



# Mapping to Empower in La Perla

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<https://wp.wpi.edu/puertorico/projects/2023-mar-may-2/fondita/>

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# Abstract

This project examined the benefits of participatory community mapping as a tool of community development in the historic San Juan neighborhood, La Perla. Data collection relied on interviews, stories, and drawings from individuals in the community to reach the goal of inclusion, transparency, and empowerment. The project team created multiple sample maps, such as an Arts/Murals map highlighting the beauty around La Perla and an Assets map highlighting strengths and areas for improvement, that reflected the desires of the community. We conducted training workshops on mapping software and created two guides on related mapping software. Through collaboration, this project built foundational relationships with La Fondita de Jesús, La Perla and WPI for future community development projects.

# Executive Summary

Community development happens all over the world. However, that development will take on a different form depending on the community. In the case of our project, we used participatory community mapping as a tool for supporting community initiatives. Data collection for mapping relies on interviews, stories, and drawings from individual community members to reach the goal of inclusion, transparency, and empowerment (Parker, 2006).

Participatory community mapping has helped many diverse communities around the world. Puerto Rico has its own set of unique advantages and challenges, and our project sponsor, Corporación La Fondita de Jesús, saw participatory mapping as a promising idea. La Fondita was interested in exploring this approach with the pilot community of La Perla to facilitate participatory mapping strategies. Additionally, we saw an opportunity to help residents of La Perla use accessible mapping tools to identify the strengths of their community and determine areas they may develop.

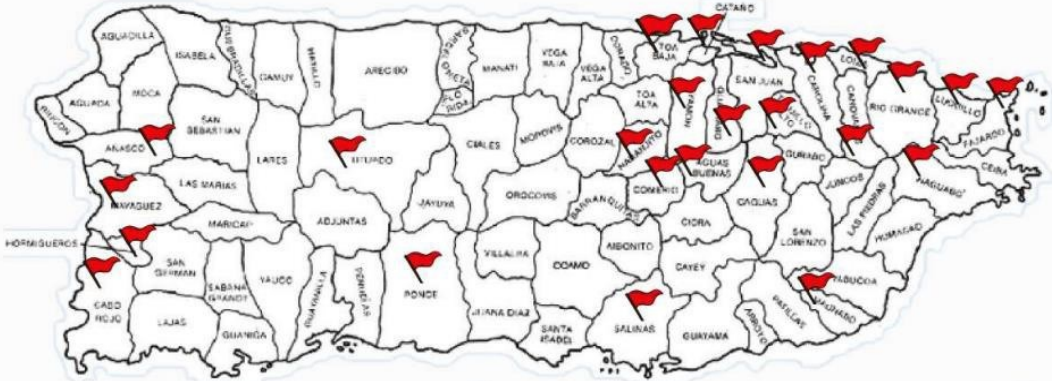


Figure A: The municipalities served by La Fondita de Jesús (Corporación L.F.d.J, 2022).

La Perla, a small 650-yard-wide seaside neighborhood bordering Viejo San Juan (Old San Juan), has faced a stigma of being the “most dangerous neighborhood” in San Juan due to their marginalized, often violent history. Due to its low elevation and a defensive colonial wall that isolates the colorful small community from the rest of San Juan, La Perla is also susceptible to natural disasters such as tsunamis and hurricanes.

Over the centuries, La Perla's population and community has been ever-changing. In the 1940s, “slum clearance” attempts to displace residents continued, and the population dipped from 4500 residents to 1200 residents (Vega Valdivieso, 2015, p. 15). In more modern times, a drug raid in 2011 displaced over 100 mostly male residents in the already shrinking displaced population (Vega Valdivieso, 2015, p. 18). After the raid, a fight for positive change was on the horizon within the community. This change was led by a new wave of mostly female local leaders lead through art, music, and tourism. The

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population residing in La Perla is estimated to be 350 residents living in about 200 households.



Figure B: Two murals in La Perla. On the left, the words “The future is painted by them” can be read in the center. On the right, the mural reads “Our culture is resistance”.

For a project such as ours to have a positive impact on a community, it is important that residents be deeply involved in the process. Meaningful participation encourages engaging with residents within a community and gives a deeper understanding of the experiences they live through and promotes relevant and sustainable outcomes (Geesteranus, 2022).

### **Goal and Objectives**

The goal of this project was to work with residents of La Perla to develop data collection and mapping techniques that they and other communities can use to advance community initiatives. Furthermore, through communication and engagement with our sponsors and residents of La Perla, we aimed to build foundational relationships for future projects. We organized our work around the following central objectives to achieve these goals:

- Establish Familiarity with Residents of the Community
- Gather Information on What the Community Wants Mapped
- Create Sample Maps to Show the Capabilities of Mapping to the Community
- Provide Training Workshops on the Capabilities of Mapping
- Create Guides for Sponsors and Community Leaders for Future Mapmaking Activities

### **Project Outcomes**

The community of La Perla was eager to learn mapping capabilities as they found it a useful tool for community development. Two findings of note were:

#### **1. Building Trust with Community Members Takes Time and Effort**

The La Perla community was inviting to anyone who respected their community and wanted to learn about their culture and history. The sense of pride in their community

was evident. However, not everyone is comfortable working with strangers. Not surprisingly, some residents did not want to speak or work with us. Although we invited anybody who wanted to work with us, we never pressured anyone to do so.

## 2. Data Collection was Challenging

Data collection was difficult during the day as many community members worked in other communities. Residents at home often were understandably sensitive to visitors encroaching on their privacy. It was important for us to respect privacy, but this extended the data collection period. Further, cellular network connections in the area were weak, a challenge for online mapping.

**Key Project Outcomes** included sample maps created using Google My Maps software to present as templates and ideas for La Perla and future mapping projects. Furthermore, we created guides and provided training workshops for anyone interested in mapping which enabled this project to live on once we left.

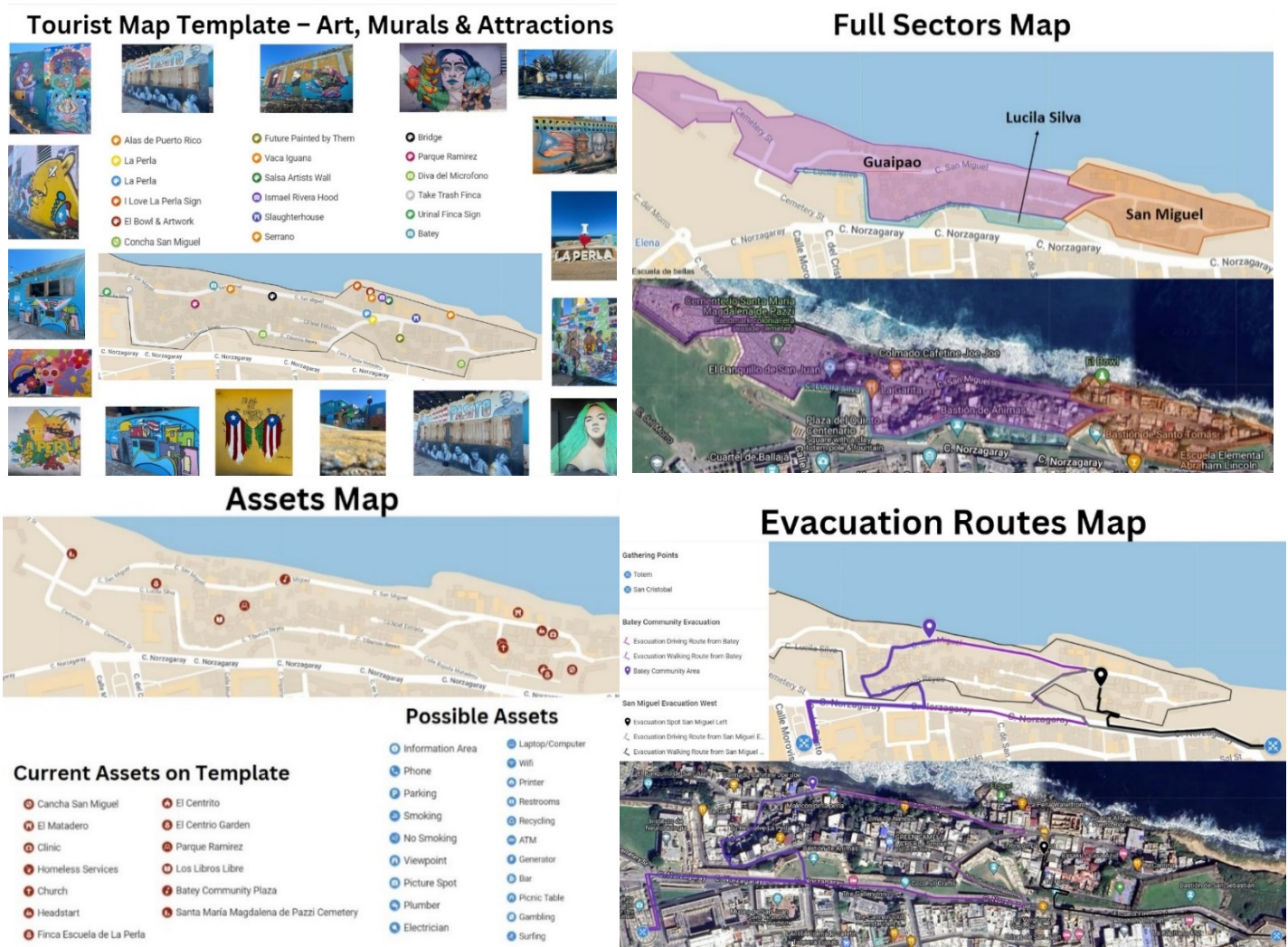
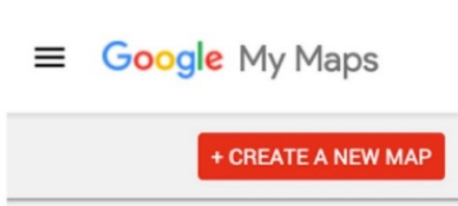


Figure C: Four sample map templates created using Google My Maps.

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We found the trainings to be a crucial part as it allowed us to train individuals of the community and lay the groundwork for the continuation of the project once it came to an end. The workshops also allowed the team to further our knowledge of mapping and its role in community development. Understanding the limited time frame of the project, the guides on how to use Google My Maps as well as the guide on how to Register a Business or Location on Google Maps allow the project to live on once the project ended. Both training guides may be found and referenced on our project center website: <https://wp.wpi.edu/puertorico/projects/2023-mar-may-2/fondita/>.



## Google My Maps Facilitators Guide



## Register your Work On Google

Figure D: Cover pages for the two guides created.

### **Conclusions and Recommendations**

As the first project team from WPI to work with La Fondita de Jesús and the community of La Perla, the main goal of this project was to communicate, engage and build foundational relationships. With the help of our sponsor, advisors, and the community of La



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Perla, the team was able to create maps using Google My Maps that reflected the ideas and voices of the community members. Further, the team created guides and provided workshops to teach mapping and its capabilities, allowing the project to continue after the team left.

### **Recommendations for Future Community Mapping IQP Project Teams**

- Get involved with the community early and often. Identify important stakeholders and conduct key informant interviews as well as informal conversations.
- Be prepared to learn and re-learn in the field. Allow the community to guide the project and offer guidance when necessary. Hosting workshops and engaging events allowed the team to teach mapping capabilities to community members, but in a reciprocal spirit in which residents taught us about the subject matter.
- Create numerous sample maps prior to and once in field work for the community to visualize possibilities. Creating sample maps such as maps that highlight assets or different landmarks in your hometown will also allow the team to gauge the interest of community members regarding different types of maps.

### **Recommendations for working with the La Perla Community**

- Understand positionality and its relation to your project and this community. Reciprocate the hospitality the community gives you and be open to working with everyone in the community. Be sensitive to sensitive information and understand the questions you may ask before asking. Provide clear explanations for what type of work you are doing in the community and where any information they provide you with will go.
- Work closely with a co-researcher who can translate conversations. Most La Perla residents speak Spanish. Having a translator with you will be important but be prepared for times when you will be on your own. Community members are more comfortable when speaking Spanish and are more likely to work with you as well.

### **Recommendations for the PPRC**

- Consider future projects in collaboration with La Perla such as working alongside Jerome at the Finca Escuela de La Perla, with La Junta on furthering emergency preparedness plans or similar community development projects.
- Consider future projects in collaboration with La Fondita de Jesús such as work in other municipalities they serve. La Fondita offers many services to vulnerable populations around the island. They are a prominent organization with goals that align with the goals of the WPI Puerto Rico Project Center regarding sustainable community development.

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# Acknowledgements

We would like to thank the following individuals for their contributions to this project. First, we would like to thank our sponsor liaison Lourdes Diaz Pabón for her guidance and passion. This project could not have been completed without her wisdom and invaluable connections.

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# 1.0 Background

The background chapter introduces our sponsor, the community of La Perla including information on geography, topography, community history, art, music and dance, governmental relations, non-government interventions, and gentrification. The importance of community involvement section highlights Asset Based Community Development as a strategy that may be used when working with a community. The background then introduces different possibilities for mapping, including participatory asset mapping, vulnerability mapping, and GIS mapping.

## 1.1 Introducing La Fondita de Jesús

La Fondita de Jesús is a non-profit organization that has focused on transforming vulnerable communities and homeless citizens in Puerto Rico for the last 37 years (Corporación L.F.d.J., n.d.). Lourdes Diaz Pabón is the Equity & Social Justice Coordinator for La Fondita. The projects of the Equity and Social Justice Program have two main branches: “the Social Justice Committee, a multisectoral and multigenerational collective that addresses issues of politics and public opinion and the Voices of the Homelessness, a group of spokespeople that narrate, through artistic and cultural manifestations, the challenges experienced by homeless people and people in our communities that are at risk of displacement” (L. Diaz, personal communication, January 31, 2023). La Fondita de Jesús’s mission is to “make a community with the homeless and other vulnerable populations, transforming lives and promoting dignified conditions, self-sufficiency and spiritual development for all” (Corporación L.F.d.J., n.d.). During the pandemic, La Fondita provided approximately 300,000 services including physical and mental health services, meals, emergency grocery bags, and permanent housing units (Corporación L.F.d.J., n.d.). In 2022, La Fondita served 25 municipalities (Corporación L.F.d.J, 2022) (Figure 1).



Figure 1: The municipalities served by La Fondita de Jesús (Corporación L.F.d.J, 2022).

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## 1.2 The Community of La Perla

### 1.2.1 Geography

La Perla is a small 650-yard-long seaside neighborhood bordering Viejo San Juan (Old San Juan), located on the northeast coast of Puerto Rico. A defensive colonial wall isolates the colorful small community from the rest of San Juan. Due to its low elevation, La Perla is susceptible to natural disasters such as tsunamis and hurricanes.



Figure 2: Sky View of La Perla (Google Earth Pro).

To the east is La Garita del Diablo. A large colonial wall, up to 42 feet tall, separates La Perla from Old San Juan. A colonial-era cemetery, Cementerio Santa Maria Magdalena de Pazzis, borders La Perla to the west. Further to the west is a popular tourist spot named Fuerte San Felipe del Morro, a historical citadel (Figure 3). La Perla is surrounded by some of the most popular tourist attractions on the entire island, adding layers to its rich history and culture. Because of this wall and the more popular tourist attractions above, people may figuratively and literally look down on La Perla aligning with its history of being neglected.



Figure 3: El Morro tourist site in Old San Juan (*Explore El Morro Fort*, n.d.).

### 1.2.2 La Perla History

Over the centuries, La Perla's population and community has been ever-changing. The community's unique history begins in the 18<sup>th</sup> century when a slaughterhouse was established outside the city wall near the Santa María Magdalena de Pazzis Cemetery. At the time cemeteries, slaughterhouses, and slaves were required to be located outside of city limits due to colonial law (Vega Valdivieso, 2015). Slaves lived near the slaughterhouse and became some of the first people to live in La Perla. In the early 19<sup>th</sup> century, La Perla became a common place where poorer people from the countryside of Puerto Rico settled, contributing to La Perla's stigma and reputation as a slum, that continues to exist today ("Visiting La Perla Neighborhood", n.d.).



Figure 4: La Perla in the 1950s (Concepcion, 2023).

In the 1940s, "slum clearance" attempts to displace residents continued, and the population dipped from 4500 residents to 1200 residents (Vega Valdivieso, 2015, p. 15). In more modern times, a drug raid in 2011 displaced over 100 mostly male residents in the already shrinking displaced population (Vega Valdivieso, 2015, p. 18). After the raid, a fight for positive change was on the horizon within the community. This change was led by a new wave of mostly female local leaders lead through art, music, and tourism. The population residing in La Perla today is estimated to be 350 residents living in about 200 households.

### 1.2.3 Art in La Perla

Art acts as a way for the residents of La Perla to begin positive change. One of the most visible restoration projects, led by painting, launched in 2017, is called "La Perla pinta su futuro" (La Perla Paints Its Future). This project resulted in 375 houses being painted bright colors and revitalized ("Visiting La Perla Neighborhood", n.d). Murals also appear around the neighborhood, where outside artists are rumored to be invited into the community to brighten and evolve the ever-changing walls (L. Lopez, personal communication, April 12, 2023).



Figure 5: Two murals in La Perla. On the left, the words “The future is painted by them” can be read in the center. On the right, the mural reads “Our culture is resistance”.

Before the hit song Despacito by Luis Fonsi music video was filmed in La Perla around 2017, which is one of the most streamed music videos on YouTube, a boom of murals popped up on the streets of the neighborhood (L. Lopez, personal communication, April 12, 2023). Businesses such as El Mundo Aparte and La Garita utilize La Perla's unique vantage point overlooking the Atlantic Ocean (“Visiting La Perla Neighborhood”, n.d). La Perla has been attracting visitors to experience its vibrant culture, rich history, and unique architecture.

### 1.2.4 Music and Dance in La Perla

Puerto Ricans connect to their history and culture through music and dance. In the 17th century, while Puerto Rico was under Spanish Rule, captive African slaves brought the musical form of Bomba to the island (Espada-Brignoni & Ruiz-Alfaro, 2021). Bomba is unusual as it incorporates dancing into the percussion. Music is played using drums: a group of bueleadors play a melody, while one drummer, the subidor, follows the actions and steps of a dancer. Bomba is used to express grievances and to speak on issues that are affecting the people. As Espada-Brignoni and Ruiz-Alfaro (2021) said, lyrics typically include a “narrative about the world and current events” (p. 5). In La Perla, Bomba is a way that the community can express their beliefs and opinions on the government at regular Friday evening open-air performances. These performances are known as batey, a space where people sing, play, and dance bomba (Lozada, 2022). The community holds the batey at a space called Community Batey of La Plaza del Negro which may be seen in Figure 6 below.



Figure 6: Picture from weekly batey at Community Batey of La Plaza del Negro in La Perla.

### 1.2.5 Government Relations

The history of La Perla cannot be complete without describing their unfortunate relationship with the government of San Juan. This relationship can be highlighted in the slum clearance attempts in the 20th century (Vega Valdivieso, 2015). Beginning in the 1940s, the municipal government of San Juan led the demolition of structures in La Perla, on the promise that new housing would be constructed in La Perla. In 1947, one-fifth of the homes in La Perla were destroyed along with homes close to the walls (Vega Valdivieso, 2015).

There have been efforts such as sewage system improvements, however many view those improvements from the projects as secondary to the displacement they cause. In 1978, a project to “improve infrastructure and living conditions in La Perla” displaced 100 families; the displaced were offered housing options in La Perla for relocation (Vega Valdivieso, 2015, p. 1). These actions generated the public distrust within La Perla that remains today.



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## 1.2.6 Non-Government Interventions

La Perla “acts as a “semi-independent” area where residents have their own informal laws and the police rarely intervene” (Vega Valdivieso, 2015, p. 18). Informal government structures and the relationships among residents greatly impact the daily lives of the people of La Perla. Services like water, electricity, fire, and even the police are limited, forcing residents to solve these problems rather than relying on help from the government. (Vega Valdivieso, 2015).

There is a community board, La Junta Comunitaria de La Perla (La Perla Community Board), known as La Junta, that advocates for the community. La Junta was formed in 2013 and is comprised of six residents of La Perla, two from each of the three sectors. Its mission is “to involve residents in caring for the community and raising awareness of the opportunities inside La Perla as a means of combating its negative stigma” (Vega Valdivieso, 2015, p. 41). This objective to better the community can be highlighted in its most recognizable project where 375 buildings were painted (Kantrow-Vázquez, 2017), giving La Perla the eye-catching attractiveness that it is known for today. The board is very active throughout the community, putting on employment workshops, delivering groceries and other household essentials, and engaging with residents and others through their Facebook page (Vega Valdivieso, 2015).

## 1.2.7 Gentrification

Another issue that La Perla faces is gentrification. Gentrification is defined as the process where a poorer community’s character, tradition, and identity change due to the mass movement of wealthier residents (*Dictionary by Merriam-Webster*, n.d.). In Puerto Rico, gentrification takes many forms. From 2018 to 2020, housing prices soared 32% every year (Sanahori, n.d.). On top of that, certain tax laws in Puerto Rico incentivize Airbnb and other “half-local” properties by letting them receive benefits of both a hotel and a private home (Sanahori, n.d.). These policies and regulations change neighborhoods immensely, sometimes from being tight-knit communities of like-minded people to effective ghost towns full of rental properties (Sanahori, n.d.).

## 1.3 Importance of Community Involvement

For a project to have a positive impact on a community, it is important that residents are involved in the process. As stated by the World Economic Forum, “meaningful participation involves working closely with the communities you aim to support to really understand people’s experiences and design processes around their needs and perspectives” (Geesteranus, 2022). Meaningful participation encourages engaging with

residents within a community and gives a deeper understanding of the experiences they live through and ensures relevant and sustainable outcomes (Geesteranus, 2022).

One of the main benefits of including the community in a project is finding out the most prominent issues they face and how they want to address them. One community-driven strategy to identify prominent issues is Asset Based Community Development (ABCD). This approach focuses on the goal of a community driven identification of assets and strengths.

### 1.3.1 Asset Based Community Development

Asset Based Community Development (ABCD) is a strategy where members in a community drive the “development process of their own community by identifying and mobilizing existing, but often unrecognized assets, and thereby responding to and creating local economic opportunity” (Depaul University, n.d., p. 2). ABCD focuses on a community’s gifts and assets. The National Oceanic and Atmospheric Administration (NOAA) defines assets as important people, things, services, resources, and connections that are key “to the members of a community and that the community wants to keep, sustain, and build upon” (NOAA, 2018, p. 1). ABCD pursued in collaboration with others from outside the community is designed to involve direct collaboration between facilitators and community members that may be personally affected by the outcome of the project at hand.



Figure 7: Infographic that visually explains ABCD. (Asset Based Community Development, n.d.).

Liam Maclure from the University of Oxford analyzes and defines four specific types of power. Maclure believes that for a community engagement strategy to be successful, it

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must take into effect all four closely related definitions of power within the power framework. The four power definitions are (p. 6):

- “‘power with’ refers to cooperative power that is realized through relationships.”
- “‘power over’ is a finite resource that people, institutions, or ideologies use to dominate and oppress others.”
- “‘power to’ refers to the agency of people to act, and realize their rights, citizenship, and political voice.”
- “‘power within’ is the power associated with self-confidence and personal capacity.”

Some methods that may be followed within ABCD are collecting stories, building a community vision and plan, and mapping the capacities and assets of individuals, associations, and local institutions (Cunningham, G., & Mathie, A., n.d.). According to Cunningham & Mathie (n.d.), an outsider working with a small community must work diligently to "stimulate this process" toward the goal of community-driven development rather than the opposite effect, dependency. Maclure (2023) writes that, "ABCD suggests if communities can recognize and mobilize their assets and strengths, they can lead themselves to a better future." (p. 4) ABCD has a strong focus on community empowerment, and it prioritizes the power that is realized through relationships (known as 'power with') but, according to Maclure, the ABCD approach lacks the other forms of power defined above (Maclure, 2023).

ABCD is often seen as a positive in a community development project, but others believe ABCD does not draw attention to all types of power within a community. Liam Maclure (2023), highlights that "ABCD is inattentive to power" (p. 5). He claims that ABCD deemphasizes "power within," and "completely neglects 'power over' and 'power to.'" Maclure (2023) also states that ABCD completely ignores relationships with institutions and avoids political voice and power. It also "deemphasizes" the power associated with self-confidence. In a small community distant from the government, and one that relies on people to work together to create change, ABCD may nonetheless be an effective community engagement strategy.

## 1.4 Mapping Strategies

### 1.4.1 Participatory Asset Mapping

Participatory community asset mapping is a planning tool that engages a target community in exploring their assets within the physical and social environment (Burns et al., 2012). This method of mapping challenges community members to provide knowledge

about their individual assets first, and then to investigate and compile community assets (Burns et al., 2012). In other words, rather than focusing on problems or deficiencies, this philosophy suggests that the first step in a community development process is to identify a community's capacities and assets. Once this is complete, then the next step is to use these assets to build an action plan (Burns et al., 2012).

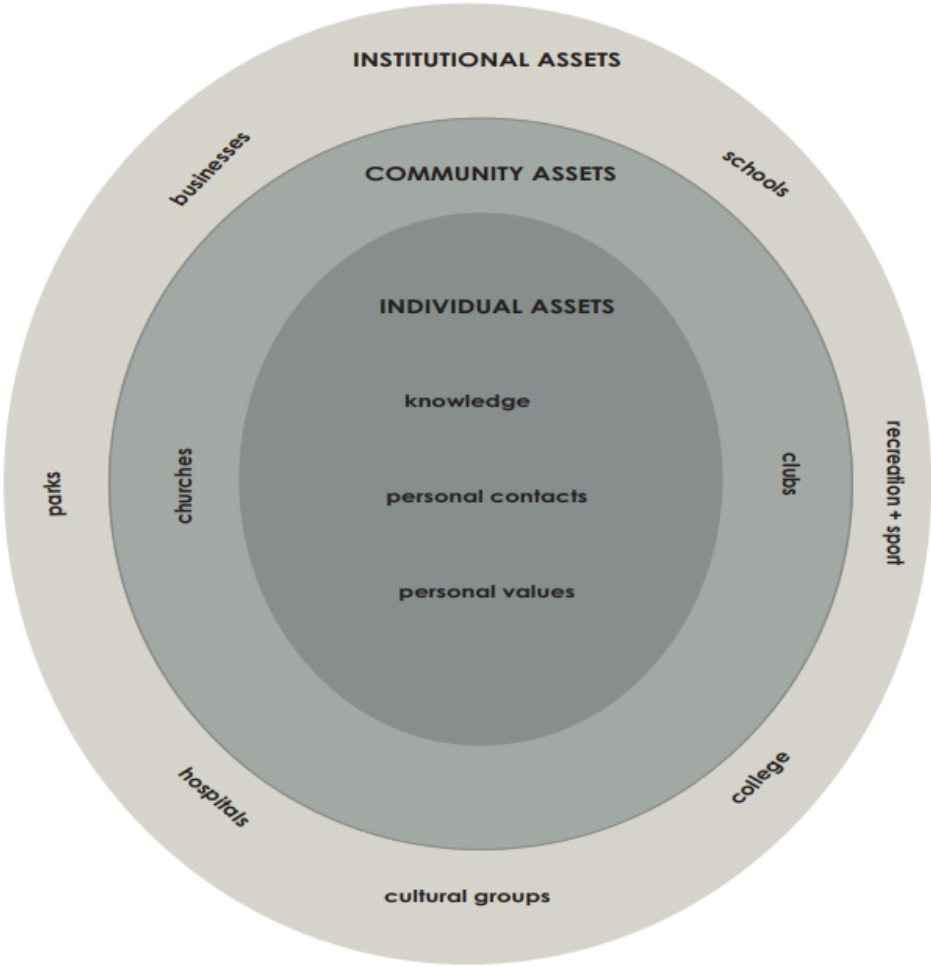


Figure 8: Levels of Assets in Participatory Asset Mapping (Ragan et al., 2010).

All the features of Ragan's participatory asset visual above are important to a community. Commonly, separate maps could be made for the different layers of assets, or all assets can be highlighted together. Assets can be used to positively impact a small community economically, socially, environmentally, and Participatory Asset Mapping allows facilitators to work directly with the community being impacted. Assets are things such as people, transportation, human services, institutional, economy, physical and government as seen below in Figure 9.



Figure 9: List of community assets highlighted in Participatory Asset Mapping (NOAA, 2018).

Participatory Asset Mapping offers a visual representation of community knowledge (Burns et al., 2012). The National Oceanic and Atmospheric Administration (2018) highlights the Participatory Asset Map process by showing assets such as churches, health care and education facilities as seen below in Figure 10.

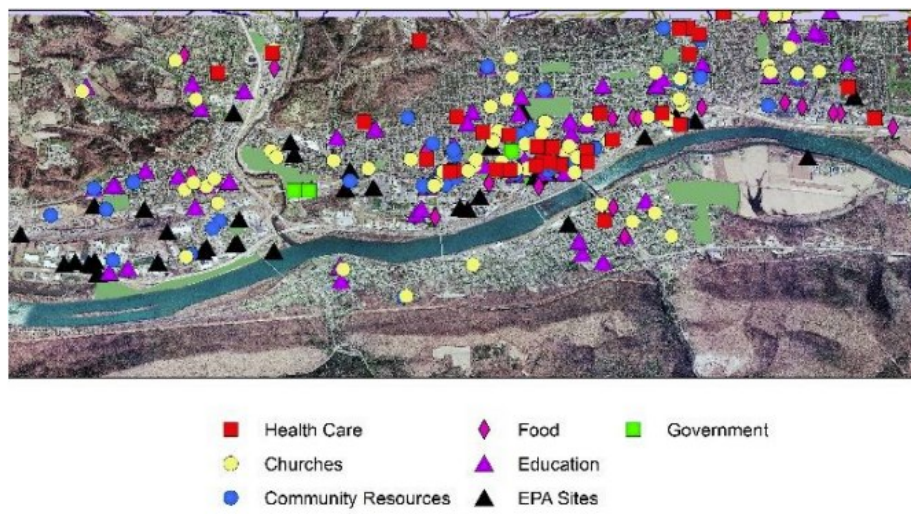


Figure 10: Participatory Mapping Project example used by National Oceanic and Atmospheric Administration (NOAA, 2018).

## 1.4.2 Participatory Vulnerability Mapping

Vulnerability mapping is a type of participatory mapping that highlights key areas with increased potential of risk and disasters. This mapping style allows communities to plan and reduce risk while reducing the need for post-disaster relief and aid (Sullivan-Wiley et al., 2019). Vulnerability mapping allows community members to voice their opinions and concerns and improve their quality of life. Local knowledge is used to include “the many ways that communities perceive and respond, cope, and adapt to threats” (Sullivan-Wiley et al., 2019, p. 47). This idea of local knowledge and perspective is critical especially when social, economic, environmental, and/or physical risks overlap and threaten the communities in different ways at the same time (Sullivan-Wiley et al.) (Figure 11 and Figure 12).

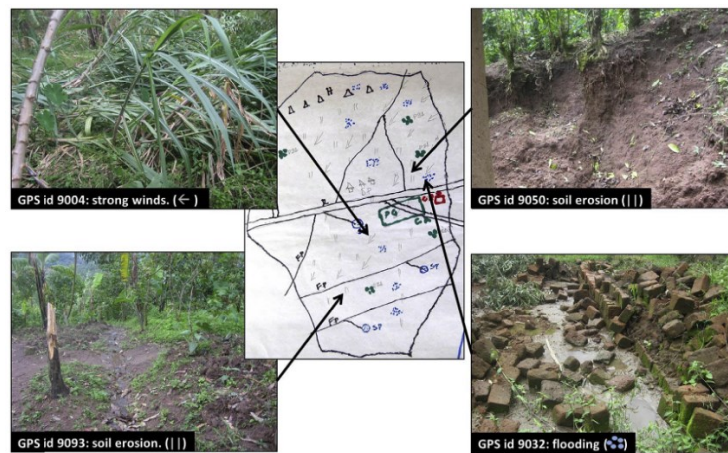


Figure 11: A sketch of the participatory efforts for a vulnerability map and the environmental risks that affect a local community in Uganda (Sullivan-Wiley et al., 2019).



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**Figure 12: A vulnerability map highlighting assets physical risks in Los Angeles (Douglas, 2020).**

The participatory vulnerability mapping process varies between locations and the risk being highlighted. As Sullivan-Wiley et al. (2019) notes, community members are the experts and lead the development. Socio-economic, environmental, or cultural risks to be highlighted are decided and participatory efforts begin. Participatory efforts can include the use of group discussions, focus groups, or individual sketch mapping (Sullivan-Wiley et al., 2019). From there, vulnerability or risk levels are classified by the community. The process of vulnerability mapping can bring a community together as “the deliberations that take place during the production of the risk maps can provide insights above and beyond what is visible in the final map product, facilitate knowledge exchange among participants, and can increase community awareness of risks and engagement with solution” (Sullivan-Wiley et al., 2019, p. 54).

Scholars note that vulnerability mapping has drawbacks. When relying on local knowledge, the greater the information provided, the greater the map will be. Further, if there are hesitations in giving information, social groups may be underrepresented and if there is substantially low participation, the map will not accurately depict the conditions of the community and cannot provide the intended support for its purpose (Sullivan-Wiley et al., 2019). Some mapping projects include a process for developing a vulnerability map where indicators, or information that is to be shown on the map, are picked, and given a level of risk from “very low” to “very high” (Sullivan-Wiley et al., 2019).

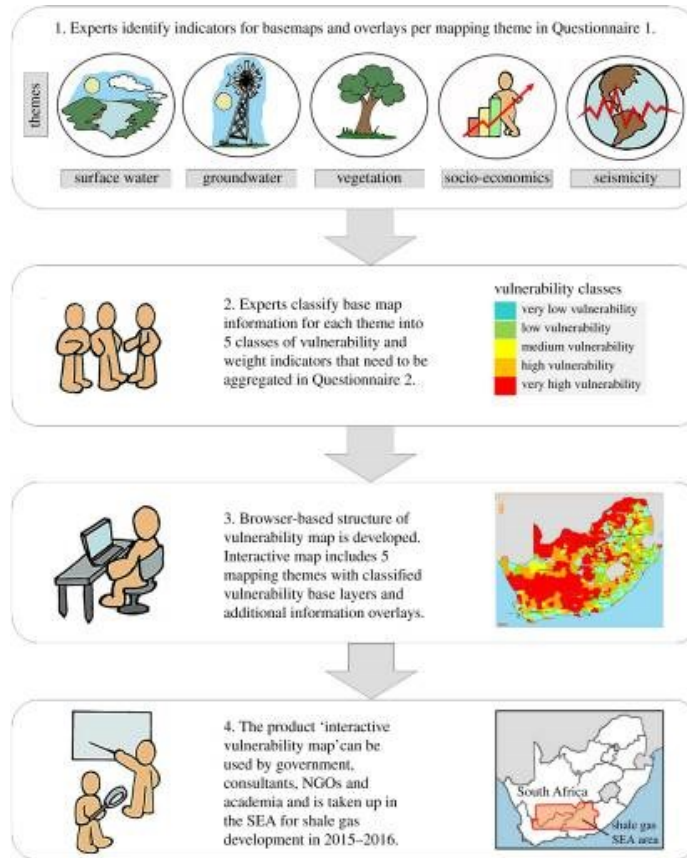


Figure 13: Example process for mapping vulnerabilities in South Africa (Sullivan-Wiley et al., 2019).

### 1.4.3 GIS Mapping

Geographic Information Systems, or GIS, mapping is a computer-based tool that interprets geographic data and features (CDC, n.d.). This style of mapping allows for the inclusion of numbers and data surrounding issues. That said, GIS mapping can be less personal than other methods.

Another benefit to GIS mapping is the versatility of the tools available. The ability to put in data allows for all kinds of information to be displayed about a community. GIS's preference towards geography also allows for data to be pinned to precise locations if needed (MassGIS) (Figures 14 and 15), allowing for much more structure when it comes to planning projects (RF Wireless World, n.d).



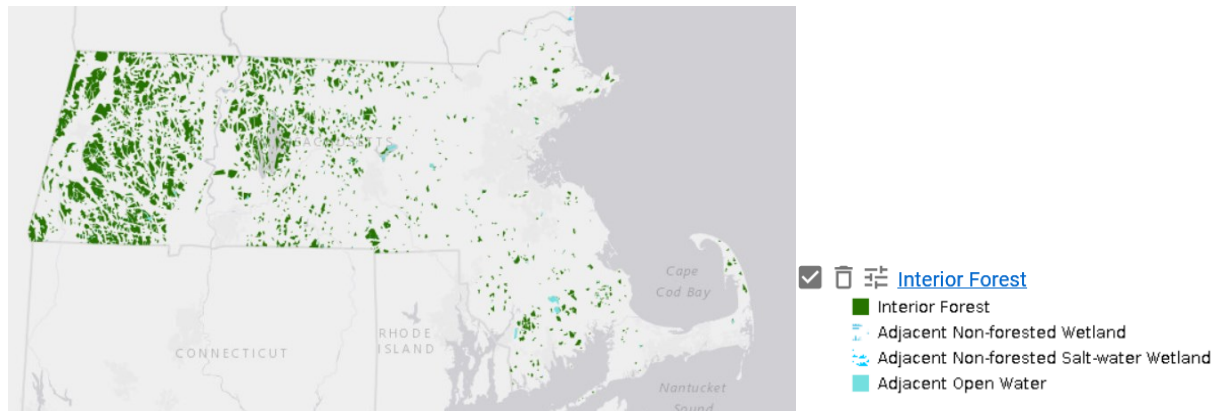


Figure 14: GIS data of interior forests in the state of Massachusetts (MassGIS, 2020, data accessed using MassMapper).



Figure 15: GIS data for endorsed hotel locations in Old San Juan (Turismo, 2021, accessed using Google Earth Pro).

GIS has drawbacks when it comes to implementation. The first major hurdle is cost. Many GIS tools are expensive. There are free tools (notably QGIS and Google Maps GIS), but free tools are a bit more limited in their ability to process data. Also, GIS has a steep learning curve. It could be too time-consuming to learn how to not only use GIS tools, but to learn them effectively enough to teach others to use the tools as well. Another key issue is processing power. With the amount of data being processed for GIS mapping, it can render older computers completely useless, which is important to consider when working with communities that might not have access to those higher-end devices.

Another drawback of GIS mapping is that it is a very delicate topic in terms of respect to the community. Inherently geographic data does not lend itself to solutions in the same way that other mapping tools do (RF Wireless World). It is extremely easy to overlook the individual in a sea of raw data, which is the exact opposite of what community efforts intend to do. It can also often be a privacy issue ("What Is GIS?," 2020). It is easy to take geographic information from a person, but exceedingly difficult to do so ethically without resistance. Both make it difficult to implement without careful consideration of the community.



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## 2.0 Methodology

The goal of this project was to work with residents of La Perla to develop data collection and mapping techniques that they and other communities can use to advance community initiatives. Furthermore, through communication and engagement with our sponsors and residents of the community La Perla, we aimed to build foundational relationships for future projects. We organized our work around central objectives to achieve these goals.

Objectives:

- Establish Familiarity with Residents of the Community
- Gather Information on What the Community Wants Mapped
- Create Sample Maps to Show the Capabilities of Mapping to the Community
- Provide Training Workshops on the Capabilities of Mapping
- Create Guides for Sponsors and Community Leaders for Future Mapmaking Activities

Before beginning field work, the team had ethical and safety considerations. These considerations were necessary to ensure both productive project work and the safety of the project team.

### 2.1 Ethical Considerations

Vulnerability is a contested concept that is dependent on perspective and context. Vulnerability is the notion of equality versus inequality or power versus powerlessness (Aldridge, 2015). This community mapping project sought out to collaborate with the La Perla community “to address inequality and powerlessness of individuals who may be marginalized or excluded” (Aldridge, 2015).

To effectively address power and marginalization concerns, the project team incorporated informed consent, confidentiality, and anonymity. It is important to remember that each community and individual is unique and with this, the project team kept in mind there is no perfect resolution that works for every community or individual. Our project aimed to uphold the “principles of justice, beneficence, and respect for the individual” (Araiza, 2019).

Regarding informed consent, the ethical issues are “informing participants, right to withdraw, giving of consent, consent to the unknown and ‘joiners’ in the research.” (Löfman et al., 2004) A special consideration we made when considering language barriers was to stress to every community member that they may cease interaction at any time and were under no obligation to answer any questions asked, as well as providing a clear explanation of our research.

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Like informed consent, confidentiality and anonymity are ethical considerations we addressed by assuring the identity of participants remained confidential unless expressly approved.

The team was aware of and considered the role we had in our participatory efforts. It was important for our project that there is not an unequal relationship with the communities we work with. To avoid this, we included the community in all stages of our work and made certain that the project was developed to meet their goals. The research we conducted was shared and accessible for the community.

As our sponsor Lourdes Diaz stated, “to work with communities in vulnerable situations is to enter spaces of deep introspection, contemplation, and all of the transformative aspects that facilitate real personal and professional growth” (Personal communication, January 31, 2023).

## 2.2 Safety Considerations

When presented with any new situation, it is important to be aware of health and safety issues. To decrease the risk of any safety issues, the team made sure to plan where we were going and traveled in groups. When traveling to unfamiliar areas, we were accompanied by our sponsors or community members who could not only guide us but provided a local presence.

Specific to our project's community La Perla, the team understood the significance of their history and culture. Although we denied the stigma of La Perla being a dangerous neighborhood, we recognized that we were outsiders to their community and respected the culture and privacy of their residents.

## 2.3 Establishing Familiarity with Residents of the Community

During the preparation period, the team identified the importance of building trust with the residents of La Perla. Our main approach was engaging in the community routinely. The team got involved by conducting walks around the community and participating with residents in various activities.

### 2.3.1 *Engagement in La Perla*

The team worked in La Perla often, quickly observing all the arts and views of the ocean which gave the community its beauty.



Figure 16: Project team and co-researcher Daniela walking along Malecón, a cement boardwalk that sits just along the edge of the water.

Walking around the community on a regular basis gave the team familiarity and a better understanding of La Perla. In addition, it gave us opportunities to work with community members in informal settings which created a neighborly atmosphere as the project progressed.



Figure 17: On the left, Alexi working alongside Jerome cooking Sancocho, a Puerto Rican beef stew, for families in the community. On the right, Tai and Humberto cleaning up trash around Finca Escuela de La Perla.

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## 2.4 Gathering Information on Community Perspective

With the help of our sponsor, we identified community members who were willing to speak with us in La Perla. This gave the team the chance to introduce our project and receive feedback on what they felt would be most important to map.

### 2.4.1 Key Informant Interviews

Conducting key informant interviews was the project team's main method of data collection. During these interviews, the team's focus was centered around the culture and history of La Perla and the community member's ideas in connection with mapping.



Figure 18: On the left, the team conducts an interview with Manny, a resident of La Perla. On the right, the team looks over an old hand-drawn map of La Perla with Jerome, Head of Finca Escuela de La Perla.

## 2.5 Creating Sample Maps

After gathering information and data from different stakeholders, the project team wanted to create sample maps to reflect their ideas. We created sample maps as templates that could be adapted and expanded by the community in the future.

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### 2.5.1 *Google My Maps*

The team investigated different mapping software to create sample maps and ultimately decided on Google My Maps for a variety of reasons. First, we researched similar WPI projects from the past and found that the teams used Google My Maps mapping software. This gave us past research data and guides to reference.

Google My Maps is free to use, has a simple interface making it user-friendly and has seamless integration with all programs and features that Google offers such as Google Sheets and Google Forms. The software also allows users to create maps in private with the freedom to share with whoever they choose to.

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## 3.0 Project Outcomes

Fieldwork in La Perla resulted in several findings and project outcomes. The findings, a few of which are summarized below, concerned organizational relationship building, data collection, and interest in mapping. Other findings were embedded in other project outcomes, such as those described below:

- Sample maps created using Google My Maps software as templates and ideas for La Perla and future mapping projects.
- Guides for Google My Maps and Registering a Location to Google Maps
- Training workshops for anyone interested in mapping, which enabled this project to live on once we left.

### 3.1 Findings

#### **Finding: Building Trust with Community Members Takes Time and Effort.**

- It takes time to build trust when working as an outsider in a community. This was a crucial step to building the foundation for future projects in La Perla.
- Not everyone is comfortable working with strangers. Not surprisingly, some residents did not want to speak or work with us. Although we invited anybody who wanted to work with us, we never pressured anyone to work with us.
- The La Perla community was inviting to anyone who respected their community and wanted to learn about their culture and history. The sense of pride in their community was evident.

#### **Finding: Data Collection was Challenging**

- Data collection was difficult during the day as many community members worked in other communities. Even outside of work hours, it was difficult to approach residents at their homes as they were sensitive to visitors and their privacy. It was important for us to respect privacy, but this extended the data collection period.
- The network connection was not strong within the community. T-Mobile and other big cellular networks had little to no service in most of La Perla, while AT&T and Liberty had decent enough signal strength. Hotspots were vital to project work in the community.
- There are not many formal addresses in La Perla, so using latitude and longitude coordinates was crucial for pinpointing exact locations on a map. The project team used the compass app on their phones to find their coordinates.

#### **Finding: Community Members Found Mapping to be a Useful Tool**

- There was interest in mapping the various artwork and murals around the community. This interest was backed by many community members showing pride in the art and murals displayed all around the neighborhood.
- The La Perla community showed eagerness to learn mapping capabilities and saw



the potential benefits mapping could have for community development.

## 3.2 Prototyping Sample Maps in La Perla

After gathering information and data from different stakeholders, the project team created sample maps that reflected their ideas and priorities. These sample maps were created to demonstrate the many ways mapping can support analysis and planning and showcase information.

### 3.2.1 Arts/Murals Map

One of the most consistent responses from community members to what they would highlight about La Perla was the beauty and arts of the community. After hearing this, the team created a map that highlighted the art and murals in Google My Maps with brief descriptions.

#### Tourist Map Template – Art, Murals & Attractions

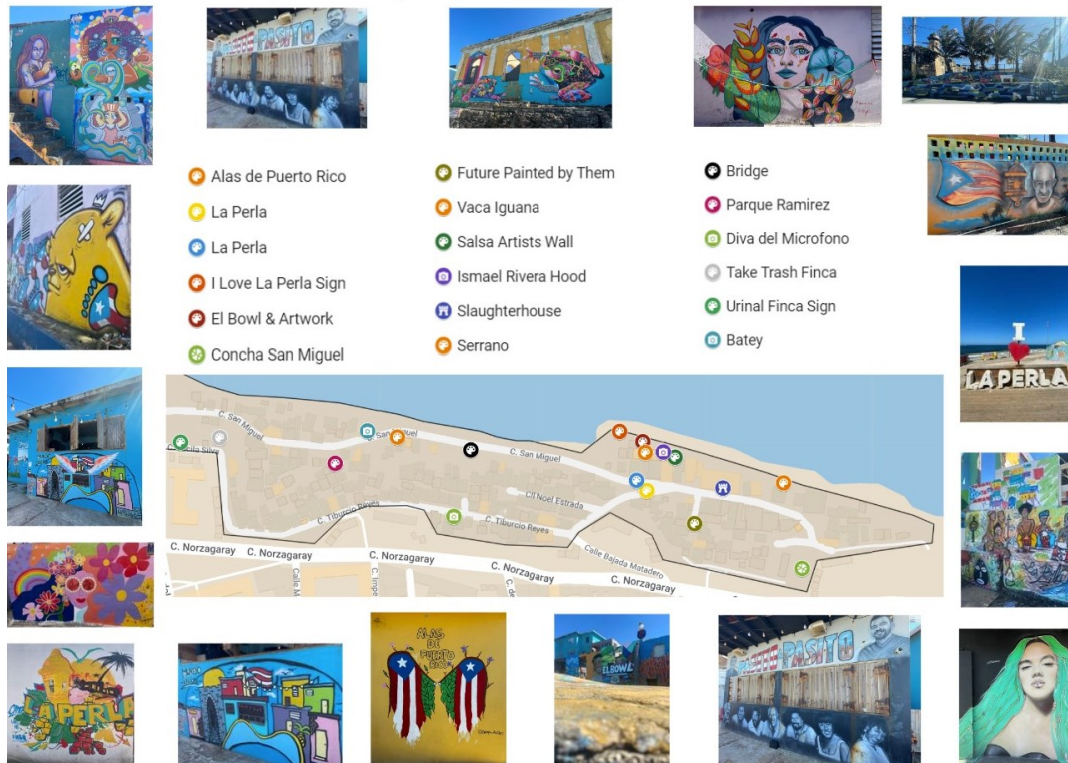


Figure 19: Interactive map that highlights the beauty of La Perla through art, murals, and tourist attractions.

The importance of this map is to give a glimpse of the beauty to outsiders of the community as well as raise awareness for maintenance of the beauty. This map also aligns

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with the goals of a future project in La Perla that intends to focus on tourism, with the art being the focus.

### 3.2.2 Sectors of La Perla Map

Another sample map the team created was one which highlighted the three main sectors of La Perla: San Miguel, Guaipao, and Lucila Silva.

## Full Sectors Map



Figure 20: Interactive map that highlights the three main sectors of La Perla.

Lourdes Lopez (referred to as Lourdes), the Vice President of La Junta Comunitaria de La Perla, helped the team identify the locations of each sector by drawing each on a map. The team then translated that information into Google My Maps. The importance of creating this map was to give a visual representation of the different sectors for future projects and the community of La Perla.

### 3.2.3 Assets Map

Based on our background research, along with a guided tour with Lourdes around the community, the team created a rough draft of an Assets Map.

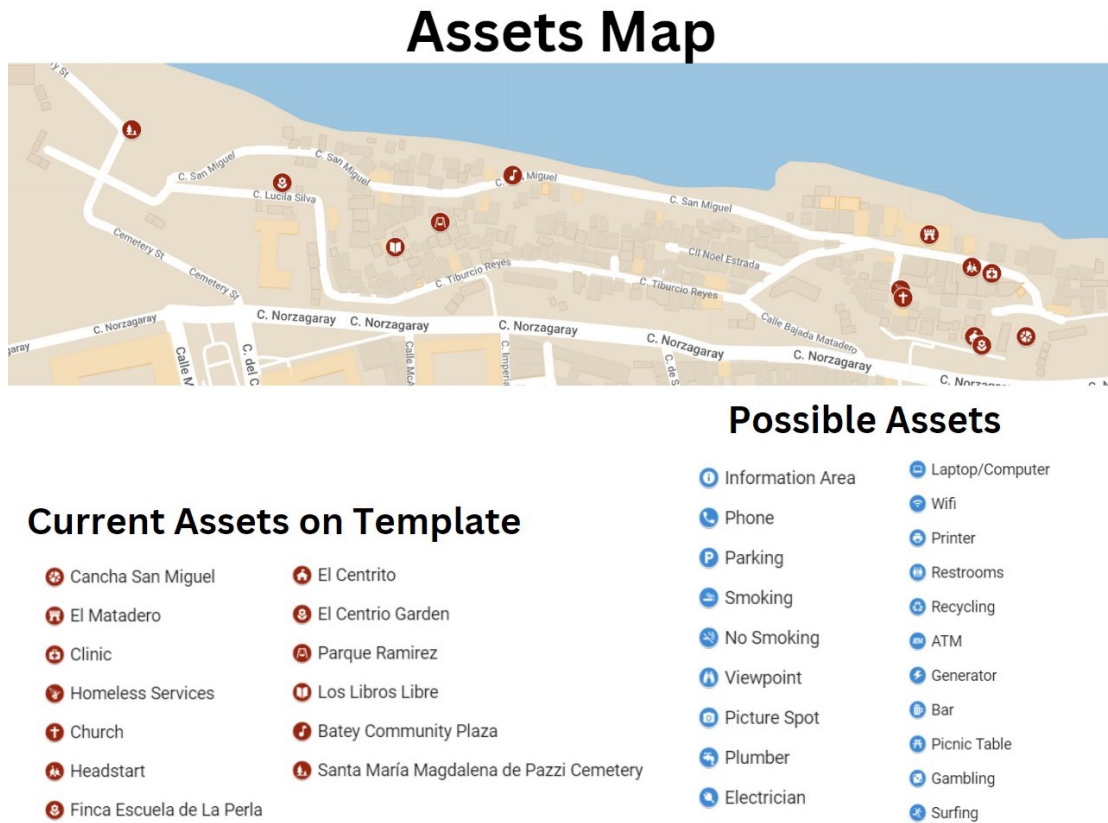


Figure 21: Interactive map that highlights different assets in La Perla. Note: The icons in red are established while the icons in blue are possible assets that may be added to the map.

This map illustrates the assets and strengths of the community as well as identify areas the community can investigate for improvement in the future. Asset maps internally help them to find strengths and bring the community together as well as have the ability to change outside impressions.

### 3.2.4 Evacuation Routes Map

The last sample map created was an Evacuation Routes Map.

## Evacuation Routes Map



Figure 22: Interactive map that begins to organize possible driving and walking evacuation routes from different areas in La Perla.

Lourdes described the safety of both residents and visitors to the community as the main concern for La Junta regarding mapping. This map was not professionally reviewed, but it offers ideas for evacuation routes from different areas within the community.

One important thing to note regarding La Perla is that there are only four entrances into the community: two staircases and two tunnels. These entrances proved hard to find during the early stages of the project and have also proved difficult during emergencies in the past. These entrances can be seen in Figures 23-26 below.

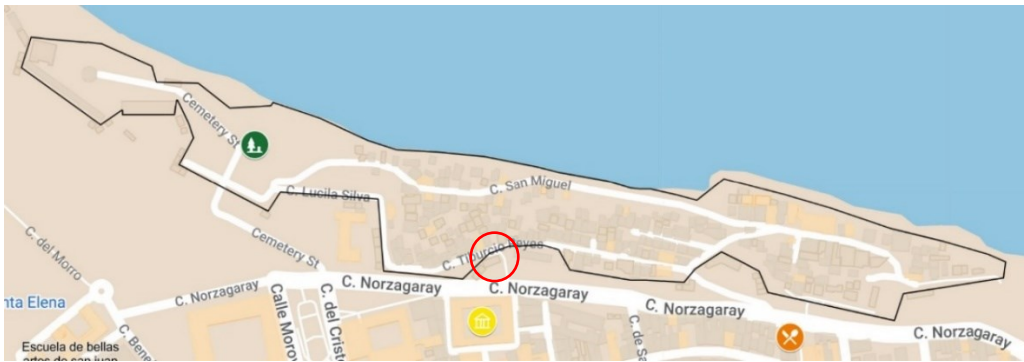


Figure 23: One of two stairway entrances to La Perla, located across Museo de San Juan which is labeled with a yellow icon on the map.

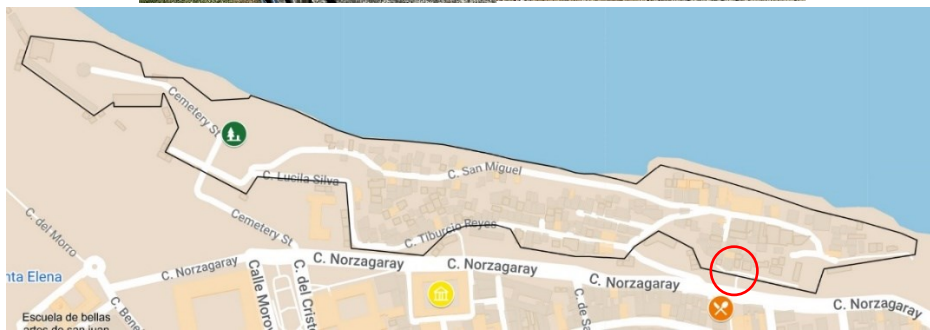
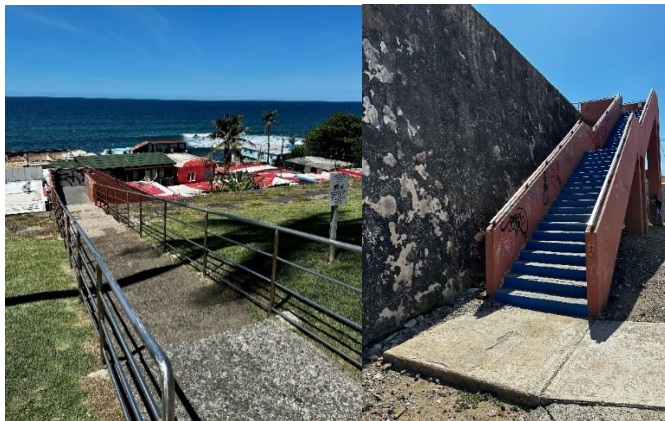


Figure 24: Second of two stairway entrances to La Perla, located across La Vergüenza Viejo San Juan, labeled with an orange icon on the map.



Figure 25: One of two entrances cars may enter the community, located across La Vergüenza Viejo San Juan, labeled with an orange icon on the map.

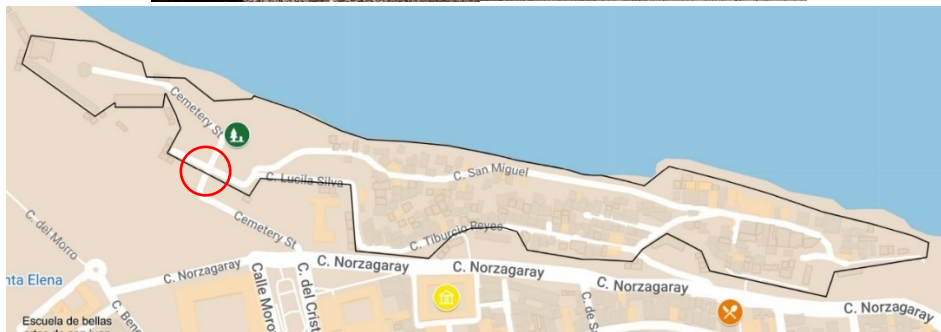


Figure 26: Second of two entrances cars may enter the community, located next to Cementerio Santa María Magdalena de Pazzi, labeled with a green icon on the map.

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## 3.3 Workshops and Training

Following the creation of the four sample maps, the team shifted focus to providing workshops and training for anyone interested in learning the mapping software and capabilities of mapmaking.

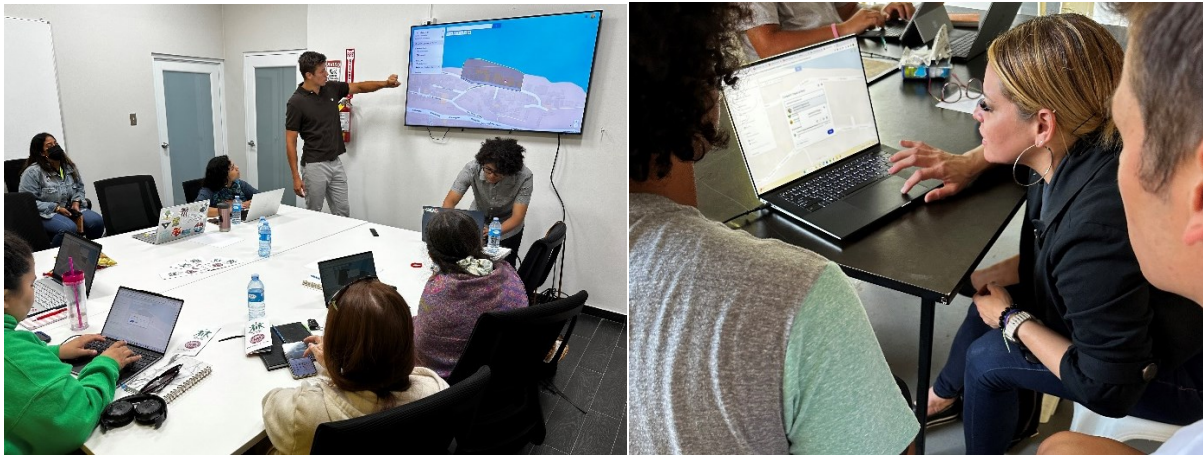


Figure 27: On the left, mapping training workshop with members from La Fondita de Jesús. On the right, training session with Yashira, President of La Junta Comunitaria de La Perla.

We found these trainings to be a crucial part of the project as it allowed us to train individuals in the community and lay the groundwork for the continuation of the project once it came to an end. The workshops also allowed the team to further our knowledge of mapping and its role in community development.

## 3.4 Training Guides for Community Mapping

Understanding that the time frame of this project was limited, the team created a guide on how to use Google My Maps as well as a guide on how to register a business or location on Google Maps. Both guides were written in English, reviewed, and then translated to Spanish. Both training guides may be found and referenced on our project center website: <https://wp.wpi.edu/puertorico/projects/2023-mar-may-2/fondita/>.

### 3.4.1 Google My Maps Facilitator's Guide

In addition to providing training workshops on mapping, the project team created a step-by-step guide on how to use Google My Maps. This guide includes specific steps on



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how to use the different features within Google My Maps as well as providing the connection between other Google software such as Google Sheets.



Figure 28: Cover page for Google My Maps Facilitators Guide we created. This guide may be referenced at our project center website.

### 3.4.2 Register a Location to Google Maps Guide

In recent years, La Perla has seen the growth of many different businesses from restaurants to bars. However, when you search for places in La Perla on Google, the results are scarce. The team created this guide to leave behind for current and prospective business owners so they can register on Google and increase their online visibility. Registration is not limited to businesses as it is possible to register entities such as non-profit organizations or locations such as landmarks or things alike as well. These locations also need to be updated in La Perla's case. For example, El Mundo Aparte is not in the correct location within Google Maps.



Register your Work  
On Google

Figure 29: Cover page to our guide to Register a Location to Google Maps available at URL.



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## 4.0 Conclusions and Recommendations

The main goal of this project was to communicate, engage and build foundational relationships with our sponsors La Fondita de Jesús and the community of La Perla. Due to their violent history, La Perla has held a reputation of being “the most dangerous neighborhood in San Juan” (Concepcion, 2023). However, our team received nothing short of a sense of family from the community. As the first project team from WPI to work in La Perla, we were extremely grateful for the hospitality and cooperation from the community members as we worked together on this project. We appreciated people’s eagerness to learn about mapping and the positive impacts it may have on community development.

With the help of our sponsor, advisors, and the community of La Perla, the team created maps using Google My Maps that reflected the ideas and voices of the community members. Further, the team created guides and provided workshops on mapping and its capabilities, allowing the project to continue after the team left.



In the limited time we had to complete this project, the team believes we were able to provide a foundational relationship for future project teams working with the community of La Perla and sponsor La Fondita de Jesús. Below are recommendations for future initiatives.

### **Recommendations for Future Community Mapping IQP Project Teams**

- Get involved with the community early and often. Identify important stakeholders and conduct key informant interviews as well as informal conversations. Do not treat anyone as a “test subject” and rather be human by listening and asking relevant questions. Avoid uncomfortable situations and questions as the best work happens

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with good chemistry.

- Do not come in as “experts” and be prepared to learn and re-learn in the field. Allow the community to guide the project and offer guidance when necessary. Hosting workshops and engaging events allows the team to teach the mapping capabilities to community members who may continue the project in the future.
- Work closely with a co-researcher who can translate conversations. most La Perla residents only speak Spanish or are only comfortable speaking Spanish. Having a translator with you will be important but be prepared for times when you will be on your own. Community members are more comfortable when speaking Spanish and are more likely to work with you as well.
- Create numerous sample maps prior to and once in field work for the community to visualize possibilities. Creating sample maps such as maps that highlight assets or different landmarks in your hometown will also allow the team to gauge the interest of community members regarding different types of maps.

### **Recommendations for working with the La Perla Community**

- Understand positionality and its relation to your project and this community. Reciprocate the hospitality the community gives you and be open to working with everyone in the community. Be delicate about sensitive information and understand the questions you may ask before asking. Provide clear explanations for what type of work you are doing in the community and where any information they provide you with will go.

### **Recommendations for the PPRC**

- Consider future projects in collaboration with La Perla such as working alongside Jerome at the Finca Escuela de La Perla, with La Junta on furthering emergency preparedness plans or similar community development projects.
- Consider future projects in collaboration with La Fondita de Jesús such as work in other municipalities they serve. La Fondita offers many services to vulnerable populations around the island. They are a prominent organization with goals that align with the goals of the WPI Puerto Rico Project Center regarding sustainable community development.

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