The background of the cover is a photograph of a majestic, snow-covered mountain range under a clear blue sky. In the foreground, a ski lift with several chairs is visible, carrying skiers up a snowy slope. The overall scene is bright and crisp, typical of a winter day in a ski resort.

Applied Statistics in Business & Economics

www.mhhe.com/doane3e

3e

DAVID P. DOANE

LORI E. SEWARD

Applied Statistics

in Business and Economics

Third Edition

David P. Doane

Oakland University

Lori E. Seward

University of Colorado



**McGraw-Hill
Irwin**



APPLIED STATISTICS IN BUSINESS AND ECONOMICS

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add questions | organize assignment (2 questions)

Applied Statistics in Business and Economics
Course 3a

▼ type
☐ Worksheet
☐ Check All That Apply
☐ Multiple Choice
☐ show all

Learning Objective (3)
 Bloom's (3)
 Difficulty (3)
 AACSB (3)
 Topic (3)

Chapter 01 Overview of Statistics > Chapter 01 Section Exercises - Static

results: 6 questions

add random selection...

switch to detail view

questions	info	type	algorithmic
Section Exercise 1-2 Part B-1		Worksheet	no
Section Exercise 1-2 Part B-2		Check All That Apply	no
Section Exercise 1-4		Worksheet	no
Section Exercise 1-10		Multiple Choice	no
Section Exercise 1-12 Part A		Check All That Apply	no
Section Exercise 1-12 Part B		Multiple Choice	no

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add random selection...

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Grace took a random sample of the number of steps per minute from the electronic readout of her aerobic climbing machine during a 1-hour workout.

90 110 97 144 54 60 156 86 82 64 100 47 80 164 93

Click here for the Excel Data File

(a) Find the mean, median and mode. (Round your answers to 2 decimal places. Leave no cells blank. Enter "0" if there is no answer.)

Descriptive Statistics	Data
Mean	95.13
Median	90
Mode	82

(b) Which is the best measure of central tendency?
Mean

Grace took a random sample of the number of steps per minute from the electronic readout of her aerobic climbing machine during a 1-hour workout.

90 110 97 144 54 60 156 86 82 64 100 47 80 164 93

Click here for the Excel Data File

(a) Find the mean, median and mode. (Round your answers to 2 decimal places. Leave no cells blank. Enter "0" if there is no answer.)

Descriptive Statistics	Data
Mean	95.1 ± 0.1
Median	90
Mode	0

(b) Which is the best measure of central tendency?
Median

Explanation
(b)

assignment results: Multiple Sections

report created: 09/09/2010 9:57 AM CDT

report date range: -

attempt: Best score style: Percents (Averaged)

assignment type: Homework, Practice, Quiz, Exam

Select the checkboxes in columns you want to export or print.

Section	Assignment 1	Assignment 2	Exam 1
Total Value (Points)	28	25	28
Townsend, Rachel Section One: MNF 1:30-3:30	88%	91.50%	88%
Mann, Becky Section One: MNF 1:30-3:30	85.33%	93%	86%
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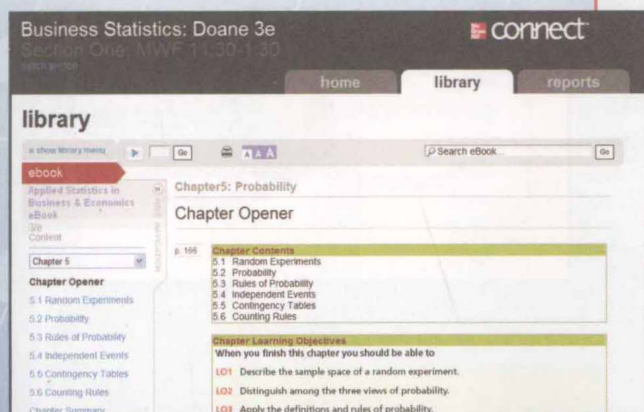
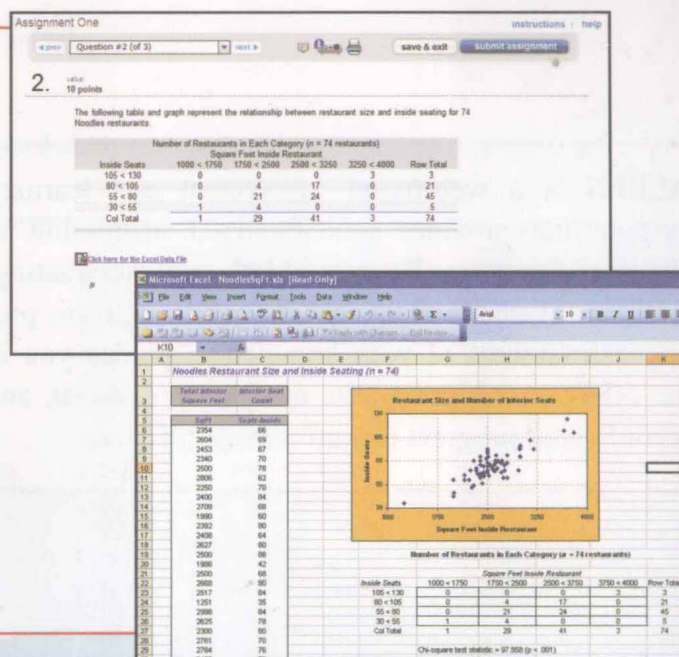


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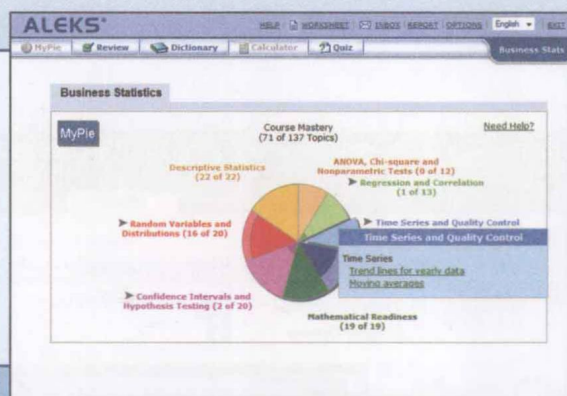
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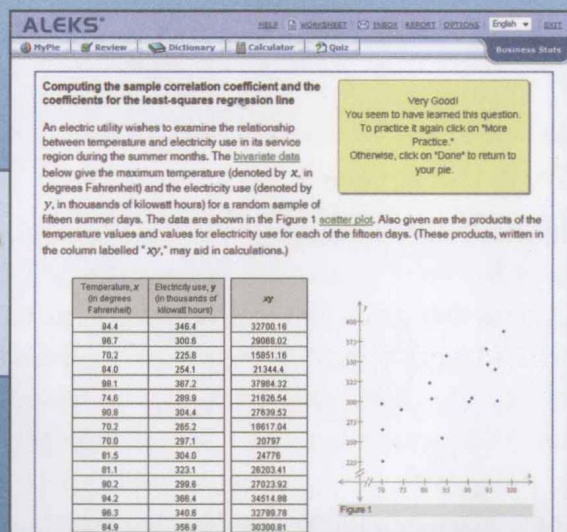
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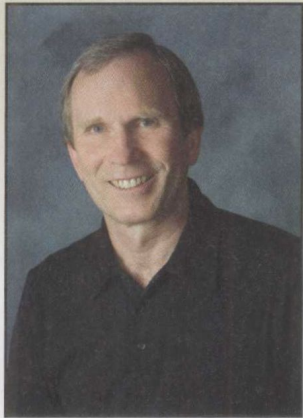


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David P. Doane is a professor of quantitative methods in Oakland University's Department of Decision and Information Sciences. He earned his Bachelor of Arts degree in mathematics and economics at the University of Kansas and his PhD from Purdue University's Krannert Graduate School. His research and teaching interests include applied statistics, forecasting, and statistical education. He is corecipient of three National Science Foundation grants to develop software to teach statistics and to create a computer classroom. He is a longtime member of the American Statistical Association and INFORMS, serving in 2002 as president of the Detroit ASA chapter, where he remains on the board. He has consulted with government, health care organizations, and local firms. He has published articles in many academic journals and is the author of *LearningStats* (McGraw-Hill, 2003, 2007) and co-author of *Visual Statistics* (McGraw-Hill, 1997, 2001).



Lori E. Seward

Lori E. Seward is an instructor in the Decisions Sciences Department in the College of Business at the University of Colorado at Denver and Health Sciences Center. She earned her Bachelor of Science and Master of Science degrees in Industrial Engineering at Virginia Tech. After several years working as a reliability and quality engineer in the paper and automotive industries, she earned her PhD from Virginia Tech. She served as the chair of the INFORMS Teachers' Workshop for the annual 2004 meeting. Prior to joining UCDHSC in 2008, Dr. Seward served on the faculty at the Leeds School of Business at the University of Colorado–Boulder for 10 years. Her teaching interests focus on developing pedagogy that uses technology to create a collaborative learning environment in both large undergraduate and MBA statistics courses. Her most recent article was published in *The International Journal of Flexible Manufacturing Systems* (Kluwer Academic Publishers, 2004).

DEDICATION

To Robert Hamilton Doane-Solomon

David

To all my students who challenged me to make statistics relevant to their lives.

Lori

“How often have you heard people/students say about a particular subject, ‘I’ll never use this in the real world?’ I thought statistics was a bit on the ‘math-geeky’ side at first. Imagine my horror when I saw α , R^2 , and correlations on several financial reports at my current job (an intern position at a financial services company). I realized then that I had better try to understand some of this stuff.”

—Jill Odette (an introductory statistics student)

As recently as a decade ago our students used to ask us, “**How** do I use statistics?” Today we more often hear, “**Why** should I use statistics?” *Applied Statistics in Business and Economics* has attempted to provide real meaning to the use of statistics in our world by using real business situations and real data and appealing to your need to know *why* rather than just *how*.

With over 50 years of teaching statistics between the two of us, we feel we have something to offer. Seeing how students have changed as the new century unfolds has required us to adapt and seek out better ways of instruction. So we wrote *Applied Statistics in Business and Economics* to meet four distinct objectives.

Objective 1: Communicate the Meaning of Variation in a Business Context Variation exists everywhere in the world around us. Successful businesses know how to measure variation. They also know how to tell when variation should be responded to and when it should be left alone. We’ll show how businesses do this.

Objective 2: Use Real Data and Real Business Applications Examples, case studies, and problems are taken from published research or real applications whenever possible. Hypothetical data are used when it seems the best way to illustrate a concept. You can usually tell the difference by examining the footnotes citing the source.

Objective 3: Incorporate Current Statistical Practices and Offer Practical Advice With the increased reliance on computers, statistics practitioners have changed the way they use statistical tools. We’ll show the current practices and explain why they are used the way they are. We will also tell you when each technique should *not* be used.

Objective 4: Provide More In-Depth Explanation of the Why and Let the Software Take Care of the How It is critical to understand the importance of communicating with data. Today’s computer capabilities make it much easier to summarize and display data than ever before. We demonstrate easily mastered software techniques using the common software available. We also spend a great deal of time on the idea that there are risks in decision making and those risks should be quantified and directly considered in every business decision.

Our experience tells us that students want to be given credit for the experience they bring to the college classroom. We have tried to honor this by choosing examples and exercises set in situations that will draw on students’ already vast knowledge of the world and knowledge gained from other classes. Emphasis is on thinking about data, choosing appropriate analytic tools, using computers effectively, and recognizing limitations of statistics.

What’s New in This Third Edition?

In this third edition we have listened to you and have made many changes that you asked for. We sought advice from students and faculty who are currently using the textbook, objective reviewers at a variety of colleges and universities, and participants in focus groups on teaching statistics with technology. At the end of this preface is a detailed list of chapter-by-chapter improvements, but here are just a few of them:

- Revised learning objectives mapped to topics within chapter sections.
- Step-by-step instructions on using Excel 2007 for descriptive statistics, histograms, scatter plots, line charts, fitting trends, and editing charts.
- More “practice” exercises and more worked examples in the textbook.
- Sixteen large, real data sets that can be downloaded for class projects.
- Many updated exercises and new skill-focused “business context” exercises.
- Appendix on writing technical business reports and presenting them orally.
- Expanded treatment of business ethics and critical thinking skills.
- Closer compatibility between textbook exercises and Connect online grading.
- Rewritten instructor’s manual with step-by-step solutions.

AUTHORS

- New Mini Cases featuring Vail Resorts, Inc., a mountain resort company.
- Consistent notation for random variables and event probabilities.
- Improved flow of normal distribution concepts and matching exercises.
- Restructured material on sampling distributions, estimation, and hypothesis testing.
- Intuitive explanations and illustrations of p -values and steps in hypothesis testing.
- New format for hypotheses in tests of two means or two proportions.
- Moved two-sample confidence intervals to chapter on two-sample hypothesis tests.
- More coverage of covariance and its role in financial analysis.
- More emphasis on interpretation of regression results.
- End of each chapter guides to downloads from the **Online Learning Center** (simulations, demonstrations, tips, and ScreenCam video tutorials for Excel, *MegaStat*, and MINITAB).



Software

Excel is used throughout this book because it is available everywhere. But calculations are illustrated using *MegaStat*, an Excel add-in whose Excel-based menus and spreadsheet format offer more capability than Excel's Data Analysis Tools. MINITAB menus and examples are also included to point out similarities and differences of these tools. To assist students who need extra help or "catch up" work, the text Web site contains tutorials or demonstrations on using Excel, MINITAB, or *MegaStat* for the tasks of each chapter. At the end of each chapter is a list of *LearningStats* demonstrations that illustrate the concepts from the chapter. These demonstrations can be downloaded from the text Web site (www.mhhe.com/doane3e).

Math Level

The assumed level of mathematics is pre-calculus, though there are rare references to calculus where it might help the better-trained reader. All but the simplest proofs and derivations are omitted, though key assumptions are stated clearly. The learner is advised what to do when these assumptions are not fulfilled. Worked examples are included for basic calculations, but the textbook does assume that computers will do all calculations after the statistics class is over. Thus, *interpretation* is paramount. End-of-chapter references and suggested Web sites are given so that interested readers can deepen their understanding.

Exercises

Simple practice exercises are placed within each section. End-of-chapter exercises tend to be more integrative or to be embedded in more realistic contexts. The end-of-chapter exercises encourage the learner to try alternative approaches and discuss ambiguities or underlying issues when the statistical tools do not quite "fit" the situation. Some exercises invite miniessays (at least a sentence or two) rather than just quoting a formula. Answers to most odd-numbered exercises are in the back of the book (all answers are in the instructor's manual).

LearningStats

LearningStats is intended to let students explore data and concepts at their own pace, ignoring material they already know and focusing on things that interest them. *LearningStats* includes explanations on topics that are not covered in other software packages, such as how to write effective reports, how to perform calculations, how to make effective charts, or how the bootstrap method works. It also includes some topics that did not appear prominently in the textbook (e.g., stem-and-leaf plots, finite population correction factor, and bootstrap simulation techniques). Instructors can use *LearningStats* PowerPoint presentations in the classroom, but students can also use them for self-instruction. No instructor can "cover everything," but students can be encouraged to explore *LearningStats* data sets and/or demonstrations perhaps with an instructor's guidance, or even as an assigned project.

David P. Doane
Lori E. Seward

HOW ARE CHAPTERS ORGANIZED

Chapter Contents

Each chapter begins with a short list of section topics that are covered in the chapter.

Chapter Learning Objectives

Each chapter includes a list of learning objectives students should be able to attain upon reading and studying the chapter material. Learning objectives give students an overview of what is expected and identify the goals for learning. Learning objectives also appear next to chapter topics in the margins.

Chapter Contents

- 1.1 What Is Statistics?
- 1.2 Why Study Statistics?
- 1.3 Uses of Statistics
- 1.4 Statistical Challenges
- 1.5 Critical Thinking

Chapter Learning Objectives

When you finish this chapter you should be able to

- LO1** Define statistics and explain some of its uses in business.
- LO2** List reasons for a business student to study statistics.
- LO3** State the common challenges facing business professionals using statistics.
- LO4** List and explain common statistical pitfalls.

Section Exercises

Multiple section exercises are found throughout the chapter so that students can focus on material just learned.

SECTION EXERCISES

Instructions for Exercises 12.21 and 12.22: (a) Perform a regression using MegaStat or Excel. (b) State the null and alternative hypotheses for a two-tailed test for a zero slope. (c) Report the p -value and the 95 percent confidence interval for the slope shown in the regression results. (d) Is the slope significantly different from zero? Explain your conclusion.

12.21 College Student Weekly Earnings in Dollars ($n = 5$)

WeekPay

Hours Worked (X)	Weekly Pay (Y)
10	93
15	171
20	204
20	156
35	261

12.22 Phone Hold Time for Concert Tickets in Seconds ($n = 5$)

CallWait

Operators (X)	Wait Time (Y)
4	385
5	335
6	383
7	344
8	288

Mini Cases

Every chapter includes two or three mini cases, which are solved applications. They show and illustrate the analytical application of specific statistical concepts at a deeper level than the examples.

Mini Case

4.7

Vail Resorts Customer Satisfaction

Figure 4.37 is a matrix showing correlations between several satisfaction variables from a sample of respondents to a Vail Resorts' satisfaction survey. The correlations are all positive, suggesting that greater satisfaction with any one of these criteria tends to be associated with greater satisfaction with the others (positive covariance). The highest correlation ($r = 0.488$) is between *SkiSafe* (attention to skier safety) and *SkiPatV* (Ski Patrol visibility). This makes intuitive sense. When a skier sees a ski patroller, you would expect increased perception that the organization is concerned with skier safety. While many of the correlations seem small, they are all statistically significant (as you will learn in Chapter 12).

FIGURE 4.37 Correlation Matrix Skier Satisfaction Variables ($n = 502$)
 VailGuestSat

	LiftOps	LiftWait	TrailVar	SnoAmt	GroomT	SkiSafe	SkiPatV
LiftOps	1.000						
LiftWait	0.180	1.000					
TrailVar	0.206	0.128	1.000				
SnoAmt	0.242	0.227	0.373	1.000			
GroomT	0.271	0.251	0.221	0.299	1.000		
SkiSafe	0.306	0.196	0.172	0.200	0.274	1.000	
SkiPatV	0.190	0.207	0.172	0.184	0.149	0.488	1.000

TO PROMOTE STUDENT LEARNING?

Figures and Tables

Throughout the text, there are hundreds of charts, graphs, tables, and spreadsheets to illustrate statistical concepts being applied. These visuals help stimulate student interest and clarify the text explanations.

FIGURE 4.21

Central Tendency versus Dispersion

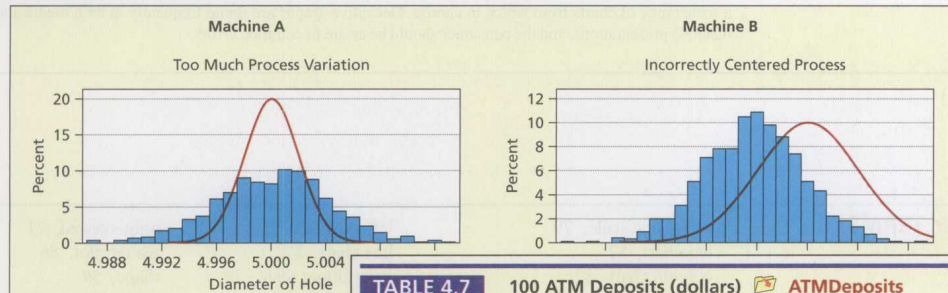


TABLE 4.7 100 ATM Deposits (dollars) ATMDeposits

3	10	15	15	20	20	20	22	23	25	26	26
30	30	35	35	36	39	40	40	40	40	47	50
50	50	50	53	55	60	60	60	67	75	78	86
90	96	100	100	100	100	100	103	105	118	125	125
130	131	139	140	145	150	150	153	153	156	160	163
170	176	185	198	200	200	200	220	232	237	252	259
260	268	270	279	295	309	345	350	366	375	431	433
450	450	474	484	495	553	600	720	777	855	960	987
1,020	1,050	1,200	1,341								

Examples

Examples of interest to students are taken from published research or real applications to illustrate the statistics concept. For the most part, examples are focused on business but there are also some that are more general and don't require any pre-requisite knowledge. And there are some that are based on student projects.

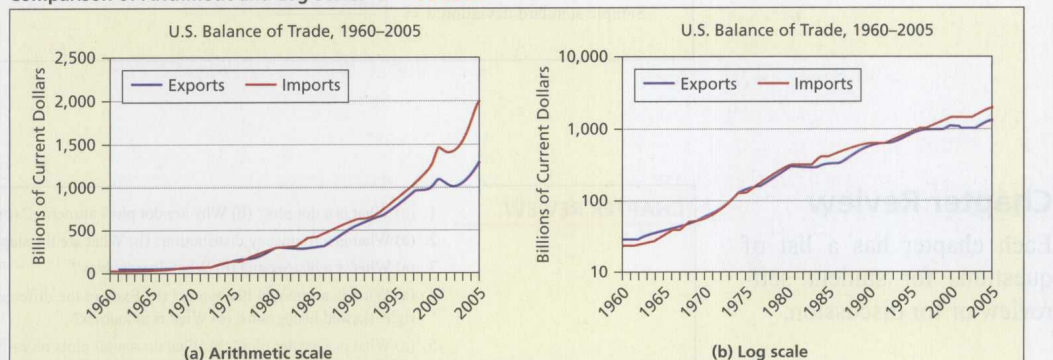
EXAMPLE

U.S. Trade
 USTrade

Figure 3.18 shows the U.S. balance of trade. The arithmetic scale shows that growth has been exponential. Yet, although exports and imports are increasing in absolute terms, the log graph suggests that the *growth rate* in both series may be slowing, because the log graph is slightly concave. On the log graph, the recently increasing trade deficit is not *relatively* as large. Regardless how it is displayed, the trade deficit remains a concern for policymakers, for fear that foreigners may no longer wish to purchase U.S. debt instruments to finance the trade deficit (see *The Wall Street Journal*, July 24, 2005, p. C1).

FIGURE 3.18

Comparison of Arithmetic and Log Scales USTrade



Data Set Icon

A data set icon is used throughout the text to identify data sets used in the figures, examples, and exercises that are included on the Online Learning Center (OLC) for the text.

USTrade

HOW DOES THIS TEXT REINFORCE

Chapter Summary

Chapter summaries provide an overview of the material covered in the chapter.

CHAPTER SUMMARY

For a set of observations on a single numerical variable, a **dot plot** displays the individual data values, while a **frequency distribution** classifies the data into classes called **bins** for a **histogram of frequencies** for each bin. The number of bins and their limits are matters left to your judgment, though **Sturges' Rule** offers advice on the number of bins. The **line chart** shows values of one or more **time series** variables plotted against time. A **log scale** is sometimes used in time series charts when data vary by orders of magnitude. The **bar chart** or **column chart** shows a **numerical** data value for each category of an **attribute**. However, a bar chart can also be used for a time series. A **scatter plot** can reveal the association (or lack of association) between two variables X and Y . The **pie chart** (showing a **numerical** data value for each category of an **attribute** if the data values are parts of a whole) is common but should be used with caution. Sometimes a **simple table** is the best visual display. Creating effective visual displays is an acquired skill. Excel offers a wide range of charts from which to choose. Deceptive graphs are found frequently in both media and business presentations, and the consumer should be aware of common errors.

Key Terms

Key terms are highlighted and defined within the text. They are also listed at the ends of chapters, along with chapter page references, to aid in reviewing.

KEY TERMS

arithmetic scale, 79	left-skewed, 71	right-skewed, 71
bar chart, 82	line chart, 77	scatter plot, 86
column chart, 82	logarithmic scale, 79	shape, 59
central tendency, 59	modal class, 71	stacked bar chart, 83
dispersion, 59	ogive, 72	stacked dot plot, 62
dot plot, 61	outlier, 71	Sturges' Rule, 65
frequency distribution, 64	Pareto chart, 82	symmetric, 71
frequency polygon, 72	pie chart, 95	trend line, 89
histogram, 66	pivot table, 92	

Commonly Used Formulas

Some chapters provide a listing of commonly used formulas for the topic under discussion.

Commonly Used Formulas in Descriptive Statistics

$$\text{Sample mean: } \bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$$

$$\text{Geometric mean: } G = \sqrt[n]{x_1 x_2 \cdots x_n}$$

$$\text{Range: } R = x_{\max} - x_{\min}$$

$$\text{Midrange: } \text{Midrange} = \frac{x_{\min} + x_{\max}}{2}$$

$$\text{Sample standard deviation: } s = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n - 1}}$$

Chapter Review

Each chapter has a list of questions for student self-review or for discussion.

CHAPTER REVIEW

1. (a) What is a dot plot? (b) Why are dot plots attractive? (c) What are their limitations?
2. (a) What is a frequency distribution? (b) What are the steps in creating one?
3. (a) What is a histogram? (b) What does it show?
4. (a) What is a bimodal histogram? (b) Explain the difference between left-skewed, symmetric, and right-skewed histograms. (c) What is an outlier?
5. (a) What is a scatter plot? (b) What do scatter plots reveal? (c) Sketch a scatter plot with a moderate positive correlation. (d) Sketch a scatter plot with a strong negative correlation.

STUDENT LEARNING?

Chapter Exercises

Exercises give students an opportunity to test their understanding of the chapter material. Exercises are included at the ends of sections and at the ends of chapters. Some exercises contain data sets, identified by data set icons. Data sets can be accessed on the Online Learning Center and used to solve problems in the text.

- 4.75 (a) Choose a data set and prepare a brief, descriptive report. You may use any computer software you wish (e.g., Excel, MegaStat, MINITAB). Include relevant worksheets or graphs in your report. If some questions do not apply to your data set, explain why not. (b) Sort the data. (c) Make a histogram. Describe its shape. (d) Calculate the mean and median. Are the data skewed? (e) Calculate the standard deviation. (f) Standardize the data and check for outliers. (g) Compare the data with the Empirical Rule. Discuss. (h) Calculate the quartiles and interpret them. (i) Make a box plot. Describe its appearance.

DATA SET A Advertising Dollars as Percent of Sales in Selected Industries ($n = 30$) Ads

Industry	Percent
Accident and health insurance	0.9
Apparel and other finished products	5.5
Beverages	7.4
:	:
Steel works and blast furnaces	1.9
Tires and inner tubes	1.8
Wine, brandy, and spirits	11.3

Source: George E. Belch and Michael A. Belch, *Advertising and Promotion*, pp. 219–220. Copyright © 2004 Richard D. Irwin. Used with permission of McGraw-Hill Companies, Inc.

Online Learning Resources

LearningStats, included on the Online Learning Center (OLC; www.mhhe.com/doane3e), provides a means for students to explore data and concepts at their own pace. Applications that relate to the material in the chapter are identified by topic at the ends of chapters under Online Learning Resources.

CHAPTER 7 Online Learning Resources

The Online Learning Center (OLC) at www.mhhe.com/doane3e has several *LearningStats* demonstrations to help you understand continuous probability distributions. Your instructor may assign one or more of them, or you may decide to download the ones that sound interesting.



Topic	LearningStats demonstrations
Calculations	<input checked="" type="checkbox"/> Normal Areas <input checked="" type="checkbox"/> Probability Calculator
Normal approximations	<input checked="" type="checkbox"/> Evaluating Rules of Thumb
Random data	<input checked="" type="checkbox"/> Random Continuous Data <input checked="" type="checkbox"/> Visualizing Random Normal Data
Tables	<input checked="" type="checkbox"/> Table C—Normal Probabilities

Key:  = Excel

Exam Review Questions

At the end of a group of chapters, students can review the material they covered in those chapters. This provides them with an opportunity to test themselves on their grasp of the material.

EXAM REVIEW QUESTIONS FOR CHAPTERS 5–7

- Which type of probability (empirical, classical, subjective) is each of the following?
 - On a given Friday, the probability that Flight 277 to Chicago is on time is 23.7%.
 - Your chance of going to Disney World next year is 10%.
 - The chance of rolling a 3 on two dice is $1/18$.
- For the following contingency table, find (a) $P(H \cap T)$; (b) $P(S | G)$; (c) $P(S)$

	R	S	T	Row Total
G	10	50	30	90
H	20	50	40	110
Col Total	30	100	70	200

- If $P(A) = .30$, $P(B) = .70$, and $P(A \cap B) = .25$ are A and B independent events? Explain.

WHAT TECHNOLOGY CONNECTS

McGraw-Hill Connect™ Business Statistics



Less Managing. More Teaching. Greater Learning. McGraw-Hill *Connect Business Statistics* is an online assignment and assessment solution that connects students with the tools and resources they'll need to achieve success.

McGraw-Hill *Connect Business Statistics* helps prepare students for their future by enabling faster learning, more efficient studying, and higher retention of knowledge.

McGraw-Hill CONNECT / BUSINESS STATISTICS

Features. *Connect Business Statistics* offers a number of powerful tools and features to make managing assignments easier, so faculty can spend more time teaching. With *Connect Business Statistics*, students can engage with their coursework anytime and anywhere, making the learning process more accessible and efficient. *Connect Business Statistics* offers you the features described below.

Simple Assignment Management. With *Connect Business Statistics*, creating assignments is easier than ever, so you can spend more time teaching and less time managing. The assignment management function enables you to:

- Create and deliver assignments easily with selectable end-of-chapter questions and test bank items.
- Streamline lesson planning, student progress reporting, and assignment grading to make classroom management more efficient than ever.
- Go paperless with the eBook and online submission and grading of student assignments.

Smart Grading. When it comes to studying, time is precious. *Connect Business Statistics* helps students learn more efficiently by providing feedback and practice material when they need it, where they need it. When it comes to teaching, your time also is precious. The grading function enables you to:

- Have assignments scored automatically, giving students immediate feedback on their work and side-by-side comparisons with correct answers.
- Access and review each response; manually change grades or leave comments for students to review.
- Reinforce classroom concepts with practice tests and instant quizzes.

Integration of Excel Data Sets. A convenient feature is the inclusion of an Excel data file link in many problems using data sets in their calculation. This allows students to easily launch into Excel, work the problem, and return to Connect to key in the answer.

Chapter Exercise 5-74

High levels of cockpit noise in an aircraft can damage the hearing of pilots who are exposed to this hazard for many hours. Cockpit noise in a jet aircraft is mostly due to airflow at hundreds of miles per hour. This 3×3 contingency table shows 61 observations of data collected by an airline pilot using a handheld sound meter in a Boeing 727 cockpit. Noise level is defined as "low" (under 88 decibels), "medium" (88 to 91 decibels), or "high" (92 decibels or more). There are three flight phases (climb, cruise, descent).

Cockpit Noise	Flight Phase			Row Total
	Climb(B)	Cruise(C)	Descent(D)	
Noise Level				
Low(L)	6	2	6	14
Medium(M)	18	3	8	29
High(H)	1	3	14	18
Column Total	25	8	28	61

[Click here for the Excel Data File](#)

(a) Calculate the following probabilities. (Round your answers to 4 decimal places.)

$P(B)$

$P(L)$

$P(H)$

STUDENTS TO BUSINESS STATISTICS?

Instructor Library. The *Connect Business Statistics* Instructor Library is your repository for additional resources to improve student engagement in and out of class. You can select and use any asset that enhances your lecture. The *Connect Business Statistics* Instructor Library includes:

- eBook
- PowerPoint presentations
- Test Bank
- Solutions Manual
- Digital Image Library

Student Study Center. The *Connect Business Statistics* Student Study Center is the place for students to access additional resources. The Student Study Center:

- Offers students quick access to lectures, practice materials, eBooks, and more.
- Provides instant practice material and study questions, easily accessible on-the-go.
- Gives students access to the Personalized Learning Plan described below.

Student Progress Tracking. *Connect Business Statistics* keeps instructors informed about how each student, section, and class is performing, allowing for more productive use of lecture and office hours. The progress-tracking function enables you to:

- View scored work immediately and track individual or group performance with assignment and grade reports.
- Access an instant view of student or class performance relative to learning objectives.
- Collect data and generate reports required by many accreditation organizations, such as AACSB.

Business Statistics: Doane 3e
Section One: MWF 11:30-1:30
switch section

home library reports

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Applied Statistics in Business & Economics
eBook
316
Content

Chapter 5
Chapter Opener
5.1 Random Experiments
5.2 Probability
5.3 Rules of Probability
5.4 Independent Events
5.5 Contingency Tables
5.6 Counting Rules
Chapter Summary
Key Terms
Commonly Used

Chapter5: Probability
Chapter Opener

p. 106

Chapter Contents
5.1 Random Experiments
5.2 Probability
5.3 Rules of Probability
5.4 Independent Events
5.5 Contingency Tables
5.6 Counting Rules

Chapter Learning Objectives
When you finish this chapter you should be able to
LO1 Describe the sample space of a random experiment.
LO2 Distinguish among the three views of probability.
LO3 Apply the definitions and rules of probability.
LO4 Calculate odds from given probabilities.
LO5 Determine when events are independent.

Business Statistics: Doane 3e
Section One: MWF 11:30-1:30
switch section

home library reports

assignment results report type: Assignment Results

Use the options below to view assignment scores.

show report options & settings

assignment results: Multiple Sections
report created: 09/09/2010 9:57 AM CDT
report date range: -
attempt: Best score style: Percents (Averaged)
assignment type: Homework, Practice, Quiz, Exam

Select the checkboxes on columns you want to export or print.

export to excel

Section	Assignment 1	Assignment 2	Exam 1
Total Value (Points)	20	25	20
Townsend, Rachel Section One: MWF 1:30-3:30	89%	91.50%	89%
Mann, Becky Section One: MWF 1:30-3:30	85.33%	93%	85%
Dalo, Danielle Section One: MWF 1:30-3:30	89%	91.50%	91%
Billows, Nancy Section One: MWF 1:30-3:30	85.33%	93%	93%

WHAT TECHNOLOGY CONNECTS

McGraw-Hill Connect™ Plus Business Statistics



McGraw-Hill Connect Plus Business Statistics. McGraw-Hill reinvents the textbook learning experience for the modern student with *Connect Plus Business Statistics*. A seamless integration of an eBook and *Connect Business Statistics*, *Connect Plus Business Statistics* provides all of the *Connect Business Statistics* features plus the following:

- An integrated eBook, allowing for anytime, anywhere access to the textbook.
- Dynamic links between the problems or questions you assign to your students and the location in the eBook where that problem or question is covered.
- A powerful search function to pinpoint and connect key concepts in a snap.

In short, *Connect Business Statistics* offers you and your students powerful tools and features that optimize your time and energies, enabling you to focus on course content, teaching, and student learning. *Connect Business Statistics* also offers a wealth of content resources for both instructors and students. This state-of-the-art, thoroughly tested system supports you in preparing students for the world that awaits.

For more information about Connect, go to www.mcgrawhillconnect.com, or contact your local McGraw-Hill sales representative.

Tegrity Campus: Lectures 14/7

Tegrity Campus is a service that makes class time available 24/7 by automatically capturing every lecture in a searchable format for students to review when they study and complete assignments. With a simple one-click start-and-stop process, you capture all computer screens and corresponding audio. Students can replay any part of any class with easy-to-use browser-based viewing on a PC or Mac.

McGraw-Hill Tegrity Campus



Educators know that the more students can see, hear, and experience class resources, the better they learn. In fact, studies prove it. With Tegrity Campus, students quickly recall key moments by using Tegrity Campus's unique search feature. This search helps students efficiently find what they need, when they need it, across an entire semester of class recordings. Help turn all your students' study time into learning moments immediately supported by your lecture.

To learn more about Tegrity, watch a 2-minute Flash demo at <http://tegritycampus.mhhe.com>.

STUDENTS TO BUSINESS STATISTICS?

Assurance-of-Learning Ready

Many educational institutions today are focused on the notion of *assurance of learning* an important element of some accreditation standards. *Applied Statistics in Business and Economics* is designed specifically to support your assurance-of-learning initiatives with a simple, yet powerful solution.

Each test bank question for *Applied Statistics for Business and Economics* maps to a specific chapter learning outcome/objective listed in the text. You can use our test bank software, EZ Test and EZ Test Online, or *Connect Business Statistics* to easily query for learning outcomes/objectives that directly relate to the learning objectives for your course. You can then use the reporting features of EZ Test to aggregate student results in similar fashion, making the collection and presentation of assurance of learning data simple and easy.

AACSB Statement

The McGraw-Hill Companies is a proud corporate member of AACSB International. Understanding the importance and value of AACSB accreditation, *Applied Statistics in Business and Economics* recognizes the curricula guidelines detailed in the AACSB standards for business accreditation by connecting selected questions in the text and the test bank to the six general knowledge and skill guidelines in the AACSB standards.

The statements contained in *Applied Statistics in Business and Economics* are provided only as a guide for the users of this textbook. The AACSB leaves content coverage and assessment within the purview of individual schools, the mission of the school, and the faculty. While *Applied Statistics in Business and Economics* and the teaching package make no claim of any specific AACSB qualification or evaluation, we have labeled within *Applied Statistics in Business and Economics* selected questions according to the six general knowledge and skills areas.

McGraw-Hill Customer Care Information

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The screenshot displays the 'category analysis' report within the 'connect BUSINESS STATISTICS' software. The report is for 'Townsend, Rachel' and covers 'Section One: MWF 11:30-1:30'. It shows performance based on different question categories. The report was created on 09/09/2010 at 4:45 PM CDT and covers the date range from 01/01/2010 to 09/09/2010. The report is for 'Assignment 1'. A table lists the performance for two categories: 'AACSB Analytic' and 'AACSB Reflective Thinking'. The table includes columns for the number of questions, the number of times submitted, the number of students submitted, and the percentage of submissions correct.

	# questions	# times submitted	# students submitted	% submissions correct
AACSB Analytic	2	6	6/6	50.0
AACSB Reflective Thinking	4	12	6/6	12.5