Bayesian modelling for child mortality
Applications are being sought for a 10-12 month full-time position with the Maternal Child Epidemiology Estimation (MCEE) team.

Purpose
Assist with writing code for Bayesian analyses to estimate causes of death in children in 195 countries.

Background
MCEE (formerly CHERG) has worked extensively on estimating the distribution of main causes of death in children less than five years of age (including neonates) for countries with incomplete or no vital registration information. This work has contributed to renewed global interest and attention to child/neonatal survival but, most of all, MCEE results have contributed to child/neonatal health policy. Key policy groups and all major initiatives directed at reducing under-five mortality, including Saving Newborn Lives, Roll Back Malaria, the Global Fund and others, have requested technical contributions from MCEE. MCEE’s work is done in close collaboration with the WHO Department of Health Statistics and Information Systems as part of the Global Collaboration on Mortality and Causes of Death coordinated by WHO.

At the same time, MCEE work has revealed gaps and methodological challenges that need to be addressed to improve the reliability and accuracy of MCEE’s cause-of-death estimates. The core of MCEE’s mortality estimation approach involves using multinomial models to predict cause of death distributions. The current project involves shifting these models from a frequentist statistical framework to a Bayesian framework, to facilitate the incorporation of country-specific random effects into the model, and to improve model selection. This work has the promise of being both useful and intellectually stimulating.

Work to be performed
The candidate will work under the supervision of MCEE staff to perform various tasks, such as:
  - Implement new or modify existing code in a Bayesian framework (e.g. incorporating random effects in a multinomial cause-of-death model)
  - Assess Bayesian covariate selection methods and implement appropriate ones
  - Improve the efficiency of the existing algorithms
  - Perform additional analyses to improve the cause-of-death model reliability/accuracy

Qualifications
Candidates should have an advanced degree in Computer Science, Statistics, Biostatistics, or similar quantitative fields. The candidate should have strong computational skills and knowledge of statistical modelling. Expertise in writing code for Bayesian analyses, preferably using R, is essential. Experience with JAGS, STAN, or similar programs is strongly preferred.

Timeline
This full-time position is available immediately and will continue for 10-12 months, with the possibility of extension. Part-time hours over a longer period of time may be negotiable.

Application procedure and contact information
Interested candidates should email a cover letter and CV to jperin@jhu.edu. Applications will be reviewed until the position is filled. If you have questions about this position, please contact Jamie Perin (jperin@jhu.edu).