Design Thinking
for Healthy Urban Environments

A Case Study of the Social Housing Project: Pedregulho

Rio de Janeiro, 2017

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A Case Study of the Social Housing Project: Pedregulho, Rio de Janeiro, 2017

Graduate School of Architecture, Planning & Preservation

Table of Contents

A-01. View of Pedregulho from below

INTRODUCTION

Executive Summary

A-02: Copacabana Beach, Rio de Janeiro

The built environment has a profound affect on public health and social interactions through the design of housing, streets, and public spaces. If we believe that architecture and urban planning can make us healthier, and that every aspect of urban design has an impact on our daily lives and well-being, then the challenge for planners is to identify the tools that can make as much of a positive impact as possible.

This publication's research was conducted by the Columbia University Graduate School of Architecture, Planning & Preservation in the Spring of 2017. The site of Conjunto Residencial Prefeito Mendes de Moraes (Pedregulho) in Rio de Janeiro was chosen as a case study to explore design concepts and solutions that lead to healthier urban programs and environments for the social housing residents. The following proposals illuminate both the opportunities for growth and the methods to which implementation could be achieved through facilitated toolkit processes. These interventions intend to spur grassroots actions for the improvement and maintenance of Pedregulho's culture, built environment and community involvement.

Design Thinking for Healthy Urban Environments

The Design Thinking for Healthy Urban Environments studio was conducted from January 2017 through May 2017 by a team of 12 researchers, one teaching assistant and two adjunct professors at the Columbia Graduate School of Architecture, Planning and Preservation in New York City. The studio centered around using urban design to improve residential health conditions for those living in the Rio de Janeiro social housing complex formally known as Conjunto Residencial Prefeito Mendes de Moraes (Pedregulho). This project aimed to explore multiple options that activate underutilized public spaces within the building through design and ethnographic studies. Results of this report could be exported to similar contexts and policy procedures throughout the city.

This project addresses the following questions:

Question 1. How can urban design and planning foster wellbeing?

Question 2. How can design thinking deliver solutions, policies, and tools to promote healthier lifestyles and healthier communities?

Question 3. How can policymakers rethink the urban environment to enhance local social sustainability?

There were a number of learning objectives considered as part of the course curriculum that were integrated into this study:

Objective 1. To understand and reconsider community spaces and social dynamics in order to facilitate and promote healthier living conditions.

Objective 2. To use design thinking methodology to problem solve real-world, inter-disciplinary problems.

Objective 3. To synthesize ideas and proposals beyond the use of the conventional planning mechanisms by incorporating other media methods and communicate ideas.

The studio was organized with six teams of two students each who possess a combination of research and design knowledge. Each team analyzed and proposed implementable solutions for the Pedregulho community based upon creative analysis of disparate topics. In March 2017, studio members were given the opportunity to collaborate with Studio-X, an affiliate organization of Columbia University in Rio de Janeiro, Brazil, to examine the ideas produced during primary research in further detail. Together with Studio-X, the studio was able to gain a deeper perspective on relevant urban issues that face Pedregulho and the overall city of Rio de Janeiro.

The outcomes of this studio include a published, final report, a 10-minute video overview of our project, and a studio exhibition. The final products from this studio will be utilized as primary research documents and proposals for future projects based within Pedregulho.

Rio de Janeiro

Population of Brazil's Five Largest Metro Areas (2016)

■ suburban ■ municipality

12,300,000

São Paulo | **Rio de Janeiro** | São Salvador | Brasília | Fortaleza | B-01
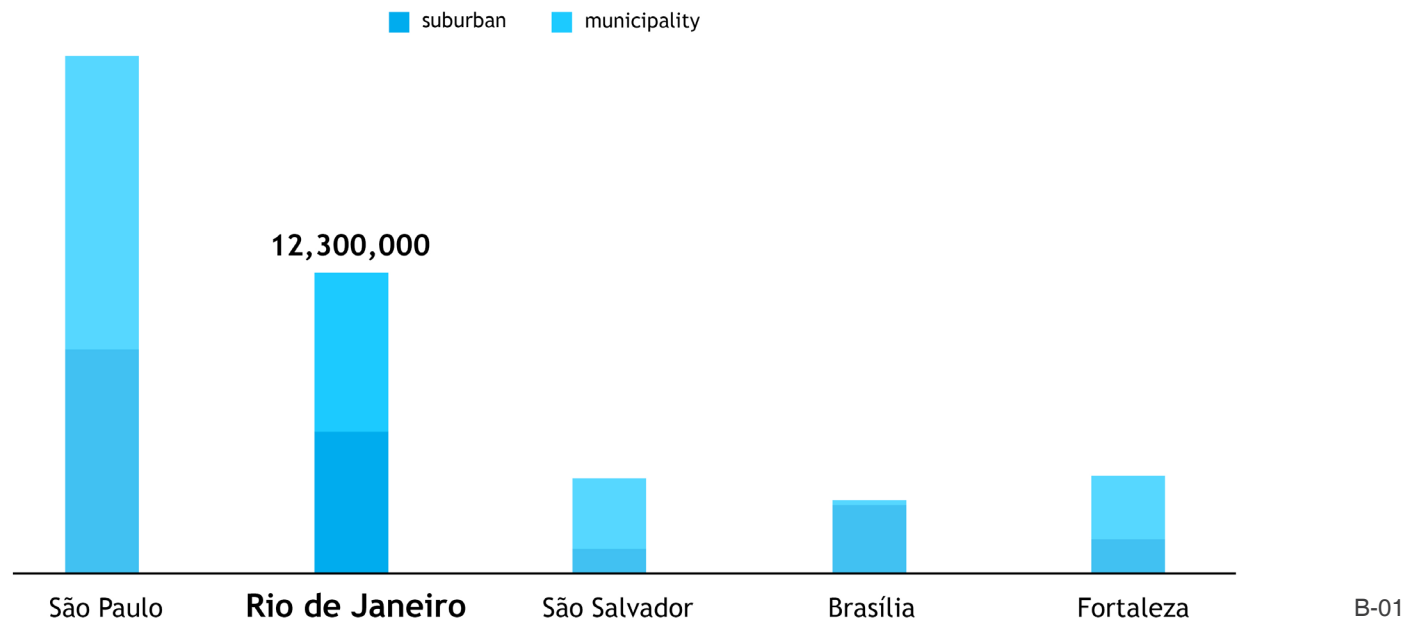
Cities are complex, evolving, living laboratories where socio-environmental relations are consistently redefined and both ingenuity and creativity are concentrated. They have become mosaics constructed by interactions between people, nature, and the built environment. Urbanism thus becomes a mirror in which the many aspects and layers of social infrastructures are reflected.

With over half of the world's population now living in urban areas, it has become clear that there can be no single solution to its multiple environmental, social, or economic challenges[1]. Rather, it is now necessary to work on a variety of aspects of city life simultaneously, thereby demanding a more holistic approach to designing cities as multilayered contemporary experiences

Rio de Janeiro is Brazil's second most populous municipality and is home to more than 6.5 million residents (Fig.B-01), showcased by its visible urban density. The city is the main cultural hub and primary tourist attraction of Brazil and doubles as the birthplace of Brazilian icons such as *Samba*[2] and *Carnaval*[3]. Rio de Janeiro is rich with diversity and offers a plethora of different sights and sounds. The Brazilian people are artistic, innovative, and

entrepreneurial. However, in its richness, Rio de Janeiro is a place of multiple contradictions with formal and informal spaces and economies. These inequalities have led to several public health issues which we aimed to address through this studio.

Urban planning as a practice and a study arose from the need to address public health obstacles throughout the world, including those that stem from income inequalities. In Brazil, 26% of the population are below the national poverty level[4] and nearly 60% of the diet for poor children under 12 is made up of fried, sugary or salty processed foods, contributing to 20% of the overall population being classified as obese[5]. These national statistics are reflected within the building's population, as a large number of Pedregulho's senior citizens suffer from diabetes, hypertension, mental health problems and poor access to healthy fruits and vegetables. Finally, the lack of social integration, the growing hostility between the poor and the wealthy, and the inability of poor young people to find their way into the job market continues to drive crime and an overall lack of security throughout the city, specifically in low-income neighborhoods.
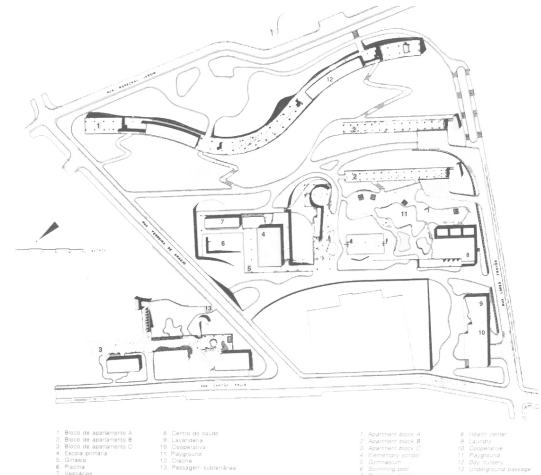
B-02. Aerial of complex site
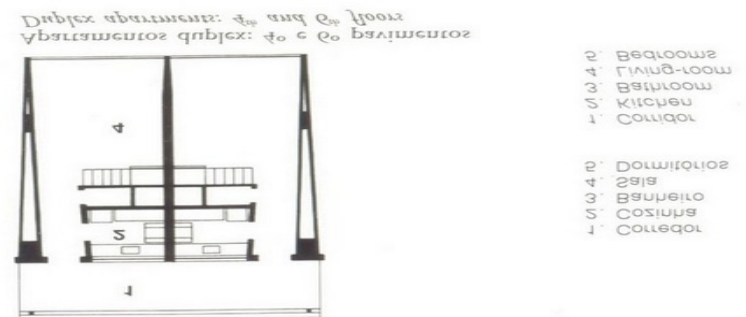
B-03. Sectional view of Pedregulhio Apartments

[1]United Nations, 2014

[2]Samba is a Brazilian musical genre and dance style of African origin. (Merriam Webster, 2017)

[3]Carnaval is an annual Brazilian festival held between the Good Friday afternoon and Ash Wednesday which marks the beginning of Lent. (Ipanema, 2017)

[4] Rio Times Online, 2012

[5] Gama. 2015

History of Pedregulho

A-03. View of the building and surroundings from the third floor

Pedregulho is an apartment complex and planned community in the Benfica neighborhood of Sao Christóvão within Rio de Janeiro, Brazil. The building was designed by Brazilian architect Affonso Eduardo Reidy as low cost housing for civil servants, to showcase the socio-economic and technological progress of the country. Under the Department of Public Housing, Pedregulho was touted as a model for society that encouraged populations to live closer to workplaces, basic services and leisure options. In fact, occupants of Pedregulho were required to be part of the municipal administration, and had their rent directly deducted from their paychecks.

Pedregulho also represented the direction of Brazilian social reform and modernism. Families living in Pedregulho were checked for medical diseases before occupying units in an effort to mitigate any potential public health crisis; a policy that is paralleled by the pure, white aesthetic of the building's architecture. Additionally, residents agreed to mandatory, frequent inspections by public health authorities who periodically accessed apartments to enforce building regulations and health codes[6].

[6]Cabinet Magazine, 2002

INTERMEDIATE FLOOR

5TH AND 7TH FLOOR

4TH AND 6TH FLOOR

1ST AND 2ND FLOOR

0   15   30

GROUND FLOOR
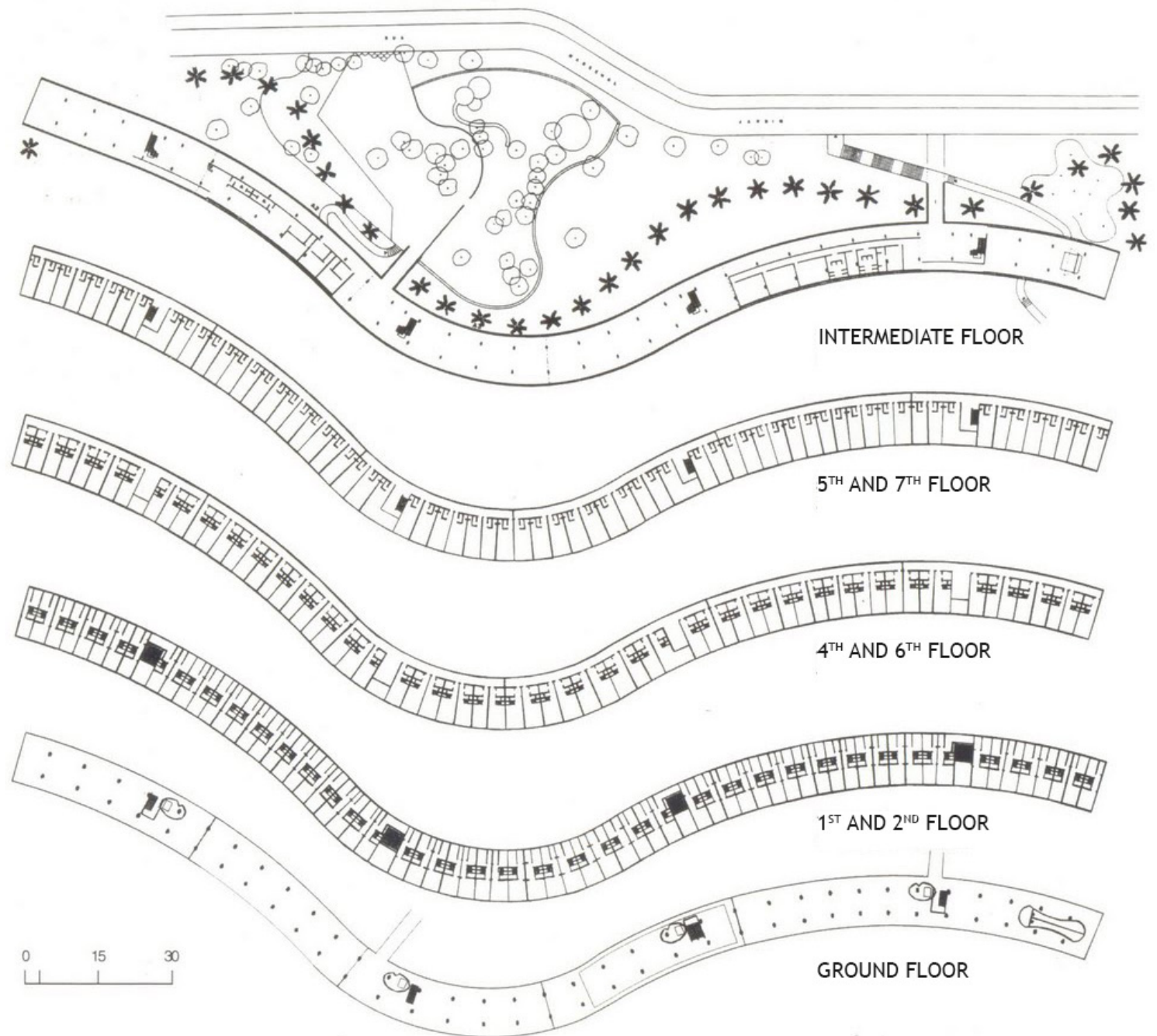
B-04. Floor Plans of the Building

Inaugurated in 1962, the entire development of Pedregulho covers an area of 50,000 m^2, and comprises four residential buildings, an elementary school, a gymnasium, a swimming pool with dressing rooms, a health center, a daycare center, a laundry room, outdoor recreation areas and gardens designed by prolific landscape architect, Roberto Burle Marx. The most prominent building is a 260-meter-long serpentine complex that sits on a hill overlooking the rest of the other residential units.

The main building consists of 272 apartments varying from one to four bedrooms layouts. Access to this main building is provided by two small pedestrian bridges that connect the main road with the middle-level, open-air floor. This third floor public space, with its spectacular views, was originally constructed to facilitate residential interactions. From this level, residents can access their private units located either on the two lower floors or the two upper floors through several staircases.

The building can efficiently respond to a variety of local climatic conditions with its versatile, bioclimatic facade that can be easily rearranged by hand. In addition, the building incorporates outdoor scenery and significant common spaces as integral parts of its design to improve the wellbeing of the inhabitants. These open-air public spaces have been customized by its residents to allow different activities to take place that have become characteristic features of communal living.

The building was abandoned by the government and rapidly deteriorated in the decades following its initial completion. As a response to the building's decline, and taking into consideration the international fame associated

Section 1:500
1   Footbridge
2   Intermediate pavement, level 3
3   Access gallery
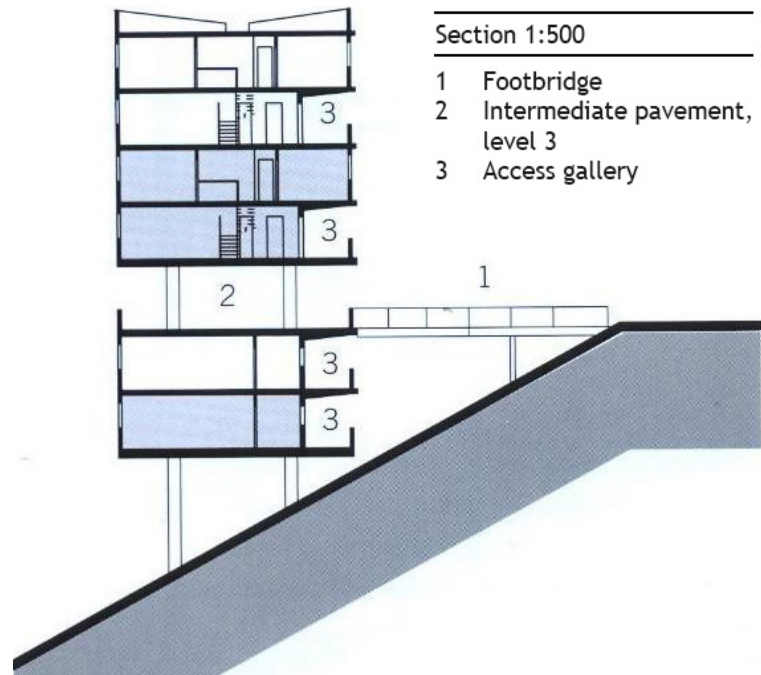
B-05. Sectional view of the building

with Pedregulho's design, the building was registered as a cultural monument property in 2011 by the State of Rio de Janeiro and was granted a renovation fund of 10.5 million reais by the city government in 2013[7]. The state-funded restoration project was to be incrementally completed in three main phases; the first two phases concentrated on the main building's maintenance, facade, and public spaces and the third phase, paused indefinitely, was slated with the goal of reconstructing the landscape surrounding the complex. Today, Pedregulho remains one of the most referenced buildings by academics and architects working in social housing, and continues to be a well-loved and well-visited place of interest for researchers and tourists from around the world.

[7]*The Rio Times, 2014*

A-04 View of the building before renovation

A-05. Aerial view of Rio de Janeiro

METHODOLOGY

Primary research was developed through mixed-method techniques with an emphasis in qualitative focus group research. These methods are clarified below to explain the processes and knowledge behind the actions of this studio.

Mixed methods research includes qualitative and quantitative methods to explore research problems. Mixed methods research encourages a holistic process and experience in research and solution-making.

Qualitative research seeks to understand a given research problem or topic from the perspectives of the local population it involves. Qualitative research is especially effective in obtaining culturally specific information about the values, opinions, behaviors, and social contexts of particular populations.

Focus groups are effective in eliciting data on the cultural norms of a group and in generating broad overviews of issues or concern to the cultural groups or subgroups represented.

Phases

A-06. View of the building

In order to clearly isolate the elements of each proposal and gauge implementation and evaluation, researchers used a modified version of the logical model framework borrowed from non-profit theory. The purpose of the model was to ensure sound, causal logic between the outputs and the final outcomes and impacts, and to simplify the evaluation process. Opportunities for improving urban health at the Pedregulho site were formulated and creatively analyzed through this method.

Phases

Research was divided into three phases; a **1. Research Phase**, conducted in New York City; a **2. Feedback Phase**, conducted in Rio de Janeiro, Brazil; and a **3. Focus Phase** which became the culmination of the studio's research efforts in New York City.

1. Research Phase

A-07. Researchers interviewing community leaders

1.The Research Phase was concluded in five weeks and included broad overviews of international design initiatives through focused interventions and historical case studies that promoted healthy urban environments. From this broad overview, research focused on projects and concepts that would promote healthy living through urban design. The Research Phase also included initial analysis in Pedregulho, the building and the population, as well as a discussion with Pedro Rivera, the Director of Studio-X in Rio de Janeiro.

At the beginning this five week period, researchers were placed into groups of two that focused on individual concepts chosen from a list of healthy design vocabulary **(see Appendix A)**. The six teams were tasked with an exploration of those terms and how they could be specified for their application of design concepts in Pedregulho.

From this exploration and concept-driven research, researchers were able to focus their design interventions on public housing case studies, low income neighborhoods and informal settlements with a focus upon South America and the country of Brazil. Texts used to support each of the six design concepts during this phase include the following:

Concept	Author	Title	Year
Urban Landscapes	Dannenburg, Frumkin, Jackson	Making Healthy Places: Designing and Building for Health, Wellbeing and Sustainability	2011
Placemaking	Project for Public Spaces	Placemaking: What if we build our cities around places?	2009
Adaptation	Angelil, Marc and Hehl, Rainer	City of God: Working with Informalized Mass Housing in Brazil.	2013
Sharing	Benkler, Yochai	The Penguin and the Leviathan: How Cooperation Triumphs Over Self-Interest	2011
Networking	Gehl Jan	Life Between Buildings: Using Public Space	2011
Security	Yoshinobu Ashihara	The Aesthetic Townscape	1983

Bibliography of initial Research/ Articles/ Books

Research from this phase led to deeper case study examinations by each group to explore of their specific concepts and the ways in which they could be tied to healthy living within urban environments. An understanding of these concept based interventions then led to an analysis of specific proposals that could be utilized in Pedregulho during the next Feedback Phase.

2. Feedback Phase

A-08. Interviews with community members in Pedregulho's chapel

2. The Feedback Phase began upon arrival to Rio de Janeiro, Brazil on March 7, 2017. Potential proposals formulated during the previous phase were explored in-person through discussions with planning experts and community members of Pedregulho. An understanding of Brazilian and Rio de Janeiro *(Carioca)* [8] culture was especially helpful to ensure mindfulness of local norms and realities. Through two tours of Rio das Pedras and Tuiuti *favelas* [9] and discussions with local officials, researchers were able to broaden their regional and political understanding of Brazil. These visits and discussions were complemented with further visits to similar, architecturally noteworthy housing complexes such as the building of *Minhocão*, officially *Via Elevada Presidente João Goulart* and colloquially known as "the worm."

[8] *'Carioca' is a native or resident of Rio de Janeiro, Brazil (Merriam Webster, 2017)*

[9] *A favela is a Brazilian shack or shantytown (Oxford Dictionaries, 2017)*

During the Feedback Phase, researchers were immersed in four full days of cultural-, design-, and experiential-based research prior to the first visit to Pedregulho. During this time, each group had coordinated in advance with Studio-X to host presentations by local officials or community organizers affiliated with each group's design concept. These meetings allowed researchers to discuss ideas and ask questions, providing an opportunity to explore and discuss individual concepts and projects with regional experts in architecture, landscape architecture, and public health.

Prior to the initial visit to Pedregulho, Studio-X advised the group that the building activities on the public floors differed between the weekend and on the weekdays, resulting in group visits occurring on both a Sunday and a Tuesday.

On the first morning of the site tour, researchers met with the president from the nearby Morro do Tuiuti favela to tour his neighborhood. The Tuiuti tour was an invaluable experience as it assisted researchers to gain insight to the surrounding community and the many infrastructural and political challenges that arise in Rio de Janeiro. After the tour of Tuiuti, researchers visited the main building of Pedregulho and met with the Pedregulho Resident Director, Hamilton Marinho, to discuss general building and resident dynamics. These interviews were translated by Studio-X volunteer students. General inquiries about each of the six conceptual proposals were made via these evening interviews. These interviews also offered feedback regarding the population makeup of Pedregulho, its building history, and neighborhood concerns.

On the second visit to Pedregulho, researchers distributed

invitations throughout the building for a small community gathering hosted within the on-site chapel with food and drinks. The community gathering lasted three hours and was attended by approximately 35 community members. A total of 20 hand-written surveys were voluntarily completed by residents. Surveys included both open-ended and qualitative questions pertaining to the demographics and safety of the building, in addition to one question per each of the six core concepts to better guide researchers in their proposal of a final plan **(see Appendix B)**.

This community gathering included a local police official, a public health practitioner that routinely visited Pedregulho, a social worker, local community organizers, Pedregulho store owners and senior residents. Researchers also continued analysis of the building to confirm that all proposed interventions were feasible given the current physical constraints, public space, and population dynamics. During this gathering, interviews were recorded with the help of Studio-X interpreters and photographs were taken of all the participants.

Limitations to information gathering: Short notice of a community party was recommended by Hamilton, however this left only a specific segment of the population available to survey on a Tuesday afternoon. This population included non-school age, non-working adults, and many of the elderly population living within Pedregulho. A number of Tuiuti residents were also involved, but no formal invitations were sent to residents of the Tuiuti favela.

3. Focus Phase

3. The Focus Phase commenced upon return to New York City and included the compiling of reports, translation of surveys, and an inventory of pictures and videos. Concept teams used Research Phase ideas and Feedback Phase data to strengthen each design concept proposal. Teams further divided roles for video script writing, video production, editing, and document production. The final research proposal addresses each of the previously mentioned objectives as listed below:

Objective I. To understand through holistic research both community spaces and the building's social dynamics in order to facilitate and promote healthier living conditions.

Objective I as addressed throughout the project via concept feedback and discussions with Pedregulho community members, its Housing Association, and local health professionals regarding the experiences of the building's residents and local health conditions.

Objective II. To use design thinking methodology to solve real-world, inter-disciplinary problems.

Objective II was completed predominantly during the Research Phase through case studies of healthy design initiatives that influenced each of the six concept proposals. These concepts were then applied to specific research questions during the Feedback Phase to receive opinions about their implementation on real-world problems in Pedregulho.

Objective III. To synthesize ideas and proposals beyond the use of the conventional planning mechanisms by incorporating other media methods to communicate ideas

*Objective III* was implemented throughout the three phases and manifested through creative activities such as video making and GIF creation. During this time, design renderings and exhibition preparations allowed students to explore new and exciting methods of presenting and communicating research ideas.

A-09. The head of the Pedregulho community explains the building

A-10. Pedra do Sal
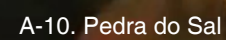
OPPORTUNITIES

Affonso Eduardo Reidy's original vision for Pedregulho was to design physical spaces that would lead to a high quality of life and health among its residents. He believed that communities could reach optimal efficiency and health if the majority of residential daily needs were located in close proximity to housing units. This vision unfortunately went unrealized and the building fell into disrepair shortly after its creation. However, following the 2013 renovation of the building there has been a renewed public interest in addressing the multiple opportunities that could increase physical and mental well being of the residents of Pedregulho. For example, many upgrades were made to the exterior facade through the renovation funding allocated to the building in 2013, The visible changes to the facade then inspired some residents who could afford renovations to upgrade their individual units. Although there were many residents who took initiative to to do so, there were also many residents who could not afford such renovations thus leaving both private apartments and various public spaces in disrepair.

While the renovations sparked a rejuvenation of both the physical facade and the pride of residents themselves, the third and final phase of construction focused on the periphery buildings and grounds was put on indefinite hold. As the Rio de Janeiro government can not be depended upon to invest in Pedregulho due to the country's recent economic downturn, residents must find self-sufficient methods to improve their own living conditions. The strategies outlined in this document are designed as a multi-proposal toolbox to help empower residents through different motives and methods in order to make positive changes within the community, and without the need for outside intervention.

Through archival research and ethnographic studies, researchers identified multiple opportunities for interventions in the physical and programmatic spaces of Pedregulho to increase the physical and mental well being of its residents. To do so, it was first necessary to identify the broad opportunities available for improvements. These include; **1) built environment**, **2) social well-being**, and **3) economic opportunity**. Within these categories, interventions that were deemed essential were those that would improve opportunities to: decrease isolation, increase accessibility, reduce barriers to healthy food, and improve medical care, all with a particular emphasis on children and elderly residents.

Built Environment Opportunities

A-11. Community gathering at the foothill of the Pedregulho

The built environment of Pedregulho and the surrounding community presents many opportunities for intervention, as its many communal spaces could be activated for public use. Interior communal spaces for public use are exemplified by the open air third floor as well as the building's hallway. The building itself also has valuable open space both underneath and surrounding the elevated main structure, however the terrain's steep slopes and lack of landscaping maintenance makes these spaces unusable for a majority of activities. Yet, through careful analysis and planning, these spaces too have the opportunity to be utilized for playful and meaningful programs.

The proximity of local schools becomes an opportunity to educate and bring together children of the Pedregulho and Tuiuti community. These schools can cooperate with Pedregulho through partnerships that utilize open space as venues that can host afterschool programs and extracurricular activities.

Pedregulho is highly accessible through multiple public transit networks and to nearby amenities throughout the neighborhoods of Benfica and Tuiuti. However, the steep slope makes transportation difficult for residents with mobility issues to access these public transportation

A-12. View from the third floor at sunset

resources, predominantly the elderly or handicapped. Elderly residents report an inability to walk up and down the slope to access food and supplies. In fact, some residents reported that they frequently launder their own clothes because of the inaccessibility of off-site laundry facilities. This terrain also contributes to the social isolation felt by many of Pedregulho's residents and points to an opportunity for new programs to provide more social and economic resources to residents within the complex itself.

One of the greatest assets of Pedregulho is the stunning viewscape offered by the building's hill-top location. These views are expansive and showcase Rio's dramatic topography and ample nature present within the urban fabric. These views are accessible from nearly all of the common spaces within Pedregulho, and provide many opportunities to enhance the spatial experience of visitors and users.

Lastly, located upon the exterior slope of the complex itself is a large lawn area. The lack of maintenance and lawn care has led to an unused and unmanaged space that presents tremendous opportunities for adaptive reuse to produce food gardens for economic improvement and social empowerment.

Social Opportunities

The current conditions of Pedregulho present many opportunities for increased community well being and communication. First, Pedregulho residents report various levels of isolation and loneliness. The building itself is physically isolated and detached from the rest of the city, thus creating vast inequalities that sever communication and participatory action between low and middle income residents from surrounding neighborhoods. In addition, the surrounding favela of Tuiuti, although highly functioning and self-sufficient, is unable to rely on the city for basic needs and services. Of the little funding available, residents report that the building segregated into North and South zones, with more affluent residents living in one of the of the building and lower economic residents living in the other.

Additionally, many of the Pedregulho inhabitants are lifelong residents of the building and make up a majority of the senior population. These older residents reported having few regular interactions outside of the building and noted that the steep terrain prevented them from being able to access communal facilities or local shops.

Despite the multiple social challenges posed by these conditions that lead to subsequent feelings of isolation, the community also possess a number of opportunities to increase community social engagement. For example, the presence of many elderly residents and children both within the complex as well as the surrounding community is an asset to the neighborhood. While senior citizens may have health challenges regarding mobility and accessibility, they also may have the benefit of available free time to participate in newly implemented activities. In addition, the proximity of Pedregulho to schools creates opportunities for educational engagement with children of the surrounding

A-13. Hamilton Marinho, the community leader of Pedregulho

Tuiuti community and of Pedregulho. The school provides an organized focal point for activities and interventions that involve children in both roles of student and teacher. These opportunities to integrate senior citizens and children have become the basis for a variety of intervention strategies detailed in this report.

Pedregulho has had, throughout its existence, a strong and highly active community association - currently led by the Association Manager, Hamilton Marinho. The Pedregulho Association provides an existing work structure for the purpose of strengthening community bonds and planning for subsequent intervention strategies. Currently, only half of the building pays a monthly maintenance fee to the association for general building upkeep, leading to an unequal financial burden for building maintenance and differences in participatory capacities regarding the future of the complex. Nonetheless, this participatory inequality creates an opportunity to assist the association in creating an engaging organization that actively and accurately represents all residents of Pedregulho, not just some.

Lastly, while residents of both Pedregulho and Tuiuti report community solidarity, it is not clear that there is strong collaboration in social programming between these two neighbourhoods. From this, researchers have garnered that there are multiple opportunities to enrich and build upon existing social structures. Creating educational and social initiatives will result in an increase of social well-being and an enhanced sense of livelihood and self-determination.

A-14. Community participation for staging protest, Rio

Economic Opportunities

A-15. View of a kitchen in an unrenovated apartment

A-16. View from inside an unrenovated apartment

Enhancing the economic opportunities of residents is a third goal of this research. Although the building was originally built to house civil servants, many units have changed ownership since the building's initiation. Since then, it has become occupied by residents with a wide range of socio-economic statuses. Since the renovations of 2013, some residents have transferred ownership of their units through informal sales that are worth up to 10 times their pre-renovation value. These property transfers have generally resulted in the presence of more wealthy residents in comparison to pre-renovation residents.

The building is roughly divided into sections that correspond to residents' economic status. A vertical division is illustrated through the building's design, with residents on the first and second floors occupying smaller, bedroom units. These residents generally have lower incomes than those occupying the two and three bedroom, two-story units on the upper floors. In addition to this vertical division, a horizontal socio-economic separation between the North and South zones of the building is apparent. Residents of the North zone, who are higher income than residents of the South zone, were the first to receive renovation funding as they typically pay the monthly maintenance fee dues to

the Pedregulho Association. The ability to pay has also led to higher quality renovations in the North zone, including well maintained communal spaces and advanced upgrades in individual units. In contrast, the South zone received renovations that were completed haphazardly only within the last year. These residents are unable to afford the building maintenance fee, nor are they able to maintain as high quality living standards within their individual dwellings. These conditions demonstrate the multiple opportunities that future interventions can address, to generate more upward mobility and enhance self-determinism amongst all residents.

Economic opportunities primarily revolve around the existence of the multiple small businesses located within the building. The presence of these businesses indicate that residents are entrepreneurial and are willing to accept commercial activity within the building premises. Through survey studies, research found that all 20 respondents indicated a strong desire for more businesses that provide increased access to fresh and healthy food within Pedregulho **(see Appendix C)**. In addition, survey results indicated a general longing for higher accessibility to commercial activities that could provide items needed for everyday living. In addressing these wishes, there is a potential to also increase social interactions within the community and capitalize upon the building's status as an architectural icon.

A-17. View inside of an apartment that has been transformed into a small business

A-18. Third floor space that is being used as a gathering area and bar

A-19. Steps in Lapa neighborhood

ACTIONS

This proposal provides seven programs of action for implementation based upon the aforementioned opportunities of decreasing isolation, improving accessibility, and creating more equitable, healthy and educational spaces for kids, the elderly and the neighborhood of Pedregulho. Each of these seven programs target specific populations and opportunities for Pedregulho in order to provide more personalized approaches for programming.

ACTION 1:
Praça Pedregulho

Pedregulho has made a name for itself as a world-renown cultural icon with its linear design and modernist, schematic detailing. The site is visited by hundreds of tourists, students and architects every year who seek a deeper knowledge of Brazilian history, modernist architecture, public health and social housing. In speaking with residents, researchers found that the residential community embraces and takes pride in the building's importance as a cultural icon and are highly receptive to visitors and students alike.

Pedregulho residents mentioned that university visits are particularly special as student visitors are seen as inspirational icons for the children who live in the building. In highlighting children as one of the community's main interests, the proposed **Praça Pedregulho** program aims to contribute to the building's existing status as a cultural attraction in and of itself by providing youth more opportunities for knowledge exchange and interactive participation.

Murals and pichação[10] are two artistic elements deeply embedded in Carioca culture. Taking advantage of Pedregulho's proximity to local elementary schools, we envision **Praça Pedregulho** to become a monthly activity where the city government, local schools, and the building's residents can work together in facilitating local artists to come to Pedregulho to create murals on the third floor public space.

The first initiative within **Praça Pedregulho** is **Uma Coluna, Uma Classe** - "One Column, One Class." This project is a week-long, monthly activity that partners schoolchildren with local Rio-based artists after school. These artists would first teach art skills and techniques to older students, who in turn would pass on artistic knowledge to younger students, thus initiating a knowledge transfer and mentorship process that would culmulate in a final, public exhibition at Pedregulho that takes place at the end of the school year. Within this umbrella placemaking program, various spaces can be made beautiful, productive, and foster community engagement and identity-building.

This following model timeline can be re-used for the other **Praça Pedregulho** initiatives such as beautifying areas of the school and creating playground sculptures and exhibits. The week long schedule is as follows:

Monday: Artist-led workshops with teachers and older students begin in conjunction with activities for younger students;

Tuesday: Older students begin to design and produce personal art projects;

Wednesdays: Teachers, artists, and older students work with younger students through mentorship art groups;

Thursday: Younger students produce structured art and work that combines all their ideas into a singular; and

Friday: Activity Day - Artists lead students in implementing their collaborative project onto a column in Pedregulho. The project is coordinated by artist, parents, and older students to ensure a high level of quality and beauty.

Uma Coluna, Uma Classe is the first initiative of **Praça Pedregulho** as a pilot project that can be initiated within its first month, fully functioning within its first six months, and ending at an annual Summer Art Festival at the completion of the school year. All columns will be painted or designed by local artists and students, making Pedregulho a go-to place for summer art and tourism activities.

The public exhibitions of the art work resulting from **Praça Pedregulho** provides an opportunity to activate Pedregulho's unused open public space through an engaging, colorful and highly anticipated event that places further importance on Pedregulho as a cultural hub of Carioca life and education. In addition, **Praça Pedregulho** as a positive afterschool activity generates creativity, knowledge and hard skills within students at an early age in an inspiring and compassionate environment. Through **Praça Pedregulho**, the building can expand its social connections with the surrounding community and local schools by providing an existing spaces for new programming, cultural and educational activities and social interactions.

A-20. Graffiti along sidewalk from Pedregulho to the school

ACTION 2:
Biblioteca Pedregulho

Our second proposal continues to focus upon the opportunities that re-envision Pedregulho as a cultural and social hub for education. We believe that such an intervention is necessary at this site based upon Pedregulho's natural geography that inadvertently isolates the building and its residents from much of Carioca urban life. The steep terrain that surrounds the building regularly fixates its residents within the building, particularly its senior citizens. In addressing this opportunity of furthering accessibility, we aim to provide ways that bring local knowledge and information to the building and its residents instead of pressuring residents to externally seek resources through physical movement.

Biblioteca Pedregulho focuses upon providing education and resources through the productive use of space located within the currently vacant shelves and rooms on the third floor of the building. Based on the philosophy of "take a book-leave a book," community residents can easily and efficiently populate shelves with favorite literary classics. Additional funding from universities or nonprofit organizations can also assist with the collection and purchasing of literature for community use.

Small construction renovations would be necessary, but not substantial in order to create the public library with multiple rooms that house several new programs such as a tutoring center for language courses and skill workshops. This new facility would be publicly accessible by Pedregulho residents, Tuiuti favela residents, as well as students, visitors, and tourists, thus connecting Pedregulho with the rest of the city of Rio de Janeiro through education, skill sharing and knowledge building.

The focus groups of Biblioteca Pedregulho are twofold; the program aims to lower the risk of social isolation in Pedregulho of senior citizens while opening up educational opportunities for the younger population of children and students to connect with a rapidly digitizing nation through improved literacy. A public library provides a space for children and students to learn, read, study, build knowledge and utilize digital tools to network and connect with a modernizing Brazilian economy and society, while also becoming a location for retirees and senior citizens to read, relax in, and participate in public life within an easily accessible area.

The programmatic opportunities within this new, educational facility are endless, fostering a cooperative environment that builds upon the legacy of Pedregulho as a cultural icon in shaping a cultural and social hub for education and technical skill sharing.

ACTION 3:
Home Forum Lab

Through further study, we find that a new community activities center is necessary to foster a sense of belonging and ownership and to strengthen community ties. Through a series of extra-curricular activities, **Home Forum Lab** intends to promote valuable experiences for Pedregulho's younger generations.

Home Forum Lab is implemented through a three-step process:

Step 1: The construction of a community activities center as a home for participation and performance is necessary to provide an accessible and equitable space for community engagement. We propose these activities to take place together with the aforementioned **Biblioteca Pedregulho** on the third floor open, public space. This location is ideal for community activities as Pedregulho is situated in proximity to multiple elementary schools and would be convenient for after-school endeavors such as a samba school or skateboarding classes with built-in ramps.

Step 2: It is imperative that the **Home Forum Lab** community activities center be formally recognized as a forum for conversation and civic engagement through marketing and legislative transparency. The community center would focus on providing interactive opportunities for youth, parents, and local professionals to communicate and exchange solutions and perspectives in an engaging, safe, and healthy space that furthers community involvement and knowledge exchange. Activities to take place in this forum include career fairs, lecture spaces, and meetings for nonprofits and volunteer organizations.

Step 3: Lastly, the **Home Forum Lab** community activities center would operate as a lab for living, experiencing, and creating a sustainable future. Opportunities to grow and practice learnt skills, and spatial programming for entrepreneurial businesses (such as market stalls) could take place here in order to raise local community awareness of the social challenges within the larger Brazilian urban context, while also becoming a refuge to test, learn, and share solutions for such challenges.

In focusing on opportunities for sustainability, knowledge sharing, and transparency, the **Home Forum Lab** community center aims to build civic engagement that heightens the knowledge of Pedregulho's residents of the opportunities or challenges necessary to improve the building and its surrounding community. The center also operates as a warm, inviting, and transparent venue to explore and share thoughts, a culture that in turn builds confidence, trust, and involvement within community culture.

ACTION 4:
Jardim de Carioca

The government sponsored program, Hortas Cariocas is a project financed by Rio de Janeiro's Municipal Government. Its main objective is to encourage the creation of organic vegetable gardens in low-income communities and public schools as a way to generate access to healthy food and offer work and economic return to people involved.

Under this partnership with the Municipal Government, the neighbourhood receives resources such as equipment, uniforms, and seeds to create a community garden. In addition, gardeners receive a stipend to encourage them to dedicate their time to the project. In return, the gardens must donate half of their total harvest to the local public school while the other half may be consumed, sold, or donated by the gardeners at their discretion. The objective is that the gardeners would be able to eventually manage the garden on their own, in a self-sustainable way.

The western exterior slope of Pedregulho provides a wealth of opportunities for newly built environment interventions that focus on outdoor livability and sustainability. In discussion with residents and through visible evidence, researchers concluded that an urban garden was much needed. These produce gardens would be actively maintained by selected community gardeners and volunteers who would either distribute the produce to the local school, amongst themselves, or sell them to other residents in the building to generate profits. The long-term goal would be that these profits could then be re-invested into the garden for upgrades, expansion and continued use.

Jardim de Carioca food gardens are an initiative to address two opportunities within Pedregulho; providing affordable and accessible food to residents for healthier diets and creating a new educational opportunity for residents of all ages to become involved and educated on sustainable living, healthy food, and farming practices.

Engaging youth in farming as an empowering and reflective process places students in roles of both teacher and employee thus increasing the collective practices of problem solving, self awareness, and defining their role in the Pedregulho community to discover agency, social skills, and self-worth. Through pedagogical practice, productive landscapes can train youth to become the next generation of farmers, organizers, leaders and educators in Brazilian society.

A grocery store could be installed to provide access to food and jobs within Pedregulho within the space of the **Home Forum Lab**. Thus, **Jardim de Carioca** is an all-encompassing activity that utilizes food as an element to combine opportunities for culture sharing, business development, and youth engagement. By ensuring a healthier lifestyle for Pedregulho's residents, we can ensure a better future for the community at large.

ACTION 5:
PedreGO

Two of the largest identified opportunities within Pedregulho are increased mobility and the presence of both elderly and youth residents. **PedreGO** is an initiative that seeks to capitalize on these opportunities by bringing youth and elderly together to increase mobility and decrease isolation as experienced by elderly members of the community. **PedreGO** also aims to increase alternative employment options for young adults.

The program is designed to operate as a car share service with young adult residents of Pedregulho employed as full-time drivers. The service has the potential to expand into outer areas of the neighborhood as demand increases. Pedrego would allow elderly residents to request two separate services from the drivers:

The first option would be for an elderly resident to request a driver to run an errand on behalf of the elderly resident. For example, a driver could be requested to pick up a prescription at the pharmacy and deliver it to an elderly resident within Pedregulho.

The second option would be for an elderly resident to request an accompanied ride into the city for medical appointments or small errands. In this scenario, the young adult driver would accompany the elderly resident for the full day and assist them throughout the day before returning them safely back to the complex. The young adult could also help to carry bought items back to the resident's housing unit and help put items away.

Drivers receive a full-time wage as well as a small compensation to cover gas and vehicle maintenance. This compensation would be partially covered by the Pedregulho Association's general fund as well as a nominal fee charged to any elderly resident utilizing the service. The program's payment assists in employing young adults in a full-time capacity to discourage youth participation in negative street culture.

Despite the presence of similar services in existence (i.e. mainstream applications such as Uber), this program is unique in its services to Pedregulho and is necessary for two main reasons. First, there are technical challenges and barriers to many seniors using Uber, such as the necessity of owning a smartphone, a data plan, and the technical knowledge to maneuver the application's interface. In contrast, **PedreGO** will be integrated within the **Tudo Bem** social platform which will be designed for easy technical navigation by senior residents. **PedreGO** also helps to foster social bonds between youth and elderly residents, something that projects such as Uber would not be able to achieve due to capitalistic tendencies and temporary engagement between driver and passenger.

In addition to being integrated within **Tudo Bem**, **PedreGO** will have a designated parking spot with wayfinding signage and a digital information board. This station provides residents a well-marked and known place to wait for pick-up and service, including real-time information about when the next ride will be available.

ACTION 6:
The Gray Area Handbook

Providing strategies for adaptive reuse of underutilized spaces within Pedregulho has the potential to create opportunities for economic and social activities that in turn, can increase the health and well-being of the residents. The following proposal seeks to inhabit the gray area between formal and informal conditions in Rio. Research indicated that conditions of suboptimal health and well-being can be mitigated by increasing the economic opportunity of Pedregulho's residents.

There are currently less than ten identified businesses in the building that include service-oriented stores such as a barbershop, a hairdresser, convenience stores, and multiple fast-food snackbars. These existing businesses suffer from problems in sourcing, such as the inability to buy in bulk. This issue mainly stems from the lack of access to capital and credit. In addition, businesses are only open during erratic hours that hinder their ability to build clientele or for patrons to rely on their services.

Survey results indicated that residents would like to have access to more businesses within the building, specifically those that would offer healthy and fresh food. In addition, many residents would like to be able to meet the majority of their daily needs through businesses within the Pedregulho complex. Informal conversations with community members also indicated that many residents would like to operate businesses as forms of secondary income. Despite this desire of residents to start these businesses, many don't have the confidence, capital, or knowledge to initiate their ideas. The Gray Area Handbook is a set of actions to aid community members through the process of starting a small businesses and tactics of entrepreneurship.

A-21. View from inside an unrenovated apartment

what businesses Pedregulho residents would want to have and what businesses residents believe that they have the capacity to run. Additionally, potential sources of credit for business owners would be explored. This would include partnering with SEBRAE, the largest small business association in Brazil with over 700 service centers throughout the country. Additional sources of credit and micro-loans could include those available through the KIVA organization or the Grameen Bank.

Before spatial adaptation begins, the community would establish rules and strategies to define the types of

adaptations that residents are allowed to implement. These concepts would be tested before making drastic and permanent alterations via prototypes produced with temporary materials. Additionally, mentorship and dialogue would be encouraged between existing and aspiring entrepreneurs. This would initiate the foundations of a formal mentorship program that would guide potential business owners through the process of creating a small business. Once the rules are finalized and residents approve of the temporary spatial modifications, residents can permanently modify their existing units to accommodate new businesses as per community-defined rules.

Businesses would then establish a comprehensive marketing strategy to promote Pedregulho as a commercial hub. Comprehensive strategies would include wayfinding, physical and digital advertising, and brand identity via integration with the **Tudo Bem** digital platform. In addition, this program would cooperate with other emerging business initiatives, such as sourcing produce from the local community garden for the creation of a local marketplace. Ideally, businesses are structured to become economically sustainable within a couple of years.

A-22. Small business snack shop

ACTION 7:
Tudo Bem Digital Platform

Lastly, a digital platform will be implemented to serve the Pedregulho community by connecting all aforementioned programmatic elements. Titled, **Tudo Bem** - an informal greeting meaning, "how's it going?," - the digital platform shall be designed through interactive workshops hosted by local Rio de Janeiro universities. These initiatives to build the program interface and design will be conducted with input from the Pedregulho community, specifically by the children, the elderly and small business owners for easy use. **Tudo Bem** aims to engage the youth, the elderly and businesses through increasing communication and informational accessibility via technological advancements available from the growing Brazilian industry.

We envision that through local government funding, university research grants, and technological grants, each household shall be given one tablet device for primary access to the **Tudo Bem** network. The **Tudo Bem** network will be a digital host of a variety of programs to increase social interactions and accessibility throughout the building, such as an online chat room to communicate with neighbors and announcements of events hosted within all spaces of the building. The network will also have the ability to send weekly community newsletters and post maintenance information and requests to the Pedregulho Housing Association.

The **Tudo Bem** network can be accessed as a free marketing tool for local businesses and includes the ability to order delivery of products across the building and throughout the Tuiuti community. Three public interfaces will be placed in the third floor accessway to be used as community boards, televisions, and digital maps to provide detail about the types of small businesses available throughout the building

as well as the historical significance of the building for tourist interactions.

Children heavily influence the programs available in **Tudo Bem.** Through interactive workshops with local universities, youth are exposed to programming education that increases digital literacy and provides a source of inspiration for future career and educational prospects. Youths have the opportunity to formulate games on the program to increase physical activity, as well as initiate a peer-to-peer network that pairs youth with the elderly of the building as e-mail "pen pals" to create both a memorable and enriching digital and face-to-face experience for the youth and elderly. The **Tudo Bem** network thus assists in lowering social isolation by increasing community involvement and communication amongst residents, businesses, tourists and the external urban environment alike.

The Tooklit Diagram

OPPORTUNITIES

- SOCIAL
- CHILDREN
- ELDERLY POPULATION
- LOCAL COMMUNITY
- BROADER COMMUNITY
- BUILT ENVIRONMENT
- COMMUNAL SPACES
- ACCESSIBILITY
- UNDERUTILIZED LAND
- ECONOMIC
- ENTREPRENEURIALISM
- EXISTING BUSINESSES

ACTIONS

- PRAÇA PEDREGULHO
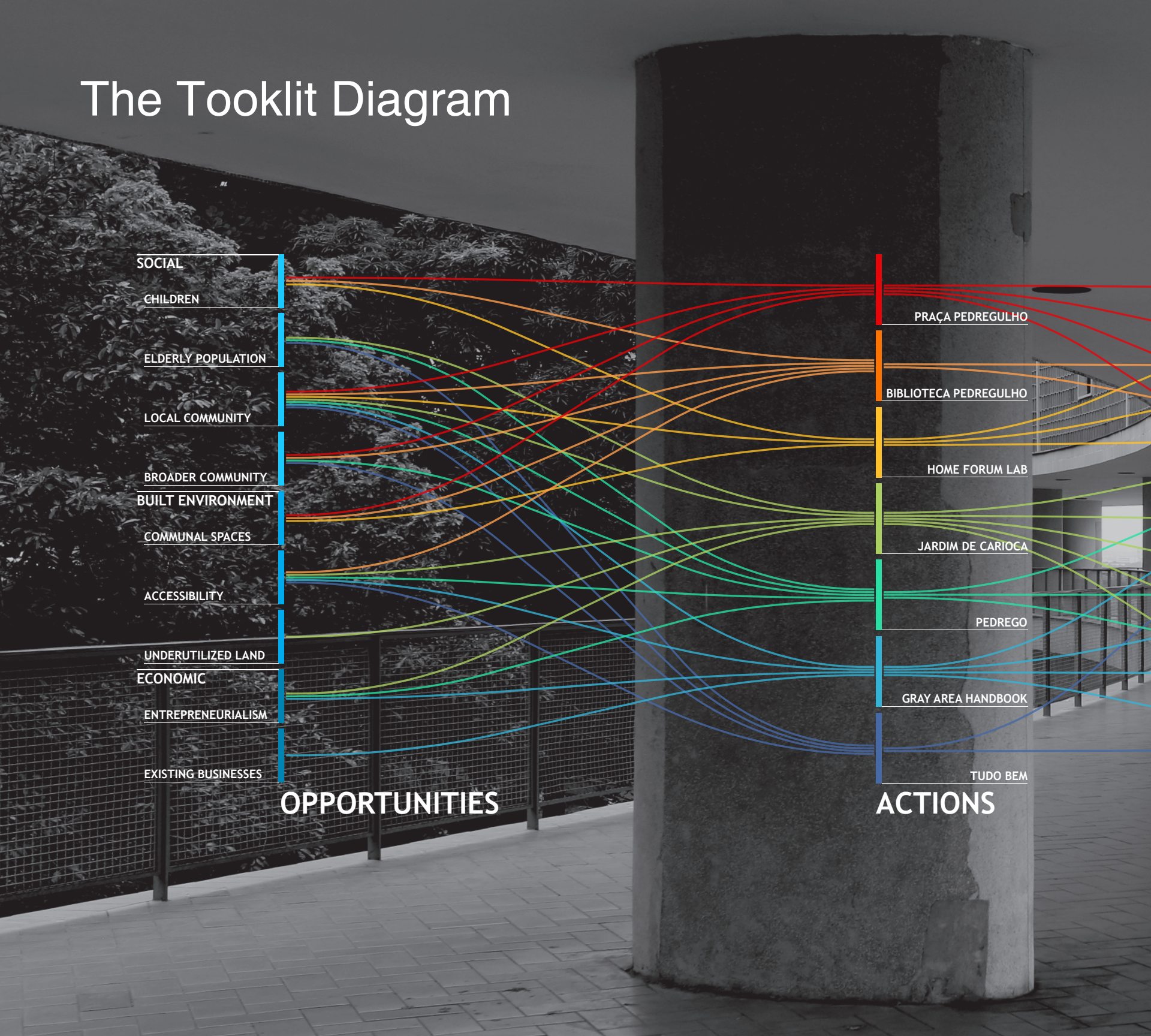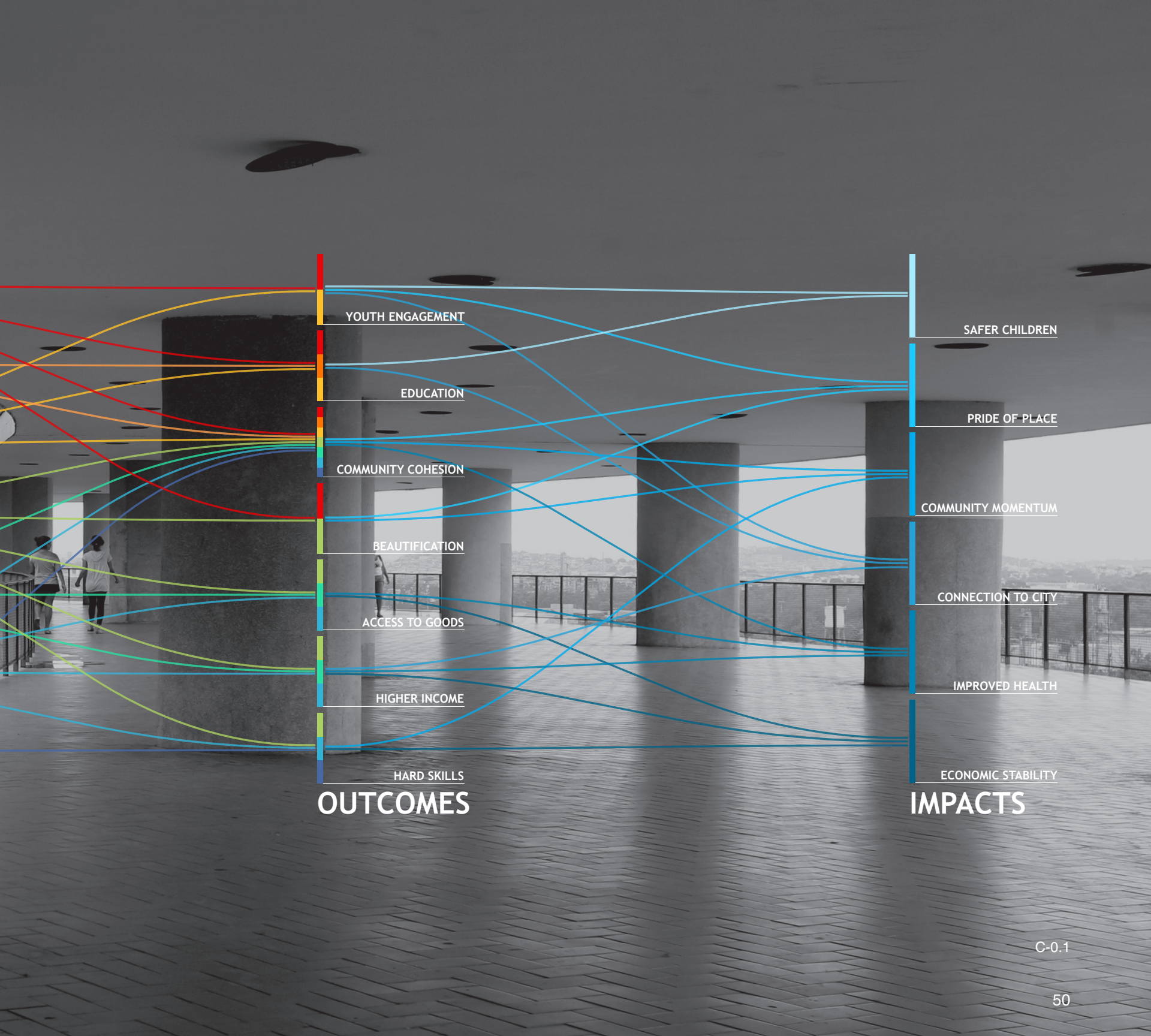- BIBLIOTECA PEDREGULHO
- HOME FORUM LAB
- JARDIM DE CARIOCA
- PEDREGO
- GRAY AREA HANDBOOK
- TUDO BEM

OUTCOMES

YOUTH ENGAGEMENT

EDUCATION

COMMUNITY COHESION

BEAUTIFICATION

ACCESS TO GOODS

HIGHER INCOME

HARD SKILLS

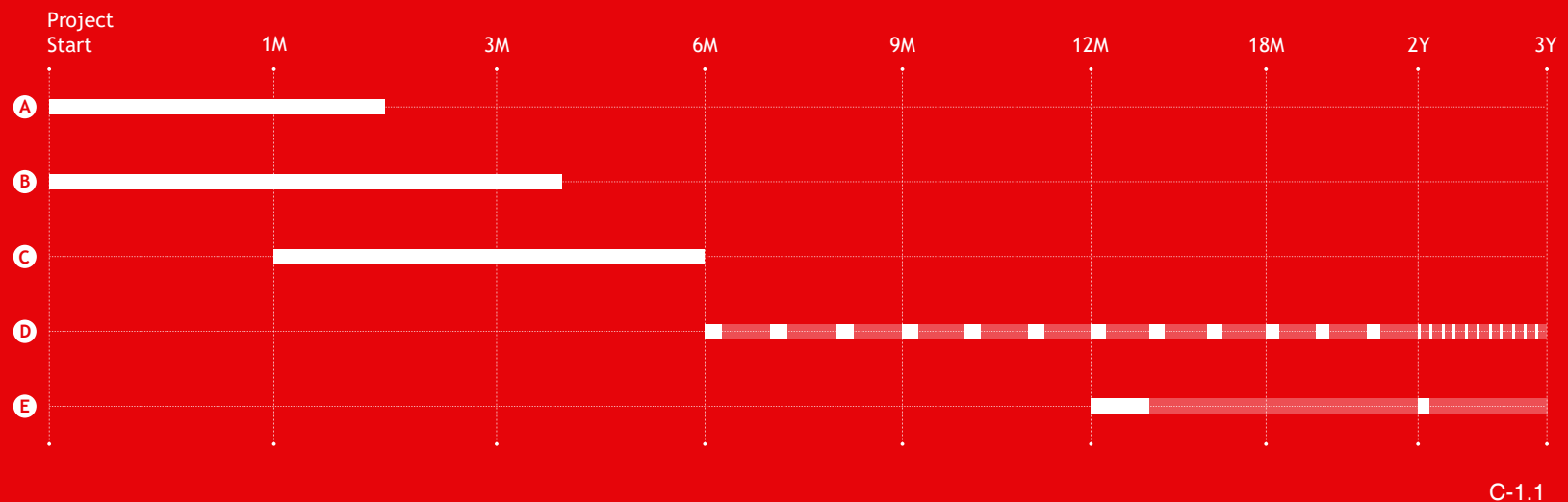IMPACTS

SAFER CHILDREN

PRIDE OF PLACE

COMMUNITY MOMENTUM

CONNECTION TO CITY

IMPROVED HEALTH

ECONOMIC STABILITY

C-0.1

ACTION 1:
Praça Pedregulho

C-1.1

A: Groundwork - During the first two months, Praça Pedregulho (PP) will target places/things in and around Pedregulho for a year long artistic intervention. This will occur alongside setting up the managerial structure of PP and integrating it into the school curriculum.

B: Funding - Also during the first four months, managers will seek city/state funding as well as take advantage of artist networks in an effort to engage in local/global crowdfunding opportunities.

C: Artist Partnership - During the initial phases managers

will also have to connect with local artists in collaboration for the pilot project "Uma Coluna Uma Classe" (UCUC) as well as building a network for the sustainability of the project.

D: Monthly Intervention - Week long interventions will begin occurring each month that will target a specific area in Pedregulho in collaboration with the artist. UCUC will occur six months after the initial groundwork.

E: Annual Festival - An annual summer festival to end the school year by exhibiting cumulative collaborations

C-1.2

from the past semesters will occur in conjunction with the summer farmer's market.

Outcome: Pedregulho becomes a strong cultural icon and top tourist destination in Rio. Ideally, there will be an increase of youth participation in art activities and skills, starting from the Pedregulho community itself and branching out to other school districts.

ACTION 2:
Biblioteca Pedregulho

C-2.1
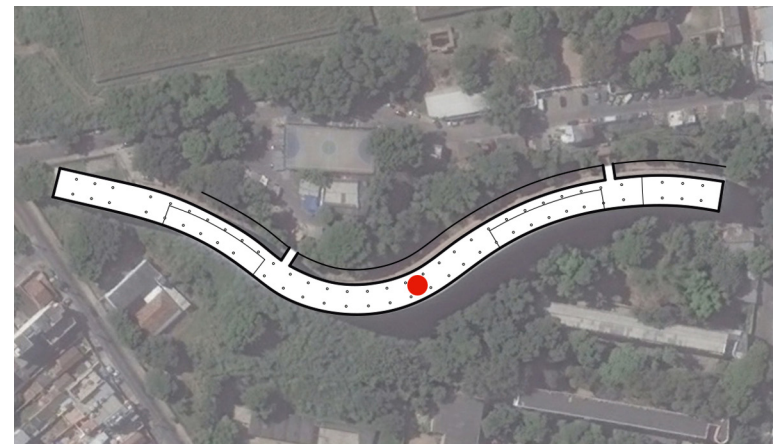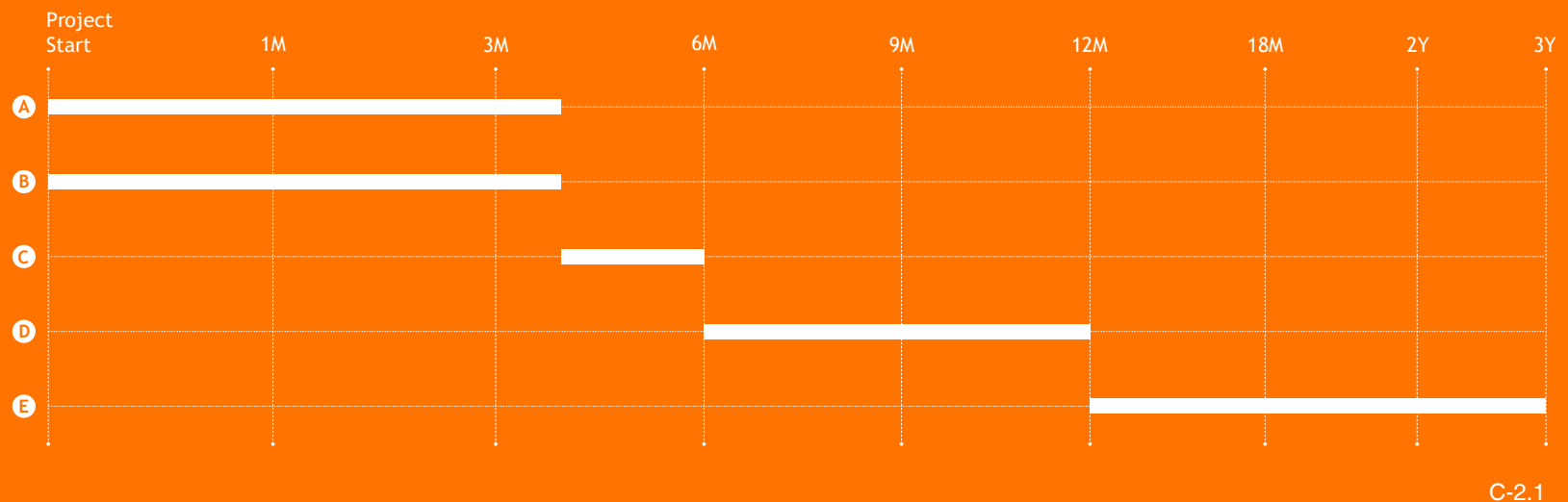
A: Donations - During the donations phase, pre-identified managers of the program request and gather book donations from universities, book stores, libraries, Pedregulho residents, and from the general public. At the same time, the storage shelving on the third floor is cleaned and painted for use as book shelves. Additionally, the unused rooms on the third floor are cleaned, painted, and converted into activity and reading rooms.

B: Network Building - Also during the first four months, volunteers will be identified to build the official website for the program and establish online networks with outside

organizations such as libraries, bookstores, volunteer organizations, educational organizations, etc.

C: Recruitment and Registration - This phase requires the recruitment of managers and volunteers to run and maintain the online system as well as the bookshelves on the third floor. Membership fees should be established (recommended 3RS/month). The membership should allow for the ability to exchange as many books as possible.

D: Connection Building - Over the course of the first year, residents in Pedregulho and the surrounding communities
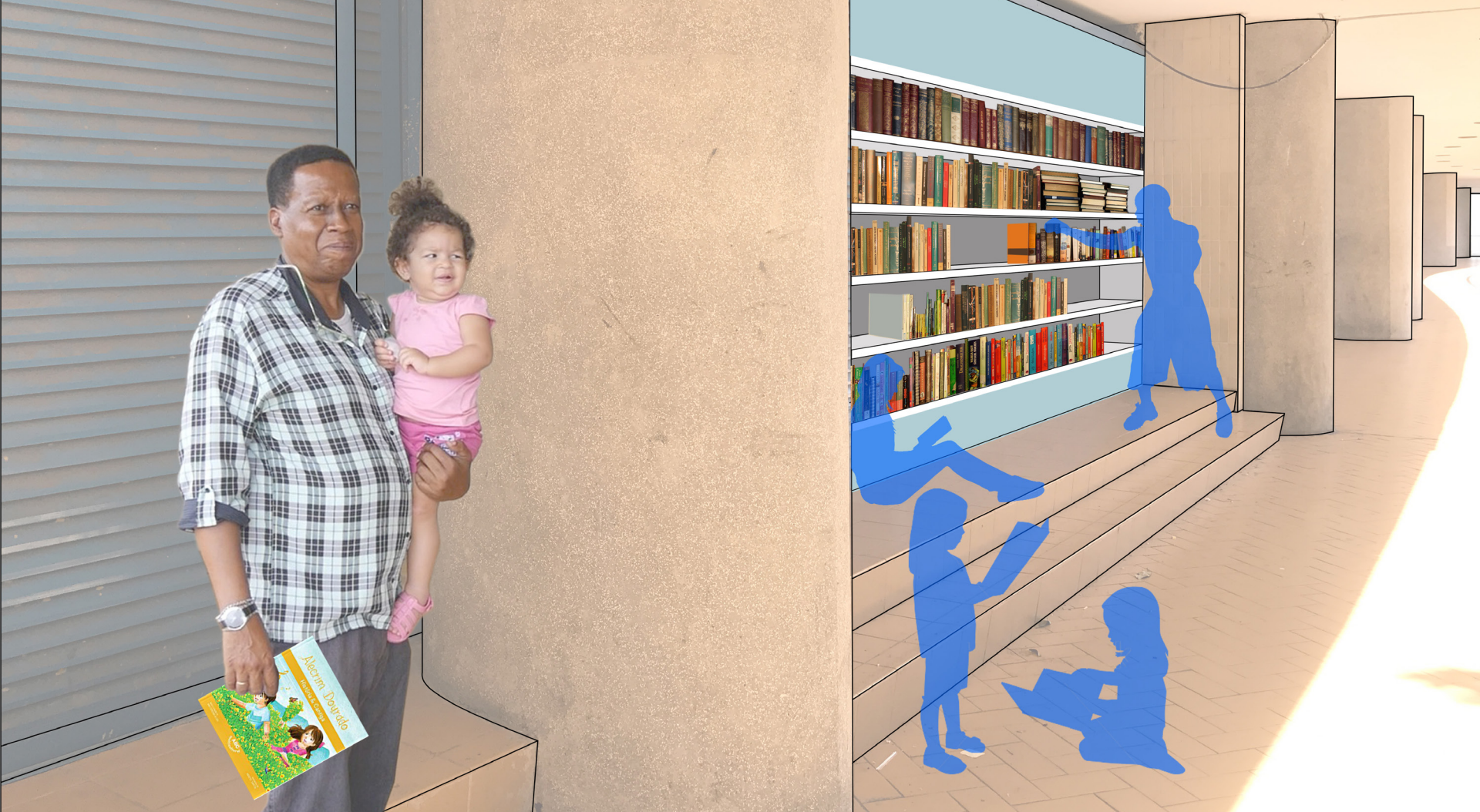
C-2.2

start to have stronger connections as a result of Biblioteca Pedregulho.

E: Expansion - Programs continue to expand to include residents from additional communities in Rio. Biblioteca Pedregulho housing complex will continue to grow and act as the hub of the library system for the surrounding communities.

Outcome: Biblioteca Pedregulho will build strong social connections for residents in Pedregulho and the surrounding communities.

ACTION 3:
Home Forum Lab

Project
Start

| | 1M | 3M | 6M | 9M | 12M | 18M | 2Y | 3Y |

A
B
C
D
E
F
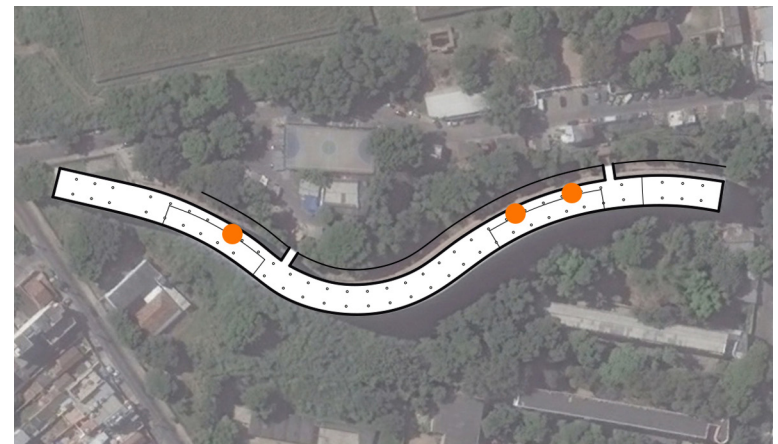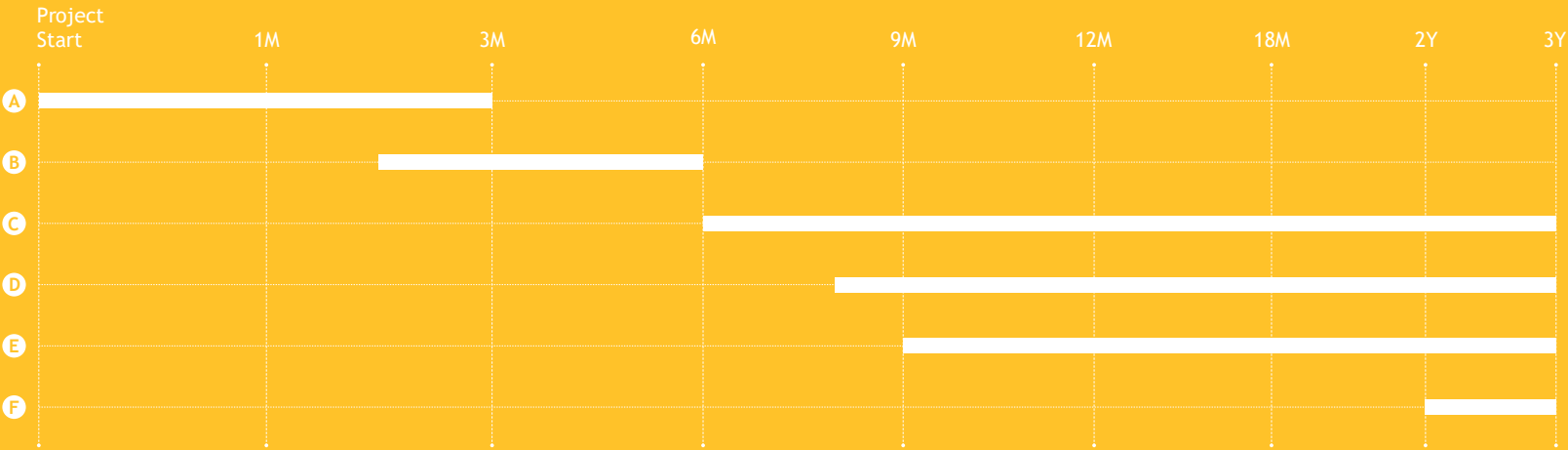
C-3.1

A: Participatory Research - During the initial three months, this program will introduce new activity ideas to the public, gather feedback, and adjust accordingly. During this time there is a call for resident volunteers to set up and upgrade some of the existing unused facilities.

B: Resource Preparation - Recruit resident volunteers from Pedregulho to form a committee for long-term operation. Look for avenues to secure finance resources.

C: Pilot Run - After six months the community center will be integrated and regularly used, with daily arts and sports

workshops for youth. Continue collecting feedback from the participants, further adjust the daily programs and promote them to the community.

D: Senior Project - Launch monthly forums between students, parents, and professionals to exchange ideas and increase social connections. Events could include career fairs or professional lectures.

E: Financial Sustainability - Frequent visitors pay a small membership fee to participate in popular programs. These fees can be used for ongoing maintenance and operational

costs. A second round of volunteer recruitment to help manage the activities can further community participation.

**F: Expansion** - Eventually this program expands to include residents and youth from not only Pedregulho, but also nearby communities.

Outcome: Pedregulho sets up the model for the nearby communities on improving both physical and mental health of the future young generations and encourage communication with other centers in the city of Rio so there could be more opportunities for knowledge exchange.

ACTION 4:
Jardim de Carioca

	1M	3M	6M	9M	12M	18M	2Y	3Y
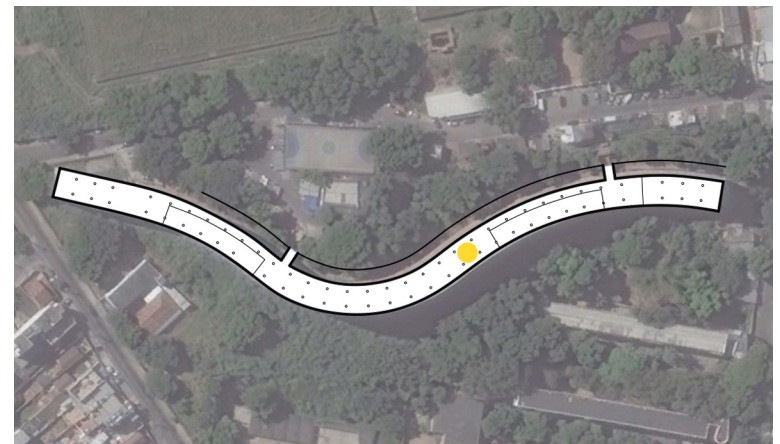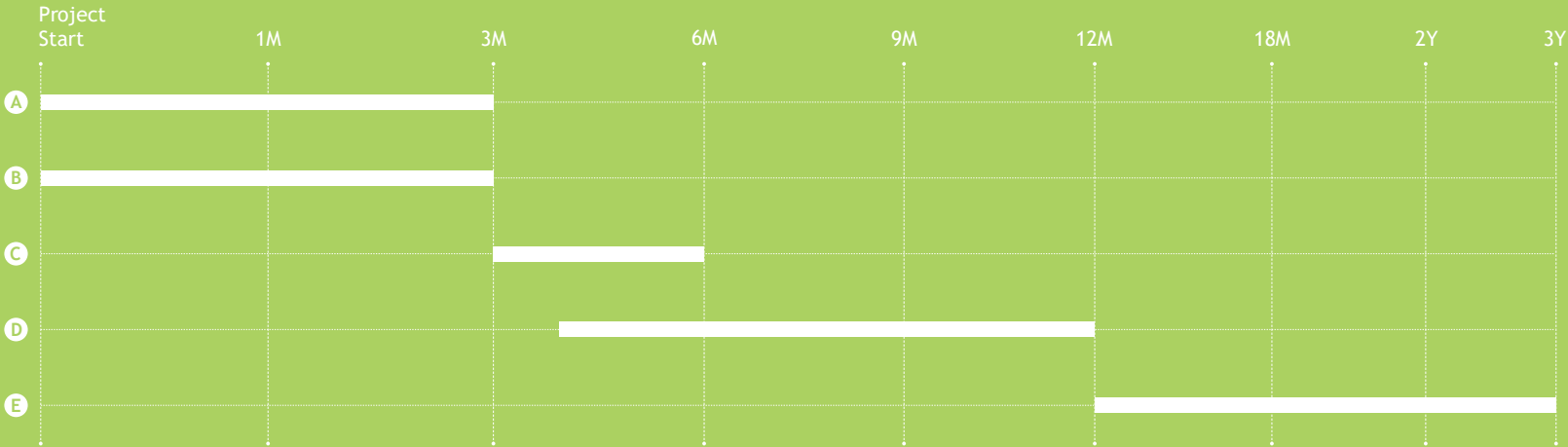
C-4.1

A: Application - Residents should apply to the Hortas Cariocas initiative through the Rio Municipal Government. This program provides funding, training, resources, equipment, uniforms, seeds, etc. for low-income communities. The program then offers guidance and helps prepare the soil for a garden to be planted.

B: Site Preparation - During this phase, workers and volunteers need to be identified and trained. Additionally, the location for the proposed garden needs to be agreed upon.

C: Preparation - With preparation of the garden complete and residents identified, planting can begin for produce of both long and short growing periods. Daily maintenance and upkeep is required by workers and volunteers.

D: Harvest - Crop harvesting needs to take place as a community and 50% of the produce goes to the local school at Pedregulho (as a requirement of the Hortas Cariocas program). The excess can be used by volunteers to be eaten, or sold in local shops and markets.

E: Expansion - The projected production yields a variety

C-4.2

of crops best suited for the following three months as recommended by Hortas Cariocas and in collaboration with the community.

Outcome: The garden becomes a community space for residents to stay engaged and active. Produce from the garden becomes a staple in the resident's diets and provides extra income through sales in the local economy.

ACTION 5:
PedreGO

| | 1M | 3M | 6M | 9M | 12M | 18M | 2Y | 3Y |

A

B

C

D

E
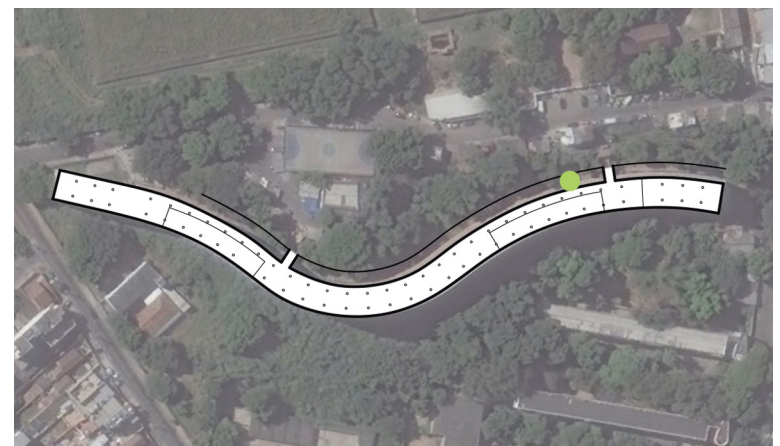
C-5.1

A: Community Input - Identify residents with available time/vehicles, the willingness to participate, and establish a car-sharing service to assist those residents with limited mobility. Also discuss and find solutions for how the carpool and delivery system will be used and where the carpool station will be built. Establish the fee residents will pay car owners/driver in order to use these services.

B: Create Schedule - Define a management structure in charge of scheduling and create specific windows for deliveries of groceries, medication and rides. This will be implemented based on residents needs and driver availability.

C: Space Creation - Designate and paint a space in the Pedregulho parking lot for drop offs and pick-ups to take place and begin implementation of these services.

D: Implementation - Pedrego begins providing limited services to residents in need.

**E: Expansion** - Able community members continue to provide transportation services and expand to offer delivery of other household supplies. The program becomes a
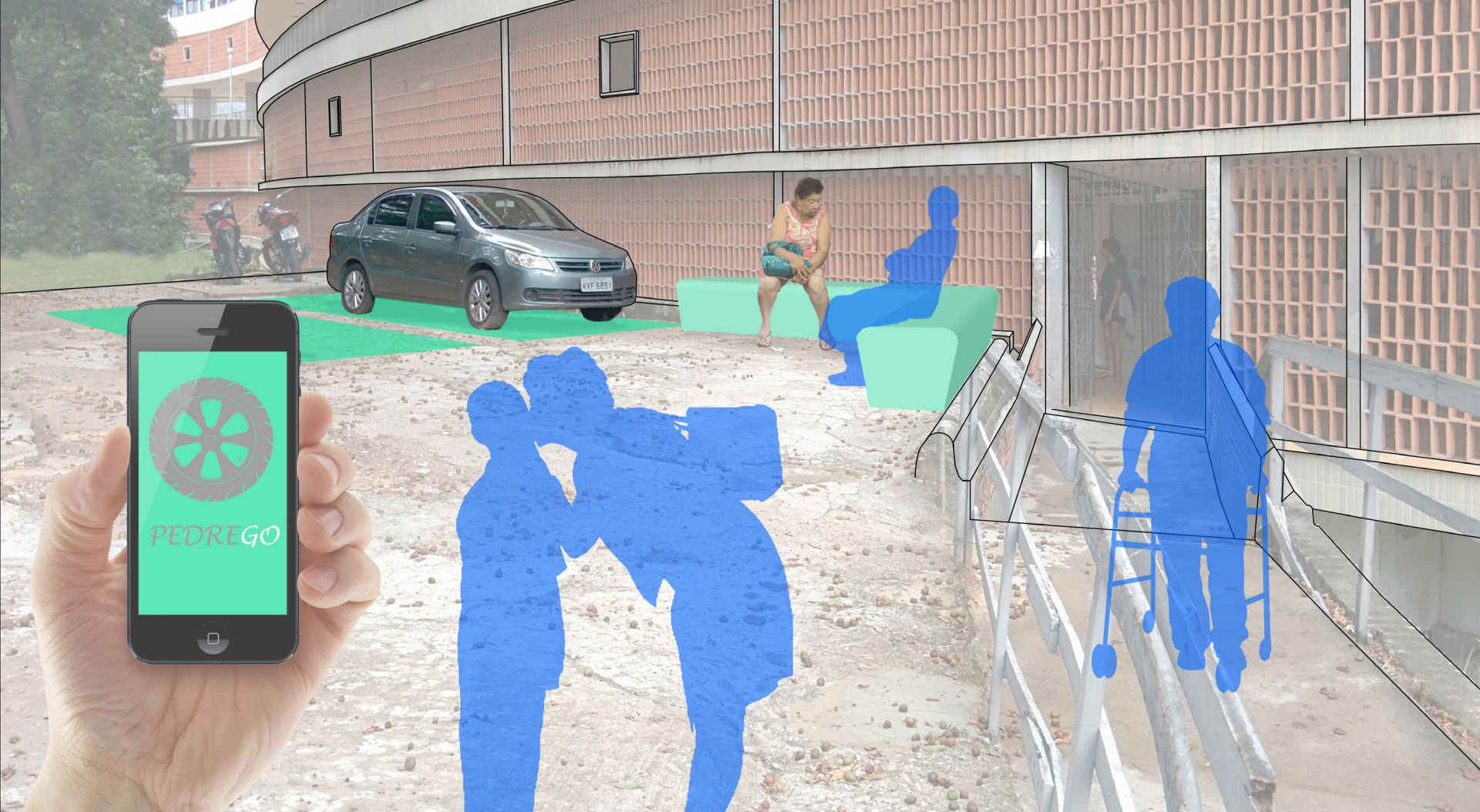
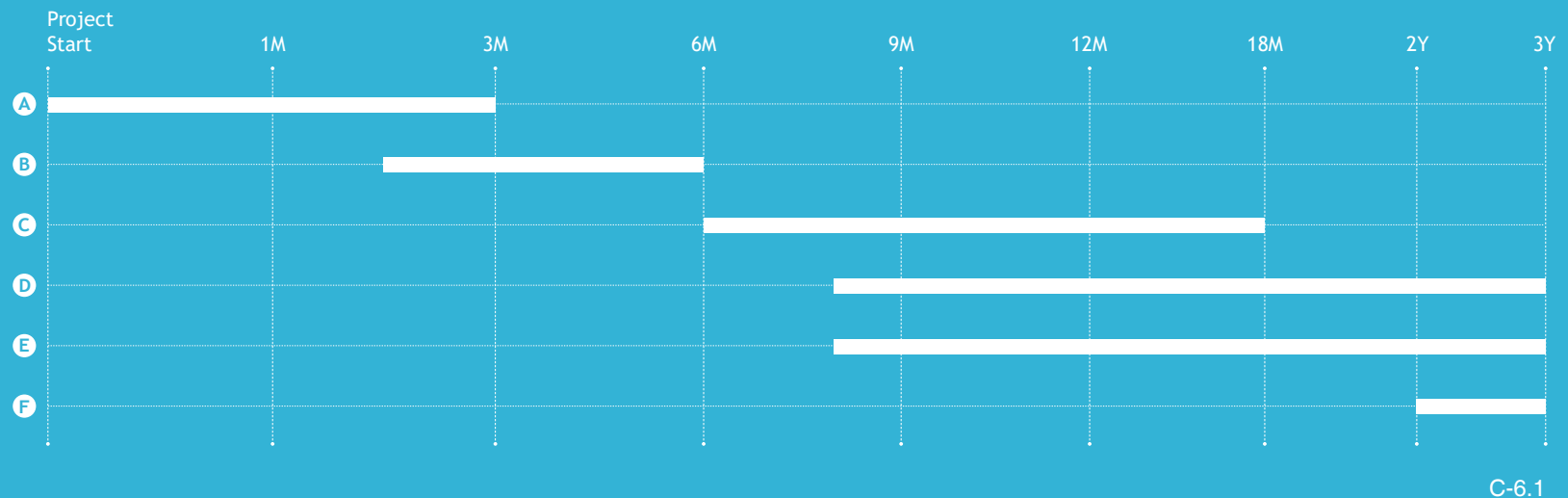viable way to create supplementary income.

Outcome: Residents have steady and reliable access to groceries and medication. Residents also interact within the community to organize these rides, providing a larger sense of cooperation and community.

ACTION 6:
The Gray Area Handbook

Project Start | 1M | 3M | 6M | 9M | 12M | 18M | 2Y | 3Y

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F

C-6.1
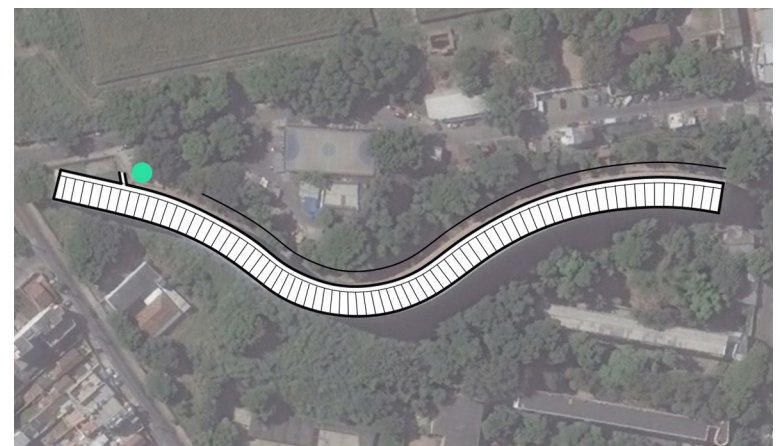
A: Participatory Assessment - During the initial phase, the existing community board conducts surveys to determine what businesses Pedregulho residents want to have and what businesses residents have the capacity to run.

B: Strategy Development - Establish the rules and strategies that define the types of adaptations that residents are allowed to implement. Before making drastic and permanent alterations, proposals can be prototyped through the use of temporary materials.

C: Space Adaptation - Residents modify their existing units and spaces to accommodate new businesses as per the rules defined in strategy development.

D: Marketing and Advertising - Businesses should establish a marketing strategy to include wayfinding, physical and digital advertising, and brand identity.

E: Cooperative Integration - Identify areas of potential cooperation with other emerging programs within the Pedregulho community and the surrounding neighborhood. Integration with the community garden and Tudo Bem platform is encouraged.

F: Economic Sustainability - Ideally businesses have been structured to become economically sustainable by this point. The community expects that loans taken out to start small businesses are being paid back on time. New businesses continue to open and existing businesses expand.

Outcome: Business owners become economically independent and residents who otherwise have little access to community goods, food, or produce are now able to buy it from the shops within the building, allowing for a healthier Pedregulho community.

ACTION 7:
Tudo Bem Digital Platform

Project Start | 1M | 3M | 6M | 9M | 12M | 18M | 2Y | 3Y

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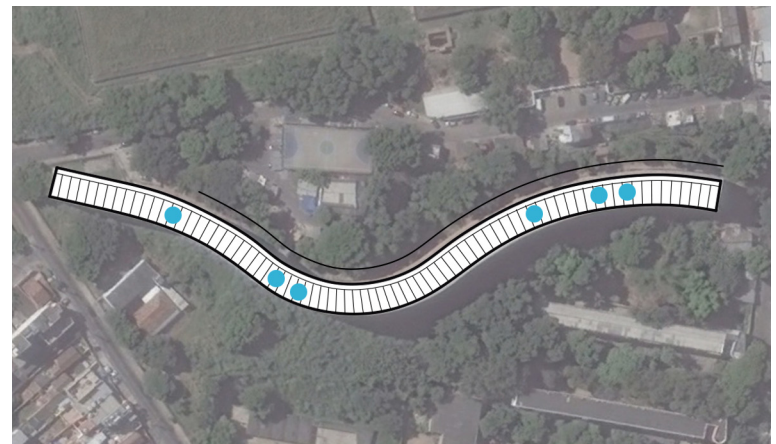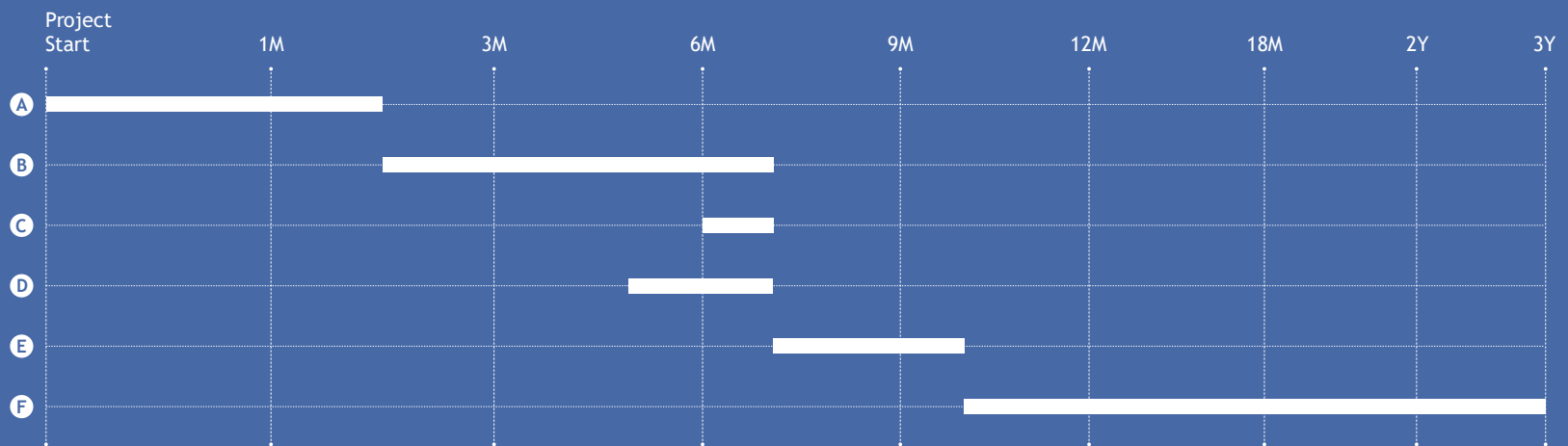
C-7.1

A: Community Input - During this brainstorming phase, workshops are held to determine what priorities the community has for the digital platform and how they foresee it being used.

B: Develop Website - Tudo Bem partners with local technical universities that have a computer science program to develop the digital platform and perform testing of its uses and capabilities.

C: Install Screen - Multiple sources of funding are explored. This can include government funding, nonprofit grants, and

local/global crowdfunding initiatives. After securing the funding for and purchasing the three screens that act as communal access to the digital platform, the screens are installed in predetermined locations on the third floor.

D: Management Structure - While technical development is taking place, a management structure for the digital platform will be outlined and implemented.

E: Training - Once a prototype of the digital platform is developed, University students will hold training workshops with the community. After the workshops, the children

C-7.2

of Pedregulho will offer ongoing technical assistance, particularly to the elderly who are less familiar with technology.

F: Usage & Refinement - The digital platform will be available for use on personal devices and the community screens. The community will give continued feedback on necessary adjustments.

Outcome: Increased community engagement within the building and mitigation of feelings of isolation amongst the elderly for a more cohesive and robust networking system.
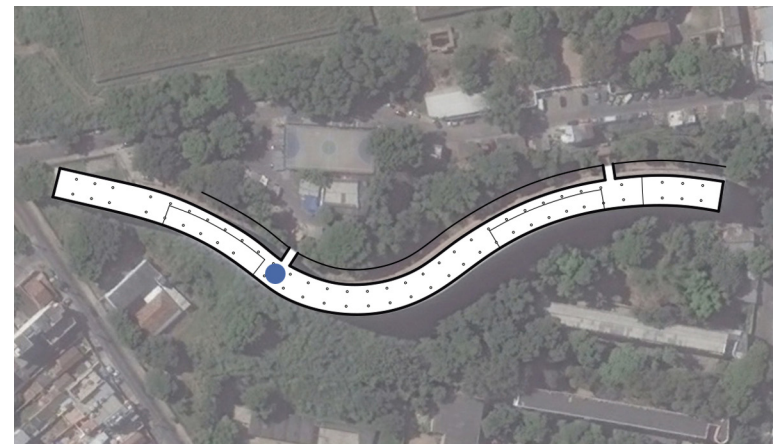
A-23. Open space on the third floor in Pedregulho

OUTCOMES

Logical Model Framework

This section will discuss the outcomes and impacts of each proposal and how they can be measured for success.

Outcomes

From the proposals arise seven outcomes that encompass the aims of each project. These outcomes are; 1) increased income, 2) access to healthy food, 3) engagement of children, 4) education and connectivity, 5) urban beautification, 6) hard skill acquisition, and 7) community cohesion. Not every outcome is shared by every project, rather they work in tandem to achieve these results.

Outcome One:
Increased Income

There is a range of socio-economic statuses amongst residents of Pedregulho. While some residents identify as middle-class, others have few sources of dispensable income, in particular those who work from home as a result of physical or accessibility constraints. The Pedregulho Association's building manager, Hamilton Marinho, mentioned that several residents use income from their small businesses within the building as their main source of income. Thus, several of the discussed proposals produce direct opportunities for increased income and economic stability by supporting small businesses within the building. The **Grey Area Handbook** and Lab provides both economic capital to invest in the businesses, and educational strategies to start and grow small business. By providing capital and entrepreneurial education, residents can increase their ability to manage successful businesses that ultimately return solid profit.

Of these new businesses there is the potential for residents to also buy and sell produce from the **Jardim de Carioca**. Gardeners can sell produce to the local residents and the surrounding community, a program that is particularly beneficial for elderly residents who cannot leave the building to acquire food. The urban garden would also be supported by activities and spaces of the **Grey Area Lab**.

Additionally, the **Tudo Bem** digital network acts to connect multiple businesses within the building to make them more visible to residents, members of the surrounding community, and tourists. Awareness is a major obstacle for the current businesses as they have no means to market their location and promote their products. The **Tudo Bem** digital platform, in tandem with **PedreGO** also creates an opportunity for youth to be engaged in full-time employment.

A-24. Residents enjoying melon and the vegetation

Outcome Two:
Access to Healthy Food

Jardim de Carioca not only provides a new source of income for the building as a whole, but also improved access to healthy foods for all community residents. There is currently no place in or around the building to buy fresh produce. Results of conducted surveys illustrate that respondents were primarily interested in using public space for healthy food stores. Through the community garden, participating residents would grow climate appropriate produce that they can consume or sell to fellow residents. Having access to fresh produce in the building is highly beneficial to all residents, particularly those with limited mobility that limits their ability to travel for groceries.

A-25. Children sitting in the apartment hallways

Outcome Three:
Engagement of Children

Outside of regular school hours, the children of Pedregulho lack constructive organized activities. Several of the proposals aim to engage children in educational and creative programs. **Praça Pedregulho** provides a creative outlet for children by partnering them with local artists to create designs for and paint the columns located on the third floor open space. By giving children the resources and outlet for creative expression, the program increases community focus on the arts, opening new horizons for children who had previously had little interaction with communities outside of their own. The **Home Forum Lab** community activities center, located on the third floor also acts as a hub for providing and connecting programs for children that gives them a positive way to spend their time and positive role models to look up to. Residents, teachers from the onsite school, and outside community members can provide a range of activities for the children aimed at education and development of skills. Importantly these programs give the children a space where their activities are welcomed and encouraged. Lastly, the **Tudo Bem** platforms provides a learning opportunity for younger children to connect to elderly residents for a more engaged community.

Outcome Four:
Education and Connectivity

Several of the proposals provide instructive programs for residents of all ages. The **Home Forum Lab** community activities center provides educational programs after school. In addition, the **Grey Area Lab** provides instruction and training in the field of entrepreneurship for residents who currently own or are looking to start a small business. Through survey results, it is clear there is an entrepreneurial spirit among residents, however activities are stifled by lack of experienced instruction from successful business owners. Business management skills like marketing, maintaining product inventory, and pricing will be provided in the **Grey Area Lab**.

Residents will also be able to learn from each other and from visiting guests through the sharing of experiences and empirical knowledge. The **Biblioteca Pedregulho** provides both offline and online educational resources such as books, academic journals, newspapers, and magazines while also containing a computer lab where residents can access online resources and information archives.

Outcome Five:
Urban Beautification

Pedregulho is an iconic work of architecture inspired by Le Corbusier's vision for Rio de Janeiro. Much of the facade and public space were improved during the 2013 renovation. However, there are several areas that remain unrenovated including the building's exterior landscaping. The **Jardim de Carioca** not only activates unused land through positive activities, but can also transform the east side of the slope into a visually appealing area. In addition, the apartments hallways that often act as social gathering spaces will have improved visual access to the gardens, thus increasing the overall comfort of the building.

The **Praça Pedregulho** program targets beautification of the third floor, public space. The design of this space, however iconic, was aimed more towards projecting modernity and progress rather than for the comfort of residents creating a stark environment that is perceived as an unwelcoming space. **Praça Pedregulho** provides vibrant artwork completed by the community to personalize the third floor while involving the entire community in the process of reshaping Pedregulho's aesthetic. Because the artwork will be completed upon plastic wrapping, there will be no permanent changes to the structure, thus preserving the architectural history of the building while also allowing for a new, flexible initiative focusing on community engagement.

A-26. Members of the surrounding community

Outcome Six:
Hard Skill Acquisition

In addition to to educational programs, several proposals allow for residents to acquire hard skills such as farming or entrepreneurial leadership. The **Jardim de Carioca** teaches a variety of practical skills such as identifying plants that can grow in a certain environment, seasons in which plants grow, and how to cultivate and care for plants. These skills can be applied elsewhere in the job market if the resident needs to seek employment.

The **Grey Area Lab** also teaches hard skills that are valuable in the job market. Accounting, inventory management, physical adaptation for business space, and financial management are all necessary skills for managing a small business and can transfer to other business contexts.

A-27. Volunteering Translator providing help for filling survey

Outcome Seven:
Community Cohesion

Most members of the community in Pedregulho are first, second, or even third generation tenants. The community has organized to accomplish many tasks and support each other, however, as new tenants move in and second generation tenants move out, there has been a decrease in community cohesion and collaboration. **Tudo Bem** creates a digital platform that makes coordination among residents and programs easier and more accessible.

There already exists a significant number of activities at Pedregulho, which is slated to grow with the impletation of these proposals. **Tudo Bem** keeps the community informed of the multiple activities, opportunities, and

spaces for engagement. This platform is accessible through personal and public devices. This digital platform parallels the activities taking place in the **Home Forum Lab**, which provides a physical space specifically for community gatherings and programming.

A-28 Hallway path to apartments in Pedregulho

IMPACTS

The proposals above combine to generate seven outcomes that translate into six long term impacts within the community. These impacts are; connectivity to the wider city, improved physical health, increased opportunities for children, a sense of pride in the home, community momentum, and economic stability. These impacts illustrate the ways in which each of the above individual proposals combine to produce overall benefits.

Impacts

Impact ONE: City Connectivity
The outcomes of increased income, improved opportunities for children, and new connections to outside educational and research facilities collectively connect Pedregulho to the wider city of Rio de Janeiro. The building, despite its iconic status, is not linked to the plurality of resources present in the city. The purpose of these proposals are to link the resources of the city to the community in order to give the residents a voice and opportunities for advocacy.

Impact TWO: Improved Physical Health
Increased income, access to healthy food options, and community cohesion improve the physical health of residents. Income and access to healthy food are two tangible outcomes that are directly linked to physical health; those with increased income have access to improved healthcare, and access to healthy food is crucial to overall health. Community cohesion provides a more elusive benefit - a feeling of safety and belonging that has been linked to improved physical and mental health.

Impact THREE: Increased Opportunities for Children
Educational programs geared towards children allows them to contribute to community processes and initiatives. These programs also expand the educational horizons of the children inspirational and fun way.

Impact FOUR: Pride in Residency
The residents of Pedregulho are aware of and take pride in the iconic status of their building. Prior to the renovation, the community was dispirited due to its deteriorating physical conditions. The integration of children, particularly in beautification programs, and community cohesion facilitate efforts to improve the building in ways that make residents proud to call it home. Part of the pride in one's space is not only its physical appearance, but one's ability to contribute to the space. Outlets for contribution can increase this pride and sense of ownership.

Impact FIVE: Economic Stability
Beyond a simple increase in income, the proposals aim to provide more economic stability to residents. Increased income produced by small businesses and the selling of food from the community garden, as well as hard skills learned through these processes, give residents a wider range of economic opportunities on which to rely. This diversification provides more economic stability and security to residents.

Impact SIX: Community Momentum
All of these initiatives demonstrate the ability of the community to coordinate and produce concrete outputs that provide multiple benefits. Once these processes begin, it becomes easier to continue the momentum. Proving that the community is capable of accomplishing goals provides more motivation to push for future initiatives and programs.

A-29. Boy from Pedregulho

CONCLUSION

The initial premise of the studio, and its focus on design thinking, was an understanding that the built environment and its associated social and economic structures affect health systems as a whole, especially the health and well-being of individuals living in an urban setting. This understanding led to a qualitative research process that combined case study research and onsite experiences. An integral part of our design process was the recognition that community groups have the ability to advocate for and bring about creative interventions and programs that positively affect their health. The material produced in this studio will be given to the community of Pedregulho to us as a tool to advocate for better opportunities in obtaining these improvements. Additionally, the proposals listed in this book are meant to be flexible tools that can be used at the discretion of the community. As researchers and urbanists, we hope that the results of this work can assist in facilitating healthier urban growth through community development and grassroots efforts.

Columbia University GSAPP Researchers in Rio de Janeiro, Spring 2017.

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A-30. View from behind grills used to control access

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Images Cited

Photographs:

Front Cover: View of Pedregulho and surroundings from third floor. *Clicked* : Qun Huang. *Edited* : Yashesh Panchal

A-01, pg01: View of Pedregulho from below, James Piacentini. *Edited* : Yashesh Panchal

A-02, pg03: Copacabana Beach, Rio de Janeiro. Mteixeira62

A-03, pg07: View of the building and surroundings from the third floor. *Clicked* : Qun Huang

A-04, pg10: View of the building before renovation: https://naturalidadep4.wordpress.com/2016/04/25/intervencao/

A-05, pg11: Aerial view of Rio de Janeiro: https://upload.wikimedia.org/wikipedia/commons/2/2b/Rio_de_Janeiro_visto_ do_Parque_da_Cidade%2Cem_Niter%C3%B3i..jpg

A-06, pg14: View of the Building: https://static.dezeen.com/uploads/2016/07/pedregulho-rio-modernism-re_bartolomeu-1568-dezeen.jpg

A-07, pg15: Researchers interviewing community leaders. *Clicked* : Qun Huang

A-08, pg17: Interviews with community members in Pedregulho's chapel. *Clicked* : Tara Rae Heidger

A-09, pg20: The head of the Pedregulho community explains the building, *Clicked* : Eric Pietraszkiewicz

A-10. pg25: Pedra do Sal - http://estaticos.globoradio.globo.com/fotos/2016/11/72ed26da-0e25-4ffc-bbdb-f407d1df80cd. jpg

A-11. pg26: Community gathering at the foothill of the Pedregulho. *Clicked* : Nanchen Ma

A-12. pg27: View from the third floor at sunset, *Clicked* : Qun Huang

A-13. pg28: Hamilton Marinho, the community leader of Pedregulho. *Clicked* : Stephanie Chan

A-14. pg29: Community participation for staging protest, Rio. https://upload.wikimedia.org/wikipedia/commons/2/25/Mani-festa%C3%A7%C3%A3o_contr%C3%A1ria_a_realiza%C3%A7%C3%A3o_das_Olimp%C3%ADadas%2C_ no_RIo_%2828713373661%29.jpg

A-15. pg30: View of a kitchen in an unrenovated apartment. *Clicked* : Stephanie Chan

A-16. pg30: View from inside an unrenovated apartment. *Clicked* : Stephanie Chan

A-17. pg31: View inside of an apartment that has been transformed into a small business *Clicked* : Eric Pietraszkiewicz

A-18. pg32: Third floor space that is being used as a gathering area and bar. *Clicked* : Qun Huang

A-19. pg33: Steps in Lapa neighborhood. https://s.iha.com/0012994366/Southeast-region-Steps-in-lapa-rio-de-janeiro.jpeg

A-20. pg39: Graffiti along sidewalk from Pedregulho to the school. *Clicked* : Faisha Namira Indrakesuma

A-21. pg44: View from inside an unrenovated apartment. *Clicked* : Wesley Thomas Rhodes

A-22. pg45: Small business snack shop. *Clicked* : Wesley Thomas Rhodes

A-23. pg63: Open space on the third floor in Pedregulho. *Clicked* : Sheng-Yi Xu

A-24. pg66: Residents enjoying melon and the vegetation. *Clicked* : Tara Rae Heidger

A-25. pg67: Children sitting in the apartment hallways. *Clicked* : Qun Huang

A-26. pg69: Members of the surrounding community.*Clicked* : Qun Huang

Figures:

Diagrams:

A-31. One of the entrances to the building

APPENDIX

A. Class Vocabulary List:
  Urban Health

Connectivity	Landscape	Environment	Physical Configuration	Human Scale
Transportation	Biodiversity	Air Quality	Land Use	Physical Activity
Walkability	Resilience	Water	Materiality	Food
Technology	Productive-Landscape	Waste	Design	Social Interaction
Equity	Security	Acoustics	Open Space	Climatic-comfort
Accessibility	Maintenance	Pollution	Infrastructures	Behavioral Change
Information	Vegetation	Energy	Programs	Collaboration
Network		Awareness	Regulations	Sharing
Affordabilty		Big Data	Topography	Placemaking
Monitoring		Policy	Inclusiveness	Knowledge
Social Media		Resources		Happiness
Digital Identity		Education		
		Sunlight		

B. Questionnaire

Pesquisa do Pedregulho

1. Gênero: _____

2. Idade: _____

3. A Quanto tempo você mora no Pedregulho? _____

4. Como você utiliza as áreas livres do Pedregulho? _____

5. Quantas pessoas vivem no seu apartamento? _____

6. Quantas horas por semana você faz um trabalho remunerado (pagado)? _____

7. O que você faz no seu tempo livre?

8. Você estaria disposto a trabalhar de forma voluntária para melhorar a comunidade do Pedregulho? Se sim, quantas horas?

9. Você tem uma boa relação com seus vizinhos?\

10. Como você se sente com relação ao numero de visitantes no Pedregulho?

11. Você participaria de atividades comunitárias ou eventos que atraíram pessoas que não moram no Pedregulho?

12. Você gostaria de ver mais comércio no Pedregulho? Se sim, qual tipo?

13. Você se sente seguro no Pedregulho de dia?
Muito Seguro | Seguro | Mais ou Menos | Pouco seguro | Não me sinto seguro

14. Você se sente seguro no Pedregulho a noite?
Muito Seguro | Seguro | Mais ou Menos | Pouco seguro | Não me sinto seguro

15. Como você se sente com relação ás comunidades vizinhas?

Questionnaire for Pedregulho

1. Gender? _____

2. Age? _____

3. How long have you lived in Pedregulho? _____

4. How many people live in your unit? _____

5. How many hours per week do you do paid work? _____

6. How do you use the public spaces in Pedregulho? _____

7. What do you do in your free time?

8. In order to improve the community of Pedregulho, how many hours a week would you be willing to volunteer for a community project?

9. How often do you have positive interactions with your neighbors?

10. How do you feel about the current number of visitors?

11. If positive, would you be open to community activities or events that would attract more non-residents to Pedregulho?

12. Would you like to see more business started in Pedregulho? If yes, what businesses would you like to see?

13. How safe do you feel during the day in Pedregulho?
Very Safe | Safe | Neutral | Less Safe | Unsafe

14. How safe do you feel during the night in Pedregulho?
Very Safe | Safe | Neutral | Less Safe | Unsafe

15. What is your perception of the surrounding neighborhoods of Pedregulho?

C. Survey Results

Survey #	Gender (Male=0 Female=1)	Age	How many years have you lived in Pedregulho?	How do you use the common spaces of Pedregulho?	How many people live in your unit?	Hours of paid work per week	What do you do in your free time?	Hours willing to volunteer for Pedregulho?
01	1	58	30	Walking / physical activity	1	0 (supported)	Beach, cinema, film, and television	2
02	1	56	56	Yes, I use them	3	40	Stroll and Rest	I would, if I could
03	1	52	52	-	3	Retired	Sleep	Yes
04	1	20	20	-	4	-	Sleep	4
05	1	22	6	-	4	-	Sleep	2
06	0	48	48	Work	2	8	Enjoy with family	3
07	1	40	Approx. 30	My morning walk is always here	2	40 +	Relax, movies, beach, clubs	I still have no time
08	1	52	52	-	3	Retired	-	Yes, if I could
09	1	66	15	No	3	Retired	Go out for lunch	Give my free time, if I quit working
10	0	44	31	-	3	8	Family Outing	Wanted, lacking time
11	-	29	8	Very well	3	12	Course	If you have time
12	1	70	16	No, I stay at home	1	Retired	Homemaker	2
13	1	61	20	Do not use	4	Housewife	Play on the cellphone, listen to TV	8
14	0	68	68	Yes	10	-	Movies	-
15	0	40	30	I don't know where I can go	2	-	Work in an organization of store design	-
16	0	66	11	Leisure walks	1	Retired	Sleep	No
17	1	80	50	Not much, stay at home	4	Retired	Stay at home	No
18	0	51	30	No	5	40	Shop	-
19	0	71	26	Yes	5	Retired	Beer and soccer	Yes
20	-	42	3	Yes	5	60	Barbeque	Yes

Do you have a good relationship with your neighbors?	How do you feel about the number of visitors to Pedregulho?	Would you like events attracting non-Pedregulho people?	Would you like more businesses in Pedregulho? If so, what kind?	How safe do you feel in Pedregulho during the Day? (1: Unsafe to 5: Safe)	During the night? (1: Unsafe to 5: Safe)	How do you feel about the neighboring community?
Good day, good afternoon	Satisfied	Yes	Very much	5	3	Nothing to declare
Yes	Iamgladtoseepeoplevisit the place where I live	Yes	Yes, banks and more supermarkets	3	3	RelationshiptoTuiutiIfeelatease,but theissueofviolenceinthewholecityof Rio is unsafe
Yes	Normal	Yes	Yes, hospital and a recreation area	1	1	-
Yes	Normal	No	Yes,amarket,pharmacy, and hospital	3	3	I still don't know
Yes	Normal	Yes	Yes, a bakery	3	3	Too violent
Great	Proud	Yes	Pharmacy	3	3	-
Yes	Happy	Maybe yes	Yes, a tote bag (fruit and veg shop)	5	4	Pleasure/ comfortable
Yes	Normal	Yes	Hospital, Leisure area	1	1	Bad
I like you, I do not talk to neighbors	I think it's great	Yes	Yes, a kiosk, children's parties, and physical activity for children	4	4	Idonotknowhowtosay.Theydonot care and neither am I going to
Yes	I like it	Yes	Yes, a market	3	3	I do not have anything to complain about
Yes	Good	Yes	Yes, would like more shopping variety and groceries	5	4	Great
Yes, very good	Yes, it is cool	No	Yes, a market	4	2	Mostly good, but some are snobs
Certainly	Satisfied	I have a strange chaman retreat inside	Yes	2	2	It has already been better.
Yes	Good	Yes	Yes	5	5	Safe
Yes	Ifsomeweremorehappyit would be better	Yes	Yes, a green market	5	-	Veryconcernedabouttheeducationof children
Yes,havewonderfulneighbors	Honored	No	Yes, utilities, drug store, bakery	4	4	Unknown
Very good	It is cool	No, I am tired	Grocery	5	4	It's very calm around here and the communitieshaveagoodrelationship
Yes	-	Yes	Grocerystore,pharmacy, bakery	4	4	-
Yes	Comfortable	-	Yes	5	5	Good
Yes	Comfortable	-	Yes	5	5	Yes

D. Interview Records

Interview	Contents	Researchers	Translators	Date
Interview in Hamilton's office	Discussing the layout of the building	All	Luana	March12,2017
Interview with Hamilton and Tuiuti Leader	Discussing the history of Pedregulho, its residents, the social dynamics in play, and the building's connection to the wider city.	All	Haica	March12,2017
Interview with Hamilton and Tuiuti Leader	Discussing the proposals and receiving feedback from Hamilton	All	Rodrigo	March12,2017
Interview with local Jiu Jitsu Trainer	Discussing opportunities for children in the community, his training facility, and exercise amongst residents	Stephanie & Tara	Rodrigo	March14,2017
Interview with Edina, a social services worker in Tuiuti	Discussing health issues and health services available to residents. Mentions of social isolation and lack of healthy food	Tara	Rodrigo	March14,2017
Interview with two female residents	Discussing lack of community input, particularly when it comes to the public spaces	Tara	Luana	March14,2017
Interview with resident	Lacking English translation	Wesley	Haica	March14,2017
Interview with couple	Discussing their experiences living in the building and their grandchildren	Avery	Luana	March14,2017
Interview with religious blogger	Discussing the need for charitable giving in Brazil	Ubaldo, James, Jose, and Hamilton	Rodrigo	March14,2017
Interview with Priest	Discussing his view of challenges in the building	Jose	Rodrigo	March14,2017
Interview with Health Worker	Discussing overall health challenges amongst the Pedregulho population	Tara	Rodrigo	March14,2017
Interview with Social Worker	Discussing accessibility challenges	Wesley	Haica	March14,2017