

**TECHNOLOGY AND TERRORISM: THE EFFECTS OF CELL PHONE  
COVERAGE ON TERRORIST ACTIVITY**

An Undergraduate Research Scholars Thesis

by

ASHALI CHIMATA

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Dr. Johanna Dunaway

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## ABSTRACT

Technology and Terrorism: The Effects of Cell Phone Coverage on Terrorism

Ashali Chimata  
Department of International Studies  
Texas A&M University

Research Advisor: Dr. Johanna Dunaway  
Department of Communication  
Texas A&M University

The spread of mobile technology and coverage has had transformative effects, and most current literature focuses on the positive effects of this technology; it holds leaders accountable, facilitates democracy, and encourages transparency. More recently, there has been research done on the relationship between mobile phone availability and violent conflicts. However, there has yet to be research done on the link between cell phone coverage and terrorism. Moreover, most research does not take other characteristics of weak and failing states that may contribute to terrorism into account such as regime type. I will investigate this link using data from the START terrorism database and *Collins Coverage* by Harper Collins Publisher, and I will focus on the states in the Middle East and North African region. I contend that cell phone coverage helps terror cells overcome collective actions issues and create diaspora networks, and this will lead to more terror activity. I also hypothesize that the effects of cell coverage will be more pronounced in states where the technology rapidly improved and in those that score highest in the “state legitimacy” category on the Fragile States Index. This research can help states identify problem areas, understand the technology terror groups use, and help governments maintain a monopoly on organized violence.

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## **INTRODUCTION**

### **Thesis Statement**

Cell phone coverage allows terror cells to overcome collective actions issues, create diaspora networks, and communicate with their intended audience with ease, and this will lead to more terror activity. Increases in terror incidents will be more pronounced in states where mobile coverage has increased rapidly, and there will be little change in states where the amount of coverage has remained stagnant. Additionally, the highest number of terror attacks will occur in states that score above an eight on the Fragile States Index in the “state legitimacy” category, because the lack of a strong authoritarian government is an indicator for violent non-state actor involvement.

## **Motivation and Background Information**

### *Threshold Concepts*

To begin, some background concepts must be addressed; the first of which is the definition of terrorism, and the second is the main objectives of terror groups. A definitive definition of the term is difficult to reach because of the various discourses surrounding what constitutes terrorism. Different governmental organizations, countries, and databases define it differently. However, the most important aspect of the definition is the motive behind the acts or threat of violence; they must be intended to intimidate a civilian population, to influence the policy of a government, and to affect the conduct of a government. In other words, the motivation must be a political agenda. Second, to illustrate how the news media meets the needs of terror organizations, their objectives must first be covered. Professor of Media at Naif Arab University for Security Sciences, Taha Najem, outlined four main objectives. The first is the recognition and legitimization of their name and ideology. Next is the ability to recruit and communicate with their supporters, and then their ability to communicate with those who have the power to enact their agenda. Lastly, they want to be depicted as legitimate alternatives to their actual governments (Najem, 4). Dr. Brigitte Nacos, from Columbia University, wrote a study titled “Terrorism/Counterterrorism and Media in the Age of Global Communication.” In her study, she highlighted the most important goals for a terror organization which go further than their need to legitimize and communicate. She emphasized the intimidating and awareness goal, and a prime example of that is the 1972 Olympic Games attack by the Palestinian Liberation Organization (PLO). She also articulated their need to be respected and sympathized with (Nacos, 6-7).

Tapping into the power of the media is a means to achieving every one of the goals outlined by these researchers. Now that we have identified these threshold concepts, we can discuss the news media's organizational structure and culture.

*A Brief History of Communication Technology Use by Terror Groups*

A thesis project at the University of North Carolina at Chapel Hill, by Nourah Shuaibi, studied the impact of mass media of terrorism. His thesis outlined three eras of mass communication which affected terror organizations. The first of which occurred in the 19th century with the printing machine. The second happened at the beginning of the 1970s with the advent of television satellites; for the first time, international terrorism was possible as terrorists were able to spread their messages to more people. The third and final distinct wave of mass communication was during the tail end of the 20th century; this time it was not a technological invention, rather, news began being administered in a different way. News became twenty-four hour around the clock coverage, sometimes dubbed the "CNN Effect" (Shuaibi, 6-7). Throughout history, various forms of media have been used to spread propaganda and influence attitudes and opinions; for example, the Nazis used the radio to spread their messages. In its infancy, terrorism focused on advancing specific political agendas, without the intention of mass casualties and collateral damage. However, that tide turned starting with the 1972 Olympic Games attack by the PLO; it was the first instance of a terror group exploiting media attention to garner legitimacy and credibility, and it coincided with the aforementioned second wave of mass communication, in which satellites were making mass communication possible (O'Donnell & Gray, 129). Those Olympic Games marked the first time satellite technology provided live coverage of the games. It was during this event that one of the terrorists acknowledged the importance of the media in

their attack Shuaibi's thesis project. "We recognize that sport is the modern religion of the Western world. We knew that people in England and America would switch their television sets from any program about the plight of the Palestinians if there was a sporting event on another channel. So we decided to use their Olympics...to make the world pay attention to us...from Munich onwards, nobody ignore the Palestinians or their cause." (Shuaibi, 8)

The utilization of the mass communication outlets by terror organizations is not a new development; prior to the advent of the digital revolution, extremist groups such as the PLO and Al Qaeda used audio cassettes, pamphlets, and videotapes. The founder of Al-Qaeda, Osama Bin Laden, recognized the importance of publicity from the very beginning. During the Cold War, Bin Laden was fighting the Soviet Union with Afghani Mujahideens, and he chose a select few filmmakers to travel with him. Additionally, in the 1990's, Bin Laden pursued the establishment of a media office in London. Up until this point, the means of mass communication were not readily available in the Middle East. However, beginning in the 1990's, new local language news channels were established (Burke). One of the prominent channels was Al Jazeera; it was widely criticized for allowing Bin Laden a method of disseminating his unfiltered messages (O'Donnell & Gray, 129). Bin Laden took advantage of the newfound technology and regularly sent taped video statements and organized press conferences. By the September 11th attacks, Al Qaeda had captured media attention around the world and amplified their message and agenda through the media (Burke). More information regarding terrorism since the digital revolution will be covered in a later section.

*Communication Technology Facilitating Terrorist Activity*



Starting in the mid-2000's, digital media drastically changed the way the media was used. Organizations could finally obtain cheap equipment and editing software, digitally send videos to news organizations, and fundraise effectively. In fact, with the internet, groups relied less and less on news bureaus to disseminate their materials; they could broadcast them over the largely unregulated world wide web. The most notable shift that occurred with digital media was that people could now send unfiltered messages. In traditional news media, your message gets altered by hours of commentary from anchors, edited clips, news framing, and the gatekeepers in the organization. However, with social media, terrorists could go around the traditional media to communicate directly with their audiences. For example, when Al-Qaeda executed American Nicholas Berg, they posted the video on a website. It received thousands of hits and downloads, and traditional media had nothing to do with it. Eventually, the arrival of smartphones also marked a turning point in how people consumed media. ISIS was one of the first organizations to fully exploit the power of social media through live-tweeting or live-streaming, and over time, these technologies gave way to a wave of "leaderless jihad." They are increasingly relying on digital media to reach out to and motivate their "lone wolf" recruits, like in the case of the Charlie Hebdo attacks or the many western attacks from professed ISIS fighters (Burke). Individuals in different parts of the world can now learn bomb-making skills through Youtube videos or understand the principles of a larger terror group through a chatroom. In the Fig below it is evident that the increases in lone wolf terrorism coincide with the three waves of mass communication mentioned in the historical section. Presently, many terror groups have members dedicated to just handling the media and managing their public image. For example, Al-Shabaab's media wing is named the al-Kataib Media Foundation (Menkhaus, 138). Norah

Shuaibi's earlier mentioned thesis project also postulated *The Triangle of Political Communication* as a model to explain how terror organizations view their reliance on the media (Shuaibi). The following figure illustrates the how groups can use the media as a vehicle to reach policymakers and possible recruits. Targeting digital media is crucial for the terrorists to advance their political agenda as seen in this diagram.

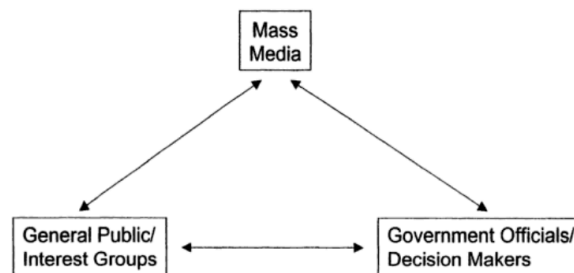


Figure 1. The Triangle of Political Communication (Shuaibi)

Overall, the digital revolution provided terror groups with a new way to achieve their objectives with less work and middlemen; as a result, these less centralized networks are more difficult to track and stop.

#### *A Case Study: Al-Shabaab and The Digital Revolution*

No other extremist group has harnessed the power of social media and technology quite the way Somali jihadi group, Al-Shabaab, did during the 2010s. Understanding the ways in which technology facilitated their cause, but also worked against them, will help illustrate what terrorists have to gain and lose from its use. The internet moved Al-Shabaab from relative obscurity to notoriety around 2008. Exploiting the local technology and social media was integral in narrative building and developing a “virtual jihad” within the diaspora of Somali people, especially considering the relative lack of internet usage by Somali citizens. It also helped fund their activities through extorting or taxing telecommunication companies in areas

under their control. Social media allowed the group to maintain the already present narrative of Somali victimhood and exploitation by the West; they were also to communicate with the diaspora and appeal to their sense of displacement and alienation. The group posted Youtube videos, live tweeted attacks, used chatrooms, ran an official website, and produced high quality videos; all these forms of media allowed them to communicate with the diaspora and those sympathetic to their plight. Many of their recruits became self-radicalized through their content. In their case, the media helped them achieve their recruitment and respect and sympathy goals. They even allowed certain sympathetic journalists to interview or film them; however, this is where a double-edged sword occurred. Al-Shabaab has less control of their message with a reporter or while using Twitter. Ultimately, this led to their downfall as inter-organizational disputes were posted on Twitter, which ended with a violent confrontation in 2013. Furthermore, their cell phone usage left them exposed to surveillance and U.S. drone strikes, so much so that, they began prohibiting internet usage in their controlled region. They even attacked the telecommunications provider that they were profiteering off of, so that they would stop their services (Menkhaus). It allowed them to circumvent media outlets and inspire recruits abroad. For Al-Shabaab, the digital revolution was central to their development, but also, to their undoing.

It is clear that communication technology is integral to achieving a terror group's objectives and communicating with the largest audience possible to influence key decision makers. The ability to use this technology easily will attract terror groups to a state or region.

## **Statement of the Problem**

Given the earlier mentioned case studies and use of communication technology, it can be hypothesized that the ability to disseminate information quickly about politically-motivated violence through private communication networks should improve their effectiveness. Cell phone technology must allow non-state actors to overcome collective action issue and engage in terrorist networks that are more spread out and lack traditional training functions. This can disrupt the government monopoly on organized violence and group coordination. Given the logic and examples outlined, I contend that the ability to coordinate, plan, and execute terrorist activity by non-state actors is enabled through private communication networks. Furthermore, cell phone coverage allows non-state actors to not only plan better, but also achieve their goals of publicity easier.

## LITERATURE REVIEW

The spread of mobile phone technology is often regarded, and rightly so, as a transformative force in developing parts of the world. The positive economic and development outcomes have been proven in many research studies. For example, one paper reveals a significant negative relationship between cell phone availability and institutional corruption (Bailard 2009). A similar study shows a positive correlation between cell phone availability and agricultural and labor market efficiency (Aker et al. 2010). Which brings me to my next point, most of this research focuses on the effects to groups or institutions rather than individuals. Additionally, while the economic effects have been researched, less attention has been given to the political effects. Moreover, much research has not been done on the correlation between the proliferation of telecommunication infrastructure and violence. More recently, some studies have addressed the relationship between cell phone availability and violent conflict. Namely, a paper in the *American Political Science* established a positive relationship in the African continent specifically (Pierskella and Hollenback 2013). Likewise, a study in the *Journal of Peace Research* proves a positive correlation between ethnic conflict and mobile usage (Bailard 2015). However, there hasn't been any research on cell phone coverage and a violent global phenomenon. In addition, terrorism differs in one very important and distinct way from other types of violent conflict; it is actions that are done to push for a political agenda. Media and mobile technology are integral to political motivations since it how they reach wide audiences to incite mass panic. Also, modern terrorism is increasingly embracing the "lone wolf" model of terrorism. Terror cells to not need to rely on direct recruitment and training to achieve their goals. Also, nonstate actors struggle with free rider issues and coordination problems that require

interpersonal communication technology to organize against the state. This paper will analyze mobile phone coverage's effect on a global phenomenon not limited to one region and control for other factors such as riots or coups. Tracking the expansion of cell phone coverage with that of terrorist activity will establish cell phone use as a key indicator of future attacks.

### **Theoretical Framework**

To investigate this research question, I will use data from the START terrorism database and Collins Coverage data along with country level data on political and institutional characteristics to explore the significance of relationships between cell phone coverage and terrorist incidents. Collins Coverage consists of information submitted by mobile network operators from around the world. Specifically, I will test whether the expansion of cell phone coverage in a given geographic locale is positively correlated with the occurrence of terrorist incidents in the same area. Existing social scientific work on changing communication technologies establishes their potential for facilitating collective action in pursuit of both positive (i.e. the coordination of peaceful protest) and negative (i.e. the coordination of violent acts) goals. Building on this work my research will investigate the question posed through the theoretical lenses of collective action problems (e.g. Lupia and Sin 2003). Other than access to the primary databases referenced above, this research will require access to social science research articles available through the TAMU library and software for analyzing statistical relationships which are either available freely online or through TAMU computing resources or Professor Dunaway.

## Databases

*Collins Coverage* is an online mapping service designed to help Mobile Network Operators (MNOs) demonstrate to customers their true global network footprint. Using coverage information that has been submitted by operators around the world, this data provides frequently updated coverage maps to give insight into mobile network coverage across the world. Moreover, the map datasets show aggregated GSM, 3G, and 4G coverage allowing us to view how much coverage each region has and when it got that level of coverage. It is important to note that this data only indicates the availability of cell phone coverage, not network traffic or usage by individual citizens. It is represented using spatial polygons. Given that this data is expensive to license and use, Harper Collins Publisher told me to obtain the data through another Texas A&M University Department that had already bought it. However, much of the data was incomplete for the purposes of this project, so I was only able to analyze GSM and 3G coverage from 2011, 2012, and 2013. The attributes that I will focus on are shape area and shape length which denote the perimeter and area of the polygon in each country which represents the amount of coverage in that country.

The START Global Terrorism Database is an open-source database that tracks all terror activity from 1970 to 2018. It was originally started by Pinkerton Global Intelligence Services, but since 2012, has been managed by a research team at the University of Maryland. This database tracks not only international terror incidents, but also domestic ones. For each event, we can view the number of casualties, actors responsible, weapons used, and exact location. This statistical information is based on a number of media sources, but information is not published until credibility is established. To date, the database includes over 180,000 terror incidents with 45 -

120 variables per incident. For the purposes of this project, I limited the database to only counting incidents which were not ambiguous and met the three criterion for acts of terrorism. These include the attack being aimed at attaining a political, economic, or social goal, evidence of the intention to convey a message to or intimidate a larger audience, and the action must be outside the bounds of legitimate acts of warfare and violate international norms or laws.

The Fragile States Index is a database created and managed by the Fund for Peace which is an independent and nonpartisan 501(c)(3) non-profit based in Washington, D.C. and Abuja, Nigeria. They aim to prevent conflict and promote global security by creating practical tools to anticipate conditions that lead to conflict. Annually, they produce the Fragile States Index which ranks 178 countries across 12 indicators of risks, conditions, regimes, and vulnerabilities. They work directly with local and international partners to collect regional data and trends for this index. These indicators include security apparatus, factionalized elites, group grievances, economic decline, unequal economic development, brain drain, state legitimacy, public services, human rights violations, demographic pressures, refugees, and external intervention. I will focus on the state legitimacy indicator for this project. The index's methodology uses both qualitative and quantitative indicators.



## DISCUSSION

For this project, I used data from sixteen states in the Middle East and North African (MENA) region. I chose these states because they have experienced rapid telecommunications improvements in recent years and have a high concentration of violent non-state actors. I also included Afghanistan and Turkey due to their proximity to the region and the former's inclusion in the regional Arab League organization. The states that I considered are Egypt, Iran, Iraq, Saudi Arabia, Syria, Jordan, the United Arab Emirates, Israel, Lebanon, Kuwait, Bahrain, Morocco, Sudan, Qatar, Afghanistan, and Turkey. Exclusion of other MENA region states such as Oman or Tunisia are due to incomplete data. Due to data limitations, I was unable to conduct statistical analysis and regression models to establish a causal relationship between the variables. After observing states with the largest increases in their spatial polygons and the number of terror attacks in the corresponding years, it is clear that terrorism has increased significantly between 2011 and 2013 and at roughly the same rate as increases in mobile coverage. However, there are several outliers which had significant increases on coverage and negligible increases in terrorism or even decreases in terrorism. Afghanistan had a significant increase in 3G coverage from 2011 to 2012 and then little to no increase from 2012 to 2013 as seen in Figure 1. Consequently, in 2011, there was 372 terror incidents in Afghanistan and 1,041 and 1,151 incidents in 2012 and 2013, respectively as seen in Figure 3. This seems to validate my hypothesis. However, Saudi Arabia's 3G coverage saw an increase of over 1,000% between 2012 and 2013, but only experienced 1 more terror attack in 2013 than in 2012. This seems to disprove my hypothesis. That said, Saudi Arabia has a strong authoritarian government which Afghanistan does not have, and it scores a 6.7 for state legitimacy on the Fragile States Index. The absence of a state

legitimacy seems to be correlated to higher incidents of terror attacks. The same can be seen with the Gulf Coast Cooperation (G.C.C.) countries such as Qatar and the United Arab Emirates which both have strong central governments. There are also states such as Bahrain which saw minimal increases in 3G or GSM coverage, as seen in Figure 2, but experienced more terror attacks. Some states such as Syria or Israel that experienced an uptick of terror attack or a sudden reduction with no significant coverage increases can be attributed to the progression of the Syrian civil war or the lead up to the Israel-Gaza conflict. This leads me to believe that there are regional and state characteristics that have an influence and a larger research project with data for more states and more countries is necessary. Overall, 2013 saw the greatest number of terror attacks in eight of the sixteen states analyzed as represented in Figure 4.

3G Mobile Coverage in the Middle East and North Africa Region (shape length, shape area)

Country	2011	2012	2013
Egypt	92.5686533153, 2.74701572338	92.5686533153, 2.74701572338	92.7484830667, 2.74756790847
Iran	1.90679571004, 0.00673413226183	2.26270591611, 0.0195764579698	19.7361163648, 0.646161575627
Iraq	9.98526172479, 0.216056754186	9.98526172479, 0.216056754186	11.2459028397, 0.230462794619
KSA	47.1829366905, 0.79076394259	54.5960948855, 0.907827789123	686.482021919, 18.3512687685
Syria	11.1736423009, 0.124015271491	11.1736423009, 0.124015271491	11.1736329848, 0.124015379344
Jordan	8.87895257874, 0.573179424584	8.87895257874, 0.573179424584	8.92348408136, 0.573252670023
UAE	50.2577722247, 2.31395657153	50.2577722247, 2.31395657153	50.9450568082, 2.32524227193
Israel	11.9697721618, 2.02671626038	11.9697721618, 2.02671626038	11.969757327, 2.02671862902
Lebanon	2.16392379987, 0.105506927368	2.16392379987, 0.105506927368	2.16392392356, 0.105506764233
Kuwait	24.5974240614, 1.51756599435	24.5974240614, 1.51756599435	24.5560556177, 1.51773935115
Bahrain	2.38620888937, 0.0651479642119	2.44953246904, 0.0664039041811	2.44953245632, 0.0664040862227
Morocco	0.69998759418, 0.008416956371	0.69998759418, 0.008416956371	0.69998759418, 0.008416956371
Sudan	0.919082344, 0.0289901148824	0.919082344, 0.0289901148824	43.6359439967, 2.23261589361
Qatar	16.2064962815, 0.336679793806	6.84746329955, 1.00327793548	6.36793577443, 1.00327833812
Afghanistan	1.18394678302, 0.0206792919102	8.30289510401, 0.10499419689	8.30289510401, 0.10499419689
Turkey	1269.97434019, 9.06455530797	1274.48936612, 9.11784539725	1274.66779449, 9.12620093793

Figure 1

Total Number of Terrorist Attacks

Country	2011	2012	2013
Egypt	16	39	207
Iran	11	3	8
Iraq	1225	1265	2506
Saudi Arabia	2	5	6
Syria	41	144	234
Jordan	0	2	1
UAE	0	0	1
Israel	51	53	29
Lebanon	10	13	95
Morocco	1	0	0
Kuwait	1	0	0
Bahrain	1	26	52
Sudan	35	37	36
Qatar	0	0	0
Afghanistan	372	1041	1151
Turkey	50	129	34
<b>Total Attacks</b>	<b>1816</b>	<b>2757</b>	<b>4360</b>

Figure 3

Global Systems for Mobile Communications (GSM) Coverage in the Middle East and North Africa Region

	2011	2012	2013
Egypt	262.756334543, 19.288941675	262.756334543, 19.288941675	264.091999676, 19.3230642318
Iran	1640.85621303, 54.6337873889	1815.28283774, 56.7723663571	1813.7355009, 56.812969822
Iraq	222.504445388, 22.445235762	191.799803676, 25.579161889	191.883722483, 25.5793471436
Saudi Arabia	688.304398267, 61.1002955147	688.953350375, 61.1165727753	830.996175724, 66.4493865701
Syria	39.3336781415, 15.4604671922	40.1855449587, 15.4739724185	40.1855263636, 15.4739736284
Jordan	33.690837482, 6.26496795013	33.66366054, 6.26740171479	34.4630632504, 6.27349102788
UAE	29.4262300759, 6.45568702408	29.3635673039, 6.45610058732	29.2695444392, 6.45963819406
Israel	11.2674552163, 2.03253263041	11.2674552163, 2.0325326304	11.2674324426, 2.03253501173
Lebanon	5.98087600582, 0.990539908162	5.98123305251, 0.990541067266	5.98124359824, 0.990540518916
Kuwait	8.90932894665, 1.5867812097	8.90932894665, 1.5867812097	8.90932894279, 1.58678132543
Bahrain	2.39770635038, 0.0670663459507	2.39770635038, 0.0670663459507	2.39770633766, 0.0670665279923
Morocco	115.099405731, 32.0347534341	117.486794631, 32.204246506	118.941727506, 32.060706931
Sudan	205.690952183, 20.483387617	205.690952183, 20.483387617	362.670053432, 41.2924882178
Qatar	6.24435857556, 1.00492540365	6.33362444803, 1.0055736576	5.85409637523, 1.00557406289
Afghanistan	653.604895919, 17.5907235691	658.528349937, 17.7314399373	658.527370758, 17.7314344824
Turkey	333.117718637, 79.3570403732	334.141355363, 79.3902206905	334.203205042, 79.3888408097

Figure 2

### Number of Terror Attacks in 2011, 2012, and 2013

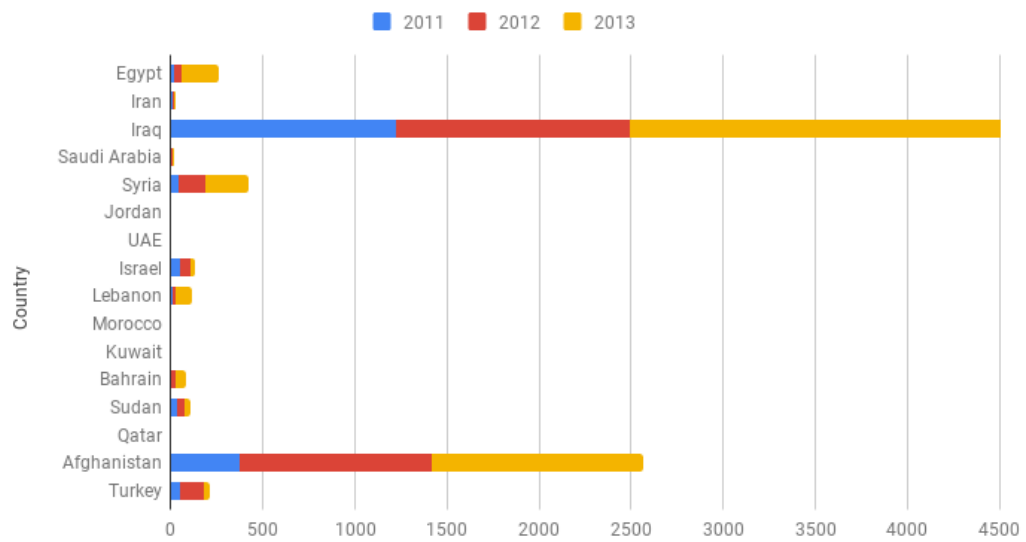


Figure 4

## **Policy Recommendations**

To mitigate the benefits that terror groups get from accessing mobile coverage networks, governments can target coverage in specific areas in which terror groups operate such as the certain territories in Pakistan. Additionally, social media sites and search engines must better regulate their platforms to shut down potential terror cells that operating on it. States should also establish and maintain monitoring systems to obtain intelligence from correspondence on these networks.

## **CONCLUSION**

Cell phone coverage along with the lack of a strong central government allows for the proliferation of violent non-state actors. While there are correlations which point to this conclusion, to better understand and establish this link further, research must be conducted which controls for local and regional characteristics and analyzes data from years with the most rapid expansion of cell phone coverage in the early to mid 2000's. Data limitations in this project restricted my ability to establish a link between cell phone coverage and terror incidents.

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