Estimation of Coverage Errors Based on Three Data Sources

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Coverage errors occur in many surveys and censuses due to a difference between the target population and the population that is indeed surveyed. A traditional approach to handle this type of non–sampling error is by dual system estimation, which requires two data sources usually consisting of a census enumeration and a census coverage survey. Statistical properties of the dual system estimator have been established under the specification of key assumptions, such as the one of closed population, independent captures and homogeneous capture rates. In this work, we investigate the impact of having a third data source available to relax or extend some of these assumptions. This additional source can be based, for instance, on existing administrative records. It carries with it several possibilities, including replacing either the census or survey by the third source, as well as combining all the three sources. The advantages and challenges of the various alternatives are to be demonstrated.

Keywords: under–coverage; over–coverage; capture–recapture.