Abstract

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This paper introduces a Time/Frequency-based Stop Accessibility Index (FSA) to evaluate the local accessibility of transit stops. The developed index reflects both the suitability of the surrounding built environment and the availability of service at a transit stop for a predefined time period. In addition, the paper proposes a Stop Importance Index (SI), which reflects the importance of the surrounding land uses with respect to their trip generation characteristics and considering their actual proximity to the stop. Finally, the paper introduces three different algorithms through manipulating FSA and SI as well as its components to investigate each stop utilization level and to determine the urgency level of improvements. The proposed methodology was applied on the City of Kelowna transit system and the results showed that transit stops with high FSA values are located near mixed land uses and high-frequency transit corridors, and more likely are being utilized by more than one transit route. Regarding stop utilization and improvement urgency levels, the results showed that around 25% of the stops are reasonably utilized while around 40% of stops does not require urgent improvements for the surrounding built environment.