

A comparison of methods to estimate poverty indexes in small samples

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Abstract

In recent years, official statistics institutes are facing an increasing demand for more detailed information about the population. In many cases, it would be too costly to provide the required detail using standard direct sample estimators. In this scenario, the development of small area estimation methods has become a necessity and its use more widespread. The World Bank has a poverty mapping project that relies on the small area estimation method developed by Elbers, Lanjouw and Lanjouw (ELL). This approach has been used in several countries, including Brazil. Since the method used has great influence on the estimates and their precision, there is a clear advantage in using the most efficient one. In this paper we compare the ELL method, the Empirical Bayes (EB) method and the Hierarchical Bayes (HB) method, these last two described by Rao. The comparison is done using a super population model where the parameters were based on the 2000 Brazilian Census and the sample design used tries to mimic those of IBGE's surveys. The HB method was the most efficient both in point and interval estimation.

Keywords: Empirical Bayes, Hierarchical Bayes, mixed model, World Bank, poverty mapping