Calibration of the Microscopic Roundabout Model in Aimsun Next using Gap Acceptance Data

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This study validated the capability of Aimsun Next to build a realistic roundabout model. A sensitivity analysis exploring the impact of different simulation parameters further assisted in proposing an efficient and reliable simulation calibration methodology. Initial safety margin, visibility along the main stream, reaction time at stops, and maximum acceleration were selected to calibrate driver gap acceptance behavior.

The result showed that if a calibrated model in Aimsun Next could produce the same critical headway and follow-up headway as those in the HCM6 model, it would also result in similar capacities to the HCM6 model.

This study also tested whether the values of parameters from a calibrated traditional intersection with permissive left-turn phase could be used to calibrate the gap acceptance behaviors in a roundabout model. The result showed that the values of parameters used to calibrate a traditional intersection model cannot be used to calibrate the roundabout model in Aimsun Next.