

A Survey of Game-theoretic Models in Natural Disaster and Terrorism Research

Research for countering natural disasters and acts of terrorism is of vital interest due to the devastating effects and losses caused by their occurrence, including economic deficiency, casualties, and infrastructure damage. In recent years following the terrorist attacks on September 11, 2001 and the large breadth of natural disasters like Hurricane Katrina in 2005, we observe a growing use of game-theoretical models in the research concerning the prevention of, defense against, and relief from both natural disasters and terrorism. Notable research in these areas has studied attacker-defender games and multi-agency collaboration, among others, to provide insights to optimal decisions concerning defensive investment and private-public partnerships in the face of disaster occurrence. We survey and integrate about fifty recent academic papers to present an informative summary of game theory-based research in the fields of natural disaster and terrorism. This study aims to increase the comprehension of game theory-based research in the prevention and relief of natural disasters and terrorism, and to provide directions for future research. In addition to academia, the targeted audience of this research includes governments, private sectors, private citizens, and others who are concerned with or involved in disaster management.

Keywords: game theory, natural disaster, terrorism, game model, disaster management