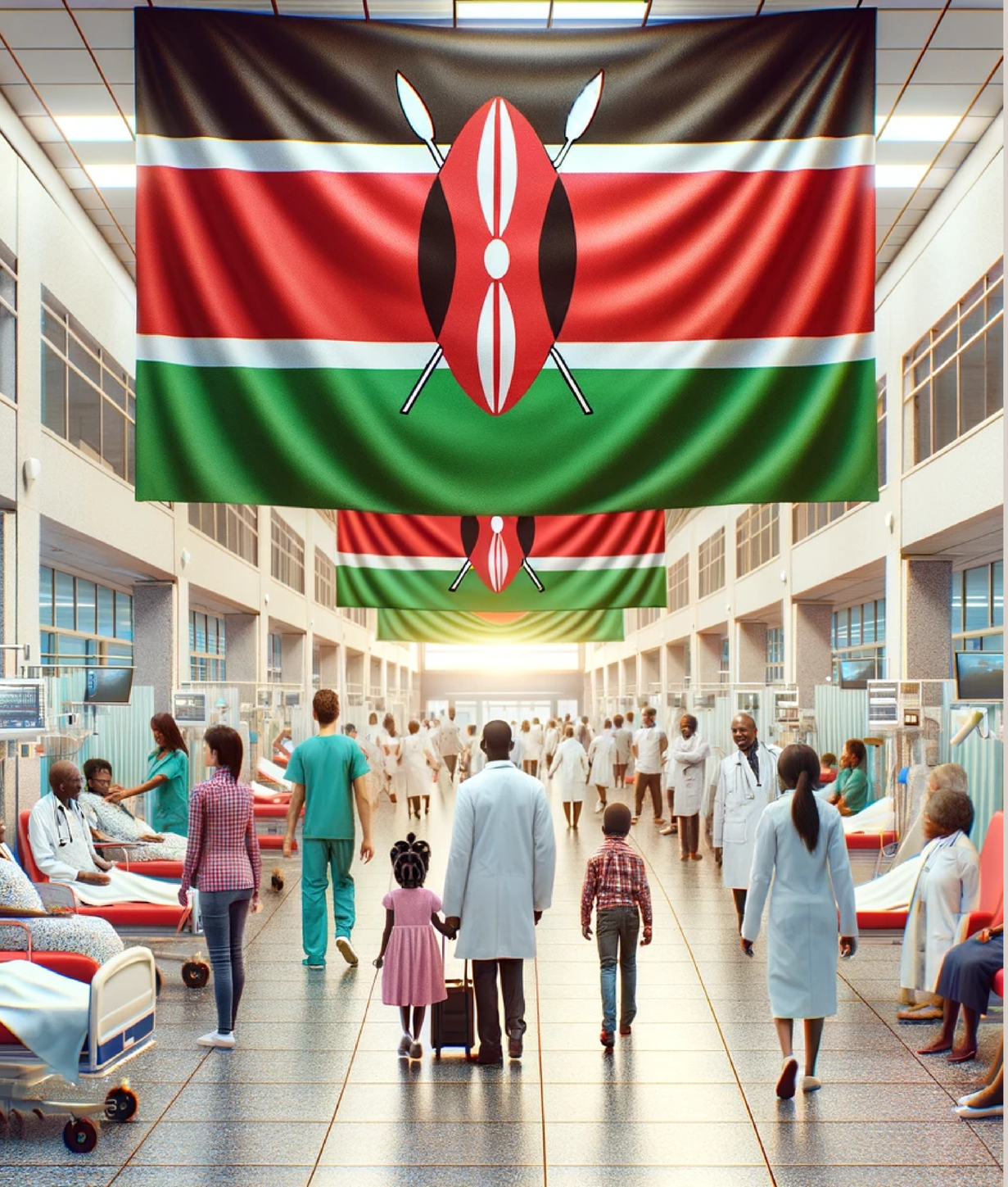

AN ANALYSIS OF HEALTHCARE ACCESSIBILITY AND DEMOGRAPHIC DISPARITIES IN NAIROBI

Presented by Ronald Ongori & Florence Nguuni

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INTRODUCTION: NAIROBI’S HEALTHCARE DISPARITY HISTORY

- **Early Disparities:** Post-independence Nairobi faced a stark urban-rural divide in healthcare quality and access.
- **Infrastructure Lag:** 1990s saw slow growth in health infrastructure, widening the gap as population surged.
- **Private Sector Rise:** Early 2000s, private healthcare burgeoned, yet remained inaccessible to many.
- **Government Initiatives:** Mid-2000s onwards, government efforts increased but disparities persisted.
- **Current State:** Despite progress, Nairobi's healthcare access still varies by location and demographics.

PROBLEM STATEMENT

Global Commitment to SDG 3:

- Despite the global commitment to Sustainable Development Goal (SDG) 3, which aims to ensure healthy lives and promote well-being for all at all ages.

Challenges in Achieving Universal Health Coverage in Kenya:

- Kenya faces substantial challenges in achieving universal health coverage.
- These challenges include disparities in healthcare accessibility, demographic health variances, and systemic limitations.

Imperative for Analysis:

- There is an imperative need to analyze the distribution and capacity of healthcare facilities across Kenya's diverse socio-demographic landscape.

MAIN OBJECTIVE

- **The goal of this project is to identify gaps and opportunities for targeted improvements in healthcare accessibility and address demographic health disparities.**

HYPOTHESIS FORMULATION AND ANALYSIS

The hypotheses formulation for analyzing healthcare in Nairobi covered 2 key areas:

1. **Accessibility of Healthcare Facilities**

a). **Geographic Accessibility Hypothesis:** Healthcare facilities may not equitably distributed across Nairobi, leading to longer travel times and reduced access in lower-income neighborhoods.

b). **Service Range Accessibility Hypothesis:** The range of services offered by healthcare facilities in Nairobi may varies significantly between districts, affecting the quality of care available to residents."

HYPOTHESIS FORMULATION AND ANALYSIS...CON

The hypotheses formulation for analyzing healthcare in Nairobi covered 2 key areas:

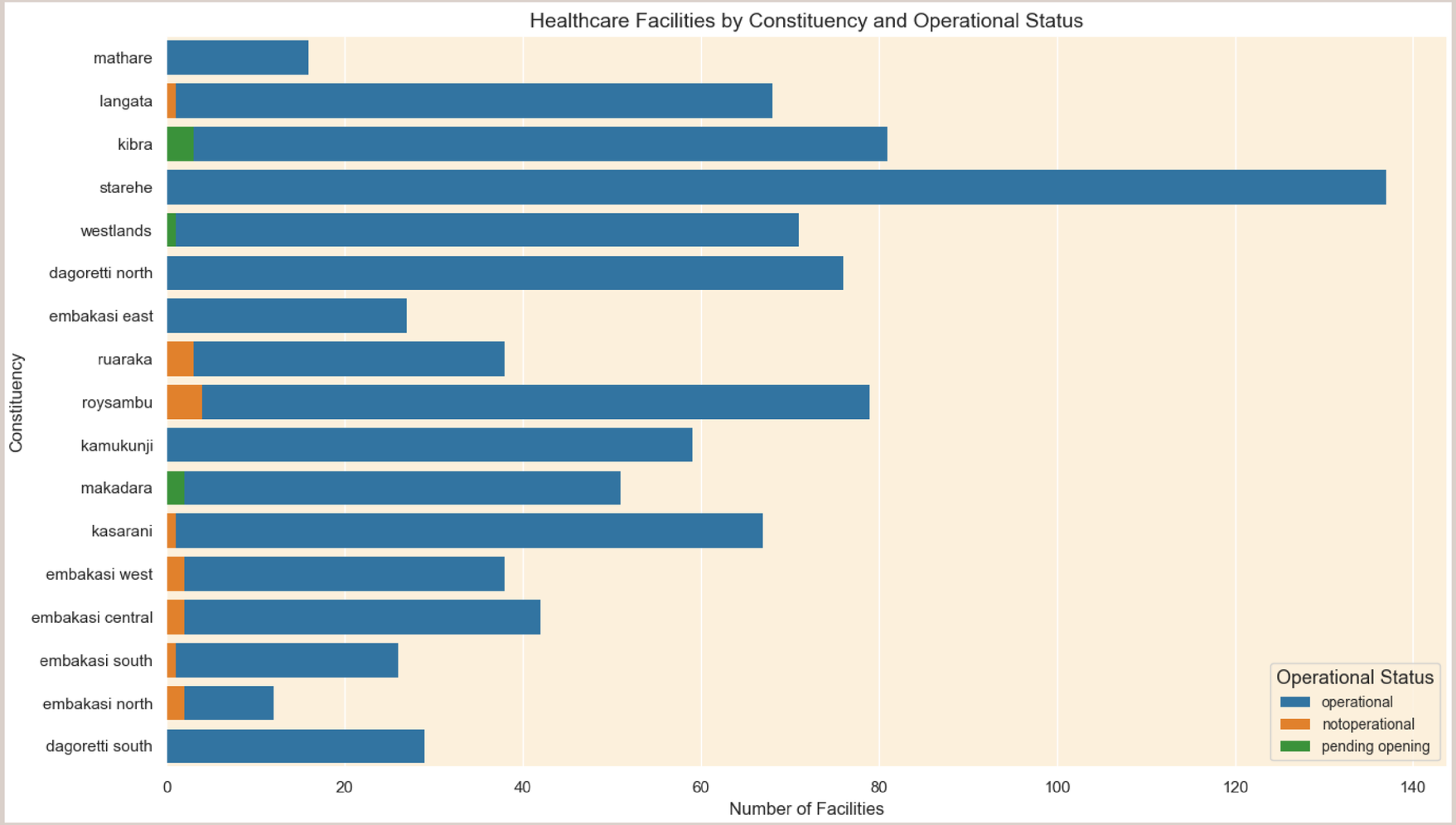
2. Healthcare System Analysis

a)**. Resource Allocation Hypothesis:** The current allocation of medical resources and personnel across Nairobi's healthcare facilities does not match the demographic health profiles of the regions they serve.

b)**. Impact of Household Size Hypothesis:** Large household sizes in Nairobi correlate with increased pressure on healthcare facilities, suggesting the need for a strategic expansion of healthcare resources in densely populated areas.

ACCESSIBILITY OF HEALTHCARE FACILITIES

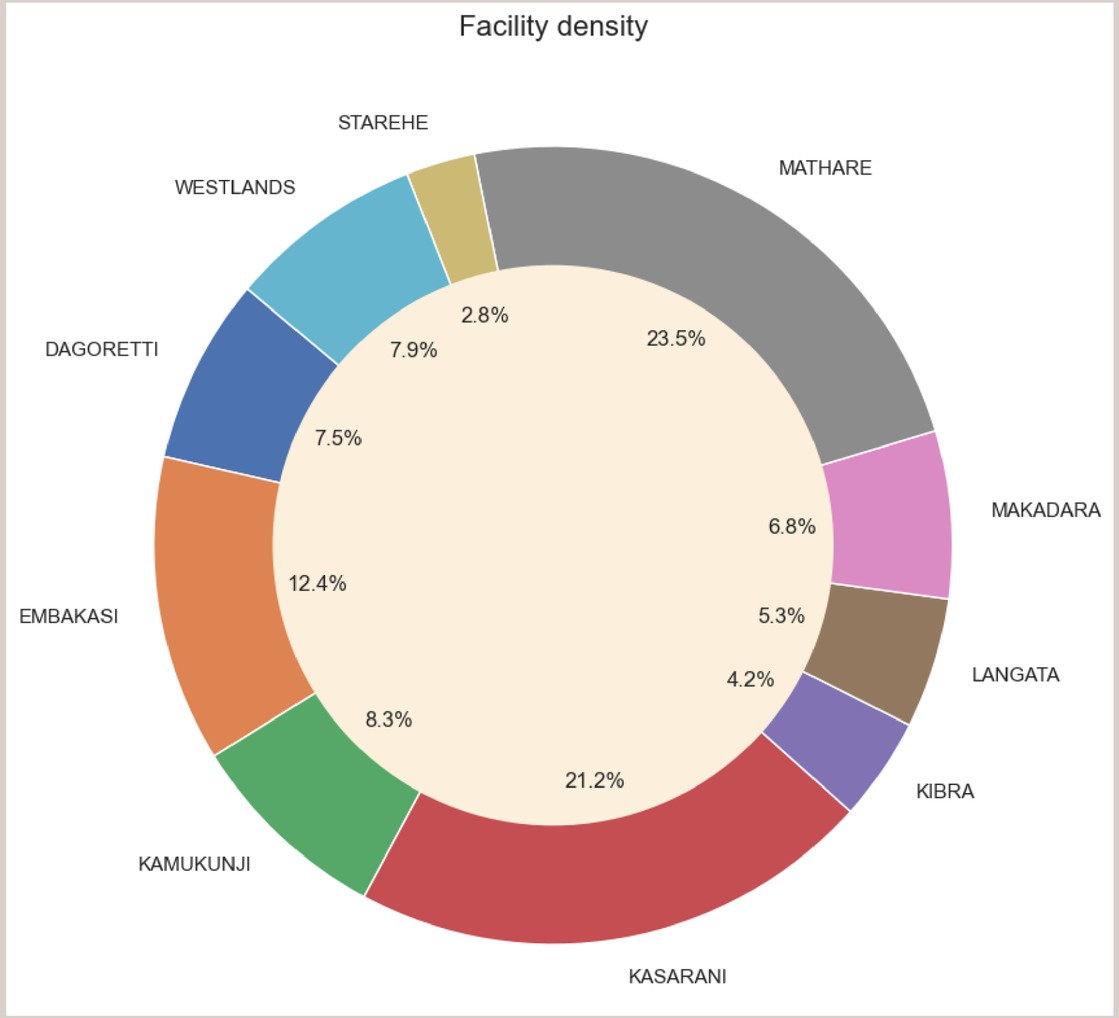
a). Healthcare Facilities by Constituency and Operational Status



Observation

- Kibra has the highest number of healthcare facilities, mostly pending opening.
- Dagoretti North follows with the second-highest number, primarily operational.
- Starehe tops the list for operational facilities, while Embakasi North has the fewest.
- Roysambu has several non-operational facilities, contrasting with Kibra's high pending openings.

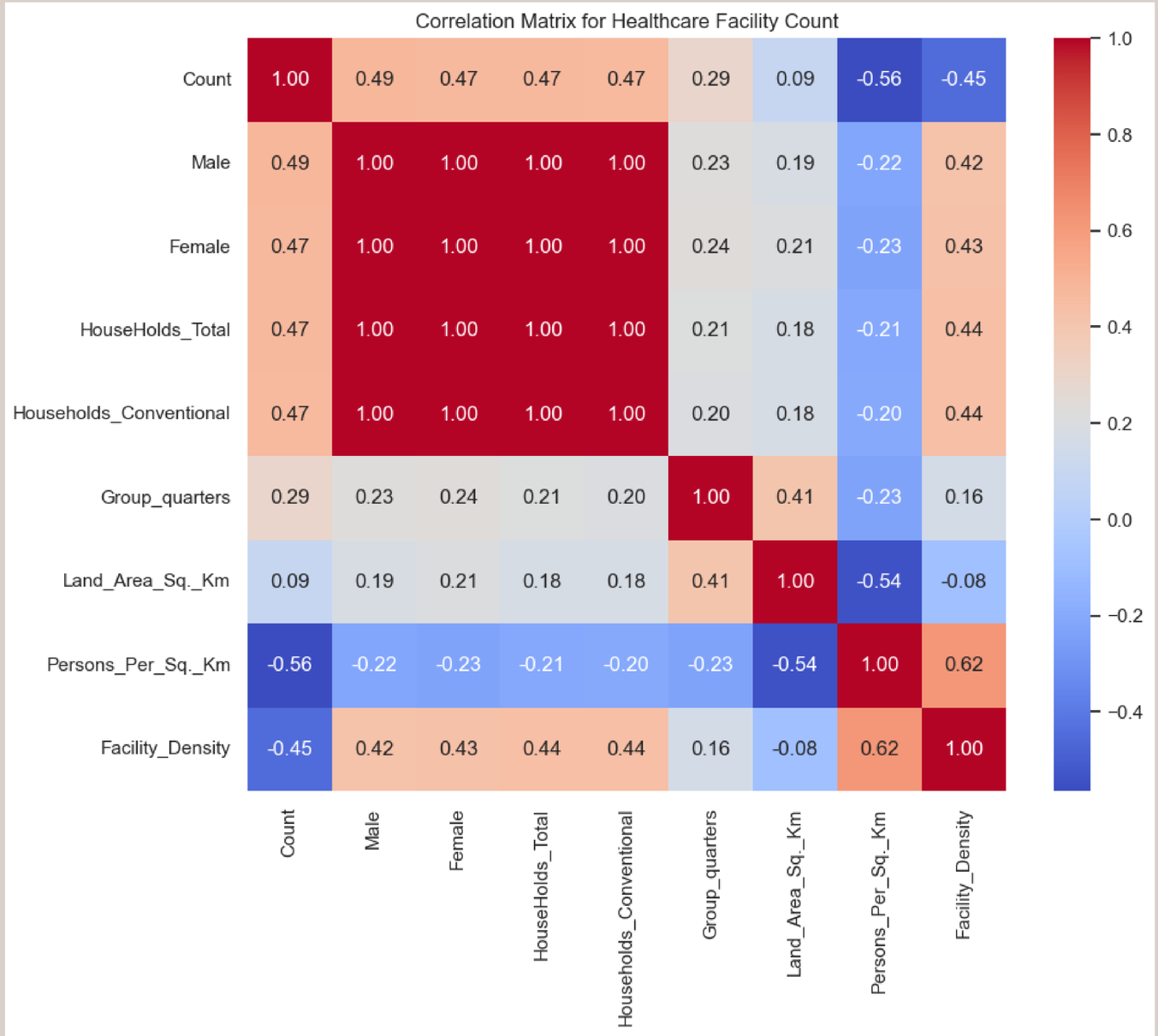
b).Facility Density Analysis



Observation

- **Mathare's Challenge:** High facility density (23.5%) in Mathare suggests potential overcrowding.
- **Variability in Access:** Kasarani and Embakasi show high people-to-hospital ratios, indicating resource allocation issues.
- **Healthcare Planning:** Mathare and Kasarani may need more hospitals to meet demand.
- **Potential for Improvement:** Langata and Westlands have moderate densities, hinting at better accessibility. Additional facilities could still benefit as the population grows.

c).Correlation Matrix for Healthcare Facility Count



Observation

- **Moderate positive correlation:** Population and household metrics correlate with facility count, suggesting increased population leads to more facilities.
- **Low correlation with group quarters:** Presence of group quarters has a weak influence on facility count.
- **Weak correlation with land area:** Larger land areas don't necessarily correlate with more facilities.
- **Negative correlation with population density:** Areas with higher population density may have fewer facilities relative to their population.

Population Demand Hypothesis

Hypothesis Formulation:

- **Population Demand Hypothesis (H0):** No significant linear correlation between subcounty population and healthcare facility count.
- **Alternative Hypothesis (H1):** Significant linear correlation exists between subcounty population and healthcare facility count..

Choice of Test:
The **Pearson correlation coefficient** is here to determine if a larger population in a subcounty is associated with a higher number of healthcare facilities.

Observation:

- Pearson Correlation Coefficient: 0.478 (moderate positive relationship).
- **p-value:** 0.163 (not statistically significant).
- Population size influences healthcare facilities but not the sole determinant.
- Other factors contribute to facility distribution.
- Hypothesis of population size as primary determinant not supported.

Persons per sq km Hypothesis

Hypothesis Formulation:

- **Persons per sq km Hypothesis (H0):** There is no significant linear correlation between the total Healthcare facilities of a subcounty and the Persons per sq km.
- **Alternative Hypothesis (H1):** There is a significant linear correlation between the total Healthcare facilities of a subcounty and the Persons per sq km.

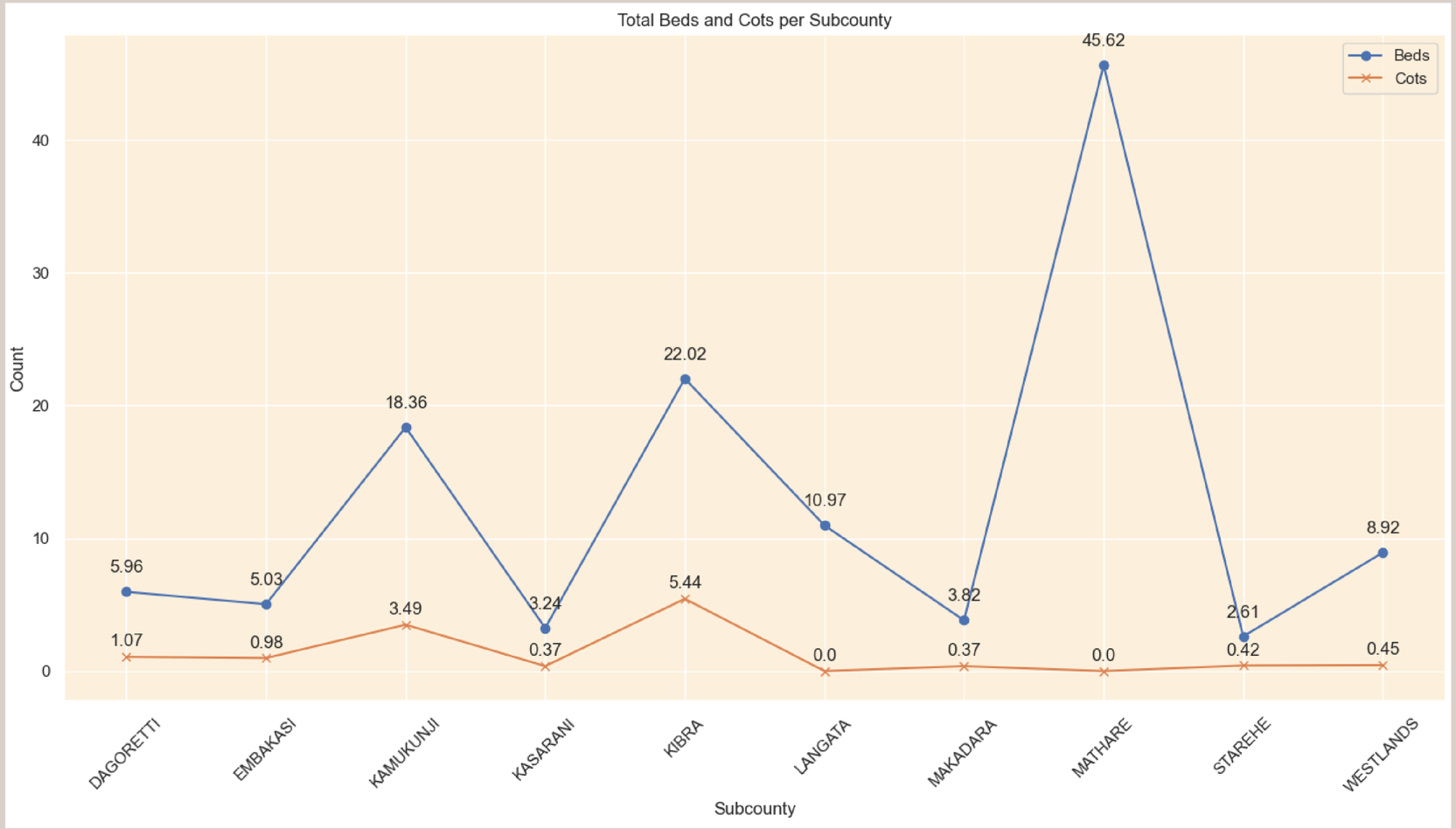
Choice of Test: Pearson correlation coefficient

Observation:

- Pearson Correlation Coefficient (r): -0.565 (moderate negative relationship).
- **p-value**: 0.089 (not statistically significant).
- **Null hypothesis** not rejected; no significant linear relationship.
- Population density (Persons_Per_Sq._Km) ***not a strong predictor of healthcare facilities.***

2. HEALTHCARE SYSTEM RESOURCE ANALYSIS

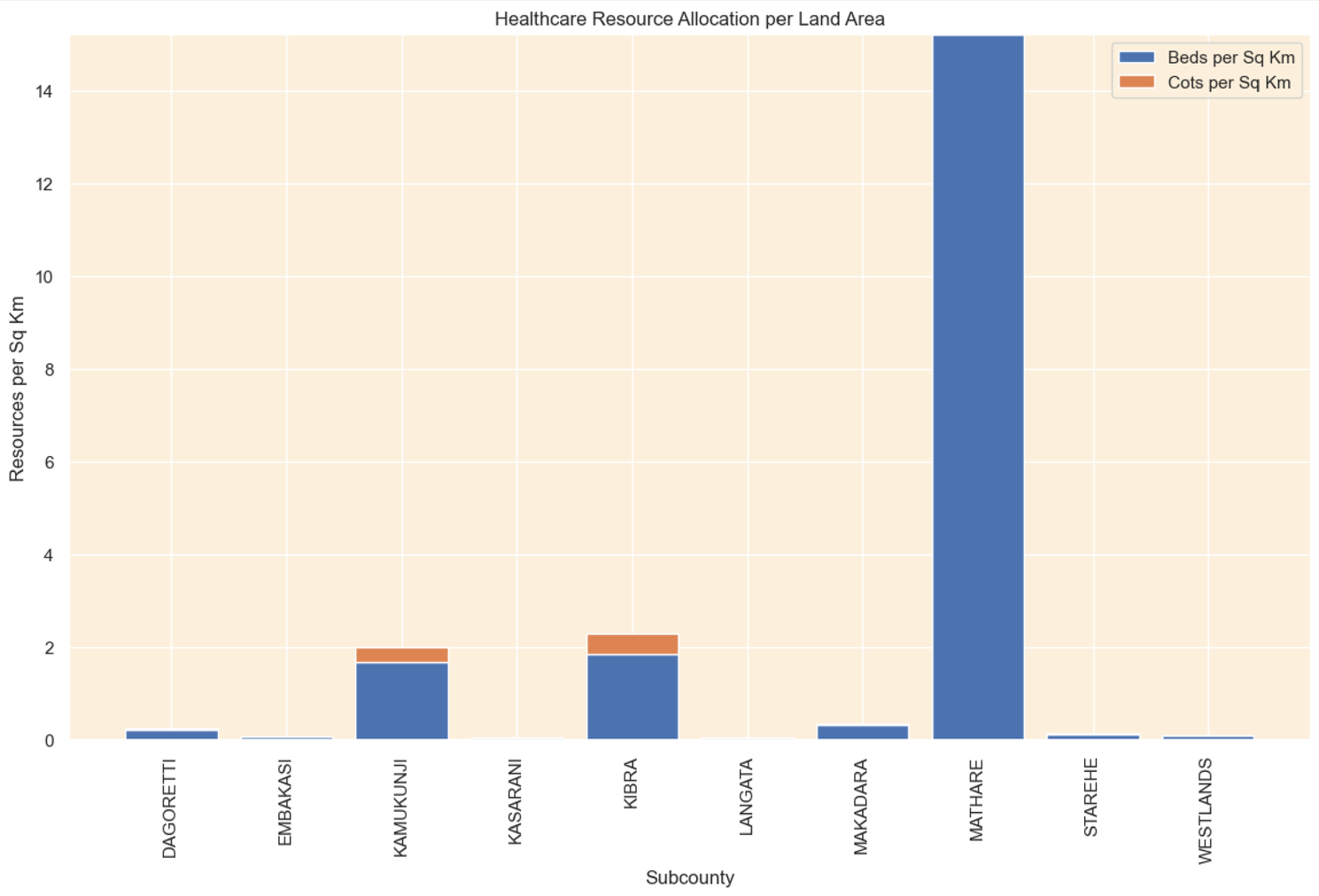
a).Resource Distribution (Bed and Cots)



Observation

- **Beds per Facility:** Mathare has the most beds, suggesting high patient capacity.
- **Cots per Facility:** Kibra leads in cots, possibly focusing on childcare or maternity.
- **Distribution Variability:** Varying counts across sub-counties reflect diverse healthcare priorities.
- **Zero Cots: Langata** and **Mathare** lack cots, raising concerns for specialized care availability.
- **Resource Allocation:** Uneven distribution may not meet local needs, warranting investigation.

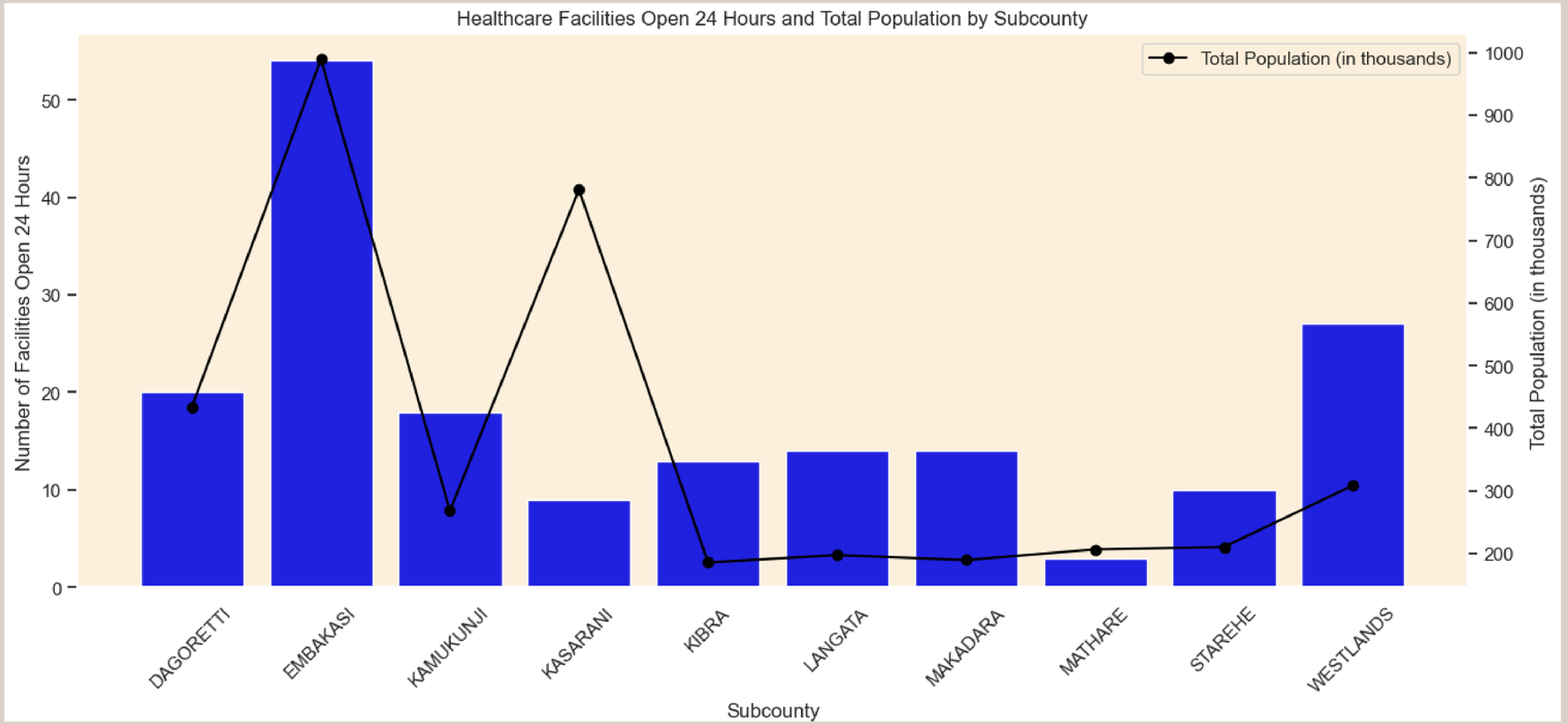
b). Healthcare Resource Allocation per Land Area



Observation

- **Uneven Distribution:** Mathare has more beds, suggesting possible overcrowding.
- **Resource Allocation per Area:** Generally low cots distribution, with Kibra having more.
- **Resource Discrepancy:** Some subcounties have lower bed and cot allocations, indicating infrastructure disparities.
- **Potential Overcrowding:** High bed density in Mathare raises concerns for overcrowding.

c). Healthcare Facilities Open 24 Hours and Total Population by Subcounty



Observation

- Embakasi has the highest number of facilities operating 24 hours, followed by Westlands, indicating robust healthcare accessibility around the clock in these areas.
- Sub-counties like Mathare, despite having a substantial number of beds, show limited availability of 24-hour facilities, which could indicate a gap in continuous care services

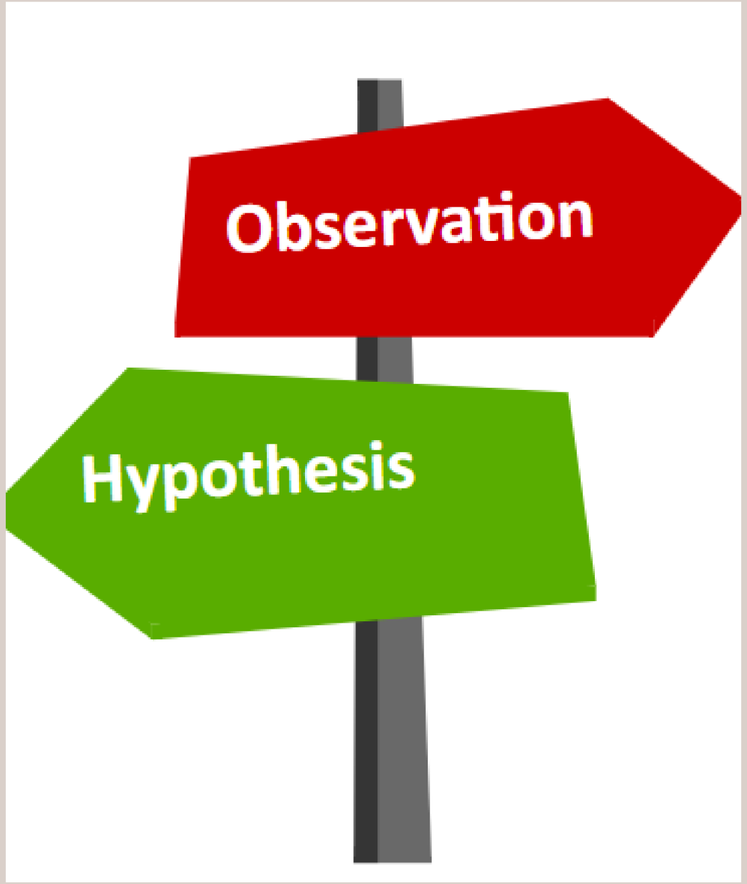
Healthcare Open_24_Hours Availability Hypothesis

Hypothesis Formulation:

- **Null Hypothesis (H0):** There is no correlation between the total population of a subcounty and the number of healthcare facilities open 24 hours
- **Alternative Hypothesis (H1):** There is a correlation between the total population of a subcounty and the number of healthcare facilities open 24 hours.

- **Choice of Test:**

Pearson correlation coefficient will help us determining the strength and direction of the linear relationship between total population and the number of facilities open 24 hours



Observation:

- Pearson Correlation Coefficient (r): -0.565 (moderate negative relationship).
- **p-value:** 0.089 (not statistically significant).
- **Null hypothesis** not rejected; no significant linear relationship.
- Population density (Persons_Per_Sq._Km) ***not a strong predictor*** of healthcare facilities.

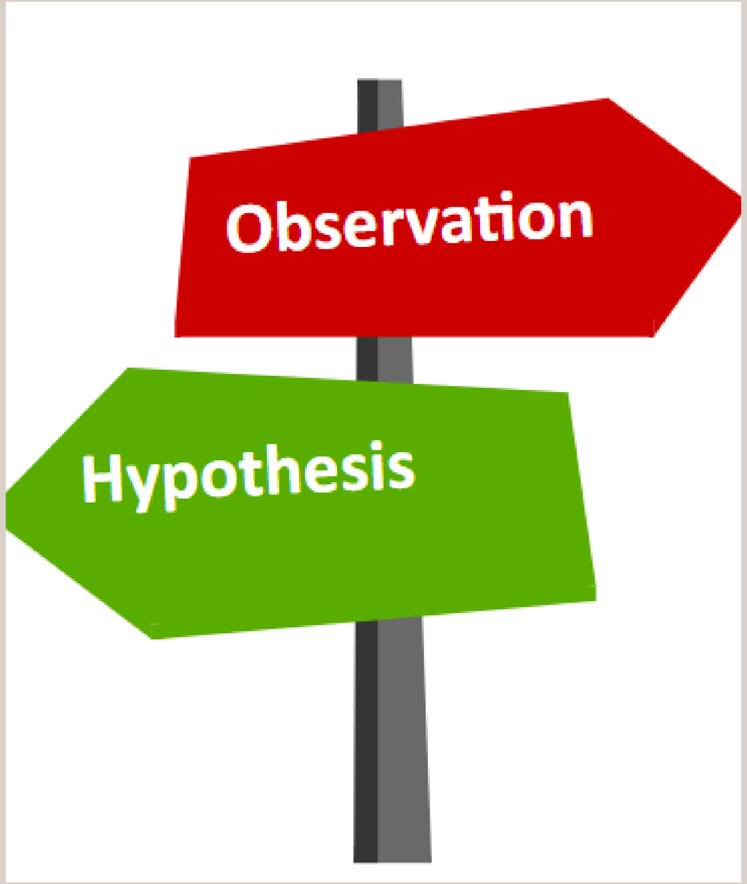
Healthcare Bed & Cots against Population Availability Hypothesis test

Hypothesis Formulation:

- **Null Hypothesis (H0):** No correlation between subcounty population and number of beds & cots in healthcare facilities.
- **Alternative Hypothesis (H1):** Correlation exists between subcounty population and number of beds & cots in healthcare facilities.

- **Choice of Test:**

The Pearson correlation coefficient test will be used for the same reasons as above.



Observation:

- **Beds Allocation:** Weak correlation with population (r = -0.24, p = 0.50), suggesting no direct influence.
- **Cots Allocation:** Even weaker correlation (r = -0.05, p = 0.88), indicating no impact from population.
- **Resource Allocation Independence:** Allocation not tied to population size.
- **Other Influencing Factors:** Policies or accessibility may play larger roles.

KEY INSIGHTS FROM THE ANALYSIS

1

Mathare's Resource Concentration

- Mathare's high facility density and population suggest centralized healthcare, risking overcrowding.

2

Embakasi's Accessibility versus Strain

- Despite a large population, Embakasi lacks beds and cots, yet leads in 24/7 facilities, hinting at accessibility efforts

3

Kibra's Pediatric Care

- Kibra focuses on childcare but lacks proportional resources, indicating a pediatric care gap

4

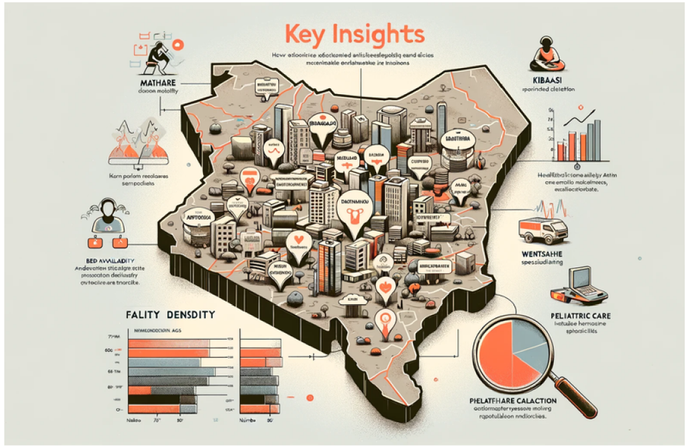
Langata and Westlands – Potential for Enhanced Access

- Moderate resource allocation suggests capacity for population growth without immediate strain, but expansion planning is prudent.

5

Starehe's Anomalous Provision

- Starehe's high bed count suggests potential over-allocation or specialized facilities presence.



CONCLUSION

Inconsistent Resource Distribution:

- Nairobi's sub counties lack uniform healthcare resource allocation, leading to potential over or under-allocation.

Population Not Sole Decisive Factor:

- Offers a slight buzz but is still suitable for social settings where remaining sober is important

Disparities Impacting SDG 3:

- Discrepancies between population density and healthcare facility availability hinder SDG 3 achievement in Nairobi.

RECOMMENDATION

Resource Re-evaluation

Reassess the healthcare resource allocation in sub-counties like Embakasi and Langata to ensure facilities can accommodate current and projected demands without sacrificing service quality.

Specialized Care Expansion

Invest in expanding specialized care, particularly pediatric and maternity services in sub counties such as Kibra, to bridge the service gaps indicated by the disproportionate cot-to-population ratio

Infrastructure Planning

Implement targeted infrastructure development in densely populated sub counties to prevent service strain, prioritizing areas with low facility-to-population density ratios.

Demographic-Driven Allocation

Develop and apply a demographic-driven allocation model that factors in population size, density, and health profiles to guide the distribution of healthcare resources more effectively.

Thank You