Disease Sentinel: Exploring Nigeria's Disease Reporting System (2013 and 2015)

By Faith Mbonu

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1. Introduction

In 2013 and 2015, Nigeria recorded over 13 million suspected disease cases across 747 Local Government Areas in 36 states (excluding Adamawa). This dataset, sourced from the **Nigeria Centre for Disease Control (NCDC)**, spans 48 diseases and provides a unique lens into public health trends, demographic vulnerabilities, and systemic gaps in disease surveillance.

This project applies **SQL** for data exploration, **Power BI** for interactive dashboards, and **Canva** for simplified health visuals. The aim is to convert complex datasets into accessible stories that empower not only data professionals but also everyday Nigerians..

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2. Objectives

- Identify and rank the top 5 most reported diseases across states between 2013 and 2015.
- Analyze demographic vulnerability with a focus on age trends in malaria and typhoid.
- Measure disease investigation coverage as a proxy for follow-up and system responsiveness.
- Build a user-friendly dashboard that enables health workers, journalists, and citizens to engage with disease data intuitively.

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3. Key Insights

📌 **Malaria** remains the most reported disease, with **9.1 million cases**, peaking in **September 2013** (rainy season).
📌 **Children aged 1–9** are the most affected demographic for malaria, contributing **3.6 million cases (39.6%)**.
📌 **Investigation rates are critically low** at just **11.8%**, raising concerns about

under-response to reported cases.
📌 States like **Bayelsa (0%)**, **Akwa Ibom (1.1%)**, and **Ebonyi (8.2%)** had near-zero case reporting rates.
📌 **High Blood Pressure** showed stable year-round prevalence, indicating chronic non-communicable disease trends.

Top 5 diseases by total case count:

1. Malaria – 9,157,781
2. Diarrhoea – 750,911
3. Malaria in pregnancy – 573,901
4. High Blood Pressure – 533,104
5. Typhoid Fever – 492,230

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4. Tools & Techniques

- **MySQL** – Used for data querying, cleansing, and structuring.
- **Power BI** – Designed the interactive dashboard with filters for region, disease, and age.
- **Canva** – Produced visuals for non-technical users.
- **GitHub** – Hosted the project and tracked its version history.

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5. Dashboard Features

- **Dynamic Filters** by state and disease category.
- **Demographic Panels** showing disease burden by age.
- **Top Diseases & Top States** visuals to identify key clusters.
- **Seasonality Trends** with monthly charts to track outbreaks.

🔗 Click here to view the live Power BI dashboard

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6. Recommendations Summary

Stakeholder	Priority	Action	Success Indicator
General Public	High	Promote prevention during rainy season	Decrease in Q3 malaria/diarrhoea cases
General Public	Medium	Encourage routine BP checks	Increased hypertension awareness
NCDC	High	Launch mobile/digital reporting tools	LGAs with 80% monthly reporting rate
NCDC	High	Establish a national case investigation task force	Raise investigation rate from 11.8% to 50%
NCDC	Medium	Use weather data for outbreak prediction	Malaria alerts before seasonal spikes
State Health	High	Appoint LGA disease surveillance officers	One officer per LGA by year-end
State Health	Medium	Build diagnostic capacity at PHCs	Confirmed case rates vs suspected
State Health	Medium	Create seasonal disease calendars	Each LGA with custom wall chart poster

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7. Expanded Recommendations

To the General Public

- **Prioritize seasonal prevention**: Use mosquito nets, clean water storage, and indoor repellents especially during the rainy season (Q2–Q3).
- **Take chronic illness seriously**: Adults over 40 should monitor blood pressure, avoid high salt intake, and exercise regularly.
- **Report early symptoms**: Early medical attention can lead to better case follow-up and community-level intervention.
- **Protect vulnerable groups**: Children under 10 and teens face the highest risks of malaria, typhoid, and diarrhoea.

To the NCDC

- **Boost investigation rates**: A task force should follow up on key diseases like typhoid and malaria in pregnancy.
- **Address silent reporting zones**: Use mobile tools that work offline or via USSD for hard-to-reach LGAs.
- **Encourage state performance**: Publish dashboards on reporting quality and reward top-performing states.
- **Weather + disease modeling**: Predict outbreaks using historical and meteorological data.

To State and LGA Health Centers

- **Equip PHCs with diagnostics**: Simple testing kits will validate case reports and improve data quality.
- **Focus health education locally**: Deploy community health workers with age-specific health messaging.
- **Assign surveillance officers per LGA**: Designated officers will monitor, escalate, and respond quickly.

- **Post local risk calendars**: Wall posters indicating peak risk months can guide prevention behaviors.

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8. Conclusion

This project shines a light on a strained but promising health reporting system. With over 13 million suspected cases in two years, and only 11.8% investigated, the challenge is clear. But so is the opportunity: smarter tools, seasonal preparedness, and grassroots health education can turn data into prevention..

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Project Repository