Nowhere to
Walk

Pune
Walkability
Survey

परिसर

Report 4

This walkability survey was conducted by Parisar on behalf of Clean Air Initiative (CAI) and was done using a toolkit provided by CAI which was adapted from the Global Walkability Index toolkit developed for the World Bank.

The survey consists of three components, namely a Field Walkability Survey, a Pedestrian Interview Survey, and a Government/Stakeholder Survey.

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Executive Summary

Three months ago the Commissioner of Pune, Mahesh Zagade admitted that the city is becoming pedestrian-unfriendly even though 37% trips are made by walking. This is at once both obvious and astounding. Obvious as soon as one steps onto the streets and astounding that when so little is required to make things so much better for so many it still remains one of the most neglected areas in the city's development. And this is not a neglect without consequences. In the year preceding this report, 320 pedestrians have been involved in serious accidents, 160 of them have been fatal. While the general public tends to blame unruly driving and lack of enforcement as the cause of this horrifying statistic, traffic engineers the world over recognize that this is because of inadequate pedestrian infrastructure. The simple fact is that pedestrians cannot use the footpaths, cannot cross our roads and consequently get mowed down by vehicles.

Walkability is not just about having 'x' kilometers of footpaths, it is a package that consists of various aspects, from availability and usability of footpaths, to safe at-grade crossings, safety, amenities like lighting, shade and benches and respect that pedestrians get from motorists. The ultimate test of accessible streets is for them to be handicapped-friendly. The Global Walkability Index attempts to capture all of these. Any such index has its limitations, but the picture from this report is clear – our streets fall woefully short on all aspects.

Pune managed an overall score of 54/100. Of the 9 aspects of walkability, it scored highest on street safety (73/100). Ironically this is because our streets are "alive", with pedestrians and hawkers/vendors, the latter often blamed for "encroaching". But it is this typically Indian street flavor that makes them vibrant and hence safe. It scored poorly on availability of pedestrian infrastructure (footpaths, crossings and modal conflicts), less than 60/100. Quite simply, footpaths where even available, are unwalkable, crossings difficult. The lowest scores were in aspects related to amenities and disability access, scoring less than 40/100. It quantifies what we already know – streets are unpleasant to walk on and barely accessible for able-bodied persons, let alone those with disabilities.

Walkability Score
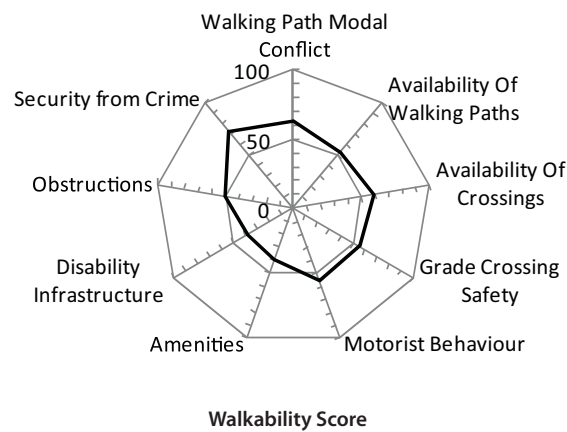
The message to the policy makers is equally clear, we need to have deliberate policies to improve the situation and the allocation of adequate resources, budgetary and institutional, to make this happen.

So called "world class" cities, the kind that Indian cities aspire to be, have not only focused on basic pedestrian safety, but are investing heavily in making streets vibrant and attractive – often this means curbing vehicles and creating more spaces not just for the non-motorized commuters (pedestrians and cyclists) but also great public spaces. The recent developments in New York City, where parts of the famous Broadway have been re-claimed for people is a classic example of what cities are doing to remain "world class".

Columbus Circle in New York City – Before and After space was reclaimed from vehicular traffic

We urge the Pune Municipal Corporation to revitalize the currently defunct NMT Cell and initiate a process to create and adopt street design guidelines that will help make the streets safe and pleasant and the city more livable. And we hope to see an improvement in the walkability score for the city a year from now.

Introduction

Walkability is a measure of how friendly an area is to walking. A community fortunate enough to contain walkable urbanity is a community to cherish, celebrate and protect. A walkable place is lively, physically and financially healthy, affordable, sustainable, sociable and safe. In a nutshell, an attractive community is walkable and an unwalkable community is unpleasant.

"An urban environment that encourages and facilitates walking supports community health, vitality and safety. It will increase use of public transit; decrease car dependence; increase pedestrians; lead to cleaner air; green public space; and support green tourism. Such an environment creates opportunities for the informal social interaction that is one of the main attributes of a vibrant, liveable city."[1]

Walking is the most fundamental human activity that provides a connection between activities and other transportation modes. Environments that are conducive for walking are conducive for people. Walking and walkability provide a variety of benefits, including basic mobility, consumer cost savings (reduced external costs), efficient land use, community livability, improved fitness and public health, economic development, and support for equity objectives. In number of instances, the best way to improve urban transport is to improve walking and cycling, thereby increasing the use of non-motorized transport, so that it can restrict automobile travel. However, current transportation planning practices unfortunately tend to undervalue walking.

According to the objectives of India's NUTP (National Urban Transport Policy)[2], the city should ensure safe, affordable, quick, comfortable, reliable and sustainable access to jobs, education, recreation and such other needs for the growing number of residents within our cities. Some of the key features of NUTP focusing on pedestrians are:

- Bringing about more equitable allocation of road space with people, rather than vehicles, as its main focus
- Encourage greater use of public transport and non-motorised modes by offering Central financial assistance for this purpose.
- Safety concerns of cyclists and pedestrians have to be addressed by encouraging the construction of segregated rights of way for bicycles and pedestrians.

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1   The City of Toronto shows a strong commitment to walking. See Toronto Pedestrian Charter (2002): http://www.toronto.ca/transportation/walking/pdf/charter.pdf (retrieved on 09.11.2010)

2   National Urban Transport Policy, Ministry of Urban Development, Government of India (2006): http://www.urbanindia.nic.in/policies/TransportPolicy.pdf (retrieved on 09.11.2010)

Scope of study and Methodology

This walkability survey was undertaken to assess the pedestrian friendliness of the city of Pune in Maharashtra, India. The study was conducted by Parisar[3] on behalf of Clean Air Initiative[4] (CAI) and was done using a toolkit[5] provided by CAI which was adapted from the Global Walkability Index toolkit developed for the World Bank.
The walkability survey consists of three components, namely a Field Walkability Survey, a Pedestrian Interview Survey, and a Government/Stakeholder Survey.

- Field Walkability survey: This consists of a physical assessment of the footpaths in the city. Annexure II provides the field walkability survey form.

- Pedestrian Interview Survey: It consists of interviewing people to find out their opinion on the pedestrian facilities and their recommendations if any. All the interviews were done during peak hours. The pedestrian interview survey form is given in annexure III.

- Stakeholder Survey: This survey aims at capturing the responses of government officials regarding the pedestrian facilities in the city. The stakeholder survey form is given in annexure IV.

- In addition, the study also included a pedestrian count as follows. For every road stretch surveyed, two points were chosen. The total number of pedestrians crossing each such point was counted for a period of 15 minutes during peak hours.

The Pune Urban Agglomeration (which includes the city of Pimpri-Chinchwad) is the eighth largest in India[6] with an estimated population of over 5 million residents. Like many developing cities, walking and cycling occupy a large modal share – to the tune of 33%[7] – of trips in Pune. In many parts of Pune it is observed that there are no sidewalks[8] or other pedestrian facilities. This results in pedestrians having to share road space with vehicles threatening their safety and thus discouraging pedestrian activities.

The present survey is an attempt to objectively measure the walkability of the city using the toolkit described above. The "walkability index" computed from this study can help raise awareness and also assist policy makers to better understand the situation and improve walking in their cities.

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3   For further information about Pune based NGO Parisar please visit: http://www.parisar.org

4   The mission of the Clean Air Initiative for Asian Cities (CAI-Asia) is to promote better air quality and livable cities by translating knowledge to policies and actions that reduce air pollution and greenhouse gas emissions from transport, energy and other sectors. For further information please go to: http://www.cleanairinitiative.org

5   CAI provides various helpful survey documents: http://cleanairinitiative.org/portal/whatwedo/projects/Walkability (retrieved on 09.11.2010)

6   Information about population taken from: http://www.censusindia.gov.in/Census_Data_2001/Census_Data_Online/Population/List_of_Million_Plus_Cities.aspx (retrieved on 09.11.2010)

7   Pune Municipality Corporation (2008): Comprehensive Mobility Plan for Pune City, Sec 4.13. Download at: http://www.punecorporation.org/pmcwebn/Mobility%20Plan.aspx (retrieved on 09.11.2010)

8   Ibid. Appendix 4.2

Area of study

The walkability study was conducted in four types of areas:

1. **Commercial areas:** This included stretches on Lakshmi road, Tulsibag road, Mahatma Gandhi road, Jangli Maharaj road and University road (E-square to Pune Central mall), and covered approximately 6.3 km (on one side of the road). These covered the traditional commercial districts of 'old Pune' as well as the more modern ones that have developed recently. This also includes stretches from Pimpri, which accounts for about 1.8 km on one side of the road.

2. **Public transport terminals:** The areas covered under this were Shivajinagar bus stand, Pune Municipal Corporation bus stand, Pune railway station, Swargate bus stand and Pimpri railway station – approximately 6.6 km. This combination of terminals covered important bus stations and railway stations both for commuters within the city as well as inter-city travel.

3. **Educational area s:** Pune University road, Fergusson College road, parts of the core city area covering Ramanbaugh School, Nootan Marathi School etc., and Nal stop area covering Abhinav Vidyalaya (school) – approximately 6.25 km – were covered in this, thus covering many schools and colleges in the city.

4. **Residential area:** Patil Estate near Sangamwadi Bridge, Paud road, Sinhagad road, Dattawadi, Koregaon Park and Pimpri areas were covered under this category, totalling approximately 7.5 km. This covered all categories of residential areas; low income, middle income and upper income groups.

All together, the survey covered around 28.65 km in Pune and Pimpri-Chinchwad. Of this, 3.15 km of pedestrian facilities were surveyed in Pimpri-Chinchwad, covering mainly residential areas and public transport terminals[9]. See annexure I for detailed maps of the areas studied and a description of the areas. Section 3 gives the findings of the walkability survey.

Pedestrian and stakeholder interviews

Pedestrians were interviewed for their responses regarding pedestrian facilities and the improvements they would like to see in them. The interviews were conducted along all the stretches that were surveyed. In all, 309 pedestrians were interviewed. The results of the pedestrian interviews are given in Section 4.

The study also included interviews with key city officials responsible for pedestrian infrastructure and safety. For this, we interviewed Mr. Srinivas Bonala (Additional City Engineer, Transport), Mr. Vivek Kharwadkar (Additional City Engineer, Roads) and Mr. Manoj Patil (Deputy Commissioner of Police, Traffic). The views of the stakeholders are summarized in Section 5.

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9   The survey in Pimpri-Chinchwad was done at the request of ITDP and CAI to help them in their planning for BRT services in Pimpri-Chinchwad

Field walkability survey

The quality of the pedestrian infrastructure in Pune covers a wide range: from missing footpaths on both sides of a street to comfortable, attractive, safe and unobstructed pedestrian walkways. We present the most important observations below. These include the observations for Pune and the short stretch done in Pimpri-Chinchwad. Graphs summarizing the walkability survey are provided after the descriptions.

Walking Path Modal Conflict

This section describes the conflict of pedestrians with other modes of transport, such as motorists or cyclists. Modal conflict is a serious matter, particularly when there are no footpaths along busy streets or when due to congested roads vehicles use the footpath, because pedestrians have to then jostle among fast moving vehicles. It is astounding that when motor vehicles do use footpaths, it is pedestrians who are expected to give way to the vehicles and are honked at if they do otherwise.

Cyclists rarely encroach on pedestrian spaces, as footpaths are not conducive to comfortable cycling. Conversely, on streets equipped with cycle tracks pedestrians often walk on the cycle track due to inadequate or poorly maintained footpaths.

In residential areas with minor side streets, some of them having dead ends, the modal conflict is relatively small. Traffic flow was very little and consisted only of local residential traffic. As there was no fast moving traffic in some cases walkways were not required. People were able to walk wherever they wanted to, sharing the road space only with few vehicles.

In the survey, it was found that the areas most in need of safe pedestrian infrastructure faced the most conflict since residential and public transport terminal areas scored only 56 (out of 100), while educational areas scored 66 and commercial areas scored the best with 71. The average score for Pune (including Pimpri-Chinchwad) was 62.

Availability of footpaths

Pune still has a woeful inadequacy of good, walkable footpaths as our survey found that this index only achieved a score of 52 out of 100. Once again, residential areas scored worst with a score of only 44, while public transport terminals scored 49, educational areas scored 56 and commercial areas again had the best score with 59. Even if footpaths existed, these were rarely continuous and comfortable to use[10].

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10   S. S. Wibowo and P. Olszewski took a very interesting and precise approach. In their work they rated walking not just by time or distance, but also by the real effort – something they expressed in 'equivalent walking distance'. Therefore their measurement took characteristics of walking route into account, such as number of road crossings, ascending steps and conflict points. For further information see: S.S.WIBOWO & P.OLSZEWSKI: Modeling walking accessibility to public transport terminals: Case study of Singapore Mass Rapid download the article at: http://www.easts.info/on-line journal_06/147.pdf (retrieved on 10.11.2010)

Fig. 1:
An example of a nice footpath in Pune - to be continued...

Fig. 2:
Boulevard of broken dreams – footpath situation at Fergusson College Road

But the availability of footpaths is just one part of the story. Conditions of the footpath, as well as its maintenance and cleanliness are other important factors that determine the walkability. Judging by the behavior of many pedestrians, the footpaths in the city are generally not walking-friendly. Thus, people often prefer to walk directly on the street or on the cycle track (if there is one). This results in their being exposed to danger while walking on the road, a choice inadvertently made rather than zigzagging around obstructions, parked vehicles, open manholes, loose electricity cables, hawkers and so on.

Fig. 3:
Pedestrians say: "I too need a space to walk!"

Fig. 4:
All the major parts of the footpath are obstructed by bus stands and electric boxes

Koregaon Park, an upper class residential area and popular tourist destination in Pune, was disappointing in its quality of footpaths. Instead of nicely designed modern pedestrian facilities, there was a lack of footpaths plus maintenance and cleanliness in that area, and it was even a little worse than some middle class areas.

Availability of crossings and crossing safety

During the survey in all parts of Pune, almost no intersection was equipped with a working pedestrian traffic signal[11]. People wanting to cross have to observe the traffic flow and try to slip through at a lucky moment. Even at signalized crossings people had to look out for vehicles

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11   A study conducted a year ago by NGO Save Pune Traffic Movement revealed that of the 110 junctions surveyed 61% had no pedestrian aspects working as compared to only 10% that had no vehicular aspects working. For more information please go to: http://www.savepunetraffic.org

making a left turn or a u-turn. Many wide streets are missing pedestrian refuges, thus making crossing time-consuming and dangerous[12].

The function of zebra crossings is mostly unknown to the vehicle drivers and probably also to the pedestrians. The idea of a car stopping for a pedestrian to let him pass is far from reality in Pune. Zebra crossings are often located poorly or the paint has almost been washed away. The traffic police have taken steps to correct this (even though strictly this is the job of the Municipal Corporation, rather than the Police)[13]. Luckily the traffic speed on most of the roads is not high due to bad road conditions, congestion etc. This allows people who want to try to cross the road at an uncontrolled crossing to somehow get in eye contact with the drivers and signal their intention to cross. On major arterial roads or newly converted one-way roads, this becomes difficult and crossing is only possible after enough pedestrians accumulate to become 'a visible mass'. In commercial areas a lot of road space has been converted to parking space. For example, a nearly endless row of parked motorcycles at Laxmi road hinder people from crossing a street easily.

Parisar

Fig. 5:
Zebras do not make crossing a road easier as vehicles rarely yield to pedestrians

It is important to point out, that in a pedestrian friendly city the preferred crossing must be at grade. Skywalks (or subways) cannot be a substitute for badly maintained footpaths and a lack of safe pedestrian crossings. See also graph 7 in section 4.2 in this context.

The average score for Pune on this count was 59; with commercial areas again scoring best with 63 and public transport terminals the worst with 55. When it comes to crossing at grade, the score was, not surprisingly, even lower at 55 with all the types of areas scoring roughly the same.

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12 A pedestrian survey conducted 2009 at intersections along the proposed BRT lanes in Pune revealed this. The level of pedestrian-vehicular conflict exceeded the critical values at most of the locations, thus indicating whether realignment for facilitation of pedestrian and vehicular movement or a traffic signal with exclusive pedestrian phase. See: M. MACDONALD: Detailed Planning & Design of the BRT Lane & Associated Facilities, Pune City, 2009

13 Traffic police to put zebra crossings at the right place, Indian Express 26 Sep 2010: http://www.indianexpress.com/news/traffic-police-to-put-zebra-crossings-at-the-right-place/688173/0 (retrieved on 09.11.2010)

Motorist Behavior

There is little respect for pedestrians among other traffic participants. In spite of being the most vulnerable in the urban traffic system, right of way has been rarely experienced by pedestrians in Pune. Instead pedestrians are seen as obstacles and greeted with honking.

At places where it gives them a time or a speed advantage motorists tend to break traffic rules. Along one-way roads or roads with dividers motorists drive the wrong way or use the footpath for a short cut. Illegal u-turns and left turns at red lights add to pedestrian woes. Pedestrians need to have their eyes virtually everywhere!

Increased policing at major junctions has helped in slightly better enforcement of traffic rules. Further, we recommend additional awareness building among police staff, as it would create a wider understanding of the importance of non-motorized traffic, and it would help them look at traffic flow not just from the perspective of vehicles but also care for safer pedestrian traffic.

The average score for Pune on this index was again a lowly 56, with residential areas scoring the best (60) and educational areas the worst (53).

Amenities

Pedestrian amenities are features designed to encourage and facilitate travel by foot, such as benches, waste bins, information boards, art in public space and so on. They define public spaces and create walking-friendly environments, thus encouraging people to walk. It goes without saying that these amenities should be placed in a way that they do not obstruct the walkway. If pedestrian amenities are not maintained and looked after, they can have a counterproductive effect on walking – the best (or worst) examples probably being disregarded public urinals.

Overall there are few places equipped with amenities in Pune. Benches, especially for the elder people taking a rest and public drinking water facilities are widely used by the people where available. Impressive big old trees provide shade in the midday heat in a few places. Information signs, dating back from 2008 when Pune held the Commonwealth Youth Games, are sometimes poorly placed and block the footpath. To summarize, there is enough scope for improvements, though lack of amenities is not among the most urgent problems pedestrians in Pune are facing.

As expected, this index scores rather poorly with an average score of only 39 (best score being educational areas with 46 and lowest score being residential areas with 33).

Parisar

Fig. 6:
Street vendors are a substantial and desired part of Indian street life. They need designated hawker zones, so that they don't occupy the pedestrian walking zone

Disability Infrastructure

In spite of The Persons with Disabilities Act, 1995[14] the practice of constructing footpaths accessible by handicapped people is not widespread in the city. The construction of disability infrastructure was often carried out badly and placed poorly. Most of the footpath is not convenient for walking, leave alone for the use of disabled people. Often there is no alternative to using the street. A disabled friendly footpath has the potential to benefit all the other pedestrians too. A crossing with kerb ramps and wider footpaths are much more convenient for walking. Ramps help elder people as well as people wheeling a pram or a handcart.

Parisar

Fig. 7:
Unacceptable road conditions especially for handicapped person

The difficulty is to have pedestrian infrastructure that gives an unobstructed way for pedestrians but at the same time protects it from motorized traffic. For this task, infrastructure design must be chosen wisely and their use / misuse should be tested.

Not surprisingly, Pune scored only 38 on this index, with residential areas scoring only 26 and public transport terminal areas scoring 47.

Obstructions

All kind of obstructions can be found while walking in Pune. Most of them are not of permanent nature, such as parked vehicles; vendor stalls etc. and hence can be removed with little political will. To make this a longer lasting success, compliance with the parking / street hawking rules has to be enforced. As the footpath is seldom wide enough to walk around the obstacles, the pedestrians have to step onto the street or the cycle track and find themselves exposed to dangerous situations.

It is commendable, that while constructing the footpath many trees have been left untouched. Protecting the pedestrians in the summer heat and during heavy rain showers in monsoon, the trees play an important role for climatic comfort. Sadly the footpath is usually not widened at such places. This narrows the footpaths, sometimes blocking it totally and people again have to step onto the road.

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14   For further information please go to: http://socialjustice.nic.in/policiesacts3.php (retrieved on 09.11.2010)

Parisar

Fig. 8:
With a little more enforcement on the part of local authorities, many obstructions could be quickly removed

Bus shelters are another main concern. They function as sun and rain protection for people waiting for their bus to come. But placed on a narrow footpath it hinders pedestrians.

Construction material and rubble is another problem. During construction on or close to the footpath, the footpath should be closed for safety reasons and an alternate walkway should be given to pedestrians as long as the construction is on[15]. However, today people are forced to walk on the street. Besides, construction rubble is often left on the footpath even after the construction work is completed. Therefore, it is advisable to send inspection teams to construction sites during and after construction to ensure that footpaths are cleared of rubble once the work is completed and they are restored to a walkable state. An optimal footpath allows unobstructed walking and gives additional space to trees, bus shelters, street furniture and to legal street vendors and planned street markets.

Pune's average score on this count was 50 with residential areas scoring as low as 36 and commercial areas scoring 59.
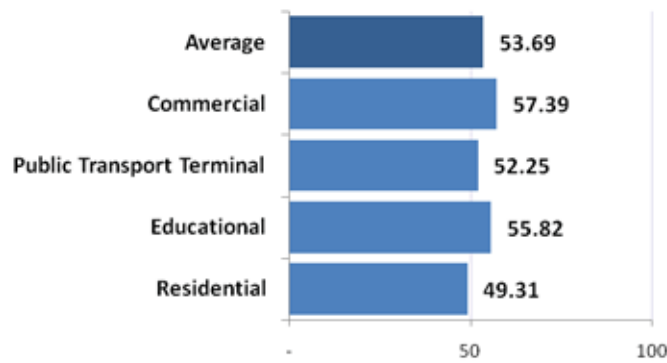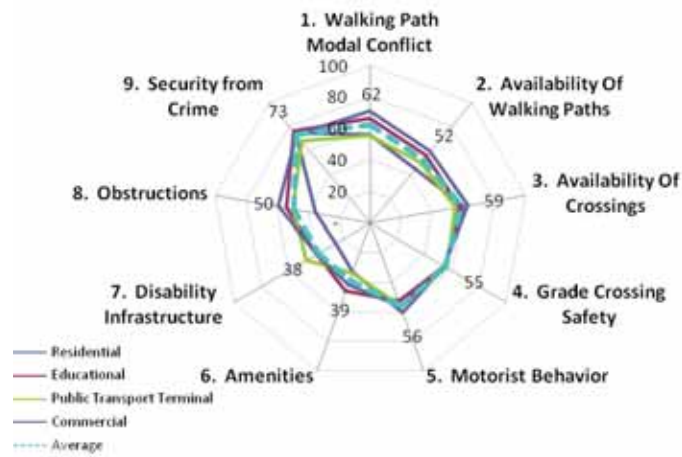
Security from crime

Security aspects depend on the time of the visit. During morning and evening peak hours most of the surveyed locations were crowded and appear to be safe. A few places, such as Pune station, are crowded even at nighttime and hence safe. Compared to many cities around the world, Pune is a safe place to visit and street crime is not a major issue, though sadly it is not a safe place for walking. So, Pune scores about 73 on this score with roughly equal scores for all types of areas.

Summary of pedestrian field survey

Over all, Pune's walkability index was about 54 on a maximum of 100, with residential areas scoring the worst at 49, educational areas scoring 56, public transport terminal areas scoring 52 and commercial areas scoring the best at 57. These results are summarized in the following two graphs.

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15   Indian Roads Congress, Ministry of Road Transport & Highways (2001): Guidelines on Safety in Road Construction Zones, IRC: SP: 55:2001

1. Walking Path Modal Conflict
2. Availability Of Walking Paths
3. Availability Of Crossings
4. Grade Crossing Safety
5. Motorist Behavior
6. Amenities
7. Disability Infrastructure
8. Obstructions
9. Security from Crime

— Residential
— Educational
— Public Transport Terminal
— Commercial
······ Average

Average	53.69
Commercial	57.39
Public Transport Terminal	52.25
Educational	55.82
Residential	49.31

The following graph shows pedestrian counts in the various area types as well as the length of footpaths surveyed in these areas. The length surveyed shown in the graph corresponds to both sides of the street and hence is about double the numbers mentioned in Section 2.1. The pedestrian count for an area type gives the total number of pedestrians crossing the person taking counts for a given stretch in that area (see Section 2). This graph clearly shows that the number of pedestrians is quite high (over 1000) in all the areas. It is the highest in commercial areas while residential areas have the least.
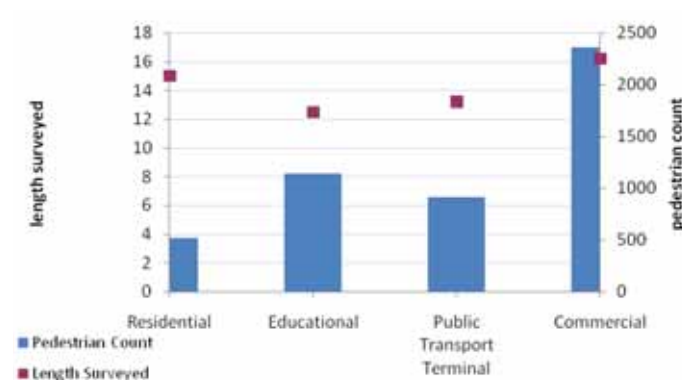
Pedestrian interviews

These interviews were conducted to understand the problems faced by pedestrians in Pune and to know their preferences and requirements. In all, 309 pedestrians were interviewed and their responses are presented below[16].

Travel behaviour

The first question was aimed at understanding the travel behaviour of people, to determine how much time they spent on each mode and the average travel time in one direction for a major trip (say office, school etc.). To further get to know if people are captive or choice riders, they were also asked about their vehicle ownership.
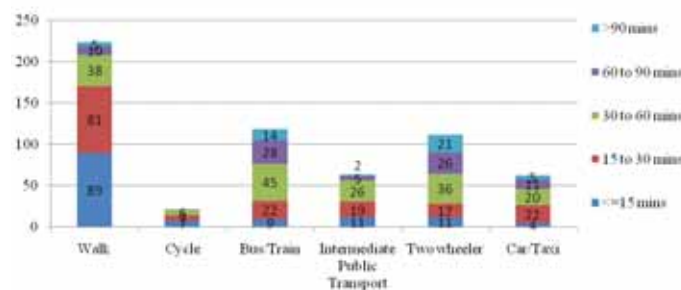
Graph 1: Average travel time spent on each mode every day

From graph 1, we see that walking is one of the most preferred modes of travelling, particularly for distances less than 30 minutes. Out of total number of people interviewed, 170 walked less than thirty minutes for their daily work where as only around 54 people use their two-wheelers or cars for this time. Most of the people interviewed travelled less than 30 minutes, with the large number of people (114) travelled for 15 to 30 minutes, as is clear from graph 2.

It can be seen from graph 3 (distance travelled) that the largest number of people interviewed (88) travelled between 6 and 9 km for work, shopping etc., while 75 people travelled 3-6 km. So, in general average travelled distance for an individual is around 6 km[17].

To understand whether many pedestrians where captive users of the mode or users by choice, we tried to find out the vehicle ownership pattern in the city (graph 4) and realised that a large number (188) of the surveyed sample owns two-wheelers. 128 people surveyed owned a car[18] while 103 owned a bicycle.

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16   Some people did not respond to some of the questions. The total number of responses shown in the graphs for such questions will be less than 309. In some cases, the total number of respondents will be more than 309, since respondents had the option to choose more than one choice

17   This compares well with the Comprehensive Mobility Plan which indicates that 80% of all trips are less than 6 km (see also footnotes 7 and 8)
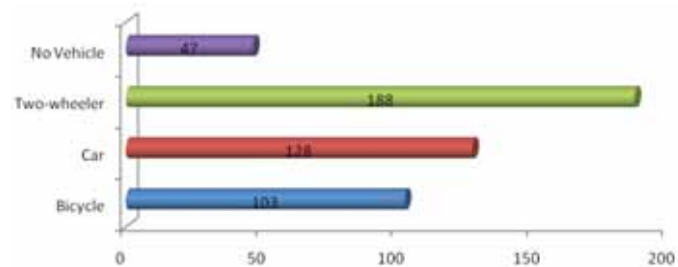
18   The vehicle ownership numbers in the survey may not be indicative of the ownership patterns of the population of Pune. Please note that respondents could tick more than option for this question
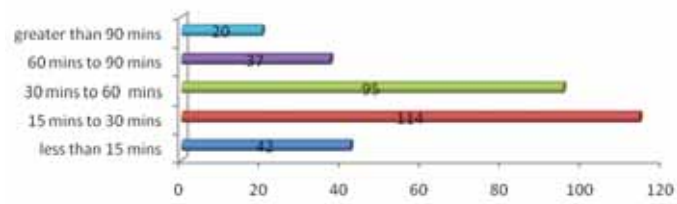
**Graph 2:** Average travel time (one way) to main destination
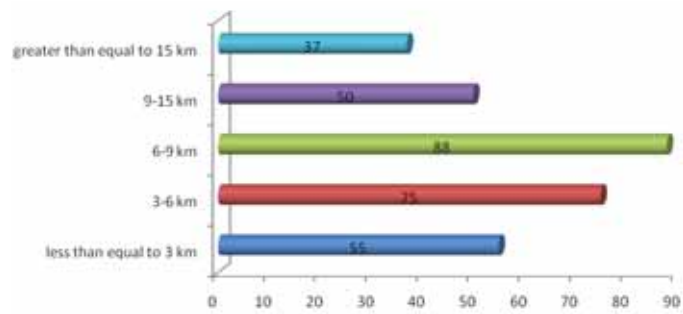
Graph 3: Average travel distance (one way) to main destination

Graph 4: What type of vehicle(s) does your family own?

Pedestrian preferences

To better know pedestrian needs and desires, the interview also sought their opinions on current pedestrian facilities and improvements to them. Here we also tried to determine if they would migrate to other modes if improvements are not made to pedestrian facilities.
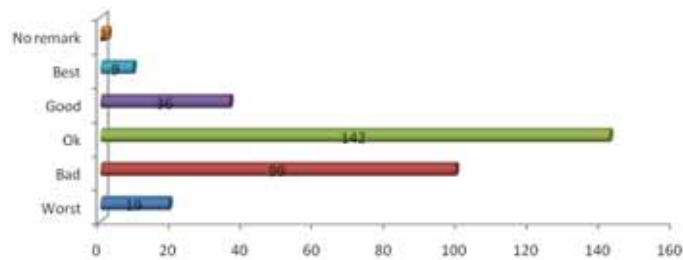

Graph 5: How do you rate Pedestrian facilities in the city

People in the city were not happy about the condition of the pedestrian facility in the city (graph 5). 142 people said that the facilities are just okay while 99 people felt they were bad and 19 felt they were the worst. In other words, 85% of the respondents thought footpaths in Pune were either just okay or bad. People complained about having no footpath or even if it exists, being badly maintained. Footpaths are often occupied by parked vehicles and are dirty, narrow and unlevelled. Citizens complained that pedestrians' safety is always compromised on the traffic laden roads. People said that '*neither the footpath nor the road is available for us. We have no alternative but to walk on the vehicle lane, which endangers our lives*'[19].


Parisar

Fig. 9:
High level of pedestrian-vehicular conflict due to missing or unusable footpaths

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19   As forecasted in M. MACDONALD (2009): Design Report for Detailed Planning & Design of the BRT Lane & Associated Facilities for the Identified BRTS Network in Pune City, Pune: "While planning, the convenience of pedestrians should be a paramount consideration. Otherwise, the facilities provided will not be fully used."
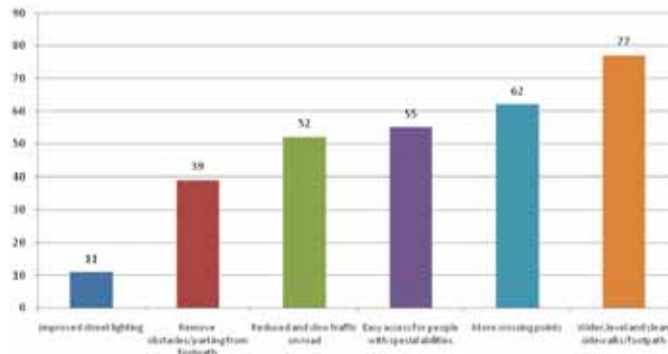
Graph 6: Pedestrian facility improvement rank

The respondents were given a choice of improvements to make to pedestrian facilities in the city and asked to rank them from 1 (most desired) to 5 (least desired). Graph 6 presents the respondents' choices for the most desired improvements. The highest priority for improvement demanded was wider, levelled and clean footpaths followed by more points to cross the road, indicating that current footpaths are not wide, level or clean enough and current crossing facilities are either non-existent or too dangerous. Improved street lighting came lowest in the most preferred priority list.
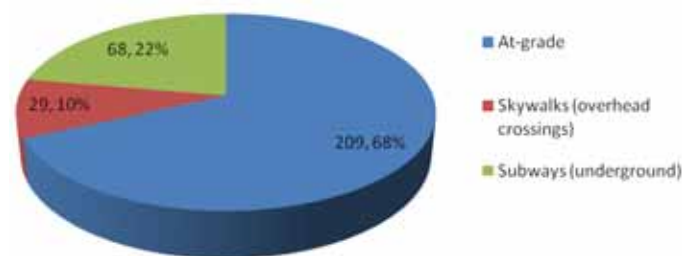
Graph 7: If you have to cross the road, what do you prefer?

Respondents were also asked for their preferred mode of crossing the road. An overwhelming 209 people out of 309 (68%) preferred crossing at-grade, that is without either having to go up or down but to cross the road on the surface and claiming equal rights on the road as the other vehicles (graph 7). They felt that it is always better to cross the road rather than climb the stairs or going underground to reach the other side of the road. Citizens complained that vehicles were usually given preference. People interviewed on Jangli Maharaj and Fergusson College roads said that pedestrians were not taken into consideration while planning the one way system recently introduced there – if they would have there would have been more crossing points and better footpaths for them. Given such a low preference for skywalks and overhead crossings, it is strange that the city plans to build long skywalks (each well over a km long) all the way from Shivajinagar station to Shaniwarwada and from Mandai to Swargate. We recommend that the city must reconsider these plans and put in more effort to improve at-grade pedestrian facilities.
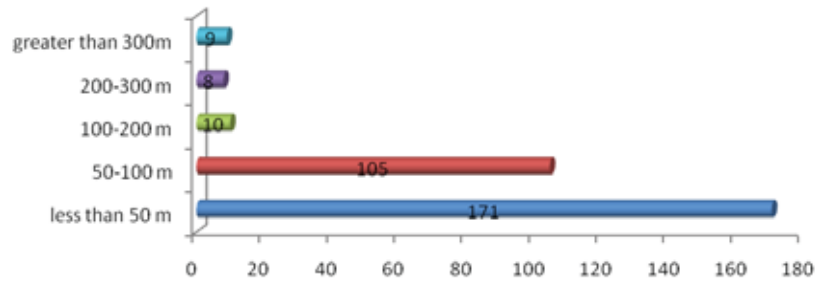
**Graph 8:** Willingness to walk to cross the street

More than 170 people insisted on walking lesser than 50 metres to cross a road while over 100 people were also willing to walk for around 50 to 100 metres to access pedestrian crossings (Graph 8), but the numbers fall very sharply after that indicating that road crossings must be available no more than 200 m apart (100 m in either direction). Many of the arterial roads in the city currently have high barricades or dividers along the median for long distances making it difficult for citizens to cross the road conveniently.

When asked if they would continue to walk if facilities do not improve, the largest number (80) of people said they will continue to walk even then, indicating that they were very likely to be citizens who were captive users who cannot afford other modes of transport. They pleaded that at some point of time we all are pedestrians, and we all need good facilities for pedestrian infrastructure. They even said that while shopping or going to nearby stores, we can't take our own personal vehicles, so urban areas should be walkable and destinations easily accessible.

Regarding air pollution, citizens felt that they were most exposed to air pollution when they walked (46%) as shown in graph 10.
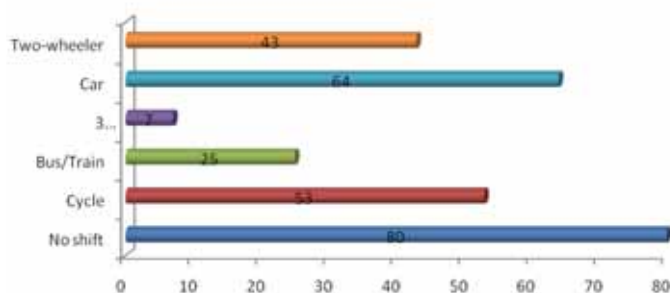

**Graph 9:** Shifting out of walking as a mode
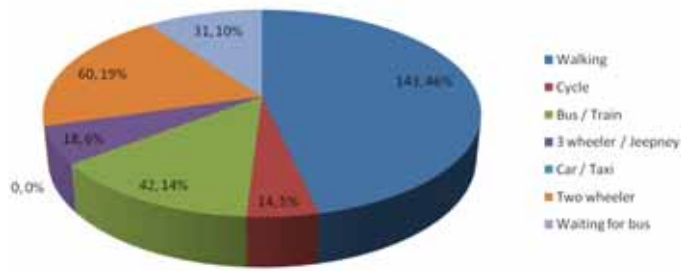
Graph 10: Exposure to air pollution

Socio-Economic Profile

A brief socio-economic profile of the respondents is given below to get a better understanding of the survey (graphs 11, 12 and 13). We interviewed around 165 (53%) males and 145 (47%) females for the survey. A large number of people were interviewed in the age group of 15 to 30 (45%) and those in the age group of 30-50 years made up 35%. A large number of citizens interviewed had an income of more than Rs. 25000 / month (110 out of 277 – some did not provide this information) and 68 people had an average income in the range of Rs. 10000 to Rs. 15000 / month.
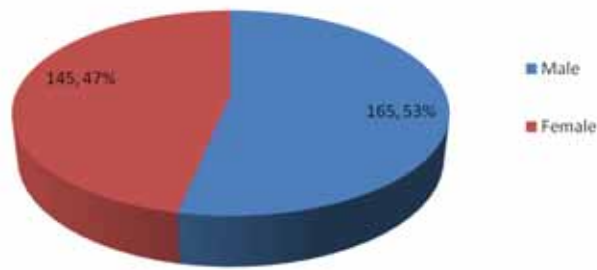
Graph 11: Sex
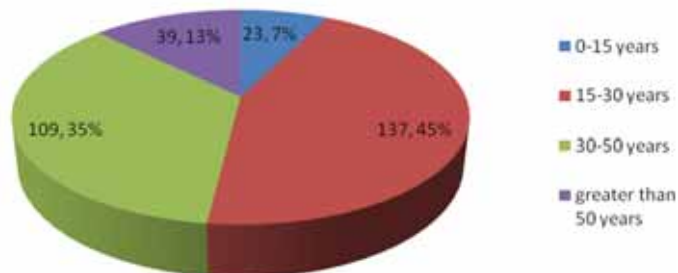
Graph 12: Age
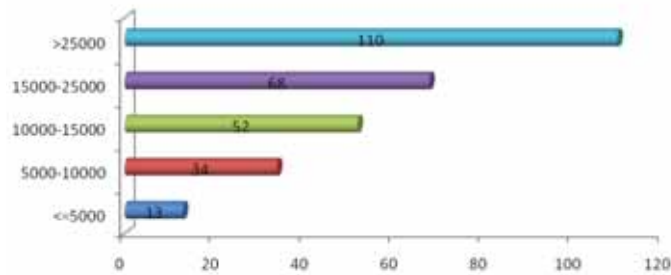
Graph 13: Household Income

Ole Haeger

Fig. 10:
Walking is often the only transport mode poor people can afford

Stakeholder interviews

The ward offices, traffic planning department, road department, JnNURM (Jawaharlal Nehru National Urban Renewal Mission) cell and traffic police are the various agencies responsible for various facets of building, improving and maintaining pedestrian infrastructure and ensuring pedestrian safety and convenience. For pedestrian related design guidelines, the norms of IRC (Indian road congress guidelines) are usually followed.

We interviewed three key stakeholders in the city's transportation infrastructure – the officers in the Municipal Corporation responsible for transport planning and implementation and the chief of the traffic police in the city. All the stakeholders interviewed commented that the pedestrian facility in the city can be better and the city is not providing requisite pedestrian facilities. They felt that most of the newly developed roads in Pune have footpaths on both sides and are reasonably pedestrian friendly, for example Senapati Bapat road, University road, Satara road etc. All the 30 m wide roads already have footpaths on both the sides, while 120 km of road length has both cycle track and footpath.

They said that the pedestrian trip mode share is around 30% of the total trips in the city, while the share of pedestrian fatalities is around 37% of the total road fatalities in the city over the last one year[20]. They all cited the lack of a holistic approach, lack of prioritization in the planning

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20   Information obtained from the online accident reporting system of Pune Police at http://www.indictranstech.com/
ars (retrieved on 09.11.2010)

by concerned agencies, obstructions dues to trees, service lanes etc. with lot of political pressure as some of the biggest barriers to improving pedestrian facilities. The stakeholders felt that education and awareness about the role and importance of pedestrians is an urgent requirement as many leaders and key persons also do not understand this.

Conclusions and recommendations

In general, the pedestrian infrastructure in Pune leaves much to be desired. Of particular concern are issues of non-existent or unreasonably narrow footpaths, obstructions on footpaths (due to various reasons such as junction boxes, garbage containers, parked vehicles, vendor stalls, broken tiles etc.), unsafe crossings for pedestrians and lack of sufficient respect for pedestrians. Therefore, the city only scores an average of 54 out of 100 as its walkability score.

A major reason for inadequate pedestrian infrastructure and respect is that the city continues to treat the 'smooth passage' of motor vehicles as its priority rather than providing for safe and pleasant walking and crossing conditions. This is in spite of the fact that about 35% of trips are walking trips and the National Urban Transport Policy emphasizes that pedestrians must be encouraged and given adequate infrastructure and treated with the respect they are due.

Pune made a good beginning towards this by creating a non-motorized transport (NMT) cell a couple of years ago. Unfortunately, since about mid-2009, this cell has largely become defunct and is not actively working to protect and promote the interests of pedestrians.
In order to improve pedestrian facilities and follow the NUTP in letter and spirit, we recommend the following:

1. Revitalizing and strengthening the NMT cell and empower it to act on behalf of pedestrians and cyclists.

2. Treating pedestrians and their safety with the same, if not greater, importance as given to motorized vehicles.

3. Adopting travel demand measures (such as appropriately priced parking) to free some road space and distribute this among various modes, particularly pedestrians and other vulnerable road users such as cyclists.

4. Developing well-defined norms for pedestrian infrastructure and amenities – including hawkers and vendors – and implementing these norms all across the city.

5. Amending development control rules and land use planning norms to ensure that walkable, mixed use neighborhoods with plenty of public open space is available to citizens.

6. Developing and adopting detailed street design guidelines (including handicapped accessibility) so that footpath design elements are standardized. How to treat various street elements (such as trees) so that pedestrian comfort is not compromised can be illustrated. Contractors executing works should be instructed to follow these guidelines[21],[22].

We are confident that if such norms are followed, Pune will become a city that is not only pleasant to walk in but also live in. But if they are not followed and the current direction is continued, then Pune will no longer be an attractive destination for people and therefore, for investment and industry as well.

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Fig. 11, 12:
Pune at a crossroads: Will it be a city for people or for cars and motorcycles?

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21 Delhi has adopted such guidelines prepared by UTTIPEC: http://www.uttipec.nic.in/PedestrianGuidelines-30Nov09-UTTPEC-DDA.pdf (retrieved on 09.11.2010)

22 Pune based NGO Pedestrians FIRST made a significant contribution in developing a guide that can be of use for upgradation and maintenance of existing pedestrian facilities as well as construction of new facilities. Pedestrians FIRST (2009): Guide for Correct Practices for Construction & Maintenance of Pedestrian Facilities, Pune

The areas surveyed

The following map[23] shows the different areas that were surveyed, colour-coded by their type.

Commercial areas

Prime commercial hubs were selected for the survey.

Core city area: Lakshmi Road, Tulsibaug road and Mandai were the areas covered in Pune city. People from all over the city come to *Lakshmi Road* to buy garments and jewellery. This road is lined with shops on both sides.

Tulsibaug road is situated off Lakshmi road. It is one of the busiest streets for shopping for all kinds of items from clothes to home décor items. It has the flavour of an old Indian bazaar and in many ways is close to being a kind of pedestrian zone though it is not officially so.

Mahatma Phule Mandai is famous for fresh vegetables, spices, fruits and articles for the festivals. It also looks more like a pedestrian zone as most people walk around to buy articles of their choice.

MG road (Mahatma Gandhi road) is famous for its urban shopping. It has old bakery shops and nice line of restaurants and eating joints and shopping malls. For a while MG road was also a walking plaza on weekends, but this has recently been discontinued.

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23   The map was created using Google Maps.

Jangli Maharaj road (JM road) is one of the better maintained roads in Pune. A large public garden called Sambhaji Park occupies a large section on one side of the road. Famous for its many restaurants and shops, JM road is one of the busiest places in Pune.

University road (E-square multiplex to Pune central mall) is one of the important roads in Pune and has a mixed land use pattern and houses commercial places and educational centres. The stretch undertaken for survey is a commercial stretch with multiplexes and shopping malls.

Pimpri: The entire stretch covered was on old Bombay-Pune highway, covering stretches beside Jewel of Pimpri, Citrus Hotel, Ginger Hotel etc. Also stretches covered in Pimpri gaon, where the commercial hub is on ground floor and sometimes first floor and above it is residential.

Public transport terminals

The main public transport terminals in the city have been chosen for the study: Shivajinagar bus stand, PMC bus stand, Pune railway station, Swargate bus stand and Pimpri railway station were the selected sites.

Shivajinagar bus terminus: This important area of the city has the district court, Pune Municipal Corporation, College of Engineering, Agricultural College, Shivaji preparatory military school etc. located close by. The bus stand at Shivajinagar connects the city to destinations in the state of Maharashtra. Shivajinagar Railway Station is an important station for the suburban railway traffic of Pune. Shivajinagar is also well connected to the city by local (PMPML) buses.

Swargate bus terminus: Swargate serves as a major bus stand for Pune. It serves as BRTS hub for the Katraj-Swargate-Hadapsar corridor. It is well connected to the city and nearby villages by PMPML buses and is also a terminus for out-station buses arriving from (or heading to) cities to the south of Pune. The junction at Swargate (Jedhe chowk) is believed to be the busiest in Pune.

Pune railway station and Pune station bus terminus: Pune railway station is an important point for travellers and tourists. It is the main centre of connectivity to other places all over India. Pune Station bus stand is one of the three major bus stands in city of Pune (along with Shivajinagar and Swargate). It links to large number of commercial, educational and residential places such as MG road, Koregaon Park, Shivajinagar, University road etc.

PMC bus stand: This is also one of the important bus stands in which is centrally located and connected by PMPML buses all over Pune.

Pimpri bus stand and railway station: Pimpri bus stand is a major bus depot which connects to a large number of cities in Maharashtra. Pimpri railway station is connected to Pune and Lonavla (towards Mumbai) through local trains.

Educational areas

University road (University of Pune): The road starts from the Shivajinagar State Transport Terminus Intersection at Shivajinagar and ends at the Pune University. Apart from the University of Pune, some schools and colleges are also located nearby.

Fergusson college road: The road gets its name from Fergusson College, an educational institute established in 1885. The traffic is chaotic and undisciplined on weekends and on peak hours on week days. The stretch we covered for the survey covered, includes Garware College, Fergusson College and Marathawada College.

Core city area (Raman baugh school, Ahiliya Devi Vidyalaya, Nootan Marathi school etc.): The Core city area has a large number of schools such as Raman baugh school, Ahilya Devi Vidyalaya etc. These are some of the best schools in Pune and famous for imparting good education. Since these are located in the heart of the city and close to commercial areas, it is very important to study the pedestrian facilities in and around the schools for the safety of school children.

Nal stop area (Abhinav Vidyalaya, Law college road): Karve road connects all the places on one side of the Mutha River and runs parallel to it. It is one of the longest & busiest roads within the city. It connects the Deccan area to the densely populated Kothrud and Karve Nagar areas. A few of Pune's prestigious colleges and schools, such as the Abasaheb Garware College, Abhinav Vidyalaya, and Dr. Kalmadi Shamrao High School, lie just off this road. Nal Stop and Karishma Society Chowk are some of its main junctions.

Residential areas

The residential areas to be surveyed were chosen so as to cover all the income groups. This was done in order to ensure that the pedestrian facilities in different kinds of pedestrian areas were covered.

Lower income group (Patil estate, Wakdewadi)

Patil Estate is a slum area located close to the Old Bombay-Pune highway at Wakadewadi on the bank of the Mutha river. The average income of the people was around three thousand to five thousand rupees per month and the main mode of travelling was on foot and sometimes public transport.

Middle income group (Paud road, Dattavadi, Sinhagad road, Dhayari Phata and Pimpri)

1. *Paud road*: An offshoot of Karve road, this road runs from Paud Phata to the village of Paud via Chandani Chowk. Main areas on this road include Paud phata, Mayur Colony, Rambaug Colony, Ideal Colony, Anand Nagar, Bhusari Colony etc.

2. *Dattavadi*: Located off Sinhagad road, this area has a number of middle income societies. It has a number of inner lanes which have two or three storey apartments and small separate bungalows.

3. *Sinhagad road and Dhyari phatta road*: Sinhagad road connects Swargate with Anandnagar, Vadgaon Phata, and Dhayari Phata. It was one of the most congested roads in Pune due to the exodus of large populations of the middle classes from the old Peth and Gaothan areas in Pune to newly constructed flats and apartments on the way to the Sinhagad Fort

4. *Pimpri*: Some residential areas close to Pimpri station were also surveyed.

Higher income group (Koregaon Park)

Koregaon Park is one of the more expensive and posh areas in Pune. It is located south of the Mula-Mutha river. The housing pattern in this area is usually separate bungalow type with open gardens and most residents here belong to the upper class of society.

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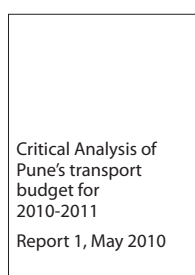Crossing facilities

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