



# 10 years of monitoring and benchmarking veterinarians: experiences in the Netherlands

**AACTING**



Herd level antimicrobial consumption in animals  
Collect | Analyze | Benchmark | Communicate

**SDa**  
Autoriteit Diergeneesmiddelen

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- What was achieved?
- Data collection
- Evolution of indicators for benchmarking
- Trends in prescription patterns
- Future perspectives

# Reduction goals

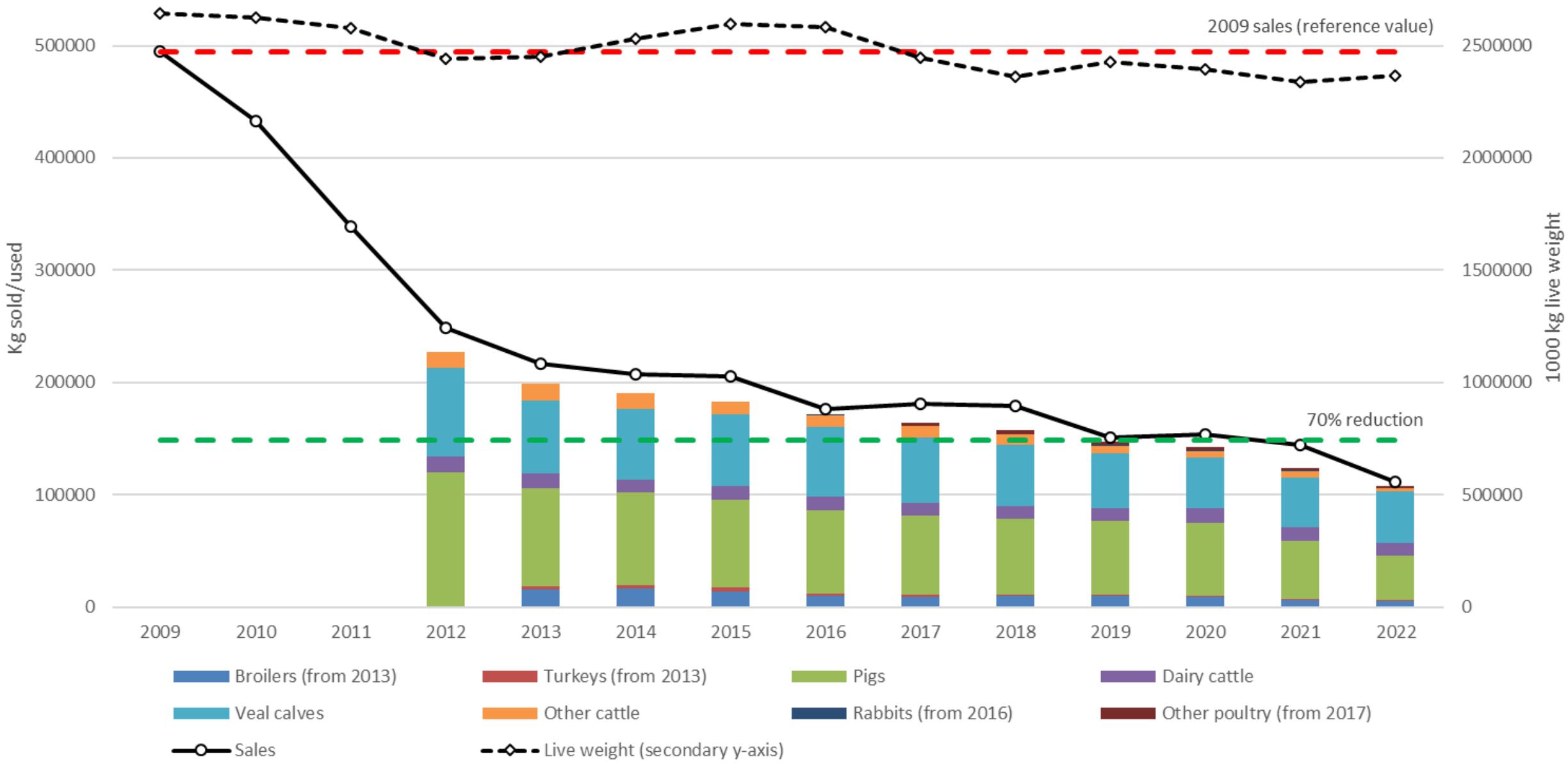
- Set out by the government

Reduction compared to 2009 AMU

- 20% in 2011 
- 50% in 2013 
- 70% in 2015 

# What was achieved?

- 77.4% reduction from reference year 2009
- Joined accomplishment of farmers and veterinarians
- Reduction by livestock sector from 2009 :
  - Broilers 84%
  - Pigs 72%
  - Veal calves 52%
  - Dairy cattle 45%



# Data collection

- 1-on-1 relations between farmer and veterinarian
- Prescriptions recorded in practice management system (PMS)
- Sectoral databases collect data by livestock sector
- Antimicrobial usage data is annually send to the SDa



# Example of 1-on-1 relations

UBN	UDN	DA_START	DA_EIND	...
6081284	2012170	1-1-2020		
6233735	9784496	1-1-2020	30-7-2020	
6233735	9053308	31-7-2020		
4950544	8861630	1-1-2020		
730592	8276784	6-4-2020		
9712224	8112688	1-1-2020		
2836264	9218722	1-1-2020	31-12-2020	
7110414	9726930	1-1-2020	17-2-2020	
2437205	6296622	1-1-2020		
8244635	6296622	1-1-2020		
2356592	9372344	1-1-2020		
7044372	8867858	1-1-2020		
8340664	6726250	1-1-2020		
812264	7966364	1-1-2020		
2782413	2088452	1-1-2020		
6340654	8112688	1-1-2020		
1958392	8112688	1-1-2020		
4331693	8861630	1-1-2020		
3515183	2091004	1-1-2020		
8629864	6296622	1-1-2020		
2866814	9143390	1-1-2020	31-8-2020	
4118573	7084790	1-1-2020		
3223544	8861630	1-1-2020		
2649264	9784496	1-1-2020		
1838924	7084790	1-1-2020		
5874043	9784496	13-8-2020	13-9-2020	neesmiddelen

# Data collection

- Usage data (numerator data)
  - Farm ID
  - Veterinarian ID
  - Livestock sector
  - European Article Number
  - Amount
  - Prescription date
- Animal population data (denominator data)
  - Animal counts for different (age) categories
  - Average numbers of animals at risk of treatment

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# Veterinary benchmark indicator (VBI) before 2021

- Based on probability that a farm has a “red benchmark”
- Probability  $> 0.3$  → take action!
- But not equal to proportion of farms in red... not very intuitive for veterinarians
- Misunderstood
- Does not work well with zero usage

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# VBI from 2021

- Simplified approach
- Based on defined daily doses animal (DDDA)
- Similar to indicator used for farms (DDDA<sub>F</sub>)
- Same benchmark thresholds as used for farms
- Specific policy for persistent high users
- NOT suited for monitoring trends

# VBI from 2021

VBI = treated kilograms of animal in a year / animal mass at risk of treatment of veterinarian in a year\*

\* Excluding persistent high users (specific policy)

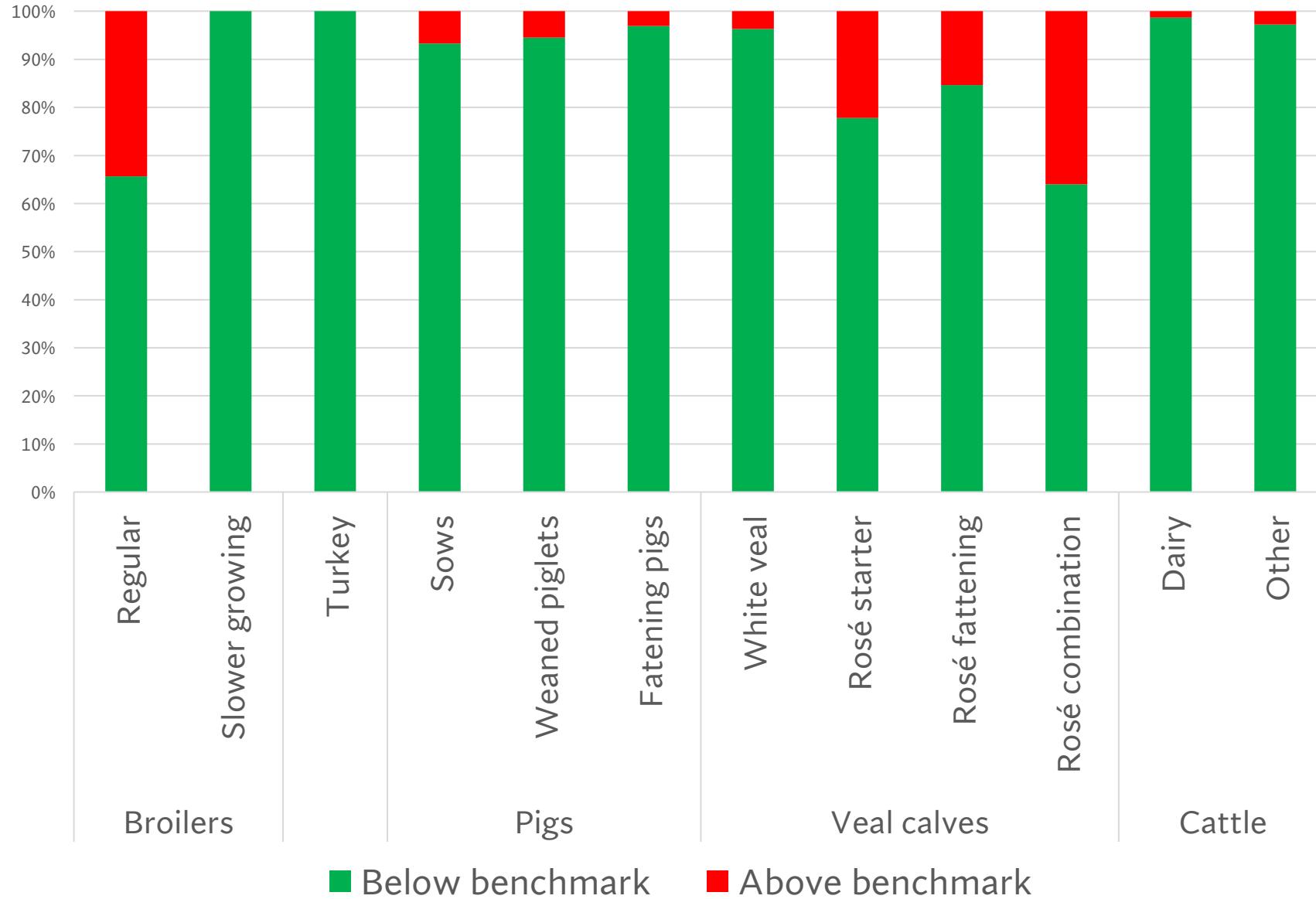
# VBI from 2021

Intrepretation: the number of days a year an animal under care of a certain veterinarian is treated with antimicrobials



# Benchmarking

- VBI > action threshold
- Consequences differ by animal species
  - Reflection on prescription behaviour
- For most livestock sectors over 80% of veterinarians **below action threshold**

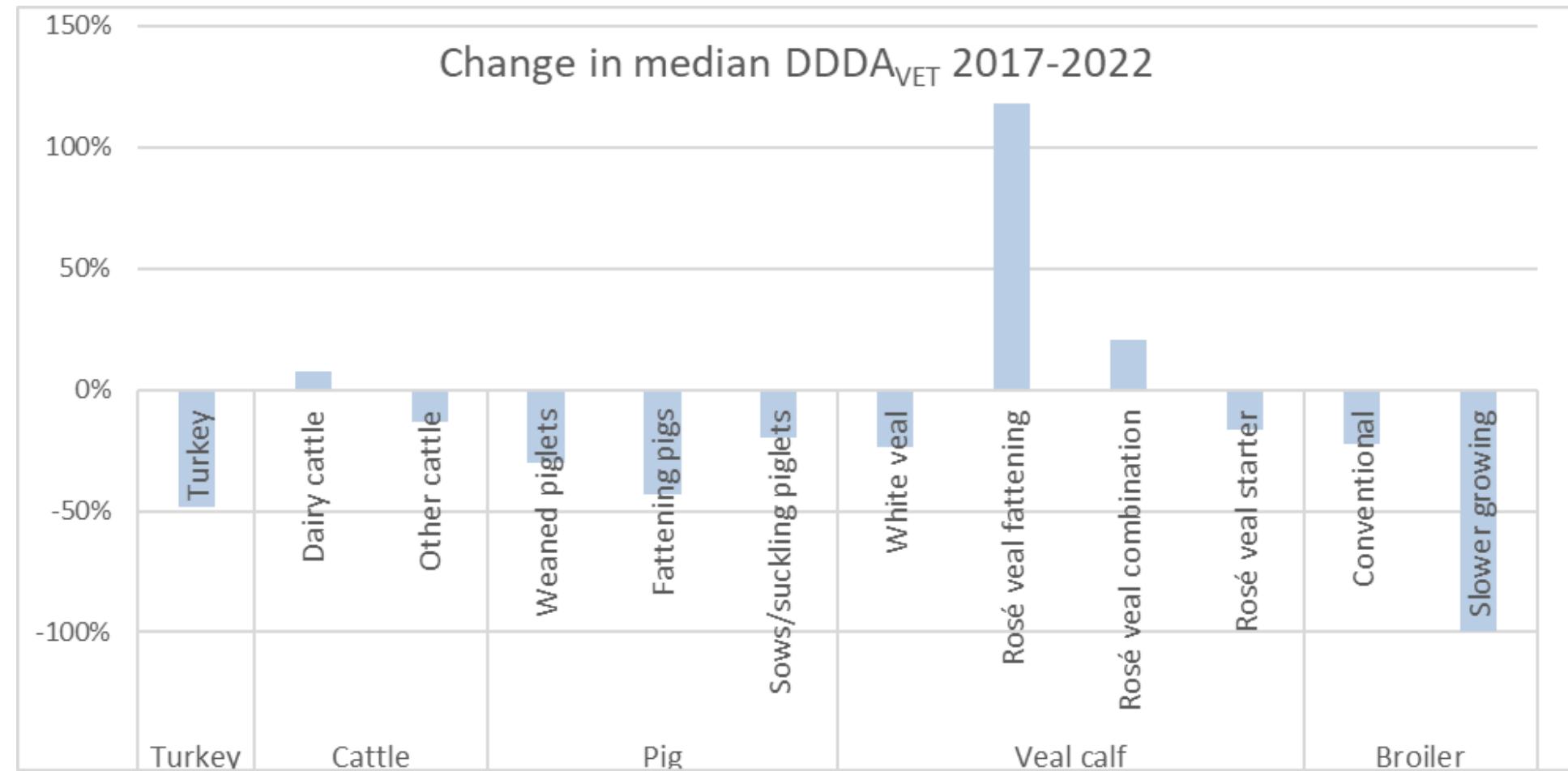


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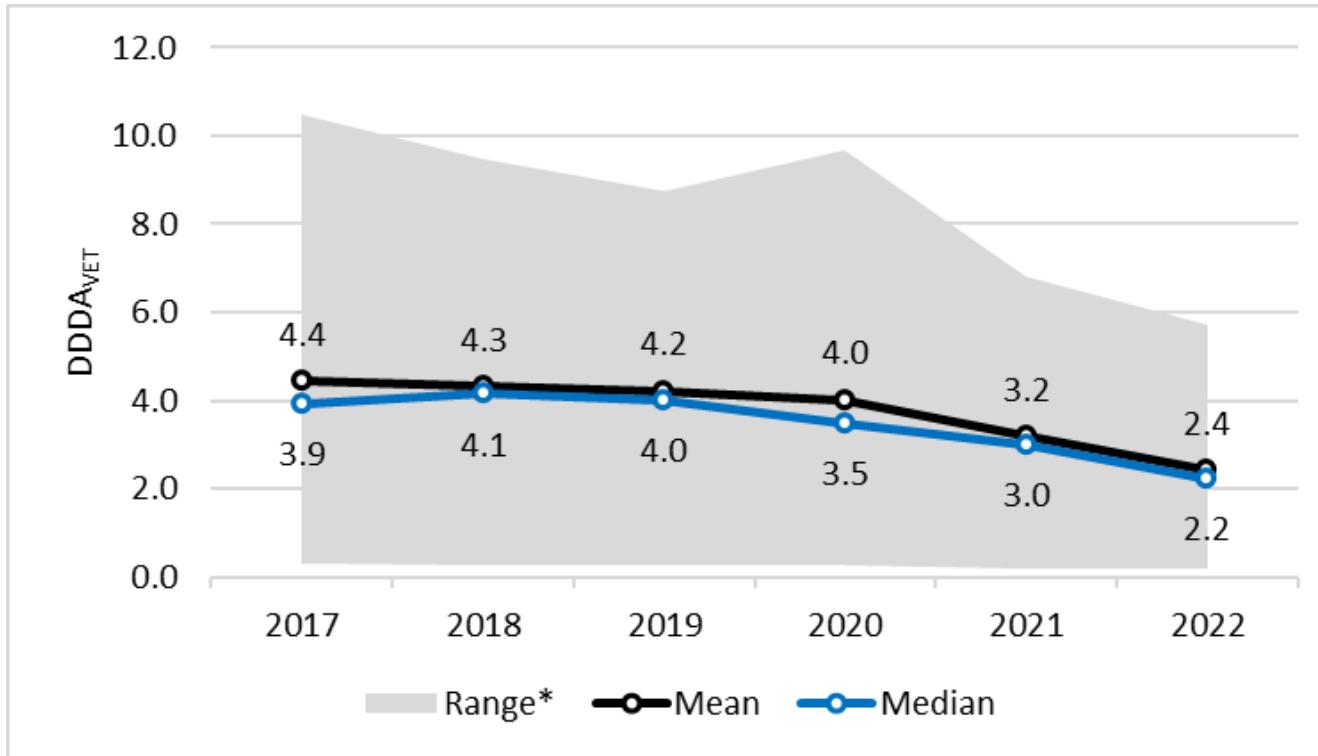
# Indicator for trends in prescription patterns

- Defined daily dose animal veterinarians (DDDA<sub>VET</sub>)
- Used for trend analysis since 2014
- Difference with VBI: persistent high users also included

# Trends in prescription patterns



# Trends in prescription patterns



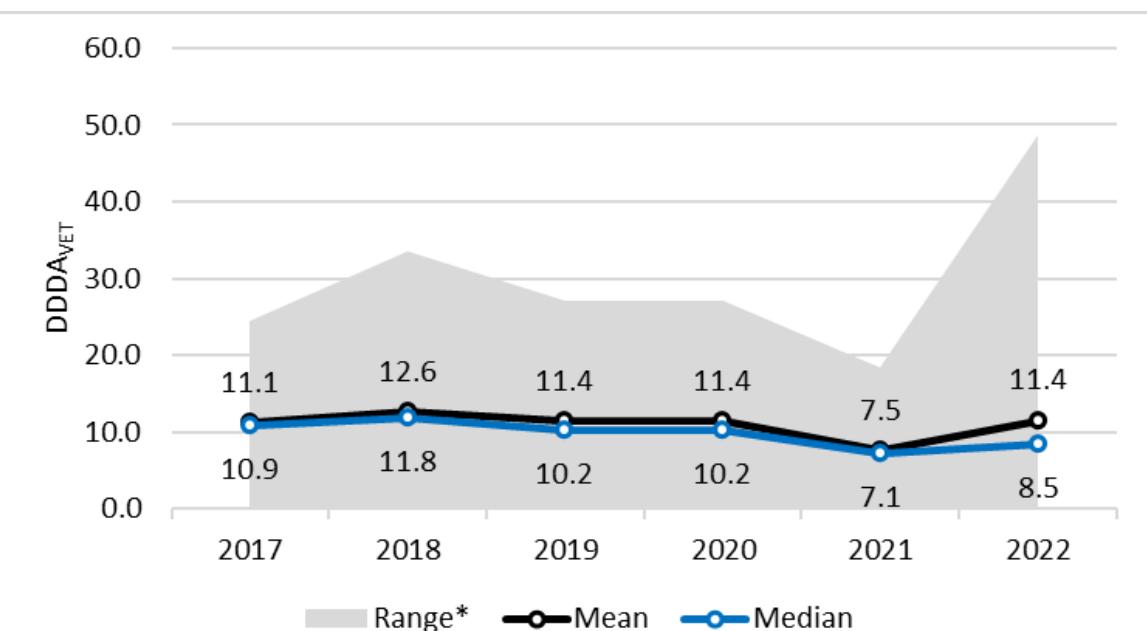
## Fattening pig veterinarians

- Variation between veterinarians 
- Antibiotics prescribed 

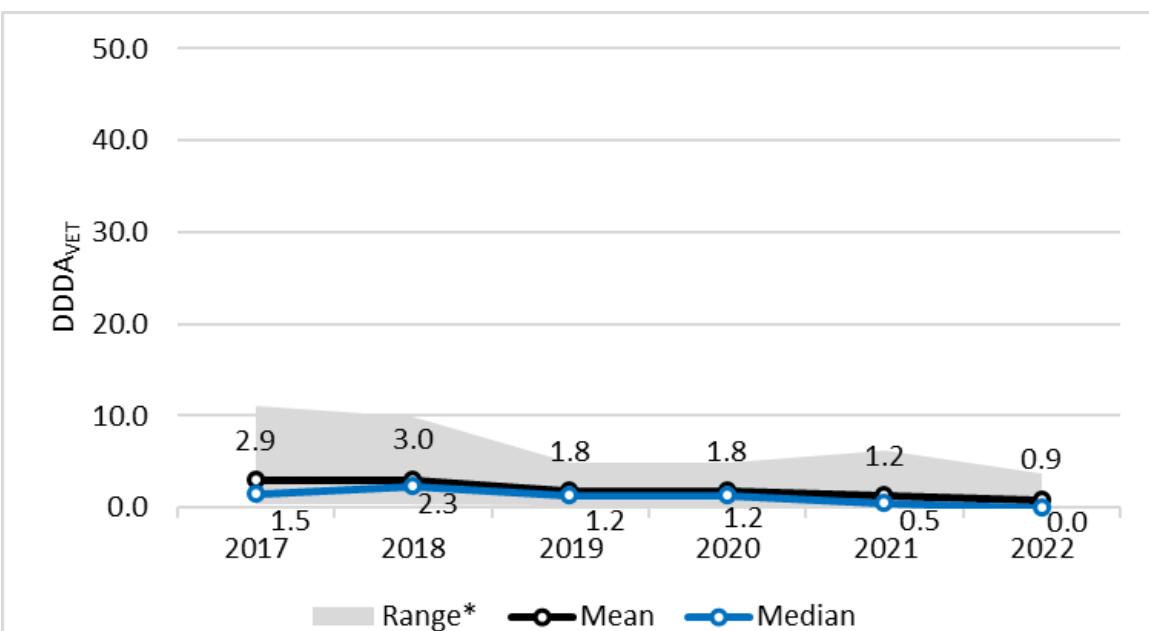
# Trends in prescription patterns

## Broiler veterinarians

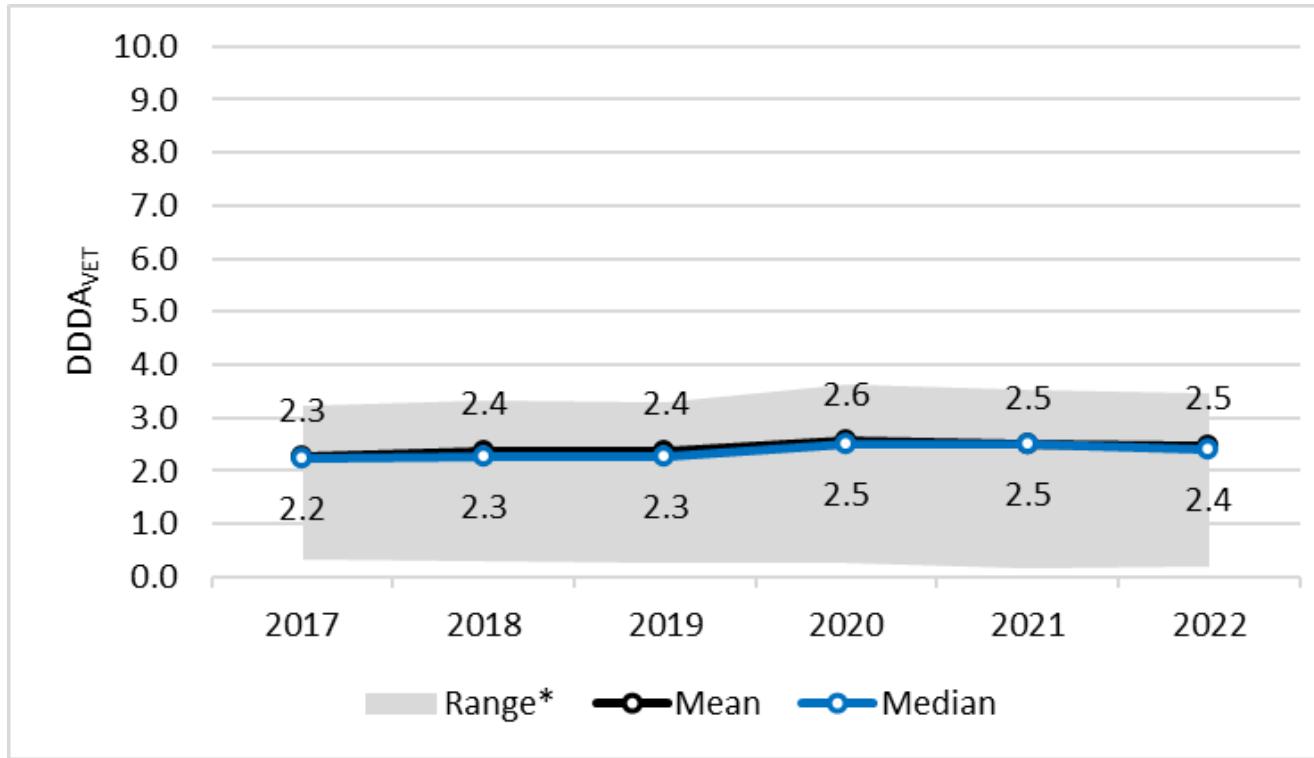
### Conventional breeds



### Slower growing breeds



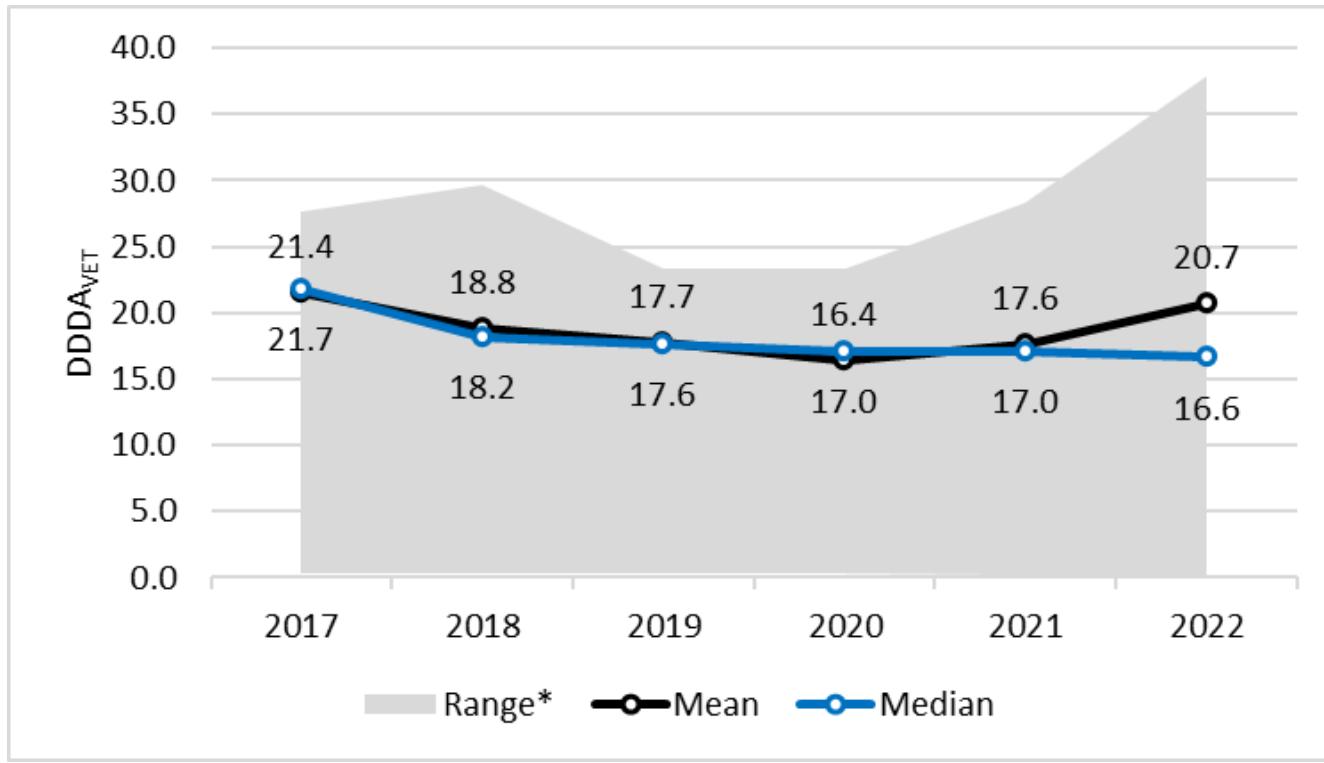
# Trends in prescription patterns



## Dairy cattle veterinarians

- Limited variation between veterinarians
- 2-3 days of average treatment per year

# Trends in prescription patterns



## White veal veterinarians

- Large variation between veterinarians
- No downward trend

# Future

- Focus on persistent high users
- Establish benchmark values reflecting acceptable use/prescription behaviour
- Expand current monitoring to all food-producing animals and eventually also companion animals

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# Thank you!

SDa reports:

<https://www.autoriteitdiergeesmiddelen.nl/en/publications/general-reports> -

