

QUANTIFYING THE HIDDEN TRAVEL COST OF PUBLIC TRANSPORT: AN ANALYSIS OF FIRST AND LAST MILE EXPENSES IN JABALPUR, INDIA

ABSTRACT Sustainability of public transport depends not only on the core system efficiency but also on the accessibility of its nodes. Though the affordability is a key metrics, the often overlooked first and last mile (FLM) segments can present significant, unquantified barriers. This study addresses a critical gap in urban transport literature by quantifying the hidden costs both financial and temporal, associated with FLM travel in the context of a Tier-II Indian city, Jabalpur.

Employing a mixed-methods approach, the research combined a structured survey of over 450 public transport users across diverse socioeconomic backgrounds with spatial analysis of the Jabalpur city bus network. Data was collected on FLM mode choice including walking, auto-rickshaws, cycles, etc., direct expenses, and travel time. The financial cost of FLM travel was then calculated as a percentage of the main public transport fare.

Preliminary findings reveal that FLM expenses constitute a substantial burden, averaging 45-60% of the main public transport fare in Jabalpur. For low-income households, this hidden cost can exceed the core fare, effectively doubling their daily transport expenditure. Auto-rickshaws, the dominant FLM mode, are identified as the primary cost driver, while inadequate pedestrian infrastructure significantly increases travel time and discomfort for walkers, thereby forcing reliance on expensive modes of travel. The analysis demonstrates that the aggregate FLM cost acts as a regressive tax, disproportionately affecting the poor and limiting the effectiveness and perceived affordability of the public transport system.

The study concludes that without integrated FLM planning, public transport systems in developing cities like Jabalpur will remain inaccessible to a significant portion of the population. It recommends policy interventions, including formalized feeder services, integration of micro mobility, and pedestrian infrastructure improvements, to create a more equitable and sustainable urban mobility ecosystem.