



Modelling long-term impacts of the transport supply system on land use and travel demand in urban areas

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Abstract

It is commonly accepted that there is a two-way relationship between land use and transport in urban areas. Land use affects transport, conditioning travel demand. Conversely, transport affects land use, conditioning spatial distribution of activities and land market.

The problem of simulating mutual interactions between land use and transport has been tackled by so-called Land Use Transport Interaction (LUTI) models. Different modelling approaches are present in literature, which are generally grouped into three main categories: spatial micro-economic, spatial interaction and spatial accounting models.

The paper presents a spatial accounting LUTI model, which relies on Multi-Regional-Input-Output (MRIO) framework. The model has two main interacting components: an activity model and a transport model, which allow to endogenously estimate activities generation and location, land prices, travel demand and transport accessibility.

The proposed LUTI model has been specified and applied in an urban area, more particularly to the town of Reggio Calabria (Italy). The objective of the application is the estimation of long-term impacts on land use and passenger travel demand patterns when interventions on transport facilities and services are planned at a strategic scale. The results confirm that MRIO framework offers the potentialities to bring activity location, land use in line within travel demand modelling.

Keywords: Land use transport interaction; Activity location; Travel demand.

1. Introduction

In urban areas land use affects transport, conditioning travel demand. Conversely, transport affects land use, conditioning spatial distribution of activities and land market.

The two-way relationship between land use and transport may be simulated by so-called Land Use Transport Interaction (LUTI) models. Literature is very rich and involves urban economics and urban transportation planning. LUTI models are generally grouped into three main categories: spatial micro-economic, spatial interaction and spatial accounting models.

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