

# New method quantifies uncertainty in estimates of child mortality rates

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Measures of uncertainty should be taken into account when estimating progress towards Millennium Development Goal 4 (to reduce the mortality rate of children under 5 years by two thirds from the 1990 level by 2015) in order to give more accurate assessments of countries' progress, according to a study published in this week's *PLoS Medicine*.

Leontine Alkema and Jin Rou New from the National University of Singapore used a [statistical method](#) called bootstrapping to calculate uncertainty intervals for the estimates of mortality rates in children aged under 5 years and the yearly reduction in these rates for 174 countries.

Factoring in uncertainty is necessary because many [poor countries](#) do not have well-functioning vital registration systems to record the number of [child deaths](#). When analysing trends in under-5 mortality rates, researchers typically focus on the "best" estimates, but this practice can lead to misleading results and comparisons when such estimates are highly uncertain.

The authors found that in 86 high child mortality countries (with more than 40 deaths per 1,000 [live births](#) in 1990), there was much uncertainty about the levels and trends, especially more recently because of the limited availability of data. In 2011, the median width of the uncertainty intervals of the [child mortality rates](#), relative to their level, was 48% among the high mortality countries compared with 19% in 1990. Furthermore, for 8 countries, the uncertainty level was high enough to not exclude the possibility that no progress had been made in reducing child mortality, whereas for 13 countries, progress is likely to have exceeded the Millennium Development Goal 4 [target](#) of a 4.4% annual rate of reduction since 1990.

The authors say: "The new uncertainty assessments provide more insights into countries' progress in reducing child mortality because they

enable a categorization of countries based on the evidence for the progress that has been made (as supposed to focusing on potentially highly uncertain point estimates)".

The authors add: "Uncertainty assessments can and should be used to complement point estimates to avoid unwarranted conclusions about levels or trends in child mortality and to reduce confusion about differences in estimates, such as estimates from different groups such as the [United Nations Inter-agency Group for Child Mortality Estimation] and the [Institute for Health Metrics Evaluation], or after updating point estimates in light of new data."

**More information:** Alkema L, New JR (2012) Progress toward Global Reduction in Under-Five Mortality: A Bootstrap Analysis of Uncertainty in Millennium Development Goal 4 Estimates. *PLoS Med* 9(12): e1001355.  
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