Guidelines for Master of Biostatistics Workplace Project Portfolio (Biostatistics Research Project) at The University of Sydney

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Adequate supervisory arrangements must be in place before students commence this unit. Students wishing to complete the Masters Degree should discuss options for Biostatistics Research Project with the Biostatistics program coordinator at the University of Sydney.

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**.

Identification of suitable Biostatistics Research Project topics

Students may identify topics for the projects of their Biostatistics Research Project 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 Biostatistics Research Project 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 from students who have a strong clinical or 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.

Students may view examples of previous Biostatistics Research Project portfolios online at http://ses.library.usyd.edu.au/handle/2123/1212

Click on the **Issue Date** or **Title** button to see the collection.

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 unit of study of Biostatistics Research Project.

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 – attached).

Ideally, the preface should be presented with similar headings to those given on page 6 for the Preface. This will allow examiners to evaluate how the student managed the project report(s) within the proposed objectives of the Biostatistics Research Project.

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 information).

Presentation

Length

A portfolio that includes a preface and two project reports should generally be around 10,000 words in length (about 50-60 A4 double-spaced pages), excluding figures, index or table of contents, bibliography or references, 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 the University's 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
- Margins should all be at least 2 cm.
- Page numbers should be shown within margins.

Text

- Double or one-and-a-half spacing of text should be used.

- Standard easy-to-read fonts are required (e.g. 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 at www.bca.edu.au/currentstudents.html#reportingguide.

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 at www.bca.edu.au/currentstudents.html#referencingguide.

Supervision

Preparation for Biostatistics Research Project

- **Consultation with the Biostatistics program coordinator**

  Adequate supervisory arrangements must be in place before students commence Biostatistics Research Project. Students should discuss options with the Biostatistics program coordinator at the University of Sydney. The program coordinator will advise on the suitability of projects and will 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. In addition, the proposal document should include arrangements for supervision and contact details of proposed supervisors if they are not at the University of Sydney.

  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 of Sydney. 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 University of Sydney.

If the University of Sydney 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 teamwork, communication issues and timelines.

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

Assessment

- Biostatistics Research Project is not graded at the University of Sydney. The result will be satisfactory or not. Examiners may specify revisions, emendations or typographical errors that should be made before the portfolio is passed.

- There will be two examiners, one from the University of Sydney (but not closely involved with supervising the student) and the other from another university in the BCA consortium.

- Examiners will be asked to consider the way in which the aspects listed in the tables on the following page are covered, where appropriate.

- Examiners will be asked to provide a report, which states concisely the grounds on which their recommendation is based indicating, where appropriate, the strengths and weaknesses of the portfolio.

Submission

- Students must submit their portfolios for examination by 30 June or 30 November.

- A single electronic examination copy of the portfolio must be submitted to the School of Public Health Student Office at sph.bsta@sydney.edu.au. This should be a single document in pdf format.

- If an examiner requests a printed copy of the portfolio, this will be supplied by the University; otherwise examiners will be sent the electronic copy.

- The degree will not normally be awarded until after the receipt of the approved final copy of the portfolio for the University Library e-repository, with emendations if required. This should be an electronic submission of a single document in pdf format.

Preface

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

Project Reports

Project description

Background, rationale for project
Aim: what was/were the substantive question/s 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 & explanation of methods chosen
Correct implementation, including software

Presentation of data/results

Quality and appropriateness of tables
Quality and appropriateness of graphs

Interpretation of results

Demonstrate understanding of statistical principles (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