later years. The widespread desire among older people to avoid being a burden on younger relatives may be satisfied only by reducing or withdrawing intergenerational financial transfers.

The community care reforms should not be seen in isolation from social and health policies in other areas. For example, current developments in social policy (such as the Child Support Agency) are placing an increased emphasis on the rights and responsibilities of individuals in the context of a rising divorce rate and family reformation. For some individuals the impact of such policies is likely to combine with the effects of reduced intergenerational transfers of wealth from old to young and indeed with increased financial liability for older dependent relatives. Quantification of this is impossible at this stage, but policy development must take account of these wider issues if the family is to remain a principal focus for social policy intervention. In summary, in the short term we run the risk, by default, of introducing inequities between generations in terms of their likelihood of acquiring capital assets and in the longer term of compounding disadvantage within and between generations.

Need for monitoring

Given the high stakes it is important to monitor the impact of the community care reforms. Present arrangements for monitoring have not advanced much beyond documenting the progress made in implementing the key policy tasks, although bodies such as the select committee on health have given some useful pointers about how the distributional impact of community care funding can also be charted. However, the monitoring of these wider inequities between and within generations—which are potentially much more fundamental—is so far conspicuous by its absence. In particular, the documentation of individual and organisational responses to perceived inequities between individuals, between different localities, and between generations is not part of the current policy evaluation agenda. This omission exposes us to the risk of substantial unintended, and possibly deeply divisive, consequences.

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2 Department of Health and Social Security. *Report of a study on community care.* London: HMSO, 1981.
3 Social Security Committee. *Fourth report.* Memorandum of evidence by Melanie Henwood and Gerald Wistow. Appendix 15. *The financing of private residential and nursing home fees.* Vol II, Minutes of evidence and appendices. London: HMSO, 1991.
4 Secretaries of State. *Caring for people: community care in the next decade and beyond.* London: HMSO, 1989 (cm 849).
5 Wistow G, Henwood M. *Residential care: will social security still pay?* Leeds: Nuffield Institute, 1994.
6 Judge K, Mays N. Allocating resources for health and social care in England. *BMJ* 1994;308:1363-6.
7 Health Advisory Service. *The rising tide: developing services for mental illness in old age.* Sutton: HAS, 1982.
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Statistics Notes

Regression towards the mean

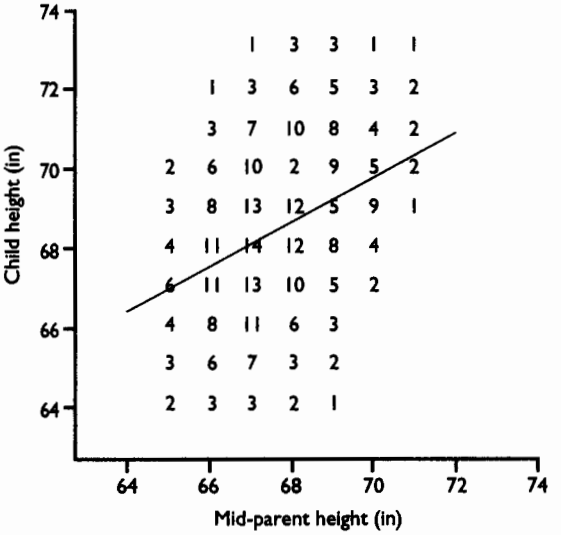
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This is the second in a series of occasional notes on medical statistics.

The statistical term "regression," from a Latin root meaning "going back," was first used by Francis Galton in his paper "Regression towards Mediocrity in Hereditary Stature."[1] Galton related the heights of children to the average height of their parents, which he called the mid-parent height (figure). Children and parents had the same mean height of 68·2 inches. The ranges differed, however, because the mid-parent height was an average of two observations and thus had its range reduced. Now, consider those parents with a mid-height between 70 and 71 inches. The mean height of their children was 69·5 inches, which was closer to the mean height of all children than the mean height of their parents was to the mean height of all parents. Galton called this phenomenon "regression towards mediocrity"; we now call it "regression towards the mean." The same thing happens if we start with the children. For the children with height between 70 and 71 inches, the mean height of their parents was 69·0 inches. This is a statistical, not a genetic phenomenon.

If we take each group of mid-parents by height and calculate the mean height of their children, these means will lie close to a straight line. This line came to be called the regression line, and hence the process of fitting such lines became known as "regression."

In mathematical terms, if variables X and Y have standard deviations s_X and s_Y, and correlation r, the slope of the familiar least squares regression line can be written rs_y/s_x. Thus a change of one standard deviation in X is associated with a change of r standard deviations in Y. Unless X and Y are exactly linearly related, so that all the points lie along a straight line, r is less than 1. For a given value of X the predicted value of Y is always fewer standard deviations from its mean than is X from its mean. Regression towards the mean occurs unless $r=1$, perfect correlation, so it always occurs in practice. We give some examples in a subsequent note.



Galton's original data showing the relation between the heights of children and their parents, with regression line[1]

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1 Galton F. Regression towards mediocrity in hereditary stature. *Journal of the Anthropological Institute* 1886;15:246-63.