

Formulations for a Vehicle Routing Problem applied to Dengue Control

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Abstract. In the Americas, 1,600,947 of dengue cases were reported in 2020, and, among these, a total of 1,040,481 cases of dengue were reported in Brazil [1]. To deal with dengue outbreaks, authorities focus their efforts on control policies. One effective activity for dengue control is insecticide spraying on targeted street blocks. To this end, spraying vehicles achieve high performances of 80 to 160 blocks per day. Our work proposes an exact methodology to route spraying vehicles for dengue control. This work reduces this problem to a covering routing problem and proposes a solution methodology grounded on Integer Programming (IP). Computational experiments were conducted over a set of districts, from the city of Campinas, São Paulo, Brazil. The results show that the methodology was effective to find optimal solutions in a reasonable amount of time.

Keywords: Dengue; Health logistics; Routing; Integer programming; Operations Research;

References

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