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Yun Lu* (lu@kutztown.edu) and **Francis Vasko**. *An Empirical Quantification of the Impact of Choice Constraints on Generalizations of the 0-1 Knapsack Problem using CPLEX®.*

It has been well-known for some time that adding choice constraints to certain types of knapsack formulations improves the solution time for these problems when using integer programming solvers, but by how much? In this paper, by using the integer programming option of CPLEX, we provide comprehensive empirical and analytical evidence of the impact of choice constraints on two important categories of knapsack problems. Specifically, we show using multidimensional knapsack problems (MKP) and multi-demand multidimensional knapsack problems from Beasley's OR-Library that adding choice constraints reduces solution time by more than 99.9%. Additionally, using these same problem instances, we show that even if only some of the variables have choice constraints imposed on them, the CPLEX solution times are drastically reduced. These results provide motivation for operations research practitioners to check if choice constraints are applicable when solving real-world problems involving generalizations of the 0-1 knapsack problem. (Received September 16, 2019)