Conformance in land-use planning: The determinants of decision, conversion and transgression

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ABSTRACT

Over recent decades, urban areas have expanded into agricultural areas. To contain outward spatial expansion and regulate urbanisation, policy-makers should continually review and evaluate their plans. Planners may use conformance-based approaches in which they examine the relationships between plans and physical outcomes.

This paper analyses land-use changes and their links to seventeen municipal master plans approved during the 1990s in the Lisbon Metropolitan Area. We evaluated the conformity of land-use changes to municipal master plans and identified the major measurable factors conducive to land allocation, conforming changes, and nonconforming changes. We created three logistic-regression models to estimate the probabilities of plot development in three different land-use pathways: (i) intended for development within municipal plans (conversion decision path); (ii) subsequently converted in conformity with the plan (conforming conversion path); (iii) converted in disagreement with the plan which had assumed the land plot could not be developed (transgression path).

Results show that previous urban dynamics and distances from Lisbon are the main drivers of all models. Transport networks affect policy decisions—as well as conforming and transgressive conversions. The political orientations of local governments significantly influence land-use evolution. Land-preservation policies and municipal decisions do not reduce transgression.

This study is a contribution to the body of research literature regarding the evaluation of plan implementation. It is shown how regression models can be used to refine conformance-based analyses. More than simply quantifying nonconformity, its determinants are identified.

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1. Introduction

Over recent decades, urban areas have expanded into agricultural areas (Brabec and Smith, 2002; Abrantes et al., 2013). To contain outward spatial expansion and regulate urbanisation has become one of the most important and global issues for urban policies (Ewing, 1997). Across the globe, growth-management programmes have become widespread (Carruthers, 2002; Dawkins and Nelson, 2002; Pendall et al., 2002; Zhao, 2011; Paulsen, 2013). The zoning-based comprehensive local plan is a popular planning instrument for creating public strategies and decisions about land use (Nechyba and Walsh, 2004; Lichtenberg, 2011).

This development has led to an increasing need for plan evaluation (Alexander and Faludi, 1989; Talen, 1996a; Oliveira and Pinho, 2010), however, there is no agreement about the most adequate appraisal methods. Decision-making processes have been widely explored via 'performance-based analysis' (Faludi, 2000; Albrechts, 2006). However, another approach to the examination of the relationship between plans and physical outcomes has emerged: 'conformance-based analysis' (Talen, 1996a; Seasons, 2003; Laurian et al., 2004a,b; Berke et al., 2006).

In this paper, we analysed land-use changes and their links to seventeen municipal master plans approved during the 1990s in the Lisbon Metropolitan Area (LMA). The aim of this paper is twofold: (i) to evaluate the conformity of land-use changes to municipal master plans across the LMA and (ii) to identify the major measurable factors conducive to land allocation, conforming changes, and nonconforming changes. In this study, we focused on the LMA's natural and agricultural areas.

We created three logistic regression models to estimate the probabilities of plot development in three different land-use pathways: (i) plots specified for development in municipal plans (conversion decision path), (ii) plots converted to conform with plans (conforming conversion path), and (iii) plots converted although plans said they could not be developed (transgression
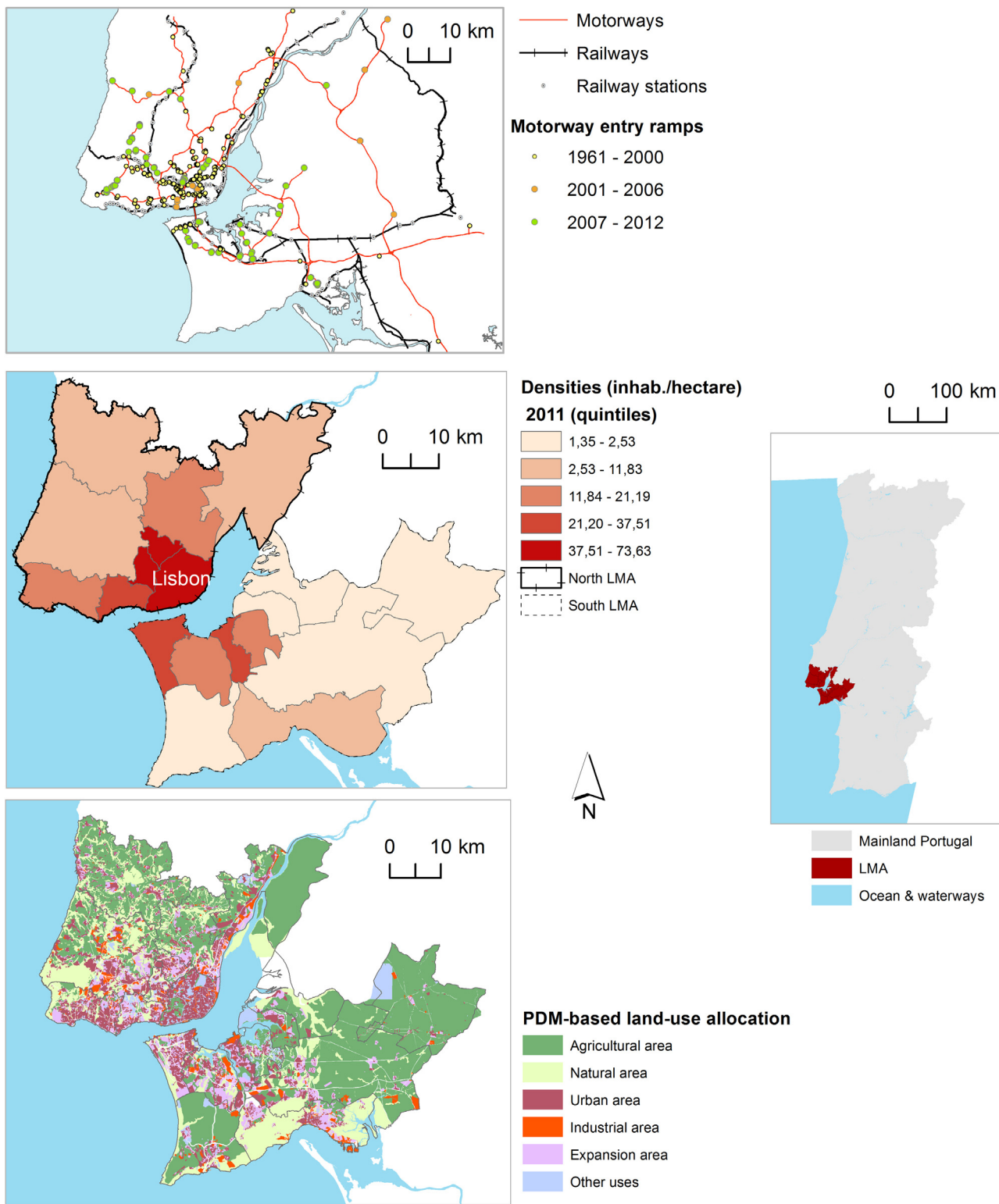
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Fig. 1. The Lisbon Metropolitan Area and its municipal master plans.

path). This study thus contributes to the body of research literature regarding the evaluation of plan implementation. We have shown how regression models can be used to refine conformance-based analyses. More than simply identifying nonconformity, we have identified its determinants.

In the next section, we provide an overview of plan evaluations and focus on the 'conformance approach'. In the third section, we give insight into the Portuguese planning system. We present our study area, data, and methodological issues in the fourth section, alongside our modelling approach. In the fifth section, we present a general evaluation of LMA land-use conversions. We present the main results of our model in the sixth section; in the seventh section, we discuss their scientific and political implications. Last section concludes.