DEVELOPMENT OF BYPASS ROAD FROM ITI TO RAILWAY OVERBRIDGE PATTAN BARAMULLA INDIA

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Abstract: The increasing volume of traffic in built up areas of the developing countries and the physical capacities is resulting in increase in travel time and severe congestion scenario. The disparity between demand and supply is the result of fast improving socioeconomics of the people resulting in steep rise of vehicle ownership, accompanied by slow development of transportation infrastructure. The construction of highway bypasses has resulted in many economic benefits both for Inter City motorists as well as residents of towns bypassed. Pattan is one such town of J&K wherein roads coming from different villages, various districts, sub districts leading to town have lately experienced sudden increase in traffic volumes. Large traffic volume is the prime cause of traffic congestion which in turn increases travel time, vehicle operation cost as well as maintenance cost. Pathan is a hub of road communication of Northern part of Kashmir. At present the most important India - Pakistan national highway is connected with Pattan town through that single road which passes through the heart of town. By developing bypass MDRs will get directly connected to NH44 (Jammu- Srinagar highway) without touching centre of town thereby, reducing the traffic volume and shortening travel time. However bypasses also have environmental and economic consequences. This road network will have a great influence on the commercial development of Pattan. The results are expected to help the authorities in framing and prioritizing the improvement schemes. This study will also help us to investigate the relationship between road network and guidelines to identify the possible future development expansion of commercial zone.

1. Introduction

Bypass roads are special roads or highways constructed for the purpose of deflecting traffic from certain areas, often from the centers of cities and towns. The principal reasons for their construction are the removal of through-traffic from the centre of a town or city to the periphery, for purposes of improving the flow of traffic, shortening travel times, and reducing traffic accidents. However, bypass roads also have environmental and economic consequences. On the one hand, they reduce noise and pollution emissions along the previous route. The lower level of traffic can improve the local qualities of the bypassed area, such as its pedestrian comfort, and make it possible to install amenities that can enhance local economic development (e.g; widened sidewalks (footpaths), trees, etc.) On the other hand, bypass projects often raise severe fears among local proprietors and businesses along the bypassed route thus worry that their business revenues and value of their properties will decline with the reduction of passing traffic. Depending on the land use controls in place in the vicinity of the bypass, downtown merchants and others also may worry that the bypass will shift commercial interest and activity to the town edges and off-ramps of the bypass, resulting in collapse development and its related auto dependency. Previous studies of bypass roads have focused primarily on traffic shifts and to a lesser extent on changes in the amount and type of local economic activity. We are unable to find more than a handful of studies that have looked more broadly at the larger political, social, and regional economic context in which bypass decisions are made and in which the bypasses' local impacts are embedded.

Statement of the Problem

Bypass is a road that avoids or "bypasses" a built up area, town or village to let through the traffic flow without interference from local traffic to reduce congestion in the built up area and to improve road safety. According to research conducted in Kansas (USA), the construction of highway bypasses has resulted in many economic benefits both for intercity motorists as well as residents of towns bypassed. Perhaps, the most significant of these is the travel time savings resulting from through-town traffic which avoids the slower speeds, stops and congestions associated with driving through the bypassed communities. In spite of the benefits of bypasses, the benefits remain debate able as the local businesses in the communities being bypassed fear that the reduction of traffic passing through the town will adversely affect their sales. This is especially the case for travel related businesses such as car and truck repair shops, hotels and restaurants, stores and fuel or gas filling stations (Babecock and Davalos, 2004). As Pattan is a very busy town this by pass will help us to decongest it and will provide easy access to tourist destinations like Gumarg ,Bangus Valley, eco park, gulnar park etc. As the road coming from different villages, various district, sub districts leading to town is shared by all types of vehicles such as light motorized vehicles, heavy motorized vehicles and non-motorized vehicles. Large traffic volume is the prime cause of traffic congestion at urban roads. Traffic congestion in urban area is a serious problem and is increasing day by day with the increase in population, vehicular ownership due to uprising economic status of urbanities. The reduction of traffic passing through the town will adversely affect their sales. This is especially the case for travel related businesses such as car and truck repair shops, hotels and restaurants, stores and fuel or gas filling stations (Babecock and Davalos, 2004). As Pattan is a very busy town this by pass will help us to decongest it and will provide easy access to tourist destinations like Gumarg ,Bangus Valley, eco park, gulnar park etc. As the road coming from different villages, various district, sub districts leading to town is shared by all types of vehicles such as light motorized vehicles, heavy motorized vehicles and non-motorized vehicles. Large traffic volume is

the prime cause of traffic congestion at urban roads. Traffic congestion in urban area is a serious problem and is increasing day by day with the increase in population, vehicular ownership due to uprising economic status of urbanities.



Figure 1.2: Section of proposed Bypass study Impacts

Positive Impacts

Overall, the planned construction of the road will create job opportunities for workers to be recruited along the project road. There is much anticipation among the roadside communities that local labour will be employed on the road project, especially to carry out manual and unskilled tasks. The unskilled positions would include casual labours, watchmen, etc.

Negative Impacts

The main environmental and social impacts from the construction of the bypasses include; dust, noise, loss of vegetation for the entire road stretch of largely grazed lands will be taken up by the road, interference with livestock/cattle movements, loss of grazing lands, limited displacement of persons, some damage to the wetland ecosystem,

Destruction of catchment areas and habitats.

Benefits of Bypass

The key advantages of a By Pass are listed below:

- 1) This road will provide good connectivity from ITI to Railway Overbridge via malik coloney & Nai basti.
- 2) It will connect MDR to NH-44.

3) This will be an important route for the Army. It will also provide alternate route for the strategic traffic leading

to Srinagar.

- 4) It will reduce the travel time of the passengers travelling directly to the other districts of the valley.
- 5) It will reduce the traffic volume within the city
- 6) It will increase the economics of the land along the Bypass road.
- 7) It will help in improving the air quality within the town.

Limitations of Bypass

01) Common measures of economic activity in bypass studies include employment, retail sales and personal income. These data are not easily obtained for very small places. The U.S. Census Bureau does not aggregate data for places of fewer than 2,500 people. While it is possible to aggregate at the tract level, the resulting data would only be available for Census years. Zip code level data are of limited use since rural zip codes areas can include one or more small towns plus surrounding non-incorporated land areas.

02) Accordingly, studies of very small towns generally rely on site visits and surveys to assess bypass impacts. Survey data are costly to obtain and subject to bias. Furthermore, it is difficult, and sometimes impossible, to get data for the pre-bypass period after the fact. People move and businesses close, change owners, or don't keep adequate records. The unavailability of reliable, quantitative data poses a major obstacle for analyzing bypass impacts.

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03) Consequently, studies of bypass impacts on small town business districts are limited in umber and scope. The local option sales tax data offer a reliable, annual source of sales tax data for bypassed and non-bypassed communities of all sizes. Few other by pass studies have exploited this data.

Guidelines for the selection of Bypass

01) Traffic plying on rural highways many a time has to pass through the urban areas of various sizes with or without the purpose of halting within the urban areas. The non-halting traffic is known as through traffic with its origin and destination lying outside the limits of the urban area. The proportion of through traffic to total traffic in the case of medium sized towns as in case of pattan having the population in range (with population 1,00,000 to 5,00,000) as per census 2011 and small sized towns (with population 20,000 to 1,00,000) will be larger than that of big cities. The frequent interaction of through traffic with the local traffic of the urban area besides bringing down the level of operation of both types of traffic would also erode the traffic environment of the township. In all such cases, proper planning of bypasses assume great importance for providing unhindered movement to the through traffic and de congest the townships.

02) In many instances a bypass, after being constructed, soon becomes engulfed with the local activities resulting in a total loss of its desired functional character. Chances of such eventualities taking place must be obviated through planning the bypass alignment in relation to the master plan of the town in such a manner that the bypass remains unaffected by the local urban activities till the end of the design year. A total volume of about 3000 vehicles per hour can be considered as the upper limiting case and a volume of 500 vehicles per hour is the lower limit.

03) Particulars such as volume, origin, destination, and delays, pertaining to through and local traffic are required for justifying the provision of a bypass. Depending upon its

origin and destination, the traffic going through a town can be classified as:

- (i) External to external: Traffic whose origin and destination both lie outside the town.
- (ii) External to internal: Origin of traffic outside and destination inside the town.
- (iii) Internal to external: Origin of traffic inside and destination outside the town; and
- (iv) Internal: Traffic whose origin and destination both lye within the town.

As far as possible the survey should cover maximum percentage of traffic, and it is preferable to cover the entire traffic giving one hundred percent sample size. When this is not possible the survey should cover a minimum percentage of traffic as given below:

During peak periods: 25 per cent of volume of traffic. During normal periods: 50 per cent of volume of traffic.

2.6 Need for Bypass

1. Pattan is a Busy Industrial Town and Traffic intensity is much more as the Road width available is less within the Built Up area, thus the need for the development of Bypass arises.

2. Heavy Commercial traffic is available due to location of the Fruit Mandi, Agriculture Land & other Industrial activities results in traffic jams.

3. This road also acts as the sub artery for traffic flow for NH44 as it directly connects Pattan town with NH44.

4. It is also a strategic important road for the defense purposes as the famous military depot is located along this road.

5. It is also important road for the cross trade LOC.

6. It is also important road as far as CARVAN -E- AMAN BUS is concerned.

7. This road is the key Route for the three Major districts viz. Baramulla, Kupwara and bandipora. Connecting them with the summer capital city Srinagar.

02. RESEARCH METHODOLOGY

Introduction

The target of our study is the impact of highway bypasses on small town business districts. Aggregate data are used to determine whether a bypass highway stimulated or inhibited economic growth in a city. The main outcome variable is the sales tax base, which

provides a measure of overall economic activity at the community level. Unlike other relevant outcome measures, these data are available yearly for all communities that impose local sales taxes in Pattan, even very small communities. Impact studies of roads, including bypass roads, involve three main methodological problems, as the review of the literature has noted. Frist, it is necessary to identify the physical spatial boundaries for the area to be analyzed. Second, it is necessary to define urban and economic development and identify which indicators or parameters meaningfully measure these. Third, there is a need to design the research in order to isolate the effect of the road upon development, distinct from other factors that also affect it, e.g., population growth trends unrelated to the road construction, local economic climate, local tax policy, other infrastructure investments, because we are particularly interested in local impacts and the effects of locally controlled decisions such as land use and zoning, we have adopted the specific formal township boundaries in considering spatial location impacts.

Data Collection and Sources

This section documents the data sources used in the project. The sources as well as details about the scope of relevant data are discussed. Notably, some data were investigated, but not used in the direct analysis due to availability or reliability concerns.

Local Option Sales Tax Data

Local option tax data provide a very practical way of overcoming data limitations when analyzing economies of small communities. The state legislatures authorize local option taxes at the county, municipal or special district level. A local option sales tax allows a municipality to tax qualified sales (sales subject to sales tax) occurring its jurisdiction. The local option sales tax data offer a reliable, annual source of data on sales tax base for bypassed and non-bypassed communities of all sizes

Population Data

The Census 2011 provides historical population data for the census years from 1991 through 2001 for each state in a single file available on the Census web site. This file provides census estimates for city population by county of residence.

Traffic Volume Study

Traffic volumes on access routes are important factors when considering bypass impacts. It is important for use as matching criteria when constructing control groups as well as for predicting impacts on business activity for cities of different size. Of particular value are before and after volumes for a location in the central business district. From the traffic Volume considerations, the total traffic volume is almost double the volume measured east and west of Pattan indicate a considerable amount of city centre traffic amounting to around 5,000 vehicles including cars and motorcycles per day, of which Light Motor vehicles account for about 60 % of the total traffic and is also assumed that, around half of the traffic will according to the Origin destination survey will drive through Pattan town towards Srinagar. Different classes of the vehicles make use of the same roadway, particularly in developing countries like India, thus the traffic streams consists of "mixed traffic flow". The vehicles of traffic stream may be classified into different classes. They consist of: (a) Fast moving vehicles such as passenger cars, buses, trucks or heavy commercial vehicles (HCV), light commercial vehicles, auto-rickshaws, two-wheeler automobiles (motor cycles and scooters) and (b) Slow moving vehicles such as animal drawn vehicles like bullock carts, cycle rickshaws, pedal cycles. Determination of volume of each vehicle class separately and finding the total volume is called "classified traffic volume studies".

Traffic volume characteristics

The traffic volume and the traffic flow is dynamic and varies from time to time. Hourly traffic volume varies considerably during 24 hours of the day. The peak hourly volume is generally much higher than the average hourly volume of the entire day. Even within one peak hour period the traffic volume may vary during the different smaller periods of say, five or ten minutes. Daily traffic volume varies considerably on different months or seasons of the year. If a true picture of traffic flow on a road is to be obtained, the classified traffic volume study should be conducted continuously by recording the direction wise counts of each vehicle class at selected time intervals such as 10 or 15 minute intervals. From these data it is possible to obtain hourly, daily and seasonal variations in traffic flow and find the fluctuations and patterns of traffic flow. These details can be collected by establishing permanent traffic count stations and recording of traffic flow continuously. Alternatively statistical methods are adopted making use of appropriate sampling techniques or short counts.

Objects of traffic volume studies:

- The objects and uses of traffic volume studies are given below:
- i. To decide the priority for improvement and up gradation of roads.
- ii For geometric design or re-design of roadway facilities.
- iii For analysis of traffic patterns, trends and rate of growth of each vehicle class and
- projecting future traffic volume along identified roads.
- iv For computing roadway capacity.
- v.To plan traffic operation and control of traffic facilities.
- vi.For planning traffic operation and other regulatory measures.
- vii. To plan and design new facilities.

Methods for Classified Traffic Volume Studies:

Traffic volume counts may be carried out either manually or by using mechanical or automatic counters.

Manual counts

This method employs a field team of enumerators at pre-determined locations of selected roads and intersections. The enumerators carry out classified count of the vehicles and record them on prescribed record sheets/forms at desired time intervals. By this method it is possible to obtain all the details of classified traffic data which cannot be collected by automatic or mechanical counters. It is possible to obtain details such as; (a) classification of different types of vehicles and their counts at desired time intervals (b) noting the direction wise movements including turning movements of each vehicle class at intersections (c) classified volume counts with number of occupants in each passenger vehicle (d) number of commercial vehicles HCV and LCV with details of load and types of commodity transported and (e) desired details of pedestrian volume counts. The main drawback of the manual counting method is that it is not practicable to carry out manual count of different vehicle classes during all the 24 hours of the day and on all the days round the year. Traffic volume during different seasons of the year is to be noted. By selecting typical short count periods the traffic volume study is carried out by manual counting. Then by statistical analysis the peak hourly traffic volumes as well as the daily average volumes are calculated. This method is very commonly adopted due to the specific advantages over other methods.

Automatic traffic counters-cum-classifiers

These may be either fixed or permanent type or portable type of counters. The mechanical counter can automatically record the total number of vehicles crossing a section of road in a desired period. One of the old methods of automatic counters is by the effect of impulses on a pneumatic hose placed across the roadway; traffic count is recorded by electrically operated counters and recorders capable of recording the impulses but the impulses caused by vehicles of light weight may not be enough in some cases to actuate this type of counter.

APPENDIX A

Traffic Volume Studies: The traffic volume data was collected at the ITI and Railway Over bridge by taking 15 minute counts. The volume of traffic approaching and leaving the town during design hour is shown in tabular form below:

Type of Vehicle	No of Vehicles	PCU equivalent	Multiplying	PCU/hr
			Factor	
Motorcycles and	48	0.5	4	96
Scooters				
Cars, Tempos,	150	1	4	600
Auto-rickshaws,				
Etc				
Agriculture	40	1.5	4	240
Tractor, LCV				
Trucks and	18	3	4	216
Buses				
				Total =1152

Traffic volume counts on Road-1(ITI and Railway Over bridge) at ITI entering towards Pattan Town (9:00am to 10:00am)

Type of Vehicle	No of Vehicles	PCU equivalent	Multiplying	PCU/hr
			Factor	
Motorcycles and	54	0.5	4	108
Scooters	1	T	r	I
Cars, Tempos,	174	1	4	696
Auto-rickshaws,				
Etc				
Agriculture	52	1.5	4	312
Tractor, LCV				
Trucks and	22	3	4	264

Buses

Total =1380

Traffic volume counts on Road-1(ITI and Railway Overbridge) leaving Pattan Town at Railway 6verbridge

point.

(9:00am to 10:00am)

The data shown above is the peak hour data. The peak hour data was observed during the morning.

_	Time	PCU/hr
		(Average of
		seven days)
	9.00Am to 10.00 Am	1310
	10.00Am to 11.00 Am	1184
	11.00Am to 12.00 Pm	1012
	12.00pm to 01.00 pm	934
	1.00pm to 2.00 pm	916
	2.00pm to 3.00 pm	879
	3.00pm to 4.00 pm	989
	4.00pm to 5.00 pm	1016
	Total	8240

Traffic Entering Pattan Town at Malik coloney

Time	PCU/hr
	(Average of
	seven days)
9.00Am to 10.00 Am	1328
10.00Am to 11.00 Am	1207
11.00Am to 12.00 Pm	1043
12.00pm to 01.00 pm	988
1.00pm to 2.00 pm	940
2.00pm to 3.00 pm	867
3.00pm to 4.00 pm	972

Traffic leaving from ITI Pattan towards Srinagar

The average traffic volume was also calculated for eight hours a day for a week's time. Starting from 9:00am in the morning to 5:00pm in the evening, the average traffic volume for these eight

Total

hours came out to be equal to 1030 PCU/hr of traffic entering the Pattan town at ITI(Road-1 ITI to Railway overbridge) and 1064 PCU/hr leaving at overbridge Point(Road-1 ITI and Railway Overbridge). This is more than the data which has to be met while taking in consideration the development of bypass road. Thus the bypass needs to be developed between ITI and Railway Overbridge

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Data Processing and Analysis

In this study, the data analysis was a blend of the quantitative and qualitative analysis. In Quantitative Data Analysis, descriptive analysis of the data collected using Descriptive Statistics was used to compare and contrast the data gathered with the set objectives. The data from the structured questionnaire was presented in bar charts, to bring out the Descriptive Statistics of the Qualitative Variables of the impact of the bypass using the Statistical Package for the Social Scientists (SPSS)

[~		
S.		No. of	Agree	Dis -Agree	Neutral
No		observations	6	6	
1.	The Bypass v Positively redu the congestion on	vill300 uce	90	7	3
1	the existing road		0		
2.	The Bypass v reduce f emission harmful gases	vill300 the of	80	10	10
3.	The Bypass v reduce the tr traffic through the town	vill300 uck	75	15	10
4.	The Bypass v reduce the n pollution in t town	vill300 ^{oise} the	85	5	10
5.	The Bypass I improved a access business in town	nas300 the for	70	25	5
6.	The Bypass v be of no benefit to pattan Town	vill300	5	93	3

Impact of Highway Bypass on Environment, Safety and Traffic TABLE Descriptive Statistics

Total

7.

The impact of the bypass on traffic, safety and environment were examined using 6 factors:

Case 1: 90 % of the respondents agreed that by the development of bypass traffic will considerably decrease in Traffic Congestion, 7% of the respondents dis-agree with it and rest 3% remained neutral. This shows that respondents agreed that the bypass has positive impact on the traffic congestion on the existing road.

Case 2:80 % of the respondents agreed that by the development of bypass traffic will get diverted thus leading to decrease in emission of harmful gases, 10% of the respondents dis-agreed with this agreement and rest 10% remained neutral. This shows that respondents agreed that the bypass will decrease the emission of harmful gases.

Case 3: 75 % of the respondents agreed that by the development of bypass traffic will decrease the truck traffic, 15% of the respondents did not agree with this statement and rest 10% remained neutral. This shows that respondents were in agreement that the bypass will reduce the truck traffic through the town.

Case 4: 85 % of the respondents agreed that bypass will reduce the noise pollution within the town, 5% of the respondents disagreed with it and rest 10% remained neutral. This shows that respondents stated that the bypass will reduce noise pollution in the town.

Case 5:70% of the respondents were in agreed state that by the development of bypass there will be easy access to the business units, 25% of the respondents showed dis-interest towards the statement and rest 5% remained neutral. This indicates that respondents agreed that the bypass will help in improved access to businesses in the town.

Case 6: 5 % of the respondents agreed that there will be no benefit to Pattan town by development of this bypass, 93% of the respondents did not agree with this, and the rest 3% remained neutral. This indicates that respondents disagreed that the bypass had no benefit to the Pattan town. An overall study of the above factors indicates that, almost all 6 factors were positively affected by the bypass.

•		Frequency	Percent	Valid	Cumulative
No				Percent	Percent
1.	Highly	8	8.0	8.0	8.0
	Positive				
2.	Positive	80	80.0	80.0	88.0
3.		5	5.0	5.0	93.0
	Negative				
4.	No Effect	7	7.0	7.0	100.0
5.	Total	100	100.0	100.0	

According to Table 4.11, 88% of respondents agreed that the bypass will positively affect the quality of life of locals in Pattan. 5% of respondents were of the view that the bypass will negatively affect the quality of life of locals of Pattan and the remaining 7% of respondents were of the view that the bypasses have no effect on the quality of life of locals of Pattan.

03. RESULTS & DISCUSSIONS

Introduction

Highway bypasses impact small town economies in ways that are not well understood. Previous studies indicate that highway bypasses can have both positive and negative impacts. Positive impacts include expanded local markets, reduction in travel time, decrease in noise and increasing accessibility. Negative impacts include reduced demand for highway-related services and improved access to merchants in nearby towns. Non-transportation factors, such as the introduction of large discount retailers in rural markets, decline in agricultural demand, restructuring in oil and gas industry and environmental regulations may be more important than highway service in small town economies. State transportation agencies and small towns need a better understanding of highway bypass impacts in order to develop prudent policies and mitigation strategies.

This research aimed at evaluating the effect of Highway bypass on the development of pattan. Chapter one of the research outlined the introduction of the study. Chapter two consists of relevant literature within the limits of total quality management systems in road construction with chapter three outlining the methodology of the research. Chapter four discussed the analysis of data obtained for the study. Chapter five looks at the conclusion drawn from the research and the recommendations made.

Summary of Research Findings

Objectives were outlined for this study namely;

To study the environmental, and traffic impact on the local habitants.

Impact of highway bypass on environment, and traffic.

In the assessment of the impact of highway bypass on environment, and traffic, six factors were considered. These factors were; traffic congestion, vehicle emissions in local environment, access for town businesses, truck traffic on the bypassed route, noise

pollution in the town and overall benefit to the Pattan town. Back ground results indicated that, Reduction of the traffic congestion on the Existing road meaning that respondents agreed that the bypass have a positive impact on the traffic congestion on the existing highway. Reduction of Truck Traffic: 75 % of the respondents agreed with the fact that with the development of bypass, the truck traffic will get reduced on the existing route. There will also be reduction in noise pollution, vehicle emissions in local environment with development of bypass that respondents agreed. Improved access to businesses got a percentage of 75 % thus indicating that the respondents fully satisfy that the bypass will offer improved access to businesses in the town. 93 % of the respondents disagreed that the bypass had no benefit to the Pattan town, thus indicating that the bypass will offer over all benefits for the people of Pattan. In conclusion, from over all responses, it was observed that the highway bypass positively affected Environment and traffic. An overall respondent mean percentage indicates that, almost all six factors were positively affected by the bypass.

CONCLUSION AND FUTURE SCOPE

Conclusion

A summary of the findings of this study reveals that the construction of the bypass road will significantly affected the town in all areas examined also the land prices in different neighborhoods within the town, business activities, and land uses (commercial/agriculture) will also get affected. Different sub-areas within the town will be affected by the bypass roads in different ways, and in some cases in contradictory directions (e.g. road accidents and land prices). This implies that the equity/distributional effects of the bypass road need to be taken into consideration, in addition to efficiency considerations. Perhaps the most notable finding is that the bypass road resulted in strengthening the roads they bypassed by altering their status from a main road to local road, thus effecting the removal of restrictions on building and development and hence converting them into central arteries on which businesses and services could flourish.

From the analysis of the interview responses and other analysis conducted during the investigations, it was concluded that with decrease in the traffic along the existing road, the bypass will result in decrease of sales for retail businesses, food vendors will also experience effect in sales, hotels & restaurants as well as vehicle service stations. The study further revealed that, the communities will perceive the improvement in traffic flow by deviation of traffic along the bypass road, this will result in saving of total travel time, reduced congestion, reducing noise and vibration which occurs due to movement of heavy loaded commercial vehicles, improving road safety by decreasing the chances of accidents, saving in vehicle maintenance costs and reduction in environmental pollution as the main benefit of the bypass. In total, the community believes that the bypass will positively impact on the inhabitants of Pattan. In General context the development of Bypass will increase the commercial activities of the town to the greater extent. This will also lead to increased interest of the people towards the setting up of the business units along the bypassed road which will also create the employment with the creation of these establishments thus will help in minimizing the unemployment to some extent. On the whole, the bypass has been perceived to have positive effect on the entire life of people in Pattan.

Future Scope

Although our study did not find any significant economic impacts of highway bypasses, the results are not so conclusive since we lacked a sufficient number of treatment cases, as well as usable data on traffic volumes and composition, residential property values, regional economic performance, and business climate during the pre-bypass years. The lack of baseline information was a major obstacle in our analysis. In response, we propose that a similar but expanded study be applied to the other towns situated in J&K that preferably will be bypassed over the next year and a half. The basic contribution of the extended research would be to make a baseline assessment of conditions in the pre-bypass period before bypass construction begins (rather than after the fact). For other similar works, it would provide an assessment of bypass impacts using the methodology developed in this project. It would also help to investigate the effectiveness of bypass mitigation measures. Such an analysis would examine bypass impacts on retail sales, land uses, business location, business climate, residential property values, and population. The extended research could also examine the effect of different mitigation strategies. The expanded research project would:

01) Help agencies planning highway bypasses for safety and efficiency reasons and wishing to predict and ease economic impacts.

02) Contribute to the research on highway bypasses, which to date is inconsistent in its findings.

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