A bootstrap approach to model checking for linear models under length-biased data

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Abstract In this paper, we propose two bootstrap-based model checking tests for a parametric linear model when data are affected by length-bias. These tests are based on the measure of the discrepancy between nonparametric and parametric estimators for the regression function when the data are drawn under a length-biased mechanism. We consider two different discrepancy measures: the supremum and the integral of the quadratic difference between the parametric and nonparametric estimators.

Keywords Bootstrap · Length-biased data · Model checking · Lack-of-fit test · Local linear estimator