

Article

Cartographies of Resistance: Counter-Data Mapping as the New Frontier of Digital Media Activism

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Submitted: 29 July 2022 | Accepted: 8 February 2023 | Published: 28 February 2023

Abstract

In the first datified pandemic, the production of interactive Covid-19 data maps was intensified by state institutions and corporate media. Maps have been used by states and citizens to understand the advance and retreat of the contagion and monitor vaccine rates. However, the visualisations being used are often based on non-comparable data types across countries, leading to visual misrepresentations. Many pandemic data visualisations have consequently had a negative impact on public debate, contributing to an infodemic of disinformation that has stigmatised marginalised groups and detracted from social justice objectives. Counter to such hegemonic mapping, counter-data maps, produced by marginalised groups, have revealed hidden inequalities, supporting calls for intersectional health justice. This article investigates the ways in which various intersectional global communities have appropriated data, produced counter-data maps, unveiled hidden social realities, and generated more authentic social meanings through emergent counter-data mapping imaginaries. We use a comparative multi-case study, based on a netnography of three Covid-19 data mapping projects, namely Data for Black Lives (US), Indigenous Emergency (Brazil), and CityLab maps (global). Our findings indicate that counter-data mapping imaginaries are deeply embedded in community-oriented notions of spatiality and relationality. Moreover, the cartographic process tends to reflect alternative imaginaries through four key dimensions of data mapping practice—objectives, uses, production, and ownership. We argue that counter-data mapping is the new frontier of digital media activism and community communication, as it extends the projects of data justice and community media activism, generating new practices in the activist repertoire of communicative action.

Keywords

activist maps; CityLab; Covid-19; Data for Black Lives; data imaginaries; data justice; data mapping; Indigenous Emergency

Issue

This article is part of the issue “Global Inequalities in the Wake of Covid-19: Gender, Pandemic, and Media Gaps” edited by Margreth Lünenborg (Freie Universität Berlin), Miriam Siemon (Freie Universität Berlin), and Wolfgang Reißmann (Freie Universität Berlin).

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1. Introduction

During Covid-19, the “first pandemic of the datified society” (Milan et al., 2021, p. 100), interactive digital maps became an important aspect of everyday life (Kent, 2020; Sloane & Kraemer, 2020). Produced and disseminated by state authorities, research institutions, and the media to disseminate knowledge about the pandemic, these maps

have transformed geospatial data into dominant everyday cartographies of the pandemic.

Hegemonic maps can be defined as visualisations produced by dominant global institutions, reflecting Western epistemological frameworks. Kitchin (2005, p. 2) argues that “Anglo-American academics and institutions...maintain a global hegemony in relation to the discipline of geography, exerting an unequal influence

in relation to what kinds of geography and geographical practices are to be valued.” Hegemonic pandemic maps have been widely circulated in the global mediascape, serving as reference points for diffuse publics, thus acquiring an official status (Kent, 2020).

Global Covid-19 data maps, however, are often generated from data types that are non-comparable for several reasons, including variations in reporting criteria and timeframes among countries; non-normalized data mapping; state interests invested in collecting, organising, distributing, or hiding data; interpretations introduced into the data by analytics and analysts alike—all leading to visual misrepresentations (Kent, 2020).

Such misrepresentations have consequences for democratic, informational, and public health systems. Wahl-Jorgensen (2020) has found that hegemonic data visualisations have negatively impacted public debate during the pandemic. Moreover, scholars have found that hegemonic data maps have contributed to the *infodemic* of disinformation on Covid-19, leading to unscientific public policy (Mooney & Juhász, 2020). Further, Wahl-Jorgensen (2020) has found that hegemonic Covid-19 mapping has impeded activists from advocating for social and health justice.

In contrast, communities have created counter-data maps to address their needs for Covid-19-related information and services. Following Kidd (2019), we define counter-mapping as any mapping activity that challenges dominant big-data and cartographic processes. Kent (2020, p. 189) asserts that “counter-mapping aims to reverse power asymmetries,” challenging power-inflected representations of hegemonic maps. Activists have re-appropriated big data and created counter-datasets to develop counter-mapping visualisations. Conjoining data and mapping, we define *counter-data mapping* as practices that integrate resistant data appropriations into counter-mapping processes, with the objective of challenging power asymmetries.

In this article, we present a comparative multi-case study (Yin, 2009) involving three counter-data mapping projects—Data for Black Lives in the US, Indigenous Emergency in Brazil, and global CityLab maps. The aim is to draw cross-case conclusions (Yin, 2009) that shed light on counter-data mapping using the specific frame of the pandemic. These cases met our criteria of representing alternatives to hegemonic maps, often visualised through intersectional axes of racialized, gendered, and colonial oppression, structures reproduced by hegemonic Covid-19 maps (Kent, 2020). We combine netnography (Kozinets, 2019) and critical visual analysis (Ledin & Machin, 2018) to examine community uses of intersectional counter-data mapping practices and imaginaries.

Data activist imaginaries (Neumayer et al., 2021, p. 5) emerge as “data are believed to have the capacity to measure, represent or unveil social phenomena.” Counter-data analytics and counter-data mapping, by extension, are understood to both construct and reveal social meanings for communities. *Data mapping imaginaries* that

underlie counter-data mapping practices are important to understand as they inform communicative practices of resistant data appropriation and data mapping, while not being data-centric, constructing alternative social practices and social imaginaries in relation to data.

Below we introduce a theoretical framework encompassing datafication, hegemonic maps, and technified space-making, followed by research questions and methodology. We then present our findings, arguing that counter-data mapping practices and imaginaries have the potential to foster self-determined communities through cartographies of resistance. Further, we explore how four key counter-data mapping practices—with respect to uses, production, objectives, and ownership—relate to specific counter-data mapping imaginaries. Finally, we argue that counter-data mapping represents a new frontier of digital media activism and community communication.

2. Theoretical Framework

2.1. Datafication, Data Colonialism, and Resistant Data Appropriation

Datafication is defined as “the wider *transformation of human life* so that its elements can be a continual source of data” (Couldry & Mejias, 2019, p. 2, italics in original). This is the mechanism of data colonialism with the expansion of colonial resource extraction to include data extraction. Organisations predominantly located in higher-income countries tend to extract and profit from data collected through digital labour in lower-income countries, and from marginalised communities in higher-income countries, with intersections across race, class, and gender (Madianou, 2019).

Data colonialism is therefore defined as the extraction of data from marginalised populations by tech corporations typically headquartered in higher-income countries (Couldry & Mejias, 2019). Examples include the collection and resale of geotagging information of migrants or the constant monitoring and reselling of intimate social media data by, for instance, Tinder or Foursquare (Thatcher et al., 2016). A third example includes the use of biometric data collected in a national digital identity program in Zimbabwe being reused by Chinese AI company Cloudwalk to develop facial recognition algorithms that are then sold worldwide (Madianou, 2019, p. 9). These colonial data extraction dynamics have intensified during the pandemic in two key ways. First, global knowledge about the pandemic is dependent on the extraction and compilation of various data types, which are rendered into data maps that reflect hegemonic economic and political interests. Second, global pandemic data have not typically been made available in useful ways for marginalised communities, as the pandemic has given rise to the “data poor”—communities absent from big-data narratives (Milan & Treré, 2020). This effect of data colonialism is an aspect of precarity

under neoliberal regimes in which all realms of human life are subjected to the mediation of neocolonial data markets dominated by big technology (Reguillo, 2017).

Emerging in relation to colonialism, *coloniality* is an epistemological framework that creates hierarchies of knowledge, the prevailing logic remaining after the historical process of colonisation came to an end (Mignolo, 2007). In coloniality, a path of linear development should culminate in Western ways of living, whereby the non-West is either invisible or considered primitive, uncivilised, or still “developing” (de Sousa Santos, 2015). Coloniality has been replicated through hegemonic data maps, shaped through data colonialism, and a tangible communicative form of coloniality is evident in data extraction, data structures, and data poverty.

Hegemonic data and algorithmic structures reproduce not only coloniality but also race, class, and gender discrimination (Noble, 2018; O’Neil, 2016; Sandvig et al., 2016; Wachter-Boettcher, 2017). During the pandemic, existing inequalities intensified during lockdowns. White-collar jobs could accommodate working from home, while the service industry could not. These employment categories break down along racialized and gendered lines, with Black, Indigenous, and People of Colour and/or women more often employed in the service industry, and thus put at greater risk of exposure to Covid-19 (Milan & Treré, 2020). Data revealing these amplified inequalities, including data colonialism, however, were not typically represented in mainstream media or hegemonic data maps.

An epistemological framework that contests hegemonic communications, critical coloniality helps us better understand community activist practices engaged in resistance to datafication (Ricaurte, 2019). Critical coloniality, as a multidimensional concept, can help to explain *resistant data appropriation*, which we figure as a step beyond resistance to datafication. Resistant data appropriation includes the construction of subaltern datasets and the repurposing of big data for socio-political resistance, a community communication practice that both uses and contests new data technologies. Resistant data appropriation moves beyond technologically deterministic calls for digital inclusion that assume merely granting access to technologies—such as devices or broadband internet—will correct the underlying intersectional social inequalities and structures (Robinson et al., 2020).

2.2. Hegemonic Cartographies as Technified Space-Making

Hegemonic Covid-19 data maps have amplified the political power of globally dominant groups. An illustrative example is the US-based Johns Hopkins Coronavirus Research Center (2020) near-real-time global map, representing the daily progression of the pandemic, including cases, deaths, and vaccinations. It uses a colour scheme of saturated reds, oranges, and greens against a black

background, with red signifying crisis, disease, alarm, and danger (Kent, 2020). This map, “possibly the leading apparatus of global situational awareness regarding Covid-19,” (Kent, 2020, p. 187), is an example of technified space-making with hegemonic institutional objectives, amplifying crisis communications. Covid-19 maps such as this, produced by globally hegemonic research or state institutions, are often, in turn, widely circulated by hegemonic media institutions such as CNN, the BBC, and *The New York Times*, in the same locations of global power.

Maps of this nature are therefore clearly representations of power. They define and construct space, naming and thus circumscribing communities and the places where they exist. Hegemonic maps direct urban planning, shaping future spatial decisions and policies (Boeing, 2021; Vaughan, 2018) and organising space in ways that amplify existing oppressions, express hegemonic desires and imaginaries, and render invisible the important relations among people, animals, and ecosystems. Hegemonic Covid-19 maps, in particular, amplify interlocking structures of oppression including the state, capitalism, colonialism, race, gender, and health.

Also imbued with power, algorithms that process and visualise data tend to amplify intersectional oppressions through social sorting, the process of managing categories of people in datasets, which reproduces inequitable social outcomes (Dencik et al., 2019; Lyon, 2006; Monahan, 2008; O’Neil, 2016). A cogent example of social sorting is the discriminatory racialized effects of surveillance after the September 11, 2001 terrorist attacks on the World Trade Towers. Islamophobia was coded into datasets, sorting citizens into Muslim and non-Muslim, resulting in systemic harassment in border checks, immigration, policing, education, hiring, and cultural institutions (Lyon, 2006). Social sorting algorithms have been shown to reproduce racial oppression (Noble, 2018), gender invisibility (Perez, 2019), and data poverty (Milan & Treré, 2020). This reinforces negative impacts on the most vulnerable (Langlois et al., 2015), for example, through surveillance and social control of welfare recipients while providing benefits for the wealthy through membership in frequent flyer or hotel booking programs (Jeppesen & Nazar, 2012). Big data and algorithms, including those producing hegemonic data maps, facilitate intersectional capitalist agendas while limiting democratic participation (Langlois et al., 2015), contributing to discriminatory technified space-making.

Brazilian geographer Santos (2006) has discussed how the interplay between technology and human action constructs spaces unequally, with digital information playing a central role in the “making” of a territory by uniting its different parts. He notes that centralised control and hierarchical information flows can lead to inequalitarian social structures, where essential information is transmitted predominantly in exclusive circles, leading to the entrenchment of data colonialism. Regarding the specific intersections of poverty, race, and colonialism,

for example, data mapping can frame low-income areas as violent, stigmatising communities through spatialized terms like ghetto, favela, and slum.

Hegemonic maps, big data, and algorithms thus reproduce cartographies of power, reinforcing hegemonic communicative dynamics through a growing reliance on state and capitalist datasets as territorial representations that render intersectional inequalities both immobile and invisible. “There is more, therefore, to be gained from the processes of mapping and counter-mapping Covid-19 than calculating risk and resolving information anxiety” (Kent, 2020, p. 191). In this context, it becomes vital to understand how resistant data appropriation and counter-data mapping serve to challenge the intersectional power structures embedded in hegemonic cartographies.

2.3. Counter-Data Mapping

Counter-data maps challenge hegemonic narratives through a process of social cartography (Vaughan, 2018). Grassroots mapmakers reinvent themselves as digital media and community communication activists contributing to the data justice repertoire of contention (Dencik et al., 2019). Countering the data narratives of hegemonic maps, community-produced maps can resist dominant representations of the pandemic, providing greater visibility, specificity, and nuance regarding the communities and territories mapped. Counter-data narratives are grounded in community experience, subjectivities, and epistemologies. *Counter-data mapping* can thus be defined as a political practice through which “groups normally excluded from political decision-making deploy maps and other geographic data to communicate complex information about inequality in an easy-to-understand visual format” (Inwood & Alderman, 2020). Engaging in resistant data appropriations to create pandemic maps, marginalised groups have used counter-data mapping to unveil health inequalities, amplifying activist actions to combat the deleterious effects of the pandemic for intersectionally-oppressed groups (Pelizza et al., 2020).

Counter-data mapping practices are grounded in and emerge out of counter-data imaginaries. Data imaginaries are the:

Ways in which individuals, communities, and societies imagine or conceive of their relationship to the datasets produced by social media and other big data sources, including their internalised perception of how big data may be able to either represent or invisibilise something important to them. (Jeppesen, 2023, pp. 122–123)

Counter-data imaginaries, by extension, locate agency in the process of self-producing counter-datasets and counter-maps, in opposition to the explicitly commercial goals of corporations and the social-control objectives of

nation-states that reduce, delimit, or even eliminate citizen agency. Counter-data practices reveal counter-data imaginaries through the ways in which collectivities appropriate data to visualise community experiences and epistemologies. Counter-data mapping “reconsiders relations between states, citizens and digital technologies in the production of data and statistics by imagining a new political subjectivity, that of the data citizen” (Lösch et al., 2019, p. 10). The counter-data mapping practices of the data citizen relate not just to data, but also to the communities’ counter-data imaginaries, which in turn influence their counter-data mapping practices. Taken together, counter-data mapping practices and imaginaries allow communities to reimagine and reshape social realities.

3. Methodology

To better understand counter-data mapping in marginalised communities during the pandemic, we set out with the following research questions: (a) How do communities and activists appropriate existing datasets or develop community-based datasets to create counter-data maps? (b) What are the counter-data mapping practices engaged by activists to visualise and make visible their communities? (c) What are the counter-data mapping imaginaries of communities that emerge through an analysis of their counter-data mapping practices?

We conducted a multi-case study (Yin, 2009) of three counter-data mapping projects in February and March 2020, using the netnographic strategy of immersive engagement (Kozinets, 2019). Considering three data sites (described below), we performed data collection operations that consisted of collecting and analysing online traces comprising the maps created by communities in this period. Departing from traditional netnography, we did not observe social media interactions but focused on digital and interactive representations of space through resistant data appropriation. Considering digital media as both an object of interest and an approach to understanding practices (Pink et al., 2015), we conducted analysis and interpretation operations (Kozinets, 2019) of the pages, data maps, and data charts available, including the context and discourses in which they were embedded and engaged.

We also analysed visual aspects of the maps (Ledin & Machin, 2018) to understand counter-hegemonic spatial representations as resistant strategies to visual misrepresentations, social-control datafication, and data colonialism. We inductively identified emergent themes in the counter-data maps in their contexts of production to examine the relation between socio-spatial data marginalisation and resistant data appropriation. We analysed emerging themes of spatiality and relationality with regard to counter-data mapping practices and imaginaries.

The first case study, Data for Black Lives, created the Covid Racial Data Tracker in early 2020 in the US context

under the Trump presidency during the rise of both populist white supremacy and the Black Lives Matter movement (Pleyers, 2020). Their initial data tracker consisted of data charts tracking the impact of Covid-19 in Black communities (Bowe et al., 2020; Data for Black Lives, 2020). This quantitative dataset was depicted visually and organised geographically by state, revealing disproportionate effects for Black people, providing evidence of how the pandemic amplified social inequalities, and calling for racial health justice (Moriarty et al., 2021).

The second case study, Indigenous Emergency, emerged in Brazil during Bolsonaro's right-wing government, which had sided with agribusiness, implementing hostile policies against Indigenous peoples. Indigenous groups in Brazil found that state-based Covid-19 case reporting in their territories drastically underrepresented the actual rates experienced and that public health measures were not culturally appropriate for Indigenous peoples. In response, the Articulation of Indigenous Peoples in Brazil (*Articulação dos Povos Indígenas do Brasil*, in Portuguese) founded Indigenous Emergency (*Emergência Indígena*), undertaking data collection and dissemination, including counter-data mapping, with the objective of producing trustworthy information on the effects of the pandemic on Indigenous communities in Brazil.

The third case study, CityLab maps, is a collection of personal maps of pandemic lockdown experiences, sourced via a global open invitation by urban data-mapping analysts at Bloomberg, US. They suggested that "making maps of your own world can amplify that experience because it asks you to sort out what you think, feel, see, hear, and even desire in a place" (Bliss & Martin, 2020). The qualitative maps shared on their website were accompanied by a narrative text, producing experiential data consisting of the material of everyday life. The CityLab maps can be understood as aggregate data, creating particular narratives with emergent themes illustrating similarities and differences in pandemic experiences across global locations and intersectional identities.

The projects were selected according to several criteria. First, they serve as alternatives to hegemonic Covid-19 data mapping, representing communities not readily visible in hegemonic maps. Second, they address the data poverty identified by Milan and Treré (2020) in lower-income countries and marginalised communities within higher-income countries. From a world-systems theory perspective (Sunkel, 1989), Data for Black Lives represents the racialized periphery within the metropole; Indigenous Emergency represents the colonised periphery within the periphery; and CityLab maps are situated in the metropole, with the maps representing diverse global subjectivities from both metropole and periphery. Third, we sought out projects with the objective of challenging power inequalities (Kidd, 2019). Fourth, collectively the projects should represent a range of intersectional subjectivities across race, gender, and global location, contesting these structures of

marginalisation. Finally, we aimed to include projects that appropriated both quantitative (Data for Black Lives, Indigenous Emergency) and qualitative (CityLab maps) data.

4. Findings

4.1. Resistant Data Appropriation

Our first research question interrogated resistant data appropriation by groups producing data maps that responded to their unique needs. Counter-data mappers tended to reappropriate data either by engaging in critical community-based analysis of hegemonic datasets or by collecting and organising their own subaltern datasets (Jeppesen, 2023, p. 127).

Data for Black Lives and Indigenous Emergency re-appropriated data to de-homogenise human geographies, revealing the persistence of racism and coloniality in Black communities in the US and Indigenous communities in Brazil, respectively. Data for Black Lives and Indigenous Emergency both used data, albeit in different formats, to carve out spaces for symbolically and geographically marginalised groups, illustrating how they were disproportionately affected by the global pandemic, and contesting health injustice through communicative mapping actions.

CityLab maps made visible the individual and the intimate through qualitative hyper-local counter-maps. The CityLab mapping project showed how constructed spatialities depicted shifts in daily routines during lockdown, reflecting on how these routines brought individuals into closer relations with nearby people, plants, animals, and ecosystems. These spatialized relations extended to the virtual. Qualitative resistant data appropriations took the material of everyday life as their subaltern datasets, foregrounding affective and relational structures of liberation to counter hegemonic mappings of social control.

The appropriation of qualitative and quantitative data to produce counter-maps followed principles of community communication. The maps connected collective identities to resistant spatial data appropriations, expressing shared interests. Moreover, they were created and circulated through empowering relations of mutuality, directly and indirectly contesting pandemic conditions of isolation and marginality (Peruzzo, 2008). The resistant counter-map spatialities contested the hegemonic spatialities of contagion, engaging data to prioritise human spatial-relationalities.

The case studies advanced spatial-relational narratives by mapping material elements connected to living spaces and experiences, reconstructing the relational ways in which the pandemic had affected individuals in communities, and expressing strong connections among communities, data, and spaces. This differs from hegemonic mapping, where the data focused on crisis points of contagion and death. Relationality in counter-data

mapping is created through collectively resistant data appropriation in the communicative action of “making” a territory (Santos, 2021). Relational counter-data mapping practices may thus be understood as citizen-centred technologies and actions, appropriating data to spatially visualise and visibilise communities.

4.2. Cartographies of Resistance

Our second research question examined the use of counter-data mapping to visualise marginalised communities during the pandemic. We observed the emergence of new counter-mapping practices we call cartographies of resistance. The three case studies were quick to realise that hegemonic maps fell short of providing valuable information for marginalised groups, such as differentiated contagion among Indigenous populations in Brazil and Black populations in the US (Figures 1 and 2), and more individualised relations between those confined in lockdown and their lived spaces (Figure 3). Using datasets to reconstruct geographies, the communities strengthened and rendered visible their relationships to their lived spaces and territories. They engaged in space-making practices that disrupted exclusionary cartographies marked by coloniality that represent populations as homogenous inhabitants of nations and regions (Mignolo, 2007), instead differentiating their own communities either by expressing particular community needs and demands (in the case of Indigenous and Black communities) or intimate relations within lived spaces (in the case of CityLab maps). These findings strengthen Kidd’s (2019, p. 955) argument that coloniality has been disrupted through activist mapping, as “Indigenous first nations have employed counter-mapping as part of a complex repertoire of resistance.” Such repertoires of resistance link counter-mapping to social movement actions, further supporting our argument that counter-data mapping is the new frontier of media activism and community communication.

Counter-mapping practices have revealed invisibilised, racialised, gendered, and Indigenous communities, linking lived space to marginalised identities, and consequently have challenged hegemonic maps that construct feelings of alarm, alienation, and social control. These practices also contest the erasure of particular challenges faced by communities, such as the threat of contact with outsiders in the case of Indigenous groups, and the racialisation of access to healthcare and housing in the case of Black populations in the US. In hegemonic Covid-19 maps, on one hand, interpersonal relationality was largely erased or figured only as communication of disease, sowing fear of potentially infected “others,” rather than communicating the possibility of finding common ground, sharing experiences, and supporting one another. Counter-data maps, on the other hand, allowed for relational communicative action, as the three counter-mapping projects constructed relationality through mapping private, public, and commu-


nity information, relations, spaces, and territories not visible in hegemonic data maps. In so doing, they created cartographies of resistance against the homogenisation of data that had erased the empirical specificities of intersectional communities at the margins. Through the practice of representing themselves in data and maps, Indigenous groups, Black communities, and locked-down individuals constructed themselves as collective communities occupying physical spaces and reconstructing self-representations. Relating to Santos’ (2021) conceptualization of the interplay between systems of objects and systems of actions, these marginalised communities and individuals have resisted the technological and normative order imposed by hegemonic data and maps—by engaging in symbolic action, creating resistant datasets, and cartographically representing their own communities and territories.

The three case studies were explicitly created to produce qualitative and quantitative data visualisations that represented lived spaces, territories, and health impacts during the pandemic through the lens of marginalised communities and isolated individuals, contesting both marginalisation and isolation through counter-data visualisations. Moreover, the visualisations constructed new social realities through counter-data mapping, calling for state and corporate accountability around intersectional health justice (Brower, 2021; Moriarty et al., 2021).

4.3. Spatial-Relational Counter-Data Mapping Imaginaries

Our third and final question explored counter-data mapping imaginaries. The predominant data mapping imaginary that emerged in all three case studies was a spatial-relational imaginary that revealed and revalued community relationships. In this section, we analyse the contributions of counter-data mapping practices and imaginaries to a new frontier of alternative digital media activism and community communication.

The Data for Black Lives counter-data chart (Figure 1) is a data visualisation (not a map in the traditional sense) that visualises relationships between Black and non-Black people with respect to death rates during Covid-19, enumerated geographically state by state. Black communities have long used counter-data mapping to demarcate community spaces and call for change, harkening back to the civil rights movement when mapping focused on racist policing (Alderman et al., 2021). Spatiality in the Data for Black Lives counter-data visualisation was expressed on the state level, with relationality being expressed through a colour scheme that includes white, green, red, and grey. Red highlights states wherein the percentage of reported Covid-19 cases and deaths for Black people exceeded the percentage of Black people in the total US population. Green highlights states where the reverse was true. White highlights states indicating no statistically significant difference. Grey highlights missing or unreported data.



DATA FOR BLACK LIVES

State	Total positive cases in state	Total deaths in state	Percentage of Black people represented in total cases	Percentage of Black people represented in total deaths	Percentage of total population that identify as Black (census)
Alaska	1479	17	2.39%	0	3.8
Alabama	53587	1121	31.04%	42.73%	26.8
Arkansas	28367	321	21.27%	24.30%	15.7
American Samoa	0	0	0	0	0
Arizona	122467	2237	2.19%	2.86%	5.1
California	320804	7017	2.79%	8.74%	6.5
Colorado	36913	1586	4.68%	6.75%	4.6
Connecticut	47287	4348	13.17%	14.86%	12
District of Columbia	10847	568	49.26%	74.12%	46.4
Delaware	12804	517	25.54%	25.53%	23
Florida	269811	4346	14.17%	19.88%	16.9
Georgia	116926	3001	26.20%	46.35%	32.4
Guam	312	5	0	0	0
Hawaii	1220	19	0.77%	0	2.2
Iowa	35712	750	8.82%	4.80%	4
Idaho	10902	102	1.33%	0.98%	0.9
Illinois	155048	7388	16.68%	26.94%	14.6
Indiana	51612	2760	11.82%	13.41%	9.8
Kansas	18611	284	7.57%	21.48%	6.1
Kentucky	19389	625	8.96%	14.08%	8.4
Louisiana	78122	3416	0	48.92%	32.7

Figure 1. Excerpt of data visualisation titled “Percentage of Black people represented in total deaths per state.” Source: Data for Black Lives (2020).

The statistics quantifying the state-by-state proportion of Black populations more generally served not just to visualise disparate health outcomes but also to make visible the size of Black communities in the US, a spatial-relational representation of existing Black communities.

With red-highlighted states representing a higher proportion than green ones, this quantitative counter-data visualisation renders visible the pandemic amplification of systemic racial inequalities in healthcare delivery. It also suggests that negative outcomes and systemic health racism are not inevitable because a significant number of states had equitable impacts or, relatively speaking, more positive outcomes for Black people.

The counter-data mapping imaginary of Data for Black Lives may thus be characterised as one of Black visibility, with concomitant calls for Black health justice, consistent with the political, intersectional objectives of the Black Lives Matter movement. Further, this may be understood as a key social imaginary constructing a new mode of media activism in the early days of the pandemic lockdown when Black Lives Matter street protests had nearly ground to a halt (Pleyers, 2020).

Indigenous Emergency also aimed to render local communities visible. Through an anti-colonial imaginary, Indigenous Emergency challenged the logic of coloniality by creating Indigenous-owned counter-datasets and counter-maps. Quantitative geospatial maps created by the Articulation of Indigenous Peoples in Brazil collective were constructed using community-developed datasets to address an identified data gap regarding Indigenous Covid-19 cases and death reporting.

The maps revealed inter-Indigenous relations and relations with non-Indigenous populations. In one example, data from the meat-packing industry (Figure 2) revealed how the spread of Covid-19 was amplified through a local workplace, as Indigenous and non-Indigenous workers interacted. Due to inadequate Covid-19 protocols, this meat-packing plant had an outbreak that deeply impacted the surrounding Indigenous communities (Foscaches & Klein, 2020). Overlaying several counter-data maps, Indigenous Emergency highlighted the fact that the meat-packing corporations were not doing their due diligence to protect employees, including Indigenous peoples, which drove up infections in Indigenous territories.

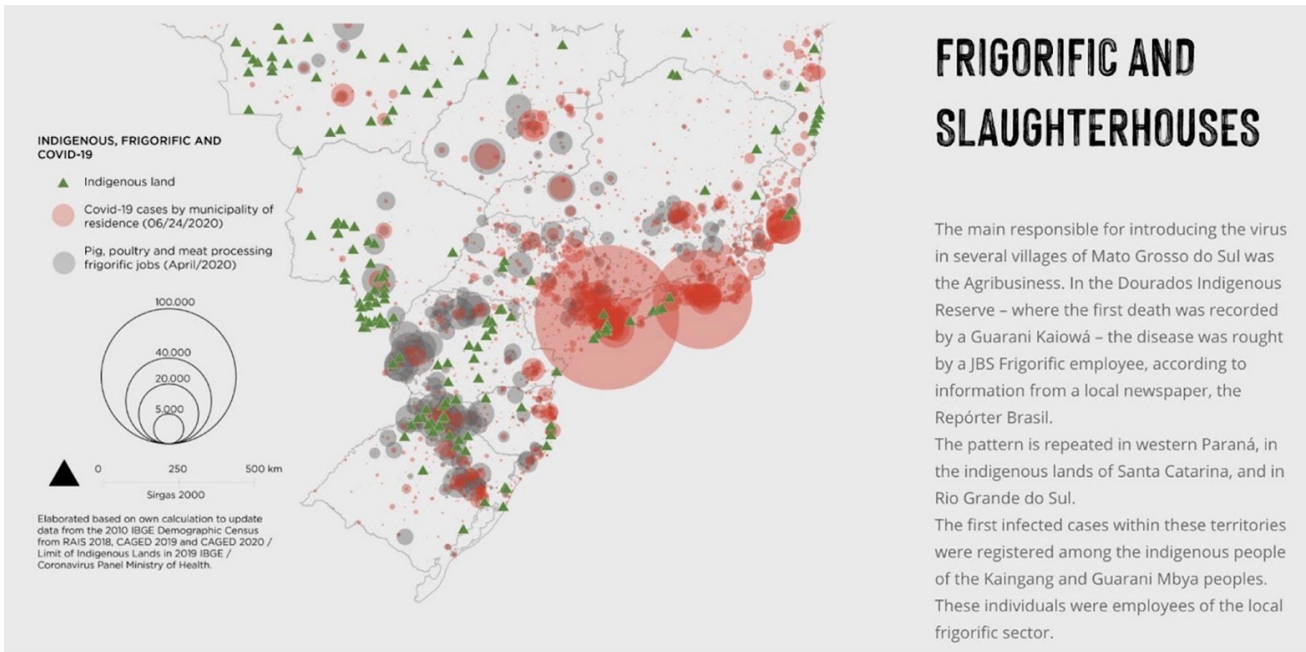


Figure 2. Frigorific and slaughterhouses. Source: Emergência Indígena (2020).

In another map (not shown here), Indigenous Emergency illustrated the relationship between Indigenous peoples and state health workers travelling to remote communities, revealing them as the origin of outbreaks in four different Indigenous territories (Farias, 2020).

The counter-data mapping practices of Indigenous Emergency highlighted relationality and called for intersectional accountability from the reciprocally supporting local state (public health workers) and capitalist (meat-packing plant) institutions. Their data visualisations demonstrated how state and corporate neglect intersected to reproduce coloniality, amplifying Indigenous health and death outcomes.

The CityLab maps were primarily concerned with spatial self-expression within the home and community, including relations to other people, pets, outdoor spaces, birds and animals, neighbours and neighbourhoods, and virtual spaces, all constitutive elements of the communities depicted (Figure 3).

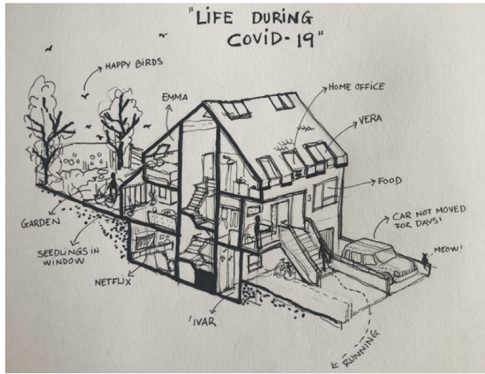
The spatial-relational data-mapping imaginary in the CityLab maps project, exemplified here by Edda Ívarsdóttir’s map (Figure 3), can be conceptualised as several concentric circles of spatial relationships (Figure 4) starting with the relation to self, moving outward toward relations with the space of the home (other residents are named: Ivar, Emma, Vera), including people, pets, and plants, both indoors and outdoors. The representation moves outward toward spatial relations to neighbours in proximity, and those neighbours’ plants and pets, then to spatial aspects of the neighbourhood, which included limited access to grocery stores (here indicated by “food” in the kitchen) and pharmacies, then outward again to circumscribed but pleasurable acts such as walking in the

streets and green spaces such as parks (in Figure 3 hinted at by “car not moved for days”).

At the same time, many of the CityLab maps also depicted boundaries, prohibited spaces, and nostalgic spaces and relations no longer being engaged. Virtual spatial relationality was the outermost circle of spatial relations, extending beyond the circumscribed boundaries in the physical world, often including those prohibited from travelling and thus only seen on-screen.

The three counter-data mapping imaginaries of this multi-case study are depicted comparatively in a data visualisation (Figure 4), with Data for Black Lives socially constructing Black visibility and calls for health justice, Indigenous Emergency socially constructing intersectional anti-colonial and anti-state action, and CityLab maps socially constructing self-expression, interrupting the hegemonic isolation narrative to replace it with one of relationality and interaction.

Counter-data mapping practices emerged as concrete manifestations of the conceptual development of counter-data mapping imaginaries, as inferred through the data appropriations and representations analysed. Data for Black Lives in the US collected data organised by race to illustrate racial inequalities, make Black communities visible, and advocate for health justice. Indigenous Emergency in Brazil reappropriated big datasets and generated more accurate Covid-19 datasets, which were then used to both visualise and visibilise their communities. CityLab maps, while both more hyper-local per map and more global in aggregate, re-imagined how the creation of maps allowed for self-expression during times of isolation, encouraging mapmakers to engage with their feelings, and foregrounding relational experiences in person and virtually.



Edda Ívarsdóttir Iceland

Category: **Domestic rearrangements**
4/5/2020

My map shows my house. After spending weeks staying at home working and learning there, it's like our world has shrunk into it. Only leaving for running and occasional shopping. The city seems so quiet and tranquil, the birds and the cats seem to like it. All the cars are parked in the driveways, which is a nice change.

We live close by a busy street and we feel there is a big difference in noise during rush hours. We see people going out more for biking and running than before. It's overall a positive change. I hope we don't go back to the way it was before, at least not all the way.

Figure 3. CityLab map produced by Edda Ivarsdottir, Iceland. Source: Bliss and Martin (2020).

All three projects have continued to develop their counter-mapping projects, expanding beyond the maps studied in this multi-case study, indicating their continued relevance to our understanding of counter-data mapping, and suggesting a subsequent study; however, that is beyond the scope of this situated analysis.

5. Discussion and Concluding Remarks

During the emergent Covid-19 pandemic, big data was used by global power centres, including states and corporations, to create hegemonic representations emphasising disease and social control. In this context, we find that marginalised communities have been resisting state and commercial control of big data through resistant data appropriation and counter-hegemonic cartographic representations. Through counter-mapping Covid-19 data, they have challenged datafication on an intersectional level across social class, race, Indigeneity, gender, and global location. These counter-data mapping practices and imaginaries constitute a participatory communication process, as theorised in the field of

community communication, wherein communities may express demands for justice through appropriation, production, analysis, and visualisation of data. We argue that counter-data mapping comprises a data justice practice and has become a key form of alternative digital media activism and community communication in the 2020s, a practice we characterise as cartographies of resistance.

Analysing a comparative, multi-case study featuring cartographies of resistance, we have identified four key practices present in all three case studies: the creation of counter-narratives, the implementation of collective action, the insistence on community data ownership, and the engagement in community self-production. These four practices, we argue, are consistent with practices of alternative digital media activism and community communication.

First, spatial-relational counter-data practices were used in the case studies to provide counter-narratives as a form of self-representation by individuals, groups, and communities. These narratives function as a denunciation of the systems of fear and control created by

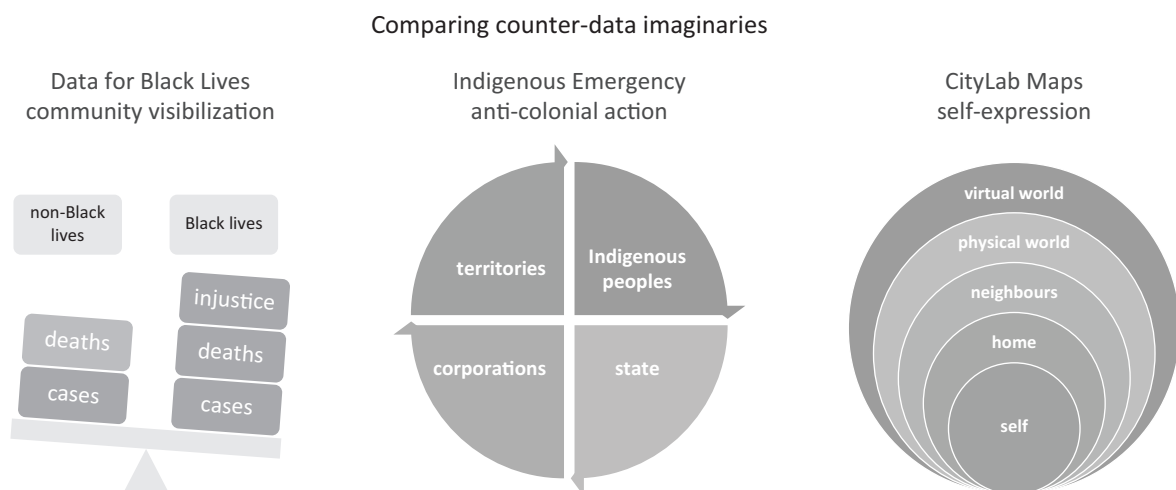


Figure 4. Comparing counter-data mapping imaginaries across the multi-case study.

hegemonic Covid-19 maps, and in their place, develop more authentic narratives about the everyday lives of individuals and communities, rendering local communities visible, literally putting them on the map. Practices of self-representation and providing a voice for the voiceless have long been understood as key strategies in alternative media activism and community communication (Downing, 2000; Rodríguez, 2017).

Second, alternative and community media provide an avenue for collective civic action (Bailey et al., 2008), a role also played by counter-data mapping projects. During the pandemic, counter-data mapping practices had collective action as an objective. As such, they worked at the grassroots to contest the neoliberal top-down management of the pandemic through mechanisms such as increasing state social control, rising corporate profits in the health sector driven by privatised vaccinations, and the intensification of datafication in big tech social media platforms. Collaborative mapping practices were articulated in circumstances of limited social contact, promoting collective well-being and empowerment through mutual aid, key practices and imaginaries in media activism and community communication.

Third, digital and community media activism forms that include data justice and smart cities advocacy have focused on the importance of community data ownership (Boeing, 2021; Dencik et al., 2019). Counter-mapping resistant data appropriation practices similarly exercise collective ownership over data employed for the benefit of counter-mapped communities and territories. Through spatial-relational counter-data mapping imaginaries, the communities we studied were able to reappropriate ownership and control over their personal and collective data, developing digital technologies of the (collective) self for liberatory rather than oppressive purposes, consistent with media activism and community communication practices and imaginaries.

Finally, the communities we studied fostered community self-production in two crucial ways. First, their counter-data mapping self-representation practices created spatial-relational reflections through decentralised and distributive dynamics that relied on collaboration within and across communities producing the community in data and maps. Second, the production processes were collectively organised through mutual aid and solidarity practices, through collaborations and knowledge sharing that were either face-to-face or digitally facilitated. Thus, communities self-organised to produce counter-data maps, simultaneously producing themselves as communities. This dual community self-production process has been well documented in the media activism community communication literature (Jeppesen, 2021).

Counter-data mapping practices, according to these four dimensions of analysis, therefore, tend to follow the logic and practices of digital media activism and community communication (Downing, 2000; Jeppesen, 2021; Paiva, 2005; Peruzzo, 2014; Rodríguez, 2017). Communities engaged in counter-data mapping both

reveal and construct counter-hegemonic social and data-mapping imaginaries. Reproducing the collective dynamics of self-representation seen within community media (Peruzzo, 2008), counter-mapping projects have thus brought into focus the “politics of who or what is and is not represented in the standard datasets” (Bowe et al., 2020, p. 10), while simultaneously foregrounding the malleability of data maps through counter-data actions against platform datafication and data coloniality (Meng & DiSalvo, 2018).

Data justice scholar Milan (2017) has argued that data activism is a new frontier of media activism. Following Milan, taking a communications approach to data and mapping, we have revealed how counter-data mapping intervenes in the field of geography, introducing a geospatial understanding of data activism while integrating map-based data visualisations into our understanding of data justice, digital media activism, and community communication practices. We therefore argue that counter-data mapping is the new frontier of media activism and community communication, with the potential to become an important communicative form of resistance in the 21st century.

Although there may be both continuities and divergences between counter-hegemonic media and counter-hegemonic mapping, counter-data mapping initiatives unveil disparities in access to technologies and the sociotechnical capacities to use them. Digital access is conditioned by social class and often impacted by racialized, gendered, and colonial structures of oppression. Digital divides mean that diverse groups have differential access, not just to digital devices, but also to mapping technologies, social capacities, and the skills, time, knowledge, training, and opportunities to use these advanced geospatial techniques. Moreover, instead of bridging digital divides, technologies often place marginalised groups under surveillance through processes of discipline, capture, and social control, further perpetuating their marginalisation and exclusion, and potentially putting their very lives at risk (Couldry & Mejias, 2019; van Dijck, 2014). Consequently, counter-data mapping addresses not just technological but also social practices of community map-making which can be understood as digital media activism. Counter-data mapping thus shapes new sociotechnical opportunities through further developing the resistant data-mapping imaginaries that have shaped the Covid-19 counter-data mapping practices of the three projects studied. Part and parcel in this are the ways in which participants have created resistant social meanings and imaginaries regarding the communities, spaces, and relationships they live in, move through, and engage with daily.

Finally, this study highlights how data and digitised maps have been collectively appropriated by marginalised groups as a form of counter-hegemonic spatial-relational representation that can be analytically accounted for as a communicative process. Further, it reveals how the complex crossroads between territories

and spaces, human and non-human life, and subaltern datasets and big data can be a terrain of struggle for communication rights.

After the Covid-19 pandemic is over, while crises caused by capitalism's contradictions continue to affect many marginalised communities, the collective capacity and skills to appropriate data to represent, visualise, visibilise, and understand the spatial-relationality of marginalised communities through counter-data mapping will be an important feature of collective political participation, resistance, and social change for the future.

Acknowledgments

This article draws on research supported by the Social Sciences and Humanities Research Council of Canada (File No. 430–2021–00835). The authors would like to thank iowyth hezel ulthiin for proofreading the manuscript.

Conflict of Interests

The authors declare no conflict of interests.

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