Levels, Trends and Projection of Under-five Mortality Rates and Prospects of Achievement of Millennium Development Goal Four in India.

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INTRODUCTION: India has made significant strides in reducing under-five mortality from 204 per 1000 live births in 1976 to 55 in 2011. However, India is a federation of 35 States/UTs, each of which has different rates of decline in infant and child mortality and hence different chances of reaching the goal. The present study firstly provides levels and trends, then projected estimates for the year 2015–21 of infant and under-five mortality rates of India and its states. By doing so, it hopes to bring in a sense of urgency among those who are not likely to achieve the MDG-4, and a sense of renewed commitment among those who are likely to.

METHODS: Trends in infant and under-five mortality rates are estimated by fitting a regression line (Hill et al. 1997) to the relation between observations and time. A time series structure analysis is carried out by applying the auto regressive integrated moving averages (ARIMA) model to the IMR and Under-five mortality to forecast beyond the series up to year 2021.

RESULTS: Comparison of the levels and trends of components of under-five mortality rates from 1968 to 2011 reveals that the level of U5MR in India was about 190 per 1000 live births in 1976 to 55 in 2011. However, India is a federation of 35 States/UTs, each of which has different rates of decline in infant and child mortality and hence different chances of reaching the goal. The present study firstly provides levels and trends, then projected estimates for the year 2015–21 of infant and under-five mortality rates of India and its states. By doing so, it hopes to bring in a sense of urgency among those who are not likely to achieve the MDG-4, and a sense of renewed commitment among those who are likely to.

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RESULTS: Comparison of the levels and trends of components of under-five mortality rates from 1968 to 2011 reveals that the level of U5MR in India was about 190 per 1000 live births while IMR was around 130 per 1000 live births during 1968–70. The U5MR started declining in the late 1970s and until 1993 the rate of decline was substantial. The decline, however, slowed during 1993–98. Between 1981–86 and 1999–2005 the late neonatal, post-neonatal and child mortality (age 1–4 years) reduced by around 50 percent. Encouragingly, the decline in neonatal (both early and late) was substantial in Haryana, Uttaranchal, Uttar-Pradesh, Bihar, Orissa, Karnataka, Kerala and Tamil Nadu. The percent decline in non-southern states was higher in states with relatively higher levels of neonatal mortality during 1981–86. Rates of decline were higher for child and toddler than infant and within infant it was higher for post-neonatal and early neonatal.

Projections based on Autoregressive integrated moving averages (ARIMA) model confirms that without further intervention, India will not be able to achieve the set target of an U5MR of less than 39 in MDG4 goal by 2015. Only six states, namely, Kerala and Tamil Nadu in South, Maharashtra in West, Punjab and Himachal Pradesh