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Article

Evaluating Environmental Risks Using Safety-First Constraints

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Abstract

This article incorporates an upper partial moment concept into a linear programming model to impose safety-first environmental constraints. The model is linear and deterministic, treats a discrete sample as an empirical distribution, and optimizes over the column space. It allows a decision maker to specify the objectives and the compliance probabilities with the objectives when making decisions, and endogenously determines the risk levels. Even though it is presented in the context of environmental management, the model is general enough to be extended to other situations where the probability of a variable exceeding some target or standard is restricted.