

# Pro-Kremlin German Twitter users are more likely than Anti-Kremlin users to be involved in both anti-lockdown and anti-vaccine discourse

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Abstract

There is qualitative evidence of intersection between anti-vaccination, anti-lockdown and pro-Kremlin narrative in European Social Media, but no research quantifies the level of overlap. Community detection algorithms of interactions between accounts during selected polarizing discussion on German Twitter were deployed. 62% of pro-Kremlin users have been engaged in vaccines and 45% in COVID-19 protests. Moreover, pro-Kremlin users are over 51 times more likely to be involved in both anti-lockdown and anti-vaccine clusters than Anti-Kremlin.

## 1 Introduction

The aim of our analysis is to evaluate the reaction of selected German Twitter users (potentially pro or anti Kremlin) to the most polarizing topics of COVID-19 pandemic (infodemiology [1]).

### 1.1 Coronasceptic protests

Russia sponsored traditional and social media have been marked by the European External Action Service (EU counter disinformation agency) as propagating dis-/mis-information during Covid-19 pandemic. In spring/summer 2020 in Germany, Kremlin-funded channels have been suggesting “the pandemic never happened” as well as amplifying coronasceptic protest movements [2]. Thousands of people across hundreds of Germans towns have gone to the streets against the government’s measures on Covid-19. Demonstration gathered various kinds of magical thinking categories of QAnon followers, Querdenkers, believers in alternative medicine, esoteric or folk religion communities [3]. According to

surveys the highest coronasceptic protest potential is mainly among far right i.e. AfD (59%) and to some extent far left i.e. die Linke (18%) part of the electorate [4] and similar mosaic can be found on Tweeter [5]. Protesters were claiming that Germany was still an “occupied country” and demonstrators just wanted to “defend our freedom and our democracy” asking “Mr. Putin” for help [6]. The protests reached a peak on 2020.08.29 on the streets of Berlin [7] and I focus on this particular event.

## 1.2 Vaccine hesitancy

Association between pro-Kremlin narration and vaccine hesitancy is not a new phenomenon and in USA the so-called “Russian trolls” were found to be 22 times more likely to tweet about vaccines than was the average Twitter user [8]. However, since the beginning of 2021 Kremlin-funded disinformation intensified, targeting in particular Western-developed vaccines against Covid-19 [9]. Thus, the first half of 2021 was crucial for socializing the picture of vaccines in the societies (so this period is of special interest). According to Russian media researcher Ilya Kiriya, the Kremlin has separate information strategies for inner and outer communication [10]. As COVID-19 vaccines uptake is promoted in state sponsored media inside Russia, anti-vaccination attitudes are fuelled to the international audience. AstraZeneca Covid-19 vaccine [11] was potentially identified as the main target of the larger Kremlin campaign on Twitter aimed at discrediting the Western vaccines. German society reacted the most in the panic (i.e. compering Google Trends search volumes) among European countries rolling out the same vaccine in more-less the same extent [12]. At this same time German and Hungarian authorities called to approve Sputnik V (Russian flagship vaccine of very similar vector - like mechanism as AstraZeneca) roll-out in the EU as soon as possible [13].

## 1.3 Ukrainian-Russian War contexts

Pro-Russian/pro-Ukrainian propaganda with #IstandwithPutin in English [14,15] Twittersphere has been already attempted by social media researchers. It is important to notice, most of #IstandwithPutin Tweets are coming from Asia, Americas and Africa (while the war is happening in Europe). However, quantitative analysis of possible link between war and coronavirus discourse is missing.

## 1.4 Research questions

- To what extent does the pro-Kremlin position during the Russian invasion correlate with the appearance of vaccine and anti-lockdown protests?
- What is the degree of overlap between pro-Kremlin and anti-Kremlin accounts and anti-vaccine/supporting coronaseptic protest clusters?

## 2 Data and Methodology

This is retrospective observational study of Twitter data. The author's understanding of research integrity and difficult circumstances, suggests that usernames involved in #IstandwithPutin (mainly pro-Kremlin ones) cannot be revealed because of possibility of user miss-classification (not 100% specificity). The research does not violate the terms and condition of the platform (no profiling of a single account based on produced content was applied). R package rtweet for Twitter application programming interface (API) was used with query 1) "impfung" (vaccine) keyword from 2021-01-27 to 2021-06-07 (1 160 941 tweets and 171 542 unique selected users) 2) hashtag #B2908 (anti-lockdown protest) from 2020-08-17 to 2020-09-08 (389 217 tweets and 71 612 selected users) 3) hashtag #IstandwithPutin (Russian invasion) from 2022-02-24 to 2022-03-04 (3 032 tweets with 2 089 selected users), all for language: de (German).

Social Network Analysis (SNA) approach have been deployed. Retweeting (the Golden Standard for Social Media Engagement with better information propagation prediction liability than following, commenting, replaying etc. [16]) activity was chosen as a basis for our networks. Thus, the base of determining particular pro/anti position in a given discourse is a subset of users (nodes) who retweeted or were retweeted (links). Louvain community detection [17] as well as in case of big networks of Covid-19 issues, spin-glass [18] (with fixed number of only two communities selected) algorithms of retweets were applied. Thus, our classifiers worked purely on meta-characteristics of the interactions and do not use the content as in other studies [19,20]. Fisher two sample tests were applied with OR (odds ratio) to compare engagement of pro-Kremlin and anti-Kremlin users in Covid-19 discourse.

To assess overlapping sets only accounts created before 15.07.2020 have been selected. First of all to exclude accounts created for a short time only (i.e. bots or quickly blocked extremists) and include only accounts with a history.

### 3 Results

Provided analysis is a signaling rapid response only and further investigation is needed (described below) to further understand the underlying social dynamics.

#### 3.1 Polarizing discourse and hashtag hijacking

To automatically distinguish potentially pro and anti coronasceptic protest as well as pro- and anti-vaccination discourse a spin-glass algorithm was chosen (after removing users who do not belong to the giant component). Most social movements are accompanied by the opposite movement [21] in social media (i.e. phenomenon of Hashtag hijacking [22] where opponents are discussing under hashtag of the enemy). I obtained 42 314 users who were classified as protests supporters and 25 803 who were against protests, as well as 72 669 users who were classified as pro-vaccination and 26 792 anti-vaccination. Note that no cleaning afterward was performed. However, the border between pro/anti-vaccination and anti/pro-protesters against lockdown are blurred.

#### 3.2 Selecting pro/anti- Kremlin clusters

Classification of users to classes (pro/anti-Kremlin) is a difficult task and various technique for tweets/users were proposed [14,15,19,20,23]. Due to a large number of disconnected dyads and small nets I decided to map multiple communities (Louvain) instead of applying a binary spin-glass classifier. Through manual overview the giant component was detected as anti-Kremlin (Hashtag #IstandwithPutin was hijacked by the German Twitter community). Small disconnected graphs were classified as pro-Kremlin. Moreover, the peripheral part of the Giant component does not provide anti-Kremlin narratives to the rest of the anti-Kremlin cluster, so these communities were also classified as pro-Kremlin. Thus 1890 accounts were classified as anti-Kremlin and 199 as pro-Kremlin. Note, that additional cleaning was not performed.

Overlap	Pro-Kremlin (199)	Anti-Kremlin (1890)	OR (p-Value)
Coronasceptic Protest	90 (45%)	591 (31%)	1.81 (<0.001)
Coronasceptic Protest (Pro)	70 (35%)	86 (5%)	13.2 (<0.001)
Vaccine	125 (62%)	928 (49%)	1.71 (<0.001)
Vaccine (Anti)	102 (51%)	75 (4%)	25.3 (<0.001)
Vaccine AND Protests	84 (42%)	526 (28%)	1.89 (<0.001)

Vaccine (Anti) AND Protests (Pro)	66 (33%)	18 (1%)	51.3 (<0.001)
Vaccine OR Protests	131 (67%)	993 (52%)	1.74 (<0.001)
Vaccine (Anti) OR Protests (Pro)	113 (57%)	143 (8%)	16 (<0.001)

Table 1: Descriptive statistics of users sets overlaps (number of accounts co-occurring in given sets of users). Fisher two sample test was applied with OR (odds ratio) for statistical significance verification.

### 3.3 Accounts Overlapping

The highest absolute overlap  $w$  is between vaccine and war's pro-Kremlin accounts; however, the highest relative overlap is between coronasceptic protest and pro-Kremlin war's accounts (without distinguishing context) [Tab. 1].

Pro-Kremlin users were over 13 folds more likely than Anti-Kremlin users to support coronasceptic side during Berlin protests (2020.08.29) and 25 time more to be engaged in anti-vaccination community.

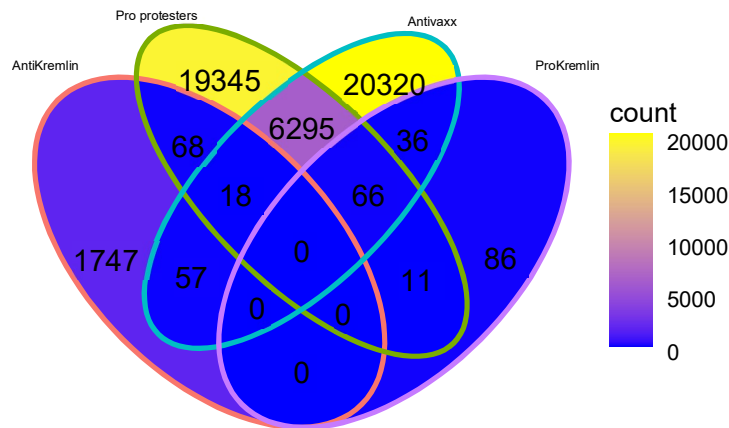


Figure 1: Venn diagram of the users engaged in multiple activities with overlapping sets showing how many accounts belong to each subset.

The biggest difference between pro-Kremlin and anti-Kremlin overlapping characteristic is observed for Vaccine AND Protest (intersection of both sets [Tab. 1, Fig. 1]), so it suggests that pro-Kremlin users are especially likely to get involved in all kind of polarizing activity. Thus, 51 folds higher activity of Pro-Kremlin users in both anti-vaccination and anti-lockdown communities suggest strong cohesion and mobilisation of these accounts [Tab. 1].

## 4 Conclusions

The listening to social media makes it possible to trace COVID-19 perception and allows to early detect possible behavioral changes associated with the epidemic, however the impact of narrative driven by

foreign intelligence was surprisingly not considered enough by epidemiologists, while most infodemiological efforts concentrates on bots [24] or fake news [25].

#### 4.1 Quantifying engagement of Pro-Kremlin users

Based on the analysis of protest material of the anti-lockdown Berlin demonstrations in 2020 and COVID-19 vaccine, overlaps between accounts of pro-Kremlin attitudes can be identified and significantly different from anti-Kremlin users [Tab. 1]. However, conclusions need to be carefully assessed if they are interpreted correctly according to statistical reasoning. Huge intersection of both “COVID anti-mainstream” cluster and pro-Kremlin war accounts suggest (over 51 folds) that pro-Kremlin users are extremely coherent and consistent in engaging in multiple polarizing discourse and this should turn on the red light for public health authorities. However, this approach cannot tell how many of coronasceptic and anti-vaccination accounts are pro-Kremlin. I can only speculate that minority of anti-corona discourse have exhibit explicitly pro-Kremlin attitude [Fig. 1], so still there is a hope and possible place for public health interventions.

#### 4.2 Limitation

I confirm that majority of pro-Kremlin accounts using very specific hashtag (#IstandwithPutin) were involved in COVID discourse, however this research cannot be extrapolated to whole war discourse on Twitter. There is high uncertainty in user’s classification, because there is also pro Ukrainian content produced by pro-Kremlin accounts. There are plenty of possible arguments explaining this phenomenon. Mark Owen Jones [14] and David Broniatowski [26] suggest that one of the tactics of pro-Kremlin agents of influence is mixing opposing content (presenting views of both sides) to get higher reach (the total number of people who see your content). Another possible explanation is mis-classification (false positive, if account is classified as pro-Kremlin by mistake). Moreover, the ground truth for the type of accounts is also not known and there is no consensus how to properly label messages [20]. On the other hand, fact-checking and fakes classifications in pro-Kremlin messages is much easier to obtain with very good performance (for instance by agreement between human judges [23]). It’s important to notice, that Twitter is actively moderating, which bias the results. For instance, significant amount of account engaged

in coronasceptic protests have been closed or suspended. Pro-Kremlin users motivation [27] to engage in anti-vaccination/anti-lockdown communities may be either internal (promote their own agenda) or external (spread pro-Russian propaganda), however it is undistinguished by my approach. The results of this study cannot be extrapolated for other countries due to uniqueness of German political Twittersphere.

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