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## Article

# Preface: Public transport planning in the face of uncertainty

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## Preface: Public transport planning in the face of uncertainty

Operations in public transport systems are vulnerable to delays, disruptions, and other forms of uncertainty, such as the variation of passenger demand or weather conditions. Uncertainties related to traffic dynamics, operations, and passenger demand affect the reliability of the services and can lead to low passenger satisfaction and ridership loss.

Public transport planning that does not consider operational uncertainty offers services that perform well on the average case, but are vulnerable to disruptions during the actual operations. If operational uncertainty is not considered at the planning stage, slight disruptions can affect the entire spectrum of the public transport system spanning from the service frequencies and timetables to the vehicle/crew schedules and transfer synchronizations.

This special issue on Public Transport Planning in the face of uncertainty provides a view on the topic of mitigating the adverse effects of uncertainty in public transportation from different angles. The call was made in conjunction with the 30th European Conference of Operational Research held in Dublin, on June 23–26 2019 (EURO, 2019) organized by the Association of European Operational Research Societies.

The special issue consists of three original contributions on the rolling stock rescheduling problem, the robust transit line planning problem with capacity constraints, and the impact of wind on energy-efficient train control. A brief description of the three papers in the issue is provided below:

Hoogervorst et al. (2021) present a variable neighborhood search heuristic for the rolling stock rescheduling problem and test it on instances of Netherlands Railways (NS). The proposed method is able to find high-quality solutions in less than 1 min.

Lee and Nair (2021) address a transit-line-planning problem that uses demand estimates based on mobile phone data. The authors present a mathematical model for the problem, and a column generation solution method. They test the algorithm on real-world data from the city of Abidjan.

Trivella et al. (2021) study the impact of wind on train motion. They

propose a new train resistance equation that takes into account wind speed and direction. Using this equation, the authors manage to compute energy-efficient train trajectories.

We thank the authors for submitting these high quality papers and the referees for their excellent reviews. Finally, we would also like to thank the former and current Editor-in-Chief, Michel Bierlaire and Dominique Feillet, for supervising this special issue.

## Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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