



**A FIXED EFFECTS ESTIMATOR IN PANEL COUNT MODEL
FRGS/2/2010/SG/UITM/02/34**

**RESEARCH MANAGEMENT INSTITUTE (RMI)
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MALAYSIA**

BY :

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PROF. MADYA DR MOHAMAD ALIAS LAZIM
PROF. DR KAMARULZAMAN IBRAHIM**

JUNE 2013

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ABSTRACT

This research presents the work on modeling road accident data using panel count models. The research objectives include to use a more comprehensive modeling procedure which incorporates both the time and individual impacts to get better parameter estimates, and to evaluate the effects of panel size and time period of the fixed effects Negative Binomial model estimator using simulation. This research involves two phases which are the statistical modeling and simulation study. During the first phase of the research, panel count models ranging from fixed and random effects Poisson and Negative Binomial model were developed using Limdep v9. Additionally, several estimation methods such as conditional and unconditional approach were used to model the road accident data for 12 states in Malaysia, particularly focusing on the effects of weather on road accidents. The panel model results revealed that precipitation in a form of rainfall, dry spell and number of rainy days has significant effect on road accidents in Malaysia. The risk of road accident occurrence significantly increases during the rainy months with shorter dry spell period of gap between rain and no-rain. Additionally, the Monte-Carlo simulation using SAS programming was used to investigate on the robustness of the unconditional fixed-effects Negative Binomial (FENB) estimator to the changes of sample (panel) size as well as number of time periods. Simulation results show that the unconditional fixed effects estimator is less satisfactory with small individual size and time periods.

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