

Animal breeders Protests in Polish Twitter -preliminary research

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Abstract

Aim: In September 2020, the governing party (Law and Justice) proposed the so-called "Five for Animals" which attempted to extend animal rights, but at the same time it impacted a number of sectors of Polish agriculture. Moreover, the feeling of abandonment (by the state) and powerlessness (for instance due to ongoing outbreaks of ASF and HPAI) and accumulated social tensions due to COVID-19 pandemic warmed up conflicts within various social groups of interest which led to protest distributed over 1000 locations across the country in October 2020.

Material and Methods: We have collected 9 739 tweets from 1st to 31st October 2020 in Polish language with the hashtag ProtestRolników (farmers

protest). We primarily applied Social Network Analysis (SNA) of the Internet media users connected via their tweets sharing activities. Moreover, our investigation was extended by time series analysis as well as NLP techniques such as sentiment analysis and keyword analysis.

Results and Conclusions: Animal breeders protest communication has highly modular and hierarchical structure with clear boundaries between communities and opinion leaders. Anti-protest communities (25% of all users) are constituted by 1) the mainstream opposition with representation of “green” and animal right defenders (12%); 2) Law and Justice supporters (13%). Pro-protest communities are constituted by: 1) farmers and agricultural organisations (26%); 2) right wing and catholic organisations (16%); 3) protestants (6%); 4) the agricultural party PSL (6%). Tweeting activity concentrates around late mornings (the time after post sunrise grooming of animals).

Keywords: animal breeders protest, infectious diseases, social media analytics, social network analysis

1. Introduction

There is a complex interaction landscape between animal breeders and society as well as their interaction with nature (Jarynowski et al., 2019a) and it will be more and more challenging (van der Ploeg, 2020; Dobbins et al., 2021). Dutch farmers took to the roads in tractors in November 2020 to protest against culling minks due to detection of a mink-associated SARS-CoV-2 variant, the so called Cluster 5 (Dyer, 2020). Animal infectious diseases as African Swine Fever (ASF) which is not only the the biggest current threat to veterinary public health (Normile, 2019), but also could be important trigger of social protest of both animal breeders from SE Asia (Luskin et al., 2021), thought Eastern Europe (<https://agro-tv.ro/fermierii-resemnati-dupa-protestul-din-piata-victoriei/>) till Dominican Rep (<https://www.pigprogress.net/Health/Articles/2021/8/ASF-Dominican-Republic-Unrest-despite-compensation-780481E/>), and wide life conservation (15 associations (Jori et al., 2020; Vicente et al., 2019).

One health and rural sociology Animal epizootics show a widely destructive effect on livestock production, but also cause tensions between various groups of interest. Hence, lack of effective mitigating actions to control ASF for instance (Iacolina et al., 2021) has been deeply triggering in affected European regions. There were attempts to map the landscape by surveys, interviews or media perception analysis with a special focus on conflicts and protests (Gorlach, 2000; Bilewicz, 2020; Cloke et al., 2006) in agriculture. In the XX and beginning of XXI century Polish farmers in the course of their contesting activities usually contested relations with the institutional (mainly during soviet occupation), social (mainly during The second Republic) and economic (mainly during post-socialistic transformation) environment on basic frameworks as patriotic, religious and peasant (Foryś, 2021). However, since 2019, animal breeders and other farmers as well as animal welfare organizations have been intensified protesting and cont-protesting activities in Poland due to causes of infectious diseases to a high extent. Civil society is built by so-called pillars of interacting communities which could lead to cooperation of actors who share broadly similar goals and hold ideological or materialistic positions, but conflicts if their objective goes are opposite (Ekiert and Kubik, 2017). The potential interaction between agents wider definition (Jarynowski et al., 2019a) in the context of animal breeding (farmers, ecologists, hunters, veterinarian, public administration). Pre-existing social conflicting matters of the animal production conditions has been manifested in reconfiguration of social relations by strengthening the tendency to issue farm animal protection in the general population (mostly urban) and "hijacking" profitability and cultural values of farmers (Rodak, 2020). Such a structural configuration facilitates mobilization of one's own group of interest and ends up with conflict between animal breeders, far-right, agricultural parties, Christian organizations as well as opposing, government, pro-European opposition and ecological organization. The social field of conflict about animal production was evolving and COVID-19 pandemic influenced ⁴⁵ long term processes by powerlessness of animal breeders and abandonment by state in another crisis. Background of the protests Poland counts for almost 15% farms (and share is decreasing) of the EU, but only 2 million people in Poland are employed in

agriculture while animal products (mainly pork) contain significant social meanings connected with homeland (Mroczkowska, 2019). COVID-19 crisis and pressures on farmers related to economic and climate challenges (van der Ploeg, 2020) cause more and more farmers to escape from animal production. Thus, changing and ending livestock production as well as deanimalization processes speed up (Bilewicz and Bukraba-Rylska, 2021) in regions affected by ASF among others. The European Green Deal is projected to affect livestock production by decline between 5% and 15%, with the animal breeders income being the hardest hit among all farmers in the perspective of the next 10 years (Barreiro Hurlé et al., 2021). Not only COVID-19, but animal infectious diseases (mainly ASF and HPAI) are currently the major problems in animal breeding immediately affecting the food production market. We observed social and economic impacts of animal infection, and these diseases amplify tensions contributing to the vulnerability of some groups as farmers. E.g. the average price of hogs body mass (0.75EUR/kg) in Poland (Jarynowski et al.) in the middle of Autumn 2020 was the lowest in the history of exchange markets, far below production cost. The announcement of new COVID-19 restrictions in Autumn 2020 (as remote work prioritisation in public administration) due to the Covid-19 pandemic in Poland imposed irregularities on activities of veterinary inspection and other services related to animal welfare, as well as diverting out a certain amount of foreseen budget funds. Reducing working hours or ability to travel to farms led to situations when some non-urgent activities had to be postponed or cancelled. Thus, animal breeders were left on their own.

Prequels the protests

Series of national-wide protest started January 2019 with protest against wild boars depopulation (Jarynowski et al., 2019b). In turn, in several Polish cities animal right defenders organized demonstrations against hunters (Matulewska and Gwiazdowicz, 2021) and government plan of wild boars depopulation (Kowalewska et al., 2019; Panciuchin, 2019) and as a way to stop the slow down the spread of ASF. On the other hand, Agrounia (one of the leading protest organizations (Bilewicz, 2020)) calls for significant reduction of wild boar population with sometimes drastic protest tactics such as throwing pig carcasses

on the streets of Warsaw (during the March 2019 protest). They also blame the environmentalists and ecological organisations which were successfully blocking sanitary wild boars hunting. Furthermore, the Agrounia was in conflict with large-scale industrial farms too (Bilewicz et al., 2021), thus they represented ⁸⁵ only small fraction of animal breeders until Autumn 2020.

Direct trigger for the protests

PiS (governing party in Poland) in September proposed the so-called “Kaczyński Five rules for Animals” which attempted to extend animal rights, but at the same time it hit a number of sectors of Polish agriculture. The organizational trajectory of civil society as American and European has fundamental features directing it towards cultural and political polarization (Ekiert and Kubik, 2017) and livestock infections, welfare and carbon footprint could escalate these processes. The leader of Agrounia, argued that the price of pork is falling, while production prices are rising, leaving farmers at a growing shortfall as the result of the government's “bad solutions in the fight against African Swine Fever” (October 6, 2020).

The proposal of new governmental regulations and standards warmed up conflicts within various social groups of interest (Jarynowski et al. 2021). Agricultural protests [Fig. 1] were widespread and distributed around the whole country with a significant delegation in the capital - Warsaw and concentrated around the middle of October 2020.

Twitter as a mirror of protests

Traditional and social media do not only reflect reality (Łódzki et al., 2017; Eysenbach, 2020), but also create it. Animal breeders use social media as communication platform among them but also representing rural spaces and animal breeding activities for non-farmer audience (Riley and Robertson, 2021). Digital online media, specifically social media, have changed both agricultural and protest communication being a primary source for information seekers (Dobbins et al., 2021) in an interactive way, which was not possible in traditional media.



Figure 1: Protests picture (c) <https://wydarzenia.interia.pl/galerie/kraj/zdjecie.ild.2962754.iAId.385348>

Dietary or consuming changes, government decisions, animal welfare and health issues causing protest movements have been discussed actively in social media (Neogi et al., 2021). Covid-19 pandemic demonstrated that the medicalization (or veterinization in this case) paradigm where the interactions are described in purely biological terms, has some limits. In particular, actions of human actors, participating in the animal production supply chains, such as ecological associations, politicians or animal breeders, are driven by social dynamics (Broz et al., 2021).

Nowadays researchers widely use online social media data to investigate the behavioral and affective dynamics of the public during COVID-19 pandemics, ¹²⁰ however non-English European languages are highly underrepresented and other diseases are not covered at all. With COVID-19 and ASF context amongst others, animal breeders and animal right defenders social movement emerged, with a significant part of protest activity in social media (Bilewicz, 2021). Detailed protest event analysis in media is a key method to understand social circum ¹²⁵ stances. Protest movements against wild boar depopulation and their digital footprints have been already attempted by veterinary anthropologists in East ern Europe (Mamzer, 2020; Broz et al., 2021). However, there is not even a single attempt to understand farmers' protest related to the wide concept of animal welfare and

food production safety in areas affected with ASF. Twitter may reflect and strengthen offline relations of activation possibility, as powerful actors from both protesting and anti protesting sites should possess marketing potential to engage in social media (Rodak, 2020). However, There are many sources of information influencing farmers' opinions and actions (van der Ploeg, 2020): such as the media, agricultural portals, opinion leaders, ¹³⁵ agricultural consulting and in social media analysis. In this study we are going to recognize them and quantify their impact in a selected digital medium.

2. Methods

The study focuses on selected populations involved in conflicts around animal rights and vulnerabilities of farmers in presence of infectious diseases spread. We have collected 9 739 tweets from 1st to 31st October 2020 in Polish language with hashtag #ProtestRolników (animal breeders protest). We primarily applied Social Network Analysis (SNA) (Govoeyi et al., 2020) of the Internet media users connected via their tweets sharing activities.

2 812 users were engaged in discourse, while 2 595 were retweeted at least once.

We ask the following questions:

- What? (content as key vocabulary and sentiment)
- Who? (categories of senders and recipients of information, recognition of main actors and communities in discourse)
- When? (timeline, daily patterns)
- Where? (geography, cross-regional comparison)
- How? (understanding of conflict, how do actors make sense of threats to food production with focus on animal health, the relationships between various group of interest and the socio-political context)

3. Results

Among almost 1000 small demonstrations across the country, the biggest attention gained was protests on 7th, 13th and 21st of October 2020 [Fig. 2]. These events triggered interest in agriculture among politicians, journalists and to some extent the general population.

Figure 2: No. Tweets by hour

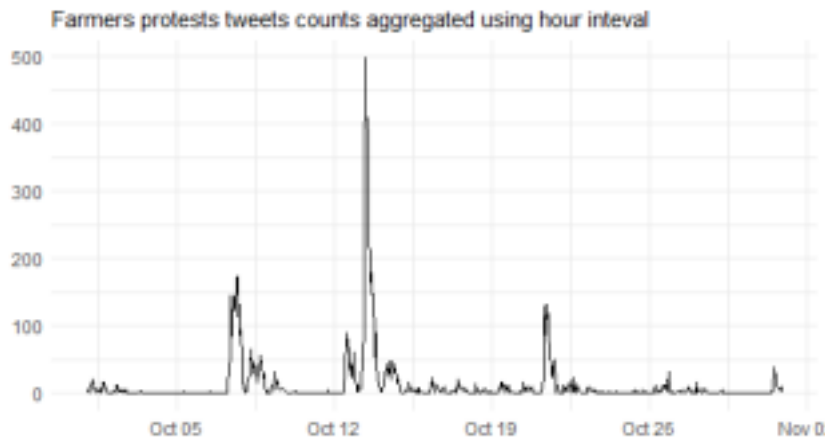


Figure 2: No. Tweets by hour

Tweeting activity is potentially driven by small farm daily routines and concentrates around late mornings [Fig. 3] (the time after post sunrise grooming of animals).

Figure 3: No. Tweets per hour of the day

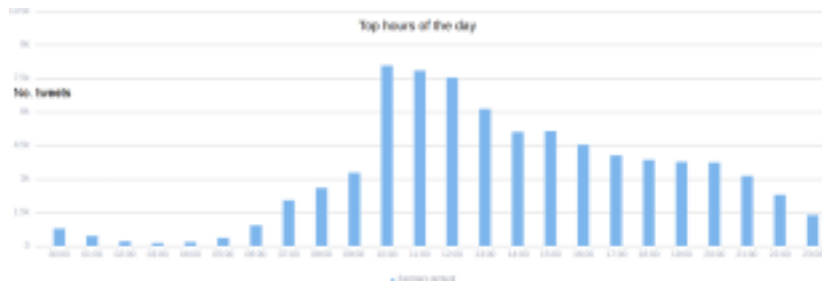


Figure 3: No. Tweets per hour of the day

Users characteristics

Typical users engaged in Twitter's discourse are middle- aged males (here is estimated 70% share of males according to classification algorithms by

SentiONE: <https://sentione.com>), which corresponds to farmers demographic structure in Poland (Michalek and Peszek, 2012). We see that most of users have a long history, there is a large fraction of accounts created in spring 2020 [Fig. 4], probably due to the pandemic and the transfer of social activity to the Internet, but we do not observe increased account created shortly to the event as it was the case in other protests that time (Jarynowski and Płatek, 2021).

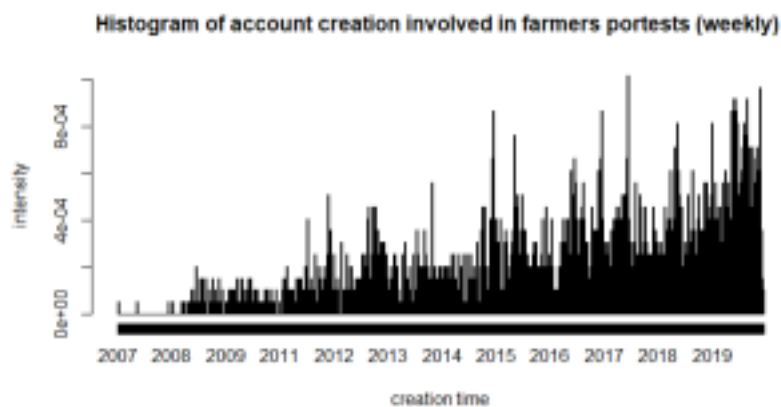


Figure 4: When were the debaters' accounts created?

Social media analysis

Animal breeders protest communication has a highly modular and hierarchical structure with clear boundaries between communities and opinion leaders. Networks of Twitter users (vertices) and edges representing retweets. Retweeting network (only user with more than 10 retweets are shown) for hashtag #Strajkrolników in October 2020 [Fig. 5]. In a second presentation of retweeting patterns, we combine communities in aggregate form to a single node and links are retweets between communities [Fig. 6].

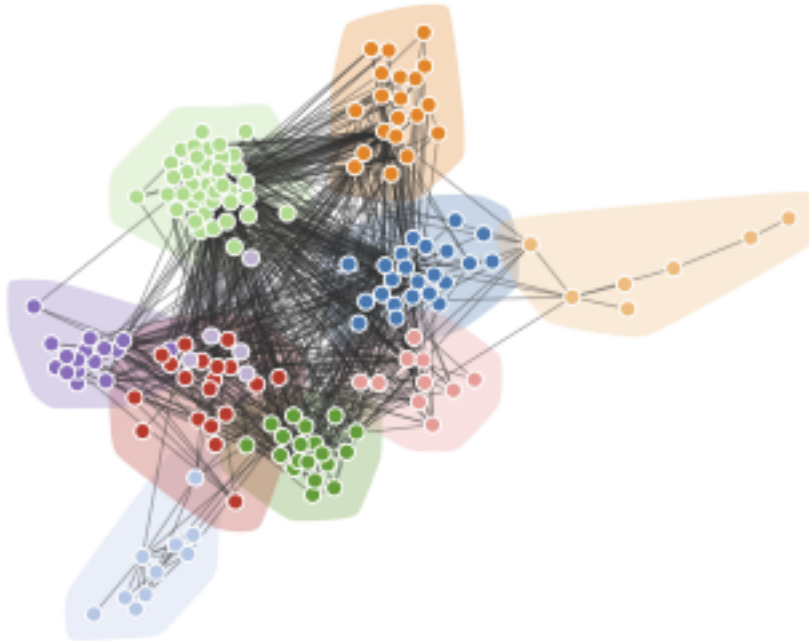


Figure 5: Community detection of main actors http://belik.userpage.fu-berlin.de/asf/asf_vis.html. Colorcode: pink – opponents of protests from the opposition; blue – opponents of protest associated with PiS – a governing party; orange – a mix of supporters and opponents of protest; light blue/gray – Protestant protesters; red – protesting farmers and agricultural organizations; light green – supporters of protests within right-wing (conservative) organizations; violet – supporters of protests within right-wing (liberal) organizations; dark green – supporters of protests associated with agricultural party PSL

The nodes of the farmers protests network [Fig. 6,5] can be easily grouped into communities (clusters of users more often connected with users in the same group than the rest of the network). Anti-protest communities (25% of all users) constituted by:

- 1) the mainstream opposition with representation of “green” and animal right defenders (12%);
- 2) Law and Justice supporters and neutral commentators (partial pro/partial against protest) (13%).

Please notice that the community of Law and Justice (governing party) is very close to communities of the opposition with representation of animal right defenders [Fig. 5]. Thus, as they share the same negative attitude against protesting farmers, they have a potential to collaborate in this aspect in future animal welfare and infectious disease control challenges.

Pro-protest communities are constituted by:

- 1) farmers and agricultural organisations (26%);
- 2) right-wing and Catholic organisations (16%);
- 3) Protestants organizations (6%);
- 4) the agricultural party PSL (6%).

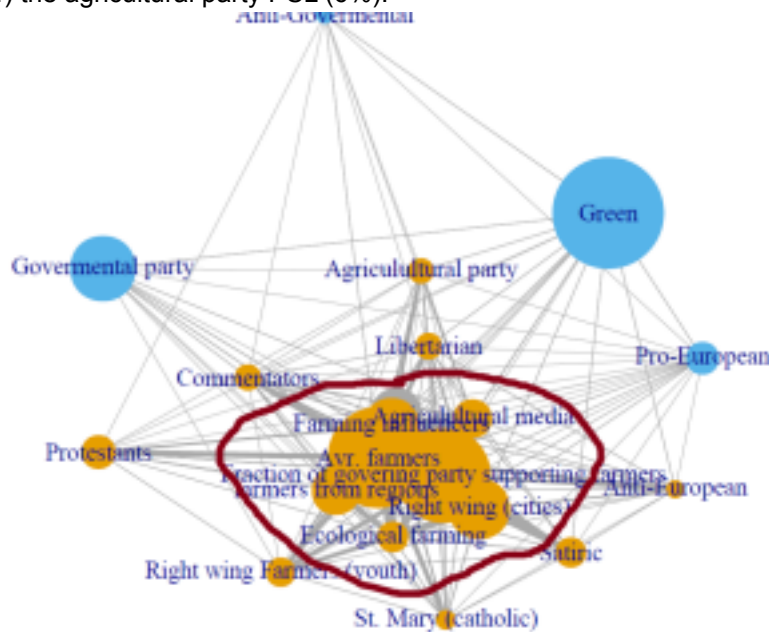


Figure 6: Main grouped communities in hierarchical projection - where node is a community and links are inter community aggregated links

We can see that the farmers associations have been organized hierarchically with several small communities forming the core of the protest and being surrounded by supportive satellite organizations of political, publicist or religious obedience [Fig. 6]. The core of discourse gather around accounts (central role in information propagation) representing farmers media Świat Rolnika, various organizations as PolPig, various trade unions as Polskie Towarzystwo Rolnicze, farmers' think tanks as Instytut Gospodarki Rolnej, etc. It is worth mentioning that most farmers' media/organisations (of various political sympathies or positions in supply chain) have supported protest, which was rare in the long history of farmers protests in Poland (Foryś, 2021).

Text mining

The load of negative emotions does not differ between farmers and other protests (Jarynowski and P latek, 2022). However, the same time level of optimism among farmers arised - probably due to a feeling of unity [Fig. 7].

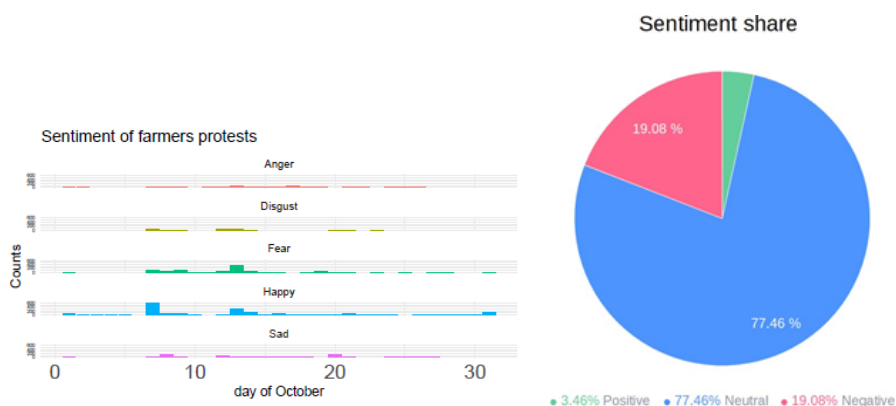


Figure 7: Sentiment [Left] in various emotions (own analysis based on Nencki's list of emotional words (Riegel et al., 2015)) [Right] pos/neg/neu (based on SentiOne algorithms)

Animal breeders are highly diverse from smallholder family farms owners to larger animal holdings. Thus, they represent different, sometimes contradictory, interests (Bilewicz, 2020) and already have been in conflict due significantly different operational costs of ASF mitigation programs (Jarynowski et al., 2019a). Thus, a feeling of common sense of solidarity among various animal breeders has been reflected in network structure [Fig. 6] and sentiment [Fig. 7].



Figure 8: Most frequent keywords [Left] 20 [Right] 50

Vocabulary is mainly negatively associated [Fig. 7, 8], but there is no significant load of aggression as it was the case in protests of other reasons that time (Jarynowski and Piatek, 2021). Top keywords (without stemming and stop words): Farmers, Law and Justice, protests, farmer, Polish, voted, act (juristic), block, Warsaw, government, agriculture, human, Poland, protest, countryside, to block, Kaczynski (Law and Justice leader).

Geography of the protests

Mapped geography of Tweets and protest correlates with animal production intensity as well as with structural properties of farmers breeding organizations (Jarynowski et al., 2019a; Jarynowski and Belik, 2020). The majority of tweets came from the Masovia region [Fig. 9]. Very low coverage of tweets from Eastern Poland with high insensitivity or street protests could suggest that Twitter is not popular there among farmers.

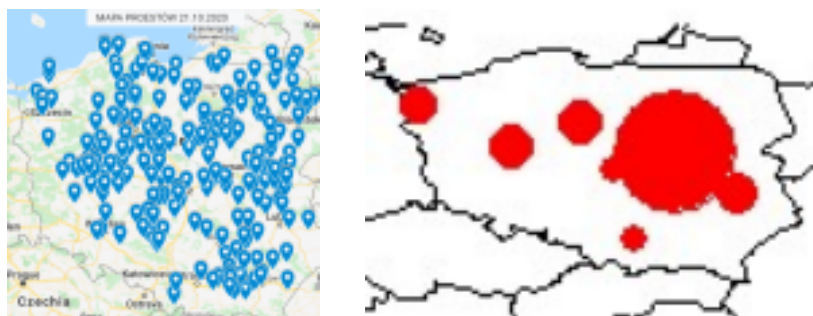


Figure 9: Geography of the protests [Left] Selected physical protest locations (Jarynowski et al.) [Right] Selected most frequent locations of users on Twitter

4. Conclusion

Our study has shown how social media analytic (as secondary data analysis) may be used in understanding social movements triggered by animal welfare in broader and infectious disease in a narrower sense, which have not been yet applied in veterinary epidemiology yet. We have identified:

- 1) main actors and communities (the most central accounts were farmers' media and right-wing political parties/activists with a mosaic of different kinds of farmers organizations and animal activists as well as journalists, political actors).
- 2) key vocabulary and sentiment (mainly negative, but not aggressive or vulgar as in typical protest that time (Jarynowski et al., 2020), but with an important fraction of optimism - unique feeling of unity not observed in previous farmers protests (Bilewicz, 2020; Foryś, 2021));
- 3) a very low coverage of tweets from Eastern Poland could suggest that Twitter is not popular there among farmers, thus most of active on social media farmers organization concentrate in Masovia and Western Poland.
- 4) characteristic timeline as concentration of information supply during late-mornings (animal farming routing which may be overlapped with protest timing).

Street protests (Kowalewski, 2020) can tell some things about discourse for main actors as a granulated farmers organization surrounded by satellite organizations Catholic, Protestant (over-represented on Twitter), populist of right-wing (Zuk and Zuk, 2020). Our

methodology does not allow us to understand the nature of the links (mutual collaboration on the level of common values or instrumental temporary coalition for common goals) between core protesters and their satellites (mainly political and religious organization), thus further qualitative analysis will be needed. We can observe formation of coalitions processes among various groups of animal breeders with signs of establishing a sense of community manifested in hierarchical structure of subcommittees protesters core component [Fig. 5], as well as with rise of optimism [Fig. 7] suggesting perceived support and solidarity. On the other side, we see weekly interconnected opponents of the protest gathering governmental party supporters, pro-European political opposition and green/animal right defenders. Interlinks between governmental and opposition parties are rare in the highly Partisan and polarized political Tweetosphere

(Matuszewski and Szabo, 2019; Jarynowski et al., 2021), thus this potential for coalition needs further investigation. By comparing animal breeders' protests with the whole picture of Polish protests (Platek, 2021), we can see that farmers strike-leading organizations split protests into two components containing separated right-wing and left-liberal pillars. Thus, farmers both criticized the government's not sufficiently help in times of ASF/HPAI and COVID-19 epidemics/epizootics from the right side as well as showed negative attitude towards pro-European and pro-Animal organizations from the left side of the political scene. This suggests, that animal infectious disease and welfare protest could lead to coalition and conflicts against well established pillars of the society (Ekiert and Kubik, 2017). This example of quantitative analysis of animal breeders protest movement could be useful in understanding social circumstances of animal health and welfare driven protest in other societies. Moreover, due to similar conflicting lines and as a consequence of projected reduction of animal breeders income due to the "European Green Deal" such protests are expected to happen to some extent in other EU countries too in next years. 'European Green Deal' which aims to transform the European economy and society towards long-term sustainability, climate neutrality by 2050 and the tackling of many other environmental and social challenges is known to reduce EU's livestock production capacity, and profitability of animal breeding (Barreiro Hurlé et al., 2021). There is a possibility that bots or human-driven foreign state sponsored propaganda (what we have already seen in COVID-19 infodemic (Broniatowski et al., 2021)) could influence discourse to escalate conflict on animal warfare (Jarynowski et al., 2019c). Moreover, special operation in Ukraine during Winter/Spring 2022 threatens supplies for fertilizers and some crops, causing increases in animal feed prices, which could lead to tensions in the context of animal breeding in Europe in the near future.

Limitation. Some specific aspects of animal breeders protests may refer to the Polish post-communistic agrarian situation. Eastern European animal breeder protests could be more ideology-oriented (peasant heritage, nationalism or religious) in contrast to materialist farmers' movements in Western Europe or USA (Mamonova and Franquesa, 2020).

Moreover, Twitter in Poland has relatively low popularity in comparison to Facebook/YouTube (1.5 million active users which correspond to 5% of the literate

population (IAB, 2020)), however the analysis of commentary patterns on animal health breeders protest revealed a meaningful structure of the underlying social system, which is of great importance for veterinary epidemiology. Acknowledgements. This work was funded in part by the PNFN (2019-21) and DFG (458528774). This study follows protocol accepted by the Ethical Commission.

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