Testing for one-sided alternatives in nonparametric censored regression

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Abstract:
Assume we have two populations satisfying the general model $Y_j = m_j(X_j) + \varepsilon_j$, $j = 1, 2$, where $m(\cdot)$ is a smooth function, ε has zero location and Y_j is possibly right-censored. In this paper, we propose to test the null hypothesis $H_0 : m_1 = m_2$ versus the one-sided alternative $H_1 : m_1 < m_2$. We introduce two test statistics for which we obtain the asymptotic normality under the null and the alternative hypotheses. Both tests can detect any local alternative converging to the null hypothesis at the parametric rate $n^{-1/2}$. The practical performance of the tests is investigated in a simulation study. An application to a data set about unemployment is also included.