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SPREE estimation of disabled persons in Poland – a simulation study

Topic 2 – Learning more from what we already know

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Introduction

The phenomenon of disability is regarded as one of the most serious social problems facing contemporary society. The number of people with disability is consistently rising, among others as a result of population aging.

According to the latest WHO report, the phenomenon of disability affects over 1 billion people across the world, which accounts for about 15% of the world's population. Implementation of tasks aimed at enabling a full inclusion of this social group in all kinds of activities, both at the national, regional and local level, requires detailed and up-to-date information.

Different groups of data users express the need for data on disability, not only at the level of the country or provinces/states but, above all, at the level of local territorial units, while having specific expectations concerning their quality.

Methods / Problem statement

The authors based on previous experiences, showing that the direct estimates for marginal distributions (poviats, status on the labour market, education) are acceptable, will try to use Structure Preserving Estimator (SPREE) to estimate the number of disabled persons in Poland for domains defined as three dimensional cells (cross-section of poviats, status on the labour market, education) of Wielkopolska (region in Poland) in 2002. Data from the 2002 census will be analysed using a simulation approach based on the concept of superpopulation.

Results / Proposed solution

Considering the above, the aim of the paper is to demonstrate the potential of the SPREE estimator for estimating the number of disabled persons in Poland for domains defined as three dimensional cells (cross-section of poviats, status on the labour market, education) of Wielkopolska. The proposed approach is expected to be tested on Labour Force Survey data to produced estimate of disable persons for beetwen census period. Estimates obtained in the study will be evaluated in terms of selected measures of quality.

Conclusions

Thanks to their properties, SPREE estimator enable reliable estimation at lower levels of spatial aggregation and with more specific domains, where direct estimation techniques display too much estimator variance. Another advantage over estimators used in the representative approach is that small area estimation can be used to handle cases with few or no observations for a given domain in the sample. However, estimators of cell totals obtained for lower levels of spatial aggregation or subpopulations tend to differ from marginal totals calculated by means of the direct method for a higher level.