Reviewer's report

Title: Strategic Emergency Department Design: From static estimation to dynamic capacity planning. An experience report from a Swiss University Hospital emergency department

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Reviewer: Kai Bauwens

Reviewer's report:

In this work, the authors use a dynamic system model to simulate patient flows, waiting times, and general ED development using different scenarios.

I really struggled with the manuscript which, in its current form, is difficult to read and to interpret. It is unclear to the reader which specific problems the authors are trying to solve, and which consequences they draw from their simulation findings.

There is no clear hypothesis, and the paper is not structured in a clear introduction – methods – results – discussion form. The figures appear as independent add-ons, and the reader is hardly guided along the confusing diagrams.

My major concern is that the topic of trauma which would make the approach interesting for the audience of the JTMO has not been addressed at all.

The authors are little too enthusiastic on DS, making unjustified statements like “only the DS approach described below enables capacity planning close to the real-life situation.” In fact, other modeling techniques like neuronal networks, or Markov models offer similar, if not better options to trade off inputs, outputs, and outcomes.

Any model is only as good as the source data entered into the model, and the authors do not provide much information on their decision nodes.

Altogether, I strongly advise the authors

1. to pose a precise hypothesis, and to reorganize the paper in a clear IMRD-format
2. to limit the number of figures to an essential amount, and to better explain their meaning
3. to highlight the implications for trauma services and units
4. to compare the DS approach to other suitable modeling techniques

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests