DEVELOPING AN ACTIVITY PATTERN CHOICE MODEL FOR INDIVIDUALS IN WESTERN PROVINCE

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Degree of Master of Science

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DECLARATION

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Abstract

Transport demand models assess impacts of transport policies and transport infrastructure. In recent times transport modellers have been moving towards disaggregate activity based models from widely used aggregate trip/tour based models. Hence the unit of analysis has shifted from vehicle flows/trips between zones to individual's activity patterns which in turn has aided in modelling complex human behavioural responses to current policy decisions. With Sri Lanka also moving towards activity based modelling in the near future identifying a suitable method to represent activity patterns of individuals is a key aspect. The research addresses the issue by developing an activity pattern choice model using home visit survey (HVS) data for individuals in Western Province.

Based on HVS data activity patterns for each member was developed with each pattern consisting of spatial and temporal representation. 3 main categories (Education, Work & Other) were clearly identified and each member was assigned a category based on the most prominent trip in the pattern. The 3 categories were further categorized based on aspects of number of tours, purpose, diversions and time. 17 subgroups were identified which consisted of 5 work, 4 educational & 8 other pattern groups.

The identified 17subgroups were used to develop the activity pattern choice model based on socio economic data. Initially a multi-level structure was considered. But due to the fuzziness of the results each level was considered as a single level and hence estimated separately. Each level consists of 2 choices and one choice is estimated relative to the other. Estimation of the 7 level choice model was carried out using "Apollo" module in R programming language.

The developed choice model at upper levels of education and work patterns displays a high level of accuracy. But lower level of the model mainly the patterns related to other pattern groups displays fuzziness and hence displays a lower level of accuracy at these levels.

Keywords: Activity patterns, Choice model, Logit estimation, Apollo module

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Abbreviation	Description
HVS	Home visit survey
LL	Log likelihood

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