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Incorporating activity space and trip chaining into facility siting for accessibility maximization

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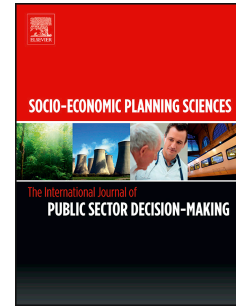
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Abstract

Location models have been widely used to support locational decisions for various service provision. One common objective of location models has been to ensure maximal accessibility of sited facilities to demand populations. Accessibility evaluation in location models often assumes that trips originate from fixed locations (usually home) and are single purpose. These assumptions contradict the empirical evidence that suggests trips also commonly originate from non-home locations and may involve multiple stops. In this study, a new multi-objective location model is developed that extends the classic p -median problem (PMP) to account for a more realistic assessment of accessibility. Based on the individual accessibility assessment, notions of trip chaining and activity space are incorporated into the model development. In addition to fixed home locations, stops along chained trips are allowed for potential service site visits, and activity space is introduced as an additional dimension to evaluate accessibility of alternative opportunities. The effectiveness of the new model is demonstrated using an application in Tucson, AZ.

Keywords: Location modeling; accessibility; activity space; GIS

1. Introduction

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