

Land Use Transportation Modelling for Large City Regions: Long Term Forecasting and Planning in the Londo Region

Michael Batty[□]

[□]CASA, UCL, 1-19 Torrington Place, London WC1E 6BT, UK
Tel. (44) 207 679 1781
m.batty@ucl.ac.uk, www.casa.ucl.ac.uk

Abstract

We are building an integrated quasi-dynamic model for Greater London and the Thames Gateway as part of an effort to develop models for simulating the impact of changes in spatial behaviours over relatively long time periods from 50 to 100 years. This model is part of our interest in assessing the impact of dramatic shifts in the costs of energy related to travel and residential development on the location of population and employment. Such changes are part and parcel of the effects of climate change, aging and resources depletion and substitution in the energy sector which are forecast to have a significant impact on location and spatial interaction patterns during the rest of this century. The model as it is currently designed is a cross-sectional, hence static residential location model incorporating four modes of transport which reflect the cost of travel and the income budgets of populations with respect to house prices and travel costs. This is in one sense simply one of the many modules that we will be extending to other sectors of the urban system as the suite of models, that we have entitled **SIMULACRA**, is developed. This first model is currently in pilot form for Greater London which is comprised of 600 or so spatial units (wards) and is structured so that it can be driven visually by an expert user from the desktop. It has links to external web-based visualization software so that it can be demonstrated effectively to stakeholders and it is currently part of the integrated assessment of climate change in the London region being developed in the Tyndall Centre for Climate Change Cities project and its successor ARCADIA. In this paper, we will outline the mathematical structure of the model, develop its algorithmic basis, explore the visual basis to the simulation, and illustrate how it can be used to enable users to make predictions of future residential population in the London region, on-the-fly so-to-speak. The current version is a pilot and it is intended to develop at least two other versions of a much more comprehensive quasi-dynamic structure for a wider area than Greater London, comprising some 2000 or so zones in the metro south-east of England, embedding these versions into the London database that we in CASA are constructing, and relating this to various web-based services that we are developing for visualisation.