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# Supply Flow Protection to Mitigate Disruption Risks in Supply Chains

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**Abstract:** This article deals with optimal allocation of responsive capacity in a capacitated supply network in order to mitigate disruption risks of such supply networks. It provides a decision tool that enables a decision maker to plan for contingencies *a priori*, so that disruption impacts are minimized. A game-theoretic framework of attack and defense is applied to identify facilities to protect with capacity backups. The problem is formulated as a hierarchical mixed integer optimization model and solved to optimality through implicit enumeration of defense strategies by utilizing a binary search tree. We present numerical examples and key managerial insights.

*Keywords:* Disruption Risks, Interdiction-Fortification, Response Speeds, Capacity Backups