

INTISARI

MODEL MULTILEVEL REGRESI BINOMIAL NEGATIF ZERO- INFLATED

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Analisis regresi Poisson merupakan analisis regresi non linear yang memiliki asumsi variabel respon berdistribusi Poisson dan bersifat khusus yaitu nilai mean dan variansinya sama atau dikenal dengan equidispersi. Apabila asumsi equidispersi tidak terpenuhi dan terjadi *excess zero* maka regresi Binomial Negatif zero-inflated dapat digunakan. Selanjutnya untuk data berhirarki dan *cluster* yang memperhatikan variasi dan korelasi antar level maka pemodelan multilevel merupakan solusinya.

Tahapan analisis multilevel regresi Binomial zero-inflated adalah estimasi parameter dengan algoritma EM, estimasi komponen varians, uji kelayakan model dengan uji rasio likelihood, uji signifikansi parameter dengan menggunakan uji Wald dan pemilihan model terbaik menggunakan kriteria AIC. Data yang digunakan adalah data kematian akibat demam berdarah Dengue (DBD).

Kata kunci: regresi Poisson, equidispersi, *excess zero*, regresi Binomial Negatif zero-inflated, pemodelan multilevel, algoritma EM, uji rasio likelihood, uji Wald, AIC.

ABSTRACT

MULTILEVEL ZERO-INFLATED GENERALIZED POISSON REGRESSION MODELING

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Poisson regression analysis is a non-linear regression which assumes that a dependent variable has Poisson distribution and it is special that its mean and its variance are equal or known as equidispersion. If equidispersion assumptions are not fulfilled and there is excess zero, it means that zero-inflated generalized Poisson regression can be used. Furthermore, a multilevel modeling is the solution for hierarchical and cluster data which take into *account* the variation and the correlation between level.

The analysis step of multilevel zero-inflated Negative Binomial regression is parameters estimation with EM algorithm, variance components estimation, feasibility testing model with likelihood ratio testing, significance parameter testing by Wald testing and the best selection model by using AIC criteria. The number of deaths caused by dengue hemorrhagic fever (DHF) are used as the data.

Keywords: Poisson regression, equidispersion, excess zero, zero-inflated Negative Binomial regression, multilevel modeling, EM algorithm, likelihood ratio test, Wald test, AIC.