

# MODELING UNEMPLOYMENT PANEL DATA IN EAST JAVA USING GENERALIZED LINEAR MIXED MODELS

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## ABSTRACT

Unemployment is a condition in which a person is in the labor force but does not work and is still looking for a job. Unemployment data in East Java can be viewed as panel data. The result of a combination of cross-section data and time series data. However, the observed data at certain intervals repeatedly, then between the times will have correlated or mutually independent data. Unemployment is observed from year to year, then inter-data also correlate each other. If the response variable states that many unemployed cities or districts in East Java from 2006 to 2015 follow the distribution included in the exponential family and contain autocorrelation. Verbeke and Molenberghs (2005) proposed Generalized Linear Mixed Models (GLMM) to overcome data containing autocorrelation and the response variable did not spread normally. This study aims to analyze unemployment panel data in East Java with the Generalized Linear Mixed Model, forecasting the number of unemployed and identifying the influence of predictor variables on the number of unemployed.

In Generalized Linear Mixed Models there are fixed effects and random effects. Estimation of model parameters using Maximum Likelihood (ML) method for estimating fixed effect and Restricted Maximum Likelihood (REML) for estimating random effects. In the modeling of many labor forces, large MSEs, economic growth, GRDP, inflation and District or City are fixed and yearly effects are random effects. The variable of many labor force, MSE, economic growth, and inflation affect many unemployment in East Java. The analysis results show that GLMM can be used to analyze unemployment in East Java.

Keywords: Data Panel, GLMM, Unemployment in East Java