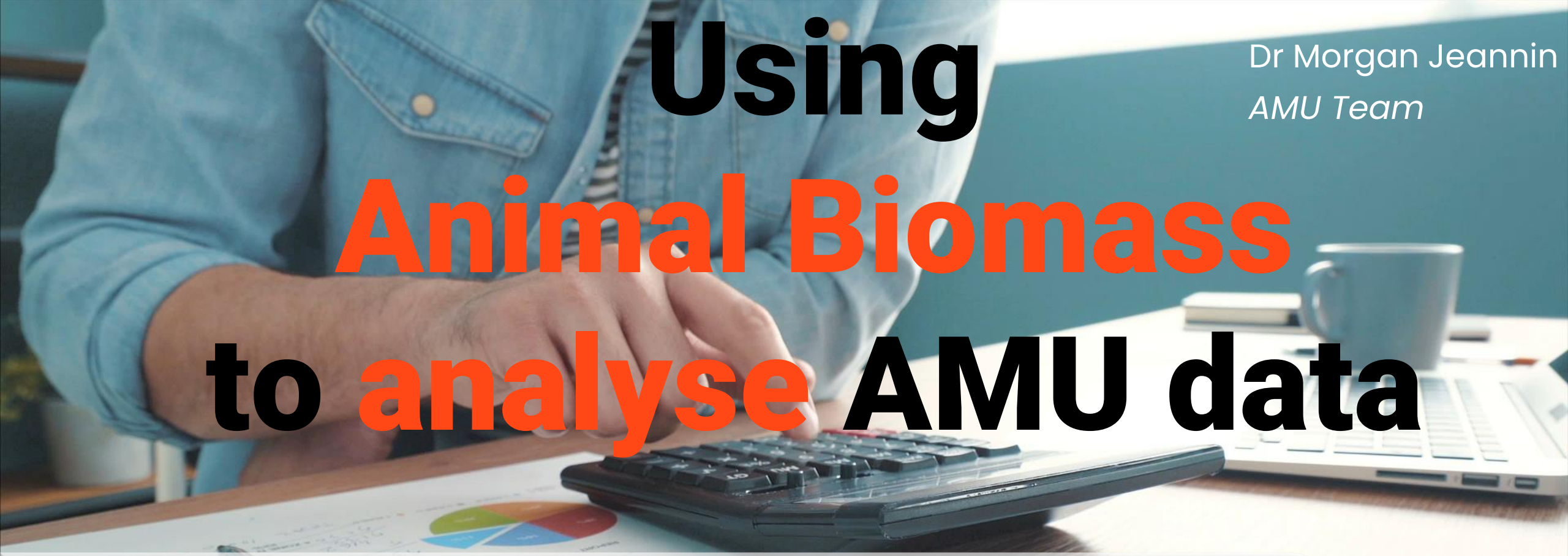
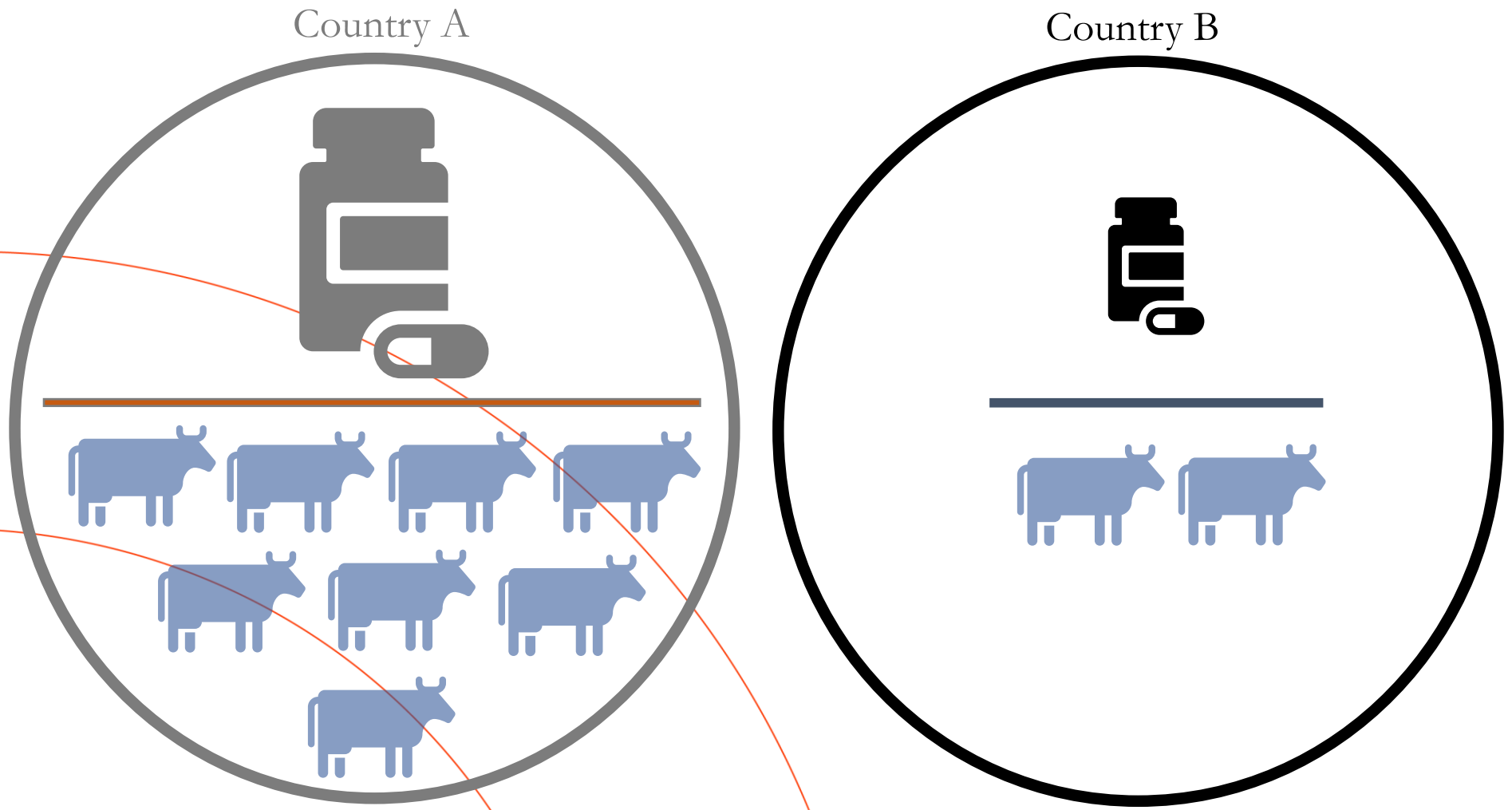


Using Animal Biomass to analyse AMU data

Dr Morgan Jeannin
AMU Team

ANIMUSE Global Database

A denominator : What for?



WOAH Animal Biomass denominator

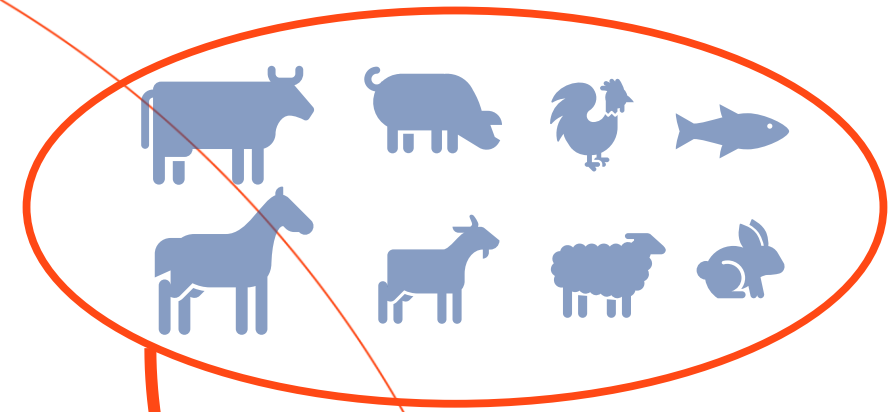
AMU

as **reported** by the country to the WOAH AMU data collection for the target year

Quantities of antimicrobial agents **(mg)**

Animal biomass **(kg)**

mg/kg



Total weight of all food-producing animals in the target year

↓ = ↑

ANIMAL BIOMASS

Calculated Animal Biomass **by AMU Team** for a country for the target year

WOAH Animal Biomass denominator

Methodology developed by WOAH *ad hoc* Group on AMR that acknowledged each country will have **variability of their animals' population numbers, cycle factors and average weights.**

Based on *Terrestrial Animal Health Code* Chapter 6.9 & *Aquatic Animal Health Code* Chapter 6.3 – « *When comparing AMU data over time, changes in* **size** *and* **composition** *of* **animal populations** *should also be taken into account.* »

Adjusting the quantitity of AM by the biomass improves the possibilities of,

- ❑ **following AMU over time**, taking into account the changes in animal population
- ❑ **Comparing AMU between different regions**, with different species of food-producing animals and different farming systems.

➔ *proxy* to measure the population **exposed to AMU** during the year of data collection

Which data are available?

Data needed

The number of animal present in the country for each age category of each species and their mean body weight.

Data available globally

WAHIS

- **WAHIS** census data → number of live animals per species at one time of the year (+/- age categories)

FAOSTAT

- **FAO** data → Production data: Number of animals slaughtered, for each species, in a whole year + mass of animal slaughtered & census data

Participation from the Countries

We need help from Members with validation of national animal population numbers and average species weights.

Methodology : How is calculated ?

General principles

- Animals with a life duration of less than one year → Use yearly **production data**
- Animals with a life duration of more than one year → Use **census data,** combined with estimates of average weights by sub-region/country.
- **Privilege census data** when possible→ Production data might not reflect backyard slaughter practices

Find out more with the peer-reviewed methodologies for data collection and analysis

General Methodology

- Animal biomass is calculated using country-level animal population data by species, data-derived estimates of their average weights by sub-region and country, and average reproductive rates of short-lived species (cycle factors).

→ kilograms animal biomass used as a *denominator* in analysis of antimicrobial use data (mg/kg)

Methodology: Estimation of average animal weights for any country in the world

Different AMU surveillance programs ➔ Different weight calculation methodologies

- Canada, ESVAC (EU), Thailand: weight at time of treatment
- USA, Japan: average weight by production category

- **From production data → carcass weight**

$$carcass\ weight\ (kg) = \frac{weight\ of\ species\ slaughtered\ (kg)}{number\ of\ species\ slaughtered\ (heads)}$$

- **From carcass weight → live weight at time of slaughter**

$$live\ weight\ at\ slaughter\ (kg) = \frac{carcass\ weight\ (kg)}{conversion\ coefficient\ (k)}$$

Refinement of Animal Biomass Calculation

- To refine the calculations of the Animal Biomass: considering region/country particularities

- Evolution of **WAHIS** system: Importance of **countries' commitment** in reporting animal population figures
  - Animal categories + sub-categories by age groups
  - Increased country-level understanding: Cycle factors, Mean live weight at slaughter…

- Continued collaboration of the countries to research and verify :
  - ✓ Animal population figures
  - ✓ Average animal weights
  - ✓ Carcass conversion coefficients
  - ✓ Distribution of age groups in a species
  - ✓ Cycle factors

Thank you

Regional ANIMUSE Training for Europe
7-9 November 2023, Belgrade, Serbia

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