

## MAST90099 Categorical Data: Models and Methods

<b>Credit Points:</b>	12.5
<b>Level:</b>	9 (Graduate/Postgraduate)
<b>Dates &amp; Locations:</b>	2016, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
<b>Time Commitment:</b>	Contact Hours: 30 hours Total Time Commitment: 170 hours
<b>Prerequisites:</b>	# POPH90014 Epidemiology 1 <b>OR</b> POPH90016 Epidemiology # POPH90148 Probability and Distribution Theory # MAST90100 Inference Methods in Biostatistics <b>OR</b> POPH90017 Principles of Statistical Inference # MAST90102 Linear Regression <b>OR</b> POPH90120 Linear Models (either may be taken concurrently)
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	None
<b>Non Allowed Subjects:</b>	None
<b>Core Participation Requirements:</b>	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website.
<b>Coordinator:</b>	Assoc Prof Lyle Gurrin
<b>Contact:</b>	<b><a href="mailto:l.gurrin@unimelb.edu.au">l.gurrin@unimelb.edu.au</a> (mailto:%20l.gurrin@unimelb.edu.au)</b> <b>Melbourne School of Population and Global Health</b> <b>OR</b> <b>Currently enrolled students:</b> # General information: <b><a href="https://ask.unimelb.edu.au">https://ask.unimelb.edu.au</a> (<a href="https://ask.unimelb.edu.au">https://ask.unimelb.edu.au</a>)</b> # Email: <b><a href="mailto:enquiries-STEM@unimelb.edu.au">enquiries-STEM@unimelb.edu.au</a> (mailto:enquiries-STEM@unimelb.edu.au)</b> <b>Future Students:</b> # Further Information: <b><a href="http://mspgh.unimelb.edu.au/">http://mspgh.unimelb.edu.au/</a> (<a href="http://mspgh.unimelb.edu.au/">http://mspgh.unimelb.edu.au/</a>)</b> # Email: <b><a href="http://mspgh.unimelb.edu.au/study/degrees/master-of-public-health/overview">Online Form</a> (<a href="http://mspgh.unimelb.edu.au/study/degrees/master-of-public-health/overview">http://mspgh.unimelb.edu.au/study/degrees/master-of-public-health/overview</a>)</b>
<b>Subject Overview:</b>	Introduction to and revision of conventional methods for contingency tables especially in epidemiology: # Odds ratios and relative risks; # Chi-squared tests for independence; # Mantel Haenszel methods for stratified tables; # Methods for paired data. The exponential family of distributions; # Generalized Linear Models (GLMs); # Parameter estimation for GLMs; # Inference for GLMs, including the use of score, Wald and deviance statistics (including residuals) for confidence intervals and hypothesis tests.

	<p>Binary variables and logistic regression models:</p> <ul style="list-style-type: none"> <li># Methods for assessing model adequacy;</li> <li># Nominal and ordinal logistic regression for categorical response variables with more than two categories;</li> </ul> <p>Count data and Poisson regression models:</p> <ul style="list-style-type: none"> <li># Log-linear models.</li> </ul> <p>Software:</p> <ul style="list-style-type: none"> <li># Fitting GLMs in Stata and R.</li> </ul>
<b>Learning Outcomes:</b>	<ul style="list-style-type: none"> <li># Understand the mathematical theory behind generalised linear models (GLMs) to analyse categorical data with proper attention to the underlying assumptions.</li> <li># Appreciate that most conventional methods of analysis of contingency table data are special cases of GLMs.</li> <li># Operate the Stata and R statistical packages to fit GLMs to data, extract, summarise, present and report the results.</li> <li># Emphasise the importance of the practical interpretation and communication of results to colleagues and clients who are not statisticians.</li> </ul>
<b>Assessment:</b>	<p>Practical exercise 1 (approx 4 hours of work, approx 600 words, no more than 4 pages) due in Week 2 (10%) Practical exercise 2 (approx 4 hours of work, approx 600 words, no more than 4 pages) due in Week 4 (10%) Major assignment 1 (approx 10 hours of work, approx 1900 words, no more than 10 pages) due in Week 8 (30%) Practical exercise 3 (approx 4 hours of work, approx 600 words, no more than 4 pages) due in Week 10 (10%) Major assignment 2 (approx 12 hours of work, approx 2300 words, no more than 12 pages) due in Week 12 (40%)</p>
<b>Prescribed Texts:</b>	<p>Resources Provided to Students online: Course notes and assignments. Special Computer Requirements: Stata and R (open access) statistical software.</p>
<b>Breadth Options:</b>	<p>This subject is not available as a breadth subject.</p>
<b>Fees Information:</b>	<p>Subject EFTSL, Level, Discipline &amp; Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a></p>
<b>Generic Skills:</b>	<ul style="list-style-type: none"> <li># Independent problem solving,</li> <li># Facility with abstract reasoning,</li> <li># Clarity of written expression,</li> <li># Sound communication of technical concepts</li> </ul>
<b>Related Course(s):</b>	<p>Graduate Diploma in Biostatistics Master of Biostatistics</p>