
Significance - Statistics making sense

Sir Francis Galton and the homing pigeon

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January 2011 marks the one hundredth anniversary of the death of the celebrated scientist Sir Francis Galton (1822-1911). Here we continue to examine some of Galton's lesser-known contributions to the history of statistics.

We have already [noted](#) the phenomenal range of application areas that caught Galton's attention. Who else could boast so incongruous a collection of paper titles as '[Exploration in the arid country](#)', '[Barometric predictions of weather](#)', '[Finger prints in the Indian Army](#)' and '[Arithmetic by smell](#)'?



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A [column](#) in an 1894 edition of the '*Homing News and Pigeon Fanciers' Journal*' is particularly revealing. A report is given on the speeds of over 6,000 homing pigeons in an attempt provide a means of comparison for the race-worthiness of any bird that an interested reader might consider breeding.

The results for the 3,207 "old birds" are shown in the table. The table shows the proportion of birds in each category. Galton suggests summarising the figures by their mean and "variability", which he estimates as 976 and 124 yards per minute respectively. It is not clear which quantity Galton calls the "variability" – his figure appears too small to be a standard deviation.

Velocity (yards per minute) of 3,207 "old birds"

Velocity	<500	500-600	600-700	700-800	800-900	900-1000	1000-1100	1100-1200	1200-1300	1300-1400	>1400
Observed	0.6	1.3	5.3	8.8	18.6	20.3	21.3	12.3	4.3	3.6	3.6
Expected	1	1	5	10	17	21	20	14	7	3	1

The second row of figures are Galton's, and arise from the proportions that would be expected by approximating the original data by a Normal distribution. The fit appears extremely good.

Simple as this example is, it illustrates two themes that overarch much of Galton's work. The first is his attention to detail: he points out that he is unable to tell whether the data are "trustworthy" and then corrects an omission in the original table printed ("I notice that a line has dropped out"). The second, and perhaps more important, is his insatiable appetite for quantifying the world around him, which he does in a style that had rarely been seen before. Many of the methods for doing so would stem from Galton's own work and that of three other statisticians he mentions in this article who "are now occupying themselves with this class of subject", John Venn, Raphael Weldon and Karl Pearson.