
Vehicle repositioning within a city

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Abstract

Nowadays, almost every worldwide operating car rental company provides the service of delivering vehicles to customers and picking them up after the rental period. The use of vehicle trailers for this purpose within a city is in most cases too expensive and very time-consuming. This poses new challenges for planning departments, as the determination of a set of routes for the vehicle repositioning problem exhibits special characteristics and is not yet covered by the literature on vehicle routing. For instance, a vehicle that is on the way to a customer may make a detour in order to give other drivers a ride to different customer locations. This may lead to constellations in which no shuttle is required to deliver and pick drivers up. This research is the result of a joint project with a large car rental company dealing with the afore mentioned repositioning problem. To tackle this problem, we developed a mixed integer linear program and a specialized Adaptive Large Neighborhood Search.

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