Presentation

I'm presenting my capstone data analytics project titled ***'Healthcare Utilization and Medicine Availability in Kakuma Refugee Camp.'***

This project explores how data can be used to understand and improve healthcare delivery and medicine access in a resource-constrained environment.

Introduction

The goal of this project is to analyze patterns in clinic visits and the availability of medicine across the Kakuma Refugee Camp.

Given the ongoing challenges such as medicine shortages and high patient volumes, it’s critical to use data to allocate resources more effectively and improve healthcare outcomes

Dataset Overview

I worked with a dataset titled **`kakuma_healthcare_visits.csv`** which contains records of patient visits to clinics in Kakuma.

Key fields include patient_ID, visit reasons,gender, age, zone, visit_reason, medicines given, clinic names, and visit dates.

A mock preview shows how each row captures an individual clinic visit, such as a 28-year-old female visiting Unity Clinic for cough and fever, receiving Paracetamol and Amoxicillin.

Methodology

I used **Python**, specifically **Pandas**, for data cleaning and transformation.

Key steps included:

- Filling missing values — e.g., handled missing values using forward fill and backward fill.

- Standardizing medicine names (e.g., "Panadol" → "Paracetamol") using text replacement.
- Extracting the **month** from the `Visit_Date` for time-based analysis.
- Grouping visit reasons into broad categories such as: **Respiratory**, **Gastrointestinal**, **Injuries**, and **Chronic.**

Dashboard Page 1 — Overview

The first dashboard provides a snapshot of **overall healthcare utilization** across the Kakuma Refugee Camp.
I used **Power BI** for the visualizations and **Python** for cleaning and transforming the data.

🔑 **Key visuals include**:

- A **bar chart** showing the **Top 5 most visited clinics** — for example, Unity Clinic had 3,245 visits, followed by Hope Health Center.
- A **column chart** breaking down **visit reasons** — with **Respiratory** illnesses at 35%, followed by **Gastrointestinal**, **Injuries**, and **Others**.

🔄 The dashboard includes **slicer filters** for:

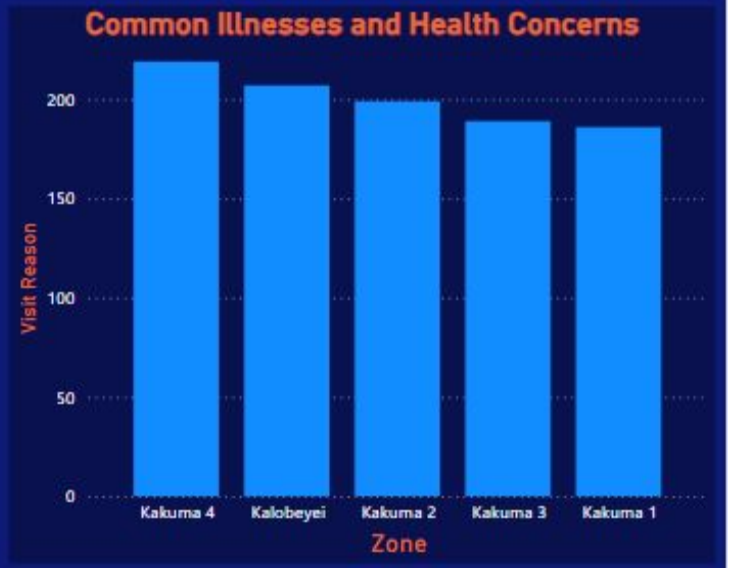
- **Clinic**, **Zone, visit_ date**, and **visit _reason** — allowing users to interactively drill down and explore zone-specific and seasonal trends
- **KPIs** These KPIs provide quick, high-level insights that help health officials immediately understand the overall service demand and trend.

💡 This overview makes it easy to identify high-traffic clinics and the most common health conditions affecting camp residents

Healthcare Utilization and Medicine Availability in Kakuma Refugee Camp

Zone: All | Clinic: All | Visit_Reason: All | Visit_Date: All

Total Visits	Most_Visit_Clinic	Percent_Shortage_Visit	Top_Visit_Reason	Visit_This_Month
1000	356	32.0%	140	47



Insight #1 – Most Utilized Clinics

A **bar chart** shows that Kakuma Health Center had the highest number of visits — (closest to 400 visits) in total.

- UNHCR Mobile Unit and Kalobeyei Clinic follow in descending order.
- The data indicates strong demand for these services, with Kakuma acting as the central point of healthcare activity.

Insight #2_Common Illnesses

The data shows that **Kakuma 4** recorded the highest number of clinic visits (above **200**),

identifying it as a potential hotspot for common illnesses in the region and an area requiring urgent attention. Immediate intervention is recommended, including the deployment of **additional medical staff**, increased **medicine and supply availability**, and the implementation of **targeted disease prevention programs**. Other zones such as **Kakuma 1**, **Kakuma 2**, **Kakuma 3,and kaloboyei** show varying levels of healthcare demand and should continue to receive routine support and monitoring

Dashboard Page 2 — Health Access Insight

The second dashboard focuses on **medicine usage** and **clinic visits by gender and age group**.

Key visuals:

1. **Bar Chart – Medicines Dispensed by Clinic**
   Displays the number of times each top medicine (e.g., Paracetamol, ORS, Amoxicillin) was dispensed across different clinics.

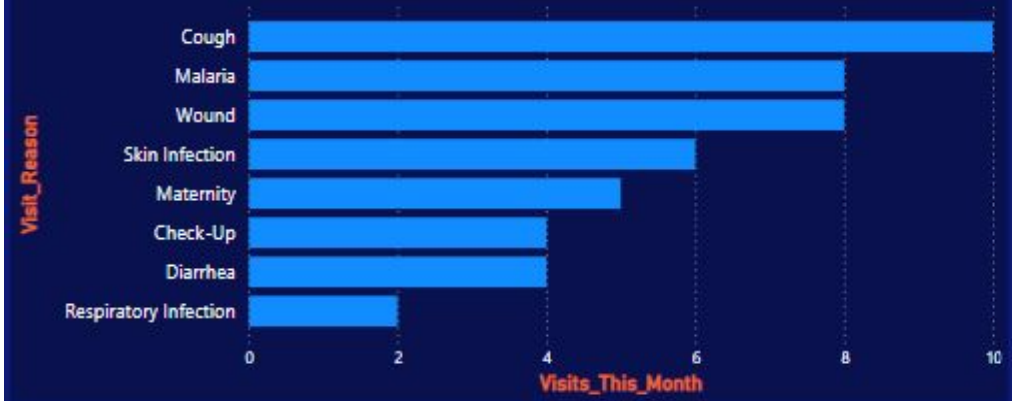
2. **Donut Chart – Visits by Gender**
   Shows the proportion of total clinic visits made by male and female patients.

3. **Donut Chart – Visits by Age Group**
   Highlights which age groups had the highest number of clinic visits — especially children (0–5 years) and young adults (21–30 years).

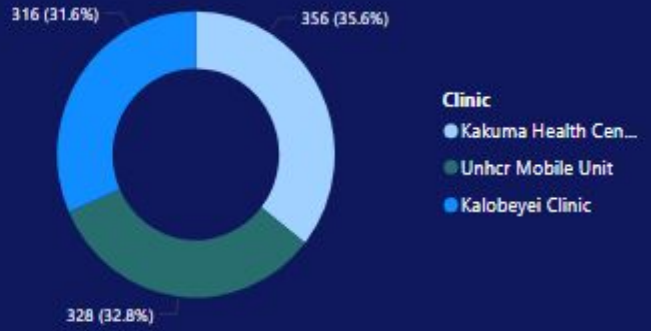
4. **Line Chart – Monthly Visit Trends (Jan–Jun 2025)**
   Tracks total clinic visits each month to show seasonal trends and peak periods of demand.

Health Access Insights

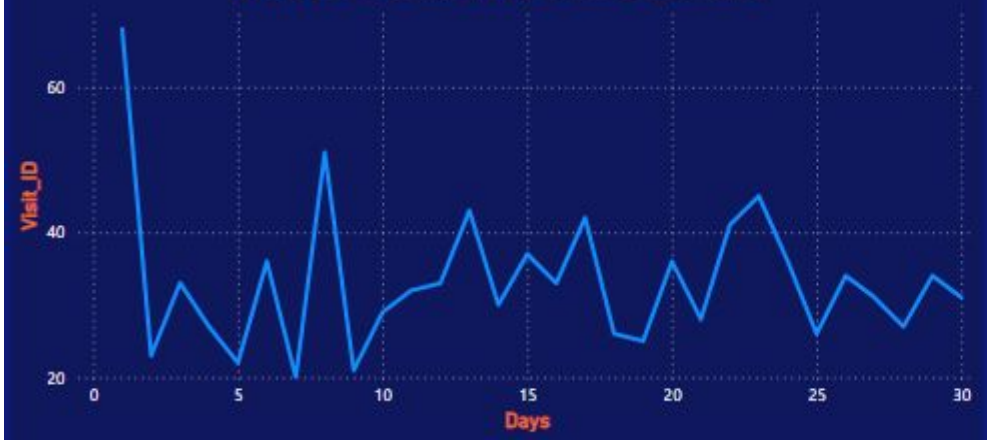
Health Concerns



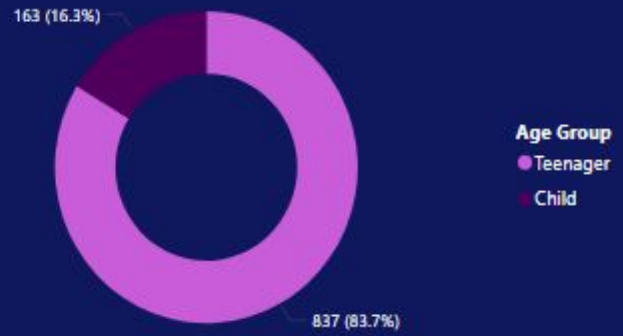
Medicine Availabity and Usage



Temporal Trends in Healthcare Demand



Patient Visits by Age category

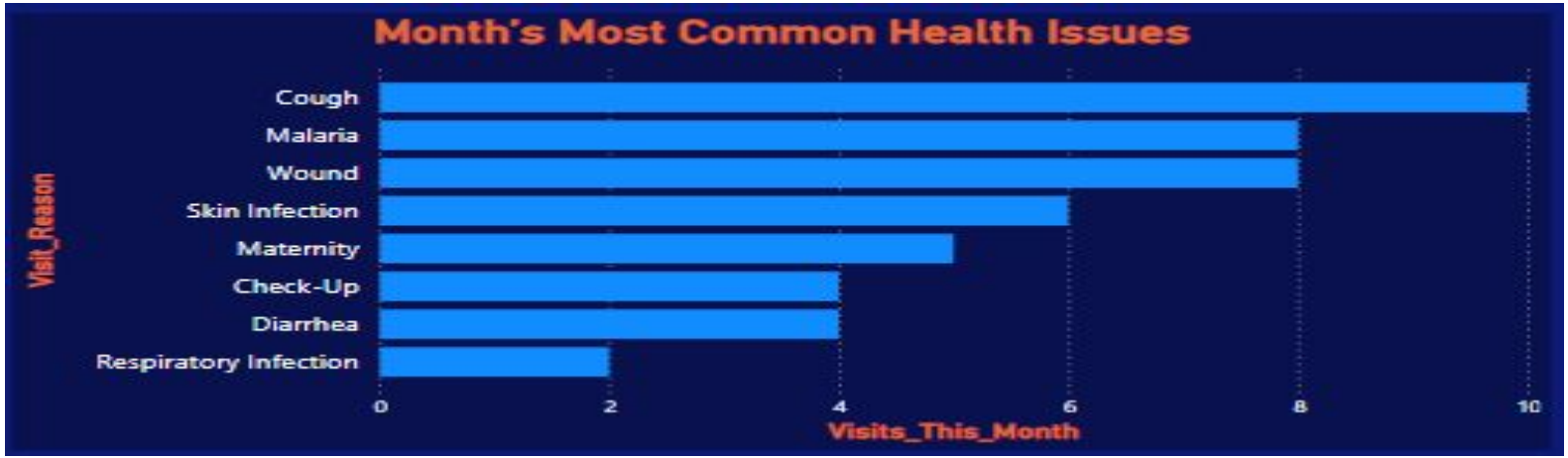


Insight #3_This Month’s Most Common Health Issues

A **bar chart** displays the number of visits for each health issue during the currently selected month.

in July, respiratory illnesses accounted for the highest number of visits (e.g., 1,120), followed by gastrointestinal issues and injuries.

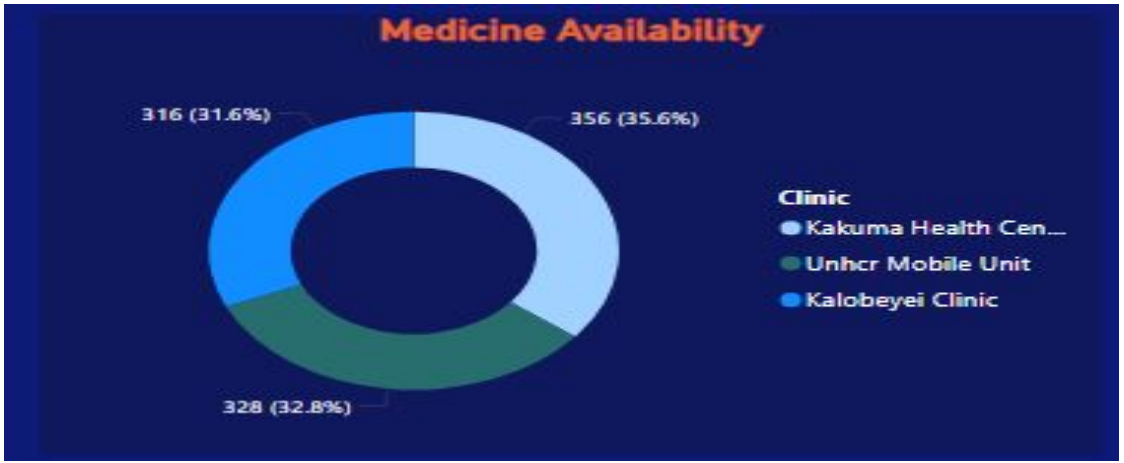
This suggests the need to ensure enough medicine stock and clinic staff focused on respiratory treatment this month.



Insight #4_Medicine Distribution by Clinic

A **donut chart** shows how medicines are distributed across clinics based on the number of doses dispensed

The chart shows that **Unity Clinic** dispensed **38%** the highest share of medicines, followed by **Hope Health Center** at **31%.**
This indicates that Unity is managing a **higher volume of patients** and may require **extra medicine stock** to meet demand and avoid shortages



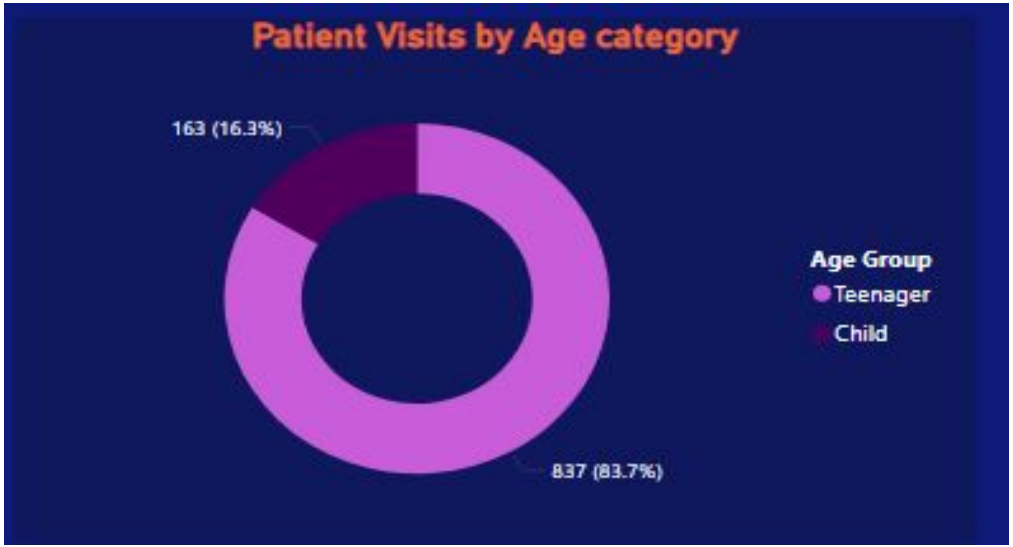
Insight #5 – Total Clinic Visits by Age Group

A **donut chart** displays the total number of clinic visits distributed across different **age groups**.

The chart shows that the **0–5 years age group** had the **highest number of clinic visits**, followed by the **21–30 years** group.

This indicates that **young children** and **young adults** are the most frequent users of healthcare services.

Clinics should ensure child-focused care and prioritize services like **pediatric care and reproductive health.**



Insight #6_Daily Clinic Visit Trends

A line chart tracks the number of clinic visits from **Day 1 to Day 30**.

Clinic visits varied throughout the 30-day period, with the **highest number of visits recorded on Day 30** (720 visits).
This pattern suggests that **health service demand increases toward the end of each month**.
Clinics should plan for **extra staff and medicine supply** during the final days of each reporting period.