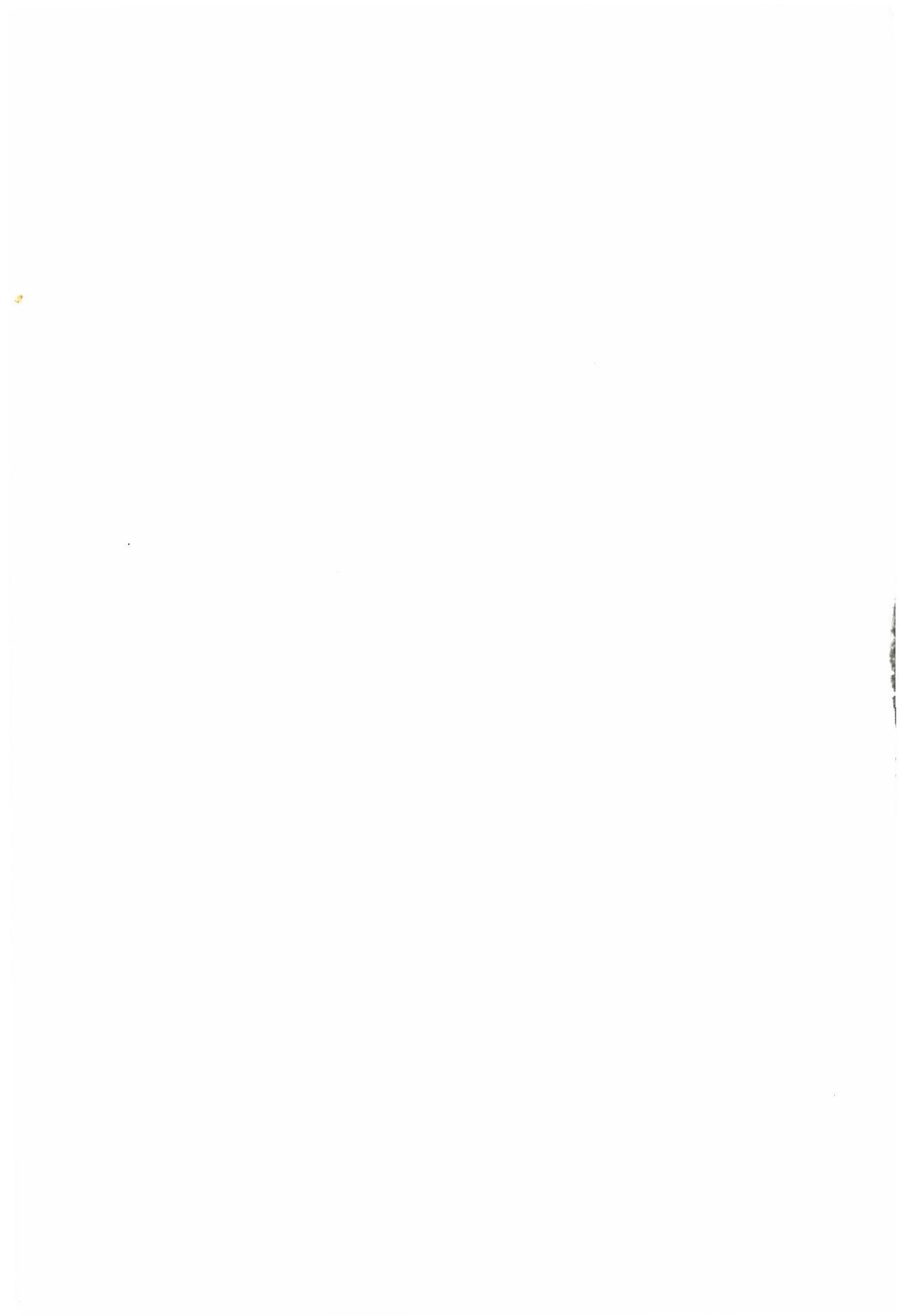


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Elementary Biostatistics with Applications from Saudi Arabia

Second Edition

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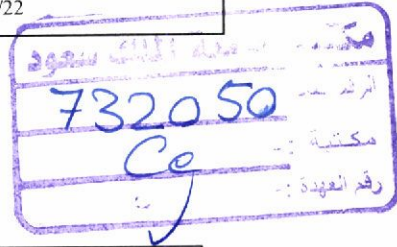
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PREFACE TO THE SECOND EDITION

This edition was prepared to expand the treatment of certain important concepts. Various reviewers desired some of these expansions, and other additions were deemed necessary for the students' understanding. Revisions include a brief discussion of the effects of adding or multiplying data values by a constant on the values of summary statistics in Chapter 2; an expanded discussion of independence along with exercises in Chapter 3 and a connection made with the Binomial distribution in Chapter 4; and a discussion of statistics as parameter estimates to the introductory section of Chapter 5 to which the discussion of the central limit theorem was also moved.

More minor revisions include a rule for range classes and revised exercises to distinguish between the two types of classes in Chapter 1; expanded exercises to include finding information from histograms in Chapter 1; a discussion of repeatable experiments and with replacement sampling early in Chapter 3; a brief discussion of non-integer discrete random variables and the revision of exercises giving the cumulative probabilities for discrete random variables in Chapter 4; the expansion of some examples particularly those on distributions; and various changes in presentation throughout the book.

It is hoped that these revisions will be useful to the understanding of the readers of this book and particularly the students in the medical colleges. The author appreciates the comments of those who have used the book and bears responsibility for any remaining deficiencies.

Nancy Ann Eyink Hasabelnaby

PREFACE TO THE FIRST EDITION

The intention of this book is to give a basic understanding of some elementary probability and statistics using health-related examples primarily from Saudi Arabia. These examples are, for the most part, based on actual or real-life data from Saudi Arabia as published in Saudi journals. Examples have been taken from the various specializations of students at King Saud University who are required to take the statistics course covered by this book. However, data are invented unless otherwise stated. Only in those cases where the data or results come directly from a published source is a reference given. The majority of exercises in Chapters 2, 3, 5 and 6 are from published sources. For the exercises in Chapters 1 and 4, many are based on results of studies but do not come directly from them. All data have been treated as random samples from some population (whenever this assumption is needed) even when it is not actually the case for the data used.

The statistics in this book are confined to those that use the probability distributions of the Binomial, Poisson, Normal and Student's t-distributions. While this does not allow us to explore many commonly used statistical techniques, it is hoped that readers of this book will get a feel for the use of statistics in health fields. This book can be used as a textbook for a one-semester course designed to give a quick overview of statistics with a minimum of mathematics – only elementary algebra is needed. It is also expected that this book will serve as a useful reference in other types of courses.

Most of the contents of this book (except sections 3.5, 5.5, 5.6, 5.7, and 6.4) have been used for several terms in a one semester course meeting three hours per week (one lecture and two tutorial hours) taught by the author and other colleagues at the University Center for Women Students, King Saud University, as a requirement for all students in the Colleges of Medical Science, Dentistry, Medicine, and Pharmacy. Examples and exercises have been developed in accordance with the needs and difficulties encountered by these primarily Saudi students. Examples are intended not only to illustrate statistical methods but also to educate the Saudi student about medical problems that exist in the Kingdom and the research of its practitioners. The sections not used in this particular course and various exercises can easily be used in a broader course allowing for more time.

Because it has been found that many of these students have not had extensive experience using a calculator, the calculations of the various statistics in this book have usually been given in full. This allows every student to check step-by-step how to carry out each part of the calculations.

Nancy Ann Eyink Hasabelnaby

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