Spatial data analysis for 2004 electoral data in Barcelona

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Abstract: Abstract text

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1 Introduction

This work shows an application of the spatial data analysis techniques to the results of the 2004 General Elections in the city of Barcelona at level of Small Research Zones (ZRP, from their initials in Catalan), an official division of the city in 248 areas with almost equal number of inhabitants. O’Loughlin (2002) comments that in spite of the recent attempts to introduce the space dependency in the studies of Political Science, political scientists still fail to apply geographic techniques extensively to its data. Traditionally, the geographic factor has not considered in the regression equations and this practice ignores the fact that the human societies are not scattered in a statistically independent way. Figure 1 shows the participation rate (in percentage) by ZRP. In is observed that there is a systematic variation in this variable, that is to say, the phenomena in study exhibits space autocorrelation.

2 Description of the data

The spatial data matrix (Haining, 2003) used in the analysis was constructed using the concept of Geographical Information System (GIS). A GIS consists of a data base with geographic information that is associate, through a common identifier, to graphical objects in a digital map. The chosen variables for an initial analysis are the participation rate and the percentage of votes obtained by each political party in the general elections of day 14 of March of 2004 in Barcelona. The partition of the area in study in ZRPs takes into account the aggregation level under which other variables of interest are available.

3 Spatial Data Analysis

Our main goal is to show empirically that an electoral process can be considered a spatial process. We analyze the structure of spatial dependency
Electoral data in Barcelona, year 2004

Global and local indices of association are calculated and cluster and outliers are identified (Anselin, 1995). The Exploratory Analysis is made with GeoDAT™, a free software for the analysis of data of areas (Anselin, 2003).

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