Project Urban Living Lab

IMAGINE panaji
SMART CITY DEVELOPMENT LTD.

INCLUSIVE STREETS

Preliminary Report

May 2021

PANAJI

Green Strategic Partnership
India-Denmark

ROYAL DANISH EMBASSY
New Delhi

MINISTRY OF FOREIGN AFFAIRS
OF DENMARK

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PULL is a sandbox to test new approaches and solutions for sustainable and liveable cities in collaboration with residents, policymakers, public bodies, businesses and academia. It has been set up under a Memorandum of Understanding (MoU) between the Royal Danish Embassy in India (RDE) and Imagine Panaji Smart City Development Limited (IPSCDL), drawing on an earlier MoU on Sustainable and Smart Urban Development signed between the governments of Denmark and India in April 2018. It is being implemented by Oxford Policy Management, Transitions Research, and TERI.

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Executive Summary

Women's access to the city is limited by a number of factors, mobility being one of them. Across urban India, women are more likely to travel on foot or by public transport[1]. However, disinvestment in these infrastructures and the prioritisation of motorised vehicles has left many cities with poor pedestrian and transit facilities. This is not only unsustainable but inequitable as it disproportionately impacts how women navigate the city.

This legacy of designing cities for motorised, private vehicles plagues Panaji as well: only 30% of city streets have adequate footpaths[2]. Walking infrastructure is mostly concentrated in the City Centre and Northern parts of the city, so women from other communities must risk navigating dark streets without foot paths to commute. Panaji has an opportunity to address these gaps and improve walking infrastructure throughout the city.

Inclusive Streets is a comprehensive and gendered public space improvement framework for the City of Panaji to address the following questions:

1. What are the challenges that girls and women in Panaji face while walking in the city?

2. What can be done to mitigate these challenges and make the city more inclusive for women?

This preliminary report identifies the main factors that impact the female pedestrian experience in the city and provides pan-city recommendations that the can be implemented to make Panaji a more inclusive city.

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City Corporation of Panaji (CCP)
Imagine Panaji Smart City Development Limited (IPSCDL)
Non-Governmental Organisation (NGO)
Project Urban Living Lab (PULL)
Public Works Department (PWD)
Resident Welfare Associations (RWAs)
Royal Danish Embassy (RDE)
Urban Local Body (ULB)
Water, Sanitation and Hygiene (WASH)

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Walks with Women on 18th June Road on March 7th, 2021

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A quiet street in Fountainhaas, Panaji


AGNELO D'COSTA
ADVOCATE & NOTARY
HAPPY JOURNEY TRAVELS
XEROX
DE LUXE LODGE

BACKGROUND

Setting the Context

Mobility in Indian cities has been designed to prioritise the needs of people using motorised vehicles. In Panaji, this legacy is manifested in neighborhoods without foot paths, parking on spaces allocated for pedestrians and the sprawling expansion of the city connected by motorways and not walkways. These conditions create unpleasant and unsafe experiences for people who walk, especially women. In urban areas in the North Goa district, women are more likely to walk while commuting than men[3] and are thus disproportionately impacted by inadequate pedestrian facilities throughout the city.

The recent COVID-19 crisis has highlighted the importance of walkability in Indian cities: walking is not only healthier but also more sustainable and conducive to distancing. By promoting walkability, the city of Panaji can also address equity issues such as improving access to the city for traditionally marginalised communities like women and low-income households.

30%

of Panaji's streets have foot paths according to SLB Report prepared in 2015[4]

52%

of women walk or use public transportation in urban areas in North Goa versus only 31% of men.

Objective

This report aims to identify **pathways to improve walking conditions that enable better access, especially for women**, to the city of Panaji. This preliminary report focuses on pan-city recommendations and neighborhood specific interventions will be identified subsequently.

Principles of Walkable Streets

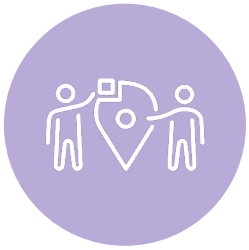
Indian and international literature about gender, mobility and access to the city have highlighted various factors that promote walkability in cities[6]. This report focuses on these principles of walkable streets as goals to work towards to promote gender equitable walkability in Panaji:

TRAVERSABLE STREETS:

These are streets that enable pedestrian movement without any major impediment. This principle focuses on the physical conditions of streets and walk paths.

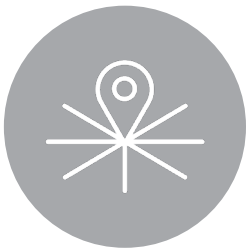
SAFE STREETS:

These are streets where female pedestrians can walk without fear of crime or physical harm. This principle focuses on both physical and social conditions that mitigate crime and accidents.



SOCIABLE STREETS:

Borrowing from William Whyte's theory of triangulation[5], these are streets that spark interaction between people. This principle focuses on stimuli that facilitate interactions, ranging from people waiting together at a bus stop to stopping to have a chai or buy vegetables while walking home.



CONNECTED STREETS:

These are streets that enable pedestrians to reach their destinations easily. This principle focuses on spatial planning that encourages short distances and travel times like access to public transportation and small block sizes. This report does not directly address this principle as PULL engages with spatial planning and public transportation in different workstreams.

Methodology

Left

Figure 3:
Conducting Walks with Women on 18th June Road on Sunday, March 7th, 2021

Right

Map 1:
The various neighbourhoods in which perception walks were held in March with women in Panaji

PULL adopted a robust and comprehensive approach to understand the challenges that female pedestrians in the city face while walking. First, a series of perception walks were held with 27 women to understand how the built environment shapes female experiences while walking through the city. Second, a Safety Audit of the city was conducted with the social enterprise Safetipin to understand how different parameters contribute to how safe the city of Panaji is for women.

Walking with Women

Walks with Women were conducted in Panaji on March 7th and 8th, 2021. The facilitators walked alongside girls and women during their commutes and for leisure to understand, in real-time, which factors impacted the way in which they perceived their surroundings. Interviews were also conducted with some women in public spaces to understand access to public spaces by foot. Women from diverse age groups and socio-economic backgrounds were selected as participants to ensure holistic results.

25+

girls and women participated in walks & interviews during the two days of Walking with Women across the city in March 2021

Walks were conducted in the neighborhoods of Camrabhat, Tonca, Altinho and the areas around the city centre and Panjim Market

Safetipin Audit

Panaji's Safety Audit was conducted using the Safetipin Nite app. The app captured nighttime photos of city streets between 7pm and 9pm on weekdays from 20 January, 2021 to 17 February, 2021. Each photo was then scored on eight parameters by analysts (see pg 13). Some parameters, such as walk-path, were also evaluated using day time photographs.

Note: Certain parameters might not be fully reflective of safety in the city due to a reduced number of people in public places due to Covid-19 restrictions.

594

locations audited within the City Corporation of Panaji limit

Left

Map 2:
Locations that were surveyed for the Safeitpin audit in the CCP boundary

Right

Description of the eight parameters used during the Safety Audit

LIGHTING measures the amount of brightness or illumination at a place and ranges from Dark to Bright. A place can be lit with street lighting or from other sources.

WALK-PATH indicates whether a person can comfortably walk at a place. This could refer to the quality of a pavement or space along a road

OPENNESS refers to whether a person has a good line of sight in all directions

SECURITY refers to visible security offered either by the police or private security guards (for example along ATM/Bank)

PEOPLE indicates the number of people around. This increases as a consequence of usage opportunities

GENDER USAGE is about diversity i.e. the percentage of women and children amongst the crowd. This increases as a consequence of safety perception

VISIBILITY refers to how visible one is to others. It is based on the principle of 'eyes on the street'. This comprises of windows-doors of shops, houses along with the street vendors and hawkers

PUBLIC TRANSPORT refers to the ease of accessing any mode of public transport i.e. metro/bus/auto/taxi etc. and is measured in terms of the distance to the nearest mode

Figure 4:
Street vendor walking in the shade with her produce to sell

RESULTS & ANALYSIS

Panaji Safety Score

As per the findings of the Safety Audit, the city of Panaji has an above average safety score of 3.41 out of 5[1]. The safety score is an indicator that reflects safety at a specific location. This score is a number between zero and five, with scores of zero to one being poor, one to two being below average, two to three being average, three to four being above average and four to five being good. The score is calculated as a function of the eight parameters evaluated as part of the Audit (see pg 13). Certain parameters, like lighting, gender usage and visibility are more important in the calculation of the safety score.

As seen in Map 3, each one of the locations audited has a corresponding safety score. Across Panaji, 61% of locations have a safety score of above average or good (shown as points in green and blue in the map). These are heavily concentrated in the areas of City Centre, Fountainhaas, MG Road-St Inez Road and Marine Drive.

37% of locations have a safety score of average of below average (shown as points in yellow and orange in the map). These are more evenly distributed across the city but there are clusters of these scores in some neighborhoods like Althino, Campal, Donna Paula and Caranzalem.

Only 2% of Panaji has a poor safety score (shown as points in red on the map) and these are predominantly concentrated along the Pontes des Linhares Causeway.

3.41 / 5

average safety score across the city

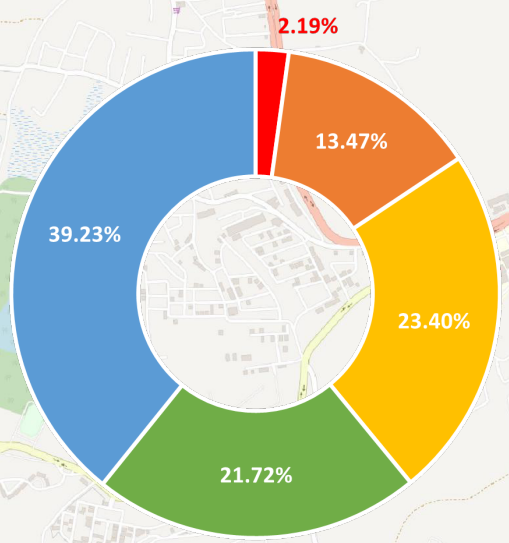
Right

Map 3:
Safety scores across the city

Figure 5:
Pie-chart showing the distribution of safety scores

1 Panaji scores well compared to other Indian cities which have conducted a Safety Audit, such as Bhopal (2.9/5), Delhi (2.5/5), Bangalore (3.2/5) and Karnal (3.1/5)

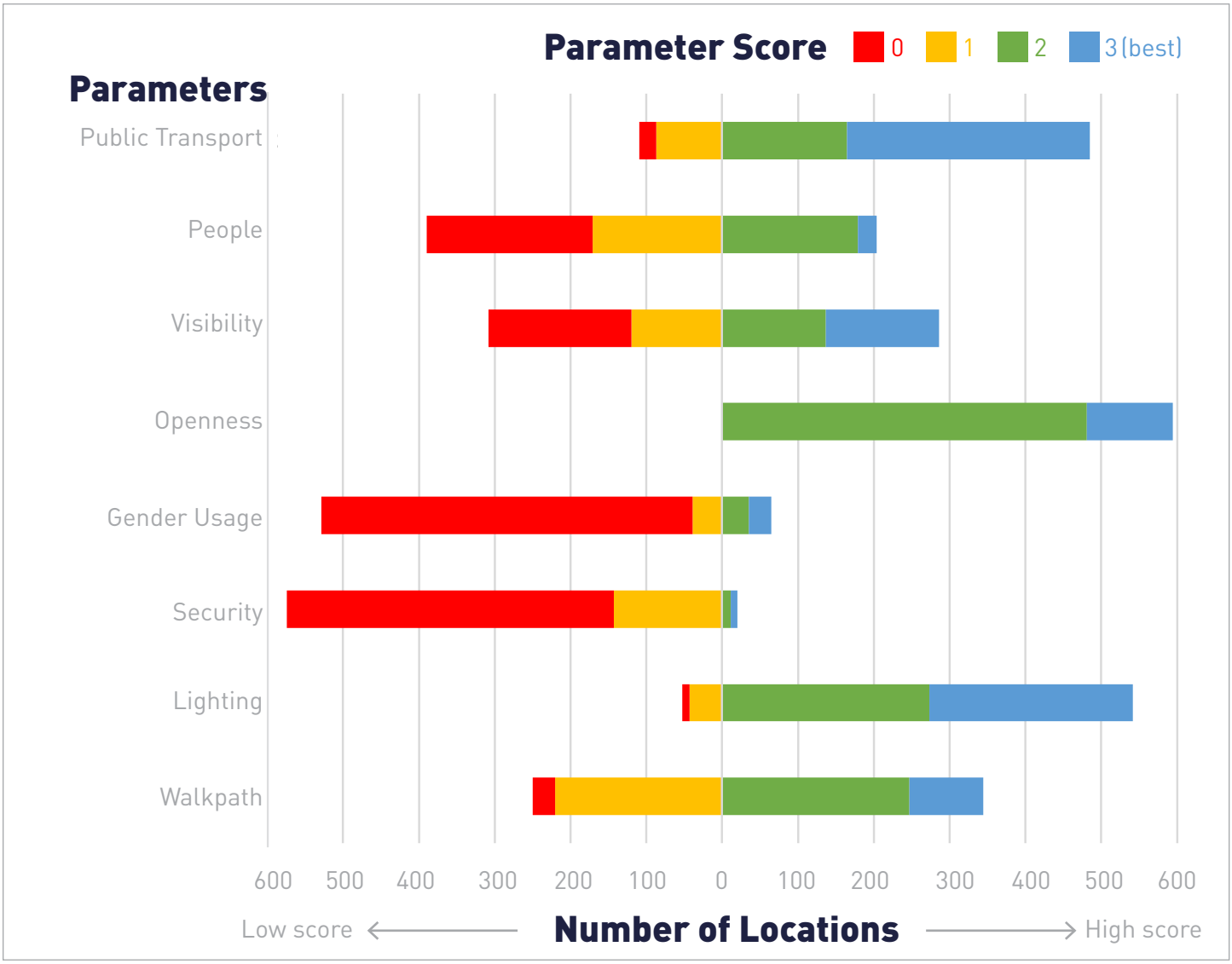
SAFETIPIN
Supporting Safer Cities



Safety Score

- Poor
- Below Average
- Average
- Above Average
- Good

Parameter Analysis



The eight safety parameters have been scored on a scale of zero to three, where zero is the lowest score and three is the best score as per the metrics of PULL's data partner Safetipin. As seen in Figure 6 (above), the distribution of scores indicates that public transport, openness and lighting are good in Panaji. On the other hand security, gender usage and people have low scores. Parameters like visibility and walk path are average in the audited streets.

Left
Figure 6:` Distribution of parameter scores

These parameters correspond to the four principles of walkable streets (see pg 9).

First, the principle of Traversable Streets, which is about the physical conditions of the street that enable pedestrians to walk easily, is correlated to the safety parameter: walk path. This describes the conditions of walk paths in the city, including both elevated and on-grade walk paths.

Second, the principle of Safe Streets focuses on creating conditions that reduce the risk of crime and/or physical harm. This refers to both actual crimes and accidents as well as the perception of them. The safety parameters of lighting, security, gender usage and openness all correspond to this principle. The parameter of lighting describes how well lit an area is. Studies have shown that well lit streets and public spaces correspond to an improvement in perceived safety[7]. They also can help reduce accidents if they adequately illuminate pedestrian right of ways (including crossings)[8]. The parameter security relates to the number of police or private security forces that are present in a given location. This is important as it ensures female pedestrians that there is security nearby who can respond if something were to happen. The parameter gender usage is indicative of the diversity of other people on the street: is there a mix of men and women on the street? This is important as it strongly contributes to a woman's sense of perceived safety[9]. Finally, the parameter openness indicates the ability to view what's around you in all directions. This is important for safe streets as it reduces the fear of crime in public space.

Parameter Analysis

Third, the principle of Sociable Streets addresses community interactions to create a welcoming atmosphere on a street. The safety parameters of visibility and people correspond with this principle. Visibility draws on Jane Jacob's theory of Eyes on the Street[10], which refers to the informal networks of surveillance by members of the community, thus linking to the principle of sociable streets. The parameter people also corresponds to this principle as it refers to the number of people present in a given location, which is intrinsic to facilitating interactions.

Some safety parameters may correspond to multiple principles. For example, visibility also corresponds to Safe Streets as the informal surveillance network of community presence also reduces the likelihood of crime.

Finally, the principle of Connected Streets, which refers to spatial planning to facilitate short travel times, is linked to the parameter: public transportation.

The next section of this chapter will draw on parameter specific findings from the Safety Audit and insights derived from Walking with Women to identify factors that impact pedestrian experiences for women. These results will be summarised by the three principles of walkable streets that are the focus of this report: Traversable, Safe and Sociable Streets.

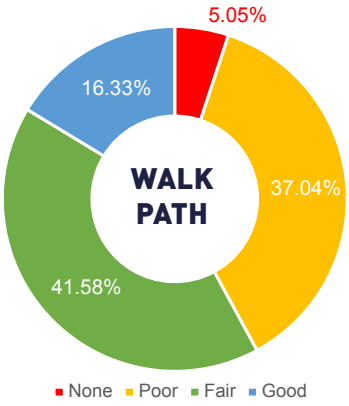
Figure 7:
Woman walking to work in the morning

Traversable Streets

Traversable streets are those in which pedestrians can walk easily without any form of major impediment. In Panaji, there are multiple challenges in creating traversable streets, which impact women disproportionately as they are more likely to be walking and working (vending, hawking, cleaning etc) on the street.

Left

Figure 8:`
Motorcycle driving on the footpath, obstructing the ease of walking for pedestrians



Above

Figure 9:` Distribution of Audit scores for the parameter Walk Path

Right

Figure 10: Elderly woman trying to step off the poorly designed walk path

CHALLENGE 1: WALK PATH DESIGN

The results of the Safety Audit for the parameter Walk Path, as seen in figure 9, indicate that 84% of the city streets did not have a good walk path. This perception was supplemented by evidence during our Walks, where women complained of poor walking infrastructure in the city. Many areas have discontinuous foot paths or walking paths on only one side of the road.

Furthermore, walk paths have been designed poorly: very few elevated walking paths have ramps, railings or elevation gradients, limiting access for the elderly, differently-abled and women carrying large items, such as sanitation workers collecting garbage or vendors selling wares. At many of these elevated paths, there are drains or parking spots adjacent to the walking path, further limting access to the walk path. Incongruous material choice for walk paths has also made walking on footpaths in the monsoon dangerous, as many elderly women voiced their fears of slipping.

Traversable Streets

Left
Figure 11:`
Women walking on the road as the walk path is blocked by construction work

CHALLENGE 2: OBSTRUCTIONS ON WALK PATH

The Safety Audit indicated that many locations had obstructions on the walk path, making it challenging for pedestrians to walk easily. The Audit specifically indicated repair work, construction debris, and poles as obstructions on walk paths in the city.

Based on the findings from Walking with Women, other obstacles included the presence of garbage and litter, which deterred women from walking on the footpath at all due to foul smells. This included the presence of general waste, spit, urine and cow dung. In certain areas, police and security presence served as an obstacle for women as they requested pedestrians to refrain from walking on footpaths near defense or police buildings.

Right

Figure 12:`
Vehicle unloading material on the designated walk path, blocking pedestrian right of way

CHALLENGE 3: VEHICULAR ENCROACHMENT

While conducting the perception Walks, women voiced concern about vehicular encroachment on walk paths in the city. In high traffic areas, motor bikes were found to be driving on walk paths (both elevated and on-grade) and in many areas parking of motor bikes and cars were found to block right of way for pedestrians as they encroached on walk paths. In certain commercial areas, trucks and tempos also blocked footpaths as they were used as space to unload goods for establishments, blocking the way of pedestrians.

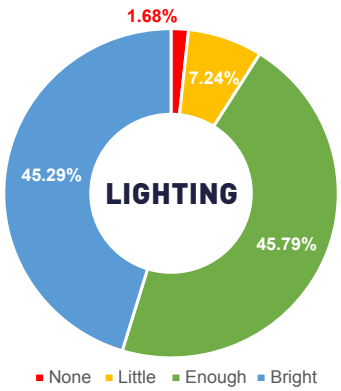
Overall, improving the conditions of elevated and level walk paths to ensure that pedestrians can safely and easily traverse the city on foot is key in improving women's access to the city.

Safe Streets

Safe streets enable women to walk freely without fear of crime or physical harm through an accident. The city of Panaji has a high safety score in general and women echoed this sentiment during Walks with Women as they said fear of crime is minimal during the day. However, all parameters related to this principle did not have high scores and some women voiced concerns about fear of having an accident and perceptions of safety, especially at night.

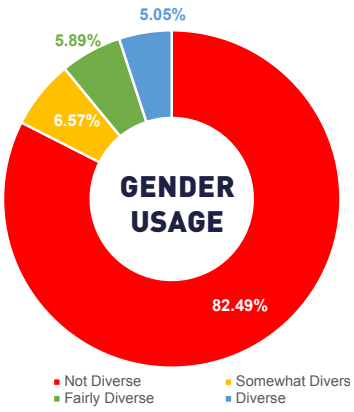
CHALLENGE 4: LOW LIGHTING

Lighting was one of the highest scoring parameters as part of the Safety Audit, with more than 45% of locations surveyed having bright light in the city. However, photographs from this audit show that lights often illuminate motorised rights of way rather than pedestrian infrastructure, creating patches of darkness on walk paths. Furthermore, women voiced concerns about broken streets lights and areas that were not well lit given the absence of lighting infrastructure.



Above
Figure 13:` Distribution of Audit scores for the parameter Lighting

Left
Figure 14: An area with "enough" lighting but focused on the road not walkpath



Above
Figure 15:` Distribution of Audit scores for the parameter Gender Usage

Right
Figure 16: A group of women walking amidst a crowd of only men

CHALLENGE 5: MALE DOMINATED SPACES

The Audit showed that most of Panaji's streets are not very diverse, indicating that there were either no people or only men present in many locations. Most women mentioned that this was not a deterrent from walking during the day, but younger women stated that they would change their routes and take longer trips to avoid streets with no women. Some women also stated that public spaces that were dominated men were not accessible to them as they were worried about being stigmatised after spending time there without other girls or women.

Safe Streets

Left
Figure 17:`
Sanitation workers in Panaji face risks while crossing the street due to oncoming traffic and lack of cross walks

CHALLENGE 6: UNSAFE CROSSINGS

Women who walk invariably need to cross the street and this experience is rather unpleasant for most. Without enough traffic lights, zebra crossings and infrastructure like medians on large roads, women scurry through traffic and risk getting into an accident while crossing at many points in the city. Women who work on the streets, such as hawkers, vendors and sanitation workers, are at higher risk due to prolonged exposure. One woman recounted an incident of a neighbour getting hit by a speeding car in Tonca at a blind turn.

This challenge is exacerbated by poor edge management, where edges of walk paths are lined with parked motorbikes and vehicles. This trend stretches onto designated crossing space, making it difficult to safely disembark the footpath and safely cross the street.

Sociable Streets

Right
Figure 18:`
An elderly vendor takes a break from walking and sits on the floor as there are no other places to rest

Sociable streets are places where people stop for conversation with their neighbours or local vendors or where children feel comfortable playing[11]. However, all streets may not spark the same level of interaction: smaller residential streets may not attract commercial uses and larger promenades may not have a local feel. Nonetheless, sociable streets are still important for building community and a sense of place, making streets more inclusive and welcoming for women.

CHALLENGE 7: POOR SEATING INFRASTRUCTURE

Women who work in the informal economy and in jobs that entail walking or being on the street for most of the day complained that there were very few provisions for seating. This made it difficult to find a place to eat lunch or take a break while working, for example, women collecting garbage had nowhere to rest while walking many kilometers to residential properties. This challenge was also voiced by elderly women, who got tired walking in the heat and wanted a place to rest.

Sociable Streets

CHALLENGE 8: INEQUITABLE ACCESS TO WASH FACILITIES

During Walks with Women, female pedestrians complained that there were inadequate Water, Sanitation and Hygiene (WASH) facilities across Panaji. Women who walked long distances to commute or while working, stated that there were limited free toilets and that paid toilets were more expensive for women. Many also stated that there were very few drinking water points as well and that they had to spend money to buy water, even if they had a water bottle to refill.

Visitors to the area (people who didn't live nearby but were still from Panaji) and tourists stated that there was poor signage for toilets in Panaji and that they were easy to miss. Some also pointed out that attendants were generally male, and that could detract usage by women.

16

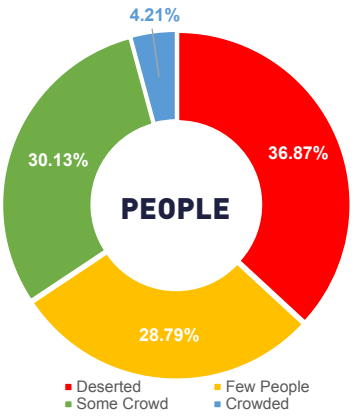
public toilets
in all of Panaji[12]

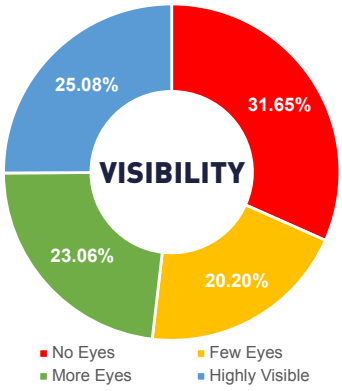
Left
Figure 19:`
A public toilet near Panjim market with a sign showing the higher cost for women's use

Right
Figure 20:`
Distribution of Audit scores for the parameter People

Figure 21:
Distribution of Audit scores for the parameter Visibility

Sociable Streets





Right

Figure 22:` Women walking adjacent to closed shops on Sunday

CHALLENGE 9: INACTIVATED SPACES

The Safety Audit found that the parameters People and Visibility were relatively low scoring. Across the areas audited, 65% of the city were deserted or had very few people. There were also limited eyes on the street, with 51% of areas having no or few eyes (less than 5 windows or entrances facing the street) for the parameter visibility. This creates an unwelcoming atmosphere, where pedestrians, especially women, would choose not to loiter but to instead pass through an area quickly.

During the Walks with Women, many women stated that Sunday evenings felt a bit lonely as many shops were closed and there were few other people around. While they didn't feel unsafe walking, they didn't enjoy walking on these streets either. Many suggested aesthetic improvements such as artwork as a way to create a more welcoming environment on quieter streets.

Figure 23:
Women waiting to cross the road

RECOMMENDATIONS

Given the current conditions of streets in Panaji, improvements must be made to improve access to the city for pedestrians. The pan-city recommendations proposed in this report are designed to make the streets of Panaji more walkable by focusing on making streets traversable, safe and sociable. The interventions proposed build upon existing strengths, such as Panaji's strong neighborhoods and communities, and turn challenges into opportunities to make Panaji more inclusive. All of the recommendations are grounded in research as they draw inspiration from good practices from around the world, especially growing cities in developing countries, and from global and Indian urban planning and safety standards.

Each recommendation presented in this section will include short term and long term actions (based on relevance) required for implementation as well as a list of stakeholders who will need to be part of the implementation process. Short term recommendations are actions that can be implemented within a one-year time frame while long term recommendations are actions that will take more time than that. At the bottom right of each page, the principles of walkability that each recommendation addresses will be highlighted as well.

Above

Figure 24:` People walking in Fountainhaas

Right

Figure 25:` Signage installed during repair work to signal to pedestrians where to go for easy navigation[13]

1. Removing Obstructions

Obstructions like dumped construction debris, trash and repair work on walk paths are barriers to easily accessing the city by foot. This recommendation proposes to remove these obstructions, making it easier to walk. Trash collection also creates a more pleasant walking environment for pedestrians and encourages socialisation.

SHORT TERM ACTIONS

First, the city can organise neighbourhood clean up drives with local businesses and residents, who have a vested interest in keeping their community clean.

Second, the city can install more dustbins and conduct more frequent trash collection. In this regard, the city can also develop a tool for community mapping of trash hotspots to alert local authorities to pick up litter in polluted areas.

Third, the city can institute fines for littering and dumping of construction debris to discourage pollution.

Finally, when repair work is being conducted on walk paths, the city should install clear signage where the work is blocking the footpath. Temporary, alternate walk path provisions should be installed for pedestrians. This may entail blocking vehicular traffic routes to ensure pedestrians have right of way.

STAKEHOLDERS

Civil Society and Non-Government Organisations (NGOs), Residential Welfare Associations (RWAs), the Public Works Department (PWD), and the Urban Local Body (ULB)

PRINCIPLES OF WALKABILITY

2. Preventing Vehicular Encroachment

Vehicular encroachment on the sidewalk is a big challenge across the city of Panaji. From parking to motorbikes trying to bypass traffic to tempos unloading, these forms of encroachment are barriers to walkability.

SHORT TERM ACTIONS

First, temporary barricades and dividers, such as tyres or planters, can be installed to prevent vehicles from accessing the sidewalk (see figure 26). However, the placement of dividers should consider people with different needs, including mothers with prams, street vendors with goods, sanitation workers with equipment and differently abled persons.

Second, fines for parking on the footpath should be implemented.

Third, the city should work with local businesses to create designated unloading hours for trucks and service vehicles at low foot-fall hours such as early morning or late evening.

LONG TERM ACTIONS

In the long term, permanent barricades such as bollards can be installed to prevent vehicular encroachment on walk paths. This is especially important for street level walk paths. Again, this should comply with design guidelines and take into account the needs of everyone using the street

Above

Figure 26:` Barricades that are temporary to prevent encroachment[14]

STAKEHOLDERS

Panaji Traffic Police, PWD, Businesses, and the ULB

PRINCIPLES OF WALKABILITY

3. Redesigning Walk Paths

To ensure that women can easily and safely walk in Panaji, walk paths must be redesigned to be universally accessible and meet safety standards. This will help reduce accidents and encourage more people to walk in the city.

LONG TERM ACTIONS

First, kerb cuts and slopes should be integrated in all elevated walk paths[15]. This will ensure that walking is accessible to those with walking challenges. These should be designed to keep in the needs of workers like vendors and trash collectors.

Second, if there is no height difference between the passage for motorised vehicles and pedestrians, dividers need to be installed to ensure walk paths are designated exclusively for pedestrians.

Third, an audit should be conducted and those foot paths that are not durable and non-slip should be repaved with appropriate material.

Finally, efforts should be made to ensure continuous walk paths are built on both sides of the street throughout the city.

Above

Figure 27:`

A woman pushing a wheelchair on a street with a slope in Curitiba, Brazil[16]

STAKEHOLDERS

PWD, Transport Department, Traffic Police, ULB

PRINCIPLES OF WALKABILITY:

4. Increasing Lighting

Lighting is an essential component of Safe Streets: without such the conditions for walking are dangerous for everyone and create a sense of perceived risk of crime, especially for women. Lighting must focus on illuminating walk paths more than roads as pedestrians do not have their own ability to light the path, unlike vehicles[18].

SHORT TERM ACTIONS

First, the city can conduct a street light audit to determine which street lights are currently broken or not adequately illuminating walk paths. Based on the results of the audit, the city can prioritise areas to repair broken lights and poles in which appendages can be installed to illuminate walk paths.

LONG TERM ACTIONS

In the long term, the city should focus on adding street lights to illuminate pedestrian walkways through the city.

Above

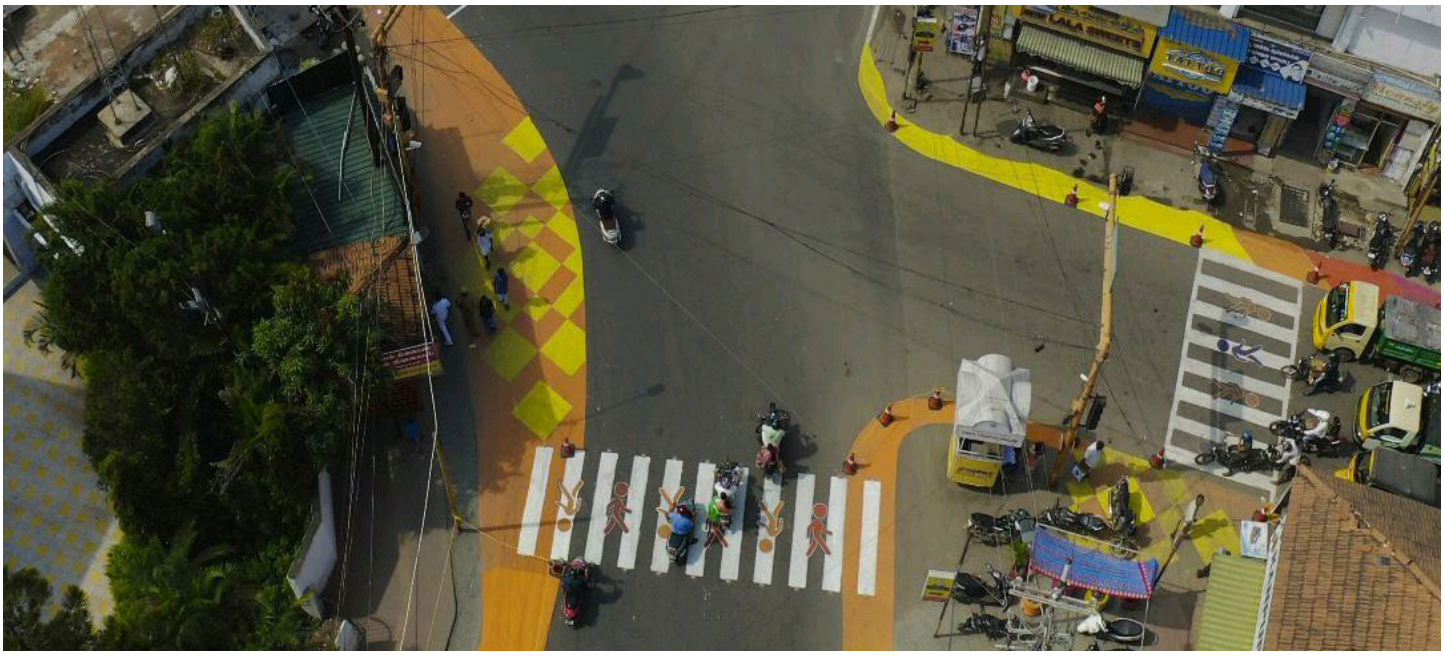
Figure 28:`

A well lit street, illuminating walk paths and the road in Fortaleza, Brazil[17]

STAKEHOLDERS

PWD, ULB, Smart City

PRINCIPLES OF WALKABILITY



5. Creating Safe Crossings

Panaji has a dearth of safe crossings, which is hazardous for pedestrians. Women in the city have voiced concern about the risks they take while walking, especially the elderly. To reduce the risk of accidents and work towards vision zero streets, designated crossings must be created and regulations for the same must be enforced.

SHORT TERM ACTIONS

Indian standards suggest that crosswalks on non-arterial city roads should be defined every 100 metres[21]. Clear signage and surface markings can be used to expedite the creation of crossings.

Cities in Canada and Iceland have experimented with using optical illusions to slow speeding vehicles and reduce speeds on local roads[22]. This can be considered in accident prone areas to slow vehicle speeds in the short run but is not a permanent solution as once these are recognised as illusions they may not be effective in the long run.

LONG TERM ACTIONS

Eventually, the city must install permanent crossings with traffic signals and designated walking times for pedestrians. Traffic signals should have a maximum waiting period for 45 seconds as per service level benchmarks[20] and wider streets should have universally accessible medians.

Above

Figure 29:` New pedestrian crossings in Coimbatore[19]

STAKEHOLDERS

PWD, ULB, Transport Department, Traffic Police, Smart City

PRINCIPLES OF WALKABILITY:

6. Improving Edge Conditions

Women in Panaji have difficulty disembarking from walking paths in certain areas: especially at crossings and designated egresses due to parking of vehicles on crossings. When edges of footpaths are lined by vehicles it also creates a disconnect between pedestrians and other sides of the street, creating a perception of isolation and thus risk of crime. Sociable streets have a strong identity between both sides of the street and require better edge management.

SHORT TERM ACTIONS

In the short run, the city can institute parking violations and fines for parking or stopping at or on kerbs and crosswalks to enable safe egress. These areas (as seen in figure 28) can also be demarcated as pedestrian zones using paint to signal to drivers to slow down or wait.

LONG TERM ACTIONS

If possible, on-street parking should be removed on main streets to increase openness and enhance visibility, which connects both sides of the street.

Above

Figure 28:` Tactical Urbanism Project:Pedestrian Improvement in Jersey City, USA[23]

STAKEHOLDERS

PWD, ULB, Smart City, Traffic Police, Transport Department

PRINCIPLES OF WALKABILITY

7. Activating Dead Spaces

During low traffic times and when commercial establishments are closed, walkways in commercial streets feel deserted and have low visibility. These factors create a sense of isolation for women walking on the streets. Building on Goa's market culture, this recommendation proposes using pop-ups to activate streets during low traffic times, like Sundays. This is especially pertinent given the COVID-19 pandemic, where indoor spaces are closed or not accessible: outdoor markets can help boost local economies and help provide essentials to marginalised communities.

SHORT-LONG TERM ACTIONS

The city can set up pop-up markets to activate dead spaces. This would entail working with local businesses and informal vendors to set up committees across neighbourhoods to organise pop up markets during weekends, nights or low traffic hours. Along with activating dead spaces, markets can be used to promote diverse businesses (especially female owned businesses) in communities that don't have access to basic necessities and have been severely impacted by COVID-19.

The city can also work with local artists to use art and murals to activate dead spaces and blank walls. Panaji already has a culture around public art (eg. Panjim Market). This can help boost tourism and facilitate community development. Inspiration can be drawn from the Philadelphia Mural Arts Program[25].

Above

Figure 29:` Pop-Up Market in Pittsburgh, USA[24]

STAKEHOLDERS

PWD, ULB, Transport Department, Traffic Police, Smart City

PRINCIPLES OF WALKABILITY:

8. Installing Community Seating

This recommendation addresses the concerns of elderly women and workers who stated that they need places to rest while walking. It proposes that the city install seating facilities on streets with high commercial activity and high footfall, especially tourist destinations.

Above
Figure 30:` Public seating for pedestrians to rest and socialise[26]

SHORT TERM ACTIONS

Seating can be installed in the forms of benches or chairs with tables (built into the ground to avoid theft). If possible these can be designed for various user needs from children to differently abled persons and cater to different purposes such as rest but also socialisation. These should be prioritised to be installed on major thoroughfares, especially near busy attractions or employment hubs (ie. Panjim Market).

STAKEHOLDERS

PWD, ULB, Smart City

PRINCIPLES OF WALKABILITY

9. Providing WASH Infrastructure

Women in Panaji had expressed that the lack of toilets and drinking water were costly to them as they had to pay more to use the toilet and procure potable water. This recommendation suggests that the city improve access to toilets and provide drinking water fountains in the city.

SHORT TERM ACTIONS

First, the city can conduct an audit of public toilets to determine how many toilets and facilities exist and evaluate the condition they are in. Based on this, they can prioritise toilets to repair, add facilities for women, and install better signage around existing toilets. To ensure equitable access, they should also remove or equalise user fees for men and women.

The audit will also help identify areas where public toilets are lacking and here the city should install new toilets.

Finally, the city should create drinking water points on commercial streets, near government offices and tourist destinations so women can refill bottles instead of procuring new bottles when they need to drink water. This also reduces plastic consumption and waste.

Above

Figure 31:`
A drinking water station accessible for children and adults[27]

STAKEHOLDERS

PWD, ULB, Smart City, Water Board

PRINCIPLES OF WALKABILITY:

Figure 32:
A residential street in Fountainhaas

CONCLUSION

Conclusion

The nine pan city recommendations presented in this report range from urban design interventions to infrastructure requirements to programmatic strategies that will make Panaji's streets more inclusive. These proposed ideas directly improve access for women who walk in the city, whether as workers in informal livelihoods, commuters, passer-bys or tourists. PULL's recommendations will help Panaji achieve three principles of walkability, as they facilitate the creation of **Traversable**, **Safe** and **Sociable** Streets. As seen in Figure 33 below, they are multifaceted and holistic, as they meet multiple principles of walkability. Overall, we look forward to experiencing Panaji's transformation into a more inclusive city for women.

	Traversable Streets	Safe Streets	Sociable Streets
Recommendation 1			
Recommendation 2			
Recommendation 3			
Recommendation 4			
Recommendation 5			
Recommendation 6			
Recommendation 7			
Recommendation 8			
Recommendation 9			

Figure 33:`
Summary table of recommendations and achieved Principles of Walkability

Next Steps

The recommendations presented in this preliminary report are general, pan-city interventions. To take these recommendations forward, PULL will convene a stakeholder consultation with members from CCP, PWD, the State Transport and Urban Development Departments, IPSCDL and others to prioritise these recommendations based on cost, ease of implementation, timelines and community involvement. Based on the outcomes from this consultation, PULL will conduct spatial analysis for each Safety Audit Parameter to identify neighbourhood specific issues and develop localised recommendations for implementation. PULL will also seek out Danish expertise while creating these recommendations and action plans to ensure they are robust and draw on best practices from around the world.

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