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A short-turning policy for the management of demand disruptions in rapid transit systems.

(English) [Zbl 1357.90013](#)

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Summary: Rapid transit systems timetables are commonly designed to accommodate passenger demand in sections with the highest passenger load. However, disruptions frequently arise due to an increase in the demand, infrastructure incidences or as a consequence of fleet size reductions. All these circumstances give rise to unsupplied demand at certain stations, which generates passenger overloads in the available vehicles. The design of strategies that guarantee reasonable user waiting time with small increases of operation costs is now an important research topic. This paper proposes a tactical approach to determine optimal policies for dealing with such situations. Concretely, a short-turning strategy is analysed, where some vehicles perform short cycles in order to increase the frequency among certain stations of the lines and to equilibrate the train occupancy level. Turn-back points should be located and service offset should be determined with the objective of diminishing the passenger waiting time while preserving certain level of quality of service. Computational results and analysis for a real case study are provided.

MSC:

[90B06](#) Transportation, logistics and supply chain management

[90C11](#) Mixed integer programming

Cited in **2** Documents

Keywords:

[railways](#); [timetabling](#); [short-turning](#); [disruptions](#)

Software:

[AlphaECP](#); [PESPLib](#)

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