



STATISTICS

FOR MANAGEMENT AND ECONOMICS

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STATISTICS

**FIFTH
EDITION**

for Management and Economics

COLLIN J. WATSON
University of Utah

PATRICK BILLINGSLEY
University of Chicago

D. JAMES CROFT
Mortgage Asset Research Institute

DAVID V. HUNTSBERGER
Iowa State University

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Editor-in-Chief, Business and Economics: *Rich Wohl*
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Preface

Statistics for Management and Economics, Fifth Edition, is an introductory statistics text for students of management, business, and economics. It was written for a one- or two-term course. Our major objective for the fifth edition has been to present *principles* and *practices* of statistics in the context of substantive, engaging, and up-to-date *applications* in management, business, and economics. As we made changes in the text, we emphasized three themes: *clarity*, *accuracy*, and *applicability*.

CHANGES IN THE FIFTH EDITION

The fifth edition of *Statistics for Management and Economics* includes many improvements in organization, content, and design.

Expanded Coverage of Statistical Process Control. We expanded and improved our discussion of *statistical process control*, which we now cover in Chapter 15. In this chapter, we discuss quality improvement, we present a complete and accurate discussion of process control, we discuss control charts and process capability, and we introduce Pareto charts.

Supplemental Sections. We reorganized most of the chapters so that *supplemental sections* are now placed at the ends of chapters. Instructors can omit the supplemental sections to streamline their courses, or they can include the supplemental sections to concentrate on the additional topics at their discretion.

Enhanced Content. Chapter 1 now includes important applications of statistics in management, business, and economics, along with pictorial graphics and more emphasis on time series or sequence plots for data generated by a process. Chapter 2 discusses data distributions, including histograms and stem-and-leaf diagrams. Chapter 6, on continuous probability distributions, emphasizes normal distributions; in addition, we have added a supplemental section on exponential probability distributions. For this edition, we have reintroduced a supplemental section on type II errors and power of hypothesis tests in Chapter 9. Analysis of residuals from regression analysis has been reorganized in Chapters 12 and 13. Chapter 14 includes a section on autocorrelation and autoregressive models for stationary series. In the nonparametric methods chapter (Chapter 18), we have included new sections on the runs test for randomness and the Kruskal–Wallis test, including multiple pairwise comparisons. We moved the discussion of index numbers to Chapter 19.

The fifth edition has been edited throughout to improve readability, to enhance clarity, and to improve our conversational and narrative style. Readers will find

many new, color-enhanced graphics that contribute to the visual attractiveness of the book. Examples, problems, graphics, cases, data analyses, tables, data files, and references have been added, updated, and enhanced with color in every chapter.

Some material has been omitted or de-emphasized to keep the length of the book more manageable and to reflect increased emphasis on contemporary practices of statistics. For example, summaries are now shorter because they do not include material from the supplemental sections.

FEATURES

The fifth edition of *Statistics for Management and Economics* contains a wealth of special features.

== **Topics.** The core topics that we included in the fifth edition reflect contemporary trends and widely applicable practices of statistics in management, business, and economics—from exploratory data analysis and statistical process control to estimation and hypothesis testing, and from analysis of variance and multiple regression to time series analysis.

== **Genuine Management and Business Examples and Cases.** Throughout the text, we have used management and business examples and cases that are practical, relevant, and widely applicable. Students become involved as they think about and solve problems related to stock returns, yields of treasury bills, bankruptcy, predicting the catastrophic failure of the space shuttle *Challenger*, reducing risk with portfolio theory, and much more.

== **Abundant Assignment Problems.** The fifth edition is unexcelled for the quality, abundance, and variety of its problems. Plentiful assignment problems, many with multiple parts, are located at the ends of sections and at the ends of chapters. Up-to-date problems are taken from all of the functional areas of management, business, and economics.

== **Unique Statistical Graphics.** Well-designed, colorful graphics are used to present concepts, functions, and data. Graphics make statistical concepts physically perceptible, objectively real, and easier to comprehend. For graphical excellence in statistics, this text is unrivaled.

== **Actual Data.** To enhance the realism of problems and cases, we have taken data from practical management and business sources such as *Business Statistics*, *Business Week*, *Forbes*, *Fortune*, *Statistical Abstract of the United States*, and *The Sporting News*. We have also used data from the COMPUSTAT files, business transactions, consulting engagements, surveys, experiments, processes, original research, and academic journals. A data disk containing files for larger data sets taken from the problems and cases is available to the instructor, and to the student in the student software workbooks.

== **Computer Integration.** We have used computer applications to demonstrate data analysis throughout the book. Data analyses using MINITAB, SAS, and MYSTAT are presented in most of the chapters. We have annotated the computer exhibits with unique boxes that explain commands, program statement listings, and outputs.

ANCILLARIES FOR STUDENTS

Ancillaries available for students include the following items.

== ***Student Solutions Manual to Accompany Statistics for Management and Economics, Fifth Edition.*** The student's Solutions Manual includes complete solutions for all odd-numbered problems in the text.

== **Business MYSTAT with QC Tools Software.** Business MYSTAT is the educational version of SYSTAT, a highly rated, nationally recognized statistics package for personal computers. It is available packaged with the text on either 5 1/4" or 3 1/2" disks.

== ***Study Guide for Statistics for Management and Economics, Fifth Edition*** (by Edward Mansfield). The study guide contains review tests and problems with worked out solutions corresponding to each chapter in the text.

== ***MINITAB Workbook for Statistics for Management and Economics, Fifth Edition*** (by Leonard Presby). The workbook contains examples of data analysis with MINITAB using problems from the text. It is packaged with a data disk with over 50 files of data from the text, including the credit and ratio data sets.

== ***Business MYSTAT Workbook with QC Tools for Statistics for Management and Economics, Fifth Edition.*** The workbook contains examples of data analyses from Business MYSTAT with QC Tools, using problems from the text. It is packaged with a data disk with over 50 files of data from the text, including the credit and ratio data sets.

== INSTRUCTOR'S ANCILLARIES

Available for the instructor are the following materials:

- *Instructor's Annotated Edition*
- *Instructor's Solutions Manual*
- Transparency masters
- Data disk
- Test bank
- Computerized test bank
- Video tapes

Detailed information about these ancillaries are available in the Instructor's Annotated Edition.

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REWARD

One theme for our text is accuracy. We work hard to be sure that our discussion of principles and practices of statistics, and our graphics, are completely accurate. We try to correct, in reprints, any misspelled words or mathematical errors that crop up in the text. To reward those willing to help correct any possible spelling or mathematical mistakes, we hereby offer \$3 per misspelled word or mathematical error (not rounding differences, follow-through errors, and the like) in *Statistics for Management and Economics*, Fifth Edition, to the first instructor or student using our text who reports the mistake to us. Please submit reports of mistakes directly to the lead author's mail box or to the publisher.

We invite readers to send us comments or suggestions about how we should continue to improve the book. Please send us your ideas.

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