

Incorporating Value of Travel Time Reliability for Transport Sector Project's Economic Feasibility

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Abstract

Travel Time Reliability has a fundamental impact on travel behaviour. Based on previous studies, in general, reliability is considered the degree of uncertainty that travellers experience in moving between any two nodes in a network. Travel time reliability is one factor that is very important for travellers in order to make their journeys more effective with time and cost. In many countries that are improved and implemented advanced transport methods, major infrastructure projects are evaluated using cost-benefit analysis, after which specific guidelines are applied. The reliability of travel time is a factor that is less spoken about, as travel time has not been directly included in cost-benefit analyses in most of the studies. Hence it is difficult to find suitable valuation methods for inclusion in cost-benefit analysis. It is important to consider both monetary values of reliability as well as reliable forecasting models when analyzing the cost-benefit ratio of infrastructure projects. A major focus of the paper is to find a method to incorporate the value of Travel Time Reliability, which is also the topic of most existing literature on modelling and valuing Travel Time Reliability for Economic Feasibility when Transport infrastructure is planned. In recent years, based on the literature reviewed and evaluated by the Dutch Ministry of Transport, it found that the Reliability Ratio is a key concept that should be included in the preliminary economic analysis. The reliability ratio is determined by dividing the value of reliability (VOR) by travel time, and the Value of Reliability is measured as the Standard Deviation of Travel Time. The reliability of travel modes has been found to be one of the most significant attributes of transportation systems. But it observed that only a few attempts had been made to use these findings. Changes in travel time reliability are not included in the standard evaluation and appraisal process of transport infrastructure projects and policies in Sri Lanka. Transport projects have been observed to affect not only by the average travel time but also their distribution. Previously, increased travel time reliability for road projects was included in the Dutch Cost-Benefit analysis. This was done by incorporating the travel time benefits that have been gained by reducing congestion. Hence it was observed that the reason for most of the delays is the traffic congestion of the roads. Therefore, here it is assumed delays are mostly due to the congestion, and the relationship is when the congestion decreases, the reliability increases. This research focuses on deriving empirical relationships between travel time, the standard deviation of travel times, mean delay (Mean Delay is the difference between mean travel (MTT) time and the free flow travel time (FFTT)), and route length by using the Dutch national model and a predictive model for travel time reliability for the Sri Lankan context. This was already incorporated in the Netherlands and German guidelines for Cost-benefit analysis and economic analysis for transport infrastructure projects.

Keywords: *Travel Time Reliability, Feasibility Study, Economic Analysis*

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