INTEGRATION OF A VOLUNTARY SAMPLE ASSUMING THE NOT MISSING AT RANDOM RESPONSE MECHANISM

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Abstract

We aim to effectively integrate a voluntary (non-probability) sample for the estimation of population parameters of the Statistical survey on population by ethnicity, native language and religion of the Lithuanian census 2021. We apply the propensity score adjustment to correct the non-probability sample selection bias. We use a parametric model in estimating the propensity scores (probabilities) to participate in the voluntary survey. The modeling of propensity scores is conducted in two ways: assuming the response mechanism to be missing at random, and assuming it to be not missing at random. The maximum likelihood based method is used to estimate the propensity scores in both cases. We compare the obtained estimators in a simulation study based on Lithuanian census data.

Keywords: data integration, non-probability sample, missing at random, not missing at random, propensity score adjustment.