

URBAN AND SOCIAL IMPACTS OF SIGNAL-FREE CORRIDORS: CASE STUDY OF LAHORE'S MAIN BOULEVARD AND JAIL ROAD

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Abstract

Cities often prioritize traffic flow and enable this through signal-free corridors, this makes movement easier for vehicles but much harder for pedestrians, their safety and urban social life is often compromised. This study critically examines the urban and social impacts of signal-free corridors, with a specific focus on the Main Boulevard and Jail Road corridors in the Gulberg area in Lahore. These infrastructural interventions were originally aimed at reducing vehicular congestion; however, the study shows that they marginalize pedestrians and alter the urban fabric in ways that undermine inclusivity and accessibility. This study uses a mixed-method approach—including site observations, surveys with users, and interviews with urban planning professionals. The research evaluates how these corridors affect pedestrian mobility, neighborhood connectivity, and the broader urban experience of users. Findings reveal that such signal-free developments prioritize vehicular speed over pedestrian well-being, and ultimately contribute to unsafe conditions and social fragmentation in society. The study advocates for urban design policies that restore pedestrian agency and promote walkable public spaces and equity within Lahore's evolving metropolitan landscape.

INTRODUCTION

A city is defined by the number of pedestrians it has. It is directly proportional to how a city has been developed. Moreover, due to the worldwide addition of Signal-free corridors, number of vehicles are increasing rapidly as they feel themselves more welcoming than the pedestrian on roads. It has become an integral part of a cityscape and has overcome us in such a way that the city's infrastructure is being designed according to it. It encourages fast moving vehicles which results in uncontrollable traffic and a great number of accidents; it makes pedestrian difficult to cross the road while the signal is red and effects greatly onto the neighbourhood. Therefore, Lahore city's infrastructure is rapidly changing.

The term Signal-free corridor aims to improve traffic flow but often neglect pedestrian needs. The main topic of this research is to analyse the pedestrian movement with respect to the need of Signal-free Corridor. It will examine the impact of Lahore's signal-free corridor, particularly in the Gulberg area, on pedestrian movement. Gulberg, a central commercial hub in Lahore, is renowned for its vibrant road-side eateries, shopping centres, reputable academic institutions, and top-rated medical facilities. In February 2016, Habib Construction Services (HCS) in collaboration with the Lahore Development Authority (LDA) transformed a segment of Gulberg into a Signal-free Corridor. The segment under study stretches from

Qartaba Chowk on Jail Road to Main Boulevard Road. In Lahore, signal-free roads are being designed and built rapidly without any consideration for the future or real obstacles. Certain groups have attempted and presented a case to halt the operation of Lahore's signal-free lanes, which were contributing to the destruction of our cultural legacy. They lost the lawsuit, though, since the power won, and a signal-free corridor was created. Following that, a number of further projects are planned to alter Lahore's city boundaries. People without cars and pedestrians have suffered greatly as a result of this. Due to the ongoing installation of signal-free lanes, several people have lost their lives while travelling. In light of this strategy, a pilot study of a Lahore signal-free route is necessary to protect pedestrian rights and refute the notion that the planners are advancing.

The research objectives include understanding the reasons behind signal-free corridor design, assessing its impact on public transport and neighbourhoods, and proposing pedestrian-friendly solutions. Methodology involves data collection through literature reviews, surveys, interviews, and site analysis. The study concludes that signal-free corridors, while intended to manage traffic, often

increase vehicular dominance, posing risks to pedestrians.

Literature Review

The literature review on urban development covers various aspects of urban character, social impacts on the urban fabric, and the consequences of signal-free corridors. Below is a summary of the key points.

Urban Character

Urban character, also known as “urban place-identity,” is an intangible feeling associated with a space that comes from within, giving a sense of comfort or discomfort. It is defined by both i.e., the physical environment like buildings, roads, vegetation and the social environment which contain types of people. In an article by Kim Dovey (Dovey, Woodcock, & Wood), urban character has been defined as:

A combination of things such as types of buildings in the area, vegetation around the area... what’s the actual lifestyle of the area... as well as the social structure of the people living there....

It encompasses several terminologies as shown (see Table 1) below:

Table 1. Understanding the term ‘Urban Character’.

Urban Development	Infrastructure for education, health, justice, markets, street pavements, and cultural health protection.
Urban Design	Shape and form of spaces/buildings and streets
Urban Planning	Function and evolution of a place over time
Urban Infrastructure	Major systems like transport, water supplies, telecommunications
Urban Form	Physical and non-physical aspects like size, shape, scale, density, land-use, building types, urban block layout, and green spaces distribution

These terminologies when combined together forms ‘urban character’ of a certain place.

Social Impact in Urban Fabric

‘social impact is the effect an individual or organization’s actions have on the social fabric of a community’. Social impact refers to the effect an individual or organization’s actions have on the social fabric of a

community. This can include both positive and negative effects:

Positive social impact:

Improving health, supporting the local economy, providing access to education.

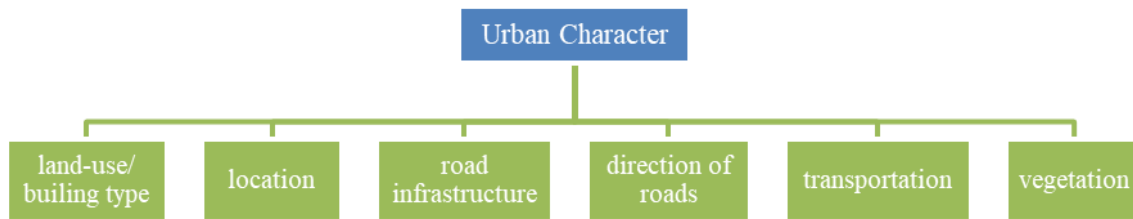


Figure 1: Classification of urban character

Negative social impact:

Economic failure, crime, and actions not beneficial to society like road widening that increases traffic and pollution. Measurement approaches for social impact include conclusion-based metrics (outcomes of projects), impact-based metrics (broader impact over time), and performance-based metrics (process and activities to achieve goals).

There are a limited number of methods for measuring social impact in relation to an individual or organization:

Conclusion-based metrics:

These metrics concentrate only on the end result of a specific project undertaken by an individual or organization. They can encompass any improvement made for the community or for the people.

Impact-based metrics: These metrics concentrate on the wider impact that a society can have through an organization or an individual. They include the extent and duration to which the organization can improve the quality of life for the people it serves and encourage positive social change.

Performance-based metrics: These metrics concentrate on the methods and actions chosen by an individual or an organization to accomplish their goals.

In many European cities, efforts are being made to make driving more uncomfortable for drivers and encourage them to switch to other modes of transportation in order to reduce traffic. More recently, there has been a movement to create environments that are openly hostile to cars; the methods used vary depending on the country and city, but the end result is always the same: making driving more expensive and discouraging people from using cars (Rosenthal, June 26, 2011). With the addition of it (Burgen, 2019), a car is seen to be 95%

of its presence as parked, and only 5% is seen as to be moving around the city.

Pedestrians and Their Spaces

Pedestrian walkability is vital in urban planning. Various authors about walkability have said:

We’ve long said that one simple idea can transform the way we think about transportation planning: streets should not simply be for moving cars, but should also be places for people.

Historically, pedestrians have played a vital role in city dynamics. In the context of urban planning, pedestrians are often disregarded, and walking is frequently disregarded as a mode of transportation.

This leads to a general lack of concern for pedestrian mobility, which in turn breeds apathy toward it and, consequently, the unpredictable nature of its effects, issues, and requirements. Advocate Azhar Siddique (Randhawa, 2017) said in Pakistan Today that walking is the basic civic right of any citizen and the government is accountable for providing this right to every citizen. On the other hand, it is also true that the majority of tolls on highways or motorways are paid for by the vehicular public, which results in building roads. Furthermore, the fact that many walks and bike rides, particularly short excursions that link walking or bicycling to other forms of transportation, are undercounted or ignored in transportation planning exacerbates the undervaluation of non-motorized transportation. It is evident that traditional transportation planning undervalues walking and walkability for a variety of reasons. Consequently, a few of the elements that led to this situation may be easily recognized and comprehended by applying common sense.

The following points highlight the challenges and solutions for pedestrian spaces:

Challenges:

Encroachments, poorly placed infrastructure, and lack of proper footpaths.

Solutions:

Focus on creating walkable communities, promoting mixed-use development, and designing spaces that prioritize pedestrian safety and comfort. The concept of the '15-minute city' aims to create neighbourhoods where all necessary amenities are within a 15-minute walk or bike ride.

Pakistan's second largest city Lahore has once again topped the daily ranking of the most polluted cities in the world, leaving authorities scrambling to fight the environmental crisis.

Pakistani officials blame industrial pollutants, smoke from factories and vehicles, crop residue burning, and general garbage for Lahore's air pollution and haze.

Signal-Free Corridors

An entity which as its name suggests, eliminates traffic crossings for kilometres at a stretch, and encourages fast-moving vehicles often at speeds of 80-100km/hour to whiz through the city.

In addition to saving the motorized user's trip time, this is also seen as part of the "modernization" trend that was sparked in the 1960s by Western cities like New York. Cities in Pakistan will soon be on par with Shanghai and New Delhi.

A survey indicates that with 277489 registered cars, Lahore, the capital of Punjab province, has the highest number of autos (Khalti, 2021). The Punjab government has built Signal-free Corridors across Lahore, mostly in Gulberg, to handle the volume of traffic. Gulberg, was originally meant to be "a garden with flowers," has been transformed into a region of concrete motorways and is now a major contributor to environmental issues. It's a great spot to live and visit because it links to the Liberty Roundabout. Gulberg's Signal-free Corridor begins at the Main Boulevard Liberty Roundabout and finishes at Qartaba Chowk Jail Road. Seven signal-free U-turns, a flyover, and two underpasses have all been built (HCS, n.d.). It was anticipated that the project will be finished by December 31st, 2015 (Adnan, 2015).

According to a report (Tribune, Signal-free corridor: 'Jail Road Project is harmful to environment', 2015),

a study was done by University of Karachi in which they found out that signal-free corridors replace minor road accidents into major accidents. Signal-free corridors, designed to facilitate smooth vehicular traffic, often neglect pedestrian rights and this scenario is extremely visible in Karachi where residents endanger their lives by jumping from the heavy New Jersey barriers built along the medians of the corridors restricting street crossing (Vamsi & Divya Sree, 2017). For instance, the construction of overhead bridges on Jail Road Lahore, did not consider pedestrian convenience, leading to underuse by walkers.

From the above data it is concluded that:

The global traffic problem has led to numerous accidents and deaths. In response, various countries have launched initiatives to discourage private vehicle use and promote local transportation modes. Reducing vehicular road space is essential for urban areas to ensure the safety of elderly, disabled individuals, and children. In Pakistan, pedestrian vulnerability is heightened due to increased vehicle use, inadequate pedestrian infrastructure, and weak traffic law enforcement.

As vehicular traffic grows, people tend to relocate to quieter areas, leading to longer commutes and increased automobile dependency. Enhancing walkability through mixed-use, high-density neighbourhoods can reduce the need for private cars and improve urban life quality. However, pedestrian infrastructure in Pakistan remains underfunded and undervalued. For example, pedestrian overpasses, intended to ease road crossing, often require walking long distances and exposure to pollution. Investments in bicycle and pedestrian initiatives are insufficient due to undervaluation of non-motorized transportation and inadequate pedestrian data.

In summary, addressing the traffic problem and enhancing pedestrian safety requires a balanced approach that values non-motorized transportation modes, improves infrastructure, and enforces traffic regulations. Pedestrianization is defined as:

To limiting automobile traffic to allow walkers to use the streets safely.

By prioritizing pedestrian needs and promoting walkable urban environments, cities can create safer and more inclusive spaces for all residents.

The Importance of Pedestrian-Friendly Development

Pedestrian-friendly development plays a pivotal role in promoting inclusive, sustainable, and livable urban environments. Walkable cities facilitate healthier lifestyles, reduce environmental pollution, and foster stronger social connections. Conversely, urban infrastructure that prioritizes vehicular speed—such as signal-free corridors—often undermines pedestrian accessibility and safety. In Lahore, for example, the creation of signal-free roads like those in Gulberg has led to the marginalization of pedestrians, with increased accidents and reduced walkability, highlighting the adverse effects of car-centric planning.

Urban theorists like Kim Dovey emphasize that urban character—a fusion of built form, social dynamics, and public space—is strengthened through walkable, pedestrian-oriented environments (Dovey, Woodcock, & Wood, 2012). Furthermore, international studies have shown that making urban areas less accommodating to cars—through limited parking, reduced road space, and pedestrian zones—encourages public transit use and improves environmental outcomes (Rosenthal, 2011; Burgen, 2019).

Social equity is also a critical aspect. Walking is a fundamental civic right and remains the most accessible form of transport. Yet in many cities, including those in Pakistan, pedestrians face systemic neglect due to poor infrastructure and weak

enforcement of traffic laws (Tabassum, 2019). As a result, urban planning must shift from vehicle-dominant frameworks to human-centered strategies that prioritize safety, accessibility, and livability.

Methodology

This study is grounded in public and professional perception of signal free corridors. It adopts a multi-method approach to explore the relationship between spatial design and user engagement. There are three sources of data for this study, this includes questionnaire surveys, personal observation, and professional interviews. The questionnaire surveys are conducted with the local public and users of these signal free corridors to understand their perception of them. It includes exploring their comfort levels, usage patterns, and opinions about the use of the signal free corridors. Moreover, the study also conducts a visual survey for spatial and behavioural observations to assess how the space is used in practice. Qualitative interviews are conducted with key stakeholders, including representatives from the Lahore Development Authority, TEPA, and Habib Construction Services, to examine the rationale behind specific design and construction decisions. Collectively, these varied inputs inform an understanding of the values and mindsets influencing both the use and production of space. The data is then systematically and critically analysed to extract meaningful results.

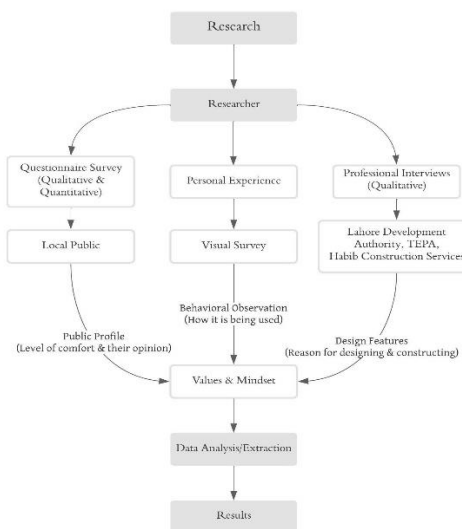


Figure 2: Data collection method & workflow chart

Site Selection Criteria

Following is the site selection criteria for this study. The site should be a major junction that serves practically all of the activities on Lahore roadways and should originate from one of Lahore's main thoroughfares, such as Ferozpur Road, Mall Road, Jail Road, or Canal Road. In order to obtain better findings regarding pedestrian movement behaviour, the chosen location should have a major commercial centre that includes markets, offices, and recreational activities (before and after the implementation of Signal-free Corridor).

As of right now, the location ought to accommodate as many pedestrians as possible, including workers, students, and foodies.

A comparison of constructed Signal-free corridors was made to opt a site for this article from which Main Boulevard Road and Jail Road covered all the points mentioned above.

Selected Site

The site selected for the case-study of this thesis research is **Main Boulevard Road & Jail Road Lahore**. It starts from Qartaba Chowk; consisting major institutes, hospitals, Race-course Park, eateries etc. and leads toward Main Boulevard Road till Liberty roundabout. Figure 3 shows the site location.



Figure 3: Site Location

Findings

Spatial Analysis of Signal-free Corridors

Land use pattern: Jail Road majorly carries institutions, hospitals and car workshops near Qartaba chowk. As shown in Figure 4 through

colour coding, Main Boulevard Road consists of commercial buildings with corporate offices, famous eateries in main market and mall one area. Figure 5 shows the road networks and traffic analysis on the site.

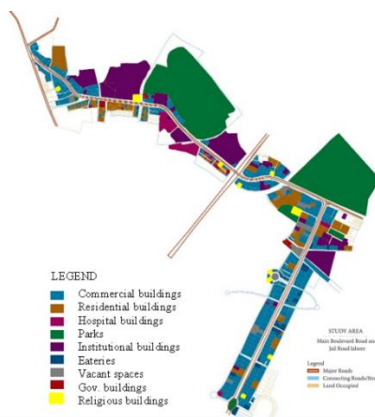


Figure 4: Land Use Pattern

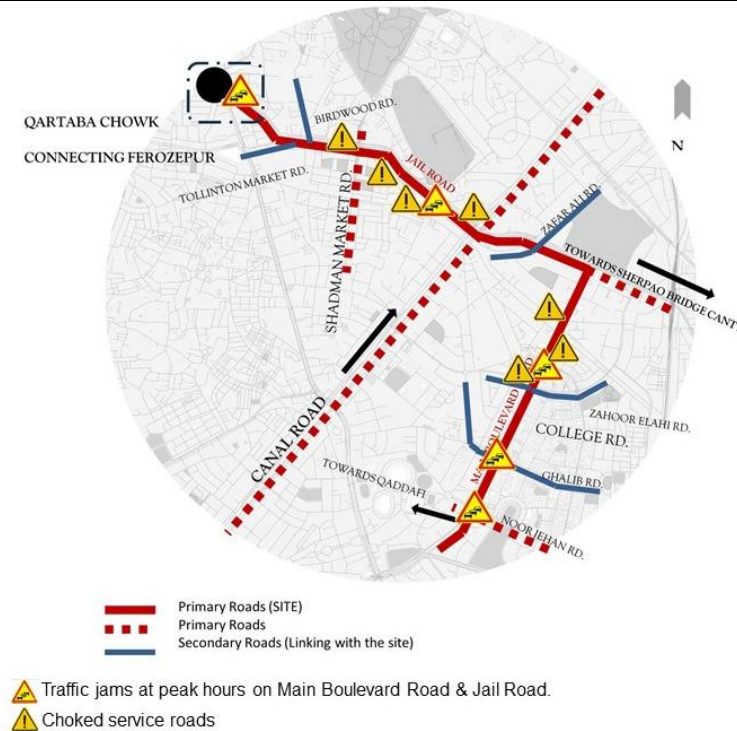


Figure 5: Road Networks and traffic analysis

- (1) On Jail Road, manholes are placed on sidewalks with improper closing (Figure 6), obstructions present on sidewalks of both roads. And, Jail road lack sidewalks where heavy traffic flows.
- (2) There are no shaded trees present near sidewalks for pedestrians to cover themselves from this extremely hot weather.
- (3) Barriers are being placed in medians to avoid on-road crossing.
- (4) No trees or proper sidewalks being made for pedestrians i.e., encroachments are present.
- (5) Drug addicts are seen sleeping under bridge' shades on sidewalks.
- (6) A sample photo showing trees planted on whole Signal-free corridor but are present in medians not with the sidewalks. Coming towards Main Boulevard Road, U-turn is opened and free to use. Whereas, when coming from Main Boulevard Road towards Jail Road, U-turn opening is blocked by barriers due to the traffic choking near Kinnaird College for women university
- (7) There is very less shaded space for people to sit but its design looks impressive overall. It is also considered to be a historical social space but to reach towards the fountain, access is pretty much difficult.
- (8) This landmark has not been given a proper space to exist. It feels like it was just a negative space which has been covered by a random structure.
- (9) This mosque acts as a prominent landmark due to its architectural style and location.
- (10) These ring-structures attracts passers-by with its perspective view, but unable for pedestrians to reach near it.
- (11) The structure is well-designed but the space lacks due to no shaded area.
- (12) This tower just acts as a historical landmark. Its views have been blocked after the construction of orange-line metro train system.

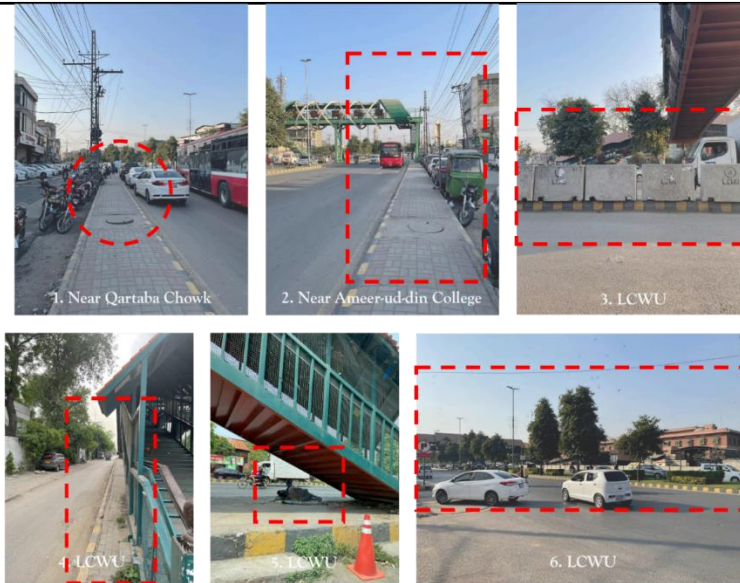


Figure 6: Observations on Site

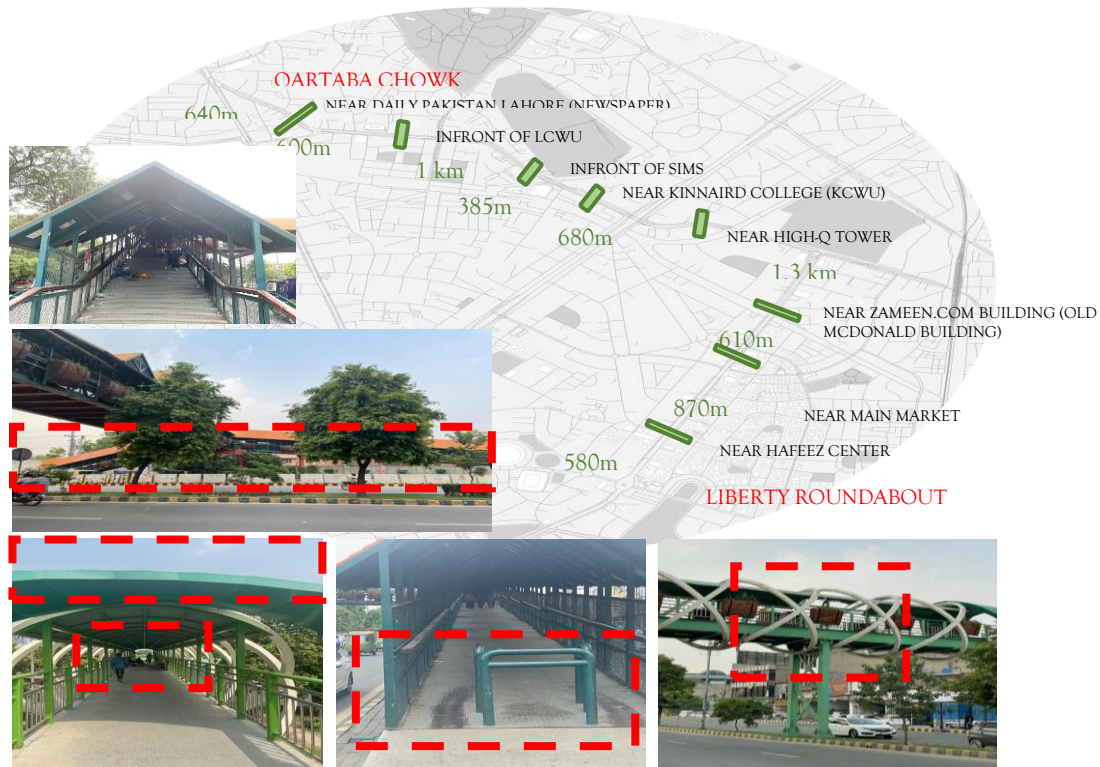


Figure 7: Pedestrian Overhead Bridges



Figure 8: Observations from the site

Pedestrians feel insecurity due to drug addicts sitting and resting. Incomplete shade is given on pedestrian bridges & the stairs (see Figure 7). Lighting facility is not available in the pedestrian bridges to cross safely in evening. Bridges near KCWU & LCWU provides the facility of ramp too, for users who can't climb stairs and they've put barriers on entrance/exit to stop motorbikes coming inside it. Few of the bridges are not being used. But most of them are being used by the pedestrians, wanderers, students etc.

Sitting spaces for public has been placed on site but most of the structures are made of steel. Road painting on Main Boulevard Road has been seen (Figure 8). Dustbins have been seen near every overhead-pedestrian bridge on Main Boulevard Road and some on Jail Road. Road signs like "watch out for pedestrians" has been seen on Main Boulevard Road for the vehicular traffic.

infrastructure and pedestrian necessities they are provided with. A total of 250 participants took part in a survey designed to assess pedestrian experiences along the signal-free corridors of Main Boulevard and Jail Road in Lahore. total 34 questions were included in the questionnaire, but here only those will be discussed that created significant responses. The survey, conducted in person, gathered input from pedestrians, shopkeepers, and public transport users, aiming to understand their preferences for the road use, movement patterns, and the challenges they face in the physical infrastructure. The majority of respondents were between 14 and 30 years old, with over 47% citing education as their primary reason for travel, followed by work and recreation (Figure 9). This indicates that the roads are used heavily by students and young professionals, and it emphasises the need for pedestrian-friendly design that supports daily commute of these students, rather than focusing on cars.

Quantitative Study (Survey)

Furthermore, a questionnaire survey was filled by the public to know their response about the road

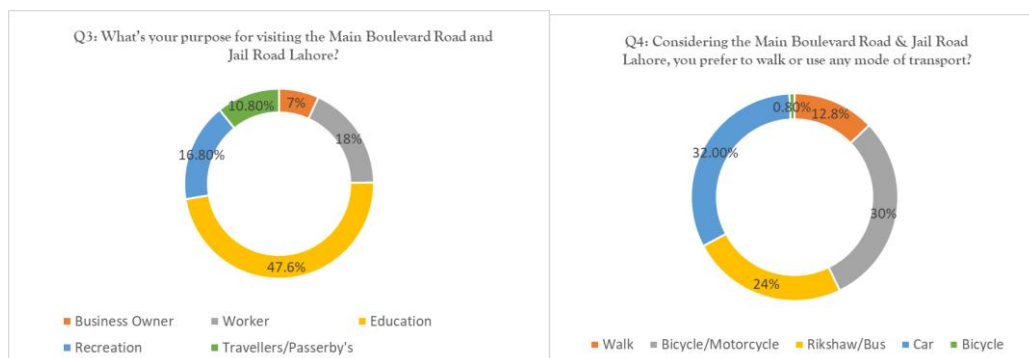


Figure 9: Reasons for travel and preference for travel

Despite the large presence of pedestrians on these roads, only 12.8% of respondents reported walking as their primary mode of travel (Figure 10), while car

and motorbike use dominated. Most people expressed concerns about pedestrian safety, ease of access, and the overall walkability of the area.

Overhead pedestrian bridges were generally preferred over on-road crossings due to safety concerns, yet only a small number of people were willing to walk longer distances to reach them. This contradiction highlights a fundamental flaw in the placement and accessibility of current pedestrian infrastructure.

The survey also revealed growing frustration among road users. While 70% supported prioritizing walking and cycling in future traffic management strategies, a significant number indicated that, if no

improvements are made, they would shift toward private vehicle use. Such a trend could increase congestion, pollution, and urban sprawl. Respondents overwhelmingly called for better sidewalks, more crossing points, reduced vehicular speed, and the inclusion of accessible features for people with disabilities. There was also a consensus on the need for law enforcement, driver education, and infrastructure maintenance, particularly for street furniture and signage.

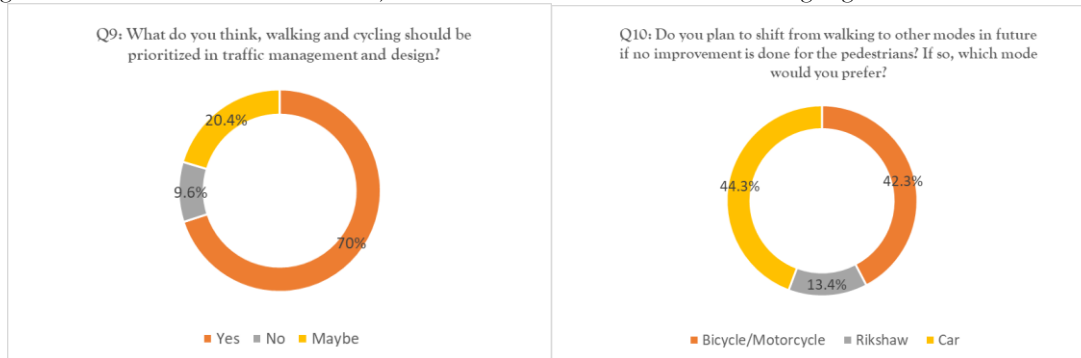


Figure 10: Response to Walking

Most of the people agreed with the idea of shortening of roads and increasing sidewalks to make them more usable for pedestrians. 17.2% responded as no whereas 23.2% responded as maybe (Figure 11). An overwhelming 88.4% of the people

responded as yes for a law/driver education policy on pedestrian safety, showing that people believe that there should be proper laws and policies for pedestrian safety, and drivers should be made aware of these.

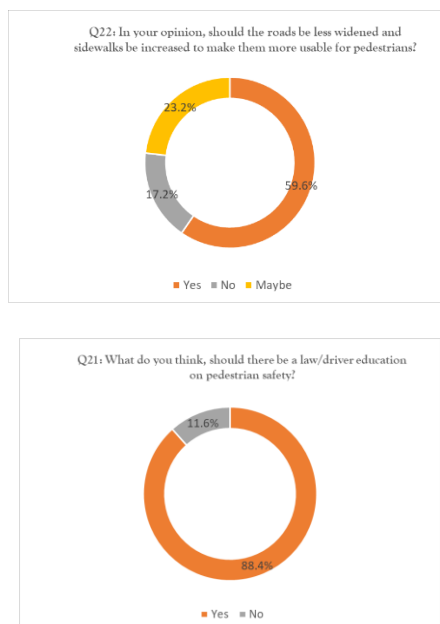


Figure 11: Response to Importance of Sidewalks

Qualitative Study (Interviews)

The interviews conducted with professionals from LDA, TEPA, and HCS reveal a multifaceted and, at times, conflicting perspective on the impacts of signal-free corridors on pedestrian movement in Lahore. While all respondents agreed that traffic congestion, excessive fuel consumption, and environmental concerns necessitated the project, their views on pedestrian infrastructure were generally critical. Most professionals acknowledged that the implementation of pedestrian-friendly features was either insufficient or entirely neglected. Although walking and cycling were unanimously recognized as vital and deserving of prioritization in urban design, these modes were often overlooked during planning or execution phases. Interviewees cited limitations such as climatic challenges, budget constraints, and systemic inertia as reasons for excluding non-motorized transport infrastructure like cycling tracks.

Pedestrian overpasses were added as a post-construction feature rather than being integrated into the original design. Moreover, several participants noted that at-grade crossings are still preferred by pedestrians due to surveillance concerns and the physical effort or inaccessibility of overhead bridges. The lack of walkability and aesthetic consideration was criticized, with observations that areas like Jail Road fail to offer a vibrant pedestrian experience. Shading, lighting, and proper footpaths are largely absent, making walking unappealing and unsafe. The absence of international case studies or best practices in the project design further reinforces

the ad hoc nature of the planning process, which was rooted in local policies and reactive solutions rather than visionary urbanism. Some interviewees pointed out that issues like mislocated U-turns and ignored pedestrian needs continue to create bottlenecks and accessibility concerns, despite the improved vehicle flow. This underscores a significant gap between vehicular efficiency and human-centered urban design. Collectively, these insights highlight a disconnect between infrastructure development and inclusive urban mobility, where pedestrians are still an afterthought in the quest for smoother traffic flow. Again, from the spatial analysis we get to know that, there is a dire need to plant more trees especially with the sidewalks to make it easy for pedestrians and one of the professionals from LDA told us that there is zero lively experience of pedestrians on Jail Road which makes it least attractive and usable. Negative spaces or dark corners should be treated with proper lighting or by covering them with vegetation. Incorrect positioning of U-turn near McDonald's (Jail Road) and less radius is provided for vehicles at Qartaba Chowk U-turn. Mr. Habib Ahmad told us about the incorrect positions of U-turns; except pedestrian bridges no other consideration has been made for pedestrians; traffic choking at certain points is affecting the vehicular traffic and the construction of Signal-free corridor has poorly affected the safety of pedestrians.

Combined Analysis of Data

Table 3 provides a relationship of the three forms of data and provides a complete picture of the study.

Table 3. Combined analysis of data.

Through interviews	Through questionnaire survey	Through spatial analysis
Incorrect positioning of U-turns	None	Traffic choking occurs at some of the U-turns on site
No other amenity except pedestrian bridges. Needs improvement in its structure like lighting, surveillance etc.	Public choose over-head pedestrian bridge to cross the road though they don't prefer to cross it. Afraid of signal free corridor.	No proper sidewalks being made for pedestrians. Pedestrian bridge-placement is not correct and not at proper distances.
Traffic choking	None	Traffic jams at peak hours occurs, choked service roads near mall one area, Hafeez center area on Main Boulevard Road, hospitals & colleges at Jail Road.
Footpaths can be made	Sidewalks are present but aren't	Broken footpaths. Manholes, encroachments &

wider	easily available. It should be widened & roads be reduced.	obstructions on sidewalks. Bus-stops being placed on sidewalks.
Walking & cycling should be prioritized	70% agreed with prioritizing walking & cycling	None
More use of local transport	24.4% of the people resulted in using local transport & 32% in using private vehicles. Public agrees to give up using private transport if pedestrian infrastructure is improved.	None
Zero lively experience of pedestrians on Jail Road	Demands for pedestrian safety, ease in access, recreation & sight-seeing.	Liberty Chowk acts as a communal space but lacks due to its long-distance crossing.

Combined Findings

Due to the wrong placement of U-turns on Jail Road and Main Boulevard Road, traffic still chokes which clashes with the implementation of ideal solution i.e., Signal-free corridor.

Over-head pedestrian-bridge crossings needs improvement within the structures like surveillance factor. Though they're not easy to use and environment/climate-friendly due to its steel structure. But considering our poor economic conditions, some adjustments have to be made accordingly.

There are no shaded trees present for pedestrians to cover themselves from this extremely hot weather. At some points they do exist but on medians not with the sidewalks.

Spaces like Hafeez center area, Mall one area, Main Market, near Hospitals, Institutions where pedestrian access is more, traffic still chokes at peak hours due to it.

Sidewalks are present on both roads (only near Fawara chowk underpass, sidewalks are not present) but due to the encroachments and obstructions present or motorbikes moving over it, pedestrians are afraid to use sidewalks.

Majority of the people from the survey agreed on making paths for walking & cycling.

Public agrees on providing them with more people-friendly environment.

Different policies/laws on driver education, pedestrian safety to be made to make space people-friendly not vehicular-friendly.

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Discussion

The analysis of the signal-free corridor along Jail Road and Main Boulevard in Lahore highlights a deep disconnect between the objectives of traffic efficiency and the principles of inclusive urban design. The overarching intention behind the signal-free corridor was to reduce congestion, streamline vehicular flow, and modernize infrastructure. However, this ambition has largely ignored the needs of a significant portion of road users—pedestrians.

The spatial analysis clearly shows that pedestrian infrastructure is either underdeveloped or improperly implemented. While sidewalks exist in several areas, they are often obstructed by encroachments, poorly closed manholes, and bus stops, rendering them unusable or unsafe. In places where sidewalks are missing altogether—such as near Fawara Chowk underpass—the situation becomes more hazardous. The lack of shaded trees, especially considering Lahore’s extreme temperatures, further discourages walking. Trees, when present, are mainly confined to medians rather than walkways, failing to serve their intended protective and environmental function for pedestrians.

The quantitative survey reinforced these physical observations with public sentiment. Despite a high pedestrian presence—particularly of students and young professionals—only a small fraction of respondents reported walking as their primary mode of travel. This stark contrast underscores how hostile and inconvenient the built environment is for non-motorized users. Interestingly, even though overhead pedestrian bridges are available, they are often avoided due to poor maintenance, lack of lighting,

and concerns about safety. Pedestrians prefer shorter at-grade crossings, but the absence of pedestrian signals or zebra crossings makes this choice risky.

A clear contradiction emerges here: while people prefer overhead bridges for safety, they also find them inaccessible or unfriendly to use. This dilemma illustrates a core issue with pedestrian infrastructure planning—facilities exist in form, but not in function. It's not just about presence but usability, safety, and comfort.

Further insights from qualitative interviews with planning professionals from LDA, TEPA, and HCS reveal that pedestrian needs were largely an afterthought in the corridor's development. Most agree that non-motorized transport was not prioritized due to budgetary limitations, climatic factors, and planning inertia. Notably, pedestrian overpasses were integrated only after the main construction phase, lacking any strategic foresight. These oversights highlight a reactive, not proactive, planning process—one that favors vehicular movement at the cost of human-centered design.

Moreover, a key issue that repeatedly emerged across all three data sources is the incorrect positioning of U-turns. This has led to continued traffic choking near high-density zones such as Kinnaird College and Main Market. This defeats the purpose of a signal-free system, proving that traffic flow improvements are only as effective as the details of their implementation.

The combined analysis makes it clear that improving pedestrian infrastructure is not just a matter of urban beautification, but a critical need to ensure accessibility, safety, and equity. The current design heavily favors private vehicles, yet survey data shows public willingness to shift to walking or local transport—if conditions improve. This presents a valuable opportunity for planners to mitigate traffic congestion, reduce environmental impact, and foster healthier urban lifestyles through better pedestrian and cycling infrastructure.

Pedestrian safety is not a luxury; it is a necessity. The call for shaded sidewalks, lighting, widened paths, and surveillance is not just about comfort but about creating a liveable and inclusive city. Likewise, policies regarding driver education and pedestrian protection laws must be strengthened and enforced to shift the current car-centric paradigm.

The findings of this study, supported by spatial analysis, user surveys, and expert interviews, highlight a profound disconnect between the design of Lahore's signal-free corridors and the lived experiences of its pedestrians. While these corridors are framed as symbols of modernization and vehicular efficiency, the literature clearly illustrates the social and environmental costs of such development models.

As discussed in the literature, urban character is not solely shaped by infrastructure but by the interaction of physical and social dynamics. The signal-free corridor, although an engineering feat, has diluted Lahore's urban character by prioritizing speed over place-identity and social interaction (Dovey et al.). The transformation of areas like Gulberg—from "a garden with flowers" to a concrete landscape—epitomizes this loss.

The social impact is evident in the pedestrian neglect observed during the fieldwork. Consistent with international studies, Pakistani urban infrastructure continues to undervalue non-motorized transportation (Rosenthal, 2011; Siddique, 2017), leading to increased risk for vulnerable groups and diminished walkability. The literature emphasizes the importance of performance-based planning and inclusive design, yet Lahore's infrastructural priorities remain skewed towards cars, echoing critiques seen in cities like Karachi.

Moreover, the pedestrian experience, as recorded in this study, affirms earlier research: footpaths are either broken or nonexistent, pedestrian bridges are underused due to poor placement and accessibility, and environmental concerns—such as pollution—further discourage walking. These findings validate the literature's view that pedestrianization should be a central urban goal, not a secondary consideration. Signal-free corridors, as the literature warns, may convert minor road risks into major safety threats and deepen urban inequality. The evidence from Jail Road and Main Boulevard aligns with these concerns. Without integrating pedestrian-centric urban planning principles—such as the 15-minute city concept or investments in urban form and design—these corridors will continue to serve vehicles more than the people who use the city on foot.

In summary, this study reinforces the literature's call for a shift from vehicle-centric to human-centric

urban development. By embracing the principles of walkability, mixed-use planning, and inclusive infrastructure, Lahore can not only reclaim its urban character but also move toward a more just, sustainable, and liveable future.

In summary, the study reveals a paradox: the signal-free corridor was designed to ease mobility but ended up marginalizing one of its most frequent user groups—pedestrians. Addressing this imbalance requires a shift in urban priorities from vehicle throughput to human experience, from infrastructure as hardware to infrastructure as liveable space. Only through such reorientation can Lahore transform into a city that values all its inhabitants, not just its motorists.

Conclusion

This study critically examined the spatial, social, and infrastructural dynamics of the signal-free corridor along Jail Road and Main Boulevard in Lahore. Despite its objective to ease traffic flow and modernize urban mobility, the corridor has inadvertently marginalized pedestrian needs, creating an environment that prioritizes vehicular movement over human-centered design.

Findings from spatial analysis, public surveys, and expert interviews consistently reveal a lack of safe, accessible, and comfortable infrastructure for pedestrians. Broken or obstructed sidewalks, poorly placed U-turns, inadequate pedestrian bridges, absence of shaded walkways, and limited seating and lighting reflect a planning approach that overlooks the realities of everyday users—especially students, professionals, and vulnerable groups such as the elderly and disabled.

The overwhelming support from the public for pedestrian-friendly interventions, combined with professionals' acknowledgment of current infrastructural shortcomings, underscores the urgency of rethinking urban mobility. Enhancing walkability, integrating green infrastructure, and enforcing pedestrian safety laws are not merely cosmetic improvements; they are essential steps toward creating an inclusive, sustainable, and livable city.

In conclusion, if Lahore is to evolve into a truly modern urban center, it must shift its focus from being vehicle-centric to people-centric. The signal-free

corridor, in its current form, represents a missed opportunity. With targeted reforms and a renewed commitment to inclusive design, it can still become a model of balanced urban mobility that serves all citizens—whether they walk, cycle, or drive.

Disclosure statement

The research work in this article titled “Evaluation of the Urban Characters and Social Impacts of Signal-free Corridor: A Case-study of Main Boulevard Road and Jail Road Gulberg Lahore” has no competing interests as stated by the authors: Nayab Nasir, Dr. Mamuna Iqbal, and Dr. Usman Awan

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