

Safe Yatra

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Introduction

Over the past 30 years, Bengaluru's population has surged by 8 million to 14 million, straining public services and prompting poor city planning. This growth led to inefficient, vehicle-centric street designs and limited public transit infrastructure, severely impacting walkability. A walkable area is characterized by safely walking to services and amenities within a reasonable distance. [1]

Even with walking constituting only 8% of city trips, 70% of journeys under 2 km are on foot, indicating the high number of walkers and the need for better infrastructure. A 2015 study revealed that only 58% of the surveyed 3,318 km of roads in Bengaluru had footpaths, with just 67% of those being walkable. Encroachments by parking and vendors further reduce accessible footpaths, and a mere 9% of intersections have usable crossings [2], contributing to pedestrians comprising 32% of road fatalities in 2022. [3]

Addressing these issues requires higher-level policy interventions, but government agencies, like the Bruhat Bengaluru Mahanagara Palike (BBMP), Bengaluru Traffic Police (BTP), and Bengaluru Electric Supply Company Unlimited (BESCOM), lack the coordination to support these efforts. There have even been instances of one agency repairing streets, only for another to disrupt them for underground utility access the next day. [4]

While walkability is often considered an infrastructure problem, information on walkable areas and routes is primarily shared through word of mouth and personal experience.

Problem

People in Bengaluru do not have easy access to information about the city's walkability and state of pedestrian infrastructure. While access to this information does not directly change the condition of the roads, there is a connection between having data about pedestrian infrastructure and how urban planners and policymakers make informed infrastructure decisions [5].

The lack of public information about pedestrian infrastructure limits how people can move around the city safely. It also stops people from feeling like it is a problem they have a voice in and that it can only be solved by the government or someone more powerful than themselves. Recreational walkers and commuters our team has spoken with have mentioned that they lack access to conveniently aggregated and easily accessible information about the condition of walkability around the city. This is an important problem because pedestrian infrastructure directly impacts the lives of everyone in Bengaluru.

This is not a problem without hope, and there are many beautiful and pleasant places to walk in Bengaluru. However, there are large sections of Bengaluru without walkable paths and heavy vehicle traffic, making it hard and even dangerous to find and easily move between walkable areas. For the most part, residents of Bengaluru can effectively navigate their wards on foot. However, the intermittent hazards are a larger challenge for more sensitive populations. They often have to stick to the same walking routes or cannot walk because of the irregularity of the infrastructure. Additionally, insufficient pedestrian infrastructure, particularly on streets with high traffic, can become instantly dangerous no matter who the person is. A specific problem that

people, particularly dog walkers, face walking around Bengaluru is altercations with stray dogs. Dog walkers often have to stick to a specific path or avoid certain streets because of hostility between their dogs and stray dogs. Because of this, they must be careful when walking their dogs in new areas.

Changing the state of walkability starts with collecting holistic data on hazards and the quality of pedestrian experiences in Bengaluru. Sensing Local, a local urban planning organization, recently completed walkability audits over 19 wards and 350 km of Bengaluru and has identified walkability as a grand challenge [3]. Walking around Bengaluru can become a dangerous experience for anyone. People must know safe and enjoyable walking areas for leisure or commuting to work or shops.

Our Solution

The SafeYatra app bridges the information gap on walkability in Bengaluru. Our solution addresses the challenge of walkability information dissemination in Bengaluru by introducing an innovative navigation app that provides accurate and detailed information on pedestrian-friendly routes and actively involves the community in contributing high-quality data. We recognize the importance of crowdsourcing relevant walkability data to ensure community involvement; therefore, we created a comprehensive and dynamic platform. SafeYatra provides users with walkability information while collecting valuable data that can be used to inform future pedestrian infrastructure projects. Collecting quality data on walkability is central to improving the city's walking experience. This data plays a valuable role in influencing decision-makers to prioritize pedestrian infrastructure in urban planning budgets by conveying the high impact of current hazards and demonstrating citizens' high demand for a safe and walkable city.

The app's base is a multilayered map where users can access comprehensive information on various aspects that impact the walking experience. Through interviews with pedestrians, we identified the most important features to be live traffic data to measure street activity, hazards such as uneven surfaces or encroachment, location and rating of nearby amenities like toilets or trash bins, green spaces, points of interest and community events, cleanliness as measured by trash spots and yellow zones, and the location of stray dogs to avoid (Refer Appendix 5). All map features are displayed as icons that can be expanded to see the details, including a picture and how many other users have confirmed it. Users can select what they want to see on the map based on their specific needs and preferences. This setting prevents the UI from cluttering and overwhelming the user with information. Interview evidence also indicated that safety is one of the main factors influencing people's, especially women's, willingness to walk in many areas. Therefore, we included special safety components like marking streets with lights and CCTV, an SOS button that calls the police, and a way to share your trip with your emergency contact.

The app encourages community engagement by asking users to upload new items to the map, this fosters a sense of community and shared responsibility [7]. The user uploading process is streamlined by limiting users' data options. This ensures accurate and up-to-date information that can be easily sorted and processed while facilitating participation through convenience, a priority stated by target users. User uploads are verified through two main avenues. First, by other users through a peer verification system where users confirm the location of uploaded items as they approach them. Second, on the back end through satellite imaging and site visits.

A key aspect of SafeYatra, beyond providing information on walkability, is using the data it gathers to generate walking navigation routes. This is done through a navigation system that starts like any other: inputting your desired destination and receiving the fastest route. Through interviews with walkers, we discovered the importance of creating features that resemble and match the convenience of Google Maps while providing more valuable pedestrian information. Therefore, we start with the familiar basics and add additional value while maintaining convenience. We go one step further by providing customizable routes based on user-selected preferences. These routes can cater to any needs and provide users with guidance. Suppose users do not want to input their preferences but seek a safer and more enjoyable route. In that case, they can select the option for an overall best route calculated through the app's reading of nearby positive and negative features.

Another important aspect of the SafeYatra app is the incentive system, which would encourage users to upload data, regulate data quality, and achieve fitness goals. This would be achieved through gamification. A study done in 2017 found that the gamification of a crowdsourced walkability mobile app improved user engagement concerning uploading data and better moderated uploaded data [6]. We would use this strategy to establish a point system where users are rewarded for uploading accurate data and meeting step count objectives.

SafeYatra also includes more features that are reserved for premium members. These features cater more to the needs and wants of recreational walkers and runners, who we see as our main paying audience. The premium subscription would include access to your area's suggested walking/ running routes. These suggestions are based on user-generated data, user recommendations, and feedback. This helps build a community around walking and supports the development of a Bengaluru walking culture outside of parks or lakes. To further support this community building, the subscription would enter users into an online forum with shared suggested walking areas and provide a space for recreational groups to organize.

Our solution aims to transform the walking culture of Bengaluru and, if possible, across other cities that experience similar problems with walkability. We aim to provide individuals with the information, motivation, and autonomy to choose routes that align with their comfort and safety preferences. This fosters a sense of community and communication, creating pathways for dialogue on walkability status, hazards, and social organizing. By generating a comprehensive walkability database, the application becomes a valuable resource for NGOs and government agencies, enabling them to prioritize civil projects effectively. Including features beyond walkability, such as information on nearby amenities, expands the app's utility, contributing to the overall well-being and enjoyment of the city. Our solution is not just an app; it is a catalyst for positive change, empowering individuals, fostering community collaboration, and contributing to creating a safer, more accessible, and culturally vibrant Bengaluru.

Customer and Beneficiary

SafeYatra aims to help all residents of Bengaluru affected by walkability issues, specifically targeting recreational walkers and commuters. There is currently a disconnect in finding safe and enjoyable walking routes that meet specific groups' needs. Recreational walkers seek community,

fresh air, and green spaces, while commuters prioritize safety and timely travel. Other groups like dog walkers, mobility-impaired individuals, and those new to the city also have specific needs ranging from avoiding conflicts with stray dogs to finding safe routes in unfamiliar areas.

These groups in Bengaluru encounter challenges walking due to the lack of accessible information about walkability and the quality of amenities in different areas. The absence of walkable streets in their immediate surroundings drives residents to abandon searching for information on pedestrian-friendly spaces and stick with the places they know. Testimonials from various groups, such as the BMS College of Engineering students and women outside of Jayamahal Park, said that they resort to walking on roads due to the absence of accessible footpaths. A total of 26 interviews, in addition to mentor feedback, indicated that walkability issues are prevalent, emphasizing the need for information on good and bad aspects to improve the walking experience.

Sensing Local and Google confirm that the quantity and quality of walkability data pose challenges for urban planning and pedestrian navigation and would thus benefit from access to the data SafeYatra collects. Government agencies also stand to gain from the crowdsourced walkability data; a quantitative understanding of the walkability conditions of an area will allow urban planners and engineers to identify priority infrastructure upgrades.

The issue's complexity stems from the lack of readily available and easily accessible information. Gathering this data is time-consuming and energy-intensive, deterring individuals from addressing the problem independently. Community organizing capacity is also limited when collecting walkability data, as there is a lack of guidance on collecting information and a convenient platform to do so, even if community members are motivated. Some residents may have identified walkable areas that meet their immediate needs, while others might lack awareness of more convenient options. The difficulty of finding new places further hinders individuals, leading them to persist with less satisfactory locations due to a lack of better-known alternatives.

Business Model

Revenue and expenses were estimated using the following business model to determine the financial viability of the SafeYatra mobile application. The primary revenue generator will come from a “freemium” model, where income is split between advertising revenue from a free-with-advertisements subscription and premium subscription fees that grant access to the premium exclusive features outlined in the solution section. The advertising revenue comprises 16% of total income from banner, interstitial, and map pin advertisements. The remaining 84% of income comes from the 200 rupees per month premium subscription service, with an assumed 5% of users having a premium subscription. Operating expenses are estimated to be ₹1.7 lakh per month, with 80% coming from salaries and overhead. The remaining 20% comes from software services and marketing. Further description of the expense and revenue breakdown is provided in Appendix 7. Comparing this expense to the expected revenue, the break-even point occurs at approximately 15,000 active users, which is a fairly high but reasonably achievable number. To supplement income until financial self-sustainability is achieved, additional revenue

can be generated through grants, philanthropy, and selling walkability data to NGOs and government agencies.

Next Steps

To make the SafeYatra app a reality, a six-month development plan outlines organizational expansion, app development, and data collection. After consulting with a professional mobile application developer, the estimated startup cost of the SafeYatra app is ₹71 lakh (Refer to Appendix 7 for the breakdown of startup cost). This investment would finance the activities outlined in a 6-month development plan. The plan's first month involves expanding the team to capture the missing technical expertise, including an experienced navigational app developer, a GIS specialist with experience working with Mergin Maps or ArcGIS Field Maps, and a UI designer. After an additional two months of development, data collection can occur with a soft app launch and beta test. This would allow for volunteer walkability audits, organized in partnership with urban planning organizations such as Sensing Local, which are looking to collect walkability data. This data would form the foundation of our Bengaluru map going forward. The next three months of development will focus on testing and additional feature rollout, with the 6-month culmination of the plan being the pilot launch of the SafeYatra mobile application.

Following the pilot's success, future efforts will focus on growing the user base in Bengaluru and additional cities, which will require increased marketing and hiring translators for language support. Achieving self-sustainability will allow for the development of additional features and programs. The application could be expanded to provide information on how individuals can get involved in committee meetings or when ward meetings are to facilitate more civic engagement around improving walkability around Bengaluru. Additional technical features, such as machine learning and artificial intelligence, could be added to streamline the user-generated content process to minimize the human input needed to generate data. This could include training AI to detect hazards from pictures, allowing users to take a photo of a given hazard simply and have it categorized and uploaded to the database without additional user input.

Impact Statement

The initiative to enhance walkability in Bengaluru has a profound impact, primarily by fostering increased civic engagement in infrastructure projects. The provision of detailed walkability data empowers citizens to participate in urban planning discussions actively, enabling them to advocate for pedestrian-friendly spaces and contribute to shaping their immediate surroundings. Beyond addressing the information gap, our initiative instigates a cultural shift by promoting a walking culture in the city, encouraging informed daily route decisions, and fostering a sense of responsibility for public spaces. This shift towards prioritizing walking contributes to healthier lifestyles and strengthens the community's connection to its environment. Walking benefits physical and mental health and can reduce vehicle emissions and roadside air pollution if more people walk instead of driving. This could, in turn, also reduce the number of motor vehicles on the road, which alleviates traffic and improves pedestrian safety.

Additionally, the focus on walkability positively transforms urban spaces, making them more inclusive and accessible. Residents become active stakeholders in developing walkable neighborhoods, leading to a collaborative effort to improve the city's overall livability. Urban planners and government agencies can use the data collected by SafeYatra to help make more informed infrastructure and planning decisions. This initiative results in more civic engagement and investment in the long-term sustainability and quality of life in Bengaluru.

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Appendix 1: 16 Questions

A. PROBLEM DEFINITION

1. What problem are you working on?
 - Lack of public access to walkability data because it either does not exist or is inaccessible to the public.
 - Lack of information on walking areas
2. What evidence do you have that this is a problem?
 - Sensing Local identifies walkability as a grand challenge of Bengaluru
 - Interviewees identified a lack of information on pedestrian safety information
 - Studies showing the link between pedestrian infrastructure data and informed infrastructure decisions [5]
3. Who faces this problem?
 - Walking commuters, recreational walkers/runners, residents, tourists, dog walkers, mobility-impaired persons, and people with strollers (young children).
4. Why does this problem exist?
 - The knowledge of pedestrian infrastructure is insufficient, but the perception is that nothing might change without government intervention
 - Walkability data collection is labor-intensive and expensive without volunteers.

B. CUSTOMER

5. Who is your customer/beneficiary?

Customer	Beneficiary
<ul style="list-style-type: none"> • Walking commuters • Recreational runners/walkers • Dog walkers • Mobility impaired persons • Tourist / Newcomers 	<ul style="list-style-type: none"> • Government • Urban Planning Organizations

6. Why do they face the problem?
 - Walkability data has not been adequately recorded and is inaccessible
 - Collecting walkability data is challenging and has not been prioritized
 - A lack of awareness of the impact of having inadequate pedestrian infrastructure
7. What evidence do you have that they consider this issue a problem?
 - A total of 26 interviews and mentor feedback indicated that walkability problems exist and that information on where good/bad aspects are would be helpful.
 - Sensing Local and Google confirm that more quality and quantity of walkability data is a problem for urban planning and navigation.
8. Why haven't they solved this problem themselves?
 - Gathering information on walkability is 1) time-consuming, 2) energy-intensive.
 - Lack of community organizing capacity and interest in generating walkability data

C. SOLUTION

9. What is your solution?

- A crowdsourced, comprehensive, community-centric walkability information generation and sharing mobile application - SafeYatra
- See the Prototype Description Sheet (Appendix #5) for a description of features.

10. How will the solution help the problem? (Social value proposition/theory of change)

- Provides individuals with data-driven information, motivation, and autonomy to walk where they feel safe and comfortable
- Provide government agencies and community groups with quantitative walkability data to make informed decisions regarding hazards.
- Engaging communities through social features and sharing information on local walkability concerns

11. What evidence do you have that the solution will help the problem?

- Some interviewees indicated that it would be helpful if the app were just as convenient for navigation as Google Maps but provided more information on walkability aspects (particularly safety).
- Feedback on prototypes - most interviewees indicated that information on pedestrian safety and walkability hazards would help make informed walking decisions
- NGOs/Mentors - said that a platform that creates and shares walkability data provides essential data for users and urban planners.
- Google Maps - if we can generate walkability data of sufficient quality and quantity, this data would be beneficial to both everyday users and multi-modal navigation services
- Studies indicate that gamification of walkability data collection improves user engagement and user-organized content moderation [6] and that it increases community involvement in walkability-minded organizations [7]

D. MAKE IT REAL

12. Do you have primary data?

- Nine interviews of recreational walkers, ten interviews of commuters, 7 Prototype feedback interviews, lake visits for Sensing Local, and general experiences living in Bengaluru, peer and mentor feedback

13. Have you received feedback on a prototype/MVP?

- Mentor feedback helped to reduce the scope of the problem
- 19 Interviews on the idea - helped to identify the most important features
- 7 “physical” prototype interviews – helped validate our idea and make adjustments to improve clarity

14. Do you have a clearly articulated plan for next steps?

- 6-Month Plan: expand the team, develop the app, collect data and beta test, and then roll out final features
- Invest in marketing to grow the user base.
- Once grown (~15,000 users; estimated break-even point): expand features and languages, build partnerships with NGOs and government agencies, and integrate machine learning.

- 15.** Do you have the right partners+team, or have you identified who you would like to work with / bring into your team?
- Hires: Full-time developer with experience working on navigational apps, mainly working with Google Maps API, GIS specialist with experience working with Mergin Maps / QGIS or ArcGIS Field Maps, and UI designer
 - Translators for language support
 - Partnering with urban planning groups such as Sensing Local will provide local connections, walkability project experience, and walkability data.
- 16.** How do you sustain yourself financially? (Financial value proposition)
- 15,000 users will be reached within 36 months, our break-even point. 5% are expected to be premium users.
 - Selling walkability data to government and NGOs

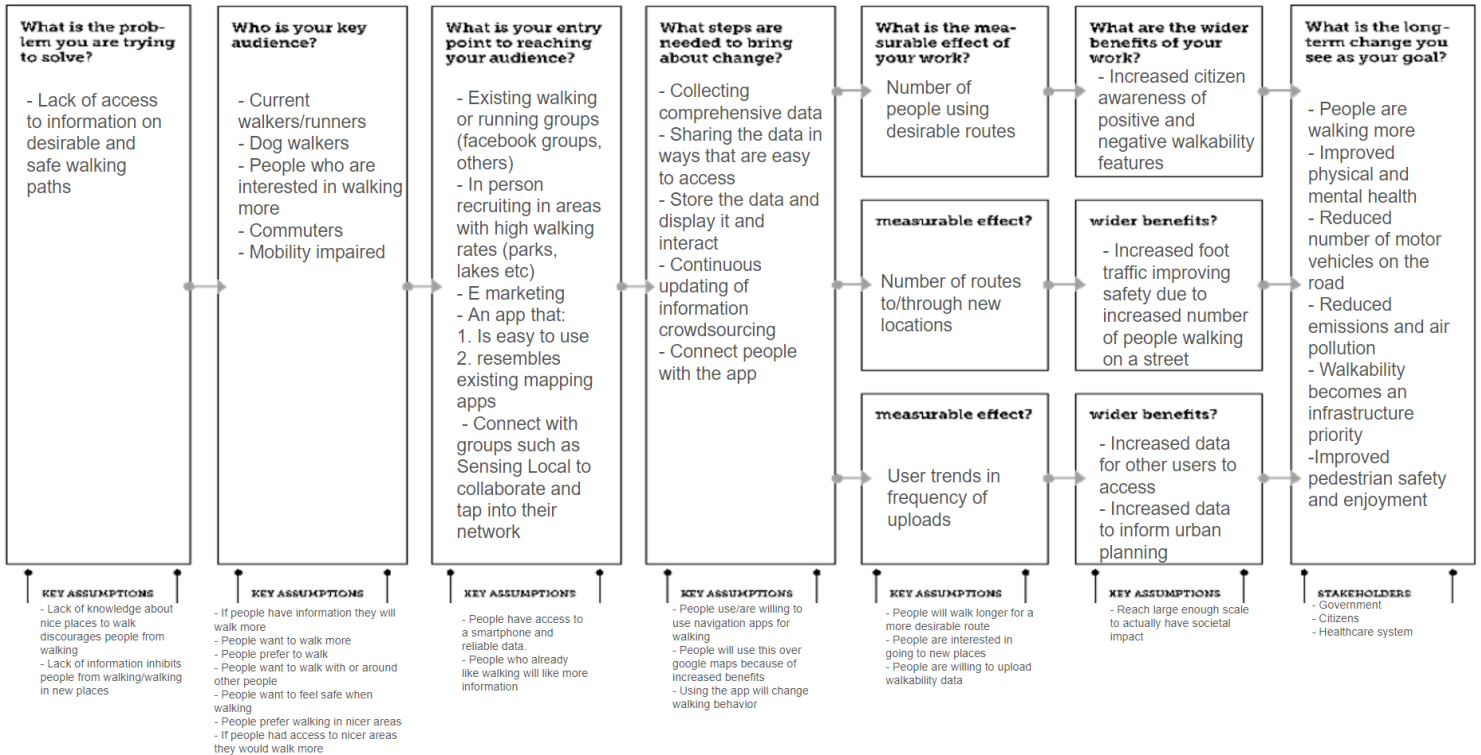
Refer to the linked [Long 16 Questions](#) document for more comprehensive answers.

Appendix 2: Theory of Change



I want to clarify my priorities
by defining my goals and the path to reach them

THEORY OF CHANGE



Appendix 3: Description of RCT

A six-month randomized control trial involving participants of varying ages and abilities could prove that the application's implementation increased the frequency and duration of people's walks.

Participants would be gathered from three different apartment complexes within the same ward catering to similar moderate income levels, with the control and both intervention groups tied to their respective apartments. Each group will consist of 100 individuals from different households. Each group will be stratified into three age groups: a) 18-30, b) 31 - 45, and c) 45+. Approximately 33 individuals will be randomly selected from each age group to create a stratified random sample set.

The first intervention group would receive the app's free version, and the second intervention group would receive both the basic and paid services, whereas the control would not receive the app. Those who receive the app will receive training on how to use it. It is assumed that each apartment complex would have a similarly representative set of users, ranging in age and physical ability.

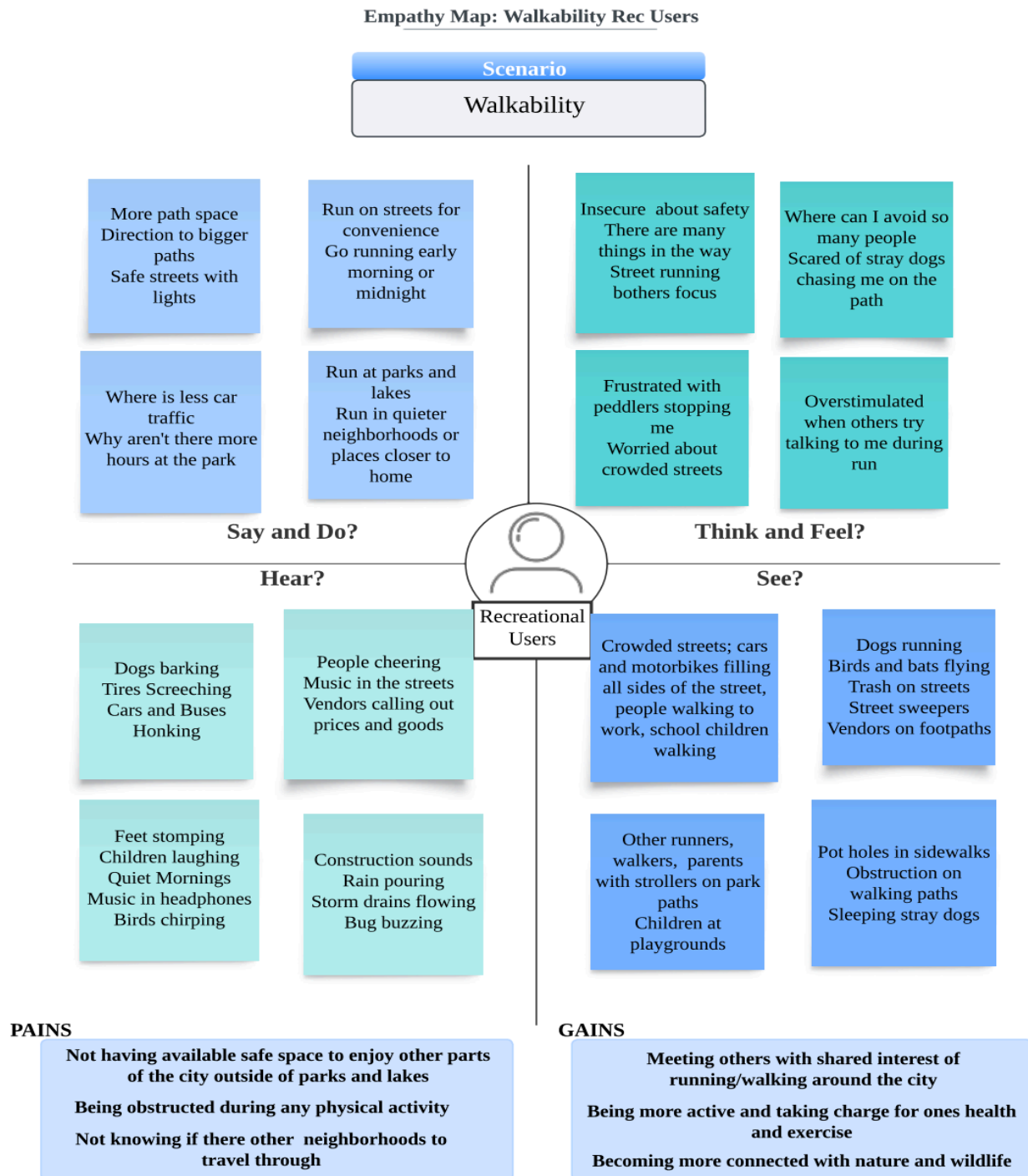
The metric by which change would be measured is the number of routes to and through new locations compared to the baseline. New locations are defined by areas on a walking path that a study participant had yet to walk to or through during baseline data collection. This data would be acquired by location tracking data stored on mobile phones. Baseline data will be collected during the first two months of the study. If study participants in the intervention group travel to a statistically more significant number of "new locations" compared to the control group, then the impact of the intervention will be demonstrated.

The study would cover the drier months from November to May to mitigate weather obstacles that would otherwise dissuade users from walking. If the 6-month study is infeasible, a 3-month study including the months of November through February, could also be adequate.

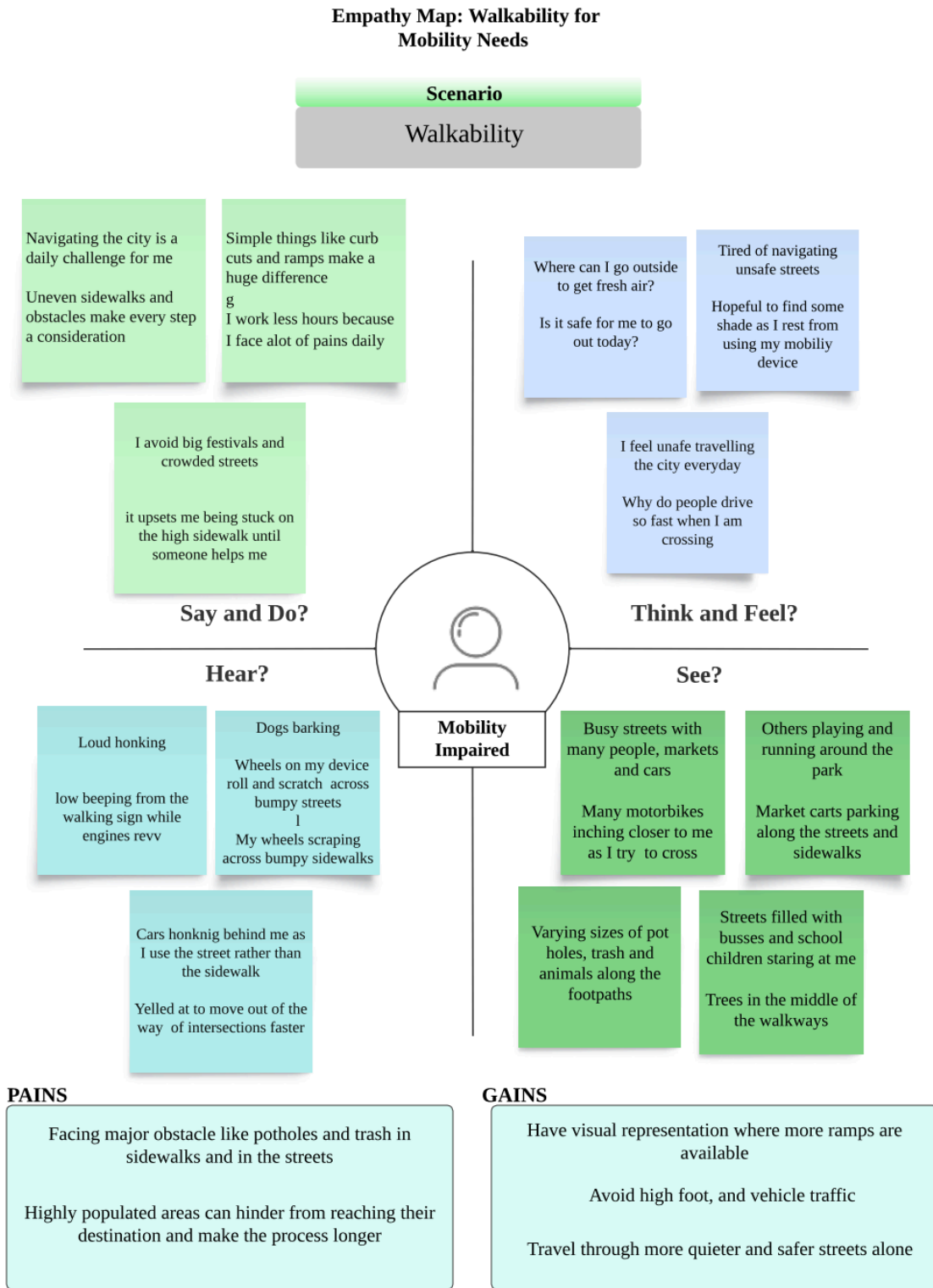
Caveats and considerations:

- Cognitive bias in the control group could develop, skewing results
 - By participating in the study, control participants could become more aware of their walking habits, such that they could change their walking behavior.
- Assumption of representative and non-interacting participants may be invalid if study groups are from the same ward. If there are relationships between intervention and control group participants, members of the intervention group could provide members of the control group information on new walking paths, thus impacting the results.
- Participants will have to give consent to view their location data.

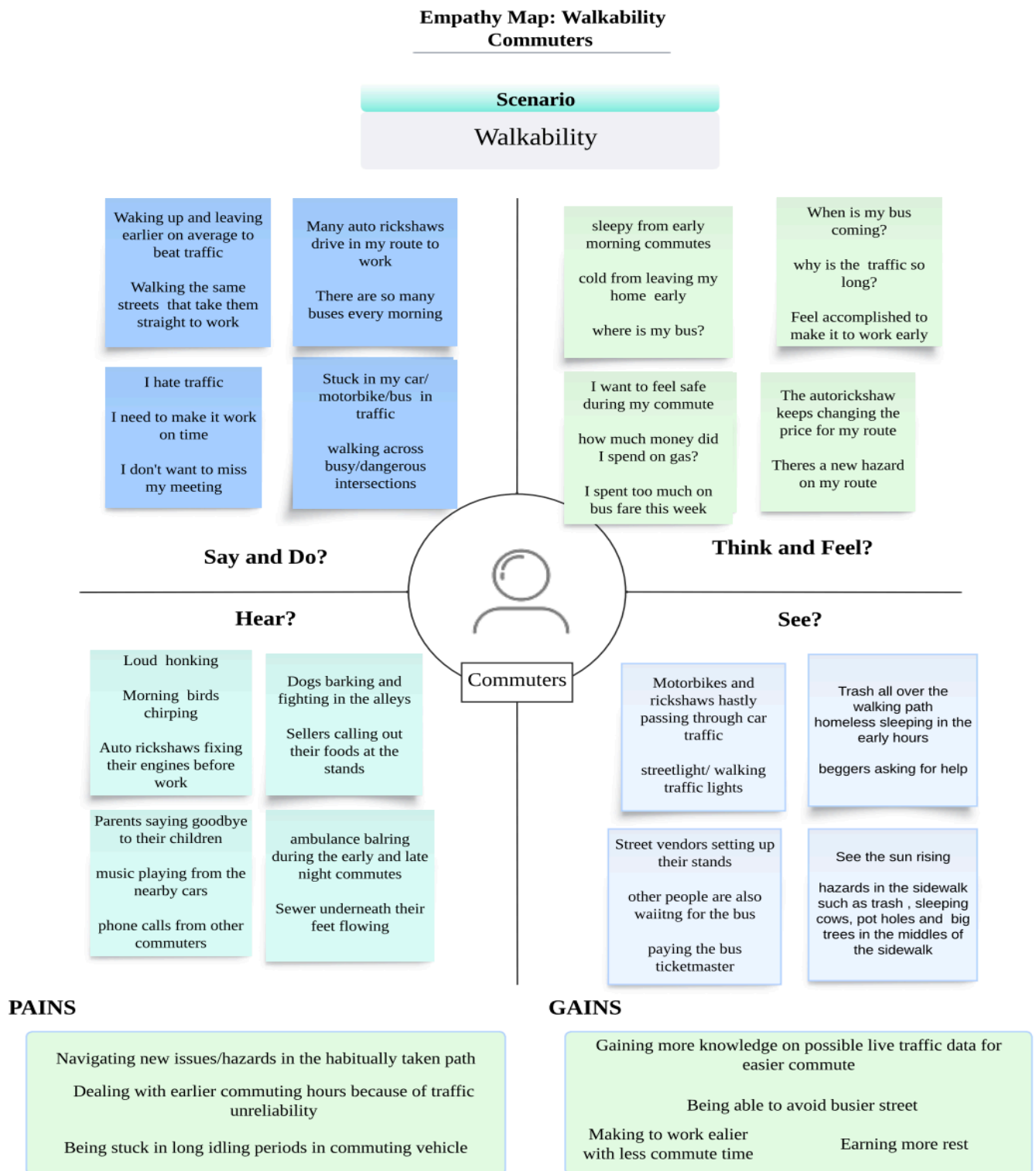
Appendix 4a: Empathy Map of Recreational Users



Appendix 4b: Empathy Map for Mobility-Impaired Individuals

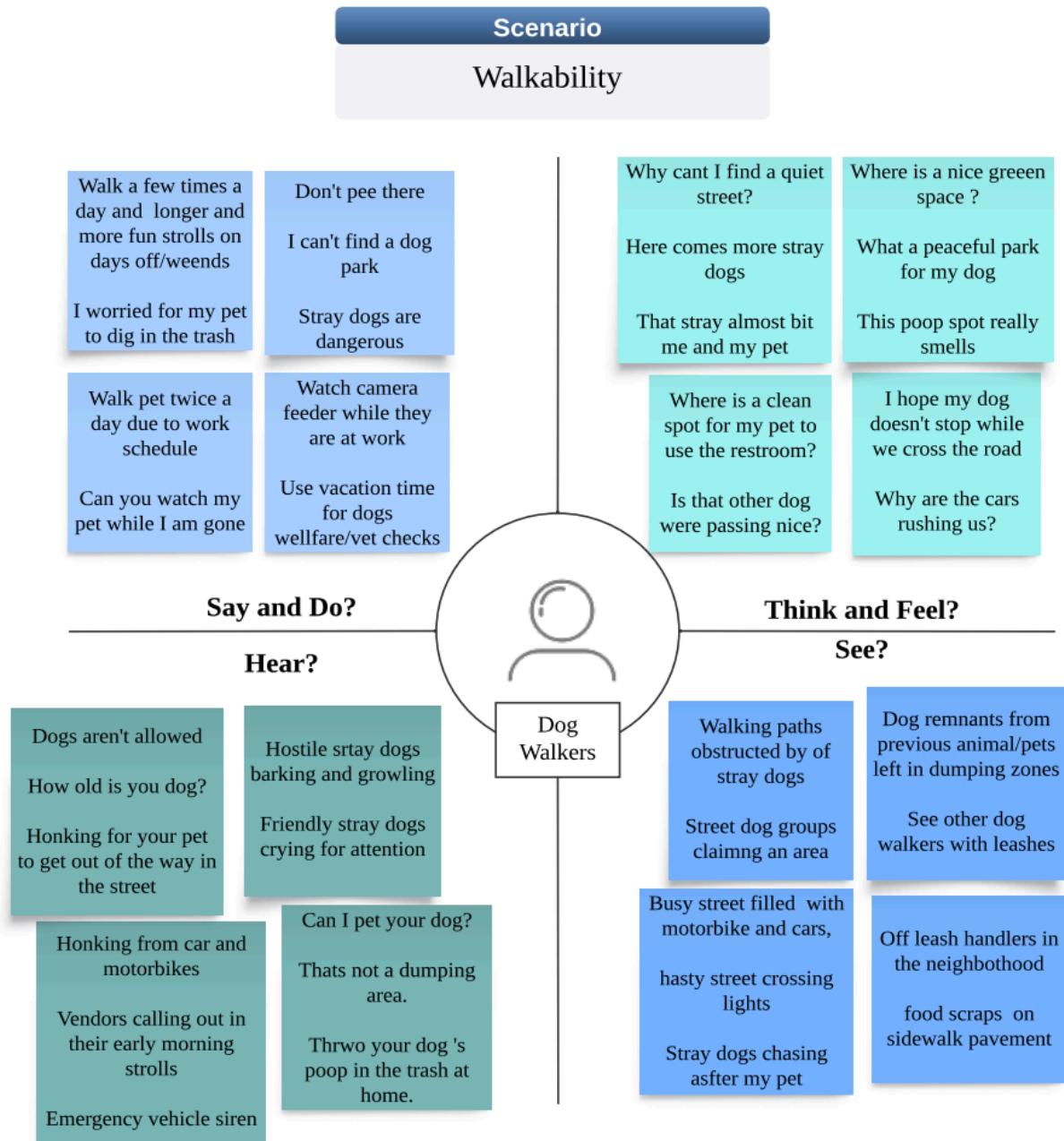


Appendix 4c: Empathy Map for Commuters



Appendix 4d: Empathy Map for Dog Walkers

Empathy map: Walkability of Dog Walkers



PAINS

Dealing with the unkown of traffic and stray dogs affecting their walk

Having long working hours which makes their afternoon walks short

Walking farther distances or away from home to have a safe and comfortable stroll with their pet

GAINS

Having access to other dog walking communities

Seeing where common issues are dealt with in neighborhood ran by stray dog groups

Avoid traffic issues and find more green spaces , dog parks or quieter streets to enjoy ones dog walk

Appendix 5a: Prototype Description

Prototype

Video Demonstration

Detailed description

Features

- Multilayered map
 - Users can select and deselect features to be displayed on the map
 - Traffic
 - Hazards: Uneven surfaces, Encroachment, Gaps in footpaths, Potholes, Low wires
 - Amenities: Toilets, Trashcan, Handwash, Water, Benches
 - Green spaces: Trees, Open air gyms, Playgrounds
 - Points of Interest: Parks, Lakes, Landmarks
 - Cleanliness: Trash, Sewage, Yellow zones, Bad odor
 - Street Vendors
 - Stray Dogs
 - Safety: Lights, Dark zones, CCTV
- User uploads
 - View other users' uploads by clicking on the icons on the map to expand and view the upload details and how many users have thumbs up or downvoted it.
 - Users select the category the upload falls under, Traffic, Hazards, Amenities, Green spaces, POI, Cleanliness, Street Vendors, Stray Dogs Safety, Other
 - Users select an item in the category, give a rating and upload a geotagged photo.
- Upload verification
 - Upload are verified by other users through thumbs up or down votes
 - Uploads are verified by app monitors through satellite data or formal audits
- Navigation
 - Users enter their desired destination and are given the fastest and best route
 - Users can create custom routes by inputting their preferences
 - Users fill out the review survey at the end of trips
- Suggested walking running paths
 - Premium users can view running paths near them and in other areas
- Chat
 - Users can join recreation groups and chat with other users they friends.

Incentives

- Points systems on participation and fitness goals

In app finances

- Ads (Banners, pop ups, and integrated into the map) and Premium subscriptions

Appendix 5b: Prototype Feedback

To receive feedback for our initial idea, we conducted interviews to gauge what would be important to users. We conducted interviews in Jayamahar Park in the evening, Lal Bagh Park in the morning, and Malleshwar in the late afternoon. Based on the feedback we received, we adjusted the app's features to have more information on cleanliness, stray dogs, and safety. An important factor where most recreational walkers we talked to chose to walk was how clean the area was. Dog owners also noted that stray dog packs affected where they can walk and that knowing the locations of where other users have seen dogs would be useful information. Safety was another important feature, particularly for the women we talked to. They mentioned things like street lights, CCTV, and other walkers as important factors in where they chose to walk. Another commonality between our interviews was that people thought the app's additional features would only be worth using if the interface was as convenient as Google Maps.

Feedback from mentors included Anjune saying that she would like to use a service like this so she could walk more outside of her colony and Ashutosh affirming our identification of the problem and suggesting more features like an SOS button as a safety feature and including stray dogs. We also received feedback that we should work to control the project's scope to focus on a more specific problem. From an interview with an employee at Google Maps, Anushree, we got feedback on ensuring cleaner and more usable data by limiting user input options. She also mentioned limiting the information on the display to prevent UI cluttering and the survey at the end of trips to ensure some data collection from everyone. This was an important aspect that we added.

For the SafeYatra prototype, we created a series of images to depict the app's different pages. From this platform, we received feedback from the mentors, who said it looked clean and seemed easy to use. They did note that the features should be limited and that the multilayer map may get too cluttered with uploads. Our add and subtraction option on what shows up on the map helps mitigate cluttering but we do need to consider a post-removal system in the future. We also received feedback from our peers on the prototype to see how usable it would be for them and whether they thought it would be helpful information as a foreigner in an unfamiliar city. They thought it looked good, would be helpful, and suggested adding an overall best route for users who didn't always want to put in their customized preferences in navigation.

To get feedback from our target customers we needed to make an interactive prototype to make demonstrating the app quick and easy. Through Marvel, an app where you can link areas of one image to another, we created an interactive system that mimics how a fully developed app would respond to selecting buttons. We went to church street to receive feedback from people walking in urban areas and Cubbon Park to interview recreational walkers. Both groups had very similar experiences and feedback. All seven people/ groups we interviewed said it seemed easy to use and visually pleasing. A common theme was that the information included is helpful but would be most useful when walking in an unfamiliar area or going on a longer walk where going out of your way for a nicer route feels more worth it. This ties into the feedback that we heard from two people that most people already know where they are going when they are walking because they stay in their area and only walk short distances. 2 people explicitly mentioned that

this information is not accessible anywhere else. Many people said that they use Google Maps frequently with more young people also using it for walking trips. This helps us see that they are familiar with using mapping apps for walking trips. Some people talked about not being very interested or motivated to upload new points with the two reasons being people are used to hazards and would not think to take a photo and upload it or that it would require free time for people to stop and participate in the app. Lastly we had a man in a group talk to us about Bengaluru's walking culture and that very few people walk more than 1-2 k and would not find use for this. Instead he thought it would be more useful when using the information in multimodal trips to areas you are less familiar with.

This feedback was helpful and we expected to receive much of the feedback we got. We still believe that in the hands of the right users the app would be very helpful and successful. We know that Bengaluru doesn't have a strong urban walking culture but there is a large population of people who go to parks or lakes and walk every morning for fresh air and exercise. They chose the park because it's safe, green, and enjoyable. This leads us to the conclusion that there are many people who care about this information and would benefit from having it all compiled in one easy-to-use app.

Appendix 6: Business Model Canvas

Business Model Canvas: Sensing Local | March, 2024

<p><i>Key Partners</i></p> <ul style="list-style-type: none"> Partnerships with urban planning organizations, such as Sensing Local Google Maps for transit data Community based <u>organization's</u> who would like to collect data on their community 	<p><i>Key Activities</i></p> <ul style="list-style-type: none"> Storing Data Data Collection Data Sorting Data Verification Chat Content Moderation Maintenance Hosting Advertisements Marketing 	<p><i>Value Proposition</i></p> <ul style="list-style-type: none"> Providing information on safe and desirable walking paths Creating a platform to upload and share walkability data Making walkability data accessible Providing urban planners and government agencies <u>walkability data in order to inform infrastructure projects</u> 	<p><i>Customer Relationships</i></p> <ul style="list-style-type: none"> Regular maintenance and updates Content moderation and verification 	<p><i>Customer Segments</i></p> <ul style="list-style-type: none"> Commuters Recreational Walkers and Runners Dog Walkers Mobility Impaired Peoples Residents of Bangalore Those who wish to walk more
<p><i>Key Resources</i></p> <ul style="list-style-type: none"> Crowdsourced Data Google Data Server Space 	<p><i>Channels</i></p> <ul style="list-style-type: none"> Word of mouth Targeted in-person recruiting <u>E marketing</u> NGOs Recreational Social Groups 			
<p><i>Cost Structure</i></p> <ul style="list-style-type: none"> Salaries and Overhead Office space Marketing Software (GIS, App Development) Hardware (Computers, Servers) 		<p><i>Revenue Streams</i></p> <ul style="list-style-type: none"> In-App Advertising Premium Subscription 		

Appendix 7: Finance Sheet

Refer to the following Google Sheets [link](#) for information on the financial breakdown

Appendix 8: Minimum Viable Product

Due to the high upfront investment cost of developing the app, an alternative business model has been devised with the consideration of making the largest impact possible with the smallest financial cost. The minimum viable product (MVP) consists of physical or digital maps that include drawn-on product features (such as cleanliness, infrastructure quality, etc...) that could be packaged on a ward-by-ward basis. The data reflected in the maps would be collected entirely by the team and volunteers and would include features on both the basic and premium versions of the product. The main component of the MVP would be the recommended walking paths, which are more easily translated into static format. Maps will be bundled together based on ward and sold as a bundle. Customers would find our product in physical form at stands in high-traffic areas such as parks or lakes or on a website where physical and digital maps can be purchased.