



Modeling of Congestion: A Tool for Urban Traffic Management in Developing Countries

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Abstract

In order to formulate rational traffic management measures for urban roads, it is essential to understand the effect of different types of vehicle on congestion. The effect of different types of vehicle on congestion has been captured on the basis of marginal congestion. Using congestion models, the marginal congestions have been estimated for different road widths, traffic compositions and on-street parking levels. The peak hour vehicular composition and volume level vary for different roads in an urban area. Therefore, for assessing the operating conditions for different roads based on a comparable quantitative measure, the marginal congestion caused per Passenger Car Unit (PCU) of mixed traffic stream has been estimated and denominated 'Marginal Congestion Index (MCI)'. The use of MCI for prioritization of management actions for different urban roads is discussed. It is shown that a congestion model explicitly accounts for the effects of traffic composition and volume level. Therefore, the effect of different types of vehicles on congestion at all traffic volumes could be estimated using congestion models. Altogether, modeling of congestion is established as a tool for formulating rational traffic management measures for urban roads in developing countries.

Keywords: Congestion; Urban transport; Traffic management; Developing countries.

Introduction

The rapid growth of traffic congestion on urban roads and the resulting impediment to urban mobility is a serious concern to urban management professionals and decision makers. In attempting to alleviate the congestion on urban roads, it is commonly found that the expansion and improvement of roads is restricted by increasingly tight fiscal and physical constraints. However, addressing the problem through rational traffic management measures like restricting the entry of certain types of vehicle during peak periods of traffic flow or enforcing congestion pricing is considered to be a more acceptable alternative.

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