



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




Contents

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

Reduction goals

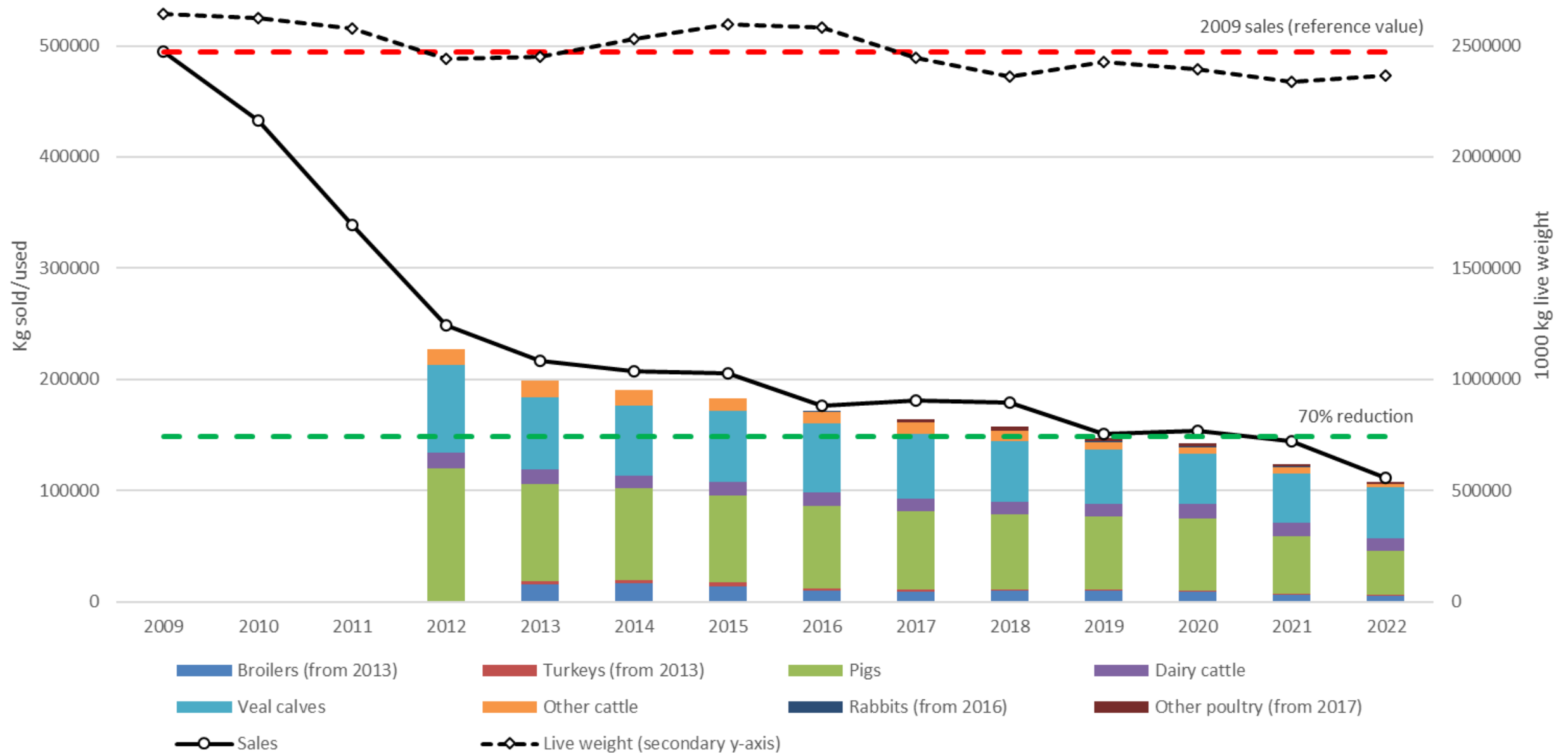
- Set out by the government

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

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

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

VBI from 2021

- Simplified approach
- Based on defined daily doses animal (DDDA)
- Similar to indicator used for farms (DDDA_F)
- 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)

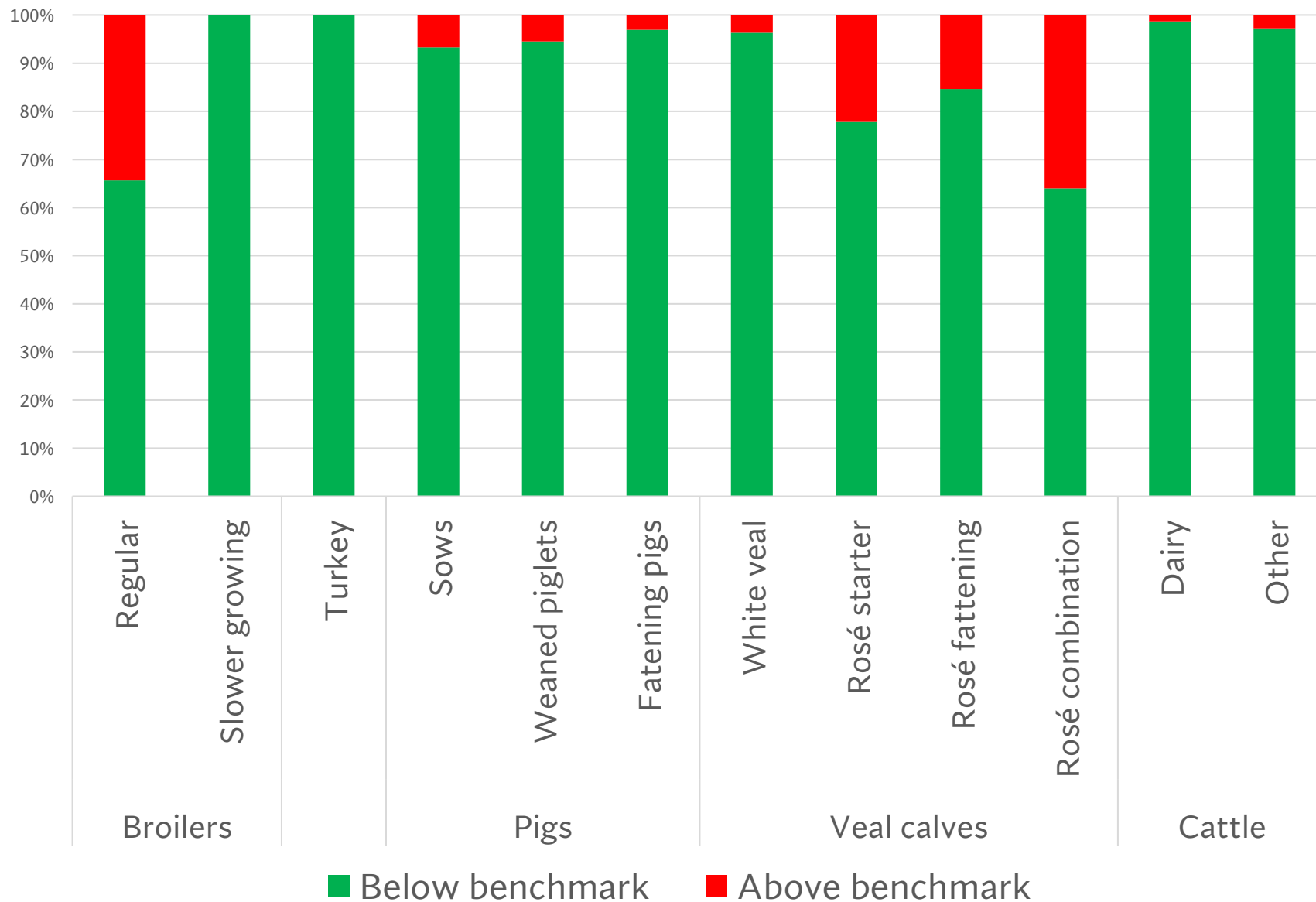
VBI from 2021

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



Benchmarking

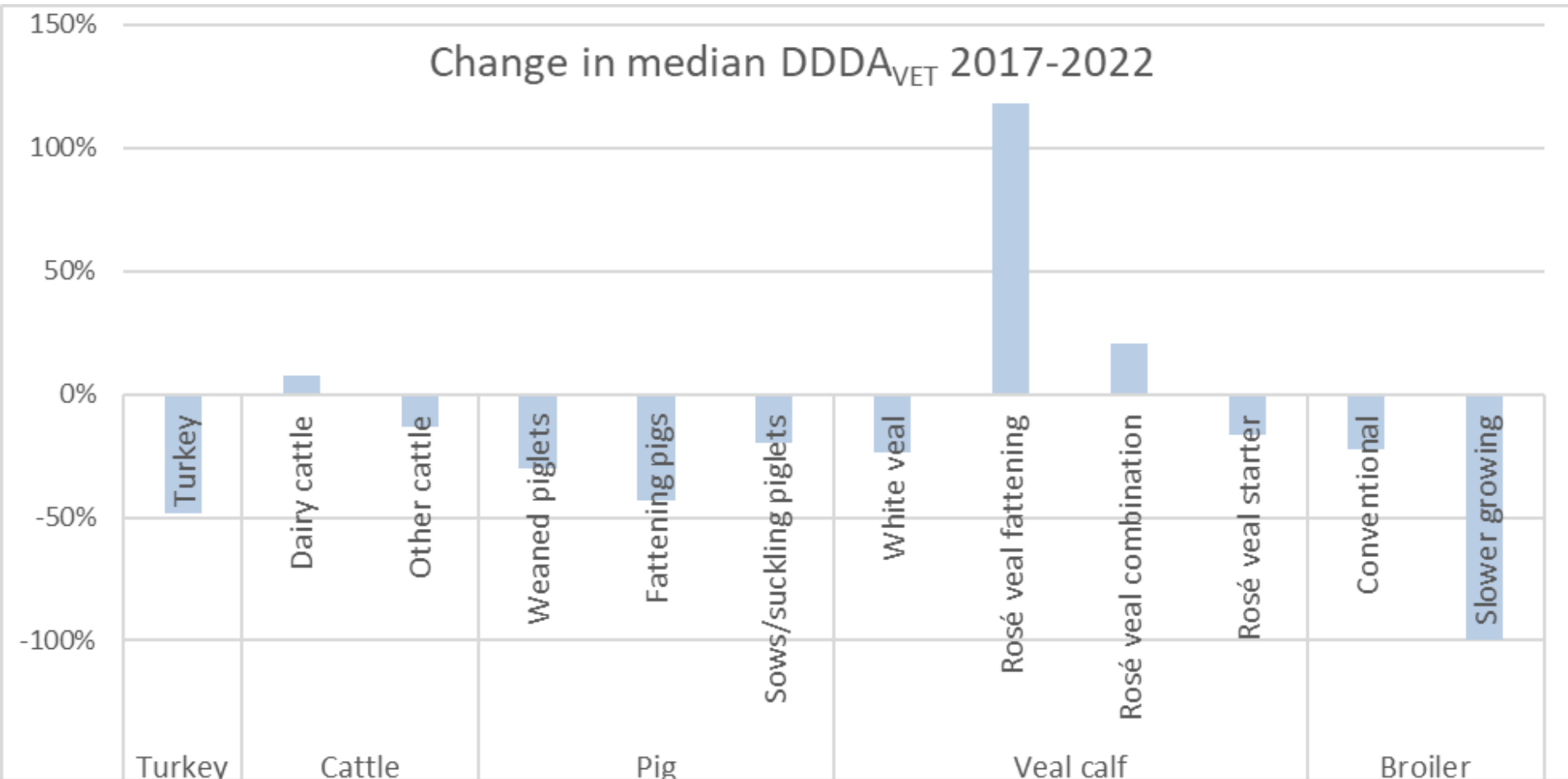
- VBI > action threshold
- Consequences differ by animal species
 - Reflection on prescription behaviour
- For most livestock sectors over 80% of veterinarians **below action threshold**



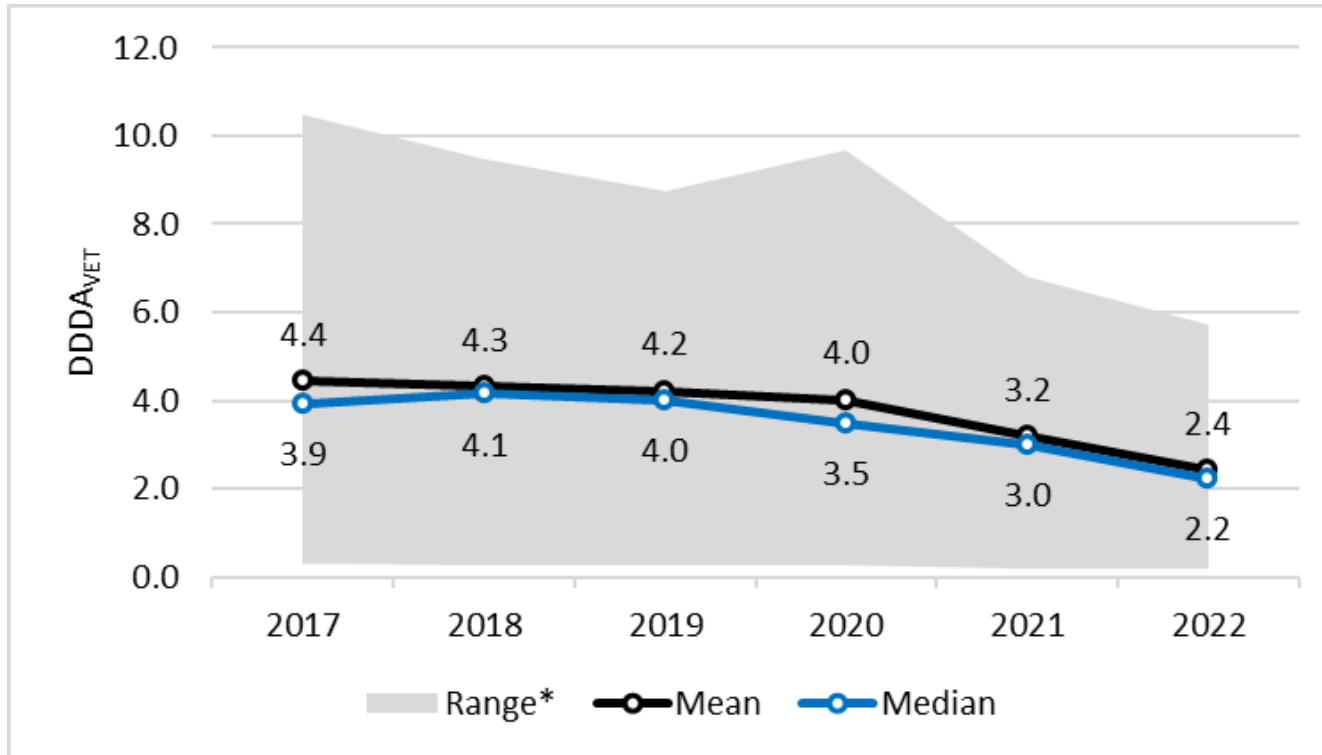
Indicator for trends in prescription patterns

- Defined daily dose animal veterinarians (DDDA_{VET})
- Used for trend analysis since 2014
- Difference with VBI: persistent high users also included

Trends in prescription patterns



Trends in prescription patterns



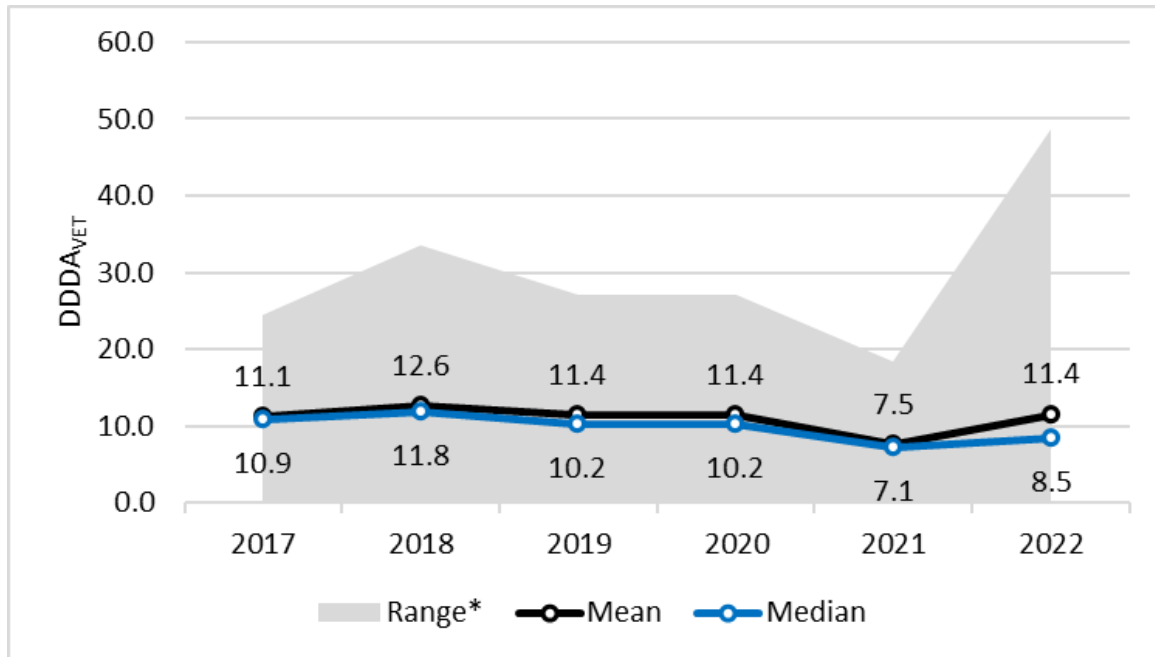
Fattening pig veterinarians

- Variation between veterinarians ↓
- Antibiotics prescribed ↓

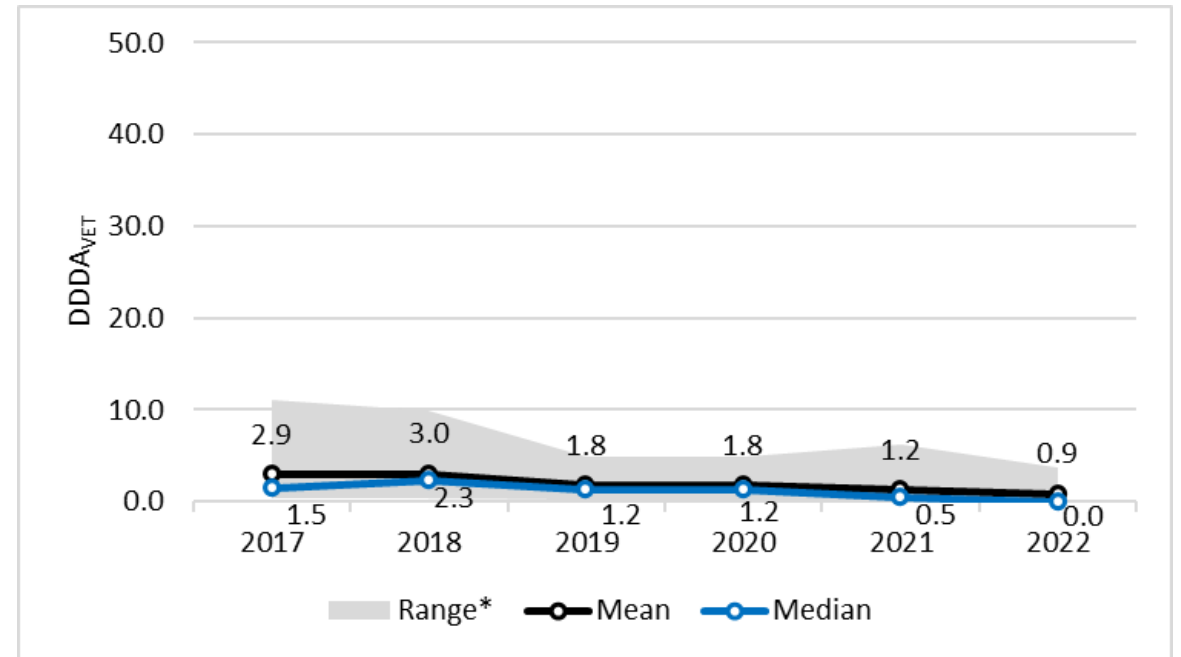
Trends in prescription patterns

Broiler veterinarians

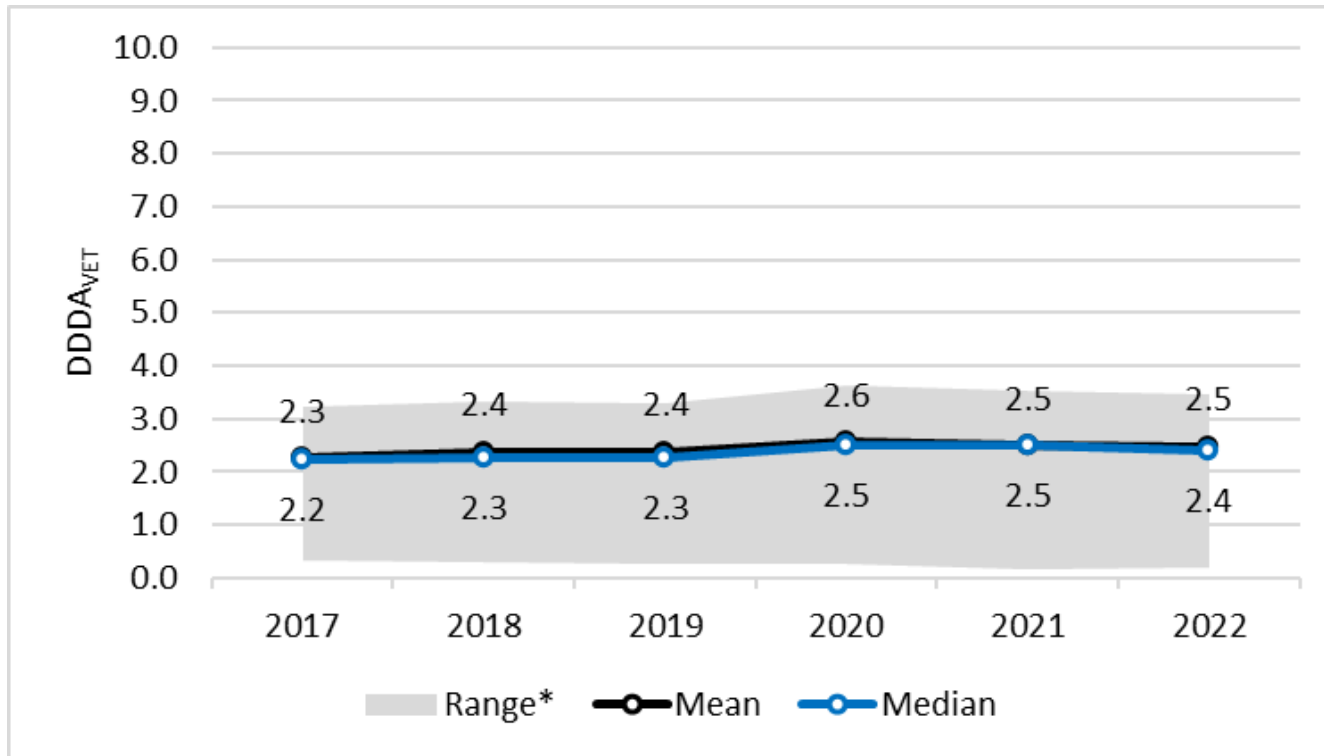
Conventional breeds



Slower growing breeds



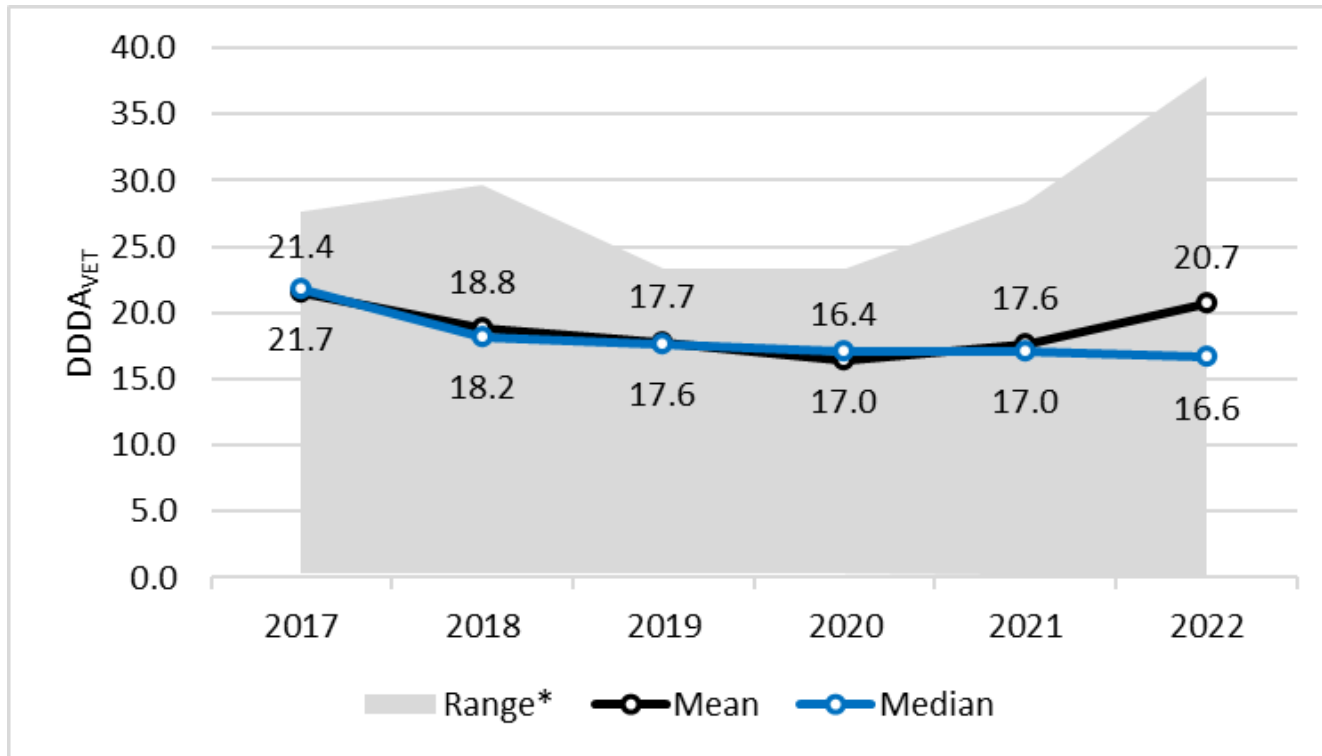
Trends in prescription patterns



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

Thank you!

SDa reports:

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



Usage of Antibiotics in Agricultural Livestock
in the Netherlands in 2022

June 2023
Revision October 2023