



Bayesian Nonparametric Estimation of Distribution Function for Length-Biased Data

Najmeh Nakhaei Rad^{31 1}, *Vahid Fakoore*²

¹ *Department of Mathematics and Statistics, Mashhad Branch, Islamic Azad University, Mashhad, Iran.*

² *Department of Statistics, Faculty of Mathematical Sciences, Ferdowsi University of Mashhad, Mashhad, Iran.*

abstract: The length-biased sampling occurs when an appropriate sampling scheme is absent. Then units are chosen at a rate proportional to their length. As a result, the greater values have more chances to be selected. When observations are not coming directly from the distribution of interest, but from a length biased version, Cox (1969) proposed an estimator for distribution function which plays the same role as the empirical distribution for direct data. In this paper, by using Bayesian nonparametric approach the estimation of distribution function is derived under length bias and its consistency is also discussed. A simulation study is presented as well as a real data example to illustrate obtained results.

keyword: Bayesian nonparametric inference; Dirichlet process; Length-biased data; Monte Carlo method.

Mathematics Subject Classification (2010): 99X99, 99X99.

³¹Speaker: najme.rad@gmail.com