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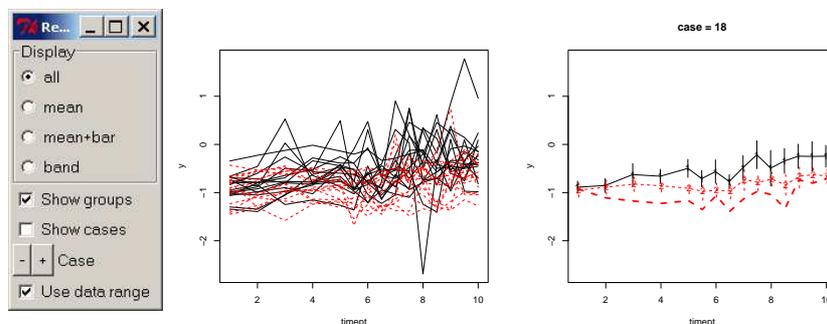
rpanel: simple interactive controls for R functions using the tcltk package

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In a variety of settings it is extremely helpful to be able to apply R functions through buttons, sliders and other types of graphical control. This is particularly true in plotting activities where immediate communication between such controls and a graphical display allows the user to interact with a plot in a very effective manner. The `tcltk` package described by Dalgaard (2001) provides extensive tools for this and the aim of the `rpanel` package is to provide simple and well documented functions which make these facilities as accessible as possible, particularly for those who have reasonable familiarity with R but are less confident in embarking on a general exploration of the *Tcl/Tk* system. In addition, the global variables which are the means of communication in `tcltk` are also managed by `rpanel` so that the user need not be aware of them. A standard, flexible form of parameter passing is also used to communicate with the plotting functions written by the user. Among other advantages, this allows users to call a particular function repeatedly, to produce simultaneous and independent copies of the same graphical method without causing control difficulties.

The basic design of the software will be described and illustrated on a variety of examples of interactive control of graphics. Part of the aim of the presentation is also to outline the range of uses to which these facilities can be put. This includes situations in data analysis where interactive control gives important and convenient insight, such as in dynamic graphics. The figure below shows an example with repeated measurements data where a panel allows easy movement between plots of the raw data, means and standard errors or individual profiles. This provides a very helpful means of identifying unusual profile shapes in a manner which is not possible by plotting all the data, due to the difficulty in identifying individual cases. A further example involving the animated display of three-dimensional shape data, employing the facilities of the `rgl` package (Adler, 2005), will also be described. Other examples will be drawn from teaching, where animation in particular can communicate some concepts in a much more effective manner than static plots. Interaction with more general images is also a potentially rich facility.



The current version of the `rpanel` package, and a full description of its aims (Bowman, Crawford, Alexander & Bowman), are available at

www.stats.gla.ac.uk/~adrian/rpanel.