

Dynamic Control of R Graphics through RExcel

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R provides powerful graphic tools. R also has a high startup cost for non-technical users. Excel is already on almost everyone's desk, provides a familiar interface, and has many control mechanisms (sliders, checkboxes, option buttons, double-clicking) with which users are comfortable. It is relatively easy to place complex R graphs into the the Excel automatic recalculation model, so the graphs are automatically updated when the data or the control mechanisms are changed on the spreadsheet. In this paper we present and discuss the behind-the-scenes details of several R graphical displays that are accessed and controlled through simple and familiar widgets.

Dynamic displays can be designed for different audience assumptions. The normal and t plot, designed for the introductory course, shows a graph of significance and power for the normal and t -tests. We adjust sliders to illustrate how the power changes as the sample mean \bar{x} changes and as the location of the alternative value of the population mean μ_1 changes. The Adverse Events Dotplot, designed for the monitoring of safety data collected during clinical trials, shows the relative risk of various adverse events. We click the data to change the display characteristics of the plot, for example, to emphasize the risk or the actual frequency of occurrence of the types of events.

We illustrate and discuss the technical capabilities of the interface, the characteristics of the intended audience for these displays, and design decisions we made based on these considerations.

References

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