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## A Bayesian Approach to Competing Risks Model with Masked Causes of Failure and Incomplete Failure Times (Article) [\(Open Access\)](#)

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### Abstract

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We present a Bayesian approach for analysis of competing risks survival data with masked causes of failure. This approach is often used to assess the impact of covariates on the hazard functions when the failure time is exactly observed for some subjects but only known to lie in an interval of time for the remaining subjects. Such data, known as partly interval-censored data, usually result from periodic inspection in production engineering. In this study, Dirichlet and Gamma processes are assumed as priors for masking probabilities and baseline hazards. Markov chain Monte Carlo (MCMC) technique is employed for the implementation of the Bayesian approach. The effectiveness of the proposed approach is illustrated with simulated and production engineering applications. © 2020 Yosra Yousif et al.

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- 
- 1 Reiser, B., Guttman, I., Lin, D.K.J., Guess, F.M., Usher, J.S.  
Bayesian inference for masked system lifetime data  
(1995) *Applied Statistics*, 44 (1), pp. 79-90. Cited 60 times.
- 
- 2 Sen, A., Banerjee, M., Li, Y., Noone, A.-M.  
A Bayesian approach to competing risks analysis with masked cause of death  
(2010) *Statistics in Medicine*, 29 (16), pp. 1681-1695. Cited 17 times.  
<http://www3.interscience.wiley.com.ezproxy.um.edu.my/cgi-bin/fulltext/123334449/PDFSTART>  
doi: 10.1002/sim.3894  
[View at Publisher](#)
- 
- 3 Mukhopadhyay, C., Basu, S.  
Bayesian analysis of masked series system lifetime data  
(2007) *Communications in Statistics - Theory and Methods*, 36 (2), pp. 329-348. Cited 17 times.  
doi: 10.1080/03610920600853357  
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- 
- 4 Mukhopadhyay, C., Basu, A.P.  
Bayesian analysis of incomplete time and cause of failure data  
(1997) *Journal of Statistical Planning and Inference*, 59 (1), pp. 79-100. Cited 25 times.
- 
- 5 Basu, S., Sen, A., Banerjee, M.  
Bayesian analysis of competing risks with partially masked cause of failure  
(2003) *Journal of the Royal Statistical Society. Series C: Applied Statistics*, 52 (1), pp. 77-93. Cited 30 times.  
doi: 10.1111/1467-9876.00390  
[View at Publisher](#)
- 
- 6 Basu, S., Basu, A.P., Mukhopadhyay, C.  
Bayesian analysis for masked system failure data using non-identical Weibull models  
(1999) *Journal of Statistical Planning and Inference*, 78 (1-2), pp. 255-275. Cited 42 times.  
[View at Publisher](#)
- 
- 7 Guttman, I., Lin, D.K.J., Reiser, B., Usher, J.S.  
Dependent masking and system life data analysis: Bayesian inference for two-component systems  
(1995) *Lifetime Data Analysis*, 1 (1), pp. 87-100. Cited 41 times.  
doi: 10.1007/BF00985260  
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