

A Study on Public Infrastructure Deficits in India's Urban Landscape

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Abstract: *As India urbanises rapidly, its cities face widening public infrastructure deficits across transport, water supply, waste management and housing, with direct consequences for residents' quality of life. This paper synthesises secondary data from government reports, institutional datasets and peer-reviewed literature to examine infrastructure deficits in three major Indian metropolitan cities - Bengaluru, Delhi and Mumbai - and their documented association with citizens' psychological well-being. Comparative indicators, including air quality, waste generation, water demand-supply gaps and traffic congestion, are presented alongside a thematic review of published research linking commuting stress, water insecurity, air pollution and housing overcrowding to adverse mental-health outcomes in urban India. Findings indicate that infrastructure deficits are systemic rather than isolated, driven by rapid, unplanned urbanisation and fragmented governance, and that these deficits carry a measurable psychological cost that existing policy frameworks largely overlook. The paper concludes by recommending integrated, data-driven urban planning and highlights the need for future primary research combining infrastructure indicators with validated psychological measures.*

Keywords: Quality of life, Urban Growth, Civic Issues, Local Governance, Sustainable Planning, Bengaluru

1. Introduction

India's urban population has grown from roughly 286 million in 2001 to an estimated 500 million by 2024, projected to approach 600 million by 2031 (Census of India, 2011; Ministry of Housing and Urban Affairs [MoHUA], 2024). This growth has outpaced civic infrastructure: metro commute times average 30–60 minutes, the vehicle fleet exceeds 300 million (Ministry of Road Transport and Highways, 2024), solid waste exceeds 160,000 tonnes daily with only about 30% processed, and urban water demand is projected to exceed supply by 2030 (MoHUA, 2024; NITI Aayog, 2019).

Despite sustained economic growth, these deficits persist, disproportionately affecting the urban poor and compounding governance inefficiencies (A. Kundu et al., 2024; Rathod & Bhole, 2025). This study asks: (i) why do infrastructure deficits persist in India despite economic growth, and (ii) how do they affect residents' quality of life and psychological well-being? It compares infrastructure indicators and citizen-experience evidence across Bengaluru, Delhi and Mumbai (Chetty & Surawar, 2021).

2. Literature Review

A substantial body of research documents infrastructure deficits in Indian cities at a governance-focused level. Urbanisation has driven economic growth even as it widens sustainability and equity gaps (Rathod & Bhole, 2025), with long-term under-investment leaving deficits disproportionately severe for small towns and the urban poor (A. Kundu et al., 2024). Outdoor air pollution is the leading contributor to premature mortality across more than 40 Indian cities (Ramaswami & Nagpure, 2026). A livability assessment in Guwahati found 56% of residents dissatisfied with basic services, and quality of life in Indian cities is deteriorating

despite economic growth, driven by unplanned sprawl and weak governance-reform implementation (Centre for Policy Research, 2026, as cited in The Wire, 2026). Waste-management studies in Gurugram and Delhi similarly find persistent gaps in collection and disposal, and call for greater citizen participation (Bhardwaj et al., 2026; Shekhar et al., 2023).

A parallel, human-centred literature documents the psychological toll of specific infrastructure stressors. Traffic congestion is linked to commuting stress and aggressive driving among Bengaluru college students (Singh & Reddy, 2021), to moderate-to-high stress among Shillong schoolchildren (Chullet et al., 2025), and - in a 2026 study from the author's own department at JAIN (Deemed-to-be University) - to significantly higher stress among female relative to male corporate employees in Bengaluru (Ashwathi & Kavya, 2026). Chronic traffic exposure is similarly linked to anxiety and depressive symptoms among cab drivers (Aryan, 2026). Water insecurity carries a comparable burden: women in water-scarce New Delhi communities reported elevated frustration and loss of dignity tied to menstrual management (Choudhary et al., 2023), while a Vellore slum study found water insecurity and poor sanitation reduced well-being (Lekha et al., 2025). National studies link long-term PM2.5 exposure to raised odds of depression and anxiety (P. Kundu et al., 2026) and show a causal effect of air pollution on mental health (Balakrishnan & Tsaneva, 2023). Housing deficits compound this: 23% of residents in a non-notified Mumbai slum screened at high risk of a common mental disorder, with overcrowding among the significant predictors (Subbaraman et al., 2014), and a 2025 Bengaluru study identified overcrowding among the stressors most linked to anxiety and depression.

Taken together, this literature shows that infrastructure deficits and psychological distress are each well documented,

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but typically studied separately, within single cities, and without a comparative, multi-city lens. This paper addresses that gap by synthesising secondary infrastructure indicators together with the human-centred findings above across Bengaluru, Delhi and Mumbai.

3. Methodology

This is a secondary, documentary study; no respondents were sampled. Data were drawn from government reports and datasets (MoHUA, NITI Aayog, Census of India, CPCB), recognised global indices (e.g., TomTom Traffic Index), and peer-reviewed articles via SCOPUS, Web of Science and Taylor & Francis, published within the last 10–15 years and relevant to infrastructure deficits or psychological outcomes in the three cities; unverified and non-peer-reviewed sources were excluded. The analysis combines quantitative comparison of infrastructure indicators, a temporal perspective on population and infrastructure growth, and thematic synthesis of the psychological-impact literature above. With no primary sample, the propositions examined - that infrastructure deficits are associated with poorer psychological well-being (P1), and that infrastructure-related strain differs across cities (P2) - are evaluated through synthesis rather than inferential statistical testing.

4. Findings and Discussion

Table 1 summarises comparative infrastructure indicators across the three cities. Delhi records the highest air pollution levels (AQI 87–123), consistent with national data attributing much of its pollution burden to vehicular emissions, while Bengaluru and Mumbai show comparatively better air quality but acute pressure on transport and housing respectively.

Table 1: Comparative Infrastructure Indicators Across Bengaluru, Delhi and Mumbai

Dimension	Bengaluru	Delhi	Mumbai
Transport	High congestion, limited coverage	Better coverage, high pollution	Extensive but overcrowded
Water	Scarcity + tanker dependency	Supply present but uneven	Seasonal shortages
Housing	Growing slums	High-density settlements	Severe space constraints
Air Quality (AQI)	59	87–123	78

Note. Sources: AQI India reports; MoHUA (2024); NITI Aayog (2019); TomTom (2024).

Nationally, solid waste generation exceeds 160,000 tonnes daily, of which only about 30% is processed (MoHUA, 2024), and less than 40% of urban roads have usable pedestrian infrastructure. These deficits are systemic: urban population nearly doubled between 2001 and 2024 without proportional infrastructure expansion, vehicle growth has outpaced road capacity, and fragmented governance delays implementation (A. Kundu et al., 2024; Rathod & Bhole, 2025).

The psychological-impact literature indicates these deficits carry a documented mental-health cost - elevated stress among commuters and cab drivers, distress linked to water insecurity, and anxiety/depression tied to air pollution and

overcrowding - supporting P1. Evidence for P2 is more qualified: the cities differ in which sector is most strained (transport in Bengaluru, air quality in Delhi, housing in Mumbai), but few studies directly compare psychological outcomes across all three using a common measure.

5. Conclusion and Recommendations

Public infrastructure deficits in Indian cities are systemic outcomes of rapid urban growth outpacing governance and investment, and the secondary literature indicates these deficits carry a real, if unevenly measured, psychological cost for residents. Addressing them requires integrated urban planning: strengthening public transport and traffic management, investing in water conservation and recycling, expanding waste-processing capacity, and improving inter-agency coordination and transparency.

This review is limited by its reliance on secondary data and the absence of a primary, cross-city sample using a common psychological measure. Future research should collect primary data - using validated instruments such as the PSS-10 or WHOQOL-BREF, administered to a representative sample (N = 50–100) across the three cities - to test directly whether, and how strongly, infrastructure deficits predict psychological well-being, and whether this relationship differs by city.

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