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ORIGINAL ARTICLE

Equity in Urban Mobility: A Case Study of Bangalore's Transportation System

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Abstract

Transportation investments are primarily driven by the objective to enhance the accessibility and mobility of people and goods, thereby contributing to the social and economic development of communities. This study examines transportation equity in Bangalore in the context of two types of disturbances on equity: recurring urban floods and fare hikes. While urban floods have a short-term but profound impact, fare hikes result in prolonged economic impacts, both significantly affecting the Quality of Life (QoL) and well-being of citizens. To assess equity, an exploratory survey focusing on parameters of accessibility and affordability was employed. Statistical methods such as cluster analysis and McNemar's test were carried out to extract patterns and insights from the collected data. The impact of fare hikes assessed using McNemar's test revealed a 31.5% mode shift from public transport users to non-public transport, with low-income and male users most sensitive to price changes. Female ridership remained stable due to existing free-travel schemes. These findings highlight the precarious balance between social inclusivity and financial viability in fare policy design. By integrating transport equity with resilience objectives, this study directly addresses SDG 11.2 (safe, affordable, and sustainable transport), SDG 10.2 (social inclusion), SDG 5 (gender equality), SDG 1.5 and 11.5 (climate resilience), and SDG 17.18 (data capacity for inclusive development). The study concludes that long-term transportation planning must integrate equity metrics alongside resilience goals, leveraging context-specific data to inform infrastructure investments and fare structures.

Keywords Transportation equity · Cluster analysis · Urban flood · Fare hike · Public transportation · Sustainable development goals

Introduction

Transportation investments are primarily driven by the objective to enhance the accessibility and mobility of people and goods, thereby contributing to the social and economic development of communities. However, the effectiveness of these investments is constantly tested by rapid, unregulated urbanisation, intensified by internal and international labour migration. With urban areas absorbing the majority of the population, a trend projected to intensify, urban transportation will soon face the challenge of astronomical demand and increasing complexities.

In addition to addressing these challenges, transportation investments will need to promote a more sustainable future by supporting the development of sustainable transportation systems [1]. This involves developing urban transportation systems that are equitable [2], resilient [3], affordable [4], and accessible [5]. In alignment with this vision, the United Nations launched 17 Sustainable Development Goals (SDGs) in 2015, encompassing 169 targets. Nitwal et al. [6] identified 27 direct and 24 indirect SDG targets linked to transportation, highlighting the sector's broad and significant role in advancing global sustainability objectives through both direct and indirect contributions.

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