A
Model to Predict Fatality Rate
of
Road Accidents in Sri Lanka

By

D. A. Rohana

Supervisors: Mr. P. Dias
Prof. S. Weerakoon
Dr. A. S. Kumarage

ABSTRACT

Today road safety has become an important talking point. The authorities are making an effort to reduce the problem. Scientists try to find causes, prevention methods and predict the future of the problem.

This thesis mainly emphasizes prediction models of fatal road accidents. The fatal accident figure is given in three ways namely the rate per thousand persons, thousand cumulative vehicle fleet and million vehicle kilometers. Also effectiveness of helmet law and rider experience on rider fatalities are discussed.

Models for fatality rates are developed based on thousand persons, thousand cumulative vehicle fleet and million vehicle kilometers. Population and vehicle kilometers are highly correlated with fatality figure. The study also shows that the effect of the helmet law does not significantly reduce the rider fatality figure per thousand motor cycles. The riders with less than one-year experience significantly contributed to rider fatality figure.

CONTENTES

Abstract III

Acknowledgement IV

List of Tables VII

List of Figures XI

Chapter 1 - Introduction

1.1 Introduction 1
1.2 Data Collection 2
1.3 Classification of Damages 2
1.4 Terminology 3
1.5 Completeness of Fatal Accident Data 6
1.6 Comparison with other Countries 8
1.7 Units 10
1.8 Objectives of the Study 11
1.9 Scope of the Study 11
1.10 Limitations of the Study 12
1.11 Importance of the Study 12
1.12 Organization of the Thesis 13

Chapter 2 – Methodology

2.1 Introduction 14
2.2 Correlation Analysis 14
2.3 Regression Analysis 16
2.4 Time Series Analysis 20

Chapter 3 – An Attempt to Estimate the Relative Importance of Variables of Models

3.1	Introduction	22
3.2	Correction to Fatality Data	22
3.3	Fatalities as a Rate of Thousand Persons	27
3.4	Fatalities against the Registered Vehicle Fleet	31
3.5	Fatalities against the Million Vehicle Kilometers	37
3.6	Fatality Rates Errors and Accuracy	45
3.7	Fatalities With Population and Vehicle Kilometers	46
3.8	Effectiveness of the Helmet Law	47
3.9	Rider Fatality, Experience and Effect of Helmet Law	52

Chapter 4 – Conclusions and Discussion

4.1	Introduction	54
4.2	Conclusions	54
4.3	Further Research	56

List of References 58

Appendices

I	Classification of Degree of Injury	60
II	Fatalities of Road User	61
III	Population except Northern and Eastern Region	62
IV	Vehicle Registration	63
V	Computer Programs	67
VI	Computer Outputs	74
VII	Fatality Rate per Million Vehicle kilometers	82