# The Mixed Capacitated General Routing Problem with Time-Dependent Demands

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## Abstract

The Mixed Capacitated General Routing Problem (MCGRP) is defined over a mixed graph, for which some nodes, arcs and edges must be serviced. The problem consists of determining a minimum cost that satisfy the demand. Some problem like snow plowing or salt spreading have a time dependent demand which was ignored in the previous studies, this variation of demand is due to the weather or traffic condition. This study presents two models without graph transformation and another with graph transformation to node routing, we use CPLEX to solve the small instances and we developed "Slack Induction by String Removals" metaheuristic for the large instances, The proposed model and metaheuristic were tested on problems derived from a set of classical instances of the MCGRP and CARP with some modification.

**Keywords:** Mixed Capacitated General Routing Problem, time dependent demand, metaheuristic

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