

## Data on life expectancy show many countries clustered in high mortality traps

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Growing recognition of the importance of health as a contributing factor to economic development and societal change has prompted the *Proceedings of the National Academy of Sciences (PNAS)* to add a new subsection in Sustainable Health to its existing section on Sustainable Development.

The inaugural subsection, posted online Oct. 3, 2007 includes an editorial by Barry R. Bloom, Dean of the Harvard School of Public Health (HSPH), describing this new dimension of the sustainable science field and summarizing the special section's four articles, among them Mortality Traps and the Dynamics of Health Transitions, in which Professors David Bloom and David Canning, from the Department of Population and International Health at HSPH, analyze global life expectancy data to show that most countries are clustered in high or low mortality groupings with little continuum of change between them.

The traditional view of health in the context of economic development sees robust macroeconomic performance leading to improvements in health. But that paradigm has broadened in recent years to include the view that, "health is also a significant contributing determinant of economic and social development," writes Dean Barry R. Bloom.

The new challenge for the international community, he continues, "goes beyond how to contribute to pilot programs in health that provide drugs, vaccines and preventive or health care services" to how to do so in a way that engages the local and national populations and enables the programs

to expand to a nationwide scale that is sustainable over time.

[As defined by the UN Bruntland Commission: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."]

Economists David E. Bloom and David Canning describe the discovery in life expectancy data of two clusters of countries, one of high mortality and the other low, that both progress toward improved life expectancy but lack a continuum of change between them. An examination of life expectancy in the early 1960s revealed one group of countries clustered around a life expectancy of 40 years and a second group clustered around a life expectancy of 65 years. By the first half of this decade, the mode of each cluster had moved up by about 10 years. ( Mode is the value occurring most frequently in a series of observations or statistical data.) The authors reject the idea that these changes reflect a simple convergence process, that instead, the data suggest continuous advances within the cluster but that low life expectancy countries seem mired in a mortality "trap." A few countries from time to time seem to escape the trap by rapidly reaching a certain threshold and then leap the gap to the high life expectancy cluster. These observations hold even when excluding the effect of AIDS mortality on countries. The authors suggest consideration of a 'big push' (or transformational) theory of health aid that focuses on helping those countries approaching the low-mortality threshold to bounce into the low mortality cluster rather than providing incremental funding to a larger set of countries.

"With limited resources, the largest health gains may be achieved by focusing on countries near the threshold, where small changes in health status can have large effects on those countries' chances of escaping the mortality trap," they write.

A second paper, by Burton H. Singer of the Office of Population Research at Princeton University and Marcia Caldas de Castro, assistant professor of demography in the Department of Population and International Health at HSPH, argues that sustainable control of schistosomiasis and other water-borne diseases in the tropics will require bridging organizations and communities to ensure human and animal disease surveillance, monitoring the impact of new economic development projects and linking the engineering and health institutions responsible for clean water and sanitation.

Another article describes the success of a program in rural villages of Argentina that, by including the community, was able to create sustainable control of the parasite causing Chagas disease. A fourth article is an analysis of factors predisposing industrial workers in India to cardiovascular disease in which the critical importance of education to reduce tobacco use and hypertension is revealed.

All four papers in the special series, writes Dean Barry R. Bloom, "emphasize the importance of multisectoral approaches to providing sustainable solutions to complex health problems in developing countries -- public health, medicine, engineering, education and community engagement."

Sustainable health: A new dimension of sustainability science

Barry R. Bloom

PNAS 2007 104: 15969.

Bridges to sustainable tropical health

Burton H. Singer and Marcia Caldas de Castro

PNAS 2007 104: 16038-16043.

Mortality traps and the dynamics of health transitions

David E. Bloom and David Canning

PNAS 2007 104: 16044-16049.

Sustainable vector control and management of Chagas disease in the Gran Chaco, Argentina

Ricardo E. Gartler, Uriel Kitron, M. Carla Cecere, Elsa L. Segura, and Joel E. Cohen

PNAS 2007 104: 16194-16199.

Educational status and cardiovascular risk profile in Indians

K. Srinath Reddy, Dorairaj Prabhakaran, Panniyammakal Jeemon, K. R. Thankappan, Prashant Joshi, Vivek Chaturvedi, Lakshmy Ramakrishnan, and Farooque Ahmed

PNAS 2007 104: 16263-16268.

Source: Harvard School of Public Health

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