

Medical staff planning for field hospital deployments: the START hospital

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Abstract-

PurposeThe deployment of a field hospital can play an important role in the response to an emergency. This paper is concerned with the management of emergency staff to a field hospital from a roster of volunteers with different characteristics. This paper aims to propose a mathematical optimisation model that selects the necessary profiles of the roster according to several criteria and provides travel planning taking into account the total cost of the operation.

Design/methodology/approachThis study uses a multi-criteria optimisation model to take into account the preferences of the three main stakeholders involved in the deployment of the field hospital: the cooperation organisation, the staff and the end users. The model considers the possibility of using commercial or chartered flights, allows staff to indicate their preferred availability, considers the grading of volunteers according to their skills and training and provides a final flight schedule for all the medical personnel needed to operate the field hospital. Compromise programming is used to provide a Pareto optimal solution, which is compared with solutions provided by Goal programming.

FindingsThe model has been validated using data from the operation in a case study of the deployment of the Spanish START hospital in Turkey 2023, demonstrating the practical utility of the model in similar operations.

Originality/valueThe study innovates by considering a multi-criteria model that takes into account the main actors involved in the response – cooperation organisation, staff and end users – in an integrated way and proposes new measures of efficiency.

Index Terms- Humanitarian logistics, Disaster response, Scheduling, Emergency medical services

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