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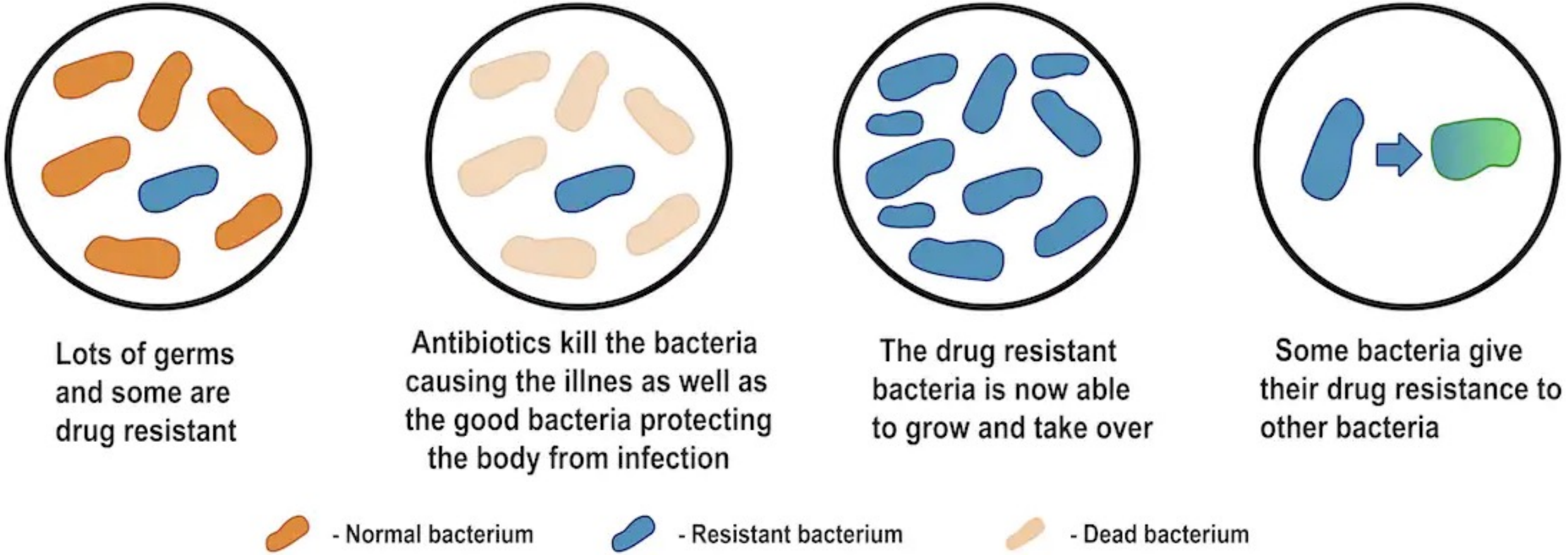
Overview

- What is Antimicrobial Resistance?
- How are these pathogens spread?
- At risk populations

Our Analysis looked at the following:

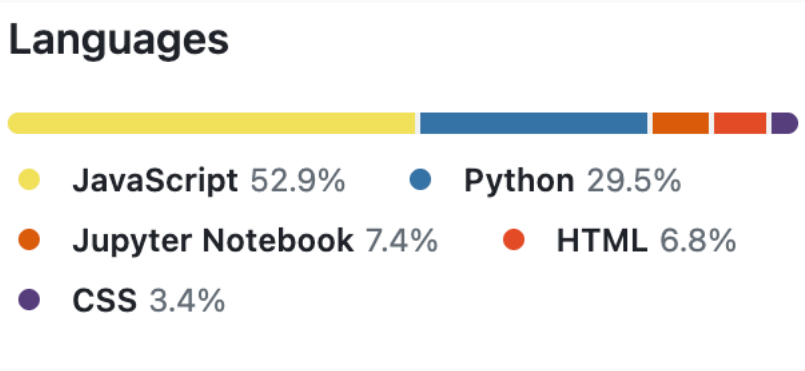
- Which Pathogens, Antibiotic Classes and Infectious syndromes are associated with death?
- Which regions of the world are most at risk and why?
- Does the amount of healthcare spending affect the risk of the population to AMR's?

HOW ANTIBIOTIC RESISTANCE HAPPENS



Source: [How to train the body's own cells to combat antibiotic resistance (theconversation.com)]

Methods



Data extraction:

- Download csv datasets (AMR, country coordinates, health spending)
- Website scraping (countries in each region)

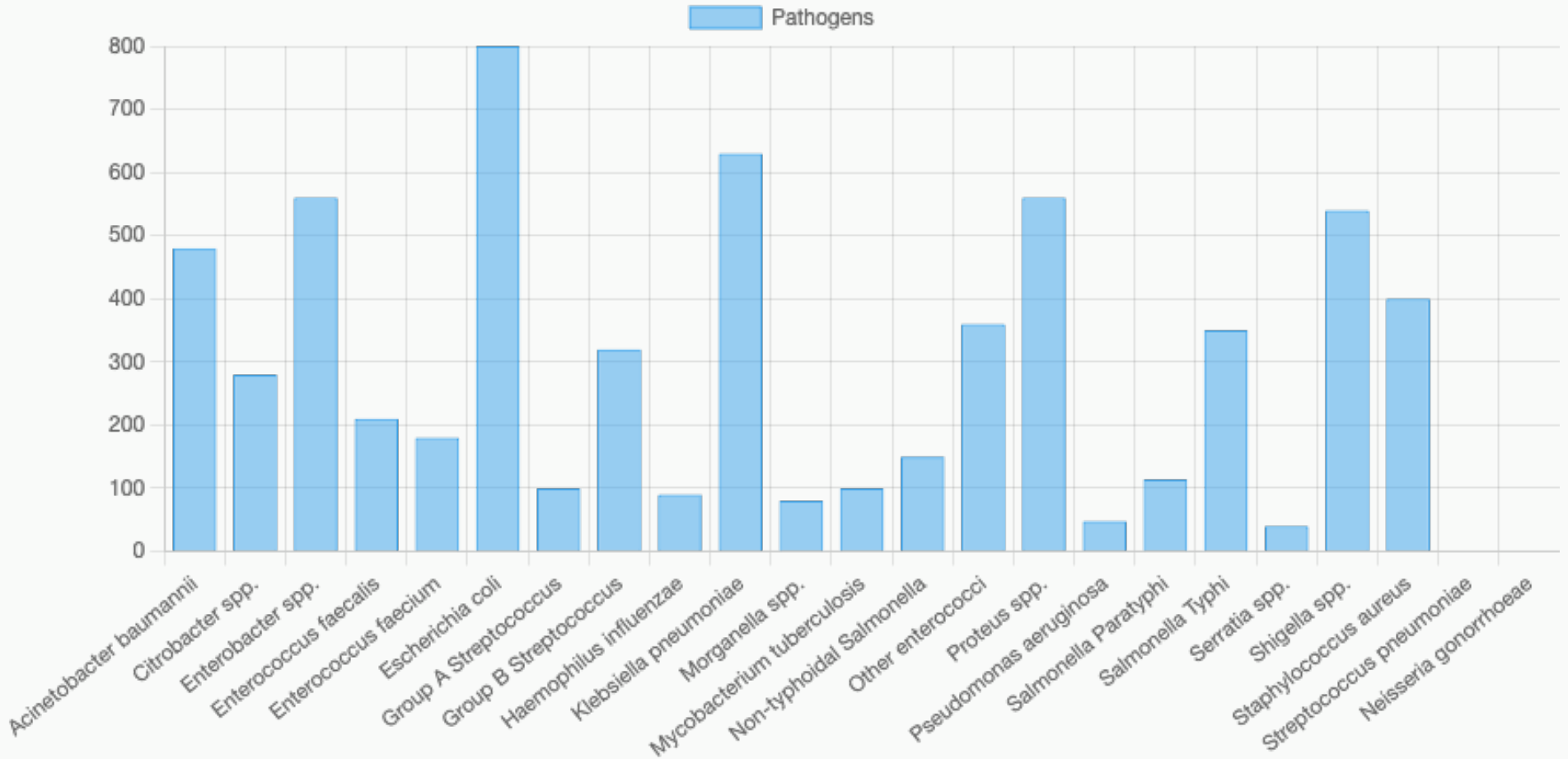
Data cleaning:

- Clean csv datasets
- Load cleaned csv files into sqlite database

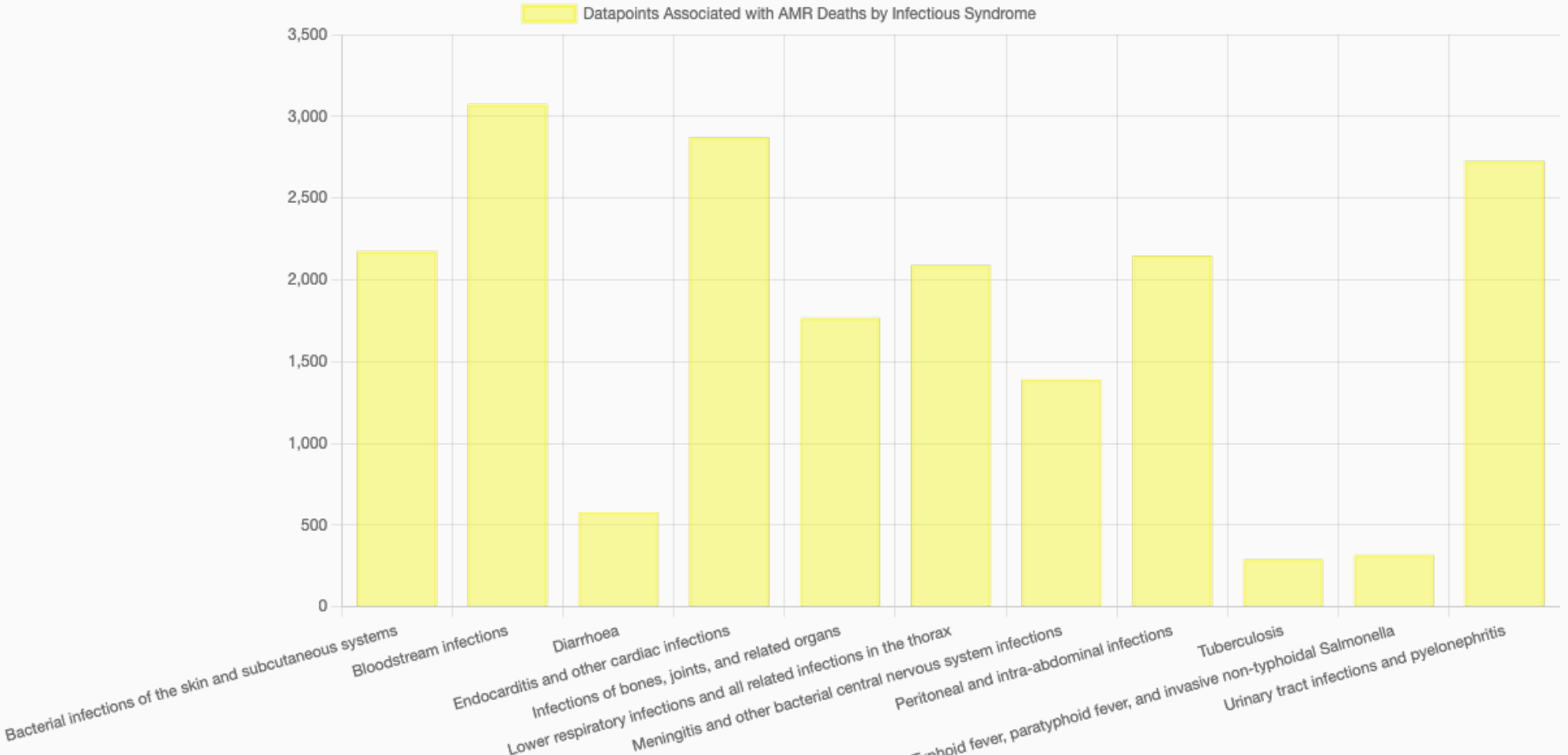
Interactive charts :

- Metadata – countries in each region
- Metadata – number of datapoints
- AMR burden and healthcare spending visualizations

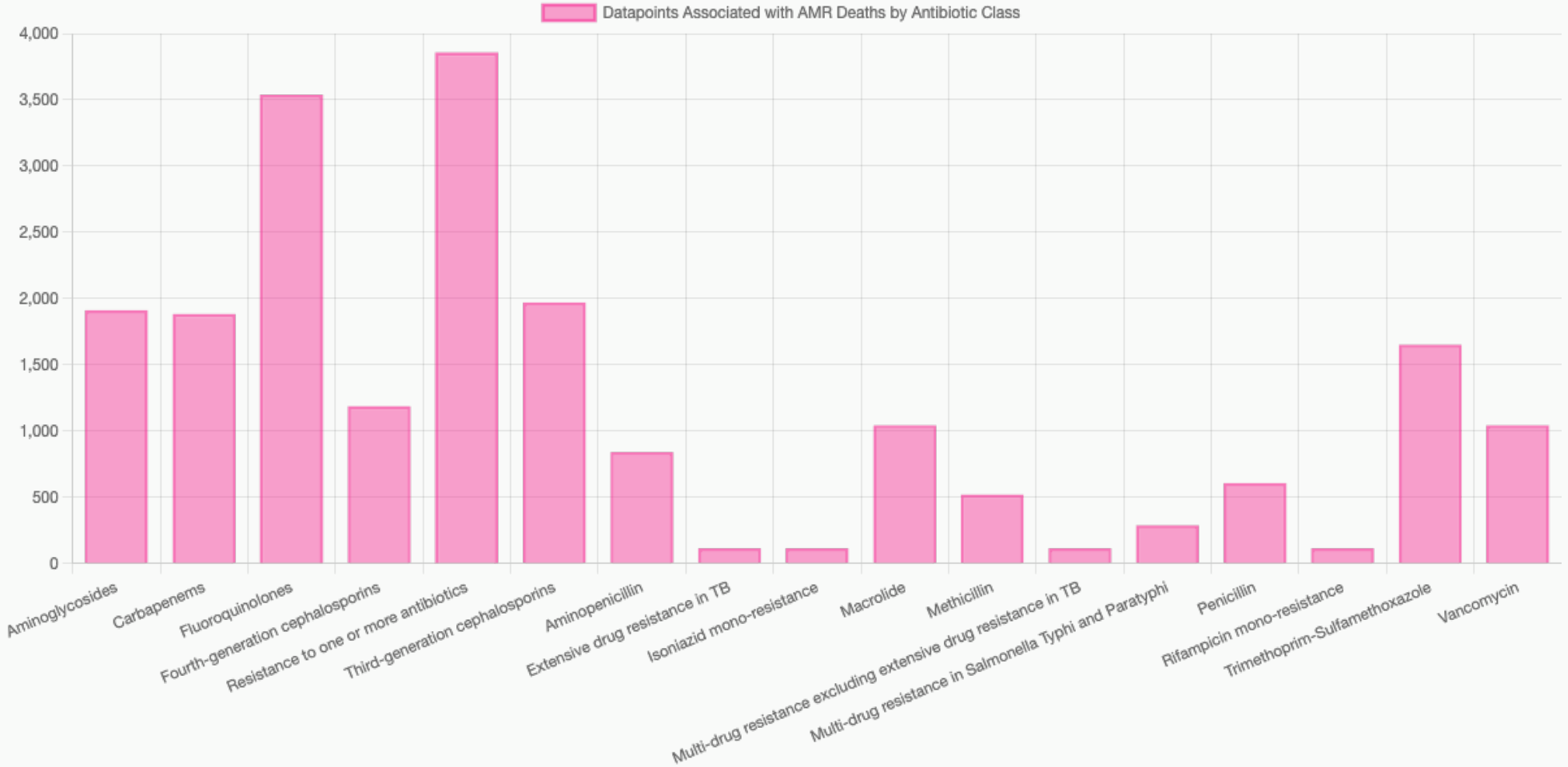
Analysis: Pathogens associated with Death



Analysis: Infectious Syndrome associated with Death



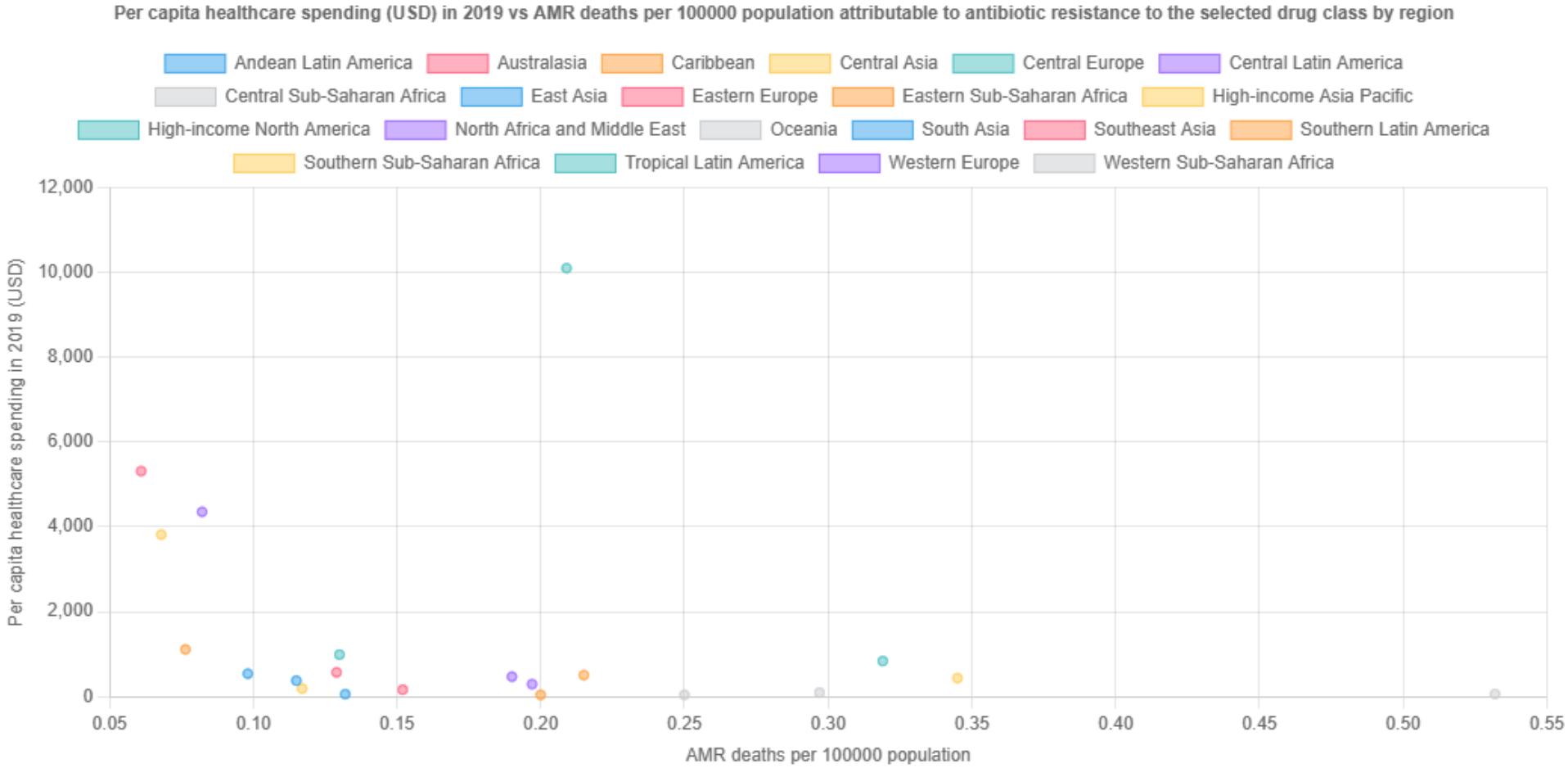
Analysis: Pathogens associated with Death



Regions

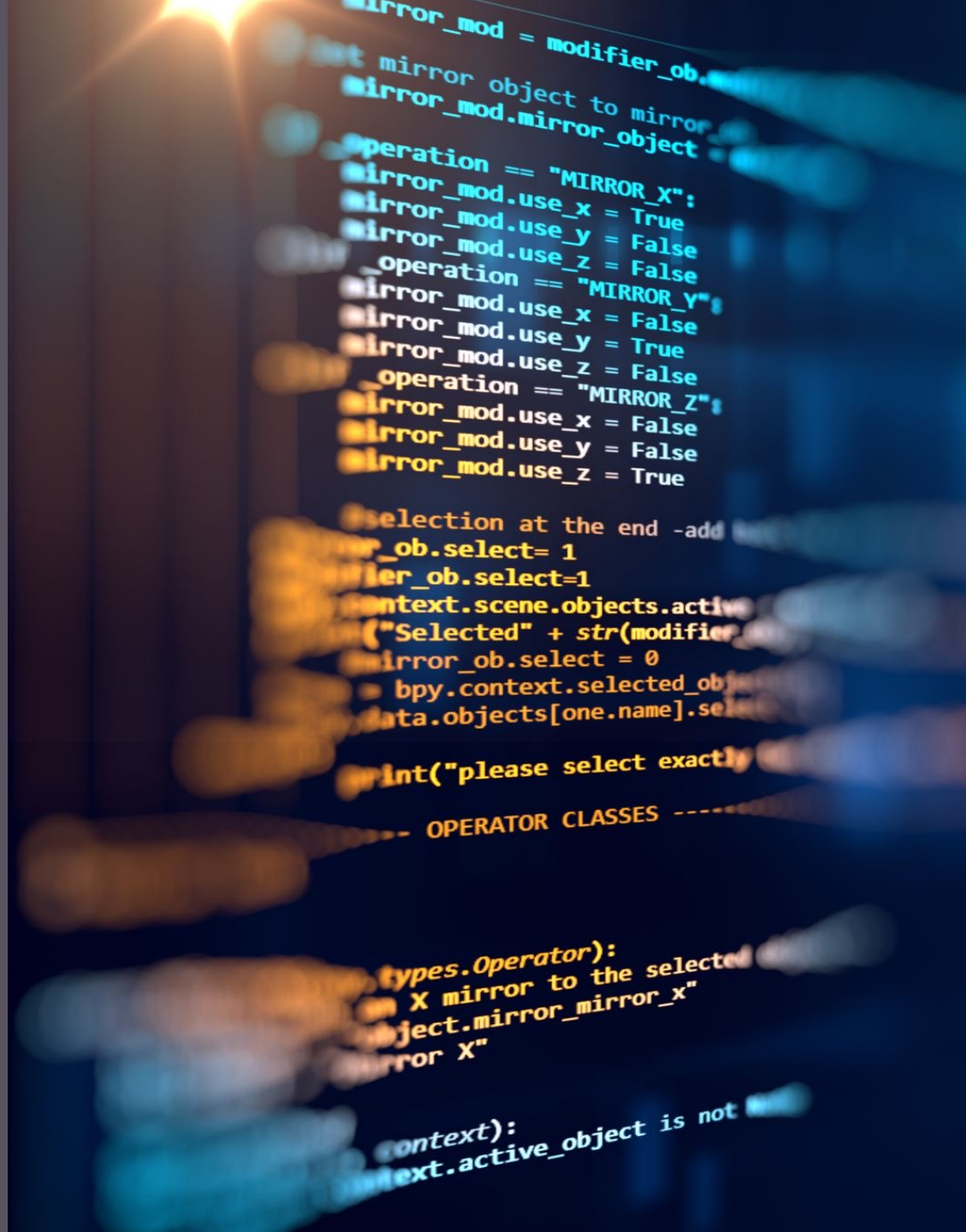

Eswatini
Region Southern Sub-Saharan Africa
Leaflet | © OpenStreetMap contributo

AMR data


Per capita healthcare spending (USD) in 2019 vs AMR deaths per 100000 population attributable to antibiotic resistance to the selected drug class by region
Andean Latin America
Australasia
Caribbean
Central Asia
Central Europe
Central Latin America
Central Sub-Saharan Africa
East Asia
Eastern Europe
Eastern Sub-Saharan Africa
High-income Asia Pacific
High-income North America
North Africa and Middle East
Oceania
South Asia
Southeast Asia
Southern Latin America
Southern Sub-Saharan Africa
Tropical Latin America
Western Europe
Western Sub-Saharan Africa
12,000
10,000
8,000
6,000
4,000
2,000
0
Per capita healthcare spending in 2019 (USD)
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0.50
0.55
AMR deaths per 100000 population

HTML

With a FULL interactive demonstration to class



Limitations

1. Data availability
2. Methodological choices made by the authors.

The analysis compared health spending and AMR burden using data available by region and country.

Countries not listed as part of a region were not included in the analysis.

Only data from 2019 was considered for the analysis of discrete health spending compared to AMR burden.

Limitations

The AMR data is only available by region while the health spending data is only available by country, so countries belonging to each region as defined by the Global Health Data Exchange was used to compare health spending to AMR burden. This means that any country in the health spending dataset that was not listed as part of a region in the Global Health Data Exchange is omitted from the analysis.

The AMR data is only available for 2019. This means that while health spending data is available for many different years, in the analysis of discrete health spending compared to AMR burden only 2019 is considered.

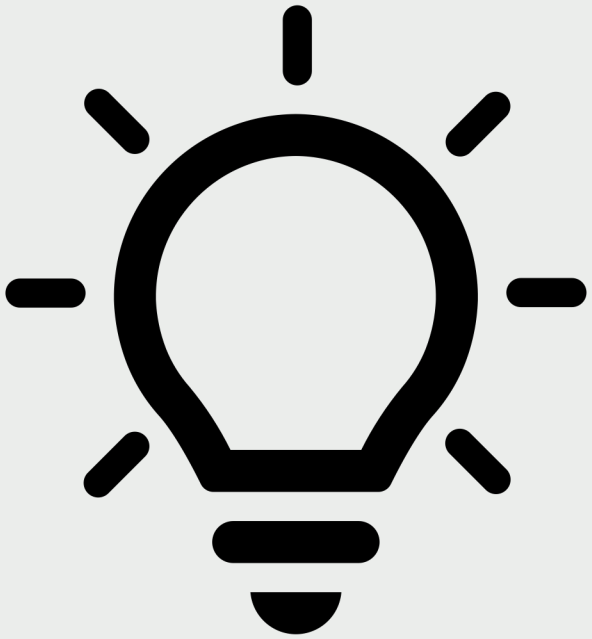
Data Sources

The coordinates for each country were sourced from a dataset on Kaggle

The list of countries belonging to each region was scraped from the Global Health Data Exchange website (which is the site where the AMR data is posted)

The AMR data was sourced from the publication "Global burden of antimicrobial resistance: essential pieces of a global puzzle" by Charani et al published in The Lancet

The health spending data was sourced from the Global Health Expenditure Database via the World Health Organization (WHO)



Conclusions

This project provided interactive ways for people interested in know more about antimicrobial resistance.