



Analysis and Evaluation of Traffic Congestion Control Methods in Touristic Metropolis Using Analytical Hierarchy Process (AHP)

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Received 05 January 2018; Accepted 16 March 2018

Abstract

One of the most important issues of urban transport management in metropolitan cities is the control of traffic congestion in the central parts of the city or other densely populated areas. Typical ways to control traffic congestion in metropolitan areas are to create a prohibited traffic area, alternate traffic plan (even and odd), and congestion pricing. In this paper, these traffic congestion control methods have been compared and evaluated. The methodology of this research is analytical hierarchy analysis (AHP). Based on the results, the most effective measures for assessing traffic congestion control methods in metropolitan cities were improving traffic conditions, social welfare, reducing environmental pollution and improving the safety of intra-urban travel. The best Traffic congestion control options were also priced for traffic congestion, roaming traffic (odd and odd), and the creation of traffic barriers. The results of analyzes and paired comparisons in analytic hierarchy analysis were also obtained using "Expert choice" software.

Keywords: Prohibited Traffic Area; Alternate Traffic Plan; Traffic Congestion Pricing; Analytical Hierarchy Analysis.

1. Introduction

In metropolitan cities, there are typically three general policies to solve the high traffic congestion problem in the city's central districts: 1- Prohibited traffic area; 2- Alternate traffic plan; 3- Congestion pricing. In the policy of creating a prohibited traffic area, within a specific time period of the day, the entry of all vehicles except public transportation vehicles is prohibited. Given the fact that most state and economic centers in metropolitan cities are deployed in urban centers, problems such as increased traffic in central areas, lack of suitable parking spaces in these areas, increased vehicle fuel consumption due to long and Air pollution is probable and predictable. Therefore, regulating the traffic flow of cars in the central metropolitan area and preventing any traffic jams is considered as one of the most important issues of transport management in metropolitan areas. One of the reasons for carrying this issue, which is currently being used in many major cities of the world, is the introduction of traffic congestion into city centers or highways. In these designs, public transport vehicles and ambulances are generally allowed to enter the area without any restrictions. Also, vehicles that are licensed for traffic can be entered into the range with special labels.

In the policy of Alternate traffic plan, every day, only a portion of personal vehicles are allowed to enter the traffic area. Usually, this scheme is implemented that allows for entering into the area of the traffic plan into cars with a pair of plains on the special days of the week and on the other days to cars with an individual plaque (even and odd). In this way, the last digit of the license plate number is used to quit their traffic. In the implementation of this method, a range usually from the central and commercial areas of the city and physically crowded is considered as the scope of the design and the entry of vehicles into the area is fixed on certain days of the week. The assigned pattern for vehicle

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 <http://dx.doi.org/10.28991/cej-0309119>

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