

A Comparative Analysis of Reading Outcomes in Primary Schools Across Zimbabwe & Zambia: A Case Study

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August 05, 2019

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EXECUTIVE SUMMARY

Happy Readers is a for-profit educational organization that works to improve English language literacy of primary school students in Zimbabwe, Zambia, and Malawi. Their intervention, which is primarily focused on grades 1 through 3, is especially tailored for the African context where English is not the first language of an overwhelming majority of the populations. This report publishes the results of a quantitative study performed on data collected from reading tests conducted by Happy Readers as part of two different projects in Zimbabwe and Zambia. The analyses, conducted using STATA/IC Version 15.1, explored associations in the Endline data between measures of reading achievement and factors such as progress through the Happy Readers program, grade, and gender. They also explored variations in these measures across different rounds of testing. The analyses looked at findings from Zimbabwe and Zambia from a comparative standpoint.

The results of the study showed encouraging associations between student reading outcomes and the Happy Readers' intervention. Following were the main findings of the study:

- In terms of literacy, almost three-fourths of all Zimbabwean students in the data who had completed at least one module of the Happy Readers program classified as literate, in comparison to only 4% of those who had not. The gap was relatively narrower in Zambia but it was still significant, with a 48 percentage-points difference between the literacy rate of students who underwent the program and those who did not. The difference in literacy rates was greater for girls than for boys in Zimbabwe, while it was similar in the case of Zambia.
- In terms of reading proficiency, as measured by the Reading Index Scores (RIS), there was again a statistically significant association between higher reading attainment and

exposure to and progress through the Happy Readers program. For instance, Zimbabwean students in the data who had successfully completed at least one module of the program were, on average, three reading years ahead of students who had completed or attempted none. Again, the gap in Zambia was not as wide as in Zimbabwe, but still amounted to a significant difference of two reading years. The only association for which the magnitude was greater for Zambia was the association between RIS and the number of modules of Happy Readers completed; nevertheless, the association was statistically significant for both countries.

- 64% of Zimbabwean students who had not completed any module of the Happy Readers could not read a single word in the Endline test; on the contrary, only 0.7% of those who underwent the program were unable to do so. The gap in the Zambian case was 48 percentage-points. The results were similar for both boys and girls.
- From the analysis of test results across multiple rounds of testing, there was a consistent pattern of literacy rates and reading scores being highest for the Endline data and lowest for the Baseline data. This was true regardless of the country or the gender.

INTRODUCTION

The early years of a child's education are crucial for the development of their lifelong reading ability. The disparities in achievement that develop in the early years of reading tend to continue in later life (Scarborough et.al, 2009, p. 26). Acknowledging the importance of early reading instruction, Happy Readers works to provide quality literacy resources to primary school children and teachers in schools across Zimbabwe, Zambia and Malawi. Their books and teacher training materials are primarily designed for grades 1 to 3 in the aforementioned African countries, keeping in mind that English is not the first language in these contexts; however, these books are also sometimes used in higher grades for remedial reading. In addition to providing books, they also offer teacher training and instructional resources/guides, and work with partner organizations to conduct monitoring and evaluations to gauge the impact of their intervention (Happy Readers, n.d.).

In this project, I have tried to explore answers to the following problem of practice that Happy Readers are faced with in their work to provide quality literacy resources to school children in Zimbabwe and Zambia. The central question that I explored was about how the reading outcomes of primary school students correlated with Happy Readers' intervention, and whether and how it varied by factors such as completion of a certain number of modules, the stage (module) of the Happy Readers initiative that students are in, and gender. I employed linear regression techniques to students' reading outcomes data provided to me by Happy Readers. My focus was on finding, in the given sample, how the samples compared across the two countries in terms of their literacy outcomes, which in turn was related to how these countries compared in terms of their linguistic map, history and other contextual factors.

BACKGROUND: LANGUAGE & EDUCATION

Zimbabwe and Zambia were both British colonies before gaining independence, hence the English language plays a central role in their systems of education and government (Mugore, 1995, p. 1; Tripathi, 1990). However, English remains the first language of only 1.6% and 0.3% of the Zimbabwean and Zambian populations respectively (Ethnologue, 2019).

ZIMBABWE

According to Ethnologue (2019), almost two-thirds of the Zimbabwean population speak Shona, most of which speak it as a first language, while around another 10% speak Ndebele. Other important languages include Ndau (with almost 5% speakers), Chichewa and Manyika (both with almost 3% speakers), and Tonga (with almost 1% speakers).

There are two ministries in Zimbabwe that are responsible for managing the system of education in the country. The Ministry of Primary and Secondary Education (MoPSE) is responsible for early childhood, primary and secondary education, while the Ministry of Higher and Tertiary Education, Science and Technology Development (MoHTES&TD) oversees university, technical and teacher education. Primary education in Zimbabwe comprises seven grades, with the official start age being six years (SACMEQ, 2007). A UNICEF report on language policy (2016, p. 90) cites the current language of instruction policy of Zimbabwe as one which “favours three languages for use in education: Shona, Ndebele, and English”. It provides for the use of Shona or Ndebele as a medium of instruction initially, until a transition to English is made starting Grade 3. Pupils learn English in Grades 1 & 2 to prepare them for this transition. Shona or Ndebele are continued to be taught as subjects.

The government of Zimbabwe claims, in the latest education report published by the Zimbabwe National Statistics Agency (2017, p. 11), that the overall literacy rate in the country is an

astonishingly high 94%. However, this figure is not a reliable proxy for actual literacy achievement since the government statistics classify anyone that has completed Grade 3 of schooling as literate. The data available on actual reading ability show a completely different picture. For instance, according to SACMEQ III Report (2007) on achievement levels of grade 6 pupils in Zimbabwe (see Table 1 in Appendix A), more than one-third of grade 6 students were still performing at the very “basic levels” of reading (levels 1-3), and only around 16% were performing “at the highest levels” (levels 7 and 8).

ZAMBIA

The language map in Zambia is more complex than that of Zimbabwe. According to the Census of Population and Housing results (2010, p. 64), there are around 73 dialects in total belonging to seven language clusters or root languages. The most widely used languages are Bemba (33.5%), Nyanja (14.8%), Tonga (11.4%), Lozi (5.5%), Chewa (4.5%), and Nsenga (3%).

As stipulated by the education policy of the country, primary education in Zambia consists of grades 1-7. Zambia had a language of instruction policy similar to that of Zimbabwe at the time that Happy Readers conducted their tests and collected data. Instruction in grade 1 was supposed to be in the mother tongue (the language of initial literacy instruction), transitioning towards English beginning in grade 2, and by grade 3 becoming predominantly English, the language of overall instruction (UNICEF, 2016, p. 84).

UNESCO reports Zambia’s literacy rate for 2010 to be 83.01% (UNESCO, 2019). However, as in the case of Zimbabwe, independent assessments of reading levels paint a bleak picture. The SACMEQ III report on Zambia (2007) showed more than 70% of grade 6 students performing at or below level 3 (see Table 2 in Appendix A). EGRA (Early Grade Reading Assessment) results

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from 2013 show that a staggering 91% of Zambian students at the end of Grade 2 are unable to read English at all.

THE CASE STUDY OF HAPPY READERS

Happy Readers is a for-profit organization that works to improve English language literacy at early & middle primary school level by providing books and teacher resources to schools in Zimbabwe, Zambia and Malawi. They also conduct monitoring and evaluation in partnership with donor partners to assess how their programs are helping children improve their literacy. Their books are designed so that they are grounded in the African context and use themes that are relevant to or important for the children they are designed for (Happy Readers, n.d.). Almost all private schools in Zimbabwe use books provided by Happy Readers and over a thousand rural schools across Zimbabwe and Zambia also use them. The books are designed to be used in grades 1 through 3 (although they are sometimes also used in higher grades), and the three-year program is completed in 27 modules i.e. 9 modules per grade (Happy Readers, n.d.).

In 2012, in partnership with the Australian Direct Assistance program (AusDAP), Happy Readers conducted a Baseline test, in seven schools from Kalomo & Kazungula outside Livingstone in Zambia, to measure reading outcomes of students prior to their intervention. They followed this up with an Endline test eighteen months later to measure outcomes again, this time with a considerable proportion of the students being tested having participated in the Happy Readers program. In a similar manner, three rounds of tests were conducted in Zimbabwe, from 2015 to 2017, as part of a project with the World Vision IGATE Girls Education project.

DATA

Overall, we have 782 observations from Baseline, 573 observations from Midline, and 1023 observations from the Endline rounds of testing across both countries. Most of the analyses were done on data gathered during the Endline round, which comprise 751 Endline observations from Zimbabwe, coming from five schools in the Insiza district, and 375 Endline observations from

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Zambia, coming from seven rural primary schools (see Table 3 in Appendix A). All of the tests were conducted in English, using the Happy Readers Reading Testing Kit. The study design was not based on random assignment, and hence we cannot infer causal links from our analysis of the data obtained through the multiple rounds of testing.

MEASURES

Both the datasets use the same measures to record information. The main measures of interest in this report are the Reading Index Score (RIS), the Headline Literacy Measure, Zero Word Score, Country, Grade and Grade Level, Years Overage, Read HR (Has the child completed any of the Happy Readers modules?), the Number of HR Books Completed, and the Test Round. The RIS is measured on a scale from 30 (no letters/words read correctly) to 139 (all words read correctly). On the RIS scale, a 10-units difference translates roughly to one year of learning English, or a shift in one level of reading, e.g. from poor to okay (or vice versa), or from okay to good (or vice versa). My second outcome of interest, the Headline Literacy Measure, is 1 if the RIS score is above the minimum literacy threshold score of 60, and 0 otherwise. My third outcome of interest, the Zero Word Score, is 1 if the student cannot read any word from the test, and 0 otherwise. For a list and brief description of all measures included in my analysis, see Table 4 in Appendix A.

ANALYSIS

The analysis was carried out in STATA/IC Version 15.1, mostly using linear regression techniques, to find associations between my outcomes of interest, which were the Reading Index Score (RIS), the Headline Literacy Measure and the Zero Word Score, and different predictor variables such as the Happy Readers treatment status, progress through the Happy Readers program, grades, gender, and years of overage etc.

The most important research questions that I was exploring in my analysis were the following:

- 1. Is there an association between using the Happy Readers reading scheme and the Headline Literacy Measure? How does this association vary across the two countries of Zimbabwe and Zambia, and across genders?**
- 2. Given a particular grade level, is there an association between using the Happy Readers reading scheme and the RIS? How does this association vary across the two countries of Zimbabwe and Zambia, and across genders?**
- 3. Is there an association between using the Happy Readers reading scheme and the Zero Words Score? How does this association vary across the two countries of Zimbabwe and Zambia, and across genders?**
- 4. Are there variations in literacy rates and reading scores across different rounds of testing? How do these variations change across the two countries of Zimbabwe and Zambia, and across genders?**

Answers to the first three research questions were explored by looking only at the Endline data for which I had information on the Happy Readers' treatment status. The fourth research question required comparing outcomes across different rounds of testing.

RESULTS

RESULTS FOR RESEARCH QUESTIONS 1, 2 & 3 (ENDLINE ANALYSES)

Overall, in the sample, a greater proportion of children in Zimbabwe were classified as literate as compared to those in Zambia. Zimbabwean children also averaged higher on the RIS measure.

One of the reasons for higher overall literacy and average reading scores in Zimbabwe might be the fact that Zimbabwean data had observations from upper primary grades too while the Zambian data did not.

Girls in Zimbabwe were observed to be outperforming boys on the LITERACY measure. 70% of the girls in the Zimbabwean data classified as literate as compared to 51% of the boys. In Zambia, there was no statistically significant difference between girls and boys in terms of literacy rate. On average, there was no statistically significant difference between the RIS of girls and boys in both Zimbabwe and Zambia.

Given below are the findings that correspond to each of the first three research questions:

1. In Zimbabwe, 72% of the students who completed at least one module of Happy Readers were classified as literate according to the Headline Literacy Measure, in comparison to only 4% of those who did not (see Figure 1 in Appendix B). In Zambia, the difference in proportions wasn't as stark: 49% of the students who completed some Happy Readers were literate as opposed to 1% of those who did not complete any Happy Readers module (see Figure 2 in Appendix B). In Zimbabwe, 64% of the boys who completed at least one module of Happy Readers classified as literate, in comparison to 5% of those who did not. Of the Zimbabwean girls who had completed at least one module of Happy Readers, 80% classified as literate, in comparison to 4% of those who did not (see Figure 5 in Appendix B). In Zambia, the association between LITERACY and STARTEDHR was similar for girls and boys.
2. In Zimbabwe, those who had completed at least one module of Happy Readers were on average scoring 29.6 points higher on the Reading Index Score (RIS) as compared to those who had not, as shown by the following regression equation: $\widehat{RIS} = 39 + 29.6 * STARTEDHR$. In Zambia, like in Zimbabwe, the association between RIS and STARTEDHR was statistically significant. The regression equation for the sample, $\widehat{RIS} = 39.5 + 22.2 * STARTEDHR$, shows that students who completed at least one module of

Happy Readers scored, on average, 22.2 points higher on the RIS scale. When I controlled for grade levels, the Zimbabwean slope coefficient, i.e. the gap between average scores of those who did and those who did not complete at least one Happy Readers module, did not reduce much, while the Zambian one basically stayed the same (see Figure 3 in Appendix B). In Zimbabwe, there was a statistically significant association between the RIS and HRBOOKS, an ordinal discrete variable indicating the number of Happy Readers books/modules a student has completed. The corresponding regression equation, $\widehat{RIS} = 45.7 + 2.7 * HRBOOKS$, indicates that a one-unit difference in HRBOOKS is associated with a 2.7 units difference in RIS. If we look at the association between RIS and HRBOOKS only for students with STARTEDHR value equal to 1 (those who have completed at least one module of the Happy Readers), the magnitude of association drops slightly to a 2.2 units statistically significant difference in RIS. In Zambia too, the association was statistically significant, and the magnitude of association was more than that for Zimbabwe ($\widehat{RIS} = 43 + 4.4 * HRBOOKS$, see Figure 4 in Appendix B). If we look at the association between RIS and HRBOOKS only for students with STARTEDHR value equal to 1, the magnitude of association drops slightly to a 4.1 units statistically significant difference in RIS. In both Zimbabwe and Zambia, there was no statistically significant difference in RIS across genders for the same treatment status or level of progress through the Happy Readers modules.

3. In Zimbabwe, only 0.7% of the students who completed at least one module of Happy Readers were not able to read a single word, in comparison to 64% of those who did not (see Figure 6 in Appendix B). Similarly, in Zambia, only 1% of the students who completed some Happy Readers could not read a single word as opposed to 49% of those

who did not complete any Happy Readers module (see Figure 7 in Appendix B). In both Zimbabwe and Zambia, the association between ZEROWORD and STARTEDHR was similar for girls and boys.

RESULTS FOR RESEARCH QUESTION 4 (ANALYSIS ACROSS TEST ROUNDS)

Overall, 35% of students from the Baseline round of testing classified as literate as compared to 52.5% for Midline and 50.4% for the Endline. The average reading index scores for the Baseline, Midline and Endline rounds of testing were 53.4, 60.6, and 61.2 respectively. It is worth noting here that all of the 782 baseline observations did not start Happy Readers, whereas 616 of the 1023 Endline observations had completed at least one module. All of the Midline observations and 273 of the Endline observations had unknown data on Happy Readers' treatment status. The time elapsed between the Baseline and Midline rounds of testing in Zimbabwe was the same as the time elapsed between the Baseline and Endline rounds of testing in Zambia (remember that there was no Midline testing for Zambia), i.e. eighteen months. Given below are the results for variation across test rounds in literacy rates and reading scores by country and gender:

1. When we compare across the two countries, we find that:
 - a. In Zimbabwe, literacy rates for the Baseline, Midline and Endline tests are 45.5%, 52.5% and 60.3% respectively (see Figure 8 in Appendix B). In comparison, in Zambia, literacy rates for the Baseline and Endline tests are 14.9% and 36.6% respectively (see Figure 9 in Appendix B).
 - b. In Zimbabwe, the average RIS for the Baseline, Midline and Endline tests are 57.2, 60.6 and 64.9 respectively (see Figure 10 in Appendix B), while in Zambia, the average RIS values for the Baseline and Endline tests are 46.3 and 56.1 respectively (see Figure 11 in Appendix B).

2. If we explore by gender, we see that:

- a. In Zimbabwe, literacy rates of female students for the Baseline, Midline and Endline tests are 56.7%, 65.8% and 74% respectively, while those of male students are 33.9%, 39.7% and 48.9%. In Zambia, literacy rates of female students for the Baseline and Endline tests are 14.2% and 37.4% respectively, while those of male students are 15.7% and 35.9%.
- b. The average RIS of Zimbabwean female students for the Baseline, Midline and Endline tests are 61.8, 65.4 and 71.3 respectively, while those of Zimbabwean male students are 52.4, 56 and 59.9. In Zambia, the average RIS of female students for the Baseline and Endline tests are 46.7 and 55.5 respectively, while those of male students are 46 and 56.8.

DISCUSSION

My findings suggest that the intervention by Happy Readers is slightly more strongly associated with literacy outcomes in Zimbabwe than in Zambia, although the magnitudes of association are high in both the countries. This is most clearly demonstrated by the difference in the literacy rates of students who have received some treatment from Happy Readers versus those who have not. In Zimbabwe, this figure is an impressive 72% for the former as compared to only 4% for the latter, a large difference of about 68 percentage-points between the two groups. Zambian figures are not as disparate but a difference of 48 percentage-points is still pretty large. We obtain a similar picture from other results too. For instance, we see from Figure 3 in Appendix B, which depicts the results of regression of RIS on STARTEDHR, a widening of gap between the Zimbabwean and Zambian RIS averages as we move along the lines of best fit from no treatment to some treatment. The average Zimbabwean RIS associated with having received some

treatment is almost 29 units higher than the average for no treatment, the difference being almost seven units higher than in the Zambian case. It is worth remembering here that on the RIS scale, a 10-units difference translates to a shift in one level (or year) of reading. A 29-units difference in the Zimbabwean case and a 22-units difference in the Zambian case are thus phenomenal.

Also, for Zambia, the difference in RIS associated with a unit difference in the number of books/modules completed is 4.4 units, as compared to 2.7 units for Zimbabwe (See Figure 4 in Appendix B).

My findings also suggest that overall, in Zimbabwe, a significantly higher proportion of girls classify as literate as compared to the proportion of boys that do. However, there is no statistically significant difference in terms of the RIS. The difference in literacy rates is largely due to the fact that the average RIS for Zimbabwean boys (59.2) is just below the literacy threshold of 60 points, hence many boys might have missed out on classifying as literate by a small margin, and otherwise their reading scores are not too dissimilar from their female counterparts. Zambian boys and girls do not differ significantly on either the Headline Literacy Measure or the Reading Index Score. In terms of the magnitudes of association between literacy outcomes and Happy Readers' treatment status, it is observed that these associations are for the most part similar for boys and girls in both the countries. An important exception is the difference in associations between literacy rate and treatment status for the two genders in Zimbabwe: 80% of the girls who have completed at least one module of Happy Readers classify as literate whereas only 64% of the corresponding group of boys do (the fractions of boys and girls classifying as literate without having completed any Happy Readers module are similar). Again, the discrepancy of this difference in literacy rates across genders with the similarity of

associations between RIS and treatment status across genders can be reconciled by observing that many boys marginally miss out on being classified as literate.

Other important findings pertain to the Zero Words Score and how it is associated with the status of Happy Readers treatment for children across the two countries and genders. It is observed that in both Zimbabwe and Zambia, a considerably higher proportion of students who have not completed any module of Happy Readers are unable to read any word in the tests. For Zambia, this is almost half of all such students, whereas for Zimbabwe it is almost 65%. For those who have had some progress through the Happy Readers reading scheme, these figures are very close to zero. Hence, there appears to be a strong association between having a low rate of zero-words status and using the Happy Readers reading scheme. In other words, those who used Happy Readers reading scheme are much less likely to not be able to read a single word as compared to those who did not. These associations are very similar across genders in both Zimbabwe and Zambia.

The last of the findings are not directly related to associations between the use of Happy Readers and literacy outcomes, rather these are focused on the variation of indicators across multiple rounds of testing. In both Zimbabwe and Zambia, as expected, literacy rates and average RIS are the lowest for Baseline and highest for the Endline round of testing. The association between literacy outcomes and test rounds are similar for both boys and girls.

All of the findings stated in the previous section are results of chi-squared tests and linear regression techniques, which only help us find correlations and associations between attributes of a data and tell us nothing about the causality between them. We do not know for sure what exactly causes the differences that we have discussed above.

LIMITATIONS

1. The analysis is not an impact evaluation, because it does not establish any causations between the intervention under study and the literacy outcomes, and only establishes correlations present in the data provided. There was no random assignment of students to defined “treatment” and “control” groups in order to measure the causal effect of the program. Any positive associations that we have found between the intervention and reading outcomes may be a result of unknown factors such as parent motivation (students who have completed some of the modules might have done so because their parents pushed them to work harder, which led them to scoring better on the reading tests), students with higher motivation or skill self-selecting themselves into the program (selection bias), teacher motivation and/or skill etc. These characteristics can only be made uniform across treatment and control groups through a random assignment such as in a Randomized Control Trial.
2. Most of the analysis is conducted at the Endline, which reduces the sample size considerably. Both the datasets contained observations from a very limited number of schools, which limits the precision, reliability, and generalizability of the results. The fewer number of schools means that most of the data is interdependent, which leads to estimates with large standard errors and a lot of variability.

RECOMMENDATIONS

1. The Endline study should be expanded to schools outside of the Insiza district to include more schools from all regions of Zimbabwe in order to have a sample that is more representative and has a greater number of clusters. The same goes for Zambia. This will allow for a more robust analysis that furnishes precise and truly representative outcomes.
2. The study should be based on experimental designs such as Randomized Control Trials which will allow attribution and causal relationships. The Happy Readers website (n.d.) mentions that the IGATE program will be able to publish results based on such studies at the end of its current project.
3. The project should also expand its qualitative research in both its breadth and depth to understand the complexity of hurdles that stand in the way of attaining literacy goals. A comprehensive and extensive qualitative research in conjunction with a quantitative study will ensure that we are comprehending not only what the situation is but also why that situation exists. The qualitative study done by Willemsen, Cade, and Miske for the IGATE project is an excellent step in this direction, which concludes its report by saying that the heads of schools, teachers, and pupils in Zimbabwe see the Happy Readers initiative as really beneficial for the literacy development of students (2017, pp. 28-29).
4. Given that all the materials and tests were in English, more research should be done to look at the skills of children in local languages, especially given the wealth of research that demonstrates the benefits of early education in the child's mother tongue, even for second language acquisition (Cummins, 2000). In the case that the use of mother tongue is found to be useful for Happy Readers' literacy goals, they could also expand their work to include raising awareness about the research-based positive impacts of mother tongue

education which can help change existing negative attitudes around it (Shizha, 2012).

Inversely, the gains that students make in English language literacy as a result of the Happy Readers' intervention can help them better their reading skills in their first language, as suggested by the research conducted by Kim & Piper in Kenya (2019), especially since the orthographies of local languages in both Zimbabwe and Zambia are shallower than that of English.

APPENDIX

APPENDIX A

Table 1: Percentage of Grade 6 pupils at each Reading Level in Zimbabwe (SACMEQ III, 2007)

Level 1	Pre-Reading	6.0 %
Level 2	Emergent Reading	12.50%
Level 3	Basic Reading	18.70%
Level 4	Reading for Meaning	20.70%
Level 5	Interpretive Reading	15.00%
Level 6	Inferential Reading	11.0 %
Level 7	Analytical Reading	11.7 %
Level 8	Critical Reading	4.5 %

Table 2: Percentage of Grade 6 pupils at each Reading Level in Zambia (SACMEQ III, 2007)

Level 1	Pre-Reading	15.8 %
Level 2	Emergent Reading	28.3 %
Level 3	Basic Reading	28.6 %

Level 4	Reading for Meaning	14.9 %
Level 5	Interpretive Reading	6.0 %
Level 6	Inferential Reading	3.7 %
Level 7	Analytical Reading	2.2 %
Level 8	Critical Reading	0.5 %

Table 3: Endline Datasets

Dataset	Location	Dates	No. of Results	No. of Schools	Test Version and data
Dataset1	Zimbabwe (Insiza)	2017 Endline	751	5	V2.5 Word Recognition
Dataset2	Zambia (Kalomo, Kazungula)	2013 Endline	375	7	V1.1 Words & Letters only

Table 4: Measures used in the Analysis

CATEGORY	MEASURE	VARIABLE	DESCRIPTION
Testing Round Data	Test Round	TESTROUND	Test Round e.g. Baseline, Midline, Endline
	Country	CTRY	Country where test conducted
School/Class Data	School	SCHOOL	School Name
	Grade	GRADE	Grade (number) when tested e.g. 2,3,4,5
	Grade Level	GRADELEVEL	Grade Level to Assess at. This will depend on when English teaching starts based on LOI policy & curriculum.
	Gender	GENDER	Gender M,F

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Pupil Data	Chronological Age	CHRONAGE	Age of child when tested, based on DOB, or else standard Grade Age for the class if DOB not given
	Grade Age	GRADEAGE	This is a standardised age for the Grade at the time of the test.
	Years Overage	OVERAGE	Rounded number of years the child is over (or under) age vs the Grade Age
Test Results Recorded	Words Read Correctly	CORRECTWORDS	Number of words the child read correctly from the List
Happy Readers Treatment Status	Read HR	READHR	Has the child started on Happy Readers books/modules?
	No. of HR Books completed	HRBOOKS	Number of Happy Readers books/modules completed by the child at time of test
Derived Results	RIS	RIS	Reading Index Score. A score of 60 to 69 is the standard expectation for Grade 1 English speaker
	Headline Literacy Measure	LITERACY	Measure of whether a child meets the minimum RIS threshold of score 60 for the Grade Level being assessed
	Reading Level	READINGLEVEL	Based on the RIS score against Grade Level expectations.
	Zero Word Score	ZEROWORD	A score of 1 indicates that a student cannot read any word from the test.

APPENDIX B

Figure 1: Comparison of Literacy Rates by Treatment Status in Zimbabwe

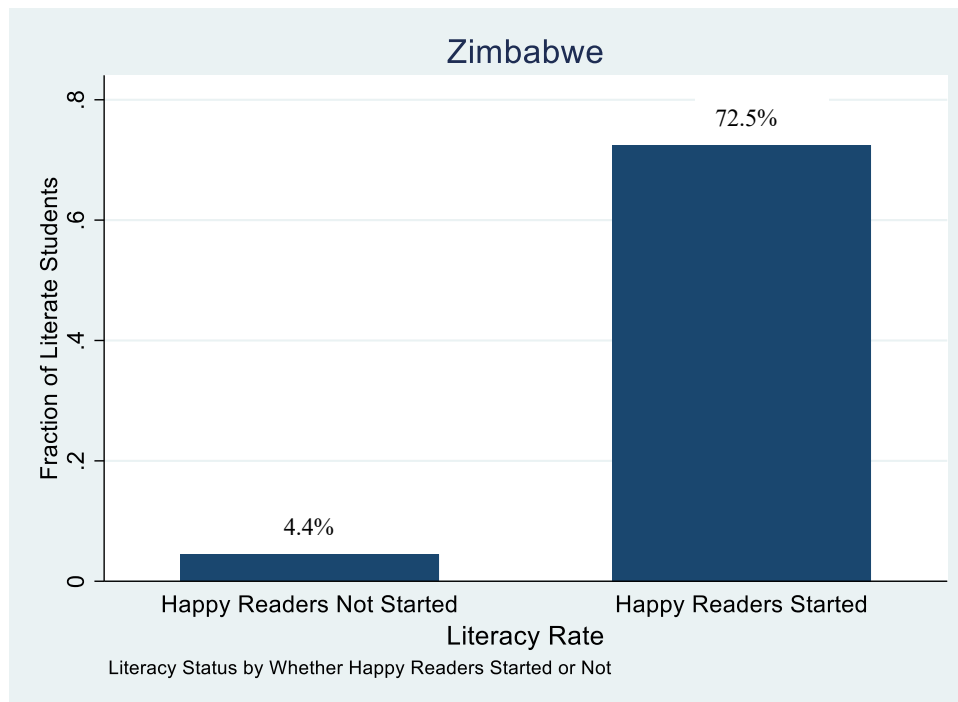


Figure 2: Comparison of Literacy Rates by Treatment Status in Zambia

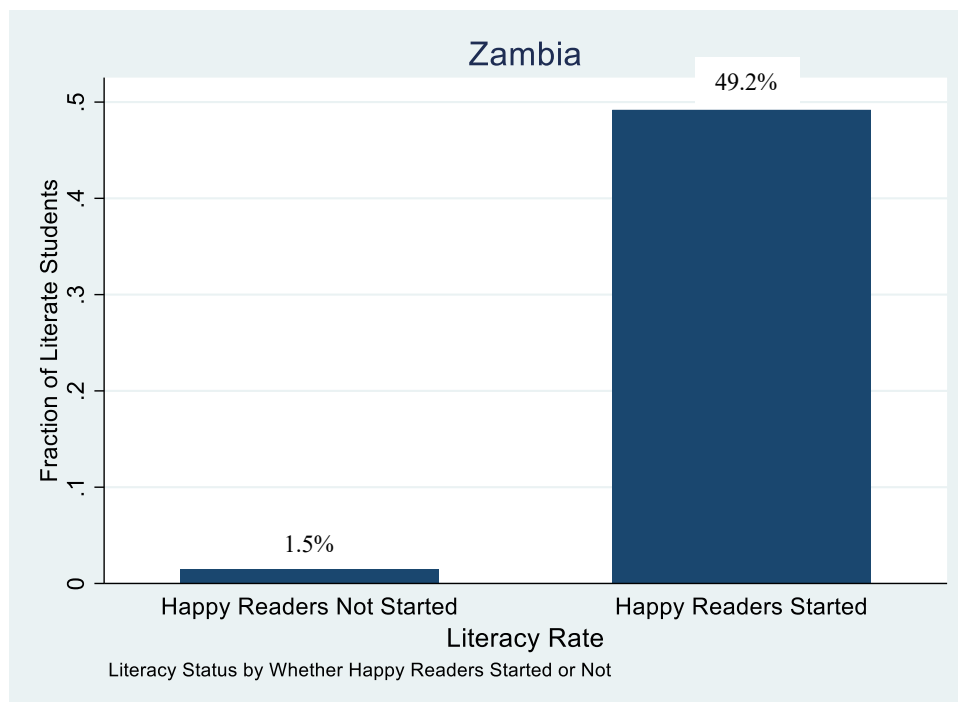


Figure 3: Comparison of Associations between RIS and Treatment Status across the two Countries



Figure 4: Comparison of Associations between RIS and Happy Readers Modules completed across the two Countries (with an extrapolated best fit line for Zambia)

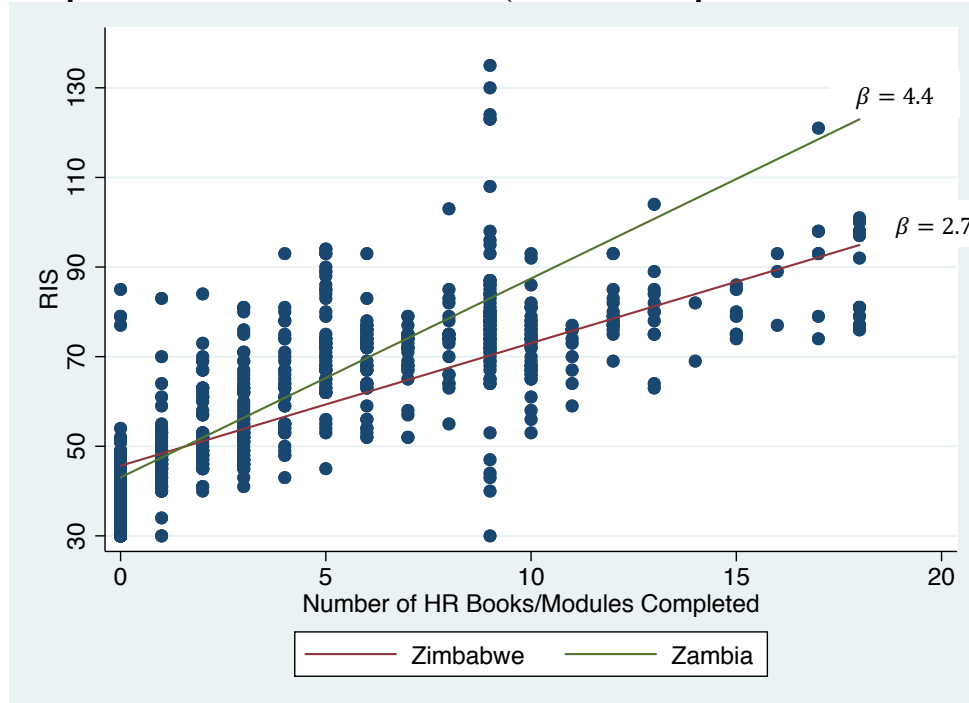


Figure 5: Comparison of Literacy Rates by Treatment Status for Zimbabwean Boys & for Zimbabwean Girls

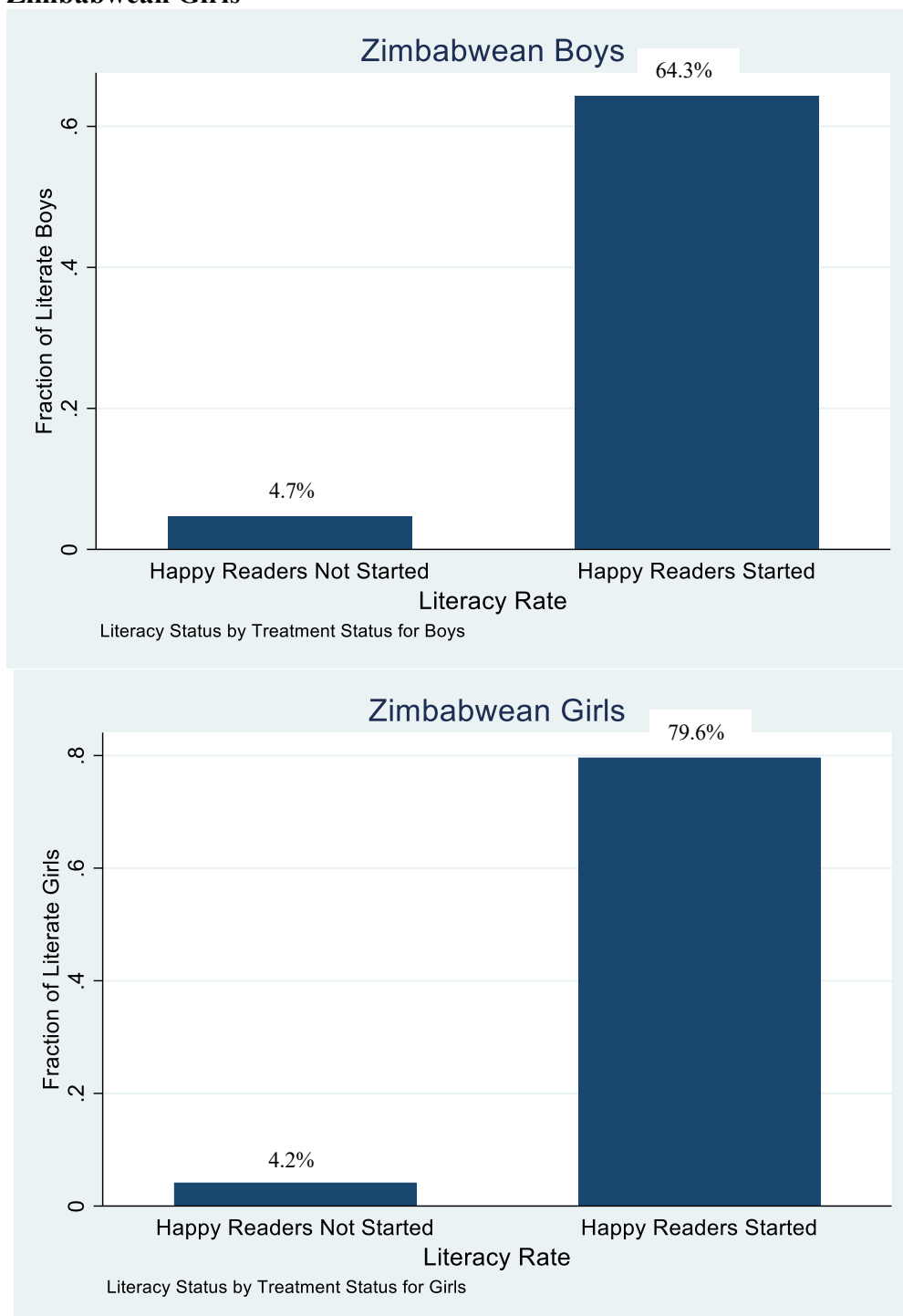


Figure 6: Comparison of Zero-words Status by Treatment Status in Zimbabwe

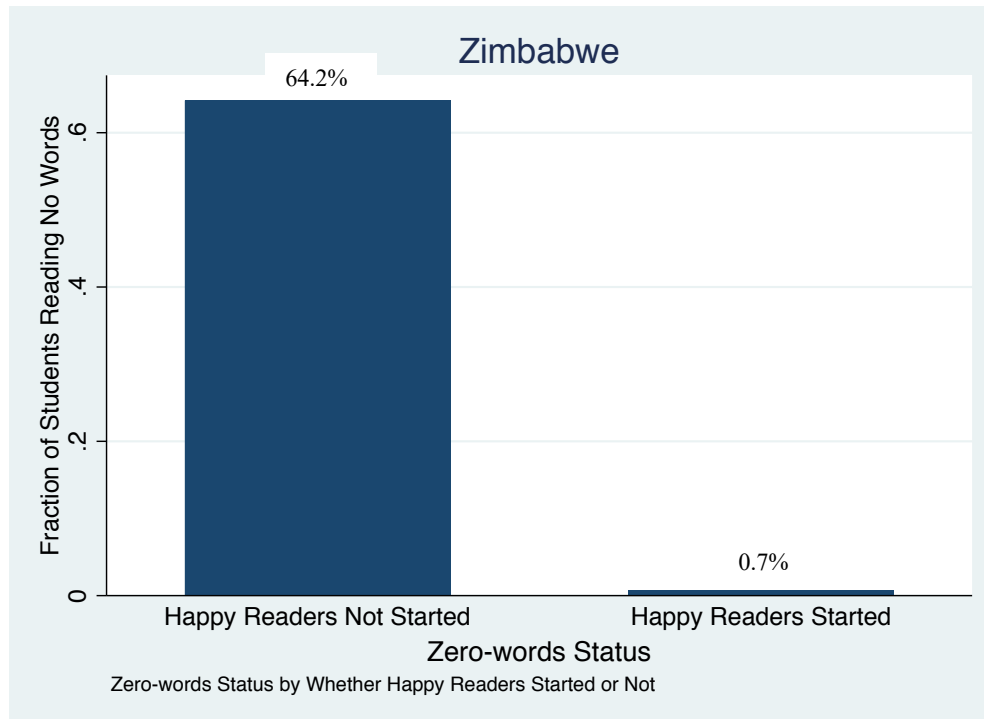


Figure 7: Comparison of Zero-words Status by Treatment Status in Zambia

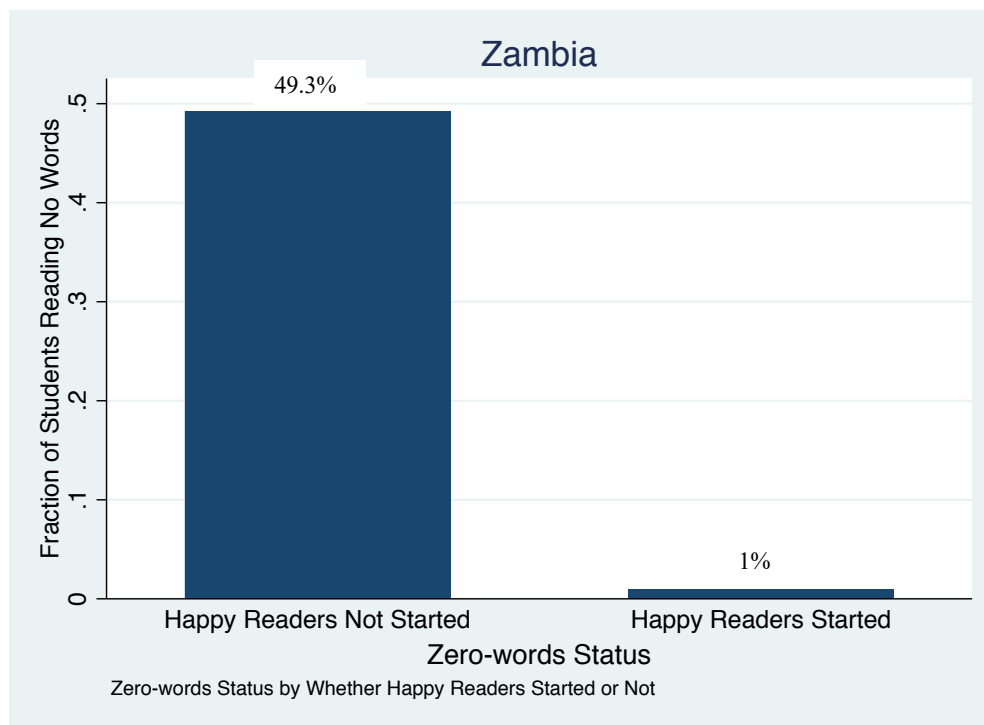


Figure 8: Comparison of Literacy Rates by Test Round in Zimbabwe

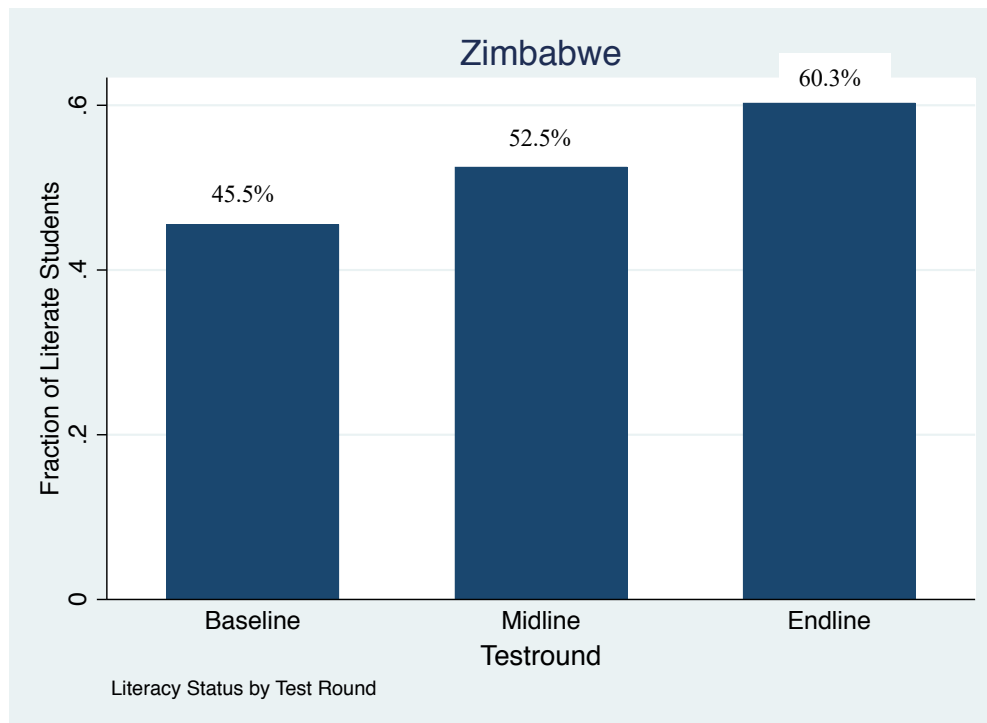


Figure 9: Comparison of Literacy Rates by Test Round in Zambia

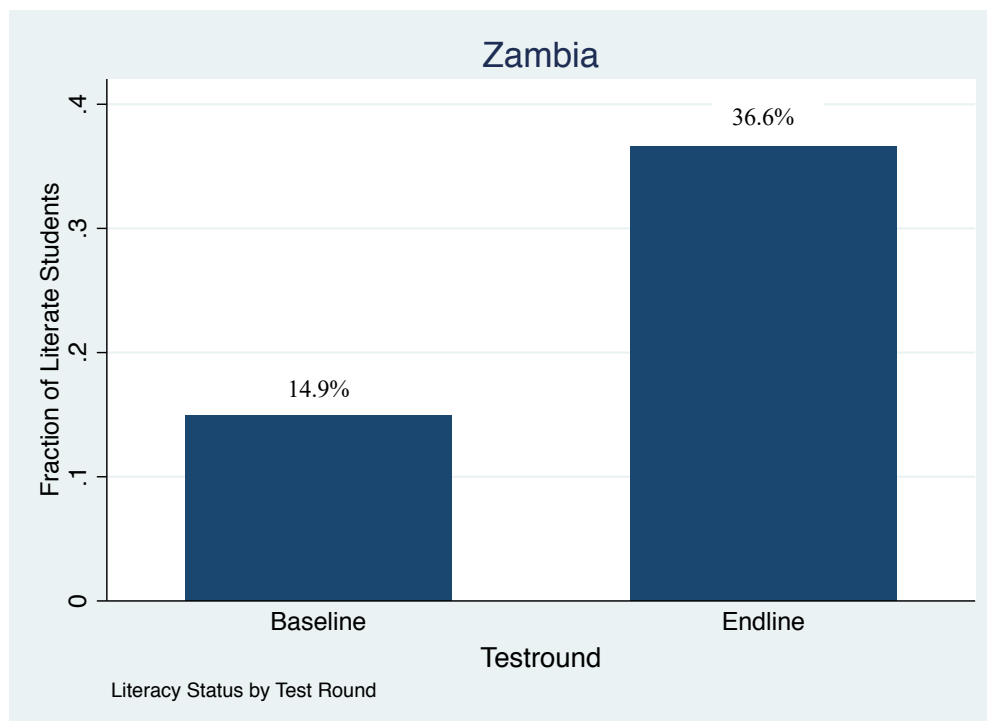


Figure 10: Comparison of RIS by Test Round in Zimbabwe

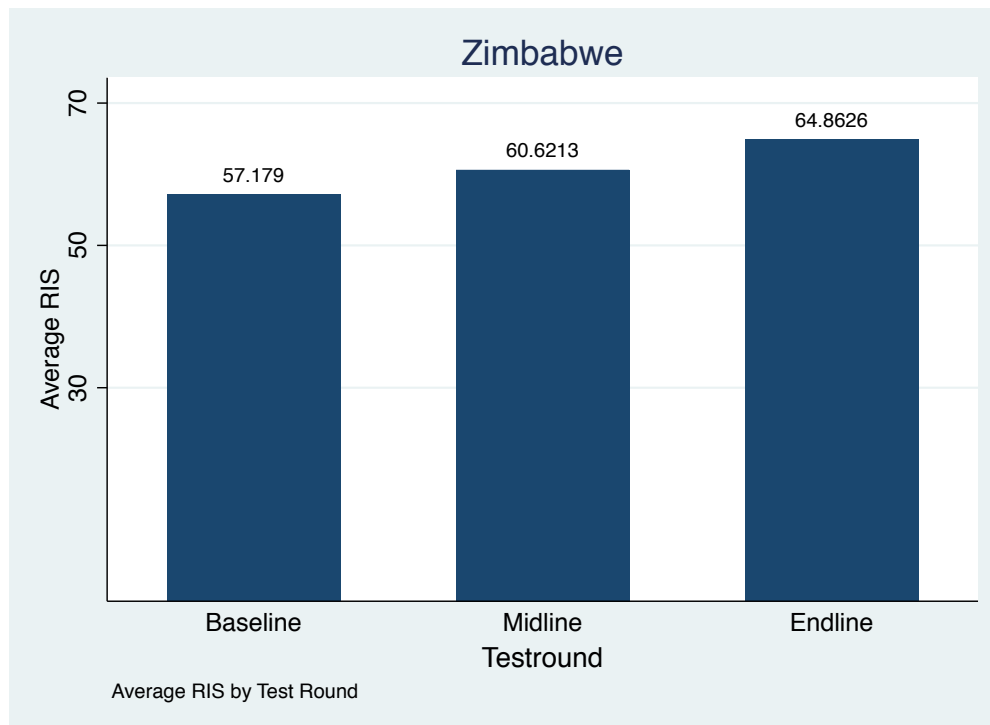
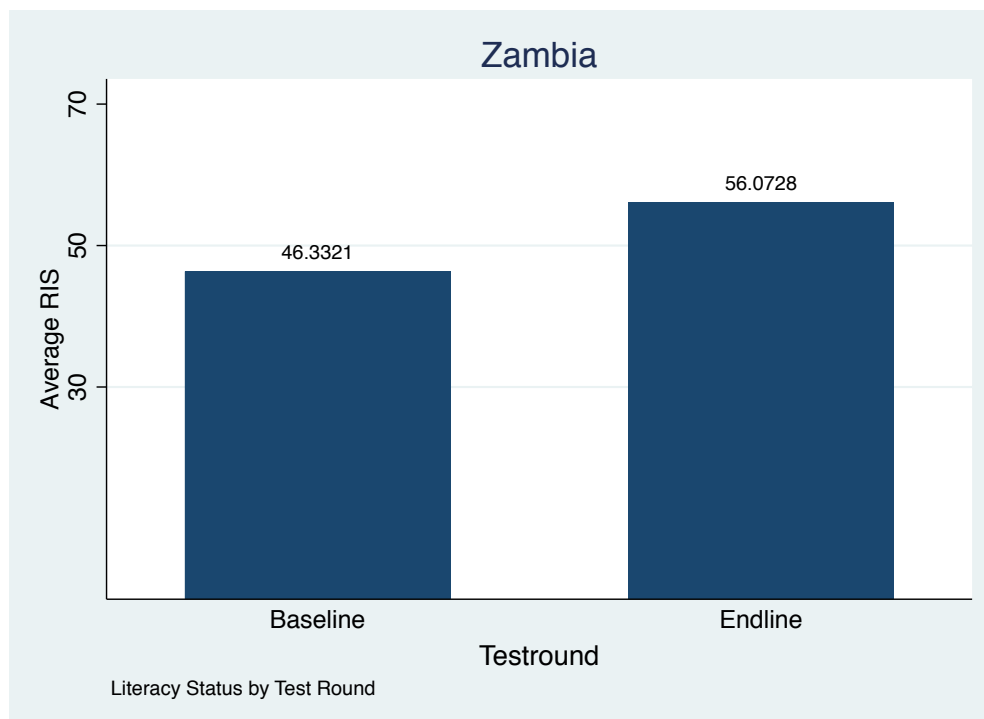


Figure 11: Comparison of RIS by Test Round in Zambia



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