Strategic Planning for Acute Adverse Multi-Site Events: An Info-Gap Analysis

Yakov Ben-Haim
Technion — Israel Institute of Technology
Haifa, Israel
yakov@technion.ac.il

Oxford University
Centre for the Environment
20 May 2022

Abstract Acute adverse events such as fires, floods, earthquakes, or terror attacks can occur in distinct circumstances: residential, industrial, natural, etc. Severity of events range from minor to extreme, and events can occur in parallel at multiple locations. Response to adverse events is a governmental responsibility that requires infrastructure of equipment, trained personnel, and operational procedures. Long-range planning is fraught with deep uncertainties about the locations, circumstances, severities, and multiplicity of adverse events. We use info-gap decision theory to develop a methodology for formulating and evaluating long-range plans for response to acute adverse multi-site events. We demonstrate generic properties of info-gap robust satisficing, especially the quantified trade off between robustness against uncertainty and quality of the outcome: better outcome entails lower robustness. Application to single-site fire and to generic multi-site adverse events is developed.

\lectures\talks\lib\oxford2022abs001.tex. 2.4.2022