

Spatial Information and Geoadditive Model for Small Area Statistics

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Abstract

Spatial patterns are useful but also lead to violation of independence assumption in global dependence models. In social studies, spatial information can provide the pattern of poverty. Welfare research is important but has limitations in sample adequacy, thus small area estimation method is an alternative. Classic Small Area Estimation (SAE) only includes spatial information as a random effect but another method use the spatial information as covariate which known as Spatial SAE. However, the relationship between the response variable and the auxiliary variables may not be linear either in the original scale or in a transformed scale. So that, geoadditive model accommodate that non linear relationship. The objective of this paper is to determine household expenditure in Bangka Belitung province on 2017 by the best fit spatial model. This paper found out that the best fit model is geoadditive with the significant auxiliary variables are distance to district center and spatial information.

Keywords

Non-linear Covariate, Poverty, Small Area Estimation

Biographies

Novi Hidayat Puspongoro is a lecturer at Statistics department in Institute of Statistics, Jakarta, Indonesia. She earned undergraduate degree in Statistics from Institute of Statistics, Masters in Applied Statistics from Padjajaran University, Bandung and currently a PhD students in Statistics from Bogor Agricultural University, Bogor. She has published conference papers and wrote some welfare researches.

Anik Djuraidah is currently a fulltime senior lecturer Bogor Agricultural University. Mrs. Anik holds a PhD in Statistics from Bogor Agricultural University. She has published journal and conference papers in Spatial Models and Statistical Downscaling.