# PATNA GAYA MUZAFFARPUR
# SAFETY AUDIT REPORT

*By Safetipin*

# BIHAR SAFETY AUDIT

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ACKNOWLEDGEMENT

# SAFETIPIN
# ACKNOWLEDGES

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*For the tri-city Bihar project*

# CITES OF BIHAR
## PATNA, GAYA, MUZAFFARPUR

*Women's access to public spaces in the cities of Bihar*

Bihar is the third largest state by population and twelfth largest state by territory with an area of 94,163 sq.km. In ancient and classical India, Bihar was considered as a centre of power, learning and culture. The name Bihar is a derivative from Vihara, which means 'monastery'. Today Bihar is a seat of leading educational institutions and has significant built and cultural heritage.

As per Census 2011 data, Bihar has a population of 104 million with an urban population of only 11.29%. The total population in the state resides in 199 towns and 14 urban agglomerations. The density of population (persons per square km) in the state is 1109. Bihar recorded a sex ratio of 918 females per 1000 males. The average literacy rate in the state is 61.80% with male literacy rate of 71.20% and female literacy rate of 51.50%. According to Census 2011 data, the female workforce participation rate in Bihar state is about 27% and only 17% in urban areas of Bihar. The corresponding figures for male workforce participation rate in Bihar and urban Bihar are 73% and 83% respectively. Although, main workers constitute majority of the workers (61.5%) in Bihar, more females are employed as marginal workers (40%) as compared to main workers (19%) in Bihar.

71-78% of women in urban areas of Patna, Gaya and Muzaffarpur districts are other workers i.e. they are not engaged in agriculture, cultivation and household industry indicating the importance of transport in their everyday lives. 87% of female workers in various cities and towns in the state are concentrated in the following sectors: domestic work, tailoring, manufacturing, forestry, fishing, education, health, social work, entertainment, public administration, and support services activities which highlights the need of urban spaces to be safe, accessible and inclusive.

**Patna** is the largest city and capital of Bihar with a population of around 1.68 million as per Census 2011. It is located on the south bank of river Ganges. It is a linear city with an area of about 107 sq.km. Patna is the administrative and economic hub of the state. Patna district too is urbanized both in terms of land area and density. The Patna Urban Agglomeration (PUA) consists of Patna Municipal Corporation Area (PMC) and its outgrowths. The PUA with a population of 2.04 million covers an area of 152.33 sq.kms. The PMC has 83% (1.68 million) of the of PUA's population in an area of 107.62kms with 72 wards.

**Gaya** is the second largest city in Bihar and is a popular tourist node due to its proximity to Bodhgaya. Gaya Urban Agglomeration (GUA) consists of Gaya Municipal Corporation (GMC) and its outgrowths. GUA with a population of 0.475 million covers an area of 48.37 sq.km. GMC accounts for almost 99% (0.47 million) of GUA's population in an area of 47.05 sq.km with 97 wards.

**Muzaffarpur** is the third largest and fourth most populous city in Bihar, is popular for its agricultural produce. Muzaffarpur Urban Agglomeration (MUA) consists of Muzaffarpur Municipal Corporation (MMC) and its outgrowths. MUA with a population of 0.396 million covers an area of 33.44 sq.km. MMC accounts for almost 89% (0.35 million) of MUA's population in an area of 26.43 sq.km with 49 wards.

The average literacy rates across the three agglomerations is 82 percent, which is higher than that of urban areas in Bihar (77 percent). However, this has not translated into increased economic opportunities for women with only 11% of women in PUA and MUA in the workforce as main workers and 15% of women in GUA in the workforce as marginal workers.

## WOMEN'S SAFETY IN PUBLIC SPACES

While the issue of the safety of women in public places has gained media attention in the metro cities like Delhi, Mumbai and Bengaluru, there is very little evidence based research that discusses safety in public places in Tier II and Tier III cities of India. According to the data published by NCRB (National Crime and Records Bureau), the number of crimes reported against women in Bihar increased up to 15 percent in 2018 as compared to the past year. One of the reasons for the increase in reported crimes is the increase in visibility of women in public spaces including the workplaces. Cases of sexual harassment were also reported from public transport indicating lack of safety for girls and women in using and accessing public transport.

A study on women's safety perception, experiences, incidence and impact of sexual harassment in public spaces in Patna in 2014-2015 reveals that almost 40% women in the city consider streets as the most unsafe. This was followed by other public spaces such as public parks, bus stands and railway stations. The same study highlights that visual and verbal harassment is more rampant in open public spaces such as streets, parks as compared to physical harassment which was found higher in public transport. Most respondents (28%) in the study reported feeling mentally and emotionally stressed due to sexual harassment. Around 18% of the respondents reported feeling scared in public spaces. Few women (13%) reported that incidents of sexual harassment resulted in lack of mobility for them. Sexual harassment also had negative impact on the performance of girls and women at educational institutions and workplaces (2-3%).

Bihar has a large share of workers engaged in the informal economy. According to a study conducted by NIDAN in Patna in 2010, there were about 28,432 street vendors including both static and mobile vendors. Of the total street vendors in Patna, almost 22 % are females. Street vendors have often been neglected by municipal authorities and police as they see street vending as an illegal activity and hawkers as offenders. The study highlights that there has been a decrease in the number of female vendors in Patna. The main reason for this decline was the fear of sexual harassment from males. Most of the female vendors preferred being mobile vendors as they considered

this way they could avoid harassment. Female vendors also said that they are reluctant to sit in crowded markets as most vendors are male. Lack of public toilets and child care centres was another important constraint for almost 80% of female vendors.

The above studies suggest that there is an urgent need to address women's safety in public spaces to ensure their continued access to opportunities and resources.

## PUBLIC SPACE SAFETY AUDIT BY SAFETIPIN APPS

The tri-city public safety audit project seeks to address the issues of public safety in the cities of Patna, Gaya and Muzaffarpur by enhanced participatory data collection using the Safetipin applications. The project planned to collect data, conduct analysis of the data and work with local governments on how to use the data to make public spaces safer. The information on the application specifically focuses on the experience of women and girls, providing them with an interactive tool around feelings of safety. In addition, this project will work towards strategic partnerships with city stakeholders to influence and make city spaces safer and more inclusive by responding to the priority issues identified through the use of the Safetipin applications.

The applications are used both to diagnose safety issues and to involve the community in monitoring public spaces, particularly those where interventions have taken place. The use of the Safetipin Apps and local capacity building have provided large scale data at the street level and promoted women's engagement. The project mapped all the main roads of the cities as well as some key public spaces in the cities. Further it conducted analysis of the data and provided recommendations on how to improve safety, inclusion and use of public spaces which could be valuable for both citizens and governments. The details of how the applications were used and data was produced to give recommendations for improvement are given in the following chapters.

SAFETIPIN
# IMAGE ANALYSIS TECHNIQUE

*Safety mapping using Safetipin applications*

### DATA COLLECTION WITH SAFETIPIN NITE

Safetipin Nite app generates data by clicking night-time pictures across the city via a phone camera mounted on the windshield of a moving vehicle. Photos are taken to capture pedestrian's safety conditions at regular intervals of 30-50 metres. Every picture is geo-tagged and uploaded on to a server and further analysed by a team of expert coders using Safetipin parameters and sub-parameters. These eventually are translated into data sets that appears as audit points on the Safetipin map. This GIS data is then shared with local stakeholders and government authorities in order to address and improve safety conditions in the city.



*Image on right*
*Phone running Safetipin Nite App mounted on the windshield of a car*

### SAFETIPIN AUDIT PARAMETERS TO EVALUATE SAFETY AND INCLUSIVITY IN PUBLIC SPACES:

*Lighting – Availability of enough light to see all around you*

*Walkpath – Either a pavement or road with space to walk*

*Public Transport – Availability of public transport like metro, buses, autos, rickshaws*

*Visibility – Vendors, shops, building entrances, windows and balconies from where you can be seen*

*Security – Presence of formal police or private guards*

*People – Number of people around you*

*Gender Usage – Presence of women and children near you*

*Openness – Ability to see clearly and move in all directions*

*Feeling – How safe do you feel*

| Parameter | Score 0 | Score 1 | Score 2 | Score 3 |
|---|---|---|---|---|
| **Lighting (Night)** | **None** <br><br> No street or other lights | **Little** <br><br> Can see lights, but there is low visibility in the area | **Enough** <br><br> Lighting is enough for clear visibility | **Bright** <br><br> Whole area brightly lit |
| **Openness** | **Not Open** <br><br> Many blind corners and no clear sightlines | **Partly Open** <br><br> Able to see a little ahead and around | **Mostly Open** <br><br> Able to see in most directions | **Completely Open** <br><br> Can see clearly in all directions |
| **Visibility** | **No Eyes** <br> No windows or entrances of shops or residences overlook the point | **Few Eyes** <br> Less than 5 windows or entrances overlook the point | **More Eyes** <br> Less than 10 windows or entrances and vendors overlook the point | **Highly Visible** <br> More than 10 windows or entrances and vendors overlook this point |
| **People** | **Deserted** <br><br> No one in sight | **Few People** <br><br> Less than 10 people in sight | **Some Crowd** <br><br> More than 10 people visible | **Crowded** <br><br> Many people within touching distance |
| **Security** | **None** <br><br> No guards or police visible in surrounding area | **Minimal** <br><br> Some private security visible in surrounding area but not nearby | **Moderate** <br><br> Private security within hailing distance | **High** <br><br> Police / reliable security within hailing distance |
| **Walk Path** | **None** <br><br> No walking path available | **Poor** <br><br> Path exists but in very bad condition | **Fair** <br><br> Can walk but not run | **Good** <br><br> Easy to walk fast or run |
| **Public Transport** | **Unavailable** <br><br> No metro, bus, auto/rickshaw stop within 10 mins walk | **Distant** <br><br> Metro or bus auto/rickshaw stop between 5-10 mins walk | **Nearby** <br><br> Metro or bus, auto/rickshaw stop between 2-5 mins walk | **Very Close** <br><br> Metro or bus, auto/rickshaw available within 2 mins walk |
| **Gender Usage** | **Not Diverse** <br><br> No one in sight, or only men | **Somewhat Diverse** <br><br> Mostly men, very few women or children | **Fairly Diverse** <br><br> Some women and children | **Diverse** <br><br> Balance of all genders or more women and children |
| **Feeling** | **Frightening** <br><br> Not venture here without sufficient escort | **Uncomfortable** <br><br> Will avoid this place whenever possible | **Acceptable** <br><br> Feel safe enough, but will be careful | **Comfortable** <br><br> Feel safe here even after dark |

THE RATING RUBRIC

*Image on left*

*The ratings for each of the nine parameters are defined on a scale of 0-3*

SAFETIPIN
# IMAGE ANALYSIS TECHNIQUE

*Safety mapping using Safetipin applications*

## DATA CODING ON SAFETIPIN PORTAL

The photographs collected through Safetipin Nite gets uploaded onto the Safetipin server. These are then accessed on the portal and analysed on a wide range of parameters (given below) linked to safety and inclusivity of public spaces. For deeper analysis, a set of sub-parametres for the parameters of Lighting, Walkpath, Public Transport, Visibility and Security are used for recording additional information. The complete list of sub-parameters is given here. Google Maps are also used to identify the sub-parameters. Every 100 metres, an audit is generated at a point by using all the photographs collected around that point.

## GENERATING MAPS, ANALYSES, REPORTS,

Based on the collected and coded data, the Safetipin team analyses and produces reports and maps that can be used for actual on ground responses and actions to work towards improving safety for citizens on the streets and public spaces in cities. Maps are produced on each parameter of safety with geo tagged location of audit points, supported with images. Data is also analysed in terms of correlations and linkages with other possible data sets which further supports or reinforce the findings. Based on these analyses, a concrete set of recommendations are drawn out for key stakeholders for city improvement programs.

*Image below*
*Snapshot of the coding screen showing the parameters and sub-parameters*

| Lighting | Visibility | Walkpath | Security | Public Transport |
|----------|-----------|----------|----------|------------------|
| No SL | 50% Boundary Wall | No Pavement | Private Guards | Metro/Rail |
| Off SL | 100% Boundary Wall | Broken Pavement | Police Van/Bike | Bus/Mini bus |
| Dim SL | Unused Land | Unpaved Pavement | Police Check | Auto/Shared Auto |
| High SL | Road side Vendors | Car Blocking | Police Booth | Cycle Rickshaw |
| Too Far SL | Temporary Stalls | Vendor Blocking | Police Station | Taxi |
| Leaves cover SL | Shops | Houses Extending | Other Govt. | Rental Bicycle |
| Other cover SL | Houses upto 4 Floors | Trees Blocking | | |
| One side SL | Houses >4 Floors | Other Blocking | | |
| | | Walkable Road | | |
| | | On-street Parking | | |

## SUB-PARAMETER RUBRIC

*Image on left*

*Rubric showing all the sub-parameters for the listed five parameters*
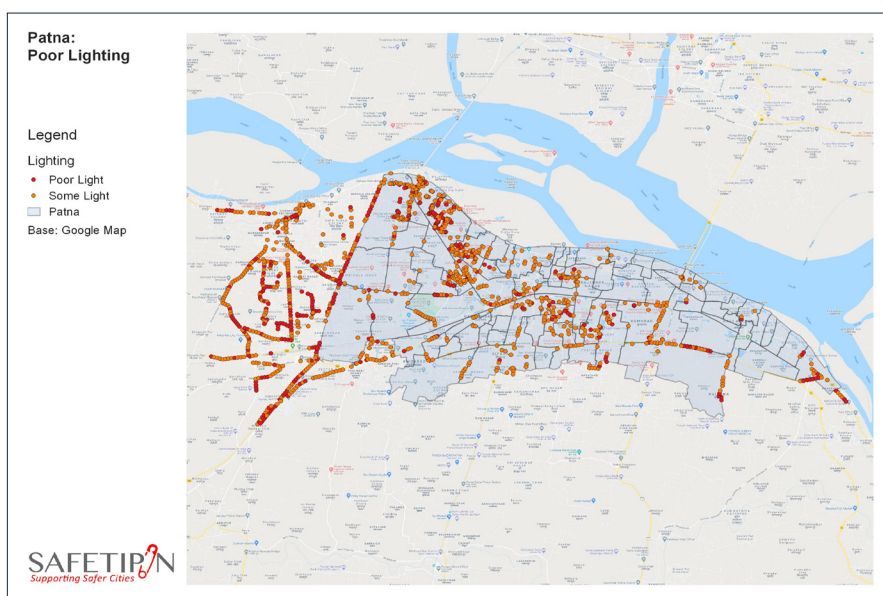


## PATNA POOR LIGHTING MAP

*Image on left*

*The map shows locations in the city where there is no or poor street lighting*
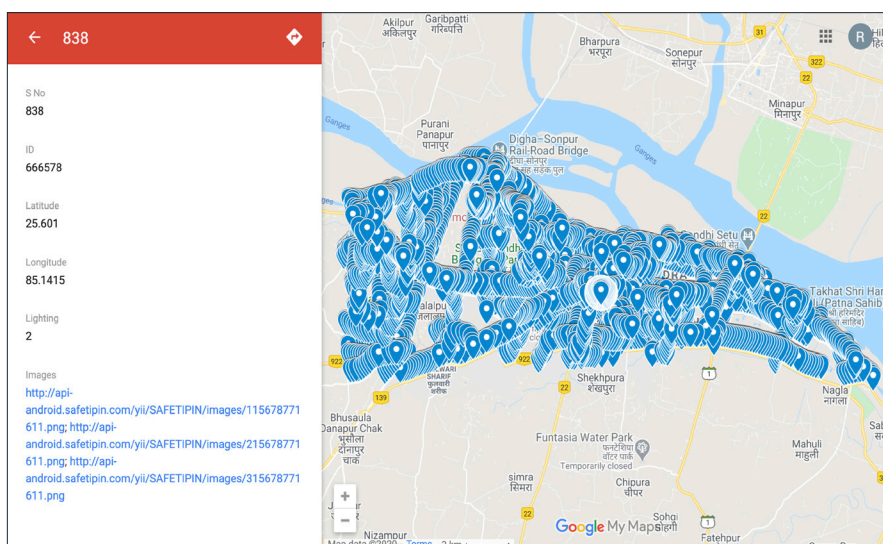


## PATNA LIGHTING GIS LAYER

*Image on left*

*GIS layer of lighting on Goggle Maps with image links*

TRI-CITY
# DATA COLLECTION

*Data collection using Safetipin Applications*

## PUBLIC SAFETY AUDIT IN BIHAR

In Patna, Gaya and Muzaffarpur, Safetipin collected data through both the applications - Safetipin Nite and My Safetipin. Safetipin Nite mapped the city through photographs and My Safetipin involved volunteers by providing a tool through which they could express their safety concerns related to public open spaces.

In the first phase of the project, the city of Patna was selected to start the data collection process using Safetipin applications. This was mainly done because Patna being the capital city has the largest area and higher levels of complexity in terms of public safety. Additionally, the GIS files required for supporting the data collection were acquired on time to finish the process before the heavy rains had flooded the city. The data collection process involved prior planning like extent of the motorable roads to be covered, selection of public spaces in the city and choosing the volunteers who will collect data using Safetipin applications. Post planning, the process included volunteer training, test rides/audits and actual data collection.

In the second phase of the project, the data was collected in the cities of Muzaffarpur and Gaya and similar prior planning and post processes were involved to facilitate data collection.

## DATA COLLECTION WITH SAFETIPIN NITE

Over the app training session, Safetipin Nite App was introduced to four volunteers and four drivers who were chosen for the work. The volunteers were introduced to the app and were even trained to use the app in their personal phones as well as the smart phones which were provided for data collection.

Alongside, they were also trained on how to mount the phones on the windshields of the cars to do the image collection. Pre-assigned data collection routes were run on all their phones and hands-on training with the volunteers/drivers were done with the Safetipin team members driving around the city collecting data.

519 km were covered by the drivers and their respective volunteers in Patna, collecting 38476 images of the city between 6pm to 9pm. Similarly, 140 km in Gaya, collecting 11103 images and 217 km in Muzaffarpur, collecting 7114 images of the city. The quality of most of the images collected were certified good after an initial round of review by the Safetipin team and were processed for the main visual analysis. The volunteers and drivers worked efficiently in collecting data with the help of Safetipin Nite app.

However, in spite of having a good app training and data collection experience in all three cities, couple of challenges as listed below were encountered.

Challenge: The routes which were assigned to the drivers for data collection by using Safetipin Nite app were made from the GIS road layers and google maps. There were issues in actually accessing few routes on ground. One reason for the inaccessibility was that the changes made on ground were not reflected on the google map or GIS road layers. The other problem was that due to some construction work on few of the roads, drivers were unable to access it.

Challenge: The photographs are expected to be of a certain quality for having convenience in coding process. It was hard to maintain the quality of the images collected due to the constant shaking of the car, due to bad road condition and traffic on the road blocking the camera view.

## DRIVER TRAINING

*Image on left*

*Safetipin Nite app running on volunteer's and driver's smart phones*



## GOOD IMAGE

*Image on left*

*Photo collected through Safetipin Nite app - an example of a good image*



## BAD IMAGE

*Image on left*

*Photo collected through Safetipin Nite app - an example of a bad image*

TRI-CITY
# DATA COLLECTION

*Data collection using Safetipin Applications*

## DATA COLLECTION WITH MY SAFETIPIN

Twelve female volunteers were selected by the C3 team for conducting public space safety audits. Safetipin team trained all the twelve volunteers as well as three staff members from C3 Patna team. The first session of the training initiated informal discussions with the volunteers on women's safety and the second session the technical training was conducted on the user generated audits using My Safetipin app.

The initial discussions between Safetipin team and the female volunteers was quite intriguing. C3 staff members also participated to enrich the discussion. The discussion started with the volunteers explaining their experience of the city of Patna in terms of what time of the day is convenient for them to be out, which places do they feel comfortable to access and what kinds of challenges do they face while roaming or travelling in the city. The volunteers were quite vocal in terms of bringing out the points like gender biased public spaces and prejudices associated to how women should behave or act in public places. The perception of safety was much more grounded in the female volunteers as compared to the male volunteers because of their first hand experiences. During the discussion, the challenges faced because of the patriarchal mindset of the society were quite evident. Young female volunteers also spoke about their struggles in achieving milestones in their life due to these challenges. They sensed inequality in various domains of their day to day life. This discussion laid out a good base for them to understand the importance of the work which they were going to do in upcoming days and how it could improve the safety standards of the city.

In another session the volunteers were introduced with the functioning of the My Safetipin app and were helped to install the app in their smart phones. After installing the app each volunteer did some trial audits to make sure that they have understood the process correctly. After trial-audits were done, each volunteer was assigned with areas which were convenient for them to access and do the safety audits. These two sessions of the training complemented each other in generating quality work at the end of the audits.

Similar sessions were held in Gaya and Muzaffarpur too to train volunteers selected for doing public space safety audits.

However, in spite of having a good app training and public space audit experience in all three cities, couple of challenges as listed below were encountered.

Challenge: After the training of My Safetipin app all female volunteers were expected to use the app with ease. Some volunteers had problems with the functioning of the My Safetipin app. The reason for this problem was the diversity in the personal phones used by the volunteers.

Challenge: It was assumed that the volunteers will be able to access all the areas (areas identified by the organization to be audited) and will be able to do public space safety audits. The female volunteers were not convinced to go to all the places at night. Due to this issue few areas were left out and some areas were club together.

## VOLUNTEER TRAINING

*Image on left*

*My Safetipin app training session with volunteers*
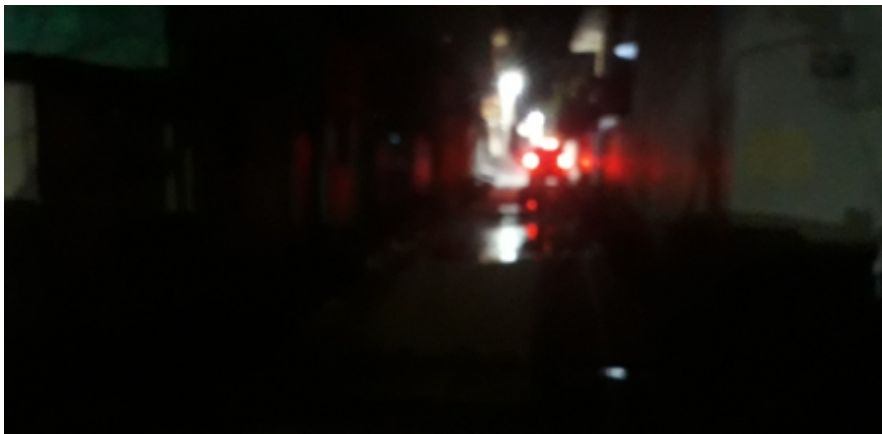


## BAD IMAGE

*Image on left*

*Photo collected through My Safetipin app - an example of a bad image*



## GOOD IMAGE

*Image on left*

*Photo collected through My Safetipin app - an example of a good image*

## CITY OF PATNA
# FINDINGS

*Parameter maps and safety ratings*

In Patna, data was collected through both the applications - 'Safetipin Nite' mapped the city through photographs and 'My Safetipin' involved volunteers to express their safety concerns by auditing popular public spaces. The following parameter maps represent the collected data and analyses them to understand where the gap lies to make public spaces safe for women and girls.

**Patna:**
**Safetipin Nite Audits**

Legend
- Safety Audits
- Patna

Base: Google Map

## 2740 AUDIT POINTS

*Map top right*

*The map shows the safety audit points generated by the Safetipin Nite Application.*

**Patna:**
**My Safetipin Audits**

Legend
- Safety Audits
- Patna

Base: Google Map
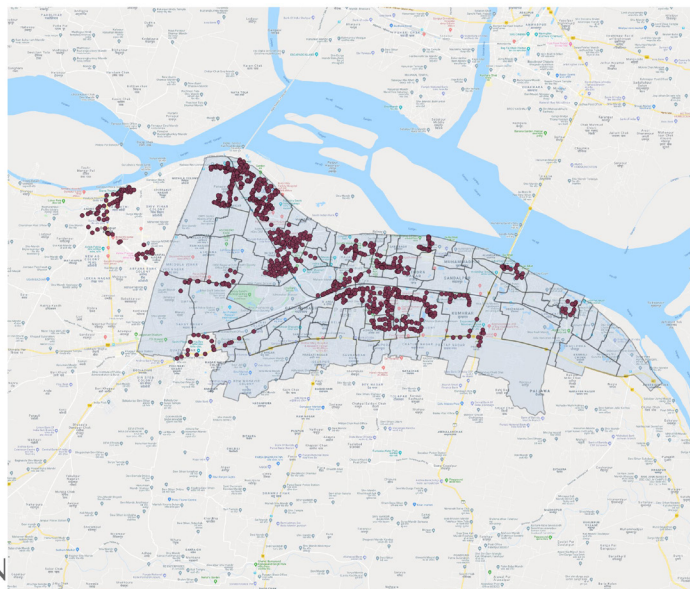
## 940 AUDIT POINTS

*Map bottom right*

*The map shows the safety audit points generated by the My Safetipin Application.*

# 2.6/5

## SAFETY SCORE OF PATNA
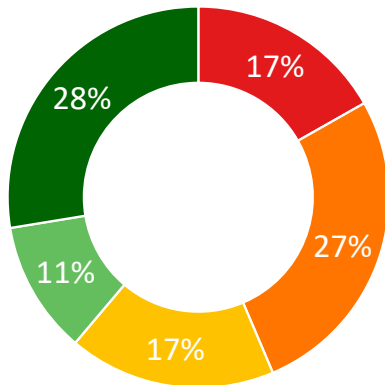


On the safety map below, the periphery of the city, shows poor infrastructure and weak connectivity. This primarily means none or broken lights and footpaths, no or very low visibility (eyes on the street) and security, and public transport being out of reach. These aspects together contribute to make city peripheries unsafe. However, the city core has scored slightly better comparatively on the above parameters. A thorough analysis of each parameter follows.

*On the left, percentage distribution pie of the safety score map below. Tally with the legend below.*

**Patna: Safety Score**

### Legend

**Safety Audits**

- 🔴 Poor
- 🟠 Below Average
- 🟡 Average
- 🟢 Above Average
- 🟢 Excellent
- ⬜ Patna

Base: Google Map
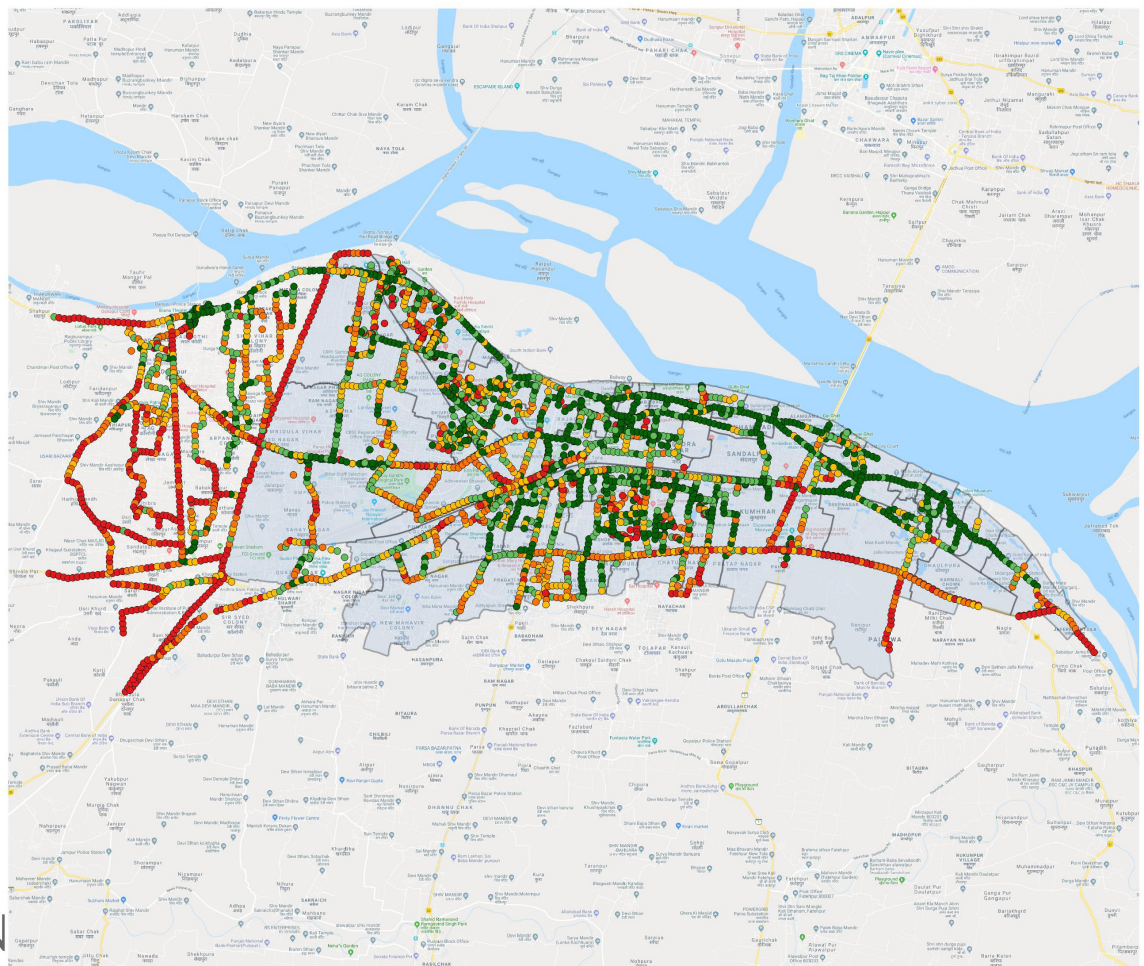
# 34%

## OF THE CITY MAPPED HAS NO OR POOR LIGHT
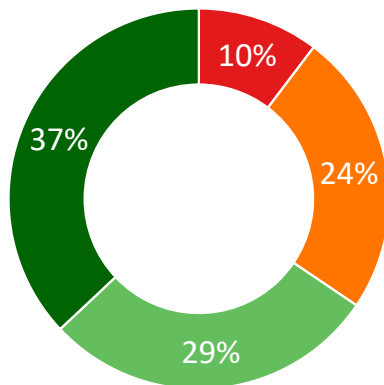
66% of the city in general has good street lighting but 34% scores poorly on the same. When data is represented geographically (map below) it is seen that most of the lower ratings on street lighting are on the western periphery and a few clusters present in the core too. This means, either there are none or inadequate street lighting in these parts of the city. This geo-located data could be used for city improvement programs to identify the status of street lighting in the city.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*



**Patna:
Parameter
Lighting**

Legend

Safety Audits
- Poor Light
- Some Light
- Enough Light
- Bright Light
- Patna

Base: Google Map
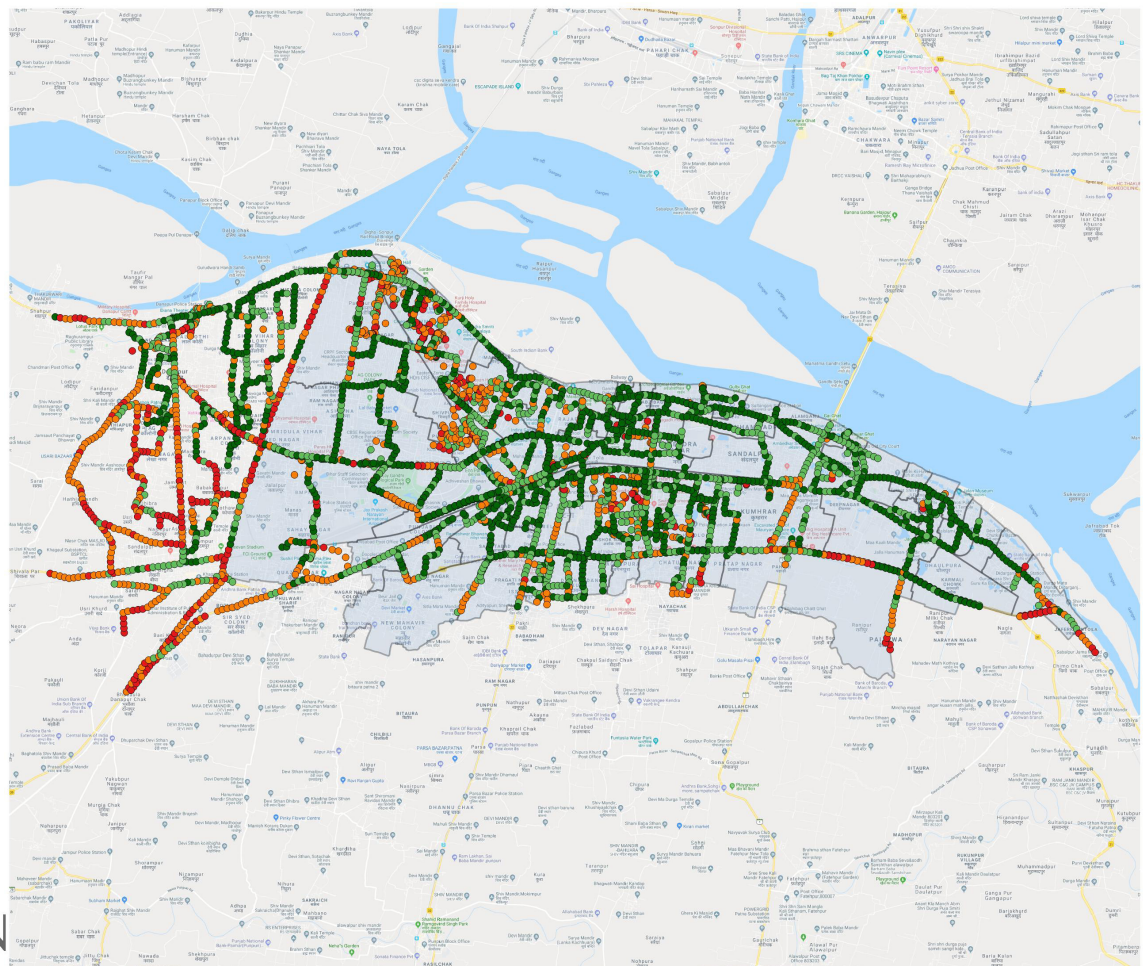
# 62%

## OF THE CITY MAPPED HAS POOR WALKPATH
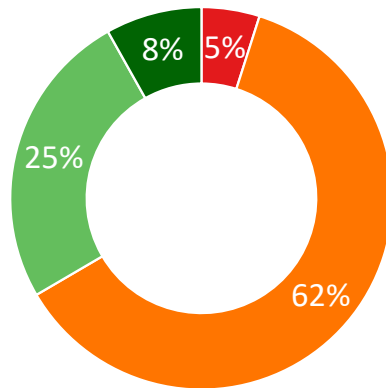
Only 33% of the city has walkable footpaths, rest 67% scores poorly on the same. When data is represented geographically (map below) it is seen that most of the lower ratings on footpaths are spread across the city with a few exceptions in some pockets in the core where the ratings are good. This largely means, either there are none or very poor quality footpaths in the city. This geo-located data could be used for upgradation work to identify the condition of walkpath in the city.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*



**Patna: Parameter Walkpath**

### Legend

Safety Audits
- None
- Poor
- Fair
- Good
- Patna

Base: Google Map
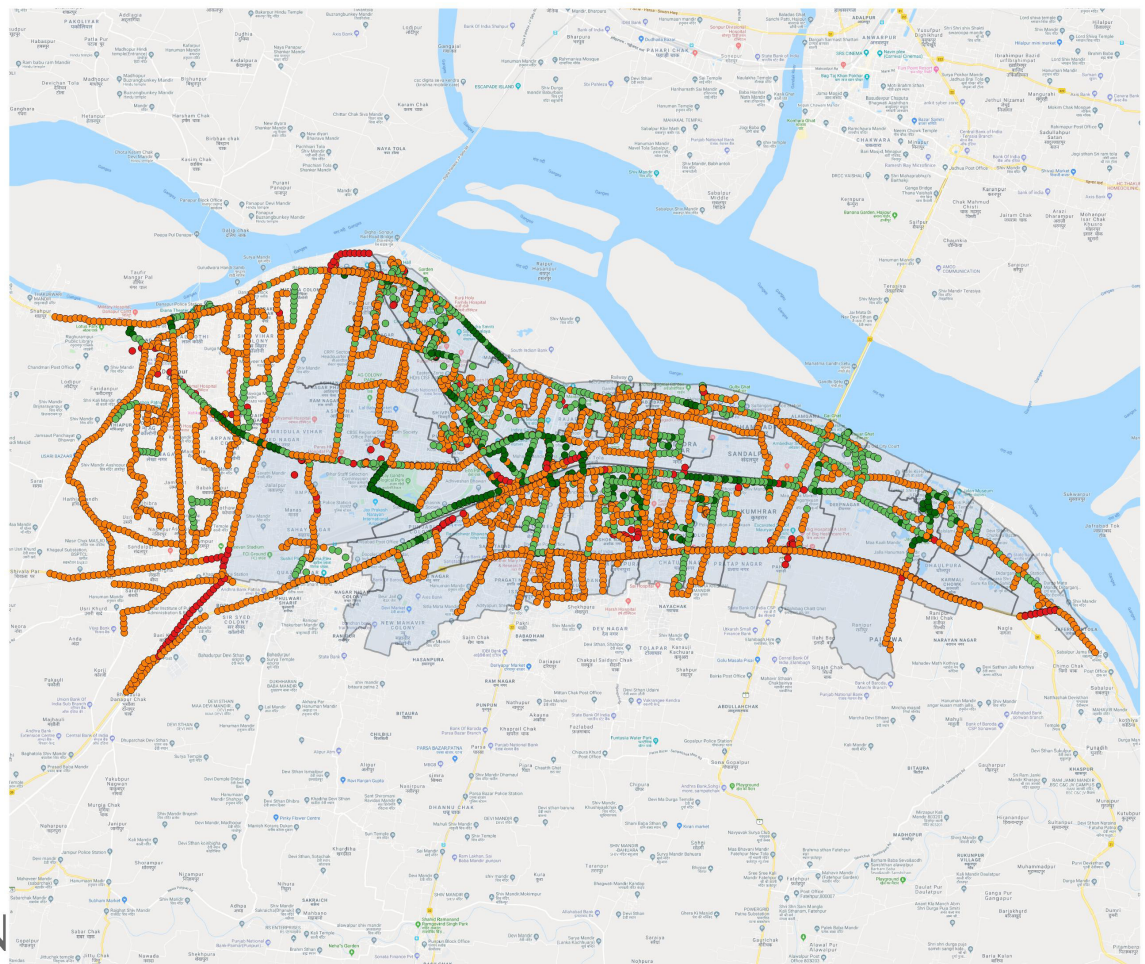
# 77%

## HAS OUT OF REACH PUBLIC TRANSPORT STANDS
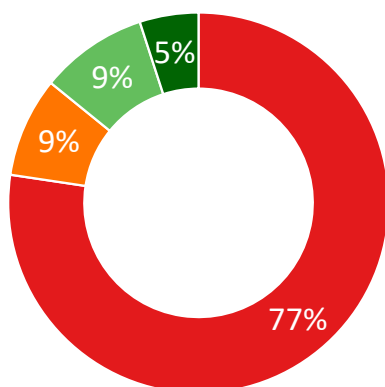
Only 14% of the city has public transport stands within 5 mins walking distance, rest 77% does not have any formal or informal transport stands/stops reachable within 10mins walking distance and only 09% can reach them in 5-10 mins. When data is represented geographically (map below) it is seen that most of the lower ratings on public transport being out of reach are spread evenly across the city. This means, either public transport stands/stops is out of reach or distant in the city.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*

5%

9%

9%

77%

**Patna:**
**Parameter**
**Public Transport**

## Legend

**Safety Audits**

- ● Unavailable
- ● Distant
- ● Nearby
- ● Very Close
- ▢ Patna

Base: Google Map

SAFETIPIN
*Supporting Safer Cities*

# 55%

## OF THE CITY MAPPED HAS NO OR POOR VISIBILITY
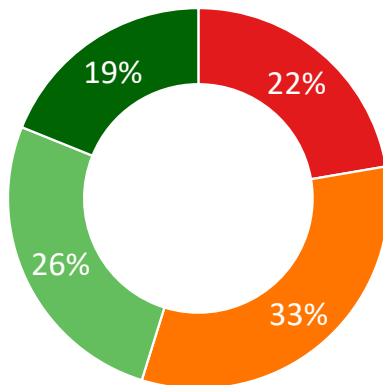
45% of the city in general has good visibility or eyes on the streets or has active streets but 55% scores poorly on the same. When data is represented geographically (map below) it is seen that most of the lower ratings on visibility are on the western periphery and small clusters are present all over the city. This means, either there are none or low visibility in these parts of the city. This geo-located data could be used for city improvement programs to identify the status of visibility in the city.

*On the left, percentage distribution pie of the parameter map below.*
*Tally with the legend below.*



22%
33%
26%
19%

**Patna: Parameter Visibility**

### Legend

**Safety Audits**
- No Eyes
- Few Eyes
- More Eyes
- Highly Visible
- Patna

Base: Google Map



SAFETIPIN
*Supporting Safer Cities*
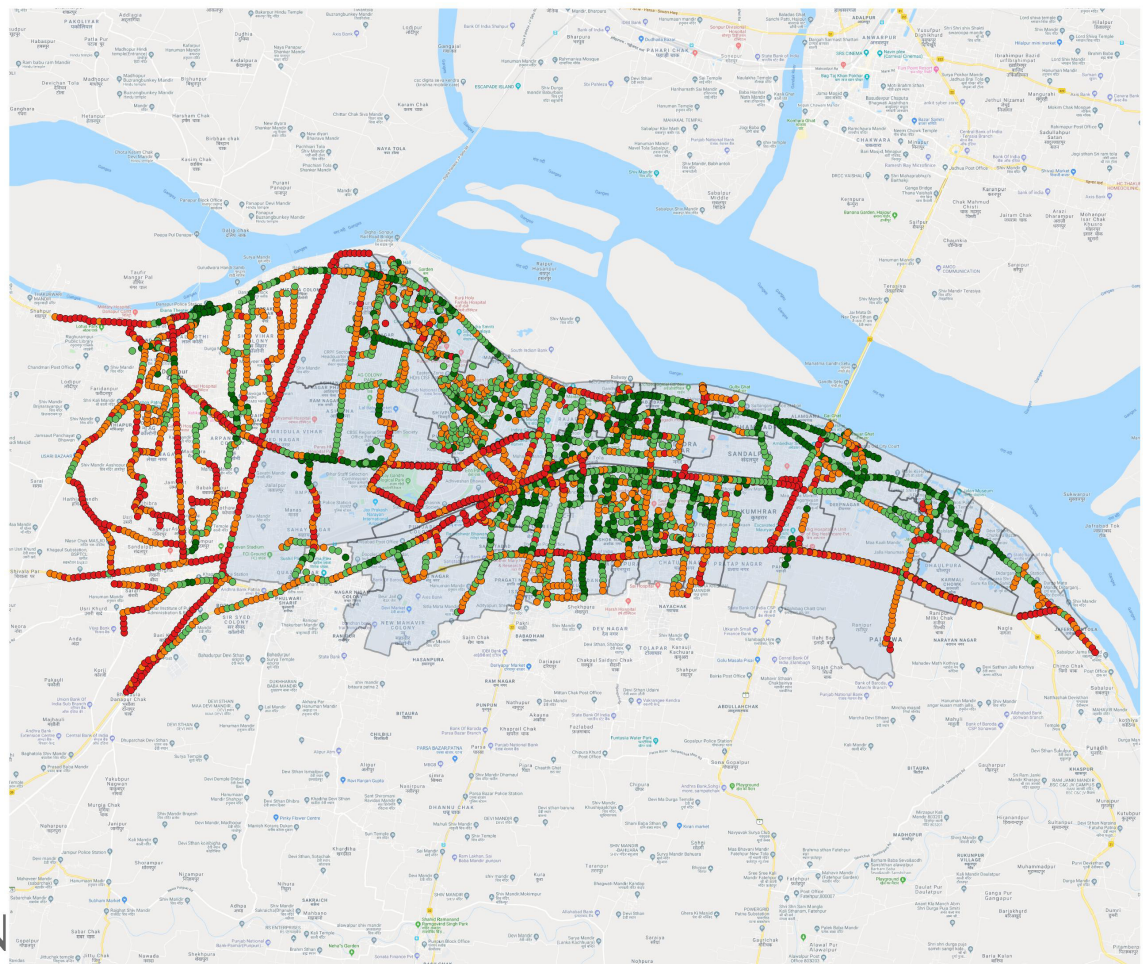
# 73%

## OF THE CITY MAPPED HAS NO FORMAL SECURITY
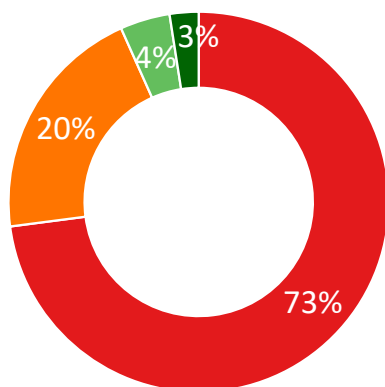
Only 7% of the city has security (formal police or private gaurds), in rest 73% no police or guards were seen present and only 20% had few private guards visible in public spaces. When data is represented geographically (map below) it is seen that most of the lower ratings on security are spread evenly across the city. This means, either there are none or minimal formal security visible in the city during the mapping. This data could be used understand the status of security in the city.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*



**Patna: Parameter Security**

**Legend**

**Safety Audits**
- • None
- • Minimal
- • Moderate
- • High
- ▢ Patna

Base: Google Map

# 17%

## OF THE CITY MAPPED HAS WOMEN IN PUBLIC SPACE
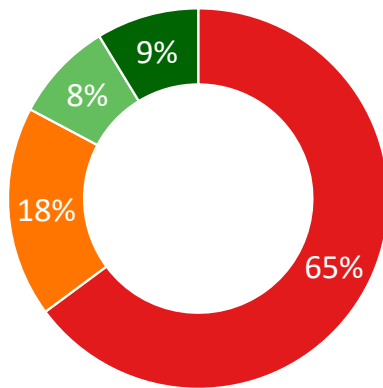
Only 17% of the city had women and children present in public spaces during the time of the audit, rest 83% had no or very few women and children seen on the streets. When data is represented geographically (map below) it is seen that most of the lower ratings on gender usage are spread evenly across the city. This means that there were no women or diverse groups present at night in public spaces. This data could be used to understand spaces where diverse groups are seen.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*



**Patna: Parameter Gender Usage**

### Legend

Safety Audits
- Not Diverse
- Somewhat Diverse
- Fairly Diverse
- Diverse
- Patna

Base: Google Map
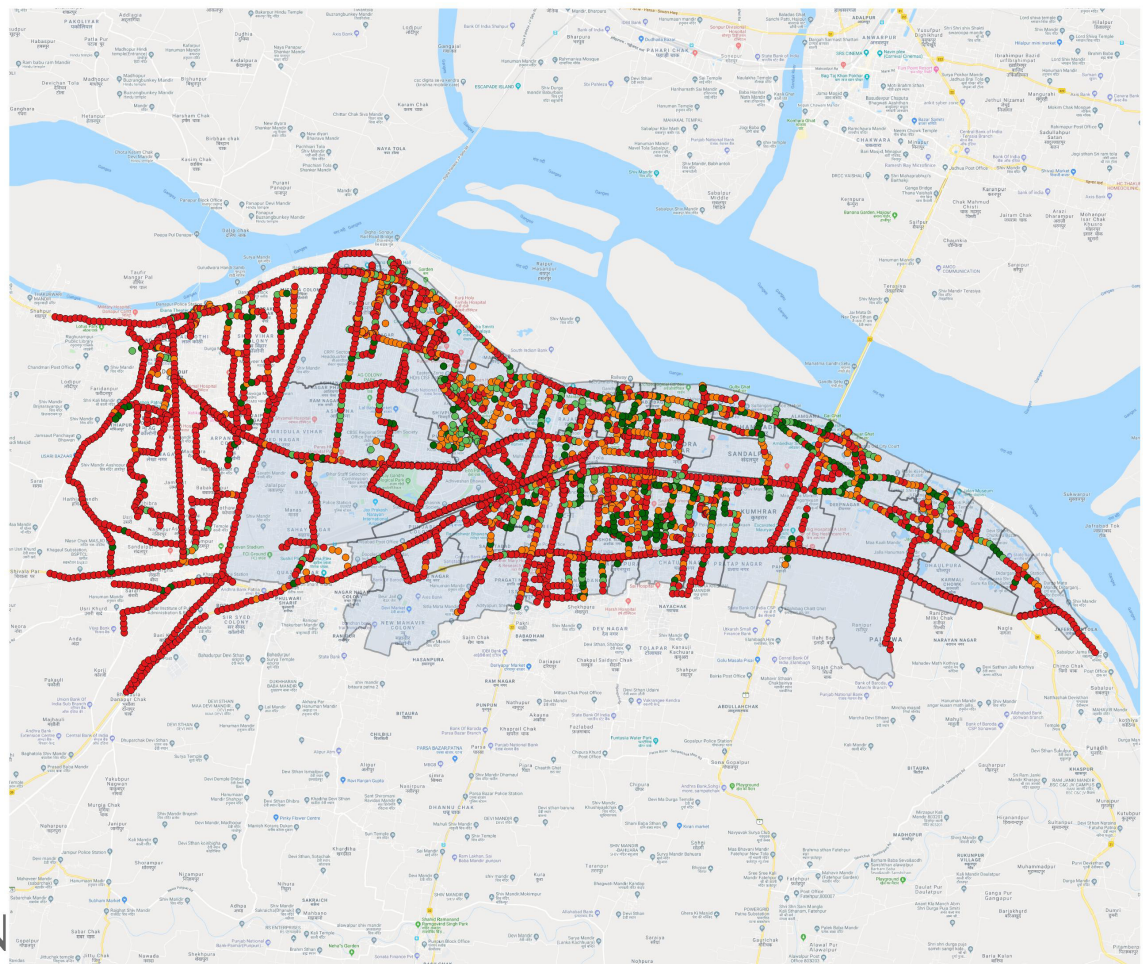
# 56%
## HAS NO OR FEW PEOPLE IN PUBLIC SPACES



- 26%
- 30%
- 27%
- 17%
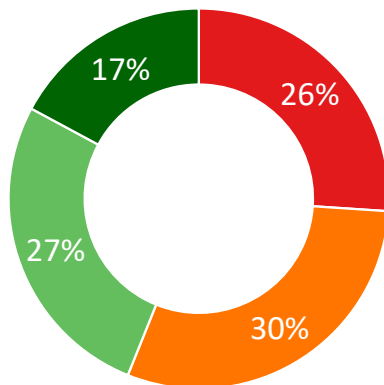
44% of the city in general had good amount of people present on the streets during the time of the audit but 55% had deserted or less than 10 persons seen in public spaces. When data is represented geographically (map below) it is seen that most of the lower ratings on people are on the western periphery and in several pockets throughout the city. This means, either there are none or very less people in these parts of the city and this data could be used to see why it is so.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*

**Patna: Parameter People**

### Legend

**Safety Audits**
- Deserted
- Few People
- Some Crowd
- Crowded
- Patna

Base: Google Map

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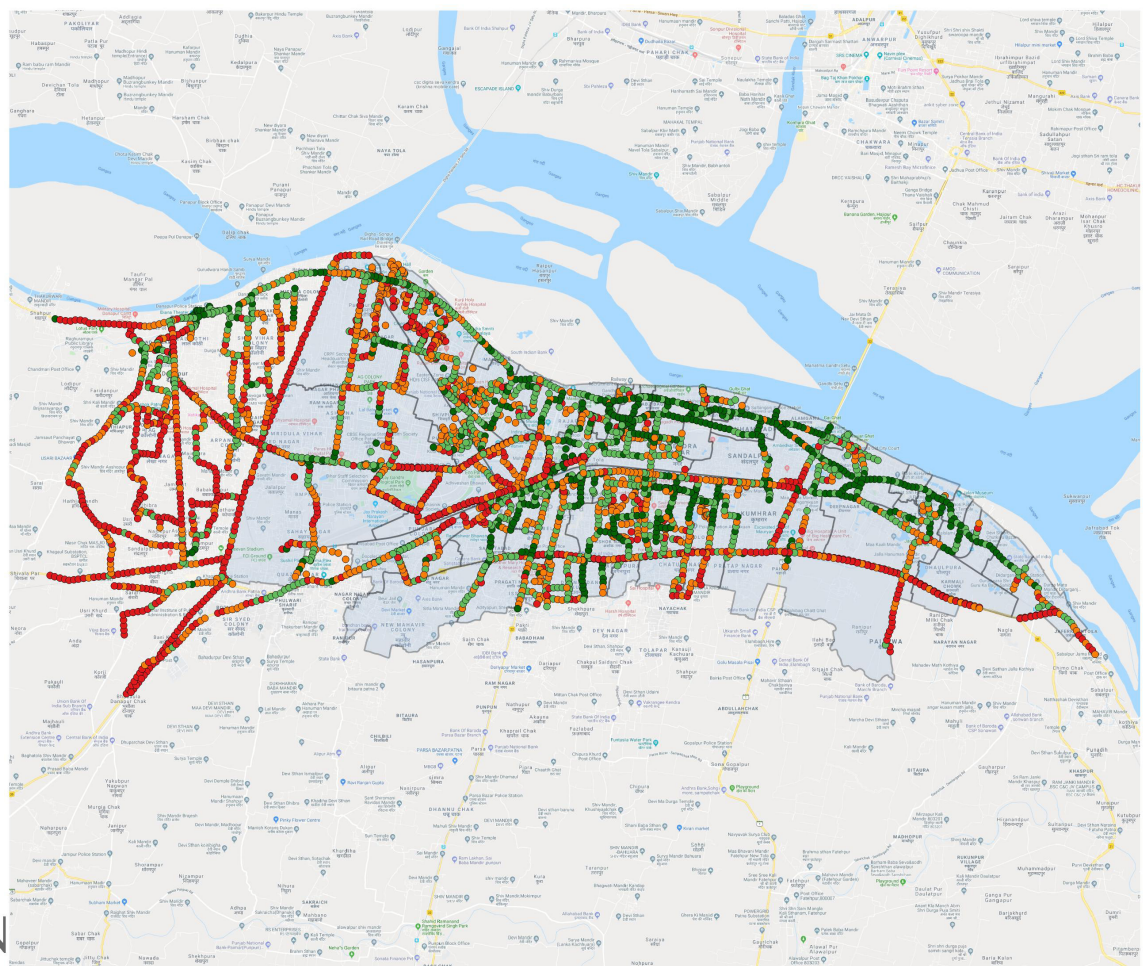
# 72%

## OF THE CITY MAPPED HAS MOSTLY OPEN STREETS
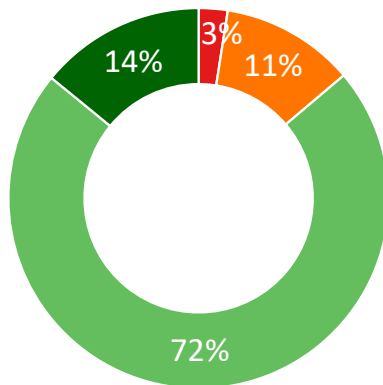
86% of the city has open streets with clear line of sight for all or most directions, rest 14% only scores poorly on the same having blind turns and obstructed sighlines. When data is represented geographically (map below) it is seen that some of the lower ratings on open streets are in the core of the city forming clusters at various locations. This means, either these parts in the city are congested or have blind turns and dead ends, making these areas very difficult to navigate through.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*



**Patna: Parameter Openness**

### Legend

**Safety Audits**

- Not Open
- Partly Open
- Mostly Open
- Completely Open
- Patna

Base: Google Map



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# 70%
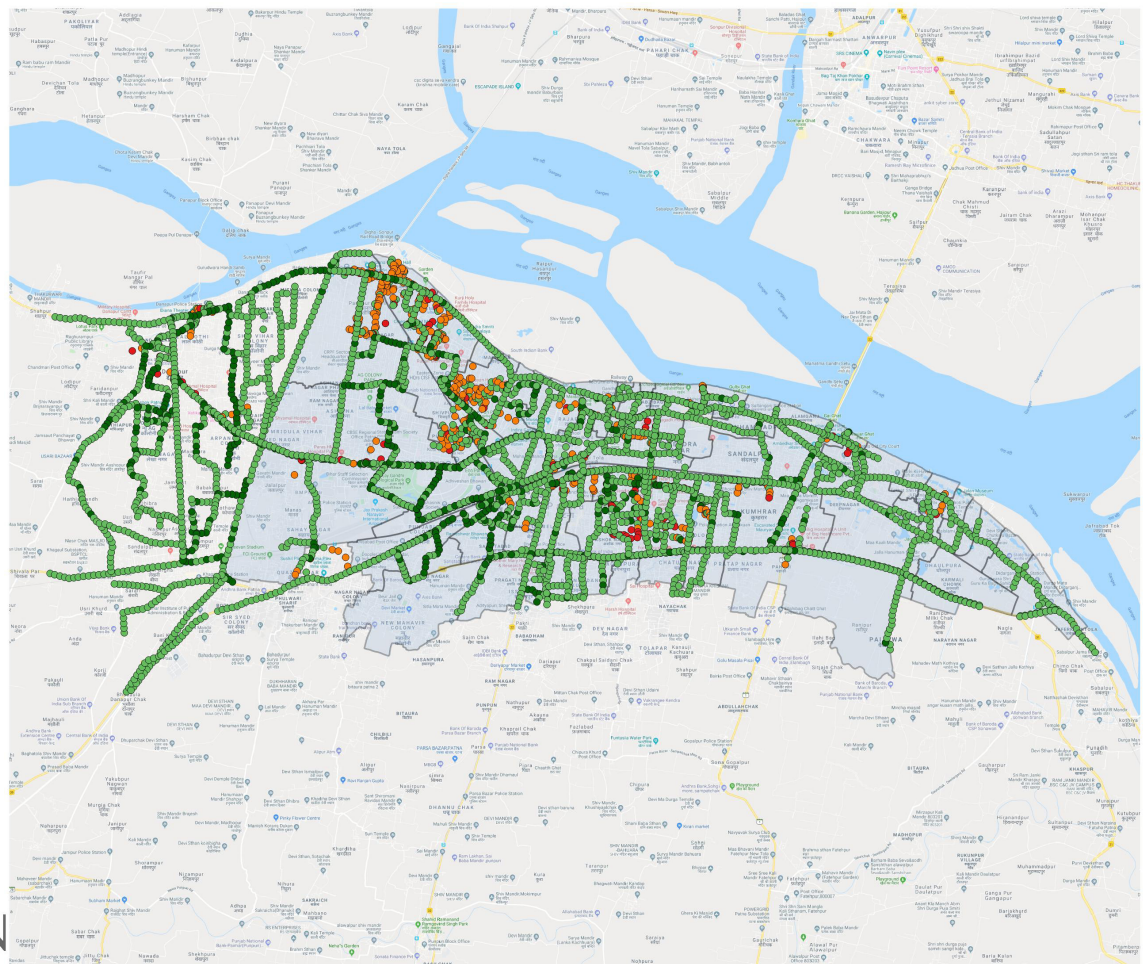
## OF THE CITY MAPPED
## PEOPLE FEEL UNSAFE

Only 30% of the city feels safe in the evening or after dark but 70% feels frightened to venture out without escort or will avoid being out. When data is represented geographically (map below) it is seen that most of the lower ratings on feeling of safety are spread evenly across the city. This means that the perception of safety is poor among people, especially women and it is a common perception for almost all who expressed their safety concerns about the city through their public space audits.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*

**3%**
**11%**
**27%**
**59%**

**Patna:
Parameter
Feeling**

## Legend

### Safety Audits
- 🔴 Frightening
- 🟠 Uncomfortable
- 🟢 Acceptable
- 🟢 Comfortable
- ⬜ Patna

Base: Google Map

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## Patna: Average Parameter Graph

## Patna: Pin Distribution Graph

■ Poor  ■ Below Average  ■ Average  ■ Good

The average parameter rating graph indicates the average rating for each parameter on a scale of three. Each of the nine parameters are rated either 0,1, 2 or 3, where 0 is poor and 3 is good. As seen on the graph, Openness and Lighting parameters have been rated the highest, followed by other parameters such as Visibility, Walkpath and People. Gender Usage parameter is rated slightly lower and the parameters Transport and Security have been rated the lowest. The overall Feeling of Safety or the perception of safety for Patna is rated Below Average.

The parameter wise pin distribution graph indicates the number of points rated as 0, 1, 2 and 3. The good ratings are taken as positive and poor ratings as negative. As shown on the graph, the parameter of Gender Usage, Transport and Security are rated poorly for most parts of the city, whereas parameters like Lighting, Visibility and People are mostly rated below average the city.

# CITY OF GAYA
# **FINDINGS**

*Parameter maps and safety ratings*

In Patna, data was collected through both the applications - 'Safetipin Nite' mapped the city through photographs and 'My Safetipin' involved volunteers to express their safety concerns by auditing popular public spaces. The following parameter maps represent the collected data and analyses them to understand where the gap lies to make public spaces safe for women and girls.



**Gaya:
Safetipin Nite Audits**
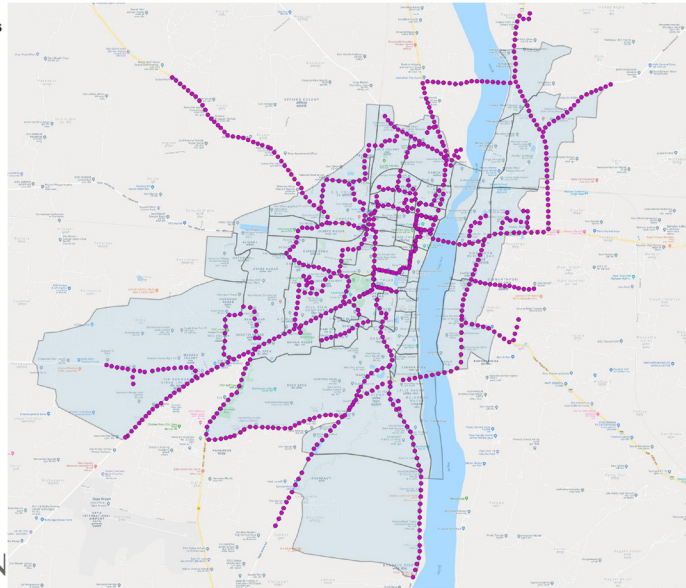
Legend
- Safety Audits
- Gaya
Base: Google Map

## 805 AUDIT POINTS

*Map top right*

*The map shows the safety audit points generated by the Safetipin Nite Application.*



**Gaya:
My Safetipin Audits**

Legend
- Safety Audits
- Gaya
Base: Google Map
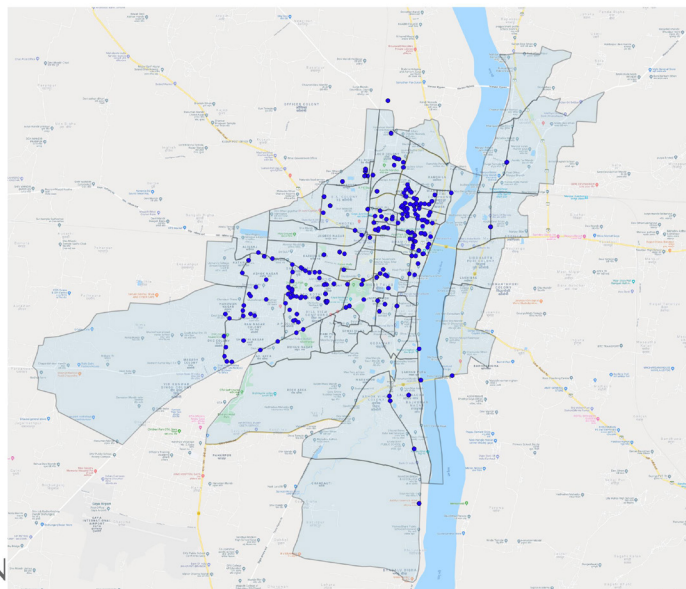
## 915 AUDIT POINTS

*Map bottom right*

*The map shows the safety audit points generated by the My Safetipin Application.*

# 2.2/5
## SAFETY SCORE OF GAYA



On the safety map below, the periphery of the city, shows poor infrastructure and weak connectivity. This primarily means none or broken lights and footpaths, no or very low visibility (eyes on the street) and security, and public transport being out of reach. These aspects together contribute to make city peripheries unsafe. However, the city core has scored slightly better comparatively on the above parameters. A thorough analysis of each parameter follows.

*On the left, percentage distribution pie of the safety score map below. Tally with the legend below.*

**Gaya:
Safety Score**

### Legend

Safety Audits

- 🔴 Poor
- 🟠 Below Average
- 🟡 Average
- 🟢 Above Average
- 🟢 Excellent
- 🟦 Gaya

Base: Google Map



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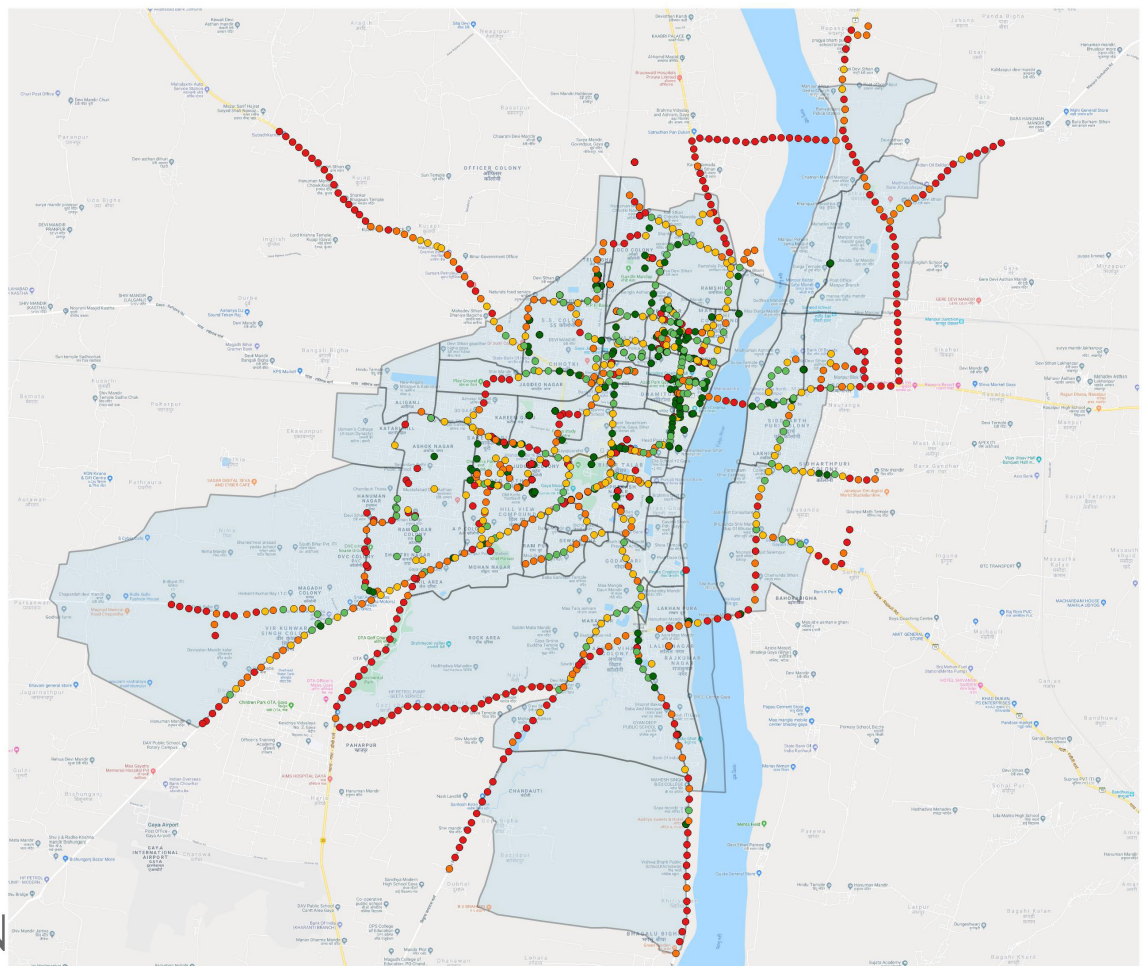
# 41%

## OF THE CITY MAPPED HAS NO OR POOR LIGHT
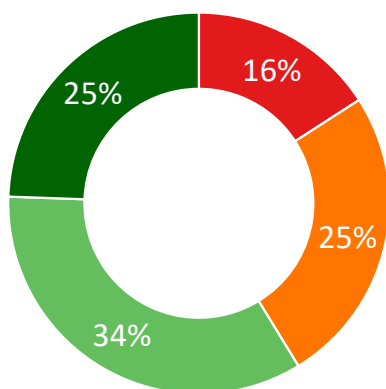
59% of the city in general has good street lighting but 41% scores poorly on the same. When data is represented geographically (map below) it is seen that most of the lower ratings on street lighting are on the extreme periphery and a few clusters shread across the city too. This means, either there are none or inadequate street lighting in these parts of the city. This geo-located data could be used for city improvement programs to identify the status of street lighting in the city.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*



Pie chart: 16%, 25%, 34%, 25%

**Gaya: Parameter Lighting**

## Legend

### Safety Audits

- 🔴 Poor Light
- 🟠 Some Light
- 🟢 Enough Light
- 🟢 Bright Light
- ⬜ Gaya

Base: Google Map

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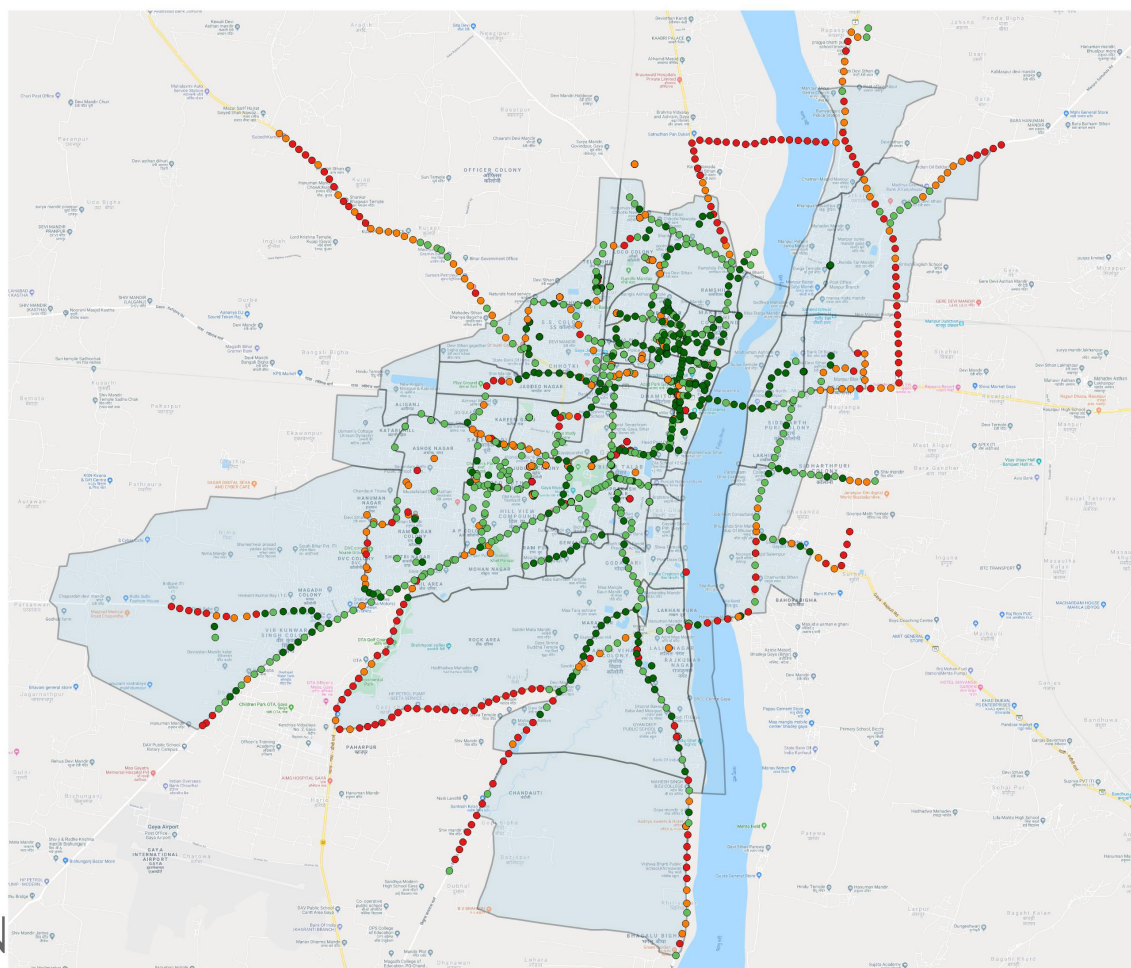
# 84%

## OF THE CITY MAPPED HAS NO OR POOR WALKPATH
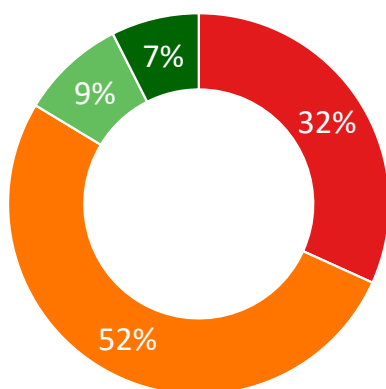
Only 16% of the city has walkable footpaths, rest 84% scores poorly on the same. When data is represented geographically (map below) it is seen that most of the lower ratings on footpaths are spread across the city with very few exceptions in some pockets in the core where the ratings are good. This largely means, either there are none or very poor quality footpaths in the city. This geo-located data could be used for upgradation work to identify the condition of walkpath in the city.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*



32%
52%
9%
7%

**Gaya: Parameter Walkpath**

Legend

Safety Audits
- None
- Poor
- Fair
- Good
- Gaya

Base: Google Map



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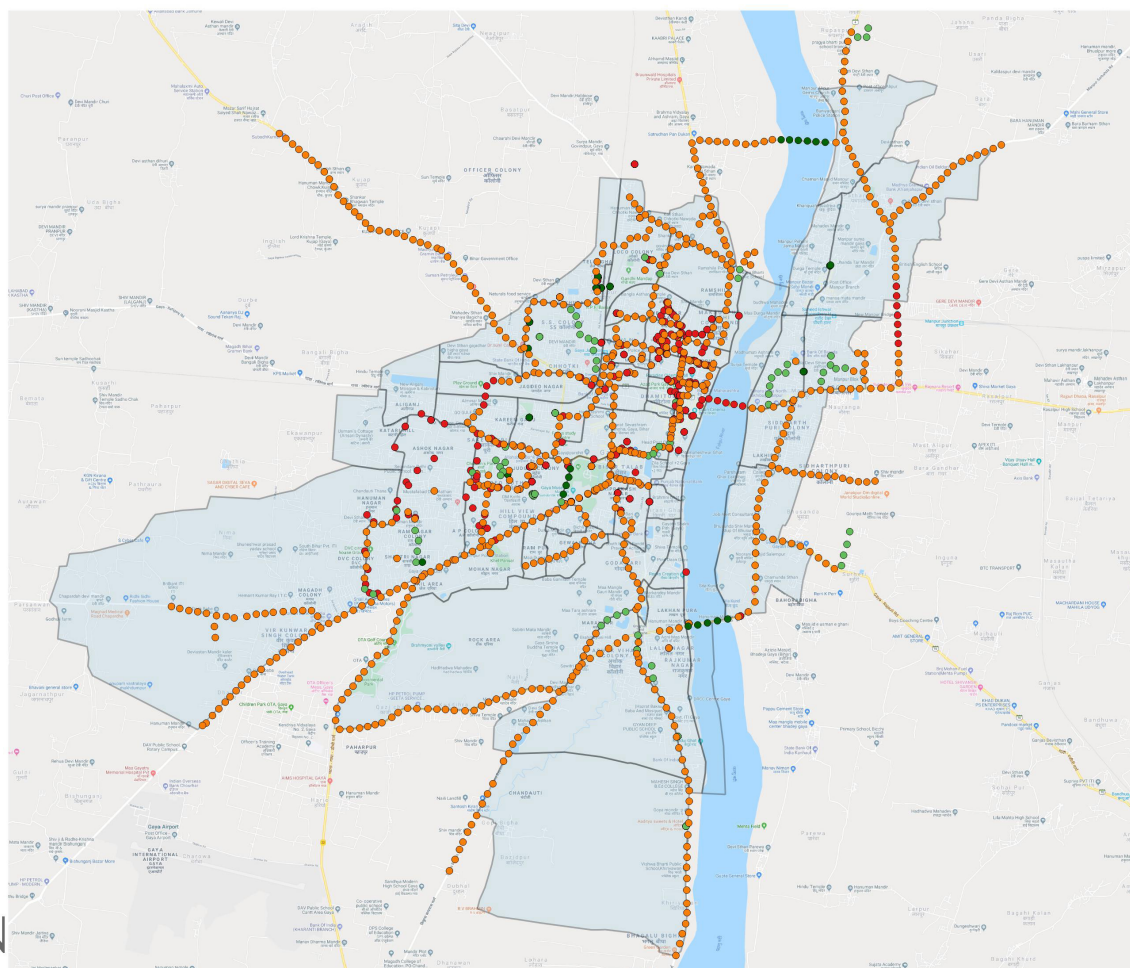
# 60%
## HAS OUT OF REACH PUBLIC TRANSPORT STANDS
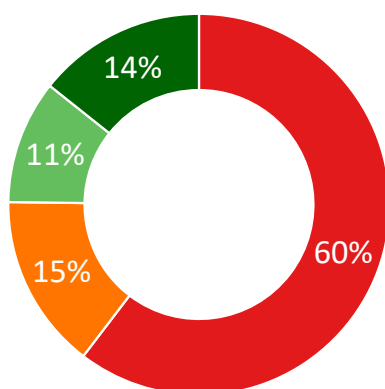
Only 25% of the city has public transport stands within 5 mins walking distance, rest 60% does not have any formal or informal transport stands/stops reachable within 10mins walking distance and 15% can reach them in 5-10 mins. When data is represented geographically (map below) it is seen that most of the lower ratings on public transport being out of reach are spread evenly across the city. This means, either public transport stands/stops is out of reach or distant in the city.

*On the left, percentage distribution pie of the parameter map below.*
*Tally with the legend below.*



**Gaya:**
**Parameter**
**Public Transport**

Legend

Safety Audits
- Unavailable
- Distant
- Nearby
- Very Close
- Gaya

Base: Google Map
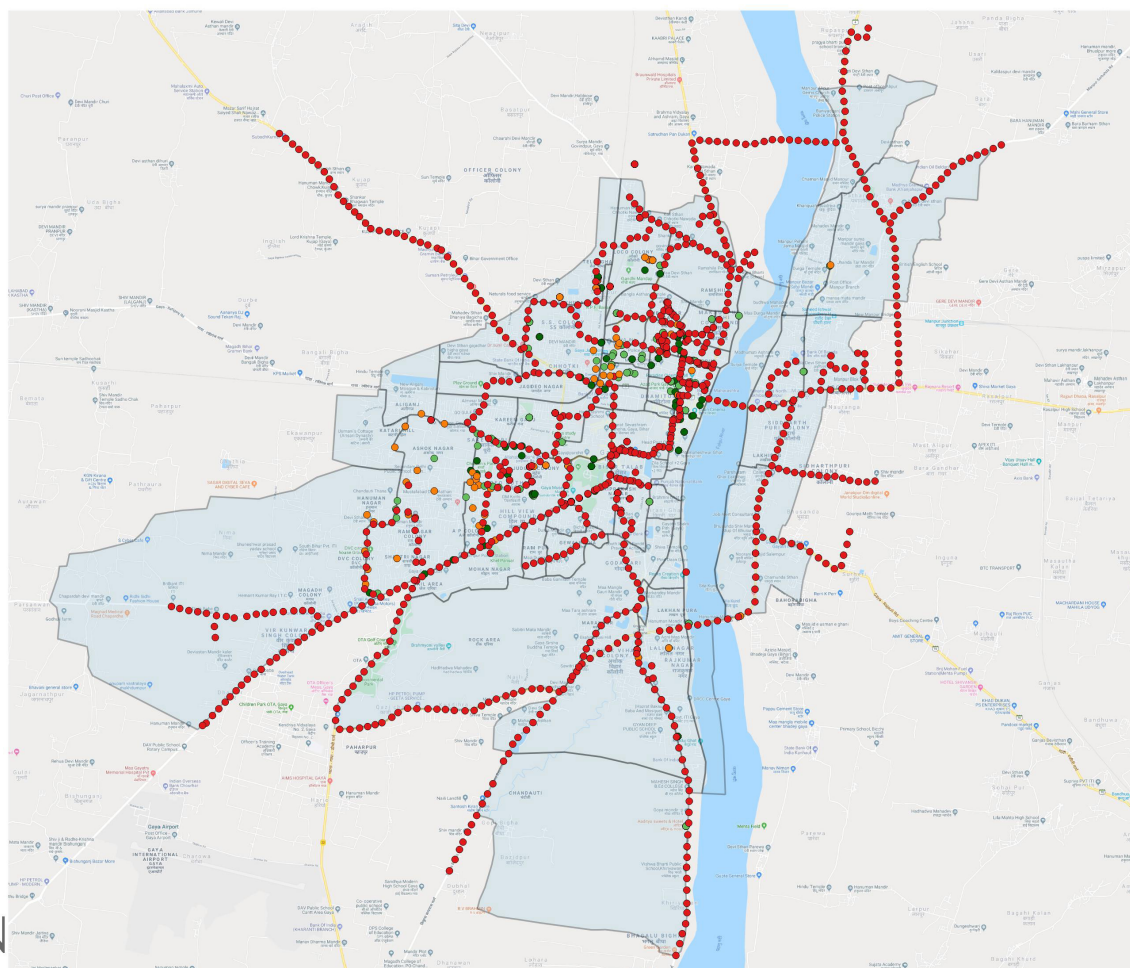
# 63%

## OF THE CITY MAPPED HAS NO OR POOR VISIBILITY
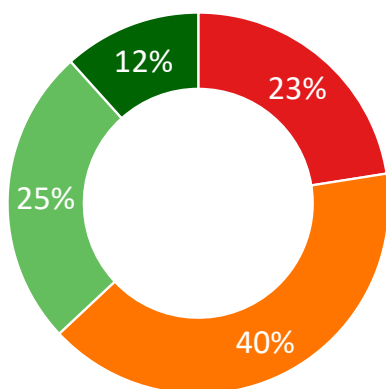
37% of the city in general has good visibility or eyes on the streets or has active streets but 63% scores poorly on the same. When data is represented geographically (map below) it is seen that most of the lower ratings on visibility are all over the city apart from a few clusters with higher ratings in the core. This means, either there are none or low visibility in these parts of the city. This geo-located data could be used for city improvement programs to identify the status of visibility in the city.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*



**Gaya: Parameter Visibility**

Legend

Safety Audits
- No Eyes
- Few Eyes
- More Eyes
- Highly Visible
- Gaya

Base: Google Map

# 81%
## OF THE CITY MAPPED HAS NO FORMAL SECURITY
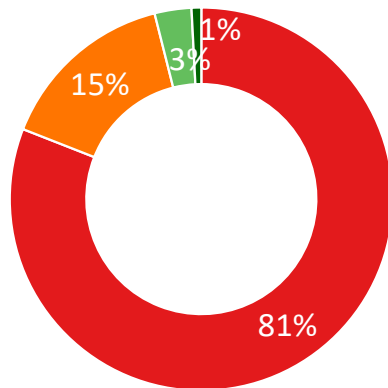
Only 4% of the city has security (formal police or private gaurds), in rest 81% no police or guards were seen present and only 15% had few private guards visible in public spaces. When data is represented geographically (map below) it is seen that most of the lower ratings on security are spread evenly across the city. This means, either there are none or minimal formal security visible in the city during the mapping. This data could be used understand the status of security in the city.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*

1%
3%
15%
81%

**Gaya:
Parameter
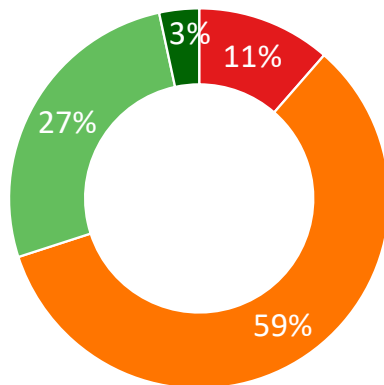Security**

Legend

Safety Audits

- None
- Minimal
- Moderate
- High
- Gaya

Base: Google Map



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# 09%

## OF THE CITY MAPPED HAS WOMEN IN PUBLIC SPACE
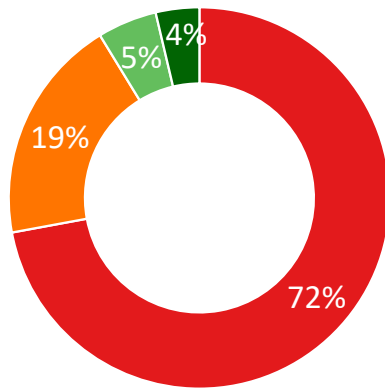
Only 09% of the city had women and children present in public spaces during the time of the audit, rest 91% had no or very few women and children seen on the streets. When data is represented geographically (map below) it is seen that most of the lower ratings on gender usage are spread evenly across the city. This means that there were no women or diverse groups present at night in public spaces. This data could be used to understand spaces where diverse groups are seen.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*



**Gaya: Parameter Gender Usage**
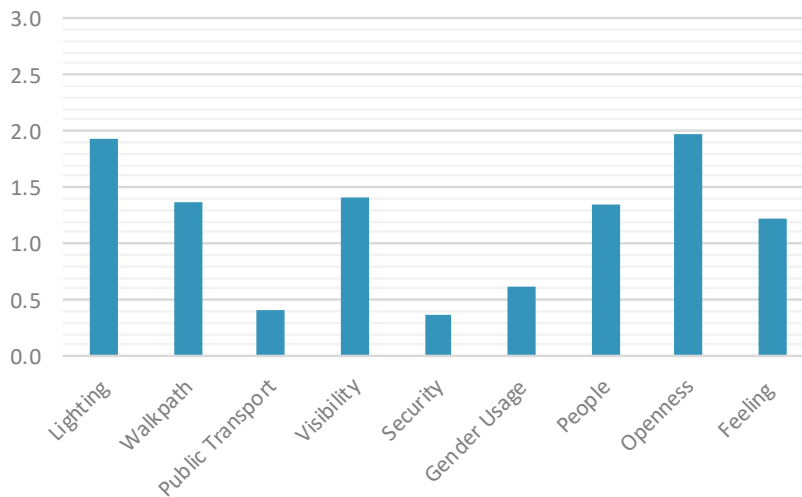
Legend

Safety Audits

- Not Diverse
- Somewhat Diverse
- Fairly Diverse
- Diverse
- Gaya

Base: Google Map

# 74%

## HAS NO OR FEW PEOPLE IN PUBLIC SPACES

26% of the city in general had good amount of people present on the streets during the time of the audit but 74% had deserted or less than 10 persons seen in public spaces. When data is represented geographically (map below) it is seen that most of the lower ratings on people are on the periphery and almost evenly across the city barring few pockets in the core. This means, either there are none or very less people in these parts of the city and this data could be used to see why it is so.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*

- 8%
- 18%
- 36%
- 38%

**Gaya:
Parameter
People**

## Legend

### Safety Audits

- • Deserted
- • Few People
- • Some Crowd
- • Crowded
- ▢ Gaya

Base: Google Map
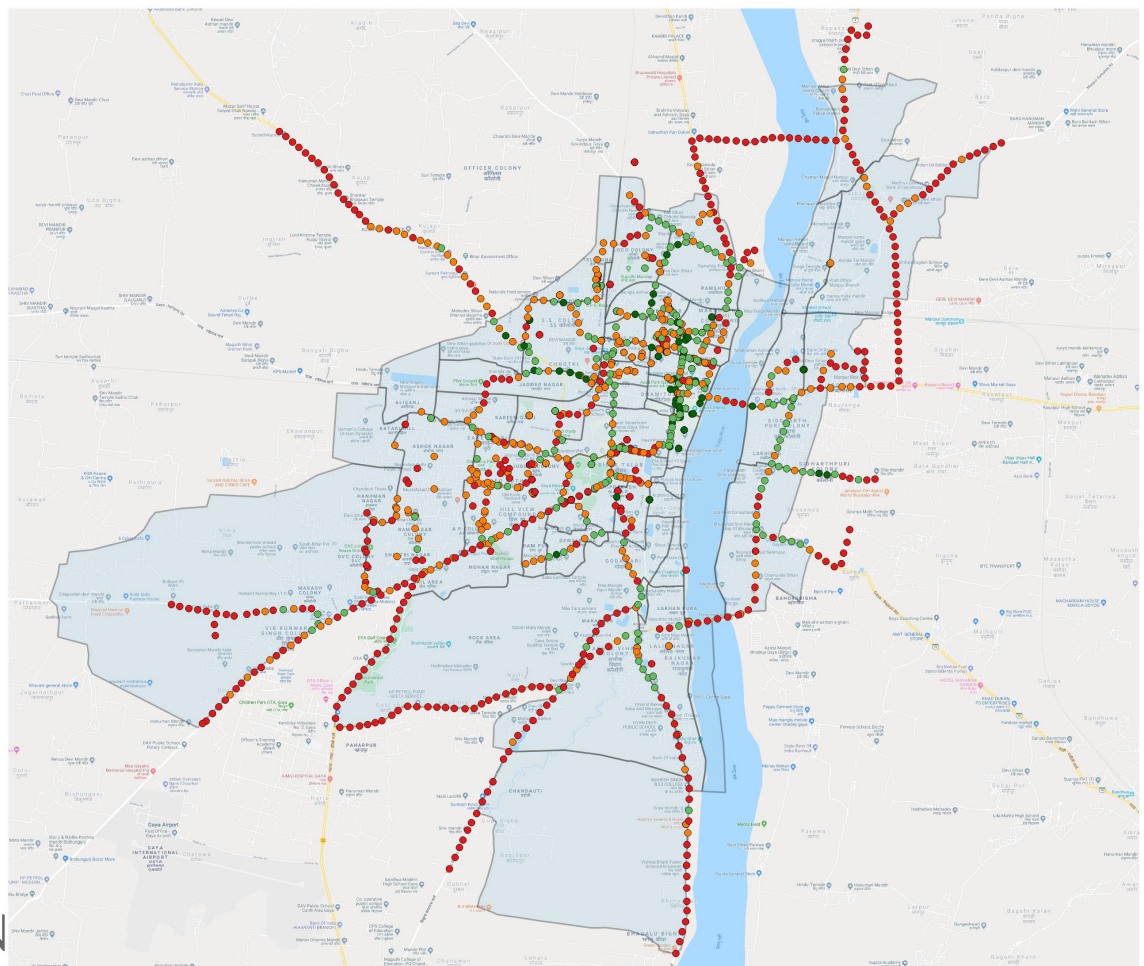
# 67%

## OF THE CITY MAPPED HAS MOSTLY OPEN STREETS
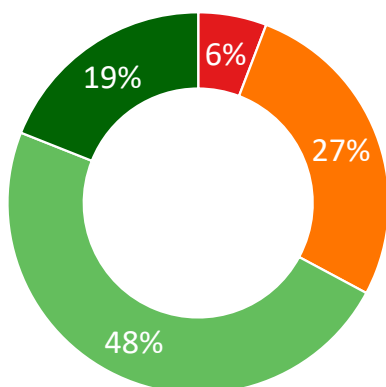
67% of the city has open streets with clear line of sight for all or most directions, rest 33% scores poorly on the same having blind turns and obstructed sighlines. When data is represented geographically (map below) it is seen that some of the lower ratings on open streets are in the core of the city forming clusters at various locations. This means, either these parts in the city are congested or have blind turns and dead ends, making these areas very difficult to navigate through.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*

6%
27%
48%
19%

**Gaya: Parameter Openness**

## Legend

### Safety Audits

- ● Not Open
- ● Partly Open
- ● Mostly Open
- ● Completely Open
- ▢ Gaya

Base: Google Map

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# 70%

## OF THE CITY MAPPED PEOPLE FEEL UNSAFE



7%

22%

23%

48%

Only 30% of the city feels safe in the evening or after dark but 70% feels frightened to venture out without escort or will avoid being out. When data is represented geographically (map below) it is seen that most of the lower ratings on feeling of safety are spread evenly across the city. This means that the perception of safety is poor among people, especially women and it is a common perception for almost all who expressed their safety concerns about the city through their public space audits.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*

**Gaya: Parameter Feeling**

### Legend

Safety Audits

- Frightening
- Uncomfortable
- Acceptable
- Comfortable
- Gaya

Base: Google Map



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## Gaya: Average Parameter Graph



Y-axis: 3.0, 2.5, 2.0, 1.5, 1.0, 0.5, 0.0

X-axis: Lighting, Walkpath, Public Transport, Visibility, Security, Gender Usage, People, Openness, Feeling
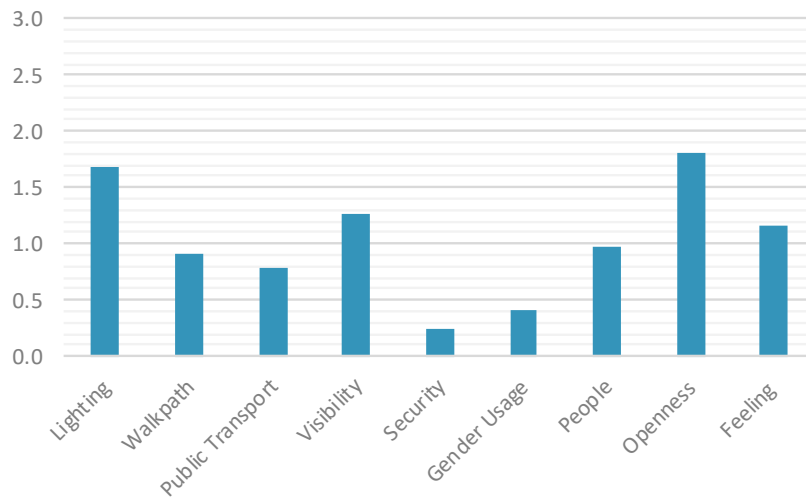
PARAMETER RATING

*Graph top left*

*The graph shows average rating for each parameter on a scale of three.*

## Gaya: Pin Distribution Graph

■ Poor ■ Below Average ■ Average ■ Good



Y-axis: 1500, 1000, 500, 0, -500, -1000, -1500, -2000

X-axis: Lighting, Walkpath, Public Transport, Visibility, Security, Gender Usage, People, Openness, Feeling
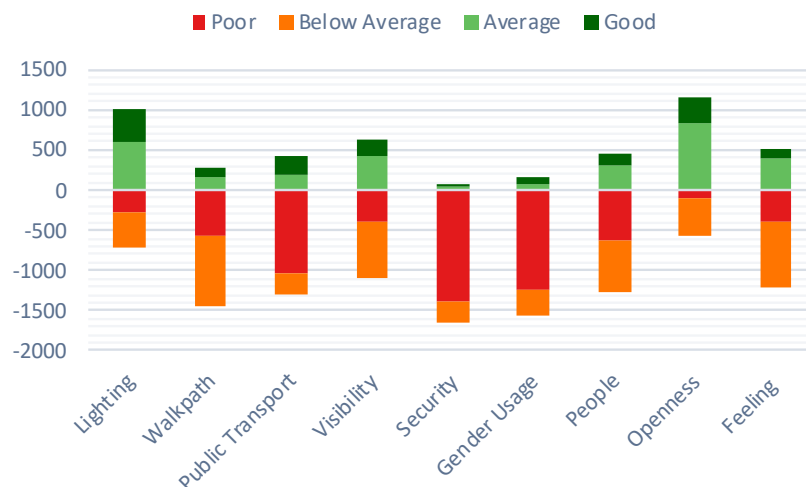
PIN DISTRIBUTION

*Graph bottom left*

*The graph shows parameter wise pin distribution on a scale of three.*

The average parameter rating graph indicates the average rating for each parameter on a scale of three. Each of the nine parameters are rated either 0,1, 2 or 3, where 0 is poor and 3 is good. As seen on the graph, Openness and Lighting parameters have been rated the highest, followed by other parameters such as Visibility, People and Walkpath. Transport parameter is rated slightly lower and the parameters Gender Usage and Security have been rated the lowest. The overall Feeling of Safety or the perception of safety for Gaya is rated Below Average.

The parameter wise pin distribution graph indicates the number of points rated as 0, 1, 2 and 3. The good ratings are taken as positive and poor ratings as negative. As shown on the graph, the parameter of Security, Gender Usage and Walkpath are rated poorly for most parts of the city, whereas parameters like Lighting, Visibility and People are mostly below average through out the city.

## CITY OF MUZAFFARPUR
# FINDINGS

*Parameter maps and safety ratings*

In Patna, data was collected through both the applications - 'Safetipin Nite' mapped the city through photographs and 'My Safetipin' involved volunteers to express their safety concerns by auditing popular public spaces. The following parameter maps represent the collected data and analyses them to understand where the gap lies to make public spaces safe for women and girls.



**Muzaffarpur: Safetipin Nite Audits**
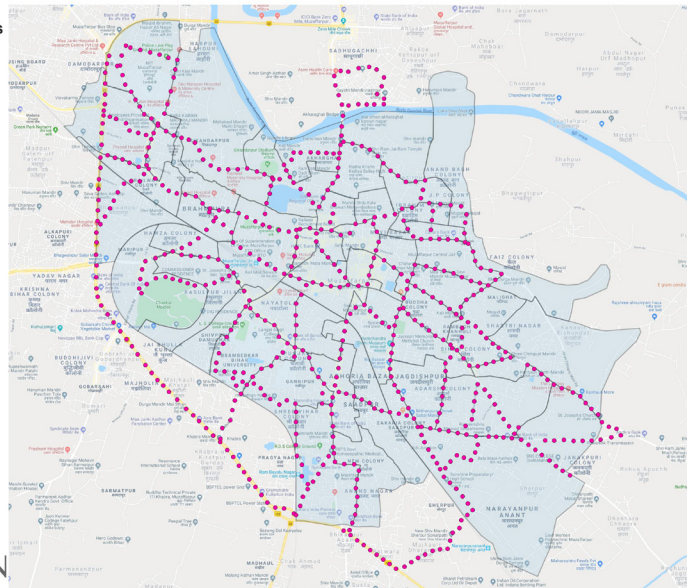
Legend
• Safety Audits
☐ Muzaffarpur
Base: Google Map

## 603 AUDIT POINTS

*Map top right*

The map shows the safety audit points generated by the Safetipin Nite Application.



**Muzaffarpur: My Safetipin Audits**

Legend
• Safety Audits
☐ Muzaffarpur
Base: Google Map
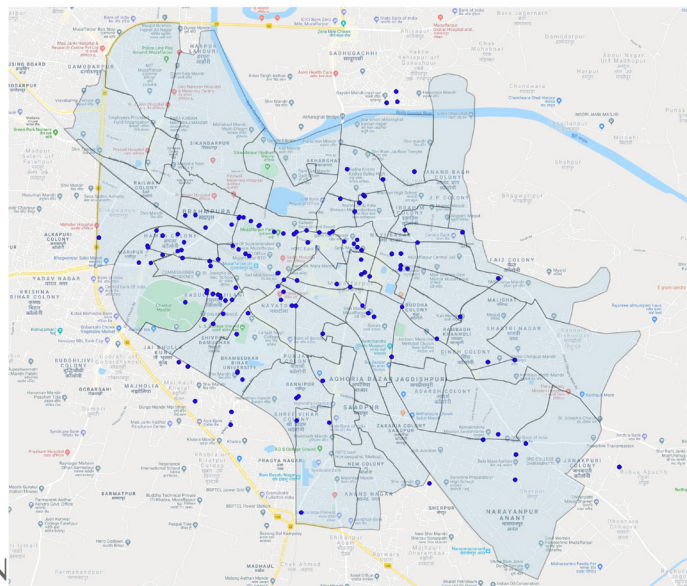
## 990 AUDIT POINTS

*Map bottom right*

The map shows the safety audit points generated by the My Safetipin Application.

# 2.3/5
## SAFETY SCORE OF MUZAFFARPUR
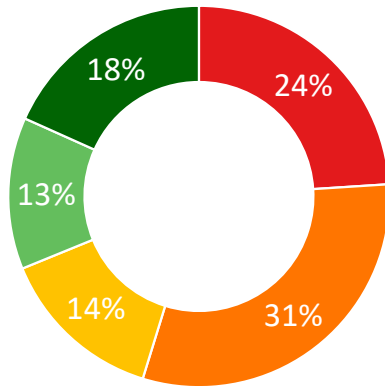


On the safety map below, the periphery of the city, shows poor infrastructure and weak connectivity. This primarily means none or broken lights and footpaths, no or very low visibility (eyes on the street) and security, and public transport being out of reach. These aspects together contribute to make city peripheries unsafe. However, the city core has scored slightly better comparatively on the above parameters. A thorough analysis of each parameter follows.

*On the left, percentage distribution pie of the safety score map below. Tally with the legend below.*

**Muzaffarpur: Safety Score**

## Legend

### Safety Audits
- 🔴 Poor
- 🟠 Below Average
- 🟡 Average
- 🟢 Above Average
- 🟢 Excellent
- 🟦 Muzaffarpur

Base: Google Map
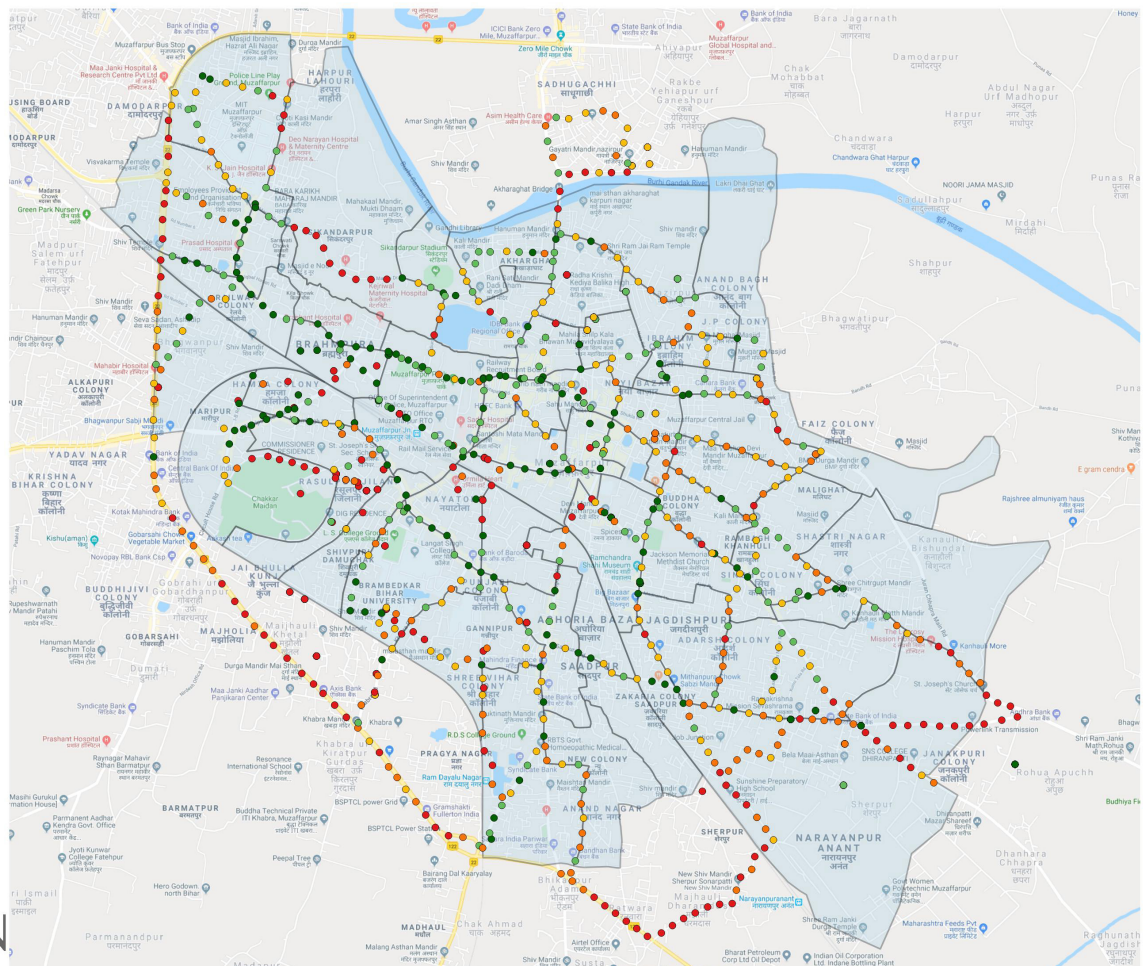
# 43%

## OF THE CITY MAPPED HAS NO OR POOR LIGHT
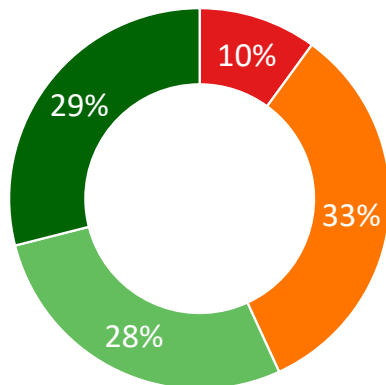
57% of the city in general has good street lighting but 43% scores poorly on the same. When data is represented geographically (map below) it is seen that most of the lower ratings on street lighting are on the extreme periphery and a few clusters shread across the city too. This means, either there are none or inadequate street lighting in these parts of the city. This geo-located data could be used for city improvement programs to identify the status of street lighting in the city.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*



Pie chart: 10%, 33%, 28%, 29%

**Muzaffarpur: Parameter Lighting**

### Legend

**Safety Audits**
- 🔴 Poor Light
- 🟠 Some Light
- 🟢 Enough Light
- 🟢 Bright Light
- ⬜ Muzaffarpur

Base: Google Map



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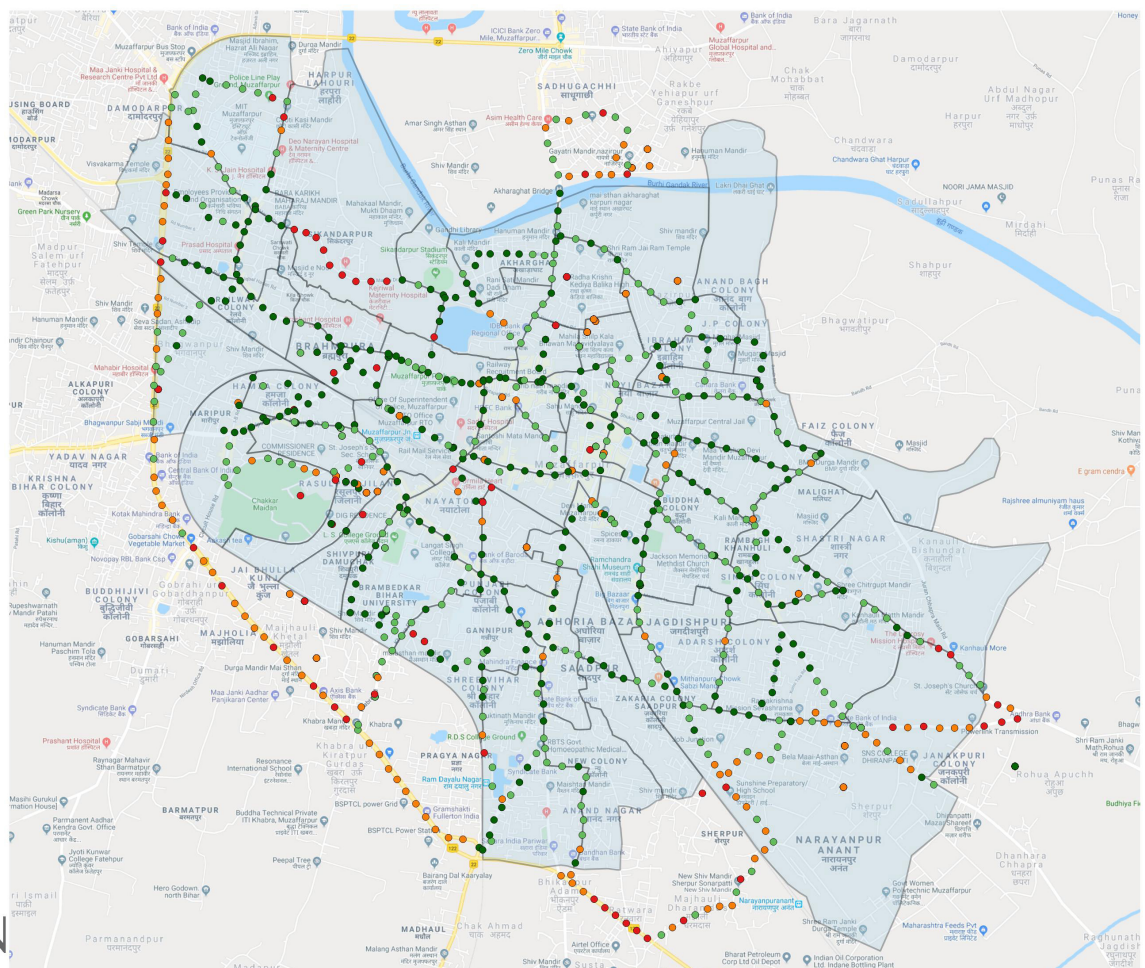
# 79%

## OF THE CITY MAPPED HAS NO OR POOR WALKPATH
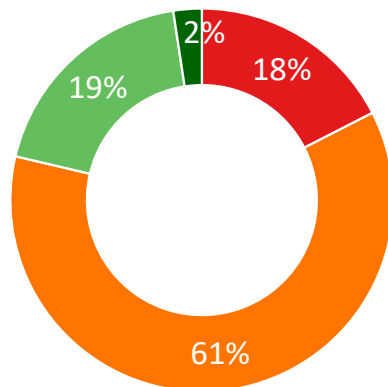
Only 21% of the city has walkable footpaths, rest 79% scores poorly on the same. When data is represented geographically (map below) it is seen that most of the lower ratings on footpaths are spread across the city with a few exceptions in some pockets in the core where the ratings are good. This largely means, either there are none or very poor quality footpaths in the city. This geo-located data could be used for upgradation work to identify the condition of walkpath in the city.

*On the left, percentage distribution pie of the parameter map below.*
*Tally with the legend below.*

- 2%
- 18%
- 19%
- 61%

**Muzaffarpur: Parameter Walkpath**

## Legend

### Safety Audits

- 🔴 None
- 🟠 Poor
- 🟢 Fair
- 🟢 Good
- ⬜ Muzaffarpur

Base: Google Map

# 68%

## HAS OUT OF REACH PUBLIC TRANSPORT STANDS
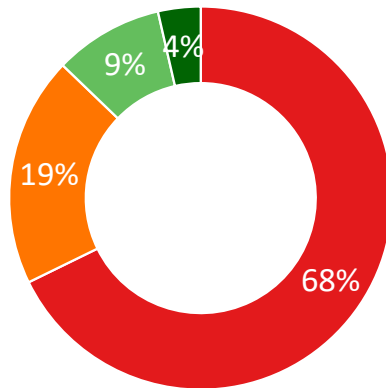
Only 13% of the city has public transport stands within 5 mins walking distance, rest 68% does not have any formal or informal transport stands/stops reachable within 10mins walking distance and 19% can reach them in 5-10 mins. When data is represented geographically (map below) it is seen that most of the lower ratings on public transport being out of reach are spread evenly across the city. This means, either public transport stands/stops is out of reach or distant in the city.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*

4%
9%
19%
68%

**Muzaffarpur:
Parameter
Public Transport**

## Legend

Safety Audits

- Unavailable
- Distant
- Nearby
- Very Close
- Muzaffarpur

Base: Google Map

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44
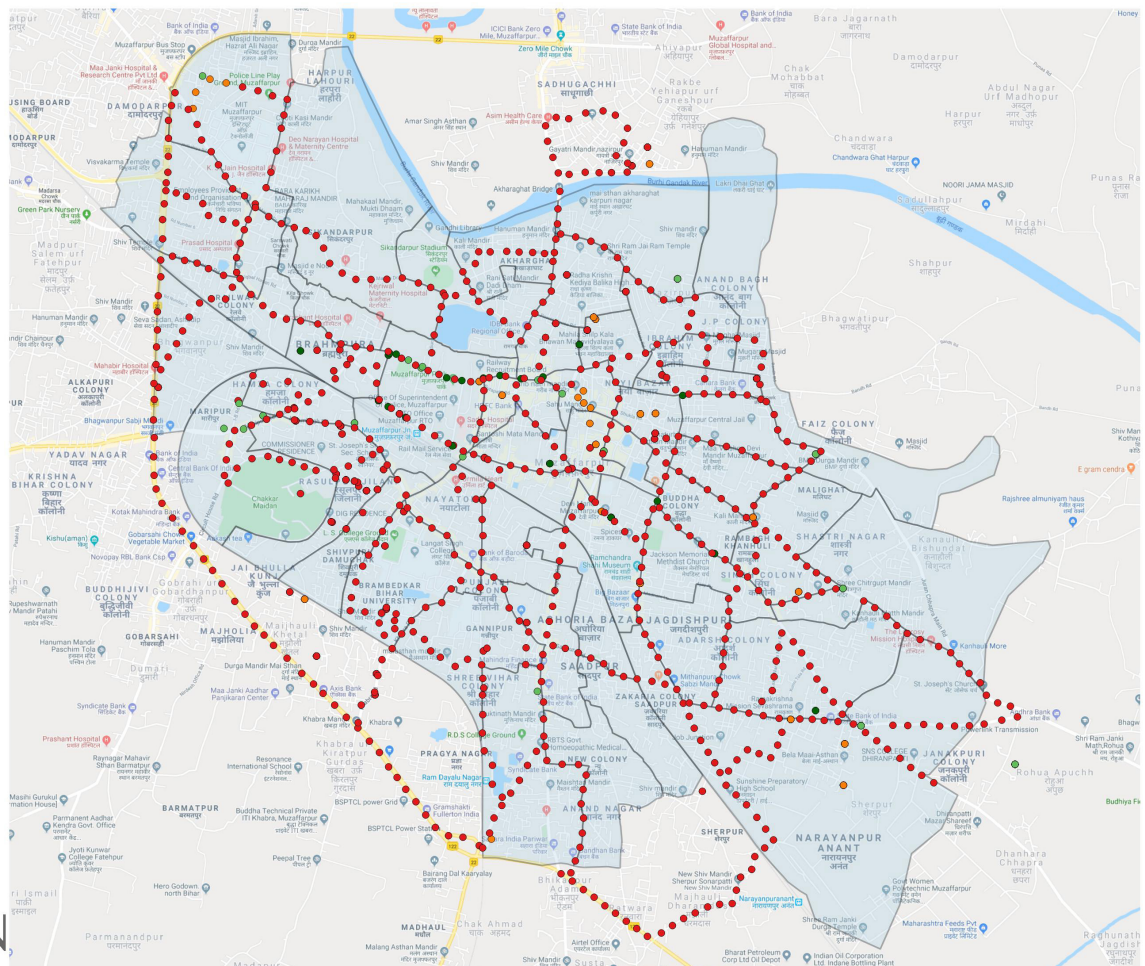
# 59%

## OF THE CITY MAPPED HAS NO OR POOR VISIBILITY
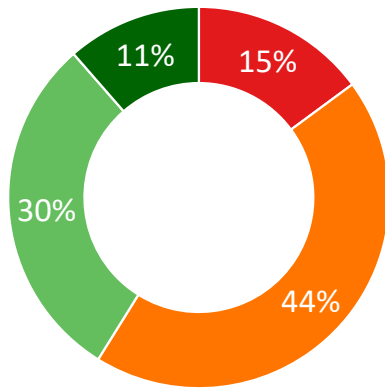
41% of the city in general has good visibility or eyes on the streets or has active streets but 59% scores poorly on the same. When data is represented geographically (map below) it is seen that most of the lower ratings on visibility are all over the city apart from a few clusters with higher ratings in the core. This means, either there are none or low visibility in these parts of the city. This geo-located data could be used for city improvement programs to identify the status of visibility in the city.

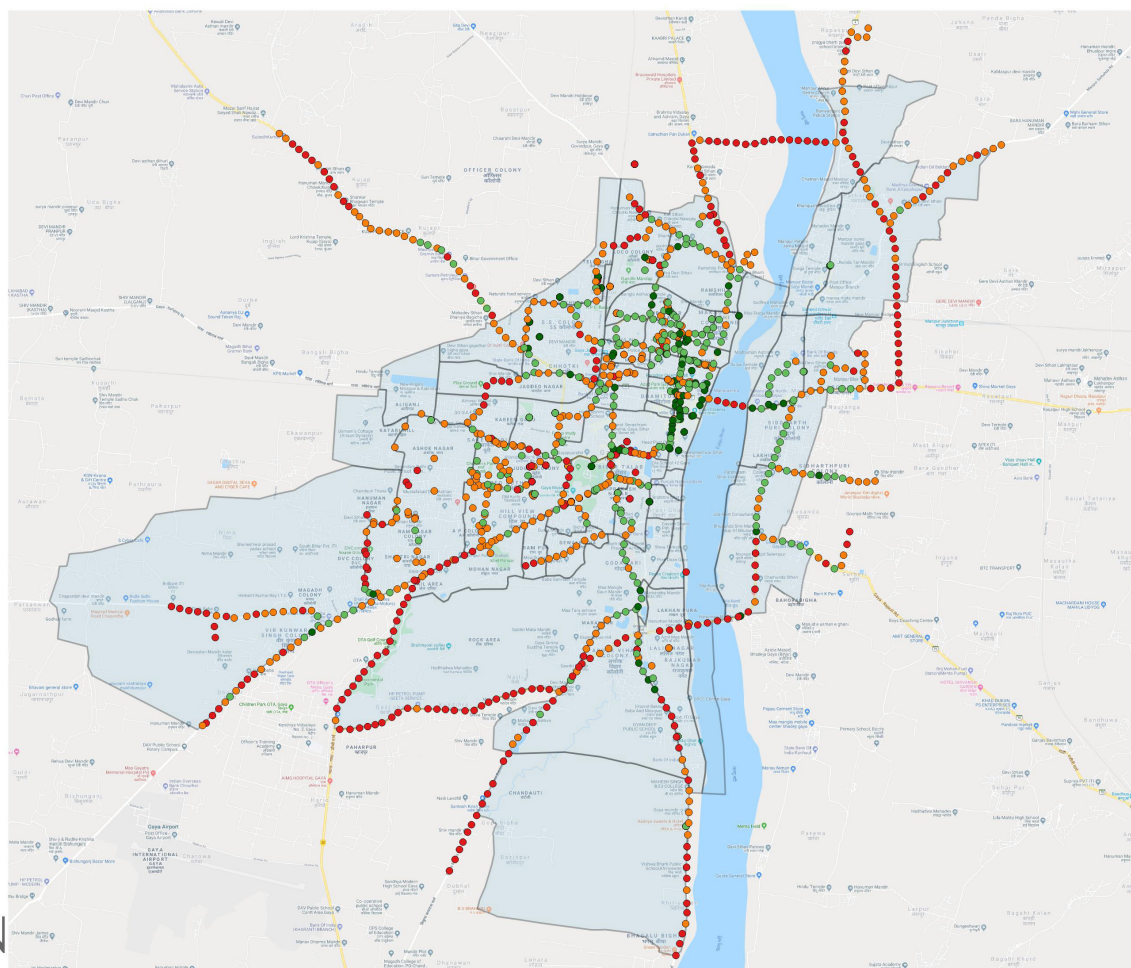*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*

**11%**  **15%**  **30%**  **44%**

**Muzaffarpur: Parameter Visibility**

## Legend

**Safety Audits**

- 🔴 No Eyes
- 🟠 Few Eyes
- 🟢 More Eyes
- 🟢 Highly Visible
- ⬜ Muzaffarpur

Base: Google Map



SAFETIPIN
*Supporting Safer Cities*
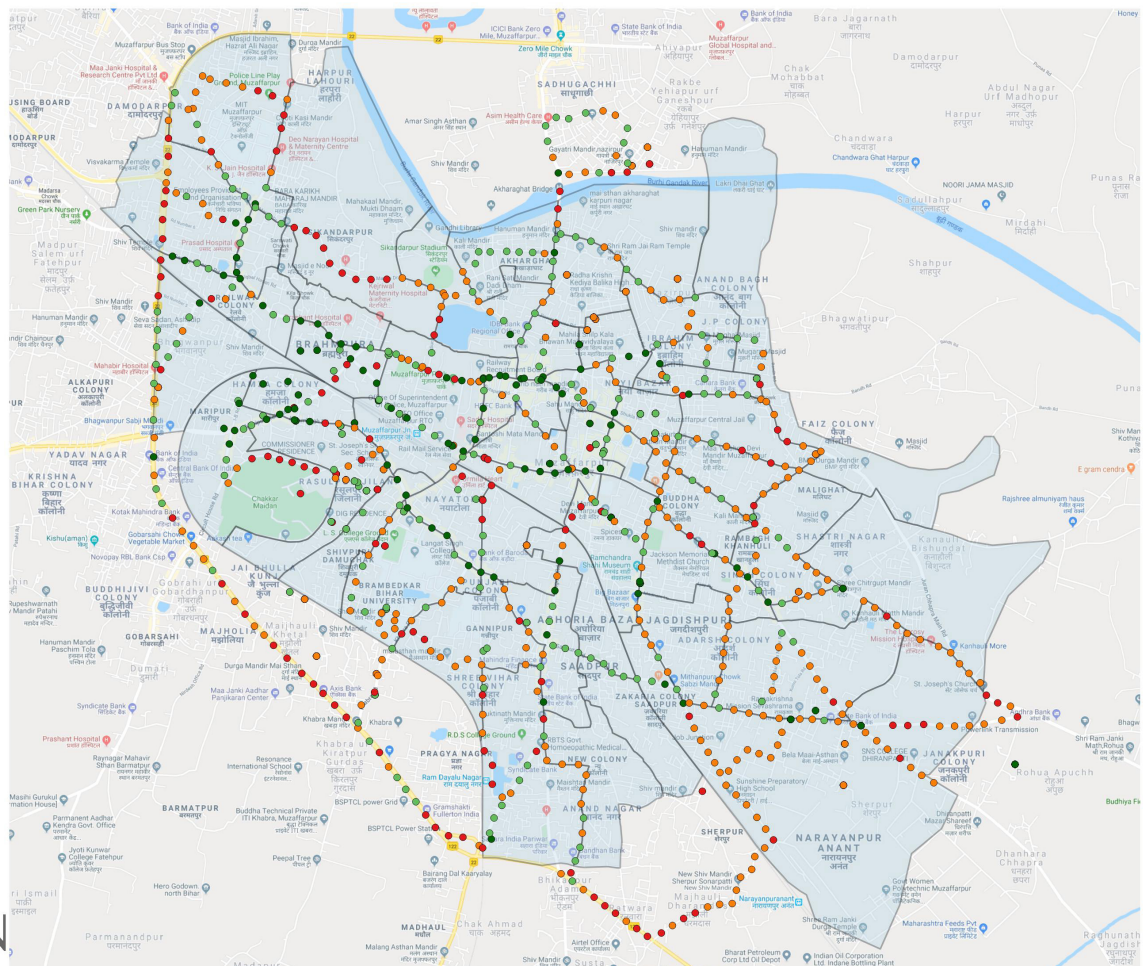
# 66%

## OF THE CITY MAPPED HAS NO FORMAL SECURITY
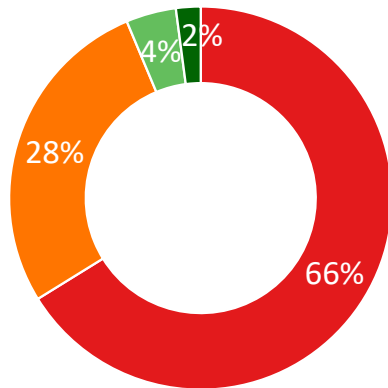
Only 6% of the city has security (formal police or private gaurds), in rest 66% no police or guards were seen present and only 28% had few private guards visible in public spaces. When data is represented geographically (map below) it is seen that most of the lower ratings on security are spread evenly across the city. This means, either there are none or minimal formal security visible in the city during the mapping. This data could be used understand the status of security in the city.

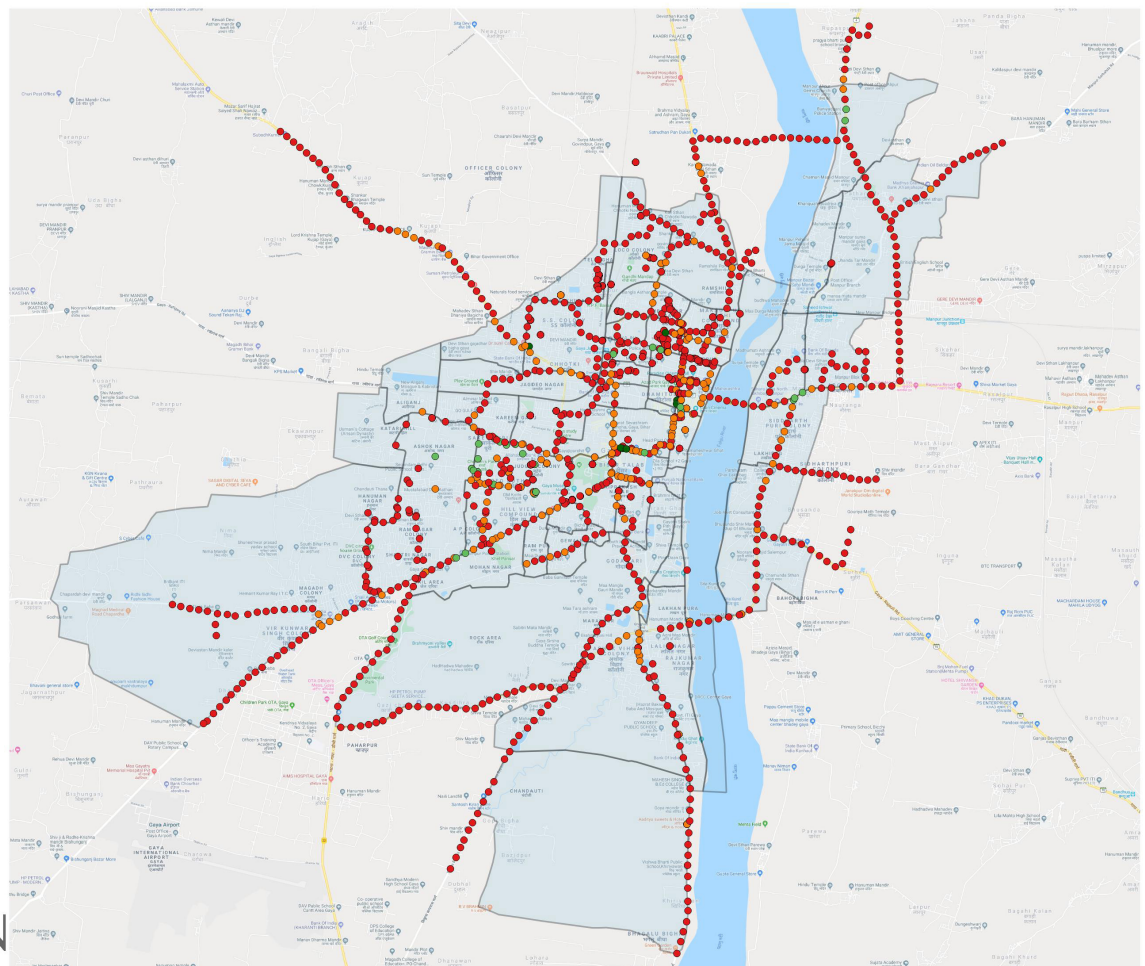*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*



**Muzaffarpur: Parameter Security**

## Legend

Safety Audits
- 🔴 None
- 🟠 Minimal
- 🟢 Moderate
- 🟢 High
- ⬜ Muzaffarpur

Base: Google Map



SAFETIPIN
*Supporting Safer Cities*
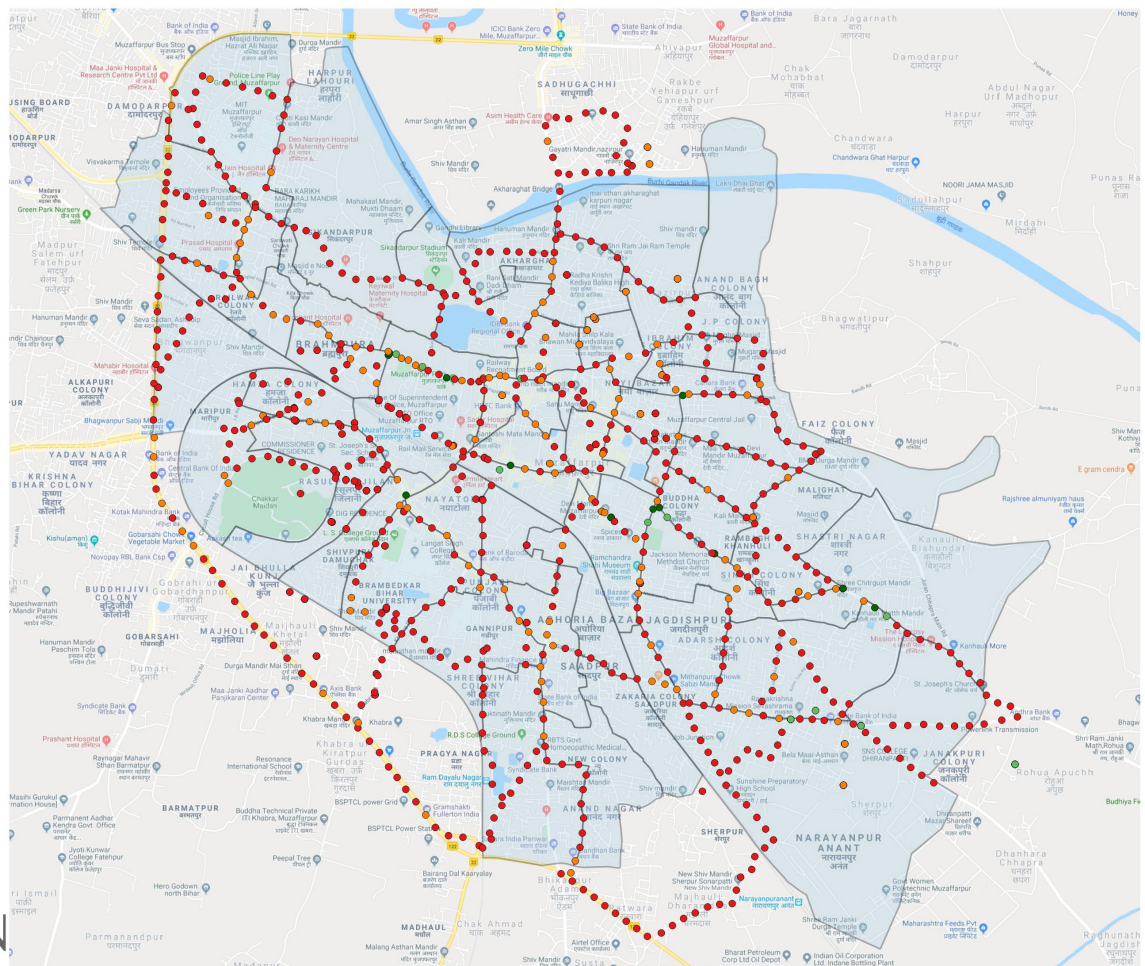
# 12%

## OF THE CITY MAPPED HAS WOMEN IN PUBLIC SPACE
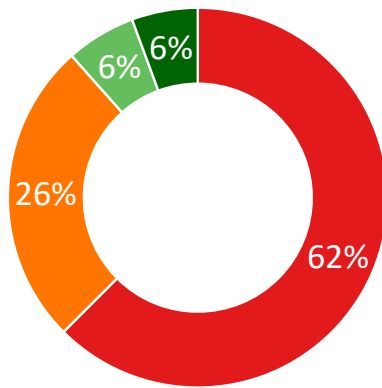
Only 12% of the city had women and children present in public spaces during the time of the audit, rest 88% had no or very few women and children seen on the streets. When data is represented geographically (map below) it is seen that most of the lower ratings on gender usage are spread evenly across the city. This means that there were no women or diverse groups present at night in public spaces. This data could be used to understand spaces where diverse groups are seen.

*On the left, percentage distribution pie of the parameter map below.*
*Tally with the legend below.*



6% 6%

26%

62%

**Muzaffarpur:
Parameter
Gender Usage**

## Legend

### Safety Audits

- Not Diverse
- Somewhat Diverse
- Fairly Diverse
- Diverse
- Muzaffarpur

Base: Google Map



SAFETIPIN
*Supporting Safer Cities*

# 74%

## HAS NO OR FEW PEOPLE IN PUBLIC SPACES



26% of the city in general had good amount of people present on the streets during the time of the audit but 74% had deserted or less than 10 persons seen in public spaces. When data is represented geographically (map below) it is seen that most of the lower ratings on people are on the periphery and almost evenly across the city barring few pockets in the core. This means, either there are none or very less people in these parts of the city and this data could be used to see why it is so.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*
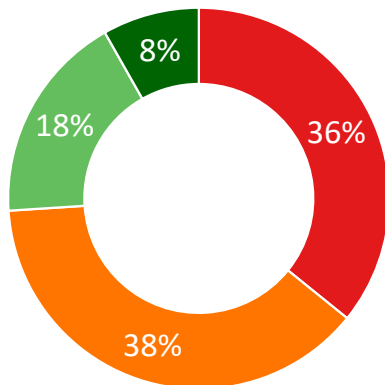
**Muzaffarpur: Parameter People**

## Legend

### Safety Audits

- • Deserted
- • Few People
- • Some Crowd
- • Crowded
- ▢ Muzaffarpur

Base: Google Map

SAFETIPIN
*Supporting Safer Cities*
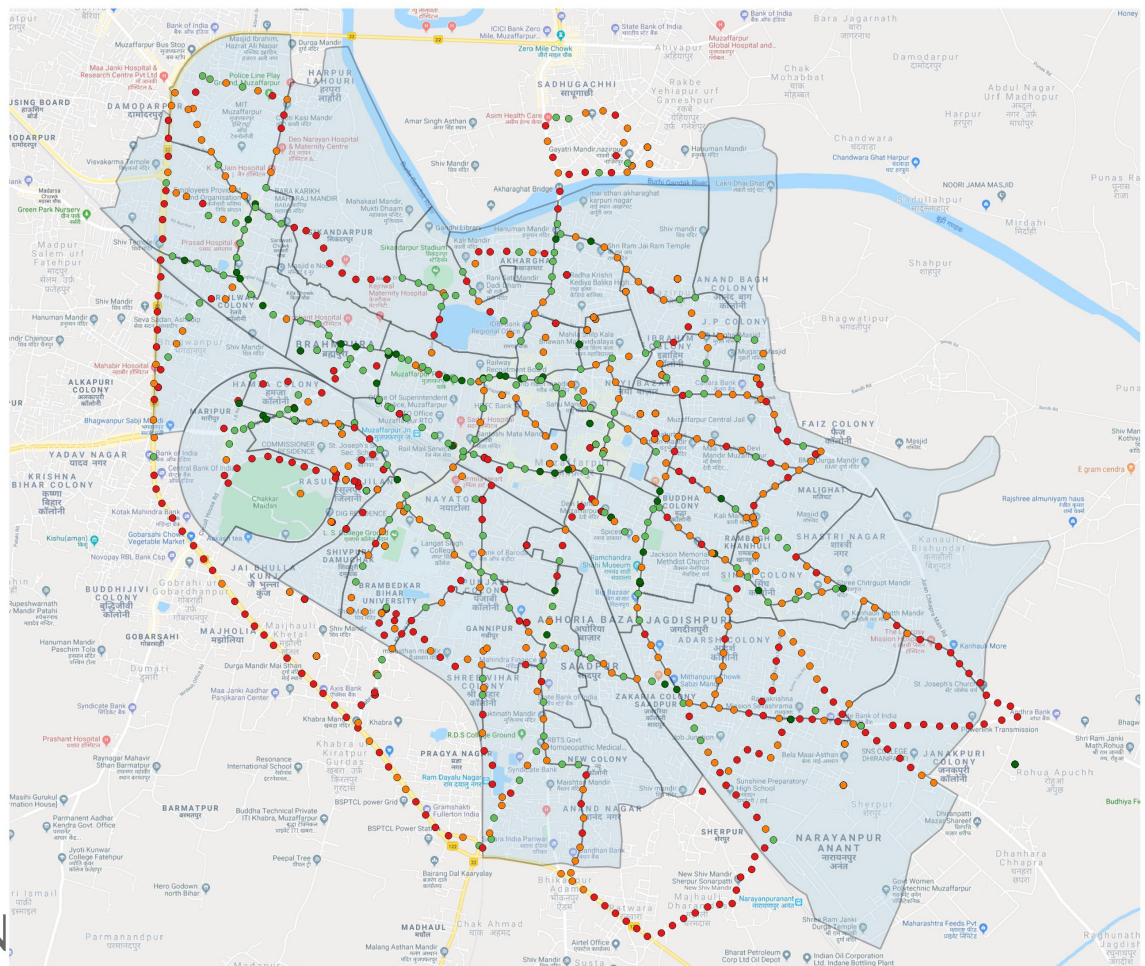
# 52%

## OF THE CITY MAPPED HAS MOSTLY OPEN STREETS
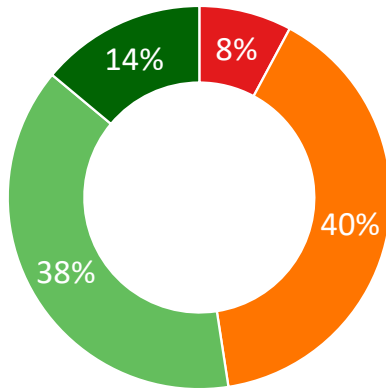
48% of the city has open streets with clear line of sight for all or most directions, rest 52% only scores poorly on the same having blind turns and obstructed sighlines. When data is represented geographically (map below) it is seen that some of the lower ratings on open streets are in the core of the city forming clusters at various locations. This means, either these parts in the city are congested or have blind turns and dead ends, making these areas very difficult to navigate through.

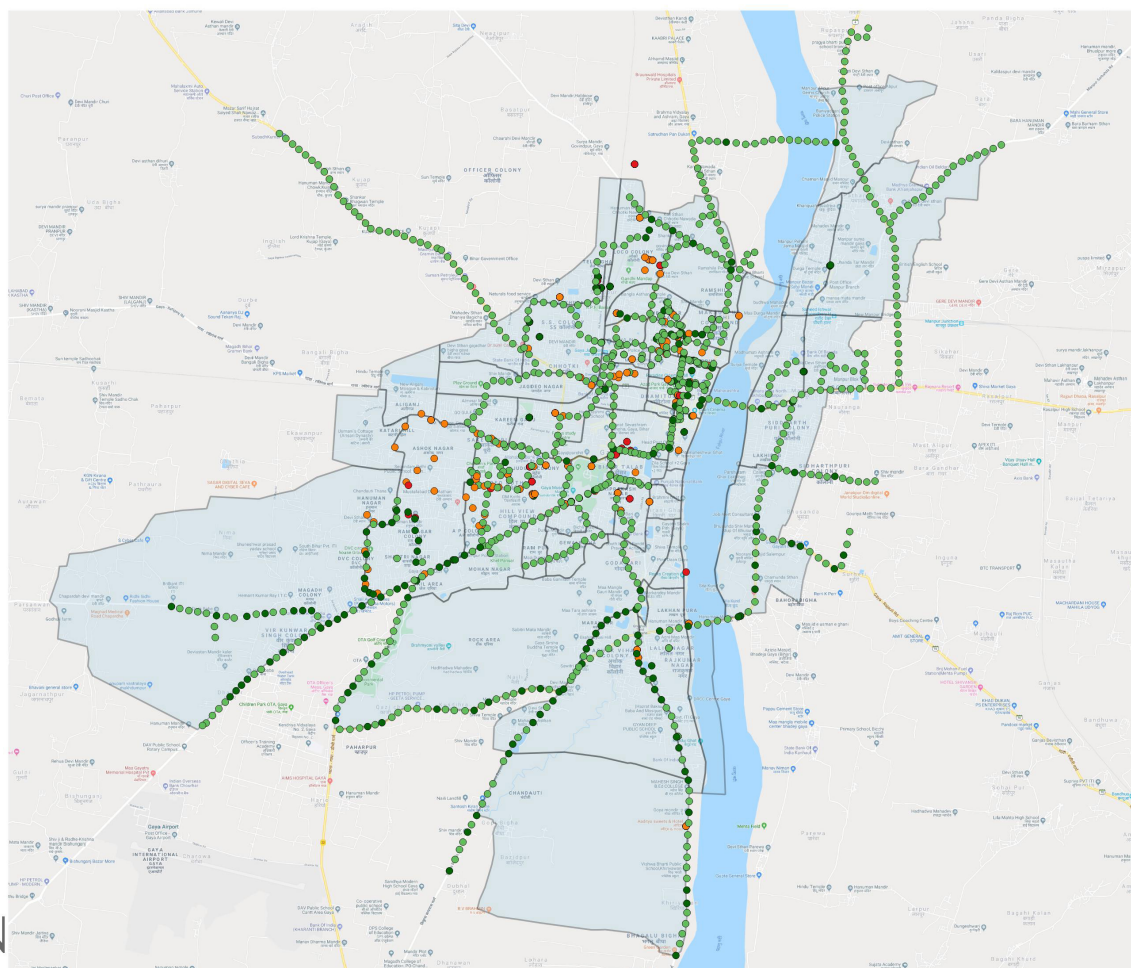*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*



Pie chart values: 8%, 40%, 38%, 14%

**Muzaffarpur: Parameter Openness**

## Legend

Safety Audits
- Not Open
- Partly Open
- Mostly Open
- Completely Open
- Muzaffarpur

Base: Google Map
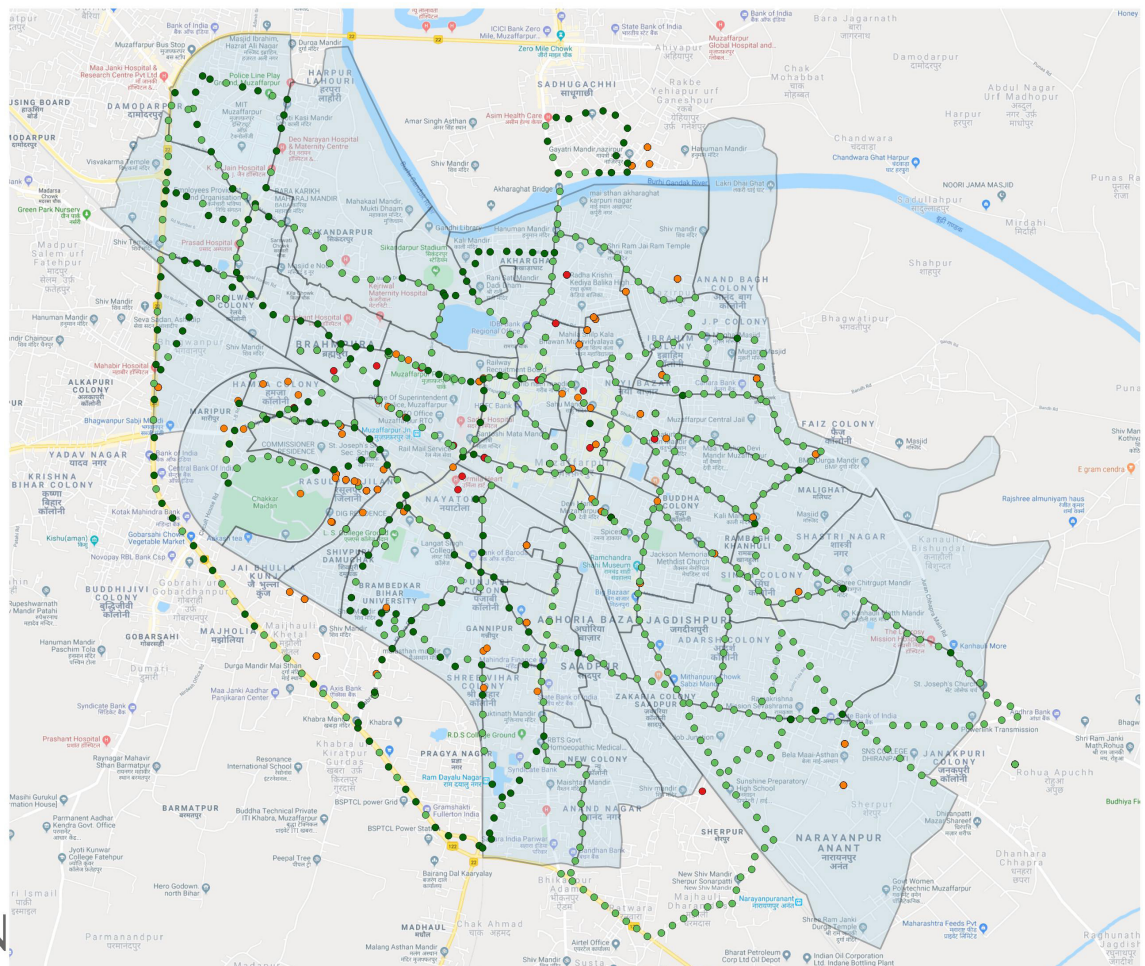
# 69%
## OF THE CITY MAPPED PEOPLE FEEL UNSAFE
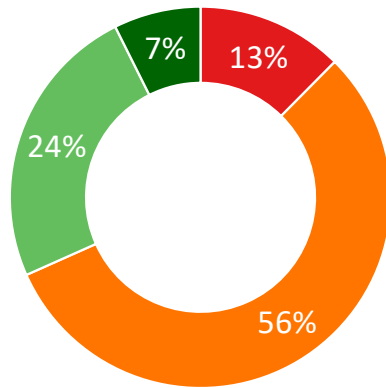
Only 31% of the city feels safe in the evening or after dark but 69% feels frightened to venture out without escort or will avoid being out. When data is represented geographically (map below) it is seen that most of the lower ratings on feeling of safety are spread evenly across the city. This means that the perception of safety is poor among people, especially women and it is a common perception for almost all who expressed their safety concerns about the city through their public space audits.

*On the left, percentage distribution pie of the parameter map below. Tally with the legend below.*



**Muzaffarpur: Parameter Feeling**

## Legend

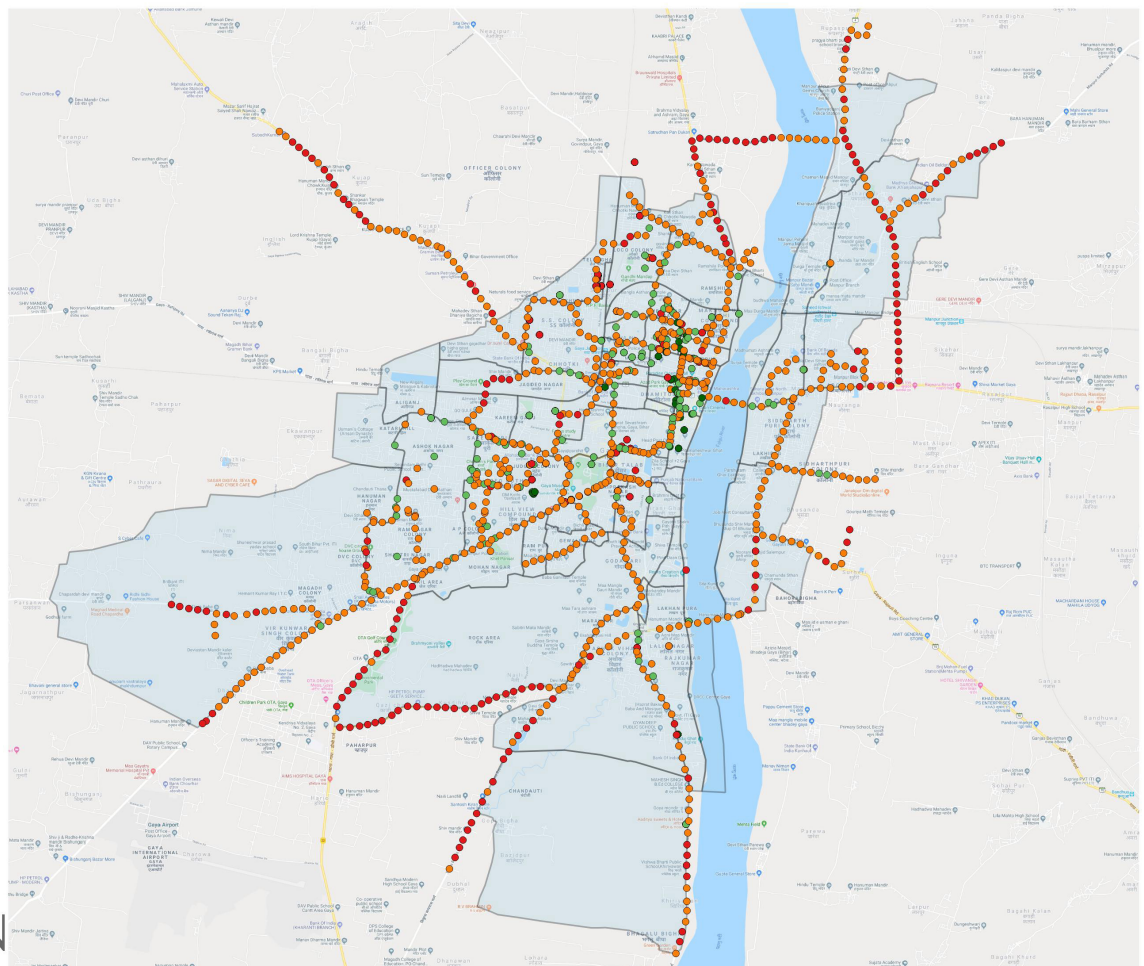Safety Audits

- Frightening
- Uncomfortable
- Acceptable
- Comfortable
- Muzaffarpur

Base: Google Map
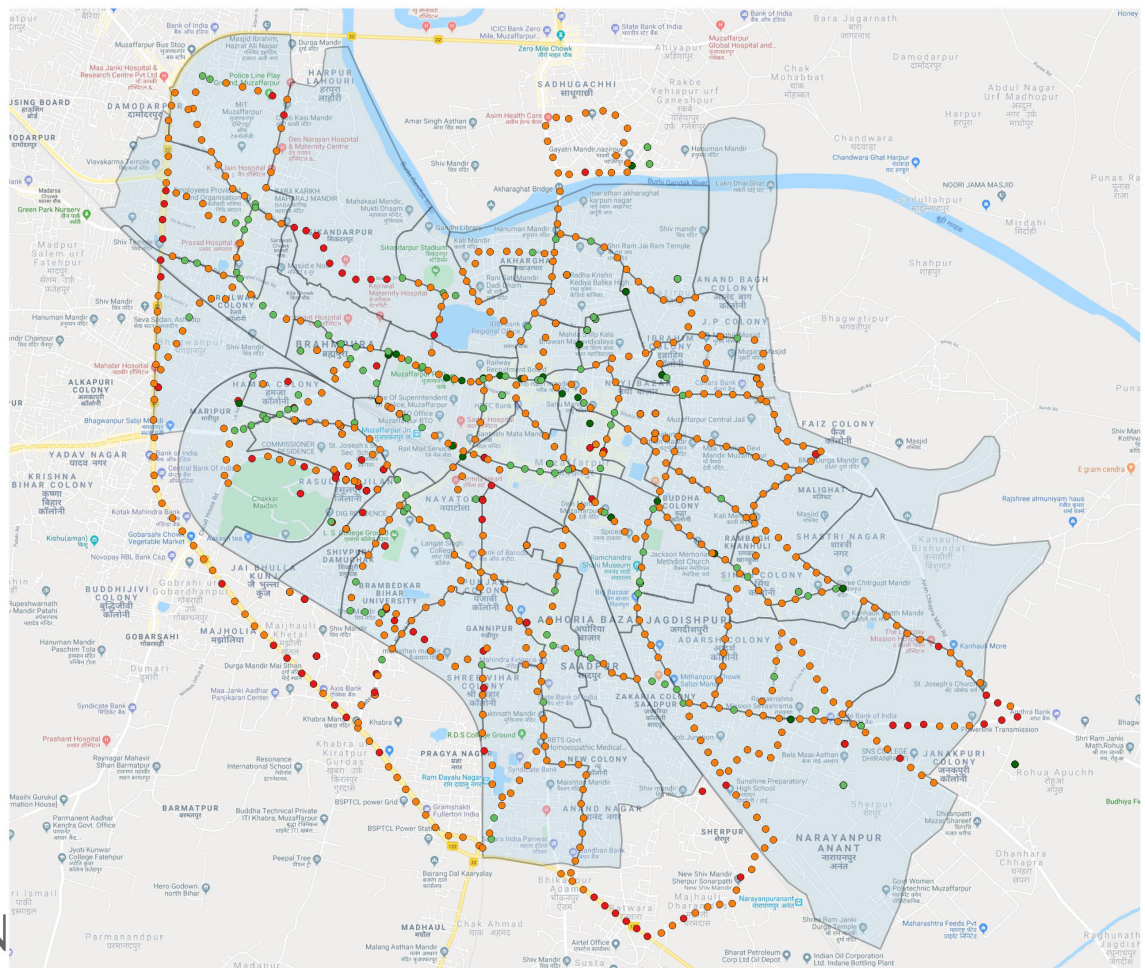
## Muzaffarpur: Average Parameter Graph
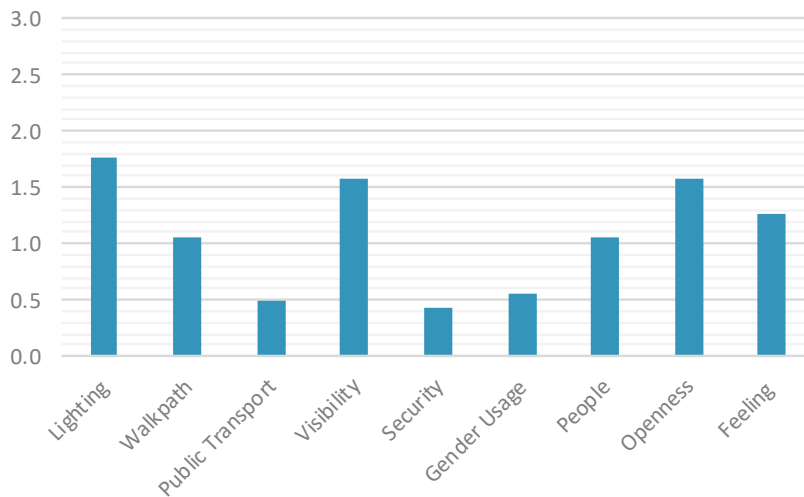
## Muzaffarpur: Pin Distribution Graph
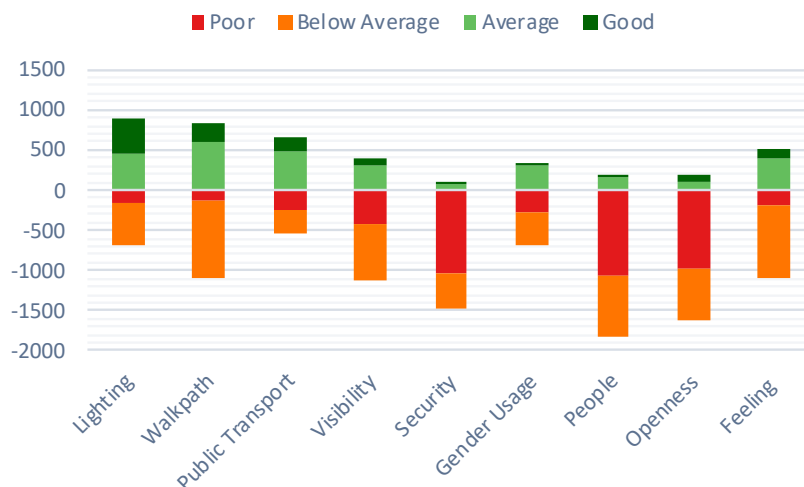
■ Poor  ■ Below Average  ■ Average  ■ Good

The average parameter rating graph indicates the average rating for each parameter on a scale of three. Each of the nine parameters are rated either 0,1, 2 or 3, where 0 is poor and 3 is good. As seen on the graph, Lighting parameter has been rated the highest, followed by other parameters such as Openness, Visibility and Walkpath. People parameter is rated slightly lower and the parameters Gender Usage, Transport and Security have been rated the lowest. The overall Feeling of Safety or the perception of safety for Muzaffarpur is rated Below Average.

The parameter wise pin distribution graph indicates the number of points rated as 0, 1, 2 and 3. The good ratings are taken as positive and poor ratings as negative. As shown on the graph, the parameter of People, Openness and Security are rated poorly for most parts of the city, whereas parameters like Lighting, Walkpath and Transport are mostly below average through out the city.

# TRI-CITY
# **DATA ANALYSIS**

*Tri-City Comparative Data*

The correlation graph below for all three cities, indicate the correlation drawn between each of the eight parameters in each city with respect to feeling - the ninth parameter. City wise correlation webs are also given below for ready reference. The collated data from 'My Safetipin' audits show that Transport, People and Security have been rated the highest when correlated with feeling and are common to all three cities. It also shows the strong relationship these parameters have to ones perception of safety and helps to indentify safety related aspects in cities which needs immidiate attention.



Parameter Correlation w.r.t. Feeling Parameter



Patna: Correlation Graph



Gaya: Correlation Graph



Muzaffarpur: Correlation Graph
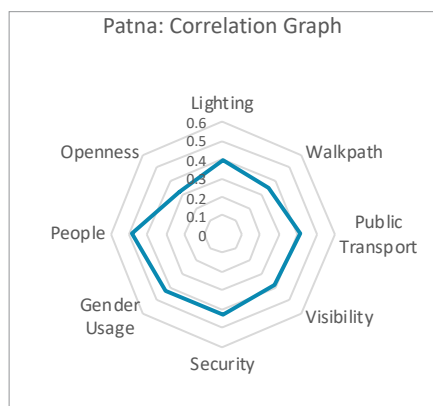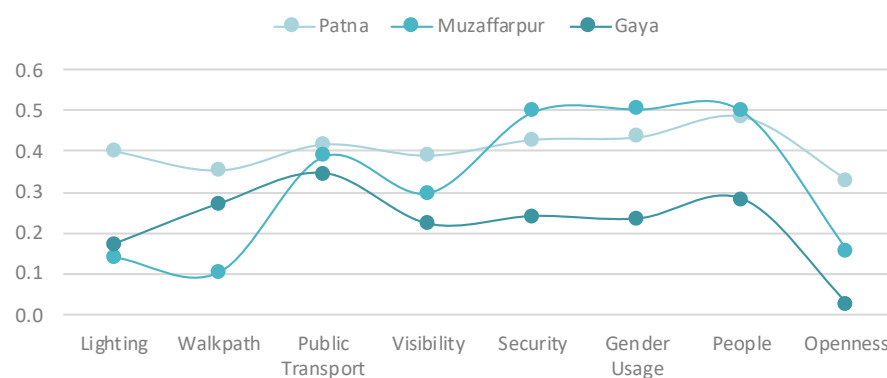
## PATNA

*Transport, People, Lighting*

The above graph indicates the correlation drawn between each of the eight parameters with respect to feeling, the ninth parameter. In case of Patna, 'My Safetipin' audits show People, Gender Usage, Lighting and Transport to be rated the highest when correlated with feeling. This clearly shows the relationship of these parameters to ones perception of safety.
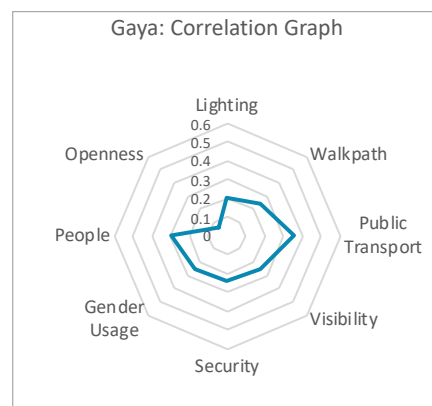
## GAYA

*Transport, People*

The above graph indicates the correlation drawn between each of the eight parameters with respect to feeling, the ninth parameter. In case of Muzaffarpur, 'My Safetipin' audits show People, Gender Usage, Security and Transport to be rated the highest when correlated with feeling. This clearly shows the relationship of these parameters to ones perception of safety.
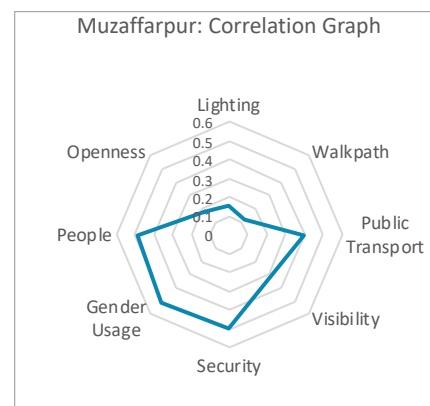
## MUZAFFARPUR

*Transport, People, Gender Usage, Security*

The above graph indicates the correlation drawn between each of the eight parameters with respect to feeling, the ninth parameter. In case of Muzaffarpur, 'My Safetipin' audits show People, Gender Usage, Security and Transport to be rated the highest when correlated with feeling. This clearly shows the relationship of these parameters to ones perception of safety.

## Comparative Analysis: Average Parameter Rating
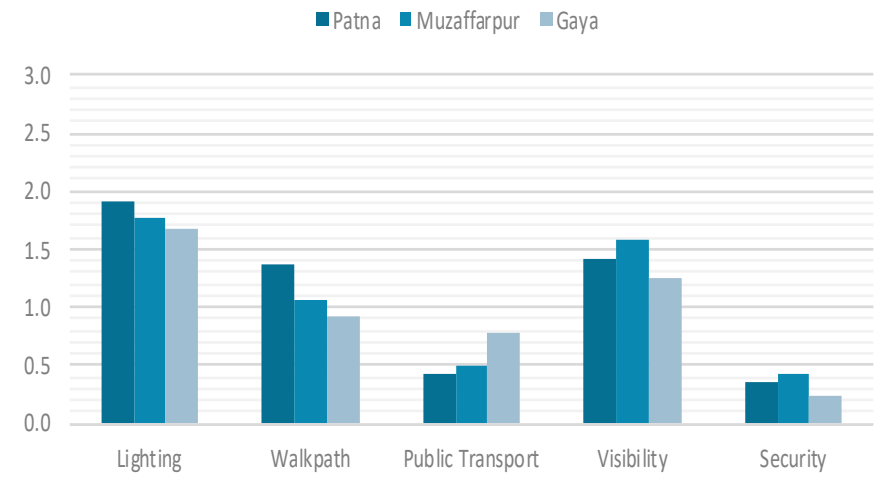


Legend: ■ Patna ■ Muzaffarpur ■ Gaya

## Comparative Analysis: % of people and women present
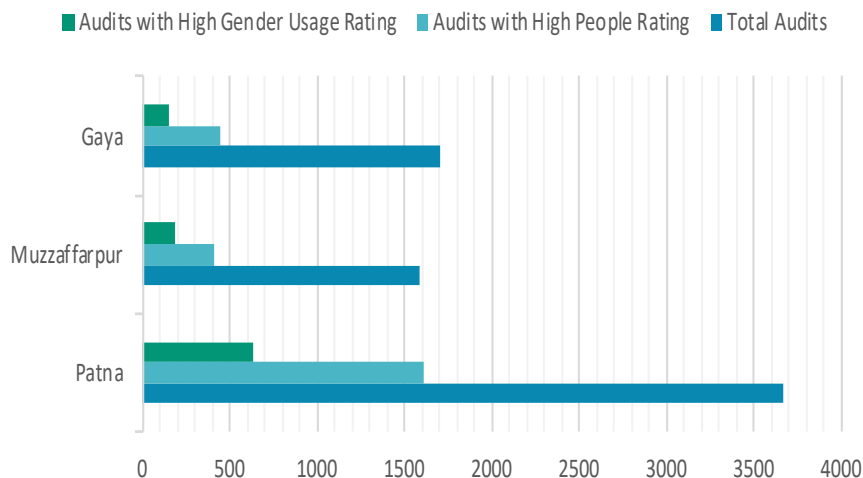


Legend: ■ Audits with High Gender Usage Rating ■ Audits with High People Rating ■ Total Audits

The graph above compares the average ratings given for five improtant parameters across three cities which Safetipin evaluated through its safety audits. Additionally, these were even identified through correlation analysis as discussed before. At a glance this helps to understand how each parameter is rated differently in every city and further directs to enquire about the reasons for such ratings. It also graphically compares the given parameters with each other and helps to understand how such inter-dependencies eventually informs the quality of the public spaces.

The graph below indicates the presence of people in general and women in particular in public spaces during the time of Safetipin audits. The overall percentage of people in public spaces after nightfall is less and even lesser for women across all three cities. If public spaces are to be made safer then participation of women in public life has to be supported and improved.

## Correlation between gender usage and street lighting



**1113** audit points with poor lighting

**631** audit points where women are seen in streets

**112** audit points where women are present in public spaces but street lighting is either poor or inadequate
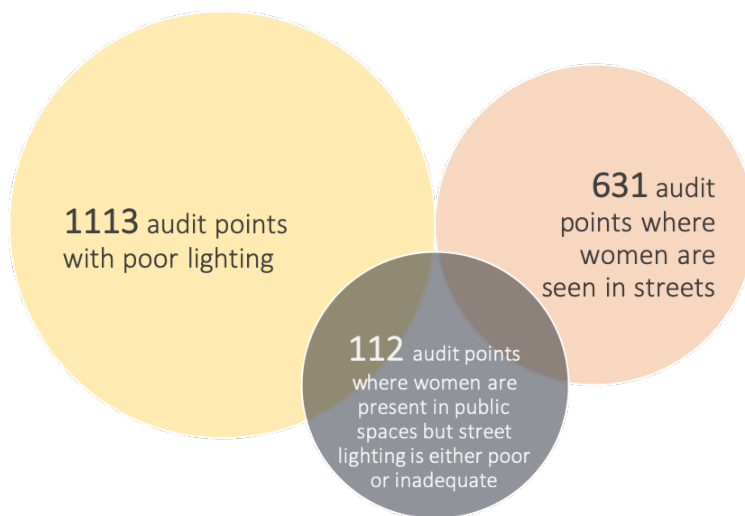
## CORRELATION DIAGRAM

*Diagram  top right*

*The diagram represents data - where women are present but no lighting is available*

**Patna:
Correlation between
Lighting &
Gender Usage**

Legend
• Poor Lighting
☐ Patna
Base: Google Map
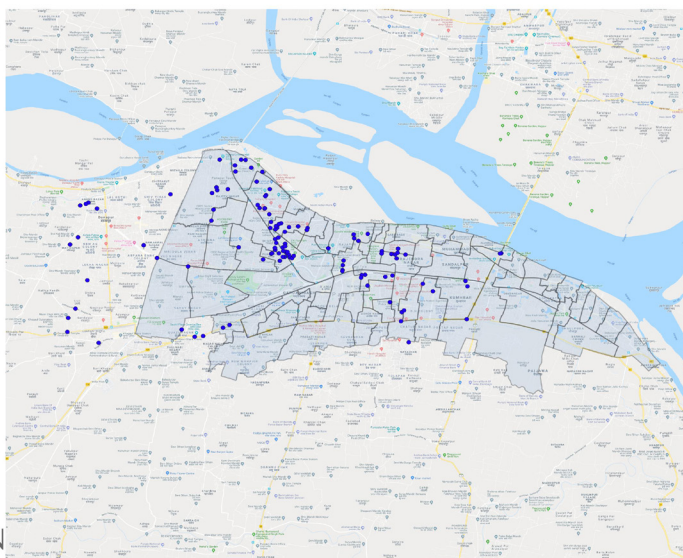


## CORRELATION MAP

*Map bottom right*

*The map shows point data - where women are present but no lighting is available*

The map above shows audit points in the city of Patna where women are present in the streets but inadequate or poor street lighting is available. There are all together 112 points identified in the city where women can be seen accessing public spaces in the dark. The diagram on top represents this data quantitatively.

Since this is visual mapping, every geo-tagged audit point is supported by two or more images. Such data would enable the authoritires to investigate deeper into the city's street lighting infrastructure and plan better in order to improve safe access to public spaces. Women's access to public spaces would certainly improve if street lighting is prioritise.

A CSV file is generated (refer Appendix for details) which has all the geo located audits with supporting photographs for each point, to enable necessary interventions as recommended by Safetipin.

Correlation between people usage and public transport



2965 audit points with public transport stops not being within 5-10 mins walking distance

1592 audit points where people are seen in streets

1274 audit points where people are present in public space but public transport stops are distant or out of reach

**Patna:**
**Correlation between**
**People &**
**Public Transport**

Legend

• Poor Transport
☐ Patna
Base: Google Map



SAFETIP?N
*Supporting Safer Cities*
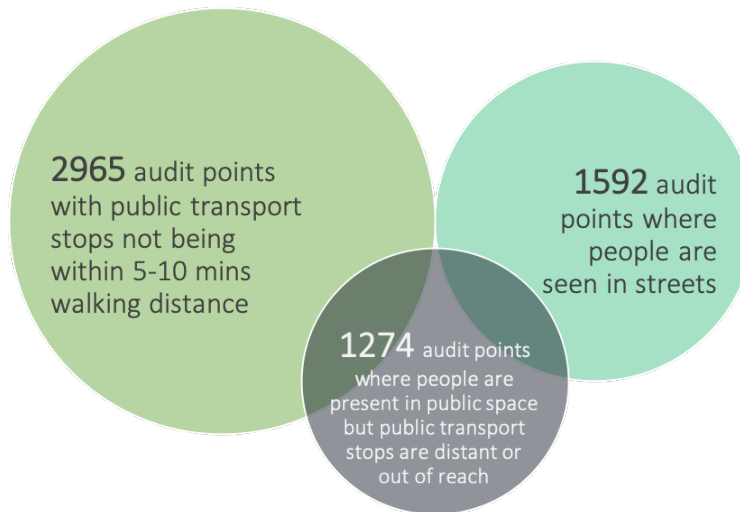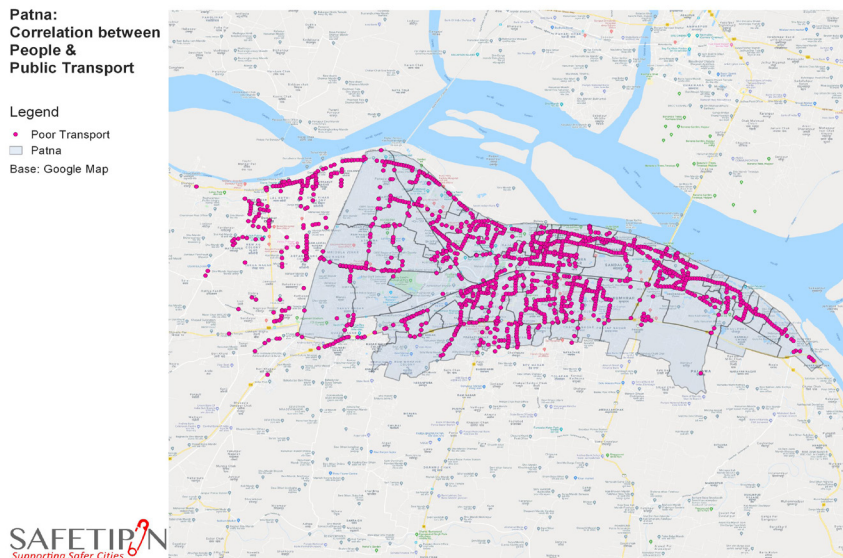
The map above shows audit points in the city of Patna where peole are present but public transport stops are distant or out of reach. There are all together 1275 points identified in the city where people cannot reach public transport stops within 2-5 mins walking distance. The diagram on top represents this data quantitatively.

Since this is visual mapping, every geo-tagged audit point is supported by two or more images. Such data would enable the authoritires to investigate deeper into the city's transportaion systems and plan better in order to improve its access and reach. Women's mobility would certainly improve if the overall transport sytem is upgraded and last mile connectivity is prioritised.

A CSV file is generated (refer Appendix for details) which has all the geo located audits with supporting photographs for each point, to enable necessary interventions as recommended by Safetipin.

## Correlation between people usage and public transport



1343 audit points with public transport stops not being within 5-10 mins walking distance

1027 audit points where people are seen in streets

246 audit points where people are present in public space but public transport stops are distant or out of reach

## CORRELATION DIAGRAM

*Diagram top right*

*The diagram represents data - where people are present but no transport is available*

**Gaya: Correlation between People & Public Transport**

Legend
• Safety Audits
☐ Gaya
Base: Google Map



## CORRELATION MAP

*Map bottom right*

*The map shows point data - where people are present but no transport is availablev*

The map above shows audit points in the city of Gaya where peole are present but public transport stops are distant or out of reach. There are all together 246 points identified in the city where people cannot reach public transport stops within 2-5 mins walking distance. The diagram on top represents this data quantitatively.

Since this is visual mapping, every geo-tagged audit point is supported by two or more images. Such data would enable the authoritires to investigate deeper into the city's transportaion systems and plan better in order to improve its access and reach. Women's mobility would certainly improve if the overall transport sytem is upgraded and last mile connectivity is prioritised.

A CSV file is generated (refer Appendix for details) which has all the geo located audits with supporting photographs for each point, to enable necessary interventions as recommended by Safetipin.

Correlation between people usage and public transport



**1382** audit points with public transport stops not being within 5-10 mins walking distance

**406** audit points where people are seen in streets

**289** audit points where people are present in public space but public transport stops are distant or out of reach

**Muzaffarpur: Correlation between People & Public Transport**

Legend
- Safety Audits
- Muzaffarpur
Base: Google Map



**SAFETIPIN**
*Supporting Safer Cities*

**CORRELATION DIAGRAM**

*Diagram top right*

*The diagram represents data - where people are present but no transport is available*

**CORRELATION MAP**

*Map bottom right*

*The map shows point data - where people are present but no transport is available*

The map above shows audit points in the city of Muzaffarour where peole are present but public transport stops are distant or out of reach. There are all together 289 points identified in the city where people cannot reach public transport stops within 2-5 mins walking distance. The diagram on top represents this data quantitatively.

Since this is visual mapping, every geo-tagged audit point is supported by two or more images. Such data would enable the authoritires to investigate deeper into the city's transportaion systems and plan better in order to improve its access and reach. Women's mobility would certainly improve if the overall transport sytem is upgraded and last mile connectivity is prioritised.

A CSV file is generated (refer Appendix for details) which has all the geo located audits with supporting photographs for each point, to enable necessary interventions as recommended by Safetipin.

**PATNA: CORRELATING AUDITS WITH PUBLIC SPACES**
*Public spaces and street lighting*

Safetipin overlayed analysed data on a GIS layer of public places (open spaces and markets) received from the city authorities. This helped in geographically locating the exact areas (open spaces or markets) where street lighting is poor or not available. The map below clearly illustrates this correlation. This combined GIS layer could be used for immidiate public space intervention to upgrade these areas. This information is given in a CSV file to be integrated with the city's exsisting GIS platform.

GEO-LOCATED IMAGES

*Left to right*

*The geo-tagged photos show poor and no street lighting*



**Patna:**
**Public Spaces &**
**Lighting**

Legend

▫ Open Spaces
☆ Markets
• Lighting
▢ Patna

Base: Google Map
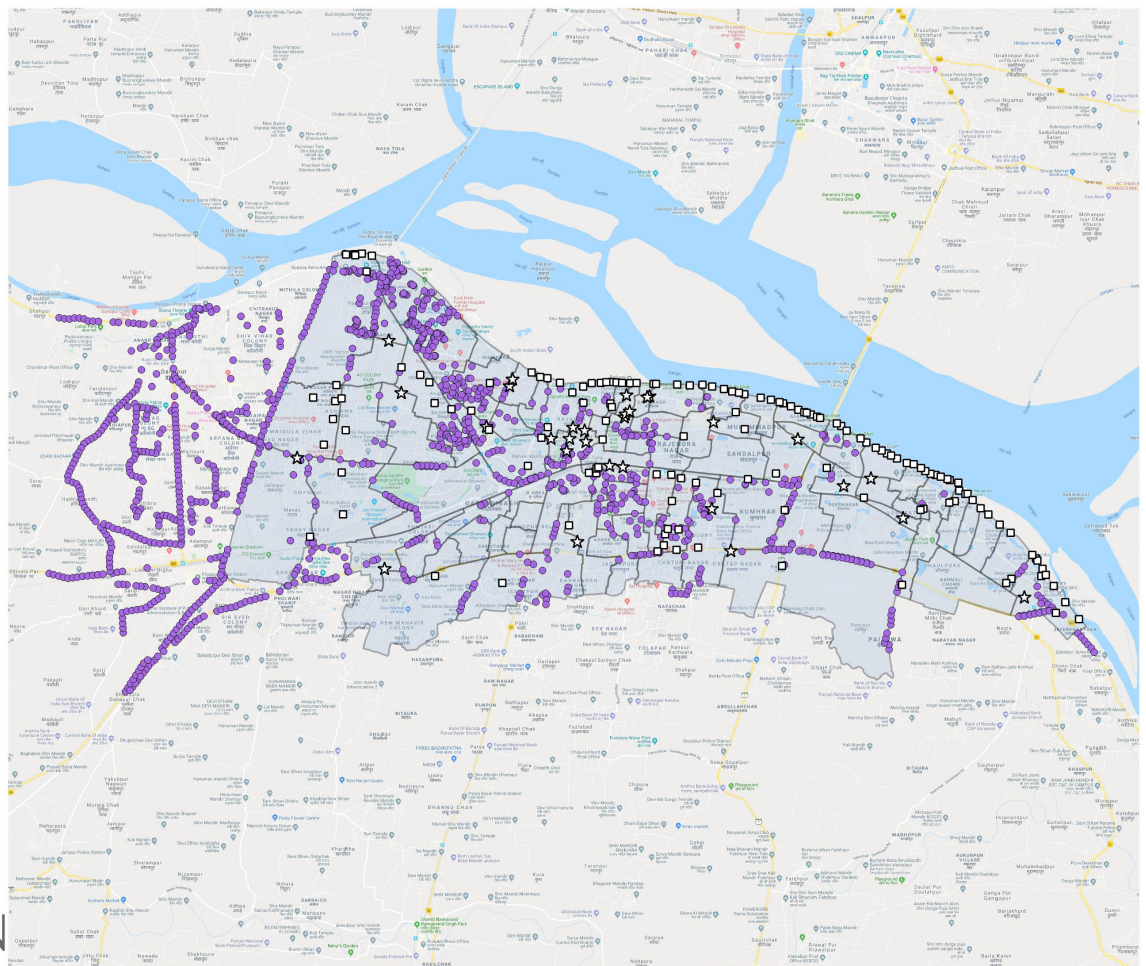
**PATNA: CORRELATING AUDITS WITH PUBLIC SPACES**
*Public spaces and dedicated walkpath*

Safetipin overlayed analysed data on a GIS layer of public places (open spaces and markets) received from the city authorities. This helped in geographically locating the exact areas (open spaces or markets) where walkpath is poor or not available. The map below clearly illustrates this correlation. This combined GIS layer could be used for immidiate public space intervention to upgrade these areas. This information is given in a CSV file to be integrated with the city's exsisting GIS platform.

GEO-LOCATED IMAGES

*Left to right*

*The geo-tagged photos show poor and no walkpath*



**Patna:
Public Spaces &
Walkpath**

Legend

▫ Open Spaces
☆ Markets
• Walkpath
▢ Patna
Base: Google Map
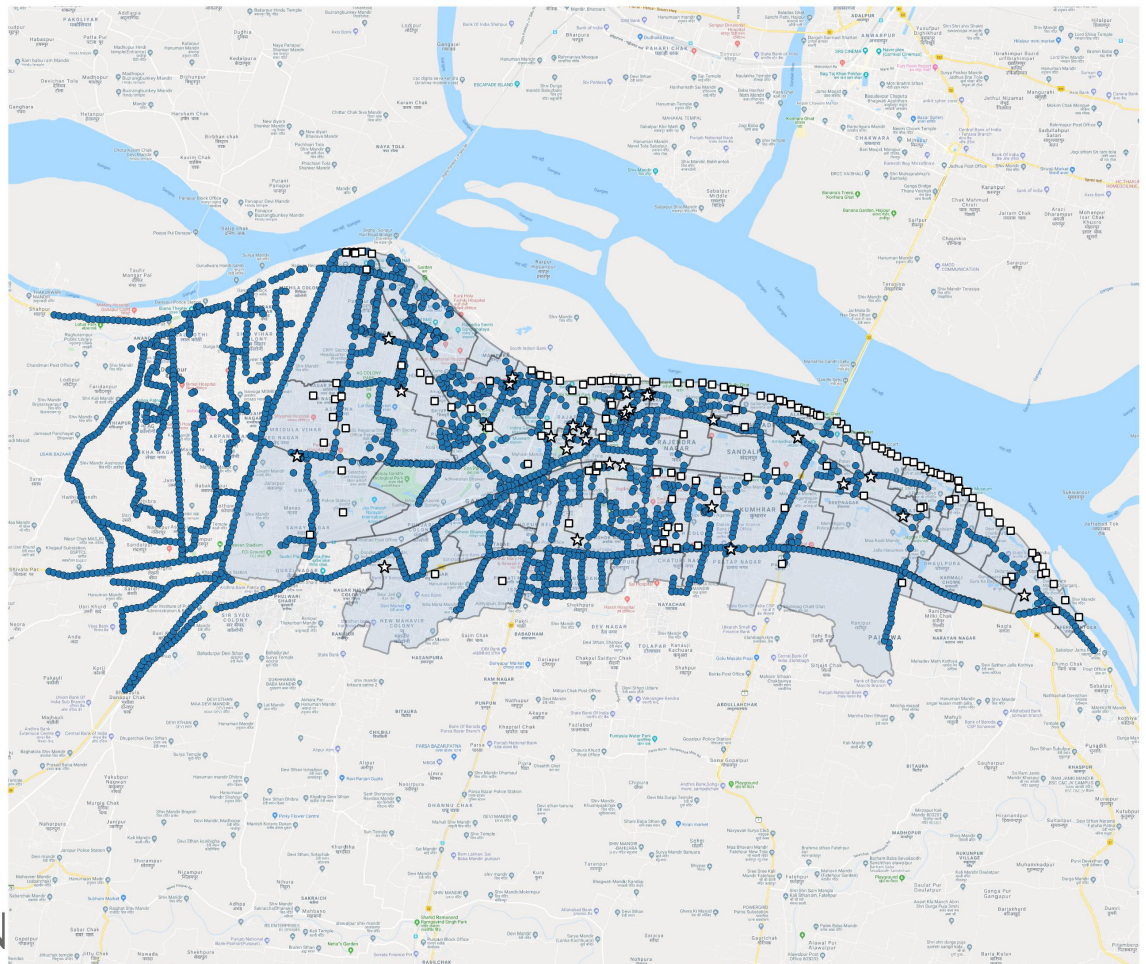
**PATNA: CORRELATING AUDITS WITH PUBLIC SPACES**
*Public spaces and public transport*

Safetipin overlayed analysed data on a GIS layer of public places (open spaces and markets) received from the city authorities. This helped in geographically locating the exact areas (open spaces or markets) where public tranport stops are distant or unavailable. The map below clearly illustrates this correlation. This combined GIS layer could be used for immidiate public space intervention to upgrade these areas. This information is given in a CSV file to be integrated with the city's exsisting GIS platform.

GEO-LOCATED IMAGES

*Left to right*

*The geo-tagged photos show poor and no public transport*



**Patna:
Public Spaces &
Public Transport**

Legend

▫ Open Spaces
☆ Markets
● Public Transport
▢ Patna
Base: Google Map
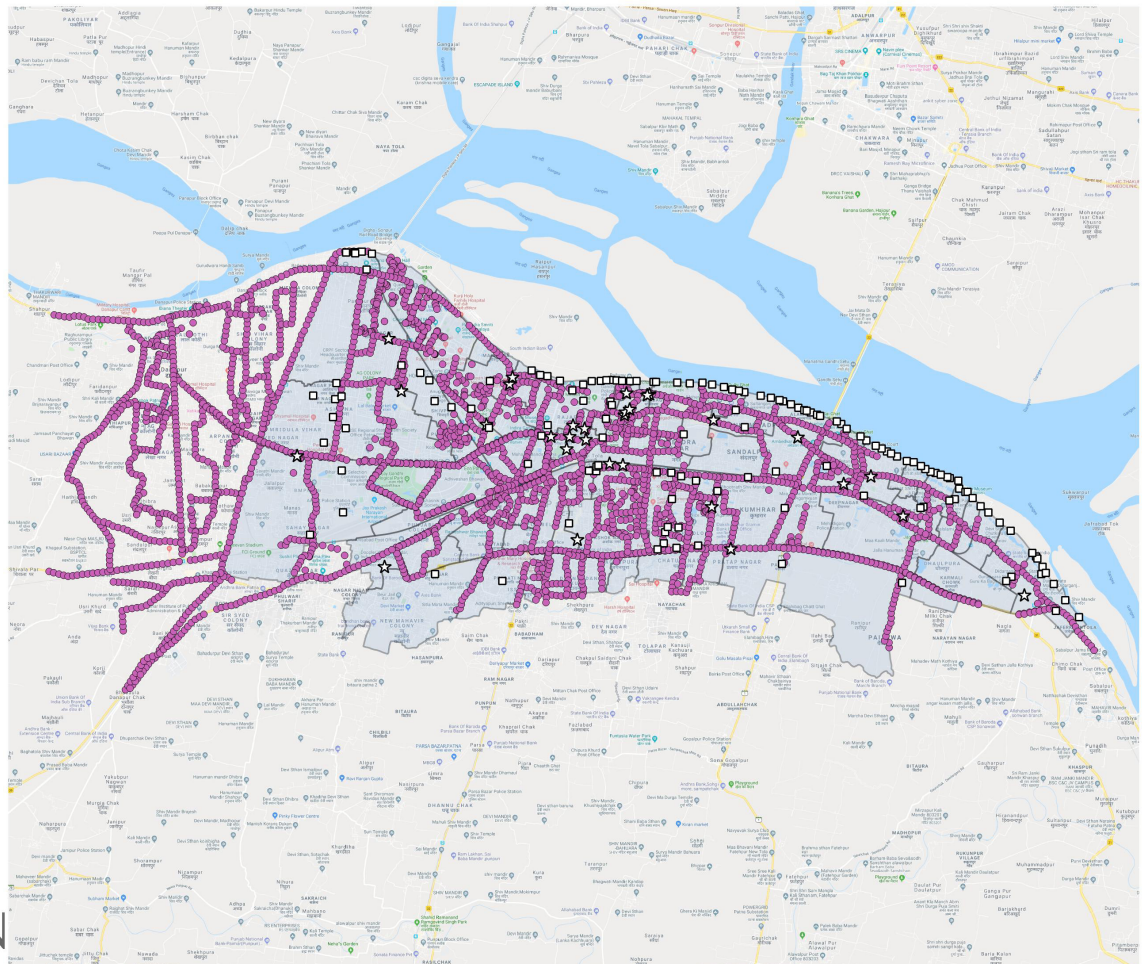
## PATNA: CORRELATING AUDITS WITH EDUCATIONAL INSTITUTIONS
*Educational institutions and public transport*

Safetipin overlayed analysed data on a GIS layer of educational institutions and schools received from the city authorities. This helped in geographically locating the exact areas (institutions and schools) where public tranport stops are distant or unavailable. The map below clearly illustrates this correlation. This combined GIS layer could be used for immidiate public space intervention to upgrade these areas. This information is given in a CSV file to be integrated with the city's exsisting GIS platform.



GEO-LOCATED IMAGES

*Left to right*

*The geo-tagged photos show poor and no public transport*

**Patna: Educational Institutions & Public Transport**

Legend

△ Educational Institutions
● Public Transport
▢ Patna

Base: Google Map
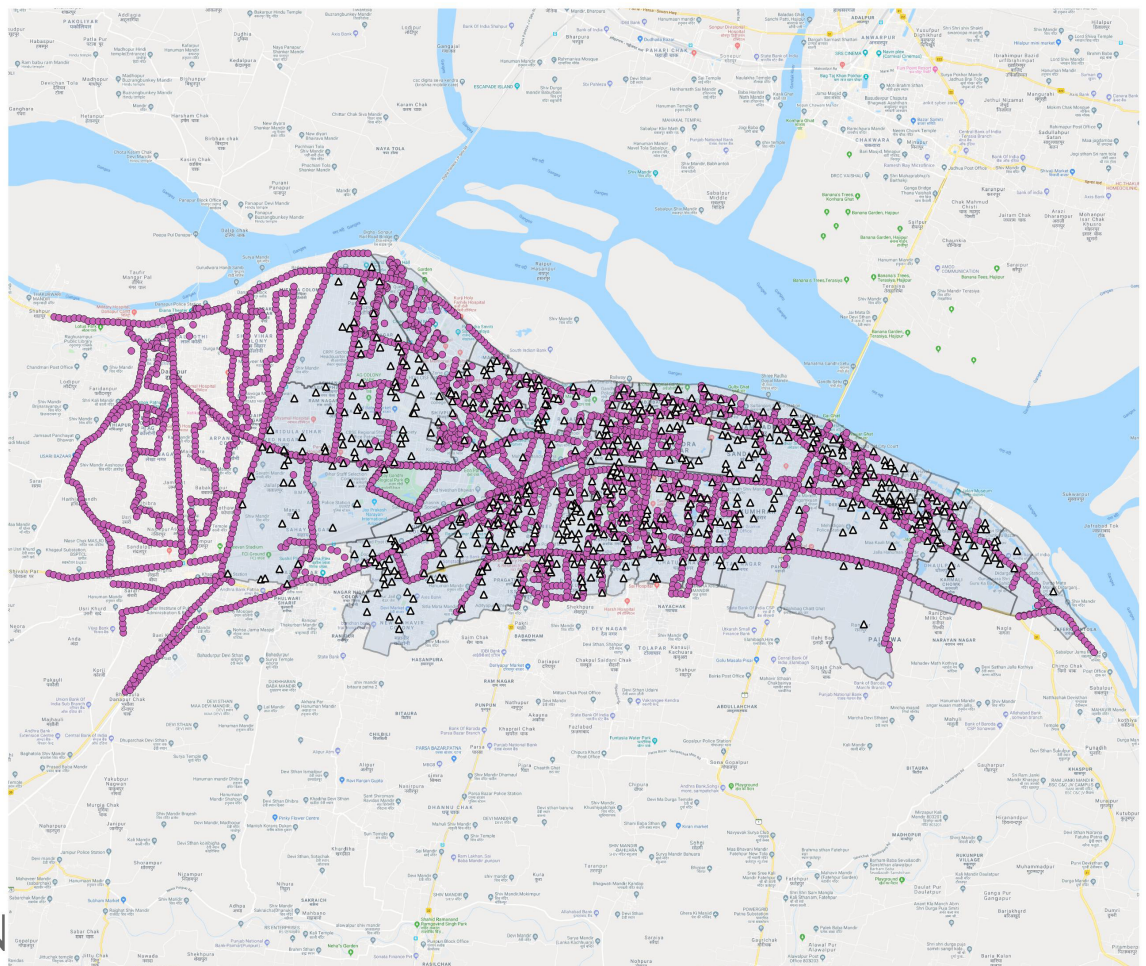
TRI-CITY
# RECOMMENDATIONS

*Qucik responses to planned interventions*

## MAKE PUBLIC SPACES SAFER

As seen in the previous chapter on Findings, none of the cities - Patna, Gaya, Muzaffarpur, have faired very well on any of the parameters evaluated by Safetipin and so have consistently scored 'Below Average' on safety in all three cities.  As discussed before, the analysed data primarily points toward the state of physical infrastructure and social participation in public space. Hence, in order to make spaces safer these parameters need immidiate attention. Lighting, Transport, Walkpath are the physical infrastructure parameters and Visibility, People are the social participation parameters which needs improvement.

Also, the collected data when correlated with feeling parameter shows that people's perception of safety is linked to better infrastructure like lighting, transport and higher usage of public space by women.

*Analysed data shows,*

- *34% of Patna, 41% of Gaya, 43% of Muzaffarpur* **has no or poor lighting**
- *86% of Patna, 75% of Gaya, 87% of Muzaffarpur* **has no or poor transport**
- *67% of Patna, 84% of Gaya, 79% of Muzaffarpur* **has no or poor walkpath**

- *55% of Patna, 63% of Gaya, 59% of Muzaffarpur* **has no or poor visibility**
- *56% of Patna, 74% of Gaya, 74% of Muzaffarpur* **has deserted public spaces**

- **Women using public space in the evening (6-8pm)** *17% of Patna, 09% of Gaya, 12% of Muzaffarpur*

- **People feeling unsafe in public spaces** *70% of Patna, 70% of Gaya, 69% of Muzaffarpur*

## LEARNING FROM OTHER CITIES

Additionally, Safetipin's mapping in other cities like Delhi, Gurgaon, Gwalior have yielded positive results in identifying and improving certain parameters for enhancing safety in public spaces.

In Delhi in 2014, after the first round of mapping, 7438 darkspots were identified in the city. The authorities made dedicated efforts in making the city well lit at night to improve safety and usage of public space. In 2018, another round of audits were done to map the city's improved condition and to identify more dark spots.

Similarly, in Gurgaon in 2016, mapping was done to improve the quality of street lighting in order to make people feel safer on the streets after dark. The Gurgaon Municipal Corporation asked to identify places where people were seen at night and where street lighting was indequate. 630 nos. of such spots were located in the city where street lighting was improved for better visibility and safety at night.

In Gwalior in 2019, after Safetipin's mapping of the city, Gwalior Smart City launched 'Gwalior One City One App' to provide its citizens information on administrative as well as infrastructural status of the city. One section of the app was developed and named 'Veerangana' (meaning brave woman) that allows users to conduct safety reviews. This review is similar to Safetipin app's Safety Audit wherein one has to rate physical and social infrastructure of a place on the basis of its condition and status.

The maps/images on the next page displays Safetipin's involvement in all three cities mentioned above and highlights the strong linkage between physical infrastructure, public participation and actual and perceived safety in streets for women and girls.

**Measuring Change: Delhi Dark Spots Mapping**

Delhi  2016
**7438**
Dark Spots

Delhi  2018
**2780**
Dark Spots
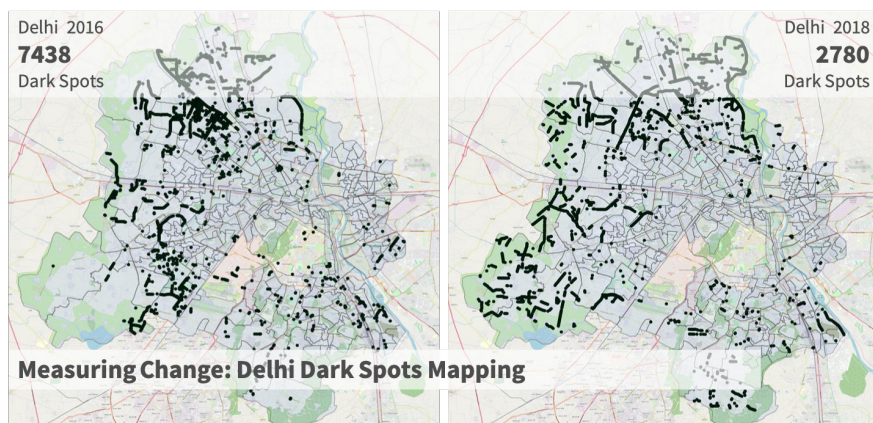
## DELHI AUDIT

*Image on left*

*The image shows dark spot mapping of the city of Delhi*



**2782**
POOR
LIGHTING

**1974**
HIGH
CROWD

**630**
SPOTS
LIGHTING WAS FIXED

## GURGAON AUDIT

*Image on left*

*The image shows before and after photos of a stretch of road where lighting was improved*



## GWALIOR AUDIT

*Image on left*

*The image shows Smart City Gwalior app with Safety Review feature*

## PATNA: QUICK RESPONSES
*On street lighting*

34% of the city has no or poor street lighting. Safetipin's data (geo-located images) can be used to improve street lighting in the city. The map below represents the locations where there are absolutely no lights, very poor or inadequate lights and non-functional street lights. This information is also provided in a csv file which can be intergrated with the city's GIS portal for ease of planning for immidiate upgradation like adding and fixing street lights. Street lighting is crucial for ensuring safety in public spaces and plays a vital role in people's, particularly women's perception of safety in streets and public places after dark.



GEO-LOCATED IMAGES

*Left to right*

*The geo-tagged photos show poor and no street lighting*

**Patna:**
**Poor Lighting**

**Legend**

Lighting
- Poor Light
- Some Light
- Patna

Base: Google Map
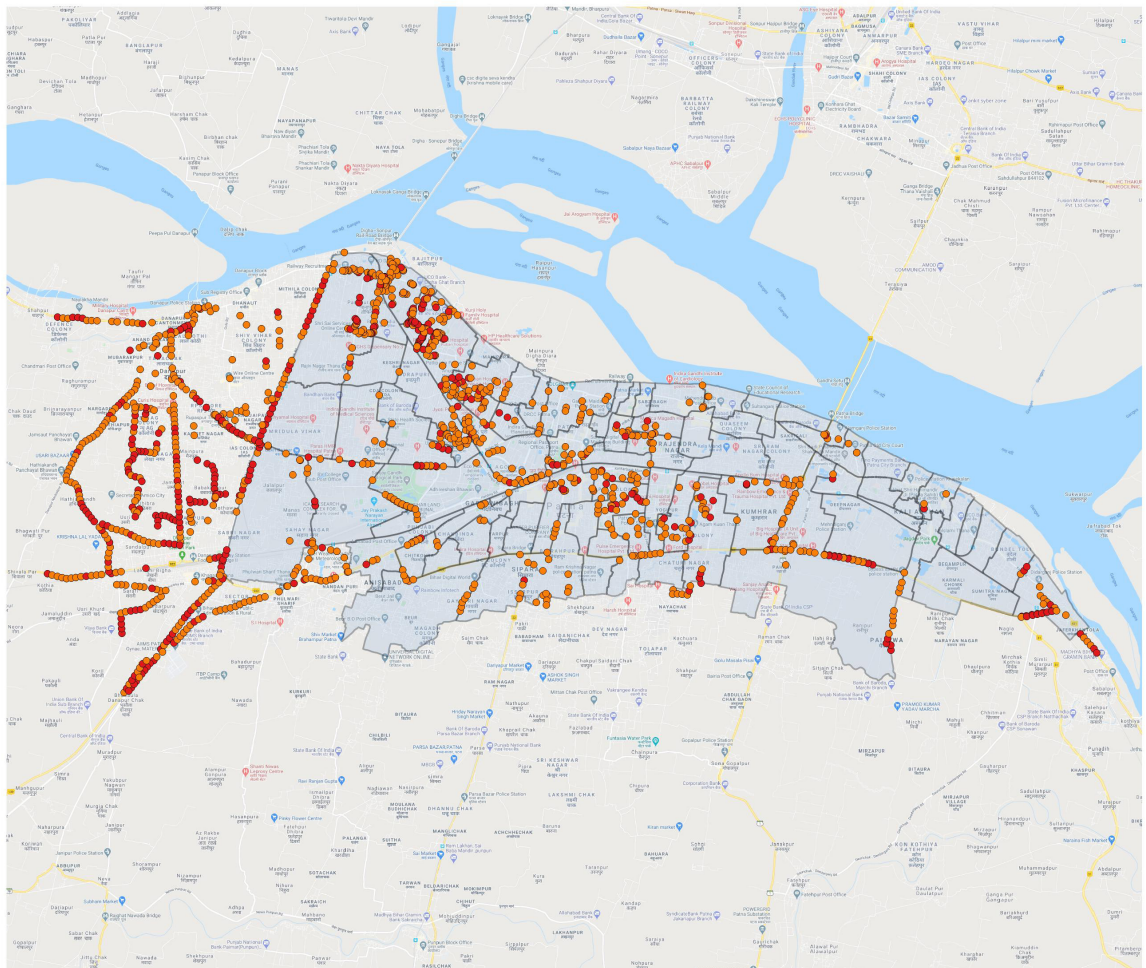
## PATNA: QUICK RESPONSES
*On dedicated walkpath*

67% of the city has no or poor walkpath condition. Safetipin's data (geo-located images) can be used to improve pedestrain life in the city. The map below represents the locations where there are no dedicated walkpaths, no constructed footpaths and hazardous, encroached or blocked footpaths. This information is also provided in a csv file which can be intergrated with the city's GIS portal for ease of planning for immidiate footpath upgradation like construction, repairs and removal of all forms of obstruction. Ease of walking in the city is important for pedestrains, especially women to feel safe while accessing the city for various daily activities.



GEO-LOCATED IMAGES

*Left to right*

The geo-tagged photos show poor and no walkpath

**Patna:
Poor Walkpath**

### Legend

Walkpath
- None
- Poor
- Patna

Base: Google Map
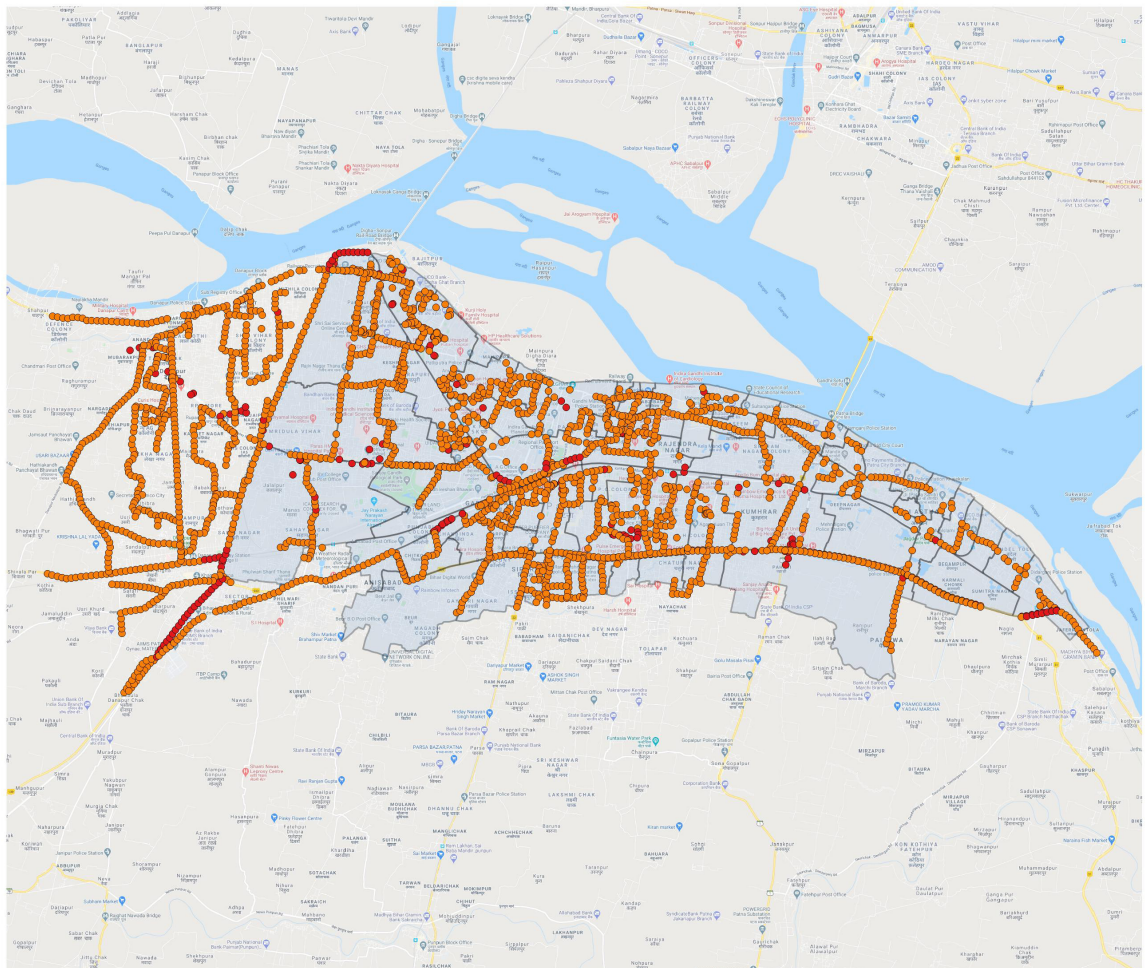
## PATNA: QUICK RESPONSES
*On public transport*

86% of the city has distant or out of reach public transport. Safetipin's data (geo-located images) can be used to improve public transport in the city. The map below represents the locations where there are no public transport stops available or the public transprt stops are distant. This information is also provided in a csv file which can be intergrated with the city's GIS portal for ease of planning for immidiate transport upgradation like adding more bus stops, auto/rickhaw stands within 2-5mins walking distance. Safe and reliable public transport is the critical link between women's access to education, employment and resources in the city.




GEO-LOCATED IMAGES

*Left to right*

*The geo-tagged photos show poor and no public transport*

**Patna:
Poor Transport**

### Legend

Public Transport
- 🔴 Unavailable
- 🟠 Distant
- ⬜ Patna

Base: Google Map

## PATNA: QUICK RESPONSES
*On visibility or 'eyes on the streets'*

55% of the city has no or poor visibility which means people present on the streets cannot be seen by other people living or working on the streets. Safetipin's data (geo-located images) can be used to improve 'eyes on the streets' - the key component in making cities safe. The map below represents the locations where visibility is low. This information like others, is also provided in a csv file which can be intergrated with the city's GIS portal for ease of planning for immediate enhancement of visibility like replacing boundary walls with fences, adding lights to transport stops, footovers, underpasses and allowing activities like hawking and peddling.



GEO-LOCATED IMAGES

*Left to right*

*The geo-tagged photos show poor and no visibility*

**Patna:
Poor Visibility**

### Legend

Visibility

- ● No Eyes
- ● Few Eyes
- ▢ Patna

Base: Google Map
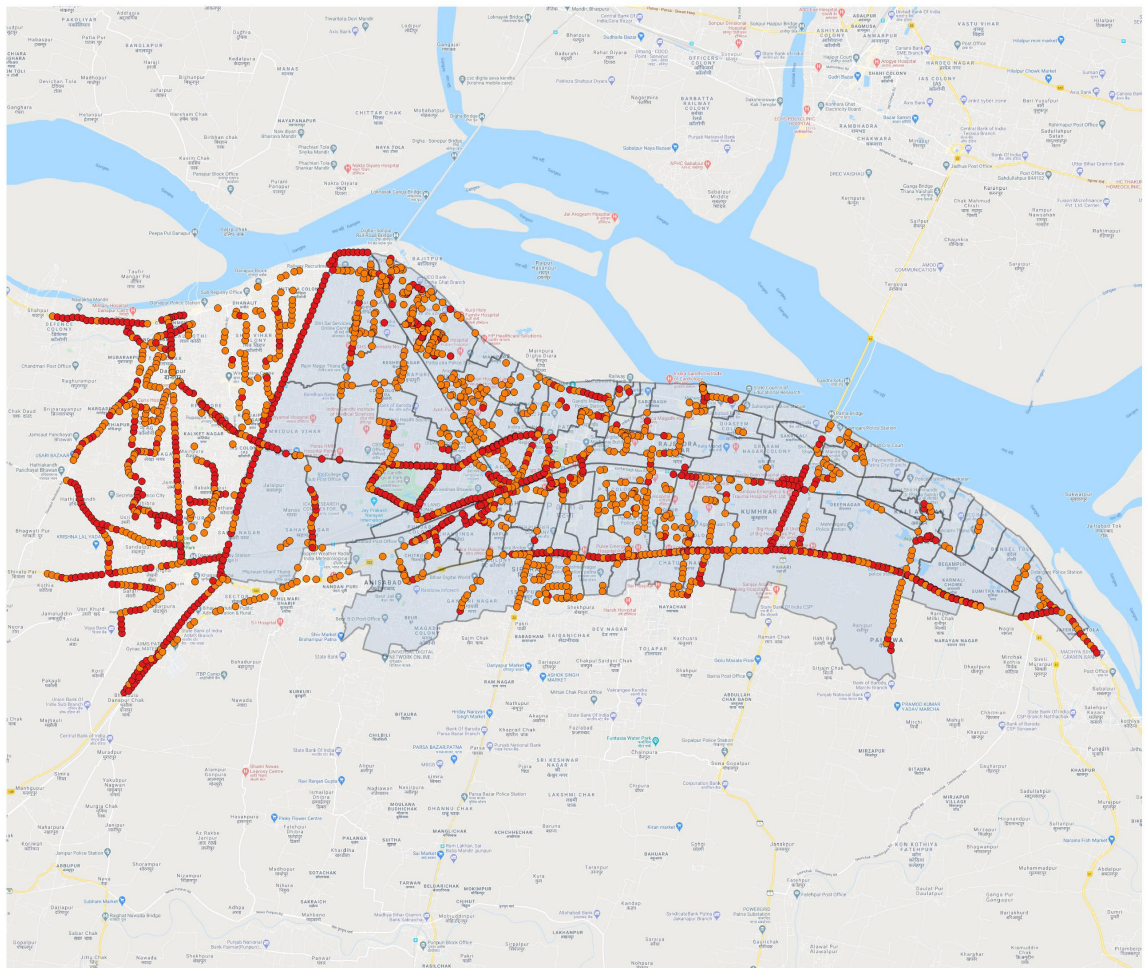
## GAYA: QUICK RESPONSES
*On street lighting*

41% of the city has no or poor street lighting. Safetipin's data (geo-located images) can be used to improve street lighting in the city. The map below represents the locations where there are absolutely no lights, very poor or inadequate lights and non-functional street lights. This information is also provided in a csv file which can be intergrated with the city's GIS portal for ease of planning for immidiate upgradation like adding and fixing street lights. Street lighting is crucial for ensuring safety in public spaces and plays a vital role in people's, particularly women's perception of safety in streets and public areas after dark.

GEO-LOCATED IMAGES

*Left to right*

*The geo-tagged photos show poor and no street lighting*



**Gaya:
Poor Lighting**

### Legend

Lighting
- ● Poor Light
- ● Some Light
- ▢ Gaya

Base: Google Map

SAFETIPIN
*Supporting Safer Cities*
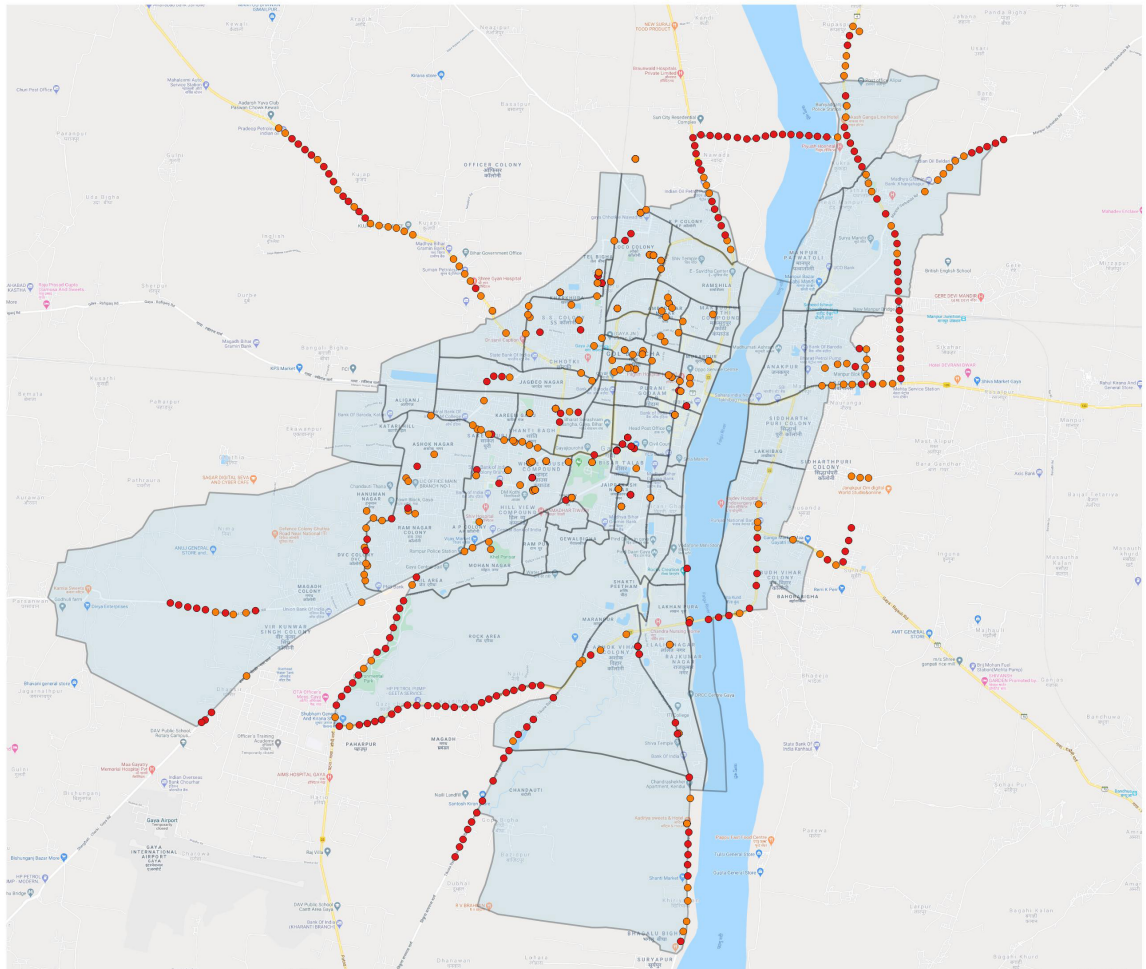
## GAYA: QUICK RESPONSES
*On dedicated walkpath*

84% of the city has no or poor walkpath condition. Safetipin's data (geo-located images) can be used to improve pedestrain life in the city. The map below represents the locations where there are no dedicated walkpaths, no constructed footpaths and hazardous, encroached or blocked footpaths. This information is also provided in a csv file which can be intergrated with the city's GIS portal for ease of planning for immidiate footpath upgradation like construction, repairs and removal of all forms of obstruction. Ease of walking in the city is important for pedestrains, especially women to feel safe while accessing the city for various daily activities.



GEO-LOCATED IMAGES

*Left to right*

*The geo-tagged photos show poor and no walkpath*

**Gaya:**
**Poor Walkpath**

### Legend

Walkpath
- • None
- • Poor
- ▫ Gaya

Base: Google Map
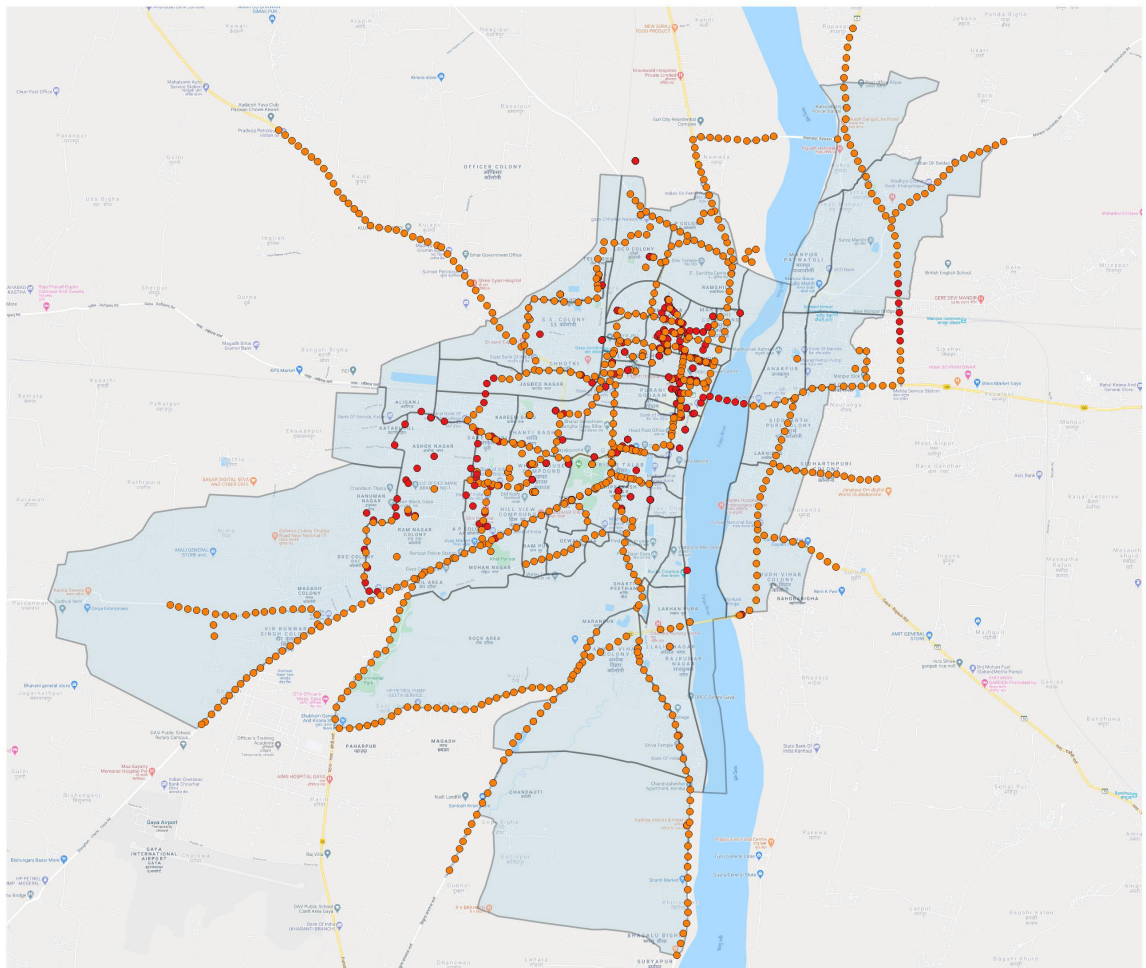
## GAYA: QUICK RESPONSES
*On public transport*

75% of the city has distant or out of reach public transport. Safetipin's data (geo-located images) can be used to improve public transport in the city. The map below represents the locations where there are no public transport stops available or the public transprt stops are distant. This information is also provided in a csv file which can be intergrated with the city's GIS portal for ease of planning for immidiate transport upgradation like adding more bus stops, auto/rickhaw stands within 2-5mins walking distance. Safe and reliable public transport is the critical link between women's access to education, employment and resources in the city.



GEO-LOCATED IMAGES

*Left to right*

*The geo-tagged photos show poor and no public transport*

**Gaya:
Poor Transport**

### Legend

Public Transport
- Unavailable
- Distant
- Gaya

Base: Google Map
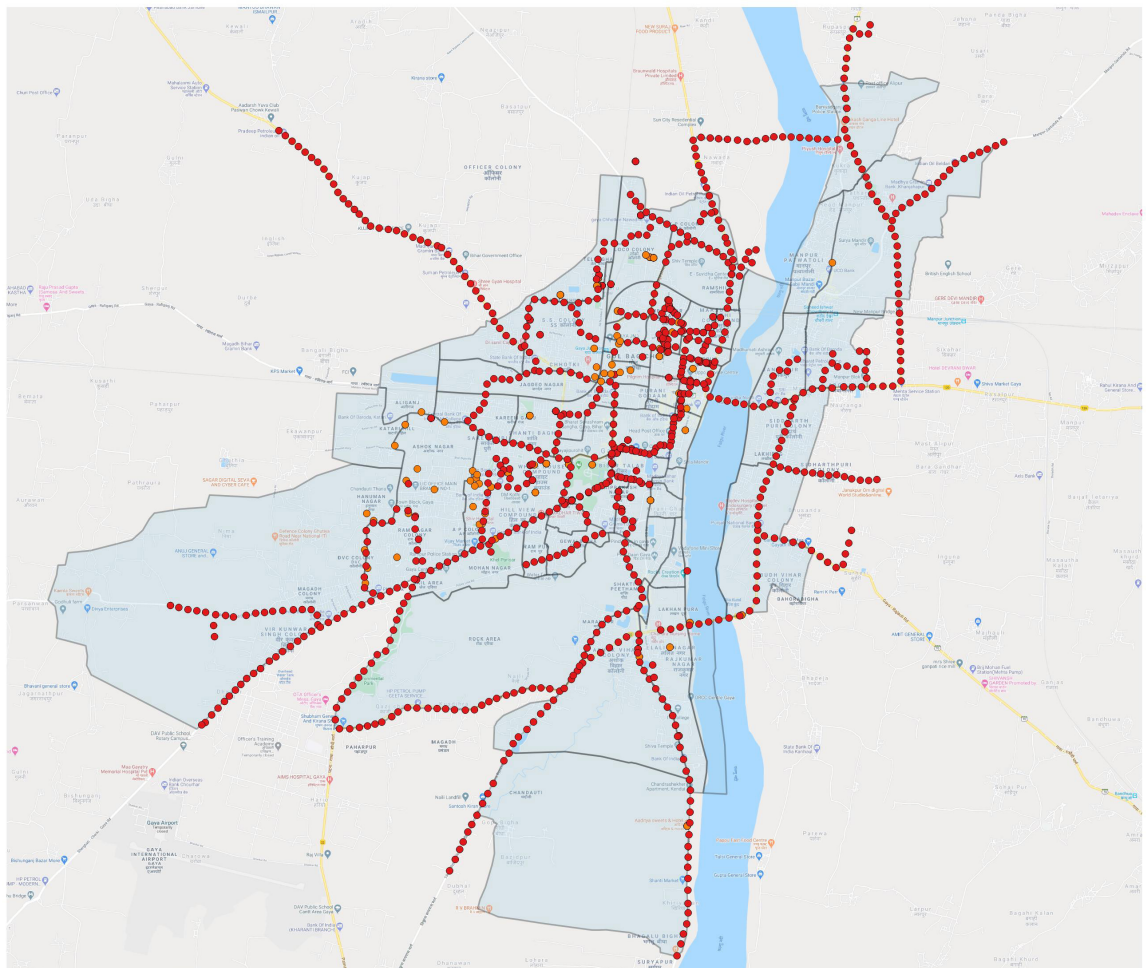
## GAYA: QUICK RESPONSES
*On visibility or 'eyes on the streets'*

63% of the city has no or poor visibility which means people present on the streets cannot be seen by other people living or working on the streets. Safetipin's data (geo-located images) can be used to improve 'eyes on the streets' - the key component in making cities safe. The map below represents the locations where visibility is low. This information like others, is also provided in a csv file which can be intergrated with the city's GIS portal for ease of planning for immediate enhancement of visibility like replacing boundary walls with fences, adding lights to transport stops, footovers, underpasses and allowing activities like hawking and peddling.

GEO-LOCATED IMAGES

*Left to right*

*The geo-tagged photos show poor and no visibility*



**Gaya:
Poor Visibility**

### Legend

Visibility
- ● No Eyes
- ● Few Eyes
- ▢ Gaya

Base: Google Map
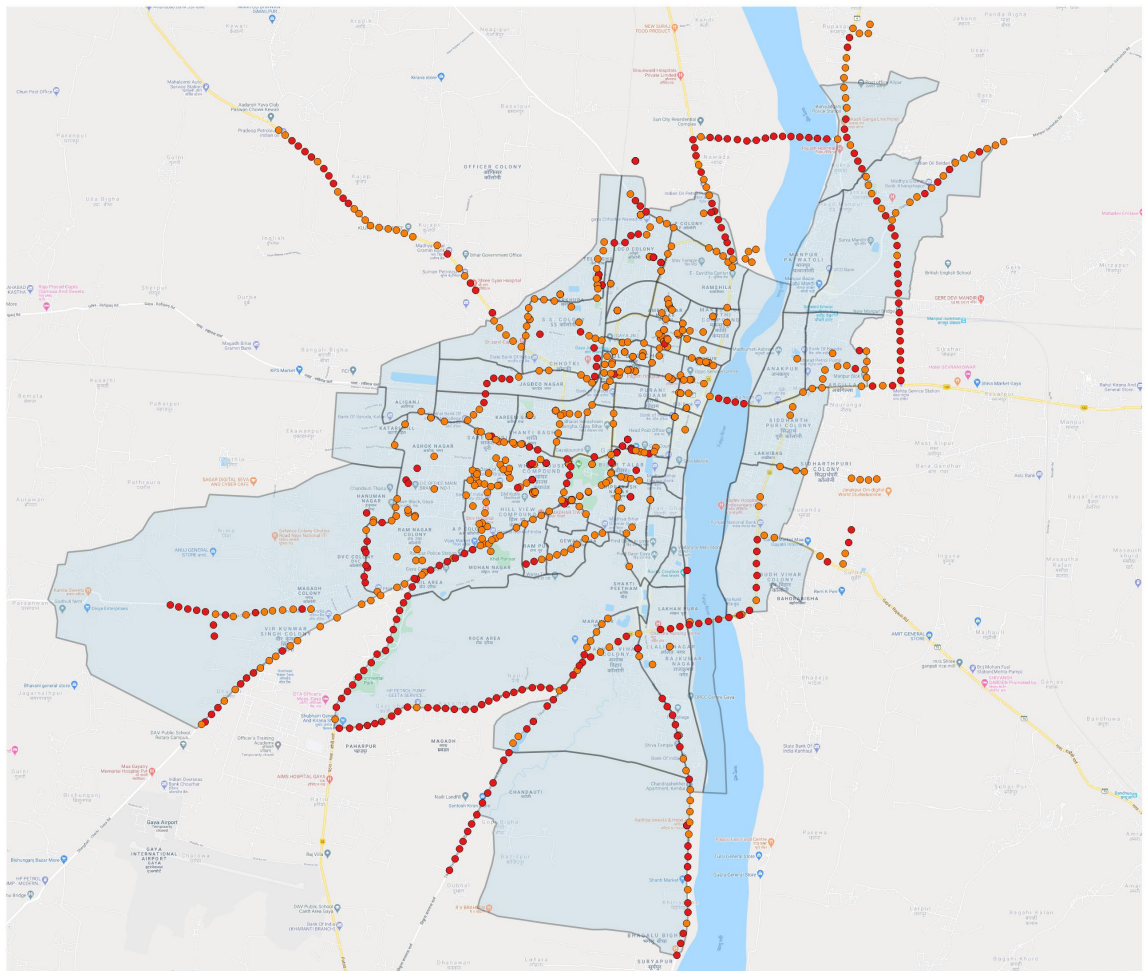
## MUZAFFARPUR: QUICK RESPONSES
### *On street lighting*

43% of the city has no or poor street lighting. Safetipin's data (geo-located images) can be used to improve street lighting in the city. The map below represents the locations where there are absolutely no lights, very poor or inadequate lights and non-functional street lights. This information is also provided in a csv file which can be intergrated with the city's GIS portal for ease of planning for immidiate upgradation like adding and fixing street lights. Street lighting is crucial for ensuring safety in public spaces and plays a vital role in people's, particularly women's perception of safety in streets and public areas after dark.



GEO-LOCATED IMAGES

*Left to right*

*The geo-tagged photos show poor and no street lighting*

**Muzaffarpur: Poor Lighting**

### Legend

Lighting

- ● Poor Light
- ● Some Light
- ▪ Muzaffarpur

Base: Google Map

SAFETIPIN
*Supporting Safer Cities*
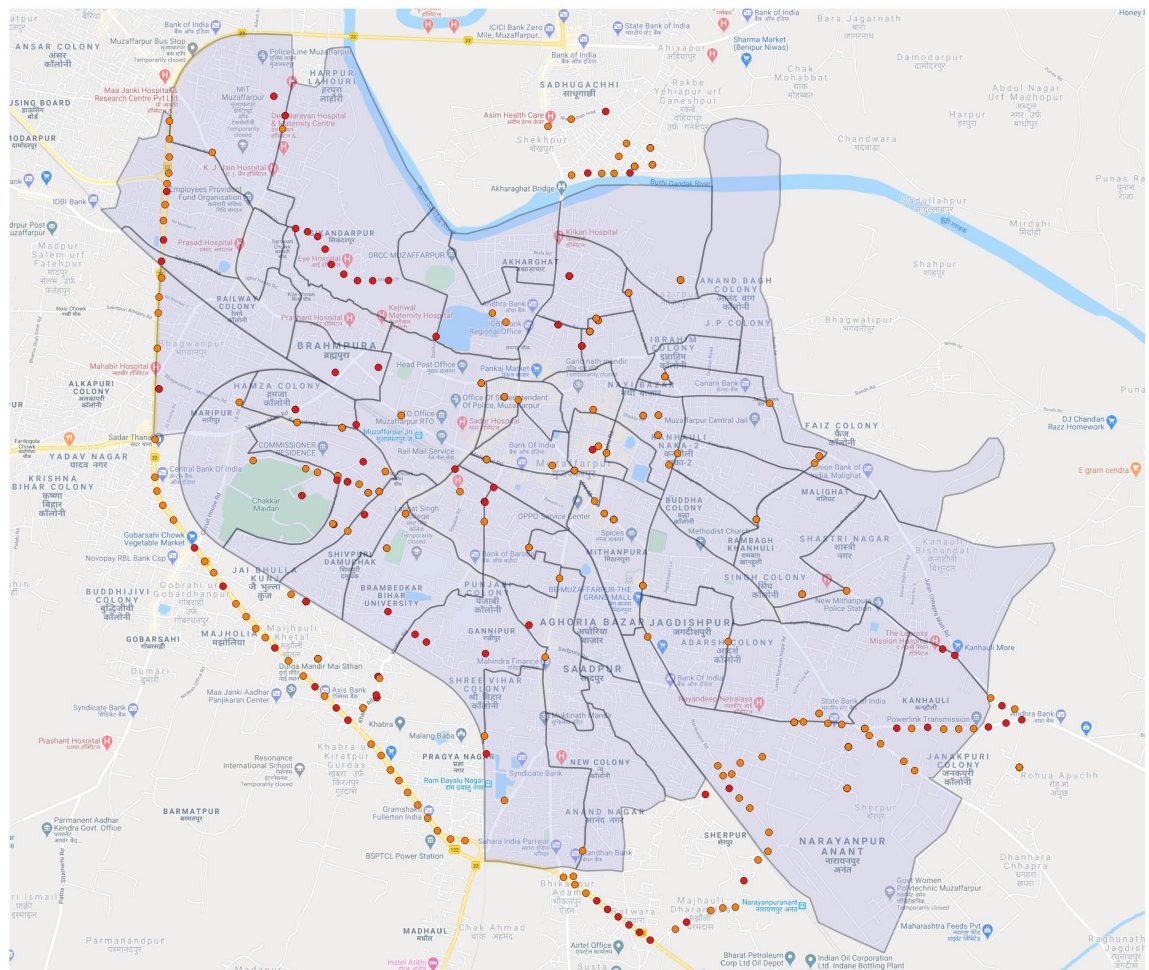
## MUZAFFARPUR: QUICK RESPONSES
### *On dedicated walkpath*

79% of the city has no or poor walkpath condition. Safetipin's data (geo-located images) can be used to improve pedestrain life in the city. The map below represents the locations where there are no dedicated walkpaths, no constructed footpaths and hazardous, encroached or blocked footpaths. This information is also provided in a csv file which can be intergrated with the city's GIS portal for ease of planning for immidiate footpath upgradation like construction, repairs and removal of all forms of obstruction. Ease of walking in the city is important for pedestrains, especially women to feel safe while accessing the city for various daily activities.



GEO-LOCATED IMAGES

*Left to right*

*The geo-tagged photos show poor and no walkpath*

**Muzaffarpur: Poor Walkpath**



### Legend

Walkpath

- None
- Poor
- Muzaffarpur

Base: Google Map
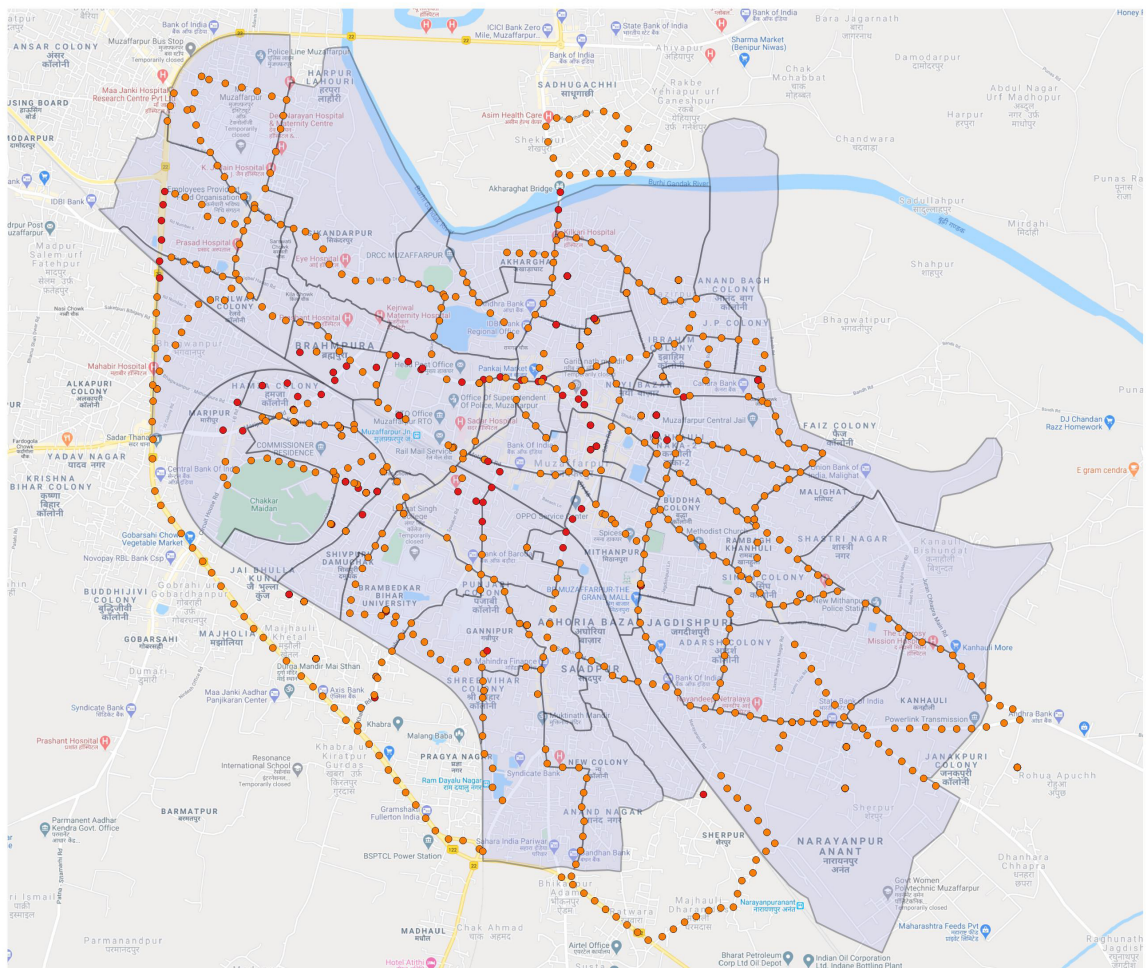
## MUZAFFARPUR: QUICK RESPONSES
### *On public transport*

87% of the city has distant or out of reach public transport. Safetipin's data (geo-located images) can be used to improve public transport in the city. The map below represents the locations where there are no public transport stops available or the public transprt stops are distant. This information is also provided in a csv file which can be intergrated with the city's GIS portal for ease of planning for immidiate transport upgradation like adding more bus stops, auto/rickhaw stands within 2-5mins walking distance. Safe and reliable public transport is the critical link between women's access to education, employment and resources in the city.

GEO-LOCATED IMAGES

*Left to right*

*The geo-tagged photos show poor and no public transport*



**Muzaffarpur:
Poor Transport**

### Legend

Public Transport

- 🔴 Unavailable
- 🟠 Distant
- 🟪 Muzaffarpur

Base: Google Map
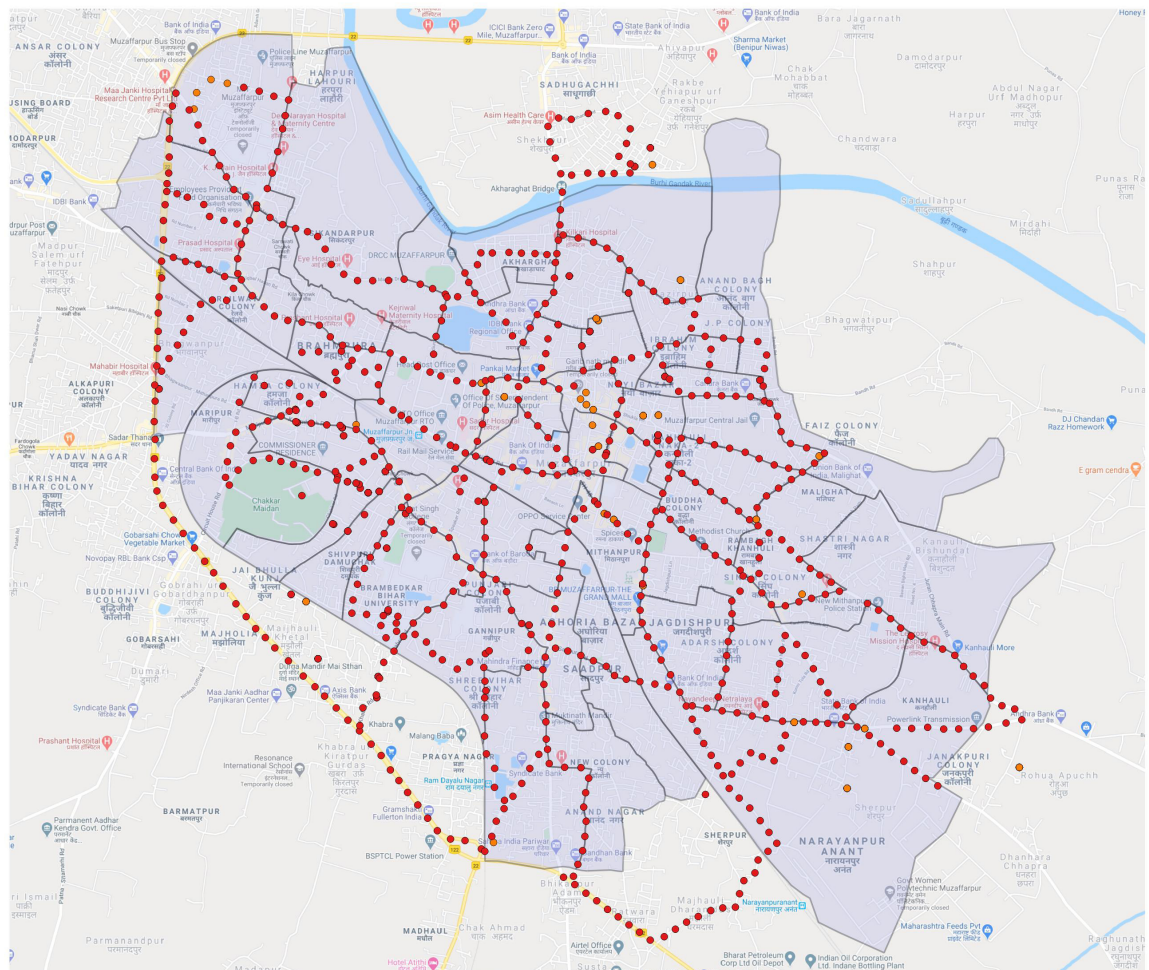
## MUZAFFARPUR: QUICK RESPONSES
*On visibility or 'eyes on the streets'*

59% of the city has no or poor visibility which means people present on the streets cannot be seen by other people living or working on the streets. Safetipin's data (geo-located images) can be used to improve 'eyes on the streets' - the key component in making cities safe. The map below represents the locations where visibility is low. This information like others, is also provided in a csv file which can be intergrated with the city's GIS portal for ease of planning for immediate enhancement of visibility like replacing boundary walls with fences, adding lights to transport stops, footovers, underpasses and allowing activities like hawking and peddling.

GEO-LOCATED IMAGES

*Left to right*

*The geo-tagged photos show poor and no visibility*



**Muzaffarpur: Poor Visibility**

### Legend

Visibility
- ● No Eyes
- ● Few Eyes
- ▨ Muzaffarpur

Base: Google Map
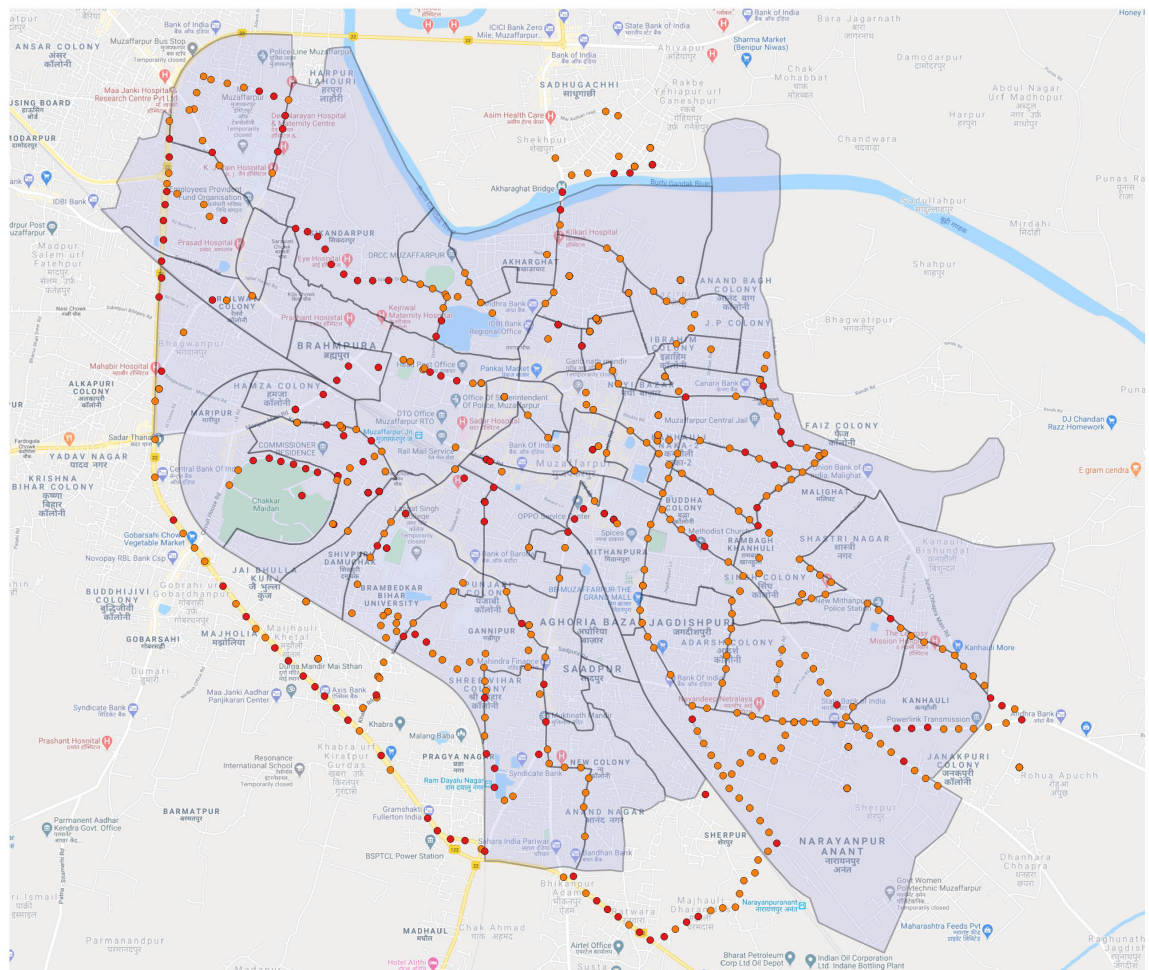
# LONG TERM
# **STRATEGIES**

*Planned interventions*

Unlike quick fixes which are pragmatic in nature, long term public space intervention strategies look at the city wholistically. These bigger plans have larger goals to make cities function better. They theoritically connect between various aspects that are linked but not so apparently visible - like the strong link between public transport and women's personal growth and aspiration. Below are few long term strategy recommendations which when undertaken would help the three cities of Bihar in improving safety, access and mobility for women and girls.

### MAKE WALKING SEAMLESS
*Footpaths, curb ramps, crossings, footovers, underpasses*
To make walking easy, safe and seamless walking routes must be in good condition and connected to a larger network of streets in the city. A good walking route must be well paved, well lit and free from any type of obstruction. Additionally all walking route must be well connected to other routes and well designed with crossovers to have a seamless walking experience when travelling from point A to point B. This particularly benefits women and other vulnerable groups.

### MAKE PUBLIC TRANSPORT EASILY ACCESSIBLE
*Transport stops, routes, frequency, capacity, safety within transport*

To make public transport within everyone's reach, various transportation systems functional in the city should be looked at. It is important to understand how one transport system interacts with the other and how people use them. Only then the gaps or overlaps between systems could be identified and improved to make them seamless. Such interventions to stitch different systems makes the overall transport network accessible and allows people to switch within transport systems easily. Women's safety inside every transport is an essential aspect to consider too.

### FOCUS ON LAST MILE CONNECTIVITY
*Non-motorised transport, light motor vehicles, informal transport*
Last mile connectivity is an important aspect of any public transportation system operating in the city. Strengthening informal transport like non-motorised vehicles and light motor vehicles which serve as first/last mile connectivity to one's origin and destination could be an useful way of ensuring safe travelling. Often people especially women forego oppurtunities available in the city due to weak, unsafe or expensive first/last mile connectivity options. Time poverty is another reason for women to lose out on oppurtunities when transport options are inadequate.

### MAKE STREETS ACTIVE
*Mixed-use development, informal shopping, eyes on the streets*

Active streets are safe streets. To make streets safe an optimum amount of activity on the streets and by the streets is required. Just the way over crowded streets tends to be unsafe, similarly under used streets are unsafe too. Streets which have enough people overlooking it from buildings next to it and have enough people present on it are safer. Encouraging mixed-used developments, on street shopping, informal hawking and discouraging high boundary walls, front setback for buildings are good practices to make streets active round the clock.

### BOOST WOMEN'S PARTICIPATION
*Employment in public services, women's representation in govt, advocacy and sensitisation programs*

Ensuring more women employment and representation in public services and government includes women's perspective in planning, designing and maintaining public space in the city.

# EXAMPLES OF
# **GOOD PRACTICES**

*Design Standards and Best Practices*

## DESIGN CONSIDERATIONS FOR SAFER STREETS

Feeling and being safe in the street is a basic requirement for people to perform daily activities, such as going out, walking, cycling or using public transport. Thus, it is necessary to ensure that the environment in which people move and interact every day is safe. Street safety may have different meanings for different people, depending on factors that range from social norms to gender perceptions and individual mobility patterns, among others. For some, street safety is narrowed to being protected from physical harm caused by traffic, while for others, the absence of assault may be overarching. To take into account these different understandings of safety the physical and social dimensions of streets must be considered when designing streets. Here are a few good practice examples and design standards given to illustrate the importance of well-designed streets and its infrastructure which caters to diverse users of public space and makes them safe, inclusive and attractive.

**Street Lighting:** There is a wide range of light sources that contribute to the overall illumination of the public realm. Well-designed solutions incorporate different types of light sources such as conventional pole-mounted lights, decorative light fixtures as well as signage/advertising illumination. Borrowed light spilling from storefront or residences, lights mounted to building exteriors and facade lighting may add to street illumination too. However, borrowed illumination may not always be consistent, evenly distributed, or designed for human comfort. Hence pole-mounted street light fixtures are installed for uniform distribution and illumination of roadways and sidewalks. The top image on the left illustrates thumb rules used for streetlight spacing, height and light cone. Find the full detail on *https://globaldesigningcities.org/ publication/global-street-design-guide/utilities-and-infrastructure/lighting-and- technology/lighting-design-guidance/*

**Walkable Streets:** Every trip begins and ends with walking, and therefore everyone is a pedestrian on a city's street at some point. Providing continuous and unobstructed clear paths ensures walkable neighborhoods for everyone. Each sidewalk's clear path should be complemented with active street edges and accessible facilities to make the journey comfortable and engaging. Cities are places for people, and they use streets for diverse activities. This requires making people the highest priority in street design, with careful consideration for the most vulnerable users: women, children, elderly, and the disabled. The middle image on the left illustrates different types of uses of the street - people walking, cycling, driving, waiting, conducting business, doing maintenance work and residing or working in the buildings by the street. All of these uses, and user groups must be catered to when designing a street. Find the full detail on *https:// globaldesigningcities.org/publication/global-street-design-guide/*

**Active Streets:** Streets that provide safety, comfort and amenities for all users are active streets. Create "eyes on the street" by removing setbacks and boundary walls and building to the edge of the street's right of way. This would allow people from inside to look out on to the pavement, thus discouraging misbehaviour and creating safety through visual surveillance. Encourage commercial facades to have minimum 30-50% transparency. Provide adequate street lighting for pedestrians walkpaths and bicycles lanes. Create mixed-use developements, commercial edges/shopfronts and hawking zones at regular intervals to encourage walkability, increase street activity and provide safety. The bottom image on the left illustrates the above principles which makes safe, inclusive and accessible streets. Find the full detail on *http://www.uttipec.nic.in/*
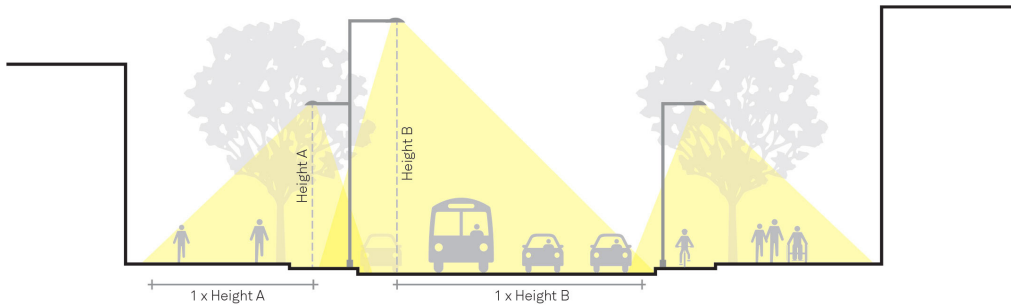
The spacing between light poles is typically 2.5–3 times the height of the fixture. A single row of light poles might be sufficient for a narrow street, while wider streets will require multiple rows.
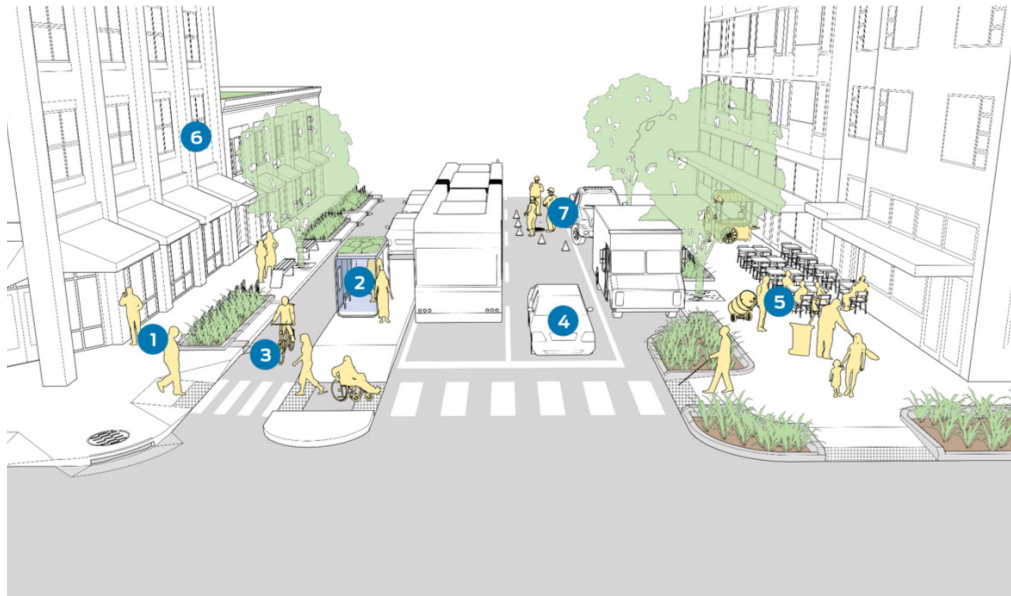
# WAY FORWARD

*For the tri-city Bihar project*

Focusing on vulnerable groups while planning and designing streets, not only benefits them, but everyone. Safety for people feeling vulnerable in the streets because of their gender, age, ability, or mode of transport is an entry point in designing safe streets for all. This focus recognizes the needs and experiences of the majority of the population as equal to able-bodied men, facilitates equitable decision-making, and enables a much needed change in the quest for gender equality and inclusive urban spaces. Incorporating these principles in policy and planning will have a positive impact on the way the most vulnerable use and perceive public space.

***Expanding the usage of safety audits to consistently map cities for safety, accessibility and inclusivity***

Safety audits which were pioneered first in Delhi by Jagori, a women resource centre has now been used in more than 15 cities around the country as a methodology of collecting useful information about public infrastructure as well as social usage of public space.

In 2013, Safetipin was developed to make the safety audit tool widely available through technology. The two key premises of Safetipin are that large data collection can lead to change and that safety will ensue when more people become engaged in creating safer communities and cities. Thus, as more and more data is generates which can be used to conduct advocacy and to inform urban service providers to work on initiatives and projects for improving safety.

Cities are like living organisms, constantly evolving and steadily expanding. Hence cities must be frequently evaluated to account for these changes. Regular collection of data and information is one of the effective ways of keeping track of cities and its growth. Delhi has been one city where Safetipin has been collecting data consistently since 2013. City wide data was collected in 2016 and after a massive street lighting improvement program, in 2019 Safetipin was again asked to collect city wide data to measure the impact. The second time the peripheral developments were also included to understand the state of lighting and other infrastructure and services. Hence, consistent inflow of current data to inform maintenance and upgradation of infrastructure and services is essential for cities.

Over the past five years, Safetipin has collected data in over 20 cities and has collaborated with stakeholders in the cities in order to bring about changes that would make public spaces more women friendly. Cities are beginning to use this data to improve physical infrastructure as well as addressing the social usage of streets and public spaces. Cities which have collected data periodically have been able to manage their resource allocation well in order to maintain and upkeep their infrastructure and services. Hence, it is always advised to measure the change regularly and seen as a way forward every time city wide data is collected. Unless impact is assessed, managing and improving urban infrastructure and services becomes short-sighted.

# APPENDIX

This section includes as examples part of the CSV files for all three cities of Bihar. These files have geo location for each audit point along with the ratings of every parameter. Every audit point is also accompanied by the images collected at that particular audit location. These files could be integrated with any GIS platform and analysed further. These could be also seen on Google Maps for easier visualisation.

**PATNA CSV FILE**

| S No | ID | Latitude | Longitude | Lighting | Openness | Visibility | People | Security | Walkpath | Public Transport | Gender Usage | Feeling | Safety Score | Comment | Images |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3183 | 682410 | 25.6128157 | 85.1184547 | 2 | 3 | 3 | 2 | 1 | 1 | 0 | 0 | 1 | 4 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_182329-15042.jpg |
| 3278 | 682505 | 25.589459 | 85.1193023 | 3 | 3 | 3 | 3 | 0 | 1 | 0 | 3 | 2 | 4.4 | | https://safetipinimages.s3.amazonaws.com/20190829/15119/IMG_20190829_195934-15119.jpg; https:/ |
| 3415 | 682642 | 25.6145764 | 85.0915092 | 3 | 3 | 2 | 2 | 0 | 1 | 0 | 3 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15065/IMG_20190828_211132-15065.jpg |
| 1 | 492399 | 25.619 | 85.0453 | 2 | 0 | 1 | 2 | 0 | 2 | 2 | 2 | 1 | 3.5 | no police are present in this area | |
| 2 | 530580 | 25.5778 | 85.0693 | 3 | 2 | 2 | 3 | 2 | 1 | 3 | 2 | 2 | 4.5 | | |
| 2147 | 681227 | 25.6254549 | 85.110333 | 3 | 2 | 2 | 2 | 1 | 1 | 0 | 2 | 2 | 4.2 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_180648-15042.jpg; https:/ |
| 2146 | 681226 | 25.624502 | 85.1101238 | 3 | 2 | 3 | 2 | 1 | 1 | 0 | 0 | 1 | 4 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_180717-15042.jpg |
| 3142 | 682369 | 25.632705 | 85.1163679 | 2 | 2 | 2 | 2 | 1 | 3 | 0 | 0 | 1 | 4 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_180922-15043.jpg |
| 3141 | 682368 | 25.6320617 | 85.1170707 | 3 | 2 | 2 | 3 | 0 | 3 | 0 | 2 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_180933-15043.jpg; https:/ |
| 3139 | 682366 | 25.6306688 | 85.1186103 | 3 | 2 | 3 | 3 | 0 | 3 | 0 | 1 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_181003-15043.jpg; https:/ |
| 2168 | 681248 | 25.6231815 | 85.1078761 | 3 | 2 | 2 | 2 | 0 | 1 | 0 | 3 | 2 | 4.2 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_181022-15042.jpg |
| 3138 | 682365 | 25.6299626 | 85.1193023 | 3 | 2 | 3 | 3 | 0 | 3 | 0 | 1 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_181022-15043.jpg; https:/ |
| 3137 | 682364 | 25.6294451 | 85.1201391 | 3 | 2 | 2 | 2 | 0 | 3 | 0 | 0 | 1 | 4 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_181044-15043.jpg |
| 3136 | 682363 | 25.6287777 | 85.1208901 | 3 | 2 | 3 | 2 | 1 | 3 | 0 | 0 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_181104-15043.jpg; https:/ |
| 3135 | 682362 | 25.6281489 | 85.1216465 | 3 | 2 | 2 | 2 | 1 | 3 | 0 | 0 | 2 | 4.2 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_181132-15043.jpg; https:/ |
| 3134 | 682361 | 25.6274718 | 85.1224029 | 3 | 2 | 2 | 1 | 0 | 3 | 0 | 0 | 1 | 3.5 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_181143-15043.jpg; https:/ |
| 2167 | 681247 | 25.6227462 | 85.1068997 | 3 | 2 | 2 | 2 | 1 | 1 | 0 | 2 | 2 | 4.2 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_181201-15042.jpg; https:/ |
| 3132 | 682359 | 25.626074 | 85.1238513 | 3 | 2 | 2 | 3 | 1 | 2 | 0 | 3 | 2 | 4.4 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_181243-15043.jpg; https:/ |
| 2166 | 681246 | 25.6218514 | 85.1072216 | 3 | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 2 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_181305-15042.jpg; https:/ |
| 2165 | 681245 | 25.6210194 | 85.1077795 | 3 | 2 | 2 | 3 | 0 | 1 | 0 | 1 | 2 | 4.1 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_181354-15042.jpg; https:/ |
| 2150 | 681230 | 25.620202 | 85.109008 | 3 | 2 | 2 | 2 | 1 | 3 | 0 | 1 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_181504-15042.jpg; https:/ |
| 3086 | 682313 | 25.6236024 | 85.1253802 | 3 | 2 | 2 | 3 | 0 | 1 | 0 | 3 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_181517-15043.jpg; https:/ |
| 2151 | 681231 | 25.61952 | 85.1098073 | 3 | 3 | 2 | 2 | 1 | 3 | 0 | 0 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_181523-15042.jpg; https:/ |
| 2152 | 681232 | 25.6188863 | 85.1106226 | 3 | 2 | 3 | 2 | 0 | 2 | 0 | 0 | 1 | 4 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_181554-15042.jpg; https:/ |
| 2153 | 681233 | 25.6182091 | 85.111497 | 3 | 2 | 2 | 2 | 1 | 2 | 0 | 1 | 2 | 4.2 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_181609-15042.jpg; https:/ |
| 3087 | 682314 | 25.6235927 | 85.1266515 | 3 | 2 | 1 | 3 | 1 | 1 | 0 | 1 | 2 | 4.1 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_181620-15043.jpg; https:/ |
| 3088 | 682315 | 25.6236217 | 85.1277727 | 3 | 2 | 2 | 3 | 1 | 2 | 0 | 2 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_181633-15043.jpg; https:/ |
| 2154 | 681234 | 25.6175755 | 85.1123607 | 3 | 3 | 3 | 3 | 1 | 2 | 0 | 1 | 2 | 4.4 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_181747-15042.jpg |
| 2155 | 681235 | 25.6169612 | 85.1131493 | 3 | 2 | 3 | 2 | 1 | 2 | 0 | 2 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_181802-15042.jpg; https:/ |
| 2156 | 681236 | 25.6163275 | 85.1139915 | 3 | 2 | 3 | 3 | 1 | 3 | 0 | 3 | 2 | 4.5 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_181820-15042.jpg; https:/ |
| 1939 | 681014 | 25.6222867 | 85.1338881 | 2 | 2 | 1 | 2 | 0 | 1 | 0 | 0 | 1 | 2 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_181920-15043.jpg; https:/ |
| 1940 | 681015 | 25.6218562 | 85.1349127 | 3 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 2.6 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_181936-15043.jpg; https:/ |
| 1941 | 681016 | 25.6214403 | 85.135771 | 3 | 2 | 1 | 2 | 0 | 2 | 0 | 0 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_181950-15043.jpg |
| 3187 | 682414 | 25.6152778 | 85.115236 | 2 | 3 | 3 | 1 | 1 | 1 | 0 | 0 | 1 | 3.5 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_182144-15042.jpg |
| 3186 | 682413 | 25.614649 | 85.1160944 | 2 | 3 | 2 | 2 | 1 | 1 | 0 | 0 | 1 | 3.5 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_182200-15042.jpg; https:/ |
| 1279 | 680322 | 25.6207921 | 85.1387805 | 2 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_182201-15043.jpg; https:/ |
| 1280 | 680323 | 25.6206131 | 85.1399285 | 2 | 2 | 1 | 2 | 0 | 2 | 0 | 0 | 1 | 2.6 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_182218-15043.jpg; https:/ |
| 3185 | 682412 | 25.6140105 | 85.1169312 | 2 | 2 | 2 | 2 | 1 | 2 | 0 | 3 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_182227-15042.jpg; https:/ |
| 1281 | 680324 | 25.6204487 | 85.1411033 | 2 | 2 | 1 | 2 | 2 | 2 | 0 | 0 | 1 | 3.5 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_182238-15043.jpg; https:/ |
| 1282 | 680325 | 25.6202842 | 85.1421869 | 2 | 2 | 0 | 2 | 2 | 2 | 0 | 0 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_182254-15043.jpg; https:/ |
| 3184 | 682411 | 25.613401 | 85.1177037 | 2 | 2 | 3 | 3 | 0 | 1 | 0 | 1 | 2 | 4.1 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_182302-15042.jpg; https:/ |
| 3075 | 682302 | 25.6129415 | 85.1191199 | 3 | 2 | 3 | 3 | 0 | 2 | 0 | 1 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_182445-15042.jpg; https:/ |
| 3076 | 682303 | 25.6139718 | 85.1196992 | 3 | 2 | 3 | 3 | 0 | 1 | 0 | 1 | 2 | 4.2 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_182523-15042.jpg; https:/ |
| 3077 | 682304 | 25.6149489 | 85.1201981 | 3 | 2 | 3 | 3 | 1 | 1 | 0 | 1 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_182559-15042.jpg; https:/ |
| 3078 | 682305 | 25.615955 | 85.1207507 | 3 | 2 | 2 | 2 | 1 | 1 | 0 | 1 | 2 | 4.1 | | https://safetipinimages.s3.amazonaws.com/20190828/15042/IMG_20190828_182643-15042.jpg; https:/ |
| 1377 | 680420 | 25.6135751 | 85.1438445 | 3 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20190828/15044/IMG_20190828_183754-15044.jpg |
| 2573 | 681683 | 25.615926 | 85.1618314 | 3 | 2 | 3 | 3 | 0 | 1 | 0 | 3 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15043/IMG_20190828_183804-15043.jpg; https:/ |
| 1382 | 680425 | 25.6128834 | 85.1434475 | 3 | 2 | 3 | 2 | 1 | 2 | 0 | 1 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15044/IMG_20190828_184038-15044.jpg; https:/ |
| 1383 | 680426 | 25.6139476 | 85.1438445 | 3 | 2 | 3 | 3 | 1 | 2 | 0 | 1 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20190828/15044/IMG_20190828_184114-15044.jpg; https:/ |

## GAYA CSV FILE

| S No | ID | Latitude | Longitude | Lighting | Openness | Visibility | People | Security | Walkpath | Public Transport | Gender Usage | Feeling | Safety Score | Comment | Images |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5579 | 24.803745 | 84.9899019 | 3 | 1 | 3 | 2 | 3 | 3 | 2 | 1 | 2 | 4.5 | Good | |
| 2 | 672368 | 24.7873569 | 84.9983362 | 2 | 1 | 2 | 2 | 1 | 1 | 3 | 1 | 1 | 4.1 | | |
| 1512 | 674850 | 24.7904018 | 85.0003517 | 2 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1.3 | | https://safetipinimages.s3.amazonaws.com/20191121/15506/IMG_20191121_173854-15506.jpg; https:/ |
| 1517 | 674855 | 24.7914829 | 85.0003678 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 2.6 | | https://safetipinimages.s3.amazonaws.com/20191121/15506/IMG_20191121_173917-15506.jpg; https:/ |
| 1518 | 674856 | 24.7926176 | 85.0004321 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 2.6 | | https://safetipinimages.s3.amazonaws.com/20191121/15506/IMG_20191121_174029-15506.jpg; https:/ |
| 1519 | 674857 | 24.7937523 | 85.0005341 | 2 | 2 | 2 | 2 | 1 | 1 | 0 | 2 | 2 | 4.1 | | https://safetipinimages.s3.amazonaws.com/20191121/15506/IMG_20191121_174044-15506.jpg; https:/ |
| 1520 | 674858 | 24.7948335 | 85.0005877 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 2 | | https://safetipinimages.s3.amazonaws.com/20191121/15506/IMG_20191121_174113-15506.jpg; https:/ |
| 1521 | 674859 | 24.7960168 | 85.0006253 | 2 | 2 | 1 | 2 | 1 | 1 | 0 | 0 | 1 | 2.6 | | https://safetipinimages.s3.amazonaws.com/20191121/15506/IMG_20191121_174137-15506.jpg; https:/ |
| 1522 | 674860 | 24.7971807 | 85.0007111 | 3 | 2 | 2 | 2 | 0 | 1 | 0 | 0 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20191121/15506/IMG_20191121_174201-15506.jpg; https:/ |
| 1523 | 674861 | 24.7982083 | 85.0007647 | 2 | 2 | 2 | 2 | 1 | 1 | 0 | 2 | 2 | 4.1 | | https://safetipinimages.s3.amazonaws.com/20191121/15506/IMG_20191121_174357-15506.jpg; https:/ |
| 1524 | 674862 | 24.7992601 | 85.0008506 | 3 | 2 | 3 | 2 | 1 | 1 | 0 | 2 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20191121/15506/IMG_20191121_174422-15506.jpg; https:/ |
| 1528 | 674866 | 24.7997033 | 85.0001425 | 2 | 2 | 1 | 2 | 1 | 1 | 0 | 1 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20191121/15506/IMG_20191121_174448-15506.jpg; https:/ |
| 1525 | 674863 | 24.8005798 | 85.0002712 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 0 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20191121/15506/IMG_20191121_174458-15506.jpg; https:/ |
| 1526 | 674864 | 24.8016414 | 85.0003892 | 2 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 2 | | https://safetipinimages.s3.amazonaws.com/20191121/15506/IMG_20191121_174522-15506.jpg; https:/ |
| 1477 | 674815 | 24.8077429 | 85.0053084 | 2 | 2 | 2 | 2 | 0 | 1 | 0 | 2 | 1 | 3.5 | | https://safetipinimages.s3.amazonaws.com/20191121/15522/IMG_20191121_180951-15522.jpg; https:/ |
| 1478 | 674816 | 24.8087411 | 85.0055283 | 3 | 2 | 3 | 3 | 1 | 1 | 0 | 1 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20191121/15522/IMG_20191121_181012-15522.jpg; https:/ |
| 1479 | 674817 | 24.8097588 | 85.0057375 | 2 | 2 | 3 | 3 | 1 | 1 | 0 | 3 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20191121/15522/IMG_20191121_181036-15522.jpg; https:/ |
| 1480 | 674818 | 24.810757 | 85.0060058 | 2 | 2 | 2 | 2 | 1 | 1 | 0 | 1 | 1 | 3.5 | | https://safetipinimages.s3.amazonaws.com/20191121/15522/IMG_20191121_181112-15522.jpg; https:/ |
| 1481 | 674819 | 24.8133864 | 85.0071752 | 2 | 2 | 2 | 2 | 1 | 1 | 0 | 2 | 2 | 4.1 | | https://safetipinimages.s3.amazonaws.com/20191121/15523/IMG_20191121_181234-15523.jpg; https:/ |
| 1482 | 674820 | 24.8142677 | 85.0074488 | 3 | 2 | 1 | 3 | 0 | 1 | 0 | 1 | 1 | 3.5 | | https://safetipinimages.s3.amazonaws.com/20191121/15523/IMG_20191121_181247-15523.jpg; https:/ |
| 1483 | 674821 | 24.8151344 | 85.0078994 | 3 | 2 | 1 | 2 | 0 | 1 | 0 | 1 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20191121/15523/IMG_20191121_181310-15523.jpg; https:/ |
| 1484 | 674822 | 24.8154266 | 85.0088435 | 3 | 2 | 3 | 3 | 0 | 1 | 0 | 1 | 2 | 4.2 | | https://safetipinimages.s3.amazonaws.com/20191121/15523/IMG_20191121_181317-15523.jpg; https:/ |
| 1485 | 674823 | 24.8156895 | 85.0098521 | 2 | 2 | 2 | 2 | 0 | 1 | 0 | 1 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20191121/15523/IMG_20191121_181332-15523.jpg; https:/ |
| 1486 | 674824 | 24.8158063 | 85.0107747 | 2 | 3 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20191121/15523/IMG_20191121_181400-15523.jpg; https:/ |
| 1497 | 674835 | 24.815373 | 85.0116652 | 2 | 2 | 2 | 2 | 0 | 1 | 0 | 0 | 1 | 2.6 | | https://safetipinimages.s3.amazonaws.com/20191121/15523/IMG_20191121_181415-15523.jpg; https:/ |
| 1499 | 674837 | 24.8145355 | 85.0135803 | 2 | 2 | 1 | 2 | 0 | 1 | 0 | 0 | 1 | 2 | | https://safetipinimages.s3.amazonaws.com/20191121/15523/IMG_20191121_181443-15523.jpg; https:/ |
| 1501 | 674839 | 24.8133134 | 85.0150448 | 2 | 2 | 1 | 2 | 0 | 1 | 0 | 0 | 1 | 2 | | https://safetipinimages.s3.amazonaws.com/20191121/15523/IMG_20191121_181505-15523.jpg; https:/ |
| 1542 | 674880 | 24.8200229 | 85.0130117 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0.4 | | https://safetipinimages.s3.amazonaws.com/20191121/15523/IMG_20191121_181831-15523.jpg |
| 1538 | 674876 | 24.8161764 | 85.0146747 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0.4 | | https://safetipinimages.s3.amazonaws.com/20191121/15523/IMG_20191121_181929-15523.jpg; https:/ |
| 1715 | 675055 | 24.8019725 | 85.0133497 | 2 | 2 | 2 | 2 | 0 | 1 | 0 | 1 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20191121/15523/IMG_20191121_182452-15523.jpg; https:/ |
| 1591 | 674929 | 24.7996984 | 85.0124967 | 3 | 2 | 3 | 2 | 1 | 1 | 0 | 0 | 1 | 4 | | https://safetipinimages.s3.amazonaws.com/20191121/15523/IMG_20191121_182604-15523.jpg; https:/ |
| 1589 | 674927 | 24.7979599 | 85.0127542 | 3 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1.6 | | https://safetipinimages.s3.amazonaws.com/20191121/15523/IMG_20191121_184918-15523.jpg |
| 1588 | 674926 | 24.7977402 | 85.0138539 | 3 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1.3 | | https://safetipinimages.s3.amazonaws.com/20191121/15523/IMG_20191121_184931-15523.jpg; https:/ |
| 1584 | 674922 | 24.7968837 | 85.0182581 | 3 | 2 | 3 | 3 | 0 | 1 | 0 | 2 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20191121/15523/IMG_20191121_185056-15523.jpg; https:/ |

## MUZAFFARPUR CSV FILE

| S No | ID | Latitude | Longitude | Lighting | Openness | Visibility | People | Security | Walkpath | Public Transport | Gender Usage | Feeling | Safety Score | Comment | Images |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 529925 | 26.0937 | 85.3848 | 2 | 3 | 3 | 2 | 0 | 3 | 1 | 0 | 2 | 4.3 | | |
| 1188 | 675313 | 26.1248087 | 85.3716284 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.9 | | https://safetipinimages.s3.amazonaws.com/20191118/15466/IMG_20191118_174152-15466.jpg; https:/ |
| 1093 | 675218 | 26.1388969 | 85.3595263 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | | https://safetipinimages.s3.amazonaws.com/20191118/15467/IMG_20191118_180220-15467.jpg |
| 1092 | 675217 | 26.1379807 | 85.3593975 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | | https://safetipinimages.s3.amazonaws.com/20191118/15467/IMG_20191118_180232-15467.jpg; https:/ |
| 1091 | 675216 | 26.1368791 | 85.3592688 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | | https://safetipinimages.s3.amazonaws.com/20191118/15467/IMG_20191118_180240-15467.jpg; https:/ |
| 1090 | 675215 | 26.1355342 | 85.3592742 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.3 | | https://safetipinimages.s3.amazonaws.com/20191118/15467/IMG_20191118_180335-15467.jpg; https:/ |
| 1089 | 675214 | 26.1340617 | 85.359124 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.3 | | https://safetipinimages.s3.amazonaws.com/20191118/15467/IMG_20191118_180448-15467.jpg; https:/ |
| 1088 | 675213 | 26.1328951 | 85.3591293 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | | https://safetipinimages.s3.amazonaws.com/20191118/15467/IMG_20191118_180539-15467.jpg; https:/ |
| 1087 | 675212 | 26.1315719 | 85.3589308 | 1 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.9 | | https://safetipinimages.s3.amazonaws.com/20191118/15467/IMG_20191118_180600-15467.jpg; https:/ |
| 1086 | 675211 | 26.1304629 | 85.3588665 | 1 | 2 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 1.3 | | https://safetipinimages.s3.amazonaws.com/20191118/15467/IMG_20191118_180616-15467.jpg; https:/ |
| 1085 | 675210 | 26.1291927 | 85.3588665 | 2 | 3 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | | https://safetipinimages.s3.amazonaws.com/20191118/15467/IMG_20191118_180639-15467.jpg; https:/ |
| 1084 | 675209 | 26.1280067 | 85.3587967 | 1 | 2 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 1.3 | | https://safetipinimages.s3.amazonaws.com/20191118/15467/IMG_20191118_180659-15467.jpg; https:/ |
| 1083 | 675208 | 26.1267834 | 85.3587538 | 2 | 3 | 2 | 1 | 0 | 2 | 0 | 0 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20191118/15467/IMG_20191118_180716-15467.jpg; https:/ |
| 1131 | 675256 | 26.120345 | 85.3585714 | 2 | 3 | 3 | 2 | 1 | 1 | 0 | 0 | 1 | 4 | | https://safetipinimages.s3.amazonaws.com/20191118/15467/IMG_20191118_180938-15467.jpg; https:/ |
| 1129 | 675254 | 26.1181041 | 85.3587645 | 1 | 2 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 1.3 | | https://safetipinimages.s3.amazonaws.com/20191118/15467/IMG_20191118_181032-15467.jpg; https:/ |
| 1195 | 675320 | 26.1201367 | 85.3642148 | 2 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | | https://safetipinimages.s3.amazonaws.com/20191118/15469/IMG_20191118_183328-15469.jpg; https:/ |
| 983 | 675108 | 26.1379723 | 85.3664678 | 3 | 3 | 3 | 3 | 0 | 1 | 0 | 1 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_183440-15468.jpg; https:/ |
| 984 | 675109 | 26.1391028 | 85.3673047 | 3 | 3 | 2 | 2 | 0 | 1 | 0 | 0 | 1 | 3.5 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_183601-15468.jpg; https:/ |
| 985 | 675110 | 26.1401815 | 85.3676802 | 3 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 2.6 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_183659-15468.jpg; https:/ |
| 986 | 675111 | 26.1416599 | 85.3681147 | 2 | 3 | 0 | 1 | 0 | 1 | 0 | 3 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_183742-15468.jpg; https:/ |
| 987 | 675112 | 26.1432455 | 85.3684849 | 1 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.9 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_183846-15468.jpg; https:/ |
| 988 | 675113 | 26.1441653 | 85.3686887 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0.5 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_183924-15468.jpg; https:/ |
| 989 | 675114 | 26.1452524 | 85.3689462 | 2 | 3 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 2 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_184033-15468.jpg; https:/ |
| 990 | 675115 | 26.1455088 | 85.3678089 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0.4 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_184111-15468.jpg; https:/ |
| 991 | 675116 | 26.1458591 | 85.3666771 | 2 | 3 | 0 | 1 | 0 | 1 | 0 | 3 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_184154-15468.jpg; https:/ |
| 992 | 675117 | 26.146124 | 85.3654808 | 2 | 3 | 1 | 2 | 0 | 1 | 0 | 0 | 1 | 2.6 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_184347-15468.jpg; https:/ |
| 993 | 675118 | 26.1464045 | 85.3642094 | 2 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 2 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_184441-15468.jpg; https:/ |
| 994 | 675119 | 26.1466693 | 85.3629488 | 3 | 3 | 1 | 2 | 1 | 1 | 1 | 3 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_184512-15468.jpg; https:/ |
| 995 | 675120 | 26.1468896 | 85.3623748 | 3 | 3 | 1 | 2 | 0 | 1 | 2 | 2 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_184533-15468.jpg; https:/ |
| 996 | 675121 | 26.1457592 | 85.3618383 | 2 | 3 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 2 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_184646-15468.jpg; https:/ |
| 997 | 675122 | 26.1446215 | 85.3616345 | 2 | 2 | 1 | 1 | 0 | 1 | 1 | 3 | 1 | 3.5 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_184750-15468.jpg; https:/ |
| 998 | 675123 | 26.1435152 | 85.3619456 | 3 | 3 | 2 | 1 | 0 | 1 | 0 | 0 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_184823-15468.jpg; https:/ |
| 999 | 675124 | 26.1424304 | 85.3622943 | 3 | 3 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 2 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_184843-15468.jpg; https:/ |
| 1001 | 675126 | 26.1406968 | 85.3636032 | 2 | 2 | 1 | 2 | 0 | 1 | 0 | 0 | 1 | 2 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_184919-15468.jpg |
| 1003 | 675128 | 26.1390305 | 85.3647137 | 2 | 3 | 2 | 1 | 0 | 1 | 0 | 0 | 1 | 2.6 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_184957-15468.jpg |
| 1004 | 675129 | 26.1385405 | 85.3656364 | 3 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 1 | 2.6 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_185014-15468.jpg |
| 1169 | 675294 | 26.1282198 | 85.3731251 | 3 | 3 | 3 | 3 | 0 | 2 | 0 | 1 | 2 | 4.3 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_185917-15468.jpg; https:/ |
| 1170 | 675295 | 26.1276033 | 85.3801632 | 3 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 1 | 2.6 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_190354-15468.jpg; https:/ |
| 1171 | 675296 | 26.1288351 | 85.3803563 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0.4 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_190459-15468.jpg; https:/ |
| 1172 | 675297 | 26.1299247 | 85.3807694 | 3 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1.3 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_190542-15468.jpg; https:/ |
| 1173 | 675298 | 26.1308193 | 85.3809142 | 3 | 2 | 1 | 2 | 0 | 1 | 0 | 0 | 1 | 2.6 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_190757-15468.jpg; https:/ |
| 1174 | 675299 | 26.1315658 | 85.3811985 | 3 | 3 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_190830-15468.jpg; https:/ |
| 1043 | 675168 | 26.1346686 | 85.3859943 | 3 | 3 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 2.6 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_191330-15468.jpg; https:/ |
| 1044 | 675169 | 26.1346192 | 85.3869546 | 3 | 3 | 2 | 1 | 0 | 1 | 0 | 0 | 1 | 3.5 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_191347-15468.jpg; https:/ |
| 1045 | 675170 | 26.1345903 | 85.388006 | 2 | 3 | 2 | 1 | 0 | 1 | 0 | 3 | 2 | 4.1 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_191413-15468.jpg; https:/ |
| 1046 | 675171 | 26.1345193 | 85.3889287 | 3 | 3 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1.6 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_191434-15468.jpg; https:/ |
| 1184 | 675309 | 26.1229158 | 85.3695041 | 2 | 2 | 1 | 3 | 0 | 1 | 0 | 0 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20191118/15470/IMG_20191118_191547-15470.jpg; https:/ |
| 1330 | 675455 | 26.1358774 | 85.3901839 | 3 | 2 | 2 | 2 | 0 | 1 | 0 | 0 | 1 | 3 | | https://safetipinimages.s3.amazonaws.com/20191118/15468/IMG_20191118_191606-15468.jpg; https:/ |
| 1183 | 675308 | 26.1228062 | 85.3707004 | 3 | 3 | 3 | 1 | 1 | 1 | 0 | 0 | 1 | 4 | | https://safetipinimages.s3.amazonaws.com/20191118/15470/IMG_20191118_191617-15470.jpg; https:/ |