

## **Abstract**

This study was conducted in order to identify the factors which affect the number of claims in motor vehicles insurance data of Lahore region. A sample of 350 policyholders was selected from the The United Insurances Company Limited. Among these 350 subjects, approximately 66% of the policyholders have no Claims. Twenty three percent policyholder's have only one Claim. Two, three and four claims were filed by 8%, 2% and 1%, policyholders, respectively.

For bivariate analysis, phi statistic and kendall's tau-b statistic were used. For the purpose of inferential analysis, the poisson regression, negative binomial regression, zero inflated poisson and zero inflated negative binomial regression models were fitted by using R-software (version – 3.0.3) to identify the significant factors.

In descriptive analysis, it was observed that the number of claims decreases with an increase in the age of the policyholders. It was noted that the number of claims increases when the age of vehicles increases. This study also concluded that number of claims filed from the male policyholder were greater than the female policyholder. It was also concluded that number of claims increases when the car engine power increases. It was found that the number of claims were greater for those policyholder's who lived in more congested areas. In bivariate analysis, the factors including policyholder's age, sum insured and manufacturing were found to be negatively associated with the number of claims which shows that number of claims decreases with respect to their reference category. On the other hand, the seven factors including vehicle's age, gender, purpose of use, person entitled to derive, car capacity, seating capacity, net premium and area of residence were positively associated with number of claims. Poisson regression model, negative binomial regression model, zero inflated poisson regression model and zero inflated negative binomial regression model analysis have shown that the factors including policyholder's age, vehicles age, sum insured, gender, manufacturing, person entitled to derive, car capacity and area of residences were found to be significant.

The negative binomial regression among the traditional models and zero inflated negative binomial regression among the zero inflated models were selected by using the Score – test and Voung-test. The log-likelihood, AIC, BIC, deviance statistic and pseudo- r

square were used for comparison purpose of models. The negative binomial regression model outperformed than poisson regression model and zero inflated negative binomial regression model outperformed than the zero inflated poisson regression model.

Key words: Poisson regression, negative binomial regression, zero-inflated poisson regression, zero-inflated negative binomial regression, score-test, vounge-test, sum insured, policyholder.