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Harms of digital capital: social harm analysis of online public resistance and information pollution

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Harms of digital capital: Social harm analysis of online public resistance and information pollution

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Abstract:

Criminological studies of social harms extensively document intersections of power and the production of harm, revealing how the actions of the powerful in the public and private sectors expose (typically) less powerful groups to harm, often with impunity. Whilst this scholarship provides much needed insight into the often minimised or dismissed harms of the powerful, attention must also be paid to the agency of the victimised and the outcomes of their active efforts to resist such harms, especially in a digital context where concepts such as ‘power’ and ‘capital’ might take a different meaning. To this end, this paper expands existing criminological scholarship on social harms by providing new insights on how the dynamics of resistance by ordinary citizens, that is, people not generally considered part of the powerful capitalist elite, can nevertheless produce secondary social harms. The paper uses the example of online resistance to the COVID-19 digital tracing ‘track and trace’ app in England and Wales to unravel how ordinary citizens utilise their agency to resist the perceived harms of powerful actors whilst at the same time producing the secondary social harm of information pollution.

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Harms of digital capital: Social harm analysis of online public resistance and information pollution

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Abstract

Criminological studies of social harms extensively document intersections of power and the production of harm, revealing how the actions of the powerful in the public and private sectors expose (typically) less powerful groups to harm, often with impunity. Whilst this scholarship provides much needed insight into the often minimised or dismissed harms of the powerful, attention must also be paid to the agency of the victimised and the outcomes of their active efforts to resist such harms, especially in a digital context where concepts such as ‘power’ and ‘capital’ might take a different meaning. To this end, this paper expands existing criminological scholarship on social harms by providing new insights on how the dynamics of resistance by ordinary citizens, that is, people not generally considered part of the powerful capitalist elite, can nevertheless produce secondary social harms. The paper uses the example of online resistance to the COVID-19 digital tracing ‘track and trace’ app in England and Wales to unravel how ordinary citizens utilise their agency to resist the perceived harms of powerful actors whilst at the same time producing the secondary social harm of information pollution.

Introduction

Both the extant criminological and zemiological scholarship on social harm provide much needed insight into the often minimised or dismissed harms of the powerful. However, attention must also be paid to the agency of the victimised and their active efforts to resist harms. On the importance of studying the agency of those victimised by social harms of the powerful, Hillyard and Tombs’ (2021) position is somewhat instructive. They argue that ‘if we are attempting to measure both the nature and the relative impact of harms which people bear, it is at least reasonable to take some account of people’s own expressions, and perceptions, of what those harms are!’ We respond to this call by drawing on large scale social media data to study both the agency of the victimised and their ability to produce secondary social harms when resisting perceived primary harms of the powerful.

1 The concept of ‘resistance’ has been traditionally invoked in defence of the oppressed or with
2 reference to forms of civil disobedience. Over time, the notion of a ‘right to resist’ has gained
3 currency with governments, civil society organisations, and other social institutions in liberal
4 democracies (Cosi, 1984; Ferrari, 2004: 177). The notion conjures up the image of powerless
5 masses rejecting the efforts of a powerful elite to control them. In this scenario, the masses are
6 typically marginal individuals, and their resistance is often discussed with a focus on the
7 powerful elite (that is, the efforts of the powerful to control dissent). Resistance can take the
8 form of both action and speech (Krippendorff and Halabi, 2020), including digital speech (e.g.,
9 Ziccardi, 2012; Hill, 2018).

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18 This paper focuses on online resistance and demonstrates that power relations can become more
19 fluid in online spaces as new forms of agency become possible, empowering historically
20 marginalised groups resisting the harms of the powerful to exercise power by producing
21 discourses that can have adverse social, health and other implications. We, therefore, show that
22 ‘acts of resistance’ perpetrated by the less powerful (that is, those who have suffered social
23 harms because of unequal power structures, keeping in mind that social harms need to be
24 considered in relational terms – see Canning and Tombs, 2021) can, at times, also create
25 socially harmful implications. In doing so, we adopt a subversive stance that reflects the
26 traditional criminological focus on the harms of the less powerful. A key difference between
27 our approach and mainstream criminological accounts of the aetiology of harm is that we
28 develop a structural outlook that focuses on the ways in which acts of resistance by the less
29 powerful to primary harms of the more powerful can potentiate secondary harms in the form
30 of profound adverse implications for individuals and communities.

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44 In the paper, we draw on the empirical example of online resistance against the harms linked
45 to a COVID-related public health directive introduced by the government and endorsed by
46 other powerful groups including the media and politicians. Drawing on this example, we
47 explore the agency of those involved in resisting perceived harms posed by the actions of the
48 powerful national state in introducing and promoting the COVID-19 digital tracing ‘track and
49 trace’ app (henceforth, ‘the app’). We focus on resistance on Online Social Networking Sites
50 (ONS), specifically Twitter. In doing so, we unravel how online social resistance by the less
51 powerful to perceived primary harms of the more so can potentiate secondary harms. Through
52 our analysis of these issues, we advance the criminological scholarship on social harms.

The criminological scholarship on social harm

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2 The social harm approach emerged towards the end of the 1990s, in part to counter
3 criminology's inordinate focus on the legal definition of crime as acts or omissions that violate
4 the criminal law (Hillyard et al., 2004). Inspired by this reductionist legal definition,
5 criminology predominantly focused on the activities of the less powerful: the group most likely
6 to be criminalised because of power imbalances and intersectional oppressions (Canning and
7 Tombs, 2021: 33). Rejecting this, the proponents of a new social harm perspective argued that
8 moving criminological analysis beyond 'crime' to the broader concept of 'harm' was necessary
9 to accommodate the socially harmful, but often non-criminalised, actions of more powerful
10 groups. Such harmful acts have been defined by the original proponents of the approach as 'the
11 deleterious activities of local and national states, and of corporations, upon people's lives
12 (Hillyard and Tombs, 2017: 16).
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23 Of course, the social harm approach was influenced by the seminal work of earlier scholars, *in*
24 *primis* by the contributions of exponents of sociological criminology such as Ferri (1921) or of
25 the Chicago school and particularly Sutherland (1983), but also by the work of figures such as
26 Durkheim (1893; 1900), and others (e.g., Schwendinger and Schwendinger 1977). Together,
27 regardless of the different focuses of their analyses, they all emphasised that, several socially
28 harmful practices of the powerful are not criminalized, and criminology should look beyond
29 the legalistic understanding of criminal justice systems¹. Indeed, the social harm approach in
30 criminology views the powerful and their activities as fitting objects of criminological enquiry
31 not least because of the capacity of powerful institutions, groups and elites to produce harms
32 that are typically minimised and deemed outside the purview of criminal justice intervention.
33 The field has evolved in different theoretical directions, focusing on diverse definitions of
34 social harm, its perpetrators, and its victims (e.g., Canning and Tombs, 2021; Greenfield and
35 Paoli, 2013; Pemberton, 2015; Leighton et al., 2021), but one of the several themes unifying
36 the multifarious strands of social harm scholarship is relevant to this paper. It concerns the
37 study of non-criminalised practices that cause harm and should, as such, attract more
38 criminological and policy attention than crime (Hillyard and Tombs, 2004).
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54 Perhaps inspired by the perspective's initial emphasis on harms produced by those more
55 powerful in society, criminological studies of social harms tend to focus on how the activities
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60 ¹ For further discussions on this point, see also Lasslett, 2010; Yar, 2012; Rothe and Kauzlarich, 2016.
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1 of the more powerful, including corporations and nation states, produce harms, primarily
2 victimising the less powerful in society (see, generally Canning and Tombs, 2021). Some
3 emphasise the links between such harms and capitalist imperatives (e.g., Pemberton, 2015).
4 Thus, scholars adopting the social harm approach have explored cultural, social, political, and
5 other activities that produce harm, including harms related to the environment (e.g., White,
6 2021), employment (e.g., Tombs, 2014; Lloyd, 2021), industrial food production (e.g.,
7 Leighton, 2021) and penal practices (e.g., Presser, 2013).

14 That which is missing from the social harm literature is an understanding of how less powerful
15 groups who feel victimised by the primary harms of the powerful actively resist such harms
16 and how, at times, secondary harms can arise from such resistance. This paper addresses the
17 gap in knowledge. By focusing on the potential secondary harms generated by ordinary citizens
18 digitally resisting the harms of the powerful, the article advances the criminological scholarship
19 on social harms. It moves beyond the emphasis of many criminological study of social harms
20 on how the actions of the powerful expose (typically) less powerful groups to harm, often with
21 impunity (Canning and Tombs, 2021). It also advances the scholarship on online social
22 resistance by highlighting how resistance in digital spaces such as ONSs can produce socially
23 harmful implications.

34 Criminological studies influenced by the social harm perspective have similarly explored
35 digitally enabled harms of various kinds (e.g., Lavorgna 2021a; Gordon et al., 2022). However,
36 the studies have not addressed the issue in the context of public resistance to perceived harms
37 of the powerful. To shed some light on the nature of digitally enabled harms, Wood (2021) has
38 conceptualised several harms emerging from technology design and deployment, of which the
39 harm of zemiosis is the most relevant in this context. It refers to the harms produced by
40 sociotechnical systems which rely on human interaction with technology. In his study of the
41 ‘zemiogetic power of technologies’, Wood (2021) provides a detailed analysis of how new
42 and emerging technologies propagate a range of harms. Key examples include the harms of
43 algorithmic racial discrimination in justice systems (as detailed also in Ugwudike, 2020) and
44 the disempowering practices of social media algorithms which can reproduce the offline
45 marginalisation of less powerful groups in online spaces (see Lavorgna et al., 2021a). In our
46 analysis of how secondary harms can emerge from resistance to harms of the powerful, we
47 explore the digitally enabled harm of information pollution on ONSs and use it as an empirical
48 and illustrative example.

1 The advent and proliferation of ONSs, such as Twitter, mean that forms of social, cultural and
2 political expression now transcend spatiotemporal boundaries. With affordances provided by
3 the sites, millions of people globally are connecting through such virtual platforms.
4 Affordances in this context refer to the opportunities provided by social media platforms which
5 empower anyone with a compatible device (e.g., a smart phone) to broadcast their opinions and
6 resistance to a global audience in real time, changing the equilibria of key elements of interest
7 in investigating social harms: that is, how language is used and exercised (Canning and Tombs,
8 2021: 117). The affordances are transforming the sites into global platforms of networked
9 interaction, information dissemination, and forms of social resistance, such as expressions of
10 dissent and opposition towards the perceived harms of the powerful (Bonilla and Rosa, 2015;
11 Carney, 2016; Freelon et al., 2016; Lavorgna 2021b; Lavorgna et al., 2021a). Although they
12 currently facilitate such exercise of public agency, this paper demonstrates that the social media
13 affordances that enable public resistance can in themselves empower users, including those
14 from historically marginalised groups, to engage in forms of resistance that propagate
15 secondary harms. In this paper, we focus on the secondary harm of information pollution.
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31 **Information pollution as a secondary harm of resistance**

32 The concept of information pollution was first used by Nielsen (2003) to describe irrelevant,
33 redundant, unsolicited, and low-value information, and more recently by Wardle and
34 Derakhshan (2017) to describe a distinguishing feature of political life in online spaces. It
35 relates to the practice of constructing and disseminating information that can cause harm to
36 others, and it can take the form of misinformation (when false information is shared, but no
37 harm is intended), disinformation (when false information is knowingly shared to cause harm),
38 and malinformation (when genuine information is shared, but harm can be caused²). The notion
39 of information pollution has since been applied in socio-criminological analysis, with specific
40 reference to the COVID-19 pandemic, and conceptualised as capable of producing social harms
41 such as discouraging public compliance with public health initiatives (Lavorgna, 2021b;
42 Lavorgna et al., 2021a). Looking at information pollution in its entirety allows us to overlook
43 intent, which is often difficult to prove and can be irrelevant to the emergence of a certain
44 harmful outcome.
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60 ² For the context of this contribution, the motive does not matter.
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Conspiratorial thinking can also be classified as a dimension of information pollution. It manifests itself in the form of speculations about the existence of socially harmful conspiring agents such as public institutions, government representatives, and others (see also, Coday, 2006). Conspiratorial thinking is located at the basis of some of the epistemic mechanisms enabling the proliferation and success of information pollution (Lavorgna, 2021b). The existence of conspiratorial thinking in the context of the pandemic has been largely studied from other disciplinary standpoints (e.g., Biddlestone et al., 2020; Romer and Hall Jamieson, 2020; Allington et al., 2021; Pummerer et al., 2022). This increased attention to the topic is not surprising, considering that conspiratorial thinking thrives in situations where people’s need to feel safe and secure in their world and to exert control over their existence are threatened. Such thinking helps restore feelings of agency and power (Bangerter et al., 2020; Douglas et al., 2020; Imhoff and Lamberty, 2020).

Information pollution is a rapidly growing problem and a type of harm that can be perpetrated by individuals/ordinary citizens against communities, as noted by the World Health Organisation (WHO) (2020) in their description of what they conceptualise as a fast growing ‘infodemic’. Albeit it is a non-criminalised harm that has been largely ignored within social harm or zemiological scholarship when focusing on the harms of the powerful. Nevertheless, in this paper, we demonstrate how, in the process of resisting perceived (primary) harms of the powerful, online information pollution can emerge as a (secondary) socially harmful practice that warrants criminological and zemiological attention. In as much as social harm includes actions that produce physical harm (Hillyard and Tombs, 2017; Canning and Tombs, 2021) or harm the health of others (Tift and Sullivan, 2001), information pollution pertaining to public health initiatives can be categorised as a non-criminalised social media practice that can produce a variety of social harms and can, accordingly, be approached from a social harm perspective (see Lavorgna, 2021b). Indeed, studies suggest that information pollution via misinformation, disinformation, malinformation or conspiratorial thinking can be socially harmful because it can adversely influence people’s beliefs, attitudes, and behaviours (Chadwick et al., 2018). Online pollution of health information, for instance, can generate potentially harmful attitudinal and behavioural resistance to important public health initiatives, often impacting those socially more vulnerable (Lavorgna, 2021b). Where certain communities (e.g., BAME groups) are affected, this can worsen existing health inequalities. Official statistics and other studies reveal that BAME communities experience the worst health

1 outcomes in several areas of healthcare delivery including public health responses to the current
2 pandemic (e.g., ONS, 2020; Royal Society for Public Health, 2020).
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5 The potential for information pollution to disproportionately harm certain communities, very
6 much reaffirms its nature as a social harm (see also, Lavorgna and Di Ronco, 2019; Lavorgna
7 2021b). As Hillyard and Tomb (2004: 23) observe, the social harm approach should be more
8 concerned with ‘mass harms’ and the implications for ‘a harmed community’ (19), comprising
9 ‘groups of people in some form of collectivity who are physically or financially harmed by
10 whatever means’ (Hillyard and Tombs, 2004: 19). Unlike much criminological analysis, the
11 approach is not individualistic; its sole focus is not on ‘an atomised individual’ and the
12 criminalisation of the behaviour of individuals. Such a focus excludes social harms that should
13 not and cannot be condensed into current reductionist definitions of interpersonal crime.
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23 That said, the social harm literature places greater emphasis on the harmful activities of non-
24 individuals such as corporations and states. Nevertheless, the non-criminalised but very
25 harmful activities individuals perpetrate against communities deserves similar attention.
26 Examples include sexism, bullying, racially motivated microaggressions, and other harms
27 perpetrated online, including on social media platforms. For affected communities, these can
28 produce adverse psychological and other injuries which the proponents of social harm theory
29 and research recognise as social harms.
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38 We expand the social harm literature by analysing harms perpetrated by individuals resisting
39 harms of the powerful and who are empowered by ONSs to propagate (as a form of online
40 social resistance) socially harmful information pollution.
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47 **Methodology**

48 *Data collection*

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51 Our study drew on a subset of Twitter data produced by a research project that brought together
52 criminological and computational expertise to unravel the sociotechnical dynamics of people’s
53 resistance to the National Health Service of the United Kingdom (NHS) COVID-19 tracing
54 app across England and Wales. The data comprised a large dataset of tweets opposing the use
55 of the NHS Covid tracing app covering the period March-December 2020, and collected
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1 retrospectively using WebDataRA (for further details, see Lavorgna et al., 2021a, b).
2 WebDataRA is a Chrome browser extension that monitors the pages a researcher browses (e.g.,
3 social media timelines and search results) and saves relevant data and metadata as a spreadsheet
4 (Carr, 2020).
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9 The subset of data on which this paper focuses comprises Twitter accounts belonging to
10 ordinary citizens,³ or in other words, ‘less powerful’ actors compared with the typical
11 (powerful) subjects of social harm research: corporations, states, and other powerful entities.
12 To select the subset from the large Excel file of Twitter data, we used Excel filters which
13 identified accounts that had between 200 and 1,000 followers. Out of these, we deleted the
14 accounts that were considered ‘dormant’ accounts, that is, social media accounts, human or
15 bot-operated, that have not posted or engaged with other accounts for an extended period of
16 time (Wardle, 2018) – in our case, accounts that have tweeted on any subject less than once a
17 week. While there is no agreed definition of ‘dormancy’ in relation to time, one week was
18 considered a suitable time to show lack of engagement – see Lavorgna et al., 2021a, b. We also
19 deleted accounts that appeared to be automated (bots) because they tweeted more than 50 times
20 per day (a standard approach to detect social bots on Twitter, see Alothali et al., 2018). As our
21 focus was limited to England and Wales, we excluded accounts with a different geographical
22 location. Further, we filtered the tweets associated with the selected accounts by considering
23 only those containing the keyword ‘track and trace’, to ensure that we were focusing on those
24 directly engaging in conversations around the topic. These processes reduced our dataset to
25 7,496 profiles and 10,175 tweets. We then applied the Twitter Engagement metric, which is
26 calculated based on the number of favourites, retweets and mentions generated by tweets, and
27 measures the effectiveness of tweets and how much certain profiles are connecting with their
28 followers (see also, Agarwal et al., 2019). The Twitter Engagement metric revealed that a total
29 of 3,127 tweets belonging to 2,021 accounts were above average and were as such those with
30 which users most actively engaged. These were analysed for this study as explained in the
31 following section.
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55 ³ ‘Ordinary citizens’ are generally defined, in negative terms, as ‘non-elite’ citizens, see, e.g., Peter and
56 Zerback, 2020; ‘elite’ are those ‘with power’ as they are ‘with vastly disproportionate control over or
57 access to a resource’, in line with the traditional sociological definition – see Khan, 2012. For the sake
58 of our study, we consider ‘ordinary citizens’ to encompass both ‘private citizens’ representing
59 themselves only, and citizens speaking on behalf of a grassroots initiative organized by a group of
60 ordinary citizens (in line with Hopmann and Shehata, 2011).
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It is important to note that, in order to carry out our study, we took all the necessary precautions to ensure that our research was ethically-informed (Zimmer and Kinder-Kurlanda, 2017): we collected data by using a software tool compatible with Twitter policies, and we collected information that had already been posted on Twitter in line with its Terms and Conditions; for the nature of the information posted and the platform used we could assume that the participants expected the virtual space used to be public; for concerns related to users' anonymity, we did not use personal identifiers, and when we use some quotes as examples we are slightly changing the wording to make the tweets unrecognizable (Social Data Lab, 2019). Our research plans were approved by the Research Ethics Committee of the University of Southampton (ERGO2 no 62176).

Data analysis

The dataset of 3,127 tweets belonging to 2,021 accounts was thematically analysed with the support of Netlytic software (Gruzd, 2016), which is an open source, community-supported text and social networks analyser. To guide our work, we first automatically extracted the 100 words most commonly present in the tweets using Netlytic's text analyser which summarises and visualises social media data (see Figure 1). Please note that Figure 1 also shows the prevalence of the words (i.e., the small numbers near each word).

Figure 1 - Most used words in the dataset

[Figure 1 about here]

Netlytic allows researchers to click on each of the words extracted through Netlytic to access the tweet in which the word is embedded, enabling coding of the context in which the word was used for subsequent thematic analysis. This computational support rendered our qualitative analysis of the large dataset manageable. To enhance the objectivity and accuracy of analysis, all three researchers participated in performing Keyword in Context (KWIC) analysis – an established approach initially used in the machine indexing literature (Luhn, 1960), and more recently adapted by social scientists to analyse large corpora of social media datasets (e.g., Wiedemann, 2016; Miller, 2021; Ugwudike and Sánchez-Benitez, 2022). The analysis involved, (1) deriving codes from the data by analysing the 100 extracted words in the context (tweets) from which they emerged, (2) agreeing the codes, and (3) assembling the codes into themes depicting primary and secondary harms (thematic analysis). The codes agreed were: app attribution; outsourcing and profiteering; NHS links; nepotism; distrust; surveillance;

1 blame towards named politicians; expensive incompetence; app as delayed and defective; the
2 affiliate is a private company; privatisation: data breaches and GDPR; neoliberalism and
3 individual responsibility; fraud risk; deliberate malfunction; risks of non-compliance; freedom
4 of movement; and covid denialism.
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9 As we demonstrate below, we identified several themes, associated with, (1) forms of
10 expressions of resistance to the perceived primary harms of the government's introduction of
11 the app, and (2) the potential secondary harms that emerged during said resistance (as
12 summarised in Table 1 below).
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18 The primary harms were: false advertisement; institutionalised nepotism; incompetence; and
19 privacy violations; as well as enhanced surveillance and law enforcement. The secondary
20 harms produced by the resisters were: malinformation (when genuine information is shared,
21 but it can potentially cause harm, for instance because it is shared in incomplete or potentially
22 misleading ways); mal/disinformation (false information is shared, willingly or unwillingly, in
23 a way that can cause harm); and conspiratorial thinking; all of which are dimensions of
24 information pollution.⁴ They can also all be considered socially harmful since, as already noted,
25 they are forms of information pollution that can foment harmful forms of resistance. On this
26 point, rather than posing genuine concerns, or providing evidence-based insights, they typically
27 propagate false, inaccurate or otherwise potentially misleading information. For instance, they
28 divulge non-science-based information, rumours, and even foster the rejection of potentially
29 lifesaving health initiatives (e.g., Chadwick et al., 2018; Lavorgna and Di Ronco, 2019;
30 Lavorgna, 2021b).
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44 Before we discuss the themes in more detail, it is worth noting that the discourses we classified
45 as instances of information pollution were depicted as such purely because they were produced
46 by resisters in a way that can create or potentiate harms by discouraging others from adopting
47 a potentially useful health initiative. The resisters offered no evidence (or only produced
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54 ⁴ While we did not perform any quantitative analysis on our dataset as it was unnecessary for the scope
55 of our study, it should be noted that, as we focused on the 100 most found KWIC, all the themes derived
56 from our codes can be considered dominant in our full dataset, as it is unlikely that lone views were
57 captured by using this approach. Nonetheless, it would be interesting for future studies on the potential
58 secondary social harms of certain forms of digital resistance, to approach the full dataset with
59 computational tools than can enable them to further unpack the prevalence and distribution of the views
60 identified.
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1 ‘evidence’ dismissed by the scientific community) to substantiate their discourses. We make
2 no claims as to the viability, efficiency, or utility of the app. Further, digital forms of resistance
3 and the use of ONSs to share genuine information are certainly to be welcomed. It is what the
4 app symbolises that matters here: it is a public health initiative which, if efficiently developed
5 and adopted in a stage of the pandemic where scientific evidence on the virus was under
6 development and the international scientific community was consistently advocating for
7 caution, contact tracing and physical distancing, could have saved lives. Information pollution
8 in relation to the app, therefore, can be considered harmful, not least because it has the potential
9 to provoke public rejection of a public health intervention in a time of crisis. Regarding the
10 COVID pandemic specifically, studies found evidence of information pollution which could
11 have fuelled resistance to the use of masks, physical distancing and vaccinations – see e.g.
12 Jamison et al., 2020; Lavorgna, 2021b; Sattar and Arifuzzaman, 2021; Lavorgna et al., 2022).
13 Below we present the themes that emerged from our analysis.
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25 *Table 1 - Themes depicting primary and secondary harms (selected samples)*

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33 ***Limitation of the chosen approach*** 34 35

36 It is important to note that the approach chosen in this study, while useful for shedding light on
37 how ordinary citizens can utilise their agency to resist the perceived harms of powerful actors
38 and at the same time produce the secondary social harm of information pollution, suffers from
39 a number of limitations. Firstly, we have considered a relatively limited sample from a specific
40 social media platform, and one language/geographical area only. As such, it is important to
41 stress to the reader that, from an empirical perspective, this study should be considered
42 exploratory, a starting point for broader debate on the need to uncover new types of potentially
43 socially harmful practices, and to unpack some assumptions within the criminological
44 scholarship on social harms on the concept of ‘power’ in the digital field.
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54 More importantly, it is essential to note – once more – that our approach does not allow us to
55 draw any conclusion on causality and intent: we cannot prove the impact of the tweets
56 observed, and certainly we cannot prove the motivations behind them. We can only note that,
57 collectively, they had a part in shaping (or at least they tried to shape) public discourse in a
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1 potentially harmful way. Digital social movements and resistance are topics that have attracted
2 an increasing number of scholars, who have demonstrated how social media is used by less
3 powerful groups to frame social issues, raise awareness on harms and injustices, and to
4 advocate for social change (e.g., Freelon et al., 2016). While the attention so far has mostly
5 centred on those digital speeches having a positive impact, we cannot ignore that the same
6 dynamics can propagate harms. This, of course, is not about denying the social importance of
7 forms of digital resistance. We contend that it is necessary to critically explore such practices,
8 to distinguish between the positives (to be supported) and the negatives (to be avoided or
9 mitigated).
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18 **Results**

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22 Resistance focused mainly on the perceived harms surrounding the app. But expressions of
23 resistance produced secondary harms in the form of various dimensions of information
24 pollution, revealing how resistance by less powerful groups can in itself potentially propagate
25 social harms. The primary harms are outlined below along with the potential secondary harms
26 (forms of information pollution) produced by those resisting the primary harms.
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32 *False advertisement*

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34 For some resisters, their acts of resistance centred on the harms of false advertisement by the
35 government. They rejected the app on the basis that the app developer, politicians, and the
36 Government were engaging in the harmful act of advertising it as an NHS app when it was in
37 fact an outsourced, commercially produced tool (e.g., ‘*This is not run by the NHS, this is run*
38 *by Serco!*’). This can amount to malinformation, as from the context it was clear that the scope
39 of the information shared was not to provide a piece of factual information, but to use that piece
40 of information to oppose *per se* said public health initiative. Similarly, resisters also maintained
41 that the app was being falsely advertised as an NHS product so that the NHS could be
42 demonised in the event of app failure, furthering the government’s privatisation agenda (e.g.,
43 ‘*The blame game has started*’. ‘*The NHS is up for grabs*’). This discourse gained traction as
44 many other users advanced it and transformed it into a vital part of the general resistance to the
45 app. We classified it as malinformation since the resisters offered no evidence to verify their
46 claims.
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In discussing the harms of false advertisement by the government, other resisters propagated further information pollution in the form of mis/disinformation through the claim, for instance, that the app had been released on ‘clap for the NHS day’ to link the NHS to the app and ensure that the Service would be blamed if app implementation becomes unsuccessful. There was further mis/disinformation via comments to the effect that the app had been deliberately designed to fail, to support a herd immunity agenda (e.g., ‘*Anyone else think that having the app release day on the same day we clap for the NHS is suspicious? This is another nail in the coffin for the NHS*’). As already noted, studies show that such information pollution in the form of malinformation and mis/disinformation can foment distrust of the government’s motives and resistance to public health initiatives, undermining potential uptake by vulnerable individuals and communities who may otherwise benefit from such resources.

Institutionalised nepotism

Acts of resistance also centred on the perceived harms of nepotism and cronyism in the Government. In particular, resisters claimed that the app contract had been allocated to a well-known and allegedly incompetent, close affiliate of a specific government official. The resisters pushing this narrative also claimed that the app had been introduced to bolster the affiliate’s profiteering agenda and quest to maximise profit above all other considerations, including human rights and wellbeing. Thus, in resisting the perceived harm of institutionalised nepotism, which would hamper the possibilities to create an efficient and effective product, the resisters were producing unverifiable discourses that could discourage app use. This amounts to information pollution in the form of mis/disinformation. There were also additional instances of information pollution, this time via malinformation expressed through claims that the affiliate (a private company) had a history of data breaches and other serious forms of incompetence when delivering public services (e.g., ‘*Stop giving contracts to your incompetent friends!*’; ‘*How can our data be safe with these people in charge?*’; ‘*This company has an history of fraud!*’).

Information pollution in the form of conspiratorial thinking was also evident in the resisters’ claims that the app’s developers were far right backers of the Government and Vote Leave affiliates (trying to do something ‘*profitable for their cronies*’; and ‘*they can use this data to track and trace voters*’). Again, a potential impact of such information pollution is that it could undermine public trust in government policies and discourage compliance with public health initiatives, in this case, the contact tracing app.

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2 *Government incompetence and privacy violations*

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4 Additional primary harms linked to the app by resisters were the issues of government
5 incompetence and privacy violations. Again, in resisting these harms, the resisters propagated
6 forms of information pollution that were in profusion across the dataset and involved
7 malinformation via descriptions of the app's defects and comments about the failure to test the
8 app before rolling it out, with critical comments directed at the government for wasting
9 taxpayers' money on a defective app (e.g., '*a catastrophic waste of money!*'; '*£12million*
10 *wasted!*'; '*£103m wasted!*').

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18 Additional examples also centred on the theme of incompetence with some resisters posting
19 comments and evidence depicting the incompetence of the aforementioned affiliate company
20 in charge of app implementation (e.g., '*This incompetence is killing people*'). Relatedly, there
21 were instances of malinformation pertaining to the government's incompetence in the area of
22 data protection (e.g., '*Incompetence yet zero resignations!*'). Indeed, data insecurity and
23 privacy violations were key concerns amongst the resisters, particularly the ones who were able
24 to promote discourses on this issue across conversational networks.

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33 Resisters in this camp expressed their lack of trust in the government's ability to deal with
34 delicate issues of data protection proficiently. Concerns were raised about the potential of the
35 app, which is data-driven, to foment data breaches and violations. For instance, there were
36 speculations regarding compliance with some aspects of the GDPR and concerns that the app
37 required a number of permissions (including Bluetooth accessibility) which could increase the
38 risk of hacking (e.g., '*It breaks GDPR law!*'; '*this is a cybersecurity nightmare, it worked in*
39 *China but British people cannot agree to this!*'). Several resisters also noted that private access
40 to sensitive data can prompt other cybersecurity concerns or increase exposure to scams. There
41 were claims that people were being asked to enter credit card details for identification and
42 verification which could expose them to cyber harms.

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53 There were also instances of disinformation through references to the possibility that the private
54 company implementing the app will access people's information for nefarious purposes, and
55 that the Government, working with 'big tech' companies such as Google, would misuse users'
56 data by feeding the companies the data they need for their facial recognition software since the
57 current pandemic and face mask restrictions had reduced the availability of such data (e.g.,
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‘Face masks have hindered facial recognition, that track and trace app so wanted by the government could harvest new data’). Some also claimed that the government would release such data to other countries such as Russia for surveillance policies and practices (e.g., *‘the app will release all our data to Russia’*). More generally, the app was portrayed as a data harvesting app for malicious agents and motives, denying its use as a public health tool. Further, the app was depicted by some resisters as a feature of neoliberal responsabilisation. In this respect, some resisters maintained that the Government, incapable of dealing with the pandemic effectively and seeking to divest itself of its responsibility for ensuring adequate public health protection and provision, was (through the app) deliberately transferring responsibility for dealing with the virus to the general public (e.g., *‘They should take responsibility for its failures, but they shamefully use political covers’*).

Taken together, these narratives, which were produced or endorsed (e.g., via retweets) by users resisting the app and able to widely promote their resistance across conversational networks, can be considered instances of information pollution. Regardless of the concerns, motives, or intent underpinning the narratives in the Twittersphere, together, the forms of malinformation and mis/disinformation encountered were constructed or propagated in a way that intended to sustain a certain narrative, sustaining the rejection of a public health initiative.

Information pollution via perceived harms of enhanced surveillance and law enforcement

The risk of enhanced surveillance and law enforcement was another primary harm attributed to the app. Our analysis also revealed concerns expressed by resisters regarding the capacity of the app to operate as an additional surveillance technology alongside existing tools such as CCTV cameras (e.g., *‘a state surveillance app’*; *‘this is just another method of mass surveillance’*). These discourses about the primary harm of an initiative introduced by the Government, contained instances of information pollution in the form of conspiratorial thinking. To illustrate this, some users in this category claimed that the app was part of a wider plan to create a private police force for the future (e.g., *‘this is one step towards a private police force’*; *‘a private contractor that will soon have the authority to tell you to comply or else, a private police to keep us commoners in line’*). Others maintained that data collected from the app would be misused for practices such as covert surveillance or the promotion of a eugenics agenda (*‘our data will be in the hands of eugenics enthusiasts’*). Some also stated emphatically that users’ personal data could at some point be de-anonymised to enhance surveillance capacities (e.g., *‘ministers are discussing how they might de-anonymise users’*). The

1 Government does however claim that controls reducing or removing the ability to identify app
2 users are integrated in the app and although the app holds personal data (for example, on venues
3 visited), such data are not stored or shared (UK Health Security Agency, 2021). Nevertheless,
4 speculative concerns about enhanced surveillance through the app formed the basis of
5 expressions of resistance and information pollution via disinformation and conspiratorial
6 thinking.
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10 **Discussion**

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18 In this paper, we built on an interdisciplinary study that brought together criminological and
19 computational expertise to provide an empirical account of how ‘less powerful’ people digitally
20 exercise their agency to resist the perceived harms of powerful actors, whilst at the same time
21 producing the secondary harm of information pollution. This apparent paradox, we argue, is of
22 fundamental criminological importance, not only because it uncovers new types of potentially
23 socially harmful practices, but also because it demystifies some assumptions within the
24 criminological scholarship on social harms.
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33 In our paper, we focused on online social resistance which has expanded phenomenally in
34 recent years, partly due to the availability of social media affordances which enable anyone
35 with a suitable device and internet access to share their opinions with a global audience in real
36 time and to ‘cluster’ with likeminded people just as the resisters in our study did in response to
37 the perceived harms of the contact tracing app. Studies of social movements have shown that
38 the experience or even the perception of marginality, victimisation, and other forms of
39 disempowerment (or ‘powerlessness’, in the social harm jargon – see e.g. Pemberton, 2015)
40 can motivate online resistance. Such resistance is typically intended to raise awareness of the
41 harmful implications of unequal power relations across several spheres.
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51 Although we focused on digital resistance by ordinary citizens against perceived harms of
52 government initiatives, other studies of digital resistance have explored resistance against male
53 violence towards women (e.g., Carney, 2016), and against policing (e.g., Bonilla and Rosa,
54 2015). Studies of movements such as #BLM and #MeToo reveal how historically
55 disempowered groups, such as women and BAME people, utilise social media sites to influence
56 the representation of important social issues, publicise social harms and injustices, and catalyse
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1 social and political change (e.g., Freelon et al., 2016). These studies suggest that, just as we
2 found in our study, ordinary citizens are able to engage in online resistance against the harms
3 of the powerful by developing counter-narratives and influential oppositional discourses (see
4 also Gallagher et al., 2018).
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9 In his critical analysis of digital media and democratic participation, Dahlberg (2015: 861)
10 notes that digital spaces can enable online ‘discursive contestation’ in the form of ‘contestations
11 of power [...] strengthening the voice of alternative, marginalized, or otherwise oppressed
12 groups’. This highlights what has been conceptualised as the empowerment model of online
13 knowledge production (Ugwudike and Fleming, 2021). It can be bolstered by social media
14 algorithms which amplify content that appear to be generating significant interest. In the case
15 of Twitter, for example, content which generates interest in the form of likes, replies and
16 retweets are more likely to attract algorithmic amplification via further dissemination to wider
17 audiences (Koumchatzky and Andryeyev, 2017). This is an empowering feature that equips
18 users with digital capital in the form of the power to produce influential online discourses,
19 including those propagating information pollution.
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31 Digital capital is a relatively new form of capital that has gained ascendancy with the advent
32 of the digital age and the worldwide explosion of web 2.0 which enables anyone to freely create
33 and share information to a global audience in real time, engendering new power relations. From
34 a sociological perspective, digital capital has been defined as the skills, competencies and other
35 resources which confer the power and ability to exploit the benefits of technologies such as
36 ONSs (Ragnedda and Ruiu, 2020; van Dijk, 2005). One such benefit is the ability to control
37 the narrative or prevailing discourse about important issues including public health initiatives.
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45 Existing social harm perspectives emphasise other forms of capital, for example, material or
46 financial capital (see Pemberton, 2015), and demonstrate quite persuasively how ownership or
47 access to such capital explains power asymmetries in society. These perspectives show that the
48 individuals, states, and corporations equipped with such capital able to exercise social,
49 economic, and political power, and enjoy a level of impunity when their actions, produce social
50 harms. Less powerful groups lacking such capital are often the ones exposed to social harms,
51 particularly the harms associated with capitalist production and accumulation, harms such as
52 environmental pollution and Health and Safety violations (Pemberton, 2015; Canning and
53 Tombs, 2021).
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1 Unequal access to digital capital also contributes to power asymmetries, with those lacking
2 such capital also tending to be more exposed to digital harms and marginalisation (van Dijk,
3 2005). Although a key difference between digital capital and material capital is that the former
4 focuses more on the new types of power imbalance that are emerging with the advent of new
5 technologies such as ONSs. Unlike material capital, the power inequalities associated with
6 digital capital are not necessarily linked to differential abilities to exercise social, economic,
7 and political power. Instead, the inequalities stem largely from the ability of the powerful (in
8 this context, those equipped with digital capital) to use digital products in ways that can, *inter*
9 *alia*, shape knowledge of key social issues, and in some cases, produce – alongside positive
10 effects – harms such as information pollution. That said, those equipped with this form of
11 capital may be of low socioeconomic status and affected by powerlessness in the offline world.
12 Yet, they may retain the capacity to exercise power through their digital capital, hereby
13 empowering them to control knowledge and information production both online and offline.
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27 We have shown that in the instances of resistance observed in the data, some resisters who
28 were ordinary citizens were able to promote discourses that contained forms of information
29 pollution across conversational networks, specifically information pollution disputing the
30 origins and proposed agenda of the contact tracing app. In other words, speeches of resistance,
31 to be welcomed when opposing injustice and corruption, also became the means through which
32 potentially misleading information travelled. In addition, it is worth considering the role of
33 social media algorithms in conferring digital capital on some users by amplifying their digital
34 content, particularly where such content appears to be generating great interest (Koumchatzky
35 and Andryeyev, 2017).
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45 More generally, the emergence of digital capital as a resource that confers the power to produce
46 influential, but potentially harmful, discourses challenges the predominant (in social harm
47 studies) distinctions made between the powerful and the powerless via the lens of neoliberal or
48 other forms of capital. Historically marginalised groups are now able to access digital capital
49 and the power it confers via social media affordances and other digital facilities. In this context,
50 the paper poses a fundamental question for zemiology and, more generally, critical
51 criminologists in the digital era: should we redefine the meaning of capital, or rather, consider
52 different forms of capital, and why?
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Indeed, the empowerment model of social media usage which empowers ordinary citizens, such as the resisters in our study, to produce influential discourses, could be displacing the locus of power from its traditional sites, notably amongst the more powerful (e.g., large corporations and nation states). This could entail the extending of power to new areas, including amongst ordinary citizens equipped with digital capital. As we have shown in our study of public resistance to the contact tracing app, in the current digital age, the power to construct potentially harmful but influential information and forms of knowledge no longer resides solely in the powerful elite, disciplines and institutions.

Therefore, although it has been argued that a progressive social harm perspective must be cognizant of the intersections of access to traditional forms of capital, power, and the capacity to produce social harm (Garside, 2013), this must be reconsidered in the digital age. This is because, focusing on how relations of production central to capitalism generate social harm ignores other harms perpetrated by those outside the capitalist establishment. Examples include those with access to social media and other technological affordances that can confer digital capital. The resisters we studied pose an example.

Digital capital can manifest itself as the power to construct dominant or influential discourses (e.g., van Dijk, 2005), and we demonstrate in this paper that this is a type of capital that brings with it novel harms. Much like neoliberal capital, it is a highly unregulated form of capital with freedom of speech often cited to legitimise it. Owners of digital capital may lack the political and economic power associated with forms of capitalism such as neoliberal capitalism, but just as we found in our study, they have the power (acquired for example through social media affordances) to pollute information. They can even monetise such practice whilst causing social harms. Therefore, their motives and justifications must be critiqued and debunked with relevant moderations and regulations established. This is particularly necessary in the context of potentially life-saving public health interventions. Our study found evidence of resisters using their digital capital to propagate harmful information pollution whilst discussing the contact tracing app. Other studies have shown that people with digital capital (e.g., social media influencers) can produce online health misinformation that can persuade and influence others (e.g., Chadwick et al., 2018; Lavorgna and Myles, 2021; Lavorgna, 2021b). This can include historically disempowered groups who, with their digital capital bolstered social media affordances, construct and disseminate discourses designed to resist perceived harms of the powerful and challenge epistemic domination.

1 Paradoxically, studies have found that although social media platforms can also be
2 disempowering when they amplify the discourses of the more powerful, rendering others less
3 visible (e.g., Ugwudike and Fleming, 2021), the platforms can also heighten the visibility of
4 the historically marginalised, including those resisting perceived harms of the more powerful
5 in society. Therefore, the distribution of power in online spaces is dynamic. Platform
6 algorithms play a part in this through the amplification or suppression of posts (e.g., Keller,
7 2021). For example, as already noted, posts that appear to generate considerable attention tend
8 to be subject to algorithmic amplification, conferring digital capital on the authors by allowing
9 them to dominate digital discourses. Algorithmic amplification processes can allow individuals
10 and groups that traditionally lack public visibility and voice offline, to produce influential
11 discourses in online spaces. This new voice might not be sufficient to have a seat in the
12 metaphorical table, but it is enough to confer the power to exercise one's agency and produce
13 widely disseminated information.
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29 **Conclusions**

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32 Our primary focus in this paper has been to show that in the process of exercising their agency
33 through online resistance in the form of producing potentially harmful information, resisters
34 can produce secondary social harm, such as digitally-enabled information pollution, as has
35 been the focus of this study. We have used the example of resistance to public health
36 interventions, specifically the contact tracing app introduced in the UK in the wake of the
37 COVID-19 pandemic. The harms perpetrated by those resisting such intervention have mostly
38 been ignored in criminological literature. In the context of the COVID pandemic, apart from a
39 few exceptions (see, for instance, Lavorgna & Myles 2021; Lavorgna, 2021b; Lavorgna et al.,
40 2021), critical criminologists and zemiologists studying social harms have mostly focused on
41 the governmental failures in responding effectively to the crisis. Key issues addressed include
42 poor healthcare services, discriminatory responses to the pandemic (Vegh Weis and Magnin,
43 2021), and increased government support for populist policing (Scalia, 2021). We acknowledge
44 that these are fundamental issues deserving disciplinary attention. We therefore recognise why
45 criminological studies of social harms have traditionally focused on the often minimised or
46 dismissed harms of the powerful, including state harms.
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Nevertheless, we contend that there is a risk of overlooking the agency of less powerful individuals and groups affected by the harms of the powerful. In our study, we addressed this problem by focusing on those typically categorised as the ‘less powerful’ (ordinary citizens). We explored their active efforts to resist real or perceived harms pertaining to the COVID-19 digital tracing app. We have in the process, shown how unrecognised or minimised ‘secondary’ harms can be produced by individuals resisting the harms of ‘the usual (powerful) suspects’, and we have focused on the harm of information pollution. Such harm and its embedded mechanisms, such as mis/disinformation, misinformation and conspiratorial thinking, can produce socially harmful outcomes even if they are perpetrated by the ‘less powerful’. It is also worth noting that ‘less powerful’ is not always synonymous with ‘victimised’. This is particularly the case where the position of some individuals typically considered less powerful becomes ambiguous. An example is when their access to social media affordances equips them with the digital capital to support, and proactively further, potentially dangerous information pollution.

27 **Acknowledgements**

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Tables & Figures

Figure 1 - Most used words in the dataset

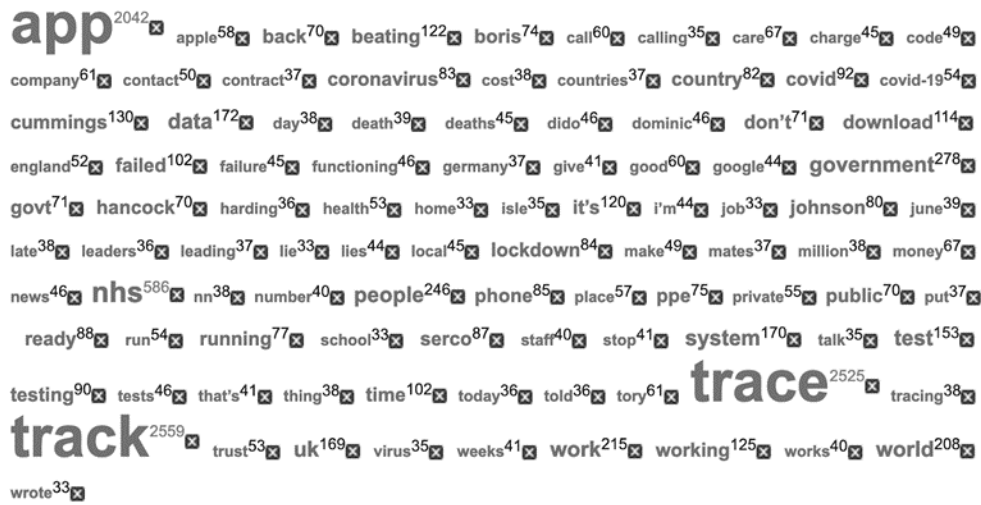


Table 1 - Themes depicting primary and secondary harms (selected samples)

Primary Harms (Perceived harms of the powerful)	Secondary Harms (Types of information pollution by those resisting primary harms)
<i>False advertisement</i>	<p>Malinformation</p> <ul style="list-style-type: none"> App is privatised/ commercial app. but advertised as an NHS tool <p>Mis/Disinformation</p> <ul style="list-style-type: none"> The app has been deliberately designed to fail, to support a herd immunity agenda.
<i>Institutionalised nepotism</i>	<p>Mis/Disinformation</p> <ul style="list-style-type: none"> App has been introduced to bolster the profiteering agenda of a close affiliate of the current government <p>Conspiratorial Thinking</p> <ul style="list-style-type: none"> Developers of the app are far right backers of the Government and Vote Leave affiliates
<i>Government incompetence and privacy violations</i>	<p>Malinformation</p> <ul style="list-style-type: none"> App will foment data breaches and violations. <p>Mis/Disinformation</p> <ul style="list-style-type: none"> App grants private companies access to confidential data for nefarious purposes.

Enhanced surveillance and law enforcement

Conspiratorial Thinking

- *App data will be misused for practices such as covert surveillance or a eugenics agenda.*

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