



EFFECT OF RESIDENTIAL QUARTERS OPENING ON URBAN TRAFFIC FROM THE VIEW OF MATHEMATICAL MODELING

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Received November 25, 2016

Abstract

With the great prosperity of national economy, there has been a dramatic rise of vehicles on city road, which makes increasing pressure of road transportation. Currently, many countries are confronting the severe situation of traffic jam in different degrees. Nevertheless, there are many triggers contributing to this congestion, one of which is the blocking of residential quarters towards vital traffic line. Therefore, it is extremely necessary to study whether the opening of residential quarters can improve the road capacity of the entire city and remit the traffic pressure. Our paper is based on graph theory, density theory and random utility theory. First of all, we demonstrate a mathematical model of road traffic. Secondly, we explore the influence of residential quarters opening on urban traffic, taking three factors into account listed as road traffic capacity, road network density and network average running time. On the basis of above contents, the impact analysis of vehicle traffic caused by pedestrians is added afterwards. Finally, our paper take three different types of residential areas into account as an example to empirically analyze the tangible impact of the opening, and finally come to the benefit of the traffic system after the opening.

Keywords and phrases: urban road network, network diagram, traffic capacity, average running time.

**Pioneer Journal
of Mathematics
and Mathematical
Sciences**



**Pioneer Scientific
Publisher**