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Estimating the parameters of the critical clearances distribution

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We study statistical modelling of clearances and critical clearances, which are the main subjects of the Gap Acceptance Theory. First, we define a mathematical model of an unsignalized T-intersection, and then we specify the problem of the partial distribution of clearances of order $k \in \mathbb{N}_0$. Assuming Generalized Inverse Gaussian (GIG) distribution of clearances and critical clearances, we derive a solution to this problem first analytically and then using Monte Carlo simulations; afterwards, we verify the correctness of both solutions. Subsequently, we present a concept for estimating the parameters of the critical clearances distribution assuming a known shape of the distribution. Finally, using up-to-date empirical datasets from three intersections in Germany, we investigate the distribution of clearances and critical clearances.

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