

Titulo: Reallocating and Sharing Health Equipments in Sanitary Emergency Situations: The COVID-19 Case in Spain

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Abstract:

In this work we provide several mathematical programming based approaches to determine optimal reallocation and sharing of equipments in emergency situations under lack of resources to avoid health collapses. We present a general framework to obtain the amount of equipments to be delivered between hospitals and the number of equipment to be shared between different clusters/regions that minimize the overall non covered demand where a given network structured set of units is given. The mathematical programming models that we provide are stochastic and multiperiod and we provide different robust objective functions. The models are tested using the data of the COVID-19 case in different regions of Spain and we observed that the policies obtained with our models would have considerably improved the performance on the lack of equipments during the peaks of the crisis.. We also present different extensions as the one of simultaneously locating field logistic centers to distribute and share the available resources.