

***Title:***

Small-area estimation with spatial similarity

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***Abstract:***

A class of composite estimators of small-area quantities that exploit spatial (distance-related) similarity is derived. The estimators are based on a distribution-free model for the areas, but they are aimed to have optimal design-based properties. Composition is applied also to estimating some of the global parameters on which the small-area estimators depend. It is shown that the commonly adopted assumption of random effects is not necessary for exploiting the similarity of the districts (borrowing strength across the districts).

The methods are applied to estimation of the mean household sizes and the proportions of single-member households in the counties (comarcas) of Catalonia.