Meeting Abstracts

Estimating national poverty rates and their effect on mortality: 129 countries, 1990–2013

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Abstract

Background A country's wealth is an established predictor of population health outcomes. The distribution of wealth within a country is also associated with health outcomes, yet the relation between poverty and health outcomes has not been as widely assessed in cross-country studies because of insufficient data. In this study, we construct 22 complete, yet distinct, poverty data series and test how poverty can explain variation in health.

Methods The World Bank's International Comparison Program estimates the number of people living at or below US$1·25 per day using more than 800 household surveys. However, this data series is far from complete. We build from the World Bank dataset and use covariates and intertemporal trends to generate a complete data series for 129 countries for 1990–2013. We used a variable selection process based on linear regression and Bayesian model selection to derive a tractable set of predictors. To predict national poverty rates at 51 different income thresholds, we used 20 variants of three models and relied on out-of-sample validation to choose the best model. Finally, we use fixed-effects linear regression techniques to test how national poverty rates are associated with changes in adult and child mortality.

Findings A three-stage model based on multiple imputation, hierarchical random-effects estimation, and Gaussian process regression out performs all other methods used to estimate national poverty rates. We noted that the number of people living on $1·25 per day is being reduced in most parts of the world, although in some regions of Africa the extreme poverty count is increasing. When poverty is defined as living on $5·00 per day, we see that the number of people living in poverty is increasing in 88 countries (68·2%) in our sample. Finally, our analysis shows that escaping extreme poverty, as currently defined as living at or below $1·25 per day, is not sufficient to produce great improvements in population health. When poverty is redefined at a larger income threshold, reductions in national poverty rates predict more substantial population health gains.

Interpretation Since 1990, there has been a great deal of progress made in reducing the number of people living at or below $1·25 per day. We provide evidence that increasing an individual's income above $1·25 is not associated with dramatically improved health. Instead, an income closer to $5·00 per day seems to be more closely associated with improved population health. This research highlights that, while reducing the number of people living at or below $1·25 per day is important for better health outcomes, more income is required for substantial improvements in population health.

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Declaration of interests
We declare no competing interests.