A Quantitative Analysis of Resource Allotment to Schools across Punjab

Presented By:

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INTRODUCTION

A dataset containing information pertaining to state of various schools across different districts in the province of Punjab is analyzed. It is used to identify how resource availability impacts key parameters such as enrollment, gender disparity etc.

Furthermore, using these data-driven insights on resource allocation, solutions and recommendations are provided to overcome the regional and gender-based disparities. Figure 1 shows the number of functional schools in Punjab province.

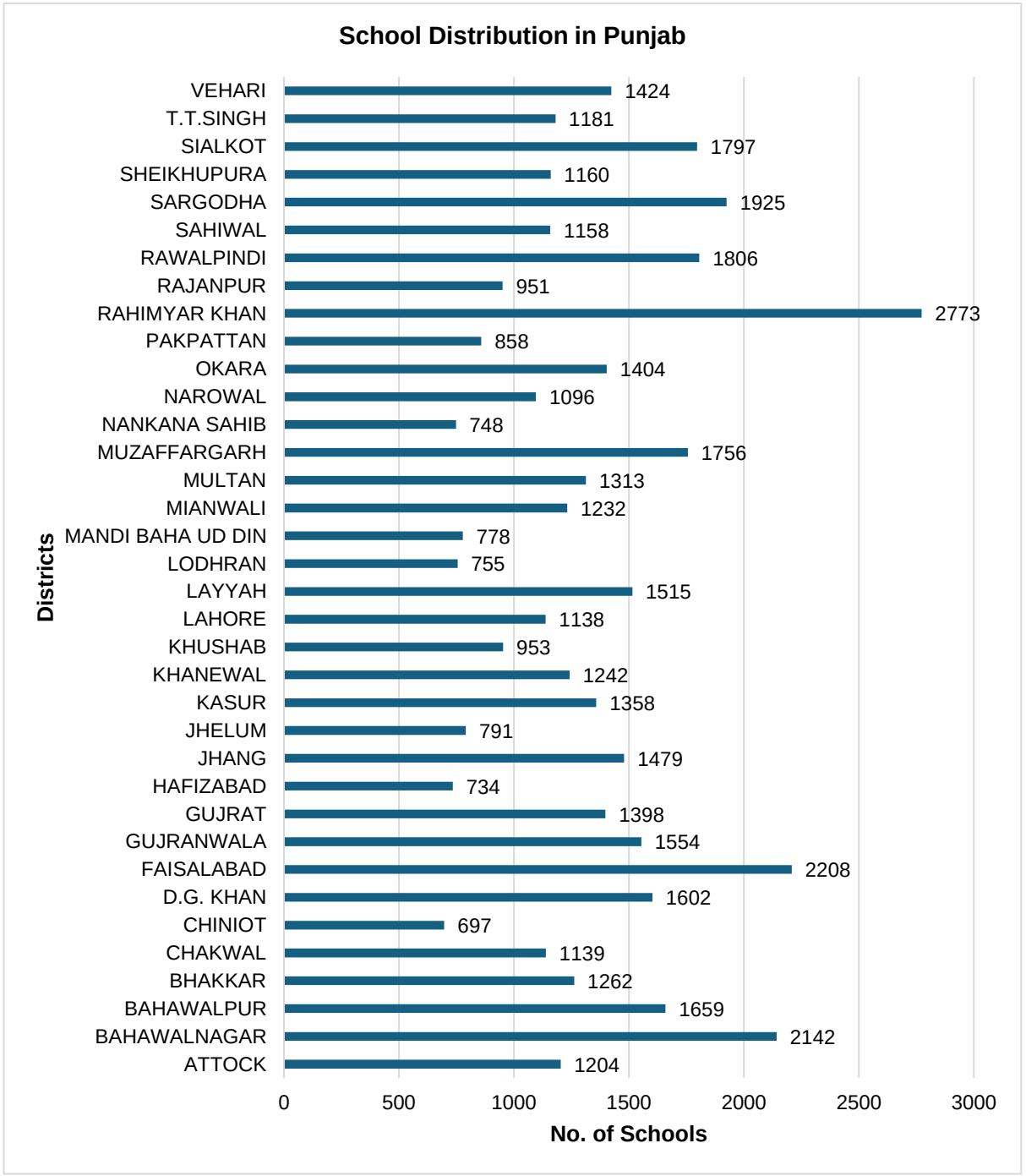


Figure 1: School Distribution Across Different Districts of Punjab

DATA CLEANUP

Data collected and maintained by Punjab Government is used in this report. To ensure the integrity of the data set basic cleanup was performed which involved following steps:

1. Making sure dataset did not contain any duplicates
2. Each individual set of information i.e. est. Year, Functional classrooms etc. had appropriate data type.
3. Data that did not provide any useful information for this particular study was removed such as detailed addresses and area information.
4. Nulls and Blanks were treated such that they wouldn't affect the aggregated results and the data type such as for 'Teachers' column the blanks are left as is whereas for 'Electricity' where the value is 1 but the 'Electricity Source' is not mentioned is replaced with 'Insufficient Data'.
5. Data disparities such as 'Drinking Water Type' is mentioned but 'Drinking Water' is 0 was changed.

RESOURCE ALLOCATION

Resource Allocation with respect to districts, school location, gender and school level is established in this section. The results are further used to study the impact this will have on the operation and success of the school. The trends for following key resources are tracked:

1. Building
2. Boundary Wall
3. Security
4. Electricity
5. Drinking Water
6. Washroom

Resource Allocation: Urban vs. Rural

There seems to be a significant difference in no. of schools in rural vs. urban setup however this does not seem to impact the resource distribution amongst schools. The resources allotted to rural schools is comparable to the no. of schools in the same location and vice versa.

Security and Boundary Wall are major concerns for both urban and rural schools followed by the availability of electricity in rural setup.

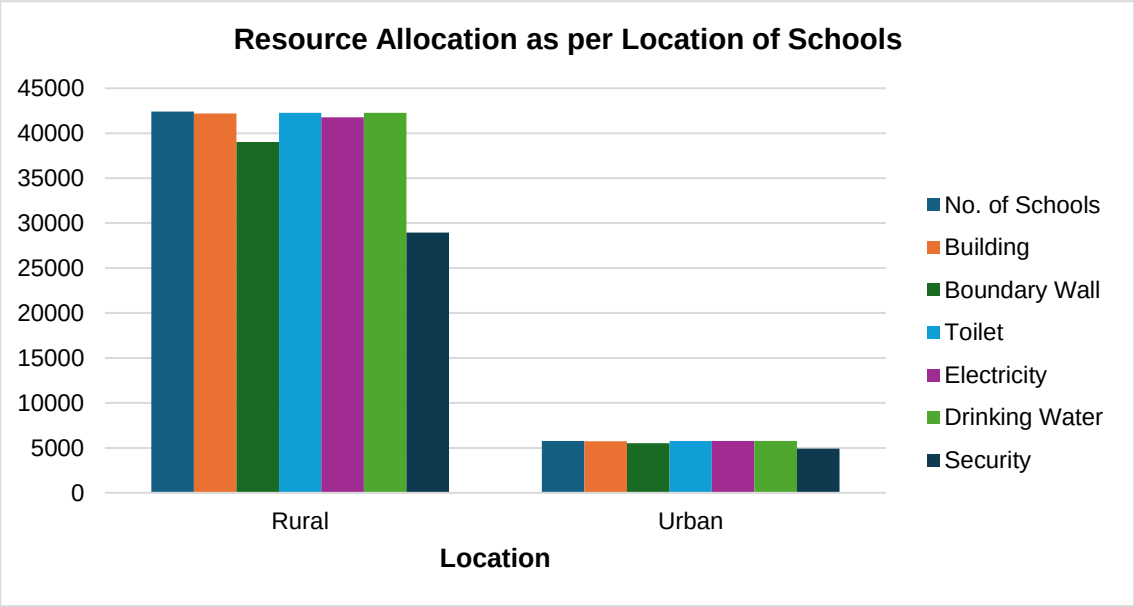


Figure 2: Resource Allocation: Urban vs Rural

Resource Allocation: District

The availability of following resources compared to the no. of schools in each district are compared. The major concern for most of the districts is lack of a boundary wall and security followed by the availability of electricity.

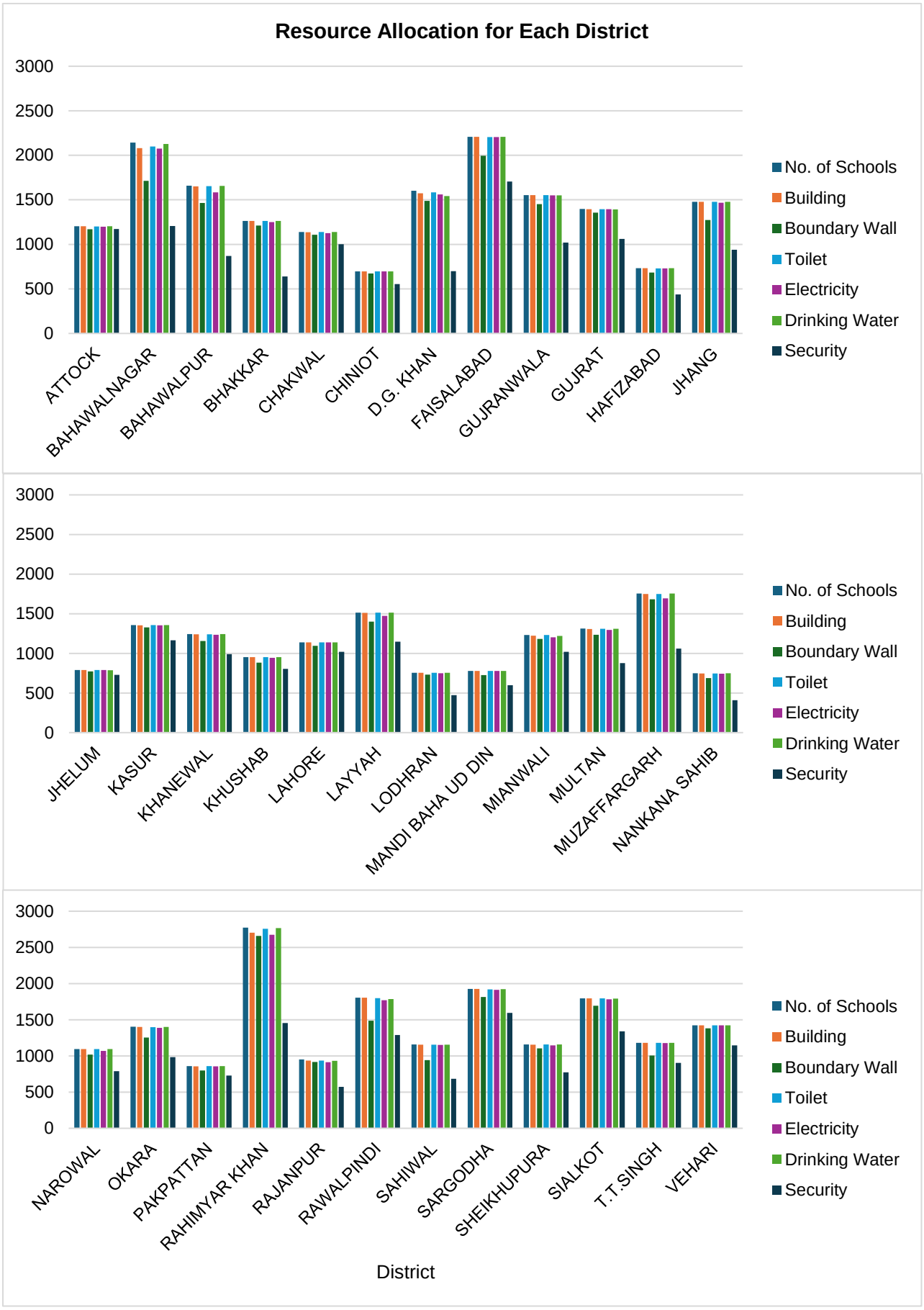


Figure 3: Resource Allocation w.r.t No. of Schools in Each District

Resource Allocation: Gender

The trend where the resources allocated to schools are comparable to the no. of schools remains consistent for gender and school-level based study.

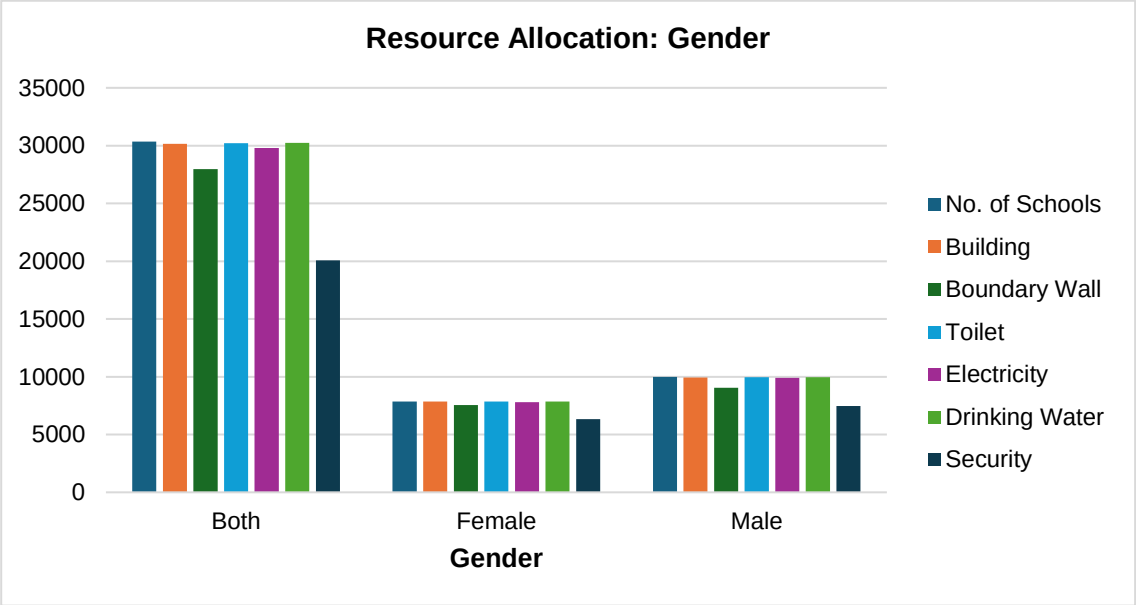


Figure 4: Resource Allocation: Gender based Schools

Resource Allocation: School Level

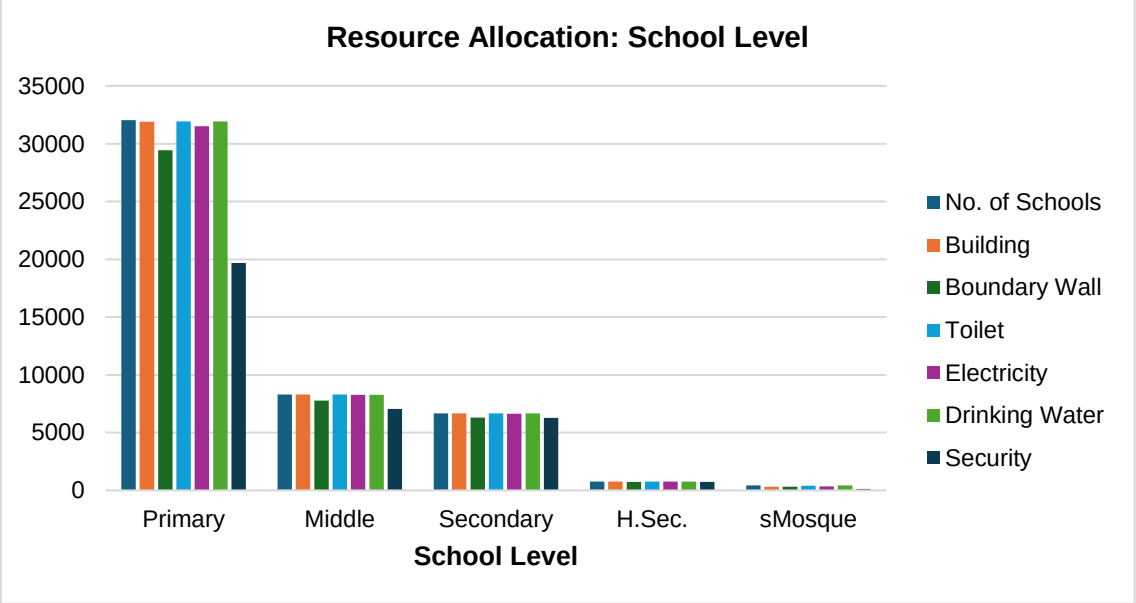


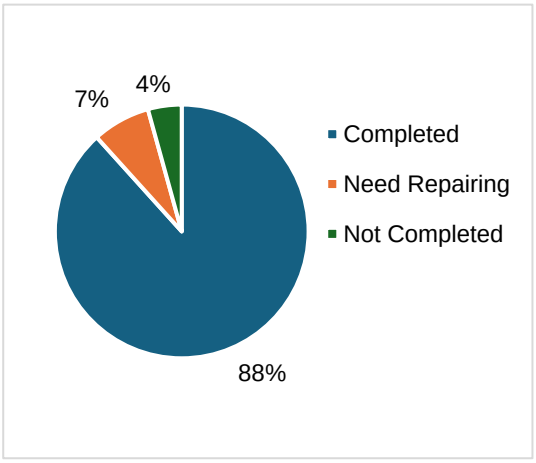
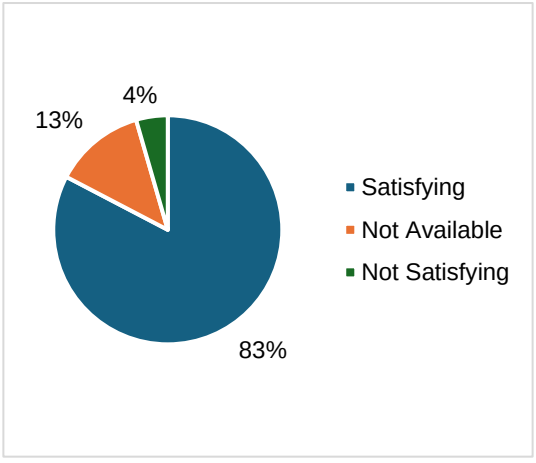
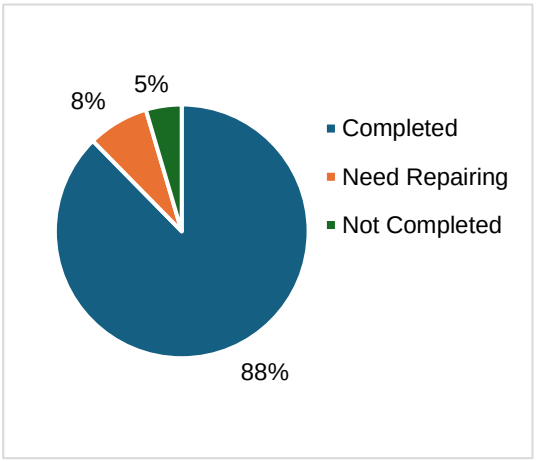
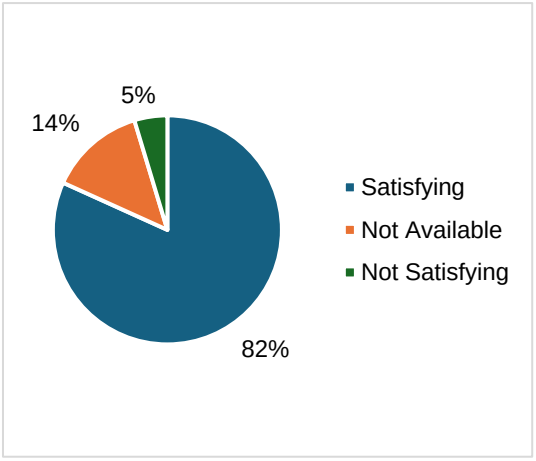
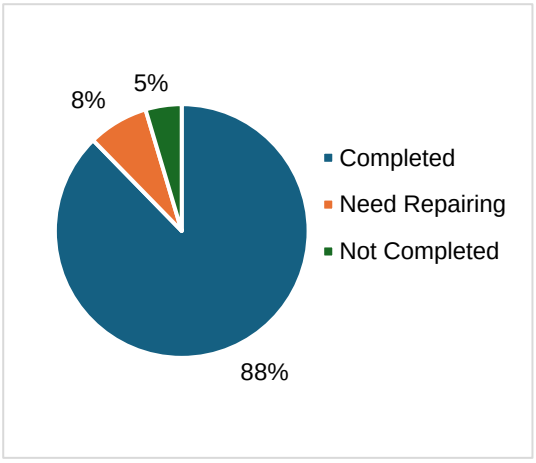
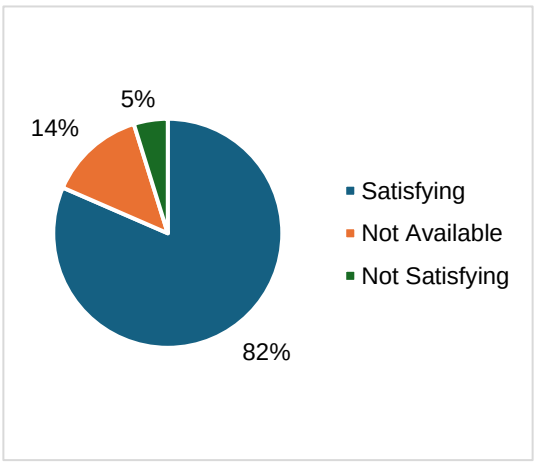
Figure 5: Resource Allocation: School Level

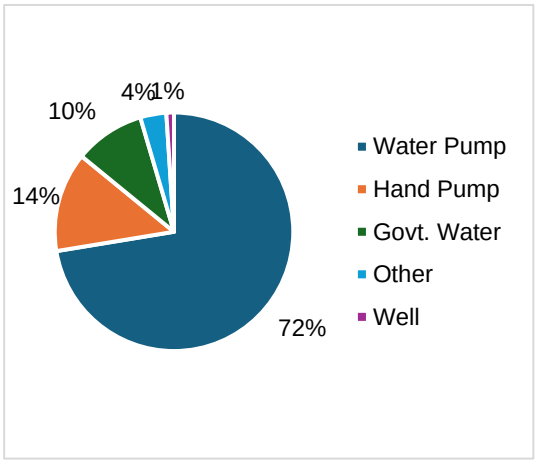
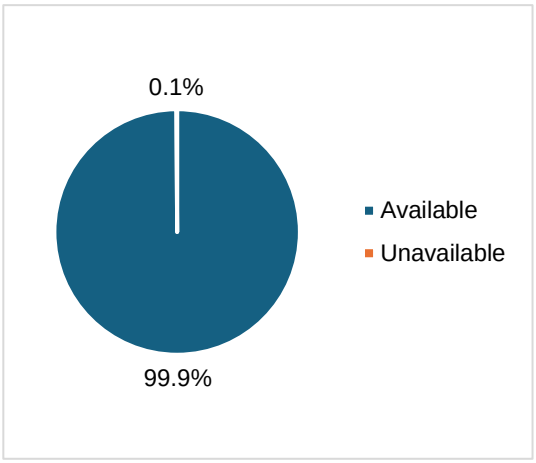
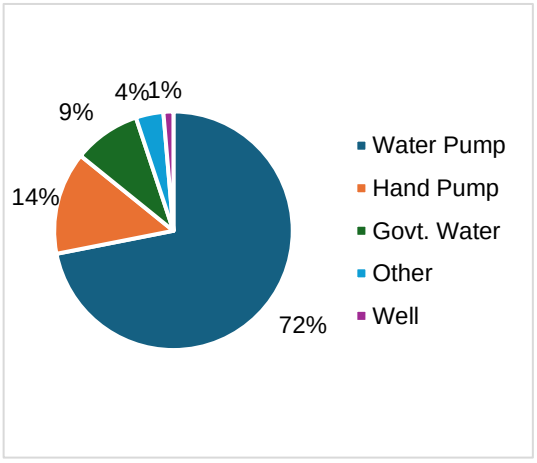
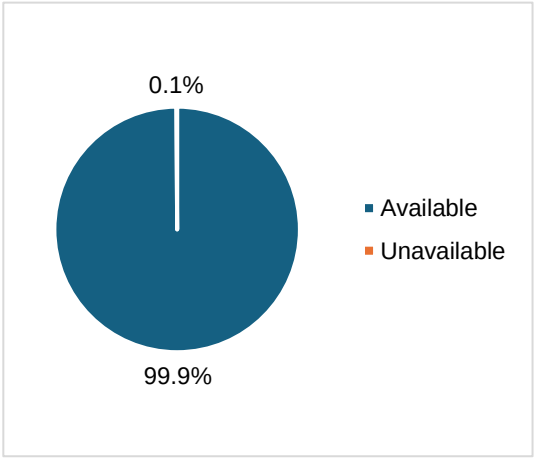
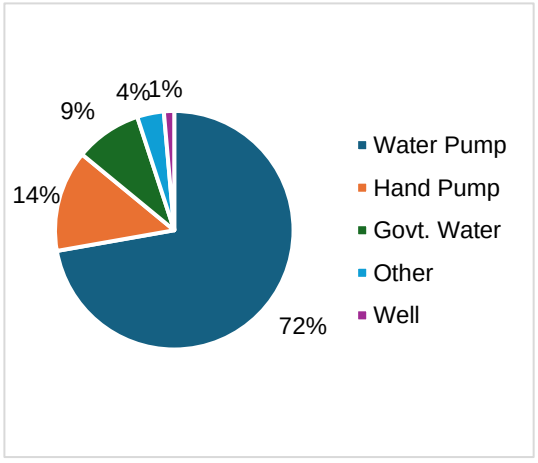
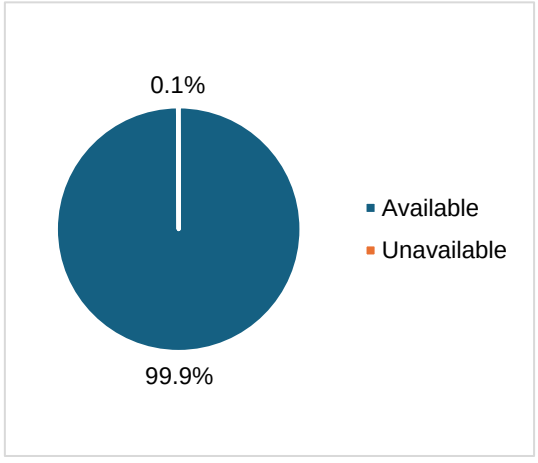
Overall, resources allocated to the schools are comparable to the no. of schools in a district, location, gender-based schools and school levels. Security and Boundary Wall seem to be the major concern for all of the above distributions followed by the availability of electricity.

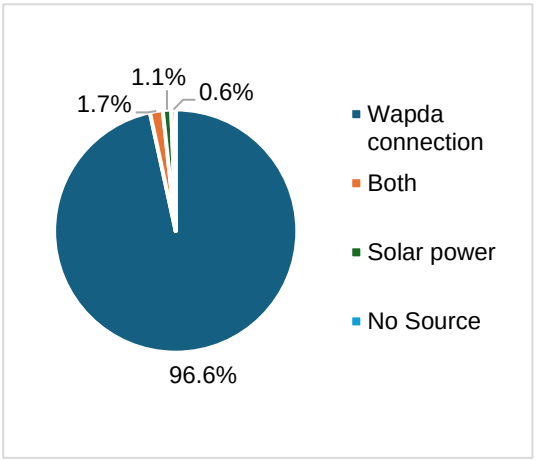
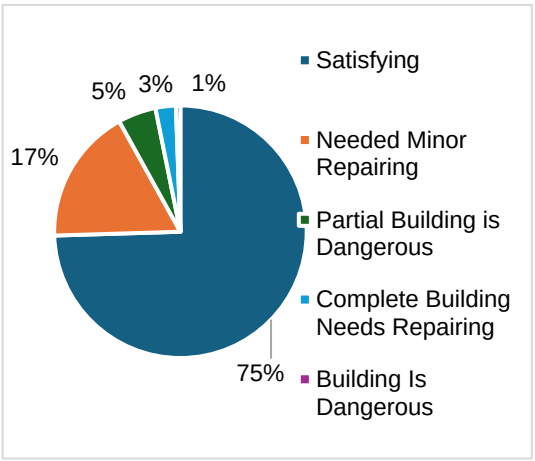
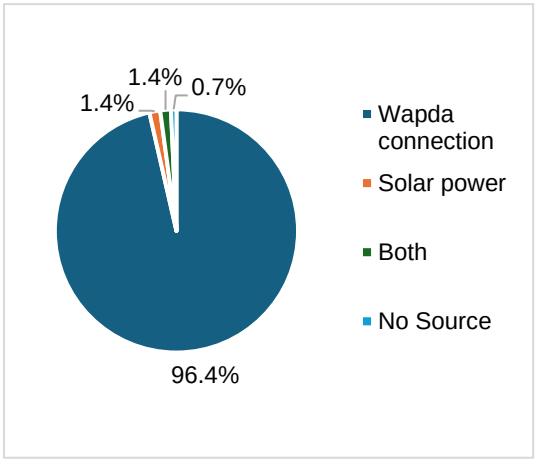
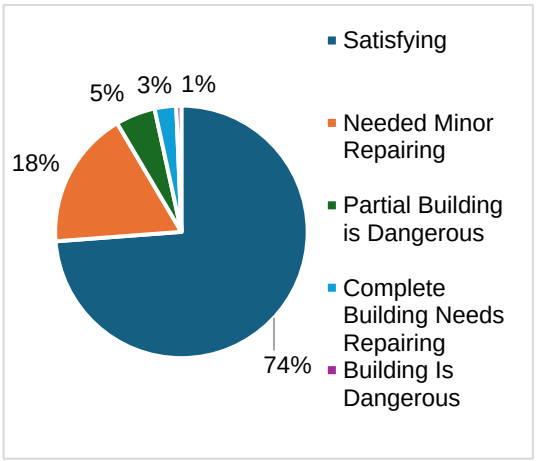
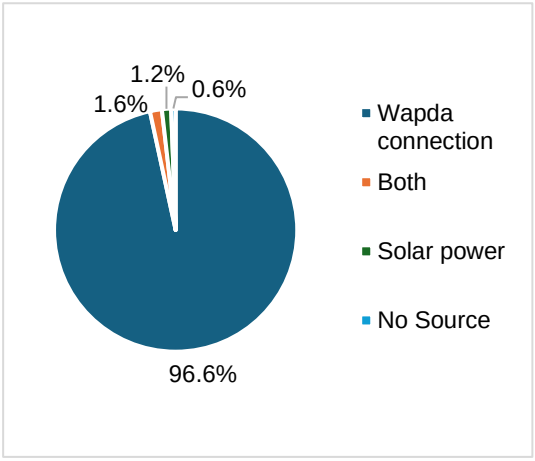
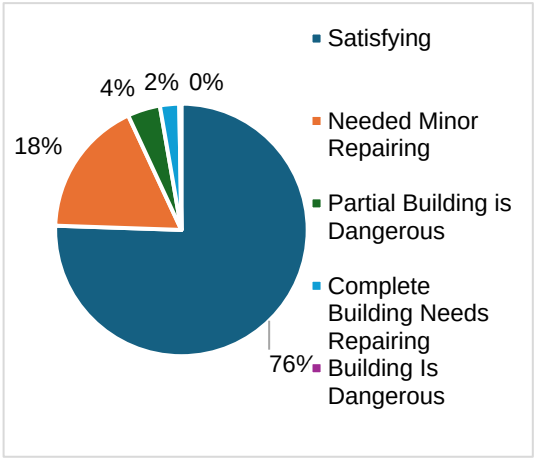
IMPACT OF AVAILABILITY OF RESOURCES

In this section, impact of each resource is evaluated based on the no. of teachers, students enrolled as well as the functional classrooms.

Table 1: Impact of Availability of Resources

	Boundary Wall	Security
Students Enrolled		
Teachers		
Functional Classrooms		

	Drinking Water	Washrooms
Students Enrolled		
Teachers		
Functional Classrooms		

	Electricity	Building Condition
Students Enrolled		
Teachers		
Functional Classrooms		

The above six tables show the correlation between no. of students enrolled, no. of teachers and functional classrooms with the availability of better infrastructure and basic necessities.

Data shows that the provision of better infrastructure and basic necessities does not just impact the functionality of school but are in fact the defining factors. The operability drops to approximately 0% when some (water and electricity) of these conditions are not met.

DISTRICT PERFORMANCE

In this section, underperforming districts are highlighted on the basis of enrollment, teachers employed and functional classrooms to evaluate the reasons and take measures to counter them. Furthermore, a comparison with top five districts based on performance is also presented to rule out certain factors like no. of schools etc.

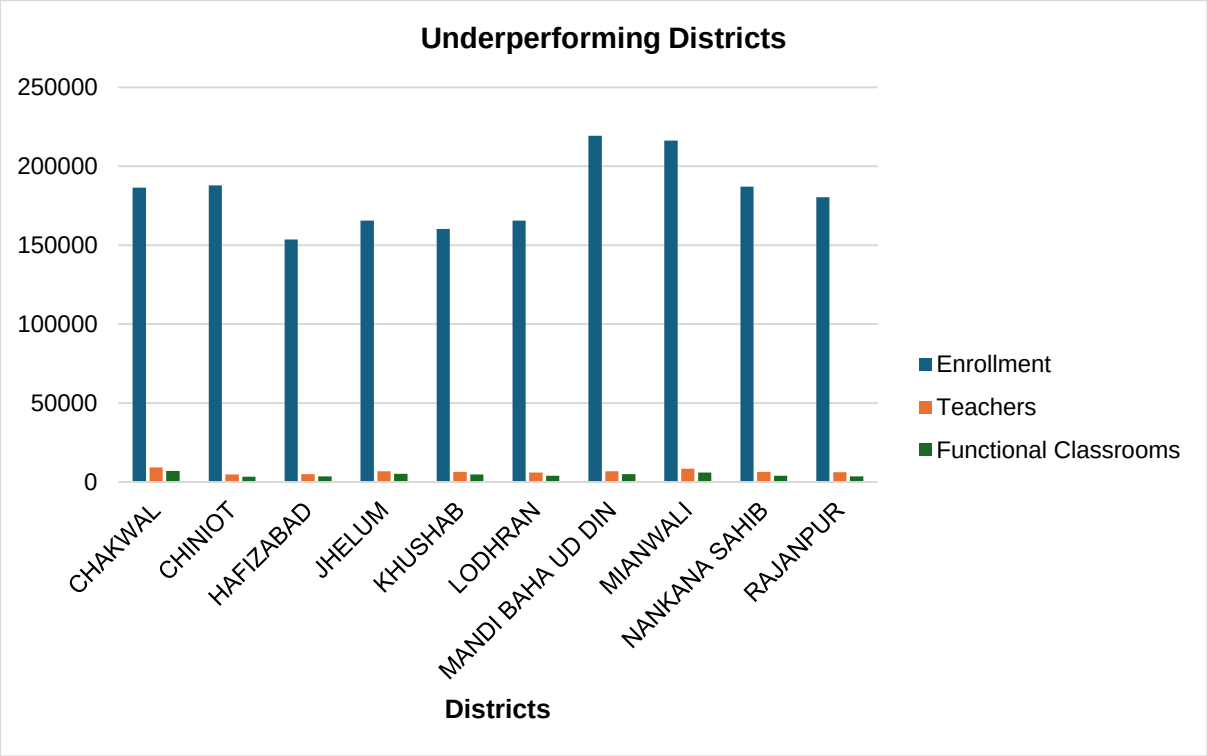


Figure 6: Underperforming Districts

Figure 7 shows comparison of top performing districts to that of underperforming districts by comparing the no. of schools each has compared to the students enrolled. It is evident that the enrollment rate in highest performing districts exceeds far more than their number of schools, hence proving that the lack of schools is not a governing factor in less no. of students.

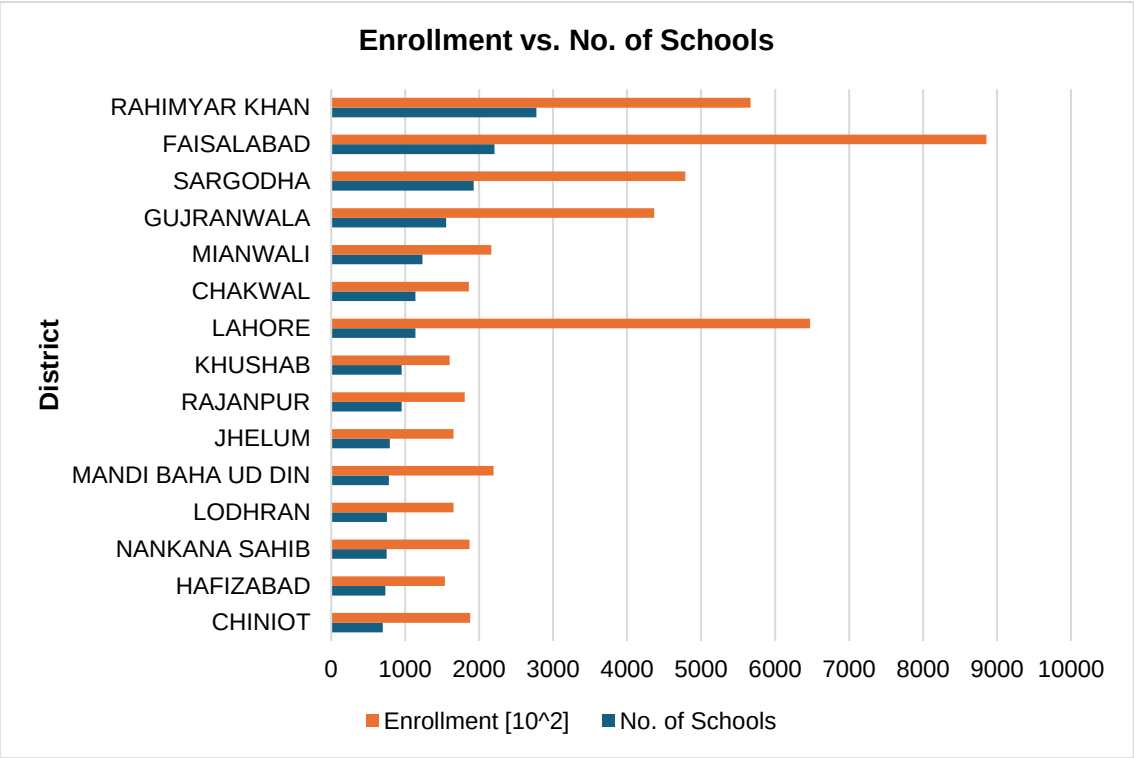


Figure 8: **No. of schools vs. Students Enrolled**

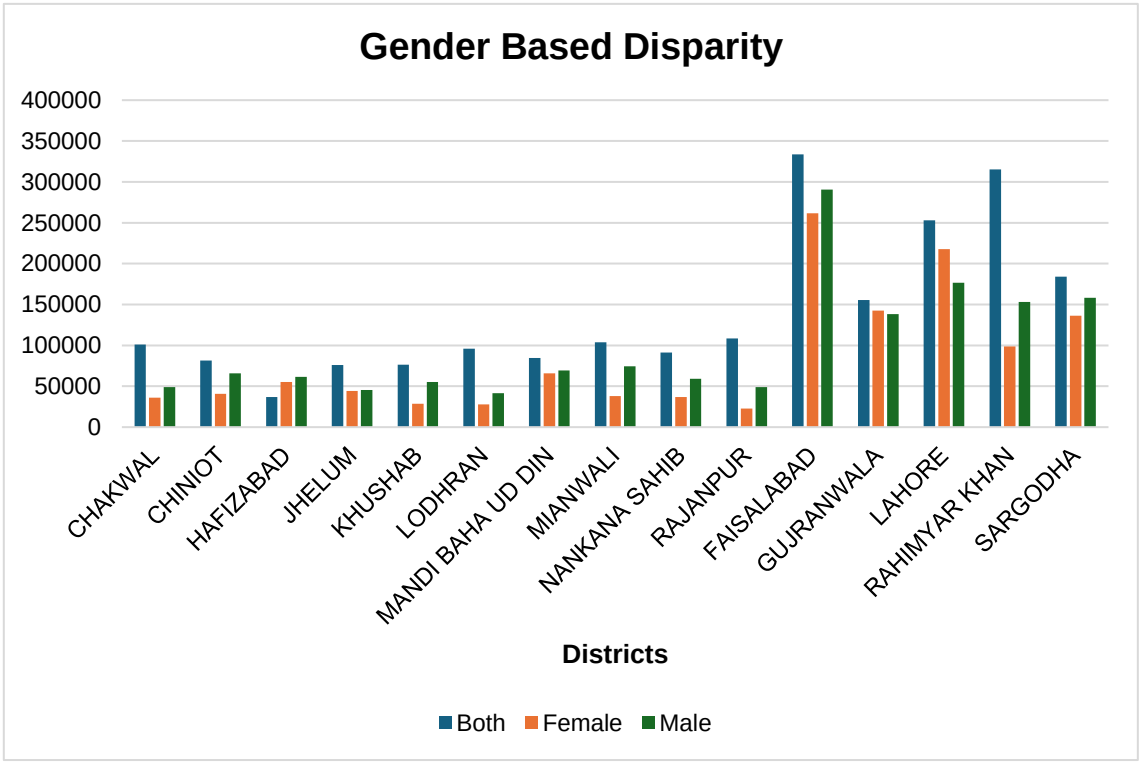


Figure 7: District Performance: Gender based Schools

As per Figure 8, it can also be ruled out that the school gender impacts the enrollment of students as the overall enrollment has decreased regardless of male or female.

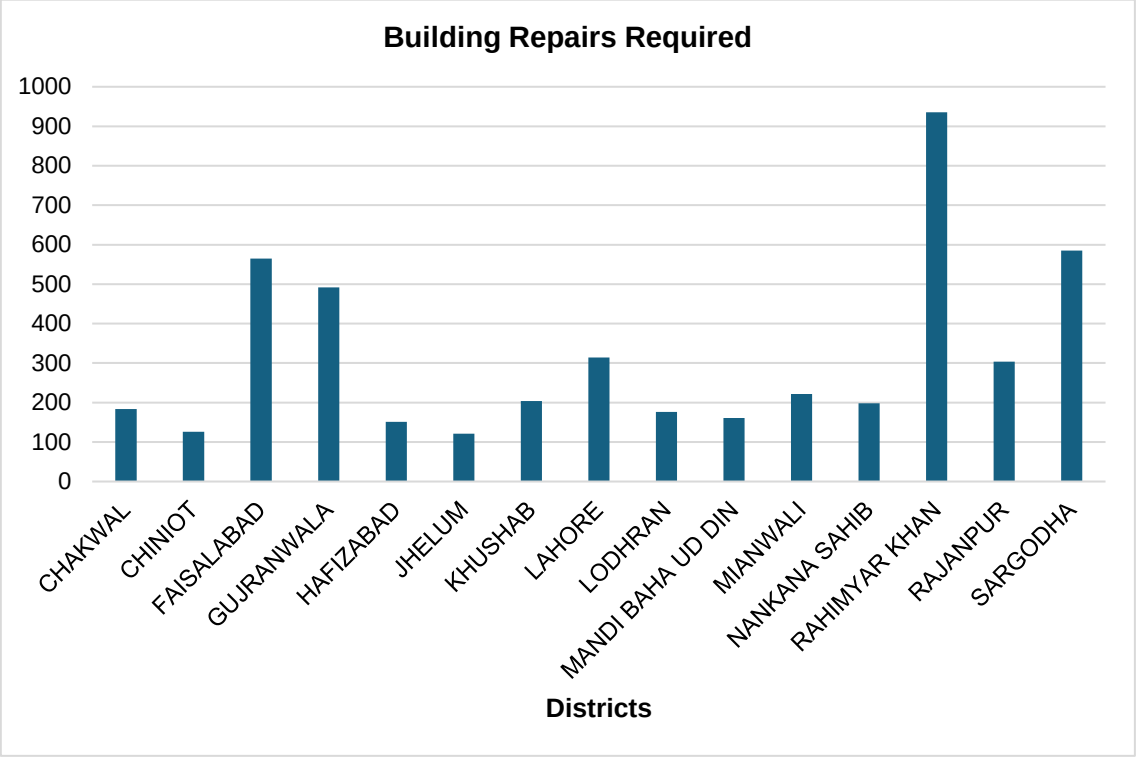


Figure 9: Repairs required for buildings

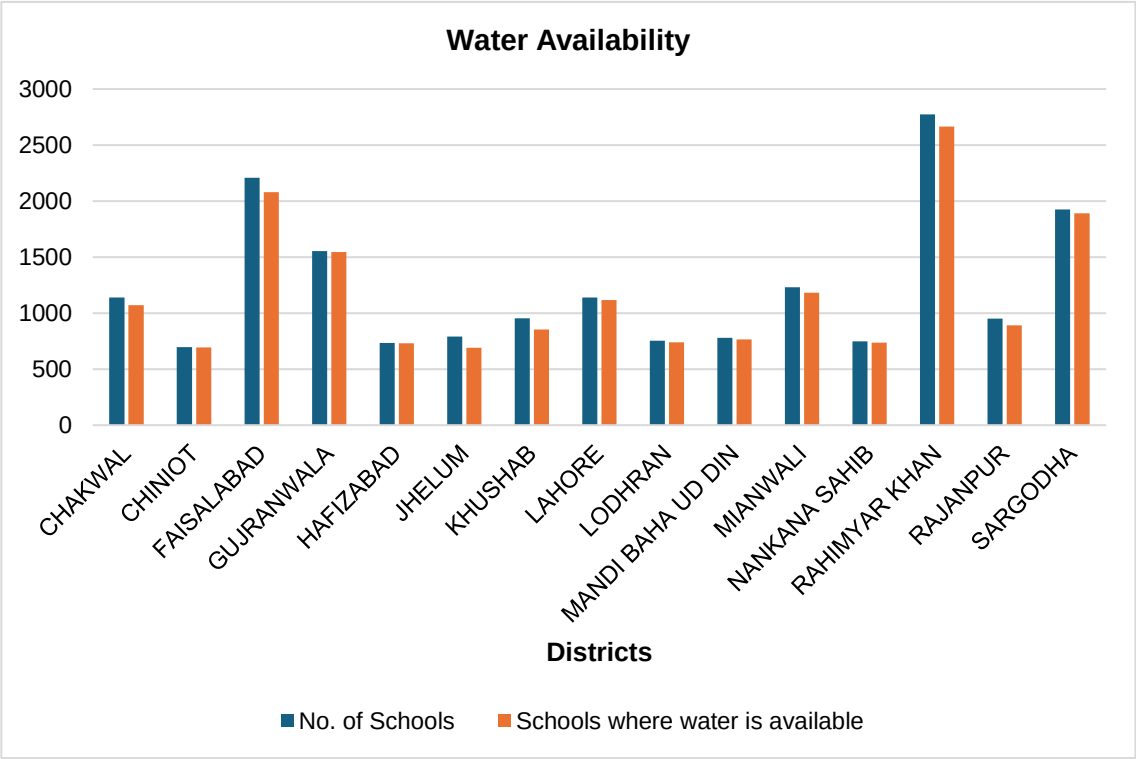


Figure 10: Water Availability

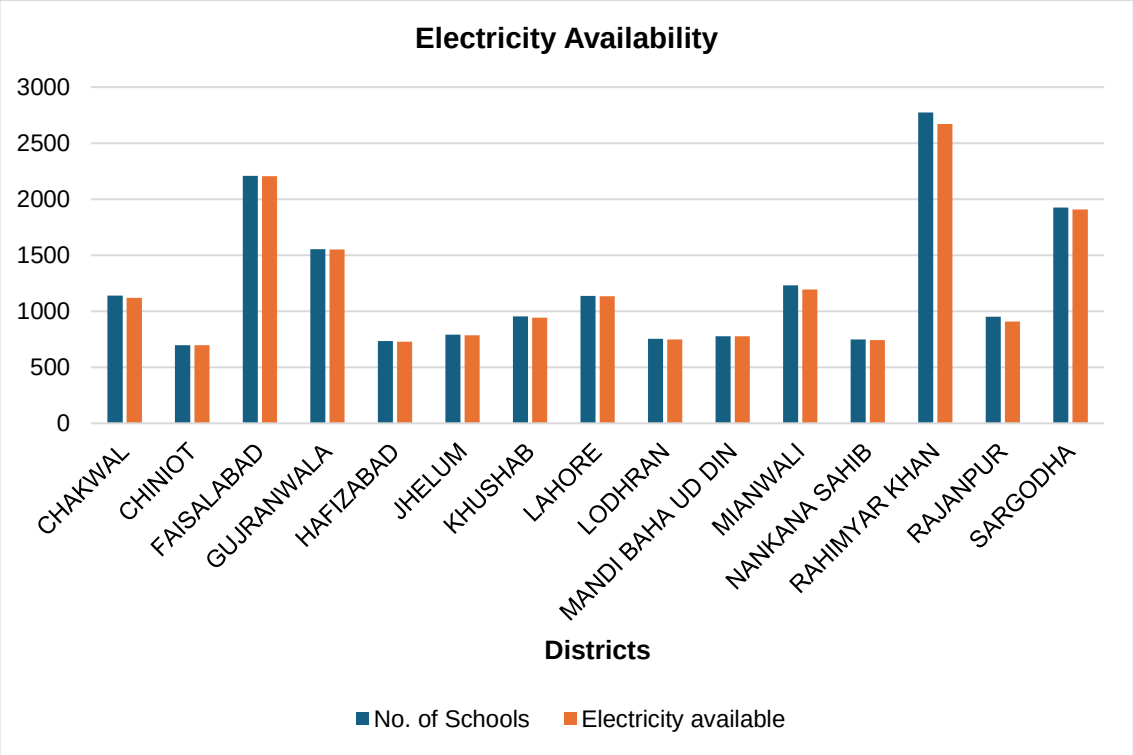


Figure 12: Electricity Availability

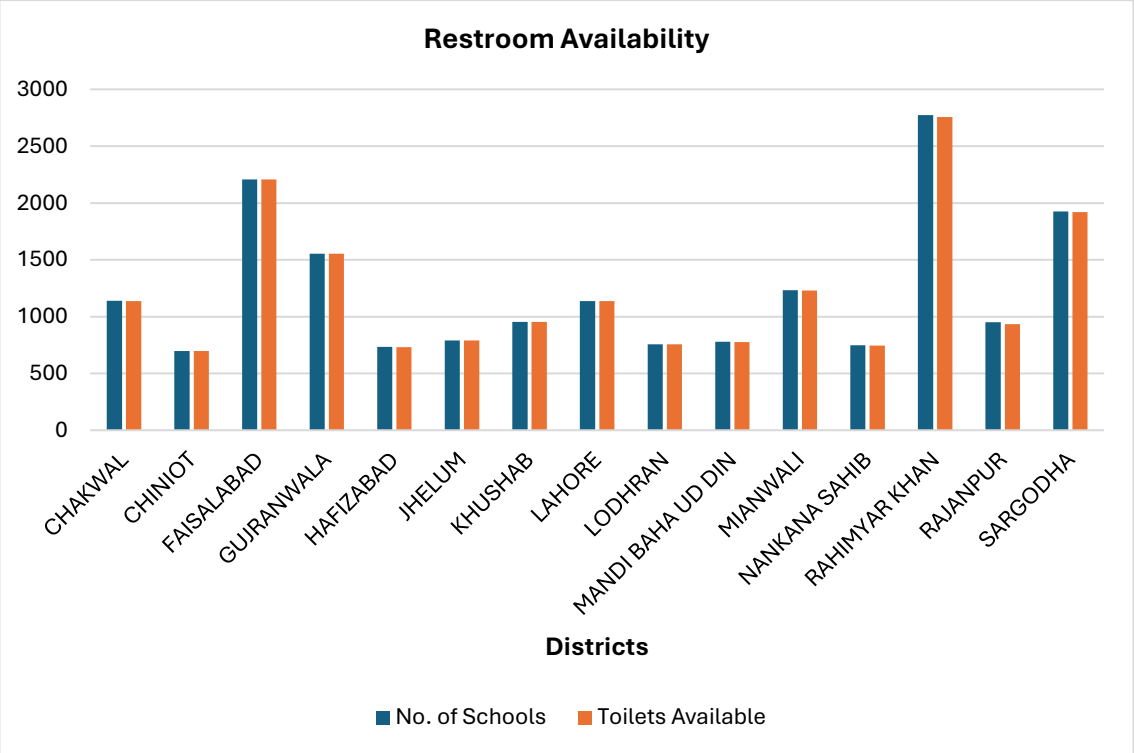


Figure 11: Restroom Availability

Availability of Infrastructure and water, electricity and restroom facilities are compared to those with good performance. The above data shows no disparity to suggest that

these districts are underperforming due to lack of any of the above-mentioned resources. The current dataset is insufficient to provide any further clarifications.

SUGGESTIONS AND RECOMMENDATIONS

Keeping in view the above analysis following key parameters can be ensured to improve the overall education system in Punjab province:

1. Number of schools for higher education must be increased as this number progressively decreases with each school level.

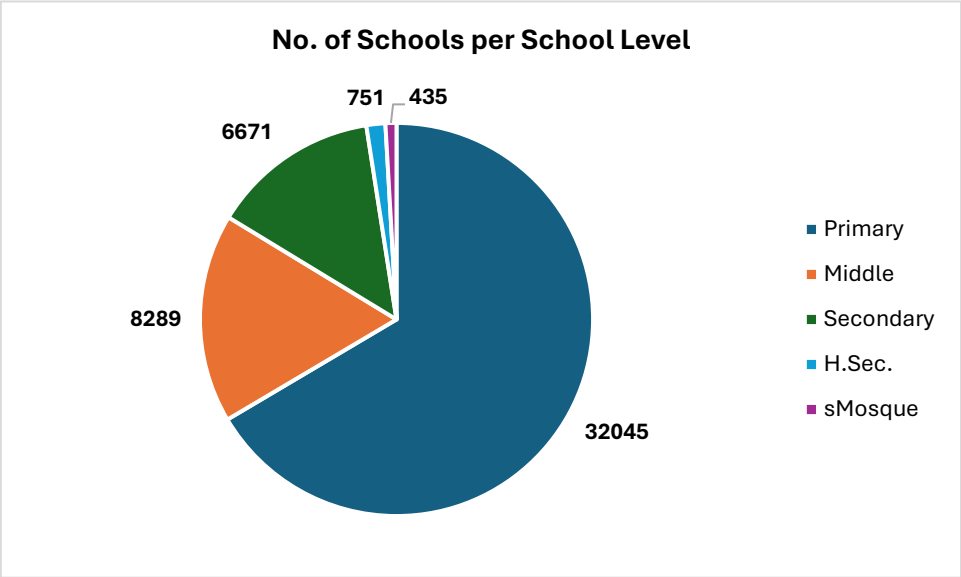


Figure 13: Schools available for each School Level

2. Schools in urban settings must be increased as shown in Figure 2.
3. Availability of good infrastructure and basic necessities must be ensured. [Please refer. Table 1]
4. Each district must be made responsible to gather data so factors that are local to a particular area/district can provide insights where this dataset fails to provide explanation as is evident from analysis done for Low Performing Districts.