

Investigating a Deterrence Function for Work Trips for Perth Metropolitan Area

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Abstract : The Perth metropolitan area and its surrounding regions have been expanding rapidly in recent decades and it is expected that this growth will continue in the years to come. With this rapid growth and the resulting increase in population, consideration should be given to strategic planning and modelling for the future expansion of Perth. The accurate estimation of projected traffic volumes has always been a major concern for the transport modelers and planners. Development of a reliable strategic transport model depends significantly on the inputs data into the model and the calibrated parameters of the model to reflect the existing situation. Trip distribution is the second step in four-step modelling (FSM) which is complex due to its behavioral nature. Gravity model is the most common method for trip distribution. The spatial separation between the Origin and Destination (OD) zones will be reflected in gravity model by applying deterrence functions which provide an opportunity to include people's behavior in choosing their destinations based on distance, time and cost of their journeys. Deterrence functions play an important role for distribution of the trips within a study area and would simulate the trip distances and therefore should be calibrated for any particular strategic transport model to correctly reflect the trip behavior within the modelling area. This paper aims to review the most common deterrence functions and propose a calibrated deterrence function for work trips within the Perth Metropolitan Area based on the information obtained from the latest available Household data and Perth and Region Travel Survey (PARTS) data. As part of this study, a four-step transport model using EMME software has been developed for Perth Metropolitan Area to assist with the analysis and findings.

Keywords : deterrence function, four-step modelling, origin destination, transport model

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