ANALYSIS OF INTERVAL CENSORED-DATA FROM CIRCULAR MIGRANT AND NON-MIGRANT SEXUAL PARTNERSHIPS USING THE EM ALGORITHM

<u>K. Zuma^{$\dagger 1$}</u>, M. Lurie², M. Jorgensen³

¹Human Sciences Research Council, PRETORIA, South Africa; ²Department of Community Health, Brown University School of Medicine and the Miriam Hospital, Providence RI, USA; ³Department of Statistics, University of Waikato, HAMILTON, New Zealand

[†]E-mail: *kzuma@hsrc.ac.za*

In epidemiological studies where subjects are seen periodically on follow-up visits, intervalcensored data occur naturally. The exact time the change of state (such as HIV seroconversion) occurs is not known exactly, only that it occurred sometime within a specific time interval. Methods of estimation for interval-censored data are readily available when data are independent. However, methods for correlated interval-censored data are not well developed. This paper considers an approach for estimating the parameters when data are interval-censored and correlated within sexual partnerships. We consider the exact event times for interval-censored observations as unobserved data, only known to be between two time points. Dependency induced by sexual partnerships is modelled as frailties assuming a gamma distribution for frailties and an exponential distribution on the time to infection. This formulation facilitates application of the expectation-maximization (EM) algorithm. Maximization process maximizes the standard survival frailty model. Results show high degree of heterogeneity between sexual partnerships. Intervention strategies aimed at combating the spread of HIV and other sexually transmitted infections (STI)s should treat sexual partnerships as social units and fully incorporate the effects of migration in their strategies.