

Delhi Government Education Performance (2023–2024)

Executive Summary

- This report analyzes district-wise performance across Delhi Government Education System for 2023–2024, using official district data.
 - Key metrics include quality index (for Class X & XII), gender parity, infrastructure, and pass percentage trends.
 - Actionable insights and recommendations target schools/districts needing improvement and highlight best practices.
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Exploratory Data Analysis

Data-driven insights and statistical exploration using Python and SQL to uncover foundational trends in Delhi's school performance.

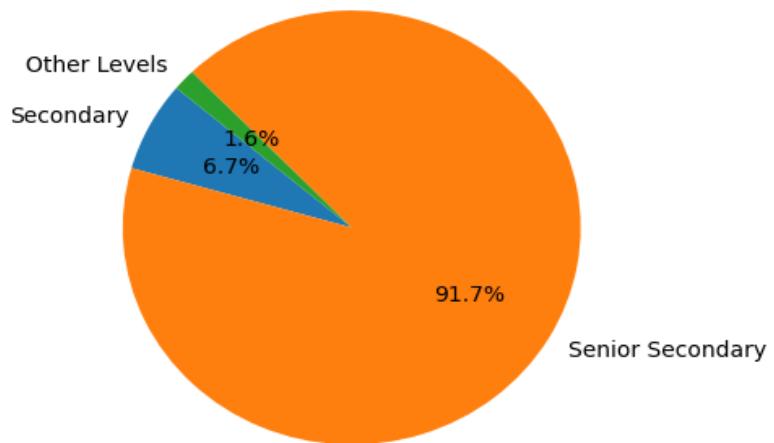
Summary Statistics:

	count	mean	std	min	25%	50%	75%	max
no_of_zone	16.0	1.812500	0.655108	1.000000	1.000000	2.000000	2.000000	3.000000
no_of_schools_primary	16.0	0.062500	0.250000	0.000000	0.000000	0.000000	0.000000	1.000000
no_of_schools_middle	16.0	1.000000	1.505545	0.000000	0.000000	0.000000	2.000000	4.000000
no_of_schools_sec	16.0	4.437500	3.966001	0.000000	1.000000	3.500000	7.250000	14.000000
no_of_schools_sr_sec	16.0	60.812500	28.636151	3.000000	44.000000	55.500000	79.500000	111.000000
no_of_schools_total	16.0	66.312500	31.045598	3.000000	48.000000	62.000000	84.250000	121.000000
no_of_students_pre_primary	16.0	1968.375000	1067.746279	70.000000	1417.250000	2050.500000	2523.000000	3997.000000
no_of_students_primary	16.0	8508.937500	4575.149126	303.000000	6138.250000	8447.000000	11168.750000	18017.000000
no_of_students_middle	16.0	43059.875000	25295.049407	397.000000	25058.000000	41160.000000	62485.750000	82575.000000
no_of_students_secondary	16.0	28237.375000	17236.428102	253.000000	16165.500000	25146.000000	42560.000000	52855.000000
no_of_students_sr_secondary	16.0	22407.937500	13525.069407	272.000000	13018.750000	20635.500000	32981.500000	42221.000000
no_of_students_boys	16.0	49989.750000	28760.053872	668.000000	31194.750000	45634.000000	74347.000000	89786.000000
no_of_students_girls	16.0	54192.750000	31294.001560	627.000000	31256.250000	50915.000000	79511.750000	99620.000000
no_of_students_total	16.0	104182.500000	60010.525669	1295.000000	62451.000000	96498.500000	150687.750000	189406.000000
class_x_appeared	16.0	10312.250000	6531.358281	86.000000	5651.250000	9260.500000	15587.750000	19921.000000
class_x_passed	16.0	9715.125000	6091.103347	81.000000	5466.750000	8720.500000	14404.500000	18544.000000
class_x_pass_percentage	16.0	94.919375	2.735408	89.320000	92.970000	94.570000	97.362500	98.580000
class_xii_quality_index	16.0	279.363750	8.615402	265.520000	272.587500	278.710000	282.895000	294.620000
class_xii_appeared	16.0	9464.312500	5709.194534	163.000000	5379.750000	8528.500000	14533.250000	17900.000000
class_xii_passed	16.0	9180.312500	5486.624934	155.000000	5331.250000	8280.500000	13828.750000	17324.000000
class_xii_pass_percentage	16.0	97.215000	1.674228	94.060000	95.910000	97.220000	98.470000	99.510000
class_xii_quality_index	16.0	312.438750	11.567457	290.030000	306.972500	310.095000	318.195000	334.800000
id	16.0	8.500000	4.760952	1.000000	4.750000	8.500000	12.250000	16.000000
quality_index_change	16.0	33.075000	5.431871	17.900000	31.925000	33.560000	35.052500	42.570000
gender_parity	16.0	0.518787	0.018672	0.484170	0.509265	0.517686	0.527090	0.568757
students_per_school	16.0	1455.978003	532.527820	431.666667	1203.100000	1553.558310	1681.694153	2644.395833

District-wise Percentage Distribution of Secondary and Senior Secondary Schools out of Total Schools

	district	no_of_schools_total	no_of_schools_sec	no_of_schools_sr_sec	secondary_schl_percnt	sr_secondary_schl_percnt
1	East	121	8	111	6.6	91.7
6	North West A	117	7	110	6.0	94.0
10	South East	100	5	92	5.0	92.0
5	North East-2	85	14	67	16.5	78.8
15	West B	84	6	78	7.1	92.9
7	North West B-1	84	0	84	0.0	100.0
9	South	70	9	61	12.9	87.1
3	North	65	8	53	12.3	81.5
14	West A	59	1	58	1.7	98.3
12	South West B-1	50	2	48	4.0	96.0
4	North East-1	48	2	44	4.2	91.7
8	North West B-2	48	4	44	8.3	91.7
13	South West B-2	48	1	47	2.1	97.9
0	Central	40	3	35	7.5	87.5
11	South West A	39	1	38	2.6	97.4
2	New Delhi	3	0	3	0.0	100.0

Overall Percentage Distribution of Schools by Level



"District-wise Educational Infrastructure Imbalance: A Comparative View of Secondary vs. Senior Secondary School Availability"

High Senior Secondary Coverage:

Districts like North West B-1, New Delhi, and West A show nearly 100% Sr. Secondary schools, indicating strong higher education infrastructure.

Low or No Secondary Schools:

North West B-1 and New Delhi have 0% secondary schools, suggesting a potential gap in class 9–10 education or data anomalies.

Balanced Districts:

East, South East, and West B show a smooth transition from secondary to Sr. Secondary levels (5–8% vs. 90%+).

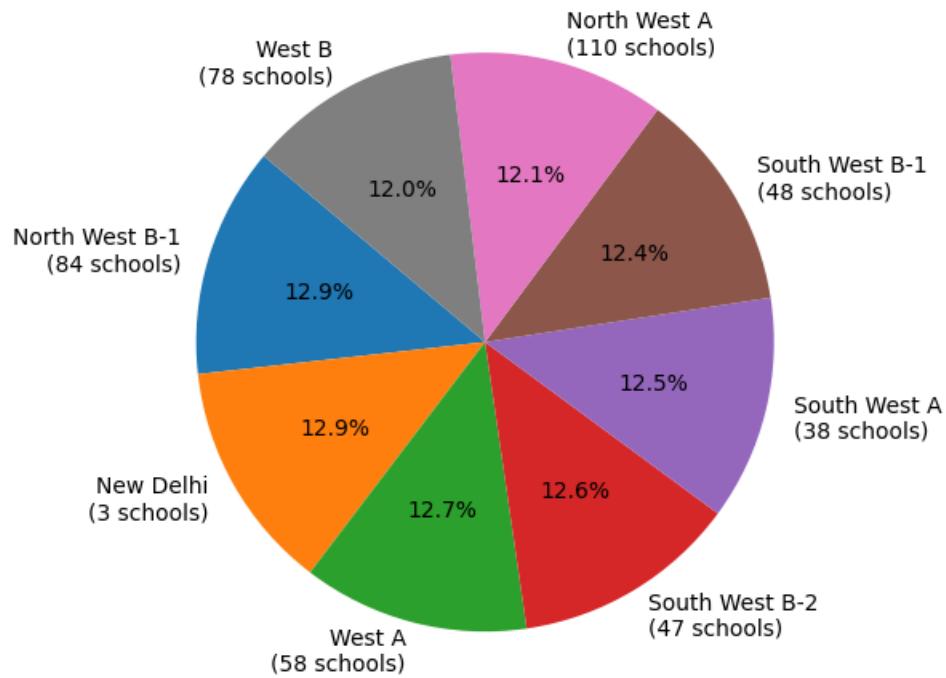
Infrastructure Gaps:

North East-2 has the highest secondary school share (16.5%) but a lower Sr. Secondary share (78.8%), hinting at a Sr. Secondary shortfall.

Moderate Zones:

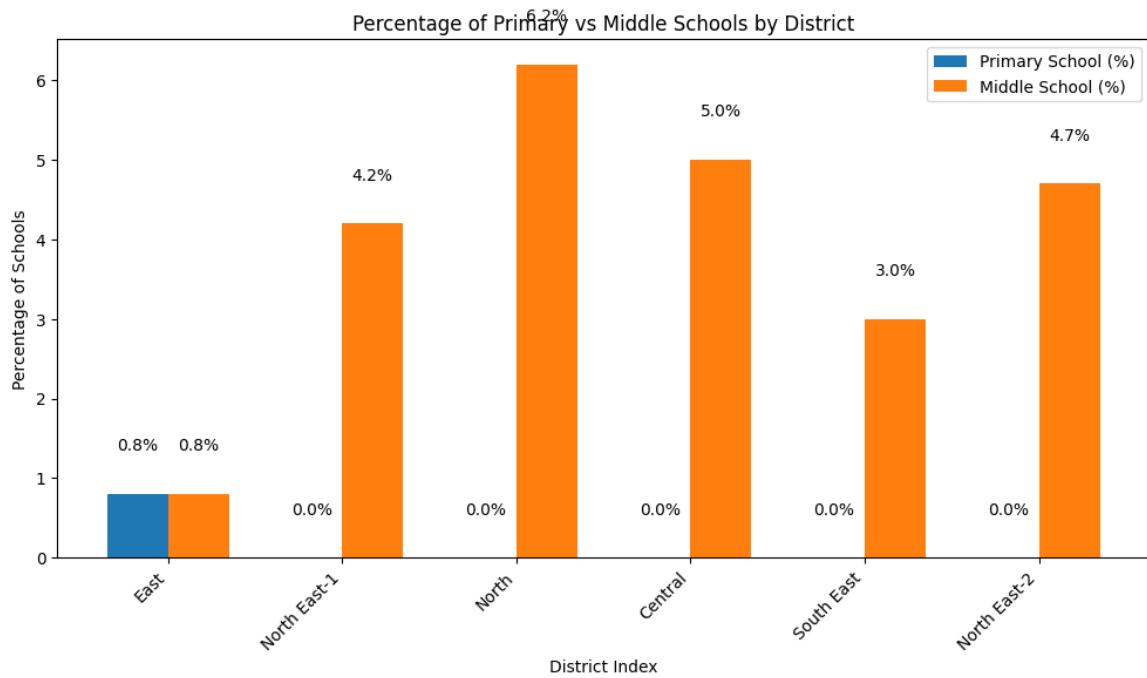
South and North districts maintain balanced infrastructure, but still show room for growth at the higher level.

Top 8 Districts by % of Senior Secondary Schools



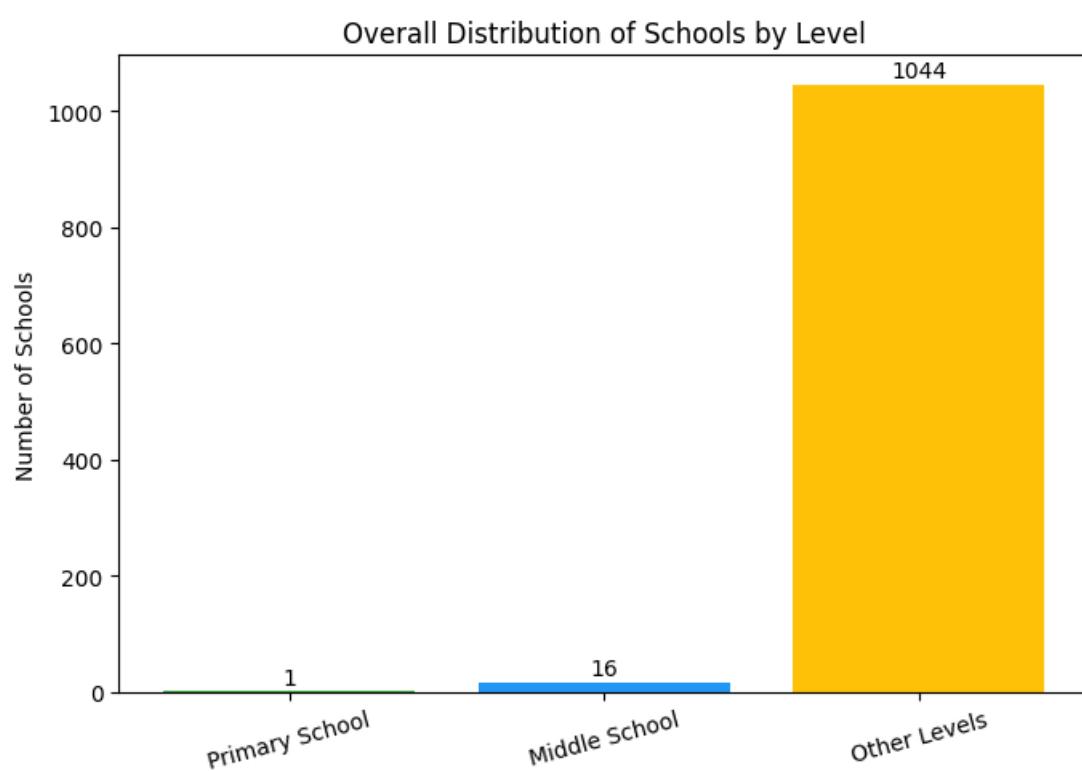
Overall Percentage Distribution of Primary School and Middle Schools

	district	school_primary	school_middle
0	East	0.8	0.8
1	North East-1	0.0	4.2
2	North	0.0	6.2
3	North West A	0.0	0.0
4	North West B-1	0.0	0.0
5	West A	0.0	0.0
6	West B	0.0	0.0
7	South West A	0.0	0.0
8	South West B-1	0.0	0.0
9	South	0.0	0.0
10	New Delhi	0.0	0.0
11	Central	0.0	5.0
12	South East	0.0	3.0
13	North East-2	0.0	4.7
14	North West B-2	0.0	0.0
15	South West B-2	0.0	0.0



District-wise Educational Infrastructure Imbalance: A Comparative View of Primary School vs Middle Schools Availability

	district	no_of_schools_total	no_of_schools_primary	no_of_schools_middle	school_primary	school_middle
1	East	121	1	1	0.8	0.8
6	North West A	117	0	0	0.0	0.0
10	South East	100	0	3	0.0	3.0
5	North East-2	85	0	4	0.0	4.7
15	West B	84	0	0	0.0	0.0
7	North West B-1	84	0	0	0.0	0.0
9	South	70	0	0	0.0	0.0
3	North	65	0	4	0.0	6.2
14	West A	59	0	0	0.0	0.0
12	South West B-1	50	0	0	0.0	0.0
4	North East-1	48	0	2	0.0	4.2
8	North West B-2	48	0	0	0.0	0.0
13	South West B-2	48	0	0	0.0	0.0
0	Central	40	0	2	0.0	5.0
11	South West A	39	0	0	0.0	0.0
2	New Delhi	3	0	0	0.0	0.0



Insight:

Extremely low share of primary schools:

Only East district has any recorded primary schools in this dataset (0.8% of total schools).

This suggests that primary education infrastructure may be housed inside combined/multi-level schools, or has been almost completely replaced by higher levels.

Middle school presence is very limited:

The highest share is in North district (6.2%), followed by North East-2 (4.7%), North East-1 (4.2%), and Central (5.0%).

Many districts (e.g., West A, West B, South West A, South West B-1, etc.) have 0% middle schools.

Clear urban shift towards higher-level schools:

Since most districts have 0% in both categories, this suggests a systemic focus on secondary and senior secondary education — possibly assuming younger students have access to private institutions or feeder schools outside the dataset.

Policy implication:

The absence of lower-level schools in many districts may create accessibility gaps for early education, especially for disadvantaged communities.

Student–School Ratios (primary and middle school)

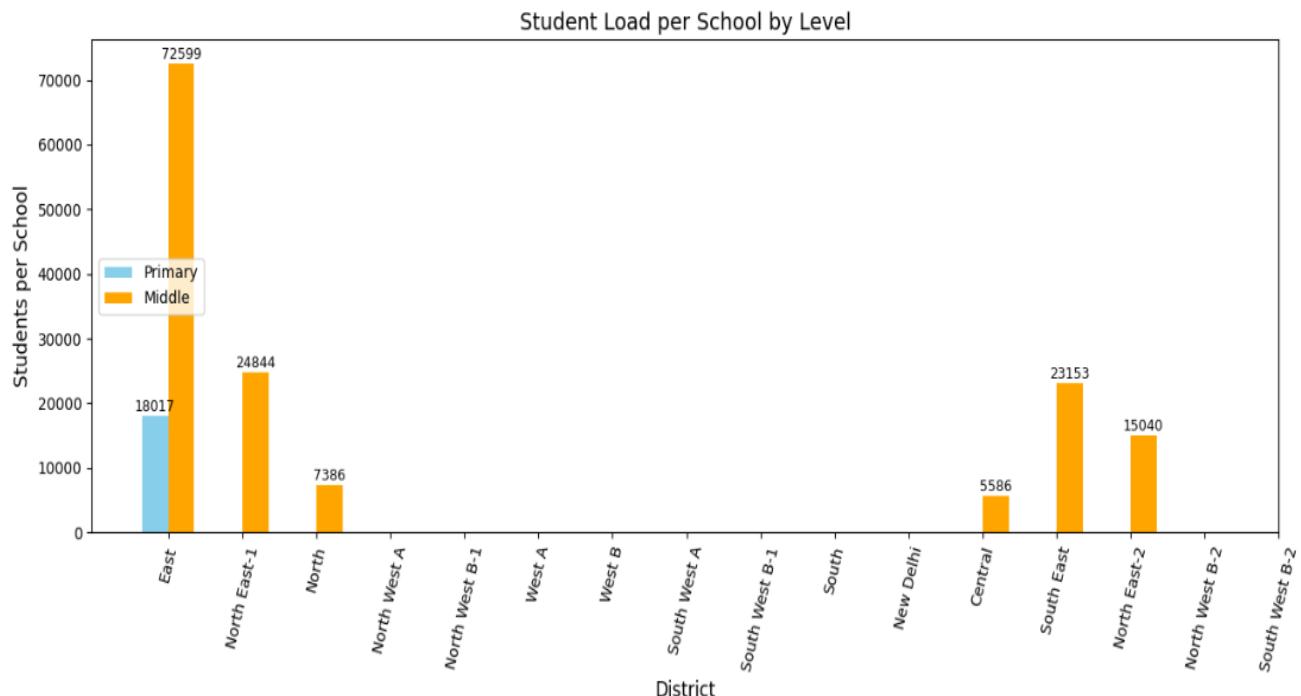
	district	no_of_students_primary	no_of_students_middle	no_of_schools_primary	no_of_schools_middle	no_of_schools_total
0	East	18017	72599	1	1	121
1	North East-1	3610	49688	0	2	48
2	North	9128	29545	0	4	65
3	North West A	11034	82575	0	0	117
4	North West B-1	15676	58992	0	0	84
5	West A	9563	36687	0	0	59
6	West B	11573	76683	0	0	84
7	South West A	6389	18599	0	0	39
8	South West B-1	6586	33752	0	0	50
9	South	8215	45633	0	0	70
10	New Delhi	303	397	0	0	3
11	Central	5386	11171	0	2	40
12	South East	12100	69460	0	3	100
13	North East-2	8679	60161	0	4	85
14	North West B-2	6841	27211	0	0	48
15	South West B-2	3043	15805	0	0	48

```
⚠️ Districts with high load in Primary (>5000 students per school):
    district  students_per_primary_school
0      East                  18017.0

⚠️ Districts with high load in Middle (>20000 students per school):
    district  students_per_middle_school
0        East                72599.0
1  North East-1              24844.0
12  South East                23153.3

🌟 Districts with students but ZERO primary schools:
    district  no_of_students_primary
1  North East-1                  3610
2        North                  9128
3   North West A                 11034
4  North West B-1                15676
5        West A                  9563
6        West B                  11573
7   South West A                  6389
8  South West B-1                6586
9        South                  8215
10     New Delhi                  303
11       Central                  5386
12  South East                  12100
13  North East-2                8679
14  North West B-2                6841
15  South West B-2                3043

🌟 Districts with students but ZERO middle schools:
    district  no_of_students_middle
3   North West A                 82575
4  North West B-1                58992
5        West A                  36687
6        West B                  76683
7   South West A                  18599
8  South West B-1                33752
9        South                  45633
10     New Delhi                  397
14  North West B-2                27211
15  South West B-2                15805
```



1 Some districts have extremely high student-to-school ratios

East stands out — 18,017 students per primary school and 72,599 students per middle school. That means a single school is responsible for an entire district's education load — an unsustainable situation.

For middle schools, North East-1 (24,844 students/school) and South East (23,153 students/school) are also heavily overloaded. This usually indicates severe overcrowding or severe shortage of schools.

2 Many districts have students but no schools

Primary level: 14 districts (e.g., North, North West A, South, West B) have 0 primary schools but still show hundreds or thousands of students. This means those students are either traveling to other districts or data entry errors exist.

Middle level: 10 districts (e.g., North West A, West A, South West B-2) have 0 middle schools but still have thousands of students — again, pointing to a lack of facilities or dependency on other districts.

3 School infrastructure is unevenly distributed

Some districts like East have a few schools serving huge populations, while others have moderate student counts but no schools at all.

This mismatch suggests that school construction and resource allocation have not kept pace with population distribution.

Implications for action:

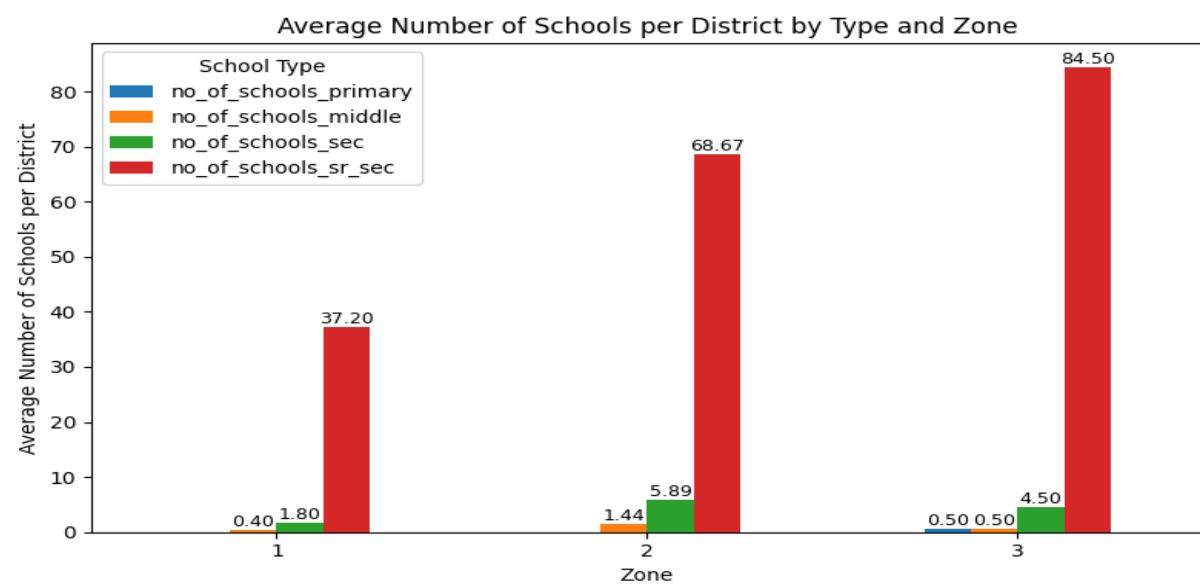
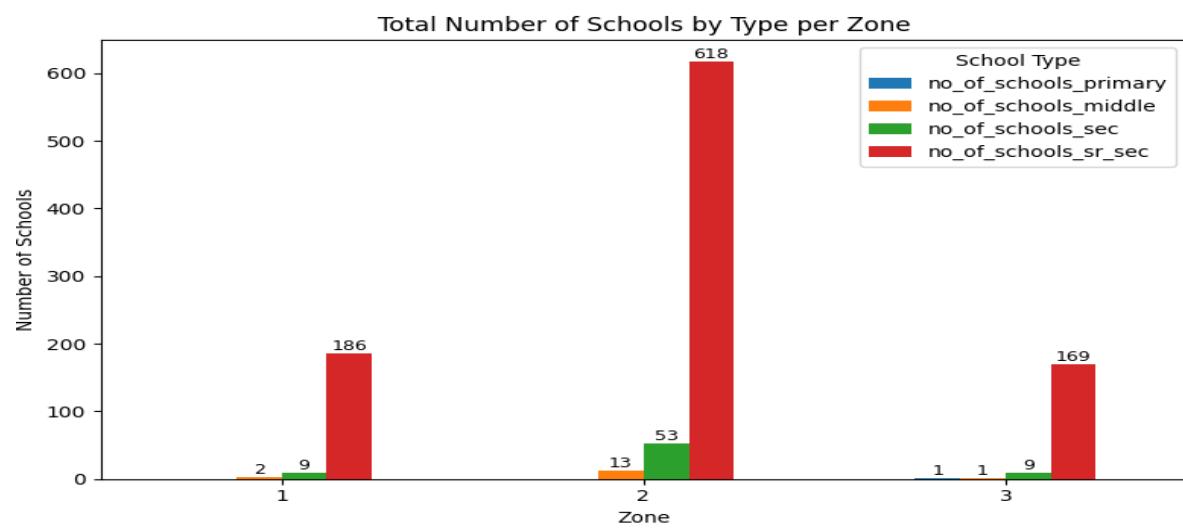
Immediate need to build schools in high-load and zero-school districts.

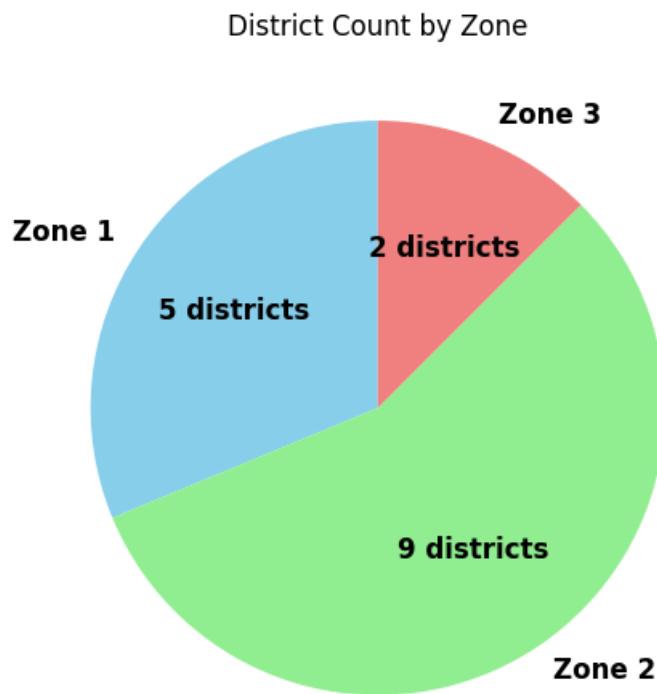
Redistribution of students or creation of temporary classrooms in overloaded areas.

Verification of Enrollment and facility data — the mismatch between student counts and school availability needs to be checked for errors.

Zone-wise Educational Infrastructure

no_of_zone	no_of_schools_primary	mean	sum	no_of_schools_middle	mean	sum	no_of_schools_sec	mean	sum	no_of_schools_sr_sec	mean	sum	no_of_schools_total	mean	sum
	mean	sum	mean	sum	mean	sum	mean	sum	mean	sum	mean	sum	no_of_schools_total	mean	sum
1	0.0	0	0.400000	2	1.800000	9	37.200000	186	39.4	197					
2	0.0	0	1.444444	13	5.888889	53	68.666667	618	76.0	684					
3	0.5	1	0.500000	1	4.500000	9	84.500000	169	90.0	180					





Insights:

1. Distribution of School Types by Zone

Zones 1 & 2 have no primary schools (those columns are all zero).

Zone 3 is the only zone with any primary schools (mean 0.5 per district, 1 total).

Middle schools are fewest in Zone 3 and Zone 1 (just one or two across all districts), Zone 2 has most (mean 1.44/district, total 13).

Secondary and Senior Secondary Schools are most common across all zones, but especially in Zone 2 (53 secondary, a whopping 618 senior secondary schools).

Total schools are highest for Zone 2.

2. Infrastructure Strengths and Weaknesses

Senior Secondary Schools dominate every zone, especially Zone 2 (average ~68 per district, 618 total).

This suggests Zone 2 is better equipped for higher-grade education.

Primary-level infrastructure is almost absent—possible because the dataset might focus on government schools or your region's school structure. Or, in this education system, most schools are composite or start at higher grades

3. Zone Comparison

Zone 2 stands out: it has not only the highest total number of schools but also the highest average schools per district in nearly every category.

Zone 2: "The best equipped zone for secondary and senior secondary education."

Zone 3 is another well-served area for senior secondary schools (average 84 per district), but it covers fewer districts.

Zone 1 is the least equipped overall, with the fewest schools per district in almost all categories.

Explanation:

"From my analysis of school infrastructure by zone, I found that Zone 2 has the strongest educational infrastructure, with the highest number of schools and highest average per district—especially at the secondary and senior secondary levels. Zone 1 is much less well-resourced, with fewer schools per district in all categories. Primary schools are almost non-existent—suggesting that either most schools are composite or the dataset doesn't capture them. My results highlight clear infrastructure disparities, and show that equity across zones is something policy makers might need to address, particularly if student populations are concentrated in underserved areas."

Gender Parity and Its Impact on Educational Quality Across Districts

```
Gender Parity Summary (first 5 rows):
    district  students_per_school  gender_parity_index  proportion_girls \
0        East          1565.338843          1.109527      0.525960
1  North East-1          2644.395833          1.138253      0.532329
2       North          1190.707692          1.055561      0.513515
3  North West A          1541.777778          1.075668      0.518227
4 North West B-1          1697.011905          1.009261      0.502304

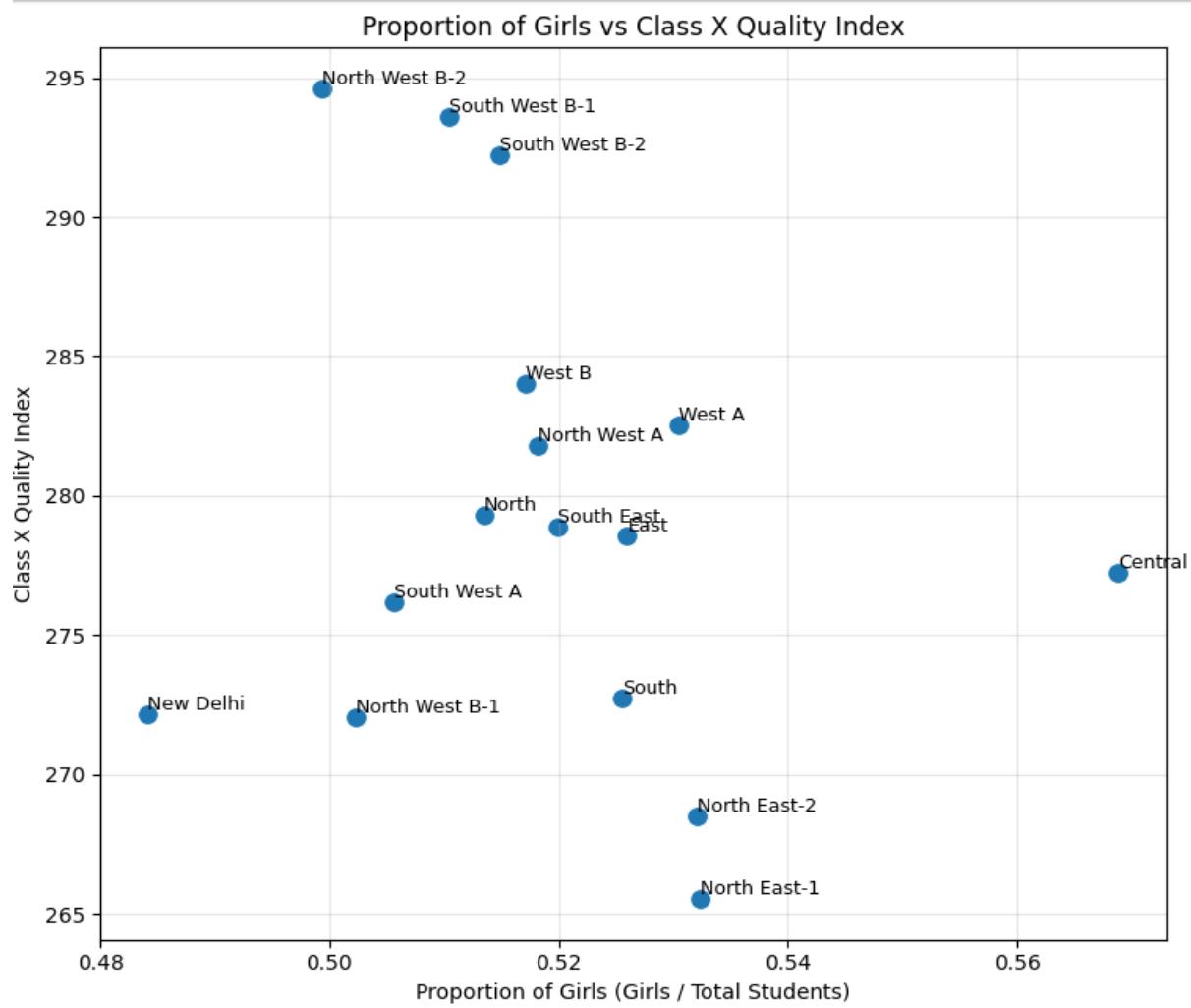
    class_x_quality_index  class_xii_quality_index
0                  278.54                  306.59
1                  265.52                  299.35
2                  279.29                  310.93
3                  281.77                  320.85
4                  272.07                  307.10

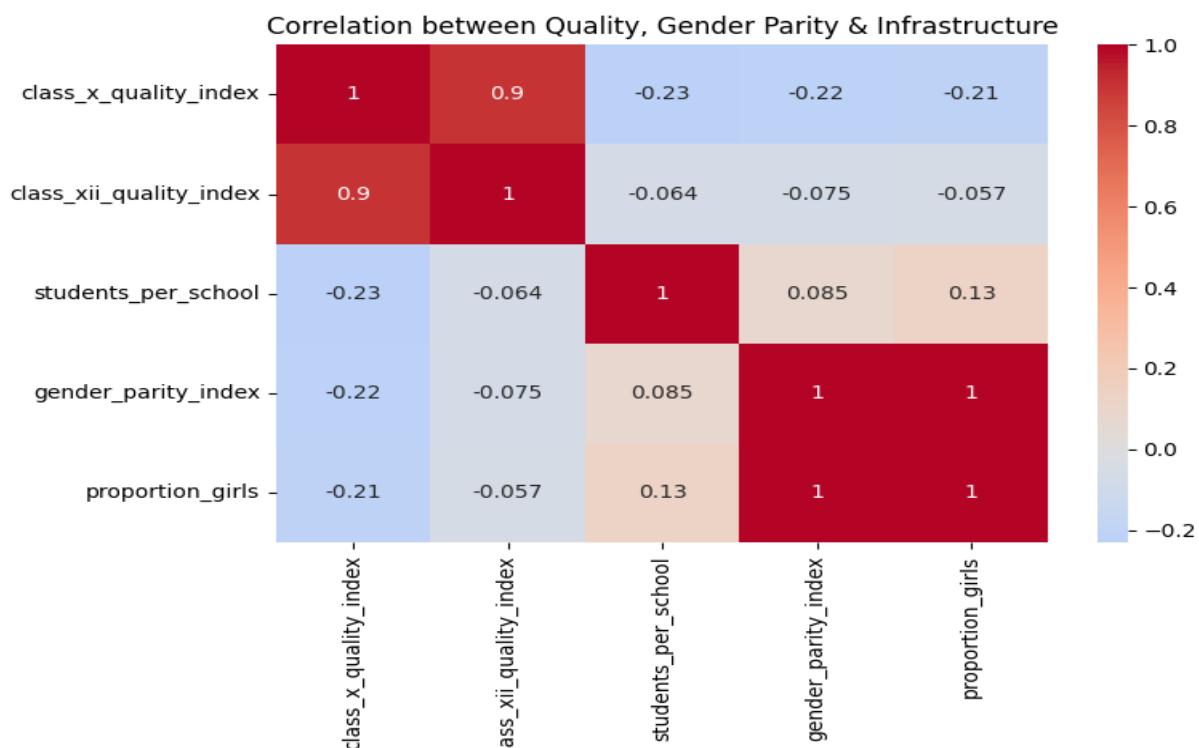
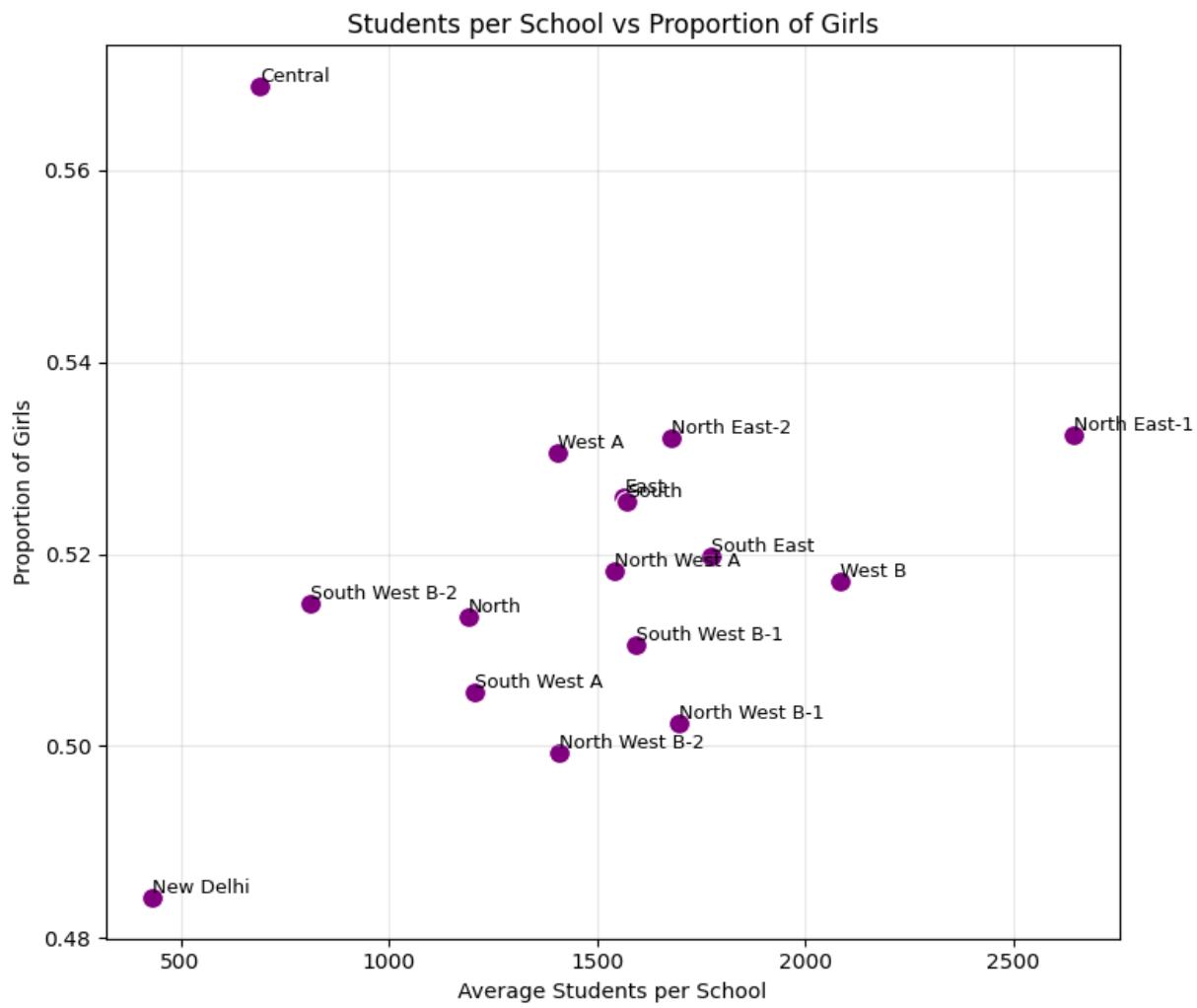
Top 5 districts (most balanced gender parity - GPI closest to 1):
    district  students_per_school  gender_parity_index \
14  North West B-2          1407.791667          0.997163
4   North West B-1          1697.011905          1.009261
7    South West A          1207.230769          1.022944
8  South West B-1          1594.120000          1.042748
2       North          1190.707692          1.055561

    proportion_girls  class_x_quality_index  class_xii_quality_index
14          0.499290          294.62          327.13
4           0.502304          272.07          307.10
7           0.505671          276.16          313.94
8           0.510463          293.60          328.72
2           0.513515          279.29          310.93

Lowest 5 districts (least balanced parity - GPI farthest from 1):
    district  students_per_school  gender_parity_index  proportion_girls \
0        East          1565.338843          1.109527      0.525960
5       West A          1404.898305          1.129837      0.530481
13  North East-2          1676.588235          1.137255      0.532110
1  North East-1          2644.395833          1.138253      0.532329
11      Central          691.025000          1.318876      0.568757

    class_x_quality_index  class_xii_quality_index
0                  278.54                  306.59
5                  282.52                  316.37
13                 268.49                  301.65
1                  265.52                  299.35
11                 277.24                  309.26
```





Insight: Gender Parity in Districts

Balanced Districts:

Districts like North West B-2, North West B-1, South West A, South West B-1 and North have a Gender Parity Index (GPI) close to 1 and around 50% girls, meaning boys and girls are enrolled in almost equal numbers.

Less Balanced Districts:

Districts such as East, West A, North East-2, North East-1, and Central have more girls than boys. For example, Central has about 57% girls and only 43% boys (GPI ~1.32), the highest imbalance in the dataset.

Overall Pattern:

Most districts are close to gender balance, but some areas—especially Central and parts of the North East—enroll noticeably more girls than boys. There are no districts in your dataset with a clear male-majority enrollment.

Possible Factors:

Higher girl ratios could be due to better retention programs for girls, migration patterns, or lower dropout rates among female students in those districts.

In simple words for your report:

"The gender distribution in most districts is fairly balanced, with about half boys and half girls. A few districts, particularly Central and the North East, have significantly higher proportions of girls, reaching up to 57%. No district shows a strong male-dominated enrollment pattern."

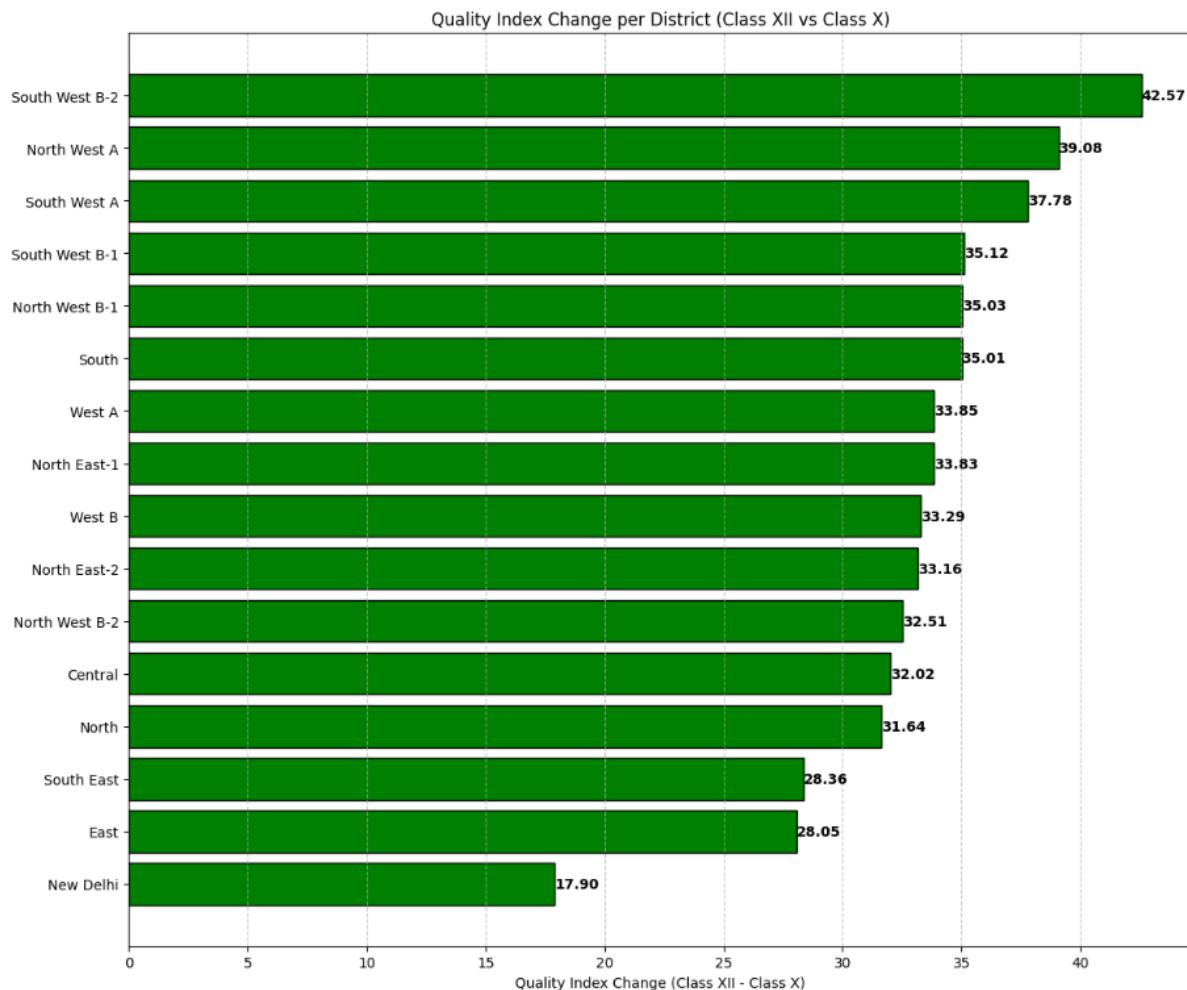
Decoding Educational Excellence: A Deep Dive into Quality Index Trends and Insights

1. Explore Quality Index Across Districts

Highest Class X Quality Index: North West B-2 294.62
Lowest Class X Quality Index: North East-1 265.52
Highest Class XII Quality Index: South West B-2 334.8
Lowest Class XII Quality Index: New Delhi 290.03

2. Compare Exam Levels: Performance Change

	district	class_x_quality_index	class_xii_quality_index	quality_index_change
0	East	278.54	306.59	28.05
1	North East-1	265.52	299.35	33.83
2	North	279.29	310.93	31.64
3	North West A	281.77	320.85	39.08
4	North West B-1	272.07	307.10	35.03
5	West A	282.52	316.37	33.85
6	West B	284.02	317.31	33.29
7	South West A	276.16	313.94	37.78
8	South West B-1	293.60	328.72	35.12
9	South	272.74	307.75	35.01
10	New Delhi	272.13	290.03	17.90
11	Central	277.24	309.26	32.02
12	South East	278.88	307.24	28.36
13	North East-2	268.49	301.65	33.16
14	North West B-2	294.62	327.13	32.51
15	South West B-2	292.23	334.80	42.57



Insight:

All listed districts show a positive change in quality index from Class X to Class XII — meaning student performance quality improved at the higher level.

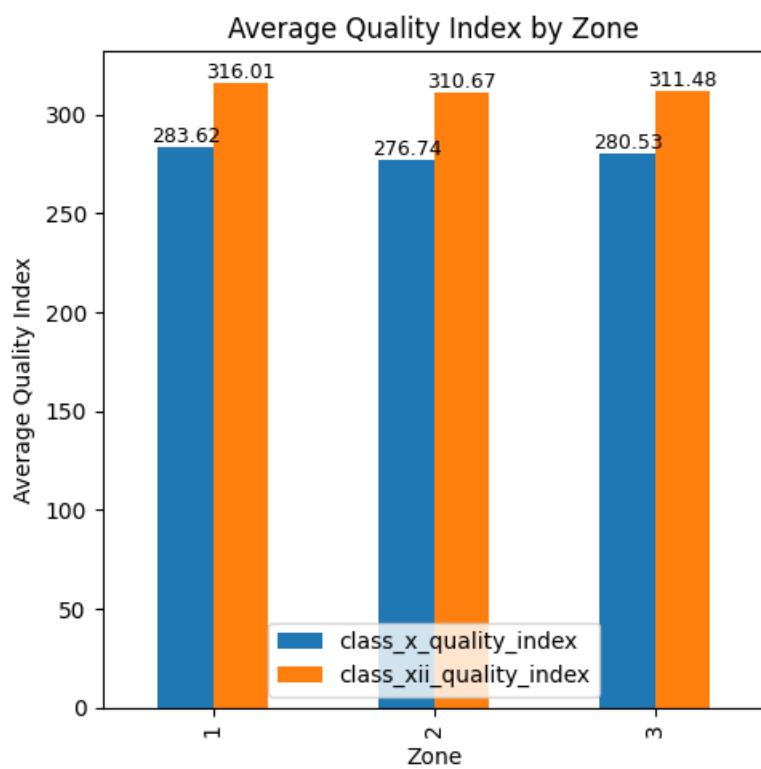
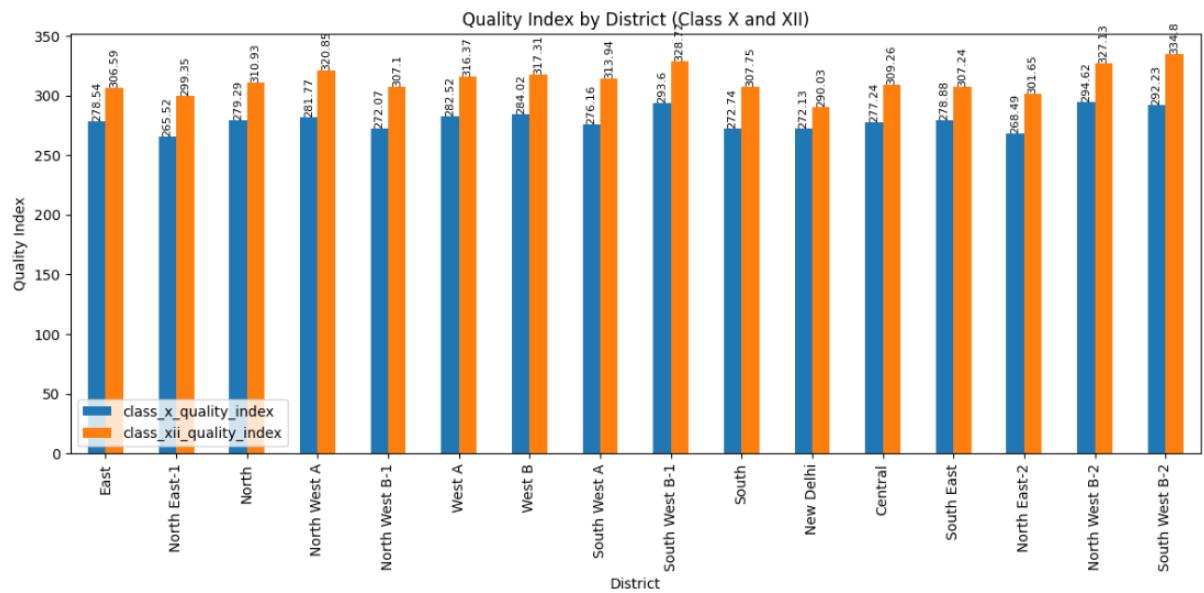
North West A has the biggest improvement in this group (+39.08), followed by North West B-1 (+35.03) and North East-1 (+33.83).

East district has the smallest improvement among these five (+28.05), though it's still a healthy gain.

This suggests a consistent upward trend in quality as student progress from Class X to Class XII, but with variation in improvement levels between districts.

3. Zone-wise Quality Index Analysis

no_of_zone	class_x_quality_index	class_xii_quality_index
1	283.62	316.006
2	276.74	310.670
3	280.53	311.480



insight:

Zone 1 has the highest averages for both Class X (283.62) and Class XII (316.01), indicating it maintains a consistently strong performance quality across both grades.

Zone 3 is in the middle — Class X (280.53) and Class XII (311.48) — performing above Zone 2 in Class X but slightly below in Class XII.

Zone 2 has the lowest Class X Quality Index (276.74), but makes a notable jump to Class XII (310.67), showing the most improvement between the two levels.

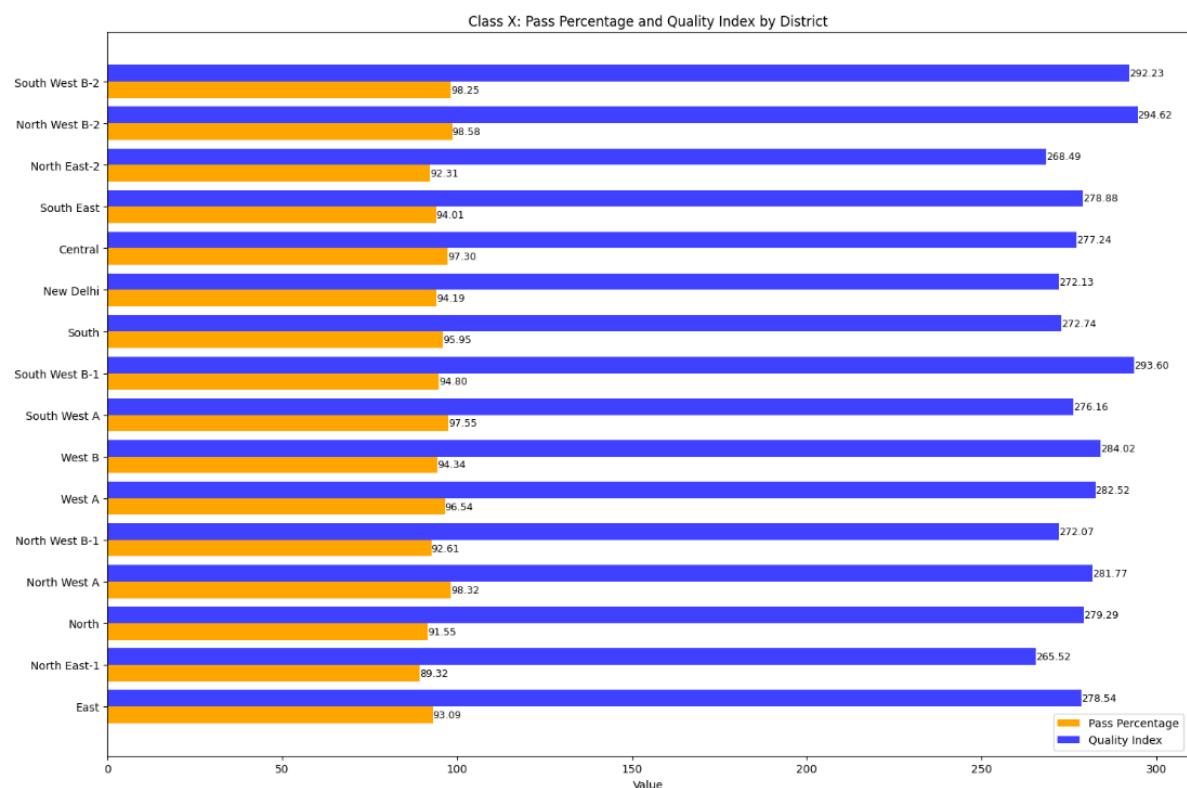
In simple terms:

Zone 1 leads in quality at both stages, Zone 2 starts lower but catches up significantly, and Zone 3 stays steady in the middle.

4. Find Districts/Zones with High Pass Percentages but Low-Quality Index (Possible Grade Inflation)

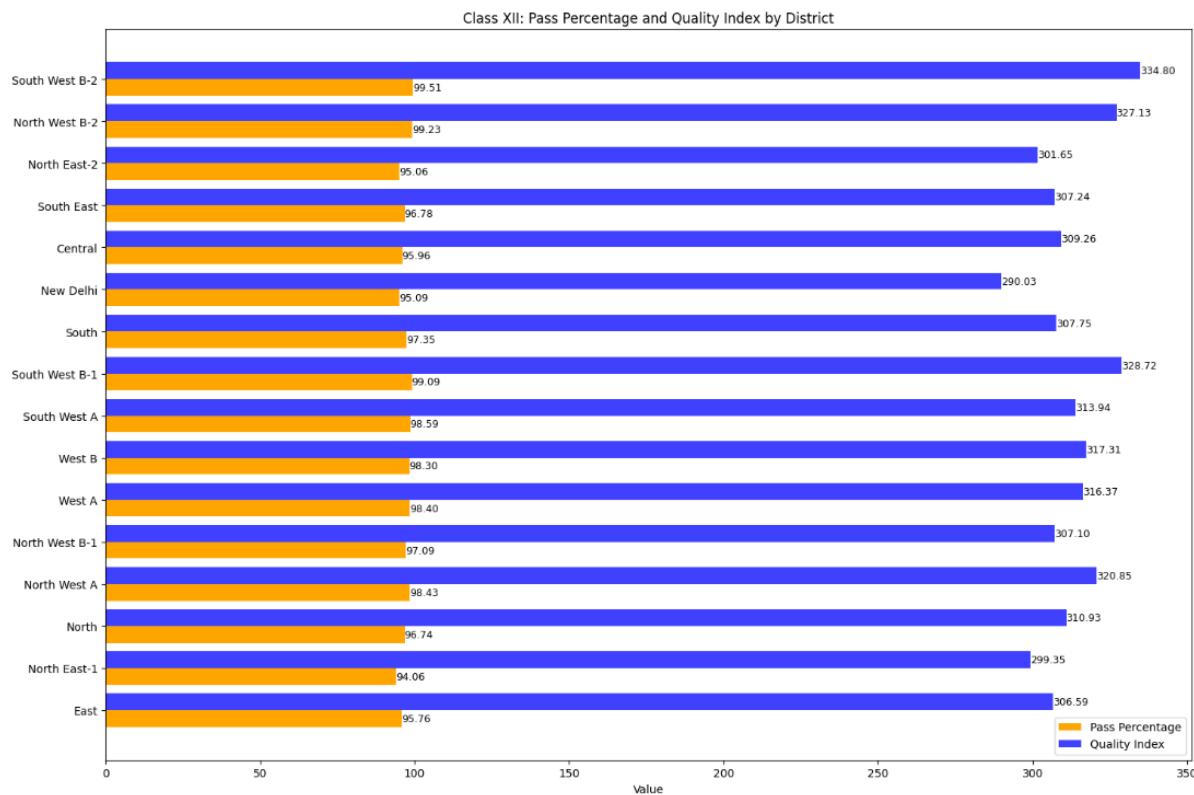
Class X: Pass Percentage and Quality Index by District

	district	class_x_pass_percentage	class_x_quality_index
0	East	93.09	278.54
1	North East-1	89.32	265.52
2	North	91.55	279.29
3	North West A	98.32	281.77
4	North West B-1	92.61	272.07



Class XII: Pass Percentage and Quality Index by District

	district	class_xii_pass_percentage	class_xii_quality_index
0	East	95.76	306.59
1	North East-1	94.06	299.35
2	North	96.74	310.93
3	North West A	98.43	320.85
4	North West B-1	97.09	307.10



Class X:

South West A, South, and Central have very high pass percentages (95–98%) but comparatively lower Quality Index scores (~272–277).

This means many students are passing, but overall performance quality is not as high — suggesting exams might be easier or marking more lenient here.

Class XII:

North West B-1 and South also show high pass rates (~97%) with moderate quality index (~307), again hinting at possible grade inflation.

In simple terms:

These districts produce a lot of passes, but the average performance level isn't equally high. This mismatch between pass rates and quality scores can signal possible grade inflation — where passing is easier than achieving strong academic quality.

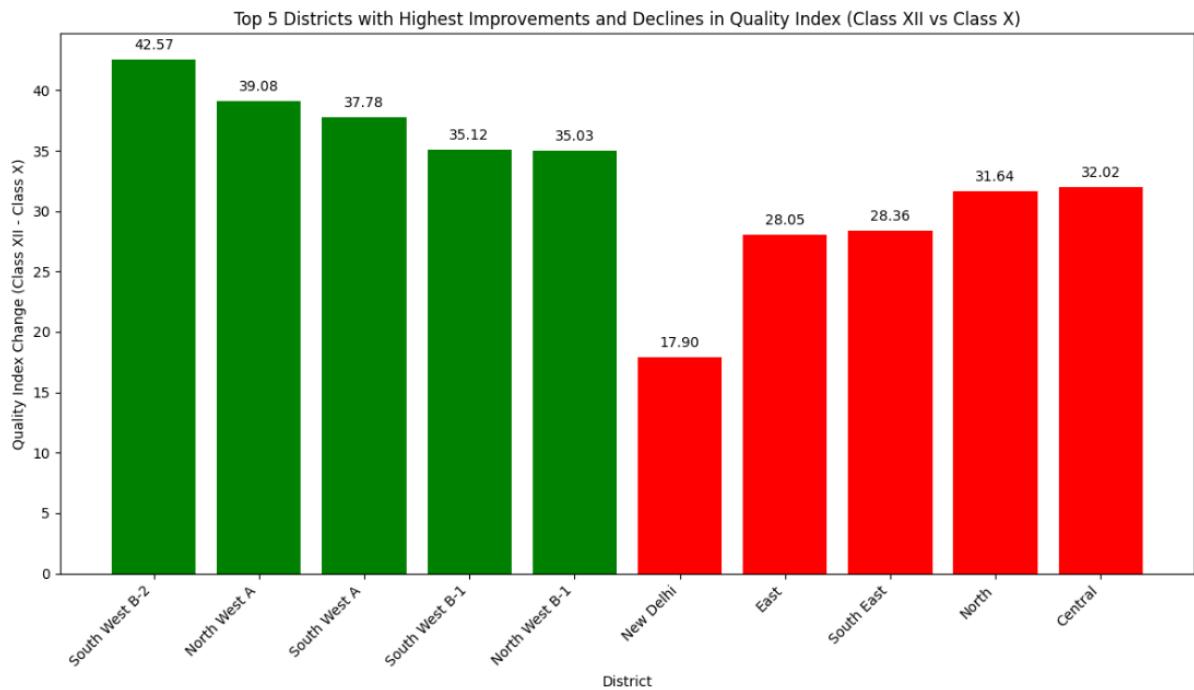
5. Detect Districts with High Improvements or Declines in Quality from Class X to Class XII

Districts with highest improvements in quality index:

	district	quality_index_change	Change Type
15	South West B-2	42.57	Improvement
3	North West A	39.08	Improvement
7	South West A	37.78	Improvement
8	South West B-1	35.12	Improvement
4	North West B-1	35.03	Improvement

Districts with highest declines in quality index:

	district	quality_index_change	Change Type
10	New Delhi	17.90	Decline
0	East	28.05	Decline
12	South East	28.36	Decline
2	North	31.64	Decline
11	Central	32.02	Decline



Insight:

Largest Improvements:

The districts South West B-2, North West A, South West A, South West B-1, and North West B-1 show the highest growth in quality index from Class X to Class XII (gains of about 35 to 43 points). These are your top performers for educational quality improvement.

Lowest Improvements:

The districts New Delhi, East, South East, North, and Central have the smallest increases in quality index (gains between about 18 and 32 points). While their quality index still went up, the improvement was less compared to other districts.

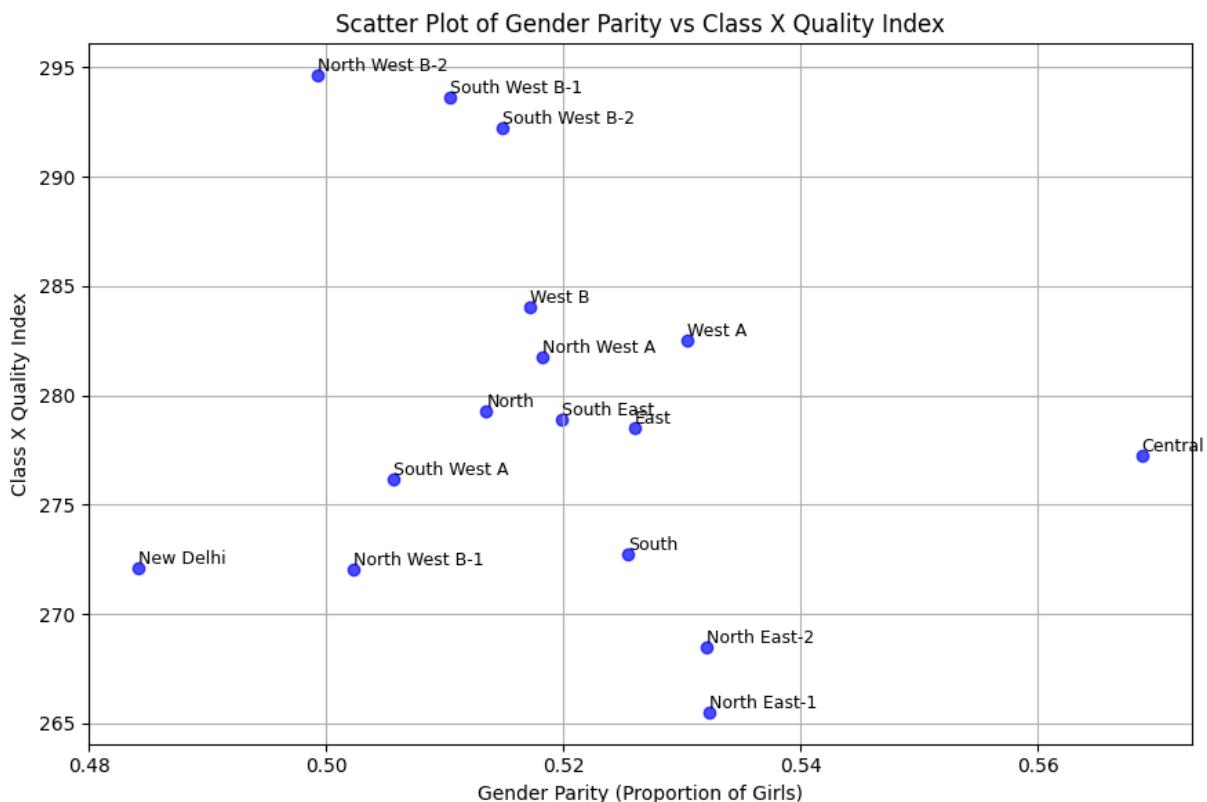
In simple terms:

All listed districts improved, but some (South West B-2, North West A, etc.) saw much bigger jumps in education quality from Class X to XII than others (New Delhi, East, South East, North, Central).

This means progress in education quality is not even—some areas accelerated much more than others.

6. Correlate Quality Index with Infrastructure or Gender Parity

	class_x_quality_index	class_xii_quality_index	no_of_schools_total	gender_parity	students_per_school
class_x_quality_index	1.000000	0.895691	-0.032148	-0.213380	-0.230481
class_xii_quality_index	0.895691	1.000000	0.080639	-0.056631	-0.064181
no_of_schools_total	-0.032148	0.080639	1.000000	0.210014	0.492469
gender_parity	-0.213380	-0.056631	0.210014	1.000000	0.130796
students_per_school	-0.230481	-0.064181	0.492469	0.130796	1.000000



What is a Quality Index?

Imagine you're checking how good the teaching or learning is in schools — not just whether students pass, but how well they are being taught and how effectively they are learning.

This is where the Quality Index comes in. It's like a score or rating that tells us:

“How good is the quality of education in this class or district?”

Simple Breakdown: It's not just about pass percentage. It looks at how strong the performance is — like how many students got high marks, consistency, etc. It's often calculated using multiple factors: like attendance, learning levels, assessments, and performance distribution.

insight:

-**Class X & XII Quality Index** → Strongly related (0.89) — districts good in Class X tend to be good in Class XII.

-**Gender Parity** → Slight negative link with Class X Quality Index (-0.21) — districts with more girls proportionally show a slightly lower quality index in Class X (weak trend).

-**Students per School** → Weak negative link with quality indices — more crowded schools tend to have slightly lower quality.

-**No. of Schools & Students per School** → Moderate positive link (0.49) — bigger districts often have both more schools and more students per school.

-Most other relationships are weak — no strong impact detected.

In short:

Quality in X and XII moves together, but higher girl ratio or more crowded schools show a slight dip in quality; otherwise, relationships are minor.

calculated using multiple factors: like attendance, learning levels, assessments, and performance distribution.

District-wise (quality index) Performance Change from Class X to Class XII

district	class_x_quality_index	class_xii_quality_index	inconsistency
South West B-2	292.23	334.80	42.57
North West A	281.77	320.85	39.08
South West A	276.16	313.94	37.78
South West B-1	293.60	328.72	35.12
North West B-1	272.07	307.10	35.03
South	272.74	307.75	35.01
West A	282.52	316.37	33.85
North East-1	265.52	299.35	33.83
West B	284.02	317.31	33.29
North East-2	268.49	301.65	33.16
North West B-2	294.62	327.13	32.51
Central	277.24	309.26	32.02
North	279.29	310.93	31.64
South East	278.88	307.24	28.36
East	278.54	306.59	28.05
New Delhi	272.13	290.03	17.90

Shows higher inconsistency

Metric	Value
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Class X Quality Index 294.62

Class XII Quality Index 334.80

Inconsistency 42.57

Shows lowest inconsistency

Metric	Value
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Class X Quality Index 265.52

Class XII Quality Index 290.03

Inconsistency 17.90

Lower value = more consistent quality across classes

Higher value = unstable education quality

district South West B-2 = 42.57

district New Delhi = 17.90

South West B-2 records an inconsistency score of **42.57**, indicating a significant gap in education quality between Class X and XII. This highlights the need for targeted educational support in the district.

District-wise (%) Performance Change from Class X to Class XII

district	class_x_pass_percentage	class_xii_pass_percentage	pass_percentage_diff
Central	97.30	95.96	-1.34
East	93.09	95.76	2.67
New Delhi	94.19	95.09	0.90
North	91.55	96.74	5.19
North East-1	89.32	94.06	4.74
North East-2	92.31	95.06	2.75
North West A	98.32	98.43	0.11
North West B-1	92.61	97.09	4.48
North West B-2	98.58	99.23	0.65
South	95.95	97.35	1.40
South East	94.01	96.78	2.77
South West A	97.55	98.59	1.04
South West B-1	94.80	99.09	4.29
South West B-2	98.25	99.51	1.26
West A	96.54	98.40	1.86
West B	94.34	98.30	3.96

Interpretation:

Positive values → Improvement

Negative values → Drop in performance

Top districts with most improvement

district	class_x_pass_percentage	class_xii_pass_percentage	pass_percentage_diff
North	91.55	96.74	5.19
North East-1	89.32	94.06	4.74
North West B-1	92.61	97.09	4.48
South West B-1	94.80	99.09	4.29
West B	94.34	98.30	3.96

Insight:

Several districts demonstrate significant improvement from Class X to Class XII, which may be attributed to stronger teaching practices, effective retention strategies, or additional student support at the senior level. Notably, the **North district** shows a clear upward trend, with students performing substantially better in Class XII compared to Class X.

Districts with biggest drop

district	class_x_pass_percentage	class_xii_pass_percentage	pass_percentage_diff
Central	97.30	95.96	-1.34
North West A	98.32	98.43	0.11
North West B-2	98.58	99.23	0.65
New Delhi	94.19	95.09	0.90
South West A	97.55	98.59	1.04

Insight:

The Central district shows a decline, indicating that performance at the senior secondary level (Class XII) fell compared to Class X, possibly due to systemic challenges or resource gaps. Meanwhile, several other districts display only marginal improvements, which may reflect stagnation rather than genuine progress.

Conclusion:

"I calculated the difference between Class XII and Class X pass percentages per district. A positive difference indicates improvement in performance as student progress, while a negative one signals a decline. For example, 'North' improved by 5.19%, whereas 'Central' declined by 1.34% — possibly pointing to issues in senior secondary education in that district."