

Small Domain Estimation Applied to the Brazilian Service Annual Survey

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Small domain estimation covers a variety of statistical methods for parameter estimation of population groups with small sample sizes that may yield imprecise direct estimates for some domains. A possible solution for this problem is the use of model based estimators. In the case of economic surveys, there are additional issues related to the asymmetry of the data and the non-linear relationship among economic variables. This work presents small area estimation methods and their application to domain estimation for the Service Annual Survey conducted by the Brazilian Institute of Geography and Statistics. Due to the sampling design, sample estimates for some economic activities in the North, Northeast and Midwest regions of Brazil have low precision. To solve this problem, an area level Fay-Herriot model is used to produce model based estimates. The small domain estimation model relates operating revenues with auxiliary variables obtained from a Business Register and provides results showing improvement in precision for the majority of the domains considered.

Key Words: *small area estimation, official statistics, sample surveys, business surveys*