NCG603A/NCG613 – Modelling Voter Turnout in Dublin

Introduction

In the GWmodel package you will find a dataset named DubVoter. It arises out of some work undertaken at Maynooth exploring spatial variation in voter turnout in the 2002 General Election and the which social characteristics might be thought to influence this (Kavanagh, 2006). You have been tasked with updating the analysis in the paper.

Data

The DubVoter dataset in GWmodel loads a Spatial Polygons Data Frame, Dub.voter, with data on the turnout in the 2002 General Election, and some associated social characteristics, for the 322 Electoral Divisions in Dublin (Dublin City, Fingal, South Dublin, and Dún Laoghaire-Rathdown). The data are:

Variable	Description
DED_ID	Electoral Division code
X	Easting of ED centroid
Y	Northing of ED centroid
DiffAdd	Percent of population with different address 1 year ago – a measure of mobility
LARent	Percent of population renting dwelling from local authority
SC1	Percent of population with head of household in social class 1
Unempl	Percent of population seeking work
LowEduc	Percent of population educated only to lower secondary level
Age18_24	Percent of population aged between 18 and 24 inclusive
Age25_44	Percent of population aged between 25 and 44 inclusive
Age45_64	Percent of population aged between 45 and 64 inclusive
GenEl2004	Percent of voting age population who voted on election day

Your task

Which variables influence the variation in voter turnout most strongly? Bear in mind that there is noticeable collinearity within the potential predictors, so you may need to take steps to minimise its influence. You will need to explore the data – what are the characteristics when taken singly, when bivariate correlations are examined, and when you consider the relationships in a principal components transform? The residuals from a non-spatial predictive model may exhibit spatial pattern, so you may need to include a spatial component.

Your submission will be a brief report (1000 words maximum) outlining the problem, the data, the approach you have chosen, and your results. The submission will be hardcopy to my office, no later than 17:00 on a date to be set in class.

References

Kavanagh A, 2006, Turnout or turned off? Electoral participation in Dublin in the early 21st century. *Journal of Irish Urban Studies*, **3**(2), 1-24