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Application of a Bayesian varying coefficients model to a Receptor Occupancy study

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Abstract.

In many applications of linear regression models, the regression coefficients are not regarded as fixed but as varying with another covariate named the effect modifier. In this presentation, we focus on an application of the varying-coefficients model in a Positron Emission Tomography (PET) study, where we are interested in the relation between the Receptor Occupancy and the drug concentration in plasma. We show how the Receptor Occupancy turns to be a regression coefficient varying nonlinearly with the drug concentration. To link in a smooth way the regression coefficients with the effect modifier, we propose to use a non-parametric method based on robust Bayesian P-splines. This offers a highly flexible tool to model the change of the regression coefficient with the effect modifier.