

عنوان مقاله:

Relationship between Pedestrians' Speed, Density and Flow Rate of Crossings through Urban Intersections (Case Study: Rasht Metropolis)

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نویسندگان:

I Bargegol - *Department of Civil Engineering, Faculty of Engineering University of Guilan, Rasht, Iran*

V Najafi Moghaddam Gilani - *Highway and Transportation Engineering, Faculty of Engineering, University of Guilan, Iran*

F Jamshidpour - *Transportation Engineering, Managing Director of Transport and Traffic, Rasht Metropolitan Municipality, Rasht, Iran*

خلاصه مقاله:

Travels within the city are done in different ways, by vehicle or on foot. Thus, inevitably, a part of the travel is always done on foot. Since intersections as traffic nodes are determinant factor in transportation network capacity, any disruption in them leads to severe reduction in network capacity. Unfortunately, pedestrian behavior has received little attention in Iran. While this is a very important and effective part of traffic engineering. In some cases, pedestrians are the main cause of increasing road users' delay, therefore, the most important action before anything, is identifying the characteristics of pedestrians. Identifying issues such as speed, volume and density of pedestrians are necessary to control the traffic flow and delay, and can lead to better design of facilities associated with pedestrians. Cases that are studied in this study are: the relationship between speed, density and pedestrians' flow rate while crossing the street. In this study, the data was collected by filming four intersections in Rasht Metropolis for 15 hours, and the number of pedestrians crossing that were studied was 8489. Two intersections had traffic lights and the other ones had no traffic lights. Then, the relationship between speed, density and volume of pedestrians were obtained by determining the variables of speed, density and volume of pedestrians and using linear and nonlinear regression method and finding the correlation coefficient between the variables. The results showed that for pedestrians, there is a relationship between the flow rate and density with a high correlation coefficient in crossing through crosswalk ($R^2=0.99$) and outside the crosswalk ($R^2=0.99$). But the relationship between speed and flow rate was not significant (crossing through crosswalk, $R^2=0.29$ and outside the crosswalk, $R^2=0.24$); furthermore, speed and density had no significant relationship (crossing through crosswalk, $R^2=0.36$ and outside the crosswalk, $R^2=0.28$).

کلمات کلیدی:

Pedestrian, Crosswalk, Intersection, Speed, Density, Flow Rate

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