

Chapter 6

Spotting Premium Hot Spots for Urban Tourism Based on Facebook and Foursquare Data Using VGI and GIS

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ABSTRACT

Spatial modeling always involves choices. The existence of constraints, the uncertainty and even the reliability of the data, the purposes and the applications of the studies make these reflections a kind of guiding compass for GIS analysts. Building on a previous exercise of data acquisition (check-ins) based on two digital social networks (DSN – Facebook and Foursquare) and on the awareness of the use of volunteered geographic information (VGI) generated by tourists through DSN, this work aims to evaluate the contribution of spatial analysis applied to urban tourism in the “Alta and University of Coimbra” area. Concepts and procedural tasks related to density determination, cluster analysis, and identification of patterns have thus been implemented with the purpose of evaluating and comparing the results obtained through the application of two techniques of spatial analysis, kernel density estimation (KDE) and optimized hot spot analysis (OHSA) and inverse distance weighting (IDW) interpolation.

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INTRODUCTION

Working with spatial models and Geographical Information Systems (GIS) involves choices. There are always constraints, either of a financial nature or related to the specifics of the software itself, to the algorithms being used, to the level of uncertainty or to the contingencies that affect the consistency and accuracy of the data. Spatial modeling encompasses all these components, and the researchers should be aware of this fact if they wish to be able to discuss the best solutions for each case. To these initial thoughts one should add the words of George E. P. Box and Norman Richard Draper when they wrote in 1987: “Remember that all models are wrong; the practical question is how wrong they have to be to not be useful. Essentially, all models are wrong, but some are useful” (Rocha, 2012, 323).

Geostatistical methodologies, modeling and spatial analysis are currently used in such varied fields as the communication strategies of numerous economic and scientific/research activities, both in the state and private sector, and applied to many different branches of knowledge, from the biomedical to the spatial sciences and, of course, the geosciences. They resort to a set of tools that allow for the construction of geospatial models and the inclusion of predictive capabilities conducive to the shaping of a system aimed at explaining both natural and social phenomena.

The present study builds on a previous broader research project that sought to compare and assess the reliability of three geostatistical algorithms, two of which in association (complement), applied to the study of urban tourism in the “Alta and University of Coimbra”, the uptown area and University of Coimbra main campus, in Portugal’s Centre region.

Background

Regionalization as something that is reflected in the structured nature of phenomena will thus be best articulated in the language of Random Functions. However, one must point out that these concepts got it wrong in initially assuming an overly naturalistic bent, because today’s knowledge in the area of Geostatistics lends itself to a treatment similar to that of other types of anthropic variables, as is the case with the areas of Health, Criminology, Road Accident Monitoring, Tourism, Natural or Technological Hazards and Risks, among others. This work seeks to correlate variables, attributes and their respective interactions, and the authors concur with Getis’s notion (Getis, 1991), that the family of spatial interaction models is a special instance of the broader models used in spatial autocorrelation. With the necessary adaptations, the present study applies Getis & Ord’s paper (Getis & Ord, 1992) on “sudden death syndrome by county in North Carolina” and its potential correlation with the “price of housing units sold by zip-code district in the San Diego metropolitan region.” It

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