

# Local influence analysis for penalized Gaussian likelihood estimation in partially linear single-index models

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**Abstract** Single-index model is a potentially tool for multivariate nonparametric regression, generalizes both the generalized linear models(GLM) and the missing-link function problem in GLM. In this paper, we extend Cook's local influence analysis to the penalized Gaussian likelihood estimator based on P-spline for the partially linear single-index model. Some influence measures, based on the minor perturbation of the model, are derived for the penalized least squares estimation. An illustrative example is also presented.

**Keywords** Local influence · P-spline · Partially linear · Single-index model · Case-weight