

An obstacle in policymaking and evidence-based planning for enhancing education access to girls-A Comprehensive Analysis of Astonishing School Enrollment Case in Sindh-Pakistan

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ABSTRACT

This Paper has been written in the above context to critically evaluate the Sindh school education enrollment data as a case study in details and suggests recommendation for improvement in data collections system particularly for policy planners in the greater public interest. It is scientific scrutiny of the data and valid for the researchers, decision-makers, development partners including donors and general readers as food for thought and net addition in the available literature on enrollment in the public sector schools.

Keywords: Astonishing Data, Annual School Census (ASC), Sindh Education Management Information System (SEMIS) School Enrollments, Statistical Errors, Sustainable Policy, Data Anomalies.

INTRODUCTION

Sindh Education Management Information System (SEMIS) is collecting the school's enrollment census data annually since 1991. The annual census provides information about public sector schools running under School Education and Literacy Department (SELD) in three major areas; (i) Enrollment (ii) Human Resource information. (iii) Physical Infrastructure. A typical census form carries 240 fields (30 Questions). The core indicators from the aforementioned three areas are (1) Number of Rooms indicator from physical infrastructure, (2) Enrollment and (3) number of Teachers indicator from Human Resource information area. The researcher is

convinced that the study “Why policies and practices adopted to enhance girls education in Sindh have not seen fruition” will be a breakthrough in gender disparity as previous studies. “Statistical data regarding various sectors plays a pivotal role in the socio-economic development of a country as the resource allocations are always based on this. Unfortunately, in Pakistan, national figures are usually doubtful and a source of confusion...It is interesting to note that all sources contradict each other. The ‘Economic Surveys’ and ‘Education Policies’ which are considered to be the most authentic government documents, both differ from each other.” [1].

National Education Policy (NEP) 2017 reveals that “Pre-primary education (3 – 4+ year age group) net enrollment rate (NER) in Pakistan is assumed to be around 36%, however, no data about NER at early childhood education (ECE) level is available” [2]. On the other hand, there is a huge disconnect between Pakistan’s socio-economic indicators and growth, observed, “Pakistan has had respectable per capita growth over 1950-1999, intensive involvement by donors and international agencies (\$58 billion in foreign aid)”, despite considerable economic growth, country underperformed on the social indicators, like “...Infant mortality and female primary and secondary enrollment are among the worst in the world in Pakistan.” furthermore, he stated “Pakistan is also more corrupt, more politically unstable and violent, less respectful of human rights, and less democratic than the benchmark for its level of income” therefore, he quoted “growth without development” [3].

It is important to mention that this paper is based on the PhD Proposal of the lead author [4].

OBJECTIVES

The reliable, updated and accurate data helps in planning and budgeting. The (SEMIS) data is also used by development partners to design interventions and programs. The purpose of this attempt is to present an analysis of extreme cases where fluctuations, variations, and patterns points to inconsistent data reporting anomalies. It is expected that this study will contribute to setting new benchmarks for the data verification process in the Annual School Census (ASC), exercise.

The specific objectives of the study were to:

- I. An evaluation of the Sindh school education enrollment data.
- II. Assess the details of data in public interest.
- III. Examine different aspects of data, its bottlenecks and feasible recommendations for producing quality data for sustainable policy and evidence based planning.

RESEARCH QUESTIONS

The study was guided by the following questions:

- I. How have Sindh Education Management Information’s system collected data for planning?
- II. What is the quality of the data provided by institutions of the province?
- III. What is its impact on policy making and evidence-based planning for enhancing education access to all particularly on girls.

METHODOLOGY& DATA

The study sorted biased and unbiased statically errors in the data in the school education system of Pakistan and findings of the study can be used by the policymakers to improve the data collection and managing it in decent manners. The author’s experiences are incorporated at large. The qualitative and quantitative strategy has been adopted to identify the relevant issue in Sindh School’s education system in public interest and in systemically order.

DISCUSSION AND RESULTS

A. Extreme Enrollment Cases: it is based on thorough data analysis techniques, the following cases are identified using standard data query techniques. In the first case, the same enrollment reported in both years which is less possible. The first criteria identify schools that are reporting exactly the same enrollment numbers class-wise in annual school census (ASCs). There are 374 such schools having 31,012 enrollments. Further discussion on such schools are observed in following sections of the report as mentioned in

Table -01

Year	K	C 1	C 2	C 3	C 4	C 5	C 6	C 7	C 8	C 9	C 10	C 11	C 12	Total
01	200	100	95	90	85	80	75	70	65	60	55	50	45	1070
02	200	100	95	90	85	80	75	70	65	60	55	50	45	1070
Diff. %	0	0	0	0	0	0	0	0	0	0	0	0	0	0

K=Kachi Class, C=Class, Year 01=Previous Year (2012-13), Year 02=Current Year (2013-14)

B. Fluctuated enrollment case: In Criteria, for case 'B' the schools reported current academic year's enrollment in annual school census (ASC). The current enrollment sometimes is higher or lower than the previous year depending on factors such as intake in grades, dropped out children and promotion to the next grade. Under this criterion, schools are identified which are outliers in terms of significant fluctuations in two academic years which is also not properly justified in our analysis of the data as mentioned in table 02.

Table -02

Year	K	C 1	C 2	C 3	C 4	C 5	C 6	C 7	C 8	C 9	C 10	C 11	C 12	Total
01	200	100	95	90	85	800	75	70	65	60	55	50	45	1790
02	100	0	95	90	85	80	75	70	65	60	55	50	45	870
Diff. %	NA	NA	NA	-69										

K=Kachi Class, C=Class, Year 01=Previous Year (2012-13), Year 02=Current Year (2013-14), NA=Not Applicable

C. Fluctuated Enrollment of a specific class: In the analysis of case 'C' in detail, other criteria used are high enrollment grades within the school. Under this criterion for case "C" the school's enrollment of Year 02 (ASC 2013-14) is more than 50 and enrollment of specific class enrollment is more than or equal to 50% as resulted in table 03 which is also less possible in the field.

Table-3

Year	K	C 1	C 2	C 3	C 4	C 5	C 6	C 7	C 8	C 9	C 10	C 11	C 12	Total
01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
02	10	10	10	10	100	10	0	0	0	0	0	0	0	150
Enrol. % of Specific Class	6.6	6.6	6.6	6.6	66.67	6.6	0	0	0	0	0	0	0	100

K=Kachi Class, C=Class, Year 01=Previous Year (2012-13), Year 02=Current Year (2013-14), NA=Not Applicable

D. High dropout and unrealistic promotion rates: The promotion rates of two academic years are analyzed. The assumption is that promotion from grade x to grade x+1 must have some consistency. For example, it seems unlikely that a cohort of 200 pupils in class-I would increase to 400 pupils in class-II in the next academic year. An illustration is provided below. Schools enrollment of Year 2 (Annual School Census 2013-14) is more than 200 and Students promoted from class-I (year 01) to I+1 (Year 02) are Less than and equal to 25%, OR more than or equal to 200% (excluding campus Schools and entrance classes i.e Kachi, Class 1, 6, 9 and 11), see below example in table 04 which also reflects an astonishing case of enrollment in the schools' data.

Table-04

Year	K	C 1	C 2	C 3	C 4	C 5	C 6	C 7	C 8	C 9	C 10	C 11	C 12	Total
01	200	200	95	90	85	80	75	80	65	60	55	50	45	1070
02	200	175	400	125	90	85	60	65	20	40	45	30	30	1265
Promotion Rate	NA	NA	200	132	100	100	NA	87	25	NA	75	NA	60	118

E. Astonishing Enrollment Cases Result and others Anomalies in the districts: The first criterion identifies schools that are reporting exactly the same enrollment numbers class-wise. suspicious enrollment was observed in 374 schools (0.8%) and top one district was Tharparkar therein 31 schools class wise enrollment reported exactly the same as reported in the previous year which is not reliable data as resulted below and it proved the case of astonishing enrollment case in Sindh province schools which affects largely on policy planning and access to quality education for all because of satirical errors in the data.

Table -05

S.No	District Name	# of Schools	S.No	District Name	# of Schools
1	Tharparkar	31	16	Ghotki	11
2	Kashmore	25	17	Badin	9
3	Sujawal	25	18	Larkana	9
4	Khairpur Mirs	24	19	Mitiari	9
5	Thatta	23	20	South Karachi	9
6	Dadu	21	21	Sukkur	9
7	Umerkot	21	22	Tando Allah Yar	6
8	Sanghar	20	23	Hyderabad	5
9	Mirpur Khas	19	24	Korangi Karachi	4
10	Tando Muhammad Khan	16	25	Shikarpur	4
11	Jacobabad	15	26	East Karachi	3
12	Kambar-Shahdadkot	14	27	Malir Karachi	3
13	Jamshoro	13	28	West Karachi	2
14	Naushero Feroze	12	29	Shaheed Benazirabad	1
15	Central Karachi	11	Total		374

F. Anomalies in case B: Schools enrollment of Year 2 (ASC 2013-14) is more than 50 and the difference between year 1 and Year 2 enrollment is more than 150% or Less than -50% (excluding campus schools).The highly fluctuated enrollment reported in 468 (1%) schools, where the top schools are mentioned below and the top district was Dadu, where 60 schools found in a highly fluctuated category and these fluctuations and astonishing create obstacles in

policy planning in Sindh Pakistan and harmful for real gender enrollments data in long term planning for women’s literacy and empowerments in Sindh Pakistan. For more details see table 06, 07 and 08 given below.

Table -06
District Sujawal, 404070067 GGPS HUSSAIN DAL @ GOOGANI YOON
(-137% fluctuation observed)

ASC Year	Kachi	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Boys Enrollment	Girls Enrollment	Total Enrollment
Year 01	16	132	102	86	140	47	0	0	0	0	0	0	0	0	523	523
Year 02	0	23	16	21	15	22	0	0	0	0	0	0	0	0	97	97

Table -07
District Badin, 401040305 GBPS ALI MUHAMMAD KHANGHAR@MINRO KOLHI
(186% fluctuation observed)

ASC Year	Kachi	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Boys Enrollment	Girls Enrollment	Total Enrollment
Year 01	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
Year 02	12	25	20	0	0	0	0	0	0	0	0	0	0	41	16	57

Table-08
‘Case B - Categories of Highly Fluctuated Enrollment’

Fluctuated Enrollment Category	Number of Schools
For all schools reported in year two having more than 50 enrollment and not declared as campus school and Enrollment difference between year 1 and Year 2 is more than 150% or Less than -50%	468
For all schools reported in year two having less than or equal to 50 enrollment and difference between year 1 and Year 2 is more than 150% or Less than -50%	5,204
Enrollment difference between year 1 and Year 2 is between 101% to 150% or Between -26% to -50%	4,246
Enrollment difference between year 1 and Year 2 is between 51 % to 100% or Between -16% to -25%	4,634
Enrollment difference between year 1 and Year 2 is between 26% to 50% or Between -6% to -15%	8,444
Remaining Schools	23728

Total Schools 46,724

Table 09 - District wise summary of case B Fluctuated enrollment

S.No	District Name	# of Schools	S.No	District Name	# of Schools
1	Dadu	60	16	Naushero Feroze	11
2	Jacobabad	49	17	Jamshoro	10
3	Kambar-Shahdaddkot	46	18	East Karachi	9
4	Tharparkar	31	19	Ghotki	8
5	Kashmore	26	20	Shaheed Benazirabad	8
6	Korangi Karachi	24	21	Tando Muhammad Khan	7
7	Badin	23	22	Larkana	7
8	Sujawal	19	23	Umerkot	6
9	Sanghar	17	24	Hyderabad	6
10	West Karachi	16	25	Mirpur Khas	5
11	Thatta	14	26	Tando Allah Yar	5
12	South Karachi	14	27	Shikarpur	5
13	Khairpur Mirs	13	28	SUKKUR	3
14	Central Karachi	12	29	Mitiani	2
15	Malir Karachi	12	Total		468

G. Anomalies analysis in case C: Enrollment of a specific class is more than or equal to the 50% of overall enrollment was observed in 1,696 (3.6%) schools, in other words, it was high fluctuation in enrollment of a particular class. Moreover in primary classes high fluctuated enrollment found in a school located in Jacobabad, similarly, the high fluctuated enrollment is observed in the post-primary school located in Karachi Gadap Town. It is evident that district Naushero Feroze is the top one district where 165 schools reported with high fluctuation in a particular class. For detail see table 10,11and 12 given below.

Table-10 .District Jacobabad, 412020266 GGPS QADIR PUR - II (CMS)

Kachi	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Boys Enrollment	Girls Enrollment	Total Enrollment
331	40	36	23	18	9	0	0	0	0	0	0	0	0	457	457

Table-11.Malir Karachi (Gadap Town) 408180466 GBHSS HIGHER SECONDARY SCHOOL

Kachi	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Boys Enrollment	Girls Enrollment	Total Enrollment
0	0	0	0	0	0	7	7	5	65	135	115	349	465	218	683

Table-12: District wise summary from Case C: Fluctuate Enrollment of a specific class (Any class enrollment is more than or equal to 50% of overall enrollment)

S.No	District Name	# of Schools	S.No	District Name	# of Schools
1	Naushero Feroze	165	16	Shikarpur	41
2	Shaheed Benazirabad	129	17	SUKKUR	36
3	Dadu	117	18	Hyderabad	34
4	Khairpur Mirs	115	19	Malir Karachi	32
5	Jacobabad	114	20	Larkana	23
6	Badin	113	21	Tando Muhammad Khan	20
7	Ghotki	96	22	South Karachi	18
8	Sujawal	90	23	Jamshoro	18
9	Sanghar	89	24	Mitiari	15
10	Kambar-Shahdadkot	81	25	West Karachi	11
11	Tharparkar	81	26	Kashmore	10
12	Thatta	76	27	Central Karachi	8
13	Mirpur Khas	56	28	Korangi Karachi	6
14	Umerkot	50	29	East Karachi	5
15	Tando Allah Yar	47	Total		1,696

H. Anomalies Analysis in case D: Schools enrollment of Year 2 (ASC 2013-14) is more than 200 and Students promoted from class-I (year 01) to I+1 (Year 02) are less than and equal to 25% OR more than or equal to 200% (excluding campus Schools and entrance classes i.e Kachi, Class 1, 6, 9 and 11), This is very tricky formula (detail is given 3.4 heading) the School in District Ghotki, GBPS IRRIGATION COLONY (SEMIS ID 419010214), in ASC 2012-13 Class 1 total 90 students enrolled and the ASC 2013-14 in Class 2 total 211 (Promotion rate is 234%), the similar unrealistic promotion rates and high dropout is observed in 182 (0.4%). Schools and the top district was Naushero Feroze where 25 schools have high fluctuation in promotion or dropout rates. For detail see table 13.

Table 13- District wise summary from Case D: High dropout and unrealistic promotion rates

S.No	District Name	# of Schools	S.No	District Name	# of Schools
1	Naushero Feroze	25	16	Umerkot	4
2	Shaheed Benazirabad	20	17	Sukkur	3
3	Dadu	19	18	Larkana	3
4	Khairpur Mirs	18	19	Malir Karachi	3
5	Jacobabad	13	20	Hyderabad	3
6	Badin	9	21	Tando Muhammad Khan	3
7	Ghotki	8	22	Jamshoro	2
8	Sujawal	7	23	South Karachi	2
9	Kambar-Shahdadkot	6	24	Mitiani	2
10	Sanghar	6	25	Kashmore	1
11	Tharparkar	5	26	West Karachi	1
12	Thatta	5	27	Central Karachi	1
13	Mirpur Khas	5	28	Korangi Karachi	0
14	Shikarpur	4	29	East Karachi	0
15	Tando Allah Yar	4	Total		182

I. Anomalies analysis in case E: It is evident that 3,652 (7.8%) schools found too low and too high students and teachers ratio (STR) and the top one is Shaheed Benazirabad where 384 Schools observed with too low or too high STR For detail see table 14 below and 15.

Table -14

Category	# of Schools
Student Teacher Ratio (STR) Too High	3,163
Student Teacher Ratio (STR) Too low	489
Total	
3,652	

Table 15- District wise summary from Case E: Student Teacher Ratio (STR) too low OR too high

S.No	District Name	# of Schools	S.No	District Name	# of Schools
1	Shaheed Benazirabad	384	16	Korangi Karachi	93
2	Ghotki	291	17	Larkana	92
3	Dadu	272	18	Jamshoro	92
4	Khairpur Mirs	267	19	Umerkot	81
5	South Karachi	217	20	SUKKUR	70
6	Naushero Feroze	207	21	East Karachi	65
7	Sujawal	187	22	Hyderabad	64
8	Badin	184	23	Shikarpur	53
9	Jacobabad	159	24	Kashmore	49
10	Tharparkar	144	25	Tando Allah Yar	42
11	Sanghar	117	26	Mitiari	35
12	Mirpur Khas	106	27	Tando Muhammad Khan	33
13	West Karachi	105	28	Central Karachi	27
14	Kambar-Shahdadkot	102	29	Malir Karachi	16
15	Thatta	98	Total		3,652

J. Anomalies Analysis in Case F: It is also observed that 3,649 (7.8%) schools found too low and too high School Class Ratio (SCR) and the top one Dadu where 350 Schools observed with too low or too high school class ratio (SCR) For detail see table 16 given below in district wise summary.

Table 16

S.No	District Name	# of Schools	S.No	District Name	# of Schools
1	Dadu	350	16	Sukkur	96
2	Kambar-Shahdadkot	322	17	Umerkot	85
3	Khairpur Mirs	273	18	Thatta	83
4	Jacobabad	265	19	Hyderabad	80
5	Larkana	198	20	Tando Allah Yar	61
6	Ghotki	195	21	Central Karachi	59
7	Shaheed Benazirabad	184	22	Mitiari	49
8	Naushero Feroze	179	23	Jamshoro	47
9	Sanghar	157	24	Tando Muhammad Khan	44
10	Badin	145	25	Malir Karachi	40
11	Kashmore	142	26	South Karachi	37
12	Tharparkar	140	27	Korangi Karachi	36
13	Shikarpur	120	28	West Karachi	26
14	Mirpur Khas	115	29	East Karachi	17
15	Sujawal	104	Total		3,649

K. Anomalies Analysis in case G: It is observed that between 1 to 10 students reported as per criteria 377 (0.8%) found low enrollment and district Umerkot is top one where 58 Schools reported with low enrollment. For detail see table 17 which shows District wise summary from Case G: School has too low enrollment.

Table-17

S.No	District Name	# of Schools	S.No	District Name	# of Schools
1	Umerkot	58	16	Naushero Feroze	6
2	Thatta	32	17	Sukkur	6
3	Sujawal	29	18	Shikarpur	4
4	Khairpur Mirs	28	19	Hyderabad	4
5	Badin	26	20	Tando Allah Yar	4
6	Tharparkar	24	21	Jamshoro	4
7	Malir Karachi	24	22	Dadu	3
8	Sanghar	21	23	Kambar-Shahdadkot	3
9	Mirpur Khas	20	24	Jacobabad	3
10	Central Karachi	20	25	Korangi Karachi	3
11	South Karachi	15	26	East Karachi	2
12	Mitiari	11	27	Larkana	1
13	Ghotki	10	28	Kashmore	1
14	Shaheed Benazirabad	7	29	West Karachi	1
15	Tando Muhammad Khan	7	Total		377

L. All Cases Result: The individual cases calculation showing total Schools are 10,398, but Combining all Schools selected through Astonishing Enrollment cases labeled from A to G and removing the duplication, only 7,974 schools filtered which is 17% of overall schools reported in Sindh (Total 46,724). District Dadu was the top one where the total 679 Schools found in the anomalies. The enrollment figure of those 7974 schools was observer 1,409,345 which is 34.5% of overall enrollment (4,085,415), for detail see table 18,19 and 20.

Table 18 - Combining all Schools selected through Astonishing Enrollment

Case A Schools	Case B Schools	Case C Schools	Case D Schools	Case E Schools	Case F Schools	Case G Schools	Total Schools
374	468	1696	182	3652	3649	377	10398

Table 19- Combining all Schools selected through Astonishing Enrollment

Category of School	# of Schools
Unique Schools (Case A 292+B 333+C 1157+D 63+E 1942+F 1970 +G 174)	5,931
Any two cases Intersect with each other	1,679
Any three cases Intersect with each other	347
Any four cases Intersect with each other	17

Total Astonishing Enrollment cases

7,974

Table 20- District wise summary from All Case ranging from A to G

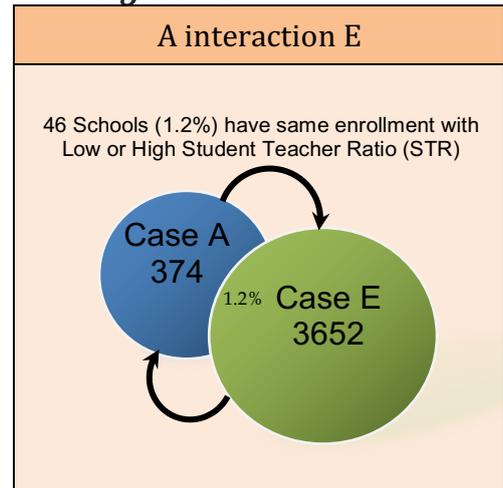
S. No	District Name	Case A	Case B	Case C	Case D	Case E	Case F	Case G	Total unique Schools	Astonishing Enrollment
1	Dadu	21	60	117	20	384	350	3	679	135,601
2	Khairpur Mirs	24	13	115	8	291	273	28	579	101,247
3	Kambar-Shahdadkot	14	46	81	18	267	322	3	528	104,401
4	Jacobabad	15	49	114	25	207	265	3	500	101,792
5	Ghotki	11	8	96	19	272	195	10	475	85,834
6	Naushero Feroze	12	11	165	7	187	179	6	444	89,699
7	Tharparkar	31	31	81	2	217	140	24	400	38,452
8	Sanghar	20	17	89	13	159	157	21	396	70,942
9	Shaheed Benazirabad	1	8	129	5	144	184	7	377	68,518
10	Badin	9	23	113	5	98	145	26	322	46,265
11	Kashmore	25	26	10	9	184	142	1	313	57,459
12	Larkana	9	7	23	6	102	198	1	299	107,250
13	Mirpur Khas	19	5	56	1	105	115	20	267	40,867
14	Sujawal	25	19	90	0	93	104	29	257	29,796
15	Thatta	23	14	76	2	92	83	32	230	21,207
16	Shikarpur	4	5	41	5	106	120	4	222	48,540
17	Umerkot	21	6	50	0	65	85	58	220	25,395
18	Sukkur	9	3	36	6	117	96	6	215	38,580
19	Hyderabad	5	6	34	3	70	80	4	169	38,890
20	Tando Allah Yar	6	5	47	4	81	61	4	154	27,219
21	Central Karachi	11	12	8	3	92	59	20	144	16,762
22	Jamshoro	13	10	18	4	53	47	4	118	28,544
23	South Karachi	9	14	18	3	64	37	15	116	8,057
24	T. Muhammad Khan	16	7	20	2	35	44	7	111	9,961
25	Mitiani	9	2	15	1	49	49	11	110	19,027
26	Malir Karachi	3	12	32	4	42	40	24	108	12,385
27	Korangi Karachi	4	24	6	3	33	36	3	98	17,577
28	West Karachi	2	16	11	3	16	26	1	70	12,896
29	East Karachi	3	9	5	1	27	17	2	53	6,182
Total		374	468	1,696	182	3,652	3,649	377	7,974	1,409,345

Interactions between all cases

i. Interactions between case A with Case B, C, D, E, F & G

A notable overlap observed between Case A & E where 46 schools (1.2%) have the same enrollment with low or high student Teacher Ratio (STR) reported in figure 01, however, there is no overlapping between Case A & B. Moreover, remaining cases overlapping is given below: A interaction C: 17 Schools (0.8%) have same enrollment and specific class fluctuated. A interaction D: Only 1 School (0.2%) has the same enrollment and high promotion rates interaction F: 42 Schools (1.1%) have the same enrollment with Low or High Student Classroom Ratio (SCR) A interaction G:10 Schools (1.3%) have same enrollment and very low enrollment.

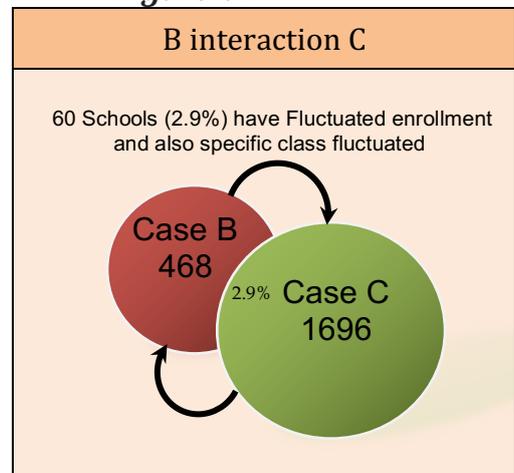
Figure-01



ii. Interactions between case B with Case A, C, D, E, F & G

A substantial overlap between Case B & C where 60 schools (2.9%) have overall fluctuated enrollment and also specific class fluctuated as shown in figure 02, and no overlapping between case B & A and Case G & G. see below all combinations. Moreover, remaining cases overlapping is given below interaction D: 3 Schools (0.5%) have fluctuated enrollment and high promotion or dropout rates' interaction E: 69 Schools (1.7%) have fluctuated enrollment with Low or High Student Teacher Ratio (STR) B interaction F: 35 Schools (0.9%) have fluctuated enrollment with Low or High Student Classroom Ratio (SCR)

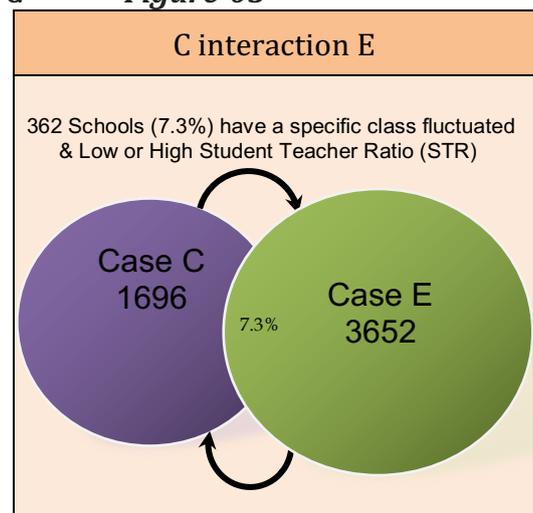
Figure-02



iii. Interactions between case C with Case A, B, D, E, F & G

A significant number of schools overlap between Case C & E where 362 schools (7.3%) have a specific class fluctuated and low or high student Teacher Ratio (STR) reported in figure 03, and no overlapping between case C & G. Moreover, remaining cases overlapping is given below interaction A: 17 Schools (0.8%) have a specific class fluctuated and same enrollment both years interaction D: 12 Schools (0.6%) have a specific class fluctuated and high promotion or dropout rates C interaction F: 295 Schools (5.8%) have a specific class fluctuated & Low or High Student Classroom Ratio (SCR)

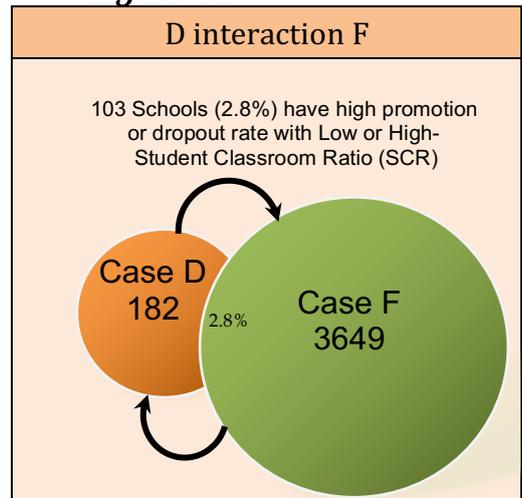
Figure-03



iv. Interactions between case D with Case A, B, C, E, F & G

A major overlap between Case E & F observed where 103 (2.8%) schools high promotion or dropout rate with Low or High Student Classroom Ratio (SCR) however, there is no interaction between Case D & G. Moreover, remaining cases overlapping is given below interaction A: Only 1 School (0.2%) has high promotion rate and same enrollment with previous Year D interaction B: 3 Schools (0.5%) have high promotion rates and enrollment fluctuated interaction C: 12 Schools (0.6%) have high promotion or dropout rate and specific class fluctuated interaction E: 51 Schools (1.3%) have a high promotion or dropout rates with Low or High Student Teacher Ratio (STR). Details are discussed in figures 04 and 05.

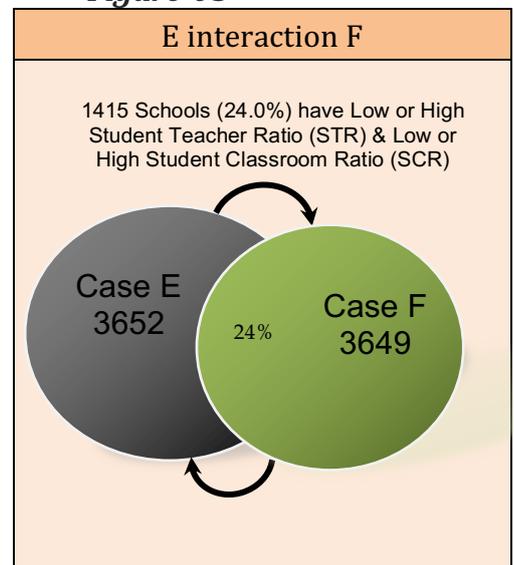
Figure-04



v. Interactions between case E with Case A, B, C, D, F & G

A Large number of schools overlap between Case E & F where 1415 (24.0%) schools have Low or High Student Teacher Ratio (STR) & Low or High Student Classroom Ratio (SCR). The low overlap observed 46 Schools (1.2%) between Case E & A have Low or High Student Teacher Ratio (STR) & the same enrollment both years. Moreover, remaining cases overlapping is given below interaction B: 69 Schools (1.7%) have Low or High Student Teacher Ratio (STR) and also overall enrollment fluctuated interaction C: 362 Schools (7.3%) have Low or High Student Teacher Ratio (STR) & specific class fluctuated interaction D: 51 Schools (1.3%) have Low or High Student Teacher Ratio (STR) & high promotion or dropout rates interaction G: 136 Schools (3.5%) have Low or High STR Low enrollment.

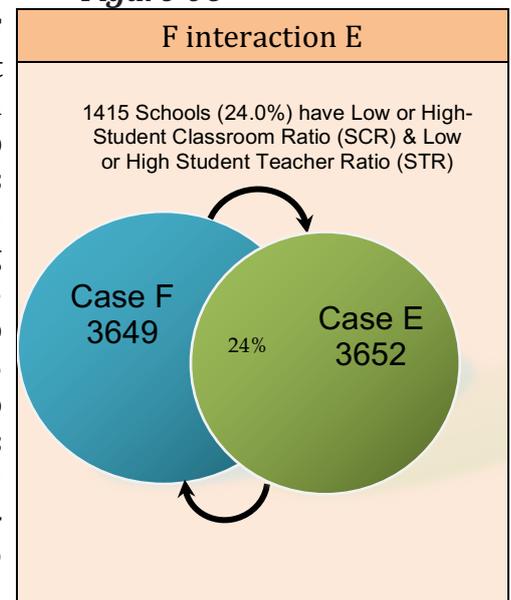
Figure-05



vi. Interactions between case F with Case A, B, C, D, E & G

A very large number of schools overlap between Case E & F where 1415 (24.0%) schools have Low or High Student Teacher Ratio (STR) & Low or High Student Classroom Ratio (SCR) reflected in the figure 06. The low overlap observed between Case F & B found where 36 Schools (0.9%) have Low or High Student Classroom Ratio (SCR) and overall enrollment fluctuated. Moreover, remaining cases overlapping is given below: F interaction A:43 Schools (1.1%) have Low or High Student Classroom Ratio (SCR) and same enrollment both years interaction C:295 Schools (5.8%) have Low or High Student Classroom Ratio (SCR) & specific class fluctuated interaction D:103 Schools (2.8%) have Low or High Student Classroom Ratio (SCR) and high promotion or dropout rates interaction G:164 Schools (4.2%) have Low or High Student Teacher Ratio (STR) and Low enrollment.

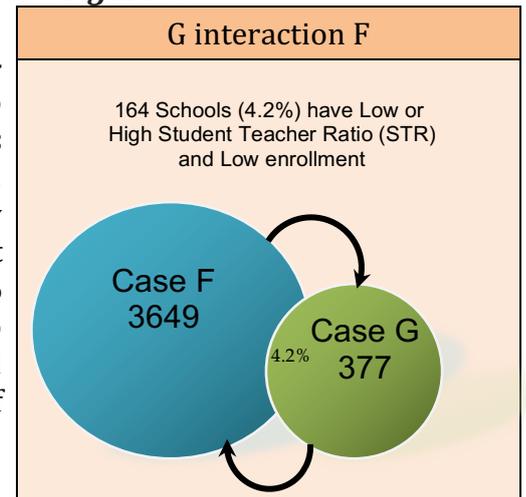
Figure-06



vii. Interactions between case G with Case A, B, C, D, E & F

A notable overlap found between Case G & F, where 164 (4.2%) Schools have Low or High Student Teacher Ratio (STR) and Low enrollment examined in figure 07. There is no overlap between G & A, G & B, G & C and D & G. Moreover, remaining cases overlapping is given below interaction A:10 Schools (1.3%) have very low enrollment and the same enrollment in both Years G interaction E:136 Schools (3.5%) have Low or High Student Teacher Ratio (STR) and Low enrollment. All interactions are elaborated in figures mentioned above for the easy understanding of the readers as in figure 01 to 07. [5].

Figure-07



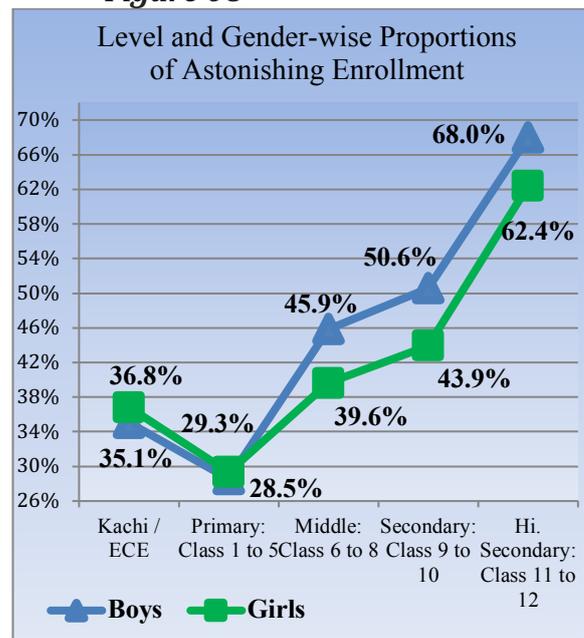
Gender and Level Wise Proportions of Astonishing Enrollment and Challenge of Evidence-Based Planning For Enhancing Education Access to Girls:

In terms of proportions, as compared to boys more of astonishing enrollment of girls were observed in Karchi (Boys 35.1% & Girls 36.8%) and Primary level classes from Class 1st to class 5th (Boys 28.5% & Girls 29.3%), contrary in post-primary classes (Class 6th to 12th) more boys were reported, detail calculation is explained in table 21 and figure 08.

Table 21-Level and Gender-wise Proportion

Gender	Kachi / ECE	Primary: Class 1 to 5	Middle: Class 6 to 8	Second.: Class 9 to 10	Hi. Second.: Class 11 to 12
As per Census 2013-14					
Boys	321,449	1,468,134	360,190	221,584	54,098
Girls	244,264	969,964	272,150	147,489	26,093
Total	565,713	2,438,098	632,340	369,073	80,191
Figures & Percentages form Astonishing cases					
Gender Wise Numbers					
Boys	112,717	419,144	165,219	112,049	36,799
Girls	89,927	284,571	107,837	64,802	16,280
Total	202,644	703,715	273,056	176,851	53,079
Gender Wise Proportion					
Boys	35.1%	28.5%	45.9%	50.6%	68.0%
Girls	36.8%	29.3%	39.6%	43.9%	62.4%
Total	35.8%	28.9%	43.2%	47.9%	66.2%

Figure 08



[6].

CONCLUSIONS AND POLICY RECOMMENDATIONS

It is concluded that the result of the comprehensive analysis shows that out of overall schools 46,724 anomalies in the enrollment data found in 7,974 schools wherein 1,409,345 enrollments reported which is 34.5% of overall enrollment (4,085,415), now there is a need to further investigate and find out the reasons why such enrollment is available in the system. But it is important to conclude that astonishing enrollments in the schools, large scale fluctuations in the enrollments system, biased and unbiased statistical errors in the data of the

children affected on the literacy trends and quality educations access. its major obstacles in sustainable policy planning for tomorrow's people.

Recommendation: Researcher strongly believed that the role of technology is to facilitate the reform, therefore, a robust integrated centralized system is proposed which not only import data from various sources then assemble the data and generate the anomalies for further checking, correction & update (if any) but through that progress of all educational indicators, comparisons, tracking & monitoring can be done easily. In this regard, following points may be useful in the development of such system.

a. Centralized Integrated System: A system which should have the capacity to update Indicators periodically with their shelf-life and generate indicator as well as district wise rankings, vertical and horizontal comparisons, trends with forecasting, export time-series data of selected variables and maintain keys for integrations with other systems. For all updates, data may be collected through Android-App and synchronized with a system or proforma manually filled & which further digitized on the system. It is pertinent to highlight that during the annual school census almost all indicators' data updated, if any indicator missing that may be incorporated, if shelf-life of any indicators expired that also be updated with its periodicity, for instance, shelf-life of date of birth of a teacher is a lifetime, however, teacher as well as student attendance, maybe updated periodically and regularly, therefore, the system should have the capability to updated variable before its expiry, and then generate the inconsistencies (detail mentioned below) in the data for further correction so that the planners and decision-makers can have concurrent & accurate data, trends, and theme wise reports for special focus.

b. Built in Data (in)-Consistency Check: The aforementioned cases may be tagged as "A", "B", "C" and so on, subsequently coding of the system in such a way so that after digitization data, the system built-in checks will execute and generate school wise list of anomalies that need further verification from either filed or the data provider. The system will ensure that all fields being entered / edited / assembled do not contradict entries that have been previously entered.

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