OTTAWA 2023
64TH WORLD STATISTICS CONGRESS

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IPS Paper

Quarterly unemployment estimates for the Brazilian Labour Force Survey using state-space models in small areas

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Submission ID: 1334

Reference Number: 1334

Presentation File

abstracts/ottawa-2023_bc7331b945058e9cd43cb98898293a65.pdf

Brief Description

The study aims to produce quarterly unemployment estimates for small areas inside the Brazilian states based on time series models for repeated surveys.

This application allows the production of seasonally adjusted series and difference indicators taking to account the sampling error. (Joint work with Denise Silva/ENCE-IBGE, Luna Hidalgo/IBGE and Jan van den Brakel/Statistics Netherlands- Maastricht University).

Abstract

The production of increasingly geographically granular statistics, particularly for intercensal years, is a recurrent demand for statistical offices and falls within the scope of the 2030 agenda for monitoring the Sustainable Development Goals at local and regional levels. The present paper aims to develop a time series model for small area estimation to produce quarterly unemployment estimates for ten geographical areas (strata) of the state of Minas Gerais in Brazil. A multivariate time series model for repeated surveys that take into account the sampling error, deals with seasonality, and incorporates the correlations between the slope disturbances as a mechanism to borrow strength from other areas was adopted to investigate whether it is possible to produce more accurate estimates than those design-based using the Brazilian Labour Force Survey (BLFS). The results indicated that it is possible to obtain precision gains using the multivariate model. These results showed a potential to explore time series models in the BLFS since the survey completed ten years of publication in 2022. It also pointed to the possibility of building a system of model-based statistics as other international experiences to produce local area unemployment statistics.