Estimating the prevalence of injecting drug use in Scotland using capture-recapture and partially observed contingency tables

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In the past decade, capture-recapture data has been used to estimate the number of injecting drug users (IDUs) in Scotland. The IDUs are observed (or not) by a number of sources. The number of IDUs observed by each combination of sources can be displayed in a contingency table. The unknown cell corresponding to not being observed by any of the sources can be estimated by fitting a log-linear model to the observed cells. This leads to an estimate of the total population size of IDUs. Furthermore, the observed IDUs can be cross-classified by various covariates allowing estimation of the population size for different demographic groups, e.g. young males.

However, it is becoming increasingly clear that what constitutes an IDU is very different for each source and this can lead to biased estimates of the total population size of IDUs. For example, one of the sources is the Hepatitis C virus database. This source only records individuals with a history of injecting drug use, not current drug use, and leads to over-estimates of the total population size. In this talk, these type of problems will be reviewed and modelling strategies to overcome them will be presented.

Keywords: Hepatitis C; injecting drug users; log-linear models; population size.