

## RANK ESTIMATES IN A CLASS OF SEMIPARAMETRIC TWO-SAMPLE MODELS\*

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(Received December 16, 1987; revised July 14, 1988)

**Abstract.** We consider a two-sample semiparametric model involving a real parameter  $\theta$  and a nuisance parameter  $F$  which is a distribution function. This model includes the proportional hazard, proportional odds, linear transformation and Harrington-Fleming models (1982, *Biometrika*, **69**, 533-546). We propose two types of estimates based on ranks. The first is a rank approximation to Huber's  $M$ -estimates (1981, *Robust Statistics*, Wiley) and the second is a Hodges-Lehmann type rank inversion estimate (1963, *Ann. Math. Statist.*, **34**, 598-611). We obtain asymptotic normality and efficiency results. The estimates are consistent and asymptotically normal generally but fully efficient only for special cases.

*Key words and phrases:* Semiparametric transformation models,  $M$ -estimates based on ranks, Hodges-Lehmann estimates.