

# Cost of poor child growth in developing world: \$177 billion in lost wages for children born each year

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Early life growth faltering in low- and middle-income countries results in a US \$176.8 billion reduction in potential career earnings for children born each year, according to new Harvard T.H. Chan School of Public Health research funded by Grand Challenges Canada.

Representing the first in-depth study of the economic impact of early life growth faltering (when a child's physical growth is below the normal range for healthy children) in low- and middle-income countries, the research was published today in the *American Journal of Clinical Nutrition*.

Led by scientists at the Harvard T.H. Chan School of Public Health and funded by the Government of Canada through Grand Challenges Canada's "Saving Brains" program, the study finds that early life growth faltering is associated with an estimated 69.4 million years of lost educational attainment per 'birth cohort' (all children born in a single year), which is highly predictive of adult incomes.

Says Professor Gunther Fink, senior author and associate professor at the Harvard T.H. Chan School of Public Health: "Our estimates suggest that we are losing at least US \$177 billion of potential career earnings per birth cohort due to early life growth faltering in developing countries. By quantifying the impact that early childhood development has on personal and national economic well-being, our study provides

further evidence for investing in early childhood development."

According to the study, every dollar invested in eliminating early life growth faltering would yield a three dollar return.

"Several recent studies have estimated the cost of providing a comprehensive package of critical interventions to children," the paper says. "At the country level, the annual intervention cost for such a package is estimated to be US\$100 or less per child for the majority of developing countries."

"Assuming that this comprehensive package could prevent 20% of all growth faltering, a cost of \$100 per child and year suggests a benefit-cost ratio of about 3:1, not taking into account other long-term benefits generated by increased human capital and improved long-term health outcomes."

The economic costs of early life growth faltering are largest in South Asia (US\$ 46.6 billion), Latin America (US\$ 44.7 billion) and sub-Saharan Africa (US\$ 34.2 billion). Countries with the most to gain in terms of future annual income and educational attainment are India (US\$ 37.9 billion), Mexico (US\$ 18.5 billion), and China (US\$ 13.3 billion).

By calculating per 'birth cohort', the study captures the education and future income loss for all children born in a single year, assuming that they will participate in the labor market for 40 years, entering the labor market at the age of 20 and retiring at the age of 60.

Early life growth faltering results from a large number of risk factors such as poor nutrition, prematurity, low breastfeeding rates and early exposure to infection, but does not include cognitive or socio-emotional factors like stimulation and play.

"The true cost of developmental delays in low- and middle-income countries is likely much larger than US \$177 billion per birth cohort," adds Professor Fink. "We made conservative assumptions and only captured losses due to physical growth delays, not accounting for cognitive or socio-emotional delays. This further emphasizes the economic benefits that could be created by a more comprehensive package of [early life](#) interventions improving all domains of development."

Says Dr. Peter A. Singer, Chief Executive Officer of Grand Challenges Canada: "\$177 billion is a big paycheque that the world is missing out on - about half a percentage point of GDP of these countries! If we truly want the so-called developing world to develop, we have to stop wasting the world's most precious economic and social asset and ensure children thrive."

The importance of children thriving, not just surviving, is emphasized in the United Nations Sustainable Development Goals and is central to the Every Woman Every Child Global Strategy for Women's, Children's and Adolescent's Health.

While conservative, the new US \$177 billion figure is significantly larger than estimates in the Every Woman Every Child Global Strategy for Women's, Children's and Adolescent's Health, which calculated that investing in early childhood and adolescent health and development would yield US \$100 billion in demographic dividends by 2030.

The study follows previous work by the same Canadian-funded Saving Brains team that found that one-third of 3- and 4-year-olds in low- and middle-income countries don't reach basic milestones in cognitive and/or socio-emotional growth. That PLOS Medicine study is available here: [bit.ly/1Y598IJ](http://bit.ly/1Y598IJ)

The Saving Brains program supports new approaches to ensure children thrive by protecting and nurturing early brain development, providing a long-term exit strategy from poverty. Saving Brains has invested a total of \$41 million in 107 innovations, and recently launched its fifth Request for Proposals: [bit.ly/1IRaEgk](https://bit.ly/1IRaEgk)

To date, over 20,000 children have accessed Saving Brains innovations designed to improve early child development. Given the early stage of the innovations, the full impact will occur in the coming years as the most promising of these innovations transition to scale.

Provided by Grand Challenges Canada

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