SUMMARY

Present study entitled “Quality and Availability of Passenger Facilities along Selected National Highways in Haryana and Its Impact on Highway Users and Surrounding Communities” has been organized in to seven chapters. Chapter one deals with introduction of the study, conceptualization, objectives, hypotheses, and characteristics of study area and organization of the study.

Introduction

The national highways are the backbone of the road infrastructure and the major roads in India running through the length and breadth of the country connecting major ports, state capitals, large industrial and tourist centers. India has 70,934 km of national highways till August, 2011. These constitute about 2 per cent of entire road system in India, but carry about 40 per cent of the total road traffic. These are managed and maintained by national agency of the central government namely National Highway Authority of India (NHAI) under the Ministry of Road Transport and Highways (MORTH).

National Highways in Haryana: On November 1, 1966 when the new State of Haryana was carved out of the Punjab a total length of national highways was 767 km which has increased to 1512 km in 2011. Presently 15 national highways namely 1, 2, 8, 10, 21A, 22, 64, 65, 71, 71A, 71B, 72, 73, 73A and NE-2 passes through different parts of the State.

Passenger Facilities

Nothing can be said about the routes laid down by the pre-historic people of India. It was during the Aryans about 1500 B.C. when the foundation of Northern Trunk Route traversing the whole length of the sub-continent from east to the north-west was laid but no attention to passenger facilities was paid. In the Mauryans period supply of water and shade on the highways were the concern of the government. Trees were planted, wells were dug and rest houses provided for travelers' comforts. These roadside facilities were available during the Guptas’ and the reign of Harsh Verdhana. In the medieval time, major initiative to re-establish the road system after long neglect was taken by Sher Shah Suri. In addition, he did whatever was possible to provide comfortable travel on the roads. Shady trees were planted on both sides of
roads. Under the Mughals, roadside facilities i.e. milestones, wells, reservoirs, trees, sarai and passengers’ safety were provided. Under British rule there was a general lack of interest in road development. There was no effort towards passenger facilities during this period.

**Passenger Facilities after Independence:** As regard the passenger facilities, there is no mention of these in Nagpur Plan (1943-1961) as well as in Bombay Plan (1961-1981). The government was fully negligent and completely ignored this aspect of road development. These grew rather haphazardly and spontaneously according to the necessity and requirement in time and space. It was only the Lucknow Plan (1981-2001) which gave serious consideration to this aspect of the road development. In view of its recommendations, the central government started taking notice of this aspect of road development. Central government took the initiative and prepared various scheme for the purpose and directed the state governments and union territories vide Letter no. R.W./NH-11052/3/97.DOI dated 31st December, 1997 that provision of passenger facilities be made at every 50 km of national highway. Again stressing the necessity of passenger facilities along national highways, the governments vide its Letter no. R.W./NH-34032/4/91-DO-III dated 3rd April, 1998 sent broad guidelines regarding the selection of sites for passenger facilities along national highways and directed the concerned authorities that the wayside amenities should be so planed as to allow phased development, subject to the minimum stipulated scale of facilities being provided in first instance. It was during this plan (1981-2001) that government fund was earmarked for financing these facilities. In view of the Open Door Policy a new Road Development Plan: Vision 2021 was prepared in 2001 by the Indian Road Congress with the full involvement of highway professional. It recommended that, provision of wayside amenities with facilities like parking lots, drinking water, toilet, snack bars, dhabas, restaurants, rest rooms, petrol pumps with service and repair and communication facilities should become integral part of roads modernization. These facilities should be provided and run by the private sector which be encouraged and supported by the government. Steps should also be taken for providing highway police petrol, medical aid posts and arrangements for tow truck service to remove accidental vehicle from the site and to provide immediate medical attention to victims. It is also recommended that, a comprehensive highway
act be enacted by centre and the state for efficient land and traffic management including effective control on ribbon development and prevention of encroachment to cover roads under their respective jurisdiction. The highway authorities should be made responsible for removal of under the act encroachment. Thus, it is quite evident that the central government is quite serious about regulating the increasing volume of traffic on national highways and for providing wayside passenger facilities to the highway users since the introduction of economic reforms in 1991.

Conceptualization

Development of Highway serves several purposes. These are the arteries through which goods are transported from surplus to deficit regions. The roadside passenger facilities are in direct proportion to highway development. The more volume of vehicle, the more is growth of these facilities. The density of these facilities do affects the socio-economic and cultural aspect of the surrounding communities. Roadside amenities are established primarily to meet the needs of long distance travellers and are aimed at reducing fatigue related crashes whilst enriching the total travel experience. With the increase in upgradation of national and state highways network in the country, long distance travel on the roads is bound to increase tremendously. Consequently, there would be demand for more and better quality wayside amenities. Thus, the development of highways and passenger facilities raise many questions like:

- Why we need to develop National Highways and passenger facilities?
- What are the driving forces of the growth of passenger's wayside facilities?
- Who is responsible for providing these roadside facilities at the National highways?
- Whether government is liable to ensure the minimum wayside facilities?
- What is the spatial pattern and occurrence of growth of various wayside facilities?
- What are the functional characteristics of these facilities?
- Who are the owners of these facilities?
- What are the characteristics of staff employed on wayside facilities?
• Are the users of these wayside facilities satisfied?
• How do they affect the land values of the adjoining areas?
• How do they affect the economic development of the surrounding area?
• What is the impact of large number of vehicles plying on these highways on physical environment of adjoining area?
• What is their impact on the social and cultural aspects of local communities living in the vicinity?

Objectives
The main objectives of the present study are:-

1. To analyse the spatial pattern and process of the development of passengers oriented wayside facilities along selected national highways in Haryana
2. To describe the functional characteristics of passengers oriented wayside facilities
3. To assess the satisfaction level of highway users
4. To examine the impact of passenger oriented wayside facilities on local communities and surrounding areas

Hypotheses
Following hypotheses are to be tested in the study: -

• The more the density of passengers on a national highway the more passengers’ oriented wayside facilities are expected to be developed on either side.
• The number of services and their qualities mainly depend on economic and social environment of the region. Therefore, quality and number of services are expected to be better along highways that passing through economically and socially developed regions.
• Most of the passengers oriented wayside facilities and services require large investment so they are expected to be owned by elite section or businessmen of big urban centers like Delhi and Chandigarh.
• Because highway provides cheap and efficient mode of transport therefore, the competition for land may increase the land values in the adjoining area.
• These facilities like food-joints, filling-stations, recreational centers, rest houses, shopping complexes and the like provide jobs opportunity to the local people. Therefore, it is expected that there will be occupational shift in the area. It may change from agriculture to secondary or territory activities.
• Emergence of food joints along highways which require large amount of water are expected to negative effect on the level and quality of ground water of adjoining areas.
• Highway provides efficient mode of transport used by large number of passengers of different background. It is expected that there will be encouragement to burglary, theft, murder, drug trafficking and the like.

Study Area

The state of Haryana came into existence on November 1, 1966. It shares boundary with Himachal Pradesh in the north, Delhi and Uttar Pradesh in the east, Rajasthan in the south and Punjab in the west. It encircles Delhi from three sides. It is located between $27^039' 0''$ to $30^0 55' 5''$ north latitudes and $74^027' 8''$ and $77^036' 5''$ east longitude. The state has 42, 212 square km area. The altitude of the Haryana state varies from the lowest of 250 meters to the highest of 1500 meters above sea level. It is a plain area except the Siwalik Hills in the north and the Aravalli in the south. Soil is alluvial in the plain. It varies from sandy loam, silt loam to red clay. Haryana is basically an agricultural state and most of the land is under cultivation. It is densely populated state with 573 persons per square km. In 2011 its population was 2, 53, 53, 081 persons (male: 1, 35, 05, 130 and female: 1, 18, 47, 951).

Organization of the Study

The present study is organized into seven chapters. Chapter one deals with introduction of the study, conceptualization, objectives, hypotheses, and characteristics of study area and organization of the study. Chapter second describes research methodology used in study, including research design, database and selection of samples of passenger oriented wayside facilities. Third chapter deals with the review of literature. Fourth chapter analysis growth process and spatial pattern of passenger oriented wayside facilities. Characteristics of passenger facilities are
discussed in chapter fifth. Chapter sixth deals with the satisfaction level of highway users with respect to passenger facilities and the impact of the development of the passenger oriented wayside facilities on local area and communities living in its surroundings with respect to physical, socio-cultural and economic effects. Chapter seven discusses the conclusions and suggestions of the study.

Methodology of the Study

Chapter second describes research methodology of the study, which includes research design, database, and selection of samples of passengers and wayside facilities.

Research Design and Methods of the Study: Present research work is delimited to study of the characteristics of the following selected national highways, passing through the length and breadth of the state of Haryana.

- NH-1 from Singhu border (Delhi) to Sambhu border (Punjab) covering a distance of 180 km
- NH-2 in the stretch of 74 km from Badarpur border (Delhi) to Karwan (Kosi) border (Uttar Pradesh)
- NH-8 in a stretch of 101 km, from Kapushera border (Delhi) to Jai Singh Pur Khera border (Rajasthan)
- NH-10 from Tikri border (Delhi) to Mandi Dabwali border (Punjab) covering a stretch of 313 km long

These national highways have been divided into following sections. NH-1: A, B, C and D, NH-2: A and B, NH-8: A, B and C and NH-10: A, B, C, D, E and F.

In the beginning a list of passenger oriented wayside facilities available along selected national highways was prepared on the basis of pilot survey. Then these identified passenger facilities were classified in following five major groups and sixteen sub-groups i.e.

- **Food Joints**: i) Hotel  ii) Restaurant  iii) Dhaba  iv) Wine Shop  v) Other Facilities
- **Security Post and Health Services**: i) Hospital  ii) Clinic  iii) Medical Store  iv) Crane Service  v) Traffic Police Station
- **Recreational Center**: i) Park and Zoo  ii) Books and News Paper Vendors
- **Bank (ATM) and Communication**: i) Bank (ATM)  ii) Communication
Fuel Filling and Allied Services: i) Fuel Filling Station ii) Repair and Spare Parts Shop

These classified passenger facilities were further categorized into permanent and temporary structure on the basis of material used in construction. A comprehensive field survey of passenger facilities on selected national highways was carried out in, 2007 to find out the establishment year of these facilities on the basis of which these were divided in following three time-periods to understand their periodic development pattern.

- First Phase: Up to 1966
- Third Phase: After 1991

All the temporary building structure facilities are considered in the third phase of the periodic development. To understand the per unit distance concentration of passenger facilities on the basis of per ten kilometers (ptk) distance along national highway have been recorded keeping in view the convenience of study and comparative accounts.

The quality of passenger facilities, satisfaction level of highway users and impacts of these facilities on surrounding communities with respect to physical, economic and socio-cultural aspects were studied by conducting field survey in the year, 2007-2008 and 2010-2011. The survey was conducted with the help of a self prepared questionnaire primarily based on a pilot survey of the study area. The questionnaire has been divided into four schedules.

The researcher collected information through three schedules (I, II, III), by making personal observations on the basis of interviews with facilities owners and their staff on the spot from all four selected national highways in, 2007-2008, while information through schedule-IV were collected from those specific places out of cities where at list ten facilities are concentrated at single place in, 2010-2011. The researcher visited these places several times and gathered the observations of surrounding communities by interviewing with the people on the basis of the constructed questionnaire and focused group discussion (FGD).

Data Sources: Present study relies on both primary and secondary data. The secondary data related to the development of national highways, and quality and availability of passenger oriented wayside facilities along selected national highways
in Haryana and its impact on highway users and surrounding communities is partially available with many private and public sector organizations such as:

- Ministry of Road Transport and Highway (MORTH), New Delhi India
- National Highway Authority of India (NHAI)
- Central Road Research Institute New Delhi, India (CRRI)
- School of Planning and Architect, New Delhi, India (SPA)
- Indian Road Congress, New Delhi, India (IRC)
- Town and Country Planning Department, Haryana, Chandigarh.
- Headquarter, AIG of Police, Traffic & Highways, Haryana, Karnal.
- Department of Economics and Statistical Analysis, Haryana, Chandigarh.

These institutions are involved in the development, maintenance, planning and safety for national highways. However, the data from such sources has limited use for the purpose of this study. Therefore, the present findings are mainly based on the primary data collected through the field survey conducted in, 2007-2008 and 2010-2011.

**Selection of Samples:** The present study is primarily based on field survey. Samples of different facilities were taken to understand the characteristics of passenger facilities as mentioned below;

Ten per cent samples of the food-joints and fuel-filling stations were randomly selected from each section of national highway corridors and where numbers were less at least one sample was taken. A total of 112 food joints including 13 hotels, 17 restaurants and 82 dhabas and 33 fuel-filling stations were selected from different national highways. One traffic police station from each district was selected for the detail analysis. So, a total of 14 traffic police stations including 5 on NH-1, 2 on NH-2, 2 on NH-8 and 5 on NH-10 have been selected.

**Samples of Highway Users:** Four samples from each hotel; 4 from each restaurant; 2 from each dhaba; 4 from each fuel filling station and 7 from each traffic police station were selected for comparative analysis of their satisfaction level. A total of 516 passengers including 52 from 13 hotels, 68 from 17 restaurants 164 from 82 dhabas, 132 from 33 fuel filling stations and 100 from 14 traffic police stations were selected.

**Impact on surrounding communities:** To know the perception of surrounding communities with respect to impact of all passenger facilities on their communities, 15 respondents have been surveyed from each cluster of passenger facilities. So, a
total of 330 persons including 135 from NH-1, 45 from NH-2, 60 from NH-8 and 90 from NH-10 were selected for the study.

**Data analysis:** The collected qualitative and quantitative data related to the growth, spatial pattern, building structure, quality and characteristics and impact on surrounding communities of passenger facilities has been tabulated, processed, analyzed and interpreted using simple percentage technique. The diagrams have been employed to explain the required information and maps have been prepared in ARC GIS 9.1. Only permanent building structured facilities have been shown in maps.

**Satisfaction Level:** The satisfaction level of facilities users has been determined by using Awotona’s index of Satisfaction Level. Facilities users’ level of satisfaction with respect to particular facility was evaluated by asking them specific number of questions or variables delimited for each facility. Satisfaction index level of a passenger or highway user on 1-5 scale is noted in the light of the following grading:

<table>
<thead>
<tr>
<th>Scales</th>
<th>Status of a Particular Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Poor</td>
</tr>
<tr>
<td>2</td>
<td>Average</td>
</tr>
<tr>
<td>3</td>
<td>Good</td>
</tr>
<tr>
<td>4</td>
<td>Very Good</td>
</tr>
<tr>
<td>5</td>
<td>Excellent</td>
</tr>
</tbody>
</table>

**Computation of Indices of Satisfaction (SI):** All the scores given by each respondent to all variables are added up to calculate the total actual scores which were then divided by maximum possible scores depending on the number of variables. The result is then multiplied by 100 to obtain index of satisfaction (SI) of respondent as a percentage. Thus:

\[
SI = \frac{\text{sum of respondent's actual score}}{\text{sum of respondent's maximum possible score}} \times 100
\]

Based on the above given method SI’s for all the respondents using a particular facility is thus calculated.

**Grouping of Indices of Satisfaction Index Based on Standard Deviation Method**

In order to group the SI’s on the basis of standard deviation method, first the mean and standard deviations are calculated separately for all the SI's of respondents for
each facility. With the help of mean and standard deviation all the respondents of each facility were divided into three level of satisfaction by using the following formula:

<table>
<thead>
<tr>
<th>Category</th>
<th>Level of Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ Mean +1 S.D.</td>
<td>High</td>
</tr>
<tr>
<td>Mean – 1 S.D. to &lt; Mean +1 S.D.</td>
<td>Medium</td>
</tr>
<tr>
<td>&lt; Mean – 1 S.D.</td>
<td>Low</td>
</tr>
</tbody>
</table>

**Limitations of the Study**

Present study is largely based on information collected through field survey. The field survey method itself has some of its own inherent deficiency. The responses of the target people are not always free from bias. So, it is very difficult to arrive at exact truth. Secondly, the secondary data obtained from government department is incomplete in several aspects. In the absence of authentic information it could not be possible to arrive at the final conclusion in some aspects. Thus the author has made some moderation on the basis of his field survey.

**Growth Process and Spatial Pattern of Passenger Oriented Wayside Facilities**

The fourth chapter deals with the growth process and spatial pattern of passenger facilities along national highways-1, 2, 8 and 10 falling in Haryana till, 2007. The study reveals that the concentration of facilities was very low in first phase when the state of Haryana came into being. Out of 14,994 passenger facilities only 4.15 per cent facilities were available prior to 1966. Second phase (1967-1991) constitute 21.56 per cent of all facilities. The third phase (1992-2007) witnessed remarkable development in the expansion of passenger facilities which account for about 74.29 per cent of total. The overall development of the state has played a pivotal role in the growth of passenger facilities along the highways in the state. Similar trends have been noticed in temporal growth of the major groups of passenger facilities viz. food-joints, security posts and health services, banks and communications, fuel-filling and allied services. Recreational center facilities were not available during first phase. Thereafter, it started developing and there was a maximum growth of parks etc. between the periods of 1999-2004. This same pattern of periodic growth was observed in case of all the selected national highways.

It is also evident that before 1991 these passenger facilities were mainly concentrated in towns and cities, but after 1991 there was a wide dispersal of these
facilities along national highways. There was sudden increase in economic growth of the country due to new economic reforms introduced by the government of India in 1991, which have direct effect on transport system thereby leading to tremendous increase in the means of transportation which created gigantic demands of roadside facilities.

The sectoral analysis shows that food-joints are very common in the study area which constitutes about 48 per cent of total facilities. Fuel-filling and allied services comprise 41 per cent of total passenger facilities. It is also evident that fuel-filling and allied services is second dominant passenger facilities because the food-joint is the first preference and basic need of passengers while fuel-filling and allied services are the primary need of vehicles. These both facilities constitute about 89 per cent share of the total passenger facilities.

It is also found that about 39.06 percent of total facilities are temporary and rest i.e.60.94 per cent are permanent. The study reveals that food-joints have the highest percentage of temporary facilities i.e. 60.50 per cent, whereas all security post and health services have permanent structure. The study shows that fuel-filling and allied services enjoy the highest i.e. 83.89 per cent of permanent structures because neither petrol pumps nor the repair and spare parts shops (accept few shops) have temporary structure. The lowest share of permanent status of facilities has been observed in recreational sector.

The study shows that the highest number i.e. 6362 of facilities are on NH-10 (with an average concentration of 203ptk out of which 143ptk are of permanent building structure) and the lowest on NH-8 i.e. 1838 in numbers, while NH-1 and NH-2 have 3974 and 2820 facilities, respectively. The average concentration of passenger facilities on NH-1 is 221ptk of which 114ptk are of temporary nature. The study also points out that if facilities situated within the big cities are not taken into account then these are the highest on NH-1. It is because the volume of traffic on NH-1 is more than NH-10.

The study indicates that among food-joints, the largest share is that of other facilities excluding hotel, restaurant, dhaba and wine shop. These are temporary building structure and are mainly concentrated around chowks. Dhabas and wine shops are widespread along national highways while hotels and restaurants are located
in and around cities and towns. Similarly, the major share of fuel-filling and allied services is that of repair and spares parts shops having their temporary building structure and these are concentrated in and around cities and towns. The fuel-filling stations are widely distributed along national highways. The security posts and health services are concentrated in cities and towns. While the communication facilities like STD and PCO etc. have decreased due the massive use of mobile.

**Characteristics of Passenger Oriented Wayside Facilities**

Chapter fifth analyses characteristics of passenger facilities viz. food-joints (hotels, restaurants, *dhabas*), fuel-filling stations and traffic police stations in the study area.

**Food Joints**

**Characteristics of the owners:** The study reveals that the owners of the food-joints are mainly from local area and belong to dominating caste and creed. The farmers whose land was adjacent to highway started this business as a subsidiary occupation along with the farming. The hotel and restaurant owners are from business class, while the *Dhaba* owners are mainly from farming class.

**Status of Violations by the Food Joints:** The food-joints along the national highways have developed in a very haphazard manner. It is well reflected in the study that not a single *dhaba* and most of the restaurants do not have approval from the concerned authority, while hotels are mainly established by the state government itself according to the norms but those built in private sector usually violate the norms laid down by the government. As regard the other norms such as plot size, covered area, parking space, distance from national highway and encroachment of the government land, the position is rather dismal. Most of the *dhabas* and the restaurants are short of the space, so generally encroached government land in order to accommodate the vehicles and passengers. National highways are getting congested and chocked by undesirable road side development and encroachment as a result of which the traffic on national highway is subjected to lot of hardships. There is widespread criticism about deteriorating level of services. The absence of legislation empowering the competent authority to remove encroachments on national highways resulted in the extension of encroachment. To remove this bottleneck an act namely “The Control of National Highways (Land and Traffic) Act, 2002” was passed by the parliament which
empowers National Highway Authority of India to remove and demolish unauthorized construction. However, government of Haryana vide its Letter no. D.T.C.P.-S.T.P. (E) 2009/714 dated 24.03. 2009 and 1095-1130 dated 21.05.2009 pre-empted the effect of this law by regulating the unauthorized constructions. The callous attitude of the government is reflected in not even removing the illegal constructions posing a serious threat to the life of national highway users.

**Status of Aesthetic Environment and Various Available Facilities**

**Hotel:** The study indicates that all hotels provide a good level of the overall aesthetic environment. The entire covered area is utilized for providing quality comfort and luxury to the users. Most of the facilities provided by the hotels are good enough for the full satisfaction of the costumers. It is found that only two hotels i.e. Green Apple, Fatehabad city on NH-10 and The Residency, Manesar town on NH-8 have low availability and provide average quality of these facilities due to paucity of space.

**Restaurant:** The study has found that *pucca* material is used for the construction of restaurants building. A major part of covered area is used only for sitting purpose. Two thirds of the restaurants have good level of the aesthetic environment including good ventilation level in covered area, ideal conditions for sitting area, adequate cleanliness and good hygienic conditions of utensils and kitchens. It is also observed that facilities like electricity, fan, gen-set and toilet are available in all the establishments whereas, air-conditioners, fire-extinguisher facilities are present in half of the restaurants, while lawn, parking, security arrangement and first-aid exist in one-third of restaurants. Some famous restaurants such as Mc Donald, Domino’s and like have more facilities. Restaurants along NH-I in section A, B (Sambhu border to Gharaunda) and D Samalkha to Kundli border) and along NH-8 in section B and C (Dharuhera to Kapushera border have good level of facilities, on the other hand restaurants along NH-2 in section A from Karwan-Kosi border to Palwal city and NH-10 section B (Sirsa city to Fatehabad), D and E (Hissar City to Rohtak City ) average or poor level of facilities.

**Dhaba:** The study also indicates that more than three-fourth of the *dhabas* are *kacha* or semi-*pacca* building. In most of cases open space is utilized for all the purpose except cooking of food. Cots for sleeping and resting are provided on demand. It is found that one third of the *dhabas* have good level of the overall aesthetic
environment which includes the attractive outlook of building as well as furniture, ventilation level in covered area, good condition of sitting area, cleanliness and hygienic conditions of utensils and kitchen. The facilities of electricity and fan are available in all the dhabas. Approximately, two thirds dhabas possess gen-set, cot for sleeping, bathing chabacha, STD, minor repair shop and general item facilities. Parking and toilet exist in one third whereas desert coolers and bathrooms are found only in approximately one fifth of the dhabas. Other facilities like lawn, air-conditioner, security arrangement, entertainment, fire-extinguishers and first-aid are being provided by less than one tenth of the dhabas. NH-1 is the busiest highway in the study area and provides good business opportunities. Therefore, the level of facilities is good enough on NH-1. On the contrary, NH-10 dhabas are in very poor condition and they are devoid of even basic facilities. The facilities which are available found in poor conditions.

**Characteristics of Staff Employed on Food Joints**

The study shows that the staff employed in food-joints is mostly from outside the state of Haryana and most of the workers in a cluster of dhabas were found belonging to a specific place of origin. There is a chain system in supply of workers which usually follow diffusion of household information. In respect of duty hours all the dhabas and most of the restaurants are totally ignoring the law but majority of the hotels were found observing the law in proper sense. It is found that laws related to minimum wages and weekly leave are violated by most of the private hotels, restaurants and all the dhabas. Child labour is rampant in dhabas and restaurants.

**Fuel Filling Stations**

It is revealed in the study that the owners of fuel-filling stations mainly belong to local area and are from different wealthy section of the society. The fuel-filling stations are mainly in the category of company owned and company operated ownership and the rest are in company owned and dealer operated category. Most of the norms laid down by the government are being observed by the fuel filling stations because the government is very strict in granting licenses to these fuel-filling stations. There are number of violations prominent among them are right of way, distance of covered area from highway, separate entry and exit, minimum distance between two fuel filling stations, distance from intersection, buffer strip norm and encroachment of
government lands. The lowest violations are found along NH-1, while these are highest in case of NH-10, NH-8 A (Jai Singh Pur Khera border to Dharuhera) and NH-2 A from Karwan - Kosi border to Palwal city. The study shows the status of various facilities available in fuel filling stations. The facilities like fire extinguisher, toilet, air filling machine and drinking water are in good condition in all cases but the facilities such as first aid, security arrangement, lawn facility and rest area complex are not available in majority cases. The study shows that more than three-fourth of the staff employed on fuel-filling station belongs to Haryana. There is no regular flow of workers from outside area due to lack of food and shelter facility on fuel-filling stations. The legal provisions regarding duty hours, weekly leave, and minimum wages are not followed by the owners of the fuel-filling stations.

**Traffic Police Stations**

In view of the increasing injuries and deaths due to the road accidents the government of Haryana in its review meeting held on 20.04.2000 established a new division, within its transport department called “Haryana highway patrol for road safety”. Twenty two traffic police stations and 5 traffic police posts each at a distance of 30 km were established along selected national highways. The main objectives to be fulfilled by the highway patrol are: To regulate traffic, to provide first aid and facilitate shifting of the accidents victims to the nearest hospital and to educate and make the public aware about traffic rules. A state traffic control room and Headquarter of HHPRS have been established at Karnal. It serves as an important link with the highway passengers. Road safety vehicles remain stand by round the clock in their jurisdiction area. The traffic police stations concentrate usually on giving help and medical aid to passengers in the hour of need. It is also found that they spent their lot of time in the safety of VIP’s on national highway. NH-1 is the busiest highway in the study area so availability of these facilities is also highly concentrated over there. The facilities and patrolling are good on NH-2 as well as NH-8. These facilities are rather poor on NH-10 as the volume of traffic and speed on NH-10 is comparatively low. As soon as the traffic police station receives the information of any accident, they immediately rush to the site to handle the situation. The affected people either injured or dead are immediately shifted to nearby civil hospital and handed over them to the duty staff. The nature of the staff employed on traffic police stations is very
different from the other wayside facilities. They are government employees their numbers, duties, pay-scale, leave, educational qualification etc. depends on the rank of the employee and decided by the government of Haryana. The study points out that the main causes of accidents and crashes are human errors: over speeding, rash driving, drunken driving, diversion of attention mainly due to talking on mobile phone while driving, red light jumping, avoiding safety gears like seat belts and helmets, non-adherence to lane driving and overtaking in a wrong manner. The study shows that the highest road accidents have taken place on the NH-1 and NH-2. The study also found that maximum road accidents occur in the monsoon season and the least accidents occur during the retreating of monsoon season.

Chapter sixth study the satisfaction level of highway users with respect to passenger facilities and the impact of the development of the passenger facilities on local area and communities living in its surroundings with respect to physical, socio-cultural and economic effects.

**Satisfaction level of highway users with respect to wayside Facilities:** The present study quite evidently reveals that more than fifty seven per cent users of national highways fall in the category of medium level of satisfaction whereas the remaining are equally distributed between low and high level of satisfaction in respect of all facilities. It is further indicated that there is no uniform distribution of facilities along the national highways. These facilities are concentrated at some strategic points of roads or mainly situated in the urban area through which a national highway passes. The facilities in term of both quality and quantity depend upon the volume of traffic on a particular national highway. The more the number of users, the more the number of facilities and the better are the quality of service due to the stiff competition among the service providers. Thus the concentration of facilities and quality of facilities are directly linked to the number of users of a national highway. There are wide gaps in availability and quality of facilities along different highways. The level of overall satisfaction is high in case of NH-1 and is rather low in case of NH-10. The major cause of this difference appears to be the level of development of these highways and number of highway users i.e. passenger, vehicles and surrounding communities.
Impact of Passenger Facilities on Surrounding Communities: The present study also reveals how and to what extent the surrounding communities are directly or indirectly influenced by the highway and roadside passenger oriented facilities.

**Physical Impacts:** The present study also reveals how and to what extent the surrounding communities are directly or indirectly influenced by the highway and roadside passenger facilities. The respondents are of the view that wherever there is growth of these facilities, the surrounding area is cleared of plantation to establish the facility, to provide entry and exit for the vehicles, to provide parking space to the vehicle and to make the facility visible from a distance. Though, their overall opinion is that the greenery is not much disturbed. In the case of NH-1 majority opinion says that greenery is adversely affected by these facilities. Surrounding communities found hardly any impact of wayside facilities on ground water table though the people residing alongside NH-1 like Murthal, Jhanjhari, Dhanoti, Tyora-Tyori, Rattangarh and Mohra in the area where these facilities are highly concentrated feel that there is a lot of wastage of water. The major cause of air pollution is found to be waste material and smoke generated by these facilities. There is no significant role of these facilities in causing land pollution. Sound pollution is caused due to the sound of generator set, music system and standing vehicle in start mode but it is insignificant in local people’s opinion. It was also noted that this negative effect is more concentrated closer to the facility complex.

**Economic Impact:** Whenever a national highway is constructed in an area it automatically results in multifold rise in land value due to establishment of passenger facilities hubs. This fact is corroborated by ninety eight per cent respondents. There is exorbitant rise in land value in Haryana along the surveyed passenger facilities hubs from 1966 to 2011. The land value gradually increases with the movement from border to national capital region. Great majority of the respondents have stated that there is no occupational change owing to the growth of passenger facilities. These facilities have hardly generated employment opportunities for the surrounding communities. There is hardly any contribution of these facilities in augmenting the income of surrounding communities.

**Social Impacts:** The study shows that there is hardly any impact on the eating-habit of local community as fifty four per cent respondents stated they never went to take their
meals in these food-joints. All the respondents opined that the vices of drinking and smoking are on increase due to these facilities. They noted that youngsters get liberal supply of liquor and biri, cigarettes etc. in these food-joints. The study reveals that ninety five per cent respondents on NH-1 and ninety two per cent respondents on NH-8 considered the increase of these vices significant. The menace of drug trafficking is bye product of these facilities. The overwhelming majority of surrounding communities blames these food-joints for drug trafficking. It is observed that NH-1 and NH-2 are highly affected where majority of respondents stated that the increase is significant, while the effect is lowest on NH-10. Theft and burglary cases are affected by the number of wayside facilities. The study reveals that fifty five per cent respondents see no effect on the theft and burglary cases but thirty per cent are of the opinion that there is increase of these vices, while fifteen per cent respondents’ state that these vices have decreased owing to increase in these facilities because these facilities keep the surrounding area alive throughout the night. Immoral activities are observed more on NH-1 where seventy five percent respondents see the significant increase in immoral activities. It is low in case of other highways. The more developed the highway the more are immoral activities.

Chapter seven discusses the conclusions and suggestions of the study.

Suggestions

Road side amenities are a necessity to minimize the driving relating stresses which are public health issues and play important role in improving safety, efficiency and journey quality. These reduce the fatigue of drivers, stop clear of traffic and minimize collision of vehicles parked on the shoulders. The growth and development of these facilities depend upon the volume of vehicles plying on a particular road. These grow either in natural way as per need or planned keeping in view the necessity of a specific road. In India, the facilities location have not been scientifically planned, but growth of these facilities and places is haphazard and is not regulated by the rules framed for the purpose. Following are the suggestions to improve the qualities and quantities of the facilities available on these highways.

- The facilities are dispersed along the highway and are present single or in small groups at a distance of a few kilometers. However, bye laws state that
these facilities should be concentrated at a few places in a cluster at least at a distance of 50 km.

- Before the establishment of a facility in a rest area, the proper authorization must be obtained from the appropriate authority.
- The encroachment of the government land should not be allowed. Strict action must be taken at the very early stage.
- Remove all construction within 30 meters area on both sides of road as stipulated in bye laws.
- Entry and exit from the highway should not be direct rather it should be on the service lane.
- The minimum width of the approach road to a facility (mainly in case of food-joint) should be 33 feet. The condition on NH-I A (Sambhru border to Pipli (Kurukshetra), NH-2, NH-8 A (Jai Singh Pur Khera border to Dharuhera) and NH-10 is very poor. It must be improved at the earliest.
- In order to avoid congestion of vehicles during peak hours on food-joints (mainly in case of *dhabas* and restaurants), the provision of parking facility of 25 per cent of total plot must be strictly implemented.
- Hygienic and sanitary conditions in resting areas, mainly in case of *dhabas* except those on NH-I D (Samalkha to Kundli border), are very poor which require immediate improvement.
- Ventilation level in *dhabas* in general is improper. It should be made proper according to climatic conditions.
- Utensil conditions in case of *dhabas* of NH-2, NH-8 C (Manesar to Kapushera border) and NH-10 must be improved by employing trained and educated workers.
- Drinking water particularly in case of NH-2, NH-8 and NH-10, is in very poor condition. The quality drinking water must be made available on these *dhabas*.
- The toilet facility is not available in most of *dhabas* on NH-1 B and C (Pipli (Kurukshetra), to Samalkha including), NH-2, NH-8 A (Jai Singh Pur Khera
border (Rajasthan) to Dharuhera) and C and NH-10. It is basic and essential facility, so it must be made available at very food-joint.

- Every *dhabas* should provide fan facility in dining space. But it is found that in case of NH-2 A (Karwan (Kosi) border to Palwal city (including), NH-8 C (Manesar to Kapushera border (Delhi), and NH-10 A, B (Mandi Dabwali border (Punjab) to Fatehabad (excluded), E and F (Mundhal intersection to Tikri border (Delhi) there is no fan in some *dhabas*.
- First aid facility must be available at every food-joint.
- Liquor in food-joints should be completely banned.
- Food rates should be fixed and every food-joint must display rate list on its counter.
- Separate tank for solid waste be kept in every *dhaba*.
- Labour laws must be observed in all food-joints and punitive action be taken against violating employers. It is observed that the private employers do not follow labour law in case of their staff in respect of duty-hours, weekly leaves, minimum wages and child labour. It must be ensured that employers follow the labour laws in true spirit.
- Fuel filling stations should be the part of rest area complex.
- Haryana Highway Patrol for Road Safety (HHPRS) has not been properly equipped for the work assigned to it. It is frequently deployed on extraneous work or on VIP’s duty. It should be allowed to do assigned work.
- The behaviour of safety police personnel’s is not proper and up to mark. It must be amended by in service training.
- Traffic rules should be strictly followed by improving the traffic regulatory mechanism.
- The facilities available are inadequate, so new facilities locations must be scientifically planned and developed to cater the need of the future.