Transportation Status Report by Citizens   Pune, 2012-13

Transportation Status Report by Citizens of Pune

2012-13

Compiled by "Save Pune Traffic Movement" and "Parisar"

December 2013.

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Preface

The deteriorating traffic situation of Pune has become a regular topic of conversation right from office pantries to seminars and meetings. Though opinions may vary about the reasons, it is generally agreed that the transportation is indeed deteriorating.

But what do we mean by "good transportation", after all? We generally call it good or bad depending on our personal experience. Once "personal experience" comes into picture, it becomes the same as the story of an elephant and six blind men. Everyone describes it by his or her experience, and that too in subjective terms like "so so, very bad". If that is how we describe it, how can we tell whether transportation is really becoming worse?

Instead, how about quantifying various attributes of transportation, annually? Then we could not only describe the exact status of transportation, but also identify in which aspect our city is improving or becoming worse. Not only that, we could identify exactly the aspects where we need improvement and how much, and design projects, allocate budgets accordingly.

Various official entities do have the information we need for this purpose, but it is scattered across various departments. And what they have is "information", not "evaluation". What we need is an annual "Report Card" that compiles and evaluates all this information. Such a report card would tell us how many marks the city gets in various subjects related to transportation. That will tell us in which subjects our city's transportation does not fare well, and needs extra "coaching" - i.e., special projects or initiatives.

Which are these "subjects"? The Ministry of Urban Development, Government of India has stated some such subjects or parameters. They have also specified how one should evaluate transportation with respect to those parameters and give marks to your city. Some of these are: Public transportation system, facilities for pedestrians and cyclists, traffic accident fatalities etc. They have stated a system of awarding marks depending on how many buses your city has, how crowded they are, for how long pedestrians have to wait for crossing a road at a signal, etc.

Additionally our city has a "Comprehensive Mobility Plan", or the CMP. The CMP has specific transportation objectives for our city, projects needed to achieve those objectives, investment needed and approximate timeline. These objectives and associated plans are very important for our city and we should continuously track whether our city is on track with those plans and objectives. This report does exactly that job.

We would like to stress one point here. The objective of this report is not to evaluate anyone's performance, but to prepare a benchmark for transportation in our city. Therefore we have only mentioned information in this report and refrained from analyzing its causes. It is up to the citizens, corporators and administration to make the best use of this information. This benchmark will help us determine next year whether we have made any progress in transportation.

What is important is not the points scored by various parameters this year, but whether these points increase next year.

We think that the PMC should come up with such a "Transportation Status Report" every year that crosschecks today's status with targets in the CMP. The PMC publishes an "Environment Status Report" with a similar philosophy. We hope that this report prepared by citizens encourages not only the PMC but also other municipal corporations to prepare such a report.

Till that happens, we intend to publish such a report "by the citizens, for the citizens". This report will help us understand whether the transportation system of our city is really improving, whether it is convenient, reliable, safe and sustainable to not just vehicles, but also all citizens, as documented in the CMP.

Effort of five months for collecting and analyzing information has culminated in this TSR for 2012-13. PMC, Traffic Police, PMPML, transportation experts in the city, NGOs, common citizens … all have helped in this effort. This report does not belong to one or two organizations, but all of us. All information collected during this effort will be available on the website mentioned herein. Since this is public information, anyone can use this information freely, as long as its source is quoted.

The report and all associated information is available on the following website:

- http://tsrpune.wikispaces.com

We propose that the character of this report is somewhat like "Wikipedia". Your comments, suggestions - and yes, appreciation and financial support - are most welcome. We would like this report to be supported in all ways by citizens instead of finding "sponsors" for the same.

For comments and suggestions and also for offering financial support for the next year, please write to us at:

- tsrpune@gmail.com

Donors can avail of income tax benefits under Section 80(G).

This report is the first of its kind, not only for Pune, but also for any city in India. All residents of Pune are proud of it.

- The Editors,

"Transportation Status Report", 2012-13

How to read this report

1. The 9 parameters that have been used for preparing this benchmark are given in the beginning. These 9 parameters have been prepared after taking into consideration the Service Level Benchmarks by the ministry of Urban Development, Government of India, as well as the Comprehensive Mobility Plan (CMP) of Pune.
2. Major objectives stated in the CMP are mentioned.
3. Information about these 9 parameters is provided on two pages each:
    a. The page on the left has some supplementary information.
    b. The header on the right page tells how many points Pune has scored in that parameter. A symbol that looks like a traffic signal indicated the overall situation.
    c. The matter on the page provides some selective important and thought provoking information for 2012-13. Some of this information may have been collected until June 2013. It is possible that some additional information might have also been collected for preparing the TSR, and the score in the header might have been derived from this additional information.
    d. The last line on the page in right suggests a few steps that could be taken to improve the score.
4. The criteria on which the scoring system of these 9 parameters is based is provided thereafter.
5. The annexure that follows provides some additional figures and information on some aspects that could affect Pune's transportation system.

Benchmarks of transportation

The Ministry of Urban Transportation, Government of India, has suggested some parameters for benchmarking urban transportation. (More information on these is available in the "Service Level Benchmarks" they have defined in the document at http://moud.gov.in/sites/upload_files/moud/files/pdf/Service_level.pdf.) As much as possible, we have used these parameters and the method to evaluate them as stated in that document. However, the main objective of these benchmarks is to determine whether cities receiving funds from the Government of India are using them wisely. Therefore we have made some changes in some of the benchmarks they have suggested and have replaced some benchmarks with others more appropriate for our city.

Transportation is a facility for going from one place to another. Modes of transportation include public transportation (bus, BRT, metro, monorail etc), auto rickshaws, school buses, company buses, motorized personal vehicles (cars, motorcycles etc), bicycles and walking. When we think of what aspects we must take care of while providing facilities for all these modes of transportation, the following for turn out to be the main aspects:
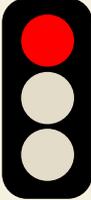
1. Safety
2. Mobility for all sections of society
3. Transportation in a reasonable amount of time
4. Transportation that does not adversely affect health

In addition, the Comprehensive Mobility Plan accepted by Pune Municipal Corporation has stated some objectives for our city's transportation system. considering all this, the following 9 "subjects" have been chosen for the TSR and points have been awarded based on these subjects.

Sr No	Subject	Details
1	Safety	Statistics of fatalities in accidents in Pune city
2	Modal share	How many trips are undertaken by which mode?
3	Facilities for pedestrians	Facilities for walking along the road as well as for crossing the road
4	Quality of public transportation	No of buses, quality of buses, time needed to get a bus
5	Facilities for bicycles	Facilities for riding as well as parking bicycles
6	Time to commute	How much time does it need to commute by various modes?
7	Pollution	Pollution caused by vehicles
8	Parking on mobility corridors	Our objective is to use arterial roads for transportation, not for parking. What is the actual situation?
9	Public opinion	What do people think about our city's transportation?

Important statistics regarding each subject is provided in form of tables and graphs; however, the marks received by Pune transportation in that parameter may also depend on some additional statistics. All details about how the evaluation is done and marks are awarded, from where was the information obtained, how was the information analyzed can be obtained from the detailed TSR available at http://tsrpune.wikispaces.com.

In order to quickly understand the overall status of each parameter, it is represented by a symbol as follows:

0 to 34 marks (Red signal)	35 to 59 marks (Amber signal)	60 or more marks (Green signal)
The situation is grave and the city needs to urgently focus on this issue. The city's major transportation projects and thinking should be centered around this parameter.	Significant improvement is needed regarding this parameter, else the situation could go out of control.	The situation is not so bad. If the city constantly monitors whether the measures being taken today are effective, no major problem would arise in near future.

The criteria used for scoring is given on the next page. More details about the scoring scheme are available in the detailed TSR available at http://tsrpune.wikispaces.com. The scoring scheme might seem a little subjective, but the same scoring scheme will be used for subsequent years. <u>What is important is not the points scored by various parameters this year, but whether these points increase next year.</u>

Criteria used for scoring

Please refer to the next page for explanation of (1) to (4) in the last column.

No.	Parameter	Criteria used for scoring	
1	Safety	Fatalities per lakh population, fatality rate for pedestrians and cyclists	(1)
2	Modal share	Modal share of walking, bicycles and public transportation	(4)
3	Facilities for pedestrians	Width, evenness of surface, blockages on footpaths, whether vehicles can come on them Zebra stripes, pedestrian signals, timing provided for pedestrians in signals	(3)
4	Quality of public transportation	Punctuality, cleanliness, maintenance of buses, ease of boarding, crowding, proximity of bus stops, waiting time at stop, reserved seats, handling complaints, affordable fares	(2)
5	Facilities for bicycles	Network of cycle tracks, blockages on cycle tracks, cycle parking facilities	(1)
6	Time to commute	Time taken to commute 1 km in peak hours, for bus, bicycle, 2-wheelers and 4-wheelers	(3)
7	Pollution	SO_2, NO_X, RSPM and SPM levels in air	(1)
8	Parking on mobility corridors	Whether road space on arterial roads is used for transportation or parking, reducing free parking, higher parking rates in congested areas	(2)
9	Public opinion	People's perception regarding safety, time to commute, mobility for all, effects on health	(4)

The Ministry of Urban Transportation, Government of India, has suggested some parameters for benchmarking urban transportation. (More information on these is available in the "Service Level Benchmarks" they have defined in the document at http://moud.gov.in/sites/upload_files/moud/files/pdf/Service_level.pdf.) They compare with the scoring schemes used in this report as follows:

(1) The suggested benchmark is used exactly as it is.

(2) The scheme used in this report is heavily based on the benchmark.

(3) The scheme used in report is based on the principle expressed in the benchmark, though a different method is developed.

(4) The benchmark does not include this parameter, therefore a new scoring scheme is developed.

Information in appendices

No.	Subject	Description
A.	Analysis of PMC budget	Objectives in CMP and provisions in budget
B.	Initiatives of Traffic Police	Information about initiatives specifically beneficial to pedestrians, public transport and cyclists
C.	Traffic discipline	Details of actions taken by traffic police and its effect on discipline
D.	Driving licenses	How many candidates apply for licenses, how many pass or fail tests
E.	Number of vehicles in Pune	Statistics about number of vehicles and their growth
F.	Pollution checks of vehicles	Number of vehicles in the city and number of PUC tests conducted
G.	Affordability	Cost of transportation by various modes
H.	Fuel consumption	Amount of fuel used for transportation in the city

Transportation Status Report of Pune, 2012-13

Before we benchmark the status of transportation in Pune, it is imperative that we understand the important objectives stated in Pune's Comprehensive Mobility Plan, approved and accepted by PMC.

Sr No	Parameter	Objective	Remarks
1	Modal share of non-motorized transport (bicycles and walking) in overall transportation, minimum	50%	The CMP does not separate objectives for bicycling and walking. One can say that bicycling trips should be 20% and walking trips should be 30%.
2	Share of public transport system in motorized transportation, minimum	80%	This implies that 40% of all trips should be with public transportation. If trips by auto rickshaws are assumed to be about 8%, modal share of PMP (plus Metro in future) should be 32%.
3	Modal share of personal vehicles, maximum	10%	Inference from the 2 objectives above.
4	Network speed	30 kmph	General speed on arterial roads.
5	Number of buses per lakh population	55	
6	Cycle tracks and footpaths	100%	Every road should have a cycle track and a footpath.
7	Parking on mobility corridors	0%	All space of important roads should be used for actual transportation.
8	Road accident fatalities	0	

Safety

Fatalities per lakh from other cities in the world

Accident fatalities per lakh population
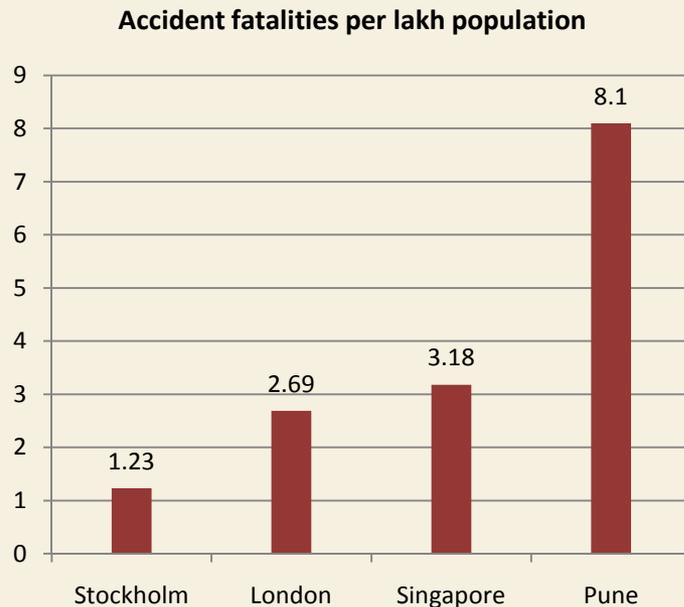
The accompanying graph shows road traffic accident fatalities from cities from some developed countries in the world.

It should be noted that these cities have more vehicles than Pune and their speeds are also higher.

Many cities devise time bound plans for reducing accident fatalities. Such plans include road safety audits, analysis of causes of accidents, measures driven by analysis, annual targets for reduction in accident fatalities etc.

The Comprehensive Mobility Plan of Pune has an objective of zero traffic accident fatalities; however Pune is yet to devise a time bound plan to achieve this objective.

1. Safety

40 / 100 marks

Situation in Pune

No of deaths
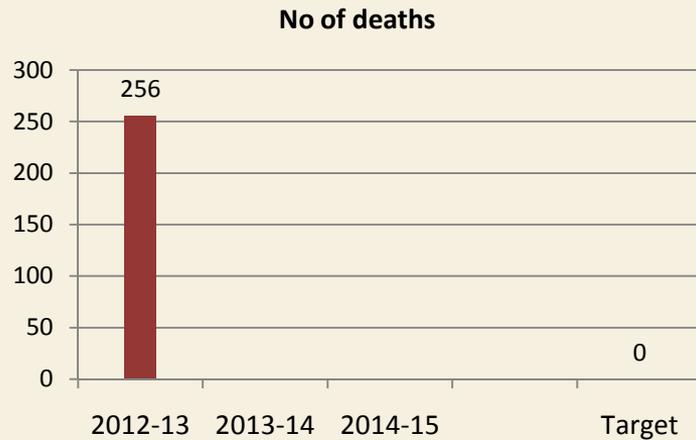
Fatalities for different modes of transportation
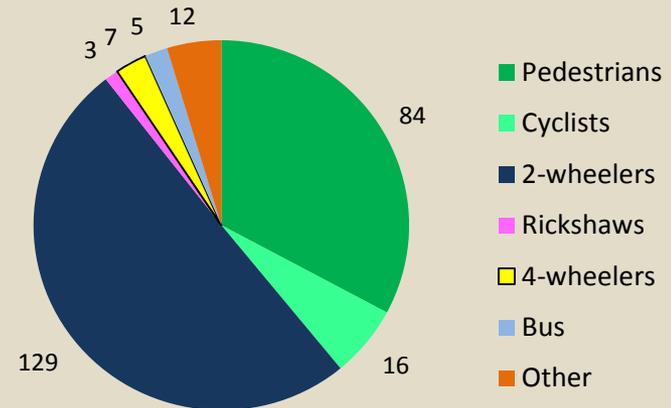
About half of the fatalities are two-wheeler riders and one third are pedestrians. The score of the city will increase if the number of fatalities in these two modes decreases.

Modal share

Mobility for all

Many people cannot use personal vehicles for a variety of reasons. These include young children, people with physical limitations, financially weak section etc. Even owners of personal vehicles use other modes of transportation more often than we think! These modes generally cause less pollution and occupy less road space per person. Considering this, Pune's CMP has set forth objectives for modal split. In view of these objectives, Pune needs to devise plans to increase the modal share of the bus and bicycles, and reduce use of personal vehicles.

Plans

Plans for bridging the gap between today's modal share and targets in CMP-

Mode	Today	Target	Plan
Personal vehicles	47%	10%	
Bicycle	5.2%	20%	(1)
Public transport: Metro		5%	(2)
Public transport: Bus	8%	27%	(3)

(1) Steps are being taken to prepare a plan to improve cycling in Pune.

(2) As per the plan, Metro will carry about 5% of all trips.

(3) Steps are being taken to invite proposals from professional consultants to improve PMPML.

Please also see information on page no 15 in this regard.
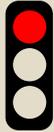
Situation today
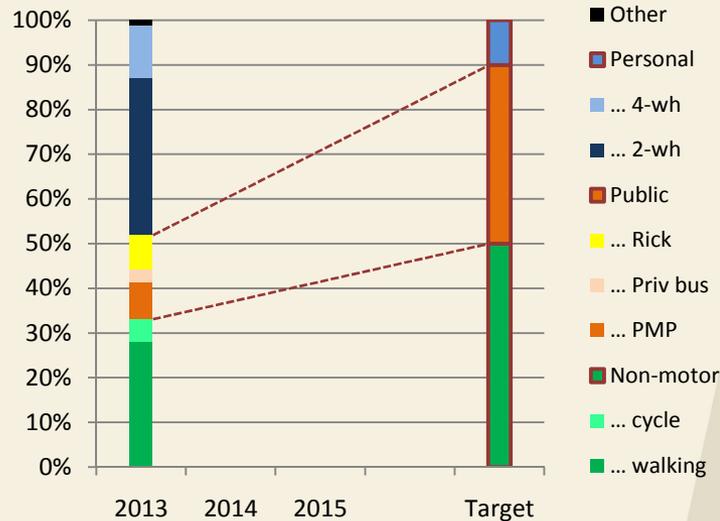
Men, women, age groups 10-17, 30-59, 60+ years
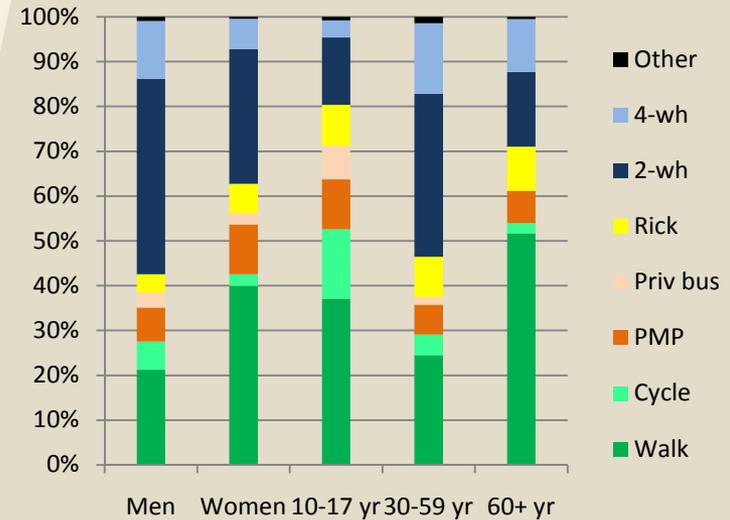
The city's score will increase if the modal share of public transportation and cycling is increased in a planned way.

Facilities for pedestrians

Right to walk, licensed to drive

Walking is a fundamental right of every citizen.

Driving "License" is a permission granted to bring a vehicle on road without encroaching on people's right of walking safely on road.

For walking safely on road, people need the following facilities at the minimum.

- A footpath or similar safe way of walking along the road
- Sufficient time in signal cycle for crossing a road safely
- Conspicuous zebra stripes so that the place where people are expected to cross is visible to everyone

Necessary facilities

According to guidelines of IRC (Indian Road Congress)-

1. Width of footpaths must be at least 1.8m.

2. Time provided in signal cycles for pedestrians to cross roads is determined as follows.

- Speed of walking - 1.2 m/s.
- Reaction time to ensure that it is safe to cross - 7s.
  - e.g. if width of road is 18m, (18/1.2 + 7 = 22s.

In addition, both citizens as well as traffic police must learn to respect pedestrians' rights and not encroach on this time.

According to the Persons with Disabilities Act, 1995, Chapter VIII, transportation infrastructure must be accessible to persons with disabilities.
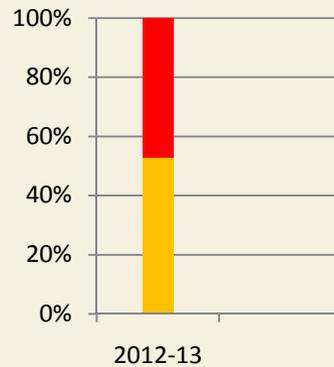
3. Facilities for pedestrians   37 / 100 marks
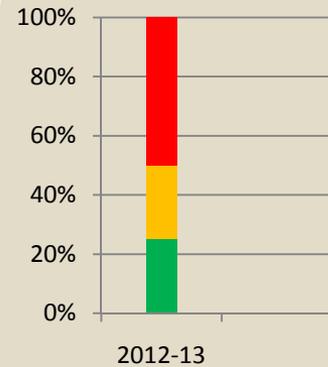
Width of footpaths

Legend: ■ >1.8m ■ <1.8m ■ None

2012-13
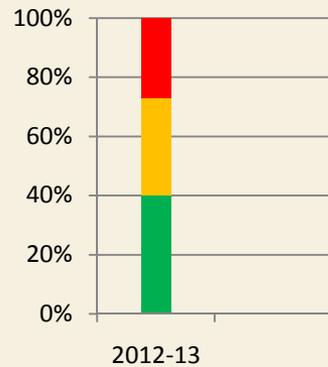
Obstructions on footpaths per km

Legend: ■ <2 ■ 3-6 ■ >7

2012-13

Zebras at intersections

Legend: ■ Clear ■ Barely seen ■ None

2012-13

Time provided to cross road

Legend: ■ Enough ■ Barely ■ Not enough

2012-13
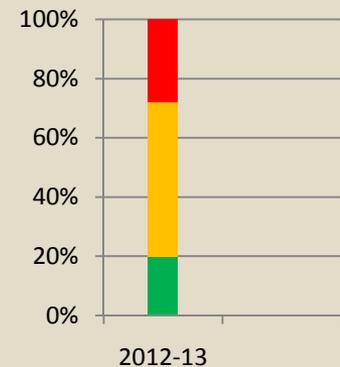
The city's score will increase if footpaths are obstruction free and zebras are painted clearly.

Quality of public transportation

Transportation for public

A public transport system is not designed only for those who cannot afford a personal vehicle, but is also designed so that people of all ages, income levels, physical abilities etc. would feel like using it and would hence use it.

A basic rule of thumb to see if a city's public transport system is good enough is to see if the city has 55 or more buses per lakh population.

As far as people are concerned, the following four attributes are very important-

1. Reliability of service
2. Comfort
3. Convenience
4. Affordability

Number of buses per lakh population
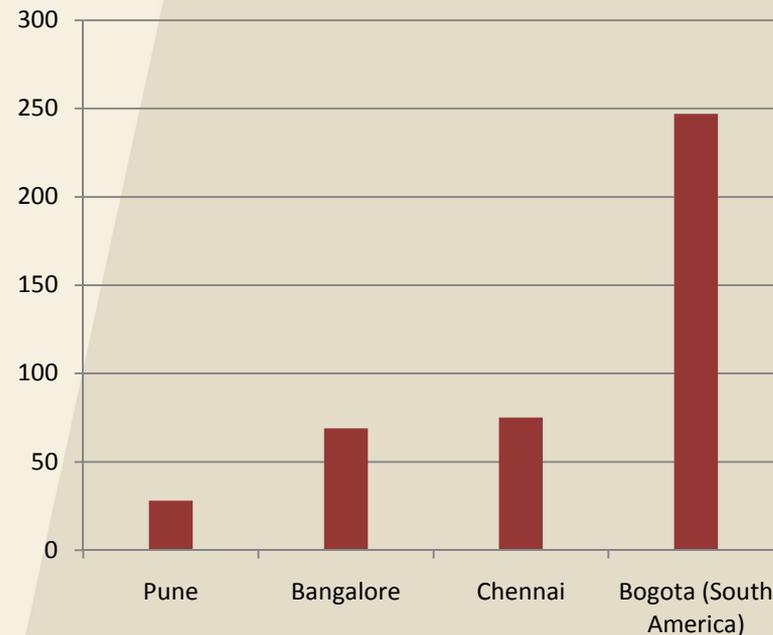
4. Quality of public transportation   59 / 100 marks

Factors important to commuters
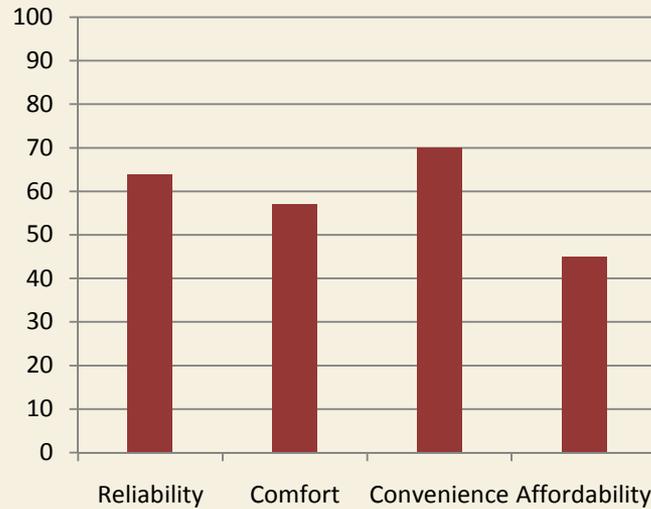
Factors important for management of system

25	931	11
No of on road buses per lakh	Breakdowns per month	Daily ridership (lakh)
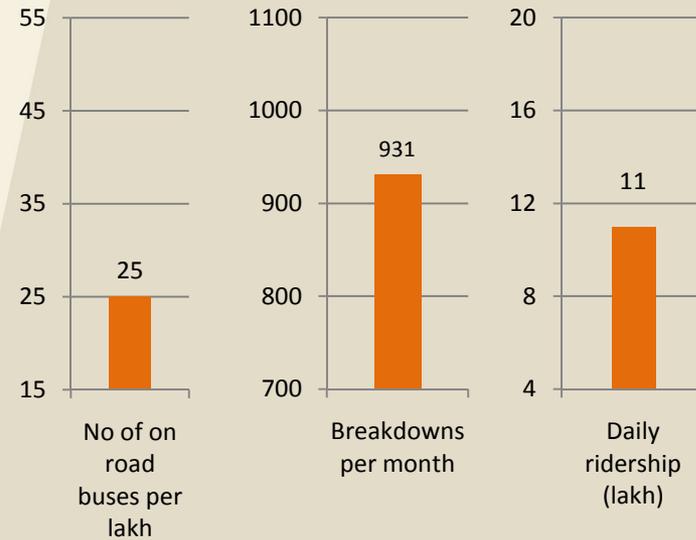
The city will score more if cleanliness and maintenance of buses improves.

Facilities for bicycles

An important mode of transportation

Many people cannot use motorized personal vehicles because of financial reasons as well as age. Many people cannot also afford to us the bus every day. Number of people who depend on a bicycle for their living is more than we can imagine. Safe cycling facilities help such people access more jobs.

Many students use a cycle to go to school.

Even financially well off people want to use a bicycle wherever it is safe, for health benefits.

Use of bicycles has dropped down to 5-6% in Pune, which was once known as a cycling city. European cities like Amsterdam and Copenhagen have increased use of cycling to 30-35% from a situation similar to what is found in Pune today, and should provide us inspiration and role models.
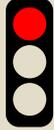
Households that depend on bicycles

☐ Have 2wh/4wh ☐ Have only cycle ■ Don't have even a cycle

12.4%
6.3%
81.3%
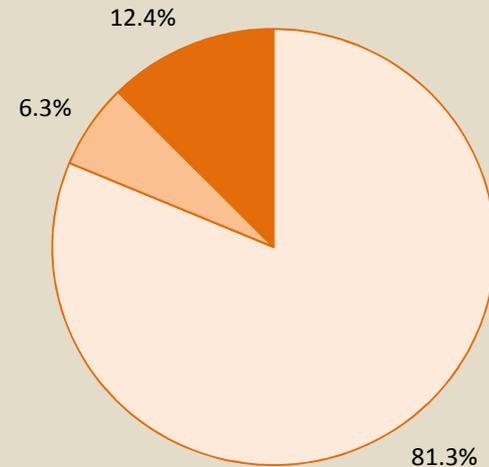
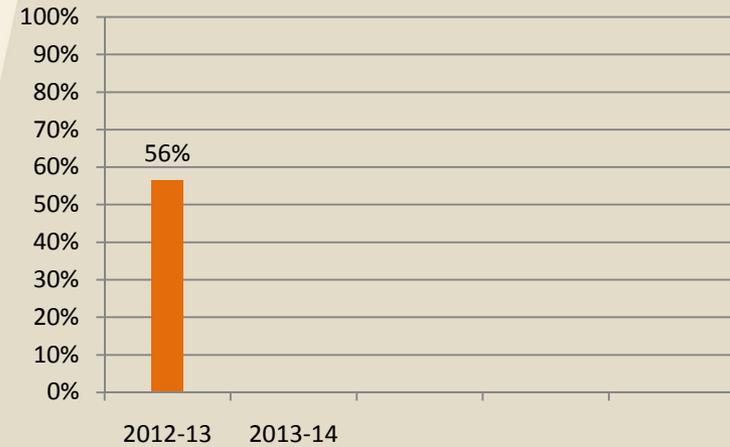## 5. Facilities for bicycles   10 / 100 marks

Completed cycle tracks out of planned, km

Obstructions on constructed cycle tracks

To get a higher score, the city needs to make progress on all three factors: Plan cycle tracks along all major roads, complete planned cycle tracks and keep the tracks obstruction free.

Time to commute

Net time to commute and incidental time

Time to commute can be split in 3 components.

1. Reaching your vehicle from where you are

2. Net time taken for commute

3. (For personal vehicles: Parking), Getting off the vehicle and reaching the destination

Different modes could be fastest for different distances, considering these 3 components.

This report considers only the net time taken for the commute (no. 2 above).

Factors that affect time to commute

Net time taken for the commute depends on various factors. Obvious factors are quality of road, congestion etc.

Different vehicles travel at different speeds. Lanes for different types of vehicles reduce conflict and increase not only speed but also safety of all.
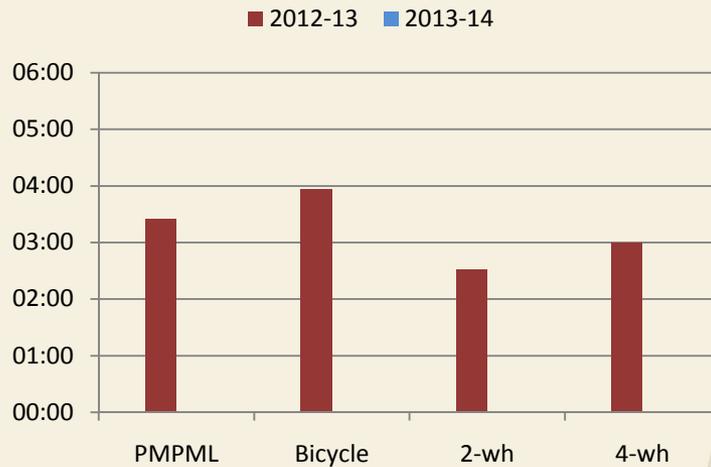
The accompanying charts show "time" and not "speed"; because people generally think of the time it would take them to reach their destination, not the speed they can attain.

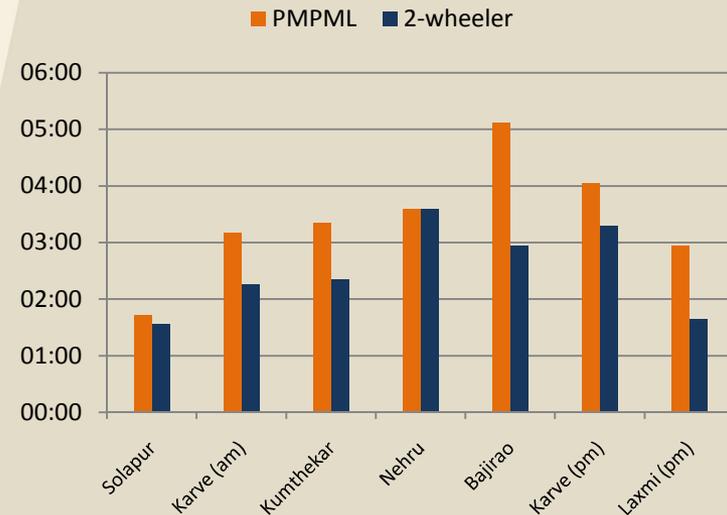**Average time (min) needed for 1 km for different modes**

Time needed (min) for 1 km on some important roads

Time taken for PMPML is given more weightage for calculating the score. Therefore the score will increase more significantly if the time taken by PMPML reduces.

Pollution

Components of air pollution

Vehicular emissions are a major contributor to urban pollution. The emissions include some gases that are harmful to human health. Pollution also includes fine particles coming from these emissions as well as other sources. Following are the major pollutants of urban air.

1. Sulphur dioxide
2. Nitrogen oxides
3. SPM (suspended particulate matter)
4. RSPM (Respirable suspended particulate matter)

Sound pollution is also a type of pollution. The TSR intends to consider sound pollution next year.

The petrol used today contains substantially low amount of sulphur than earlier, therefore the share of Sulphur dioxide in urban pollution has reduced substantially.

The "RSPM" type of particles can penetrate deep into our lungs, therefore are very dangerous. They are mainly found in emissions from diesel vehicles.

Instruments that measure ambient air quality are installed at Nal Stop, Swargate and Karve Road. Since these instruments are mainly for checking ambient air quality, they are not in the intersection or on the road, but a bit far from the traffic. Amount of pollution in traffic is likely to be significantly more than what is indicated by these instruments.

Level of Oxides of Nitrogen (µg/m^3)

Level of RSPM (µg/m^3)

Increased use of public transportation and bicycles, reduced use of personal vehicles, reduced use of diesel vehicles even in personal vehicles and better maintenance of vehicles will reduce RSPM levels and increase the score.

Road space used for parking than transportation

Objective of CMP

If mobility corridors are to transport maximum number of people and safely, it is important to ensure that road space is used for public transportation, pedestrians and cyclists as well. Parking on mobility corridors reduces the corridors' capacity to transport people. Therefore the CMP states an objective of eliminating on street parking on mobility corridors. If parking is needed, it could be provided on side lanes or in paid parking lots. (Since urban land is expensive, the National Urban Transport Policy recommends paid parking in urban areas.)

Objectives stated in the CMP and benchmarks of Government of India are-

1. On street parking on mobility corridors- 0%
2. If parking is provided, it should be paid
3. Higher parking tariffs in congested, core city areas

Examples of other cities

In 1996, Zurich (Switzerland) decided to reduce on street parking to what it was in 1990. In the process they eliminated several on street parking slots and used the space for public transport.

In all major cities in the world, as we go towards the core and congested part of the city, parking progressively gets more and more expensive. The per hour parking rate becomes roughly 5-6 times the minimum fare for public transport. According to the fundamentals of economics, viz. supply-demand-price, parking rates also vary with time, with parking becoming more expensive on weekdays and cheaper on weekends.
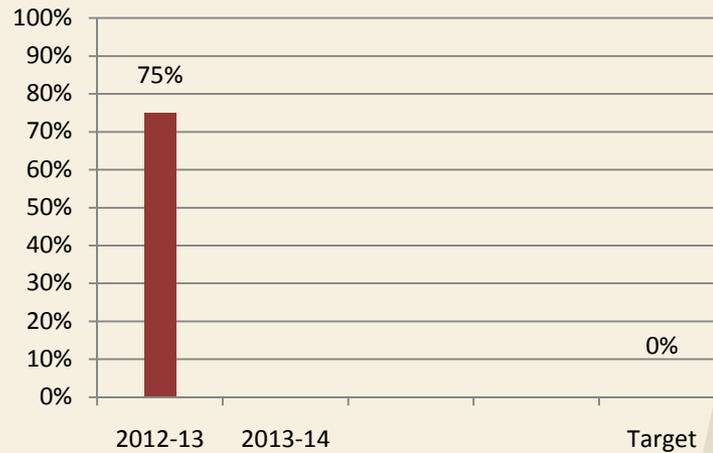
Such measures very effectively encourage public transportation.
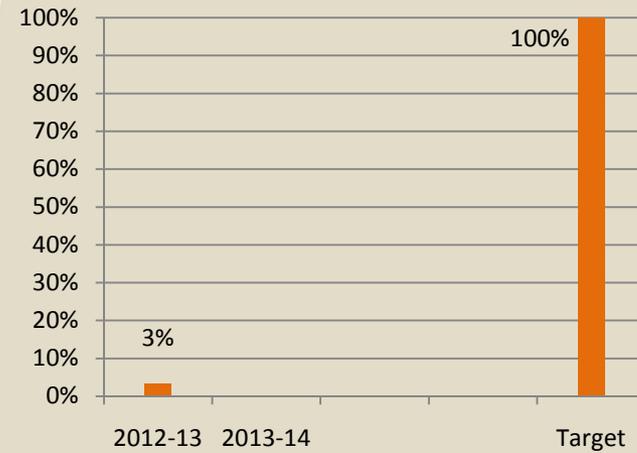
8. Parking on mobility corridors   20 / 100 marks
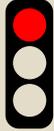
On street parking allowed on mobility corridors

Paid parking on mobility corridors

Measures like using road space on mobility corridors for transportation rather than parking, providing only paid parking as exception and making cost of parking reflect the land prices will increase the city's score.

Public opinion

People's expectations

People have several expectations from transportation system, e.g.

- Safe, accident free transport
- Should be able to cross the road
- Children should be able to use cycles
- Parking should be available
- Should get the bus on time and should be able to board the bus
- No traffic jams
- Commute should take less time
  - Be able to predict time needed
- No potholes on roads
- No pollution

etc.

Real expectations

The following four expectations are at the root of these-

- Safety
- Mobility for all
- Minimum time spent on commute
- No adverse effects on health

People's expectations keep changing even if the transportation system of a city might be improving. It is therefore important to keep track of their expectations continuously.

What do people feel about transportation in Pune?
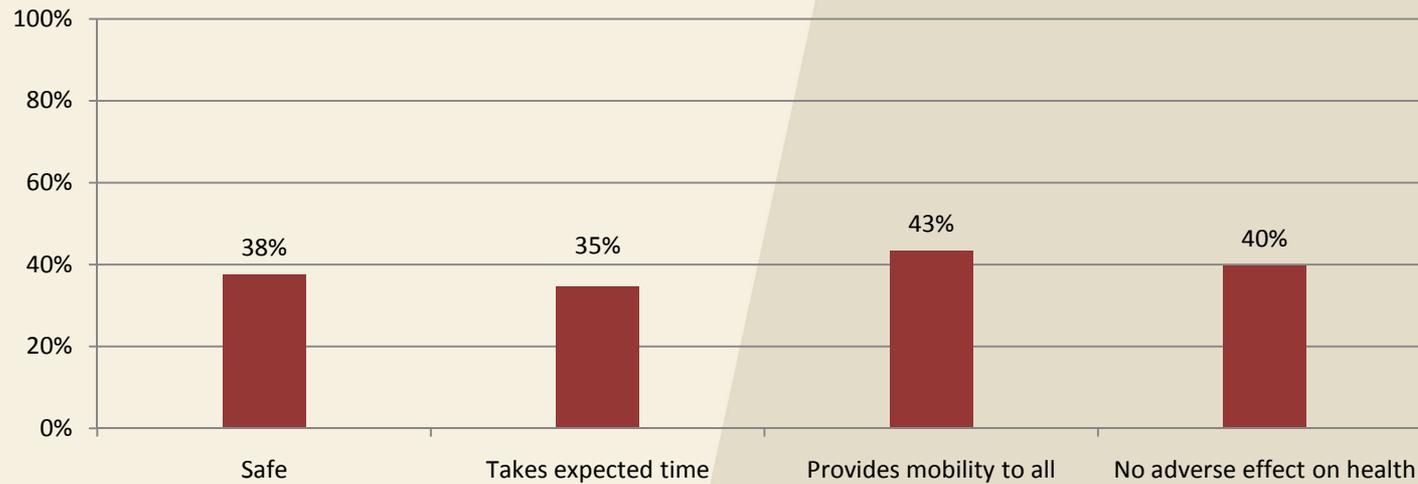
The city has fared almost equally on all four fronts. Improvements are needed on all four.

Appendices

A) Allocations for transportation in PMC budget

Beneficiaries of allocations

A large part of PMC budget goes towards transportation. The beneficiaries of these allocations are as follows-

- Pedestrians (footpaths, subways, overbridges, zebra stripes etc)

- Cyclists (cycle tracks, rent a cycle scheme)

- Public transportation (BRT, bus stops, buying buses, long term plan for PMPML etc)

- Personal vehicles (road widening, tarring, grade separator, flyovers, parking lots etc)

Proportion of allocation of capital expenditure
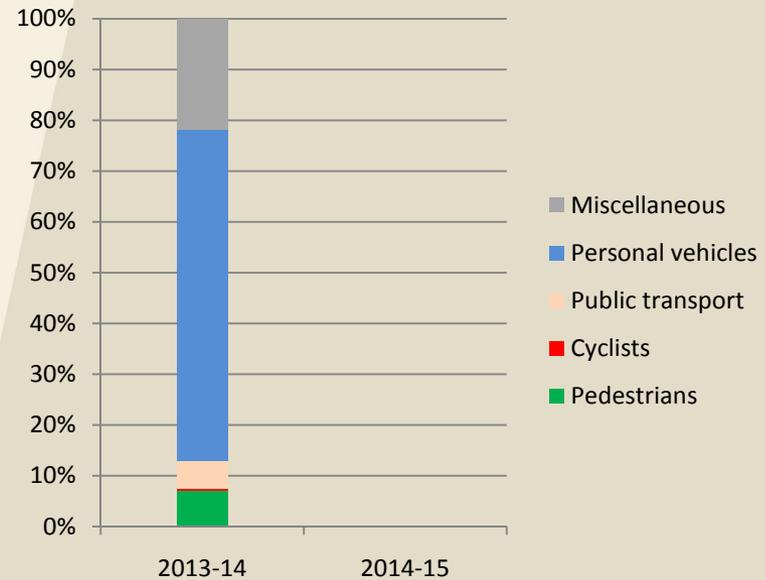
B) Initiatives of Pune Traffic Police

C) Traffic discipline

No data or information has been collected regarding these two points for this report this year. These two points would be considered for the TSR next year.

D) Driving licenses

An application under the RTI Act has been submitted to the RTO requesting the following information. The information obtained will be presented in the TSR next year.

- Number of applicants
- Number of applicants failing the written as well as practical tests
- Number of driving licenses issued
- Nature of written and practical tests

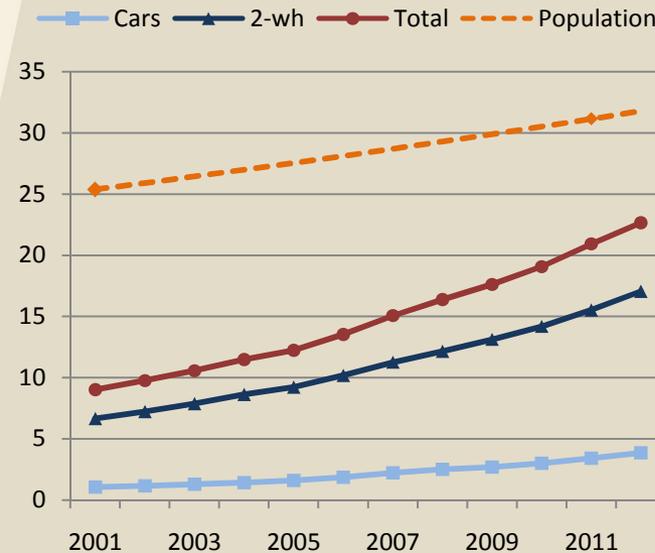# E) number of vehicles

Increase in number of vehicles and population in Pune

Number of cars is rising faster than number of 2-wheelers.
Average annual growth in last 6 years- 2wh 9%, cars 13%.
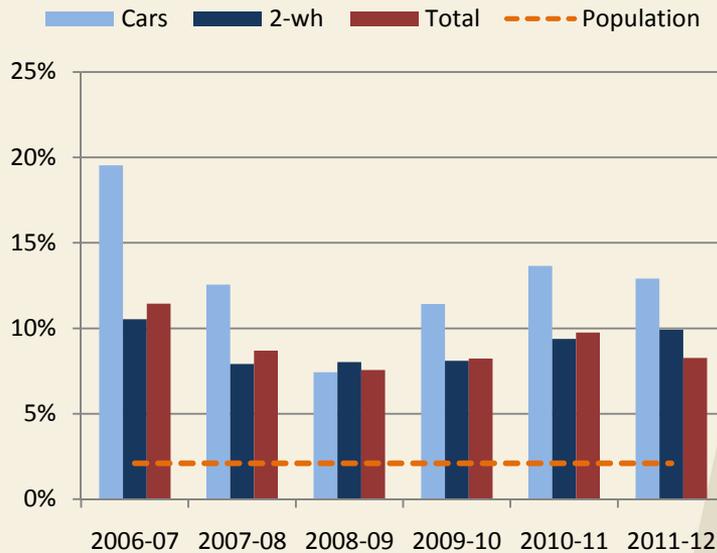
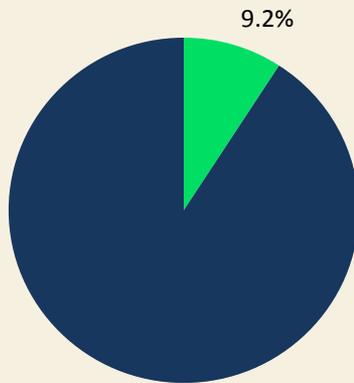### Total number of vehicles and population

Average daily registrations in 2012-13: 2-wh: 400, cars: 133.
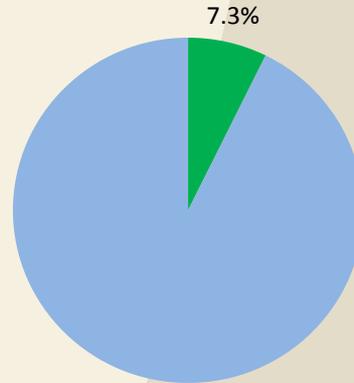
F) Coverage of PUC tests
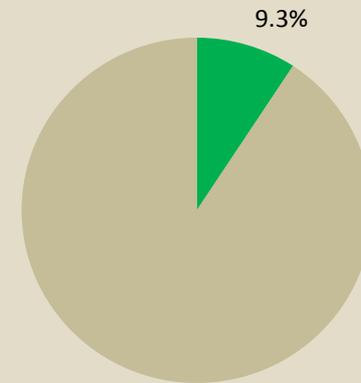
Two-wheelers

■ Test done ■ Test not done

9.2%

Four-wheelers

■ Test done ■ Test not done
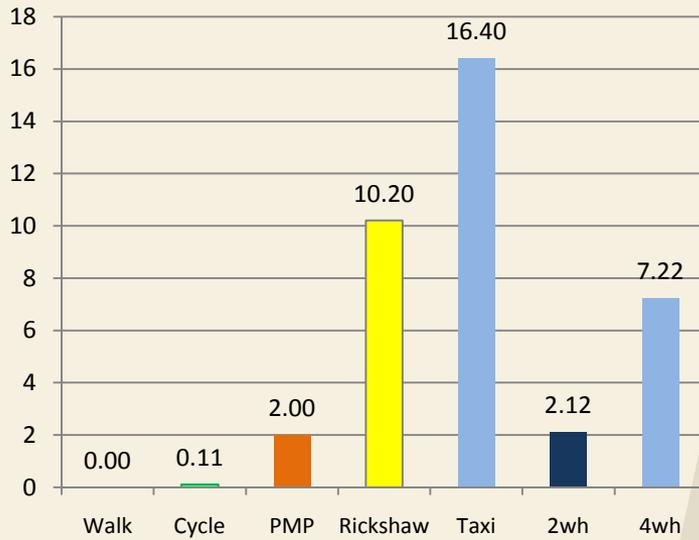
7.3%

All vehicles
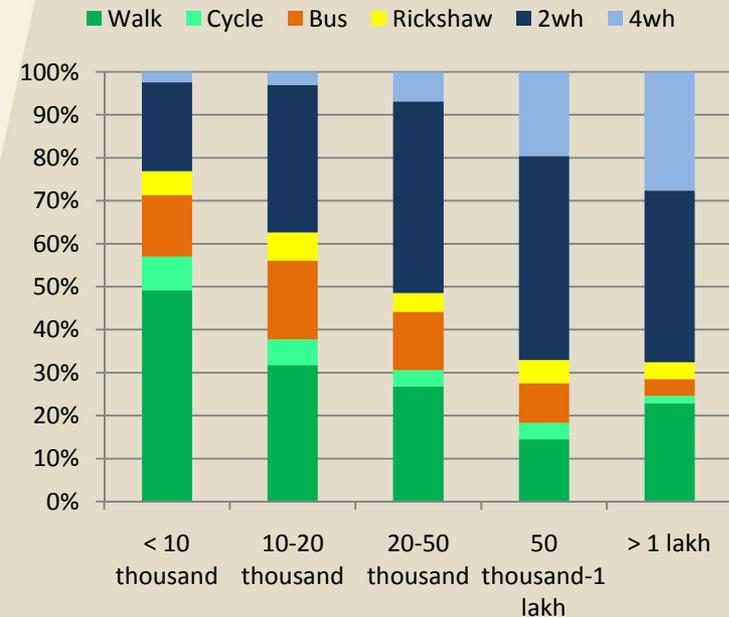
■ Test done ■ Test not done

9.3%

G) Affordability

Cost of travelling 1 km (Rs)

This includes cost of vehicle (with life of vehicle as 10 yrs), insurance, maintenance for 10,000 km per year, fuel.

## Modes used by income groups (family income per month)

G) Fuel consumption in Pune

Usage profile of petroleum products in Pune

This information refers to 2010-11 and has been taken from a report by TERI.

As per our estimate, if the modal split objectives on page 15 are achieved, it could reduce the fuel used in the city for transportation by about 35-40%.

- ■ Transportation
- ■ Domestic
- □ Industrial
- □ Commercial
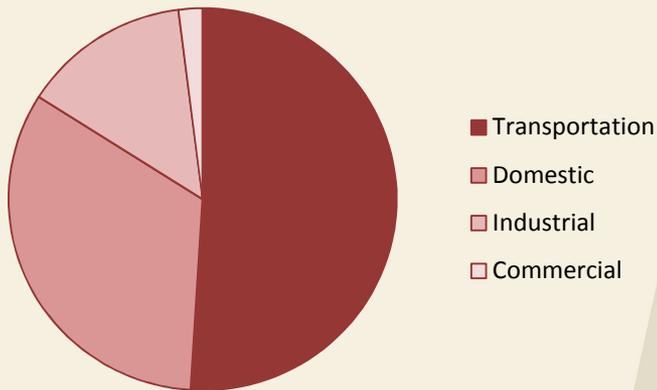
Fuel used for transportation

This information refers to 2010-11 and has been taken from a report by TERI.

Motor spirit = petrol, HSD = diesel.

Sale trends of major petroleum products used in the transport sector in Pune

■ MOTOR SPIRIT ■ HSD ■ LPG-AUTO
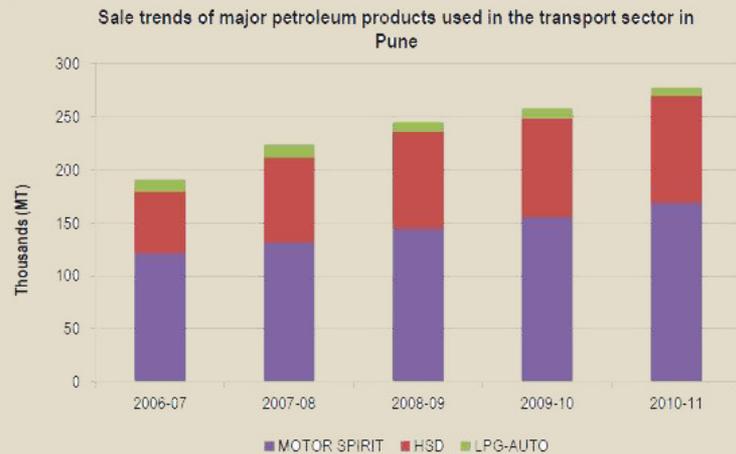
Transportation Status Report of Pune at a glance

No	Parameter	2012-13		2013-14		2014-15		2015-15		2016-17	
1	Safety	40	🟡								
2	Modal share	27	🔴								
3	Facilities for pedestrians	37	🟡								
4	Quality of public transportation	59	🟡								
5	Facilities for bicycles	10	🔴								
6	Time to commute	75	🟢								
7	Pollution	60	🟢								
8	Parking on mobility corridors	20	🔴								
9	Public opinion	41	🟡								