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Stata tip 12: Tuning the plot region aspect ratio

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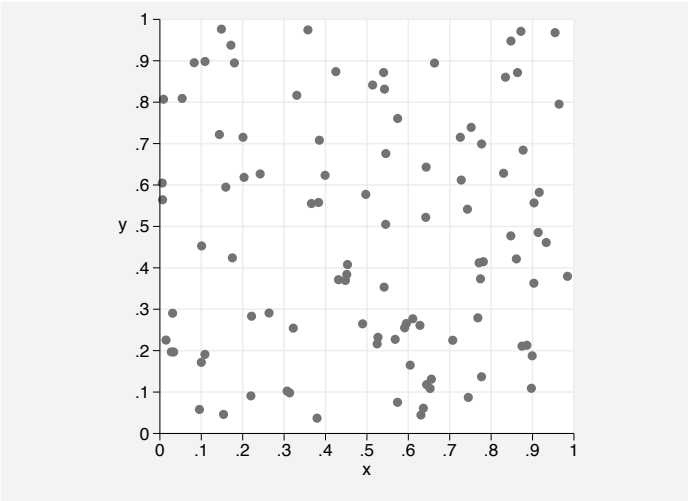
Sometimes you want a graph to have a particular shape. Graph shape is customarily quantified by the aspect ratio (height/width). One standard way of controlling the aspect ratio is setting the graph height and width by specifying the `ysize()` and `xsize()` options of `graph display`. See also [G] **graph display** and [G] ***region_options***. These options control the size and, thus, the shape of the entire available graph area, including titles and other stuff beyond the plot region. At best, this is an indirect way of controlling the plot region shape, which is likely to be your main concern.

In the 23 July 2004 update, Stata 8 added an `aspect()` option to `graph` to meet this need. For example, `aspect(1)` specifies equal height and width, so that the rectangular plot region becomes a square. (A rectangle that is not a square is, strictly, an oblong.) You might want a square plot as a matter either of logic or of taste. Suppose that you are contemplating uniform random numbers falling like raindrops on the unit square within the real plane (or the plain, or as the old song has it):

```
. clear
. set obs 100
. gen y = uniform()
. gen x = uniform()
. scatter y x, aspect(1) xla(0(0.1)1, grid) yla(0(0.1)1, ang(h) grid)
> yti(, orient(horiz)) plotregion(margin(none))
```



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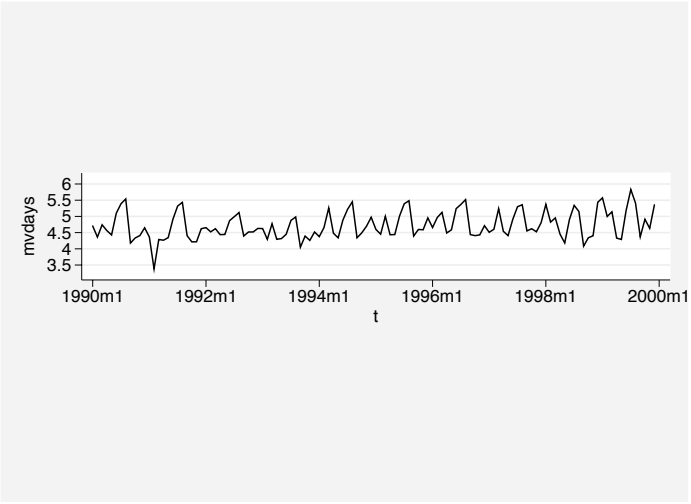
In effect you have drawn a map, and maps customarily have equal vertical and horizontal distance scales or, more simply put, a single distance scale. Hence the aspect ratio is set as 1 whenever the plot region has equal extent on both axes. The same preference applies also to various special graphs on the unit square, such as ROC or Lorenz curves.

In other circumstances, the aspect ratio sought might differ from 1. Fisher (1925, 31) recommended plotting data so that lines make approximately equal angles with both axes; the same advice of banking to 45° is discussed in much more detail by Cleveland (1993). Avoiding roller-coaster plots of time series is one application. In practice, a little trial and error will be needed to balance a desire for equal angles with other considerations. For example, try variations on the following:

```
. use http://www.stata-press.com/data/r8/htourism.dta
. tsline mvdays, aspect(0.15) yla(, ang(h))
```



References

Cleveland, W. S. 1993. *Visualizing Data*. Summit, NJ: Hobart Press.

Fisher, R. A. 1925. *Statistical Methods for Research Workers*. Edinburgh: Oliver and Boyd.