DATA ANALYTICS BASED MODEL TO ESTIMATE RIDE-SHARING POTENTIAL IN SRI LANKA

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DECLARATION

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Name: Dr. Amal Shehan Perera

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Author

Nelum Weerakoon

Abstract

Traffic handling in cities is becoming a major issue worldwide. Everyone is in a hurry to go to work or deliver goods on time. The more the vehicular traffic, the higher the pollution. This is a waste of time, fuel and energy. Currently, there are many types of research being done to come up with a solution to reduce vehicular traffic.

Ride-sharing is one of the potential solutions to reduce the traffic congestion by reducing the number of vehicles entering a city. The idea of Ride-Sharing is to share rides to/from home/work daily, based on home/work locations. Identification of home/work locations is one of the major task in Ride-Sharing to identify potential ride-sharers. Identification of these locations can be done using CDR data. There are models and algorithms that have been introduced by several types of research to identify the home/work locations based on CDR data. However, this has not yet been implemented in Sri Lanka.

The idea of this study is to identify the potential of Ride-Sharing in Sri Lanka using CDR data. End-Point and En-Route Ride-Sharing are considered as the main Ride-Sharing options. Analysis was performed on data collected in 2012/2013 period for 41 cities of the Western Province of Sri Lanka. To identify the home/work locations, the hours between 21.00-05.30 was considered as home hour events and the hours between 10.00-15.00 considered as work hour events. As per the analysis based on the collected data it was identified that there are 72.94% potential ride-sharers and based on the transportation data it was identified that there are 38.43% Private transportation modes users in the selected cities/towns. Hence, it was identified, that there is a potential of implementing Ride-Sharing and it has a high impact on traffic congestion. The decision was mainly based on the number of vehicles entering the cities.

Keywords: Call Detailed Records, Ride-Sharing, Cluster Analysis, Carpooling, Cell Towers, Base Stations, Sri Lanka

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ABM	Agent Based Modeling
ATS	Artificial Transportation Systems
CA	Cluster Analysis
CDR	Call Detail Record
CP	Carpooling
CPP	Carpooling Problem
CSV	Comma Separated Value
DSD	Divisional Secretariat Department
DSS	Decision Support System
ITS	Intelligent Transportation Systems
JVM	Java Virtual Machine
MSC	Mobile Switching Centers
RDD	Resilient Distributed Dataset
VKT	Vehicle Kilometers Travelled
VLR	Visitor Location Record