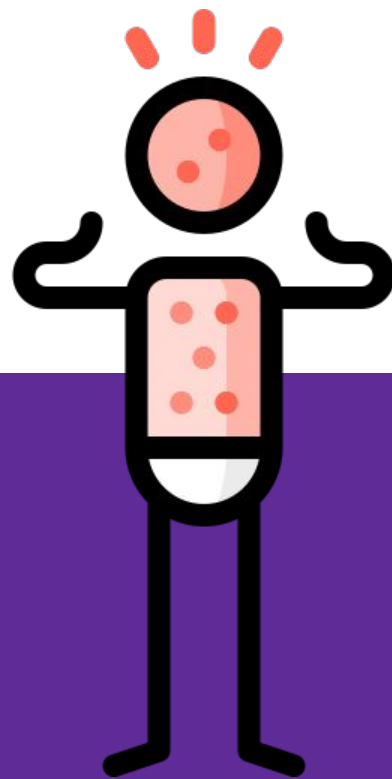


# Cameron Coders

Measles Madness

By: Nabrisa Badu, Monica Rashkov, Alyssa Estrada, and Lauren Campano



# Intro to Topic



## Research Question:

How do **incidence rates** of **measles** and **rubella**, as well as the proportion of lab-confirmed cases, differ between **least developed countries** (LDCs) and **non-LDC** countries over time?

# Motivation



Analysis can show how well countries track and manage outbreaks

Measles is rising worldwide, highlighting gaps in outbreak control

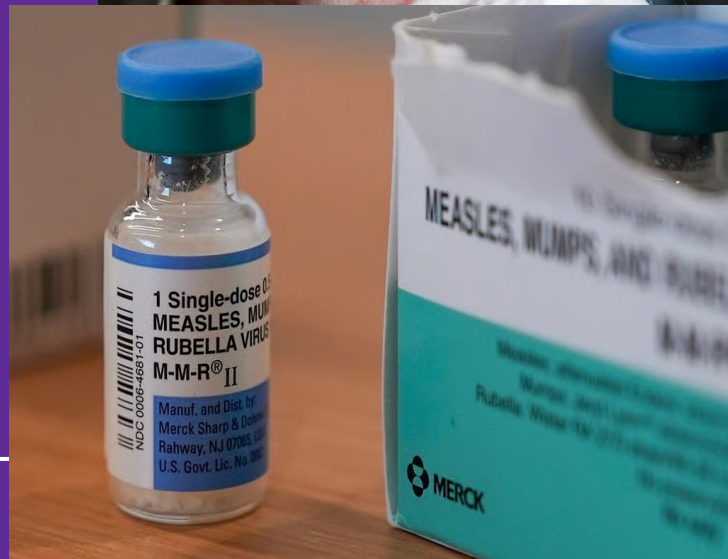
The Rise of  
**Measles**  
in the U.S.



Results can guide public health interventions

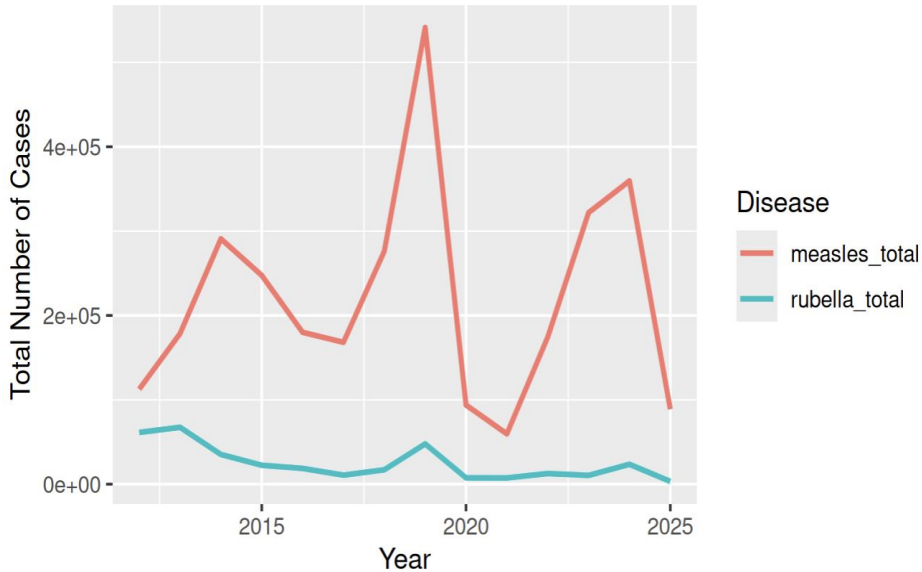
# Data Overview

- Original source: World Health Organization (WHO)
- Data collected through joint WHO/UNICEF data collection exercise
- Includes data from 194 countries spanning from 2012 to 2025
- Completed our analysis based on grouping of 46 countries deemed by the UN as the “least-developed countries” (LDCs) as of 2023 together in comparison to non-LDCs



# Data Analysis: Measles vs. Rubella Over Time

Global Measles vs Rubella Cases Over Time



**Exploratory plot** of the total **measles** and **rubella** cases over time

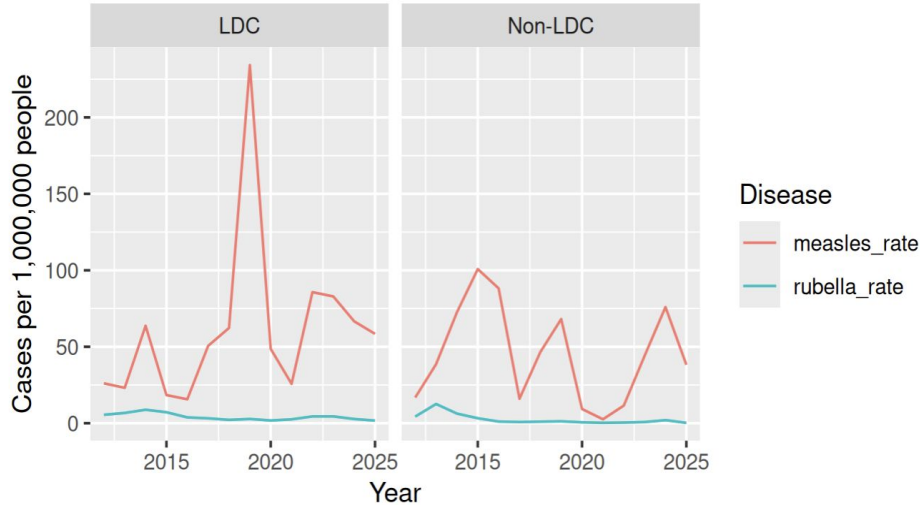
**Rubella** cases stay **low** and **stable** over time

**Measles** cases show **large spikes** across the globe

**Next Step:** compare trends in **developing** vs. **developed** countries

# Data Analysis: Measles in LDCs vs. Non-LDCs

Measles vs Rubella Incidence Rates:  
LDC vs Non-LDC Countries



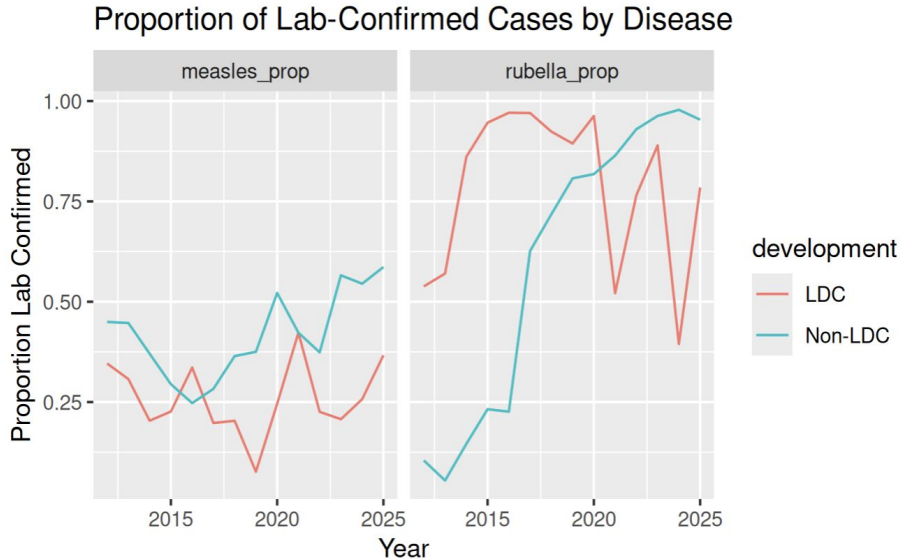
Measles incidence **varies more than rubella** over time for both

**LDCs** show **higher measles** peaks than **non-LDCs**

Indicates **higher measles burden** in LDCs

**Next Step:** examine proportion of lab-confirmed cases

# Data Analysis: Lab-Confirmed Cases



**Non-LDCs** have consistently **higher** lab-confirmed **measles cases** than LDCs

**Gap** suggests **better diagnostic resources** and surveillance in **non-LDCs**

**Rubella** lab-confirmation is **high in both groups** but **more variable** in **LDCs**

**Low rubella** case counts make **LDC** trends **less stable**

**Overall: measles** shows clear **disparities**; **rubella differences** are **less consistent**

# Discussion and Conclusion

- **Key Findings:**

- **Higher Measles Burden in LDCs:** Measles incidence rates (per 1,000,000) are consistently higher and more variable in LDCs, with repeated outbreak peaks indicating greater vulnerability.
  - **Rubella Largely Controlled:** Rubella incidence remains low and stable in both LDC and non-LDC countries, suggesting effective global control.
  - **Diagnostic Disparities:** Non-LDC countries have a consistently higher proportion of lab-confirmed measles cases, reflecting stronger surveillance and testing capacity.
- **Statistical Context:** Using incidence rates enables valid cross-country comparisons; persistent trends over time provide robust descriptive evidence despite the absence of formal hypothesis testing.
  - **Limitations & Conclusion:** Results rely on potentially underreported WHO data and descriptive methods, but overall highlight clear global inequities in measles burden and diagnostic capacity, underscoring the need for improved surveillance and healthcare infrastructure in LDCs.