Research Paper

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Pedestrianisation of an Urban Area: A Case Study of Nagerbazar, Kolkata

Engineering

KEYWORDS : Non-motorized modes, Public transport, Traffic congestion, Pollution, Safety

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ABSTRACT

Nagerbazar's transport crisis has been exacerbated by deteriorating public transport services, limited and outdated transport infrastructure, sharply rising motor vehicle ownership and use, and a wide range of motorized and non-motorized transport modes sharing roadways.

In Nagerbazar non-motorized modes of transport and public transport/para-transit constitute a significant proportion of trips. Due to poor and unreliable supply of public transport, the share of private automobiles is ever increasing.

Growing number of automobiles has increased congestion, travel delay and accidents. To reduce these negative externalities both public and non-motorized forms of transport has to be given importance. It will be difficult to increase the share of NMV and public transport unless these modes are made much more convenient, safer and reliable.

This article summarizes Nagerbazar's transport system and travel behavior, analyzes the extent and causes of the most severe problems, and recommends policy improvements that would help mitigate Nagerbazar's transport crisis.

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Introduction

Nagerbazar is located in the eastern part of Kolkata, situated at a distance of 5 km from NSCB International Airport along Jessore road. Jessore road is a major transit corridor connecting NH-34 to North Kolkata. It is in close proximity to Dum Dum railway junction, Metro station and houses a bus terminal.

Availability of all modes of travel and various social and commercial infrastructure facilities such as schools, hospitals, shopping and entertainment centers has established Nagerbazar area as major trip attraction and distribution center.

Nagerbazar intersection experiences heavy volume of motorized and pedestrian traffic rendering LOS (Level of service) F. The average daily traffic is around 1, 15,813 Passenger Car Unit's (PCU's). The Moring (1000-1100 hrs) and Evening (1900-2000 hrs) peak hour traffic in all the direction are 7,238 PCUs and 6,874 PCUs respectively. The Volume/ Capacity (V/C) ratio of Nagerbazar intersection is 1.15.

Increasing share of vehicular traffic at Nagerbazar intersection on limited road space causes frequent traffic congestion and travel delay. In order to decongest the Nagerbazar intersection a fly over had been constructed on Jessore road to enable thorough traffic to NSCB International Airport from North Kolkata. In spite of construction of a flyover, this intersection experiences frequent traffic delay and congestion. As a result accessing jobs, education, recreation and similar activities is becoming increasingly time consuming. Millions of man hours are lost with people "stuck in traffic".

The primary reason for traffic congestion has been the explosive growth in the number of motor vehicles, coupled with limitations on the amount of road space that can be provided. Poor mobility has become a major dampener to economic growth and deteriorated the quality of life. A policy is, therefore, needed to dealing with this rapidly growing problem.

Issues

Transport demand in Nagerbazar has increased substantially outstripping the road capacity. Greater congestion and delays are widespread indicate the seriousness of transport problems. A high level of pollution is another undesirable feature of overloaded streets. The main reasons for these problems are the prevailing imbalance in modal split, inadequate transport infrastructure, and its suboptimal use.

Despite presence of large share nonmotorized modes (walking, cycling, and their variations), pedestrian facilities are in poor conditions and bicycling facilities do not exist because nonmotorized modes are considered inferior to the motor vehicles. Frequent level difference on the pedestrian pathways discourages pedestrian movement. At times in the absence of drain covers, pedestrian pathway opens directly into the drain. The lumination level is often very low which reduces visibility during dark hours, exposing pedestrians in the danger of falling into the open drains, deterring pedestrian movement. Pedestrian pathways are heavily encroached by shopkeepers or utilities such as electric and telephone poles or garbage bins, which causes spill over of pedestrian and NMV users on the main carriageway, rendering them venerable.

The use of cheaper non-motorised modes like cycling and walking has become extremely risky, as non-motorised modes have to share the same right of way with motorized modes. Pedestrians, bicyclists and MTWs constitute 75% of the total fatalities in road traffic crashes (Tiwari, 1993). This has increased the cost of travel, especially for the poor who could only afford cycling or walking considerably and has made access to livelihoods far more difficult.

Analysis

Nagerbazar has considerable number of pedestrian and NMV users. Nearly 23.1%, 16.50% and 11.10 % of the population have access to bicycles, two wheelers and motorized vehicles respectively. While 49.20 % of population, do not have access to any mode of transport.

Clearly around 72.30 % of population prefer either walk or ride bicycles to work as they cannot afford to use motorized transport - private vehicles or public buses. In spite of the fact that a large section of society prefers to use non-motorized mode, the pedestrian infrastructure provided are in suboptimal condition or absent. There need are ignored to avoid delaying motorized traffic.

The absence of dedicated infrastructure designed for pedestrian and NMV users compels them to share common road space with high speed modes causing intermixing of slow and fast moving traffic leading to traffic congestion. In order to avoid traffic con-

gestion and allow smooth movement of vehicles a fly over had been constructed. But in absence of comprehensive multi model integrated planning of the flyover, the area still experiences congestion, travel delay, environmental and noise pollution defeating the purpose of construction of flyover.

Traffic congestion in Nagerbazar has reduced peak-hour speeds to 5 to 10 kms per hour resulting in higher levels of vehicular emission. According to the Centre for Science and Environment (CSE), the quantity of all three major air pollutants (namely, CO, hydrocarbons, and nitrogen oxides) drastically increases with reduction in motor vehicle speeds. For example, at a speed of 75 kmph, emission of CO is 6.4 gm/veh.-km, which increases by five times to 33.0 gm/ veh.-km at a speed of 10 kmph. Similarly, emission of hydrocarbons, at the same speeds, increases by 4.8 times from 0.93 to 4.47 gm/veh.-km. In Kolkata, the average annual emission of SPM is 394 microgrammes per cubic meter, while the WHO standard is 75 (Singh, 2005). Thus, prevalent traffic congestion in Nagerbazar, particularly during peak hours, not only increases the delay but also increases the pollution level.

In addition, Public transport systems have not been able to keep pace with the rapid and substantial increases in demand over the past few decades. Bus services in particular have deteriorated, and their relative output has been further reduced as passengers have turned to personalized modes and intermediate public transport. With deteriorating levels of mass transport services and increasing use of personalized modes, vehicular emission has reached an alarming level.

Proposals

This section recommends various proposal, which if adopted will enhance mobility of people belonging to all age groups and cross sections of the society and reduce negative externalities exerted by motorized vehicles in Nagerbazar.

- Encourage construction of dedicated and segregated rights of way for bicycles and pedestrians. Dedicated and segregated bicycles and pedestrian lanes will not only enhance the mobility of pedestrian and cyclist but also ensure their safety and increase road capacity. The infrastructure for NMV and pedestrians should be barrier free and comply with the norms laid down by National Policy for People with Disabilities (2006).
- Creative facilities like shade giving landscaping, provision of drinking water and resting stations along bicycle corridors should be provided as they make pedestrian and NMV movement more attractive and also help in mitigating adverse weather conditions.
- Pedestrianisation of street will also help in improving the economy of unorganized and weaker section of the society directly or indirectly related to art culture and heritage, craft, textile and street food industry. This street will also act as a direct link between the manufacturer and buyer for the promotion of local handicraft products. It will also acts as a promotional platform to create awareness of culture and heritage of Kolkata through food and music.
- Reliable, attractive and quality focused multi-modal public transport systems should be established in order to expect paradigm modal shift in favor of public transport. In addition to it, discrimination on the basis of disability in public transportation services such as city buses and public rail (subways, commuter trains, etc.) should be prohibited (Americans with Disabilities Act of 1990).
- Segregated HOV (High Occupancy Vehicle) lane if provided will help in improving traffic flow, increase the average speed of traffic and reduce emissions resulting from suboptimal speeds. The timings of all public mode of transport such as bus, trains, air planes and para transit should be synchronized to provide hassle free seamless travel.
- Intelligent Transport Systems (ITS) should be deployed to effectively regulate and enforce mechanisms that allow a level playing field for all operators of transport services and enhanced safety for the transport system users. ITS also will help in achieving fully integrated transportation demand management system, improve efficiency, general mobility and productivity. It will also help in reducing negative effects to the environment such as pollution.
- Cleaner technologies should be promoted by encouraging battery operated auto rickshaw and phasing out polluting rickshaws along with buses complying with Bharat Stage III norms and below.
- A graded scale of parking fee, that recovers the economic cost of the land used in parking of automobiles should be adopted as it will discourage the use of motorized vehicle and peruse people to use public transport. In addition, preference in the allocation of parking space for public transport vehicles and non-motorized modes with easier access of work places should be provided. Park and ride facilities for bicycle users, with convenient inter-change, would be another useful measure.
- Underground multi-level parking complexes should be provided and this parking complex should be encouraged to go in for electronic metering so that is there is better realization of parking fees to make the investments viable and also a better recovery of the cost of using valuable urban space in the parking of personal motor vehicles.
- Due to non availability of parking space, automobiles are generally parked road side reducing effective Right of Way (ROW). Therefore automobile sale should be permitted only if the customer has access to parking slots.
- Massive intensive awareness campaigns educating people on the ill effects of the growing transport problems in urban areas should be launched. The campaigns would seek their support for initiatives like greater use of public transport and non-motorized vehicles, the proper maintenance of their vehicles, safer driving practices, etc. Such campaigns would also encourage individuals, families and communities to adopt "Green Travel Habits" that would make travel less polluting and damaging. Particular emphasis would be laid on bringing about such awareness amongst children through inputs in their school curricula.

Conclusions

Nagerbazar face issues of traffic congestion due to heterogeneous traffic. The intermixing of fast and slow traffic results in more conflicts and adverse effects on the movement of other motorized vehicles. It is very important to transform car oriented Jassore road into functional public spaces and pedestrianised environments which supports active transport (e.g. cycling and walking), social interaction, and economic development.

A successfully developed pedestrianisation of Nagerbazar area will improve economic performance, encourage 'high-end' retail options, enhance health outcomes and improve personal security. Improvements in urban environment will increase social cohesion by creating opportunities for people to engage in recreational activities (e.g., outdoor events and sport) and social activities (e.g., shopping and dining). Therefore in order to improve urban environment and reduce negative externalities of automobiles and achieve sustainable transportation urban system in Nagerbazar area, pedestrian oriented schemes by integrating and coordinating policies and interventions should be vigorously adopted.

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