



BIOMETRICS INFORMATION

(You're 95% likely to need this information)

PAMPHLET NO. # 44

DATE: May 10, 1993

SUBJECT: What Do We Look for in a Working Plan?

The Biometrics section reviews many working plans each year (55 working plans during fiscal year 92/93.) This pamphlet briefly outlines the many things that we look for in a working plan. Please keep in mind that this is not a guideline for preparing a working plan, but rather a checklist to ensure that a working plan is complete from the Biometrics point of view.

Background

Should give a clear description of the background, justifying the need of the proposed experiment.

Objectives

Should correspond to the questions the experimenter wants to answer. Should be specific and concisely state the purposes and the expected products of the proposed experiment.

If the proposed study involves conducting a controlled experiment then the experimental design of the study should be discussed. If the proposed study involves observing some uncontrolled process by sampling then the sampling design should be described.

Experimental Design

Should support the objectives. The working plan should provide information that answers the following questions:

- Where will the experiment be performed?
- What will be the treatment factors?
- How many levels will each treatment factor have?
- Does the study design include suitable controls?
- What will be the experimental unit for each treatment factor?
- What will be the method/criteria of selecting the experimental units?
- How large will the experimental units be?
- How will the treatment factors be assigned to the experimental units?
- Will any treatments be nested within other treatments?
- How many experimental units will each treatment level or combination of levels have?
- Will the treatment factors be replicated properly and sufficiently?

- How many variables will be measured? Are they all necessary?
- Does the information gain justify the cost of data collection?
- What will be the elements ¹?
- How many elements will there be?
- Will the measurements be repeated over time?
- Are the sample sizes adequate?
- How will the data be coded?
- Have field sheets for the data collection been developed?

Sampling Design

Should support the objectives. In addition to the questions listed under "Experimental Design", the working plan should provide information that answers the following questions:

- What is the population, or universe to be surveyed?
- What is the sampling "frame" ²?
- What information is to be sought in the survey?
- Has the information to be sought been found by others?
- What will be the sampling design (simple random sampling, stratified random sampling, cluster sampling, or systematic sampling)?
- What will be the method of data collection?
- How will each piece of data be handled for all stages of survey?
- What analyses are to be performed?

Proposed Analysis

Should describe method of analysis for each objective. The following details should be included in the working plan.

- What will be the method of analysis?
- Will the raw data be suitable for analysis? If not, how will the data be manipulated?
- If the data is to be transformed, what is the rationale for transformation, and what will be the transformation?
- How many data points will be available for the final analysis?
- Will there be sufficient data for the proposed analysis?

¹ An element is the experimental material on which a measurement is taken. It has also been referred to as a sampling unit.

² A frame is a list of all units from which samples are taken. It is also called the 'statistical universe'.

- Will the proposed method of analysis be appropriate for the type of data collected?
- If an index is calculated, how should the index be interpreted, and what will be the expected range of the index values?
- If ANOVA is the proposed method of analysis, has an ANOVA table matching the experimental design been included in the working plan?
- If the design includes repeated measures, how will they be analyzed?
- If uncommon tests are to be used, have they been described in the working plan with reference to the original development of the tests (not to cases where the tests were used)? Are copies of the papers attached to the working plan?

Other

- What quality control measures will be taken to ensure consistency and accuracy in the data collection?
- Has the timing and coordination of the data collection, and the study as a whole, been planned and is a schedule included in the working plan?
- What are the responsibilities of the research team?

The purpose of reviewing a working plan is to examine an experiment in depth before the experiment is executed. This will ensure that the experiment is properly designed, the proposed analysis is sound for the type of data to be collected, and the expected results meet the experiment's objectives. Including the information suggested above in your working plan allows us to properly review your proposed study. Thus we can assist you more efficiently and effectively with the design and execution of your experiments.

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