**Red-light running violation during car following at high-speed signalized intersections**

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## Abstract:

At signalized intersections, red-light running crashes can lead to serious injuries or deaths. Red-light running is significantly influenced by intersection factors and human factors. To test driver response to circular yellow and circular red indications, an experiment was performed using a driving simulator. Data included 1,272 observations from 53 participants with a red-light running violation rate of 3.7%. A study was conducted to examine whether drivers decided to run a red light when a circular red light was displayed at signalized intersections while being closely followed. Participants' heterogeneity was accounted for using a mixed logit model. The study found that drivers ran red lights more frequently when they had a longer time to reach the intersection and a shorter tailway. No statistically significant difference was found between the following vehicle classifications and red-light violations. Additionally, results of the mixed logit model did not find a significant connection between gender of drivers and their driving behavior approaching signalized intersections. All red light running violations occurred when the time to intersections was either 4.5 s or 5.5 s. About 60% of red light violations exceed the posted speed limit of 45 mph, running the red light with an average speed of 47 mph. Furthermore, 59% of red-light running violations occurred between 1-1.5 s after the circular red signal commenced.