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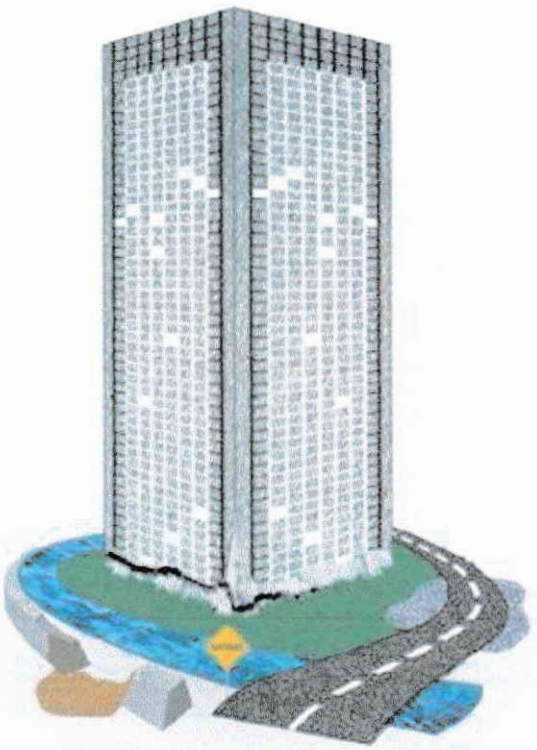

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Table of Contents

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The Application of Traffic Conflict Technique as a Road Safety Evaluation Method: a Case Study of Hasselt Intersection

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Abstract. The majority of traffic safety evaluations in the world generally have been conducted by colecting historical accident data. The data will then being analyzed using risk prediction models or before-after study that required an exact and reliable data. Meanwhile, the availability of accident data is rare where the rest actually consist of near-crashes and abnormal behaviour, which is mostly underreporting and lack of detail concerning the behavioural and situational of the event. Therefore, traffic conflict technique, is needed to assess traffic safety as another approach rather than waiting for several years until a number of accidents happen in a certain area. Hence the aim of this study is to make a safety evaluation towards a specific intersection in Hasselt Belgium using traffic conflict technique. The observation of conflict (near crashes) was carried out in intersection of Manteliusstraat – Dorpsstraat – Thonissenlaan in the Hasselt, Belgium. In order to differentiate slight conflict and serious conflict, the TA-value (Time of accident) was defined based on the estimated speed of the road user and estimated distance from the road user when conflict occurred. From the observation, it was found that the conflicts between car and pedestrian were the most frequent conflict, with 50% of the total conflict, and that the conflict between car with car and the conflict between car with cyclist were high in terms of severity level based on the TA-value. By taking these into consideration, it can be concluded that unsafe crossing for pedestrian and cyclist, different speed, and peak hour traffic were the causes of conflict. Therefore, it was concluded that traffic conflict technique can be used to assess and measure traffic safety in a certain road segment. Furthermore, in term of safety, the Manteliusstraat – Dorpsstraat – Thonissenlaan intersection should be modified with some alternatives; signalized intersection with toucan crossing and traffic control devices improvement.

Introduction

Traffic safety evaluation is important to understand the level of road safety in certain areas, which location or situation is dangerous, and why it is dangerous. Additionaly traffic safety evaluation is also important to determine whether if countermeasure is needed to improve the safety of the road itself. The majority of traffic safety evaluation has been conducted by analyzing historical accident data. The data will then being analyzed using risk prediction models or before-after study that require an exact and reliable data. Meanwhile, crashes accident data that available are rare and only a tip of pyramid where the rest are actually consist of near-crashes and abnormal behavior, which are mostly underreporting. Additionally the data obtained are usually lack of detail concerning the behavioral and situational of the event. Taking into account this situation, this type of accident data is deemed unreliable actual conflict data. Moreover, it needs accidents to fall before the evaluation can be made and will be require an extensive time to obtain the accident data.

Therefore, surrogated safety measure as another approach is needed to assess traffic safety rather than wait for several years until a number of accidents happened in a certain area, surrogate safety measure is enabled to complete the assessment within days or a few weeks without the necessity to wait the occurrence of accidents. By using this technique, one can get an understanding of road safety problem in a short-term period with more detailed data quality such as location characteristic, causes of conflict and road user behavior interaction. And with perceiving those

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