OUT OF SCHOOL CHILDREN IN INDIA SOME INSIGHTS ON WHAT WE KNOW AND WHAT WE DON'T

Kiran Bhatty, Radhika Saraf and Vrinda Gupta

WORKING PAPER

CENTRE FOR
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RESEARCH

INTRODUCTION

The number for out-of-school children [OOSC] put out by various official sources in India, show wide variations. The Ministry of Human Resource Development (MHRD) survey (IMRB-SRI, 2014) estimate of this figure is 6 million, while for the same year, the National Sample Survey (NSS) figure is 20 million. Each figure is based on an estimate of 'never enrolled' and 'dropped out' children. A closer look reveals that problems exist not just in the definitions, especially of drop out used by each source, but also in the methods of estimating 'never enrolled'. In addition, discrepancies and inefficiencies in the overall system of collecting and collating data compound the problems.

The never enrolled figure is a derivation – based on total child population in the relevant age group and the number of children shown as enrolled in school registers. However, due to poor birth registration records, the former is not reliably available. Further, household surveys done by different sources, instead of being simple censuses of children, rely on different 'questions' to gauge who an out-of-school child is, thus arriving at vastly different numbers[1]. A more recent attempt at maintaining records of OOSC through an annual 'child tracking' survey has not met with great success either, as this exercise -meant to be done by teachers- is resented by them for adding an "extra burden" on their heavy workload, leading to sporadic and inefficient tracking. Even where (and when) done, the reliability of data is in question as teachers have an incentive [as well as administrative pressure] to match the household numbers with school enrolment records, in order to over-state enrolment.

Estimates for dropped out children, on the other hand, are based on calculating the difference in enrolment from one year to the next. This calculation includes children whose names are struck off the rolls on account of continuous absence for a period of time, the length of which defers from state to state. Thus a child, if absent for 7 days continuously would qualify as a dropped out child in Karnataka, and his/her name struck off the rolls, but only if continuously absent for 90 days in Gujarat. Sporadic absence or irregular attendance is not captured in the methodology used for calculations made for this indicator. In other words, a child might be absent for 90 days over the period of the whole year, distributed in spurts (not continuous), but would not be considered a drop out. It raises a fundamental question of who an "out-of school" child is, with particular reference to learning levels of children with irregular or sporadic attendance. Although this lies outside the scope of this paper, the study does attempt to develop a more direct approach to calculating never enrolled children based on a child census; identify OOSC using a broader understanding of absenteeism based on irregular attendance; and analyze the links between attendance and socio-economic and school factors. In doing so, it fills an important gap in the literature by questioning the definition/ understanding of an 'out-of-school' child as well as by using methodologies not employed before to estimate children not enrolled in school and to track attendance of those enrolled over an academic year.

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[1] For instance, the question asked by NSS is "how many children are not currently attending to school?" whereas the MHRD [SRI-IMRB] survey asks how many children are "not enrolled" in any school.

Data collected for the study thus involved a census of all children and all government schools in the sample area and matching of responses regarding enrolment from the households with the school records to get a more accurate estimate of both, children enrolled in school and those not enrolled. The study also looked at Panchayat registers for birth registrations, which are crucial sources of information regarding the child population (by age) and thus for determining the number of children not enrolled, by age. However, we were unable to use this data, due to the fact that registration records are incomplete, with roughly only 20% of births registered in them. Therefore, age estimations provided by the household in the household survey (often not accurate), were the only ones available to us.[2] Due to this, it is possible that some children of school-going age but who are not enrolled in any school have been excluded.

Nevertheless, the focus of the study, and the analysis in this paper, is on the issue of student attendance, in order to capture its extent – both continuous and sporadic - as well as to highlight its relevance in the larger meaning of an "out-of-school child". The analysis is focused on possible household and school factors that can explain the variation in attendance across social groups and gender as well as across school type. In other words, this paper is an attempt to i) provide a more accurate estimate of OOSC using both household and school level data on children as well as an expanded definition of dropped out by including sporadic attendance data; ii) document the variation in attendance patterns by social groups and iii) unpack reasons for low attendance based on a set of household and school level factors. Accordingly, after describing the research and data collection, the paper is divided into two parts: Part I describes the survey findings and estimates of OOSC and attendance patterns of students and teachers. Part II provides an analysis of the links between child attendance and various household and school level factors.

DESCRIPTION OF THE RESEARCH AND DATA COLLECTION

The research for this paper involved an intensive micro study of all children in a single Gram Panchayat (GP), in the western Indian state of Rajasthan. It began with a household survey that provided the sample population of children in the study area in the age group - 5-17 years - and a survey of all government schools of the Panchayat. The children documented from the household survey were then mapped on to the lists of enrolled children in the sample schools. Thereafter the attendance of these mapped children was tracked through the course of one academic year by making unannounced visits twice a week [3] (before and after the serving of the mid-day meal to capture attendance patterns of the children at two points in the day).[4] The children of school-going age who were never enrolled or who had been

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[2] Birth records are largely absent in the area, and a majority of the households did not know the date or year of the child's birth. When the child began going to school, the teachers usually estimate the age of the child in an arbitrary manner based on the physical development of the child and "how old the child looks". This also forms the basis of placing the child in a particular grade, if a child does not begin school at age 6, in accordance with age-appropriate enrolment.

[3] Children from outside the panchayat, studying in the Panchayat schools have been excluded from the sample. Children residing in the Panchayat and studying in schools outside the Panchayat have been included in the child census, but not in the attendance tracking.

[4] This was done, as prior research has indicated that children often attend school up to the point that school meals are served and depart thereafter. However, we did not find this to be the case in our survey and hence our findings do not reflect as pre and post mid-day meal separation.

enrolled last year but were not enrolled this year[5] were not on the school lists and therefore noted as out of school. Those children with inadequate attendance through the course of the year were added to this list to determine the total number of 'out of school' children. Attendance data was differentiated between continuous absence (as officially mandated) and sporadic absence. In the state of Rajasthan, 45 days of continuous absence is considered the benchmark for dropping out. We noted both continuous and sporadic absence of 45 days. In addition, the attendance of the teachers (a total of 31 in the sample government schools) was also tracked on the day of the school visits, albeit only at the start of the school day, for possible correlation between teacher absenteeism and student attendance.

For the purposes of this study, the child was taken as the unit of analysis. The GP, Gawar, is located in Kumbhalgarh block of Rajsamand district in Rajasthan. According to the Census 2011, average literacy rates in Rajsamand is 63.14% which is much lower than the national literacy rate of 74.04%; moreover, male literacy in Rajsamand is 78.42%, also lower than all-India figure of 82.14% whereas female literacy is only 47.95% compared with 65.46% for all-India – displaying a wide gender gap in literacy. Kumbhalgarh is a tribal dominated area, with Scheduled Tribes constituting roughly 30% of the population as per Census 2011, and is categorized as an educationally backward block (EBB)[6]. Gawar mirrors the demographic of the block with a large proportion of scheduled tribes. As with most EBBs and especially those with large tribal populations, poverty levels are high and a majority of the population illiterate. According to the Census 2011, the average literacy rate of the block is only 43.7%, with male literacy rate at 56.6% and female literacy rate a mere 31.45%. Gawar is spread over 4 villages and consists of nine schools and 470 households.

SURVEY FINDINGS

This section shows the findings from the survey related to status of enrolment of children in the 5-17 years age group; number of OOSC in Gawar at the beginning of the academic year 2015-16. It also shows relevant household and school characteristics as well as average teacher attendance rates, as factors which affect student attendance. Finally, it presents average student attendance rates and dropouts based on attendance patterns.

Child Census and Mapping with School Records

From the household survey, it was found that Gawar has 1038 children in the age group 5-17 years. Of these, 860 children were enrolled in school in 2015-16 as reported by the households (including schools outside Gawar). The survey of schools in Gawar then enabled mapping of the children from the household data with the school register data. This allowed us to obtain the final sample of children whose attendance was tracked. The mapping process permitted us to identify children living and studying in Gawar and eliminate those who are enrolled in the sample schools but come from outside the GP as well as those who live in the

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[5] The survey also asked the households details of enrolment in the previous year.
[6] An Educationally Backward Block (EBB) is a block where the level of rural female literacy is less than the national average and the gender gap in literacy rate is above the national average. There are 3479 EBBs in India under the Sarva Shiksha Abhiyan (SSA) and the MHRD is implementing various schemes for EBBs such as Model Schools, construction of Girls Hostels, Kasturba Gandhi Balika Vidyalaya (KGBVs) and provision of incentives such as scholarships, bicycles etc.,.

GP but study outside it. The final sample of children was in this way culled out to include only those children who lived in Gawar and went to government schools only in Gawar. Thus, while 860 children were enrolled in school in 2015-16, 195 children attended either a private school in Gawar or were enrolled in a school outside Gawar. Therefore 675 (860-195) attended one of the nine government schools in Gawar. Of the 675, however, only 609 children were enrolled in elementary education (Classes I-VIII) and hence formed the final sample of children whose attendance was tracked through the year. The number of children not enrolled was therefore calculated as the difference between all children in Gawar (1038) and those enrolled in school (860) i.e. 178, and constituted the OOSC at the beginning of the academic year.

Table 1: Child Census

Status of the children	Numbers of Children (% of total)
Total Number of Children	1038 (100)
Total Enrolled	**860 (82.9)**
Enrolled in government schools (Class I-VIII)	609 (70.8)
Enrolled in government schools (Class IX-XII)	56 (6.6)
Enrolled in private schools or schools outside the Panchayat	195 (22.7)
Total Non-Enrolled	**178 (17.15)**
Never enrolled	47
Dropped out at the beginning of 2015-16	131

Household Characteristics

In addition to conducting a child census, the household survey also collected information on some basic socio-economic characteristics that have been shown in the literature to have an impact on child participation in education. Among these are parents' education levels and employment status, especially of mothers.

The household survey revealed that more than 80 percent of the mothers in the sample have no formal schooling compared with roughly 33 percent of the fathers and only 7 percent had completed primary education compared with 33 percent fathers. The number of fathers or mothers who have completed elementary or higher education is negligible. [Figure 1]. But, do education levels of parents impact attendance rates of children? We explore the links in the regression analysis presented in a later section.

The survey further showed that agriculture and daily wage labour in non-agricultural activities make up the primary occupations for both parents. Mothers however are more likely to be involved in agriculture. Wage labour in agriculture is a negligible source of employment suggesting small land holdings, where people work on their own farms or and therefore have less reliance on outside labour. [Figure 2].
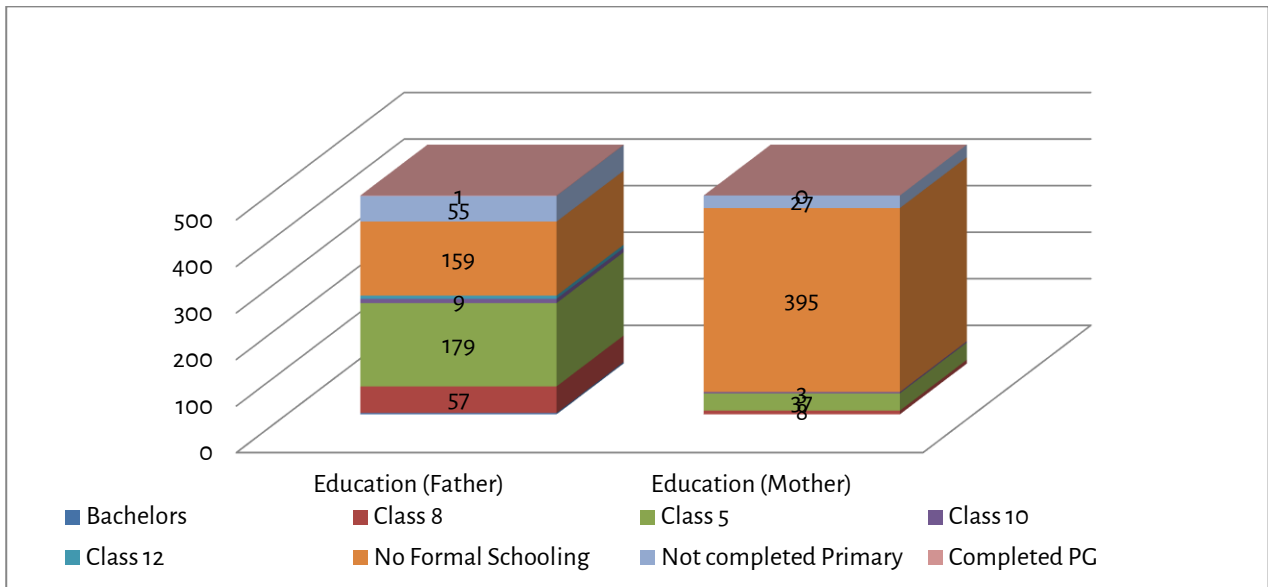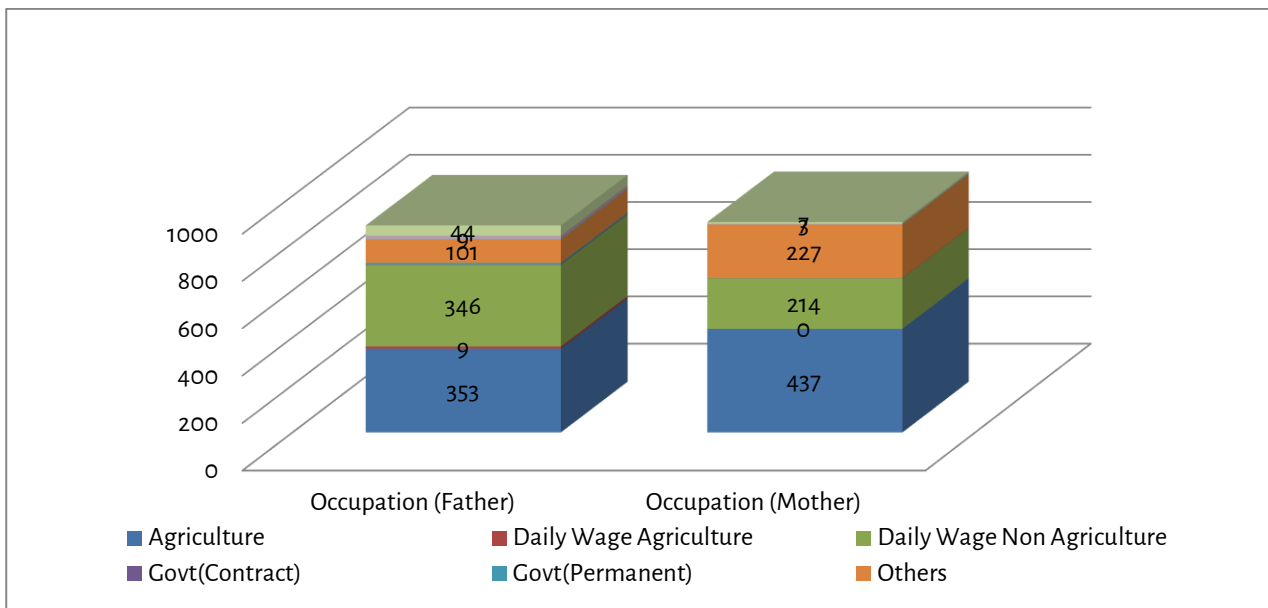
Figure 1: Education levels of Parents

Legend:
- Bachelors
- Class 8
- Class 5
- Class 10
- Class 12
- No Formal Schooling
- Not completed Primary
- Completed PG

Figure 2: Occupations of Parents

Legend:
- Agriculture
- Daily Wage Agriculture
- Daily Wage Non Agriculture
- Govt(Contract)
- Govt(Permanent)
- Others

School Characteristics

In addition to mapping children from the household survey on to school registration records, the survey also collected basic information about the quality of the schools. These included information about infrastructure as well as availability of teachers.

Table 2: Status of Schools

School Facility	% of Sample Schools with availability
Pucca School Building	87
Functional Toilet Seats (Boys)	44.4
Functional Toilet Seats (Girls)	44.4
Electricity (Total)	44.4
Electricity (Official)	33.3
Pucca Boundary Wall	22.2
Classroom access to differently abled	56
MDM provision	100

a) *Infrastructure*:

Table 2 describes the infrastructure facilities in the schools. It points to five main findings: *First,* only 22% of the schools have a pucca boundary wall, while 56% have no boundary all at all. The others have either a partial or pucca but broken wall. *Second,* electricity connections come in various forms – official and unofficial – of which 33% are official and the other unofficial. This means that 56% of schools have no electricity connection at all. And the 11% of the schools that have unofficial electricity essentially "steal" the electricity from a neighbouring household that has an official electricity connection.[7] *Third,* access to classrooms for the disabled is available in only a little over half the schools. *Fourth,* more than half the schools have no functional toilets. Although all schools have a toilet for boys and 89% have a toilet for girls, more than half of these are not functional due to lack of repair or water, which results from lack of coordination with the Water and Sanitation Department. As a result, only 44% of schools have a functional toilet for boys and girls. *Fifth,* clean drinking water is not available in roughly a quarter of the schools. *Sixth,* all schools provide MDM, perhaps as a result of a Supreme Court order for its provision and the meticulous supervision that has followed.

From the description of schools given above, it is clear that infrastructure in schools leaves a lot to be desired and may contribute to poor attendance of children. The situation with teacher availability, especially female teachers, is not too much better, as can be seen from Table 3.

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[7] This is a very common practice in un-authorised constructions all over the country, evidently imitated by government schools as well.

b) *Teacher Availability*

Table 3: Status of Teacher Availability

Name of School	Number of Teachers	Number of Female Teachers
Senior Secondary School Gawar	7	3
Primary School Koliyo ki Bhagal	1	0
Upper Primary School Hathai Ki Bhagal	5	0
Upper Primary School Kila	6	0
Upper Primary School Aret	6	0
Primary School Bid ki Bhagal	2	0
Primary School Jalindra	2	0
Primary School Naya Kheda	1	0
Primary School SujokaLeva	1	0

c) *Distance of School from Cluster*

How far the school is located from the cluster headquarters – the closest administrative unit for education also plays a part in the functioning of the school. For instance, how well (and regularly) it is monitored, how easily teachers are able to attend meetings and trainings etc., are affected by proximity to the cluster. In situations where there is a paucity of teachers, this assumes greater significance, as teachers often have to close the school on the days they have to attend meetings, trainings, or take care of other administrative duties.

Table 4: Distance of School from CRC

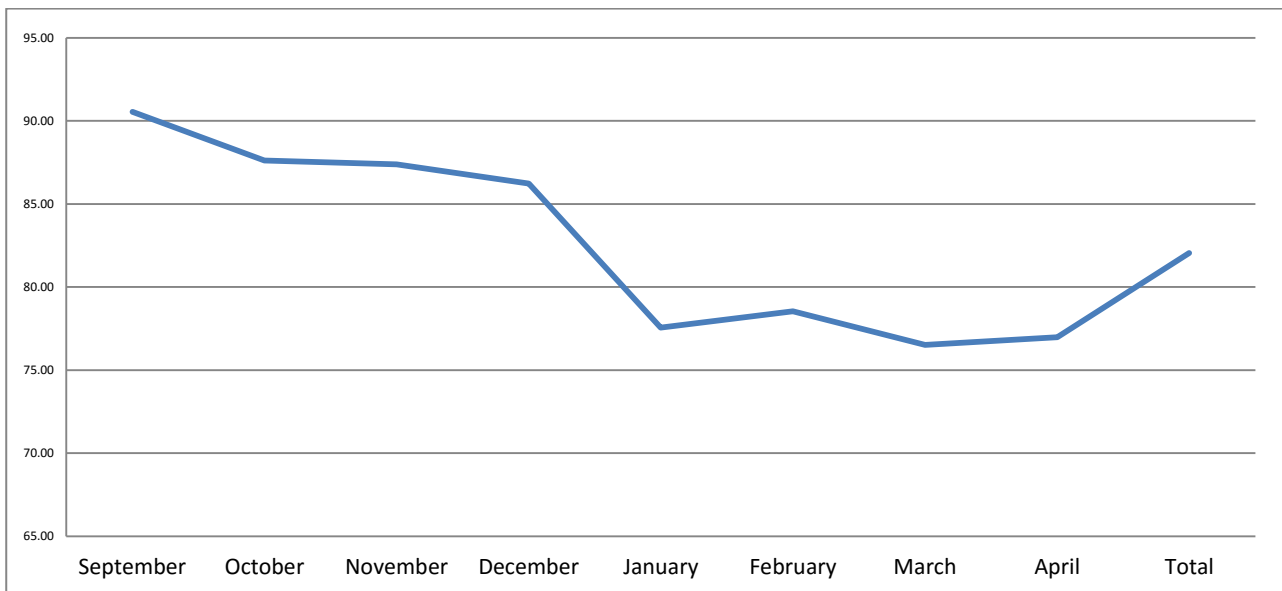| Name of School	Distance of School from CRC Headquarters [kms]
Senior Secondary School Gawar	8
Primary School Koliyo ki Bhagal	9
Upper Primary School Hathai Ki Bhagal	8
Upper Primary School Kila	5
Upper Primary School Aret	7
Primary School Bid ki Bhagal	4
Primary School Jalindra	8
Primary School Naya Kheda	16
Primary School SujokaLeva	10

d) *Grades of schools*

Typically schools going up to higher grades tend to have better infrastructure and deployment of teachers. Hence, this information is also important to analyse children's attendance. For our sample area, we found that five schools have grade V as the highest grade; three schools have grade VIII and one school goes up to grade XI. In other words, 5 schools are Primary Schools [PS], while 4 schools are Upper primary Schools [UPS]

Teacher Attendance

According to a well-publicized World Bank study,[8] teacher absenteeism in India was almost 25% in public schools as studied from a nationally representative sample of government schools. The absenteeism ranged from 15% in Maharashtra to 42% in Jharkhand. The study also concluded that factors like better school infrastructure such as electricity connection, library, and covered classrooms had a positive impact on teacher attendance, while salary levels did not. However, a study by NBER[9] shows that with 23.6 percent of teachers in public schools across rural India being absent during unannounced visits to schools, there was no correlation found between school infrastructure and teacher absence. According to the latter study, increases in the frequency of school inspections were instead strongly correlated with lower teacher absence. In our study it was found however, that teacher absenteeism is not as high as 25%, but does average roughly 18%, despite the fact that school visits by the investigators were unannounced (Figure 3). As we will see in the regression analysis later, this level of absenteeism also has an impact on student attendance.

Figure 3: Average Teacher Attendance Rates

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[8] Teacher's absence in India: A snapshot, (2005-06), Kremer et al
[9] Muralidharan, K. et al, (2014) The Fiscal Cost of Weak Governance: Evidence from teacher absence in India, NBER Working paper Series

Student Attendance

Student attendance rates have been collected by caste and gender across the elementary school going age.

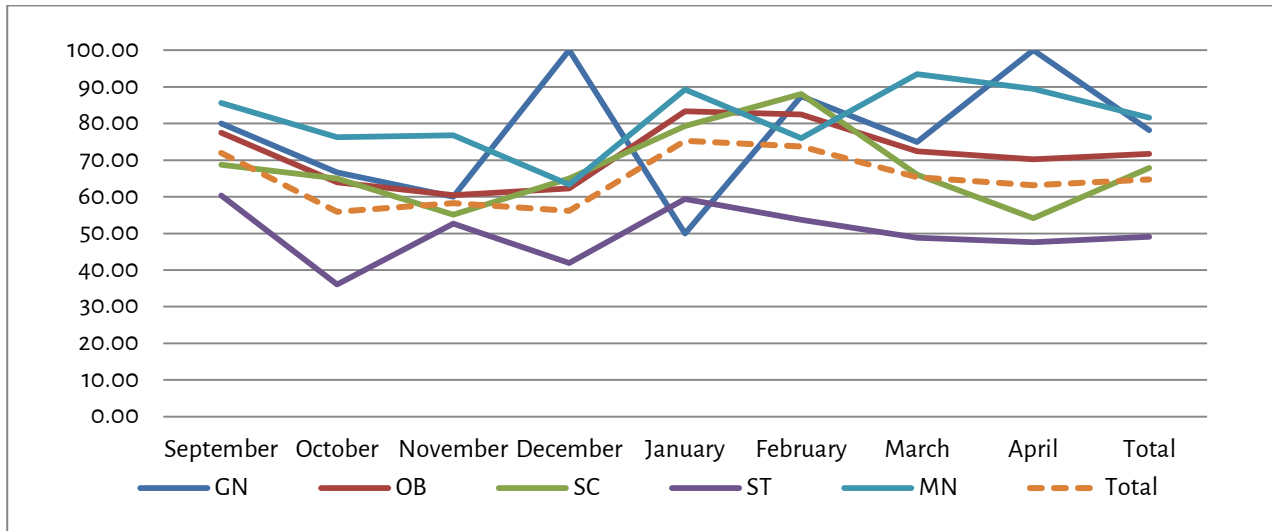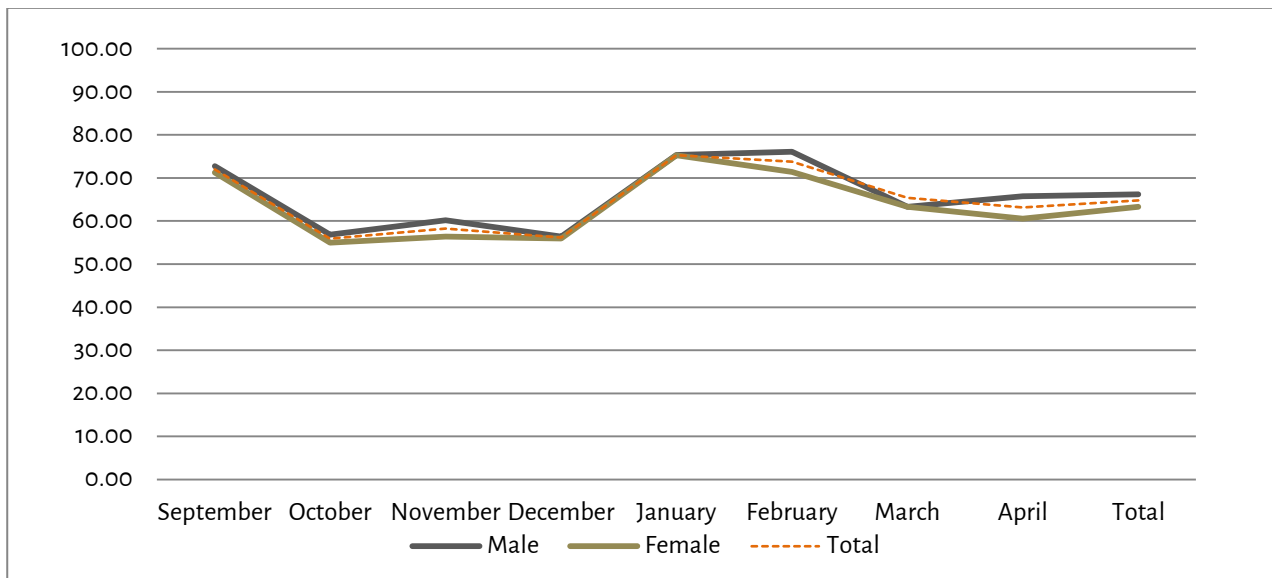*Figure 4: Average Student Attendance Rates by Caste (Headcount)*

Figure 5: Average Student Attendance Rates by Gender (Headcount)

As Figure 4 shows, caste appears to have a significant impact on attendance. First, not only are the average attendance rates of Scheduled Tribe [ST] students the lowest, they are also the most variant over the period; second, the attendance rates of Scheduled Caste [SC] students are second from the bottom, followed by Other Backward Caste [OBC] students; third, Minority [i.e., Muslim] students have the highest average attendance rates; fourth, General [Upper Caste] students have high but variant attendance rates. It must be noted here, that there is only one child in the General category, which may account for the high attendance rates and may not be accurately representative of the caste category. Although this is a limitation of the study, it has been included since the sample is not a selected

sample, but includes all children in the Gawar. Fifth, attendance rates drop in October and in December for more or less all categories of children, but the drop is more severe in the case of SC students and ST students. This is because October is harvesting season and December is sowing season for custard apple – the main fruit crop grown in Kumbhalgarh. While all children are expected to help, SC and ST students are the poorest and are probably the most needed by their families, not only on the fields but also in helping with the marketing of the food.

Education of girls has traditionally not been a priority especially in rural areas and the costs involved have served to act as a further barrier to their education. In addition, the engagement of girls in various household chores such as taking care of siblings has also prevented their regular attendance in school. However, this trend has been changing and motivation levels for girls' education have been steadily climbing up. It is not surprising then that, as shown in Figure 5, attendance rates of Male and Female children are more or less the same, although the former is consistently but marginally higher.

Figure 6: Average Student Attendance by School (Sep-Apr, Headcount)
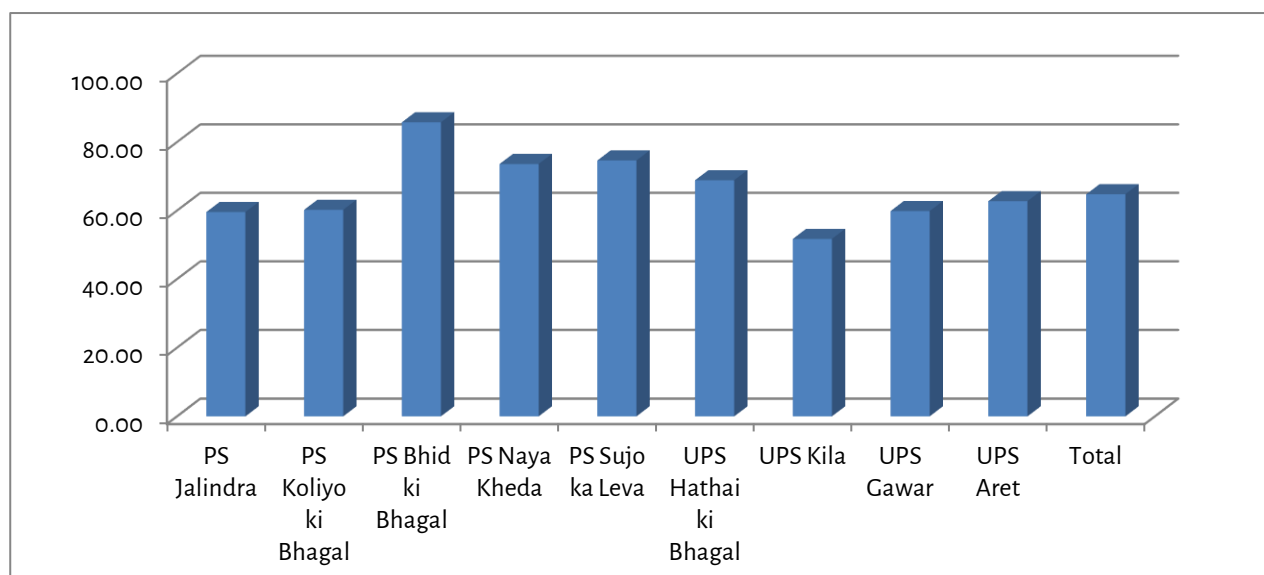
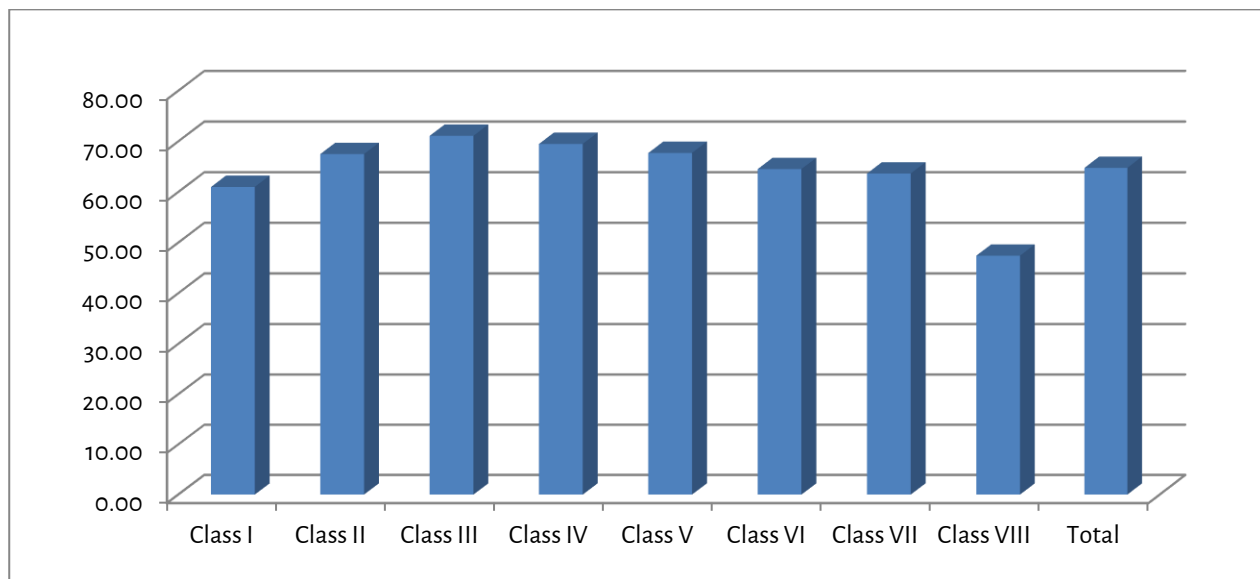*Figure 7: Average Student Attendance Rates by Grade (Sep-Apr, Headcount)*

Figure 6 shows that attendance rates tend to be higher in primary schools than in upper primary schools. Possible reasons include primary schools being closer to children's homes and a lower student-teacher ratio. Figure 7 corresponds with education literature, which has shown that attendance tends to reduce at the upper primary levels, which may be due to pressures to ensure children are in school until at least primary level. The sharp drop in attendance rates in Grade VIII is probably because children are more likely to be needed for work as they grow older.

Dropped-out children: Continuous and Sporadic Absence

Of the 609 children who were being tracked, 317 (52%) children were absent for at least 45 days, irrespective of whether continuous or sporadic absence. Of these, 293 (92%) children were absent for 45 days or more sporadically whereas only 24 (8%) children had continuous absence of 45 days. In other words, a much larger number of children were sporadically absent. Of the 24 who were continuously absent and hence qualified to be struck off the rolls, in accordance with official policy in this regard, only 15 (63%) were identified by the administration and removed from the school registers.

Figure 8: % of students absent for at least 45 days over the academic year 2015-16
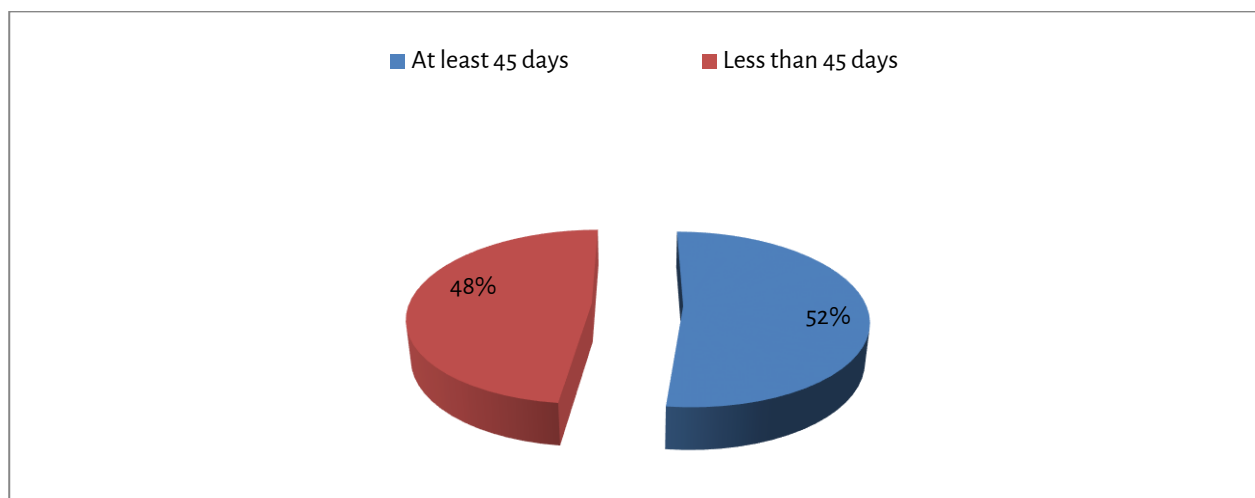

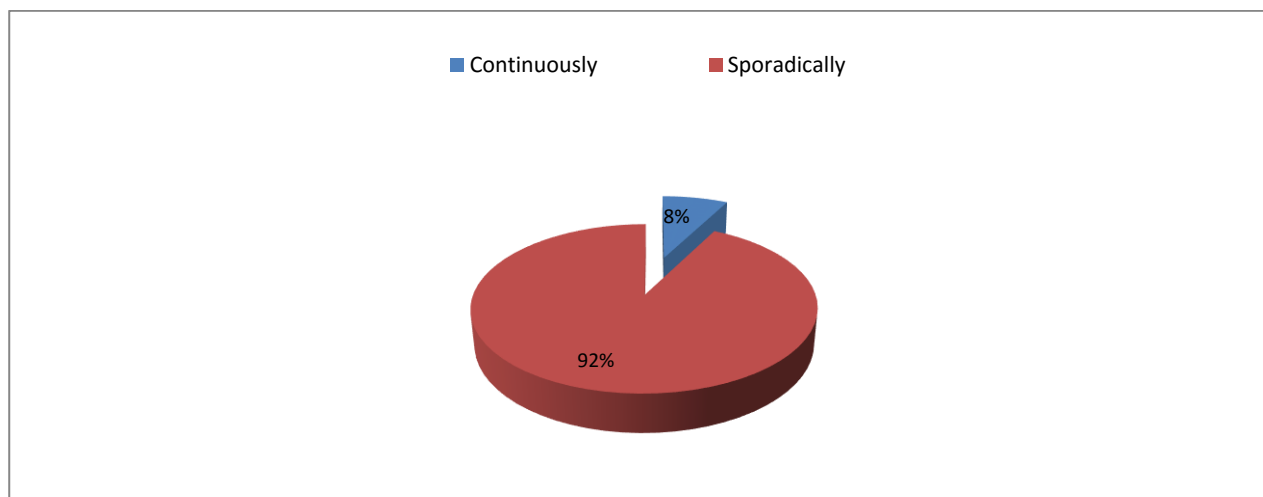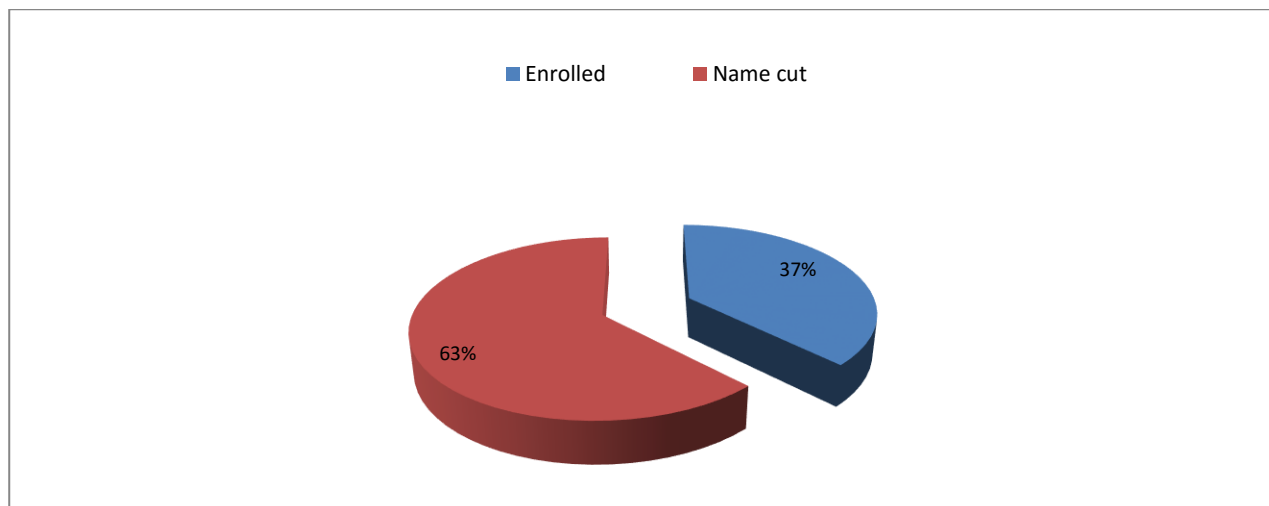*Figure 9: Distribution of absence of at least 45 days*

Figure 10: Enrolment status of students absent for at least 45 days continuously

Further, by questioning the families of the 24 children who were absent for 45 days or more continuously, it was found that 12 of them dropped out because of school related issues such as the school being very far away from the home, corporal punishment, discrimination and, because the child "does not like going to school". The last reason subsumes issues of violence in school as well as poor performance leading to a deep sense of inadequacy and frustration. While this represents only approximately 2 percent of the sample, there are 302 more children who have been absent for 45 days or more over the entire academic year and are considered as dropouts by this study. Given that 50 percent of the children who have been absent for 45 days continuously have done so due to factors related to school functioning, it is plausible that the students who were sporadically absent had similar reasons for staying away. Other factors can only be known through further research.

In brief, the findings revealed the following: (i) Children that are never enrolled constitute an "invisible" category as far as the system is concerned, as they are not recorded in any official document. In other words, the invisibilisation is a result of poor birth registration records as well as the lack of household level data on children; (ii) Irregular or sporadic attendance is a huge phenomenon that is not recorded in the official figures related to dropped out (and thus OOSC). Instead, definitions of dropped out children are based on continuous, rather than sporadic absence; (iii) Various pressures – both societal and administrative – have led to overstating attendance of children in the school records to the detriment of children and their chances of improving their learning levels; iv) The attendance of children varies depending on both household level factors (such as the social group the child belongs to, the education of parents, the employment status of mothers) as well as school level factors (such as infrastructure, availability and regularity of teacher attendance. Further research is required to understand the reasons for why these factors affect attendance, in order to develop strategies for mainstreaming all out of school children. The latter is beyond the scope of this paper.

Although this study has not investigated the reasons of drop-out for children with sporadic attendance, the next section tries to understand the impact of household, school and socio-economic factors on student attendance in order to identify reasons of low attendance and develop possible strategies for improving student attendance. A cross sectional regression analysis is conducted towards this purpose.

REGRESSION ANALYSIS

A cross section multiple regression model has been specified to establish the linkages between student attendance and household characteristics of the student as well as school related factors. The variables related to household characteristics include gender, caste and occupation of parents. The variables related to school factors include

distance of school from cluster, school infrastructure, highest grade in the school[10], grade in which the student is studying, availability of female teachers in school and teacher attendance in school. The regression equation is thus as follows:

$$average\ attendance_i = \beta_0 + \beta_1\ gender_i + \beta_2\ grade_i + \beta_3\ caste_i +$$

$$\beta_4\ occupation\ of\ mother_i + \beta_5\ school\ infrastructure_i + \beta_6\ highest\ class\ in\ school_i +$$

$$\beta_7\ distance\ of\ school\ from\ cluster_i + \beta_8\ availability\ of\ female\ teachers\ in\ school_i +$$

$$\beta_9\ average\ teacher\ attendance_i + u_i$$

where 'i' represents the ith student in the sample.

Hypothese*s*:

- Children belonging to upper castes have higher attendance than those belonging to lower castes and religious minorities. This may be because there tends to be a convergence of caste and class with lower caste belonging to low-income families, because of which there is higher need and dependency on children for help in income generation. Minority, OBC and SCs appear in regression equation as dummies, where D =1 if the ith student belongs in either of the categories- and 0 if the ith student is ST. Since the average attendance of ST children as a group is lowest, ST is used as a benchmark category.

- Males have higher attendance than females due to the gender bias prevalent in rural India, particularly in an EBB, where girls are often required to stay at home for responsibilities such as domestic chores of cooking, cleaning, taking care of younger siblings, and cattle grazing. Gender appears in the regression equation as a dummy variable, where D =1 if the ith student is a male and D=0 if i[th] student is a female.

- The state of school infrastructure – in particular, type of school building, condition of boundary wall, availability of electricity, availability of functional toilet seats for boys and availability of functional toilet seats for girls – has a positive impact on student attendance. An index, that has a range of 0 to 5, has been constructed for representing the status of school infrastructure, since correlation between the variables is high. Variables such as school boundary wall, type of school building and availability of electricity in school are qualitative variables. The last is also considered as a qualitative variable because a school might have no access to electricity, unofficial access to electricity or official access to electricity. The observation has been assigned value' 1' if school has any boundary, be it pucca, partial or pucca but broken and '0' if the school has *no boundary* at all. Similarly, for school building the observation has been assigned number '1' if school building is pucca and '0' if otherwise. Likewise, the observation takes the value '1' if the school has '*official access*' to electricity and '0' if not. The index indicating school infrastructure has been formed by summation of the five mentioned variables. Since, number '1' indicates better condition of any of the infrastructure variables and '0' indicates otherwise, the highest number that can be assigned to an observation is '5' with

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[10] Although the sample schools include schools going up to Grade XI and XII, attendance of children children in grades above Grade VIII are not included in the sample.

lowest being '0'. The grouping considers the distribution of categories for each variable as well as facilitates the comparison between different categories and makes computation easy. Thus, if the school offers a more conducive environment in the form of better infrastructure to its students, the student might be more willing to attend the school regularly.

- Distance of school from cluster[11] has a negative impact on student attendance since far off schools tend to have fewer resources difficulty in accessing information, fewer visits by monitoring officials and may also be located in hilly and difficult terrain making it difficult for children to come to school easily. In the regression, distance of school from cluster appears as regressor to measure distance from school.

- Children in schools, which have Grade XI as the highest grade, are more likely to have higher attendance than children in schools, which have Grade VIII or Grade V. This is because a school going up to a higher grade is likely to be more developed, in terms of teacher availability and physical infrastructure as compared to a school that goes up to a lower grade. Highest grades being 'fifth' and 'eighth' are used as dummies, where $D = 1$ if the ith student belongs to a school where the highest grade is 'fifth' or 'eighth' and $D=0$ i^{th} student belong to a school where the highest grade is 'eleventh'.

- Attendance of children in primary grades is higher than in upper primary because as a child enters his/her teens, there is greater pressure from the household to a) enter the labour market, b) assist in domestic chores and/or c) enter into early marriage in the case of girls.

- In the regression, Grade is used as a dummy variable, where $D = 1$ if the ith observation student belongs to primary classes and $D=0$ if i^{th} student belongs to upper primary grades.

- Children whose parents are employed in white-collar jobs in the government or private sector have higher attendance than those whose parents are employed as daily wage-workers or in self-employed occupations. This is particularly due to job security and higher wages in white collar jobs. In the model, mothers employed in agriculture and those working as daily wagers in non-agricultural activities appear as dummies, where $D=1$, if mother of ith student is engaged in agriculture or works as a non-agriculture daily wager and 0, if mothers are self-employed, or work in private or government jobs.

- Availability of female teachers has a positive impact on student attendance. This is particularly true for female students. In the current study, 50 percent of children in the sample are girls, whose attendance might depend on availability of female teachers. Availability of female teachers appears as a dummy, where $D = 1$ if the ith student goes to school where female teachers are available and 0 otherwise.

- Teacher attendance has a positive impact on student attendance. Regular attendance of teachers is a crucial factor in motivation levels and monitoring of children and has been shown to have significant impact on quality of learning. Moreover, if students go to school without teachers being present, parents often remove the child from school.

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[11] A cluster is an administrative unit smaller than a block with the aim of increasing administrative control, including provision of resources and academic support.

REGRESSION RESULTS

Table 5: Factors affecting Student Attendance: OLS regressions

	Model-1	Model-2
Minority	30.42*** (4.55)	31.56*** (4.4)
OBC	22.33*** (1.99)	21.95*** (1.91)
SC	19.36*** (3.09)	18.83*** (3.07)
Gender (Male=1)	4.37*** (1.49)	4.37*** (1.48)
Infrastructure Index	2.61*** (0.72)	
distance from cluster	-0.80** (0.39)	-1.41*** (0.37)
highest grade in school is V	10.26*** (3.58)	
highest grade in school is VIII	5.21** (2.47)	
grade (primary=1)	6.28*** (1.78)	7.06*** (1.64)
mother occupation in agriculture	9.54*** (3.54)	8.64** (3.54)
mother occupation is agriculture and as daily wager in non-agriculture	10.21*** (3.56)	8.47** (3.56)
availability of female teachers in school	-6.13*** (2.12)	-5.90*** (1.66)
teacher attendance		0.53*** (0.13)
Constant	26.42 (5.56)	-0.85 (10.23)
R bar sq	0.30	0.30
Observations	607	607

Figures given in the parentheses are standard errors

   ***significant at 1%

   **significant at 5%

The first column in Table- 5 contains the nine independent variables i.e. caste, gender, grade in which child is studying, mother's occupation, school infrastructure, distance of school from cluster, highest grade in school, availability of female teacher and attendance of teachers in the school.

The coefficients on the Minority, OBC and SC variable are statistically significant at one per cent level. This indicates that the attendance of Minority, OBC, SC students is significantly higher than that of ST students. Further, of the three i.e. Minority, OBC and SC, the coefficient of Minority is the highest, followed by OBC and then SC. This is perhaps a slightly counter-intuitive result with regard to the Minorities having a higher attendance than the OBCs.

As expected, the attendance of male students is significantly higher than their female counterparts at 1% significance level.

The coefficient on primary grade is positive and significant. This suggests that average attendance is significantly higher for students in primary grades compared to upper primary grades, also as expected.

The coefficients on mother's employment as agricultural and non-agricultural daily wager, which appear as occupation of mothers in the regression are positive and significant. This indicates that attendance of children is higher if mothers are involved in agriculture, or if they are daily wage earners in non-agricultural activities, when compared with other occupations. This may seem counter-intuitive, but could be because mothers from low-income households tend to put more stress on education of their children since they recognize its importance for social mobility and as a route out of poverty. Land holdings and other avenues for livelihood being less available to children of such backgrounds, education assumes greater priority. However, since a majority of the mothers in the sample are engaged in either agriculture or are non-agriculture daily wagers, there might also be a large-sample size effect skewing the result. The occupation of fathers, on the other hand, has no significant impact on child attendance.

School infrastructure has a significant positive impact on the average attendance of students, though its coefficient suggests that its role is small when compared with the individual characteristics such as caste and gender. This is not surprising.

Distance has a significant negative effect on student attendance, as expected. Distance of the school from the cluster has a significant negative effect on student attendance. This may be due to a variety of reasons including less frequent

visits by monitoring officials to schools, particularly CRCs who provide academic support. Distance from the cluster can also result in fewer hours of school functioning due to teachers having to attend frequent meetings at the cluster offices. Further, although this aspect has not been explored, it may also be the case that schools far away from the cluster are also far away from students' habitation, making it difficult for children to regularly attend school.

Further, the results indicate that average attendance is significantly higher in schools with highest grade as V, followed by VIII, rather than XI. In the sample, 66% of children are in classes up to fifth, while all the children are in classes up to eighth. Therefore, whether higher classes are being taught at school or not might have no bearing on student attendance in this case.

It has been acknowledged that availability of female teachers has a positive implication on child attendance. However, the results show the reverse. The results suggest that students tend to be more irregular in schools where female teachers are available. One reason behind it might be the scarce availability of female teachers since schools in Kumbhalgarh are situated in remote and hilly locations where female teachers tend not to be posted. At the secondary level, the percentage of women teachers across the state is only 19% (UDISE 2011–12). In our sample of nine schools, there were only 3 female teachers.

The second column of Table 5 comprises of caste, gender, grade in which the student is studying, mother's occupation of students and school variables- distance from cluster, female teacher availability and teacher attendance. Variables in the infrastructure index and highest grade in school have not been considered in this model due to their high correlation with teacher attendance. The results show that average teacher attendance has a positive significant impact on average student attendance.

Although approximately 21 percent of households reported migration as a phenomenon in their households, migration does not have a statistically significant impact on student attendance. This is due to the fact that only in one of these households who experience migration, do the school-going children also migrate. In the rest of the migrating households, the children stay behind in the care of non-migrating family members. Similarly, parents' education levels have no effect on student attendance, perhaps due to the fact that a large proportion of them have no formal schooling. Variance inflation factor measurement has been used for checking multi-collinearity[12]. The regression results do not change with application of robust standard errors.[13]

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[12] Variance Inflation Factor measurement was used to check multi-collinearity among variables to test if correlation between variables is an issue. The test is applied to examine if correlation between the variables is high enough to inflate their variance such that the variables are rendered insignificant. It is observed that there is no such issue in the analysis.

[13] In our analysis, application of hetroskedasticity robust standard errors do not change our results, indicating heteroskedasticity is not an issue. Heteroskedasticity occurs when variance of the error term changes across different segments of population, where these segments are determined by different values of explanatory variables. Presence of heteroskedasticity hinders hypothesis testing in linear regression.

CONCLUSIONS

There are several policy implications of the survey and analysis, not the least of which is a better data regime, that accounts for OOSC in a more robust as well as realistic manner, taking into account sporadic absence as well as the invisible children.

The study also suggests that targeted interventions for lower caste groups and religious minorities, as well as female students, are needed in order to improve their attendance levels. As possible reasons for low attendance amongst these social groups relate to low income levels and the consequent need for child labour, a case is made a) for incentives to families to free the children from labour; and b) for adjusting the school calendar to align it with the agricultural cycle permitting children who help their families in peak agricultural season to contribute to the family income without disrupting their education.

Since all the school variables considered showed significant results, it is clear that the focus of policy must be on improving the condition and quality of schools. For instance, even though infrastructure is often considered as being in place, this case study shows that not only does it leave a lot to be desired, but it also has a significant impact on attendance and therefore on learning outcomes. The other factor that emerged strongly is teacher attendance. Even at 18% absenteeism, it has an impact on child attendance, especially in single or double teacher schools, which are the majority in our sample. Clearly, the constant presence of one or more teachers is required to elicit student participation.

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