

News Release

June 29, 2016

Cost of Poor Child Growth in Developing World: \$177B in Lost Wages for Children Born Each Year

Canadian Government-funded Harvard study also estimates that poor child growth results in children losing out on 69 million years of educational attainment per birth year;

Investing in better childhood growth would yield threefold return

Toronto, ON / Boston, MA – 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* (ajcn.nutrition.org).

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 Günther 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 reports. "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 a 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 labour 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 three- and four-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/1Y598J

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.

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.

For more information, visit grandchallenges.ca and look for us on Facebook, Twitter, YouTube and LinkedIn.

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Grand Challenges Canada

Grand Challenges Canada is dedicated to supporting Bold Ideas with Big Impact® in global health. We are funded by the Government of Canada and we support innovators in low- and middle-income countries and Canada. The bold ideas we support integrate science and technology, social and business innovation – we call this Integrated Innovation®. Grand Challenges Canada focuses on innovator-defined challenges through its Stars in Global Health program and on targeted challenges in its Saving Lives at Birth, Saving Brains and Global Mental Health programs. Grand Challenges Canada works closely with Canada’s International Development Research Centre (IDRC), the Canadian Institutes of Health Research (CIHR) and Global Affairs Canada to catalyze scale, sustainability and impact. We have a determined focus on results, and on saving and improving lives.

www.grandchallenges.ca

Saving Brains

Saving Brains is a partnership of Grand Challenges Canada, Aga Khan Foundation Canada, Bernard van Leer Foundation, Bill & Melinda Gates Foundation, The ELMA Foundation, Grand Challenges Ethiopia, Maria Cecilia Souto Vidigal Foundation, Palix Foundation, UBS Optimus Foundation and World Vision Canada. It seeks and supports bold ideas for products, services and implementation models that protect and nurture early brain development relevant to poor, marginalized populations in low- and middle-income countries.

www.savingbrainsinnovation.net

Harvard T.H. Chan School of Public Health

Harvard T.H. Chan School of Public Health brings together dedicated experts from many disciplines to educate new generations of global health leaders and produce powerful ideas that improve the lives and health of people everywhere. As a community of leading scientists, educators, and students, we work together to take innovative ideas from the laboratory to people’s lives—not only making scientific breakthroughs, but also working to change individual behaviors, public policies, and health care practices. Each year, more than 400 faculty members at Harvard Chan School teach 1,000-plus full-time students from around the world and train thousands more through online and executive education courses. Founded in 1913 as the Harvard-MIT School of Health Officers, the School is recognized as America’s oldest professional training program in public health.

<http://www.hsph.harvard.edu>

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Appendix

Country	Birth cohort size in 2010, in thousands	Total career loss per cohort, in US\$ millions
Afghanistan	1092.5	744.5
Algeria	874.9	982.9
Angola	1010.8	2168.6
Antigua and Barbuda	1.5	11.4
Argentina	747.8	1692.5
Armenia	41.1	29.7
Azerbaijan	192.9	289.7
Bahamas	5.6	50.9
Bahrain	19.2	52.3
Bangladesh	3248.2	1995.9
Barbados	3.5	33.1
Belize	7.7	22.8
Benin	359.9	130.2
Bhutan	14.3	27.2
Bolivia	253.4	328.7
Botswana	52.3	414.9
Brazil	3123.5	11418.0
Burkina Faso	661.1	155.6
Burundi	420.6	143.4
Cambodia	365.3	130.7

Cameroon	795.1	508.6
Cape Verde	11.0	8.9
Central African Republic	155.7	46.1
Chad	563.9	231.4
Chile	238.1	0.0
China	16475.5	13328.1
Colombia	784.1	3037.7
Comoros	24.7	18.3
Congo	153.9	193.1
Costa Rica	71.8	162.8
Cote d'Ivoire	768.1	568.8
Cuba	123.2	201.0
Democratic People's Republic of Korea	356.4	106.9
Democratic Republic of the Congo	2890.2	604.2
Djibouti	22.1	16.5
Dominica	1.0	4.0
Dominican Republic	219.2	408.8
Ecuador	326.4	1017.5
Egypt	2228.6	2174.3
El Salvador	111.0	326.3
Equatorial Guinea	26.5	216.2
Eritrea	171.0	88.1
Ethiopia	3046.3	1397.2
Fiji	18.5	8.8
Gabon	48.2	169.2
Gambia	73.6	26.5

Georgia	58.5	15.2
Ghana	816.0	455.2
Grenada	2.0	10.0
Guatemala	422.4	1725.3
Guinea	427.3	83.6
Guinea-Bissau	63.0	14.9
Guyana	14.5	28.1
Haiti	266.1	158.7
Honduras	175.2	564.2
India	26594.7	37869.8
Indonesia	5051.1	9056.7
Iran (Islamic Republic of)	1349.3	3296.8
Iraq	1104.3	273.2
Jamaica	49.6	0.0
Jordan	183.4	127.4
Kazakhstan	363.2	1141.2
Kenya	1481.7	1351.9
Kiribati	3.0	4.7
Kuwait	66.8	0.0
Kyrgyzstan	140.7	23.6
Lao People's Democratic Republic	175.7	92.7
Lebanon	64.6	47.4
Lesotho	57.9	107.4
Liberia	145.4	22.8
Libyan Arab Jamahiriya	137.1	569.1
Madagascar	752.2	379.1

Malawi	608.7	408.0
Malaysia	476.5	564.2
Maldives	7.1	14.2
Mali	694.2	179.1
Marshall Islands	1.0	2.5
Mauritania	125.8	51.0
Mauritius	15.3	18.3
Mexico	2375.7	18486.3
Micronesia (Federated States of)	2.5	7.3
Mongolia	64.0	51.7
Morocco	678.3	910.1
Mozambique	1000.1	479.5
Myanmar	1020.7	350.8
Namibia	66.2	421.3
Nepal	621.9	404.6
Nicaragua	126.9	125.1
Niger	828.8	405.4
Nigeria	6562.0	6445.0
Palestine, State of	137.3	22.4
Oman	67.8	333.5
Pakistan	5118.2	5542.7
Panama	73.8	350.6
Papua New Guinea	206.9	481.7
Paraguay	139.6	240.1
Peru	614.1	1563.5
Philippines	2307.4	4355.3

Qatar	20.6	134.3
Rwanda	361.7	507.7
Samoa	5.2	6.7
Sao Tome and Principe	6.1	2.5
Saudi Arabia	609.4	1338.5
Senegal	508.9	175.3
Seychelles	1.7	1.9
Sierra Leone	224.9	43.4
Solomon Islands	17.0	31.5
Somalia	432.0	245.9
South Africa	1110.6	9537.6
Sri Lanka	350.7	153.5
St. Lucia	2.9	14.4
St. Vincent	1.9	7.3
Sudan	1257.9	1378.2
Suriname	10.0	40.8
Swaziland	36.8	166.1
Syrian Arab Republic	492.1	450.9
Taiwan	241.7	941.5
Tajikistan	230.7	52.1
Thailand	782.7	2207.2
Timore Leste	42.3	29.4
Togo	239.9	44.2
Tonga	2.8	5.3
Trinidad and Tobago	20.0	60.5
Tunisia	189.0	96.6
Turkey	1306.1	4236.4
Turkmenistan	110.0	142.0
Uganda	1493.7	1379.7



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Grand
Challenges
Ethiopia

United Arab Emirates	89.2	371.8
United Republic of Tanzania	1873.4	1414.0
Uruguay	49.9	201.1
Uzbekistan	639.5	220.1
Vanuatu	6.5	20.5
Venezuela	598.6	2461.6
Viet Nam	1537.9	1016.4
Yemen	813.4	904.9
Zambia	585.4	1266.9
Zimbabwe	506.5	162.4