



Growth Process and Spatial Pattern of Security Posts & Health Services along Selected National Highways in Haryana: A Geographical Analysis

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Abstract

The present paper shows the growth process and spatial pattern of security posts and health services i.e. hospital, clinic, medical store, crane services and traffic police stations along national highway-1, 2, 8 and 10 falling in Haryana. The present study is based on both qualitative and quantitative data. The data has been analyzed with the help of simple statistical techniques. The study reveals tremendous growth of security posts and health services after 1991. The highest concentration of security posts and health services is on NH-10 due to the presence of a large number of big cities and towns on the other hand NH-8 have the lowest concentration of these services. If the facilities in cities and towns are not taken into consideration then these facilities are the highest on NH-1. It seems that the volume of traffic directly affected the concentration of these services. It is found that security post and health services are mainly concentrated in cities and towns.

Introduction

Road and road transport have come to occupy a dominant position in the transport system of our country. Roads are increasing with passage of time but number of vehicles is growing with faster rate. Highway users have often to drive for long hours and consequently needs wayside facilities.

So, the attention also needs to be focus on the provision of wayside facilities along national highways (Ministry of Road Transport and Highways, 2001). The national highways are the main highways running through the length and breadth of the country connecting major ports, state capitals, large industrial and tourist centers, etc. (Ministry of Road Transport and Highways, 1984). Total length of national highways in India was 19,800kms at the time of independence (Economic Survey, 2002-03). It has increased to 70,934kms in August 2011. These constitute about 2 per cent of all the roads in India, but carried about 40 per cent of the total road traffic (NHAI 2012). On the formation day of Haryana on November 1, 1966, the total length of national highways in was 767kms in 1966-67 (Statistical Abstract Haryana, 2003-04) and presently it has increased to 1512kms in 2011 (NHAI, 2012). Passenger oriented wayside amenities along national highways are essential because both passengers and drivers need certain minimum wayside facilities to make their travel safe, comfortable and convenient in order to reduce fatigue in a long distance journey (GOI, 1998). So, The Ministry of Road Transport and Highways decided to provide the following facilities along national highways: petrol pump with minor repair shops, telephone booths, first aid and rest room for short stay, toilets, restaurants, parking lots, kiosks or sale miscellaneous or sundry items (GOI, 1998 and

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2003). Road Development Plan: Vision 2021 also recommended that, provision of wayside amenities with facilities like parking lots, drinking water, toilet, petrol pumps with service and repair, food-joints alike should become integral part of roads modernization. Steps shall 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 provide immediate medical attention to victims (IRC, 2001).

Security Posts and Health Services

These are important when some untoward incident and accident occur on highway. With the advent of fast moving motorized society, road safety has become an prominent subject of discuss. Though the matter of road safety in India is still in its nascent stage we will have to stride faster to address it (MORTH, 2011).

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°39'2" to 30°52'53" north latitudes and 74°27'28" and 77°36'25" east longitude. The state has 42, 212 sq.kms area. The altitude of the Haryana state varies from lowest 250m to highest 1500m above sea level. It is a plain area except the Siwalik Hills in the north and the Aravalli in the south. Soils are alluvial in the plains. It varies from sandy loam, silt loam to red clay. Haryana is basically an agricultural state and most of the land is under cultivation. Therefore, tree-covered area has reduced to 8 per cent of the geographical area (Singh, 1997). The population was 2, 53, 53, 081 persons in 2011 with 573 persons per square kilometers. Haryana has very low sex ratio i.e. 877 (Census of India, 2011).

However, the present study is aimed at analyzing the characteristics of the selected highways in Haryana.

- NH-1 from Kundli border (Delhi) to Sambhu border (Punjab) covering a distance of 180kms
- NH-2 in the stretch of 74kms from Badarpur border (Delhi) to Karwan border (U.P.)
- NH-8 in a stretch of 101kms, from Kapushera (Gurgaon) to Jai Singh Pur Khera (Rajasthan)
- NH-10 from Tikri border (Delhi) to Mandi Dabwali border (Punjab) covering a stretch of 313kms long (NHAI, 2007).

Objective

The present study aims at to analyze the growth process and spatial pattern of security posts and health services located along selected national highways in Haryana.

Data Base

Present study relies on both secondary and primary data. The relevant secondary data has been collected from Ministry of Road Transport and Highways, New Delhi, National Highway Authority of India, New Delhi, Central Road Research Institute, New Delhi, School of Planning and Architecture, New Delhi, Indian Road Congress, New Delhi, Town and Country Planning Department, Haryana, Chandigarh and Headquarter, AIG of Police, Traffic & Highways, Haryana, Karnal. However, the present study is largely based upon primary data of all the observation units. Field survey of the observational units was conducted in 2007-2008. All the security posts and health services were plotted on the map by physically visiting them across all the highways.

Methods of Study

The information relating to growth and spatial spread of security posts and health services was

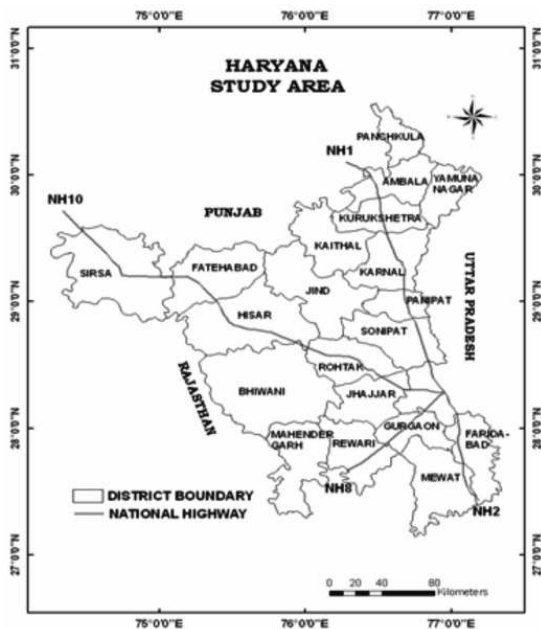


Fig.1: Haryana study area

Source: State Natural Resources Data Management System (NRDMS) Centre, HSCST, Chandigarh, 2001

collected through personal interviews and field survey of all the selected national highways. Both qualitative and quantitative data have been tabulated, processed, analyses and interpreted using the field observation. Simple percentage technique is employed to examine the desired information and map is prepared in ARC GIS 9.1.

Results and Discussions

Many types of facilities are available on both sides of roads to facilitate the highways users as well as surrounding communities. There are number of amenities on NH as compared to the amenities available on other roads. NH is a road net spread all over the country which is usually used by vehicles destined to cover the long distances. The passengers usually ply on road day and night therefore; national highways need more wherewithals to fulfill their required needs. The basic necessities for vehicles are fuel,

mechanics, spare parts, air, water and parking etc. People traveling in such vehicles also need various amenities like restrooms, washroom, food, entertainment, refreshment, juice and other beverage and communication facilities. In some special circumstances like accident, bad weather and illness the need of doctors, medicine, police and crane etc. is also required. All these factors together justify the greater facilities on NH in comparison with local roads. The present paper deals with the growth process and spatial pattern of security posts and health services study area till 2008. For the sake of study security posts and health services have been divided into five classes' viz. hospital, clinic, medical store, crane services and traffic police stations. Accidents, robbery, violation of traffic rules and other mis-happenings on roads are a human tragedy. It involves high human suffering and monetary loss in terms of premature death, injuries, loss of productivity etc. If we understand our responsibility towards road safety, our society will have fewer traumas due to road accidents. In the last few years traffic on the national highways increased manifold and so have accidents. So, these are important for highway users.

Table 1 and Figure 2 reveals the temporal growth and spatial pattern of security posts and health services in the study area. The temporal growth of security posts and health services has been studied with reference to following three periods for convenient and comparative study:

- First Phase - Up to 1966
- Second Phase -1967-1991
- Third Phase –After 1991

First phase cover the time till the formation of Haryana state. Second phase include the period from formation of Haryana to beginning of new economic reforms in India. Third phase include

Table 1: Temporal Change & Status of Security Posts & Health Services Along Selected National Highways in Haryana

Establishment year	Hospital		Clinic		Medical Store		Crane Service		Traffic Police Station		Grand Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
National Highway - 1												
Up to 1966	2	18.18	2	10.53	2	5.88	0	0.00	0	0.00	6	6.76
1967-1991	4	36.36	6	31.58	15	44.12	0	0.00	0	0.00	25	28.09
After 1991	5	45.46	11	57.89	17	50	19	100	6	100	58	65.17
Total	11	100	19	100	34	100	19	100	6	100	89	100
National Highway - 2												
Up to 1966	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
1967-1991	7	58.33	6	37.5	19	57.58	0	0.00	0	0.00	32	35.96
After 1991	5	41.67	10	62.5	14	42.42	25	100	3	100	57	64.04
Total	12	100	16	100	33	100	25	100	3	100	89	100
National Highway - 8												
Up to 1966	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0
1967-1991	1	50	0	0.00	5	41.67	0	0.00	0	0.00	6	13.33
After 1991	1	50	2	100	7	58.33	26	100	3	100	39	86.67
Total	2	100	2	100	12	100	26	100	3	100	45	100
National Highway - 10												
Up to 1966	3	5.66	7	15.91	21	11.11	0	0.00	0	0.00	31	10.13
1967-1991	17	32.08	22	50	66	34.92	0	0.00	0	0.00	105	34.31
After 1991	33	62.26	15	34.09	102	53.97	13	100	7	100	170	55.56
Total	53	100	44	100	189	100	13	100	7	100	306	100
Grand Total												
Up to 1966	5	6.41	9	11.11	23	8.58	0	0.00	0	0.00	37	6.99
1967-1991	29	37.18	34	41.98	105	39.18	0	0.00	0	0.00	165	31.19
After 1991	44	56.41	38	46.91	140	52.24	83	100	19	100	327	61.81
Total	78	100	81	100	268	100	83	100	19	100	529	100

Source: Field Survey, 2007-2008

the period of new economic reforms till the field survey conducted in 2007-2008. The concentration of security posts and health services was very low in first phase when the state of Haryana came into being (Fig.2). Out of 529 security posts and health services only 6.99 per cent were there prior to 1966. Second phase

constitute 31.19 per cent of all security posts and health services with a genuine improvement in conditions. The third phase experienced remarkable development in the expansion of security posts and health services which together account for 61.81 per cent of total. Similar trends have shown in temporal growth of the sub-

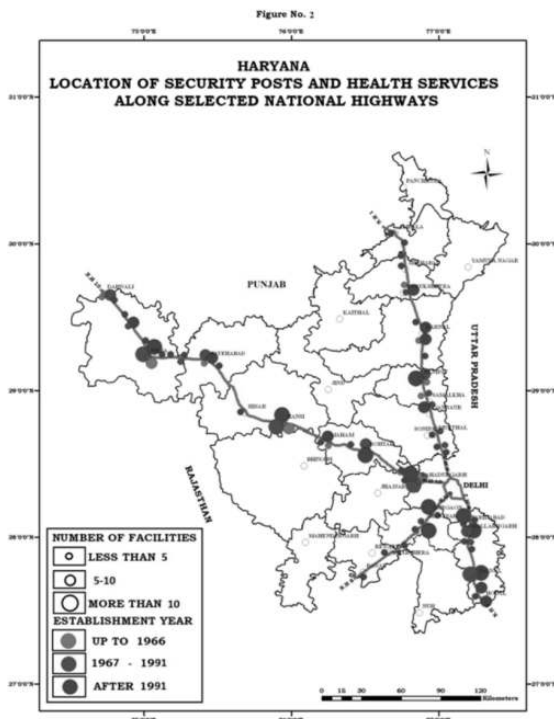


Fig.2: Haryana Location of security posts and health services along selected National Highways

Source : Field Survey 2007-08.

groups of security posts and health services: - hospital, clinic and medical store (Table 1). There was no crane service and traffic police post in first and second phase. Thereafter, it started developing and there was a maximum growth of restaurants during third phase of study. The traffic police stations were established after 2000, prior to that the responsibilities of highway safety were with district police in whose jurisdiction the regions of highway was (AIG, Traffic and Highways Haryana, 2010). The study also reveals that these services are mainly concentrated in cities and towns (Fig. 2). The police force remains on duty on national highways at different spots and can be contacted by the passenger at the hour of need on helpline numbers i.e. 099910-66666, 1033, 1073, 0184-2383199, 2280028 and other mobile or landline

numbers of concerned district traffic police station. Medical facilities available at highway are usually utilized by the local population also. Whenever there is any accident on the highway, the traffic police carried the injured to nearby civil hospital. Thus, these facilities are occasionally used by the passengers. As regard the crane facility, it is exclusively available in cities and other *abadi deh areas*. The cranes are owned by the private contractors and their phone numbers are available with the nearby traffic police posts. There is one traffic police station in each district (Field Survey, 2007-2008). In fact, Haryana has been achieving an all round development since its existence. In the sixties, Haryana progressed rapidly with a growth rate of 5.5 per annum against the all India's growth rate of 3.0 per cent (GOI, 2002-07). Notably, during the overall period from 1980-81 to 1990-2000, Haryana recorded the highest growth rate of 7.80 per cent per annum in the country as against all India's growth rate of 5.66 per cent per annum (GOI, 2007-08). The economy of the state has undergone major structural changes witnessed in terms of occupational shift from primary sector to tertiary sector, agricultural development due to green revolution, rise and expansion of industries, educational institutions, medical and credit services, trade and transport network etc (GOI, 2009).

All these factors together have also exercised a vital role in the expansion of volume of traffic as well as these services along the highways in the state. Among security posts and health services, the largest share is that of medical stores with the strength of 268 out of 529 facilities, whereas traffic police stations have the lowest strength. So, it is clear that in this category 50 per cent are medical stores and 50 per cent are the rest of facilities (Table 1) mainly due to their maximum concentration of medical stores on all

national highways is around *chowks*, villages, towns and cities. On the other hand, hospital, clinics and crane services are mainly located in and around cities and towns (Field Survey, 2007-2008).

Security Posts and Health Services on National Highways

The table shows that there are as many as 89 security posts and health services facilities available at NH-I. The concentration of these services along this highway before 1966 were 6.76 per cent, increased to 28.09 per cent during 1967-1991 and third phase constitute 65.17 per cent of the total. Government of India adopted open door policy in 1991. Under this policy the economy was liberalized. More emphasis was given on privatization. Indian market was opened for multinational companies and Indian economy was made a part of international economy as a result of which Indian market has been significantly transformed. There was a great impact of liberalization on industries and trade. There was a spectacular growth of Indian economy under this new liberal system. There was a direct effect of this economic growth on transport system there was a tremendous increase in the means of transportation which created gigantic demands of roadside facilities (Gupta and Gupta, 2008). During the economic reform period there is very high investment in roads and other services, resulting in manifold increase in the number of vehicles and average speed of vehicles meaning thereby the number of accidents has gone up. So, in view of increasing accident and other highway violations there are a need to increase the number of security posts.

The table also depicts the temporal growth of security posts and health services on NH-2. Their total numbers of these facilities are 89 on this highway. Before 1966, these facilities were

absent which increased to 35.96 per cent during 1967-1991. Thereafter, there was a spurt in these services and thus third phase consist of 64.04 per cent of the total security posts and health services developed along this highway. This tremendous increase may be attributed to the development of agriculture, trade and industry which is resulted from the development of science and technology. It influences all the sectors including the growth of roads and transport. Similarly, there was a boom in roadside facilities. The reason of this heavy growth appears to be the decentralization of these facilities on the highway as earlier these were limited to the vicinity of the town (Field Survey, 2007-2008). The table 1 also indicates that there are 45 security posts and health services on NH-8. Before 1966 these facilities were not available, which increased to 13.33 per cent during 1967-1991, but after 1991 these swelled to near about 86.97 per cent of the total facilities developed along this highway till 2008. Security posts and health services were very less on this highway up to 1991. During the survey it come to light that though clinics and medical store were available before 1966, but abolished when the road was widened by National Highway Authority of India or closed by the owners themselves when vehicle started going on the flyovers mainly built after 1991 (Field Survey, 2007).

It is also evident from table 1 the number of security posts and health services is 306 on NH-10. Before 1966, the number of these facilities was rather high and constitutes 10.13 per cent of the total because a large number of big cities and towns (in case of hospital, clinic and medical store) including Bahadurgarh, Rohtak, Maham, Mundhal, Hansi, Hissar, Agroha, Fatehabad, Sirsa and Mandi Dabwali are situated along side of this highway, so these facilities were present since a long time ago. During third phase these

had spread to developing village like Garhi, Sampla, Asthal Abohar, Madina, Mundhal, Agroha, Badopal, Ding, Moriwala, Oudhan, Chormar Khera, Sanwat Khera etc. (Fig. 2) and rose to 34.31 per cent. After 1991, there was a boom of development in all sectors including agriculture, trade and industries, transport and service, consequent upon; there was a spurt in the number of highway users. With this economic development there was an increase in the wayside facilities spreading more or less uniform along the entire highway. So during this period their number went up to 55.56 per cent.

Table 1 also provides an overview of the entire study area which is a comparative study of all the four national highways. The highest number of security posts and health services is on NH-10 whereas the minimum on NH-8. There are many reasons behind highest number of these services along NH-10. (a) This highway has the maximum length of 313kms. (b) This highway passes through several big cities as mentioned earlier. So, the reason of being highly concentrated is that surrounding community does participate in availing these facilities. Another reason of concentration of health services i.e. hospital, clinic and medical store on NH-10 can be attributed to Sirsa city and Jhajjar (Fig. 2). The reason of being lowest number of security posts and health services on NH-8 is due to the abundance of over bridge on the highways spreading from Delhi border to Manesar. In addition, there are high grills on both side of the road from Delhi border to Manesar. So, no space is left for erecting any structure and for parking a vehicle.

The study also points out that if we consider the concentration of these highway facilities barring big cities, we find these in maximum number on NH-1, whereas NH-10 has the maximum number of facilities mainly in big cities (Fig. 2).

It seems that the volume of traffic on NH-1 is more than NH-10, because the volume of traffic is directly affected the concentration of these services. NH-10 links Delhi to Haryana; Punjab and Rajasthan, while NH-1 links Delhi to Haryana, Punjab, Himachal Pradesh, Jammu and Kashmir, Chandigarh etc. The complete truck load of fruits and vegetables from Jammu and Kashmir and Himachal Pradesh pass via NH-1 to Delhi. Secondly, NH-1 links several hill stations which are important from tourist point of view. So, the religious and holiday tourism also increase the volume of traffic on NH-1. So, all these reasons indicate that the volume of traffic on NH-1 is very high and road is quite busy throughout day and night. So, the high volume of traffic provides a better opportunity for the more concentration of these services (Field Survey, 2007-2008).

Conclusion

It is evident from foregoing discussion that the number of security posts and health services was very few during mid 1960s when the state of Haryana came into being. Only 6.99 per cent security posts and health services were available on roads during this period. However, during next two decades, the proportion of facilities increased to little less than one-third of all security posts and health services. The third phase experienced remarkable development in the expansion of security posts and health services which together account for more than two third of security posts and health services. Similar trend is seen in temporal growth of the sub-groups of security posts and health services: - hospital, clinic and medical store. There was no crane service and traffic police post in first and second phase. The overall development of the state has played a pivotal role in the growth of security posts and health services along the selected highways in the state. The study reveals highest concentration

of security posts and health services on NH-10 due to a large number of big cities and towns on the other hand NH-8 has the lowest concentration of these services. The study also points out that if we consider the concentration of these highway facilities barring big cities, we find these in maximum number on NH-1, whereas NH-10 has the maximum number of facilities mainly in big cities. It seems that the volume of traffic on NH-1 is more than NH-10, because the volume of traffic is directly affected the concentration of these services. The study also reveals that security post and health services are mainly concentrated in cities and towns.

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