

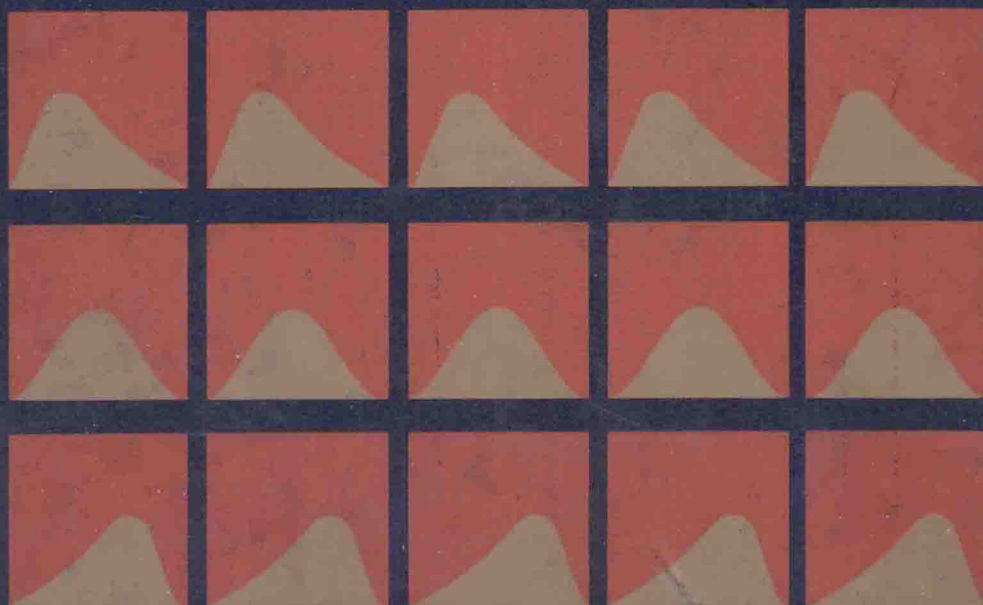
Statistical

Techniques

in Business

and Economics

Mason



Statistical
Techniques

In Business
and Economics

Fifth
Edition

Robert D. Mason
The University of Toledo



1982

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**Statistical Techniques
in Business and Economics**

The Irwin Series in Quantitative Analysis for Business

Consulting Editor Robert B. Fetter Yale University

To Dorothy

Preface

This text is designed primarily for a first course in business and economic statistics. However, students majoring in any of the social sciences will find the illustrative material quite familiar. The mathematics can be handled by students who do not have an extensive mathematical background.

The book is divided into 24 chapters, and 16 appendixes are included. There is ample material for a one-year course, but considerable latitude is possible in the selection of topics for shorter courses. A one-semester course, for example, could include Chapters 1–5, 9–15, and 20. The primary objective of this fifth edition remains the same as that of the previous editions. Both descriptive statistics and inferential statistics are covered, but the main emphasis is on inferential statistics. In addition, there are a number of special-interest topics such as quality control, time series analysis, and index numbers.

The text includes a number of new special features.

It is now oriented to the example—solution approach.

At various points in each section there are *self-reviews* designed to give students an opportunity to work problems similar to the examples. Answers and methods of solution are given in the margin adjacent to the self-review problems. This work serves to reinforce the student's understanding of the preceding material.

A *chapter self-review examination* at the end of each chapter covers all the material in the chapter. This test allows the student to evaluate his or her overall comprehension of the subject matter.

A number of applications presented use the Statistical Package for the Social Sciences, Minitab, and Basic to illustrate the computer's potential for problem solving.

Both a *chapter summary* and a *chapter outline* are presented at the end of each chapter. Students can use them to pull together the ideas of the chapter.

New material in this fifth edition also includes exponential smoothing, the moving-average method of smoothing time series, and the normal approximation to the binomial. The material on probability and probability distributions has been revised and expanded to three chapters. The presentation of tests of hypotheses has also been revised and is now contained in three chapters.

A new, 200-page Study Guide now accompanies the text. The chapter

organization of this comprehensive study guide is the same as the text's. For each chapter there are:

Chapter objectives.

An extensive summary.

A glossary of terms.

Problems with detailed solutions.

Student practice exercises, with answers.

A two- or four-page tear-out chapter assignment.

A Teacher's Manual contains the full solutions to all the exercises in the textbook and all the chapter assignments in the Study Guide.

I wish to express special thanks to colleagues William G. Marchal and Douglas A. Lind for their many helpful comments in organizing this fifth edition. Special acknowledgment is given to Jeff Hooper, Mesa Community College; Charles N. Keppler, Miami Dade Community College; Charles E. Leitle, Missouri Southern State College; William G. Marchal, University of Toledo; Douglas W. Morrill, Centenary College of Louisiana; John C. Shannon, Suffolk University, Boston, Massachusetts; and Lee C. Wilson, Mason Community College; who made many valuable comments and criticisms in their reviews of the manuscript. I am indebted to the Literary Executor of the late Sir Ronald A. Fisher, F.R.S. Cambridge; to Dr. Frank Yates, F.R.S. Rothamsted; and to Messrs. Oliver and Boyd, Ltd., for permission to reprint Tables III and IV of their book *Statistical Tables for Biological, Agriculture and Medical Research*.

Robert D. Mason

A note to the student

This textbook is constructed to aid you in your study by presenting the subject matter in small, easy-to-take steps with frequent checks to determine whether you fully understood the preceding material.

As you progress through each chapter you will be asked to solve a problem and interpret your findings. The answer to each *self-review* is always given on the left side adjacent to the problem. Cover the answer before starting work. Following is an example.

SELF-REVIEW

- a. The range is 54.3, found by
b. Highest value – Lowest value
= 297.9 – 243.6
= 54.3.

(Cover the answers in the left hand column.)

The consumer price indexes for May in selected cities are: Cleveland, 285.1; Buffalo, 297.9; Denver, 256.7; Atlanta, 284.7; Chicago, 243.6; Dallas, 277.2.

- a. What is the range?
b. Now verify your answer against the one given in the margin.
-

There are *exercises* after each section, if you need additional practice. The answers to selected exercises and the methods of solution are given in Appendix A.

Another distinctive feature of this text is the *Chapter Self-Review Examination* with answers and method of solution given in Appendix A. By completing this test you can better evaluate your comprehension of all the material in the chapter.

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