

About This Guide

Whether you are teaching Statistics for the first time, or just adapting to the new approach we take in this book, we hope this Instructor's Guide will help you optimize your students' experience. Here we explain the reasoning behind our approach to teaching Statistics. We summarize each chapter, highlighting the important concepts and pointing out where they'll show up later in the course. We offer some pedagogical suggestions—do's and don'ts—and include examples and activities you might use in teaching your class. We offer suggested quizzes, tests, and investigative tasks. And we provide references to *ActivStats* and other resources that you may find helpful.

Each chapter of this Instructor's Guide contains some or all of the following features.

What's It About?

This section summarizes the major topics included in the chapter. More important, we tell the *story* of the chapter. Each chapter introduces new concepts and methods, and each one fits with what students have learned in previous chapters and will learn in subsequent ones. We give you the overview to help you show your students how it all fits together.

Comments

The Comments section explains the statistical and pedagogical reasons for the choices we've made in what to teach, in how to present it, and in what order to discuss it. Some of these choices may differ from those made by other textbooks. We try to point out these differences and explain our approach.

Looking Ahead

The Looking Ahead sections point out ways that many of the ideas we introduce in early chapters foreshadow or pave the way for important features of later chapters. These are often good points to make in class to motivate students and to help them fit all these new concepts together into a coherent whole.

Class Do's

We offer pedagogical advice about approaches that have worked for us, ideas to stress, and other ways to highlight important concepts or take advantage of important features of this text.

The Importance of What You Don't Say

One of the challenges of teaching Stats is that there's so much to say. But too much information at the wrong time can be confusing to the beginning student. Because deciding how much to say and when to say it can be tricky, we offer some suggestions about what *not* to say and what not to say quite *yet*.

Class Examples

It's always good to have another example for class. Students seem to always want one more example. So we provide new examples different from those in the book or on the *ActivStats* DVD. These can include actual classroom materials in the form of worksheets or guided explorations.

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Resources

We offer a list of resources for background information, data sets, and classroom activities. These may include other books, videos, software, or Web sites.

Chapter Quiz

We offer three versions of a quiz you might choose to give after completing the chapter.

Investigative Task

Instead of a quiz, you may choose to have students complete a written assignment that asks them to apply the major concepts of the chapter. Along with each classroom-tested task we include a scoring rubric you can use as you grade each student's work and return to the student to provide them with guidance about writing clear, complete, concise statistical analyses. (We prefer these to quizzes, but that's us.)

Part Test

We offer three versions of a sample exam at the end of each of the text's seven Parts. These exams include multiple choice questions, short questions requiring some calculations or written explanations, and longer questions requiring more in-depth analysis.

A Few More Words About the Text

We think this text is different. We hope to entice students to read the book with our easy-to-understand conversational style—and to entertain them with occasional humor. We have created several features that provide consistent themes and helpful resources for doing Statistics. Take advantage of them!

New to the Third Edition

- **For Example.** In every chapter, you'll find new, worked-out examples that illustrate how to apply the concepts and methods discussed up to that point. With approximately 4 of these examples per chapter, that's more than 100 new illustrative examples. As we introduce each important, new concept, we present a focused example applying it – usually with real up-to-the-minute data. But these aren't isolated examples. We carry the discussion through the chapter with each *For Example*, picking up the story and moving it forward as students learn more about the topics of the chapter. Providing these examples in sequences enhances and illustrates the story of each chapter.
- **Chapters 4 and 5** were entirely rewritten and reorganized for the Second Edition, so this may be new to some instructors. Chapter 4 discusses displays and summaries for quantitative data, and Chapter 5 expands on those ideas in a discussion of comparison across groups, outliers, and other more sophisticated topics.

Continued Features

- **Think-Show-Tell** helps you create the clear expectation that Statistics is so much more than formulas and arithmetic. Every answer is a sentence.
- **Math Box** explanations provide your students more background in the underlying mathematics without detracting from the chapter's narrative.

- **Step-By-Step.** These newly updated examples and solutions further explain and reinforce your expectations of what a complete solution should include by providing your students with fully worked examples and parallel play-by-play commentary to supplement what you do in class.
- **Just Checking** questions help students assess whether they understand the key concepts and skills they're reading about.
- **What Can Go Wrong** helps your students recognize and avoid the common misunderstandings, misapplications, and misinterpretations that can undermine sound Statistics practice.
- **ActivStats® Pointers** tie the text to corresponding software activities. For the third edition, these pointers have been updated to indicate exactly what they are pointing to – an activity, video, simulation, etc.
- **On the Computer** provides annotated output to help you teach your students how to read the analyses produced by computer software packages.
- **Reality Check** reminds students that Statistics is about understanding the world with data, and that results that make no sense are probably wrong, no matter how carefully we think we did the calculations.
- **Notation Alert** emphasizes the importance of clear communication. Proper notation is part of the vocabulary of Statistics.
- **Connections** help your students see how the new ideas in each chapter tie into what they have already learned.
- **What Have We Learned** help your students review and study the important concepts, terms, and skills.
- **Exercises** provide you with a generous supply of in-depth and real-world examples requiring the kind of statistical reasoning and clear writing we all hope to foster. Solutions require sentences, not just numbers!

Review of Part ...

The 31 chapters of this book are divided into seven units. The end of each Part includes a one page **Quick Review** of the major concepts followed by a large set of **Exercises**. These exercises are comprehensive, often integrate several concepts, and appear in random order. You should find everything you need to prepare your students for tests.

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Some Important Resources

ActivStats® and Data Desk®

These award-winning programs are on the DVD accompanying the Instructor's Edition. Take time to work your way through the *ActivStats* lessons. You'll learn a lot, and find many activities you'll want your class to see. Activities include narrated and animated expositions, video stories of real-world applications, simulations that support discovery learning, interactive tools, online quizzes, and more. Some work very well as classroom demonstrations; most are interactive lessons you'll want your whole class to engage in. The *ActivStats* pointers in the margins of the text will help you find them, and we'll make chapter-by-chapter recommendations in this Guide. Individual student copies and site licenses are available.

ActivStats is also a source of hundreds of additional exercises, most with data sets provided on the DVD and prepared for use by statistics software. Versions of *ActivStats* are available to support *Data Desk* (on the DVD provided with the textbook), *Excel®*, *JMP®*, *Minitab®*, and *SPSS®*. Versions for packages other than *Data Desk* can optionally be bundled with student versions of the software. (Contact Addison-Wesley for price information.)

Videos

- *ActivStats* presents video and animated presentations of real-world applications of Statistics. Some are condensed from the *Decisions Through Data* stories (see below). Others are unique to *ActivStats*.
- *Decisions Through Data*; COMAP (1-800-77COMAP), 1992. This set of 5 VHS tapes contains 21 lessons to show in class. Each looks at real-life situations and demonstrates the use of statistics to answer important questions. The units are typically 10-15 minutes in length, allowing you to show the video segment and have time to discuss the statistical concepts and techniques introduced. We'll indicate appropriate units in many chapters.

Other Books and Magazines

- *Statistics*, 3rd Ed., Freedman, Pisani, and Purvis; Norton, 2001. This book contains interesting stories and great explanations of statistical concepts; it's a valuable resource to have on your shelf.
- *Statistics: Concepts and Controversies*, 6th Ed., Moore; Freeman, 2006. This collection of great stories about the uses and misuses of statistics is a valuable resource when you are looking for examples to talk about in class.
- *Chance*, Springer-Verlag (1-800-SPRINGER). This magazine, published quarterly, provides articles about statistics as well as excellent examples and data sets to use in class.
- *Stats*, American Statistical Association. This is a magazine for students that provides articles about statistics and examples that you might find useful for class preparation.

StatCrunch®

StatCrunch is a powerful online tool that allows you to:

- Upload data files from your computer or the Web to you own datasets library.
- Analyze data using the extensive list of numerical and graphical procedures StatCrunch offers.
- Report your insights along with attached data sets and analysis results.
- Share your data, results and reports with the rest of the world or keep them private.
- Comment on your items or those being shared by other subscribers.

Explore and learn more at www.statcrunch.com. Accessing StatCrunch requires a StatCrunch or MyStatLab account.

Web Links

The Internet is a valuable source of data sets, examples, tables, random numbers, and current events. The good news is that you can probably find almost everything you need or want to know there. The bad news is that the materials will not be consistent or integrated. Be especially wary of introducing students to a variety of online applets, each with its own interface, notation, terminology, and assumptions.

Many of the data sets and examples of the book are sourced from Internet sites. Where appropriate, we provide URL references to the top level, and key search terms to help locate the particular data or discussion. These references may lead to even more up-to-date data than were available when we found them for the book. The data used in the book are available on the DVD, but you may prefer to discuss the most recent versions in class.

We provide below some useful jumping off points, with the obvious caveat that many of them may move, change, or disappear altogether between the time we compile this list and you try to use it. With our apologies in advance when a link fails, we hope you find this effort of value. You'll find information on many other useful links on our website, www.pearsonhighered.com/deveaux.

- Software – calculators and commercial software:
education.ti.com
www.activstats.com
www.datadesk.com
www.minitab.com
www.jmp.com
www.spss.com
- Sources of data:
www.dartmouth.edu/~chance/teaching_aids/data.html
exploringdata.net
www.census.gov

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www.fedstats.gov

dasl.datadesk.com (data sets indexed by topic)

www.madd.org/Drunk-Driving/Drunk-Driving/Statistics.aspx (DWI statistics)

www.fbi.gov/ucr/01cius.htm (crime statistics)

www.amstat.org/publications/jse

earthtrends.wri.org

- Applets you may find useful for classroom demonstration:

www.amstat.org/sections/educ/applets.html

stat.duke.edu/sites/java.html

davidmlane.com/hyperstat/index.html

www.stat.sc.edu/~west/javahtml

www.ruf.rice.edu/~lane/stat_sim

- Statistics background

www.Dartmouth.edu/~chance/index.html

courses.ncssm.edu/math/Stat_Inst/Notes.htm