EDUCATION SYSTEM ANALYSIS IN PAKISTAN

Literacy, Infrastructure & Performance Insights

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OVERVIEW

- INTRODUCTION OF THE DATASET

- BEFORE/AFTER CLEANING

- EXPLANATORY DATA ANALYSIS

- PRESENTING AN OVERALL MESSAGE/NARRATIVE

INTRODUCTION

- National-level school datasets (Punjab, KPK ,etc)

- Includes literacy, infrastructure, staffing, facilities

- 50,000+ Rows and 113 columns

- **Goal:** Understand gaps, patterns & educational inequalities

CLEANING METHADOLOGY

Changed Columns into Meaningful Names

pp_no → provincial_assemble_number
uc_name → Union Council Name

Removed Empty Rows

• Removed All Empty Rows in between

Removed Redundunt Columns

• Total Area in kanal and marla was given
• Other Useless columns

Integrated secondary Dataset

• Integrated Kpk primary and middle school. dataset

QUESTIONS TO ASK

Main Dataset → Punjab census report

1 Since there is no specific ranking given in the dataset, how could we use different features to rank each school?

2 After Ranking, Which School/district performed better? Also since provincial assembly no was given, which party performed better?

3 How did Punjab Perform Relative to Other States?

DERIVED RANKING METRICS

1.Insfrastructure Score

- Classrooms
- Functional ClassRooms
- Electricity/Water Availibility
- Usable Toilets
- Main Gate

1. Facility Score

- Science Labs
- Computer Labs
- Internet Access
- Library
- Playground

1.Safety Score

- Dangerous ClassRooms
- Dangerous Other Rooms
- Boundary Wall
- Main Gate
- Security

1.Lab Readiness Level

- Physics Labs and Availible Apparatus
- Biology Labs and Availible Apparatus
- Chemistry Labs and Availible Apparatus
- Computer Labs
- Home Economic Labs And Apparatus

Total Performances = [0.40 × Infrastructure_Score + 0.30 × Safety_Score + 0.30 × Facilities_Score]
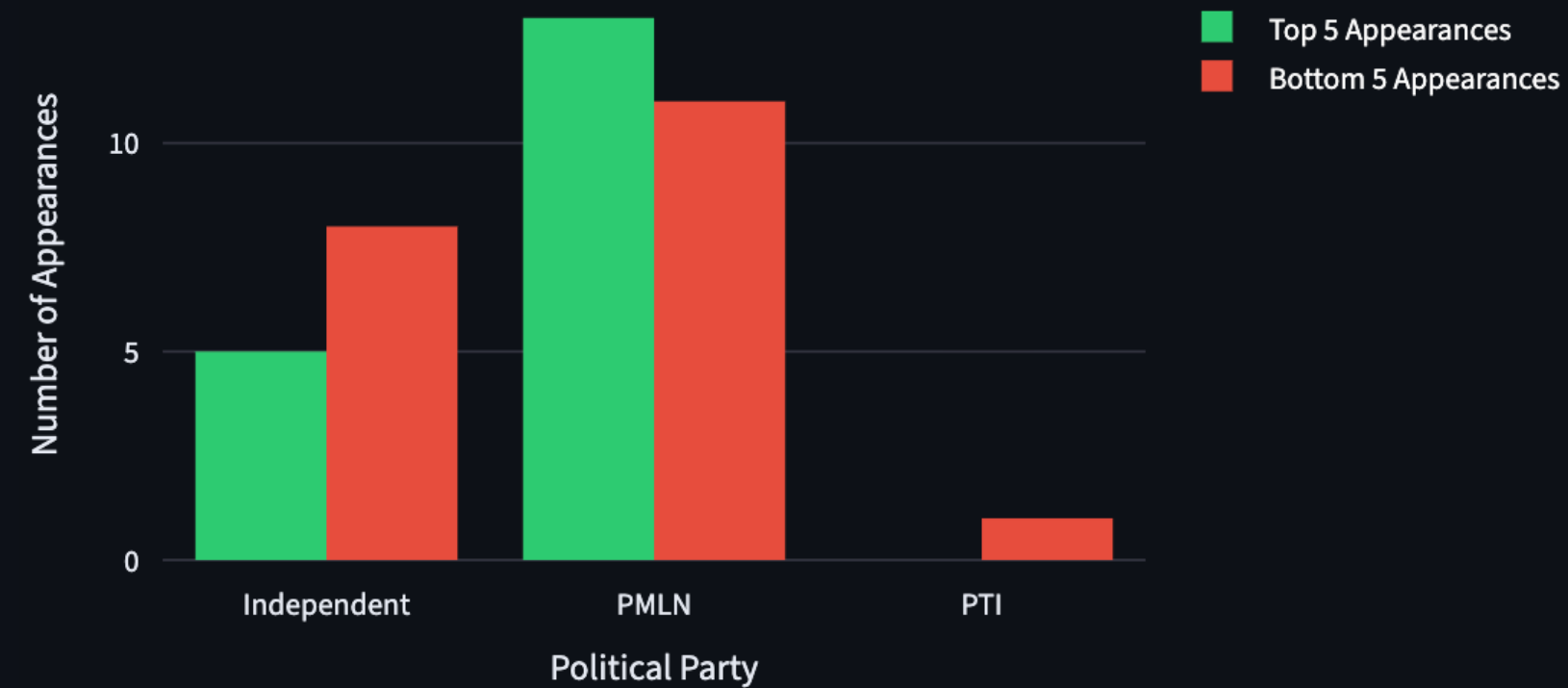
RESULTS

1 Lahore and faisalabad Dominate, with faisalabad having more facility score than lahore
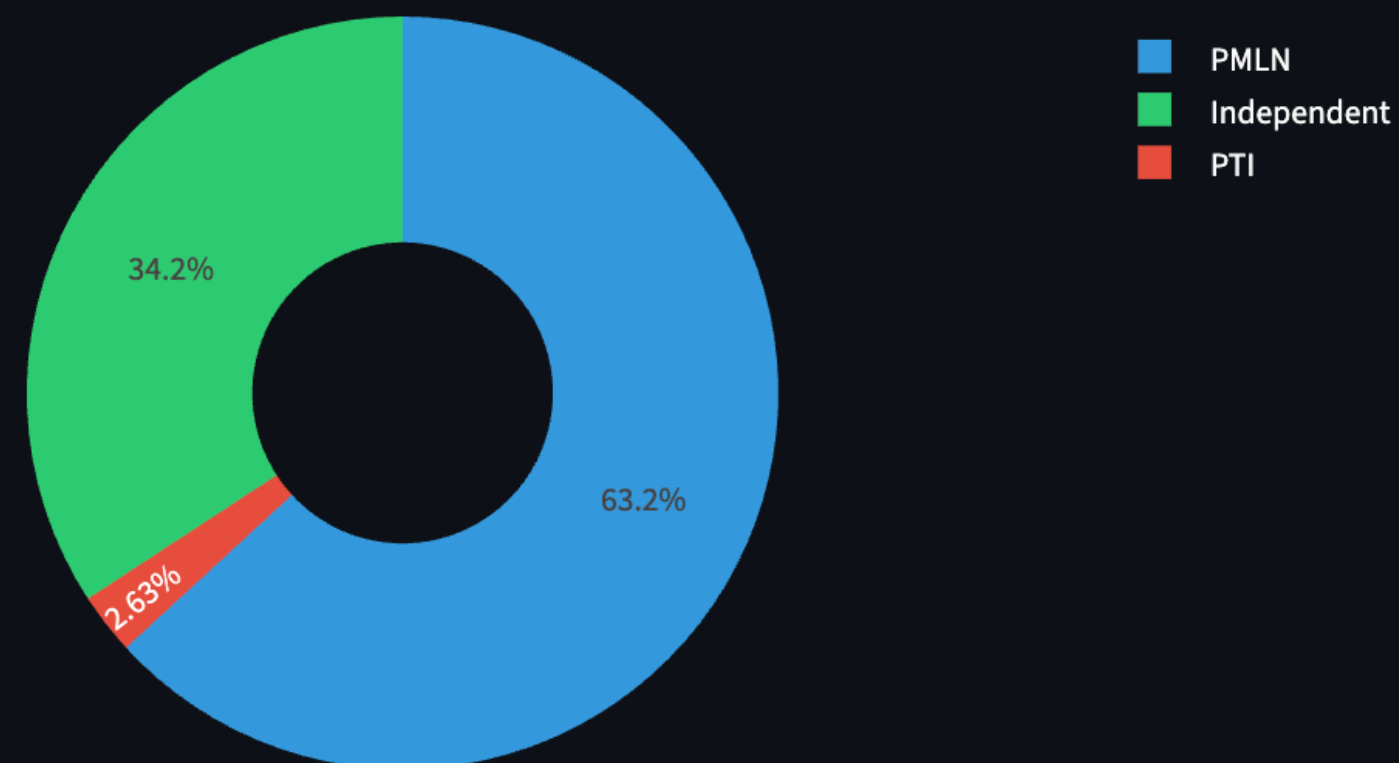
2 D.G Khan and Rajanpur Have the Worst Scores

3 South vs North Punjab?

Overall Party Performance (All Categories)

Party Share of Top/Bottom Appearances

PARTY WISE ANALYSIS

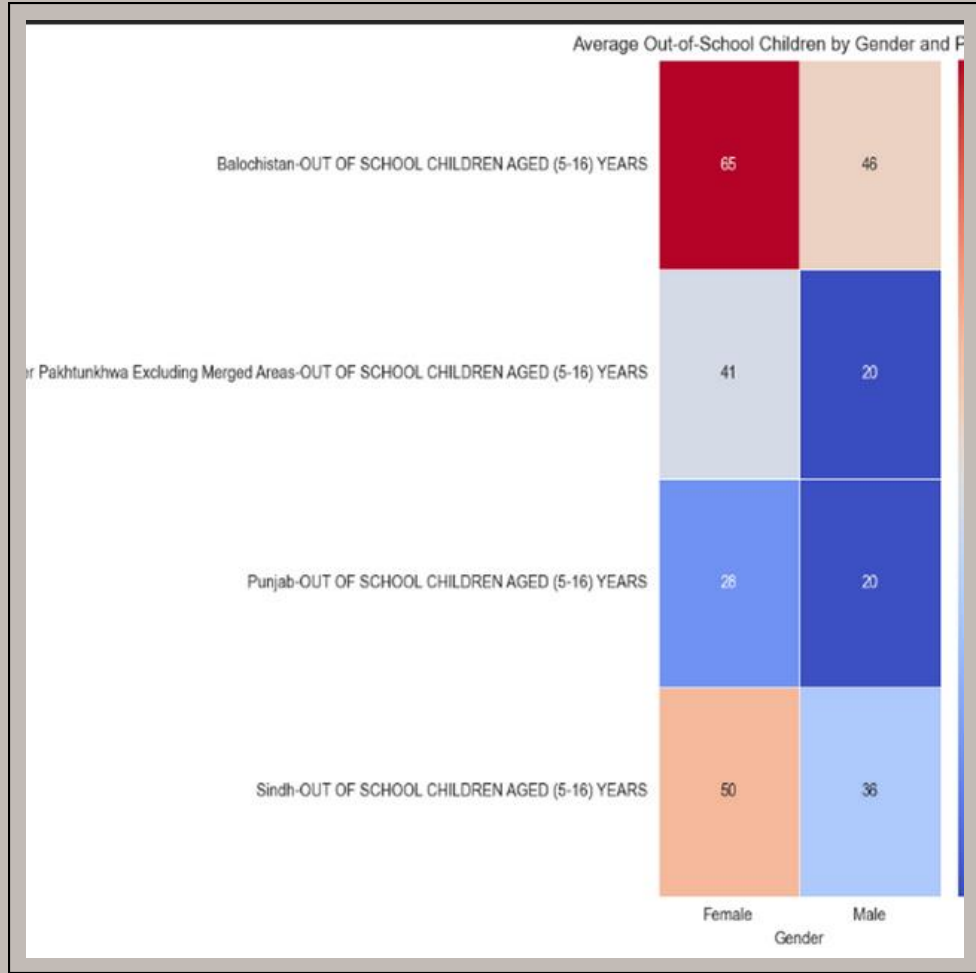Mapped Each Provincial Assembly Number to its elected MPA and Affiliated Party

1
- PMLN has both worst and best Schools
- Independent Candidates have more worse schools
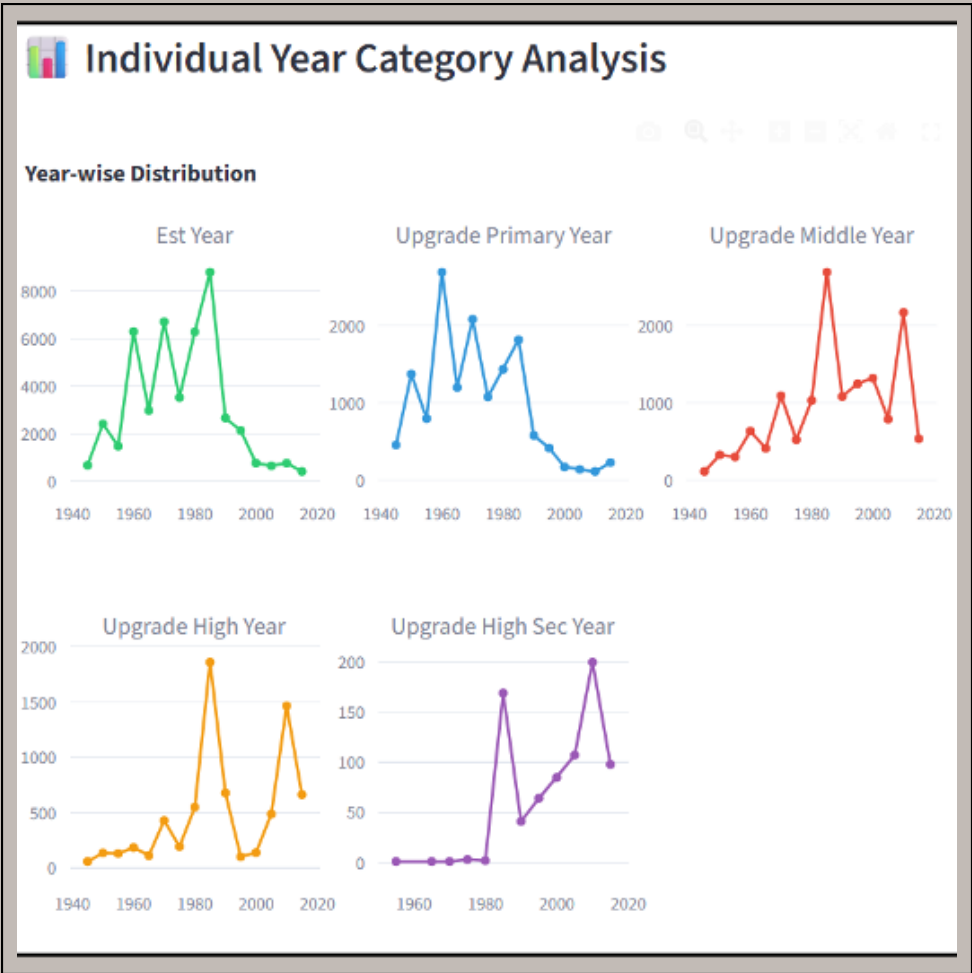- PTI Did not have any good school in top 5 schools

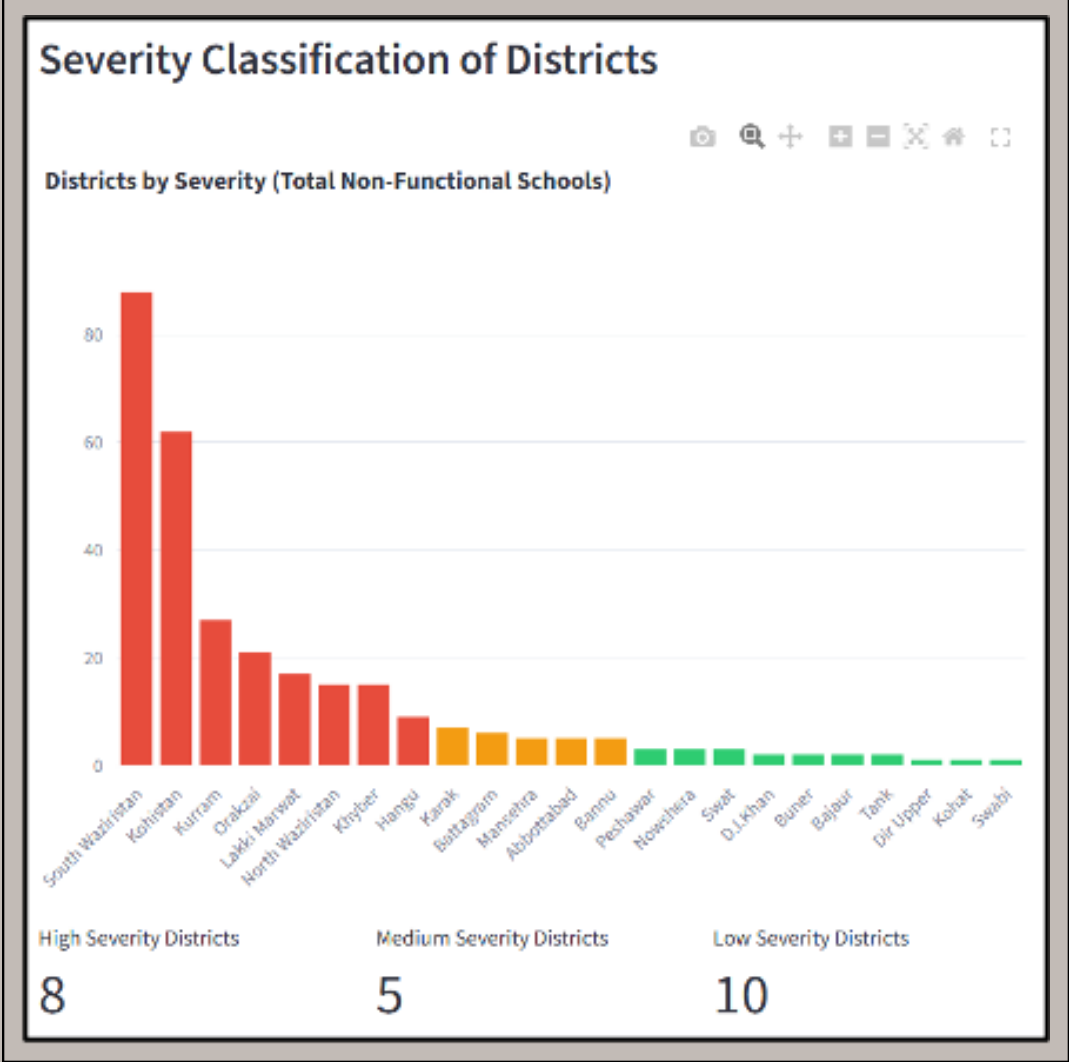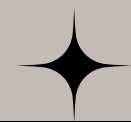**2** Since PMLN Have more seats? bias?
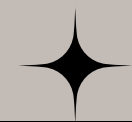
MORE ANALYSIS

Punjab Has Least out of school Female/Male Students, While Balochistan has most

There were schools Even from 1800's and, most schools were established in the 90's

South Waziristan had the most non-functional schools. Due to ongoing crisis over there.

NARRATIVE

Gender Gaps persistent and region driven

Rural Infrastrucutre Gaps

Across all schools Labs Readiness score Was very low

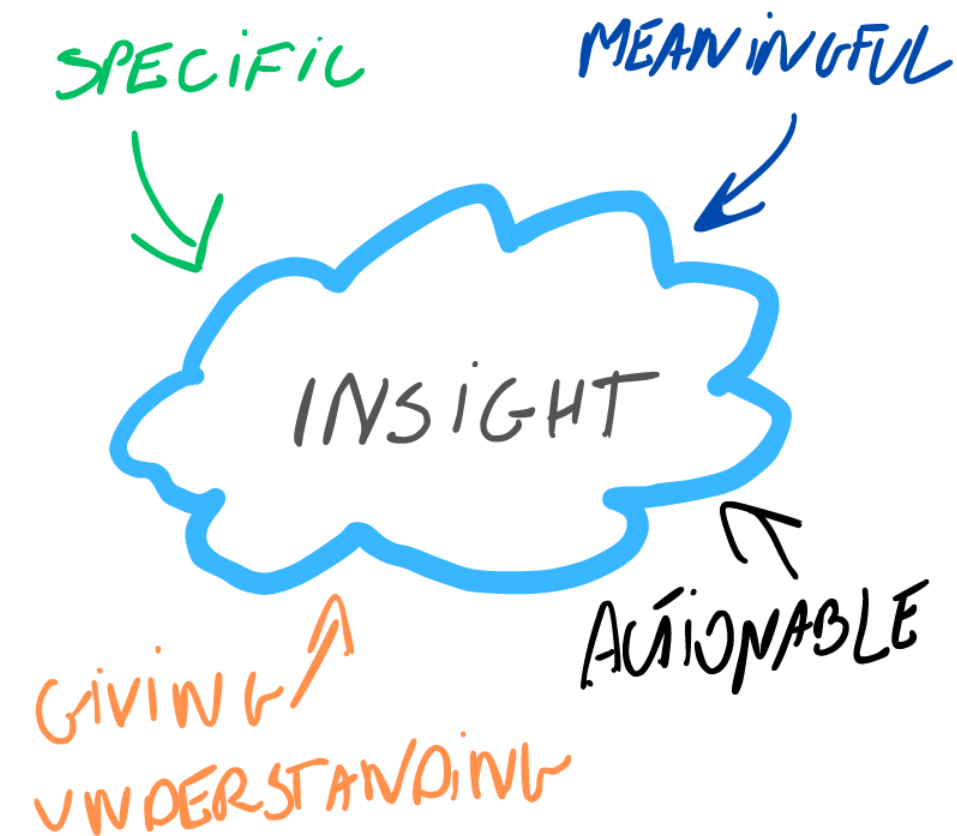Facilities weakest dimension across all districts

Region Wise School Disparity (North vs South Punjab)

PMLN districts show stronger school infrastructure performance.

Actionable Outcomes

- Prioritize Rural School Infrastructure Upgrades

- Expand School Facilities and Staff

- Strengthen Female Education (Scholarships/Cultural Awareness)

- Strengthen Safety Measures Across All Schools

- Focus on South Punjab School

THANK YOU