

Vaccine hesitancy and the politicization of immunization practices on Twitter

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The growing availability of vaccines in 2021 to counter the spread of the Covid-19 pandemic has not been exempt from the phenomenon of "vaccine hesitancy", a broad category that includes both the no-vax ideological discourse, and a skeptical or fearful attitude towards the vaccines. While public visibility of vaccine hesitancy has grown with the adoption of Green Pass policies in several EU countries, what consequences can be expected from a law or decree making Covid vaccination mandatory? Analyzing discussions on Twitter about an earlier enactment of mandatory vaccination in Italy, this research note considers how public health policies can affect social media opinion on vaccination practices. The findings suggest that such vaccination laws may further increase the visibility of the anti-vax discourse on social media, due to the politicization and mediatization of the issue, with broader potential implications for public health and policy making.

Introduction

Among the public policies aimed at containing COVID-19 is the requirement of state-issued documentation for activities such as traveling, indoor dining, and access to entertainment venues, as introduced in several European countries including Italy. While this *Green Pass* has been gradually adopted since the summer of 2021, public opinion is divided not only between those who consider it a necessity to contain the virus and those who consider it as a restriction to personal freedom. An underlying phenomenon, in fact, is that of “vaccine hesitancy”, a delayed acceptance or outright refusal of vaccination stemming from a series of social, cultural, economic, and political factors (Larson et al. 2014). Public health policies and immunization practices addressing vaccination might concur to shift the focus from broader health implications to political or social elements (Dror et al. 2020), which in turn might undermine support for policies and vaccination.

1. Theoretical framework

Despite its specificities, the Coronavirus pandemic has some continuities with previous health-related crisis such as epidemics and pandemics; one of these is a degree of vaccine hesitancy (Wolfe 2002), leading to public debates surrounding immunization and its consequent politicization. Health policies have been historically deployed to address vaccine hesitancy in different ways, in turn leading to a further politicization of public health policies and practices (Smith & Graham 2017). However, vaccine hesitancy occurs for different reasons: political, individual, economic, and social influences and issues all have an effect in determining the propensity to doubt immunization (Larson et al. 2014); generally, it is linked to a general mistrust of political and medical institution as well as mainstream media (Betsch 2012). This is further complicated by the intertwining of motivations when health-related measures are taken concerning vaccination. Vaccine hesitancy is not only related to immunization practices *per se*, but it intertwines with the legislative measures undertaken precisely to solve the issue at an institutional level; health-related reasons merge with worries about political impositions, personal liberty, and freedom of choice (Wolfe 2002). As social media is one of the privileged channels to diffuse information - and misinformation - about vaccines (to various extents,

see Caliendo et al. 2020), it is a privileged ground to consider how public health policies affect the spread of content and, more generally, the conversation around vaccines (Smith & Graham 2017).

To this aim Twitter, being used to both react to events and express opinions, seems to be particularly receptive for what concerns the entanglement of public health policies and political discussions (Becker et al. 2016). Twitter is used to coordinate and share information by and to publics (Rambukkana 2015), in this instance both to support and oppose vaccination and immunization practices and policies (Kang et al. 2017, Nuzhath et al. 2020). Moreover, it aptly represents the complexity of a conversation composed by those opposing or promoting immunization, in turn basing this decision on health or political implications, while tangentially discussing public policies addressing these issues (Cossard et al. 2020).

Despite extensive research on vaccination, hesitancy, and their broader social impact, the potential effects of health policies on public opinion around immunization practices, especially on social media, remains understudied. This concerns both the changes in support of vaccine practices and how immunization and related topics are framed following legislative acts. These dimensions will be taken into consideration to analyse how public health policies addressing vaccine hesitancy affect the conversation on social media. In detail two dimensions will be considered: (1) if legislation on policies related to immunization affects the degree of support for vaccination practices on social media, and (2) if it causes the conversation to shift from a medical or health focus to a political one. Our research expectations are to see an increase in the political framing of the vaccine issue, without a significant increase in those opposing immunization practices. To do so, the conversation on Twitter will be analysed in the days surrounding the issuing of a legislative act concerning pre-Covid immunization in Italy.¹

2. Data and methods

To delve deeper into the effects of public health policies in relation to public opinion and immunization practices, data has been collected from the Italian conversation around the issue on Twitter. Its effect will be gauged by considering changes in said conversation following the policy's enactment, and compared to a period where the vaccination issue was not being politicized as much; the latter has been selected based on a low number of tweet occurrences, low mediatisation, and low presence in political debates, as established through external data – i.e.: newspaper articles about vaccines, immunization, and related political discussion. The time frames will then be two: the 3 days following the approval of the policy (19th – 21st of May 2017, for a total of 3010 tweets), and an off-peak period around a month before it (9th – 16th of April 2017, 3470 total).

A first step of the analysis was the manual coding of the 50 most popular tweets for both time periods, based on their position on vaccination (in favour or against) and on the frame used to discuss the issue (medical/health or political/partisan). Then, the number of retweets of each message was calculated, given that retweeting, or broadcasting another user's post to one own's followers, is mostly intended as supportive behaviour, and often used to spread information more widely (Halavais 2014, boyd et al. 2010). Data has been collected using the hashtag #vaccini (Italian for vaccines). Indeed, hashtags represent a way to identify the conversation around a topic or event (Becker et al. 2011), and to

¹ The policy in question is a decree-law referred commonly known as "Lorenzin Decree", after the health minister who proposed it. It has been approved by the Italian Parliament on the 19th of May 2017 and has been converted in law on the 18th of July 2017. It raised the number of mandatory vaccinations, made them a requirement to access services such as nurseries, and raised existing fines for non-compliance.

connect to ad-hoc public that can engage in conversation (Bruns et al. 2015). This specific hashtag has been selected following an exploratory analysis of hashtags related to vaccination, considering the highest number of occurrences both as an absolute number and over time, as well as a semantically neutral word.

The coding process referred to vaccination stance in three possible ways: *in favour*, *against*, or *neutral*; this referred to support or rejection of immunization considering both individuals and society, around vaccination practices, vaccines as a pharmacological product, and mandatory vaccination or similar policies. The frame used to discuss immunization practices and policies has been divided into three categories: *political/partisan* when it concerns political parties, figures, or actors; *health*, when the focus was on the national health service, public health concerns, or more generally concerning health. *Other* has been used as a residual category.

3. Results

The results of the sentiment analysis, gauging the slant of tweets as based on their stance on vaccination, is shown in Figure 1. Aside from a difference in absolute numbers, given by different levels of mediatisation and politicization across the timeframes, at a relative level the distribution of the conversation changes significantly. While the non-politicized period is overwhelmingly in favour of vaccination (82.22% of retweets, or 1821), the days following the decree show a less skewed distribution; the spread of content opposing immunization and related practices, on all grounds, becomes relevant following the decree (31.17% of retweets), and shows a stark increase when compared to the previous month (+15.61%). Given the semantically neutral nature of the hashtag, such an increase is notable, as it is not relegated to specific or explicitly politicized digital environments.

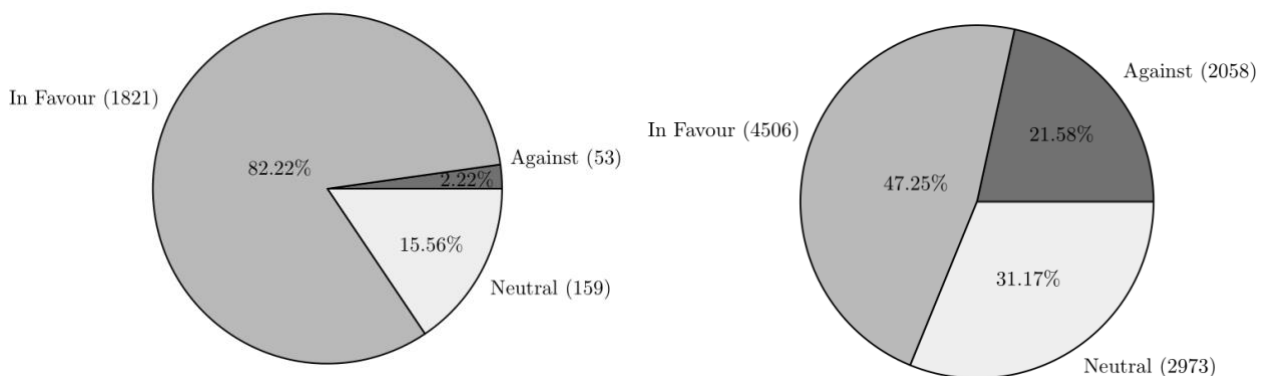


Figure 1. Sentiment on vaccination and related policies. Left is the control period, right is after the policy's enactment

Such a change is not limited to the slant of opinions; rather, it is also reflected in *how* vaccination is discussed. As shown in Figure 2, while the majority of the conversation still remains focused on themes related to health - such as the public health system, the effectiveness of vaccines and immunization practices at large, or potential health risks – its size decreases significantly (by almost 20 percentage points compared to the control period). At the same time, a much more partisan frame grows in the days following the policy, with conversations focusing more often (plus 15 percentage

points) around political parties and their legitimacy to propose or oppose mandatory immunization practices, as well as a slight increase in the residual category.

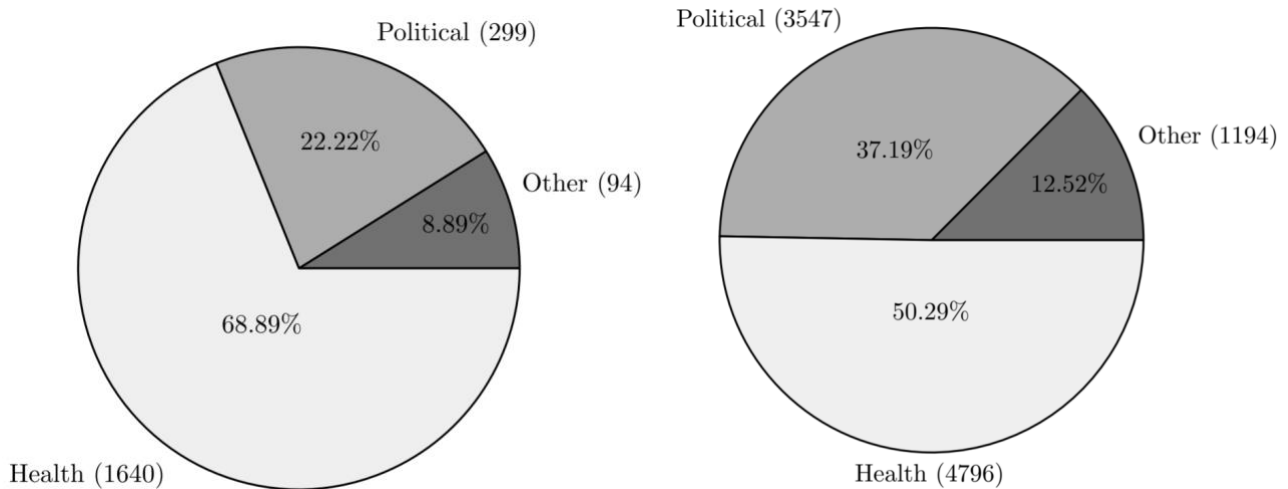


Figure 2. Discussion frames on vaccination and related policies. Left is the control period, right is after the policy's enactment

4. Discussion and Conclusions

The enactment of public health policies concerning immunization affects how vaccines are perceived and discussed on social media. This concerns both their general perception, as favourable or negative, and how the topic is generally framed by users as a political or a health issue. In this case, the enactment and discussion of health-related policies concurred to an increased visibility of negative opinions surrounding immunization practices; notably, this happened in a general space of conversation rather than in thematically strict or slanted arenas (i.e., not using a strongly connotated hashtag such as #vaccineskill or #vaccinated). Similarly, legislation surrounding immunization practices projects the issue in the political arena. Framing the issue as political concurs to underplay health concerns while overemphasizing the partisan nature of policies, as reflected by the conversation on social media.

The enactment of public health policies concerning vaccinations then results in a relevant increase in both opposition to the vaccine and in how the topic is understood and discussed by individuals on social media. The combination of a change in both slant and frame however does not only have implications for public opinion on Twitter. Social media is increasingly used to seek information on general health practices and vaccination in particular (Coomes et al. 2020), concurring to increasingly merge this information with peer-to-peer interaction (Zheo et al. 2017). The enactment of public health policies therefore does not only affect opinions *per se*, but concurs to underline and accelerate some of the mechanisms through which vaccine hesitancy gains prominence, such as exposure to ambivalent content; this suggests that vaccination policies may need to consider the subsequent politicization of issues as a relevant component, one that could actively hinder the efforts that led to the implementation of those policies in the first place.

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