CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

1. **Lack of strategic Planning:**

   It has been observed in the study that the agencies responsible for traffic management do not work in a strategic manner. They do not plan, execute, monitor, and evaluate their actions. Police do not have any short term or long term traffic management plan. They have two main functions to play—enforcement and education. Enforcement and education work together. They are not effective individually. The enforcement drive should be supported by education. The education should be backed by strong enforcement. But it has been observed that the police do not have a plan for either of these. The actions are being done for the sake of taking actions. Behind their action, they do not have objectives to achieve.

   It has been observed that majority of the police officers didn’t know what the strategy is. They were found to be unaware of such a concept. Of course there were some officers who individually have their vision but an organisation the vision was found to be missing.

   As the police do not have any objective to achieve behind their action, they do not have any concept like impact assessment.

   The municipal authorities too do not work in a strategic manner. Bhavnagar Municipal Corporation got prepared a short term traffic management plan for Bhavnagar city in 2003 through a consultant but most of its recommendations are not implemented.

2. **Poor Enforcement:**

   It has been observed that the police enforcement is quite poor. The helmet, seatbelt, driving without licence, the teen-age driving, triple riding on two-wheelers, the illegal transportation of the passengers without having necessary permits, the parking regulations, use of mobile phone while driving, drunken driving, traffic signals, speed regulations etc are some of the important regulations that are not effectively implemented by police. This is the regulations that can either improve traffic management or reduce road accidents. It has been observed that the police officers do not have clear directions or vision about what enforcement measures
They are supposed to take and what is the outcome expected out of that action. They simply stand on the road and issue traffic tickets to the drivers regarding whatever violation they come across.

Following observations are made:

There is no separate traffic branch except for Bhavnagar city.
There is no special dedicated police personnel for rural areas.
The enforcement personnel are not selected on the basis of predetermined criteria.
There is no wing for keeping studying issues and making appropriate recommendations.

No positive relation between enforcement action and number of accidents could be derived. This may be due to the fact that the enforcement actions are not taken keeping some objectives in mind.

The data are not collected with a specific purpose. It is very difficult to get relevant precious data from police. The same is the case with the road transport department as far as enforcement data are concerned.

The stricter enforcement, with clear cut objective will improve overall traffic management, reduce congestion, facilitate smooth flow of traffic, bring order on road and reduce accidents to some extent.

3. **Lack of awareness and Public cooperation**:

It has been observed that people generally do not cooperate with police in enforcement of traffic rules. They try to avoid police officers. They try to bringing in some influential person’s influence to prevent police from taking legal actions. They do not adhere to traffic rules themselves. People generally do not observe rules like wearing helmet and seat belt parking regulations etc; they use mobile phone while driving though it is harmful and legally not permitted, more than 3 persons ride two-wheeler, they overtake vehicle form wrong side. They avoid observance of almost all kind of traffic regulations.

Regulations like risky overtaking, wrong side overtaking, using mobile phone while driving, dazzling light wearing seat belt, sticking reflectors on the back of the vehicle need a lot self regulations. These regulations cannot be enforced on the support of police presence and fear because police presence is not possible everywhere and we generally do not have surveillance cameras for enforcement.
The main reason for lack of self regulation and non cooperation is lack of awareness. Many a time people do not know traffic rules. Even if they know the law they do not adhere to it because, they do not feel that these rules are for their benefit.

Following reasons were observed for their non cooperation and self regulation:

- Lack of awareness about traffic rules.
- Absence of certainty of penalty. They feel that they can avoid police action by political, official or some other kind of influence.
- People do not know the traffic rules because they are never or rarely enforced.
- Low respect for police due to poor police image.
- General low respect for law and police.
- They consider police role to be of interventionist. They consider police role of stopping people from violating rules to be negative. They do not feel and experience that the police enforce rules for their benefit. The police have failed to create that image.
- Lack of traffic education.
- Poor literacy.
- The fine is too light to prove to be effective deterrent.
- They violate parking regulations because of insufficient parking space.
- They avoid wearing helmet because they find it to be inconvenient.
- Youth violates traffic rules much because they are unable to comprehend its implications.
4. **Lack of systematic traffic education:**

It has been observed that systematic traffic education efforts are missing. The organisation of the traffic education programmes depend on the officer at the top. If he is interested, he will lead the organisation in to such initiative.

The police have to deal with daily law and order issues. Even if the top leader wants that they should focus on traffic education, the priority shifts due to day to day issues. The continuity is not maintained. Only large scale traffic education initiative sustained on a long term basis would bring desired impact. Thus present police action is unable to bring desired result.

It has been observed that only celebration of traffic awareness week once in a year is the only regular effort made in traffic education. Obviously this cannot create any impact.

It has been observed that the right age for traffic education is school age. At that age child is quite impressionable. The impression created on mind at that age will last for ever.

The traffic education is expected to lead to following results:
- Better cooperation from people.
- Improved self regulation.
- Order on the roads.
- Lesser violations.
- Improved police image.
- Reduced accidents.
- Improved drive’s behaviour.
- Better enforcement of law.

Following weakness were observed in traffic awareness efforts.
- Traffic education is done once in a year during traffic awareness week celebrations.
- Non involvement of people on large scale.
- It is done only occasionally
- No separate traffic education wing in police.
- Insufficient staff.
- Changing priorities.
- Total absence of traffic awareness efforts in rural areas.
- Poor communication skills in police officers.
No systematic training to police to make them capable of educating public.

It has also been observed that some categories of people need more awareness. These are:

Youth
The drivers driving vehicles carrying passenger without necessary permit.
Luxury bus drivers.
Auto rickshaw drivers.
Truck drivers.

5. Role of traffic engineering for prevention of traffic:

It has been observed that the faulty road engineering is found to be responsible for traffic accident in some cases. There are locations where accidents occur frequently due to faulty engineering. Following are some such issues:

No marking on the road, especially on road junctions.
Direct entry from minor road to main road, no speed breaker.
No speed breaker on the highways passing through the villages and towns.
Narrow road with sharp curves.
Not driving in lane due to poor quality of road- road pits.
Poor visibility due to curves on the road.
Large scale ribbon development on highways. No provision to segregate the local and through traffic at such place.

It has been observed that the police officers come across cases where road engineering was found to be responsible for accident but there is no system of informing the concerned road department and corrective action.
6. Lack of coordination between agencies:

Following agencies are involved in traffic and transport planning and management.

- Municipal bodies and panchayat
- The police authorities
- The licensing authorities for shops
- The Road engineering department of the government
- The Road Transport department of the government.

Following observations are made about this issue:

- It has been observed that closer coordination between these agencies is required.
- At present these agencies do not coordinate at the planning stage. They take each other’s support whenever it becomes inevitable. For example, municipal authorities take police help when they go for removal of encroachment.
- There are multiple agencies for issuing different kinds of license. They do not take police opinion before issuing license. The issue of license may create a parking issue or congestion which later police have to handle.
- Traffic signals are not effective due to lack of coordination between police and Municipal Corporation.
- The police come across accident cases that can be prevented by taking necessary corrective traffic engineering measures. But there is no system of communicating it in a timely manner to the concerned road engineering department.
- In some cases they are informed but there is no system so that corrective action is ensured in a timely manner.
- Even if the action is taken there is no system so that the suggesting authority that is police are informed about it. In absence of that the police are not motivated to bring such road engineering defect to the notice of concerned department.
7. **The severity and certainty of penalty:**

   **The certainty of penalty:**
   It is unfortunate that the police had to work under different interference and had to adopt differential standards according to the status of the violator. It is difficult to take action against a violator if he is politically well connected or he is known to some influential person. Many police officers and leading citizens said in their interviews that the people adopt several means to avoid traffic tickets.

   **Severity of penalty:**
   It is observed in the interview with many police officers that the amount of penalty is not severe enough to deter people from violating law.

8. **Compliance of the penalty:**

   The police issue ticket for traffic violation. The vehicle owner is supposed to pay this in the RTO office within 15 days. But people are not paying it in time. They pay after several memos. This further makes the law ineffective.

9. **Lack of public participation in decision making:**

   Right now there is no system for involvement and participation of different stakeholders. The elected bodies like the municipal corporation, nagarpalikas and panchayats are supposed to take care of the interest of the people but sometimes the members of these bodies do not represent the interest of all the sections of the society and take partisan view. Therefore the decision makers need to devise means for evaluating interest of all the sections of the society, especially the weaker sections of the society.

10. **Road Safety Issues:**

    Every year more than 200 people die in road accidents in Bhavnagar district. Most of them are bread earner for the family. This is more serious because most of them do not have personal or accident insurance cover. In interviews with police officers following major causes of traffic accidents are identified:
**Issues in General:**

Pertaining to driver's behaviour:

a. Non-wearing of safety gear like helmet and seat belt.

b. Risky overtaking

c. Long driving hours

d. Drunken driving

e. Over speeding

f. Teen-age driving

g. Use of mobile phone while driving.

h. Driving without license and without the capability to drive.

i. On road parking of vehicle.

j. Leaving vehicle involved in accident without proper warning lead to accident again.

k. Dazzling head light during night

l. Overloading

Pertaining to road engineering:

m. Defective roads.

n. Narrow roads

o. Poor maintenance of roads.

p. Absence of road marking especially in rural areas.

Pertaining to vehicle:

q. Poor maintenance of vehicle.

r. Poor tyre quality

s. Brake light not working

t. Lack of reflectors on the back of the vehicle.

u. Protruding material behind the vehicle, especially the steel bars, without necessary warning.

**Prominent Issues in rural areas**

v. Absence of speed breakers at junctions where minor rural roads meet the main roads.

w. The absence of road marking on the roads.

x. Lack of awareness of the rural road users.

y. Near absence of effective enforcement.
z. More than 2 riders on two-wheeler.
aa. Driving without license
bb. Drunken driving
c. Illegal transportation of passengers by unsafe vehicles.
dd. Carelessness on the part of the drivers of heavy vehicles - they do not respect the user of small vehicles.
e. Non-wearing of safety gears like helmet and seat belts.
ff. Lack of traffic education and consequent lack of awareness of traffic

From the analysis of accident data and the enforcement action data form Bhavnagar district police It has been observed that the enforcement action simply doesn’t lead to reduction in road accident.

11. Parking Issues:
Following are the major parking issues:
a. Parking in no parking zones:
Very few declared no parking zones are their in Bhavnagar city and other towns. The towns have hardly any such zones. Some places, these no parking zones are not enforced strictly. These zones are declared with a specific purpose especially with the purpose of preventing traffic congestions and ensuring smooth flow of traffic. These results are not achieved when it is not enforced leading to traffic congestions or hindrance in smooth flow of traffic.
b. Parking on roads:
It is very common to park vehicles on the roads. This leads to traffic congestion or obstruction in smooth flow of traffic. The speed of traffic goes down and it causes delay.
c. Haphazard parking:
This is generally found out at:
In front of bus and railway stations.
Places from where illegal buses and other vehicles start.
Places where such vehicles are parked.
Places from where auto rickshaws take passenger to different part of the city.
Auto rickshaw stand
This is harmful because this is generally found out at places where generally space is enough for parking and managing traffic. If vehicles are parked and plied in orderly manner, the enough space will be available for parking and for smooth flow of traffic. But because of lack of traffic sense on the part of such road user and lack of initiative on the part of police to take necessary enforcement action, this becomes headache for the people.

It is generally observed that there is enough parking place in front of the railway and bust station but the rickshaw driver to get maximum trips they stand anywhere and keep on moving as the passengers come out of the station. This creates inconvenience to the passengers and it is unsafe too.

d. Misuse of parking lots:
   In urban centres like Bhavnagar there is are clear cut municipal bylaws that require the builder to keep enough parking space in shopping complexes and apartments. These regulations are not strictly implemented. The builders show the parking space in the maps of the proposed building get the plan approved, construct the building get the building use permit. After that they construct shops in the earmarked parking lot. Such buildings have huge parking need as the residents are large in number. These vehicles are parked on the road. The visitors of these building also park their vehicles on the road. They hinder traffic a lot.

e. Misuse of parking space:
   There is a space between apartment or shopping complex and the main road. This space can be utilised for parking temporary vehicles. But the builders raise this space with a cemented platform. Therefore it is not available for parking. This, again, creates pressure on the road.

12. Encroachment:
   Encroachment is a major issue in Bhavnagar city and all other towns of the district. This is done either on footpath or on road. The shopkeepers construct cemented platforms outside their shops. This also encroaches upon the footpath. The pedestrian cannot use the footpath because of encroachment on footpath. The pedestrian have to walk on the road. This endangers their safety and hinders the vehicular traffic. The encroachment on road obstructs vehicular traffic.
No action is taken either by police or the municipal or panchayat authorities because the shopkeepers who commit these are quite influential and make hue and cry when such actions are taken. Sometimes the actions are taken but they are not sustained. Without sustained efforts, it doesn’t bring the desired result.

The police generally avoid taking action stating that it is the job of municipal agencies. Legally speaking yes, these authorities are responsible to keep these spaces open and do not permit any illegal construction and police should provide them with security while taking such action. But police is also responsible for traffic management and is empowered to take actions under section 283 of the Indian Penal Code (IPC).

13. Lack of efficient Public transport system:

Bhavnagar city has a bus based public transport system. According to one estimate it presently caters to about 7.5% of the transport needs. As per the report submitted by the consultant it should increase to 25%. The lack of sufficient public transport leads to increased motorisation. The large numbers of the personalised vehicles are two-wheelers. Two-wheelers consist of 79% of the total numbers of vehicles in the district. This leads to mixed traffic on the road with large number of two-wheelers. This has its implication in traffic management.

The state of affairs in the rural areas is very bad. The mass transport buses run by the State Transport (ST) Corporation generally do not cover most of the villages. Even in the villages where they go, the frequency is very less. It is unable to fulfil the transport needs of the villagers. This has resulted in to operation of private buses and other private vehicles like chhakdas, mini door rickshaw, tempo etc. The drivers of these vehicles are poorly trained. These vehicles are overcrowded and are very unsafe. These vehicles are parked in a very haphazard manner in the towns and they create traffic congestions and disorder in traffic management.

The ST buses going to other major cities of the state are also inadequate. This need is fulfilled by the private buses, though in a illegal manner as these buses are not given license to carry passengers from point to point. That is called stage carriage permit in the language of Road Transport Department. These
vehicles are not permitted to use the ST bus station and they ply from different parts of the city, towns and villages. They are parked on the roads and obstruct smooth movement of traffic and create congestion.

These vehicles run illegally. They are detained at times by enforcement agencies. The passengers suffer.

It has been observed that the VTCOS, the official bus operator for Bhavnagar city has been plying buses for Gogha, Vadodara etc. They have the advantage of having their own bus station at Gangajaliya Talav. The other private bus operators do not have that benefit.

14. **Major enforcement concerns in Bhavnagar city:**

Following are the major enforcement concern raised by the citizens:

10. Stray cattle on the roads.

The stray cattle are very common in Bhavnagar city. They obstruct traffic and some time is responsible for traffic accident and even for loss of life. The police are not taking any action on the pretext that it is the responsibility of Municipal Corporation. The corporation doesn’t take any action saying that they do not have place to keep such cattle after catching them. They also say that the owners are not taking them back and it becomes unnecessary burden for the corporation to maintain them.

11. Non functional Traffic Signals:

It involves following issues:

I. The signals are out of order at times.

II. They are not maintained on time.

III. There is lack of coordination as the signals are installed and maintained by the municipal corporation and are enforced by police.

IV. The timings are not appropriate. The timings are fixed by the supplier. The signal timings need to be changed as per the flow of traffic at different time of the day and on different days. On the spot enforcing agency, the police, do not have access to change
the time and therefore at times the signals become a hindrance than a help.

V. The most important issue is the non adherence in absence of police. The public invests financial resources in terms of cost of police personnel as well the cost of installation and maintenance of signal.

VI. More signals are needed on other junctions provided they are enforced strictly.

12. Teen-age driving:

Teen-age driving is quite prominent in Bhavnagar city. It is there in other smaller towns too but not to the extent it is prevalent in Bhavnagar city. The school going children drive such vehicles as they go to school, tuition class and other activities. This is quite dangerous for their life and for the life of other road users.

15. Congestions in Bhavnagar city:

The issue of traffic congestions is more prominent in Bhavnagar city. It is there in other towns also but there it is mere mismanagement of space. Secondly there people generally do not mind having that. It can be solved easily with little initiative and sustained action on the part of police. The main traffic congestions points are as under and the observation and recommendations to solve them are listed below:

a. Bhidbhanjan Chowk:
   Due to narrow road.

b. Haluria Chowk:
   Too much vehicular traffic towards all the four roads and the parking on road in front of the district court building, parking on Haluria Chowk on the side of Alfred High School building are responsible for congestion on this point.

   The parking issue of the court need to be resolved. It has been observed that this has been a headache for police as lawyers are an influential community and not ready to accept any restriction. This also reflects on the overall attitude of the people in our nation. The influential people want best of the services but
they are not ready to sacrifice. They want the administration to be strict with everybody else and spare them. The strict enforcement after consultation with judiciary and the bar is suggested.

c. DSP officer to Haluria Chowk:

This road is congested because the residents keep their material (mostly from Alang ship breaking yard wreckage.)

d. Gogha Gate to Khar Gate:

The road is narrow. This the main market of the city. The shopkeepers keep their material on the footpath and park the vehicles on the road. Lot of pedestrian traffic as people visit the market for purchase. These are the main reasons for constant traffic congestion on this road.

e. Gangajaliya Talav to Nagrik Bank

This area is badly infested by disorderly parking of auto rickshaw and other such vehicles in addition to the city buses of VTCOS. These vehicle drivers stop their vehicle where ever they want and move in a very disorderly fashion to get maximum passengers and trips.

The problem here is more of order than of lack of enough space for moving as well as parked vehicles.

f. Area in front of ST Bus Station:

The privately owned buses transporting passengers illegally are parked in front of the bus station. The auto rickshaws are also parked in front of the bus station. They do not stand in a queue and wait for passengers. They compete among themselves to get passengers. This creates disorder there and hinders traffic passing thereby.

g. Gadhechi Vadla to Akhol J akat Naka:

This road is congested as the vehicular traffic is too much to be handled by the road. This is so as this is the main entry point of the city. Moreover there is lot of vehicular and pedestrian traffic due to diamond factories around.
h. Ram Mantra Mandir Chowk:
   This is a main junction especially for the traffic going to Talaja. Also the area has numerous diamond factories that add traffic especially the two wheeler traffic and the pedestrian.

i. Danapith:
   Danapith is the area where trucks come with food grains. There is a time limit for trucks to enter in to this area. They are not permitted form 9 am to 9 pm. But they violate this regulation and hence the congestion.

j. Gogha circle to Shivaji Circle:
   This area have problem of traffic congestion as private vehicles like tempos, chhakdas, mini door auto rickshaw are parked in this areas.

k. Kumbharwada Railway crossing:
   Here the problem is due to narrow bridge.

   The work for widening of the bridge is under way. The problem will be resolved once the work is over.

l. Mama Kotha to Kanabiwad, Vora Bazaar and Diwanpara
   The road is very narrow.

16. The traffic issues of smaller towns:
   The small taluka level towns have following main traffic related features:

i. They do not have scarcity of the space as much as the city of Bhavnagar has.

ii. The question is more of better utilisation of space.

iii. The people here are not much aware about traffic issues. They have accepted the disorder, congestions and obstruction as a part of life. They have not thought that something can be done.

iv. People here are not ready to make smaller sacrifices to have better traffic. They would walk a kilometre in Bhavnagar but would like to park the vehicle just in front of the place to be visited.
v. They do not follow the traffic discipline because they do not know about its benefit.
vi. The shopkeepers keep their luggage on the road.

vii. There are usually no footpaths. Pedestrians walk on the road.

viii. The vehicles transporting passengers illegally are driven and parked in a very disorderly manner.

17. The plight of pedestrian:

   The pedestrian face the following issues:
   The footpath space is encroached upon by shopkeepers.
   They have to walk on the road where they are susceptible to accidents.

18. Increased vehicular traffic and limited road infrastructure/ increased motorisation.

   As seen in chapter-1 and 2, the vehicles have been growing at a very faster rate than the road infrastructure. This leads to issues like congestions, accidents, obstruction in road, reduced speed, delays etc.

19. Drunken driving:

   This is found out especially during evening hours in city and rural areas and during night on highway. This is considered to be one of the major reasons for traffic accident. This is quite responsible for serious and fatal road accidents.

20. Enforcement of helmet and seat belt regulation:

   These regulations need special mention as they are very effective in saving life and preventing serious injury.
   Right now these regulations are hardly enforced.

21. Inadequate resources for police

   Following observations are made:
   The police personnel are not enough for traffic enforcement.
   They need more vehicles.
   Speed guns and breath analysers are needed. There are only one speed gun and one breath analyser in Bhavnagar district.
   They need more cranes to toe wrongly parked vehicles.
Safety gears like reflective jackets, breathing mass for protection against pollution are needed.
Barricades to stop and divert traffic are needed.
It is expected that police will be able to perform better in terms of better enforcement, better education, traffic management and reduced accidents and congestions and smooth movement of traffic.

22. **Impact of police actions on road accidents:**
   Looking to the enforcement action taken by Bhavnagar police and the number of accident figure of the past ten years, it appears that no consistent positive impact of enforcement action taken on number of accidents occurring. This is against the general perception that accidents will reduce if the enforcement action is taken. This may be due to the facts that the enforcement actions are not taken with the specific objective of reducing accidents.

23. **Ribbon development:**
   This is very common on both the sides of highways passing through rural areas. This reduces the speed of the vehicular traffic on highway and leads to accidents.

24. **Main impediments in police performance:**
   In the study following major impediment were observed:
   - Non cooperation from people.
   - Political interference.
   - Insufficient staff and other resources.
   - Lack of trained traffic personnel
   - Lack of awareness of traffic rules among the people
   - Low penalty unable to act as deterrent
RECOMMENDATIONS

1. **Strategic functioning:**
   
   Both police and the municipal authorities need to prepare their short term and long term plans covering all aspects of traffic management. For example the police should include all enforcement and education initiatives they intend to do. Similarly the municipal authorities need to incorporate all the aspects of traffic and transport management. They should have clear vision for traffic and transport planning and management. They should make their mission statement in consultation with all the responsible agencies and stake holders. They should make these plans public with clear deadlines. An evaluation and monitoring mechanism should be created. The actions should be periodically monitored as decided in the plan. The monitoring should not be limited to checking whether planned actions have been taken or not. They should actually measure the impact of the actions. They should find out whether the intended outcome has been achieved after the actions were taken. Continuous follow-up studies and impact assessment are necessary to take corrective measures.

   This is to find out whether the proposed action was necessary at all or not. Otherwise the enforcement actions will lead to harassment to people without bringing about the desired result. The result should be made public to ensure transparency and accountability.

   In this process the first step need to be to train their personnel about the strategic planning and management.

2. **Enforcement strategy:**

   The police should devise a clear enforcement strategy with clear objectives, make it public, implement that after training the officers, monitor the result, get the impact assessment done, make necessary change, if it fails or lack in the desired outcome. Continue this process to optimise the results. The results should be made public, In the process the views of all the stake holders should be taken in to consideration.

   Separate traffic planning and research wing in the district is recommended.

   Earmarked staff for every police station for traffic enforcement.
Study of enforcement actions and its impact on the outcome in terms of improvement in traffic management, reduction in congestion, reduction in number of accidents etc.

The enforcement should be made effective by taking action in a campaign mode. Enforcement drive should be organised and information should be given to the public through media.

The enforcement drive should be backed by education drive so as to increase public cooperation and self regulation.

Enforcement for reducing road accidents:

Police should focus on enforcement of the following regulations; measure its impact and review:

- Drunken driving;
- Over speeding;
- Driving without license.
- Teen-age driving
- Transportation of passengers illegally, without necessary permit.
- Triple riding on two-wheelers
- Use of mobile phone while driving.
- Dazzling head lights.
- Wrong side overtaking.
- Overloading and foot-board travel in case of transport vehicles;

Enforcement for better traffic management:

- Parking regulations
- Traffic signals
- Transportation of passengers illegally, without necessary permit. (Because these vehicles harm traffic management because of driver's behaviour. They park vehicle in a disorderly manner and do not follow traffic norms.)
3. **Strategy to get cooperation from people in enforcement:**

   To improve public cooperation and self-regulation following measures are suggested:

   - Effective traffic education backed by strict traffic enforcement.
   - Enforcement drive should be followed by vigorous awareness drive.
   - Strict traffic enforcement will create fear of law as well as educate people about law.
   - Police should be protected from outside influence. An environment is created through generation of public opinion where police can enforce traffic rules strictly irrespective of the status of the violator. This will create certainty of police action and consequent deterrence.
   - Meetings with political leaders to request to them not to interfere in police work of enforcement.
   - Improve police behaviour. It will improve police image and respect for police and law. These will improve self-regulations and cooperation.
   - Police officer should be given power to fine people on the spot. This will act as a deterrent. It will also reduce inconvenience to the people as they do not have to go to RTO office to pay fines.
   - Provision should be made in the law that insurance company will not pay if the person was not wearing helmet at the time of accidents and he dies due to head injury that could have been prevented by helmet.
   - Similar provision for other violations is recommended.

4. **Strategy for traffic education:**

   Traffic education should start from school. It should become part of the school syllabus.
   - The school and college student should be involved in the traffic education programmes, the way they do NCC or NSS activities as part of their education.
   - Use of existing forums like Garib kalian Melas, Krishi Mahostav, Sadbhavna mission programmes for educating people about the traffic rules.
   - The prevalent fares and festivals should be used to generate respect for law of the land in citizens.
Creation of traffic education wing in police and providing them with enough staff, funds and other resources.
Target oriented traffic education campaign looking to the education needs of different target group.
Preparation of traffic education material for different categories of people.
Training of police personnel to make them capable of educating people.
Involving people on a very larger scale.
Traffic education should become part of the agenda of the Gram Sabha.
Use of electronics means for traffic education.

5. **Corrective action in road engineering to prevent accidents:**
   A system should be set up to examine, in every case, whether road engineering was responsible for accident or not and to inform the concerned department for corrective action. The concerned department should inform police about action taken in every case.
   A system should be created that this happens in every case in systematic manner and the suggested action is ensured.
   The, three-monthly coordination meeting should be systemised to review the coordination between departments.

6. **Certainty, severity and compliance of the penalty:**
   The police should be protected from the interference. They should be allowed to enforce law without fear or favour. The police should create such awareness among the people that police cannot be effective in protecting them if they do not behave impartially. They should also be told that people need to respect law if they want to be protected by it.
   The penalty should be increased several times to make it severe enough to deter people from violating it.
   The higher rank police officers are right now empowered to fine people on the spot in some of the violations. These power should be given all traffic police personnel with effective check. This will make the enforcement arm strong enough to be effective. This will also reduce harassment to people as they will not have to go to RTO to pay fine. This will also improve penalty compliance and the income from the fine.
   Police and RTO should share online data to make the enforcement more effective.
7. **Ensuring public participation in decision making:**

To ensure public participation the appropriate public forums should be created representing interests of all the sections of the society. Different bodies should be created for different purpose including all the stake holders pertaining to that issue.

8. **Strategy for improving road safety:**

Following measures are suggested to enhance the road safety and reduce the casualties:

I. Traffic education to improve driver's behaviour.

II. Stricter enforcement of law with specific objective of reducing traffic accidents.

III. The police need to analyse causes for the accident and plan enforcement actions accordingly. The result should be periodically reviewed to find out the effectiveness of the action. The action plan should be modified accordingly.

IV. The accidents hotspots should be identified and the action should be devised to prevent accidents on those hot spots. The actions and results should be periodically reviewed to make if more effective.

V. A system should be established to analyse causes of each accident and identify what could have prevented that accidents.

VI. This information should be made public to educate them.

VII. The period of the day wise analysis should be carried out to identify causes of the accidents.

VIII. Use of safety gears like seat belt and helmet should be promoted to prevent injury and casualty.

IX. The engineering cause of accident, if any, should be identified. The concerned road construction department should be informed and necessary correction in the road design should be ensured.

9. **Parking strategy:**

Parking regulation is very important for traffic management and for smooth flow of traffic. Following recommendations are made:

Parking on road should be generally discouraged.

Narrow roads and busy markets should be declared no parking zones.
All no parking zones should be strictly enforced. Traffic cranes should be utilized to toe wrongly parked vehicles. The fines should be increased.

It should also be used in smaller towns. The road should be painted with parking lines so that the users have choice of adhering to parking norms.

The pay and park is suggested also with a view to use the parking place effectively, to avoid disorderly parking and to discourage unnecessary motorised journey and to encourage use of mass transport.

Parking can be permitted on sufficiently wide roads where additional space is available after the space needed for vehicular and pedestrian traffic. A committee should be constituted to decide such locations. These should be periodically reviewed.

All parking should be made charged parking. The charges should be decided on the basis of the principle of equity. That on the basis of the payment capacity of the user. The parking charges should also be based on the space utilised. That is larger size vehicle will pay more. This principle will also bring in the factor of equity. The parking fees collected should be utilised to improve parking facilities.

The municipal bye laws should be strictly implemented. The misused parking space should be got back by removing illegal construction. The violators should be punished with legal actions including a criminal case under relevant sections of the IPC.

The private buses should not be permitted to be parked on roads. They should be made to create their own parking lot and bus stations. Educational institutes should be made to use their space for parking. Their vehicles should not be permitted to be parked on streets.

The business establishments like banks, tuition classes should be made to make provision for parking of vehicles of their customers. Parking lots should be developed both by government agencies and private developers on PPP model. BOT concept may be encouraged in development of parking lots.
10. **Strategy to deal with encroachment:**

The police and the municipal agencies are for the people. They should not shy away with their responsibility. They should come out on a unified front. The municipal authorities need to remove all the encroachment with the security help of police and they should not permit it to happen again. The shopkeepers’ license should be cancelled if they indulge in encroachment. The support of general public should be taken by informing them that these actions are being taken for the general interest of the people. The shopkeepers can also be taken in confidence. Initially they should be given an opportunity to remove such encroachment themselves with clear cut deadlines.

These actions do not bring results because the administration doesn’t remain firm and buckle under the pressure. The administration should commit it publicly and stick to its decision. They should create such a public support for the move so that it becomes difficult for them to withdraw. An awareness campaign in this regard will help a lot in this regard.

11. **Efficient Public Transport System:**

The state government has not been able to fulfil the increased transport need of the people and a parallel unorganised illegal and uncontrolled market of transport is thriving. The step should be taken to fulfil transport needs of the people by providing efficient public transport. This can be done either by the state run ST Corporation or the steps should be taken to privatise the sectors so that the transport needs are fulfilled in a safe and legal manner.

12. **Strategy to deal with major enforcement concerns of Bhavnagar city:**

I. **Action against stray cattle:**

To deal with the issue of stray cattle, strict action by close coordination between police and Municipal Corporation is needed. Actually these cattle are owned by somebody. They should be identified, cases registered and prosecuted under Section 283 of the Indian Penal Code. All the cattle in the city should be tagged and their owners should
be prosecuted for neglecting them and creating danger on the road. Appropriate notification should be issued by the District Magistrate on recommendation of police for regulation of keeping cattle in the municipal limits.

II. Action for making traffic signals more effective:
   i. The present traffic signals should be enforced strictly before installing new signals.
   ii. The police should take strict legal actions so that the signals are observed in absence of police.
   iii. There should be closer coordination between police and the municipal corporation. The corporations should provide police with funds and the police should be made responsible for operation and maintenance of the traffic signals. The traffic branch of police should be given responsibility of change signals timings according to the traffic flow.

III. Dealing with teen-age driving:
   Following measures should be taken to curb teen-age driving
   i. Traffic education programmes in schools.
   ii. Traffic education should be included in school syllabus.
   iii. The parents should be educated in the parents meeting in the school.
   iv. The school authorities should be made responsible for this.
   v. The areas around school should be checked during school opening and closing hours and enforce this regulation strictly.
   vi. The parents should be called and educated when child is caught violating this regulation.
   vii. The registrations of the vehicle should be cancelled if it violates the rule for more than twice.

13. Strategy to deal with congestions in Bhavnagar city:
   i. Bhidbhanjan Chowk:
      This requires strict monitoring by deployment of police personnel at two points, in front of Bhidbhanjan Mandir and on the road going to town hall.
ii. Haluria Chowk:
   The strict enforcement after consultation with judiciary and the bar is suggested with judiciary and the bar is recommended.

iii. DSP officer to Haluria Chowk:
   Strict enforcement action under section 283 of the Indian Penal Code, after advising them for self compliance is recommended.

iv. Gogha Gate to Khar Gate:
   This can be eased with strict enforcement. The shopkeepers should not be permitted to keep their things on footpath. The road should be declared no parking zone and no vehicles should be allowed to park there.

v. Gangaajaliya Talav to Nagrik Bank
   This can be solved by strict enforcement of law, making all the stakeholders very clear, what is permitted and what will not be tolerated and then adhering to it strictly and enforcing it very strictly.

vi. Area in front of ST Bus Station:
   The auto rickshaws should be disciplined and made to stand in a queue and take passenger in turn.

vii. Gadhechi Vadla to Akhol Jakat Naka:
   A flyover is recommended so that the local traffic does not disturb the traffic going out of the city.

viii. Ram Mantra Mandir Chowk:
   This junction needs police presence to monitor the traffic there.

ix. Danapith:
   This is basically an issue of strict enforcement. The problem can be resolved through stricter enforcement of law of no entry during declared hours.

x. Gogha circle to Shivaji Circle:
   Strict enforcement of law against illegally plying vehicles is recommended.
14. **Strategy for dealing with traffic issues of smaller towns:**

- Traffic education of the people so as to make them aware about the possible improvement in traffic.
- Strict enforcement of law.
- Strict action against the drivers transporting passenger without permit.
- Earmarking parking place for different types of vehicles.
- Entry restrictions to some of the vehicles in some areas.
- Removal of encroachment.
- Construction of footpath wherever required and space available.
- Study of the traffic issues. Preparation of traffic plan and implementing it.

15. **Protecting the pedestrians:**

- The first priority to pedestrians.
- Removal of encroachment from footpath.
- Construction of pedestrian path.
- Adequate provision should be made for their safely by providing facilities like guard rails, secured crossing areas, footpaths, and grade separations, zebra crossings etc.

16. **Limiting the motorisation:**

The increase in motorisation needs to be tacked. To discourage motorisation following measures are suggested:

i. Improving the efficiency of existing infrastructure by taking several measures like declaring some road to be one way, declaring some areas to be no parking zones, declaring some areas to be no entry for some types of vehicles for some duration of the day.

ii. Giving priority to the non motorised means of transport like walking and cycling by protecting their interest by making provision for their safety and giving them priority by providing separate lanes for them by keeping footpath free for walkers, special lane for cyclist, some areas reserved for pedestrians and cyclists etc.

iii. Providing efficient public transport so that use of personalised motorised vehicle is discouraged.
17. **Dealing with drunken driving:**

Following recommendations are made:
- The drunken driving should be controlled by having strict implementation of state prohibition policy.
- The police should be provided with enough number of breath analyser equipments to check drivers.
- Even in absence of that police need to physically check driver and control this menace.
- The driving licence should be suspended at least for an year as it is done in some western developed country.

18. **Enforcement of safety gears:**

Following recommendations are made for enforcement of seat belt and helmet regulations.
- The regulations are strictly enforced.
- The penalty should be increased considerably so as to act as deterrent.
- It should be done campaign mode. Enforcement drive should be organised, people should be informed about the action taken through media.
- The enforcement drive should be backed by education drive. People should be educated about its benefit.

19. **Providing police with enough resources:**

Sufficient manpower and equipment:
- The police should be provided with sufficient manpower. Provision should be made for training personnel. They should be provided with adequate number of vehicles and equipments like speed guns breathe analyser and safety gears like reflective jackets, breathing mask etc.
- They should be provided with all the resources needed for traffic education.

20. **Police training:**

They should be trained so that they are able to educate people.
They should be trained to improve their behaviour with people.
They should be trained in traffic laws to make them more effective in traffic management.
21. **Dealing with ribbon development:**

   Construction of flyover where the road is so important and economically feasible is recommended.

**USEFULNESS OF THIS STUDY FOR OTHER DISTRICTS:**

Bhavnagar district is having Bhavnagar city with a population of 6 Lakh and Botad town having population of 1.3 Lakh. The districts have other smaller towns and rural areas. According to census 2011, the country has 494 towns and cities having population more than 1 Lakh. Gujarat has 29 towns and cities having population more than 1 Lakh. Many of these cities are in the population range of 5 to 10 Lakh may have problems similar to Bhavnagar city. The recommendations made in this study may prove to be quite useful for other such cities.

Most of the districts in the country have rural and urban composition like Bhavnagar district. The recommendations made in this study will be useful for other districts of Gujarat and the country.

The methodology adopted for this study can be useful for studying the traffic management issues and to identify solutions for almost all the district of the country.

**DIRECTIONS FOR FURTHER STUDY:**

1. This study was conducted for Bhavnagar district. The similar study can be conducted for any other district in the county.
2. Various traffic management issues can be identified. The action is thought of to solve these issues. The actions are taken and the results are monitored and measured so as to find out the effectiveness of the action. This kind of study may help in identifying actions to address some of the traffic management issues. The results can be scaled up on more numbers of district or regions.
3. The study of causes of road accidents can be done to identify actions for prevention of accidents and fatalities in accidents.
4. Study of traffic accident hotspots to reduce accidents: Traffic accident hotspots are identified. The causes of each of them be studied. On the basis of causes, the action is suggested. The suggested steps implemented. The results monitored and measured to analyse and study the effectiveness of the proposed action.

5. Similarly other traffic management issues like congestions, illegal parking, safety of different road users, especially pedestrian and cyclists, can be studied using the approach suggested in the previous point.