

Restoring sight would save global economy US\$202 billion each year

October 2 2012



Vision screening at health centre in Uganda. Photo by Dean Saffron. Credit: Brien Holden Vision Institute

Governments could add billions of dollars to their economies annually by funding the provision of an eye examination and a pair of glasses to the estimated 703 million people globally that needed them in 2010 according to a new study to be released soon.

The [health economics](#) study calculated that there would be a saving of US\$202 billion annually to the global economy through a one-off investment of US\$28 billion in human resource development and establishing and providing vision care for 5 years. The investment would establish the eye care services to provide good vision to people with uncorrected [refractive error](#), enabling greater workplace output and increasing gross domestic product.

"Spending US\$28 billion to train eye care personnel, establish infrastructure and provide spectacles, is a drop in the ocean compared with the annual cost to the global economy," says co-author of the study Professor Brien Holden, CEO of the Brien Holden Vision Institute. "By restoring people's vision, we're generating massive [economic benefits](#) for society – it's as simple as that."

Conducted by researchers from the Brien Holden Vision Institute in Australia and South Africa, and Johns Hopkins University in the US, the study calculated the cost of training an adequate number of eye care providers to assess vision and optical dispensers to provide the glasses, and to build facilities for them to operate in. The investment would be enough to cover costs for 5 years, after which revenue generated by the services would sustain them.

Holden says the productivity loss only tells part of what is a tragic human story and that developing communities around the world would benefit massively from such an investment.

"Children and adults with uncorrected refractive error are faced with a range of unnecessary health, economic and social effects, including [poor vision](#), reduced education and employment opportunities, [social isolation](#), as well as an increased risk of morbidity."

"It's truly remarkable that around the world 703 million people are

unnecessarily vision impaired when it is absolutely straightforward to eliminate this problem. A trained eye care provider can assess someone's vision correction need and prescribe and fit a pair of glasses in around 30 minutes. A pair of spectacles can be made available for as little as US\$2."

The results of the analysis in this paper present a very powerful message to governments around the world, says co-author on the paper, Johns Hopkins health economics Professor Kevin Frick. "Governments are required to make some difficult decisions about how to use scarce resources – the economics of correcting refractive error should make this one of the easier decisions," he said.



Vision screening at health centre in Uganda. Photo by Dean Saffron. Credit: Brien Holden Vision Institute

Dr David Wilson, Research Manager for Asia-Pacific at the Brien Holden Vision Institute observed, "Even when conservative assumptions were used, the cost of establishing systems to correct all vision impairing refractive error in the world is only about 2.4% of the estimated 5 year [productivity loss](#) associated with distance-only vision impairing refractive error. This includes the costs of running the facilities and training institutions for a period of 5 years."

Additionally, the estimate is relatively conservative and therefore the economic gain could be far greater, he adds. "For example we've not assumed any increase in productivity for people over 50 years of age," he said.



Yatiantota, Sri Lanka: Local vision technicians prescribed and made the spectacles that now give Mr Ariyarthna, owner of an electrical repair shop, good vision. Photo by Dean Saffron. Credit: Brien Holden Vision Institute

"The study also does not factor in the economic burden of presbyopia," said Tim Fricke, former Brien Holden Vision Institute researcher and author of the paper. "The cost only applies to distance vision impairment and there are about five times as many people who have uncorrected near vision impairment (presbyopia). Thus the real burden of uncorrected refractive error is in fact, much higher."

The research estimated that 47,000 extra personnel who would provide clinical refractive care, plus 18,000 to provide optical dispensing services, are needed to relieve this problem. The total cost of training the necessary additional personnel, together with the establishment and maintenance of the clinical facilities, and supply of consumables, required to be able to provide enough refractive care was estimated to be approximately US\$20 billion with the an upper estimate of US\$28 billion.

The study authors collaborated on an earlier study published in 2009 which estimated the cost to the global economy in lost productivity was I\$269 billion (about US\$202 billion) annually due to uncorrected distance refractive error alone (which at the time accounted for 158 million people). The paper estimates that an additional 544 million people are vision impaired due to uncorrected near vision impairment.

Holden says the investment would recoup long-term financial benefits because the services will always be necessary. "Refractive errors are experienced by 30 to over 50% of people who all need corrective lenses to see clearly. This will always be the case so this one-off investment will provide productivity benefits far into the future for the whole society."

The figures:

- Annual cost in lost productivity for distance refractive error only:

US\$202 billion to global economy annually

- Investment needed to address infrastructure, education and distance vision spectacles: US\$28 billion (once, to cover necessary costs for first five years)
- Saving to [global economy](#): US\$174 billion for first year, then US\$202 billion annually

Vision impairment needs

703 million people vision impaired due to uncorrected refractive error (URE) which includes:

- Distance vision impairment – myopia (short –or near-sightedness), hyperopia (far- or long-sightedness), and astigmatism – 158 million without adequate correction
- Near vision impairment – presbyopia (age-related loss of focusing power, particularly on close objects) – 544 million without adequate correction

US\$28 billion would buy...

- 47,000 functional clinical eye care providers – to assess vision and eye health and prescribe corrective lenses needed to restore good [vision](#).
- 18,000 optical dispensers – to provide appropriate glasses.
- Establish the service delivery facilities needed
- Cover operating costs for facilities for 5 years, after which it is assumed that revenue generated by the service would cover costs.

More information: Fricke TR, Holden BA, Wilson DA, Schlenker G, Naidoo KS, Resnikoff S & Frick KD. Global cost of correcting vision

impairment from uncorrected refractive error. *Bulletin of the World Health Organization*, published online ahead of print 12 July 2012.

Smith T, Frick K, Holden B, Fricke T, Naidoo K. Potential lost productivity resulting from the global burden of uncorrected refractive error. *Bulletin of the World Health Organization* [Internet]. 9 April 2009; 87. Available from: www.who.int/bulletin/volumes/87/08-055673.pdf

Provided by Science in Public

Citation: Restoring sight would save global economy US\$202 billion each year (2012, October 2) retrieved 25 April 2024 from

<https://medicalxpress.com/news/2012-10-sight-global-economy-us202-billion.html>

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