

RSS Social Statistics Section

Location matters: Techniques for exploring geographic variation in survey data

Monday 27th June 2016 17:00-18:30 Tea and Coffee from 16:30

Northampton Suite, City University London, EC1V OHB

Geography – and particularly where people live – matters and can have a profound effect on people’s attitudes, behaviour and outcomes. However, all too often, analyses of survey data ignore this geographic variation and are restricted to ‘one size fits all’ global models. Where geography is taken into account it is often done fairly bluntly, for example by using regional dummies and associated interactions at a large geographical scale. The interaction between location and behaviour is likely to be far more nuanced and valuable insights can be gained from drilling down further.

The increased availability of highly granular geocoded data and advances in statistical and computational techniques for exploring these data provide exciting new opportunities for survey researchers interested in investigating geographic variation in their data. These techniques are commonly used among geographers but less well known across other social science disciplines. This event will provide an introduction to several techniques - including geographically weighted regression, small-area estimation and visualization - which can be used to explore low level geographic variation in survey data. Talks will demonstrate how these techniques can be used to address a range of methodological and substantive research questions relevant to social scientists.

Attendance is free but please register at events@rss.org.uk

Programme

16:30 Tea and coffee available

17:00-17:10 Why geography matters (Chris Brunson, NUI Maynooth)

17:10-17:30 Using geographically weighted regression to explore spatial variation in survey non-response (Kaisa Lahtinen, University of Liverpool)

17:30-17:50 The role of geography in small area estimation (Nikos Tzavidis, University of Southampton)

17:50-18:10 Exploring survey results with visualization (Aidan Slingsby, City University London)

18:30 Close

Using geographically weighted regression to explore spatial variation in survey non-response

Kaisa Lahtinen (University of Liverpool)

Chris Brunsdon (NUI Maynooth)

Sarah Butt (City University London)

Survey nonresponse is one of the major challenges facing social surveys today and there is widespread interest among both survey methodologists and practitioners in understanding how and why individuals' propensity to respond varies. Although levels of nonresponse are known to vary geographically within countries there has been little consideration of whether and how the predictors of survey nonresponse might also vary geographically. This study examines the possibility of spatial variation in response behavior to Round 6 of the European Social Survey in the UK using a technique known as geographically weighted regression (GWR). Our results suggest that there is indeed geographical variation in the drivers of response behavior and that relying on "one size fits all" global models in nonresponse modelling might, therefore, be insufficient. Accommodating geography as a discrete entity defined by regional or other administrative boundaries (e.g. using interaction terms or regional dummies) is an improvement but still fails to capture the full picture given that drivers of response behaviour may vary both across and within administrative boundaries. Using GWR – which explore the spatial variation in our data more flexibly by treating geography as a continuous variable - can provide a fuller account of spatial variation in survey response behaviour and may therefore improve our ability to both predict and explain response propensity across the UK. The GWR technique can also be used to understand how other aspects of attitudes and behavior measured in social surveys such as the ESS vary geographically.

The role of geography in small area estimation

Nikos Tzavidis (University of Southampton)

In this talk we discuss recent methodological developments in small area estimation (SAE) and in particular the role of geography in prediction. We discuss how the choice of geography in relation to the survey data available impacts upon the methods an analyst can use for example, area vs unit level models and synthetic estimators as opposed to estimators that include random effects. We further describe recent methodology that allows for the use of a flexible definition of geography in estimation with large scale data (register data) in the presence of measurement error added to the geographical coordinates for ensuring confidentiality. Examples will be presented from a range of recent SAE applications in the UK and internationally. Application areas will include the estimation of income, deprivation, inequality and densities of ethnic compositions.

Exploring survey results with visualization

Aidan Slingsby (City University London)

In addition to playing a role in communicating findings, information visualization can also have an important role in helping identify and perhaps explain findings. We will show how interactive visualization has an exploratory role that can help us (a) explore how where people live and their characteristics appear to affect the way they respond to surveys, and (b) build statistical models to help us study this in more formal ways. It is the ability of visualization to act as an interface to data, show distributions, and facilitate comparison that makes it so suitable.