

Institution: Queen's University Belfast		
Unit of Assessment: UoA 2		
Title of case study: PROSPER transforms global debate on the value of glasses for workers, improving productivity and well-being		
Period when the underpinning research was undertaken: 2017		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): Nathan Congdon	Role(s) (e.g. job title): Professor; Centre for Public Health; School of Medicine, Dentistry and Biomedical Sciences	Period(s) employed by submitting HEI: 2015 onwards
Period when the claimed impact occurred: 2018 - 2000		
Is this case study continued from a case study submitted in 2014? No		
1. Summary of the impact (indicative maximum 100 words) <p>Most people have presbyopia, age-related decline in near vision, by age 50, but no trials had assessed workplace effects of correcting it until PROSPER showed that Indian tea pickers randomly assigned to receive glasses correcting near vision picked 22% more tea per day than controls, with a glasses delivery cost of only US\$10/participant. This productivity impact is greater than that reported in any previous health intervention trial. The findings have led to programs providing glasses in Assam India and wider adoption of the Clear Vision Workspace model (as tested in PROSPER) by tea, coffee, automotive and textile sectors in India and Africa, leading to glasses delivery for 750,000 workers and consequent improvements in their productivity and well-being.</p>		
2. Underpinning research (indicative maximum 500 words) <p>Presbyopia is the almost-universal decline in unaided near vision associated with ageing. Beginning at age 40 and affecting nearly all by 50, presbyopia's impact is felt at the heart of the working years. The number of people with presbyopia globally exceeds 1 billion, making it the world's most common cause of vision impairment. However, despite the existence of randomised trials on other health interventions to improve work productivity, there were none targeting presbyopia until the 2018 publication in Lancet Global Health of the PROSPER (PROductivity Study of Presbyopia Elimination in Rural-dwellers) trial among tea-pickers in Assam, India [R1, R2]. The trial was led by Professor Congdon from Queen's University Belfast, in close collaboration with QUB colleagues and local investigators.</p> <p>Professor Congdon's main focus is on research to improve vision care in low-resource settings. He has carried out numerous randomised trials concerning vision care in low- and middle-income countries (LMICs). These include the first trial to show that providing glasses significantly improves children's school outcomes (Ma <i>et al</i> 2014. Effect of providing free glasses on children's educational outcomes in China: cluster randomized controlled trial) and PROSPER (the subject of this case study) to investigate work productivity in adults. He collaborates closely with leading global eye health charities in his research, enabling the findings to be shared rapidly with employers, governments, policy makers, etc.</p> <p>PROSPER was done in collaboration with three leading global eye health NGOs (Orbis International, Clearly and VisionSpring) and Amalgamated Plantation Private Ltd. It studied the effect of providing glasses to correct presbyopia among 751 mostly female tea workers aged ≥40 in India, who were recruited during July 2017. They were randomly allocated to</p>		

receive free glasses to correct their refractive error immediately or to a control group who received glasses after an 11-week evaluation period. The trial found a significantly higher increase in mean productivity in the intervention group over controls: a difference of >5 kg/day or 22% in tea picked daily, which rose to >30% among workers over 50 years. This greater impact among older participants in this age-related condition supports the biological plausibility of the effect. The total delivery cost was low (US\$10.20/participant), acceptance was high (85% in the intervention group wore their glasses by closeout) and presbyopia was common (>50%) among workers aged ≥40 years, highlighting the minimal expense, good acceptability and wide applicability of this intervention.

Low-cost, sustainable, and effective health interventions are needed to increase work productivity and reduce poverty in LMICs. With the global population ageing rapidly, and labour participation rates in LMICs declining in individuals ≥45 years, health strategies supporting productive employment (United Nation's Sustainable Development Goal (SDG) 8) among older workers are of particular interest. Gender equality (SDG 5) is also highly relevant to poverty alleviation, as increasing workforce participation and productivity among women results in faster economic growth. With 2.5 billion people worldwide suffering from poor vision and no access to refractive care, PROSPER demonstrated the crucial role of glasses in achieving these and other SDGs, including poverty alleviation (SDG 1) and improved health (SDG 3).

The relative productivity increase in the PROSPER intervention group was as large as, or larger than that reported for any other health intervention trials in LMICs. Most such interventions have shown either no impact or effect sizes below 15%. On the basis of the PROSPER results, project partner VisionSpring has estimated that if glasses were given to everyone who needed them in India's agricultural sector, an extra \$20 billion from productivity gains alone could be realised. PROSPER shows that the delivery of glasses to older workers is a scalable and sustainable strategy for poverty alleviation. The PROSPER intervention was inexpensive and could potentially be sustained by employers benefiting from productivity increases, or by workers themselves: 95% of intervention group participants in PROSPER said they would pay for glasses. Medium-to-long-term retention of presbyopic glasses also appears to be good, making provision logistically easy.

3. References to the research (indicative maximum of six references)

R1. Reddy PA, **Congdon N**, MacKenzie G, Gogate P, Wen Q, Jan C, Clarke M, Kassalow J, Gudwin E, O'Neill C, Jin L, Tang J, Bassett K, Cherwek DH, Ali R. Effect of providing near glasses on productivity among rural Indian tea workers with presbyopia (PROSPER): a randomised trial. *Lancet Global Health* 2018;6:e1019–27 doi: 10.1016/S2214-109X(18)30329-2

R2. **Congdon N**, Reddy P, MacKenzie G, Gogate P, Wen Q, Clarke M. Presbyopia and the Sustainable Development Goals. *Lancet Global Health* 2018;6:e1067 doi: 10.1016/S2214-109X(18)30376-0

4. Details of the impact (indicative maximum 750 words)

Before PROSPER, some studies had suggested that correction of presbyopia could improve performance of various economically important tasks, including reading, writing, cooking, use of tools and mobile phones, sewing, weeding, and recognising money. However, none of these studies were randomized trials and they had had little impact. The improved rigour and reliability arising from PROSPER's randomized, controlled design added considerable strength to this evidence base. PROSPER is a tipping point for uptake and impact. It is the first ever randomised trial to explore the link between clear vision and productivity, representing a significant step forward in understanding of the role of good

vision in achieving the SDGs. The trial was nested within and supported NGO VisionSpring's Clear Vision Workplace [S1], which is seeking to increase workers' use of eyeglasses in industries that are advancing economic growth and is thus aligned with VISION 2020's Right to Sight initiative for the elimination of avoidable blindness.

Beneficial impact on the health and productivity of an estimated 750,000 workers

- The success of PROSPER provided VisionSpring with evidence to attract more corporate partners for Clear Vision Workplace in India, Africa and elsewhere [S2]. The CEO of VisionSpring has said: 'VisionSpring has been able to expand Clear Vision Workplace and other programs focused on working-age adults as a direct result of the PROSPER study and findings'. This led to several companies signing on to Clear Vision Workplace, including Target, William Sonoma, VF Corporation, Levi Strauss, Finlay's Tea and Warby Parker; and other companies expressing interest include Honest Tea, Starbucks, GAP, UNIGLO, Patagonia and Walmart. She added 'These programs will reach more than 750,000 employees and their families over the next 3 years'. [S3]

Beneficial impact on employee well-being and the operations of a major tea company

- When the PROSPER findings were published, a spokesperson from Amalgamated Plantations Private Ltd, owners of the plantation where the trial took place welcomed the findings: 'There is a clear and certain case for improving vision and providing sight tests for our business' employees. It makes work more productive and more rewarding.' He described the trial as 'a turning point in awareness of the impact of clear vision on our tea garden's wellbeing and productivity', noting they 'will fully support the policy recommendations that emerge as a result' [S4].

Impact on policy and practice in the tea industry in India

- The Ministry of Labour in Assam, where PROSPER was carried out, is planning a program for the distribution of glasses, catalysed by the trial's results, which were shared with them. More action is also expected on this from the Indian government. A major architect of Indian economic policy, Arvind Panagariya, wrote the following about PROSPER in July 2019 in The Economic Times of India: 'In view of high bang for the buck from corrective glasses, intervening on a vast scale to attack the problem should be high up on the government's "to do list"' [S5].
- As a direct result of PROSPER, VisionSpring secured funding to conduct a feasibility assessment (directed by Deloitte) to understand how to finance a state-wide Clear Vision Assam initiative covering more than 1 million tea pickers. Key partners involved in this initiative include the Assam Branch of Indian Tea Association (ABITA), the Government of India's ministry of Tea & Ex-Tea Tribes Welfare, Ministry of Labour, Ministry of Social Welfare and the Tea Board.

Impact on other sectors

- The success of PROSPER is bringing spillover benefits into other sectors. As noted by the CEO of VisionSpring 'the exciting results of PROSPER have led to USAID support for additional research and service provision to extend these findings into other sectors, such as textiles in India'. [S3]
- The results of PROSPER provided the evidence for including eyeglasses in the ATscale2030 initiative to scale up global access to five key assistive technologies, funded by governments of US, UK and Kenya as well as UNICEF and WHO.

Impact on international advocacy

- PROSPER helped catalyse the founding of the United Nations Friends of Vision Group, which met first on World Sight Day in October 2018 [S6]. This followed the pledge from 53 member countries at the Commonwealth Heads of Government Meeting in London in April 2018 to 'take action towards achieving access to quality

eye-care for all', which was the first time that so many governments had joined together in a commitment to tackling poor vision.

- Following the 2019 UN General Assembly on Universal Health Care and in preparation for the 2021 UN General Assembly, a group of NGOs and UN ambassadors are working to have eyecare recognized for its important impact on the SDGs. The PROSPER findings are specifically referenced in the draft resolution as validating the impact of eye care service on productivity and the potential to eradicate poverty.
- Clearly, as part of a global campaign to bring clear vision to the 2.5 billion people worldwide denied it, has shared the PROSPER results with 120 leading businesses, urging them to introduce work-based sight schemes [S7]. Working with Global Citizen [S8], Clearly's petition calling on CEOs around the world to provide free work-based sight tests gained over 10,000 signatures in the first few days [S6].
- The PROSPER trial features in the report of the Lancet Global Eye Health Commission, with the associated Lancet website (www.thelancet.com/commissions/global-eye-health) showing a tea-picker in India in direct reference to PROSPER. This report is among the highest-profile statements of the international vision community about plans to reduce the burden of global vision impairment over the next decade. The report was finalised in 2020 but publication was delayed until February 2021 because of COVID-19 [S9].
- PROSPER was cited as the evidence base for recommendations to improve access to eyeglasses in the report delivered by the Clinton Health Access Initiative, which works with partners to strengthen the capabilities of governments and the private sector to create and sustain high-quality health systems to save lives and reduce the burden of disease in LMICs, under the AT2030 programme [S10].

Impact on global and national public debate

- The importance of PROSPER was recognized by articles focusing on global benefits e.g. the Financial Times described how the 'dramatic economic benefits' of providing the glasses could 'transform the lives of tea-pickers' [S11]. PROSPER also drew media coverage in India [S11] and was used by Tim Harford to help inform his episode on glasses in the BBC World Service series, 50 Things That Made the Modern Economy [S12].

5. Sources to corroborate the impact (indicative maximum of 10 references)

S1. Press release by VisionSpring. Available at visionspring.org/Files/PublicFiles/Research/VisionSpring-Clear-Vision-Workplaces-one-pager.pdf (Accessed on 20 January 2021).

S2. Website of VisionSpring documenting impact of PROSPER on The Clear Workspace program. Available at visionspring.org/impact/landmark-study-prosper (Accessed on 20 January 2021).

S3. Personal communication from CEO of VisionSpring – can be contacted for further information.

S4. Press release by VisionSpring and Clearly. Available at visionspring.org/Files/PublicFiles/Research/Prosper-Lancet-Press-release-VS-201807231.pdf (Accessed on 20 January 2021).

S5. Pangyra A. View: Why India needs an 'eyeglasses to all' mission. The Economic Times 29 July 2019. Available at economictimes.indiatimes.com/news/economy/policy/view-why-india-needs-an-eyeglasses-to-all-mission/articleshow/70423557.cms (Accessed on 20 January 2021).

S6. Article providing evidence of the link between PROSPER and the founding of Friends of Vision, with the subsequent declaration from 53 Commonwealth countries and the success

of the Clearly petition. Available at allafrica.com/stories/201810240826.html (Accessed on 20 January 2021).

S7. Article by James Chen at World Economic Forum. Available at www.weforum.org/agenda/2018/10/why-business-can-no-longer-turn-a-blind-eye-to-poor-vision/ (Accessed on 20 January 2021).

S8. Article by Imogen Calderwood in Global Citizen. Available at www.globalcitizen.org/en/content/clearly-world-sight-day-companies-sight-tests/ (Accessed on 20 January 2021).

S9. Burton MJ, Ramke J, Marques AP, Bourne RPA, Congdon N, Jones I, et al. The Lancet Global Health Commission on Global Eye Health: vision beyond 2020. Lancet Global Health published online 16 February 2021 doi: 10.1016/S2214-109X(20)30488-5.

S10. A Market Landscape and Strategic Approach to Increasing Access to Eyeglasses in Low- and Middle-Income Countries. Available at at2030.org/static/at2030_core/outputs/Product_Narrative-Eyeglasses_final.pdf (Accessed on 20 January 2021).

S11. Citations of PROSPER in the media. Multiple sources in one pdf comprising

- Kazmin A. How spectacles transform the lives of tea-pickers. Financial Times 10 September 2018. Available at www.ft.com/content/dcc50e04-b100-11e8-99ca-68cf89602132
- Mascarenhas A. Lancet study: 'Spectacles increase productivity among tea workers with near vision'. The Indian Express 31 July 2018. Available at indianexpress.com/article/cities/pune/lancet-study-spectacles-increase-productivity-among-tea-workers-with-near-vision-5284112/

S12. Sources used in episode on glasses in the BBC World Service podcast series, 50 Things That Made the Modern Economy. Available at www.bbc.co.uk/programmes/w3csz2x2