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Design of indicators to guide capacity improvements in urban railway lines

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Abstract-

The transport capacity of an urban railway line can be increased in many different ways. For planners and infrastructure managers it is vital to have all the tools available that allow choosing the most cost-effective solution among all the possibilities. This selection process can be complex sometimes and deciding how the available capacity should be increased is an important decision with significant financial consequences.
In this paper new transport capacity indicators suitable for urban lines are presented; that can be used as a guide by decision-makers to help them decide on infrastructure capacity improvements. The indicators ease the process of deciding among different alternatives by considering the specific capacity improvement they involve individually.
The model uses a railway simulator that allows obtaining the minimum departure-arrival itinerary times in the station under study. It has been applied to a case study in a suburban commuter line in Barcelona. Specifically, to the station of Provença that is a station with long Dwell Times during rush hour and belonging to the Spanish railway operator FGC.
This case demonstrates the indicators application and contributions; it also shows that it would be possible to extend the same kind of study to other nodes allowing the systematization of their capacity improvement by fine-tuning their signaling system.

Index Terms- Urban transport; Dwell times; Capacity; Railway; Indicators

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