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# TEACHING STATISTICS

## EDITORIAL

The scatterplot on the cover of this issue was generated from the words in *A Tale of Two Cities* by Charles Dickens. In particular, the logarithm of word frequency is plotted against the logarithm of word rank. To elaborate a bit, the largest word frequency is 8,024 – the number of times ‘the’ appears. So, this is assigned a rank of 1. The next largest word frequency is 4,999 – the number of times ‘and’ appears. This is assigned a rank of 2. We continue in this fashion until, finally, we encounter the words that only occur once in this work by Dickens. One technical detail here: when several words have an identical frequency they are each assigned to have a rank equal to the average of the next available rank numbers. In particular, the ranks 5,549 – 9,857 are the next available for the words ‘aback’ through ‘youths’ which each appear just once. Therefore, each is assigned an (average) rank of 7,703. The point in the lower right corner of the scatterplot at  $(\ln(1), \ln(7703))$  is associated with these “singletons”. If you are intrigued by the pattern you see, then consult this issue’s Statistical Diversions column by Peter Petocz and Eric Sowe and note the discussion on “Zipf’s Law” (see their solution to Question 2 of issue 30.3).

In this issue you will also find discussion of another unusual law, called “Benford’s Law”, in the article by Bradley and Farnsworth. Goldman and McKenzie describe how to create data with specific summary statistics. In his article Muttart argues that instructors should only use “definitional” not computational formulae. Bedwell gives examples that indicate that normality is not to be strictly trusted as a model for anthropomorphic measurements. Bush, Menzies and Thorp give a nice variety of web resources – notably a collection of applets, that instructors may wish to use to demonstrate statistical concepts. Johnson, Dasgupta, Zhang and Evans provide student reaction to using the Internet for course delivery rather than a more traditional lecture and lab-based approach. Petocz and Sowe focus on statistical estimation in their column.

Still more is contained within this issue! Also find inside a book review by Neil Sheldon and a new crossword puzzle provided by Erithacus!

Roger Johnson  
Editor