Primary School Infrastructure and Educational Outcomes in Nairobi
An Analysis of School Density, Access, and Completion Rates

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Project Overview: Linking to SDG 4

Goal: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (SDG 4).

Project Focus: This study examines **primary school infrastructure and educational outcomes** in Nairobi, highlighting how access and quality vary across divisions.

Key Connections to SDG 4:
- **Access to Education:** Measures how school density impacts enrollment rates
- **Quality of Education:** Evaluates completion rates and the quality-quantity trade-off
- **Equity Considerations:** Identifies infrastructure disparities across Nairobi divisions
- **Policy Relevance:** Provides evidence-based recommendations for improving both access and outcomes

Key Idea

Does having more schools always lead to better education?

Observation:

- Some areas have many schools
- Other areas have fewer schools

Question We Ask:

- Does more schools mean all children complete school?
- Could too many schools reduce quality because resources are stretched?

Assumption: School completion rates are analyzed based on school density only, excluding factors like healthcare or economic conditions.

Spatial Distribution of Primary Schools in Nairobi

Key Observations:

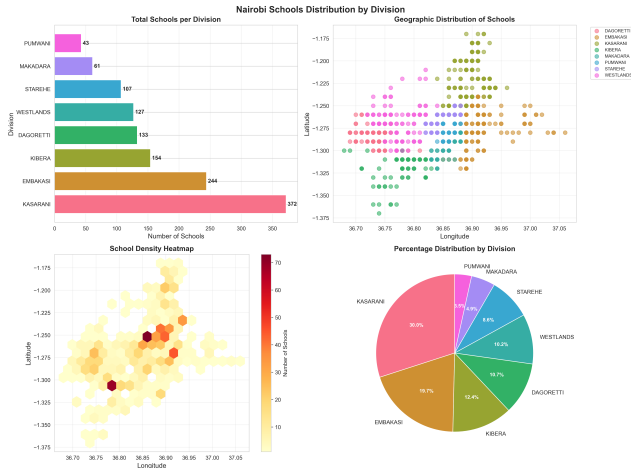- **Geographic Clustering:**
  - Schools unevenly distributed
  - High concentration in central/northern divisions
  - Sparse in peripheral areas
- **Division Patterns:**
  - KASARANI: 372 schools (highest)
  - EMBAKASI: large area, low density
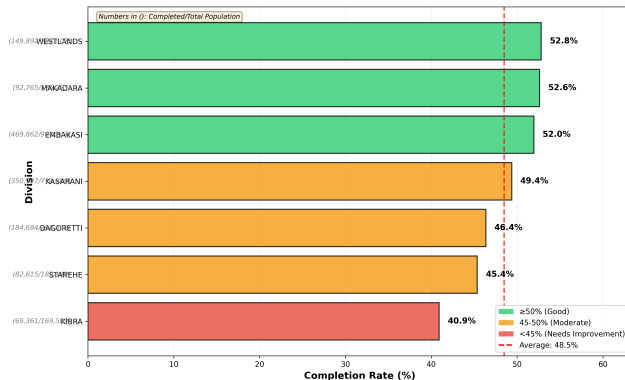 - KIBRA: high concentration in small area
- **Access Gaps:**
  - Some divisions well-covered
  - Others need more schools to balance population

Primary School Completion Rates by Division
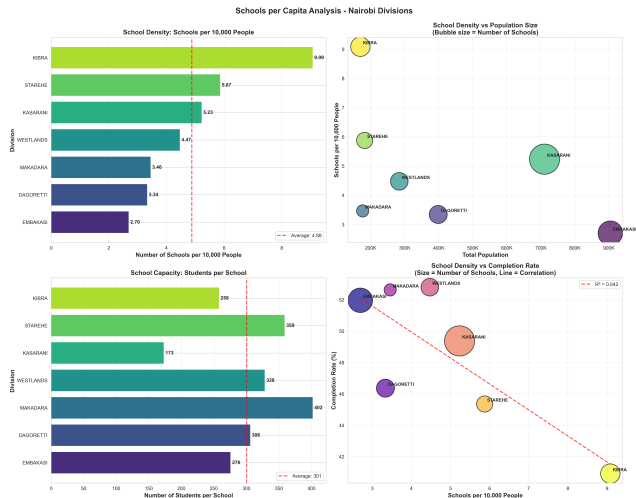(Direct Percentage Comparison)

Key Insights:

1 Key Sub-Counties:
- WESTLANDS/MAKADARA: Highest completion rates
- KIBRA: Lowest completion rate despite high density
- KASARANI: Moderate completion, highest population

Schools Per Capita Analysis

Key Insights:

1. **School Density (Panel 1):**
   - KIBRA: 9.09 schools/10k (highest)
   - EMBAKASI: 2.70 schools/10k (lowest)
   - Average: 4.88 schools per 10,000 people

2. **Density vs Completion Rate (Panel 4):**
   - Higher density → Lower completion
   - Strong negative correlation ($R^2 = 0.642$)
   - Suggests resource dilution may affect school completion.

Conclusions and Recommendations

Main Conclusions:

1. School density improves access but not outcomes
2. Quality-quantity trade-off exists
3. Optimal planning requires balancing both
4. Division-specific strategies are essential

Key Recommendations:
Immediate Actions:

- Expand schools in EMBAKASI
- Reduce overcrowding in MAKADARA

Long-term Strategy:

- Balance density with quality
- Continuous data-driven monitoring

Thank you for your attention!