Home   Reviewers   Associate Editors   Editor   Publisher   Contact

Bayesian spatial analysis of demographic survey data
An application to contraceptive use at first sexual intercourse

Riccardo Borgoni
Francesco C. Billari

Click the icon to view and/or download the PDF file. Once you are in the PDF file, use your browser back button to return to this page.

Abstract
In this paper we analyze the spatial patterns of the risk of unprotected sexual intercourse for Italian women during their initial experience with sexual intercourse. We rely on geo-referenced survey data from the Italian Fertility and Family Survey, and we use a Bayesian approach relying on weakly informative prior distributions. Our analyses are based on a logistic regression model with a multilevel structure. The spatial pattern uses an intrinsic Gaussian conditional autoregressive (CAR) error component. The complexity of such a model is best handled within a Bayesian framework, and statistical inference is carried out using Markov Chain Monte Carlo simulation. In contrast with previous analyses based on multilevel model, our approach avoids the restrictive assumption of independence between area effects. This model allows us to borrow strength from neighbors in order to obtain estimates for areas that may, on their own, have inadequate sample sizes. We show that substantial geographical variation exists within Italy (Southern Italy has higher risks of unprotected first-time sexual intercourse). The findings are robust with respect to the specification of the prior distribution. We argue that spatial analysis can give useful insights on unmet reproductive health needs.

Author's affiliation
Riccardo Borgoni
University of Southampton, United Kingdom
Francesco C. Billari
University of Milan, Italy

Keywords
contraceptive use, FFS, hierarchical Bayesian modeling, Italy, Monte Carlo Markov Chain, multilevel statistical models, spatial statistical demography

Word count (Main text)
5983

Other articles by the same author/authors (in *Demographic Research*)

Most recent similar articles in *Demographic Research*

[*Back to previous page*]