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### RELIABILITY ANALYSIS OF TRAFFIC NOISE ESTIMATES IN HIGHWAYS OF TEHRAN BY MONTE CARLO SIMULATION METHOD

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#### Abstract:

This study was aimed to examine the reliability of traffic noise estimate and measurement techniques in highways of Tehran, capital of Iran. The multiple regressions showed that the traffic flow and the distance from the effective source position are the most important factors to estimate the L10 (1h). Traffic flow, traffic composition in terms of heavy vehicles and traffic speed are identified as the key factors influencing the generation of traffic noise. The new equations for estimating the noise descriptor L10 was calibrated on the basis of noise measurements. The effects of the key factors on L10 (1h) were examined by the sensitivity analysis and it was found that traffic flow, distance from the effective source position, traffic composition and traffic speed had the most sensitivity on traffic noise, respectively. The probability distribution for each of the key factors was derived with the use of the survey data. The reliability of the traffic noise estimates was obtained from the combined probability distribution of the key factors by Monte Carlo simulation method. This study showed that there was no significant difference between estimated noise by calibrated CoRTN calculation of road traffic noise and measured noise level. The reliability analysis gives the traffic noise estimates with a particular probability or vice versa.

#### Keywords:

[Traffic noise](#) . [road](#) . [Monte Carlo simulation](#)

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