

عنوان مقاله:

Capacity Drop Estimation Based on Stochastic Approach Applied to Tehran-Karaj Freeway

محل انتشار:

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نویسندگان:

Amir Reza Mamdoohi - Assistant Professor, Department of Civil and Environmental Engineering, Tarbiat Modares University, Tehran, Iran

Mahmoud Saffarzadeh - Professor, Department of Civil and Environmental Engineering, Tarbiat Modares University, Tehran, Iran

Siavash Shojaat - Ph.D. Candidate, Department of Civil and Environmental Engineering, Tarbiat Modares University, Tehran, Iran

خلاصه مقاله:

Existence of capacity drop phenomenon, as the difference between pre-queue and queue discharge flow rates, has been one of the controversial concepts of traffic engineering. Several researches have focused on capacity drop existence and also its estimation issues. This paper aims to estimate capacity drop based not only on a comparison between breakdown and queue discharge flow rates, but also on the estimation of the capacity distribution function before and after breakdown. In the empirical case, speed and flow rate data are collected in a section of Iran's most crowded freeway for four months, based on which the threshold speed as the boundary between congested and non-congested flow is determined, and breakdown flow rates and their subsequent queue discharge flows are detected. Paired t-test between pre-queue and queue discharge flow rates is conducted to find the mean difference. Also, the distribution function of capacity under non-congested and congested flow is estimated using maximum likelihood and product limit methods. Based on the 11,600-record data set, it was observed that end results of both methods are consistent, revealing roughly five percent drop in capacity for the section under investigation.

کلمات کلیدی:

Capacity drop, stochastic approach, probability distribution function

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