SAFETY ANALYSIS REPORT









About the project: This report is part of a two-year project implemented by The Asia Foundation in partnership with SafetiPin and the Centre for Social Research (CSR), on "Making Cities Safe for Women in India." The project goal is to engage diverse stakeholders tasked with improving public place safety for women in three Indian cities: Bhopal, Gwalior (Madhya Pradesh), and Jodhpur (Rajasthan). Supported by the Korea International Cooperation Agency (KOICA), the project initiates an evidence backed dialogue with policy makers, police, and civil society organizations about the challenges women face in accessing and enjoying public places and proposes implementable solutions to address these challenges.

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Introduction

afetipin is a technology platform that uses apps to collect data in order to make cities and public spaces safer and more inclusive for women.

At the core of the app is the Safety Audit. A Safety Audit is a participatory tool for collecting and assessing information about perceptions of safety in public spaces. The audit is based on nine parameters – Lighting, Openness, Visibility, Crowd, Security, Walkpath, Availability of Public Transport, Gender Diversity and Feeling.

Each parameter is rated 0/1/2/3 with 0 being Poor rating and 3 being Good. All parameters except Feeling are completely objective and are rated based on a well-defined rubric

Sefetipin Parameters



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



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



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



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



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



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



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.



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

Methodology

The safety audits have been generated using two methods. First, manual audits were conducted using My Safetipin app.

Secondly, safety audits have been generated using the Safetipin Nite app. The assessment was done post sunset till 10 pm. Mobile phones were mounted on the windshield of the taxis', and using the app photographs of the city roads were taken. These photographs were then assessed based on the eight audit parameters to generate audit pins at each location.

A total of 3548 audits have been generated. Over 290 km of road length has been covered in this project.

Overall, the Safety Score for Jodhpur is rated 2.6/5 i.e. Average.



Poor	Below Averag	Average	Above Average	Good
1.0-2.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5





Audit Analysis

Safety Score Parameter Ratings Parameter-wise Pin Distribution

Safety Score

The Safety Score of a point is a reflection of the perception of safety at that particular location. For each audit point it is a number between 0 and 5, 0 being Poor i.e. very unsafe and 5 being Good in terms of overall safety.

Indicated in the pie chart is the percentage distribution of pins in each range. 16% of the audit points were rated poorly i.e. safety score equal to or less than 1/5. As seen in the Safety Score map below, many of these points are located on the outskirts of the city. 37% of the points have been rated as Good in terms of overall safety in Jodhpur.





Map 1. Indicating Safety Score ratings

Parameter Ratings

Each of the nine parameters is rated 0/1/2/3, 0 being the poorest and 3 good. The average parameter ratings graph indicates the overall average rating for each parameter. As seen in the graph below, the Openness parameter has been rated the highest followed by other parameters of Lighting and Walkpath. However, since these three parameters are also rated below 2, i.e. fair there is scope for improvement.

Gender Usage and Public Transport are the least rated parameters in Jodhpur. Visibility and People parameters have also been rated low. Low ratings in Gender Usage, People parameters suggest that the city residents especially women do not use the public realm actively after it gets dark in the evening. The poor rating of Public Transport can be attributed to no or poor availability of a formal mode of public transport within 400m from the audit point. Security parameter has not been assessed completely due to lack of information, hence rated low. The overall safety in Gwalior has been rated as Average.



Parameter-wise Pin Distribution

The Parameter wise pin distribution graph indicates the number of points rated 0/1/2/3 i.e. the good points as positive and poor ratings as negative. The parameters of Gender Usage, Public Transport, Visibility and People have been rated poorly for many parts of the city, whereas parameters like Walkpath and Lighting need to be improved in some parts of the city. Infrastructural improvements in Lighting and Walkpath parameters will enhance the overall Safety Score and result in safer public spaces in the city.







Lighting Walkpath Visibility Public Transport

Lighting 1.8/3

Lighting measures the amount of brightness or illumination at a place and ranges from dark to bright (rating 0-3). A place can be lit with street lighting or from other sources such as light coming from houses, shops, street vendors etc. Light coming from the vehicles is not considered as it is a temporary source of light

Lighting has been rated 1.8/3 i.e. Average. 14% of the audit points (as shown in map 3) have been rated poor and identified as dark spots in the city indicating no source of lighting and no streetlights installed along the road. Streetlights need to be installed along these points to remove the dark spots.

20% of the audit points (as shown in map 3) were rated Below Average as streetlights were found to be non functional at the time of audits. On roads with more than 4 lanes, streetlights that are installed along the central median results in a well-lit vehicular carriageway but a poorly lit walkpath. These audit points have been shown in map 4. Only 32% of the audit points were rated as Good in terms of lighting.



Map 2 Indicating Lighting rating

Image showing a stretch with no streetlights



Image showing non-functional streetlights







Image showing streetlights on only one side of the main road

Image showing streetlights on only one side of the main road





Map 4 Showing points with streetlights on only one side of main roads



Walkpath

Walkpath parameter indicates whether a person can comfortably walk at a place. This refers to the quality of walkpath or space left for pedestrians along a road. Walkpath has been rated 1.6/3 i.e. Average. 52% of the audit points have been rated 2 and above for Walkpath parameter indicating presence of footpath at these points. However, the footpath is not accessible at most of the places. This is primarily attributed to the obstructions on the footpath. The obstructions include vehicular parking, dumping of construction debris, inappropriate positioning of signage and street furniture on the footpath. Obstructions on the footpath like vehicular parking should be installed along the edge of the footpath, clear of the pedestrian path to ensure seamless and accessible walkpath for the pedestrians.

48% of the audit points were rated poor in Jodhpur. Map 6 shows audit points where walkpath is either unavailable, unpaved/kacha or broken. At these points, proper footpath needs to be constructed and maintained regularly. Map 7 shows audit points with obstructions on the walkpath.



Map 5 Indicating Walkpath Rating

Image showing a stretch with broken footpath



Image showing a stretch with no walkpath



Map 6 Indicating points with no or unpaved walkpath.



Image showing walkpath being obstructed by vehicular parking

Image showing walkpath being obstructed by Construction debris







Visibility

Visibility refers to how visible is one to others. It is based on the principle of 'eyes on the street'. i.e. can you be seen when on the street. This includes windows- doors of shops, houses along with street vendors and hawkers. Visibility has been rated 1.1/3 i.e. Below Average in Jodhpur. About 70 % of the audits have been rated Poor or Below Average. One of the reasons for low visibility is presence of high boundary walls in many areas. Jodhpur is famous for its historical places like forts and palaces in the city which have high solid boundary walls. Additionally, parcels of unused or vacant land exists in the peripheral areas of Jodhpur where urbanization is low thus resulting in low visibility.

To improve visibility, the design of the boundary walls should be altered wherever possible. The height of the solid part of the boundary wall should be reduced to 1-2 m and the rest of the height can be attained through grills. This would maintain some level of transparency between the streets and the buildings thus making pedestrians feel safer. Additionally, designated spaces i.e. 'hawker zones' should be provided at places where vendors are present to maintain natural surveillance.



Map 8 Indicating Visibility Rating

Image showing a stretch with high boundary wall



Image showing a stretch with high boundary wall





Map 9 Indicating points with low visibility due to high boundary walls.

Public Transport

The Public Transport parameter rates the ease of accessing any mode of public transport i.e. metro/bus/taxi etc. It is measured in terms of the distance to the nearest mode.

Public Transport has been rated 0.6/3 i.e. Poor. At present, mainly private buses are plying in the city and very few government buses are operational. 64% of the audit points have no bus stop within 10 mins walking distance. Map11 shows the audit points where People parameter has been rated high but are more than 10mins walking distance from the nearest bus stop. Many residents opt for autos or tata magic, with auto being the major form of intermediate public transport in Jodhpur.

In addition to improving and extending the existing bus network, bus shelters needs to upgraded. Designated well lit auto stands should be set up with proper space for parking autos at major market places and landmarks around the city. Additionally, street furniture and convenience facilities for the commuters and drivers should also be located nearby.



Map 10 Indicating Public Transport Rating

Image showing a stretch with parameter Public Transport (rating 0) and People (rating 2)



Image showing a stretch with parameter Public Transport (rating 0) and People (rating 3)





Map 11 Indicating points with Public Transport (rating 0) and People (rating 2,3)

Bus Stops

A total of 79 bus stops were audited using Safetipin app. The Safety Score map as shown below indicates that most of the bus stops have been rated Good in terms of overall safety. Individual maps showing parameter rating of Lighting, Walkpath, Visibility and People parameters are provided on the following pages.

Lighting was found to be adequate at most of the audited bus stops, however, the walkpath was found to be broken or unpaved at some of the bus stops. Bus stops need to be made accessible and convenient to use by providing obstruction free footpath.

Visibility has been rated poor and below average for many bus stops. In terms of co-relation analysis, Visibility and People parameter maps indicate that People parameter recorded low ratings at audit locations which were also rated poorly on the Visibility parameter. People tend to avoid bus stops that are deserted or have 'no eyes on the street'.









Overall Recommendations

The safety ratings varies largely on account of the infrastructure provision and planning typology of the area. Areas which are well lit, have proper footpaths, has access to public transportation and are active, tend to be more safer. Lighting, Walkpath, Public Transportation and Visibility are infrastructural parameters that can be improved upon. This improvisation would result in more people especially women using public places at night.

• Enhance Illumination along Walkpath

The existing streetlights that have been found non-operational need to be checked. Regular checks should be carried out to ensure uniform and unobstructed illumination. Streetlights need to be installed along areas, identified as dark spots i.e. at these locations there is no illumination at present.

Along the main roads having four lanes or more, streetlights are provided along the central median of the road. In such cases, additional streetlights need to be installed along the footpath. Pedestrian scale streetlights should be installed such that the footpaths are also well light.

• Maintenance of Footpath

Properly paved footpath should be constructed at points with unpaved or broken walkpath and they should be maintained regularly.

Footpath should be kept free from any obstructions. Obstructions due to vehicular parking, construction debris or extended shops should be removed. Designated space to be provided for onstreet parking clear of pedestrian path. Space should also be provided for hawkers as they help in making streets active hence safer for women pedestrians.

Improve the Public Transport Infrastructure

It is important to ensure that people find public transport in their city as safe and convenient. Existing bus shelters should be upgraded. They should be well lit and have adequate seating. Interactive panels indicating routes, emergency helpline numbers and an emergency button for help in distress should be provided at the bus stops.

Designated well lit para transit stands with public convenience facilities needs to be created near bus stops to ensure last mile connectivity. These stands should have designated parking space where autos, e-rickshaws, etc. can be parked and from where they can be hailed.

Improve Visibility

High boundary walls result in poor visibility along the walkpath. Wherever possible, the height of the solid part of the boundary wall should be maintained at 1m. Above the solid part, grills can be used to achieve the remaining height. Inactive edges along the footpath instill a sense of fear in the pedestrians.

Edges can be made active by providing space for street furniture and incorporating the street vendors. Hawkers and vendors act as natural surveillance system. Creating such zones throughout the city will help activate the public realm making one feel safer.

Area based Recommendations



LIGHTING

Repair streetlights

Sangariya Industrial Area Police Line Road

Install new streetlights

- Jethaniya Jodhpur Road
- Jaisalmer & Dangiyawas Bypass Road
- Heeranagar
- Pal Balaji
- Roop Rajat Township
- Amrawati Nagar
- MIA 2nd Phase
- Sangariya Industrial Area
- Jhalamand
- HI Area Phase II
- Paota Flyover
- Banar Road and Shantipriya Nagar
- Nandri Road to Defence Colony

WALKPATH



Pave Walkpath

- Jethaniya Jodhpur Road
- Jaisalmer & Dangiyawas Bypass
- Road
- Pal Road
- Salawas Road
- Jhalamand
- Roop Rajat Township
- Amrawati Nagar
- Khodiyal Nagar
- MIA 2nd Phase
- 80 Feet Road
- Nandri Road to Defence Colony
- Dhapi Marble Road
- Baba Ramdev Road

Clear vehicular obstruction

- Jethaniya Jodhpur Road
- Jaisalmer & Dangiyawas Bypass Road
 - Chopasni Road
- Pal Road
- Jhalawar Road
- Naher Road
- MIA 2nd Phase
- Central Academy School Road
- Saras Dairy Road
- Soorsagar Bypass Road
- Soorsagar Road
- Soorsagar Police Station to Chandpole Gate
- Soorsagar Mod to Rao Jodha Desert Park

PUBLIC TRANSPORT



Provide public transport (Bus Stops)

- MIA 2nd Phase
- Pal Balaii
- Ravi Nagar
- Sangariya Industrial Area
- HI Area Phase II
- Meera Nagar
- Rajiv Nagar •
- Mahaveer Nagar •
- Kanwar Nagar •
- **KK** Colony • •
- Aarti Nagar (Jodhpur -Balotra Road)
- Dangiyawas Bypass •
- Pabupura
- Uchiyarda Road
- Shikargarh Road
- Soorsagar
- Sukhram Nagar
- Soorsagar Road •
- Jaisalmer & Dangiyawas • **Bypass Road**
- Ravit
- Banar Road
- Banar
- Shantipriya Nagar





- Old city area
- Aarti Nagar (Jodhpur -Balotra Road)
- **Dangiyawas Bypass**
 - Pabupura
 - Uchiyarda Road
- Shikargarh Road
- Soorsagar •
- Sukhram Nagar
- Soorsagar Road

VISIBILITY



Reduce height of solid boundary wall

- Pal Balaji
- Amrawati Nagar
- Gayatri Nagar Road
- Aims Road
- Chopasni Road
- Naher Road
- Shubhash Nagar
- Milkman Colony
- ITI Road
- Haddi Mill Road •
- **Rest House Road**
- New Power House Road
- Shashtri Nagar
- **Residency Road**
- Olympic Road
- Jaipur Jodhpur National Highway



Create designated vendor and hawker zones

- Umaid Bhavan Palace Road
- Gaushala Road
- Banar Road
- Paota Circle Road
- Madore Marg
- Digari Road
- Defence Colony Road
- Central Academy School Road



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Safetipin is a technology platform that uses apps to collect data in order to make cities and public spaces safer and more inclusive for women. Safetipin works with city governments to use data for improvement, and specific initiatives to address women safety in public spaces.