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**DEVELOPMENT AND TESTING OF A SET OF MATHEMATICAL
MODELS FOR TRAVEL DEMAND ESTIMATION**

BY

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DECLARATION

I certify that this dissertation does not incorporate without acknowledgement any material previously submitted for any other course in any university and to the best of knowledge and belief does not contain any material previously published or written or orally communicated by another person except where due reference is made in the text.

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ABSTRACT

Regional traffic models are a useful tool in planning transport infrastructure in keeping with anticipated human settlement patterns and activities. The amount and nature of travel depend on the population size, income level and type of employment etc in the region. Therefore, by correlating the trip generations with socio-economic parameters, it is possible to develop mathematical models to predict the travel demand in terms of socio-economic variables.

The objective of this study is to develop a family of trip generation models for the Colombo Metropolitan Region to estimate travel demand for work, education and other purposes by available motorized forms of transport. While the main focus is on estimation of bus passenger demand, another set of models is calibrated estimate aggregate demand for bus, rail, car, motor cycle and three - wheeler travel. Finally, a mode choice model is developed to estimate the variation of bus passenger modal share for work trips in terms of availability of rail and private vehicles.

The regression facility available with SPSS V.10 software was used for the calibration of the models. Statistical testing methods such as R^2 value, F-statistic, t-statistic and residual analysis were used to identify the best predictor models.

The calibrated traffic generation models can be used for estimating future trip generations in the Colombo Metropolitan Region. In addition, these models may be used for trip generation estimates for other geographic regions after validating for such regions.

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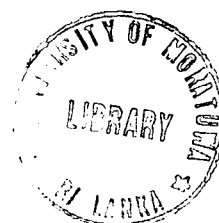


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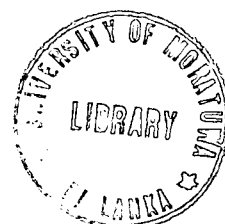
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LIST OF ABBREVIATIONS

Abbreviation	Description
ADT	Average Daily Traffic
AGA	Assistant Government Agent
CMC	Colombo Municipal Council
CMR	Colombo Metropolitan Region
CMRSP	Colombo Metropolitan Regional Structure Plan
CTS	Colombo Traffic Study
CUTS-1	Colombo Urban Transport Study - Stage 1
DEMIDEPT	Demand Estimation Model for Inter District Passenger Travel
DSD	Divisional Secretariat Division
EDUPC	Percentage of Educational Population
EXPO	Exponential
GCTM	Greater Colombo Traffic Model
HBEDT	Home Based Educational Trips
HBOT	Home Based Other Trips
HBWT	Home Based Work Trips
HH	Household
HHTOT	Total Households per Zone
MULTI	Multiplicative
NHBT	Non Home Based Trips
NTM	National Traffic Model
O-D	Origin - Destination
PV	Private Vehicle
PVHH	Private Vehicles per Household
STDEN	Rail Station Density
TRANSPLAN	TRANSPLAN™ - University of Moratuwa
UDA	Urban Development Authority
UNEMPC	Percentage of Unemployed Population
UoM	University of Moratuwa