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Review of *A Visual Guide to Stata Graphics*, Second Edition by Michael N. Mitchell

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Abstract. This article reviews *A Visual Guide to Stata Graphics, Second Edition* by Michael N. Mitchell.

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1 Introduction

Modern data graphics can do much more than simply substitute for small statistical tables. At their best, graphics are instruments for reasoning about quantitative information. . . . Of all methods for analyzing and communicating statistical information, well-designed data graphics are usually the simplest and at the same time the most powerful (Tufte 2001).

The creation of graphs and the display of data is a major task for many Stata users. Well-designed graphs efficiently communicate information and are part of any research narrative. With the introduction of Stata 8, graphs have become more flexible but also more complex. Depending on how much one chooses to deviate from the default options (which generally are pretty smart), there are numerous options and suboptions to consider. Given the complexity of the graph syntax, it is not always easy for even an experienced user to find the correct combination of options to use. Michael Mitchell's *A Visual Guide to Stata Graphics* (2008) can assist many Stata users with creating the graphs they want. It does so by offering numerous example graphs that users can adapt to their own needs. Working through Mitchell's book is an excellent way to learn how to create graphs and understand the logic behind Stata's graphic language.

The goal of the book is “to help you learn and use the Stata graph commands and the Graph Editor for the purpose of creating graphs in Stata. I assume that you know the kind of graph you want to create and that you are turning to this book for advice on how to make that graph.” It succeeds admirably. The book not only helps you learn how to create graphs but it also beautifully displays Stata graphic capabilities. With over 900 graphs, it explains the commands and options by building up complex graphs from very simple beginnings. The innovative color-coded two-level table of contents printed on the outer edge of the right side of the book makes it easy to see what options are being explained and to locate graph types and options.

In Ulrich Kohler's review (2004) of the first edition, he wrote "A *Visual Guide to Stata Graphics* is an exceptional book". The second edition continues this in both the design and in meeting the author's goal. The book should not be seen as a resource only for beginning Stata users; experienced users will also be surprised to learn about the flexibility in editing that the new features in Stata 10 offer. Some of these features are not readily apparent in the graphics manual.

The Graph Editor is new in Stata 10, and it accounts for the significant addition to the *Visual Guide*. This new material will be the focus of this review.

2 Contents

The contents of the second edition are similar to the first edition with two notable additions: there is an entire chapter devoted to the interactive Graph Editor, and nearly every graph includes both the command line syntax and a description of how to use the Graph Editor to modify the graph. In addition to the new chapter about the Graph Editor, there are chapters covering the basic Stata graph types: `twoway`, `matrix`, `bar`, `box`, `dot`, and `pie`. Beyond the graph types, there are two chapters covering graph options in more detail, a chapter on style options (e.g., colors, line patterns), and an appendix. The appendix briefly covers statistical graphs, saving and combining graphs, common mistakes (e.g., obtaining an overall title when using `graph, by()`), and how to customize graph schemes. Throughout the book, Mitchell offers tips on a variety of tools and techniques to modify graphs.

3 The Graph Editor

The interactive Graph Editor allows you to add, hide, or modify graph elements (such as markers or lines); change plot types; and rotate bar, dot, and box plots. Though the *Stata Graphics Reference Manual* does have 14 pages dedicated to using the new Graph Editor (the online help has additional material on the Graph Recorder, added 25 February 2008), one highlight of the second edition of the *Visual Guide* is the 54 pages dedicated to using the Graph Editor. But what makes this chapter of the *Visual Guide* so useful is that within these 54 pages are nearly 120 screenshots highlighting the interactive toolbars, menus, and example graphs to be replicated.

Chapter 2 discusses all the aspects of the Graph Editor: the toolbars, the Object Browser, operations on graph objects, the Graph Recorder, and a comparison of the Graph Editor versus the command line. The Object Browser contains a hierarchical list of all the graph objects. This tool makes it easy to locate individual graph elements that might be too difficult to find with the pointer. The next several sections detail modifying, adding, moving, hiding, and locking graph objects. In many of the examples, Mitchell displays the different tools that can be used to edit graphs. The Graph Recorder allows you to combine the command line syntax with the customization of the Graph Editor. The Graph Recorder will save changes made to a graph in Stata's low-level graph language. Once the changes are recorded, using the `play()` option allows

you to reproduce the graph with all the changes. Though not discussed by Mitchell, the recorded files (*.grec) are simply text files that can be edited (the files contain the appropriate warning: "Edit only if you know what you are doing."). The section *Graph Editor versus Stata commands* makes a persuasive case that even seasoned Stata programmers should become comfortable with the Graph Editor, that for some tasks it often requires less effort to use the Editor than to rely solely on commands.

There are three features of the Graph Editor demonstrated by Mitchell that may not be widely known. The first feature, a really novel feature of the Graph Editor, is the ability to rotate **bar**, **box**, and **dot** graphs. This gives you the ability to quickly move through the various combinations of categorical variables in the **over(varname1) over(varname2)** options. The second feature is that the Graph Editor offers editing options that are not available with the command line, such as changing individual graph elements by using **graph, by()**. The third feature of the Graph Editor allows you to add objects across two graphs, thereby linking the elements in one graph to another. In figure 1, I have added an arrow linking the high-risk yield distribution to the corresponding region on the map.

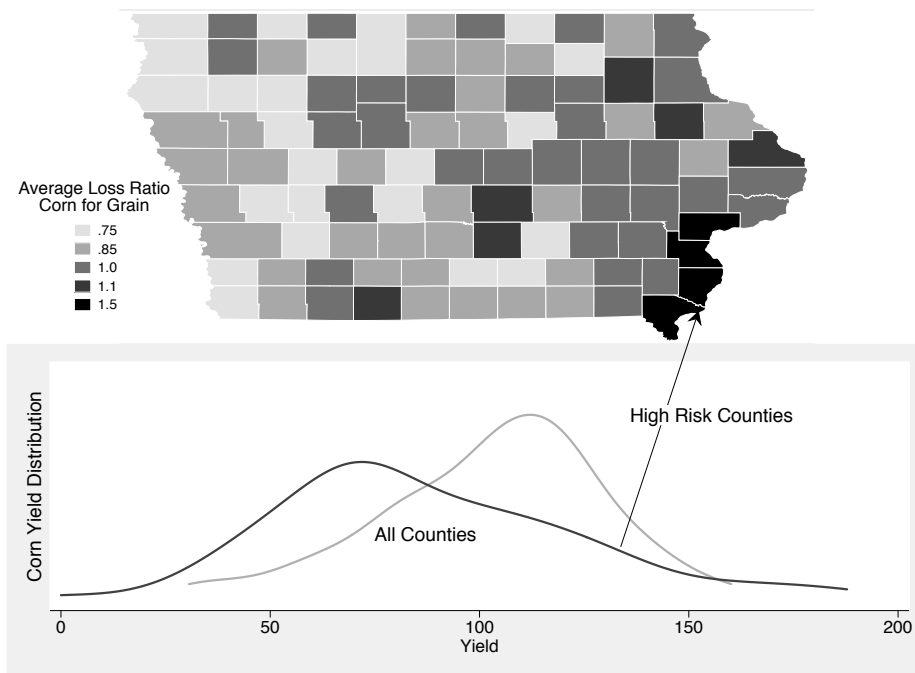


Figure 1. Iowa corn loss ratios and yield distributions

At first glance, it may seem like the point-and-click interface of the Graph Editor would be cumbersome. However, after a short time working through the examples using the Editor, I was surprised at how easy it is to work with.

4 Assessment

The *Visual Guide* is very useful and highly accessible. All members of the Stata community will benefit from it. I do, however, have three comments: First, given the usefulness of `graph combine`, I am surprised that this material is left for the appendix rather than as a standard option. Second, there is no mention of some of the user-created graphing programs (e.g., `tableplot`, `triplot`, `spmap`) or Nick Cox's *Speaking Stata* columns dealing with creating graphs. Third, a common handicap to creating graphs is transforming the data beforehand. The *Visual Guide* does have a few examples on transforming data before creating graphs, but these examples are in the appendix. I would have preferred this topic to be more prominent.

The examples and explanations in this book will allow many readers to learn and understand graph syntax and realize that the Graph Editor is a very powerful tool to easily customize graphs. The *Visual Guide* is not a replacement for the *Stata Graphics Reference Manual*, but it does serve as an excellent complement to it.

5 References

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