

WHEELS OF CHANGE

The Impact of Bicycles on Girls' Education and Empowerment in Rural Zambia

Randomized Controlled Trial by Innovations for Poverty Action (IPA) - Zambia | 2017 - 2018



28%

GIRLS' ABSENTEEISM WAS
REDUCED BY 28%



66%

GIRLS' PUNCTUALITY
INCREASED BY 66%



GIRLS REPORTED FEELING MORE
IN CONTROL OF THE DECISIONS
AFFECTING THEIR LIVES



After 10 years of successfully implementing its Bicycles for Educational Empowerment Program (BEEP), in partnership with the Ministry of General Education (MoGE) in Zambia, World Bicycle Relief (WBR) aimed to assess the impact of the program through a rigorous evaluation by independent researchers. WBR partnered with Innovations for Poverty Action (IPA), a nonprofit organization that evaluates solutions to social and development problems, to conduct a randomized controlled trial (RCT) evaluating the impact of WBR's bicycle programs on school-going adolescent girls' education and empowerment in rural Zambia.



WORLD BICYCLE RELIEF®

THE NEED

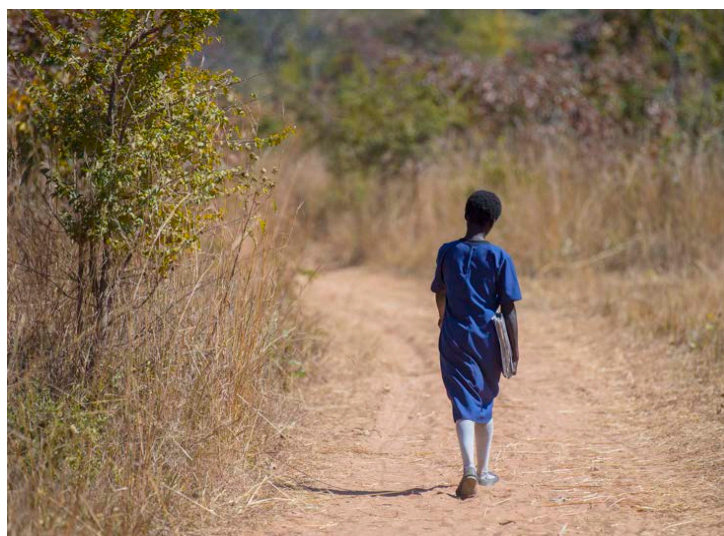
Although great progress has been made towards improving equal opportunities and access to basic education in Zambia, low attendance and dropout rates are still higher for girls than boys^[1]. These challenges are influenced by many factors, including economic constraints, early pregnancies and marriages, family dynamics, as well as issues at school. A key contributing factor is the distance that many students in rural areas must travel on foot to reach school, sometimes exceeding 10km (6.2 miles) one way. This barrier is more arduous for girl students because of safety issues and harassment on their journeys as well as major responsibilities at the household level that make them get up long before the sun to do chores.

THE OPPORTUNITY

The Zambian government has prioritized finding cost-effective and scalable strategies to address the gender gap in school attendance, which correlates to learning outcomes for girls. One strategy to improve school access and reduce travel distances is increasing school construction programs^[2]. Although effective, this response is expensive and takes time. Alternatively, providing bicycles to girls can decrease the distance cost of schooling and improve safety in a cost effective and time efficient manner.

World Bicycle Relief believes that by reducing the time and effort learners expend on getting to school, bicycles help students reserve their energy for schoolwork, and promote regular attendance and punctuality, which leads to more and better quality time in the classroom. Outside of school hours, bicycles can be used by the recipients and other family members to fetch water, bring goods to market, access healthcare or transport necessities.

[1] From Grade 6 onwards, significantly more girls leave school than boys. In 2013 and 2014 more than double the number of girls in Grade 7 and three times as many girls in Grade 11 left school compared with their male peers (McConnell and Mupwalywa, 2015). In so far as learning is affected by number of days of instruction (Marcotte, 2007; Hansen, 2013; Sims, 2008; Agüero and Beleche, 2013), long distance to school affects not just the quantity of education but also the quality of education received by those enrolled in school. [2] Duflo (2001), Burde and Linde (2013) and Kazianga et al. (2013).



THE SOLUTION

WBR's Bicycles for Educational Empowerment Program (BEEP) provides Buffalo Bicycles to students who walk more than 3km each way between home and school. BEEP aims to contribute to improving educational outcomes by making regular school attendance possible. To ensure the sustainability of the program, a community-led Bicycle Supervisory Committee (BSC) is established and trained to manage and monitor the progress of the program at each school. To help achieve gender equality, 70% of bicycles are allocated to girl students and bicycle recipients are selected based on distance traveled and vulnerability criteria established by the BSC and the school. A bicycle mechanic from each school is chosen from the community and trained to fix the bicycles, fit spare parts, and complete regular preventative maintenance.

Upon receiving their bicycles, students (together with their parents or guardians) sign a contract with the BSC, agreeing to attend classes regularly. The contract stipulates that if they adhere to the terms set out by the BSC, the bicycle becomes their personal property after achieving a specific learning milestone, such as graduation.



THE STUDY

The study took place from 2017 to 2018 in the Monze, Mazabuka, and Kalomo districts in the Southern Province of Zambia and was co-funded by UBS Optimus Foundation and World Bicycle Relief. IPA monitored the implementation of BEEP in 55 new schools to assess the impact of the program.

For the RCT, the researchers measured the effect the bicycles had on the time it took to reach school, absenteeism, punctuality, mobility, dropout rates, and grade transitions, as well as empowerment measures such as learners' locus of control, fertility choices, and aspirations.



THE IMPACT

Compared to the girls without bicycles, the girls with bicycles reported the following:

TRAVEL TIME

- Bicycles reduced the girls' commute time by one third, saving them more than an hour each day.

PUNCTUALITY

- The bicycles increased punctuality by 66%. The bicycles reduced the days that girls arrived late by one and a half days per week.

ATTENDANCE

- The bicycles reduced absenteeism by 28%. The girls with bicycles attended school five more days per year than girls without bicycles.

PERFORMANCE

- Girls with bicycles scored higher on a mathematics assessment test.

EMPOWERMENT

- **Increased Locus of Control:** Girls with bicycles reported feeling more in control of the decisions affecting their lives than the girls in the comparison group.
- **Improved Self Image:** Bicycle recipients ranked themselves higher academically and had a greater belief in their potential to succeed in life.
- **Increased Pro-sociality:** Pro-sociality amongst the girls increased with the bicycle. This included their willingness to help a friend, their participation in local clubs and their knowledge of local leadership.
- **Bargaining:** Girls with bicycles had access to and control over resources, and had more open communication with their parents.
- **Income Generation:** Girls with bicycles were also less likely to engage in income-generating activities.

SAFETY

- Girls were one third less likely to miss school or leave home early from schools due to concern for their safety.
- The bicycles reduced the probability of being teased and or whistled at on the way to school by 22%.

The study did not find a statistically significant impact on dropout rates, grade transition, future aspirations and mobility.

GRADE TRANSITION AND DROPOUTS

It is worth noting that dropout rates were low across the whole sample and in the Zambian educational system, all students transition from one grade to the next.

FUTURE ASPIRATIONS

Impact on future term aspirations may change over a longer period of time.

MOBILITY

Researchers found no impact on mobility due to variation in bicycle usage policies among schools.

Overall, the results provide evidence that programs that give girls bicycles for traveling to and from school can help improve their wellbeing in developing countries where distance to school is a barrier to education.

**Please note that further analysis may reveal additional, secondary findings.*

RESEARCH METHODOLOGY

An RCT study is regarded as the highest standard for research design because its processes provide the most accurate evidence of interventions. Participants are randomly allocated into a “treatment” group (which receives the intervention) or a “control” group (which does not receive the intervention). The effectiveness of the intervention is assessed by comparing data from the two groups after the program’s implementation.

For this RCT, the cohort consisted of 2,471 girl students across 100 government primary schools (45 treatment schools and 55 control schools) in Southern Zambia. Randomization was at the school level.

- 1,112 girl students received Buffalo Bicycles (treatment group) and 1,359 girls did not receive bicycles (control group)
- Girls in the study were in grades 5, 6 and 7
- The average age of participants was 13 years old
- Participants lived between 3km and 10km from school



PRIMARY DATA COLLECTED BY RESEARCHERS

- Face-to-face survey through in-depth interviews with the girls
- Semi-self-administered survey on marriage and fertility desires
- Self-administered learning assessments in English and mathematics
- Empowerment games (limited schools)

SECONDARY DATA COLLECTED BY RESEARCHERS

Administration data from the MoGE included:

- Grade 7 exam results for 2017 and 2018
- Girls’ and boys’ attendance data from school registers
- Establishment data, such as enrollment, staffing, facilities and location

This data was then analyzed by the principal investigators commissioned by IPA: Nathan Fiala, PhD, (University of Connecticut, Makerere University and RWI-Leibniz Institute for Economic Research), Ana Garcia-Hernandez (NOVA SBE and Berlin Social Science Center), Kritika Narula (Yale University) and Nishith Prakash, PhD, (University of Connecticut, IZA, CReAM, and HiCN).

"From the time we received the bicycles, at school our performance has improved and actually it is improving every day...Since we now reach school early and start lessons with everyone, it has helped us improve in our English."

— (GIRL STUDENT, MAZABUKA)

ABOUT INNOVATIONS FOR POVERTY ACTION

IPA is a non-profit organization dedicated to discovering and promoting effective solutions to global poverty problems. In partnership with decision-makers, IPA designs and evaluates potential solutions to poverty problems using the rigorous method of randomized evaluations. IPA also mobilizes and supports these decision-makers – policymakers, practitioners, investors, and donors – to use the solutions to build better programs and policies at scale. For more information, visit <https://www.poverty-action.org/>.



ABOUT WORLD BICYCLE RELIEF

World Bicycle Relief mobilizes people through The Power of Bicycles. It combines impactful nonprofit programs with social enterprise sales to meet the pressing need for reliable transportation in developing countries. Its philanthropic programs provide specially designed, locally assembled Buffalo Bicycles for students, health workers and entrepreneurs. Its social enterprise sales enable greater efficiencies of scale and distribution of bicycles per donor dollar and create a deeper impact in program regions. World Bicycle Relief is committed to helping people conquer the challenge of distance, achieve independence, and thrive. For more information, visit worldbicyclerelief.org



World Bicycle Relief
1000 W Fulton Market, 4th Floor
Chicago, IL 60607
T: 312-664-3836
contact@worldbicyclerelief.org