

**Macrocategoria:** Geometria e Sicurezza

**Titolo articolo:** Analysis of Pedestrian Crossing Behaviour at Roundabout

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**Abstract:** Studies looking at roundabout safety have generally focused on drivers, overlooking the importance of the safety of vulnerable users such as pedestrians. Crosswalks at roundabouts are useful for pedestrians and increase safety. They should be placed to attract the maximum number of pedestrians, who would otherwise cross the road haphazardly. In this study, we analyse the street crossing behaviour of non-elderly and elderly pedestrians by filming their crossing behaviour with video cameras at 4 selected roundabouts. Data on pedestrian behaviour, including kerb delay and crossing conditions (legal and illegal), are then extracted and analysed.

The crosswalks studied were intentionally chosen with different setback distances, to understand pedestrians' willingness to deviate from the linear path when there are no bollards or other devices forcing them to cross on the crosswalk. Most of the pedestrians observed did not stop to wait for a passing vehicle but they continued to walk "zigzagging" among cars. The CHAID (Chi-square Automatic Interaction Detector) decision tree was used to identify the significant factors leading to increased likelihood of illegal crossing and highest kerb delay values. Path analysis was used to test the direct effect of independent variables on dependent variables.

For Crossing condition, CHAID analysis results showed that the more significant variables were: type of street (main or secondary), type of pedestrian (non-elderly; elderly), and distance of intersection from roundabout. While the analysis of PATH shows a direct relationship between illegal crossings and secondary streets and a negative relationship with Crosswalk length. For kerb delay, the results of the CHAID analysis showed that there was only one significant variable: type of pedestrian. While the PATH analysis highlighted that elderly pedestrians were strongly directly associated with higher Kerb delay values and that also secondary streets were directly associated with higher kerb delay.

This study can help researchers and practitioners understand pedestrian crossing behaviour at roundabouts, both to develop pedestrian delay models and to define measures to improve pedestrian safety.

**Keywords:** Chi-square Automatic Interaction Detector Analysis; Crossing conditions; Kerb delay; Path Analysis; Pedestrians safety

**Link:**

<https://www.sciencedirect.com/science/article/pii/S2352146521009054/pdf?md5=3d7e407e3fe7ba1c02b7c0a348006533&pid=1-s2.0-S2352146521009054-main.pdf>