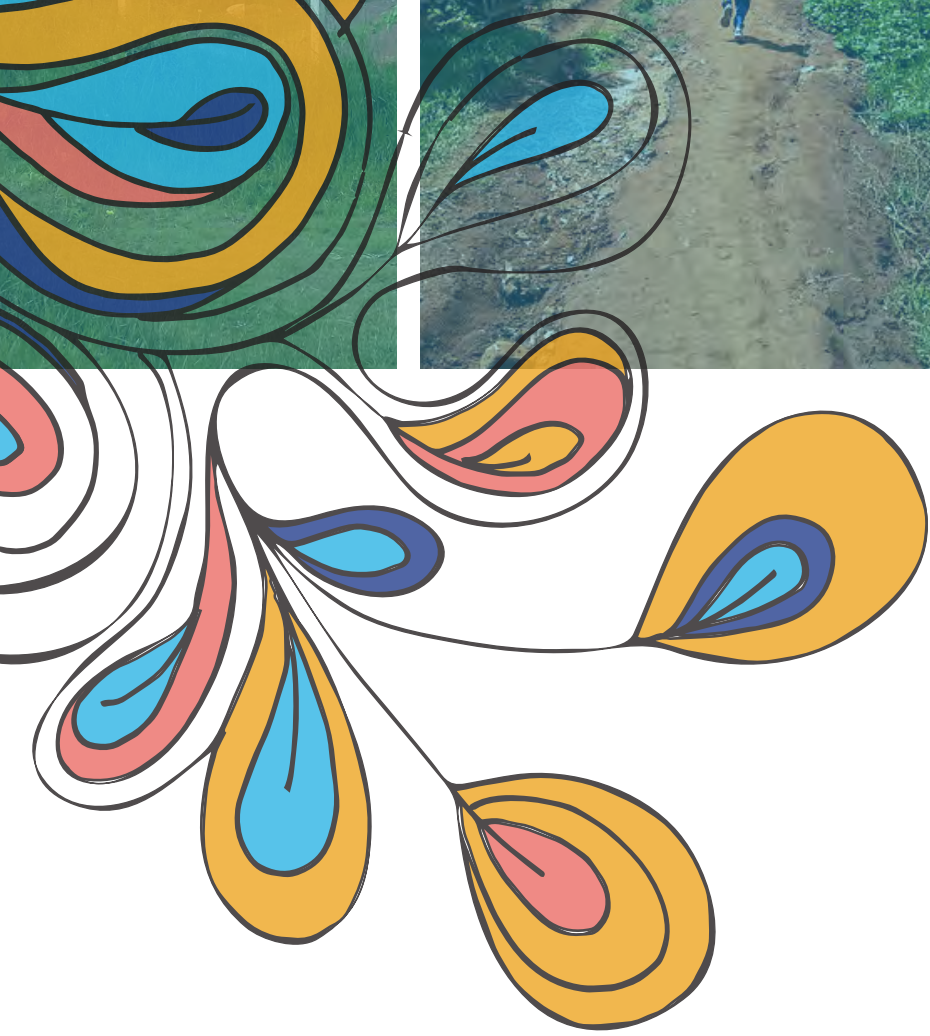




TOGETHER
WE MAKE
santa
marta
HOME

Fostering Community Ownership
and Environmental Stewardship
in Vila Santa Marta, Brazil

University of Michigan
Taubman College of Architecture + Urban Planning
May, 2015



TOGETHER WE MAKE SANTA MARTA HOME

Capstone Report, May 2015

Prepared by:

Alexandro Bazan, Samantha Farr, Stephanie Gerretsen,
Mabel Kessler, Julia Mantey, Alexandra Markiewicz, Shirley
Rempe, Kelly Richardson, Charlotte Wilson, Julia Upfal

Master of Urban Planning Students, University of
Michigan, Taubman College of Architecture and Urban
Planning

Academic Advisors:

Ana Paula Pimentel-Walker, Assistant Professor, University
of Michigan, Taubman College of Architecture and Urban
Planning, PhD, MUP, JD

Joshua Shake, Doctoral Candidate, University of Michigan,
Taubman College of Architecture and Urban Planning

Program:

Department of Urban and Regional Planning
Taubman College of Architecture and Urban Planning
University of Michigan

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Executive Summary

Assembled by Masters of Urban Planning students from the University of Michigan, this report analyzes key issues that affect the quality of life for residents living in Santa Marta.

Santa Marta is an informal settlement in São Leopoldo, a city approximately 30 kilometers north of Porto Alegre, Brazil. São Leopoldo has a conglomeration of informal and formal settlements, which include regularized neighborhoods and public housing projects. Santa Marta faces a host of environmental challenges that result from trash dumping in public spaces, trash burning, animals opening trash bags, and inadequate sewage, water systems, and road infrastructure. These issues stem from systemic inequalities within the governmental structure that provides waste management and infrastructure resources, as well as the lack of public participation in the participatory budget process. Our project partners have already combined efforts and have begun working with the municipal government of São Leopoldo to address these issues. This report is a continuation of their efforts.

During our site visit in March 2015 we gathered information from interviews, surveys, participatory mapping exercises, and visioning sessions. In addition, we established relationships with the students and teachers from the Santa Marta K-9 Municipal School, the São Leopoldo Prefeitura (Municipal Government), and the Santa Marta Neighborhood Association. These efforts have shaped the content of our recommendations for intervention and have been invaluable in determining the underlying factors that enable the identified issues to persist.

In this report we provide a number of different recommendations and initiatives that can be used and implemented in the local community; these initiatives will encompass and improve environmental stewardship and communication between the local government and the community at large, activate public spaces, and create a greater sense of community pride and community ownership. The success of our project depends directly on meeting the needs of our community partners and better understanding the interactions between the municipality and the community.

This report is a guidebook for leaders in Santa Marta to use to address the key issues and problems identified herein. We carefully compiled it by using Santa Marta's history and natural environment as the initial stepping stones toward creating initiatives that not only address the identified issues in a comprehensive manner, but also instigate recommendations that are holistic and wide-reaching. The report begins with an introduction that provides background information on Santa Marta to provide context for the targeted issues and problems in the community. The second part of the report discusses

the different types of research methods we used to better understand the Santa Marta community and the underlying issues at hand. The third part of the report synthesizes the data gathered and analyzes the core issues we identified. The final two sections detail the recommendations we propose and the visions we see for activated public spaces in Santa Marta.

The community of Santa Marta has a history of strong collective action among residents and the capacity to re-envision and redefine what it means to be a proud resident of Santa Marta. Using this report as both a learning and advocacy tool, we hope that it can help bring more community cohesion, inspire environmental stewardship across the different generations living in the community, and serve as an example for other informal settlements.

Muito obrigado pela sua consideração,
The University of Michigan Urban and Regional Planning International Capstone

INTRODUCTION

A wide-angle landscape photograph showing a town nestled in a valley, surrounded by dense green forests. In the foreground, there's a lush green field. The background features rolling hills and mountains under a bright blue sky with scattered white clouds. The entire image has a light blue tint.

OUR PROJECT

Bringing together University of Michigan students and Santa Marta residents, this project hopes to offer new approaches to this dynamic community's ongoing challenges and concerns.

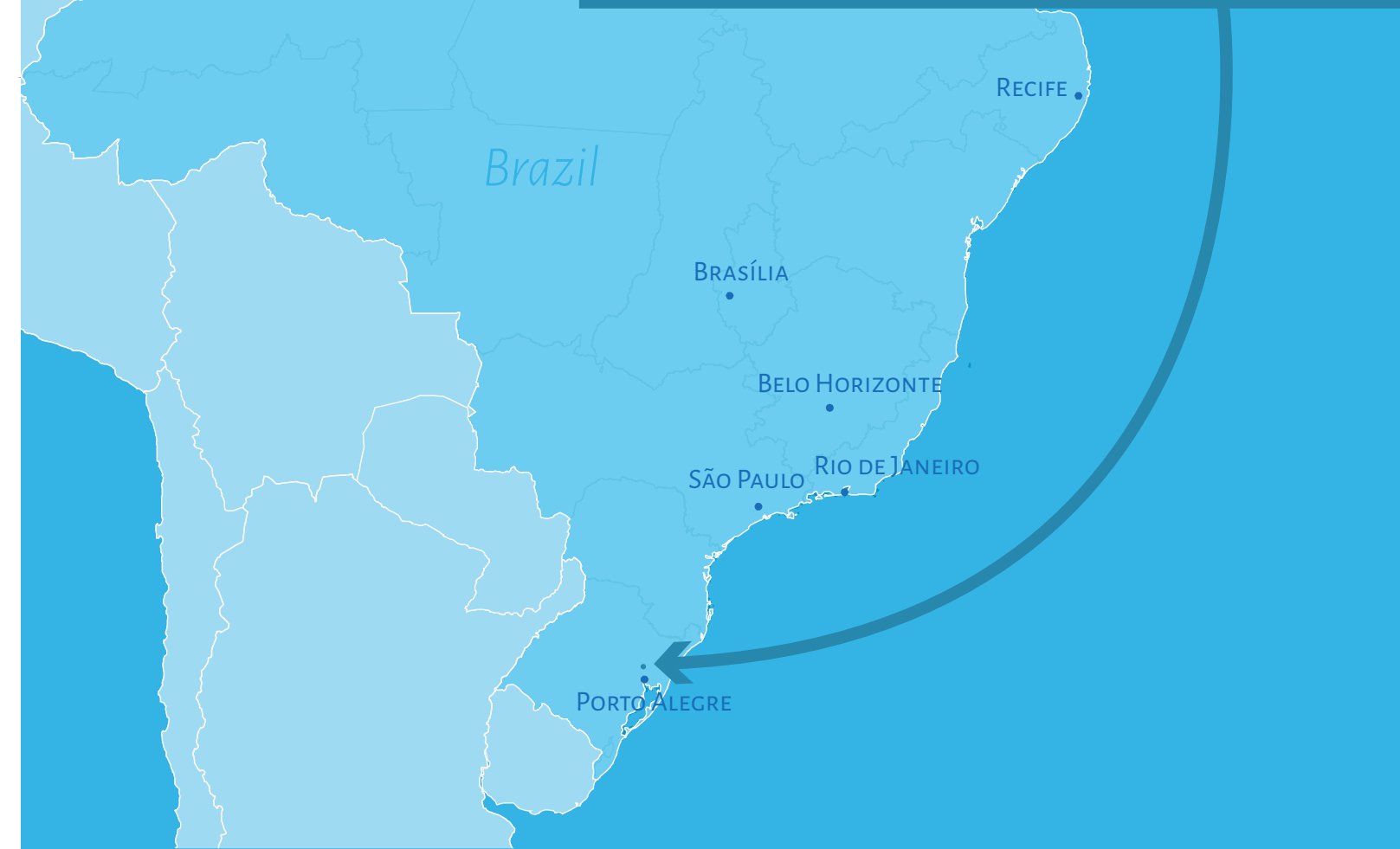
The purpose of this project is to create recommendations for developing public spaces and environmental education programs that foster environmental stewardship, build community ownership, improve infrastructure, and strengthen community identity in Santa Marta, Brazil. Santa Marta is an informal settlement in the Arroio da Manteiga district of São Leopoldo, Brazil. Approximately 200,000 people live in São Leopoldo, which is in the metropolitan region of Porto Alegre, an area with a population of four million. In order to achieve these goals, the University of Michigan has partnered with students

and teachers of the Santa Marta School, a K-9 municipal school; Com-Vida, a student-run organization; and the Santa Marta Neighborhood Association to create and implement future programs and recommendations. The University of Michigan student group worked with our partners to conduct field research in March 2015, using a wide array of research techniques addressed in the Community Data section, in order to gain an understanding of the problems the community faces. Based on the data collected on this trip and study of similar cases and relevant literature, the University of Michigan students



Com-Vida and University of Michigan students at Santa Marta School during the field research trip in March 2015.

Vila Santa Marta is an informal settlement on the outskirts of São Leopoldo, a city located in the Porto Alegre metro area.



Context Map for Project Site. São Leopoldo is in the metropolitan region of Porto Alegre, the capital of the state Rio Grande do Sul.



The Santa Marta community contains a range of building types and uses, including retail and religious buildings.

have created a portfolio of specific recommendations for the residents of Santa Marta to pursue and implement in their community.

Santa Marta faces persistent issues that include, but are not limited to, inadequate and infrequent road maintenance, prevalence of open sewage, incomplete waste management services, and lack of well-maintained public spaces for recreation and leisure. Despite these challenges, the community of Santa Marta has a history of strong collective action among residents and the capacity to re-envision and redefine what it means to be a proud resident of Santa Marta. Residents of Santa Marta, for example,

applied for and received private funding for large garbage bins made out of concrete that were installed throughout the community.

We developed recommendations that provide Santa Marta residents with a package of tools and ideas that have the potential to stimulate change in waste management practices and waste disposal behavior, maximize the community's voice in effectively communicating with the municipal government to improve public services and infrastructure provisions, and create public spaces that are both safe and inviting for residents of all ages.



1 SANTA MARTA SCHOOL



2 BRIDGE AT ENTRANCE



3 SMOKE STREET



4 PAC HOUSING



5 RECYCLING CENTER



6 TANCREDO NEVES

Map of Key Locations in Santa Marta and Tancredo Neves.

ABOUT SANTA MARTA

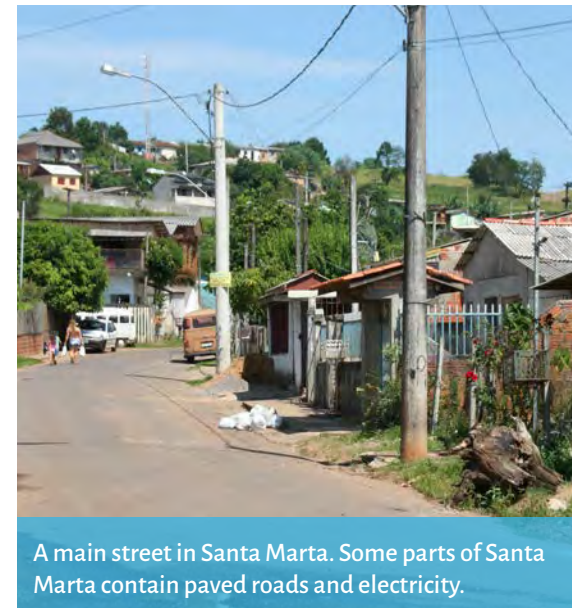
The residents and students of Santa Marta take action to address environmental and social needs despite the community's lack of access to infrastructure and resources.

History and Context

São Leopoldo is an industrial city in the Porto Alegre metropolitan region. The city has 24 districts, which include formal neighborhoods and informal settlements, including unregularized communities, formal neighborhoods, and public housing projects. Santa Marta is located in the Northeast portion of São Leopoldo, the region of the city with the highest

relative increase in population (26%) and households (45%). Santa Marta faces both environmental and social challenges resulting from informal and unequal urban development.

Santa Marta is one of the poorest informal settlements in São Leopoldo. Originally settled by informal recyclers around a nearby dumpsite, development of Santa Marta occurred through



A main street in Santa Marta. Some parts of Santa Marta contain paved roads and electricity.



Tancredo Neves contains more regularized housing and infrastructure than Santa Marta.



Part of Santa Marta is on an incline overlooking the rest of São Leopoldo to the East. The housing stock is varied; pictured here are homes on unpaved roads constructed from clay blocks.

spontaneous land occupations, as well as clandestine and illegal land subdivisions. Despite the fact that most residents do not have land title and only a few lots are regularized, they have fairly strong security of tenure and do not risk eviction. The security of tenure is in part due to the fact that Santa Marta is zoned for low-income housing, a zoning designation called AEIS (Special Zones of Social Interest). AEIS integrates the informal areas in the municipal zoning scheme and urban planning laws and regulations (Fernandes, 2002).

Article 183 of the Brazilian Constitution guarantees the social function of urban land, explicitly stating that, "someone who possesses as their own an urban area up to 250 square meters for five years, uninterrupted and without opposition, using it for housing for them or their family, acquires it as their domain as

long as the claimant is not the owner of another urban or rural property. Title and concession of use shall be given to a man or woman, or both, independent of their civil state" (Fernandes, 2002). The City Statute of 2001 (Law 10.257) is the enabling legislation for this Articles (this and other urban policy articles in the Federal Constitution). Under the City Statute, AEIS is a policy tool aimed at preserving land for low-income housing (City Statute, art. 4º, inc. V, line "f"). AEIS designation maintains an area for a community and its residents and prevents companies and developers from buying the land and integrating it into the formal land market, which largely concentrates the middle- and high-income classes.

This City Statute encourages the legalization and improvements of tenure conditions and security in informal settlements.

Informality is often defined as the “lack of serviced land and social housing as well as a dysfunctional legal system which generates large costs for residents including the lack of public services, discrimination by others, environmental and health hazards, and inequitable civil rights” (Fernandes, 2011, p.3). Although Santa Marta is zoned as AEIS, our interviews with municipal planners, architects, and elected and appointed officials revealed that the municipality is unable to identify land ownership for most parcels. The municipality does not provide permanent infrastructure on federally owned land or on privately owned land that has been occupied and is under dispute. Thus, Santa Marta residents who occupy these types of land do not receive certain public works and services, such as street pavement.

Santa Marta is adjacent to a public housing development, Loteamento Tancredo Neves, which is federally sponsored by the Minha Casa Minha Vida program. Unlike Santa Marta, the Tancredo Neves community tends to receive more municipal support and has better distribution of services because residents live on regularized land that the municipal government recognizes. These public housing projects come with basic infrastructure and services such as electricity and sewer and water systems. Since Tancredo Neves is on public land, the São Leopoldo municipality by law cannot sell the land, but instead it continues to build public housing units on it in conjunction with the Minha Casa Minha Vida program. Consequently, residents of Tancredo Neves do not possess legal land titles and cannot sell or exchange homes located on municipal

Minha Casa Minha Vida, My House My Life

The federal government launched Minha Casa Minha Vida, the federal housing program, in 2009 with the goal of building one million homes for low to middle income families by 2011 (Loudiyi, 2010). As of 2014, the program has provided 1,247,859 units for low-income families (Klink & Denaldi, 2014). It has contracted a total of 2,783,275 units and involved “R\$ 160 billion of grants and subsidized finance” (Klink & Denaldi, 2014, p. 224).

The program provides financial support to recipients and privately contracted developers through lump-sum grants, subsidies, and cheap credit. This financial support reduces risk for the private sector entities who construct units. Furthermore, “a public guarantee fund eliminates the risk of loan defaults during the construction period,” and then the national buys the units and assumes subsequent risks (Klink & Denaldi, 2014, 224).

Minha Casa Minha Vida will finance future construction in Tancredo Neves II, the site north of Tancredo Neves, as the original funding mechanism did not adequately finance construction.



The municipality began constructing Tancredo Neves II, the site north of Tancredo Neves, but had to abandon construction due to budget constraints set in place by the federal Growth Acceleration Program (PAC). During construction in 2010, building contracts organized by the municipality became prohibitively expensive and led the municipality to shut down construction after road and lighting infrastructure was put in place.

lands, but they can instead pass down the right to use the home or land through familial relations in accordance with the Concession of Special Use for Housing Purposes on public land, a City Statute.

Com-Vida and Community Action

Given the environmental and infrastructural problems in this community, teachers and students at Santa Marta School started organizing to build environmental education programs that are meaningful and cognizant of their realities. The community has found respite in building environmental awareness through the implementation of the federally sponsored and student-led association, Com-Vida. Under the leadership of Sandra Grohe, one of the teachers at Santa Marta School, the Com-Vida program began in 2013 with the aim of decreasing violence within the community through processes of mediation, and raising awareness about the dangers and consequences of dumping, littering, and living in close proximity to the Arroio da Manteiga creek. São Leopoldo's Department of Education sponsored 32 schools to attend an environmental education training seminar and another twenty schools to attend the Children, Youth, and Environment Conference, both of which the federal government hosts. These two forums promote environmental education and encourage schools to formally

implement environmental education as part of the national curriculum. Five schools in São Leopoldo have active Com-Vida programs thus far. The Santa Marta School's Com-Vida program, however, is the region's flagship program and has served as a model for other schools in the region. Santa Marta's Com-Vida program, which has ten active student members, has successfully raised environmental awareness in the school. However, the students and administration seek recommendations for programs to change individual behavioral patterns with regard to dumping and littering practices, improve environmental conditions and waste management, as well as to transform outsiders' negative perceptions of Santa Marta and strengthen community identity and pride.

Com-Vida has already conducted its own analysis of dumping and littering practices in the community through interviews with residents from 72 homes and distribution of flyers promoting environmental awareness and the importance of engaging in sustainable waste management practices. Partnerships with LIFE Murilo Braga and Rondonia, PUCRS University, Universidade de Vale do Rio dos Sinos (UNISINOS), and now the University of Michigan help support these initiatives. Furthermore, Com-Vida derives its support and basic foundation from Bairro Melhor, the Better Neighborhood program. The Better Neighborhood initiative is a program through the Federal Education

Department, O Programa Nacional de Educação Sustentável. This initiative is "designed as a policy for basic education, which provides for close cooperation between school and community, and between Basic Education and Higher Education. The programs that promote synergistic relationships and strengthen each other in the transition and building of sustainable societies, as envisaged by the Treaty of Environmental Education for Sustainable Societies and Global Responsibility" (Ministério Da Educação, Secretaria De Educação Continuada, Alfabetização, Diversidade E Inclusão Diretoria De Políticas De Educação Em Direitos Humanos E Cidadania Coordenação Geral De Educação

Ambiental. Apresentação do Programa Nacional Escolas Sustentáveis).

With the success and hard work that the students from Com-Vida have demonstrated thus far, the student organization won the LanXess Prize of R\$10,000 to use for building compost bins. While São Leopoldo's Department of Education will not impose the program on other schools, it hopes that with Santa Marta's current success, more schools will start their own programs and further promote environmental stewardship in the region. Looking forward, the students and teachers hope to engage in more horizontal dialogue with community members and the municipality about environmental stewardship.



Com-Vida builds compost bins after receiving R\$10,00 for the LanXess Prize.

PROJECT GOALS

Our recommendations aim to build community identity and address improper waste disposal. Our visions for public space provide for safe, enjoyable recreation and leisure.

Although the municipality recognizes Santa Marta, the community has limited capacity to effectively acquire basic infrastructure and improve the quality of existing educational, public service, recreational, and environmental programs. Santa Marta School, the student-led association Com-Vida, and the Neighborhood Association voiced the need for environmental, physical, and educational interventions that address the inadequate waste management and lack of usable public space. Our client-partners noted that since Santa Marta is a relatively new community, residents do not possess a strong sense of belonging

to the community. Other neighborhoods and nearby communities have negative perceptions of Santa Marta, exacerbating the lack of community identity.

We aim to put forward recommendations that change ingrained behaviors toward waste disposal and strengthen residents' sense of belonging and attachment to the community and surrounding environment. Furthermore, we hope to identify ways in which community leaders can partner with the local government, as well as suggest actions the municipality can take to improve municipal provisioning of public works and services.



Santa Marta lies on the periphery of São Leopoldo, adjacent to undeveloped open space. However, the community currently lacks programmed and well-maintained public spaces for recreation.

Our project goals and planning interventions take into consideration the need to plan with limited resources, therefore we tailored our recommendations and project goals in such a way that community members can pursue change without a lot of resources, funding, or governmental support. We believe it is possible to think on the small scale and still have large impacts that are also long-term. Santa Marta is rich in community, but has noticeable deficiencies in the dialogue between community members as well as the São Leopoldo municipality. This report therefore provides a guide to better understand how the different municipal departments operate for the benefit of Santa Marta residents. Furthermore, this report provides more insight on how to leverage collective action in promoting environmental and public space stewardship in making Santa Marta a home that all residents can enjoy.

This report is not only an initial step toward improving the quality of life in Santa Marta, but is also a learning and advocacy tool that other informal settlements in Brazil can use to inspire ideas for replicating interventions. We hope this report can serve as a paradigm for other schools serving residents of informal settlements in Brazil to use for capacity building and engaging in effective dialogue with the municipality.



Dumping occurs throughout the community on corners and in open spaces.

PARTNERS & ACTORS

This project is a collaborative effort, bringing together people across different groups who are invested in promoting a cleaner, healthier, and safer Santa Marta.

This report addresses the concerns of a number of primary stakeholders who are invested in promoting a cleaner, healthier Santa Marta. Prior to our involvement in Santa Marta, many of these community leaders and advocates worked collaboratively to lay the groundwork for community transformation. Their commitment to change allowed us to

develop meaningful partnerships and create an expansive network in São Leopoldo. Our recommendations were generated in consideration of existing leadership structures and the prospective roles that stakeholders can fill during implementation. The following section provides a brief description of the role of each stakeholder in our project.



Santa Marta School is a social hub in the community. Approximately 800 elementary and middle school and 100 adult students attend classes daily.



The Secretary and Vice Secretary of Education, other municipal employees, and teachers from Santa Marta School welcome the University of Michigan group to São Leopoldo, Brazil in March 2015.

Santa Marta School

Santa Marta School educates students in grades K-9 that live in the Santa Marta and Tancredo Neves communities. Approximately 800 elementary and middle school students attend classes either in the morning or in the afternoon. In addition, approximately 100 young adult students attend evening classes for continuing education. The school and teachers are well organized and highly respected, as evident in the esteem that students showed for the administration and the hospitable, yet structured, atmosphere that the administration provided for them.

In addition to its primary role of providing educational resources, Santa Marta School is a critical piece of the community's social infrastructure.

The Santa Marta School staff helps facilitate community interventions and advocate for change. In fact, the teacher in charge of environmental education, Sandra Grohe, helped to initiate this project to involve her students in leading a community transformation. Administrators at Santa Marta School have a close relationship with local organizations and attend community meetings and events, while teachers work hard to integrate environmental education and community challenges into their curriculum. For example, during our visit, the English teacher taught an interactive lesson on recycling in English. Santa Marta School is a safe place for children to play and residents to gather. The facility itself includes recreational spaces, a library, a media center, an auditorium, and a community garden.

Com-Vida Student Organization

Com-Vida is an extracurricular program at Santa Marta School that is dedicated to addressing school- and community-wide environmental issues. About 30 students are enrolled in Com-Vida, with about ten students actively involved. The program is part of a federal environmental education initiative based in part on the philosophy of Brazilian educator Paulo Freire, who argued that meaningful learning is rooted in a curriculum based on the reality of the students. One of the main goals of the federal program is to promote collaboration between

schools, community organizations, and universities to foster sustainable communities and societies. Santa Marta's Com-Vida has proven to be an excellent model of success. These students work to address the issues unique to Santa Marta and their school. The work that Com-Vida has done leads the way towards a cleaner, healthier community. Students started by addressing waste management issues at Santa Marta School through facilitating competitions that encouraged classroom cleanliness. Moving beyond the classroom, these students are working with our group to continue to broaden their scope to the neighborhood level and determine how to best reach the community about environmental issues.



Located centrally in Santa Marta, the Neighborhood Association facility has a two room building that hosts meetings and a playground and soccer field where children play.



Com-Vida students Micael, Fernanda, Katiely, and Lucas (left to right) work with Professor Ana Paula Pimentel Walker during the March 2015 field research trip.

The Santa Marta Neighborhood Association

Santa Marta is home to a neighborhood association that was founded in 1997 and is a staple of the community. The Neighborhood Association is run by one elected president, Dilce Rosa, and has the support of twelve board members. Regular meetings occur at the Neighborhood Association with other organizations and community members. These meetings provide residents with an outlet to discuss pressing issues. The Neighborhood Association often facilitates communication between residents and municipal leaders. In fact, Dilce has put a concerted effort towards increasing neighborhood involvement in the participatory budgeting process

as well as drafted and filed a list of requests for municipal services and infrastructure upgrades with City Hall. The neighborhood association hosts a variety of events and meetings, including meetings with municipal staff and elected officials, community events, such as free preparation classes for college entrance exams, and private events like baby showers.

The Neighborhood Association space has a recreation area that includes a playground and soccer field. It is one of the primary public spaces in Santa Marta; children and families frequently spend time there. The facility itself is in poor physical condition, but remains a place residents feel they can intimately and comfortably congregate.



Members of the Nova Conquista recycling cooperative sort plastic bottles at the recycling center in Santa Marta.

Nova Conquista Recycling Cooperative

Nova Conquista, Santa Marta and Tancredo Neves' recycling cooperative, is one of seven recycling cooperatives in São Leopoldo. The cooperative rents a truck to pick up recyclable items and employees process and separate them. The cooperative has a large warehouse facility where materials are sorted and compacted. Santa Marta is also home to many informal recyclers, who employ themselves by sorting waste and selling usable items. Unlike the informal recyclers, who often sort through waste and dump or burn what is unusable, Nova Conquista uses proper disposal techniques and directs unusable waste to the local landfill. Leaders from Nova Conquista collaborate with the Santa Marta School, Com-Vida, and the

Neighborhood Association as part of a student-driven movement towards environmental stewardship, "Movimento Barrio Melhor."

Religious Organizations

Santa Marta is home to a number of religious facilities. Almost every block has at least one small Pentecostal or Catholic Church. The churches tend to serve small congregations of around ten people and provide an outlet for neighbors to come together and discuss community issues. Church leaders often take initiative in community organizing and outreach; for example, one of church leaders we spoke with, Agenor Kertes de Azevedo, described his participation in growing flowers in areas where trash dumping takes place to deter future dumping.

Municipality

Mayor Anibal Moacil da Silva, of the Brazilian Social Democracy Party (PDSB), leads São Leopoldo's municipal government. The municipal governance structure consists of a number of different departments, many of which are part of "Viva Santa Marta," a collaborative and multi-departmental initiative to address Santa Marta's challenges. These departmental leaders expressed their enthusiasm about current work in Santa Marta and will be critical to implementing our recommendations. Please refer to the Community Data section for a table outlining departmental roles and responsibilities, as well as the sidebar below for information on the Growth Acceleration Plan.

PUCRS

The Pontifical Catholic University of Rio Grande do Sul (or PUCRS) is a private university in Porto Alegre that has over 30,000 students, making it Rio Grande do Sul's largest university. We collaborated with professors and students from PUCRS on this project. Dr. Isabel Carvalho, a professor of environmental pedagogy, worked with us to select Santa Marta as the location for our research. During our field research, several students from PUCRS helped us survey residents. PUCRS students and faculty have expressed interest in continuing work in Santa Marta. Given their commitment and expertise, they will serve a valuable role in the implementation of our recommendations.

Growth Acceleration Program (PAC)

In 2007, the Brazilian federal government launched the Growth Acceleration Program (PAC), a program to enhance the national economy through social and urban infrastructure upgrades (highways, airports, ports, low-income housing, and water and sewage systems). By 2010, PAC had allocated over R\$1.1 trillion, including R\$170.8 billion to social infrastructure and urban improvements, R\$106.3 billion for housing in low-income communities, R\$40 billion in basic sanitation and R\$12.7 billion in water system improvements. (Selvanayagam, 2010).

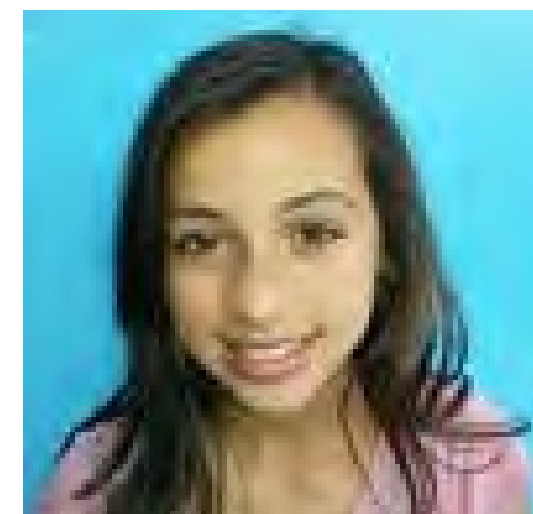
In Santa Marta, PAC plans on relocating houses too close to the Arroio da Manteiga, as the federal government requires that homes are 15m from the creek. It began construction on Tancredo Neves II (located north of Tancredo Neves) to house 532 people currently located too near to the creek. However, the municipality could not finance the 5% match to the federal cash transfer installments. The project is now under Minha Casa Minha Vida, for which the municipality provides the land, rather than a cash match, and the status of the housing development remains unclear (D. Pinheiro, personal communication, March 9, 2015).

Other Community Organizations

In addition to the organizations involved in “Movimento Barrio Melhor,” (Santa Marta School, Com-Vida, Nova Conquista, and the Neighborhood Association), Santa Marta and Tancredo Neves host several other community organizations that are important elements of the local social infrastructure. Tancredo Neves has an NGO facility that hosts children from Santa Marta and Tancredo Neves for after school care, providing an essential service for working parents. The facility also provides social services for youth focused on sexual violence, court order protection, child abandonment, and child labor. Tancredo Neves also has a K-9 school, providing educational opportunities for Tancredo Neves’ youth. In Santa Marta, we identified at least one preschool for children under five. Together and along with Movimento Barrio Melhor, these community organizations strengthen Santa Marta’s social fabric and can be looked to as potential partners in the implementation of the recommendations in this report.

Local Businesses

Santa Marta has a vibrant business community; there are a number of different local entrepreneurs who employ many residents in retail and in private services. Local business owners in Santa Marta are invested in the success of the initiatives recommended in this report. One of the primary neighborhood markets, Ziller Market, has helped to encourage environmental stewardship by tending their own garden and selling produce in their store. Another market owner expressed interest in our report and offered up his wall for us to paint a public input board. Given the welcoming and enthusiastic feedback we received from community businesses, we suspect they could act as potential partners in program implementation and perhaps serve as hubs for public campaigns.



Com-Vida members at Santa Marta School: Sandra Grohe, Marcia Kehl de Souza, Ana Carolina Kertes, Katiely Seibel, Micael Duarte, Bruno, Arno Rosa, Lucas Hermes, Fernanda Antunes, Mathiely, and Tabita

CURRENT CONDITIONS

Santa Marta is a strong, vibrant community, with residents who care for their neighbors and their space. It simultaneously faces difficult challenges stemming from its lack of resources.

Santa Marta currently contains a number of important assets, which we will leverage in our recommendations. It also faces a number of challenges, which we view as spaces of opportunity in creating a stronger Santa Marta. Challenges include issues related to social fabric, poverty, governance, and infrastructure. Despite the complexity of issues and physical and social isolation from the rest of São Leopoldo, Santa Marta is a community where residents confront and address challenges through collective action. Local organizations and leaders have proven their commitment to effectuating change, even in the face of complex community obstacles. The following section provides a snapshot of the social and environmental conditions in Santa Marta by briefly discussing its assets and challenges.



Active street life in Santa Marta features a variety of types of transportation, including horses.

Assets

Community Organizations

The community organizations in Santa Marta play a critical role in ensuring neighborhood stability and encouraging initiatives that bring positive change. Movimento Barrio Melhor, a movement collaboratively driven by four community organizations, has led the way towards a cleaner, healthier, and safer Santa Marta by promoting environmental sustainability through community engagement and outreach. The collaborative nature of Santa Marta's neighborhood organizations has made it possible for them to connect with municipal leadership and diagnose community needs. Through neighborhood meetings, cleanups, surveys, and outreach, Santa Marta's community organizations laid the foundation for us to engage in meaningful research. They were influential in the development of our recommendations due to their reliable and first-hand opinions of community challenges and potential solutions.



Existing parks in Santa Marta and Tancredo Neves

Existing Parks

While Santa Marta has a shortage of developed public spaces, the existing public spaces are incredibly valuable to the community. We identified five public spaces that residents use heavily for recreation and leisure: the former CECAM Park, the Neighborhood Association Park, the Tancredo Neves Diamond Park, Santa Marta School's playground, and a small pocket-park, referred to as Triangle Park, near Santa Marta's entrance. The former CECAM Park is a large park on the site of a former NGO that had a community center and a large recreation area; the area is protected and maintained by its gatekeeper. The Neighborhood Association Park and the former CECAM Park both have large soccer fields and all five parks have recreation equipment

(although the former CECAM Park's recreation equipment is in evident need of repairs). With few other public spaces to choose from, these parks are widely used and fundamental to the neighborhood.

Active Street Life

When the sun is up in Santa Marta, it means that residents are out and about – working, playing, and running errands. People sit on their porches and sip on chimarrão while friends and neighbors stop by to visit. The active street life contributes to community cohesion in Santa Marta; neighbors know each other well and watch each other's children, which brings a heightened sense of security to the neighborhood in the daytime.

Santa Marta's main streets, which are paved, well lit, and simultaneously serve buses, cars, bicycles, and pedestrians. The main streets serve many of the vital neighborhood facilities; the Santa Marta School and the Neighborhood Association building are both situated along main streets. With heavy foot traffic, these corridors are also attractive for commercial purposes; Santa Marta's most popular shops and private services also reside along them.



Supermercado Ziller is a popular location for groceries. It sells produce from its own garden.

Local Commerce

From corner markets and restaurants to hair salons and printing shops, Santa Marta has a diverse business community. While the community contains business corridors along main streets, business development in Santa Marta often seems geographically spontaneous; almost every street is home to at least one business venture. Some of the businesses have big signs and storefronts, while others are indistinguishable from the owner's home. The business culture in Santa Marta encourages resident entrepreneurship and is a critical component of the active street life. The prevalence and diversity of commercial activity in Santa Marta makes it easier for residents to access goods and services, despite the distance from São Leopoldo's city center.

Santa Marta is well connected to transit; it has a bus stop with service every fifteen minutes within one block of the neighborhood's entrance, as well as many bus stops throughout the neighborhood. Through the city bus system, residents can access the metro that travels from São Leopoldo to central Porto Alegre within an hour. Still, transit presents challenges. Bus stops are poorly marked and hard to navigate if residents are unfamiliar with the system. The transit infrastructure in Santa Marta is critical for residents to access employment opportunities, higher education, and healthcare, although in need of improvements, the existing transit expands neighborhood accessibility.



Across from Santa Marta School, this market and pool hall is covered in murals common to Santa Marta. After school, many students congregate and socialize in front of this market.

Access to Water and Food

Running water is one service that the municipal government and community have worked hard to ensure all residents have. Even houses built on federal land seem to have running water, although our research did not divulge when or how this infrastructure was built. Water access is fundamental for public health and safety. As many houses in Santa Marta do not receive basic services, running water is not taken for granted. This is a critical piece of the infrastructure and protects residents from some of the hardships experienced in other informal settlements.

People frequently label many low-income neighborhoods in the United States as "food deserts" due to lack of access to food. Given the lack of food in communities with few resources in the United States, we were surprised to find diverse food availability in Santa Marta. Alongside the grocery stores, restaurants, and shops, many homes have private gardens and Ziller Market, one of the grocers, maintains a large well-tended garden right next door. Even Santa Marta School has a private garden, which it uses to equip students with the skills needed to grow and harvest their own produce garden.

Challenges

Land Ownership

The social challenges in Santa Marta are complex and interconnected; many of them stem from the fundamental problem of land ownership. Santa Marta residents live in houses that are on land owned privately or by the municipal, state, or federal government. Houses built on federally owned land pose a difficult challenge: the Brazilian constitution forbids development on federal land and the municipal government will not make infrastructural improvements in these areas, as it could provoke a lawsuit. Through our research, we found that the municipal government has poor knowledge of which parcels are and are not federally owned, potentially leaving a number of additional parcels unnecessarily without public infrastructure and services.

Drug Trafficking and Violence

Residents of Santa Marta indicated that drug use and trafficking, and drug-related violence are major challenges. Santa Marta is seen as hub for drug trafficking. People deliver and transport drugs to and from Santa Marta with frequency from all parts of Brazil and South America. Drug dealers in Santa Marta hold authority and power in the community, although to what extent was not clear during our visit. Drug-related gangs often occupy public



Many residents of Santa Marta construct their own homes on land with unclear ownership.

spaces and street corners, making them inaccessible for leisure and recreation and dangerous for children. At night, the perception of public safety in Santa Marta changes: gunshots are reported and children are told to stay inside. The challenges with drugs and drug trafficking are reinforced by an outside perception of Santa Marta that views residents as drug addicts and criminals. Drug trafficking youth gangs, known as bondes, make up only a small portion of Santa Marta residents, but their actions result in consequences for the whole community. The municipality responds to these issues through policing, but does little to address the root causes that lead to violence and gangs in the neighborhood.

Vandalism and Security

In Tancredo Neves, the municipality and community had to rebuild a community center three times due to vandalism and scavenging. This community center now stands empty without windows, doors, or a roof. The Neighborhood Association facility in Santa Marta is under close watch by its President, but it has fallen victim to a number of small acts of vandalism. Vandalism throughout Santa Marta is prevalent and is often committed for fun or entertainment with little thought of the consequences. Dilce Rosa, the president of the Neighborhood Association, made connections between the local government's abandonment

of Santa Marta and the careless acts of vandals. She noted that people likely participate in vandalism because they know that the government will not enforce consequences. While Santa Marta has a vibrant street life and a sense of community pride, there is an overwhelming feeling of insecurity throughout the neighborhood. There is a strong solidarity between some neighbors, but there is a generalized lack of trust. Due to lack of security, almost every house in Santa Marta has a gate in front and often times a loud dog to guard it. Most of Santa Marta's public spaces and recreation areas also must be secured with a fence and require supervision to protect them from vandals and thieves.



A community center constructed north of Tancredo Neves stands empty after it was scavenged. Located in an unpopulated area, people stripped the building of all reusable material.

Dumping and Burning

Illegal dumping and burning of garbage poses a major problem in Santa Marta. Trash bags are dumped along some streets and in the creek; some corners have become collection spots for enormous piles of waste. One street, Smoke Street, is unlit and unoccupied, making it ripe for illegal dumping and burning. The people responsible for dumping on Smoke Street are often not residents of Santa Marta and bring their trash to Santa Marta for disposal. We suspect that the residents of Santa Marta who are the biggest contributors to neighborhood dumping are the informal recyclers and residents without access to municipal waste services; informal recyclers dump unusable waste after sorting for recyclable material and residents who cannot access municipal waste services

have few other choices besides dumping. Littering is also a common occurrence and frequently the result of people searching through garbage bags or bins for usable items. Littering and improper waste disposal have become a part of local culture, tolerated as part of social norms. Santa Marta's many dogs and other animals exacerbate the issues with trash. Throughout the community, dogs roam in small packs, lying out in the sun, or digging through garbage. The size of the stray dog population is unmanageable and leads to a number of challenges for residents. Aside from the public health and safety risks they pose, stray dogs are major contributors to Santa Marta's waste management problems. Dogs open garbage bags, spilling waste everywhere and making it difficult for garbage collectors to properly do their job without leaving behind waste.



A drainage ditch on the southernmost portion of Santa Marta contains litter, dumped trash, and materials scattered during rainstorm flooding.



Similar to other South and Central American communities, many residents of Santa Marta install trash baskets in front of their homes. Some are permanent installations while others are constructed of less durable material. Despite holding trash for pickup above ground level, animals still manage to reach the trash.

Polluted Creek

The Arroio da Manteiga, a long winding creek, weaves through Santa Marta. Residents colloquially call it a “hole” or “ditch” rather than a creek, as they view it as a place to dump waste and drain sewage. This treatment pollutes the creek, making it hazardous to the neighborhood. Tires are a common sight along the creek as people dump them or use them as stream-bank reinforcements. The tires pool up with water and become ripe for mosquito breeding. The combination of extreme pollution in these areas leads to mosquito borne illnesses, such as Dengue Fever. Many houses are in close, unsafe proximity to the creek, meaning flooding is more likely to affect them and the residents are more likely to endure the health risks that waste and sewage in the creek pose.

Relationship between Santa Marta and Tancredo Neves

Santa Marta neighbors a social housing project, Tancredo Neves, with which it has minimal interaction. Santa Marta residents often stereotype Tancredo Neves as a place for criminal activity and Tancredo Neves residents have similar ideas about Santa Marta. While both communities would benefit from sharing their social and physical infrastructure, collaboration between the neighborhoods is difficult given existing social tensions.

Interactions between Santa Marta and the Municipal Government

Santa Marta and the municipal government do not work collaboratively on neighborhood problems, making efforts towards community change particularly difficult for resident leaders. A notable gap in communication exists between residents and the municipal government; residents frequently view government leaders as inaccessible and unwilling to address critical issues. For example, on multiple occasions we heard residents report that they had been given a number to report improper waste disposal and that nobody answered the phone calls. Participation in municipal affairs requires outreach and education efforts throughout the community.

Local involvement in the democratic participatory budgeting process, a process which plays an important role in neighborhood improvements, is also prone to issues of poor communication. The participatory budget is a municipal budgeting strategy that provides the public with the opportunity to directly decide how to allocate part of the public budget to specific initiatives and capital improvements, instead of leaving those decisions up to municipal leaders. (Pimental Walker, 2015, p. 169; della Porta et al, 2006, p. 216; Santos, 2005, p. 310). Santa Marta has poor voter turnout, which results in an inability to gain funds for important improvements.



Many residents use a variety of materials, such as unfinished wood and metal sheeting (as illustrated above) to construct homes that are not as resilient to flooding and weather as those built with more traditional material.

Housing Conditions

The housing stock in Santa Marta offers a range of conditions: some homes are well-insulated, with porches and well-tended yards, while others have cracks and openings, cement floors, and leaky roofs. Houses are made from a number of materials ranging from terra cotta blocks to plaster and wood. Almost all of the homes in Santa Marta have front yards, gates, and many even have car ports. Without engineers or inspectors to evaluate the housing stock, houses are often built in a way that poses a risk to homeowners. Most of the houses in the neighborhood are vulnerable when flooding occurs.

Road and Sewage Conditions

Many of Santa Marta’s roads are unpaved, which causes them to erode and develop huge potholes. This exacerbates

neighborhood waste management challenges; garbage vehicles will not drive along poorly maintained roads, leaving many residents without any waste management service. Attempts at road improvements are difficult, since the municipality will not pave roads on federal land. The municipality does, however, level and gravel unpaved roads, but heavy rainfall and open sewage make it difficult to maintain drivable surfaces. The public works department revealed to us that leveling the roads multiple times a year costs as much as installing ecological (permeable) pavement, but they will not pave them due to the threat of federal prosecution. The department therefore cannot pursue long-term solutions for road maintenance in many parts of Santa Marta. Between the vibrant main streets and the unpaved side streets, it is evident that disparities occur in areas that do not have access to adequate infrastructure or public services.



Com-Vida member Tabita walks along an unpaved street covered in trash after a heavy rainstorm. In addition to trash, open sewage on these streets exacerbates the health and environmental risks.

Small streams of exposed sewage run along unpaved roads in Santa Marta - nearly 40% of residents use open sewage (SEMMAN, 2012). Residents without proper sewage connections are left to their own devices to manage their personal wastewater, imposing public health hazards on all residents. The last political administration made preparations to install sewerage systems on federal land, despite the threat of prosecution, but the new political party terminated these efforts.

Flooding and Topography

Our first day in Santa Marta ended with a huge rainstorm. The streets became small rivers as several inches of water rapidly accumulated. Although Santa Marta is not in a floodplain, insufficient stormwater management leads to regular flooding, which damages the homes of the neighborhood's economically vulnerable residents. The informal stormwater grates and drainage pipes they use are inadequate given the ferocity of the rainstorms. Santa Marta's waste management problems exacerbate these flooding events; trash stuck in sewer grates and in the creek prevent water from draining properly. When combined with Santa Marta's hilly topography, heavy rains and flooding pose a major threat to unpaved roads and homes at the foot of hills. When we returned to Santa Marta the day following the rainstorm, we found that the storm caused roads to crumble and new potholes to form.

Lack of Public Spaces

Residents of Santa Marta have repeatedly expressed their desire for more public space. The Neighborhood Association offers the biggest space for recreation, but this area primarily serves younger children. Gang members and drug dealers often occupy other public spaces and street corners, making them inaccessible for others seeking space for recreation or leisure. Without financial resources, maintenance of public spaces is challenging. One of the most popular recreation spaces, the former CECAM Park, has outdated playground infrastructure. Recreation and leisure spaces serve a fundamental role in maintaining community cohesion; they add a sense of belonging and community ownership and their absence leads to an unfulfilled demand.

Poorly Lit Streets

While street lights line Santa Marta's main streets, residential blocks are still poorly lit. Although the municipality provided a phone number for residents to report broken streetlights, residents claim that their requests remain unanswered. Areas that are unlit become vulnerable to criminal activity and illegal trash dumping. Smoke Street, the most popular dumping and burning site, has no street lights, making it easy for illegal dumpers to get away with their actions undetected.

COMMUNITY DATA

This section outlines the main findings from our data collection activities and how they inform our recommendations. Prior to our trip, we spent two months learning about Santa Marta, São Leopoldo, and Brazilian culture to help shape our data collection approach and understand what to expect on our visit. For the purposes of this project, we define data collection as gathering any new information about the Santa Marta community, its residents, their opinions, and the greater São Leopoldo area.

In March 2015, we collected data on a ten-day intensive field research trip to Santa Marta. We spent eight to ten hours each day conducting research activities. Considering the limited amount of time we had to conduct all of the necessary data collection, we selected research methods that could be easily implemented in a timely manner.

FIELD RESEARCH METHODOLOGY

To better understand current conditions in Santa Marta, we chose a two-pronged approach for our field research methods: rapid appraisal and community participation.

Rapid appraisal simultaneously uses multiple evaluation methods to quickly collect field data when working under time or budget constraints (Beebe, 1995, p. 43). This approach allowed us to triangulate the data; we gathered the same data through several different methods to ensure validity. We designed the rapid appraisal methods to gather basic information about the community and answer any questions we had about current conditions in Santa Marta.

In addition to rapid appraisal methods, we used community participation techniques to gather qualitative data. We designed several participatory mapping exercises to solicit the perspectives of community members regarding trash, public space, landmarks, and their visions for the future. This methodology can take multiple forms, including making hand-drawn maps that represent cognitive, as much as physical, geographies (Sletto, 2009) and using aerial photography maps to ask participants to identify sites with specific qualities (The Jane Goodall Institute, 2013). Soliciting community input was important to our project methodology and we also saw these exercises as a collaborative starting point for developing our recommendations.

Rapid Appraisal

- Household survey
- Stakeholder interviews
- Focus groups
- Building type and open space inventory
- Participant observation of community and municipal meetings

Community Participation

- Classroom community mapping
- Community mapping
- Transect walk
- Interactive public input boards
- 'Route home' worksheet

Limitations

Our field research faced the following limitations: time constraints, lack of experience, and language and cultural barriers.

Time Constraints

Given our time constraints, we had to make a few concessions in the data collection process. With more time, we could have refined and tested several

of our methods before administering them in the community. For example, teachers at Santa Marta School reviewed the household survey prior to survey administration, but piloting the survey with a few community residents could have further improved its quality. Additional time would also have allowed for a more involved community mapping process that would have served as the beginning of a formal community-wide process.

Experience

Our limited experience with formal field research techniques also affected our ability to carry out data collection. Although we spent time prior to the trip learning about each method, additional field experience would have increased our confidence level in administering the methods, as well as improved the accuracy of the data collection.

Communication Barrier

The largest limitation to note in data collection is the language barrier. Although we had translators for all of our activities requiring translation, we likely still lost or missed certain information. This is perhaps most evident in the conversations with stakeholders. Even though we recorded each conversation, our notes are still subject to how our translators summarized the conversation. The language barrier was also a large limitation in the administration

of surveys. A Com-Vida student administered each survey, accompanied by two members of our group. Many residents elaborated on points during the survey that were lost without a translator present.

Our inability to meaningfully engage in conversation with the community means that we inevitably missed some information in our analysis. However, the closed format of the survey questions provided clear direction for our recommendations since survey responses identified the most prominent issues regarding waste management and public spaces.

Conclusions

Our field research and community participation methods revealed that the residents of Santa Marta take a great deal of pride in their community and have thoughtful ideas about potential improvements. Prior to analyzing any data, we noted that the municipality and community could address issues with the municipal services problems through better communication and collaboration. We also noted that residents have a wealth of ideas for improving their community, but coordination among community members can be difficult. The following section provides a brief summary of each data collection method we administered and highlights the findings. Further findings can be found in the Appendix.

STAKEHOLDER INTERVIEWS

Rapid Appraisal

Methodology & Approach

Through conducting open-ended interviews with community residents and stakeholders, we were able to gather a more nuanced understanding of the issues raised by the Santa Marta community. Questions for these interviews were developed in advance, but we encouraged interviewees to speak freely about topics beyond the questions posed. The interviews with community residents and stakeholders generally lasted anywhere from 20 minutes to one hour. The interviews were conducted in Portuguese and simultaneously translated into English by our Portuguese speaking faculty advisors.

We also conducted interviews with municipal officials, which generally lasted an hour. We prepared interview questions for municipal officials in advance, but did not limit the interviews to these questions, permitting each interviewee to discuss important points that we may not have known to ask about. We interviewed eight different municipal departments and five community members. Each interview was led by a member of our group with the aid of a translator and recorded for further translation and transcription. The following pages contain our summaries of interviews with municipal and community stakeholders.



Project partners Sandra Grohe and Alexandra Markiewicz meeting with members from the Participatory Budgeting Department at São Leopoldo's City Hall.

Key Findings

Prior to arriving in São Leopoldo, we were unsure how much support we would receive from the municipal government, but found that most departments were more than willing to meet with us to discuss their various programs. We gained important insights into the municipal operations regarding waste management, infrastructure, housing, and participatory budgeting through interviews and conversations. This was due in large part to the willingness of municipal employees to meet with us. Through these various municipal interviews, we learned about the programs in place that address public or recreational space and issues related to trash dumping and burning in Santa Marta. This information allowed us to eliminate any ideas or recommendations that are already in place or have already been addressed by the São Leopoldo government.

The interviews with community members supported our findings from the municipal interviews, as well as provided an internal perspective of the issues facing Santa Marta. The conversations provided us with new information regarding issues residents identified as priorities in their community. For example, during our interview with Dilce, the Neighborhood Association president, we learned that violence and drugs are major issues in Santa Marta. Prior to our visit, we did not know the extent to which safety was a concern in the community. After hearing concurring opinions from other community members about violence



UM team members meet with Dilce Rosa, President of Santa Marta's Neighborhood Association.

and drugs, we realized the importance of addressing issues surrounding safety in our recommendations, especially those pertaining to public space.

Some of our first interactions with residents of Santa Marta left us confused about the services the municipality provides. We used the interviews with both municipal departments and community residents to untangle the bureaucratic processes and understand service delivery in São Leopoldo in order to synthesize the information and clearly present it for the residents of Santa Marta. Conversations with several Santa Marta community members revealed that people in the community know the municipality is willing to address many of their issues, but are unsure which department or office can assist them. On the following page is a diagram of relevant municipal departments, the services they provide, and their contact information.

DEPARTMENTAL ORGANIZATION

<p>Department of Education</p>	<ul style="list-style-type: none"> - Coordinates curriculum for municipal schools in São Leopoldo - Administers environmental education programs for youth, does not include adult environmental education
<p>Housing Department (51) 3589-1122 or 3589-5222</p>	<ul style="list-style-type: none"> - Coordinates housing placement; required to have social housing plan that diagnoses housing vulnerability - Administers Minha Casa Minha Vida - Assists in relocation to public housing - Provides technical support for all public housing in São Leopoldo <p>Programs include: PAC, Minha Casa Minha Vida</p>
<p>Department of Public Works (51) 5326-6200</p>	<ul style="list-style-type: none"> - Maintains municipal roadways - Maintains municipal parks and playgrounds - Collects construction waste and old school equipment
<p>Department of Public Services (51) 3526-5404</p>	<ul style="list-style-type: none"> - Coordinates household waste collection through a private company and recycling collection through the recycling cooperatives - Oversees municipal landfills - Manages São Leopoldo's seven recycling cooperatives composed of previously informal recyclers
<p>Department of Urban Management & Governance</p>	<ul style="list-style-type: none"> - Oversees planning and project implementation, including locally implementing the federal Growth Acceleration Program (PAC) - Includes Land Regularization Department and Urban Planning Department within department
<p>Department of Participatory Budgeting</p>	<ul style="list-style-type: none"> - Coordinates and implements the participatory budgeting process - Educates community members on voting and participation process
<p>Department of Environment (51) 3526-6800</p>	<ul style="list-style-type: none"> - Administers environmental policies related to conservation and protection - Administers environmental education program for school children



Sandro Cassel of the Public Works Department addresses other municipal departments at City Hall.

Department of the Environment
March 5, 2015
Gilmar Grub, Secretary of the Environment

During this interview, we learned about the environmental education programs offered to schoolchildren in São Leopoldo. The main component of the program includes the environmental education boat ride on the Rio dos Sinos. Approximately 300,000 students have participated in the boat ride, during which students learn about the environmental history of the area and see some of the sights of the city. One of the major pieces of environmental history that the students learn about is a relatively recent toxic liquid spill that killed several hundred thousand fish in the river. Secretary Grub noted that the fish population has rebounded in recent years.

We also learned about the levy built in the 1970s to protect the city from flooding. It was built after a major flood in the 1960s that prompted the municipality to realize that it needed to protect itself from future floods. The most recent flood of comparable size was in 2013.

Department of Governance
March 9, 2015
Deise Pinheiro

During this interview, we learned about the Growth Acceleration Program (PAC) and urban regularization in São Leopoldo. Ms. Pinheiro outlined the challenges related to the implementation of the PAC program in Santa Marta, such as unclear land titles involved in the required land acquisitions. Ms. Pinheiro also informed us that the municipality is not involved in following up with residents after they have been relocated, but that a third-party company that specializes in these types of issues does the follow-up work. Ms. Pinheiro explained that the program focuses its efforts on relocating individuals living too close to creeks and rivers, and they have ordered a new census of those areas to better estimate the number of households living too close.

Ms. Pinheiro also explained the land regularization process in São Leopoldo, even though their department does not directly handle it. She explained that land regularization will happen in the Tancredo Neves neighborhood and may not directly benefit the Santa Marta neighborhood, but that it will benefit the greater region.

Department of Public Services
March 9, 2015
Charles Pierre da Silva,
Head of the Department

The information gathered about trash collection in São Leopoldo during this interview was especially useful for shaping some of our recommendations. The Public Services Department contracts a private third party company to collect garbage material throughout São Leopoldo. Secretary da Silva outlined the collection process and we confirmed that trash is collected three times per week in Santa Marta.

During this interview, we also learned about recycling in São Leopoldo. Secretary de Silva explained that prior to the organization of the current recycling cooperatives, a privately contracted third-party company also collected recyclable material. One of the goals of the current administration was to organize the informal recyclers into the series of

recycling cooperatives that are currently operating in São Leopoldo. Secretary da Silva also noted that improved coordination of the recycling cooperatives is a major goal the department. The department holds regular workshops that teach management skills and basic material science skills to the cooperatives to improve collection efficiency. Despite the recycler's cooperative system, Secretary de Silva noted that some recyclers are still slow to acclimate to the new system and choose to remain independent, collecting and selling recycled materials on their own.

Secretary da Silva added that fines are in place for illegal dumping and a department of three people oversee its implementation. There are six garbage trucks in São Leopoldo's fleet, containing trucks of various sizes to service different types of streets. He also noted that the department has heard complaints from both residents and trash collectors about trash falling out of ripped, open, or otherwise misused trash bags.

Trash Collection in Santa Marta

With trash collection scheduled three times a week, our group had the chance to witness trash pickup in action in Santa Marta. We noticed that trash collectors chose between two different routines when collecting household trash. Some teams collected trash bags directly from household trash baskets and tossed the bags into the back of a slow-moving truck. Other teams used a two-part approach. They would send someone ahead of the truck to empty each trash basket and place the bags of trash on the ground. Once collectors placed all the trash on the ground for a street or section of the route, the garbage truck would pass through and toss the bags of trash in the back of the truck.

In our conversations with municipal departments and community members, we heard that the latter, two-part approach to garbage collection was common and from their perspective, seemed to be the most efficient. Although seemingly faster, the two-part approach comes with its own drawbacks. Garbage bags left on the ground are prone to weather, animals, and general wear and tear that leaves trash and litter in the collectors' wake. This approach also calls for a larger collection team and more team members to go through each street twice. During our interview, Secretary da Silva noted that the latter approach might be due to time constraints and labor laws that call for larger teams of trash collectors.



Recycler sorting paper at Nova Conquista, Santa Marta's local recycling cooperative.



Trash collectors tossing garbage directly from household waste baskets into the truck.



Trash bags awaiting pickup after trash collectors placed them on the ground.



Trash and litter remnants left on the ground after trash collection.



Completed section of public housing built under the Growth Acceleration Program (PAC) in Loteamento Tancredo Neves.

Housing Social Services March 11, 2015 Interviewee, position

The Housing Social Services section of the Housing Department discussed the responsibilities of their staff and the various housing programs they implement. The staff in this department provides technical social support for every new public housing project, like the public housing in Tancredo Neves. We learned that currently 900 families are registered for Minha Casa Minha Vida benefits in the Campinas and Santa Marta neighborhoods, but timely assessments of the relocation of these families to public housing has not occurred.

The interviewee also discussed some of the issues they see most frequently when helping individuals adjust and move into public housing. The adjustment to living in a solid house with indoor plumbing is quite difficult for some. Many people also need conflict mediation advice during the adjustment period to help them better handle living close to new neighbors.

Housing Department March 11, 2015 Anael, employee

In our interview with the Housing Department, we learned about São Leopoldo's Local Plan for Social Housing and several other programs the Department oversees. Some of these programs include the growth acceleration program (PAC), Minha Casa Minha Vida program, and assistance programs for the area's housing cooperatives. Anael clearly outlined the connections between funding and housing plans in São Leopoldo. Federal funding for public housing is dependent on the Social Housing plan, which includes a diagnosis of housing needs and services.

We also learned about Santa Marta's designation in the zoning code as a low-income housing area. Much of Tancredo Neves remains undeveloped because the developer changed a few times and eventually the municipality turned land over to the federal government to finish the first phase of the project.

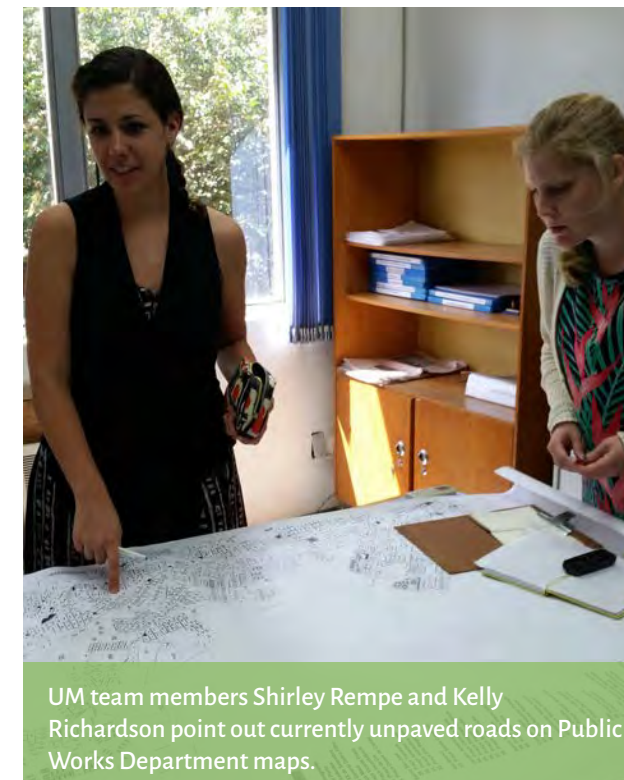
Department of Public Works March 11, 2015 Duda Techio, Adjunct Secretary for Public Works

Our interview with the Department of Public Works was particularly insightful for understanding the municipality's role in infrastructure upgrades. Techio outlined the major responsibilities of the department, which include engineering, stormwater maintenance, street paving, and installing and maintaining playground equipment, benches, and bridges throughout São Leopoldo.

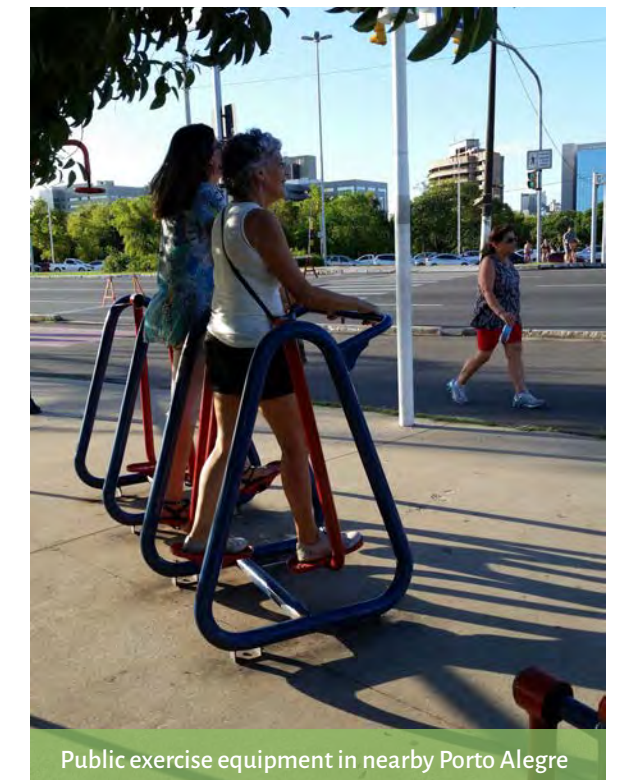
We learned that a private insurance company funds the public exercise equipment we had seen in São Leopoldo and in other

cities in Brazil. The Department of Public Works oversees maintenance of this and all playground equipment.

A large portion of the interview was dedicated to discussing street maintenance in informal settlements. Techio explained the process for leveling streets every couple of months after the rainstorms wash them out, significantly damaging them. He also explained that many of the streets in Santa Marta are outside of the department's purview since they are on federal land. In fact, he said it was illegal for the São Leopoldo government to pave land they did not own and doing so could result in a lawsuit.



UM team members Shirley Rempe and Kelly Richardson point out currently unpaved roads on Public Works Department maps.



Public exercise equipment in nearby Porto Alegre



Com-Vida members meeting at Santa Marta School

Department of Education March 12, 2015

During this interview, we learned about the environmental education programs that the department administers. It administers a number of environmental education programs at municipal schools, including the Com-Vida program. A private company develops the curriculum materials for the other programs. Currently, the department is working on a partnership with an electrical company to develop materials for teachers. It evaluates these programs on a number of levels, including how much of this information is transferred from the students to the adults in their lives.

We also learned about the future goals of the department. To demonstrate the importance of positive environmental behaviors, the department currently encourages its employees to exhibit model environmental behavior. It also hopes to create indicators to better evaluate the success of its environmental education programs.

Office of Participatory Budgeting March 9, 2015

In this interview, Dilce discussed several aspects of the Participatory Budgeting (PB) process and its history in the Santa Marta community. We learned that in the past Santa Marta has tried to get street paving on 15 or 16 streets, but did not gather enough votes in the process. Santa Marta has tried partnering with neighboring communities, such as Campinas, to gather more votes, but this also failed. Dilce mentioned that it is important for Santa Marta to have community leaders that can help mobilize residents to vote for the projects they want. The Tancredo Neves community, while smaller than Santa Marta, has had more success in the PB process because it gathers more community votes.

When we probed for more information about voter turnout in Santa Marta Dilce suggested that the presence of drug traffickers and dealers impacts the low voter turnout. The streets of Santa Marta are narrow, making them good places for drug dealing, so those involved with the drug trade have no interest in improving the streets. This is also a problem in other communities that have a lot of drug trafficking and dealing. These pieces of information that we were unable to gather elsewhere helped inform our recommendations for mobilizing community members for Participatory Budgeting.

Santa Marta Neighborhood Association March 4, 2015 Dilce Rosa, President

During this interview, we learned about the role of the Neighborhood Association in Santa Marta. The Neighborhood Association, which has existed for 18 years, seeks to address problems in the community and voice important concerns to the municipality regarding issues such as sewage and street pavement. The Neighborhood Association differs from other organizations in the community (religious organizations and the recycling association) because its mission plainly includes all community members, rather than only those in a particular group. We also gained an understanding of key characteristics and problems in the

community. Rosa emphasized that Santa Marta is a welcoming community full of residents who display goodwill. Many residents work long hours in manufacturing jobs, but still find time to take evening classes at the school. The community has an active street life; young people socialize on the corners and in front of school. She noted that men tend to spend time in bars, women in homes, young men on corners, and that young women wander (rather than remain on one corner).

Alongside widespread poverty, Santa Marta faces problems with drug addiction, drug dealing, drug trafficking, violence, and trash dumping. She viewed these problems as a result of a lack of resources from the government and opportunities for young people in the area.

The Association's Services

Managing the participatory budgeting process for the community

Partnering with UNISINOS to run afterschool programs

Hosting a community soup program every Saturday to assist those in need

Providing young adults with free courses to prepare for college entrance exams

Hosting the mobile public health clinic once a week and the public health post and doctor once a month.



Santa Marta's Neighborhood Association

Youth Center in Tancredo Neves March 6, 2015 Elaine Amorium, Director of Youth Programming

During this interview, we learned about the role of a youth center in Tancredo Neves. This center, located between the Tancredo Neves School and the main commercial street in Santa Marta, hosts educational afterschool programs related to sexual health and violence, court order protection, child abandonment and labor, citizenship, and violence, for students ages six to 17. The current organization has used this location for only a few months; prior to current management it was a transitional home for youth who had been in jail. It currently has space for 100 students, with 27 students on a waiting list.

The building does not experience vandalism, but the gate is locked at night and the building has security cameras to deter such activity from happening. This organization partners with European groups, including Swiss and German groups, to further develop programming. These programs include one to help curb littering and dumping. They hope to coordinate with Santa Marta School on this program in the future.

We also learned about different aspects of the community and larger region. Amorium emphasized that the community has strong families with parents who are involved in their children's lives. However, she also pointed

to gun violence as a major problem, which she tied to the lack of public space and the proximity to a gun factory as contributing factors. She believed that additional occupational and computer classes for young adults could better prepare them to enter the workforce in São Leopoldo and prevent them from resorting to violence. Finally, she had some insights regarding waste management. She suspected that the tendency to burn trash originates in slash and burn techniques used in the countryside. She also informed us about a program the electrical company runs. The program gives residents bonus points that reduce their electric bills if they bring the company separated recyclables.



Youth Center in Tancredo Neves



Nova Conquista Recycling Center

Nova Conquista March 7, 2015 President

Formed in 2006, the Nova Conquista Recycling Association is one of seven recycling cooperatives and recycling centers in São Leopoldo. All of the recycling centers were private until July 2014 when a new contract was drafted with City Hall. Nova Conquista, along with the other recycling centers, offers one-week-long training service educating new workers about which materials they can and cannot recycle and which materials are considered trash.

Since some of the workers in Nova Conquista used to be informal recyclers, they do not need much training, as they have been recycling for awhile prior to the cooperative system. However, many current informal recyclers refuse to integrate into the cooperative system. This causes some friction between the recycling centers that have initiated a standard schedule for pick-up services and the informal recyclers who remain independent.

One of the biggest issues that Nova Conquista experiences is that each of the seven different recycling cooperatives or centers operate independently, with very few plans to collaborate. If all seven recycling centers improved communication between the different management levels, they could make more money by selling directly to industry rather than continuing to work with a middleman whom Nova Conquista hired six years ago. The seven

recycling associations meet every 15 days or so in order to discuss issues or concerns regarding collecting recyclables. However, it has been difficult for the main actors working with each of the seven cooperatives to figure out a system in which all centers benefit financially and that creates a more efficient recycling system.

Former CECAM Park March 9, 2015 Lionel, Caretaker

In this spontaneous interview, we learned about an unnamed park, which we will refer to as the former CECAM Park. It is an important public space in Santa Marta. We spoke with the man who lives adjacent to the park premises and has voluntarily cared for the park for nine years. The space used to house CECAM, an NGO that ran afterschool programs in buildings that still exist on the property. However, the organization disappeared without explanation two years ago.

Lionel cares for the outdoor space, which includes a soccer field and playground, and ensures that people do not vandalize the buildings. He believes that people do not vandalize the area because they respect him; he closes the gate at night, and the dog on the property keeps people away. On the weekends, between 70 and 80 people use the space, bringing lawn chairs so they can spend the day socializing and playing.

FOCUS GROUPS

Rapid Appraisal

Methodology & Approach

The focus groups targeted the adult population, from young adult to middle-aged, who attend the evening classes at Santa Marta School. Our team held these focus groups in the second week of our field research, providing us an opportunity to triangulate data and confirm information we learned in our earlier research methods.

We organized three groups, which each discussed their views on community, trash and dumping, and recreational spaces within the community. We prepared questions in an effort to focus on specific topics, but were open to instigating longer,

more casual conversations on the topics at hand. Group leaders and translators prompted the focus groups with certain open-ended questions on the three general topics. Group leaders took notes on the ensuing translations.

Each session had 20 to 30 participants, all of whom are residents of Santa Marta and Tancredo Neves, and lasted about an hour. We also recorded discussion for future reference.



Students gathering for an assembly at Santa Marta School

Key Findings

The information gathered in the focus groups helped triangulate our findings from the interviews and household surveys. Understanding that young adults have the same concerns about their community as many of the older residents speaks to the importance of the issues raised.

Residents consistently brought up violence and drugs as major problems, along with the issues surrounding dumping and burning of trash and the lack of public or recreational space. These focus groups provided the perspective of an age group that represents the future leadership and management of the Santa Marta community.



Household trash awaiting pickup



Stray dogs picking at trash before pickup

Table 2. Frequently noted points from focus groups

Topic	Frequently Noted Points
Sense of community in Santa Marta	<ul style="list-style-type: none"> - Lacks sense of community - Definitions of community do not match descriptions of Santa Marta - Enjoy living in Santa Marta
Trash and dumping	<ul style="list-style-type: none"> - Size and durability of trash bags is an issue - Animals getting into trash is likely to be a problem, regardless
Public and recreational space	<ul style="list-style-type: none"> - Lack of safety is an issue - Public spaces need to be cared for and monitored to limit vandalism and violence - Public spaces should be closed at night to limit vandalism and violence

HOUSEHOLD SURVEYS

Rapid Appraisal

Methodology & Approach

We used the Household Surveys to collect data about the community regarding waste management, community recreation and leisure, community perceptions, environmental perceptions, and demographics. Gathering information about the current levels of service was an important goal of the household surveys, since our client-partners identified trash and illegal dumping as major issues in the community.

The survey consisted of 20 questions. Question types included multiple-choice, Likert scale, and one open-ended question. We consulted two other surveys about waste management practices and

behaviors in informal settlements to help us determine our own survey questions. Full copies of the survey in both Portuguese and English can be found in the Appendix.

Simple random sampling of households may not capture the differences in basic infrastructure and environmental conditions among all the homes, which vary by block in most informal settlements, including Santa Marta. For instance, informal housing built on a grid pattern with access to municipal sewage may experience different waste disposal problems than informal housing built on green areas that are spontaneously occupied and carry open sewage. To ensure that we covered the entire



Com-Vida members Katiely and Tabita going door to door to collect survey responses.

geography of Santa Marta and Tancredo Neves in our limited amount of time, we divided Santa Marta and Tancredo Neves into five clusters and administered the survey to every fourth house on the left side of each street. We counted each house, including those that did not answer or whose owners were not home. This method of clustering assured that our results and, therefore, our recommendations address a variety of households and all areas of Santa Marta and Tancredo Neves.

Teams of two University of Michigan students partnered with at least one Com-Vida student to administer the surveys. Com-Vida students read the surveys aloud to participants while we recorded information about housing type and quality. We divided the community into districts for survey administration to account for the variety of housing types or infrastructure conditions. See the box to the right for a map of the survey routes.

We also conducted convenience surveys at the Adult Community Mapping event and along the regular survey routes when community members expressed a desire to take the survey. We analyzed the convenience surveys separately from the door-to-door surveys following standard methodology.

For the most part, residents were eager to take the survey and provide their opinions about the future of the community. In many cases residents elaborated on their answers to survey questions. Some survey respondents had additional things to say

after completing the survey. We recorded a few of these additional comments for translation. The conversations that were translated showed that residents are engaged in their community and have many ideas for improving it.



Number of door-to-door survey responses by color-coded districts

Total No. of Surveys	Color	Count
84	Red	17
	Purple	21
	Orange	8
	Blue	16
	Yellow	22

Key Findings

The following section discusses just a few of the survey questions that provided particularly helpful answers or insights for crafting our recommendations. Our recommendations are based on all of the survey results, but these questions helped highlight some interesting trends in the community. Complete survey results can be found in the Appendix.

Community

The first section of the survey consisted of two open-ended questions: What are two or three things you enjoy most about living in Santa Marta or Tancredo Neves? What are two or three things that concern you about living in Santa Marta or Tancredo Neves? These two questions elicited a variety of answers, but one of the most interesting points, and perhaps most insightful, is that while many people noted violence and drugs as aspects of the community they do not like, many people also said they are happy with their neighbors and the quiet or tranquil nature of the community. The concerns about drugs and violence, especially in public areas, are important to consider when providing recommendations for activating public spaces throughout the community. Overseeing spaces to keep them free of drugs and violence should be a community effort that extends beyond the home. These answers indicate that a sense of community exists, despite the presence of issues related to violence and drugs. However, this sentiment may stop at the household or neighborhood level.

Top Responses to open-ended survey questions

*“What are two or three things you **enjoy** most about living in Santa Marta or Tancredo Neves?”*

Neighbors/ Neighborhood
Santa Marta School
Calmness, Tranquility

*“What are two or three things that **concern** you about living in Santa Marta or Tancredo Neves?”*

Security
Violence
Crime



UM team member Joshua Shake surveying a local Santa Marta resident.

Other survey questions about community or leisure and recreational spaces indicated residents would like to see a variety of new facilities and programs in their community. Surveys revealed that almost 30% of respondents would like vocational workshops and career development classes in their community. Also that approximately 25% of respondents would like sports and dance classes. Table 3 provides a full distribution of responses. These types of responses guided our recommendations for activating public spaces throughout the community.

Table 3. Responses to “Which of the following would you like to see in your community? Select all options that apply.”

Possible Responses	Count	Percent
Career development classes, workshops	52	28.9%
Sports and dance classes	44	24.4%
Arts and crafts classes	28	15.6%
Tutoring	27	15%
Music classes	24	13.3%
Other	5	2.8%
Total	180	100%



UM and Com-Vida team members go door to door to collect survey responses.



Professor Ana Paula Pimentel Walker interviews a Santa Marta Resident in her home.

Trash Collection

As an informal settlement the municipal waste collection does not service all settled areas of Santa Marta for a variety of reasons. For example, the garbage truck cannot pass through some streets that are too narrow or are unpaved and in poor condition. When comparing respondents' answers to the location of their garbage pick-up service to the color of the survey administration cluster, it is easy to see where residents might not receive trash collection at their doorstep and where more coordination may be necessary for efficient trash collection. We triangulated these answers with our own inventory of

street conditions. For example, we noted in our street inventory that several streets in the blue district are in poor condition and/or not paved and six respondents stated that their garbage is collected from a specific collection point.

During our time in Santa Marta we noticed that people commonly dumped large items, such as couches, along Rua da Fumaça. The survey question regarding large item disposal shed light on this behavior (Table 5). Answers revealed that misinformation about large item disposal circulates in the community. This question provided the most insight in the 'other' responses and was one of

Table 4. Responses to "Do you receive garbage pickup service at your home other than recyclable materials?"

Response to close-ended question	Yellow	Blue	Purple	Red	Orange	Total
Yes, I receive it at my house	21	8	20	15	3	67
Yes, I receive it at the corner of my house	0	1	0	0	2	3
Yes, I take my garbage to a specific collection point	0	6	1	1	2	10
No, I need to burn my garbage	0	0	0	0	0	0
No, I need to leave it by the creek	0	0	0	0	0	0
No, I have to take my garbage to the process facility (landfill)	0	1	0	0	0	1
Other	0	0	0	0	0	0
No Answer	1	0	0	1	1	2



Survey Districts and Street Conditions

We compared survey responses concerning current municipal waste pickup to road conditions to get an impression of which streets garbage trucks may and may not be able to access. Although the municipality has trucks of various sizes for different types of streets, Santa Marta's informal unpaved streets pose a challenge with their steep slopes and narrow lanes.

-  Paved Roads
-  Cobblestone Roads
-  Dirt Roads

the questions with the largest number of ‘other’ responses. Although many respondents sell their large items to the recycling center or donate their items to an individual recycler, the most common ‘other’ answers were all variations on the theme of burning these items. Walks through the community and along Rua da Fumaça confirmed that burning large items is a common occurrence.

Although this question did not allow for multiple responses, many people selected the ‘other’ option and answered that they often combined one of the pre-determined responses with burning - i.e. taking the item to an empty lot to burn it or burning the item and then throwing it in the ditch/creek.

Table 5. Responses to “How do you dispose of larger items the garbage truck does not take?”

Possible Responses	Count	Percent
Sell to recycling center	13	15.5%
Sell to a recycler	11	13.1%
Leave outside home	15	17.9%
Leave at the end of road	4	4.8%
Leave in an empty lot	1	1.2%
Other	32	38.1%
No Answer	3	3.6%
Total	84	100%

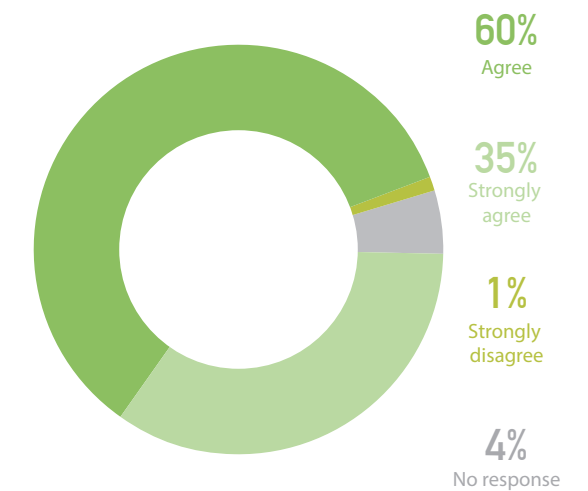
Comparing the answers to this question



with those to the questions regarding environmental responsibility reveal a disconnect between social norms and social behavior that we considered when forming recommendations. An astounding 95% of respondents indicated that they play an important role in keeping the Santa Marta community clean (see table 6).

These two questions clearly show what our group noticed repeatedly during our time in Santa Marta - the community members have a strong desire to be good environmental stewards, but do not always follow through with action.

Table 6. Responses to “I play an important role in keeping the Santa Marta community clean and free of garbage.”



TRANSECT WALK

Community Participation

Methodology & Approach

Transect walks are an efficient method to identify places of special interest with stakeholder input (USAID, 2010, p. 5). We used the Transect Walk to gather observational data and provide the basis for initiating our dialogue with Com-Vida students about the environment of Santa Marta.

In a transect walk, surveyors follow a predetermined route, taking inventory of and commenting on the sites they pass (Keller, n.d.). This exercise results in a record of built, environmental, and social conditions encountered along the path.

Following the walking inventory, we held a debriefing session to allow participants to compare impressions, reflect, and build common understanding. It also provided space to begin brainstorming solutions for issues noted during the walk (Catalytic Communities, 2015).

We created two routes that took us through most of the community. A group of University of Michigan and Com-Vida students covered each route. Students received a map of Santa Marta streets on which they marked places they like to hang out, areas where they see a lot of trash, and areas they avoid as they walked the route.



Map of two transect walk routes, seen in orange and blue

Key Findings

The maps on the following pages illustrate the results from the Transect Walk. Students marked places where they socialize with stars, places where they see trash with circled dots, and places they avoid with circled X's.

Three Com-Vida students walked the Orange Route, which covered streets in central and east Santa Marta. The students did not mark any places they avoid on this route, but noted the places they hang out with friends along two steep streets leading up to Tancredo Neves School and the small park across from

that school. They noted that they saw too much trash, usually at intersections, on the orange map.

Four Com-Vida students walked the Blue Route, which took them through the eastern side of Santa Marta. They recorded the majority of stars (denoting where people mingle) near the Santa Marta School and Padaria W.D. Brasil. Most noted that they avoided places in the southernmost portion of the route; while they recorded that they saw too much trash at several street corners spread across the map.



UM team member Julia Mantey takes notes on the transect walk's orange route.

Following the Transect Walk exercise, we debriefed with the Com-Vida students. A student who walked the Orange Route said that trash on the ground was commonplace and that it exacerbates flooding issues. He speculated that since the residents are used to seeing sewage on their daily paths, they might not see it as an immediate concern. In addition, he said that the trash on the street is not caused by the people living nearby, but by others.

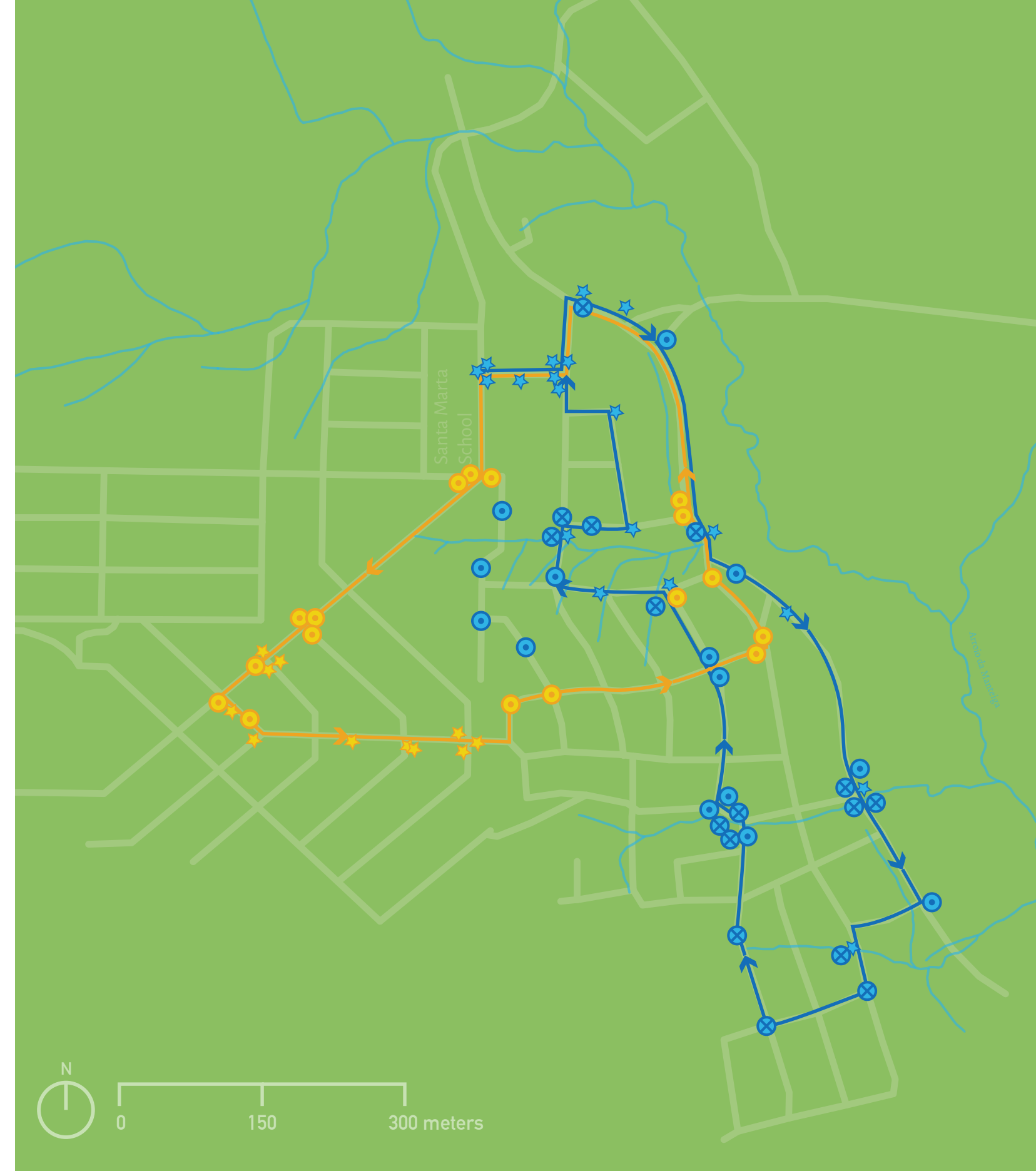
Vandalism is also common; the places where children could play have been vandalized, dumped on, or are old and unkempt. Furthermore, the Neighborhood Association is the only usable site. It was renovated three years ago with a new coat of paint and newly planted trees, but people vandalized the trees.

Another student in the orange group explained that she responded to “places people hang out” by marking the spots where shoes hung on electrical wires because those were places where gang members meet; she did not feel comfortable hanging out in these spaces.

She expanded on the statement about how trash collected at the street corners washes away during the rain and that houses at the bottom of the hill are worse off because of this flow of trash and mud. The last student in the orange group informed us that residents who live near the wetland across from the sewage treatment plant keep it clean by returning trash to those who dump there.

In the blue group, we discussed the trash by the river and learned that people swim there despite the trash. One student marked places he does not necessarily like to hang out, but other people do, with a star. Another student told us that many groups of people like to hang out in front of the Neighborhood Association, not just children who play on the playground. Lastly, we learned that certain places are good hangout stops during the day, but are avoided at night.

Although this exercise used a very limited sample of students and did not cover every street in Santa Marta, it was a valuable exercise to initially engage and learn from the Com-Vida students who partnered with us for our trip. It became apparent through our debriefing session that students had interpreted the prompts differently; however, knowing this informs us that similar prompts in other mapping exercises may be similarly interpreted. This can help explain unexpected combinations of responses: for example, in this exercise a “place I like to hang out” response co-occurred with several “place I avoid” responses, which could be because a respondent was marking places other people hang out (such as gang members) rather than his or her own personal habits, or the fact that the safety of places changes depending on time of day. The lessons learned through this exercise helped us begin to understand the community and inform our interpretation of other findings.



Transect Walk Results

As they walked along one of the two transect walk routes, Com-Vida members marked areas they hang out, areas they avoided, and any area they considered to have too much trash. The map above shows the consolidated results of all seven Com-Vida participants.

- ★ ★ Where do you like to hang out?
- ⊗ ⊗ What areas do you avoid?
- ● Where do you see too much trash?

'ROUTE HOME' WORKSHEET

Community Participation

Methodology & Approach

We designed the Route Home Worksheet primarily to learn what landmarks in Santa Marta stand out to students in their daily lives. In this exercise, we asked students to map their route home, marking places they stop and landmarks they use to find their way.

The worksheet and exercise was implemented with the help of Santa Marta School's geography teacher, Luciane Fleck, who was able to assign the worksheet in her class. With her help, 101 middle school students completed the exercise.

Although we provided blank maps on the worksheet for students to work with, the vast majority of students chose the option of drawing their own map on a separate sheet of paper. Ms. Fleck noted that many of the students had a difficult time orienting themselves enough to provide their answers on the map.

These concerns were not necessarily a surprise to our research team. Responses to these types of mapping exercises helped our team gauge the level of map literacy in the community and tailor our other mapping exercises to better meet the needs of Santa Marta.



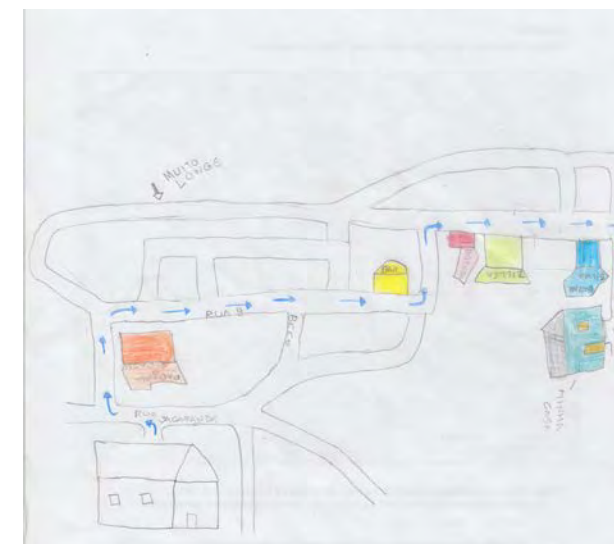
An example of one of the 101 worksheets collected showing a student's route home from school. This student chose to draw her own map instead of the one provided, but still depicted a relatively high level of detail.

Key Findings

In completing the Route Home Worksheet, all but a handful of students opted to draw their own maps on a blank page. Given the free-form nature of most of these maps, the level of detail varied greatly. However, the missing content on these maps was equally informative as the included content. Some students included landmarks they did not pass on their way home. At the other end of the spectrum, others' maps showed that they lived around the corner, but did not include any nearby shops.

Nearly half of the participants (47 students) noted the Padaria W.D. Brasil market and bakery on their maps. This location was likely mentioned so frequently in part because it is only a block away from Santa Marta School.

Maps frequently included other markets as landmarks: Ziller Market appeared in 13 maps, "Market" (not specified) was noted eight times, and specific markets were mentioned several additional times. Students also noted eight times that Santa Marta School is on Rua Jacarandá, though we had believed the street's name was Rua Um. All other locations were noted on four or fewer occasions. These results indicate the centrality of markets in community members' daily lives, which is insight we can use in efforts to disseminate information or raise awareness about a public campaign.



The majority of students opted to draw their own map instead of using the simple street map provided. Responses depicted a wide range of detail to their routes, but still showed similar community landmarks.

CLASSROOM COMMUNITY MAPPING

Community Participation

Methodology & Approach

The Classroom Community Mapping activity was carried out in groups of four to six students in three classrooms, yielding 14 maps showing students' input. Each group of students received a large aerial map of Santa Marta and stickers with which to mark their answers to specific prompts.

We trained Com-Vida students to lead the exercise and collect their peers' responses. In the first classroom, students worked in groups of six. At their teacher's suggestion, students in the second and third classrooms worked in groups of four.

These varied group sizes, as well as the inherent subtle differences in leadership methods of the Com-Vida students, present potential limitations that could affect the accuracy of our results. Consequently, we chose to compare relative, rather than absolute frequencies of dots, because in some cases a dot could represent the input of more than one student.

Com-Vida students first prompted the students to find their homes on the map, as a method of orienting themselves. Next, each group worked through a series of prompts and marked their responses on the annotated aerial maps.



Com-Vida member Lucas leads a community mapping session with a group of Santa Marta students.

Classroom Community Mapping Process and Prompts

Part I:

Classrooms are divided into groups of about five students with each one assigned a Com-Vida facilitator. The facilitator will go through the following questions as a group and instruct the students to mark their answers to the question on the map.

- Where are your favorite places to play or hang out?
- What landmarks do you see in your neighborhood?
- Where do you get your food?
- Where do you meet with your friends?
- Are there areas you avoid? Where?
- Where do you see too much trash?
- Where is the creek? Can you draw it on the map?

Part II:

The facilitator will give the students four pieces of colored paper signifying different objects or places and as a group will have to decide where to place each object or place within Santa Marta

- Place a park
- Place a sports field
- Place a group of benches
- Place a small shop

Key Findings

The results of this exercise are summarized in the map on the following page. The most common responses to the question, "Where are your favorite places to play/hang out?" overlapped strongly with responses to the question, "Where do you meet with your friends?" Students primarily placed these responses on Santa Marta School, on a plot of land in southeast Santa Marta, and to the east of the creek, south of its fork.

Students also primarily placed responses to the question, "What landmarks do you see in your neighborhood?" in three locations: Santa Marta School, Tancredo Neves School, and Padaria W.D. Brasil. This supports the finding from the Route Home Worksheet analysis that the Padaria W.D. Brasil is a prominent feature in many students' mental maps of their community. Responses to the prompt, "Where do you get your food?" also highlighted the prominent role of Padaria W.D. Brasil. The two main locations identified in response to this prompt were the Padaria W.D. Brasil and Ziller Market.

Lastly, the prompts, "What areas do you avoid?" and "Where do you see too much trash?" similarly yielded overlapping responses. Students placed the vast majority of responses on Rua da Fumaça. Other concentrations of responses indicate that students both avoid and see too much trash in fields south of Santa Marta and at the dirt road corner at the base of the sewage treatment field, near the Santa Marta School.



Classroom Community Mapping Responses

- Where are your favorite places to play or hang out?
- What landmarks do you see in your neighborhood?
- Where do you get your food?
- Where do you meet with your friends
- Are there areas you avoid? Where?
- Where do you see too much trash?
- Place a park
- place a sports field
- Place a group of benches
- Place a small shop

Responses to the questions posed in part two of the Classroom Community Mapping exercise offered valuable insight into where students would like to see new developments in their community. When asked to place a park, many students placed their responses in the same southern plot and location east of the creek that was a popular response to the questions about hanging out and meeting friends in part one. Many students also placed their park representations in the wetland near the Santa Marta School, in the sewage treatment field across the street from the wetland, behind (west of) Tancredo Neves School, and in the same fields south of Santa Marta that many said they avoided.

In response to the prompt, “place a sports field,” most placements agreed with the prospective placement of parks. In

addition to those locations, many groups placed stickers on the Santa Marta School.

In response to the prompt to place a group of benches, many groups placed them in the same southern plot popular for parks and sports fields. Other concentrations were on the Santa Marta School and in the field behind the Tancredo Neves School. Lastly, students placed a small shop. Many placed it in a field north of Tancredo Neves. Many others placed it on the corner at the base of the sewage treatment field near Santa Marta School, which they had identified as an avoided location where they saw too much trash. This was both surprising and inspiring. Placing a shop where trash normally collects could activate that space, preventing dumping and providing accountability for its maintenance.



Com-Vida member Bruno helps Santa Marta students mark their responses on the map.

COMMUNITY MAPPING

Community Participation

Methodology & Approach

In order to collect information from the greater Santa Marta community, we implemented a second community mapping exercise open to all residents. While carrying out our surveys and interviews, we invited community members to an information session about our project while also asking them to contribute their opinions on what could help foster a cleaner, safer Santa Marta.

We hosted the community mapping event on a Saturday morning at the Neighborhood Association facility. We posted five large aerial maps on the walls of the room. Each map contained a

question, and participants used stickers to provide their responses on the map. Com-Vida students and teachers were on hand to help community members orient themselves on the map and to appropriately answer questions.

In addition to the maps posted around the room, we included two community input boards that posed two open-ended questions: "What do you like about your community?" and "What would you like to see more of in your community?" We also asked participants to select pictures of public spaces and urban design elements they would like to see in Santa Marta. The following pages of this section contain results to both of these types of public input boards.



Com-Vida member helps participants mark their responses to the prompts on the map.



Community Mapping Responses

This map shows the compiled results of all five prompts to the community mapping exercise. Com-Vida members and Santa Marta School staff were on hand to help participants orient themselves and place their responses on the map.

- What areas do you avoid?
- Where can the garbage truck not go?
- Where would you like to see a recreation space?
- Where do you do your shopping?
- Where do you see too much trash?

Key Findings

The answers to the questions posed in the Community Mapping exercise confirm information from other activities and provide helpful insight. In response to the question, “Where would you like to see a recreation space?,” participants placed the highest concentration of responses on the same plot of land in southern Santa Marta that children participating in the Classroom Community Mapping exercises had overwhelming indicated they would like to place a park.



Participants noted this abandoned park space on the southern edge of Santa Marta as a possible future recreation space.

Two locations contained the most answers to the question “Where do you see too much trash?” Multiple participants indicated that they see too much trash along Rua da Fumaça and south of the main fork in the stream. People clustered responses to the question, “Where do you do your shopping?” along one of the main commercial stretches of road in Santa Marta (where Padaria W.D. Brasil is located).



Participants marked certain informally designated trash collection points like the one above as areas that had too much trash.

Responses to the questions “What areas do you avoid?” and “Where can the garbage truck not go?” were not clustered, but occurred mostly in the southern portion of the community. The information gathered regarding access to garbage collection helped inform our recommendations for municipal waste management strategies. By identifying areas the current waste management system neglects, we could geographically target our recommended interventions.



Unpaved roads with steep slopes and severe erosion were frequently marked as places that the garbage truck could not access.



We placed photographs of community landmarks on the maps to help orient residents when placing their responses.

The input gathered through this exercise was not exclusively from adults; at least 15 children who were playing in the Neighborhood Association playground also joined in the activity. None of these children had partaken in the Classroom Community Mapping exercise, so the input they provided widened our perspective.

Overall, the Community Mapping exercise was helpful to gauge map literacy in the wider community and

solicit some needed feedback on community conditions and possible design interventions. Despite advertising the event through Santa Marta School and handing out informational flyers, attendance was relatively low with only about 45 participants. Although community mapping exercises may often aim to have high levels of participation, encouraging high turnout is a common challenge.

Taking the events of this Community Mapping exercise into account, it is worth noting that a number of issues could have affected attendance. Marketing and announcement efforts for the event might have been too vague or may have not reached interested parties. Alternatively, residents may not have felt motivated to participate and contribute their feedback to our project regardless of their feelings towards their community or their level of community mobilization.

Despite these challenges, this Community Mapping exercise still played an important role in our data collection and was especially helpful in guiding us as we developed specific plans for recommendations and public space interventions. Although it did not have conclusive results, this experience with community mobilization, as well as other similar experiences during our field research, weighed into our considerations of what types of activities and proposals could create incentives for community involvement.

PUBLIC INPUT BOARDS

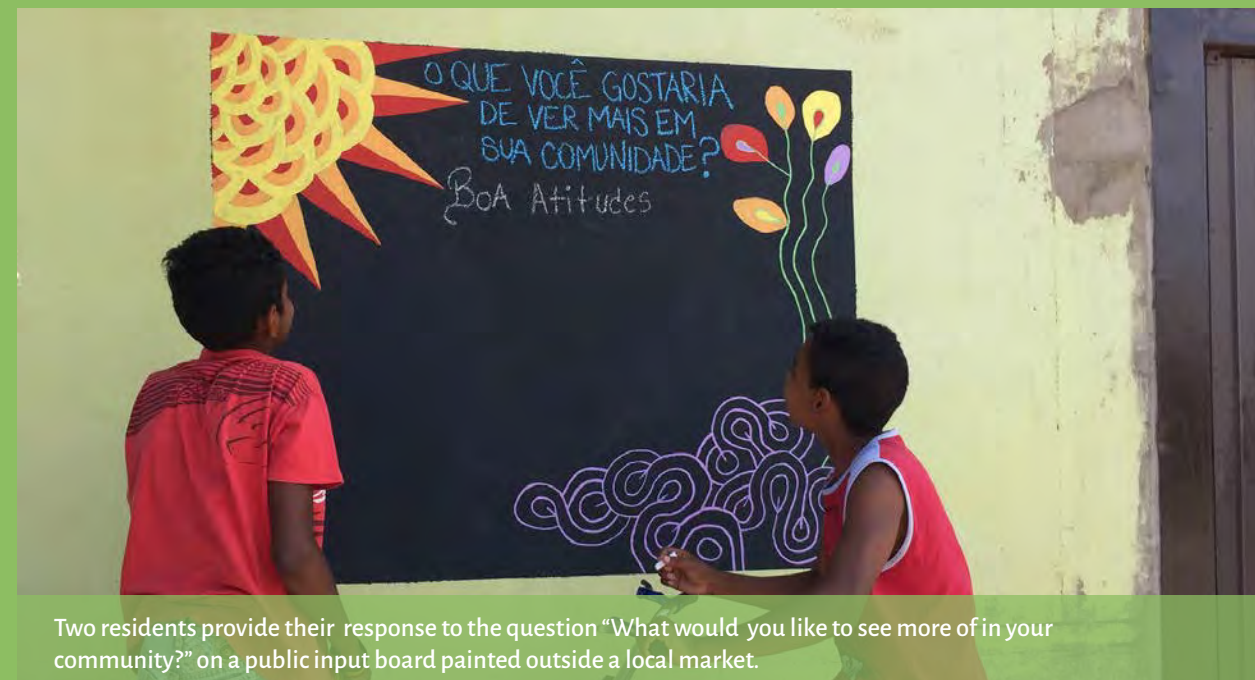
Community Participation

Methodology & Approach

We sought public input during the Community Mapping event and via two Public Input Boards: one installed in the Santa Marta School and the other on the outside wall of a local market. At the Community Mapping event, we posted two large sheets of paper, each with a question written at the top: (1) What do you like about your neighborhood? and (2) What would you like to see more of in your neighborhood? To ensure that literacy was not a barrier to participation, a Com-Vida student assisted by recording answers for participants on the paper provided.

We also offered two posters displaying representative design precedents, which functioned as a preliminary charrette. The term “charrette” refers to methods of seeking public input on potential designs or interventions in a short window of time. Using stickers, participants marked any and all design prototypes they would like to see in Santa Marta.

We created a third type of Public Input Board on the exterior walls of two markets by painting chalkboards that presented the question, “What would you like to see more of in your community?” We encouraged residents to write their responses in these public spaces with the chalk provided.



Two residents provide their response to the question “What would you like to see more of in your community?” on a public input board painted outside a local market.

Key Findings

Public Input at Community Mapping

During the Community Mapping event, we solicited responses to the questions, “What do you like about your community?” and “What would you like to see more of in your community?” The most frequent response to “What do you like about your community?” was the school. The second most frequent response to this question was that residents like their neighbors. The most common responses to “What would you like to see more of in your community?” all referred to safety and security. The second most common response to this prompt mentioned small parks and plazas. The most popular responses are summarized in Tables 7 and 8.

Table 7. Responses to “What do you like about your community?”

Common Responses	Count
School	8
Neighbors	6
Church	3
Friends	3
Parks/ Plazas	3
Soccer	2
Swingset	2

Table 8. Responses to “What would you like to see more of in your community?”

Common Responses	Count
Safety/ Security	7
Small Parks/ Plazas	4
Basic Sanitation	3
Recreation	3
Police Post	3
Health Clinic	3
Social Projects for Youth	2
Electricity	2
Sewerage	2
Soccer Field	2



Residents post their responses to public input boards at the Community Mapping session.

Design Precedent Boards

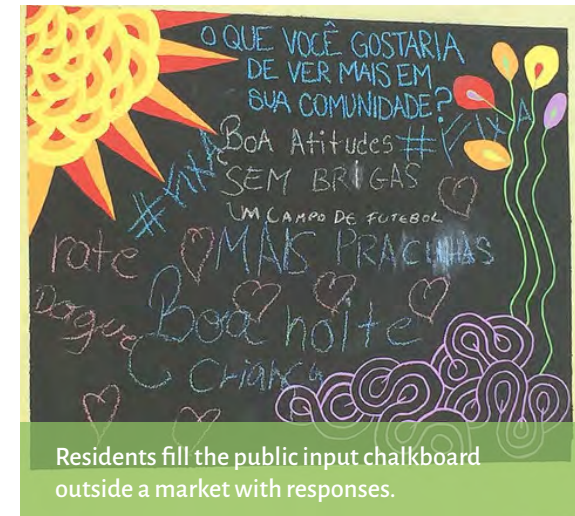
In addition to the maps presented at the Community Mapping exercise, we also presented two posters of 30 photographs depicting design precedents and specific public space design interventions. We selected photographs and descriptive titles for each design precedent in order to give residents a specific idea of what type of design intervention we would like to solicit feedback on. Some design elements we asked about were types of plazas, play equipment, seating arrangements as well as possible public space programming like markets and sports.

We encouraged event participants to mark any and all precedent types they would like to see in Santa Marta. We did not limit participants to a certain number of responses, which may have opened up our results to skewed or inflated numbers. Many of the younger participants marked multiple answers for a few photographs and may have skewed our results towards design interventions like sports and play equipment.

The most popular design precedents were soccer fields with 40 marks and playground structures with 39 marks. The third most popular design intervention type was the model creek crossing, with 21 marks. This feedback from community members proved a great resource to help us choose design interventions that matched community priorities.



Community Mapping participants choose design precedents they would like to see in Santa Marta.



Residents fill the public input chalkboard outside a market with responses.



UM team member Samantha Farr paints a public input chalkboard at Santa Marta School.



Santa Marta School students post their responses to the board at the school's entrance.

Public Input Chalkboards

In order to open the conversation to residents who did not participate in our other input boards, we painted chalkboards in key community locations asking people to respond to the question “What would you like to see in your community?”

We painted both Public Input Chalkboards with black backgrounds so that residents could respond to the posted question by writing on them with chalk. We painted one on the wall of Santa Marta School and the other on a market’s exterior wall on one of Santa Marta’s main thoroughfares.

Due to the limited time frame and placement of these boards and our close involvement with Santa Marta School students, it seemed that most of the responses we received were from children. These included “a football field,” “more parks/ playgrounds/ public places,” and “more security.”

We wrote the prompt in chalk so that these boards can continue to be used as interactive art pieces in the community. This is inspired by Gabriele Valente Feliz’s “Free Your Dreams” project in Rio de Janeiro, in which interactive public art was created through the city. (Before I Die, n.d.)

CORE ISSUES

Our experiences in the field gave our team an opportunity to gain insight into the complex issues facing the residents of Santa Marta. The following section synthesizes our findings covered in the Introduction and Community Data chapters into five essays, each one diving into a topic we view as an underlying, core issue in the Santa Marta community. These essays are meant to serve as a transition to our recommendations, drawing out the connections between Santa Marta's underlying problems and the community's potential solutions.

LAND TENURE AND INFRASTRUCTURE

The municipality of São Leopoldo distributes services differently depending how it formally recognizes the land. Informal settlements are either located on public or private lands, as is the case in São Leopoldo, and oftentimes land ownership is ambiguous or unknown. The municipality's records reflecting the current ownership of the parcels in Santa Marta remain unclear and may only cover a portion of the entire settlement. Because of this unclear land ownership, Santa Marta's requests for infrastructure upgrading may remain unmet by the municipality.

In the 1990s, the Porto Alegre and Recife metropolitan areas pioneered in creating innovative land tenure policies in order to regularize its informal settlements. They zoned land as AEIS (Special Areas or Zones of Social Interest), a low-income housing designation, in order to integrate informal settlements into the municipal zoning map and in the urban planning laws and regulations (Fernandes, 2002). In 2001, a Federal Municipal Statute then incorporated the AEIS experiments from Porto Alegre and Recife metropolitan areas into federal law. Despite the AEIS designation, Santa Marta still faces challenges in receiving adequate public services, such as waste management, storm water management, basic sanitation, and adequate roads.

Santa Marta is a mixture of land types: private, municipal, state, federal, and unknown land ownership. Our research indicates that Santa Marta is also a mixture of informal settlements (land occupied spontaneously) and illegal subdivisions (land subdivided and sold without following the municipal regulations). Santa Marta's rapid growth may be one of the causes of such a mixture of land ownership types. In general, new sections of Santa Marta tend to receive inadequate public services, such as trash pick-up and road maintenance services. For example, the northern and eastern sections of Santa Marta have been occupied as recently as five months ago, as indicated by household surveys and conversations with residents. These homes lack formal access to basic sanitation and electricity because of their recent informal development.

In interviews with municipal departments, they voiced their concern about the legality of upgrading infrastructure on land with unclear ownership. The municipality knows they cannot make improvements on federally owned land, but may be unclear as to what land is federally owned in Santa Marta. Since the municipality does not know who owns the land, it cannot construct the necessary infrastructure to provide formal services.

The ambiguity of legal land titles impacts infrastructure and service delivery in informal settlements. In Santa Marta, infrastructure upgrading would require better understanding of land ownership.

In São Leopoldo, the Department of Public Works decides which roads to pave based on land tenure. The department explained via interviews that it prioritizes projects on the oldest roads and the roads where the most traffic flows. Due to the ambiguity and mixed property rights in Santa Marta, the department is cautious to pave roads on occupied areas that may be federally owned. The municipality fears potential lawsuits from federal agencies and private actors with claims to the property. It also fears that the federal prosecutors who are in charge of protecting the public good will fine the municipality for using public dollars inefficiently by paving an unauthorized road. Therefore, the department only levels and covers with gravel roads in newly constructed areas that could be on federal or private land. However, our interviews with the Department of Public Works revealed that it is more expensive and time consuming to continuously level the roads with gravel after every major rainstorm than it would cost to pave the road once.

Our group conducted legal research to search for lawful alternatives to provide basic public works and services, regardless of land tenure and ownership status. The municipality has the right to pave streets on private land where people have built homes. In such cases, the municipality

is not liable if the original private land titleholder or lawful possessor sues for adverse possession lawsuit. Rio Grande do Sul Supreme Court decisions have ruled: "In spite of the various questions produced by appellants, such as 'the opening of paths and the pavement', erecting lighting poles', 'putting free faucets and pipes gauge on public streets', 'installing electric current transformers, to serve a clandestine community,'" such acts do NOT result in a true tort of dispossession, possession, or indirect expropriation (TJTJRS 101/318). Therefore, São Leopoldo does not need to fear indirect expropriation lawsuits from private actors and other municipal legal departments in Rio Grande do Sul, if they provide basic services in informal settlements on privately owned land. However, these rulings do not apply for federal land.

We must make recommendations that help determine whether or not land parcels in Santa Marta are federally or privately owned. Once the residents of Santa Marta and the municipality can identify the ownership of parcels, the municipality can begin to make desperately needed infrastructural improvements.

THE COMPLICATIONS OF INFORMAL PUBLIC SPACE

The power of public spaces is abstract and at times difficult to quantify, but we understand and express that power whenever we request safer spaces to meet and discuss frustrations about unclear or lacking community identity. Seeing public space as a public good underscores the importance of these spaces to serving all citizens regardless of where they live or what form their community may take.

But what happens in communities like Santa Marta, where informal settlements extend into open space indiscriminately? What happens to land set aside as public space in communities where the personal need for housing overcomes the public need for space?

In our field research and surveys, we heard resounding requests for more public spaces for adults to meet, for children to play, and for residents to find more recreational activities. But we also heard of the problems that open spaces wrought when these spaces became targets of trash dumping and illicit activity. How do we approach the challenge of providing much needed public space in an environment where open space is a liability and a threat?

Open spaces are not inherently public spaces. Public spaces are defined loosely by activity and purpose. These activities give a space an identity and help it transform from simply a space to a well-defined place. Compared to public spaces,

Open Spaces Are Not Always Public Spaces

Open Spaces

- Lack a specific function or use
- Have unclear ownership and consequently unclear oversight
- Are overlooked and ignored
- Are prone to misuse and can attract unwanted activity
- Lie between other points of interest
- Lack a clear identity

Public spaces

- Have a prevailing function or clearly designated uses
- Encourage social gathering
- Represent shared community priorities
- Reflect cultural identity
- Are clearly defined and delineated from private spaces
- Are communally monitored out of shared concern

Santa Marta deserves public spaces that can help incite civic engagement and act as physical symbols of community identity and pride. In order to do so, public spaces need to be clearly defined with specific uses to deter misuse and transform these open spaces from a threat to an asset.

open spaces have no specific purpose and, when left open and undefined, solicit unwanted and even illicit activities like crime and dumping. Instead of serving as an asset to the community, they are a liability that undermines Santa Marta's community identity and exacerbates the social disconnection many residents fear (D. Rosa, Interview, March 4, 2015).

The condition of the nearby creek Arroio da Manteiga clearly illustrates this problem. Instead of an area defined by a community-shared use, the creek is seen as a ditch and a source of embarrassment and concern. What could have possibly served as a community symbol or public recreation space has instead turned into a dumping ground and neighborhood

liability even attracting people from outside the community to dump trash and threaten the space (L. Hermes personal communication, March 5, 2015). We are faced with a real dilemma, but one that is not uncommon all over the world, how do we create spaces that will be open to public use and will not fall victim to misuse by others? How can we provide Santa Marta with the public space it deserves without inadvertently exposing it to the threat open spaces present? In order to do so, we must make sure to create places, not spaces, that are defined by uses and functions that serve the needs of the community and express the cultural and social aspirations of Santa Marta's residents.



Residents pointed out this space in particular as a relatively new informal dumping site for large discarded items. According to residents, this site had been recently cleared several times to make way for a possible municipal park, but attracted dumping after being left undeveloped even for a short period of time (L. Hermes, S. Grohe, Personal Communication, March 4-8, 2015).

PLANNING WITH LIMITED RESOURCES

Resources to fund developments and improvements are limited in Santa Marta. Our recommendations aim to provide maximum impacts with minimum costs. Community-level recommendations aim to build on existing strengths and habits in the community, while more systemic recommendations focus on increasing efficiency and creating tools for advocacy with the municipality.

As an informal settlement and low-income community, Santa Marta is dependent on funding from the municipality's general budget, financial grants, and participatory budgeting funds for new projects to supply or improve services. However, stakeholders identified strengths that the community can leverage in place of lacking funds. Several interviewees said that the community is welcoming and its members trust one another (D. Rosa, Interview, March 4, 2015). Community members participate in social organizations such as the Neighborhood Association and various churches.

We recommend capitalizing on this existing social infrastructure through community advocacy strategies to reduce costs and better involve community members in the design and production of public space interventions.

Other issues faced in Santa Marta stem from poor coordination and communication, both within the community and between the community and municipality. To address these issues, we will propose tools for advocacy and improved access to information. By making data available both to residents and the municipality, and involving residents in the production of that data, misunderstandings and the inefficiencies that result can be minimized.

In Santa Marta, development and the provision of services are in part limited by the capacity and funds available at the municipal level of São Leopoldo. Financial and logistical constraints have stalled the development of 2,200 new homes in Tancredo Neves, which would allow for the relocation of families living too close to the creek. The Federal Bank required many improvements to the area before building could commence, while a new law passed stating that expenses cannot exceed 125% of original budgets. This limit was nearly met just in preparing the site for the construction of homes, and the municipality closed the contracts because they could not be completed within the budget. The municipality donated the land to the Federal Bank, which currently plans to complete only 580 homes on the site through the Minha Casa Minha Vida program (D. Pinhero, Interview, March 9).

Santa Marta depends on the municipality's general fund, financial grants, and participatory budgeting to fund community projects. Our recommendations focus on increasing efficiency, keeping costs low, and leveraging existing strengths to advocate for improvements in the community.

Similarly, the municipality's ability to provide waste collection service is limited by the resources available. We learned that just six garbage trucks cover waste collection for all of São Leopoldo. The high demand placed on so few trucks limits the quality of collection. As a Department of Public Services representative told us, "They collect all they can, but whatever is left behind is left behind" (C.P. da Silva, Interview, March 9, 2015). Furthermore, the same representative told us that if the amount of recyclables increased, the recycling cooperatives would not be able to meet the increased demand for their services.

One way that Santa Marta could receive additional funding to implement plans is through the participatory budgeting program. São Leopoldo is allotted R\$20 million to spend in its eight regions targeting health, security, public works, recreation, and roads. In order for Santa Marta to receive available funds, community members need to participate in multiple stages of the budgeting process. Our recommendations include tools to raise awareness of this process as a means of increasing the resources available to Santa Marta.

By planning for interventions that require minimal monetary investment, we aim to maximize the feasibility of our

recommendations while strengthening community ties. Through maximizing efficiency in the provision of services, the community could also save money that it could potentially put toward future, more permanent design interventions or public service provisions. We have produced the following recommendations with an awareness of the limited resources available to our client, and hope these will provide lasting positive impacts with very low costs.

Incremental Improvements

The Project for Public Spaces offers an example of "low-cost, high-impact incremental" improvements for public spaces. The organization focuses on encouraging use rather than design and construction. Action plans are used to map the short, medium, and long-term interventions. Positive and frequent use is encouraged through short-term interventions meant to activate the space. These include portable/ flexible seating and public art, which can be interactive. Medium- and long-term visioning in the action plan provides a guide for future phases of more permanent investments and development (Project for Public Spaces, 2015).

COMMUNICATION WITH THE MUNICIPALITY

Between our conversations with residents of Santa Marta and various municipal interviews, we noticed misinformation circulating among community members and miscommunication between the community and municipal officials. There were several instances during our time in Santa Marta when we noticed confusion about how trash is collected or why the current system operates the way it does. Some of the responses to the survey question asking about frequency of trash collection illuminated these discrepancies. In some instances houses along the same street or from the same survey district responded that their garbage is not collected the same number of times per week as their neighbors. Along one survey route, responses to the trash collection frequency question varied from never, to three times each week, to daily. Presumably, households on the same street (barring any significant change in street quality or pavement) would have the same collection schedule.

Effective and clear communication between municipal governments and local communities or neighborhoods is often difficult. As we found out through the municipal interviews, departments like Public Services, who handle waste disposal including disposal of large items, may feel they have adequately advertised how to use these services. Through our

interview with Dilce Rosa, the President of the Neighborhood Association, we learned the community did at one time know the phone number to call to request large item disposal, but the number has since been misplaced. Instead of attempting to get the correct information on trash disposal, many residents opt instead to burn their large items to dispose of them. This is something that may be easily remedied by the municipality with a different approach to communication between them and the residents.

The semi-transient nature of informal settlements like Santa Marta also lends itself to weaker lines of communication between municipalities and their communities. The residents of Santa Marta deserve to know what is going on in their community and their city at large. Transparent and efficient communication from the municipality can eliminate residents' frustrations when they are looking to the municipality for assistance with specific issues. For example, Santa Marta residents expressed a need for paving several currently unpaved streets. Although the municipality has very legitimate reasons for not paving certain streets, the communication of these reasons from the municipality to community members appeared, during our time there, to be lacking. Community members frequently had different ideas

Miscommunication and lack of communication between communities and local governments is a common problem. Residents of Santa Marta and the São Leopoldo municipal government must effectively communicate with each other for the most efficient provision of services within the community.

about why their streets are not paved; ideas ranging from municipal neglect to recognizing the difficulty in paving streets in informal settlements.

Communication is a two-way street, however, and a community's ability to effectively and clearly communicate with their municipal government can also eliminate frustrations and lead to better outcomes. Improved communication between the municipal government and the residents of Santa Marta could also lead to better outcomes in the participatory budgeting process. Our experiences in Santa Marta and learning about the communication issues that

have impacted Santa Marta's ability to affect change within the community either through the participatory budgeting process or by other means have impacted how we approach this project. Based on our experiences we have identified clearing the lines of communication and improving community-organizing capacity as primary objectives of this project. It is clear that Santa Marta residents wish to be involved in their community and we hope the recommendations made in this report can help the residents of Santa Marta better communicate their requests with the municipal government.



Tucked away on a side street, our team found the only municipal sign in Santa Marta communicating that dumping is a prohibited. The sign also provides a number to report illegal dumping, but does not provide information on how to dispose of large items. Despite the sign's placement, illegal dumping still may occur as seen in the image on the right taken only a few feet behind the sign.

REDEFINING HOME IN SANTA MARTA

The residents of Santa Marta are proud of their community – they choose to live here and choose to raise their families here. The students, residents, and community leaders we spoke with during the ten days we spent in Santa Marta conveyed this sentiment. All of the people we spoke with recognized difficulties, including violence, drug trafficking, and trash dumping. However, most everyone emphasized the strong sense of community felt in Santa Marta. Surveys indicate that people also feel responsible for keeping their community clean and appreciate its calm, close-knit qualities. But something is missing. While residents of Santa Marta feel responsible for keeping their community clean and have strong ties to their neighbors, the emotion stops short of inducing action. Residents and outsiders still dump trash in the creek and around open public spaces. In our recommendations, we hope to build upon the sentiment people feel for their community, to further establish the notion that home is not only your house but also your community.

The surveys, conversations with residents, and focus groups we conducted in Santa Marta indicated that people feel like they play an important role in keeping their community clean. In door-to-door surveys, 61.7% of respondents agreed and 35.8% of respondents strongly agreed with

the statement: “I play an important role in keeping the Santa Marta community clean and free of garbage.” Furthermore, 45.2% of respondents strongly agreed and 35.7% of respondents agreed that it bothered them to see garbage in their community. This means that more than 95% of community members feel responsible for keeping the community litter-free.

However, another survey question revealed a disconnect between their feelings as individuals and their opinions about other community members. Survey respondents indicated that they think other people dump and burn garbage because these people do not think these actions are problematic and they do not find the appearance of their community important. Despite the strong sense of responsibility for one’s community, respondents did not feel as though this sense of responsibility permeates the community. The results of these questions, as well as more casual conversations with residents, showed that people in Santa Marta do not feel as though the community as a whole cares for their environment. In other words, some community members feel responsible on an individual level, but the community as a single entity has yet to feel responsible for taking care of the environment.

The residents of Santa Marta feel a strong connection to their neighbors. However, a disconnect exists between an individual's home and his or her community. Our recommendations aim to broaden what “home” means to residents of Santa Marta.

Literature on attitudes about environmental issues point to a number of factors that shape our views on the environment. These include social norms, attachment to place, sense of control of the issues, among others related to upbringing, education, and surroundings (Gifford and Nilsson, 2014). Residents of Santa Marta, as individuals, identify with these factors at varying degrees, as evidenced by the disconnect between the survey answers, as well as the fact that we saw trash dumping and burning was a widespread issue.

Given our observations, we suspect that part of the reason community-wide appreciation for the environment is lacking is because residents currently focus on their individual responsibility toward the environment. We hope to build a sense of community, or group responsibility, towards the environment and Santa Marta through our recommendations to collectively encourage the individuals that dump and burn trash to cease. These efforts will, in a sense, redefine home from the house an individual lives in to Santa Marta as a whole.



The majority of homes in Santa Marta have a gated front yard or patio that serves as a semi-private space for people to meet and talk with their neighbors and friends. Community ties and connections to neighbors are strong in Santa Marta, but we hope to draw this sense of community out of the boundaries of the home itself and help extend a sense of ownership and responsibility beyond just the front porch.



RECOMMENDATIONS

In a unique community like Santa Marta, it is important to consider social context and place – any approach to a community's challenges must be sensitive to the needs of its environment, the priorities of its residents, and the aspirations of the community itself. We aim to incorporate the complexities of the challenges facing Santa Marta into feasible, pointed recommendations that address concerns about waste management, environmental awareness, and community cohesion.

The following section offers a range of recommendations informed and inspired by observations in the field and from concerns voiced by Com-Vida, Movimento Bairro Melhor, and the larger Santa Marta community. Our partners expressed concerns that at first sounded varied and distinct, but, as illustrated in the Core Issues, we quickly saw common threads running through the community's challenges. Our recommendations do not present a single solution to each issue, but instead offer a multi-faceted approach touching each concern.

RECOMMENDATIONS

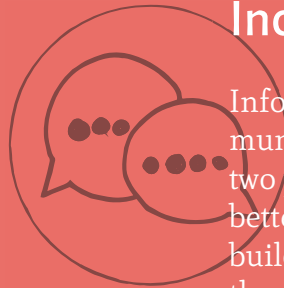
We offer the following six icons as a guide through this section. Each outlines a key goal our group used when developing our recommendations. Although not an exhaustive list, these six broad goals trace how each recommendation echoes more than one of our project partners' concerns. Each recommendation displays the icon(s) related the issue(s) and subsequent goal(s) addressed. In this way, the recommendations remain rooted in Santa Marta's social context and highlight the community's own priorities and aspirations.

Deter Dumping



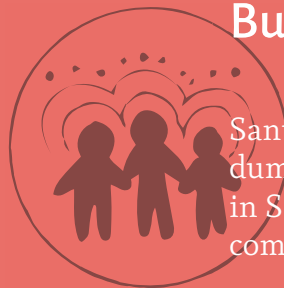
The residents of Santa Marta voiced concerns about the amount of trash and litter they saw in their neighborhood and the threat illegal dumping posed to their community. These recommendations approach their concern about excessive trash by deterring people from dumping and offering new methods to address waste management.

Increase Communication



Information is frequently lost between the residents of Santa Marta and the municipality. These recommendations encourage a clearer dialogue between the two parties to help public officials recognize the community's needs and residents better understand what the municipality can offer in return. They aim to not only build self-agency within the community, but also foster co-management, bringing the municipality and Santa Marta residents together in mutually beneficial ways.

Build Community Pride & Visibility



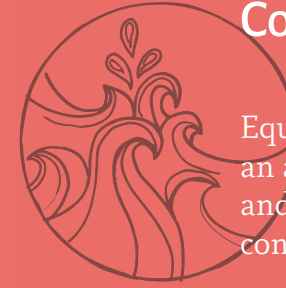
Santa Marta's image has suffered under the weight of threats such as illegal dumping, crime, and general disinvestment. These recommendations bolster pride in Santa Marta and establish a stronger sense of place. They aim to change the community's reputation and shift residents' sense of identity and self-worth.

Improve Security



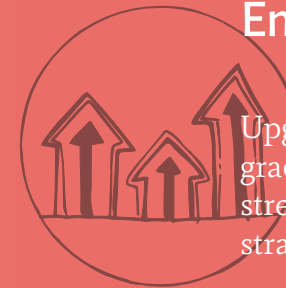
Unsafe streets, vandalism, and crime threaten Santa Marta's requests for more public spaces to gather and connect. These recommendations hope to offer new welcoming spaces and address the threat of crime in implicit, yet powerful ways.

Control Flooding



Equipped with a mix of informal and formal water infrastructure and located in an area prone to heavy rainfall, Santa Marta is especially susceptible to flooding and the risks heavy rain can bring. These recommendations propose methods to control stormwater and proactively avoid flooding in innovative ways.

Encourage Upgrading



Upgrading and regularizing Santa Marta's streets, sewage, and infrastructure is a gradual process. As the community grows, we offer these recommendations to help streamline municipal intervention and help the residents of Santa Marta develop strategies to request service upgrades.

The following recommendations are not for Santa Marta residents alone, but instead propose methods that bring together different actors to instigate change. They require different methods of intervention, with the involvement of different parties. Municipal planning interventions call for the authority and input of the municipality. Collective action interventions lie on the other end of the spectrum, relying on residents themselves to help incite change. Participatory planning is where these two key actors meet, working together to make decisions and implement shared interventions.

The scope of our recommendations is limited to what we could learn in two short, but powerful weeks, of field research in São Leopoldo. However, we truly hope that will help this community reach the change to which it aspires. We offer these recommendations as a starting point, as suggestions for where Santa Marta might go, now empowered with new knowledge and new approaches. We hope they inspire action, encourage self-agency, spur conversation, and initiate the question: what if? What if we thought about forgotten spaces in new ways? What if we approached complex problems in seemingly simple ways? Although the challenges Santa Marta faces may seem daunting, we offer these recommendations as a supportive vision to encourage the first brave step towards lasting and rewarding change.

PUBLIC CAMPAIGN



The “Together we make Santa Marta home” campaign aims to shift social norms and perceptions about trash disposal through building upon the sense of community identity and promoting information about municipal services and penalties.

Why a public campaign?

A public campaign is a tool for sharing information, changing perceptions, bringing people together, and influencing behaviors, processes, and outcomes. “Together we make Santa Marta home”, as the following sections detail, will touch on all of these aspects of campaigns. Public campaigns have the potential to mobilize communities for action and are typically organized under a single unifying theme designed to attract a broad audience (Atkin, 2001, 3-4). They take on several forms of communication through message framing and tailoring, a tactic that provides a means for connecting emotionally with individuals through compelling images, and inspiring phrases (Pelletier, 2008). Such tools offer the ability to promote behavioral changes and encourage community collaboration

to effectively address pressing issues. Many public campaigns have successfully tackled issues such as trash littering and dumping, while improving public spaces and building community (See sidebars for different examples of public campaign techniques).

The materials that the municipality currently uses do not effectively engage the entire population, as they are focused on reaching children in a school setting. Our campaign aims to engage the entire community with messages relevant to different groups and promoting both behavioral change and community pride.

“Together we make Santa Marta home”

The campaign is unified under a logo that incorporates homes, a creek, and hills to create a stylized image reminiscent of the landscape in Santa Marta. The attached slogan will drive the idea that Santa Marta, as a whole, is one’s home. The slogan is flexible; one can place an additional slogan in front of the main slogan that specifies different aspects of the campaign. For example it could say, “Together we keep Santa Marta clean. Together we make Santa Marta home” or “Together we keep Santa Marta safe. Together we make Santa Marta home.” Graphically, the campaign will display



CAMPAIGN LOGO: The first part of the slogan is flexible, it can state different phrases such as “Together We Keep Santa Marta Clean” or “Together We Keep Santa Marta Safe.”

this logo on large stickers and small posters with other content to promote the campaign’s brand.

Using a variety of methods, the campaign addresses three main topics:

Reduce Dumping and Burning in Public Space: The campaign aims to stop the practice of trash dumping and burning and encourage people to report dumping and burning. The target audience is the group of individuals who dump and burn trash and the people who see others dump and burn trash.

Increase Access to Information about Waste Management: The campaign aims to disseminate information regarding the alternatives to trash dumping and burning and publicize the consequences for trash dumping and burning. The target audience is the Santa Marta community, particularly residents who are unaware of waste management services.

Foster Understanding of Rainwater and the Creek: The campaign aims to draw attention to the importance of the creek and storm drainage system and increase reporting of clogged or broken drains. One interviewee from our interviews noted that although a previous campaign warned residents to not build near the river, it did not explain the reasoning. This program will take both issues into account. The target audience is the Santa Marta community.

The campaign will make its presence felt throughout the community, and focus its efforts on a few specific areas identified through field research and feedback from residents. For an overview of each program, its targeted audience, its form of intervention, and its taglines, refer to Table 1 at the conclusion of this section.

Reduce Dumping and Burning in Public Space

Material related to this campaign topic will focus on reducing trash dumping and burning by using pointed messages targeted at both people who dump and burn trash and people who might report others dumping and burning trash. Signage in multiple forms will raise awareness about the detriments of these behaviors. More broadly, this facet of the campaign aims to transform the perception of dumping and burning trash from tolerated to socially discouraged activities, in order to institute community-wide behavioral change.

Material addressing this campaign topic will use messages that incorporate two methods for instigating behavioral change: (1) drawing a connection between home as one's house and home as one's community and (2) explaining the negative impacts of dumping and burning trash.

Surveys, interviews, and the participatory activities conducted in March 2015 indicated that individuals feel strongly about their neighbors and neighborhood. This component of the campaign will build on this finding as well as the indications that people do not want trash dumped in their own home, to expand the notion of home.

We recommend using the following slogans and signage:

1. Poster with tagline: *Would you throw trash on your mother's house? Respect Mother Earth like your mother.*

This poster likens trash dumping to throwing trash in your mother's front yard, identifying one's environment (Mother Earth) as a place that garners as much respect as one's mother's home. Referencing an individual's family and mother is particularly relevant to Brazilian culture, which highly values familial ties (da Matta, 1997). Graphically, these posters can incite a high impact by using images of a scolding mother and dumped trash around the neighborhood.

2. Poster with tagline: *Beware! If you dump trash, you will pay a fine.*

This direct poster reminds people who dump trash that their actions have consequences - the city will fine them if they are caught. Using a direct message intends to increase the sense that people monitor these spaces and will report dumping. It ties a reminder about municipal sanctions for illegal behavior to a message about shifting social norms regarding this behavior, therefore emphasizing the connection between these two concepts (Bamberg et al., 2006; DeYoung, 1993; Pelletier, 2008). The image on the poster is flexible, but should feature people illegally dumping trash.

3. Municipal Signs with tagline: *Keep our Neighborhood Clean*

The campaign will place metal signs in public spaces, that simply say, "Keep our Neighborhood Clean." The sign will also include a recycling symbol, like those used in other municipal signs. Unlike the Santa Marta logo, the city can adopt this sign to use throughout the whole city.

the campaign aims to encourage people to use these resources to report dumping and burning and to arrange for a pick up of trash that they would normally dump or burn. Surveys, interviews, and the participatory activities conducted in March 2015 indicated that individuals did not have clear information regarding the municipal services, so this component of the campaign aims to clarify information about the municipal services in an engaging manner.

We recommend using the following slogans and signage:

1. Poster with slogan: *Do it right the first time. Don't dump, don't burn. Call for pickup.*

This poster admonishes those who dump and burn trash, but also provides people with information about how to correctly dispose of trash. The poster will include an image of something burning and graphically show the negative health impacts of this process. It will prominently feature the number to call for picking up items.

2. Poster and tagline: *Eliminate the problem. Make the call.*

This poster encourages people to report dumping and burning by reminding them that it is a problem and providing them with the number to call to report incidents.

Case Study: Pedagogical Urbanism, Bogotá, Colombia



Photo by Pedro Felipe

The City of Bogotá, Colombia suffered from poorly defined public space and littering, as well as unequal access to parks and misuse of open space. Moreover, rapid urban growth paired with a lack of planning exacerbated these issues.

Interventions: The city used passive and active communication to promote better uses of public space. Passive approaches involved using provocative signage in parks that say things like "This is your park too. Keep it clean"

Active approaches involved the city employing or appointing active monitoring agents to discourage littering and misuses of public spaces. Agents included civic guides, city workers, security guards, and police (Berney, 2011, 22-23).

3. Recycling Posters and Magnets

Community members identified a lack of separation as a barrier to efficient recycling (A. Rosa, personal communication, March 4, 2015). This poster will encourage and promote the separation of recyclables within the home. Displayed in supermarkets and other community landmarks, they will visually convey which items are recyclable and how to separate them. These posters should be supplemented with a reminder/tool such as a magnet or window cling that residents can conveniently keep in their homes.

4. Truck messages: *“Save room in your trash bin- separate your recyclables and call (51) 3526-5404 for bulk item disposal.”*

Truck messages broadcasted on the vehicles that currently have advertisements will address the frequent improper disposal of large items and remind people to recycle. Between other advertisements, a brief message will remind people that recycling saves room in the trash bin and will conclude with the number to call for help disposing of large or bulk items.

Foster Understanding of Rainwater and the Creek

Material related to this campaign topic will focus on making people aware of the creek as an important part of Santa

Marta’s community and environment, thus combating the notion that it is a site for dumping. Signage, maps, posters, and slogans will inform the community and its visitors about the creek and aim to change the mindset of those who believe the creek is a ditch, dump site, or dirty waterway that people should avoid.

Currently, people do not see the creek as an attraction because it is littered with trash and is not easily accessible. During the Adult Community Mapping exercise conducted in March 2015, people indicated they would like a creek crossing to make the creek an accessible part of their environment. This facet of the campaign builds on that community wish to raise consciousness about the creek.

We recommend using the following slogans and signage:

1. Maps with information.

The campaign will include several permanent signs that feature a map of the Arroio da Manteiga, showing its connection to the Rio Dos Sinos. The signage will display images and information about the fish and plants that live in or along the creek, highlighting the importance of keeping the waterway clean for the sake of the habitat. The signs will be placed in highly trafficked areas and in dumping areas along the creek, each containing a “you are here” mark for orientation. These posters will highlight the connection between the waterways

with text saying, “This drains here” that is placed above an arrow pointing from an image of the littered creek to the Rio Dos Sinos.

2. Poster with tagline: *It’s a creek, not a ditch.*

The campaign will make clear that the Arroio da Manteiga is a creek, rather than

a ditch or a place to dump trash. The posters will depict people playing in or walking over a clean creek. The posters will be placed at schools and inside local businesses in the community. By informing members of the community that the Arroio da Manteiga is a creek and not a ditch, we hope that residents and outsiders will regard and treat the creek differently.

Case Study: Healthy Harbor Initiative, Baltimore, Maryland



Baltimore, Maryland’s harbor was polluted due to dumping and littering. Building on a common sense of identity with local crabs and oysters (“critters”), the Waterfront Partnership and local planning agencies reached out to community leaders, volunteers, and targeted neighborhoods to draw the connection between how street littering affects the water quality of the harbor and the health of its critters. The social media campaign also established this connection with slogans like “Trash in the streets pollutes what we eat.”

The campaign also employed public art. It installed a decorated water wheel that prevents trash from entering the harbor and encourages visitors to better appreciate the harbor. Finally, it created a school competition in which school children made art designs on storm drains that reminded the public that what goes down the drain impacts the harbor (A. Lindquist, personal communication, February 13, 2015).



“Do not feed the wolf!” A decorated Boca de lobo in Minas Gerais, Brazil. Photo from portalpropaganda.com.br

3. Storm drain social media: *Hey Wolf!*

The storm drains in Santa Marta are known as ‘bocas de lobos’ (wolves’ mouths) because they are thought to resemble wolves’ mouths. Retrofitting the bocas de lobos with grates will give ‘teeth’ to ‘the wolves’ mouths’ (see Waste Management recommendations for more information on upgrading these drains, p. 112). Once retrofitted with ‘teeth’ (grates), a social media campaign that encourages community members to take pictures of the bocas de lobos filled with trash would help demonstrate their usefulness as a litter and pollution prevention measure. The tagline associated with the image could be, ‘Hey, wolf! Cheese!’ or “Hey, wolf! You’ve got trash in your teeth!” As

an added benefit, pictures uploaded to a social media platform would alert the community and municipality to clogged drains.

Com-Vida students can paint the retrofitted drains to appear as cartoon wolves to draw the attention of passersby. Com-Vida students could use stencils and spray paint to write messages on the drains, such as: ‘No dumping, this drain leads to Rio Dos Sinos’ or ‘No dumping, drains to creek.’ These messages raise awareness about the connection between the storm drain and the nearby waterways. Either activity provides students and community members with an opportunity to design and create the messages.

Conclusion

Through focusing on these three topics, the campaign aims to raise awareness about the detriments of dumping and burning trash, initiate a change in behavior and social norms, and provide information about the alternatives to these activities.

While the campaign will focus efforts in Santa Marta, it can also place these posters on buses serving Santa Marta and the surrounding settlements. The bus ads will be a useful way to target dumpers who do not live in Santa Marta.

Table 1. “Together we make Santa Marta home” Campaign

Topic	Materials	Tagline
Reduce Dumping and Burning in Public Space	<ul style="list-style-type: none"> - Posters - Municipal Signs 	<ul style="list-style-type: none"> - Would you throw trash on your mother's house? Respect Mother Earth like your mother. - Beware! If you dump trash, you will pay a fine. - Keep Our Neighborhood Clean
Increase Access to Information about Waste Management	<ul style="list-style-type: none"> - Posters - Magnets - Messages 	<ul style="list-style-type: none"> - Do it right the first time. Don't dump, don't burn. Call for pickup. - Eliminate the problem. Make the call. - “Save room in your trash bin- separate your recyclables and call (51) 3526-5404 or bulk item disposal.”
Foster Understanding of Rainwater and the Creek	<ul style="list-style-type: none"> - Posters - Public Art 	<ul style="list-style-type: none"> - It's a creek, not a ditch - Hi Wolf!

WASTE MANAGEMENT



Changes at both the community and municipal level will improve the efficiency and clarity of the waste collection system in Santa Marta. Observations from March 2015 revealed several inefficiencies and points of confusion regarding the current municipal waste collection system. Garbage trucks picked up trash on most streets, but cannot access sections lacking pavement.

Several other recommendations directly address this issue. Lack of access to information regarding proper waste disposal methods also creates confusion. Additionally, survey respondents said that animals further complicate any efforts to keep trash out of the roads and drains. In Santa Marta, stray dogs contribute significantly to the dispersal of trash when they tear into trash bags in search of food, resulting in blown or washed away remnants. While dogs are the leading offenders, horses are also guilty of this behavior. Finding an ethical solution for

the animals of Santa Marta is a necessity for decreasing the dispersal of trash. Dogs without owners will eventually die and are not buried, creating health problems in open streets and dumpsters. The following recommendations target waste management issues at the community and municipal level through interventions addressing awareness, access, and animal control. Note that these recommendations work in conjunction with the campaign topics regarding trash dumping and burning and access to information.

Waste Management at the Community Level

Trash Bags

Residents tend to use thin, small plastic grocery bags for collecting trash and sorting recyclables because they are free. People place these bags, which easily rip, outside in open bins or hanging along household fences. The fragility and small size of these bags limit residents' ability to properly sort and store recyclables and trash for safe pickup. Com-Vida and/or the Neighborhood Association will conduct a pilot study to determine the feasibility of using free or low-cost bags that are larger and more durable, as well as providing stackable bins for sorting recyclables and trash. Providing bins for residents to place the grocery bags in is



Residents without trash baskets sometimes tie trash bags to their fences

a more sustainable option, as it reduces the amount of non-reusable plastic used. However, such bins create the potential for odor, insects, and a loss of space. A pilot study will ensure that Com-Vida and/or the Neighborhood Association use the method that is more practical in Santa Marta. The pilot leader can survey the pilot participants to determine which method works best and then seek funding for larger scale distribution.

Animal Behavior

Residents can prevent dogs from tearing into trash bags by securing lids on trash bins, if used. Households with horses can make sure they are tied up in the grazing fields surrounding Santa Marta.

Recycling Associations

Unifying the recycling associations in São Leopoldo, or initiating coordination among them, will simplify and

standardize their processes for collection and sorting, which should increase their overall recycling capacity. An increase in capacity is necessary to complement the positive effects of any educational campaign, as the current level of operation in São Leopoldo cannot take on an increase in recyclables (P. da Silva, Interview, March 9, 2015). Additionally, coordination between associations would benefit all of the recyclers by enabling them to sell directly to a processing plant instead of using middlemen, yielding higher profits (President of Nova Conquista, Interview, March 7, 2015).

Waste Management at the Municipal Level

Animal Control

Population control through an Animal Birth Control (ABC) program is an effective way to control the stray dog population. We did not consider the slaughtering of healthy dogs because it is ethically questionable and presumably unacceptable in the local community (Nolan, 2015). An ABC program will promote both dog and human welfare. Through this program, stray dogs are captured, surgically neutered or spayed, vaccinated and re-released in the same area in which they were caught. The aim is to produce a smaller, healthier, more stable dog population. To reduce costs, the program should focus on females since one unaltered female dog and her offspring can produce 67,000 puppies in only six years (Projecto Pro-Animal).

The municipality will contract local humane societies and NGOs to conduct an ABC program. NGOs such as Castração Solidária specialize in the spaying and neutering of stray animals in São Paulo (Castração Solidária, 2015). Currently, the Abrigo Dos Bichos is a humane society in São Leopoldo that performs spaying and neutering (Abrigo Dos Bichos, 2001). Projecto Pro-Animal has a castration program in Porto Alegre that may be an option, as they also have an office in São Leopoldo. Typically, a family must pay R\$50 –R\$80 to spay or neuter dogs, however, in underserved neighborhoods organizations make exceptions and reduce the cost to zero (Projecto Pro-Animal). In addition, residents can bring dogs to the municipal kennel, established in June 5, 2009 by municipal law number 6899 to meet the needs of animals in situations of abandonment and abuse, for free spaying and neutering. This facility can conduct up to eight castrations a day and will cater for free for owners with low income and animals on the street (Winter, 2015).



Stray dogs often rip open trash bags awaiting pickup.

Case Study: ABC in India

A study in India followed two groups of dogs: one set underwent Animal Birth Control (ABC) and another did not. The stray dogs that underwent ABC had an overall higher health score than those that did not (Tottona et. al., 2011). With fewer dogs, fewer dog deaths on the street will occur, leading to better sanitation in the streets and open dumps.

New Dumpsters

Installing larger dumpsters will facilitate more efficient garbage collection, while making proper disposal more accessible. Almost 50% of survey respondents indicated that larger dumpsters or bins to store the trash outside waiting for pickup would make trash disposal easier for their household (see Appendix for full survey results). The household wire bins currently used are small and not all community members have them (D. Rosa, Interview, March 4, 2015; field notes). Larger dumpsters would allow more people to have access to trash receptacles.

However, we recognize that road conditions, odors, and placement are complicating factors that the municipality must address when expanding the number of dumpsters. In the past, dumpsters created unpleasant odors in the community (field notes). Emptying

the dumpsters at least twice a week will minimize odors in the humid climate. Furthermore, residents do not want to see dumpsters in front of their homes because they attract animals and create odors, and corners are sometimes too narrow to accommodate them. Hence, placement is difficult: too far out of sight makes them less accessible, while central locations introduce issues of smell and stigma. We recommend that the municipality use a participatory approach in deciding the placement of such dumpsters.

Collection Schedule

While our survey results show that most people have their curbside trash collected three times each week, the pickup route was less clear. In side conversations, residents noted that the route sometimes changes (Field notes). The municipality can take steps to clarify the routes and communicate these to residents of Santa Marta and Tancredo Neves. We recommend the municipality provide clear and easily accessible maps of routes and times of pickup, available online and in hard copies.

Collection Method

Trash collection teams currently employ different procedures to collect trash. Field observations indicate that of the two methods, the one-step rather than the two-step procedure is likely more efficient. The two-step procedure entails one team



Trash collection occurs using different types of procedures. We observed two in March 2015: a one-step procedure and a two-step procedure.

taking trash out of baskets followed by another team putting trash in the trucks. A one-step procedure entails one team removing the trash from the basket and placing it directly into the truck. The two-step approach oftentimes left behind pieces of trash along the curb, whereas the one-step procedure more often prevented left over trash on the side of the road. Left over trash attracts stray dogs and creates more litter. We recommend instructing trash collection teams to institute the one-step process to avoid these problems.

Storm Drains

Currently, the storm drains (‘bocas de lobos’) do not have grates to catch trash and debris before it flows into the drainage system. The Public Works Department should retrofit the storm drains to include these grates. This infrastructure improvement will save the municipality money in the long run, as cleaning up clogged storm drains is costly.

Trash Traps

Trash and debris can cause problems in a waterway, such as clogging stormwater drains and polluting the water. The entanglement of trash and debris in drains results in a 'damming effect' that prevents water flow, creates hazardous conditions for people and wildlife, and produces high cleanup and maintenance costs for municipalities (Ferguson Foundation, 2012). Trash traps are a low cost and effective means of capturing litter and debris in a waterway.

Trash traps come in the following forms:

- Bandalong Litter Trap: a device that floats in a waterway and captures litter as it passes, using the current as a guide.
- StormX: stainless steel nets that are attached to existing pipe ends/outfalls and capture litter, debris, and pollutants from storm water runoff.
- Boom System: a floating boom that spans across a waterway and acts as a barrier to collect litter and debris and prevents it from floating further downstream (Storm Water Systems, 2011).

Because the Arroio da Manteiga creek is shallow, it is most effective to use a bandalong litter trap or boom system at the creek's deepest point. Considering the high upfront cost, the municipality should be responsible for this intervention and conduct a study to determine their location.



Bandalong Litter Trap



StormX net



Boom System



Although Santa Marta is adjacent to open fields, horses tend to pick through the trash dumped in the streets or set in the street awaiting pickup.

MONITORING AND ENFORCEMENT



To mitigate waste management problems, Santa Marta needs increased monitoring and enforcement against the dumping and burning of trash. Monitoring and enforcement programs are critical to discouraging improper disposal methods and compelling people to change behaviors regarding waste disposal.

An effective monitoring and enforcement program can help to serve three main purposes: (1) identify areas where dumping is prevalent, (2) identify people responsible for improper waste disposal, and (3) make those involved in dumping (residents and non-residents) bear the consequences of their actions.

The initiation of a new and improved monitoring and enforcement program will require cooperation between the municipal government and the community. The municipal government will be responsible for launching the effort regarding the following recommendations.

Monitoring

A monitoring program in Santa Marta will identify where dumping is prevalent and which people are responsible for improper waste disposal. Through collaboration between the community and the municipal government, monitoring will help to discourage dumping; if people know monitoring occurs, they are less likely to engage in socially unacceptable or illegal behavior.

The monitoring program will initiate four main elements:

1. “Community Waste Monitor” position
2. Com-Vida “waste-watcher” journals
3. Keep-it-Clean Task Force
4. Monthly “waste-watcher” meetings at the Neighborhood Association

Create a “Community Waste Monitor” Position in Santa Marta

With an inadequate police presence and little enforcement against improper waste disposal, Santa Marta needs someone whose primary job is to monitor waste disposal. The Community Waste Monitor, who will reside in the Department of Public Works, will track waste dumping trends and catch people engaging in waste dumping and burning. As Santa Marta residents are currently faced with producing proof when reporting dumping crimes, it is critical that the

Community Waste Monitor can legally enforce punishment against dumpers as the municipality sees fit. The Department of Public works will select the Community Waste Monitor; in order to avoid social tension and conflict, someone who does not live in Santa Marta should fill the position.

Com-Vida Waste-Watcher Journals

Waste-watcher journals will increase the monitoring of waste trends while serving an educational purpose. Every week, Com-Vida students will spend thirty minutes writing in their own personal waste-watcher journal. Following prompts from teachers, students will write about where they see trash piles and related problems. Students will report their waste related observations to members of the waste-watchers at the monthly meetings, noting improvements and new challenges.

Initiate a Keep-It-Clean Task Force

The Keep-It-Clean Task Force will consist of Keep-It-Clean Ambassadors assigned to different areas of Santa Marta. The Keep-it-Clean Ambassadors will each monitor waste management in his or her assigned areas and will report findings at the monthly waste-watcher meetings. The Keep-it-Clean Ambassadors will talk to other residents about their waste disposal options and the penalties involved in illegal dumping. They will promote public waste management campaigns, as outlined in the following recommendation, and assist with the community clean-ups that Com-Vida currently facilitates. In the future, they can lead additional community clean-ups focused on their areas. They will collaborate to form a Keep-it-Clean Task Force, which will oversee community waste management initiatives and promote a cleaner, healthier Santa Marta.

Case Study: Johannesburg, South Africa



Johannesberg skyline. Photo by Nick Roux

In Johannesburg, South Africa, the municipal government responded to improper waste disposal by forming a compliance monitoring and enforcement section under the Department of Environmental Management (City of Johannesburg, 2011). The section is composed of Environmental Management Inspectors (EMI's), who monitor and enforce local ordinances concerning improper waste disposal. The EMI program was established in consideration of long-term goals, including a goal to increase persecution for waste disposal by 40% within four years.

Set Up Monthly Waste-Watcher Meetings at the Neighborhood Association

The best monitors of waste dumping patterns are the residents of Santa Marta themselves. Residents see who is dumping and when it is occurring, they understand which corners accumulate waste and what trash items are most commonly dumped. This internal knowledge is a critical component of an effective monitoring program. To allow collaboration between residents, Com-Vida students, the Keep-it-Clean Task Force, the Community Waste Monitor, and local police, the Neighborhood Association should host monthly meetings to discuss problems and patterns with improper waste disposal. During these meetings, Com-

Vida students will be given an opportunity to share observations they have logged in their waste-watcher journals and residents will be given a chance to share the trends they have noticed. The waste-watcher meetings will help the Community Waste Monitor and police to catch waste dumpers and prevent waste dumping in the future.

Enforcement

An enforcement program will ensure that the monitoring program successfully discourages improper waste disposal. Enforcement programs typically come in the form of fines, but, given the economic vulnerability of most Santa Marta residents, we recommend offering an alternative penalty in lieu of fines. Based

on interviews with the head of the Public Works Department and other municipal workers, we discovered that the fine system in place is rarely used to prevent improper waste disposal. Instead, the municipality opts for education programs promoting proper waste disposal practices and the issuance of warnings.

While these measures are important, a system that discourages illegal waste practices through enforcement will attach a consequence to the action of dumping and burning.

The municipality can address enforcement issues in the two following ways: initiate site clean-ups and improve current enforcement.

Enforcement through Site Clean-Up

Site clean-up requirements for violators of waste regulations are an enforcement strategy that offers a productive alternative to fining. Once the monitoring program identifies individuals who dump and burn trash, they can give the offenders the option of paying a fine or cleaning up the site where the dumping or burning occurred. By giving violators an option between fines or site cleanup, all violators will bear consequences for their actions, but economically vulnerable residents will not take on a disproportionate burden in doing so. Furthermore, those who choose the site cleanup option will contribute to maintaining a trash-free community.

Improve Current Enforcement

São Leopoldo has an enforcement program, in the form of fines, which intends to target those who improperly dispose of waste. However, violators are often only given a warning and bear little-to-no consequences for their actions (D. Rosa, personal communication, March 4, 2015). In Santa Marta, improved enforcement will help change environmentally harmful behaviors and discourage improper waste disposal. Police units and the newly hired Community Waste Monitor can collaborate to catch the people responsible for dumping and burning waste and penalize them with a fine or a fine alternative. The Community Waste Monitor will maintain a log of the issuance of fines to reveal what times and places are the most susceptible to improper waste disposal, so that police can better monitor these spaces as well.

Case Study: Dudley Street Neighborhood Initiative



Dudley Street, Boston. Photo by Tim Pierce

The Dudley Street Neighborhood Initiative is an initiative in the Roxbury and North Dorchester neighborhoods of Boston. The neighborhoods created the organization in reaction to a number of challenges, namely: arson, disinvestment, neglect, and redlining practices (DSNI, 2015). Over 3,000 residents and community organizations came together to work toward neighborhood growth and improvement. The Dudley Street Neighborhood Initiative has gained national recognition for its success in promoting neighborhood change.

COMMUNITY MAPPING



As Santa Marta grows and informal settlement stretches beyond the limits of city maps, municipal departments are pressured to update their records to keep this dynamic community on the map and visible in their planning priorities.

We recommend *Estamos Aquí!* as a new community mapping initiative to help municipal departments better understand on the ground conditions in Santa Marta and to also help the residents of Santa Marta better understand their surroundings and how they can direct and facilitate their own community's upgrading process. The program teaches community members how to map their surroundings, thereby enabling them to share information on their community's needs and to better articulate strategic ways for the municipality to intervene. In order to give Santa Marta residents a clearer voice in municipal requests, *Estamos Aquí!* will use an interactive community mapping exercise that brings together community members and planning officials to train residents to collect and share maps of their own community. Residents of Santa Marta

can use the findings and maps produced in this process to identify requests to make during participatory budgeting and to the municipality's "Viva Santa Marta" initiative and other funding opportunities.

What is Interactive Community Mapping?

Interactive Community Mapping (ICM) is an initiative that aims to give communities a new voice in their cities by putting the power of gathering data and mapping their surroundings in their own hands. In informal settlements around the world, communities use ICM initiatives to approach a host of different issues such as asserting people's rights and legal claims over land and resources, designating environmentally sensitive sites, establishing historical narratives to strengthen community identity, and more. ICM initiatives educate and train individuals to map their own communities through a program that coordinates sharing information between communities and municipalities. By mapping their own communities, individuals can play a pivotal role in the planning process and better understand how to participate and coordinate with their municipality. Although ICM initiatives can take many forms, the underlying goals of the program center on a participatory mapping process that can

Recommendation: Community Mapping

build community-agency and facilitate a clearer dialogue between municipal leaders, service providers, and community residents.

Knowing what exists in a community is vital to the planning process. ICM initiatives aim to encourage individuals to bring their own knowledge of their community to the table, while they learn new skills and gather the necessary data to formally put their community 'on the map.' Instead of relying on incomplete maps to gauge current conditions and steer future decisions, ICM initiatives help marginalized communities that lie 'off the map' strengthen the community's voice while also gaining important mapping skills and building wider community engagement.

Why Should We Map?

Interactive Community Mapping can...

- Teach new skills to residents
- Build and help better define community identity
- Empower residents to determine how their community is represented
- Give residents an opportunity to better understand the planning and upgrading process
- Put municipal leaders in direct conversation with residents
- Expose residents to new educational opportunities
- Help expand municipal data and information on the community



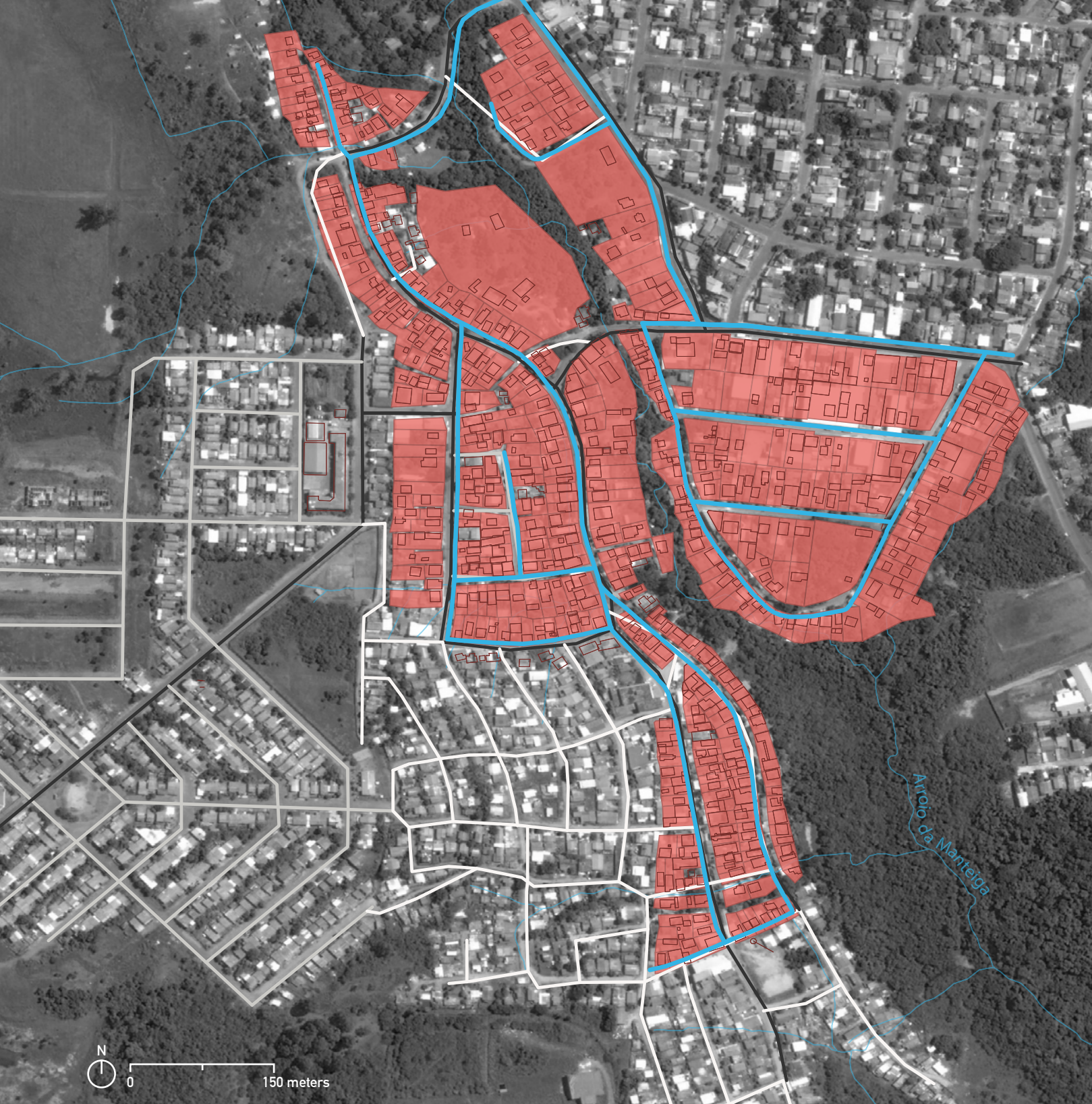
Many unpaved streets are at risk for severe erosion which limit mobility and garbage pickup. Mapping these streets can help the municipality prioritize streets for maintenance.



Community mapping can help the municipality keep track of new streets and the effects of informal growth in Santa Marta.



Self-enumeration efforts can help clarify land tenure and land ownership to allow for service upgrades and extensions.



Spatial Data Collected from the São Leopoldo Municipality

The map above shows a selection of the spatial data collected from the São Leopoldo municipality's Department of Urban Management and Governance. This department provided our team with a collection of files (AutoCAD and GIS Shapefiles) that showed the spatial extent of their municipal data. Their collection of data only covers a portion of Santa Marta, as seen in red, and closely coincides with the area's paved roads. A community mapping initiative might be able to help extend the municipality's data beyond the limited boundaries seen above to create a more complete map of Santa Marta for service extension and upgrading.

-  Paved Roads
-  Cobblestone Roads
-  Dirt Roads
-  Water Mains (Rede Água)
-  Parcels (Lotes)
-  Building Footprints (Edifícios)

Who Will Do the Mapping?

Although each ICM initiative must take care to accommodate the specific needs of each community, most initiatives have a similar list of people and groups involved. Commonly initiatives have four different types of participants, each playing an important role: the external team of ICM specialists, local non-profits or civil society organizations (CSOs), local community members, local public officials and municipal departments (Shkabatur, 2014, p. 4). Public policies often instigate NGOs or educational groups to collaboratively conduct community-mapping exercises as a way to increase transparency in the regularization and data collection that precedes certain planning activities.

'Outside Help': External ICM Specialists

Certain groups external to the community commonly instigate ICM initiatives and help guide the community-mapping process. Groups such as international non-profits, or university research teams often facilitate these types of exercises and offer their technological expertise to design and implement an ICM program that the community can carry forward. They often teach the technical expertise and data collection methodology to the program's participants, who can then carry forward and evolve the program. Their role in the project may

be temporary. They often guide the initial pilot program and coordinate with local CSOs, community members, and municipal departments to help develop a framework to have the local community carry the project into the future.

If we receive the 2015 DOW Sustainability Fellowship, the University of Michigan hopes to continue a partnership with Santa Marta. In this case, a University of Michigan team will work with Santa Marta as outside help in planning and designing a self-mapping exercise, whether remotely from Ann Arbor or, ideally, back in the field in Santa Marta. This team would aim to help assist the municipality with data collection by updating its current data set with information collected in the field. Faced with the challenging task of mapping and surveying a dynamic and growing community, the University of Michigan would like to demonstrate the important role up-to-date data plays in serving a community and what type of data could be prioritized to help spur road upgrading and service extensions.

Local partners and mapping specialists

Typically, local partners and mapping specialists pick up the leadership of the program after the external specialists lay the groundwork. These local groups maintain the relationship and information exchange between the community and the municipality and also lend their technical expertise to the program.

Local partners often take the form of local NGOs, non-profits, or social service groups, but Estamos Aqui! hopes to target educational institutions local to São Leopoldo or even the greater Porto Alegre area. Estamos Aqui! aims to present this initiative as an ongoing educational opportunity to not only keep the information gathered current, but to also extend the technical expertise learned in the project to as large a group of people as possible.

Community Mappers

Empowering community members to better articulate their community's needs lies at the heart of the Interactive Community Mapping process and the community's assembled team of mappers are integral to the initiative's success. It may be hard for community members to first understand the importance of mapping and data collection in their efforts for improved local services and municipal attention. It is important to help design an ICM initiative that makes the important role of mapping clear and also provides the right type of incentives to compel community members to participate and donate their valuable time (Shkabatur, 2013, p. 7). Although ICM projects revolve around community participation, an ICM project's benefits may not be apparent to residents and incentive to participate may become a large hurdle to the community-mapping process. Since residents already know their environment intimately well, it is

difficult for them to see the advantages of formalizing that knowledge into a map for the municipality (Shkabatur, 2013).

Estamos Aqui! hopes to present this ICM initiative as an educational opportunity to those pursuing higher education through Santa Marta School's adult education program. As a strong community center, the Santa Marta School can serve as the local headquarters and guiding force, as well as incorporate the program into the regular curriculum. As a joint project with local University students and school staff, Estamos Aqui! will offer Santa Marta students the opportunity to learn higher-level technical skills.

In addition to working directly with the local school, Estamos Aqui! hopes to take advantage of the growing role of the Santa Marta Neighborhood Association.



Community Mapping can contribute to a "Needs Assessment" and lead to infrastructure improvements

The Santa Marta School can partner with the Neighborhood Association and its larger community task force, Movimento Bairro Melhor, to offer the educational opportunities and technical training to community members at large. Regularly scheduled community meetings with external ICM specialists, municipal partners, and local mappers will help articulate this project as a means to gain specific services in Santa Marta and will extend the offer to participate to all who are willing to volunteer their time. Estamos Aqui! will offer multiple ways for community members to participate in the

process and feel their own voice is heard. Including more technologically advanced mapping in the process may run the risk of seeming exclusionary and inadvertently preclude residents from joining, but it also provides residents with insight into other ways of community engagement and personal empowerment. The mapping process will therefore require different levels of technical proficiency from simply drawing on paper maps and collecting local survey answers, to learning how to interact with and edit digital maps and simple databases.

The ICM Mapping Process

1. The ICM team consists of external ICM specialists, local project partners, community mapping volunteers, and municipal officials. The external ICM specialists commonly coordinate the team and explain the goals and aims of the process.
2. The ICM team presents the project to the community at large and solicits feedback on what their mapping priorities are and how those priorities align with the mapping and data collection needs of the municipality. The team develops a list of mapping themes to focus on what can help reach the community's goals such as municipal service extensions, road maintenance, or lighting improvements.
3. ICM specialists and local partners help train the community mapping volunteers on how to collect and digitize the data and help them establish a database that they can easily update and maintain.
4. Community mappers show the resulting maps of their specific mapping themes to community members and municipal partners to solicit feedback and revisions.
5. Community mappers prepare their data and maps for sharing with the municipality. (Albornoz et. al., 2007)

Possible Mapping Themes

Estamos Aqui! proposes an ICM process that is flexible enough to approach a number of different mapping themes. Through our field research and input from Santa Marta residents, we heard a number of repeated requests for improved information on some of the following themes:

Infrastructure: Street conditions and streets prioritized for upgrading and paving

Public Places: Inventory and condition of open spaces that may serve as possible public places

Water Infrastructure: Areas prone to excessive flooding or water retention

Waste Management: Sites of excessive trash dumping

'Dark spots': areas with insufficient lighting and inadequate monitoring

Self-enumeration: creating a comprehensive survey of all residents, their houses, and their parcels. (IIED, 2012, p. 2)

Mapping the history of Santa Marta: creating a survey that maps of length of tenure and how residents obtained their property (Municipal Spatial Planning Support Programme, 2013, p 34)

How Does the Mapping Process Work?

Estamos Aqui! envisions a process that includes new community mappers with each turn through the cycle or with the mapping of each theme. By establishing a specific process and mapping curriculum, the school can repeat this ICM initiative with each class of incoming students and can continue to build on data collected from years before. With each passing round of mapping, the municipality can gain even more information on

conditions in Santa Marta, as resident input becomes an integral component in the planning process.

As community engagement is at the heart of the ICM process, it is important to offer multiple ways for community members to participate. Regardless of what method or combination of methods this particular ICM process will use, Estamos Aqui! will offer 'orientation workshops' throughout the program to help guide participants and ensure they collect data accurately and in a way that will best serve both the municipality and Santa Marta residents.

ICM programs improve participants' skills and increase residents' exposure to new technology, but the mapping process includes more than the input of trained community mappers. Throughout the mapping and data collection process, community members at-large will contribute their input about what to map, as well as feedback on drafts of the maps before they are shared with the municipality.

Mapping Methods

ICM methods may vary depending on resources at hand and a community's priorities and goals for the project, but Estamos Aqui! can imagine a mapping curriculum that takes full advantage of today's interactive mapping technologies.

Method A: Editing Online Maps

Pros:
Cost effective, updated in real time, requires low technical skill

Cons:
Data may not be in a format municipality can directly use or edit

ICM specialists and local project partners train community mappers on how to collect specific data by marking high-resolution aerial images or taking photographs geo-tagged with GPS data

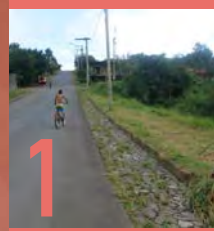
using smartphones or digital cameras. Community mappers then upload the geo-tagged photographs and specific points collected into an online mapping software such as "Mapping for Change's community maps" or "Open Street Map." They can then share this information with the municipality and edit in real time to reflect changing conditions.

Method B: Creating Spatial Data with Mapping Software

Pros:
Can build strong technical skills, editable data can be easily shared with and updated by the municipality

Cons:
Requires more advanced technical skills and more oversight database management.

ICM specialists and local project partners train community mappers how to collect GPS data in the field using handheld GPS devices or smartphone apps. With the help from the ICM specialists, local partners and community mappers input their GPS data into a free open source GIS (Geographic Information System) software such as QGIS. Community mappers and local partners maintain and update the data and share their files with the municipality.



1
Cobblestone drainage ditch



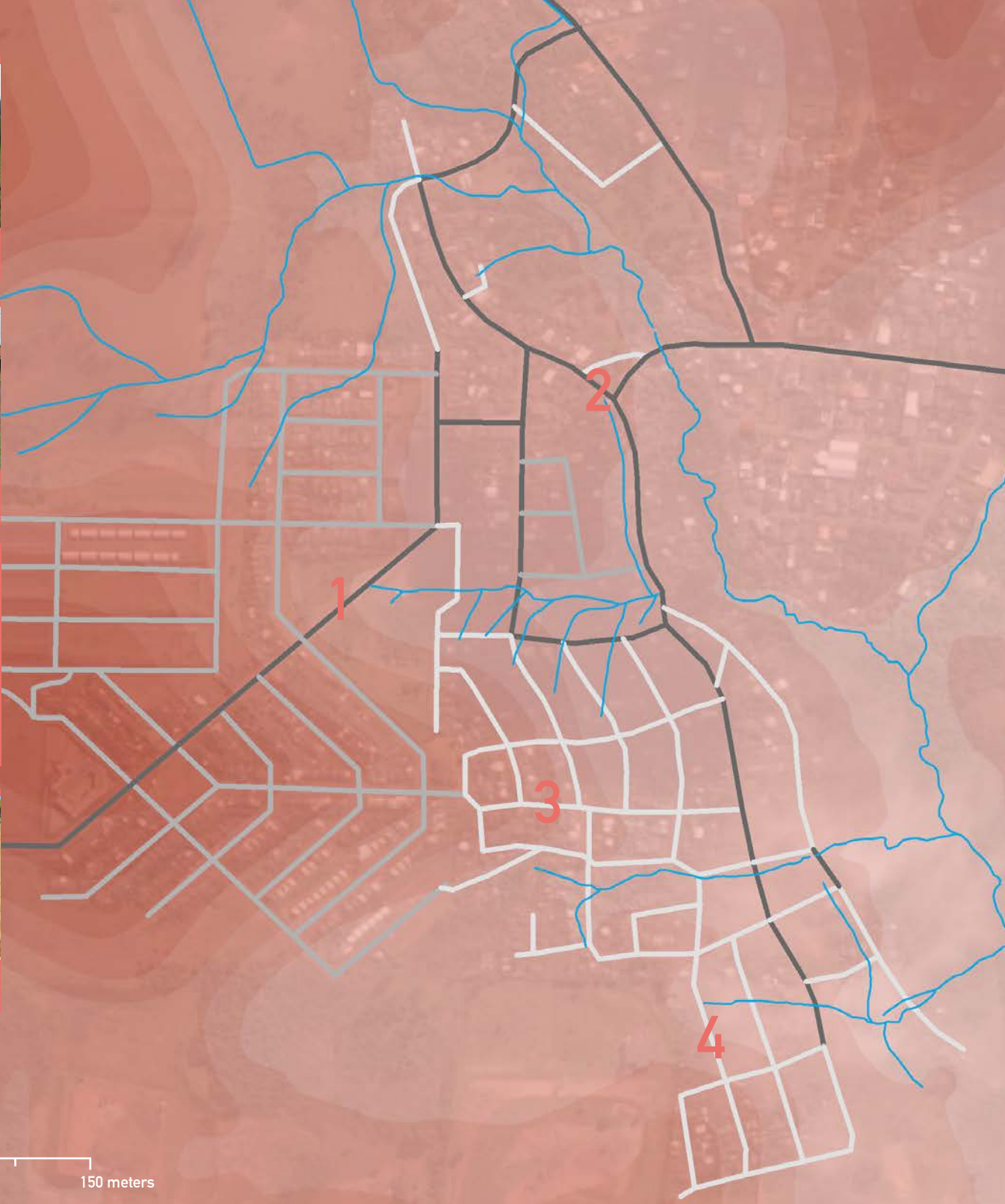
2
Municipal drain



3
Eroded slope



4
Impassable ditch



Road Types and Slope in Santa Marta

Many roads in Santa Marta suffer from being both unpaved and on steep inclines. These roads are susceptible to severe erosion that call for frequent municipal maintenance and may limit the scope of municipal garbage pickup. Using the data gathered from the Department of Urban Management and Governance, the map above shows a rough approximation of streets that suffer from this two-fold threat. Although limited information and incomplete data barred us from determining exact elevations in this map, we were at least able to present relative elevations to show the areas of Santa Marta with the steepest slopes.

- Paved Roads
- Cobblestone Roads
- Dirt Roads
- Arroio da Manteiga
- Elevation

Mapping to Instigate Upgrading

The Estamos Aqui! ICM initiative could be a powerful tool for approaching one of Santa Marta's most complicated requests. How can the municipality address the community's request for paved roads when ownership of the roads remains unclear?

São Leopoldo's Public Works Department is held at a literal roadblock with few infrastructure improvement options available on a right of way that remains unclear and legally problematic. The municipality cannot pave roads that are on federal land; it can only pave roads on private or municipal land. Currently, it is unclear which entity owns which parcels of land, making it difficult for the municipality to pave roads. Furthermore, interviews and conversations during March 2015 revealed that the municipality is under the impression that it cannot pave roads on private land, further complicating the paving issues. Rain quickly erodes these dirt roads, which exacerbates Santa Marta's issues of limited trash collection and requires the municipality to commit to costly and inefficient maintenance. Without paved roads, municipal garbage trucks can only access certain roads, which leaves many of the newer informal roads without municipal trash pickup. As residents consolidate garbage in informally designated trash pickup spots, these trash piles run the risk of being washed away, scavenged, and picked at by animals and people alike, and further exacerbates Santa Marta's concerns for trash and litter accumulating in the streets and eventually in its streams. In order to address its trash collection problems, Santa Marta needs to also address its informal roads problem. But as right of way ownership remains unclear, permanent solutions like street paving remain just out of reach.

Estamos Aqui! can become the first step in clarifying Santa Marta's right of way ownership and initiating road paving on Santa Marta's informal streets. Attempting to map ownership may seem like a difficult task, but the benefits of clarifying ownership go beyond just opening the door to street upgrading options. Residents voiced concern over the lack of identity Santa Marta has and the negative reputation they fear people have of the place they call home. As residents trace ownership and land status in their community in order to clarify who owns the streets, can they also begin a process of establishing and narrating Santa Marta's history? With a more clearly defined history, can a new community identity start to develop? Through a survey and mapping process, community mappers can help the municipality understand how long people have lived on their land and how they came to live there, all the while creating a visual record and historical narrative of the community.

PARTICIPATORY BUDGETING



In order for Santa Marta to better address its capital needs, residents need to increase their involvement in the participatory budgeting process. The following recommendations are for different community organizing strategies that would help improve awareness and increase involvement in the participatory budget.

They fall into two main categories: (1) education and outreach and (2) strategic planning. These recommendations take into account the long history of participatory budgeting in the region, as well as the particular process in São Leopoldo.

What is Participatory Budgeting?

Porto Alegre first implemented the participatory budgeting process in 1989. Participatory budgeting is based on leftist and socialist ideas, which aim

to increase public participation and empower the poor (Pimentel Walker, 2013, pg. 203). It is a democratic process in which residents have an opportunity to participate in a city's budget allocation for capital improvements. In São Leopoldo, the municipality sets aside \$20 million reais (approximately \$7 million dollars) annually for spending on public works projects determined through participatory budgeting (PB). The municipality allocates and then subdivides the funds between eight regions. Although PB districts with a higher percentage of households living in informal settlements receive a greater amount of per capita investment than wealthier neighborhoods (Marquetti 2003), the needs of informal settlements are greater than resources available. Neighborhoods with informal settlements essentially compete against one another in order to receive more money relative to their need for improving particular local projects.

The process requires three community meetings, each with a different purpose. First, residents attend a preparatory meeting where they brainstorm requests. Next, residents attend a plenary (public assembly) where they register specific requests, vote for thematic priorities (among health, security, public works, education, and roads), and elect delegates. Interviews with Dilce Rosa (President of the Santa Marta Neighborhood Association and the local PB Councilor)

and Cristina Santos, a Santa Marta School teacher, revealed that many residents think that this is the final step in the process. However, a vital step remains: residents must vote for the specific requests they previously registered.

Currently, the community lacks the ability to mobilize enough residents to vote, therefore they miss out on important funding opportunities. In 2014, Santa Marta was only able to accumulate 500 votes during the PB process. Of these 500 votes, only 191 votes directly came from Santa Marta community members; the rest of these votes came from members of neighboring communities who supported Santa Marta requests in exchange for support of their requests. The lack of votes and community participation may not stem from disinterest, but rather from the lack of understanding the voting process and the implications that voting has on community funding. Miscommunication about the process is common in communities with transitioning leadership and during a change in municipal political parties, but violence, drug trafficking, and the power of drug dealers also lessens the community's ability to mobilize voters.

While Santa Marta has attempted to align with neighboring communities such as Campinas to receive more votes or trade votes in order to pass different projects – i.e. vote for one project that benefits Santa Marta and in return vote for a project that benefits Campinas – the problem that continues to persist is mobilizing community members to

actively participate and vote. Even though Santa Marta's relative need for municipal assistance is much greater than that of other communities, the Santa Marta community continues to fall short in gaining funding.

Education and Outreach

The first critical component of increasing involvement in the participatory budget is to educate residents on the process itself. Through education and outreach campaigns, residents of Santa Marta can familiarize themselves with the participatory budget and how to become involved. Increased understanding of the process will expand Santa Marta's chances for gaining funding for infrastructural and other improvements. The following recommendations address three strategies for education and outreach.

Question Campaign

The Keep-it-Clean Task Force will lead the question campaign, under the guidance of the Neighborhood Association, who will teach Task Force members about the participatory budget and the steps needed to advocate for Santa Marta's capital needs. Keep-it-Clean Ambassadors will be encouraged to approach neighbors, family and friends asking them, "What do you know about the participatory budget?" This question will lead to productive discussions between the Keep-it-Clean Ambassadors and residents and will give the Ambassadors an opportunity to share

their knowledge. To follow up, the Keep-it-Clean Ambassadors will be trained to ask, “Did you know you have to vote twice a year for Participate Budgeting? Come to the General Assembly at (x) location and then don’t forget to vote online at Santa Marta School or by hand at the Neighborhood Association.” This question and information will help bolster attendance and participation in public assemblies and participatory budget elections.

By leading a two-way conversation about the participatory budget, Keep-it-Clean Ambassadors will be able to increase awareness of the process and encourage residents to participate. This campaign does not involve written materials so that it does not exclude residents with a low level of literacy.

Participatory Budget Pamphlets

To complement the question campaign, participatory budget pamphlets will describe the ins-and-outs of the participatory budgeting process. Pamphlets will stress the importance of attending meetings related to participatory budgeting. The municipal government should produce and print the pamphlets, while leaders from Santa Marta School, the Keep-it-Clean Task Force, and the Neighborhood Association will distribute them widely. In order to make sure that distribution of them does not exacerbate current littering issues, hand pamphlets to people directly instead of leaving them on gates or under windshield wipers. Distribute them during the two months before a public assembly to reach the more people in the community with this information.



The Santa Marta School is currently one of two voting sites in Santa Marta. To increase attendance and votes, the school can open up the computer lab to allow online voting to occur at this location as well.

Voter Information Cards

One major contributor to Santa Marta’s low level of involvement in the participatory budget is a lack of knowledge about when and where to vote. To spread the word, neighborhood leaders from the Neighborhood Association, Santa Marta School, and the Keep-it-Clean Task Force can create and distribute voter information cards before each of the three public assemblies.

The cards complement the more comprehensive pamphlets, but focus on the “where” and “when.” They will include the addresses of public assembly locations along with a time and date; they will also have a small amount of writing that highlights the importance of voting. Distribution of these cards will be widespread through resident interactions, door-to-door drop-offs, and Neighborhood Association meetings.

Strategic Planning

In order for Santa Marta residents to achieve their goals during the participatory budget, they need to strategically plan and organize. These two recommendations address access to voting within Santa Marta and collaboration with other communities. They will strengthen the ability of Santa Marta to gain funding through participatory budgeting.

Polling Locations

In order to vote on the participatory budget, Santa Marta residents must either visit a ‘voting tent’ or vote at home online. Currently, Santa Marta has ‘voting tents’ at Santa Marta School and the Neighborhood Association. To increase attendance and votes, Santa Marta School can also open its computer lab and internet service to allow online voting to occur at this location. As residents view Santa Marta School as a “neighborhood center,” allowing them to use the school computers will help to promote the election.

Neighborhood-to-Neighborhood Collaboration

To gain additional leverage at public assemblies, Santa Marta should continue to collaborate with other neighborhoods. This may require Santa Marta to focus community organizing efforts on issues that are not top priorities. For example, while unpaved roads are a serious problem in Santa Marta, other neighborhoods also make their own road requests and will likely not trade votes with Santa Marta. However, Santa Marta needs a community health clinic; other neighborhoods may vote for this in exchange for a vote towards their capital need in a different category (security, public works, etc.). Working collaboratively will increase the votes for Santa Marta’s proposed capital improvements.



RETHINKING PUBLIC SPACE

Great public spaces have measurable economic, environmental, and social benefits. They can be catalysts for neighborhood revitalization by not only beautifying an area, but also by acting as anchors for economic development. Public spaces have environmental benefits, as added green spaces can increase people's stewardship over the natural environment and appreciation of their surroundings while increasing opportunities for leisure and recreation (Project for Public Spaces, 2015). Additionally, great public spaces contribute to a strong sense of community. When these spaces are inadequate people may feel less connected to one another and the spaces they share. People who have the ability to shape their spaces develop stronger ties to their community (Gehl, 22, 2010).

ACTIVATING PUBLIC SPACES

How do you create successful public spaces?

Creating a successful public space goes beyond transforming the physical space; it is about enabling new modes of social interaction and public activity through programming and place-based design. The organization Project for Public Spaces (2015) has identified four main qualities of a successful public space: the space should be accessible, comfortable, sociable, and allow for various uses and activities. We aim to incorporate these four qualities into our recommendations for activating Santa Marta's public spaces to better serve the residents' needs.

Accessible

An accessible public space is both visually and physically connected to its surroundings. Accessible spaces should be highly visible and easily connected to a variety of transportation options. The space and design also need to be functional for people of all needs.

Comfortable

A comfortable public space is safe, clean, provides places to sit and relax, and enjoyable for people of all genders, races, and social statuses.

Sociable

Public spaces should be social places where people can meet and spend time with friends and feel comfortable interacting with strangers. By encouraging social interaction, public spaces can foster a strong sense of place and feelings of attachment to a community.

Uses and Activities

Public spaces should allow people to socialize and participate in activities that are not home or work related. An empty public space generally indicates lack of programming or inadequate design and infrastructure. Public spaces should provide people of all ages with opportunities to engage in various activities at all times of the day.

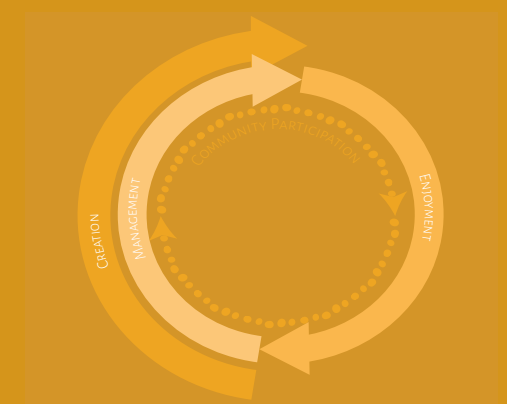
MAINTAINING PUBLIC SPACES

Currently, many of Santa Marta's public spaces are overlooked and underused, and are therefore vandalized or treated as informal dumping sites. Despite greater support for city revitalization through better public spaces, cities around the world still suffer from having plenty of overlooked and underused spaces. Santa Marta is not alone in its challenge to deal with these overlooked spaces, but Santa Marta does stand apart in how it must approach activating and defining them. Timing, community input, programming, and design are integral to the success of Santa Marta's public spaces. Special attention must be paid to how the recommended sites are designed, what activities they support and encourage, and how quickly they are developed, so that they do not continue to stand incomplete and remain susceptible to disrespect and misuse.

Our recommendations aim to do more than identify the spaces of intervention by addressing what is logistically possible in Santa Marta, what shapes the spaces should take, and how the community and municipality can cooperate to transform these overlooked spaces into public spaces that the community supports, residents love, and everyone respects. As a public good, the municipality has taken the first steps in introducing well-planned and clearly defined public spaces in Santa Marta. Although municipal intervention is welcome when creating public spaces, it is important to realize the limitations of a site conceived,

implemented, and maintained solely by the municipality. Without community input and participation, these sites may inadvertently overlook the needs, desires, and priorities of the community. These spaces may simply sit, detached from the community and its social surroundings, exposing themselves to the threats of poorly designed public spaces.

The process of designing and building a public space is only the first step of what continues as a cycle of care (UN Habitat, Toolkit (2014), 40). The cycle of care follows a pattern of creation, management, and enjoyment and works by bringing in new users and spurring new levels of personal investment with each rotation. The creation of a public space leads to management and maintenance, which brings enjoyment to its users who then begin the cycle again as they shape and maintain the space through their own newfound personal commitment to this community space.



Cycle of Care, adapted from the UN Habitat "Global Public Space Toolkit"

PLACEMAKING

Our recommendations also incorporate various placemaking strategies to support and activate Santa Marta's public spaces. Placemaking is about connecting residents and strengthening the relationship between people and the spaces they share. Communities that lack a cohesive identity hinder residents' ability to meaningfully connect with, and maintain the spaces around them, and therefore cultivate a strong group identity.

Our recommendations are committed to the idea of placemaking, of transforming a space without a specific use or visual character into a place with a clearly defined use and identity. Transforming an open space into a place of pride requires more than a redesign, it calls for creating a 'culture of placemaking' that instills in all parties involved the level

of commitment needed to make sure one particular use does not overwhelm the space and stifle productive use (UN Habitat, *Turning Spaces into Places*, 2014). Through our recommendations we hope to help transform Santa Marta's open spaces from a threat that encourages illicit activity and harmful dumping to a source of community pride and a symbol of a shared vision of placemaking supported by the City of São Leopoldo and the residents of Santa Marta.

As an informal settlement that built itself out of nothing but open land, Santa Marta residents have shown an impressive level of ingenuity, determination, and self-agency. We believe that public spaces that are produced and maintained by the community can become symbols of self-agency and a testament to their ingenuity.



An example of a well-defined public space: the playground at Santa Marta's Neighborhood Association. Given a specific use with its play equipment and sport fields, this clearly demarcated space has been treated with respect and spared from dumping since the municipality renovated it.



Com-Vida students, Lucas, Amanda, and Samira, responding to the Public Input Board at Santa Marta School that asks, "What would you like to see more of in your community?"

How Do You Create Productive Public Spaces?

Kounkuey Design Initiative was faced with the same question in their efforts to establish productive public spaces in Kibera, Kenya.

Concerned with open spaces that became informal dumping grounds which divided the neighborhood and undermined community mobilization, Kounkuey Design Initiative brought together a team of designers, planners, engineers, and community members to create public spaces that gave a new use and identity to these previously overlooked and mistreated spaces.

Their goals centered around transforming these spaces into productive public spaces that :

- transform environmental liabilities into usable public spaces
- are authored and operated by their end-users in collaboration with outside groups
- integrate income-generating, socially constructive uses to ensure sustainability adds value to these spaces without alienating the original community
- are designed to address needs unmet through traditional channels
- introduce strong design concepts to create beautiful places

(Project for Public Spaces, 2015)

ADDRESSING THE NEEDS OF THE SANTA MARTA COMMUNITY

Our recommendations focus on six spaces we identified based on the following three priorities: our client-partner's wishes, the community's interests and concerns (selected based on field work findings), and feasibility. Using these priorities and our understanding of the criteria for activating public spaces as guides ensures that we will make recommendations appropriate for the Santa Marta community. While this report focuses on how our recommendations fit into visions for six particular locations, we encourage Com-Vida, the Neighborhood Association, and the residents of Santa Marta to use the criteria for activating public spaces and their current priorities to identify additional interventions for other public spaces in the community.

Priority 1: Address issues of dumping on Rua da Fumaça and increase opportunities for recreation

One of the primary concerns voiced by the community is the amount of trash and litter they saw in their neighborhood and the threat illegal dumping posed to their community. These recommendations approach their concern of excessive trash by deterring people from dumping and offering new ways for dealing with waste management.

Priority 2: Incorporate the wishes and concerns the community identified

Our conversations with Santa Marta residents and municipal leaders led us to realize how frequently information was lost between the community and its public officials. These recommendations hope to encourage a clearer dialogue between the two parties to help public officials recognize the community's needs and help residents better understand what the municipality can offer in return. These recommendations are meant to help not only build up self-agency within the community, but to also foster co-management and bring the municipality and Santa Marta residents together in mutually beneficial ways.

Priority 3: Use the most feasible spaces

Our recommendations for public spaces are multi-layered and versatile so that our client-partners and the community can select the parts to implement based on levels of funding, feasibility, and need. While the resources currently available for transforming public spaces are limited, we recognize that the community might have the opportunity in the future to obtain additional funding and the capacity to expand public space facilities and

programming. We keep this in mind in our recommendations - we present an array of strategies and interventions that vary in implementation and maintenance costs.

Santa Marta currently has three major existing recreational spaces: Triangle Park near Santa Marta's entrance, the Neighborhood Association, and the former CECAM Park (the site of an NGO located south of the Neighborhood Association). We focus our recommendations on these spaces in order to take advantage of existing infrastructure, thus conserving resources and working in spaces that people currently use.

Table 1. Top Results from Survey

Topic	Top Results (and percentage of respondents indicating preference)
Activities in Community	<ul style="list-style-type: none"> - Career Development Classes (64.2%) - Dance/Sport Classes (54.3%)
Facilities in Community	<ul style="list-style-type: none"> - Playground (54.4%) - Leisure Center (46.8%) - Community Center (44.3%) - Soccer Fields (36.7%)

Table 2. Top Results from Public Input Board

Topic	Top Results (and percentage of respondents indicating preference)
Facilities in Community	<ul style="list-style-type: none"> - Soccer field (16.5%) - Play structure (16%) - Creek crossings (8.6%) - Murals on buildings (6.2%) - In ground slide (5.3%) - Outdoor exercise equipment (4.1%) - Market space (4.1%)

OVERVIEW OF RECOMMENDATION SITES

The mapping exercises identified where participants currently spend leisure time and play. Top mapping results were Rua da Fumaça, Neighborhood Association, Triangle Park Entrance, and the former CECAM Park. These sites all present opportunities for transformation. They contain key assets, whether related to current use or location, that prime them for design and programming interventions. They have potential to serve as spaces that help build community pride, as well as provide leisure, recreation, and community services. However, these spaces all contain different challenges. For example, Rua da Fumaça is currently a site where people routinely dump trash, the Neighborhood Association suffers from occasional vandalism, and the former CECAM Park lacks adequate maintenance.

Beyond providing for recreation, leisure, and services, public spaces in Santa Marta have the potential to strengthen community pride and identity. The following section will detail the multi-faceted visions we have for these spaces.



This is a large open space at the Neighborhood Association that would benefit from landscaping, shaded areas, and seating to create a welcome space for everyone.

The following tables summarize the key assets and challenges of these spaces in relation to the criteria identified in the previous section.

Table 3. Current Challenges

Site	Sociability	Infrastructure	Comfort/ Security	Accessibility
Rua da Fumaça	Lacks infrastructure		Problem with trash dumping	
Entrance and Triangle Park		Under maintained	Problem with trash dumping	
Neighborhood Association		Facility needs upgrades	Problem with vandalism	
Former CECAM Park	Lacks infrastructure	Under maintained		On periphery of community

Table 4. Current Assets

Site	Sociability	Infrastructure	Comfort/ Security	Accessibility
Rua da Fumaça				Second entrance
Entrance and Triangle Park	Current opportunity for social interaction			Main entrance
Neighborhood Association		Recently renovated playground		Centrally located
Former CECAM Park	Used on weekends for leisure		Monitored by Lionel and his dogs	



ENTRANCE



RUA DA FUMAÇA



NEIGHBORHOOD ASSOC.



FORMER CECAM PARK



STORMWATER PARKS



ENTRANCE TO SANTA MARTA AND TRIANGLE PARK

The primary entrance into Santa Marta is located at the intersection of Rua Seis and Rua Cinco. An entrance can leave an impression on residents and visitors, and should therefore create a sense of welcoming and “place”. The entrance extends from the pedestrian bridge along Rua Seis to Triangle Park.

This entrance is vital to how neighboring communities view Santa Marta. We hope the improved entryway will make residents and visitors feel that they are entering a strong community, and help identify Santa Marta as a place that residents can be proud to call home.

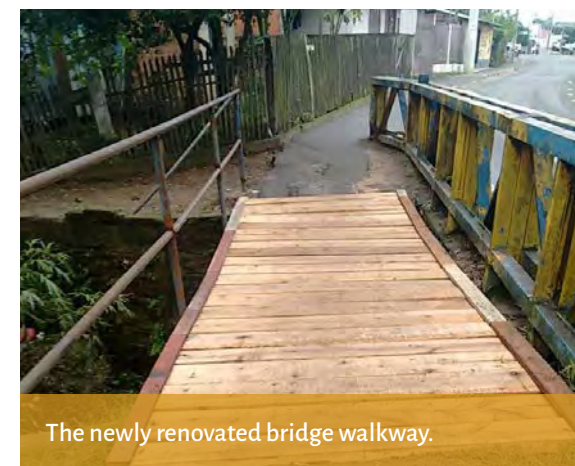
We divided the entrance into three areas of intervention that once improved, will enhance the experience of entering Santa Marta for residents and visitors alike. The three target areas are the entryway, Triangle Park, and Rua Cinco.



Entryway

The Rua Seis bridge over the Arroio da Manteiga is the entryway into the community. The bridge is located east of the intersection of Rua Seis and Rua Cinco. As the entrance point into the community, it is important that there is a gateway sign before the bridge welcoming residents and visitors to Santa Marta. The sign will be located east of the bridge on the north side of Rua Seis. It will contain a greeting such as, “Welcome to Santa Marta” along with the Santa Marta logo.

Until recently, the bridge was unsafe and in need of structural repairs. The walkway was uneven and comprised of haphazardly placed wooden boards with significant gaps between them. There was a railing along the road, but not along the creek, creating a potentially unsafe walkway. Many pedestrians avoided the bridge and instead walked along the road, which put them in danger of passing vehicles. After our visit to the community, the municipality renovated the bridge, adding a railing and new wooden boards.



The newly renovated bridge walkway.



A child on a swing in Triangle Park.

Triangle Park

The second point of intervention is Triangle Park. We chose this site because residents identified it as problematic, but it has the potential to become a productive public space. Recommendations for the park include landscaping and beautification, upgraded access and increased comfort, and placemaking strategies.

On the south side of the park we recommend the construction of a sidewalk to provide pedestrians a pathway along Rua Seis. Currently, pedestrians walk along the road or inside the park to avoid traffic. A sidewalk with a curb will better serve and protect the travel of pedestrians and improve pedestrian access in and out of Santa Marta. Also, extending the west point of the park, will increase the size of the park and make use of dead space.

Currently, the park contains a swing set, two seesaws, and a slide that are in need of maintenance and repair. Updated equipment will make children want

to play in the park and will increase safety while doing so. The park lacks spaces for people to sit, socialize, and relax. Installing benches at various points throughout will allow people to comfortably spend time in the park. The landscaping is patchy and not well maintained, the grass should be cut regularly and shrubbery trimmed down to increase the park's visibility. A green wall installed at the west end of the park will serve as a wall between the park and neighboring property. Green walls provide shade, detain storm water, and are aesthetically pleasing. The green wall conveys that the Santa Marta community is interested in innovative strategies to enhance the natural environment.

The park will also have a sign with a name to be chosen by residents, and the Santa Marta logo to help identify the park. The sign will be located at the east end of the park. It will present residents and visitors with a clear identity of the space, and will serve as a wayfinding indicator.



Example of a green wall in Grand Rapids, MI, USA.



Example of stone pavers and a small open channel to guide stormwater on a sidewalk in Cusco, Peru.

Rua Cinco

Rua Cinco borders the northern end of Triangle Park. It is a dirt road that slopes downhill toward the entrance of Santa Marta. During periods of heavy rainfall this road experiences tremendous erosion and runoff, leading to the accumulation of debris and litter at the intersection of Rua Cinco and Rua Seis. Thus, to fully transform the entrance, our recommendations include upgrades to Rua Cinco. And since many of the problems stem from it being a dirt road, we recommend paving it to hold the soil in place and reduce the level of erosion and debris that accumulates down its slope. The use of stone pavers, roadside landscaping, and an open channel running along the middle will help mitigate flooding. During rainfall the small open channel within the stone pavers will guide storm water downhill to the creek and storm drains. Landscaping will also slow the flow and runoff of water during rainfall. Finally, we recommend installing bollards at the intersection of

Rua Cinco and Rua Seis to block vehicular traffic on Rua Cinco and to make it a primarily pedestrian pathway. This pathway will extend the park to the north and create another safe space for people to gather.

Implementation and Upkeep

Implementation and upkeep of the entrance can be achieved formally and informally. Formally, the municipality could implement the renovation of the park. For example, they can be responsible for the initial landscaping of Triangle Park, paving Rua Cinco, constructing a sidewalk along Rua Seis, and repairing the playground equipment.

Since the municipality may not be able to continuously maintain the park, the possibility exists for it to be maintained

informally by the community. Several public spaces in Santa Marta are maintained by community members, including the Neighborhood Association and the former CECAM Park; both spaces are maintained through volunteers. Maintenance of the entrance can be performed by residents who are interested in the upkeep of the site, or through a group of individuals organized by the Neighborhood Association to oversee the area.

One final component to consider prior to implementation and maintenance is ownership of the entrance, particularly Rua Cinco. Currently, ownership is unknown, therefore community members should contact the municipality to clarify tenure and encourage acquisition.



Triangle Park's current playground equipment could be updated or replaced and the grounds need landscaping for beautification and stormwater management.



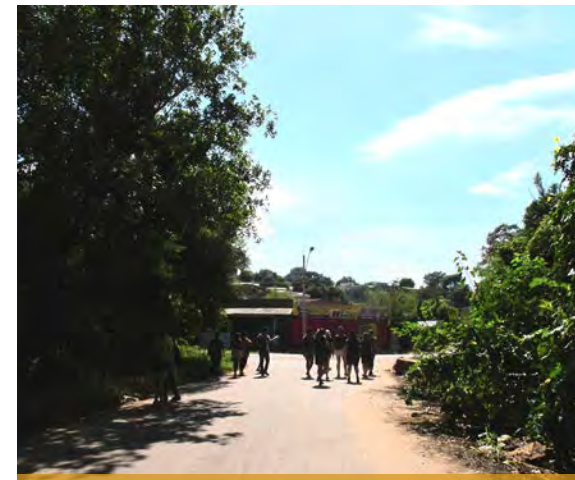
A bicyclist on Rua Cinco, with Triangle Park and Rua Seis to his right.

RUA DA FUMAÇA

Rua da Fumaça, which translates to Smoke Street, is in a desolate part of Santa Marta and has become a place where people illegally dump and burn trash. There are few homes in the area and as a consequence, little oversight of what takes place on and along the street. Current conditions in the area make Rua da Fumaça a primary concern for the Santa Marta community.

Our recommendations for the Rua da Fumaça area take into consideration concerns of how the space is currently used, and provide a vision for how it can become a more productive public space based on feedback from residents during the community mapping event. Our recommendations prioritize placemaking strategies to eliminate the stigma associated with Rua da Fumaça, road improvements, activating the field off Rua Dois, and establishing community programs that help monitor and maintain the space.

It is important to note that current ownership of this space is unknown. Before implementing some of these recommendations, community members should contact the municipality to clarify tenure and encourage acquisition.



The second entrance into Santa Marta, located at Avenida Henrique Bier and Rua da Fumaça

Entrance

The second entrance into Santa Marta is located at Avenida Henrique Bier and Rua da Fumaça. There is no signage indicating this as an entrance into Santa Marta. Developing a sense of place is important for community identity, which can be reinforced through signage. We recommend using a sign similar to the one at the main entrance.

Rename Rua da Fumaça

In order to change the perception of Rua da Fumaça we recommend renaming it to reflect what the community wants for the area. Currently, the name evokes the stigma associated with the area because it is a place where people dump and burn trash. Renaming the street could change how residents view the area, and help define it as an entry point into Santa Marta and a place where the community can come together.

Since recommendations for Rua da Fumaça include establishing a market, an option for a new name could be Market Street to reflect this potential new use. Another option is to use the formal name given by the municipality. In either case, renaming the street is a good opportunity for residents to come together and have a part in defining the future of Rua da Fumaça.

Street Upgrades

Streetscaping upgrades will make Rua da Fumaça a cleaner, safer, and more enjoyable public space.

Installing streetlights will increase safety and security. Trash bins placed along the street, especially close to the pavilion and market areas, will be necessary once the community starts using the Rua da Fumaça area. A good portion of Rua da Fumaça already has many existing trees, but more could be added to areas where shade is lacking. Shade structures will also be installed near the pavilion, as people will tend to gather in these areas.

A pedestrian path painted along the side of the existing street will create a buffer for pedestrians, separating them from vehicular traffic. Benches along the pedestrian path will create an inviting space for leisure and rest and encourage use of the pedestrian path.

Planting flowers and native plants along both sides of Rua da Fumaça can discourage misuse of the space. Trash is usually dumped along the side of Rua da

Fumaça so beautifying it will deter illegal dumping. Another method to beautify the space and deter dumping is to have artists and residents come together to paint murals along Rua da Fumaça. The murals will help convey that the community cares for the area. Santa Marta has several local artists who have painted murals on businesses and should be pursued to help with the Rua da Fumaça paintings. The murals will be painted on wooden boards and installed in areas where dumping is prevalent. The murals will encourage residents to recycle and not dump trash, and should include the slogan “Together we keep Santa Marta clean. Together we make Santa Marta home”.

Field off Rua Dois

In the field just north of the school off Rua Dois, there is potential to create a place for the community to congregate. We envision this space to include a covered, multi-use pavilion with bleachers, an outdoor stage, graffiti park, skate park, outdoor exercise equipment, and play structures. In addition to streetlights, inexpensive string lights throughout the field will add supplemental lighting during evening gatherings.

The pavilion would look similar to the covered, open-air gym at Santa Marta School and have a paved floor that will allow it to function as a multi-use space. The pavilion will have basketball and soccer nets, and benches on the

side for people to sit and watch. The field along Rua Dois will also include a covered stage that residents can use for performances and weekly movie nights. A public performance space is currently nonexistent in Santa Marta. Also, a graffiti park will provide the community with another opportunity for self-expression and hopefully deter vandalism of other properties.

Benches, picnic tables, and outdoor lighting throughout the space will increase comfort and security, and encourage residents to use the space in many different ways. With these recommendations, the field off Rua Dois will be a place for everyone in the community to enjoy and make use of throughout the week.



Horses grazing in the field off Rua Dois.



Unpaved portion of Rua da Fumaça, in front of the field.

Market

A market can be held on the weekends for local vendors to sell food, fruit, vegetables, baked goods, art, clothing, and other items. Live music and other art performances can take place during this time. The market will present an opportunity for local vendors to generate additional income and act as a place for people to congregate and grab a bite to eat, shop for goods, relax, and enjoy their community. Vendors can also set up on the street, in the field next to the pavilion, and under the covered pavilion.

Rua da Fumaça should be closed to vehicular traffic during market days so people can take over the street and ride bikes, walk, run, roller blade, skateboard, and engage in other forms of leisure. The street off Rua Dois, in front of the field, is currently a dirt road and should be paved to allow for these activities.

Even if the ownership of the land is unknown, the weekly market is possible because the street can be closed. Vendors can assemble their stands along the street. To arrange street closings, Santa Marta can contact the Secretary of Labor for enforcement and help.

Santa Marta School Food Academy Program

Santa Marta School should develop a cooking program for students of all ages to learn to prepare goods to be sold at the weekly market (Detroit Food Academy, 2015). Fruits and vegetables grown in Santa Marta School’s garden could also be sold. The program will teach students business skills, event management, and culinary arts.

Santa Marta Ambassador Program

Community members who live near dumping sites can act as Keep-It-Clean Ambassadors who are instructed to supervise and help residents understand their trash disposal options and the penalties involved in illegal dumping. This program may use Rua da Fumaça as a pilot and can also involve the municipality to help guide residents in monitoring and watching for illegal dumping. With the presence of Keep-It-Clean Ambassadors, residents will be more reluctant to dump trash if they know the people who are keeping the area clean. The ambassadors can help foster pride in the community.



Trash burning on Rua da Fumaça.

NEIGHBORHOOD ASSOCIATION

Since the Santa Marta Neighborhood Association is centrally located, it is a focal point for the community. It consists of a small, one-story facility, a dirt soccer field, a playground, a fence encompassing the space, and a bus stop at the entrance. The organization and surrounding features are assets to the community for a number of reasons.

The Neighborhood Association facility is currently undergoing renovations, including the bathroom and kitchen. The facility offers an improvised indoor classroom for a variety of social and educational programs, including a training program to help students pass their college entrance exams. The outdoor space contains a playground and soccer field that provides recreation and playtime for children in the community. The nearby bus stop is a popular spot for teenagers to socialize. Finally, the space hosts the mobile health clinic, which is a vital service for community members since alternative health services are far from Santa Marta.



A security fence surrounds the Neighborhood Association, we recommend installing lighting, and adding trees and bushes along the fence.

However, the area also poses challenges that prevent it from being an active, well-used public space. The grounds lack seating and shade. The existing fence does not protect the facility and surrounding play equipment from vandalism. Finally, the organization does not have the capacity to provide a wide variety of programs and classes. Fortunately, these challenges are resolvable.

The Neighborhood Association has the potential to become a greater institution in the community by providing important services to community members and, more importantly, contribute to strengthening the community's sense of identity. Our recommendations build upon the Neighborhood Association's central location, its connections with community members, and existing programming to create a vision for a stronger, larger community center. A focus on programming and the property itself will increase the comfort and security

of participants, while new leisure space and recreational equipment will increase sociability. Together, programming and leisure space aim to maintain the organization's current sense of community while strengthening its draw among community members.

Security

Creating a sense of enclosure will contribute to improved comfort, security, and usability at the Neighborhood Association. Providing enclosure in public spaces translates to creating spaces that do not feel entirely open or exposed (Ewing & Bartholemew, 2013). For example, cities and organizations increase the sense of enclosure in public spaces with tree cover, providing a 'roof' to public spaces. Creating a sense of enclosure through design choices results in spaces that are comfortable and feel safe for pedestrian users. We recommend the Neighborhood Association increase its sense of enclosure by installing



lighting and planting more trees and bushes along the boundary fence. These changes serve two purposes: enhance security and create a more distinct boundary between the Neighborhood Association and the public right of way. Lighting is a useful strategy for increasing the sense of security and monitoring in public spaces. Additional lighting reduces blind spots and increases visibility. We recommend installing pedestrian-friendly lights, which should include light posts that are shorter than typical streetlights (12 - 16 feet tall) and direct light towards the sidewalk (Ewing & Bartholemew, 2013). Such lighting will increase pedestrians' comfort and, hopefully, deter crime and vandalism.

Planting trees within the space and bushes along the fence will increase the sense of enclosure. Tall fences that decrease visibility can actually increase vulnerability because they prevent passersby from keeping an eye on a space. Therefore we recommend planting bushes around the interior of the fence so that people can still see into the space (ChangeLab Solutions, 2015). These plantings will increase the comfort of the user by adding shade and creating a sense of enclosure. We recommend the leaders of the Neighborhood Association seek community members to help plant new trees and bushes so that community members will feel increased ownership over the space. Additionally, the plantings will decorate the space to secure and beautify it.

Bus Stop “Parklet”

Integrating the bus stop into a larger leisure area outside the enclosure will add to the entrance to the Neighborhood Association. Modeled after parklets, this space will be a smaller, more contained sitting and nature area. Concrete seating with built-in planters will be useful. In addition, shade will be provided in the form of a metal roof for people to relax and have protection from the elements. Transforming the space will help make residents' bus waits more enjoyable and give them a better space to spend their leisure time. The Neighborhood Association should be responsible for keeping the bus stop maintained.

Parklets

A parklet is a small area along a street dedicated to providing green space and a place for people to gather, sit, or rest. Parklets typically extend from the sidewalk and often include art, bicycle parking, tables, and benches. San Francisco, California developed the first parklet and the trend has since spread to many cities around the world. (Pavement to Parks, 2013)



The soccer field at the Neighborhood Association will be improved by adding goal posts and seating.

Programming

Expanding the current programming offered at the Neighborhood Association will strengthen the ties community members feel toward this space.

The responses to the participatory methods we conducted in Santa Marta indicate that the community members would like career development, dance, and sports classes. We recommend offering free programming in these areas. A partnership with UNISINOS or another local university can help jump start career development and vocational classes. Additionally, neighborhood volunteers can help organize exercise classes that utilize the adult exercise equipment. Finally, neighborhood volunteers can help organize pick up adult soccer or other sports. Using neighborhood volunteers to organize athletic activities will reduce costs and encourage the involvement of other community members.

Equipment

Expanding the play equipment to include adult exercise equipment will give older residents a place to work-out. Furthermore, the equipment can be the centerpiece for work out programs to help promote a healthy community. We recommend contacting the Public Services Department to learn more about the program for implementing adult exercise equipment.

Currently, the playground is well-maintained by the municipality. However, the dirt soccer field is missing goal posts due to vandalism. A remedy for this is to build permanent concrete goal posts. For both of these areas, seating and shaded areas should be included so the space is welcoming for everyone.



The Neighborhood Association Facility and Playground.

FORMER CECAM PARK

Another public space in Santa Marta that could be enhanced is the park one block south of the Neighborhood Association. This park is the former site of CECAM, a nongovernmental organization that built a center for after-school programs (now vacant), a playground and soccer field. Despite the vacant facility, the park attracts many residents on the weekends.

Before any changes are made to the site, we recommend identifying the owner and contacting them to find out whether they are interested in developing the land or selling it to the municipality, who can then carry out our proposed recommendations.

Although the buildings are unoccupied, Lionel, a resident of Santa Marta, takes care of the grounds, keeping the grass mowed and the structures maintained to the best of his ability. People do not vandalize the site, nor is it unsafe, a fact Lionel attributes to his presence as a respected community member, the dogs he keeps on the property, and the gate at the entrance he closes each night. He added that the gate prevents people from driving in with their cars or motorcycles. Lionel reported that between 70 and 80



A sign left by CECAM, an NGO that once oversaw the park.

people come to the park on the weekends, they bring lawn chairs and gather with one another. Although it is not as centrally located as some of the other spaces discussed, the extent to which community members use the space proves its importance for socializing and leisure.

Our recommendations for the space include: locating additional funding to help maintain the equipment and soccer field, opening and expanding the existing garden for community use, and beautifying the space with public art.

Name It and Maintain It

We recommend the Neighborhood Association work with Lionel to find an additional funding stream for this park to help maintain the equipment. For example, the playground is in dire need of repair - the swings are all broken and some of the ladders are missing steps.

Additional funding should come from participatory budgeting, grants, or community fundraising. We also recommend that the community name the park in order to establish a stronger sense

Public Space: Former CECAM Park

of place. The Neighborhood Association can host an election for how to name the park to ensure community members are involved in the process.

Soccer Field

The former CECAM Park has a soccer field that many children enjoy playing on after school and on the weekends. Unfortunately, the goal posts are currently without nets so we recommend upgrading the goal posts with mesh netting. This space is also a common area where friends and family come together. Therefore, to accommodate everyone, we recommend incorporating seating and shade structures into the space. Residents will not have to bring chairs from their homes and can relax while watching kids play. We recommend funding these upgrades through participatory budgeting and community fundraising. In addition, funding should be secured through the Viva Santa Marta program. We also recommend pursuing the São Leopoldo Department of Public Works since they craft playground and park equipment for additional play space.



The Soccer field at the former CECAM Park.

Community Garden

Lionel maintains and harvests the former community garden originally established by CECAM. We recommend expanding the garden and reopening it to the community so it can function as a productive public space. With fences and the watchful eye of Lionel, these gardens will become a community asset. The community could even sell food they grow at the weekly markets on Rua da Fumaça.

We suggest forming a cooperative to manage the garden; each member of the cooperative will have ownership over a plot to grow fruits and vegetables. Each member will also have a role at the garden to maintain it, with Lionel as the leader of the cooperative. New plots can be in a raised wooden bed and filled with organic

soil made from household compost. A community garden at the former CECAM Park would increase access to fresh food, provide opportunities for members to generate additional income, promote ownership over the park, and beautify the space.

Mural Space

We recommend painting a mural on the blank wall of the church as another method of beautifying the space and establishing a community presence. The mural could be painted by Com-Vida students, and would visualize the community coming together and caring for the on-site community garden or enjoying the space. The mural would also function as a backdrop for outdoor concerts, performances, or other programming.



The garden at the former CECAM Park could be expanded and opened for the community's use.



A mural could be painted on this wall at the former CECAM Park.



Com-Vida students, Lucas and Ariane, in front of the former CECAM Park playground.

STORMWATER PARKS

Lying in a small valley, Santa Marta is at constant risk of flash flooding from sudden, but frequent, heavy rains. As water washes down into Santa Marta's streets and to its lowest points, high waters can bring trash, mud, and debris into the few open spaces and overwhelm the neighborhood's storm water infrastructure by blocking drains and clogging gutters.

The dumping of trash becomes a problem everywhere when heavy rains cause large amounts of trash to accumulate and threaten the community's public spaces while also causing damage to residents' homes and municipally owned infrastructure. Although Santa Marta does not technically lie within an area designated to be at high risk for flooding, unpaved roads and informal dumping create problems and risks that could potentially be avoided.

Stormwater Parks

Although Santa Marta's topography may lead to flooding, the community does have one surprising advantage to their flooding dilemma. São Leopoldo is fortunate to have a Public Works



This open space, off Avenida Coronel Atalíbio Taurino de Rezende, is where we envision a Stormwater Park.

Department that oversees both storm water infrastructure and urban furniture and playground equipment. At sites that have been overlooked by both residents and the municipality due to their high flooding risk, there may be an opportunity to take advantage of the Public Works Department's dual role in managing water and furnishing public space. This project proposes the idea of having stormwater infrastructure fulfill two roles at once. Our 'Stormwater Parks' initiative suggests using key open spaces as both parks and drains, with strategically designed street furniture that can both trap the trash washed to the drain and provide a much-needed space for residents to congregate in central Santa Marta. We suggest giving a new identity and level of visibility to spaces that have been viewed as drainage basins and dumping grounds through a strategic redesign that creates simple yet innovative public seating to stop trash and debris from blocking Santa Marta's key stormwater drains.

Creating small parks around these low points can serve a number of goals beyond just overall public space improvement. These parks can help deter land occupation in unstable flood zones, help provide public meeting places at central neighborhood nodes, and help coordinate municipal participation in these new public spaces by including residents in the design and construction of the dual-purpose drainage benches and trash traps. This initiative does not intend to provide a specific design intervention, but instead hopes to pose the question, "what else could your park do for you?" Stormwater Parks suggest looking beyond providing public spaces with a single function in an effort to transform open spaces into memorable and well-loved public places (Municipal Spatial Planning Support Programme, p. 38). By locating these parks on municipally maintained drains, we hope that the Public Works Department may be able to provide a simultaneous two-fold approach and



do two jobs at once. Not only will they maintain a drain to reduce flooding, but they will also keep a park free of litter and trash, and more clearly define specific open spaces as places worth caring for by both the city and the community.

Cooperative Management with Cooperative Design

With drains such as the one located at Avenida Coronel Atalíbio Taurino de Rezende, the municipality is faced with the large task of frequent cleanup and maintenance to make sure it remains clear from dumped and washed up trash. As a space with no specific identity or community use, it is not surprising that residents may overlook the trash piling up in this open space, and that the municipality may not prioritize its cleanup as highly as other more established public spaces and parks. With a new identity brought to specific open spaces, we hope this initiative can bring a new level of priority to these spaces as well. Instead of just a drain that should be kept clear enough to keep the water flowing, we hope to see a park that the community and municipality are actively motivated to keep clean in order to use it to its fullest capacity.

A community's input is pivotal to a public space's success; in how well it is used, maintained and cared for throughout its life (Charter for public space, 2013). Although the municipality's involvement

is key in the Water Parks initiative, their design intervention alone may not be enough to keep these parks clean, clear, and functioning. If a space does not physically reflect the needs, priorities, and goals of a community, that community may not give it the attention it needs, again; opening these spaces to misuse or neglect. With that realization in mind, the Water Parks initiative encourages co-management through co-design, seeking community input during the design process in order to engender a wider sense of community ownership for these spaces. By creating spaces that the community wants to use, we hope to create spaces the community will want to collectively keep clean. This initiative hopes to take advantage of some local 'sweat-equity' as a means to build community care, and helps create a maintenance plan that can bring together the efforts of both the municipality and the community (Municipal Spatial Planning Support Programme, 2013, p. 37).

Increased Visibility through Pioneering Uses

Putting forward the idea of these dual-purpose designs could have benefits beyond just Santa Marta. We cannot help but imagine what it would be like if the Stormwater Parks initiative became part of a larger citywide strategy to consolidate water management and public space. What would happen if São Leopoldo's needs for stormwater and flooding

management also became opportunities for placemaking and community empowerment?

These water parks could become a citywide attraction and destination, bringing a new level of visibility to Santa Marta or other communities that might take advantage of these dual-purpose parks. By creating spaces with a 'pioneering use,' Santa Marta could become home to a place known well beyond its community boundaries, and for all the right reasons (Municipal Spatial Planning Support Programme, 2013, p. 16).



Litter traps in disguise. New methods in metal cutting and etching have made ornate designs like these more cost effective. Seating like this could keep large pieces of debris and trash out of the drain while also acting as an exciting focal point and place to sit.



New York City's Metropolitan Transit Authority's new subway grates showcase the dual-purpose approach with grates that prevent flooding while also adding amenities, like bike parking and benches. Instead of just creating a simple grate, why not take advantage of increasing value and creating memorable places with a little extra design?



Open area off Avenida Coronel Atalábio Taurino de Rezende where we envision a Stormwater Park.

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APPENDIX

APPENDIX A

We provide the household survey in English and Portuguese. All surveys were administered in Portuguese.

Instructions

This survey asks a series of questions about your community, recreational needs, municipal waste management services, and household waste disposal behavior. Data gathered from this survey will be used to help inform the University of Michigan student team when formulating recommendations for improving public spaces and reducing littering. Please answer the questions to the best of your ability. The information gathered in this survey will be anonymous.

Recreation

1) Identify:

What are the top two or three things you enjoy most about living in Santa Marta (or Tancredo Neves)?	What are the top two or three things that concern you about living in Santa Marta?

2) Where do your children play? Select all options that apply.

- a. In the patio of my house
- b. In the street near my house
- c. In the soccer field
- d. By the ditch/creek
- e. Playground
- f. School
- g. Other:

3) Which of the following would you like to see in your community? Select all options that apply.

- a. Sports and dance classes
- b. Art craft classes
- c. Music classes
- d. Tutoring
- e. Vocational workshops and career development classes
- f. Other:

4) Which of these facilities would you use? Select all options that apply.

- a. Soccer field
- b. Benches in parks
- c. Walking trails
- d. Bicycling trails
- e. Playground
- f. Basketball court
- g. Sand court for volleyball
- h. Leisure and recreational center
- i. Skate ramp
- j. Community center
- k. Other:

Waste Management

5) Do you receive garbage pickup service at your home other than for recyclable materials?

- a. Yes, I receive it at my home
- b. Yes, I receive it at the corner of my house
- c. Yes, I take my garbage to a specific collection point
- d. No, I need to burn my garbage
- e. No, I need to leave it by the creek
- f. No, I have to take my garbage to the processing facility (landfill)
- g. Other:

6) On average, the municipal service picks up my garbage:

- a. Daily
- b. A few times a week
- c. Once each week
- d. Once every two weeks
- e. Never
- f. Other (please specify):

7) Do you have any of these problems when leaving garbage bags out for pickup?
Select all options that apply.

- a. Rodents and other animals get into my garbage
- b. My garbage blows away when I put it out
- c. My garbage is washed away in the rain
- d. Other people go through my garbage
- e. My garbage is not collected when I put it out
- f. Other (please specify):

8) What would make garbage disposal easier in your household?
Select all options that apply.

- a. Providing dumpsters/bins to store garbage outside awaiting pickup
- b. More frequent service
- c. Service directly to my house instead of a designated pickup location
- d. Larger garbage cans for inside the house
- e. Larger garbage bags for inside the house
- f. Other:

9) How do you dispose of larger items that the garbage truck does not take?

- a. Sell to recycling center
- b. Sell to a recycler
- c. Leave outside home
- d. Leave at the end of the road
- e. Leave in an empty lot
- f. Throw in the ditch/creek
- g. Other (please specify):

Waste Disposal Behavior

10) I play an important role in keeping the Santa Marta community clean and free of garbage.

- a. Strongly agree
- b. Agree
- c. Neither agree or disagree
- d. Disagree
- e. Strongly disagree

11) It bothers me when I see garbage in my neighborhood.

- a. Strongly agree
- b. Agree
- c. Neither agree nor disagree
- d. Disagree
- e. Strongly disagree

12) Where do you see garbage accumulate in your neighborhood?
Select all options that apply.

- a. On my walk to school
- b. On my walk to work
- c. In unoccupied or open areas
- d. In front of my house
- e. Near the stream
- f. Other (please specify):

13) Please select agree or disagree for the following statements about burning garbage.

- a. Burning garbage is a problem because of the smell.
 - i. Agree
 - ii. Disagree
- b. Burning garbage is a problem because it is unattractive and prevents me or my family from playing outside.
 - i. Agree
 - ii. Disagree

c. Burning garbage is useful because it provides a cost effective method to get rid of garbage.

- i. Agree
- ii. Disagree

14) Which of the following materials is considered valuable to recycle?
Select all options that apply.

- a. Rubber (tires)
- b. Plastics (containers or scrap)
- c. Wood (scrap wood, plywood)
- d. Paper (newspaper, mail, magazines)
- e. Metal (tin or aluminum cans, scrap metal)
- f. Glass

15) Why do you think people dump and burn their garbage instead of using the municipal waste collection system? Select all options that apply.

- a. Garbage collection locations are inconvenient
- b. Garbage collection services are not frequent enough
- c. Garbage collection location are always full
- d. People do not feel that dumping and burning garbage is a problem
- e. People do not feel the appearance of open areas is important in this community

16) Where do you live?

- a. Santa Marta
- b. Loteamento Tancredo Neves
- c. Other:

17) How many people live in your household? _____

18) How old are you? _____

19) For how long have you lived in Santa Marta (or Tancredo Neves)? _____

20) Internal use

- a. Male
- b. Female

Instruções

Este questionário pergunta sobre a sua comunidade, as necessidades de lazer, serviços de coleta de lixo, entre outros. As informações obtidas serão utilizadas para ajudar os estudantes da Universidade de Michigan a formular recomendações para melhorar os espaços públicos e reduzir lixo na sua vizinhança. Por favor, responda as perguntas de acordo com o seu entendimento pessoal. As informações recolhidas neste questionário são anônimas.

1.) Identificar:

Quais são as duas ou três coisas que você mais gosta sobre viver em Santa Marta?	Quais são duas ou três coisas que lhe preocupam mais sobre a vida em Santa Marta?

Recreação:

2) Aonde os seus filhos brincam? Escolha as opções que se aplicam.

- a) No pátio da casa
- b) Na rua perto de casa
- c) No campo de futebol
- d) No valão/arroio
- e) Na pracinha
- f) Na escola
- g) Outros:

3) Qual dos seguintes programas você gostaria de ver na sua comunidade? Escolha as opções que se aplicam.

- a) Esportes e aulas de dança
- b) Aulas de artesanato
- c) Aulas de música
- d) Reforço das aulas da escola.
- e) Oficinas profissionalizantes e orientação profissional
- f) Outros:

4) Quais dessas instalações você usaria em Santa Marta? Escolha as opções que se aplicam:

- a) Campo de futebol
- b) Bancos em praças e parques
- c) Trilhas para caminhada
- d) Ciclovia
- e) Parquinho infantil
- f) Quadra de basquete
- g) Quadra de areia para vôlei
- h) Centro de lazer e recreação
- i) Rampa para Skate
- j) Centro Comunitário
- k) Outros

Gestão de Resíduos

5) Você recebe serviço de coleta de lixo?

- a) Sim, recebo na frente da minha casa
- b) Sim, recebo na esquina da minha casa
- c) Sim, levo o meu lixo para um ponto de coleta específico
- d) Não, tenho que queimar meu lixo
- e) Não, tenho que levar meu lixo para o arroio
- f) Não, tenho que levar meu lixo para o aterro sanitário
- g) Outro:

6) Em média, o serviço municipal recolhe meu lixo:

- a) Diariamente
- b) Algumas vezes por semana
- c) Uma vez por semana
- d) A cada quinze dias
- e) Nunca
- f) Outros (especifique):

7) Você tem algum destes problemas quando deixa sacolas de lixo na rua para serem coletadas? Escolha as opções que se aplicam.

- a) Roedores e outros animais extraviam meu lixo.
- b) O meu lixo é carregado pelo vento
- c) O meu lixo é carregado pela chuva
- d) Outras pessoas mexem no lixo
- e) O meu lixo não é coletado quando deixo na rua.
- f) Outros (especifique):

8) O que tornaria mais fácil a coleta de lixo na sua casa? Escolha as opções que se aplicam.

- a) Fornecimento de lixeiras para armazenar o lixo na rua
- b) Serviço de coleta de lixo mais frequente
- c) Serviço diretamente para minha casa em vez de um local designado para retirada
- d) Fornecimento de lixeiras maiores para dentro de casa
- e) Fornecimento de sacos de lixo maiores para dentro de casa
- f) Outros:

9) Como você se desfaz de itens maiores que o caminhão de lixo não recolhe?

- a) Vendo para o centro de reciclagem.
- b) Vendo para o reciclador.
- c) Deixo fora de casa.
- d) Deixo no final da estrada.
- e) Deixo num terreno baldio.
- f) Jogo no valão/arroio
- g) Outros (especifique):

Maneiras Usadas para Descarte do Lixo Domestico

10) Eu tenho um papel importante em manter a comunidade de Santa Marta limpa e livre de lixo.

- a) concordo plenamente
- b) concordo
- c) não concordo nem discordo
- d) discordo
- e) discordo totalmente

11) Me incomoda quando vejo lixo no meu bairro.

- a) concordo plenamente
- b) concordo
- c) não concordo nem discordo
- d) discordo
- e) discordo totalmente

12) Onde você vê o lixo acumular no seu bairro? Escolha as opções que se aplicam.

- a) No meu caminho para a escola
- b) No meu caminho para o trabalho
- c) Em áreas desocupadas ou abertas
- d) Na frente da minha casa
- e) Perto do valão/arroio
- f) Outros (especifique):

13) Por favor, selecione concordo ou discordo das seguintes afirmações sobre queima de lixo:

- a) Queima de lixo é um problema devido ao mal cheiro.
 - a. Concorde
 - b. Discordo

- b) Queima de lixo é um problema, porque é pouco atraente e impede minha família de ficar fora de casa.

- a. Concorde
- b. Discordo

c) Queima de lixo é um modo prático e econômico de me desfazer do lixo.

- a. Concorde
- b. Discordo

14) Quais dos seguintes materiais são considerados valiosos para reciclar? Escolha todos os itens que se aplicam.

- a) Borracha (pneus)
- b) Plásticos (recipientes ou sucata)
- c) Madeira (aparas de madeira, madeira compensada)
- d) Papel e papelão (jornal , correio, revistas)
- e) Metal (lata de alumínio, latas de estanho, sucatas de metal)
- f) Vidro

15) Por que você acha que as pessoas jogam ou queimam o lixo em vez de usar o sistema de coleta? Escolha as opções que se aplicam.

- a) a coleta de lixo pela prefeitura não é eficaz.
- b) as coletas de lixo não são freqüentes o suficiente
- c) locais de coleta de lixo estão sempre cheios
- d) as pessoas não acham que jogar ou queimar lixo seja um problema
- e) as pessoas não acham que a aparência dos lugares publicos como praças, ruas e valão/arroio seja importante.

Dados Pessoais

16) Onde você mora?

- a) Santa Marta
- b) Loteamento Tancredo Neves
- c) Outros:

17) Quantas pessoas vivem na sua casa? _____

18.) Quantos anos você tem ? _____

19.) Por quanto tempo você mora em Santa Marta ? _____

20.) (para uso interno): Sexo:

- a) masculino
- b) feminino

APPENDIX B

We analyzed the results of the convenience and door to door surveys separately. This section provides the results of each type of survey.

Convenience Survey Results

2.) Where do your children play? Select all options that apply.

	Frequency	Percent (%)	Percent of Respondents n=24
In the patio of my house	10	29.4%	41.7%
In the street near my house	9	26.5%	37.5%
In the soccer field	3	8.8%	12.5%
By the ditch/creek	0	0.0%	0.0%
Playground	4	11.8%	16.7%
School	8	23.5%	33.3%
Other	0	0.0%	0.0%

3.) Which of the following would you like to see in your community? Select all options that apply.

	Frequency	Percent (%)	Percent of Respondents n=24
Sports and dance classes	12	22.6%	50.0%
Art craft classes	7	13.2%	29.2%
Music classes	5	9.4%	20.8%
Tutoring	11	20.8%	45.8%
Vocational workshops and career development classes	17	32.1%	70.8%
Other	1	1.9%	4.2%

4.) Which of these facilities would you use? Select all options that apply.

	Frequency	Percent (%)	Percent of Respondents n=24
Soccer field	6	9.1%	25.0%
Benches in parks	4	6.1%	16.7%
Walking trails	3	4.5%	12.5%
Bicycling trails	2	3.0%	8.3%
Playground	11	16.7%	45.8%
Basketball court	5	7.6%	20.8%
Sand court for volleyball	4	6.1%	16.7%
Leisure and recreational center	11	16.7%	45.8%
Skate ramp	4	6.1%	16.7%
Community center	13	19.7%	54.2%
Other	3	4.5%	12.5%

5.) Do you receive garbage pickup service at your home other than for recyclable materials?

	Frequency	Percent (%)
Yes, I receive it at my home	17	70.8%
Yes, I receive it at the corner of my house	3	12.5%
Yes, I take my garbage to a specific collection point	2	8.3%
No, I need to burn my garbage	0	0.0%
No, I need to leave it by the creek	1	4.2%
No, I have to take my garbage to the processing facility (landfill)	0	0.0%
Other	1	4.2%

6.) On average, the municipal service picks up my garbage:

	Frequency	Percent (%)
Daily	1	4.2%

	Frequency	Percent (%)
A few times a week	16	66.7%
Once each week	3	12.5%
Once every two weeks	0	0.0%
Never	2	8.3%
Other	2	8.3%

7.) Do you have any of these problems when leaving garbage bags out for pickup? Select all options that apply.

	Frequency	Percent (%)	Percent of Respondents n=24
Rodents and other animals get into my garbage	18	58.1%	75.0%
My garbage blows away when I put it out	1	3.2%	4.2%
My garbage is washed away in the rain	2	6.5%	8.3%
Other people go through my garbage	3	9.7%	12.5%
My garbage is not collected when I put it out	3	9.7%	12.5%
Other	4	12.9%	16.7%

8.) What would make garbage disposal easier in your household? Select all options that apply.

	Frequency	Percent (%)	Percent of Respondents n=24
Providing dumpsters/bins to store garbage outside awaiting pickup	11	36.7%	45.8%
More frequent service	7	23.3%	29.2%
Service directly to my house instead of a designated pickup location	3	10.0%	12.5%
Larger garbage cans for inside the house	3	10.0%	12.5%
Larger garbage bags for inside the house	4	13.3%	16.7%
Other	2	6.7%	8.3%

9.) How do you dispose of larger items that the garbage truck does not take?

	Frequency	Percent (%)
Sell to recycling center	6	26.1%
Sell to a recycler	2	8.7%
Leave outside home	5	21.7%
Leave at the end of the road	2	8.7%
Leave in an empty lot	0	0.0%
Throw in the ditch/creek	0	0.0%
Other (please specify)	8	34.8%

10.) I play an important role in keeping the Santa Marta community clean and free of garbage.

	Frequency	Percent (%)
Strongly agree	9	37.5%
Agree	13	54.2%
Neither agree nor disagree	0	0.0%
Disagree	0	0.0%
Strongly disagree	1	4.2%
No answer	1	4.2%

11.) It bothers me when I see garbage in my neighborhood.

	Frequency	Percent (%)
Strongly agree	12	50.0%
Agree	8	33.3%
Neither agree nor disagree	1	4.2%
Disagree	1	4.2%
Strongly disagree	2	8.3%
No answer	0	0.0%

12.) Where do you see garbage accumulate in your neighborhood? Select all options that apply.

	Frequency	Percent (%)	Percent of Respondents n=24
On my walk to school	4	12.1%	16.7%
On my walk to work	3	9.1%	12.5%
In unoccupied or open areas	3	9.1%	12.5%
In front of my house	6	18.2%	25.0%
Near the stream	13	39.4%	54.2%
Other (please specify)	4	12.1%	16.7%

13a.) Burning garbage is a problem because of the smell.

	Frequency	Percent (%)
Agree	75	87.5%
Disagree	6	12.5%
No answer	3	0.0%

13b.) Burning garbage is a problem because it is unattractive and prevents me or my family from playing outside.

	Frequency	Percent (%)
Agree	21	87.5%
Disagree	3	12.5%
No answer	0	0.0%

13c.) Burning garbage is useful because it provides a cost effective method to get rid of garbage.

	Frequency	Percent (%)
Agree	3	12.5%
Disagree	21	87.5%
No answer	0	0.0%

14.) Which of the following materials is considered valuable to recycle? Select all options that apply.

	Frequency	Percent (%)	Percent of Respondents n=24
Rubber (tires)	4	7.3%	16.7%
Plastics (containers or scrap)	15	27.3%	62.5%
Wood (scrap wood, plywood)	2	3.6%	8.3%
Paper (newspaper, mail, magazines)	13	23.6%	54.2%
Metal (tin or aluminum cans, scrap metal)	15	27.3%	62.5%
Glass	6	10.9%	25.0%

15.) Why do you think people dump and burn their garbage instead of using the municipal waste collection system? Select all options that apply.

	Frequency	Percent (%)	Percent of Respondents n=24
Garbage collection locations are inconvenient	3	9.7%	12.5%
Garbage collection services are not frequent enough	7	22.6%	29.2%
Garbage collection locations are always full	5	16.1%	20.8%
People do not feel that dumping and burning garbage is a problem	6	19.4%	25.0%
People do not feel the appearance of open areas is important in this community	10	32.3%	41.7%

16.) Where do you live?

	Frequency	Percent (%)
Santa Marta	24	100.0%
Loteamento Tancredo Neves	0	0.0%
Other	0	0.0%
No answer	1	1.2

17.) How many people live in your household?

	Frequency	Percent (%)
1	2	8.3%
2	3	12.5%
3	5	20.8%
4	8	33.3%
5	2	8.3%
6	2	8.3%
7	2	8.3%

18.) How old are you?

	Frequency	Percent (%)
0-14 years	0	0.0%
15-19 years	0	0.0%
20-24 years	1	4.2%
25-29 years	3	12.5%
30-34 years	4	16.7%
35-39 years	1	4.2%
40-44 years	4	16.7%
45-49 years	4	16.7%
50-54 years	2	8.3%
55-59 years	2	8.3%
60-64 years	2	8.3%
65+ years	1	4.2%

19.) For how long have you lived in Santa Marta (or Tancredo Neves)?

	Frequency	Percent (%)
0-4 years	3	12.5%
5-9 years	4	16.7%
10-14 years	6	25.0%
15-19 years	1	4.2%
20-24 years	6	25.0%
25-29 years	0	0.0%
30+ years	4	16.7%

20.) Female/male

	Frequency	Percent (%)
Female	4	16.7%
Male	16	66.7%
No answer	4	16.7%

Door to Door Survey Results

2.) Where do your children play? Select all options that apply.

	Frequency	Percent (%)	Percent of Respondents n=84
In the patio of my house	47	40.9%	56.0%
In the street near my house	17	14.8%	20.2%
In the soccer field	6	5.2%	7.1%
By the ditch/creek	0	0.0%	0.0%
Playground	9	7.8%	10.7%
School	18	15.7%	21.4%
Other	18	15.7%	21.4%

3.) Which of the following would you like to see in your community? Select all options that apply.

	Frequency	Percent (%)	Percent of Respondents n=84
Sports and dance classes	44	24.4%	52.4%
Art craft classes	28	15.6%	33.3%
Music classes	24	13.3%	28.6%
Tutoring	27	15.0%	32.1%
Vocational workshops and career development classes	52	28.9%	61.9%
Other	5	2.8%	6.0%

4.) Which of these facilities would you use? Select all options that apply.

	Frequency	Percent (%)	Percent of Respondents n=84
Soccer field	29	12.2%	34.5%
Benches in parks	19	8.0%	22.6%

	Frequency	Percent (%)	Percent of Respondents n=84
Walking trails	15	6.3%	17.9%
Bicycling trails	18	7.6%	21.4%
Playground	43	18.1%	51.2%
Basketball court	11	4.6%	13.1%
Sand court for volleyball	15	6.3%	17.9%
Leisure and recreational center	37	15.5%	44.0%
Skate ramp	10	4.2%	11.9%
Community center	35	14.7%	41.7%
Other	6	2.5%	7.1%

5.) Do you receive garbage pickup service at your home other than for recyclable materials?

	Frequency	Percent (%)
Yes, I receive it at my home	67	79.8%
Yes, I receive it at the corner of my house	3	3.6%
Yes, I take my garbage to a specific collection point	10	11.9%
No, I need to burn my garbage	0	0.0%
No, I need to leave it by the creek	0	0.0%
No, I have to take my garbage to the processing facility (landfill)	1	1.2%
Other	0	0.0%
	3	3.6%

6.) On average, the municipal service picks up my garbage:

	Frequency	Percent (%)
Daily	3	3.6%
A few times a week	75	89.3%

	Frequency	Percent (%)
Once each week	1	1.2%
Once every two weeks	0	0.0%
Never	0	0.0%
Other	3	3.6%
	2	2.4%

7.) Do you have any of these problems when leaving garbage bags out for pickup? Select all options that apply.

	Frequency	Percent (%)	Percent of Respondents n=84
Rodents and other animals get into my garbage	48	41.7%	57.1%
My garbage blows away when I put it out	9	7.8%	10.7%
My garbage is washed away in the rain	9	7.8%	10.7%
Other people go through my garbage	21	18.3%	25.0%
My garbage is not collected when I put it out	2	1.7%	2.4%
Other	26	22.6%	31.0%

8.) What would make garbage disposal easier in your household? Select all options that apply.

	Frequency	Percent (%)	Percent of Respondents n=84
Providing dumpsters/bins to store garbage outside awaiting pickup	49	43.0%	58.3%
More frequent service	21	18.4%	25.0%
Service directly to my house instead of a designated pickup location	7	6.1%	8.3%
Larger garbage cans for inside the house	10	8.8%	11.9%
Larger garbage bags for inside the house	13	11.4%	15.5%
Other	14	12.3%	16.7%

9.) How do you dispose of larger items that the garbage truck does not take?

	Frequency	Percent (%)
Sell to recycling center	13	15.5%
Sell to a recycler	11	13.1%
Leave outside home	15	17.9%
Leave at the end of the road	4	4.8%
Leave in an empty lot	5	6.0%
Throw in the ditch/creek	1	1.2%
Other (please specify)	30	35.7%
	5	6.0%

10.) I play an important role in keeping the Santa Marta community clean and free of garbage.

	Frequency	Percent (%)
Strongly agree	29	34.5%
Agree	50	59.5%
Neither agree nor disagree	0	0.0%
Disagree	0	0.0%
Strongly disagree	1	1.2%
No answer	4	4.8%

11.) It bothers me when I see garbage in my neighborhood.

	Frequency	Percent (%)
Strongly agree	30	35.7%
Agree	38	45.2%
Neither agree nor disagree	3	3.6%
Disagree	9	10.7%
Strongly disagree	1	1.2%
No answer	3	3.6%

12.) Where do you see garbage accumulate in your neighborhood? Select all options that apply.

	Frequency	Percent (%)	Percent of Respondents n=84
On my walk to school	14	12.4%	16.7%
On my walk to work	8	7.1%	9.5%
In unoccupied or open areas	35	31.0%	41.7%
In front of my house	11	9.7%	13.1%
Near the stream	34	30.1%	40.5%
Other (please specify)	11	9.7%	13.1%

13a.) Burning garbage is a problem because of the smell.

	Frequency	Percent (%)
Agree	75	89.3%
Disagree	6	7.1%
No answer	3	3.6%

13b.) Burning garbage is a problem because it is unattractive and prevents me or my family from playing outside.

	Frequency	Percent (%)
Agree	66	78.6%
Disagree	15	17.9%
No answer	3	3.6%

13c.) Burning garbage is useful because it provides a cost effective method to get rid of garbage.

	Frequency	Percent (%)
Agree	16	19.0%
Disagree	63	75.0%
No answer	5	6.0%

14.) Which of the following materials is considered valuable to recycle? Select all options that apply.

	Frequency	Percent (%)	Percent of Respondents n=84
Rubber (tires)	18	8.3%	21.4%
Plastics (containers or scrap)	57	26.3%	67.9%
Wood (scrap wood, plywood)	20	9.2%	23.8%
Paper (newspaper, mail, magazines)	44	20.3%	52.4%
Metal (tin or aluminum cans, scrap metal)	49	22.6%	58.3%
Glass	29	13.4%	34.5%

15.) Why do you think people dump and burn their garbage instead of using the municipal waste collection system? Select all options that apply.

	Frequency	Percent (%)	Percent of Respondents n=84
Garbage collection locations are inconvenient	9	8.6%	10.7%
Garbage collection services are not frequent enough	20	19.0%	23.8%
Garbage collection locations are always full	6	5.7%	7.1%
People do not feel that dumping and burning garbage is a problem	32	30.5%	38.1%
People do not feel the appearance of open areas is important in this community	38	36.2%	45.2%

16.) Where do you live?

	Frequency	Percent (%)
Santa Marta	47	56.0%
Loteamento Tancredo Neves	35	41.7%
Other	1	1.2%
	1	1.2%

17.) How many people live in your household?

	Frequency	Percent (%)
1	6	7.1%
2	14	16.7%
3	23	27.4%
4	16	19.0%
5	9	10.7%
6	7	8.3%
7	4	4.8%
8	3	3.6%
9	1	1.2%
no answer	1	1.2%

18.) How old are you?

	Frequency	Percent (%)
0-14 years	1	1.2%
15-19 years	11	13.1%
20-24 years	8	9.5%
25-29 years	13	15.5%
30-34 years	8	9.5%
35-39 years	6	7.1%
40-44 years	6	7.1%
45-49 years	7	8.3%
50-54 years	5	6.0%
55-59 years	8	9.5%
60-64 years	5	6.0%
65+ years	5	6.0%
	1	1.2%

19.) For how long have you lived in Santa Marta (or Tancredo Neves)?

	Frequency	Percent (%)
0-4 years	18	21.4%
5-9 years	22	26.2%
10-14 years	18	21.4%
15-19 years	11	13.1%
20-24 years	11	13.1%
25-29 years	1	1.2%
30+ years	2	2.4%
No answer	1	1.2%

20.) Female/male

	Frequency	Percent (%)
Female	46	54.8%
Male	34	40.5%
No answer	4	4.8%

APPENDIX C

We interviewed a number of community members. Below are summaries of the interviews not included in the Community Data section of the report.

Agenor Kertes de Azevedo
Religious Leader
March 4, 2015

In this interview, we learned about the role of religious organizations in Santa Marta. Agenor Kertes de Azevedo is a part of a Catholic organization, but finds that all the different religious groups in Santa Marta respect each other. His group ensures that people who are sick or not religious receives services and celebrates a weekly mass. Every Tuesday, a group meets to pray the rosary and conduct activities. Recently, the activity has been collecting trash that the garbage trucks do not pick up and planting flowers where the trash was left.

Owner of Ziller Market
March 4, 2015

In this interview, we learned about a local grocery store that has a garden from which it sells produce. The owner, whose family helps run the business and garden, started planting the organic garden three years ago. He hopes for more soccer fields and recreational spaces, as well as fewer drugs in Santa Marta. He experiences some vandalism, for example someone recently had stolen lettuce, but he has a security camera.

Owner of Bazaar Silva
March 9, 2015

In this spontaneous interview we learned about the public spaces and participatory budgeting in Santa Marta. This local shop owner has owned Bazaar Silva, a clothing store across the street from the Neighborhood Association, for almost six years, though he is not very involved in local politics because he travels often. He speculated that the municipality is planning on creating another entrance to Santa Marta to help simplify the bus room. He noted that younger children play at the Neighborhood Association playground, while older children play soccer at the former CECAM Park. He appreciates the good bus connections in the neighborhood and that the neighbors are always willing to help each other out.

However, he wishes the community had paved streets to prevent degradation, more police presence, and a public health clinic. The nearest clinic is in neighboring Campinas, where it takes people without cars an hour to walk to by foot and 40 minutes by to travel by bus. He noted that they voted for pavement in the participatory budgeting process, but did not get enough votes. He mentioned that there was a miscommunication about where to vote - some people thought you had to vote downtown and other came on the wrong day. Regarding trash dumping, he viewed individual behavior as more of the problem than inefficiencies in trash collection. He felt that people do not know or care about the consequences, such as flooding from clogged storm drains, and that the municipality should impose larger fines.