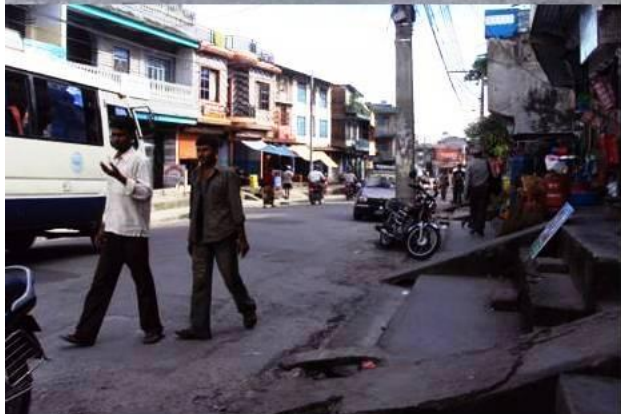




Walkability in Pokhara: Assessment of Pedestrian Facilities and Infrastructures



Walkability in Pokhara: Assessment of Pedestrian Facilities and Infrastructures

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List of Acronyms

- ADB : Asian Development Bank
- CAI-Asia: Clean Air Initiative for Asian Cities Center
- CANN : Clean Air Network Nepal
- CEN : Clean Energy Nepal
- CSE : Center for Science and Environment
- FK : Fredskorpset
- km. : kilometer
- LI BIRD : Local Initiatives for Biodiversity, Research and Development
- PM : Particulate Matter

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Clean Energy Nepal

Clean Air Network Nepal

Executive Summary

Walkability takes into account the quality of pedestrian facilities, roadway conditions, land use patterns, community support, security and comfort for walking (*Victoria Transport Policy Institute*). The survey is based on the methodology taken from the Global Walkability Index developed by Holly Krambeck as an Intern in the World Bank. This was modified slightly to accommodate complete route assessments and made simpler and cost effective. The Global Walkability Index document can be accessed from: <http://www.cleanairnet.org/caiasia/1412/article-60499.html>

Through this initiative, we seek to improve the walkability of Pokhara, particularly for those residents who have no choice but to walk long distances to their destinations.

The study provides information on the current pedestrian infrastructure in Pokhara which includes field walkability surveys, pedestrian preference interviews and an assessment of the current policies and institutions relating to pedestrians and walking environments in the city.

The pedestrian preference interviews revealed that 27% of the respondents think that the pedestrian facilities are in “bad” condition while 57% of the respondents think that it is “ok”. Moreover, the interviews revealed that 62 percent of the respondents would shift their walking trips to motorized modes of transport (with 38 shifting to cars/taxi and 34 to two-wheelers) if the walking environments in their city do not improve.

The assessment of policies and institutions related to pedestrians and walking environments through meetings and interviews with relevant stakeholders in the city show that, generally, there is a lack of relevant policies, dedicated institutions, and political support that cater to the needs of pedestrians. Proper allocation and use of funds for pedestrian facilities are also identified as a major issue.

1. Introduction

Walking is a significant mode of transport. All human beings are pedestrians for varying time periods on roads, even though motorization is increasing at a rapid pace. Even people who use motorcycles and cars, depending on their need, walk for shorter or longer distances. For health and environment, walking benefits as well as for the mobility and economic point of view.

In most developing cities, a large number of citizens walk as part of their daily social, recreational, and livelihood activities. Every trip begins and ends with a walking trip. Nearly all trips made by people entail some walking, either directly to a destination or to another mode of transport. In Kathmandu, a large section of population prefers to walk. In fact, 18.1 percent of daily trips are made entirely on foot, and of the nearly 56.5 percent of the commuters who use different modes of public transport, a large percentage walk as part of their daily commute (Kathmandu Valley Mapping Project (KVMP), 2001).

While transport sector is emerging as the fastest growing source of global greenhouse gas (GHG) and accounts for 13 % of GHG and 23 % of energy related CO₂ emissions, modal shift to Non Motorized Transport (NMT) such as walking and cycling could be significant. Many Asian cities have identified Environmentally Sustainable Transport (EST) as a way forward. NMT is one of the 12 EST thematic areas as defined by the Aichi Statement of 2005.

Inadequate planning for pedestrians has many negative consequences, the most notable being fatalities and injuries. According to study conducted by Kathmandu Valley Mapping Project (KVMP), pedestrians represent up to 40 percent of all fatalities in Kathmandu City in 2001.

Aside from this, an unsafe and inconvenient pedestrian environment impedes social and economic mobility of people. It reduces the time and energy that people could otherwise devote to work, family, and other productive activities. There are also opportunity costs that are lost from tourism and investment. Pedestrian facilities play a significant role in the way outsiders perceive a city's image. The safer and convenient the pedestrian facilities are, the greater is the demand for tourism and investments to come in.

Pokhara

Pokhara Sub-Metropolitan City is the second largest city of Nepal, located at 28.25°N, 83.99°E. It is the Headquarters of Kaski District, Gandaki Zone and capital of geographical Central Nepal i.e, Western Development Region. Pokhara is one of the most popular tourist destinations in Nepal, noted for its tranquil atmosphere and the



Figure 1. Map of Pokhara

Reference: <http://tinyurl.com/7nglu3o>

beauty of the surrounding countryside. Three out of the ten highest mountains in the world are situated within 50 miles (linear distance) of the city so that the northern skyline of the city offers a very close view of the Himalayas. Due to its proximity to the Annapurna mountain range the city is also a base for trekkers undertaking the Annapurna Circuit.

Due to rapid urbanization of the city and the adjoining areas, recently, proposals have been made to consolidate Pokhara Valley and the nearby VDC's into the Greater Pokhara Metropolitan Area. The possible area that will include are Pokhara city, Lekhnath Municipality, Sarangkot, and nearby VDC's with a combined population exceeding one million. Pokhara is considered the most liveable cities in Nepal in terms of quality of life.

The climate is sub-tropical but due to the elevation the temperatures are moderate: the summer temperatures average between 25 – 35 °C, in winter around -2 – 15 °C.

Objectives and Scope

The study provides information on the current pedestrian infrastructure in Pokhara and can be used to develop and propose pedestrian-focused solutions. The development and use of the walkability assessment methodology can raise awareness and generate interest among policy makers and city officials and help them to improve walking in the city.

2. Walkability

Walkability is a measure of how friendly an area is to walking. Walkability has many health, environmental, and economic benefits. Factors influencing walkability include the presence or absence and quality of footpaths, sidewalks or other pedestrian right-of-ways, traffic and road conditions, land use patterns, building accessibility, and safety, among others.[1] Walkability is an important concept in sustainable urban design.

Walkability takes into account the quality of pedestrian facilities, roadway conditions, land use patterns, community support, security and comfort for walking. It is important because:

- Walkable cities SAVE LIVES.
- Better pedestrian environment helps in– Poverty Reduction.
- Walking is SUSTAINABLE.
- Walking reduces CO₂ emissions.

A research carried out by CAI-Asia estimates that a nominal increase of 5% mode share in Pedestrians can contribute as much as 9.9% reduction in daily CO₂ emissions in an average Indian city (under prevailing trip/ traffic and control conditions).

Walkability Objectives:

1. Generate awareness of walkability as an important issue in developing cities.
2. Document the public interest to address walkability issues.
3. Help city planners understand scope and extent of local pedestrian conditions, relative to other cities.
4. Provide city planners with the information necessary to identify specific pedestrian related shortcomings, as well with recommendations for next steps.

Data Collection

Walkability can be measured and assessed by the use of the Global Walkability Index, developed by Holly Krambeck.

The methodology for the survey, Global Walkability Index, has been slightly modified to accommodate complete route assessments and has been revised to be made simpler and cost effective.

The Walkability Survey consists of three major components;

1. Field Walkability Survey – is used to collect raw data on the availability and quality of pedestrian infrastructure. This includes a summary of pedestrian counts (the number of people walking on the street), a description of the area such as width of road, motorized traffic conditions and other characteristics that is visible on the road and which needs attention. Photos are also taken for each surveyed stretch as well as general photos of area.
2. Pedestrian Interview Survey – documents the pedestrians’ voice and their opinions on current conditions and suggest on improvements. This will cover perception of safety, quality of mode transfers and quality of infrastructure.
3. Government and Stakeholder Survey - collects important data that is not obtainable through physical infrastructure surveys, such as city population and population density, pedestrian fatalities and injuries over time and by income class.

The first two survey components are largely observational and each variable is based on the survey team’s observations using scoring criteria. (see the walkability index field guide in the annex for more details on scoring criteria). The third component, policy support is assessed based on interviews with officials concerned.

The surveys are to be carried out in the areas which best represent the city as a whole. The components on safety and security, convenience and policy support are analyzed from the survey results.

Study area selection: City boundary and Street selection

Time of day considerations: The objective of the walkability survey is to compare streets and cities. Hence the surveys will be conducted during peak hours as this may provide the best results as more pedestrian activity happens during this hour.

Walkability Index in Asian Cities

Clean Air initiative for Asian Cities (CAI-Asia) conducted walkability surveys in different Asian cities to collect data about our city’s pedestrian environment, which was intended to measure the safety, security and convenience of the pedestrians. Walkability survey also aims to understand pedestrian concerns regarding aspects of specific pedestrian sidewalks that make walking a pleasant or unpleasant experience. The results of the survey generate an index that will compare pedestrian environment between different cities and areas within a city. This index ranking can help decision makers make targeted solutions to improve the walkability of footpaths. The sections followed by this one discuss the methodologies in detail.

<u>Walkability Surveys carried out in different cities of these countries:</u>	
Hong Kong	Nepal
India	Pakistan
Maldives	Philippines
Sri Lanka	Vietnam

Walkability in Kathmandu

Walkability Index: 559
(A lower ranking suggests that city is more walkable)

People say: Pedestrian Facilities are in ‘worst’ condition

Best Practices-

Pedestrianisation of Hanuman Dhoka Durbar Square (Vehicle Free Zone)

Walkability in Bhaktapur

Walkability Index: 309

People say: Pedestrian Facilities are in ‘good’ condition

Best Practices-

Bhaktapur Durbar Square is a vehicle free zone for more than 20 years. The Municipality is planning to extend the same initiative to make the whole core area of Bhaktapur as vehicle free zone from 2050 A. D. onwards

2.1 Walkability Survey in Pokhara

The Walkability Survey is implemented by Clean Energy Nepal and Clean Air Network Nepal in coordination with Local Initiatives for Biodiversity, Research and Development (LI BIRD).

Walkability training was conducted on Sep 21, 2011 to train 15 volunteers as Walkability Ambassadors in Pokhara. Aimed to improving the pedestrian infrastructures and services in the city, the Walkability Ambassadors went to the streets of Pokhara to investigate and document public issues and concerns being faced by the pedestrians. The groups were divided and deployed to five areas; commercial, public transport, residential, educational and lake side. Additional area, Lake Side was considered in consultation with local authority as Pokhara's Lake Side being one of the major attractions for tourist destination. Government stakeholders' survey was also done in tandem.

About 200 pedestrian interviews were conducted to analyze travel behaviour (time that pedestrians spend for each travel mode), pedestrian preference in terms of infrastructures, degrees of exposure to air pollution and socioeconomic profiles. Field Survey forms were collected to examine road stretches around the city that includes availability of walking paths, motorist behaviour, amenities, obstructions, security from crime among others.

Field Walkability and Pedestrian Ratings

Methodology

The methodology used in this study is based on the GWI and includes a field walkability survey and a government policy and institutional. The study added a pedestrian survey to gather people's sentiments regarding their walking environments. The details of the methodology are provided in Annex.

Field Walkability Survey

To provide a holistic approach that links design and execution with user perception and the built environment, the GWI was slightly modified to accommodate complete route assessments.

The field survey was conducted in five areas; Commercial area represented by New Road, Public Transport area represented by Prithvi Chowk, Educational area represented by Bagar, Residential area represented by Ram Bajar and Lake Side area. Consultations with local authorities and stakeholders were done in selecting the areas to be surveyed.

The areas were surveyed using the parameters in the GWI, with slight modifications to the descriptions to make them more applicable in the Asian context, as shown in Table 2.

Table 1. Field Walkability Parameters

Parameters	Description
Walking Path Modal Conflict	The extent of conflict between pedestrians and other modes, such as bicycles, motorcycles, and cars on the road.
Availability of Walking Paths	This parameter is added to the original Global Walkability Index (combined with the original parameter “Maintenance and Cleanliness”). It reflects the need for, availability, and condition of walking paths.
Availability of Crossings	The availability and distances between crossings to describe whether pedestrians tend to jaywalk when there are no crossings or when the distances between crossings are too long.
Grade Crossing Safety	This refers to the exposure of pedestrians to other modes while crossing, the time spent waiting and crossing the street, and the sufficiency of time given to pedestrians to cross signalized intersections.
Motorist Behavior	The behavior of motorists toward pedestrians, which may well indicate the kind of pedestrian environment there is in that area.
Amenities	The availability of pedestrian amenities such as benches, street lights, public toilets, and trees. These amenities greatly enhance the attractiveness and convenience of the pedestrian environment, and in turn, the city itself.
Disability Infrastructure	The availability, positioning, and maintenance of infrastructure for the disabled.
Obstructions	The presence of permanent and temporary obstructions on the pedestrian pathways. These ultimately affect the effective width of the pedestrian pathway and may cause inconvenience to the pedestrians.

Security from Crime	The general feeling of security from crime in the street. The extent of conflict between pedestrians and other modes, such as bicycles, motorcycles, and cars on the road.
---------------------	--

Source: Krambeck, H. 2006.

One of the limitations of the field walkability surveys is the subjectivity of responses, as they greatly depend on the individual assessments of the surveyor, especially in this case, where there were various organizations and individuals involved in carrying out the surveys.

Pedestrian Interview Survey

A short questionnaire on travel and social characteristics as well as the preferences of the respondents was prepared. The questionnaire was filled out by a surveyor while interviewing pedestrians. In some cases, responses were taken from pedestrians waiting for their ride. Both the field walkability survey and the pedestrian interview survey were mostly conducted from 4 p.m. to 6 p.m. to capture the afternoon peak-hour pedestrian movement.

Results of the Field Walkability Surveys

The field survey was conducted in five areas; Commercial area represented by New Road, Public Transport area represented by Prithvi Chowk, Educational area represented by Bagar, Residential area represented by Ram Bajar and Lake Side area. Please see the figures below for the surveyed areas:

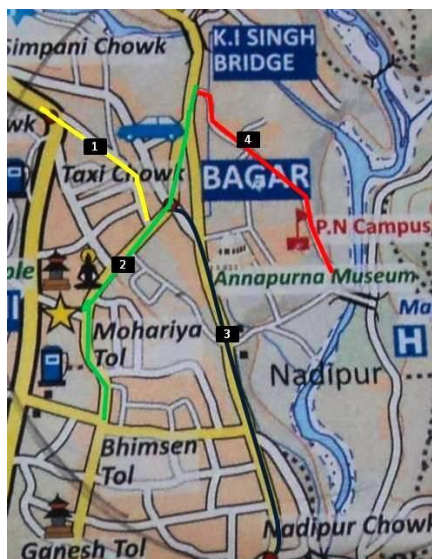


Figure 2. Educational Area

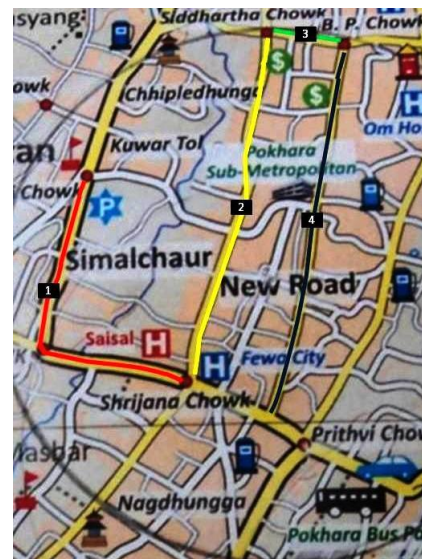


Figure 3. Commercial Area



Figure 4. Public Transport Area

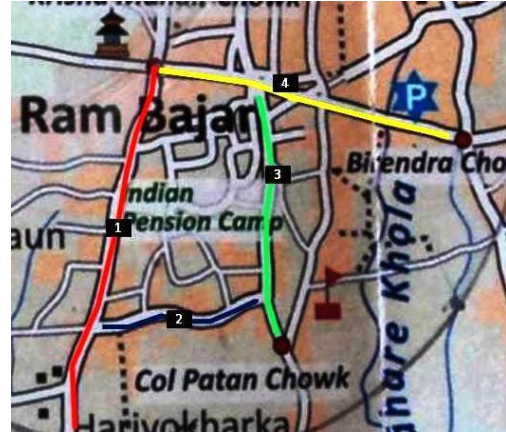


Figure 5. Residential Area



Figure 6. Tourist Area

These areas covered a total of 18 road stretches with a combined length of 32.8 kilometers.

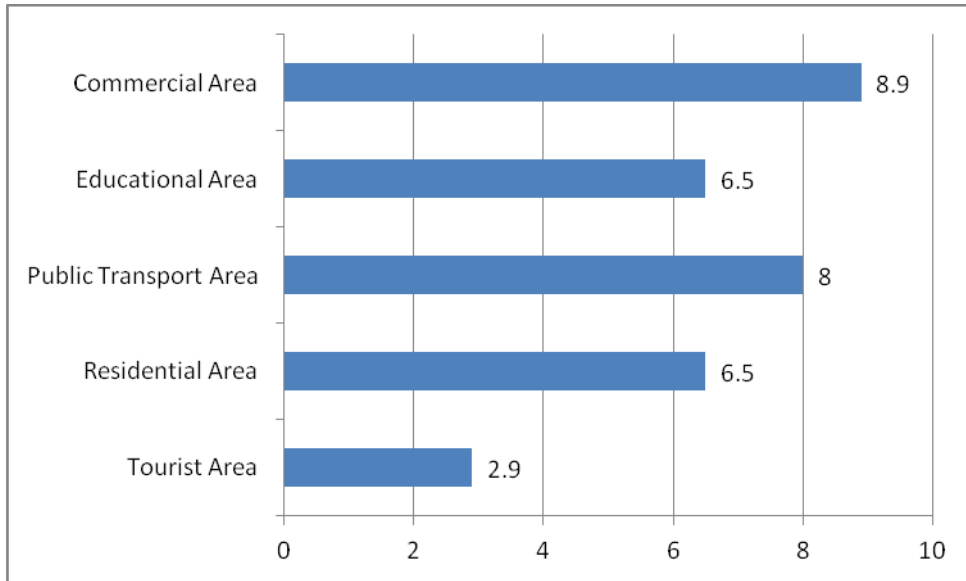


Figure 7. Length of Surveyed Road Stretch

The total number of people walking in the streets on both sides is tallied within 15 minutes. This is to measure the density of pedestrians in an area. Based on survey results, commercial area has the highest number of pedestrian users with 512 commuters using that road stretch in one hour while tourist area has 350 road users in a day.

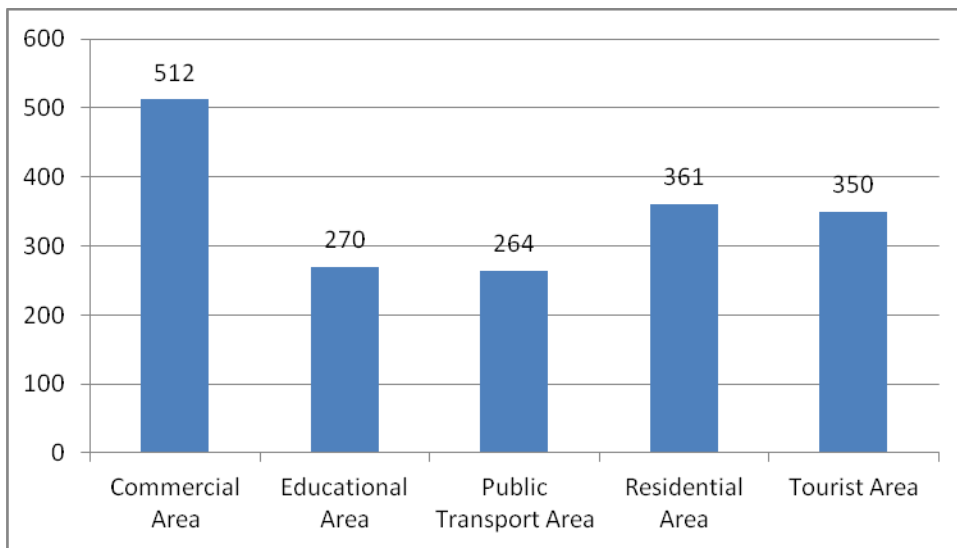


Figure 8. Pedestrian Count in Survey Areas

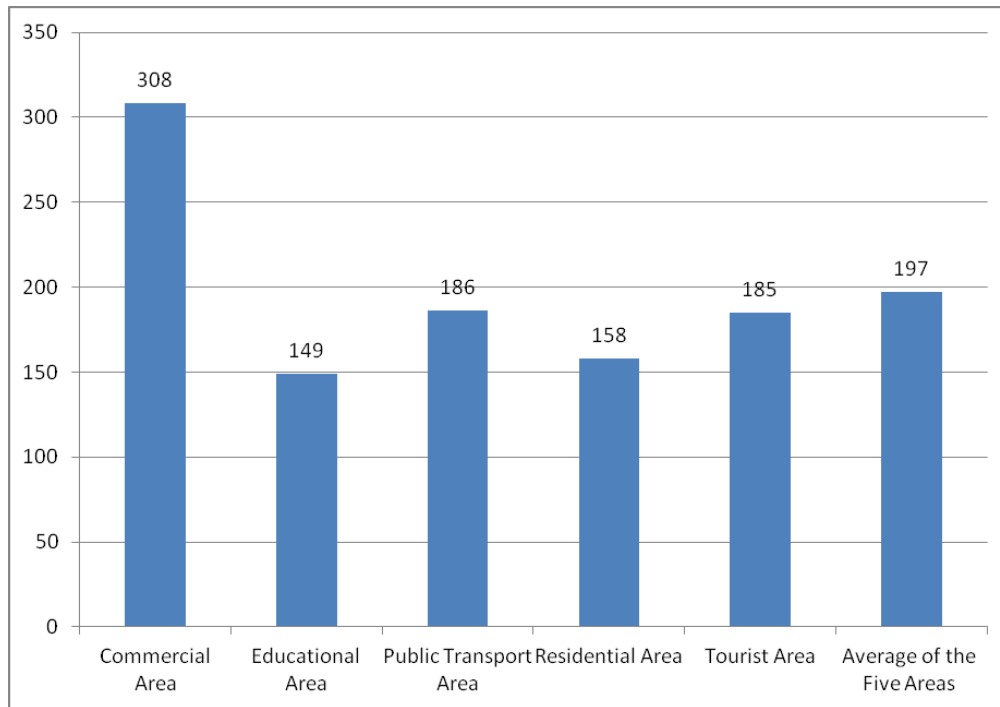


Figure 9. Field Walkability Index

The commercial area, the most crowded area of the city, obtained the highest field walkability index. A low ranking index suggests better pedestrian infrastructures and services while a higher ranking suggests opposite. The observed barriers for pedestrians include vendor encroachment; unmanaged parking- parking of motorcycles in side walk and streets. Despite of having high traffic, there are very low crossing points which make it difficult and inconvenient for pedestrians in crossing roads. Also with high walking path modal conflict, the pedestrians are exposed to high risk of accidents. On the other hand footpaths are not properly managed and have very low amenities. Random movement of animals in the area also add challenges to walk at times.

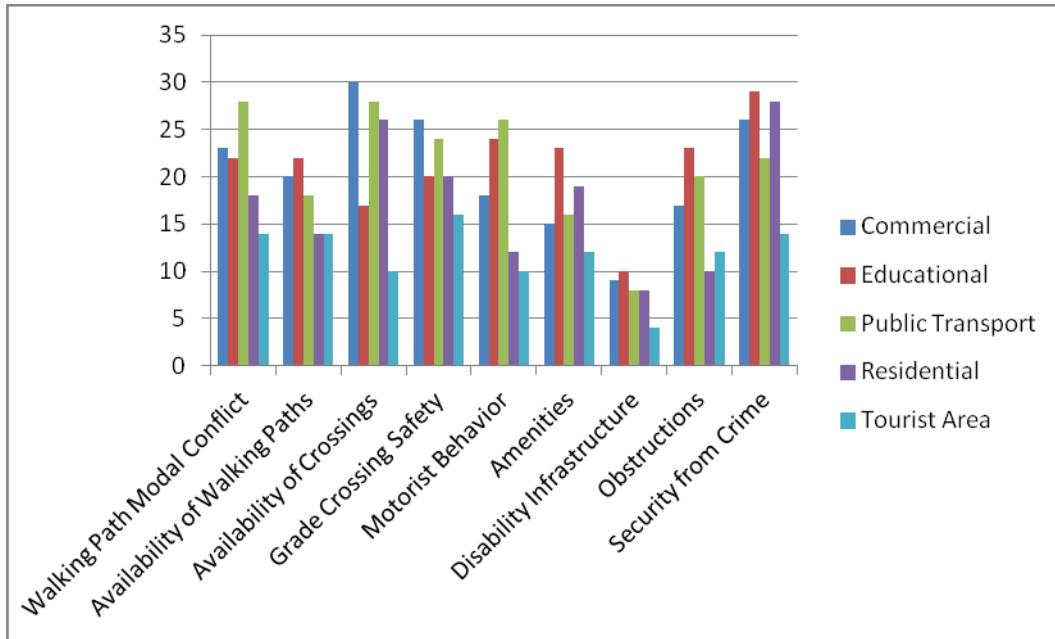


Figure 10. Aggregate Scores of Field Walkability

Among the nine variables that were evaluated, the disability infrastructures received the lowest attention of all. Nearly 91.67 percent of the total road stretches have no infrastructure at all for disabled persons.

Results of Pedestrians' Interview Survey

Pedestrian Preference Survey Results

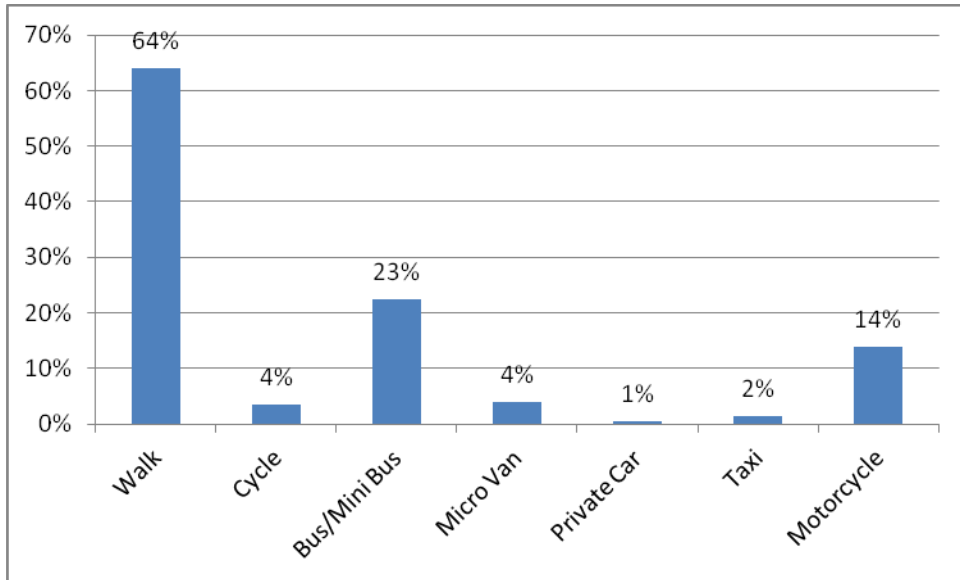


Figure 11. Mode of Transport

In our conduct of pedestrian preference survey from 200 respondents across all areas, it was revealed that 64 percent of commuters’ daily trips are made entirely on foot, of which 33.59 percent of this population sample walks for more than 15-30 minutes in one direction for a major trip. In this daily trips made, 55 percent of the respondents said that walking is perceived to have the highest exposure to air pollution, affecting health and visibility.

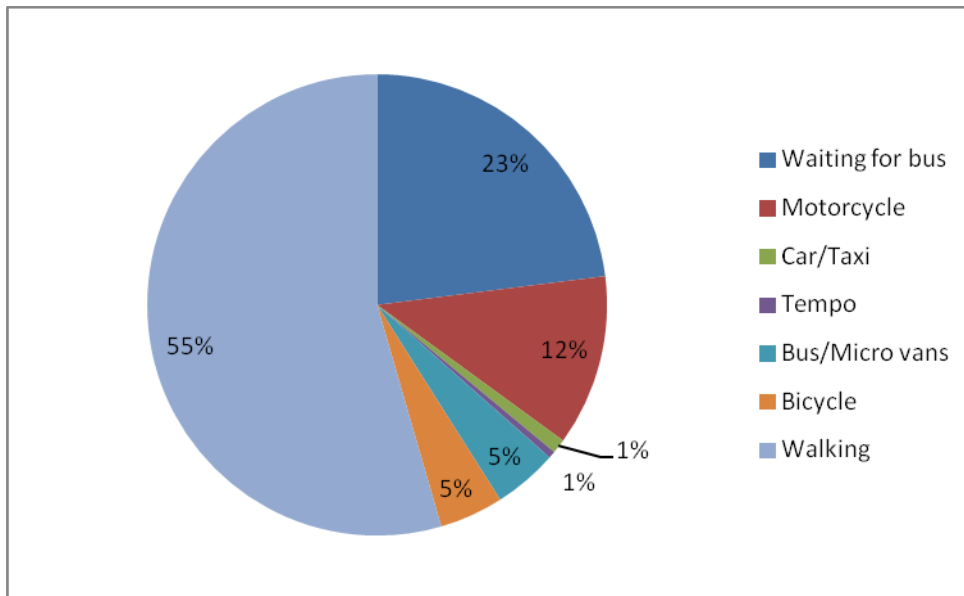


Figure 12. Place Where Most Exposed to Pollution

The National Ambient Air Quality Standards (NAAQS) for PM₁₀ is 120µg/m³. This particle pollution contains microscopic solids or liquid droplets, small enough to get deep into the lungs and cause serious health problems. With higher exposure to pollution, likelihood of suffering from air ailments increases.

Travel Behaviour

A total of 51 percent of the population travels less than 3 km everyday from their residence to their main destination.

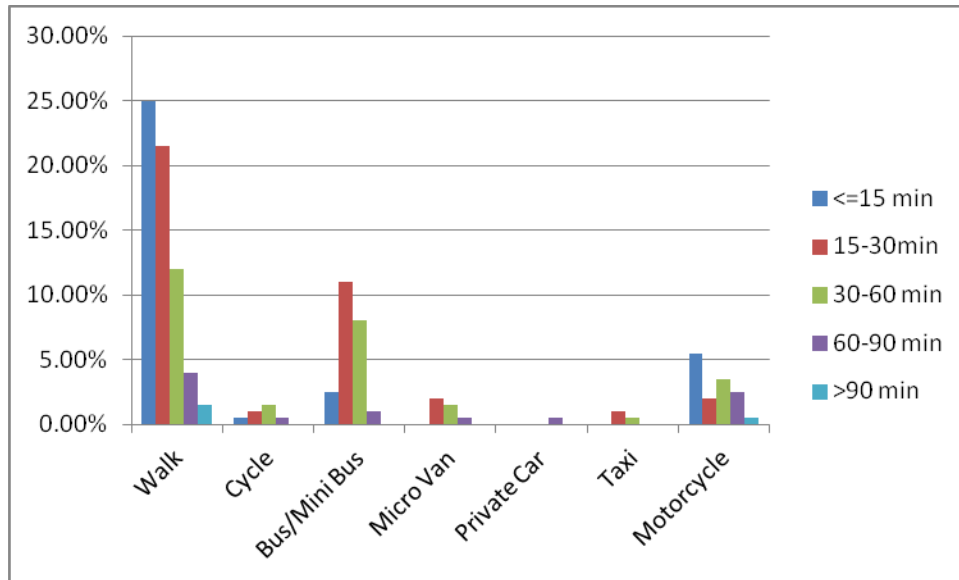


Figure 13. Travel Behaviour

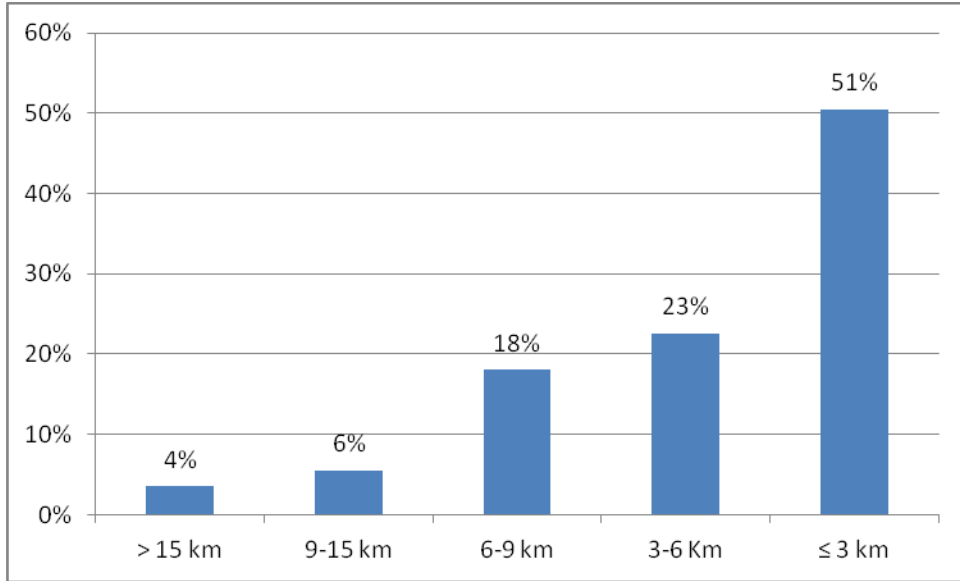


Figure 14. Average Travel Distance (One Way)

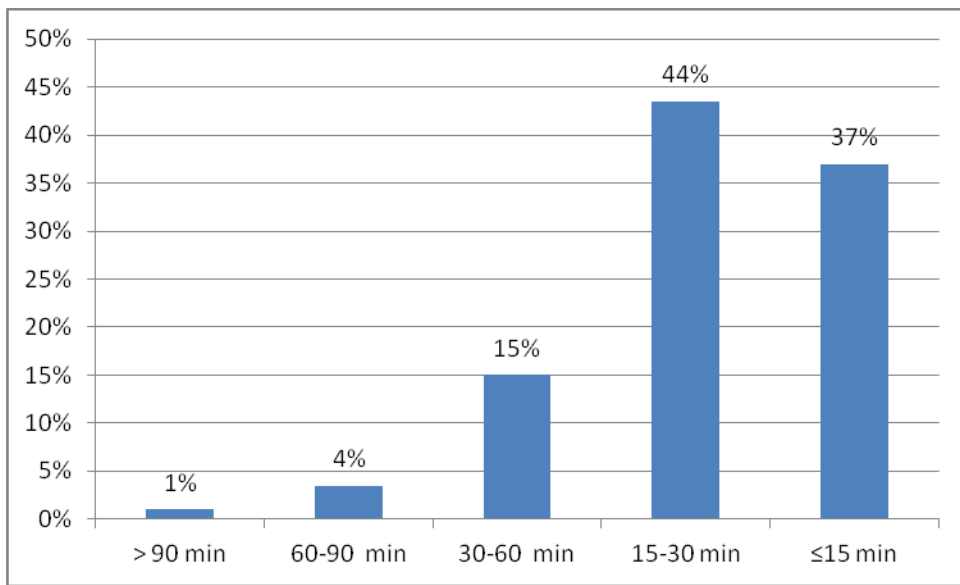


Figure 15. Average Travel Time (One Way)

From the survey results, 45 percent are found to be captive riders while 55 percent of the respondents are choice riders. Captive riders are those who lack an alternative to transit; they therefore use primary mode of transportation to reach their destination. Choice riders are those who have realistic alternatives (e.g., driving) but choose to use transit for various trips.

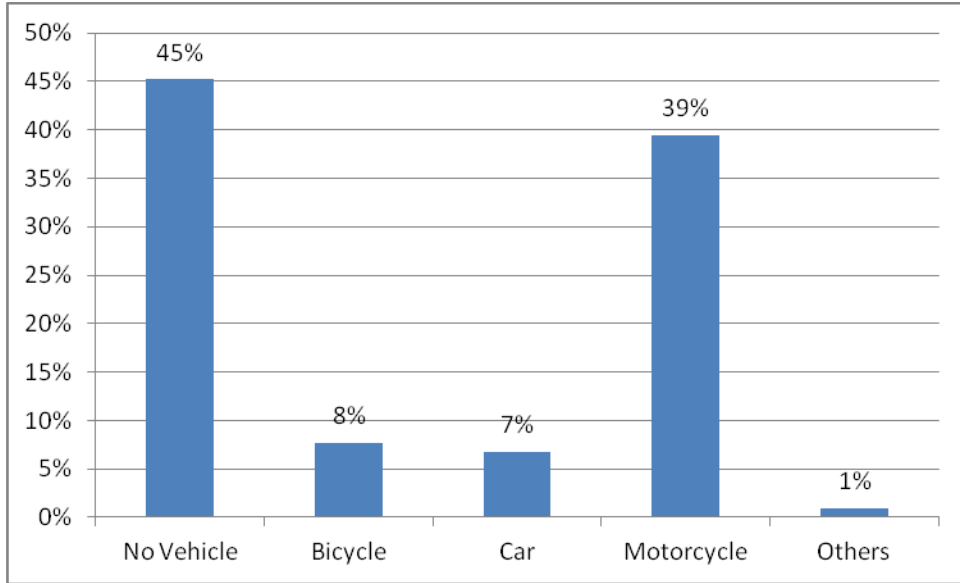


Figure 16. Types of Vehicles Owned

Walkability takes into account the quality of pedestrian facilities, roadway conditions, land use patterns, community support, security and comfort for walking. Walkability can be evaluated at various scales. When the pedestrians were asked to rate the existing pedestrian facilities in the city, 57 percent said that the situation of existing infrastructures in the city is okay while 27 percent respondents said it to be in bad condition. Among their noted observations are encroached footpaths by vendors, unmanaged and interrupted footpaths and barriers like hoarding boards, parking of motorized vehicles in sidewalks, lack of crossing points, which make walking inconvenient. Also, it was noted that the poor management of street lights are of particular concern especially during night.

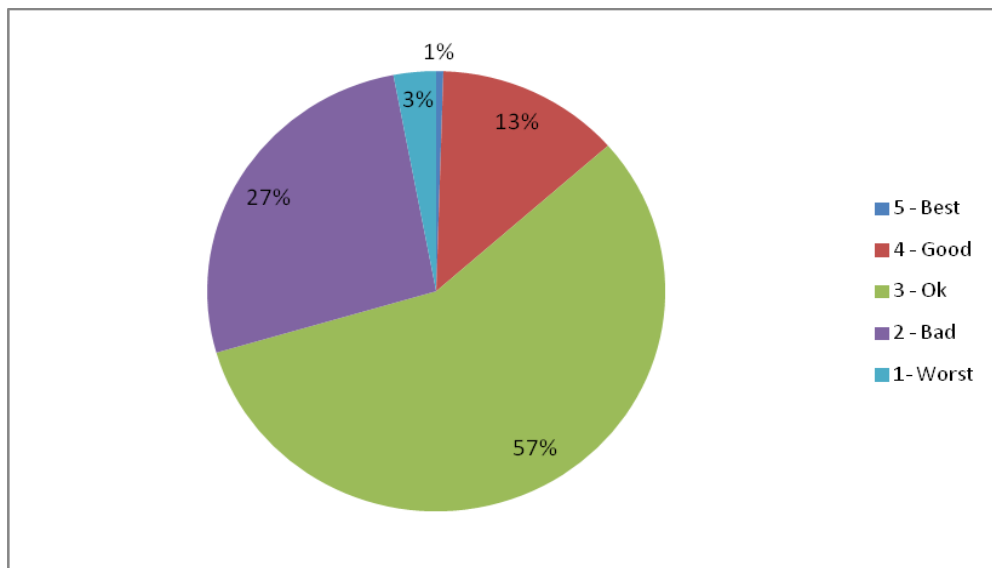


Figure 17. Rating of Pedestrian Facilities in the City

Investing on good pedestrian facilities plays a key role in developing healthy communities that support physical activity. When asked about the top five priorities in pedestrian facilities, the infrastructures with wider, level and clean footpaths came as a top priority, followed by reduced and slow traffic on roads and removing obstacles/parking from the footpaths.

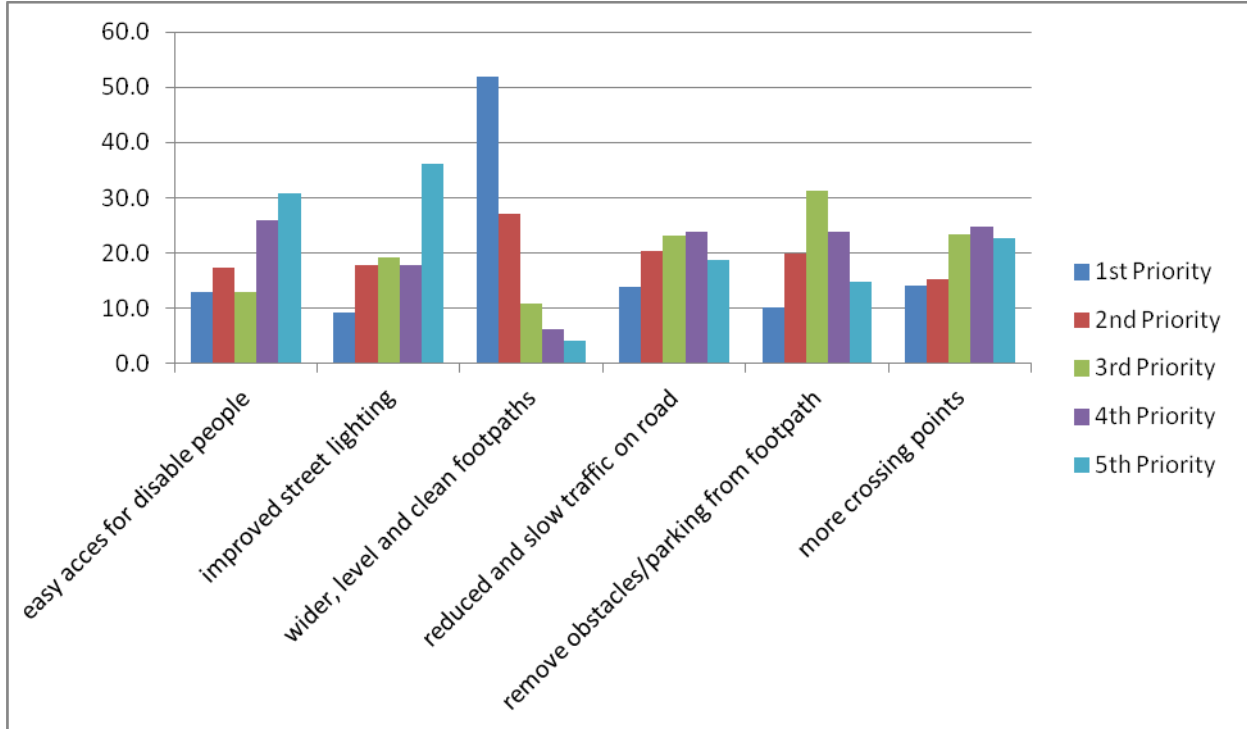


Figure 18. Top Five Priorities for Pedestrians' Facilities Improvement

In terms of pedestrian preference for crossing 59 percent of the respondents' favour ground crossing compared to skyways (31 percent) and subways (11 percent). Moreover, 61 percent of the respondents' are not willing to walk more than 50 m to reach the crossings.

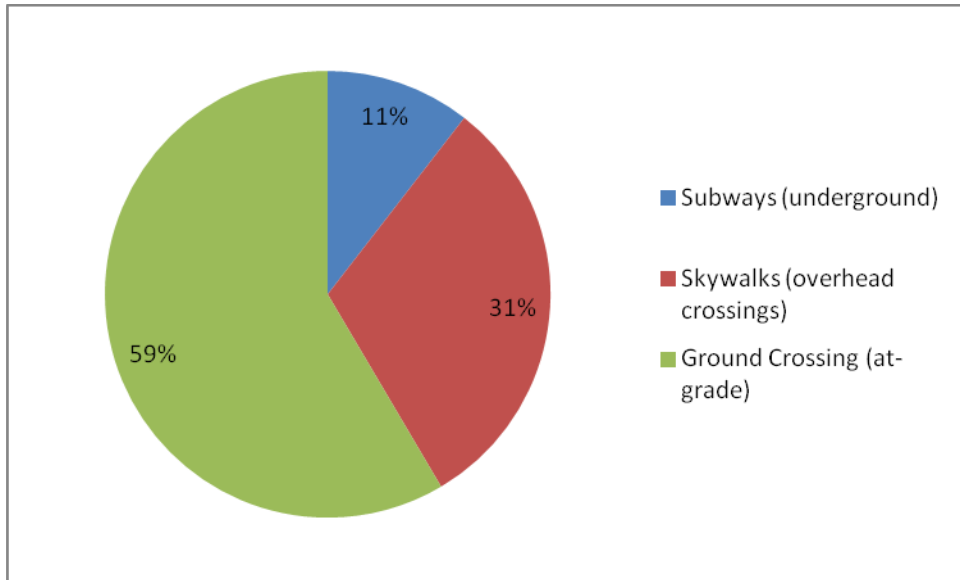


Figure 19. Preferred Facility in Crossing Roads

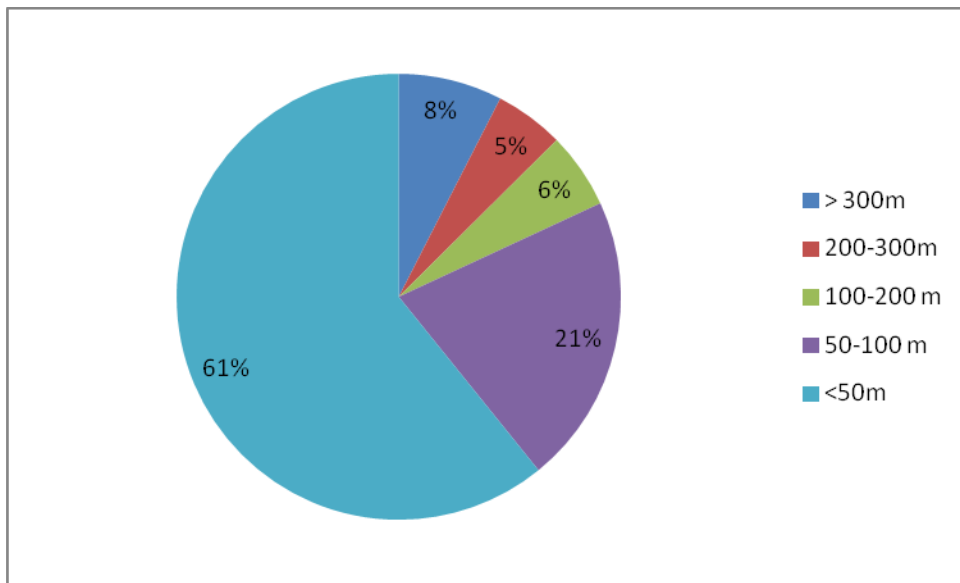


Figure 20. Respondent's Willingness to Walk to Access Pedestrians' Crossings

Surveyed respondents revealed that if there is no improvement in the pedestrian infrastructures, 62 percent of them plan to shift from walking to other mode of transportation, while 38 percent says they have no option than to continue walking. Among those 62 percent who plan to shift their mode, majority (72 percent combined) will shift to motorcycles and car/taxi.

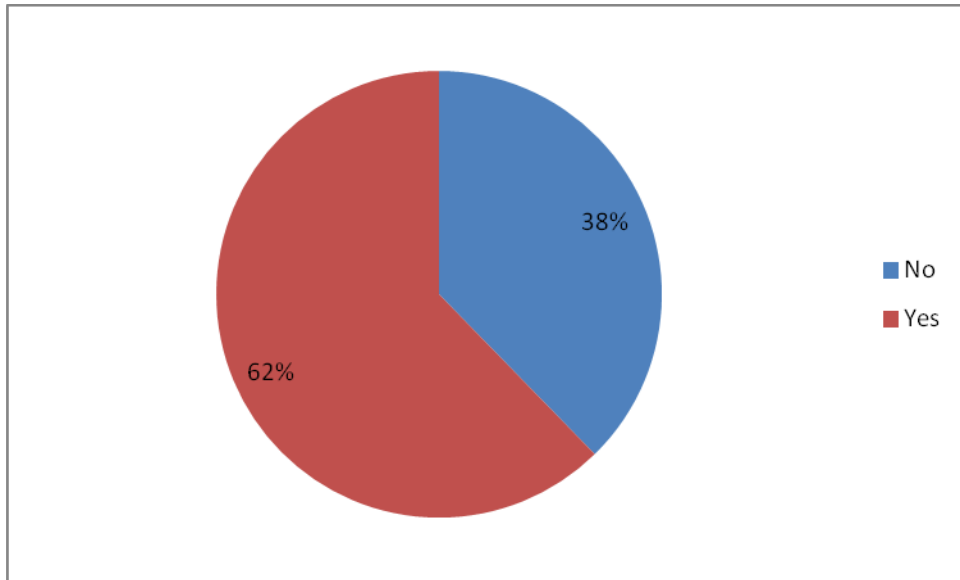


Figure 21. Plan to Shift from Walking to other Mode of Transportation

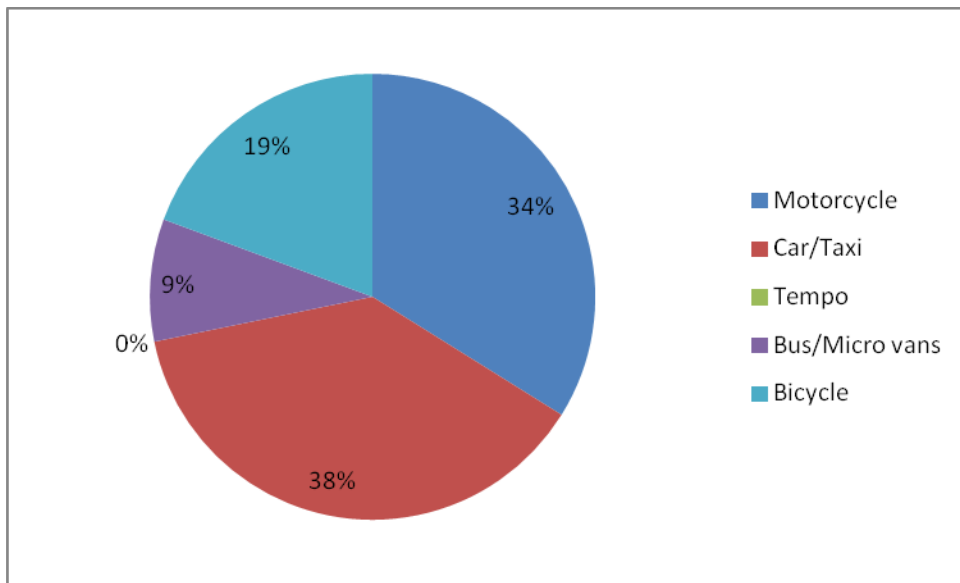


Figure 22. Transport Mode Preference if Pedestrians Facilities are not improved

Respondents Profile

Among the respondents, 53.5 percent are male and 46.5 percent are female. 61 percent respondents come from (15-30) years of age, followed by (30-50) with 28 percent.

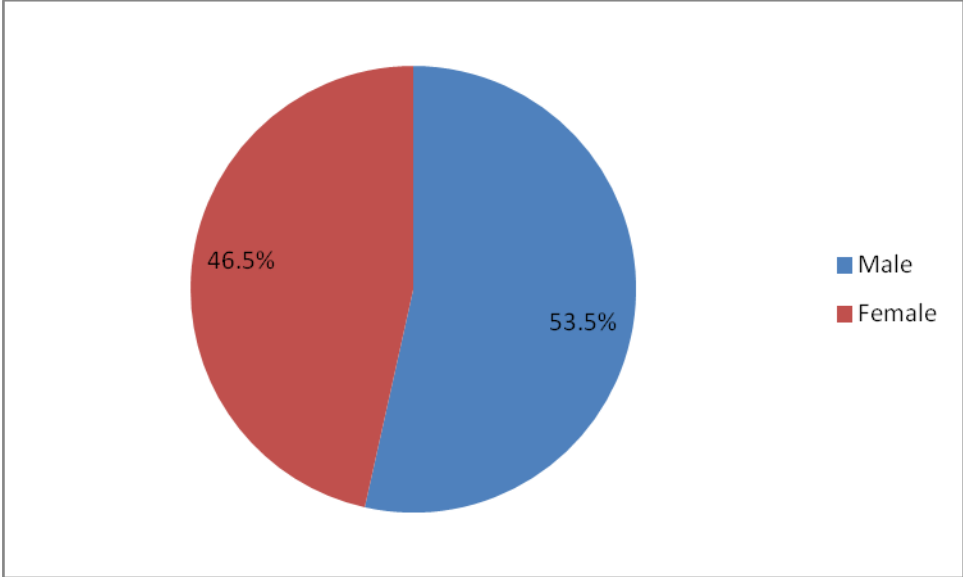


Figure 23. Respondents Profile

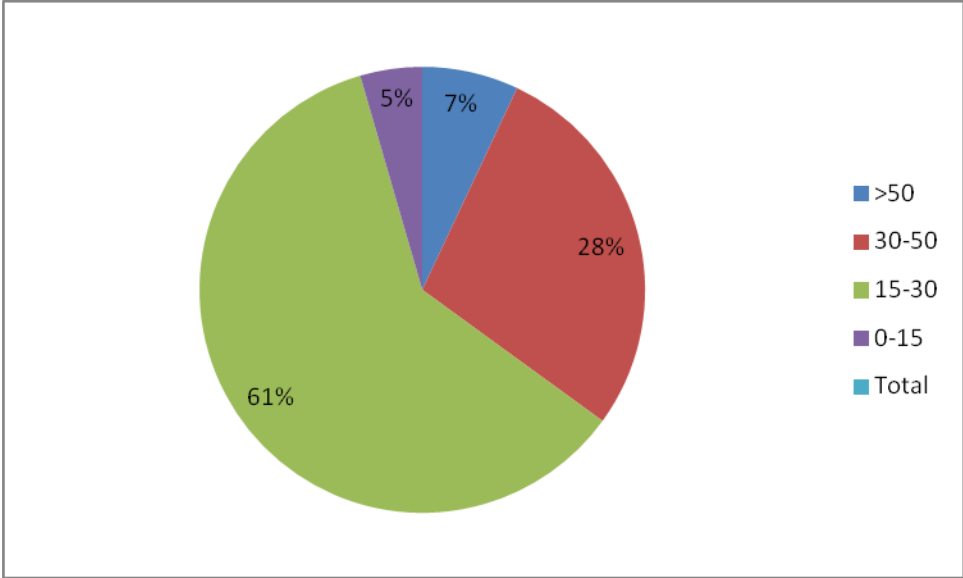


Figure 24. Age Group of Respondents

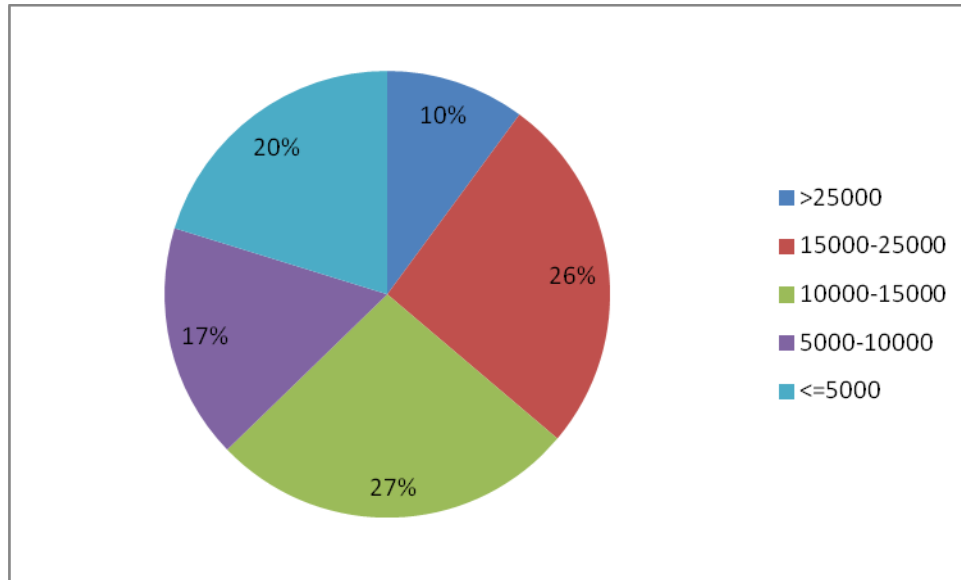


Figure 25. Monthly Household Income

Highlights of the Survey Results-

1. The Walkability Index of Pokhara City is 197, compared to Kathmandu's 559 and Bhaktapur's 309. Meanwhile if compared with other cities, Bangkok is 121. Lower the index better is the walkability, in other words, a low ranking index suggests that a city is more walkable.
2. Commercial area obtained the highest walkability index scores which indicates that pedestrian infrastructures and facilities are inadequate thus making it unsafe and inconvenient for people to walk. Note that this is the same area which has the highest flow of pedestrians.
3. Commercial area has the highest number of pedestrian users and the highest walking path modal conflict.
4. About 27 percent of the total respondents' assessment of the existing pedestrian facilities in the city to be in bad condition while 57% said to be okay and 13% expressed it as good.
5. About 91.67 percent of all the surveyed road stretches have no existing facilities for persons with disabilities.
6. When asked about the top five priorities in pedestrian facilities, the infrastructures with wider, level and clean footpaths came as a top priority, followed by reduced and slow traffic on roads and removing obstacles/parking from the footpaths.

7. The pedestrians' preference survey showed that about 59 percent prefers ground crossings (through zebra crossing and traffic calming). And a total of 61 percent are not willing to walk more than 50 m to reach the crossings.
8. The results showed that 45 percent are found to be captive riders while 55 percent of the respondents are choice riders.
9. Stakeholders identified the main barriers the main barriers in improving the pedestrian facilities in the city, which are: lack of public awareness on the importance of pedestrians' safety, inadequate polices and pedestrian friendly infrastructures and guidelines, lack of coordination among the authorities working on pedestrian issues, not sufficient budget in development plan, poor urbanization plan and weak agency implementation.
10. District Traffic Office, Kaski: In Fiscal Year 2067/68, the number of injuries was 17 and the total number of seriously injured were 15 while the number of fatality accounts for 8.

Policies and Guidelines

Best Practices

- In 2010/11, the stretch along Lake Side used to be exclusive for pedestrians only once a week.
- Nepal Tourism Board in coordination with local tourism stake holders have constructed a foot track for pedestrians along the lake.

Plan, Policies and Strategies

The Motto of the Municipality is 'Our Responsibility to make Pokhara Clean and Beauty'. This line emphasis local government's focus in maintain the city.

The Annual Municipal Development Plan of Pokhara comprises several components of pedestrians' infrastructures and facilities. Inside the heading Infrastructure development, it has incorporated the following actions:

- Removal of construction materials in the road side or public places by the municipality.
- Management of Street lights powered by solar in major areas.
- Fostering Public private partnership for the construction of complex, divider, footpath and public toilets
- Parking space mandatory for newly built housed in the main city area

The annual plan also mentions about prioritization of overhead bridges in the plan but the survey has revealed that 59 percent prefer ground crossings. Hence priority in traffic calming should be in place in future.

Likewise in the Forest and Environment sector, the municipality has adopted 1 home: 2 trees policy which is a remarkable step forward. Plantation program and awareness program are also in priority areas of the municipality.

Resources

According to the Annual Municipal Development B.S. 2068/69, 30 lakh Nepali Rupees has been allocated for management of roads which also includes street lighting. While for footpath management, a mere sum of 1 lakh is set aside.

Conclusion and Recommendations

Pokhara is the second largest city of Nepal and major tourist destinations. But the walking environment of the city is not matched to its scenic beauty. The survey has expressed pedestrians' preference of travel, social characteristics and their preference for pedestrian facilities. Major hindrances and problems identified from the survey are due to inadequate planning and management. A large scope of improvement in pedestrian infrastructures and facilities remains for the city.

The Pokhara Sub-Metropolitan City is envisaged that it can be an environment friendly city in the sub-continent. Considering this Pokhara Sub-Metropolitan authority is committed to improve physical infrastructure and services including urban road.

However the key is to foster partnership and create linkages among government agencies and relevant stakeholders of the city in working together for pedestrians' issues. Integrated effort from all the sectors is a way forward. Pedestrian Inclusive development planning is the need for a sustainable future. Branding the city as 'Walkable City' could be tourism strategy of Pokhara.

Recommendations-

1. Disseminate the results of the walkability survey in Pokhara

The results of the survey should be disseminated to the relevant stakeholders of the city and inform them about the existing pedestrian infrastructure conditions.

2. Promote walkability as a environmentally sustainable urban mode of transport

Walking is a sustainable urban mode of transport. For short to medium distances, walking is the best mode. It requires no energy sources and emits no pollution. Investment on walking friendly infrastructures is a sustainable solution to the traffic related and pollution problems. Promoting walkability as environmentally sustainable urban mode of transport is a crucial step.

3. Initiate dialogue with concerned authorities for improved planning and investment in pedestrian infrastructures and facilities

Pedestrian inclusive planning and management falls under the responsibility of the respective authorities and stakeholders. Proper dialogue should be initiated with concerned authorities for to prioritize improved planning and investment in pedestrian infrastructures and facilities.

4. Plan and conduct awareness raising programs amongst general public

Many people are not aware on the pedestrians' rights and walking as a mode of urban transport. Mass awareness campaign amongst the general public is important in raising the walkability issue and its promotion for safer footpaths.

5. Periodic surveys should be done to assess the improvement in pedestrians' infrastructure and facilities

Regular surveys should be done to assess city's action and status in improving pedestrians' infrastructure and facilities. Local volunteers and college students could collage in doing these surveys. Local government should

6. Local government/ concerned stakeholders should prioritize peoples' voice and priorities

Local government and authorities should hear peoples' preference and priorities first. Program should be developed in consultation with wider range of stakeholders.

7. Resources for Pedestrian infrastructures are utmost need for a sustainable city and development

Improving pedestrian's infrastructures and facilities entails city's development. These kinds of activities should in access for development budget. Adequate resources should be available for the proper conduct.

8. People first policies/ Pedestrian Policies

While formulating any policy, peoples' choices and convenience should be in priority. Any plan should be people centric rather than vehicles. In Pokhara, step towards this could lead a example to other larger cities of Nepal.

Policies ensuring safer footpaths and which encourage people to walk should be devised.

9. Complete street policy

Any plan or action about street should be based on complete street policy. Conventional thought of street for vehicles should be revised, streets for all (pedestrians, cyclists) concept should be developed. Any new construction of road should strictly follow this guideline.

10. Fostering Public private partnership for working towards pedestrians issues

Integrated effort from all relevant sectors is a key to make walkability a worthwhile success. Hence fostering partnership opportunities, creating linkages among relevant stakeholders, is a vital way forward.

11. A designated, specific area, preferably, Lake Side should be set as vehicle free zone, exclusively for pedestrians only to encourage more pedestrians to walk.

12. Noise and pollution factors influence the walking pattern hence appropriate legislative procedures should be in place to control pollution level.

Specific recommendations:

- Parking space should be managed and illegal parking should be abandoned.
- Obstructions in the footpaths such as construction materials, hoarding boards should be removed
- Street lights should be managed by the authorities to ease pedestrian movement during night
- More crossing points are required for the pedestrians, while making crossing; ground crossings are recommended.
- Maintenance and cleanliness of footpaths should be done
- Local government/ concerned stakeholders should prioritize following actions: wider, level and clean footpaths, reduced and slow traffic on roads and removing obstacles/parking from the footpaths in their yearly plan and act in order.

Pedestrian accessibility plays a fundamental role in sustainable urban transport policies, along with quality public transport, rational pricing of motor vehicle use, and land use–transport integration. These policies can minimize and control the inefficient use of motor vehicles, which in turn reduces emissions of air pollutants and greenhouse gases from the transport sector. Greater pedestrian access and mobility would also enhance the effectiveness of mass transit, reduce fossil fuel consumption, and promote social justice on the roads (Badami 2009).

“The single biggest difference between the infrastructure of an advanced nation and a backward nation is its footpaths, not its highways,” Enrique Peñalosa, the former Mayor of Bogota

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Annexes

A. List of stakeholders surveyed in Pokhara

S.N.	Name of agency	Contact Person
1.	Tourism Office	Shukra Raj Koirala
2.	Nepal Tourism Board	Shradhha Shrestha
3.	District Traffic Office, Kaski	Gyan Bahadur Singh (Sub- Inspector)
4.	Transport Management Office (TMO), Kaski	Kali Bahadur Bhujel (Branch Officer)
5.	District Development Committee (DDC), Kaski	Arjun Kumar Thapa (L.D.O)
6.	Road Division Office, Kaski	Umesh Bindu Shrestha (Division Officer)
7.	Town Development Office, Kaski	Sudip Acharya (Engineer)
8.	Bus Byabasaya Committee (Prithvi Highway)	Basant Bastola (Chairperson)
9.	Pokhara Sub Metropolitan City Office	Surendra Pandey (Engineer)
10.	IOE WRC, LamaChaur	Kishor Man Singh Bhandari

B. Case of Accidents in Pokhara

Fiscal Year 2067/68
District Traffic Office, Kaski

From (Type of vehicle)	Injuries (No.)
Motorcycle	6
Jeep/car	6
Truck/Tanker	3
Tractor	
Bus	2

	Seriously Injured	Fatality (No.)- Death
Male	7	6
Female	5	1
Child (boy)	1	1
Child (girl)	2	

C. Questionnaire Survey Forms

1. [Pedestrian Preference Survey Form](#)
2. [Field Survey Form](#)
3. [Stakeholders' Survey Form](#)

D. Walkability Index Field Guide: Details on Scoring Area

[Walkability Index Field Guide](#)

E. The guidelines for footpaths

Capacity in (Persons) (in one hour)		Required width of footpath in meters
All in one direction	In both directions	
1220	800	1.5
2400	1600	2.0
3600	2400	2.5
4800	3200	3.0
6000	4000	4.0

Source: Urban Development Plans Formulation & Implementation Guidelines (UDPFI).