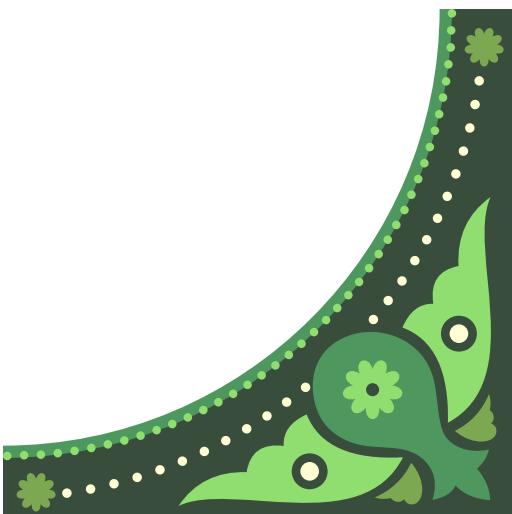


A Provincial Perspective through Data & Visualization



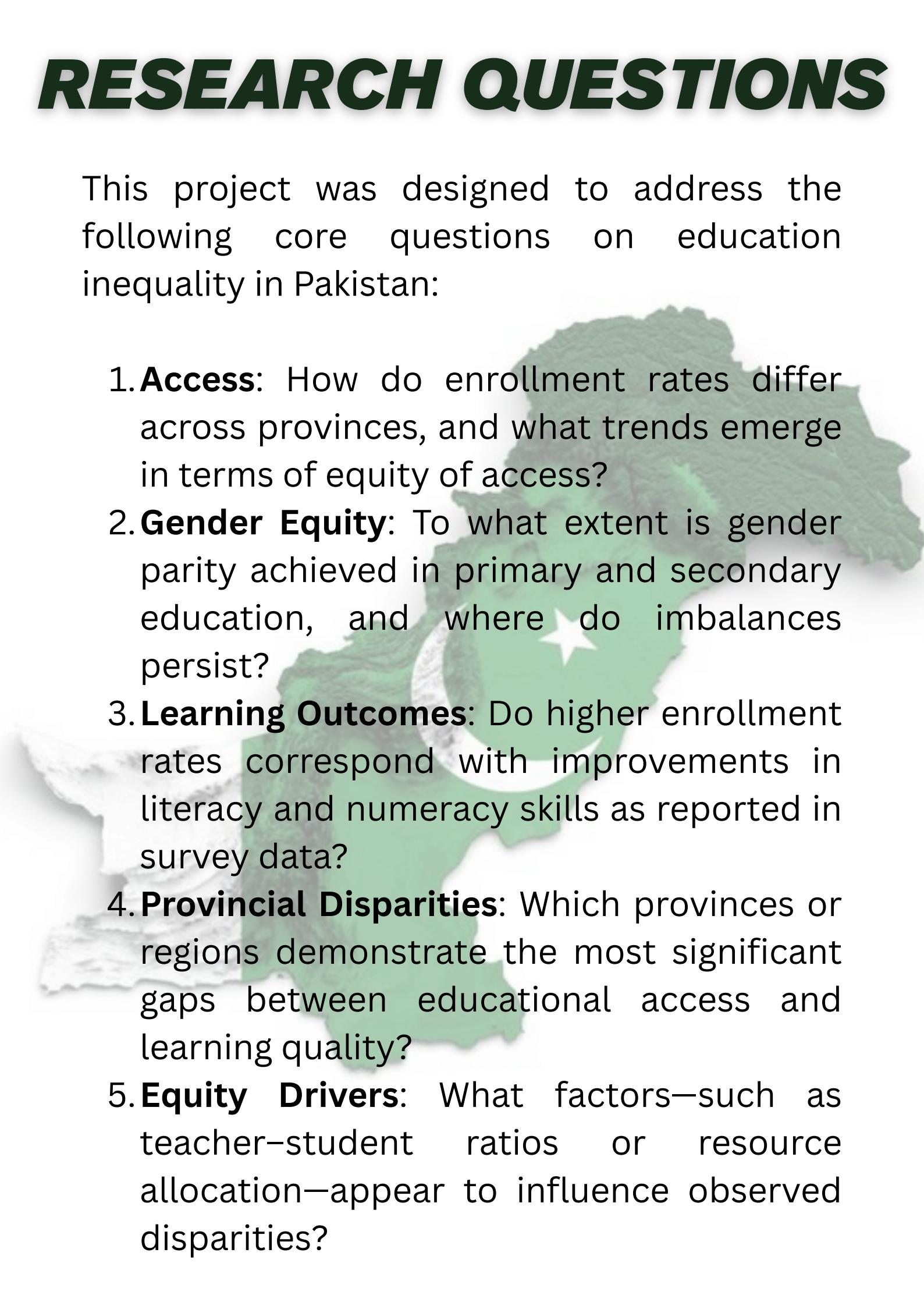
Education Inequality Analysis

PAKISTAN



RESEARCH QUESTIONS

This project was designed to address the following core questions on education inequality in Pakistan:

- 
- 1. Access:** How do enrollment rates differ across provinces, and what trends emerge in terms of equity of access?
 - 2. Gender Equity:** To what extent is gender parity achieved in primary and secondary education, and where do imbalances persist?
 - 3. Learning Outcomes:** Do higher enrollment rates correspond with improvements in literacy and numeracy skills as reported in survey data?
 - 4. Provincial Disparities:** Which provinces or regions demonstrate the most significant gaps between educational access and learning quality?
 - 5. Equity Drivers:** What factors—such as teacher-student ratios or resource allocation—appear to influence observed disparities?

KEY INSIGHTS

- **Enrollment versus Quality:** Provinces with comparatively high enrollment rates do not always demonstrate corresponding gains in literacy and numeracy, highlighting a gap between access and learning outcomes.
- **Gender Parity Variability:** Gender Parity Index (GPI) values reveal that progress toward female inclusion is uneven, with certain provinces still reflecting systemic disadvantages for girls.
- **Regional Inequalities:** Literacy rates and basic learning indicators vary significantly by province, underscoring the importance of localized interventions rather than one-size-fits-all policies.
- **Resource Challenges:** Teacher-student ratios and school infrastructure disparities contribute to inequities, affecting the quality of education delivery.

○

METHODOLOGY

◆ **Data Sources**

- PES – Enrollment, schools, teachers
- PSLM – Literacy & attendance
- ASER – Learning outcomes (rea

◆ **Data Preparation**

- Extracted provincial-level tables
- Cleaned in Power Query (names, formats, indicators)
- Calculated:
 - Gender Parity Index (GPI)
 - Teacher–Student Ratio
 - Composite Education Equity Index

◆ **Analytical Framework**

- Comparative analysis (enrollment, gender, outcomes)
- Descriptive stats & ratio analysis
- Normalized indicators for cross-province ranking

◆ **Visualization Design**

- Choropleth Map – Provincial equity index
- Bar & Scatter Charts – Enrollment vs learning outcomes
- KPIs – National averages & provincial outliers

RECOMMENDATIONS

- **Prioritize Learning Outcomes:** Policymakers should complement enrollment initiatives with focused programs that improve foundational literacy and numeracy skills, particularly in underperforming provinces.
- **Strengthen Gender Equity Measures:** Targeted interventions are needed in provinces where the Gender Parity Index remains below national benchmarks to ensure equitable access for girls.
- **Invest in Teacher Capacity:** Addressing teacher-student ratios and investing in teacher training can directly improve classroom learning experiences and outcomes.
- **Localized Policy Design:** Provincial disparities suggest that interventions should be tailored to regional contexts rather than applying uniform, nationwide strategies.
- **Data-Driven Monitoring:** Regular integration of administrative statistics with independent learning assessments (such as ASER) can provide policymakers with a more holistic view of progress and challenges.

CONCLUSION

The analysis reveals that education inequality in Pakistan is shaped not only by differences in enrollment but also by disparities in gender parity, resource allocation, and learning outcomes. While several provinces have made notable progress in expanding access, the translation of access into actual learning remains inconsistent. The Education Equity Index highlights that provinces performing well on enrollment often lag in literacy and numeracy benchmarks, underscoring the persistent quality gap in the education system.