



Guidelines for Masters degree in Biostatistics
Biostatistics Research/Practical Project*
 (BCA code WPP)

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* Title differs across universities. Called the *Biostatistics Research Project* at The University of Adelaide, Macquarie University and The University of Sydney; the *Biostatistics Practical Project* at Monash University; and *Special Topic/Thesis in Biostatistics* at The University of Queensland. The unit code WPP is used in BCA documentation. As is the case for all BCA units, the university unit/course/subject code will be used at respective universities. (WPP is a legacy acronym for Workplace Project Portfolio, which was the original name of the unit.)

Goal

The aim of this unit is that the student gains practical experience, usually in workplace settings, in the application of knowledge and skills learnt during the coursework of the Masters program.

The student will provide evidence of having met this goal by presenting a **portfolio** made up of a **preface** and **project reports**.

Disclaimer

This document describes a generic form of the WPP. The requirements of individual universities may differ from those described here. 1, 2 and 4 (BCA) unit options may be available.

Prior to enrolment in WPP...

Adequate supervisory arrangements must be in place before students commence this unit. Students should discuss options for WPP with the BCA program coordinator at their home university and ask about access to examples of previous WPP portfolios.

Identification of suitable WPP topics

Students may identify topics for the projects of their WPP report in a number of ways. Students who are currently employed in health research may choose a topic relevant to their job. Other students may be assisted by their local WPP unit coordinator to make connections with a researcher who may be in a clinical area, in health services or in epidemiological research. It will usually be appropriate to identify topics in which there is a co-supervisor with a specific genuine interest in the results of the work, in order to ensure there is strong focus on the application of the work and on communication with non-statistical users of the results.

Projects should be selected to challenge the student and extend their knowledge, consolidating concepts and theories learnt through the BCA programme. Examiners will assess project reports in the context of the previous experience of the student, as described in your portfolio Preface. For example, students who have little clinical experience but a strong mathematical background will have a different project focus than students who have a strong clinical/epidemiological background but less mathematics. The selection of a suitable project topic and the subsequent report should be tailored to and accurately reflect the background of the student.

A project may include any of the following:

- primary or secondary analysis of health data and a report describing the work and interpretation of results;
- scientific manuscript for a peer-reviewed journal, with an appendix giving further detail of the statistical methods used;
- design work on a study, e.g. a clinical trial or health survey, and a report describing the work;
- statistical consulting project which might involve advising the client on design or analysis and guiding the work, and a report describing the work;
- evaluation of a data collection, data management or health information system from the perspective of statistical analysis of the data, and a report summarising the findings.

When more than one project is completed, the projects should not all be of the same type and must involve the use of different statistical methods and concepts (e.g. not all client reports on RCTs).

At least one project should involve complex multivariable analysis of data.

Publication of material from a WPP project report

Students should be aware that there are significant issues that must be considered prior to the publication of any material from a WPP project. These include ownership and confidentiality of the source data and results, inclusion of appropriate authorship, protection of copyright, and general approval from the supervisor of the WPP student that the content is fit to publish. Students should therefore engage in discussion with their supervisor (or Program Coordinator of their university of enrolment if the supervisor is external) prior to the preparation of any manuscripts for publication based on the WPP work. Adherence to this is of particular importance if a student is contacted directly by a publisher offering to publish the WPP in its original form, free of charge, and promising wide dissemination.

Content of the Portfolio

The portfolio will contain:

A. a Preface

This will contain an outline of the context in which each project was conducted, an outline of the work done and a reflection on the whole learning process for this unit.

B. one or more Project Reports

These reports may relate to different parts of the same study (e.g. design of a clinical trial, data collection, analysis and interpretation) or may comprise completely different projects.

Generally, students should complete 1 project per BCA unit of study of WPP.

The Preface

The Preface serves as an introduction to the portfolio of work and an overview of the whole unit. The aim of the preface is to give the reader your perception of what you learned, and how you learned it. The preface allows the student to place the project report(s) into context, demonstrating the increased confidence and competency of the student by the end of their study.

In the preface, the student should discuss their perceived change in knowledge and skills as a result of undertaking the projects comprising the workplace portfolio. Other suggested areas for discussion in the preface (where relevant) are the relationship of the portfolio work to coursework undertaken, difficulties in determining appropriate analysis methods, useful sources of assistance other than the supervisor, and statistical consulting communication issues. The preface must include a section of reflection on the whole learning process from the student's perspective, including issues of communication, team work and ethical considerations (e.g. in relation to the code of conduct of the Statistical Society of Australia, see [SSAI Code of Conduct](#)).

Ideally, the preface should be presented with similar headings to the marking scheme used for the Preface. This will allow examiners to evaluate how the student managed the project report(s) within the proposed objectives of the WPP.

Project Reports

Each project report should comprise

- A front sheet of no more than 2 pages giving:
 1. Project title
 2. Location and dates
 3. Context (provide a brief description of the context in which the work was done, including a short summary of the problem, how this project arose, objective of the problem, and the statistical and content-matter supervisors)
 4. Contribution of student to the project as a whole (may use bullet points)
 5. Statistical issues involved (may use bullet points to summarise the statistical topics covered by the student)
 6. Signed declaration by student (a short declaration about the evidence of the student's work, following the lines of "I declare this project is evidence of my own work, with direction and assistance provided by my project supervisor(s). This work has not been previously submitted for academic credit.")
- A statement by the main supervisor (see below for details)
- Report on the project – this may take many different forms as appropriate for the setting. Examples include a report for a client, a manuscript submitted to a journal (with statistical appendix), data documentation, briefing document, or conference presentation.

Project reports should not include computer printout unless it is absolutely essential. The results of computer analysis should be presented in appropriate tables or figures (see BCA Guidelines for Presenting Statistical Results).

Presentation

Length

A portfolio that includes a preface and two project reports should generally be around 10,000 words in total length (about 50-60 A4 double-spaced pages), excluding figures, index/table of contents, bibliography and any appendices. This may vary depending on the details of each project.

A single-project portfolio would be slightly more than half this length (including the preface).

Format

The portfolio should be written in English of an acceptable standard. If English is not your first language, you may need to seek help to assist with your grammar (such help is available from universities' student support services).

Unless the project reports have already been prepared in a required format other than that described here, the portfolio should be formatted as follows:

Appearance

- A4 size only, in PDF format.

Text

- Page numbers should be shown within margins.
- Double or one-and-a-half spacing of text should be used.

- Standard easy-to-read fonts are required (eg. Times New Roman, Arial) and should be no smaller than 11 point for text, and 9 point for footnote text.

The report should be **readily accessible to a biostatistical reader unfamiliar with the clinical area of application**. When the content area has its own technical terms, these should be defined when they first appear in the text and compiled into a glossary at the front of the report. Similarly, abbreviations should be defined when they first appear in the text and, when several non-standard abbreviations are used, a list of abbreviations should appear at the beginning.

Statistical Results

Students must follow the BCA Guidelines for Presenting Statistical Results, which give guidance on the precision of reported results and on preparing tables, graphs, frequency distributions, and histograms. These [guidelines](#) are available from the BCA website.

References

Students must follow the BCA Guidelines for Academic Referencing, which give guidance on referencing styles for all different types of references, including journal articles, books, government reports, and websites. These [guidelines](#) are available from the BCA website.

Supervision

Preparation for WPP

- **Consultation with the BCA program coordinator**

Adequate supervisory arrangements must be in place before students commence WPP. Students should discuss options with the BCA program coordinator at their home university. The program coordinator will advise on the suitability of projects and approve supervisory arrangements.

- **Proposal for project/s**

Prior to discussion with the program coordinator, or as a result of these discussions, a Proposal for Project should be prepared for each project that is undertaken. This should be no more than a page (per project) and contain a brief outline of the proposed project, including arrangements for supervision.

The Proposal for Project should be approved by the Program Coordinator, with a copy sent to the BCA Executive Officer.

Supervisor/s

Each student should have a statistically qualified supervisor with whom to discuss the plan for projects and progress towards producing the portfolio. This supervisor may be the program coordinator at the university where the student is enrolled (the enrolling university). Alternatively, in consultation with the student, the program coordinator may nominate a professional (bio)statistician to be the supervisor or associate supervisor for one or more projects. An associate supervisor may supervise a particular project or provide backup in case the main supervisor is unable to take a close role.

A main or associate supervisor who is not the program coordinator will be a person approved by the enrolling university.

If the enrolling university is unable to offer suitable supervision for a chosen project then the student may need to select a different project or nominate an alternative supervisor.

The supervisor should guide the student at each stage of the project or projects and provide feedback on drafts of the project reports.

Supervisor Statement

At the completion of the project/s, before submission for assessment, the statistics supervisor* is asked to write a brief statement of no more than half a page, commenting on the degree of independence of the work, the quality of the student's engagement with the project, and how they tackled problems and challenges such as communication issues and timelines.

*Where there are two supervisors, a statistics and a content supervisor, the statistics supervisor should write the statement.

Assessment

1. Usually the university grading scheme will be used rather than pass/fail so it can be used in the calculation of grade point averages.

NB: WPP is not graded at the University of Sydney.

2. As far as possible there should be two examiners, one from the student's own university (but not closely involved with supervising the student) and the other from another university in the BCA consortium.
3. Each part of the portfolio will be marked according to assessment sheets supplied to each examiner.
4. A total mark for the projects will be obtained as the simple average of all the project reports, over the two examiners, and will comprise 80% of the final mark.
5. The other 20% of the final mark will be obtained as the average from the two examiners of the marks for the Preface.
6. Students will need to submit their portfolios for examination by dates set each semester by their university, to ensure the work can be assessed by examiners and the results are available for the BCA and program examiners' meetings.

Marking scheme for Preface

The Preface will normally be marked after the Project reports so that the marker has an overview of the whole Portfolio. This part of the assessment will also take account of the supervisors' comments on the front sheets of the project reports.

Each of the following aspects/items will be assessed (unless the aspect is not applicable in the context of this student's portfolio; N.B. some items must be assessed and cannot be marked not applicable):

as

- Poor – score = 1
- Fair – score = 2
- Good – score = 3
- Very good – score = 4
- Excellent – score = 5

The total mark for the "Preface and Reflections" from each examiner will be the unweighted sum of scores for all items that are assessed (some may be marked as "Not applicable"), scaled to the range from 0 to 100.

Area	Item	1	2	3	4	5
Student's role	Overall contributions to projects					
	Overall value added to projects					
Reflections on Learning	Communication skills					
	Work patterns/planning					
	Statistical principles					
	Statistical methods					
	Statistical computing					
Teamwork	Communication with other team members					
	Negotiating roles and responsibilities					
	Working within timelines					
	Helping others to understand statistical issues - teaching					
Ethical considerations	NHMRC ethics guidelines					
	Confidentiality issues					
	Professional responsibility					
Other issues (please list)						

Marking scheme for Project Reports

Each of the following aspects/items of the report will be assessed (unless not applicable):

As

- Poor – score = 1
- Fair – score = 2
- Good – score = 3
- Very good – score = 4
- Excellent – score = 5

The total mark for the project from each examiner will be the unweighted sum of scores for all items which are not assessed as “Not applicable” scaled to the range from 0 to 100.

Students will not be asked to make revisions to WPP submissions unless the examiner is proposing to fail the student.

NB: This does not apply at the University of Sydney, where WPP is ungraded and emendations may be required before the portfolio is passed.

Examiners should comment on the submission by providing a brief report – generally no more than a few paragraphs.

Area	Item	1	2	3	4	5
Project description	Background, rationale for project Aim: what was/were the substantive questions to be investigated? Description of design Ethical issues					
Data management	Obtaining data (e.g. accessing routinely collected surveillance data, or working with people who collect the data) Data cleaning/manipulation					
Statistical methods	Demonstrate understanding of the key statistical issues raised by the project Make appropriate choices of statistical methods Provide adequate justification and explanation of methods chosen Correct implementation, incl software					
Presentation of data/results	Quality and appropriateness of tables Quality and appropriateness of graphs					
Interpretation of results	Demonstrate understanding of basic statistical concepts (eg. sampling variability, CIs, hypothesis tests, power) Correct summaries of results Discussion of limitations (e.g. potential bias) Conclusions consistent with results					
Presentation/writing	Clear, concise, correct English Appropriate referencing					
Other issues (please list)						