Response to reviewers

A game theoretic model of the behavioural gaming that takes place at the ED-EMS interface

June 28, 2022

The authors would like to thank once again all the reviewers for their constructive feedback and for the time they took to review the manuscript. We are also pleased to see that the reviewers feel that the revision has addressed their comments and that the manuscript presents scientifically correct and useful results. We have made the remaining requested minor changes and also provide a response to one of the reviewers whose remaining concern is about the fit of this paper for EJOR. Our main arguments are:

- Our paper provides theoretical results and insights
- There is a number of pages in EJOR that are similar to ours
- The EJOR scope does not emphasise that a paper should present a new theorem in order to be published

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- Reviewer 1: *The following two papers are related to the current work and I suggest the authors add them in the references with citations in the literature review:*
  1. Chen, W., Z. G. Zhang, and X. Chen. 2020. "On Two-tier Healthcare System Under Capacity Constraint." International Journal of Production Research 58 (12): 3744-3764.
  2. Wang, J., Z. Wang, Z. G. Zhang and F. Wang. 2021. "Efficiency-quality trade-off in allocating resource to public healthcare systems." International Journal of Production Research,
  DOI:10.1080/00207543.2021.1992529

These two papers are now discussed and included in the literature review section.

- Reviewer 2: I gave a look into the new version and the comments made by the authors following the reviews they received. My criticism towards the paper as stated in the first round stays. It is basically the question of what are the standards of EJOR. If a paper which states a interesting

model and gives details on numerical procedures for solving it but without any theorems and insights is good enough, then it should be accepted as the paper is doing a good job of what it promises. Otherwise, they should look for a more applied journal where what they do is sufficient.

We are grateful for the opportunity to respond to this as it seems that the remaining concern is the fit of this work in EJOR and not the work itself. Firstly, this paper does provide theoretical results and insights. Section 3 provides detailed theoretical expressions of the queueing model's performance measures. Expressions of the waiting time, blocking time and proportion of individuals within target have been derived and are presented in the paper. Also, section 4.2 contains a list of applied scenarios where insights are presented. A busy model is examined and insights on ways to increase the relative efficiency of the model are presented.

We do understand the main point being raised by the reviewer in that this paper is not a purely theoretic one. For the benefits of the handling editor who we believe is left with the decision of whether or not the paper is in the scope of EJOR, here is a list of examples of papers published in EJOR that have a similar applied emphasis:

- ▷ **A queueing model for general group screening policies and dynamic item arrivals** published in 2010, Volume 207, Issue 2, by Dieter Claeys, Joris Walraevens, Koenraad Laevens and Herwig Bruneel
  https://doi.org/10.1016/j.ejor.2010.05.042

- ▷ **Selfish routing in public services** published in 2013, Volume 230, Issue 1, by Vincent A.Knight and Paul R. Harper
  https://doi.org/10.1016/j.ejor.2013.04.003

- ▷ **The effect of ambulance relocations on the performance of ambulance service providers** published in 2016, Volume 252, Issue 1, by T. C. van Barneveld, S. Bhulai and R.D.van der Mei
  https://doi.org/10.1016/j.ejor.2015.12.022

- ▷ **Robust and stochastic formulations for ambulance deployment and dispatch** published in 2019, Volume 279, Issue 2, by Dimitris Bertsimas and Yeesian Ng
  https://doi.org/10.1016/j.ejor.2019.05.011

- ▷ **A Markovian queueing model for ambulance offload delays** published in 2013, Volume 226, Issue 3, by Eman Almehdawe, Beth Jewkes and Qi-Ming He
  https://doi.org/10.1016/j.ejor.2012.11.030

- ▷ **Models and algorithms for an integrated vessel scheduling and tug assignment problem within a canal harbor** published in 2022, Volume 300, Issue 3, by Matteo Petris, Paola Pellegrini and Raffaele Pesenti
  https://doi.org/10.1016/j.ejor.2021.10.037

▷ **The application of operational research to European air traffic flow management - understanding the context** published in 2000, Volume 123, Issue 1, by Paula Leal de Matos and Richard Ormerod https://doi.org/10.1016/S0377-2217(99)00084-3

Finally, we note that the aims and scope of EJOR do not emphasise that a paper should present a new theorem in order to be published. Here's the aim and scope of EJOR as listed in their website:

The European Journal of Operational Research (EJOR) publishes high quality, original papers that contribute to the methodology of operational research (OR) and to the practice of decision making. EJOR contains the following types of papers:

- ☐ *Invited Reviews, explaining to the general OR audience the developments in an OR topic over the recent years*
- ☐ *Innovative Applications of OR, describing novel ways to solve real problems*
- ☐ *Theory and Methodology Papers, presenting original research results contributing to the methodology of OR and to its theoretical foundations,*
- ☐ *Short Communications, if they correct important errors found in papers previously published in EJOR*

- Reviewer 3: *The authors handled my remarks well.*

Thank you.