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Traffic Congestion and Urban Planning: A Government Policy Perspective on Market Failure in Major Pakistani Cities

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ABSTRACT

Lahore has expanded road and mass-transit capacity, yet congestion remains widespread. This study explains that mismatch by asking whether public policy corrects the divergence between private travel decisions and their social costs. It uses a qualitative, document-based case study of government plans, operational records, census evidence, official reports, and peer-reviewed research published between 2010 and July 2026. Market Failure Theory supplies the central evaluative test; Rational Choice, Urban Land Use, and Institutional theories explain the behavioral, spatial, and implementation mechanisms. Three findings emerge. Metrobus, the Orange Line, and feeder services improve corridor access, but available sources do not demonstrate a citywide reduction in congestion, while delay, parking, and emissions remain weakly managed or priced. Outward development continues beyond transit reach, generating car-dependent trips and diluting corridor investment. Fragmented mandates also separate transport, land-use, parking, and enforcement decisions. These findings support a sequenced policy package: improve feeder and pedestrian access, reform parking, implement station-area transit-oriented development, establish metropolitan coordination and shared evaluation, and only then pilot congestion pricing where credible alternatives exist. The study's practical contribution is an integrated framework for judging whether infrastructure changes accessibility, external costs, and travel behavior at city scale, with transferable lessons for other rapidly motorizing Pakistani cities.

1. Introduction

Lahore's population grew by 1.9 million between the 2017 and 2023 censuses, from 11,119,985 to 13,004,135 residents (Pakistan Bureau of Statistics [PBS], 2023). The road network and the institutions that manage it have not kept pace. Congestion is often treated as a transport inconvenience; it is more accurately understood as a distributive problem. It raises the cost of reaching work, school, and services; it degrades the reliability of the public transport that lower-income commuters depend on most; and it concentrates air and noise pollution along the corridors where people already spend the most time in traffic.

Economically, this pattern is a textbook case of negative externality. A driver weighs the private cost of a trip - fuel, time, wear - but not the delay imposed on other road users or the emissions imposed on nearby residents. Where road access is cheap and these wider costs go unpriced, peak-period demand will exceed capacity almost by construction (Bator, 1958; Vickrey, 1969). This is not an argument that every road or transit project fails to generate benefit; it is an argument that capacity alone cannot close a gap that is, at root, about price.

Government responses have not been absent. Lahore has road widening, signal-free corridors, the Metrobus, the Orange Line Metro Train, feeder services, and successive land-use and transport plans, each adding real capacity. Yet Lahore-focused research keeps returning to the same obstacles: illegal parking, encroachment, weak enforcement, corridor bottlenecks, and poor inter-agency coordination (Ali et al., 2021; Gulzar et al., 2022). If capacity has grown while these problems persist, the likely explanation is not that Lahore lacks infrastructure, but that infrastructure has been built without the demand-management measures needed to make it work as a system.

Urban planning is the connecting thread. Where people live relative to where they work, learn, and shop determines how much travel a city generates in the first place; a transit line that opens ten years after a neighborhood forms beyond its reach recovers little of its intended value. Two recent studies make the same point from different angles: mobility policy and land-use governance cannot be planned as separate administrative fields without weakening both (Chaudhry et al., 2025; Nadeem & Matsuyuki, 2025). This reframes the research question. The issue is not whether Lahore has received intervention - it has - but whether its interventions function as one coordinated system or as parallel, uncoordinated projects.

Lahore is the case here because it combines four conditions rarely found together at this scale: rapid demographic growth, severe and spatially uneven congestion, substantial mass-transit investment, and a governance structure split across multiple agencies. Together these allow infrastructure, commuter incentive, land use, and institutional coordination to be examined as interacting parts of one policy problem rather than four separate ones. The findings are specific to Lahore, but the underlying pattern - visible investment paired with invisible coordination gaps - recurs across Pakistan's other large, rapidly motorising cities. Figure 1 visualises the scale and tehsil composition of Lahore's demographic growth.

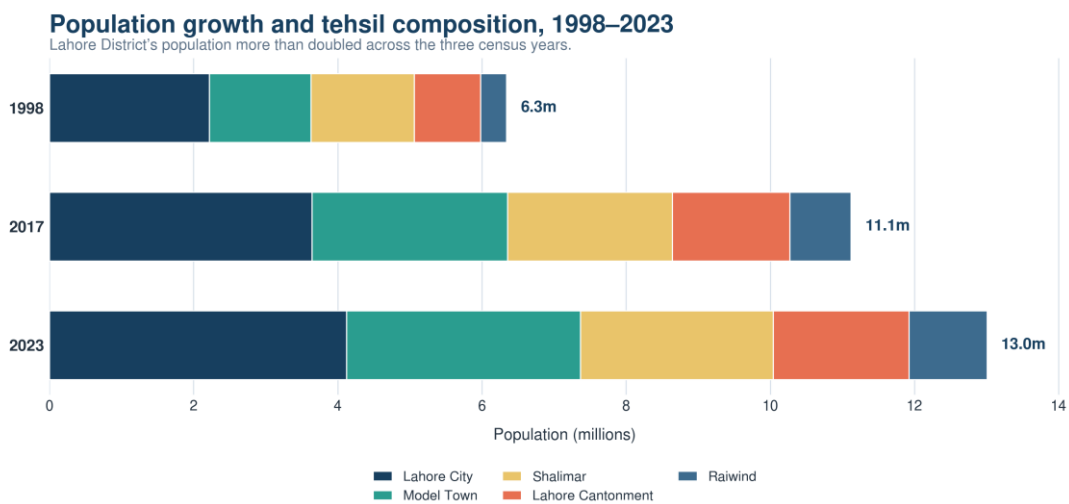


Figure 1. Population growth and tehsil composition in Lahore District, 1998–2023. Source: Author's visualization using City Population (n.d.), based on Pakistan Bureau of Statistics census data.

1.1 Research Questions

1. To what extent do government urban-planning and transport policies address traffic congestion as a market failure in Lahore?
2. How effectively have these interventions improved urban mobility and public welfare, and what lessons do they offer for other major Pakistani cities?

1.2 Research Objectives

1. To assess the extent to which government urban-planning and transport policies address traffic congestion as a market failure in Lahore.
2. To evaluate the effectiveness of these policies in improving urban mobility and public welfare and identify implications for other major Pakistani cities.

2. Literature Review

2.1 Urban Traffic Congestion

Congestion arises when travel demand approaches or exceeds a road network's effective capacity, producing slower speeds, unreliable journeys, and queuing. Lahore-specific studies agree on the severity of the problem but locate its causes differently. Using stakeholder surveys and interviews, Ali et al. (2021) attribute central-city congestion mainly to illegal parking, encroachment, and weak compliance. Gulzar et al. (2022), drawing on spatial and temporal traffic data, identify recurring bottlenecks associated with corridor design and timing. The contrast is methodological as well as substantive: one study records perceived behavioral and enforcement failures, whereas the other maps structural patterns across the network.

The accounts are therefore complementary rather than contradictory. Ali et al. (2021) explain why congestion can remain locally severe even where capacity exists; Gulzar et al. (2022) show why it recurs predictably across corridors. Read together, they establish that Lahore's congestion is both a governance and a physical-network problem. This study consequently evaluates policy against both dimensions instead of treating infrastructure delivery as a sufficient response.

2.2 Market Failure and Transport Economics

Bator (1958) supplies the general logic of market failure; Vickrey (1969) applies it to congested road use through marginal-cost pricing. Later evidence complicates a capacity-led response. Duranton and Turner (2011) show that additional road capacity tends to generate offsetting travel, eroding much of its intended congestion relief. Downs (2004) likewise argues that road expansion rarely provides a durable solution to peak-hour congestion. Both findings are directly relevant to Lahore's continuing reliance on road expansion.

This literature does not support pricing in isolation. Vickrey's framework assumes that road users have a credible alternative to the priced trip. The key question for Lahore is therefore one of sequencing: does its policy mix create viable alternatives before introducing pricing, or does it add infrastructure while leaving the underlying external-cost problem unchanged?

2.3 Land Use Patterns and Urban Planning

Land-use patterns determine the distance, direction, and mode of daily travel, while Lahore's outward growth has repeatedly exceeded the reach of mass transit. Nadeem and Matsuyuki (2025) identify fragmented planning authority, absent transit-oriented-development zoning, and weak

inter-agency coordination around Lahore's BRT corridors. Chaudhry et al. (2025) reach a similar conclusion through comparison with Dubai's more centralised governance model.

The studies differ in where they locate the binding constraint. Nadeem and Matsuyuki (2025) emphasise missing regulatory tools; Chaudhry et al. (2025) treat coordination capacity as the deeper cause, with weak zoning as one symptom. This distinction changes policy sequencing. It asks whether Lahore should prioritise implementation of the Punjab Transit Oriented Development Policy (The Urban Unit, 2025) or first create a mechanism capable of coordinating its use. Section 5.3 addresses this unresolved question.

2.4 Governance Challenges

Responsibility for Lahore's transport system is divided among agencies for mass transit, land development, traffic engineering, policing, environmental regulation, and local government. Ayaz et al. (2024) document how this division complicates coherent transport policy in practice; Chaudhry et al. (2025) link the same fragmentation to citywide mobility outcomes through comparison with Dubai's more unified model. Institutional plurality is not, by itself, evidence of failure - specialised agencies exist for good reason in any large city. The problem this literature identifies is more specific: overlapping mandates, unshared data, and the absence of any mechanism holding the system as a whole accountable for citywide outcomes. This study therefore treats institutional capacity not as a background condition but as a variable that determines whether every other intervention - pricing, transit expansion, zoning reform - can actually be implemented as designed.

2.5 Policy Interventions and International Comparisons

Two international cases offer contrasting instances of demand management. London's congestion charge operates within an established administrative and public-transport system that pre-dated the charge itself (Leape, 2006); Singapore combines road pricing with vehicle ownership restraint and high-capacity transit, layering three instruments rather than relying on one (Lam & Toan, 2006). Both differ from Lahore's current approach, which still relies predominantly on road and corridor-based transit investment rather than pricing or restraint. These cases are not offered here as templates for direct adoption - income levels, enforcement capacity, and available travel alternatives differ too substantially for that - but as evidence for a narrower, more transferable claim: demand management performs best as a coordinated package of pricing, regulation, transit, and public accountability, introduced in that rough sequence rather than pricing first.

2.6 Environmental and Health Impacts

Congestion carries costs beyond delay. The Urban Unit's (2023) emissions inventory identifies road transport as a substantial component of Lahore's overall emissions profile, and international evidence associates traffic-related pollution with measurable health risk for people living or working near major corridors (Zhang & Batterman, 2013). These findings strengthen rather than merely supplement the market-failure argument: they establish that the uninternalised cost of driving in Lahore is not a theoretical abstraction but includes a documented public-health burden. Congestion policy in Lahore should accordingly be evaluated against emissions and exposure outcomes, not travel-speed metrics alone - a standard the existing literature applies inconsistently.

2.7 Socioeconomic Aspects

The distribution of transport policy's costs and benefits is uneven. Batool et al. (2020) find that Lahore's BRT produces social, economic, and environmental benefits for users who depend on public transport. Ahmad et al. (2024), however, show that ridership remains sensitive to reliability, access, safety, comfort, and service quality. Investment in a transit corridor therefore does not guarantee mode shift, even among commuters who could benefit from switching.

Read together, the studies qualify a common policy assumption. A low fare paired with poor feeder access or an unsafe walk is not a credible alternative for lower-income travellers; car users may still value flexibility and door-to-door convenience more highly than price. This study accordingly treats equity and service quality as determinants of policy effectiveness, not as secondary concerns.

2.8 Research Gap

Individually, the literature explains Lahore's congestion hotspots (Ali et al., 2021; Gulzar et al., 2022), its mass-transit performance (Batool et al., 2020; Ahmad et al., 2024), its land-use barriers (Nadeem & Matsuyuki, 2025), and its institutional fragmentation (Ayaz et al., 2024; Chaudhry et al., 2025) - but each study isolates one part of the system. None evaluates whether Lahore's interventions jointly internalise congestion's external costs, reshape commuter incentives, coordinate transport with land use, and build the institutional capacity implementation requires. This is the integrated gap the present study addresses: not a new empirical fact about Lahore's traffic, but an assessment of whether the facts the literature already documents add up to a coherent policy system.

3. Theoretical Framework

This study applies four theories in a deliberate hierarchy rather than as parallel, unrelated lenses: Market Failure Theory defines the welfare problem under evaluation, while the remaining three explain, respectively, why the problem persists behaviourally, spatially, and institutionally.

Market Failure Theory identifies the welfare loss created when road users do not bear the full delay, pollution, parking, and safety costs their travel imposes on others (Pigou, 1920; Bator, 1958; Vickrey, 1969). It supplies this study's central evaluative test: does a given intervention reduce the gap between private travel decisions and their social costs, or does it simply add capacity without touching that gap? Public transport expansion, parking management, enforcement, emissions policy, and congestion pricing are each assessed in Section 5 against this single test, which is what allows otherwise very different interventions to be compared on common terms.

Rational Choice Theory supplies the behavioural mechanism: commuters weigh travel time, cost, reliability, comfort, safety, and flexibility when choosing a mode, and discrete-choice research explains why private travel remains individually rational even when it is collectively costly (Ben-Akiva & Lerman, 1985). Applied to Lahore, this theory directs the analysis toward a specific, falsifiable question: does public transport currently offer a credible alternative on these terms, or does policy change only the supply of transit without changing the relative attractiveness of driving? Urban Land Use Theory supplies the spatial mechanism. Because the location of housing, employment, and services determines trip length and mode demand (Alonso, 1964), this theory explains a pattern Section 2.3 already identified in the literature: a transit corridor can perform well along its own length while leaving citywide car dependence almost untouched, if development around it remains uncoordinated with the line itself.

Institutional Theory supplies the implementation mechanism, explaining how formal rules, agency responsibilities, and enforcement capacity determine whether a well-designed policy is actually carried out as written (North, 1990; Scott, 2014). It is used here specifically to test whether Lahore's agencies coordinate plans, share data, enforce existing regulation, and evaluate outcomes - the absence of any one of which can defeat an otherwise sound policy before it reaches commuters.

4. Research Methodology

This study uses a qualitative, document-based case-study design. The choice follows directly from the research questions: they concern the content, coherence, and implementation of an existing policy system, not the estimation of a discrete causal effect for which an experimental or statistical design would be required. Document analysis is the appropriate method for this kind of question

because it permits systematic, source-triangulated examination of official plans, operational records, and independent scholarly assessment of the same policy problem (Bowen, 2009), while the case-study format allows transport, land use, incentive structures, and governance to be examined together within one institutional context rather than in isolation (Yin, 2018).

Lahore is not selected as a statistically representative Pakistani city; no single city could be. It is selected because it is an information-rich case in the sense Yin (2018) describes: it combines rapid population growth, recurring and spatially uneven congestion, substantial investment in both road and mass-transit infrastructure, and a governance structure divided across multiple agencies - the precise combination of conditions this study's four theories are designed to evaluate together. The Metrobus and Orange Line, in particular, provide observable, dateable public interventions against which continuing congestion can be assessed directly, giving the case an empirical anchor that a purely descriptive account of Pakistani urban transport policy would lack. The resulting analysis yields cautious, transferable lessons for other large Pakistani cities facing similar motorisation pressure, rather than a claim of direct generalisability.

4.1 Data Acquisition

The Lahore-specific empirical and policy corpus comprises secondary evidence published between 2010 and July 2026. Foundational theoretical and international comparative works published before 2010 were retained where necessary to define established concepts or policy mechanisms. The case-specific corpus includes Punjab government and agency documents, the Lahore Urban Transport Master Plan (Japan International Cooperation Agency [JICA], 2012), census tables, mass-transit operational information, environmental and transit-oriented-development reports, and peer-reviewed research on congestion, mobility, land use, and governance. Sources were located through Google Scholar, JSTOR, publisher databases, official government portals, and citation chaining from already identified sources. A source was included when it addressed Lahore directly or supplied a well-established theoretical or international comparative framework relevant to the research questions; unverifiable web material, duplicate items, and sources without clear relevance were excluded at the point of collection, not retrospectively.

4.2 Analytical Framework

Documents were analysed through thematic content analysis, initially coded against the four theoretical lenses set out in Section 3: external costs and policy correction; commuter incentives and mode choice; land-use and accessibility; and institutional coordination and enforcement.

Additional themes - first- and last-mile access, parking, policy sequencing, equity, and data limitations - were recorded inductively where they recurred across multiple independent sources, following Braun and Clarke’s (2006) approach to thematic analysis. Evidence was then cross-checked between government documents and independent scholarship specifically to separate stated policy intention from documented implementation, and to surface agreement, contradiction, or evidentiary gaps between the two source types rather than treating official documents as self-evidently accurate accounts of outcomes. Figure 2 summarises this analytical pathway.

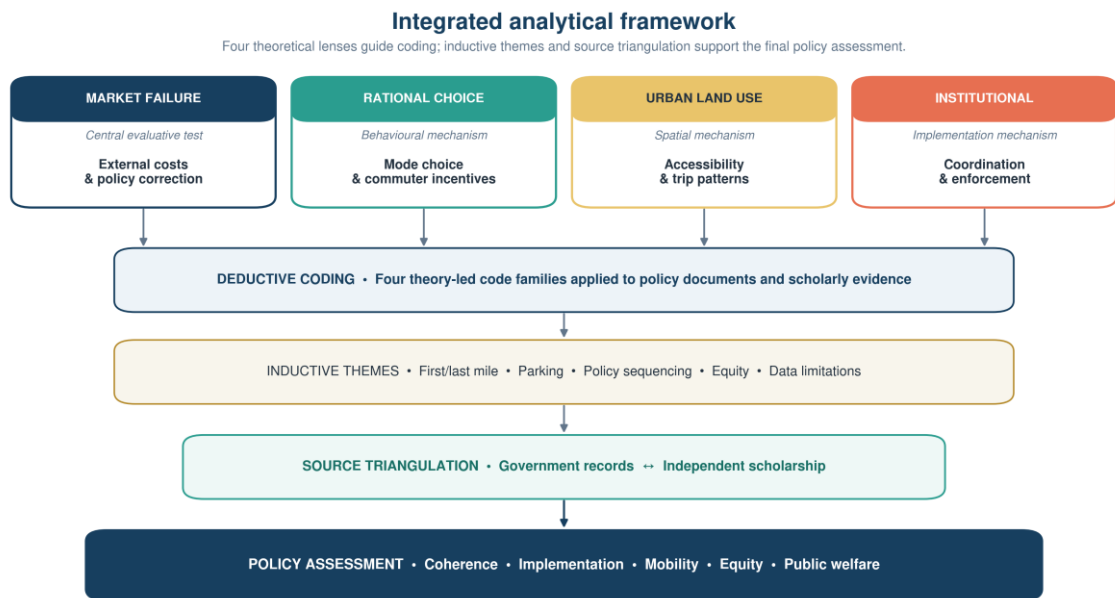


Figure 2. Integrated analytical framework and evidence pathway. Source: Author’s synthesis based on Alonso (1964), Bator (1958), Ben-Akiva and Lerman (1985), Braun and Clarke (2006), North (1990), Pigou (1920), Scott (2014), and Vickrey (1969).

4.3 Case Study of Lahore

The analysis covers policies and interventions affecting Lahore between 2010 and July 2026, a period that captures the major road-network expansions, the Metro bus, the Orange Line, feeder-service rollout, successive planning frameworks, and the 2025 Transit-Oriented Development Policy. Lahore’s relevance to this study lies specifically in how these measures interact rather than in the performance of any single project considered alone. Where international cases are discussed, they clarify policy mechanisms and sequencing logic; they are not treated as institutionally equivalent to Lahore’s context.

4.4 Methodological Limitations

Three limitations bound the study’s claims.

First, secondary evidence cannot directly measure current commuter experience or real-time decisions. Government data are therefore triangulated with independent survey- and interview-based research (e.g., Ali et al., 2021) wherever sources address the same claim. Second, agency records vary in completeness and reporting period. Missing or inconsistent figures are identified rather than estimated. Third, findings from Lahore cannot be generalised automatically to Karachi, Islamabad, or other Pakistani cities. Section 5 therefore distinguishes context-specific findings from mechanisms such as pricing, land-use coordination, and institutional fragmentation—that may transfer cautiously to other settings.

5. Analysis and Discussion

5.1 Traffic Congestion in Lahore and Market Failure

Lahore’s congestion fits the market-failure framework because its costs are not borne fully by the people generating them. A driver entering a congested corridor at peak hour adds delay to every other vehicle but does not pay for that delay; emissions and parking externalities are similarly underpriced. Ali et al. (2021) and Gulzar et al. (2022) document illegal parking, encroachment, weak compliance, and recurring bottlenecks as visible symptoms of this underlying gap.

Seen through Market Failure Theory, these are not independent causes. They are predictable consequences of managing road and parking access below their full social cost. This interpretation changes the policy diagnosis from ‘insufficient capacity’ to ‘insufficient management of existing capacity’ and therefore supports a different remedy from road expansion alone.

Government intervention has genuinely expanded mobility capacity through the Metrobus, Orange Line, feeder services, and road improvements, and it would be inaccurate to characterise this response as absent or nominal. What the evidence shows instead is an imbalance in emphasis: capacity-building has been consistent, while parking management, demand regulation, first- and last-mile access, and emissions control have not received comparable, sustained policy attention. This asymmetry is, in the author’s assessment, the more useful explanation for why corridor-level gains have not translated into citywide congestion relief than any single explanation - population growth, vehicle ownership, enforcement capacity - considered alone. Lahore’s central policy gap is accordingly not a shortage of action, but the absence of a sequenced package that pairs new travel alternatives with measures that manage the demand those alternatives are meant to absorb.

5.2 Government Interventions and Institutional Theory

Institutional Theory directs attention to the organisations that must convert plans into daily outcomes, and Lahore divides that responsibility across land-development, mass-transit, traffic-engineering, policing, environmental, and local-government bodies. Ayaz et al. (2024) and Chaudhry et al. (2025) independently identify coordination and mandate problems within this structure, approaching the same fragmentation from policy-analysis and comparative-governance angles respectively - a convergence across methods that strengthens confidence in the underlying finding more than either study would alone. In practice, this fragmentation means a road project, a land-use approval, a bus route, a parking rule, and an enforcement plan can each be decided through a separate administrative process, even though a single commuter experiences all five as one uninterrupted journey.

The policy implication is not to create another authority layered atop the existing structure - that risks reproducing the same overlap under a new name unless its mandate, data responsibilities, and accountability lines are unambiguous from the outset. A more immediate and lower-risk reform is a formal metropolitan coordination mechanism built around shared performance indicators - travel-time reliability, ridership, and access, parking occupancy, crash rates, emissions - that every relevant agency reports against. This extends the existing literature in a specific way: it treats institutional fragmentation not merely as a description of weak governance, but as a testable operational condition, one that a coordination mechanism with shared metrics would either resolve or reveal to be more deeply structural than data-sharing alone can fix.

5.3 Urban Land Use Theory, Spatial Patterns, and Congestion

Urban Land Use Theory explains why congestion can persist while transport capacity grows. Lahore's outward development separates housing from employment, education, and services faster than transit can extend, lengthening trips and reinforcing motorised travel. Nadeem and Matsuyuki (2025) connect this pattern to fragmented planning authority and the previous absence of transit-oriented-development zoning around BRT corridors. The 2025 Punjab policy now supplies a formal planning instrument that was missing from that earlier institutional setting (The Urban Unit, 2025). This comparison helps resolve the sequencing question raised in Section 2.3. The immediate priority is to implement the new policy through station-specific plans, because a usable land-use instrument now exists. Metropolitan coordination should proceed in parallel to ensure that the instrument is applied consistently across transport and planning agencies.

Poor pedestrian access, unsafe crossings, weak feeder connections, and unmanaged parking around stations compound this problem by reducing the practical accessibility of transit that does exist. A transit line is only the middle segment of most journeys; if reaching the station is costly, unsafe, or unreliable, commuters will rationally continue choosing motorcycles, cars, or door-to-door informal services even when the line itself performs well. Land-use reform and modal shift are therefore not sequential problems to be solved one after the other, but the same problem: mixed-use station areas, safe walking routes, feeder services, and controlled parking need to be planned as one package, not four.

5.4 Rational Choice Theory and Behavioral Choice

Rational Choice Theory explains why private and informal modes retain their appeal after mass-transit expansion. Commuters evaluate the full door-to-door journey not merely the fare including reliability, waiting time, transfers, comfort, personal safety, and first- and last-mile access (Ahmad et al., 2024; Ben-Akiva & Lerman, 1985). Lahore's systems offer a competitive option near their corridors, and Batool et al. (2020) document real benefits for users located there.

The evidence does not show that corridor-level competitiveness automatically produces a citywide modal shift. Across much of Lahore, private and informal modes still offer greater flexibility and direct access, so choosing them remains individually rational. Service improvement must therefore precede or at least accompany stronger restraints on private travel.

5.5 Policy Effectiveness

Government intervention in Lahore has produced real, if uneven, benefits. Metro bus and the Orange Line provide high-capacity service along defined corridors, while feeder routes extend that reach (Punjab Masstransit Authority, n.d.). Corridor performance, however, is not evidence of citywide congestion reduction, and the two outcomes should not be conflated.

A stronger policy test asks whether intervention improves total accessibility, supports reliable transfers, reduces external costs, and changes travel behaviour across the network. Against those criteria, this study finds genuine progress in mobility provision but weaker results in land-use integration, demand management, and inter-agency evaluation. Policy effectiveness is therefore partial and unevenly distributed across domains not simply a success or failure in the aggregate.

5.6 Comparative Analysis and Global Practices

London and Singapore illustrate a shared principle rather than a transferable blueprint: road pricing gains credibility, and public acceptance, when it is one component of a wider package that already

includes strong administration and usable transport alternatives (Lam & Toan, 2006; Leape, 2006). For Lahore, the relevant lesson is one of sequencing, not imitation. Introducing a citywide charge ahead of improved transit access, functioning parking enforcement, reliable data, and public trust would likely produce inequitable outcomes and weak compliance, undermining the policy before it could demonstrate benefit. The more defensible path is to test limited, transparent, geographically bounded measures in already-congested areas first, with published, verifiable commitments about how any revenue collected will fund the mobility alternatives commuters would need in order to accept the charge as fair.

Read together, the four theories converge on one integrated explanation rather than four separate diagnoses. Market Failure Theory identifies the underlying welfare loss; Rational Choice Theory explains why commuters continue selecting private modes despite that loss; Urban Land Use Theory explains how the city's spatial form keeps regenerating the travel demand driving the loss; and Institutional Theory explains why the policies capable of correcting it remain only partially implemented. In the author's interpretation, this is precisely why isolated interventions - a single road project, transit line, pricing pilot, or enforcement campaign - have consistently underperformed in Lahore: each addresses one mechanism in a system where congestion is sustained by the interaction of all four.

6. Conclusion and Recommendations

6.1 Conclusion

This study's principal contribution is not a new fact about Lahore's traffic but an integrated explanation for why substantial, genuine investment has not translated into proportionate congestion relief. Existing research separately documents bottlenecks, commuter perception, mass-transit benefits, urban expansion, and governance strain; this analysis connects them causally. Poorly internalized external costs contribute to excessive road use; commuter choices favor whichever mode offers the most convenient full journey, not merely the cheapest fare; dispersed land use lengthens the trips transit must compete against; and fragmented institutions weaken implementation of any policy designed to address the first three. The result is a policy system that delivers visible, creditable projects without correcting the underlying market failure those projects were meant to address.

This is not a claim that intervention has failed. Metro bus, the Orange Line, feeder services, and road improvements have produced measurable mobility benefit. Their effect remains

geographically concentrated because infrastructure investment has not been matched, at comparable scale or urgency, with first- and last-mile access, parking control, demand management, and service integration. Public transport must become a genuinely credible and equitable alternative before economic instruments such as pricing are introduced; pricing should reinforce that credibility once established, not attempt to substitute for it.

Transport and urban planning cannot, on this evidence, be treated as separable policy domains for Lahore or for comparable Pakistani cities. Station-area land use, pedestrian access, development control, and institutional coordination jointly determine whether an infrastructure investment changes citywide travel patterns or remains a well-used but isolated corridor. The policy priority this analysis identifies is therefore not simply “more investment,” but the deliberate alignment of infrastructure, incentive, spatial planning, and governance around outcomes that are actually measured.

6.2 Recommendations

6.2.1 Institutional Reforms and Governance

Establish a formal metropolitan mobility coordination mechanism spanning the agencies responsible for mass transit, land use, traffic management, environmental regulation, and local government. The mechanism should assign clear responsibilities, synchronise investment schedules across agencies, maintain shared performance data, and publish an annual public mobility report. Strengthening existing institutions should precede the creation of any additional authority.

6.2.2 Transport Planning and Service Integration

Expand feeder coverage and improve bus-rail transfers; provide safe first- and last-mile access through footpaths, crossings, lighting, and universal design standards. Evaluate service performance through reliability and access to jobs and services rather than corridor ridership alone, and subject major road and transit investments to structured before-and-after evaluation rather than one-off launch assessment.

6.2.3 Economic Instruments

Reform parking management before introducing any broad congestion charge: enforce existing restrictions, remove illegal roadside occupation where feasible alternatives exist, and price parking in selected congested commercial areas. Only once public-transport access and baseline performance data have measurably improved should a time- and location-specific congestion charge

be piloted in a bounded area, with clear exemptions, published evaluation criteria, and transparent, publicly reported use of revenue.

6.2.4 Land Use, Equity, and Environmental Protection

Implement the Punjab TOD Policy through station-area plans combining mixed use, pedestrian access, feeder services, and managed parking. Direct revenue from parking charges and any future road pricing toward feeder routes, safe walking infrastructure, and targeted support for low-income travellers, so that pricing reform does not simply shift cost onto those least able to absorb it. Transport and environmental agencies should jointly monitor emissions around congested corridors and incorporate environmental outcomes into standard project evaluation, not as a separate, optional assessment.

Declarations

There is no competing interest for this study.

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