PUBH 7025 STATISTICAL METHODS IN EPIDEMIOLOGY

Credit Points 10

Legacy Code 401176

Coordinator Haider Mannan (https://directory.westernsydney.edu.au/search/name/Haider Mannan/)

Description Statistical ideas are integral to the conceptual basis of epidemiology and provide the tools needed to interpret epidemiological information and conduct epidemiological studies. Most professions in the health sciences need to be able to read and interpret statistics relating to individual and population health status and health risks, and to identify appropriate statistical methods to evaluate interventions, health policies and programs. Many public health practitioners are actively involved in surveillance, quantitative research and/or evaluation. This unit aims to support students to reach a level of proficiency in the selection of appropriate statistical methods to address specific research questions with a given dataset, conduct the selected analysis, interpret the results appropriately and draw valid and insightful conclusions about the research question.

School Medicine

Discipline Epidemiology

Student Contribution Band HECS Band 2 10cp

Level Postgraduate Coursework Level 7 subject

Pre-requisite(s) HLTH 7008

Restrictions

Students must be enrolled in a postgraduate program.

Assumed Knowledge

High school mathematics (arithmetic, formulas and algebra, reading graphs).

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Describe epidemiological data in tabular and graphical format including the calculation and interpretation of measures of disease occurrence
2. Assess a disease-exposure association using appropriate hypothesis tests and calculate confidence intervals for measures of association between exposures and disease
3. Determine whether effect measure modification/or confounding is present in an epidemiological study
4. Explain how the study design determines the method of analysis
5. Select appropriate statistical analyses to address a given research question and carry out the analyses in statistical software
6. Interpret the model output, assess the model fit and test model assumptions
7. Critically appraise published studies by assessing study design and methods of data analysis, as well as interpret study methods, results and conclusions

Subject Content

1. Use of measurement scales and implications for selection of statistical methods
2. Descriptive techniques to summarise public health data
3. Formulate a scientific question about the relationship of a response variable and predictor variable(s)
4. Use statistical software package (e.g. SAS, Stata, R)
5. Methods for analysing case-control studies (linear and logistic regression)
6. Methods for analysing cohort/longitudinal studies (Poisson regression, negative binomial regression)
7. Methods for time-to-event studies (Kaplan-Meier estimator, logrank test, Cox proportional hazards regression)
8. Inferences about model coefficients, tests of hypotheses and determination of whether interaction and/or confounding is present in epidemiological study
9. Evaluate model fits and test model assumptions
10. Interpret regression coefficients and draw appropriate conclusions from epidemiological data

7. Methods for time-to-event studies (Kaplan-Meier estimator, logrank test, Cox proportional hazards regression)
8. Inferences about model coefficients, tests of hypotheses and determination of whether interaction and/or confounding is present in epidemiological study
10. Interpret regression coefficients and draw appropriate conclusions from epidemiological data

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Item	Length	Percent	Threshold	Individual/ Group Task
Essay: Descriptive analysis and interpretation of an epidemiological data set	1,000 words (incl. Summary Figures & Tables)	25	N	Individual
Statistical modelling and interpretation of an epidemiologic data set	1,500 words (incl. Summary Figures & Tables)	35	N	Individual
Research and statistical analysis report	3,000 words (incl. Summary Figures & Tables)	40	N	Individual

Teaching Periods

Spring

Online

Online

Subject Contact Haider Mannan (https://directory.westernsydney.edu.au/search/name/Haider Mannan/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=PUBH7025_22-SPR_ON_O#subjects)

Parramatta - Victoria Rd

Day

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