

# Protest perspective against COVID-19 risk mitigation strategies on the German Internet

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**Abstract.** The aim of this study is to quantitatively assess perception of protests around COVID-19 in Germany from the late July till the end of August 2020 in the Internet media by infodemiological approach. To this end we investigate Google searches, Twitter and Telegram posts, and selection of news articles via EventRegistry. We focus on narratives around Berlin Demonstrations on August 1st and August 29th, 2020. Using media intelligence we spot trends, analyze relevant topics over a longer time span and create sociolinguistic landscapes targeting Querdenken and QAnon movements and other actors such as AfD, SPD, and Green political parties and Antifa. Although the dominant actors of the protest are on the far-right political spectrum, we demonstrate (based on network analysis) that left-wing activists could both sympathize with (e.g. some liberal greens) and oppose (e.g. Antifa) the protest. Although we observe a constant interest in the protest movements in traditional media, their popularity on social media is growing (for Querdenken faster than for QAnon). The revealed insights shed light on social dynamics in the context of such major disruptive events as COVID-19 pandemic and could serve as a basis for optimization of risk awareness campaigns by the authorities.

**Keywords:** protest movements, social network analysis, COVID-19

## 1 Introduction

Spread of SARS-CoV-2 is mediated by human behavior and it impacts human lives not only in medical, but also in economic or social dimensions [16]. There have been protests and demonstrations around the world [26] against risk mitigation strategies during COVID-19 pandemics such as lockdowns and mandatory mask wearing. German government is longitudinally monitoring public opinion to assess optimal epidemiological effectiveness and acceptance of measures and policies during the COVID-19 pandemic [5]. Every country or even group of protesters has a different perspective and distinct factors are driving the protests.

Some protesters questioned the need for a lockdown and were concerned about economical consequences of a disease allegedly “not more dangerous than flu”. Some protested against breaking the citizen rights, others claimed the pandemic was planned (“Plandemic”). Such a mosaic in Berlin protests is revealed by our analysis, where representatives of the far right flank of AfD (“Alternative for Germany” political party) as well as far left flanks of liberals and greens could be contextualized around the same idea during 01.08 and 29.08 Berlin demonstrations. In the investigated COVID-19 movements we observe a very rare presence of common interests of right wing of AfD with Green/liberal movements, which must be very carefully monitored due to its potential to reach a big fraction of the population [10].

Social and traditional media can provide information and disinformation about the virus globally and locally causing [20]:

- fear of the disease which increases risk mitigation protective behavior and adherence to measures.
- anger due to the restriction, fueling anti-restriction protests [17] and back-flash.

We observe a conflict between minority of population driven by anger against the restrictions with the majority of population, which accepts the measures and are negatively oriented towards anti COVID-19 protesters. Continuous monitoring of the Internet activity, information needs patterns of various groups of interest within COVID-19 discourse and the consequent data analysis is a pillar of the infodemiology [11] and digital epidemiology [24]. We concentrate on two main movements in Germany:

1. Querdenken (in English: latent thinking) – demonstration movement which main goal is to oppose the governmental measures against COVID-19. It originates in the state of Baden-Württemberg and could possibly build on the protest movement against the controversial Stuttgart21 railway renovation project.
2. QAnon - an international conspiracy theory movement popular in Germany, which among others, opposes the governmental measures against COVID-19 [12]. It is worth to mention that majority of supporters of QAnon movement (>95%) are located in English speaking countries [12] and German QAnon movement seems to be more independent and oriented more towards European issues [8,19].

### 1.1 Data and methods

As each media has a different audience and reach, we focus on the following platforms:

1. Google (Trends). We have selected search keywords related to protest movements such as QAnon and Querdenken with geographical precision to a federal state, for various time spans. Search keyword intensity is measured in RSV (Relative Search Volume).

2. Twitter. We have collected tweets in German language with hashtags #B0108 (92,474) and #B2908 (345,992) for both main demonstrations on August 1st and August 29th, 2020 in Berlin.
3. News articles. We have collected information on 2,329 articles from 20.07 till 31.08 from German Internet news agencies with a keyword "Querdenken" using EventRegistry representative sample of the articles with the highest reach. QAnon concept is rarely (around 10 times less than Querdenken in September 2020) used in mainstream media (possible auto-censored), so it wasn't included into analysis.
4. Telegram. The data was collected from channels "Querdenken 711", and "QAnon Deutschland".

The passive representativeness of the Internet in Germany is relatively high and constitutes around 80% of adults population [25], but active (own content creation) is biased towards younger age groups and women. Our choice of Internet sources targets a wide share of general population with a relatively high coverage of Internet users with quite a significant audience variability across platforms with active/passive users and traditional/social-content media. We used the following methodological approaches to the analysis of the collected data:

- Statistical analysis of the time series of numbers of posts, tweets and articles in the Internet media. We tested for the change of the trend via the  $t$ -test for series and compared the growth slopes with standard error bars to assess statistical significance of the results.
- Natural Language Processing (NLP) methods such as sentiment analysis techniques.
- Social Network Analysis (SNA) of networks of the Internet media users connected via their post or tweets sharing activity.

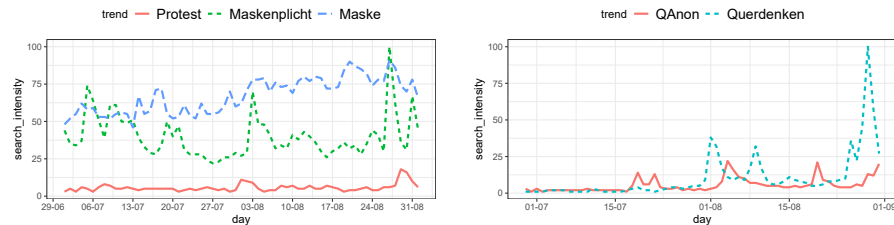


Fig. 1: [Left] The intensity of queries with the phrases “Protest”, “Obligation to wear mask”, “protective mask” in German Google (01.07-01.09.2020). [Right] The intensity of queries with the phrases “QAnon”, “Querdenken” in German Google (15.01-01.09.2020) both generated using the Google Trends tool.

## 2 Results and timeline of the protests

Protests against the lockdown imposed by the government in Germany started already in April with hundreds of people gathering in Berlin and Stuttgart on April 26th, 2020 (Fig. 1). However, the first big event was #B0108 on August 1st, 2020 in Berlin. It gathered around 20 thousands of protesters (however protesters claim the numbers were significantly higher [27]). Even bigger protest against anti-COVID-19 measures happened on August 29, 2020 in Berlin as well (#B2908). However, authorities in the German capital have banned it on August 26, causing an avalanche of interest already before the event (Fig. 1). Eventually the state court allowed demonstrations. According to the authorities, there were around 40,000 protesters on the main demonstration on August 29, 2020 [4]. So media monitoring could be a method for preparing resources and safety cautions before such a protest could take place. In particular, the authorities apparently were not well prepared on August 29, as a group of radical right protesters attempted to enter the Parliament Building yielding very symbolic pictures.

### 2.1 Google

There are ca. 64,600,000 Google users in Germany with a number of German speaking users being ca. 61,370,000 (according to Google Ads from 05.05.2020). Thus Google is not only the leader on search engine market, but the also the main selector of the digital information to the public during COVID-19 pandemics [6].

Querdenken RSV	29.06-30.07	31.07-31.08	<i>t</i> -test (p-value)
Daily RSV	Mean=2.16	Mean=18.87	0.00004114
Absolute change	Mean=0.125	Mean=0.6875	0.8528
Proportional change	Mean= 14.58	Mean=24.05	0.5928
linear regression slope	a=0.097±0.02	a=0.70±0.36	NA

Table 1: Descriptive statistics of the trend in RSV of "Querdenken" in Google one month before and one month containing the main demonstrations. Welch's two sample *t*-test was applied for statistical significance verification.

Analyzing the trends in RSV of Querdenken and QAnon and by using Welch's two sample *t*-test we confirmed that popularity of Querdenken increased significantly during the main demonstrations month – August – (Tab. 1). This increase in popularity sped up as well and significantly if we compare regression slopes with standard errors. QAnon is also gaining popularity, however it is slowing down (Tab. 2). The protests in August were embedded in a complicated social context of the end of summer holidays and schools starts after holidays (Fig. 2). The interest in masks is linked with interest in anti-COVID-19 measures (Fig. 1). QAnon and Querdenken movements popularity are not equally

QAnon RSV	29.06-30.07	31.07-31.08	t-test (p-value)
Daily RSV	Mean=3.3	Mean=7.8	0.0001
Absolute change	Mean=0.03	Mean=0.53	0.64
Proportional change	Mean=22.77	Mean=19.79	0.88
linear regression slope	a= 0.10±0.05	a= 0.055±0.103	NA

Table 2: Descriptive statistics of the trend in RSV of “QAnon” in Google one month before and one month containing the main demonstrations. Welch’s two sample t-test was applied for statistical significance verification.

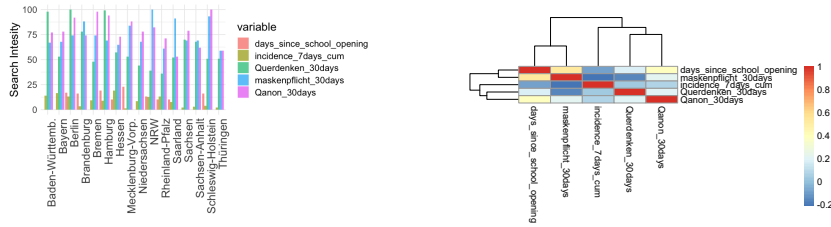


Fig. 2: Potential relationship between the interest (proxy for engagement) in sceptical thinking in terms of 30 days of Google Trends and 7 days of Google Trends, discussing the rules of wearing mask as well as epidemiology (transmission dynamics defined as 7 days incidence), and days since school opening with spatial resolution on the level of Federal States with reference to 24.08. [Left] Interaction between protest intensity, incidence and interest in anti-COVID-19 protest for various German states. [Right] Pearson correlation coefficient between significant events (school starts after holidays) and media activity.

distributed across Germany (Fig. 2) and there is no significant relationship between the growth in COVID-19 incidence (being at a low level in August) and popularity of the movements which is a proxy for the demonstration attendance all around Germany.

2.2 Twitter

There were numerous attempts to analyze Twitter in the context of COVID-19, e.g. [13,1]. Twitter in Germany has about 11 million users in total and almost 2 million are using Twitter daily [18]. Using Twitter as a sampling tool for the whole society will be most efficient for age groups between 15-40. We choose such keywords or hashtags as #B0108 and #B2908 because others (#Querdenken, #Covidioten, #Deppenparade, #Berlindemo, "BranderburgerTor") are not as prevalent and are often included within the same concept already used for the search which could later come into use as Internet users are changing COVID-19-related hashtags, with selection criteria for a language being German. For these 62% of users who provided their location only less than 15% can be linked to Berlin area. Thus both demonstrations are discussed mainly by non-local populations. The vast majority of the Twitter accounts involved in the discussion

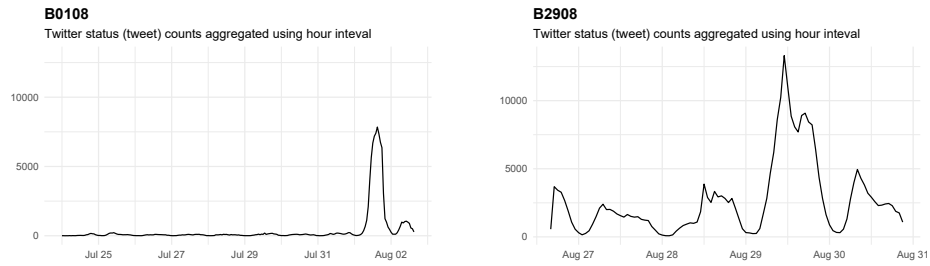


Fig. 3: [Left] Tweet counts aggregated hourly for b0108 [Right] Tweet counts aggregated hourly for b2908.

were created long before the demonstration. Thus so-called Internet trolls do not seem to play a visible role, but shadowed interventions still need to be further analyzed. Notably, as we observe on Twitter, apparently an unsuccessful attempt to prohibit the #B2908 protests by the local government on August 26th caused significantly more communication volume before the main event #B0108 (Fig. 3). Structure of the retweet network, consisting of vertices being users and

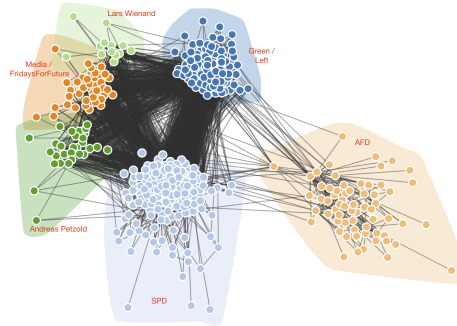


Fig. 4: Polarized communities in retweet network of users constructed from ca. 100,000 tweets (including retweets) with the hashtag #B0108 denoting protests in Berlin mostly against anti-COVID-19 measures (<https://bit.ly/30qdNGD>). Interesting is the connection of opposite political camps such as AfD far right party and left movements.

edges being retweets, depends on a variety of factors such as temporal dynamics of the protest (Fig. 3) and interactions or communication between and within subpopulations engaged in the protests. We applied unsupervised weighted Louvain algorithm [7] for community detection and revealed those subpopulations. We observe a pattern in the German protests when supporters of AfD party with supporters of liberal or green ideology were highly interconnected between each-others. On the other hand mainstream media with central role of more cen-

tral SPD party formed a separated structure with a dominant attitude against the protests (concentrated around Saskia Esken account). The dynamics of the

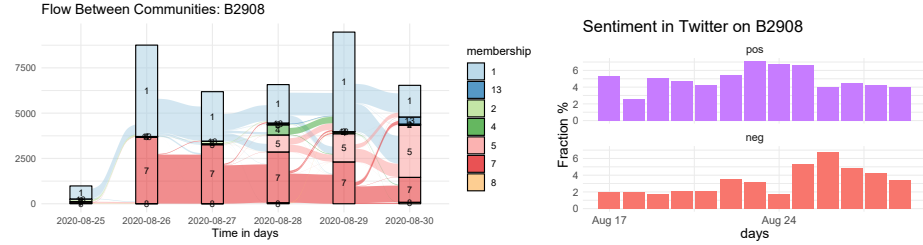


Fig. 5: Daily situation for #B2908 demonstration. [Left] Flow of users between communities with the biggest communities. Codes for the main identified communities: 1 – SPD and mainstream (anti-protest); 5 – Antifa (anti-protest); 7 – AfD (pro-protest); 4 – community of left-wing liberals (anti-protest); 13 – a liberal and more acceptable to protests. [Right] Sentiment analysis

#B2908 protest is significantly different from #B0108 due to an attempt of the regional government to cancel the event on August 26th (Fig. 5). The main communities on Fig. 5 are SPD and mainstream (antiprotest) (1); Antifa (antiprotest) (5); AfD (pro protest) (7). Day before the demonstration community of left-wing liberal (antiprotest) (4) appeared, which was taken by mainstream (1) next day. The day after the demonstration the mainstream (1) have divided into more liberal and more acceptable to protest (13) and strictly antiprotest (1). On August 27th (the day after the demonstration ban) a very small community of left-wing users sympathizing with protests appears (13), however they did not agree with all protesters postulate, emphasizing their right to protest and freedom of speech only. As QAnon gather followers of the far-right (Reichsbürger — literally “imperial citizens” – or AfD), Querdenken is entering into German street protest movements with no clear affiliation with a given political option. Thus, it allows for the flow between left-wing communities of anti-protesters to protest sympathizers (Fig. 5) or even the engagement into the protest related activities by some liberals or green party activists (Fig. 4), which could not be probably possible in a political landscape in other countries. The sentiment analysis [23] revealed that the negative sentiment clearly dominated Twitter discourse (Fig. 5) on the ban day – August 26th.

According to the weighted degree centrality (sum of retweets and being retweeted) of retweet networks, the most prominent user during #B0108 was Saskia Esken (@EskenSaskia – SPD leader and trained programmer, centrality 2128), but during #B2908 it was @PolizeiBerlin\_E (Berlin Police Department, centrality:10874). During #B0108-event we could observe liberal/Green community was interacting and engaging with the protests (Fig. 4), however during #B2908-event, such a community left-wing community was not directly

observed. Some minor left-wing activists formed small cliques, which were too small to be captured by the community detection algorithm. However, some left-wing communities retweeting with protest emerged for a short time only, which was visible mainly on 30.08 day after demonstration (Fig. 5). #B2908-demonstration gathered over 45,000 new users (and lost only 8,000), who were not engaged in #B0108 event. This could indicate that protest movements are getting more and more recognized in the general public.

### 2.3 News articles

EventRegistry is a media research service monitoring a few hundred thousand news web pages daily from Germany alone. We choose EventRegistry as a traditional news media search engine because it collects a large range of online magazines and digital versions of other broadcasting channels representing various political sides. Readers of selected articles can be representative for the population of 20-60 age cohort [2]. Mainstream media demonstrated negative attitude towards protests and have been reporting rather rarely (relative small numbers of articles on Fig. 6), linking protests with AfD in general.

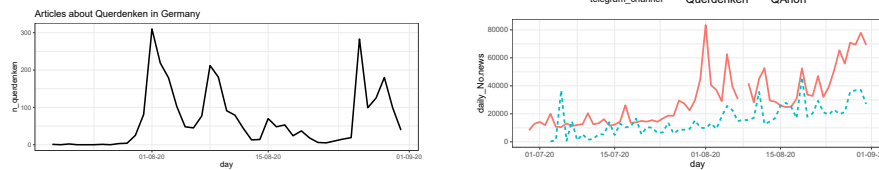


Fig. 6: [Left] Daily No. the articles about Querdenken [Right] Daily No. views on Telegram channels

### 2.4 Telegram

Telegram is an important communication channel for conspiracy and protest movements against governmental measures. In Germany it has 10% share of users among common messengers [9]. This medium is currently gaining new users very quickly. Moreover, channels involved in the protest such as Querdenken doubled subscribers during investigated period (from less than 30 to over 60 thousands).

The reach of the main QAnon channel content measured by mean daily number of views is increasing (Tab. 3) during the demonstration period (31.07-31.08) (significantly faster than in the previous month). Querdenken channel is consequently increasing its reach during the demonstration month and it is also speeding up (however insignificantly).



Mean daily views (linear regression slope)	29.06-30.07	31.07-31.08	Significance according to coefficients' errors
Qanon	a=115.4±173.0	a= 560.9±141.3	yes
Querdenken	a= 390.30±81.94	a= 575.7±316.2	no

Table 3: Descriptive statistics of trend popularity of "QanonDeutschland" and "Querdenken 711" channels in Telegram during the month before and during the month containing main demonstrations.

## 2.5 Platform comparison

The interest in anti-COVID-19 protests in the Internet social-content media (Google, Twitter and Telegram) is growing whereas in the traditional news media it is relatively constant (Fig. 6, Tab 4). All these sources complement perception of the COVID-19 pandemics in Germany, while Google has the highest reach, on Twitter there is the most of interactions, Telegram is a platform for conspiracy theorist, and News show how journalists are building narrations. Very

Interest on a protest day	01.08	29.08	growth
Google (RSV) -Querdenken	38	100	2.63
Google (RSV) -Protest	11	18	1.64
Google (RSV) -Maskenpflicht	27	36	1.33
No. News: Querdenken	310	180	0.58
Telegram (Querdenken 711) Max No. views of a message on a given day	83,436	149,421	1.79
No. of Tweets (B0108 vs B2908)	70,172	136,947	1.95

Table 4: Comparison of interest for protest days (01.08 and 29.08) with relative proportion

fast increase in "Querdenken" queries on Google and number of tweets between demonstrations is related to a growing popularity of the movement in the general population. It is worth to mention than most of tweets were generated by users, who were against the protests. Very high correlation between Google and Twitter series (Fig. 7), suggest that both represent information needs of the general population (mostly not accepting protest). On the other hand, popularity of the protest on Telegram (which is dominated by protesters) is growing much slower. Moreover, the dynamics in the traditional media is substantially different from the rest of media as seen in the correlation pattern as well (Fig. 7) where it forms a separate cluster.

## 3 Conclusions

This study is an attempt to empirically examine the Internet media on the anti-COVID protests in Germany, mainly related to the demonstrations in Berlin on

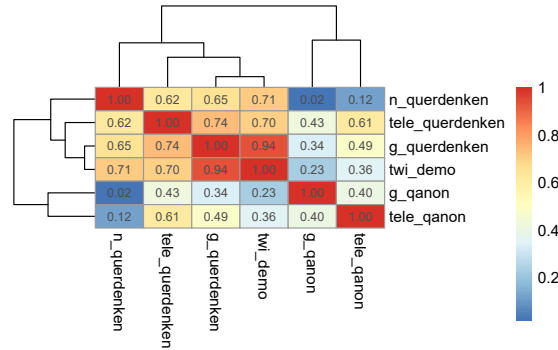


Fig. 7: Pair-wise Pearson correlations between daily series (29.06–01.09.2020). g – for google and its RSV, twi – for number of tweets in with #B0108 and #B0129, n – for number of articles/news collected by Event Registry, tele – for daily average views in a channel on telegram.

August 1st (#B0109) and August 29th (#B2908). Epidemic containment measures such as face mask wearing, lockdown, physical distancing and potential vaccinations against the disease could suppress infection dynamic. However they also might lead to high socio-economic costs for the German society. QAnon movement is well analyzed [12,21] due its main popularity in the English speaking world, but Querdenken movement needs much more scientific attention. We observe that the majority of general population is sceptical toward protesters (Fig. 4,7, [22]) and is just observing the movements dominated mainly by far-right organizations. It is important to monitor the anti-COVID movement [26] due to a rare presence of common interests of the right wing of AfD with Green or liberal movements (Fig. 4). It is worth to mention, that still majority of moderate-right, central or left-wing politicians and electorate strongly disagree with protesters. However, protests have a potential to reach a large fraction of the population [10] and could have an effect on the compliance with non-pharmaceutical intervention during the Autumn wave of infections. We proved, that the interest in the main organizer of both events – Querdenken – is growing on each social-content platform from #B0108 to #B2908 (Tab. 4). Moreover, the growth speed is also increasing (Tab. 1) in comparison to the baseline before demonstrations. QAnon movement is also increasing popularity, but the growth is slowing down, so it may be close to saturation (Tab. 2, Fig. 7). However, Internet media are actively censoring QAnon [14] and only Telegram (from presented data sources) probably does not manipulate its reach. On the other side of the society, there are anti-protest movements with SPD party as its core (Fig. 4, 5).

Protesters usually did not apply physical distancing rules and did not use personal protective equipment, but there is no significant effect of the protest on increase of incidence (Fig. 2) probably due to the low viral pressure and open air conditions due to Summer.

This study is a signaling paper for the real-time analysis [15] of protests during COVID-19 pandemic. A deeper investigation of the mutual interrelation of societal reactions (such as protests), the epidemic dynamics [3], its surveillance and measures undertaken is required; it could help for crisis management in Germany and probably other countries as well.

**Acknowledgements.** AJ was supported with COSTNET (COST Action CA15109) travel grant.

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