Multi-period load assignment problem with stochastic load availability

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Résumé

Abstract : In this research, we want to investigate optimization techniques for a generic load assignment problem including a limited fleet of vehicles within a full-truck-load (FTL) multi-period setting including forecasts on load availability. Several policies are generated from simple heuristics through state of the art approaches such as consensus and restricted expectation algorithms up to the optimization of a subtree of scenarios. Moreover, myopic and a-posteriori deterministic optimizations (including no or fully revealed information) set bounds for policies performance comparisons. Tests are performed for different graphs sizes and sparsity, several distribution laws and number of loads. Performances are compared statistically over paired samples. The robustness of performing policies against a false valuation of the probability distribution is also analyzed. Results highlight the efficiency of an algorithm based on a subtree of scenarios. Moreover, this subtree calibrated with a 50% probability distribution is robust against a false evaluation of the probability distribution.

Mots-Clés: Transportation, Multiperiod, Stochastic, Load assignment problem

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