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Weighted estimating equations for additive hazards models with missing covariates

**Lihong Qi[1] · Xu Zhang[2,3] · Yanqing Sun[4] ·
Lu Wang[5] · Yichuan Zhao[6]**

Abstract This paper presents simple weighted and fully augmented weighted estimators for the additive hazards model with missing covariates when they are missing at random. The additive hazards model estimates the difference in hazards and has an intuitive biological interpretation. The proposed weighted estimators for the additive

✉ Lihong Qi
lhqi@ucdavis.edu

1 Division of Biostatistics, Department of Public Health Sciences, University of California Davis, One Shields Ave, MS1C, Davis, CA 95616, USA

2 Division of Clinical and Translational Sciences, Department of Internal Medicine, Medical School, University of Texas Health Science Center at Houston, 6410 Fannin Street, Houston, TX 77030, USA

3 Biostatistics/Epidemiology/Research Design Core, Center for Clinical and Translational Sciences, University of Texas Health Science Center at Houston, 6410 Fannin Street, Houston, TX 77030, USA

4 Department of Mathematics and Statistics, University of North Carolina at Charlotte, 9201 University City Boulevard, Charlotte, NC 28223, USA

5 Department of Statistics, University of California Davis, 399 Crocker Ln, Davis, CA 95616, USA

6 Department of Mathematics and Statistics, Georgia State University, Room 1342, 25 Park Place, Atlanta, GA 30303, USA

hazards model use incomplete data nonparametrically and have close-form expressions. We show that they are consistent and asymptotically normal, and are more efficient than the simple weighted estimator which only uses the complete data. We illustrate their finite-sample performance through simulation studies and an application to study the progression from mild cognitive impairment to dementia using data from the Alzheimer's Disease Neuroimaging Initiative as well as an application to the mouse leukemia study.