



Big Data, information and support for terrorism: the ISIS case

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رسول
محمد

SM & ISIS

The rise and fall of the so-called Islamic State of Iraq and Syria (ISIS) represents one of the most salient political topics over these last few years

In the past, terrorist groups usually relied on traditional mass media to spread their message, i.e., Al Qaeda addressing the public by sending declarations recorded on video tapes to Al-Jazeera

Communication strategy adopted by ISIS was rather different: SM, SM, SM!

Debate around ISIS propaganda on social media, which started in 2014, was one of the first fire alarms related to the potential perils of social media

SM & ISIS

Using iSA approach, we analyzed 26.2 million comments published in Arabic language on Twitter, via a data firehose (i.e., complete coverage) from July 2014 to January 2015, when ISIS' strength reached its peak and the group was prominently expanding the territorial area under its control

Nearly 40% of the Arab public is now online and of this population, 30% are on Twitter

By doing that, we were able to measure the share of support and aversion toward the Islamic State within the online Arab communities

Why using SM data?



Why using SM data?

SM allow to observe theoretically relevant social and political attitudes/preferences usually difficult to detect

- out-group hostility (e.g. racism) hard to investigate directly, while more indirect approaches can be fruitful
- catching the “unfiltered” opinions of individuals

As a result, SM enable individuals to express their views in public in relatively safe ways producing a set of discourses, possibly not deeply reflective, but still revealing about values, perspectives, and emotions of large numbers of people who have politically relevant views and are ready to express them (at least on-line)

Our research questions

We investigate two specific topics concerning the conversations on ISIS on-line

First, by exploiting the time-granularity of the tweets, we link the opinions with daily events to understand the main determinants of the changing trend in support toward ISIS

Research Question 1 (RQ1): How strong is the online support for ISIS and what elements influence the level of online support within Twitter Arabic communities?

Our research questions

Second, by taking advantage of the geographical locations of tweets, we explore the relationship between online opinions across countries and offline behavior, linking sentiment with data about the number of foreign fighters joining ISIS from those countries

Research Question 2 (RQ2): What is the relationship between online support for ISIS and the number of foreign fighters and how social media censorship might affect such relationship?

Our method

In the human-codification stage, we employed three graduated Arab native speakers (one Syrian, one Egyptian and one from Morocco) to ascribe the tone (that we call “sentiment”) towards ISIS with 3 options: positive, negative or neutral (as well as the main reasons behind)

The training-set was compromised by 1,600 tweets extracted randomly from different days in the period here analyzed

Pro-ISIS (own translation from Arabic)

“ Why do you hate Islamic State soldiers? Who are you closer to Bush or Isis? According to what you are saying I don't believe you are Sunni and you talk in this way because those who hate Islamic State are Shia

“ The Sunni people in Iraq and Syria disagree with you. They live within Islamic State and they love the state but you hate Isis though you live in Qatar

“ They are attacking the rules on stoning and taxing non-believers.They are fighting the Islamic State because they hate god's shariah that Islamic State implements

“ The most beautiful thing in Syria is that you don't need to raise the consciousness of the people because they have understood the lies of the media when they talk about Isis

Anti-ISIS (own translation from Arabic)

“ Isis killed a syrian boy for stealing. May god take them and wipe them off the face of the earth. The images are horrible, I couldn't watch it okay :(

“ Either you're with us or against us. These words were said by that monkey Bush and are put into effect by [Abu Bakr al] Bagdhadi's mobs.
#unjust #Islamicstate

“ I hate Isis and anyone moving in its orbit. And what are you waiting for?

“ Those who call themselves Isis and Islamic State, keep quiet cos a superior complex is not good and your path is ignorance and darkness. Educate yourself, it's better than being a vagabond from the streets

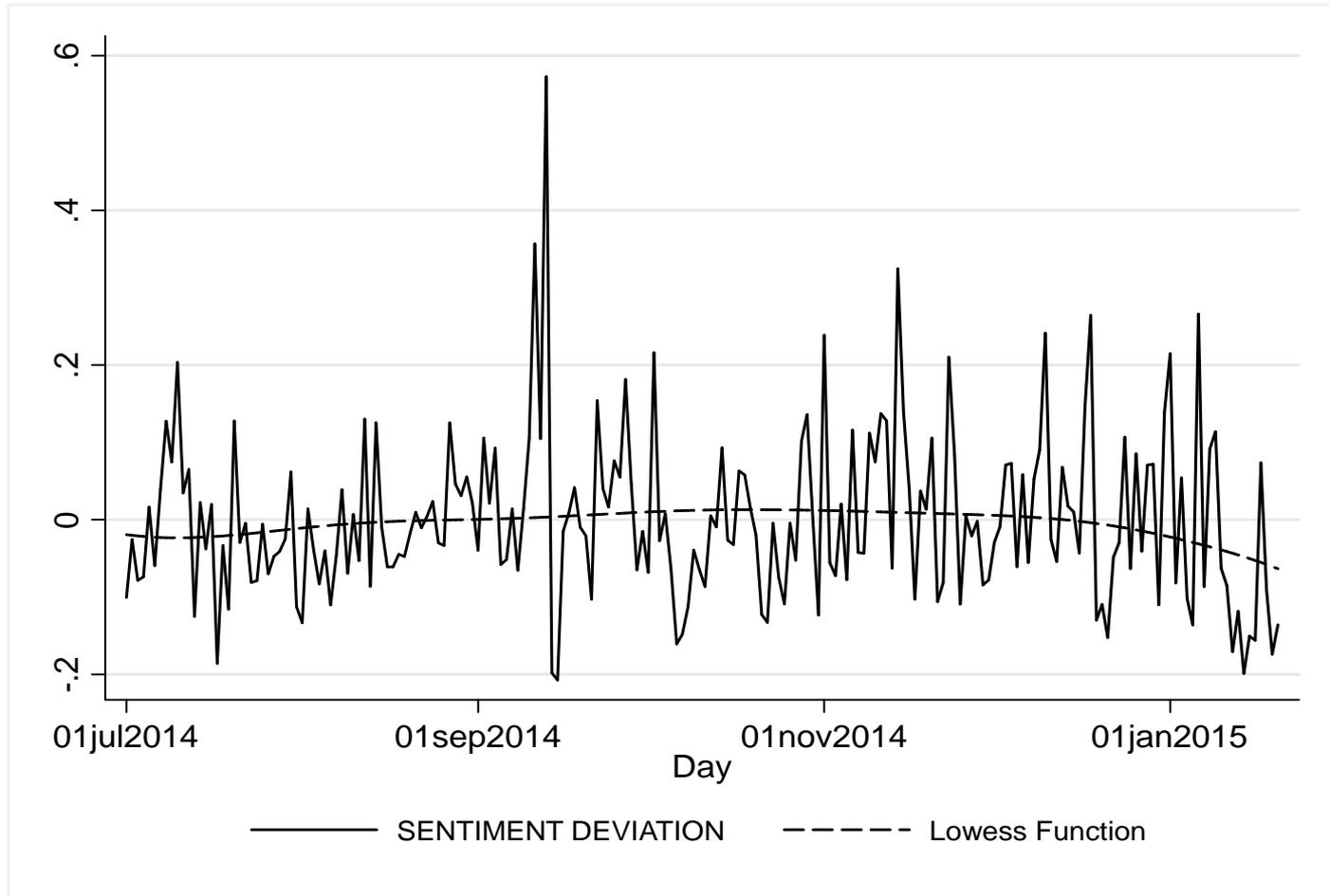
“ Oh man... They are tyrants and have marred Islam. Everyday Isis makes Islam wear the mask of a barbarous sexual monster

Our method

The Arabic language has many varieties and dialects. We focus on the posts written in Modern Standard Arabic besides the Levantine and Egyptian dialects, classifying as off-topics all other dialects

Note that by focusing only on tweets written in Arabic language, we could have incorporated a bias in our analysis as long as the subset of Twitter users in the social-media Arabic sphere who employs other languages to debate about ISIS shares some peculiar and unique characteristics with respect to our research focus

First results: sentiment



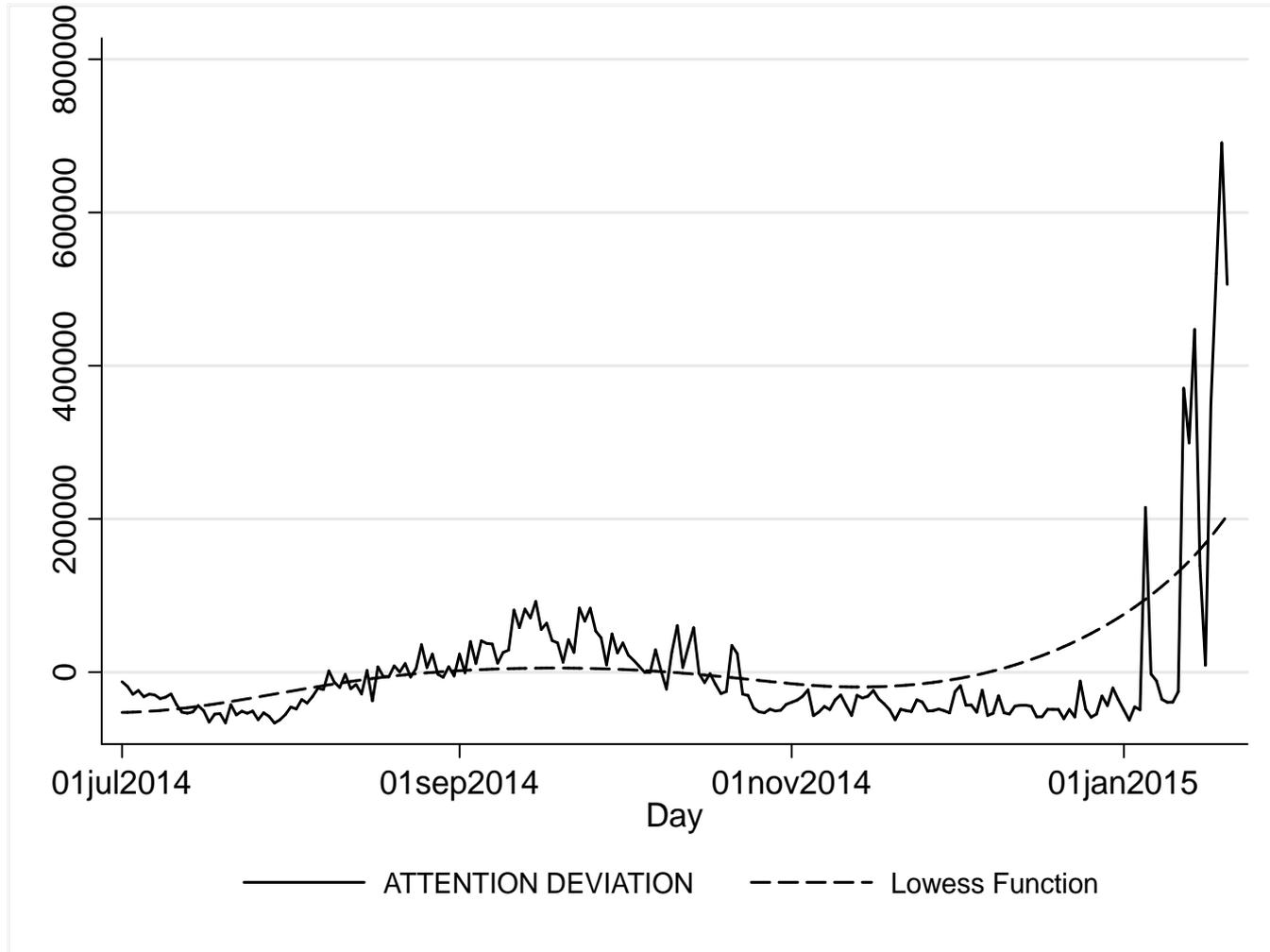
First results: sentiment

Overall, the average positive sentiment value towards Isis (the ratio between % of positive tweets over the sum of % of positive and negative tweets) is 25.1%

This is a **recurrent finding** in the literature in the study of Islamic terrorism on SM

The lowess function presents a rather flat trend, meaning that any extemporal shock in the value of SENTIMENT DEVIATION appears to be absorbed in a very fast rate. However, the lowess function begins to bend down in January 2015

First results: discussion



First results: discussion

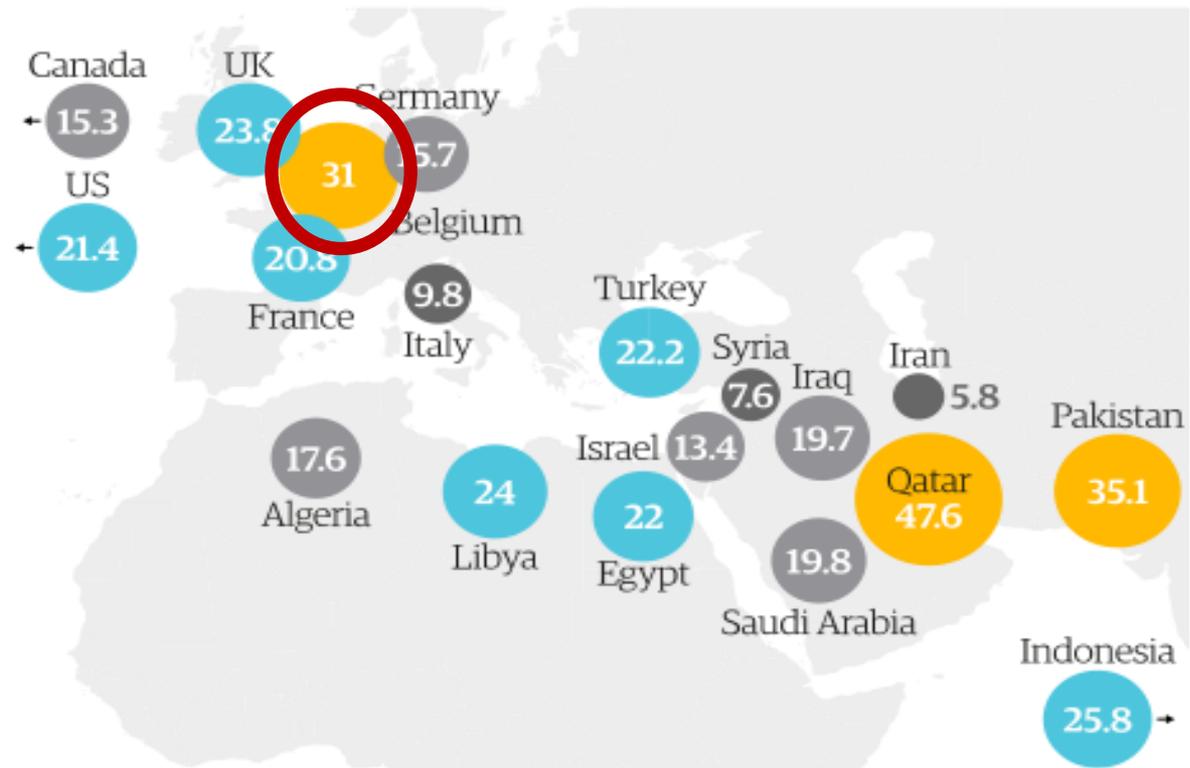
Around 128,000 tweets on a daily basis

The lowest function that shows a substantial stability that begins to increase once again around January 2015

The geography of ISIS

Arabic language social media support for Isis

Percentage of posts expressing positive sentiment towards Isis in a study of Arabic language social media



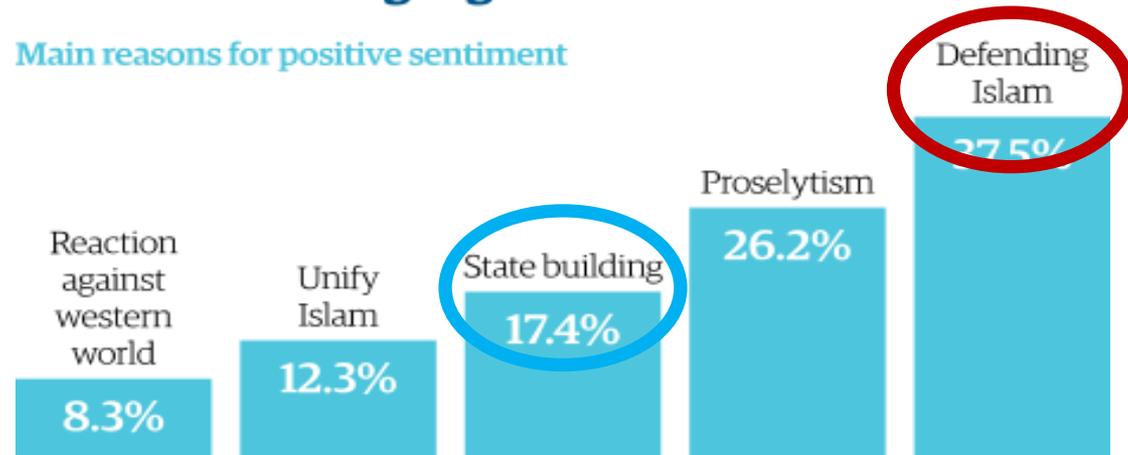
GUARDIAN GRAPHIC

SOURCE: VOICES, SOCIAL MEDIA

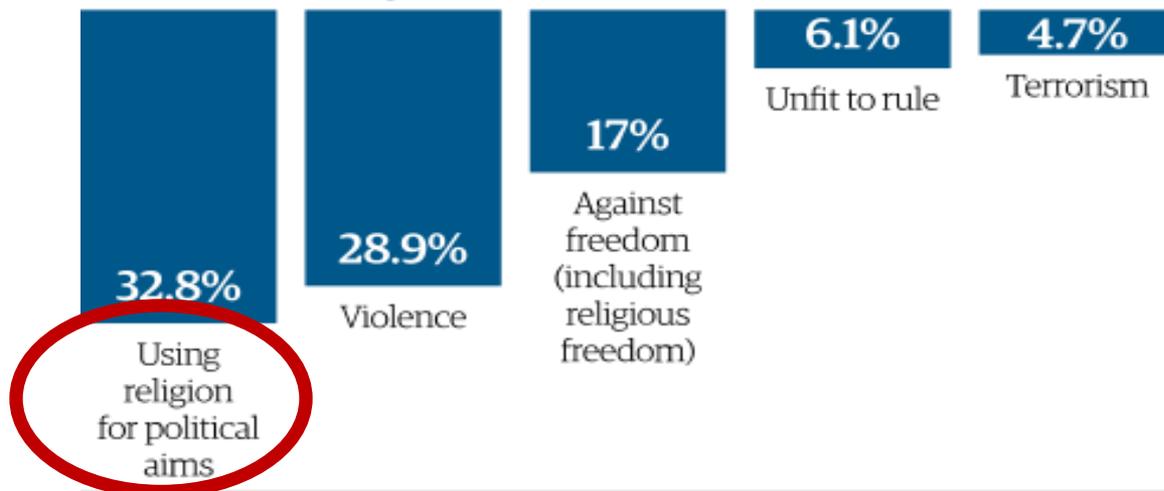
The reasons behind ISIS debate

Isis in Arabic language social media

Main reasons for positive sentiment



Main reasons for negative sentiment



Determinants of daily positive sentiment towards ISIS

Main findings:

- ✓ *Us vs. Them effect? YES!*
- ✓ The attacks against Mosques or Imams have a negative impact on SENTIMENT confirming that *“when a terrorist group chooses a target that is viewed as illegitimate by their constituents, the group can lose a significant amount of popular support”*

Determinants of daily positive sentiment towards ISIS

- ✓ *War events effect? YES!*
- ✓ On average, ISIS Military victories decrease SENTIMENT as a possible result of an increased “fear effect” within Arabic communities
- ✓ Similarly, the news regarding the *injury of the Caliph* has spurred a “liberation (from ISIS threat)” effect contagion within the Arabic Twitter discourses that decreased the SENTIMENT towards ISIS

Determinants of daily positive sentiment towards ISIS

- ✓ *Violence effect?* NO!
- ✓ The showing of violence (beheadings of prisoners on SM) do not seem to effect systematically the sentiment towards ISIS: we do not find any evidence of a clear backlash effect related to the ostentation of atrocities committed against prisoners often highlighted in the literature

Determinants of daily positive sentiment towards ISIS

- ✓ *Volume matters? YES!*
- ✓ As more ppl discuss about ISIS, lower the sentiment. Sentiment towards ISIS drops to 12.9% in those days in which we have more than 200,000 comments
- ✓ The attack against Charlie Hebdo committed by a group of ISIS inspired terrorists that had a world-wide echo for example decreases sentiment towards ISIS

Determinants of daily positive sentiment towards ISIS

- ✓ *Media matters? (partially) YES!*
- ✓ The more news on-line discusses about ISIS, the higher is SENTIMENT (at 90% c.i.)

Positive Sentiment towards ISIS and FF

The phenomenon of **foreign fighters** has attracted a large attention in these last years, both at the academic level as well on the popular press

A special focus has been devoted on the reasons that could explain such radical choice

We exploit the geo-localization of tweets to understand if there is any the relationship between the national on-line overall tone towards ISIS across countries with the number of foreign fighters for ISIS of those same countries

Positive Sentiment towards ISIS and FF

To identify the national origin of a tweet we followed these rules:

- a) we considered the geo-coordinates meta-data attached to a tweet whenever they were available;
- b) otherwise, to determine the location of a mention we took advantages either of the information provided directly by the user and/or the time zone meta-data that is sometimes attached to a tweet

Through this method, we were able to recover the national origin of 45% of tweets in our dataset

Positive Sentiment towards ISIS and FF

The data source for foreign fighters, on the other side, comes from the International Center for the study of Radicalisation and Political violence and The Soufan Group

Positive Sentiment towards ISIS and FF

Main findings:

✓ *Sentiment matters!*

When a given country has a higher ratio of positive to negative ISIS-related tweets, fewer of its residents traveled to fight with the Islamic State

So, for example, the expected number of Foreign Fighters decreases by more than half if the *Twitter-Sentiment toward ISIS* in a country increases from 10% to 20%

Monkey Cage

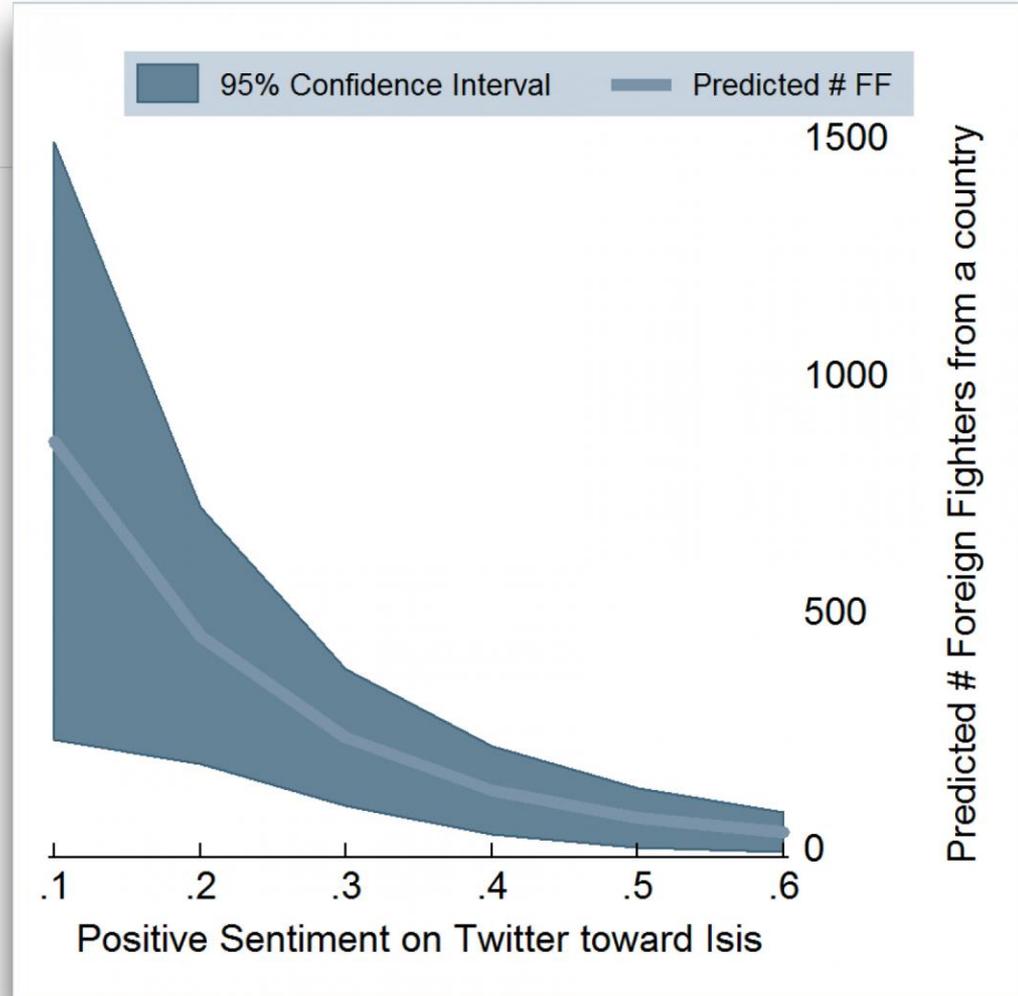
Here's a paradox: Shutting down the Islamic State on Twitter might help it recruit

By Andrea Ceron, Luigi Curini, Stefano Iacus and Andrea Ruggeri

December 10, 2015



An undated image posted on a militant website Jan. 14, 2014, shows fighters from the Islamic State marching in Raqqa, Syria. (Via AP)



Positive Sentiment towards ISIS and FF

- ✓ Moreover, the **more tweets** we find in a country about ISIS, the stronger this relationship is, i.e., the negative impact on Foreign Fighters of *Sentiment toward ISIS* appears to rise as the amount of discussion within a country about ISIS increases as well.
- ✓ The opposite is also true: the more negative a country's Twitter discussion was about the Islamic State, the more of that country's people left to fight with the group

Positive Sentiment towards ISIS and FF

- ✓ Why that?

Our hypothesis is that when Islamic State sympathizers find an online community where they can share their ideas - even extremist ones - fewer of them feel the need to take action by leaving “home” to go fight for the group

This means that individuals struggling to be “**loyal**” to a community with non-radical preferences could, if they do not have the option to “**voice**” (or, more pertinently, tweet) their radical preferences, opt for a far more radical “**exit**” and actually join the Islamic State (*Hirschman docet!*)

Positive Sentiment towards ISIS and FF

- ✓ Our results in this respect sends back to a number of studies that consider political terrorism as a substitute for nonviolent expression of harsh dissent

Positive Sentiment towards ISIS and FF

Policy implications: Shutting down Twitter accounts? Censorship?



Not (always) a good idea! Less (public) information available for the *intelligence* plus...more FF?

Positive Sentiment towards ISIS and FF

Further findings:

The fact that the *Democracy score* variable in our analysis is almost always significant and with a negative score provides a further evidence of how a “*marketplace of ideas*” typical of a well-functioning democracy can **prevent radicalization** (in our case, the number of foreign fighters leaving a given country)

Positive Sentiment towards ISIS and Foreign Fighters

Everything that reduces the “**transaction costs**” of becoming a foreign fighter (such as *Living in a country around ISIS border*, having within a country an already existing *Active Islamic Terrorist Group*, and *% Broadband*: all factors that could make communication, access to information to organize a trip to Syria and Iraq easier as well as reducing the financial costs of such trip), increases almost always the number of foreign fighters from a given country

Positive Sentiment towards ISIS and Foreign Fighters

The existence of a strong and negative impact of % *Shia over Muslims within a country* on FF highlight the well-known religious divide inside Islam characterizing the **Shia-Sunni relationship**

This is far from being a surprise: ISIS rhetoric has often fanned the flames of sectarian hostility by presenting the Caliphate as the defender of Sunnis against both Shia-led militias and governments and defining Shias collectively as infidels and therefore legitimate targets of jihad

Conclusion

The military campaign against ISIS in both Syria and Iraq has recorded an impressive series of victories in the months following January 2015, forcing ISIS to abandon almost all of the territory previously controlled

This, however, does not reduce the relevance of the results reported here that focuses on the “glorious days” of the so called “Islamic State”: not only in terms of better understanding an (almost) past phenomenon, but also in terms of **the lessons we can derive from it**

Conclusion

For example, the relevance of the “loneliness effect”: ISIS’s losses of terrain in the Middle East (and North Africa), seems to coincide to a growing online activity by ISIS itself targeting those populations more receptive to its message in several European countries

The fact that ISIS appears successful at inspiring low-level attacks in Europe despite its territorial losses indicates in this sense that its messaging for a “call for lone jihad” remains potentially resonant

Conclusion

Such message could be easily interpreted as a different factual translation of the “loneliness effect” we have highlighted: by being deprived of the exit route represented by joining the Islamic State in the Islamic State controlled territory, the “loneliness effect” could risk to produce a new “**exit**” option, i.e., terrorist attacks in one’s own native country

This represents a future direction of research that should be investigated in greater details



Conclusion (beyond ISIS)

This study adds to the mounting evidence that online social networks are not ephemeral, spam-ridden sources of information

Rather, social media activity can provide a valid indicator of political decision making that could have relevant (and sometimes unfortunate) consequences