

How to spot a transit city: Towards a level-of-service measure for public transport in metropolitan areas

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The planning and implementation of road systems, both urban and inter-urban, have long benefitted from a detailed understanding of what constitutes the required level of service for different traffic purposes. These standards have been applied internationally with many agencies around the world drawing on the US Highway Capacity Manual which was first published in 1950 (Transportation Research Board, 2010). No equivalent measures exist for public transport systems except, in some cases, at the level of individual agencies or national peak bodies. The shortfall generates difficulties for policy makers in defining robust performance thresholds for a city's public transport system beyond popular targets concerning mode share, passenger boardings, energy use or financial performance.

This paper uses international comparative results from the Spatial Network Analysis for Multimodal Urban Transport Systems (SNAMUTS) instrument and other accessibility tools to sketch an assessment framework that can viably be applied to cities with different settlement structures, policy histories and approaches to public transport provision. This is achieved by deriving a set of core standards from the more complex accessibility measures contained in SNAMUTS and other tools – measures that were designed to facilitate a policy discourse rather than set a rigid performance threshold, and are therefore not free from ambiguity. We argue that from a utility perspective, the core level of service measures in public transport systems should be: **general network coverage**: what percentage of urban activities are within walking distance of public transport services meeting a minimum standard of frequency and operational span?

qualified network coverage: what percentage of urban activities are within walking distance of public transport services that achieve a specified level of ease of movement and/or size of travel time contour?

network resilience: what percentage of the public transport network is maintained a critical threshold of pressure resulting from the concentration of land use activities and capacity of transport infrastructures and services?

flexibility of movement: what percentage of urban users enjoy a level of network connectivity where public transport can reasonably be considered a primary choice for movement?

Drawing on a global sample of 25 developed metropolitan areas on four continents, we introduce and discuss the results for each case study and identify common patterns of strength and weaknesses. In conclusion, we discuss the opportunities and limitations of this analytic framework for an internationally applicable set of public transport level-of-service measures.