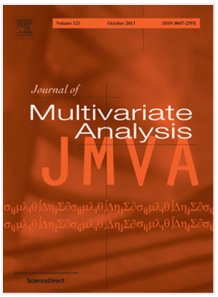
Accepted Manuscript



A proportional hazards model for time-to-event data with epidemiological bias

Qiaozhen Zhang, Hongsheng Dai, Bo Fu

PII: S0047-259X(16)30067-7
DOI: http://dx.doi.org/10.1016/j.jmva.2016.08.003
Reference: YJMVA 4147

To appear in: *Journal of Multivariate Analysis*

Received date: 31 July 2015

Please cite this article as: Q. Zhang, H. Dai, B. Fu, A proportional hazards model for time-to-event data with epidemiological bias, *Journal of Multivariate Analysis* (2016), http://dx.doi.org/10.1016/j.jmva.2016.08.003

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

*Manuscript
Click here to download Manuscript: Survival_referralbias_0805.pdf
Click here to view linked References
ACCEPTED MANUSCRIPT

A proportional hazards model for time-to-event data with epidemiological bias

Qiaozhen Zhang[1], Hongsheng Dai[2*], Bo Fu[3,4]

[1] *LPMC and Institute of Statistics, Nankai University, Tianjin 300071, China*

[2] *Department of Mathematical Sciences, University of Essex, Wivenhoe Park, Colchester,CO4 3SQ, UK*

[3] *Administrative Data Research Centre for England, University College London, 222 Euston Road, London NW1 2DA, UK*

[4] *Institute of Child Health, University College London, 30 Guilford Street, London WC1 N 1EH, UK*

Abstract

In hepatitis C virus (HCV) epidemiological studies, the estimation of progression to cirrhosis and prognostic effects of associated risk factors is of particular importance when projecting national disease burden. However, the progression estimates obtained from conventional methods could be distorted due to a referral bias [11]. In recent years, several approaches have been developed to handle this epidemiological bias in analyzing time-to-event data. This paper proposes a new estimation approach for this problem under a semiparametric proportional hazards framework. The new method uses a martingale approach based on the mean rate function, rather than the traditional hazard rate function, and develops an iterative algorithm to estimate the Cox regression parameter and baseline hazard rate simultaneously. The consistency and asymptotic properties of the proposed estimators are derived theoretically and evaluated via simulation studies. The new

*Corresponding author. *Email address:* hdaia@essex.ac.uk (Hongsheng Dai).

Download English Version:

https://daneshyari.com/en/article/7546826

Download Persian Version:

https://daneshyari.com/article/7546826

Daneshyari.com