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Séminaire conjoint
CIRRELT /
Chaire de Recherche du Canada en Logistique Intégrée

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An Integer Programming Approach for Integrated Public Transport Timetabling and Vehicle Scheduling

Abstract: This work describes a mixed integer programming approach that is based on time-expanded networks to help support the operation of a company that belongs to the public transport system operating in Santiago, Chile (Transantiago). The proposed model solves the timetabling and vehicle-scheduling stages of the planning process in an integrated manner. The approach considers all the operational constraints embedded in the concession contracts along with the option of performing deadhead trips to more efficiently utilize the buses and adjust supply to demand at critical periods. The results show a considerably positive impact on the regularity and frequency indicators, as well as a time reduction equivalent to saving 9% of the fleet due to properly implementing deadheaded routes.

Note: Cristián E. Cortés is Associate Professor at the Civil Engineering Department, Universidad de Chile. His areas of interest are network flows, optimization, logistics, public transport operations, equilibrium models, simulation and dynamic problems with applications in transportation. He is currently the Chief of the Transport Engineering Division in the Civil Engineering Department at Universidad de Chile. He is also Associate Editor of Transportation Science.

VENDREDI

21 octobre 2016
10 h 30

Local 1609
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Organisateur:
Leandro Coelho

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