

Niger

DATA MUST SPEAK

Unpacking Factors Influencing School Performance

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DATA MUST SPEAK

Unpacking Factors Influencing School Performance in Niger



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Data Must Speak research coalition of donors:





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Acronyms and abbreviations

BEPC	Brevet d'études du premier cycle de l'enseignement secondaire [Lower Secondary Completion Certificate]
CFEEN	Certificat de fin d'études d'école normale [Teacher training certificate]
CONFEMEN	Conference of Ministers of Education of French-speaking States and Governments
DMS	Data Must Speak
DREN	Direction régionale de l'éducation nationale [Regional Directorate of National Education]
DSPI	Direction des statistiques et de la promotion de l'informatique [Directorate of Statistics and IT Promotion]
EMIS	Education Management Information System
INS	Institut national de la statistique [National Institute of Statistics]
PASEC	Programme for the Analysis of Education Systems
PDES	Plan de développement économique et social [Economic and Social Development Plan]
PSEF	Programme sectoriel de l'éducation et de la formation [Education and Training Sector Programme]
PTSEF	Plan de transition du secteur de l'éducation et de la formation [Education and Training Sector Programme Transition Plan]
SDGs	Sustainable Development Goals
UNICEF	United Nations Children's Fund



Executive summary

Executive summary

Niger has drawn up an Economic and Social Development Plan (PDES) aligned with the Sustainable Development Goals (SDGs) (Target 4.1 in particular) which aims to ensure that by 2030, all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes. This plan translates these international objectives into concrete actions adapted to Niger's country context. Following successful completion of the first implementation phase of the Education and Training Sector Program (PSEF) for 2014–2024, and the implementation of a transition plan for 2020–2023, Niger has undertaken to update its sectoral analysis of education in order to draw up a new education sector programme that aligns with the PDES (2022–2026).

To address the challenges facing its education system, Niger needs to go beyond a traditional sector analysis and analyse existing data in more detail to find innovative solutions. To do so, Niger has requested UNICEF's support as part of the global Data Must Speak (DMS) initiative. This initiative will enable dashboards to be developed and positive deviant practices and behaviours to be identified in Nigerien schools.

The first stage of DMS research involves leveraging, merging and analysing administrative data to identify contextual factors and resources influencing school performance in Niger.

This report summarizes the data analysis, particularly on data from the 2015–2019 Education Management Information System (EMIS), the 2018 national evaluation, and the 2019 Programme for the Analysis of Education Systems (PASEC) of the Conference of Ministers of Education of French-speaking States and Governments (CONFEMEN).

The education sector in Niger faces many challenges, including: i) access to schooling – 25 per cent of primary school-age children are not enrolled; ii) school retention – 39 per cent of students do not reach the final year of primary school, reflecting a high dropout rate before the end of the primary cycle; iii) security – insecurity around Lake Chad and in the tri-border area is negatively affecting Nigerien children's school attendance. In qualitative terms, between 2014 and 2019, Nigerien students made relatively significant progress in numeracy and literacy at the beginning (CP) and at the end (CM2) of the cycle. However, student performance remains fairly low.



Based on the promotion rate of students between grades and the transition rate from primary to secondary school, modelling of the factors influencing school performance in Niger has revealed associations that are worth thinking about when developing educational policies in Niger. These include, in particular:



Girls' success is associated with the presence of female teachers or female head teachers in their schools. Given that there are few female teachers and female head teachers in rural areas, and that girls face more difficulties than boys in these regions, ideally the presence of women in rural schools would increase.



Girls are more likely to be promoted to the next class when their school is equipped with latrines. More needs to be done in rural areas, where less than half of students attend schools equipped with latrines.



Large class sizes jeopardize student achievement, as do wide disparities in teacher deployment. Recruiting more teachers and ensuring that they are deployed in areas of tension could help improve student achievement.



The models revealed a positive association between possession of French and mathematics textbooks and promotion rates. Providing each student with their own textbook could enable significant progress and help improve the academic performance of Nigerien students.



The presence of decentralized school management committees is positively correlated with promotion rates. Ongoing initiatives in Niger, such as the activities carried out by various partners¹ to improve the learning and enrolment of young girls through training and support services supported by the decentralized school management committee, are worth continuing.

¹ The Japan International Cooperation Agency and UNICEF support the Ministry of National Education through the School Management Support Department, which trains and helps decentralized school management committees to improve girls' learning and enrolment.



The work sessions organized through educational organizational units (CAPED in French) are associated with higher promotion rates. Educational inspections should ensure that all schools in Niger attend these sessions.

This first stage of the Data Must Speak research in Niger allowed us to introduce the education system and to prepare for the second stage of the research, which involves identifying positive deviant schools based on data. These efforts will be supplemented with the collection of quantitative and qualitative data on positive deviant practices and behaviours observed in a sample of schools, with a view to comparing positive deviant schools with non-positive deviant schools in the third stage of the research. The final stage of the research will identify levers for scaling up the good behaviours and practices identified in positive deviant schools in Niger.





1. Introduction

Introduction

In order to achieve the SDGs by 2030, Niger has begun developing a new PDES (Ministry of Planning, 2022) covering the period 2022–2026. The overall analysis of the PDES underlines the key challenge of "accelerating human capital development, primarily through improving the quality of education and training; developing research; ensuring that the training offered meets the needs of the job market". To meet the challenges facing Niger, the first strategic priority is to "improve equitable access to quality education and training" (Ministry of Planning, 2022).

In terms of education and training, the PDES guidance focuses on:

- building school infrastructure;
- availability of qualified teachers;
- improving education quality;
- implementing basic piloting systems (concerning school mapping, quality and availability of statistics relating to education, school guidance and human resources management).

To implement these guidelines, Niger has begun revising its PSEF for 2014–2024 (Ministry of National Education, 2013). The aim is to make it easier for the population to acquire the knowledge, skills and values needed to improve their living conditions and ensure sustainable development, by applying the following specific effects:

- improved access to educational services and training;
- improved quality of education and training;
- improved management and steering of the education system.

The evaluation of the implementation of the first phase of the PSEF in 2019 highlighted several internal and external challenges affecting Niger's education system, including high population growth, security-related problems, drought, food insecurity and even teacher strikes. Moreover, school enrolment indicators remain rather low; universal access to schooling has not yet been achieved, and repetition and dropout rates are high. School life expectancy is just six years.

The country has also embarked on a process of decentralization, which will involve more local management of schools and more community participation in school management, notably through the development and monitoring of school action plans.

To manage these challenges as effectively as possible, Niger needs to find innovative ways of achieving the objectives set out in the PDES and the PSEF. It is in this context that Niger has requested UNICEF's support in implementing DMS research, the main objective of which is to increase the accountability of education system actors and managers, and to strengthen community participation through establishing and making sustainable use of feedback and monitoring processes and tools at the school level.

In 2018, Niger was one of the first countries in the West African subregion to participate in the DMS initiative, developing dashboards for primary and secondary schools. The DMS research component on positive deviance started in 2021, with a view to merging and analysing existing administrative data in cooperation with the national technical team set up by the ministry.



1. Overview of the DMS research: stages and objectives

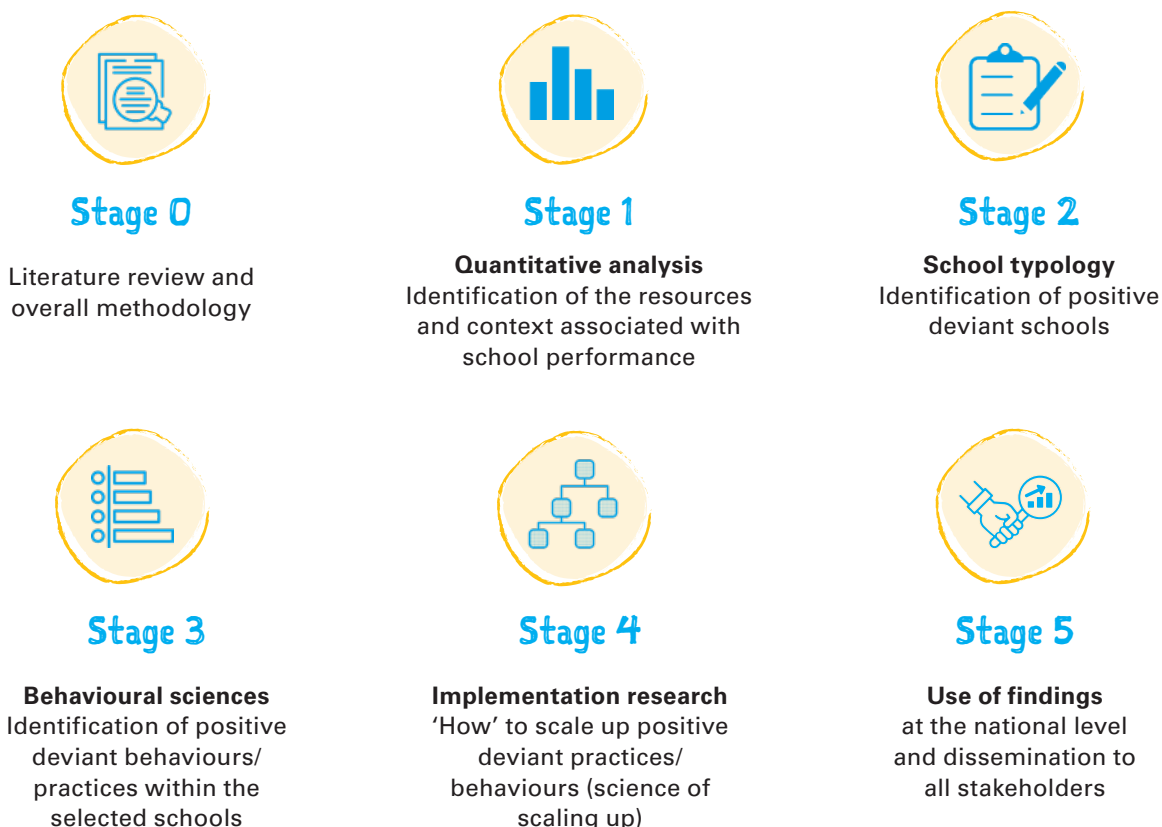
The implementation of DMS research in collaboration with Niger's Ministry of National Education is part of a global context of improved data use and evidence-based decision-making at both the central and decentralized levels. DMS research is based on an observation that applies to all education systems: some schools achieve exceptional results due to the resources available to them and the contexts in which they operate. These outliers are known as 'positive deviant' schools, and the improved outcomes they achieve are likely facilitated by specific practices and

behaviours employed either within the school (e.g., school management practices and/or pedagogical approaches) or in relation to the school (e.g., parental and community involvement).

DMS research aims to identify these positive deviant practices and behaviours in each participating country, with a view to rolling them out on a large scale. This research is broken down into five stages, with literature reviews in each one, as illustrated in **Figure 1**.

From Stage 1 of the research, the overall aim of this report is to identify the factors affecting school performance in Niger. This performance is measured in relation to the resources available to the schools and the contexts in which they operate.

Figure 1: Stages of the Data Must Speak research in Niger



2. Presentation of the Nigerien education system

In Niger, schooling is compulsory for children aged 6 to 16 years. Basic education comprises preschool education, primary education (also called the 'primary cycle') and general secondary education, which is divided into lower and upper cycles. Each cycle culminates in an examination, with the exception of the primary cycle, where the end-of-cycle examination has been replaced with a certification based on the student's annual average in CM2. The end-of-cycle examinations for the lower and upper secondary cycles are the *brevet d'études du premier cycle de l'enseignement secondaire* [Lower Secondary Completion Certificate, BEPC] and the baccalaureate, respectively.

The primary cycle lasts six years, from the age of 6 to 11 years, and is organized in three sub-cycles, each lasting two years: the preparatory stage (first and second years – CI and CP2), the elementary stage (third and fourth years – CE1 and CE2) and the intermediary stage (fifth and sixth years – CM1 and CM2) (see **Table 1**).

Table 1: The different levels of Niger's education system

Age	Level	Class	Examination
3–5	Preschool		
6	Primary	CP1	
7		CP2	
8		CE1	
9		CE2	
10		CM1	
11		CM2	CEPE
12	Secondary	6° (Year 1 of lower secondary)	
13		5° (Year 2 of lower secondary)	
14		4° (Year 3 of lower secondary)	
15		3° (Year 4 of lower secondary)	BEPC
16		Seconde (Year 1 of upper secondary)	
17		Première (Year 2 of upper secondary)	
18		Terminale (Year 3 of upper secondary)	Baccalaureate
19–23	Higher education		

3. Challenges facing the Nigerien education system

Niger is facing many challenges in terms of school enrolment, especially those concerning universal access to education, retention, completion and the acquisition of the necessary skills by students at the end of the primary cycle. This section of the report discusses the statistics from the yearbooks and the PASEC 2019 international standardized assessment report.

A. Capacity and access in the first year of primary school

The gross enrolment rate, which measures an education system's capacity to accommodate children, has fallen slightly in recent years, from 73 per cent in 2019–2020 to 68.31 per cent in 2020–2021. The data in **Table 2** show that only the Niamey region, with a gross enrolment rate of over 100 per cent,² has the capacity to accommodate all school-age children. Analysis of the gross enrolment rate shows that it reflects gender and geographical disparities. The lowest gross enrolment rates are found in the Tahoua, Diffa and Tillabéri regions, which have been affected by insecurity in recent years, while the highest rates are found in the Niamey, Agadez and Maradi regions.

Not all Nigerien students currently have access to universal primary education. According to data extracted from the Statistical Yearbook 2020–2021 presented in Table 2, three out of four Nigerien children were admitted to the first year (CI) of basic education (primary), with a higher admission rate among boys than girls. There are significant disparities between regions: while the Niamey and Agadez regions have a rate of over 100 per cent, this is not the case for the other regions. The lowest rates were recorded in the Zinder, Tillabéri and Tahoua regions.

² The gross enrolment rate is calculated by dividing the total number of students enrolled (regardless of age) in a given cycle by the number of children (whether enrolled or not) of age to attend that cycle. This rate can therefore be higher than 100 per cent when some children are over-age for the cycle, for example in the case of late entry to first grade or repetition of a year.

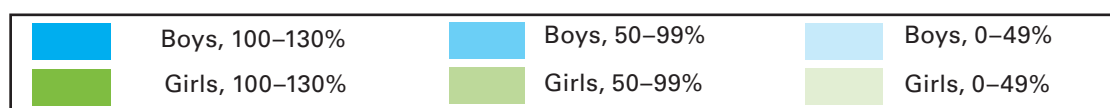
Sixty-one per cent of children aged 12 are admitted to the last year of primary school. Generally speaking, boys reach the final year more often than girls (65.2 per cent versus 56.73 per cent), but the opposite is observed in several regions (Agadez, Niamey and Tillabéri). Admission to the final year of primary school varies hugely between regions. In the capital, most students are admitted to the final year, but this is not the case in all regions. The national average was boosted mainly by good results in the Niamey and Maradi regions. Apart from these

two regions, the completion rate is between 50 per cent and 60 per cent, with the lowest rates observed in Diffa and Zinder.

These analyses highlight the problems in Niger regarding access to education (25 per cent of children do not enter the first year of schooling) and school retention (39 per cent of students do not reach the last year of primary school, reflecting a high dropout rate before the end of the primary cycle).

Table 2: Gross admission rate for first grade, gross enrolment rate and gross admission rate for last grade of primary school for the 2020–2021 school year

	Gross admission rate for the first grade			Gross enrolment ratio			Gross admission rate for the last grade		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Agadez	100.06%	100.53%	100.29%	84.21%	84.55%	84.38%	58.17%	60.21%	59.15%
Diffa	75.83%	86.49%	80.87%	53.15%	61.60%	57.21%	32.81%	38.62%	35.62%
Dosso	77.02%	67.57%	72.27%	79.62%	67.51%	73.54%	73.97%	62.06%	68.00%
Maradi	85.88%	74.63%	80.22%	83.58%	67.71%	75.60%	83.33%	63.52%	73.38%
Niamey	123.01%	125.38%	124.18%	116.18%	120.95%	118.55%	100.14%	110.49%	105.29%
Tahoua	74.61%	59.31%	67.03%	70.89%	52.58%	61.82%	66.39%	44.70%	55.64%
Tillabéri	66.79%	66.18%	66.49%	59.38%	58.97%	59.18%	53.75%	56.23%	55.00%
Zinder	65.90%	66.69%	66.29%	57.44%	56.51%	56.98%	47.19%	45.98%	46.59%
Niger	77.65%	71.82%	74.74%	72.21%	64.37%	68.31%	65.20%	56.73%	60.99%



Source: Statistical Yearbook 2020–2021

B. Education quality

Niger has made considerable progress in education quality, as noted by the latest PASEC evaluation in 2019 (PASEC, 2020), compared with the 2014 PASEC evaluation (PASEC, 2015) (see **Table 3**).

The results of the assessment of students in the CP class indicate that Niger has seen an increase of around 35 percentage points in students with sufficient reading skills, and an increase of over 40 percentage points in those with sufficient numeracy skills. Similarly, at the end of the primary cycle, Niger gained 21.5 percentage points in reading skills and 15 percentage points in numeracy skills. This performance shows that the various policies implemented by the Ministry of National Education since 2014 have been effective. Although this progress is encouraging for Niger's education system, it should be noted that students' learning achievement remains low. The country ranked tenth out of 14 countries participating in PASEC in terms of learning achievement at the end of schooling.

Teachers are an essential part of any education system. PASEC 2019 also explored the quality of teachers in the participating countries. According to this assessment, 42.7 per cent of teachers in Niger have a good command of reading comprehension

skills, compared with the average of 52 per cent for all participating countries. In other words, less than half of teachers in Niger are proficient in reading and writing and need capacity-building sessions.

In mathematics, 22.1 per cent of teachers report "the ability to solve complex problems in several stages, requiring the use of reasoning based on an in-depth analysis of the situation and possibly involving manipulating unknowns (for example in unequal sharing problems)" (PASEC, 2020).

Generally speaking, the ability of teachers in Niger is below the overall average of the various countries participating in the PASEC 2019 assessment, in written and oral comprehension as well as in mathematics. To remedy this situation, Niger has started reforming the teacher training system, notably in the country's various teacher training colleges, as well as the system of pedagogical supervision by inspectors and pedagogical advisors.

Table 3: Percentage of students with sufficient reading and mathematics skills

Skills	PASEC 2014		PASEC 2019	
	CP	CM2	CP	CM2
Reading	9.8	8.5	44.4	30
Mathematics	27.8	7.6	67.1	22.5

Source: 2014 and 2019 PASEC reports





2. Data and descriptive statistics

Data and descriptive statistics



1. Databases

The quantitative analyses carried out by the Niger Ministry of National Education and UNICEF are based on EMIS data over a five-year period (2014–2015 to 2018–2019). Although data for 2020–2021 are available, we have not been able to use them since they were not collected at the school level and the performance indicators used (promotion rate and transition rate to 6^e) were calculated over two consecutive years. Data from the 2018 national assessment and from the PASEC 2019 international assessment were also used to supplement the EMIS data.

The process of collecting these data from the EMIS, the information contained in the databases and its limitations, and the process of creating the basis for the quantitative analysis are described in more detail in the appendices.

As decided together with the Niger Ministry of National Education, this report is exclusively primary-focused. Therefore, only primary-level data are analysed in this report.



2. Descriptive statistics



A. Performance variables

Two variables are used to measure performance: the promotion rate throughout the primary cycle and the transition rate. These two indicators have been retained to measure SDG Target 4.1: “By 2030, ensure that all girls and boys **complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.**”

The validity of these two indicators has been tested by comparing them with the data from the national evaluation (see **Appendix 1**).



Progression indicator: promotion rate

The promotion rate refers to the percentage of students (boys or girls) in a given class who move up to the next class. It is a key indicator of the education system. Students who do not advance to the next class have either repeated a year (which represents an academic failure and a significant cost to the education system) or dropped out of school (which goes against the objective of ensuring education for all). The promotion rate is our main performance indicator as it can be calculated for all levels (except CM2) and is associated with the Ministry of Education’s key priorities.

In order to calculate the promotion rate, data for each school were collected over a given period, allowing us to track the evolution of student cohorts within each school. As enrolment data are broken down by grade and gender, we can estimate the rate of promotion to the next class for girls and boys for each school level (except CM2) over a four-year period.

For Niger, the promotion rate calculation does not take into account new starters, but includes all students, regardless of whether they have repeated a year. In fact, head teachers do not always provide information on repetition during data collection.

Furthermore, no data are available on student transfers between schools, which may affect the estimated promotion rate. However, students from bridging classes³ have been excluded to avoid overestimating the promotion rate.

For these reasons, the promotion rate should be understood as an estimate of the actual promotion rate. For example, some promotion rate values exceed 100 per cent, as it is possible that high promotion rates are due to unaccounted repeats or transfers between schools. Table 4 shows promotion

rates by level and that extreme values (the ninety-fifth percentile) are systematically above 100.

To ensure that extreme values for promotion rates do not distort estimates, promotion rates above 150 per cent (less than 5 per cent of observations) have been removed from the analysis and promotion rates above 100 per cent but below 150 per cent have been reduced to 100 per cent. As a result, promotion rate averages decrease significantly after data processing (see **Table 4**).

Table 4: Promotion rates by level before and after data processing in 2017/18

Before data processing				After data processing			
Grade	Average	Median	95 th percentile	Grade	Average	Median	95 th percentile
CI	91.9	93	136.4	CI	84.5	92	100
CP	90.7	92.9	138.9	CP	83.2	92	100
CE1	91.3	93.3	138.5	CE1	83.8	92.6	100
CE2	92.5	92.9	141.2	CE2	84.9	92	100
CM1	106.7	100	185	CM1	86.9	96.9	100

To minimize potential biases due to the absence of data on repetition, repetition rates were estimated using data from the PASEC 2019⁴ surveys and the 2018 national assessment. The results show that repetition rates from CI to CE2 are rather low, amounting to less than 4 per cent. These rates are slightly higher in CM1, where they stand at around 5 per cent, and are very high in CM2, where they range from 11 per cent to

23 per cent, depending on the data sources used. This high repetition rate in CM2 is reflected in **Table 5**, which shows the flow of students for different cohorts, indicated using different colours. We can see that the number of students in CM2 is systematically higher than in CM1 the previous year, reflecting the fact that many students are repeating CM2 and remain stuck at this level.

³ Bridging schools or 'second-chance schools' are non-formal education establishments designed to take in children who have dropped out or are not attending school. These children follow the official programme over a three-year period, at the end of which these children are directed towards the formal system or learning centres.

⁴ Repetition data from PASEC 2019 are calculated using responses from CM2 students. The rates calculated are therefore retrospective and could be underestimated if students who repeat are more likely to drop out of school.

Promotion rates from CI to CE2 are therefore probably overestimated by around five points, while those from CM1 to CM2 are probably overestimated by at least 10 points.

This can be seen in **Table 4**, which shows that estimates of the promotion rate from CM1 to CM2 are much higher than for the other levels.

Figure 2: Repetition rate estimated in PASEC 2019 surveys and 2018 national assessment

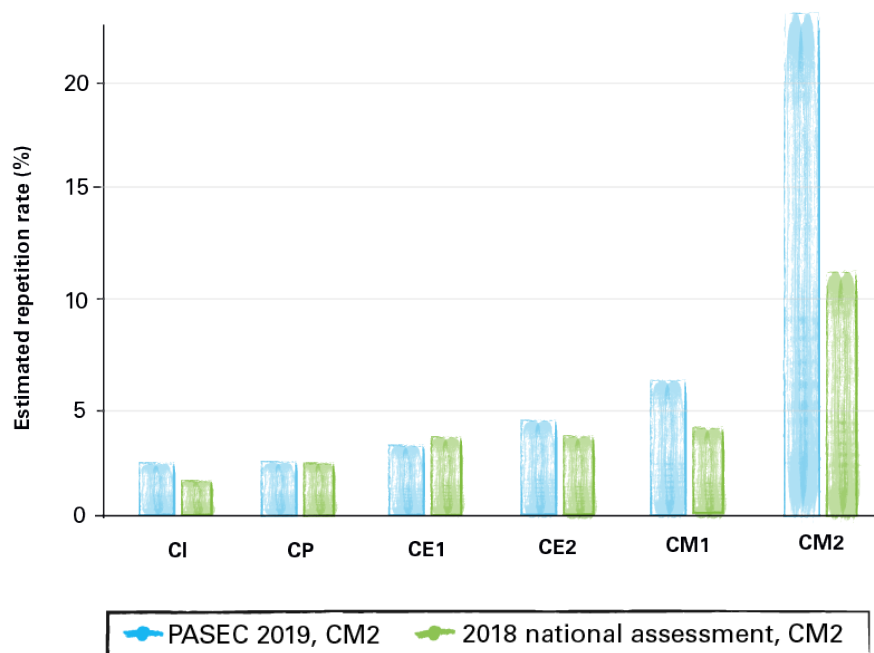


Table 5: Student flow

Class	2014–2015	2015–2016	2016–2017	2017–2018	2018–2019
CI	532,169	577,535	597,537	538,013	580,445
CP2	428,578	479,481	506,691	491,333	453,294
CE1	359,236	427,287	459,381	438,842	448,749
CE2	333,867	367,585	419,215	397,703	399,274
CM1	305,682	344,031	359,924	358,690	364,787
CM2	366,435	408,085	411,146	374,277	420,199
New entrants in 6 ^e	159,855	211,492	221,685	211,300	156,604



Learning indicator: transition rate from primary school to lower secondary school

The number of CM2 students (girls and boys) who have successfully transitioned to 6^e is reported by the head teacher the following

year. This information is used to calculate the transition rate by year, gender and school. As there are no exams at the end of the primary cycle, this variable is used as an approximation of students' learning levels, as the decision to send a student to 6^e is conditional on them obtaining an average in their schoolwork for the three terms of the school year.

Table 6: Primary to lower secondary school school transition rate calculated based on data provided by head teachers and student flow

School year	Transition rate according to head teachers	Transition rate according to student flow
2014/15	53.7	57.8
2015/16	58.1	54.3
2016/17	57.7	51.4
2017/18	48.5	57.8

The transition rate was calculated based on data provided by head teachers and, for comparison, student flow. Although the two estimates are fairly close, there are some points of difference each year, with no systematic bias in either direction (see **Table 6**).

one region to another, except in Diffa, where it is estimated at 72.82 per cent. Thus, most students are promoted to the next class throughout the primary cycle. Niger has introduced automatic promotion and has abolished the primary school leaving exam; these practices have encouraging results in terms of student promotion in the country.



Regional disparities in academic performance

Figure 3 shows the distribution of promotion and transition rates in the different regions of Niger. In general, the promotion rate is above 80 per cent and varies very little from

The results for students admitted at the end of the primary cycle are mixed. The national rate is estimated at 48.54 per cent; in other words, less than half of CM2 students complete the primary cycle. This national average hides rather significant disparities. The lowest rates were observed in the Tillabéri (39.73 per cent) and Tahoua (43.89 per cent) regions, while the highest rates were recorded in the Niamey (76.84 per cent) and Agadez (68.48 per cent) regions.

The low transition rate at the end of the primary cycle must be viewed in relation to the high promotion rate within the primary cycle. Generally speaking, students progress normally in the primary cycle but face difficulties in the final year, which poses an obstacle to their transition to basic cycle 2. Addressing the transition to CM2 is crucial to enable all students in Niger to benefit fully from basic fundamental education and to guarantee universal primary education.



Disparities in school performance by students' place of residence and gender

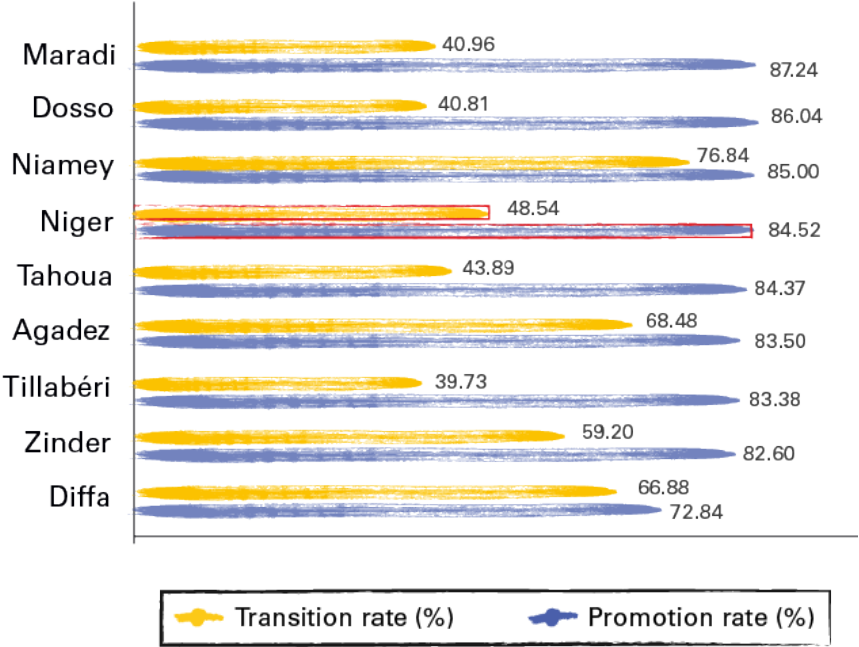
Figure 4 shows promotion and transition rates by place of residence and gender.

As with at the regional level, there are high promotion rates and low transition rates, irrespective of the student's place of residence and gender.

For these rates, there is no significant difference between girls and boys; the promotion rate is generally rather high, while the transition rate is generally rather low. More than half of all students, both boys and girls, repeat the CM2 class.

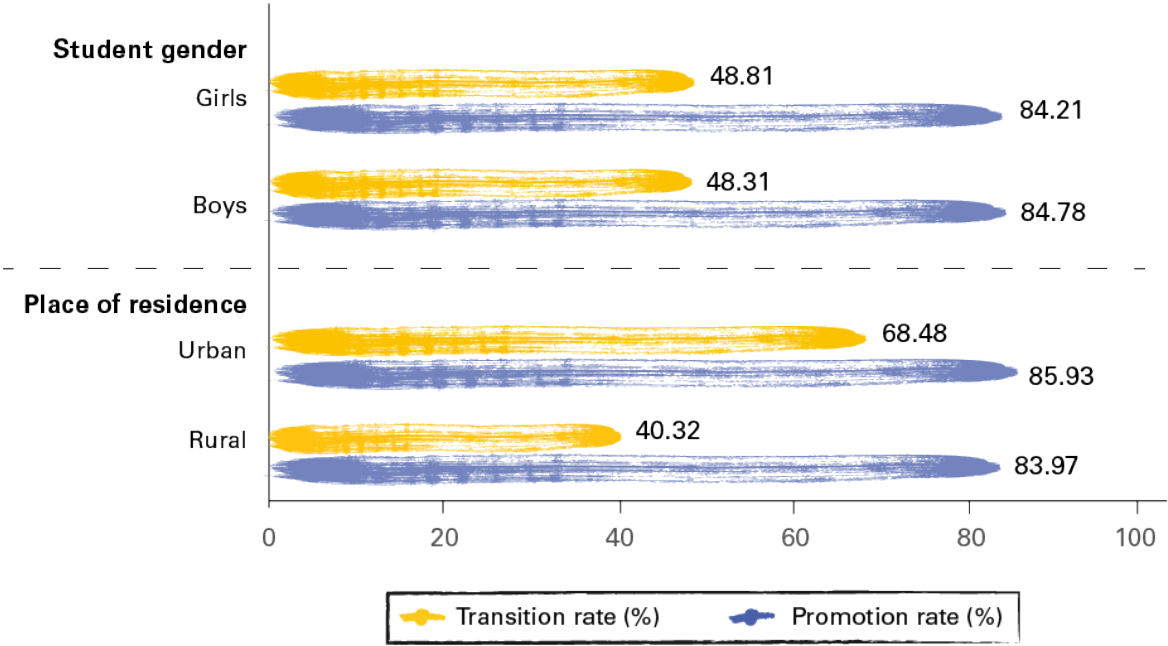
Differences in promotion rates by place of residence are also fairly small (85.93 per cent in urban areas versus 83.97 per cent in rural areas). However, there is a significant gap between urban and rural areas in terms of the transition rate, which is 28 points higher in urban areas than in rural ones.

Figure 3: Promotion and transition rates by region



Source: Calculations by the authors based on EMIS data, 2017–2018 school year.

Figure 4: Promotion and transition rates by place of residence and student gender



Source: Calculations by the authors based on EMIS data, 2017–2018 school year.

B. Contextual variables and school inputs



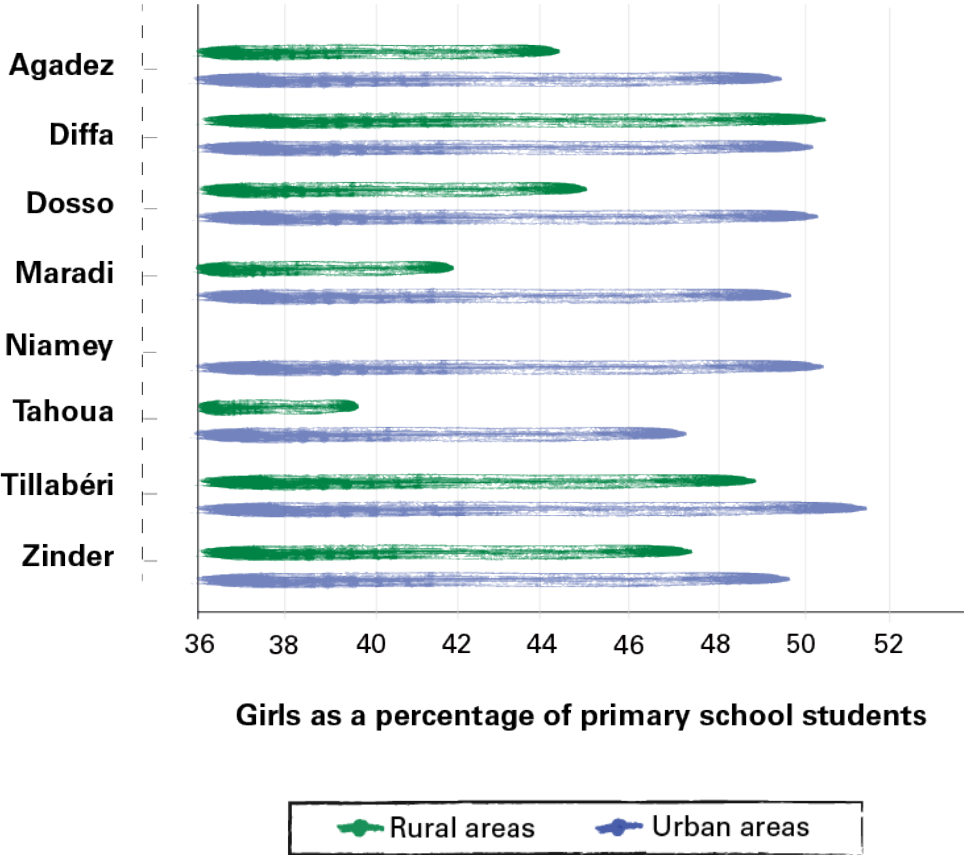
Student characteristics

Girls account for around 46 per cent of all students nationwide. Gender equality in terms of school enrolment has almost been achieved in some regions, such as Niamey and Diffa, but remains far off in others, such as Tahoua and Maradi (see **Figure 5**).



Regarding place of residence, enrolment parity has almost been achieved in urban areas: 49.7 per cent in urban areas versus 43.9 per cent in rural areas. The average age across the whole cycle is around 9.

Figure 5: Girls as a percentage of primary school students, by region and place of residence in 2017–2018



Source: Calculations by the authors based on EMIS data, 2017–2018 school year.
 Note: There are no rural areas in the Niamey region.



Teacher characteristics

The data indicate a feminization of the teaching profession in Niger: 49.6 per cent of primary school students have a female teacher. However, this figure hides several disparities as many female teachers teach in urban centres (83.8 per cent). The same is true of the distribution by region, as the proportion of female teachers is very high

in urbanized regions: 81.7 per cent in the Niamey region and 70.1 per cent in the Agadez region (including rural and urban areas) (see **Figure 6**).

Almost 15 per cent of students nationwide attend female-led schools. Although women account for almost half of all teachers, they occupy very few management positions in primary education. Furthermore, these management positions are held by women mainly in urban areas (over 50 per cent of management positions held are in the Niamey region, and 25 per cent are in Agadez) (see **Figure 7**).⁵

⁵ To expand on these findings and highlight women's prominent role in the region's education systems, UNICEF, in collaboration with the Ministries of Education of several West and Central African countries, has launched research into women's leadership in learning. More information: [Women in Learning Leadership](#).

Figure 6: Percentage of primary school students with a female teacher by region and place of residence in 2017/18

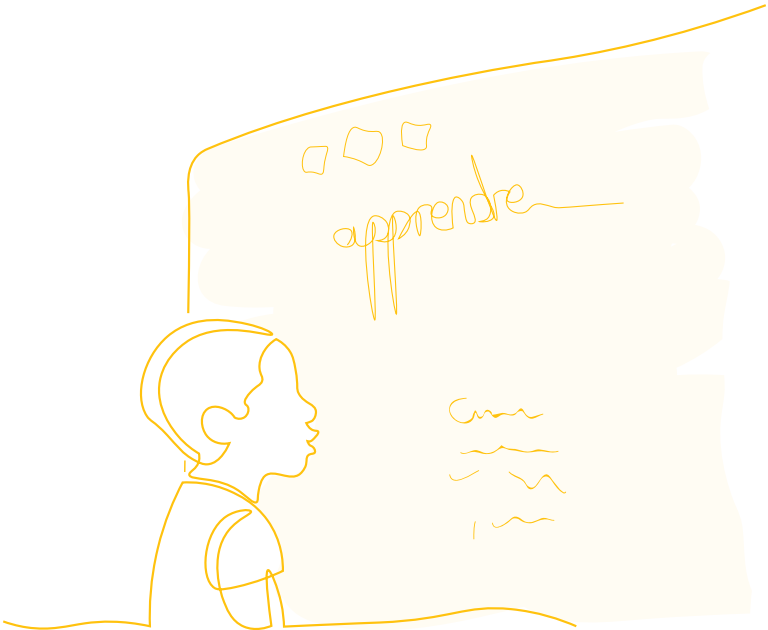
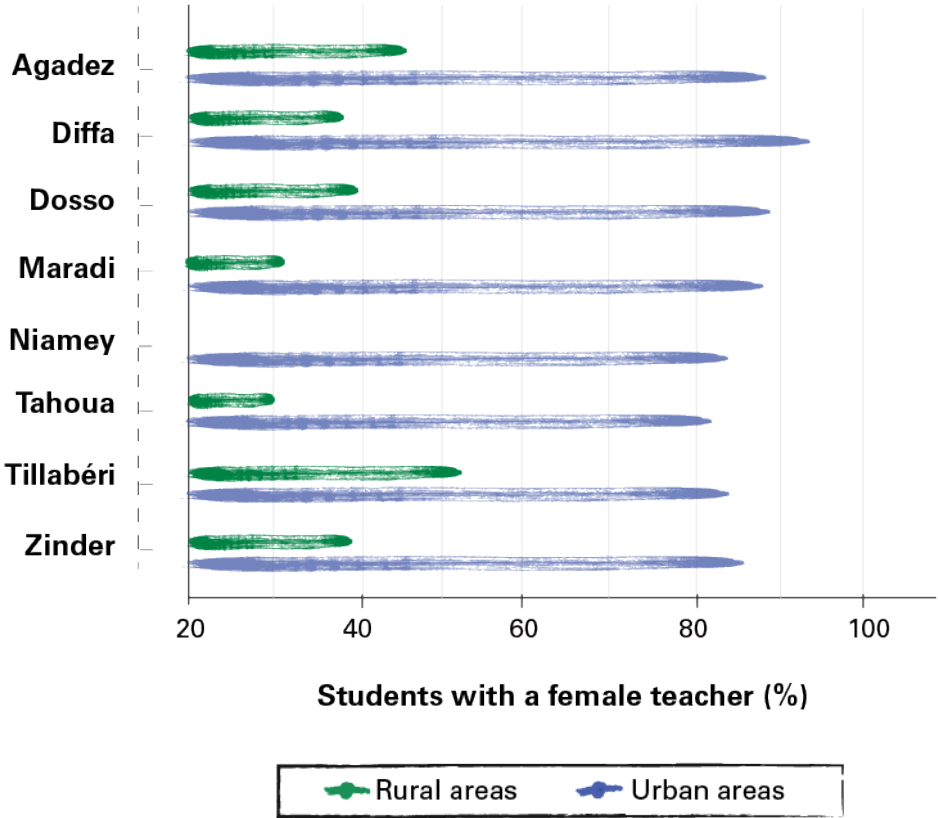
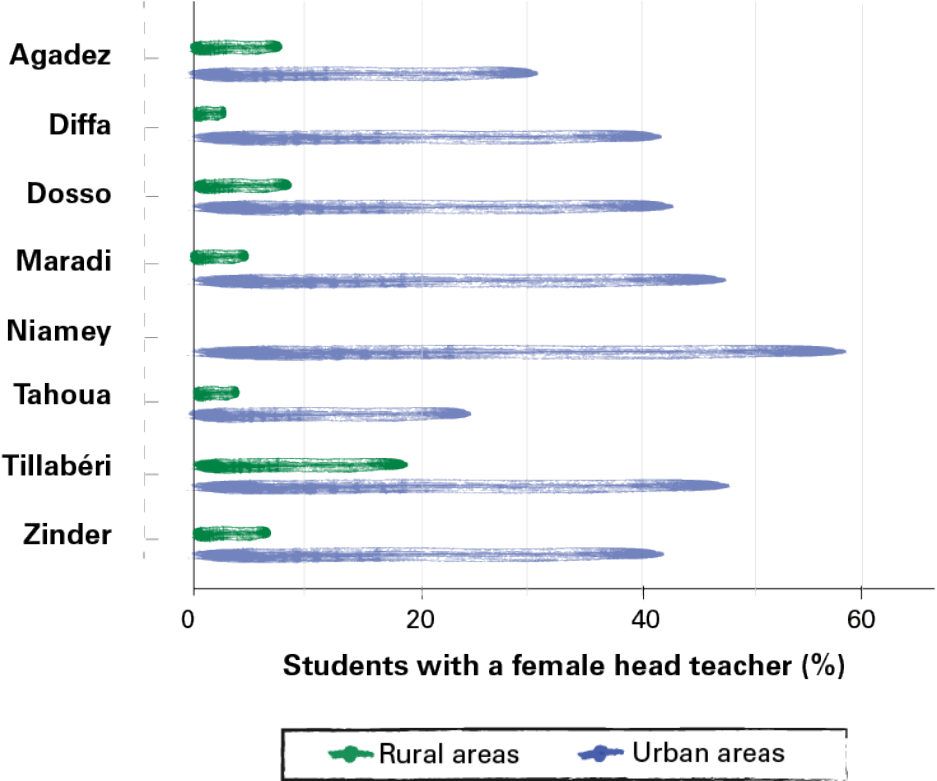


Figure 7: Percentage of primary school students with a female head teacher by region and place of residence in 2017/18



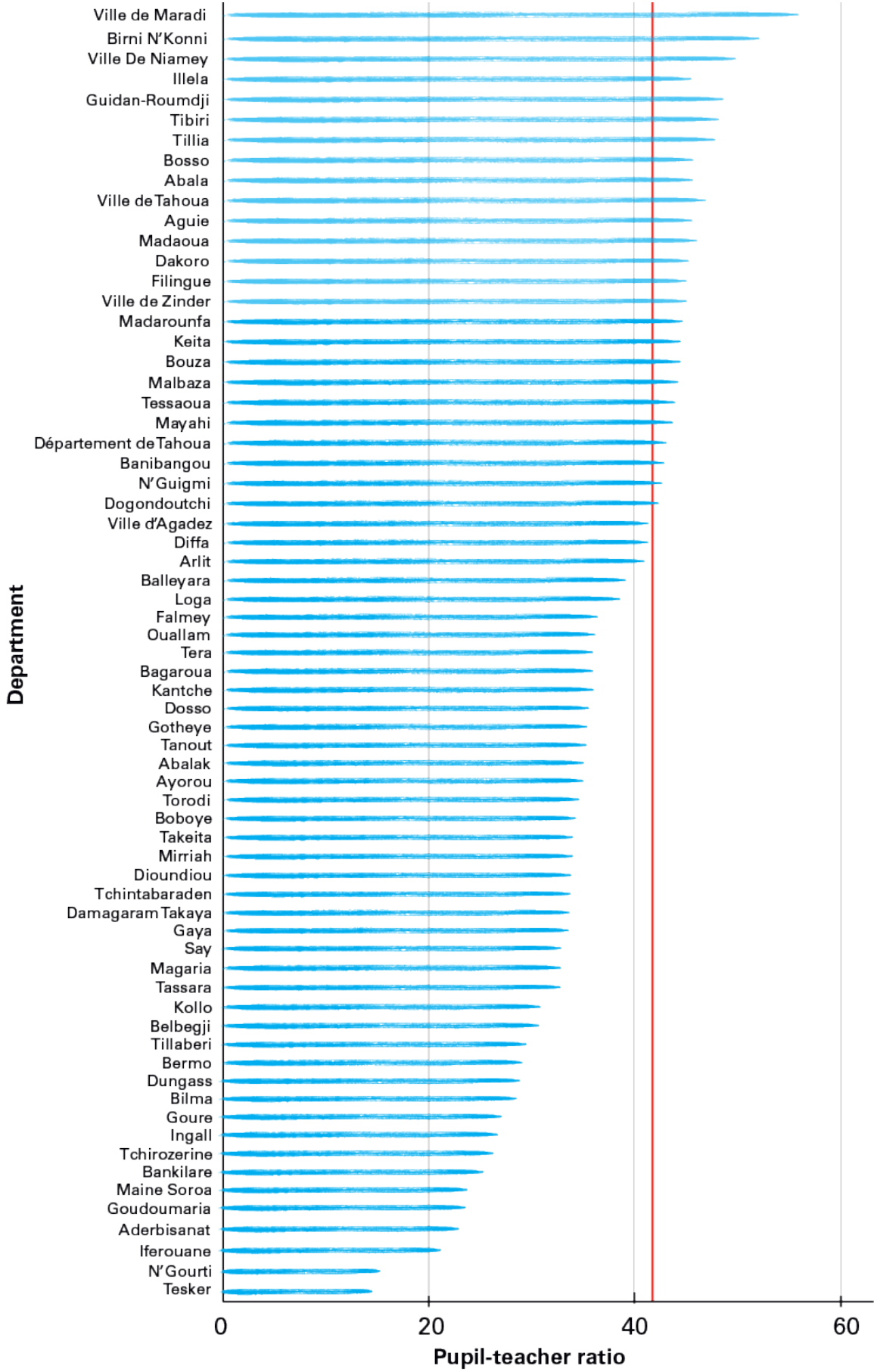
Class characteristics

According to data collected in 2016–2017, the pupil-teacher ratio is 41.7 nationwide.⁶ It is higher in urban areas than in rural areas (48.5 pupils versus 39.2 pupils). While the cities of Maradi and Niamey have some of the highest pupil-teacher ratios

in Niger (56 and 52.2 respectively), some of the predominantly rural departments in the regions of Tahoua (Birni N’Konni, Illéla, Tillia and Madaoua), Maradi (Guidan Roudji, Gazaoua, Aguié and Dakoro), Dosso (Tibiri), Diffa (Bosso) and Tillabéri (Abala and Filingué) also have high pupil-teacher ratios (over 45).

⁶ The pupil-teacher ratio is calculated at the school level. Its average is weighted according to the size of each school. This is higher than the ratio obtained by dividing the total number of pupils in the country by the number of teachers (35.5). Indeed, the most elite schools, which have a higher weighting in the weighted average, tend to have higher pupil-teacher ratios. The descriptive statistics table in the appendices shows the average class size (45), which is higher than the pupil-teacher ratio calculated at the school level. This is explained by the variation in class size within schools, where larger classes have a greater effect on the weighted average.

Figure 8: Pupil-teacher ratios by department



The red line represents the national average

Over 17 per cent of students across the country attend multigrade classes. While there are few multigrade classes in Niamey (1.9 per cent), this practice is widespread in other regions (37.3 per cent in Diffa and 35.2 per cent in Zinder) and in rural areas (22.7 per cent in rural areas versus 2.6 per cent in urban areas).

In most regions and schools, there are not enough French and mathematics textbooks, which are important inputs for quality education. Textbook-pupil ratios are approximately one French textbook for every four pupils, and one mathematics textbook for every three pupils.



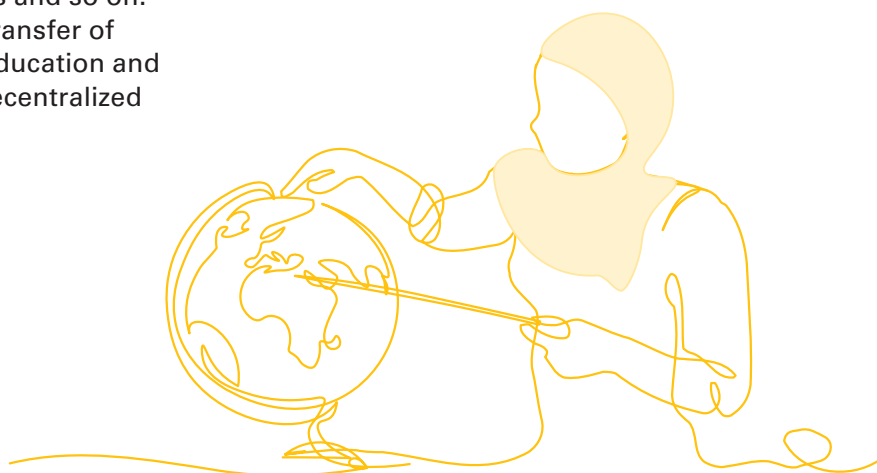
School characteristics

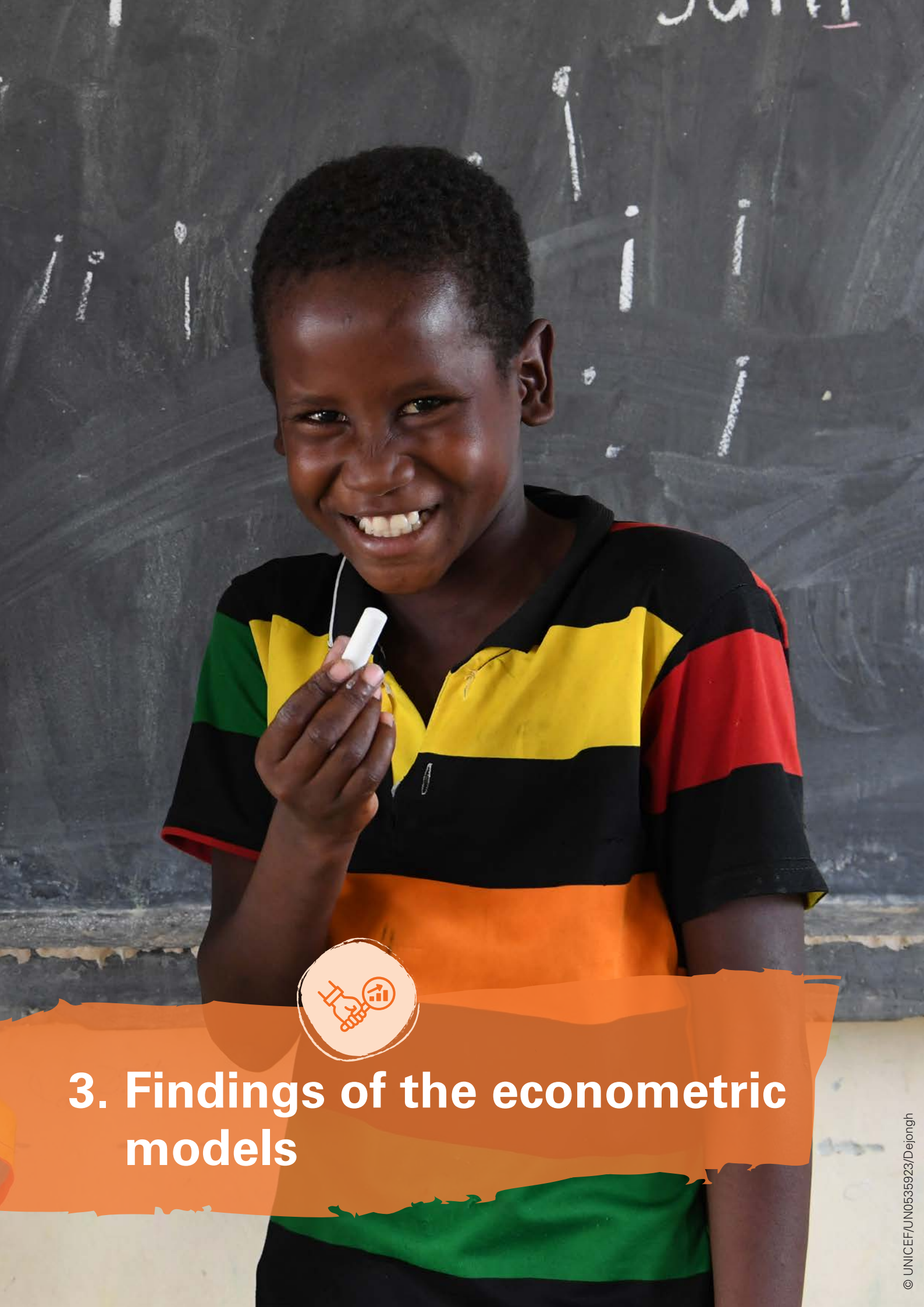
In terms of school management, the majority of schools in Niger (92.1 per cent) have a decentralized school management committee. Decentralized school management committees are generally set up as soon as an educational establishment opens to ensure coordination between the school and its various partners, including the State, students' parents, non-governmental organizations and so on. This policy is part of a gradual transfer of skills and resources regarding education and training to the municipalities. Decentralized

school management committees are more present in rural areas (93 per cent) than in urban areas (89.5 per cent).

These committees implement activities in schools through school projects and action plans. The data show that less than half of all schools (46.8 per cent) have a development plan. The availability of a school action plan is one of three conditions for determining whether or not a decentralized school management committee is functional. Although the majority of schools have a decentralized school management committee, only 50 per cent of these are in operation.

In terms of school facilities, less than 10 per cent of schools have a canteen. This rate is subject to significant regional disparities. The best-equipped regions are Diffa (45.4 per cent) and Agadez (23.6 per cent), while the least-equipped regions are Dosso (6.6 per cent) and Maradi (6.6 per cent). The majority of schools in Niger have latrines (58.7 per cent) but few have access to water (31.3 per cent) or electricity (10.8 per cent). Most schools are built using temporary materials (51.5 per cent).





3. Findings of the econometric models

Findings of the econometric models

The models highlight the factors associated with promotion rates to the next class and transition rates from primary school to lower secondary school in Niger. The various models related to Nigerien school performance in terms of student, teacher, school and classroom characteristics are summarized in **Appendices 4 and 5**.



Box

Methodology for modelling performance factors

In order to estimate the factors associated with student performance, multivariate models based on Ministry of National Education administrative data were developed. Explanatory variables were selected based on their relevance to the research questions, variability, data quality, low non-response rate and association with the performance variables. The goal was to estimate as accurately as possible the relationship between variables of interest (such as class size or number of textbooks per student) and performance variables (such as promotion rates or results at the end of primary school), which can inform policymakers.

Ideally, we would be able to interpret the estimated coefficients as causal effects rather than simple correlations, but this is very difficult to achieve in observational data analysis. For example, while we observe that students perform better when they have textbooks, this does not necessarily mean that distributing more textbooks will improve academic

performance. In fact, schools with more textbooks may also have better school facilities (such as blackboards or seats). In order to establish a causal link between textbook availability and student performance, it is necessary to take into account other variables such as school equipment, and to compare schools with similar educational provision. However, even when controlling for other variables, it is possible that there are unobserved variables in the EMIS database, such as the managerial abilities of the head teacher, which are correlated with the presence of textbooks and good educational performance. If this is the case, the positive relationship we observe between these two variables could be due to the fact that schools with more textbooks are also better managed, so distributing more textbooks would not have the desired effect.

In order to reduce this type of bias, the model includes school-level fixed effects. In practice, we have data for several years and levels, as well

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as data disaggregated by gender, for each school. This allows us to introduce school-level fixed effects into the models in order to control for all the factors that are stable over time (for example, poverty within the area considered or families' level of satisfaction with regard to school). Because the school fixed effect controls for all parameters that are stable over time, the relationships are estimated based on how the parameters vary within schools (either over time, between different levels, or between girls and boys). For example, given that the availability of textbooks in the same school varies between grades and over the years, the model will estimate for each school whether performance is better for the grades and years in which more textbooks

are available. Each school therefore carried out its own controls, which ensure that the observed relationships between the variables of interest and the performance variables are not due to systematic differences between schools.

These strategies – data richness, school-level fixed effects and robustness testing – help minimize the chances that the estimated coefficients are simple correlations, even if it is impossible to say with certainty that the estimated effects are causal. However, quantifying the relationship between school inputs and school performance is extremely important for public policymaking, as it allows us to assess which actions are most likely to improve the education system.



1. Student performance

As mentioned previously in this report, there is little difference between girls' and boys' performance in Niger: while the promotion rate for boys is slightly higher than for girls, their probability of transitioning from CM2 to 6^e is slightly lower. To better understand how school context and resources influence girls' and boys' schooling, the following analytical variables interacted with student gender:

teacher gender, head teacher gender and presence of latrines in the school. In practice, these variables may have different impacts for boys and girls.

The promotion rate across the different primary school classes varies according to the teacher's gender: the results suggest that promotion rates are negatively associated with the proportion of female teachers in schools, but that girls are more likely to be promoted to the next class when their teacher is a woman. For example, **when the teacher is a woman rather than a man, the gap between the promotion rate for girls and boys is reduced by 1.3 percentage points.**

This observed effect is particularly strong for public schools and lower grades (from CI to CP).

These results must be seen in relation to the pass rate at the end of the primary cycle. As mentioned above, student achievement at the end of the primary cycle is a major challenge for the education system in Niger, where less than half of all students progress to 6^e. **When their teacher is a woman rather than a man, the promotion rate to 6^e improves for girls (+1.7 percentage points) but decreases for boys (-3.3 percentage points).**

The head teacher's gender also seems to have an effect on girls' achievements: for girls, the same effects of having a female teacher are observed when the school is run by a woman. At the primary level, where under 15 per cent of head teachers are women, girls' pass rate at the end of the cycle is higher when they attend a school run by a woman (+1 percentage point). In terms of promotion rates, the presence of a female head teacher seems to have a negative effect on boys (-1.1 percentage points), while the promotion rate for girls is not affected by the head teacher's gender.

The available data do not explain why student results are linked to teacher gender, nor why students seem to do better when they have a teacher of the same gender as themselves. It is possible that teachers' practices and behaviours may differ depending on the learner's gender. Perhaps female teachers involve girls more, or perhaps girls feel more confident and participate more when their teacher is female. Girls may also see their female teachers as role models. Finally, the presence of more women in the school (as teachers or head teachers) can help

create a more welcoming school climate for girls, where more attention is paid to problems of sexual harassment in the school environment in particular. If the main reasons why girls do better when they have female teachers are related to the fact that they can identify with a role model, or to a more favourable school climate, the teacher's gender should have no effect on boys. Indeed, the majority of schools are staffed by at least one male teacher, and it is unlikely that boys will lack male role models or that improving the school climate for girls will affect boys negatively. It is therefore more likely that teachers behave differently depending on the learner's gender. For this reason, it would be interesting to pay more attention to gender-based interactions between teachers and learners in teacher training in order to improve educational outcomes for both girls and boys. The next stage of DMS research in Niger, which will study positive deviant schools, should provide a better understanding of the factors behind the effects observed.⁷

Finally, the models take into account the percentage of students who come from bridging schools. Although the coefficient is only significant at the 10 per cent level in the national model, it is significant and positive in urban areas. **This suggests that students from bridging schools are not at a disadvantage compared with other students in terms of promotion rates.**

At the student level, the model also takes into account the average distance between the school and the student's home. This variable shows no particular association with performance variables.

⁷ See [Women in Learning Leadership \(unicef-irc.org\)](https://www.unicef-irc.org/).



2. Results for teachers and head teachers

The model can also be used to assess the relationship between student performance and certain teacher characteristics. **Generally speaking, the associations between teacher characteristics and student performance are fairly weak and sometimes counter-intuitive.** For example, the number of years of experience teachers have is not associated with better student promotion or a higher rate of transition to 6^e. The relationship is even negative for the transition rate in urban areas. Nor are the academic qualifications of teachers associated with better transition rates. Regarding promotion, the model results suggest that students whose teachers have a baccalaureate, BEPC or CFEEN (teacher training certificate) qualification have promotion rates 0.7 to 1 point lower than students whose teachers have no academic qualifications. This relationship is rather counter-intuitive and warrants further research into the profile of teachers and their performance. It is also worth noting that neither teachers' qualifications (whether or not they hold a professional diploma), nor their status (civil servant rather than contractual), nor the fact that they hold a head teacher position are correlated with student promotion rates or achievement at the end of CM2. A more in-depth study of teacher allocation efficiency in Niger titled Teachers for All (T4A) is currently being carried out by UNICEF Innocenti and the Ministry of National Education.⁸

The relationships observed at the head teacher level are relatively similar to those observed at the teacher level. Head teachers' experience and professional qualifications are not correlated with better student results. However, students have slightly higher

promotion rates when the head teacher holds an academic degree.

This lack of correlation between observable teacher characteristics and student performance is striking and concerning, since the best-trained, most qualified and most experienced teachers do not seem to perform any better than others. This may be because even when teachers are more skilled, they do not adopt good teaching practices. The other stages of the DMS research should help identify the good practices and behaviours that make teachers more effective in Niger.



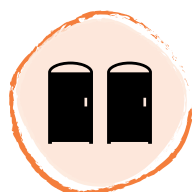
3. Class results

Class size is negatively associated with the promotion rate to the next class and the transition rate to 6^e. Thus, when the class size increases by one, the promotion rate falls by 0.35 percentage points and the transition rate at the end of the cycle falls by 0.17 percentage points. This association is relatively stable in most sub-samples, with the exception of the urban area. In this sub-sample, the presence of an additional student is correlated with a 0.31 percentage point decrease in the promotion rate, and the association is not statistically significant for the end-of-cycle transition rate. Improving teacher deployment to avoid teacher shortages in certain areas could help the system become more equitable and efficient.

Over 17 per cent of students attend multigrade classes, which are sometimes used to make up for a lack of teachers or classrooms. This practice is negatively associated with the rate of promotion to the next class (-0.91 percentage points and up to -1.9 percentage points in urban areas) but is positively associated with the pass rate at the end of primary school (+1.7 percentage points). This result is interesting, as it

⁸ See [Teachers for All \(unicef-irc.org\)](https://www.unicef-irc.org/).

suggests that pedagogical practices that teachers should adopt when teaching in multigrade classes, such as dividing the class into several groups, could have positive effects on students and on the rate of transition to the next class.



4. School-input and infrastructure results

School inputs are a key element in education quality, particularly in the context of the Ministry of National Education's priorities. The models used here enable us to analyse the relationship between these school inputs and the performance indicators of the Niger education system, and highlight **a positive association between having French and mathematics textbooks and promotion rates**. These effects are fairly clear-cut for the promotion rate (+2.4 percentage points for the French textbooks and +1.1 percentage points for the mathematics textbook) but are not significant for pass rates at the end of basic cycle 1. Distribution of kits is also associated with better promotion rates (+0.3 percentage points), but not with better end-of-cycle transition rates (-1.1 percentage points).

Regarding the presence of infrastructure in schools, the model shows a **positive association between the presence of latrines for girls and the promotion rate** (+0.5 percentage points), while this effect is not significant for boys.

The presence of a school canteen has no statistically significant effect for the models looking at promotion rates, and shows a contrasting effect in the models relating to promotion rates. Indeed, while the effect is not statistically significant at the national level, it

is quite strong in urban areas (+3.2 percentage points) and, surprisingly, is negative for small classes (-1.4 percentage points). This finding warrants further research to understand what may be preventing schools from benefiting from canteens in rural areas.



5. School results

Present in most Niger schools (over 92 per cent), decentralized school management committees play an essential role in school management and development. **The model suggests a positive association between the presence of decentralized school management committees and the promotion rate in primary schools** (+2.1 percentage points in urban areas, but no significant association in rural areas). Community involvement through the presence of decentralized school management committees gives parents a say in how schools are run and allows them to participate in school development. When this commitment is effective, and parents fully assume their role and responsibilities, school-level performance indicators improve.

It should also be noted that **educational organizational units' work sessions are associated with better promotion rates**, but not with better rates of transition to 6^e. These sessions can be an effective way of improving pedagogical practices in schools.



4. Education policy recommendations

Education policy recommendations



Develop policies to hire more female teachers and female head teachers in rural areas, where they are relatively scarce. While the majority of female teachers and head teachers work in urban areas, it is in rural areas that girls face the most difficulties (the transition rate to 6^e is 41.8 per cent for boys, compared with 38.4 per cent for girls). The analyses also show that girls could benefit from the presence of more women in schools.



Recruit enough teachers to avoid overcrowding in classrooms and ensure that teachers are properly deployed in areas of tension. According to data collected in 2016–2017, the pupil-teacher ratio is 41.7 nationwide. It is higher in urban areas than in rural areas (48.5 pupils versus 39.2 pupils).



With a view to universal schooling for all, systematically plan to build latrines specifically for girls and female teachers. This recommendation can form part of the school building strategy. Currently, 58.75 per cent of schools have latrines, with 87.43 per cent in urban areas and 48.15 per cent in rural areas. We also note that 60.66 per cent of latrines are for girls and women.



Provide pupils with more textbooks. The analyses show the importance of school textbooks, especially French textbooks. Providing each pupil with their own textbook can lead to significant progress and help improve the academic performance of Nigerien pupils. The pupil-textbook ratio is currently estimated at 0.38 for French textbooks and 0.34 for mathematics textbooks.



Review teacher training to ensure that teachers adopt good teaching practices. The fact that the students taught by primary school teachers and assistant primary school teachers achieve no more than students without professional qualifications means that we need to think about how qualified teachers leverage their theoretical knowledge.



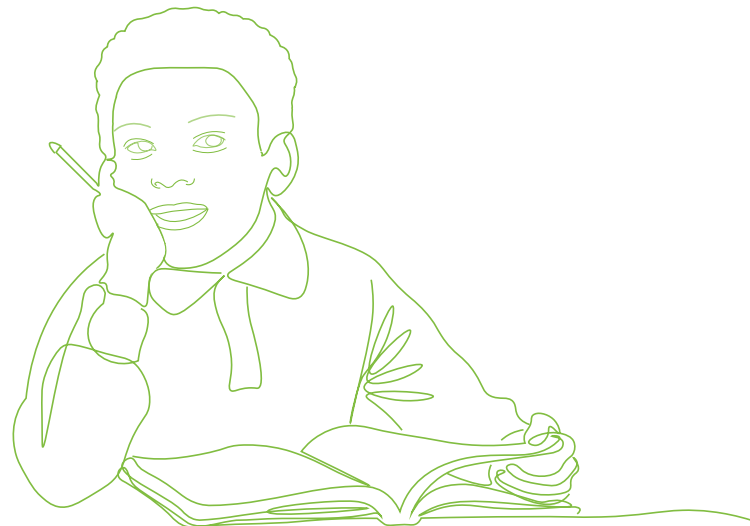
Develop a policy of local training for teachers through educational organizational units and mini-educational organizational units, as these pedagogical meetings are essential for teacher capacity-building. Around two educational organizational unit work sessions are currently organized per year.



Introduce decentralized school management committees into the few schools that lack them and build the capacity of existing decentralized school management committees regarding their role and responsibilities in school management and the implementation of school projects. To date, 92.1 per cent of schools in Niger have a decentralized school management committee.



Strengthen teaching support by setting up local support systems for head teachers, education managers, pedagogical advisors, inspectors and training managers at the regional level.







5. Conclusion

Conclusion

The first stage of the DMS research in Niger analysed performance factors in the Nigerien education system using data from EMIS, national assessments and PASEC. Econometric modelling has revealed many education policy insights that could improve school performance. Quantifying the relationships between school inputs and performance variables, for example, helps guide budget allocations and provide insights for new reforms.

Gender equality issues are a major challenge in Niger that seem to partially stem from the school system. While there is indeed a gap between the promotion rates of girls and boys, it is interesting to note that this gap decreases sharply when women occupy teaching or head teaching positions. These observations raise questions about the reasons for girls' lower achievement, which seems to be partially caused by school context.

The models also revealed that lack of school inputs heavily influences the performance of Nigerien students. Large class sizes and lack of textbooks are associated with poorer academic performance. More investment in teachers and textbooks could help improve student retention and learning.

Finally, it should be noted that the models show very few associations between teacher characteristics and student performance.

However, it is also important to highlight the limitations of these analyses. i) Firstly, although contextual factors have been taken into account, in particular through the inclusion of school fixed effects, biases may remain and estimated relationships

may be influenced by confounding factors not captured in the models; ii) Secondly, the analysis lacks information that could explain the observed phenomena. This limits the ability to use these results to guide education policy. For example, it can be observed that girls do better when their teachers are female, but it is impossible to confirm whether this is due to different pedagogical and behavioural practices used by male and female teachers or because girls identify more readily with female teachers and thus do better in school. In the first case, it is conceivable that girls' academic achievement could be improved by changing male teachers' practices, while in the second case only the recruitment of more women could have a positive impact on girls' performance. Finally, only a small portion of the variance in school performance is explained by the models. Indeed, many parameters related to pedagogical practices or school management are not captured by the data, even though they can have an important influence on school performance.

The next stages of the DMS research in Niger will aim to address some of the limitations of this analysis. By collecting quantitative and qualitative data in control and positive deviant schools (i.e., those that perform significantly better than the models in this report predict), we should be able to understand the behaviours and practices behind student outcomes that the models are unable to capture. Analysing these primary data will help us understand the reasons behind some of the relationships observed between school inputs and school performance and should allow us to refine education policy recommendations.

6. Appendices





Appendix 1: EMIS data production process

Since the 2020–2021 data collection campaign, the Institut national de la statistique [National Institute of Statistics, INS] has ensured data quality control in close collaboration with the Direction des statistiques et de la promotion de l’informatique [Directorate of Statistics and IT Promotion, DSPI]. After the initial data collection in 2020–2021, the data collection tools were revised for the 2021–2022 campaign to make the questionnaires less dense and more readable.

Data collection follows several stages:

- printing the collection tools;
- placing the collection tools in schools;
- collecting and distributing the information;
- entering and processing the data;
- consolidating databases and generating yearbooks (national and regional);
- distributing the yearbooks.

The various tools are printed and made available to the various directions régionales de l’éducation nationale [Regional Directorates of National Education, DRENs], along with a timetable for the process. The DRENs in turn forward the tools to the education inspectorates according to the agreed timetable, depending on the number of schools being inspected. The inspectorates then distribute them to head teachers and conduct training sessions on how to complete them.

After the data-collection process, two missions to check the questionnaires are

organized at the central level (DSPI and INS). These support the statisticians and computer scientists from the DRENs and the INS regional departments in checking the pre-school and primary school questionnaires. The second mission is dedicated to checking secondary school questionnaires. At the end of these missions, regional statisticians and IT specialists correct any errors that have been detected. Data entry operations take place within each DREN. Once the data have been entered, central clearance support missions are organized in all regions.

When the data have been processed and audited, a workshop to consolidate them and generate the yearbook is organized for regional and central managers from the Ministry of National Education and INS. During this workshop, the various regional databases are consolidated, the audited national database is made available and the dashboard and national yearbook are generated.

The final stage of the process involves data validation and distribution. A data presentation and validation workshop is organized, bringing together central officials from the Ministry of National Education and INS representatives. The comments received are incorporated into the draft document forwarded to the validation committee of the national statistical system, which provides comments on the document's form and content; these are taken into account and integrated into the document. The yearbook is now validated and ready for distribution.

At the end of this process, INS approves the distribution of the yearbook and dashboard.



Appendix 2: Validity of performance indicators

The validity of the performance indicators was tested by linking the information on transition rates calculated in the EMIS database to the results obtained in the 2018 national assessment learning tests. Data were linked to the commune level and school status (public or private). The correlation between the transition rate and the average score obtained in French and mathematics on the assessment is quite good, with an R^2 of 0.22 (see **Figure 9**). The transition rate therefore seems to provide a good estimate of student learning.

In contrast, the assessment score is not correlated with promotion rates in CP and CE2 (see **Figure 10** and **Figure 11**). This suggests that the promotion rate is not linked to student learning, but rather measures another dimension of school performance: schools' ability to prevent students from dropping out and help them progress to the next class.

Figure 9: Relationship between average scores on the 2018 CM2 national assessment and the transition rate



Figure 10: Relationship between the average scores obtained in the 2018 national CP assessment and the promotion rate

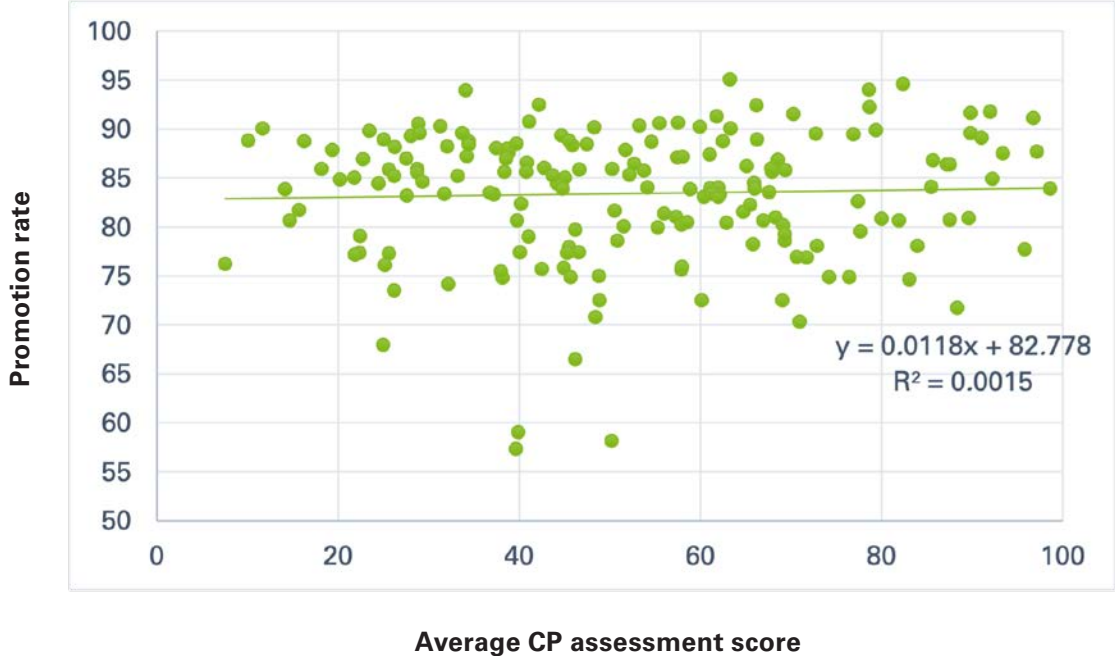
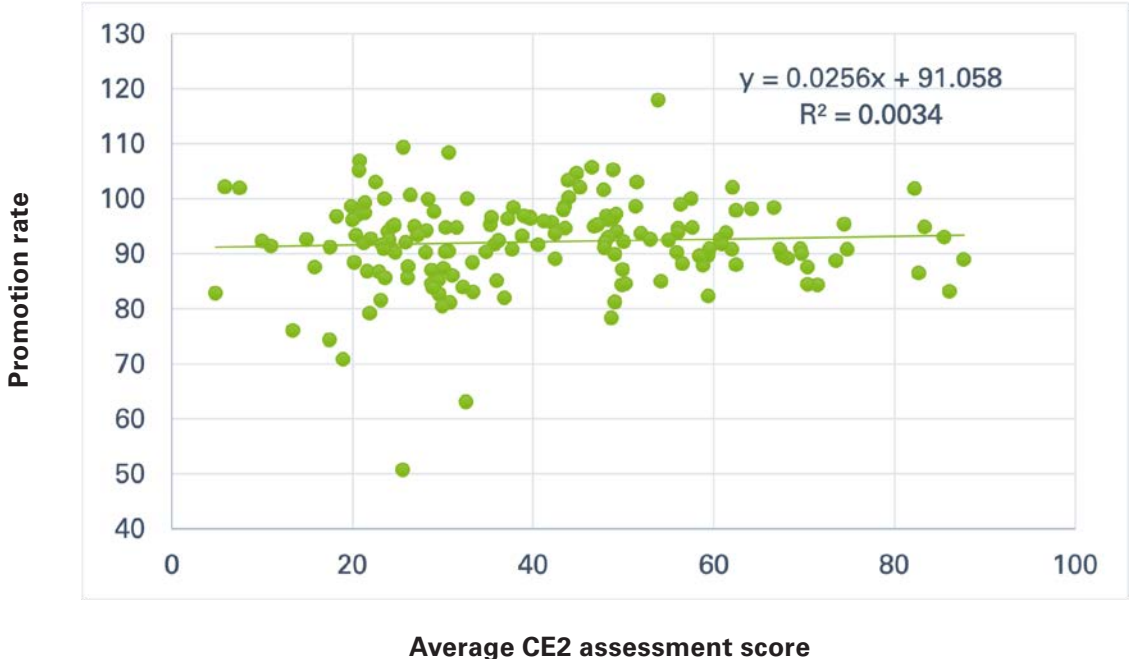


Figure 11: Relationship between the average score obtained in the 2018 CE2 national assessment and the promotion rate





Appendix 3: Description of selected variables by region, place of residence and gender in 2017/18

VARIABLES	Region										Place of residence		Gender		
	Niger	Region										Rural	Urban	Boys	Girls
		Agadez	Diffa	Dosso	Maradi	Niamey	Tahoua	Tillabéri	Zinder						
Promotion rate (%)	84.52	83.5	72.84	86.04	87.24	85	84.37	83.38	82.6	83.97	85.93	84.78	84.21		
Transition rate (%)	48.54	68.48	66.88	40.81	40.96	76.84	43.89	39.73	59.2	40.32	68.48	48.31	48.81		
Girls (%)	45.55	47.26	49.68	45.54	42.8	50.37	41	48.83	47.4	44.02	49.78	0	100		
Average age of students	9.46	9.32	8.98	9.63	9.69	9.13	9.47	9.55	9.26	9.5	9.37	9.49	9.43		
Distance from student's home to school	0.71	0.96	0.74	0.61	0.76	0.79	0.63	0.75	0.67	0.69	0.76	0.71	0.7		
Average age of teachers	32.68	31.37	30.86	32.93	31.97	36.34	31.45	32.15	33.63	31.77	35.17	32.58	32.8		
Years of teaching experience	7	6.08	6	7	6.91	8.36	6.54	6.26	7.81	6.49	8.41	6.93	7.08		
Female teachers (%)	49.59	70.06	53.74	47.04	42.51	81.74	39.74	49.79	47.78	37.19	83.82	47.41	52.19		
Teachers with a baccalaureate or higher (%)	2.9	2.33	2.34	2.31	2.01	6.14	2.96	4.26	1.6	2.67	3.54	2.88	2.94		
Teachers with a BEPC (%)	28.84	26.3	30.42	21.38	23.05	27.6	46.55	34.36	16.35	30.63	22.04	28.88	27.71		
Teachers with a CFEEN (%)	60.9	63.95	53.39	73.71	63.79	55.67	45.8	55.14	71.93	59.07	65.95	60.27	61.65		
Teachers with no academic qualifications (%)	7.85	7.42	13.85	2.6	11.15	10.59	4.69	6.24	10.12	7.62	8.48	7.98	7.7		
Teachers (%)	8.24	8.22	6.18	9.2	6.43	16.33	6.07	6.89	9.03	6.85	12.1	8.04	8.49		
Assistant teachers (%)	84.98	87.74	83.9	86.14	88.72	80.5	83.87	79.61	87.3	85.33	84.01	85.04	84.9		
Teacher-monitors (%)	6.78	4.04	9.92	4.66	4.85	3.17	10.06	13.51	3.67	7.82	3.89	6.92	6.61		

VARIABLES	Niger										Place of residence		Gender	
	Region										Rural	Urban	Boys	Girls
	Agadez	Diffa	Dosso	Maradi	Niamey	Tahoua	Tillabéri	Zinder						
Head teachers (%)	26.94	23.04	35.75	29.2	23.68	6.21	28.85	32.99	33.56	7.84	27.72	26		
Teachers who are civil servants (%)	22.42	16.46	17.12	21.32	22.11	32.66	20.65	17.94	25.69	32.16	22.05	22.85		
Teachers on contracts (%)	73.7	78.31	81.72	77.15	76.17	42.71	77.81	81.34	72.28	53.86	74.2	73.1		
Private school teachers (%)	3.88	5.23	1.08	1.52	1.71	24.63	1.51	0.71	2.03	13.98	3.74	4.05		
Class size	44.49	37.1	37.68	41.28	49.43	54.81	48.58	38.47	37.93	50.98	44.38	44.62		
Multigrade classes (%)	17.33	21.92	37.33	10.98	8.96	1.87	18.83	19.39	35.15	2.58	17.75	16.83		
Number of French textbooks per student	0.38	0.32	0.42	0.54	0.35	0.28	0.38	0.37	0.36	0.4	0.38	0.38		
Number of mathematics textbooks per student	0.34	0.31	0.42	0.41	0.33	0.28	0.31	0.3	0.36	0.33	0.34	0.34		
Bridge school students (%)	0.11	0.08	0.8	0.13	0.17	0.03	0.03	0.11	0.06	0.09	0.12	0.11		
Receipt of kits (%)	71.29	44.09	76.05	81.46	80.13	54.27	53.99	90.26	65.17	69.14	70.74	71.96		
Number of educational organizational unit sessions	1.79	2.18	1.12	1.49	2.11	1.55	1.97	1.33	2.01	1.71	1.81	1.77		
Classrooms built as permanent structures (%)	48.46	69.14	55.28	45.71	41.31	78.74	42.43	47.57	44.35	66.92	47.69	49.38		
Classrooms built using clay (%)	9.53	16.65	4.12	5.54	8.03	8.16	11.57	12.95	9.82	10.06	9.53	9.53		
Presence of a decentralized school management committee (%)	92.1	73.92	89.53	95.56	88.53	88.21	96.42	94.28	93.58	89.46	92.04	92.18		

VARIABLES	Niger										Place of residence		Gender	
	Region										Rural	Urban	Boys	Girls
	Agadez	Diffa	Dosso	Maradi	Niamey	Tahoua	Tillabéri	Zinder						
Latrines (%)	76.08	69.9	53.86	55.13	95.95	50.2	50.16	57.04	87.43	48.15	57.15	60.66		
Canteen (%)	18.78	32.14	5.73	5.63	2.27	8.03	8.98	7.42	2.19	9.7	7.7	7.71		
Average age of head teachers	36.57	35.93	38.46	38.03	42.89	36.91	36.36	38.69	40.98	37.32	37.78	37.96		
Head teachers' years of experience	9.62	9.18	10.63	11.16	12.92	9.55	8.71	11.4	13.03	9.96	10.33	10.52		
Female head teachers (%)	24.76	11.34	11.21	9.26	50.23	11.79	16.21	16.57	49.32	8.71	13.77	16.18		
Head teachers with a baccalaureate or higher (%)	5.8	6.33	5.49	6.55	22.57	6.35	6.66	4.48	12.66	5.64	6.47	6.99		
Head teachers with a BEPC (%)	32.22	30.63	11.89	16.65	17.41	34.58	29.1	12.48	17.77	21.98	21.61	21.02		
Head teachers with a CFEEN (%)	55.27	48.77	80.3	63.09	49.54	54.09	57.94	74.26	60.67	64.65	63.88	64.26		
Head teachers with no academic qualifications (%)	6.71	14.27	2.32	13.7	10.47	4.98	6.3	8.78	8.89	7.73	8.05	7.73		
Head teachers (%)	25.14	22.22	28.32	24.13	59.19	20.68	18.59	26.35	47.77	21.23	24.45	26.23		
Assistant head teachers (%)	73.29	68.83	70.07	74.18	35.61	74.67	73.06	72.02	49.26	75	71.87	70.17		
Share of population (%)	3.37	2.76	13.47	21.86	9.69	17.96	14.57	16.32	26.59	73.41	54.45	45.55		

Appendix 4: Factors associated with student promotion rates in primary school

Variables	Total	Rural	Urban	Public	Non-public	Previous class	Next class
Student characteristics							
Female	-2.129***	-2.138***	-0.935	-2.147***	1.582	-2.528***	-1.745***
Age of student	-0.274***	-0.244**	-0.285	-0.253***	-0.404	-0.448**	-0.240*
Distance between student's home and school	0.118	-0.0109	0.765**	0.0894	1.675**	0.0350	0.181
Teacher characteristics							
Age of teacher	0.0251***	0.0203**	0.0461*	0.0219**	0.0176	0.0375**	0.0305**
Years of experience	0.00612	0.00107	0.0235	0.000404	0.169**	-0.0263	-0.00932
Female teacher	-1.119***	-1.290***	0.663	-1.259***	2.679**	-1.771***	-0.570**
Female student and female teacher	1.322***	1.219***	1.045	1.367***	-0.952	1.435***	1.142***
Academic qualifications: baseline no qualifications							
Baccalaureate or higher	-1.019*	-1.106*	-1.540	-0.996*	-3.320	-1.665*	-1.380*
BEPC	-0.713*	-0.623	-1.558	-0.678	-2.093	-1.500**	-0.451
CFEEN	-0.916**	-0.771*	-2.361*	-0.904**	-0.498	-1.539**	-0.926*
Professional qualification: baseline monitor or no qualifications							
Teacher	-0.0301	-0.191	0.282	0.0441	-3.528	-0.201	0.204
Assistant teacher	0.393*	0.404*	0.597	0.477**	-5.476**	0.715*	0.519*
Teaching head teacher	-0.167	-0.249	0.638	-0.161	-2.651**	-0.108	-0.505**
Civil servant	0.0819	-0.0344	0.466	0.116	13.19***	-0.0551	0.270
Class characteristics							
Class size	-0.348***	-0.349***	-0.312***	-0.348***	-0.323***	-0.341***	-0.382***
Multigrade class	-0.905***	-0.859***	-1.875**	-0.877***	-9.424***	-0.773**	-0.807***
Number of French textbooks per student	2.413***	2.255***	3.348***	2.397***	2.115	3.798***	2.108***
Number of mathematics textbooks per student	1.097***	0.859***	3.106***	1.038***	4.930**	0.962***	1.607***
Students from bridging schools	0.0680*	0.0621	0.154**	0.0674*			0.0804*
School characteristics							
Receipt of kits	0.341**	0.367**	-0.397	0.334**	5.271*	0.452*	0.217

Variables	Total	Rural	Urban	Public	Non-public	Previous class	Next class
Number of educational organizational unit sessions	0.0860**	0.0870**	0.140	0.0908**	-0.104	0.0804	0.101*
Percentage of classrooms built as permanent structures	0.404	0.606	-2.838*	0.348	11.51**	1.151*	0.0690
Percentage of classrooms built using clay	0.664*	0.831**	-2.284	0.739**	-16.54***	0.701	0.799
Presence of decentralized school management committee	0.378*	0.101	2.101***	0.388*	-1.337	0.233	0.427
Presence of latrines in schools	0.0393	0.451	-3.207***	0.105	-9.923**	0.303	0.234
Presence of latrines and female students	0.459**	0.367*	0.331	0.416**	-1.110	0.359	0.586**
Canteen	-0.323	-0.652*	3.227**	-0.346	-1.636	-1.396**	0.535
Head teacher characteristics							
Age of head teacher	-0.0213	-8.33e-05	-0.153***	-0.0195	-0.0993	-0.0232	-0.0204
Head teacher experience	0.00441	-0.00868	0.0654	0.000338	0.155	-0.0178	0.0296
Female head teacher	-1.173***	-0.281	-3.311***	-1.251***	3.459	-1.444***	-0.811*
Female head teacher and female student	1.188***	1.133***	0.645	1.196***	0.516	1.135**	1.218***
Academic qualifications: baseline no qualifications							
Baccalaureate or higher	0.861	1.211**	0.845	0.771	-0.391	1.356	0.709
BEPC	1.280***	1.396***	-0.0787	1.227**	0.823	1.176	1.713***
CFEEN	1.144**	1.066**	2.067	1.116**	-2.854	1.173	1.465**
Professional qualification: baseline monitor or no qualifications							
Teacher	0.227	0.279	-0.468	0.150	5.706**	-0.275	0.446
Assistant teacher	-0.143	0.0535	-1.335	-0.244	7.572***	-0.978*	0.119
Control variables							
CP2	-0.892***	-0.920***	-0.704	-0.913***	-1.706	-0.746***	
CE1	-1.526***	-1.153***	-4.040***	-1.505***	-5.245***		
CE2	-1.415***	-1.055***	-3.878***	-1.394***	-5.961**		-0.337
CM1	-1.260***	-0.810*	-4.095***	-1.219***	-7.594**		-0.0900
2015–2016 school year	-0.420**	-0.579***	1.426**	-0.434***	-0.439	0.0272	-0.532**
2016–2017 school year	-1.480***	-0.898***	-5.618***	-1.441***	-9.213***	-0.667***	-1.999***
2017–2018 school year	-2.553***	-2.604***	-2.281***	-2.533***	-6.896***	-1.827***	-3.118***
Constant	103.5***	102.1***	112.9***	103.5***	112.0***	104.7***	102.3***
Comments	195,011	175,375	19,636	192,041	2,970	87,059	107,952
R-squared	0.324	0.308	0.432	0.321	0.503	0.423	0.398

Robust standard errors are shown in brackets.

*** p<0,01 ; ** p<0,05 ; * p<0,1.



Appendix 5: Factors associated with student promotion rates between primary school and lower secondary school

Variables	Total	Rural	Urban	Public	Non-public
Student characteristics					
Female	-7.461***	-7.467***	-0.780	-7.483***	-8.063
Age of student	1.174***	1.313***	-0.00576	1.186***	0.497
Distance between student's home and school	0.564	0.805*	-0.844	0.556	2.340
Teacher characteristics					
Age of teacher	0.0129	-0.0138	0.193	0.0113	0.184
Years of experience	-0.0347	0.0158	-0.401***	-0.0313	-0.318*
Female teacher	-3.300***	-2.988***	-1.483	-3.414***	6.273**
Female student and female teacher	5.076***	4.173***	4.364***	5.170***	1.888
Academic qualifications: baseline no qualifications					
Baccalaureate or higher	0.347	1.082	-0.316	0.591	-16.12**
BEPC	0.350	0.645	-2.406	0.653	-16.20**
CFEEN	-0.246	-0.146	-0.770	-0.0299	-5.406
Professional qualification: baseline monitor or no qualifications					
Teacher	-0.981	-1.049	1.424	-1.026	-7.840
Assistant teacher	-0.981	-1.049	1.424	-1.026	-7.840
Teaching head teacher	-0.577	-0.259	-2.864	-0.594	-1.662
Civil servant	0.629	0.0985	3.978**	0.661	
Class characteristics					
Class size	-0.167***	-0.186***	-0.0589	-0.168***	-0.0440
Multigrade class	1.709***	1.766***	-2.941	1.717***	-0.616
Number of French textbooks per student	1.539	1.952*	-2.595	1.515	14.19***
Number of mathematics textbooks per student	-0.695	-1.041	2.214	-0.735	-3.945
School characteristics					
Receipt of kits	-1.151**	-1.488***	1.943	-1.128**	5.635
Number of educational organizational unit sessions	0.218	0.169	0.529	0.231*	-0.655
Percentage of classrooms built as permanent structures	-0.990	-1.325	2.945	-0.994	-6.662
Percentage of classrooms built using clay	-1.009	-0.522	-10.65	-1.034	-13.98
Presence of decentralized school management committee	0.920	1.292	-0.730	0.828	5.915*
Presence of latrines in schools	-2.739***	-2.640***	-0.472	-2.668***	-11.38

Variables	Total	Rural	Urban	Public	Non-public
Presence of latrines and female students	2.973***	2.391***	1.605	2.825***	9.485
Canteen	-0.778	-1.096	4.357	-0.806	2.032
Head teacher characteristics					
Age of head teacher	-0.0236	0.00298	-0.122	-0.0180	-0.482***
Head teacher experience	-0.0493	-0.0969	0.138	-0.0552	0.568***
Female head teacher	-1.416	-0.363	-0.733	-1.306	-8.392***
Female head teacher and female student	2.440***	1.988**	-1.454	2.464***	-1.361
Academic qualifications: baseline no qualifications					
Baccalaureate or higher	-0.565	-2.762	8.407	-0.616	11.83*
BEPC	0.377	-0.567	7.803	0.130	16.76***
CFEEN	-0.0845	-0.652	3.170	-0.291	8.315
Professional qualification: baseline monitor or no qualifications					
Teacher	1.384	1.526	3.014	1.320	-0.901
Assistant teacher	2.351*	2.246	4.986	2.266*	7.256
Control variables					
2015–2016 school year	3.835***	3.429***	6.180***	3.886***	-0.463
2016–2017 school year	3.063***	2.830***	2.818	3.092***	3.138
2017–2018 school year	-6.770***	-7.235***	-4.375**	-6.816***	-8.945**
Constant	45.30***	41.02***	61.08***	44.29***	118.7***
Comments	35,003	31,761	3,242	34,501	502
R-squared	0.669	0.612	0.774	0.653	0.744

Robust standard errors are shown in brackets.

*** $p < 0,01$; ** $p < 0,05$; * $p < 0,1$.

Appendix 6: List of national technical team members

Full name	Role in team	Position
Mahaman Djibo	President	Director of Statistics and IT Promotion
Mamoudou Amadou	Vice-President	Technical advisor to the Minister of National Education
Abdoulkarim Bachirou	Member	Statistician-demographer
Abdou Gana Tchinguema	Member	Social Mobilization Specialist
Alio Boukari	Member	Planner
Ari Lawan Malam Abba	Member	Planner
Diafara Djibo	Member	Statistician
Elhadj Abdou Ibrahim	Member	Statistician
Mahamadou Marafa Agada	Member	IT Specialist
Maman Kaka	Member	IT Specialist
Sidi Ibrahim	Member	School inspector
Soumana Halidou	Member	Education Systems Manager

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