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Sourcing UK COVID-19 News: An Analysis of Sourcing Patterns of 15 UK News Outlets Reporting on COVID-19 Across Facebook, Twitter, and Instagram

Jamie Matthews [a], Xin Zhao[a], Daniel Jackson[a], Einar Thorsen[a], Claudia Mellado[b], Yasser Abuali[a], and Antje Glück[a]

[a]Faculty of Media and Communication, Bournemouth University; [b]School of Journalism, Pontificia Universidad Católica de Valparaíso

ABSTRACT

How a health emergency is defined and presented through the news media matters for public under-standing and health outcomes. Previous studies have endeavored to identify the patterns of news sourcing in crisis coverage, specifically the interplay between political sources and health expert sources, but yielded inconclusive results. This study analyses the types and roles of actors (those entities mentioned in a story) and sources cited in news coverage of COVID-19 by surveying social media posts published by 15 UK news outlets coverage across Facebook, Twitter, and Instagram between 1 January to December 31 2020. Overall, the findings show the prominence of political sources in UK news and that the most frequently named sources were representatives of the UK government. Moreover, when stories involved political actors, they were more likely to be given a voice as a source. This demonstrates how COVID-19 was a generalized crisis for the UK, which cascaded beyond health and into other economic, social, and cultural domains. The data show some variations in sourcing patterns between the different social media platforms. The analysis suggests that this may reflect the conventions of presenting news on each platform, with some tending toward the model of consensus by prioritizing political and govern-ment sources, and others contributing to a sphere of legitimate controversy by giving voice to a wider range of sources. This is distinctive and opens up the possibility for further research on how journalists adapt stories for social media and the consequences for public health communication.

Introduction

News media are a crucial conduit for the public to access health-related information (Obregon & Waisbord, 2012). This becomes of vital importance during an acute public health emergency – such as the COVID-19 pandemic – where the public requires access to high-quality and reliable information about the risks and necessary public health measures (Dudo et al., 2007). The first wave of COVID-19 witnessed a considerable increase in news consumption around the globe as people turned to the news to make sense of the unfolding pandemic (Broersma & Swart, 2022; Nielsen et al., 2021). As a key agent in mediating and managing a crisis for publics, and for shaping public knowledge and health-related behaviors, understanding news media coverage of the pan-demic is therefore of crucial importance. This includes the sources that journalists use to provide informational content, comment, and opinion as an essential factor determining the quality of journalistic reporting. Such a focus on news sources can determine who the "primary definers" (Hall et al., 1978) of the pandemic were. Importantly, if reporting was informed by evidence-based science and expertise – as demonstrated by much of the health communication literature (Brown et al., 2006; Mheidly & Fares, 2020) – or whether it became politi-cized, as previous studies of pandemics have also found (Gesser-Edelsburg et al., 2017; Lee & Basnyat, 2013; Thompson & Ofori-Parku, 2021). It is also important to recog-nize that the sources who are given voice in news coverage will intersect with public understanding and perception of the pandemic. Sources may, for example, serve as peripheral cues for audiences when evaluating claims or arguments presented in a news story (Gibson, 1997).

While there is a well-established body of research about news sources in crisis communication (e.g., Cottle, 2009; Johansson & Odén, 2017; Ramasubramanian & Miles, 2018) and health news during routine periods (e.g., De Dobbelaer et al., 2018; Hallin et al., 2013), less is known about which sources prevailed in reporting the COVID-19 pandemic; and, subsequently, how it was communicated to the public. This is important when we consider that unlike the context of pre-vious literature, the sheer scale and depth of disruption caused by the COVID-19 pandemic meant that it was covered not just by health specialists, but by journalists from all beats, whose sourcing patterns warrant scholarly attention. Second, COVID-19 is also unique in its temporality, which can be counted over a period of years rather than weeks or months. This may have consequences for news reporting and requires studies that adopt a longitudinal perspective.

Previous studies on news sourcing have predominantly focused on legacy media platforms (TV and press). While these platforms remain an essential part of the news ecosystem, existing scholarship overlooks the significant role that social media now play in the dissemination and consumption of news. Fueled by widespread smartphone access, in 2021 41% of UK adults used social media as a regular source of news

(Newman et al., 2021), making it an influential platform for news consumption. Yet, relatively little is known about patterns of journalistic performance on social media, and even less about which news sources are given voice in reporting.

Building on existing knowledge and recent developments in the field, this study analyses the types and roles of both actors (those entities mentioned in a story) and sources cited in news coverage of COVID-19 by focusing on the news updates of 15 UK news outlets across three social media platforms (Twitter, Facebook, and Instagram). As a one-year longitudinal analysis covering news reporting in 2020, it seeks to understand the diversity of source types that featured in UK news about COVID-19 and their variations across social media platforms, contextualized by the UK's responses to the pandemic.

News sources, health news, and health crises

News sources are the individuals, organizations, or institutions that convey information to journalists and they draw on when developing story ideas or to support different perspectives or positions on topics, issues, and events (Fisher, 2018). They are the entities who are given voice and cited in the news. Sigal (1986) stated that "sources make the news." Studying news sources can, therefore, provide insights into social power (Cottle, 2000), including the institutions, organizations, and individuals that are able to shape news and define the parameters of debate (O'Neill & O'Connor, 2008). Research has shown that sources afforded access to the media are those that traditionally wield power in society, representatives of the state or business interests for example, and that journalists tend to defer to official or elite sources when seeking stories or information. As such, these sources can act as the "primary definers" (Hall et al., 1978) due to their ability to shape the news. In the contemporary media environment, these primary definers also extend into the digital domain, through journalists' interactions online and the embedding of information and sources on social media (Anstead & Chadwick, 2017).

The distinctive feature of news sources in health news makes it a specialized news beat (Briggs & Hallin, 2016). Health reporting relies on the strong cultural authority of biomedical science. Here, health knowledge is widely seen as belonging to and produced by experts, with journalists playing the role of translators for laypersons and educating them in health literacy (Forsyth et al., 2012; Logan, 1991). Accordingly, literature shows that journalists place an emphasis on expertise and authoritativeness when reporting health stories and as a consequence, medical experts and academic sources are prominent (Atkin et al., 2008; De Dobbelaer et al., 2018; Hallin et al., 2013, 2020; Oh et al., 2010; Wu, 2006). Nevertheless, beyond biomedical sources, recent research has suggested a growing diversification of sources in health news coverage over time (Hallin et al., 2013) with more space for citizen participation as sources (Atkin et al., 2008; De Dobbelaer et al., 2018; Hallin et al., 2013; Stroobant et al., 2018), on account of the color and human-interest dimensions that their testimonies can bring (Hinnant et al., 2013).

The sourcing patterns of health news become more complicated during periods of instability and crisis. Normal gatekeeping routines can be disrupted, which may lead to news media relying on a narrower range of sources; usually, those able to offer authoritative insight and comment on an emergency. Hallin (1989) describes this process as a "sphere of consensus," where those that propose different responses or views are marginalized due to the assumption that there is agreement about the response to a crisis. Studies show that within the sphere of consensus, official and elite sources are typically dominant in the news coverage of crises (Larsen, 2019; Mourão & Sturm, 2018). After consensus, a sphere of legitimate controversy may occur, where news media reflect a greater breadth of voices and opinions but within the boundaries of debate about a topic or issue (Hallin,1989). There also exists a sphere of deviance, where journalism departs from the tenets of objectivity and balance, with particular views or topics rejected and not afforded access to the news media (ibid).

Empirical studies on the sourcing practices of news media in covering public health crises revealed mixed patterns. On the one hand, previous research on pandemic news coverage shows that political and government sources feature prominently as sources (e.g. Gesser-Edelsburg et al., 2017; Lee & Basnyat, 2013; Thompson & Ofori-Parku, 2021). Studies show, at times, similarities across crises and countries. News reporting of health issues during both the 2014 West Virginia water crisis in the US and the 2019 Avian Flu in South Korea found governmental sources were cited most frequently by newspapers (Choi & McKeever, 2019; Thomas et al., 2016). Looking at news coverage of the COVID-19 pandemic, a recent seven-country study of the use of sources in the social media posts of mainstream news outlets similarly found that political sources were dominant in comparison with previous studies of health news (Mellado et al., 2021). On the other hand, the same study found that there were also important differences in the diversity of sourcing practices between countries, and over time (ibid.). Other research shows that political sources will feature alongside health professionals (Lopes et al., 2012; Oh et al., 2010; Pan & Meng, 2016) or are less significant than other source types (Briggs & Hallin, 2016; Hallin et al., 2020). For example, during the COVID-19 pandemic, Spanish television drew heavily on eyewitness sources (36%) and public official sources (22.7%), while government sources had only a minor share (17%) (Rosique Cedillo & Flores, 2022).

Breaking news on social media

Almost all our knowledge of health news coverage and crises, including pandemics, is based on studies of mainstream news outlets and through legacy media platforms, such as newspapers and TV. However, such news organizations – legacy and new entrants alike – are now placing social media at the center of their news distribution strategies (Bell & Owen; Hermida & Mellado, 2020). Relatedly, audiences are now increasingly turning to social media as a source of breaking news, insights, and analysis (Newman et al., 2021).

An important question then is whether social media facilitates a disruption to traditional news sourcing practices. Certainly, social media have introduced new logics to the flows of information that prevailed in legacy media (Chadwick, 2017), and has led to new forms of journalistic rhetorical practices (Hermida & Mellado, 2020). Central to

such platforms is a culture of citizen participation, which some have argued may cultivate journalistic cultures that are less elite-centric in their sourcing practices and more open to the use of diverse and alternative sources, including everyday citizens (Hermida, 2013; Hocevar et al., 2017; Poell & Borra, 2012). So far, however, the evidence is mixed, with many studies finding a continuation of traditional elite-centric sourcing practices on social media (Brands et al., 2018; Deprez & Van Leuven, 2018; Hladík & Štětka, 2017; Knight, 2012), but others finding a wider range of actors given voice, especially when non-mainstream news outlets are studied (Boberg et al., 2020; Quandt et al., 2020).

The significance of social media posts by mainstream news outlets as part of the news ecosystem results in an important question of how they may be used to disseminate news. This topic deserves urgent examination during the COVID-19 pandemic given the central importance of quality information to health outcomes, the centrality of social media as an outlet for news audiences, and the concerns that some have raised about the circulation of misinformation online (Cinelli et al., 2020). Moreover, as audiences actively scan sources when processing a piece of news (Sundar, 1998), sources may act as a heuristic when assessing the credibility of a story or information highlighted within a report (Gibson, 1997). For short texts, such as a social media post, the presence of different sources may serve as a tool in decision-making, facilitating judgments that are made about a post and the information that is communicated within. Ultimately, this can contribute to public perception of Covid-19, interventions in response to the pandemic and more widely health issues, such as attitudes toward vaccines.

This study examines the sourcing patterns of 15 UK mainstream media outlets in their coverage of COVID-19 by focusing on the embedding of sources in their social media posts. It aims to uncover the types and role of sources in reporting through 2020 and understand the diversity of sources that featured in UK news on social media about COVID-19. The UK's response to COVID-19, including its decision to implement a full lockdown in March 2020, its vaccination strategy, and the later tiered lockdowns, were framed by the government as science-led decisions. It is unclear whether science and health sources or political sources were most prominent in reports. The first research question, therefore, asks:

RQ1: Which sources acted as the primary definers in the social media posts by UK mainstream news outlets in their coverage of COVID-19?

In expanding the literature on news sourcing dynamics on social media, following Kreiss et al. (2018), this study recognizes that each social media platform has discernible cultures, affordances, and genre. Accordingly, there might likely be different patterns of news values, agendas and thus sourcing practices across different platforms. The study asks:

RQ2: How, if at all, do sourcing practices in the social media posts about COVID-19 differ between social media platforms and news outlets?

Finally, much news sourcing literature only looks at the presence of a source in isolation from the actors that a story might contain. This is only part of the picture and neglects the understanding of how actors (those entities who are mentioned in a story) and sources (those who are given voice and cited in news) interact, which can give important insights into source diversity, and the power dynamics that underlies it. Subsequently, the study asks:

RQ3: How were actors used, and what relationship, if any, exists between the actors and the sources given voice in the news coverage of COVID-19 through posts on social media platforms?

Method

The study analyses the social media sourcing practices of 15 news media outlets across radio, television, press, and digital news in the UK. The outlets were selected as they are amongst the most popular, in terms of weekly reach (Newman et al., 2021), for news in each of the four mediums, and reflect a balance of political orientations and commercial/public service status (Newton, 2021). For digital news, we included both popular legacy news brands (MailOnline) and those that are native to digital platforms (Huffington Post UK and Buzzfeed UK). The sample was produced from the posts published to the Facebook pages, Twitter and Instagram accounts of these outlets from January 1 through until December 31 2020. Thus, the dataset covers the first and second waves of the pandemic in the UK, ending as the UK commenced its vaccination programme in December 2020. CrowdTangle[1] was used to gain access to the posts made on Facebook and Instagram for each media outlet. Web crawling and scraping strategies, in addition to the access through the API premium for developers of Twitter, were used to capture Twitter posts.

Measures

The presence of entities in COVID-19 social media coverage was identified, focusing on individuals, institutions, and organizations. Entities can be defined as either actors or sources. If a news story says something about a specific entity, and this entity does not provide information within the story, as an "object of information" it is considered an actor. Others are considered "sources of information" as entities that provide information and are cited in a news report (Hughes & Mellado, 2016). To be considered as a source, sentences, phrases, quotes, or facts must be attributed to an entity, either directly or indirectly. This distinction between sources and actors is significant since actors, unlike sources, do not have an active voice in news.

Preprocessing

Data included a total of 258,781 posts collected from Facebook, 15,901 from Instagram, and 407,307 from Twitter. To identify pandemic-related stories, COVID-19 posts were filtered based

Table 1. Overview of initial sample.

Outlet	Legacy medium	N of Twitter followers	N of C-19 stories on Twitter	N of Facebook followers	N of C-19 stories on Facebook	N of Instagram followers	N of C-19 stories on Instagram	Total N of stories
BBC News	TV	13.1 m	5674	57 m	3369	20.4 m	963	10,006
Channel 4 News	TV	2.5 m	1190	5.2 m	809	0.18 m	183	2162
Sky News	TV	7.5 m	5890	9.6 m	8479	1.3 m	394	14,763
ITV News	TV	2.5 m	5218	2.4 m	5317	0.3 m	325	10,860
BBC Radio 4 Today Programme	Radio	0.7 m	100	0.2 m	75	N.A.	N.A.	175
BBC Radio 2	Radio	0.7 m	31	0.8 m	89	0.3 m	22	142
TalkSport	Radio	1.7 m	405	2.8 m	1022	0.5 m	26	1453
Classic FM	Radio	0.2 m	107	4.9 m	310	0.7 m	74	491
The Daily Telegraph	Press	3.1 m	8572	4.7 m	5178	1 m	877	14,627
The Guardian	Press	10.1 m	17896	8.6 m	7101	4.9 m	346	25,343
The Daily Mirror	Press	1.3 m	9285	3.8 m	6366	0.3 m	84	15,735
The Sun	Press	1.9 m	9762	3.3 m	7005	0.4 m	8	16,775
MailOnline	Press	2.7 m	9618	21.4 m	10767	1.5 m	115	20,500
Huffington Post UK	Online	0.2 m	2836	1.2 m	3911	0.06 m	61	6808
Buzzfeed UK	Online	2 m	97	2 m	317	0.15 m	29	443

on the most used expressions referring to the disease: "COVID," "COVID-19," "Coronavirus," "Pandemic," "Epidemic," "SARS-CoV-2," and "Corona crisis." This resulted in a total sample of 681,989 posts (see Table 1). These expressions were then pre-processed to facilitate the analyses with scores, URLs, and stop words removed for analytical purposes.

Analytical strategy

Two analytical strategies were applied in parallel to search for entities in the social media posts. First, the material was categorized based on a deductive method to explore the presence of 11 categories of entities: political, business, legal and court, police and security, health, educational, civic society, citizen, media, sports, and celebrity. While the 11 categories follow typologies developed in other studies of sourcing (Mellado et al., 2021; Morani et al., 2022; Tiffen et al., 2014), one of the limitations of the study, and a quantitative approach to content analysis, is that these categories are broad, encompassing a range of individuals, organizations, and institutions that may appear as entities in news. Educational sources, for example, include school leaders, representatives of educational bodies such as assessment awarding bodies, and academics, which when cited as sources may be providing expert comment. Political entities include representatives of the UK government and civil service but also captured opposition political voices. These are not coded as separate subcategories but are presented as a single category. This is a limitation of the study but it enables the analysis of a large dataset of pandemic-related posts. One important coding decision was the need to place a boundary between political and health entities when defining these categories, since health institutions can be part of governmental structures at many levels. As such, a distinction was made between health ministers and other top political officials with responsibility for health policies as political entities, and medical and scientific professionals working with the government (such as the Chief Scientific Advisor (CSA), Sir Patrick Vallance, and Chief Medical Officer (CMO), Sir Chris Whitty) but not necessarily considered political, as health entities.

Anaconda, a free and open-source distribution software of the Python and R programming languages for data science and machine learning related applications was used to process the data. Entities were identified based on their grammatical order through the identification of singular nouns (called NNP by Proper Noun Singular Form) and plural nouns (called NNPS by Proper Noun Plural Form). Further language assessments were applied to distinguish between actors and sources in the news. For instance, 294 declarative verbs or common expressions that were used by the media to cite a source were identified in the news story as well as identifying colons and/or quotation marks to signify direct attribution from a source. To localize a source within the text, at least one of the declarative verbs, common expressions, or a quotation mark must be present before or after the name of the entity, while the name or expression of the entity had to be outside the quote.

This classification method underwent multiple rounds of manual pretesting on small subsamples of the data to reach an accuracy of no less than 85% (Mellado et al., 2021).

Results

The data show that political sources were the primary definers in the social media posts by UK mainstream news outlets in their coverage of COVID-19. This is reflected by both the prominence of political sources (see Table 2) and the most frequently quoted named sources (see Table 3). Specifically, across platforms and news outlets, political sources represented 48.4% of all sources cited in posts. This demonstrates the significance of political sources as the primary definers of UK news on social media and their influence in producing and disseminating information about COVID-19. It corresponds with other recent international studies of sources in COVID-19 news coverage (Mellado et al., 2021; Quandt et al., 2020). This finding was echoed by the most frequently quoted named sources. The UK Prime Minister, Boris Johnson, was the most cited source, followed by the U.S. President Donald Trump. Other prominent named sources were Matt Hancock (UK Secretary of State for Health), Rishi Sunak (UK Chancellor of the Exchequer), and Nicola Sturgeon (First Minister of

Table 2. Sources in COVID-19 news coverage by social media platform and media origin.

	Social Media Platform			Media Origin			
	Facebook	Twitter	Instagram	Online	Print	Radio	TV
Source							
Political	48.7%	49.5%	38.0%	44.6%	46.4%	35.6%	52.3%
Health	20.5%	19.9%	21.3%	21.3%	22.2%	13.9%	18.0%
Educational	10.0%	12.1%	8.9%	15.0%	11.8%	6.4%	8.0%
Citizen	6.4%	4.6%	8.6%	6.9%	5.7%	5.2%	5.6%
Media	3.3%	5.2%	2.4%	2.1%	3.7%	4.5%	5.2%
Business	3.7%	3.0%	3.8%	2.8%	3.2%	3.0%	3.9%
Celebrity	2.6%	1.8%	7.2%	3.8%	2.3%	7.1%	2.2%
Police and Military	2.4%	1.9%	3.7%	1.5%	2.6%	0.4%	2.2%
Civic Society	1.4%	1.3%	4.2%	1.5%	1.2%	2.6%	1.8%
Sport	0.9%	0.6%	1.7%	0.5%	0.7%	21.3%	0.6%
Legal and Court	0.1%	0.1%	0.2%	0.1%	0.1%	0.0%	0.2%
Total %	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
N	16,092	11,607	1,656	4,817	12,423	267	11,848

Table 3. Top 20 named sources in COVID-19 news coverage.

Named source	Role	Source Type	n	Twitter %	Facebook %	Instagram %
Boris Johnson	Prime Minister – UK	Political	2183	8.61%	7.69%	5.15%
Donald Trump	President – US	Political	1885	5.89%	7.99%	4.36%
Matt Hancock	Secretary of State Health – UK	Political	1005	4.25%	3.46%	0.79%
Rishi Sunak	Chancellor of the Exchequer – UK	Political	293	0.96%	1.25%	0.20%
Nicola Sturgeon	First Minister for Scotland – UK	Political	291	1.13%	1.10%	0.13%
Dominic Raab	Secretary of State for Foreign, Commonwealth and Development Affairs – UK	Political	197	0.82%	0.69%	0.20%
Sadiq Khan	Mayor of London – UK	Political	183	0.82%	0.58%	0.26%
Patrick Vallance	Government Chief Scientific Advisor – UK	Health	149	0.67%	0.48%	0.13%
Joe Biden	Presidential Candidate – US	Political	126	0.36%	0.50%	0.92%
Chris Whitty	Government Chief Medical Officer – UK	Health	115	0.54%	0.34%	0.20%
Dominic Cummings	Chief Advisor to the Prime Minister – UK	Political	86	0.22%	0.36%	0.66%
Priti Patel	Home Secretary – UK	Political	86	0.31%	0.35%	0.00%
Queen	Head of State – UK	Political	84	0.19%	0.40%	0.40%
Piers Morgan	Broadcaster – UK	Media	82	0.22%	0.40%	0.00%
Jair Bolsonaro	President – Brazil	Political	81	0.36%	0.24%	0.33%
Kate Garraway	Broadcaster – UK	Media	80	0.31%	0.31%	0.00%
Grant Shapps	Secretary of State for Transport – UK	Political	75	0.22%	0.34%	0.07%
Prince Charles	Prince of Wales – UK	Celebrity	70	0.27%	0.22%	0.46%
Michael Gove	Minister for the Cabinet Office – UK	Political	65	0.22%	0.27%	0.13%
Keir Starmer	Leader of the Opposition – UK	Political	62	0.26%	0.22%	0.00%
		Total %		26.60%	27.18%	14.39%
		Total n =	7,198	3,211	3,769	218

Note: Table shows total number (n) of references to the named source and as a % of the sample for each platform.

Scotland). Overall, all but five of the top 20 named sources were political sources.

As illustrated in Table 2, other sources were also prominent. Health sources comprised 20.8% of all sources in the sample, a category that included those representing the National Health Service (NHS), senior government advisors, and healthcare professionals, such as doctors, nurses, and carers. This demonstrates that health sources were also important voices in UK news media coverage of COVID-19. This was followed by educational sources (10.8%), which included scientists and academics employed by universities and research institutes, and citizen sources (5.8%). This shows that there was little space for demotic, everyday sources in the coverage of COVID-19, despite its far-reaching impacts on individuals' health and livelihoods.

The value of this level of analysis is twofold. First, it offers insights into the source typology by providing examples of the sources captured by the different categories. Second, it illustrates the nuances within and between the different categories of sources. Therefore, more than simply demonstrating the influence of political sources, the findings also show an imbalance toward government sources in news coverage of COVID-19. This clearly raises questions about the role of the media. While it is not possible to argue that the UK media's coverage was uncritical, with attention afforded to the many failures, incompetence, and scandals that dogged the UK government's handling of the pandemic, the dominant named sources in COVID-19 news were found to be representatives of the UK government.

To answer RQ2, the findings reveal significant variations between different social media platforms and media outlets. Instagram posts featured a noticeably lower number of political sources (38%) in comparison to Facebook (48.7%) and Twitter posts (49.5%) ($\chi2(2$, N = 14208) = 1378.42, p < .001). In contrast, posts made to Instagram featured more citizen (8.6%) and celebrity sources (7.2%) than those made to Facebook (citizen at 6.4% and celebrity at 2.6%) and Twitter (citizen at 8.6% and celebrity at 2.6%). Chi square tests of independence found a significant association between the social media platform and the presence of citizen sources ($\chi2(2$, N = 1707) = 538.33, p < .001) and celebrity sources ($\chi2(2$, N = 756) = 663.35, p < .001). When comparing different

news outlets, social media posts by mainstream television news showed a higher proportion of political sources (52.3%) than other media at 44.6% for online, 46.4% for print, and 35.6% for radio. Chi square tests of independence confirmed these differences to be significant ($\chi2(3$, N = 14208) = 2262.97, p < .001).

To answer RQ3, Table 4 below shows the actors represented in COVID-19 news coverage, separated by both social media platform and media origin. First, the findings show similar patterns to those of sources, with political actors referenced most frequently (36.4%), followed by health (18.6%), media (13.7%), educational (9.7%), and citizen (9.5%) actors. One difference is that media and citizen entities featured more often as actors in news than sources.

Second, Table 4 also shows differences between social media platforms in the types of actors that were prominent in news. Political actors were more common in posts on Facebook (40.5%) than those made on Twitter (33.6%) and Instagram (37.2%) ($\chi2(2$, N = 30102) = 765.98, p < .001). Media actors were found to be the second most important actor for posts made to Twitter at 22.1%, significantly higher than their visibility on Instagram (8.2%) and Facebook (4.1%) ($\chi2(2$, N = 11318) = 4495.84, p < .001). Health actors were the second most prominent across Facebook (20.9%) and Instagram (19.2%), while slightly lower on Twitter (16.6%) ($\chi2(2$, N = 15424) = 706.45, p < .001). As follows the source data, posts to Instagram referenced more citizen (12.2%) and celebrity

(6.8%) actors than those made to Facebook (citizen at 10.7% and celebrity at 3.1%) and Twitter (citizen at 8.2% and celebrity at 1.8%). Chi square tests of independence indicated a significant association between the social media platform and the presence of citizen ($\chi2(2$, N = 7842) = 606.77, p < .001) and celebrity actors ($\chi2(2$, N = 2166) = 944.95, p < .001).

There are also differences between news outlets. Posts by television news outlets were more likely to reference a political actor (44.6%) when compared with other media (online, 37.2%; print, 31.4% and radio 23.1%) ($\chi2(3$, N = 30102) = 2678.09, p < .001). Health actors (21.4%) were the second most important entity for online news (21.4%) and radio outlets (16.2%) but third for print news outlets (18.4%) ($\chi2(3$, N = 15424) = 128.93, p < .001). Instead, media actors were found to be the second most significant actor (21.4%) for posts made by print news outlets. Citizen actors were also found to be more prominent in posts made by online news (13.4%) than for other media outlets (at 8.6% for print, 6.8% for radio, and 9% for television) ($\chi2(3$, N = 7842) = 130.22, p < .001).

Third, Table 5 shows the percentage of times an entity was attributed as a source when they were also an actor in a story, with statistical analysis showing significant differences for every source type (p < . 001) with moderate (>0.3) and large (>0.6) Cramer's *V* effect sizes. Of all entities, political sources were the most likely to be given voice in stories where they featured as an actor at 46.9%, which further demonstrates the

Table 4. Actors in COVID-19 news coverage by social media platform and media origin.

	Social Media Platform			Media Origin			
	Facebook	Twitter	Instagram	Online	Print	Radio	TV
Actor							
Political	40.5%	33.6%	28.4%	37.2%	31.4%	23.1%	44.6%
Health	20.9%	16.6%	19.2%	21.4%	18.4%	16.2%	17.8%
Media	4.1%	22.1%	8.2%	3.1%	21.4%	5.3%	6.6%
Educational	10.0%	9.6%	8.6%	11.5%	9.6%	8.5%	9.1%
Citizen	10.7%	8.2%	12.2%	13.4%	8.6%	6.8%	9.0%
Business	4.6%	3.5%	4.1%	3.9%	3.6%	2.0%	4.8%
Police and Military	2.9%	2.2%	4.9%	3.1%	2.6%	0.8%	2.6%
Celebrity	3.1%	1.8%	6.8%	3.7%	2.3%	6.9%	2.5%
Civic Society	1.5%	1.0%	5.2%	1.9%	1.0%	6.3%	1.7%
Sport	1.5%	0.9%	2.2%	0.8%	1.0%	23.9%	1.1%
Legal and Court	0.2%	0.2%	0.3%	0.2%	0.2%	0.1%	0.2%
Total %	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
N	36,023	42,996	3,791	13,178	42,887	851	25,894

Table 5. Results of Cramer's V Test on attribution of sources to actors.

	Sources			
Actor type	Yes (%)	No (%)	p	Cramer´s V
Political	46.9	53.1	.001	0.638
Citizens	21.8	78.2	.001	0.456
Celebrity	35	65	.001	0.587
Sport	23.3	76.7	.001	0.481
Media	10.4	89.6	.001	0.308
Police and Military	30.3	69.7	.001	0.547
Educational	39.1	60.9	.001	0.614
Health	37.8	62.2	.001	0.585
Business	30.1	69.9	.001	0.544
Legal and court	23.5	76.5	.001	0.484
Civic society	37.4	62.6	.001	0.61

influence of this source type in news coverage of COVID-19. Where other entities featured as actors, they were less likely to be given voice in news. The data show that when reports featured education, health, and civic society actors, these same source types were given voice in 39.1%, 37.8%, and 37.4% of posts respectively. In contrast, where citizen or media actors featured in reports, they were much less likely to be given voice in news, at 21.8% and 10.4% of posts respectively. This also demonstrates the reduced influence of citizen perspectives in news coverage of Covid-19.

Discussion and conclusions

News media play a significant role in enabling audiences to understand a public health crisis (Nielsen et al., 2021) and providing access to health-related information (Tagliabue et al., 2020). Through examining the use of sources, as well as actors, in social media posts relating to COVID-19 made by UK mainstream news media through 2020, this study offers insights into how this public health crisis was communicated to the public.

The findings show that political sources were dominant. This corresponds with a recent study of pandemic news coverage in seven different countries that found that just over half of all sources in news about COVID-19 were political sources (Mellado et al., 2021) and several other studies of sourcing during health crises (Gesser-Edelsburg et al., 2017; Lee & Basnyat, 2013). However, it also contradicts some studies in health journalism and of previous pandemics that found other sources were more significant, often health sources (Briggs & Hallin, 2016; Hallin et al., 2020). Nevertheless, it follows from what we know about sources afforded access to the media during periods of societal crisis with elite and official sources, in particular representatives of the state, most prominent because of their authority to comment on an issue or event (Larsen, 2019; Mourão & Sturm, 2018). Since COVID-19 was an unprecedented crisis for the UK, described by the Prime Minister as the biggest challenge the UK had faced since the Second World War, mainstream news media adopted the mode of sourcing that has predominated in other crisis contexts, that is following political and governmental sources. COVID-19 was more than a health story, becoming a generalized crisis that cascaded beyond health and into other economic, social, and cultural domains. This was reflected in its dominant framing by political and government sources.

The findings also show that not only were political sources dominant but the most frequently named sources were largely representatives of the UK government. What is interesting in this finding is that Sir Keir Starmer, Leader of the Opposition since April 2020, ranks at the bottom of the top 20 list of named sources and was much less prominent in coverage than other political sources, including Nicola Sturgeon, the first minister for Scotland, and Sadiq Khan, the Mayor of London. Therefore, while the named political sources who either called for or implemented different COVID-19 policies to those enacted by the UK government were given voice in coverage, their perspectives sit within the sphere of what Hallin (1989) describes as "legitimate controversy." For a mainstream

media recently accused of giving platforms to climate change skeptics and pro-Brexit economists in the name of balance and impartiality (Cushion & Lewis, 2017), there is no evidence that this applied to COVID-19 news, where those in the "sphere of deviance" (Ibid.) such as "anti-vaxxers" or Covid deniers were starved of coverage. As mentioned above, it is understandable that journalism in the context of significant health crises will shift toward consensus by disseminating government public health messaging. However, considering the many criticisms levied at the UK government's response to COVID-19, described as "too little, too late and too flawed" by the British Medical Journal (Scally et al., 2020), the findings still raise critical questions about the plurality of voices allowed to shape public understanding of the COVID-19 pandemic through 2020.

While the findings show that health sources were given voice in coverage, as indicated by the list of the most frequently named sources, this category included references to the Government CMO and CSA. This may, therefore, reinforce the argument that representatives of the UK government were the primary definers of COVID-19 news. An alternative interpretation is that their prominence shows that the scientific and medical communities were at the forefront of UK government communications about COVID-19. As sources, however, they were speaking in their capacity as senior advisors to the government rather than as independent experts.

Surprisingly, given the magnitude and societal repercussions of Covid-19, citizens were not prominent in the data. This aligns with other research that has shown that the new conventions of news delivery are, so far, not significantly disrupting established elite sourcing practices in favor of affording access to more demotic voices (Thorsen & Jackson, 2018). It is also possible that this reflects the sourcing practices of health journalism, where there is a tendency to rely on government sources and health professionals and to only use citizen sources to complement scientific evidence (De Dobbelaer et al., 2018). Citizen sources, however, are valuable in explaining complex health-related issues and their impact on society. The lack of these voices raises questions about the balance and breadth of perspectives reflected in UK news coverage of the COVID-19 pandemic.

When considering the different social media platforms used by the 15 news outlets included in the study, the data show some significant variations in the types of sources that were prominent. The findings reveal that the posts made to Twitter were more elite-oriented and that Instagram was demonstrably less political but more likely to feature civic society sources than other platforms. This is in line with what is known about Instagram, its culture, and why its users are drawn to the platform (Thomson & Greenwood, 2017). It also demonstrates that the primary definers that feature in posts on Instagram may still be establishment sources but different types, with police and security sources higher than across other platforms. These are the sources that are more likely to focus on the operational response to COVID-19. For the police, this was enforcing Coronavirus restrictions; and for the military, it was supporting public services, such as the provision of testing and the initial rollout of the vaccine programme. Mainstream news outlets will adopt different news distribution strategies that reflect the

characteristics of the different social media platforms, including their culture and users' engagement. This may mean softening news that is distributed through their Facebook posts, compared to the online news sites, for example (Lamot, 2021). The differentiation between platforms in sourcing patterns may also reflect the conventions of presenting news on each platform, with some tending toward the model of consensus by prioritizing political and government sources, and others, Instagram for example, contributing to a sphere of legitimate controversy by giving voice to a wider range of sources. This is distinctive and opens up the possibility for further research and reflection on how journalists adapt stories for social media and the consequences for public health communication.

The findings have several implications for the public's understanding of the COVID-19 pandemic. It is known that at the peak of the pandemic news consumption was high (Newman et al., 2021). It has also been established that the vast majority of Britons adhered to the rules laid out by the government in order to stem the tide of COVID-19 transmission and supported government actions, such as closing schools and mandating the use of facemasks (YouGov, 2022a). While correlation does not mean causation, the analysis highlights that it was overwhelmingly those within the sphere of consensus who had access to the news during the first year of the pandemic, and thus may have contributed to such views and behaviors. However, more problematically, the proportion of Britons who thought the UK government handled the pandemic "very" or "somewhat" well fell from 72% in March 2020 to 34% in December 2020 (YouGov, 2022b). This represents a tension for journalists because while government sources were still the primary source of key data, policy announcements and public health recommendations – which would necessarily shape the agenda during a health crisis – the UK government's pandemic response was, increasingly, being critically received by the public. Yet, as the findings from this study show, government sources were given primary access to the news throughout 2020.

While this study was longitudinal, focusing on news coverage through 2020, it does not consider changes in source use over time. It would be valuable to consider, for example, whether sourcing patterns evolved as the UK extended its vaccine rollout through 2021 and in response to the emergence of new variants of COVID-19. Further studies beyond the first year of the pandemic would likely illustrate nuances in the contours of news coverage and public communication about COVID-19. A further limitation of this study is that it only surveyed sources visible in social media posts. A logical step for further research would be to compare these posts with the corresponding full article to examine how these articles and their sources are reframed for the purposes of social media and its value for communicating health emergencies.

Note

1. Crowdtangle is a search tool that is used for searching content from verified public profiles and pages on Facebook and Instagram.

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ORCID

Jamie Matthews 🔟 http://orcid.org/0000-0002-0621-6086

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