

Reply to referee number 6.

Thank you very much for your comments. I appreciated them, and agree with some of the remarks.

Your main point, however, is that <<simpler formulations such as used here are “allowed” only when motivated by the desire to obtain analytical results, which this paper however does not do“. My answer is that, for what concerns the analysis of lane occupancy regulations, in particular with respect to accidents, the literature is still missing both the analytical results and the results of the state-of-the-art techniques in vehicle flow modelling for heterogeneous traffic.

I will welcome any contribution that will extend and enrich my model, both w.r.t. an analytical solution or w.r.t. a more realistic description of drivers' behavior. It is very common to see a first paper investigating in a very simplistic way a new issue, followed by other works that analyze it in more depth. But for the moment, as another referee has pointed out, “There is a literature in transportation science, car following theory, that applies hi-tech applied mathematics to the micro modeling of traffic flow. The acceleration of an individual car is assumed to depend on the location, speed, and acceleration of the car ahead, and perhaps on the car behind as well, with perhaps a reaction time lag. This literature has proved particularly fruitful in modeling shock waves, turbulence, and instability in traffic flow. I believe that there is a less developed literature deriving from car following theory that attempts to model overtaking behavior. I and others have hoped that it would be possible to build on this body of literature to develop mathematical models of traffic accidents, but I know of no such models. Most accidents derive from driver error, and it is presumably difficult to integrate psychological models of driving error with sophisticated car following theory”.

A second point is that the results lack of generality. This is a very common criticism towards the use of simulations for theoretical modelling. I believe – and have formally argued (see Leombruni R. and Richiardi M., “Why are Economists Sceptical of Agent-Based Simulations”, *Physica A*, 2005 (forthcoming), or Contini B., Leombruni R., Richiardi M., “Introduction to the special issue”; *Advances in Complex Systems*, vol. 7, no. 2, 2004) – that this is a mistaken point. The statistical analysis of the artificial data generated by well-designed experiments with the simulation model can provide a sufficient understanding of the behavior of the model. And, of course, any result is always conditional on the hypotheses upon which the model is built. To this respect, the results of my model seem to be particularly robust to changes in driving behavior and in the stochastic process governing the arrival of accidents.

Finally, I already acknowledged in the text the possible criticism that the model ignores that in practice the *All Right* regulation will not be strictly adhered to when traffic becomes heavier - which is in fact when the policy begins to loose compared to the *Slow Right*. The point here is that, by considering that the *All Right* rule could in fact be left unattended, one goes back to something very similar to the *Slow Right* rule, thus confirming that the *All Right* rule could in practice be at best inefficient.