

PREFACE

This book is a collection of three sets of lecture notes prepared by Professor Daniel B. DeLury.

The first set of notes was used at the University of Toronto for many years as support for an Introductory Statistics course designed for non-mathematicians. These notes were originally distributed by the Department of Mathematics as course notes and were untitled apart from the course number. They became known as The Grey Notes, presumably because the original cover was grey.

Shortly before his retirement, Dan prepared the Design and Regression notes. He left the original handwritten notes with the Department of Mathematics as a resource for future instructors of Design and Regression courses. He had taught these courses for many years. The courses were taken mainly by students majoring in Mathematics but many students from other disciplines frequently took his courses too.

Some years ago Dan gave me a list of revisions that he had prepared for a revised set of notes. Most of the revisions were minor but certain pages needed to be rewritten. Where changes were made, it was my intention to retain the original style and spirit wherever possible. Dan has reviewed the revised notes, but has decided not to take an active role in editing at this stage.

In some recent letters, Dan has shared some views with me that I thought would be appropriate to include here.

With reference to the Introductory notes, he wrote, "If you are teaching a course for biologists, or anybody else for that matter, the main objective is to make clear the requisites for scientific evidence - control and randomness. Randomness, in particular, goes right back to the foundations of probability theory, contrary to some Bayesian statisticians."

With reference to the approach taken in the Design and Regression notes, he wrote, "It can be argued that the Design and the Regression cover much the same material. Certainly it is possible to imbed the Design into regression theory, but I think this is a mistake, pedagogically speaking. I agree that regression theory, at least the first go at it, is best not expressed in terms of matrices, in spite of the huge economy to be had. I tried this once, with the third year Industrial Engineers, because they had had a course in Linear Algebra, but I had to abandon it, because they were not expert enough in matrix algebra. It is not sufficient to have had a course in it; one must be expert in these operations to use them in regression theory."

On multiple comparison procedures, he wrote, "I would not introduce them at all. It is debatable whether they should be introduced in an experiment at all. They do arise in screening trials."

On factorial experiments, he wrote, "No set of lectures I have ever seen does justice to the factorial experiment. It is a limitless topic."

On the Chio rule, he wrote, "I do not know who Chio was. I ran across his name in Whitaker and Robinson's 'Calculus of Observations'. The whole reduction is my own version of the old Dolittle method and, for one who is doing the arithmetic himself, has much to recommend it."

Many readers of these notes will be interested in the examples included at the end of each set. Many of the examples present special challenges to the reader. With reference to one example in particular

(Design Notes, Example 20), Dan offered the following observation: "An analysis based on the supposition of a constant error system looks reasonable, but may be misleading. A more primitive analysis appropriate to series of experiments, reveals that the error system is hopelessly out of control. My experience with laboratories says that they are always out of control."

In the last (seventh) edition of Snedecor and Cochran, changes were made to the analysis of a split plot experiment discussed in earlier editions. This change included a partitioning of the subplot error into two pieces. When I asked him about this change, Dan wrote, "[The] notion of partitioning [subplot] error terms is quite old. I do not think that Fisher ever did it. In any event, for the standard everyday use I frown on it. There are, possibly, instances in which it is appropriate. As for what is done in Snedecor and Cochran, I hold the book in high regard, but would take issue with it here and there. For example, it offers covariance as a way of coping with an experiment "balanced" on (say) initial weight, without saying that this is strictly a salvage job."

I have taught from early forms of these notes for several years. My involvement with the notes has been extremely valuable to me. While they provide an effective introduction for beginning students of statistics, they will be considered a valuable resource to the specialist as well.

Thanks go to Mrs. Maria Dourado for her expert typing of the Design and Regression notes.

Gordon Fick
Calgary
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