

Abstract

This paper explores the integration of accessibility metrics, crowding, and travel time reliability in the evaluation of urban public transportation systems. Accessibility metrics, such as the cumulative opportunities method and gravity-based models, assess the ease with which urban dwellers can reach essential services and employment within reasonable travel times. These metrics are evolving to include variable thresholds that reflect real-world travel time distributions, enhancing their relevance and accuracy. Crowding, characterized by passenger loads exceeding the available capacity on transit vehicles, significantly impacts user satisfaction and the perceived quality of service. It influences travel behavior, potentially deterring public transport usage among commuters. Additionally, travel time reliability, which measures the predictability of travel times, is critical for planning purposes. Variability in travel times necessitates longer buffer times for passengers, impacting punctuality and the overall attractiveness of public transit options. Unreliable travel times, influenced by factors such as congestion and operational delays, undermine the efficiency of public transport systems. This paper argues for a comprehensive approach that incorporates these elements into the planning and evaluation of public transportation, proposing that such integration is crucial for improving service delivery, enhancing user satisfaction, and encouraging greater use of public transport solutions.

- The matrix used in the paper can be used in our project
- Accessibility Metrics in Public Transportation can be used to evaluate the accessibility of origin to all destinations
- Crowding in Public Transport can influence peoples travel time depending on the category
- Travel Time Reliability is crucial because variability in travel times can necessitate longer buffer times for passengers to ensure on-time arrival at their destinations, such as workplaces or schools

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