

Submission for the 2021 IAOS Prize for Young  
Statisticians

**Model-based single-month unemployment rate  
estimates for the Brazilian Labour Force Survey**

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**Abstract**

The Brazilian Labour Force Survey (BLFS) is a quarterly rotating panel survey with 80% sample overlap between two successive quarters. Monthly unemployment rate estimates are regularly produced based on a three-month rolling data. Due to the unforeseen situation of the SARS-COV-2 pandemic and its effects on the economy and labour market, there is a need to investigate model-based estimation procedures to obtain single-month unemployment rate estimates. We present structural time series models developed to produce model-based single-month estimates at the national level, and small area (state-level) estimates at a higher frequency than those currently being published. Using the state-space framework, the models account for the autocorrelation due to sample overlap and the increased dynamics in the labour force series in 2020. In addition, bivariate models that combine claimant count and survey data are investigated. The models not only yield estimates with better precision than direct estimates since the latter were affected by a rise in non-response, but they can deliver reliable state-level official statistics at the monthly frequency that is presently required. The new improved model-based estimates are proposed as experimental statistics for the Brazilian Institute of Geography and Statistics (IBGE).