HLTH 7008 INTRODUCTION TO BIOSTATISTICS

Credit Points 10

Legacy Code 401077

Coordinator Paul Fahey (https://directory.westernsydney.edu.au/search/name/Paul Fahey/)

Description Most professions in the health sciences need to read and interpret statistics relating to individual health status, interpret health risks in communities, and engage in the evaluation of interventions, or impact of health policies or programs. Many public health practitioners are actively involved in surveillance, quantitative research and/or evaluation. This subject provides students with the fundamental skills they need to analyse and interpret results from quantitative data collections. Content includes descriptive statistics, undertaking comparisons between groups, quantifying associations between variables, and statistical power. The subject is highly applied with the main focus being on interpretation and appraisal of statistical results and conducting analyses using statistical software.

School Health Sciences

Discipline Health, Not Elsewhere Classified.

Student Contribution Band HECS Band 2 10cp

Level Postgraduate Coursework Level 7 subject

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. Select appropriate descriptive statistics and graphs for different data types and produce these from a data set using statistical software.
2. Explain key concepts such as statistical inference, the central limit theorem, sampling distributions, probability distributions, confidence intervals, hypothesis tests, etc
3. List the key steps required to produce a confidence interval and to conduct a hypothesis test
4. Use statistical terms and symbols correctly when reviewing and interpreting statistical material
5. Compute statistical power or required sample size for a confidence interval or hypothesis test
6. Select appropriate statistical analyses to address a given research question and implement these analyses on a data set using statistical software
7. Interpret the output of statistical analyses clearly and correctly in a written report
8. Appraise the appropriateness of statistical results relative to all relevant considerations: including the research question, data types, shape of distribution, statistical power and other, procedure specific, assumptions.

Subject Content

1. Data and data types (categorical, ordinal, quantitative, etc)
2. Descriptive statistics (mean, standard deviation, median, quartiles, frequency, relative frequency) and graphs (bar chart, histogram, scatterplot, boxplots, run charts, etc)
3. Using statistical software
4. Statistical inference (populations, random samples and the probability relationship between them)
5. Probability distributions (binomial and normal), what they represent and how they are used
6. Confidence intervals as a method of statistical inference and the role of the central limit theorem
7. Hypothesis tests as a method of statistical inference, the 5 steps in hypothesis testing
8. t-procedures for statistical inference on means and mean differences
9. Chi-square procedures for statistical inference on associations between categorical variables
10. Statistical power and sample size in relation to one sample and difference between two sample confidence intervals and hypothesis tests only
11. Correlation and multiple regression models and associated confidence intervals and hypothesis tests
12. Nonparametric alternatives to t-procedures

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.

Type	Length	Percent	Threshold	Individual/ Group Task
Short Answer	2 hours	30	N	Individual
Short Answer	2 hours	30	N	Individual
Professional Task	2 hours	40	N	Individual

Prescribed Texts

- Sullivan LM. Essentials of Biostatistics in Public Health (2nd ed). Jones & Bartlett, Sudbury, MA. 2012. ISBN-13: 978-0-7637-9531-3, ISBN-10: 0-7637-9531-3, OR
- Sullivan, L. M. (2017). Essentials of biostatistics in public health (3rd ed). Jones & Bartlett, Sudbury. ISBN: 9781284108194

Teaching Periods

Autumn (2022)

Online

Online

Subject Contact Paul Fahey (https://directory.westernsydney.edu.au/search/name/Paul Fahey/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=HLTH7008_22-AUT_ON_O#subjects)

Parramatta - Victoria Rd

Day

Subject Contact Paul Fahey (https://directory.westernsydney.edu.au/search/name/Paul Fahey/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=HLTH7008_22-AUT_PS_D#subjects)

Spring (2022)

Online

Online

Subject Contact Paul Fahey (https://directory.westernsydney.edu.au/search/name/Paul Fahey/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=HLTH7008_22-SPR_ON_O#subjects)

Parramatta - Victoria Rd

Day

Subject Contact Paul Fahey (https://directory.westernsydney.edu.au/search/name/Paul Fahey/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=HLTH7008_22-SPR_PS_D#subjects)

Autumn (2023)

Online

Online

Subject Contact Paul Fahey (https://directory.westernsydney.edu.au/search/name/Paul Fahey/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=HLTH7008_23-AUT_ON_2#subjects)

Parramatta - Victoria Rd

On-site

Subject Contact Paul Fahey (https://directory.westernsydney.edu.au/search/name/Paul Fahey/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=HLTH7008_23-AUT_PS_1#subjects)

Spring (2023)

Online

Online

Subject Contact Paul Fahey (https://directory.westernsydney.edu.au/search/name/Paul Fahey/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=HLTH7008_23-SPR_ON_2#subjects)

Parramatta - Victoria Rd

On-site

Subject Contact Paul Fahey (https://directory.westernsydney.edu.au/search/name/Paul Fahey/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=HLTH7008_23-SPR_PS_1#subjects)