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Abstract Template

Paper title: Microsimulation for Transport Planning
- Benefits and Potential Implications

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Abstract (300 words maximum):

Traffic simulation has been widely used to assist transport planning. Most commonly implemented simulation models are equilibrium based, which are computationally efficient and capable of generating static traffic assignments for policy making. However, there are some severe drawbacks of this approach. As many have argued, there is no equilibrium in the real world. Instead, the traffic flow fluctuates from time to time. A well calibrated equilibrium model might be able to give aggregate estimations of the traffic which could be close enough for the long term strategic planning, but would not be sufficient for practical operations. An aggregate answer is clear and easy to understand, but it gives no insight on how the traffic evolves over time and on what confidence level the modeller can associate to the findings. Furthermore, as some practitioners have pointed out, in the real road network the section capacity often exceeds junction capacity largely, so the use of the speed-flow functions of the sections to calculate the delay time for the network is problematic. Coming from a different perspective, microsimulation models are not based on mathematical functions to give point estimate answers. Instead, they use a more realistic approach to "mimic" the behaviour of every individual vehicle in the network (road geometry and even traffic control plans are carefully taken into account) and provide confidence intervals for the performance indicators. Reasoning models are used to simulate drivers' behaviour and decisions on route choice and stochastic effects are used to investigate variations in these decisions. Using scenarios, this paper will discuss some potential benefits and implications of the microscopic simulation models for transport planning. The software package Aimsun will be used as an example for discussion.