

MODELING SAFETY PERFORMANCE FUNCTION (SPFs) USING POISON-GENERALIZED LINEAR MODEL

Sugiarto

Jurusan Teknik Sipil, Fakultas Teknik, Universitas Syiah Kuala
Jl. Tgk. Syeh Abdul Rauf No. 7, Darussalam Banda Aceh 23111, email:
sugiarto.ws@gmail.com

Abstract: *The generalized linear model-poisson distribution was employed incorporating available geometric data, exposure, etc. The explanatory variables used were average annual daily traffic (AADT), length of segment, heavy vehicle percentage, median, availability of shoulder, number of access, number of intersection, number of curve per km, and amount of rain fall in a year in two Major National Highways in Thailand. Maximum Likelihood Method (MLM) was used for determining of estimation parameters by using Statistical Package for the Social Sciences (SPSS) version 16. Poisson regression models were selected for the model SPFs of the accident, fatality and injury with the total explained variation (R_D^2) on average 0.44%, 0.25%, and 0.36% respectively. The final of developed models can be used for identifying and analyzing of hazardous locations, prioritizing an effective maintenance strategy tool with the identified hazardous locations along the road section.*

Keywords: *Generalized Linear Models (GLM), Safety Performance Function (SPFs), Maximum Likelihood Model (MLM), Poisson Regression, Total Explained Variation, SPSS, Hazardous Locations.*

Abstrak: Distribusi Poison yang digeneralkan sebagai model linier digunakan dalam penelitian ini dengan mengakomodir data geometrik, parameter traffic (exposure), dan lainnya. Parameter penjelas (explanatory) diambil di dua Jalan Raya (highway) utama di Thailand termasuk data didalamnya average annual daily traffic (AADT), panjang segmen yang ditinjau, persen kendaraan berat, jenis dan keberadaan median, jenis dan keberadaan bahu jalan, jumlah bukaan akses, jumlah persimpangan, jumlah kurva per km, dan nilai curah hujan per tahun. Metode Maximum Likelihood Model (MLM) digunakan untuk mendeterminasi parameter estimasi model dengan bantuan perangkat lunak SPSS (Statistical Package for the Social Sciences) versi 16. Hasil regresi menggunakan distribusi poison digunakan sebagai model keselamatan untuk model jumlah kecelakaan, kematian, dan luka-luka. Kategori pemilihan model terbaik berdasarkan nilai total explained variation (R_D^2) yang berturut-turut dengan nilai rata-rata 0.44%, 0.25%, and 0.36% untuk model jumlah kecelakaan, kematian, dan luka-luka. Hasil final model dapat digunakan untuk identifikasi dan analisis segment rawan kecelakaan, dan juga dapat digunakan untuk menganalisis prioritas penanganan daerah rawan kecelakaan yang telah teridentifikasi.

Kata Kunci: *Generalized Linear Models (GLM), Model Keselamatan Lalulintas, Maximum Likelihood Model (MLM), Poisson Regression, Total Explained Variation, SPSS, Rawan kecelakaan.*