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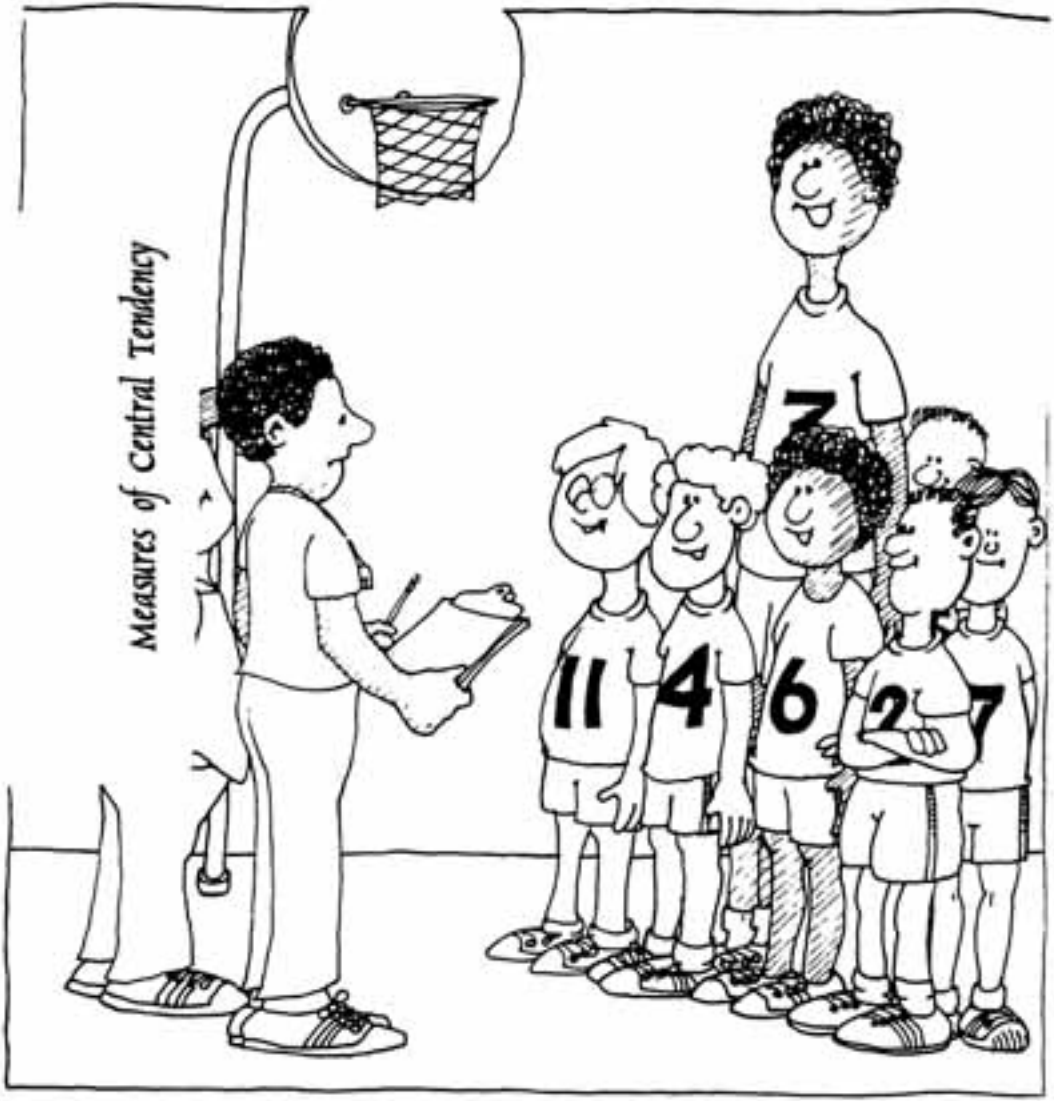


"Should we scare the opposition by announcing our mean height or lull them by announcing our median height?"

On the Average[1]

The figure 2.2 children per adult female was felt to be in some respects absurd, and a Royal Commission suggested that the middle classes be paid money to increase the average to a rounder and more convenient number.

----PUNCH

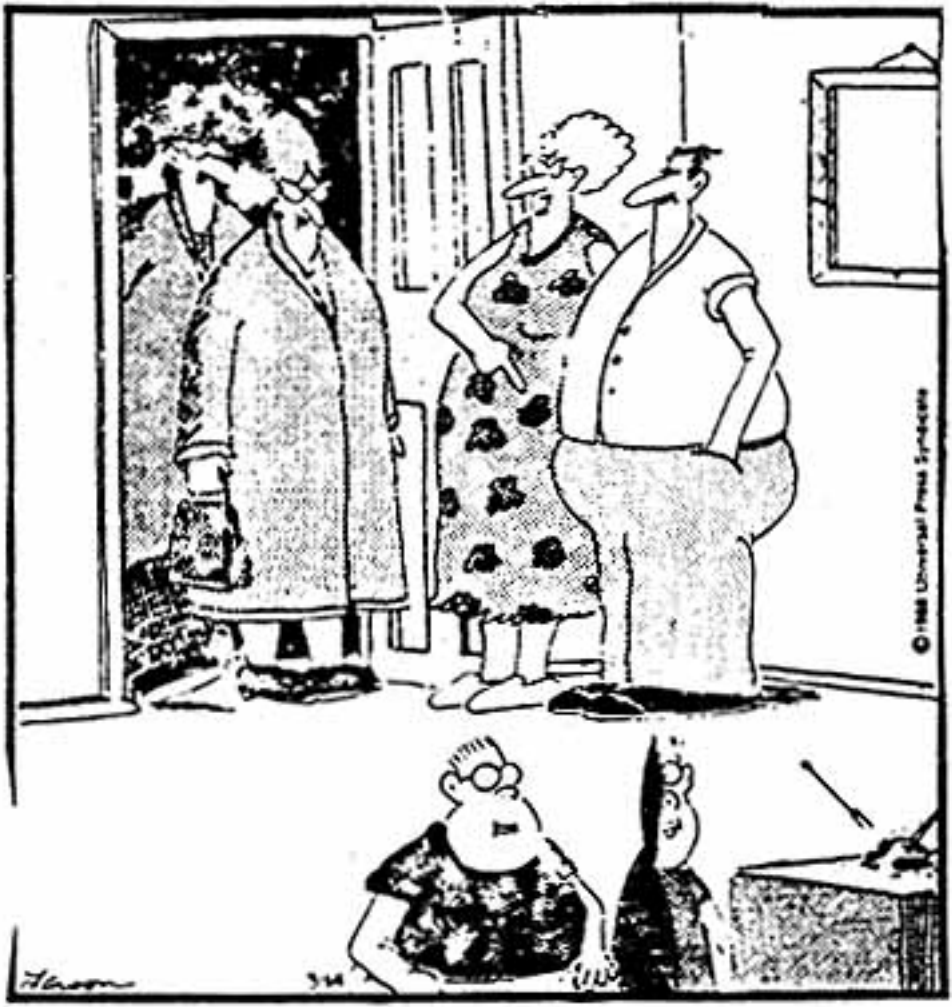
In former times, when the hazards of sea voyages were much more serious than they are today, when ships buffeted by storms threw a portion of their cargo overboard, it was recognized that those whose goods were sacrificed had a claim in equity to indemnification at the expense of those whose goods were safely delivered. The value of the lost goods was paid for by agreement between all those whose merchandise had been in the same ship. This sea damage to cargo in transit was known as havaria and the word came naturally to be applied to the compensation money which each individual was called on to pay. From this Latin word derives our modern word "average". Thus the idea of an average has its roots in primitive insurance. Quite naturally with the growth of shipping, insurance was put on a firmer footing whereby the risk was shared, not simply by those whose goods were at risk on a particular voyage, but by large groups of traders. Eventually the carrying of such risks developed into a separate skilled and profit-making profession. This entailed the payment to the underwriter of a sum of money which bore a recognizable relation to the risk involved.

The idea of an average is common property. However scanty our knowledge of arithmetic, we are all at home with the idea of goal averages, batting and bowling averages and the like. We realize that the purpose of an average is to represent a group of individual values in a simple and concise manner so that the mind can get a quick understanding of the general size of the individuals in the group, undistracted by fortuitous and irrelevant variations. It is of the utmost importance to appreciate this fact that the average is to act as a representative. It follows that it is the acme of nonsense to go through all the rigmarole of the arithmetic to calculate the average of a set of figures which do not in some real sense constitute a single family. Suppose a prosperous medical man earning£3,000 a year had a wife and two children none of whom were gainfully employed and that the doctor had in his household a maid to whom he paid£150 a year and that there was a jobbing gardner who received£40 a year. We can go through all the processes of calculating the average income for this little group. Six people between them earn£3,190 in the year. Dividing the total earnings by the number of people, we may determine the average earnings of the group to be£531 13s.4d. But this figure is no more than an imposter in the robes of an average. It represents not a single person in the group. It gives the reader a totally meaningless figure, because he cannot make one single reliable deduction from it. This is an extreme example, but mock averages are calculated with great abandon. Few people ask themselves: What conclusions will be drawn from this average that I am about to calculate? Will it create a false impression?

The idea of an average is so handy that it is not surprising that several kinds of averages have been invented so that as wide a field as possible may be covered without misrepresentation. We have a choice of averages; and we pick out the one which is appropriate both to our data and our purpose. We should not let ourselves fall into the error that because the idea of an average is easy to grasp there is no more to be said on the subject.

[1]From M.J. Moroney, Facts from Figures 2d ed. (London: Penguin Books, 1953), pp. 34-35.

THE FAR SIDE



"Bob and Ruth! Come on in .... Have you met Russell and Bill, our 1.5 children?"

MAJOR CHARACTERISTICS OF EACH MEASURE OF CENTRAL TENDENCY

Mode

1. The mode is the most frequent or probable measurement or score in a distribution.
2. There can be more than one mode per distribution of scores.
3. The mode is not influenced by extreme scores.
4. Modes of subsets cannot be combined to determine the mode of the whole set.
5. The mode can be calculated when the ends of the distribution are open, provided that it does not fall in an open-ended interval.
6. The mode's value can change by organizing the data into different categories.
7. The mode is applicable to both qualitative and quantitative data.

Median

1. The median is the central value with 50% of the scores larger than it and 50% smaller.
2. There is only one median per distribution.
3. The median is not influenced by extreme values.
4. Medians of subsets cannot be combined to determine the median of the whole set.
5. The median can be calculated when the ends of the distribution are open, provided that it does not fall in an open-ended interval.
6. The median's value is rather stable even when data are organized into different categories.
7. The median is applicable to quantitative data only.

Mean

1. The mean is the sum of all scores divided by the number of scores.
2. There is only one mean per distribution.
3. The mean is influenced by extreme scores, and thus it may not be very representative of the distribution.
4. Means of subsets, when weighted, can be combined to determine the mean of the whole set.
5. The mean cannot be calculated when the ends of the distribution are open.
6. The mean is applicable to interval and ratio data only.

Lyman Ott, Richard F. Larson, & William Mendenhall, Statistics (Boston: Duxbury Press), 1987: 118.


DON'T WORRY, THAT ROPE IS ONE INCH THICK ON THE AVERAGE