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"Game Theory or Not Game Theory? Hybrid Defensive Resource Allocations"

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The applicability of game theory to the analysis of terrorism and counter-terrorism has been questioned, with some analysts recommending the use of probabilistic risk analysis or decision analysis instead of game theory, in part on the grounds that it may be unrealistic to assume that terrorists are fully rational or strategic in the game-theoretic sense. Moreover, the question of what to do in the face of an unknown adversary, who may or may not be fully strategic, has not been extensively studied to date. In light of this ongoing controversy, it is significant that we found defensive resource allocations based on game theory to be robust in regards to the possibility of non-strategic attackers. In other words, assuming attackers to be strategic when they are not is conservative, in the sense of incurring less-expected loss than assuming attackers are non-strategic when they are actually strategic. Our results support further development and application of game-theoretical methods, by demonstrating that they can be useful even when the attacker's behavior itself may not be fully strategic or rational.

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Operations Research

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