



Capacity Building in Urban Local Bodies... Road Safety

TARUN LAD
City Engineer

**AHMEDABAD MUNICIPAL
CORPORATION**

GUJARAT

Agenda

Road Accident Problem

Case of Ahmedabad

Who is in charge?

Building Capacities - Moving forward



Road Accident Problem

A Global Issue

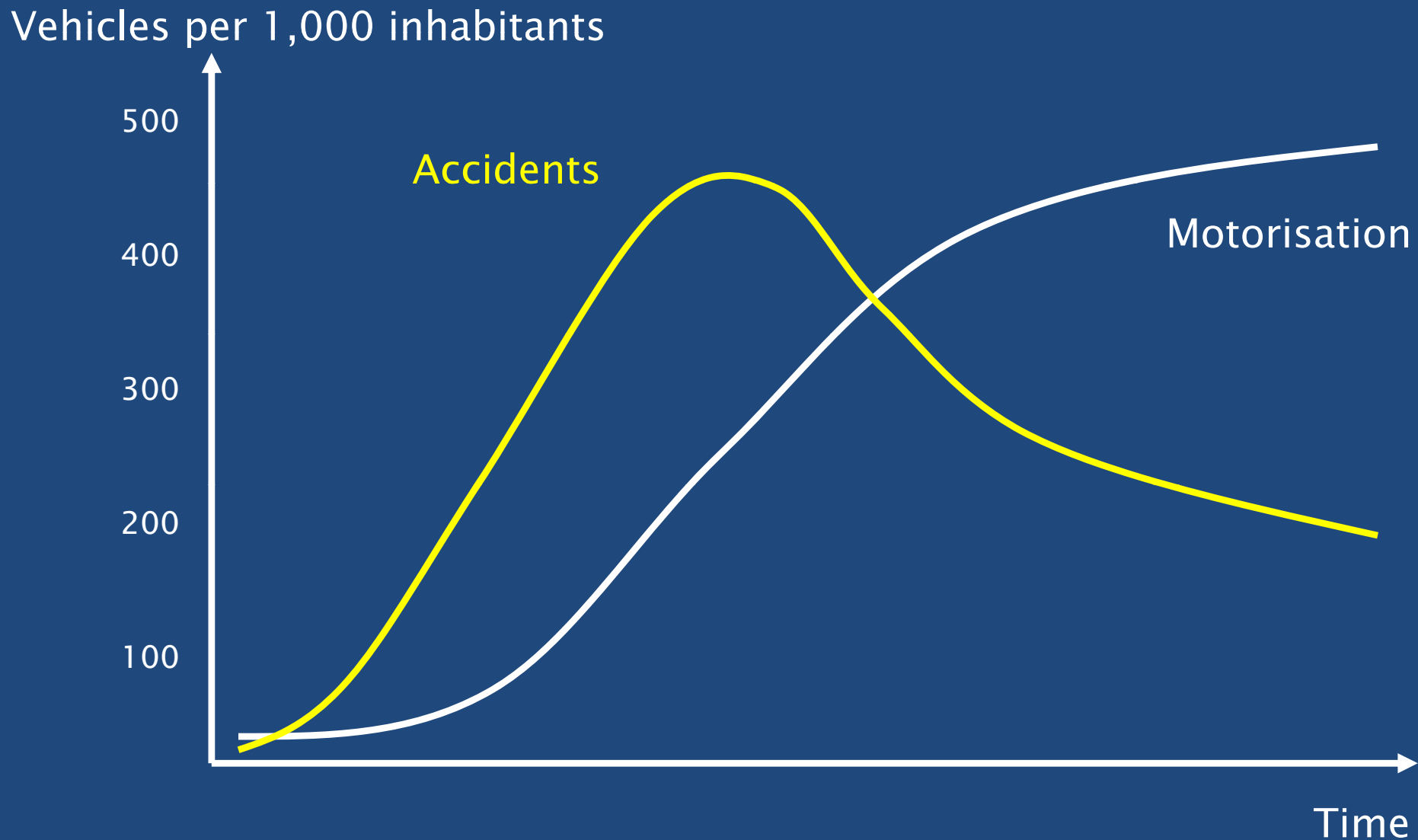
- Each year 1,300,000 persons die in road accidents and 50 million are injured

Per day!



Source: World Health Organisation

A Fast Growing Problem...



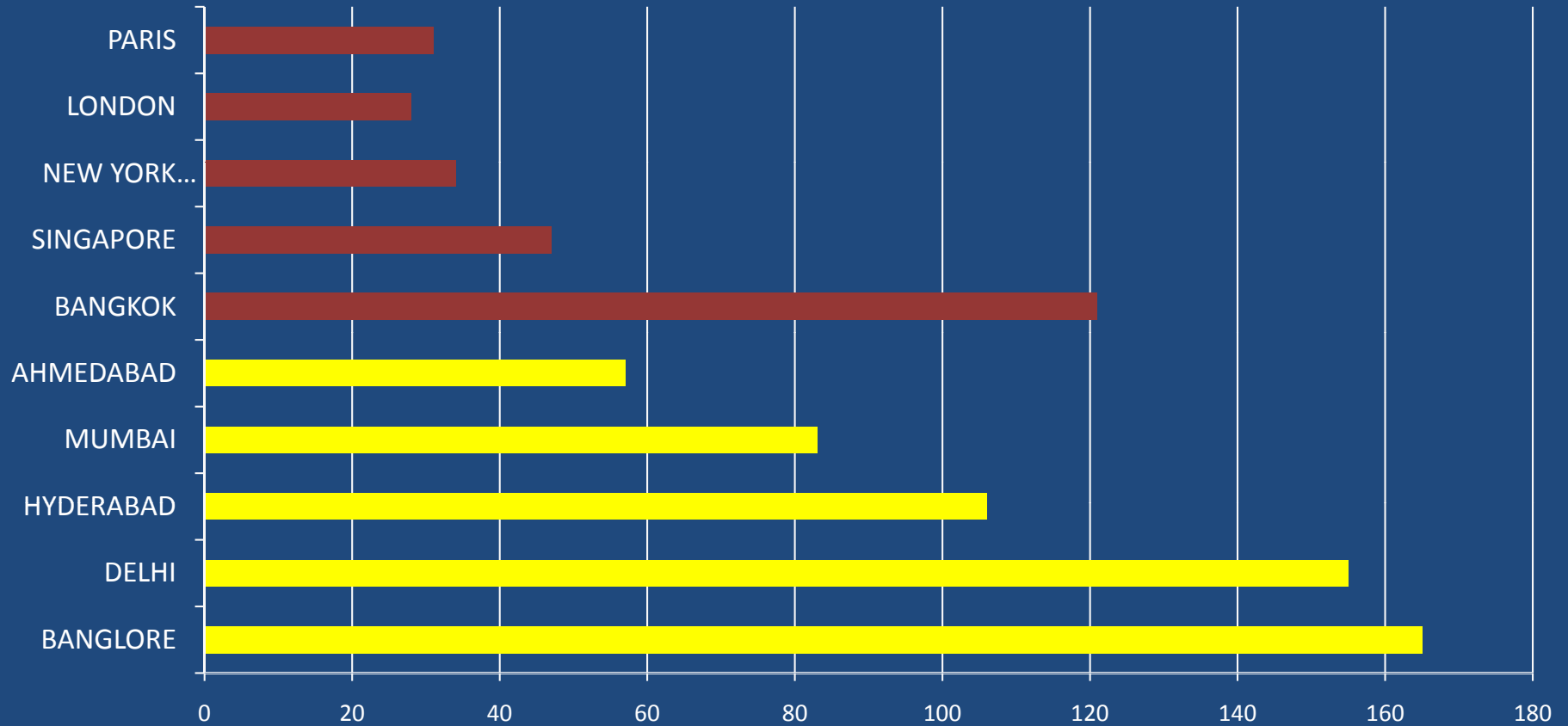
A Health Problem...

Road Accidents are the most common cause of death for the age group 15-45 years in most countries

In 2020 road accidents are expected to be the third highest cause of death in the world

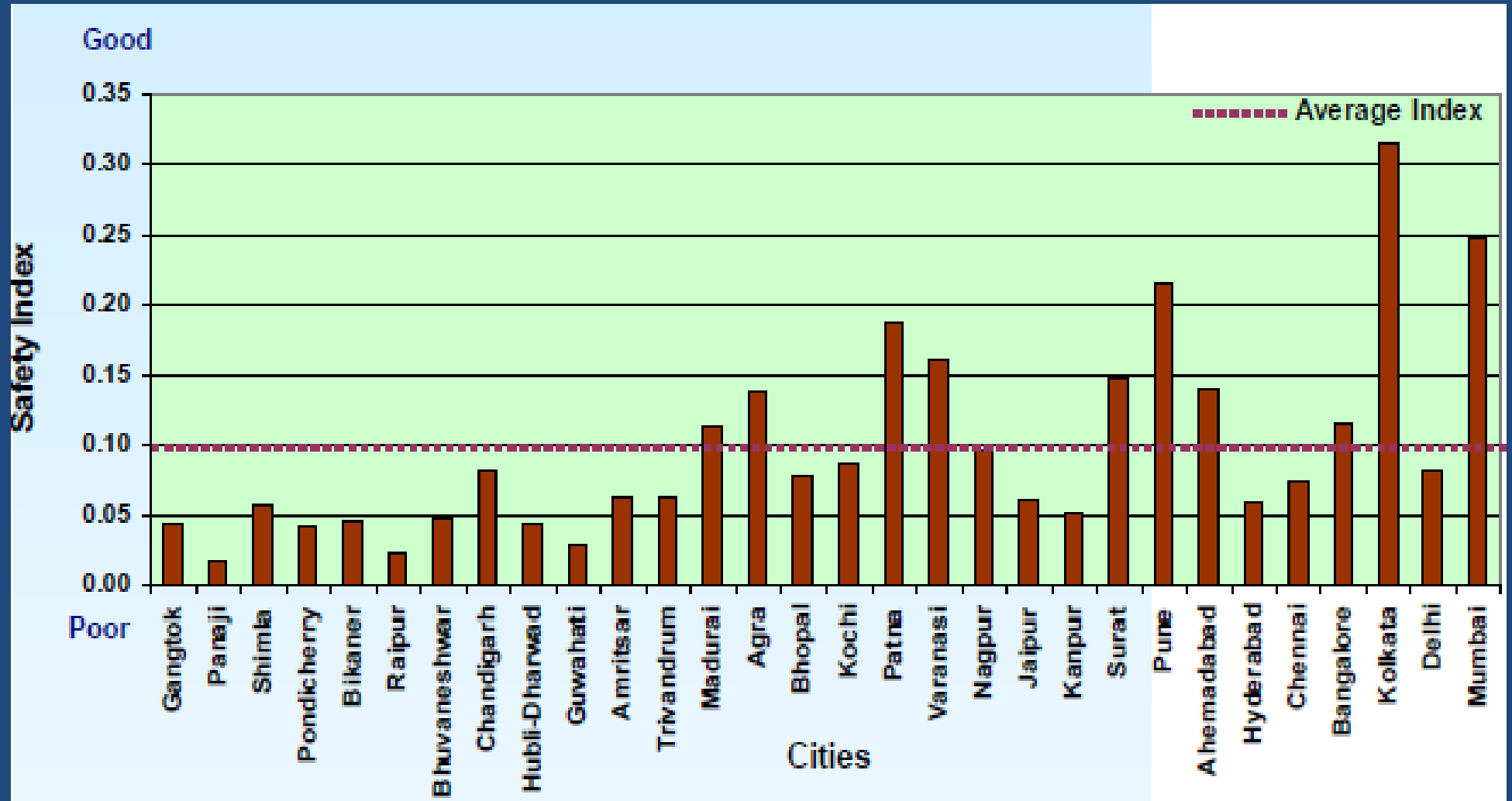
Case of Ahmedabad

Compared to other cities

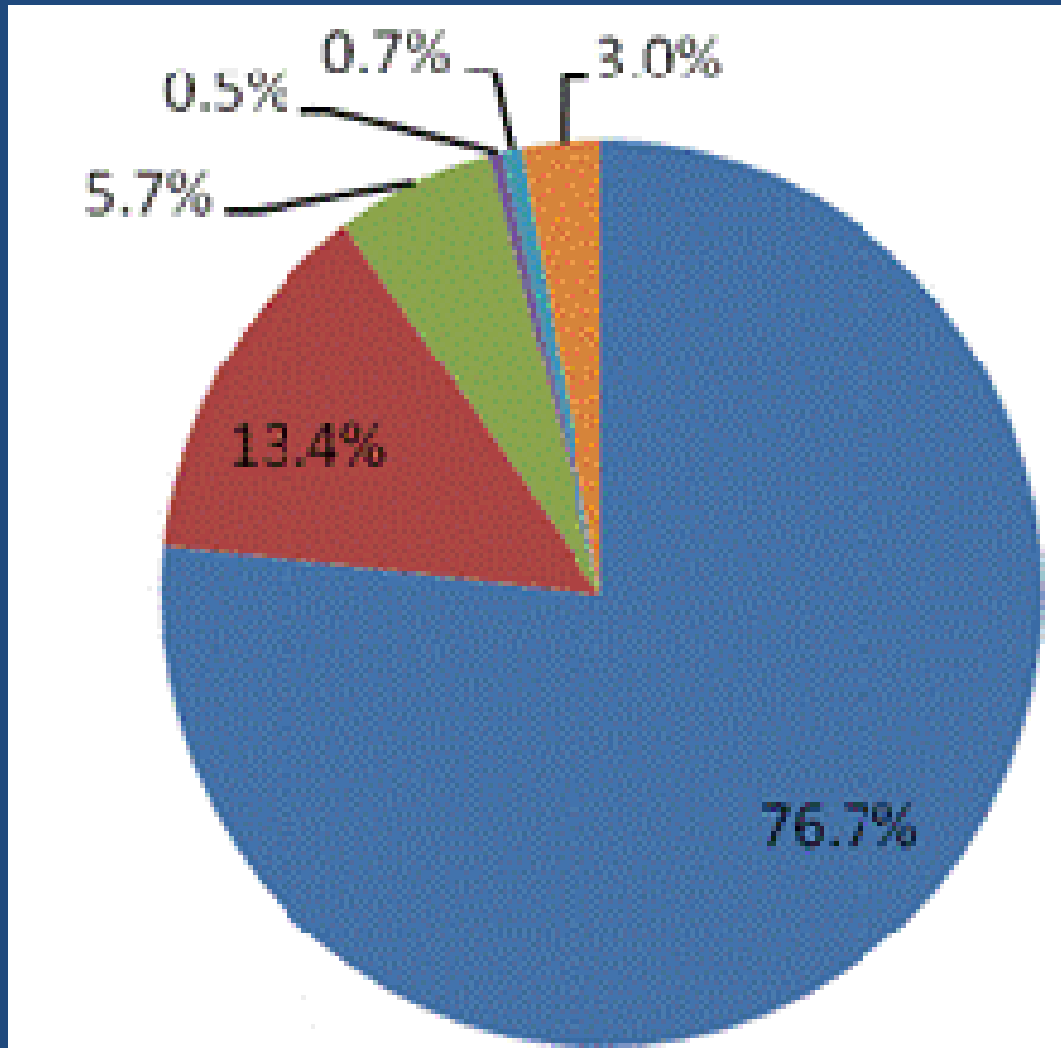


FATALITIES PER MILLION PEOPLE.

Safety Index



Vehicle composition



- 2 wheelers
- Cars
- 3 wheelers
- Taxi
- Buses
- Good vehicle and others

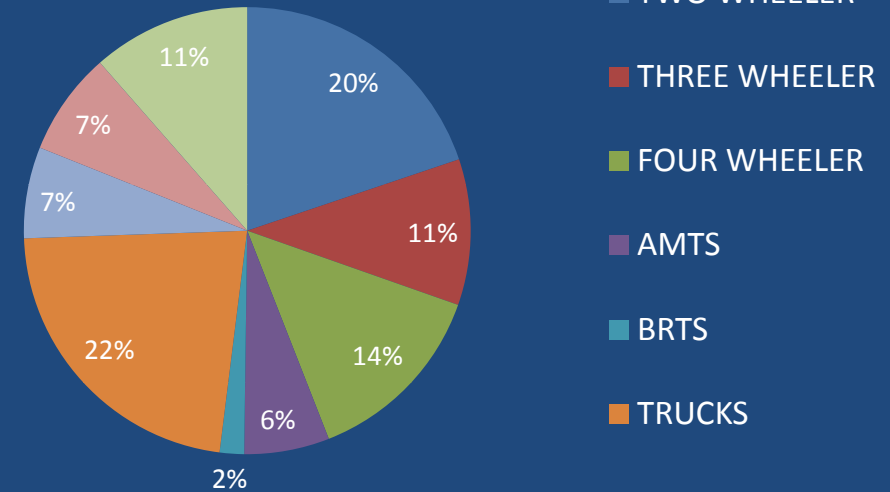
Total accidents

Year	Total Accidents	Serious Accidents	Fatal Accidents	DEATH
2001	2718	130	162	167
2002	2652	143	173	178
2003	2589	150	162	170
2004	2425	158	166	176
2005	2460	156	168	181
2006	2601	225	238	246
2007	2605	265	248	255
2008	2519	297	244	263
2009	2179	266	188	200
2010	2135	299	226	235
2011	2020	362	222	227

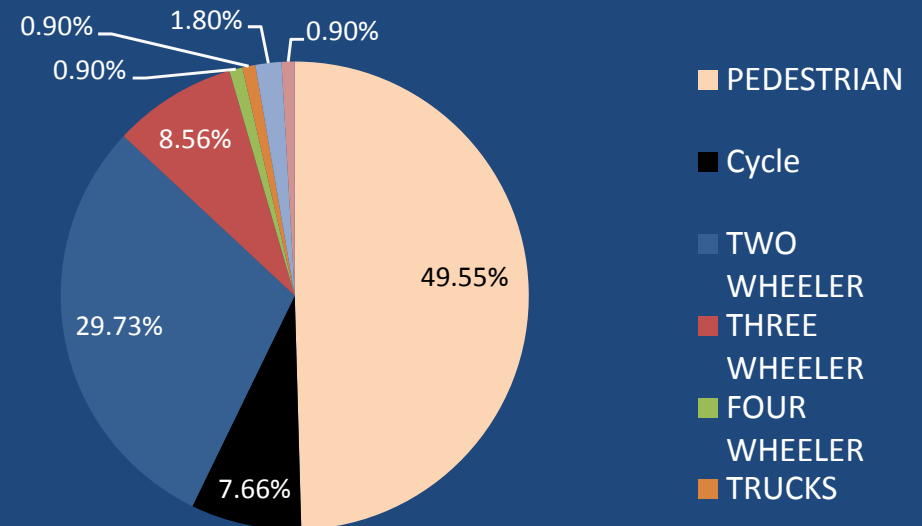
Danger and dangerous!

- Most motorized vehicles seem to be dangerous!
- Half the people who die are pedestrians!

Responsible modes for Fatal Accidents - Year 2011



Affected modes for Fatal Accidents - Year 2011



Who is in charge?



maxima
SETHI WATCH COMPANY

SHRI ANJALI

Keshu

2000 गणेश जी का
सुख-सुख

Who manages our streets?

Engineering Dept, AMC

Urban Planning
Dept, AMC

Estate Dept.
(Encroachments), A
MC

Estate Dept.
(Advertising),
AMC

Street Cleaning
Dept, AMC

AMTS, AMC

Public Works
Department, GoG

Road Transport
Organization, GoG

Cable Operators

Private Parking
Contractors

Solid Waste
Management
Dept. AMC

Police Dept, GoG

Water Supply and
Sewerage Dept, AMC

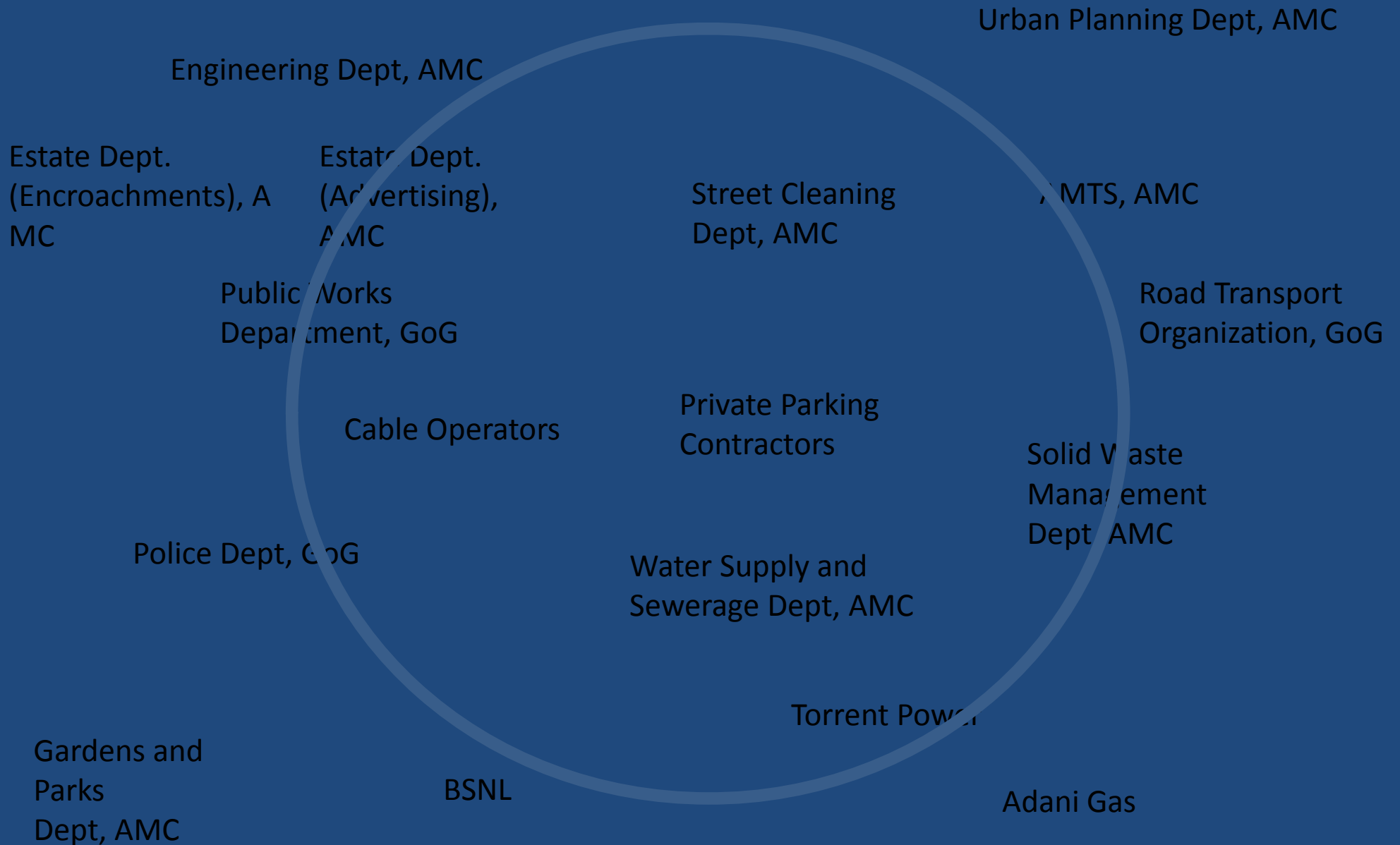
Torrent Power

Gardens and
Parks
Dept, AMC

BSNL

Adani Gas

Who manages our streets?



What is the role of traffic police?

- Reports to the police commissioner
- Responsible for regulating traffic on streets
 - Signals
 - Parking
 - Enforcement
- Investigating accidents?

What is the role of AMC?

- Plan street network
- Design and maintain streets
- Design signals cycles at intersections
- Implement public transit systems
- Policies related to parking, vending etc.

Where is the disconnect?

- Accidents are reported to the police
- FIR is filed
- Investigations are carried out under various sections of the IPC
- No system for the ULB to access this data
- Traffic police keep on requesting ULB for proper signages, lane marking etc. – often the response is slow and dependent on budgetary constraints

1. शिकात : अज्ञात पो. स्टेशन : एतोराम दि. : २०११ प्रथम माहिती नं. : १७५११०१५ तारीख : २७/११/११

११०२७६१९६

अज्ञात शिकार

Name of victim

Time of accident

Sections/s of IPC

Nationality!

Occupation

General location

आज्ञात शिकार झालेला अज्ञात शिकार शोध घेतल्यानंतर अज्ञात शिकार झाल्याची माहिती मिळाल्याने याप्रमाणे शिकार झाल्याची नोंद घेतली आहे. दि. २७/११/११ रोजी.

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The FIR should be a comprehensive document having details of exact location, nature of accident etc.

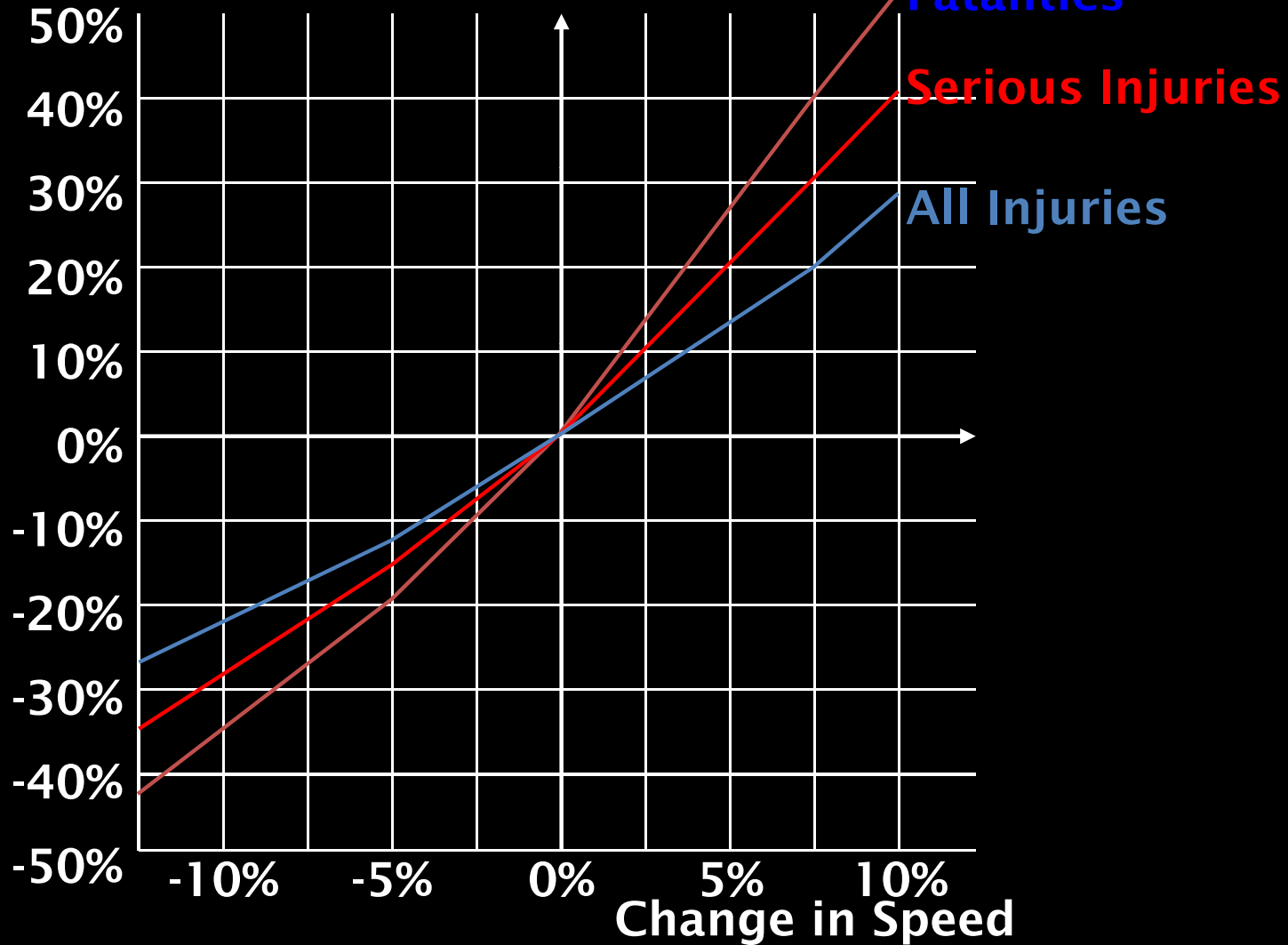
१२. माहिती आपणारानी सही/अंगुळानु निशान : इतोराम
१५. संशोधकाल नामदार कोर्टने मोडल्या तारीख : २७/११/११ शोध : इतोराम
नाम : इतोराम ठेग : H.C.
पोलीस स्टेशनना अधिकारीनी सही
१७/११/११

अज्ञात शिकार झाल्याची नोंद घेतल्यानंतर अज्ञात शिकार शोध घेतल्यानंतर अज्ञात शिकार झाल्याची माहिती मिळाल्याने याप्रमाणे शिकार झाल्याची नोंद घेतली आहे. दि. २७/११/११ रोजी.

नाम : इतोराम

Speed Management

Change in Casualties



Typical ULB interventions

- Attempt to relieve congestion
 - Widen roads (often at the cost of pedestrians)
 - Grade separate
 - Provide off street parking

All efforts are to increase vehicle throughput and increase speed (LoS)

Other issues

- Enforcement is a problem – staff strength
- Traffic wardens (sourced by AMC) do not have statutory powers
- NMT issues are relegated in the larger picture of ensuring that traffic moves (more than 50% fatalities)
- Lack of technical and trained staff in ULB and traffic police department

Building capacities – moving forward

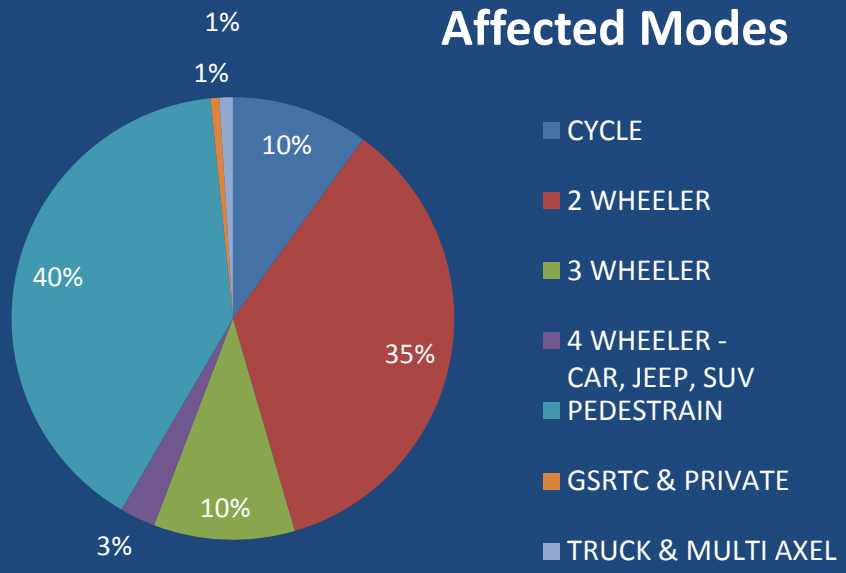
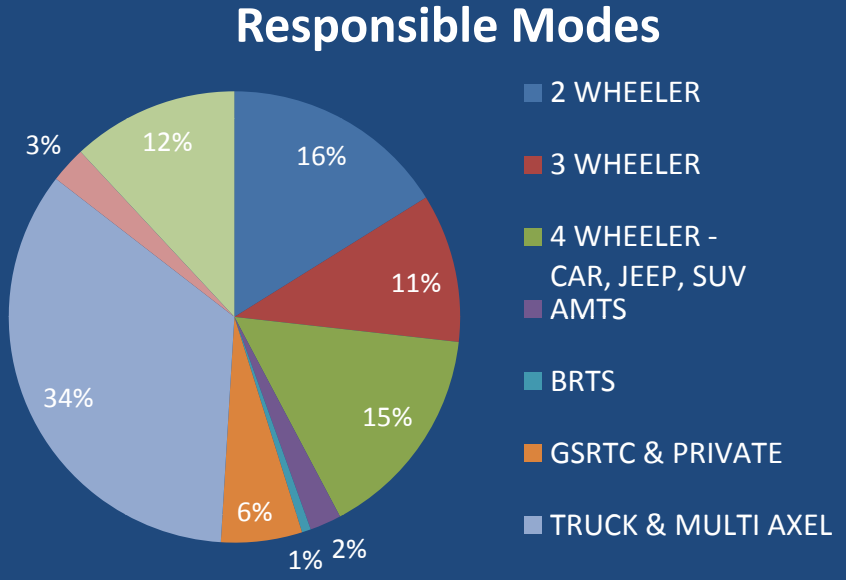
What needs to be done?

- Creating database (check trends)
- Using data to generate precise maps and identify dangerous spots/ stretches
- Analyzing data to understand responsible modes and affected modes
- Road safety audits (before major road projects)
- Road safety inspections (for existing roads)

Fatal Accidents FIR- 310

RESPONSIBLE MODES IN FATAL ACCIDENTS

CODE	RESPONSIBLE MODE	NO.	
2	2 WHEELER	50	16.13%
3	3 WHEELER	33	10.65%
4	4 WHEELER - CAR, JEEP, SUV	48	15.48%
6	AMTS	7	2.26%
7	BRTS	2	0.65%
8	GSRTC & PRIVATE	18	5.81%
9	TRUCK & MULTI AXEL	107	34.52%
10	OTHERS	8	2.58%
11	UNKNOWN	37	11.94%
Grand Total		310	



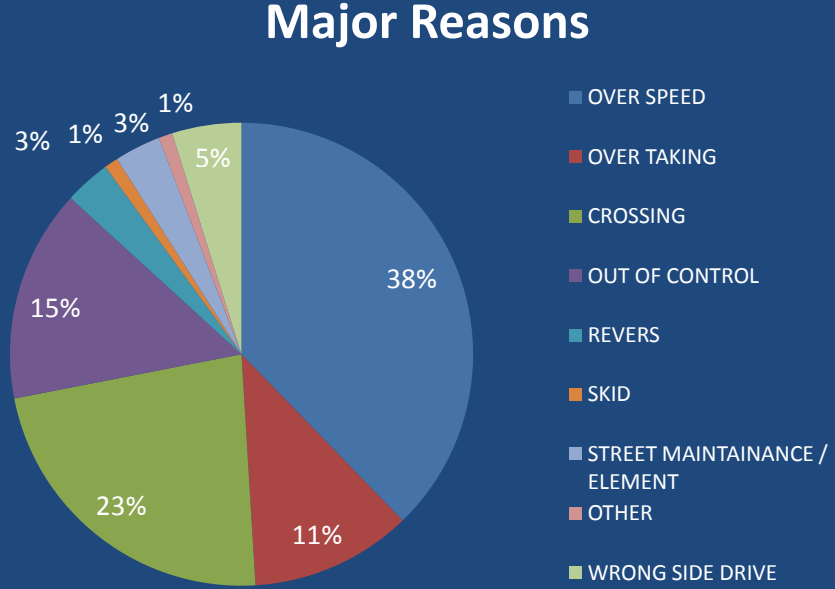
AFFECTED MODES IN FATAL ACCIDENTS

CODE	AFFECTED MODE	NO.	
1	CYCLE	31	10.00%
2	2 WHEELER	110	35.48%
3	3 WHEELER	32	10.32%
4	4 WHEELER - CAR, JEEP, SUV	8	2.58%
5	PEDESTRAIN	124	40.00%
8	GSRTC & PRIVATE	2	0.65%
9	TRUCK & MULTI AXEL	3	0.97%
Grand Total		310	

Fatal Accidents FIR- 310

MAJOR RESONS FOR FATAL ACCIDENTS

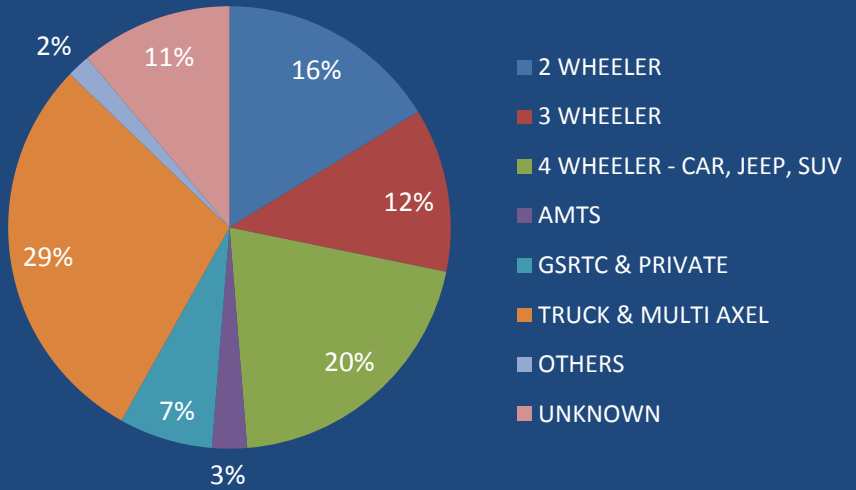
CODE	REASONS	NO.	
1	OVER SPEED	117	37.74%
2	OVER TAKING	35	11.29%
3	CROSSING	71	22.90%
4	OUT OF CONTROL	46	14.84%
5	REVERS	10	3.23%
6	SKID	3	0.97%
7	STREET MAINTAINANCE / ELEMENT	10	3.23%
8	OTHER	3	0.97%
9	WRONG SIDE DRIVE	15	4.84%
Grand Total		310	



FATAL ACCIDENTS DUE TO OVER SPEED – RESPONSIBLE MODES

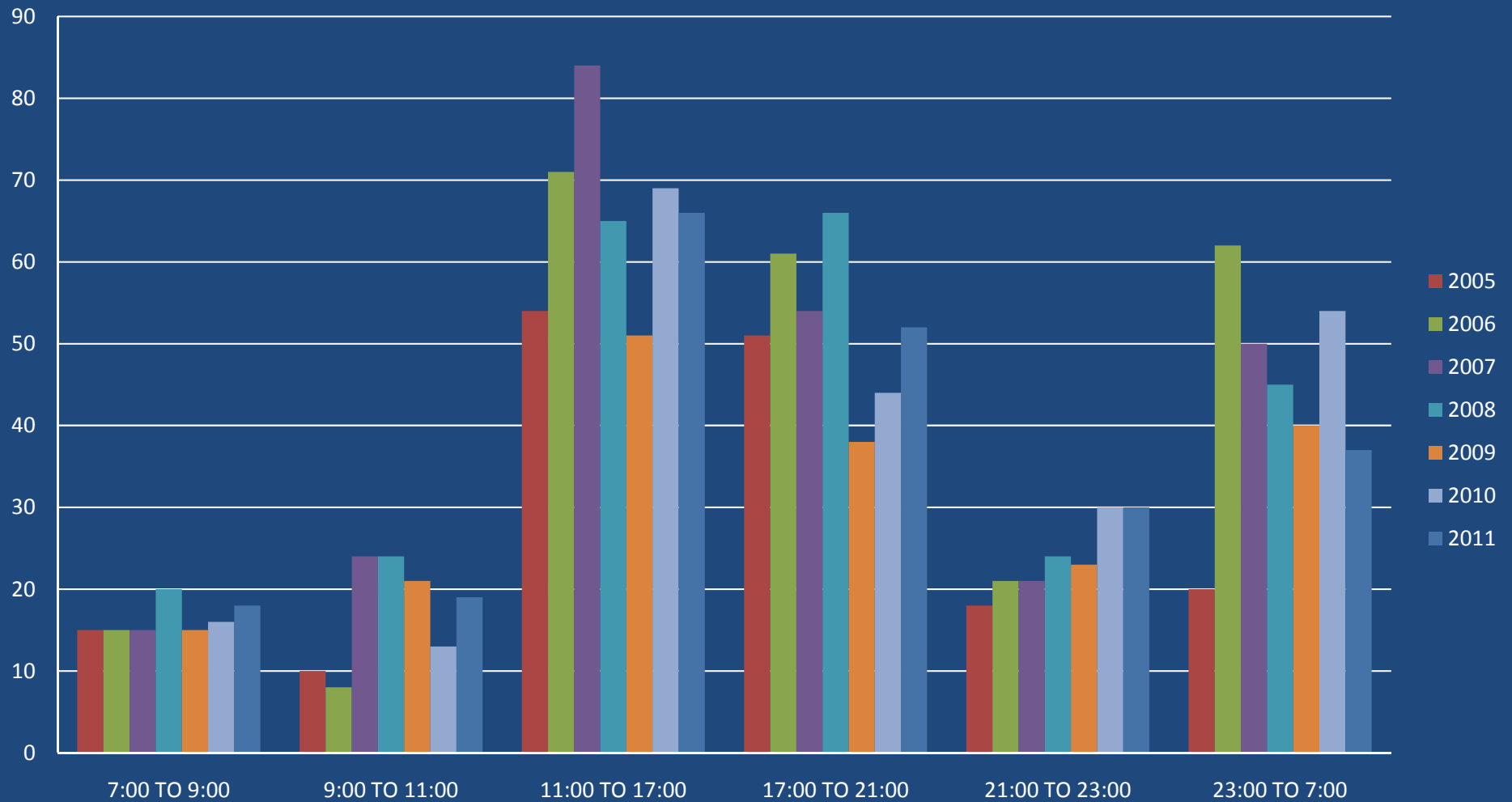
CODE	RESPONSIBLE MODE	NO.	
2	2 WHEELER	19	16.24%
3	3 WHEELER	14	11.97%
4	4 WHEELER - CAR, JEEP, SUV	24	20.51%
6	AMTS	3	2.56%
8	GSRTC & PRIVATE	8	6.84%
9	TRUCK & MULTI AXEL	34	29.06%
10	OTHERS	2	1.71%
11	UNKNOWN	13	11.11%
Grand Total		117	

Responsible Modes in Over speed



Analyzing data

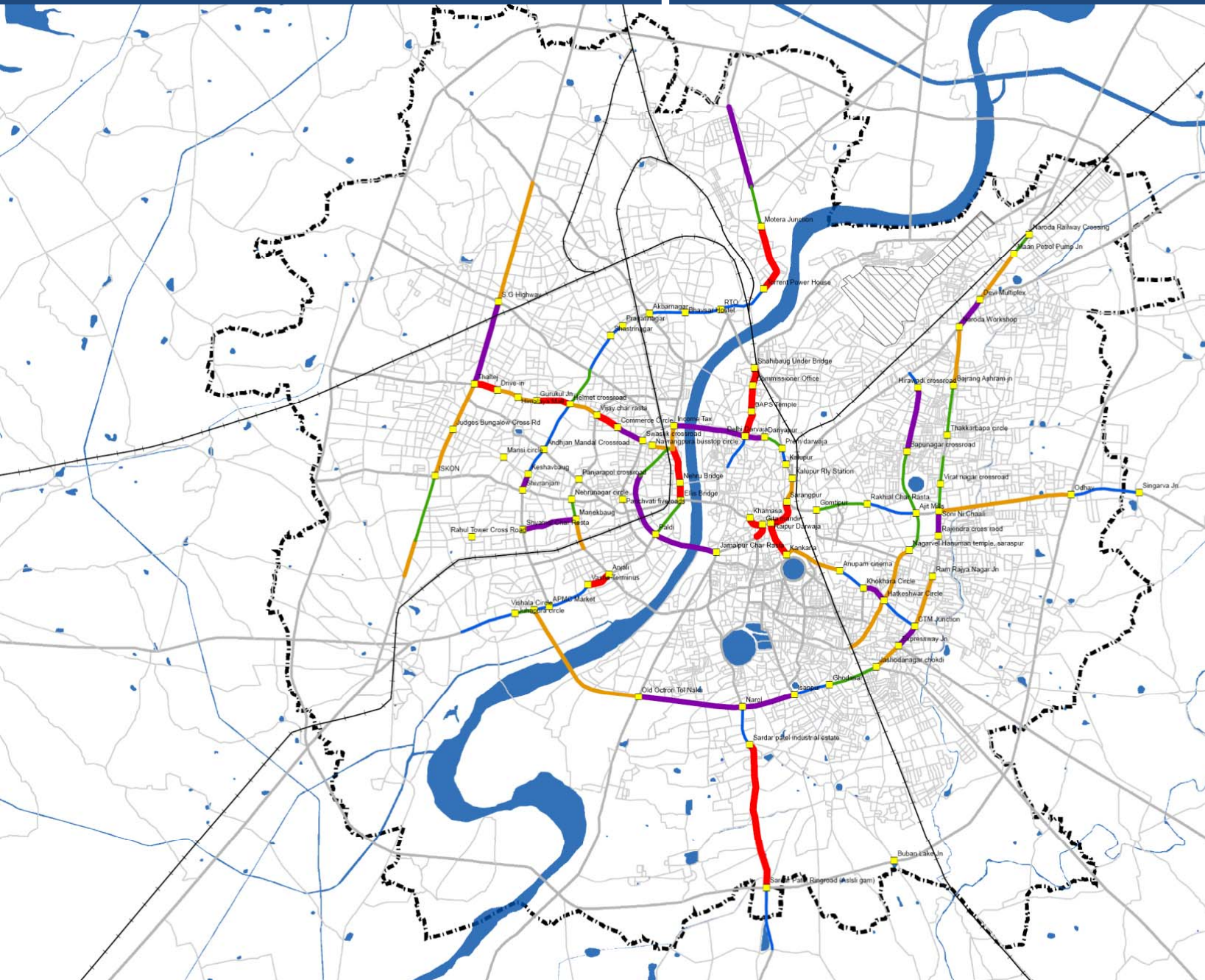
Time Wise Distribution - Fatal Accidents



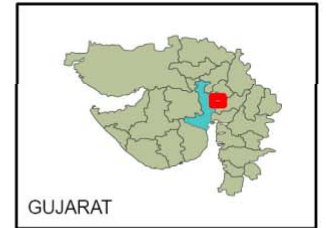
Analyzing data

Stretches	Length (km)	Serious 2011	Serious 2010	Fatal 2011	Fatal 2010	Total (2010 & 2011)	Accident rate
Shahibaug to Delhi Darwaza	2.84	10	8	2	5	25	8.80
Walled city ring	5.19	14	13	7	7	41	7.90
Drive-in Road	5.68	19	15	5	4	43	7.57
Ashram Road	3.14	7	11	3	1	22	7.01
Panjrpol to Sharda society	1.92	5	5	1	1	12	6.25
Mithakhali Road	3.72	8	10	2	2	22	5.91
Narol to Aslali gam	6.6	8	4	16	8	36	5.45
RTO to Chandkheda	6.54	11	3	3	14	31	4.74
Danapith to CTM (Hatkeshwar)	6.48	12	5	5	6	28	4.32
Anjali to Sarkhej	5.66	11	6	5	2	24	4.24
Vishala Circle to Narol	6.7	13	3	6	6	28	4.18
Shivranjni to RTO	7.91	13	6	9	4	32	4.05
SG Highway	11.03	19	9	9	6	43	3.90
Narol to Naroda	16.44	14	7	20	18	59	3.59
Soni ni chali to Odhav	5.17	4	2	6	5	17	3.29
Memco to Railway crossing	8.08	10	4	5	4	23	2.85
Sarangpur to Soni ni Chali	4.17	3		3	5	11	2.64
Total	107.27	181	111	107	98	497	

Accident prone stretches



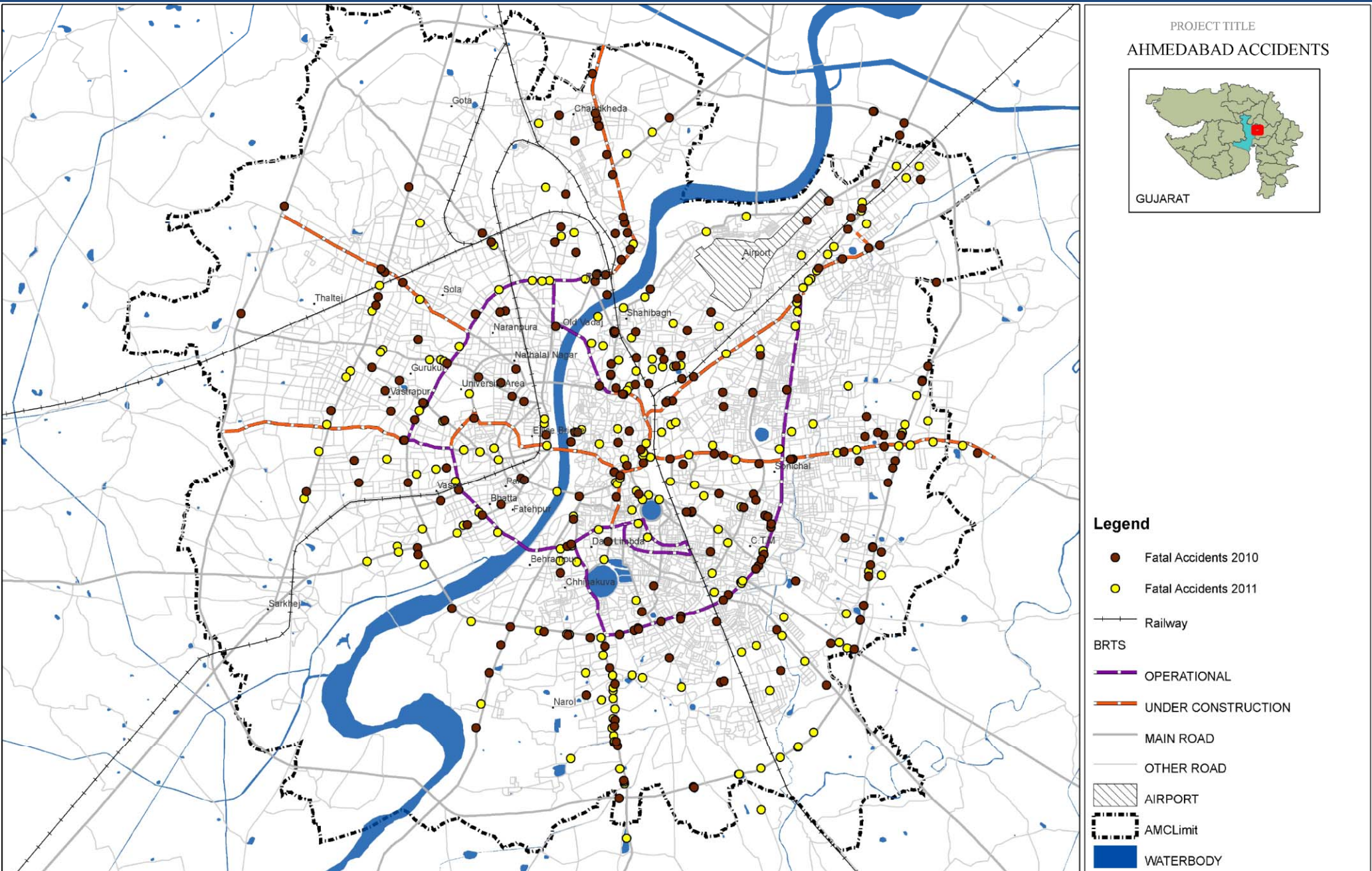
AHMEDABAD ACCIDENTS



Legend

- Junctions
- Railway
- Accident Rate**
- Above 6
- 4-6
- 3-4
- 2-3
- Below 2
- MAIN ROAD
- OTHER ROAD
- WATERBODY
- AMCLimit

Spatial distribution of accidents



Pedestrian fatalities

PROJECT TITLE
AHMEDABAD ACCIDENTS



GUJARAT

Legend

Responsible Mode For Pedestrian Accidents

- Two Wheeler
- Three Wheeler
- Four Wheeler
- AMTS
- BRTS
- Trucks
- Others
- GSRTC/Private Bus

Railway

BRTS

- OPERATIONAL
- UNDER CONSTRUCTION

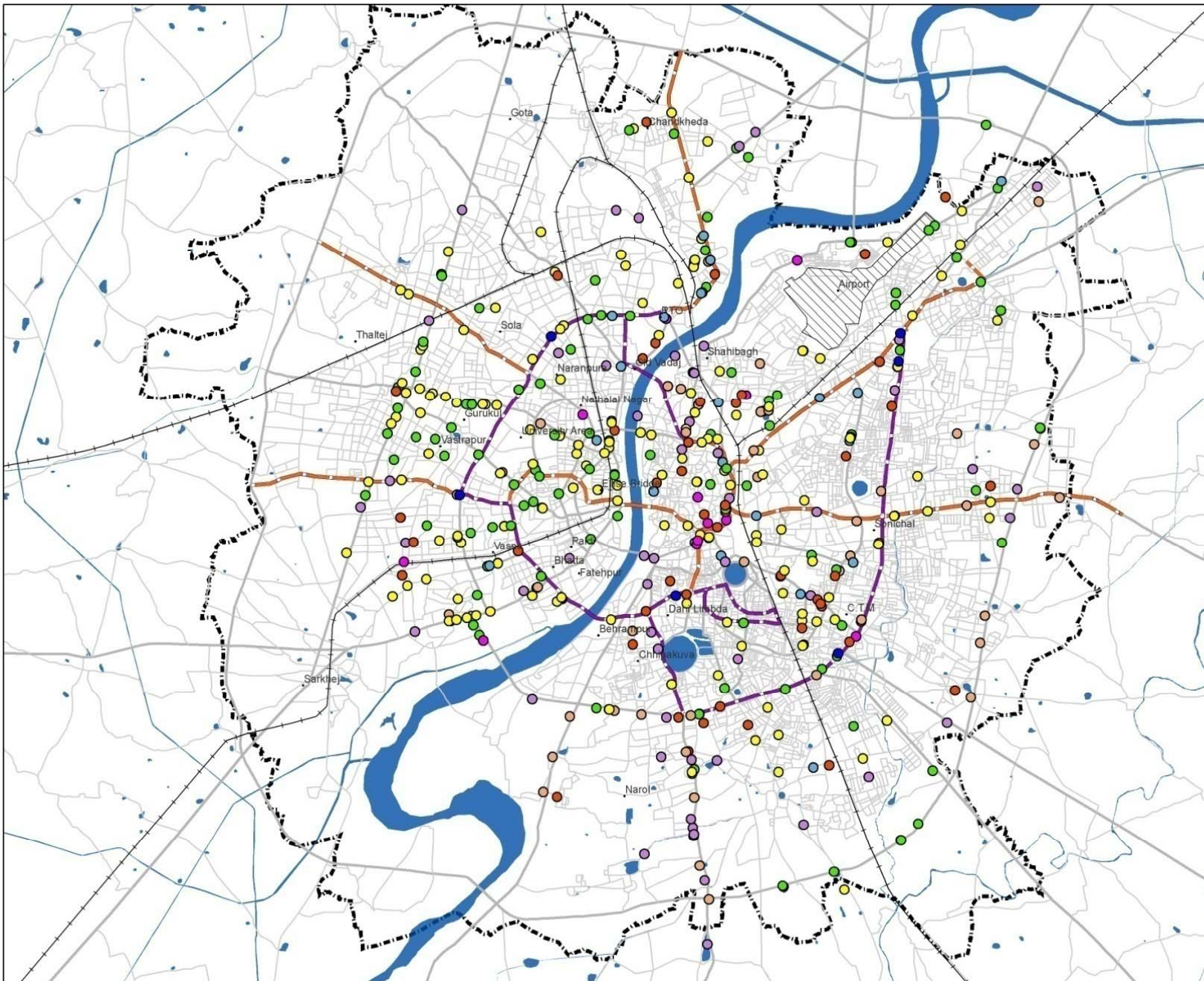
MAIN ROAD

OTHER ROAD

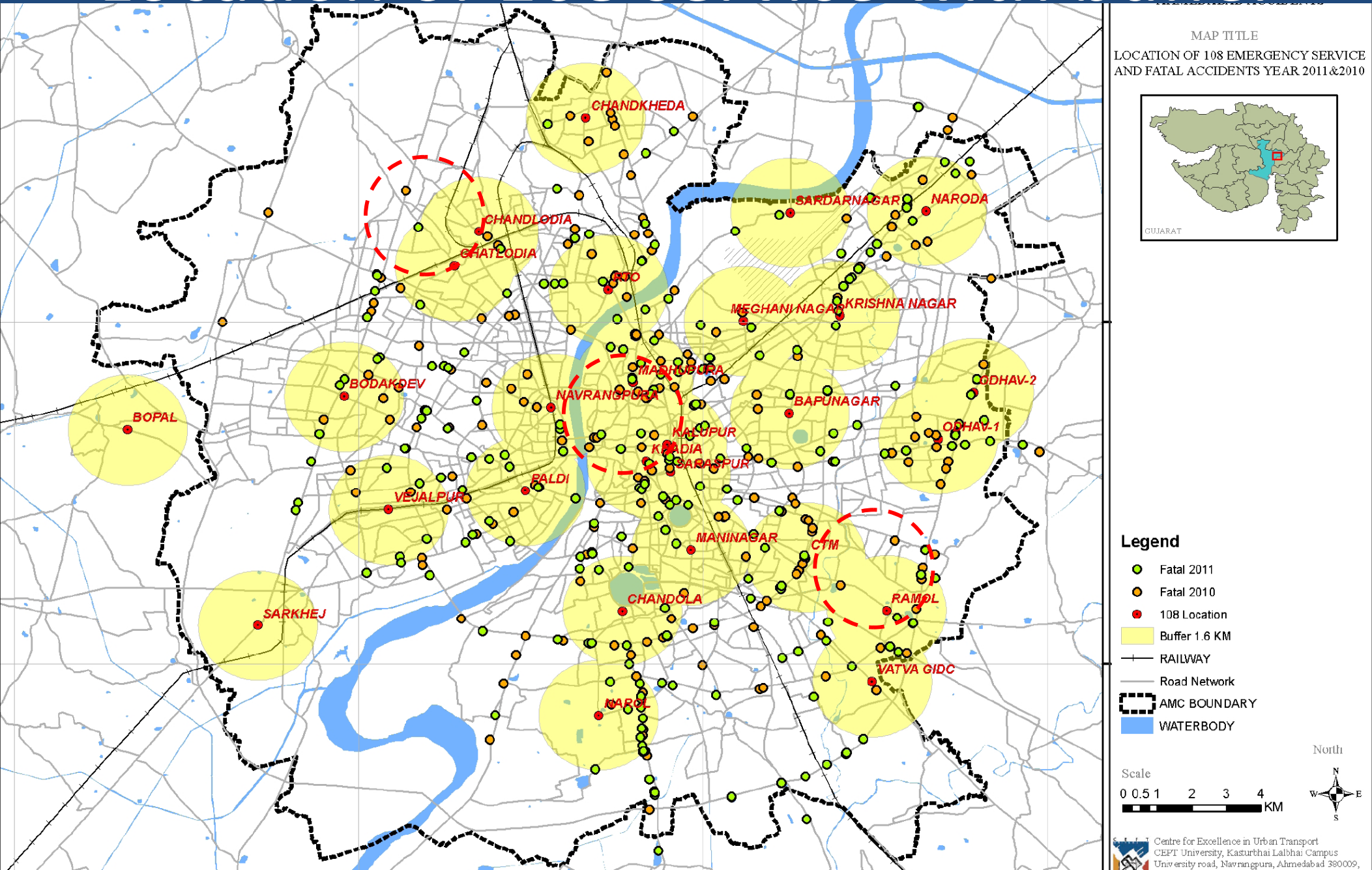
AIRPORT

AMCLimit

WATERBODY



Location of 108 service with buffer



Conducting safety audits

A systematic examination by a road safety expert of a road project

- To identify potential safety problems and recommend solutions



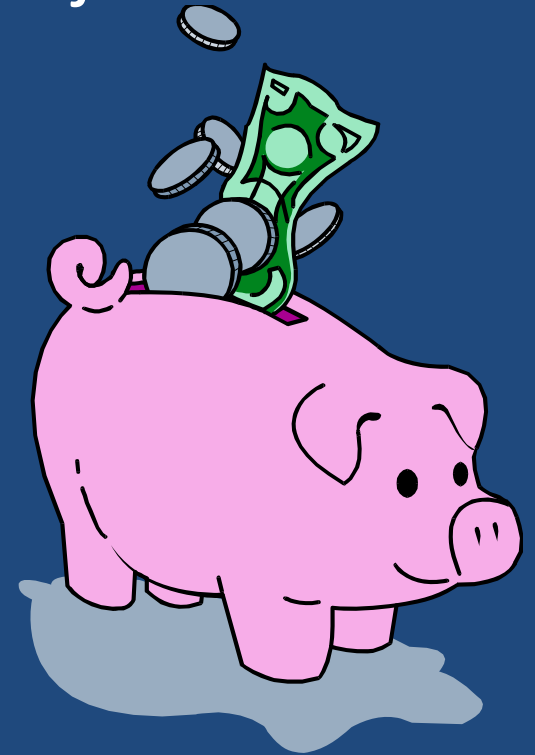
Prevention is better than Cure

A Safety Audit identifies the “black spots” before the road is built

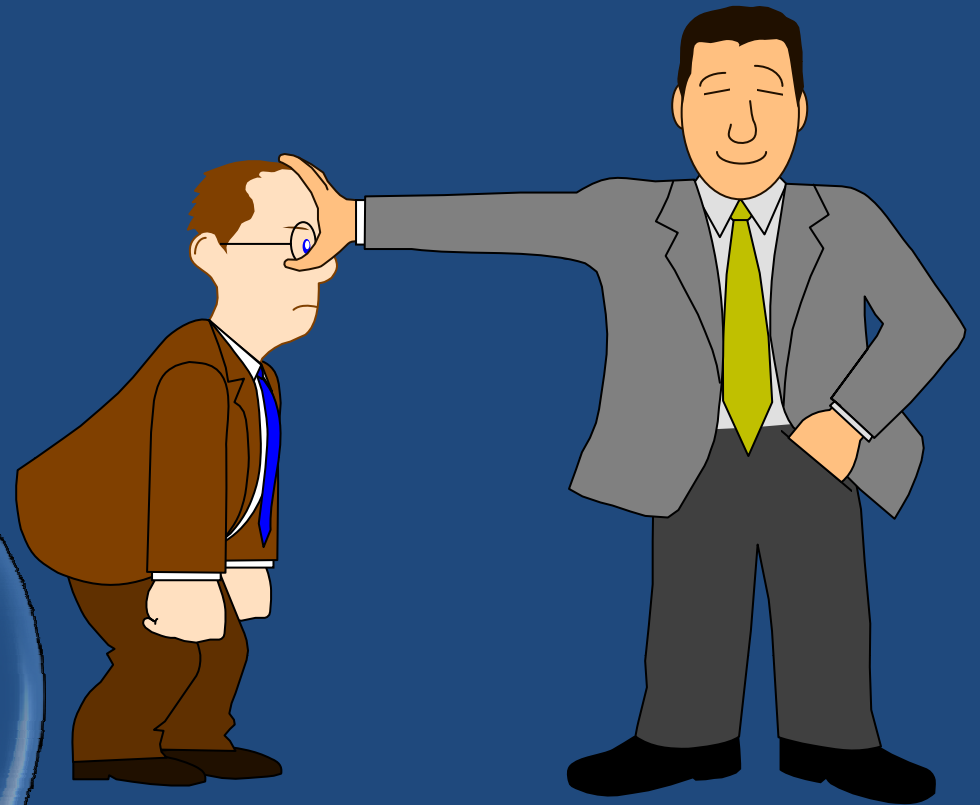
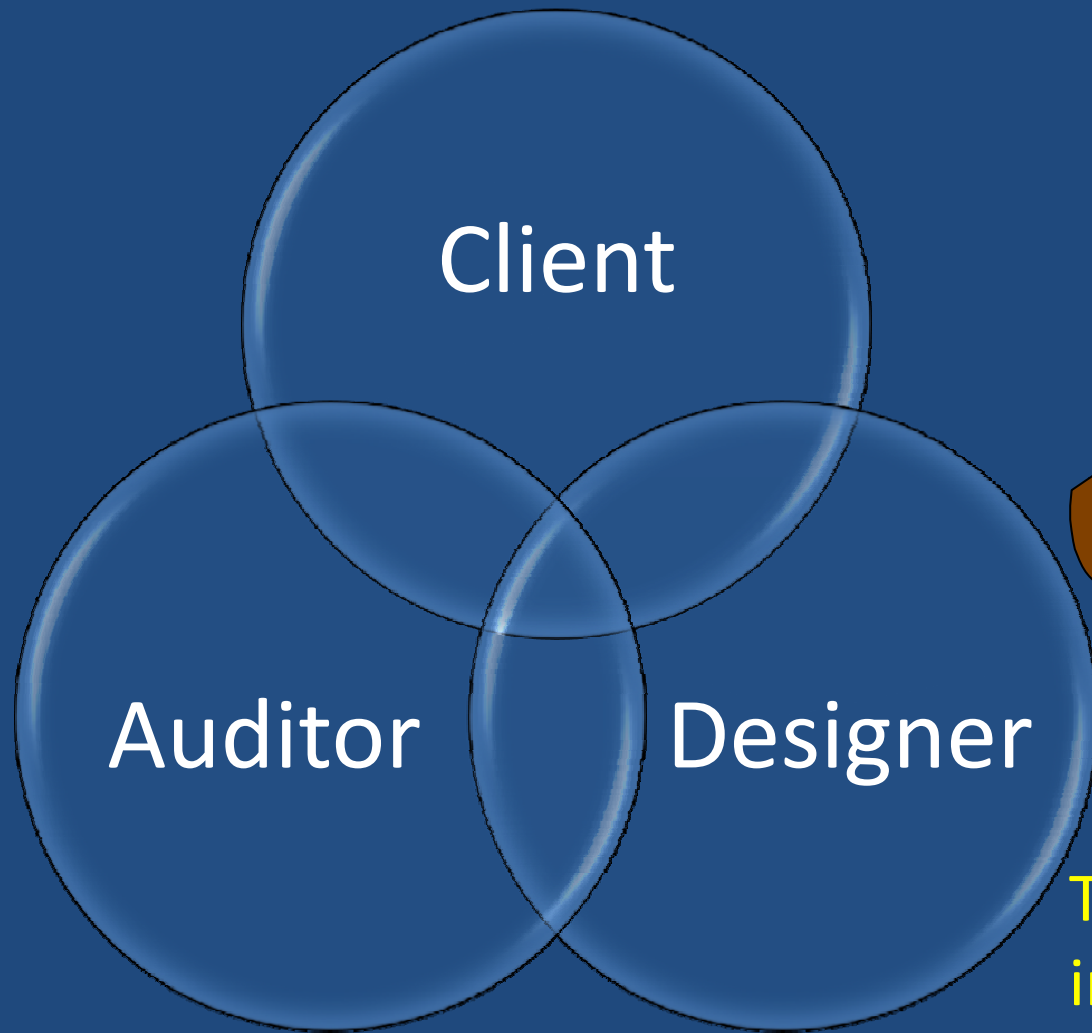
Effects of Road Safety Audit

In typical cases:

- The audit reduces accidents with 30%
- The benefit-cost ratio is around 10:1
- The audit costs less than 0.5% of the project costs



Organisation of the Audit



The auditor should be independent from the design staff

Road Safety Inspection

Road Safety Audit on existing roads

- Not connected to a specific project

The parties of an inspection



Site visits

A site visit should be made in both daylight and darkness

The influence of weather conditions should be evaluated

The auditor should travel the section in all directions

Reporting

The auditor selects the best solution to each problem

The auditor reports to the operation manager

Road inspections

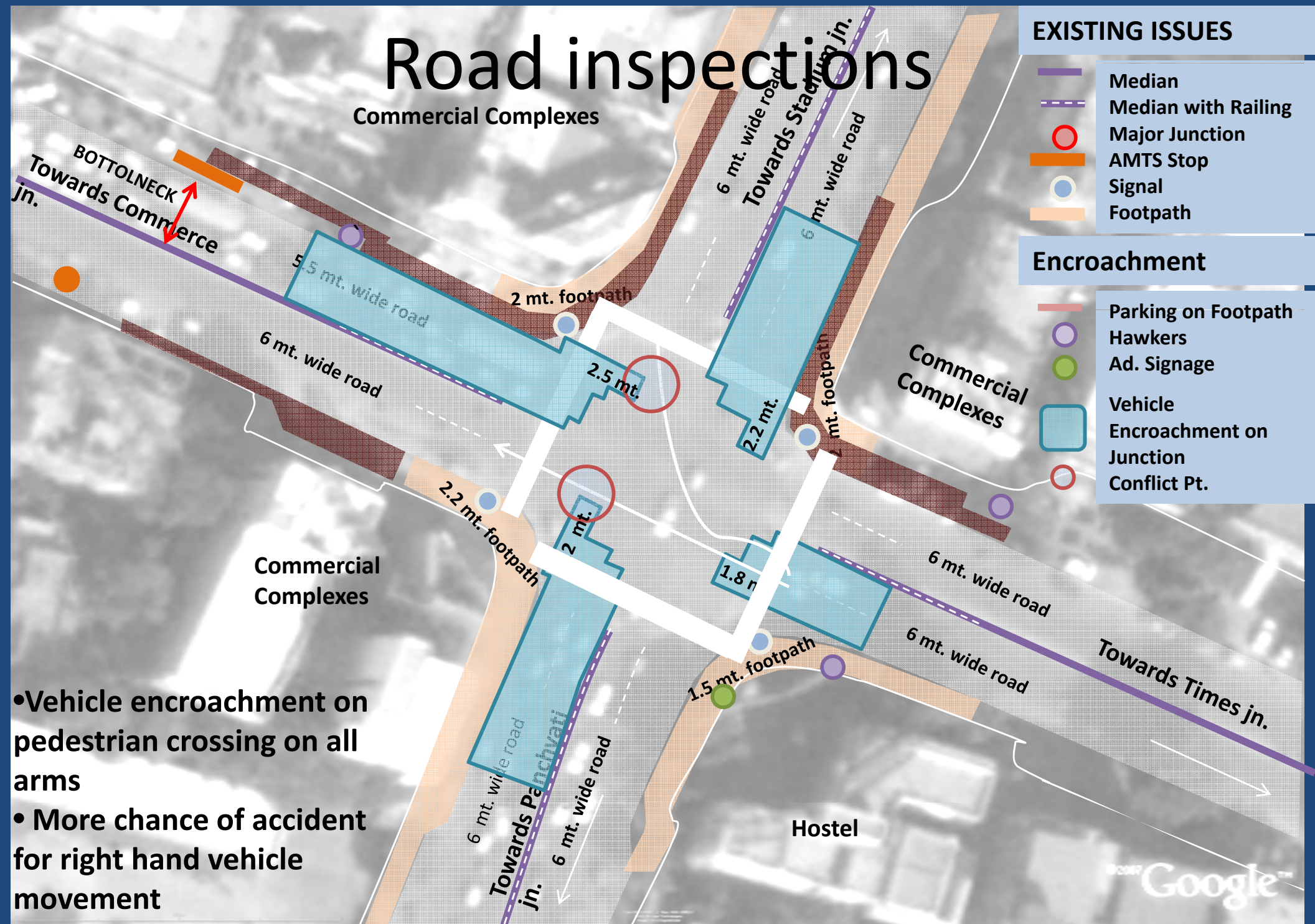
Commercial Complexes

EXISTING ISSUES

- Median
- Median with Railing
- Major Junction
- AMTS Stop
- Signal
- Footpath

Encroachment

- Parking on Footpath
- Hawkers
- Ad. Signage
- Vehicle Encroachment on Junction
- Conflict Pt.




- Vehicle encroachment on pedestrian crossing on all arms
- More chance of accident for right hand vehicle movement






Road inspections

Commercial Complexes



EXISTING ISSUES

-  Median
-  Median with Railing
-  Major Junction
-  AMTS Stop
-  Signal
-  Footpath

Encroachment

-  Parking on Footpath
-  Hawkers
-  Ad. Signage
-  Vehicle Encroachment on Junction
-  Conflict Pt.

Pedestrian Movement

-  Pedestrian pattern
-  Pedestrian volume per hr.

Towards Commerce jn.

108

5.5 mt. wide road

6 mt. wide road

2 mt. footpath

138

144

6 mt. wide road

Towards Stadium jn.

6 mt. wide road

1 mt. footpath

Commercial Complexes

Commercial Complexes

2.2 mt. footpath

90

1.5 mt. footpath

132

6 mt. wide road

6 mt. wide road

Towards Park jn.

6 mt. wide road

6 mt. wide road






Hostel

Google






- Improper movement of pedestrian because of encroachment on pedestrian pathway
- No railing on median near AMTS stop – easily crossed by pedestrian

Road inspections



EXISTING ISSUES

-  Median
-  Median with Railing
-  Major Junction
-  AMTS Stop
-  Signal
-  Footpath

Encroachment

-  Parking on Footpath
-  Hawkers
-  Ad. Signage
-  Vehicle Encroachment on Junction
-  Conflict Pt.

Vehicles Movement

-  Traffic violation (84 in 1 hr.)
-  Wrong side Movement (44 in 1 hr.)

Commercial Complexes

BOTTOLNECK
Towards Commerce
jn.

5.5 mt. wide road

2 mt. footpath

6 mt. wide road

6 mt. wide road
Towards Star jn.

6 mt. wide road

Commercial Complexes

2 mt. footpath

Commercial Complexes

2.2 mt. footpath

6 mt. wide road

6 mt. wide road

Towards Times jn

6 mt. wide road
Towards Panchvati
jn.

6 mt. wide road

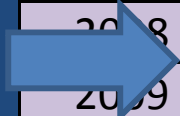
1.5 mt. footpath

Hostel

• Red light violation on C.G.Road by two wheeler & cyclist

Latest trends

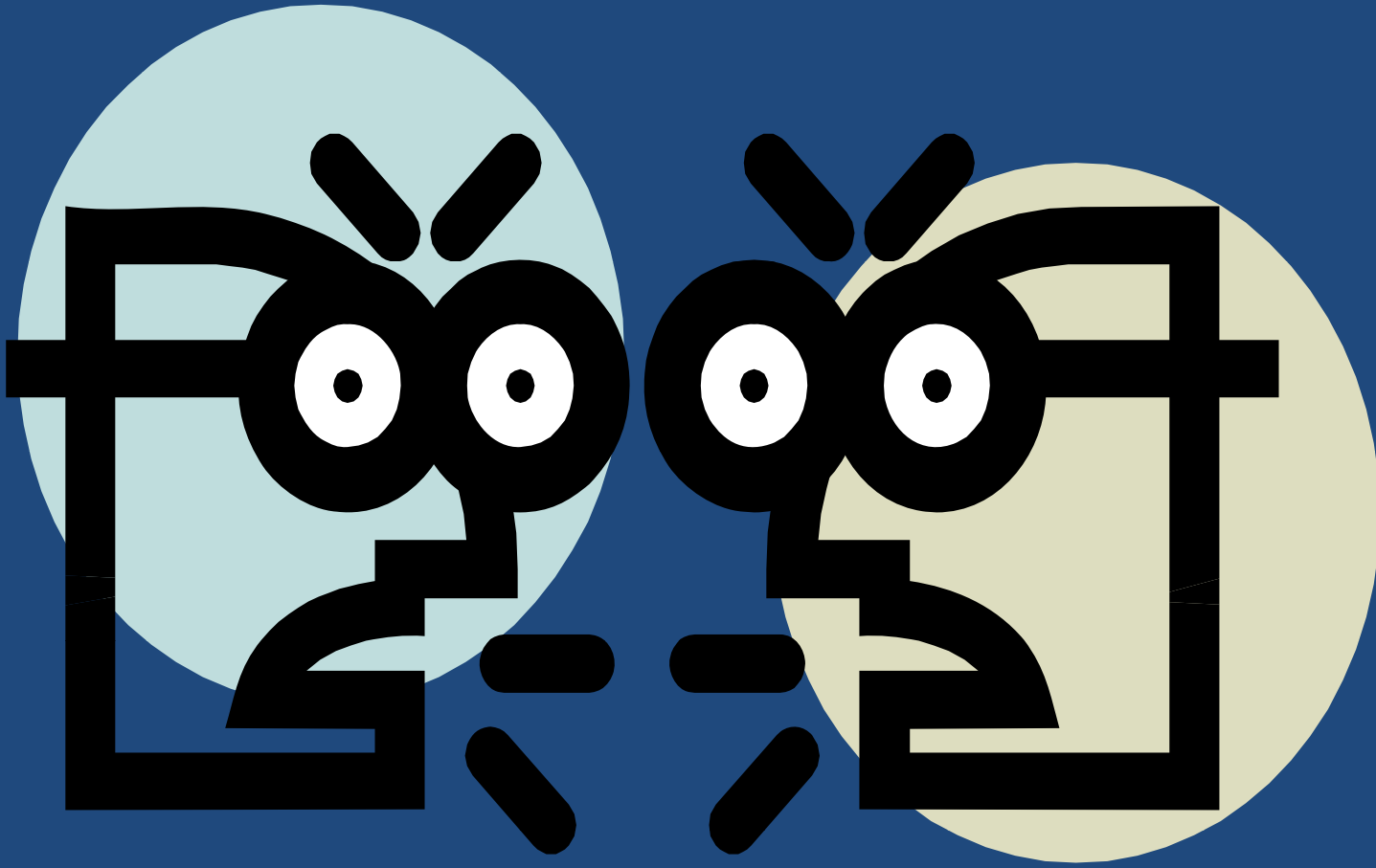
YEAR	Fatal Accidents			Serious Accidents			Total Accidents		
	Narol-Naroda	Narol-Vasna	Anjali - Nehrunagar	Narol-Naroda	Narol-Vasna	Anjali - Nehrunagar	Narol-Naroda	Narol-Vasna	Anjali - Nehrunagar
2002	39	7	1	2	0	1	232	22	7
2003	35	15	3	35	20	0	307	115	20
2004	23	2	0	8	1	2	212	14	15
2005	35	7	1	14	0	0	169	17	14
2006	47	3	2	18	2	5	183	53	57
2007	35	4	2	14	2	3	216	15	21
2008	33	1	1	14	0	2	192	34	24
2009	19	6	0	13	1	5	145	23	7
2010	24	6	1	9	0	2	151	22	12
2011	12	4	1	11	3	2	147	25	11



Introduction of BRTS in Ahmedabad

Other suggestions/ questions

- Should the traffic police department be under the ULB?
- Dedicated and certified safety audit team within ULB
- All new projects to undergo audit
- Use of ITS for monitoring and enforcement



DISCUSSION