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


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Children often walk long distances to get to school in rural areas of developing countries, which contributes to high rates of absenteeism, particularly for girls. Can providing girls with bicycles to travel to school help address this problem? In rural Zambia, researchers partnered with World Bicycle Relief (WBR) to evaluate the impact of providing girls with bicycles to travel to school. The evaluation measured impacts of the program on girls' educational attainment and empowerment outcomes. Girls were eligible for the program if they were in 5th, 6th, or 7th grade and walked at least three kilometers to school.

Key Findings

Approximately one year after bicycles were distributed:

- Giving girls access to bicycles reduced their commuting time to school by a third, or 35 minutes each way, and increased their punctuality by 66 percent.
- Girls in the program attended school an extra five days a year, accounting for a 28 percent reduction in absenteeism.
- The program increased empowerment outcomes: girls reported feeling more in control of the decisions affecting their lives, they were more willing to reach out to a friend in need, and they had a more positive self-image than girls in the comparison group.
- Girls in the program were less likely to miss school due to safety concerns and were 22 percent less likely to be whistled at or teased on their way to school.
- Girls in the program scored higher on a mathematics assessment than girls in the comparison group, while no impacts were found on reading/English.
- On average, researchers did not find evidence that access to bicycles impacted school dropout, how many children girls wanted to have in the future, their life goals, or their freedom of movement.
- These results suggest that giving girls access to bicycles to travel to and from school can increase school attendance, self-confidence, and lead to better learning outcomes in rural Zambia and possibly other developing-country contexts where distance to school is a barrier.

RESEARCHERS
Nathan Fiala (University of Connecticut, Makerere University, and RWI–Leibniz Institute for Economic Research), Ana Garcia-Hernandez (NOVA SBE and Wissenschaftszentrum Berlin für Sozialforschung), Kritika Narula (Yale University), Nishith Prakash (University of Connecticut, IZA, CReAM, and HiCN)

PARTNER
World Bicycle Relief

COUNTRY
Zambia

TIMELINE
June 2017 – December 2018

STUDY SAMPLE
100 schools (2,471 girls)

STUDY DESIGN
Randomized evaluation

The Challenge

In many rural areas of low-income countries, children have to walk a long distance to get to school. For girls, who generally receive less support to continue their education than boys, the insecurity and fatigue of walking miles to reach school may contribute to girls' low attendance and high drop-out rates. In Zambia, the second most cited reason for enrolling in school at a late age is distance, with the problem being more severe in rural areas compared to urban areas, according to national data.[1]

Identifying cost-effective and scalable strategies that directly address the gender gap in school attendance, which is likely to be correlated with learning outcomes among girls, is of considerable policy interest in Zambia. One policy that aims to address this problem is providing bicycles to girls to help reduce the distance cost of schooling and at the same time improve safety. A recent study shows that a similar policy in India was successful in reducing the gender gap in enrollment and learning outcomes.[2] However, how well such a program would work in sub-Saharan Africa has been an open question.

The Program

World Bicycle Relief (WBR), an international NGO, implements the Bicycles for Educational Empowerment Program (BEEP). Through this program, students living 3 kilometers or more from school receive a bicycle on the condition that they primarily use it to travel to school. A Bicycle Supervisory Committee (BSC) is formed consisting of teachers, parents, and community leaders, and is in charge of managing the program.

A field mechanic is trained for each school, who provides maintenance checks and repairs for a fee borne by the recipient of the bicycle. Each school is then provided with a startup spare parts kit and each beneficiary student is required to pay a contribution of 50 Kwacha (~$5) toward this kit and preventative maintenance. Since 2009, WBR has rolled out BEEP in 19 districts in Zambia.

The Evaluation

Researchers conducted a randomized evaluation to test the impact of bicycle access on school attendance and grade transition, learning, and empowerment outcomes for girls. Girls were eligible if they were in 5th, 6th, or 7th grade and walked at least 3 kilometers to school.

WBR first conducted a needs assessment to identify districts where students walked long distances to school and where the program had not yet been implemented, choosing the Kalomo, Mazabuka, and Monze districts in Zambia. In those districts, researchers conducted a baseline survey of eligible girls at 100 government schools. The 100 schools were then randomly assigned to one of the three groups:

1. **Standard bicycle program:** All eligible girls who attended schools in this group were offered WBR's standard BEEP, described above (25 schools).

2. **Bicycle program without payment:** All eligible girls who attended schools in this group were offered WBR's standard BEEP with a slight modification: no financial contribution was obtained from the beneficiary students towards the cost of the spare parts kit (20 schools).

3. **Comparison group**: Eligible girls at schools in this group did not receive bicycles during the study period (55 schools).

The program was rolled out and bicycles were successfully distributed to the 45 schools in the third term of the 2017 school year. A follow-up survey was conducted approximately one year later, in the third school term of 2018.

Results

Overall, findings suggest the bicycles reduced commute time and reduced the number of days girls were absent from school by 28 percent. Findings also suggest the program improved girls' empowerment by giving them more control over decisions and making them more willing to reach out to friends in need. Researchers did not find any evidence that access to bicycles impacted school dropout, grade transition (which is automatic), life aspirations, or girls' freedom of movement.

Access to the bicycles (both groups combined) reduced the time girls took to commute to the school by 35 minutes one way on average, a one-third decrease of their commuting time before receiving the bicycles.

Girls' punctuality increased by 66 percent as a result of the program. While girls in the comparison group were late to school a little over two days (2.19) each week, girls with access to bicycles were late less often than one day a week (0.76 days).

Girls who received bikes were less likely to miss school than girls not offered the bicycles: Girls in the comparison group missed school about four days a month on average, while girls in the program missed school about three days a month, which represents a 28 percent decrease in absenteeism.

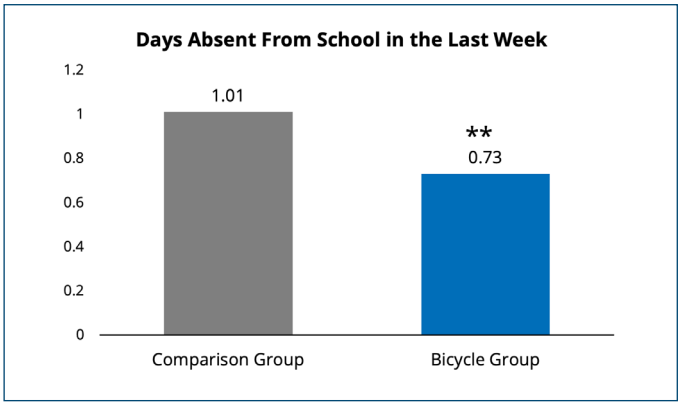
Girls at schools that received bicycles experienced an increase in measures of empowerment. The degree to which they felt in control of their lives (their "locus of control") increased. They were also more "prosocial" which included their willingness to help a friend, their participation in local clubs, and their knowledge of local leadership than their peers at schools that did not receive bicycles. Moreover, girls appeared to have a more positive self-image based on how they rank themselves academically and how likely they believe they are to succeed in life as a result of the program, though this result is only marginally statistically significant.

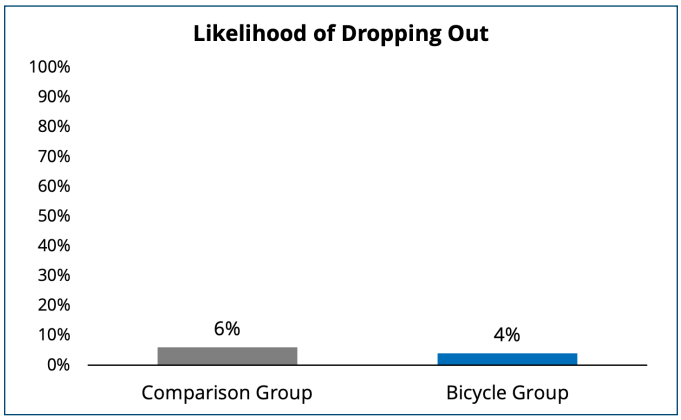
Further, their bargaining power increased as a result of the program. This included access and control over resources and open communication with parents.

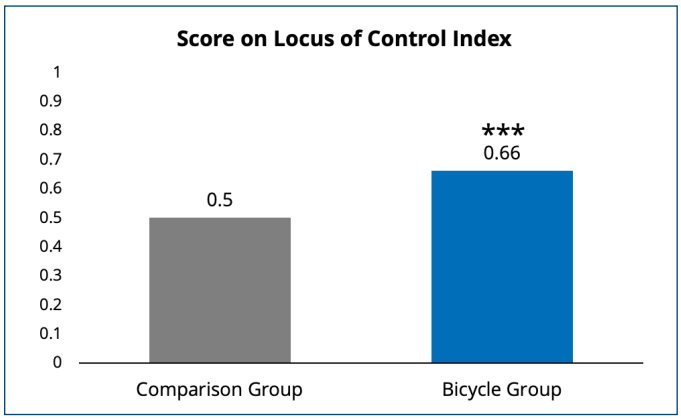
Girls with bicycles were less likely to engage in income generating activities. Possible reasons could be that the intervention had positive income effects for the family, thereby not requiring the girl to engage in any income generating activity, or that the intervention increased the value that the family places on education.

The study did not find a statistically significant impact on grade transition or dropout rates. It is worth noting, however, that dropout rates were low across the whole sample.

Researchers did not find that the intervention had any impact on girls' freedom of movement i.e., the probability that they were allowed to visit friends, family members, or go to the market by themselves.





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Testimonials

"Because of the promise, you gave over this bicycle, when she started school, she had almost given up and saying she has failed, it is better to get married; all that she used to say, she no longer says it now."

— Mother of a beneficiary, T1, Kalonde (from qualitative interview)

"From the time she got the bicycle, the [academic] performance has improved and she passes well at school because she now reaches school on time and when she knocks off, she reaches home on time so she has time to study compared to those days when she did not have the bicycle. She was not able to study because of being tired."

— Mother of a beneficiary, T2, Kalomo (from qualitative interview)

"After I received the bicycle, everything changed because I used to come late for school. I used to find most subjects have been covered especially mathematics. But after receiving the bicycle, I got motivated such that my performance has also improved and I now pass number one."

— Girl beneficiary, T2, Naleza, Mazabuka

Conclusion

This is the first randomized evaluation in Africa to test how providing girls with access to bicycles affects their educational outcomes and the first to test how such a program impacts other measures of well-being. Overall, the preliminary findings suggest that to a large extent the program alleviated constraints on going to school, which is consistent with previous evidence, and improved various measures of empowerment and sense of safety for girls. Further, BEEP had some positive impacts on learning, improving math scores.

In sum, the results suggest that in-kind transfer, in the form of a bicycle for travel to and from school, can be a useful tool to improve girls' well-being in developing countries where distance to school is a barrier.

References

1. According to ZDES (2002), 42% of children in Southern province started school late due to distance compared to 16% in Copperbelt province of Zambia.

2. Muralidharan, Karthik, and Nishith Prakash. 2017. "Cycling to School: Increasing Secondary School Enrollment for Girls in India." American Economic Journal: Applied Economics, 9 (3): 321-50.

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Editor: Laura Burke | **Designer:** Michelle Read

IPA Zambia | info-zambia@poverty-action.org | **www.poverty-action.org/zambia**