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Using Intervals for Global Sensitivity and Worst Case Analyses in Multicriteria Value Trees

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Abstract. Sensitivity analyses have for long been used to assess the impacts of uncertainties on outcomes of decision models. Several approaches have been suggested, but it has been problematic to get a quick overview of the total impact of all the uncertainties. Here we show how interval modeling can be used for global sensitivity analyses and a nuclear emergency case is used to illustrate the method. The approach is conceptually simple and computationally fast. With intervals the decision maker can include all the possible uncertainties and quickly estimate their combined impact. This is especially useful in high-risk decisions where a worst case type of sensitivity analysis is essential.

Keywords. Multiple criteria analysis, Sensitivity analysis, Interval modeling, Worst case analysis, Nuclear emergency