Final Project Proposal

DATA 604: Simulation & Modeling

Daniel Dittenhafer & Jashan Narhan

March 12, 2016

1 Problem Statement & Research Questions

TBD

Planning for disaster relief scenarios can be a tricky endevour. Where will the next disaster occur? When? On what scale? The historical record can be useful to understand a range of possible answers, but this raises more questions. How many supplies should be pre-staged in anticipation of a future disaster? How might a given set of supplies be useful for multiple disasters? Questions like these are considered in current research as shown in the papers reviewed for this proposal.

2 Statement of Objectives

We plan to use a combination of R and Simio to develop and execute a simulation model inorder to . . . **TBD**

3 Data Set(s)

The Humanitarian Data Exchange provides many different data sets which could be benefitial for this project (United Nations Secretariat, 2016).

TBD

4 Recent Journal Papers

4.1 Multi-criteria logistic modeling for miliary humanitarian assistance. . .

This paper describes a model complete with objective function an array of constraints for aiding in decision support for humanitarian assistance and disaster relief (HA/DR) efforts. Specifically, the model aims to determine the optimal the aerial supply chain network for HA/DR given target goals for response time, supply chain cost and unmet demand in the disaster zone (Bastian, Griffin, Spero, and Fulton, 2015).

4.2 Emergency Logistics Planning in Natural Disasters

This paper describes a model for delivering disaster relief via multiple transporation methods (Ozdamar, Ekinci, and Kucukyazici, 2004). The model focuses on minimizing f demand for various disaster relie commondities at various disaster locations, while considering an array of constraints. The model considers a disaster that emcompasses a region which includes the supply depots whereby a given delivery of disaster relief to one location might simultaneously be a pickup of disaster relief destined for another location in the same disaster. One might imagine an earthquake in which one area has excess food but not enough water, and logistics planners desire to optimizes the sharing of supplies.

4.3 Evaluation

TBD

5 References

Bastian, N., P. Griffin, E. Spero and L. Fulton. "Multi-criteria logistics modeling for military humanitarian assistance and disaster relief aerial delivery operations". In: Optimization Letters (2015). DOI: 10.1007/s11590-015-0888-1.

Ozdamar, L., E. Ekinci and B. Kucukyazici. "Emergency Logistics Planning in Natural Disasters". In: Annals of Operations Research (2004).

United Nations Secretariat. Humanitarian Data Exchange. 2016. URL: https://data.hdx.rwlabs.org/.