A practical method for evaluating parking area level of service

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A B S T R A C T

In recent years, some of the commonly used indicators in parking management have changed. Maximizing the supply and minimizing the price were the main objectives before, but today, optimizing the parking supply and price is the major objective. This research introduces a parking area level of service, which has not been previously addressed, to evaluate the new objectives of sustainable development with the existing parking areas. For the purpose of this research, Universiti Teknologi Malaysia (UTM) was selected as a case study to implement this method in an academic context. This method may also be utilized for other land uses, but some adjustments should be applied. In addition, based on the existing failures, some improvements are proposed to enhance parking efficiency.

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Introduction

Currently, there is a need for parking management plans that reflect the aims of sustainability, including the development of efficient parking areas that encourage and enhance green travel modes. Since the 1990s, parking areas have been designed with predefined auto-oriented and functional classifications. These designs have not paid considerable attention to the environment or to the people who use the parking spaces. These shortcomings have resulted in an increased demand and a lack of supply, which have caused many communities to change their attitude toward this issue (Litman, 2012a). In addition, inflexible parking standards require suppliers to provide extra parking, which wastes space and money and harms the environment (USEPA, 2006). As a solution, the standards for parking areas should be significantly adjusted to optimize the supply (Topp, 2009). Moreover, to make desirable adjustments in parking standards, some factors, such as the geographic location, density, mixed land use, transit accessibility, car-sharing, walkability and duty hours, should be taken into consideration (Cuddy, 2007; Engel-Yan and Passmore, 2010). Viable parking strategies that are planned based on the optimal supply and demand may result in sustainable benefits, while plans based on the maximum supply do not maximize sustainability. In this case, efficiency is the key factor. Efficiency should be considered in relation to the economic, geographic, and demographic factors that may influence parking demand (Litman, 2012a).

Furthermore, many parking areas are currently free of charge and thus motivate people to use their motorized vehicles. The parking pricing strategy proposed by Shoup (2005) is a concept that indicates that parking users should pay directly to use the parking facilities. Such strategies may also encourage people to use other alternative travel modes, such as public transport, walking and cycling. Innovative sustainable development ideas include the concepts that prices should be paid by users and that this money should be spent on improving alternative travel modes.

Overall, during the current century, the issue of parking has undergone many changes. The main changes relate to the ways in which the problems and their solutions are described. Previously, the attitudes toward parking were based on car-dependent development. These maximum and free supply beliefs reinforced the notion that as many parking spaces as needed should be available at all destinations. Moreover, these parking areas should always have empty spaces, and the costs of parking should be either included in the buildings’ costs or parking should be provided by the suppliers.

On the other hand, the availability of more parking spaces can cause more private motorized daily trips (Moeinaddini and Zaly-Shah, 2011). With more and cheaper parking, car ownership and usage has increased due to the rise of convenience and the lower cost (Litman, 2012a; Mildner et al., 1997; Morrall and Bolger, 1996; Shoup, 1997; Weinberger et al., 2008). Therefore, a new focused has been placed on the optimal supply instead of the maximum supply (Litman, 2012b). In this case, the supply and prices should be balanced with demand because too much supply and an extremely low price can be as harmful as a low supply and a high price.

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