



DATA MUST SPEAK

# The importance of infrastructure in public primary schools

Research on positive deviant schools to improve learning in Madagascar

## Key findings



**Material conditions appear to have an influence on student performance.** Factors such as the availability of girls' latrines in good condition, the proportion of classrooms in good condition, and more seats and textbooks per student are associated with higher promotion and Certificate of Primary Education (CEPE) pass rates.



**However, the data show that school infrastructure has deteriorated in recent years.** The proportion of classrooms in good condition declined by more than 15 percentage points between 2017/18 and 2020/21. The proportion of latrines in good condition and the number of seats per student also declined during this period.



**The availability and quality of school infrastructure vary considerably between regions.** Depending on the region, the proportion of schools with girls' latrines in good condition ranges from 4 per cent to 44 per cent. There are also significant differences in the number of seats per student, the availability of water points in schools, and the proportion of classrooms in good condition.



**Canteens in schools are associated with better educational outcomes for both boys and girls.** All other things being equal, school canteens are associated with higher promotion and CEPE pass rates, and yet just 6 per cent of schools have a canteen (this figure ranges from 0 per cent in some regions to 34 per cent in Androy in 2020/21).

## Context

In Madagascar, the Ministry of Education has set ambitious goals to improve access to and quality of education, as well as school management and governance, as part of the Education Sector Plan 2018–2022. Nevertheless, significant challenges remain. The primary school completion rate, which measures the percentage of students who finish primary school, was slightly above 50 per cent in 2020.<sup>1</sup> More than 80 per cent of students assessed in a representative sample of primary schools had not mastered minimum reading skills in 2019.<sup>2</sup> However, some schools perform better than others, even in disadvantaged areas. By identifying these positive deviant schools and the good practices that make them successful, important lessons can be learned to improve the quality of education in Madagascar.



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## Research on positive deviant schools

Against this background, the **Data Must Speak (DMS) research on positive deviant schools** explores local solutions for improving the quality of education in Madagascar. The first stage of the research was to conduct a statistical analysis using Education Management Information System (EMIS) data and CEPE test scores to identify factors influencing school performance. The analysis presented in this brief summarizes the key findings on school infrastructure.<sup>3</sup>

## Research findings

**In Madagascar, medium-sized schools in rural areas account for the vast majority of schools.** In 2020/21, 95 per cent of public primary schools were in rural areas, with a total enrolment of around 150 students on average. Urban schools, though in the minority, have on average twice the number of students as rural schools.

**In recent years, school infrastructure has deteriorated.** The proportion of classrooms in good condition decreased from 59 per cent to 42 per cent between 2017/18 and 2020/21 (**Table 1**). The majority of schools had boys' or mixed latrines in 2020/21 (60 per cent), but less than half of them reported that they were in good condition.<sup>4</sup> The proportion of boys' or mixed latrines in good condition decreased from 35 per cent to 26 per cent between 2017/18 and 2020/21. In addition, only 15 per cent of schools had girls' latrines in good condition in 2020/21, down from 21 per cent in 2017/18. In the last two years for which data are available, the number of seats per student has also declined from 0.55 to 0.50.

**The availability and quality of school infrastructure vary considerably between regions.** The percentage of schools with a canteen ranged from 0 per cent in several regions to 34 per cent in Androy in 2020/21 (**Figure 1**). The proportion of schools with girls' latrines in good condition ranged from 4 per cent in Ihorombe to 44 per cent in Analamanga (**Figure 2**), and the number of seats per student varied from 0.2 in Androy to 0.9 in Analamanga (**Figure 3**). There are also significant differences in the availability of water points in schools, and in the proportion of classrooms in good condition.

<sup>1</sup> United Nations Educational, Scientific and Cultural Organization (UNESCO) statistics

<sup>2</sup> Programme for the Analysis of Education Systems (PASEC) of the Conference of Ministers of Education of French-speaking Countries, 2019

<sup>3</sup> This analysis has limitations, since the available data only partially explain student performance.

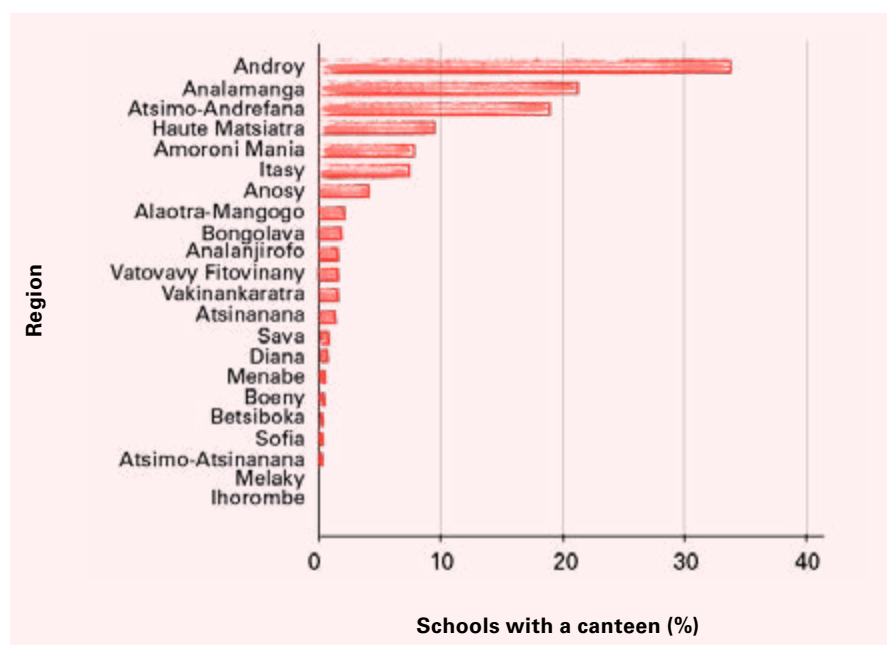
The results obtained can thus be used to identify correlations between the variables and their statistical significance, but not necessarily causal relationships.

<sup>4</sup> The EMIS data provide information on girls' latrines and aggregate information on boys' and mixed latrines.

**Table 1: Public primary school infrastructure**

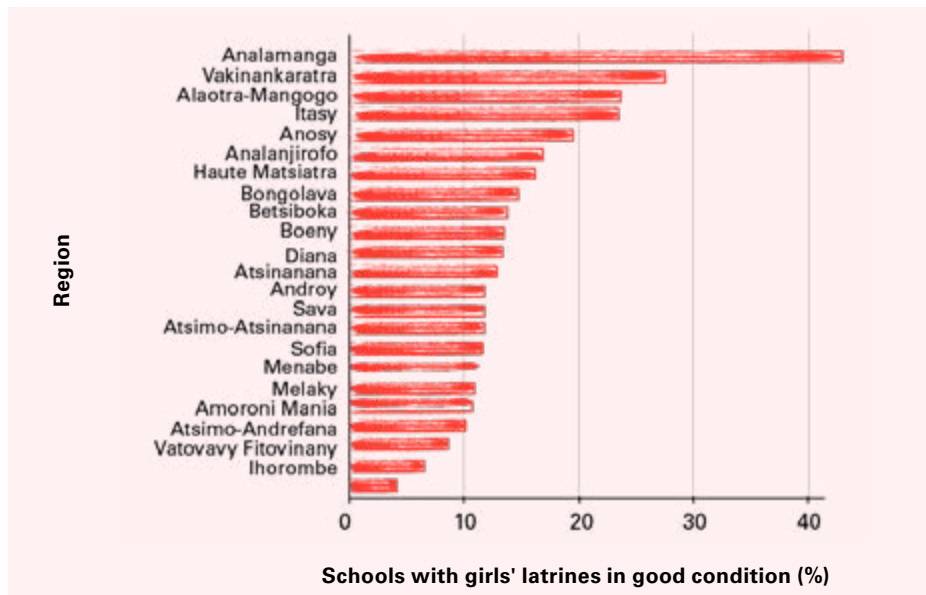
	2017/18	2018/19	2019/20	2020/21
<b>Schools in rural areas (%)</b>	92	94	95	95
<b>Schools with a canteen (%)</b>	7	6	7	6
<b>Number of classrooms</b>	3.2	3.2	3.2	3.3
<b>Classrooms in good condition (%)</b>	59	48	44	42
<b>Schools with girls' latrines (%)</b>	33	30	28	28
Of which latrines in good condition (%)	21	17	16	15
<b>Schools with boys' or mixed latrines (%)</b>	64	61	60	60
Of which latrines in good condition (%)	35	28	27	26
<b>Number of seats per student</b>	0.55	0.55	0.55	0.50
<b>Schools that do not have all grades available</b>	25	27	27	25
<b>Total number of students</b>	153	142	143	163
<b>Mixed-grade classes (%)</b>	67	64	64	62
<b>Pupil-teacher ratio</b>	41	38	37	41
<b>Textbook-student ratio</b>	1.1	1.4	1.3	1.4
<b>Total number of schools</b>	25,540	25,869	26,273	26,752

Source: EMIS data.

**Figure 1: Percentage of schools with a canteen by region (2020/21)**

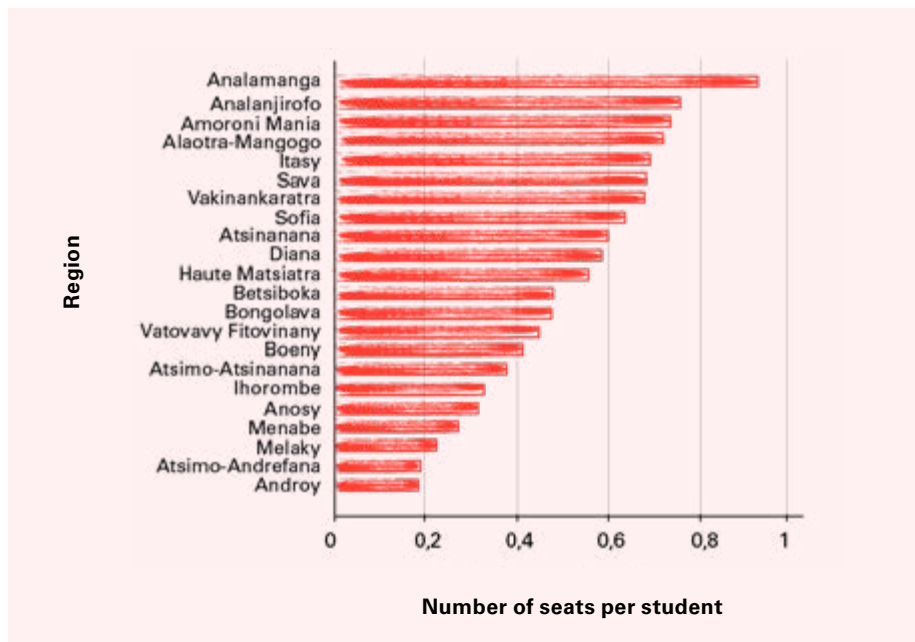
Source: Calculations based on EMIS data.

**Figure 2: Percentage of schools with girls' latrines in good condition by region (2020/21)**



Source: Calculations based on EMIS data.

**Figure 3: Number of seats per student by region (2020/21)**



Source: Calculations based on EMIS data.

**Canteens in schools are associated with better educational outcomes.** All other things being equal, canteens in schools are associated with higher promotion rates of about 1.5 percentage points, as well as an increase in the CEPE pass rate of over 4 percentage points. Nevertheless, a very limited number of schools have a canteen (6 to 7 per cent, depending on the year).

**Material conditions are associated with better school performance.** The availability of girls' latrines in good condition and an adequate proportion of classrooms in good condition have a positive impact on the promotion rate of all students (almost one percentage point higher). The numbers of seats and textbooks per student also influence promotion and CEPE pass rates.



## Education policy areas for further exploration



**Better understand and measure the mechanisms by which school canteens improve student performance (e.g., effects on absenteeism or health).** Conduct a cost-effectiveness analysis of introducing canteens, prioritizing regions and schools that could benefit most. In general, few schools have canteens, even though they are associated with better educational results (promotion and CEPE pass rates).



**Identify the main factors explaining the deterioration of infrastructure in recent years and how this affects different regions.** Encourage investment in school infrastructure to reduce regional inequalities and explore opportunities to improve and maintain existing infrastructure.

## About the Data Must Speak research on positive deviant schools

The DMS research on positive deviant schools in Madagascar was developed jointly by the Ministry of National Education of Madagascar, local partners, UNICEF Madagascar, and UNICEF Innocenti – Global Office of Research and Foresight. This global research is being implemented in 14 countries in Africa, Asia and Latin America. It is co-funded by the Jacobs Foundation, the *Knowledge and Innovation Exchange (KIX)* programme of the Global Partnership for Education/International Development Research Centre, the Hewlett Foundation, the Norwegian Agency for Development Cooperation (NORAD), the Schools2030 programme (led by the Aga Khan Foundation) and UNICEF's Thematic Fund for Education.

## Series of thematic briefs

This brief is the third in a series of documents produced as part of the DMS research in Madagascar. It focuses on the availability of school infrastructure and its impact on school performance, and aims to inform policy dialogue in Madagascar and other relevant countries. To access the full research documents, including the report analysing the factors influencing school performance in Madagascar and the tables illustrating the results described above, please see [here](#).

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