Commentary: When bad news is worse than it sounds

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In their study of a quarter century’s worth of English deaths attributed to cardiovascular disease (CVD), Dr Asaria and colleagues have unearthed a trend that is worse than they report it to be. What is new in Asaria et al.’s article is the reported trend in geographical inequalities in suffering and dying from this disease.1 However, these authors succumb to a very common error at the start of their report, an explanation of which, I hope, serves to further strengthen their overall case and the importance of their work.

In its substantive results, this article begins by stating that ‘When grouped by deprivation quintile, absolute inequality between most and least deprived wards narrowed over time in ages 30–64 years…’.1 This is true, but the implication that such a trend implies a reduction in health inequalities is false. When overall mortality rates for a disease are falling then it is quite possible to record such narrowing, but for the narrowing not to imply a reduction in inequality. It is possible because of the biological impossibility for a widening to occur when that widening could require a mortality rate to fall below zero.

In Table 1 of Asaria et al.’s article,1 the number 69 appears twice, and it is this rate and change of rate that helps explain why the bad news this article reveals is worse than it sounds. The first time 69 crops up is when it is revealed that, between 1982 and 1986, among all the least deprived quintile of wards, for every 100 000 women alive between the ages of 30 and 64, only 69 died each year from CVD. That is a very low rate of CVD deaths (twenty years on, even the best-off quintile of men enjoy twice as fast a rate of improvement).

Why are these two 69s of such importance? The reason is that when grouped by deprivation quintile, for absolute inequality (between most and least deprived wards) not to have narrowed over time in ages 30–64 years, but for the fall of 69 per 100 000 among the women living in the poorest areas to have still occurred, something impossible would have had to have taken place. A slightly greater absolute fall would have had to have taken place among the women resident in the least deprived fifth of wards. Standardized mortality rates there would have had to have fallen by at least 70 women not dying of CVD per 100 000 per year for the absolute gap to have widened. As they began at 69, the mortality rate would have had to have fallen to –1 deaths by 100 000 women per year.

A rate of –1 implies reincarnation; in this case, the reincarnation of a woman living in the most affluent of areas would have had to have occurred or, to be a little more accurate, at least one such reincarnation for every 100 000 women aged between 35 and 64 living in such areas. In other words, when considering changes in inequality, the superficially positive first finding of this article is not at all positive; in the case of women, it is simply not possible for the absolute gap not to narrow, and in the case of men, it is highly implausible that any apparent narrowing should be seen as some kind of social inequality achievement.

So, read again what most researchers who scan the abstract of the article will read, but now given what you know about how the narrowing was inevitable (sans reincarnation): ‘When grouped by deprivation quintile, absolute inequality between most and least deprived wards narrowed over time in ages 30–64 years, but increased in older adults’ (abstract), ‘…relative inequalities worsened in all four age-sex groups, more so in young and middle-ages, pointing to persistent environmental, social and health system injustice’ (page 12).

The kind of narrowing described here is akin to the narrowing in General Certificate of Secondary
Education (GCSE) grades (the standard UK school examinations at ages 15/16) between those awarded to pupils attending private schools, (where often near to 100% gain A*-C scores), and those awarded to the lowest quintile of state schools. It is easy to record such an absolute narrowing as appearing to be progress, while substantive educational inequalities widen. In education, other examinations taken at later ages begin to matter more than GCSEs, so an absolute narrowing in GCSEs is no great sign of progress. In health, other causes of death that tend to kill at older ages begin to take a greater cull.

Asaria et al.’s article reports that nationally, CVD mortality declined by about two-thirds for men and women aged 30–64 years between 1982 and 2006, and by over half for those aged >65 years; this is good news, but is already known and is partly owing to earlier events. CVD declines in the 1980s and 1990s had many possible precursors. Some precursors may have been associated with the lagged beneficial effects of cohorts growing up in periods of rising economic equality and rapidly declining absolute poverty. Others will be the period effects of entire generations being better informed on health-related matters. Most important among these might be smoking cessation decades earlier, the 0.73 geographical correlation of smoking cessation being better informed on health-related matters. Most important among these might be smoking cessation decades earlier, the 0.73 geographical correlation of CVD with early-life conditions and improved treatment, more recently including the introduction of paramedics in ambulances and the use of statins.

When it comes to inequalities, there is an absolute widening in the rates for women between the first two ‘Thatcher’ periods being compared (1982–86, 1987–91), a hiatus in the rise in absolute inequalities for women in the change to the Major years (1992–96) and then continuous, rapid and, in some cases, accelerating rises in relative inequalities during the two Blair periods dissected (1997–2001 and 2002–06) in this study. As is explained above, the apparent falls in absolute gaps are a chimera because, short of reincarnating the middle-aged middle class, absolute inequalities could only fall even if there was much less improvement in the worse-off quintile than we might expect given very rapid improvement among the best-off quintile.

At the extremes and by the end of the period they are studying, Asaria et al. find that, by ‘…2002–06, there was a nearly 4-fold difference between the 1st and 99th percentiles of CVD mortality at ages 30–64 years among English wards.’ Why should this be and why should the gap be widening to make it so? The authors suggest ‘persistent environmental, social and health system injustice’, but these are not just persistent evils, they are of growing importance. From the 1920s through to the late 1970s general educational provision in Britain became progressively less segregated, incomes less polarized, housing conditions were improved most at the bottom through slum clearances and, in short, injustice was reduced.
For any individual, it is chance that matters most, far more than genes, social class or geography but ‘...exposures that affect disease risk at a group level may have small effects in quantitative genetics terms (“variance explained”), but they are both something that public health policy can do something about and they can account for the large majority of the cases of disease in a population. ...Health promotion approaches that have less coherent views on disease causation than those popularly held are bound to be unsuccessful. Chance leads to averages being the only tractable variables in many situations, and this is why epidemiology makes sense as a science.’

Before there was science there were the humanities, of which Geography is among the oldest. Geographical averages have always been tractable. Fate is never geographically determined but right here, in England, right now, after three decades of polarization, Don DeLillo’s dictum appears to be gaining ground: “Everything is real estate. You’re a product of your geography”.

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References
7 Campbell D. Class divide in health widens, says think-tank: King’s Fund think-tank finds those with no qualifications are five times more likely to smoke, drink, and neglect diet and exercise. Guardian, 23rd August 2012. Available from: http://www.guardian.co.uk/society/2012/aug/23/class-divide-health-widens-thinktank.