

Slanted Narratives, Social Media, and Foreign Influence in Libya

Shelby Grossman, Katie Jonsson, Nicholas Lyon, and Lydia Sizer*

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Abstract

The rise of social media has lowered barriers for both creators and consumers to engage with mass communication. In fragile contexts such as Libya where social media penetration is high, foreign social media outlets with political interests can use these platforms to influence the country's volatile political climate. In this study, we assess how social media content varies by the country of the information producer. To do so, we create a dataset of the universe of Facebook posts about a strongman's recent attack on Tripoli (N=16,662) and leverage a Facebook feature that provides Page administrator locations. We find that more than half of the posts originated from outside Libya and that there is a substantively meaningful relationship between the location of content producers and a post's slant: posts from countries aligned with the Tripoli-based government are biased in that direction and posts from countries aligned with the eastern-based strongman are biased toward his forces. However, many Pages are not slanted: the correlations are instead driven by a smaller number of hyperpartisan Pages. Our findings have implications for our understanding of how social media content – especially from abroad – shapes citizen perceptions of the legitimacy of competing political actors.

*Shelby Grossman is a research scholar at the Stanford Internet Observatory (shelbygrossman@stanford.edu). Katie Jonsson is an undergraduate at Stanford University. Nicholas Lyon is a PhD candidate at Stanford University. Lydia Sizer is a PhD candidate at the Fletcher School at Tufts University. We thank Renée Diresta, Andy Guess, Laura Jakli, Jonas Kaiser, Kevin Munger, Khadeja Ramali, and Adrian Rauchfleisch for helpful feedback.

1 Introduction

Citizens increasingly rely on social media for news: 36% of American adults younger than 30 report often getting news from social media.¹ In Mexico, South Africa, Chile, and Bulgaria, over 70% of people use social media as a news source.² This reliance is potentially worrisome given the lack of transparency on many social media accounts: anyone in any country can create a Facebook Page or Twitter account and call it, for example, “Breaking News: 24/7 Philippines.” Social media users may not know who created the content on their feeds and may trust accounts that resemble news providers.

This dynamic can be especially destabilizing in places where foreign countries meddle in domestic politics—countries like Syria, Sudan, Venezuela, Mozambique, and Libya. Since the early 2000s, social media has evolved from a tool used by weaker actors in the international system to set agendas and compel stronger actors to change behavior, to a tool used by stronger states to manipulate regional and international dynamics without overt use of force on the cheap.³ Information warfare on social media can be especially attractive to states due to the plausible deniability if the operative is uncovered and the ability to make content appear as if it originated locally. Dozens of social media platform public takedowns of state-backed disinformation operations show that these information operations are prolific and target countries where other forms of foreign meddling proliferate.⁴

The practical effects of this behavior are context-dependent. On the one hand, authentic and inauthentic online information operations could crowd out local voices and shape perceptions of events and individuals in contexts where the trusted independent media space is small. Alternatively, while these activities may feel common, some research suggests their impact may be marginal, particularly if they are intervening on a topic with ubiquitous coverage (Chapman and Gerber, 2019). Similarly, there is less cause for concern if the content that information operations create is neutral and informative, such as BBC stories. Indeed, while it is hard to disentangle the effect of organic social content from state-sponsored content, some experimental research suggests that when people deactivate their social media accounts, their factual knowledge about

¹pewresearch.org/fact-tank/2018/12/10/social-media-outpaces-print-newspapers-in-the-u-s-as-a-news-source/

²statista.com/statistics/718019/social-media-news-source/

³Robinson, Piers. “Media as a Driving Force in International Politics: The CNN Effect and Related Debates.” Global Policy.

⁴github.com/DFRRLab/Dichotomies-of-Disinformation and transparency.twitter.com/en/information-operations.html

recent events decreases (Allcott et al., 2019).

As social scientists, reporters, and policymakers aim to assess the impact of foreign online disinformation campaigns (Bail et al., 2020; DiResta and Grossman, 2019), there are two important prior questions. First, what portion of social media content on a domestic topic originates in foreign countries? This question has been difficult to answer because of the “denominator problem”: it’s hard to define and identify the universe of social media posts on a specific topic of interest. Second, to what extent is foreign content slanted?

We assess these questions using the case of Libya, where, from April 2019 until June 2020, eastern-based strongman Khalifa Haftar and his self-styled Libyan Arab Armed Forces (LAAF, also known as the Libyan National Army) attempted to seize Tripoli, the capital, from the UN-backed Government of National Accord (GNA) headed by Prime Minister Fayez al-Sarraj. While the military battle for Tripoli is over, Libya’s broader conflict is playing out as an internationalized internal war, with Egypt, France, Russia, Saudi Arabia, and the UAE engaging in unconventional warfare in support of the LAAF, and Turkey and Qatar supporting the GNA through similar tactics.

Libya is a useful case for five reasons. First, there is evidence that Egypt, Russia, Saudi Arabia, and the UAE have conducted online disinformation campaigns about Libya on Twitter and Facebook.⁵ Second, both al-Sarraj and Haftar struggle for legitimacy, and we can see how online media lowers the barriers for each side to attempt to delegitimize the other (Zhuravskaya, Petrova and Enikolopov, 2019). Third, while researchers and reporters pay much attention to how foreign actors use social media to influence citizens in high-profile cases such as the US, Hong Kong, and the UK (Bail et al., 2020), there has been less attention to the vulnerabilities of developing countries. Fourth, Libya is a useful case because of new developments to its media space: social media flourished after Muammar Qadhafi fell and 70% of Libyans currently use Facebook.⁶ And fifth, research suggests that information operations can be more effective when people are less certain about the truth (DellaVigna and Gentzkow, 2010); because conflict creates high degrees of information uncertainty, Libya shows the potential consequences of these campaigns.

Using a Facebook-owned product called CrowdTangle, we created a dataset of the universe of public

⁵Russia: (DiResta and Grossman, 2019), Egypt/UAE/Saudi Arabia: medium.com/dfrlab/a-twitter-hashtag-campaign-in-libya-part-1-how-jingoism-went-viral-43d3812e8d3f

⁶gs.statcounter.com/social-media-stats/all/libya

Facebook posts, in Arabic and English, about the start of Haftar’s Tripoli offensive in April 2019. In the month that followed Haftar’s offensive there was a flood of Facebook posts describing the event from media outlets of varying legitimacy. Some framed the story as an internationally recognized government defending itself from a warlord, while others framed it as a general bringing security to Libya.⁷ For each post, we manually coded the locations of the Page administrators using Facebook’s Page Transparency feature: Facebook’s best guess at the administrators’ locations, making an assessment based on all of the data at their disposal. The data are useful particularly in cases where administrators attempt to use their self-declared location to conceal their real location. We then compiled a dictionary of pro-LAAF terms and one of pro-GNA terms to create a *GNA slant* measure for all posts and looked at the relationship between slant – the percent of words in a post aligned with the GNA or LAAF – and Page administrator location. In total, our dataset includes 16,662 posts (89% in Arabic, 11% in English).

We find that more than half of the posts about the Tripoli offensive are from Pages with a plurality of administrators based outside of Libya, and 10% of posts have a plurality of administrators who have opted into hiding their location. We also find that there is a substantively significant relationship between the location of the content producers and the slant of the post: posts from countries aligned with the GNA (Turkey and Qatar) are more pro-GNA and posts from countries aligned with the LAAF (the UAE, Egypt, and Saudi Arabia) are more pro-LAAF. Yet many Pages are not slanted; these correlations are instead driven by a subset of highly biased Pages. We dig into the Pages producing the most slanted coverage and find that an overwhelming majority on both sides have ties to foreign countries. Last, we show that not all Libyan social media users passively consume these slanted posts. On the most slanted posts, 13% of comments were critical of the post. We also found virtually no false reporting in our dataset. Rather, we found hyperpartisan and cheerleading content on each side aiming to win the battle for legitimacy. Overall, these findings suggest that Facebook content about Libya is heavily influenced by foreign actors and that the war in Libya is fought fiercely in non-kinetic domains by state and non-state actors.

This study contributes to three literatures. First, Christopher Walker and Jessica Ludwig have introduced the concept of “sharp power” to describe authoritarian information warfare.⁸ Whereas soft power aims to

⁷Haftar calls himself a general.

⁸See <https://www.foreignaffairs.com/articles/china/2017-11-16/meaning-sharp-power> and Walker

win hearts and minds (Nye Jr, 2008), sharp power is used to manipulate peoples’ information environment. This concept emerged to capture an increasingly important feature of influence campaigns, but we believe we are the first to attempt to measure the potential scale of sharp power operations in a particular context.

Second, there is an important literature on consumption of false stories (e.g. Guess et al., 2018). Increasingly, however, disinformation – defined as the intentional creation and sharing of information with the intent to deceive – takes the form of unfalsifiable hyperpartisan content (King, Pan and Roberts, 2017). In this paper we assess how competing political actors and their foreign backers leverage unfalsifiable content to shape perceptions of the legitimacy of the opposing side.

Third, there is a large literature suggesting social media and online media can polarize citizens (Sunstein, 2018; Bakshy, Messing and Adamic, 2015; Allcott et al., 2019) – though perhaps no more than offline media (Gentzkow and Shapiro, 2011) – and shape political attitudes (Guess, 2020; Walter, 2019) and behavior, including vote choice (Mitts, 2019) and protest (Enikolopov, Makarin and Petrova, 2019). The mechanisms driving these relationships, however, have received less attention. By conducting a deep dive into social media content around a highly salient and polarizing conflict, where the content producers were both domestic and foreign, we can shed light on why social media may have such effects.

2 Social media: measuring location and explaining content

2.1 Previous attempts to measure the location of social accounts

Researchers have invested considerable effort in identifying social media account locations on Twitter and Facebook. The challenge to measurement is that social media users rarely opt into providing this information. In the Arab world, only 4% of users enable geolocation on Twitter, and 31% allow location services on Facebook. Even when users self-declare their location, there are still concerns about data validity as they may lie.⁹

As a result, some researchers run algorithms over the location of a user’s friends and followers to make informed guesses about their location (Backstrom, Sun and Marlow, 2010). Variations on this process include

(2018).

⁹Ibid.

weighting the location of some friends more than others based on interaction (Kong, Liu and Huang, 2014). This process can be effective, as often a high percentage of individuals’ social connections are people they are physically proximate to. Still, these are undoubtedly noisy measures and may be less effective for social media accounts that claim to be news outlets.

Other studies leverage Twitter’s geolocation metadata, despite few users enabling this feature, combined with individuals’ self-reported location information from their profile (Siegel and Tucker, 2018; Noman, Faris and Kelly, 2015). Another strategy involves using Google Trends to assess the countries from which individuals consume certain content on YouTube (Noman, Faris and Kelly, 2015).

In this paper we focus on Facebook. 39% of people report using Facebook in the Arab World.¹⁰ We exploit a location measure that comes from Facebook, which has substantial data on user location and no obvious incentive to misreport. Until recently, Facebook’s application programming interface (API) has been less accessible to academics. By leveraging its newly accessible API and manually coding the location of Page administrators, we are able to measure this important variable at a relatively high degree of accuracy. We are not aware of any political science research to date that has leveraged this data.

2.2 A theory of location of information production and bias in authoritarian regimes

Using this measure of social account location, we can assess the relationship between the location of information producers and bias. Bias can be in the form of the slant of coverage about a particular event or in the form of which events a media outlet decides to cover. In this section we focus on the former, as we will empirically look only at posts about a particular highly salient event.

Theories of traditional media strategy typically assume that media outlets have financial incentives and that there are costs to crafting and sharing stories (Napoli, 1997). These assumptions may not always hold for social media. How should these theories be adjusted (1) when the cost of distributing stories is close to zero, as is the case on social platforms, and (2) in contexts where foreign state-tied outlets have a large presence in the social media space and there are non-financial incentives to production? In this section we

¹⁰mbrsg.ae/getattachment/1383b88a-6eb9-476a-bae4-61903688099b/Arab-Social-Media-Report-2017

build on existing models of media bias, assessing implications for slant when the costs of distribution are close to zero and there are non-financial incentives to production. Our theory focuses on authoritarian regimes, as our dataset is comprised largely of posts from these countries.

We expect content from countries with authoritarian regimes will generally align with the positions of the governments of those countries. This should be the case for several reasons. First, we expect state media to create content that is aligned with the objectives of that government. This content is often not marginal; Metzger and Siegel show that in one period of time RT was the most shared news source on Twitter, both in Arabic and English, for content about Syria (2019). But state media is not the only way that governments try to control the online political narrative. Governments may run disinformation campaigns, covertly hiring digital marketing firms to push their narrative.¹¹ Covert information operations have advantages, such as leveraging astroturfing¹² – the artificial creation of the appearance of grassroots support for a position. In these instances of disinformation, we again expect that content originating in a given country will align with the political objectives of the country’s government.

Second, we expect that in countries with authoritarian regimes even media outlets not tied to the state may publish government-aligned content. These outlets may fear reprimand for publishing non-state aligned stories. Less directly, reporters may be motivated by future career prospects (Baron, 2006) and, in countries where the public sector is a large employer, they may self-censor or slant stories to avoid alienating future employers. Budget constraints may further push news outlets to rely on government sources for stories (Herman and Chomsky, 2010).

Third, we expect consumer demand to play a weaker role on social media and thus content may more likely be government-aligned. Studies of traditional media look at the interaction of financially motivated media outlets and consumer demand, expecting that outlets bias their stories to align with the perceived opinions of their readers to increase their audience (Gentzkow and Shapiro, 2006). While some social accounts are profit-motivated – directing users to websites with ads, for example – covertly or overtly government-tied media outlets may not be financially motivated but rather policy motivated.

Fourth, there are reasons to expect that in some cases content produced in a country, but not tied to

¹¹fsi-live.s3.us-west-1.amazonaws.com/s3fs-public/20191223_smaat.pdf

¹²firstdraftnews.org/latest/digital-astroturfing/

the government, may also align with government views as ordinary citizens may be more likely to share the beliefs of their government. The large literature on citizen-government preferences over foreign policy focuses on democracies, but some of the predictions seem applicable to non-democracies. This research finds that many citizens have little information about foreign policy (Carpini and Keeter, 1996). Mass media is critical in shaping citizen beliefs (Baum and Potter, 2008); if mass media aligns with government views, which it may for the reasons discussed above, citizens will be more likely to align with government preferences. In authoritarian contexts, in the event of public apathy about a foreign policy issue, state media may be the primary or only source of information. There is also work that suggests that public opinion can shape foreign policy (Baum, 2004), but these mechanisms are likely weaker in authoritarian contexts.

An exciting literature is emerging that uses careful empirical strategies to assess the impact of foreign overt propaganda campaigns. For example, Hannah Chapman and Theodore Gerber investigate how consuming Russian state media shapes attitudes among people in Kyrgyzstan (2019). In this study, we are attempting to answer a question that is prior in the causal chain: how much of the content that people are consuming *overall* comes from foreign actors? Critically, we want to capture grassroots content, propaganda, and disinformation. For future work that aims to build on Chapman and Gerber and assess the effect of covert and overt information operations on public opinion, we believe our study will provide an important stepping stone: documenting the portion of the information environment that includes content from abroad, and how that information varies from domestically produced content.

3 Foreign interference in Libya and the fight for political legitimacy

3.1 Evolution of foreign interference in Libyan affairs since 2011

Foreign actors have influenced Libya’s political fate since before its foundation in 1951. Greek, Roman, Persian, Islamic, and Ottoman empires fought for control over parts of what is now modern Libya because of its strategic location at the crossroads between Europe, Africa, and the Middle East. Later, Italian colonists and Nazi occupiers also recognized Libya’s geostrategic value. The competition for foreign influence in Libya

has increased in particular since the 2011 NATO military intervention that contributed to the ouster of former dictator Muammar Qadhafi. Following the revolution, the foreign actors that backed the rebels, including France, Qatar, the UK, and the US, sought stronger diplomatic, commercial, and security relationships with new, post-Qadhafi governments. The “losers” in post-revolution Libya were countries more hesitant to abandon Qadhafi in 2011, especially Russia, China, and even Germany. Libya’s first post-revolution prime minister, Abdurrahman al-Keeb, was clear that those countries’ diplomats and businesses would not receive a warm welcome.¹³

Libya’s transitional governing institutions faltered quickly because of inexperience with democracy; inadequate post-conflict support from foreign partners; the Qadhafi legacy of corruption and bureaucratic incompetence; and destabilizing internal conflict and terrorist threats (Chivvis et al., 2012). In this context, post-revolution governments became less picky about the foreign support they received and regional powers sought to exploit increasing factionalism in Libyan politics and society to advance their own, often ideological, foreign policy agendas. Various Islamist politicians and militias received support from countries like Turkey and Qatar, while anti-Islamist factions received support from the UAE, Egypt, France, and, later, Russia.¹⁴ With the eruption of civil war in 2014, foreign patrons shifted their focus from influencing the course of democratic transition in Libya to directly fueling the violent conflict between warring factions that continues to the present. By 2019, foreign support for rival factions almost single-handedly sustained a conflict in the capital, Tripoli, between anti-Islamist leader Haftar, based in the east, and a diverse mix of opponents from Libya’s western area – a conflict that has displaced hundreds of thousands of people and resulted in the deaths of hundreds of civilians.¹⁵ In October 2020 the GNA and Haftar signed a peace deal; its effectiveness remains to be seen. One of the main reasons why the ceasefire could fall apart is foreign interference in the conflict. Turkish President Erdogan and several LAAF commanders have already hinted they are reluctant to respect the agreement. The tenuous ceasefire provides some evidence that once foreign actors were invited

¹³El-Keib, Abdel-rahim and Marwan Muasher, “Libyan Prime Minister Abdel-rahim El-Keib,” The Carnegie Endowment for International Peace, March 9, 2012, transcript: carnegie-mec.org/2012/03/09/libyan-prime-minister-abdel-rahim-el-keib-event-3584, (accessed February 8, 2020).

¹⁴Fishman, Ben, “The Qatar Crisis on the Mediterranean’s Shores,” The Washington Institute for Near East Policy, Policywatch 2830, July 12, 2017, <https://www.washingtoninstitute.org/policy-analysis/view/the-qatar-crisis-on-the-mediterraneans-shores>, (accessed February 8, 2020).

¹⁵Badi, Emadeddin, “Libya’s Hifter and the false narrative of authoritarian stability,” Middle East Institute, September 3, 2019, <https://www.mei.edu/publications/libyas-hifter-and-false-narrative-authoritarian-stability>, (accessed February 8, 2020).

into the Libyan conflict, it has been extremely difficult to compel them to end their interference.

3.2 The battle for political legitimacy

The war in Libya since 2014 is a battle not only for territorial control, but also – as importantly – for political legitimacy (Gluck, 2015).¹⁶ Libyans have not approved a post-revolution constitution that could confer clear legitimacy on a government; no Libyan government since 2011 has been able to provide the adequate basic services and security to the people necessary to earn popular legitimacy. Since the formal division of political institutions in 2014, rivals have defined political legitimacy differently to empower themselves at the expense of their opponents. For example, the Government of National Accord (GNA) in Tripoli emphasizes international recognition in its definition of legitimacy because UN Security Council resolutions have recognized it as the legitimate government of Libya since its establishment as part of the UN-facilitated Libyan Political Agreement (LPA) in late 2015.¹⁷ On the other hand, the rival government in the east aligned with Haftar has defined legitimacy in terms of parliamentary and militia power, in part because Libya’s internationally recognized and democratically elected parliament, the House of Representatives, has been located in the eastern city of Tobruk since 2014. Furthermore, Haftar has endeavored to brand his loosely grouped militia force, the LAAF, as a professional military (even though his force does not demonstrate Huntingtonian characteristics of professionalism) (Huntington, 1981).

In an effort to re-unify the country following civil unrest in 2014-2015, UN facilitators tried to construct, through the LPA, power-sharing between rival factions by giving them power within different segments of a post-conflict, unity government. The anti-Islamist-dominated, Tobruk-based House of Representatives would be the internationally recognized parliament; a new, consultative High State Council would be dominated by many Islamist-leaning politicians; and the GNA would serve as an overarching, representative executive branch. This agreement has never been fully realized. Since 2014, members of the House of Representatives that do not support anti-Islamist Field Marshal Khalifa Haftar have either voluntarily boycotted the Tobruk-based

¹⁶“New Poll of 15 Libyan Municipalities Shows Support for Councils, Concerns over Service Delivery,” International Republican Institute, May 15, 2019, <https://www.iri.org/resource/new-poll-15-libyan-municipalities-shows-support-councils-concerns-over-service-delivery>, (accessed February 8, 2020).

¹⁷UN Security Council resolution 2259, adopted December 23, 2015, 7598th meeting.

parliament or faced persecution, including forced disappearance by pro-Haftar militias in the east.¹⁸¹⁹ The House of Representatives as an associated, unrecognized government has served as a political ally to Haftar, whose ambitions to control Libya have fueled conflict as forces under the LAAF have slowly conquered territory in Benghazi, Derna, the Fezzan region, the outskirts of Tripoli, and Sirte. Haftar and his political allies and foreign patrons have refused to confer legitimacy on the GNA because they seek to politically dominate Libya themselves. They also see the GNA as beholden to Islamist groups such as the Muslim Brotherhood. Pro-Haftar elements – like their foreign patrons the UAE – consider the Muslim Brotherhood a terrorist organization, a label that is applied in part to erode the political legitimacy of Islamist groups in Libya (Watanabe, 2016).²⁰

Often-violent disagreements about political legitimacy in Libya are tragic manifestations of important conversations Libyans should have been having since 2011. Ideally, a robust national reconciliation process immediately following the revolution would have allowed Libyans from different ethnic, tribal, religious, and political backgrounds to have difficult, yet peaceful, conversations about past conflicts and future hopes for their country. But factionalism had already set in by the time such processes took shape, tainting them before they could help prevent civil war. Disagreements about political legitimacy have also created openings for foreign actors – those motivated by ideology and realpolitik – to extend their influence in this strategically significant country by supporting rival sides of the debate.

Two factors in post-revolution Libya have created opportunities for foreign actors to shape the current debate over political legitimacy: the important role of social media as a forum for this debate and the climax of the post-revolution unrest with Haftar’s offensive in Tripoli beginning in April 2019.

There are several reasons why social media has served as an important forum for debate over political legitimacy in Libya. First, there is little public faith in democratic institutions, like parliaments and local governments, as vehicles for societal debate and resulting legislation. As an indicator of this trend, voter

¹⁸Zaptia, Sami, “Anti Haftar HoR faction holds session in Tripoli,” Libya Herald, May 9, 2019, libyaherald.com/2019/05/09/anti-hafter-hor-faction-holds-session-in-tripoli/, (accessed February 9, 2020).

¹⁹“Libya: No Contact with Abducted Politicians for Months: Siham Sergiwa,” Amnesty International, November 1, 2019, amnesty.org/en/documents/mde19/1263/2019/en/, (accessed February 9, 2020).

²⁰Zaptia, Sami, “HoR designates the Muslim Brotherhood a terrorist organization,” Libya Herald, May 14, 2019, libyaherald.com/2019/05/14/hor-designates-the-muslim-brotherhood-a-terrorist-organization/, (accessed February 9, 2020).

participation in parliamentary elections in 2014 was 32% lower than it was in 2012.²¹ And while municipal governments have enjoyed far more public confidence than central governments, conflicts in 2019–2020 disrupted the elections of new municipal governments, leaving expired councils in place with less legitimacy.²²

Second, international fora for such debates have universally failed to produce viable solutions to Libyan disunity for over half a decade. From the UN-facilitated peace talks culminating in the failed LPA in 2015, to ineffective international conferences seeking peace in Paris, Abu Dhabi, Palermo, Moscow, and Berlin, no major world power or group of powers has been able to compel Libyan factions to agree on what constitutes political legitimacy.²³

Third, public faith in traditional media in Libya is very low. During the revolution, Libyans relied more heavily on satellite television news broadcast from other countries than on local media sources that the dictatorship controlled.²⁴ Despite international efforts to improve the professionalism of new, independent media after the revolution, the political and security vacuum led to systematic attacks on this media from unaccountable militia – including threats against journalists made on Facebook – resulting in the deterioration of the quality of local news and rampant self-censorship.²⁵

3.3 The evolution of Facebook’s role in Libya

In this context, Libyans both inside and outside the country have turned to social media to arbitrate conflict. Facebook was an important organizing tool for protestors during the 2011 revolution despite regime attempts to block online communications (Ali and Fahmy, 2013). It remains the most popular social media platform in the country, especially for Arabic-language communication.²⁶ More recently, as militia infighting erupted in Tripoli in 2018, Libyans lost access to Facebook due to spotty internet provision in the capital. The reaction

²¹“Libya,” IFES, electionguide.org/countries/id/123/, (accessed February 8, 2020).

²²Megerisi, Tarek, “Governing ungoverned spaces: The case of Libya,” Atlantic Community, March 7, 2019, atlantic-community.org/governing-ungoverned-spaces-the-case-of-libya/, (accessed February 8, 2020).

²³Cristiani, Dario, “The Berlin Conference Showed Europe’s Dwindling Influence in Libya,” German Marshall Fund, January 24, 2020, gmfus.org/blog/2020/01/24/berlin-conference-showed-europes-dwindling-influence-libya, (accessed February 8, 2020).

²⁴Mekay, Emad, “One battle over Libya is fought via the media; Qaddafi has news outlets that are well financed, but opponents are savvy,” The International Herald Tribune, February 24, 2011.

²⁵“Freedom of the Press 2016: Libya,” Freedom House, 2016.

²⁶“Netizen Report: What role does Facebook play in Libya’s civil war?” Global Voices, September 6, 2018, advox.globalvoices.org/2018/09/06/netizen-report-what-role-does-facebook-play-in-libyas-civil-war, (accessed February 8, 2020).

to the outages from the militia fighters and local citizens alike demonstrated how important Facebook had become to combatants and non-combatants. In the absence of reliable local reporting on the unfolding conflict, citizens had turned to Facebook for news about where clashes were breaking out and what kind of disruptions they could expect in their daily lives.²⁷ For the militias, Facebook was a place to spread propaganda and fake news about their urban opponents in the capital; organize armed coalitions and recruit new members; glean information to find and sometimes kill individual opponents; and even buy and sell weapons and ammunition.^{28,29}

The growing post-revolution unrest, culminating with Haftar's offensive in Tripoli, also provided an opening for foreign actors to shape Libyan affairs through social media. Before 2019, Libyan citizens, militias, and politicians instrumentalized Facebook to cope with or even exacerbate a local conflict. But as foreign actors became more and more invested in the outcome of Libya's six-year, post-revolution conflict, there was a corresponding rise in foreign interference in Libyan affairs via Facebook and other social media outlets as well. Foreign actors – aligned with either the GNA or the LAAF (see Table 1) plunged deeply into this largely Libyan debate on social media during Haftar's ongoing assault on Tripoli. For example, in the days after the outbreak of war in early April 2019, longtime Libya watchers on Twitter noticed a marked increase in bot activity, especially among social media profiles linked to Saudi Arabia.³⁰ As Haftar failed to take over the capital as quickly as he had anticipated, he and his foreign patrons, especially the UAE and Saudi Arabia, considered all pillars of power at their disposal to shift the balance in his favor: military, financial, and – importantly – rhetoric about political legitimacy. While Haftar's patrons poured military equipment, advisors, and funding into his kinetic campaign against Tripoli, they also augmented the eastern government's campaign to erode the GNA's remaining legitimacy through information warfare on social media.³¹ Therefore, this study analyzes foreign involvement in shaping political-actor legitimacy during the 2019-2020 Tripoli offensive because of the prevalence of available evidence that explains how foreign actors weaponized social

²⁷ Ibid.

²⁸ Walsh, Declan and Suliman Ali Zway, "A Facebook War: Libyans Battle on the Streets and on Screens," *The New York Times*, September 4, 2018.

²⁹ Gatehouse, Gabriel, "Weapons for sale on Facebook in Libya," *BBC World*, April 6, 2016, bbc.com/news/world-africa-35980338, (accessed February 8, 2020).

³⁰ Mary Fitzgerald, Twitter post, May 12, 2019, 3:29AM, twitter.com/MaryFitzger.

³¹ "Removing Coordinated Inauthentic Behavior in UAE, Egypt and Saudi Arabia," Facebook Newsroom, August 1, 2019, about.fb.com/news/2019/08/cib-uae-egypt-saudi-arabia/, (accessed February 8, 2020).

GNA-aligned governments	LAAF-aligned governments
Turkey	UAE
Qatar	Egypt
	Russia
	Saudi Arabi
	France

Table 1: Governments aligned with the GNA and LAAF.

media in Libya – and how they may try to do so in different contexts in the future.

4 Data and approach

In this section we outline how we constructed the dataset and our methodological approach. The goal was to create a dataset of the universe of posts about a specific topic and the content producer location. We created a measure that captures post slant and looked at the relationship between that slant and content producer location. To create this dataset, we focused on Haftar’s offensive on Tripoli, which began on April 4, 2019: an event that dominated Libyan news for over a year and in which regional actors were invested in how Libyans perceived the offensive.

We used CrowdTangle, a social media monitoring platform owned by Facebook, to identify the universe of public Page posts about the start of the offensive. Note that we do not include posts from private user accounts, which CrowdTangle does not provide access to, nor Groups, which CrowdTangle provides access to but lack locational information. We are focusing on public Pages – a Facebook feature used by brands, celebrities, and media outlets to connect with people. We set the start date at March 30, 2019, as Haftar’s regional backers may have been aware of the offensive ahead of time, and the end date at April 30, 2019. This range captures the period when the offensive was highly salient. We used 70 search terms, split between Arabic and English words and phrases, selecting words and phrases to capture posts about the Tripoli offensive. For example, we used the search terms “Operation Flood of Dignity Tripoli” in English and Arabic. This references Haftar’s military offensive to capture western Libya and Tripoli. We also used terms like “Fayez al Serraj,” the Prime Minister of the GNA, because during this time period Facebook posts with his name referred almost exclusively to the Tripoli offensive. We combined some terms that were not sufficiently

specific to pull up posts about the offensive on their own, such as “Gharyan,” “Haftar” and “LAAF.” Gharyan is a city south of Tripoli that Haftar’s LAAF forces captured on April 4, 2019. The final dataset included 14,910 unique posts in Arabic and 1,752 unique posts in English.³²

We then read each post to confirm that it was about the Tripoli offensive and deleted any that were irrelevant. Next, we visited the post’s Page to record information from the Page Transparency feature, which provides Facebook’s best guess about Page administrator location – a useful tool if the guess differs from the user’s self-declared location. Facebook uses all of the data at its disposal to make these location assessments. For example, Figure 1 shows Page Transparency information for the Al Jazeera English Page (Al Jazeera is based in Qatar).

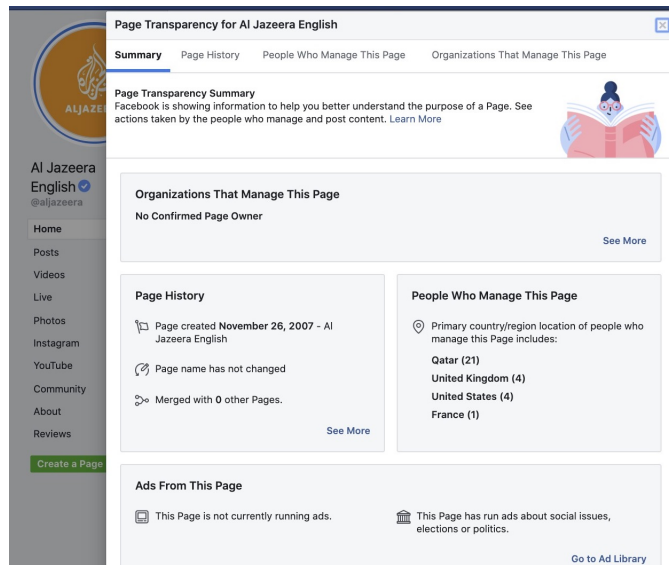


Figure 1: Page Transparency information for Al Jazeera English

In addition to listing specific countries, Page Transparency sometimes includes locations as (for example) “Location hidden (1)” or “Not available (2).” Less often, Page Transparency shows no information at all. Though we lack a crystal clear understanding of the “Location hidden” category, it may still be an important one. Facebook’s website says users can submit a form to request that Facebook hide their location – for example, for safety reasons.³³ But it also says that prior to October 2019 certain Pages could switch their location to hidden without a form. As such, it appears that Page administrators could opt into the location

³²We dropped a small number of posts that were in Italian.

³³facebook.com/help/323314944866264

hidden status, making it a theoretically important category for our purposes. In our dataset, 1,596 posts – or 9.6% – are classified as originating from an administrator with “Location hidden,” making the analysis of this category a matter of practical as well as theoretical importance.³⁴ “Not available” indicates that Facebook cannot confidently determine an administrator’s location. Because of our uncertainty about the reason for that determination, we do not think of it as a meaningful category. Facebook will sometimes not show any information about Page administrators for Pages with small audiences.³⁵ Some Pages have a tie for the country location of a plurality of their administrators; in these cases, we break the tie at random and assign the post to a single country.

Next, we created two dictionaries, one with English and Arabic words and phrases that appeared in posts we deemed biased in favor of the LAAF and the other with words and phrases that appeared in posts we assessed favored the GNA. We created these dictionaries in collaboration with Khadeja Ramali, an expert on social media in Libya. Examples of pro-LAAF terms we included are “liberation” (as in “Haftar will liberate Tripoli”), “Islamists” (as in “Haftar is fighting Islamists”), and “illegitimate” (as in “the GNA is illegitimate”). Pro-GNA words included “invaders,” “renegade,” and “war criminal”; these were words used to denigrate Haftar. The full dictionaries appear in the Appendix in Table 7. An example pro-LAAF post from the data is “General Haftar ordered the Lybian [sic] National Army to advance towards the positions of the Jihadist & Muslim Brotherhood militias inside Tripoli to pacify the capital and enable the government to protect civil society and organize elections. If this is serious, I hope the US, EU & UN support and mandate the LAAF to apply international and national law.” An example pro-GNA post is “Warlord also understood to have private support of Saudi Arabia and the UAE” (“warlord” is a reference to Haftar).

From these dictionaries, we created a pro-GNA slant measure.³⁶ To make this measure, we identified the ratio of pro-LAAF terms to all terms in a post and the ratio of pro-GNA terms to all terms in a post, and subtracted the former from the latter. Our pro-GNA slant measure for Facebook posts in the data, indexed

³⁴As seen in Figure 7, the proportion of posts coming from “Location hidden” Pages does not increase over the period under study, suggesting that new Pages are not being created with their location hidden to mask online activities towards Libya.

³⁵We collected the Page Transparency information in December 2019 and January 2020. In some unusual cases, location information changes over time, presumably if Page administrators travel. Our data captures the location information at a single point in time.

³⁶For justification on the value of simply counting words in Arabic social media data, see: ap-samena.org/2019/12/03/using-social-media-data-to-study-arab-politics/.

by i posts, is given by:

$$Slant_i = \frac{GNA_i - LAAF_i}{Terms_i}$$

GNA_i is the number of times a term in the pro-GNA dictionary appears in post i and $LAAF_i$ is the number of times a term in the pro-LAAF dictionary appears in post i . $Terms_i$ is the total number of terms in the post. Because all terms in the two dictionaries are either unigrams or bigrams after stopwords are removed, we operationalize our denominator by setting $Terms_i = Unigrams_i + Bigrams_i$. The resulting GNA slant measure is bound from -1 to 1, with numbers closer to -1 indicating more pro-LAAF terms compared to pro-GNA terms, and numbers closer to 1 indicating more pro-GNA terms compared to pro-LAAF terms.³⁷ We normalize this measure for analysis.

The dataset includes many relatively small Pages (less than 200,000 followers) that are (at least nominally) news sites. For example, the Page “Middle East Affairs,” tied to middleeastaffairs.net, has 125,000 followers. These types of Pages, with often unclear ownership, are extremely prevalent and can dominate users’ feeds, but academic researchers rarely study them. Many are likely covertly tied to governments. For example, in 2019 Facebook removed dozens of Pages targeting African countries, including Libya, that were linked to Yevgeny Prigozhin, a Russian oligarch with ties to Russian President Vladimir Putin. The Pages present as news Pages with titles like شبكة أخبار طرابلس (Tripoli News Network)³⁸ and شبكة أخبار ليبيا (Libya News Network).³⁹ A Page that appears to be news may make users less skeptical, as we know that consumers assess the messages they receive based on what they know about sender credibility (DellaVigna and Gentzkow, 2010). Many of these Pages present as local news (like Tripoli News Network) and research (in the US) suggests that citizens are more likely to trust local news sources over national ones.⁴⁰ Still, Libyan social media users are often savvy to foreign meddling in their online space.

In the analysis that follows, we look primarily at the relationship between the location of the plurality of

³⁷We created the slant measure for Arabic posts by using Google Translate to translate both the posts and the Arabic search terms. While Google Translate has its weaknesses, we believe using it in this way is appropriate, as we are less interested in the actual translation and more interested in the prevalence of slanted terms. To ensure comparability between translated Facebook posts and our two dictionaries, we also applied Google Translate to our dictionary terms.

³⁸archive.fo

³⁹archive.ph

⁴⁰poynter.org/ethics-trust/2018/finally-some-good-news-trust-in-news-is-up-especially-for-local-media/

administrators and the GNA slant measure, though we also show results for the raw number of pro-GNA and pro-LAAF terms.

5 Does Facebook post content vary by location of the information producer?

There are 78 unique locations in our dataset for the plurality of Facebook Page administrators, including labels for “Location hidden” and administrator data “Not available.” Figure 2 shows the geographic distribution of posts in the dataset. Pages with a plurality of administrators in Libya make up 48% of all posts – a plurality of content about the Tripoli offensive in April 2019 was produced within the country. The geographic distribution of posts is, in part, tied to a post’s language: English language posts are more likely to originate from Pages with administrators in Libya, the US, the UK, and France, while Arabic language posts are more likely to originate from Pages with administrators in Libya, Egypt, Tunisia, Turkey, Jordan, and the Persian Gulf states.

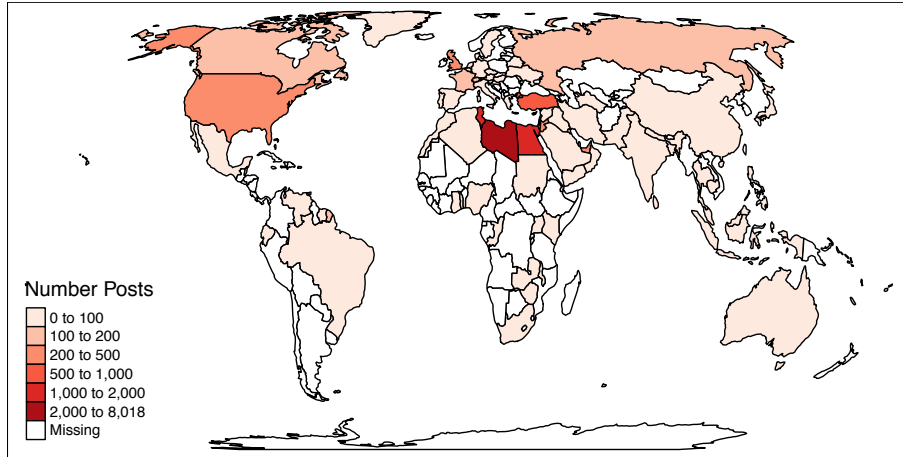


Figure 2: Number of posts by country.

The language used in a post is highly correlated with its partisan content. Posts written in English are, on average, 0.37 standard deviations more slanted in favor of the GNA than posts written in Arabic. This is true when estimates are produced using variation across all countries and when using within-country variation (see Table 8 in the Appendix).

Descriptive statistics for our measures of Page slant are included in Table 2. These measures are provided for the complete set of all posts as well as for ten relevant Page locations: Libya, the set of seven countries included in Table 1, Pages with their administrator location hidden, and the United States as a point of comparison. On average, posts about the Tripoli offensive during the month of April contain 0.22 words identified as pro-GNA keywords and 0.16 words identified as pro-LAAF keywords, resulting in a slight overall pro-GNA slant. The country-level statistics shown in Table 3 accord with how governments have aligned themselves toward the GNA and LAAF, respectively. Posts originating from Pages in Turkey and Qatar are slanted towards the GNA – with posts from those locations having, respectively, an average of 0.26 and 0.28 pro-GNA terms compared to an average of 0.05 and 0.08 pro-LAAF terms. Conversely, posts originating from Pages in Egypt and the UAE are slanted towards the LAAF, with averages of 0.34 and 0.26 pro-LAAF terms, respectively, and averages of 0.10 and 0.04 pro-GNA terms.

Country	Number Posts	Mean GNA Keywords	St. Dev. GNA Keywords	Mean LAAF Keywords	St. Dev. LAAF Keywords	Mean GNA Slant	St. Dev GNA Slant
All posts	16662	0.222	0.737	0.160	0.674	0.001	0.018
Libya	7926	0.270	0.866	0.138	0.582	0.003	0.018
Egypt	1685	0.100	0.507	0.338	1.052	-0.004	0.019
Location hidden	1596	0.095	0.397	0.131	0.652	-0.001	0.016
Turkey	790	0.259	0.685	0.052	0.264	0.007	0.023
USA	378	0.421	0.757	0.138	0.657	0.005	0.015
Qatar	298	0.282	0.813	0.084	0.323	0.004	0.015
UAE	266	0.038	0.243	0.263	0.715	-0.005	0.019
France	113	0.301	0.667	0.115	0.458	0.002	0.016
Russia	105	0.076	0.359	0.105	0.390	-0.001	0.009
Saudi Arabia	64	0.172	0.420	0.234	0.792	<0.001	0.014

Table 2: Descriptive statistics are included for all posts and select countries. Statistics for the pro-GNA slant measure are provided using the raw data, as opposed to the normalized slant measure which is used in subsequent analyses.

Figure 3 shows the geographic distribution of our slant measure for all countries (at left) and the subset of countries with at least 100 posts in the dataset (at right). Several of the most slanted countries in the left panel – such as Australia and Zimbabwe – drop out of the map in the right panel: Pages in these countries posted very few times about the Tripoli offensive in April 2019, but the minimal content posted from these places was very slanted.

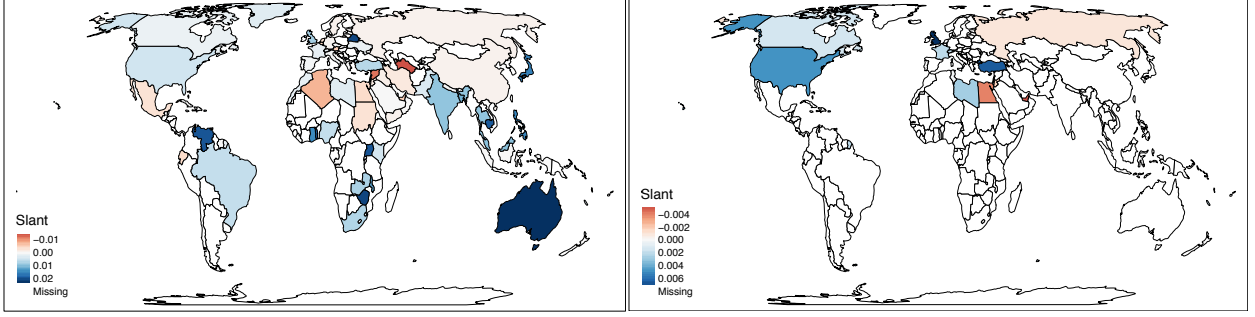


Figure 3: Left: All countries. Higher (more blue) slant indicates more pro-GNA bias. Right: Countries with at least 100 posts.

In Table 3 we investigate whether the location of information production matters for post content in a regression framework. This table presents the results from 30 separate regressions: three different outcomes – normalized GNA slant, LAAF keyword count, and GNA keyword count – regressed separately on ten different country indicators of substantive interest. We run separate regressions for each country indicator – as opposed to a single regression with all location indicators – because we are interested in estimates of the slant of posts from each relevant country compared to all other posts. Results from regressions with all location indicators support the same conclusions (see Table 9 in the appendix). All regressions include language as a fixed effect and cluster standard errors at the Facebook Page level. For all countries except France, Russia, and the United States, there is a large and significant relationship between country of origin and post content. Estimates for the Libya, Qatar, and Turkey indicators in the standardized slant model are positive – indicating pro-GNA slant – and statistically significant at conventional levels. Estimates for the Egypt, Qatar, Saudi Arabia, and UAE indicators are all negative – indicating pro-LAAF bias – and statistically significant at less than the 0.10 level. Because the outcome is standardized, estimates should be interpreted in terms of standard deviations: posts from Libyan Facebook Pages are estimated to be 0.19 standard deviations more slanted towards the GNA than non-Libyan posts.

Turkey and the United Arab Emirates are the countries that are estimated to be the most biased towards the GNA and the LAAF, respectively. Posts originating in Turkey are estimated to be 0.29 standard deviations more slanted *towards the GNA* than all other posts and posts originating in the United Arab Emirates are estimated to be 0.36 standard deviations more slanted *towards the LAAF* than all other posts. The substantive significance of these estimates is exemplified by the following set of three posts – (1) a relatively

neutral post with a standardized slant close to zero; (2) a pro-GNA post with a standardized slant close to 0.29; and (3) a pro-LAAF post with a standardized slant close to -0.36:

1. “A battalion surrenders to Haftar and a plane crashes .. Latest field developments in Libya”: *standardized slant of -0.018*, signifying a post that is relatively neutral.⁴¹
2. “#Al-Mismari: #ISIS is beginning to provide support to the Tripoli terrorists”: *standardized slant of -0.375*, signifying a post slanted towards the LAAF.⁴²
3. “The Italian Prime Minister expressed his regret that Tripoli was subjected to an unjustified attack that brought the country back to the atmosphere of war after it was on the gates of a solution to the crisis it is going through. It threatens the lives of civilians, calling for the immediate cessation of this military operation, and for Haftar’s forces to return to their previous locations from which they were launched.”: *standardized slant of 0.281*, signifying a post slanted towards the GNA.⁴³

The first post is informative without introducing normative language – markers of media that would be considered relatively neutral. The second post makes the claim that “#ISIS is beginning to provide support to the Tripoli terrorists.” This post demonstrates bias towards the LAAF and against the GNA: the GNA in Tripoli has been accused by Haftar of working with terrorists and the LAAF has sought international legitimacy, in part, by making claims of fighting against ISIS in Libya. The third post exemplifies a post that is slanted towards the GNA by reporting on accusations that portray Haftar as a threat to Libyan civilians and the city of Tripoli. These examples demonstrate that our slant metric captures meaningful variation in bias towards the GNA or the LAAF, respectively, and that the magnitudes of the coefficients reported in Table 3 represent meaningful differences in the partisan content of Facebook posts.

These findings from the standardized slant model in Table 3 largely hold for the count of LAAF and GNA keywords: post locations associated with content slanted towards the GNA – Turkey, Qatar, and Libya – either post content with more GNA keywords or post content with fewer LAAF keywords. The reverse

⁴¹Facebook post from Aljazeera Mubasher Channel, 15 April 2019. Translated using Google Translate. Available at facebook.com/ajmubasher/posts/2739464599399590.

⁴²Facebook post from Akhbar AL Aan, 9 April 2019. Translated using Google Translate. Available at facebook.com/akhbaralaan/posts/2355321544513883.

⁴³Excerpted from a Facebook post from the Department of Communication and Information (of the GNA), 8 April 2019. Translated using Google Translate. Available at <https://www.facebook.com/gna.libya/posts/2103816826575715>.

	Standardized Slant	LAAF Count	GNA Count
Libya	0.19*** (0.04)	-0.06* (0.03)	0.13*** (0.03)
Egypt	-0.30*** (0.06)	0.19** (0.08)	-0.11*** (0.03)
France	-0.16 (0.11)	-0.00 (0.07)	-0.08 (0.06)
Qatar	0.15** (0.05)	-0.08** (0.02)	0.06 (0.10)
Russia	-0.19 (0.12)	-0.04 (0.04)	-0.20 (0.11)
Saudi Arabia	-0.19* (0.09)	0.10 (0.13)	-0.14** (0.04)
Turkey	0.29** (0.11)	-0.11*** (0.02)	0.04 (0.06)
UAE	-0.36** (0.14)	0.10 (0.08)	-0.18*** (0.03)
USA	-0.04 (0.07)	0.03 (0.04)	0.03 (0.06)
Location Hidden	-0.14** (0.06)	-0.04 (0.03)	-0.12*** (0.02)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 3: Coefficients from separate regressions of a country indicator on each outcome are reported above (the above table reflects 30 individual regressions). These regressions control for language \in (Arabic, English) fixed effects. Standard errors clustered at the Facebook page level are included in parentheses. Each regression is estimated on a set of 16,662 observations across 1,487 unique Facebook pages.

is true for post locations associated with content slanted more towards LAAF – Egypt, Saudi Arabia, and the UAE. Posts from Pages with a plurality of hidden administrators are, on average, more slanted towards the LAAF and are less likely to post GNA keywords, but they are also less likely to post LAAF keywords. Posts originating from the United States are not associated with slant or keyword usage in favor of either the LAAF or the GNA. Posts associated with France and Russia, respectively, are estimated to be slanted in favor of the LAAF but these associations are not estimated precisely.

Figure 4 visually displays post-level slant data with overlaid density plots for each of the ten countries included in Table 3, above. The density plots show that, across all countries, posts are clustered around zero slant, indicating that a large fraction of posts are not explicitly slanted towards either the LAAF or the GNA. Rather, a subset of posts in each country appears to drive partisan content.

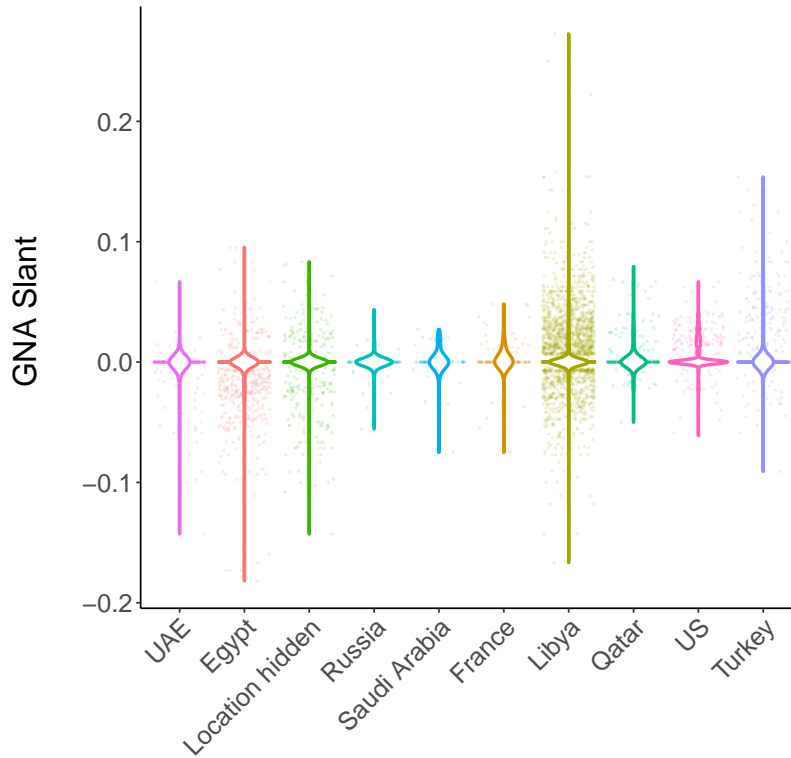


Figure 4: Density plots for non-normalized GNA slant by country of origin. Raw data points are plotted with overlaid kernel density estimates. Countries are arranged on the x-axis according to their average GNA slant (increasing from left to right).

To assess whether certain Pages are driving country-level slant estimates, we zoom in on Page-level data

for Turkey and the UAE – the most GNA-slanted and LAAF-slanted countries in the dataset, respectively. Figure 5 shows density plots for all Facebook Pages in Turkey and the UAE, respectively, that posted at least 20 times about the Tripoli offensive during April 2019. These plots suggest a high degree of Page-level variation in partisan content within countries. Several Turkish and UAE Pages did not post any slanted content during this period. We analyze who is behind partisan Facebook Pages in the following section.

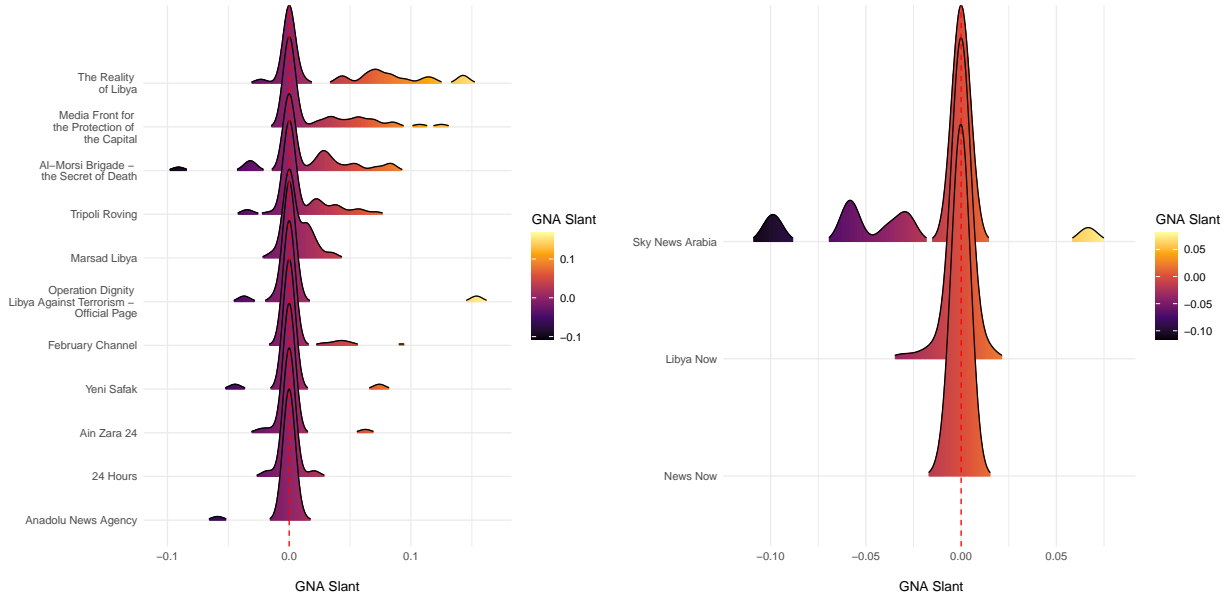


Figure 5: Page-level slant distributions for Turkey and the UAE. Left panel: Distribution of the GNA slant measure for the set of nine Facebook Pages with a plurality of Turkish administrators that posted at least 20 times during April 2019. Right panel: Distribution of the GNA slant measure for the set of three Facebook Pages with a plurality of Emirati administrators that posted at least 20 times during April 2019.

6 Who is behind highly slanted Pages?

To better understand these trends, we created a Page-level dataset, subsetting it to Pages with at least 20 posts, and identified (1) the top 10 most pro-LAAF Pages and (2) the top 10 most pro-GNA Pages, as defined by our dictionaries. For these 20 Pages, we attempted to understand their purpose and backers. We did this by consulting with a Libyan media analyst and using online open source investigation tactics, such as investigating the registration of affiliated websites. The results of this investigation are shown in Table 4 and Table 5.

There are two key takeaways. First, of the 10 most pro-LAAF Pages, only two are run by individuals in

Libya. Rather, much of the pro-LAAF content appears to originate from Pages in countries with pro-LAAF associations: Egypt, Saudi Arabia, and the UAE. Second, while more of the pro-GNA Pages appear to have direct connections to individuals in Libya, six of the top 10 Pages have associations with Turkey.

We also looked at the Pages that appeared most frequently in the dataset. The most prolific Page was facebook.com/libyaakhbar, with 429 posts (2.6% of posts in the dataset). The Page was on average slightly pro-LAAF. As of March 2020, the Page had just over a million followers. Interestingly, the Page’s four administrators all have their location hidden, and its Twitter account, @libyaakhbar, is suspended.

Another prolific Page – with 281 posts – was Aljamahiria, the former state-run broadcast channel under Muammar Qadhafi. The Stanford Internet Observatory and the Dossier Center recently revealed that a firm linked to Russian oligarch Yevgeny Prigozhin purchased half of this media outlet in 2019.⁴⁴ This is further evidence of the abundance of foreign-influenced Facebook Pages targeting Libya.

7 How do social media users respond to slanted content?

The posts in this dataset received a considerable amount of engagement, with an average of approximately 570 interactions per post (see Table 10 in the appendix).⁴⁵ Though there is no indication in our data that social media consumers engaged more – as measured by total interactions – with slanted posts, there is some evidence that slanted material in both the pro-GNA and pro-LAAF directions increased the number of times the post was shared and the number of comments on the post (see Table 11 in the appendix). To better understand how users interact with slanted material, we conducted a deep dive on some of the most slanted posts.

Specifically, by looking at how social media users respond to a subset of slanted posts, we can make some assessments as to whether citizens ever respond skeptically to such content. To do this, we looked at the first ten comments on the ten most LAAF-slanted posts and the first ten comments on the ten most GNA-slanted posts. We coded each comment as “affirmative” (the commenter agreed with the post), “critical” (the commenter disagreed with the post), “ambiguous” (the slant was not obvious and difficult to assess) or

⁴⁴cyber.fsi.stanford.edu/io/news/libya-prigozhin

⁴⁵Interactions refer to the total number of *Likes*, *Comments*, *Shares* and the “Love”, “Wow”, “Haha”, “Sad”, “Angry”, and “Thankful” reactions.

Page name	Affiliated Countries	Notes
Abdul Rahim Ali	Egypt	Page for the individual who is the editor in chief of Albawabh News (see below) and a member of the Egyptian Parliament. Content about Libya on this Page - which often links to Albawabh News articles - condemns Turkish and Qatari involvement and plays up the importance of Egyptian involvement.
Portal News (Albawabh News)	Egypt	Two of the top pro-LAAF pages are associated with the Egyptian news site Albawabh News: (1) https://www.facebook.com/Albawaba.eg/ and (2) https://www.facebook.com/albawabhnewspaper . These pages appear to post identical content. The editor in chief of Albawabh News is a member of the Egyptian Parliament (see above). Content about Libya published on this site frequently criticizes Turkish involvement in Libya and draws connections between Turkey, Qatar, the GNA, and the Muslim Brotherhood.
Arab ANHA	Kurdish region of Syria	This is the Hawar News Agency, a Kurdish news service tied to the Syrian Democratic Forces. Many of this Page's pro-LAAF posts have a strong anti-Turkish slant as well, which may explain why a Kurdish news service would be invested in following events in Libya.
Baghdad Post +	Saudi Arabia	Page for thebaghdadpost.com/ar ; the Chairman is an Iraqi man who, according to some reports, has strong relations with the Ministry of Foreign Affairs in Saudi Arabia. Posts about Libya on this page emphasize the role of the LAAF in combatting terrorism and identify Qatari involvement in Libya as suspicious.
Libyan Satellite Channel	Libya	This Page is now down though it had administrators in Libya during the period of time captured in our data-set. Posts from this Page that are available in our data-set frequently reference Major General Ahmed Al-Mismari, the official spokesperson for the LAAF. Quotes attributed to Al-Mismari condemn the influence of Turkey and Qatar and emphasize the role of the LAAF in combating terrorism.
Middle East and North Africa Media Monitor	Austria Jordan	It is not clear whether any government-linked entity is behind this Page. Current Page administrators are based in Austria and Jordan, but administrators were located in Austria, Egypt, and France for the period covered in our data-set. Articles on the linked website paint Turkish involvement in Libya in a negative light, with accusations of the plunder of Libyan wealth through an association with the Muslim Brotherhood.
Rose Al-Youssef News Portal - Official Page	Egypt	The <i>About</i> section for this Page states that it is affiliated with the Rose Al-Youssef Foundation, a journalism school in Cairo. The Page links to the online Rose Al-Youssef newspaper. Sources indicate that the paper is owned by the Egyptian state and its editor is selected by the Shura Council. Content about Libya on this Page covers Haftar's views and is critical of Turkish involvement.
Sky News Arabia	UAE	This Page is partly owned by Mansour bin Zayed Al Nahyan, a member of the ruling family and deputy prime minister in the UAE. Administrators for this Page are in seven different countries, though the majority are located in the UAE. Content about Libya on this Page references anti-Turkish and anti-GNA positions and frequently covers Haftar's views.
URGENT Libya Now	Libya	It is unclear who is behind this Page, though it has administrators in Libya. Content on this page frequently covers Haftar's views and rejects Turkish involvement in Libya.

Table 4: The Ten Most Pro-LAAF Pages. One Page identified as pro-LAAF using our slant methodology is - upon inspection - pro-GNA. This misclassified page is omitted from the table.

Page name	Affiliated Countries	Notes
Al-Morsi Brigade - The Secret of Death	Malta Turkey	It is unclear who is behind this Page, though administrators are located in Malta and Turkey. The Malta connection is not surprising: Malta officially recognizes the GNA, has disrupted efforts to bankroll Haftar’s campaign, and cooperates with Turkey in attempting to bring an end to the conflict. The <i>About</i> section of this Page references the “Armed forces of the February revolution,” an allusion to the outbreak of the First Libyan Civil War in 2011 that deposed Muammar Qadhafi. Content about Libya on this page frequently calls Haftar a criminal.
Corner of the Heart of the Event	Libya	It is unclear who is behind this Page, though administrators are based in Libya. Content on this Page praises losses to Haftar’s forces and celebrates collaboration between the GNA and Turkey.
Gharyan is Free	Jordan Libya UK US	Gharyan references a town that was Haftar’s supply base for his Tripoli offensive. We are unable to determine who runs this Page, but we note that it has administrators in Libya, the US, Jordan, and the UK. Content is anti-Haftar, including a comparison between Haftar and Hitler, and highlights cooperation between the GNA and Turkey.
Libya News	Libya Turkey	It is unclear who is behind this Page, though administrators are located in both Libya and Turkey. Content on this page frequently condemns Haftar and prominently links him to Russian mercenaries. Turkish and Qatari involvement is portrayed in a positive light.
Libya Odessa	Libya Saudi Arabia	This Page is now down but - during the period in our data-set - had administrators in Libya and Saudi Arabia. Content from this Page in our data-set condemns Haftar - frequently referring to him as “rebel” - and voices support for “Volcano Anger Operation.”
Media Front for the Protection of the Capital	Libya Turkey	This Page is explicitly aligned with GNA, as the <i>About</i> section says it is: “A media front that supports the Libyan army of the Government of National Accord against the rebel.”
The New Arab	Qatar Turkey UK US	Owned by a Qatari media group and based in London, this Page has administrators in Turkey, the United Kingdom, and the United States. The news site was founded by Azmi Bishara, a former Israeli MP who is exiled in Qatar and has political connections to the Emir of Qatar. Content about Libya on this page includes references to “rogue Libyan general Khalifa Haftar”, positive portrayals of Turkish involvement, and condemnation of Egypt’s role.
Operation Volcano Anger	Libya	This Page is explicitly aligned with the GNA, as the <i>About</i> section says it is: “The official account of the media center for the Volcano Anger Operation.”
The Reality of Libya	Libya Turkey	It is unclear who is behind this Page. The <i>About</i> section references an address in Tripoli but most of the Page administrators are based in Turkey. Posts on this Page imply alignment with the GNA, for instance: “Strong clashes between <i>our forces</i> and Haftar militias in Tarhuna axis” (emphasis added).
Tribune Street Libyan	Libya Turkey UK	It is unclear who is behind this Page, though it has administrators in Libya, Turkey, and the UK. Posts on this Page imply alignment with the GNA, for instance: “Tripoli now, no, no, no, to the criminal Haftar...Yes to the army and police, yes to the civilian state.”

Table 5: The Ten Most Pro-GNA Pages

	Pro-LAAF Posts	Pro-GNA Posts
Affirmative	58%	37%
Critical	17%	8%
Ambiguous	4%	37%
Neither	20%	18%

Table 6: Commenter Reactions on Slanted Posts

“neither” (for example a user tagging a friend in a comment).

Overall, we find that 47% of the comments on these slanted posts are affirmative and 13% are critical. Critical comments were more frequent in the pro-LAAF posts: 17% of comments on these posts were critical, compared to 8% on the pro-GNA posts (see Table 6).

For example, one pro-LAAF post said, “Libya Dawn. Volcano of Anger. They are a group of terrorist militias driven and controlled by Islamic groups such as Brotherhood, Fighter, Jihadists and others.” (translated). Libya Dawn is a group of pro-Islamist militias, and Volcano of Anger is the name of the GNA counteroffensive to regain territory captured by Haftar’s forces. One user commented: “Praise be to God for your safety, you beautiful ones” (translated). We code this as an affirmative comment as it is supporting LAAF forces fighting GNA aligned forces.

As another example, one anti-GNA post said, “Salah Badi, is the leader of the so-called terrorist ‘al-Samoud Brigades’ supported by Turkey and Qatar.” Salah Badi is an internationally sanctioned commander of the al-Samoud Brigade, a militia affiliated with the GNA.⁴⁶ Haftar’s supporters, including the governments of Saudi Arabia and the UAE, use this alliance to critique the GNA. One user commented: “The leader of terrorism is Haftar, who is backed by the Saudi and Emirati Arab Zionists” (translated). We code these types of comments as critical.

Many comments were neither affirmative nor critical. For example, one post said: “God is the greatest, fusion/coalescence of the revolutionaries of Tajura and the rebels of the Ain Zara axis.” Tajoura and Ain Zara are suburbs southeast of Tripoli experiencing intense violence amid the advancing LAAF and defending GNA. This post praises Haftar’s forces. One user commented “Bad thieves in Libya [thinking face emoji]” (translated). We code this and similar comments as neither, given ambiguity as to whether the commenter is

⁴⁶[washingtonpost.com/world/middle_east/he-once-attacked-tripoli-now-a-libyan-militia-leader-defends-it-from-another-invader/2019/07/19/52c8a0b8-a258-11e9-a767-d7ab84aef3e9_story.html](https://www.washingtonpost.com/world/middle_east/he-once-attacked-tripoli-now-a-libyan-militia-leader-defends-it-from-another-invader/2019/07/19/52c8a0b8-a258-11e9-a767-d7ab84aef3e9_story.html)

calling the GNA and its associations militias thieves, or Haftar’s forces thieves.



Figure 6: Example post critical of the GNA. It says “An attempted assassination attempt of the criminal Salah #Badi carried out by a group of #revolutionaries #Tripoli”. The post refers to Salah Badi as a criminal. Badi is an internationally sanctioned militia leader and allied with the GNA. Referring to him as a criminal feeds into a LAAF narrative that the GNA works with terrorists.

That 13% of comments on the most slanted posts in our dataset were critical suggests that social media users do not always passively absorb biased content. Future research could consider the conditions under which users are more or less likely to respond critically to content.

8 Page audience

Analysis of these Pages is incomplete without an understanding of the location of users active on these Pages. While Page administrator location is useful, the Page Transparency feature does not provide data on the consumers of the content. To identify users’ locations we randomly sampled 20 posts from the dataset, and randomly sampled five comments from these posts. This gave us a dataset of 83 comments and unique commenters. We then set out to identify the location of these commenters. To do this we looked at the “About” sections of their accounts and the location tagged in posts. For several accounts, we inferred location from the university the respondent attended.

We find that of the 83 commenters, 56 live in Libya, two in Tunisia, and one in: Egypt, Denmark, Czech Republic, and Saudi Arabia. For 21 commenters we were not able to ascertain their location. This suggests that despite the prevalence of Page administrators from outside Libya, a majority of users interacting with these Pages are in Libya.

9 Conclusion

In this paper we have shown a correlation between the bias of Facebook posts about a salient event in Libya and the location of the Facebook Page administrators. Pages with a plurality of administrators in the UAE, Egypt, and Saudi Arabia are more biased in favor of the LAAF while Pages with administrators in Turkey and Qatar are more slanted toward the GNA. This aligns with the geopolitical interests of these countries. However, not all posts linked to these countries are slanted. We find that these correlations are driven by a smaller number of highly biased Pages. When investigating the most slanted Pages in the dataset, we found that an overwhelming majority of both pro-LAAF and pro-GNA Pages had strong links to foreign countries. Encouragingly, we find that many Libyans react skeptically to biased content. On the most pro-GNA and pro-LAAF posts, 13% of comments were critical of the post.

These findings suggest, first, that academics, analysts, and policymakers should interpret social media responses to events with deep skepticism. Many of these responses may originate abroad and social media accounts may be intentionally coy about where they are based. Moreover, this paper focused on Facebook Pages that were live as of early 2020, but at the time of Haftar’s Tripoli offensive in 2019 there were likely other Pages that have since been suspended. Since the start of 2019, there have been at least seven takedowns from Facebook and Twitter of foreign state-linked information operations that targeted Libya. This suggests that we are likely underestimating the extent to which foreign-originating content is flooding Libyan social media.

While we did not code the 16,662 posts for containing falsehoods, in the process of coding for other variables we read all of the posts and saw only a very small minority of posts that were untrue. The slanted posts were largely unfalsifiable, with hyperpartisan cheerleading posts like “Haftar will bring security to Libya”; this tone-setting content is in line with content researchers have seen the Chinese government push (King, Pan and Roberts, 2017). This suggests that the current academic and policy focus on “fake news” (e.g. Guess et al., 2018) addresses only a subset of information operations, and that there may be a greater need for mechanisms to help citizens gain insight into the trustworthiness of social accounts, as opposed to specific posts. Facebook’s Page Transparency is a very helpful first step in that direction. Transparency tools are especially useful during crisis events.

Our findings suggest that the war in Libya is being fought fiercely in non-kinetic domains by state and non-state actors. Information and ideas are just as important a battleground as territory in conflicts over legitimacy, including international interventions that result in regime change, revolutions, military coups, and counterrevolutions. The narratives pushed by foreign actors can shed light on their incentives. Further work is needed to generate causal identification strategies to assess the effectiveness of these social media information operations.

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A Appendix

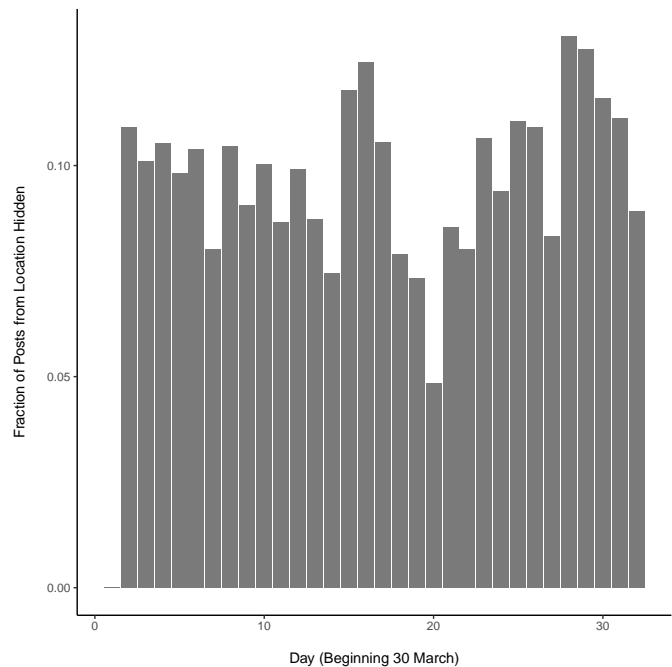


Figure 7: Fraction of posts originating from a Page with “Location hidden” over the course of the study period. This proportion appears to remain relatively stable over time.

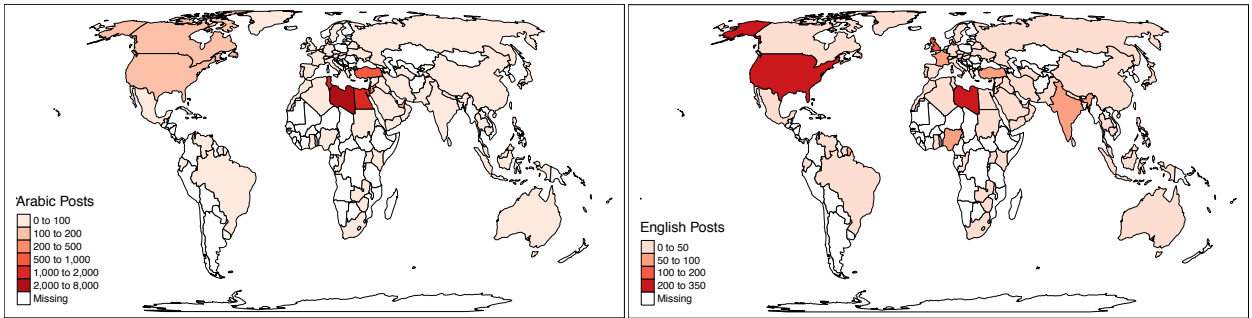


Figure 8: Geographic distribution of Facebook posts by language (Arabic, English). Note that color labels correspond to different magnitudes in each panel.

GNA terms	LAAF terms
Coup	Restore
Invaders	Islamists
Legitimate	Liberation
Rogue	Extremists
Unbacked	Illegitimate
Renegade	Bravado
Warlord	Muslim Brotherhood
Siege	Brothers
Foreign fighters	Instability
Destabilization	Turkey
Rebels	Qatar
Man of war	Daesh
War criminal	al-Qaeda
Criminal	Militias Misratah
Mercenaries	Misrata militias
Strongman	Turkish invasion
Qarmatis	Syrian mercenaries
Militias Hfter	Libyan militias
Hjalh Corner	Field Marshal
Egyptian expansion	Turkish intervention
Rebel militias	Liberate the capital
Aggressor militias	Misurata Brigades
Counter-revolution	Islamic extremists
Aggression on the capital	Brotherhood leaders
Leviathan	The Government of the frigate
Wahabi heap	
City withstand	
Russian mercenaries	
Remnants Hfter	
Aggression against Tripoli	
Children plateau	
Attack Hfter	
Criminal Hfter	
Madkhali	
Halohta	

Table 7: Dictionaries used to create slant measure. We had the original English terms translated into Arabic by an Arabic speaker and then translated back to English with Google Translate, then added those terms to these dictionaries.

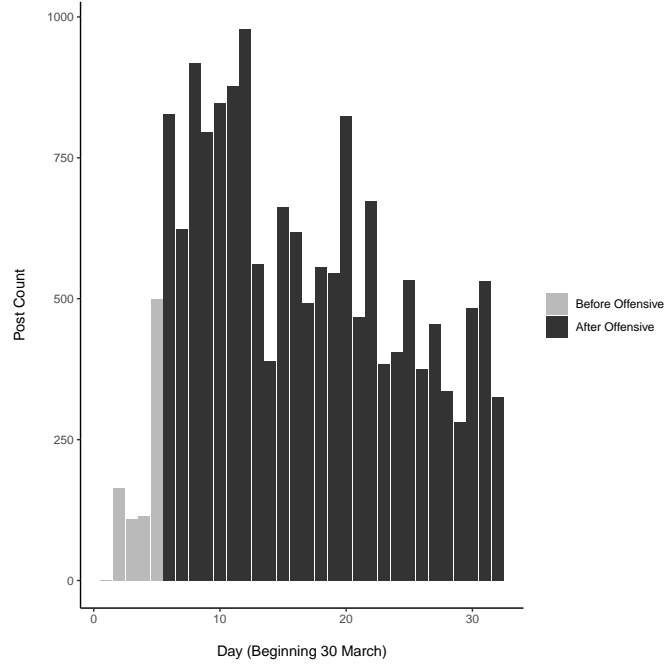


Figure 9: The number of Facebook posts per day during the study period (March 30–April 30). The number of posts increased during the period immediately following the Tripoli offensive (April 4) and remained relatively high—compared to the number of posts before the offensive—throughout the rest of April. Note that the time of a Facebook post is recorded in the data using Pacific Time, hence some posts may actually be on a different day in their local time zone; this is one possible reason for the rise in the number of posts observed on the day prior to the beginning of the offensive. Another possibility is that some Page administrators were aware that the offensive was about to happen.

	Model 1	Model 2
English	0.37*** (0.06)	0.36** (0.08)
Location Fixed Effects?		✓
R ²	0.01	0.04
N. Observations	16662	16662
N. Unique Pages	1487	1487

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table 8: Coefficients from regressions of *GNA slant* on an *English language* indicator. Model 2 includes Facebook Page location fixed effects. Standard errors clustered at the Facebook Page level are included in parentheses.

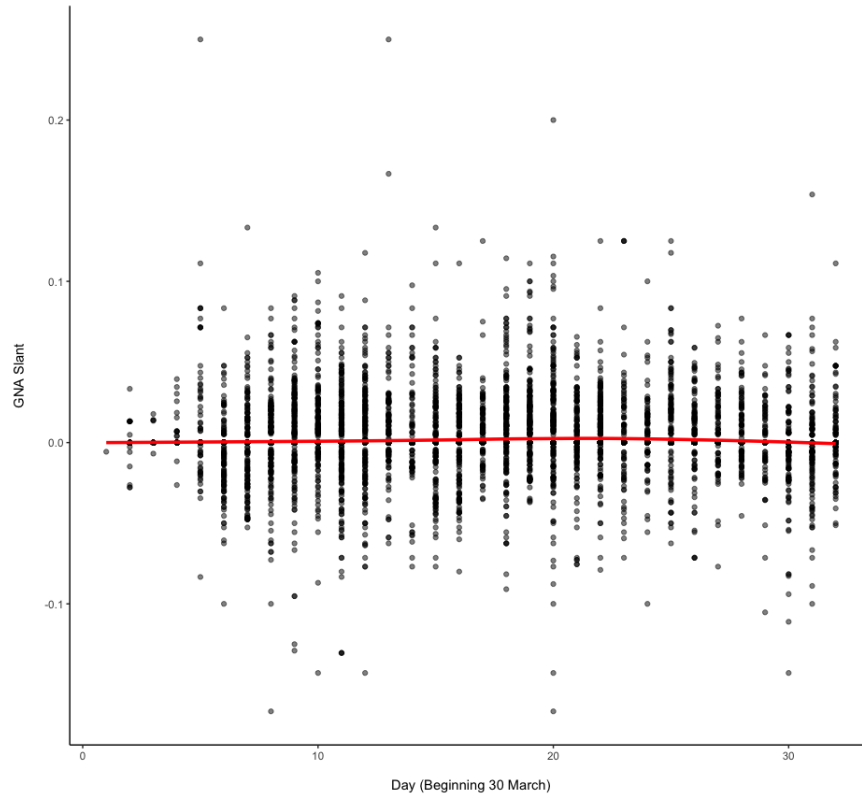


Figure 10: Raw distribution of GNA slant by the day of posting. The red line superimposes a LOESS curve. There does not appear to be a meaningful relationship between GNA slant and the day of the month, suggesting that there is no trend in partisan language over the study period.

	Standardized Slant	LAAF Count	GNA Count
Libya	0.16*** (0.04)	−0.05 (0.03)	0.13*** (0.03)
Egypt	−0.19*** (0.07)	0.15* (0.08)	−0.04 (0.03)
France	−0.10 (0.10)	−0.02 (0.07)	−0.03 (0.06)
Qatar	0.21** (0.06)	−0.10** (0.03)	0.12 (0.10)
Russia	−0.13 (0.12)	−0.06 (0.04)	−0.14 (0.11)
Saudi Arabia	−0.13 (0.08)	0.08 (0.13)	−0.09 (0.05)
Turkey	0.34*** (0.11)	−0.13*** (0.03)	0.09 (0.06)
UAE	−0.29* (0.14)	0.08 (0.08)	−0.12** (0.04)
USA	0.01 (0.06)	0.01 (0.04)	0.06 (0.06)
Location Hidden	−0.06 (0.06)	−0.05 (0.03)	−0.05 (0.03)
Language Fixed Effects?	✓	✓	✓
R ²	0.03	0.01	0.03
N. Observations	16662	16662	16662
N. Unique Pages	1487	1487	1487

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 9: Coefficients from three different regressions each with ten location indicator variables. These regressions control for language $\in (\textit{Arabic}, \textit{English})$ fixed effects. Standard errors clustered at the Facebook page level are included in parentheses.

Country	Number Posts	Mean Engagement	Mean Likes	Mean Shares	Mean Comments
All posts	16662	570.555	476.301	13.802	50.909
Libya	7926	658.687	571.187	9.837	49.342
Egypt	1685	311.282	258.123	15.833	22.037
Location hidden	1596	795.169	639.765	18.031	91.878
Turkey	790	637.99	530.549	17.611	55.41
US	378	232.741	124.693	37.511	23.608
Qatar	298	631.718	450.299	64.121	64.99
UAE	266	559.256	472.481	11.568	47.921
France	113	151.575	105.54	8.956	23.77
Russia	105	555.371	350.581	38.771	117.61
Saudi Arabia	64	124.75	94.484	5.812	17.312

Table 10: Descriptive statistics on engagement figures are included for all posts and select countries (the same set found in Table 2). *Engagement* is calculated from the sum of *Likes*, *Comments*, *Shares*, and the “Love”, “Wow”, “Haha”, “Sad”, “Angry”, and “Thankful” reactions.

	Engagement		Likes		Shares		Comments	
Standardized Slant	6.21 (15.96)	0.91 (18.93)	-5.74 (12.55)	-11.90 (14.83)	4.19* (2.12)	5.26* (2.76)	4.75* (2.55)	3.59* (2.14)
log(Page Likes)		126.89*** (20.37)		98.63*** (16.57)		5.18*** (1.11)		13.50*** (2.33)
Language FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R ²	0.07	0.10	0.08	0.11	0.01	0.01	0.05	0.07
N. Observations	16662	14460	16662	14460	16662	14460	16662	14460
N. Unique Pages	1487	1285	1487	1285	1487	1285	1487	1285

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 11: Coefficients from regressions of social media interaction on the standardized slant of the post. |Standardized Slant| is the absolute value of the standardized GNA slant measure. The *log* of page likes at the time of posting is included as a control variable. The number of page likes at the time of posting is missing for 2,300 posts. *Engagement* is calculated from the sum of *Likes*, *Comments*, *Shares*, and the “Love”, “Wow”, “Haha”, “Sad”, “Angry”, and “Thankful” reactions.