

Inequalities in child mortality: real data or modelled estimates?



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To ensure that no one is left behind is fundamental to the 2030 Agenda for the Sustainable Development Goals. Disaggregation of health statistics by multiple dimensions of inequality is necessary to identify disadvantaged populations and guide the targeting of programmes and monitoring of progress. During the past few decades, disaggregation of health statistics by wealth quintiles from household survey data has become common practice. In *The Lancet Global Health*, Fengqing Chao and colleagues¹ expand the comprehensive and well established work by the UN Inter-agency Group on Child Mortality with estimates of country, regional, and global child mortality by wealth quintiles for 1990–2016.

Their analysis allows for a general assessment of global and regional trends in inequalities. Their main conclusion is that absolute inequalities (expressed as differences between mortality in the richest and poorest quintiles) are being reduced in most countries, whereas relative inequalities (based on the ratio of mortality between the extreme quintiles) have remained constant. This type of apparent discrepancy is common in health equity literature.² Because mortality in the wealthiest quintile is still decreasing in most countries, and because ratio measures are particularly sensitive to small changes in the denominator, relative inequalities will only tend to decrease when mortality is so low in the richest quintile that the scope for further reduction is limited.

Estimates of inequalities in child mortality (and other health indicators) need to be used cautiously, as acknowledged by Chao and colleagues.¹ Their Article provides a candid appraisal of the limitations of global modelling exercises. We focus on three issues. First, no data were available for 38 of 137 low-income and middle-income countries. The magnitude of inequalities in these countries was borrowed from others with similar mortality, even though inequalities are known to vary substantially from country to country and are not easily predictable from mortality alone.

Second, a single datapoint was available for 25 countries, thus precluding the direct estimation of trends, which are assumed to be similar to those derived from countries with two or more datapoints. For example, the single datapoint used for Brazil refers to 1993, and health inequalities have markedly reduced

since then,³ which might have resulted in a greater improvement in equity than that observed in other countries from which trend data were borrowed.

Third, for most countries with trend data, the reference year for the estimate is far in the past because retrospective birth histories produce under-5 mortality for a 5 year period before the survey. For example, the nine most recent surveys for the 137 countries included in the analyses were done in 2016 and produced estimates for a midpoint in 2012, and another 19 countries had estimates for 2011. Nevertheless, the estimates of mortality inequalities are projected to 2016, which does not consider a potential acceleration or deceleration in the magnitude of inequalities. For example, equity is rapidly improving for health intervention coverage for children, which might have reduced mortality inequalities.⁴

Modelled estimates will reflect the underlying data on which these are based. Without resorting to modelling, regional patterns might be derived from countries with at least one recent timepoint and time trends from those with two or more points. The results would probably be similar to those reported in Chao and colleagues' analyses because countries without data are being included in the model using the information derived from countries with data. However, this alternative approach would be more defensible from a scientific standpoint. Finally, extrapolation of the time series to 2016 does not add to Chao and colleagues' results. Information on mortality rates after 2010 is insufficient, and information on intervention coverage in low-income and middle-income countries shows a recent acceleration (particularly among the poor) that is likely to have affected mortality in the past 5 years or so.⁴

These limitations are discussed in detail in their Article and the appendix contains the results of validation exercises to test the robustness of their results. Their analyses are more transparent than most modelling exercises. If our comments appear to be critical, they should be interpreted as a broad critique of the epidemic of modelling exercises that is affecting global health.

It is important to keep in mind that global modelling exercises are not primarily intended to inform country

For the global health
observatory data see
[http://www.who.int/gho/
health_equity/en/](http://www.who.int/gho/health_equity/en/)

progress and performance. Programme planning, implementation, and monitoring in countries should be guided by sound empirical data, adjusted for known biases as needed, on all relevant dimensions of inequality in countries.

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