Quick take

ASPI AUSTRALIAN STRATEGIC POLICY INSTITUTE

INTERNATIONAL CYBER POLICY CENTRE

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Snapshot of a shadow war: a preliminary analysis of Twitter activity linked to the Azerbaijan–Armenia conflict

A shadow battle is playing out online as the conflict between Azerbaijan and Armenia continues to escalate (for an explanation of the conflict, see reporting by the *New York Times*, the *BBC*, the Atlantic Council and others).

On Twitter, large numbers of suspicious accounts supporting both sides have been wading in on politicised hashtags linked to the conflict. Our findings indicate large-scale coordinated activity. While much of this behaviour is likely to be authentic, our analysis has also found a significant amount of suspicious and potentially inauthentic behaviour.

Crucially, the online battles are taking place in multiple languages, including English, Spanish and German, suggesting the goal is to control the international narrative about the Azerbaijani–Armenian conflict. This activity is occurring in the context of long-running information campaigns on both sides, which has previously been investigated by DFRLab.

Beyond the two combatant states, actors well outside the geographical scope of the conflict also appear to be getting involved. In an echo of Turkey and Pakistan's support for Azerbaijan in the conflict on the ground, Turkish and Pakistani accounts, some of which also appear likely to be inauthentic, have also been engaging in English-language skirmishes online. On the other side, Indian accounts have been pushing back with hashtags such as #IndiaStandWithArmenia.

Other activity includes engaging with the Twitter accounts of US celebrities, including Kim Kardashian and her partner Kanye West, in an attempt to enlist their support for Armenia, and targeting of international media outlets such as the *BBC*.

To be clear: some proportion of this shadow battle is undoubtedly authentic. Many people around the world have strong opinions on this conflict and are engaging in the debate online. Distinguishing real people from inauthentic or 'bot' accounts is challenging in the best of times, and emerging crises and conflicts can drive real users to behave in unusual ways, making it even more complicated than normal.

However, it does appear likely that there is a level of inauthentic activity on both sides of the conflict. We aren't attempting a comprehensive analysis (which will require more time and resources) and not seeking to fact-check content. We're working swiftly, in particular, seeking to capture data before the evidence is lost to researchers as a result of Twitter's content moderation. We focus here primarily on English-language activity, but it's important to note that similar activity is likely to be taking place in a variety of other languages.

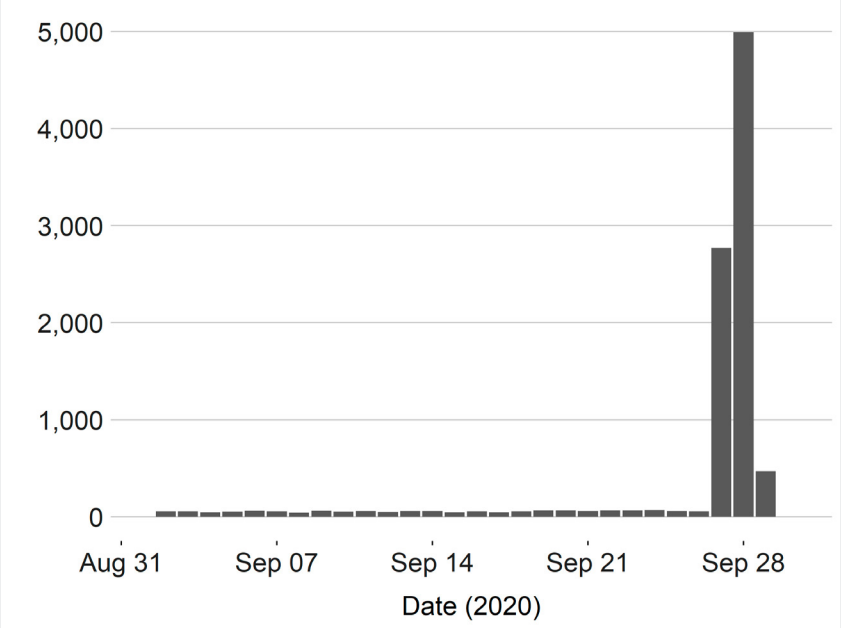
The goal of this research piece is therefore to observe and document some of the early dynamics of the information battle playing out in parallel to the conflict on the ground and create a basis for further, more comprehensive research. This report is in no way intended to undermine the legitimacy of authentic social media conversations and debate taking place on all sides of the conflict.

Rallying the hashtag troops

For this report, 206,116 tweets containing hashtags (see appendix) associated with the Azerbaijani–Armenian conflict were collected between 27 September (when Armenia claims Azerbaijan launched air and artillery attacks on Nagorno-Karabakh, and Azerbaijan says it was conducting a counteroffensive against Armenian military operations) and 29 September 2020. Of those tweets, 75% were retweets, and most tweets had little or no engagement.

There were 70,350 unique accounts in the dataset, of which 7,764 were created on 27 and 28 September alone (Figure 1). These recently created accounts accounted for 14.5% of all tweets.

Figure 1: Account creation dates

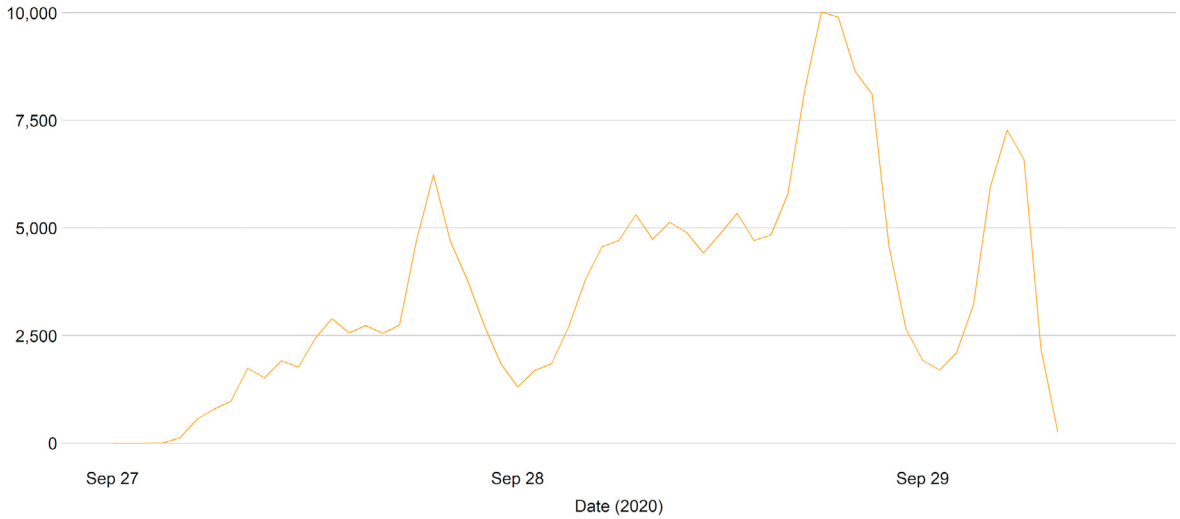


Most of the accounts created on those two days appear to amplify posts by Armenian public figures and the Armenian Government, in addition to expressing support for Armenia. The Twitter account of Alice Sharafyan (the communications manager for a pro–European Union youth organisation) is mentioned 1,765 times, and the Armenian government accounts (@armgov, @ArmenianUnified and @MFAofArmenia) are mentioned a combined total of 3,131 times.

Surges in the number of tweets per hour may indicate coordinated campaigns to drive certain hashtags to trend, as opposed to organic steady increases and decreases in trends. It's important to note that these efforts may include coordinated authentic activity by real users, as well as suspicious or inauthentic activity. The top hashtags were #Azerbaijan and #Armenia, which can be partially explained by legitimate users on both sides engaging in debate.

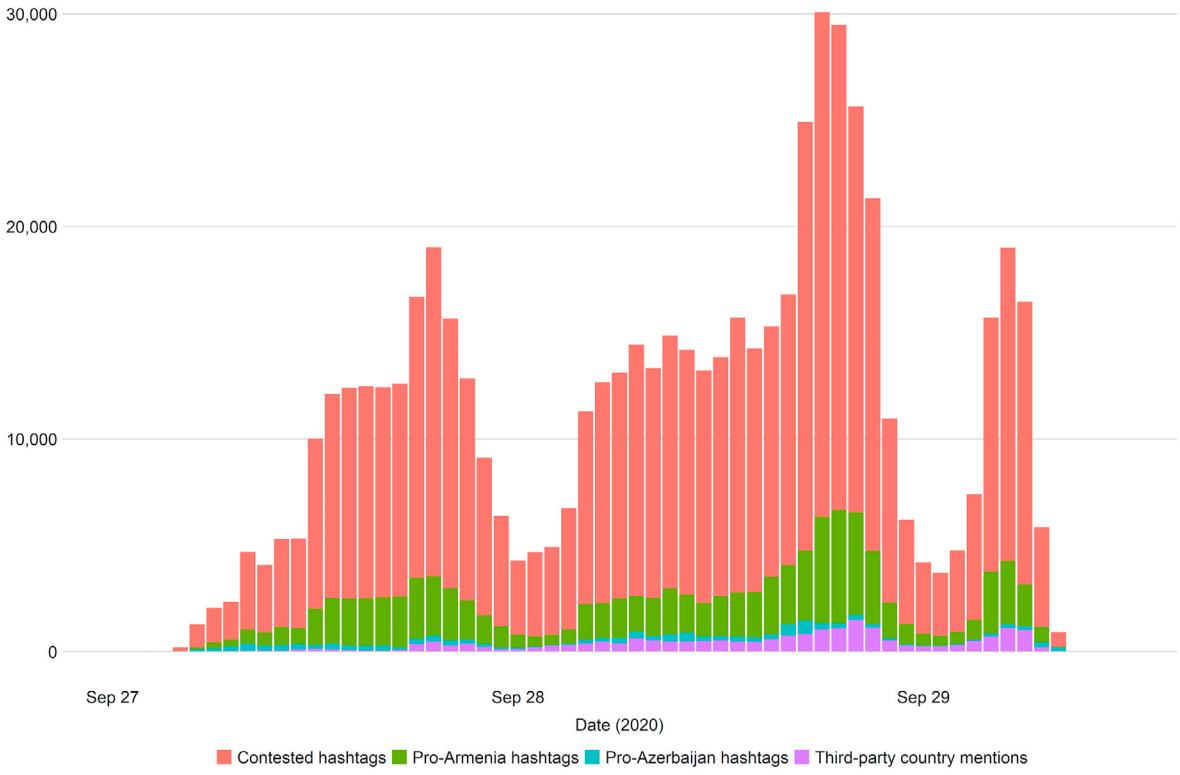
Tweeting activity was more active during the evening in Armenia/Azerbaijan time zones (UTC +4), but the lowest number of tweets per hour occurred around 4:00 am (UTC +4) during the nights of 27 and 28 September (Figure 2).

Figure 2: Total tweets per hour between 27 and 29 September 2020



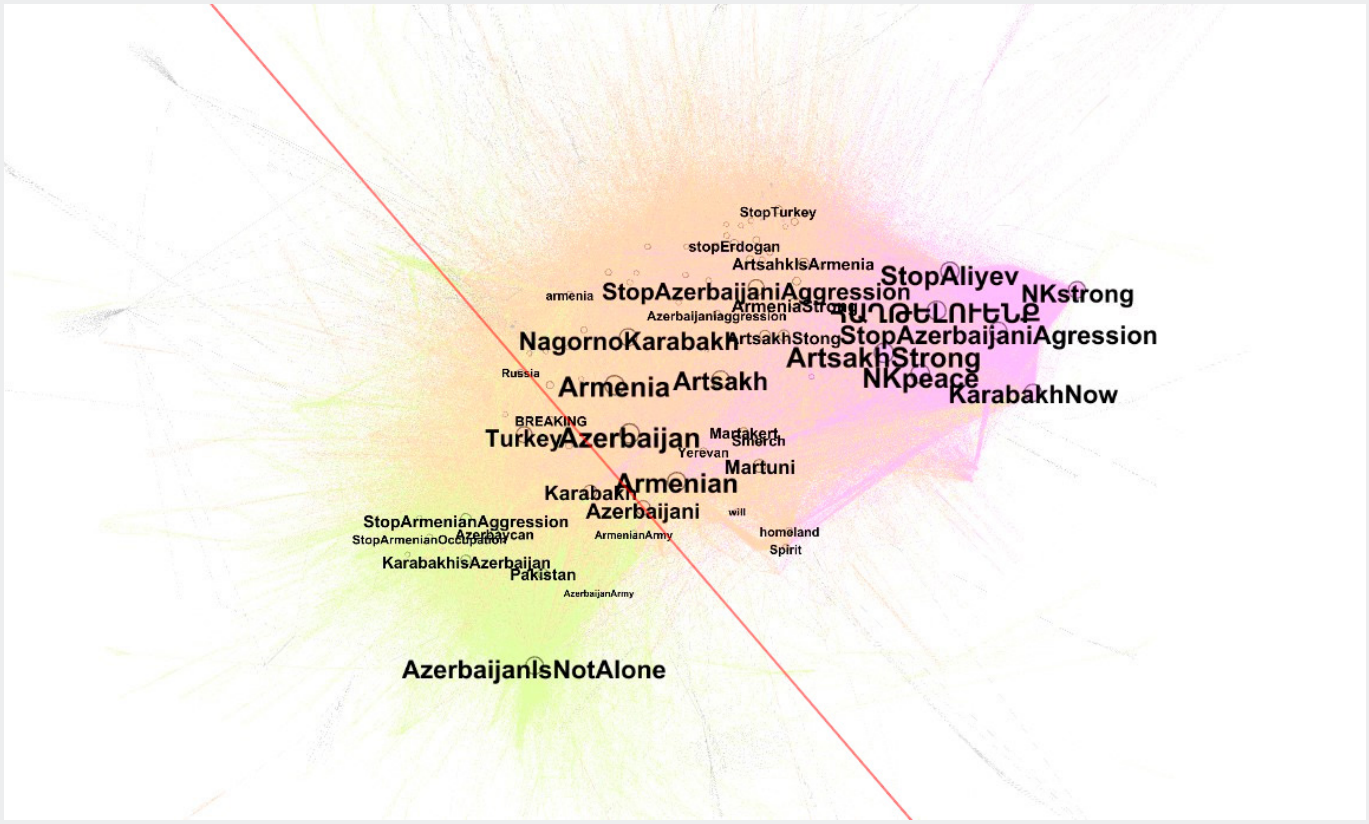
Particular hashtags, such as '#NKstrong', '#ArtsakhStrong' and '#StopAzerbaijaniAggression', were strongly associated with pro-Armenian sentiments (Figure 3). Likewise, hashtags such as '#StopArmenianAggression', '#KarabakhisAzerberjian' and '#Azerbaycan' were strongly associated with pro-Azerbaijan views. A few hashtags, such as #Armenia and #Azerbaijan, were used by accounts affiliated with both countries. Interestingly, the names of third-party countries appeared as hashtags among the activity, including '#Pakistan', '#Russia' and '#Turkey'. The involvement of those countries in the broader conflict is discussed later in the report.

Figure 3: Hashtag mentions per hour, 27–29 September 2020



Using the graphic package Gephi and a network spatialisation process, each hashtag and account was represented as a node in Figure 4. Links were drawn between account nodes and hashtag nodes if the account had used the hashtag in one of its tweets. A network analysis roughly splits these accounts into three categories, depending on their affiliation. Pro-Armenia accounts are coloured purple, pro-Azerbaijan accounts are coloured yellow, and orange nodes represent accounts with no clear affiliation.

Figure 4: The Hashtag Front—a network diagram of accounts using specific hashtags with an approximate red line representing the divide between groups of accounts



Pro-Armenian activity

Multilingual suspicious activity

One example of suspicious activity is the persistent and seemingly coordinated effort to translate identical news snippets or Armenian Government press statements into multiple languages, including English, Spanish, Ukrainian, German and others in support of Armenia. It's possible that this is a partially coordinated but authentic effort, but on closer inspection a significant proportion of the accounts involved appear to be suspicious based on a combination of factors, including account age and behaviour.

Many of the accounts involved in this activity are either recently created or older but have little to no prior activity. For example, some accounts have join dates in 2015 but posted no content earlier than the past few days. These 'aged' Twitter accounts are widely available for purchase and are sometimes used in information operations to make them appear more legitimate. Of the other accounts, some are completely blank; others have the names and profile pictures of young women (figures 5 and 6).

Figure 5: Translations on Twitter

Figure 6: Suspicious accounts engaging in pro-Armenian activity

Booster accounts

Other suspicious accounts have engaged in what appears to be inauthentic boosting of authentic pro-Armenian content (such as retweeting tweets from high-profile public figures in support of Armenia) and pro-Armenian hashtags.

In the example in Figure 7, the account is less than 24 hours old. Its activity consists entirely of retweets of pro-Armenian content, often quote tweets that retweet original authentic content with the addition of a selection of the same pro-Armenian hashtags and even the same typo. As can be seen, the hashtag #NKpeace has been mistyped or misspelled as #NKpeac, and that typo reappears across multiple retweets. One possible explanation for this is automation; another might be a human copy–pasting.

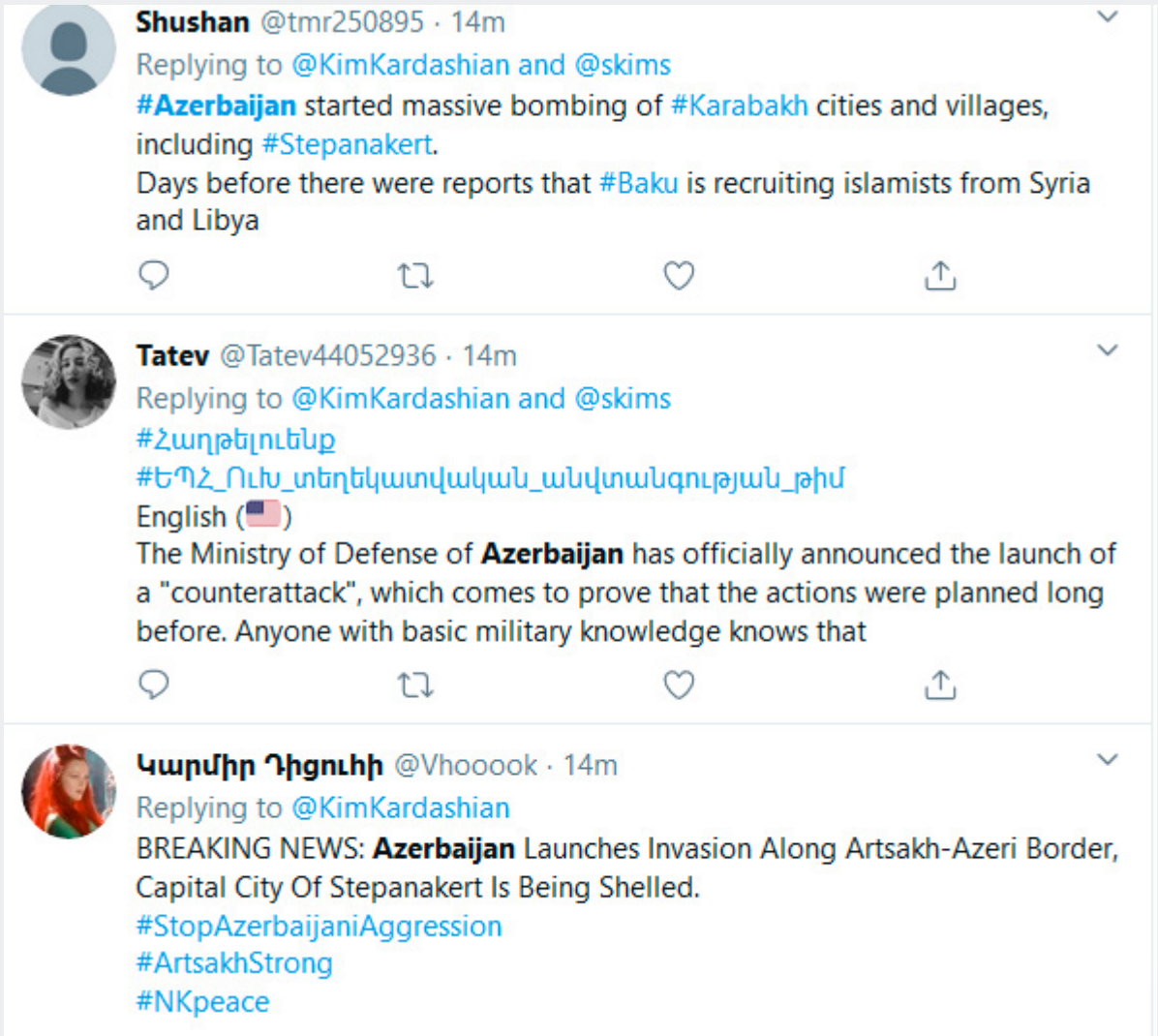
Figure 7: Suspicious booster account

The purpose of accounts such as this is both to share the pro-Armenian content more widely and to game Twitter's engagement algorithms (for example, by making the pro-Armenian hashtags trend above the pro-Azerbaijan hashtags) and therefore be able to present the Armenian side of the story to a greater audience.

Targeting US influence

A notable feature of the pro-Armenian activity is its interaction with high-profile US figures in an attempt to gain support. That includes celebrities with connections to Armenia, such as Kim Kardashian (who has family ties to Armenia), her husband Kanye West and Lady Gaga (whose '911' music video included Armenian cultural references). During one period on 27 September, Kardashian became the target of multiple tweets per minute, many from seemingly suspicious accounts (Figure 8).

Figure 8: Tweets directed at @KimKardashian



Kardashian later did comment publicly in support of Armenia. It's unclear what, if any, role the deluge of potentially inauthentic comments, alongside the genuine activity, played in her decision to lend her audience and public profile to speak out about the conflict.

Another example of pro-Armenian accounts seeking to attract US support occurred during the first US presidential debate. On 29 September (US time), multiple accounts tweeted identical text claiming that 'Armenian American taxpayers' wanted to hear about the 'US's plans to stop Azerbaijan's aggression' alongside the #debate2020 hashtag (figures 9 and 10). Genuine Armenian-Americans have been highly engaged in discussions of the conflict on Twitter, but the use of identical content combined with the suspicious nature of the accounts suggests this particular activity could be inauthentic.

Figure 9: Twitter accounts engaging with the #debate2020 hashtag for the first 2020 US presidential debate

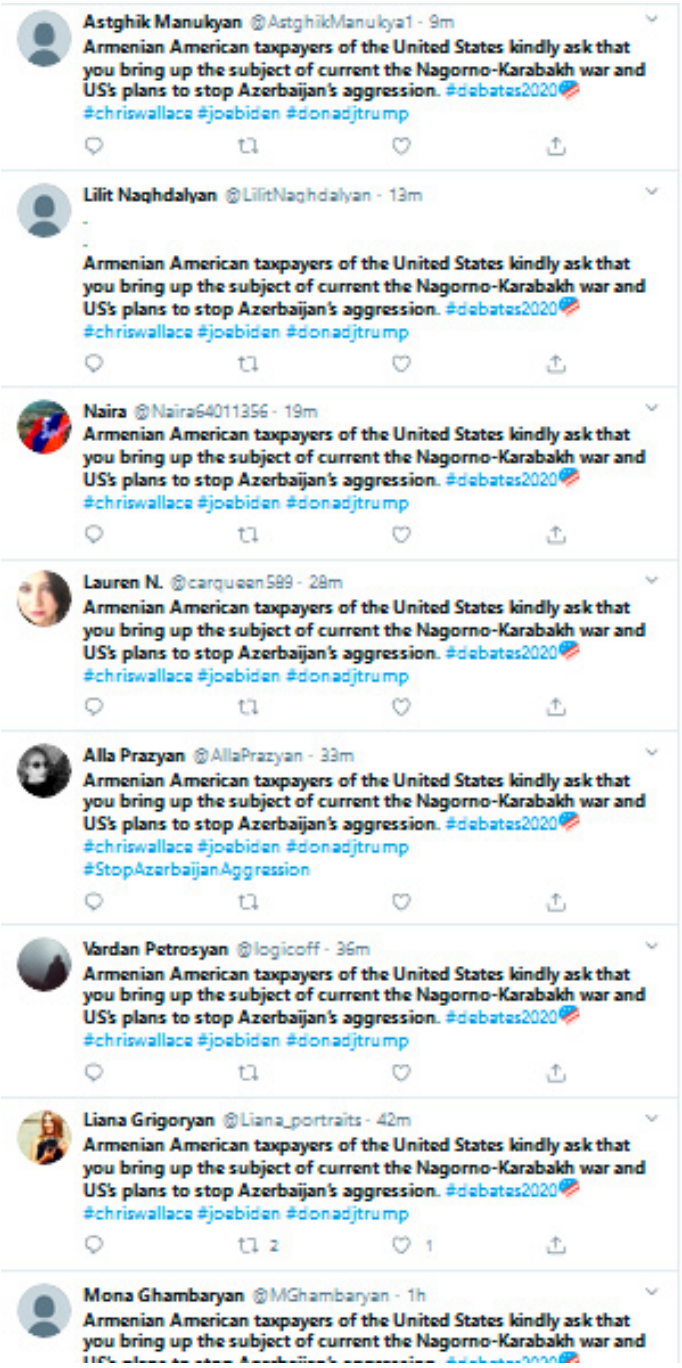


Figure 10: Twitter accounts engaging with the #debate2020 hashtag for the first US 2020 presidential debate

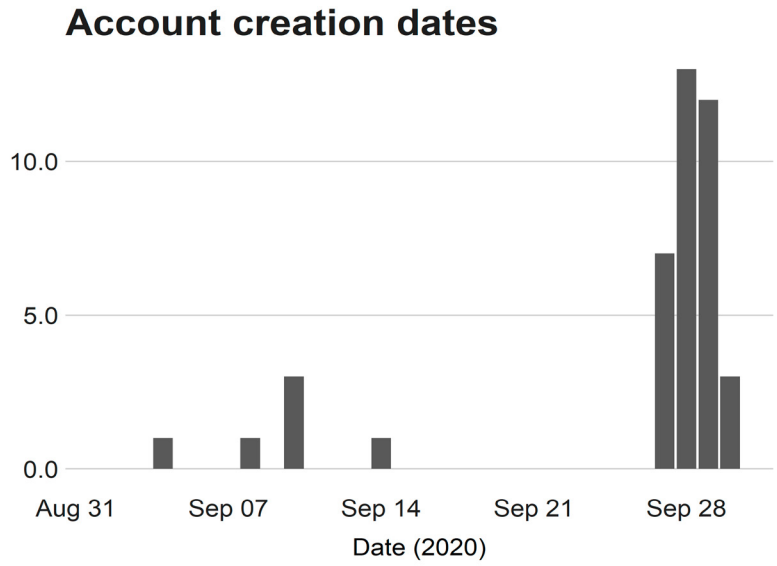
Another example of suspicious activity aimed at influencing the US's position on the conflict has been the widespread sharing of a White House petition calling on the US Government to 'condemn the aggression of Turkey and Azerbaijan against Artsakh, Armenia'. The petition was created on 27 September and had received more than 150,000 signatures as of 30 September. In addition to the petition itself, the domain defendarmenia.com (which previously redirected to a separate White House petition calling for an end to USAID and military support for Azerbaijan) was changed to redirect to this petition.

Both the petition and defendarmenia.com domain have been shared across Twitter. While much of the sharing may be authentic activity, there are reasons to suspect that it may also be being artificially boosted. Over the first day or so of the clash, the domain was widely shared on Twitter. However, Twitter's content moderators appear to have since deleted almost all tweets sharing the domain dating back as far as 6 September (some had begun to reappear as of 30 September). This suggests that Twitter's moderators themselves may suspect that the behaviour is either inauthentic or originating outside the US and therefore potentially a violation of foreign interference policies. It's worth noting that Twitter has access to data that isn't available to outside researchers, such as IP addresses, which may help in identifying inauthentic activity.

Targeting English media accounts

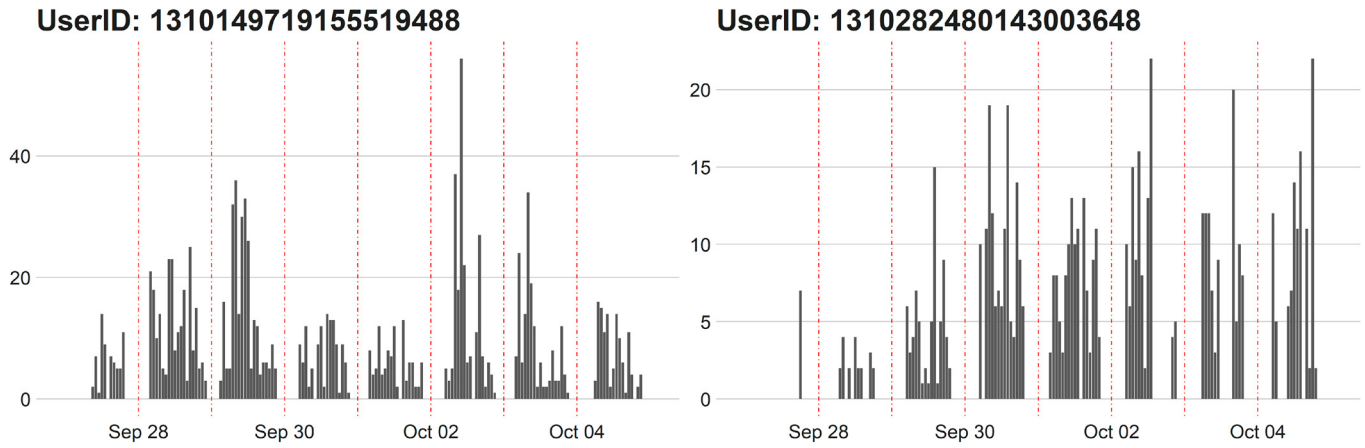
More recently, pro-Armenian accounts have been created, replying to English media articles about the conflict. The *BBCWorld* twitter account has received heightened levels of engagement on tweets regarding the Armenia–Azerbaijan conflict, which have been receiving more than 200 replies, often from accounts that have several indicators of inauthenticity. As of 2 October 2020, one tweet received replies from 34 accounts that had been created between 27 and 30 September 2020 (Figure 11). Accounts with similar creation dates have also been found following one another and replying to other media articles.

Figure 11: Creation dates of accounts replying to BBCWorld article tweet



The behaviour of these accounts at this stage appears more like that of operators tasked to amplify pro-Armenian views than automated bots. One indicator of automation is the absence of the breaks from tweeting that a real person must take to sleep. Inspecting the timelines for a few different accounts created in late September indeed shows periods of inactivity consistent with human operators sleeping in Armenian and Azerbaijan time zones (UTC +4). However, the stream of tweets during the day indicates a concerted effort to push positive Armenian and negative Azerbaijan views (Figure 12).

Figure 12: Tweets per hour for two accounts with dashed red lines representing day breaks at midnight UTC +0 or during the night in Armenian/Azerbaijan time zones (UTC +4)



In addition to the *BBCWorld* account, other English-speaking media twitter accounts have been targeted, including *al-Jazeera English*, *CNN*, *BBC News (UK)*, Time Magazine and others (Figure 13). The combination of text that appears to be copy–pasted from one tweet to another by recently created accounts with few followers is a key indicator of an inauthentic coordinated campaign.

Figure 13: Accounts targeting news outlets

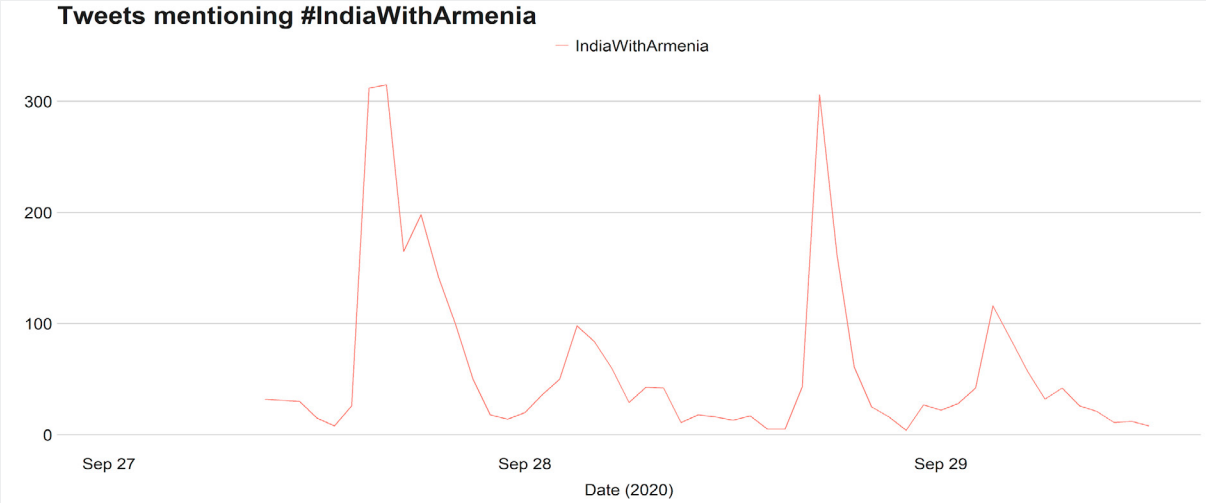
Indian accounts support Armenia

Indian accounts are beginning to emerge as a notable source of pro-Armenian activity in the conflict (Figure 14). This alliance ties back to earlier clashes in the Twitter wars, in particular to 2019, when Armenia and its patriotic Twitterverse sided with India and against Pakistan on the issue of Kashmir. India has since inked a significant defence contract with Armenia, which is interpreted as a move against Turkey. Both Pakistan and Turkey are supporting Azerbaijan in the current clash, as is discussed further below.

Figure 14: An argument between Turkish and Indian accounts, both of which have recently joined and have single-digit followers

The #IndiaWithArmenia hashtag was featured in over 3,000 tweets between 27 and 29 September (Figure 15). Hashtag use peaked around 15:00–16:00 UTC on 27 September and 17:00 UTC on 28 September. Sharp peaks in the use of particular hashtags may suggest artificial trends.

Figure 15: Number of tweets mentioning the #IndiaWithArmenia hashtag, 27–29 September 2020



Despite spikes in suspicious activity, much of this behaviour appears to be authentic. The narrative of the conflict, as presented by the pro-Armenian side, feeds into broader narratives about opposing Pakistan, opposing Turkey and Erdogan, and bringing in Islamophobic elements (Figure 16). Azerbaijan is a Muslim country, albeit one of the most secular Muslim countries; Armenia is overwhelmingly Christian.

Figure 16: Tweets relating the conflict to 'Islamic radicalism' and asserting India's support for Armenia

A complex picture

Taken together, these observations (which, as noted above, aren't intended to be comprehensive) present a complex picture. While there's clearly a large amount of authentic, legitimate social media activity and debate, it does seem clear that there's also a significant level of inauthentic activity promoting pro-Armenian content and seeking to shape the narrative on the conflict for international audiences, particularly those in the US.

It's possible that state-linked actors are responsible for segments of this likely inauthentic activity, but it's equally possible that non-state groups located either in Armenia or in the Armenian diaspora, including in the US, as well as others in India and elsewhere are participating in this information contest. Further research would be needed to determine which actors are likely to be involved, and to what extent.

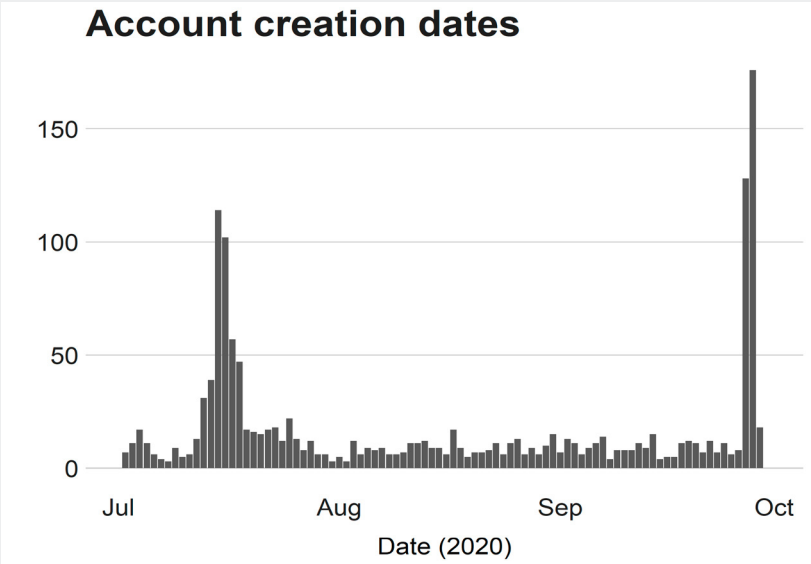
There are also some interesting absences. For example, while some other actors have invoked the name of Russia as supporting Armenia, as of 1 October (the time of writing) there doesn't seem to be a significant, overtly Russian contingent active in the English-language skirmish over control of the narrative. The possibility of covert activity can't be ruled out, but as yet there doesn't appear to be clear evidence to support it.

Pro-Azerbaijan activity

The situation becomes even more complex when looking at pro-Azerbaijan activity because of the fact that Azerbaijani authorities are reportedly blocking some access to social media. A lower overall level of pro-Azerbaijan activity would therefore be expected, but it also raises more questions about the activity that *is* occurring and how those users are getting access to social media.

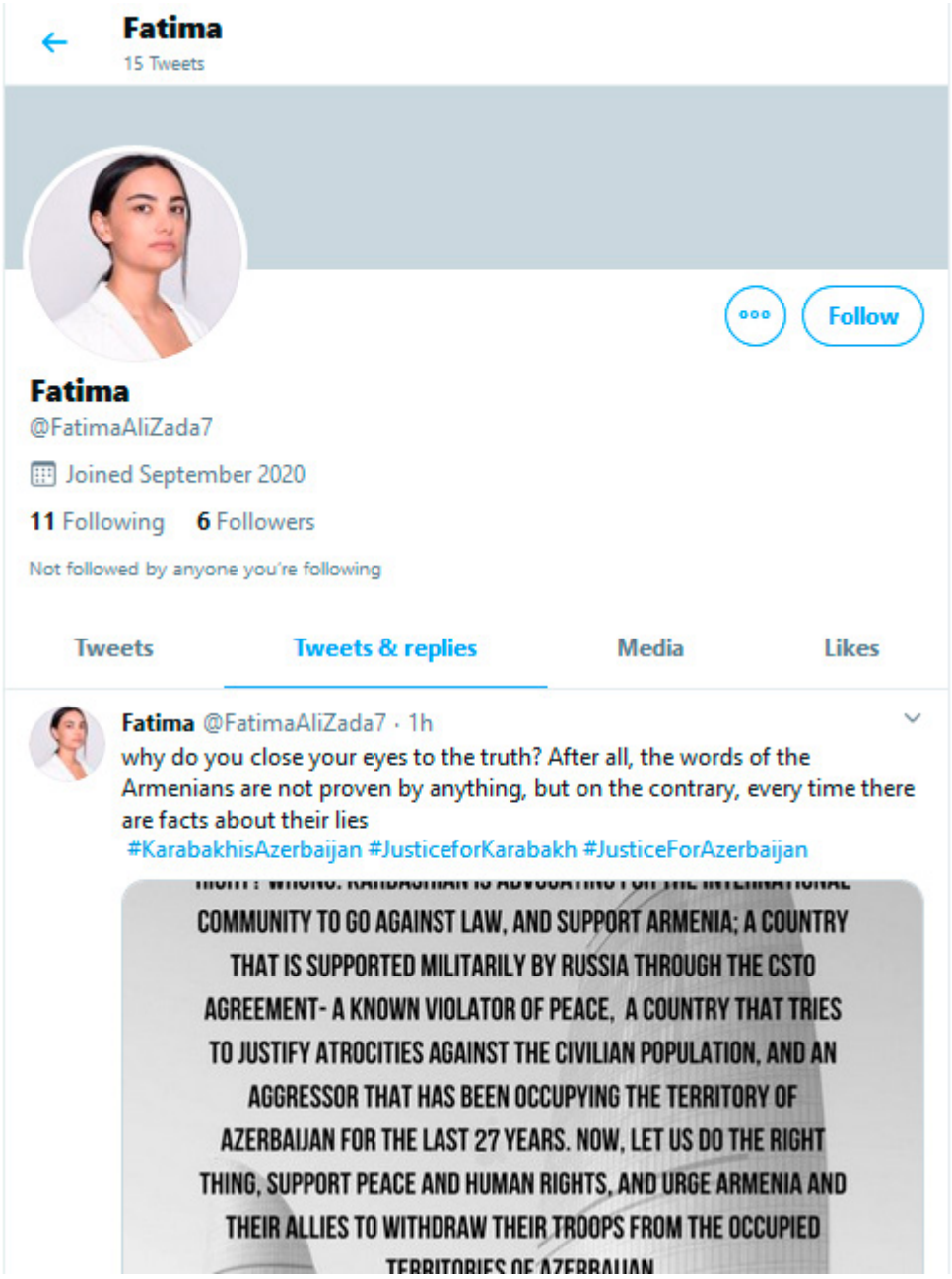
Some of the English-language pro-Azerbaijan activity does appear to be suspicious. Our data reflects a significant spike in accounts created on 27 and 28 September (Figure 17). The earlier spike in July probably reflects an information campaign accompanying the Azerbaijan–Armenia border clashes, which occurred during that month.

Figure 17: Account creation dates for pro-Azerbaijan accounts, July to October 2020



These accounts, some taking on the personas of young women, as in the case of the pro-Armenian accounts, are engaging in the English-language debate on the side of Azerbaijan (Figure 18).

Figure 18: Account created on 27 September 2020



There also appears to be some repurposing of older accounts. In the example in figures 19 and 20, what appears to have been an Azerbaijan marketing bot account is now tweeting in fluent English about the conflict.

Figure 19: Account as of 1 October 2020

Figure 20: Marketing activity in 2013

Turkish and Pakistani accounts support Azerbaijan

A substantial proportion of the pro-Azerbaijan Twitter activity in English appears to be coming from accounts linked to Turkey and Pakistan. As mentioned above, that support ties in to both broader geopolitical and military alliances and to alliances formed during the enormous information campaigns in 2019 that accompanied Turkey's incursion against the Kurds in northern Syria and the running conflict between Pakistan and India over Kashmir, which hit multiple flashpoints in 2019.

During both of those incidents, large numbers of Pakistani and Turkish accounts, many of which appeared highly suspicious, expressed solidarity with and support for one another against their opponents.

The example in Figure 21 is an account that started as a Kpop account, was converted into a 'PakTurk friendship squad' account during Turkey's Operation Peace Spring (which was accompanied by a huge bot campaign), and more recently has mainly been promoting Pakistani road safety campaigns. On 7 September, it retweeted a tweet about the collective military capabilities of Turkey, Pakistan and Azerbaijan (Figure 22).

Figure 21: @BTSArmyRock Twitter account

Figure 22: Retweet from @BTSArmyRock

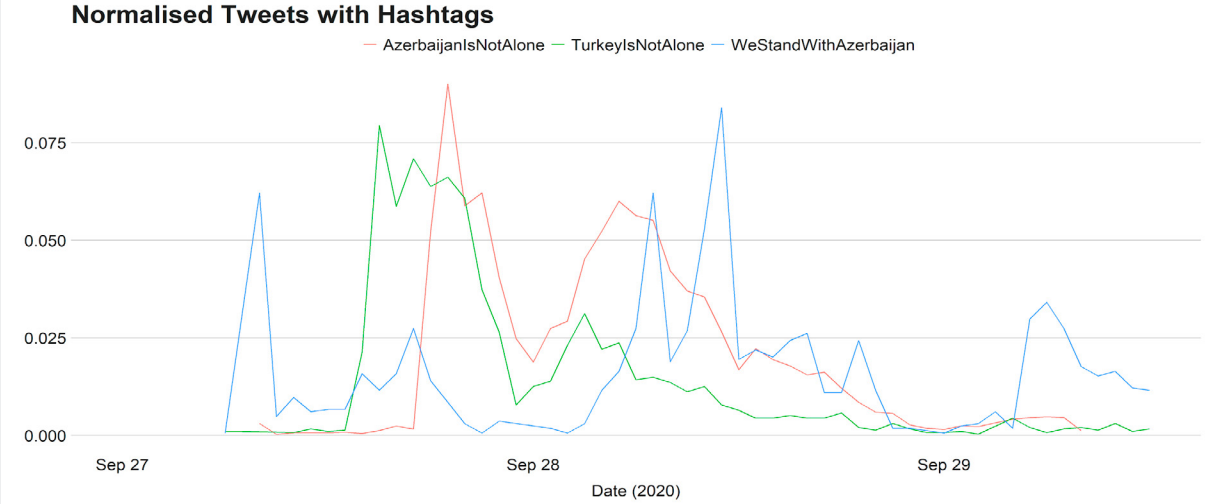
Turkey's direct support for Azerbaijan in the current conflict, combined with Azerbaijan's support for Pakistan on the issue of Kashmir and this history of mutual support in information operations accompanying conflicts, are all likely to be driving factors behind the current Twitter campaigns in support of Azerbaijan's position.

During 2019, two key hashtags used by supportive Turkish and Pakistani accounts were #Turkeyisnotalone and #Pakistanisnotalone. In the current conflict, a new variation of that hashtag, #Azerbaijanisnotalone (which appears to have been used only once in 2019 and a handful of times in 2020 before late September) is playing a significant role (Figure 23).

Figure 23: The Twitter alliance (Azerbaijan, Turkey and Pakistan) with #AzerbaijanIsNotAlone and #WeStandWithAzerbaijan hashtags

The #AzerbaijanIsNotAlone hashtag was mentioned in 21,528 tweets between 27 and 29 September 2020. Tweets posting #TurkeyIsNotAlone initially surged around 14:00 UTC on 27 September, followed by a surge in tweets containing #AzerbaijanIsNotAlone at around 18:00 UTC (Figure 24).

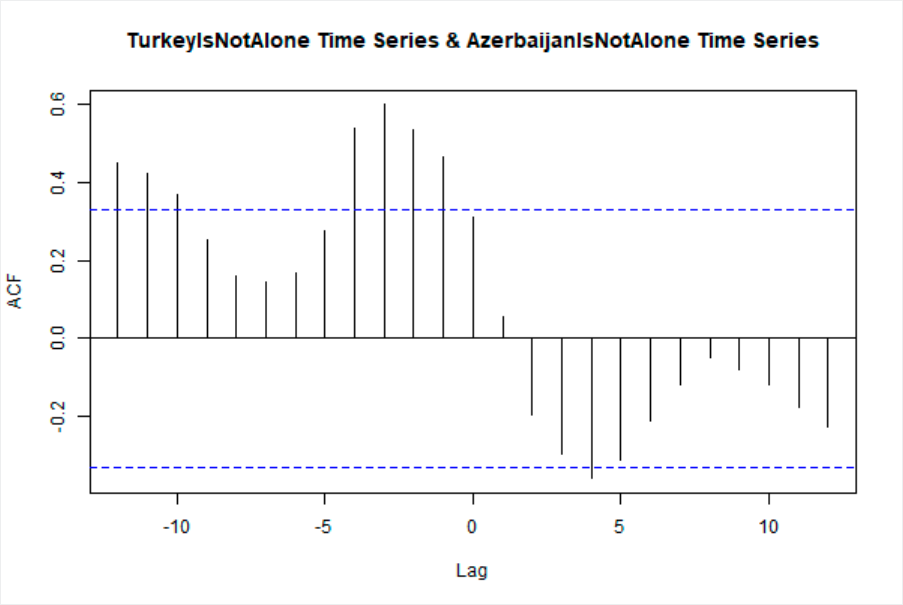
Figure 24: Normalised tweets between 27 and 29 September 2020 with the hashtags #AzerbaijanIsNotAlone, #TurkeyIsNotAlone and #WeStandWithAzerbaijan



Although there were far fewer tweets and retweets (2,946) containing the #TurkeyIsNotAlone hashtag, there was a moderate correlation (r = 0.6) between time-series data for the hashtag #AzerbaijanIsNotAlone and 3-hour lagged #TurkeyIsNotAlone time-series data.

The mantra that 'correlation doesn't imply causation' applies in this case, but correlation does show a potential dependency between the two time series (Figure 25). The most likely explanation for the correlation is that a common group of actors was responsible for the tweeting patterns for the two hashtags. The consistency of a regimented time-gap also provides further evidence for inferring potential coordination driven by inauthentic accounts tasked to amplify the reach of each hashtag.

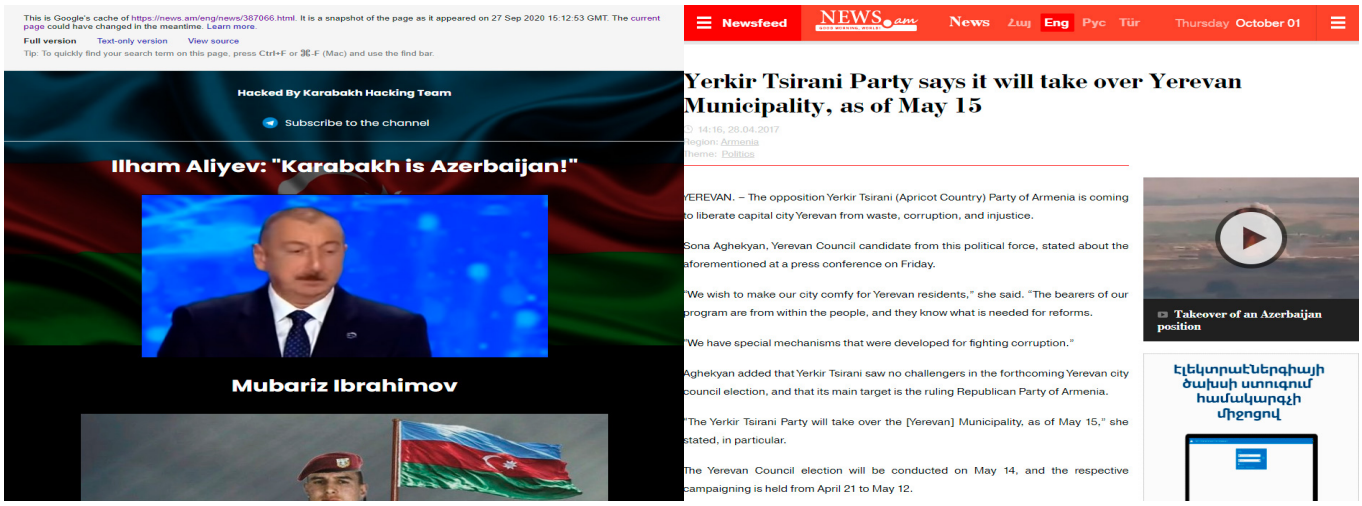
Figure 25: Autocorrelation function (ACF) between the time-series data for tweets containing #AzerbaijanIsNotAlone, #TurkeyIsNotAlone; correlation peaks at ~0.6, with a lag of –3 hours



Armenian news websites hacked

While inauthentic behaviour began on social media on 27 September 2020, Armenian websites were also attacked as part of a coordinated information operation. *Open Caucasus Media* first reported that a major Armenian news website, *News.am*, had been hacked and that a false article was published (Figure 26) The article presented a fake transcript of an address by the Armenian Prime Minister and urged Armenians to flee the Nagorno-Karabakh region due to the advances of the 'brutal' Azerbaijani Army. On the same day, a pro-Azerbaijan website, *defence.az*, claimed that Azerbaijani hackers had hacked more than 90 Armenian websites, including *News.am* and the *Armenian Times*.

Figure 26: Google cache of news.am/eng/news/387066.html captured on 27 September 2020, next to the current page on 1 October 2020



Both Google caches of News.am and Armtimes.com on 27 September display a page with the Azerbaijan flag as a background picture and text claiming the site was 'Hacked by Karabakh Hacking Team'. A video of Azerbaijani President Aliyev was also posted with a caption in English saying 'If Armenian soldier doesn't want to die, then let him leave Azerbaijani lands.' Hacking teams have sided with both Armenia and Azerbaijan in previous conflicts, and that's likely to continue in this recent dispute. In April 2020, Turkish hacking teams targeted Armenian websites, while Armenian hackers allegedly broke into Azerbaijan's government websites and doxxed Azerbaijani soldiers. According to some journalists, all of Azerbaijan's government websites were at some point down on 27 September 2020 as well.

The fake *News.am* article was referenced by numerous pro-Azerbaijan news outlets and shared on Facebook and Twitter. One website, Armiya.az, shared a screenshot of the *News.am* false article and, according to the website, it's been viewed more than 3,000 times (figures 27 and 28). A Whoisology DNS search of the *Armiya.az* lists a member of the Azerbaijani Youth Foundation as a registrant.

Overall, the campaign received little engagement across social media platforms, but how much impact it's had in influencing Armenians to leave the Nagorno-Karabakh region is unclear.

Figure 27: Armiya.az article with English-translated title ‘Pashinyan urged Armenians to leave Karabakh and move to Armenia’ next to a google search of Russian title ‘Пашинян призвал армян покинуть Карабах и переселиться в Армению’ showing multiple Azerbaijan media articles

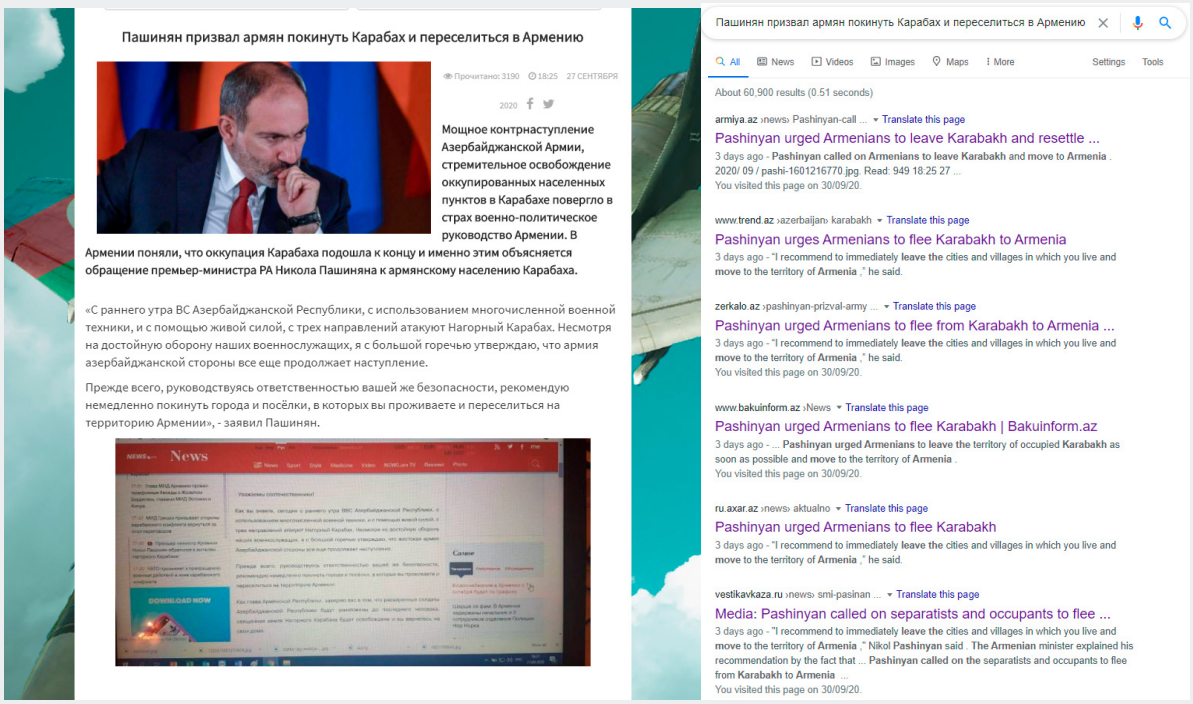
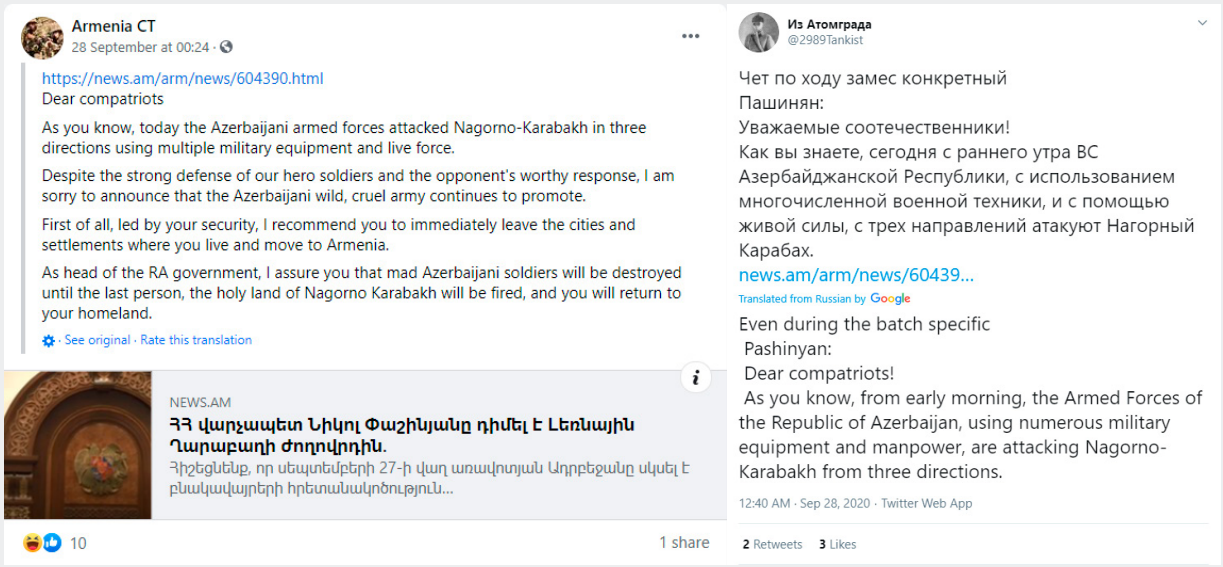


Figure 28: Facebook and Twitter posts sharing the fake article



Summary

This is a complex, rapidly evolving conflict, both on the ground and in the information space. In this report, we haven't attempted a large-scale or comprehensive analysis, which would require far more than the few days since the outbreak of the latest round of fighting in Nagorno-Karabakh. We've focused primarily on English-language content, and we haven't sought to verify, fact-check or debunk claims, images or media.

Our findings include evidence of large-scale coordinated activity aimed at shaping the international narrative about the conflict. Some of that activity is undoubtedly authentic, but we've also observed evidence that suggests likely inauthentic activity, such as significant spikes in account creation and suspicious posting patterns. We've also noted the way alliances in the Twitterverse reflect geopolitical alliances in the real world: Turkish and Pakistani accounts come to the support of Azerbaijan, while Indian accounts back Armenia.

Our goal has been to document and observe some of the dynamics of the shadow war taking place in social media over control of the international narrative about the conflict. Our hope is that this report will serve as a snapshot in time and be a useful resource and starting point for more comprehensive future research.

Appendix

Hashtags collected via related hashtags using Hashtagify.

Armenian-affiliated

- #ArtsakhStrong
- #KarabakhNow
- #StopAzerbaijaniAggression
- #StopAzerbaijansAggression
- #TavushStrong
- #ArmeniaStrong
- #NKPeace
- #StopAliev
- #StopTurkishAggression
- #stopErdogan
- #DefendArtsakh
- #ArtsakhIsArmenia
- #Armenian
- #Armenia
- #Yerevan
- #NagornoKarabakh
- #ՀԱՂԹԵԼՈՒԵՆՔ
- #KarabakhisArmenia

Azerbaijani-affiliated

- #Azerbaijanisnotalone
- #StopArmenianAggression
- #StopArmenianOccupation
- #StopArmenianTerrorism
- #ArmeniaIsTheAgressor
- #StopArmenia
- #KarabakhisAzerbaijan
- #StayStrongAzerbaijan
- #IStandWithAzerbaijan
- #GoAzerbaijan
- #ArmeniaIsTheAggressor
- #StopArmenia
- #KİAzteam
- #Karabakh
- #Azerbaijan

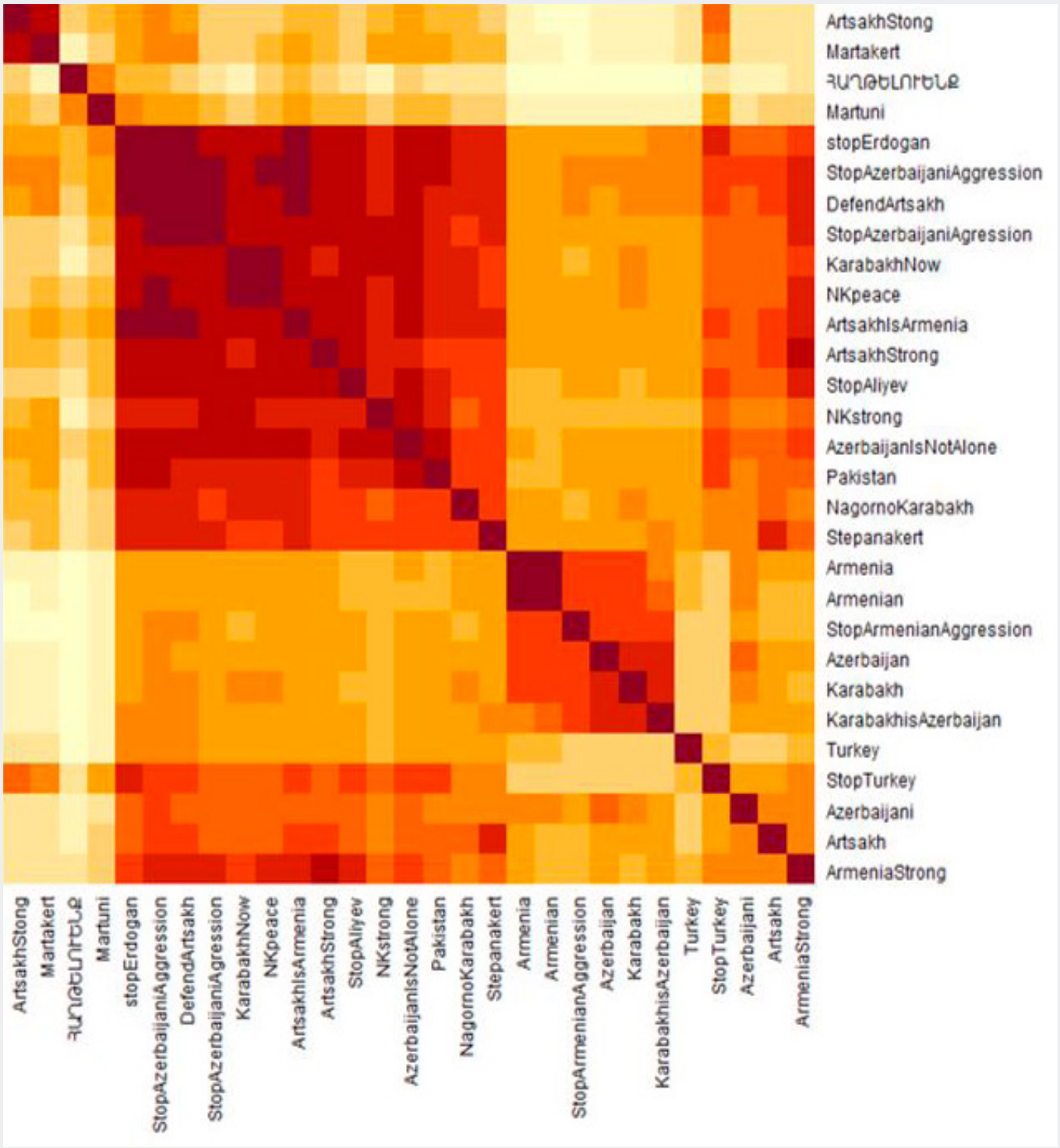
Table 1: Top hashtag mentions between 27 and 29 September 2020

Hashtag	Frequency	Hashtag	Frequency	Hashtag	Frequency
Azerbaijan	45,278	NagornoKarabakh	19,616	KarabakhisAzerbaijan	5,175
Armenia	38,237	Turkey	12,904	ArtsakhIsArmenia	4,999
ArtsakhStrong	36,726	StopAzerbaijaniAgression	12,622	ArtsakhStong	4,292
Artsakh	23,029	KarabakhNow	12,578	Stepanakert	3,820
Armenian	22,887	NKstrong	10,540	stopErdogan	3,442
NKpeace	22,424	Azerbaijani	8,472	Pakistan	3,036
StopAzerbaijaniAggression	21,918	Karabakh	7,536	Martakert	3,003
AzerbaijanIsNotAlone	21,623	ArmeniaStrong	6,228	DefendArtsakh	2,946
ՀԱՂԹԵԼՈՒԵՆՔ	20,827	StopArmenianAggression	6,044	StopTurkey	2,693
StopAliyev	20,223	Martuni	5,251	Smerch	2,601

Similarities in trending behaviour and relationships between hashtags can be quantified by calculating pairwise correlations between time-series data. In Figure 29, yellow tiles represent no or little correlation (likely independent and no shared variables) and dark brown tiles represent high correlation (dependent data or share a confounding factor). For example, diagonal tiles are expected to have high correlations ($r = 1$) between the time data series of a hashtag with itself.

More interesting examples include the hashtags #stopErdogan, #DefendArtsakh, #ArtsakhIsArmenia and #StopAzerbaijanAggression, all of which are strongly correlated with one another.

Figure 29: Heat map of Spearman correlations between different hashtags



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