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Capitalising on Twitter for Policy Learning during Crises: The Case of the Covid-19 Pandemic

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ABSTRACT

Drawing on a broader study on perceptions of time and well-being during Covid-19, we show how governments can use social media platforms, such as Twitter, to acquire knowledge for policy learning and design. We argue social knowledge, which includes personal storytelling, emotion, and use of hashtags and emojis, can contribute to policy learning. Using a qualitative approach, we examine citizens' pandemic-related experiences, including changing work routines, mental health and self-care, sleep patterns, domestic violence, and feelings of solidarity. Such data could be useful to policymakers as they provide insights into the impact of the pandemic on citizens' everyday lives.

KEYWORDS

Policy learning; Twitter; public administration; time; well-being; Covid-19

Introduction

The Covid-19 pandemic brought to light the challenges of public sector organisations (Ansell et al., 2020) when they are addressing 'wicked problems', that is, multi-faceted, complex, unpredictable, and cross-boundary problems (Rittel & Webber, 1973). As a policy problem, the pandemic was unprecedented in its scope and impact on human activity, with governments needing to act but having minimal time to engage with the public and a limited repertoire of expert and social knowledge to draw upon. The crisis brought into sharp focus the need for different forms of knowledge, both expert and social, to develop timely and effective policy responses (Daviter, 2019).

Drawing on lessons from a broader study on perceptions of time and well-being during the Covid-19 pandemic, we show how governments can use social media platforms, such as Twitter, to acquire social knowledge for policy design and policy learning under conditions of crisis and uncertainty. Public policy and public administration scholars have pointed to the growing importance of digital sites and Big Data analysis as sources for policy-relevant knowledge (Auer, 2011; Dunlop & Radaelli, 2018). Yet these studies indicate the use of digital sites by the public sector has been limited mainly to identifying socio-economic and demographic trends and sharing relevant information with citizens (Goyal et al., 2021). In this article, we explore how governments can capitalise on new social media like Twitter to acquire

social knowledge, that is, 'those new forms of societal knowledge emerging in contemporary information societies in relation to and outside traditional knowledge production institutions such as science' (Pyrozhenko, 2020, p. 4). We treat digital media as a space for civic discourse, where citizens can share experiences and express emotions about issues and events, including public policies. We argue that social knowledge which includes personal and collective storytelling, expressions of emotion, and creative use of hashtag formulations and emojis can contribute to policy learning, especially when there is considerable uncertainty about a policy problem and possible solutions.

The paper continues in the following way. The first section includes a literature review on policy learning in general and possible learning from social media sites more specifically. In the second section, we discuss the method we utilised in this study. We describe the qualitative ethnographic approach to social media analysis and the methods we used to collect and analyse the data. In the third section, we present six themes that arose from our analysis: mental-health and self-care, changes in perception of time, changes in sleep patterns, unemployment and disruption of work routine, domestic violence, and inequality and solidarity. In the fourth section, we discuss three main questions: 1) What is the contribution of this knowledge to policymakers? 2) What is the influence of this knowledge on policy? 3) How can policymakers in public administration use our

method in their work? We also present the limitations of the study. The last part contains a short conclusion.

Policy learning

Policy learning is at the heart of government action; simply stated, governments may adjust or change their actions upon acquiring new knowledge (May, 1999; Sabatier, 1998). While there are diverse definitions of policy learning (Bennett & Howlett, 1992), we refer to Zaki et al.'s (2022, p. 22) definition of it as the 'circulation and consumption of policy issue-related information and knowledge among actors in the policy system and structure, within a policy context.' In what follows, we focus on the ability of the social knowledge on Twitter to drive policy learning.

The public policy literature and the organisational literature stress the importance of diverse kinds of knowledge, or 'voices,' and the creation of contested, practice-oriented knowledge in policy and organisational processes (Spender, 1996; Rhodes, 2012; Nicolini et al., 2016). They point to the importance of 'social learning,' or knowledge derived from new social problems, not just 'instrumental learning,' or knowledge that arises from existing programs and the implementation of policy tools (May, 1999). We claim governments can use the knowledge gained from users' discourse on social media, in our case, Twitter, to define and redefine problems holistically and update policies accordingly. This is even more important in situations of crisis, such as the Covid-19 pandemic, when no obvious actor or organisation holds the necessary knowledge to make the right decisions. Dunlop and Radaelli (2020) call this kind of knowledge 'learning in reflexivity'.

Learning during a crisis, such as Covid-19, is a unique case. Lesson-drawing from one crisis to another (inter-crises) is important (Moynihan, 2009), but learning *during* a crisis (intra-crisis), with a subsequent effect on policy change, is imperative (Kamkhaji & Radaelli, 2016; Powell & King-Hill, 2020). Yet this is difficult to achieve, as during times of crisis, policymakers' cognition is biased because of limited information, the need to provide quick answers, and political pressures to act in a timely fashion (Kamkhaji & Radaelli, 2016; Moynihan, 2009). We argue governments can use social media during a crisis to gain more relevant knowledge more quickly.

Learning from social media sites

There is a growing awareness among public administration scholars of the important role of social media sites (SNSs) and their contribution to policy learning and

policymaking (Auer, 2011; Dunlop & Radaelli, 2018; Goyal et al., 2021; Simonofski et al., 2021). Dunlop and Radaelli (2018, p. 9) refer to the value of the routine capture of SNS comments to build listening capacity in real-time: 'Only by attending to the cacophony of informational inputs (or policy chatter) can managers develop peripheral vision in the here and now as well as foresee problems as they emerge down the line'. By the same token, SNSs can contribute to problem definition and policy evaluation (Driss et al., 2019).

There are difficulties and challenges involved in learning from and using SNSs, such as privacy, security, accessibility, cybercrime, reliability of data, and institutional barriers (Bertot et al., 2012; Chew & Gunasekeran, 2021; Fernández-García et al., 2018; Giest, 2017; Mirbabaie et al., 2020; Omar et al., 2014; Simonofski et al., 2021; Tang et al., 2020). Yet SNSs have the potential to make a contribution to governments, for example, by strengthening citizens' trust in government, improving local and central government services, promoting collaborative strategies, improving public employees' job satisfaction (to some extent), assimilating information during crises, and creating data that can support policy decisions (Andersen et al., ; Demircioglu, 2018; Demircioglu & Chen, 2019; Hofmann et al., 2013; Jiang & Tang, 2022; Mansoor, 2021; Mirbabaie et al., 2020; Oksa et al., 2021; Omar et al., 2014; Simonofski et al., 2021; Song & Lee, 2016; Villodre & Criado, 2020).

To learn from SNSs, government agencies need to use more and better methods for analysing these data. Until now, most analysis has comprised trend analysis. For example, Nguyen et al. (2016) suggest the use of the deep neural network (DNN), an online learning algorithm that identifies specific informative tweets and classifies them based on topics. Natural language processing also includes a modeling algorithm: latent dirichlet allocation (LDA) or latent semantic analysis (LSA). These statistical methods identify topics and their tendencies in the data (Driss et al., 2019). A similar method is 'passive crowdsourcing' or the practice of listening to users' discourse. By analysing this discourse, policymakers can be exposed to new ideas and adjust their policies (Charalabidis et al., 2014). Most of these methods lean on quantitative methods; in contrast, we focus on the qualitative insights that SNSs can bring to the policy process.

Method

In this study, we explored Twitter users' discourse during the first round of the Covid-19 pandemic as part of a larger research project. The imposition of quarantines, lockdowns, and social distancing during the pandemic

caused many to change their use and perceptions of time and affected their well-being. Uses of time include, for example, time people spend on paid work, caring for others, personal or leisure activities, and sleep (OECD Gender Data Portal, 2016). We looked at perceptions of time rather than uses of time. Time is an abstract term with diverse meanings (Fitzpatrick, 2004; Zerubavel, 1976; Zuzanek & Zuzanek, 2015). The way we use our time affects our well-being (Gershuny, 2011; Kahneman et al., 2010; Zuzanek & Zuzanek, 2015**). We focused on the meanings people ascribe to time in situations of social isolation and explored the connection between perceptions of time and well-being. For example, working too much may lead to lower well-being; but at the same time, unemployment is also problematic (Gershuny, 2011; Hilbrecht, 2009; Kahneman et al., 2010; Zuzanek & Zuzanek, 2015**).

We defined well-being as 'people's positive evaluations of their lives, including positive emotion, engagement, satisfaction, and meaning' (Seligman, 2002 in Diener & Seligman, 2004, p. 1). We focused on one aspect, emotional well-being, as reflected in positive feelings, such as happiness, satisfaction, and calmness, and negative feelings of sadness, depression, and anxiety (Ryan & Deci, 2001; Lahat and Ofek, 2022). Studies have explored well-being in the context of Covid-19 (e.g., Tani et al., 2020), but the perceptions of time and well-being as expressed in a micro-blogging platform like Twitter are understudied. The pandemic was a global crisis that crossed borders, thus enabling us to use an international dataset and learning between countries is important (see Dolowitz, 2004). Whilst quantitative SNSs and big data studies tend to examine discursive trends or the quantitative prominence of events and experiences described online (see Driss et al., 2019), In the spirit of Netnography (Kozinets, 2015) we sought to characterise those descriptions by closely analysing personal stories, unique uses of emphasis as hashtags, and first-person experiential and emotional descriptions of the pandemic (see another example, Winter & Lavis, 2021). We suggest that to plan policy in a time of crisis, policymakers must refer not just to *what* is described, but also to *how* it is described.

Data collection

The study was based on online discourse extracted from Twitter. We used TAGS 6.1 (<https://tags.hawksey.info/>), a freeware for creating a Google Sheet Archive consisting of users' discourse that includes: dates of publication, written content (tweets, comments, emojis and hashtags), and links to photos and videos. TAGS 6.1 also provides a dashboard and summary sheet pages

showing which tweets are the most viral and which tweeters are most active. In addition, some Twitter users choose to indicate their geographic location. Thus, in some cases, we were able to map the country in which the content was written. The discourse analysis referred in these cases to the geographic origin of the published content, as seen in the Findings section. All users' discourse came from the first round of the Covid-19 pandemic from April 1 to May 31, 2020. We chose this period for our study because in most countries, there were significant changes in the lives of citizens at this time, including changes in work patterns, social distancing, and fear of contagion in the pre-vaccination era. Therefore, this period served as a unique lens through which to examine users' discourse during a global crisis.

The content extracted from Twitter was tagged with the hashtag #Covid-19Pandemic (the most viral hashtag at the time). To determine the most viral hashtag on Twitter globally in the online discourse on the Covid-19 pandemic, we used several generic websites providing this information, including Twitter Trending. On each day, 3000 tweets, comments, reactions, and other shared content were extracted from the daily discourse of users around the world. Overall, we extracted ~120,000 unique tweets and comments. The extracted content was downloaded to .csv tables to create a digital archive including the content of the tweets, comments, and reactions. We also extracted the exact time users published their content, indices of interactions between users and links to visual content. For the visual content, we went through photos and videos manually by clicking on specific links in tweets with an emotional load. Since our analysis focused on written content (tweets, comments, emojis, and hashtag formulations), we did not code visual content.

Coding and analysis

We coded the online content according to a list of 30 words related to the research questions. The list was based on words used in surveys exploring emotional well-being and time. To further examine the relevance of the words, in April 2021, we met with a team of experts at the Ministry of Welfare and Social Affairs in Israel. Together, we discussed the word list and added some new words based on their suggestions. The words are time, pressure, pressed for time, care, work, sleep, hours, schedule, leisure, well-being, happy, satisfied, calm, peaceful, enjoy, cheerful, stressed, angry, depressed, sad, anxiety, worry, fear, health, violence, isolated, death, depression, suicide, and security.

The analysis included four phases. First, we built a table that included the relevant tweets for each word. Second, we conducted a thematic analysis of the discourse. We read the coded posts and comments and marked the thematic contexts emerging from them. We traced the symbolic, emotional, and cultural life experiences and personal stories of users who tweeted and wrote comments during this period. Third, we analysed the data and aggregated them into themes. We did not examine personal interactions but multi-participant discussions about thematic subjects more generally. That is, we tried to discern the common discourse topics. To maintain a high degree of validity, each of the researchers read and analysed the coded content. Later, we met for a data session discussing the findings and coming up with the results. Fourth, we did further analysis using AntConc, a freeware, multi-platform, multi-purpose corpus analysis toolkit (Anthony, 2019). To characterise the findings based on frequent words, we used AntConc's 'collocate' measure. We tracked words written by users that were close to the thematic words found in our qualitative analysis. For example, we analysed words in close proximity to 'mental' and 'hope' to characterise the discourse on mental health and self-care. By doing so, we added another interpretive and experiential layer to the online corpus.

Ethics

All content analysed and monitored in this study from Twitter is public, visible to all, and from communities defined as 'open.' Content posted in closed communities or private Twitter personas, was not analysed. In addition, quotations and contents discussed in the study are anonymised as per APA guidelines.

Findings

Mental health and self-care

Discourse on Twitter revealed users' efforts to maintain their mental health during this period of the pandemic. Users passed on tips about coping with difficult experiences, stress, mental distress, and emotional flooding. They also discussed the negative influence of isolation on theirs and others well-being. As one user tweeted on May 11, 2020, '#COVID19Pandemic side effects 75,000 'deaths of despair.' Due to #suicides #isolation and #anxiety. #WellBeingTrust study predicts the covid19 crisis.' Like other tweets, this one incorporated a hashtag implying social distance and isolation caused anxiety and negatively affected well-being.

Surveys on well-being during Covid-19 have noted this phenomenon and its presence among diverse social groups. Our findings reveal additional layers emphasising self-care. For example, some users who tweeted about dealing with mental health issues and explained what helped them and advised others to practice self-care, including yoga, meditation, participating in sports, speaking to friends, sleeping well, creating new routines, investing in hobbies, and enjoying the opportunity for time with loved ones. These experiences and practices can inform policymakers, in our case, mostly in the care services, on the nature of the problem – i.e., mental health is harmed (e.g., anxiety, fear) – and suggest ways to deal with this problem, for example, encouraging people to build new routines and engage in health-seeking behaviours.

In many cases, users attached different hashtag formulations, such as #MentalHealth, #care, #MentalHealthMatters, #Worry, and #Anxiety. For example, on April 3, 2020, one tweeted: 'Do I feel claustrophobic during this quarantine? You bet I do. And here is how I handle it. #anxiety #fear #panic #hope #survival-mode #quarantine #coronavirus.'

These hashtags reflected how users felt and pointed to the narrative or the main topic of their tweets. The formal and informal need for help was evident, and some suggested the need for greater community and government outreach and intervention. For example, on May 5, 2020, a user tweeted: '@TeamstersCanada: With the #COVID19 pandemic, mental health must be, more than ever, at the center of the concerns of unions, businesses, and governments.' The user attached the hashtags #MentalHealthWeek, #MentalHealthAwareness. Whilst policymakers' attention in this initial stage of the pandemic was mostly focused on the physical health problem – i.e., reducing infections, hospitalisations, and deaths – users called to define a new social problem – their mental health – and raised claims (Stone, 2012) for the government in this respect.

When we used AntConc to analyse the online discourse on mental health and self-care, we had similar findings. The word 'mental' had 270 numbers of collocate types. The word 'health' was most frequent and appeared 353 times in sentences that incorporated the word 'mental.' This points to a prominent discourse on the impact of the pandemic on users' mental health care and their need to discuss it.

Changes in the perception of time

The way users experienced time had changed dramatically. Old routines had changed, and people had to reinvent their uses of time. As one user tweeted on

May 25, 2020, 'Wakeup, eat, watch series online and sleep. That is the #quarantine routine for most of us. #PaatalLok #Betaal.' The changes were mostly perceived as negative. For example, on April 2, 2020, a user tweeted, 'I lost my teens to my depression And now I Am losing my twenties to a pandemic ... !! #Quarantine#CoronavirusPandemic.' This tweet included a sad and reflective perception of time as lost. This subjective experience suggests that part of the bad experience was connected to the 'loss of time' – this is an important aspect of the problem definition policymakers should contemplate. If loss of time is a problem, how can we make people experience time in a more productive way? Governments, for example, could have subsidised online courses for retraining or updating job skills and thus have brought 'value' to the lost time.

While most users referred to negative emotions, others expressed positive emotions. For example, one user tweeted on April 2, 2020: 'This is my #quarantine look, working from home ☺ Taking advantage of these days to work calmly and be with family. We can ALL do our part in safety and isolation. Protect yourselves and others. #Positive thinking always!! 😊 How is your quarantine going? #helpUsProtectAfrica ' Positive emotions were mainly expressed to refer to the opportunity to spend time (in sharp contrast to the sense of lost time mentioned above) with loved ones. As one user tweeted on May 6, 2020, 'What I love most about staying home to self-quarantine is who I share it with #quotes #quoteoftheday #quarantine.'

These findings are vital for policymakers for two reasons. First, they reveal a much less discussed phenomenon – the positive experience of the pandemic, whereby people saw this period as an opportunity to spend time with their families and enjoy their hobbies. Second, it can lead to adjustments in features of policy programs, for example, asking people to share their art with the community or asking family members to support others in need.

Changes in sleep patterns

One of the most dramatic effects of the pandemic on well-being was its effect on the sleep patterns. Users described coping with sleep difficulties and altered sleep patterns incorporating hashtags, such as #insomaniac, #WideAwake, and #Eyeshadow, to express the difficulty. Sleep problems clearly reflected changes in the uses of time and well-being. They were attributed to the many changes in users' daily schedules and the ongoing stress and uncertainty, and many directly mentioned the problematic effect of changes in sleep patterns on their well-being. For example, one user tweeted on April 26, 2020,

'Americans who are no longer working and/or quarantining. How is your sleep schedule? #covid19 #Quarantine #StayHome.' On April 3, 2020 another user tweeted, 'The quarantine got my sleeping pattern is so fucked up. I sleep around 5am and wake up around 12 or 1pm.' And on April 30, 2020, a third user said, 'I'm pretty sure sleeping in and anxiety attacks are the new normal. #COVID19Pandemic.' Some turned to sarcasm. One user tweeted on April 3, 2020, 'Will anyone ever be able to sleep again? 😱😴😊#COVID19Pandemic 😊.'

We analysed the collocates of the terms 'sleep,' 'sleeping,' and '#sleeping' and discovered similar conceptual discourse on the changes in sleep patterns. The word 'sleep' had 246 collocate types. Users used 'sleep' to discuss how 'quarantine,' 'pandemic,' and 'Covid' (29, 28, and 21 collocate types respectively) disrupted their sleeping patterns and schedules and kept them 'awake' (18 collocate types). The word 'sleeping' had 122 collocate types and was used in conjunction with 'Covid' and 'quarantine' (34 and 11 collocate types respectively) to explain a disrupted 'schedule' (14 collocate types). The term '#sleeping' had 113 collocate types. Users incorporated the hashtag #sleeping to discuss how their sleeping schedule was a 'defeat' (29 collocate types). Although sleep has critical effects on mental and physical health (Hillman & Lack, 2013), it is not a main concern of policymakers. An awareness of the pervasiveness of the problem may lead policymakers to add this focus to policy design, for example, by developing specific public education campaigns on ways to encourage better sleep.

Unemployment and disruption of work routine

Some users described the difficulty associated with mass unemployment following the outbreak of the pandemic and the challenges of the new work patterns, such as working from home and the lack of clear separation between work and family. They frequently expressed negative emotions, especially fear and uncertainty. A user explained how the lockdown damaged work as a schoolteacher by tweeting on May 17, 2020, 'Ughh! I wish the #COVID19Pandemic wasn't happening.' Another user shared the difficulties of working from home and the problem of separating family time and work time by tweeting on May 4, 2020, 'That moment when she takes over your desk for her school work 🙄♂️#Xoowee #stayinhome #COVID19Pandemic.'

'Online listening' to difficulties and needs of workers and the unemployed can reveal their unique needs to government ministries and policymakers who can adjust their responses accordingly. While the policy discourse around the world has tended to focus on the unemployed during the pandemic, SNSs analysis

reveals the importance of exploring the difficulties and needs of those *who worked* from home and those who had to work more hours because of the pandemic, such as hospital personnel. As one user tweeted on April 7, 2020, '@bijayacharya: #MedTwitter action to protect our trainees! Residents are working long hours in the hospital, at high risk, with low pay. We are pressuring the @acgme to request protections for residents. #Covid_19 #COVID19Pandemic'.

The SNSs brought to the foreground the diversity of subjective experiences among workers, not just the unemployed, and shed light on the impact of the pandemic on conceptions of work, the workplace, and work practices. For policymakers, these stories offer insights that can help inform policies governing the future of work, work-family balance, and the restructuring of the economy. These insights can also signal who will be the labour force 'winners' and 'losers' in the post-pandemic restructuring of the economy.

Domestic violence

A specific issue mentioned on Twitter, even in this early stage of the pandemic, was the increase in domestic violence triggered by the pressures, lockdowns, and quarantines. The victims were primarily women and children who became particularly vulnerable. They were imprisoned in their own homes and suffered violence from spouses or other family members. Users incorporated hashtags such as #WomenCantWait and #StopViolence, and #MeToo. One user whose tweet had the hashtag #WomenCantWait explained Covid increased domestic violence, resulting in the deaths of many women. On April 20, 2020, the user tweeted, 'Women have waited for so long and even now many are being told to wait until the #COVID19Pandemic is over for their concerns to be addressed. This time, we are saying: #WomenCantWait. Domestic violence is sending many to the graves. On April 7, 2020, one user tweeted: 'victims – See? No one believed her, and no one will believe you. Domestic Violence and Abuse will increase more during the #covid19pandemic due to the #lockdown #stayhomestaysafe measures put in place to stop the spread of the virus.'

Although this problem was added to the public and institutional agenda, the fact that it appeared in the online discourse early in the pandemic and its connection to the wider 'MeToo' movement points to the value of SNSs for policy agenda.

Inequality and solidarity

The pandemic increased social and economic gaps. Users indicated that staying at home, the loss of work

hours, and social distancing affected different population groups differently. For example, those who lost their employment security or those thrown into the streets were more adversely affected and needed more support. Gaps appeared in both national and global contexts (Africa and India). Specific target populations included children, persons of colour, and persons with disabilities. As one user tweeted on April 2, 2020, 'My heart goes out to the millions of Americans who filed for unemployment claims this week, and the millions more who worry what next week holds for them. @JoeBiden #Biden2020 #COVID19Pandemic.' Some users expressed anger towards citizens who behaved in a manner they saw as irresponsible and inconsiderate of the job-related distress many were experiencing. As one tweeted on April 3, 2020, 'It's amazing to see people celebrating #Quarantine with random challenges and social media, without any fear of losing jobs, not getting paid and recession in near future. Ignorance is truly a bliss!'

Users' recognition of the suffering of others corresponded with users' calls for people to act together in solidarity for the health and well-being of the community. They posted about the importance of following official government guidelines, alongside the importance of providing help to those in need. They incorporated hashtags such as #StayAtHome, #BeatCovidTogether, #care, #BeKind, and #WearAMask.

A call for solidarity was clear when we examined collocates with the word 'solidarity' (192 collocate types). Users discussed the importance of expressing solidarity among 'nations' (80 collocate types), 'employees,' and 'students' (60 and 59 collocate types, respectively) and showing 'appreciation' (19 collocate types) to medical staff, and the overall need for solidarity during this time of 'Covid,' and 'pandemic' (38 and 30 collocate types respectively). Some emphasised the importance of 'unity' (19 collocate types).

Users calling for social solidarity in a time of crisis can be seen as 'ambassadors' of the official policy guidelines. These users saw and posted about the connection between obeying the guidelines and good citizenship. Their online discourse reveals new and creative ways to create solidarity between different social groups, mostly by making citizens ask themselves how their conduct influences others. As one user tweeted on April 3, 2020, '#getitright on #COVID19Pandemic #CoronaVirus Our best way is to practice home hygiene, staying home and following laid down protocols and health guidelines. #HumanityWins We shall OVERCOME! #StaySafe #StayAtHome #SpreadCalmNot Fear #BeatCovidTogether #StopTheSpread.'

The frequent appearance of this theme in tweets suggests its power and importance. Policymakers who were aware of its pervasiveness could build on it; they could utilise user calls for solidarity as influencers, for example, to improve public morale.

Discussion

The central claim of this paper is that governments can use micro-blogging platforms like Twitter to acquire social knowledge that can enrich problem definition and facilitate the design stage of solutions. This knowledge is especially important to learning processes in times of uncertainty (Dunlop & Radaelli, 2020).

Our findings illustrate the emotional and experiential ways people described coping with difficulties during the first round of the pandemic. The topics were multi-faceted. Some were largely negative: concerns over mental health; calls for help and self-care; sleep problems; the influence of the pandemic on diverse groups of workers; and the early appearance of domestic violence. Others were more positive emotions, and some called for solidarity. The discourse sheds light on alternative problem definitions and points to the need for policy solutions in those areas.

To answer our larger question about how micro-blogging platforms like Twitter can be used as sources of policy-relevant knowledge, we will respond to three questions. What is the contribution of this knowledge to policymakers? What is its influence on policy? How can policymakers in public administration use our method in their work?

(1) What is the contribution of this knowledge to policymakers?

Whilst researchers have used quantitative methods to extract trends from SNSs analysis in both normal times and times of crisis, we suggest an ethnographic approach can offer valuable insights for policymakers. It can reveal citizens' experiences and yield a more holistic understanding of social problems and people's needs. It discloses new and unstudied topics; for example, how people experienced the loss of their valuable time during the pandemic. This example demonstrates how the specific knowledge available on SNSs may lead to the exposure of an unexpressed concern, then to a new problem definition, and subsequently to a new policy solution (Stone, 2012). For example, subsidising online training courses may help people feel their time is being spent in a valuable way, working on achieving their personal goals. Another example relates to the issue of sleep. Our qualitative approach provided an early indication

of the vital mental health issues linked to the disruption of sleep patterns that could have been addressed by governments earlier in the pandemic.

(2) What is the influence of this knowledge on policy?

Governments are increasingly using SNSs in a quantitative way. We claim qualitative analysis yields knowledge that is unique in its ability to lead to effective social learning and double-loop learning (Argyris, 2002; Bennett & Howlett, 1992; May, 1999). Whilst others have emphasised the importance of SNSs in the problem definition and policy evaluation stages (Driss et al., 2019), our qualitative data analysis suggests Tweeter is relevant to the problem definition and design stage. Alternate problem definitions appeared in our data, such as the experience of 'loss of time,' 'difficulties of the working people', 'the sleep disorder', and 'inequality between groups', all of which could lead policymakers to design new policy alternatives. For example, government agencies could offer supporting tools via Twitter and other SNSs to promote better sleep, subsidise leisure studies courses, encourage the creation of user support communities, or subsidise specific groups in the working populations. All were less at the focus of policy design during the first months of the pandemic. Finally, our analysis of practices implemented by users during the pandemic to support social solidarity provides insights into how governments can support and enhance social capital both online and in person.

(3) How can policymakers in public administration use our method in their work?

Our method brings a complementary qualitative tool to the quantitative analysis of SNSs (Driss et al., 2019; Jiang & Tang, 2022) and answers the call to bring to the foreground citizens' voices based on open listening to online discourse (Charalabidis et al., 2014; Weng et al., 2021). This type of work is more demanding because of the time required to analyse the data. However, government agencies could incorporate staff with skills in qualitative analysis who could extract meaning from these data, and not just the trends. Bringing both qualitative and quantitative findings into the policy process will give policymakers a more holistic view of social problems and help them create policies that can cope with wicked problems in everyday life and in times of crisis.

Limitations

Our research has some limitations. First, we looked at one point in time, over a relatively short period, two

months, and we included 3000 tweets per day. A longer exploration with diverse time frames during the Covid-19 pandemic and more data may have yielded more knowledge on users' voices, needs, and emotions. However, we looked at a longer period than other studies (e.g., Ibrahim et al., 2017; Mirbabaie et al., 2020). Second, our focus was on two leading issues – uses of time and well-being. Other topics might have disclosed other impressions. Third, the data were drawn from an international dataset; thus, different cultural interpretations may be at play. However online ethnography is a cross-border method that refers to the context by the definitions of the online community/issue. To overcome this, we implemented a two-layer analysis. In the first layer, each researcher on our team (from three countries) explored the data. In the second layer, we integrated our impressions. Our interpretations generally converged quite easily. Fourth, we extracted data only from Twitter. Analysing data from other SNSs using other discursive norms could have offered a more holistic interpretation of how users around the world experienced the challenges of the pandemic. Future studies could explore different groups, based on different characteristics, such as gender, culture, and age. Other work could also compare discussions at different time points and on different platforms.

Conclusions

Drawing on a broader study on perceptions of time and well-being during the Covid-19 pandemic, we explored the potential benefits of social media for policy learning during times of crisis. Researchers have noted the contribution of SNSs to policymaking, along with their limitations, for example, fake news, misinformation, and unreliability (Chew & Gunasekeran, 2021; Fernández-García et al., 2018; Giest, 2017; Mirbabaie et al., 2020; Tang et al., 2020). We go a step further and argue social media, as a site for civic discourse, produces social knowledge beneficial for policymakers, especially when uncertainty surrounds problem definition and potential solutions. Using a qualitative, ethnographic approach to social media analysis, we highlighted the lessons that policymakers could have learned from storytelling, expressions of emotion, and so on, expressed on Twitter during the Covid-related lockdowns.

We found that early in the pandemic and lockdowns, citizens took to Twitter to share their experiences of changing work routines and sleep patterns, unemployment, social isolation, feelings of solidarity, and so on. As social knowledge, these data would have been useful to policymakers as they yield insights into the impact of the pandemic and lockdowns on the everyday lives of citizens,

especially the unintended consequences of policy responses.

Although we focused on the Covid-19 pandemic, the findings highlight the potential value of social media as a source of qualitative data for policy learning. Future research can explore the prospects and challenges of integrating these data into policy design during both normal and uncertain times.

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