The Allocation of Teachers across Public Schools in Zambia

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This Study

• Describe the distribution of teachers across public primary schools in Zambia

• Examine the underlying administrative challenges and geographic factors linked to the allocation of teachers

• Propose a concrete plan of action to overcome the interlinked administrative problems and establish a more balanced distribution of teachers
Staffing Inequities across Public Primary Schools

- National aggregate PTR: 44.2
- Bottom 10% of schools have PTRs below 29.9
- Top 10% have PTRs above 101
- Approximately 475,000 pupils attend schools with a PTR above 80
Differences in Imbalances between Districts

Isoka District

Masaiti District

PTR Standard Deviation
- <20
- 20-30
- 30-40
- 40-50
- >50

Differences in Imbalances between Districts
Implications: Inequality of Opportunity

• Schools with high PTRs tend to be less well equipped along other dimensions as well (e.g. electricity access, water supply)

• Children who attend these schools don’t have the same opportunities as children in schools with low PTRs

• Some highly talented children at schools with high PTRs may never finish primary school
Implications: Inefficient Allocation of Teachers

• Would a more equal distribution of teachers increase the number of children completing primary school?

• Available evidence suggests so:
  • Districts with smaller differences in PTRs between schools tend to perform better at grade 7 exams
  • This is true even when taking differences in population, economic development and the total number of teachers per pupil into account
Causes

1. Administrative challenges
   - Lack of enforcement of the Ministry’s teacher allocation rule
   - Weak deployment and transfer policies
   - Payroll mismatch
   - Weaknesses in the budgeting process for teacher positions

2. Spatial variation in living and working conditions
Lack of Enforcement of Allocation Guideline

• The 2015 MoE Standards and Evaluations Guidelines established a rule that no primary school should have a PTR greater than 40.

• It is not possible to achieve this guideline given current staffing levels:
  • Approximately 12,500 teachers would need to be hired to achieve this rule at all schools.

• 73% of public primary schools lack teachers to achieve a PTR of 40.

• But at the same time, 21% of schools have more teachers than required to achieve a PTR of 40.
Deployment

• Deployment is not systematically linked to need
• Many schools in need of teachers do not receive additional teachers
• At the same time, other schools that already have sufficient staff are assigned even more teachers (grey-shaded)
Transfers

• Teacher transfers from understaffed to overstaffed schools contribute to staffing imbalances
• Approximately 40% of transfers between 2010 and 2017 moved a teacher to a school with a lower PTR than the school they originally worked at
• Why do so many transfers move teachers from understaffed schools to well-staffed schools?
Payroll Mismatch

• Payroll mismatch occurs when staff does not work at the facility they are listed at in the government payroll system

• It inhibits the government’s ability to deploy teachers according to school needs because an understaffed school may not receive teachers in deployment if it doesn’t have vacancies in the payroll system

• Several independent studies on payroll mismatch provide a range of estimates for its magnitude and indicate that at least 40% of teachers do not work at the school where they are paid
Inequalities in Sanctioned Positions

• Even in the absence of payroll mismatch there would still be significant dispersion in PTRs due to the allocation of sanctioned positions.

• Based on the number of sanctioned teaching positions, 40% of schools have PTRs greater than 40.
Outdated and Missing Establishment Registers

• School establishments are rarely updated, and updates don’t correspond to changes in enrolment:
  • Between 2012 and 2016, only 10% of schools had any update to their establishments
  • 90% of schools with an increase in enrollment did not see an increase in establishment registers
  • At the same time, 47% of schools that had their establishments increased in this period saw decreases in enrolment

• A large number of schools operate without establishments
  • MoE fieldwork in Chavuma district found that 38% of all schools there did not have establishments
Simulation of Needs-Based Allocation

• Imagine an allocation rule along the lines of the current MoE guidelines of the following type: No school should have a PTR that exceeds x.

• Compute the lowest achievable PTR threshold (x) given the current stock of teachers and pupils.
  • This amounts to 48.

• Simulate the PTR distribution under the implementation of this rule.
Needs-Based Distribution of Teachers

No pupil would have to attend a primary school with a PTR above 48.
Rural-Urban Differences

• Rural schools have on average 4 vacancies
• Urban schools are on average overstaffed by 4 teachers
• However, these averages mask large differences in PTRs between schools within each category
Conclusion

• There are large staffing imbalances across public schools in Zambia
• These raise both equity and efficiency concerns
• The observed imbalances can be traced back to
  • Administrative challenges in teacher workforce management
  • Spatial differences in living and working conditions
• How can a more equitable distribution of teachers be achieved?
  1. Overcome administrative challenges
  2. Revise incentive schemes to attract teachers to rural schools
Roadmap Towards a More Equal Distribution

• Administrative challenges in budgeting, deployment, payroll management and transfers are interlinked
• Therefore, they can be most effectively addressed jointly
• We propose a structured plan of action to do so and simulate the implementation of this plan for Chavuma district
STEP 1
Collect Data on Actual Locations and Paypoints

• Data on teacher paypoints and working locations is essential to achieving a more equitable distribution

• Two complementary approaches:
  1. Staff return collection
     • Data collection initiated in cooperation with MoE HR and ZESSTA
  2. Integration of EMIS and payroll
     • Allows for comparison of working location and paypoint of each teacher

• Both approaches could also help identify ghost teachers

• In Chavuma, staff return data collection has been completed and this data will be used to simulate the following steps
STEP 2
Establish an Achievable PTR Rule

• Compute the smallest achievable maximum PTR using the collected data on the number of pupils and teachers at each school

• In Chavuma, PTRs currently vary between 14 and 70. The smallest achievable maximum PTR amounts to 42
STEP 3
Update Establishment Registers

• Update school establishments according to the previously defined maximum PTR rule
• This does not require an increase in the total number of paypoints in the district
• Paypoints will be taken from schools with more budgeted positions than necessary and added to schools with insufficient budgeted positions
• In Chavuma, 29% of schools would gain paypoints (17% of these are currently ungazetted) and 71% would lose paypoints
STEP 4
Align Staffing with Establishment Registers

• If a school has more paypoints than teachers, all teachers currently working at the school can be added to the payroll
  • In Chavuma, 63% of schools fall into this category

• If a school has more teachers than paypoints, teachers need to be reallocated to understaffed schools
  • In Chavuma, 14% of teachers would have to be re-allocated
Local Teacher Transfers

- A large-scale teacher reallocation program is not a simple process
- Local transfers could be more easily implemented and still have a large impact on balancing PTRs
- 45% of schools with a teacher deficit are within 10km of a school with a teacher surplus
STEP 5
Maintaining Staffing Balance

• Once teachers have been distributed as equally as possible following the described steps, maintaining balance will be key

• This implies the need to ensure that
  • Deployment is based on need
  • Transfers follow official guidelines
STEP 6
Revise Incentives to Attract Teachers to Rural Schools

• Vacancies in rural areas are likely to remain an issue

• With administrative challenges resolved, it will be possible to assess the full scope of this problem and design solutions
  
  • Review existing incentive schemes
    • Why doesn’t the rural hardship allowance scheme affect teacher location and retention (Chelwa et al. 2018)?
  
  • Develop alternative approaches
    • To what extent could a preference-based allocation system help equalize staffing across schools?
Appendix
Lack of Enforcement of Transfer Guidelines

- Official transfer guidelines are not enforced
- The official bonding period amounts to 4 years (previously 2 years)
- But more than 50% of teachers who were transferred between 2010 and 2017 did so before completing a minimum of 2 years
Number of Teachers in Payroll and EMIS