

Guidelines for Alternate Thesis Format Preparation
Masters Degrees in Public Health (MPH or MS)
Pertains to all GSPH Divisions (Epidemiology/Biostatistics, Health Promotion, Health Services Administration, Occupational and Environmental Health)

Adopted by the GSPH faculty April 2006 based on experience reported by
Epidemiology and Biostatistics faculty currently working with their revised guidelines.

IMPORTANT NOTES: The guidelines below were adopted at the 4/11/06 GSPH faculty meeting and are **identical to the “modified” Epi/Biostat guidelines dated Fall 2005** that were approved by Graduate and Research Affairs and provided for review by Jeanette McCarthy. Instructions below mention specifically the Epi/Biostat division and American Journal of Epidemiology as a guide for formatting manuscripts, yet also provide instructions for using any journal format. The GSPH faculty adopted the Epi/Biostat guidelines with no changes suggested, although with the understanding that students from other divisions are likely to be preparing theses targeting journals other than the American Journal of Epidemiology. Thesis chairs will work with students to select appropriate target journals. “Study population” and other content details mentioned in Materials and Methods may not necessarily apply to all theses in all divisions; however, as long as the basic overall structure and format of the thesis is the same as that described here, then no additional approvals from Graduate and Research Affairs should be needed for students to submit theses following these guidelines.

Overview

In order to incorporate skills in scientific writing, which will benefit all students professionally, and increase the likelihood of publishing thesis research in scientific journals, we have modified the Master’s thesis guidelines within the Epidemiology/Biostat division. In all cases, students are advised to seek guidance from their Chair as to the preferred format. The new style does not require any less work than the traditional style, simply a different format. The journal article option will consist of three components. The first part of the thesis, reflecting the main body of research, should be written as a publication-quality manuscript suitable for an epidemiology journal. Second, is a comprehensive review of the literature surrounding the thesis topic (equivalent to the second chapter of a traditional format), which will become “the Appendix” or “Appendix A” if additional appendices will be added (see Part 3). Finally, supplemental data (more detailed methods, extended data sets/data analysis, tables, or additional figures, dictionary of terms, copies of surveys, etc) will be included in as other appendices. It is our hope that this will not only increase the number of theses that are published, but also teach students how to write clearly and concisely.

Part 1: Journal article

Background

What is the big picture? Set the stage for your research by including background material on the current status of your general topic (e.g. disease incidence, mortality, established risk factors,

etc). Make sure you state what you are attempting to explore via your thesis research and why. Does it fill a gap in the current body of literature on your topic? How? State your hypotheses that you'll be testing in this study. This section should be no more than a couple of pages.

Materials and methods

Describe how the research was conducted including the following:

- *Study population*

What is the study design and how were subjects selected? Describe the time period of enrollment and ascertainment scheme with inclusion/exclusion criteria. How many subjects did you start with and how many were left after exclusions? A statement should be included that the institution's review board has approved the study proposal, as well as the manner in which informed consent was obtained from subjects (if applicable).

- *Data collection*

Provide a detailed description of the variables used in your analysis including outcome(s), risk factors and other important covariates. The descriptions should include the following:

- Definition, including any cutoffs (and rationale) used for converting continuous variables to categorical ones
- Measurement
- Collection method (interview, med record abstraction, etc.)
- Validation procedure

Provide a detailed description of any special methodologies or instruments used to collect your data (e.g. special laboratory methods, psychiatric surveys) in an appendix.

- *Statistical analysis*

Describe in detail how you carried out analysis of the data including methods used (logistic regression, proportional hazards, principal components analysis), tests of statistical significance (chi square, Student's T Test, etc), transformation of data, selection of covariates for multi-variable models and any other details that would allow the reader to reproduce your work.

Results

The results should be a combination of tables, figures and text.

- Present results in a logical sequence. Usually descriptive data are presented first, followed by results of univariate analysis, then multivariable models.
- Make sure all tables are labeled such that they could stand alone.
- Do not repeat in the text all data in a table; emphasize or summarize only important observations.
- In the text, talk not only about p-values, but interpret the magnitude and direction of any associations as well.

Discussion

The purpose of the discussion is to interpret and compare the results. Be objective; point out the features and limitations of the work. Your opening paragraph should describe your key findings, emphasizing new and important aspects. Do not repeat information given elsewhere in the manuscript. Discuss the limitations of your study. Some examples include:

- Possible confounders, effect modifiers not measured
- Biases in your study and what effect they may have
- Timing of data collection relative to outcome of interest
- Sample size and power

Relate your results to current knowledge in the field and to your original purpose in undertaking the project: Have you resolved the problem? What exactly have you contributed? Briefly state the logical implications of your results. Suggest further study or applications if warranted.

Part 2: Literature Review (Appendix A)

Provide empirical evidence supporting the historical, theoretical and research background for the study. The literature review should demonstrate your ability to understand and interpret the key literature in your “field”. The exact topic(s) for your review should be discussed with your thesis Chair prior to commencing this section to avoid wasting time on areas not directly relevant to the problem. See links below for more tips.

Literature reviews and Using the literature: <http://www.languages.ait.ac.th/EL21lit.htm>. Has some good background, explains why it is a useful research tool, give some guidance on outlining.

How to write a literature review (from Sportscience - emphasis on this as a stand-alone review paper): <http://www.sportsci.org/jour/9901/wghreview.html>

The Literature Review: a few tips on conducting it: <http://www.utoronto.ca/writing/litrev.html>

Part 3: Other appendices

Because most journal articles are meant to be concise reports, there may not be room within the manuscript to include supplemental data and materials. The Appendix section is a place to put copies of surveys, additional tables or figures of results, details on specific methodologies, or any other data that you and your Chair think should be included, but which do not fit within the manuscript. Remember that appendices should be labeled in the order mentioned in text. Therefore, if you will have more than the expanded literature review in this section, label the literature review as Appendix A and the others as B, C, D and so on.

Formatting Guidelines

A good guide for format and style of journal articles is ‘*Scientific Style and Format: The CBE Manual for Authors, Editors, and Publishers*’, available from the Council of Science Editors, Inc., Check their website for information on availability of the latest edition (www.councilscienceeditors.org/publications/ssf_7th.cfm).

With respect to technical aspects (preliminary pages, formatting of tables and headers, etc.), your thesis should adhere to the strict guidelines provided in the latest edition of the *SDSU Dissertation and Thesis Manual*.

Treat each of the three parts of the thesis (Journal article, Literature Review and Other Appendices) as all parts of one document – just like you would in a traditional thesis. In terms of page numbering and the numbering of tables and figures, therefore, numbering should be continuous throughout (unless someone is using Technical format; see the *SDSU Dissertation & Thesis Manual*). Tables and figures in the text and appendices should be reflected in the Lists of Tables and Figures in the preliminary pages.

The guidelines presented below are adapted from those of the *American Journal of Epidemiology* and are used by many of the top scientific and clinical journals. As a guideline, the maximum length of a full length research article in *Am J Epidemiology*, exclusive of tables, figures, references, and abstract, is 4,000 words. However, if you have another journal that you know you'll be submitting to, use that journal's guidelines. When submitting your thesis to the Graduate Division, also include a copy of the author guidelines for whatever journal format you are using with your thesis.

Abbreviations. To improve clarity and readability, many journals limit the use of abbreviations. Only those needed for long, involved terms, such as hepatitis B surface antigen (HBsAg), are allowed. The abbreviations CI, RR, OR, and SMR may be used only in parentheses after being defined the first time used. Abbreviations may be used in tables and figures if they are defined in the table footnotes and figure legends. Avoid excessive use of abbreviations solely to limit the word count.

At its first appearance in the abstract and text, an abbreviated term should be written out in full, with the abbreviation in parentheses immediately following.

Use of "percent" in text. Express percentage in text as "percent" (one word). Use the % symbol in the abstract, tables, and figures (including legends).

Numbers. Write out numbers under 10, except for decimals, percentages, measurements, and units of time; express numbers 10 and greater in Arabic numerals. (Use numerals for case 1, subject 2, etc.) Insert commas in numbers with four or more digits.

Metric system. The *Journal* strongly encourages authors to use the metric system for all measurements. Where US measurements must be used, metric equivalents *must* be given in parentheses.

Decimal fractions. For decimal fractions less than 1.00, use a zero in the whole-number position (e.g., 0.001).

***p* values.** Note style for probability: $p < 0.01$, with a lowercase letter *p*. Avoid reporting an excessive number of digits beyond the decimal for estimates, especially when the estimate has a wide confidence interval. If *p* values are given, they should be reported to at most two digits

beyond any leading zeros. They may alternatively be reported as less than some specified value (e.g., $p < 0.05$ or $p < 0.001$). Indicate whether p values are one sided or two sided.

Means, standard deviations, and standard errors. To report means, standard deviations, and standard errors, use the following format: "mean (SD)" and "mean (SE)." Do not use " \pm ."

Confidence intervals. In the text, all confidence intervals are expressed by using a colon and with a comma instead of a dash between values, for example, (95 percent confidence interval: 1.20, 1.90). In tables, place confidence intervals in a separate column without parentheses, for example, 1.20, 1.90.

Regression analyses. When presenting results of regression analyses, regression coefficients should usually be converted into more generally meaningful terms (e.g., relative odds instead of beta coefficients). Note that, because regression coefficients are unit dependent for continuous variables and category dependent for discrete or ordinal variables, the *Journal* requires statements specifying the units or categories, that is, as parenthetical statements in the text or in table footnotes or figure legends.

Table Format and Style. Each table must be formatted by using the table feature in Word. Tables should be numbered (Arabic numerals) in the sequence in which they are mentioned in the text. They should be concise and self-explanatory. Use a single top rule, a single rule below the headings, and a single bottom rule. Do not use rules within the table body. Column headings should be clearly delineated, with straddle rules over pertinent columns to indicate subcategories. Whenever possible, data in vertical columns should have the same unit of measurement.

Table titles should give details on the place of study, the time of the study, and the study population (if applicable). Follow the *SDSU Dissertation & Thesis Manual* for the formatting of table titles. For footnotes, use the following symbols in this order:

*, †, ‡, §, ¶, **, ††, ‡‡, etc.

Use asterisks (*, **, ***) for p values. If p values repeat in successive tables, they should be defined in the first footnote to each table in which they appear. Always list any p values before other footnotes in the table.

References. Follow the *Am J Epidemiology* guidelines below to format entries in the Reference List (using the *CBE Manual* as an alternate source), but make sure to follow the *SDSU Dissertation & Thesis Manual* for page layout. *Am J Epidemiology* reference list guidelines say to number references consecutively in the order in which they are mentioned in the text. Reference numbers in the text are full-sized Arabic numerals in parentheses within the sentence. For three or more consecutive references cited all at once, use, for example, (1-4). Format other references as (4, 5, 12), with spaces between the reference numbers.

References of direct quotes should also include the page number on which the quoted material appears.

Important: All statements of scientific fact should be referenced.