

UQ Summer Research Project Description

Project title:	Novel graphical modelling of multivariate relationships in longitudinal public health studies.
Project duration:	10 weeks
Description:	<p>Epidemiological studies have contributed to a dramatic increase in average life span during the 20th century by identifying important factors for public health interventions. One commonly employed method of identifying important factors for public health policy via epidemiological studies is to separately relate each health outcome to each predisposing factor usually by normal or logistic regression. However, this may miss important factors as they are often related. Multivariate analysis potentially provides a superior approach since it considers all factors together.</p> <p>Graphical models are a form of multivariate analysis using graphs to represent models which also aids interpretation. This project will employ a new class of models called information weighted independence graphs. These graphs not only convey the strength of relationships but also estimate the amount of information without making strong distributional assumptions about the distribution of the data. This project will evaluate the effectiveness of current methods and our newer method by application and comparison to a long term longitudinal study.</p> <p>The aim of this project is to better inform public health policy makers by better identifying risk factors through the use of novel statistical methods.</p>
Expected outcomes and deliverables:	The scholar will gain experience in applied statistical research in the area of graphical models and benefit from links to the School of Population Health. The scholar is expected to gain skills in conducting a short applied statistics project, presenting the results in a short School seminar and contribute to a publication.
Suitable for:	Applicants should be latter year undergraduates from UQ or any Australian University and should have a strong background in mathematical statistics, applied statistics or a related area. While not necessary, experience in graphical models and/or programming, in particular R, would be an advantage.
Primary Supervisor:	Dr Peter Baker, School of Public Health.
Further info:	Interested applicants should contact Dr Peter Baker, Senior Lecturer and Consultant Statistician, School of Public Health: p.baker1@uq.edu.au