

CUTPOINT DETERMINATION METHODS IN COMPETING RISKS SUBDISTRIBUTION MODEL

(Kaedah Penentuan Titik Potongan dalam Model Subtaburan Risiko Bersaing)

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ABSTRACT

In the analysis involving clinical and psychological data, by transforming a continuous predictor variable into a categorical variable, usually binary, a more interpretable model can be established. Thus, we consider the problem of obtaining a threshold value of a continuous covariate given a competing risk survival time response using a binary partitioning algorithm as a way to optimally partition data into two disjoint sets. Five cutpoint determination methods are developed based on regression of competing risks subdistribution. Simulation results show that the deviance method has the desired properties. Permutation test is used to assess the level of significance and bootstrap confidence interval is obtained for the optimal cutpoint. The deviance method is applied to determine cutpoint of age for a real dataset.

Keywords: cutpoint; competing risks; binary partitioning; regression analysis; 2-sample statistic; subdistribution function

ABSTRAK

Dalam analisis yang melibatkan data klinikal dan psikologi, dengan menjelmakan pemboleh ubah peramal yang selanjut kepada pemboleh ubah berkategori, lazimnya perduaan, suatu model yang lebih mudah diinterpretasi boleh dibina. Justeru, kami mempertimbangkan pemasalahan memperoleh nilai ambang bagi kovariat selanjut diberi masa respons mandiri risiko bersaing dengan menggunakan al-Khwarizmi pemetakan binari secara optimum untuk memetakan data kepada dua set berasingan. Lima kaedah menentukan titik belah dipertimbangkan berdasarkan regresi subtaburan risiko bersaing. Keputusan simulasi menunjukkan kaedah devian mempunyai ciri-ciri yang dikehendaki. Ujian pilih atur digunakan untuk menilai aras keertian dan selang keyakinan butstrap diperolehi bagi titik potongan optimum. Kaedah devian seterusnya digunakan untuk mencari titik potongan bagi umur untuk suatu set data sebenar.

Kata kunci: titik potongan; risiko bersaing; pembahagian perduaan; analisis regresi; statistik dua sampel; fungsi subtaburan

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