

Doubly balanced spatial sampling with spreading and restitution of auxiliary totals

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A new spatial sampling method is proposed in order to achieve a double property of balancing. The sample is spatially balanced or well spread so as to avoid selecting neighbouring units. Moreover, the method also enables to satisfy balancing equations on auxiliary variables available on all the sampling units because the Horvitz-Thompson estimator is almost equal to the population totals for these variables. The method works with any definition of distance in a multidimensional space and supports the use of unequal inclusion probabilities. The algorithm is simple and fast. Examples show that the method succeeds in using more information than the local pivotal method, the cube method and the Generalized Random-Tessellation Stratified sampling method, and thus performs better.

Key Words : Balanced sampling; Pivotal method, Spatially balanced sampling; Spatial correlation.