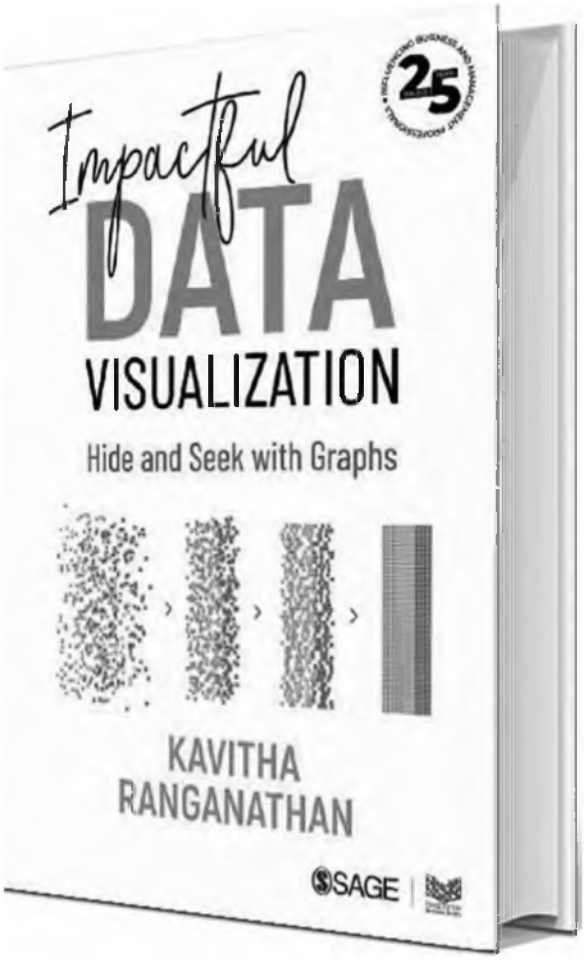
Book Review

Impactful data Visualization: Hide and Seek with Graphs

by Kavitha Ranganathan, IIM Ahmedabad

Published by: Sage Publications India Pvt Ltd
Published in: 2022
Pages: 176
Language: English
ISBN: 978-93-5479-554-1 (PB)



About the Author

Dr. Kavitha Ranagnathan works as an Associate professor of Information Systems at IIM Ahmedabad. With over After pursuing M.Sc. from BITS Pilani, she pursued both M.S. and Ph.D. in computer science from the University of Chicago. After working for a couple of years in the IBM Watson research center, she ventured into academics. She has taught several computing subjects to post-graduate and doctoral students like managerial computing, digital inclusion, data visualization, big data analytics, etc. Her research interest includes (but is not limited to) grid computing, digital inclusion, and data visualization. She has published extensively in reputed international conferences in computing and has also filed several patents.

Description, Appreciation and Critique

Data visualization can be perceived pictorial depiction of data for easy understanding and decision-making. It is now extensively used by both corporates and academia. While corporates use visualization techniques for effective decision-making, academia uses data visualization methods for research and analysis purposes. Because of its relevance, data visualization concepts are now taught at both graduate and post-graduate levels. An easy-to-understand book that can provide students with introductory and conceptual ideas about the preparation of charts is essentially the need of the hour. Impactful Data Analysis fulfills this requirement perfectly.

The book starts with an introduction to different types of charts that are used like line charts, bar charts, etc. The author provides a very comprehensive summary of even less popular graphs such as frequency polygon, Donut Chart, etc. The discussion is organized into specific categories which makes it easier to understand and remember the major chart types.

The second chapter of the book discusses 2D charts. The author provides numerous examples to explain the different types of charts and lucidly clarifies when to use which type of chart. The concept of scaling, an important factor to decide while creating charts, is discussed in detail here. For example, she clearly explains using examples when log scale should be used for visualization and what problems a log scale might create for an unversed reader, and how to address those problems. Further, several chart types that have become recently popular, like icons and area-encoded circles, have been discussed in detail.

The third chapter deals with 3D visualization. The author first explains in detail where 3D charts are more useful as compared to 2D charts. A very important idea explained in detail here is regarding the usage of several small graphs in an image. The author clearly explains the importance of sequencing, consistency, arrangement, and grid lines in making such a small collection of graphs easily understandable and interpretable.

The fourth chapter deals with situations wherein graphs can convey a visual story that is either difficult

difficult to interpret or can easily be misinterpreted. The first issue the author discussed is that of aspect ratio i.e., relative dimensions of the graph. Giving clear examples, the author describes how choosing an incorrect aspect ratio can visually convey wrong information if the person reading the graph is not careful. Proceeding further, the author discusses pitfalls related to change of scale with a graph, problems with inverted representation, etc. The author also discussed about charts like stacked area bar charts which are difficult to visually process accurately.

In the fifth chapter, the author explains some basic guidelines for creating attractive and informative graphs. Intuitive yet important concepts like the usage of grid lines, how much number precision should be displayed, coloring schemes for displaying multiple lines/bars, etc. are commented upon by the author. Then the author shows the proper usage of pie charts and bar charts.

The sixth chapter draws from concepts of psychology and information processing and suggests some key attributes like form, motion, and spatial position for creating compelling graphs. The importance of text content while displaying graphs is also discussed at length and suggestion regarding how to improve storytelling using texts is discussed at length.

Overall, the book covers all major types of graphs that are used in research and academia. The book is easy to read and understand and the usage of colorful images makes it easy to understand. The author has taken several examples from different domains (like that of finance, marketing, and sales, etc.) which makes this book ideal for students in any specialization. Illustrative examples are often based on data from Indian companies which makes it easier for students to understand the story that is being told using the graphs. Psychological aspects of the visual processing of data are also discussed which will help students decide on the techniques that can be used to create greater pre-processing impact in the mind of the readers. Several practice problems and their solution are also presented so that readers can practice to better understand the concepts through actual implementation.

Although the book focuses on the conceptual side, it can be greatly enhanced by providing little coding in terms of how to implement the charts in Excel, etc. Further, a brief explanation of the calculations associated with the charts could help students understand the logic of the graph better. Finally, some more sample datasets can be provided to the students for more practice.

The book will be very useful for students who want to learn about basic data visualization techniques irrespective of their domain. This book can also be used in conjunction with other textbooks in introductory statistical courses as well.

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