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**Caminos de la Villa:
A case study in civic advocacy through crowdmapping**

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My years living in Buenos Aires prior to starting the Community and Regional Program inspired me to take up urban planning as a career. I volunteered with the organization Techo, working with families in informal settlements outside of Buenos Aires to build emergency housing for the most vulnerable families. That work impressed upon me the need to take action in the face of injustice and inspired me to research Caminos de la Villa, a Buenos Aires based project seeking to tackle the many injustices residents of informal communities face.

Abstract

Caminos de la Villa: A case study in civic advocacy through crowdmapping

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The availability and ease with which digital platforms and maps can now be made offers a unique tool for informal communities. Many informal communities have never been “officially” put on the map. Now they can do so through the use of new digital mapmaking and crowdmapping tools. By controlling these maps, they control the narrative of these maps, creating a new tool for communicating with official authorities and people outside the community. This report reviews the directions this trend has taken in the context of Latin America and summarizes some of the key factors that have helped such projects succeed or limited their success. While the focus is on digital crowdmapping platforms that address infrastructure problems, the analysis can potentially serve to inform additional applications of this tool. The majority of analysis centers on the Caminos de la Villa project in Buenos Aires, Argentina, where six different stakeholders in the project were interviewed.

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Chapter 1: Introduction



Figure 1: Villa 31, Buenos Aires informal settlement. From Wikimedia, <http://www.thebubble.com/murder-in-buenos-aires-a-tale-of-two-cities/>.

Latin America's major cities have experienced surging populations for decades, as residents of rural areas and smaller cities pour into the economic powerhouses of the region in search of greater opportunity. Many of these residents arrive with insufficient resources to gain access to the formal housing market. Lacking any other option, individuals and families have created informal urbanization processes that overcome this gap in the market. The results have

been large informal settlements that provide homes to millions, but due to their informal nature, residents find themselves in a tenuous situation at the whim of local and national interests.



Figure 2: Villa 20, Buenos Aires, Argentina. From Clarín, by Andres D’Elia, 2015, https://www.clarin.com/ciudades/villa_20-villa_lugano-visita-cristina_fernandez_de_kirchner_0_rk532LtP7g.html

From the 1960s to approximately the 1980s, most governments in Latin America alternated between ignoring the existence of informal settlements and outright destruction of them. Only in the 1990s did more progressive attitudes in the region begin to shift government policies towards principles of “integration” and formalization. Essentially, this translated into legalization the ownership of land in these communities and their incorporation into the formal urban framework, providing access to public services and connections to the rest of the city. This shift in mindset has provided more resources and attention for informal settlements. However,

integration of these communities has proven challenging even with such additional governmental and civil society resources.

The informal nature of the communities frustrates traditional planning practices. No standardized code regulated the laying out of streets or the construction of homes. There are no records of subdivision plans or utility networks. The detailed data that provides the basis for traditional planning simply does not exist for informal communities. Even where civil society organizations or governments have at one time collected information, the rapid pace at which informal settlements grow and change severely limit data accuracy and reliability.

Thus far, the political promises of full integration for informal communities have fallen flat in many cities. The reasons are manifold, rooted not only in the lack of a solid knowledge base to plan and implement integration processes, but also in a lack of political will and uneven relations of power. Residents of informal communities and advocates have needed to apply constant pressure to governing institutions as they encountered challenges to integration. Integration outcomes have varied by community, with some communities experiencing stabilization, while others have found integration to be an ultimately detrimental process. There has now been enough time since integration efforts first began for those examples to be studied and lessons learned. Informal community advocates are now aware of the need not only to have authorities recognize their responsibilities towards these communities and dedicate resources toward them, but also the need to monitor and guide integration programs to ensure the outcome will support the community and not harm it.

Over the last ten years an increasingly important tool for achieving both these objectives has been digital advocacy. While digital access and literacy is not equal across the region, or even within countries or cities, Latin America has embraced the digital age, particularly through

cell phone use. Social media is just as highly influential in politics for many countries in the region as in the United States. The increased access to the Internet and digital media sources has created a new channel of advocacy for informal communities in the form of traditional media articles, but most pertinent to this research, also in the form of new informational platforms.

Work to document and publicize the conditions of informal settlements has been ongoing for decades; however, this work has typically been confined to the academic, civil society or government circles. Residents of informal communities and the general public had limited access to these reports and databases. As the technological barriers to creating websites and mobile applications dropped, civil society organizations found that these tools could be incorporated into their work with the advantage of potentially reaching a much wider audience than previously possible. Mobile applications could be used in the field to document conditions and changes as they were happening.

Of particular interest for this professional report is open source mapping tools, which allows anyone with a phone or computer to add information on a map that can be shared with a simple url link. Mapping was traditionally a formal process controlled by technical experts working for state institutions. A map was a powerful source of knowledge for those who knew how to read it and also a reflection of the interests of the political institutions that commissioned it. Officials determined what was and, importantly, what was not mapped. Names and boundaries were approved through sanctioned channels and conflicting opinions were ignored. The end result was an influential policy tool that outlined spatial and political landscapes.



Figure 3: ACIJ working with informal settlement residents on a participatory mapping project. From Caminos de la Villa Manual de Replicabilidad by ACIJ, 2016.

Crowdmapping has counteracted this stranglehold on mapmaking by democratizing the process and allowing anyone to be a mapmaker. A modern term, crowdmapping refers to a mapping platform that invites users to add information they would like to see on the map, whether that is a physical landmark or the location of a special memory. These maps are often tied to socially specific spatial phenomena, such as police roadblocks or protest locations. Crowdmapping helps document social phenomena both spatially and temporally, since the digital platform typically records the time at which a feature is added to the map. In this way, the map is a living archive of information available to the public.

The democratic nature of crowdmapping had made it appealing to civic society and it has become a popular tool for working on a number of issues ranging from the environment to transportation and other infrastructure. Widespread Internet access has meant crowdmapping has the potential to reach large sectors of the population, and also enables better coordination on a wider geographic scale. For these reasons and more, a number of crowd mapping platforms have been created in Latin America focused on documenting conditions in informal settlements.

This democratization of map-making through digital tools builds on a long heritage of participatory mapping, which has long been central to community organizing work in Latin America. The principal idea is that members of the community for whom the map is meant to represent work alongside the mapping experts to inform the cartographic process and eventually produce the maps. Incorporation of community insights is meant to result in a more legitimate and representative map. By involving community members in the mapmaking process they can add to the map but also inform themselves about how to read and use a map. The experiences with participatory mapping practice thus contribute critical perspectives to digital map-making, resulting in a hybrid tool with great potential to address social issues in low-income communities. However, the very newness of this tool also raises the question of how and where it is best used and the limits of it.

Camino de la Villa is one such example of a project that combined participatory mapping methods with crowdmapping in order to create an online platform aimed at addressing infrastructure issues in the informal settlements of Buenos Aires, Argentina. From the idea for the platform was conceived in 2012 until 2016, the project underwent a number of phases, with different objectives in each phase. Within four years, it has already passed through three phases, with the move from one phase to another triggered by the recognition that the platform needed to

shift to better meet the needs of the communities and to better serve particular objectives. Caminos de la Villa presents an excellent example of the potential and challenges of digital mapping platforms aiming to achieve social objectives.

THE LATIN AMERICA CONTEXT

Despite being located in vibrant urban centers, Latin America's informal settlements are marginalized and cut off from the economic opportunity and cultural vitality offered by these cities. Instead of being seen as a resource, the communities are seen as a pest that is only begrudgingly addressed. Residents of informal communities often face discrimination and are considered inferior citizens in the city. Though they live and work in the city, they are not treated as full citizens. Basic infrastructure services such as water, electricity and emergency medical attention are often not extended into the community, abruptly ending at the settlement boundary.

The focus of this report will be on the use of digital mapping platforms to address the integration of informal settlements in Latin America. While digital mapping platforms have been used for a number of other objectives in the region, the main focus for these informal settlement-centered projects has been infrastructure provision. Physical integration of these communities has been very difficult for the reasons outlined above. Mapping gaps in physical infrastructure systems is a more straightforward endeavor than some of the more innovative social uses that have also been the subject of mapping platforms. However, in the context of informal settlements even mapping of infrastructure and determining how to address the system gaps has proven challenging and provides a good starting point for learning about how digital platforms can be part of the integration process.

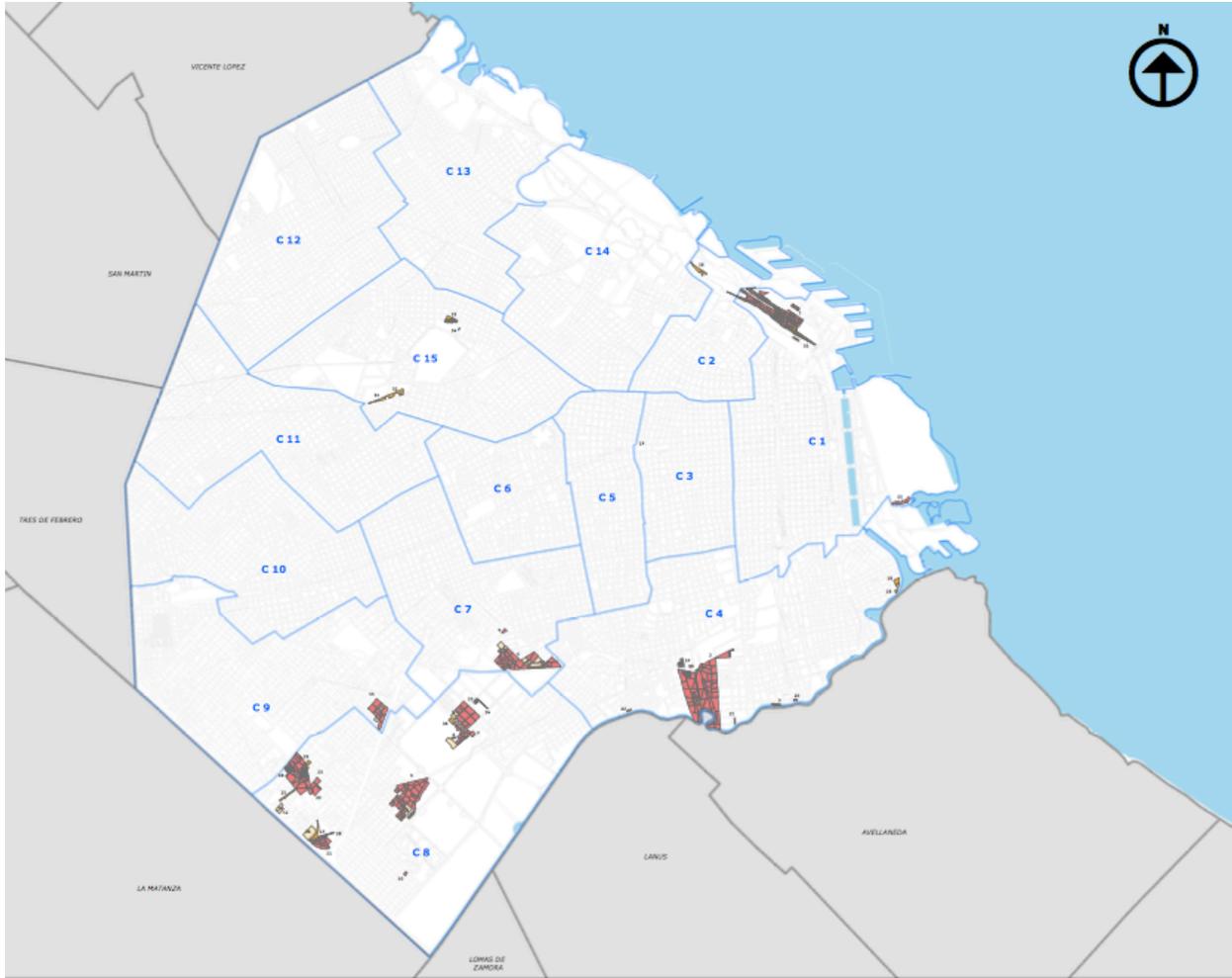


Figure 4: Map of the Buenos Aires federal capital and distribution of the city’s informal settlements, focused primarily in the south. By Buenos Aires City Statistics and Census Department, 2016.

In Argentina’s capital city of Buenos Aires, a bustling metropolis of 12 million, the municipal and national levels of government have only fairly recently begun to operate informal settlement integration programs. As shown in Figure 4, informal settlements are spread throughout the federal capital, with many more located outside of Buenos Aires proper in the metropolitan area. Most of the capital’s informal settlements are concentrated in the south and southwestern portions of the city. The turning point for the city, in terms of villa policy, came during the second term of mayor Mauricio Macri, in 2007. Macri’s first term continued a long

history of government neglect and outright antagonism towards informal settlements. During his first term he called for the razing of a number of informal settlements, an outdated policy when compared with policies in other major Latin American cities at the time. In his second term, Macri pivoted to calling for cooperation with residents and created city departments to lead integration efforts. His successor, Horacio Larreta, would continue with integration policies, which fit well with his overall platform of modernizing municipal governance and infrastructure.

Modernization as a symbol of progress has been a key theme for government actions. There has been a heavy focus on technology to achieve modernization, whether it is through free wireless access in public parks or through creating websites where citizens can easily access city data. Civil society's use of technology to push for reform clearly ties into this trend. Familiarity with different technological and Internet tools has grown exponentially in the region, and Argentina is no different. Argentines have learned how to put to good use the power of technology to document and communicate about important issues.

CAMINOS DE LA VILLA OVERVIEW

Caminos de la Villa presents a fine case study for exploring the potential and limitations of digital mapping platforms for infrastructure improvement advocacy. The initial idea of the project began with staff from the community organization Asociación Civil por la Igualdad y la Justicia (ACIJ) in 2014. The platform was meant to help document infrastructure gaps, in order to provide evidence in the civil justice



Figure 5: Caminos de la Villa logo. From Caminos de la Villa website by ACIJ.

cases that ACIJ was pursuing against the city. However, as the project plans were developed, the realization that there were no reliable official maps of the informal settlements of Buenos Aires shifted the focus on the project. Phase One essentially became an exercise in participatory mapping of all villas, a process that was completed for all 24 communities in just two years. From there, the project leaders educated community members on how to use the platform to mark service gaps on the digital map. When this use did not achieve the effectiveness that ACIJ had hoped for, the organization decided to change the aim of the platform towards providing information rather than gathering it.

The different phases of Caminos de la Villa reflect the project's strengths and weaknesses. While the original intention of the platform was not ultimately successful, the ability of the project leaders to continuously reflect on and adapt the platform to new objectives that is could be better suited to meeting provide an exemplary demonstration of the necessity and potential for digital platforms to be flexible. The limits of digital platforms, without linkage to their greater context, are demonstrated in the project's least successful ventures. Perhaps the latest phase of Caminos de la Villa, aiming at providing information about government integration projects will be able to overcome the platform's previous challenges.

METHODS

The purpose of this study was to examine the potential and limitations of digital mapping platforms as a tool in advocating for improved infrastructure in informal communities in Latin America, and methods included document review and semi-structured interviews with stakeholders in the Caminos de la Villa project. The guiding research questions were:

1A: What was the process of participatory mapping for Caminos de la Villa?

1B: How has the mapping platform been used since the maps were completed and does this align with the original objectives of Caminos de la Villa?

2A: How has the city interacted with the online platform and what could this mean for future urban infrastructure integration efforts?

3A: What other places have used a similar model to Caminos de la Villa and what have been their outcomes?

The first phase of research involved a field visit to Buenos Aires for the semi-structured interviews. This trip was funded by the School of Architecture's Travel Scholarship Fund, which enabled me to do research for two weeks. Prior to arriving in Buenos Aires, I contacted ACIJ to set up interviews with staff members. I created an interview protocol in Spanish to elicit their experiences with Caminos de la Villa, their involvement in the work (for example as participants the mapping process or observers from the city), and their perceptions of the project, in particular how and why they felt Caminos de la Villa had succeeded or failed and what the future held for the project. During my time in Buenos Aires I was able to complete six interviews: three with ACIJ staff members, two with staff from Wingu, the nonprofit that provided technical support to Caminos de la Villa, and one with a city official in one of the city's integration departments. All six interviews were transcribed once I returned to Texas and then they were coded for common themes and insights. After reviewing the themes of each interview, a master document of the most common themes to emerge was created and guided the next stage of research.

Document review was used to support and expand upon the findings from the stakeholder interviews. The term document is used loosely since one of the important category of items to review included the online platform's website and mapping application. In addition to analyzing the platform, press releases, media news articles and ACIJ reports and manuals were examined.

PREVIEW

This report is broken into one theoretical framework chapter, a chapter dedicated to Caminos de la Villa as a case study, an analysis chapter based on the case study, and finally conclusions. Chapter 2 will expand upon the themes of urbanism and informality in Latin America. The history of the region and evolution of public policy towards informality provide a foundation for understanding the issues at stake. Filling out the theoretical chapter will be a summary of the practice of participatory mapping and use of digital platforms for community planning are laid out as the precedents from which the Caminos de la Villa project draws inspiration. Chapter 3 will then dive into Caminos de la Villa as a case study in advocating for infrastructure upgrading through a digital mapping platform. Thematic findings and analysis of the case study will be explored in Chapter 4. In the final chapter, there is discussion on the lessons learned from Caminos de la Villa and possibilities for applying these lessons elsewhere.

Chapter 2. Theoretical Framework



Figure 6: Informal settlement against the modern Buenos Aires skyline. From Vamos Spanish, <https://vamospanish.com/villas-buenos-aires-argentina/>.

INFORMALITY IN THE DEVELOPING WORLD

Informality is not a new condition. Informal settlements is a term used to denominate communities that violate legal land ownership principles, that is to say act as squatters in contradiction to individual property rights. However, there have been self-building communities living on the margins of formal areas for as long cities have been built. What has changed is the rising perception of such communities as a threat to the order of the formal network. With the rapid growth in informal settlements, international organizations and non-profit actors have

started to push for more progressive policies for integrating these communities, and in particular for providing housing (Sutherland, Braathen, Dupont, & Lier, 2016).

Mainstream planning policies were adopted across the globe in the last century, and many of these traditional planning policies have been shown to contribute to the growth of the informal sector (Sutherland et al., 2016). The conceptualization of informality is relatively new and reflects the maturation of theories about formal urban planning. In many countries, large portions of the population and urban spaces exist outside of formal oversight. In such communities, the formation of urban spaces for living, recreation and commerce is limited only by each individual's ingenuity. With the recognition that planning contributed to the problem of informality, there has also been a rising chorus of voices offering new planning methods to assist and "solve" the problem of informality (Watson, 2009).

In the Latin American context, informality has been a pressing topic for the region's major cities since the explosion of urban growth starting in the 1950s. As gleaming, modern city districts have evolved in the region, the informal city sectors have mushroomed with the surge of migration from rural areas and neighboring countries. As informal settlements have matured and cities continue to grow, private real estate interests are increasingly calling on cities to redevelop and manage informal settlements, which is in turn putting pressure on residents to relocate to more remote locations (Yunda & Sletto, 2017).



Figure 7: Demolition of an informal settlement. From Agencia Paco Urondo, 2017, <http://www.agenciapacourondo.com.ar/sociedad/villa-20-los-vecinos-le-exigieron-larreta-que-cumpla-con-la-urbanizacion-del-barrio>

Residents of informal settlements have been marginalized and largely left voiceless in the creation of the modern city. However, drawing on the work of the philosopher and sociologist Henri Lefebvre and the geographer David Harvey, there have been increasing calls for the recognition of each urban dweller's Right to the City. In 2016, the United Nations Habitat III conference resulted in a New Urbanism Agenda that explicitly outlines the Right to the City as a guiding principle (United Nations, 2017).

In Latin America, the recent history of informal urban settlements has been marked by several political phases. Initially, the first surge of informal growth was largely ignored. As it became evident that these communities were not temporary, more antagonistic policies arose that often quite literally called for eradication of the communities. Despite these antagonistic policies,

the growth in informal communities did not slow and eventually governments across the region began to realize that as permanent fixtures of the urban fabric it would be best to integrate informal settlements with the formal city. In the last few decades, cities across the region have struggled with how to integrate informal settlements in a sustainable fashion. Now the results of different integration policy approaches can be evaluated, and the results have been mixed. With the concept of the Right to the City now at the fore, informal settlements challenge their lack of public services and governments are slowly accepting the obligation to provide a full array of services for these communities.

PARTICIPATORY MAPPING AND CROWDMAPPING

Maps are typically seen as static neutral tools for purposes of spatial orientation and the development of spatial knowledge. However, the elements present in each map are carefully selected and arranged with different elements given greater visual prominence than others. This deliberately constructed visual representation presents the viewer with a specific story. As explained by Harley, maps are not value-neutral objects but rather reflections of the interests and world-views of their makers (1988). While cartographic representations are more visually oriented than text, they are nevertheless highly structured presentations of pre-selected information. The map tells the viewer a specific story through its visual composition, typically reflecting political and commercial interests.

Historically, maps required a high level of skill and resources to create, which meant that very few people could commission a map or participate in mapmaking. The ruling elite controlled the production and hence the stories told by maps. The maps they commissioned were used to demonstrate their power and highlight what they felt was spatially and culturally important. The exclusion of lower socio-economic and other marginalized groups from

mapmaking meant that maps were but another means by which dominant power structures could be reinforced (Peluso, 2011).

Modern technological innovations have made mapmaking accessible by lowering cost and knowledge barriers. There are now a number of free or low-cost mapmaking applications available, and with new digital and online tools, the need for technical mapmaking knowledge has been reduced. These transformations have meant that many more people can overcome economic and technical barriers to make maps and alter their content and message.

One of the most important trends in recent mapping history has been the increasingly widespread use of online mapping and geolocation services by everyday people. This trend has been in part the result of flourishing smart phone use and coverage (Rodríguez-Amat & Brantner, 2014). Accessing a map or making one's own map by adding geolocated points of interest is within the grasp of any smart phone or laptop user with an internet connection. In a digital map the viewer can interact with the map, click on a denoted point for more information, or toggle on and off different layers of information. And most importantly for the purposes of this research, viewers can now add their own information to a previously created map.

The idea that any individual might access a map and alter it at will has resulted in a new wave of mapmaking. It creates whole new worlds of use and opportunity with maps. Whereas before maps were representations developed by established powers, now alternative voices can also represent their viewpoint in map form. Mansourian et al. (2011) describe these innovations as creating a new informational channel between citizens and government. Elwood also focuses on the potential for political empowerment that comes from increased community access to mapmaking (2002). New borders and socio-spatial patterns can be drawn and tell a new story, one that the official maps ignored or purposefully evaded, turning maps into radical tools.

Moreover, these new accessible digital maps have almost no limits in their distribution; they can be viewed from across the globe.

Digital innovations in mapmaking, while influential in creating greater inclusion in the mapmaking process, owe much to the theory and practices of participatory mapping. Before the creation of digital mapping applications, experts recognized that typical mapmaking processes were exclusionary and they sought to overcome this with the development of participatory processes to accompany the mapmaking process. The call for participatory mapping with community members also drew on growing recognition that local knowledge is legitimate and valuable, but often overlooked in traditional top-down planning processes (McCall & Minang, 2005).

Participatory mapping seeks to overcome the bias of traditional mapping by creating maps by and for marginalized and neglected social groups. This has largely focused on mapping in poor and indigenous communities across the world. Cinderby et al. view participatory mapping as the merging of expert and experiential knowledge which results in a more comprehensive perspective (2008). During a participatory mapping process the expert mapmaker collaborates with community members to create a map that better reflects the views and needs of the community. Elwood points to the importance of participatory mapping as a form of knowledge creation (2006). Maps created with these communities are representational tools that often have one or two purposes. The first is to literally put the community on a map and identify the significant landmarks and other interest points in the community; the main audience for the map is the community. However, the map can also be created with the goal of using it as a community advocacy tool in negotiations with political authorities.

One of the historic constraints of participatory mapping was the need for an expert's help with the GIS processing or other technical dimensions of mapmaking and distribution. The technical precision and analysis capabilities of GIS can be useful for community planning; however as Sliuzas (2003) and Ghose (2003) warn, the use of such technology can also be alienating to communities if communication channels are not properly established that incorporate community input. In Dunn's review of the emergence of Participatory GIS (PGIS) processes, she explains that PGIS arose from a social critique of the technocratic focus of traditional GIS methods, but that the practice has struggled with determining how and who should be part of a PGIS process (2007).



Figure 8: Caminos de la Villa participatory mapping workshop. From “Primero Jornada de Mapeo Participativo...” by Caminos de la Villa Blog, <https://www.caminosdelavilla.org/blog/1-jornada-de-mapeo-participativo-%C2%A8dando-vida-al-mapa-de-cildanez%C2%A8-en-la-manzana-a-del-barrio/>.

Maps have power in how they depict a place and the story they choose to tell. Crowdmapping is the term that has arisen to describe a new digital mapping tool that allows

viewers to add information themselves to a publicly visible map. “Crowdsourcing is radically transforming the acts of making and using maps, fusing what were traditionally two separate practices, and altering fundamentally the political economy of the cartographic industry (Dodge & Kitchin, 2013).” Crowdmapping is a dynamic tool for not only engaging communities but also giving them power in their own planning processes and how they present themselves to the outside world. Some authors argue that crowdmapping can be a process for community identity formation (Rodríguez-Amat & Brantner, 2014). Digital platforms provide an additional avenue for community organizing and collecting and sharing data, calling attention to communities with the authority of a much larger participatory base than a traditional mapmaking process.

Crowdmapping functions by accumulating individual user posts on a collective map. These posts can contain any kind of information from an icon to text to a photo. The map can show the posts in the aggregate or categorize posts by time or different established groups. Information about the user can be included or not and typically access to crowdmapping maps is open to anyone with the stipulation that they create a user profile.

However, while the democratic nature of crowdmapping is celebrated, it can also have its drawbacks. Users are self-selected and their knowledge of the site and goals of the map may vary. For a crowdmapping platform to be robust, it typically requires a large base of regular users who can provide good coverage of the geographic area and accurately reflect the variety of interests at stake. This is practically impossible to verify, which means such crowd-sourced maps must always be considered with a critical eye, as Dodge and Kitchin highlight (2013).

Crowdmapping platforms have begun to be used for a wide variety of purposes in the context of international development and the Global South. One particularly popular platform has been Ushahidi, an open source crowdmapping application that started in Kenya as means of

mapping political unrest following national elections. Many of the crowdmapping platforms have a temporal political goal, aimed at relaying time sensitive information. However, crowdmapping can be used for more than documenting political turmoil. One of the most extensive uses of crowdmapping in the developing world has focused on natural disasters. Emergency response and disaster management projects have started adopting the tool as a quick means of gathering data about potential areas that could be affected, such as the location of buildings within floodplains. After a disaster, information can be collected to assess the severity of damage and prioritize where resources should go.

Achieving success with crowdmapping platforms is not easy and requires consideration of a number of factors, including the necessary partnerships between stakeholders, careful consideration of the responsibilities and capabilities of participants, and realistic expectations as to what the platform can produce. Partnerships typically will include the community, a sponsoring civil society organization and a combination of additional civil society groups or government entities. The configuration of relationships between actors, marked by their level of communication and division of labor in regards to the crowdmapping project, can be a strong determinant in the success of the project. Each actor must be capable of shouldering the burden they take up and maintain communication with the other actors.

As crowdmapping platforms often aim at improving citizens' knowledge of state projects and push for accountability by public officials, there is often tension with local governing authorities and concerns on the part of official that such community efforts infringe on the domain of the state (Rodríguez-Amat & Brantner, 2014). Therefore consistent political support and communication with authorities are keys for success (Hoyt, Khosla, & Canepa, 2005). Community creation and use of crowdmapping data can provide a significant channel for

improving governance (McCall & Minang, 2005). However, while crowdmapping is often a response to government negligence, government cooperation or support is also often necessary for achieving the desired outcomes.

Once the crucial relationships are established, community participation becomes crucial to creating a legitimate crowdmapping process. But who should participate? How should they participate? What are the expectations of participation? All of the typical difficulties associated with participatory processes arise (Dunn, 2007)(S. Elwood, 2006). In particular, while crowdmapping allows for widespread participation, such projects often look for specific data from a specific audience. The creators of a crowdmapping platform must keep this in mind, and also consider what they are asking from the participants, as participation requires time and effort. One issue that crowdmapping platforms face is questions about the reliability and continuity of their data (Dodge & Kitchin, 2013). The reliability question is due to the limited control over who participates and the continuity question is often tied to the return that participants feel for participating.

Ultimately, crowdmapping platforms need to recognize that though the theoretical possibilities of participation and data collection are limitless, most projects are grounded in contexts where the realistic level of participation and data collection is limited. These processes can be difficult since they require balancing a potentially alienating and technical process with a participatory democratic goal (Ghose, 2003). Training and communication are of the utmost importance in setting up a platform for success (Sliuzas, 2003)(Dunn, 2007), as illustrated in several cases throughout Latin America.



Figure 9: Por Mi Barrio Front Page. From Por Mi Barrio website.

LATIN AMERICAN CASE STUDIES

In 2014, a transparency non-profit called D.A.T.A launched Por Mi Barrio (For My Neighborhood) in Montevideo, the capital city of Uruguay. The digital platform was based on the open source software of Fix My Street, a British program (“Case study: Por Mi Barrio / mySociety,” n. d.). Por Mi Barrio allows users to register different public infrastructure

Both Por Mi Barrio and Tá No Mapa are examples of successful urban crowdmapping efforts and demonstrate how digital mapping can be used to achieve different goals for different audiences. In the case of Por Mi Barrio, the project is focused on improving public infrastructure across the entire city by marking issues on an existing city map. In contrast, Tá No Mapa is focused on creating the basemap for Rio de Janeiro's many informal settlements. Civil Society groups sponsored both projects; however, D.A.T.A is a transparency-focused organization, while AfroReggae is a cultural organization. Collaboration with outside partners was key in both projects, but in Uruguay the collaboration was directly with the government, while in Brazil AfroReggae found corporate partners to provide the support and tools needed. This influenced the technical platform used since D.A.T.A chose to build its project around an open source application, and AfroReggae relied on Google's proprietary technology. In terms of community participation, D.A.T.A has used some marketing to draw attention to the platform, and provides directions and training on the website. AfroReggae has focused on specific favelas that are to be mapped and provided in-person training to selected community members who will be in charge of mapping.

Both these cases exemplify the necessity of strong partnerships outside of the core partnership between the community and civil society sponsor. Detailed information about the participatory processes and trainings for these programs was not available online. However, from what is available it is clear that Por Mi Barrio has carefully considered how to maximize citizen participation through a closed loop communication process that lets citizens know when their registered complaint has been addressed by the city. AfroReggae has been selective in who participates; investing time in training those individuals so that the information they gather has

greater validity. With both projects, it is important to highlight that participation created impactful results for those who contributed to the platform.

Chapter 3: Caminos de la Villa



Figure 11: Aerial view of Villa 31. From El Pais, 2016,
https://elpais.com/internacional/2016/08/30/argentina/1472565308_299661.html.

THE BUENOS AIRES CONTEXT

As the political and economic capital of Argentina, Buenos Aires experienced waves of migration from the interior and outside the country from the 1930s up to current day. Migrants from the interior typically came from rural agrarian areas, but also from other minor cities. In addition, Buenos Aires has a long history of immigration from European countries and its neighbors, in particular Bolivia and Paraguay. The common thread for all these migrants was the chance of a better life in the big city. Buenos Aires though was not prepared to accommodate these new hopeful residents.

As the formation of informal settlements accelerated, these new communities were termed *villas miserables* or miserable villages. The term was later shortened to villa, the still popularly used name for informal communities throughout the country. Public concerns about the villas saw them as centers of lawlessness and disorder. There was little sympathy for residents, who were viewed as part of the problem, not victims of it. Accordingly, the initial government policies towards informal settlements were to either ignore them since they were unsanctioned neighborhoods or to eradicate them if neighboring communities voiced strong enough complaints.

Villa 31, the first modern-day informal settlement in Buenos Aires, was established in the heart of the city, near the port entry for migrants arriving by boat. Research into the beginnings of the community in the 1930s suggests that the first residents were European immigrants, shifting to native Argentines and other South American nationalities only towards the second half of the 20th century (van Gelder, Cravino, & Ostuni, 2016). The community has been a political hot potato for decades, with various attempts by different government officials to demolish it. Villa 31 is emblematic of the deep history and legacy of resistance that exists for the informal settlements of Buenos Aires. Today the community is home to over 40,000 residents, who live in a dense informal environment, surrounded by the modern formal city.

In Buenos Aires, destructive government policies continued for far longer than in many other major Latin American cities. Not until Mauricio Macri's second term as mayor of Buenos Aires from 2011 to 2015 would the city experience a significant shift in the government's policies towards the villas. Macri came into office as a social conservative and pro-business politician. He pushed for progressive policies in the areas of transit and technology for the city, but prolonged the policies of neglect towards informal settlements, despite a rising social outcry.

There was a sudden about-face in policy though as Macri went into his second term. The city began to negotiate a new integration approach with leaders of Villa 31, and entirely new city department was formed just to administer the program. Additional efforts to coordinate integration of the other villas were also started in Macri's second administration. As Rosario Fassina explained during her interview:

We went from the same party that had spoken about eradication and in less than seven years they were talking about urbanization ... the government itself wanted to start to adopt all the concepts that civil society had been using for a long time. They picked up the glove and started to talk about social-urban integration, problems in the villas, etc. In parallel, they started to announce giant real estate projects, the coincidence; each one was tied to the villas they had decided to start urbanizing. (Fassina, ACIJ)

In 2015, Macri was elected president of Argentina and a new mayor stepped in, Horacio Larreta. The new administration came from the same political party as Macri and followed through on the policies established in Macri's second term. In terms of policies towards the villas, Larreta expanded the city's efforts, going so far as to build an office in Villa 31 as a sign of his willingness to integrate informal communities. Additional city departments were created to handle integration efforts and the city's official policy towards informal settlements was one of formalization.

However, before the government began its efforts, civil society organizations in Buenos Aires had put up a long fight on behalf of the informal settlements. One important organization involved in the fight is ACIJ. Founded in 2002, ACIJ's mission is to promote democratic principles and basic rights for all citizens. Their work has focused on increasing government transparency and responsibility through legal actions and reports.

ACIJ's work with informal settlements prior to the Caminos de la Villa project was focused on bringing legal action against the government for failure to uphold its service

provision obligations to villa residents. ACIJ established working relationships in informal settlements throughout the city. They would then ask residents to identify where they lacked services that the government had promised to provide. Lawyers from ACIJ would then bring the issue to court. Through this work, ACIJ formed good relationships with leaders in Buenos Aires' informal settlements, but they did not foster a positive relationship with city staff.

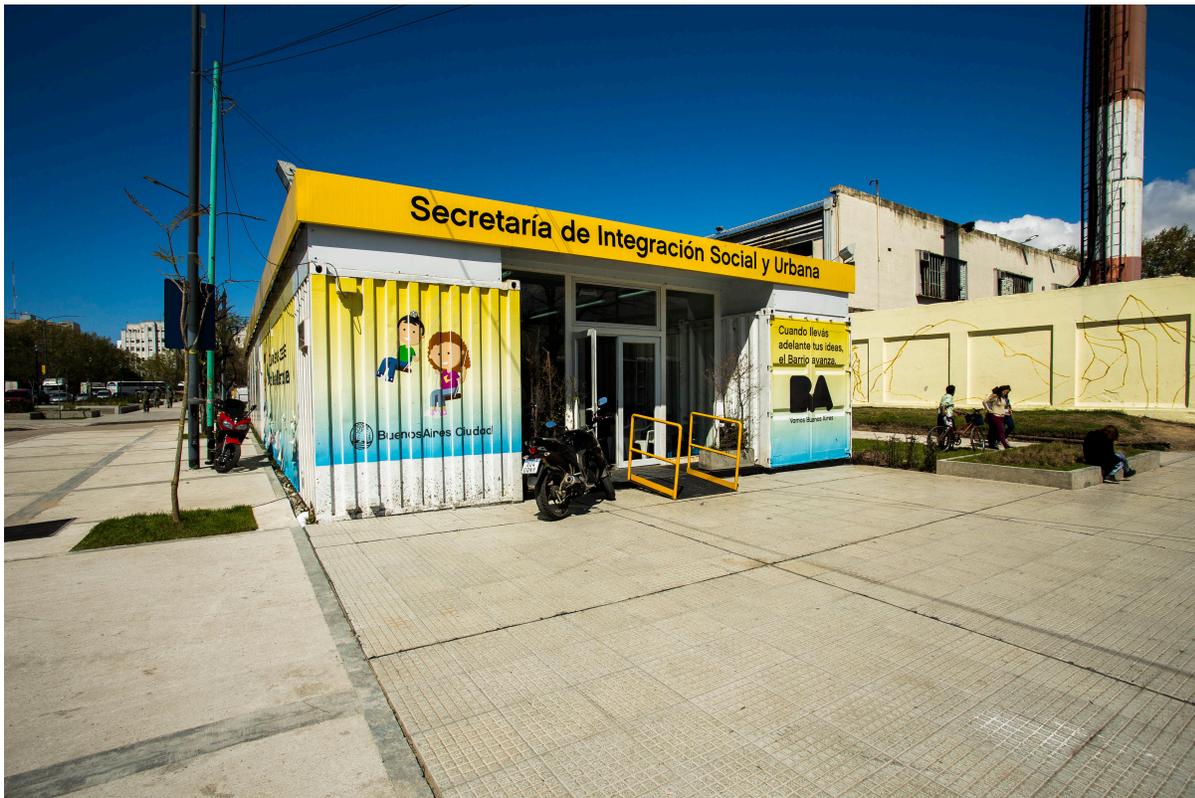


Figure 12: New city department heading Villa 31 integration. From City of Buenos Aires website, <http://www.buenosaires.gob.ar/jefaturadegabinete/secretaria-de-integracion-social-y-urbana>

CAMINOS DE LA VILLA PROJECT HISTORY

Caminos de la Villa was originally conceived as a tool to assist with the legal work already being pursued by ACIJ. The project was first discussed as an uncomplicated platform where community residents could register service gaps on a map to provide supporting evidence

for ACIJ's legal cases. According to Rosario Fassina, "The idea was simply to develop a platform that allowed us to georeference problems and transform that into diagnostic reports for each community in order to see if it was necessary to go to court for some of these problems (Fassina, ACIJ)." It would essentially be a finite tool for ACIJ's use. At the start, there was no consideration for mapping or using the platform to reach a wider audience.

For the creation of Caminos de la Villa, ACIJ called in the assistance of Wingu, a non-profit that specializes in providing technological assistance to other non-profits. Wingu was put in charge of creating the online website and tool. Staff from ACIJ would be in charge of day-to-day management of the site with Wingu on call for any necessary maintenance or platform tweaks.

While the project was initiated by ACIJ and implemented by Wingu and ACIJ staff, the content of the platform came from residents of the villas. The participation and use of the platform by residents was the key ingredient in the development of the platform. ACIJ's previous work with informal settlements throughout the city meant that the relationship between the groups was already strong and as a result, organizing workshops on the creation and use of the platform was a relatively straightforward and simple process.

The final component required was funding for Caminos de la Villa. Ultimately the principal source of funding came from the Avina Foundation, a Latin America-based non-profit organization dedicated to promoting sustainable development projects and groups. In addition to funding from Avina, ACIJ acquired some monies from the New Zealand Embassy located in Buenos Aires.

At this stage of Caminos de la Villa, the assumption for the project was that most of the work would be in creating the online platform and in training residents to use it. ACIJ staff only

realized later that before they could launch a platform they would have to create the base maps residents needed to register complaints. Prior to 2016, the official maps of the city showed grey blank space where the villas were located. Nonetheless, ACIJ staff knew from experience that the city had unofficial maps. When they requested these, they found the mapping incomplete and often extremely out of date, often based on very old paper maps. Given the high rates of growth in the communities these maps could almost automatically be assumed to be unreliable.

This lack of accurate official maps led to Caminos de la Villa's first pivot. ACIJ and Wingu staff shifted their focus from platform organization to a participatory mapping process that would allow them to properly document the layout of each community. A number of mapping projects inspired this early development of Caminos de la Villa, including two examples in Latin America, and one in Kenya. ACIJ was already familiar with a local group called Turba that worked with youth in Villa 31 to create the community's first open source map. In Brazil, ACIJ reached out AfroReggae, the non-profit organization that had created the project Tá No Mapa (It's on the Map) to map local informal settlements in Rio de Janeiro. Wingu reached outside of the region to Map Kibera, a digital open source mapping effort by a group in Kenya.

The pilot-mapping phase mapped five of the villas in five months. ACIJ started the process with each community by contacting the community, or, if the community was very large, a sub-section of the community, and then organized meetings to present the project to residents. Up to five meetings would be held prior to starting the mapping. The meetings served to familiarize neighbors with the project and also provided an opportunity to train mapping volunteers. Mapping was achieved through the use of a GPS device and marking a physical map. Once information had been collected for a block of the neighborhood it was georeferenced and

the GPS and physical map markings were cross-referenced. As Martina Lewin Hirschhorn said, “ACIJ had already been working [in many communities] and already had contacts, they would go over the entire neighborhood with the GPS marking the path and the waypoints and also tracing it with a paper, making marks by hand so that afterwards it could be digitized if there was something missing or if something wasn’t clear. (Hirschhorn, ACIJ)” The data was then uploaded to Open Street Map. From Open Street Map, the map went through Map Box in order to make it more aesthetically pleasing for viewing on the Caminos de la Villa digital platform.

After the successful completion of the pilot program, ACIJ was able to map the remaining 16 villas in just one year, thanks to the hard work of ACIJ staff and community members. In order to help other organizations interested in participatory mapping, ACIJ later wrote a manual that they made available as a free download on their website.

What started as an effort to fill in an information gap for a digital platform soon became the most prominent feature of the Caminos de la Villa project. A wave of national and international media attention lauded the efforts of ACIJ to put the villas on the map in such an accessible and democratic manner. The fact that a non-profit had to organize the first mapping of the villas, home to thousands of Buenos Aires residents, because the city had ignored them for so

long was an embarrassment.



Buenos Aires: bringing public services to the 'invisible' slums

For residents of the city's informal housing settlements invisibility on the map can be deadly. A new digital mapping project is helping change this

Figure 13: International media highlights Caminos de la Villa work. From the Guardian, 2015, <https://www.theguardian.com/global-development-professionals-network/2015/dec/02/buenos-aires-bringing-public-services-to-the-invisible-slums>.

Just one year after Caminos de la Villa uploaded their maps of the villas, the Buenos Aires municipal government finally added the villas to the official city map. While it is difficult to prove that they did so in response to the critical media attention arising from Caminos de la Villa, several ACIJ staff members who were interviewed opined that the media attention finally

forced the government to map the villas. The government mapping process followed standard procedures and was mostly done through aerial photo and technical drawing analysis. No record of participatory mapping with the government process was found.

Despite the introduction of official maps of the communities, the platform continued to use the maps created with the community. Once the mapping was complete, Phase Two for the project began, returning to the original goal of documenting service gaps. Training workshops taught community members how to upload complaints. Thanks to a national program started in 2010, all primary and secondary students had Internet access via personal laptops. This dramatically expanded digital access in Argentina's informal communities and prepared many residents to use the Internet. Once the platform was up and running there was a surge in posted complaints, however, these higher usage numbers were not sustained for long. According to Pablo Vitale,

The problem with the platform was that the people didn't use it regularly, but this was for reasons that were anticipated a little and logical. There was no clear channel of referral for the complaint. The process didn't have much of an incentive for the people to register complaints in Caminos. (Vitale, ACIJ)

Many residents expected that logging a complaint would mean a quick reaction and resolution to the problem. However, there was no agreement between ACIJ and the city government that the government would respond to Caminos de la Villa complaints. ACIJ saw the crowdmapping simply as a means of providing evidence that there were problems. This evidence could then be used to support court cases against the government. However, such court cases take a long time to resolve, leading to a decline in usage of the platform by residents. The Caminos de la Villa project was forced to take a hard look at what the platform could actually achieve.

One area in which the project team felt they could improve was expanding what was marked on the maps. After the first wave of complaints had been registered, the maps essentially

only showed problems in the communities. ACIJ staff decided that a supplemental mapping process that would record the resources and important landmarks in each community would present a more positive and representative picture. As Rosario Fassina said, “The idea was that the map didn’t look so empty and instead that it be something attention-grabbing ... but also that the neighbors could access it and it be useful for them. (Fassina, ACIJ).” This realization led to Phase Three of the project, which involved a new participatory mapping process to document community landmarks and resources in each villa. Given ACIJ and the community members’ recent experience with the basemapping process, the new participatory mapping process was easy to arrange.

Despite the difficulties in achieving the original goals of the project, with the villas officially on the maps new doors of opportunity now opened to integrate with other digital technologies, such as Google Streetview. A popular tool for

Google Maps, Google Streetview allows the viewer to virtually walk a street and take in the street front. Google’s prestige as one of the largest and most well-known tech companies in the world brings weight to any of the projects it involves itself with. One of Google’s programs has been to partner with local organizations in order to film informal communities and add the footage to Google Streetview. Prior to working with Caminos de la Villa, Google had already worked with a non-profit in Rio de Janeiro to add several informal communities there to



Figure 14: Community resident assists with Google Streetview project. From La Nacion, 2017, <https://www.lanacion.com.ar/2042030-ahora-es-posible-recorrer-la-villa-31-y-otros-asentamientos-con-google-street-view>.

Streetview. Google respects official policies on what constitutes a legal street and community, which is why they had not been able to display the villas on Google Maps until they had been added to the official city map.

The first Streetview filming took place in 2016. Google lent ACIJ the necessary equipment for two months and they were able to document the streets of three separate villas. Similar to the basemapping participatory process, ACIJ first held a number of meetings and workshops with community members to prepare for the documentation. Many of the residents who had assisted with the basemapping also assisted with the Streetview documentation. Youth in particular were very excited to be part of a project connected to Google. Community members of all ages were proud of having their community documented and shared with the world.

At the end of 2016, Caminos de la Villa was a crossroads in terms of what the best way forward for the project would be, when a momentous civil society agreement was reached, giving the project new direction.

The fear that almost all the civil society organizations, other organizations, and neighbors have is that eradication [of the communities] won't be with a bulldozer but that the market will eliminate them. (Fassina, ACIJ)

To avoid destruction by redevelopment and markets, communities and civil society groups have seen the need to proactively plan for the integration of villas into the formal network. The Villas' Integration Agreement is a ten point agenda for how to move forward with integrating Buenos Aires' villas into the formal city. It was written and signed by a collection of villa community groups, civil society and education organizations. ACIJ is one of the supporters. Point Three of the agenda states that "integration involves the provision of infrastructure equal to that of the rest of the city ("Acuerdo por la urbanización de las villas," 2016)." This point touches directly

upon the original goal behind Caminos de la Villa. The question that ACIJ then considered was what role Caminos de la Villa could fill to support this point.

Phase Four took into consideration the problems the platform faced in Phase 2, when the burden of the use of the platform was on the community members with no direct response to their efforts. For Phase 4 the dynamic is flipped and instead of collecting information, ACIJ decided that Caminos de la Villa would be repository of information for the villas about the schedules and budgets of the city's integration projects. The goal became to increase transparency in the integration process and enable community members to better advocate for themselves as the process developed. In the words of Pablo Vitale,

The long-term goal is that life in informal settlements changes for the better and that the communities can be fully incorporated into the city fabric of Buenos Aires. As always, we say that the city fabric of Buenos Aires must incorporate the villa, not integrate villa into the city but the city into the villa, and Caminos should be a support for this. (Vitale, ACIJ)

HOW THE PLATFORM WORKS

In technical terms, the Caminos de la Villa platform is a publicly accessible website that is maintained on a day-to-day basis by ACIJ staff. The project staff are able to make minor changes to the website content. For changes to the platform, Wingu continues to play the role of tech support. For the maps, two software programs are used: Open Street Map is where the initial

data is entered and then it is processed through Map Box to improve the appearance of the map.



Figure 15: Caminos de la Villa Front Page. From Caminos de la Villa website.

The initial design of the platform was determined through a two-part process. First Wingu created a platform design based on their research and working with ACIJ. Then ACIJ organized a workshop with community members. During the workshop, community members gave feedback on elements of the platform, from the color scheme to the number and kinds of buttons that should be included. This participatory process eventually resulted in the final platform design:

So there was a strong participatory stamp not only in the creation of the maps, but also in the creation of the entire platform. The neighbors chose the name ... they formed the work group with representatives from all of the first five villas that were mapped as a pilot test and in the work group they defined the names, the colors we use, how the platform would be visually. (Fassina, ACIJ)

In order to use the platform, a visitor goes to the website: www.caminosdelavilla.org. From there they can choose from four options on the landing page: Register a Complaint, Monitor

a Public Work Project, See Video or Participatory Map. Below the buttons is the Caminos de la Villa map, displaying registered complaints, community resources and the location of different public works projects. There is also a display of the latest complaints and information requests. The site is simply laid out and uses a bright color scheme.

PROJECT CHALLENGES

As the history of Caminos de la Villa demonstrates, there are a number of significant factors that determine the success of a digital participatory mapping platform. This begins with the relationship with the community that is going to participate in the mapping. Caminos de la Villa benefited greatly from the previously established relationships that ACIJ had with each villa. The continuous use of participatory processes and sustained community engagement from the basemapping to the Google Streetview project is laudable.

However, the relationship with authorities who need to respond to the information documented on the map is equally important and where the project struggled. The lack of communication and effort to coordinate work with the government meant that resident's complaints were simply archived and did not trigger direct action. In the interviews it did become clear that this was not an issue unique to ACIJ but rather an issue across the board between the Buenos Aires city government and the city's civil society actors.

The evolution of the Caminos de la Villa project demonstrates the necessity for online mapping platforms to be adaptable to changing circumstances and respond to the needs of the community beyond the initial basemapping. Creating a platform with good data means nothing if it does not provide the right mechanisms for involvement of all necessary stakeholders to achieve its goals. This requires thoughtful consideration of which stakeholders need to be involved for success and the level of responsibility required of each. Finally, there are certain objectives for

which digital mapping platforms are especially suited. Caminos de la Villa presents the case for using such platforms to increase transparency in government integration programs.

Chapter 4. Analysis The missing governmental link

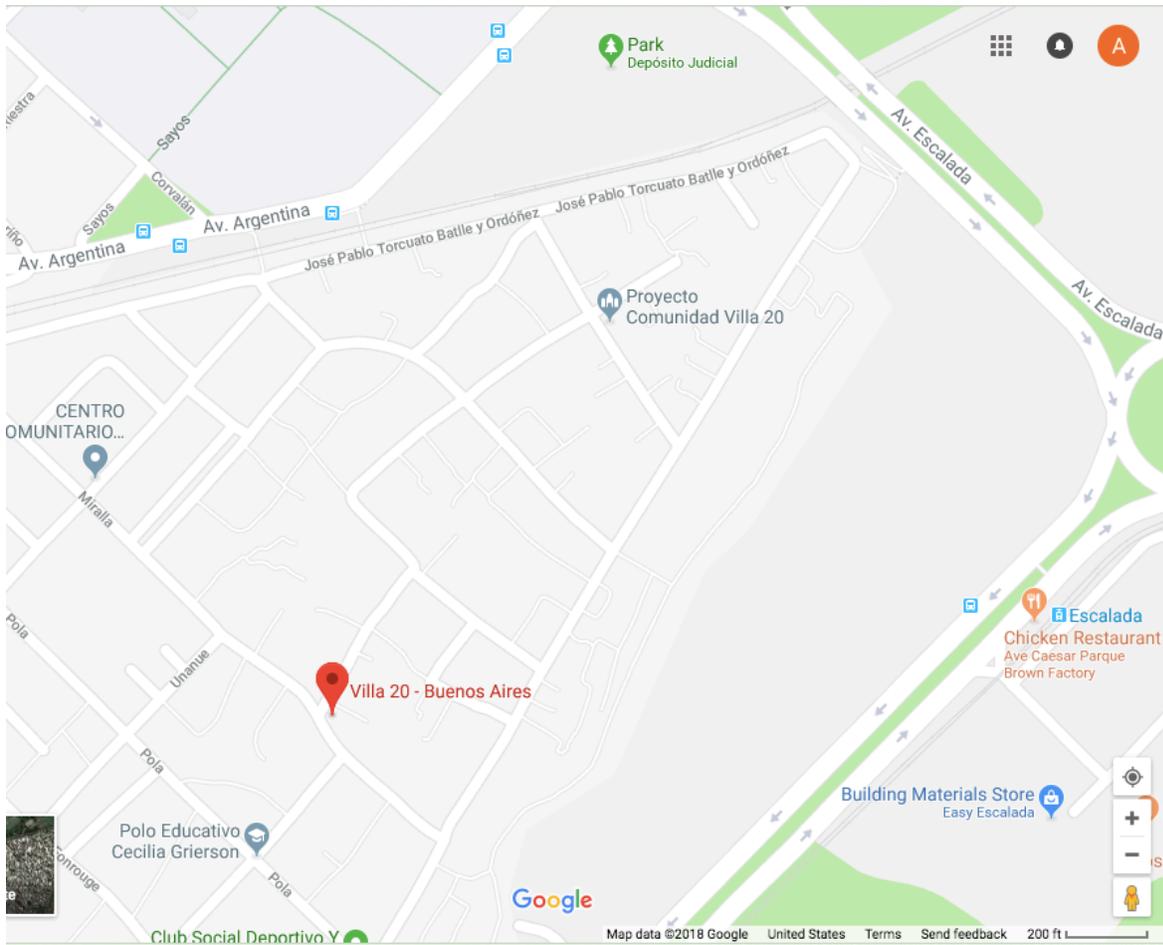


Figure 16: Google Maps View of Villa 20 shows the villa unlike prior to the Caminos de la Villa project, but the street network is incomplete. From Google Maps, 2018.

THE MISSING GOVERNMENTAL LINK

It is doubtful that Caminos de la Villa would have evolved as it had without the change in political attitudes to informal settlement integration during Macri's second term. The long history of adversarial policies towards informal settlements on the part of both the municipal and federal levels meant that the barriers towards change were high and deeply rooted. For this reason, Macri's policy shift, while open to critique as a politically convenient move to win more voter support, should still be recognized as a turning point for informal settlements in Buenos

Aires as it signaled for the first time a government using language of integration and recognition of the rights of villa residents.

With the change in government policies, new opportunities for pushing for progress opened. Civil society groups now could fight the government with its own words. The promises of integration were fuel for new battles. From this came Caminos de la Villa, a civil society sponsored program that sought to publicly document gaps in the official infrastructure provision system.

The need for a program like Caminos de la Villa is directly due to the failure of the official government to meet its responsibilities. Since the government fails to perform its responsibilities, civil society groups attempt to fill that role, which creates an uneasy tension, clearly evident in the evolution of Caminos de la Villa. During the interviews for this project it became clear that the change in government policies towards villas had not managed to translate into productive and democratic working relations between the municipal government and civil society groups. On the part of the civil society interviewees, most felt that the government was antagonistic towards them. The one government official interviewed did not express any concern or surprise that there had not been any cooperation between the government and civil society organizations over informal settlement integration projects.

Even with a change in political attitudes that recognized the need to integrate the villas, the political will did not translate into systematic change. While a period of transition is to be expected, there is a missed opportunity on the part of all the stakeholders—the communities, civil society and government if the three do not coordinate their efforts and improve their communication. In the end, the mapping of the villas by both ACIJ and the municipal government duplicated efforts. If the government is to be serious about its goals to fully integrate

the villas, then it will need to establish better relations with the residents, if only to delineate the contours and working processes of the new relationships. Civil society groups have the knowledge and relationships to help residents negotiate their new relationship with the government, but this requires civil society groups to also attempt to improve their working relationship with the government.

The city government was forced to take action to address certain problems only after ACIJ took the city to court and brought critical media attention to the government neglect of the villas. This did nothing to improve relations between the government and ACIJ. While some friction between different actors is not necessarily bad, the provision of complete infrastructure systems requires more than piecemeal reactionary fixes. Instead, there needs to be a long-term sustainable plan with the proper institutional mechanisms and funding to support it:

Well, this is more of a recording than resolution of problems. That's not bad right? But I compare it with other platforms that were able to close the loop in a successful manner...You are left with this, that is to say there is a lot more that can be done with Caminos, right? (Malia, Wingu)

The mapping done by the city government produced technically satisfactory results but did not produce the same social pride and community engagement as the Caminos de la Villa project. In following a standard technical procedure for a place that is not built to standard, the government is forcing a square peg into a round hole. The interview with the government official outlined the process for villa mapping as an entirely technical process using aerial and cadastral data. Ground truthing of the maps was only done as individual infrastructure projects were created, and these map corrections were for internal use only, not to correct publicly available, official maps. The government's lack of interest in engaging with the community to create accurate and representative maps demonstrates the low priority placed on creating participatory processes.

WHO BEARS THE BURDEN?

Residents of the villas are citizens of Buenos Aires, but their vulnerability, means that their rights as citizens are often ignored by the state. Their vulnerability is a result of circumstances mostly outside of the control of the villa residents. With scarce material resources and often low levels of education, the state then takes advantage of villa residents' situation to shirk its own duties. Civil society groups act on behalf of villa residents because their precarious situation inhibits most residents from having the time or resources to fight for their own rights.



Figure 17: Workshop between ACIJ and community residents. From “Primero Jornada de Mapeo Participativo...” by Caminos de la Villa Blog, <https://www.caminosdelavilla.org/blog/1-jornada-de-mapeo-participativo-%C2%A8dando-vida-al-mapa-de-cildanez%C2%A8-en-la-manzana-a-del-barrio/>.

In this triangle of stakeholders, civil society groups find themselves in the difficult position of balancing the need to form and maintain an equal partnership with residents while

also not adding to the pressures residents feel. This requires conscientiousness on the part of the civil society actor to not assume they know what is best for villa residents, but instead to maintain a continuing dialogue and partnership with local community representatives. ACIJ's previous experience with the villas enabled them to sustain this healthy relationship through numerous meetings and workshops throughout each phase of Caminos de la Villa.

However, a strong relationship notwithstanding, the registration of complaints in the second phase of Caminos relied on community members' vigilance without providing them with direct compensation or reward. The assumption that community members would be naturally motivated enough to continuously use the platform proved miscalculated. There was no real incentive for them to use it. During interviews, several ACIJ staff members reflected on the fact that a platform like Caminos de la Villa is not a tool that all community members should be expected to use regularly. Rather, it is more realistic to expect that community leaders and activists will be the primary users.

PARTICIPATION LIMITATIONS

While digital access and knowledge barriers are increasingly falling across the world, they can still present real challenges to certain segments of the population. Those challenges begin with access to a communication device, whether that is a cell phone or a laptop. From there, a device must have access to the internet, which may require a payment if an individual doesn't have access or knowledge of a free wireless network they can visit. Even if an individual has access they need to know the Caminos site exists and know how to search for it, or otherwise obtain the web address. Once they reach the site, they will need to have a high enough level of literacy and website navigation skills to understand how the platform works. Finally, a certain level of confidence and understanding of the project is required for an individual to register a

complaint on the platform. As the above summary demonstrates there are many potential barriers to the usage of an online mapping platform that are based in the technical aspect alone, not even considering the content and process of such a project.

Many of the technical barriers outlined above can be mitigated through technical support from civil society groups. Caminos de la Villa did see heavy initial use by residents, which suggests that it was not predominantly technical issues that inhibited its usage. Most villa residents in Buenos Aires have phones or, thanks to the one laptop per child policy, have access to laptops. ACIJ worked with communities to educate them about the platform and encourage its use, which meant many people knew how to use it. Through the ACIJ-Wingu partnership, the platform was designed and then modified by a working group of villa residents, thus creating a collaborative product with buy-in from the end users. From a technical and participatory planning perspective, the Caminos online platform is an exemplary case.

However, Caminos struggled with increasing and even maintaining usage of the site. This ties directly into an important question for all online platforms – who is the target audience? As Pablo Vitale suggests,

It's a problem of what was the objective [of the platform]... I think this has to do a little as well with looking too much at processes in terms of individual use – Facebook, Twitter, like that...you can't have the same logic because you have to understand that civic platforms [only] make sense if they create more collective processes... (Vitale, ACIJ)

It seems obvious that not every public online platform will have the reach and use of a social media site like Facebook. However, it is still necessary to define the intended user of the platform. The original idea of having all villa residents regularly use the platform proved unrealistic. Instead, the later phases of the project identified the community activists and leaders as the regular platform users.

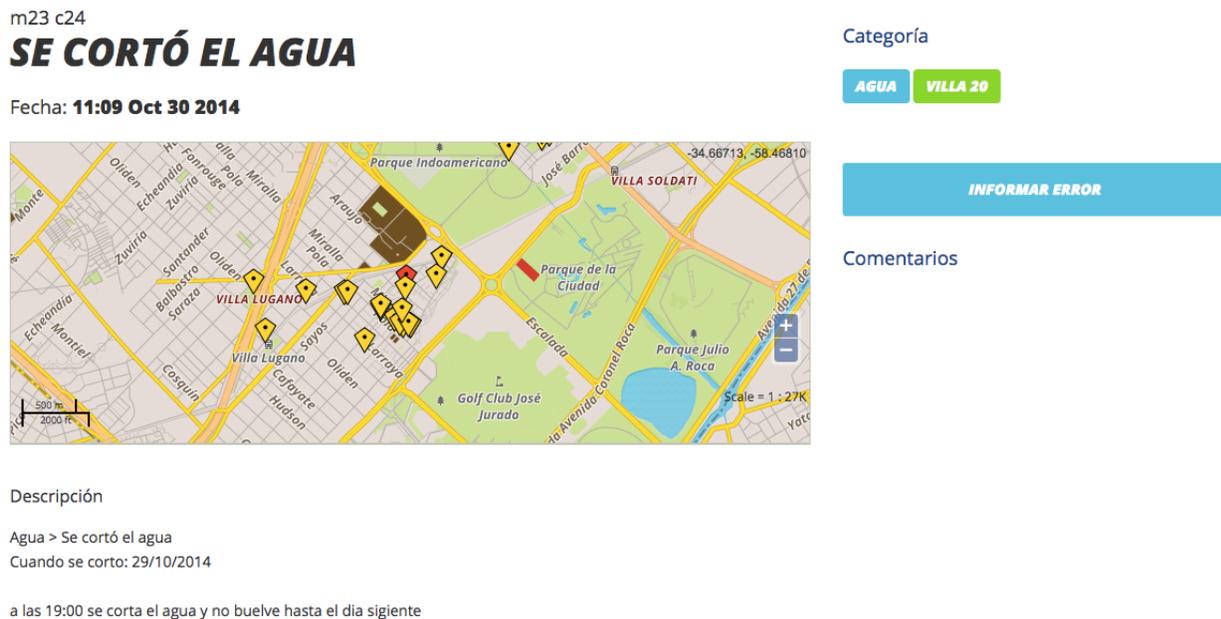


Figure 18: Registered complaint on Caminos de la Villa platform. From Villas del Camino website, 2018.

Just as characterizing the real audience for the platform led to the later phases in the development of Caminos de la Villa, the realization that crowdmapping activities can be a burden was equally important. Clearly the majority of the work for Phase Two of Caminos, which required residents to take the time to register service gaps, was on the shoulders of the residents, who in turn did not receive a direct benefit from their work. In the latest phase of the platform the burden is shifted from the residents to ACIJ, as Rosario Fassina explains. “Now the platform is just as you say, it isn’t requiring all the neighbors to keep the platform afloat with their participation but rather now they can take advantage of the platform. That is, the work now

is more on our side, collecting information from different state organizations and others. (Fassina, ACIJ)”

INCREASING VISIBILITY THROUGH MAPPING

While Caminos de la Villa had limited success as an archive of infrastructure gaps, the act of mapping the informal settlements of Buenos Aires for the first time was highly significant. For community members, the participatory mapping process taught residents about the importance of maps. Later it became a point of pride for community members to be able to access digital maps of their own communities via the Caminos de la Villa platform and then later on the official city maps.

The incredible feat of mapping all of Buenos Aires’ villas in a year and a half through participatory mapping processes was due to the previously established relationships ACIJ had built over the years with each community, which should not be glossed over. Participatory mapping is an intensive process that requires that all involved stakeholders work together closely and manage the technical, spatial and social challenges that can arise during the preparation, fieldwork and data processing stages. Establishing a strong level of trust though between the community and the mapping partner is essential for forging an effective participatory mapping process.

Creating a basemap for a community is an important first step; however, it is emblematic of the adaptable nature of the Caminos de la Villa project that when the first wave of registered complaints overwhelmed the maps, the team acknowledged the problem. While the villas face a number of serious problems, they are also communities with their own resources and landmarks that also define them. This triggered a new round of mapping in each community. From these

efforts came more detailed maps for the online platform: maps that showed not only the gaps in public infrastructure but also the local community institutions and resources.

The media attention around the mapping brought additional national and international attention to the neglect of Buenos Aire’s villas. While it is impossible to credit the participatory mapping project with the city’s decision to add the villas to the official city maps, the timing leaves little room for doubt that the government was responding to media pressure brought about by the Caminos de la Villa project. The mapping thus gave the villa greater visibility on the national and international stage.



Figure 19: Google Streetview of Villa 20. From Google Streetview, 2018.

A map in and of itself can have symbolic meaning for the individual, but a map can also be a tool for political advocacy. According to Rosario Fassina, “we discovered with the Google

project, the neighbors began to understand the map is a discourse and that it is another place from which to challenge the government. (Fassina, ACIJ)” Maps can serve to harness the knowledge of a select group of people and provide evidence to be used for specific purposes. Caminos de la Villa perfectly embodies this critical approach to mapmaking by creating a public record of service gaps that can be seen by anyone, and which also can be used as evidence in ACIJ’s legal cases against the municipal government. Even beyond ACIJ, the public mapping of service gaps means that any individual can use that information to advocate for better service.

DOCUMENTATION FOR ADVOCACY

Beyond putting the villas on the map, the resulting platform constitutes an important archive of both gaps in community infrastructure as well as community resources. This is essential for adding complexity to the map and revealing factors beyond the basic physical form of the community. Caminos de la Villa can be viewed as a living archive and documentation tool. For informal communities, documentation provides concrete testimony to the spatial, physical and social conditions the communities are experiencing. This record is evidence not only for advocacy, but also for historical and comparative perspectives.

It would be great if it (Caminos de la Villa) was massive, that is to say really a platform that serves the people for which it was created for and that the people in the neighborhoods and entities that should do something about it, pay attention and use that information. (Cavi, WIngu)

Phase Four of Caminos de la Villa as a tool for government transparency was still in the preparation stage at the time of this research in August of 2017, so the effectiveness of the new phase is unknown. However, it does provide interesting ideas for how digital mapping platforms can expand their scope. ACIJ staff hopes this new phase will be a useful advocacy tool for government transparency. The platform will provide the viewer with information not only about

government project locations and budgets, but also can be viewed at the same time with the location of registered service gaps and community resources in the community. In other words, the map continues to grow more complex and provide richer information.

This hopeful new phase must still overcome the barriers confronted in previous phases. Namely, will the government cooperate with ACIJ in providing the necessary project information and will there be a response to the use of this information by community members? In addition, there is the question of who will the platform's audience be for this new phase and how can ACIJ adjust the platform to best serve that audience.

UNDERLYING QUESTIONS

Caminos de la Villa raises a number of questions about the potential for crowdmapping platforms; beginning with what should be included in such maps. In the case of Caminos de la Villa, the initial basemapping was supplemented with community landmarks and resources, and allowed users to register gaps in service. Should community resources also be a function that any user can upload or does that require community input? There is also the question of whether there are other community or infrastructure features that should be present on such types of maps, and how different stakeholder interests should be weighed.

Returning to the question of digital access and familiarity, although it is increasingly a digital world with expanding access to technology across all levels, the level of access does differ and this matters. Who has digital access and knowledge in a community and are those the same individuals who the platform is aimed at? Does the platform appeal to these users? Caminos de la Villa confronted these challenges through community training workshops about how to use the platform and incorporated community feedback into its platform in order to create a tool that was receptive to community member's needs and expectations. Both these measures

are good steps towards addressing digital access and knowledge limitations, though neither overcomes them completely.

Digital platforms can be used for any number of purposes, but the focus of this research has been on their potential for monitoring and evaluating urban integration projects. The newest phase of Caminos de la Villa holds the potential of learning from mistakes of previous phases, and adapting to the new needs of the communities as the government moves forward with integration projects across the city. This new wave of governmental activity creates an ever more pressing need for transparency of those activities in the villas.

The proposed projects will permanently alter villas and hopefully benefit residents, but it is impossible to find detailed public records about proposed or in-progress integration projects. Considering the valid concerns of the communities and civil society groups about how integration will impact the villas, the need for a public tool to monitor these projects is urgent. The main question is whether the government will cooperate in sharing the necessary information to support the platform's new goals. If the information is obtained, the subsequent concern is how to utilize the information in such a way that it kindles greater agency and power for community residents. As Martina Lewin Hirschhorn indicates:

It means having another tool which wasn't available before and in a time of a lot of change in the neighborhoods, with the government proposing a lot of changes and the neighborhoods and it means having a base for understanding the neighborhood, to situate yourself and to discuss and say "look, this has already been done, we did this with our money with our labor, with our history and we did this in the manner that we could and moreover this seems good to us or not", but having that base upon which to discuss and gain respect as well. (Hirschhorn, ACIJ)

Hirschhorn's comment reinforces the fact that a public monitoring tool is more than just a repository of project information: this tool can also contextualize this information in light of other work and resources in the community. This public contextualization of government-funded

projects allows community members to advocate for their interests as they face the challenges, opportunities, and uncertainties of integration.

Chapter 5. Conclusion



Figure 20: Buenos Aires informal settlement. From: <http://blogs.lse.ac.uk/latamcaribbean/2017/08/10/urban-social-policy-in-buenos-aires-must-recognise-the-social-mobility-challenges-facing-marginalised-villa-youth/>.

SUMMARY OF KEY FINDINGS

Caminos de la Villa is a place-based project built on local relationships and adapted to changing, local circumstances. It took a significant shift in the local political agenda for the project to find the opening necessary to get off the ground. The continued overall progressive shift in the city's policies towards informal settlements provided fuel for Caminos to grow and evolve. While the real motivations of the city policies can be questioned, they did provide benefits to residents, by influencing government efforts to integrate the villas.

ACIJ did not set out to create the first modern participatory maps of Buenos Aires' informal settlements. However, as a civil society organization dedicated to advocating for citizens' right to the city, ACIJ adapted to circumstances, evolving into a project to document

infrastructure complaints as evidence in judicial cases and from there transformed into a citywide participatory mapping process of all of Buenos Aires' informal settlements. The organization's quick shifts in project strategies and its ultimate success were largely due to the strong relationships that ACIJ had already established with each villa, and the respectful collaborative approach used for the project.



Figure 21: Participatory mapping process. From: <http://vinilofm.com.ar/nacionales/caminos-de-la-villa-la-plataforma-argentina-premiada-como-mejor-tecnologia-social-latinoamericana-de-2017/>

Since 2014, Caminos de la Villa has already passed through four phases. In the first, participatory mapping phase the basic spatial data was gathered and the platform website was designed. From there, the project shifted towards the original goal of providing an easy means of documenting infrastructure gaps in informal communities. After some time though, ACIJ and villa residents were unhappy that the maps were only portraying negative spatial facts about the

communities, so a series of workshops led to the inclusion of data about community resources and landmarks on the platform map as well as the location of service gaps. The latest phase, still underway, is the introduction of public works data associated with the integration policy into the site. The site will serve to facilitate community review and respond to the new integration agenda, thus serving the broader agenda of governmental transparency called for by Buenos Aires' villas and non-profit sector.

BROADER IMPLICATIONS

A number of themes are prevalent in the evolution of Caminos de la Villa, but key to understanding the past, present and future of the project is the neoliberal approach of the city government. The government ignored informal settlement residents, treating them as less than citizens and choosing to neglect their communities. For this reason, civil society actors have stepped into a role that should be the domain of the government, creating uneasy tensions. Even with civil society taking over some of the government's responsibilities, the government could have provided a greater supporting role in the project by responding to infrastructure complaints or establishing a strong relationship with ACIJ. Instead, the government chose to continue to ignore the project and its efforts as much as possible, which was a huge loss of opportunity to coordinate and build on the success of the project.

While the relationship between ACIJ and community residents was strong, and the process participatory in nature, the project suffered in Phase Two from the burden put on residents. Informal settlement residents are already living in difficult conditions that require them to sacrifice most of their time and energy towards meeting basic needs. When the project asked that they take time to register service complaints, there was an understandable expectation that this would result in action to resolve the complaints. Instead, the information was collected

for use in court cases and on display to raise awareness of issues in informal settlements, both worthy goals, but neither of which provided any real incentive or reward for residents to continue using the platform. To ACIJ's credit, this undue burden was recognized and is one of the reasons why the platform's mission was shifted towards transparency, with ACIJ taking on the burden of providing information about public works projects to residents instead of relying on residents to provide information for them.

Another lesson that was learned from Phase Two was to have realistic expectations about who the users of the platform will be. The first barrier to usage is access and technical knowledge: these can be real barriers to older age groups, groups with scarce economic resources, and people coming from technology-limited educational backgrounds. Furthermore, while crowdmapping has unlimited potential users, only certain groups of people will realistically use the platforms. In the case of Caminos de la Villa, that was mostly community leaders and activists. Were it not for the time and resource constraints of a master's level professional report, more interviews with key community leaders, crowdmapping user residents and additional government officials would have been helpful for a more in-depth understanding of the Caminos de la Villa project. By drawing on ethnographic research methods, additional research would provide more insight into how each of those stakeholder groups participated and felt about the project and its outcomes. In particular, research into the progress of Phase Four would be useful to explore how effective crowdmapping platforms can be in the battle for greater government transparency.

Resources permitting, interviewing stakeholders in other crowdmapping projects, such as the ones covered in this report or different cases would also serve to paint a more nuanced picture of how crowdmapping tools are being used across the region for civic purposes. Chapter

2 reviewed the cases of the Uruguayan crowdmapping platform Por Mi Barrio and the Brazilian platform Tá No Mapa. Comparing these two with Caminos de la Villa underscores the latent possibilities that crowdmapping can offer for improving informal settlements and urban infrastructure in a modern world. Both Caminos and Por Mi Barrio have used the tool as a means of increasing citizens' voices in the public works processes of the city. Utilizing crowdmapping in this way promotes greater transparency on the part of the city government and citizen's involvement with them, which supports the argument McCall and Minang make in their case study review of participatory GIS (2005). At the same time, Caminos and Tá No Mapa used participatory mapping with a digital mapping platform to literally put communities on the map: the streets, blocks and also of great importance, community resources and landmarks. As Elwood's (2002) analysis suggests, such processes can grant new decision-making abilities to previously excluded groups. All three projects demonstrate how crowdmapping platforms can create a new powerful channel of civic participation that is inclusive and able to reach a wide audience.

There are, of course, a number of challenges and limitations that crowdmapping platforms face, as the Caminos de la Villa case study demonstrated. Foremost among these is the necessity of creating strong cross-sectoral relationships between communities, civil society actors, and governing authorities, which can be difficult to establish and sustain. In particular, as Por Mi Barrio's experiences demonstrate, government support is often essential to achieving action on the ground. The tension of working with government while at the same time pushing for change requires consideration (Rodríguez-Amat & Brantner, 2014). Even with the proper relationships in place, for crowdmapping to work it requires continuous use, a challenge when many actors have their attentions divided (Dodge & Kitchin, 2013).

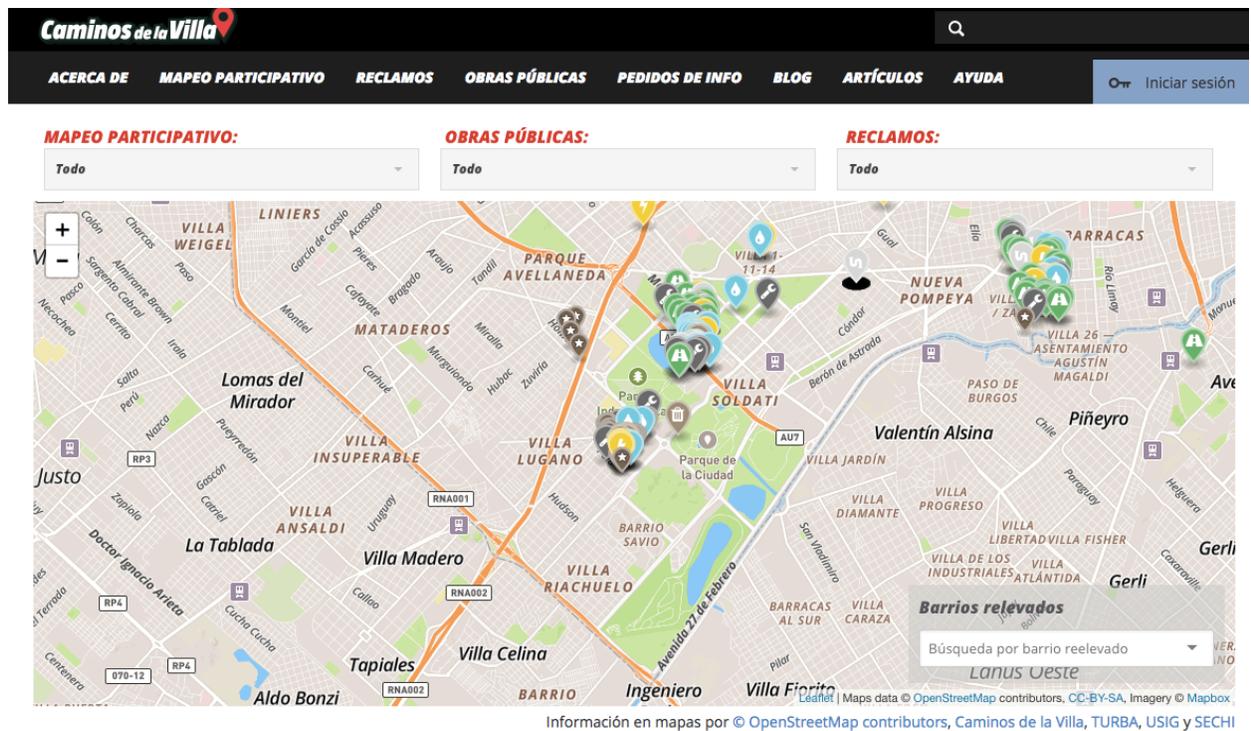


Figure 22: Caminos de la Villa Map. From Caminos de la Villa website.

FUTURE OF DIGITAL PLATFORMS AND DEVELOPMENT

In light of all this, what does the future look like for crowdmapping in an informal setting? Caminos de la Villa's fourth phase, aimed at proving an informational and monitoring tool for community residents, illustrates one possible avenue going forward. As more governments have begun to pursue integration policies, the need for transparency and good process is pressing. Crowdmapping platforms could be a good tool to address this need.

Ultimately, crowdmapping has the potential to create value for a community through the power of participatory mapping. Through participatory mapping, Caminos challenges the establishment's "official" map, essentially creating a countermap (Peluso, 2011). As the interviews revealed, residents were excited and proud to finally be officially on the map, and once on the map realized that this was an additional political advocacy tool. This recognition of the politics of mapping has the potential to create empowered community members.

Beyond being a source of pride, the platform is also now an important documentation tool, an open source of data that can be utilized by the communities and their supporters. One of the great challenges for integrating informal settlements is the lack of information available to properly plan integration projects (Lema, Sliuzas, & Kuffer, 2006). Crowdmapping of these communities helps to overcome this deficit of knowledge, while also involving the community in the planning process.



Figure 23: Caminos de la Villa participatory workshop. From “Primero Jornada de Mapeo Participativo...” by Caminos de la Villa Blog, <https://www.caminosdelavilla.org/blog/1-jornada-de-mapeo-participativo-%C2%A8dando-vida-al-mapa-de-cildanez%C2%A8-en-la-manzana-a-del-barrio/>.

The future of Caminos de la Villa is focused on government transparency in the integration process. Crowdmapping platforms seem particularly well suited for pushing for increased transparency. These platforms can integrate government data with a publicly controlled

map, subverting a typically closed technical project process. Increased access to this information has the potential for improving the integration process by keeping communities better informed and better able to advocate for themselves.

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