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TERRORIST GROUP BRANDS: UNDERSTANDING TERRORIST GROUP STRATEGIES THROUGH MEASURING BRAND AWARENESS ON SOCIAL MEDIA

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THESIS

TERRORIST GROUP BRANDS: UNDERSTANDING TERRORIST GROUP STRATEGIES THROUGH MEASURING BRAND AWARENESS ON SOCIAL MEDIA

by

Murad Z. Altarawneh

December 2022

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13. ABSTRACT (maximum 200 words)

Terrorist groups such as the Islamic State adopted commercial marketing principles and effectively communicated with the targeted audience through social media to enhance operational achievements on the ground. This thesis investigates the role of effective brand awareness management in achieving terrorist group aims. The researcher seeks to quantify the Islamic State's brand awareness among the populations in Syria and Iraq by measuring references to the terrorist group among these populations in the content appearing on the social media platform Twitter, during the period of August 1, 2013, through July 31, 2014. This thesis contributes to our understanding of the mechanisms utilized by armed actors by providing an analysis of the conditions of success of Islamic State propaganda within the areas under its control. Such knowledge can help direct more attention to targeting communication links with targeted populations. The results show that Islamic State brand awareness was higher in areas with more developed communication infrastructure, lower population density, and higher levels of historical violence. The results of this thesis further confirm the hypothesis that terrorist groups can increase the population's awareness of their brand through violence as a medium of communication with targeted populations.

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TERRORIST GROUP BRANDS: UNDERSTANDING TERRORIST GROUP STRATEGIES THROUGH MEASURING BRAND AWARENESS ON SOCIAL MEDIA

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Submitted in partial fulfillment of the
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ABSTRACT

Terrorist groups such as the Islamic State adopted commercial marketing principles and effectively communicated with the targeted audience through social media to enhance operational achievements on the ground. This thesis investigates the role of effective brand awareness management in achieving terrorist group aims. The researcher seeks to quantify the Islamic State's brand awareness among the populations in Syria and Iraq by measuring references to the terrorist group among these populations in the content appearing on the social media platform Twitter, during the period of August 1, 2013, through July 31, 2014. This thesis contributes to our understanding of the mechanisms utilized by armed actors by providing an analysis of the conditions of success of Islamic State propaganda within the areas under its control. Such knowledge can help direct more attention to targeting communication links with targeted populations. The results show that Islamic State brand awareness was higher in areas with more developed communication infrastructure, lower population density, and higher levels of historical violence. The results of this thesis further confirm the hypothesis that terrorist groups can increase the population's awareness of their brand through violence as a medium of communication with targeted populations.

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LIST OF ACRONYMS AND ABBREVIATIONS

AIC	Akaike's Information Criteria
DMSP	Defense Meteorological Satellite Program
EPR	Ethnic Power Relations
GDPPC	Gross Domestic Product Per Capita
GED	georeferenced event dataset
GeoEPR	Geo-referencing Ethnic Power Relations
GPS	Global Positioning System
GPW	Gridded Population of the World
GRUMPv1	Global Rural-Urban Mapping Project, Version 1
NPS	Naval Postgraduate School
OLS	Operational Line-Scan System
UCDP	Uppsala Conflict Data Program

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EXECUTIVE SUMMARY

Terrorist groups such as the Islamic State adopted commercial marketing principles and effectively communicated with the targeted audience through social media to enhance operational achievements on the ground. This thesis investigates the role of effective brand awareness management in achieving terrorist group aims by trying to answer the research question of when and where we see higher rates of social media discourse referencing the Islamic State in Syria and Iraq. The researcher seeks to quantify the Islamic State's brand awareness among the populations in Syria and Iraq by measuring references to the terrorist group among these populations in the content appearing on the social media platform Twitter, during the period of August 1, 2013, through July 31, 2014. This thesis contributes to our understanding of the mechanisms utilized by armed actors by providing an analysis of the conditions of success of Islamic State propaganda within the areas under its control. Such knowledge can help direct more attention to targeting communication links with targeted populations. In the case of the Islamic State's effectiveness in brand awareness management in Syria and Iraq, this success laid the roots for physical successes on the ground in these states.

This thesis examines the influence of independent variables on the monthly Twitter content referencing the Islamic State through using linear regression models. The statistical analysis is based on a spatial-temporal approach. The researcher created a standardized grid cell unit of spatial analysis and used the period of one calendar month as a temporal unit of analysis to measure the correlation between the variables throughout a year-long analysis period.

The findings:

- Discourse referencing the Islamic state was higher in areas with smaller population densities.

- The independent variable of lagged death count is the strongest predictor of the discourse referencing the Islamic State.

- Discourse referencing the Islamic state was higher in areas further in the distance to violence locations that occurred during the same month.

- Discourse referencing the Islamic state was higher in areas closer in the distance to locations where historical violence occurred.

- Discourse referencing the Islamic State was higher in areas where the state capacity is higher.

The results of this thesis further confirm the hypothesis that terrorist groups can increase the population's awareness of their brand through violence as a medium of communication with targeted populations. In addition, the finding validates the idea that terrorist groups' propaganda may have a long-term influence on the targeted audience. This thesis contributed to the effort of bridging the gap in understanding the variables affecting the spread of brand awareness within the areas under the control of terrorist groups or threatened by them.

The Islamic State's success provided an interesting model that could be reproduced by other existing and potential future terrorist groups. Investigating those techniques, coupled with understanding the environment and variables that can affect the result of applying those techniques, is an essential step in helping to reduce the effectiveness of terrorist groups' propaganda.

ACKNOWLEDGMENTS

To my father and mother for their endless love, support, and hope in me. To the woman who is more than a wife, the wise woman who tolerated the toughest days with a smile on the face, this thesis is yours.

To Dr. Camber Warren, for his exceptional patience, support, and dedication to help his students. Thank you for being such a great support.

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I. INTRODUCTION

The Islamic State in Iraq and Syria is one of the terrorist groups most researched by scholars to understand the reasons behind its global success.[1] The Islamic State became a strong military and political player in the Middle East during the years 2013 and 2014. The group defeated the regular armies of Iraq and Syria within a relatively short period and captured large cities such as Mosul in Iraq, demonstrating the growing strength, threat, and capabilities of the terrorist group at that time. This success resulted in increasing awareness about the Islamic State's brand. While previous studies have focused on analyzing the Islamic State's brand at the international level, mainly due to the active operational role played by foreign fighters,[2] this thesis focuses on understanding the Islamic State's brand awareness among the populations in Syria and Iraq. This thesis seeks to investigate the role of effectiveness in managing brand awareness, particularly among the populations in Syria and Iraq, as these states suffered the most from the success of the Islamic State in achieving their territorial conquests.

This thesis quantifies the Islamic State's brand awareness among the populations in Syria and Iraq by measuring references to the terrorist group among these populations in the content appearing on the social media platform Twitter during the period of August 1, 2013, through July 31, 2014, as this period witnessed the emergence of the Islamic State as a regional terrorist threat. This methodology analyzes how many times the different versions of the brand appeared on Twitter and geolocates the aggregated numbers within standardized grid cells across each state. The findings shed light on the Islamic State's

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[1] Andrea Beccaro, "Modern Irregular Warfare: The ISIS Case Study," *Small Wars & Insurgencies* 29, no. 2 (2018): 207–28, https://doi.org/10.1080/09592318.2018.1433469; Ahmed S. Hashim, "The Islamic State's Way of War in Iraq and Syria," *Perspectives on Terrorism* 13, no. 1 (2019): 22–31.

[2] Charlie Winter, "Apocalypse, Later: A Longitudinal Study of the Islamic State Brand," Critical Studies in Media Communication 35, no. 1 (January 2018): 103–21, https://doi.org/10.1080/15295036.2017.1393094; Jad Melki and May Jabado, "Mediated Public Diplomacy of the Islamic State in Iraq and Syria: The Synergistic Use of Terrorism, Social Media and Branding," *Media and Communication* 4, no. 2 (May 4, 2016): 92–103, https://doi.org/10.17645/mac.v4i2.432; Christina Schori Liang. Cyber Jihad: Understanding and Countering Islamic State Propaganda. GCSP Policy Paper 2015/2 (Geneva: Geneva Centre for Security Policy), 2015. https://makhaterltakfir.com/File/Article/Cyber%20Jihad%20Understanding%20and%20Countering%20Islamic%20State.pdf.12.

techniques of managing its brand within Syria and Iraq by highlighting the role of manipulating its violent image to signal the strength of the terrorist group, allowing it to gain more attention from the population. This thesis also examines the role of the history of violence in shaping the population's awareness of the Islamic State's brand. Interesting findings present the difference between the effect of distance to historical violent events where violence occurred prior to the offensives by the Islamic State during the period of January 1, 2010, to December 31, 2012, and the effect of distance to current violent events that occurred in the same calendar month on Islamic State brand awareness within Syria and Iraq. The findings indicate that populations in areas closer to violence that occurred in the same calendar month generated lower levels of discourse referencing the Islamic State on the social media platform Twitter. On the contrary, being closer to locations that witnessed historical violence generated higher levels of discourse on Twitter referencing the Islamic State.

This thesis also examines the effect of different elements of state capacity on brand awareness variation across territories within Syria and Iraq. Examining state capacity to provide infrastructure within its borders shows how the availability of infrastructure affects the level of control the state practices over the population, territory, and its ability to collect taxes. Meanwhile, the state's capacity to provide this infrastructure also critically affects modern communication applications. Social media serves as a modern communication medium for spreading the propaganda of terrorist groups. The variables of urbanization, cell tower count, and night light measured the availability of infrastructure enabling easy access to social media; those variables were found to be positively correlated with a higher level of discourse on Twitter referencing the Islamic State. This thesis also tested the impact of total population density on the brand's spread. The evidence shows higher levels of brand awareness in areas with lower population density.

The results of this thesis further confirm the hypothesis that terrorist groups can increase the population's awareness of their brand through violence as a medium of communication with the targeted population. This thesis investigates the importance of communication in helping modern terrorist groups achieve their objectives through spreading their propaganda. Terrorist groups such as the Islamic State adopted commercial

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marketing principles and effectively communicated with their targeted audiences. The importance of understanding the role of the Islamic State's communication effectiveness in its success emerges from the need to understand the conditions of propaganda success to be better able to defeat it and, thereby, decisively counter such groups through interrupting or optimally breaking their communication links with targeted populations, disrupting an essential strength utilized by contemporary armed actors.

This thesis seeks to answer the question of when and where we see higher rates of social media discourse referencing the Islamic State in Syria and Iraq. Chapter II presents a review of the current literature, focusing on the discussion of brand awareness, terrorist groups brands, state capacity, and social media. Chapter III presents my core hypotheses that focus on testing three main factors suspected to influence the rates of social discourse referencing the Islamic state within Syria and Iraq. Attention is directed at understanding the effect of population density, history of violence, and state capacity on the level of discourse on social media referencing the Islamic State. Chapter IV discusses the data sources utilized and methods of analysis before turning to the results of my statistical models. Chapter V details ideas for future research to build on the findings outlined in Chapter VI.

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II. LITERATURE REVIEW

In order to explore the dynamics of the brand awareness of terrorist groups, the following background and literature review focuses on brand awareness, how terrorist groups use brands, the role of state capacity in brand awareness, and finally the understanding of social media as a major field for terrorist groups' brands.

A. BRAND AWARENESS

Branding as a concept is not new as it has had an organizational function since the mid-nineteenth century.[3] Naomi Klein brought academics' attention to brands through her focus on the role of brands in global marketing.[4] The American Marketing Association defined brand as a "name, term, sign, symbol, or design, or a combination of them intended to identify the goods and services of one seller or group of sellers and to differentiate them from those of competition."[5] This definition highlights the commercial aspects of brand structure. Kevin Keller shows that individuals or corporations can create brands to achieve multiple goals such as providing a means of identifying the product, providing legal protection to the product's competitive features, ensuring the quality of the product to the targeted customers, and providing financial returns.[6] He also explains the benefits of a brand to consumers. Consumers use a brand to identify the authenticity of a product and reduce the risk of purchasing the wrong product or paying a higher price, and the brand also ensures the maker's responsibility for the product quality.[7] Furthermore, he explains that "to brand a product or service it is necessary to give consumers a label for the product (i.e. 'here is how you can identify the product') and to provide meaning for the brand to

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[3] Liz Moor, *The Rise of Brands* (Oxford, UK: Berg, 2007).

[4] Moor. For further information, please see Naomi Klein, *No Logo*, 2009th ed. (Toronto: Vintage Books Canada, 2009).

[5] "AMA Dictionary," American Marketing Association, accessed September 3, 2022, https://web.archive.org/web/20180614171451/https://www.ama.org/resources/Pages/Dictionary.aspx?dLetter=B&dLetter=B.

[6] Kevin Lane Keller, "Understanding Brands, Branding and Brand Equity," *Interactive Marketing* 5, no. 1 (2003): 8, https://doi.org/10.1057/palgrave.im.4340213.

[7] Keller.

consumers (i.e. 'here is what this particular product can do for you and why it is special and different from other brand-name products')."[8]

The active discussion among scholars about the steps of creating a strong brand offers different models for building a strong brand. The majority of brand building models contain at least four sequential steps. First, create a clear identification of the product. Second, ensure a clear meaning of the brand name. Third, evoke the required reaction of the targeted customer to the previous steps. Finally, achieve customers' loyalty to the brand.[9] In order for the brand to achieve the required goals, it must reach the targeted customers. David Aaker explains that the required high level of customer interaction with the brand is conditioned by increasing the chances of the brand reaching those targeted customers. Therefore, it is crucial to keep the customer engaged with the brand for the longest possible time in order to increase and maintain the awareness of the current and future potential customers.[10] Hoyer and Brown argues that the ultimate goal of the brand creator is not only to influence the decision making process of customers when having to pick one product among many available choices, but also it should reach the point of having the customer repeatedly purchasing the same product every time he has to choose.[11] This translates into creating a loyal customer who may spend more money to purchase the preferred brand over other brands that offer the same benefits.[12] In a study done by Ryan Rahinel et al., they conclude that exposure to a brand profoundly influences consumers

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[8] Keller, "Understanding Brands, Branding and Brand Equity," 8.

[9] Jerry S. Wilson and Ira Blumenthal, *Managing Brand You: 7 Steps to Creating Your Most Successful Self* (New York: AMACOM Div American Mgmt Assn, 2008); Nigel Hollis, *The Global Brand: How to Create and Develop Lasting Brand Value in the World Market* (New York: Macmillan, 2008); and Kevin Lane Keller, *Building Customer-Based Brand Equity: A Blueprint for Creating Strong Brands* (Cambridge, MA: Marketing Science Institute, 2001).

[10] David A. Aaker, "Measuring Brand Equity across Products and Markets.," *California Management Review* 38, no. 3 (Spring 1996): 102–20; Bradley S. Greaver, "Terrorist Group Brands: Understanding Terrorist Group Strategies through Brand Exposure" (master's thesis, Naval Postgraduate School, 2016), http://hdl.handle.net/10945/49471.

[11] Wayne D. Hoyer and Steven P. Brown, "Effects of Brand Awareness on Choice for a Common, Repeat-Purchase Product," *Journal of Consumer Research* 17, no. 2 (1990): 141–48. For further information see; Allan D. Shocker et al., "Consideration Set Influences on Consumer Decision-Making and Choice: Issues, Models, and Suggestions," *Marketing Letters* 2, no. 3 (1991): 181–97, https://doi.org/10.1007/BF00554125.

[12] Aaker, "Measuring Brand Equity across Products and Markets."

decisions. This influence makes it easier to impact the behavior of the consumers by prompting a "cognitive readiness for decision making" that favors the brand with a previously higher level of exposure.[13]

Higher levels of exposure to the brand contribute to a higher level of brand awareness. Keller refers to brand awareness as "whether consumers can recall or recognize a brand, or simply whether or not consumers know about a brand."[14] Furthermore Aakar states that "awareness reflects the presence of the brand in the customers mind."[15] Due to the importance of brand awareness in revealing a brand's salience as perceived by the consumers, Aaker recognized six different levels of brand awareness: First, recognition where the customer has already heard about the brand. Second, the ability of the customers to recall the brand. Third, top of mind, when the brand name is the first brand recalled among the other brands. Fourth, brand dominance over the other brands as the only brand recalled. Fifth, knowledge about what the brand represents. Finally, having opinion about the recalled brand.[16] As brands vary in their age and types of products or the quality they signal, they also vary in the sensitivity to each one of the six brand levels according to Aaker.[17] In the thesis the researcher will focus on brand recognition as the first level of brand awareness. Aaker simplified the concept of brand recognition by describing it as the

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[13] Ryan Rahinel et al., "Brand Exposure Makes Decisions Easier," in *Advances in Consumer Research*, vol. 43 (Duluth, MN: Association for Consumer Research, 2015), 163–69; For more information about the role of cognition in the decision making please refer to: Andrew R. Walls, Fevzi Okumus, and Youcheng Wang, "Cognition and Affect Interplay: A Framework for the Tourist Vacation Decision-Making Process," *Journal of Travel & Tourism Marketing* 28, no. 5 (2011): 567–82, https://doi.org/10.1080/10548408.2011.588121; and Sri Utami Ady, "The Cognitive and Psychological Bias in Investment Decision-Making Behavior: (Evidence from Indonesian Investor's Behavior)," *Journal of Economics and Behavioral Studies* 10, no. 1 (2018): 86–100, http://repository.unitomo.ac.id/id/eprint/888.

[14] Kevin Lane Keller, *Strategic Branding Management: Building Measuring, and Managing Brand Equity*, 3rd ed. (Upper Saddle River, NJ: Prentice Hall, 2003); Rong Huang and Emine Sarigöllü, "How Brand Awareness Relates to Market Outcome, Brand Equity, and the Marketing Mix," in *Fashion Branding and Consumer Behaviors: Scientific Models*, ed. Tsan-Ming Choi (New York: Springer, 2014), 113–32; Emma Macdonald and Byron Sharp, "Management Perceptions of the Importance of Brand Awareness as an Indication of Advertising Effectiveness," *Marketing Bulletin* 14 (2003): 1–11, https://doi.org/10.1016/S0148-2963(98)00070-8; and Charlene Gerber, Marlize Terblanche-Smit, and Tracey Crommelin, "Brand Recognition in Television Advertising: The Influence of Brand Presence and Brand Introduction," *Acta Commercii* 14, no. 1 (2014): 1–8.

[15] Aaker, "Measuring Brand Equity across Products and Markets," 114.

[16] Aaker, 114–15.

[17] Aaker.

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process of "remembering that there was a past exposure to the brand," Aaker highlights the importance of brand recognition in increasing the brand awareness by elaborating on the positive psychological effect of recognition in shaping the feelings of the customers toward nearly any type of products, reaching the point of giving an advantage to the brand with higher levels of recognition.[18]

B.   TERRORIST GROUPS BRANDS

Defining terrorism has been the subject of debate among academics and also within international organizations such as the United Nations. At the United Nations, the debate emerges from the divergence of national interests and preferences of state members.[19] Meanwhile, academic literature lists more than 200 definitions of terrorism within the different fields of terrorism studies.[20] The definition of terrorism has significant direct consequences for understanding the structure of terrorism and dealing with terrorism.[21] Following Greaver's thesis which examined the branding of Al Qaeda and the Islamic State, this study will use Gordon McCormick's widely used definition of terrorism.[22] McCormick defines terrorism as the "deliberate use of symbolic violence or threat of violence against non-combatants for political purposes."[23] This thesis also follows Greaver in using Philips's definition of terrorist groups. Philip defines such groups as a "subnational political organization that uses terrorism."[24] The lack of clarity and consensus on the definition of terrorism and terrorist groups muddles the debate to the point that some

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[18] David A. Aaker, *Building Strong Brands* (London: Simon & Schuster, Limited, 2012).

[19] Eva Herschinger, "A Battlefield of Meanings: The Struggle for Identity in the UN Debates on a Definition of International Terrorism," *Terrorism and Political Violence* 25, no. 2 (April 2013): 183–201, https://doi.org/10.1080/09546553.2011.652318.

[20] Richard Jackson, "An Argument for Terrorism," *Perspectives on Terrorism* 2, no. 2 (2008): 25–32, https://www.jstor.org/stable/26298330.

[21] Jackson.

[22] Greaver, "Terrorist Group Brands."

[23] Gordon H. McCormick, "Terrorist Decision Making," *Annual Review of Political Science* 6, no. 1 (2003): 474, https://doi.org/10.1146/annurev.polisci.6.121901.085601; Greaver, "Terrorist Group Brands."

[24] Brian J. Phillips, "What Is a Terrorist Group? Conceptual Issues and Empirical Implications," *Terrorism and Political Violence* 27, no. 2 (2015): 231, https://doi.org/10.1080/09546553.2013.800048; Greaver, "Terrorist Group Brands."

literature argues the Islamic State was not a terrorist group in its early stages. Cronin establishes this argument based on the key ideological, organizational, and historical background differences in origin and goals between the Islamic state and its predecessor Al Qaeda, which resembles the modern model of terrorist organizations.[25] For the purpose of this study, the researcher agrees with the general literature categorizing the Islamic State as a terrorist group. As the debate also identifies the difference between terrorist groups and insurgent groups, Greaver notes that the distinction between the two types is less important in the field of studying the groups' brands because both types seek to expand their brand awareness.[26] Following this logic, this research will deal with both types as terrorist groups.

The Islamic State terrorist group's deep understanding of the importance of gaining the population's attention has led to the group utilizing all available communication means to reach different types of targeted populations. As social media has become more prominent in the past decade, the Islamic State has shown remarkable creativity beyond other terrorist groups in packaging and communicating its messages to its targeted population.[27] The massive utilization of social media platforms such as Twitter to communicate the group's messages took place both within the areas under the control of the Islamic State and across the globe. Starting from the idea that terrorist groups use terrorism as a medium to communicate their messages, Karber presented four essential components of this medium: "transmitter (the terrorist), intended recipient (target), message (bombing, ambush) and feedback (reaction of target audience)."[28] For Karber, communicating with the target as an essential component of the communication medium requires having a victim of the terrorism violence (message). Karber further emphasizes

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[25] Audrey Kurth Cronin, "ISIS Is Not a Terrorist Group: Why Counterterrorism Won't Stop the Latest Jihadist Threat," *Foreign Affairs* 94, no. 2 (2015): 87–98, http://www.jstor.org/stable/24483485.

[26] Greaver, "Terrorist Group Brands."

[27] Alberto M. Fernandez, *Here to Stay and Growing: Combating ISIS Propaganda Networks* (Washington, DC: Brookings, Center for Middle East Policy, 2015), https://www.brookings.edu/wp-content/uploads/2016/07/IS-Propaganda_Web_English_v2.pdf.

[28] Phillip A. Karber, "Urban Terrorism: Baseline Data and a Conceptual Framework," *Social Science Quarterly* 52, no. 3 (1971): 528, https://www.jstor.org/stable/42858799.

the idea that the victim and the targeted population are different from each other.[29] Thornton highlights that "the principal lesson to be drawn from differentiation between the victims and targets is that, in appraising a terroristic act, one must ask, not only ask 'Who got hit by the bomb?' but also 'What effects is this particular act likely to entail?'"[30]

The public nature of terrorism creates an intended propaganda effect. Martha Crenshaw asserts that creating this effect is the highest goal in some cases.[31] Propaganda may influence the targeted audience in one of the following two ways: instrumental influence, in which the terrorist message instantly affects the target audience, or affective influence, when the messages have a long-term cognitive or emotional influence on the targeted audience.[32] As the targeted population may vary in terms of geographic spread, the range of the influence can also be measured through geographic metrics, as the propaganda might instrumentally affect the near targeted population, or affectively influence the far targeted population. Bockstette also explains that as terrorist groups use violence to communicate their message, they aim to ultimately reshape the identity and political orientation of the targeted population through achieving shorter-term communication goals. Terrorist groups achieve short-term goals through intimidating and coercing the targeted population to enforce acceptance of the legitimacy of the terrorist group's violence.[33] Weimann points out that the perceived legitimacy of the terrorist group's violence originates in the terrorist group's argument that violence is justified as a necessary transitional act against the will of the group to reach the ultimate goal of defeating the common enemy.[34]

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[29] Karber, "Urban Terrorism."

[30] Thomas Perry Thornton, "Terror as a Weapon of Political Agitation," in *Internal War: Problems and Approaches*, ed. Harry Eckstein (New York: Free Press, 2006), 79–80.

[31] Martha Crenshaw, "The Causes of Terrorism," *Comparative Politics* 13, no. 4 (1981): 386, https://doi.org/10.2307/421717.

[32] Karber, "Urban Terrorism."

[33] Carsten Bockstette, *Jihadist Terrorist Use of Strategic Communication Management Techniques* (Garmisch-Partenkirchen, Germany: George C. Marshall Center, 2008), https://www.marshallcenter.org/sites/default/files/files/2019-07/PDF_PUB_OPS_20.pdf.

[34] Gabriel Weimann, *Www.Terror.Net: How Modern Terrorism Uses the Internet* (Washington, DC: United States Institute of Peace, 2004), https://www.usip.org/sites/default/files/sr116.pdf.

Considering all the mobilizational challenges facing terrorist groups, a terrorist group such as the Islamic State must seek to grow the size of the organization by recruiting more people. McCormick explains that the population for recruitment purposes is "divided into three main groups: core supporters of the state, core supporters of the insurgency, and finally, the large middle group."[35] This sizeable middle group is targeted by both terrorist groups and the state to recruit prospective members. McCormick also suggests that terrorist groups manipulate violent images to signal the group's strength and to appear as the potential future winner in the conflict, leading to influencing the behavior of the population by having more people join the terrorist group.[36] What is important to notice is that terrorist groups do not need to convey the actual strength of the group, but rather, "create the impression that it is stronger than it really is."[37] The importance of influencing the perception of the population comes from the fact that members of the most considerable portion of the population, referred to earlier as the "middle group," will choose which side to support based on their perception of the strength of each side.[38] Greaver found that the Islamic State's successful seizure of territory through conducting conventional military operations leading to the capture of population centers, substantially increased the Islamic State's brand awareness.[39]

Terrorist groups can achieve an increase in attention by selecting victims of the terrorist violence who are similar to the broader targeted population.[40] In the case of the Islamic State in Syria and Iraq, this similarity can be based on, but not limited to, religion, ethnicity, tribal affiliation, and sects. The similarity leads people who identify with the

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[35] Gordon H. McCormick and Frank Giordano, "Things Come Together: Symbolic Violence and Guerrilla Mobilisation," *Third World Quarterly* 28, no. 2 (2007): 301, https://doi.org/10.1080/01436590601153705.

[36] McCormick and Giordano, "Things Come Together"; Scott Gerwehr and Kirk Hubbard, "What Is Terrorism," in *Psychology of Terrorism*, ed. Bruce Bongar et al. (New York: Oxford University Press, 2007), 87.

[37] McCormick and Giordano, 318.

[38] McCormick and Giordano.

[39] Greaver, "Terrorist Group Brands."

[40] Jonathan Matusitz, *Symbolism in Terrorism: Motivation, Communication, and Behavior* (Lanham, MD: Rowman & Littlefield, 2014); Greaver, "Terrorist Group Brands," 15.

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same category as the victim to view themselves as potential future victims of the terrorist group.[41] Therefore, it is essential for the terrorist group to maintain the visible performance of violence to signal the strength, growth, threat, and continuity of the terrorist group to the targeted population. McCormick explains that the quantity and quality of the terrorist group violence should present an effective and inclining pattern to make sure that the targeted population stays attentive to the terrorist group.[42] Furthermore, Matusitz highlights the importance of the violence location to reinforce the attention of the targeted population towards the terrorist group's message and to make sure that the targeted population gets the correct meaning of that message.[43]

While discussing the brand management in terrorism, Matusitz emphasizes the utmost importance of brand *recognition* for terrorist groups as one of the elements that make up brand awareness and fundamentally helps build brand's overall awareness.[44] As noted in a recent NPS thesis by Greaver, groups such as Al Qaeda and the Islamic state have devoted much effort to achieving high levels of brand recognition.[45] While managing their brand, terrorist groups are very sensitive about their brand recognition, especially in the early stages because it helps to leverage the reputation and fear of the terrorist group, and increase the loyalty of group members.[46] The variance in the levels of terrorist group brand recognition contribute to the variance in brand awareness levels. In the case of terrorist groups' brands awareness, variance can be observed on the domestic level. This variance can be based on, but not limited to, geography and demographics. Brand awareness also can vary over time in response to changes in political and operational variables. As Simons notes, this variance may affect the organization's ability to achieve

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[41] Boaz Ganor, "Terrorism as a Strategy of Psychological Warfare," *Journal of Aggression, Maltreatment & Trauma* 9, no. 1–2 (2005): 33–43, https://doi.org/10.1300/J146v09n01_03..

[42] McCormick and Giordano, "Things Come Together."

[43] Matusitz, *Symbolism in Terrorism*, 15.

[44] Matusitz, *Symbolism in Terrorism*.

[45] Greaver, "Terrorist Group Brands," 81.

[46] Greg Simons, "Brand ISIS: Interactions of the Tangible and Intangible Environments," *Journal of Political Marketing* 17, no. 4 (2018): 322–53, https://doi.org/10.1080/15377857.2018.1501928.

physical political goals such as establishing or expanding the physical presence of the terrorist group.[47]

C.   STATE CAPACITY

The ability of the state to provide infrastructure across different regions is the subject of academic studies about the role of the state's infrastructural power in the development of regions across the state.[48] The developmental role of the state witnessed expansions in the state's responsibilities to enhance the basic services provided to the population.[49] This subject was discussed within different fields of science, but mainly within the field of political science as part of the literature discussing state capacity. Koren explains that defining state capacity is difficult; however, there is a broad acceptance of two core elements: the state's ability to penetrate societies to achieve different state goals and the state's ability to exercise territorial control within its borders.[50] Michael Mann explains that achieving the infrastructural power of the state is a long-term process, describing it as "the capacity of the state to actually penetrate the civil society, and to implement logistically political decisions throughout the realm."[51] Mann extends the discussion by highlighting the importance of reaching individuals and communities within the political borders of the state to achieve the state's goals of establishing its presence

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[47] Simons.

[48] Peter Evans and Patrick Heller, "Human Development, State Transformation, and the Politics of the Developmental State," in *The Oxford Handbook of Transformations of the State*, ed. Stephan Leibfried et al. (Oxford, UK: Oxford University Press, 2015), 691–713.

[49] Marcelo A. Bohrt, Diana Graizbord, and Patrick Heller, "Toward a Spatial Measure of Twenty-First-Century Developmental State Capacity," *Sociology of Development* 6, no. 2 (2020): 250–74, https://doi.org/10.1525/sod.2020.6.2.250.

[50] Ore Koren and Anoop K. Sarbahi, "State Capacity, Insurgency, and Civil War: A Disaggregated Analysis," *International Studies Quarterly* 62, no. 2 (2018): 274–88, https://doi.org/10.1093/isq/sqx076; Michael Mann, "The Autonomous Power of the State: Its Origins, Mechanisms and Results," *European Journal of Sociology/Archives Européennes de Sociologie* 25, no. 2 (1984): 185–213, https://www.jstor.org/stable/23999270; Jeffrey Herbst, *States and Power in Africa: Comparative Lessons in Authority and Control*, vol. 149 (Princeton University Press, 2014); and Theda Skocpol, "Bringing the State Back in: Strategies of Analysis in Current Research," in *Bringing the State Back In*, ed. Peter B. Evans, Dietrich Rueschemeyer, and Theda Skocpol (Cambridge, UK: Cambridge University Press, 1985), 3–38.

[51] Mann, "The Autonomous Power of the State," 189.

across the political boundaries of the state.[52] Therefore, state presence takes the form of availability of institutions and infrastructures such as telecommunications, transportation, and electricity as a physical reflection of state presence.[53]

A wide range of studies examines the relationship between state capacity strength on the national level and the emergence of different forms of political violence. Crenshaw suggests that strong state capacity promotes terrorism, as the state with a strong level of state capacity becomes a target for external terrorist groups.[54] In contrast to Crenshaw, a wide range of literature suggests that weak state capacity promotes terrorism, as weak control over territory promotes non-state actors to use violence against their opponents, including the state itself.[55] The weaknesses can be attributed to the absence or the failings of multiple state capacity components in addition to state military power weakness. Technological advancements enabled the availability of subnational disaggregated data about state capacity levels across different regions. This disaggregated data allowed a deeper level of analysis to test the effect of subnational variance in state capacity on the emergence of political violence on a subnational level.[56] Koren and Sarbahi suggest that there is a strong impact of variation in state capacity on the distribution of political violence on the subnational level.[57]

Some infrastructure reflecting state presence as a form of state capacity provides the means of accessing and controlling communities across the different regions and also contributes to spreading propaganda for both state and non-state actors. Roads networks are expensive infrastructure and represent a key sign of the state's presence; the high cost

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[52] Mann, "The Autonomous Power of the State."

[53] Mann.

[54] Crenshaw, "The Causes of Terrorism."

[55] Kenneth Ewart Boulding, *Conflict and Defense: A General Theory* (Auckland: Pickle Partners Publishing, 2018), 79; James D. Fearon and David D. Laitin, "Ethnicity, Insurgency, and Civil War," *American Political Science Review* 97, no. 1 (2003): 75–90, https://doi.org/10.1017/S0003055403000534; and Carl Müller-Crepon, Philipp Hunziker, and Lars-Erik Cederman, "Roads to Rule, Roads to Rebel: Relational State Capacity and Conflict in Africa," *Journal of Conflict Resolution* 65, no. 2–3 (2021): 563–90, https://doi.org/10.1177/0022002720963674.

[56] Koren and Sarbahi, "State Capacity, Insurgency, and Civil War: A Disaggregated Analysis."

[57] Koren and Sarbahi.

of creating this infrastructure requires significant state investments. The size of the roads network indicates the state's social and economic perceived importance of the community and the area.[58] Both non-state actors and the state compete for dominance over social control and the public support of the population.[59] Roads networks serve as a critical element in enabling the authority to access the population and practice social control.[60]

Nighttime light distribution is widely used as a proxy to study socioeconomic factors such as population and wealth.[61] Min shows that the presence of nighttime light is positively correlated with the political importance of areas, regardless of the level of urbanization.[62] The state is the exclusive provider of electricity in the majority of developing countries. Electricity availability is reflected in the form of nighttime light. States invest more in areas with high economic importance and significant importance to politically mobilize the population.[63] Electricity is a core prerequisite to operating the modern means of communications and infrastructure.

Communication infrastructure has also been found to be an important component of state capacity. Shapiro and Weidmann studied the effect of the variance in cell phone towers presence across Iraq with the locations of violent events, concluding that there is a negative correlation between the locations of violent events and the geographic spread of

[58] Müller-Crepon, Hunziker, and Cederman, "Roads to Rule, Roads to Rebel."

[59] Isabelle Duyvesteyn and Bart Schuurman, "Public Support and (Counter) Terrorism," in *Routledge Handbook of Terrorism and Counterterrorism*, ed. Andrew Silke (London: Routledge, 2018), 416–24.

[60] Müller-Crepon, Hunziker, and Cederman, "Roads to Rule, Roads to Rebel."

[61] Christopher D. Elvidge et al., "Relation between Satellite Observed Visible-Near Infrared Emissions, Population, Economic Activity and Electric Power Consumption," *International Journal of Remote Sensing* 18, no. 6 (1997): 1373–79, https://doi.org/10.1080/014311697218485; Xi Chen and William D. Nordhaus, "Using Luminosity Data as a Proxy for Economic Statistics," *Proceedings of the National Academy of Sciences* 108, no. 21 (2011): 8589–94, https://doi.org/10.1073/pnas.1017031108; and Nils B. Weidmann and Sebastian Schutte, "Using Night Light Emissions for the Prediction of Local Wealth," *Journal of Peace Research* 54, no. 2 (2017): 125–40, https://doi.org/10.1177/0022343316630359.

[62] Brian Min, *Power and the Vote: Elections and Electricity in the Developing World* (Cambridge, UK: Cambridge University Press, 2015).

[63] Min.

cell phones towers.[64] Warren researched the effect of the diffusion of information and communication technologies. He investigated the difference in the spatial penetration of cellular communications and radio infrastructure, reaching the conclusion that the penetration of social media, which is mainly enabled by cellular devices, positively correlates with the increase in collective violence.[65] Furthermore, communication infrastructure enables social media access for the population, which serves as a medium for interaction between non-state actors and the population inside and outside the areas under their control.

Research shows a positive correlation between the level of urbanization and the level of state capacity.[66] Urban areas are generally characterized by a larger population and also a higher level of state infrastructural power compared to less urbanized areas.[67] While discussing the impact of state capacity and the nature of the terrain on the success of insurgency, Fearon and Laitin argued that the presence of government institutions in urban areas coupled with military and law enforcement capabilities complicates the success of insurgent groups in more urbanized areas.[68] Meanwhile, the presence of communication infrastructure and better means of transportation in urbanized areas provides a wider range of options to spread the message of non-state actors against their opponents, in comparison to the less urbanized areas. Nevertheless, Joerg Le Blanc concluded that there are still

[64] Jacob N. Shapiro and Nils B. Weidmann, "Is the Phone Mightier than the Sword? Cellphones and Insurgent Violence in Iraq," *International Organization* 69, no. 2 (2015): 247–74, https://doi.org/10.1017/S0020818314000423.

[65] 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, https://doi.org/10.1177/0022343314558102, For more information see, Jan H. Pierskalla and Florian M. Hollenbach, "Technology and Collective Action: The Effect of Cell Phone Coverage on Political Violence in Africa," *American Political Science Review* 107, no. 2 (2013): 207–24, https://doi.org/10.1017/s0003055413000075.; Martín Macías-Medellín and Laura H. Atuesta, "Constraints and Military Coordination: How ICTs Shape the Intensity of Rebel Violence," *International Interactions* 47, no. 4 (2021): 692–719, https://doi.org/10.1080/03050629.2021.1898959; and Thomas Zeitzoff, "How Social Media Is Changing Conflict," *Journal of Conflict Resolution* 61, no. 9 (2017): 1970–91, https://doi.org/10.1177/0022002717721392.

[66] Paul Staniland, "Cities on Fire: Social Mobilization, State Policy, and Urban Insurgency," *Comparative Political Studies* 43, no. 12 (2010): 1623–49, https://doi.org/10.1177/0010414010374022.

[67] Anett Hofmann and Guanghua Wan, *Determinants of Urbanization* (Manila: Asian Development Bank (ADB), 2013), http://hdl.handle.net/10419/109461.

[68] Fearon and Laitin, "Ethnicity, Insurgency, and Civil War."

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challenges facing non-state actors in spreading their messages in more urbanized areas, primarily when the non-state actor uses propaganda by the deed. Joerg also explains that miscalculating the amount, target, or type of violence used by the non-state actor to communicate their message might generate negative populace attitudes against the non-state actor and cause loss of support by the public.[69] The prevalence of the use of social media changed the dynamics of reaching terrorist groups' audiences. The reach now is happening at an unprecedented speed and range, requiring a deeper analysis of the effect it has on the spread of the non-state actor message and their brand.

D.   SOCIAL MEDIA

Social media has become an essential part of daily life for increasing numbers of the world population. Social media has significant and influential implications in the majority of people's lives.[70] Individuals and communities in the majority of countries around the world have the ability to employ social media platforms to interact and discuss emerging issues with each other with minimum limits.[71] The empowerment of individuals by enabling the creation of news content on social media reduced the attractiveness of traditional media platforms. This new situation led commercial corporations and even terrorist groups to adopt social media as a communication medium with the targeted audience.[72] The proliferation of social media in the past decade presented a natural communication medium, providing a chance for terrorist groups to amplify the effect of

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[69] Jörg Le Blanc, "The Urban Environment and Its Influences on Insurgent Campaigns," *Terrorism and Political Violence* 25, no. 5 (2013): 798–819, https://doi.org/10.1080/09546553.2012.700656.

[70] Ali Abdallah Alalwan et al., "Social Media in Marketing: A Review and Analysis of the Existing Literature," *Telematics and Informatics* 34, no. 7 (2017): 1177–90, https://doi.org/10.1016/j.tele.2017.05.008.

[71] Jan H. Kietzmann et al., "Social Media? Get Serious! Understanding the Functional Building Blocks of Social Media," *Business Horizons* 54, no. 3 (2011): 241–51, https://doi.org/10.1016/j.bushor.2011.01.005.

[72] Syed Zeeshan Zahoor and Ishtiaq Hussain Qureshi, "Social Media Marketing and Brand Equity: A Literature Review," *IUP Journal of Marketing Management* 16, no. 1 (February 2017): 47–64, EbscoHost.

violent messages and expand their audience.[73] Rogers highlighted the advantages of social media and other internet-based communications in contrast to the limitations of the traditional media. Social media provides easy access to a vast audience, interactivity, a multimedia environment, near real-time flow of information, and limited regulation or control by the governments.[74] Rogers also elaborated on other advantages of social media as a communication medium. The extreme nature of terrorist ideology requires the anonymity of the users spreading this ideology. Those users would prefer keeping their real identity unknown to other people or security agencies in case they are doing things deemed illegal according to different legal jurisdictions.[75] Social media and other internet-based communications offer a high level of anonymity through using fake accounts and other technical means such as using a VPN.[76] Social media users are also able to quickly reestablish other accounts after platforms ban reported ones; this feature helps maintains the connectivity and flow of information.[77]

The combination of the advantages provided by social media and other internet-based communication media made those communication tools the ideal field for terrorist groups' propaganda.[78] A wide range of studies focused on using social media during crises

[73] McCormick and Giordano, "Things Come Together." For more information see, Tamar Mitts, Gregoire Phillips, and Barbara F. Walter, "Studying the Impact of ISIS Propaganda Campaigns," *Journal of Politics* 84, no. 2 (April 2022): 1220–25, https://doi.org/10.1086/716281; and Cyanne E. Loyle and Samuel E. Bestvater, "# Rebel: Rebel Communication Strategies in the Age of Social Media," *Conflict Management and Peace Science* 36, no. 6 (2019): 570–90, https://doi.org/10.1177/0738894219881430.

[74] Marc Rogers, "The Psychology of Cyber-Terrorism," in *Terrorists, Victims and Society: Psychological Perspectives on Terrorism and Its Consequences*, ed. Andrew Silke (Hoboken, NJ: Wiley, 2003), 15–31.

[75] Rogers.

[76] Thais Sardá et al., "Understanding Online Anonymity," *Media, Culture & Society* 41, no. 4 (2019): 557–64, https://doi.org/10.1177/0163443719842074.

[77] Lee Rainie et al., *Anonymity, Privacy, and Security Online* (Washington, DC: Pew Research Center, 2013), https://www.pewresearch.org/internet/2013/09/05/anonymity-privacy-and-security-online/; Gabriel Weimann, *Terror on the Internet: The New Arena, the New Challenges* (Washington, DC: U.S. Institute of Peace Press, 2006); and Jessica Stern and J. M. Berger, *ISIS: The State of Terror* (New York: Harper Collins, 2015).

[78] Weimann, *Terror on the Internet*.

by the authorities to communicate with the population in response to crises.[79] Similarly the majority of the literature about social media as a communication medium between terrorist groups and targeted audience focuses on one direction. The focus of the studies has been on the terrorist group's utilization of social media to communicate with the targeted audience to achieve the goals of spreading the group's propaganda, spreading the brand, and the recruitment process. A significant amount of the attention in western academia has been directed toward studying Islamic State strategies of recruiting foreign fighters because such recruitment has become a security threat for western countries.[80] Meanwhile, people in the areas under the control of a terrorist group or threatened by its violence also use social media to express their opinions, fears, and concerns about the situation within their areas. According to Karber's concept of terrorism as a communication medium, the use of social media by the targeted population provides the feedback, or the response of the domestically targeted population to the message of the terrorist group. Social media provide terrorist groups with means to effectively narrate their messages and spread their propaganda. Social media also enable measuring the strength of the group through measuring the fourth component of the communication medium-feedback, or the reaction of the targeted audience. As the discourse on social media reflects the interests of the population, instilling fear among the population causes an increase in the attention directed to the terrorist group.[81]

The dynamics of using social media by the population in countries suffering from terrorism is as important as studying the dynamics of using social media by terrorist groups to spread their propaganda and brand. Studying this field helps measure the effectiveness

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[79] Mila Gascó et al., "What Do Citizens Communicate about during Crises? Analyzing Twitter Use during the 2011 UK Riots," *Government Information Quarterly* 34, no. 4 (2017): 635–45, https://doi.org/10.1016/j.giq.2017.11.005.

[80] The attention of international academia to the unpresented numbers of western fighters who joined the Islamic State, trying to understand the causes and the techniques used by IS to expand the recruitment pool globally; for further study please refer to, Efraim Benmelech and Esteban F. Klor, "What Explains the Flow of Foreign Fighters to ISIS?," *Terrorism and Political Violence* 32, no. 7 (2020): 1458–81, https://doi.org/10.1080/09546553.2018.1482214; Richard Barrett, *Foreign Fighters in Syria* (New York: Soufan Group, 2014).

[81] James P. Farwell, "The Media Strategy of ISIS," *Survival* 56, no. 6 (2014): 49–55, https://doi.org/10.1080/00396338.2014.985436.

of the terrorist groups in spreading their brand within the targeted population and also helps to clarify the geographic variance across the different communities within the same country in terms of how they perceive the strength of the terrorist group. Twitter data can provide geolocation reference for a portion of the platform content, although the number of geolocated Twitter messages is limited by the user's configuration that decides the geolocation availability for each tweet.[82] An increasing number of studies have utilized the geolocation of Twitter content to study the geographical differences between states, communities and even within communities.[83]

Selph et al., sought to understand the influence of violence on the way population express their sentiment about violence and violent actors through analyzing the content of geotagged tweets in Pakistan, Nigeria, and Philippines.[84] Bourret et al., used a similar approach as they examined the sentiment of geolocated tweets to assess variances in the population's support for the Yemeni government or extremist groups.[85] In an effort to utilize sentiment analysis of geotagged tweets to predict conflicts and violent events, Chew et al. and Frost et al. examined the feasibility of social media sentiment analysis in predicting conflicts and violent events in Ukraine and Iraq respectively.[86]

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[82] Mark Graham, Scott A. Hale, and Devin Gaffney, "Where in the World Are You? Geolocation and Language Identification in Twitter," *Professional Geographer* 66, no. 4 (2014): 568–78, https://doi.org/10.1080/00330124.2014.907699.

[83] Momin Malik et al., "Population Bias in Geotagged Tweets," in *Proceedings of the International AAAI Conference on Web and Social Media*, vol. 9, 2015, 18–27; Hansen Schwartz et al., "Characterizing Geographic Variation in Well-Being Using Tweets," in *Proceedings of the International AAAI Conference on Web and Social Media*, vol. 7, 2013, 583–91, https://ojs.aaai.org/index.php/ICWSM/article/view/14442; and Minxuan Lan et al., "The Spillover Effect of Geotagged Tweets as a Measure of Ambient Population for Theft Crime," *Sustainability* 11, no. 23 (2019): 1–17, https://doi.org/10.3390/su11236748.

[84] Gregory R. Selph, Michael H. Crain, and Andrew Anderson, "Measuring Sentiment Response to Collective Violence through Social Media" (master's thesis, Naval Postgraduate School, 2018), http://hdl.handle.net/10945/61269.

[85] Andrew K. Bourret, Joshua D. Wines, and Jason M. Mendes, "Assessing Sentiment in Conflict Zones through Social Media" (master's thesis, Naval Postgraduate School, 2016), http://hdl.handle.net/10945/51650.

[86] Harold G. Frost, Anthony W. Evans, and Robert H. Hodges, Jr., "Understanding Violence through Social Media" (master's thesis, Naval Postgraduate School, 2017), http://hdl.handle.net/10945/56920; Chew Yee Hur William and Kuah Weiqi, "Hashtag Warriors: The Influence of Social Media on Collective Violence in Ukraine" (master's thesis, Naval Postgraduate School, 2018), http://hdl.handle.net/10945/61332.

E.   THE WAY FORWARD

While these studies have been valuable, none has examined the impact of variance instate capacity levels across different territories on the spread of the Islamic State's message and brand awareness on a subnational level in Syria and Iraq. This absence represents a gap within the literature. It can be framed by the question of when and where we should expect to see higher level of Islamic State brand awareness in Syria and Iraq? The importance of such a question emerges from the fact that there should be a clear understanding of the dynamics of brand awareness within the states where the terrorist groups are active. The combination of data on subnational state capacity and georeferenced social media messages can provide researchers a better understanding of the terrorist group's brand awareness, in order to assess the conditions under which this brand succeeds and fails.

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III.   HYPOTHESES AND METHODOLOGY

A.   HYPOTHESES

In an effort to answer the research question, this thesis focuses on three main factors suspected to influence the rates of social media discourse referencing the Islamic State. First, the density of populations varies across each state's regions, and we can expect that a higher population density will be associated with a higher number of social media users. The higher number of social media users should increase the chance of having a higher discourse rate about trending subjects. Second, variance in the distance to violence reflects upon the population's interest in the violence across the different state regions. The distance to the violence may contribute to the level of threat posed to the civilians, leading to encouraging more people to discuss the violence on social media. This study seeks to understand the effect of the distance to violence locations on the rates of social media discourse referencing the Islamic State. Finally, territories across the state differ in the level of state capacity. As measures of state capacity vary, this study considers several different independent variables contributing to measuring geographic variance in the level of state capacity within each state. The availability of better infrastructures can facilitate the spread of news and provide the means to access social media platforms. This research seeks to understand the effect of variance in state capacity on the rates of social media discourse referencing the Islamic State.

This research hypothesizes:

- Hypothesis 1: In areas with *higher* population density there will be *higher* rates of social media discourse referencing the Islamic State.

- Hypothesis 2: In areas *closer* to violence events there will be *higher* rates of social media discourse referencing the Islamic State.

- Hypothesis 3: In areas where state capacity level is *low* there will be lower rates of social media discourse referencing the Islamic State.

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B.   DATA AND METHODS

The statistical analysis reported below is based on a spatial-temporal approach. This approach was utilized by a recent NPS thesis focused on understanding violence through social media in Iraq for the same time frame of this research.[87] Spatially, the "CShapes" dataset was used to provide the political maps of Syria and Iraq.[88] Furthermore, the researcher created a grid cell unit of analysis; each grid cell square measures 0.5º of the earth's longitude and latitude. The area of Syria and Iraq is covered by a total number of 276 grid cells; each cell covers an area of approximately 31 x 31 miles. All the variables considered in the study were limited to the maps generated and geo-spatially applied within each grid cell. Temporally, the researcher used the period of one calendar month as a temporal unit of analysis to measure the correlation between the variables throughout a year-long period of analysis.

To identify the relevant armed groups, the researcher created a list of 16 unique actors known to be operating in Syria and Iraq as appearing in the UCDP dataset.[89] A comprehensive query in Wikipedia for each actor resulted in creating an initial list of search terms by referencing the actor names in English. A further step was taken to list 2,379 alternate names in all available languages for all actors appearing on the Wikipedia page for each actor, based on multi-lingual site links.

1.   Dependent Variable

The researcher derived the dependent variable from the historical Twitter messages archive licensed by the Naval Postgraduate school; it records a 10% random sample of global Twitter messages, and covers the period from August 1, 2013, through July 31, 2014. The 2,379 names that appeared in the created list of actor names were used to search

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[87] Frost, Evans, and Hodges, Jr., "Understanding Violence through Social Media."

[88] Guy Schvitz et al., "Mapping the International System, 1886–2019: The CShapes 2.0 Dataset," *Journal of Conflict Resolution* 66, no. 1 (2022): 144–61, https://doi.org/10.1177/00220027211013563.

[89] Shawn Davies, Therése Pettersson, and Magnus Öberg, "Organized Violence 1989–2021 and Drone Warfare," *Journal of Peace Research* 59, no. 4 (2022): 593–610, https://doi.org/10.1177/00223433221108428; Ralph Sundberg and Erik Melander, "Introducing the UCDP Georeferenced Event Dataset," *Journal of Peace Research* 50, no. 4 (2013): 523–32, https://doi.org/10.1177/0022343313484347.

through the historical Twitter archive to identify and count each tweet message containing any of the listed names. Messages were geo-referenced using publicly available metadata from Twitter user profiles. Approximate latitude and longitude were assigned to each message based on the self-reported hometown in the user's profile. The dependent variable of the monthly Islamic State tweet ratio is produced by dividing the monthly total number of tweets referencing the Islamic State by the total monthly count of tweets referencing any rebel group in Syria and Iraq for each grid-cell month. This dependent variable shows the weight of Islamic State tweet counts compared to the rest of the rebel groups operating during the study period in Syria and Iraq. Figure 1 visually presents of the Islamic State monthly Twitter ratio during the study period. The plotted maps illustrate the monthly ratio with red showing high Twitter ratio tapering to blue showing lower to zero Islamic State Twitter ratio.
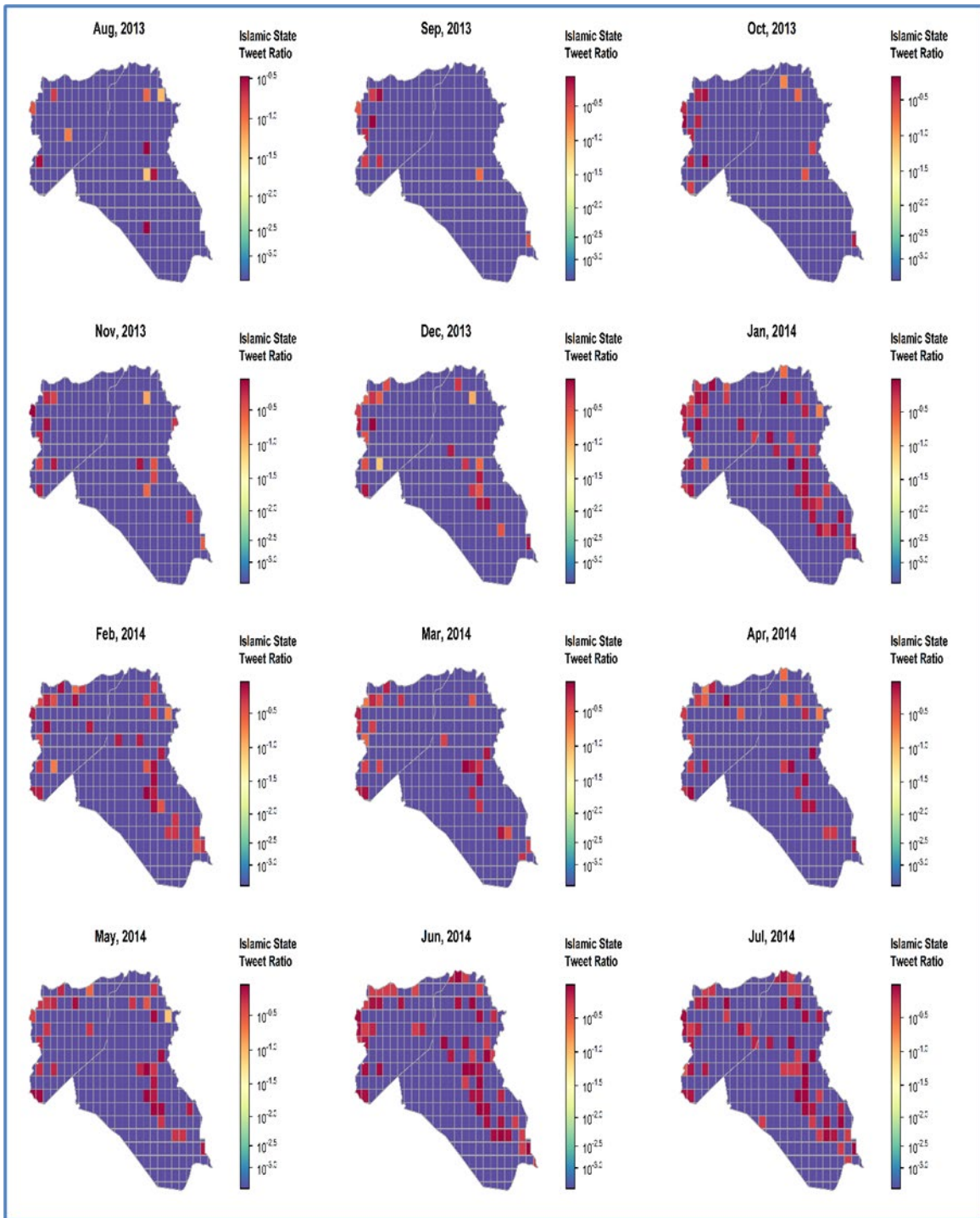
25

Figure 1.   Islamic State Monthly Twitter Ratio August 2013–July 2014

2. Independent Variables

The researcher identified two sets of independent variables. The first is derived from the UCDP GED data set, recording the timing and location of violent events. The second set is derived from five different data sets measuring the level of state capacity within the study area.

The first type includes three independent variables accounting for the role of historical violence in the study area. For this study, the researcher used a lag period of one calendar month starting from July 1, 2013. Variable 1 (Lagged Death Count) considers the effect of recent violence by using the count of violent deaths; this variable accounts for the lagged total number of deaths caused by violent events in a grid-cell at time-based distances of 1 month. Variable 2 (Current Distance to Violence) measures the minimum distance from each grid cell to the other grid cells within the study area that witnessed violent events during the same calendar month. Variable 3 (Historical Distance to Violence) measures the distance from each grid cell within the study area to the other grid cells that witnessed violent events in the years prior to the offensives by the Islamic State, with this defined as violent events that happened during the period of January 1, 2010, to December 31, 2012.

The second set of independent variables accounts for the effect of variance in state capacity within each country on the Twitter content mentioning the Islamic State. It was observed that the Islamic State's beginning occurred in areas away from the centers of state power where the governments of Syria and Iraq practiced low levels of governance over their territory. The low level of governance was also paired with variance in the strength of state capacity across the different regions. Independent variables in this category are as follows:

a. Roads Density

This independent variable is derived from the Global Roads Inventory Project - GRIP - version 4. This dataset provides the total density of all types of roads globally at a

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5 arcminutes resolution (~8x8km).[90] The researcher used this data set to measure the density of the roads within Syria and Iraq. This variable attempts to measure the traditional means of transportation as a way of spreading the news about violent events across the countries of study. Figure 2 shows the roads density within each grid cell with red representing high roads density and blue representing low to no roads density.
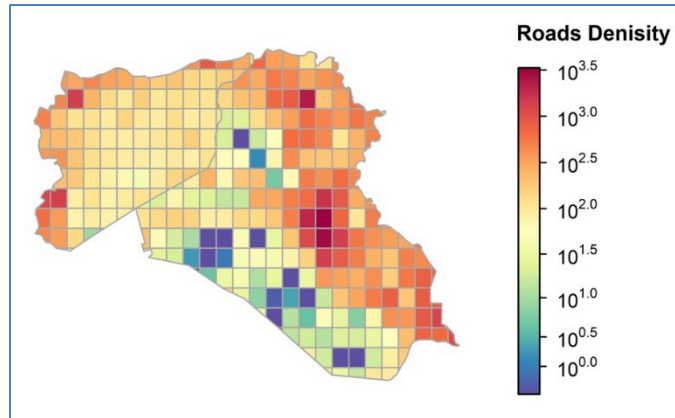

Figure 2.   Roads Density in Syria and Iraq

b.   *Cell Tower Density*

This independent variable is derived from the OpenCellid - Open Database of Cell Towers & Geolocation dataset. It provides open-source GPS coordinates for cell towers worldwide.[91] Considering the nature of the conflicts in Syria and Iraq and the effect of increasing the communication infrastructure, the researcher considered the data set reflecting the cell towers density during the study period. Recognizing some of the deficiencies in the database, such as the actual location offset of the towers due to latitude and longitude relative accuracy and not knowing the transmission power of each cell

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[90] Johan Meijer et al., "Global Patterns of Current and Future Road Infrastructure - Supplementary Spatial Data," *Zenodo*, May 23, 2018, https://doi.org/10.5281/ZENODO.6420961.

[91] Unwired Labs, "The World's Largest Open Database of Cell Towers," OpenCellid, accessed June 28, 2022, https://opencellid.org/#zoom=16&lat=37.77889&lon=-122.41942.

tower,[92] this data still provides a reasonable level of accuracy for estimating the number of cell towers within the size of the grid-cells in this research. As mobile phones constitute the most sizeable portion of devices accessing social media compared to other devices such as computers; the availability of cell towers is essential to providing this access.[93] Figure 3 shows the cell tower density within the study area with red representing high cell tower density and blue representing low to no cell tower density.
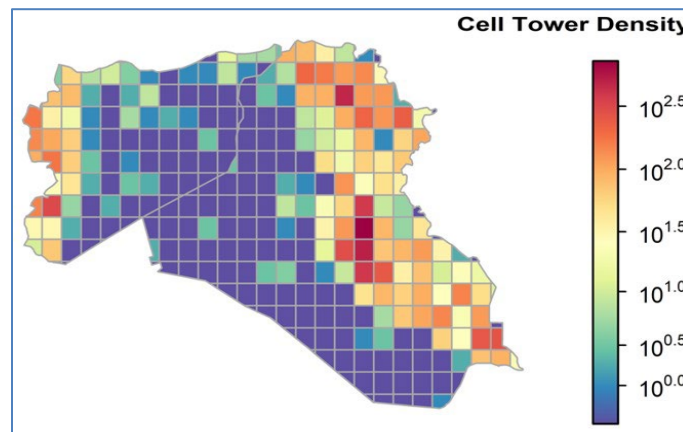

Figure 3.   Cell Tower Density in Syria and Iraq

c.   *Nighttime Light density*

This independent variable is derived from the Nighttime Lights Time Series Version 4, Defense Meteorological Program (DMSP) Operational Line-Scan System (OLS) dataset.[94]It provides cloud free aggregated imagery with the most recent update to the year 2013. Nighttime light is an indicator of electrification as a state capacity measure;

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[92] Chia-Han Lee, Cheng-Yu Shih, and Yu-Sheng Chen, "Stochastic Geometry Based Models for Modeling Cellular Networks in Urban Areas," *Wireless Networks* 19, no. 6 (2013): 1063.

[93] Rodney G. Duffett and Myles Wakeham, "Social Media Marketing Communications Effect on Attitudes among Millennials in South Africa," *African Journal of Information Systems* 8, no. 3 (2016): 20–44, https://digitalcommons.kennesaw.edu/ajis/vol8/iss3/2/; Brian Dean, "Social Network Usage & Growth Statistics: How Many People Use Social Media in 2022?," Backlinko, October 10, 2021, https://backlinko.com/social-media-users.

[94] "Nighttime Lights Composites for the Years 1992–2013 from DMSP Satellite Data," DMSP-OLS Nighttime Lights Time Series, June 7, 2017, https://noaa.maps.arcgis.com/home/item.html?id=78147366ebac4f28862053b89169dfc9.

the availability of electricity is crucial in allowing social media use. The absence of a steady source of electricity will limit the ability to use cell phones, reducing the social media content in areas with less electrification.[95] Figure 4 shows the 2013 nighttime light density in Syria and Iraq with red representing the highest night light density and blue representing the lowest to no night light density.
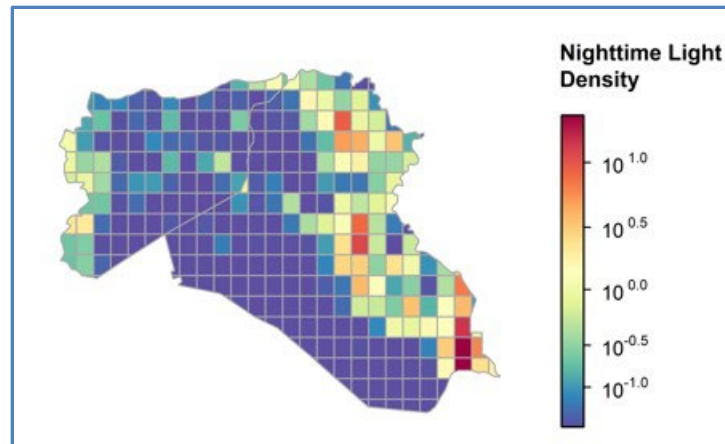

Figure 4.   Nighttime Light Density in Syria and Iraq

d.   Total Population

This variable is derived from the Gridded Population of the World (GPW), v4 dataset for the year 2015 estimate.[96] This dataset is gridded with an output accuracy of 30 arc-seconds (approximately 1 km at the equator). Applying this variable will allow checking for the correlation between the total population for each grid cell and the monthly Islamic State tweet ratio.[97] Figure 5 shows the 2015 total population density in Syria and Iraq within each grid cell with red representing high population density and white representing low to no population density.

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[95] Wulystan Pius Mtega and Benard Ronald, "The State of Rural Information and Communication Services in Tanzania: A Meta-Analysis," *International Journal of Information and Communication Technology Research* 3, no. 2 (February 2013): 64–73, https://www.suaire.sua.ac.tz/handle/123456789/1165.

[96]"Gridded Population of the World (GPW), V4," Socioeconomic Data and Application Center (SEDAC), accessed June 28, 2022, https://sedac.ciesin.columbia.edu/data/collection/gpw-v4.

[97] Frost, Evans, and Hodges, Jr., "Understanding Violence through Social Media."
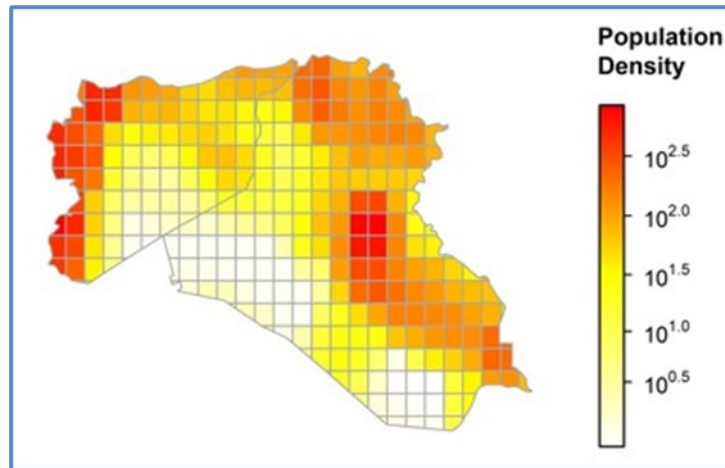
Figure 5.   Total Population Density in Syria and Iraq

e.   *Urbanization*

This independent variable is derived from the Global Rural-Urban Mapping Project, Version 1 (GRUMPv1).[98] As a further measure to account for the effect of the state capacity on the Islamic State monthly ratio, the researcher utilized the dataset for the most recent year of 2000. The data set presented two levels of urbanization: Urban and rural within 30 arc-second (1 km) grid cells.[99] Figure 6 shows the gridded categorization of the urban and rural areas in Syria and Iraq within each grid cell with blue representing urban areas and white representing rural areas.

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[98] "Global Rural-Urban Mapping Project, Version 1 (GRUMPv1): Urban Extents Grid, v1 (1995)," 2011, https://doi.org/10.7927/H4GH9FVG.

[99] "Global Rural-Urban Mapping Project, Version 1 (GRUMPv1): Population Count Grid," Data Catalog, November 12, 2020, https://catalog.data.gov/dataset/global-rural-urban-mapping-project-version-1-grumpv1-population-count-grid.

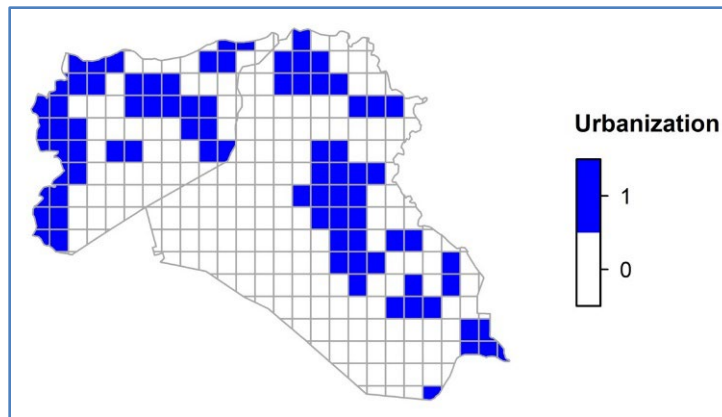NAVAL POSTGRADUATE SCHOOL | MONTEREY, CALIFORNIA | WWW.NPS.EDU

Figure 6.   Urbanization in Syria and Iraq

3.   Control Variables

a.   *Ethnic Exclusion*

This control variable is created by combining the GeoEPR - Geo-referencing Ethnic Power Relations dataset and the EPR - Ethnic Power Relations dataset.[100] This resulted in identifying each ethnic group's access to power in the executive branch of government at the national level and geospatially applying that to the grid cells in Syria and Iraq, based on the settlement regions of each group. The level of access to power in the executive branch is measured based on the degree to which ethnicities have representatives holding power within the executive branch at the national level. The EPR - Ethnic Power Relations dataset categorizes the ethnic groups in terms of the degree to which they hold executive power at the national level. These degrees are defined into nine categories, varying from complete control (Dominant) to complete Exclusion (Discriminated).[101] To create this variable, the researcher separated the ethnic groups into two types. The first describes the excluded ethnicities in Syria and Iraq, in this type we find the categories of Powerless and Discriminated. The second describes the ethnicities that are not excluded. In this type we find the categories Dominant, Irrelevant, Monopoly, Self-Exclusion, Senior Partner, Junior

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[100] "GeoEPR - Geo-Referencing Ethnic Power Relations," GeoEPR 2021, accessed June 28, 2022, https://icr.ethz.ch/data/epr/geoepr/.

[101] "Ethnic Power Relations (EPR) Dataset Family 2021," Ethnic Power Relations (EPR) Dataset Family, accessed June 28, 2022, https://icr.ethz.ch/data/epr/.

Partner, and State Collapse. This variable seeks to measure the effect of ethnicity exclusion on the Islamic state monthly tweet ratio in the areas suffering from exclusion. Figure 7 shows the ethnic exclusion in Syria and Iraq, with red representing grid cells populated by excluded ethnicities and yellow representing grid cells populated by ethnicities not excluded.
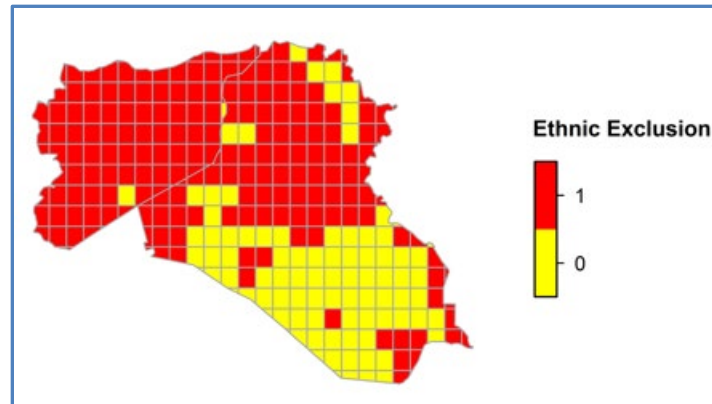

Figure 7.   Ethnic Exclusion in Syria and Iraq

b.   *Gross Domestic Product Per Capita (GDPPC)*

This control variable is derived from the DRYAD-Gridded global datasets for Gross Domestic Product and Human Development Index over the period 1990–2015.[102] This dataset provides a sub-national dataset of yearly GDPPC globally at 5 arc-min resolution (approximately 10 km at the equator).[103] Figure 8 shows the gridded GDP per capita in Syria and Iraq for the year 2015, with red representing grid cells with high GDP per capita and yellow representing grid cells with low GDP per capita.

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[102] Matti Kummu, Maija Taka, and Joseph H. A. Guillaume, "Gridded Global Datasets for Gross Domestic Product and Human Development Index over 1990–2015," *Scientific Data* 5, no. 1 (December 2018): 1–15, https://doi.org/10.1038/sdata.2018.4.
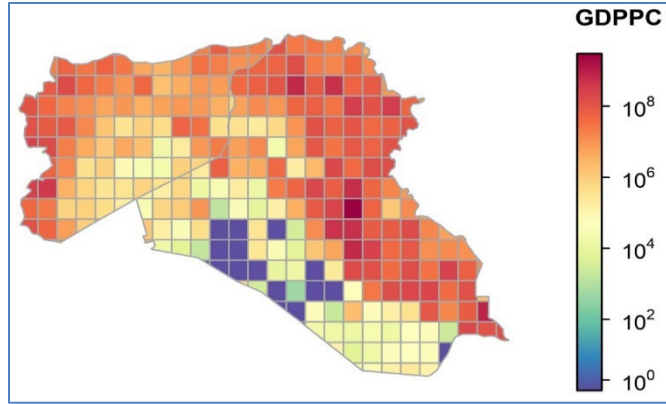
[103] Kummu, Taka, and Guillaume, 5.

Figure 8.   GDP per Capita in Syria and Iraq

IV. RESULTS AND DISCUSSION

Building on the previous theses done by Frost et al. and Greaver, this thesis examines the influence on the Islamic State monthly Twitter ratio by analyzing the effect of all previously discussed independent variables, using linear regression models.[104] To account for the skewed values of the independent variables, all independent variables were log-transformed except for the dichotomous indicators of urbanization and ethnic exclusion.

The rapid progression of violent events caused by the different rebel groups during the study period resulted in increasing levels of death. Furthermore, the data analysis shows an increase in the number of grid cells seeing higher death counts especially towards the end of the study period across Syria and Iraq, with substantial variation in intensity across these grid cells. Figure 9 shows visualizations of three sample months of the monthly death counts in Syria and Iraq during the study period (August 2013, Jan 2014, Jun 2014). The sample was chosen by keeping six-month intervals between selected months. Figure 10 visualizes of the same three months for the monthly total rebel tweet count in Syria and Iraq during the study period. Figure 11 visualizes of the same months for the monthly Islamic state tweet ratio in Syria and Iraq during the study period. A thorough examination of Figures 9–11 shows how the increase in the death counts appears to be associated with a higher number of grid cells witnessing Twitter content referencing any rebel group and how that is also reflected in an increase in the monthly Islamic State tweet ratio.

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[104] Frost, Evans, and Hodges, Jr., "Understanding Violence through Social Media"; Greaver, "Terrorist Group Brands."
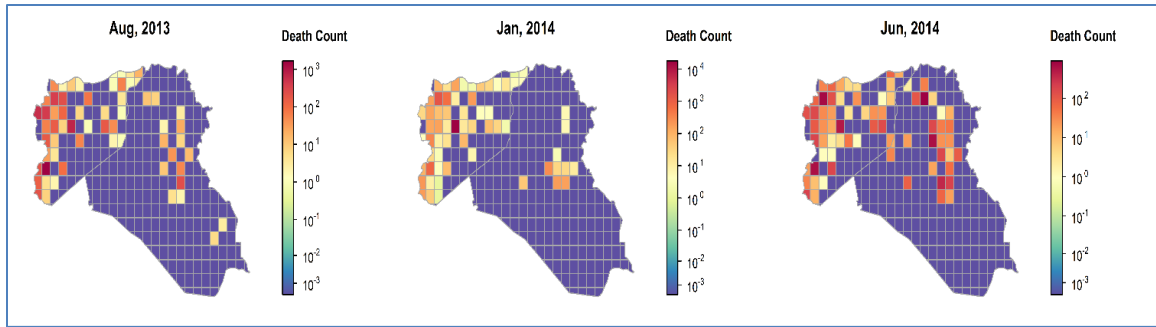
Figure 9.   Monthly Death Counts
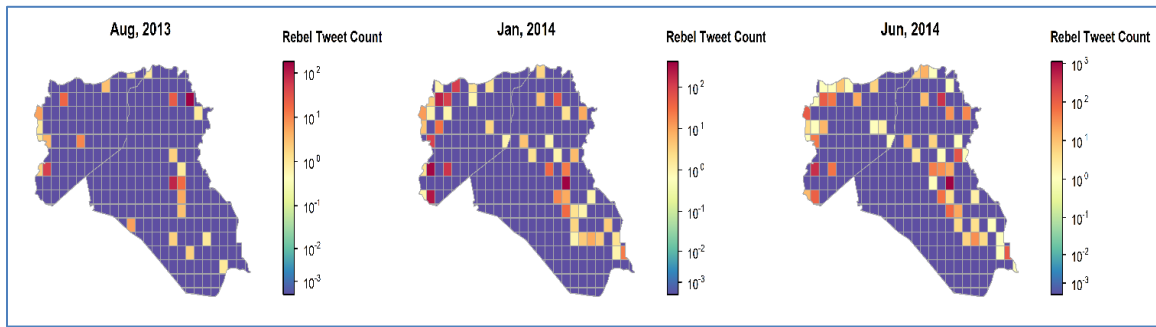
Figure 10.   Monthly Rebel Tweet Count
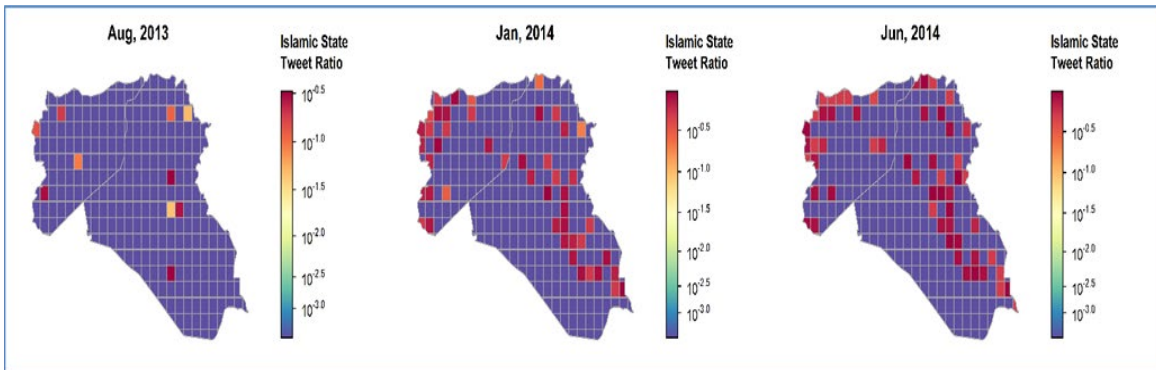
Figure 11.   Monthly Islamic State Tweet Ratio

Three linear regression models (Table 1) were used to study the impact of variables affecting the monthly Islamic State tweet ratio in Syria and Iraq. Model 1 examines the relationship between the Islamic State tweet ratio and the independent variables representing the effect of the history of violence. Model 2 builds on Model 1 and adds the independent variables measuring the effect of variance in state capacity. Model 3 builds on

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Model 2 by adding the two control variables of ethnic exclusion from executive power within the state and GDP per capita. Table 1 presents the results of the regression analysis for each model. Model 2 is the model with the lowest Akaike's Information Criteria (AIC) score, indicating that it should be preferred as the model with the lowest expected prediction errors. The result of testing for the independent variables of violence history and the variables measuring state capacity in Model 2 showed that seven variables were strongly statistically significant ($p < 0.01$). Five of these variables had a positive correlation with the dependent variable.

Figures 12–18 show the prediction plots of the statistically significant variables from Model 2. On the y-axes in all the figures, we find the expected level of monthly Islamic State tweet ratio. X-axes differ for each figure, as they reflect the variable measured in each figure, ranging from its minimum to its maximum value. The lines in each figure show the expected Islamic State tweet ratio responding to each one of the independent variables, given that all other variables are held constant at their means. The shaded bands show the 95% confidence intervals for the expected values. The visualizations show the difference between the positive and negative directions of the effect for each independent variable. However, it is important to highlight the special nature of two of the independent variables measuring the effect of distance to violence locations. For these variables, a positive coefficient indicates more Islamic State discussion at longer distances from violence, which should be interpreted as nearby violence having a negative effect on discussion rates, whereas a negative coefficient indicates that discussion is lower at longer distances from violence, which should be interpreted as nearby violence having a positive effect on discussion rates.

Table 1.　Linear Regression Results

|	Islamic State Monthly Tweet Ratio		
	Model (1)	Model (2)	Model (3)
Lagged Death Count (Log)	0.042***	0.032***	0.032***
	(0.003)	(0.003)	(0.003)
Current Distance to Violence (Log)	0.037***	0.013***	0.011**
	(0.004)	(0.004)	(0.005)
Historical Distance to Violence (Log)	-0.051***	-0.018***	-0.020***
	(0.004)	(0.005)	(0.005)
Roads Density (Log)		-0.004*	-0.002
		(0.002)	(0.003)
Cell Tower Density (Log)		0.018***	0.017***
		(0.003)	(0.003)
Nighttime Light Density (Log)		0.051***	0.051***
		(0.008)	(0.008)
Population Density (Log)		-0.008***	-0.008***
		(0.003)	(0.003)
Urbanization		0.078***	0.078***
		(0.009)	(0.009)
GDP Per Capita Mean (Log)			-0.0004
			(0.001)
Ethnic Exclusion			-0.012
			(0.008)
Constant	0.060***	0.033	0.053*
	(0.016)	(0.024)	(0.027)
Observations	3,355	3,355	3,355
MAE	0.091	0.092	0.091
RMSE	0.175	0.164	0.164
AIC	-2,158	-2,572	-2,571
BIC	-2,127	-2,511	-2,498
Log Likelihood	1,084.017	1,296.185	1,297.563
Note:	*p < 0.1; **p < 0.05; ***p < 0.01		
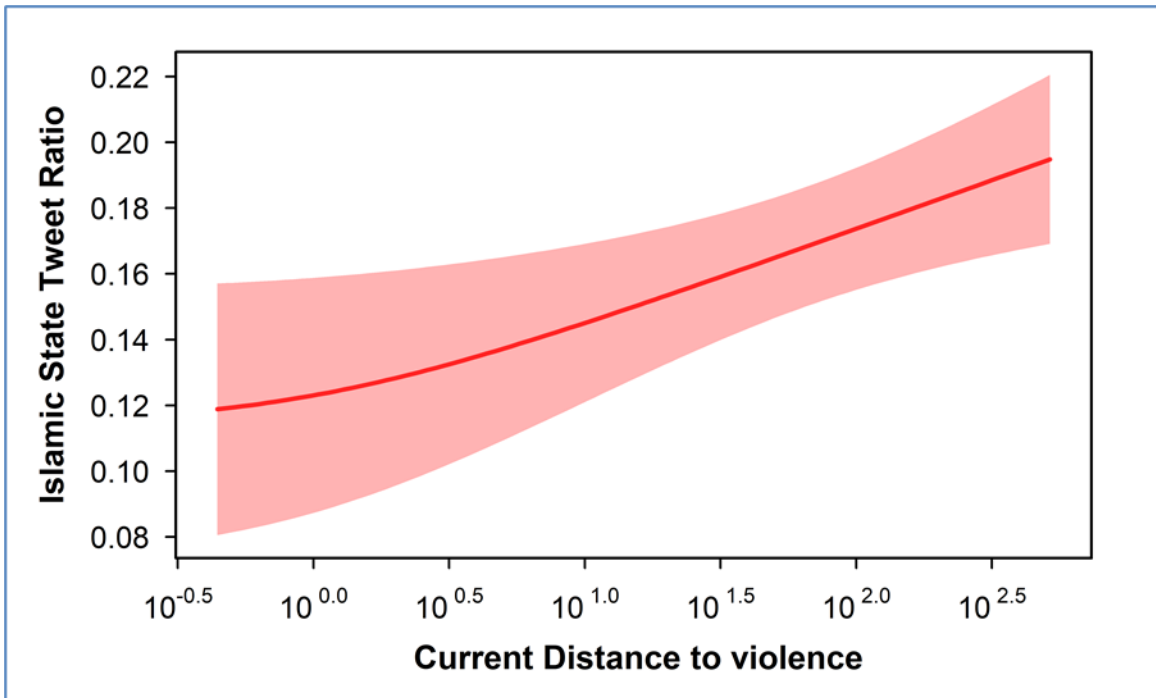
Figure 12. Effect of Current Distance to Violence
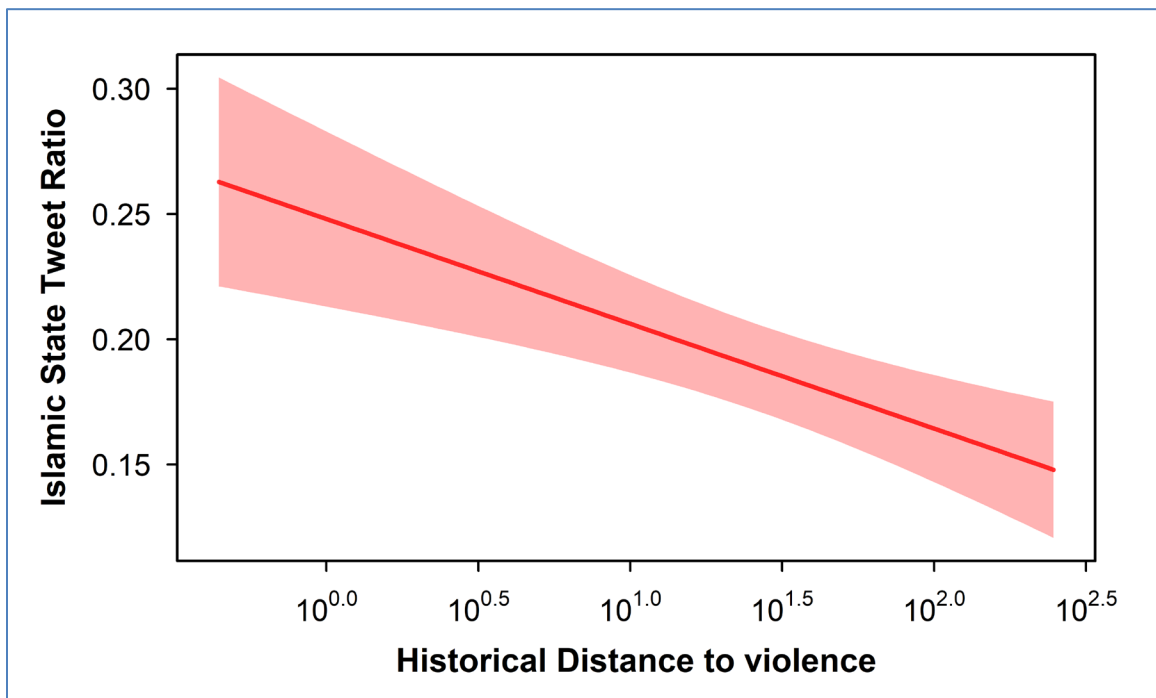

Figure 13. Effect of Historical Distance to Violence
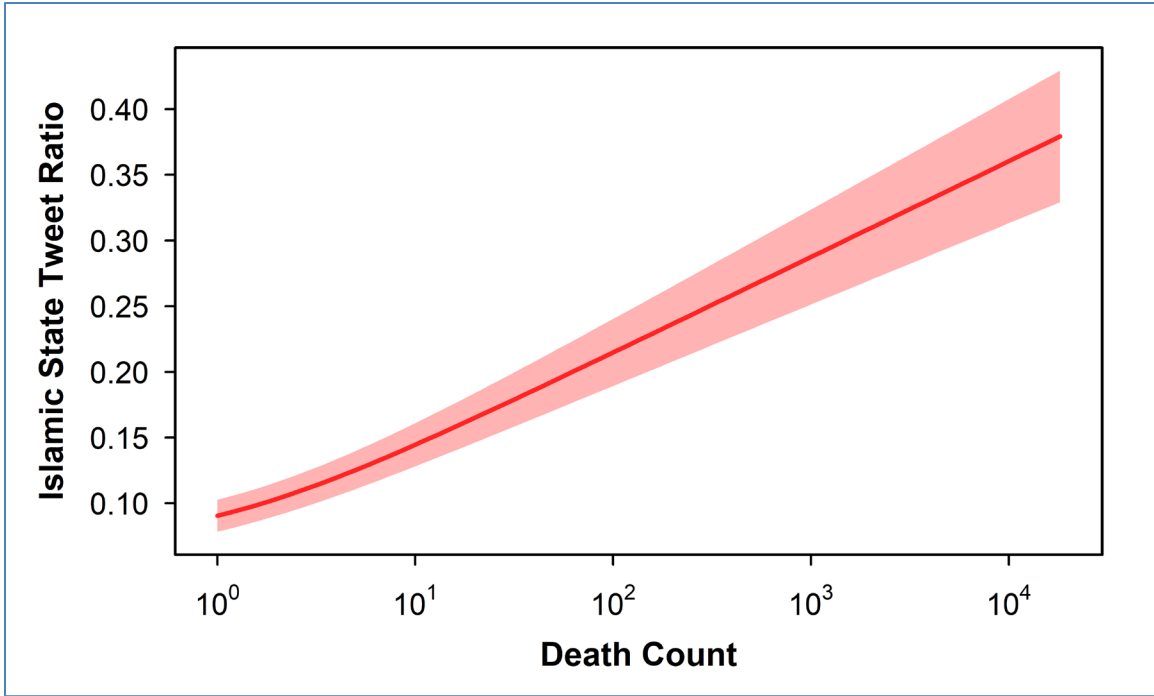
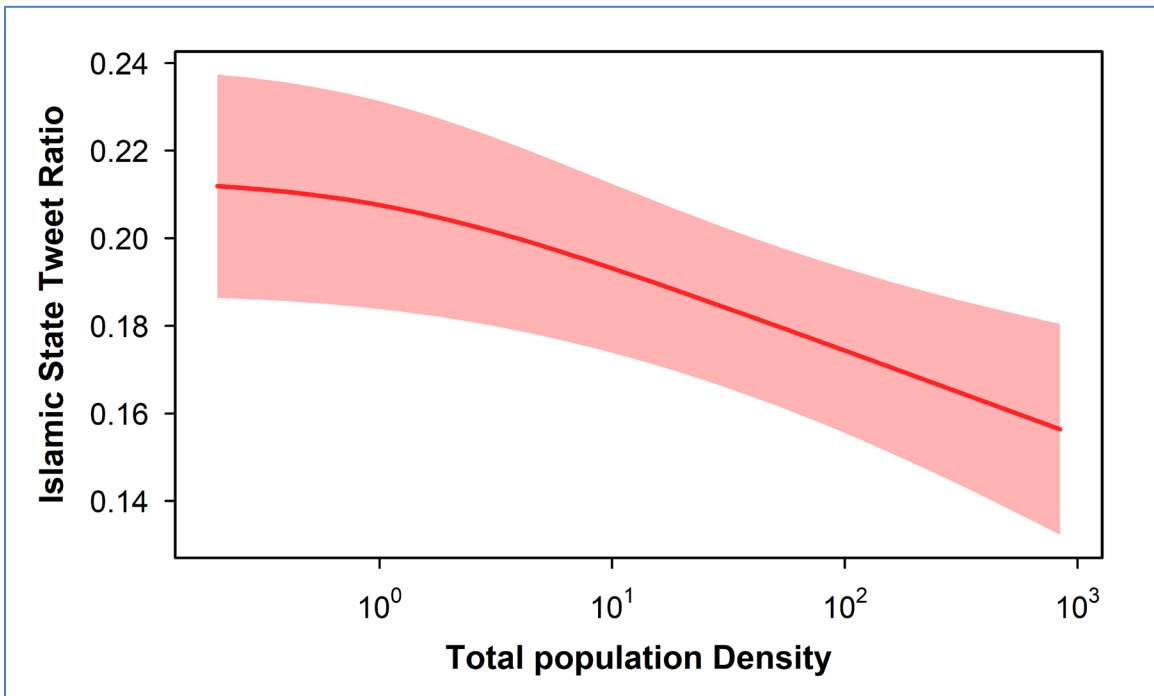Figure 14.   Effect of Lagged Death Count
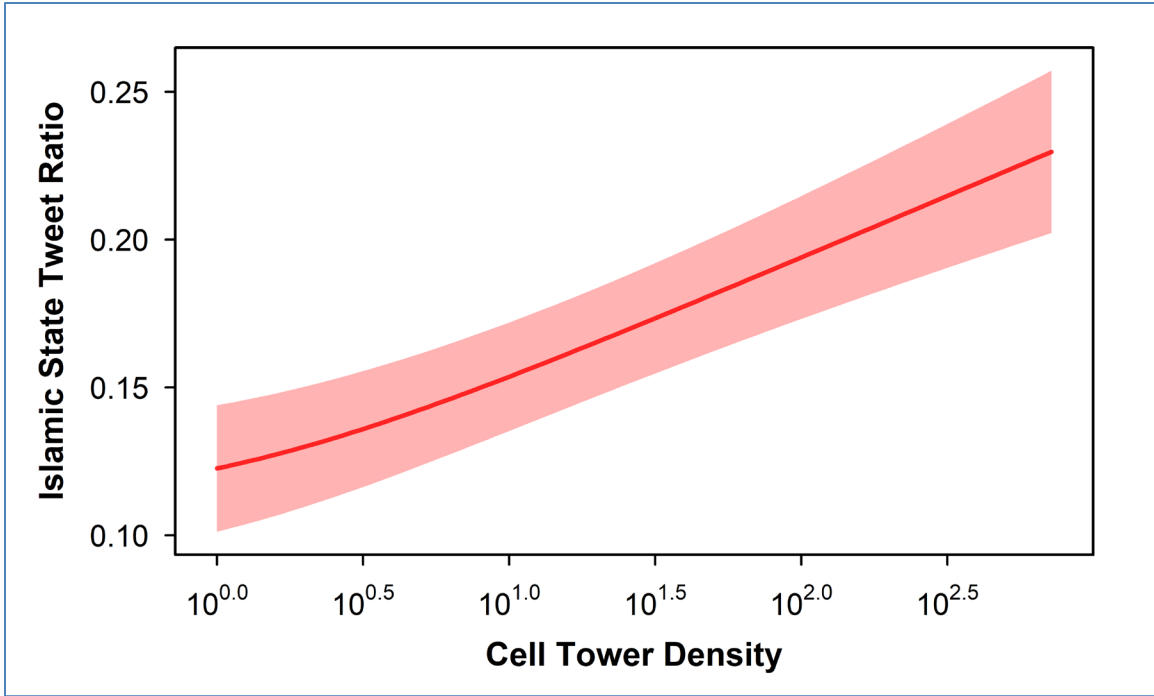

Figure 15.   Effect of Total Population

Figure 16.   Effect of Cell Tower Density

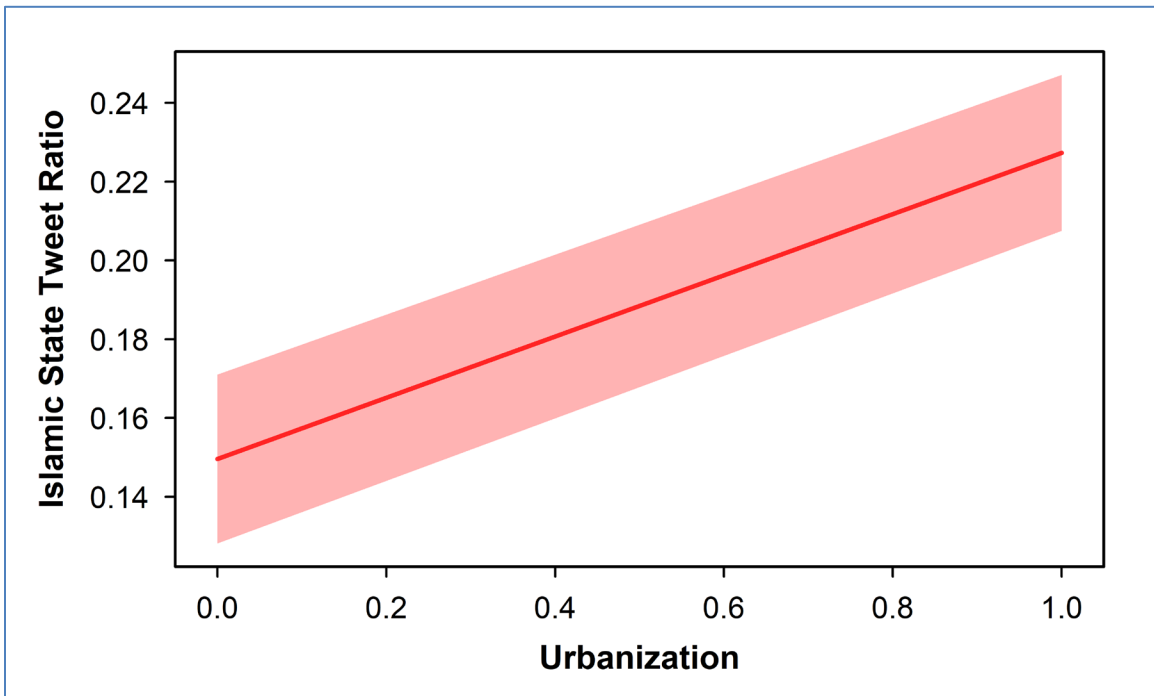
Figure 17.   Effect of Urbanization
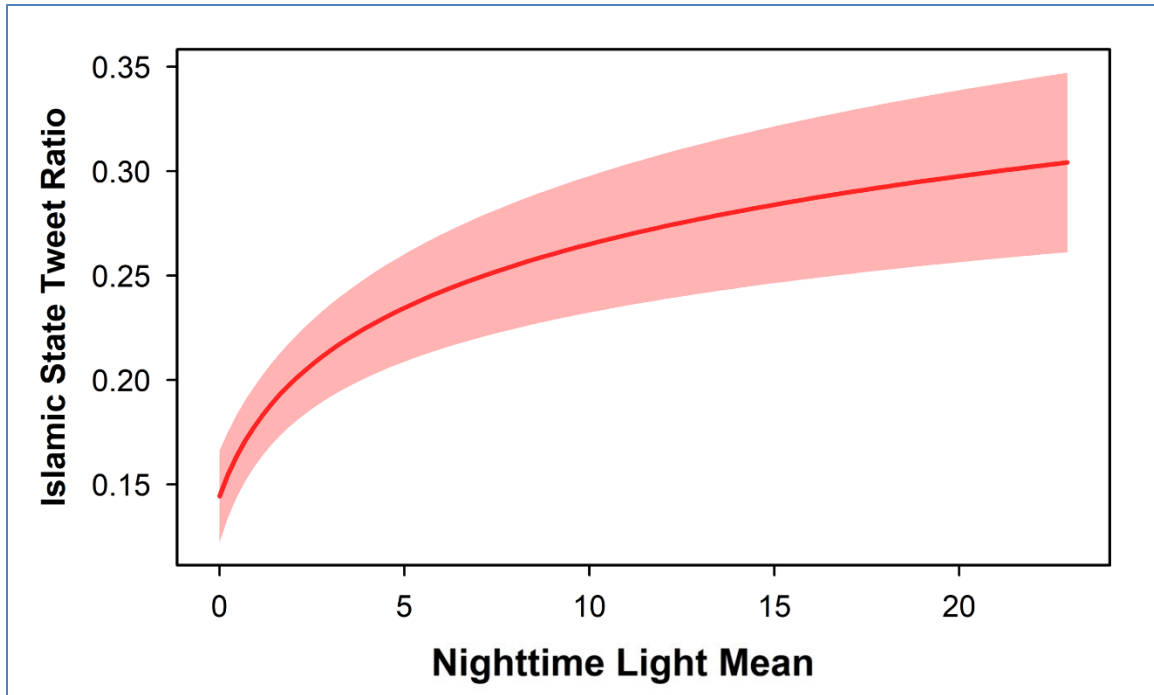
Figure 18. Effect of Nighttime Light Density

(1) Hypothesis 1: In areas with *higher* population density there will be a *higher* rates of social media discourse referencing the Islamic State.

The data analysis shows a significant ($p < 0.01$) negative coefficient for the total population density within the same grid cell. This negative coefficient negates Hypothesis 1, which expected a higher Islamic State monthly ratio in areas with higher population. The finding suggests that in grid cells representing areas with lower population density, a higher Islamic State monthly ratio will be observed (see Figure 15).

Understanding the geographical spread of the Islamic State during the study period could explain this negative coefficient. The Islamic State started in areas away from the states' population centers in Syria and Iraq. By the end of the study period, the majority of the geographic expansion occurred in remote areas where smaller populations existed. Considering the strongly connected social structure of the mostly tribal communities under the threat of the Islamic state in the study area, deaths caused by violent events in these areas may have had a higher effect on smaller populations leading to a higher level of brand recognition for the Islamic State.

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(2)   Hypothesis 2: In areas *closer to* violent events there will be a *higher* rates of social media discourse referencing the Islamic State.

The independent variable of lagged death count is the strongest predictor of the Islamic State tweet ratio. The positive coefficient of this variable means that a high death count in the previous month generates a relatively higher rate of discussion of the Islamic State on Twitter. As can be seen in Figure 14, the discussion rate more than triples in areas experiencing the highest rates of violence.

The other two variables measuring the effect of violence were found to have contradicting coefficients; both variables measure the distance to violent events. A statistically significant ($p < 0.01$) positive coefficient for the distance to violence that occurred during the same month negates Hypothesis 2. Though this variable had a positive coefficient, this means that the further the area is from the violence the higher is the Islamic State tweet ratio (see Figure 11). This finding means that being near to violence that occurred in the same month generates relatively less discussion of the Islamic State on Twitter. The fear of retaliation by the Islamic state could explain this finding, as being close in terms of time and geographic distance to Islamic State controlled areas may limit the ability of social media users to express their opinions about the Islamic State. Contrary to the effect of violence occurring in the same calendar month, distance to historical violence (January 1, 2010–December 31, 2012) produced a significant ($p < 0.01$) negative coefficient, suggesting that shorter distance to locations where historical violence occurred generated relatively higher levels of discussion about the Islamic State on Twitter (see Figure 12). Understanding this effect requires recognizing the earlier version of the Islamic State brand. The Islamic State was known as ISI (Islamic State in Iraq) during the considered period (January 1, 2010–December 31, 2012). The terrorist group was active at that time and committing violence. Meanwhile, the Islamic State in Iraq started also expanding its presence into Syria. For users who were closer to this recent historical violence, it, therefore, seems that the Islamic State may have already had higher levels of brand recognition.

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(3)   Hypothesis 3: In areas where state capacity level is *low* there will be lower rates of social media discourse referencing the Islamic State.

The data analysis presents a statistically significant ($p < 0.01$) positive coefficient for three of the independent variables measuring the level of urbanization and state infrastructure. The positive coefficients for the urbanization, cell tower count and night light variables provide evidence supporting Hypothesis 3 (see Figures 16–18). The variables measured the availability of infrastructure enabling easy access to social media. The low availability of these infrastructures translates into relatively lower rates of discussion of the Islamic State. Regardless of the presence or absence of the motivations to discuss the Islamic State on the Twitter platform, accessing the social media platforms technically depends on the electrification and mobile phone networks. Urbanization may also contribute to a higher level of education, either by the presence of educational institutes or because educated people are more likely to move to urban areas and live there.[105] This higher level of educated people may also lead to better-informed social media users.

Figure 19 shows on the y-axis the effect of each variable with high statistical significance based on the linear regression analysis results from Model 2. The regression analysis indicated the statistical significance of seven variables. The variables with blue horizontal bars represent the variables that had a positive statistical effect on the predicted monthly Islamic State tweet ratio. On the other hand, the variables with red horizontal bars represent negative predicted effects of the variable on the Islamic State ratio. On the x-axis this visualization represents the difference in substantive effect of each one of the variables on the predicted Islamic State tweet ratio while shifting the variables of interest between their 5th and 95th percentiles and keeping the other variables at their mean. While the lagged death count showed the highest predicted positive substantive effect on the Islamic State tweet ratio, the variable measuring the effect of the current distance to violence had the lowest positive substantive effect. The historical distance to violence showed the highest statistical negative effect on the predicted Islamic State ratio.

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[105] Hofmann and Wan, *Determinants of Urbanization*.

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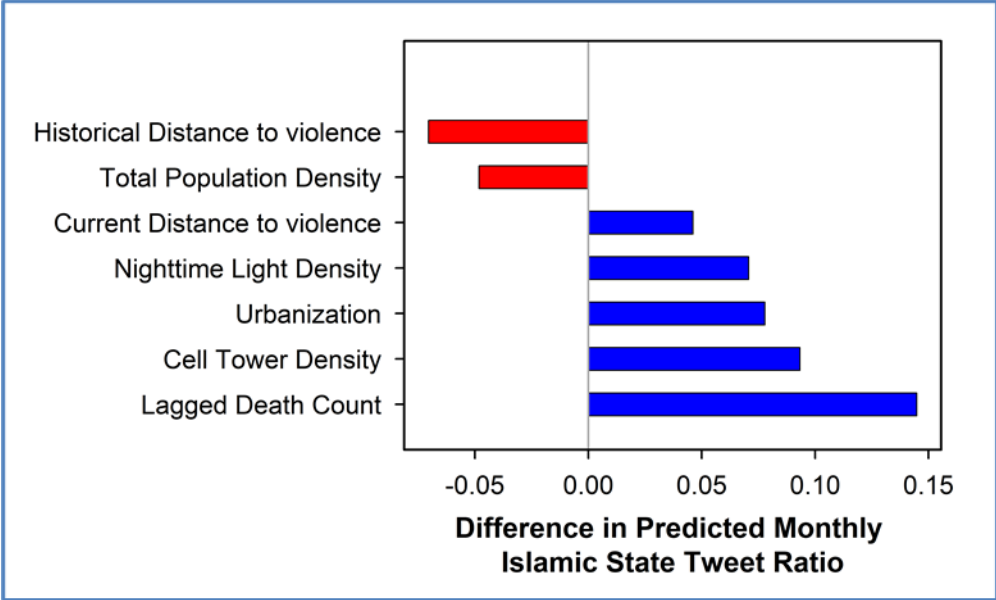Figure 19.   Substantive Effects

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V. CONCLUSION

In conclusion, the Islamic State used social media platforms successfully to spread its propaganda globally. The Islamic State instilled fear in the population of the area under its control by causing high death counts and publicizing their actions on available platforms.

The findings suggest that the number of deaths caused by the Islamic State was positively correlated with the spread of the Islamic State brand and contributed the most to giving attention to the group within Syria and Iraq. This result validates the theory of using the propaganda of the deed to force the spread of the brand.

When examining the effect of distance to violent events, the findings suggest that the Islamic State's brand awareness differed in its level depending on the history of the violence. Closeness to violent events in the same calendar month negatively correlated with discussion of the Islamic State on Twitter. Meanwhile, closeness to locations where violence happened in prior years was associated with a substantial increase in the Islamic State's brand awareness. This finding validates the idea that terrorist groups' propaganda may have a long-term influence on the targeted audience.

Contrary to the assumption that a higher population density will generate higher social media content referencing the Islamic State, the findings suggest that a lower population density generated relatively higher rates of discussion of the Islamic State on Twitter in Syria and Iraq. It seems that the Islamic State's brand awareness was higher in low population areas, where the Islamic State experienced much of its early territorial successes. Such results help guide attention to the importance of small communities in the areas threatened by the spread of terrorist groups. Smaller communities seem to be easier to influence by terrorist groups' propaganda and therefore show higher potential for providing resources required by the terrorist groups.

In terms of variables testing the effect of variance in state capacity, the findings supported the expectations of Hypothesis 3, which somewhat stands contrary to the findings regarding Hypothesis 1. Though urban areas have higher concentrations of

population, which was found to be negatively correlated to the Islamic State's brand awareness, the other variables measuring the effect of variance in state capacity were positively correlated with rates of discussion of the Islamic State on Twitter. The results of the analysis suggest that the overall substantive significance of state capacity variables was larger than the effect of total population.

Increasing the Islamic State's brand awareness among the targeted population occurred through utilizing all available techniques and communication means. The success provided an interesting model that could be reproduced by the other existing and potential future terrorist groups. Investigating those techniques coupled with understanding the environment and variables that can affect the result of applying those techniques is an important step in helping to reduce the effectiveness of terrorist groups' propaganda. Terrorism as an ideology and terrorist groups as a contemporary security challenge will keep adjusting their techniques to benefit from technological advancements. This thesis contributed to the effort of bridging the gap in understanding the variables affecting the spread of brand awareness within the areas under the control of terrorist groups or threatened by them. The importance of understanding the spread of Islamic State brand awareness among the population within Syria and Iraq emerges from the fact that Islamic State effectiveness in using terrorism as a communication medium laid the roots for physical successes on the ground achieved by the Islamic State in those states.

VI. FUTURE RESEARCH

The Islamic State in Iraq and Syria presented a unique case in modern terrorist groups. The dynamic nature of the terrorist group and the international nature of the ideological spread of its values happened through the unprecedented utilization of social media platforms. The most recent history showed that the Islamic State was not completely stopped in the Middle East and North Africa. This opens the door for more research on Islamic State brand awareness and linking the brand awareness to the rise and fall of the Islamic State.

Benefiting from technological advancement, similar approaches to this thesis could focus on using the different versions of the Islamic State logo on the social media. The importance of symbolism in the ways of using the logo could provide further understanding of the spread of the brand on the domestic level.

Further exploration of the subject could also be based on utilizing sentiment analysis of the social media content. Such analysis could help identify the different trends in attributing the blame following violence. The population can use diverse ways to attribute the blame following violent events. Understanding the blame attribution dynamics could provide a deeper understanding of the correlation between the increase in brand awareness as a potential result of violence and the nature of the perspective the populace develops about the conflict actors.

Establishing a standardized method of referencing the different versions of the brand or substitutes of the original brand could help build a more detailed picture of the spread of the brand in Syria and Iraq. Further research can shed light on some of the dark areas that are not yet explored to clarify the gaps and provide a clearer understanding of the terrorist group's strengths and vulnerabilities, and therefore shed light on how to counter the strengths and exploit the vulnerabilities.

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