

# GRADUATE SEMINAR

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## Simplified methods for modelling correlated or dependent parameters in health economic evaluations

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Jan. 23, 2023

3:30P.M.

Centre for Kin, Health & Sport 185

**Abstract:** In economic evaluation, model parameters are often not independent. Although there are existing methods to handle the not independent parameters, it is often technically challenging to implement these methods for economic modelers. Therefore, the applied economic evaluations often do not incorporate the correlation or dependence of parameters in the modelling. We propose a small extension of the routinely used methods with several examples. These simplified methods can be easily applied.

We provide analytical proofs and propose simplified methods to handle the not independent parameters in some typical modelling scenarios. We demonstrate how to quantify the unknown correlation coefficients of correlated variables based on published summary statistics. We illustrate the use of univariate normal distributions based on results from in the multiple linear regression model and the Cox proportional hazard model, instead of generating the multivariate normal distribution data, to capture the heterogeneity of the population. We introduce a conditional probability method to handle more than two state transitions within a single cycle of a Markov model.