



Assessment of Repetition and Dropout in Basic Education in Rwanda

Full Report

MINEDUC RWANDA | UNICEF

December 19th, 2017

REPUBLIC OF RWANDA



MINISTRY OF EDUCATION





From data to policy

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Acknowledgements

This report was prepared by Laterite Ltd., in close collaboration with MINEDUC and UNICEF.

Laterite would like to extend its thanks to the team from MINEDUC, in particular Director General Rose Baguma, Director General Dr. Marie Christine Gasingirwa, Emmanuel Niyomana, Clement Mugabo, Janet Nakato, Apollinaire Ndayisaba, and Ernest Rutungisha for their thoughtful support throughout this effort and for facilitating access to MINEDUC data.

We would also like to thank the team at UNICEF for their vision for this study and their continuous backing throughout. In particular, we would like to thank Sara McGinty for her support and Erin Tanner for her enthusiastic leadership of this project from UNICEF's side and for her advice at every step of the project, from roll-out through completion.

Laterite's Data Team, led by Belise Kangabe, was in charge of field logistics and data collection, and included: Jean Claude Rukondo, Fabiola Niwenshuti, Fred Nkubito, Amani Ntakirutimana, Lydie Shima, Jean Baptiste Muhoza, and Steven Karake. Laterite's Data Quality Team lead by Dominique Kalisa with the assistance of Denis Kamugisha was in charge of data quality and assurance. The team in charge of econometric analysis consisted of Dimitri Stoelinga, Íñigo Verduzco, Sachin Gathani, Emily Farbrace, Josep Casas, Patrick Hitayezu, Anirudh Rajashekar, Mallory Baxter, Michael Keenan and Michael O'Doherty. Olive Nsababera, Vincent Vanderputten, and George Stathopoulos provided valuable technical assistance.

We would also like thank our special advisers on this project, Prof. Pauline Rose and Dr Ricardo Sabates, for their continued support throughout this effort.

We also want to thank Save the Children, and in particular Lauren Pisani for providing the Kinyarwanda version of the socio-emotional items of the IDELA assessment that we used as part of the child survey.

Laterite is a data, research and advisory firm based in Rwanda and Ethiopia (www.laterite.com). Laterite specializes in innovative data collection and analysis techniques that help answer critical development questions.

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Abbreviations

EICV: Integrated Households Living Conditions Survey

EMIS: Education Management Information System

ESSP: Education Sector Strategic Plan

GER: Gross Enrolment Rate

IDELA: International Development and Early Learning Assessment

LODA: Local Administrative Entities Development Agency

MINEDUC: Ministry of Education

MINISANTE: Ministry of Health

NISR: National Institute of Statistics of Rwanda

UIS: UNESCO Institute for Statistics

UNESCO: United Nations Educational, Scientific and Cultural Organization

UNICEF: United Nations Children's Fund

Definitions

ENROLMENT: A child is enrolled at school if they are registered at school at the start of the school year.

GROSS ENROLMENT RATE: The total enrolment within a country in a specific level of education, regardless of age, expressed as a percentage of the population in the official age group corresponding to this level of education.

OUT-OF-SCHOOL: A child is out of school if they are not registered at school at the start of the school year.

DROPOUT RATE: The proportion of pupils from a cohort enrolled for a given school year who are no longer enrolled in the following school year, and have not completed their basic education.

REPETITION RATE: The proportion of pupils from a cohort enrolled in a given grade for a given school year who are enrolled in the same grade in the following school year.

PROMOTION RATE: The proportion of pupils from a cohort enrolled in a given grade for a given school year who are enrolled in the next grade in the following school year.

RE-ENTRY RATE: The proportion of pupils enrolled in a given grade at a given school year, that were out of school in the previous year after having dropped out of school at some point in the past.

LATE ENTRY or DELAYED ENTRY: The proportion of pupils that started primary school after the official entry age, which in the Rwandan context is 7.

EARLY ENTRY: The proportion of pupils that started primary school before the official entry age, which in the Rwandan context is 7.

ON-TRACK RATE: The proportion of pupils that of a given grade at a given school year that have not accumulated any delays in their education, through either repetition, dropout or late start.

PRIMARY SCHOOL COMPLETION RATE: The percentage of students that have successfully completed primary school, as evidenced either by them: passing the national primary school leaving examination, passing the grade through their school level assessment or enrolling in secondary school in the subsequent year (this definition therefore does not include all students in Primary 6, only students that have successfully completed Primary 6).

SURVIVAL RATE: The number of students from a school cohort that are still enrolled in school after a given number of years since they started their primary education, by all students from that same cohort.

Executive Summary

Introduction

Over the past two decades, Rwanda has invested significant resources towards improving the quality and coverage of primary and secondary education, as well as towards implementing policies that aim to achieve universal and equitable access to twelve years of basic education for all Rwandan children. The pace of improvement has been remarkable, resulting in almost universal access to primary education, with net enrolment rates reaching 97.7% in primary school according to the Education Statistical Yearbook published by MINEDUC (2016 edition).

Improvements were the result of major structural adjustments, reforms and a significant investment and scaling up of resources to the education system. Major policies that have shaped the education sector include: the Nine Year Basic Education Policy (9YBE), which guaranteed nine years of free and compulsory education to all Rwandan children (2008), later expanded to include the 12-Year-Basic-Education Policy (12YBE); the adoption of English in 2009 as the medium of instruction from upper primary onwards; the double-shifting policy in 2009, as a temporary measure to optimize the use of resources in primary education; and more recently a major classroom construction initiative, the introduction of a national school feeding programme in secondary schools, the gradual introduction of a competency-based curriculum starting in 2016, and a new ICT in Education policy, being implemented since 2016.

Despite these many achievements, some of the targets on the flow of children through the education system have been missed because of dropout and repetition. Primary school completion rates were lower in 2016 (65.2%) than they were in 2012 (72.7%), dropout in the transition to secondary school has been increasing (the transition rate dropped from 86.2% in 2011 to 71.1% in 2015), dropout rates in Primary 1 to Primary 5 missed targets in 2013 (14.3%) and 2014 (10.3%), although they improved significantly in 2015 (to 5.7%, based on latest official data available), and repetition rates have remained high in primary school (18.4% in 2015)¹. The focus of this study is on children aged 6 to 18, most of whom are enrolled in primary school (based on this study an estimated 70% of children aged 6 to 18 are in primary school, 13% in secondary school, and 17% are out-of-school).

It is against this backdrop that MINEDUC, with the support of UNICEF, commissioned Laterite to perform an assessment of dropout and repetition in Rwandan schools. The main objective of this project is to support MINEDUC and stakeholders in the education sector to generate new insights on the causes of grade repetition and dropout to help inform the development of evidence-based policy options to increase retention, completion and the overall efficiency of the education system.

¹ Latest statistics available from: MINEDUC, *Education Statistical Yearbook*, 2015 and 2016

Key Dropout Statistics

In 2016, an estimated 4.4% of children enrolled in primary school dropped-out. This corresponds to about 112,000 pupils that were enrolled in primary school in 2016, but failed to enrol again in 2017. About 1/3 of these pupils dropped out of school before the end of the school year; the remaining 2/3rds completed the school year in 2016, but did not enrol again in 2017. The estimated dropout rate is similar for girls and boys: on average an estimated 4.3% of girls enrolled in primary school in 2016 dropped out, compared to 4.5% of boys. For both girls and boys, dropout is a marginal occurrence in Rwanda's primary education system on average.

The dropout rate increases with each grade, from less than 1% in Primary 1 to more than 20% in Primary 6, during the transition from primary to secondary school. Dropout is a rare occurrence in lower primary school: an estimated 1.3% of children enrolled in Primary 1 to Primary 3 in 2016 dropped-out of school in the subsequent year. It is a much larger concern in upper primary school, where an estimated 9.0% of children enrolled in Primary 4 to Primary 6 in 2016 dropped-out.

From Primary 1 to Primary 5, the increase in the dropout rate is not related to grade-level dynamics, but rather age. Older children are much more likely to drop out of school compared to younger children, regardless of what grade they are enrolled in. Dropout is a very rare occurrence for children of primary school age: only an estimated 0.9% of children aged 7 to 12 that were enrolled in primary school in 2016 dropped-out of school. Dropout is a much more common occurrence for children aged 13 and above: an estimated 13.4% of children age 13 and above and enrolled in primary school in 2016 dropped-out.

The dropout rate peaks in Primary 6, during the transition from primary to secondary school, where an estimated 20.8% of children drop out of school. The increase in the dropout rate in Primary 6 is not only related to the challenges that come with age, but to the barriers that prevent some children from making the transition from primary to secondary school, including: (i) learning barriers; (ii) informal costs in secondary school; (iii) an increasing opportunity cost to being in school; and (iv) supply-side barriers.

An estimated 6.0% of children below the age of 18 and enrolled in lower secondary school in 2016 dropped out, with a margin of error of +/-2.7 percentage points. This estimate is not significantly different from the dropout rate measured in primary school. As in the case of primary school, a slightly larger proportion of children dropped-out between years – completed school in 2016, but then did not enrol again in 2017 – compared to children that dropped-out during the year, and did not enrol again in 2017. *These statistics are only valid for children below the age of 18, and do not cover pupils over the age of 18 in secondary school. Our sample size was too low to provide statistics on children in upper secondary school.*

Key Repetition Statistics

Despite a sharp drop in repetition rates in 2016-2017, high repetition remains one of the biggest challenges for Rwanda's primary education sector. An estimated 16.5% of children enrolled in primary school in 2016 repeated in 2017. This corresponds to a total population of repeaters in primary school of about 420,000 children in 2016-2017. In primary school, boys are more likely to repeat than girls. The repetition rate for boys was 18.2% compared to 14.8% of girls.

The repetition rate is the highest in Primary 1 and reduces with each passing grade, with the exception of Primary 5. This is in sharp contrast to the dropout rate, which increases from one grade to the next. Patterns of dropout and repetition show that the biggest educational challenge for young children that enter the education system, is repetition. The biggest challenge for older children enrolled in upper primary school is dropout.

Repetition in primary education is not a rare or one-time event. Some children accumulate many delays through repetition, with important implications for the grade-age structure of Rwanda's education system. Currently, repetition is an integral part of the educational trajectory of children in Rwanda's primary education system, in particular in lower primary school. An estimated 25.4% of students enrolled in Primary 1 in 2016 repeated, 16.6% repeated in Primary 2; and 13.5% in Primary 3. Repetition is also not a one-time event in the educational trajectory of children. By primary 6 an estimated 56% of children had repeated at least twice; almost 30% of children had repeated three times or more. By the age of 18 more about 67% of children had repeated at least twice. The high incidence of repetitions impacts educational outcomes and the age-grade structure of Rwanda's basic education system, with a de-coupling of age and grade.

An estimated 3.7% of children below the age of 18 and enrolled in lower secondary school in 2016 repeated in 2017, with a margin of error of +/- 2 percentage points. This is a very low level of repetition compared to primary school, lower even than the estimated dropout rate in lower secondary school. While our sample size is low for children in lower secondary school, we can say with confidence that the bulk of repetition in lower secondary school – for children below the age of 18 - happens in the first grade. *These statistics are only valid for children below the age of 18, and do not cover pupils over the age of 18 in secondary school. Our sample size was too low to provide statistics on children in upper secondary school.*

Effects of Dropout and Repetition on the Basic Education System

(i) After entry into the education system, some children quickly fall behind, accumulating delays in their education. The proportion of children who are on-track with their education falls rapidly between the ages of 7 to 12. At the start of primary school, an estimated 84% of children aged 7 in 2017 were on-track with their education and had enrolled in Primary 1. By age 13, when children should be starting lower secondary, at the start of the 2017 school year, we estimate that only 8% of students were still on-track with their education and had made the transition to secondary school. In line with repetition statistics, between the ages of 7 to 12, a much greater proportion of female pupils are on-track with their education, compared to males. One effect of this dropout and repetition is that within a grade there are pupils of a wide range of ages. High age-variation within grades inevitably affects class dynamics and the quality of teaching.

(ii) Primary school completion rates are low, but gradually increase with age. At the age of 13, in 2017, which is the expected age at which children on-track with their education should be starting Secondary 1, an estimated 9.1% of children had either completed primary 6 successfully or enrolled in secondary school thereafter. The primary school completion rate increases with age. At age 15, when children are supposed to be enrolled in Secondary 3, an estimated 37.1% of children had completed Primary 6. Completion rates increase to 60.6% of children aged 18 in 2017. Girls aged 18 are about 8.5 percentage points more likely to have completed Primary 6 than boys. This is further evidence that girls progress through their primary school education faster than boys.

(iii) Dropout and repetition dynamics lead to higher Gross Enrolment Rates in lower primary school, and lower Gross Enrolment Rates in upper primary school. Due to repetition in lower grades and dropout in higher grades, there are many more students enrolled in the lower grades of primary than the size of the corresponding age cohort; there are also fewer students enrolled in Primary 6 and in secondary school than would be expected if all students of a given age were in the appropriate grade. This means that Rwanda's lower primary school system is in over-drive, providing education to many more pupils than in the corresponding age-cohorts.

Drivers of Dropout and Repetition by Grade

WHY DO CHILDREN REPEAT IN PRIMARY 1? Repetition rates for children are highest in Primary 1: in 2016-2017, an estimated 25.4% of children repeated. We identify the following key factors:

- **Low levels of “school readiness”** for some children is one of the main reasons children repeat. Although it is difficult to establish a benchmark of “school-readiness”, socio-emotion data on school readiness using the IDELA metric (developed by Save the Children) shows that: (i) most children have a relatively high measure of school readiness; but that (ii) children with low socio-emotional development scores are significantly more likely to repeat.
- **Low levels of pre-primary education access:** Low levels of school readiness are also explained by the fact that an estimated 46% of children entering the primary education system in 2017 had previously not been enrolled in a formal or informal pre-primary school. Pre-primary education – including informal nursery schools - is associated with a 12 point drop in repetition rates in Primary 1.
- **The level of parental education** (28% never attended school, 58% attended only primary). Children from households where neither parent has received much formal education start their schooling at a disadvantage. The level of parental education is strongly predictive of IDELA scores and repetition rates in the first year of education.
- **Primary 1 is comparatively under-resourced.** It is the grade with the highest pupil-to-teacher ratios, where the strain on teachers and over-crowding in classrooms is the largest. Primary 1 also appears to be the grade with the greatest issues when it comes to teacher attendance, pointing to the possibility that schools might not be allocating their highest performing teachers to Primary 1.

WHY DO CHILDREN REPEAT IN PRIMARY 5? Primary 5 continues to be an outlier due to high repetition rates. An estimated 18.5% of children below the age of 18 repeated Primary 5 in 2016. Evidence suggests that one of the main reasons repetition rates increase in Primary 5 is because schools continue to apply higher promotion standards in Primary 5, with the objective of securing better school-level results in the national primary school leaving examination in the subsequent year. Evidence suggest that:

- Schools continue to have high incentives to perform well on the primary school leaving examination. An estimated 85% of head-teachers interviewed during the school survey reported that their “*imihigo*” targets included a minimum national examination pass-rate for their schools.
- Decisions about repetition in Primary 5 are more likely to be made by schools, because Schools apply higher passing standards compared to other grades.

WHY DO CHILDREN DROP-OUT AFTER PRIMARY 6? Dropout rates after Primary 6, in the transition to secondary school, are the highest in the education. Dropout at Primary 6 level matters, because it is often permanent for children aged 18 or below. We identify the following key factors:

- **Learning barriers:** One of the key reasons children fail to make the transition to secondary school is because of learning barriers. Children who do not perform well in Primary 6 – and by extension in the national examination – are much more likely to dropout. In 2016, an estimated 60% of children who reported having failed to meet school-level requirements for Primary 6 dropped-out after Primary 6.

- **The increase in cost of education:** According to households and children, the biggest barrier to entry into secondary school remains the aggregate cost of education, despite successful implementation of the 9/12-year basic education policy. Data on the education-related expenditures, collected as part of the household survey, confirms that there is a noticeable increase in the cost of education between primary and secondary education. The transition from primary to lower secondary school creates a whole new set of non-tuition related education expenses for children and their households. New costs, that children did not face in primary school, include much higher transportation costs (arising from the fact that there are fewer secondary schools and children have to travel longer distances) and, much higher food costs, related to the school feeding program.
- **An increasing opportunity cost of being in school:** Longer school days in lower secondary school imply that children would have to scale-back on existing household responsibilities (double shifting in primary school, although a temporary measure, allowed children to combine school with their responsibilities towards the household). The evidence also convincingly shows that the opportunity cost is real: there is a clear alternative option for children, which is to support income generating activities for the household.
- **Supply-side constraints:** The supply-side of the story does not appear to be the most binding constraint to the educational progress of children at the moment, but it might be in the future. Focusing on lower secondary school there were about 350,000 students enrolled in Secondary 1 to Secondary 3 in 2016, compared to 935,000 pupils between Primary 4 to Primary 6². If only 56% of these children progress through to Secondary school by 2019, then the secondary education system would need to cope with 50% more students, a substantial challenge from a resource, logistical and quality perspective. Future projections, based on educational targets, suggest that insufficient resources in secondary education could become one of the biggest challenges facing Rwanda's education sector.

² MINEDUC, *Education Statistical Yearbook, 2016*

Drivers of Dropout: Key child, household, educational and geographic factors

AGE: Age is a very strong predictor of dropout. Regardless of the grade, older children aged 13 to 18 that are enrolled in primary school, are much more likely to drop out of school, compared to younger children below the age of 12. The estimated dropout rates for children below the age of 13 hover between 0.5% and 1% between Primary 1 and Primary 5, which confirm that dropout is a very rare event for children of primary school age. However, children aged 13 and above accounted for 88% of the cases of dropout in primary school in 2016-2017. Ages 13 and 14 are a dropout turning point, because that is the age when children start reaching Primary 6 and making the transition to secondary school. Dropout more than doubles for children between the ages of 13 and 14, from 4% to 11%, increasing further to reach about 16% at the age 16 and 17. By the time children reach the age of 18, more than half have dropped-out of school, without having completed basic education.

GENDER: Differences in the dropout rates of girls and boys are small, but girls are much more likely to be out-of-school from age 16 onwards – this because of lower re-entry rates. On average, there are no discernible differences in the dropout rates of girls and boys aged 7 to 18: in 2016 an estimated 4.63% of boys aged 7 to 18 and enrolled in either primary or secondary school dropped out of school, compared to 4.65% of girls. Despite very similar dropout rates between girls and boys at all ages, girls are more likely to be out-of-school from ages 16 onwards. The main reason we observe divergent enrolment trends between girls and boys from age 16 onwards is because dropout is more permanent for girls than it is for boys. We identify the following key factors that would explain why girls are more likely to be out-of-school after the age of 16:

- **Girls reach primary 6 before boys.** Ironically, one of the factors contributing to lower enrolment rates for girls aged 16 to 18 is the fact that girls reach the Primary 6 milestone faster than boys, on average.
- **Girls have historically been less likely to make the transition to secondary school, but this is not linked to learning.** Although this does not appear to be the case in 2016-2017, where transition rates are estimated to have been higher for girls than for boys, it was the case during the 2011-2016 period (as per the Education Statistical Yearbook, which shows for example that in 2015 the transition rate from primary to secondary school was 75.0% for boys compared to 70.7% for girls).
- **Pregnancy and/or marriage are not one of the main drivers of dropout for the 16 to 18 age group,** but evidence suggests that they are likely to be a driver of dropout for females over 18 still and enrolled in primary or secondary school.
- **Evidence suggests that parents, and communities more broadly, have different expectations for girls' education than boys' education.** Girls are also more likely to dropout when there are more siblings in the household.
- **Girls are also more vulnerable to shocks in the household, for example the birth of a new child or the death of the mother.**

GEOGRAPHY: There are pronounced differences in dropout rates between urban and rural areas of the country, but these only appear after the age of 13. Between the ages of 7 to 12, or during primary school age, dropout is a marginal occurrence in both urban and rural areas: only an estimated 0.9% of children in rural areas dropped-out of school in 2016, compared to 0.3% of children in urban areas. The link between geography and dropout becomes much more pronounced for after the age of 13: 11.7% of children aged 13 or above and living in rural areas dropped-out in 2016, compared to 6.7% in urban areas, a difference of 5 percentage points.

POVERTY: Monetary poverty at the household level is one of the strongest predictors of dropout. School survival rates are significantly lower for children from poorer households. Twelve years after the start of their education an estimated 39% of children from the poorest 60% of households were still enrolled, compared to over 60% of children from households in the wealthiest 40% of households. The evidence linking dropout and the wealth status of a household for children of all ages is very strong. There is a clear inverse correlation between household wealth and dropout, or wealth and being out-of-school.

EARLY START: An early start is associated with improved survival rates and hence also lower dropout rates. Children that enrolled at age 6 are more likely to survive in school than children that started their education – on time - at age 7. We cannot prove that early start is the cause of a greater longevity within the education system, but many patterns that emerge across the data do suggest that children that start school early perform better.

DELAYED START: What drives the out-of-school rate for young children is not dropout, but rather a delayed start to their education. The dropout rate for children aged 7 to 9 in 2016 is estimated to be 0.9%; yet an estimated 8% of children aged 7 to 9 were out-of-school in 2017. The delayed start to education explains about 95% of out-of-school cases for children between the ages of 7 to 9. In terms of scale, it is a policy issue that deserves greater focus than dropout for children in this age range. Delayed start matters and is a key risk factor, because children that start school late are more likely to dropout in the future. School trajectory data shows clear evidence that late start to a child's education is a key predictor of future dropout in Rwanda's education system – with late starters less likely to transition from primary to secondary school.

RE-ENTRY: Re-entry is a positive outcome for children who have experienced dropout. However, children that re-enter the education system after having dropped out are at a high risk of dropping out again. Dropout becomes more permanent with age and with each passing grade. Most children who dropout in Primary 1 or Primary 2 re-enrol in school, but the probability of re-enrolment decreases rapidly as children progress through the education system. Children who have dropped out and re-entered the education system are at a much higher risk of future dropout than children who have never left the system. Re-entry in 2016 was associated with an 8-percentage point average increase in dropout rates in the same year.

Drivers of Repetition: Key child, household, educational and geographic factors

AGE: Repetition rates are highest for younger children, in particular in their first year of education. The average repetition rate for children of primary-school-age is driven up by children who enter primary school for the first time. Repetition rates are lower for children aged 13 and above, but only because they face a greater risk of dropout. Once children who dropped-out are removed from the equation, we find that there are virtually no grade-based differences in the repetition rates for children of primary – and secondary – school ages.

GENDER: At all ages, girls are less likely to repeat than boys, a difference that holds true throughout their education. The difference in repetition rates between girls and boys who are enrolled is highest during the first few years of their education. The result of these differences in repetition rates is that girls progress through their education much faster than boys. By age 9 in 2017, an estimated 40% of girls had reached Primary 3 (the grade that corresponds to that age) versus just 28% of boys. By age 12 in 2017, an estimated 15% of girls had made it to Primary 6 (the grade children are expected to be in by age 12), compared to just 6% of boys.

GEOGRAPHY: Differences in repetition rates between urban and rural areas in 2016 are not significant. Across our sample an estimated 15.1% of children in rural areas repeated, compared to 14.1% of children in urban areas. This is a small difference that is not statistically significant. Despite relatively similar repetition rates in 2016, children in rural areas were much more likely to have repeated in the past, signalling that there were larger gaps in urban/rural repetition prior to 2016. At the age of 18, in 2017, an estimated 58% of children in rural areas had either completed Primary 6 successfully or enrolled in secondary school thereafter. Completion rates in urban areas are significantly higher, at 75% of children aged 18 in 2017.

POVERTY: Children from the poorest households are the ones who repeat the most and from the earliest ages. Difference in repetition rates between wealth quintiles are highest in the 7 to 9 and 16 to 18 age groups. Young children aged 7 to 9 in the poorest wealth quintile are almost two times more likely to repeat than children from households in the wealthiest quintile. Similarly, children aged 16 to 18 in the poorest group of households are much more likely to repeat than children from the wealthiest group of households. The result of these differences in repetition and dropout rates is that children from the wealthier households are more likely to stay on-track compared to children from the poorer households.

Policy Recommendations

Improve the Enabling Environment, through the:

1. Strengthening of policies at the national level
2. Development of consistent national-level definitions on dropout and repetition and provide systematic guidance on when and how to apply repetition for individual children
3. Improvement of systems for collecting, managing, analysing, and monitoring education data, including data on repetition and dropout
4. Improvement of systems for identifying and monitoring children at-risk of repetition and/or dropout

Reduce Supply-Side Barriers, through the:

5. Launch of a national programme with targeted interventions to reduce dropout and repetition
6. Introduction of interventions to target remaining gender barriers in education for boys and girls, particularly among the poorest families
7. Increase of access to pre-primary education for improved school readiness for all children in Rwanda to mitigate repetition

Reduce Demand-Side Barriers, through the:

8. Increase of household support for and parental engagement in education
9. Re-evaluation of the Primary 6 examination and its implications for students who do not perform well

Reduce Quality-Side Barriers, through the:

10. Increase of the capacity of primary school teachers for improved quality of education

1. Introduction

Background on this assignment

Over the past two decades, Rwanda has invested significant resources towards improving the quality and coverage of primary and secondary education, as well as towards implementing policies that aim to achieve universal and equitable access to twelve years of basic education for all Rwandan children. The pace of improvement has been remarkable, resulting in almost universal access to primary education, with net enrolment rates reaching 97.7% in primary school according to the Education Statistical Yearbook published by MINEDUC (2016 edition).

These improvements are the result of major structural adjustments and a significant investment and scaling up of resources to the education system. Major policies that have shaped the education sector include the first overarching education policy in 2003, which aimed to align the country's educational objectives to the global goals of the Education for All movement. During this period, policies implemented aimed to increase the enrolment rates and ensuring greater access to education. In the period going from 2006 to 2012, the focus shifted towards improving not only access, but also completion. As a result, the Nine Year Basic Education Policy (9YBE), which guaranteed nine years of free and compulsory education to all Rwandan children was introduced in November 2008. This policy was later expanded to include the 12-Year-Basic-Education Policy (12YBE), which is currently being implemented.

Many structural reforms were implemented in the 2008-2009 period in addition to the 9YBE. These years marked a turning point for Rwanda's education system. In 2008, school capitation grants were raised and as were the number of teachers and their monthly allowances. In 2009 English was adopted as the medium of instruction from Primary 4 onwards to further integrate the country into the East African Community (EAC) and to improve the country's prospects in trade, tourism, science and technology. In 2009 the double-shifting policy was implemented, as a temporary measure to optimize the use of resources in primary education. Reforms also affected the way examinations were implemented. A new Girls Education Policy was also launched, which targeted the progressive elimination of gender disparities within the education system.

The current focus of the education sector is outlined in the 2013-2018 Education Sector Strategic Plan (ESSP 2013/14-2017/18). This strategy focuses on three key targets: (i) expanding access to education, in particular in secondary school (through 12YBE); (ii) improving the quality of education; and (iii) increasing the relevance of Rwanda's education system. The ESSP 2013/14-2017/18 also underlines the strategic objectives of "quality" and "equity" in the education system. Examples of major initiatives that are being implemented towards improving quality and equity in the education system, include: (i) a major classroom refurbishing initiative aimed at improving the state of classrooms in schools across the country; (ii) a national school feeding programme in secondary schools, subsidizing lunch for children enrolled in secondary schools across the country; (iii) the gradual introduction of a competency-based curriculum

starting in 2016, which is focused on ensuring children acquire specific competencies as they move through their education; and (iv) a new ICT in Education policy, being implemented since 2016.

Despite these many achievements, some of the targets on the flow of children through the education system have been missed because of dropout and repetition. Primary school completion rates were lower in 2016 than they were in 2012, dropout in the transition to secondary school has been increasing, dropout rates in Primary 1 to Primary 5 missed targets in 2013 and 2014, although they improved significantly in 2015 (latest official data available), and repetition rates have remained high in primary school. It is against this backdrop that MINEDUC, with the support of UNICEF, commissioned Laterite to perform an assessment of dropout and repetition in Rwandan schools. The focus of this study is on children aged 6 to 18, most of which are enrolled in primary school (based on this study an estimated 70% of children aged 6 to 18 are in primary school, 13% in secondary school, and 17% are out-of-school).

Current situation on dropout and repetition

According to the most recent official statistics, dropout targets are being met in Primary 1 to Primary 5, but dropout in the transition to secondary school has been increasing. According to MINEDUC data from the 2015 Education Statistical Yearbook, the most recent publication that reports average dropout and repetition rates (the timing of the 2016 edition did not allow for statistics on dropout and repetition), the dropout rate for children enrolled in Primary 1 to Primary 5 has been decreasing, from a high of 14.3% in 2013, to 10.3% in 2014 and 5.7% in 2015, in line with targets for the education sector. At the same time, dropout in the transition from primary to secondary school has been increasing. In 2011 the transition rate (the percentage of children who after Primary 6, enrolled in Secondary 1) was 86.2%. By 2015, the transition rate had gradually dropped to 71.1%, indicating that many more children drop out of school after completing Primary 6. In 2015 an estimated 127,000 children dropped out of school between Primary 1 and Primary 5, and an additional 50,000 children failed to make the transition from Primary 6 to Secondary 1, dropping out of school in the process. Combined this corresponds to about 177,000 dropouts in 2015.

Similar trends are observed in lower secondary education, where the Government of Rwanda has been very successful in reducing dropout rates in Secondary 1 and Secondary 2 from a high of 17.7% in 2012, to 6.5% in 2015. This might in large part be attributable to the 12YBE policy and the corresponding reduction in fees for attending secondary school. However, in lower secondary school also, dropout in the transition to upper secondary school has been increasing. The transition rate from lower secondary to upper secondary school was 95.9% in 2011, but had reduced to 82.8% by 2015.

MINEDUC administrative data over-states the dropout rates compared to estimates derived from EICV data (the Integrated Households Living Conditions Survey). Based on EICV data for the 2013 schooling year, it is estimated that the dropout rate for children in Primary 1 to Primary 5 was 4.6%. This compares to 14.3% in MINEDUC data for the same year. This raises the question of whether administrative data might be over-stating the dropout rate due to difficulties in tracking students that might be moving

schools; or conversely that survey data is underestimating the extent of dropout, for example due to the reluctance of parents or children to report that they are out-of-school.

While dropout estimates are higher according to MINEDUC administrative data, administrative data underestimates repetition when compared to EICV data. The estimated repetition rate based on MINEDUC data was 18.3% for children in primary school in 2013, compared to about 24.0% according to EICV data. One potential hypothesis is that children that repeat classes but move schools are captured in MINEDUC data as dropouts, due to the current inability to track individual students over time. This could explain higher dropout rates and lower repetition rates in administrative data.

According to official statistics, the repetition rate has remained high in primary and lower secondary schools in recent years. The repetition rate has increased from about 12.7% for children enrolled in Primary 1 to Primary 6, to an estimated 18.4% in 2015. Between 2013 and 2015 (the most recent official statistics available), every year, more than 400,000 children repeated in Primary School. Repetition rates also increased between 2012 and 2015 in lower secondary school, from 6.2% to 11.6%. This comes at a high cost for the education system, financially, but also in terms of over-aging and lower completion rates. The resulting increase in over-aging is apparent from the increase in Gross Enrolment Rates in primary school from 123.2% in 2012 to 139.6% in 2016. In fact, because of dropout and repetition dynamics, and children's delays in progressing through the education system, there are currently more children enrolled in Primary 1 to Primary 3, than in Primary 4 though to Secondary 6.

Measuring and monitoring of dropout rates at national level and school level

The dropout rate is defined by MINEDUC as: the proportion of pupils from a cohort enrolled in a given grade at a given school year who are no longer enrolled in the following school year. This is the standard administrative definition of dropout recommended by UNESCO UIS (Institute for Statistics). It is an enrolment-based definition that tracks the progress of pupils from one grade to the next, but that does not look at dropout dynamics within years. This is the definition of dropout that is also used in this report.

At the national level, the main mechanism through which dropout and repetition rates are monitored is through the Education Management Information System (EMIS); statistics are reported annually in the Education Statistical Yearbook. At the core of the EMIS system is a very detailed yearly survey of every school in the country. Surveys are completed yearly by head-teachers, before being verified by Sector - and District - Education officials and then aggregated at the District and national levels. The data collected via EMIS is the most comprehensive resource on education statistics in Rwanda. Through EMIS, the Yearbook provides detailed statistics of enrolment per grade, educational flows (dropout, repetition, transition etc.), teaching resources and school infrastructure disaggregated by school status and ownership, school-level, grade, province, district and gender. In doing so, the report measures progress against targets, including the repetition and dropout rates by grade.

One of the limitation of administrative data, by construction, is that they are school-based and not pupil based. This makes it difficult to track individual students over time, especially when: (i) they move schools;

or (ii) are out-of-school due to dropout, and then re-enter the education system. Due to these limitations it is possible that schools count a child as a dropout, when in fact this child has been promoted or repeated; or on the contrary to count a re-entrant as a repeater or child that got promoted, when in fact this child has just re-entered the education system.

At the school level, enrolment from the one year to the next is automatic in almost all public and government-aided schools; schools identify dropout not through enrolment, but through a prolonged period of absence. At the moment there is no specific definition at the school level of how many absences qualify a child as a dropout. Schools might therefore have different criteria on when to consider a child to be a dropout.

Objectives of this study

The main objective of this project is to support MINEDUC and other stakeholders in the education sector to generate new insights on the causes of grade repetition and dropout that will help inform the development of evidence-based policy options to increase retention, completion and the overall efficiency of the education system. This report will complement other resources on dropout and repetition, by providing a child-level perspective, linking data from pupils, to their households, schools and communities.

Complementary to this general objective, specific objectives for the study include:

1. **To identify age and grade specific dropout rates, that can be disaggregated by gender, location, and the socio-economic situation of households.**
2. **To assess the causes of dropout and repetition in basic education, focusing on push, pull and contextual factors which influence the process of repetition and dropout by age, gender, location, and socio-economic status.**

The main research questions, that the surveys at the child, household, community and school levels were designed to address, include:

1. ***Structural and school-level factors.*** How do structural and school-level factors contribute to dropout, repetition and completion patterns in primary school in Rwanda and what are the implications for the education system?
2. ***Household and community-level factors.*** How do socio-economic considerations at the household level, parental involvement, and community support mechanisms relate to dropout and repetition patterns?
3. ***Child-level factors.*** How do child-level factors, including their past educational experience, explain repetition and dropout patterns?

The target age group for this study are children aged 6 to 18. Children aged 6, provide insights into early entry, pre-primary school education and school readiness. Children between the ages of 7 to 18 are of the expected age in basic education: the official starting age for primary education is 7; the age when children

are expected to reach Secondary 6 is 18. A direct implication of using this age range is that this study will not provide information on all students in Rwanda's basic education system (primary and secondary school). The study will also not be able to provide representative statistics at the grade level for all children in a given grade; rather it will provide insights on grade-level dynamics only in so far children aged 6 to 18 are concerned.

Children aged 6 to 18 account for the vast majority of children in primary school (above 98% of primary school students according to EICV 4 data for the 2013 period), therefore we expect the focus on the 6 to 18 age range to yield good estimates for children in primary school and for children in transition between primary school and secondary school. The target population will not, however provide good estimates for trends in secondary school. This is because according to EICV 4 data about 25% of students in lower secondary school alone were above the age of 18 in 2013. The sample is also not representative of students in higher secondary school, considering that about 80% of students enrolled in higher secondary school were aged 19 or above in 2013 according to EICV 4.

This study takes an innovative approach to understanding the current state of Rwanda's education system. We have compiled the educational histories of over 8,000 Rwandan children from across the country allowing, for the first time, analysis on how individual children have transitioned through the education system. This uniquely constructed time-series data allows us to develop a rich understanding not only of the drivers of dropout and repetition at different stages in children's educational trajectories, but also, the dynamics of the education system. Furthermore, we focus not only on the child, but include detailed contextual information from their schools, communities and families. Using data from interviews with children, their parents/guardians, their head teachers and their village leaders, we are able to triangulate our findings on the drivers of dropout and repetition from four sources capturing the interactions between the child, home, school and community that shape educational outcomes.

Structure of this report

The following report is structured into seven chapters:

- **Chapter two** sets out the study's methodology.
- **Chapter three** reviews limitations to this study.
- **Chapter four** summarizes key findings from this study on repetition and dropout statistics.
- **Chapter five** is a discussion on drivers of dropout and repetition by grade, focusing on specific points in the educational trajectory of children in Rwanda where either dropout or repetition rates are high.
- **Chapter six** looks at dropout and repetition from the perspective of child, household, school and community-level covariates.
- Finally, **Chapter seven**, proposes some policy recommendations to tackle the barriers and challenges involving repetition in dropout identified in this report.

2. Methodology

This Chapter briefly presents key methodological elements of this study: the sampling strategy and the target population; an overview of key research instruments; and an overview of key indicators.

2.1. Sampling Strategy and target population

2.1.1 Target population

The target population for this study are all children aged 6 to 18 in Rwanda and by extension their parents, their schools and the communities they live in. This age range covers the ages within which children in Rwanda are required to be in primary and secondary school. This age range was selected after consultations with MINEDUC Senior Management and after taking into consideration the budgetary constraints for this project.

The target population for this study, which uses an age-based approach, has important implications:

- (i) **The study will provide reliable estimates on dropout and repetition trends for all children aged 6 to 18.**
- (ii) **Estimates of dropout and/or repetition with respect to primary education and the transition to secondary school will be representative of the population of children currently enrolled in primary school.** EICV 4 data shows that about 98% of primary school students are between the ages of 6 to 18 in 2013; we expect this figure to have increased since 2013 and be closer to 100% today³. As such, we are confident that our sample provides an accurate representation of children in primary school and for children in transition between primary school and lower secondary school.
- (iii) **This report will not provide reliable estimates on lower secondary and upper secondary education, because the majority of children enrolled in lower and upper secondary school fall outside of the 6 to 18 age-range.** According to EICV 4 data, about 25% of students in lower secondary school were above the age of 18 in 2014. In upper secondary school, about 80% of students enrolled were aged 19 or above in 2013 according to EICV 4. The study can therefore only provide reliable estimates for secondary school in so far children aged 18 or below are concerned.

3 While the population structure has changed since then, the proportion of primary school students falling within that age range has remained relatively unchanged.

2.1.2. Sampling Strategy

The primary sampling strategy consisted of a three-stage cluster sampling approach, with stratification at the District and urban/rural levels. We determined the number of cells to select within each stratum (Districts, divided into urban/rural areas) proportional to the size of each stratum. We then randomly sampled cells within the stratum and then randomly selected 5 villages per cell and 8 households per village.

Table 2.1: Sampling parameters

Administrative Level	Sample	Survey	Sample Size (n)
District	All Districts	Child Survey	8,122
Cell	90 Cells	Household Survey	3,608
Village	450 Village (5 in each Cell)	School Survey	155
Household	3600 Households (8 per village)	Community Survey	449

The final sample for the child and household surveys included 8,122 children in 3,608 households. The three sampling stages were structured as follows:

- **Stage 1:** We first selected 90 cells, stratified by District and urban/rural levels. The number of urban/rural cells and the number of cells per district varied based on the population of that District.
- **Stage 2:** We then selected 450 villages, by randomly selected 5 villages within each of the selected Cells.
- **Stage 3:** Within each village, we worked with village leaders to prepare a household list for each village. From this list, 8 households were randomly selected to participate in the survey after ensuring that the selected household had at least one child living in the household aged 6 to 18. At each of the selected households, all children in the qualifying age range were interviewed along with the household head.

While the sample size of over 8,000 pupils provides a high level of precision at the national level, our analysis frequently required us to break the sample into many sub-groups – for example looking at trends by grade level. If findings were based on too small a sample (and have too little statistical power), we have removed them from the report.

For the school survey, all primary and secondary schools within each of the 90 selected cells were included in the sample. This corresponds to a total of 155 schools. While the data is nationally representative, in that it was collected from all schools in 90 Cells across the country, we do not have sufficient statistical power in the school sample to make accurate estimates and generalizations about school-level statistics at the national level.

For the community survey, community leaders (*umudugudu* leaders) or the social affairs focal points within each of the 450 chosen villages were contacted for interviews.

Fieldwork for the surveys took place between February and April of 2017. Household and child survey data was collected between mid-February and mid-March 2017. Data from the Head teacher and community surveys was collected at the end of March and during April of 2017. Collecting data after the start of the 2017 school year – mid-January 2017 – allowed us to get data on enrolment in the 2017 school year, as well as calculate dropout rates for 2016.

2.2. Overview of Main Research Instruments & questionnaire development

2.2.1 Overview of research instruments

To understand the drivers of repetition and dropout, we used four survey instruments that allowed us to observe and analyse the relative importance of different contexts in affecting dropout and repetition. The four surveys were:

- **Child Survey:** administered to all children between the ages of 6 to 18, inclusive, in selected households;
- **Household Survey:** administered to a parent or guardian in selected households;
- **School Survey:** administered to head teachers at schools in the selected cells; and
- **Community Survey:** administered to the village leader or social affairs leader in the selected villages.

The main objective of the child survey was to collect information about each child between the ages of 6 to 18, focusing on three key modules, namely: (i) the child's educational trajectory, (ii) a socio-emotional assessment⁴, and (iii) information on a child's attitudes, aspirations and perceptions. A unique feature of the child survey is that it included a module which recorded the educational trajectory of each child. The education trajectory asks children about key events in each year of their education (promotion, repetition, dropout during and between years, change of schools and late entry), from the start of their education until 2017. Enumerators worked closely with students and their parents to reconstruct their educational trajectory, and double check its accuracy. The key to studying repetition and dropout patterns is understanding a child's experience moving through the education system, not just observing a snapshot at one point in time.

⁴ For the socio-emotional assessment (for 6 and 7 year olds) we used the socio-emotional items of the Kinyarwanda version of the IDELA assessment (Pisani, et al., 2015). We thank Lauren Pisani from Save the Children for providing these materials.

There are important limitations with the education trajectory data: (i) data from previous years are likely to be slightly more imprecise, due to the possibility of recall errors or errors in the reconstruction of the educational trajectory of children; and (ii) with each previous year, we lose one age group. For example, in 2017, we have data on enrolment and grades for all children aged 6 to 18 in our sample; in 2016, these children were one year younger, so we only have data on 6 to 17 year olds; in 2015, we only have data on 6 to 16-year-olds and so forth. Therefore if we want to make comparisons over time we have to limit our sample to the age group for which we have data in all of the years being compared.

The main objective of the household survey, which was administered to a parent or guardian, was to understand the situation at home of the children interviewed. This survey looked at the educational achievement of household members and their attitudes and perceptions about the importance of education. It also collected information on health, special education needs and disability, and the socio-economic status of the household. One of the key modules of this survey focused on schooling costs, collecting disaggregated information on direct and indirect costs relating to the schooling of children.

The main objective of the school survey, which was administered to headteachers, was to provide contextual information on school-level variables that may be linked with repetition and dropout. The school survey provides data that helps us better understand how some structural and school-level factors contribute to dropout, repetition and completion patterns in primary school in Rwanda. The data includes insights on: (i) the number of students and teachers by grade; (ii) academic and administrative policies in the school; (iii) material and human resource constraints; and, (iv) the causes and consequences of repetition and dropout from the perspective of headteachers.

The community survey provides information on the community context in which repetition and dropout take place and focuses on relevant community-level variables to determine if there are any relationships with the schooling trajectory of children living in those communities. Focus areas of interest include: (i) basic information about the community; (ii) access to services; (iii) attitudes towards education; and (iv) community mechanisms to deal with dropout and repetition.

2.2.2. Questionnaire development process

Questionnaire development was conducted in four phases:

- **Phase 1:** During the inception phase of this assignment, existing data from MINEDUC and the EICV was used to develop a list of research questions and hypotheses focusing on why children might be repeating or dropping-out of school. Hypotheses were structured around child, household, school and community related factors. The inception report was reviewed and discussed with stakeholders and thereafter approved by the Senior Management at MINEDUC.
- **Phase 2:** Based on hypotheses from the inception report, and following a review of best practice in education research, questionnaires were developed for each of the four survey instruments.

These were iteratively reviewed, with inputs from Dr. Ricardo Sabates and Dr. Pauline Rose from the Faculty of Education at Cambridge University, and shortened to ensure they met length targets. Help was also sought from external experts, for example Save the Children, who provided the research team with questions from the IDELA framework, which is a set of questions that provides insights into the socio-emotional school readiness of children.

- **Phase 3:** Draft research instruments were then reviewed by MINEDUC and UNICEF and adjusted to ensure they included client feedback.
- **Phase 4:** Finally, the proposed survey instruments were included in the research visa applications to the National Institute of Statistics of Rwanda (NISR) and the Rwanda National Ethics Committee (RNEC). The NISR requested a number of final changes to the questionnaires prior to approval. These were included in a revised research visa application.

2.3. Analytical framework

The analytical framework adopted in this study is inspired by the UNESCO/UNICEF ‘Five Dimensions of Exclusion’ (5DE) approach (UNICEF and UNESCO Institute for Statistics (UIS), 2011). The 5DE approach consists of segmenting the population of children of schooling age into five different groups, based on their grade, age and schooling situation: namely whether they are out-of-school or at risk of dropping-out of school. For children that are out-of-school the model distinguishes between children that have attended but dropped-out, will enter school late or will never enroll.⁵ For children that are at risk of dropout, the model looks at risk factors linked to attendance. The five groups or what are referred to as “dimensions” in the 5DE framework are summarized in *Table 2.2*, below.

Table 2.2: Analytical dimension in the 5DE approach

Categories	Out-of-school	In-school, but at risk of dropping-out
Pre-primary aged children (6 or below)	Dimension 1	
Primary-school aged children (7 to 12)	Dimension 2	Dimension 4
Lower-secondary school aged children (13 to 15)	Dimension 3	Dimension 5

Given the target age group (children aged 6 to 18) and the key purpose of this research – better understanding dropout and repetition dynamics in Rwanda - we have modified the 5DE model to meet the objectives of this study. We maintain the focus on understanding risk factors and differences between children of different age-groups, but the main focus of the analysis is grade-based.

⁵ The 5DE framework categorizes children using predictions about their expected probability of attending school and never enrolling based on strong assumptions based on national averages.

Grade-based analysis. During the inception phase of this assignment, it was shown that dropout and repetition in Rwanda peaked during specific grades. We confirm these trends using the most recent data from the child survey, in Chapter 4. Understanding why dropout or repetition is comparatively higher in certain grades is a key focus area of this report. Grade-specific questions, which are studied in Chapter 5, include:

- Why is Primary 1 the grade with the highest repetition rates?
- Why is repetition comparatively high in Primary 5?
- Why do children drop-out after Primary 6, in the transition from Primary to Secondary school?

Drivers of dropout and repetition. To understand dropout and repetition, we study various child, household, educational and geographic/community-related factors of interest. This analysis, presented in Chapter 6, enables us to profile children that dropout or repeat and to identify some of the key factors that put them at risk. In this chapter, we also make use of the school trajectory data, to show how events that occur during a child's schooling trajectory are inter-linked over time. Combined, these factors provide for an in-depth understanding of which children are at the highest risk of being out-of-school.

Age groups of interest. Where relevant, we report results separately for children in the following groups:

- Children aged 6: pre-primary age;
- Children of primary school age: 7 to 12 years old;⁶
- Children of secondary school age: 13 to 18 years old; and, where there is sufficient statistical power, we divide this age group into a lower-secondary school age group (13 to 15) and an upper-secondary school age group (16 to 18).

2.4. Key Indicators

The two key indicators in this report are dropout and repetition rates. Specific objectives of this study included to identify age and grade specific dropout rates, which can be disaggregated by gender, location, and the socio-economic situation of households. The age and grade-based indicators on dropout and repetition, tabulated by potential determinants and predictors, are presented throughout this report. The report also looks at the number of times children have repeated and/or dropped-out and how that affects educational outcomes.

The dropout rate is defined as: the share of pupils from a given grade or age group in time 't', that were not enrolled in school anymore in time 't+1'. This definition matches the definition used for official statistics in the Education Statistical Yearbook by MINEDUC. This definition includes: (1) Children who completed the school year (year t), but failed to enrol in the subsequent year (year $t+1$); (2) Children who dropped out during the school year (year t) and who did not re-enrol in the subsequent (year $t+1$). This is an enrolment-based definition that does not take into account the situation of children that dropout during the year, but re-enrol in the subsequent year.

⁶ In Rwanda, children are expected to join primary school for the first time in the year they turn 7 (school years follow the calendar year; starting in January and ending in November).

The repetition rate is defined as the share of children that were enrolled in a given year 't' and that were enrolled in the same grade in year 't+1'.

The report further studies indicators related to the educational trajectory of children. This includes related educational flow indicators and risk factors, such as entry and re-entry, and how they relate to various explanatory variables, including: grade, age, gender, location and other socio-economic variables of interest. Entry refers to the age and time-period during which children first started their education. Re-entry looks at the age and grade in which children re-entered school after having dropped-out. Educational trajectory data includes indicators on whether children were enrolled in pre-primary school or not and how they progressed through their education: when they started, what grade they were in by year, when and why they dropped-out, repeated or re-entered, etc.

Other important indicators that we will refer to throughout the report, also include stock variables, such as enrolment rates and out-of-school rates. Dropout and repetition cannot be studied in isolation of the stock of children in school at a certain age or grade. Dropout and repetition are the main drivers through which the stock of children in any given grade fluctuates, with important implications for planning in the education sector.

Stock and flow indicators, including dropout, repetition, entry, re-entry, in-school and out-of-school, combine to create key educational outcomes that are also studied in this report. Key educational outcomes include: school survival rates, primary school completion rates, Gross Enrolment Rates, over-aging, and the share of children on-track or delayed with their education.

Contextual factors from the child, household, school and community levels, include:

- **Child level:** self-reported reasons for dropout, socio-emotional school readiness (based on IDELA framework, an approach first developed by Save the Children), self-reported performance, confidence and perception indicators, performance on school exams, work - and chore - related activities, perceived parental support, perceived support from teachers.
- **Household level:** composition of household, parental education, self-reported cost of education, wealth measured using assets index, special educational needs of children, parental perceptions and aspirations for the education of their children
- **School level:** type of school, school ownership, teacher-to-pupil ratios, teacher absenteeism, school-level targets and objectives (as specified in 'Imihigo' contracts)
- **Community level:** presence of school in community or distance from nearest school

2.5. Data collection structure

Field preparation for this study started in late January 2017, after the start of the new academic year. The bulk of the data collection effort took place between February and May, 2017. The data collection process was structured along the following phases:

- **Local approvals.** During field preparation, all District and Sector offices were informed of the forthcoming study and local approval was sought to proceed with data collection activities.
- **Listing:** Prior to data collection, selected villages were visited in order to: (i) create a list of households in each selected village; (ii) randomly select households and replacement households, following a pre-determined protocol; (iii) visit the selected households to check whether they met the criteria to be included in the sample (had at least one child between the ages of 6 to 18); and finally (iv) explain the purposes of the survey and obtain consent from the head-of-household, contact information and basic information on the schooling situation of children in that household.
- **Scheduling.** Households were called ahead of time to schedule the time interviews, a critical part of the process in reducing attrition rates.
- **Data collection.** Once listing activities and local approvals had been completed in a given location, the data collection teams followed and conducted: child, household and community surveys. School surveys were conducted separately.

3. Discussion on the limitations of this report

In this chapter we briefly discuss some of the limitations of this study. Key limitations relate to the selected target age group, statistical power (from small samples) in higher grades and in the school sample, the under-representation of children in boarding school, limitations related to educational trajectory data and finally limitations related to survey data on education.

3.1. Limitations related to the target age group

The main limitation of this study is that the target age group - all children in Rwanda aged 6 to 18 years old - does not encompass the full population of children in Rwanda's basic education system. While the sample is representative of children in Rwanda's primary education system – 98% of children in primary education were between the ages of 6 to 18 in 2013 according to EICV data – it is not representative of children in lower and upper secondary school. According to estimations based on EICV 4 data (see Table 6.1), we estimate that almost 25% of children in lower secondary school were aged 19 or above in 2013. Similarly, almost 80% of children in upper secondary school in 2013 were aged 19 or above. This means that the sample is only representative of children in primary and secondary school in so far they are below the age of 18, which provides a very good sample for primary school, but not for lower and upper secondary school.

Table 3.1: Age Distribution of Children in Lower and Upper Secondary School in 2013, according to EICV 4 data

Age	Share of children enrolled in lower secondary school	Cumulative in lower secondary school	Share of children enrolled in upper secondary school	Cumulative in upper secondary school
12 or younger	1.4%	1.4%	*	*
13	4.4%	5.8%	0.2%	0.2%
14	7.5%	13.3%	0.2%	0.3%
15	13.4%	26.7%	1.0%	1.3%
16	16.3%	43.0%	3.2%	4.5%
17	19.1%	62.0%	7.4%	11.8%
18	13.6%	75.6%	9.0%	20.8%
19 or above	24.4%	100.0%	79.2%	100.0%

*! Estimates may be imprecise or have lower reliability; *insufficient observations*

The target age-group for this was decided in close collaboration with UNICEF and MINEDUC. This was a known limitation of this study from the outset.

3.2. Limitations related to small sample sizes for higher grades and the school survey

The sample sizes of the child and household surveys are sufficient for the purposes of this study, however it is important to note that because of the structure of the education system we have a larger sample in the early grades, and smaller sample in the later grades. As our sample size for lower and upper secondary school grades is smaller any statistics calculated for these grades are less precise and reliable. The number of observations per age-group can be seen in Table 6.2.

Table 3.2: Number of Children per Grade in Sample (2017)

Grade	Number of observations	% of sample
Missing	61	0.8%
Out-of-school	1,150	14.2%
Primary 1	1,067	13.1%
Primary 2	1,145	14.1%
Primary 3	1,099	13.5%
Primary 4	987	12.2%
Primary 5	945	11.6%
Primary 6	616	7.6%
Secondary 1	410	5.0%
Secondary 2	269	3.3%
Secondary 3	195	2.4%
Secondary 4	104	1.3%
Secondary 5	58	0.7%
Secondary 6	16	0.2%
Total	8122	100%

Another limitation relates to the school dataset where statistics are not as precise or reliable as desired. This is because fewer schools were selected than anticipated and the high level of variation on many school-level variables. Furthermore, the data shows that only about 50% of children go to school in the same Cell as where they live; the other half of children travel to neighbouring Cells. Given that school-level interviews were conducted only in Cells that were also selected for the child and household interviews, we were only able to link 50% of children to their school. These factors limited our ability to study the link between school-level factors and dropout/repetition.

3.3. Children in boarding school

There is one group of children under-represented in this study, namely children that attend boarding school. This is a limitation that was known in advance and discussed with UNICEF and MINEDUC. For logistical reasons, it was not possible to interview all children enrolled in boarding school during the data collection exercise. During the listing phase we were able to identify all children in our sample that were enrolled in boarding school, by interviewing the household head. An estimated 4.3% of children in the sample were enrolled in boarding school, a number that increases to about 10% for children of secondary

school-age (aged 13 and above). Only about half of children that were identified as being in boarding school were interviewed (some children attended a boarding school by day, but returned home by night or during weekends). This means that our sample of interviewed children has underrepresents children that attend boarding school and statistics for this group are therefore less precise. Given that most of these children are enrolled in secondary school, it also disproportionately affects estimates in the secondary school sample.

We correct for this limitation using weights to prevent bias, providing a higher weight to children in boarding schools. From the listing exercise we know the age and grade distribution of children identified as being in boarding school. We also know their school transition rates (in terms of promotion, repetition, and dropout) for the past three years based on input from their parents. Using parental data, and comparing repetition and dropout statistics using our weighted sample to the original “listed” sample (including all the children in boarding school), we do not find any significant differences between the two samples. This suggests that the under-representation of children in boarding school does not in a significant way affect dropout and repetition estimates in this report.

3.4. Limitations related to educational trajectory data

One of the major innovations in this study is school trajectory data on all children in the sample, which for the first time in the Rwandan context provides insights on how educational events inter-link over time. School trajectory data was put together with great care during the data collection exercise. Enumerators were instructed to follow a specific protocol, with several layers of checks to ensure the consistency of timelines and trajectory data. Putting together this educational trajectory was the core part of the data collection effort with children and a lot of time dedicated to ensure that it was done properly. The resulting data provides stable estimates and reveals some valuable insights on how repetition, dropout, entry and re-entry link over time and shape the trajectory of children through Rwanda’s education system.

However that the further back we go the more prone to error trajectory data becomes. This is an inevitable limitation of any data that uses recall. Trajectory data in this report is used with caution and used in a few places to highlight some important educational trends.

3.5. Limitations related to survey data in educational research

It is a well-established fact, in education-related research, that administrative and survey data rarely match. Survey data suffers from the fact that education data is self-reported, by parents or in this case the pupils themselves. Parents or pupils for example might have an inclination to under-report dropout or repetition. There is no way to overcome this limitation other than: (i) to ensure respondents understand the purposes of the research, that it is anonymous and that there are negative consequences of accurately report their education status accurately; and (ii) to ensure there are data consistency checks in place, which is greatly facilitated by electronic survey technology, enabling enumerators to pick-up and follow-up on inconsistent responses. Administrative data typically suffers from data management constraints,

the fact that schools might have different understanding of how to complete or interpret questions that are being asked, the lack of data on individual children, and the fact that attendance and other records are not electronic. Administrative data has the advantage of being more complete (it typically includes data from all schools in given country); survey data has the advantage of being disaggregated at the individual level, enabling the inclusion of non-school contextual factors, such as information on the child's household.

4. Dropout and Repetition: Key findings

In this Chapter, key findings from this survey are presented on dropout and repetition in education in Rwanda. This section also looks at some of the direct effects of dropout and repetition on the education system. Statistics presented are drawn from the child survey and complemented with data from the school and household surveys where necessary.

Limitations: The statistics on primary education covers all pupils in primary education regardless of age. Due to limitations noted in Chapter 2: Methodology it is not possible to present statistics on all pupils in secondary education as there are pupils aged over 18 in the secondary schools. **Therefore the findings on secondary education are limited and only cover the children aged 18 and under in secondary education.**

4.1. Dropout in primary education and the transition to secondary

Definition: The proportion of pupils from a cohort enrolled for a given school year who are no longer enrolled in the following school year, and have not completed their basic education.

Dropout levels in primary education

According to data from the child survey, an estimated 4.4% of children enrolled in primary school in 2016 dropped-out, with a margin of error of +/- 1.1 percentage points (see Table 3.1). This correspond to about 112,000 pupils that were enrolled in primary school in 2016, but failed to enrol again in 2017. About 1/3rd of these pupils dropped out of school before the end of the school year; the remaining 2/3rds completed the school year in 2016, but did not enrol again in 2017. The estimated dropout rate is similar for girls and boys: on average an estimated 4.3% of girls enrolled in primary school in 2016 dropped out, compared to 4.5% of boys (a small difference that is not statistically significant in this sample). For both girls and boys, dropout is a rare event in Rwanda's primary education system on average.

Table 4.1: Dropout Rates in Primary School (2016 - 2017)

Timing of dropout	Percentage of children (enrolled in Primary 1 to Primary 6 in 2016)
Completed school year in 2016, but did not enrol in 2017	2.9%
Started but did not complete school year in 2016, and did not enrol in 2017	1.5%
Estimated dropout rate (%)	4.4%

Dropout levels by grade

A breakdown of the dropout rate by grade, reveals that dropout increases with each grade, from less than 1% in Primary 1 to more than 20% in Primary 6, during the transition from primary to secondary

school (see Table 3.2). Dropout is rare event in lower primary school: an estimated 1.3% of children enrolled in Primary 1 to Primary 3 in 2016 dropped-out of school in the subsequent year. It is a much more common event in upper primary school, where an estimated 9.0% of children enrolled in Primary 4 to Primary 6 in 2016 dropped-out.

From Primary 1 to Primary 5, the increase in the dropout rate is not related to grade-level dynamics, but rather age. As is shown throughout this report, older children are much more likely to drop out of school compared to younger children, regardless of what grade they are enrolled in. Dropout is a very rare event for children of primary school age: only an estimated 0.9% of children aged 7 to 12 that were enrolled in primary school in 2016 dropped-out of school. Dropout is a much more common event for children aged 13 and above: an estimated 13.4% of children age 13 and above and enrolled in primary school in 2016 dropped-out. The greater proportion of older children in later grades explains the increase in dropout rates from one grade to the next.

The dropout rate peaks in Primary 6, during the transition from primary to secondary school, where an estimated 20.8% of children drop out of school. The increase in the dropout rate in Primary 6 is not only related to the challenges that come with age, but to the barriers that prevent some children from making the transition from primary to secondary school. Understanding the issues that hold children back during the transition from primary to secondary is one of the key focus areas of this report and one of the most important issues affecting children’s educational trajectory in Rwanda at the moment.

Table 4.2: Dropout Rates in Primary School, by Grade (2016 - 2017)

Grade	Percentage of children (enrolled in Primary 1 to Primary 6 in 2016)
Primary 1	0.7%
Primary 2	1.4%
Primary 3	2.1%
Primary 4	4.0%
Primary 5	7.6%
Primary 6	20.8%

Accumulated delays through dropout

Dropout is not a permanent state – some children transition from being in-school, to being out-of-school and vice versa. Dropout is the least desirable of educational outcomes because it often marks the end of a child’s education or at minimum leads to a lengthy delay in their educational journey. We show in this report that dropout is a more permanent state for older children (aged 13 or above), and a more transitional state for younger children, who are much more likely to re-enter after having dropped-out.

While dropout is not one of the main factors leading to delays in some children’s primary school education, it is important to note that there is a small group of children – particularly boys – that were enrolled in primary school in 2017 but that had previously dropped-out of school. An estimated 3.9% of

children enrolled in primary school in 2017 had previously dropped-out of school and then re-entered. This corresponds to about 100,000 children in the primary education system. About 60% of these children were out of school for one year before re-entering; 20% were out-of-school for 2 years, and the remaining 20% for more than 2 years. What is interesting is that the proportion of children that were enrolled in primary school in 2017, but that had previously dropped out, is higher for boys than it is for girls. An estimated 5.2% of boys enrolled in primary school in 2017 had previously dropped-out of school, compared to just 2.5% of girls, a ratio of more than 2:1. This difference is strongly statistically significant which shows that boys have historically been slightly more likely to dropout at a young age (this was not the case in 2016).

Limitations to the official definition of dropout

The official definition of dropout used above is enrolment-based, hence does not take into account whether children actually attended school or not, or how much school they attended. Enrolment from one year to the next is automatic in most primary schools in Rwanda (97% according to the head-teachers surveys) and does not need parents or children to intervene at the start of a school year. This system greatly reduces the administrative burden on schools and parents. However at what point schools realize that a child might in fact have dropped-out or moved to another school and no longer be enrolled? Schools do not have a standardized policy with respect to how many weeks of absence implies dropout. The majority (62%) of schools report not having a specific rule to decide when a child is considered a dropout. In schools that do report having a rule, a wide range of cut-off points are used, from less than a week to a full year. This raises the possibility that children are being counted as enrolled, when in fact they are out-of-school.

4.2. Dropout in lower secondary school

Limitations: This sample is only representative of children in secondary school who are 18 years old or younger. While we have sufficient sample size to present broad estimates for children enrolled in lower secondary school (630 children in our sample in 2016, 874 in 2017), we are not able to do the same for upper secondary school (2.3% of children aged 6 to 18 are enrolled in upper secondary school, corresponding to a sample of 178, spread across three grades).

Dropout levels in secondary education

An estimated 6.0% of children below the age of 18 and enrolled in lower secondary school in 2016 dropped out, with a margin of error of +/-2.7 percentage points. This estimate is not significantly different from the dropout rate measured in primary school. As in the case of primary school, a slightly larger proportion of children dropped-out between years – completed school in 2016, but then did not enrol again in 2017 – compared to children that dropped-out during the year, and did not enrol again in 2017. At 6.8%, the dropout rate estimated for girls was slightly higher than for boys, at an estimated 5.2%, but these differences are not statistically significant in this sample.

Table 4.3: Dropout Rates in Lower Secondary School (2016 - 2017)

Timing of dropout	Percentage of children (enrolled in Secondary 1 to Secondary 3 in 2016)
Completed school year in 2016, but did not enrol in 2017	3.3%
Started but did not complete school year in 2016, and did not enrol in 2017	2.7%
Estimated dropout rate (%)	6.0%

We do not have sufficient sample size to measure the dropout rates by grade in lower secondary school.

Accumulated delays through dropout

Only a small proportion of children that do not make the transition to secondary school immediately, and dropout after Primary 6, re-enrol in lower secondary school thereafter. In 2017 an estimated 3.9% of children enrolled in Secondary 1 had previously been out-of-school and then re-enrolled. All other children in Secondary 1 had either just been promoted from Primary 6 or had repeated Secondary 1. This suggests that failure to transition to secondary school immediately after Primary 6 - which in 2016 affected an estimated 20.8% of children enrolled in Primary 6 - marks for many dropouts, the end of their basic education.

4.3. Repetition rates in primary school

Definition: The proportion of pupils from a cohort enrolled in a given grade for a given school year who are enrolled in the same grade in the following school year.

Repetition is a tool that schools can use to strengthening learning outcomes, by giving children more time to assimilate the material of a given grade. Repetition can play a positive role in the education sector if the learning benefits for children that repeat, outweigh the delays they accumulate and the financial cost of having children take the same class two times or more. While repetition can be desirable, high repetition rates can be a symptom of underlying learning issues in the education system, cause new challenges such as over-aging, and come at significant financial cost for the education sector from repeating classes. Despite a sharp drop in repetition rates in 2016-2017, high repetition remains one of the biggest challenges for Rwanda's primary education sector.

Repetition levels in primary school

An estimated 16.5% of children enrolled in primary school in 2016 repeated in 2017, with a margin of error of +/- 2 percentage points. This corresponds to a total population of repeaters in primary school of about 420,000 children in 2016-2017.

In primary school, boys are more likely to repeat than girls. The repetition rate for boys was 18.2%, compared to 14.8% of girls, this difference is strongly statistically significant. This difference of about 3.4 percentage points might sound relatively small, but compounded from one year to the next leads to divergent educational paths for boys and girls. Due to these lower repetition rates, girls progress through the primary education system faster than boys. This explains why 55.2% of children enrolled in Primary 6 in 2017 are female, compared to 48.6% of children in Primary 1.

Repetition levels by grade

The repetition rate is the highest in Primary 1 and reduces with each passing grade, with the exception of Primary 5. This is in sharp contrast to the dropout rate, which increases from one grade to the next. Patterns of dropout and repetition show that the biggest educational challenge for young children that enter the education system, is repetition. The biggest challenge for older children enrolled in upper primary school is dropout. Understanding why repetition rates are high at-entry into the primary education system, in Primary 1, and why we observe a bump in repetition rates in Primary 5, is a key focus of this report.

Table 4.4: Repetition Rates in Primary School by Grade (2016 - 2017)

Grade	Percentage of children
Primary 1	25.4%
Primary 2	16.6%
Primary 3	13.5%
Primary 4	12.1%
Primary 5	18.5%
Primary 6	5.0%

Accumulated repetition

Repetition in primary education for some children is not a rare or one-time event. Some children accumulate many delays through repetition, with important implications for the grade-age structure of Rwanda's education system. Repetition is common for some children in Rwanda's primary education system, in particular in lower primary school. As shows in table 4.4, an estimated 25.4% of children repeated in Primary 1, 16.6% repeated in Primary 2 and 13.5% in Primary 3. Repetition is also not just a one-time event during children's primary school education. By Primary 6 an estimated 56% of children had repeated at least twice (see Figure 4.1); almost 30% of children had repeated three times or more.

The high incidence of repetitions has impacts for Rwanda's basic education system which are discussed in the section 3.5.

Figure 4.1: Percentage of Children that have Previously Repeated, and Previously Repeated twice or more, by Grade (all children aged 6 to 18 enrolled in 2017)

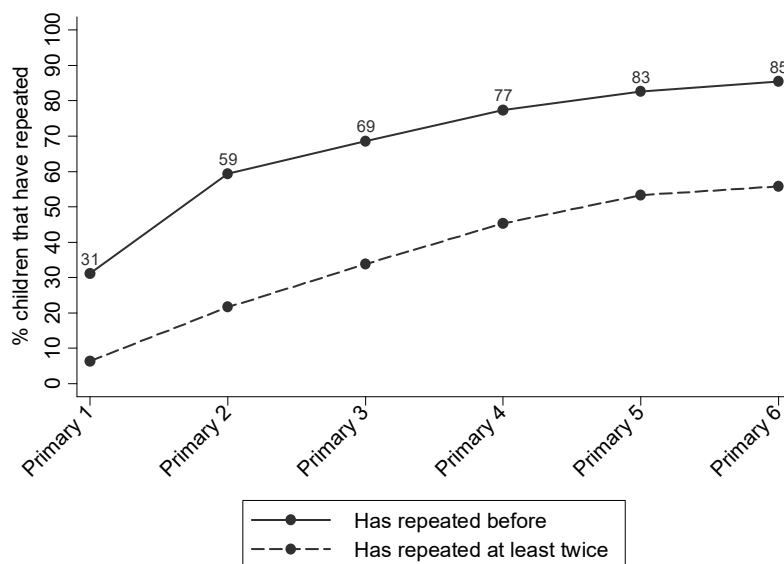


Table 4.5: Number of times Children have Repeated by age 18 (2017)

Number of times repeated	% children aged 18
Never	13.3%
Once	19.5%
Twice	26.7%
Three times	18.0%
Four times	12.1%
Five times	6.8%
Six times	3.1%
Seven times	0.6%

4.4. Repetition rates in lower secondary school

Limitations: This sample is only representative of children in secondary school who are 18-years-old or younger. We do not have sufficient sample size to study repetition trends in upper secondary school.

Repetition levels in lower secondary school

An estimated 3.7% of children enrolled in lower secondary school and below the age of 18 in 2016 repeated in 2017, with a margin of error of +/- 2 percentage points. This is a very low level of repetition compared to primary school, lower even than the estimated dropout rate in lower secondary school. Boys were slightly more likely to repeat, 4.7% versus 2.6% for girls, but the sample of lower secondary school children is too small to test whether this small difference is statistically significant.

While our sample size is limited for children in lower secondary school, we can say with confidence that the bulk of repetition in lower secondary school – for children below the age of 18 - happens in the first grade. The estimated repetition rate in Secondary 1 was 6.1%, compared to less than 2% in Secondary 2 and less than 1% in Secondary 3. The difference is statistically significant.

Box 1: Why did repetition rates drop in 2016-2017?

Repetition rates between 2016 and 2017 decreased significantly compared to previous years. Repetition rates fell across the board, in all grades, across all age groups and all locations. Understanding the reasons behind this drop and the potential implications for the future structure of Rwanda's education system is important. As we see in this section, the driving force behind the reduction in repetition rates were school-related factors and in particular the stricter enforcement of repetition targets. We therefore start with a discussion on the school factors that led to this drop, before studying the effects at the child level.

Table 4.6: Repetition Rates for Primary School Age Children (aged 7 to 12)

Year	Percentage of children
2016 - 2017	17.4%
2015 - 2016	30.9%
2014 - 2015	30.4%

School factors

MINEDUC has had a long-standing policy of limiting dropout and repetition rates to a 5% target at the school-level, but this policy was not being strictly enforced. The sharp reduction in repetition rates observed in 2016 is the result of a much stricter enforcement of these targets.

This reduction in repetition rates achieves a number of key objectives, including a better distribution of children by grade, a reduction in over-aging, and in the near future also a reduction in the aggregate cost of primary education. This change has had the immediate effect of transforming the structure of Rwanda's primary education system and distributing children over a greater number of grades. It has led to a large and sudden shift of pupils from Primary 1 to Primary 2, and so forth. More specifically, the reduction in repetition rates: (i) significantly eased the pressure, in terms of number of students, in Primary 1, which saw an approximate 16 percentage point reduction in the number of students enrolled between 2016 and 2017 as these children were promoted to Primary 2 instead of re-enrolled in Primary 1; and (ii) slightly increased the pressure on teaching resources in Primary 5 and Primary 6. In the space of one year alone, this reduction in repetition rates has improved the distribution of students by grade, and evened out the pressure on teaching resources. Primary 1 in particular should see a large reduction in pupil-to-teacher ratios and therefore also a rapid improvement in the quality of education.

If this drop in repetition rates is sustained for several years, it will completely change the structure of Rwanda's primary education sector, shifting pupils from early primary through to upper primary and then lower secondary school. This will ultimately result in a much better equilibrium throughout the education sector, but it is a shift that will put significantly more pressure on teaching resources in particular in Primary 5, Primary 6 and lower secondary school. This is a difficult shift to plan for, because it is not yet known how such a shift will affect repetition rates, dropout rates and transition rates into secondary school and in turn how those will affect requirements in terms of teaching resources. If current dropout and repetition rates by grade were to stay constant, we estimate that by 2020 there will be 24% more students in Primary 5, 38% more students in Primary 6 and almost 40% more students in

Secondary 1. This is a very large increase in student inflows over a short period of time that will require more qualified teaching resources, more textbooks, etc, if current quality standards are to be maintained.

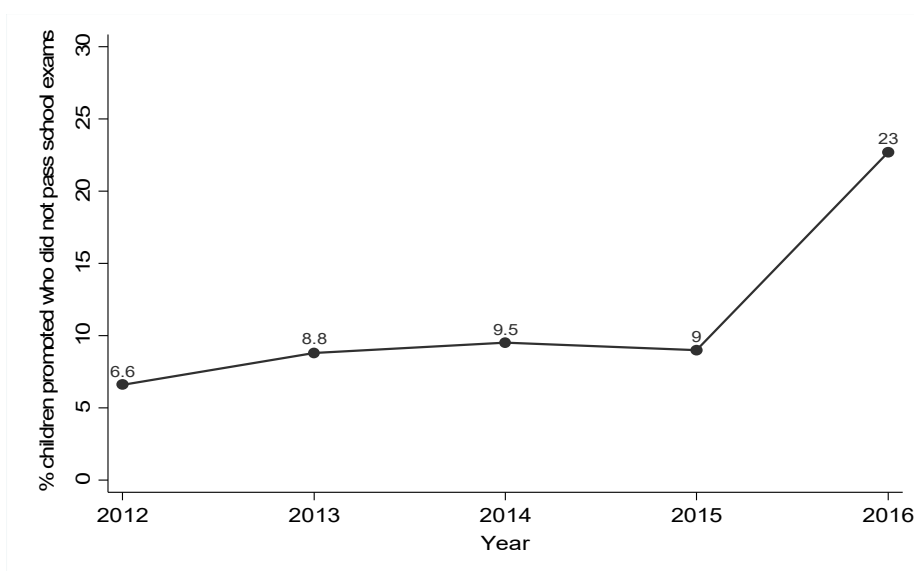
Child-level factors

Setting a repetition target that is significantly lower than the average repetition rate, implies that the pool of children that progress through the education system will have lower abilities, on average. By aiming to enforce repetition targets, schools have de-facto loosened promotion standards.

By reducing the expected standards for being promoted to the next grade, a greater number of students progress through the education system, but the average performance of children who get promoted is lower, making the next level significantly more difficult for them. This creates complex dynamics that are difficult to predict. For example: what will be the effect of lower repetition on performance in the Primary 6 leaving examination and subsequent transition into secondary school?

Evidence from the child survey suggests that the loosening of promotion standards is what has made the reduction in repetition rates possible. We show this by looking at the promotion rates of children who failed to pass their “school-level” exams, or in other words failed to meet expectations to pass to the next grade. Figure 3.2 shows that the promotion rate of primary school children that did not meet the criteria to pass to the next grade were fairly steady between 2012 and 2015. On average, an estimated 8.5% of children who failed to pass the school-level exam, between 2012 and 2015, were still promoted to the next grade. In 2016-2017, this number jumps to 22.7%, coinciding with the large drop in repetition rates.

Figure 4.2: Promotion Rate for Primary School Age Children (aged 7 to 12) who Fail End of Year Exams, by Year



The example of repetition rates, shows how improving one metric (repetition) has dynamic effects on other metrics (learning levels and resource requirements). There are no easy solutions in the education sector, but it is important to carefully model the potential dynamic effects of major policy shifts, such as the reduction in repetition rates, otherwise they might lead to unintended effects.

4.5 Effects of Dropout and Repetition on the Basic Education System: Over-aging, Low Completion Rates, and Inequalities within the Education System

In this sub-section, the key effects of dropout, repetition and accumulated delays in children's progression through the education system are studied. These include: (i) pupils are often in lower grades than would be expected from their age; (ii) low primary school completion rates; and (iii) high Gross Enrolment Rates in early grades, with important implications for future resource requirements in later grades.

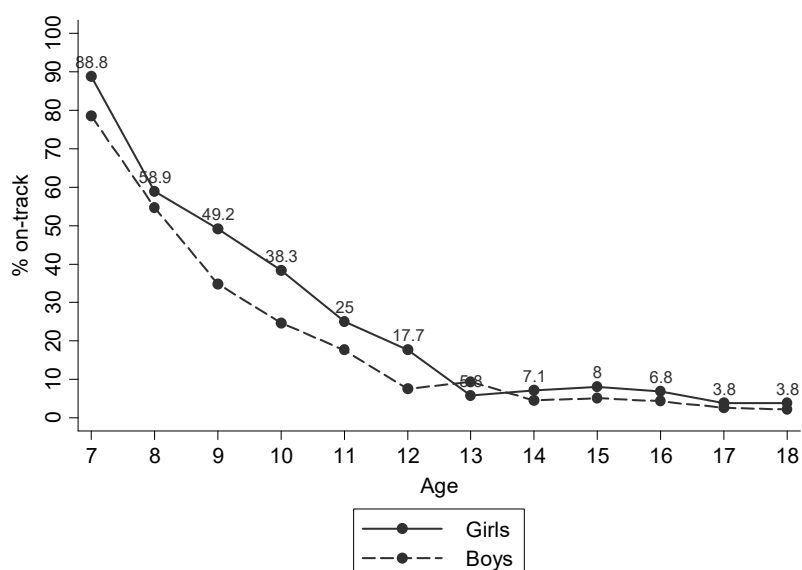
Effect 1: Pupils are often in lower grades than would be expected from their age

A good indicator of pupil progress through the education system is the percentage of students who are on-track with their education. A pupil who is “on-track” is in the appropriate grade, given his or her age. That implies not having repeated, dropped-out or started school after the age of 7. For the purposes of this report, we consider a pupil to be “on-track” if the pupil is at the appropriate age/grade-level. Using this definition, a pupil in Primary 1 is on-track if aged 7 or below; a student in Primary 2 if aged 8 or below, and so forth.

After entry into the education system, some children quickly fall behind, accumulating delays in their education (Table 3.7). The proportion of children who are on-track with their education falls rapidly between the ages of 7 to 12. At the start of primary school, an estimated 84% of children aged 7 in 2017 were on-track with their education and had enrolled in Primary 1. By age 13, when children should be starting lower secondary, at the start of the 2017 school year, we estimate that only 8% of students were still on-track with their education and had made the transition to secondary school. By the age of 13, children had accumulated 2.5 years of delay on average; 45% of children were delayed by 3 years or more. The main drivers of this delay were: frequent repetition (70%), starting school after the age of 7 (20%), years spent out-of-school (5%) and temporary dropout (5%). In line with repetition statistics, between the ages of 7 to 12, a much greater proportion of female pupils are on-track with their education, compared to males.

Table 4.7: Percentage of Children On-Track with their Education, by Age and Gender (2017)

Age group	% male pupils on-track	% female pupils on-track	% pupils on-track
Aged 7 to 9	55.2%	66.2%	60.6%
Aged 10 to 12	16.7%	26.7%	21.9%
Aged 13 to 15	6.3%	6.9%	6.6%
Aged 16 to 18	3.1%	4.9%	4.0%

Figure 4.3: Percentage of Children On-Track with their Education, by Age, split by Gender (2017)

The proportion of children that are on-track with their education stabilizes between the ages of 13 to 15, but continues to decrease after the age of 16, as can be seen in Figure 3.3. By age 18, about 3% of children remain on-track and are enrolled in Secondary 6. Children aged 18 have accumulated a 5-year delay in their education on average. At the age of 18, 46% of the delays in children's education are explained by repetition, 36% by permanent dropout, 15% by late entry and just 3% by temporary dropout.

One effect of dropout and repetition is that within a grade there are pupils of a wide range of ages. High age-variation within classrooms, resulting mainly from high repetition rates, has become a defining feature of the structure of primary and secondary education in Rwanda. Table 3.8 shows that many age groups can co-exist in a same class. In Primary 1, more than 12% of children are aged 10 or above. This number increases to more than 30% in Primary 2, and more than 70% of children by Primary 3 (the expected age for children in Primary 3 is 9). In Primary 4, more than 30% of children were aged 13 or above. This number increases to more than 60% of children by Primary 5 and over 80% of children by Primary 6 (the expected age for children in Primary 6 is 12).

Table 4.8: Age-composition of each Grade in Primary School (2017)

Grade	Age 7 to 9	Age 10 to 12	Age 13 to 15	Age 16 to 18	Total
Primary 1	87.3%	10.8%	*	*	100%
Primary 2	65.2%	27.6%	5.9%	*	100%
Primary 3	29.7%	52.9%	15.6%	*	100%
Primary 4	5.0%	62.2%	29.0%	3.8%	100%
Primary 5	*	38.6%	47.3%	13.6%	100%
Primary 6	*	15.4%	60.4%	24.1%	100%

* Not enough observations to report

High age-variation within grades inevitably affects class dynamics and the quality of teaching. Over-aging will also continue to be a dominant feature of Rwanda's primary and secondary education system for the years to come, because overaged children are already in the education system.

Effect 2: Low Completion Rates in Primary School

Another effect of the delays to some children progress through the education system, mainly due to repetition, is the impact on completion rates in primary school. Completion rates are also a key metric of the efficiency of the education system. Here we define the completion rate as the proportion of children who either: (i) completed and passed Primary 6 (as the result of school-level exams and grading); and/or (ii) have enrolled in secondary school.

Primary school completion rates are low, but gradually increase with age (Figure 3.4). At the age of 13, in 2017, which is the expected age at which children on-track with their education should be starting Secondary 1, an estimated 9.1% of children had either completed primary 6 successfully or enrolled in secondary school thereafter. The primary school completion rate increases with age. At age 15, when children are supposed to be enrolled in Secondary 3, an estimated 37.1% of children had completed Primary 6. Completion rates increase to 60.6% of children aged 18 in 2017. Girls aged 18 are about 8.5 percentage points more likely to have completed Primary 6 than boys, a gap that is large and statistically significant after controlling for other factors. This is further evidence that girls progress through their primary school education faster than boys.

Figure 4.4: Primary 6 Completion Rates, by Age, split by Gender (2017)

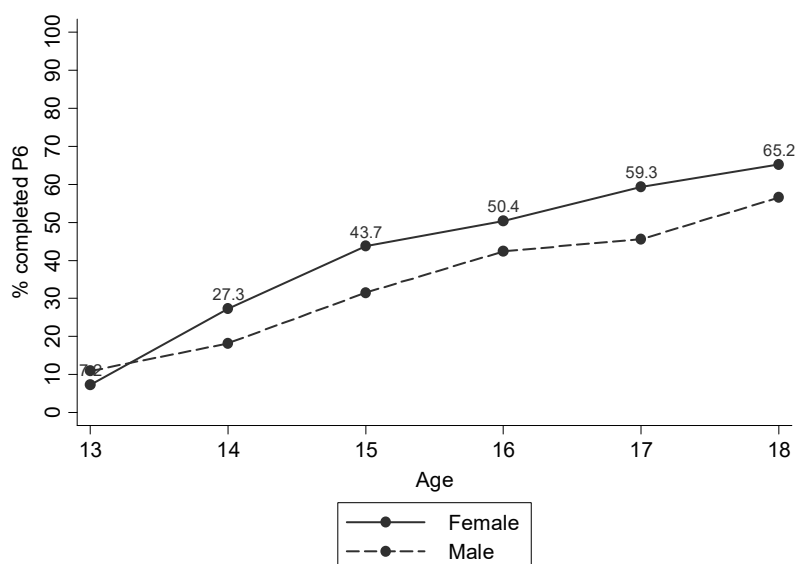


Table 4.9: Primary 6 Completion Rates, by Age and Gender (2017)

Age	% male pupils having completed Primary 6	% female pupils having completed Primary 6	% Pupils having completed Primary 6
13	10.9%	7.3%	9.0%
14	18.3%	27.3%	22.3%
15	31.2%	43.7%	37.1%
16	42.4%	50.2%	46.4%
17	45.5%	59.1%	52.1%
18	56.5%	65.0%	60.6%

Effect 3: High Gross Enrolment Rates in early grades, with important implications for future resources requirements in later grades

The Gross Enrolment Rate (GER) in each grade is driven by dropout and repetition in the grade and previous grades. The GER is a useful metric that makes it possible to get a quick overview of the physical capacity of an education system to provide education to a cohort of children. For the purposes of this report, the GER of a specific grade is defined as the ratio of total enrolment over the theoretical population of a given grade. For example, the GER for Primary 1 would be calculated as the total enrolment in Primary 1, divided by the population of 7-year-old children. The GER for Primary 2 would be calculated as the total enrolment in Primary 2, divided by the population of 8-year-old children, and so forth. The estimated GER by grade in 2017 is presented in Table 3.10.

Table 4.10: Estimated Gross Enrolment Rate, by Grade (2017)

Grade	Gross enrolment rate	Percentage of primary school children enrolled in grade
Primary 1	166.4%	19.2%
Primary 2	168.4%	19.3%
Primary 3	159.6%	18.3%
Primary 4	139.0%	16.6%
Primary 5	133.6%	15.8%
Primary 6	92.6%	10.8%
Overall	143.1%	100%

Gross enrolment levels by grade gradually decreases, which means there is a disproportionate number of children in lower primary. Due to repetition in lower grades and dropout in higher grades, there are many more students enrolled in the lower grades of primary than the size of the corresponding age cohort; there are also fewer students enrolled in Primary 6 and in secondary school than would be expected if all students of a given age were in the appropriate grade. This means that Rwanda's lower primary school system is in over-drive, providing education for many more pupils than there should be, which explains the need for double-shifting and optimizing the use of resources.

SUMMARY OF KEY FINDINGS:

- *The dropout rate in primary school in 2016 is estimated to be 4.4% and is relatively similar for boys and girls*
- *Dropout rates increase by grade and are highest in Primary 6, during the transition to secondary school*
- *The increase in dropout rates by grade between Primary 1 and Primary 5, is primarily due to older pupils dropping out who are more likely to be in higher primary grades, not grade-related idiosyncrasies*
- *The repetition rate in primary school in 2016 was 16.5%; boys were significantly more likely to repeat than girls*
- *Repetition is highest in Primary 1 and reduces with each passing grade, with the exception of Primary 5*
- *Repetition is the main cause of delays in children's education: by Primary 6 more than 80% of children have repeated at least once, 56% at least twice*
- *Repetition combined with dropout, lead to: (i) pupils often in lower grades than would be expected from their age, (ii) low primary school completion rates, and (iii) high Gross Enrolment Rates in early grade, which puts pressure on future resource requirements in later grades*
 - *Children accumulate delays in their education from dropout and repetition – by age 13 fewer than 8% of children are on-track with their education and were already enrolled in Secondary 1 or above. Dropout and repetition also lead to large age variation within classrooms – children of different ages co-exist in the same grade.*
 - *Primary school completion rates are quite low; at age 13 only 9% of children had already completed Primary 6 and/or made the transition to secondary school, a figure that increases to slightly over 60% by age 18*
 - *Gross Enrolment Rates in Primary 1 to Primary 3 are higher than 150%; they quickly drop thereafter to reach 93% by Primary 6. The disproportionate number of children in lower primary education sector has important implication for future teaching resource requirements in upper primary and secondary school*

5. Drivers of dropout and repetition by grade

Out of all children in the sample that were enrolled in 2016 and dropped-out, about 50% were enrolled between Primary 1 and Primary 5, 36% in Primary 6 and 14% in lower secondary school. Dropout between Primary 1 and Primary 5 is mainly related to contextual factors and not grade-specific factors (these are studied in Chapter 6). Children that are the most vulnerable to dropout between Primary 1 and Primary 5 are children that have accumulated many delays in their education, repeated often, might have started school late and not attended nursery school. These are children from comparatively less wealthy households where neither parent has attended secondary school or above. Dropout in the transition from primary to secondary school, is a more structural form of dropout related to learning barriers (low performance on the primary school leaving examination), financial barriers (related to non-tuition related costs), supply side constraints (for example the proximity of secondary schools) and the increasing opportunity cost for children to make the transition from Primary to secondary school. We do not have sufficient power in this sample to study the specific reasons behind dropout in lower secondary school.

Repetition occurs mainly in lower primary school and in Primary 5. Out of all the children in the sample that repeated in 2016, an estimated 67% were enrolled in lower primary school (Primary 1 to Primary 3). Repetition in lower primary school, and in particular in the very first year of children's education, is linked to low levels of school readiness for children who have not attended nursery school, household-related factors (e.g. the education of the parents), and supply-side factors (e.g. pupil-to-teacher ratios). Repetition in Primary 5, which accounted for about 15% of all cases of repetition in 2016 for children in this sample, is explained by schools applying higher standards for passage to Primary 6, which is the year in which children take the primary school leaving examination.

In this chapter, we will explore the key patterns in dropout and repetition by grade that were identified in Chapter 4:

- (i) High repetition rates in Primary 1;
- (ii) High repetition rates in Primary 5;
- (iii) High dropout rates in Primary 6, during the transition from primary to secondary school;

Our aim here is to better understand why we observe these patterns and identify the key factors that lead to dropout and repetition at these critical points in the education system.

5.1 Why do children repeat Primary 1?

Repetition rates for some children are highest in their first year of education: in 2016-2017, an estimated 37% of children repeated in their first year of schooling – when entering into Primary 1 for the first time. The first year of education stands out: while the repetition rate for children in Primary 1 in their first year of education was 37%, it quickly drops to 13.5% and 9% for children in their second and third year of education respectively. High repetition rates in Primary 1 are therefore driven by new entrants. We focus the analysis in this section on those children that enrol in Primary 1 for the very first time.

5.1.1 Child-level Factors:

School-readiness - in terms of literacy, numeracy and socio-emotional development - is a strong determinant of why children repeat in the first year of education. School-readiness is a measure of how prepared a child is to succeed in school, cognitively, socially and emotionally. In this sub-section, we examine the socio-emotional factors that could be determinants of why children repeat in their first year of education.

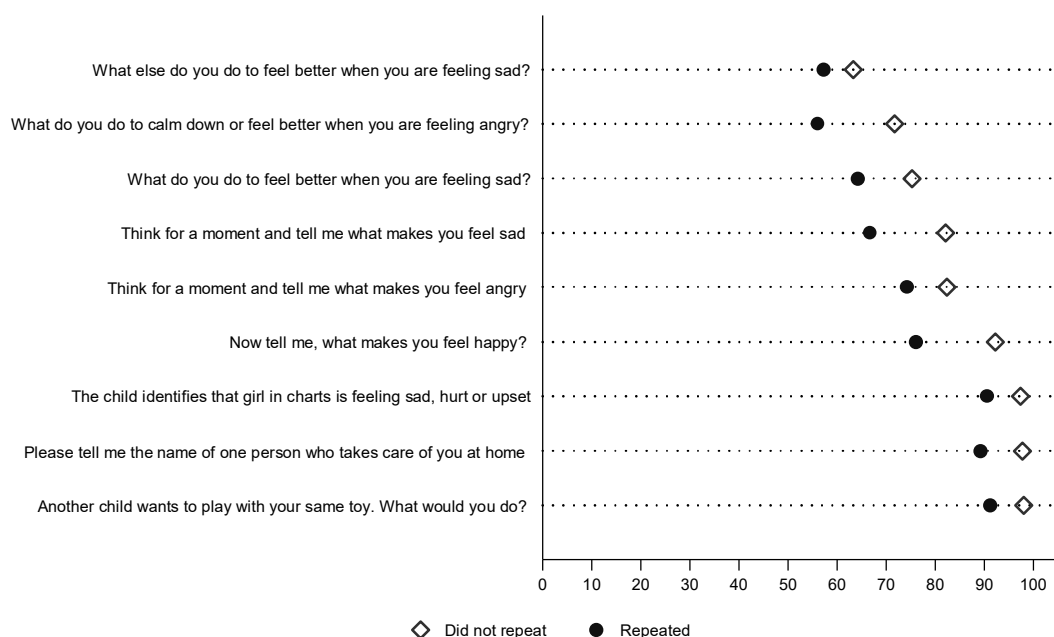
To measure socio-emotional development we borrow questions from the IDELA framework (International Development and Early Learning Assessment) developed by Save the Children. The IDELA tool measures school readiness based on children's emotional awareness (e.g. naming one person who takes care of them at home), their peer relations (e.g. being able to identify friends by name), their emotional awareness (e.g. what makes them feel happy or sad), empathy (e.g. their ability to identify whether people look happy or sad, based on a picture), conflict resolution (e.g. what they would do if another child wants to play with their toy), and self-awareness (e.g. what makes them angry and how they can calm down). IDELA questions were only asked of children aged 6 and 7 in 2017, regardless of whether they were enrolled in school or not.

Although it is difficult to establish a benchmark of “school-readiness” with socio-emotional data, the IDELA scores measured as part of this study suggest that the majority of children aged 6 and 7 are ready for school when it comes to their socio-emotional development. On average, the share of correct responses across all questions was two out of three.⁷ Scores were highest on the conflict resolution skills, self-awareness and empathy; scores were slightly lower on emotional awareness and regulation, but not below 60% of correct responses per question. Only 1.5% of children scored 0% across all IDELA questions; around 25% scored below 50%. From the IDELA results we conclude that while most children were “school-ready” from an emotional development perspective about one out of four children were not yet fully emotionally prepared for primary school.

7 Children's responses were assessed by enumerators on the spot, and categorized into three groups: 0 (incorrect/I don't know), 1 (correct), 2 (refused). For example, if a child was able to mention the name of someone who takes care of them at home, they were considered to have responded correctly.

Socio-emotional development metrics are positively associated with repetition rates. Students who perform better on IDELA questions tend to perform better at school. Table corroborates the negative correlation between the IDELA score and repetition, indicating that the probability of repeating Primary 1 decreases with school readiness via better socio-emotional development. The socio-emotional development score therefore is clearly linked to the “school readiness” of children.

Figure 5.1: IDELA Scores for Children aged 7, by whether they Repeated Primary 1 (2016)



5.1.2 Household-level Factors:

Children from households where neither parent has received much formal education start their schooling at a disadvantage. Children from households where parents have lower levels of education were more likely to repeat in their first year of education (see Table 4.1). As shown in Table 4.1, the education level of the head of households plays a much greater role in repetition in the first year of children’s education than in subsequent years.

Table 5.1: Repetition rates for Children in their First Three Years of Education, by Education Level of Household Head (2016)

Years since start of education	No education [1]	Primary only [2]	Secondary or above [3]	Difference in repetition rate [3-1]
First year	39.4%	39.2%	24.5%	-15.0%
Second Year	18.7%	17.3%	13.7%	-5.0%
Third Year	13.8%	13.3%	12.8%	-1.0%

This points to an issue of school readiness, which is closely linked to the education levels of parents. From a socio-emotional perspective, as measured by the IDELA framework, children in households where the head of household has lower or no formal education were less prepared to start school (see Table 4.1). On all metrics, the education level of the household was strongly predictive of the socio-emotional school preparedness of children aged 6 and 7.

Table 5.2: IDELA Scores for Children aged 6 or 7, by Education Level of Household Head (2017)

IDELA metrics on self-awareness, empathy, conflict resolution, emotional awareness and regulation	No education	Primary only	Secondary or above
Can identify the person who takes care of them at home by name	84.2%	89.8%	90.5%
Number of friends children can identify	2.28	2.81	2.93
Can identify what makes them feel sad	58.9%	64.9%	73.2%
Can identify something to overcome being sad	52.7%	58.7%	70.6%
Can identify something else to overcome sadness	42.6%	51.4%	55.6%
Can identify something that makes them feel angry	57.9%	64.5%	75.0%
Can identify something to overcome anger and feel better	48.2%	58.2%	60.1%
Can identify something that makes them feel happy	72.1%	76.0%	76.2%
Can identify that girl in image is feeling sad	70.3%	78.0%	84.1%
Can identify something that might make her feel better	81.9%	81.4%	87.1%
Can identify something else that might make her feel better	56.1%	61.8%	72.6%
Can identify something to overcome conflict over toy	79.3%	83.5%	88.4%
Can identify something else to overcome conflict over a toy	60.3%	60.8%	71.4%

There are multiple mechanisms through which the education of the parents affects the future educational prospects of children. A few examples of how the education of parents also shapes the educational trajectory of children are listed below (note that all the differences described are statistically significant):

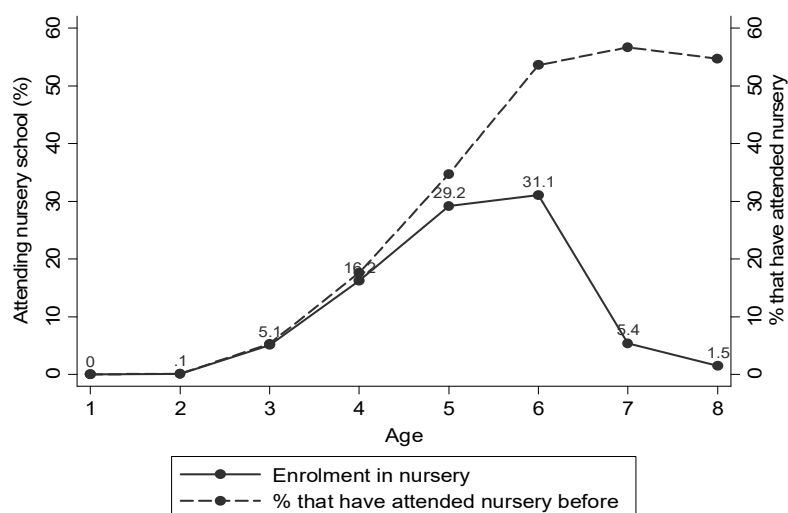
- Parents who have been to school also take greater ownership of the education of their children.**
 When interviewed during the survey, an estimated 83% of parents that had attended school said they were responsible for making sure their children completed their homework, compared to 73% of parents who had not attended school. On all questions related to who in the household is responsible for ensuring that a child attends school, does his/her homework, and prepares for exams, parents with no formal education are more likely to shift the responsibility to the spouse.
- Parents who have been to school play a much more active role in the education of their children.**
 This is especially true when it comes to reading, mathematics and helping with homework. An estimated 65% of parents with no education “never” help their children improve their reading skills, compared to 37% of parents with education. An estimated 70% of parents with no education mention “never” helping their children improve their mathematical skills, compared to 45% of parents that have been to school. Finally, an estimated 67% of parents who had never attended school mentioned that they “never” helped their children with homework, compared to 43% of parents that had attended school.

- ***Parents who have been to school are also much more likely to send their child to pre-primary school.*** In 2017 an estimated 55% of children entering primary school for the first time and from households where one of the parents had been to school, had previously attended pre-primary school. This compares to 43% of children from households where neither of the parents had ever been to school. Parents who have been to school may be more likely to realize the benefits of pre-primary school, but this may also be linked ability to afford pre-primary school as household education is strongly linked to household income.
- ***Parents who have been to school hold different beliefs about how to best educate their children.*** For example, data from the household surveys suggests that about 46% of parents who had never attended school agree that punishment is essential to a good up-bringing, education, compared to 37% of parents in households where at least one parent attended school.

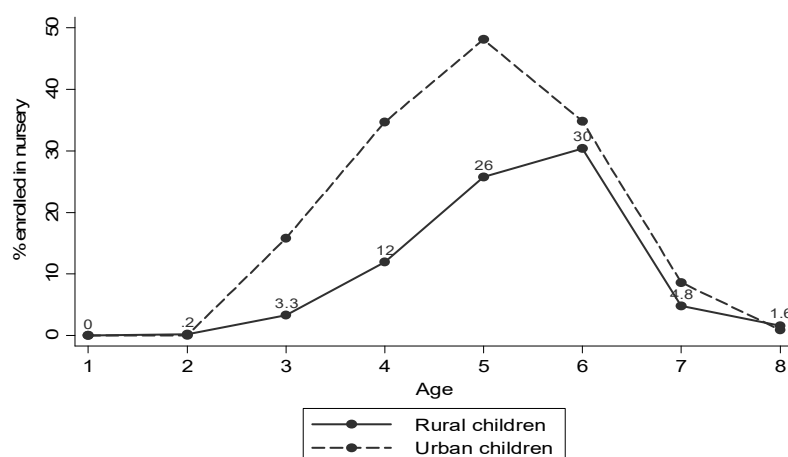
Through its effect on school-readiness, the low education level of parents appears to be one of the main reasons repetition rates in the first year of children’s primary education are high. This is a generational challenge that will be alleviated in the future, as the proportion of parents with education increases substantially. Today, in Rwanda, virtually all children who enter adulthood have attended school before. This is one of the major achievements of the past decade, which has seen enrolment rates increase very rapidly. School readiness is therefore poised to improve.

5.1.3 School Factors

Low levels of school readiness are also explained by the fact that an estimated 46% of children entering the primary education system in 2017 had previously not been enrolled in a formal or informal pre-primary school. There is both theoretical and empirical evidence that pre-primary education has a very positive impact on primary education. We define pre-primary education as any type of formal or informal education that happens before a child is formally enrolled in Primary 1. Pre-primary school attendance in Rwanda is higher than official statistics imply. This is because MINEDUC-supported pre-primary schools, co-exist with more informal structures at the community level as well as a network of early childhood development centres, supported by NGOs and international agencies (for example UNICEF). By age 6, in 2017, an estimated 58.9% of children had attended some form of pre-primary school. Household-level data shows that enrolment rates in pre-primary school increase from about 4% at the age of 3, to 30% of children by ages 5 and 6. Children do not stay in pre-primary school for very a long period of time.

Figure 5.2: Pre-Primary Enrolment Rates reported by Parents, by Age (2017)

Equity imbalances in children’s education starts from age 3 onwards between rural and urban settings. Evidence shows that there are large urban/rural gaps in pre-primary school enrolment rates. The gap starts to emerge from age 3 onwards, but significantly narrows by age 6, after which many children that were previously enrolled in pre-primary school transition into primary school. At age 5, children in urban areas are almost two times more likely to be enrolled in pre-primary school than children in rural areas: almost 50% of children aged 5 in urban areas attend pre-primary school, versus about 25% in rural areas.

Figure 5.3: Pre-Primary Enrolment Rates reported by Parents, by Age, split by Location (2017)

Attending pre-primary school improves school readiness on all accounts and significantly reduces repetition in children’s first year of education. Attending pre-primary school is associated with a 12-percentage point reduction in repetition rates, an association that holds when controlling for relevant child, household and location factors. An estimated 31% of pupils who had previously attended pre-

primary school repeated in their first year of education in 2016-2017, compared to about 43% for children who had not attended pre-primary school.

These results suggest that even informal pre-primary school, for a short period of time, can lead to significantly improved educational outcomes. The current cohort of children entering the education system started pre-primary school late and only stayed in pre-primary school for a short period of time. Most children only attended pre-primary school for one year, before making the transition to primary school. Furthermore, many of these children were enrolled in informal pre-primary schools and not in the formal pre-primary education provided by MINEDUC, for which net enrolment rates in 2016 were about 17.5%⁸. Despite undergoing an incomplete pre-primary education, attending pre-primary school still has a significant impact on the school readiness of children entering the education system.

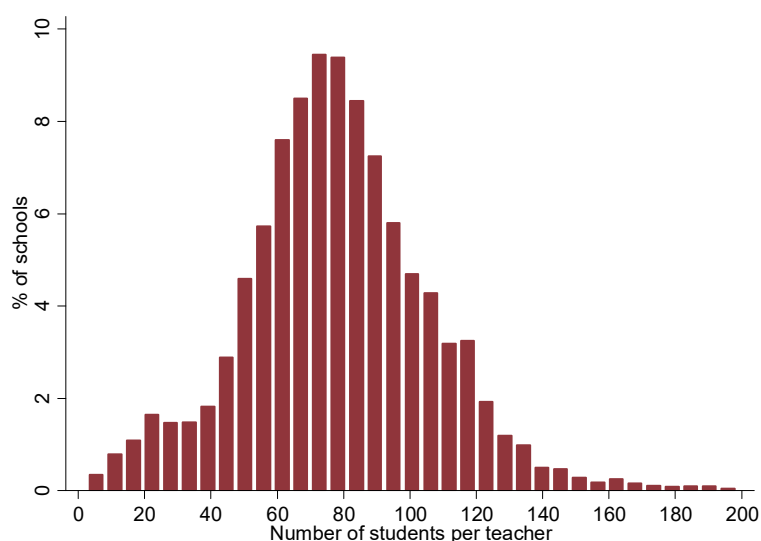
Children that attended pre-primary are also more likely to survive within the education system after Primary 1 and are less likely to dropout. Between their 8th and 11th year of education, children that attended pre-primary school were 13 percentage points more likely to still be enrolled, than children that did not attend pre-primary school. The difference is statistically significant and holds when controlling for wealth, location and other factors of interest. Moreover, attending pre-primary school is linked to starting school on time. Children that attended pre-primary school are also 13 percentage points less likely to enrol in primary school late, a very large and statistically significant difference.

5.1.4 School-level Factors

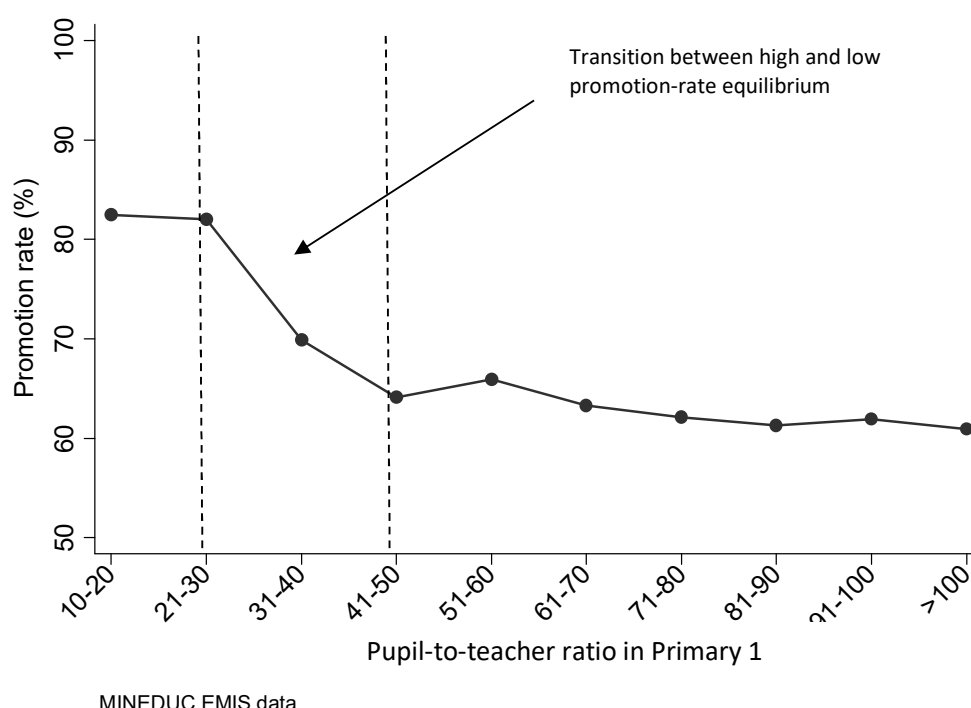
Primary 1 is one of the most important grades in a child's education. Primary 1 is the grade during which children should learn the foundations of reading and numeracy skills that will set them up for the rest of their education. High repetition rates in Primary 1 led to over-aging throughout a child's education.

Despite being so important, Primary 1 is comparatively under-resourced. It is the grade with the highest pupil-to-teacher ratios, where the strain on teachers and over-crowding in classrooms is the largest. We show this using estimates derived from a representative sample of schools from MINEDUC's 2015 EMIS dataset. Please take note that because this is a sample, there is variation around the mean, and these statistics cannot be taken to be precise estimates of national level data. What is important are the trends that are being discussed, not the exact figures. Based on calculations using a sample from the EMIS dataset for 2015, we find that in schools there were an estimated 77 students for each teacher allocated to Primary 1 (teachers can be allocated across multiple grades and in most schools take children in two shifts, so approximately 38.5 pupils per teacher and per shift); this number drops to 72 by Primary 2, 68 by Primary 3, reaching 36 pupils per teacher by Primary 6. *Figure 5.4* shows that while on average teachers in Primary teach about 77 pupils per day, there are schools where this figure is significantly higher. In 2015, the pupil-to-teacher ratio was higher than 100 pupils per teacher in about 17% of schools.

⁸ MINEDUC, *Education Statistical Yearbook, 2016*

Figure 5.4: Distribution of Schools' Primary 1 Pupils-per-Teachers Ratio (2015)

Resource constraints in Primary 1 are strongly linked to promotion rates. Figure 4.5 shows that promotion rates drop significantly from about 80% in schools with fewer than 30 pupils per teacher, to somewhere between 60% and 65% for schools with more than 50 pupils per teacher. There is significant decrease in promotion rates as the pupils-per-teacher ratio increases from 30 pupils per teacher to 50 pupils per teacher. Reducing pupil-to-teachers ratios below 30 does not seem to yield many gains in terms of average promotion rates. Similarly, above 50 pupils-per-teacher, promotion rates appear to be relatively stable, declining from about 65% for children in schools with 50 to 70 pupils per teacher, to 60% for schools with more than 100 pupils per teacher in Primary 1. These patterns seem to suggest that if teacher-to-pupil ratios in Primary 1 could be brought below the 50 mark – which is already the case in Primary 6 – it could yield substantial benefits from a learning perspective.

Figure 5.5: Primary 1 Promotion Rate by Pupils-per-Teacher Ratio (2014-2015)

Primary 1 appears to be the grade with the greatest issues when it comes to teacher attendance and professionalism, pointing to the possibility that schools might not be allocating their highest performing teachers to Primary 1. Teachers' absenteeism appears to disproportionately affect children in Primary 1, where almost 50% of children (regardless of their age) reported that their teachers were often absent. With each passing grade, teacher absenteeism is cited less frequently as a regular occurrence. By Primary 6, fewer than 20% of children mentioned that their teachers were often absent.

Table 5.3: Pupils Perceptions of Teacher Absenteeism, by Grade (2016)

Grade	Agree or strongly agree that teachers often absent	Neutral or disagrees that teachers often absent
Primary 1	49.1%	50.9%
Primary 2	42.7%	57.3%
Primary 3	37.0%	63.0%
Primary 4	31.6%	68.4%
Primary 5	25.0%	75.0%
Primary 6	18.6%	81.5%

Primary 1 is also the grade where children are punished the most. This might be because of low socio-emotional preparedness, but could also signal bad teaching practices. An estimated 22% of boys and 15% of girls in Primary 1 in 2016 reported getting punished regularly; this compares to 10% of boys and 3.5%

of girls in Primary 6. Behaviour issues and frequent punishment are not marginal issues in early grades, and affect a relatively large minority of children.

SUMMARY OF KEY FINDINGS:

- *Socio-emotional school readiness matters: repetition at entry and school-readiness are linked*
- *The education of the household head matters: children from households with lower education levels have lower levels of socio-emotional school-preparedness and are more likely to repeat Primary 1*
- *Lower parental education is also associated with lower parental support for the education of new entrants*
- *Attending pre-primary school or some form of nursery school has a very large effect on repetition rates in the first year of education*
- *Primary 1 classes are under-resourced, with high pupil-to-teacher ratios, and are more prone to teacher absenteeism*

5.2 Why do children repeat Primary 5?

Primary 5 is an outlier due to high repetition rates that run counter to the general trend of repetition rates decreasing with grade (recall Table 3.4). An estimated 18.5% of children below the age of 18 repeated Primary 5 in 2016, compared to a much lower repetition rate of 12% in Primary 4. Repetition rates in Primary 5 have consistently been higher than in any grade except Primary 1 over the past few years, raising the possibility that either schools are purposefully holding children back in Primary 5 in order to increase success rates on the Primary 6 leaving examination in the subsequent year, or that children are holding themselves back in order to be better prepared for the examination and maximize their chances of being accepted to a good secondary school. In this section we show that on balance the evidence favours the school-side of the story.

5.2.1 School-level Factors: “The pressure of the Primary 6 national examinations”

Evidence suggests that one of the main reasons repetition rates increase in Primary 5 is because schools continue to apply higher promotion standards in Primary 5, with the objective of securing better school-level results in the national primary school leaving examination in the subsequent year. This is an issue that has Ministry of Education and the Rwanda Education Board have sought to address in recent years. Steps have been taken to reduce competition between schools and to take the stigma away from school-level performance in the Primary 6 leaving examination. One of the steps taken by the Rwanda Education Board was to stop the publishing of school-level rankings in the Primary 6 leaving examination in order to reduce competition between schools. Despite these efforts, data suggest that the primary school leaving examination continues to create unintended consequences when it comes to repetition rates in Primary 5.

Although there are no national-level incentives around the average performance of schools in the national examination, there appear to be clear incentives at a more decentralized level. An estimated 85% of head-teachers interviewed during the school survey reported that their “*imihigo*” targets included a minimum national examination pass-rate for their schools (the majority of head-teachers reported having signed an “*imihigo* contract”). In the Rwandan context, “*imihigo* contracts” refer to binding performance contracts that form the basis on which the performance of Government entities/actors, including schools, is measured. The main purpose of *imihigo* contracts is to ensure that priorities at a more decentralized level of government are aligned with broader strategic objectives, to increase accountability across government and to monitor the performance of government entities in the delivery of these strategic targets. As such, *imihigo* contracts provide a powerful incentive that commits head-teachers to achieve a certain target for their schools. In most schools, the reported target pass-rate was an average of 90% or more on the National Examination.

One of the most immediate tools schools have at their disposal to increase pass-rates in the primary school leaving examination is to manage the flow of students that get promoted into Primary 6. By being more selective in Primary 5, schools can achieve three key objectives: (i) give the chance to children that are not yet ready for Primary 6 to better prepare through repetition; (ii) ensure that the pool of children

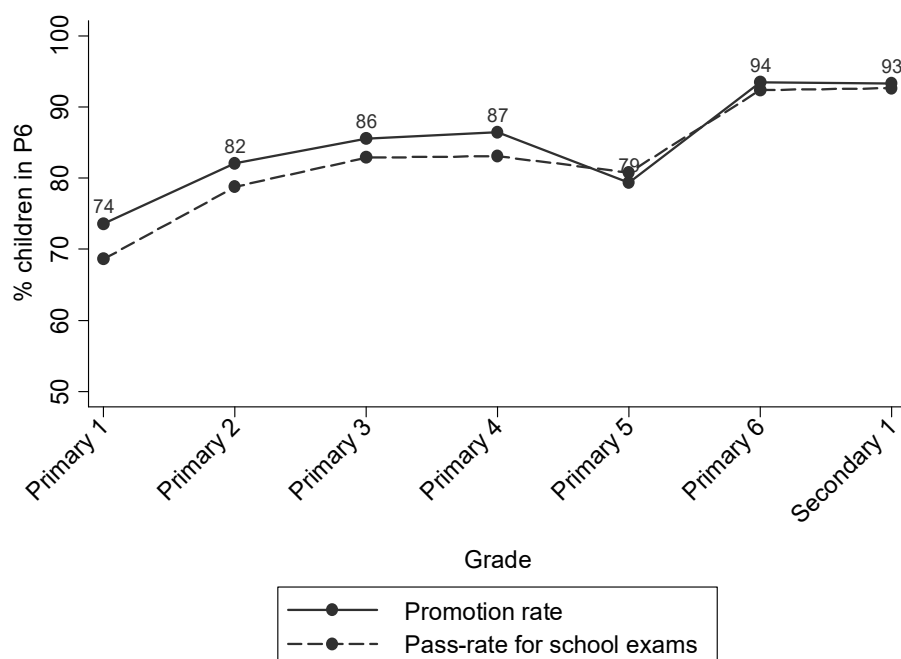
that get promoted into Primary 6 are more likely to succeed in the national examination; and (iii) improve the learning environment in Primary 6 by reducing the number of pupils per classroom.

First, from the view-point of children, decisions about repetition in Primary 5 are more likely to be made by schools, rather than by pupils or their parents; this is not the case in other grades for children aged 9 or above⁹. In 2016, we find that the proportion of children aged 9 or above who reported that the school – and not they themselves or their parents – had made the decision that they should repeat increases from 34% in Primary 3 to 47% of children that repeated in Primary 5. The situation reverses in Primary 6, with children more likely to say that they were the ones that made the decision to repeat. These trends confirm that schools take a particular interest in whether children are promoted or repeat in Primary 5.

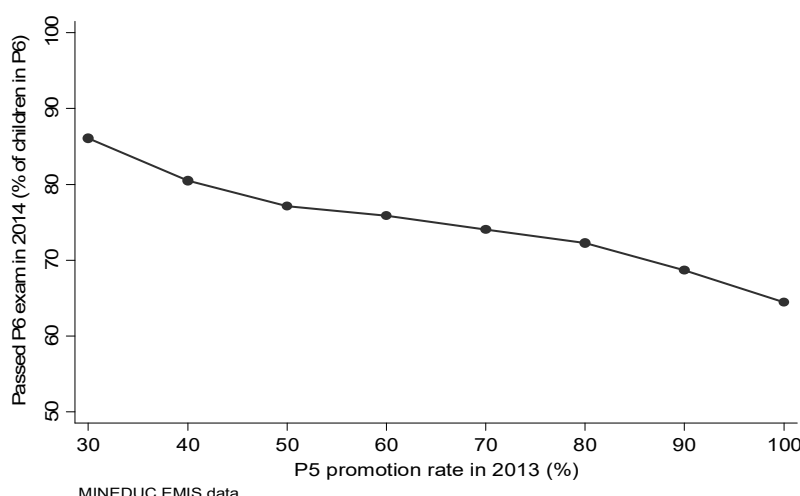
Second, evidence shows that schools apply stricter standards to promotion in Primary 5 than in previous grades. This can be seen by comparing the proportion of children that get promoted in each grade, versus the proportion of children that reported having met minimum requirements to pass to the next grade (see Figure 4.6). Each year, children get assessed at the school level and receive final grades, based on a mix of exercises, homework, and tests – we refer to these as “school exams”. There is a cut-off score beyond which children “pass” (note that according to the head-teacher survey this cut-off score can vary by school). In 2016, evidence suggests that more children enrolled in Primary 1 to Primary 4 got promoted to the next level than the proportion of children who met minimum requirements to pass to the next level. This changes from Primary 5 onwards. Schools appear to be more reluctant to let children in Primary 5 progress to Primary 6 if they do not meet the minimum requirements.

9 We make the cut-off at age 9, because before age 9 decisions about repetition are largely driven by age; after age 9 they are more driven by grade.

Figure 5.6: Promotion Rates and Pass Rates for School Exams for Children aged 6 to 17, by Grade (2016-2017)



The strategy of applying stricter standards in Primary 5 pays-off: schools with higher repetition rates in Primary 5 score better results in the national examination in the subsequent year. This can be seen using EMIS data for the 2012-2015 period. Consistently between 2012 and 2014 (and the transition to 2015), there is a negative association between Primary 5 promotion rates at the school-level in one year and national examination success rates in the subsequent year. Figure 4.7, which plots school-level examination success rates in the national primary school leaving examination in 2014, against Primary 5 promotion rates in 2013, shows that schools with higher promotion rates in the previous year, scored worse on the national examination, on average. While the strategy of applying higher standards in Primary 5 works in the short term – it leads to better results in Primary 6 in the next year – it is inefficient: a 10 percentage point decrease in the promotion rate in Primary 5 is only associated with a 2 percentage point increase in the national examination success rate in the next year.

Figure 5.7: Primary 6 Exam Success Rate in 2014 by Primary 5 Promotion Rate in 2013

5.2.2 Child-level Factors

The stakes of the national examination in Primary 6 are high not only for schools but for pupils themselves. The primary school leaving examination is key in determining which secondary school pupils will qualify for. Competition for the best secondary schools, especially schools with boarding facilities, is high. While the results are not binding for transition into secondary school, the national examination is the main allocation mechanism of pupils to the best secondary schools.

Being well prepared for Primary 6 is important because most children tend to only get one shot at the primary school leaving examination. The repetition rate in Primary 6, estimated at 5% in 2016, is by far the lowest of all grades in primary school. This is due to two competing dynamics: (i) the fact that the population of students that make it to Primary 6 are comparatively better and are much more likely to pass the national primary school leaving examination; and (ii) the fact that students that fail to make the transition to secondary school or fail to sit the exam, tend to drop out of school rather than repeat. This might be because schools are reluctant to give pupils that failed in Primary 6 a second chance, or because pupils self-select out of the education system after Primary 6; either way, most children only get the opportunity to attempt the primary school leaving examination once.

Children have their own incentives to repeat Primary 5, including:

- To improve their preparation for primary school leaving examination; and/or,
- To extend their schooling. Many children might know already in Primary 5 that they will not make the transition to secondary school. Given low repetition and high dropout rates in Primary 6, repeating in Primary 5 might be the last opportunity for these children to extend their schooling by at least one year.

Despite these incentives, there is little evidence in the data to support the child side of the story. This is evident from the fact that children feel that they or their families had less agency in repetition decisions in Primary 5 and that only 2% of repeaters in Primary 5 in 2016 mentioned without prompting that they repeated to better prepare for the national examination in the subsequent year.

On balance the evidence suggests that schools are holding children back in Primary 5 in order to obtain better school-level results on the national examinations. This implies that the Primary 6 leaving examination comes at a cost of significantly increased repetition rates in Primary 5.

SUMMARY OF KEY FINDINGS:

- *Schools apply higher promotion standards in Primary 5, with the objective of securing better school-level results in the national primary school leaving examination in the subsequent year*
- *Although there are no national-level incentives around the average performance of schools in the national examination, there appear to be clear incentives at a more decentralized level, via Imihigo contracts with schools*
- *Decisions about repetition in Primary 5 are comparatively (to other grades) more likely to be made by schools, because schools apply stricter standards to promotion in Primary 5 than in previous grades*
- *This strategy of applying stricter standards in Primary 5 pays-off: schools with higher repetition rates in Primary 5 score better results in the national examination in the subsequent year*
- *Although students have their own incentives to perform well on the Primary 6 leaving examination, on balance the evidence favours the school side of the story*

5.3 Why do children dropout during the transition from Primary 6 to Secondary 1?

The transition point from primary to secondary school is where dropout rates are the highest. In this section we argue that there are four key challenges that prevent children from making the transition to secondary school: (i) learning barriers; (ii) the increased cost of education when moving from primary to secondary school; (iii) a growing opportunity cost for children and households; and (iv) finally a supply-side limitation, with too few teaching resources in secondary school to accommodate the large population of children currently enrolled in primary school. While supply does not seem to be the binding constraint to the transition to secondary school at the moment, resource constraints in secondary school will in the near future put a high strain on transition rates to secondary school and learning outcomes in lower secondary school.

5.3.1 Child Factors

One of the key reasons children fail to make the transition to secondary school is because of learning barriers. Children who do not perform well in Primary 6 – and by extension in the national examination – are much more likely to dropout. In 2016, an estimated 60% of children who reported having failed to meet school-level requirements for Primary 6 dropped-out after Primary 6. The worst performers in schools were also the most likely to skip the Primary 6 leaving examination, whether by choice or because schools discouraged them from sitting the examination. Only an estimated 56% of children who failed the school-exams went on to take the Primary 6 leaving examination, compared to 96% of children that did not fail to meet school-level requirements.

The high pass rates in the Primary 6 leaving examination (85% in the 2016 edition) conceals high levels of variation in underlying test scores and a low minimum threshold for passing the exam. Children take exams on 5 topics in the national examination: mathematics, elementary science and technology, social studies, English and Kinyarwanda. Test scores on the national examination are obtained in four steps:

- **Step 1 - Individual grading of exam papers.** Test papers for each of the subject matters are first scored out of 100.
- **Step 2 - Translation of test scores into relative grading system.** Scores on test papers are then translated into a grading system, from 1 to 9, where 1 is the best and 9 the worst. The correspondence between the 1 to 9 grading system and the 0-100 score varies each year, depending on the performance of the pool of candidates. This is the point where test-scores are re-calibrated to match the performance of candidates. One pupil's test score is determined in relation to another student's score, not directly to whether or not the pupil meets academic expectations. This relative scoring ensures that year-on-year results from the national examination are comparable and that the distribution of scores is relatively similar.
- **Step 3 - Aggregation of test scores.** Scores from each of the subjects are then added together to create an aggregate test score. When combined across topics, scores range from 5 (for the highest-performing pupils) to 45 (for the worst performing pupils).

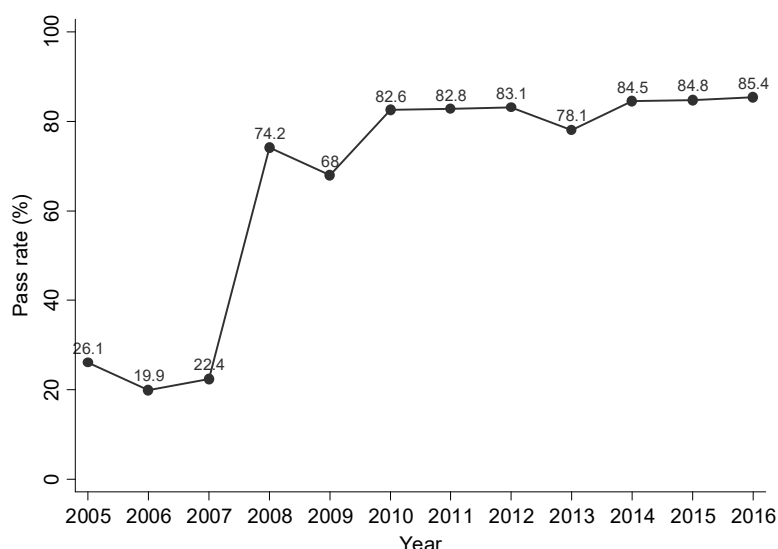
- **Step 4 - Classification into divisions.** Children’s performance on the Primary 6 leaving examination is then classified into 5 groups: division I to IV (which all lead to a “pass”) and unclassified (which corresponds to a “fail”). The correspondence of scores to divisions is described in Table 5.4. This correspondence table demonstrates that the threshold to fail is low: children can score the worst grade in four out of the five tests, and still get a “pass”.

Table 5.4: Classification of candidates by aggregate score on primary school leaving examination

Aggregate scores	Division
5-15	Division I
16-30	Division II
31-37	Division III
38-41	Division IV
42-45	Unclassified

Source: Rwanda Education Board (2009 classification system)

The effect of this classification mechanism on pass rates can be seen by looking at historic data on pass rates in the primary school leaving examination (see *Figure 5.8*). The new classification mechanism was first introduced in 2008 and further adapted in 2009. Before 2008, children used to receive a grade out of 100 which would determine whether they qualified to pass the examination or not. In 2007, before the reform, the pass rate was 22% of children that sat for the examination; this figure jumped to 74% in 2008 after the change. It has remained at above 82% since 2010 (except a small dip in 2013). Even though pass rates are high on the national examination, many children struggle with the transition to secondary school from a learning perspective.

Figure 5.8: Primary School Leaving Exam Pass Rates, by Year

Source: MINEDUC, *Education Statistical Yearbooks*, 2011-2016

5.3.2 Household-level Factors

5.3.2.1 Cost of Education

According to households and children, the biggest barrier to entry into secondary school remains the **cost of education, despite successful implementation of the 9/12-year basic education policy**. Cost is mentioned as a leading cause of dropout across grades, but there is a notable increase in Primary 6 in the proportion of children that identified the cost of education – in particular non-tuition related costs such as the cost of school materials, uniforms, school feeding – as one of the main reasons that they dropped-out. In 2016, an estimated 73% of children who dropped-out in the transition to secondary school mentioned cost as one of the main reasons they dropped-out.

Data on the education-related expenditures, collected as part of the household survey, confirms that there is a noticeable increase in the cost of education between primary and secondary education. On average, tuition fees paid by households increase from an average of RWF 300 per year per child in primary school to RWF 5,500 in lower secondary school. This increase in fees is explained by a higher proportion of children in private schools - approximately 14% of children in secondary school, compared 5% in primary school¹⁰ - and by the fact that the proportion of children enrolled in boarding schools increases substantially. The largest increase, however, is on non-tuition education expenditures, which triple on average between primary and secondary school (see *Table 5.5*).

¹⁰ MINEDUC, *Education Statistical Yearbook*, 2016

Table 5.5: Average Estimated Annual Costs of School per Child

Cost item	Primary	Lower Secondary	Change
Uniform	3,776	7,927	+4,151
School feeding program fee	58	3,129	+3,071
Notebooks	1,265	3,619	+2,354
Transport to school	13	787	+774
Bags	413	934	+521
Pens	471	967	+496
PTA (Parent Teacher Association) fees	170	380	+210
Examination expenses	79	241	+162
Other supplies	54	199	+146
Food (non-school feeding program)	64	199	+135
Books	34	100	+65
Voluntary contributions	187	213	+26
Total	RWF 6,584	RWF 18,695	RWF +12,111

Limitations: There are some limitations on this survey data, which may overstate the increase for in education for a given child. The observed cost increase is made up of two components: (i) because costs are higher in lower secondary schools - in particular, costs associated to the school feeding program; and (ii) because children that make it through to lower secondary school are more likely to come from households that are more inclined to spend on the education of their children. Indeed, the composition of households who have children in lower secondary versus only in primary school changes – households are more likely to be urban, to come from higher wealth quintiles, etc.

As shown in Table 5.5, the transition from primary to lower secondary school creates a whole new set of non-tuition related education expenses for children and their households. New costs, that children did not face in primary school, include much higher transportation costs (arising from the fact that there are fewer secondary schools and children have to travel longer distances) and, much higher food costs, related to the school feeding program.

All the evidence in this study points to the fact that the poorest households are price sensitive. This price elasticity might explain why children – and by extension their parents –self-select out of secondary school when faced with significantly higher education costs.

Children in lower secondary schools generally need to have lunch at school, whereas some children at primary school can have lunch at home. There is no double shifting in lower secondary school in Rwanda. With much longer school days and longer distances to cover from home to school, children often cannot return home to eat. To deal with the issue of lunch in secondary schools, the Government of Rwanda has launched and implemented a national school feeding program, which aims to make lunch available to students in all secondary schools in the country. This program is a home-grown solution designed to

improve nutritional and educational outcomes, provide a strong incentive to keep children in school and stimulate the local economy by procuring food from local farmers. All lower secondary schools in our sample reported providing lunch to students – demonstrating the success of the school feeding program in terms of the speed of its scale-up to the national level.

The school feeding program in secondary schools is a significant cost for children transitioning from primary to secondary school. School feeding is subsidized by the Government of Rwanda, but subsidies are not sufficient to cover the costs of school feeding and households need to contribute as well. The mandatory contribution varies by school, depending on the idiosyncratic cost-structure of each school and the level of subsidies obtained. Parents in lower secondary school that contributed some money towards the school feeding program reportedly contributed on average RWF 7,500 per child per year (note that parents did not necessarily contribute consistently to the school feeding program, which means that the figure of RWF 7,500 does not reflect the full cost of contributing to school feeding each year; also note that this figure is higher than the average reported in Table 4.5 because many households do not contribute to school feeding fees). This is a cost that can be quite significant for households in rural areas, especially households with multiple children in school.

The school feeding program may have benefits in terms of learning, nutrition, and the local economy; however it has created a new challenge for schools to deal with, which is how to manage with students that cannot or regularly fail to pay the fee. Non-payment towards school feeding is a considerable concern. Currently only 45% of households that have at least one child aged 18 or below enrolled in lower secondary school reported contributing to the school feeding program in 2016. An estimated 80% of head-teachers interviewed during the school survey, from schools that included lower-secondary classes, also confirmed that parents often failed to pay school feeding fees. It appears that schools are dealing with this in different ways. In some schools, children who cannot pay are not allowed to attend school. In others, the children who can't pay are allowed to stay, but cannot eat with their peers during lunch break. In others still, schools cross subsidize to ensure that all students can eat regardless of if they are able to pay. If children get banned from eating lunch or staying at school, it defeats the purpose of the program; if they dropout because they cannot afford the fee then this creates unwanted educational outcomes; if on the other hand, children from the poorest household get cross-subsidized by households that are slightly better-off, then it transfers the cost to the community-level. The school feeding program, instead of keeping children at school, is contributing to higher dropout rates for children from the poorest households who simply cannot afford to contribute to the fees, despite the subsidies.

4.3.2.2 The Rising Opportunity Cost of Being Enrolled in School and Over-aging

This discussion on costs is related to the opportunity cost of some children making the transition from primary to secondary school. Children with the highest dropout rates in Primary 6 are over-aged children that have at some point either started school late, repeated multiple times, or dropped-out and re-entered. These children are at the greatest risk of dropout not only because of their poor performance at school, but also because of the increasing opportunity cost of transitioning to secondary school.

The opportunity cost of transitioning to secondary school increases because longer school days imply that some children would have to scale-back on existing household responsibilities. Although double shifting is a temporary measure that was put in place to maximize the use of resources within Rwanda's primary education system, it has one benefit which is often overlooked in the policy discourse: it creates a shorter schooling day, thereby providing children with the opportunity to combine school with their household responsibilities. Children are not dropping-out after Primary 6 because they need to start working on the family farm or take care of younger siblings, and did not need to do so before Primary 6. However, they might be dropping-out because transitioning to secondary school would imply significantly scaling back their current household activities. Attending secondary school is a much more binding commitment: a) the required travel time to reach the nearest secondary school is generally higher (children enrolled in secondary school travel on average 3.3km to reach school, compared to 1.4km for children in primary school); b) children have to commit to much longer school days; and, c) make a significant investment to do homework in after-school hours. These are trade-offs that might not always be compatible with the responsibilities and challenges that children face at home.

There is a clear alternative option to school for some children, which is to support income generating activities for the household. After dropping-out of school, children quickly transition to work: at age 13 an estimated 20% of in-school and out-of-school children work; by age 18 more than 50% of out-of-school children in 2017 reported working, compared to 37% of in-school children. This seems to suggest that work is a second-best option, for children and households. It is an option that becomes more attractive as the costs of going to school increase, both in financial terms and in terms of the time commitment. It is also something that becomes more prevalent with age. With over-ageing so prevalent, many children are making the decision whether or not to transition to secondary school in late adolescence, at a time when they might otherwise be transitioning to the labour market.

Finally, perceptions about opportunity cost are shaped by some children's own perceptions about their future educational prospects. By reaching Primary 6, children have accomplished a major educational outcome: having attended and maybe also passed all grades in primary school. However, children that dropout in the transition from primary to secondary school, appear to a) have lost confidence in their own abilities; b) lost confidence in the schooling system; and c) to be surrounded by a social-network that is less supportive of their education. Elements that point in this direction include the following:

- **Own abilities.** Children who dropout after Primary 6 are more likely to have lost confidence in their own ability to learn compared to children who do not dropout. For example, children who dropped-out after Primary 6 in 2016-2017 were 17 percentage points less likely to strongly agree that they had "a lot of confidence in their own ability to learn, even the most complicated things". They were also 12 percentage points more likely to strongly agree that they had "a lot of trouble following what is taught" in class.
- **Education system.** Children who dropout are less likely to have confidence in the schooling system. For example, children who dropped-out were on, average 14, percentage points less likely to strongly agree with the statement that their teachers "really cared" about their performance at school.

- **Social-support network.** Finally, the social network of children who fail to make the transition from primary to secondary school is comparatively less supportive of schooling. Children who dropped-out were more likely not have a mentor to talk to about their education and were more likely to have friends who do not perform very well in school.

Over-aging, low self-confidence, reduced confidence in the schooling system and a comparatively less supportive social-network, increase the opportunity cost of transitioning to secondary school. Dropouts might be making the calculation that while they have reached the Primary 6 milestone, they are unlikely to reach the next educational milestone in a reasonable amount of time. The opportunity cost of investing in many more years of education is higher for children with uncertain educational prospects than it is for children that are on-track with their education.

In summary, the direct cost increase of transitioning to lower secondary school and the increased opportunity cost, combine to increase dropout in the transition from Primary 6 to secondary school.

5.3.3 School-level Factors

Rwanda has invested significantly in expanding physical and human resources in secondary education over the past few years, but the low supply of secondary education remains one of the main factors contributing to the high dropout rates observed in the transition from primary to secondary school. Although there is a direct link between low access to secondary education and the failure to transition from primary to secondary school, the supply-side of the story does not appear to be the most binding constraint to the educational progress of children at the moment. However, future projections, based on educational targets, suggests that insufficient resources in secondary education will soon become one of the biggest challenges facing Rwanda's education sector.

There are currently not enough physical and human resources at the secondary school level to absorb the population of children that are currently enrolled in Primary school. Focusing on lower secondary school there were about 350,000 students enrolled in Secondary 1 to Secondary 3 in 2016, compared to 935,000 pupils between Primary 4 to Primary 6¹¹. If only 56% of these children progress through to Secondary school by 2019, then the secondary education system would need to cope with 50% more students, a substantial challenge from a resource, logistical and quality perspective. There is some capacity in Rwanda's secondary education sector to handle increased secondary school enrolment due an increase in the stock of physical and human resources - combined with stagnating enrolment figures – but not sufficient capacity in the immediate term to deal with this very large population of students currently enrolled in upper primary school. There are three non-mutually exclusive ways to manage this issue: a) apply higher repetition rates in upper primary school to delay the transition of students to secondary school, until the capacity gap is met, at the risk of higher dropout rates due to over-aging; b) expect a significant drop in transition rates to secondary school over the next few years, while investments are

¹¹ MINEDUC, *Education Statistical Yearbook, 2016*

made to upgrade resources; and/or c) allow for a loss in the quality of education in lower secondary school, by stretching teaching resources. Neither option is optimal.

Low access to secondary schools is directly linked to higher dropout rates. Given that there are fewer secondary schools compared to primary schools, children often have to walk a longer distance to reach the nearest secondary school. Distance to the nearest secondary school is a strong predictor of dropout for children of secondary-school-age¹². The further away a child lives from a secondary school, the more likely the child is to dropout.

Supply and access are important concerns, but trends suggest they are currently not the most binding constraint to children's progression from primary through to secondary school. If absorption capacity in secondary schools was the main barrier holding children back, then recent investments in an increased number of secondary schools, classrooms and teachers should have led to a proportional increase in the number of students making it through from primary to secondary school. This has not materialized, despite the Government of Rwanda's efforts to invest in the sector and implement the policy of 9 – and now – 12 years of free basic education. Over the past five years – between 2012 and 2016 – the Government of Rwanda has invested in the construction of 109 new secondary schools, about 3,300 new classrooms, increased the number of qualified teachers by almost 4,200. Yet, enrolment levels have stagnated in the secondary education system overall (3.5% increase in aggregate enrolment since 2012) and even dropped in lower secondary school during the same period. Transition rates from primary to secondary school have also dropped significantly, from 86% in the transition from 2011 to 2012 to 71% in 2015-2016, despite stable examination results and increased enrolment levels on the primary school leaving examination. The increased investment in secondary school since 2012 has led to the temporary under-utilization of resources.

Instead of an increase in the number of students enrolling in secondary school, what we see over the past few years is a re-composition of the secondary education sector, with students shifting away from private schools towards public and government-aided school. Between 2012 and 2016 the number of students enrolled in the secondary education system increased by 3.5% overall. Enrolment levels increased by almost 13% in public schools, close to 8% in government-aided schools, but decreased by more than 20% in private schools in the space of just 4 years (see Table 5.6). This suggests that free secondary education (as part of the 9-years of basic education policy) is crowding out private-sector education at secondary school level. The rapid drop in enrolment levels in private schools also shows that households react quickly to the aggregate cost of education. This high price elasticity is consistent with findings that suggest that the aggregate cost of education (the cost of books, school accessories, uniforms, food, etc.) is one of the main drivers of dropout in the transition of primary to secondary school.

12 Even after controlling for age, gender, household and other locational factors of interest

Table 5.6: Secondary School Enrolment by School Type and Year

Type of school	2012	2016	Change
Public	153,352	173,109	+12.9%
Government-aided	279,850	301,554	+7.8%
Private	101,510	79,076	-22.1%
Total	534,712	553,739	+3.6%

Source: MINEDUC, Education Statistical Yearbook, 2012 and 2016

These statistics suggest that while the secondary education sector might in the near future face significant resource constraints, these constraints are not the main driving force behind dropout in the transition from primary to secondary school.

SUMMARY OF KEY FINDINGS:

- *One of the reasons children fail to make the transition to secondary school is because of learning barriers: low performance in Primary 6 – and by extension in the national examination – is strongly linked to dropout*
- *The largest barrier to entry into secondary school, according to children and parents, remains the aggregate cost of education, despite successful implementation of the 9/12-years of basic education policy*
- *The transition from primary to lower secondary school sees significant increases in non-tuition related education expenses (such as the school feeding program)*
- *The actual cost of transitioning to lower secondary school and the effect of a much higher opportunity cost, combine to create a situation where children simply cannot afford or have to opt out of transitioning to secondary school*
- *Finally, supply and access are urgent concerns, but trends suggest they are currently not the most binding constraint to children's progression from primary through to secondary school*
- *However, insufficient resources in secondary education will soon become one of the biggest challenges*

6. Drivers of dropout and repetition: contextual factors

In this chapter, we study some of the child, household, school and geography/community factors that relate to dropout and repetition. In doing so we create profiles of children that drop out of school and children that repeat, and also identify risk factors that signal that a child is at risk of dropout or repetition.

6.1 Drivers of dropout

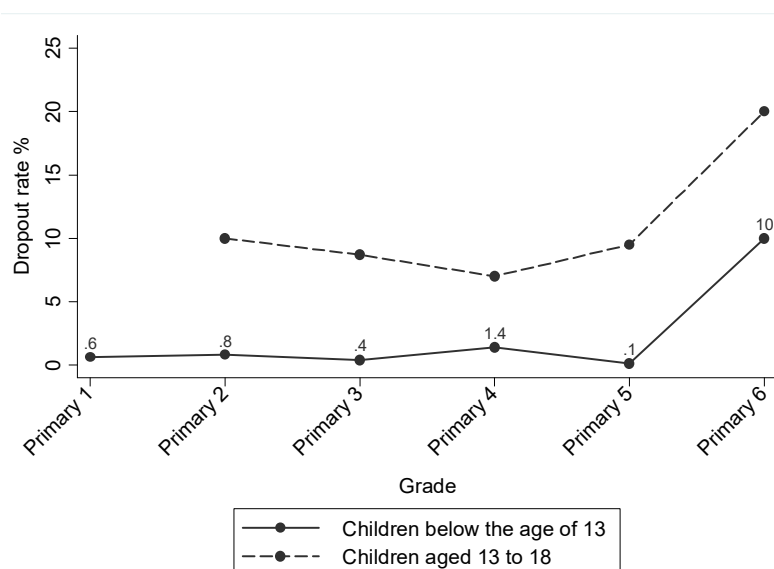
In Chapter 4, key statistics were provided on children that dropped-out of school. In this section, we go one step further by trying to better understand who these children are and what factors relate to dropout. We first study the link between child characteristics and dropout, before focusing on household, school and geographic/community factors.

6.1.1 Child Characteristics

6.1.1.1. Age

Chapter 5 noted that within a grade there are pupils of a wide range of ages. Older and younger children share the same classrooms, yet face very different prospects in terms of the prevalence of dropout.

Two of the strongest predictors of dropout are age and where children are in the course of their education. As can be seen in *Figure 6.1*, both age and grade matter when it comes to dropout. The figure highlights two very important points: (i) regardless of the grade, older children aged 13 to 18 that are enrolled in primary school, are much more likely to drop out of school, compared to younger children below the age of 12; (ii) there is a spike in dropout rates for both older and younger children in Primary 6, during the transition from primary to secondary school.

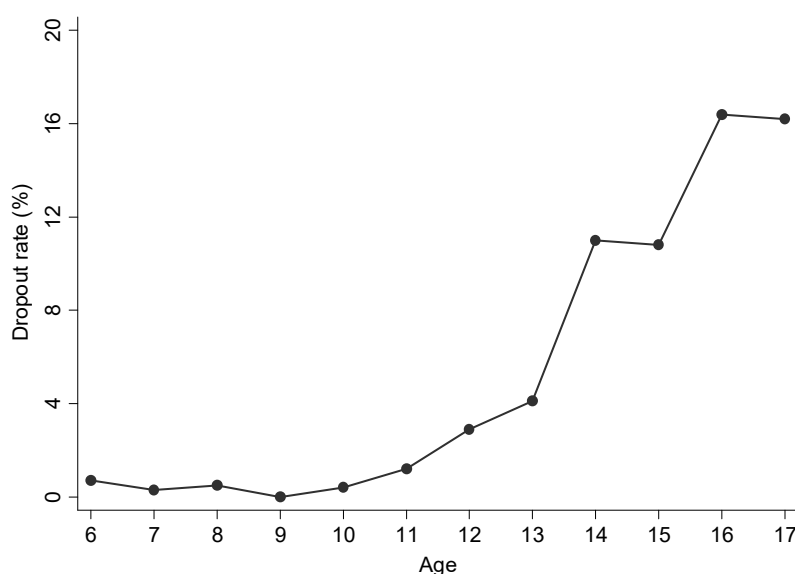
Figure 6.1: Dropout Rates, by Grade, split by Child's Age (2016 - 2017)¹³

Children aged 13 and above accounted for 88% of the cases of dropout in primary school in 2016-2017.

Tackling dropout in primary school therefore requires either reducing over-aging or tackling the causes of dropout for children above the age of 13. Children between the ages of 10 to 12 accounted for about 10% of dropout cases in primary school, while children below the age of 9 accounted for less than 2% of dropout cases. Dropout before the age of 13 is typically short-lived; it mainly affects the most vulnerable children and often follows a shock to the family (for example the loss of a parent). The biggest risk with dropout during primary-school-age is therefore not that a child will never return to school, but rather that their learning and future educational prospects might be affected by this interruption. Dropout at age 13 or after is more structural and permanent.

Ages 13 and 14 are a dropout turning point, because that is the age when children start reaching Primary 6 and making the transition to secondary school. This critical turning point can be seen in *Figure 6.2*. Dropout more than doubles for children between the ages of 13 and 14, from 4% to 11%, increasing further to reach about 16% at the age 16 and 17. This step change in the dropout rate results in the rapid decline of the estimated school enrolment rate from almost 96% at age 13, to 82% at age 15 and 49% at age 18. By the time children reach the age of 18, more than half have dropped-out of school, without having completed basic education.

¹³ Dropout rates are averaged over two years (2015 and 2016) to increase the precision of estimates for certain grades; this does not in any way change the conclusions.

Figure 6.2: Dropout Rate, by Age (2016 – 2017)*Table 6.1: Dropout Rate, by Age (2016 – 2017)*

	Children of primary-school-age (7-12)	Children of lower secondary-school-age (13-15)	Children of upper secondary-school-age (16-17)
Dropout rate	0.8%	8.5%	16.0%

6.1.1.2. Gender

Differences in the dropout rates of girls and boys are small at all ages. On average there are no discernible differences in the dropout rates of girls and boys aged 7 to 18: in 2016 an estimated 4.63% of boys aged 7 to 18 and enrolled in either primary or secondary school dropped out of school, compared to 4.65% of girls. Differences are not only small on average, but also by age group (see Table 5.2). The only observable difference in dropout rates is in the 13 to 15 age group. Girls in the 13 to 15 year age group appear to be 1.3 percentage points more likely to dropout than boys, but this difference is not statistically significant. Data from previous years is also inconclusive on whether girls in this age group are more likely to dropout than boys.

Table 6.2: Dropout Rate, by Gender and Age (2016 – 2017)

	Children of primary-school-age (7-12)	Children of lower secondary-school-age (13-15)	Children of upper secondary-school-age (16-17)
Boys	0.9%!	7.8%	16.4%
Girls	0.9%!	9.1%	16.3%

! Estimates may be imprecise or have lower reliability

Note differences in the dropout rate between girls and boys are not statistically significant

Despite very similar dropout rates between girls and boys at all ages, girls are more likely to be out-of-school from ages 16 onwards. Figure 5.3 shows this very clearly: while the proportion of out-of-school boys and girls follows a similar trajectory between the ages of 9 to 15, the trends start to diverge from age 15 onwards. The difference in the proportion of girls and boys that are out-of-school is relatively large and statistically significant- about 5.5 percentage points on average between the ages of 16 to 18. Data from the household survey (which included parental interviews on the enrolment and grade of their children) confirms this pattern and further suggests that this difference between boys and girls persist until at least the age of 20.¹⁴

Figure 6.3: Percentage of Children that are Out-of-School, by Age, split by Gender (2017)

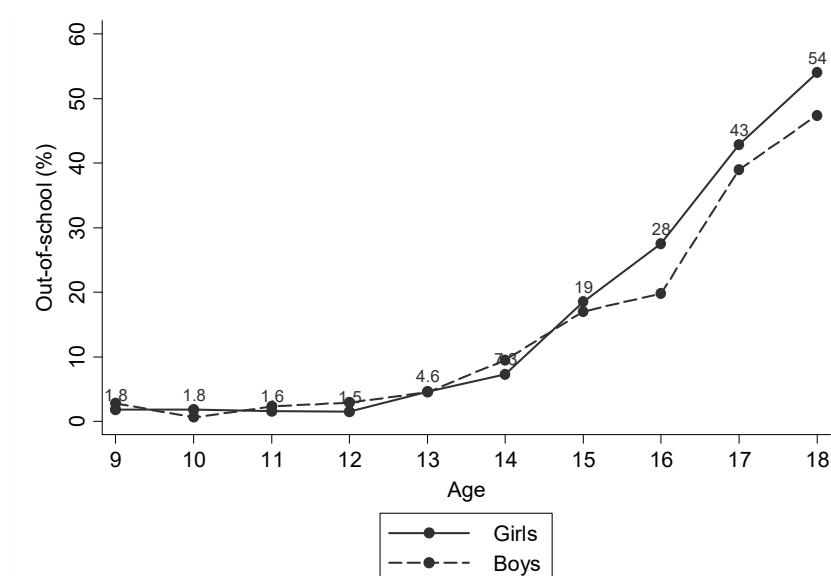


Table 6.3: Percentage of Children Out-of-School, by Gender and Age (2017)

Gender	Age 7 to 9	Age 10 to 12	Age 13 to 15	Age 16 to 18
Boys	9.5%	1.9%	10.3%	35.3%
Girls	6.4%	1.6%	9.8%	40.8%

Note that more boys are out-of-school at ages 7 to 9, because they are slightly more likely to start school later than girls (this is discussed further in the section on entry below)

For children of upper secondary-school-age (ages 16 to 18) – which is the age when dropout rates start to increase rapidly in urban areas as well - important location/gender patterns start to emerge. These are highlighted in Table 6.4. Two trends stand-out: (i) girls of upper secondary school living in rural areas

¹⁴ In the household dataset we asked information about the current enrollment and grade of all household members at the start of 2017; thus, this allowed us to have information about school enrollment for all household members, including those above the age of 18.

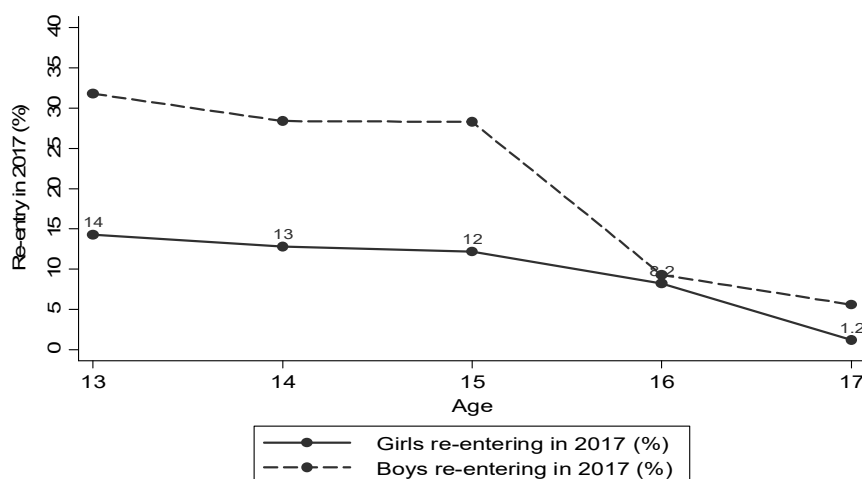
are much more likely to be out-of-school than boys (the difference is statistically significant, controlling for the age of the child and other household-level variables); (ii) out-of-school rates for girls and boys are very similar in urban areas. The issue highlighted earlier of girls being more likely to be out of school than boys after the age of 16 is therefore a rural phenomenon.

Table 6.4: Percentage of Children (aged 16 to 18) Out-of-School, by Location and Gender (2017)

Location	Boys	Girls
Rural	37.5%	44.4%
Urban	24.1%	23.2%

The main reason we observe divergent enrolment levels between girls and boys from age 16 onwards is because dropout is more permanent for girls than it is for boys (see *Figure 6.4*). While girls and boys experience relatively similar dropout rates, they have very different re-entry rates. Dropout is much more permanent for girls than it is for boys. An estimated 7% of out-of-school girls aged 13 to 17 in 2016, re-entered the education system in 2017; this compares to 15% for boys, more than double the rate for girls. This difference is largest for children in the 13 to 15 age-group. These differences are strongly statistically significant, and hold controlling for age and the highest grade achieved.

Figure 6.4: Percentage of Out-of-School Children (aged 13 to 17) in 2016, who re-entered in 2017, by Gender



Box 2: Why do older girls drop out of school?

We have established that girls aged 16 and above are more likely to be out-of-school than boys. This is predominantly a rural issue. In rural areas, girls aged 16 to 18 in early 2017 were about 8 percentage points more likely to be out-of-school than boys. In urban areas girls and boys aged 16 to 18 are equally likely to be enrolled. This switch in gender dynamics in rural areas is inconsistent with the educational performance of boys and girls between the ages of 7 to 15, an age during which boys lag behind girls on almost all metrics. The question we ask in this section is why are girls aged 16 to 18 more likely to be out-of-school relative to boys?

We show that the reason girls drop out of school after the age of 16 is not related to performance in school, rather, it is the result of the social and family environment.

Child-level Factors

a. Performance

Differences in the educational performance of girls and boys that contribute to differences in enrolment rates, learning is not the main reason girls aged 16 to 18 are out-of-school than boys. Ironically, one of the factors contributing to lower enrolment rates for girls aged 16 to 18 is the fact that girls reach the Primary 6 milestone faster than boys, on average. Primary 6 is the grade after which the likelihood of dropout is the highest. Due to their better performance throughout the primary education system girls reach that educational milestone at a younger age than boys. In 2017 for example, an estimated 57% of girls aged 16 had previously attended Primary 6, compared to just 44% of boys. This is a large difference (13 percentage points) in the context of an education system that leads to girls dropping out-of-school - by failing to make the transition to secondary school - earlier-on than boys.

Evidence suggests that girls have historically been less likely to make the transition to secondary school. Although this does not appear to be the case in 2016-2017, where transition rates are estimated to have been higher for girls than for boys, it was the case during the 2011-2016 period. Education statistics for the 2011-2014 period, as per the Education Statistical Yearbooks produced by MINEDUC, show that transition rates for girls have been, on average, one to four percentage points lower than the rate for boys. Evidence from the child survey for the 2015-2016 period shows that an estimated 82% of boys in this age group who were enrolled in Primary 6 in 2015, were still enrolled in school in 2017 – i.e. either repeated Primary 6 or, more likely, transitioned to Secondary 1, compared to just 68% of girls in the same age group. This is a very large and statistically significant gap.

For the 16 to 18 age group, this gender gap in transition rates does not seem to be related to learning discrepancies between girls and boys. Evidence from the child survey suggests that in both 2015 and 2016 success rates on the school exams in Primary 6 were about 5 percentage points higher for girls aged 16 to 18, suggesting that - if anything - girls had higher abilities on average in Primary 6, despite being much less likely to have transitioned to secondary school.

b. Pregnancy and marriage

Although there is a perception that pregnancy and/or marriage are a major cause of dropout for girls in later stages of their educational trajectory, this is not the case for girls in the 16 to 18 age group. According to data from the child survey, only an estimated 1.3% of girls aged 16 to 18 reported ever having been pregnant. Pregnancy and marriage were also not mentioned, by either girls or parents, as a major cause of dropout or a reason for not re-

entering school after having dropped-out in our child and parent surveys. Pregnancy and/or marriage might have contributed on the margins to slightly higher dropout rates for girls aged 16 to 18, but the effect is small and does not explain the enrolment wedge we observe between girls and boys from age 16 onwards.

While pregnancy and/or marriage are not one of the main drivers of dropout for the 16 to 18 age group, evidence suggests that they are likely to be a driver of dropout for females over 18 still enrolled in primary or secondary school. Note that the majority of children in secondary school are older than 18. This means that gender-related findings for the 16 to 18 year age group do not necessarily generalize well to the rest of the secondary education system. Furthermore, evidence suggests that pregnancy and/or marriage switch from being a rare occurrence around the ages of 16 to 18, to being a more dominant occurrence thereafter. There is a clear break in the prevalence of child birth and marriage around the ages of 18 to 19. According to the 2012 Population Census, and in particular the sub-sample provided by NISR, which is publicly available online, we see that pregnancy rates increase from about 2% of girls at age 17, to more than 20% of girls by age 20 and almost 50% of girls by age 23. Very similar patterns apply for marriage.

Household and Community-level Factors

a. Underlying gender biases

Evidence suggests that parents, and communities more broadly, have different expectations for girls' education than boys' education. These underlying gender biases, although marginal and impossible to fully quantify, favour the hypothesis that household-factors might explain why girls are less likely to be enrolled than boys around ages 16 to 18.

First of all, the household plays a bigger role in decisions about dropout and re-entry for girls than it does for boys. This is particularly true in rural areas. When asked who participated in the decision for them to dropout in our child survey, out-of-school girls in rural areas, aged 16 to 18, were about 9 percentage points more likely to mention their parents than boys were. Similarly, when parents were asked who participated in the decision that their child should dropout, parents were more likely to say that they themselves had participated in the decision when the child was female. This is important because it points to the possibility that girls have less agency in their education and might be pressured by parents to drop out of school.

Parents also appear to have marginally lower educational aspirations for their daughters. We show these differences using a couple of examples. During the household survey parents were asked what level of education they aspired to for their daughters and sons. An estimated 87.5% of parents surveyed wanted their sons to complete at least University or a VTC (Vocational Training Centre), compared to 81.5% for their daughters. This difference of 5.5 percentage points is strongly statistically significant, and might be reflective of a small but real bias within households favouring the education of boys.

Finally, evidence seems to suggest that girls aged 16 to 18 dropout when there are a greater number of younger siblings of schooling age in the household. The number of siblings in the household appears to have no significant impact on the enrolment level of boys. We can see this clearly in Table 5.5, which shows that in rural areas the difference in enrolment of girls and boys aged 16 to 18 with just one younger sibling of schooling age is about 3 percentage points, compared to about 8 percentage points for children with two younger siblings and 20 percentage points for children with 3 younger siblings of schooling age. These statistics show that the structure of the household has a very significant bearing on the education of girls aged 16 to 18.

Table 6.5: Enrolment Rate of Children aged 16 to 18 in Rural Areas, by Number of Younger Siblings of School Age (2017)*

Number of younger siblings aged 6 and above	Enrolment of girls aged 16-18	Enrolment of boys aged 16-18
1	57.9%	61.8%
2	50.0%	58.4%
3	40.1%	60.3%

**We do not have sufficient sample sizes to report the situation of boys/girls with more than 3 siblings*

These household-level dynamics could result from: (i) the fact that parents prioritize the education of boys over girls, sacrificing the education of girls when there is not sufficient money to pay for all siblings; or (ii) the fact that girls dropout because with more siblings in the household, come greater household-level responsibilities. There is ample evidence showing that girls are expected to play an important role within the household, taking care of siblings or older family members, conducting household chores and working on the family farm. These responsibilities increase with age and can interfere with children's education. These responsibilities increase with age and can interfere with children's education.

b. Household-shocks affect the education of girls – example of the loss of a parent/mother

These underlying biases and the differences in gender roles with respect to the family are laid to bare when there is a shock in the family. We show this using the example of the loss of a parent or household member or the birth of a child in the family.

The education of girls seems to suffer more from the loss of a parent, than the education of boys. The death of the mother is associated with a 13.5 percentage point drop in enrolment for girls, compared to an 8 percentage point drop for boys; the death of the father is associated with a 10.5 percentage point drop in enrolment for girls, compared to no significant difference in enrolment for boys. The death of a parent or other household members are likely to be one of the main drivers of the discrepancies we observe in enrolment rates between girls and boys aged 16 to 18. Older girls are much more likely to have lost a parent than younger girls: an estimated 11% of girls below the age of 16 had lost a parent, compared to about 23% of girls aged 16 to 18. This is therefore not a rare occurrence or shock to the family structure.

Other changes to the structure of the household, such as the birth of a child, also affect girls more than boys. The birth of a child in a rural household over the previous 12 months was associated with a 25-percentage point drop in enrolment rates for girls aged 16 to 18, compared to no significant change for boys. This is a very large and significant drop, which suggests that adolescent girls have large responsibilities towards taking care of younger siblings. The birth of a child is also not a marginal occurrence. An estimated 9% of girls aged 16 to 18 lived in a household in which a child was born in the previous 12 months. These differences show that girls' education is comparatively more vulnerable to household shocks than the education of boys. Girls at ages 16 to 18 are expected to take on greater responsibilities within the household and these responsibilities can have a direct effect on their education.

6.1.1.3. Performance in School

An important question to ask is whether dropout is tied to low academic performance. Do children dropout because they do not perform well at school? To answer this question we study the past schooling experience of children as well as self-assessments and compare them to educational outcomes in terms of dropout. We start by focusing on repetition, which is a leading indicator of low academic performance.

Repetition – which is used here as a proxy for academic performance - is a precursor to dropout and a key risk factor in the educational trajectory of children. Children who repeat and accumulate delays in their education, have a much higher risk of dropping-out when they reach age 13 or above. Using children's past schooling history, we test whether the frequency of past repetition is a good predictor of the dropout rate in 2016. For children aged 13 or above, the results show that on average, each incidence of past repetition is associated with a 3-percentage point increase in the dropout rate (this association is strongly statistically significant, controlling for age, gender and location). Children that have repeated several times, are therefore much more likely to dropout than children that never repeated, or repeated fewer times. The regression coefficients associated with each additional incidence of repetition are presented in Table 5.6.

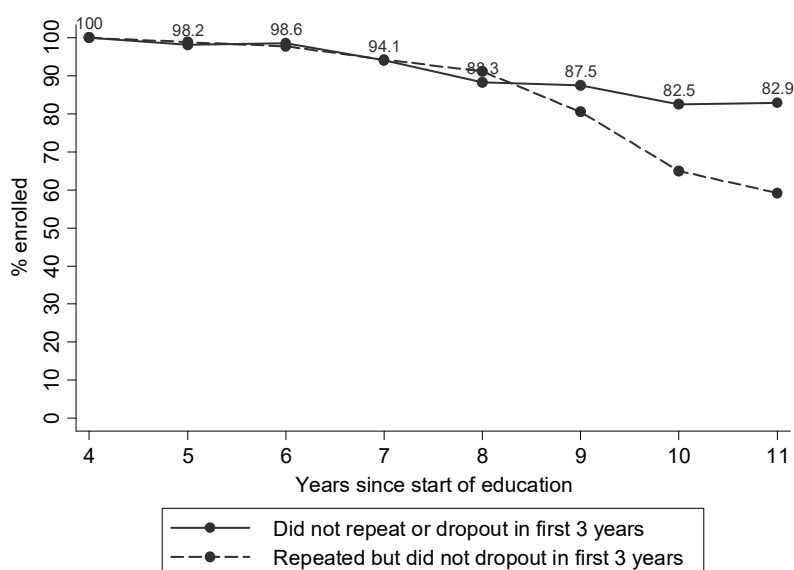
Table 6.6: Average increase in the 2016 Dropout Rate for Children aged 13 or above, by number of times repeated in the past

Number of times repeated before 2016	Estimated percentage point increase in the 2016 dropout rate
Never	Comparison point
Once	+1.9
Twice	+3.2
Three times	+4.8
Four times	+9.8**
Five times	+27.9***

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Repetition and dropout are inter-linked in a dynamic way from the start of a child's education. Children who repeated at least once in their first 3 years of their education are much more likely to dropout after the 8th year of their education, compared to children that did not repeat in their first three years of education. We can see this in *Figure 6.5*. The figure reveals that children who repeated at least once during their first three years of education and those who did not repeat experienced similar enrolment rates up to their 8th year of education. Thereafter, their enrolment rates start to diverge, with children who repeated at least once in their first three years of education becoming much more likely to dropout later. An incidence of repetition at the start of a child's education, is associated with a higher risk of dropout many years later.

Figure 6.5: Enrolment Rates, by Years since the Start of a Child's Education and by whether the Child Repeated in their first 3 years of education (2017)



There is also a strong association between measures of self-confidence and children's self-assessment of their abilities and dropout. Controlling for child, household and location-level factors, we find that children who dropped-out and children who repeated in 2016 were both significantly less likely to have found classes to be easy. Having dropped-out or repeated is associated with a 6 to 8 percentage point drop in the share of children who deemed classes at school to be easy. There are no statistically significant differences however between repeaters and children who dropped-out.

Where children who dropped-out differed from repeaters is on the metric of self-confidence to learn difficult concepts. Both children who dropped-out and children who repeated in 2016 were significantly less likely to have confidence in their own abilities to learn, compared to children who were promoted. However, the signal was strongest for dropouts. Dropping out of school is associated with a 15-percentage point reduction in children's confidence in their ability to learn the most difficult things, while repetition was associated with a 6 percentage point reduction in self-confidence (both differences are strongly statistically significant).

In summary, there is a strong link between performance, self-confidence and dropout. Children who have repeated the most are also more likely to dropout. Moreover, children who dropout appear to have given-up on their own skills; they have lost confidence in their own ability to perform at school.

5.1.1.4. Special Education Needs (SEN)

A factor to take into consideration when it comes to the risk of children dropping-out or accumulating delays in their education is the issue of various forms of special education needs. Children with special educational needs can experience physical difficulties (for example, impaired vision, hearing or

movement), but equally importantly cognitive and behavioural difficulties. In this sub-section, we briefly present average rates of different forms self-reported special educational needs (see Table 5.7), based on parental interview from the household survey, and establish the link with dropout.

Table 6.7: Percentage of Children in Primary School with a self-reported Special Education Need (2017)

Type of special education need	Girls	Boys	Total
Physical			
Difficulties w/ vision	5.0%	5.7%	5.4%
Difficulties w/ hearing	3.2%	2.6%	2.9%
Difficulties w/ movement	*	*	*
Cognitive			
Difficulties w/ learning	3.0%	5.6%	4.3%
Difficulties w/ self-care	0.8%!	1.1%!	0.9%!
Difficulties w/ speech	1.2%	2.8%	2.0%
Behavioural			
Difficulties controlling behaviour	3.0%	5.6%	4.3%
Difficulties making friends	2.2%	1.7%	1.9%

*! Estimates may be imprecise or have lower reliability; *insufficient observations*

Limitations: Questions on the special educational needs of children were asked to the parents or guardians of children. As such, the results should be taken with caution as self-reported disabilities, by definition, have not been diagnosed by a trained medical professional.

Evidence suggests that children who self-report either cognitive or behavioural difficulties are at a greater risk of dropout. The self-reported special educational needs that provide the strongest link to dropout are behavioural impairments, including difficulties making friends and controlling behaviour, and cognitive impairments, including difficulties in speaking and getting understood by people outside the household. For children aged 13 or above, self-reported cognitive difficulties are associated with a 13.5 percentage point increase in the proportion of children who have dropped-out of school at least once in the past (strongly statistically significant, controlling for child and location factors). Similarly, self-reporting behavioural control issues, was associated with a 12.9 percentage point increase in the proportion of children that had previously dropped-out of school (statistically significant, controlling for child and location factors).

We are not able to conclude on the potential link between physical difficulties and dropout. Movement-related impairments are too rare in order to make any valid statistical inference. The effect of eye-sight or hearing problems on dropout is also difficult to measure, because being in school raises the awareness about sight and hearing problems. Given that schooling strongly influences awareness about eye-sight and hearing problems, it is not possible to isolate the effect of eye-sight and hearing problems on dropout without conducting a professional medical examination.

6.1.2 Household-level Factors

6.1.2.1. Poverty

Monetary poverty at the household level is one of the strongest predictors of dropout. In this section, household wealth is proxied for using an assets-based index. This measure of household wealth was created by asking households about what assets they own in the household survey and then summarising the information on many different items into one index using a statistical technique called Principle Component Analysis. To facilitate comparisons, households are segmented into five wealth brackets, or quintiles (each quintile accounts for about 20% of children).¹⁵

Table 6.8: Percentage of Out-of-School Children (2017) and Dropout Rate (2016-2017), by Wealth Quintile

Wealth quintile	% children out-of-school (2017)	Dropout rate (2016)
1st quintile (poorest)	25.3%	6.3%
2nd quintile	18.7%	4.2%
3rd quintile	15.3%	4.9%
4th quintile	14.3%	4.5%
5th quintile (wealthiest)	11.3%	2.9%

Children from poorer households are more likely to dropout than children from wealthier households (see Table 6.8). According to the child survey, an estimated 25% of children from households in the lowest wealth quintile were out-of-school at the time of the survey, compared to 11.3% of children from households in the wealthiest quintile. Children from the poorest households were more than two times more likely to have dropped-out of school at least once, when compared to children from households in the highest wealth quintile.

6.1.2.2. Parental education

The education level of the household head, or whether the household head knows how to read and write, matters for the education of the child. Children in households where the parents have higher levels of education are less likely to drop out of school. This can clearly be seen in Table 5.9 below, which shows that children from households where the parent had attended secondary school education, were much less likely to be out-of-school or to have dropped-out of school. A child aged 6 to 18 (our sample) from a household in which the head has no education, was about 2 times more likely to be out-of-school, compared to children from households where the head had at least attended secondary-level education. The education levels of parents is closely inter-twined with the socio-economic status of the household, making it difficult to isolate the association between the education of the parents and the schooling of

¹⁵ *Wealth quintile 1 groups the 20% of households that ranked lowest in terms of wealth – i.e. the poorest; on the other hand, wealth quintile 5 groups the 20% of households that ranked highest in terms of wealth – i.e. the richest.*

their children. Nevertheless, controlling for the wealth of the household, and other relevant factors,¹⁶ we find that the education of the household head remains a significant predictor of dropout.

Table 6.9: Percentage of Out-of-School Children (2017) and Dropout Rate (2016-2017), by Education Level of the Household Head

Education level of head-of-household	% children out of school (2017)	Dropout rate (2016)
No formal education	20.0%	5.5%
Primary education	17.2%	4.6%
Secondary education or higher	8.8%	2.3%

Evidence suggests that both parents play an important role in the education of their children. What matters within a household is not the maximum level of education of one of the parents, but the combined education levels of the two parents. We show this in Table 5.10, which focuses on the sub-set of households where parents either have no education or primary education only. This table reveals that the proportion of children who are out-of-school is lowest in households where both parents have attended primary school and highest in the households where neither parent has attended school.¹⁷

Table 6.10: Percentage of Out-of-School Children, by Education Level of the Household Head and Spouse, in households where both parents are alive (2017)

		Spouse	
		No education	Primary education
Household-head	No education	20.5%	17.9%
	Primary education	20.2%	15.7%

6.1.2.3. Household chores and work

Only a small share of children and parents identified work, chores and/or caring for other family members as the main reason for dropout. An estimated 4.5% of children who dropped-out in 2016 said that they dropped-out because of chores, work, or caring for other family members. Parents agree: according to the household interviews, 4.1% of children who dropped-out were reported to have dropped-out because of household-level responsibilities or for work. This compares to an estimated 60% of children who mentioned the cost of schooling (either fees, the cost of materials, clothing, etc) as the main reason they dropped out.

After dropping-out, the chore and work-burden of children increases significantly. The vast majority of children who drop out of school report dedicating themselves to chores or work as their main activity after dropping-out. An estimated 50% of children who dropped out in 2016 reported that since dropping-

¹⁶ Such as age, age squared, gender, and location.

¹⁷ This association holds when controlling for other factors of interest, but multicollinearity resulting from the interactions between the educational attainment of the parents, wealth and location make regression coefficients difficult to interpret.

out their main activity has been staying at home and supporting with household chores; an additional 29% mention that their main activity is working either on the family farm/business or for an external employer. Only about 5% of children reported entering a technical training course after they dropped out of school. Similar patterns are found in other years.

6.1.3 Education and school related factors

6.1.3.1. Early entry and a delayed start to education

Early start

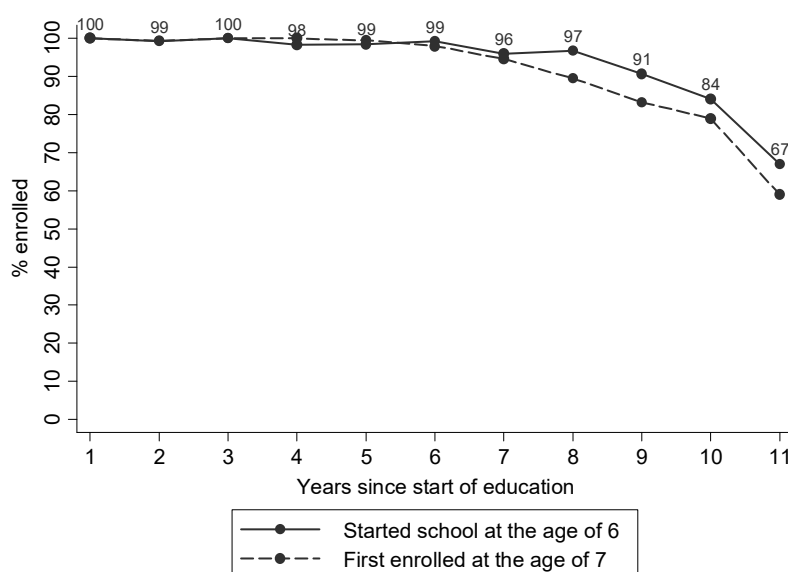
In this sub-section we study the effects of an early start to education, before the age of 7, and a late start to children's education, after the age of 7. In Rwanda's primary education system, there are more early starters than late starters. An early start to a child's education is associated with a reduction in future dropout rates; a late start is associated with an increase in the risk of future dropout.

Table 6.11: Age of New Entrants into Primary 1 (2017)

Age	% of new entrants into Primary 1
6	33.4%
7	46.2%
8	13.7%
9	3.9%
10	1.2%
Older than 10	1.6%

About one out of every three new entrants into the education system start school early, at age 6 (see Table 5.11). An early start is associated with improved survival rates and hence also lower dropout rates. This can be seen in Figure 5.6, which compared the enrolment rates of children that started school at age 7 versus children that started school at age 6, over time. Using the school trajectory data in the child survey we know when children started their education and at what age. The graph reveals that children that enrolled at age 6 are more likely to survive in school than children that started their education – on time - at age 7.

Figure 6.6: Enrolment Rates, by Years since Start of Education, split by Early Starters and On-Time Starters (2017)



We are not able to prove that early start reduces dropout. Early start is more common in urban areas, in households that are economically better-off, in households where the parents have higher levels of formal education, all factors that are also associated to a lower risk of dropout and other positive educational performance metrics. However, the association between early start and higher enrolment rates holds when controlling for various child, household, and location factors of interest.

Delayed start

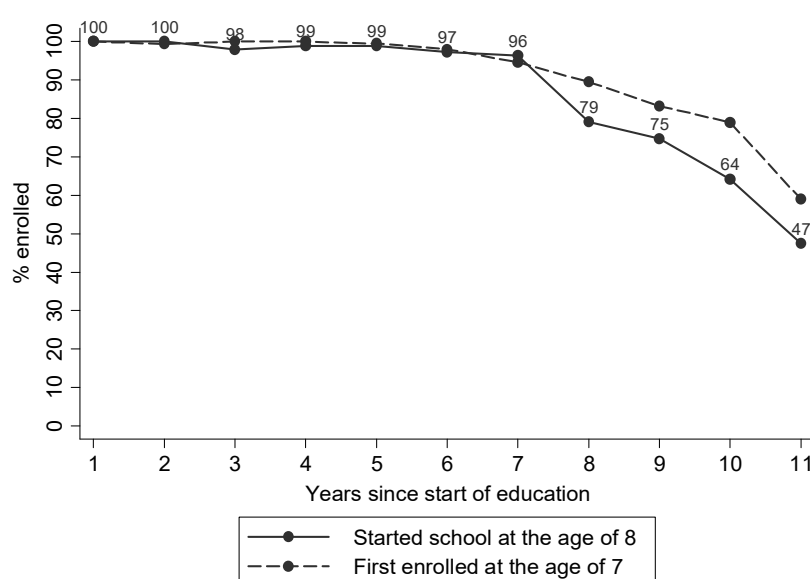
The dropout rate for children aged 7 to 9 in 2016 is estimated to be 0.9%; yet an estimated 8% of children aged 7 to 9 were out-of-school in 2017. What drives the out-of-school rate for young children is not dropout, but rather a delayed start to their education. The delayed start to education explains about 95% of out-of-school cases for children between the ages of 7 to 9. This means that for every 1 child between the ages of 7 to 9 that has dropped out there are nearly 20 that have not yet started school.

In 2017, an estimated 20% of children who entered the education system for the very first time started school late. Most children that were delayed with their education entered Primary 1 with a delay of only one year. A delayed start to education disproportionately affects children from the poorest households: an estimated 50% of children that started school late in 2017 were from households in the poorest wealth quintile. It also affects boys more than girls. An estimated 60% of children aged 7 to 9 who had never attended school in 2017 were male, a difference that is strongly statistically significant.

Children that start school late are more likely to dropout in the future. School trajectory data shows clear evidence that late start to a child's education is a key predictor of future dropout in Rwanda's education system – with late starters less likely to transition from primary to secondary school. Children

who started school at the age of 8 or higher, are much more likely to eventually dropout than children who started school at the age of 7. *Figure 6.7* shows that children who started school at ages 7 and 8 follow a similar educational trajectory – in terms of enrolment – between the first and seventh year of their educational trajectory.¹⁸ However, the educational trajectory of these two groups starts to diverge in the eighth year of their educational, after which children who started school at the age of 8 become 10 percentage points more likely to be out-of-school than children who started their education on time, at the age of 7. This sudden divergence of enrolment rates is because late starters are significantly less likely to transition from primary to secondary school. They are more likely to dropout after Primary 6.

Figure 6.7: Enrolment Rates, by Years since Start of Education, split by Late Starters and On-Time Starters (2017)



It is not possible, using this dataset, to accurately disentangle whether late start directly leads to future dropout, or whether late start and dropout share the same underlying causes (for example, household-level poverty or the low educational level of parents). However, the association between late start and lower enrolment rates holds when controlling for various child, household, and location factors of interest.

¹⁸ For example, a child who starts her education at age 7 and does not repeat or drop-out, would be in Secondary 2 in the seventh year of her educational trajectory (at an age of 14). A child who starts her education at age 8, does not repeat or drop-out, would also be in secondary 2 in the seventh year of her educational trajectory (at an age of 15). Finally, a child who starts her education at age 7, repeats Primary 1 once, progresses to Primary 3, drops out after completing Primary 3 (and re-enters in Primary 4 after a year out of school), would be in Primary 6 in the seventh year of her educational trajectory (at age 14).

6.1.3.2. Re-entry and the risk of dropout

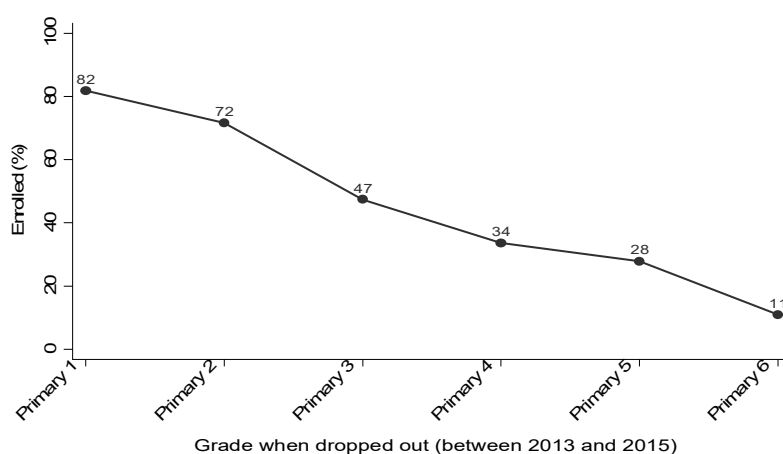
Re-entry is a positive outcome for some children who have experienced dropout. However children that re-enter the education system after having dropped out are at a high risk of dropping out again. Dropping-out of school does not necessarily mean the end of a child’s education. Dropout is a flow that is part of a system where children move from being enrolled in school, to being out-of-school, and vice-versa. We refer to the process of re-enrolling after dropping out as “re-entry” or “drop-in”.

Although dropout is not necessarily a one-way street, more children dropout in any given year than re-enter the education system. In 2016, an estimated 4.5% of children in our sample dropped-out while only 2.7% of re-entered either within the 2016 school year or at the start of 2017.

Dropout becomes more permanent with age and with each passing grade. Most children who dropout in Primary 1 or Primary 2 re-enrol in school, but the probability of re-enrolment decreases rapidly as children progress through the education system. We show this in Figure 5.8, which plots the proportion of children aged 7 to 16 who dropped-out of school between 2013 and 2015, who had re-enrolled by 2017. Out of the children that dropped-out of school during the 2013-2015 period, about 80% of those that dropped out of Primary 1 were re-enrolled in 2017, compared to just 10% of children that dropped out of school in Primary 6. Dropping-out of school during or after an early grade does not tend to mark the end of a child’s journey in the basic education system. Whereas dropping-out towards the end of Primary school tends to be a more permanent end to a child’s schooling.

Similar patterns are found when it comes to age. An estimated 71% of children of primary-school-age (7 to 12) who dropped-out of school between 2013 and 2015, were re-enrolled by 2017, compared to only 23% of children of lower secondary-school-age (13 to 15) who dropped-out during the same period. These statistics show that the educational cost of dropping-out of school increases steadily with each passing grade and year.

*Figure 6.8: Re-enrolment Rates, by Grade of Dropout (2017)
(For Dropouts between 2013 and 2015 (aged 7-16 in year of dropout))*



Children who have dropped out and re-entered the education system are at a much higher risk of future dropout than children who have never left the system. Re-entry in 2016 was associated with an 8-percentage point average increase in dropout rates in the same year, a difference that is statistically significant controlling for various child, household, and locational factors of interest. Children who had dropped-out and re-entered school prior to 2016 were also about 6 percentage-points more likely to drop out of school compared to children who had never dropped-out and re-entered. The schooling system allows for children to exit and re-enter primary and secondary school, which is key to ensuring greater equity. These children are however much more vulnerable and at a higher risk of future dropout than their peers.

6.1.3.3. Proximity to school

a. Access to primary schools

One factor that can influence access to education is the presence or not of a school in the vicinity of where a child lives. In this study, we are able to measure with a relatively high degree of accuracy – using GPS data collected for this study and data from MINEDUC’s EMIS database – the distance from a child’s home to the nearest school and from the child’s home to the school that the child actually attends.

Access to primary school, in geographic terms in Rwanda, is high. Evidence suggests that close to 100% of children in our sample live within 3kms of a primary school; about 50% of children live within 1km of a primary school. The density of the school network is higher in urban areas, where children on average live about 340 meters closer to a school than children in rural areas (statistically significant). As a result, Kigali Province is the region with the lowest average distance to a primary school. Children in Kigali live on average 640 meters from a primary school, compared to 850 meters in the Western Province, 1.1kms in the Southern and Northern Provinces, and finally 1.2kms in the Eastern Province.

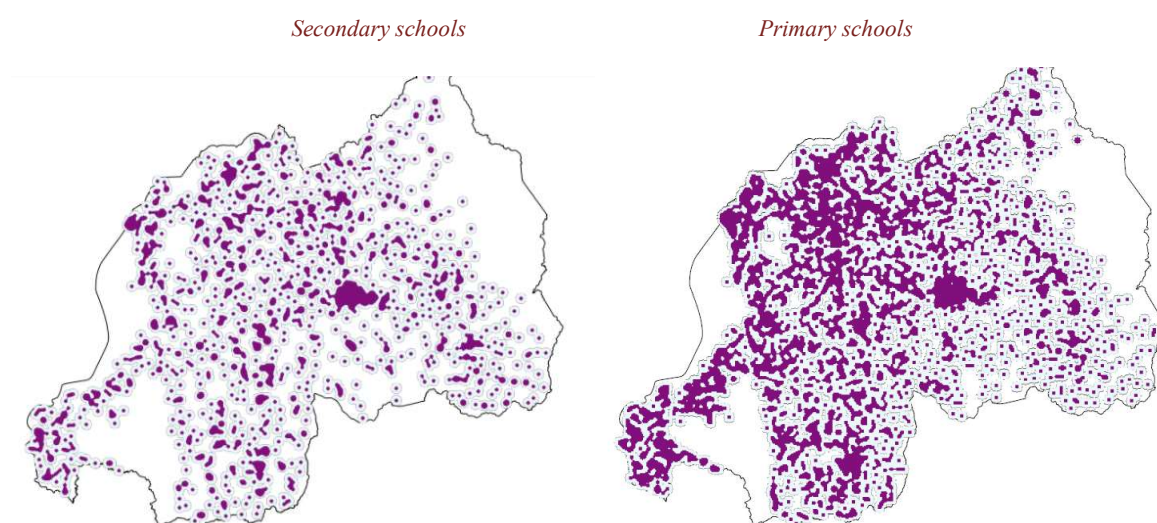
We find that proximity to a primary school matters at entry but is not significantly associated to dropout rates. Evidence suggests that children of primary school age, in rural areas, who live in a village where there is a primary school, are less likely to start school late. In 2017 an estimated 20% of children aged 7 to 9 lived in villages that had a primary school. These children were on average 7.7 percentage points less likely to be out-of-school and therefore less likely to start school late. This effect is strongly statistically significant, controlling for various child, household and location factors (including wealth and whether children lived in urban/rural areas).

b. Access to secondary schools

While MINEDUC has prioritized expansion of the network of secondary schools in the country secondary schools remain more sparsely distributed than primary schools, resulting in reduced geographic access at the secondary level. This relative scarcity of secondary schools is visualized in Figure 6.9, which maps

all primary and secondary schools in Rwanda.¹⁹ An estimated 25% of children in our sample live within 1km of a secondary school, compared to 50% of children that live within 1km of a primary school. As is the case for primary schools, the network of secondary schools is denser in urban areas. Children in urban areas live on average 740 meters closer to a secondary school, compared to children in rural areas, a difference that is statistically significant. The average child in Kigali lives approximately 1km from the nearest secondary school. This compares to 1.4kms in the Northern Province, 1.5kms in the Western Province, 2.1kms in the Eastern Province and 2.2kms in the Southern Province. The density of the secondary-school network appears to be significantly lower in the Western and Eastern Provinces.

Figure 6.9: Geographic Coverage of Primary and Secondary Schools in Rwanda (2017)



** Each school in the country has a 2km radius around it and is coloured purple. The darker the purple, the more dense the number of schools in a particular location*

Distance to the nearest secondary school is a strong predictor of the risk of dropout for children aged 13 or above. Children aged 13 or above that live in villages where there is a secondary school were on average 5.8 percentage points more likely to still be enrolled, compared to children that lived in a village without a secondary school (controlling for various child, household and location factors). More generally, distance to the nearest secondary school, is a statistically significant predictor of enrolment rates in 2017, for children aged 13 or above. In both urban and rural areas, living further away from a secondary school was also associated with higher dropout rates in 2016 (weakly statistically significant). For example, the estimated dropout rate for children aged 13 or above living within 1km of a secondary school was 7.6%, compared to 13.2% for children living more than 2km away from a secondary school.

¹⁹ We use the latest available data on school location from MINEDUC which is for 2014; as such, density may have increased since then.

6.1.4 Location and geographical factors

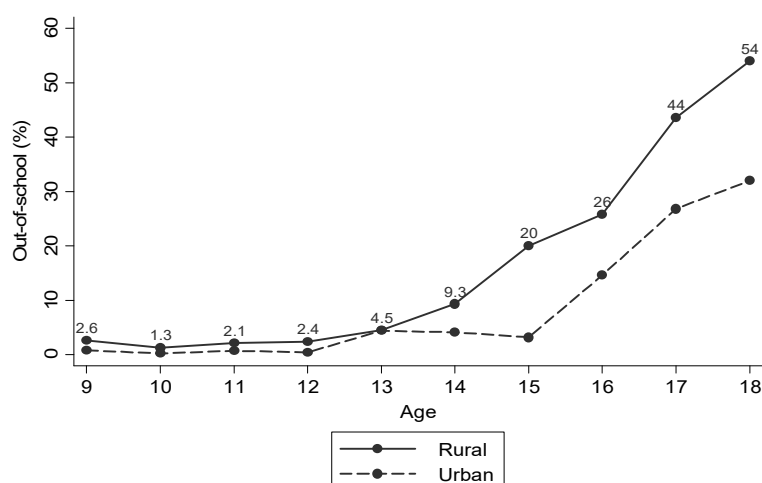
There are pronounced differences in dropout rates between urban and rural areas of the country, but these only appear after the age of 13. Between the ages of 7 to 12, or during primary school age, dropout is a marginal occurrence in both urban and rural areas. The link between geography and dropout becomes much more pronounced for after the age of 13: 11.7% of children aged 13 or above and living in rural areas dropped-out in 2016, compared to 6.7% in urban areas, a difference of 5 percentage points.

These differences in the dropout rate compound from one year to the next, leading to divergent schooling trajectories for children in rural and urban areas after the age of 13. In early 2017, and at age 13, a similar number of children in both urban and rural areas were out-of-school (see Figure 6.10). By age 15, an estimated 20% of children in rural areas were out-of-school, compared to just 3% of children in urban areas, a difference of 17 percentage points. One of the major drivers of this gap is lower transition rates to lower secondary school in rural areas. In 2016, an estimated 75% of children enrolled in Primary 6 in rural areas transitioned to lower secondary school, compared to 86% of children in urban areas.

Table 6.12: Percentage of Out-of-School Children by Urban/Rural and Age (2017)

Location	Age 7 to 12	Age 13 to 15	Age 16 to 17
Urban	3.8%	3.9%	23.7%
Rural	5.0%	11.1%	40.9%

Figure 6.10: Percentage of Out-of-School Children, by Age, split by Urban/Rural (2017)



6.2 Drivers of repetition

As shown in Chapter 4, repetition is a prevalent event in children's education, with most students repeating at least once during the course of their education. We also know that repetition and future dropout are correlated and that repetition is more pronounced for primary-school-aged children. In this section, we study some of the factors associated with repetition, and profile children at the highest risk of repetition.

6.2.1 Child-level Factors

6.2.1.1. Age

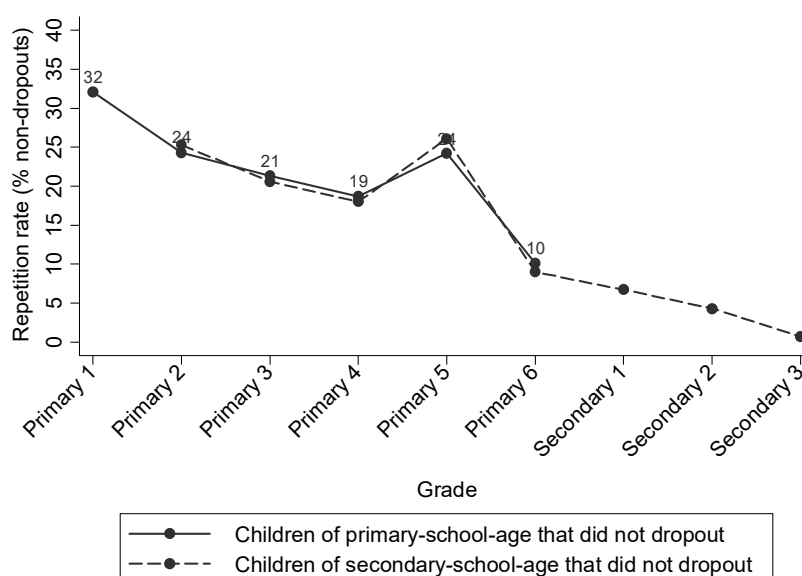
Repetition rates are highest for younger children, in particular in their very first year of education (see Table 5.14). The average repetition rate for children of primary-school-age is driven up by children who enter primary school for the first time. Children in their first year of education face by far the highest repetition rates. At an average rate of 37%, more than one-in-three pupils entering the education system for the first time in 2016 repeated. This is more than double – or about 20 percentage points more than – the average repetition rate in the second year of children's education, which at 17% is still higher than during any subsequent period. A very high risk of repetition in a child's first year of education, when most children are 6 or 7 years old, could signal that: (i) school readiness when children enter the education system, is low; and/or (ii) children have learning difficulties in Primary 1, a grade during which the foundation of literacy and numeracy skills are taught. We discuss the link between repetition, school readiness, learning and school-related factors in more detail in Chapter 5.

Table 6.13: Repetition Rates, by Gender and Age (2016 - 2017)

Gender	Age 7 to 9	Age 10 to 12	Age 13 to 15	Age 16 to 18
Boys	23.3%	16.2%	11.6%	6.8%
Girls	17.5%	12.9%	10.2%	2.3%

Repetition rates are lower for children aged 13 and above, but only because they face a greater risk of dropout. Once children who dropped-out are removed from the equation, we find that there are virtually no grade-based differences in the repetition rates for children of primary – and secondary – school ages. This can be seen in Figure 6.11, which shows that between Primary 2 and Primary 6, the repetition rates for children that did not dropout are almost identical between the two age groups. Despite having repeated frequently in the past, children of secondary-school-age that are still enrolled in primary school underperform compared to their younger peers. This suggests that repeating multiple times has not been a successful mechanism to improve learning amongst children who lag behind.

Figure 6.11: Repetition Rate, by Grade, split by Child's Age Group
(2016 - 2017 and 2015 - 2016)²⁰



6.2.1.3. Gender

At all ages, girls are less likely to repeat than boys, a difference that holds true throughout their education. The difference in repetition rates between girls and boys who are enrolled is highest during the first few years of their education. For example, in the very first year of their education, an estimated 39.6% of boys repeated, compared to 34.6% of girls; in their second year of education an estimated 20.5% of boys repeated, compared to 13.4% of girls. The result of these differences in repetition rates is that girls progress through their education much faster than boys and that the share of girls in the education system increases with every grade in the primary education system.

From the moment that they enter the schooling system, the educational trajectory of boys and girls starts to diverge. By age 9 in 2017, an estimated 40% of girls had reached Primary 3 (the grade that corresponds to that age) versus just 28% of boys. By age 12 in 2017, an estimated 15% of girls had made it to Primary 6 (the grade children are expected to be in by age 12), compared to just 6% of boys. These are very large and significant differences in the educational trajectories of girls and boys.

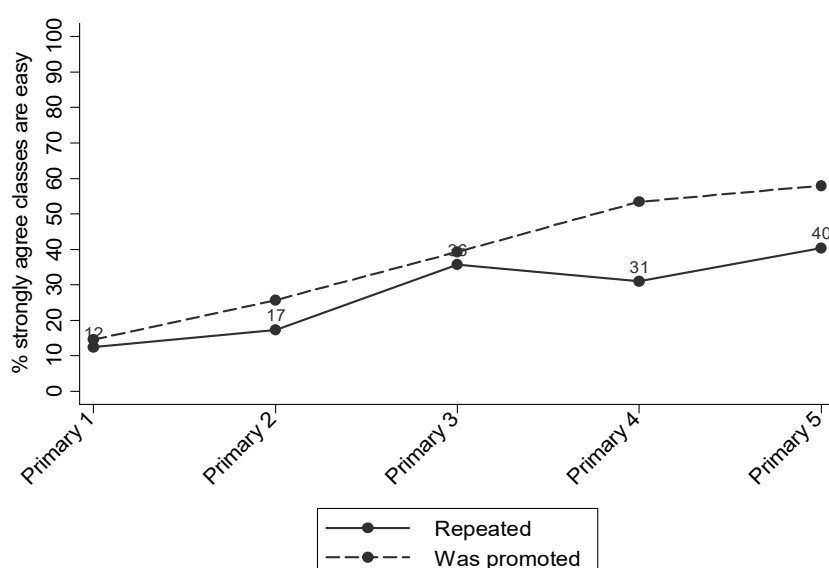
²⁰ We use two years of data to increase the sample size by grade. This does not in any way alter the message of this graph. Also note that for 2015 we only have education data for 6 to 16-year-olds; to ensure the data is comparable with 2016, we limit the sample to only include 6 to 16-year-olds. We exclude children who dropped out of school however, the grade profile of repetition rates is not altered and the same pattern holds. Also, note that given the sharp reduction in repetition rates in 2016, averaging rates between 2015 and 2016 leads to higher grade-specific repetition rates compared to those reported in Figure 3.1.

6.2.1.4. Self-perceived performance

Children who repeat appear to have greater learning difficulties, on average, than children that get promoted. We assess this by studying how children perceive the ease of school and their own abilities to learn.

On average, children who repeated were much more likely to perceive classes as being difficult, compared to children who were promoted. The difference in the perceived difficulty of classes between repeaters and children who were promoted is statistically significant in lower primary, but widens substantially in the switch from lower- to upper-primary school (see *Figure 6.12*). This might be because of the added difficulty of English in upper-primary school. We find similar patterns when we look at children's perceptions about their own ability to grasp difficult concepts. An index of self-perceived ability, created using Principal Component Analysis, shows a strongly significant association with repetition rates.

Figure 6.12: Percentage of Children that Find Classes Easy, by Grade and whether Child Repeated or was Promoted (2016 - 2017)



Children's attitudes, behaviour and perceptions about school are associated with their performance, although it is unclear to what extent these factors drive performance or vice-versa.

6.2.1.5. *Special Education Needs*

As was the case with dropout, certain forms of self-reported special educational needs are linked with significantly higher repetition rates. Two types of special educational needs stand out: (i) difficulties in speaking and being understood by people outside the household; and (ii) behavioural control issues.²¹ Children with difficulties in speaking and being understood were 15 percentage points more likely to have repeated at least once before. The difference on this metric is large and strongly statistically significant, controlling for child, household, and location and other factors of interest. Speaking difficulties appear to have a much larger impact on repetition rates on average, compared to some of the other disabilities that were examined, including learning difficulties, difficulties making friends, or difficulties related to eyesight or self-care. The sample of children with speaking difficulties might be small, but the effect is large.

Children with behavioural control issues (as reported by their parents or guardian) were also about 9 percentage points more likely to have repeated at least once in the past. This also is a statistically significant difference, controlling for child, household and location and other related factors. Behavioural control problems are more widespread than some of the other special education needs that were examined. An estimated 4.4% of children aged 6 to 18 in our sample faced behavioural control issues, compared to an estimated 1.2% with speaking difficulties. According to the parent survey, the proportion of children with behavioural control issues is relatively stable by age, location and household status, but tends to affect boys slightly more than it does girls.

6.2.2 Household-level Factors

6.2.2.1. *Poverty*

Children from the poorest households are the ones who repeat the most and from the earliest ages. We illustrate this in *Table 6.14*, which shows average repetition rates in 2016 for children in our sample by age group and the wealth quintile of the household they come from. Difference in repetition rates between wealth quintiles are highest in the 7 to 9 and 16 to 18 age groups. Young children aged 7 to 9 in the poorest wealth quintile are almost two times more likely to repeat than children from households in the wealthiest quintile. Similarly, children aged 16 to 18 in the poorest group of households much more likely to repeat than children from the wealthiest group of households.

The result of these differences in repetition and dropout rates is that children from the wealthier households are more likely to stay on-track compared to children from the poorer households. Figure 5.16 plots the percentage of children that are on-track that come from wealth quintiles 1 and 5, by grade. In Primary 1, when children first enter the education system, a roughly equal proportion of children from the wealthiest households and poorest households are on-track with their education. By Primary 6, only about 8% of children who were on-track come from households in wealth quintile 1, compared to more than 40% of children from households in wealth quintile 5.

²¹ Note that, as previously explained, all special educational needs are self-reported.

Figure 6.13: Percentage of On-Track Children by Grade, split by Wealthiest Households and Poorest Households (2016)

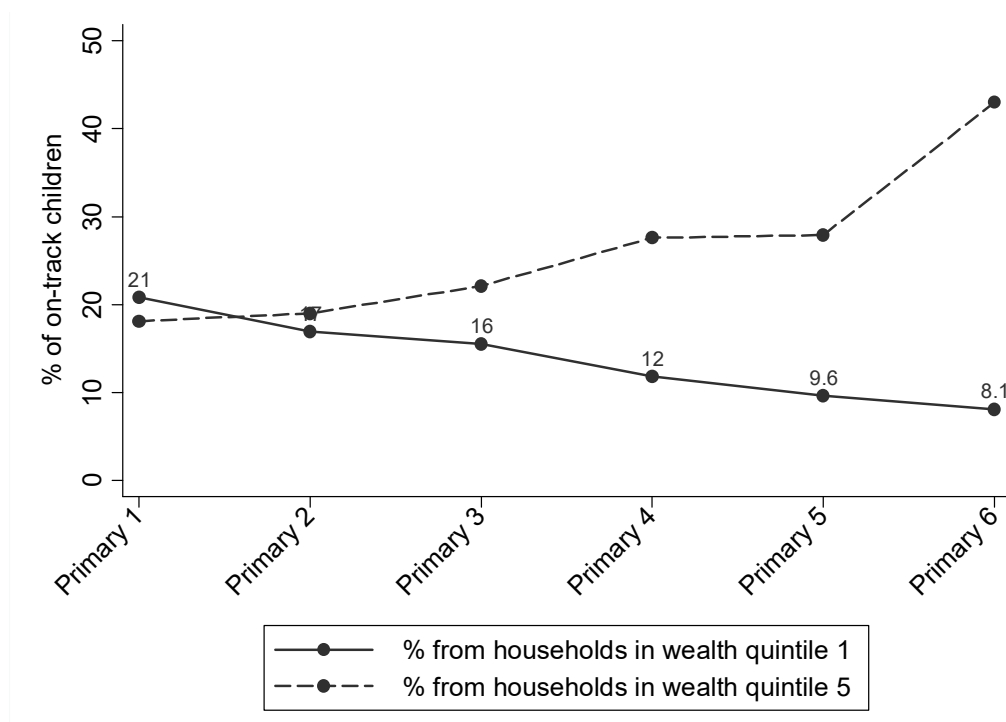


Table 6.14: Repetition Rates, by Wealth Quintile and Age (2016 – 2017)

Wealth quintile	Age 7 to 9	Age 10 to 12	Age 13 to 15	Age 16 to 18
1 st quintile (poorest)	27.2%	15.2%	10.9%	12.8%
2 nd quintile	23.7%	14.7%	11.0%	8.4%
3 rd quintile	19.6%	14.8%	10.9%	3.7%!
4 th quintile	18.1%	13.9%	12.2%	3.0%!
5 th quintile (wealthiest)	13.4%	13.4%	10.1%	1.7%!

! Estimates may be imprecise or have lower reliability; *insufficient observations

6.2.2.2. *Home Environment*

The education of parents impacts the educational performance of children, but it is important to remember that many of the parents of children aged 6 to 18 in Rwanda have either never attended school or studied beyond primary school. An estimated 30% of household-heads reported never having attended school, an additional 58% attended or completed primary school and only 12% made it through to secondary school or above.

We do not find any difference in the repetition rates of children in households where the parents had never attended school or only attended primary school. A strong reduction in repetition rates is observed in households where at least one parent made it to secondary school or beyond. Interestingly, in two parent households, it is the education of the mother that is associated with the greatest reduction in repetition rates.

What seems to matter most when it comes to parents, is not simply their education level, but rather the level of educational support they are able to provide to their children. Living in a household that provides an enabling environment for learning makes a difference in terms of educational outcomes, and several indicators point in that direction. We focus here on support for homework as a proxy for the level of support that children receive from parents.

Children that live in households where they are not encouraged to do homework – or not able to do homework – are more likely to repeat. Only about 7% of children reported not doing any homework outside of school, but these children – mostly aged 6 to 8 – were significantly more likely to repeat (about 6 percentage points more likely on average). One might argue that not conducting homework is an issue that reflects the lack of motivation of the child, but evidence suggests it is more of a household-level issue. By far the most common reason for not doing homework was household chores. Other issues reported by children included the lack of a light at home, the absence of someone to help with the homework, or work.

Having someone to support with homework, in particular both parents, makes a difference. The household members that are the most likely to support children with their homework are the siblings. An estimated 44% of children that do homework mentioned that their siblings would help them. The very important role that siblings play in the education of their brothers and sisters is something that is often overlooked in education programs and interventions. About 22% of children seek support from their mothers, and only an estimated 16% mentioned their fathers. All in all, about 30% of children who reported doing homework get support from their parents. Children are the least likely to repeat when both their mothers and fathers help them with homework (about 10% of children). For children that do not get support from both parents however, the support of the mother is the one that is the most closely related with a reduction in repetition rates. Children whose mothers support them with homework are

about 3.6 percentage points less likely to repeat.²² Support from the father alone is on average not associated with lower repetition rates.

A relatively high proportion of children, about 24%, did not have anyone in or outside the household to turn to for support with their homework. These children were on average 3 percentage points more likely to repeat than children that could get support from at least one family member or friend. The difference is statistically significant controlling for grade, child, household and other factors of interest.

6.2.3 Education and school-level factors

6.2.3.2. *Does repetition lead to more repetition*

Repetition in one year, reduces the likelihood of repetition in the immediate next year, but significantly increases the chance of repetition in subsequent years.

Children tend to repeat grades once. A child that has repeated a grade is less likely to repeat that same grade again, compared to children that are sitting the class for the first time. Repetition patterns suggest that children that have just repeated a year are about 8.5 percentage points less likely to repeat that same year again. This effect is strongly statistically significant, controlling for various child, household and location factors, and shows that repetition does – to some extent - have a positive effect on learning.

While repetition is a method to improve learning, it also signals performance issues. Children that have repeated one grade are more likely to repeat other grades again in the future. If a child repeats one grade, that child is more likely to repeat again, particularly two grades further down the line. For example a child that repeats in Primary 1, would be more likely to repeat again in Primary 3 than a child that did not repeat in Primary 1 or a child that repeated in either Primary 2 or Primary 3; the child would also be more likely to repeat again in Primary 3 than in Primary 2. On average, and controlling for grade and various child, household and location factors, children that repeat grade X are estimated to be 5 percentage points more likely to also repeat grade X+2 (strongly statistically significant).

6.2.3.2. *School characteristics*

School-level factors matter when it comes to repetition. Children in schools with lower performance metrics - be it in terms of pupil to teacher ratios, teacher care or teacher absenteeism - are more likely to repeat. This association between school-level factors and child-level repetition is likely to be the result of two re-enforcing dynamics: (i) the fact that schools in the most disadvantaged areas are also the most resource constrained; and (ii) the fact that limited teaching resources and weaker teaching practices are a direct cause of repetition.

²² A difference that is statistically significant at the 5% and holds for after including child, household and location controls.

The type of school that children attend – public, private or government aided – matters when it comes to repetition. Children that are enrolled in private schools perform better on average than children that are enrolled in either public or government-aided schools. Although only 2.3% of children in the sample were enrolled in a private school – which limits the ability to infer anything about these schools – being enrolled in a private school between Primary 1 to Primary 5 was associated with a repetition rates that are 14 percentage points lower (statistically significant). Repetition rates were very similar on average in public and government aided schools, controlling for individual, household and location factors.

The data suggests there is a strong link between reported teacher-to-pupil ratios in Primary 1 and Primary 2 (compiled during the head-teacher surveys) and repetition in the corresponding grade. For the schools where we were able to match children to their schools (about 50% of cases), we find that belonging to a school where the pupil-to-teacher ratio is high is associated with higher repetition rates. The difference holds when controlling for various child, household and location factors, and is not driven by outliers. For example, in Primary 1, an estimated 45% of students were in schools where the pupil-to-teacher ratio for Primary 1 was higher than 80 students per teacher. In these schools, the average repetition rate in Primary 1 was 33% in 2016, compared to 20% in schools with a lower pupil-to-teacher ratio. This difference is large and statistically significant. We find similar results for Primary 2, where an estimated 34% of students were in schools with a pupil-to-teacher ratios for Primary 2 above 80. In these schools the average repetition rate in Primary 2 was 20%, compared to 15% for children in schools with lower pupil-to-teacher ratios. We do not find a similar association from Primary 3 onwards. This is partly due to sample sizes, but probably also to the fact that pupil-to-teacher ratios reduce significantly from one grade to the next.

6.2.3.2. Teacher behaviour

Evidence suggests that teacher-absenteeism and repetition are associated. Children who reported that their teachers were absent on a regular basis in 2016 were much likely to have repeated in 2016. The association is statistically significant and holds when controlling for grade, child, household and location factors. This association does not directly imply that there is causal link between teacher absenteeism and repetition. The issue of teacher absenteeism, in particular in Primary 1, is discussed in more detail in Chapter 5.

There is also a very strong link between children reporting getting punished by their teachers for bad behaviour and repetition. The link between punishment and repetition might reflect the fact that attitude and behavioural issues within a classroom context matter, but punishment by teachers on a regular basis may also be a sign of weak teaching practices. Controlling for grade and other child, household and location factors, we find that children who reported having been punished by their teachers often were on average 7 percentage points more likely to repeat. The coefficient obtained is strongly statistically significant.

6.2.4 Location (urban/rural) factors

Differences in repetition rates between urban and rural areas in 2016 are not significant. Across our sample an estimated 15.1% of children in rural areas repeated, compared to 14.1% of children in urban areas. This is a small difference that is not statistically significant. The break-down of repetition rates by age group reveals a similar picture (see Table 5.16). While the repetition rate for secondary-school-age children in rural areas (9.5%) was about 2.5 percentage points higher than in urban areas (7%), the difference is not statistically significant.

Table 6.15: Repetition Rates, by Urban/Rural and Age (2016)

Location	Age 7 to 9	Age 10 to 12	Age 13 to 15	Age 16 to 18
Urban	21.9%	16.5%	9.7%	2.0%!
Rural	20.2%	14.1%	11.2%	5.4%

*! Estimates may be imprecise or have lower reliability; *insufficient observations*

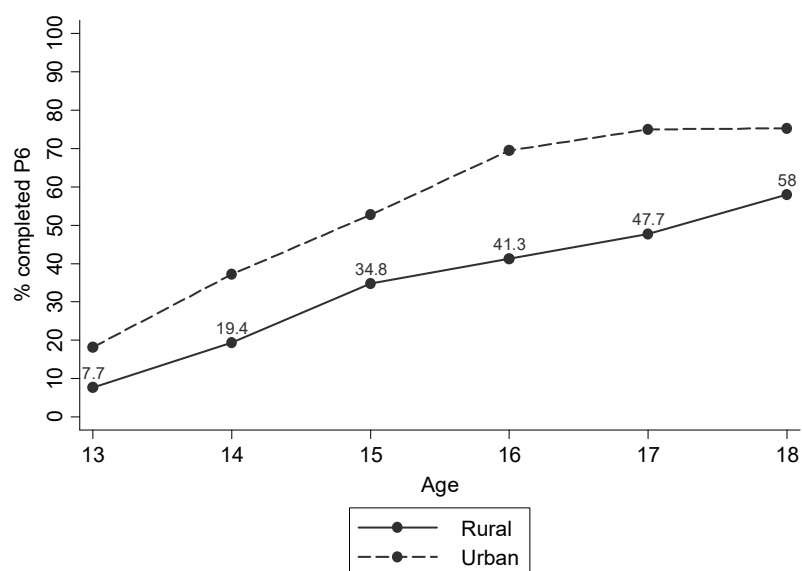
Despite relatively similar repetition rates in 2016, children in rural areas were much more likely to have repeated in the past, signalling that there were larger gaps in urban/rural repetition prior to 2016. As shown in Table 5.19, a much greater proportion of children of secondary school age (aged 13 to 18) in rural areas had already repeated twice or more by 2017, compared to children of the same age in urban areas. An estimated 54% of children aged 13 to 18 in rural areas had repeated more twice or more, compared to 34% of children in urban areas, a difference of 20 percentage points.

Table 6.16: Number of times Children aged 13 to 18 have Previously Repeated, by Urban/Rural (2016)

Number of times repeated	Rural	Urban
Never	12.3%	17.8%
Once	22.5%	31.2%
Twice	28.1%	27.6%
Three times or more	37.1%	23.5%
	100%	100%

Due to repetition rate discrepancies prior to 2016, primary school completion are lower in rural areas. At the age of 18, in 2017, an estimated 58% of children in rural areas had either completed Primary 6 successfully or enrolled in secondary school thereafter. Completion rates in urban areas are significantly higher, at 75% of children aged 18 in 2017 (Figure 5.17).

Figure 6.14: Primary 6 Completion Rates, by Age, split by Urban/Rural (2017)



7. Policy Recommendations

Having largely achieved the goal of improved access, how can policy makers reduce repetition and dropout rates while ensuring greater quality and equity in the education system?

In this final chapter, a set of policy recommendations are proposed. The policy recommendations outlined in this section stem from the key challenges identified in the data analysis presented in the preceding Chapters, key stakeholder consultations, and a review of global best practices.

Improve the Enabling Environment, through the:

7.1 Strengthening of policies at the national level

Currently, there is no overarching national policy that explicitly addresses the issues of dropout and repetition in Rwanda. Thus, this report recommends a new national policy framework to address dropout and repetition. The policy should take into consideration the following:

- **Set internally-consistent national and school-level targets for dropout and repetition:** Targets on repetition and dropout should be set within a comprehensive policy framework that takes into account current and future system-level trends for all policy targets in the education sector, yields realistic objectives for these targets, is consistent with current and future budgetary projections, and allows MINEDUC to have full understanding of all trade-offs intrinsic in any given policy mix.
- **Create inter-ministerial coordination mechanisms:** There are important determinants of repetition and dropout that do not necessarily fall within the authority of MINEDUC or of any single ministry or government agency – e.g. issues related to poverty or health. The new policy should lay out the responsibilities for each of these actors, as well as the coordination mechanisms among the different institutions.
- **Consider revising school financing to provide additional support where there are high underlying risks of repetition and dropout due to external factors:** Adjusting schools' financing based on the historic incidence of repetition or dropout, locality (rural/urban), and/or the average income level of its students can potentially help reduce inequalities in the education system.
- **Re-evaluate the current school feeding programme in secondary education:** The school feeding programme can impose an important financial burden on certain children and households. To reduce this burden, MINEDUC could:

- (i) substantially increase the subsidy per child for the school feeding programme in secondary schools to eliminate these costs for families; or,
 - (ii) restructure the school feeding programme and test the possibility of re-directing funds to a cash transfer programme that provides cash directly to children or their mothers – particularly from the poorest households.²³ In particular, this policy could target girls to help increase incentives for girls to re-enter and stay in school past primary education.²⁴
- **Strengthening teacher recruitment:** Programmes could be introduced that aim to improve the way teachers are recruited and the way they are assigned to schools and grades. There should be a focus on ensuring highly-skilled teachers are allocated to teach in early grades, and in key subjects, where repetition and learning issues are most common.

And, it is recommended to:

- **Revise the Special Needs and Inclusive Education policy:** The policy should be updated to take into consideration potential effects on dropout and repetition.

7.2 Development of consistent national-level definitions on dropout and repetition and provide systematic guidance on when and how to apply repetition for individual children

To that end, the following activities are proposed:

- **Harmonize the definitions and rules to track attendance, dropout, repetition, and enrolment at the school-level:** We propose that MINEDUC engages in a policy dialogue with other stakeholders in the education sector to establish a harmonized approach to defining, recording and measuring dropout, repetition, and enrolment at the school level. It is suggested to:
 - **Create a measure of “at risk of dropout” using attendance data:** This measure would take into account not only whether a child is enrolled or not, but also, how consistently this child attends school throughout the year. The current definition used by MINEDUC excludes children who are enrolled but never attend school or leave midway through the year, and enrol in school the next year²⁵. From a policy perspective it is important to have information on the proportion of children who are enrolled in school but never attend.

²³ Whether the transfer should be made conditional on school attendance or given unconditionally should be rigorously tested and determined before rolling out any programme at the national level.

²⁴ This type of programme has proven to be quite successful in Malawi, where it has had considerable effects in the probability of children – particularly children of secondary school age – attending school without interruptions.²⁴ It has also been implemented in different contexts, such as the State of Odisha in India, for example through the Odisha Girls’ Incentive Programme.

²⁵ Under the current calculation of dropout rates used by MINEDUC, these children are de facto considered as attending, and thus, leads to an underestimation of dropout rates. Children who drop out of school during the school year would typically be classified as either having dropped out, repeated (if when enrolling they are forced to repeat grade), or having been attending. However, in this last case, classifying them as having been attending masks the fact that they were out of school for a considerable amount of time during the school year.

- **Introduce a measure of re-entry:** There is no mechanism to account for children who have dropped-out, but then re-enter the education system. The result of this is that the current measure of dropout used is in fact the difference between dropout and drop-in (or re-entry). Introducing a measure of re-entry would contribute a better understanding of dropout, and provide a more detailed view of the flows into and out of the education system.
- **Clarify and standardize the rules governing repetition and tracking of attendance, dropout, repetition, and enrolment at the school-level:** Based on the revised definitions proposed above, a new policy on dropout and repetition would put in place clear rules about the conditions in which a child should be required to repeat a class and the conditions in which a child should be counted as a dropout. The policy should be precise, for example, stating the number of required days of attendance each year, and any cases of exceptions to the rules.

7.3 Improvement of systems for collecting, managing, analysing, and monitoring education data, including data on repetition and dropout

In order to provide relevant and accurate information to policymakers and school administrators, more timely and accurate data on the situation of the education sector and, in particular, of repetition and dropout is needed. To that end, the following is recommended:

- **Strengthen overall educational data input and information management systems, at both the national and school level:** Significant improvements to data management and information systems will be needed:
 - **Improving data management systems for the existing Education Management Information System (EMIS) to allow school-level analysis and improve the quality of statistics reported by MINEDUC:** Steps to improve this system in the short-run include:
 - Revamping data management, by creating a master database, which includes all schools and all variables by year²⁶
 - Ensuring calculations of promotion, repetition and dropout rates are based not only on information provided by schools in one year, but a comparison of information across years
 - Increasing the frequency of reporting of key statistics to once-per term, improve data collection processes and technologies, and automate the analysis using a structured

²⁶ Laterite has developed such a database for MINEDUC using a subset of information from EMIS, which can serve as an example for what can be achieved with better data management.

dataset, so that results can be produced and shared much more rapidly and at a much more disaggregated level

- **Investing in migrating the current EMIS onto a professional IT platform for better information management**
- **Ensure consistent monitoring and reporting procedures for school attendance are in place in all schools and that attendance data is reported to and aggregated at national level:** This data should feed a national database that allows for real-time tracking of attendance and for analysis and reporting of trends in attendance.

7.4 Improvement of systems for identifying and monitoring children at-risk of repetition and/or dropout

Given the results of the study, simple measures can be taken to develop tools that aid educators in identifying and monitoring children who are at risk of repetition and/or dropout. The following activity, therefore, is recommended:

- **Implement the School Data Management System (SDMS) and provide each school and each child with a unique identification number:** This number should be used across all the education system and across Ministries in the Social Cluster. This would enable MINEDUC and other relevant stakeholders to track progress in each school, as well as follow individual children as they progress through the system.
- **Develop a scorecard that can be used by schools to identify at-risk children who are likely to repeat a year or drop out of school:** Schools lack formal systems and tools to help them identify, prioritize and proactively address cases of children at risk of repetition or dropout. A scorecard, with a simple set of 5 to 15 questions, can be an effective tool that school administrators and teachers can use to identify children at-risk of repeating grade or dropping-out.

And, to ensure systematic support for these children, it is recommended to:

- **Develop a Referral Pathway for Children with special education needs:** A national-level system for referral should be developed whereby when a teacher suspects a child has special education needs the child can be systematically referred to the appropriate social sector worker or service for identification and treatment. Currently social services are available but, have low uptake rates by families and particularly amongst adolescents.

Improve Supply-Side Barriers, through the:**7.5 Launch of a national programme with targeted interventions to reduce dropout and repetition**

This programme should lay out a portfolio of targeted interventions to address the key drivers and determinants of dropout and repetition identified in this study. The programme would be a key pillar of the implementation of the national policy on repetition and dropout and should seek to:

- **Implement targeted learning support programmes for at-risk children who are likely to repeat or dropout:** Introduce a system to identify early-on children that are at-risk of repeating or dropping-out – one option is to use a scorecard, as described above. Remedial learning interventions can then be targeted directly at children identified as being at-risk of dropping out or repeating. Such remedial interventions can be delivered by school teachers to small groups of students in core subjects during extracurricular hours. Remedial learning interventions can help reduce the incidence of repetition and dropout that is caused by learning gaps.
- **Develop a programme to deploy Community Education Workers in each village:** In many cases, girls and boys at risk of dropping out of school require interventions that are difficult for schools to manage within their current envelope of resources. Appointing Community Education Workers in each village can help provide an additional village-level resource to provide direct support to individual students and families based on their specific needs and to help connect families to existing social services. This is a strategy that has already been successfully tried and tested in Rwanda by the Ministry of Health and LODA.
- **Consider geographically targeted interventions, especially for the urban poor:** A growing demographic group that is vulnerable to dropout and repetition is low-income households in urban areas. As urbanization levels in Rwanda rise, the number of urban poor children who dropout is expected to rise. There is a need to draw specific policies that target this sub-group, to help reduce the direct and opportunity costs of education for these children, which tend to be higher than those faced by children living in rural communities.

7.6 Introduction of interventions to target remaining gender barriers in education for boys and girls, particularly among the poorest families

Gender barriers continue to impact boys' and girls' education, as a result it is recommended to:

- **Launch a national communications campaign to raise awareness on gender issues in education:**
This campaign should aim to:
 - (i) raise awareness and self-efficacy among girls and boys to make positive decisions around education

- (ii) increase parents' participation in and support for girls' and boys' education
 - (iii) improve support and encouragement for education among community members; and,
 - (iv) improve knowledge of remaining gender barriers in education among government officials.
- **Improve teachers' skills around gender-sensitive pedagogy:** Increasing teachers' ability to respond to girls' and boys' learning needs in the classroom and their ability to respond to gender issues in and around schools can improve learning for boys and girls and reduce dropout and repetition.
 - **Increase coordination between schools and social services through stronger referral protocols:** Many girls and boys face extenuating family difficulties that can have a detrimental impact on their education. Having stronger community- or school-level protocols to connect those girls and boys to social services may help to alleviate gender barriers.

7.7 Increase of access to pre-primary education for improved school readiness for all children in Rwanda to mitigate repetition

Starting school late is strongly associated with future dropout, with late starters less likely to transition from Primary to Secondary school; whereas, early start has a positive effect on survival rates at later stages of a child's education. The importance of addressing late entry and repetition in the early grades of primary school – particularly in Primary 1 – as a pre-emptive measure to reduce future dropout and improve the efficiency in the education system in Rwanda cannot be overstated. To address these issues, the following set of policy actions are proposed:

- **Take steps to promote on-time entry – at age 7 – into Primary 1**
- **Take steps to bring late-starters into the system and provide targeted remedial support**
- **Encourage the expansion of formal/informal pre-primary, and strengthen early childhood education, specifically in rural and low-income areas, to improve school readiness:** MINEDUC should accelerate efforts to ensure that all Rwandan children are afforded a minimum of 1-year of pre-primary education. The long-term aim should be to ensure that all students are enrolled in a 3-year cycle of pre-primary education to increase the levels of school readiness in primary school. Similarly, reducing costs of early childhood education for households, through ensuring pre-primary teachers are placed on the government payroll and providing per capita financing at the pre-primary level would be important to ensure that low-income households – particularly in rural communities – can access these services.

- **Strengthen the collaboration amongst ministries in the Social Cluster²⁷ to promote school readiness and early childhood development:** MINEDUC should work with other ministries in the Social Cluster to promote early childhood development interventions to improve school readiness; for example, reducing stunting (MINISANTE), and promoting and continuing early childhood development (MIGEPROF).

Improve Demand-Side Barriers, through the:

7.8 Increase of household support for and parental engagement in education

Parental involvement and the home environment are important correlates of repetition and dropout. Promoting parental engagement in creating a home environment conducive to learning is an important strategy to address repetition and dropout. MINEDUC should consider developing programmes that:

- **Inform and sensitize parents on the importance of being actively involved in the education of their children:** Communications campaigns to inform parents about clear strategies they can use to improve their children's learning in school could help to increase household support for studies, particularly concerning the reduction in domestic tasks.
- **Provide support mechanisms to uneducated parents that can enable them to assist their children with their school work:** School- and community-level policies and mechanisms to help uneducated parents assist their children in their school work could have positive impacts on learning and thus, reduce repetition and dropout.
- **Strengthen parent-teacher associations:** Provide programmes and sensitization for parents and community members to actively engage and volunteer in their children's schools.
- **Raise awareness on the children and their right to education:** Parents and community members should be made aware of the rights of children, especially those with special education needs, to an education and their role as duty-bearers in ensuring that they are enrolled and participate accordingly in the education system.

7.9 Re-evaluation of the policy on Primary 6 examination and its implications for students who do not perform well

Repetition rates in Primary 5 are unusually high compared to all other primary school grades, except for Primary 1. The Primary 6 national examination puts considerable pressure on children, parents, and school

²⁷ The Social Cluster is a working group of high-level ministry officials from MINEDUC, Ministry of Health (MINISANTE), Ministry of Local Government (MINALOC), Ministry of Gender and Family Protection (MIGEPROF), Ministry of Youth, Ministry of Sports and Culture, and the Local Administrative Entities Development Agency (LODA) set up to increase coordination among ministries and government agencies in charge of social issues (e.g. education, health, etc.).

teachers and administrators; children are incentivized to repeat Primary 5, and schools to increase repetition rates in that same grade. To address these issues, it is proposed to:

- **Reduce the stakes of the Primary 6 national examination by not using it as a national allocation mechanism for secondary schools:** The Primary 6 examination is logistically and financially burdensome to implement. The cost of the examination is further augmented by the large cost to the education system of high repetition in Primary 5. Finally, the Primary 6 examination cements the existing learning gap between urban and rural areas, and low- and higher-income families, by ensuring that the best performers (who are much more likely to live in urban areas and come from better-off households) are also the children that make it to the best secondary schools. Instead, the examination can be utilized as a placement test, allowing for options for under-performing students to continue their education (including transitioning into TVET (Technical and Vocational Education and Training) and non-formal education options).

Improve Quality-Side Barriers, through the:

7.10 Increase of the capacity of primary school teachers for improved quality of education

High repetition rates, and evidence of low learning outcomes, even after repetition, signal challenges related to quality of teaching, particularly, but not exclusively, in early grades. MINEDUC should prioritize the professional development of primary education teachers by:

- **Providing teachers with opportunities for capacity development and in-service training to increase the quality of teaching and address learning issues and teaching practices in the classroom:** Teachers should be equipped with the necessary pedagogical tools to deliver the competency-based curriculum in large class settings, in a child-centred approach.
- **Promoting Inclusive Education:** Children with certain types of special education needs have a higher likelihood of repeating, dropping-out or, at times, being allowed to go through the system without learning.²⁸ Teachers should have the capacity to identify children with special education needs, and then refer them to the necessary social service worker for identification and treatment, as necessary.
- **Implementing programmes to support teachers in the transition to English instruction in upper primary education**

²⁸ Teachers who participated in FGDs mentioned that children who have a known special education need are many times promoted automatically as teachers consider that these children are not capable of learning much.