GWALIOR

SAFETY ANALYSIS REPORT

2019

Prepared by

SAFETIP?N
Supporting Safer Cities

For

The Asia Foundation
Improving Lives, Expanding Opportunities

Supported by

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Contents

Introduction

S 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

Light (Night) — 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 — Openness refers to whether a person has a good line of sight in all directions.

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

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

Walk Path — 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.

Public Transport — 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 Usage — 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 2387 audits have been generated. Over 182 km of road length has been covered in this project.
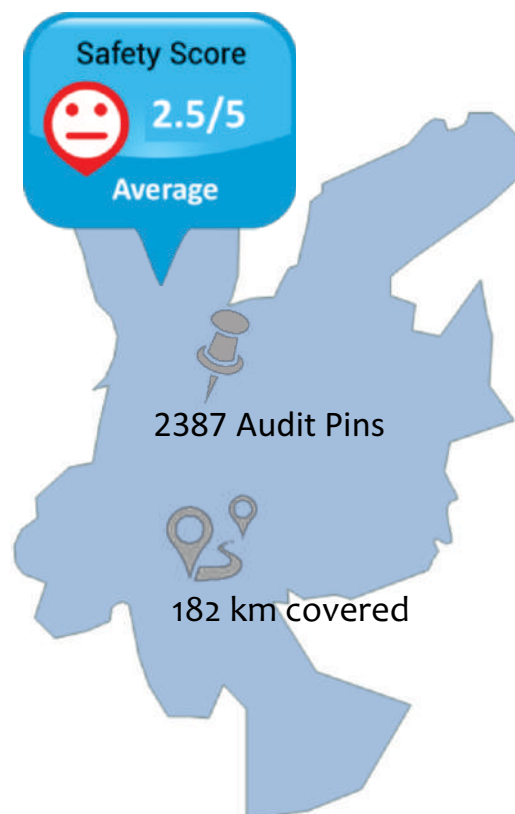
| Poor	Below Average	Average	Above Average	Good
1.0-2.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
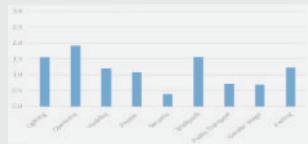
Audit Analysis

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. 22% of the audit points were rated poorly i.e. safety score equal to or less than 1 out of 5. As seen in the Safety Score map below, these points are mostly located around Morena Marg, Model Town. Also, audit points on the outer periphery of the city (Habipura, Lakhnotikalan, etc.) have been rated poor on the safety score. Areas around Topi Bazaar, Naya Bazaar, R M Colony , Samadhiya Colony have been rated Good.


Poor	Below Average	Average	Above Average	Good
1.0-2.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
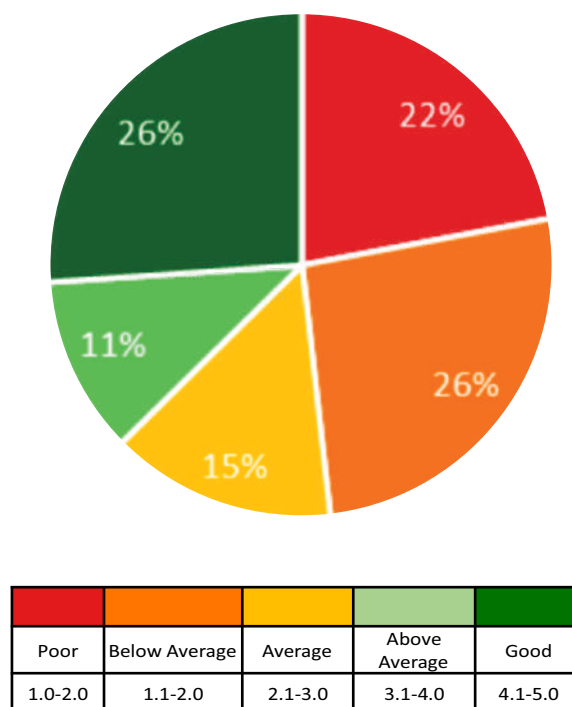
Map 1. Indicating Safety Score ratings
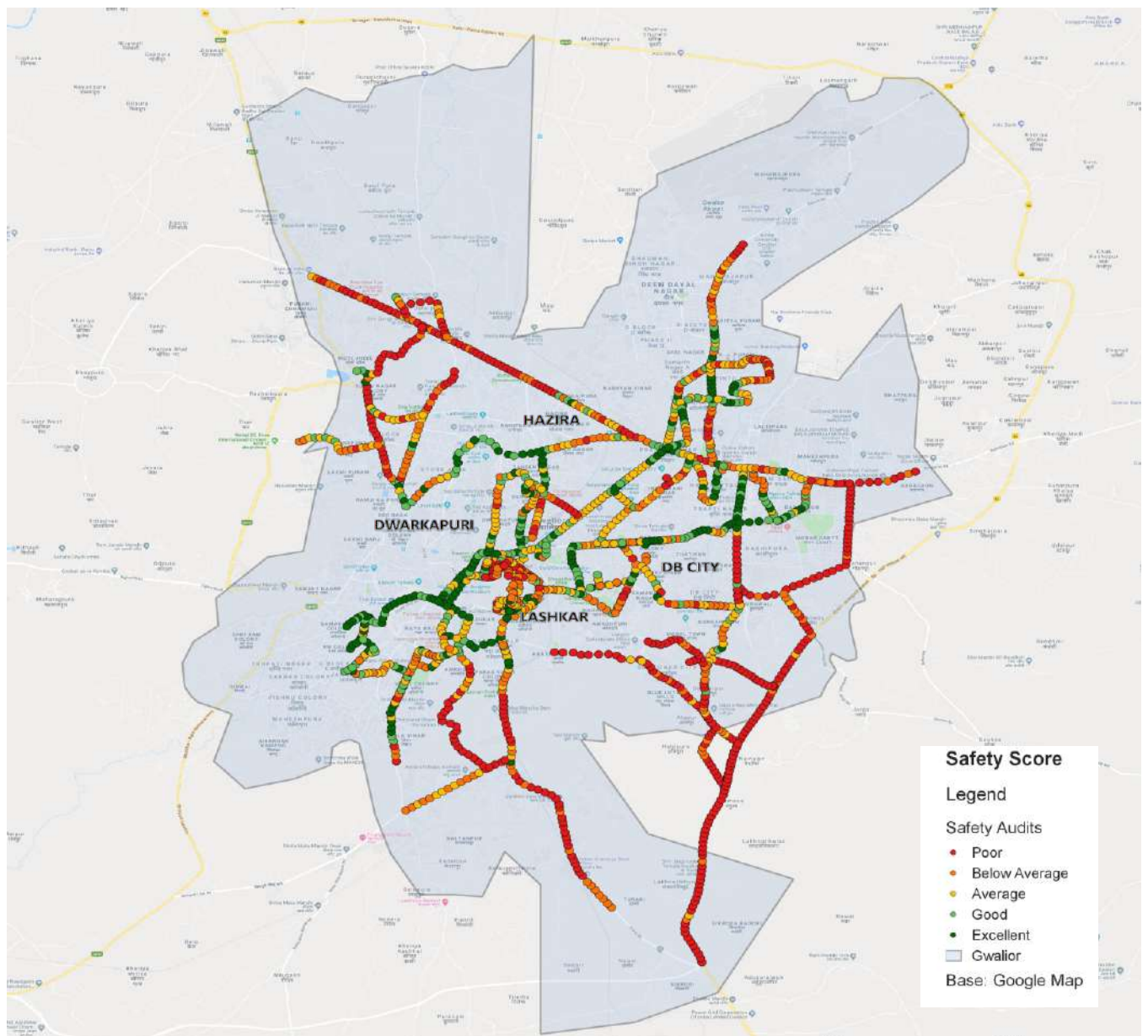
Parameter Ratings

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, Lighting, Walkpath and Openness are highly rated parameters. Since none of the parameters are rated above 2, there is an immediate need for improvement in the infrastructure.

Security parameter has not been assessed completely due to lack of information about police patrolling routes, hence rated low. The poor rating of Public Transport can be attributed to no or limited availability of bus stops within 400m from the audit point. Buses are a very recent initiative in Gwalior and the city is largely dependent on Intermediate mode of public transport like autos and tata magic. E-rickshaws have also been recently introduced in the city. Low ratings in Gender Usage, People and Visibility parameters indicate less number of pedestrians particularly women in the public spaces after sunset. The overall safety in Gwalior has been rated as Average.
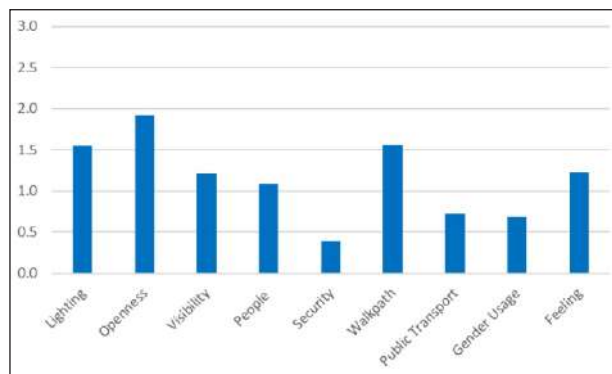
Parameter-wise Pin Distribution

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 the most parts of the city, whereas parameters like Walkpath and Lighting need to be improved in some parts of the city. Increase in People and Gender Usage is dependent on improving other parameters. Enhancing Lighting, Visibility and Security on the streets of Gwalior will result in safer public spaces.
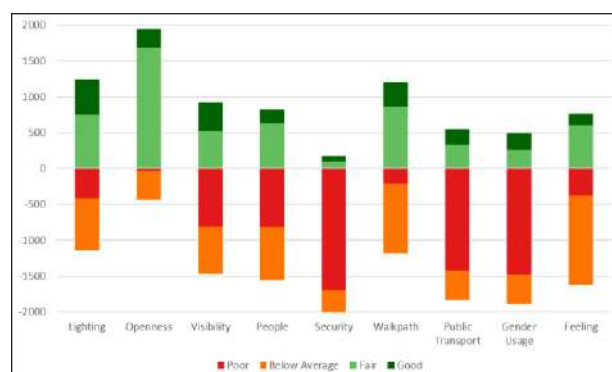
Lighting
Walkpath
Visibility
Public Transport

Lighting

1.6 / 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 1.6/3 i.e. Average. 17% of the audit points have been rated Poor and identified as dark spots in the audited area. Analysis of data at these points (as shown in map 3) indicates that either there are no streetlights installed at these locations or the existing streetlights are non-functional. Such dark spots need to be fixed immediately as some of them lie in residential areas with high pedestrian crowd as well.

62% of the audit points were rated Below Average indicating low lighting. As shown in map 4, the vehicular carriageway at these points is lit due to streetlight installed along one side of the road but pedestrian pathway is poorly lit.

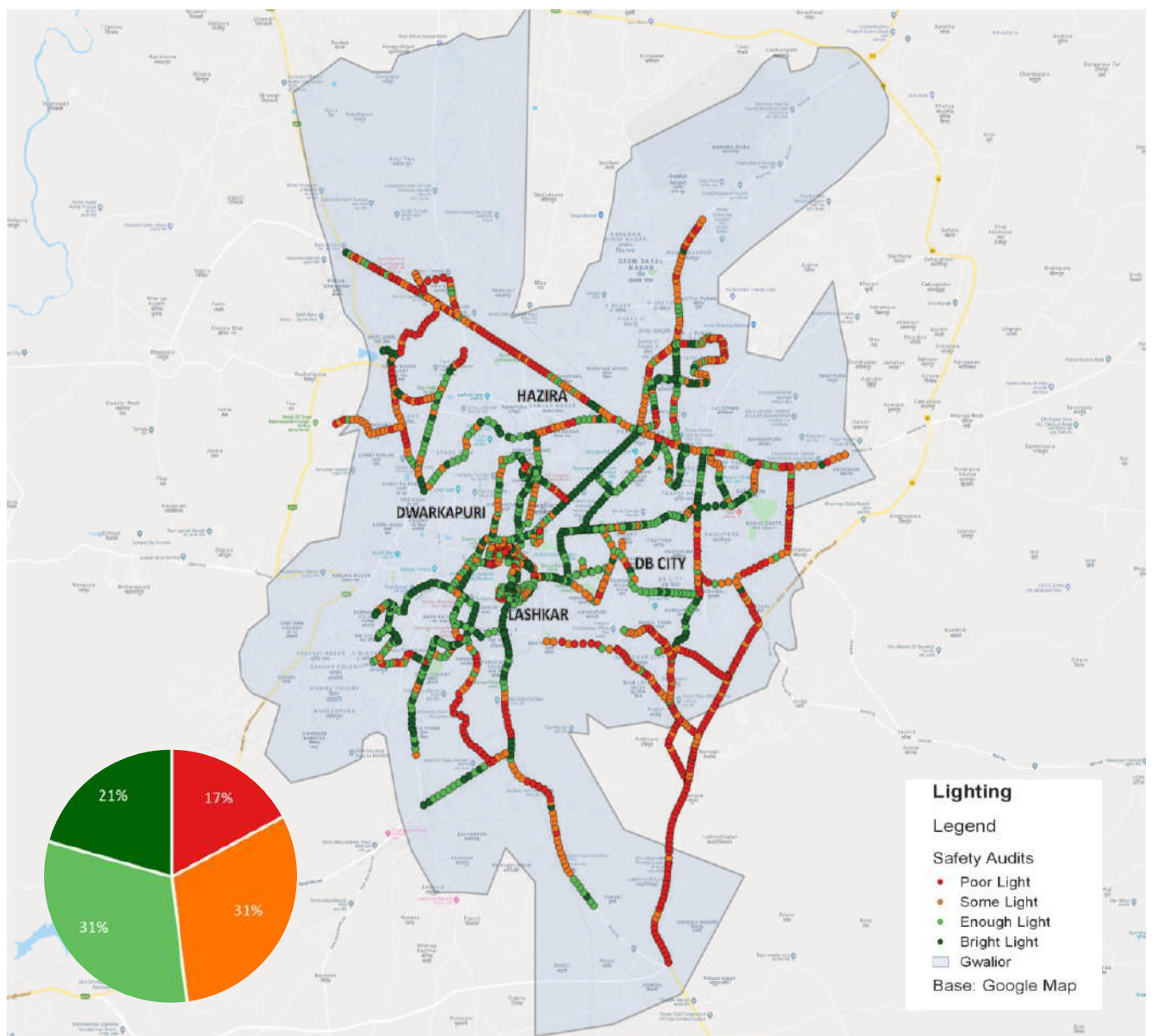**Map 2 Indicating Lighting rating**

Image showing a stretch with no streetlights

Image showing non-functional streetlights

Map 3 showing points with no or non-functional streetlights

Legend
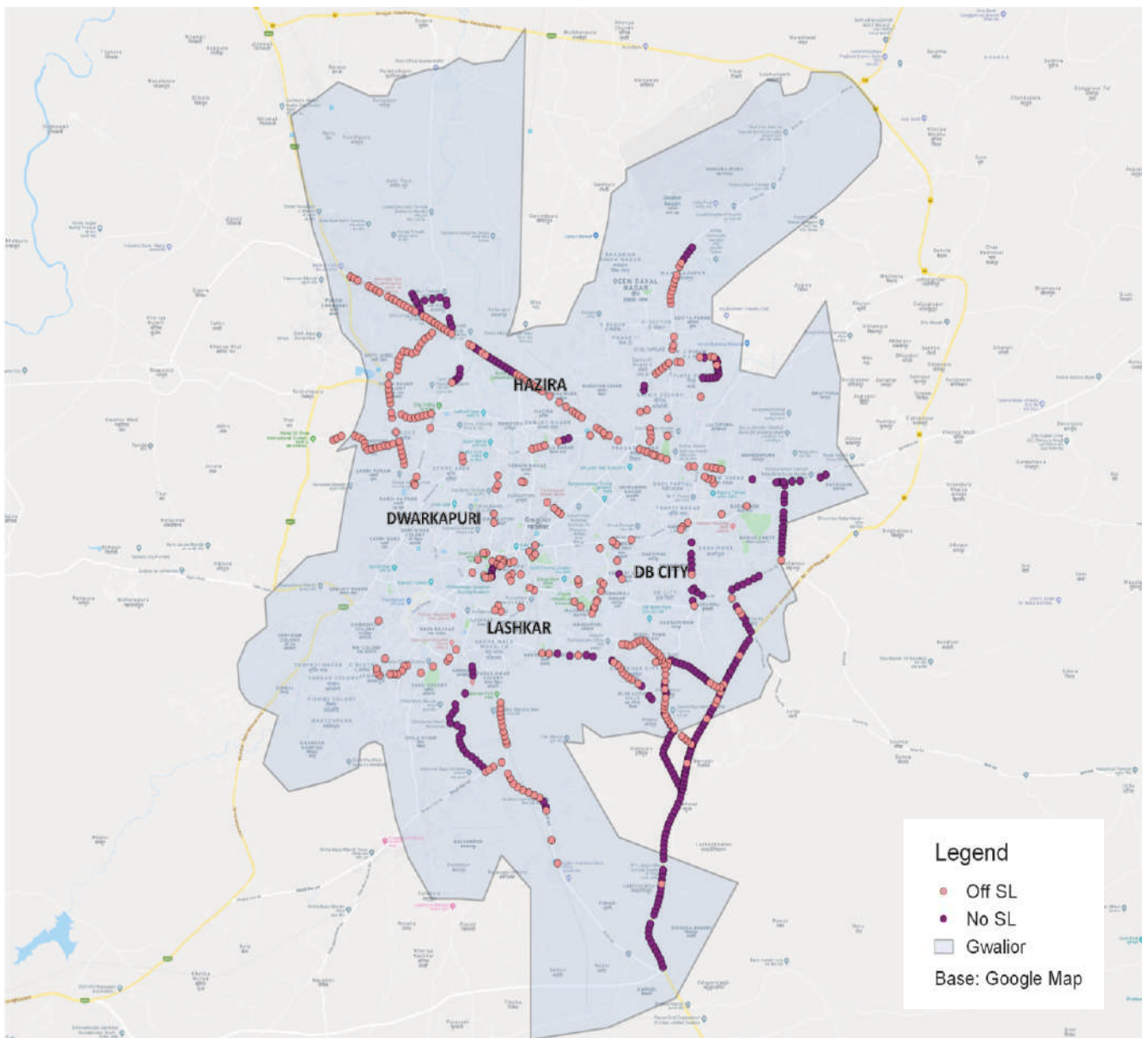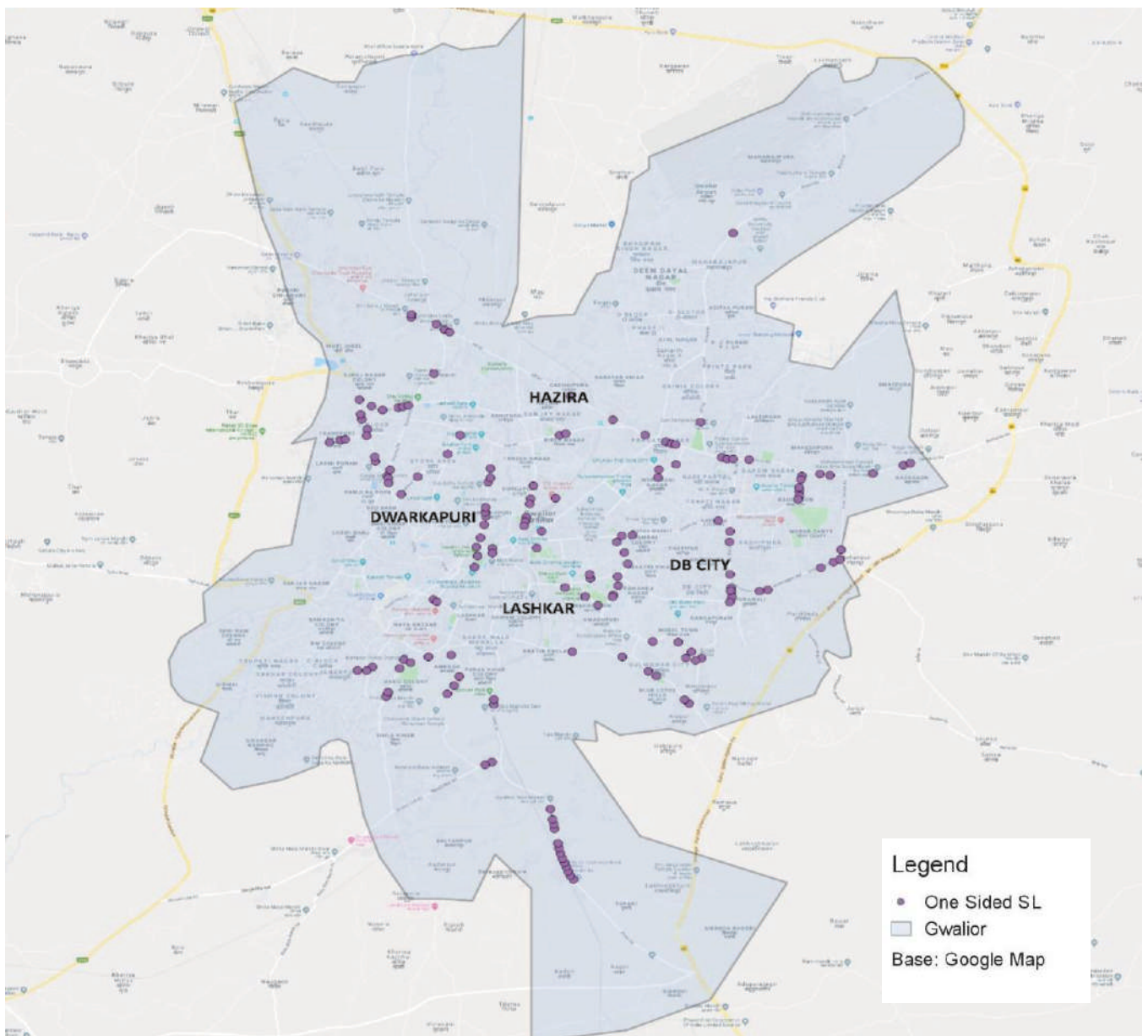- Off SL
- No SL
- Gwalior
- Base: Google Map

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

1.6 / 3

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. About 50% of the audit points have been rated 2 and above for Walkpath parameter making it the second highest rated parameter. Audit points without a walkpath (no pavement) or a kacha/unpaved walkpath have been shown in map 6. Proper footpath need to be constructed along these stretches.

40% of the audit points (as shown in map 7) have been rated as Below Average. This can be primarily attributed to obstructions on the footpath which mainly include vehicular parking, dumping of construction debris, inappropriate positioning of signage and street furniture on the footpath.
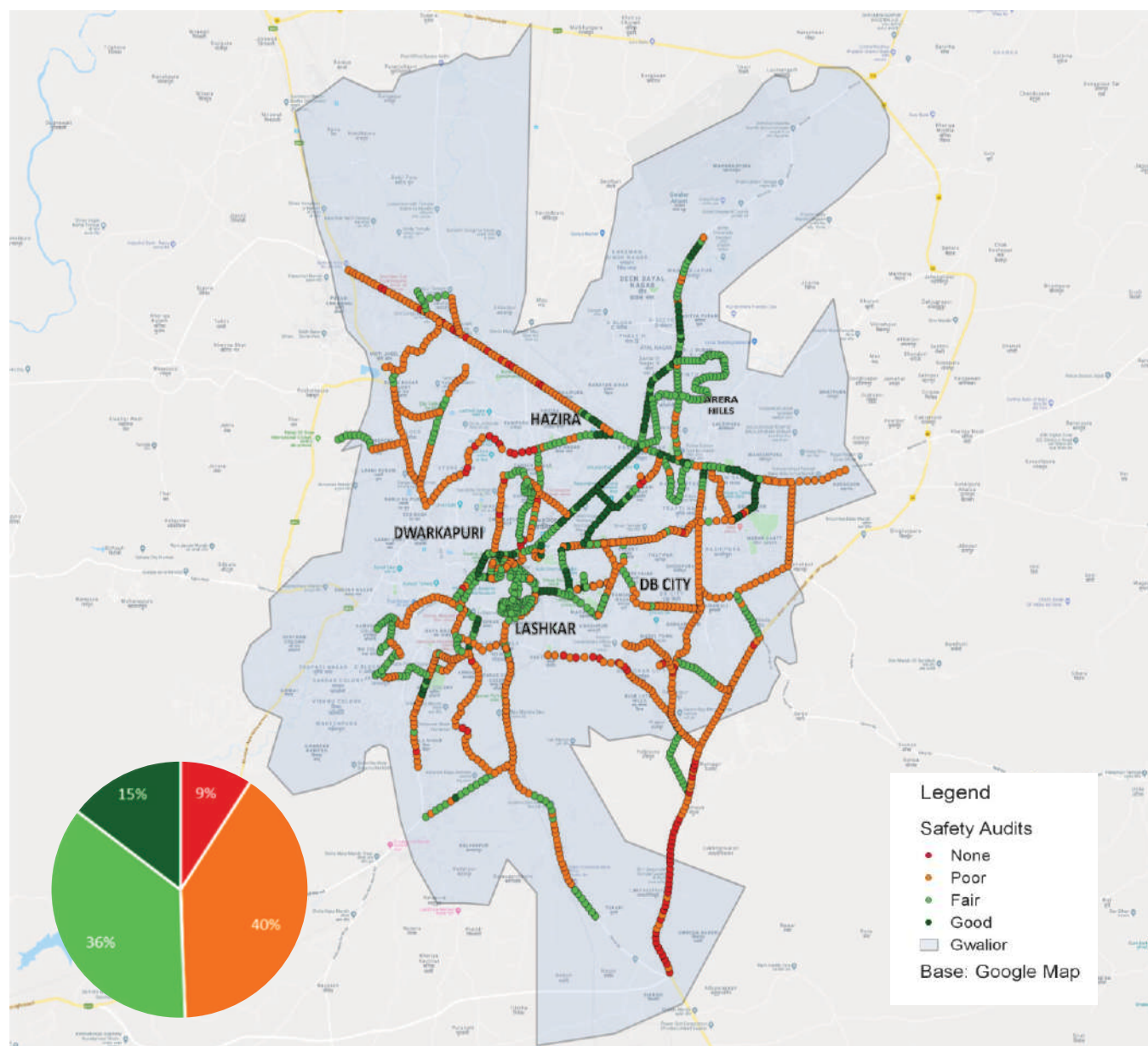
Map 5 indicating Walkpath Rating

Image showing a stretch with no walkpath

Image showing unpaved walkpath

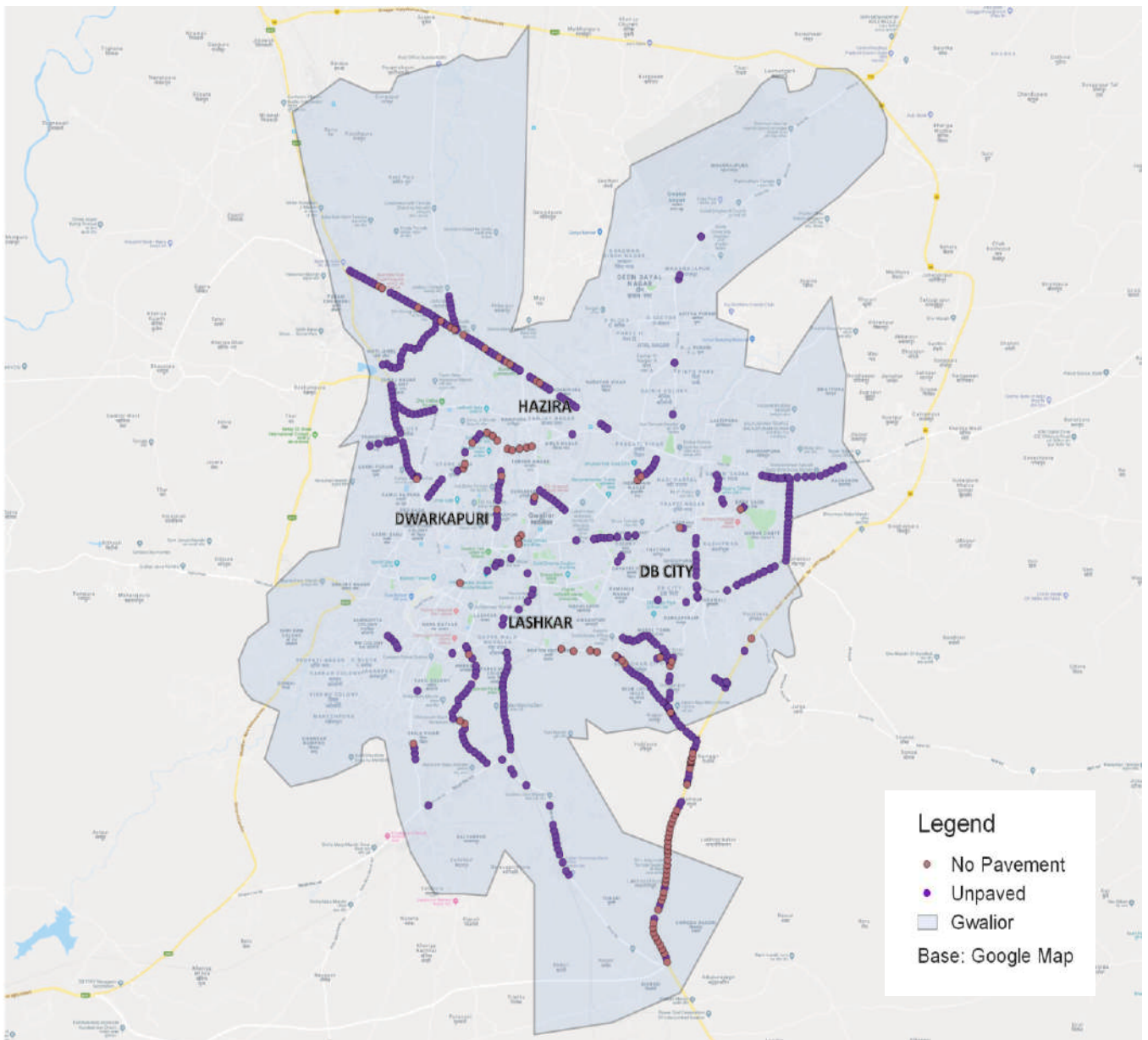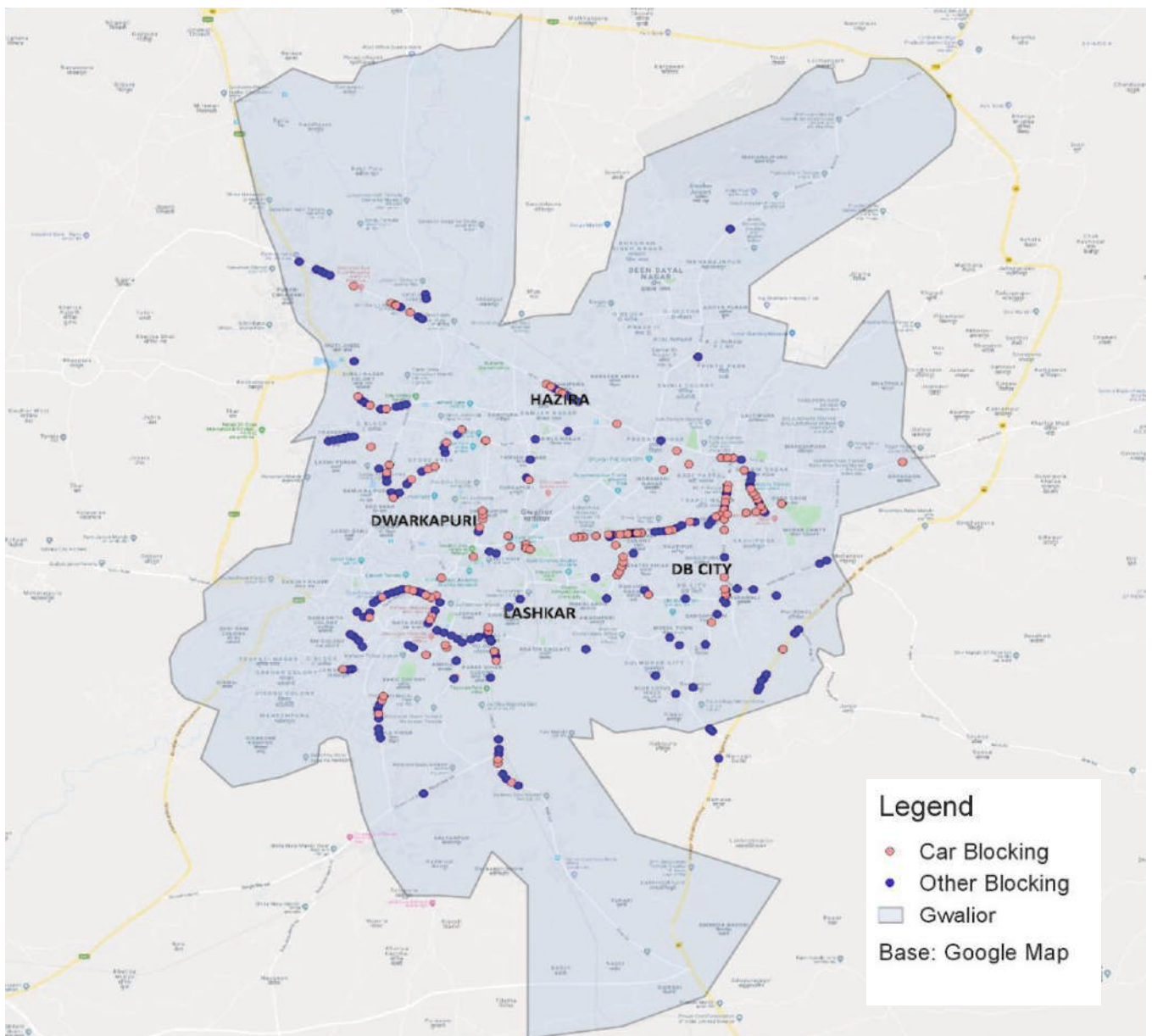**Map 6 indicating points with no or unpaved walkpath.**

Image showing walkpath being obstructed by vehicular parking

Image showing walkpath being obstructed by Construction debris

Map 7 indicating points with obstructions on walkpath

Visibility

1.2 / 3

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 1.2/3 i.e. Below Average. 34% of the audit locations have been rated Poor owing to the presence of high boundary walls in these areas. This results in limited visual contact between the built environment and the pedestrians on the streets. Also, few areas have recorded poor visibility due to parcels of unused land in between.

To improve visibility, the height of solid part of the boundary wall should be reduced to 1-1.5 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.

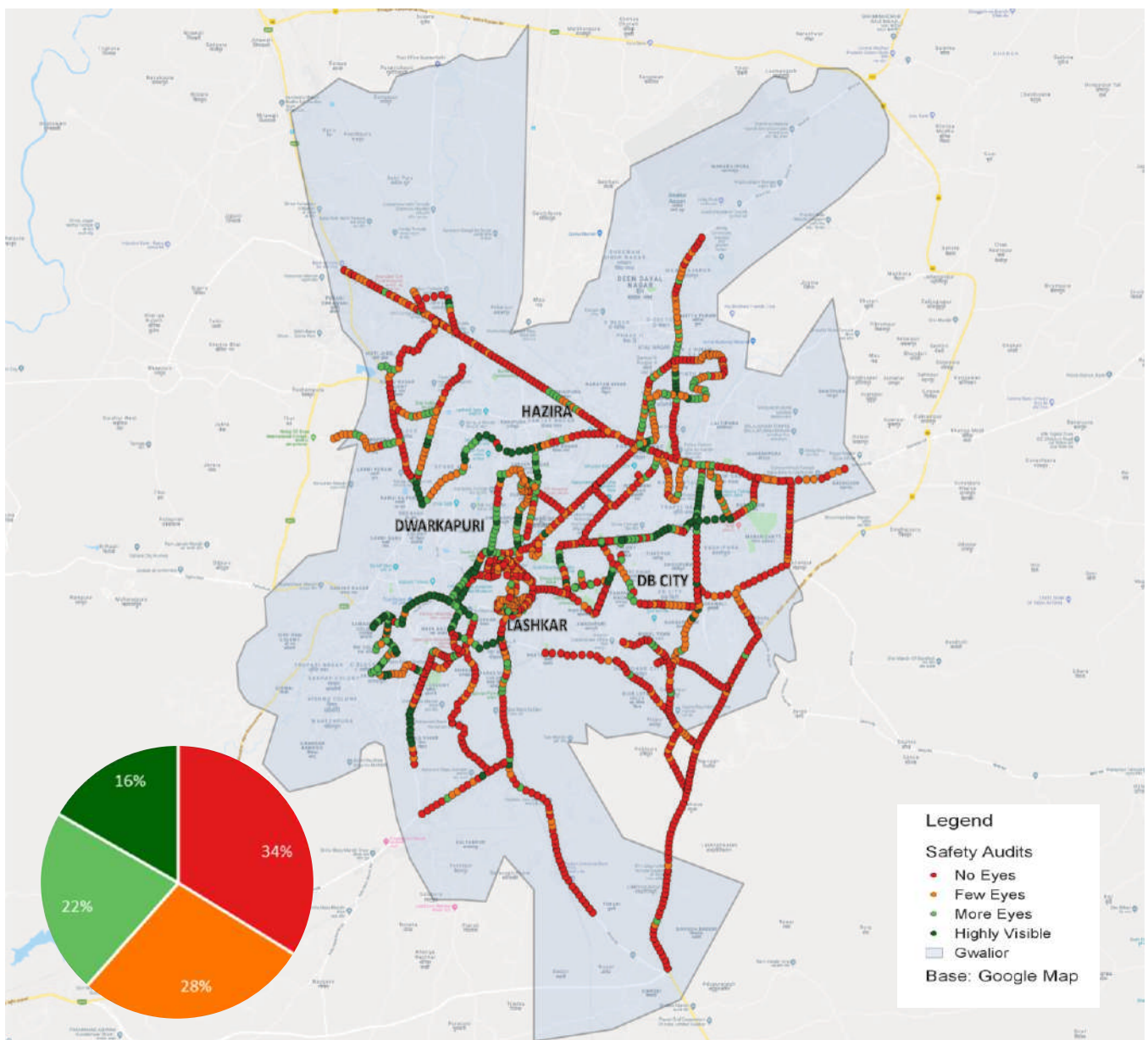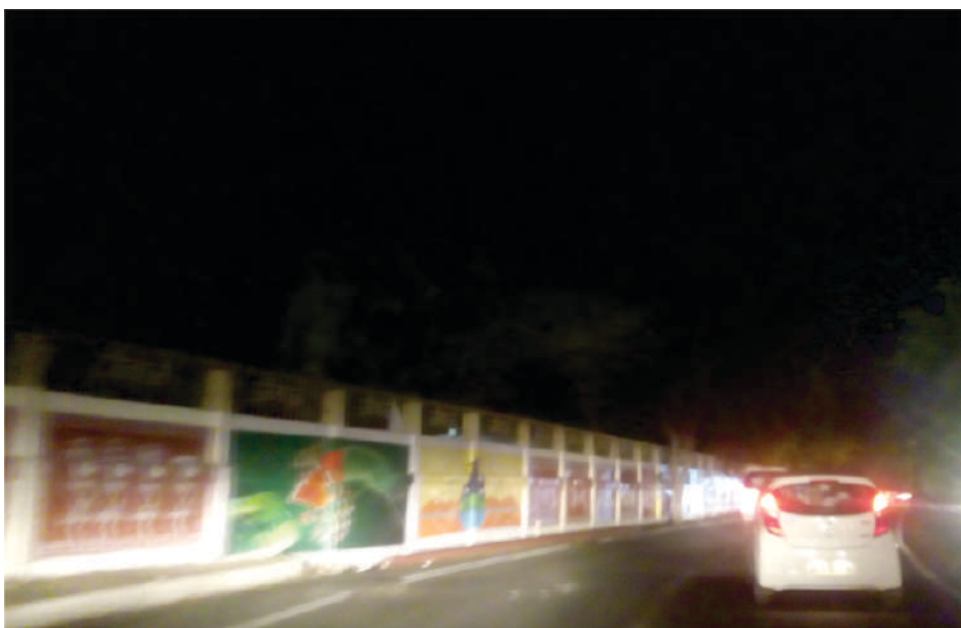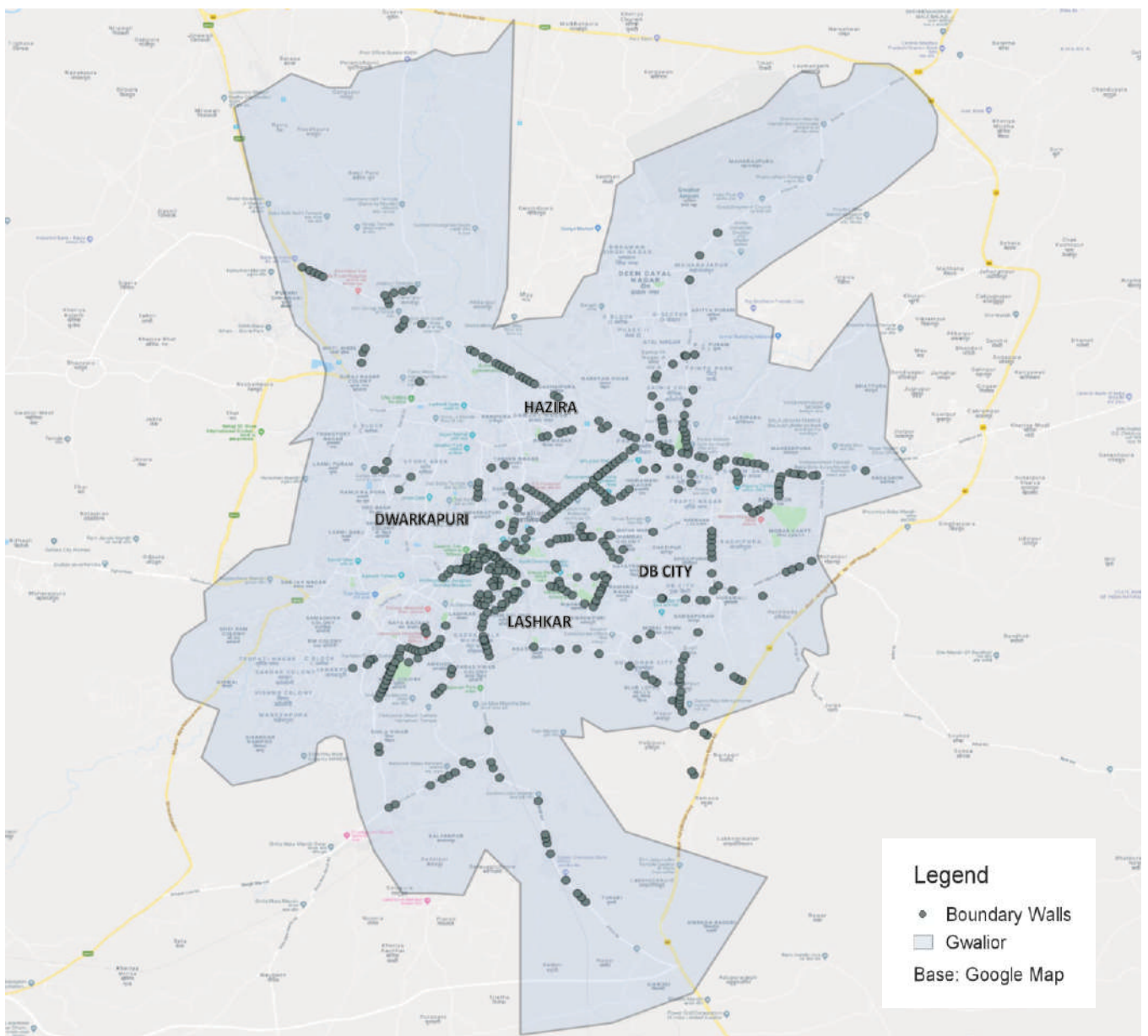**Map 8 Indicating Visibility Rating**

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

0.7 / 3

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 0.7/3 i.e. Poor.

The bus service in Gwalior is a recent initiative and is currently limited to very few areas. 52% 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. Residents opt for private or shared autos, with auto being the major form of intermediate public transport in Gwalior. E-rickshaws have also been recently introduced in the city. The existing para transit stands should be upgraded and should be set up with proper space for parking autos, taxi, etc. Street furniture and public convenience facilities for the commuters and drivers should also be available at stands which are frequented by public .

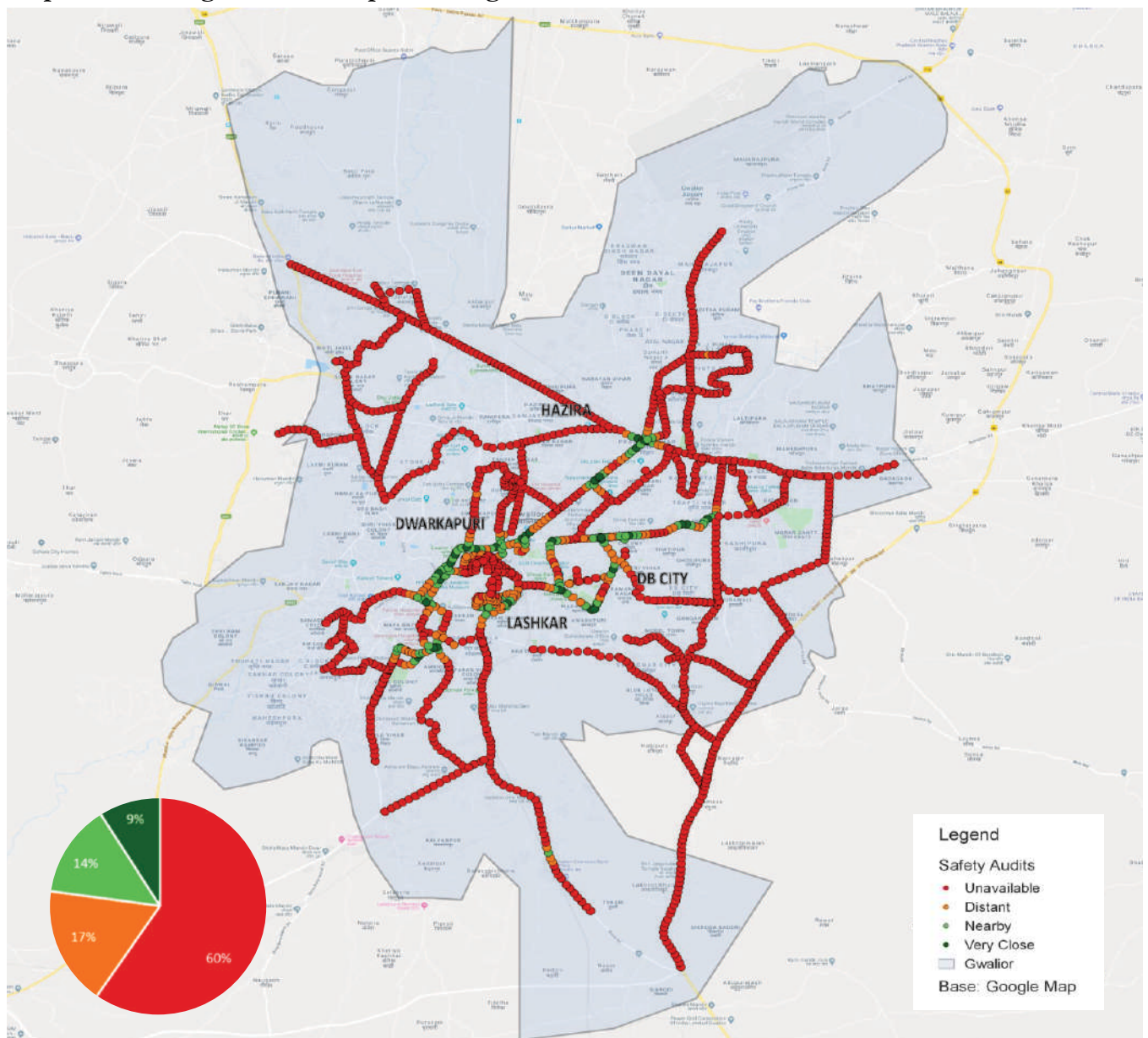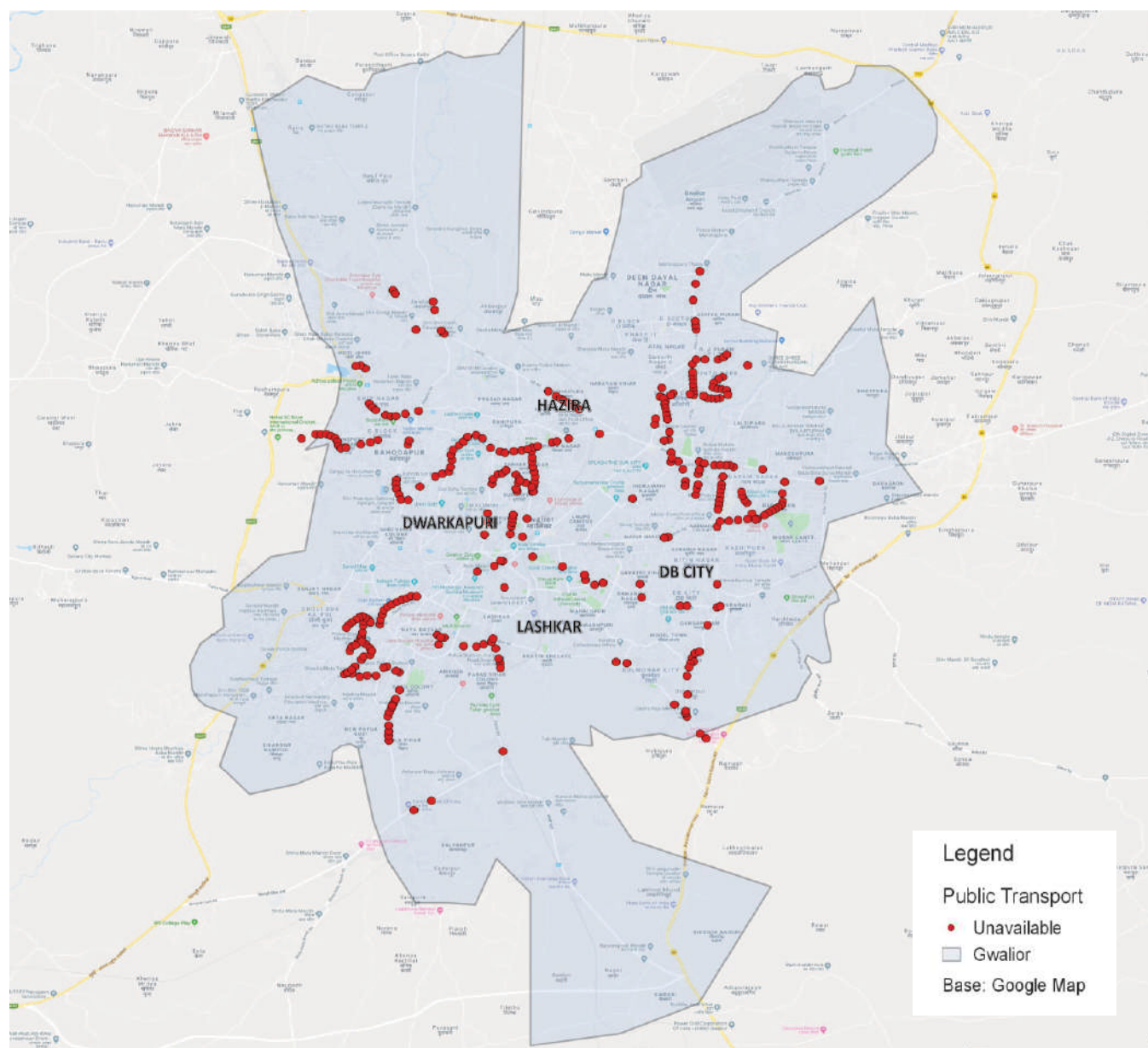**Map 10 Indicating Public Transport Rating**

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

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

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

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 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 on-street 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 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

- Gwalior Road
- Lal Sadak Road
- Amar Jyoti School And Rehabilitation Centre
- Transport Nagar Road
- Navgrah Balaji Hanuman Mandir Road
- Motijheel Railway Station Road
- Netaji SC Bose Stadium Road
- AB Road Maa Pitambara Complex
- AB Road Om Mandir
- Hanuman Mandir AB Road
- Pragati Vihar Morar Road
- Airpot Road Maharajpura
- Bhind Road
- Morar Road
- Laltipara Road
- Office Of Cantonment Board Morar Area

Install new streetlights

- Gangapur Malanpur
- Jalalpur Area
- AB Road Gadhaipura
- Sagartal Marg
- Airpot Road Maharajpura
- RJ Puram to Pinto Park Road
- Badagoan Road Deepesh DTH Dish Service's
- Outer Circular Road
- Harikheda Jarga Road
- Srinagar-Kanyakumari Highway(N44) till Bhanwar Lal Jayalwal
- Rairu-Dabra Bypass Road
- Dongarpur Road
- Murar Link Road
- Cancer Hospital Road

WALKPATH

Build footpath

- Fort Road
- Chowk Bazar Road
- Padav Road
- Lodi Mataji Temple
- Rairu-Dabra Bypass Road
- Srinagar- Kanyakumari Highway (N44) till Bhanwar Lal Jayalwal

Clear vehicular obstruction

- Shiv Nagar
- Outer Circular Road
- Badagoan Road
- Dongarpur Road
- Janshi Road
- Cancer Hospital Road
- Behat Road
- Mall Road
- Gandhi Road
- Madhav Rao Scindia Marg

Pave Walkpath

- Gwaloir Road
- Jalalpur Area
- Amar Jyoti School And Rehabilitation Centre to Shree Pipleshwar Mahadev
- Sagar Taal Sadak
- Motijheel Railway Station Road
- Koteshwar Road
- Kila Gate Road
- Tansen Nagar to Racecourse Road
- Gandhi Road Kala Vithika
- Behat Road
- Outer Circular Road
- Badagoan Road
- New Collectorate Road
- Dongarpur Road
- Janshi Road
- Cancer Hospital Road
- Janshi Road(Akshardham)
- Netorbit Computer Centre Area

PUBLIC TRANSPORT

Provide public transport (Bus Stops)

- AB Road Gahaipura
- Transport Nagar
- Gandhi Road
- Daulat Ganj Road
- Aamkho Road
- Gudagudi Ka Naka Road
- Janshi Road
- AB Road
- Outer Circular Road
- VIP Road
- Kalpi Road
- Mall Road
- Lltipara Road
- Singpur Road
- Kali Gate Road
- Fort Road
- Jail Road
- Koteshwar Temple Road

Designate parking space for para-transit

- Maharaj Bada
- Patankar Bazaar
- Sarafa Bazar

VISIBILITY

Reduce Solid boundary

- Topi Bazar Road
- Madhav Ganj Road
- Ajaypur Road
- Gudagudi Ka Naka Road
- Naka Chandrabadi Main Road
- Siroi Link Road
- Madhav Rao Sciindia Marg
- AB Road
- Mela Road
- Racecourse Road
- VIP Road
- Airpot Road

Create designated hawker zones

- Kapil Road
- Budagoan Road
- Singhpur Road
- Behat Road
- Ambawadekar Road
- Tansen Nagar Racecourse Road
- Sanatan Dharan Mandir Road
- Gudagudi ka Naka Road
- Dhongarpur Road
- New Collectorate Road
- Charak Udhyan
- Jiwaji University Road
- Gandhi Road
- University Marg

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The Asia Foundation is a non-profit international development organization committed to improving lives across a dynamic and developing Asia. Informed by six decades of experience and deep local expertise, our work across the region addresses five overarching goals—strengthen governance, empower women, expand economic opportunity, increase environmental resilience, and promote international cooperation.

SAFETIPIN
Supporting Safer Cities

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.