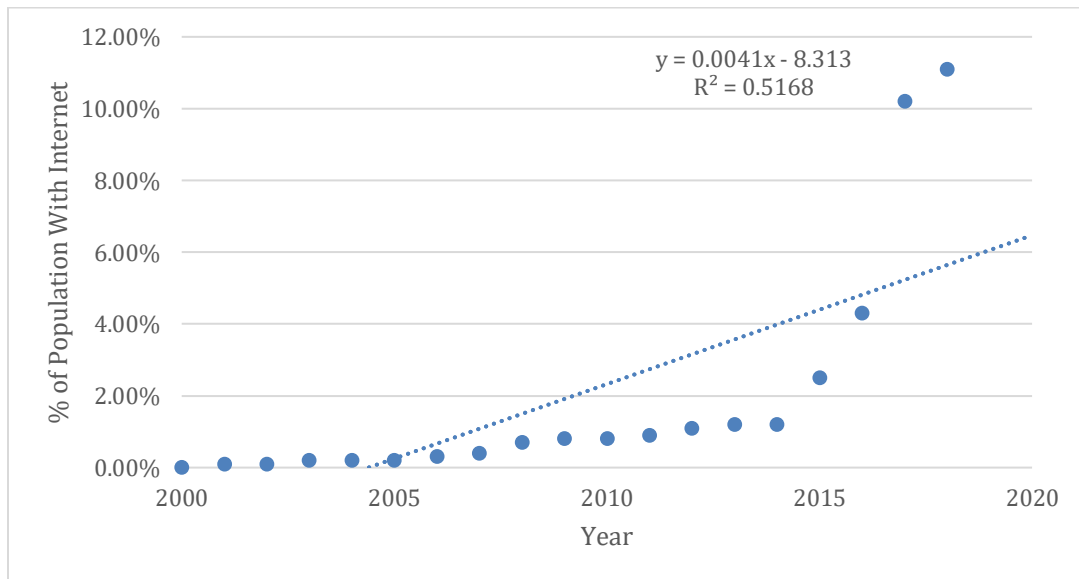
⁸⁵ Global Terrorism Index, 2020

⁸⁶ *Ibid.*

the average annual increase of terrorism occurrences in Niger was $y = 0.0004x - 14.621$ with a coefficient of determination $r^2 = 0.2468$.

Internet accessibility in Niger has slowly increased over the past two decades. At the start of the century, only .036% of the population, about 4,078 citizens, had steady access to the Internet.⁸⁷ By 2010, this amount only increased to .83% of the total population, which was approximately 136,618 citizens.⁸⁸ Even by 2017, only 10.224% of the population had access to the Internet, which accounts for approximately 2.2 million citizens.⁸⁹ Based on data collected from the World Bank, since 2000 the average annual growth in accessibility to the Internet in Niger was $y = 0.0041x - 8.313$ with a coefficient of determination $r^2 = 0.5168$.

FIGURE 11: Access to Internet in Niger (% of Population)⁹⁰



With such a small percentage of Internet users in Niger, the government has used it as a weapon for power and corruption. With the most recent presidential election,

⁸⁷ The World Bank, International Bank for Reconstruction and Development

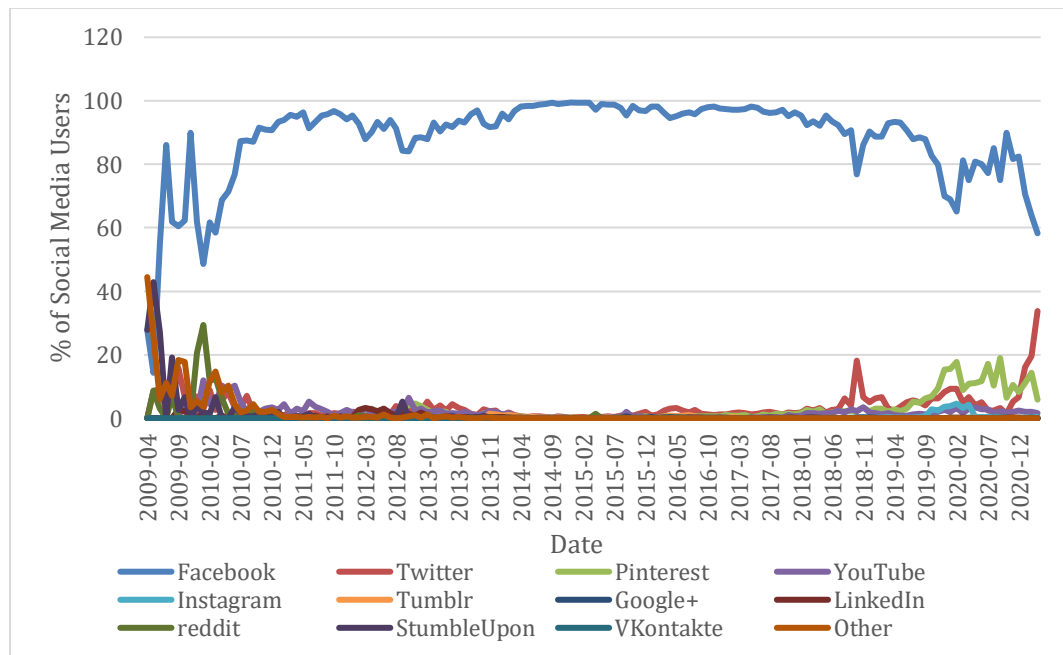
⁸⁸ *Ibid.*

⁸⁹ *Ibid.*

⁹⁰ The World Bank, World Development Indicators

Internet blackouts were implemented in many parts of the country, including the capital, Niamey, as a response to violent protests broke out after the National Independent Electoral Commission (CENI) declared Mohammad Bazoum the winner.⁹¹ Despite extensive international support through being a member of the UN Security Council and a member of the Africa Union and the Economy Community of West Africa States, there is no external support for the restoration of Internet accessibility.⁹² With the majority of social media users in Niger using Facebook as their preferred platform, turning off the Internet is also cutting off the population’s communication to the outside world and any external influence.

FIGURE 12: Popularity of Social Media Platforms in Niger (% of SM Users)⁹³



To determine if there is a correlation between the advancement in Internet accessibility and occurrences of terrorism in Niger, both growth rates must be compared.

⁹¹ Jonathan Pedneault, “Niger’s Fragile Democracy At Risk After Election”, Human Rights Watch.

⁹² *Ibid.*

⁹³ StatCounter Global Stats

Using the Pearson correlation coefficient for the data collected on Niger, $r = 0.518619104$. Based on the correlation scale, there is a **strong positive relationship** between the increased accessibility to the Internet in Niger, and the frequency of terrorist attacks that have taken place in country since 2000.

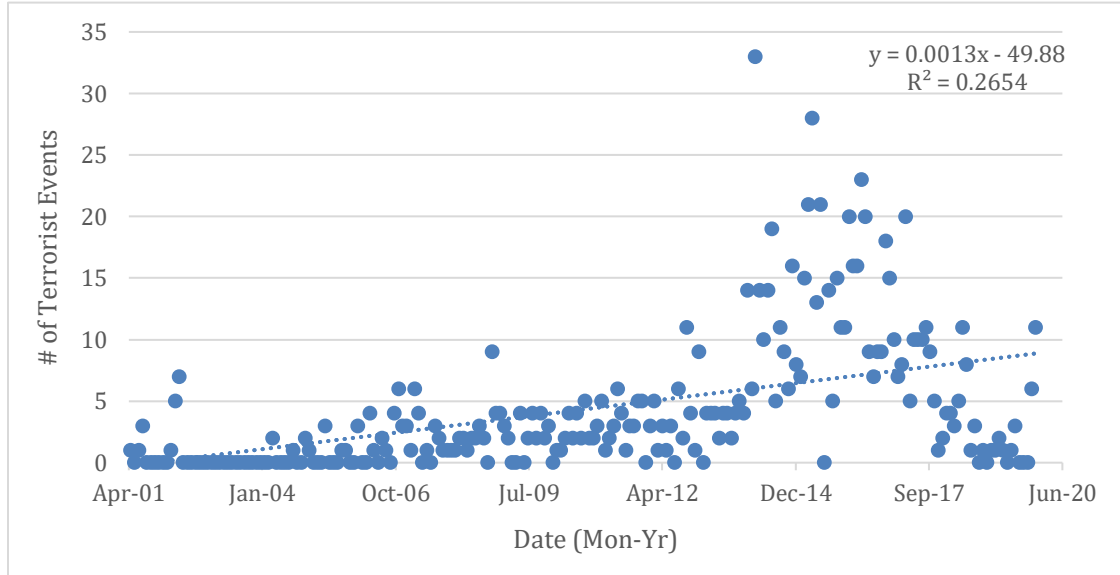
Sudan

Sudan has a lengthy history of violence, corruption, and civil war in Northern Africa. Conflicts such as the Darfur Genocide displaced millions of Sudanese citizens and resulted in hundreds of thousands of civilian deaths. Most notably, the violence resulted in the North/South Comprehensive Peace Agreement (CPA) of 2006, which ended with a referendum of independence for Southern Sudan in 2011.⁹⁴ As of 2019, Sudan is governed by their Sovereignty Council, which is a joint civilian-military-executive body that operates as the presiding rule.⁹⁵

⁹⁴ CIA World Factbook, Sudan

⁹⁵ *Ibid.*

FIGURE 13: Occurrences of Terrorism in Sudan⁹⁶



After the split of Sudan and South Sudan, each faced numerous challenges of terrorism relative to their demographic populations. South Sudan suffered from the rise of the Lord’s Resistance Army (LRA), while Sudan more recently has struggled with the Sudan People’s Liberation Movement in Opposition (SPLM-IO), who as of 2014 has been responsible for the fifth highest number of fatalities over the past decade.⁹⁷ As of 2020, Sudan is considered an At-Risk country by the United Nations Development Program (UNDP), and is considered to be suffering from “high institutional and social fragility”.⁹⁸ Since 2000, the average annual increase of terrorism occurrences in Sudan was $y = 0.0013x - 49.88$ with a coefficient of determination $r^2 = 0.2654$.

Internet accessibility in Sudan has steadily increased over the past two decades. At the start of the century, only .026% of the population, about 7,092 citizens, had steady

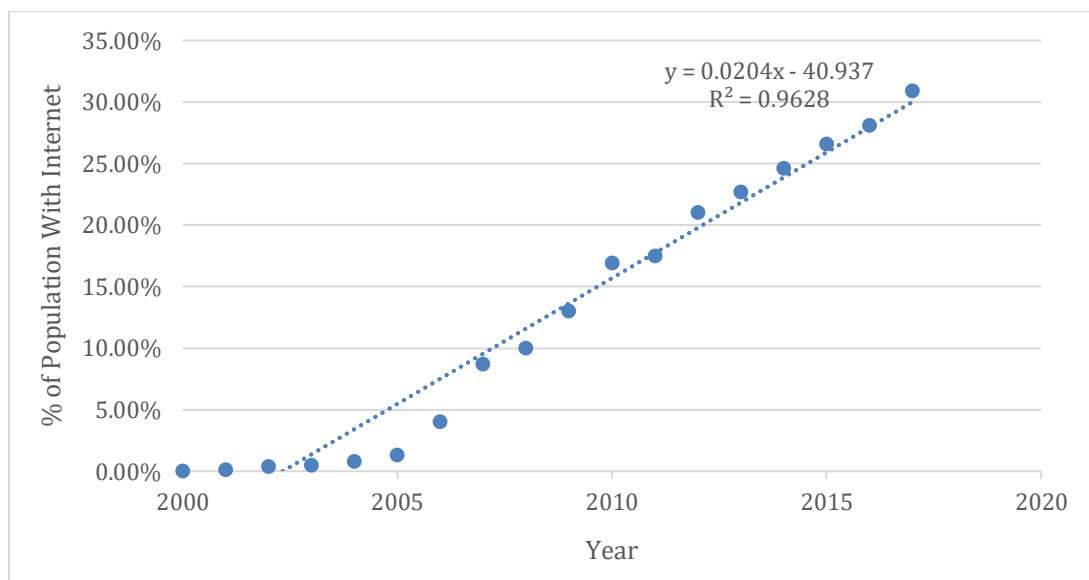
⁹⁶ Global Terrorism Database, START, University of Maryland

⁹⁷ Global Terrorism Index, 2017

⁹⁸ Global Terrorism Index, 2020

access to the Internet.⁹⁹ By 2010, this amount rose to 16.7% of the total population, which was approximately 5.77 million citizens.¹⁰⁰ Even by 2017, only 30.87% of the population had access to the Internet, which accounts for approximately 12.6 million citizens.¹⁰¹ Based on data collected from the World Bank, since 2000 the average annual growth in accessibility to the Internet in Sudan was $y = 0.0204x - 40.937$ with a coefficient of determination $r^2 = 0.9628$.

FIGURE 14: Access to Internet in Sudan (% of Population)¹⁰²



With a third of Sudan’s population having access to the Internet, there is an increased reliance on the digital footprint. The Sudanese government has used this as a tool to counter prodemocracy protesters in recent years. Most recently, in 2019 as a result of massive protests in Khartoum demanding freedom from their autocratic rule and the initiation of a democratic election, the government ordered the internet service providers

⁹⁹ The World Bank, International Bank for Reconstruction and Development

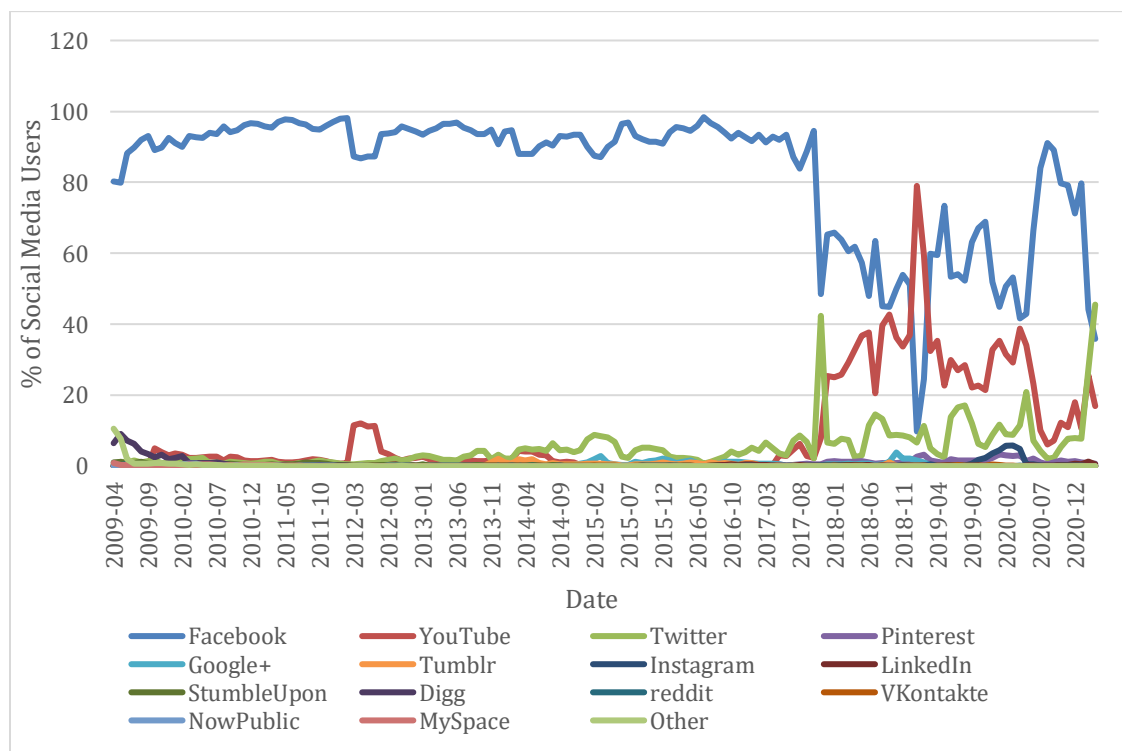
¹⁰⁰ *Ibid.*

¹⁰¹ *Ibid.*

¹⁰² The World Bank, World Development Indicators

in country to block access to social media and disable the Internet nationwide.¹⁰³ Sudan is currently showing a trend of increased social media platform usage, which could make it more challenging in the future to track the anti-government sentiments it is attempting to inhibit. Up until 2017, Facebook was the predominant platform for social media users in Sudan, but since 2018 many other platforms such as YouTube, Twitter, and Instagram have increased significantly.

FIGURE 15: Popularity of Social Media Platforms in Sudan (% of SM Users)¹⁰⁴



To determine if there is a correlation between the advancement in Internet accessibility and occurrences of terrorism in Sudan, both growth rates must be compared. Using the Pearson correlation coefficient for the data collected on Sudan, $r = 0.827043$. Based on the correlation scale, there is a **very strong positive relationship** between the

¹⁰³ Steven Feldstein, “To End Mass Protests, Sudan Has Cut Off Internet Access Nationwide. Here’s Why.” The Washington Post.

¹⁰⁴ StatCounter Global Stats

increased accessibility to the Internet in Sudan, and the frequency of terrorist attacks that have taken place in country since 2000.

Summary

Each of the five countries in this study presented relatively similar results, with Algeria being the statistical outlier. Despite being geographically close, each country has its own political and social reasons for being targets of terrorist activity. Additionally, on a similar premise, each country is economically different, with varying levels of technological infrastructure and development. Due to these differences, it is difficult to assert that terrorist events in an entire region occur at the same frequencies and for all the same reasons. For example, Algeria has numerous extenuating reasons for a decrease in terrorism over time. In the first decade of the century, Algeria experienced the aftermath of a long and violent civil war, which resulted in years of continued terrorism. These incidences were premeditated and therefore may flaw the statistically correlated findings in this study.

With this considered, the data from Algeria is omitted as a statistical outlier from the calculated cumulative mean correlation. For the remaining Sahel countries sampled, the average correlation was $r = 0.6574319$, which signifies that there is a **strong positive relationship** between the increased accessibility to the Internet in the Sahel region, and the frequency of terrorist attacks that have taken place in the region since 2000. Further research exploring qualitative variables will help strengthen and expand the scope of this research.

DISCUSSION

Apart from Algeria, the sampled countries showed relatively consistent results for the correlation between increased Internet accessibility and frequency of terrorist incidents per year. Individually, Chad, Mali, Niger, and Sudan all have experienced a generally increased amount of terrorist over the past twenty years, albeit in different frequencies. The rates in which the Internet has become available to each country's population also follow a similar trend. Based on these statistics, each of these countries individually maintained some degree of a positive relationship between the two variables. Conversely, Algeria showed a negative relationship between these two variables. Because not all countries share the same social, political, and economic struggles, drawing comparisons between different nations, even within the same region may prove difficult in some cases. By taking the average correlations from the four countries studied, it can be inferred that there is a strong positive relationship between the two variables in the Sahel region over the past twenty years.

Despite the findings in this study, there is always a margin of error and many other intangible variables that can either positively or negatively affect a country's circumstances. Additionally, just because it was determined that there was correlation between the two variables, does not automatically mean that causation exists as well. Terrorism has numerous causes and methods of spreading. Although previous research confirms that extremists successfully utilize social media to recruit and spread propaganda to much wider audiences around the world, it may not be a predominant or fundamental cause of the increased terrorism activity for the countries in this study; more information is needed to draw definitive conclusions.

Nevertheless, a few conclusions can be drawn about the importance of the Internet in the Sahel region of Africa. The results of this study suggest that on average, the frequencies of terrorist activity occur at a similarly increasing rate as the increase of accessibility to the Internet. This means that the increased Internet accessibility *may* be a contributing factor for the increased average frequency of terrorist activity in the Sahel. As Internet accessibility expands to a wider percent of the population in the region, there may also be an equally increased amount of terrorist activity in the same period.

The results of this study are important because they have real life implications for the safety and security of those in the Sahel region. The international community helps provide aid to enhance the livelihood of populations that are plagued by poverty and humanitarian issues. This includes aid for economic development, military training and supplies, and expansion of critical infrastructure (to include the Internet). With recent modern advancements in satellite Internet technology, there may be an exponential growth in accessibility to the Internet in the near future, especially in rural developing regions. Starlink, a subsidiary of American company SpaceX, has launched over 1000 broadband satellites capable of providing high speed internet to users in rural and lesser populated regions of the world, with the hope of “continuing expansion to near-global coverage of the populated world in 2021.”¹⁰⁵ With the promising outlook of increased Internet Access, the correlation between access and terrorist activity should still be considered in these developments.

Based on the results of this study, international security professionals should be aware of the potential for increased terrorist activity in regions that experience significant

¹⁰⁵ Luciano Cesta, “SpaceX’s Starlink May Help Bring Internet to Rural Areas.” Boston University News Service.

growth in online connectivity. In 2011, the United Kingdom initiated its updated counterterrorism strategy, CONTEST, due to the Internet being “firmly established as a key medium of the distribution of propaganda, radicalization of sympathizers, and preparation of attacks”.¹⁰⁶ CONTEST seeks to counter the evolving online techniques before they sprout into actionable plans or impending attacks inside the United Kingdom.

According to the State Department and U.S. Agency for International Development (USAID), Congress has granted the Department of Defense the ability to provide foreign military aid under the “global train and equip” authority, which authorizes the DoD to “provide training and equipment to foreign military and internal security forces to build their capacity to counter terrorism...and military intelligence”.¹⁰⁷ The Secretary of Defense bases the type and amount of aid based on requests of foreign military leaders, as well as the threat assessments from the intelligence community. Between fiscal years 2017-2021, most of the U.S. assistance to Sub-Saharan Africa went to Disaster Assistance (DA) and Global Health Programs (GHP), with much smaller amounts going towards International Military Education and Training (IMET) and Nonproliferation, Anti-terrorism, Demining, and Related Programs (NADR).¹⁰⁸ Little to none of the foreign military funds were spent on countering the emerging threat of online extremism.

Even though the calculations in this study are based on the average trend lines of growth for both variables, there is still a degree of uncertainty with the data. As stated previously, just because there is a correlation between the increased Internet accessibility

¹⁰⁶ CONTEST, The United Kingdom’s Strategy for Countering Terrorism

¹⁰⁷ “U.S. Assistance to Sub-Saharan Africa: An Overview” Congressional Research Service, 2020

¹⁰⁸ “U.S. Assistance to Sub-Saharan Africa: An Overview” Congressional Research Service, 2020

and terrorism, does not mean that there is direct causation. This study was limited by the availability of qualitative data accounting for the actual impact that the Internet played in the planning and execution of the terrorist attacks counted in this study. Much of this qualitative data exists through government investigation and in court documents, many of which are still classified. Gaining insight into individual attacks and how strongly the role of the Internet played would help strengthen the argument for causation.

Based on the previous research on the topic, it is clear that extremists are increasingly using social media to reach further audiences for their propaganda and recruitment efforts around the world. With the Sahel region of Africa being a currently developing area that still experiences governmental corruption, its citizens remain prime candidates for recruitment into extremism, and thus influenced to partake in terrorist activity. With broadband technology improving, such as Starlink, it is also likely that access to the Internet in rural and developing areas will exponentially increase in the not-so-distant future. In order to counter this emerging threat, the United States should incorporate online counterterrorism training to the susceptible foreign militaries and provide cyber security resources as a part of the NADR and IMET funds each year. Providing this security infrastructure early will help the security forces of the Sahel countries to identify and thwart online extremist threats as they become prevalent in the coming years.

CONCLUSION

This study tested the hypothesis that there is a statistically significant relationship between the increased use and accessibility of the Internet in the Sahel region, and the rate in occurrences of terrorist attacks within the same timeframe. The findings of this study showed that for four of the five Sahel countries analyzed, there was a moderate to very strong positive relationship between their accessibility to the Internet, and their frequency of terrorist incidents. One of the five Sahel countries, Algeria, showed a very strong negative relationship between its accessibility to the Internet, and its frequency of terrorist incidents. With Algeria's results omitted, the average of all five countries representing the Sahel showed that there might be a strong positive correlation between the two variables in the region. This study was purely quantitative, and thus did not consider qualitative data in the analysis, which limits the ability to categorize the findings.

Future research on the topic should include qualitative data and interviews with those involved in online extremism in the region, which would provide insight into how much of the terrorism data might be directly tied to the Internet. Regardless, this study is significant because it identifies a potential catalyst for an increase in future terrorist activity in specific areas around the world. Policymakers could use the findings of this study as evidence to support an effort to implement cyber and online counterterrorism strategies in US foreign military aid to developing nations. Further studies acknowledging any causation through qualitative methods should also supplement this study as evidence to promote these policies. As the Internet becomes more widespread, terrorists and extremists will utilize it as an access tool to reach previously unreachable

and vulnerable populations. If these countries are prepared to counter terrorist efforts online as their populations gain more access to the Internet, they stand a better chance at preventing the spread and growth of terrorist ideology within their borders.

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Joseph W. Coulombre was born on March 1, 1993 in Boston, Massachusetts. Joseph graduated from The Ohio State University in Columbus, OH with a Bachelor of Arts in 2015. As an enlisted soldier in the United States Army, Joseph attended the Defense Language Institute, Foreign Language Center and received an Associate of Arts for Modern Standard Arabic in 2017. In 2018, Joseph was admitted and enrolled in the Global Security Studies program at Johns Hopkins University, where he will be graduating with a Master of Arts in May 2021.