

ENHANCING SAFETY AND ACCESSIBILITY AT KARACHI'S BUS STOPS: ADDRESSING THE INTERSECTION OF URBAN DESIGN, CRIME PREVENTION, AND PUBLIC TRANSPORT

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As Karachi grew into a megacity, its rapidly growing population made the public transport network an important part of daily life. However, transport infrastructure, like bus stops, became unsafe and inaccessible. The research aims to explore the relationship between crime, urban planning frameworks, and public transport infrastructure by focusing on the safety of commuters at bus stops in Karachi. The study will use and analyze urban planning frameworks, such as the design and layout of bus stops and their integration with urban environment, to identify the key risk factors that contribute to the safety or insecurity of bus stops in Karachi. This study will help urban planners, policymakers, and transport authorities develop targeted strategies for making bus stops safer and more secure, ultimately contributing to a more reliable and user-friendly public transport system in Karachi.

1. Introduction

Karachi, the world's 6th largest metropolitan city, with a significant population, is experiencing rapid expansion [1]. This rapid urbanization has significantly increased the number of vehicles on the road. However, the city's public transport sector is in disarray due to inadequate infrastructure, such as the lack of bus terminals, workshops, and facilities for drivers and conductors [2]. Buses frequently bypass designated stops, which are often obstructed by permanent and movable encroachments, as well as para-transit modes, rendering many stops unsafe and inaccessible [3]. Hence the placement, design and layout of bus stops should be considered important because bus stops are essential components of the public transport system, significantly enhancing its appeal through improved quality, accessibility, and safety and can greatly impact a bus user's perception of safety at the stop [4].

Research by [5] indicates that people may avoid certain bus stops, limit their use to daytime, or refrain from using public transit altogether if they fear harassment or victimization. The perception of safety while waiting at bus stops is as important as the safety experienced on the bus itself in influencing public transit use. [6] further emphasize that fear and anxiety about personal security can deter individuals from using public transit, significantly affecting ridership. A 2002 survey by the Department of Transport in United Kingdom found that improving public safety could increase travel by an additional 10.5 percent [7].

In addition, crime on public transportation is a significant issue in developing countries such as India, Pakistan, and China [8]. Research consistently underscores the crucial role of urban design in influencing crime rates and overall safety in public spaces. [9] highlighted that well-designed, visible, and accessible spaces can deter criminal activity by reducing opportunities for crime. Bus stops, often prime locations for criminal behavior, offer cover for individuals who may prey on unsuspecting victims while waiting unnoticed. Urban riders frequently express concerns about their safety at bus stops, feeling uneasy about individuals lingering behind them or being intimidated by homeless individuals who use bus stops as gathering places [10]. They often experience discomfort when waiting alone in areas with vacant buildings or fenced lots, where the absence of other people heightens their sense of vulnerability.

Harassment at bus stops is a prevalent issue, with many women reporting daily experiences of unwanted advances and verbal abuse from individuals in nearby cars or on the street [2]. In Karachi, the poorly designed and neglected bus stops, often situated on grimy street corners amidst concrete and speeding traffic, exacerbate commuters' feelings of insecurity and discomfort. Incidents such as the loss of personal belongings like wallets and mobile phones are also common at these locations [11]. There are many studies done on the bus stops and transportation system in Karachi such as [12, 13, 14, 15] however, there is a lack in exploring the bus stops infrastructure by focusing on the safety of commuters in Karachi. Furthermore, how can we determine the safety level of bus stops? While there is extensive literature on designing bus stops, research into assessing the safety of existing bus stops remains relatively underdeveloped [16]. The security and protection of lives and property rely heavily on the effective functioning of various infrastructure systems. The CPTED (Crime Prevention Through Environmental Design) concept offers a modern approach to reducing crime through thoughtful design. Applying CPTED principles to transport terminals can enhance safety and security by addressing environmental factors that contribute to criminal activity [17]. Therefore, this research will be analysing the design and layout of bus stops and their integration with urban environment, to identify the key risk factors that contribute to the safety or insecurity of bus stops in Karachi by using CPTED principles.

The principles of CPTED includes:

1. Surveillance includes both formal and natural surveillance. Closed-circuit television (CCTV) camera installation has been viewed as a surveillance tool and a potential social control instrument [18, 19].
2. Territoriality is the concept of how physical design may create a sense of ownership in particular regions [19]. It may be accomplished by ensuring that every location has a clear function [20]
3. Access control means restricting access to a property through gates, fences, and entrance points [20]
4. Activity support (which encourages relationships between users and locals, which deters crime) [21].
5. Image of the place- maintenance (It explains how an environment's aesthetic appeal may strengthen people's perception of its safety and prevent potential criminals by demonstrating that people are in charge of it) [20].

2. Materials and methods

This research uses a qualitative approach, incorporating comprehensive examination of various sources such as scientific journal articles, books on transportation systems, research reports, newspaper articles, and other media resources. To gain a more detailed understanding of bus stops a Crime prevention through environmental design (CPTED) checklist will be used. A total of ten buses stops will be selected across three areas varying socio economic characteristics to perform this inspection. The check list will be focused on five key principles, visibility and surveillance, access control, territorial reinforcement, image of the place, activity support [17].

3. Expected Results

Urban planning and transportation system design go hand in hand. In Karachi there are many different public departments that are responsible for this planning and work. The number of these departments has become a big issue in terms of inter-coordination [2]. Additionally, fear about personal security respectively a perceived sense of being unsafe in public space has the potential to discourage individuals from travelling [22]. From a Crime Prevention Through Environmental Design (CPTED) perspective, it is expected that bus stops in the city of Karachi are not safe due to poor visibility, no access, inadequate lighting, lack of surveillance, and insufficient design features that enhance safety and security. Furthermore, findings of this study may suggest that specific environmental features in the immediate vicinity of a bus stop can significantly influence the possibility of criminal activity.

4. Conclusions

Crimes at bus stops are often concentrated in those areas with high population density, and with inadequate infrastructure, poorly maintained public spaces. The higher crime potential of these locations can also be partially attributed to their social and compositional characteristics. However, within these high-crime areas, some bus stops are significantly more dangerous than others. The design and layout of the physical environment can either foster criminal activity or help mitigate opportunities for crime. This study identified several bus stops in three socio economic areas including historic core—a region known for its high crime potential—that experienced frequent criminal incidents, while others in the same area and along the same bus route remained relatively unaffected. Therefore, by incorporating the CPTED principle, safety of bus stops can be enhanced, like enhancing visibility through clear signage and removing obstacles. Surveillance can be increased by installing CCTV cameras, and natural surveillance can be enhanced by incorporating features that allow for clear sightlines and encourage the presence of passive observers, such as open spaces and transparent shelters. Proximity to active spaces like retail and shops can also increase the possibility of natural surveillance and reduces opportunities for crime.

Further, preventing neglect and vandalism at the bus stop is possible by keeping bus stops clean and well-maintained that will help in making a positive image of the place. Access can be enhanced by making the bus stop universally accessible for all users, including handicapped, and by providing comfortable waiting areas, and access can be controlled by defining entry and exists and clearly define boundaries. Activity support can be done through providing different activities like cafe, reading areas, public art, landscaping, or community information boards that can make the space more engaging and welcoming. Last but not least is the territorial reinforcement that can be achieved by creating a sense of ownership like use landscaping and other design elements to create a sense of ownership and pride in the bus stop area. Well-maintained areas signal that the space is cared for, which can discourage vandalism and other criminal activities.

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