Supplemental Appendix - Age at School Entry and Human Capital Development: Evidence from Lesotho

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Appendix A: Policy and Survey instruments

A1. Excerpts from the Lesotho Education Act of 2010

(6) A parent of a learner from the age of six to an age determined by the Minister shall -

(a) enrol the learner in an independent or public school;

(b) cause the learner to receive full time education appropriate for his or her age, ability and aptitude by regular attendance at school; and

(c) provide the learner with the full opportunity and guidance to complete primary education.

Procedure **for computing the age of a child**

5. (1) For the purpose of this Act, the age of a learner, upon admission, shall be computed as the number of years completed on the 30th of June of the school year.

(2) A birth certificate, a baptismal certificate and in their absence, an infancy medical record, or a declaration by a parent or guardian shall be treated as proof of the age of a learner.

(3) If the admitting authority has reason to disbelieve a declaration by the parent or guardian, the authority shall detemiine the learner's age after making an inquiry in such manner as may be prescribed.

Compulsory attendance

6. (1) A parent shall enrol a learner in a primary school at the age of six years or in the year in which he or she will be six years of age by the 30th of June of that calendar year, and the learner shall stay in school until he or she reaches such age as may be prescribed by the Minister.

(2) Where a learner is enrolled at a school, the learner shall attend that school on each day, and for such parts of each day, as instruction is provided at the school for the learner.

(5) Subject to this section, where a learner fails to attend school regularly in accordance with sub-section (2), each parent of the learner is guilty of an offence and liable on conviction to -

(a) do such cornrnunity service as the court may determine; or

(b) a fine of not less than M1,000 or imprisonment for a term of not less than one year or both.

A2. Data: Description and Measurement of Variables

2018 Multiple Indicator Cluster Survey (MICS): The MICS 2018 is a two-stage cluster randomized household survey stratified by urban and rural areas within each district (Bureau of Statistics, 2019). In the first stage, census enumeration areas (EAs) were selected using probability proportional to size. In the second stage, households were selected within each selected EA using random systematic sampling based on the 2016 Population and Housing Census frame (Bureau of Statistics, 2019). Fieldwork was carried out between April 2018 and September 2018 by the Lesotho Bureau of Statistics under the Ministry of Development Planning as part of the Global MICS Program, with technical and financial support from the United Nations Children's Fund (UNICEF).

The survey includes a household questionnaire with basic demographic data on all persons who usually reside in the household (de jure), as well as features of the household and dwelling. The 2018 MICS had a household response rate of 95.9%. The Lesotho MICS sample is not self-weighting (Bureau of Statistics, 2019) due to oversampling in smaller districts. Sample weights were calculated and used in descriptive statistics. The education module in the household questionnaire includes a basic set of education indicators, including the highest level of education ever attended, the level of education currently attending, the level attended during the previous school year and the total years of schooling completed. The household questionnaire also collected data on labor market outcomes, marriage, fertility, and child mortality.

The MICS collected additional education-related data for a sample of children ages 5-17 years, administered to one randomly selected child in each household and their mother (or caretaker). Of the children listed, 5,304 were selected, and questionnaires were completed for 4,983 children, corresponding to a response rate of 94.0%. The questionnaire collected information on foundational mathematics and reading skills, including Sesotho and English, which can be used to measure learning outcomes "expected for Grades 2 and 3" in numeracy and reading (Amaro and Mizunoya, 2020). Foundational reading skills included word recognition, literal questions, and inferential questions. Foundational numeracy skills included number reading, number discrimination, addition, and pattern recognition. The questionnaire also collected information on out-

of-school time use (such as herding animals and domestic work) and hazardous working conditions. MICS provides comparable indicators of households and school-going-age children across settings Khan and Hancioglu (2019). To avoid misclassification, the MICS provides data on a child's age at the beginning of the current school year (i.e., January in Lesotho).

Population and Housing Census of 2006: Data were obtained from the Lesotho Population and Housing Census of 2006 through the Integrated Public Use Microdata Series (IPUMS) (Minnesota Population Center, 2019). IPUMS drew a systematic sample of every tenth dwelling drawn from 100% microdata, creating a random 10% Census sample. The Census was conducted by the Bureau of Statistics two weeks from census day (April 8, 2006) and covered all persons present in the country on census day (de facto and de jure). The list of household members excludes those outside the country continuously for more than three years, except those in institutions. The 10% sample is self-weighting. Occurring 12 years before the MICS, the Census provides information on school attendance by age, as well as educational, demographic, and fertility outcomes for adults. Data on month of birth and years of schooling completed were available for over 99% of eligible respondents, yielding 180,208 individuals ages 0 – 94 years. IPUMS also makes it possible to construct individual-level variables representing the characteristics of co-resident persons (e.g., spousal educational attainment).

Demographic and Health Surveys of 2004-05, 2009-10, and 2014 (DHS): The DHS is a two-stage cluster randomized nationally representative survey implemented with support from USAID (ICF, 2017). The DHS surveys are described in detail elsewhere (Corsi et al., 2012). Briefly, the primary objective of the DHS is to provide up-to-date estimates of basic demographic and health indicators, with a focus on sexual and reproductive health outcomes. Similar to the MICS, the DHS was intended to allow estimates of key indicators at the national level as well as in urban and rural areas, four ecological zones, and each of Lesotho's 10 districts. The DHS Surveys were fielded from September 2004 - January 2005 (DHS 2004-05), October 2009 - January 2010 (DHS 2009-10), and September - December 2014 (DHS 2014). All women aged 15-49 who were either permanent residents of the selected households or visitors who stayed in the household the night before the survey were eligible to be interviewed. The woman's questionnaire includes

questions on her full birth history, fertility preferences, child mortality, vaccinations and childhood illnesses, marriage, sexual activity, and partner characteristics. Additionally, in half of the households, all men aged 15-59 years who were either permanent residents of the selected households or visitors who stayed in the household the night before the survey were eligible to be interviewed. Household response rates in the DHS ranged from 95% (2004-05) to 99% (2014). Individual response rates ranged from 94% (2004-05) to 98% (2009-10) among women; and from 85% (2004-05) to 95% (2009-10) among men. The DHS collaborates closely with MICS (described above) to ensure that survey tools are comparable and that data can be combined in databases and analyses (Hancioglu and Arnold, 2013).

In the same subsample of households selected, blood specimens were collected for laboratory testing of HIV, enabling inferences on population HIV infection rates (Sia et al., 2014; Asiedu et al., 2012). To ascertain HIV status, interviewers collected blood specimens via finger-prick from those who consented to be tested. HIV response rates were high: in the 2014 DHS, 94% of eligible women and 89% of men were tested (DHS 2014 report). Blood samples were dried overnight, collected from the field, and transported to Maseru, Lesotho, for analysis at the National Reference Laboratory. To classify specimens as negative or screen positive, all specimens were initially tested with the Vironostika® HIV Ag/Ab (Biomérieux) enzyme-linked immunoassay (ELISA). All Vironostika-positives were subjected to a second ELISA, the Enzygnost® HIV Integral 4 assay (Siemens). If the first and second tests were discordant, the two ELISAs were repeated. If the results remained discordant, the Genetic Systems HIV-1 Western blot (BioRad), was administered. The final result was recorded as positive if the Western blot confirmed it to be positive and negative if the Western blot confirmed it to be negative. If the Western blot results were indeterminate, however, the HIV test result was recorded as "indeterminate". All Vironostika and Enzygnost ELISA testing took place at the National Reference Lab in Maseru, the capital of Lesotho, whereas Western blot testing took place at the National Institute for Communicable Diseases, located in Johannesburg, South Africa. Additional details on HIV testing methodology and HIV viral load assessment are available in DHS survey final reports (ICF, 2017).

Southern and Eastern Africa Consortium for Monitoring Educational Quality 2000 and 2007

Surveys (SACMEQ): The SACMEQ survey is a national school-based survey of 6^{th} graders conducted in their penultimate year of primary school (Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ), 2002, 2007). While the survey is representative of all 6^{th} graders in the country, it is not representative of birth cohorts: i.e., it excludes cohort members who would have been 6^{th} graders but left school early or repeated grades, and it includes older students who were retained in 6^{th} grade. Nevertheless, it provides insight into the time spent in nursery or preschool (pre-primary education), grade progression, and experiences and skills of different-aged children in 6^{th} grade at the end of primary school (Jopo et al., 2011). SACMEQ provides data on standardized scores for literacy and numeracy. The means of standardized scores for the SACMEQ 2000 and 2007 were set at 500 and the standard deviations at 100.

A3. MICS 2018 Foundational Reading Assessment tool

FL23. *Turn the page in the READING & NUMBERS Book so the child is looking at the list of numbers. Make sure the child is looking at this page.* Now here are some numbers. I want you to point to each number and tell me what the number is. *Point to the first number and say:* Start here. *If a child stops on a number for a while, tell the child what the number is, mark the number as 'No Attempt', point to the next number and say:* What is this number? *STOP RULE* *If the child does not attempt to read 2 consecutive numbers, say:* Thank you. That is ok.	**9** CORRECT ..... 1 INCORRECT ..... 2 NO ATTEMPT ..... 3 **12** CORRECT ..... 1 INCORRECT ..... 2 NO ATTEMPT ..... 3 **30** CORRECT ..... 1 INCORRECT ..... 2 NO ATTEMPT ..... 3 **48** CORRECT ..... 1 INCORRECT ..... 2 NO ATTEMPT ..... 3 **74** CORRECT ..... 1 INCORRECT ..... 2 NO ATTEMPT ..... 3 **731** CORRECT ..... 1 INCORRECT ..... 2 NO ATTEMPT 3	
FL23A. *Check FL23: Did the child correctly identify two of the first three numbers (9, 12 and 30)?*	YES, AT LEAST TWO CORRECT 1 NO, AT LEAST 2 INCORRECT OR WITH NO ATTEMPT 2	2 ⇨ *FL28*
FL24. *Turn the page so the child is looking at the first pair of numbers. Make sure the child is looking at this page. Say:* Look at these numbers. Tell me which one is bigger. *Record the child's answer before turning the page in the book and repeating the question for the next pair of numbers.* *If the child does not provide a response after a few seconds, repeat the question. If the child seems unable to provide an answer after repeating the question, mark a 'Z' for the answer on the appropriate row on the questionnaire, turn the booklet page and show the child the next pair of numbers.* *If the child does not attempt 2 consecutive pairs, say:* Thank you. That is ok. We will go to the next activity.	7 5 ____ 11 24 ____ 58 49 ____ 65 67 ____ 146 154 ____	

FL19. *Turn the page to reveal the reading passage.*

Thank you. Now I want you to try this.

Here is a story. I want you to read it aloud as carefully as you can.

You will start here *(point to the first word on the first line)* and you will read line by line *(point to the direction for reading each line)*.

When you finish I will ask you some questions about what you have read.

If you come to a word you do not know, go onto the next word.

Put your finger on the first word. Ready? Begin.

Lerato	is	seven	years	old.	One	Morning,
1	2	3	4	5	6	7
her	grandmother	asked	her	to	go	to
8	9	10	11	12	13	14
the	shop	to	buy	carrots.	She	gave
15	16	17	18	19	20	21
Lerato	some	money.	Lerato	put	it	in
22	23	24	25	26	27	28
her	bag.	The	bag	had	a	big
29	30	31	32	33	34	35
hole.	On	the	way,	Lerato	lost	the
36	37	38	39	40	41	42
money.	Tumelo	saw	the	money	and	gave
43	44	45	46	47	48	49
it	to	Lerato.	She	was	very	happy.
50	51	52	53	54	55	56
Lerato	thanked	Tumelo	and	ran	to	the
57	58	59	60	61	62	63
shop.						
64						

FL20. *Results of the child's reading.*

LAST WORD ATTEMPTED ..... NUMBER __ __

TOTAL NUMBER OF WORDS INCORRECT OR MISSED ..... NUMBER __ __

FL21. *How well did the child read the story?*

THE CHILD READ AT LEAST ONE WORD CORRECTLY 1

THE CHILD DID NOT READ ANY WORD CORRECTLY ..... 2 ⇨ 2 ⇨*FL23*

THE CHILD DID NOT TRY TO READ THE STORY ..... 3 ⇨ 3 ⇨*FL23*

FL22. Now I am going to ask you a few questions about what you have read. *If the child does not provide a response after a few seconds, repeat the question. If the child seems unable to provide an answer after repeating the question, mark 'No response' and say:* Thank you. That is ok. We will move on. *Make sure the child can still see the passage and ask:*		
[A] How old is Lerato?	CORRECT (LERATO IS SEVEN YEARS OLD)... 1 INCORRECT ..... 2 NO RESPONSE / SAYS 'I DON'T KNOW'..... 3	
[B] Who sent Lerato to the shop?	CORRECT (HER GRANDMOTHER) ..... 1 INCORRECT ..... 2 NO RESPONSE / SAYS 'I DON'T KNOW'..... 3	
[C] What was Lerato sent to buy?	CORRECT ((SHE WAS SENT TO BUY CARROTS)..... 1 INCORRECT ..... 2 NO RESPONSE / SAYS 'I DON'T KNOW'..... 3	
[D] Why did Lerato loose the money?	CORRECT (BECAUSE IT FELL THROUGH THE HOLE IN THE BAG/ THE BAG HAD A HOLE) 1 INCORRECT ..... 2 NO RESPONSE / SAYS 'I DON'T KNOW'..... 3	
[E] Why was Lerato happy?	CORRECT (BECAUSE TUMELO GAVE HER THE MONEY / BECAUSE TUMELO FOUND HER MONEY) ..... 1 INCORRECT ..... 2 NO RESPONSE / SAYS 'I DON'T KNOW'..... 3	

A4. MICS 2018 Foundational Numeracy Assessment tool

FL23. *Turn the page in the READING & NUMBERS Book so the child is looking at the list of numbers. Make sure the child is looking at this page.* Now here are some numbers. I want you to point to each number and tell me what the number is. *Point to the first number and say:* Start here. *If a child stops on a number for a while, tell the child what the number is, mark the number as 'No Attempt', point to the next number and say:* What is this number? *STOP RULE* *If the child does not attempt to read 2 consecutive numbers, say:* Thank you. That is ok.	**9** CORRECT ..... 1 INCORRECT ..... 2 NO ATTEMPT ..... 3 **12** CORRECT ..... 1 INCORRECT ..... 2 NO ATTEMPT ..... 3 **30** CORRECT ..... 1 INCORRECT ..... 2 NO ATTEMPT ..... 3 **48** CORRECT ..... 1 INCORRECT ..... 2 NO ATTEMPT ..... 3 **74** CORRECT ..... 1 INCORRECT ..... 2 NO ATTEMPT ..... 3 **731** CORRECT ..... 1 INCORRECT ..... 2 NO ATTEMPT 3	
FL23A. *Check FL23: Did the child correctly identify two of the first three numbers (9, 12 and 30)?*	YES, AT LEAST TWO CORRECT 1 NO, AT LEAST 2 INCORRECT OR WITH NO ATTEMPT 2	2 ⇨ *FL28*
FL24. *Turn the page so the child is looking at the first pair of numbers. Make sure the child is looking at this page. Say:* Look at these numbers. Tell me which one is bigger. *Record the child's answer before turning the page in the book and repeating the question for the next pair of numbers.* *If the child does not provide a response after a few seconds, repeat the question. If the child seems unable to provide an answer after repeating the question, mark a 'Z' for the answer on the appropriate row on the questionnaire, turn the booklet page and show the child the next pair of numbers.* *If the child does not attempt 2 consecutive pairs, say:* Thank you. That is ok. We will go to the next activity.	7 5 ____ 11 24 ____ 58 49 ____ 65 67 ____ 146 154 ____	

FL25. *Give the child a pencil and paper. Turn the page so the child is looking at the first addition. Make sure the child is looking at this page. Say:* Look at this sum. How much is (*number plus number*)? Tell me the answer. You can use the pencil and paper if it helps you. *Record the child's answer before turning the page in the book and repeating the question for the next sum.* *If the child does not provide a response after a few seconds, repeat the question. If the child seems unable to provide an answer after repeating the question, mark a 'Z' for the answer on the appropriate row on the questionnaire, turn the booklet page and show the child the next addition.* *If the child does not attempt 2 consecutive pairs, say:* Thank you. That is ok. We will go to the next activity.	3 + 2 =_____ 8 + 6 =_____ 7 + 3 =_____ 13 + 6 =_____ 12 + 24 =_____	

FL26. *Turn the page to the practice sheet for missing numbers. Say*

Here are some numbers. 1, 2, and 4. What number goes here?

If the child answers <u>correctly</u> say:

That's correct, 3. Let's do another one.

If the child answers <u>incorrectly</u>, do not explain the child how to get the correct answer. Just say:

The number 3 goes here. Say the numbers with me. *(Point to each number)* 1, 2, 3, 4.
3 goes here. Let's do another one.

Now turn the page to the next practice sheet. Say:

Here are some more numbers. 5, 10, 15 and ___. What number goes here?

If the child answers <u>correctly</u> say:

That's correct, 20. Now I want you to try this on your own

If the child answers <u>incorrectly</u> say:

The number 20 goes here. Say the numbers with me. *(Point to each number)* 5, 10, 15, 20.
20 goes here. Now I want you to try this on your own.

FL27. *Now turn the page in the READING & NUMBERS Book with the first missing number activity. Say*: Here are some more numbers. Tell me what number goes here (*pointing to the missing number*). *Record the child's answer before turning the page in the book and repeating the question.* *If the child does not provide a response after a few seconds, repeat the question. If the child seems unable to provide an answer after repeating the question, mark a 'Z' for the answer on the appropriate row on the questionnaire.* *If the child does not attempt 2 consecutive activities, say:* Thank you. That is ok.	5 6 7 ___ 14 15 ___ 17 20 ___ 40 50 2 4 6 ___ 5 8 11 ___	

Appendix B: Supplementary Results - Figures and Tables

Table B.1: *RDD estimates for placebo outcomes: children under five*

Dependent variable (DV)	(1)	(2)	(3)	(4)	(5)	(6)
	Birth order (Firstborn = 1)	Birth weight (kg)	Probability stunted (= 1)	Probability underweight (= 1)	Probability anemic (= 1)	Probability cough in past 2 weeks (= 1)
Born July to December (=1)	0.020	-0.015	-0.024	0.011	-0.003	0.001
	(0.040)	(0.051)	(0.039)	(0.026)	(0.041)	(0.038)
Controls						
MOB	✓	✓	✓	✓	✓	✓
(Born July to December)×MOB	✓	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓	✓
Age Indicators	✓	✓	✓	✓	✓	✓
Survey Year Indicators	✓	✓	✓	✓	✓	✓
Mean DV, lower limit	0.381	3.1	0.353	0.100	0.533	0.346
Observations	2,583	2,583	2,583	2,583	2,583	2,583
R-squared	0.004	0.010	0.036	0.020	0.035	0.020

Source: Own computations using Lesotho DHS 2004-05, 2009-10, and 2014. *Notes:* Born July to December ($MOB_i \geqslant July$) equals 1 if a child's month-of-birth (MOB) is between July and December. Anemia, stunting, and being underweight are directly measured; other variables are reported by the mother or caregiver or obtained via the child's health record card if available. Anemia was defined as measured blood hemoglobin concentration level below 11.0 g/dl. Stunted was defined as height-for-age Z-score below minus two standard deviations from the median of the reference population. Underweight was defined as weight-for-age Z-score below minus two standard deviations from the median of the reference population. The DHS children's dataset has one record for every child of interviewed women, born in the five years preceding the survey. Sample includes children ages 0-4 years at time of survey. Robust unclustered standard errors in parentheses.

Table B.2: *RDD estimates for placebo outcomes: household- or adult-level*

Dependent variable (DV)	(1) Mother completed primary school (= 1)	(2) Household wealth quintile of child (1:poorest, 5: richest)	(3) Measured adult height at time of survey in meters	(4) Adult born in Maseru (= 1)
Born July to December (=1)	-0.005	0.009	0.001	0.005
	(0.019)	(0.058)	(0.002)	(0.014)
Controls				
MOB	✓	✓	✓	✓
Gender	✓	✓	✓	✓
Age Indicators	✓	✓	✓	✓
Survey Year Indicators	✓	✓	✓	✓
Age range				
0-4 years	✓	✓	✗	✗
18-49 years (women)	✗	✗	✓	✓
18-59 years (men)	✗	✗	✓	✓
Data sources				
DHS 2004-05	✓	✓	✓	✓
DHS 2009-10	✓	✓	✓	✓
DHS 2014	✓	✓	✓	✗
Mean DV, lower limit	0.682	2.7	1.6	0.124
Observations	9,861	9,861	14,705	8,165
R-squared	0.018	0.003	0.369	0.025

Source: Own computations using Lesotho DHS 2004-05, 2009-10, and 2014. *Notes:* Born July to December ($MOB_i \geqslant July$) equals 1 if month-of-birth (MOB) is between July and December. The 2014 DHS does not contain data on place of birth and is therefore excluded in column (4). Robust unclustered standard errors in parentheses.

Table B.3: *Effect of age of school entry on total years of schooling*

Dependent variable (DV): Total years of schooling completed	(1) MICS	(2) MICS	(3) MICS	(4) DHS	(5) Census
Born July to December (=1)	0.466***	0.557***	0.405***	0.422***	0.435***
	(0.147)	(0.227)	(0.142)	(0.084)	(0.067)
Controls					
MOB	✓	✓	✓	✓	✓
MOB^2	✗	✓	✗	✗	✗
(Born July to December)×MOB	✓	✓	✓	✓	✓
(Born July to December)×MOB^2	✗	✓	✗	✗	✗
Gender	✗	✗	✓	✓	✓
Age Indicators	✗	✗	✓	✓	✓
Survey Year Indicators	✗	✗	✗	✓	✗
Excluding June-born	✗	✗	✗	✗	✓
Mean DV, lower limit	8.1	7.4	8.1	7.1	7.2
Observations	10,073	10,073	10,073	24,890	60,018
R-squared	0.006	0.007	0.073	0.093	0.069

Source: Own computations using the Lesotho MICS 2018, Lesotho DHS for 2004-05, 2009-10, and 2014, and Lesotho Census 2006 data. *Notes:* Born July to December ($MOB_i \geqslant July$) equals 1 if a respondent's month of birth (MOB) is between July and December. The running variable, MOB, is centered as $MOB - 6.5$. Results in columns (1) to (3) are based on a sample of all respondents aged 18-35 years from MICS 2018. Results in column (4) are based on a sample of all respondents aged 18-49 years from the DHS 2004-05, DHS 2009-10, and DHS 2014 surveys. Column (5) results are based on a sample of all respondents aged 18-49 years from the 2006 Census data. Excluding June-born corrects for the survey artifact in the Census 2006 data. Robust unclustered standard errors in parentheses. *** p<0.01.

Table B.4: *Effect of age at school entry on years of schooling: sample and clustering effects*

Dependent variable (DV): Total years of schooling completed	(1)	(2)	(3)	(4)	(5)
Born July to December (=1)	0.431***	0.386*	0.405**	0.405***	0.405**
	(0.156)	(0.213)	(0.152)	(0.148)	(0.136)
Controls					
MOB	✓	✓	✓	✓	✓
(Born July to December)×MOB	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓
Age Indicators	✓	✓	✓	✓	✓
Sample and clustering					
Excluding Born in January or December	✓	✗	✗	✗	✗
Excluding Born in June or July	✗	✓	✗	✗	✗
Clustered by MICS Stratum (n=53)	✗	✗	✓	✗	✗
Clustered by MICS Cluster Number (n=400)	✗	✗	✗	✓	✗
Clustered by MOB	✗	✗	✗	✗	✓
Mean DV, lower limit	8.0	8.3	8.1	8.1	8.1
Observations	8,372	8,235	10,073	10,073	10,073
R-squared	0.067	0.071	0.073	0.073	0.073

Source: Own computations using Lesotho MICS 2018. *Note:* Born July to December ($MOB_i \geqslant July$) equals 1 if month of birth (MOB) is between July and December. The running variable is centered as $MOB - 6.5$. The sample includes all respondents aged 18-35 years. In columns (1) and (2), we show robust unclustered standard errors in parentheses. In columns (3)-(5), we show standard errors clustered at the MICS stratum (n=53), MICS cluster number (n=400), and month of birth level, respectively, in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table B.5: *Effect of age at school entry on total years of schooling completed and long-term economic, demographic, and health outcomes using smaller bandwidths*

Dependent variable (DV)	(1)	(2)	(3)	(4)	(5)
Bandwidth	$+/-6$ months	$+/-5$ months	$+/-4$ months	$+/-3$ months	$+/-2$ months
Panel A: Years of schooling					
Born July to December (=1)	0.403***	0.428***	0.434***	0.401***	0.431**
	(0.106)	(0.118)	(0.131)	(0.154)	(0.201)
Observations	19,930	16,003	13,280	9,869	6,699
R-squared	0.218	0.192	0.193	0.193	0.195
Panel B: "High-class" occupation					
Born July to December (=1)	0.019**	0.018*	0.014	0.021	0.015
	(0.009)	(0.010)	(0.011)	(0.013)	(0.017)
Observations	25,416	21,085	17,446	12,719	8,505
R-squared	0.029	0.029	0.029	0.031	0.033
Panel C: Number of children					
Born July to December (=1)	-0.190***	-0.145***	-0.154***	-0.148**	-0.191**
	(0.044)	(0.049)	(0.055)	(0.065)	(0.084)
Observations	18,219	15,189	12,561	9,127	6,121
R-squared	0.472	0.473	0.473	0.474	0.473
Panel D: Ever being married					
Born July to December (=1)	-0.026***	-0.027**	-0.023*	-0.031**	-0.043**
	(0.009)	(0.011)	(0.012)	(0.014)	(0.018)
Observations	25,838	21,440	17,738	12,932	8,647
R-squared	0.323	0.326	0.327	0.325	0.330
Panel E: HIV infection (men)					
Born July to December (=1)	-0.038**	-0.036*	-0.034	-0.029	-0.053
	(0.019)	(0.021)	(0.023)	(0.027)	(0.036)
Observations	6,775	5,555	4,595	3,378	2,244
R-squared	0.099	0.101	0.103	0.107	0.111

Source: Own computations using MICS 2018, and DHS for 2004-05, 2009-10, and 2014 data. *Notes:* Born July to December ($MOB_i \geqslant July$) equals 1 if a respondent's month of birth (MOB) is between July and December. MOB is centered as $MOB - 6.5$. All regressions control for MOB, treatment variable, MOB×(treatment variable), age indicators, and gender. Additionally, we add indicators for survey year when using DHS data. Panel (a) includes all aged 18+ years (MICS), panels (b)-(d) includes all aged 18-59 years (DHS), and panel (e) includes all men aged 18-59 years (DHS). Robust unclustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table B.6: *Effect of age at school entry on years of schooling: RDD with household fixed effects*

Dependent variable (DV): Total years of schooling completed	(1) MICS	(2) MICS	(3) DHS	(4) Census
Born July to December (=1)	0.269**	0.223	0.270**	0.187***
	(0.124)	(0.163)	(0.128)	(0.072)
Controls				
MOB	✓	✓	✓	✓
(Born July to December)×MOB	✓	✓	✓	✓
Gender	✓	✓	✓	✓
Cluster Fixed Effects	✓	✗	✗	✗
Household Fixed Effects	✗	✓	✓	✓
Survey Year Fixed Effects	✗	✗	✓	✗
Excluding June-born	✗	✗	✗	✓
Number of clusters	400	400	405	-
Number of households	2,886	2,886	5,554	33,704
N, all households	10,073	10,073	24,775	67,620
N, households with >1 respondents	7,050	7,050	12,713	60,616
R-squared	0.351	0.121	0.123	0.098

Source: Own computations using Lesotho DHS 2004-05, 2009-10, 2014, MICS 2018, and Census 2006 data. *Note:* Born July to December ($MOB_i \geqslant July$) equals 1 if a month of birth (MOB) is between July and December. The running variable is centered as $MOB - 6.5$. In columns (1) and (2), the sample includes all respondents aged 18-35 years from the MICS 2018 data. In column (3), the sample includes all respondents aged 18-49 years from the DHS. In column (4), the sample includes all respondents aged 18-59 years from the Census. Excluding June-born corrects for the survey artifact in the Census 2006 data. Robust unclustered standard errors in parentheses. *** p<0.01, ** p<0.05.

Table B.7: *Effect of age at school entry on migration between Lesotho and South Africa*

Dependent variable (DV)	(1) Usual resident in household (= 1)	(2) Away from home for 3+ months past 5 years (= 1)	(3) Times away from home for 3+ months past 5 years	(4) Resides in South Africa and speaks Sesotho at home (= 1)	(5) Income among Lesotho-born living in South Africa (Rand)
Born July to December (=1)	-0.001	0.010	-0.026	0.0002	-190.8
	(0.005)	(0.018)	(0.083)	(0.0005)	(2,648.5)
Controls					
MOB	✓	✓	✓	✓	✓
(Born July to December)×MOB	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓
Age Indicators	✓	✓	✓	✓	✓
Survey Year Indicators	✓	✗	✗	✓	✓
Age range					
18-59 years	✓	✓	✓	✗	✗
25-69 years	✗	✗	✗	✓	✓
Data source					
DHS 2004-05	✓	✗	✗	✗	✗
DHS 2009-10	✓	✗	✗	✗	✗
DHS 2014	✓	✓	✓	✗	✗
South Africa Census 2001	✗	✗	✗	✓	✓
South Africa Census 2011	✗	✗	✗	✓	✓
South Africa Community Survey 2016	✗	✗	✗	✓	✗
Mean DV, lower limit	0.963	0.180	0.517	0.087	21,722
Observations	25,840	7,574	7,574	5,251,572	16,493
R-squared	0.007	0.028	0.015	0.0006	0.023

Source: Own computations using Lesotho Census 2006, DHS 2004-05, 2009-10, 2014, MICS 2018, and South African Census 2001, Census 2011 and Community Survey 2016. *Note:* Born-July-to-December ($MOB_i \geqslant July$) equals 1 if the month of birth (MOB) is between July and December. Income was defined by IPUMS as annual income in Rand for the twelve months prior to the census. Robust unclustered standard errors in parentheses.

Table B.8: *The effect of age at school entry on literacy and ICT skills in adulthood*

Dependent variable (DV)	(1) Can read a whole sentence or parts of it in the MICS (= 1)	(2) Can read a whole sentence or parts of it in the DHS (= 1)	(3) Can read and write with ease in any language in the Census (= 1)	(4) Performed any computer related activities in the past 3 months (= 1)	(5) Reads newspaper or magazine (= 1)
Born July to December (=1)	0.032***	0.017**	0.023***	0.023*	0.039***
	(0.012)	(0.007)	(0.008)	(0.014)	(0.012)
Controls					
MOB	✓	✓	✓	✓	✓
(Born July to December)×MOB	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓
Age Indicators	✓	✓	✓	✓	✓
Survey Year Indicators	✗	✓	✗	✗	✓
Excluding June-born	✗	✗	✓	✗	✗
Mean DV, lower limit	0.894	0.896	0.769	0.093	0.291
Observations	7,986	24,834	60,461	7,986	24,897
R-squared	0.085	0.106	0.079	0.017	0.016

Source: Own computations using Lesotho MICS 2018, DHS 2004-05, 2009-10, 2014 and Census 2006. *Notes:* In the DHS and MICS, literacy is defined as the ability to read a short, simple statement about everyday life or having attended secondary or higher education. The sentences were written in Sesotho or English (for those who were interviewed in English). Respondents who attended secondary school or had higher education were assumed to be literate. In the Census, each eligible member was given a literacy card and asked to read out one of the given sentences. The sentences were alternated as some members might memorize what some of the members read out even if they could not read themselves. In the MICS, computer-related activities include at least one of the following activities: copying or moving a file or folder; using copy and paste tool within a document; sending an e-mail with an attachment; using a basic arithmetic formula in a spreadsheet; connecting and installing a new device such a printer; finding, installing, and configuring software; creating an electronic presentation; transferring files between devices; and writing a computer program using any programming language. Born July-to-December ($MOB_i \geqslant July$) equals 1 if the respondent's month of birth (MOB) is between July and December. The sample used in columns (1) and (4) is from the MICS and includes 18-49 year-olds. The sample used in columns (2) and (5) is from the DHS 2004-05, 2009-10, and 2014 and includes 18-49 year olds. The sample used in column (3) is from the Census 2006 and includes 18-49 year-olds. Excluding June-born corrects for the survey artifact in the Census 2006 data. Robust unclustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table B.9: *The effect of age at school entry on labor market outcomes*

Dependent variable (DV)	(1) Worked in the past 12 months (= 1)	(2) Employed in agriculture or manual labor (= 1)	(3) Employed in "high-class" occupation in DHS (= 1)	(4) Employed in the past week (= 1)	(5) Employed in "high-class" occupation in Census (= 1)
Born July to December (=1)	0.013	-0.011	0.018**	0.021**	0.023***
	(0.012)	(0.011)	(0.009)	(0.009)	(0.005)
Controls					
MOB	✓	✓	✓	✓	✓
(Born July to December)×MOB	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓
Age Indicators	✓	✓	✓	✓	✓
Survey Year Indicators	✓	✓	✓	✗	✗
Excluding June-born	✗	✗	✗	✓	✓
Mean DV, lower limit	0.523	0.321	0.127	0.461	0.090
Observations	25,200	25,200	25,200	67,620	67,620
R-squared	0.097	0.101	0.028	0.128	0.026

Source: Own computations using Lesotho DHS 2004-05, 2009-10, 2014 and Census 2006 data. *Notes:* In the DHS, "high-class" occupation equals one if legislators, managers, professional/technical/managerial, clerical, or sales; and as zero if agricultural, household and domestic, services, manual, or not employed. In the Census, "high-class" occupation equals one if legislators, senior officials, managers, professionals, technicians and associate professionals, clerks, service workers, or sales; and zero if agricultural and fishery, crafts/trades, plant and machine operators/assemblers, elementary occupations, armed forces, or not employed. The 2006 Census defines occupation as a person's "primary occupation, coded according to the major categories in the International Standard Classification of Occupations scheme for 1988". For someone with more than one occupation, the primary occupation is typically the one where the person has spent the most time or earned the most money. Born-July-to-December ($MOB_i \geqslant July$) equals 1 if the respondent's month of birth (MOB) is between July and December. Results in columns (1) to (3) use the 2004-05, 2009-10, and 2014 DHS data and includes all women aged 18-49 years and all men aged 18-59 years. The sample in columns (4) to (6) is from the Census 2006 and includes all respondents aged 18-59 years. Excluding June-born corrects for the survey artifact in the Census 2006 data. Robust unclustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table B.10: *The effect of age at school entry on household wealth*

Dependent variable (DV)	(1) Owns livestock, herds or farm animals (= 1)	(2) Owns land usable for agriculture (= 1)	(3) Owns a bank account (= 1)	(4) Wealth quintile (poorest= 1, richest= 5)	(5) Owns a cellular phone (= 1)	(6) Owns a television (= 1)	(7) Owns a refrigerator (= 1)	(8) Owns a car (= 1)
Born July to December (=1)	0.004	-0.006	0.034*	0.129***	0.043***	0.034***	0.028***	0.010*
	(0.018)	(0.018)	(0.018)	(0.036)	(0.009)	(0.007)	(0.007)	(0.005)
Controls								
MOB	✓	✓	✓	✓	✓	✓	✓	✓
(Born July to December)×MOB	✓	✓	✓	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓	✓	✓	✓
Age Indicators	✓	✓	✓	✓	✓	✓	✓	✓
Survey Year Indicators	✓	✓	✓	✓	✗	✗	✗	✗
Excluding June-born	✗	✗	✗	✗	✓	✓	✓	✓
Mean DV, lower limit	0.584	0.522	0.391	3.1	0.414	0.188	0.171	0.078
Observations	12,577	12,577	12,577	25,840	67,620	67,620	67,620	67,620
R-squared	0.025	0.036	0.011	0.013	0.011	0.008	0.008	0.004

Source: Own computations using the Lesotho DHS 2004-05, 2009-10, 2014 and Census 2006 data. *Notes:* Born-July-to-December ($MOB_i \geqslant July$) equals 1 if month of birth (MOB) is between July and December. The sample used in columns (1) to (4) is from the DHS and includes 18-49 year old women and 18-59 year old men. The Lesotho DHS 2004-05 does not contain data on household ownership of livestock, land, or a bank account and is therefore not included in columns (1) to (3). The sample used in columns (5) to (8) is from the Lesotho Census 2006 and includes all respondents aged 18-59 years. Excluding June-born corrects for the survey artifact in the Census 2006 data. Robust unclustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table B.11: *Effect of age at school entry on childbearing and age at first birth*

Dependent variable (DV) Subsample: Women	(1) Total number of children ever born in the DHS	(2) Age first birth < 20 years (= 1)	(3) Age first birth < 18 years (= 1)	(4) Age first birth < 15 years (= 1)	(5) Total number of children ever born in the Census
Born July to December (=1)	-0.209***	-0.045***	-0.027**	0.005	-0.132***
	(0.049)	(0.016)	(0.011)	(0.004)	(0.042)
Controls					
MOB	✓	✓	✓	✓	✓
(Born July to December)×MOB	✓	✓	✓	✓	✓
Age Indicators	✓	✓	✓	✓	✓
Survey Year Indicators	✓	✓	✓	✓	✗
Excluding June-born	✗	✗	✗	✗	✓
Mean DV, lower limit	2.6	0.421	0.158	0.009	2.2
Observations	16,197	16,197	16,197	16,197	32,323
R-squared	0.412	0.006	0.004	0.004	0.439

Source: Own computations using the Lesotho DHS 2004-05, 2009-10, 2014, and Census 2006 data. *Notes:* Born-July-to-December ($MOB_i \geqslant July$) equals 1 if a woman's month of birth (MOB) is between July and December. The sample used in columns (1) to (4) includes all women aged 20-49 years in the DHS. The sample in column (5) includes all women aged 20-49 years in the Census. Excluding June-born corrects for the survey artifact in the Census 2006. The total number of children ever born was top-coded at 11+ in the Census. Robust unclustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table B.12: *Effect of age at school entry on marital status and partner characteristics*

Dependent variable (DV)	(1) Ever married in the DHS (= 1)	(2) Age at first marriage, < 20 years (= 1)	(3) Age at first marriage, < 18 years (= 1)	(4) Age at first marriage, < 15 years (= 1)	(5) Spousal educational attainment (in years)	(6) Ever married in the Census (= 1)
Born July to December (=1)	-0.029***	-0.036***	-0.033***	-0.004	0.388**	-0.027***
	(0.011)	(0.013)	(0.011)	(0.005)	(0.152)	(0.008)
Controls						
MOB	✓	✓	✓	✓	✓	✓
(Born July to December)×MOB	✓	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✗	✓
Age Indicators	✓	✓	✓	✓	✓	✓
Survey Year Indicators	✓	✓	✓	✓	✓	✗
Excluding June-born	✗	✗	✗	✗	✗	✓
Mean DV, lower limit	0.777	0.418	0.231	0.033	5.5	0.694
Observations	22,020	22,020	22,020	22,020	11,753	53,622
R-squared	0.183	0.029	0.025	0.010	0.079	0.276

Source: Own computations using the Lesotho DHS 2004-05, 2009-10, 2014, and Census 2006 data. *Note:* Born July-to-December ($MOB_i \geqslant July$) equals 1 if month of birth (MOB) is between July and December. The sample in columns (1) to (4) includes all respondents (both genders) aged 20-49 years from the DHS. The sample in column (5) includes all women aged 20-49 years from the DHS. The sample in column (6) includes all respondents aged 20-49 years from the Census. Excluding June-born corrects for the survey artifact in the Census 2006 data. Robust unclustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table B.13: *Effect of age at school entry on HIV status*

Dependent variable (DV)	(1)	(2)	(3)	(4)	(5)	(6)
	Total years of schooling (in sample with HIV test)			Positive HIV biomarker test (= 1)		
Subsample	Both genders	Female	Male	Both genders	Female	Male
Born July to December (=1)	0.490***	0.456***	0.600***	-0.001	0.022	-0.041**
	(0.113)	(0.124)	(0.212)	(0.014)	(0.019)	(0.020)
Controls						
MOB	✓	✓	✓	✓	✓	✓
(Born July to December)×MOB	✓	✓	✓	✓	✓	✓
Gender	✓	✗	✗	✓	✗	✗
Age Indicators	✓	✓	✓	✓	✓	✓
Survey Year Indicators	✓	✓	✓	✓	✓	✓
Mean DV, lower limit	6.8	7.5	5.8	0.270	0.297	0.238
Observations	14,596	8,663	5,933	14,596	8,663	5,933
R-squared	0.106	0.060	0.059	0.082	0.062	0.113

Source: Own computations using the Lesotho DHS 2004-05, 2009-10, and 2014. *Note:* Born July-to-December ($MOB_i \geqslant July$) equals 1 if month of birth (MOB) is between July and December. Sample includes all 18-49 year-olds with a valid HIV test. See Appendix A2 for further details on HIV status measurement. Robust unclustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table B.14: *Effect of age at school entry on childbearing and marriage by age*

Subsample: Women	(1)	(2) Ages 18-29	(3)	(4)	(5) Ages 30-49	(6)
Dependent variable (DV)	Number of children ever born	Age at first birth < 18 years (= 1)	Ever married (= 1)	Number of children ever born	Age at first birth < 18 years (= 1)	Ever married (= 1)
Born July to December (=1)	-0.082**	-0.027*	-0.035*	-0.310***	-0.023	-0.027**
	(0.038)	(0.014)	(0.019)	(0.083)	(0.016)	(0.012)
Controls						
MOB	✓	✓	✓	✓	✓	✓
(Born July to December)×MOB	✓	✓	✓	✓	✓	✓
Age Indicators	✓	✓	✓	✓	✓	✓
Survey Year Indicators	✓	✓	✓	✓	✓	✓
Mean DV, lower limit	1.1	0.153	0.626	3.6	0.163	0.933
Observations	9,635	9,635	9,635	8,584	8,584	8,584
R-squared	0.290	0.003	0.151	0.164	0.004	0.017

Source: Own computations using the Lesotho DHS 2004-05, 2009-10, and 2014 data. *Notes:* Born July to December ($MOB_i \geqslant July$) equals 1 if a respondent's month of birth (MOB) is between July and December. The running variable, MOB, is centered as $MOB - 6.5$. Robust unclustered standard errors in parentheses. Sample includes all women ages 18-49 years in the DHS. *** p<0.01, ** p<0.05, * p<0.10.

Table B.15: *The intergenerational effect of mother's age at school entry on child survival*

Dependent variable (DV)	(1) Child survival in the DHS (= 1)	(2) Children under-five years survival (= 1)	(3) Number children born who have died	(4) Maternal lifetime prevalence of any offspring mortality	(5) Child survival in the MICS (= 1)
Mother Born July to December (=1)	0.011*	0.020*	-0.045***	-0.039***	0.023**
	(0.006)	(0.012)	(0.017)	(0.011)	(0.011)
Controls					
Mother MOB	✓	✓	✓	✓	✓
(Mother Born July to December)×Mother MOB	✓	✓	✓	✓	✓
Child Gender	✓	✓	✗	✗	✓
Child Age Indicators	✓	✓	✗	✗	✓
Survey Year Indicators	✓	✓	✓	✓	✗
Mother Age Indicators	✗	✗	✓	✓	✗
Age range					
0-39 years (children)	✓	✗	✗	✗	✓
0-4 years (children)	✗	✓	✗	✗	✗
18-49 years (women)	✗	✗	✓	✓	✗
Mean DV, lower limit	0.891	0.897	0.255	0.192	0.903
Observations	40,648	10,288	18,219	18,219	11,307
R-squared	0.009	0.007	0.087	0.085	0.017

Source: Own computations using the Lesotho DHS 2004-05, 2009-10, 2014, and MICS 2018 data. *Note:* Mother Born July to December ($MOB_i \geqslant July$) equals 1 if mother's month of birth (MOB) is between July and December. The sample used in columns (1) and (2) includes children from the full birth history of eligible mothers in the DHS. The sample in columns (3) and (4) includes all women aged 18-49 years old in the DHS. The sample in column (5) includes all children from the full birth history of eligible mothers in the MICS. Because eligible women in the DHS and MICS are ages 18-49 years, data on child survival was available for all her children (in the next generation) up until children age 39 years. Robust unclustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table B.16: *Effect of age at school entry on schooling by household ownership of livestock, gender and age*

Dependent variable (DV) Highest school year attended (years)	(1)	(2)	(3)	(4)	(5)	(6)
	Household owns no animals			Household owns any animals		
Subsample	Both genders	Girls	Boys	Both genders	Girls	Boys
Panel A: Children aged 5-10 years at beginning of school year						
Born July to December (=1)	-0.367***	-0.370***	-0.379**	-0.238***	-0.165*	-0.309***
	(0.089)	(0.101)	(0.147)	(0.074)	(0.093)	(0.116)
Controls						
MOB	✓	✓	✓	✓	✓	✓
(Born July to December)×MOB	✓	✓	✓	✓	✓	✓
Male (=1)	✓	✗	✗	✓	✗	✗
School Age Indicators	✓	✓	✓	✓	✓	✓
Mean DV, lower limit	2.9	3.1	2.7	2.8	2.9	2.8
Observations	1,803	917	886	3,052	1,527	1,525
R-squared	0.744	0.821	0.663	0.699	0.749	0.647
Panel B: Children aged 11-18 years at beginning of school year						
Born July to December (=1)	-0.069	-0.107	-0.045	0.375***	0.120	0.604***
	(0.152)	(0.181)	(0.253)	(0.128)	(0.150)	(0.197)
Controls						
MOB	✓	✓	✓	✓	✓	✓
(Born July to December)×MOB	✓	✓	✓	✓	✓	✓
Male (=1)	✓	✗	✗	✓	✗	✗
School Age Indicators	✓	✓	✓	✓	✓	✓
Mean DV, lower limit	7.9	8.4	7.4	7.0	8.0	6.2
Observations	2,115	1,134	981	4,004	1,849	2,155
R-squared	0.355	0.421	0.258	0.293	0.387	0.116

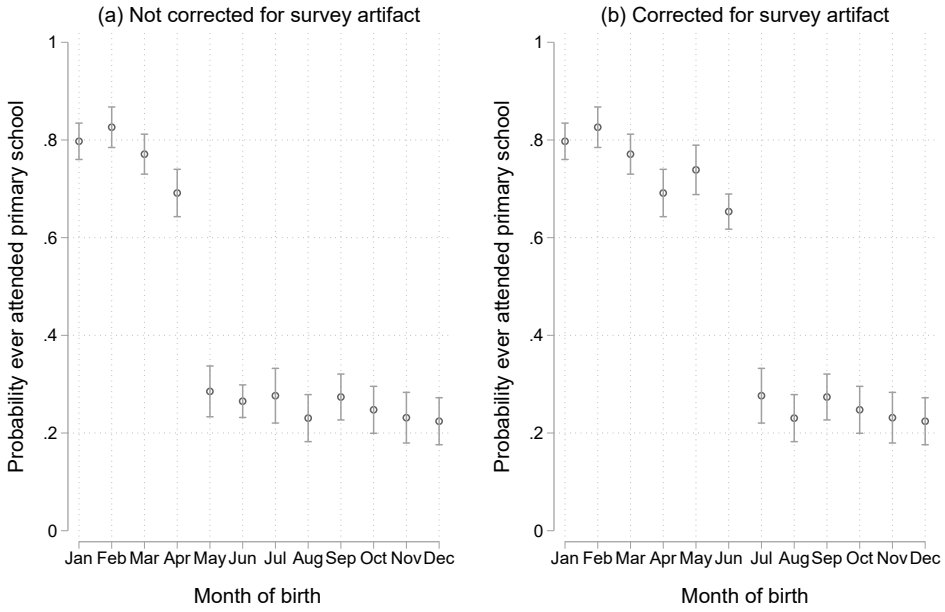
Source: Own computations using Lesotho MICS 2018. *Note:* Schooling was defined as the highest school year attended (years). The sample includes respondents aged 5-10 years (panel a) or aged 11-18 years (panel b) at the beginning of the school year. "School age" was defined as age at the start of the school year regardless of whether they are in school or not at the time of the survey. Age at the beginning of the school year does not imply that children are in school. Born July-to-December ($MOB_i \geqslant July$) equals 1 if the month of birth (MOB) is between July and December. No sample weights were used. Robust unclustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table B.17: *Decomposing the relationship between years of schooling and long-term outcomes*

Dependent variable (DV)	(1) Literacy (= 1)	(2) Total number of children	(3) Ever married (= 1)	(4) "High-class" occupation (= 1)	(5) Household wealth quintile (5 = richest)	(6) Spousal years of education
Panel A: OLS results for the relationship between total years of schooling and long-term outcomes						
Predictor						
Total years of schooling	0.047***	-0.110***	-0.017***	0.032***	0.222***	0.784***
	(0.001)	(0.003)	(0.001)	(0.001)	(0.002)	(0.011)
Controls						
MOB	✓	✓	✓	✓	✓	✓
(Born July to December)×MOB	✓	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓	✗
Age Indicators	✓	✓	✓	✓	✓	✓
Survey Year Indicators	✓	✓	✓	✓	✓	✓
Sample						
Ages 18-49 years	✗	✗	✗	✗	✗	✓
Ages 18-59 years	✓	✓	✓	✓	✓	✗
Women	✓	✓	✓	✓	✓	✓
Men	✓	✓	✓	✓	✓	✗
Mean DV	0.896	2.1	0.712	0.134	3.1	5.7
Observations	25,321	25,321	25,321	25,321	25,321	12,183
R-squared	0.370	0.517	0.337	0.112	0.266	0.354
Panel B: % of OLS estimates explained by RD estimates of age at school entry on total years of schooling						
	100%	22%	25%	75%	73%	78%

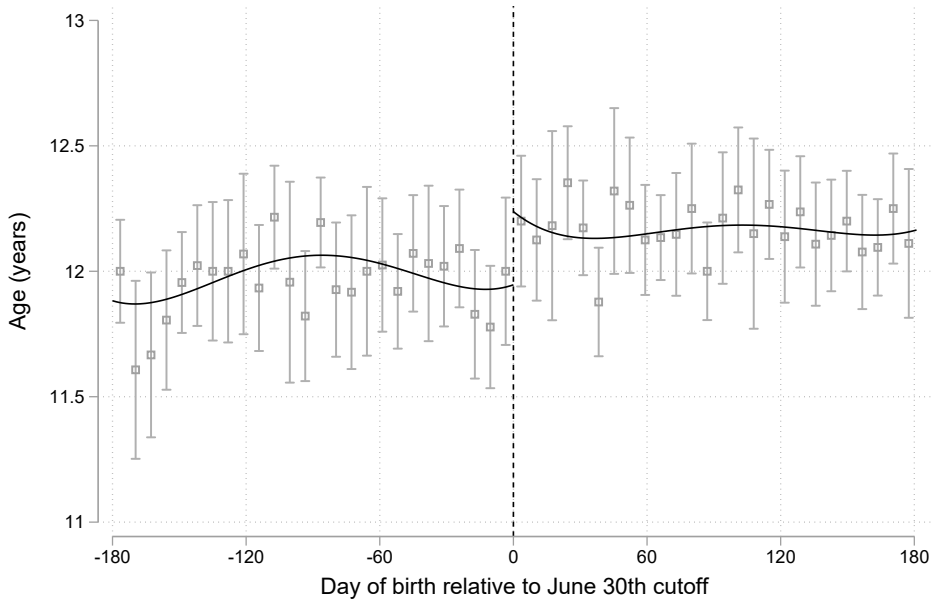
Source: Own computations using Lesotho DHS 2004-05, 2009-10, and 2014 data. *Note:* Literacy was defined as the ability to read a whole sentence or parts of a sentence. In the DHS, "high-class" occupations are legislators, managers, professional/technical/managerial, clerical, and salespersons. The DHS-provided wealth index is a composite measure of a household's cumulative living standard, categorizing households into quintiles (1=poorest, 5=richest). Spousal education was not available among men in the DHS. Robust unclustered standard errors in parentheses. *** p<0.01.

Figure B.1: *Entry into primary school among children born in 2000*



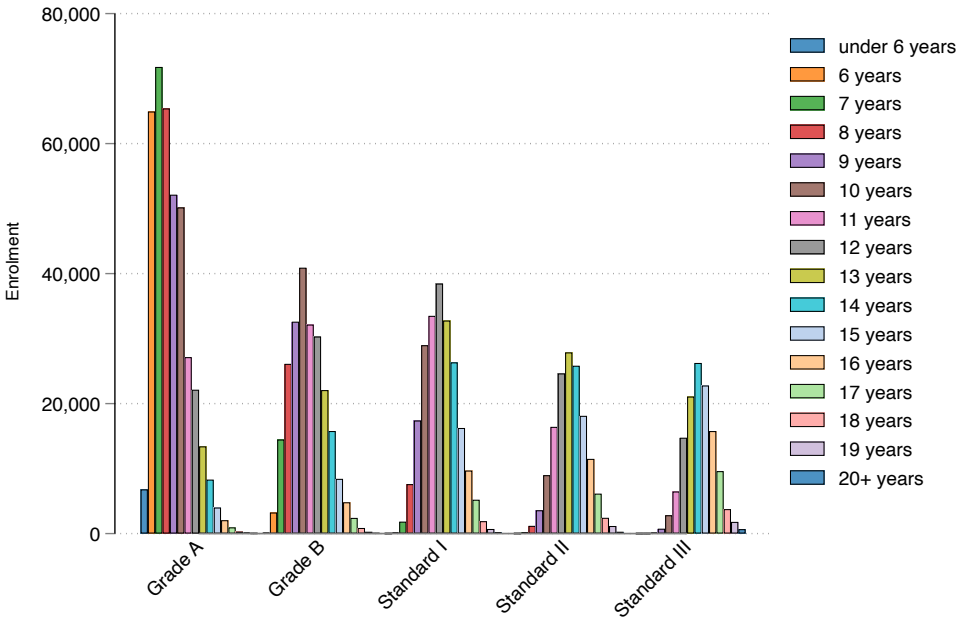
Source: Own representation using Lesotho Census 2006. *Notes*: Figure shows entry into primary school by month of birth. Panel (b) was corrected for a survey artifact in children's age due to the timing of fieldwork for the Census. The sample includes all children born in 2000 in the Census data. $N = 4,237$.

Figure B.2: *Average age among non-repeaters in Grade 6 by day of birth*



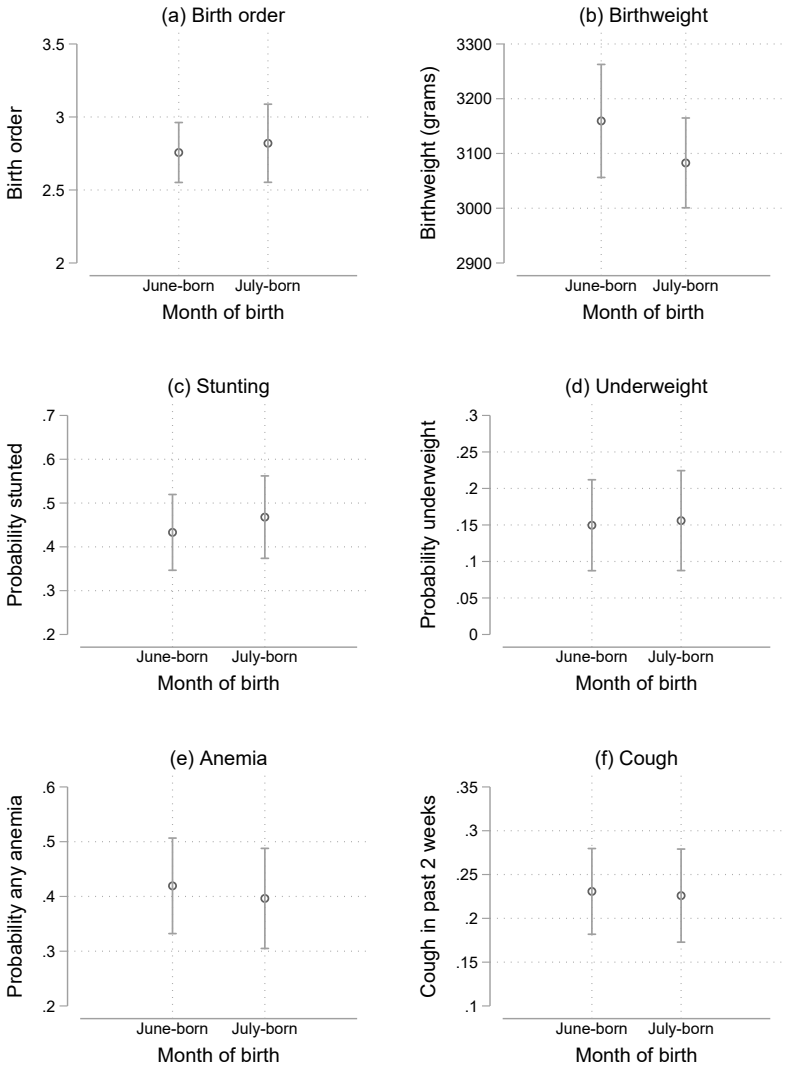
Source: Own representation using the Lesotho SACMEQ 2000 and 2007. *Notes*: Sample includes all children in Grade 6 who never repeated a grade born in or after 1987 (SACMEQ II) or 1994 (SACMEQ III).

Figure B.3: *School enrollment by age and grade "as at June 1965"*



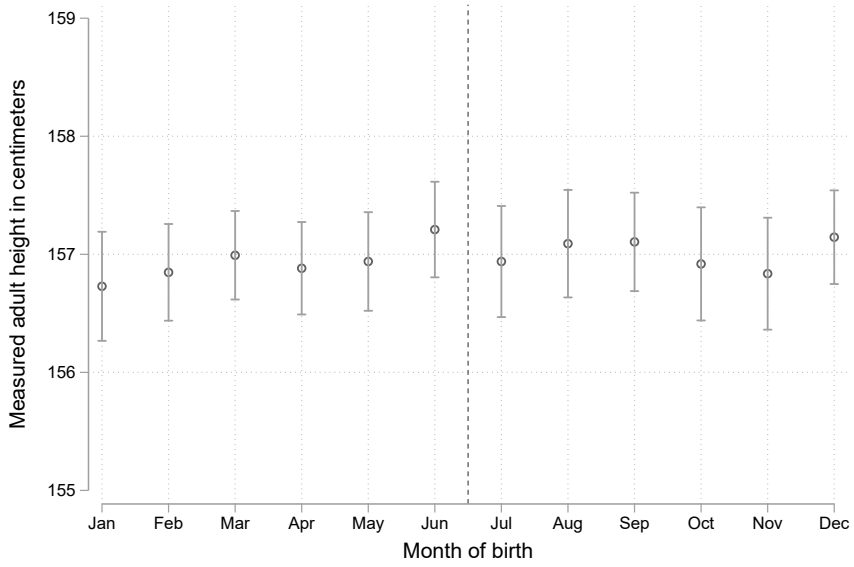
Source: Own calculations using the data extracted from the "Annual Report of the Basutoland Director of Education for the year 1965", Maseru, Basutoland, 1965. *Notes*: Grade A = Grade 1, Grade B = Grade 2, Standard I = Grade 3, Standard II = Grade 4, Standard III = Grade 5.

Figure B.4: *Balance in under-five child measures*



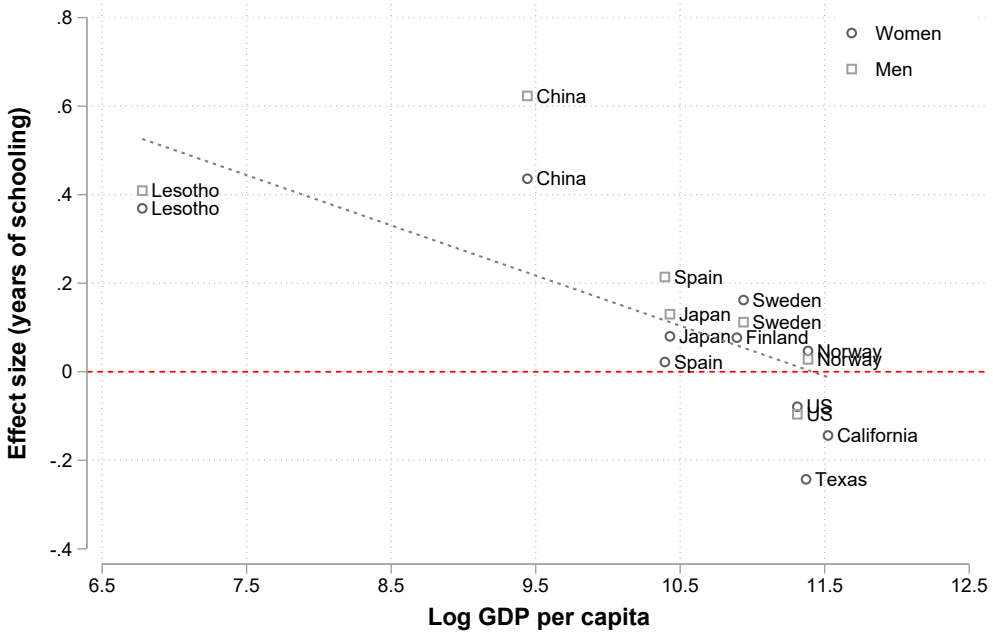
Source: Own representation using the Lesotho DHS 2004-05, 2009-10, and 2014. *Notes*: Anemia, stunting, and being underweight are directly measured; other variables are reported by the mother or caregiver or obtained via the child's health record card if available. Anemia was defined as measured blood hemoglobin concentration level below 11.0 g/dl. Stunted was defined as height-for-age Z-score below minus two standard deviations from the median of the reference population. Underweight was defined as weight-for-age Z-score below minus two standard deviations from the median of the reference population. Sample includes children born in June or July and ages 35-59 months in the DHS 2004-05, 2009-10, and 2014.

Figure B.5: *Continuity in placebo outcome: measured adult height (cm)*



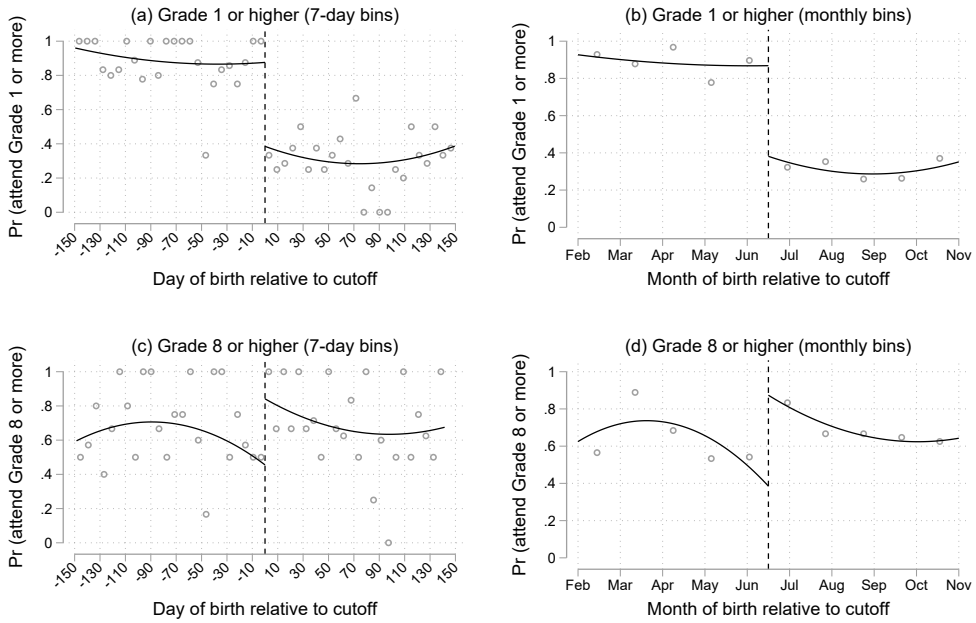
Source: Own representation using Lesotho DHS datasets. *Notes*: The sample includes all eligible women aged 15-49 years with data on measured height in the DHS 2004-05, 2009-10, and 2014. $N = 10,783$.

Figure B.6: *Effect sizes for years of schooling by log GDP per capita*



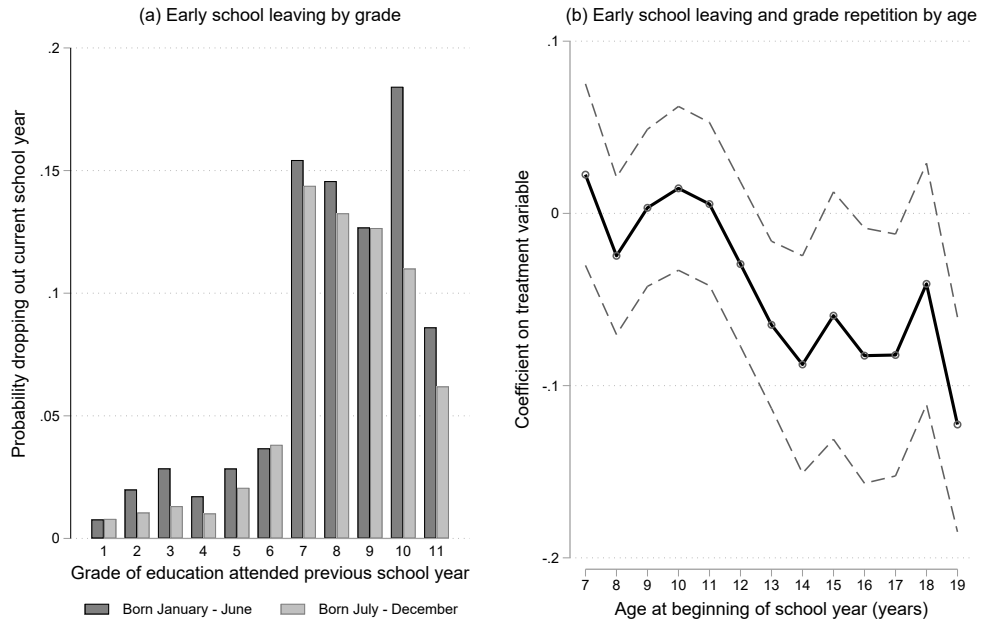
Notes: All results are reduced form estimates for the effect of being born after the school-entry age cutoff (old-for-grade) on total years of schooling completed among adults. For Norway and the United States (nationally), reduced form estimates were not available and we therefore show 2SLS results for the effect of being one year older at entry into school on total years of schooling. We included the following papers: Black et al. (2011) (Norway); Fredriksson and Öckert (2014) (Sweden); Arnold and Depew (2018) (United States); McCrary and Royer (2011) (California and Texas); Fredriksson et al. (2022) (Finland); Guo et al. (2023) (China); Kawaguchi (2011) (Japan); and Valdés and Requena (2024) (Spain). Several other papers estimated the impacts of school-entry age on educational attainment, including in middle-income countries. However, these studies assess educational attainment at a specific educational level or are limited to children. For instance, Peña (2017) explores the effect of age on having completed some college education in Mexico (as opposed to years of schooling) and Nguyen and Lewis (2020) assess years of schooling in Vietnam, but among adolescents who did not complete all their formal schooling. Results from these papers are not directly comparable to our estimates and, therefore, are not included in the figure above. Data on GDP per capita in 2023 (current USD) were extracted from the World Bank (2024).

Figure B.7: *Probability currently attending grade X or higher using exact date of birth*



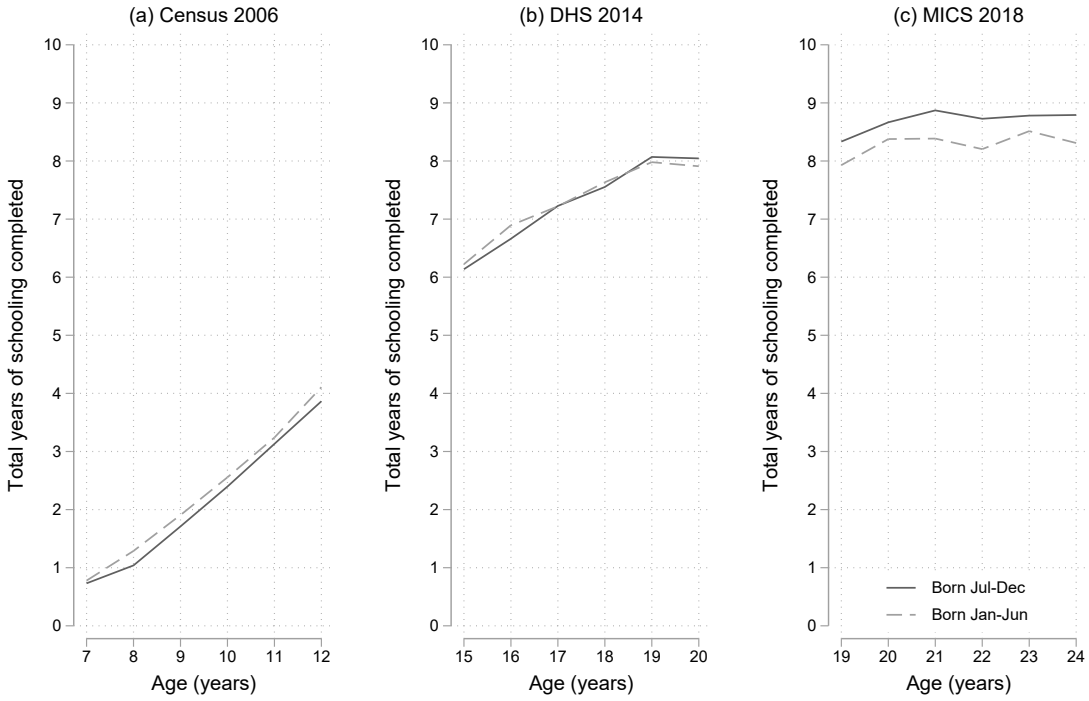
Source: Own representation using MICS 2018. *Notes*: The early advantage for June-born dissipates in later grades. The sample includes children born to eligible mothers using the full birth history dataset from the MICS 2018 (150 days +/- relative to the June 30th cut-off). Data on schooling was obtained from the houshold roster and available for children co-residing with the mother at the time of the survey. Panels (a) and (b) include children ages 5 at the beginning of the school year, and panels (c) and (d) include ages 15 at the beginning of the school year.

Figure B.8: *Early school leaving and grade repetition*



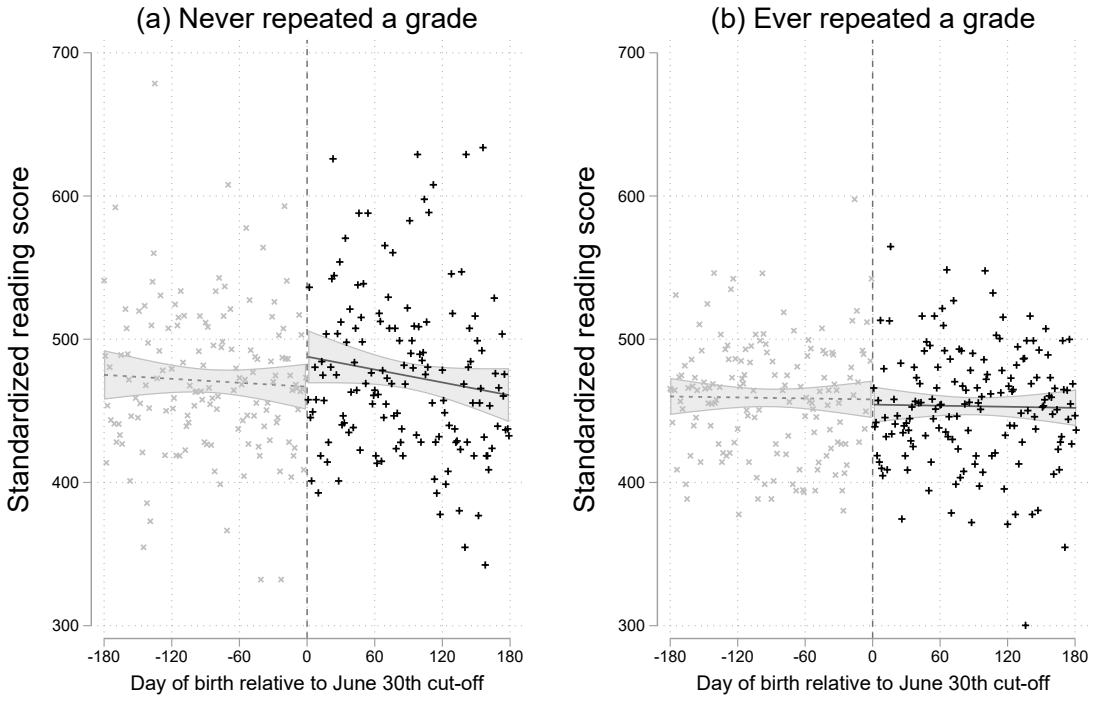
Source: Own representation using the Lesotho MICS 2018. *Notes*: Panel (a) shows the share of students leaving school after each grade. Panel (b) shows the difference in the share of students who leave school or repeat a grade by age for people born July-December vs. January-June. Children born in January-June are just as likely to be in their age-appropriate grade up to age 12; however, they are more likely to be held back or drop out of school starting at age 13. $N = 9,882$.

Figure B.9: *Education of actual cohort born between 1995 and 1999*



Source: Own representation using Lesotho Census 2006, DHS 2014, and MICS 2018 data. *Notes*: Figure shows the same cohort observed across three different time points: when (i) 7-12 years old (panel a); (ii) 15-20 years old (panel b); and (iii) 19-24 years old (panel c). Consistent with our main results, the early advantage in years of schooling for people born January-June due to their earlier eligibility (panel a) disappears during adolescence (panel b) and is reversed by age 24 (panel c). The sample in the Census 2006 and MICS 2018 includes all respondents who were born between 1995 and 1999. The DHS restricted data collection to respondents aged 15 years or older so that we observe the outcomes of respondents born between 1995 and 1998 (instead of 1999) in the DHS 2014.

Figure B.10: *Reading scores of 6th graders by grade progression*



Source: Own representation using the SACMEQ II (2000) and III (2007) data. *Notes*: Sample includes all children who are currently attending Grade 6 and who either never repeated a grade (panel a) or have ever repeated a grade (panel b) and who were born between July 1987 and June 1988 in the SACMEQ 2000 or who were born between July 1994 and June 1995 in the SACMEQ 2007. $N = 1,461$.

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