

**SPATIO-TEMPORAL MIXED MODEL IN  
SMALL AREA ESTIMATION OF DATA FROM  
ROTATED PANEL SURVEYS**

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## ABSTRACT

A spatio-temporal model with nested random effects is proposed for small area estimation where sample data are generated from a rotating panel survey. Two methods of estimation are introduced, integrating the backfitting algorithm and bootstrap procedure in two different approaches.

Simulation study shows superior predictive ability of the fitted model using the proposed small area estimation methods. In actual data on unemployment rate from the Labor Force Survey, the proposed model-based small area estimation procedures are shown to be superior over the design-based approach.

**Keywords:** spatio-temporal mixed model; small area estimation; backfitting iteration; bootstrap

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