The Performance of Unadjusted and Adjusted Medical Cost Estimators - An Application in Colorectal Cancer

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Abstract

Owing to aging, how to sufficiently use the limited resources becomes controversial. Knowing how to estimate medical cost accurately and efficiently becomes an important issue. However, it is common to have dropouts when analyzing medical cost. The naïve estimators ignoring the unobservable data may be biased. Lin (1997) suggested partitioning the study duration and estimating the cost of each interval and then constructing the estimate by summing up the cost from each interval. Furthermore, to take into account of the unobservable data, Lin (1997) and Band and Tsiatis (2000) proposed weighted estimators that used the survival probability and uncensored probability as the weight, respectively.

Furthermore, the medical cost may be related to many covariates. Baser (2006) suggested using the general linear model for the longitudinal data to model the partitioned cost, where a random intercept is included. This paper extends the model to a more general parametric model. Furthermore, similar to the weighting concept in Lin (1997), we suggest using the survival probability as the weight adjustment which is estimated by the Cox proportional hazards model. Simulations are used to evaluate the performance of the unadjusted and adjusted cost estimators under various scenarios. Finally, the proposed model is implemented on the data extracted from Health Insurance database for patients with the colorectal cancer.