Robust Bayesian analysis using classes of priors.

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In the context of robust Bayesian analysis, we focus on a new class of prior distributions based on stochastic orders and distortion functions defined in Arias-Nicolás et al. (2016). We will apply this new class in different contexts. Namely, we will analyse the problem of computing different premium principles in risk theory. We will consider that uncertainty with regard to the prior distribution can be represented by the assumption that the unknown prior distribution belongs to the new class of distributions and we will examine the ranges of the Bayesian premium when the priors belong to such a class. Kolmogorov and Kantoverich metrics could be a good election to measure the uncertainty induced by such class, as well as its effect on the Bayesian Premiums. Finally, we will also discuss the extension to the multivariate case. We will provide new definitions and their interpretations.

Keywords: Robust Bayesian Analysis, prior class, stochastic orders, distortion functions, premiums.

References

1. Arias-Nicolás, J.P., Ruggeri, F. and Suárez-Llorens, A. New classes of priors based on stochastic orders and distortion functions. Bayesian Analysis, 11, 4, pp. 1107-1136, 2016.