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Cartographies of Negotiation: Data and Pandemic Mapping in the Frena la Curva Initiative

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Abstract

The Covid-19 pandemic spurred social movements to prioritise solidarity and collective responses. In this context, counter-maps emerged as a form of data activism aimed at illuminating aspects of the crisis often overlooked in dominant representations. This article investigates the Frena la Curva initiative, which used an online forum and a collaborative map to visualise needs and offers of assistance across Ibero-American countries during the pandemic. Drawing on digital ethnography—including website analysis, map examination, and interviews with activists—the study explores the role of mapping in understanding the pandemic and representing diverse human experiences. We argue that maps became central tools for deliberation among data activists, combining practical functions with symbolic significance for social action. To conceptualise this dynamic, we introduce the notion of "cartographies of negotiation," which highlights the tensions, values, and interpretive practices that shape internet-based maps. This concept foregrounds the distinction between maps as objects and mapping as a situated process. We draw on technocentric and social justice frameworks to examine how activists navigate between technological possibilities and structural constraints, and how their cartographic practices generate new forms of visibility, solidarity, and resistance.

Keywords

Covid-19; counter-maps; data activism; digital communication; Frena la Curva; pandemic maps; social justice

1. Introduction

The Covid-19 pandemic compelled social movements to adapt, combining traditional protest strategies with grassroots networks for mutual aid (della Porta, 2020). These efforts reflect a drive to sustain social cohesion

and seek collective solutions. Solidarity in emergencies typically relies on social justice values, mutual recognition, and organisational adaptability (Smith, 2009). Historically, solidarity has played a central role in combating epidemics by mitigating their impact and controlling infections (Castañeda et al., 2011). The pandemic became a catalyst for mobilising civil society and grassroots data practices for two main reasons. Firstly, the pandemic has generated a substantial data influx, facilitated by high technological penetration and the development of various applications for infection monitoring and tracing (Zhou et al., 2020). Secondly, the nature of the pandemic, with its restrictions on traditional forms of organisation and its simultaneous global and local societal impacts, has spurred technological adaptation (della Porta, 2020; Mendes, 2020).

Maps proliferated at the intersection of data abundance, evolving cartographic technologies, and societal crisis (Micheli et al., 2020; Rosenkrantz et al., 2021). Utilised by diverse stakeholders—including health professionals, citizen scientists, and journalists—and serving various purposes such as managing public services, tracking infections, and identifying risk areas, maps have become a prevalent form of pandemic representation (Gleeson et al., 2022; Mooney & Juhász, 2020). Governmental institutions and tech corporations have proposed using GPS data for social distancing enforcement and infection tracking, raising concerns among activists about privacy infringement and civil liberties (D'Ignazio & Klein, 2020; Kitchin, 2020).

In response, activists have endeavoured to create new narratives about the pandemic through geographic representation (Bowe et al., 2020; Pase et al., 2021). Crowdsourcing platforms enabled communities to share localized knowledge of impact during the crisis (Mulder et al., 2016) while expanded geolocation and territorial data visualisation tools have aided in identifying citizen needs and questioning official data. These platforms have facilitated mutual aid efforts, raised awareness about societal realities, and encouraged the exploration of alternative perspectives (Fenner, 2020).

During the Covid-19 crisis, activists have employed maps to organise social action and identify mutual aid initiatives, shaping alternative pandemic narratives. These counter-maps, often created collaboratively, have served as instruments for solidarity, visibility of personal experiences (Bowe et al., 2020; Criado et al., 2020; Pase et al., 2021), and critical elements for understanding civil society values and interpretations during the crisis (Kent, 2020). However, the use of such maps also raises concerns about the potential reinforcement of stereotypes and increased visibility of certain forms of violence (Fenner, 2020), highlighting the dynamic and negotiable nature of their utility and impact.

We propose the concept of "cartographies of negotiation" to capture how internet-based maps serve as sites of friction and meaning-making, reflecting competing perspectives, values, and power dynamics within data activism. It constitutes a situated analysis of pandemic maps within the broader media ecosystem and an exploration of their capabilities and limitations in fostering solidarity during times of social crisis. Our research addresses unanswered questions about the meanings and underlying motivations of the counter-maps that have emerged during the pandemic.

We use technocentric and social justice not as mutually exclusive types but as heuristic orientations that co-exist and are negotiated in practice. A technocentric orientation foregrounds the affordances of platforms and visual design, treating the map as an artefact capable of scaling visibility and coordination. A social justice orientation foregrounds mapping as practice, situating cartographic work within uneven

capacities, pre-existing networks, and relations of care. Rather than a binary, our argument is that activist mapping during the pandemic typically involves a co-presence of both orientations—often within the same initiative and even the same actor. Cartographies of negotiation names this empirical hybridity: the ongoing work through which activists align ends (what should be made visible), means (data, platforms, validation), and publics (who can contribute, interpret, and benefit) under conditions of constraint and urgency (Crampton, 2001; Kennedy & Hill, 2018; Milan & van der Velden, 2016; Ślosarski, 2023). Figure 1 summarises this analytical framework by positioning technocentric and social justice orientations across the distinction between map and mapping.

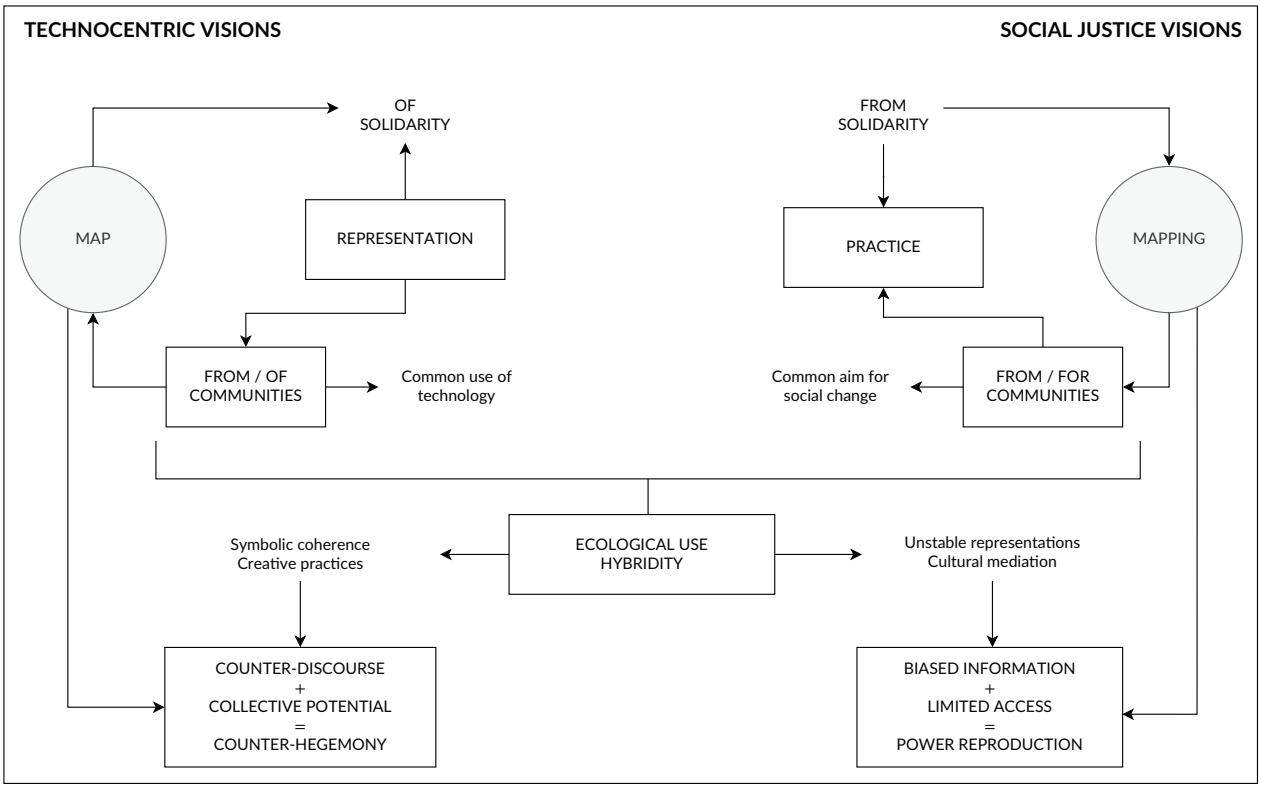

Figure 1. Technocentric and social justice visions in counter-mapping.

To pursue our aim, we connect critical cartographic scholarship with contemporary debates on data activism, recognising that the prominence of big data in everyday social processes also shapes mapping practices and cartographic visualisations. While the notion of "data arenas" (Ślosarski, 2023) highlights the contested nature of data infrastructures and "counter-mapping" (Peluso, 1995) emphasizes resistance to hegemonic geographies, our concept of cartographies of negotiation builds on these by foregrounding the hybrid, processual, and context-sensitive character of mapping as a communicative practice shaped by negotiation between technocentric and social justice visions.

More specifically, given that maps embody specific visions of technology and social order, our inquiry delves into the intentions and objectives of the Ibero-American organisation Frena la Curva (Flattening the Curve, hereafter FLC). We aim to discern the interpretations of reality and the expectations for change held by the activists who created and managed the initiative's maps. This project holds particular significance as it implements a similar solution—territorial visualisation of data on needs and aid—across various countries in

Europe, Latin America, and the Caribbean, providing insights into the local nuances of a global issue. Ultimately, this endeavour allows us to shed light on the multifaceted, holistic, and dichotomous nature of the practices and imaginaries associated with data. To guide our exploration, we pose three research questions:

RQ1: Which values do activists associate with maps?

RQ2: Which roles and centrality do they attribute to maps for mutual aid during the pandemic?

RQ3: Which affordances and limitations do activists identify with maps?

This article is structured as follows. First, we conceptualise counter-mapping and position it as a form of data activism. Subsequently, we elaborate on the findings derived from a digital ethnography of FLC's websites and maps, and interviews with local activists. This approach synthesises insights into their technological imaginaries and repertoires of action regarding technology. Based on the empirical evidence, we conclude that maps functioned as a solidarity artefact with their usage integral to hybrid collective action. For activists, maps primarily served as spaces for ongoing negotiation between the perpetuation of existing inequalities and the potential for appropriating the significance of the pandemic. This dual nature is strongly influenced by an interpretation that views maps as inseparable from mapping as uses and associated practices.

2. Maps, Data, and Representation

Technological innovations play a significant role in shaping contemporary societal identity and symbolic meanings. In this context, data act simultaneously as agents and mediators of social life (Ślosarski, 2023). Data activism encompasses grassroots practices arising from the interaction between civil society, technologies, and information (Milan & van der Velden, 2016). Data activists view technological artefacts as public concerns and engage with digital infrastructures by requesting, digesting, contributing to, modifying, and contesting data (Schrock, 2016). Research has identified two primary branches of data activism: reactive and proactive (Milan & van der Velden, 2016). The former resists the extractive logics and control systems of datafication, while the latter harnesses technological tools to reimagine the role of data for societal benefit. In this landscape, maps are central to proactive data activism (Gutiérrez, 2018) as they visualise data to offer intuitive, spatialised, and actionable knowledge. In doing so, they promote transparency, accessibility, and emotional engagement from civil society (Kennedy & Hill, 2018).

Maps operate within what Ślosarski (2023, p. 10) calls a "data arena": a space of visible, contentious, and cooperative interactions. They construct contingent representations of social worlds (Renzi & Langlois, 2015). While grounded in geography, maps are shaped by the epistemologies of their makers (Dizon, 2020). Their supposed universality often masks their authorship, making it essential to interrogate how natural and cultural phenomena are represented and which narratives are privileged or excluded (Cartwright, 2009). Critical approaches to mapping examine how power relations structure cartographic representations of human experience (Crampton, 2001; Pearce, 2008). Over the past decades, mapping has evolved from a neutral geographic tool into an instrument to visualise and politicise social practices (Cosgrove, 2008). This shift has been deeply informed by feminist, decolonial, and critical epistemologies which frame maps as tools of situated knowledge production. In response to the representational crisis, social geography has promoted action-oriented mapping to address social inequalities (Pain, 2003).

Adopting a collaborative approach transforms maps into artefacts of community self-recognition, enabling negotiation with dominant narratives and representation of territorial realities and everyday needs (Poole, 2003). The term "counter-mapping," coined by Peluso (1995), originally referred to indigenous resistance to government land-use plans. It has since been extended to describe practices that challenge dominant geographies and power structures (Harris & Hazen, 2006). It has been widely adopted in activist and academic contexts as a mode of emancipatory knowledge production (Counter Cartographies Collective et al., 2012, p. 461).

Multimedia and digital tools have radically transformed cartographic practices (Roth, 2021). Platforms like OpenStreetMap and Ushahidi have proliferated, enabling collaborative map-making through GPS tagging, crowdsourcing, and satellite imagery (Gutiérrez, 2018; Poole, 2003). These tools facilitate low-cost, low-code map generation that overlays user-contributed data onto geographic baselines, with interactive features such as zoom, filters, and embedding (Mooney & Juhász, 2020). Our study investigates pandemic-era mapping to understand how activists use technology to visualise crisis—and where these representations fall short.

As knowledge infrastructures, maps encapsulate multi-layered social, political, and technological dynamics (Gutiérrez, 2018). A key analytical distinction is that between map (as object) and mapping (as practice) which together express how activists conceptualise, generate, and circulate data (Ślosarski, 2023). Finally, we situate mapping practices within the dual technocentrism and social justice frameworks. This dialectic reveals the tension between an emphasis on technological solutionism and the critical engagement with inequality, exclusion, and voice (Crampton, 2001; Pearce, 2008). These perspectives coexist within data activism, shaping the values, possibilities, and boundaries of counter-mapping today.

3. Data and Methods

The Covid-19 pandemic presents a compelling context for exploring data activism. Emerging amidst widespread technological integration, social movements were compelled to adopt innovative organisational and protest strategies adapted to the constraints of the moment. This period also prompted a rethinking of mapping tools: Location data became essential for tracing contagion while physical isolation shifted much social activity to digital platforms. FLC originated in March 2020 in Spain, supported by the Open Government Laboratory of the Government of Aragon.

Initially conceived as a citizen-driven platform (https://frenalacurva.net) for disseminating key information and coordinating responses to community needs, the initiative rapidly expanded. Within days, a mapping interface was launched to visualise the growing data pool. The project soon gained traction across Europe (e.g., France, Poland), Latin America (e.g., Argentina, Chile, Ecuador), and the Caribbean (e.g., Dominican Republic, Guatemala). As the pandemic unfolded unevenly across regions—varying in intensity, impact, and institutional response—mapping initiatives offered a window into the global scope and local specificities of the crisis. We selected FLC over other local (e.g., Xarxes de Suport #Covid19, Laguntza) or sectoral initiatives (e.g., Emergencia Antirracista, Listado de Producción Agroecológica) because of its dual nature as an information platform and its rapid international expansion. This combination makes it particularly suitable for analysing mapping practices that reveal the tensions, values, and interpretive processes shaping internet-based cartographies, here conceived as cartographies of negotiation in contrast to other institutional dashboards or mobility tracking maps focused on infection control.

Previous research on FLC has examined the collaborative role of technology and social networks (Criado et al., 2020), acts of solidarity and mutual aid (Martínez, 2020), and the mediating influence of maps (Pase et al., 2021). Building on these studies, our research contributes in two key ways. Methodologically, we extend the inquiry through fieldwork across multiple initiatives, each embedded in a distinct geographical context. Theoretically, we centre our analysis on the imaginaries underpinning these organisations, arguing that specific perspectives shape their data practices. Our research unfolded in two phases and combines digital ethnography with semi-structured interviews. We closely analysed 15 websites and 13 maps from 17 countries in the first phase. We examined textual content and visual elements (such as tables, graphs, and infographics) to identify markers of the cultural ethos informing each initiative. Data collection and review occurred between February and March 2022.

In the second phase, conducted between April and May 2022, we conducted 15 online interviews with FLC members from 14 countries. These individuals had played key roles in the initiative either as creators or as coordinators of core tasks. Using a semi-structured protocol, we tailored questions to each interviewee's profile and national context while ensuring consistency across four thematic blocks: (a) introductory inquiries; (b) general mapping approaches; (c) creation, dissemination, and use during the pandemic; and (d) cartographic interconnections. In total, we gathered 1,109 minutes of recorded interviews in Spanish (approximately 18.5 hours) which we analysed to extract key themes, challenges, working definitions, and contextual differences.

Table 1 provides a comprehensive overview of the initiatives within the FLC framework, encompassing 37 projects across Europe, Latin America, and the Caribbean. However, the scope of our study was limited by two main factors. First, some websites were inaccessible due to broken links or the absence of Spanish-language content during the research period. Second, not all groups with functional websites responded to our interview requests. These challenges underscore the complexity of accessing and documenting decentralised, crisis-born initiatives. Founded under the exceptional circumstances of the Covid-19 emergency, many of these projects operated in precarious conditions. The proliferation of diverse

Table 1. Initiatives of FLC and their participation in the study.

Initiative	Country	Platforms (link)	Interview	Interviewee (date, duration)
FLC Argentina	Argentina	Map: https://ar.mapa.frenalacurva.net/views/map Web: https://argentina.frenalacurva.net	Yes	Virginia Brarda (12/04/2022, 01:28)
Bolivia Solidaria	Bolivia	Map and Web: https://boliviasolidaria.org.bo	Yes	Judith Apaza (21/05/2022, 01:25)
Segura a Onda	Brazil	Web: https://seguraaonda.com.br	Yes	Leonardo Brawl Márquez (03/05/2022, 01:20)
FLC Chile	Chile	Map: https://cl.mapa.frenalacurva.net/views/map Web: https://frenalacurva.cl	Yes	Gonza Reyes (09/05/2022, 01:19)
FLC Colombia	Colombia	Map: https://co.mapa.frenalacurva.net Web: https://colombia.frenalacurva.net	Yes	Luis Hernando Aguilar (20/05/2022, 01:36)

Table 1. (Cont.) Initiatives of FLC and their participation in the study.

Initiative	Country	Platforms (link)	Interview	Interviewee (date, duration)
FLC	Costa Rica (Central America)	Map: https://ca.mapa.frenalacurva.net/views/map Web: https://costaricafrenalacurva.net	Yes	Bárbara Roverssi (21/04/2022, 00:58)
FLC Ecuador	Ecuador	Map: https://ec.mapa.frenalacurva.net/views/map Web: https://ecuador.frenalacurva.net	Yes	David Racines (28/05/2022, 00:42)
FLC República Dominicana	Dominican Republic	—	No	—
Collectif Citoyen	France	—	No	—
La Red	Germany	—	No	—
FLC Guatemala	Guatemala (Central America)	Map: https://ca.mapa.frenalacurva.net/views/map Web: https://www.frenalacurva.org.gt	Yes	César Pérez (21/05/2022, 01:14)
FLC Honduras	Honduras	Map: https://app.powerbi.com Web: https://www.frenalacurva.hn	Yes	Sandra Elizabeth Gomez Ventura (12/05/2022, 01:38)
FLC México	Mexico	Web: https://mexico.frenalacurva.net	Yes	Rosa Cristina Parra Lozano (19/04/2022, 01:24)
FLC	Panama (Central America)	Map: https://ca.mapa.frenalacurva.net/views/map	No	—
Wendá	Paraguay	Map: https://mapa.wenda.org.py/views/map Web: https://wenda.org.py	Yes	Cristhian Parra (13/05/2022, 01:03)
FLC Perú	Peru	Map: https://bellavista.ushahidi.io/views/map Web: https://frenalacurva.org.pe	Yes	Jimena Sánchez Velarde (14/04/2022, 00:47)
FLC Polonia	Poland	—	No	—
Achata a Curva	Portugal	Map: https://pt.mapa.frenalacurva.net/views/map Web: https://achataacurva.com	No	—
FLC España	Spain	Map: https://es.mapa.frenalacurva.net Web: https://frenalacurva.net	Yes	Pablo Ruiz Múzquiz (12/05/2022, 01:01) Marianna Martínez (12/04/2022, 01:57)
Acá Estamos	Uruguay	Map: https://uy.mapa.frenalacurva.net/views/map Web: https://www.acaestamos.uy	Yes	Andrea Apolaro (23/05/2022, 01:08)
FLC Venezuela	Venezuela	Map: https://frenalacurvave.ushahidi.io/views/map	No	—

local communities in response to the pandemic speaks to a remarkable civic resilience, but also suggests that this momentum may not necessarily translate into sustainable structures once the immediate threat has passed.

Our methodological approach draws on digital ethnography, combining the analysis of websites and maps with interviews conducted with key activists. It does not include sustained in-person participant observation or usage analytics which were impracticable during lockdown conditions and beyond our research aims. The analysis focuses on how activists interpret maps and mapping, the values they attach to them, the roles they ascribe in mutual aid, and the affordances and limits they experience, rather than measuring behavioural uptake or community outcomes. This boundary reflects the study's focus on meaning-making and activist practices, triangulated through interviews and online cartographic traces. The approach suits our theoretical contribution, which conceives mapping as a situated communicative practice shaped by negotiation under constraint (Counter Cartographies Collective et al., 2012; Crampton, 2001; Milan & van der Velden, 2016).

4. Findings

4.1. Maps as a Space for Solidarity and Civic Engagement

FLC activists conceived maps as alternative spaces that diverged from visualisations produced by governments and mainstream media. These maps were born from the inventive spirit of social movements during the pandemic and are closely aligned with the values of the activists who created them. References to solidarity and mutual aid were pervasive in project descriptions, exemplified by statements such as: "At present, only a few days since the first cases of contagion, we're witnessing the emergence of numerous spontaneous acts of solidarity. This underscores a civic resilience that embodies the best of our society" (FLC Colombia, web). In this sense, solidarity emerged as the central value linked to mapping practices, revealing the social justice frameworks' foundations in the development of these tools.

The identification of civil initiatives emerged from grassroots efforts intertwining conceptions of maps as representations and practices. In the case of Wendá, one of the categories was titled "offers of help and other citizen initiatives" which illustrates that mutual aid was not only about individual willingness to help but also embedded in broader collective efforts. Activists thus understood maps not only as expressions of solidarity but also as instruments to catalyse broader and more complex dynamics within social movements. As one interviewee said:

> I noticed there was solidarity, but it wasn't reflected on the map. It was through social media posts, comments, conversations among people, groups, even that lady on Facebook, you know? So, in essence, the map was a step forward in that direction. (Acá Estamos, interview)

This perspective connects maps with broader processes of civic engagement, moving away from a view of maps as inherently civic artifacts.

This dynamic gave rise to dual forms of recognition among data activists. On one hand, they recognised fellow social movements mobilised to support citizens, reflecting a shared commitment to social justice. On the

other hand, they acknowledged each other as technologically adept peers organising initiatives under crisis conditions. The presence of maps signalled current action, the legacy of prior networks, and the anticipation of future collaborations. In some Latin American and Caribbean countries, maps appeared even before the first local contagions, as Spanish activists worked with counterparts abroad to initiate the project. Uruguay illustrated this question: The initiative Acá Estamos (Here We Are) deliberately distanced itself from the more common label FLC since, at the time of its launch, there were no local infection peaks to flatten. Instead, the map responded to the immediate social crisis triggered by lockdown measures, particularly food insecurity and unemployment. Thus, the values associated with maps were not static but adapted to different contexts. As temporal representations tied to specific needs, their value lay in visualising issues in order to address them. Unsurprisingly, many maps faded from use as the crisis subsided and the needs of affected populations evolved. Their life cycle followed the shifting realities they captured.

These maps thus emerged within a public health emergency that reoriented the work of existing organisations toward urgent, short-term goals. Furthermore, the symbolic power of maps endured beyond their immediate utility. The connection between cartography and solidarity aimed not only to document a crisis but also to imagine ways to resolve it both in the present and in the future. This was evident in projects that adapted to post-pandemic realities or developed longer-term initiatives such as Calle Idea (Wendá) or Hateblockers (FLC Spain), whose slogan was "flatten the hate curve." For data activists, maps became a record of collective mobilisation under pressure. As their informational relevance diminished, these activists turned to new projects, highlighting a capacity for adaptation and creativity beyond any technological tool and maintaining solidarity as a core value over time.

4.2. The Role of Maps in Mutual Aid and Civic Coordination

Maps helped spatially organise human experience during the pandemic. They enabled the identification of locally embedded actors capable of recognising and responding to specific challenges: "The map is my way of capturing the essence of the territory….I can see how a natural phenomenon is affecting things, and I can pinpoint where and when it's occurring" (FLC Mexico, interview). In this way, FLC articulated distinct narratives of the Covid-19 crisis in each locale with maps serving both symbolic and practical roles, making local realities visible while supporting solidarity networks and coordinating aid. This shows how maps gained centrality in mutual aid efforts by linking symbolic visibility with civic coordination.

The Laboratorio de Gobierno Abierto de Aragón (Spain) provided the infrastructure for the first website and map, launched in collaboration with organisations such as the Coordinadora de Voluntariado. From there, Spanish activists drew on personal ties with counterparts in Latin America so that initiatives like FLC México emerged directly from these connections. The development of FLC's maps was made possible by preexisting networks, especially those centred on citizen innovation and shared values. As a result, maps became part of a cyclical process: They promoted civic action by making social organisations visible while also being shaped by earlier relationships. Citizen innovation initiatives played a pivotal role in producing these cartographies, enabling rapid and coordinated responses to the crisis: "We were able to do it effortlessly, without second-guessing ourselves, because there was no tension; the circumstances were simply present. Obviously, this wasn't a fluke. That's just how networks operate through connections and proximity" (FLC Spain, interview). Here, mutual aid is not only represented but enacted through maps, reinforcing their central role in cartographic development and, in broader terms, crisis response.

During the Covid-19 crisis, data activists categorised civil society organisations into two main groups: those providing help and those expressing needs. This division reflected an implicit understanding of how social movement practices and visualisation are intertwined, particularly in relation to opportunities for mutual aid. However, the dual nature of maps, shaped by both temporal dynamics and spatial shifts, posed several challenges. Because maps required constantly updated data, they became inherently unstable representations of the evolving crisis. This instability, in turn, affected access to specific locations and limited the visibility of private domains. For example, domestic violence (i.e., gender-based violence by men against their partners in the household), exacerbated by confinement measures, emerged as a significant concern among activists. In response, FLC members, drawing on their proximity to data activism, turned to censuses to populate their maps with valuable information.

These challenges underscore that mutual aid maps were dynamic artefacts whose role in citizen organisation lay in their ability to adapt to evolving realities. Still, the use of secondary data sometimes introduced gaps, depending on what was available. Cultural mediators also played a crucial role in the creation of maps by contributing local knowledge. Their importance was reflected in specific map categories such as FLC Ecuador and FLC Peru (see Figure 2) or in the "need with intermediation" category used in FLC Chile and FLC Venezuela. These examples illustrate the blurring of boundaries between online and offline spaces as the initiative, despite operating entirely online, sought to address needs grounded in specific physical locations.

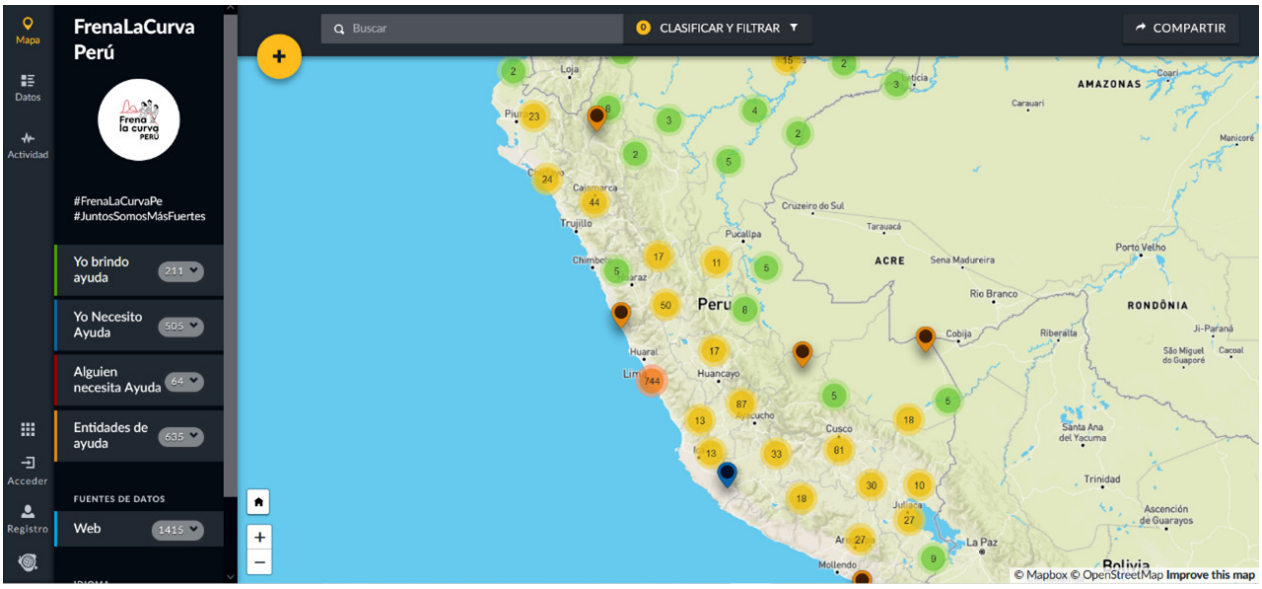

Figure 2. Map of FLC Peru with the category "someone needs help" labelled in red. Source: Ushahidi (2022).

Thus, the mapping process implied a process of cultural translation so that maps played a role in adapting local contexts of mutual aid in digital infrastructures. The online nature of FLC's practices required navigating technological tools and creatively adapting to social distancing policies. Instant messaging groups and video conferences became the primary means of organization, with maps serving as a central component of the initiative's activities. Local projects also used websites and forums to coordinate assistance, offering broader frameworks for managing aid and articulating the initiative's underlying ideals and discourses. As with Ushahidi, the coordination tools were similar across initiatives, typically relying on instant messaging apps (such as WhatsApp for FLC Venezuela) and online video conferencing platforms (such as Zoom for FLC Costa Rica). In practice, not all aid was coordinated through maps.

That is, while maps played a central role in FLC's public communication, they coexisted with other digital artefacts, articulating a broader and more complex ecosystem of mutual aid practices. The pandemic also revealed a hybrid reality that blurred physical and digital space boundaries. Bodies and territories extended into online environments, transforming lived experiences into data. Activists recognised the critical role of digital platforms in identifying and surfacing needs. One interviewee noted, "Mexico is heavily engaged with Facebook culture. Therefore, anything that doesn't exist on Facebook is practically imperceptible" (FLC Mexico, interview). Social networks not only helped disseminate maps but also enabled the collection of data to populate them. Initiatives such as Achata a Curva used online forms like Google Forms to gather information for later inclusion. The tools employed across FLC initiatives evolved in response to the specific demands of each territory, challenging activists to adapt creatively. Mapping also required developing strategies to access informal, face-to-face spaces and digital environments. In this context, maps emerged as constructed artefacts that imposed some coherence on an otherwise fragmented and continually shifting reality.

4.3. Affordances and Limitations of Activist Mapping Practices

The local initiatives, aware of the specific values associated with different digital platforms, predominantly relied on Ushahidi to build their maps. Some activists were already familiar with the platform which facilitated its rapid adoption. As one interviewee explained, "When we began implementation, one of our core team members, a systems developer, proposed utilising the Ushahidi platform for humanitarian mapping" (Bolivia Solidaria, interview). Ushahidi functioned as a ready-made program integrated into the cartographic process. However, its original purpose—mapping post-election violence in Kenya—had to be reinterpreted in each new context. Activists highlighted its key advantages: real-time updating, multimedia support, and collaborative editing. Its adoption reflected an underlying commitment to decentralised information flows and a notion of shared ownership. These affordances revealed activists' preference for collaboration in a distributed manner but also their dependence on pre-existing technological models.

In addition to recognising the affordances of maps, activists emphasised their limitations, with access barriers emerging as the most common concern. These barriers often required technical skills and spare time, posing a significant challenge during the pandemic when digital literacy and availability were unevenly distributed. To address this, initiatives published explanatory documents and videos in public and private online repositories. For instance, the Bolivia Solidaria map included a message inviting participation and providing instructions for adding information. As previously explained, many local initiatives relied instead on web pages and forums dedicated to connecting offers and needs. For instance, Segura a Onda opted against using maps and instead organised aid through a forum structured around territorial divisions (see Figure 3). These platforms provided the infrastructure for logistical coordination, debating mapping practices, and articulating the values behind them. The initiative reported difficulties in finding someone knowledgeable in map usage who could efficiently and reliably develop the map using Ushahidi. This demonstrates that while maps had important affordances, activists also sought alternatives when their limitations became evident. As such, online spaces became key arenas where data activists discussed the role and limitations of cartographic tools.

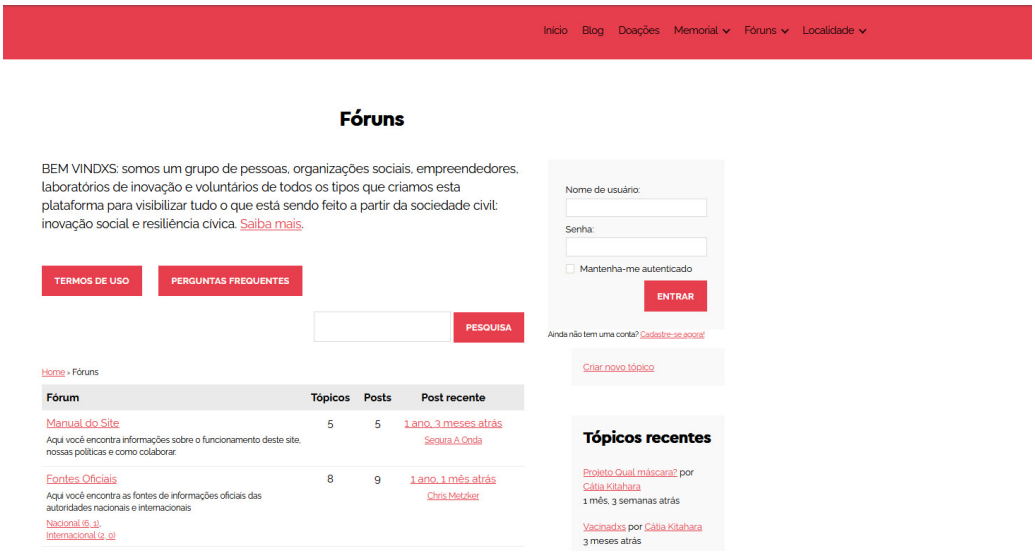

Figure 3. Segura a Onda's forum. Note: The page also has a blog section dedicated to the self-expression of activists. Source: Segura a Onda (n.d.).

While the advantages of Ushahidi were familiar to most activists, they were less accessible to the broader public for whom the maps were intended. Access issues also limited the maps' visibility which compromises their capacity to disseminate aid. Activists noted that minority groups (e.g., women, racialised communities, and people with low socioeconomic status), in particular, were less likely to use the maps, highlighting how technical limitations often pointed to broader structural inequalities. As a result, although the platform effectively organised pandemic-related information, it often fell short in engaging communities with its representations.

These challenges reveal how technological barriers and social justice concerns were inseparable. Bodies, technologies, and territories interacted in distinct ways across different initiatives, shaping cartographic processes and outcomes. Building trust was central to participation, as one activist said, "It's not just a matter of a few months before they trust you and feel comfortable seeking you out and using the tools you were trying to provide them" (FLC Costa Rica, interview). In many cases, the data featured on the maps was curated directly by the activists themselves. This centralisation allowed them to ensure accuracy, prevent the exposure of sensitive data, and validate contributions according to shared principles.

At the same time, the temporal and fragmented nature of social realities made some phenomena difficult to capture cartographically. For example, platforms like Acá Estamos hosted forums discussing psychological support or educational assistance that did not require specific geographic references. This underscores how the utility of maps depended on context and how they were embedded within complex social dynamics, especially during a pandemic that blurred physical and digital boundaries. Then, despite the digital nature of mapping initiatives, physical territory remained a crucial influence. The categories used across platforms reflected different understandings of the pandemic and its challenges. For instance, FLC Spain initially proposed four core categories: "own need," "need with intermediation," "offering," and "available service." In Latin America, however, these categories were adapted to reflect local realities, introducing terms such as "entrepreneurship" (FLC Honduras), "products and services" (Wendá), and "local suppliers" (FLC Colombia), demonstrating the necessity of context-sensitive approaches to mapping.

Here, the limitation lay in the risk of reproducing external models, reinforcing the need for localised, participatory approaches. This process of adaptation also sparked debate around language and representation. An illustrative example was the use of the word “chincheta” (meaning “map pin”) for external communications in Latin America. This term was commonly used in Spain but not widely in other regions. Some activists criticised the uncritical transfer of mapping frameworks from one region to another, calling instead for locally grounded models. As one interviewee remarked:

> I reckon a different kind of mapping could have emerged that’s actually useful for our area. Technology could be a boon for our territory, but not if it’s based on that model. We need to create our own model that springs from local needs and is developed accordingly. (FLC Costa Rica, interview)

The data presented on maps sometimes clashed with political systems, particularly during the pandemic, when some political leaders rejected scientific consensus and downplayed the severity of the virus. As highlighted in interviews with FLC Mexico and Segura a Onda, these discrepancies created a sense of urgency among activists to circulate accurate information in the face of conflicting narratives. At that time, the two countries were led by officials who publicly downplayed the severity of the pandemic: Andrés Manuel López Obrador in Mexico and Jair Bolsonaro in Brazil. Maps shaped alternative understandings of the pandemic and often carried subversive potential by challenging dominant discourses. However, this subversive intent coexisted with a paradox. While aiming to counter hegemonic narratives, activists also acknowledged that the process of creating maps could reproduce biases in representation.

In countries where press freedom was restricted, mapping practices faced additional constraints. This was evident in the case of FLC Venezuela, where only one node could be created (see Figure 4). In such settings, maps became tools for challenging state inaction and drawing attention to unmet material needs. They helped hold governments accountable during the pandemic and revealed the tensions between official discourse and grassroots perspectives. Still, activists recognised that the act of mapping was not free from inequality. Internal dynamics within social movements also shaped how maps were used and what they

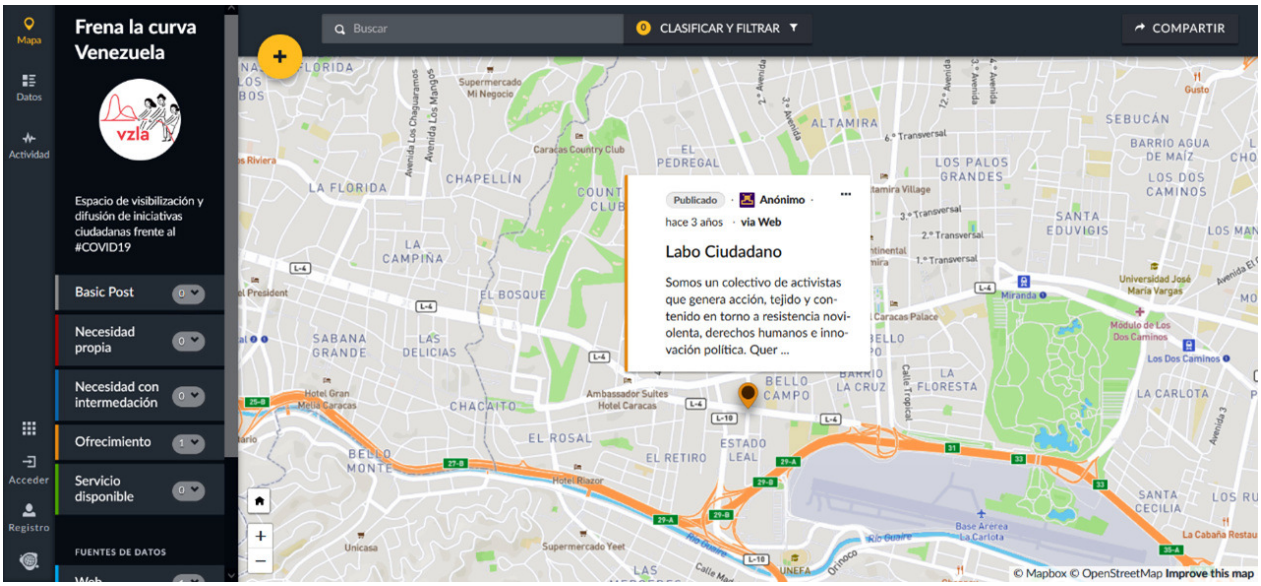

Figure 4. Map of FLC Venezuela with only the “offering” category’s node selected. Source: Usahidi (2022).

could represent. These limitations emphasised that maps were inseparable from broader technological, social, and political dynamics.

5. Conclusion

Maps have emerged as essential tools for understanding the Covid-19 pandemic (Roth, 2021), helping to make visible a range of human experiences and narratives shaped by the crisis. While maps offer accessible and broadly comprehensible visualisations, debates about their meaning and use depend on the practices behind their creation. The use of shared data and internet-based tools enables wider engagement with these visualisations, with each map reflecting a specific relationship between data activists and the territories they represent. This interplay reveals data's material and symbolic dimensions (Ślosarski, 2023).

This article has investigated the role of maps during the Covid-19 crisis by focusing on the case of FLC, a project that produced pandemic representations across multiple locations. Through this case, we have gained diverse perspectives on how maps can address global issues while reflecting local nuances. Our fieldwork showed that debates about maps also involve broader reflections on mapping as a process which, as previous studies have shown, carries embedded values and interpretive frameworks (Cartwright, 2009; Pearce, 2008). We understand maps as spaces of negotiation among data activists and we have aimed to develop this idea throughout the article.

Maps require imagination and creativity, both in their design and interpretation. Their usefulness is highly contextual with emergencies demanding specific actions at specific times. While maps serve symbolic functions, their practical applications are equally important. Activists often associated maps with solidarity, understanding them as tools for representing civil society organisations engaged in addressing urgent social needs (RQ1). Consistent with key literature on counter-mapping, activists described maps as both sources of knowledge and instruments of action (Counter Cartographies Collective et al., 2012; Harris & Hazen, 2006).

Yet the social processes they depicted were not always immediately visible. Maps became instruments of mutual recognition among organisations whose effectiveness depended on preexisting networks grounded in shared values and the capacity to respond to crisis. In this sense, recognition was both a goal and a condition for maps to function effectively. Mapping became both a result of, and a means for, representing collective action. Activists played a specific role in using data and technology to mobilise responses while participating in broader social movements shaped by the pandemic.

Maps were also part of a larger media ecology (RQ2). Their creation and circulation depended on the availability of digital technologies and platforms, shaping their meaning and impact. Websites, for example, helped contextualise maps by framing their objectives and guiding interpretation. Social media platforms played a critical role in gathering data, mobilising participation, and spreading awareness. These digital environments allowed maps to circulate widely but also highlighted the information's instability. Activists' relationships with physical territory increasingly extended into digital spaces, where data about those territories were produced and shared.

Despite these innovations, maps also faced clear limitations. Activists found them valuable for making aid visible and for identifying needs in real time (RQ3). However, maps also served unanticipated functions such

as becoming instruments of counter-discourse and resistance to official narratives that downplayed the pandemic or restricted expression. Still, many challenges remained. Accurately portraying the complexities of lived experience proved difficult, especially under constraints of data availability and accessibility. These tensions raised ongoing questions about how to represent territory and how to address the risks of centralisation in mapping processes.

Within a social justice framework, activists remained critically aware of the risks of reinforcing inequality through technological practices. The spread of mapping tools prompted reflection on who had access to create, use, and interpret them. Latin American activists, in particular, questioned the validity of importing solutions from other contexts, aligning with decolonial approaches to data activism. These reflections underscored the importance of engaging critically with both maps and the technologies behind them. Such critical engagement, however, does not eliminate the underlying inequalities that shape technological systems and social structures. Future research should further examine power dynamics within activist networks, especially in cases where social justice and decolonial concerns are not foregrounded.

In this study, we have proposed the concept of "cartographies of negotiation" to describe how maps act as data arenas where meaning is constructed through practices and representations. Especially during the pandemic, when digital integration intensified, maps became expressions of specific group values and viewpoints. The contrasting perspectives of technocentrism and social justice offer useful frameworks for analysing online mapping practices. These frameworks also help to distinguish between maps as objects and mapping as a process (Figure 1).

The technocentric perspective sees the map as a symbol of solidarity, an artefact that represents unity through technological means. In contrast, the social justice perspective views mapping as a practice grounded in mutual aid, shaped by situated knowledge and lived experience. While the former focuses on the potential of technologies to enable social change, the latter foregrounds the constraints and inequalities that structure technological access and use. Both perspectives are essential for understanding maps as spaces of negotiation as they render visible the tensions, compromises, and possibilities embedded in mapping practices.

Yet our findings do not ask readers to *choose* between technocentric and social justice perspectives. They show how both operate together with shifting emphasis across contexts and over time. This co-presence, along with the practical work of reconciling it, is precisely what we call cartographies of negotiation. Read in this way, Figure 1 functions not as a typology but as a visual aid to the negotiated and co-present orientations observed across the cases. While numerous mapping initiatives emerged during the pandemic—such as the Johns Hopkins Covid-19 dashboard, national mobility tracking visualisations, and regional health heat maps—FLC differed in purpose and structure. Rather than visualising contagion or enforcing control, it foregrounded solidarity, mutual aid, and civic coordination. Situating our analysis in relation to these more technocratic cartographies underscores the specificity of FLC as an activist mapping project driven by values of care and collective responsibility.

By coining the term cartographies of negotiation, we have sought to capture these tensions and highlight maps' dual role as both tools and terrains of struggle. In moments of crisis, such as the Covid-19 pandemic, maps are never neutral. They are shaped by the values of those who produce them, the infrastructures that

support them, and the political contexts in which they circulate. While our analysis focuses on a single platform, this approach also opens possibilities for examining how similar negotiations emerge and unfold across other contexts and mapping practices. Understanding this layered complexity is crucial for analysing past efforts and imagining how future mapping practices might contribute to more inclusive, just, and responsive forms of data activism.

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Conflict of Interests

The authors declare no conflict of interest.

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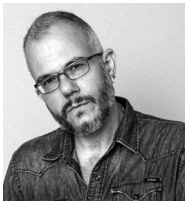

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