Nomograms for visualising relationships between three variables

Jonathan Rougier[1,*]**, Kate Milner**[2]

1. Department of Mathematics, University of Bristol
2. Crossroads Veterinary Centre, Buckinghamshire
[*]Contact author: j.c.rougier@bristol.ac.uk

A *nomogram* is a visual tool for doing a calculation. The linear nomogram, for example, is suitable for predicting z from x and y in relationships of the form $f(x) + g(y) = h(z)$, where f, g, and h are specified monotonic functions. This happens to be the form of a relationship for predicting the weight of Kenyan donkeys (typically crosses of the Nubian and Somalian wild asses), as a function of their heart girth and height; which makes it a very useful tool for Kenyan vets. There is an elegant theory for constructing nomograms relating three variables, reviewed in Doerfler (2009). Unfortunately, though, many nomograms have limitations within a statistical approach, for which predictive uncertainty must also be assessed. I discuss nomograms, including their implementation in *R*, and illustrate with a statistical application concerning Kenyan donkeys.

References

Ron Doerfler (2009). The Lost Art of Nomography. *The UMAP Journal 30*, 457–493. Available on-line, http://myreckonings.com/wordpress/wp-content/uploads/JournalArticle/The_Lost_Art_of_Nomography.pdf.

Picture of two Kenyan donkeys taken by Kate Milner, summer 2010.