This report presents the results from a study of signal control-related countermeasures to reduce the occurrences of red-light-running (RLR). The study focused on identifying and evaluating potential modifications to signal timing schemes for reducing the frequency of RLR and improving intersection safety. In addition, the study also developed online adaptive RLR collision avoidance algorithms for reducing the possibility of RLR collisions by reacting to the predicted RLR collision in real time. Vehicle count and signal timing and phasing data were collected at arterial intersections. Signal timing schemes were then developed with the objective of increasing the probability of stopping. Online signal timing adaptation strategies were also developed for avoiding potential collision when RLR occurs. Using both microscopic and macroscopic simulation environments, the study demonstrates the effectiveness of signal timing modifications in reducing RLR while maintaining level of service of the intersection. The study also describes an examination of drivers' decision making at signalized intersections using real world data and presents a probabilistic RLR prediction mod

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