Vetstat - monitoring of antimicrobial consumption

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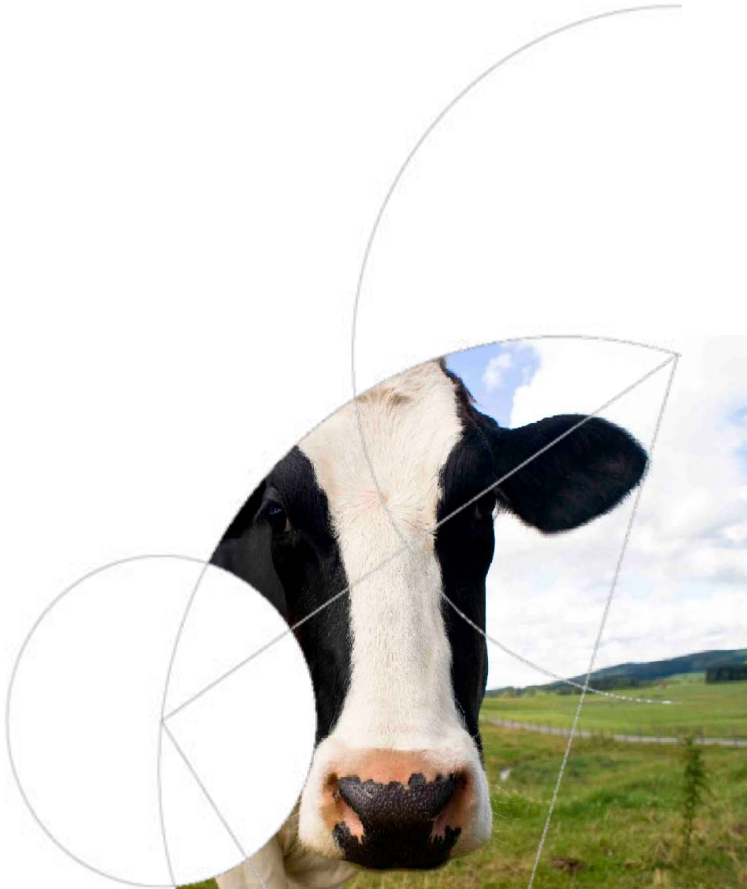

Outline

- Vetstat- structure and content
- Quantification of drug consumption
- Antimicrobial use for Danish cattle- 2007 to 2011

A brief introduction to Vetstat

Growing concern regarding antimicrobial resistance

WHO recommendation to monitor antimicrobial consumption

Vetstat initiated in 2000

A brief introduction to Vetstat

Vetstat aims:

- To monitor veterinary usage of drugs in animal production
- To help practitioners in their work as farm advisors
- To provide transparency as a basis for ensuring compliance with rules and legislation
- To provide data for pharmaco-epidemiological research

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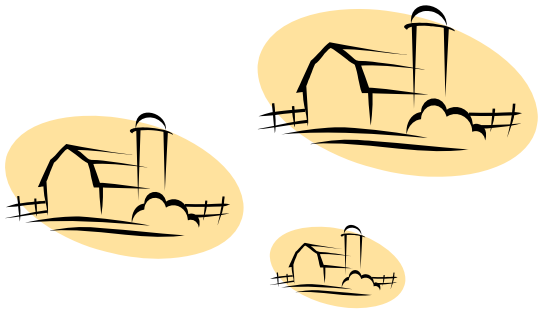
It-based relational database

Owned and managed by the Ministry of Food, Agriculture and Fisheries.

Brief facts on Denmark

- National herd register



Brief facts on Denmark

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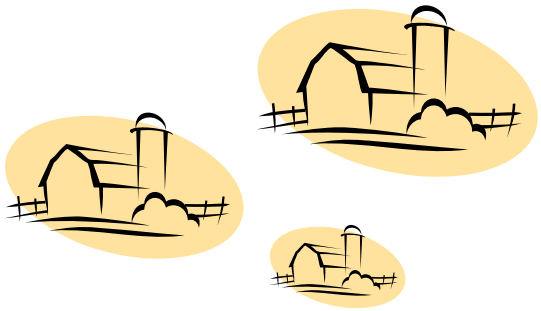

- All antimicrobials are prescription-only

Brief facts on Denmark

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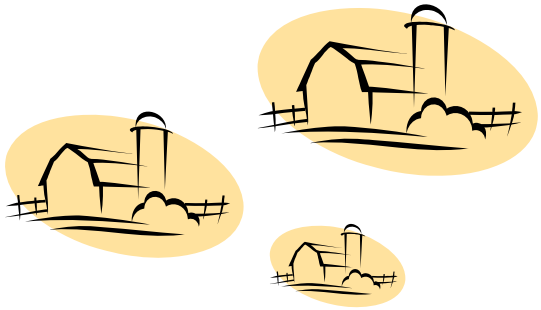


- All antimicrobials are prescription-only

- Legislation to curb antimicrobial use

Veterinary practitioners

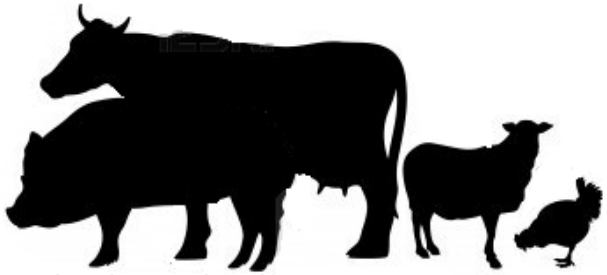
Pharmacies

Feed mills

Veterinary practitioners

Pharmacies

Vetstat



Production animals

Feed mills

All medicated feed sold

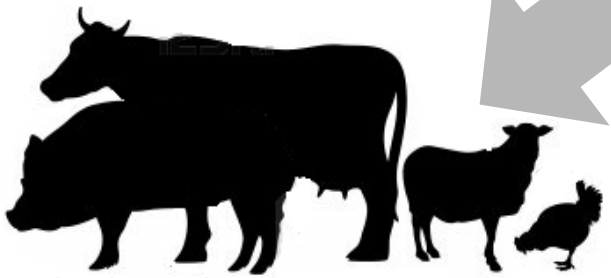
Companion animals

Veterinary practitioners

Pharmacies

All veterinary drugs sold

Vetstat



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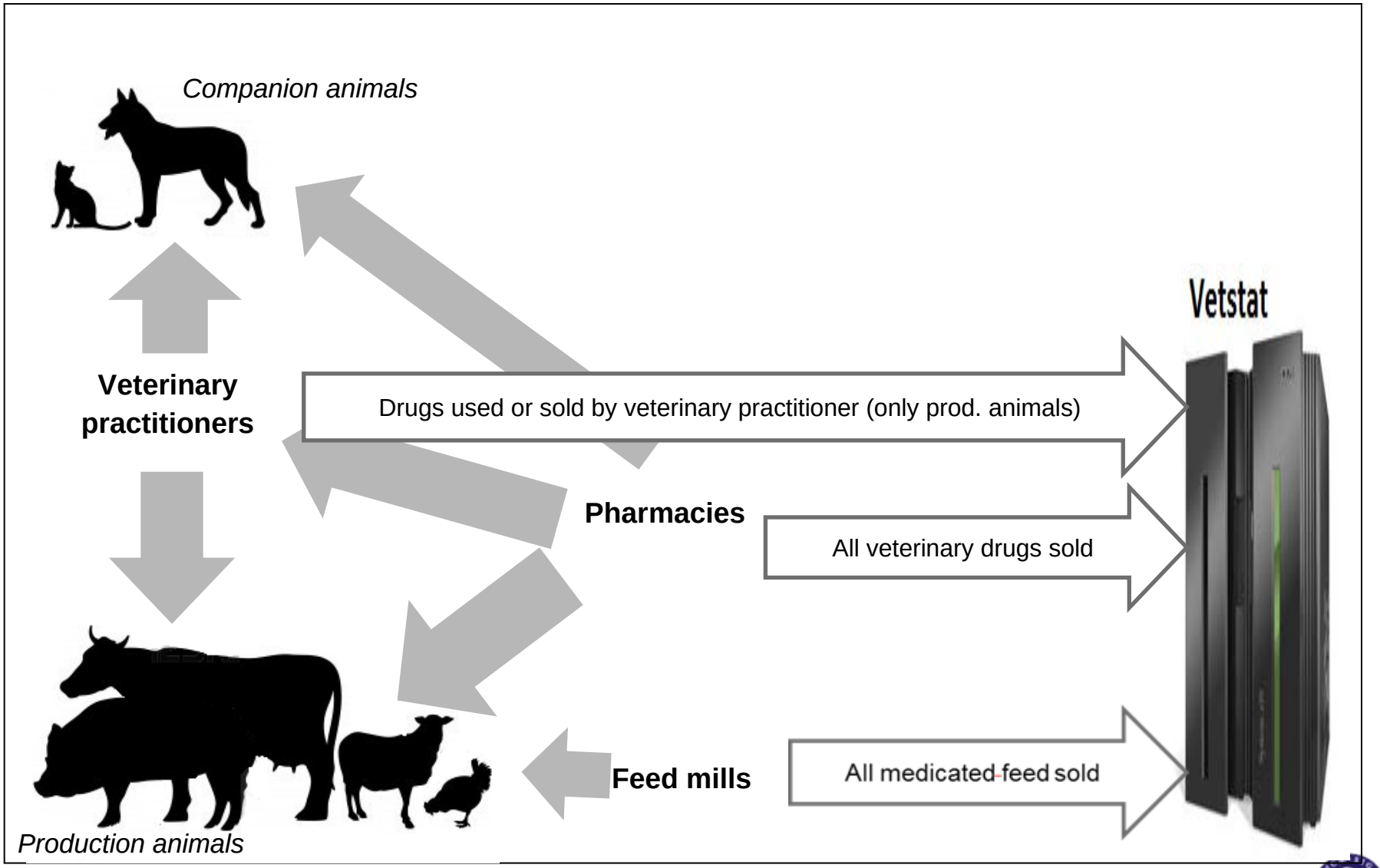
Companion animals
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Drugs used or sold by veterinary practitioner (only prod. animals)
Vetstat
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All veterinary drugs sold
Feed mills
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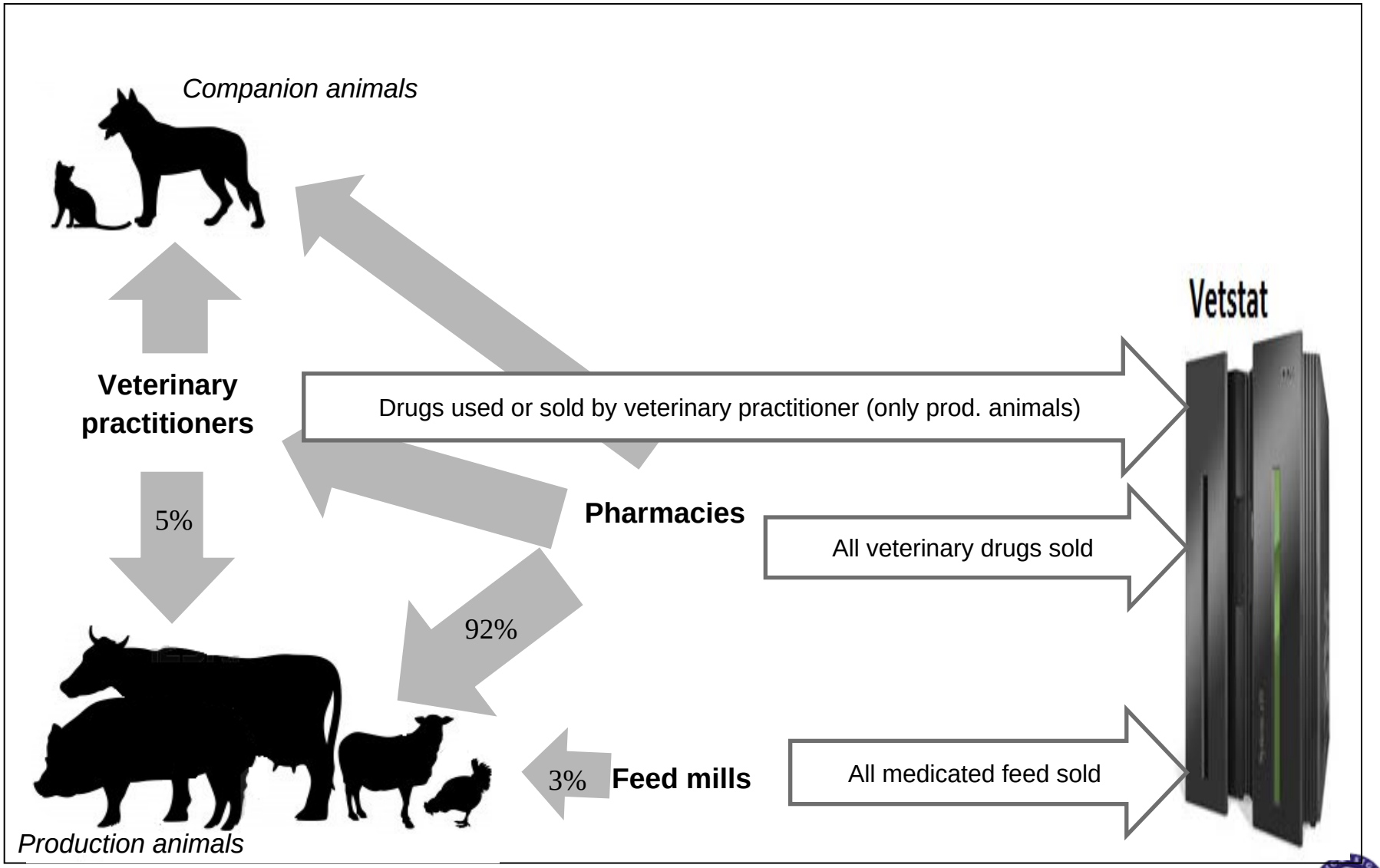
Production animals


Companion animals
Veterinary practitioners
5%
Pharmacies
92%
3%
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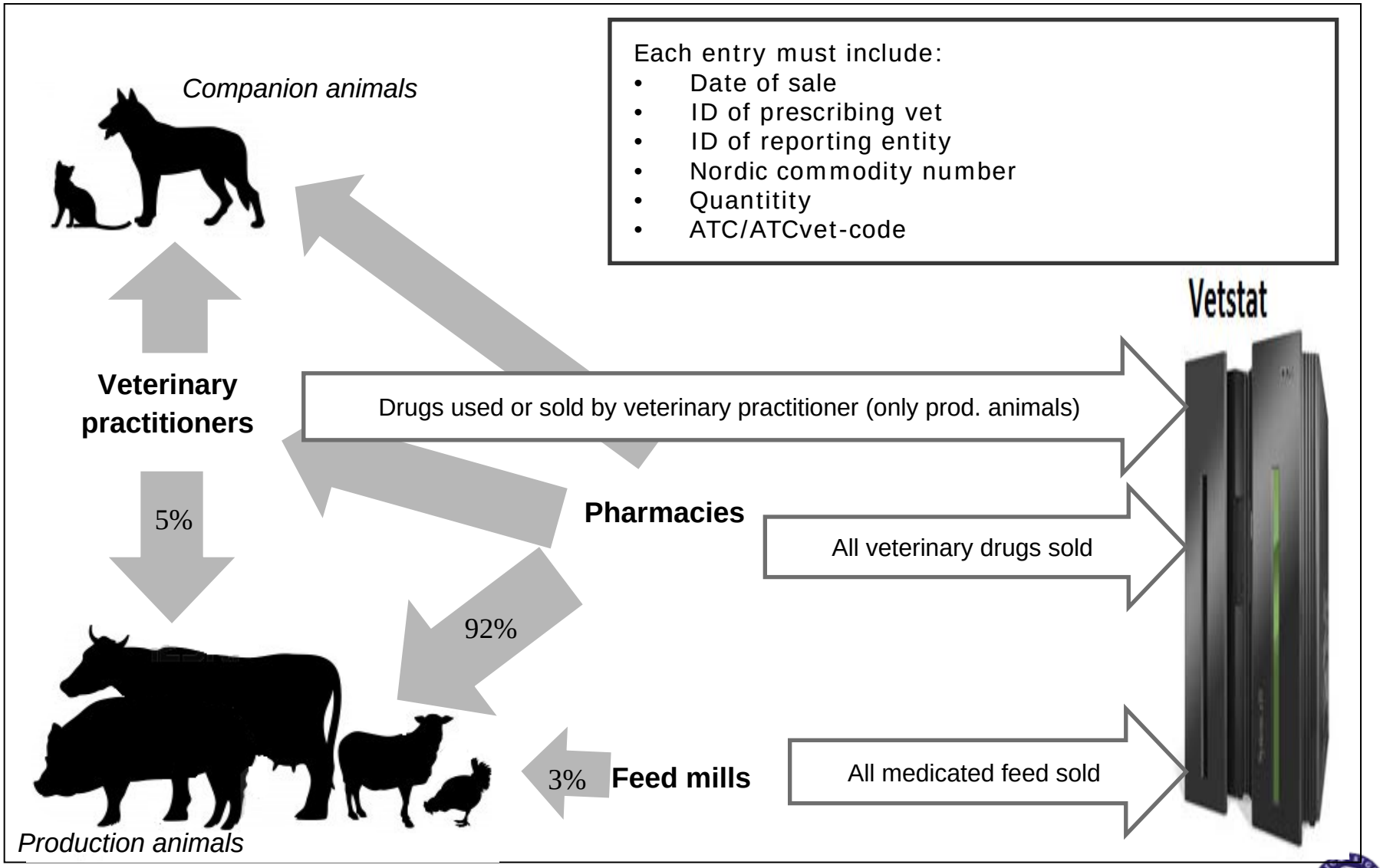
Each entry must include:
• Date of sale
• ID of prescribing vet
• ID of reporting entity
• Nordic commodity number
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• ATC/ATCvet-code
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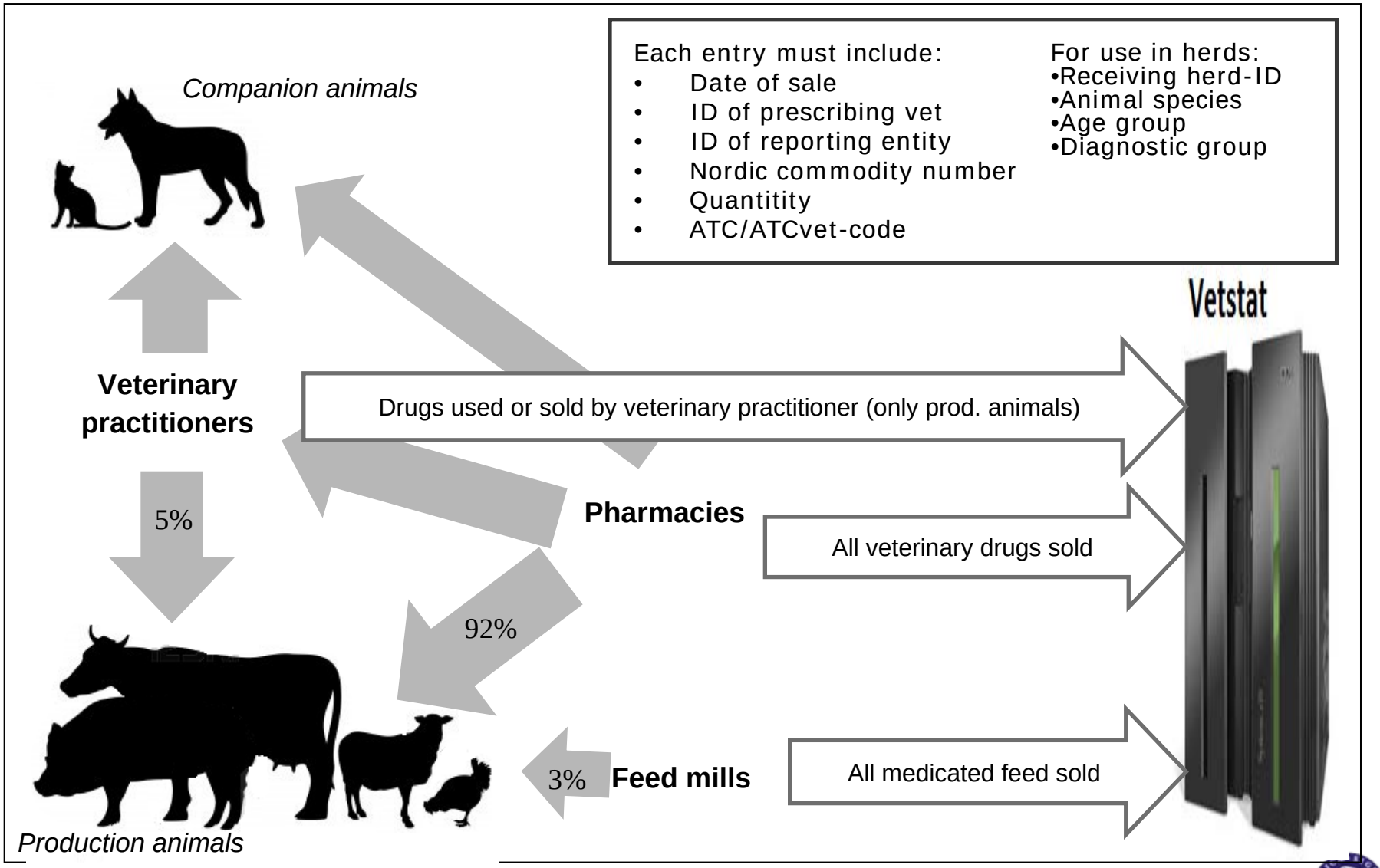
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For use in herds:
•Receiving herd-ID
•Animal species
•Age group
•Diagnostic group
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Production animals

Cattle - age groups in Vetstat

- Cows and bulls
- Calves < 12 months
- Heifers and steers > 12 months

User-access to Vetstat data

- National consumption presented by the Ministry of Food, Agriculture and Fisheries
- Vetstat.dk – detailed data
- Since spring 2012 public access

Potential pitfalls

- No automatic linking species/age/diagnostic group – 1.4% in 2011 (1405/100.021 entries)

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- Incorrect ID of prescribing veterinarian
- Lacking registrations by veterinary practitioners - estimated 10% in 2011

Quantification of drug consumption

Kg active compound

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- ÷ potency

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Animal Daily Doses (ADD)

- Daily maintenance dose per live animal for the main indication

$$ADD = \frac{Total\ amount\ of\ active\ compound\ AM\ sold/used(mg)}{dosage\ pr\ kg\ live\ animal(DMDkg) * standard\ weight\ of\ animal}$$

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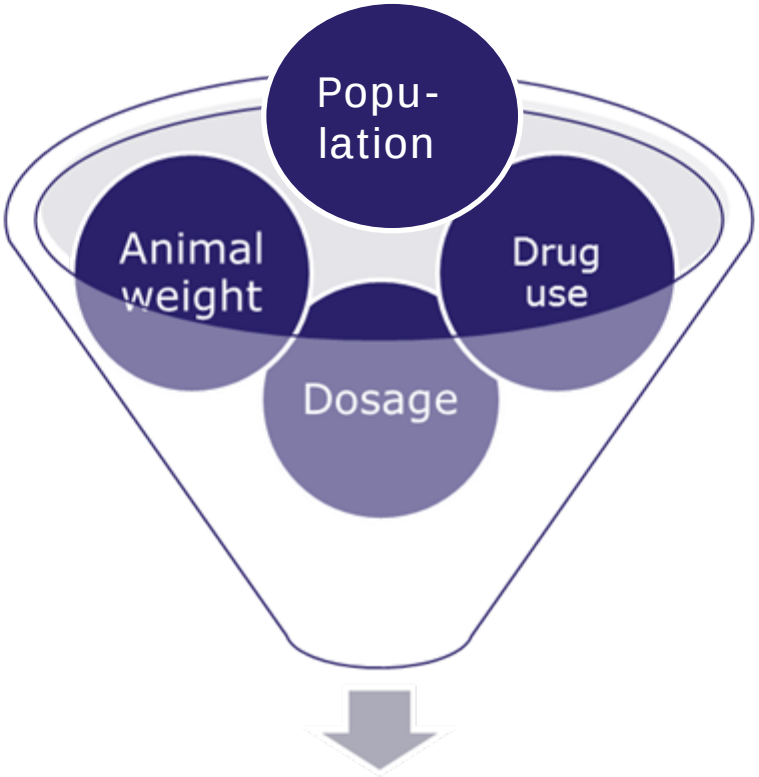
Animal Daily Doses per 100 animals per day

$$ADD\ pr\ 100\ animals\ pr\ day = \frac{ADD\ used}{number\ of\ pen\ places * days}$$

ADD per 100 animals per day



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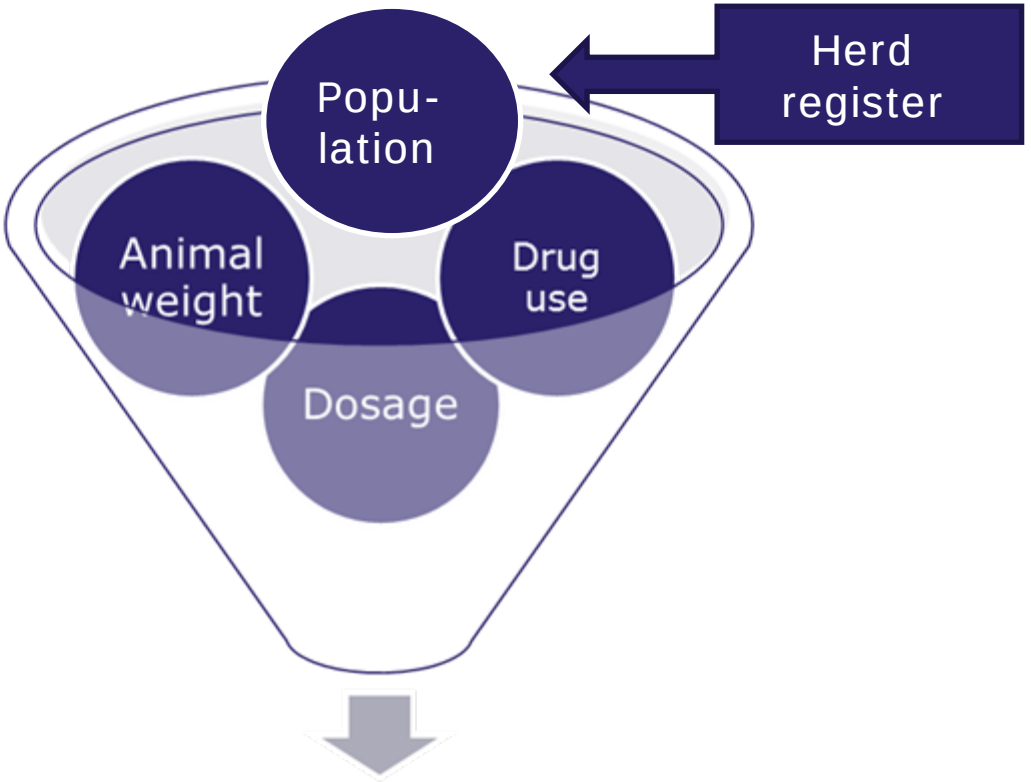

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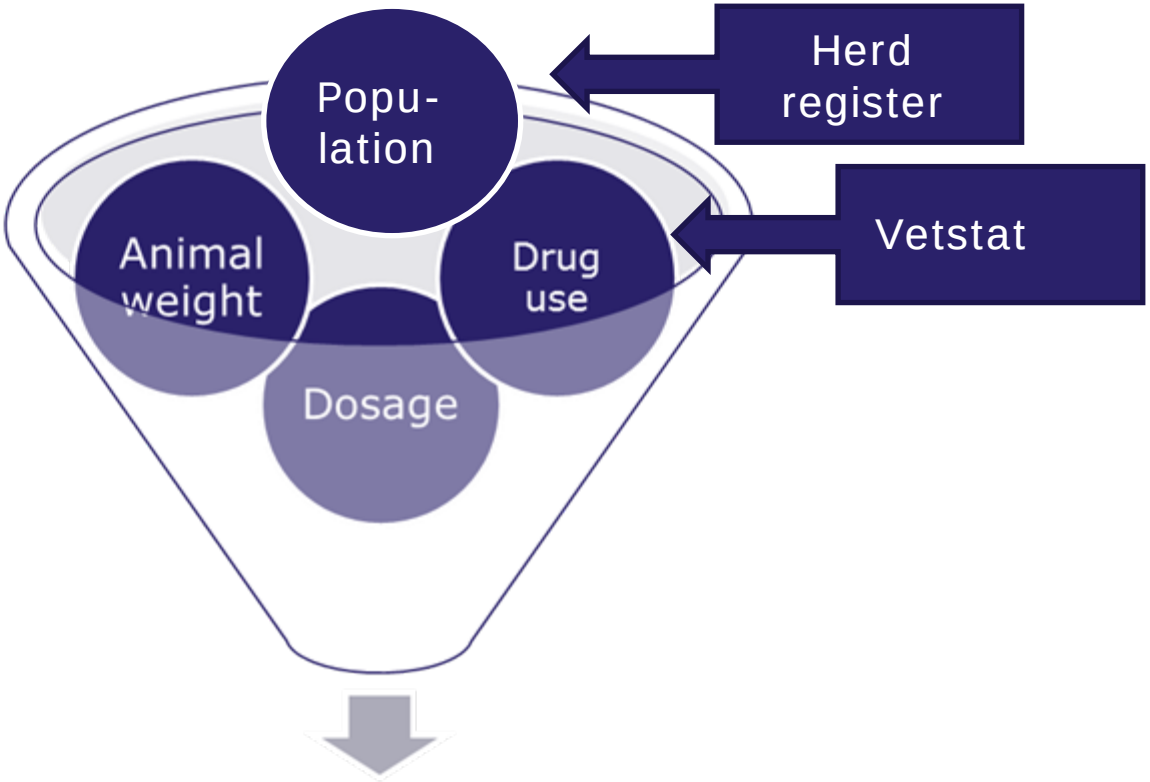

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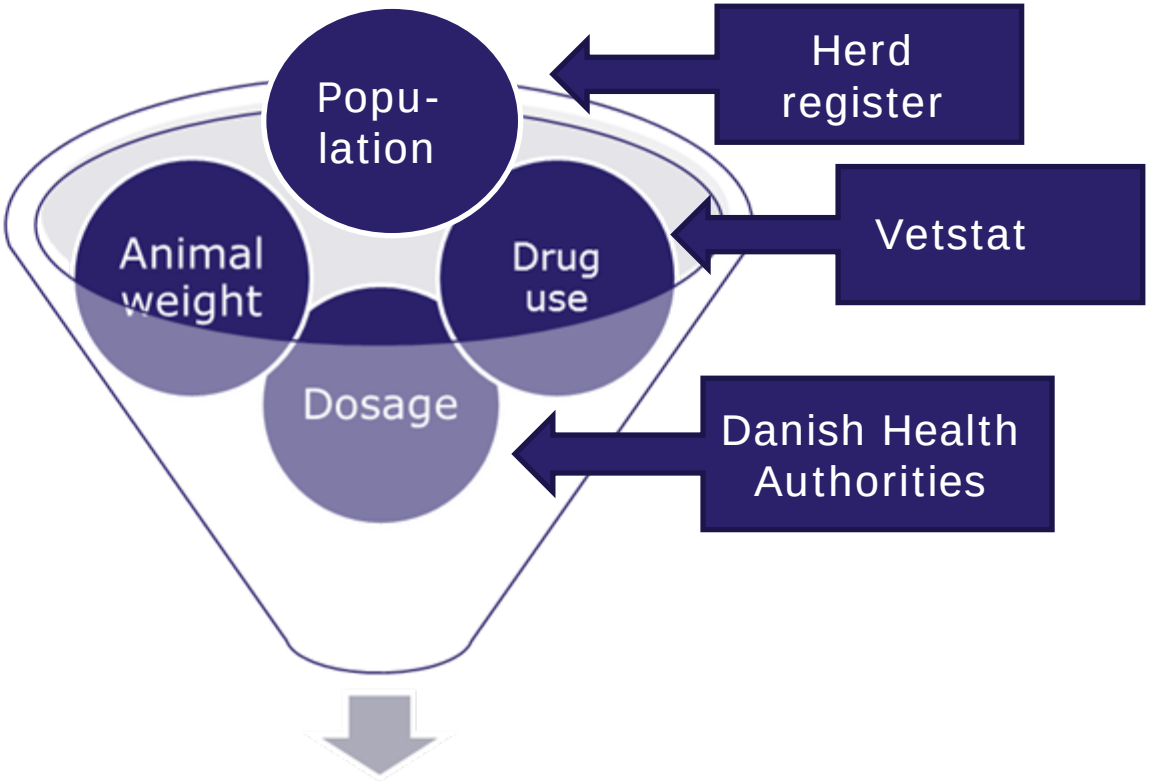

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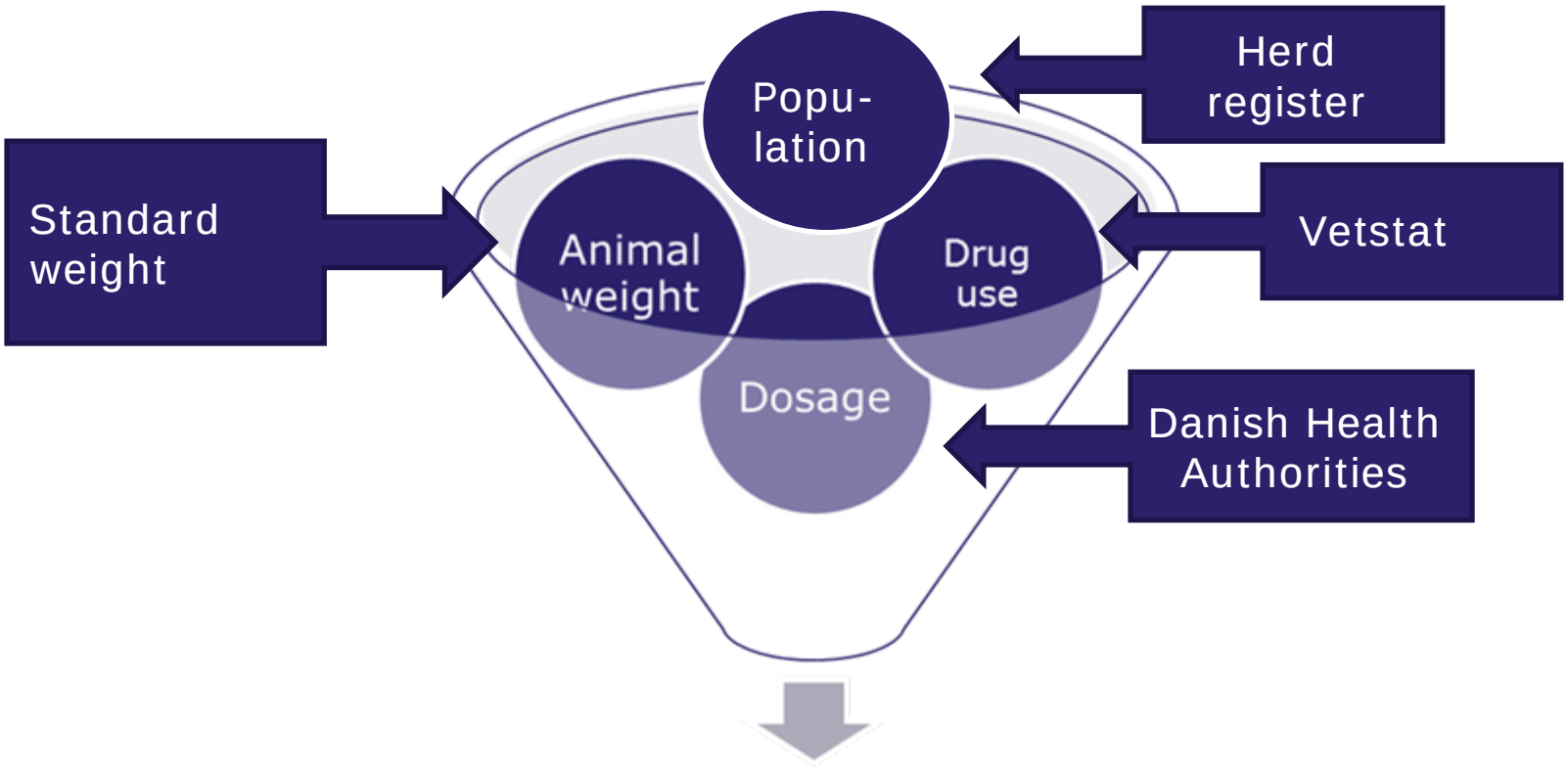

Animal Daily Doses (ADD) per 100 animals per day

Quantification of drug consumption- animal weight

Age group	Standard weight
Cows, bulls	600 kg
Calves <12 months	100 kg
Heifers, steers > 12 months	300 kg

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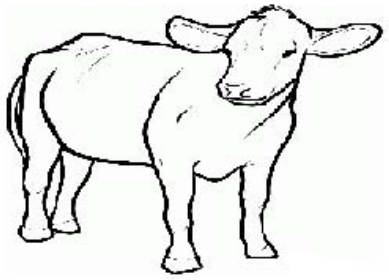
Age group → large effect on ADD



Calculation examples

ADD

100 mL EthacilinVet - 300 mg benzylpenicillinprocain/mL

for treatments of cows (15mg/kg)

$$ADD = \frac{(100mL\ product * 300mg/mL)}{15mg/kg\ * 600kg} = \mathbf{3,33ADD}$$

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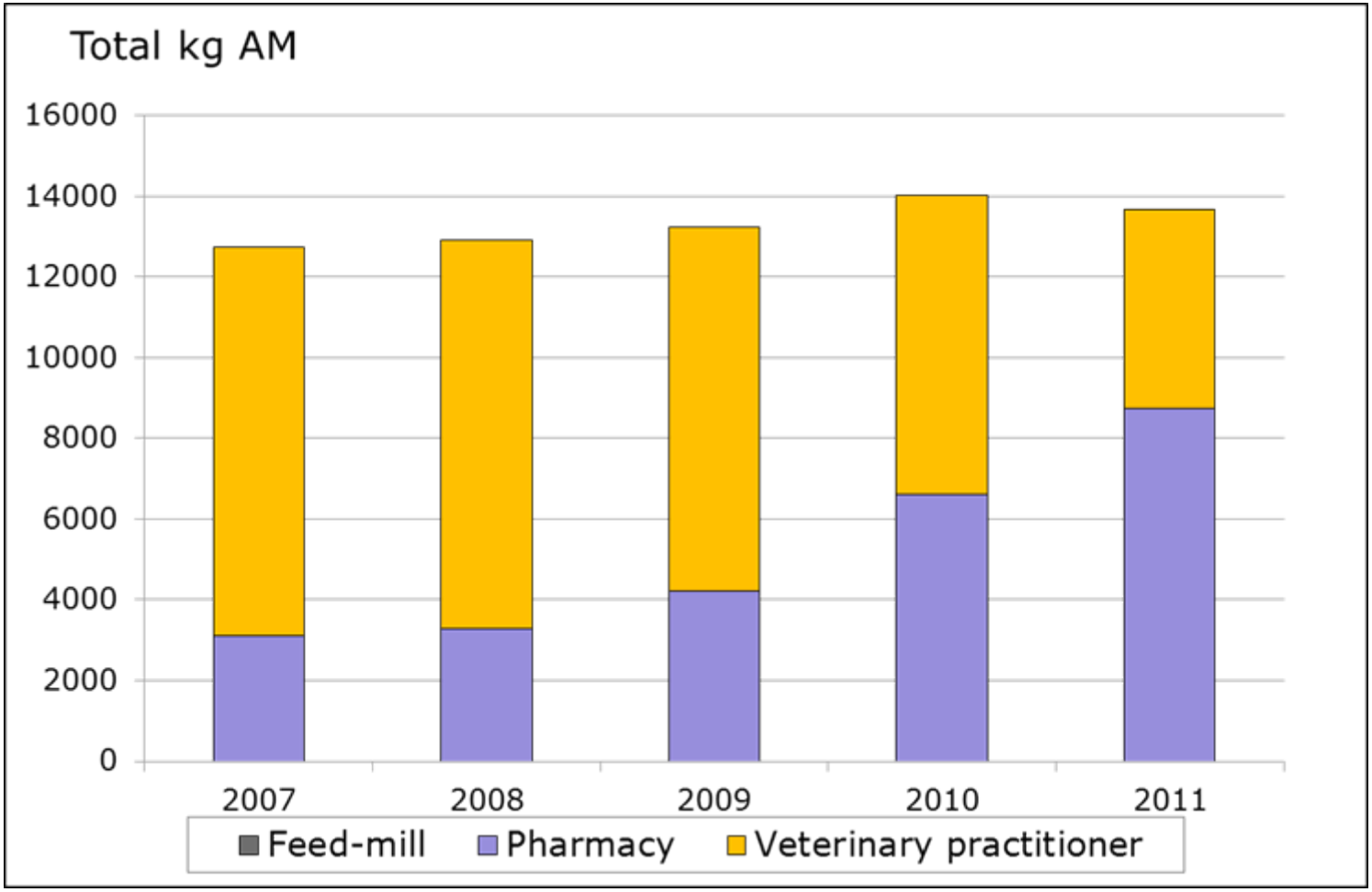
ADD per 100 animals per day

150 ADDs (cows/bulls) for herd with 400 pen places in January (31 days)

$$ADD\ pr\ 100\ animals\ pr\ day = \frac{150\ ADD\ used}{400\ pen\ places * 31\ days} * 100 = \mathbf{1.2}$$

Antimicrobial consumption in Danish cattle



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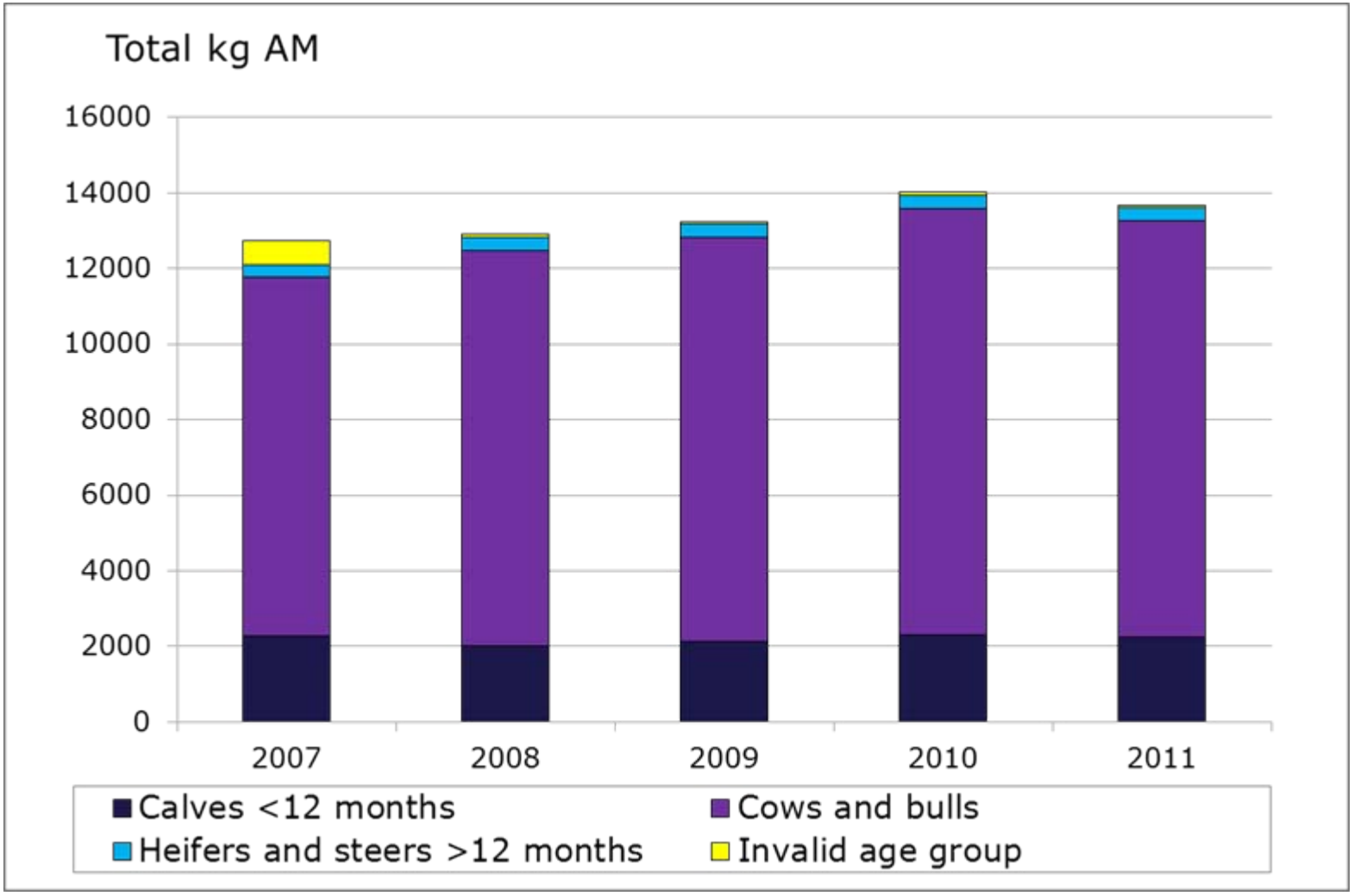

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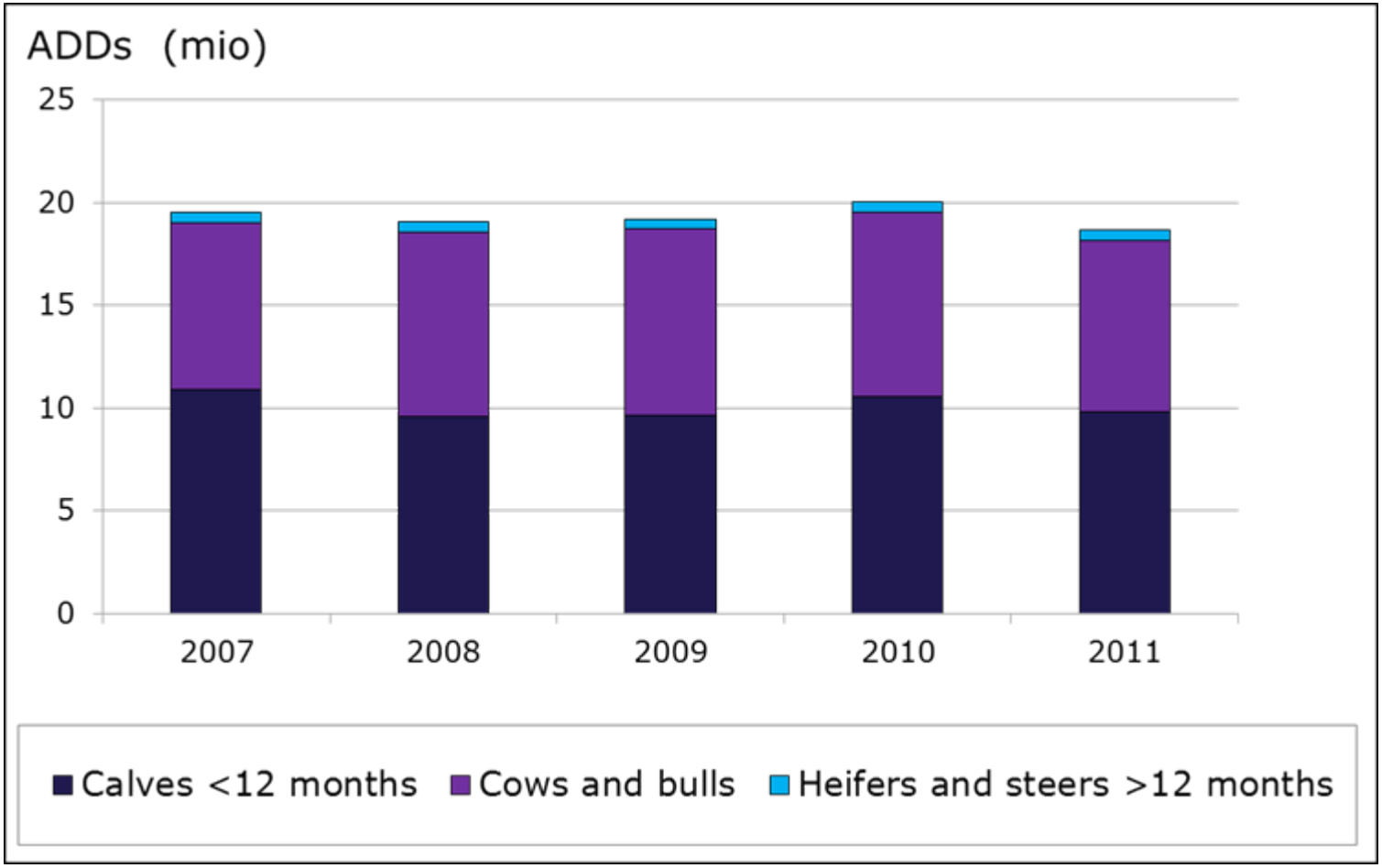

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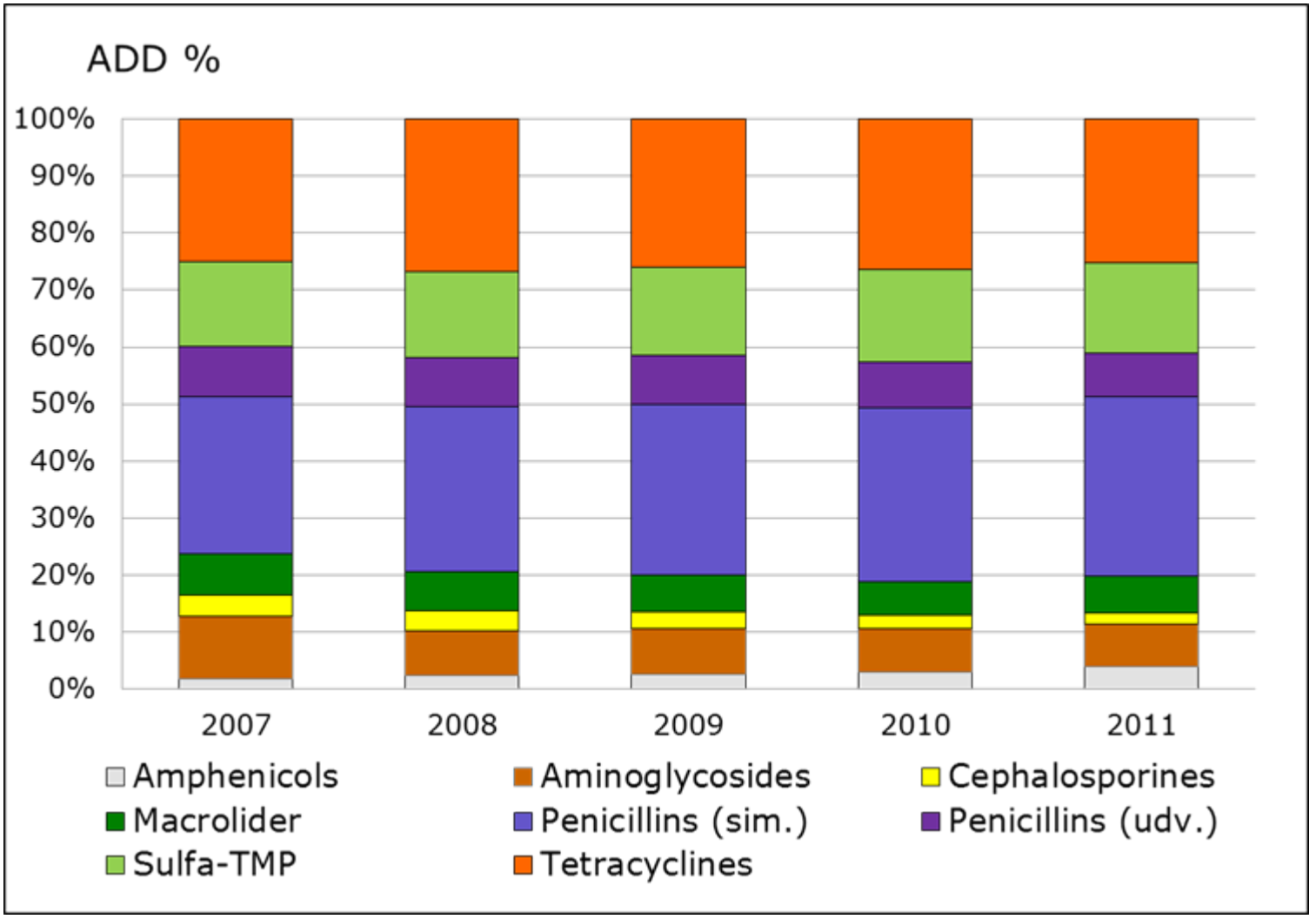

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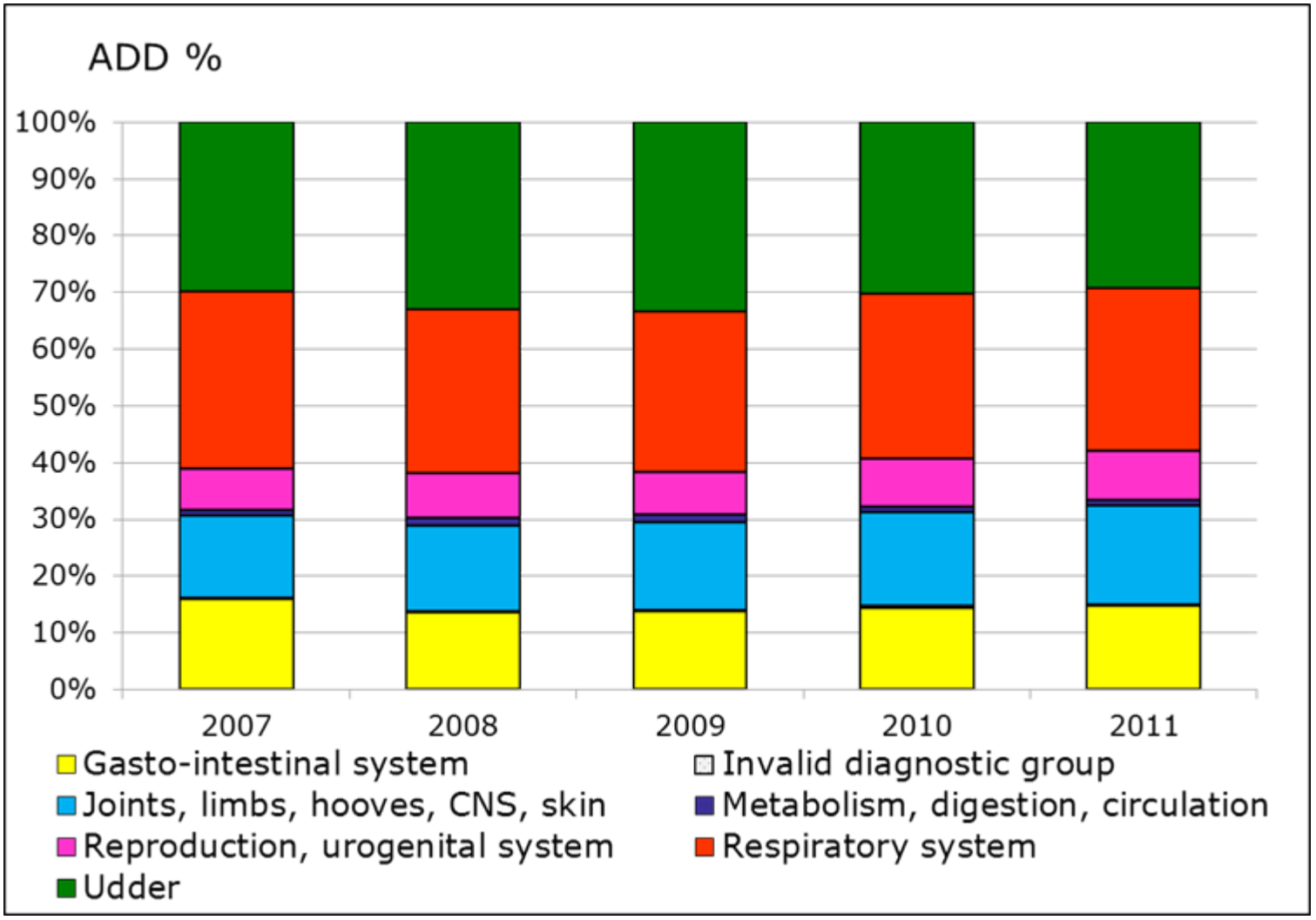


Effect of number of animals

To evaluate consumption, one needs to know the number of animals ”available for treatment” – or at least some estimate of the population size

Objective:

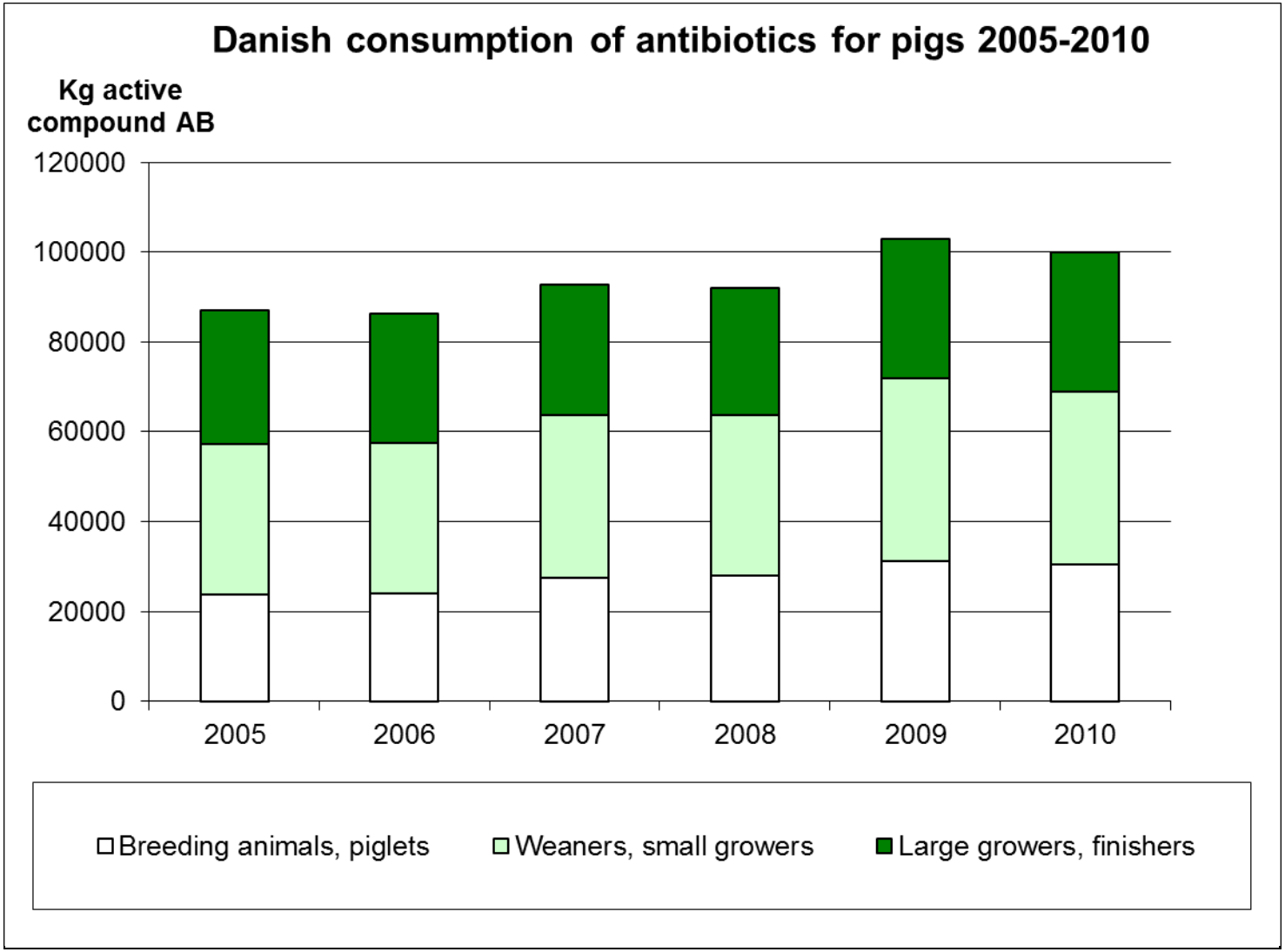
To describe the consequences of using three different ways to measure number of animals when reporting the yearly antimicrobial consumption

Effect of number of animals

Animal population measurements

- Number of pen places
- Number of pigs slaughtered in Denmark (~ 2 x pen places)
- Number of pigs slaughtered in Denmark + number of exported growers (~30 kg) and finishers

Effect of number of animals – reporting consumption



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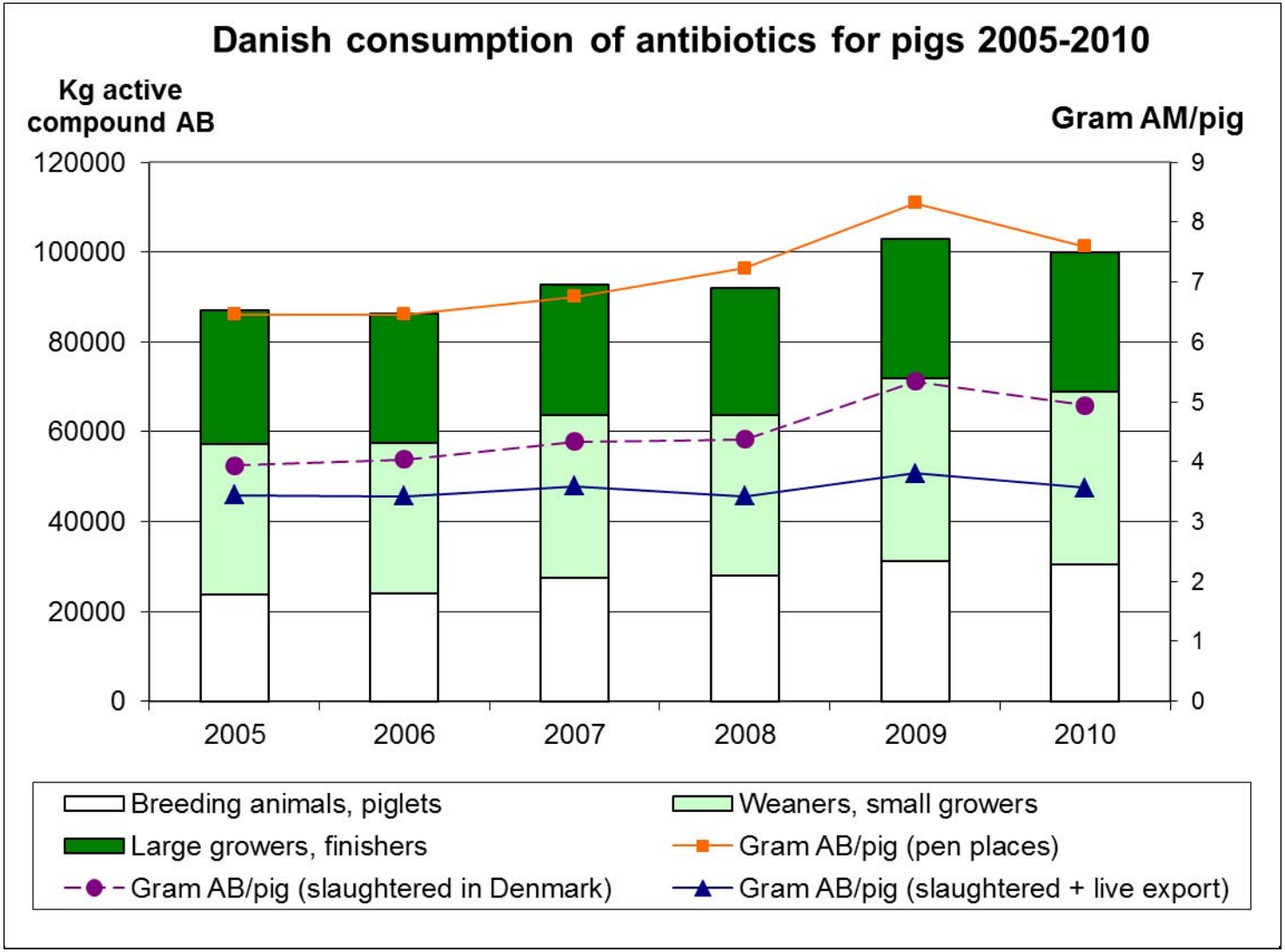
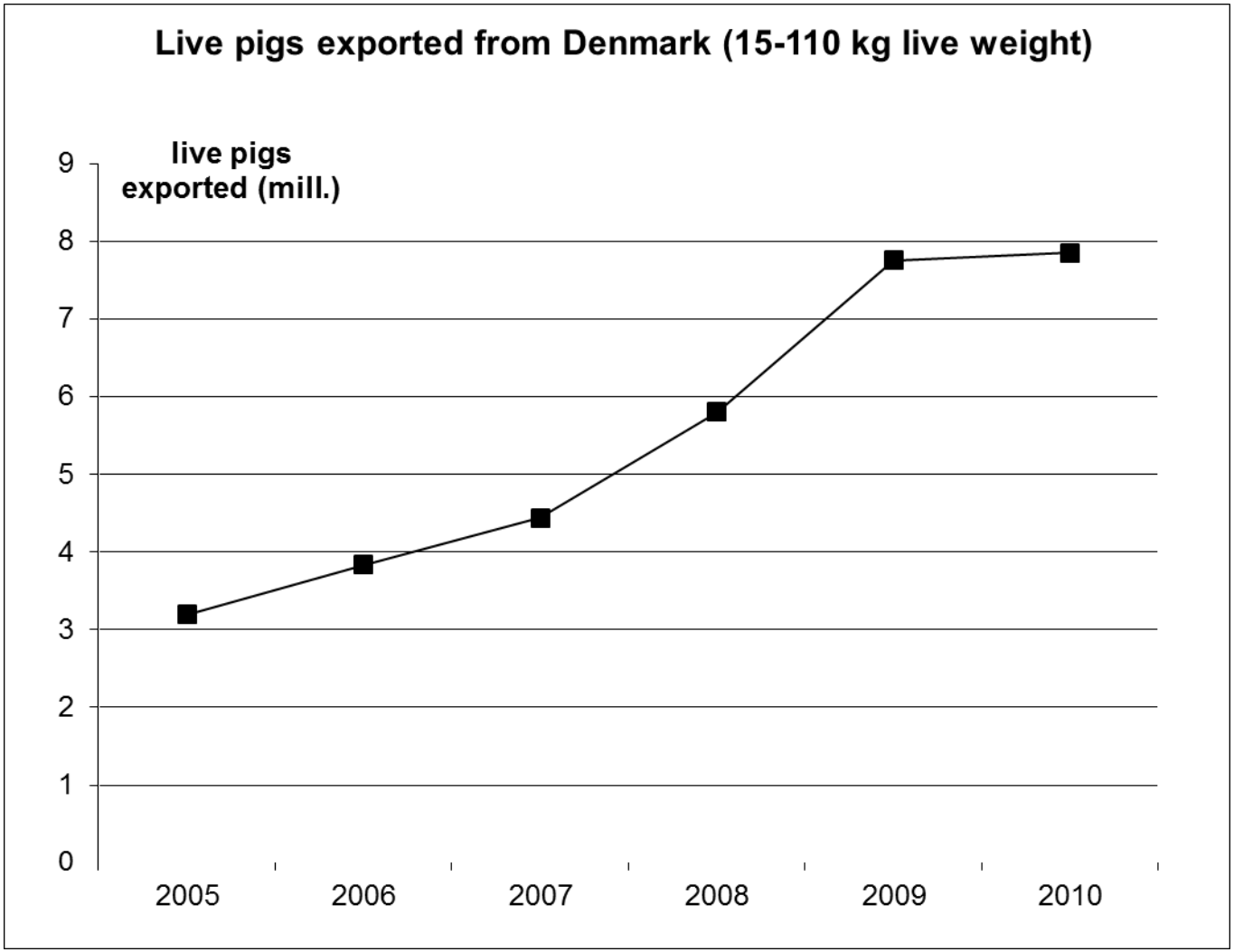


Trends in live export



Effect of number of animals

- Difficult to make accurate numbers on animal population per year

- Important to take export into account
  - ~ 95% of all growers exported ≥30 kg
  - Not including exports → skewed result in comparisons.
- When reporting the antimicrobial consumption per pig, it might be prudent always to describe exactly how ”number of pigs” are being calculated

In conclusion

- Great opportunity to assess AM usage both at a national level and a herd level

- Caution when interpreting Vetstat data

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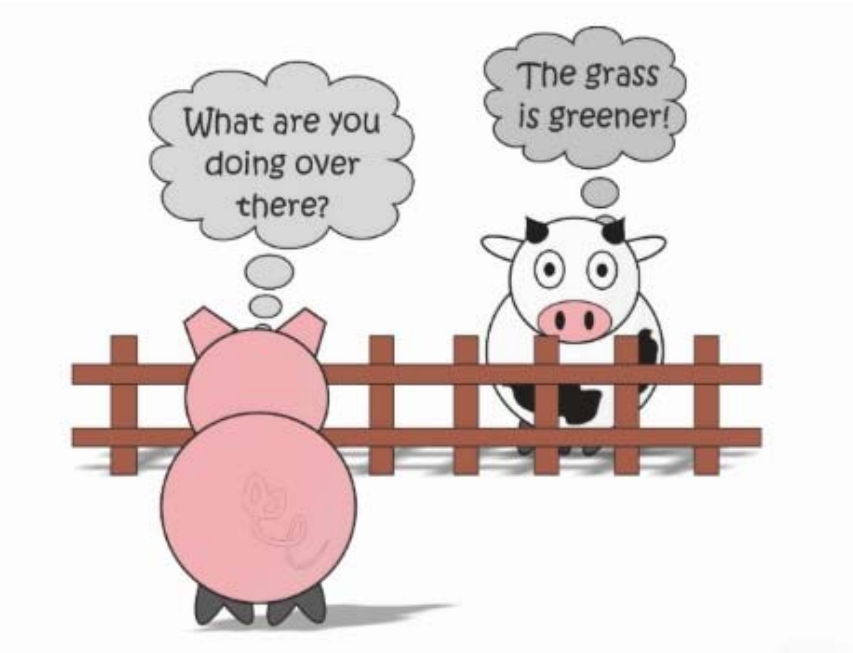
  - effect of calculation methods
  - changes in population

Thank you for your attention – any questions?



Acknowledgements

We thank The Pig Levy Fund for financial support