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# Understanding digitally networked action: A case study of #HomeToVote and the Irish abortion referendum 2018

## Digital vernetztes Handeln verstehen: Eine Fallstudie zu #HomeToVote und dem irischen Abtreibungsreferendum 2018

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## Digital vernetztes Handeln verstehen: Eine Fallstudie zu #HomeToVote und dem irischen Abtreibungsreferendum 2018

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**Abstract:** Digitally networked action (Bennett & Segerberg, 2012) has become a prominent political reality. This article explores the evolution of digitally networked action, considering the Twitter hashtag #HomeToVote in 2018 as a relevant case. The case study features the return of Irish expatriates to their home country to vote in the referendum on abortion rights, since no postal votes were available to Irish citizens abroad. We investigated how actors participated in digitally networked action on Twitter, viewed from three perspectives: composition, diffusion, and dynamics. Through an @-mention network with 7,373 edges and 5,198 nodes, built on all original tweets ($N$ = 33,927) about #HomeToVote, we interpreted the digitally networked action based on social interaction and information distribution between and beyond categorized subgroups of actors during four phases. The early phases of #HomeToVote are related to engagement and mobilization, while the latter phases are associated with experience sharing and solidarity declaration. Throughout the development of #HomeToVote, individuals and organizational actors show collective endeavors to promote digitally networked action, while media actors use Twitter to consistently depict moments of #HomeToVote. The findings suggest that #HomeToVote, as an organizationally enabled advocacy network, has a large political capacity to share communication linkages, facilitate flexible affiliations, and employ personalized engagement mechanisms.

**Keywords:** Referendum; abortion rights; Twitter; connective action; social network analysis

**Zusammenfassung:** Dieser Artikel untersucht den Twitter-Hashtag #HomeToVote im Jahr 2018 als relevanten Fall der Entwicklung der „digitally networked action" (Bennett & Segerberg, 2012). In der Fallstudie geht es um die Rückkehr irischer Auswanderer in ihr Heimatland, um an dem Referendum über Abtreibungsrechte teilzunehmen, da irischen Bürger*innen im Ausland keine Briefwahl möglich war. Wir untersuchten, wie Akteure an der „digitally networked action" auf Twitter teilnahmen, aus drei Perspektiven: Zusammensetzung, Diffusion und Dynamik. Anhand eines @-mention-Netzwerks mit 7.373 Kanten und 5.198 Knoten, das auf allen Original-Tweets ($N$ = 33.927) zum Thema #HomeToVote aufgebaut wurde, interpretierten wir die „digitally networked action" anhand der sozialen Interaktion und Informationsverteilung zwischen kategorisierten Untergruppen von Akteuren innerhalb von vier Phasen. Die frühen Phasen von #HomeToVote stehen im Zusammenhang mit Engagement und Mobilisierung, während die späteren Phasen mit Erfahrungsaustausch und Solidaritätserklärungen verbunden sind. Während der gesamten

Entwicklung von #HomeToVote zeigen Individuen und organisatorische Akteure kollektive Bemühungen, um „digitally networked action“ zu fördern, während Medienakteure Twitter nutzen, um Momente von #HomeToVote konsistent darzustellen. Die Ergebnisse deuten darauf hin, dass #HomeToVote als organisatorisch ermöglichtes Advocacy-Netzwerk eine große politische Kapazität hat, um Kommunikationsverbindungen zu teilen, flexible Zugehörigkeiten zu erleichtern und personalisierte Engagement-Mechanismen zu ermöglichen.

**Schlagwörter:** Referendum; Abtreibungsrechte; Twitter; connective action; Netzwerkanalyse

## 1. Introduction

In Ireland, no postal voting is allowed for nonresident citizens in elections and referendums. When Irish expatriates (hereinafter expats) returned home to cast a vote in the 2015 referendum to legitimize same-sex marriage, they created a hashtag, #HomeToVote. The hashtag ranked fifth among Twitter's top news trends of that year and trended again in the run-up to the 2018 referendum on abortion rights. To mobilize Irish expats to return home to vote "yes" and repeal the Eighth Amendment of the Constitution Act 1983, which strictly regulated abortion, a London-based NGO, London-Irish Abortion Rights Campaign @ldnirisharc (2018a), launched #HomeToVote as a social media drive. It was predicted and later confirmed that #HomeToVote for abortion rights would be and in fact was more significant than it was for marriage equality (Griffin, 2018; London-Irish Abortion Rights Campaign, 2018b). On May 25, 2018, the day of the referendum, Irish voters repealed the Eighth Amendment by 66.4% to 33.6% with a 64.1% turnout. As abortion has long been a controversial issue in Catholic Ireland, politicians, citizens, activists, parties, media organizations, logistics companies, religious institutions, pro-life campaigns, and many other actors networked or were encountered through the hashtag in both digital and non-digital spaces. By using the mobilizing power of digital media and with the aim to pursue equality for each group in a democratic system, #HomeToVote sets a relevant precedent for modern campaigns and digital activism by establishing a platform and providing an organizing tool to aggregate narratives and coordinate efforts.

Like #HomeToVote, a wide range of social media-based campaigns, movements, and activism have been sweeping across the globe over recent years. From #Occupy, #BlackLivesMatter, to #MeToo, political action rapidly emerged online, raised public consciousness, and led to coordinated efforts. In this paper, we use the concept of "digitally networked action" (Bennett & Segerberg, 2012), a less organization-centered and more personalized variation of collective action, to describe the mass phenomenon. It is widely acknowledged that the dramatic shift from conventional to digitally networked action mainly depends on the development of digital technologies and online networks (Benkler, 2006; Bennett & Segerberg, 2012; Castells, 2015; Tilly & Tarrow, 2015; Weller et al., 2014). While digital technologies reform organizational mechanisms by optimizing online infrastructures regarding content generation, identity formation, and political participation, online networks redefine the public sphere by providing advanced

channels to facilitate information diffusion, resource mobilization, and contentious interaction.

The boost of digitally networked action has triggered a growing body of studies in this research field. Network analysis has gradually come to play a crucial role. However, most scholars model their networks by accumulating data of politics during a single period, instead of studying the process chronologically with a focus on its changing nature. Also, due to the high volume of information, most of the works analyzing Twitter streams are limited either to a short period or to a partial sample from a node-centric perspective. Therefore, this article examines not only node-based social interaction but also edge-based information distribution of #HomeToVote as a case study from its emergence to the aftermath. By combining social network analysis and content analysis, this article scrutinizes #HomeToVote during different phases to determine and explain the evolution of digitally networked action between and beyond groups.

## 2. Political communication in the networked public sphere

The rise of digitally networked action reflects a structural transformation of communication environments and processes. In this field of research, key concerns are to explain how digital innovations and online networks are reshaping political communication, and to determine whether information and communication technologies could support democratization processes.

Scholars have revised the Habermasian concept of the public sphere (Benkler, 2006; Castells, 2008, 2015; Coleman, 2005). The public sphere with a networked structure in the information age is differentiated from the public sphere with top-down characteristics dominated by mass media through network architecture and lowered communication cost. From the perspective of technological codes, actors are nodes of networks that can reconfigure themselves and form new structures by merely joining or leaving the network without touching the consistency of the existing structures. New values, norms, and interests that change systems are introduced and disseminated as a consequence of the adaptive structures of networks and interconnectivity (Castells, 2000, 2008). On the one hand, the mass media-dominated network structure with one-way-relations to the endpoints is shifting to a distributed network constructed by multi-way-ties among all actors in the networked environment. On the other hand, networks reduce the cost of communication crossing the boundaries between different actors, so that individuals are able to move freely from being passive readers, viewers, and listeners to being potential publishers, participants, and speakers (Benkler, 2006). The networked public sphere is an alternative arena for public discourse, engagement, and political participation, and it facilitates the formation of new sets of organizations, practices, and innovations. Citizens and organizations can thus engage in the public policy process and can even become a counterbalance to the power of conventional media, institutions, or particular interest groups, thus realizing their political goals through transformative forms of political action.

Nonetheless, critical voices argue that the possibilities presented by technologies may not be socially favorable compared to the original ideal of the public sphere.

It has been found that the central dynamics of networked publics are shaped by imagined audiences, collapsed contexts, and the blurring of boundaries between the public and the private (boyd, 2010; Klinger, 2018; Litt & Hargittai, 2016; Marwick & boyd, 2011; Papacharissi, 2008). The lowered communication cost of becoming a hub and the accessibility of public discourse bring with it an enormous flow of information, flooded by messages without accreditation and filtration. Overlapping groups of the public, debates with polarized opinions, and interaction-based intersubjectivity regardless of objectivity reveal the inconsistency of communication environments (Rasmussen, 2008). Multiple private spheres are isolated or networked, depending on the affordance of technologies and various communication relationships (Klinger, 2018; Papacharissi, 2008). Later research thus conceptualizes the public sphere as multiple levels of communication and subnetworks of networking (Bennett & Pfetsch, 2018; Raupp, 2011).

The change brought about by networked digital communication is as much quantitative as qualitative. Hence, network analysis associated with data-driven approaches started playing a central role when investigating the structure of the networked public sphere and the dynamics of information flows. Social networks are outcomes of social interactions, consisting of actors positioned by their relations and affiliations and by their ties that entail the logics of interaction such as shared orientations, beliefs, and practices (Diani & Mische, 2015). The performance and power of politics become describable and measurable, as social network analysis enables researchers to map actors and their interactions to nodes and edges. It provides a broad spectrum of operationalization variants to reveal underlying patterns and reduce the complexity of studying networked phenomena. While a bottom-up perspective shows influential actors and their key messages through their network positions, a top-down approach reveals the organizational structure and group dynamics by dividing the whole population of a network into different communities and studying hubs, isolates, and their strength of connectivity (Burt, 1999; Friemel, 2008; González-Bailón & Wang, 2016). In many networked phenomena, networks follow a power-law distribution, which presents a correlation between the number of linkages of each node and the sum of nodes that own the same number of linkages. The quantity of well-connected hubs mathematically varies as a power of the quantity of loosely connected nodes, as new nodes preferentially link to the more connected nodes. The distribution is plotted as a bowed shape with a tall head and a long tail, correspondingly composed of a small number of actors with a majority of in-links and a large number of actors with few links or no links (Barabási & Albert, 1999).

## 3. Connective action and its networking mechanisms

With the progress of digitalization and personalization, digitally networked action facilitated by loosely structured networks relies less on brokered coalitions and collective identity-building processes which characterize collective action (Bennett & Segerberg, 2013; della Porta & Diani, 2020). Moving from the focus on relationships between individuals and organizations in collective action, many frameworks suggest investigating interactions, organizing, and communication

processes in digitally networked action. A social movement, as "a sustained campaign of claim-making, using repeated performances that advertise the claim, based on organizations, networks, traditions, and solidarities that sustain these activities," is a historical rather than a universal category (Tilly & Tarrow, 2015, p. 11). Tarrow (2013) coins the term "contentious politics," referring to interactions in which more than one group of actors are competing over their respective intentions and engendering cooperation based on shared interests or programs (Tilly & Tarrow, 2015, p. 7). Bennett and Segerberg raise the concept of "connective action," underlining the organizing properties of communication enabled by discursive and technological networking mechanisms (Bennett & Segerberg, 2013, pp. 42–45). Regarding communication processes, Dobusch and Schoeneborn (2015) identify three dimensions of "organizationality" – interconnected decision-making instances, identifiable and addressable actorhood, and binding identity – which describe when loose collectivities could become organizational and act in a coordinated manner.

To determine how digitally networked action operates, it is necessary to investigate various aspects, for instance, the strategical adaptations of political actions, the functionality of information and communication technologies, the type of diffusion, and/or network structures (Earl & Kimport, 2010; Earl et al., 2010; Smith et al., 2014; Tarrow, 2005; Tilly & Tarrow, 2015). The most common mechanisms – brokerage (producing new links between isolated parts), diffusion (spreading a claim from one site to another), and coordinated action (gathering multiple actors making claims on the same issue at stake) – rely on online networks and technological innovations (Tilly & Tarrow, 2015). In the digital age, the loosely structured networks that allow members to switch off or link up reduce the coherence of decision making in the organization and serve as a communication medium for networked actors to manage resources and to implement strategies (Bennett & Segerberg, 2013). Interactive and self-configurable communication forms not only engage more individuals but also create a sense of solidarity, togetherness, and connectivity in digitally networked action, whose organizational mechanisms thus become less hierarchical and more participatory (Castells, 2015). Simultaneously, the complexes of weak and strong ties and the multiple layers and overlaps of changing dynamics in digitally networked action demand a more sophisticated framework to capture the relationships of organizations, individuals, and networks (Bennett & Segerberg, 2013).

The concept of connective action introduced by Bennett and Segerberg (2012, 2013) is the central building block of this article. It classifies the organizational structures of digitally networked action into two categories: the logic of collective action based on high levels of organizational resources, firmly tied structures, and the exclusive formation of identities; and the logic of connective action associated with weakly tied networks, personalized identities, and self-organized action generated across social media. In contrast to traditional collective action that demands several levels of resource mobilization, connective action is more flexible, individualized, and technologically organized, featuring rapid action and adjustment to deal with different situations. Besides the traditional collective action – the organizationally brokered networks – two variations of connective action are

illustrated: organizationally enabled networks and crowd-enabled networks. They are distinguished by how formal organizations facilitate personalized engagement. In crowd-enabled networks, formal organizations are absent, while digital networking mechanisms play an essential role as an organizing agent. Organizationally enabled networks possess a more intentional and deliberately constructed structure to engage politicians and the public at the same time. In the case of organizationally enabled political action, the stability of organizations responsible for sharing communication linkages and employing many personal engagement mechanisms determines their political capacities. For crowd-enabled politics, political capacity depends on dense networks with paths for individual networks to converge and create an inclusive action frame. Bennett and Segerberg (2013) also expand the methodological scope by illustrating a model of power signatures to identify to which extent recognition is concentrated or dispersed among participants in a network. The model evaluates the dominance of and coherence among actors in a large-scale action network, based on whether their association is inclined to: (1) classic power-law distribution with a steep power-law curve, where a small number of actors receives most of the recognition, (2) evenly distributed power-sharing in the bottom half of the distribution and a power-law likelihood in the top half of the distribution, (3) a network of networks, in which power is dispersedly scattered, or (4) little or no evidence of organized power in the network (Bennett & Segerberg, 2013). In general, the organizationally brokered and enabled networks have either steep or moderate cascades of degree recognition. The crowd-enabled network resembles the dispersed "network of networks," in which various clusters of action are distributed geographically and socially (Bennett & Segerberg, 2013, pp. 157–164).

## 4. Literature review and research questions

Empirically, the cases most mentioned are digitally networked action originating from influential hashtags on Twitter, such as #indignados, #BlackLivesMatter, and #occupy. Studies investigating how social media-based movements matter and how they substantiate the impact of the networked environment on democratization in the digital age confirm the social media power of social movements, since they not only raise strong attention but also forecast mainstream news coverage about political injustice. Online networks help protesters achieve prominence by framing the movement, triggering public discourse, and maximizing outreach (Bennett & Segerberg, 2013; Freelon et al., 2018; Gallagher et al., 2019). Nevertheless, several empirical researchers question the claims of technological determinism about the impact of digital technologies on social movements. There is an "inverse relationship between broad online social movement mobilization and deep participation" (Lewis et al., 2014). The virality and ephemerality of social media only produce scattered narratives without having a lasting impact. Decentralized networks with weak ties will fail to incite effective collective action (Gladwell, 2010; Wasik, 2009). The networked structure of collaboration between organizations does not directly lead to distributive characters of democratic participation and distribution control (Bennett et al., 2014; González-

Bailón & Wang, 2016; Sassen, 2007). The protest communication has a fragmented nature because only a small number of actors can fill the structural holes in the network, and only a few brokers can ensure information flow from cluster to cluster (González-Bailón & Wang, 2016). Twitter is a discussion forum to start conversations on or link information about social movements, rather than a mobilization tool to engage others and call for action (Theocharis et al., 2015).

Although previous research demonstrates possibilities to interpret the popularity and prominence of digitally networked action from different perspectives, only a few studies provide an overview of digitally networked action from its emergence to its conclusion. The studies based on network analysis mainly focus on the main actors and key messages in retweet networks and are usually restricted to a partial sample or limited to a short period of time. In contrast, @-mention networks are rarely researched thoroughly. The analytical methodologies also vary from case to case. Frequently asked questions always include whether online networks and digital innovations impact on political participation, how the digitally networked action operates over time, or what kind of organizational form it has transformed into on Twitter. This article explores digitally networked action on Twitter through social network analysis and quantitative content analysis. Applying #HomeToVote in 2018 as a case study, we propose two subsidiary research questions under the main research question: How are actors involved in digitally networked action on Twitter?

> *RQ1: How, according to the composition of its general network, is #HomeToVote generally organized?*
> *RQ2: How, regarding diffusion and dynamics, do actors share and discuss #HomeToVote during the different stages of digitally networked action?*

Previous studies that applied network analysis in a typical fashion looked at the structure of the corresponding network. Bennett and Segerberg (2013) proposed the power signatures concept to study the prestige and influence of different types of political action. Tremayne (2014) interpreted #occupy through its eigenvector network. Theocharis et al. (2015) analyzed sample tweets from #15M, #greekrevolution, and #occupywallstreet and found little information on logistics and coordination efforts in the three hashtags. Freelon et al. (2018) built networks of communities through a computational approach. Mercea and Yilmaz (2018) combined multiple methods of social network analysis, namely the topic model, semantic analysis, and discourse analysis, to explore movement social learning on Twitter. Soares et al. (2019) identified influencers in Twitter conversations about the impeachment process of the ex-president of Brazil. However, these studies primarily focused on nodes, especially influential nodes, and did not include the network content and the interactions presented by edges. The first research question thus necessitates a comprehensive overview of #HomeToVote. At the structural level, it requires a complete picture of the structural features of the entire network, the interactions between actors, the number of messages sent and received, and the influence of #HomeToVote at the macro level. At the content level, it requires a delineation of how information traverses the relevant actors and a description of the types of messages that are distributed. Based on the framework

of connective action and power signatures of Bennett and Segerberg (2013), the question thus requires determining whether there are distinguishable forms of interactions and what they are, if indeed the case.

Mapping dynamics and information diffusion is another crucial part of understanding digitally networked action. Bennett, Segerberg, and Walker (2014) identified information flows in tweets of #Occupy, in processes of production, curation, and dynamic integration, and detected the varied usage of hashtags by different types of actors. Freelon et al. (2016) explored the growth of hashtags and online media on the Black movement by dividing the issue into different Twitter periods. González-Bailón et al. (2016) and Barberá et al. (2015) quantified the influence of different actors in different positions in networks and emphasized structural changes instead of temporary changes. Stier et al. (2018) revealed temporally fluctuating network structures during high attention periods, as well as the different frames utilized by different actors in public online debates. Gallagher et al. (2019) interrogated network-level reciprocal disclosures of #MeToo with a focus on information diffusion. Since each newcomer to the network brings different messages and relations, the networks always rapidly grow and evolve in a complex manner. Therefore, it is crucial to chronologically identify the interactions between and the information flow among actors. Concurrently, #HomeToVote is regarded as a social media drive, a political campaign, a hashtag movement, and an online discourse. It may contain various organizational characteristics and different patterns of social interactions. From the emergence, growth, expansion, and aftermath of #HomeToVote, we expect to observe identifiable but different tweeting behaviors and coordination forms. Therefore, the second research question requires an investigation of how groups of actors contribute to the development of digitally networked action by sharing and discussing the issue, and of the patterns of communication and the particular phase of digitally networked action involved in this process.

The research questions are explicitly formed from three perspectives: (1) composition – RQ1, (2) diffusion – RQ2, and (3) dynamics – RQ2. By dividing the Twitter stream into four periods, the study reveals the general logic of #HomeToVote, analyzes the user interaction and information distribution between and beyond groups, illustrates the organizational dynamics, and, eventually, develops a general analytical framework for digitally networked action on Twitter.

## 5. Sampling and methodology

The research design used in this article involves a longitudinal study combining social network analysis and quantitative content analysis. It builds on all original tweets about #HomeToVote based on @-mention activities. There are two reasons that we only investigated the @-mention network: The mechanism of writing a tweet with @-mention is a different form of communication than reposting a post via retweet. Writing a tweet and mentioning another user(s) implies an effort to reach out, an initiative to start a conversation, or making a reference, while retweeting reveals how information spreads among different users (Bruns & Moe, 2014; Bruns & Stieglitz, 2014). Consequently, the network of @-mentions and

that of retweets are totally different. Since one post can be retweeted hundreds of thousands of times, the number of resulting connections would be much greater than that of @-mentions. Therefore, it is not feasible to put different interaction forms in one network, and they should be studied separately. As @-mentions are more demanding, more engaging than merely retweeting something, they are more indicative of activism, and as this paper focuses on activism, we chose to study the @-mention network. Moreover, @-mention networks on Twitter are much less frequently researched than retweet networks. Supported by a web crawler, "GetOldTweets-python" in Python published on GitHub (Jefferson, 2018), we collected all original tweets ($N$ = 33,927) for the period from February 1, 2018, to June 1, 2018, by querying for tweets containing the hashtag #HomeToVote, thus covering all the tweeting activities from the pre-referendum to the post-referendum phase. After extracting 4,656 tweets with @-operator from the original posts, an @-mention network was generated, consisting of 5,198 nodes (actors) and 7,373 edges (messages linking the tweeter and the mentioned/addressed/quoted actor, generated through an @-operator).

The nodes represent all actors of the @-mention network. They are colored according to their classification as mass media, organizations, or individuals, and sized based on their eigenvector centralities (see Figure 1). The eigenvector centrality evaluates nodes based on the eigenvector value of their neighbors. It outlines the structural features of the entire network, with a logic that actors linked by prominent neighbors are also likely to be influential. The edges of the network stand for the @-based interactions between tweeters and actors they mentioned. To show the direction of information flows, the edges are colored based on the categories of the actors who are being mentioned.

Social network analysis and quantitative content analysis, as fundamental instruments, inspect network composition and tweeting patterns, respectively. The coding schemes (see Appendix) are developed to categorize the identities of actors and to describe their tweeting behavior, including the attitude they express toward #HomeToVote, the functions their tweets serve, and the websites they link to. The unit of analysis is the tweets between the actors mentioned and the actors mentioning. The coding process is iterative, departing from both the literature (Ausserhofer & Maireder, 2013; Bennett et al., 2014; Segerberg & Bennett, 2011) and the data. By investigating the profiles of actors, including name, description, tweets, and media, the actors are classified into three general categories: (1) individual actors, (2) organizational actors, and (3) mass media, namely the traditional media which can reach a large audience. The content of tweets, including messages, links, and media, is quantitatively coded based on the voting position and content pattern. Voting position of the tweets is coded as (1) pro #HomeToVote, (2) contra, (3) neutral, or (4) ambivalent. Tweeting patterns, that is the content of tweets, are coded into one or multiple categories: (1) introduction to #HomeToVote, (2) solidarity, (3) related personal experience, (4) organizational information and support offered, (5) call for help, participation, and connection, (6) praise, and/or (7) other. A single coder manually coded the actors and content of tweets and later recoded 10% of randomly selected sample data to determine

intracoder reliability. Krippendorff's Alpha reached 0.80 for contents, 0.83 for voting positions, and 0.83 for actor classification.

To identify different phases of #HomeToVote, we collected the dates of key issues revealed in news stories and in tweets. Each phase should contain at least one crucial issue. In addition, we used tweet volume as an indicator to find cutting points between every two phases, considering the relation between time and the daily volume of tweets as a function. Because cutting points should lie on the local extremum (peaks or bottoms within a given range), we compared the daily tweet volume on key dates with the local extremum near these dates. Finally, we calculated slopes[1] between every closest local extremum pair within each phase. The extreme values of the slopes were discerned to verify the cutting points. Ideally, the absolute values of slopes within one phase should be similar to each other, while the extreme values of slopes between phases should be distinct from those of other phases. In our case, we first divided the #HomeToVote network into three phases based on two dates: the date of the referendum being confirmed and the polling day. After that, we split the middle stage into the mobilization phase and the viral phase. The function of time and tweet volume in the viral phase features a steep slope whose values increase monotonically, while the function goes up and down in other phases.

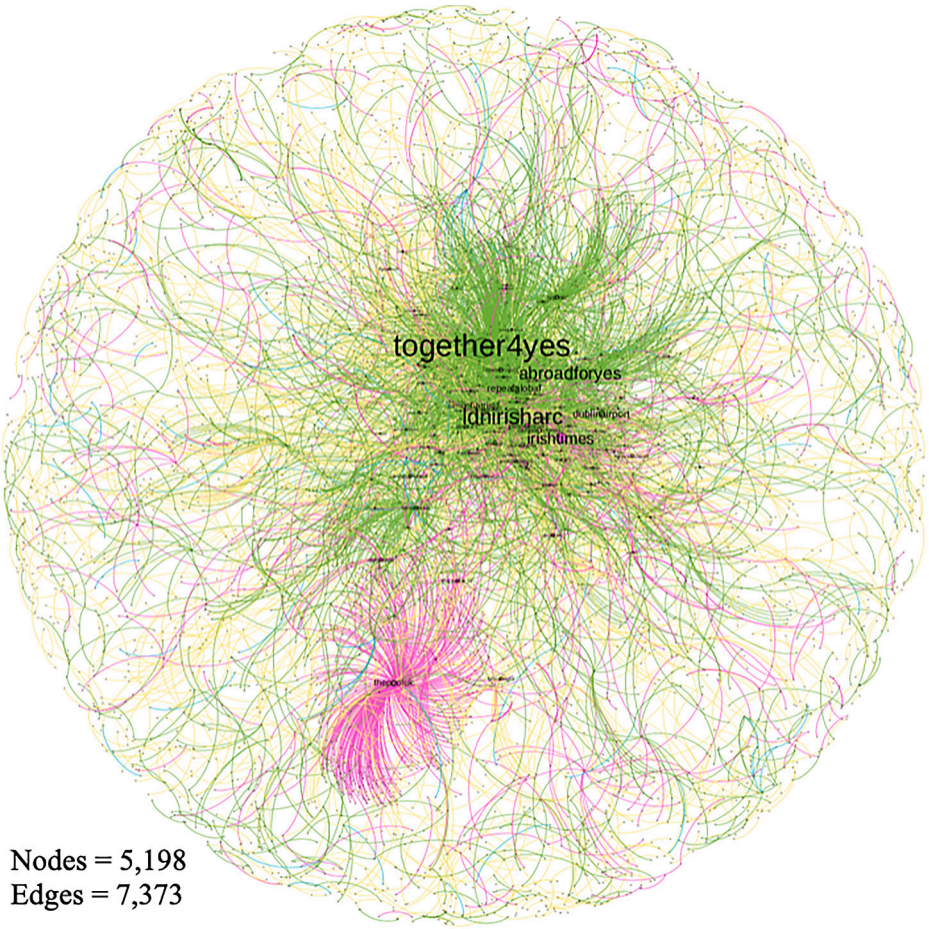
## 6. Results

### 6.1 Network composition

In the diagrams of the #HomeToVote network and its subnetwork, the entire network (see Figure 1) over the whole period is divided into two clusters: an activism and campaign cluster featuring #HomeToVote hubs (@ldnirisharc, @together4yes, @abroadforyes), and a media cluster involving the media actor @thepooluk, a British online women's magazine. Most of the posts sent by individuals are directed at organizational and media actors.

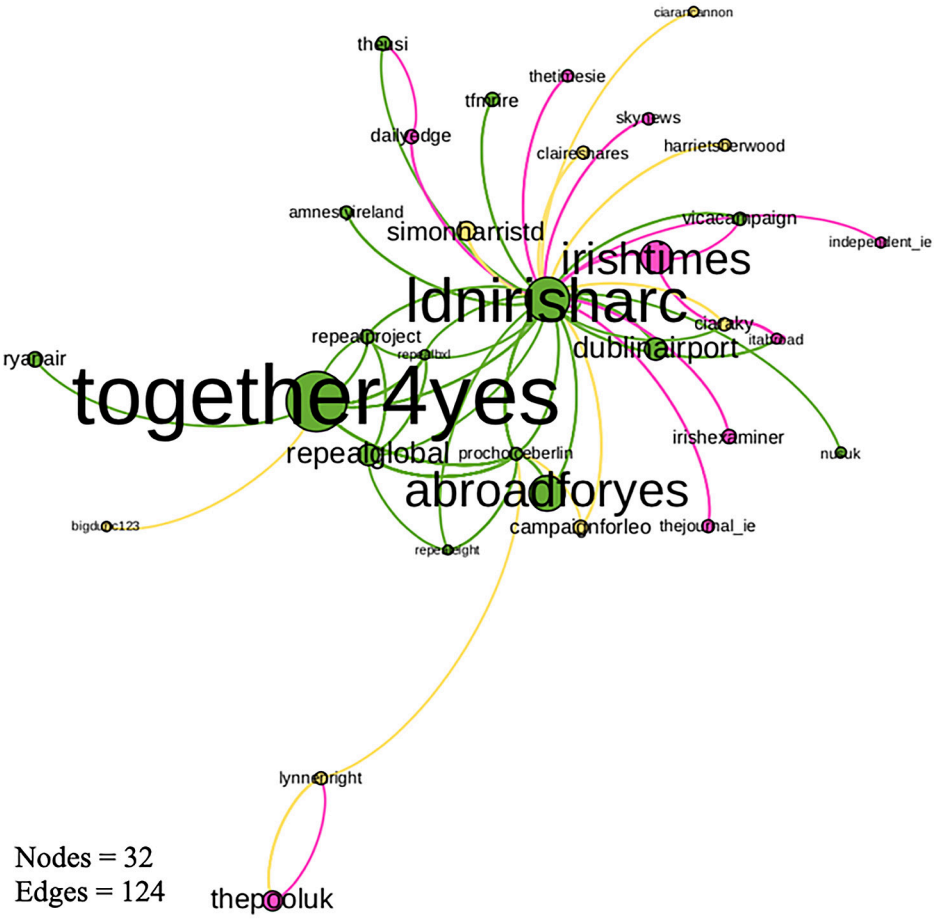
1 The slope of one line shows the growth or decline rate between two points on the line.

**Figure 1.** Network diagram of #HomeToVote




When highlighting the actors with high eigenvector centrality, the subnetwork (Figure 2) maintains the main structural characteristics of the initial network. In the activism and campaigning cluster, the pro-referendum organizations (@together4yes, @ldnirisharc, @abroadforyes, @repealglobal, and @repealproject) are intertwined by dense amplifier loops. The main organizer of #HomeToVote, @ldnirisharc, engages other actors who significantly impact on the online discourse and even on the results of the referendum by simultaneously mentioning them. In the media cluster, @thepooluk and its journalist @lynnenright, who reported on #HomeToVote, form a reciprocal relation. Apart from the media and pro-choice organizations, the other influential actors are political figures and celebrities (@simonharristd, @ciarancannon, @campaignforleo), student unions (@theusi, @nusck), journalists (@harrietsherwood, @lynnenright), activists (@claireshares), logistics-related companies (@ryanair, @dublinairport), and other NGOs (@vicacampaign, @tfmrire, @amnestyireland).

**Figure 2.** Network diagram of top actors with high eigenvector centrality




Statistically (Table 1 & Table 2), the entire #HomeToVote network – generated by 5,198 nodes and 7,373 edges – is divided into 725 weak components[2], in which members connect with one another by using the @-operator among themselves. Compared with the maximum of indegree[3] (511) and the maximum of outdegree[4] (314), the average degree of the network (1.418) indicates that each actor enables approximately 1.4 messages to circulate in the network. The average value of indegree of organizational actors (4.10) and media actors (4.46) shows that media and organizations are the most mentioned actor types. Each one of these actors is addressed about four times. According to the average outde-

2 A graph is weakly connected if there is a path between each pair of nodes of the graph when we ignore the direction of the path. That is, if node X reaches node Y, then we assume that Y can also reach X. A weak component is a maximally weakly connected subgraph of one graph.
3 Indegree of one node is the number of edges reaching the node.
4 Outdegree of one node is the number of edges initiated by the node.

gree and compared to individuals (1.59) and organizations (1.04), media actors (0.49) are not active in the network. Regarding the largest component, about 36% of the actors belong to peripheries and form small communities. The general network visually corresponds to the structure of a support network (Smith et al., 2014) in the sense that it contains large hubs and several isolated connections.

**Table 1.** Descriptive statistics for the network of #HomeToVote

| | original network | giant component |
|---|---|---|
| **nodes** | 5.198 | 3,347 (64%) |
| **edges** | 7.373 | 6,143 (83%) |
| **#components** | 725 | 1 |
| **N giant component** | 3.351 | / |
| **average degree** | 1 | 2 |
| **max indegree** | 511 | 511 |
| **max outdegree** | 314 | 314 |

**Table 2.** Indegree and outdegree of actor groups

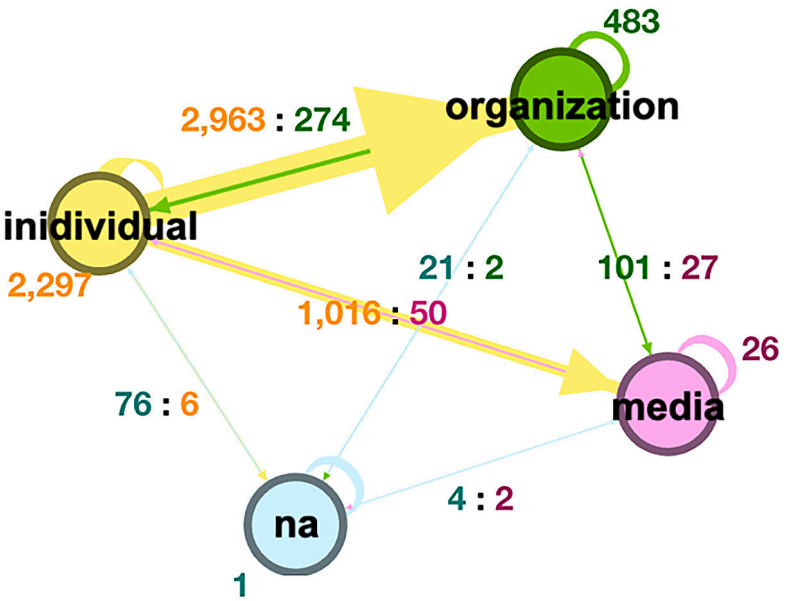
| | individuals | organizations | media |
|---|---|---|---|
| **average indegree** | 0.66 | 4.10 | 4.46 |
| **average outdegree** | 1.59 | 1.04 | 0.49 |
| **average degree** | 2.24 | 5.138 | 4.87 |

At the level of content, the network is mainly composed of tweets ($N$ = 4,656) that support yes voters to repeal the Eighth Amendment against abortion (76% pro #HomeToVote tweets). The tweets containing at least one of the following contents are well distributed in the Twitter stream: introducing #HomeToVote (32%), narrating related personal experience (28%), expressing compassion or solidarity (24%), endorsing #HomeToVote, praising the activists, donators, and voters (20%), sharing organizational information to mobilize others and support #HomeToVote (23%), and calling for action, connection, or help (19%). While description (17%), experience (8%), and information (7%) are the single functions of posts that occur most frequently, solidarity and experience (5%), information and call for participation (5%), and solidarity and praise (4%) are the most frequent concurrences. In sum, the results demonstrate a reasonably high capacity of #HomeToVote regarding engagement and mobilization.

When observing the participation and information distribution (Figure 3) in the @-mention network of #HomeToVote, it is evident that most of the tweets related to #HomeToVote on Twitter are sent by individuals (77%), while organizations (16%) play a supporting role. Mass media are marginal, constituting only 5% of the nodes of the @-mention network. Concerning the group distribution of senders and receivers, media and organizational actors participate more passively than actively in #HomeToVote. Among all the groups, although they receive most

of the messages from others (3,494), organizations rank second as senders. With a large self-loop (483), organizations tend to build connections with other organizational actors, rather than with individuals (274) or the media (101). In contrast, individuals initiate conversation among themselves (2,297), but they also actively mention the media (2,963) and organizations (2,297). Media actors are the most inactive senders (105). Noticeably, the number of messages they receive from individual actors is 20 times higher than the number of messages they send to individuals. In interactions with organizations, the ratio reaches 100:1. Therefore, individuals (6,352) amplify information about #HomeToVote and activate a base of connective activism.

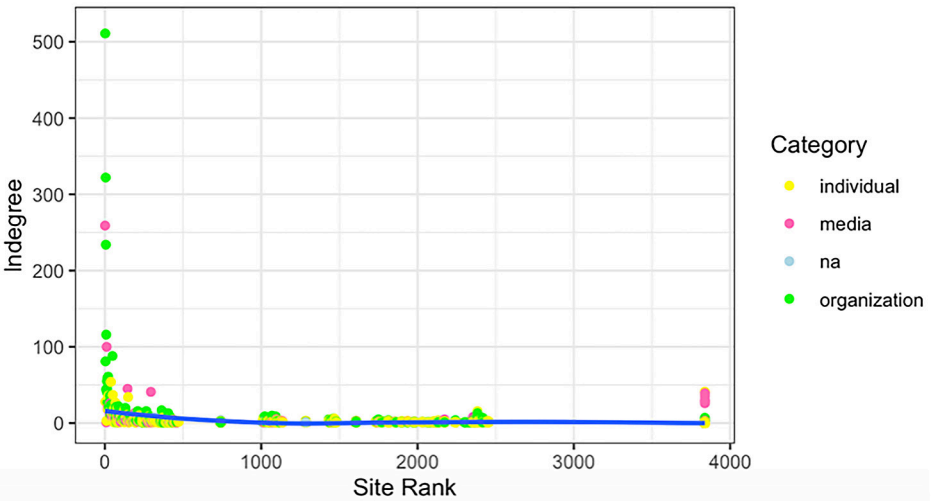
**Figure 3.** Network diagram of #HomeToVote




Related to the idea of power signatures raised by Bennett and Segerberg (2013) and the power-law concept of Barabási and Albert (1999), we plotted the distribution function from the indegree distribution and the eigenvector-based site rank distribution. The results (Figure 4) show that the overall network of #HomeToVote possesses a short head with steep power-law distribution and a long tail with moderate power distribution. While only a small number of traditional mass media, organizations, and relevant individuals gained attention and publicity and received most of the recognition, the remainder, irrespective of their categories, shared the influence evenly and only later converged in hubs. In line with the network topology using the visually structural features through which Smith et al. (2014) classify networks, the power distribution adds more detail on nodes and edges to interpret the support network. Based on the general features

of the network, the statistics on information distribution between and beyond the groups, and the power signatures presented above, the network resembles an organizationally enabled advocacy network. The loosely structured network with the pattern of "density without dominance" empowers the organizationally formed affiliations to share their followers and prompts others to engage in the politics (Bennett & Segerberg, 2013, p. 120). In #HomeToVote, the network enhances grass-root efforts and organizational support, facilitated by social media and a participatory network structure.

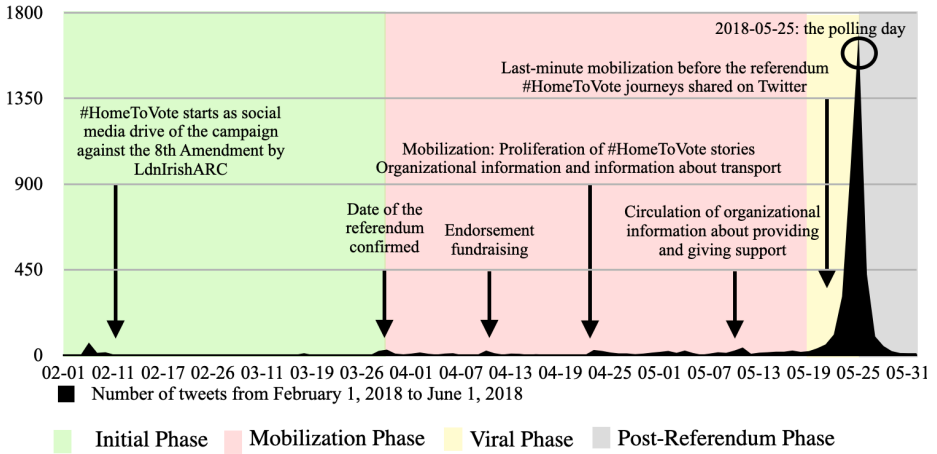
**Figure 4. Power signature-correlation between site rank and indegree of nodes (*N* = 5.198).**




## 6.2 Diffusion and dynamics

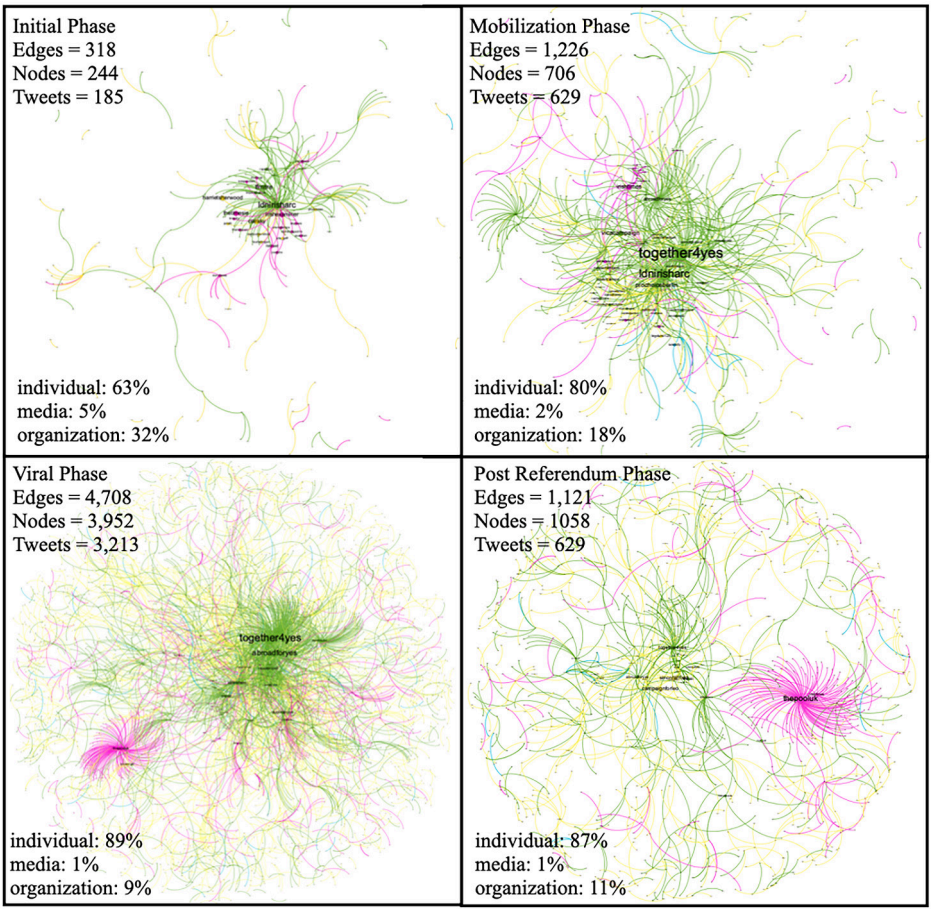
This study, in a chronological manner, conducts an inquiry into the dynamics of digitally networked action based on information distribution and social interaction. After reviewing all the tweets during the coding process, we divided the political action into the following four periods (see Figure 5). The initial phase, starting on February 8, 2018 – when LondonARC 'kicked off' the social media drive – concerns the commencement of its referendum campaign to repeal the Eighth Amendment. The mobilization phase, starting on March 28, 2018 – the confirmation date of the referendum that drew public attention to #HomeToVote – includes the intensive mobilization campaign that followed the confirmation. The viral phase, ranging from May 18 to May 25, 2018 – that is from one week before the referendum to the polling day – comprises the heyday of #HomeToVote when campaigning and activism proliferated. The post-referendum phase, extending from May 26 to June 1, 2018 – that is the week following the referendum – covers the tapering off and conclusion of #HomeToVote after the polling day.

**Figure 5.** Longitudinal distribution of tweets of the #HomeToVote (*N* = 4.656)




From the perspective of social network analysis, Figure 6 shows the actor compositions and interactions, with a focus on the information sources (i.e., who posted). During the initial phase, organizational actors, both as senders and receivers, were of great importance in the preparatory period. @ldnrisharc, as its initial organizer, was in the center of the #HomeToVote network. Although most of the messages were directed at organizational actors, frequent interactions and connections occurred across the groups in #HomeToVote. During the mobilization phase, the digitally networked action became more complex and connected. @together4yes, another national campaign organized to repeal the Eighth Amendment, took over the central position of @ldnrisharc, and brought uniform pro-choice campaigns to supporters from different regions and fields in the network. Individual actors, posting most of the tweets, served as information circulators and connected different communities, while organizations played a crucial role in mobilization and engagement by sending out messages. Regarding the viral phase, the social network diagram is similar to that of the overall #HomeToVote network, with the inclusion of the two main clusters. Individuals turned the campaign viral, and many vibrant activities were reported. Posting most of the tweets with an @-operator, they promoted news stories published by media actors such as @thepooluk, spread useful information to participants and potential participants, and maximized the influence of #HomeToVote hubs. During the post-referendum phase, core organizational actors made a gradual exit, although they were still mentioned by individuals. Individuals sent out messages to celebrate the success of the referendum and to ruminate on it, praising important actors in #HomeToVote and continuing the discussion among themselves. Through the evolving network process, especially as the number of engaged individuals grew, resource-rich organizations and media actors received increasing mentions.

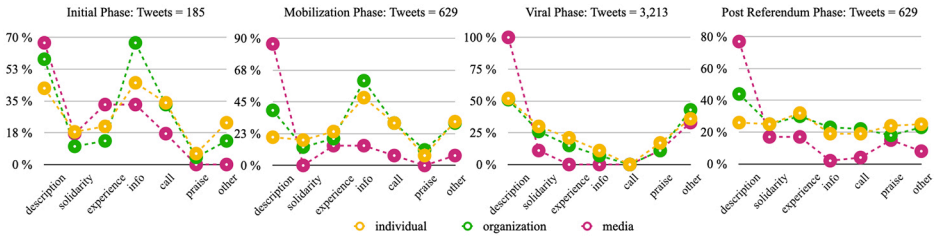
**Figure 6. Network diagrams of #HomeToVote in the period of emergence, growth, expansion, and aftermath**




At the level of tweeting patterns, the distribution of content patterns over time suggests that the main content of tweets concerns the Twittersphere being informed about #HomeToVote. While the first two phases of #HomeToVote were related to engagement and mobilization, the last two phases featured experience sharing and solidarity declaration. During the initial phase, actors supplied information on how to participate (51%) and called for action (33%). After explaining what #HomeToVote entailed (48%) during the initial phase, personal action frames regarding the provision of organizational information (50%) and calls for action (29%) increased during the mobilization phase. This changed #HomeToVote to personalized activism. During the viral phase of last-minute engagement, the content was evenly distributed. Sharing the sights and sounds during the journey (31%), showing solidarity (24%), or describing the campaign as well as the activism to the Twittersphere (28%) were key motives of the actors. Due to the dramatic rise of actors, the other functions were similarly crucial: giving praise

(23%), sharing access to resources (19%), and calling for action, connection, and help (19%). These functions necessitated offline actions. During the post-referendum phase, descriptions of #HomeToVote (52%) still proliferated, as newcomers joined, declared their solidarity, and expressed their joy (29%). Many actors stayed in the network, narrating their stories with #HomeToVote (20%). We also analyzed the content patterns of different groups throughout the four phases of #HomeToVote: it is noticeable that individual and organizational actors behave similarly (Figure 7). Both actor groups endeavored to meet changing demands during the different development stages of the political action, while media actors used Twitter to depict moments of #HomeToVote in a consistent manner.

**Figure 7. Content patterns by different groups during the four periods (*N* = 4.656)**




Considering tweeters, addressees, and content of each tweet as a whole, we calculated the concurrence of the actor types and tweeting patterns to trace the information flow. The resulting 635 combinations in four phases are supposed to explore who said what by mentioning whom. As revealed by the aforesaid findings, the most common pattern concerns the Twittersphere being informed about #HomeToVote. Being primarily initiated by individuals, it ranks first in all stages of #HomeToVote, except for the mobilization phase. When tweeting in this pattern, individuals frequently referred to pro-choice organizations during the initial phase, and quoted media during the viral and post-referendum phases. The second most occurring pattern is related to resource sharing and engagement. During the mobilization phase, this pattern is frequently found in the tweets of individuals and organizations. Individuals used this pattern to mention organizations that provided helpful information or to address other individuals whom they tried to engage. At the same time, organizational actors profoundly mentioned one another for their campaigns or mentioned individual actors such as citizens, politicians, or activists who were likely to attend their events. The other prevailing pattern that underlined personalized participation and mobilization mostly emerged during the viral phase. During this phase, individuals mentioned other Twitter users they met when journeying home, or their friends who were going home to vote, as pro-choice organizations also shared the narratives of yes voters for last-minute engagement. Overall, these patterns not only created immense publicity, but also provided the basis for coordinated action.

## 7. Conclusion and discussion

Since digitally networked campaigns, movements, and activisms have become a prominent political reality in the digital age, it is vital to understand their inherent logic resulting from digitalization and personalization. This article identified the involvement of actors as a breakthrough point, thus posing the main research question: How are actors involved in digitally networked action on Twitter? As a case study, it traced #HomeToVote in 2018 from its launch to its end and provided an analytical framework to explore digitally networked action in different stages of evolution.

Generally, #HomeToVote demonstrated a high capacity to manage resources, mobilize actions, seize opportunities, and respond to challenges. The overall @-mention network of #HomeToVote is an organizationally enabled advocacy network, featuring two main clusters: an activism and campaign cluster and a media cluster, respectively led by #HomeToVote hubs and the media actor @thepooluk. Revealing the overarching themes of the hashtag, the former is related to activism and mobilization, and the latter is about sharing #HomeToVote with the public on Twitter. The loosely affiliated network of the connective action accommodates different actors in a handful of communities and keeps them connected irrespective of diverse content. As #HomeToVote evolves, it is characterized by increasing individual activism in the foreground and the strategic change of organizational dynamics in the background. Actors establish a triad relationship for resource circulation and information processing in the multi-layered communication network, realizing a scale shift of #HomeToVote through brokerage, diffusion, and coordination.

On Twitter, network patterns have no permanent state. The organizational property of digitally networked action is determined by its capacity to shift organizational functions. In this case, actors' Twitter use and the connectivity strength between groups varied, depending on the different stages of the political action and the offline roles of actors. At its onset, #HomeToVote was initiated by campaign organizers and promoted by media actors and activists. Subsequently, organizations shifted their focus from introducing #HomeToVote to the Twittersphere to purposes of campaign mobilization and resource sharing. Diverse self-recruited individuals joined the network, comprised most of its population, and made the main contributions to scaling up the digitally networked action. Throughout the development of #HomeToVote, tweets of individuals and organizational actors show a similar content distribution. These findings not only confirm a massive individual adoption of the personalized action frame provided by organizations, but also the complete integration of different groups into the communication network, subordinate to a collectively determined goal. Because of its ability to efficiently share stable communication linkages, facilitate flexible affiliations, and employ personalized engagement mechanisms, #HomeToVote has exceptional political capacity.

Despite its articulated goal to support abortion rights, the network had no fixed collective identity or resource networks composed of a single type of interaction. Although most of the tweets mentioned organizations and media, the net-

work was neither organization-centered nor leader-driven with a notion of conventional collective action. The increasing number of individual participants and the personalized contents related to solidarity, experience, and mobilization over time are indicative of the blurred boundary between activists and the public. Individuals were involved in #HomeToVote as an online movement by expanding its influence or sharing individual stories, while organizations operated it as a campaign by facilitating channels of resource exchange and activating personal action frames. We observed intensive personalized participation and rich resource exchange in the multi-layered network between the organizational level and the individual level. NGOs from different domains endorsed each other and engaged the public, providing a loosely affiliated networking foundation for diverse participants. Participants claimed their political interests on their own terms, linked to the organizational initiators, and added unconnected actors to the network. Although media actors used this hashtag to publish their contents on Twitter, they were mainly cited as information sources and mentioned by other actors who wanted to achieve recognition. Overall, the @-mention network of #HomeToVote exemplified how communication networks operate as organizational units in digitally networked action.

However, these findings also reveal the emerging mode of crowd-as-gatekeeper and the dilemma of personalization in the organizationally enabled networks (Bennett & Segerberg, 2013; Segerberg & Bennett, 2011). As newcomers poured to #HomeToVote through last-minute mobilization and Twitter algorithms that prioritized the most popular tweets, the generation of more content and the prevailing information spread were to a greater extent associated with personalized narratives and general news sharing. Correspondingly, there was a decrease in the proportion of tweets calling for assistance and the share of tweets providing support. Consequently, when they entered the hashtag-based Twitter channel, potential help seekers or help providers received trending feeds and general news stories promoted by the newcomers, but not the relevant information meeting their demands. Compared to conventional collective action, this reveals the trade-off between the flexibility of the relaxed form of affiliation and the effectiveness to achieve the goals of political action in the organizationally enabled networks. As the relaxed networks invite broad bystander publics to join the political action and gather participants with different intentions, the initiators of digitally networked action may lose control of their agenda and become marginalized by the crowd. As Tufekci (2017) stated, the fragility and empowerment revealed in the relationship between internet and networked political action are analogous to that between Sherpas and climbers endeavoring to summit Mount Everest. Just like inexperienced people may scale the Everest with the help of these mountaineering people, the internet gives networked political action a dramatic boost. However, just like climbers still need to face challenges posed by unexpected incidents, which may lead to high fatality rates, the lack of conventional political organizational forms and other collective capacities remains an obstacle to digitally networked political actions (Tufekci, 2017).

Returning to the manifestations of technological determinism mentioned at the start of this article, digital innovations and online networks are deemed to func-

tion as alternatives to existing intermediaries in political communication processes by opening new avenues for digitally networked action and overturning traditional institutions (Benkler, 2006; Benkler et al., 2015; Castells, 2015). In the case of #HomeToVote, we observe an increase of individual actors, the proliferation of social media as a mobilization tool, and an interactive way to express opinions and criticism realized through the @-operator. As the private sphere opens and blurs the public sphere, personal experiences become connective narratives through social media, which empowers new forms of collective identity and participatory democracy. Although #HomeToVote offers a good example of well-facilitated, organization-backed, activist-driven, and grassroots networked action, it is worth remembering that the success of repealers in the referendum was not only the result of the efforts of #HomeToVote on Twitter. As a manifestation of digitally networked action targeting a national referendum by recycling the hashtag of the same-sex marriage referendum, #HomeToVote easily gained the attention of the mass media and became an important topic in interpersonal communication. After accomplishing the mission to mobilize voters to vote yes, it did not need to overcome the difficulty of transforming into other political forms after reaching its peak. Therefore, we should not overestimate the impact of the digitalization and personalization of digitally networked action merely based on this case study, especially when assessing critical views about the capacity of social media-activated social movements (Gladwell, 2010; González-Bailón & Wang, 2016; Wasik, 2009).

This study combined network analysis with a quantitative content analysis of all involved actors and diffused messages and analyzed networks in different phases of a digitally networked action. While the methodological approach yields analytical indications on investigating digitally networked action systematically, the patterns discovered in #HomeToVote enriched the understanding of how actors, networks, and information are structured and organized around a collective goal on Twitter rather than completing the full picture of digitally networked action. Still, our findings confirmed the generalized dynamics introduced in theoretical frameworks and demonstrated in empirical studies: digitally networked action is initialized by a small number of organizational actors and activists who organize campaigns and forge connections in the incubatory stage, enriched through heterogeneous and diverse repertoires contributed by involved groups and consolidated by influentials in the expansionary phase, and fragments when receiving accommodation of authority in the late stage (Bennett & Segerberg, 2013; della Porta & Diani, 2020; Diani & Mische, 2015; Freelon et al., 2016; Stier et al., 2018; Tarrow, 2011; Tilly & Tarrow, 2015). As in any empirical study, it is crucial to note the limitations of this research. First, the case study is limited to a single type of digitally networked action pursued on a single platform which is also restricted by domestic factors. The sample of this study is not representative of a society with a population of 4.7 million, of whom 23% are Twitter users and 12% use Twitter for news (eurostat, 2019; Reuters, 2019). The technological affordances of Twitter also restrict the study's scope. Future studies should take a further step to attain other outcomes and reach different or supporting conclusions by examining digitally networked action regarding other types of digital

innovations and by including comparative perspectives. Second, we only focussed on the @-mention network, which could not sufficiently capture all the mechanisms of digitally networked action. Different interactive options and the concurrence of different hashtags were not analyzed. Considering differing motives in the information flow, what deserves closer scrutinization are the one-click retweets without leaving comments, following-follower relations, along with the different interactive and referential types of mention (addressing, quoting, and mentioning). Finally, the structure of social networks is complex, too large to understand through conventional qualitative methods, and too diverse to make standard methods of automation feasible. Currently, as stated by Bennett and Pfetsch (2018), improved conceptualization and measurement of influences of information flows from social media and digital networks are in demand in the field of political communication studies. Applying advanced computational methods from the fields of both network science and natural language processing shows much potential to capture relations, interactions, and dynamics in a broader and more inclusive context.

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# Appendix

## I. Codebook

### Unit of Analysis

The original tweets with @-operator and the hashtag #HomeToVote in the period from February 01, 2018 to June 01, 2018, covering all the crucial issues related to the referendum and the digitally networked action and a bit beyond.

### Data Collection

- Search for original tweets containing "#HomeToVote" by a web crawler "GetOldTweets" in Python.
- 33,927 tweets were collected, of which 4,656 tweets with @ mentions were sorted to build the @ network.
- The final network is constructed by 5,198 nodes and 7,373 edges

## II. Coding Categories and Coding Schema

### General Information

- Source: username | in lower case | categorized actor group
- Target: username | in lower case | categorized actor group
- Date: YYYY-MM-DD MM:SS | time-set: YYYY-MM-DD
- Text: original tweets which contain #HomeToVote and the relation(s) built on @-mention
- Permalink: helps to trace back the original post

### Position

p-pro #HomeToVote | c-contra #HomeToVote | n-neutral description about #HomeToVote | a- ambivalent and unclear comments about #HomeToVote

### Content patterns

description | solidarity | experience | information | call for action | praise | other

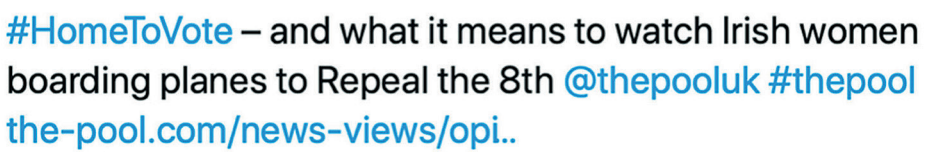
### Actor Category

General category: i-individual | o-organization | m-media | na-users not existed/suspended

**Content patterns**

1. Description/ introduction/ media coverage on #HomeToVote

- Tweets that serve as an introduction to the public and give a brief idea of #HomeToVote.
- Examples: a short video of pro-abortion girls wearing sweaters and running toward crowds who warmly welcome them/ a brief overview of #HomeToVote embedded with a link to media coverage

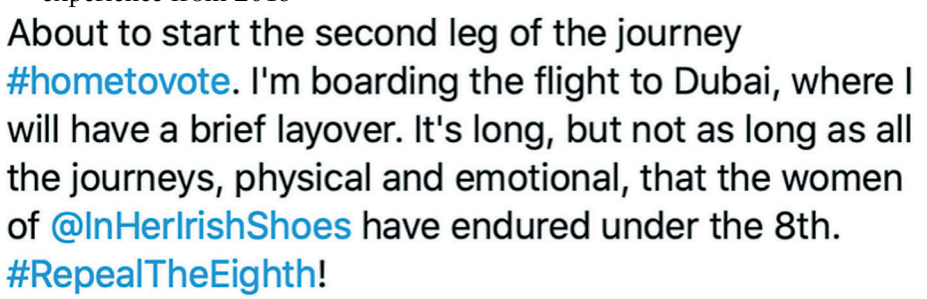



2. Solidarity/ compassion/ hope/ belief/ welcome/ sociality

- Tweets that awaken the collective feeling
- Examples: no one would be left/ with you/ good luck/ fingers crossed/ the experience of solidarity/ cry, weep, tears, bubbling, goosebumps/ music explicitly expressing the feeling


3. Personal experience/ plan

- Tweets narrating the personal experience or describing the experience of others of #HomeToVote
- Examples: feeling before casting a vote: e.g., I'm so nervous I feel like I'm getting married in the morning/ experience as expats/ experience as canvassers/ experience from 2015



4. Information (event, support, fundraising)/ resources/ logistics/ update from campaigners

- Tweets with organizational information, statistics, data, resources, or access to resources that are helpful to other users
- Examples: offering a ride, lift/ updating the logistical information/ time left/ reminder of registration issues/ aid provided and to be provided

#HomeToVote legends! I have a semi reliable Corsa, if you need a lift from the airport this evening get in touch. Can also provide lifts to polling stations on Friday after work. Based in Artane @SocDemsDBN @AodhanORiordain @DBNRepeal

5. Call for action/ connection/ attention/ help

- Tweets asking for support, action, attention, and coordination
- Examples: shout out and try to get attention from media/ seek help/ connect with other yes voters, volunteers, or other actors

@abroadforyes any chance of a plane ticket from Uganda? #HelpASisterOut #Together4Yes #HomeToVote maybe?

6. Praise/ endorsement of the campaign/ activism/ help provider

- Tweets expressing warm approval or admiration for #HomeToVote, related activists and supporters.
- Examples: thank you/ you rock/ legend (endorsements of politicians who did not explicitly participate in activism or endorsements of friends who voted yes are counted in other categories)

Can't fathom how painful it must be for women at home being faced with vile No posters, cruel lies and baying TV audiences. Those campaigning for @Together4yes are legends. #VoteYes #hometovote

7. Other

The women of Northern Ireland are paying the price of @theresa_may propping up her weak leadership with the #DUP mirror.co.uk/news/politics/...

Get your rosaries off our ovaries.

#Repealthe8th #HometoVote