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### PREFACE TO SECOND EDITION

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### 1. INTRODUCTION

The use of tables and graphs to communicate quantitative information is common practice in organizations today, yet few of us have learned the design practices that make them effective. This introductory chapter prepares the way for a journey of discovery that will enable you to become an exception to this unfortunate norm.

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### 2. SIMPLE STATISTICS TO GET YOU STARTED

Quantitative information forms the core of what organizations must know to operate effectively. The current emphasis on metrics, Key Performance Indicators (KPIs), Balanced Scorecards, and performance dashboards demonstrates the importance of numbers to organizations today. Stories contained in numbers can be communicated most effectively when we understand the fundamental characteristics and meanings of simple statistics that are routinely used to make sense of numbers, as well as the fundamental principles of effective communication that apply specifically to quantitative information.

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### 3. DIFFERING ROLES OF TABLES AND GRAPHS

Tables and graphs are the two fundamental vehicles for presenting quantitative information. They have developed over time to the point that we now thoroughly understand which works best for different circumstances and why. This chapter introduces tables and graphs and gives simple guidelines for selecting which to use for your particular purpose.

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5. **VISUAL PERCEPTION AND GRAPHICAL COMMUNICATION**
Because graphical communication is visual, it must express information in ways that human eyes can perceive and brains can understand. Our eyes and the parts of the brain that handle input from them work in particular ways. Thanks to science, how we see is now fairly well understood, from the initial information-carrying rays of light that enter our eyes to the interpretation of that information in the gray folds of the visual cortex. By understanding visual perception and its application to the graphical communication of quantitative information, you will learn what works, what doesn’t, and why. This chapter brings the principles of graphical design for communication alive in ways that are practical and can be applied skillfully to real-world challenges in presenting quantitative information.

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Learning requires practice. Through practice you reinforce what you've learned by embedding it more securely in your memory and strengthen your ability to make connections between the concepts we've examined and their application to the real world.
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With a basic understanding of visual perception, we can build a set of visual design principles, beginning with those that apply equally to tables and graphs. Our primary visual design objectives will be to present content to readers in a manner that highlights what’s important, arranges it for clarity, and leads them through it in the sequence that tells the story best.

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Nothing helps learning take root like practice. You will strengthen your developing expertise in table design by working through a few real-world scenarios.

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11. DISPLAYING MANY VARIABLES AT ONCE
Graphs can be used to tell complex stories. When designed well, graphs can combine a host of data spread across multiple variables to make a complex message accessible. When designed poorly, graphs can bury even a simple message in a cloud of visual confusion. Excellent graph design is much like excellent cooking. With a clear vision of the end result and an intimate knowledge of the ingredients, you can create something that nourishes and inspires.

Combining multiple units of measure
Combining graphs in a series of small multiples
Other arrangements of multi-graph series

12. SILLY GRAPHS THAT ARE BEST FORSAKEN
Several graphs that are readily available in software fail miserably at data presentation even though their popularity is growing. The stories that people attempt to tell with these graphs can be told simply and clearly using alternatives that are described in this chapter.

Donut charts
Radar charts
Stacked area graphs for combining part-to-whole and time-series relationships
Circle charts
Unit charts
Funnel charts
Waterfall charts for simple part-to-whole relationships

PRACTICE IN GRAPH DESIGN
You've come far in your expedition into the world of graph design. It's now time for some practice to pull together and reinforce all that you've learned. Expert graph design requires that you adapt and apply what you've learned to a variety of real-world communication problems. Working through a few scenarios with a clear focus on the principles of effective graph design will strengthen your expertise and your confidence as well.

13. TELLING COMPPELLING STORIES WITH NUMBERS
Important stories live in the numbers that measure what's going on in the world. Before we can present quantitative information, we must first uncover and understand its stories. Once we know the stories, we can tell them in ways that help others to understand them as well.

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When you design tables and graphs, you face many choices. Of the available alternatives, some are bad, some are good, some are best, and others are simply a matter of preference among equally good choices. By developing and following standards for the visual display of quantitative information, you can eliminate all but good choices once and for all. This dramatically reduces the time it takes to produce tables and graphs as well as the time required by your readers to make good use of them. Doing this will free up time to put your creativity to use where it’s most needed.

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