058
ENGR

Collision Prediction at RHCs: Insights from Tennessee's Traffic Data

Railroad-Highway Crossings (RHCs) are essential intersections of rail and road, requiring stringent safety protocols. This investigation, focused on Tennessee's RHCs, employed rigorous statistical and machine learning methods, to analyze pivotal factors affecting safety at these junctures, such as train frequency, lane crossings, traffic volumes, control measures, and the availability of advanced signals, lighting, and marked stop lines. The study revealed a direct correlation between the mentioned factors and the likelihood of collisions, with notable insights indicating that RHCs with passive controls, inadequate lighting, and lack of advanced signals or marked stop lines have higher collision probabilities. Consequently, the research implies that increasing lane numbers, upgrading to active controls, enhancing lighting, and implementing advanced warning systems are effective strategies for enhancing safety at RHCs. These insights are crucial for shaping future Department of Transportation (DOT) policies and practical safety interventions, offering a data-driven perspective on mitigating collision risks at RHCs, thereby contributing significantly to the existing body of knowledge on RHC safety.