

CIPARS Farm Surveillance Component: Grower-Finisher Pigs

Dr. Angie Bosman, DVM, MPH, PhD

World AMR Awareness Week
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Public Health Agency of Canada
Agence de la santé publique du Canada

Canada

Agenda

- CIPARS Farm Swine component overview
- Animal Health and Farm information
- Antimicrobial use (AMU)
  - Farm results
  - Sales data (VASR)
- Integrated antimicrobial use and resistance
- Key messages

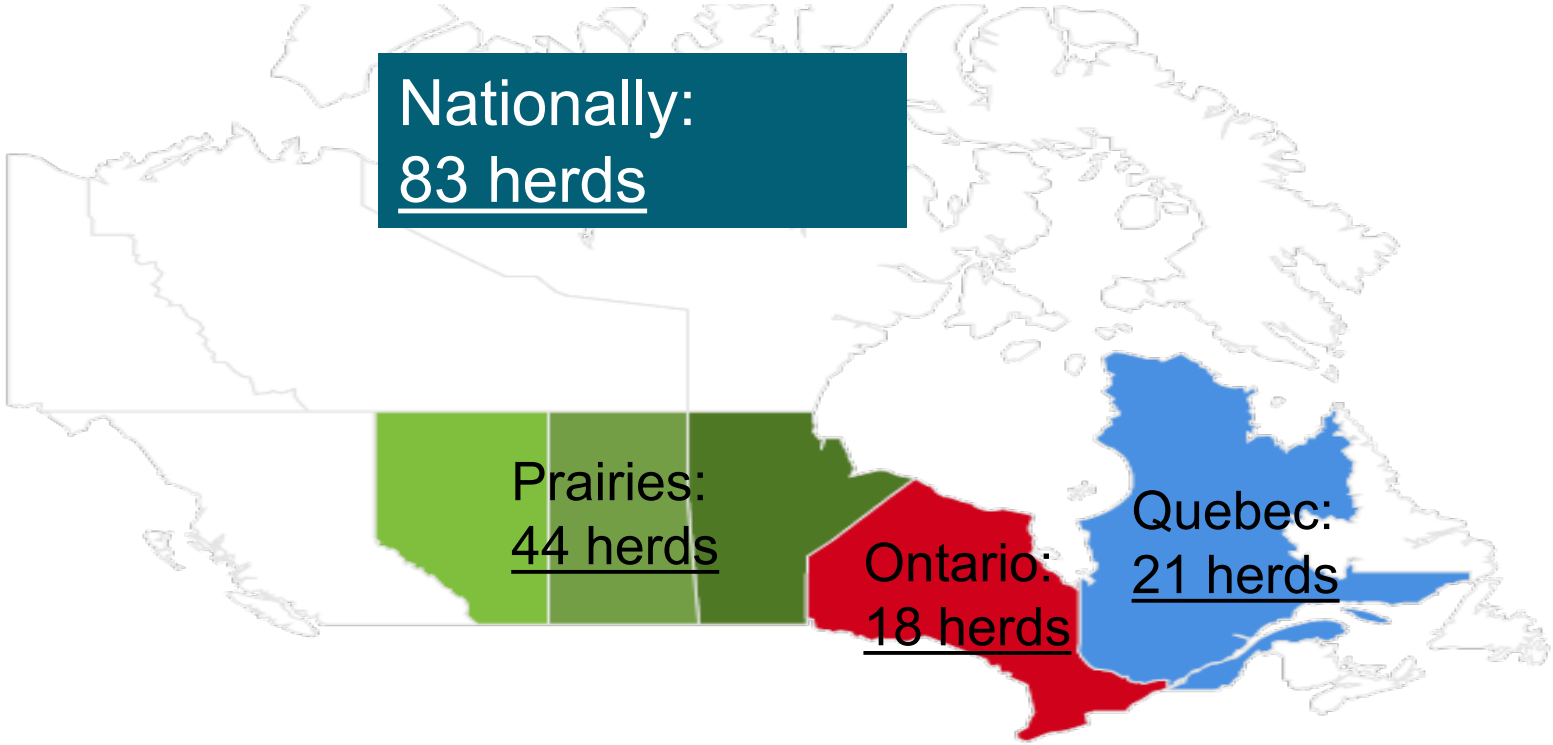
CIPARS Farm Swine Surveillance component

Distribution of herds 2025

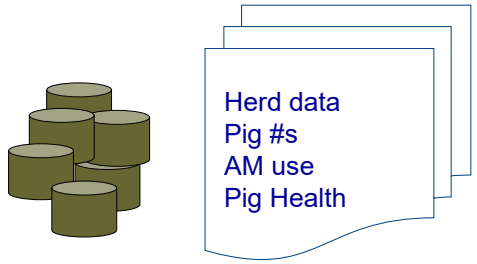
Proportional allocation of herds to provinces

Herd Veterinarians (contracted)

- Recruit/enroll herds to program
- Inclusion/exclusion criteria – representativeness
- Conduct sample and data collection visits



Data collection



Sampling Seasons

WINTER	SUMMER	FALL

- Production phase of interest: **grower-finisher pigs,** sample from pigs that are close-to-market (95-110 kg)
- One sampling/data collection visit per herd per year
- Veterinarians distribute sampling of herds over the calendar year



Composite fecal samples from pens collected & submitted by the herd veterinarian



Questionnaire:
- Herd/site demographic data
- **Antimicrobial use** data (feed, water, injection)
- Animal health data

Antimicrobial Categorization

- Antimicrobials are categorized according to their importance to human medicine by Health Canada's Veterinary Drugs Directorate (VDD)
- Included: List A antimicrobials
- List A antimicrobials not currently categorized are included and are grouped as Uncategorized medically important (e.g., orthosomycins and pleuromutilins)
- Excluded: antifungals, antiparasitics, antivirals, Category IV antimicrobials, and uncategorized not-medically important antimicrobials

Medically important antimicrobials

Category I: Very high importance

E.g. 3rd generation cephalosporins, fluoroquinolones

Category II: High importance

E.g., aminoglycosides, macrolides

Category III: Medium importance

E.g., tetracyclines, sulfonamides

Category IV: Low importance

E.g., ionophores, flavophospholipids



Measures and indicators of AMU

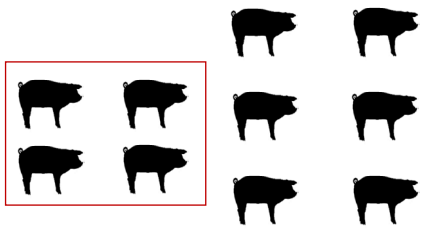
FREQUENCY MEASURES

1. Tells us **how extensive** the use practice is across Canada
   - Number (%) of farms/**herds**
   - Number (%) of medicated **rations**

2. Tells us **how intensive** a drug may be used on farm
   - Number (%) of **pigs** exposed



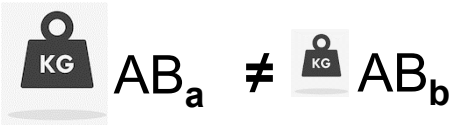




Measures and indicators of AMU

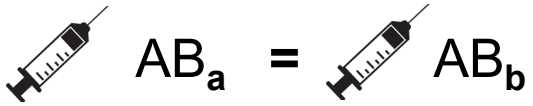
MEASURES OF QUANTITY

3. Weight-based measures - tells us the **raw quantity** used



- Unadjusted: kilograms
- Adjusted for the number and weight (biomass) of pigs (indicators)
  - ❖ Mg/population correction unit (PCU)
  - ❖ Mg/kg biomass

4. Dose-based measures - tells us the **number of standard doses** used



- Dose-based indicators of AMU
  - ❖ DDDvetCA/1,000 pig-days at risk
- Adjusts for differences in doses among the antimicrobials used

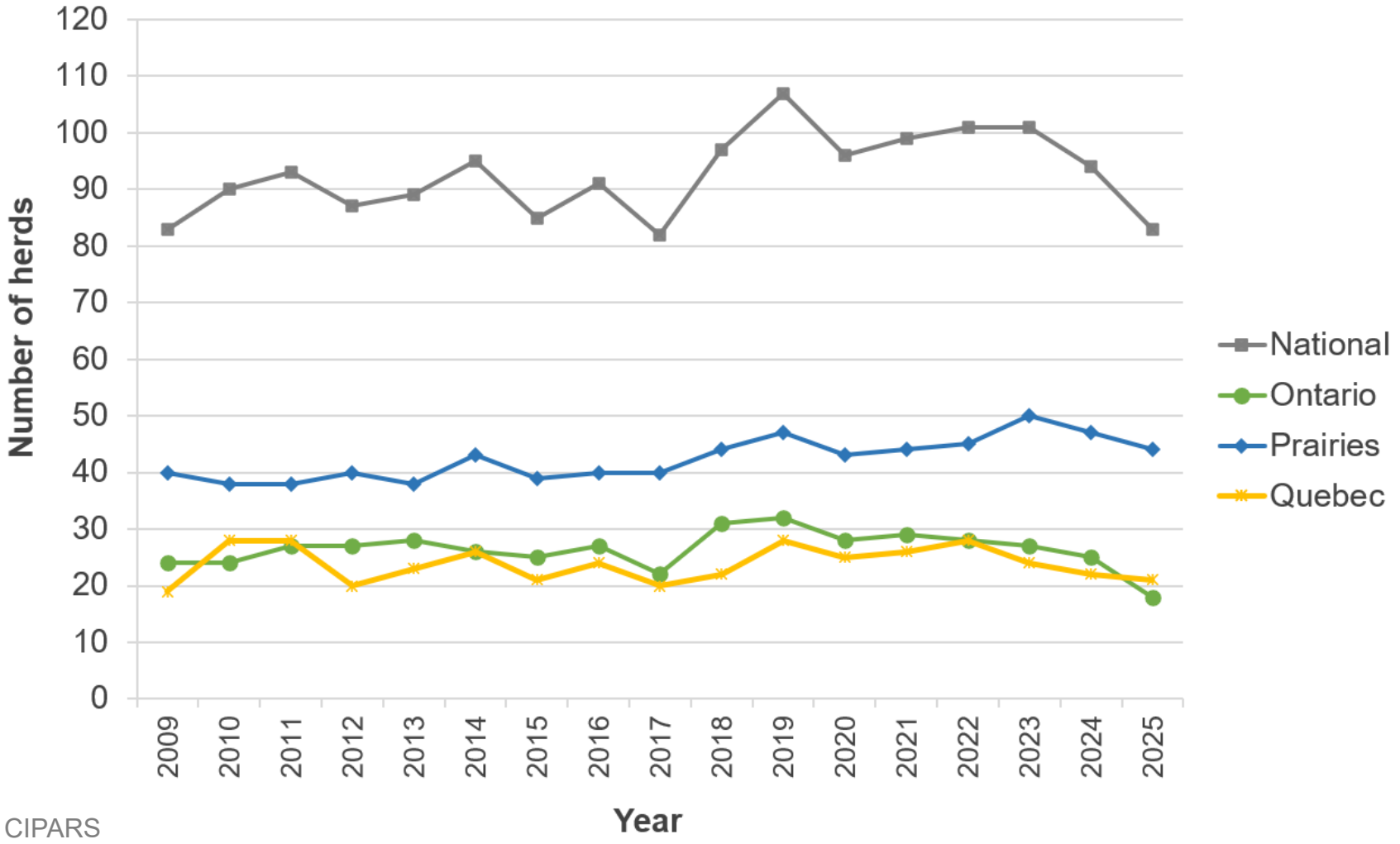


Biosecurity and Farm Information

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Number of participating herds



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In 2025, there were 83 participating herds (down from 94 in 2024).

Number of herds by region in 2025:

- Prairies 44 herds
- Ontario 18 herds
- Quebec 21 herd

Biosecurity

Region	biosecurity sign	boot dip	boots	coveralls	danish entry	downtime	locked doors	restrict visitors	shower
Prairies	98%	26%	100%	100%	87%	79%	77%	100%	72%
Ontario	100%	8%	100%	100%	80%	80%	88%	96%	64%
Quebec	73%	9%	82%	55%	77%	14%	55%	82%	5%

Percentage of herds

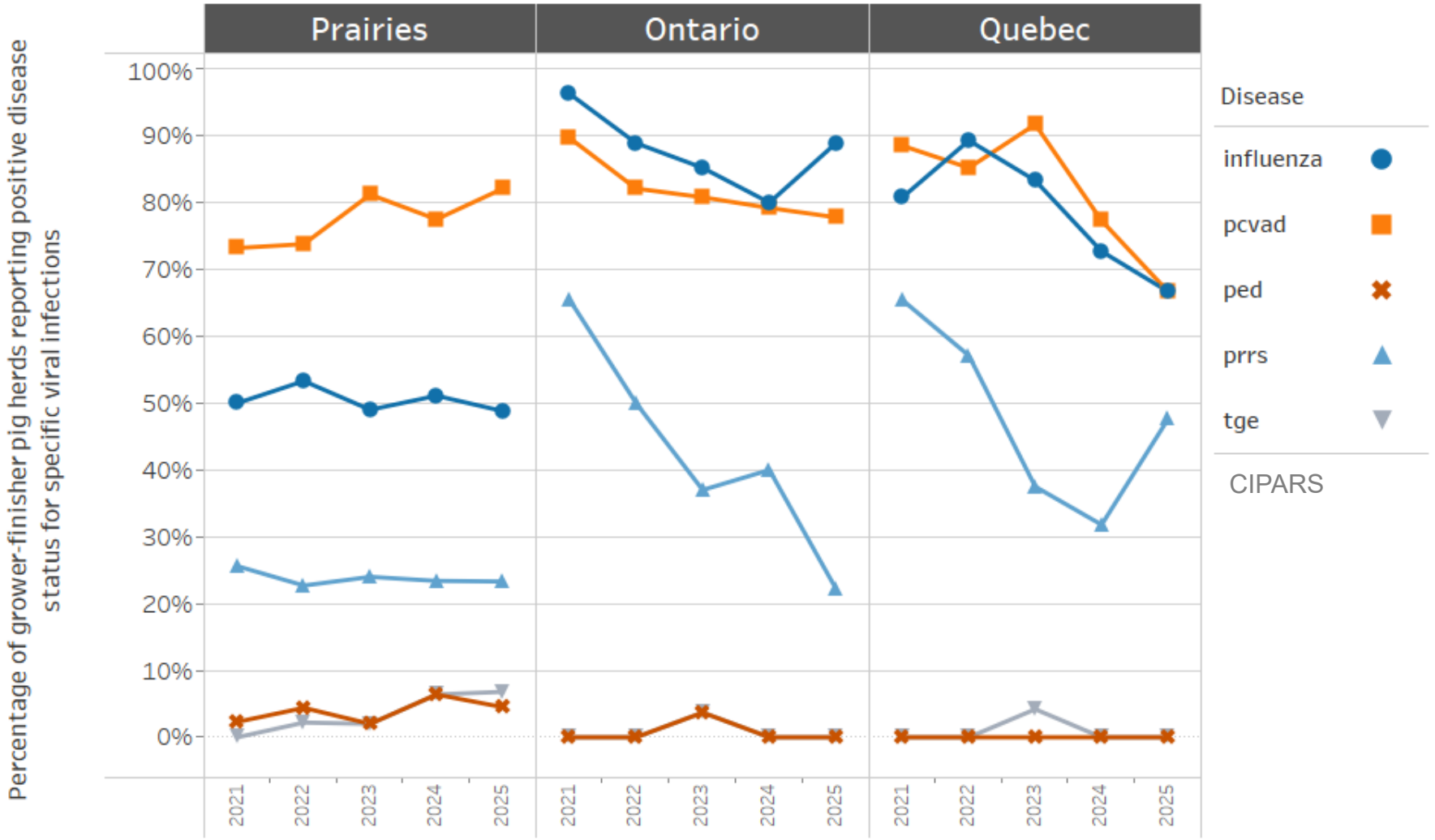


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The percentage of herds reporting various biosecurity practices in 2025 continues to be generally high, with the lowest percentages reported for boot dips and showers, and lower rates reported in Quebec, than in Ontario and the Prairies.

Ontario and Quebec continue to report more farms within 2 km than the Prairies. In 2025, 77% of participating farms in the Prairies reported zero farms within 2 km, compared to 10% in Quebec and 17% in Ontario.

Health status – viral infections



Grower-finisher pigs:

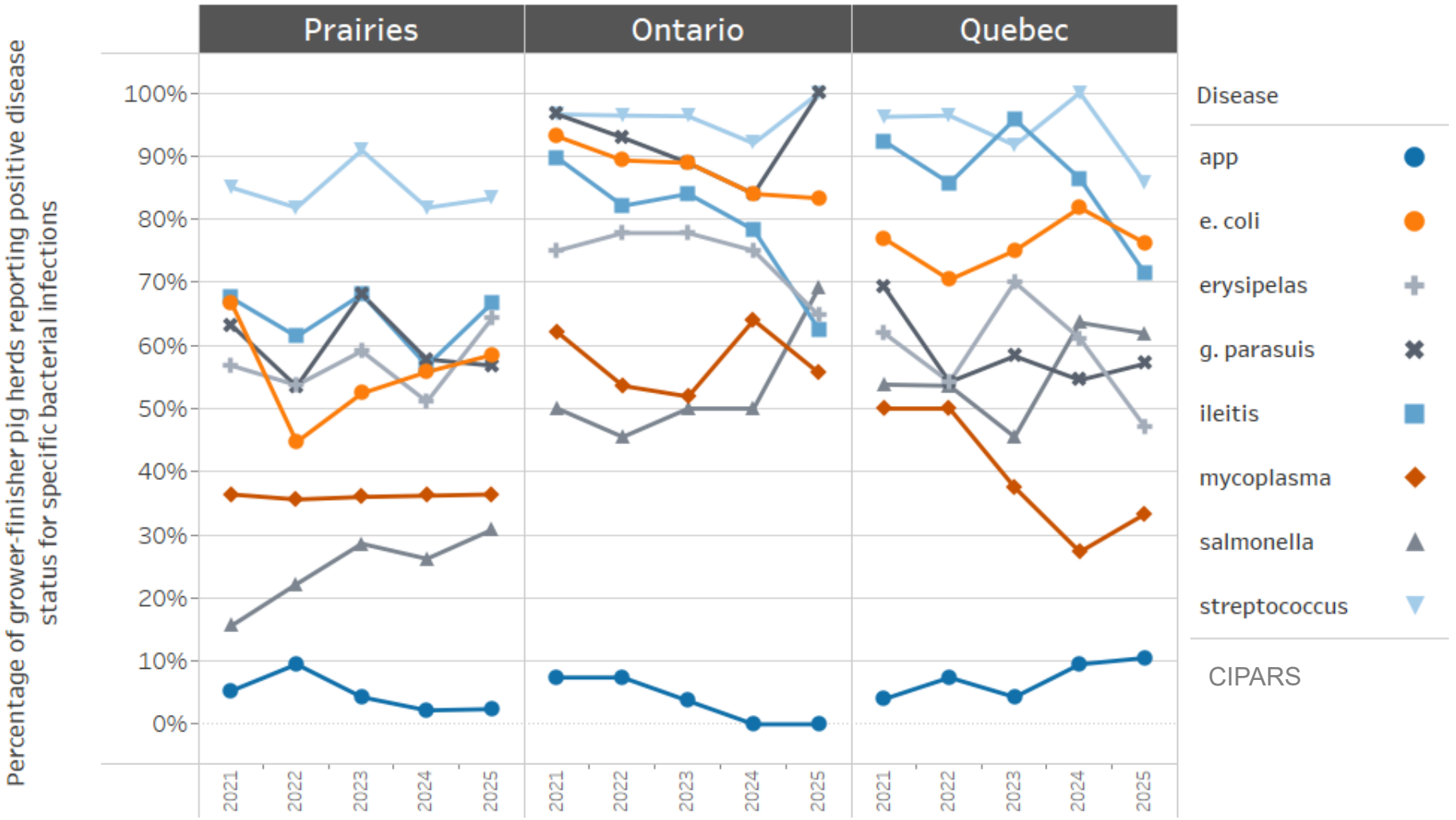
Reports for PCVAD were high across all regions.

PCVAD and influenza reports show a decreasing trend in Quebec.

PRRS reports in Ontario are decreasing, and in 2025 were similar to reports in the Prairies.

PRRS reports in Quebec increased in 2025.

Health status – bacterial infections



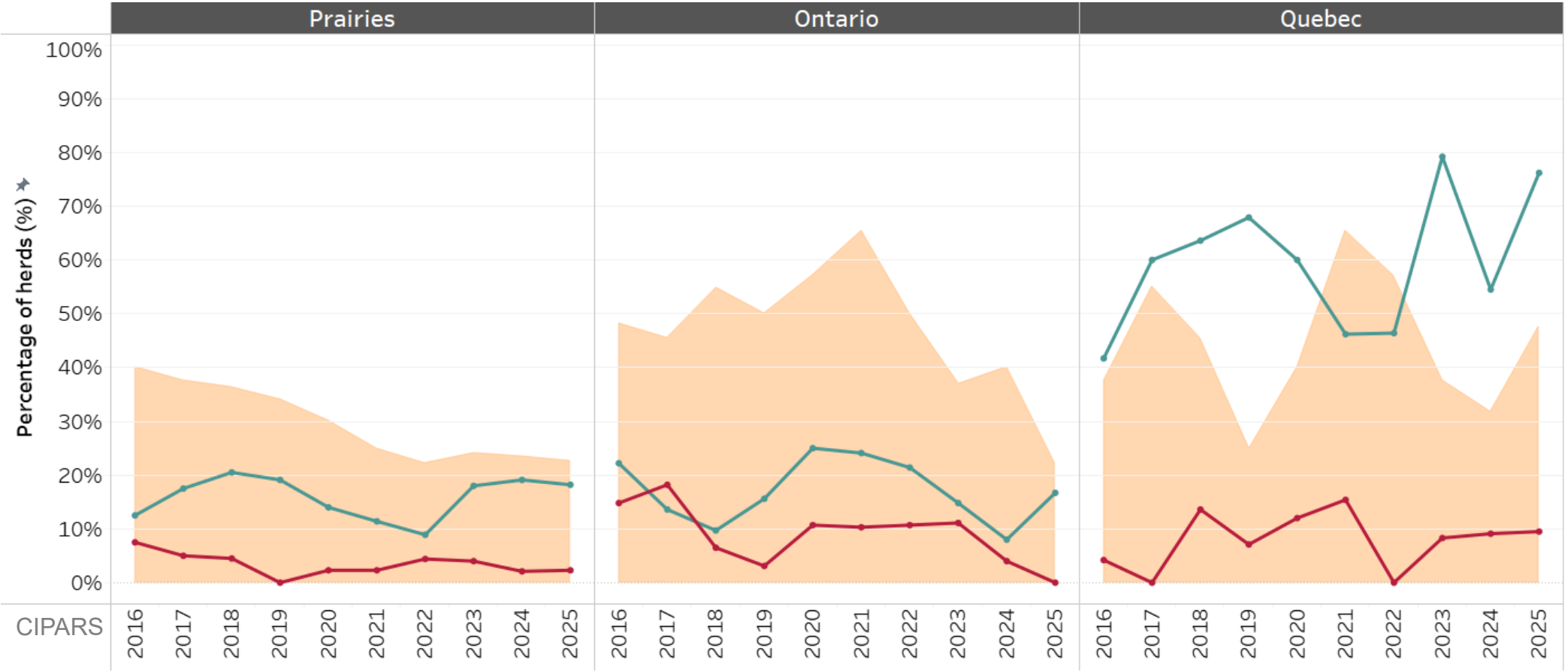
Grower-finisher pigs:

Across all regions, the percentage of herds reporting positive disease status is highest for:

- *Streptococcus*
- ileitis
- *E. coli*
- *G. parasuis*
- erysipelas

In 2025, there was an increase in positive disease status for *Salmonella* and *G. parasuis* in Ontario and an increasing trend in *E. coli* and *Salmonella* in the Prairies.

Health status – PRRS

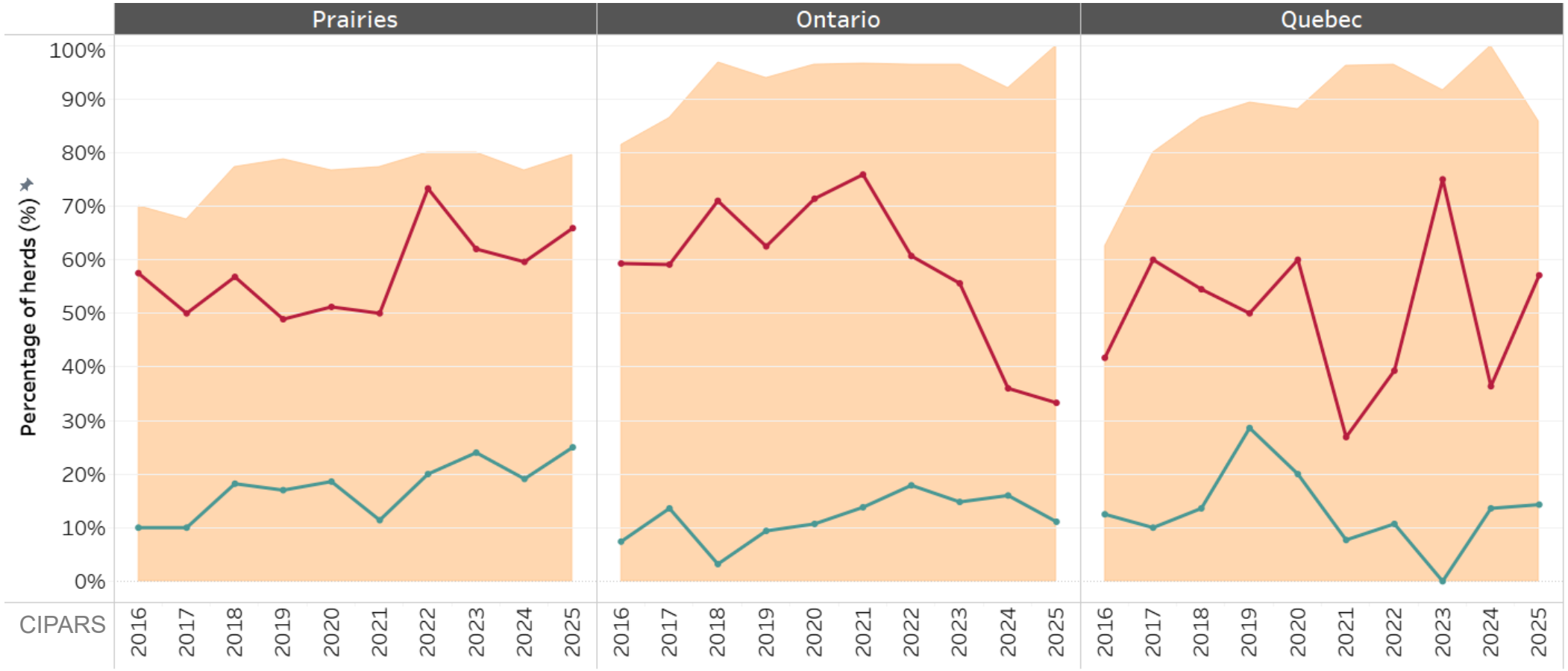


Across all stages, the percentage of herds reporting:

- positive disease status (yellow) is generally higher in Ontario and Quebec, but in 2025 Ontario and the Prairies have a similar percentage of herds reporting positive disease status
- vaccination (blue line) is highest in Quebec (4 commercial vaccines available in Canada in 2023)
- Reports of antimicrobial use (red line) for PRRS are low across all regions

*Herds were considered positive if the event occurred in at least one stage of production (in sows, nursery pigs, or grower-finisher pigs). When the herd status for the event was unknown, the herd was excluded from the analysis.

Health status – *Streptococcus*



Across all stages, the percentage of herds reporting:

- positive disease status (yellow) is high across all regions
- vaccination (blue line) is low across all regions (no commercial vaccines available)
- antimicrobial use (red line) is similar across all regions

*Herds were considered positive if the event occurred in at least one stage of production (in sows, nursery pigs, or grower-finisher pigs). When the herd status for the event was unknown, the herd was excluded from the analysis.



Antimicrobial Use (Farm) and Sales (VASR)

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Frequency of antimicrobial use (AMU)

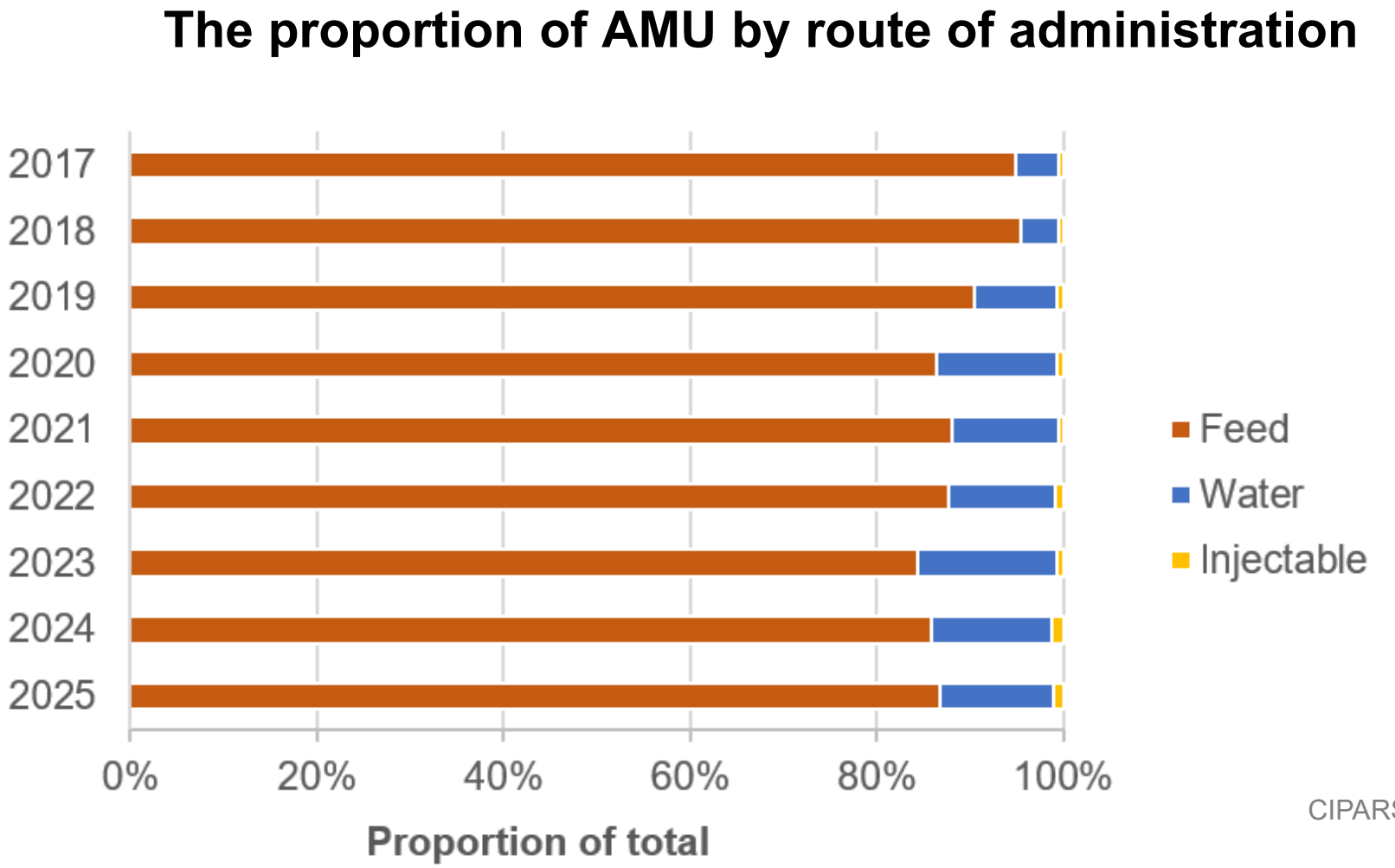
Route of administration

In 2025:

Feed 87%

Water 12%

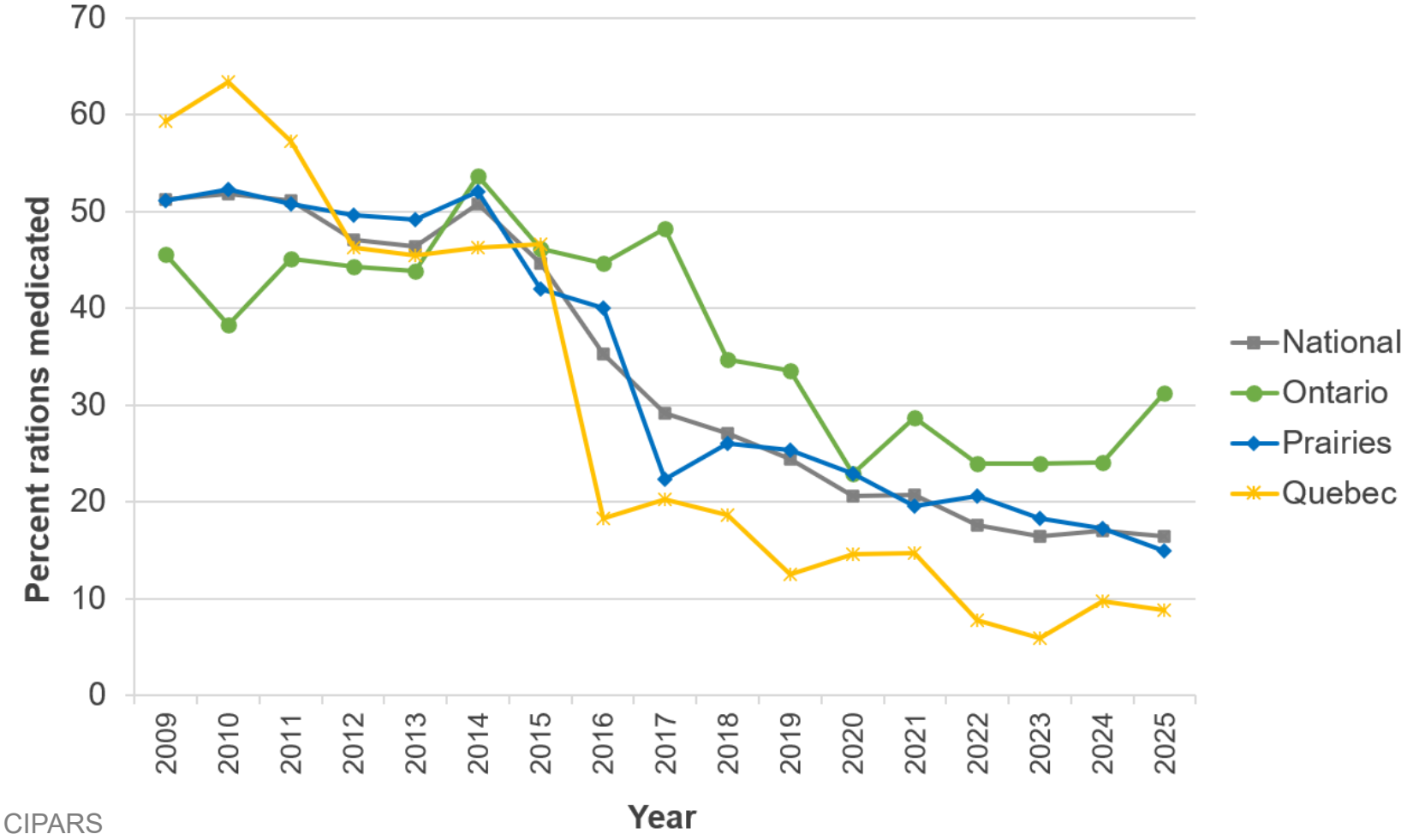
Injection 1%



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Estimated on a quantitative basis, the proportion of nDDDvetCA/1000 pig-days at risk for the 3 routes of administration

Frequency of MIA use in feed



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The **percentage of rations** that include medically important antimicrobials (MIAs) has decreased (from 51% to 16% between 2009 and 2025).

Compared to 2024, the percentage of medicated rations in 2025 decreased in Quebec and the Prairies and increased in Ontario.

Days exposed to MIAs in feed:

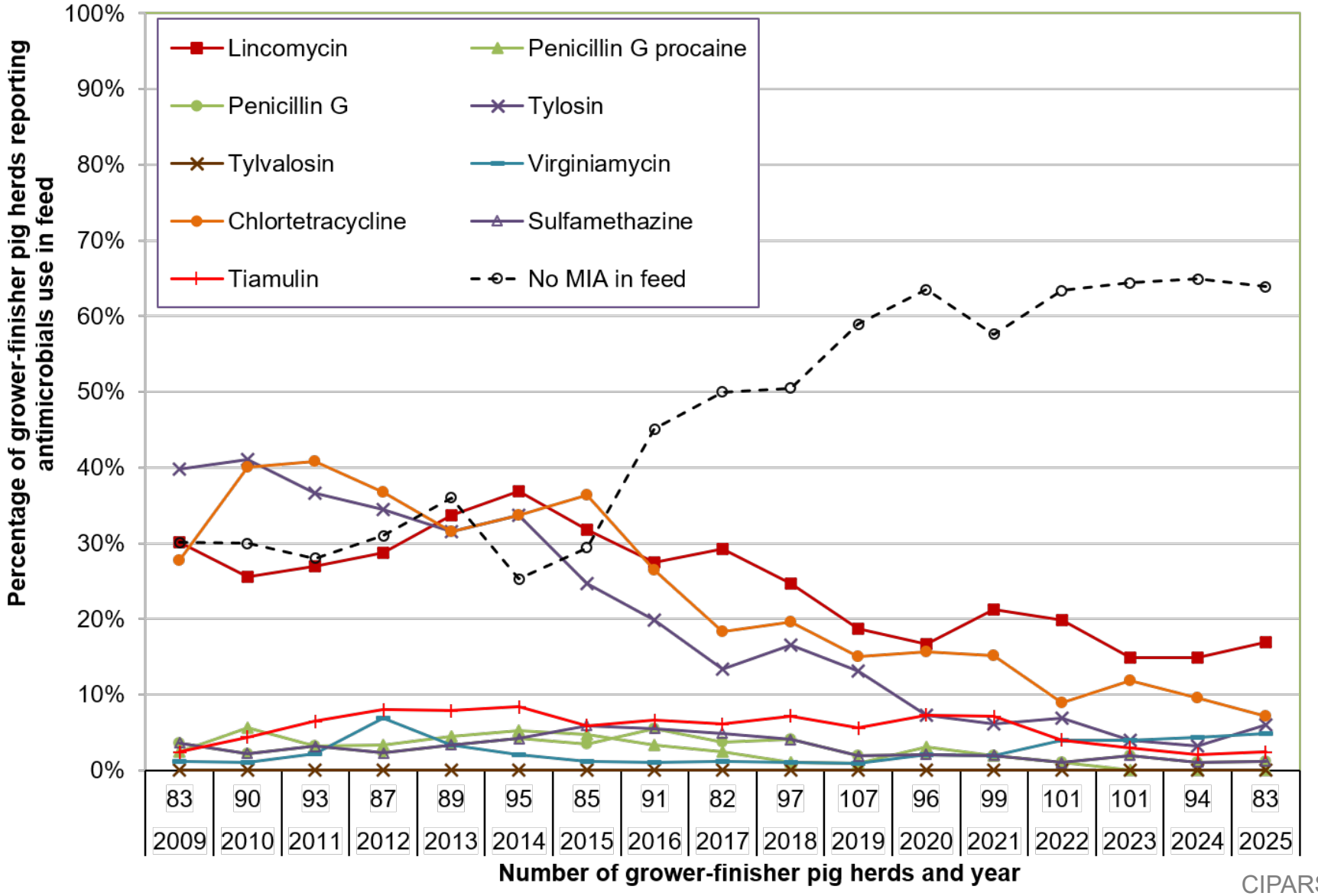
- 0-126 days Ontario
- 0-140 days Prairies
- 0-84 days Quebec

*Category IV antimicrobials including ionophores and flavophospholipols excluded from this analysis

Frequency of use in feed

The **percentage of herds** not using any MIAs in feed increased between 2014 and 2020 and has plateaued since.

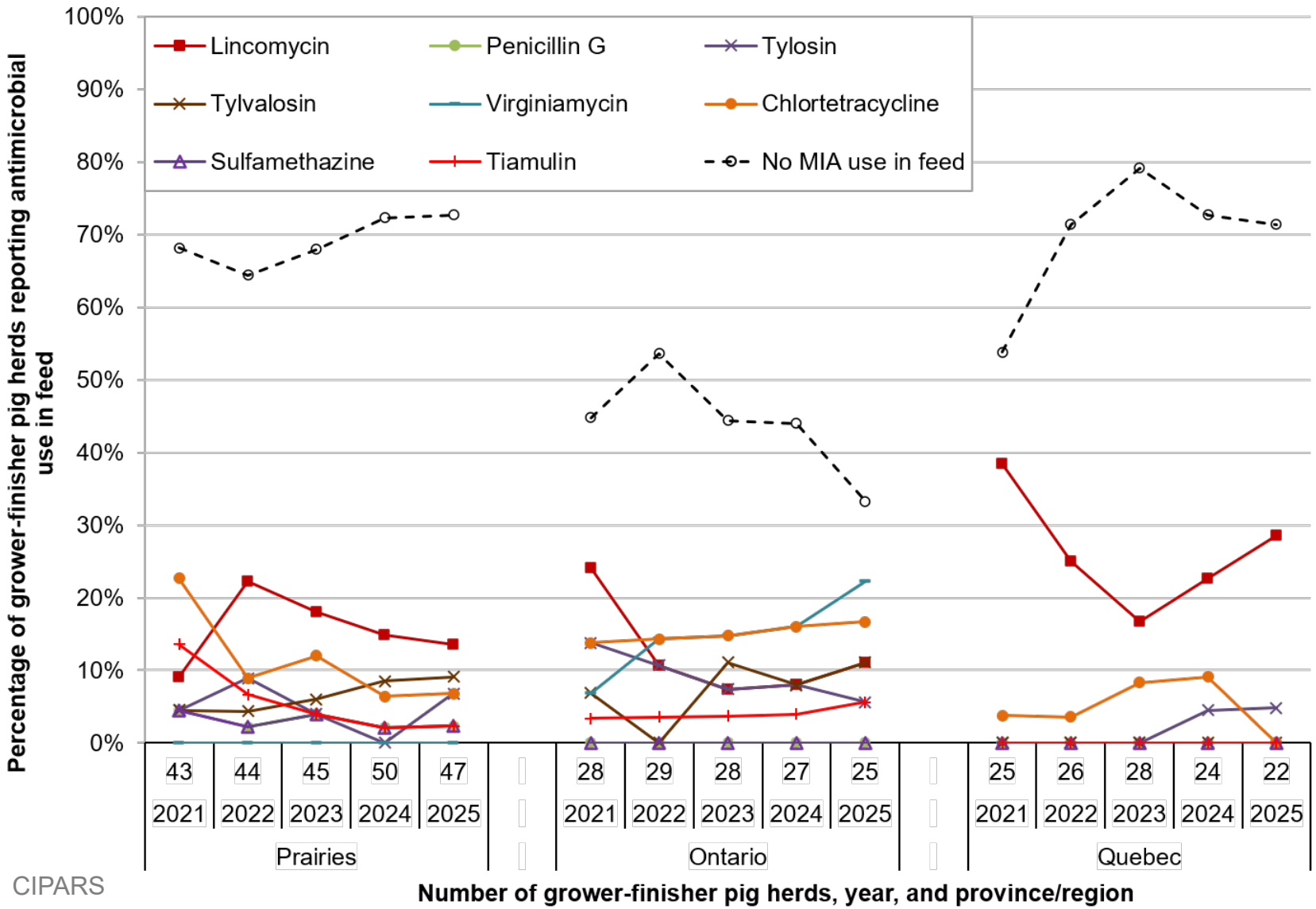
Lincomycins, tetracyclines, and macrolides remain the most common antimicrobials used in feed.



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Medically important antimicrobials used by fewer than 5% of herds were excluded from the figure.

Frequency of use in feed



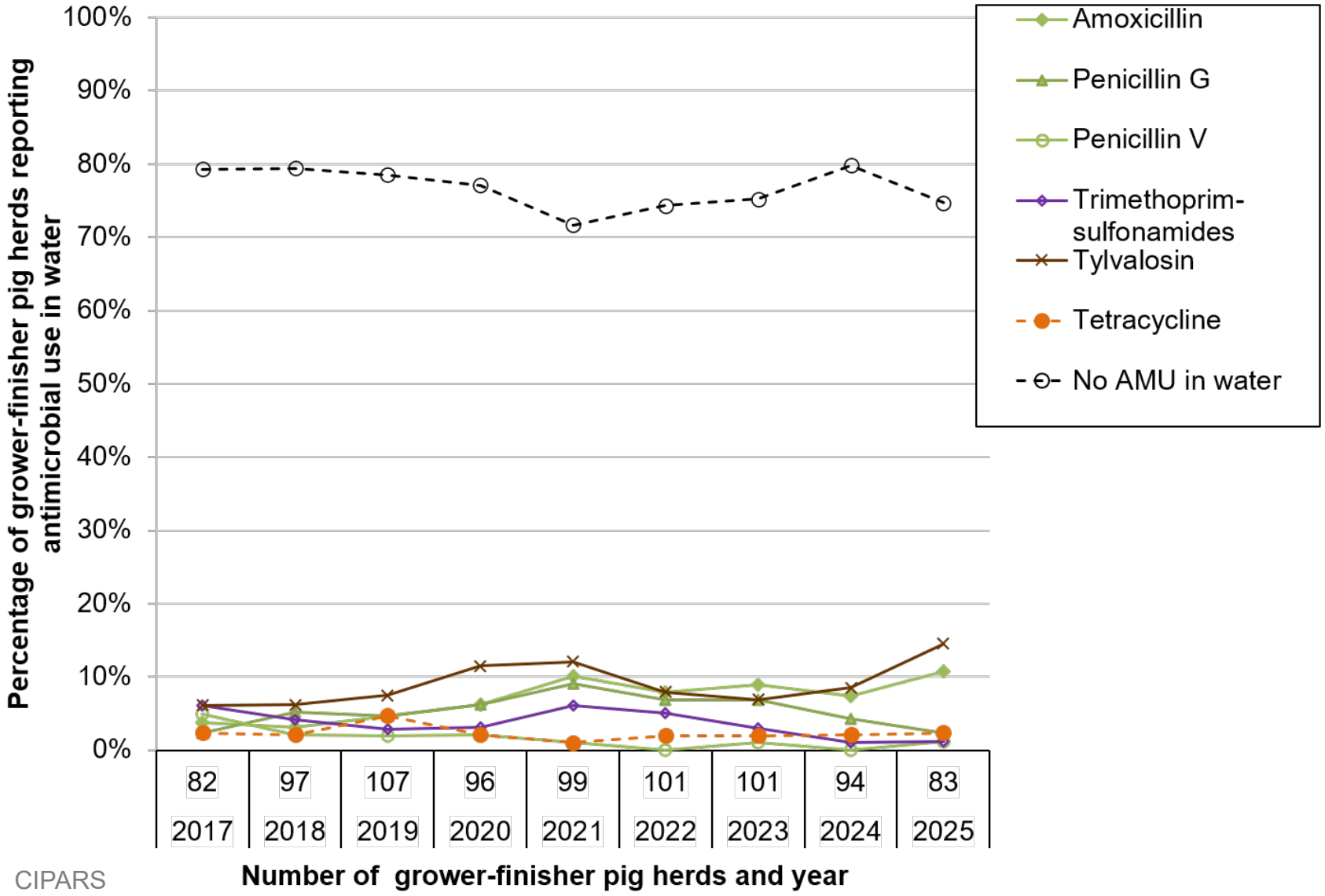
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Regionally, the percentage of herds not using MIAs in feed is similar in the Prairies and Quebec (72-73% in 2025) and is lower in Ontario (33% in 2025).

In the Prairies, the lincomycin use is decreasing, and tylvalosin use is increasing. Virginiamycin use is increasing in Ontario, and use is not reported outside of Ontario. In Quebec, lincomycin use is increasing, and in 2025, no chlortetracycline use was reported among participating herds.

Medically important antimicrobials used by fewer than 5% of herds were excluded from the figure.

Frequency of use in water



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Nationally, there has been little change in the frequency of antimicrobial use in water since 2017.

The **percentage of herds** not using any antimicrobials in water has ranged from 72 to 80%.

In 2025, the most frequently used antimicrobials in water were tylvalosin and amoxicillin (Category II antimicrobials).

Medically important antimicrobials used by fewer than 5% of herds were excluded from the figure.

Frequency of use in water

The overall trend in the **percentage of herds** not using any antimicrobials decreased in 2025 in Quebec and was stable in Ontario and the Prairies.

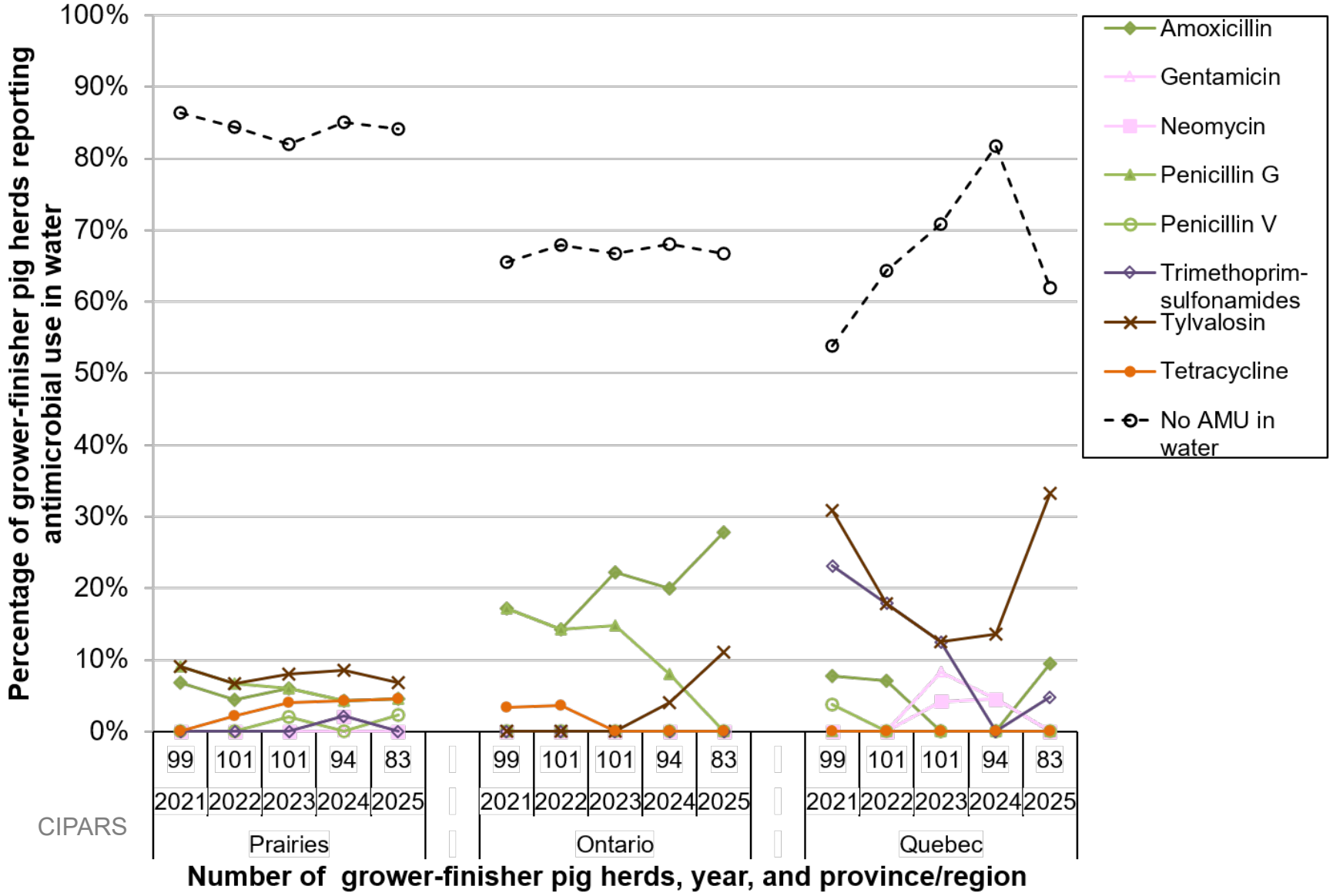
In 2025, amoxicillin was the most frequently used antimicrobial in Ontario.

The use of tylvalosin increased in 2025 in Ontario and Quebec.

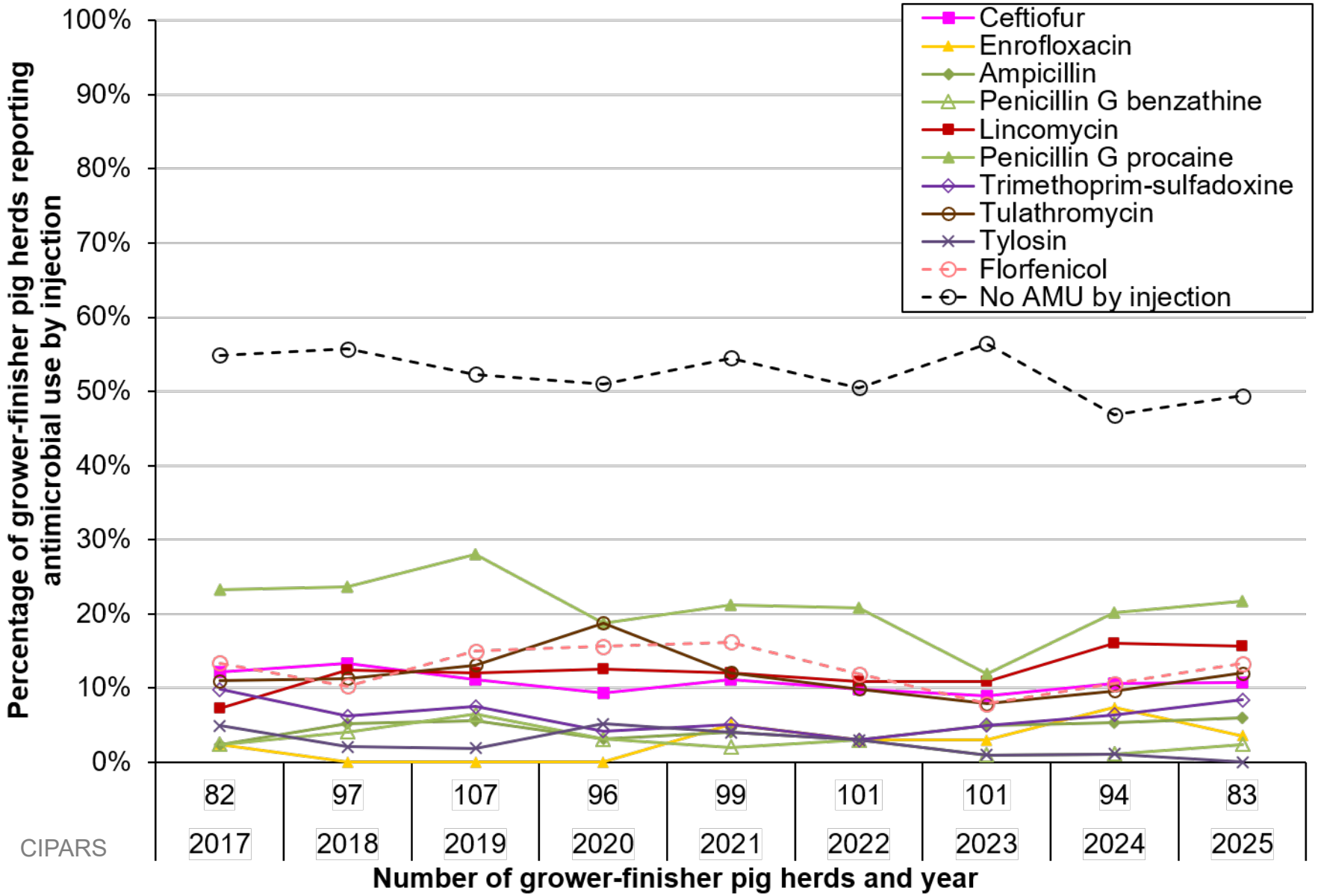
In 2025, there was no reported use of aminoglycosides in water.

TMS use was reported in Quebec in 2025 after no reported use in 2024.

Medically important antimicrobials used by fewer than 5% of herds were excluded from the figure.



Frequency of use by injection



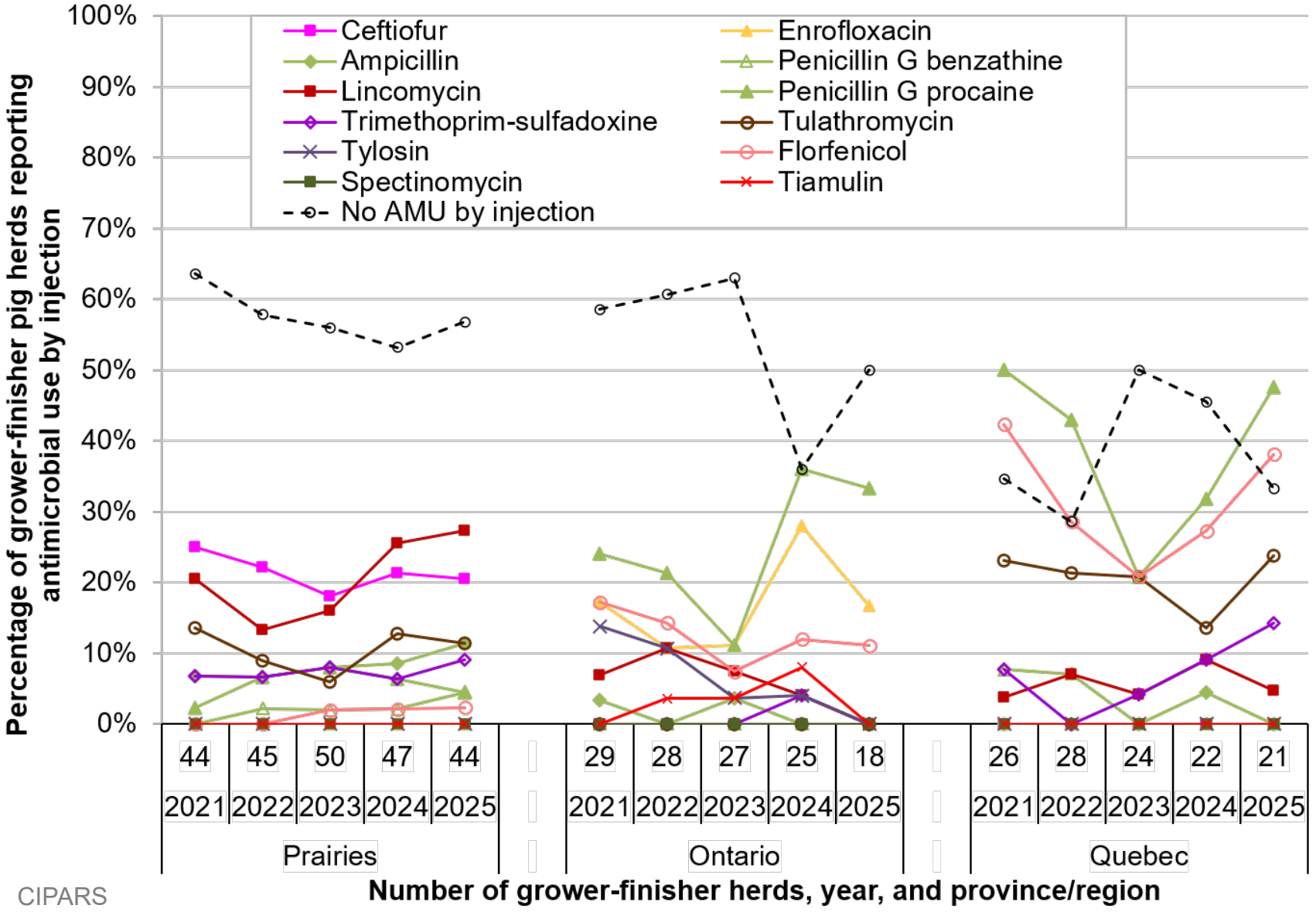
Nationally, the percentage of herds not using any antimicrobials by injection increased by a small amount in 2025 compared to 2024.

The **percentage of herds** not using any antimicrobials by injection varied between 47 and 56% since 2017.

In 2025, similar to 2024, the most frequently used antimicrobials by injection were procaine penicillin G, lincomycin, florfenicol, tulathromycin and ceftiofur.

Medically important antimicrobials used by fewer than 5% of herds were excluded from the figure.

Frequency of use by injection



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Regionally, since 2021, the **percentage of herds** not using antimicrobials by injection has been variable in Ontario and Quebec. In the Prairies, after a gradual decrease, the percentage of no use increased in 2025. No use also increased in Ontario in 2025 and decreased in Quebec.

Quebec:
Increasing frequency of penicillin G procaine, florfenicol and tulathromycin

Ontario:
Penicillin G procaine, enrofloxacin, and florfenicol the only antimicrobials reported in 2025

Prairies:
Lincomycin use continues to increase

Medically important antimicrobials used by fewer than 5% of herds were excluded from the figure.

Quantity of antimicrobial use

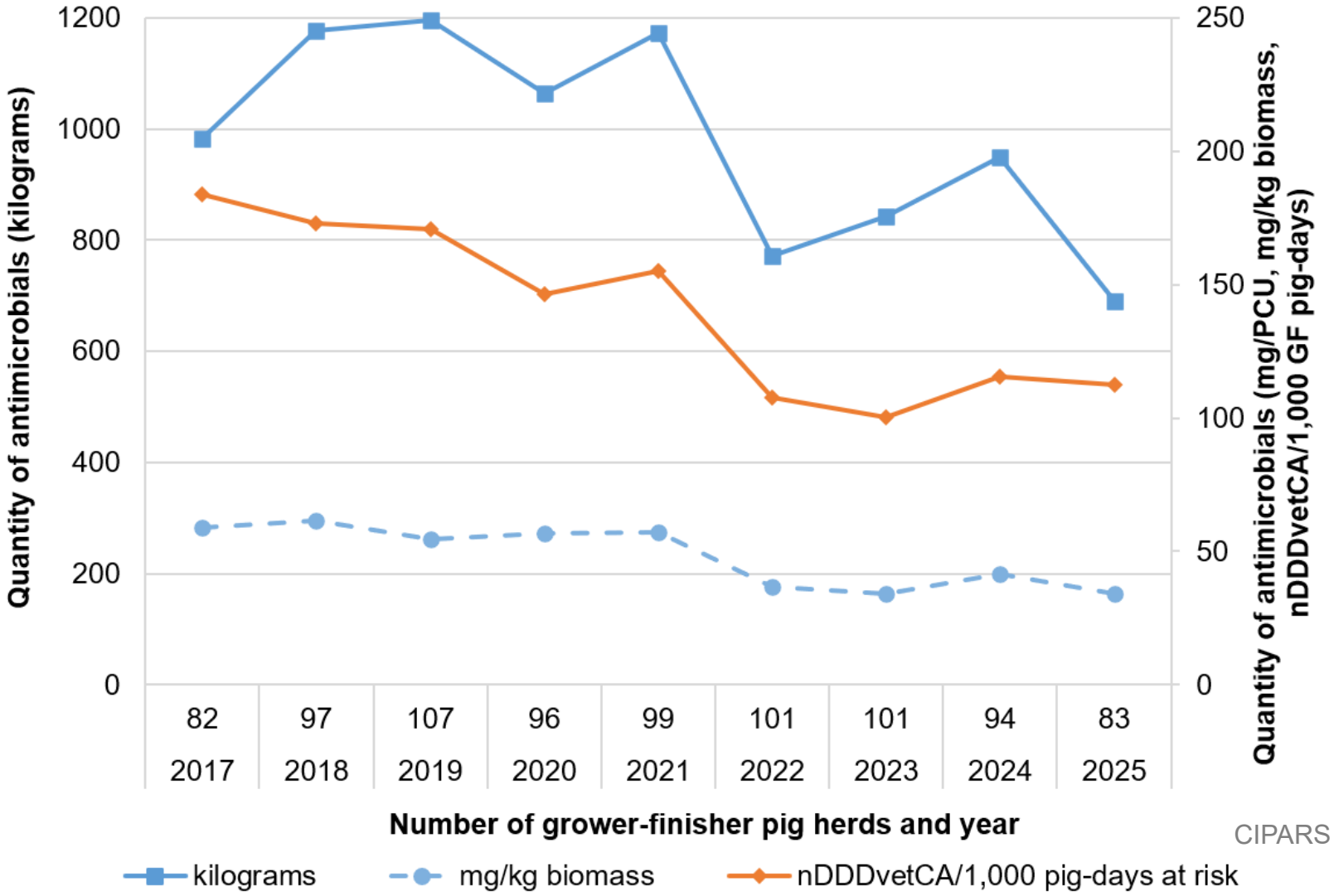
All routes summary

Since 2024:

- 27% **decrease** in kg used
- 18% **decrease** in mg/kg biomass
- 2% **decrease** in defined daily doses

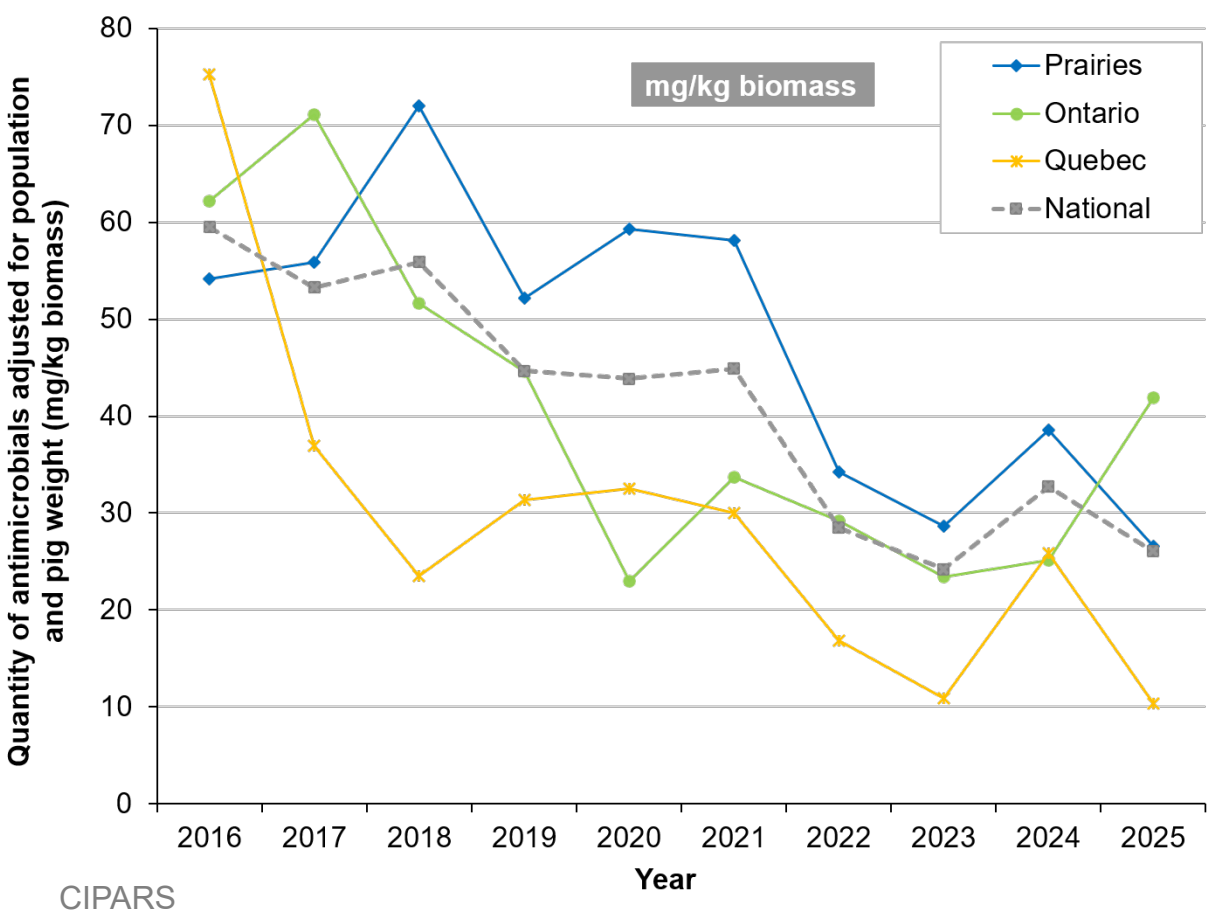
Since 2017:

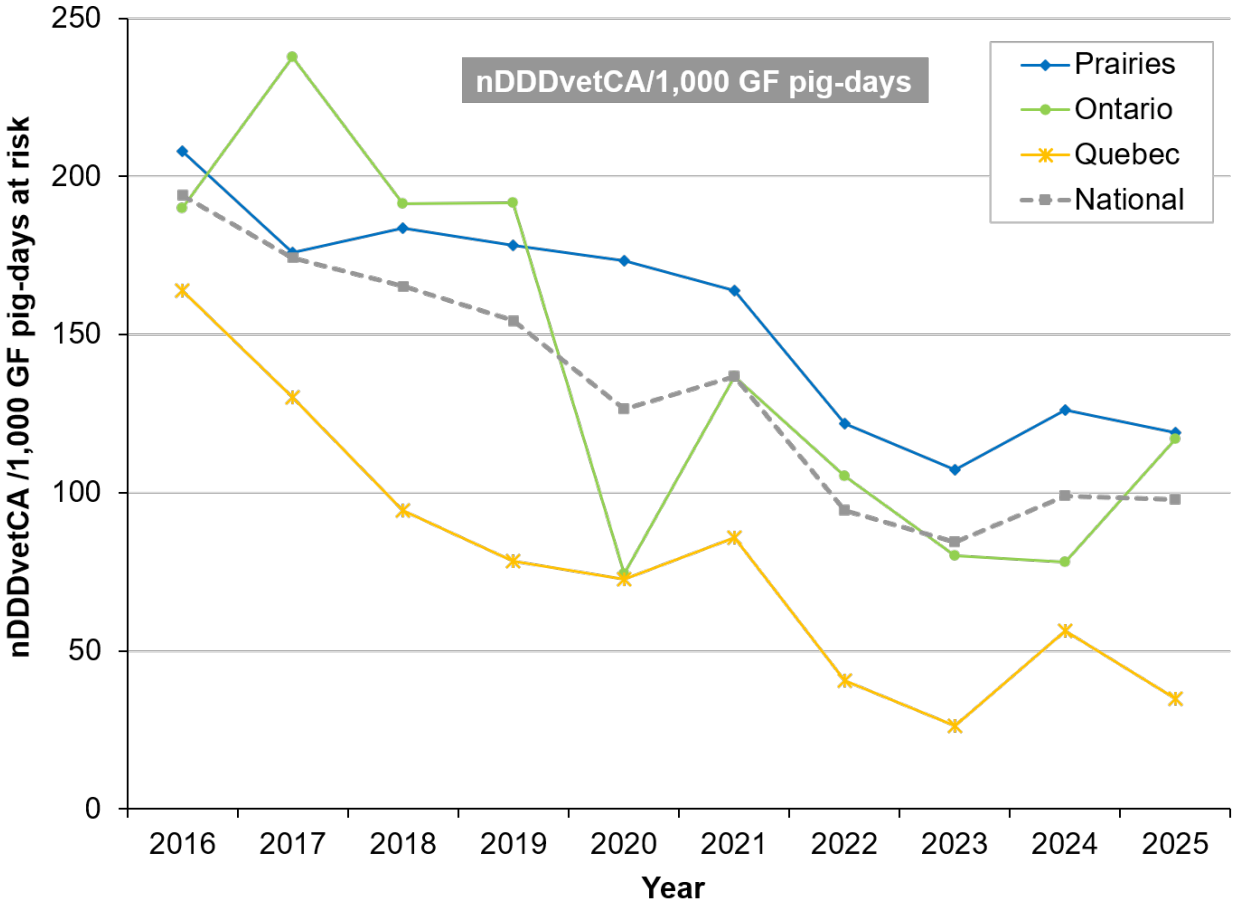
- 29% **decrease** in kg used
- 42% **decrease** in mg/kg biomass
- 38% **decrease** in defined daily doses



*Category IV antimicrobials not included

Quantity of use in feed



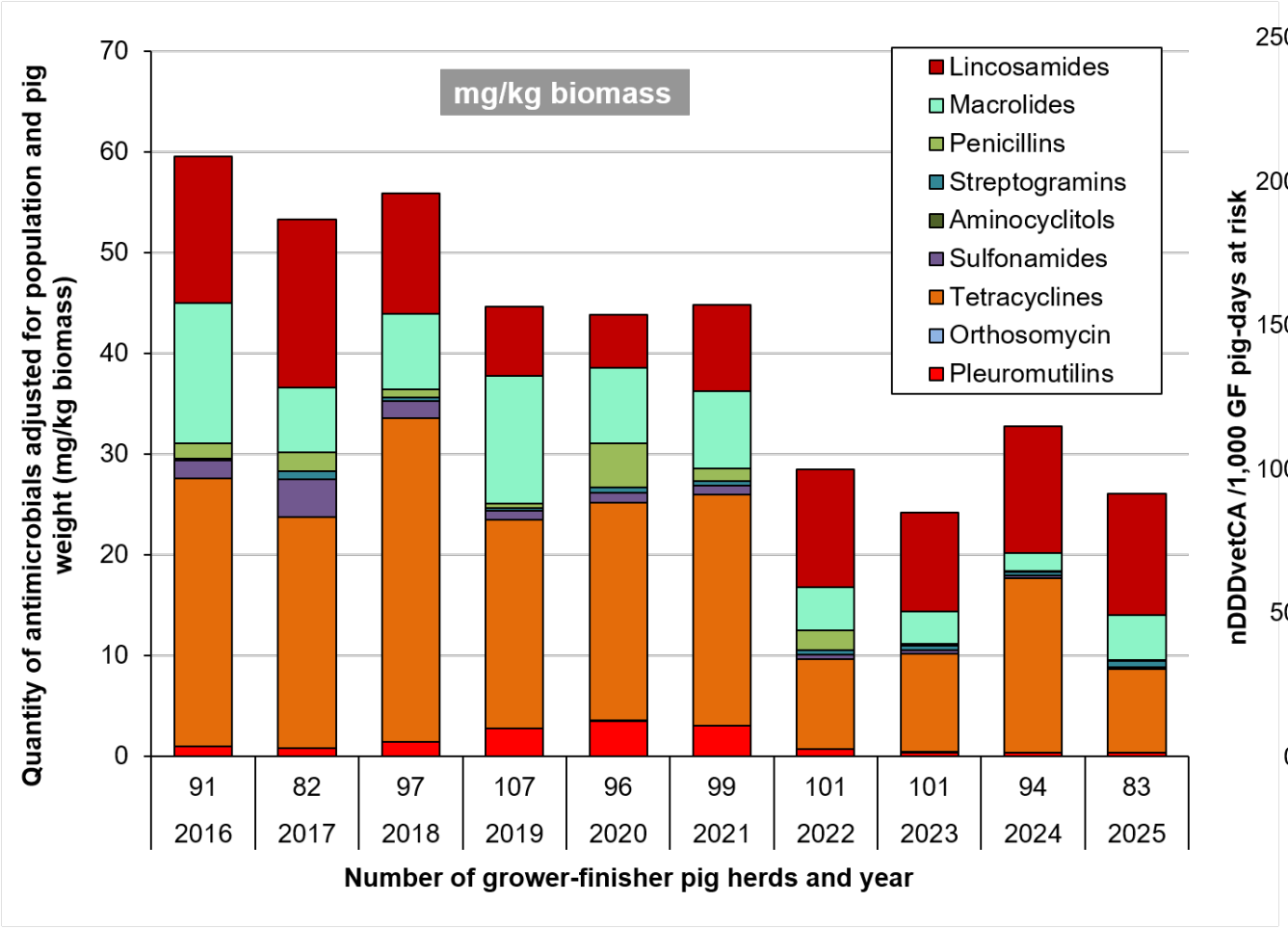


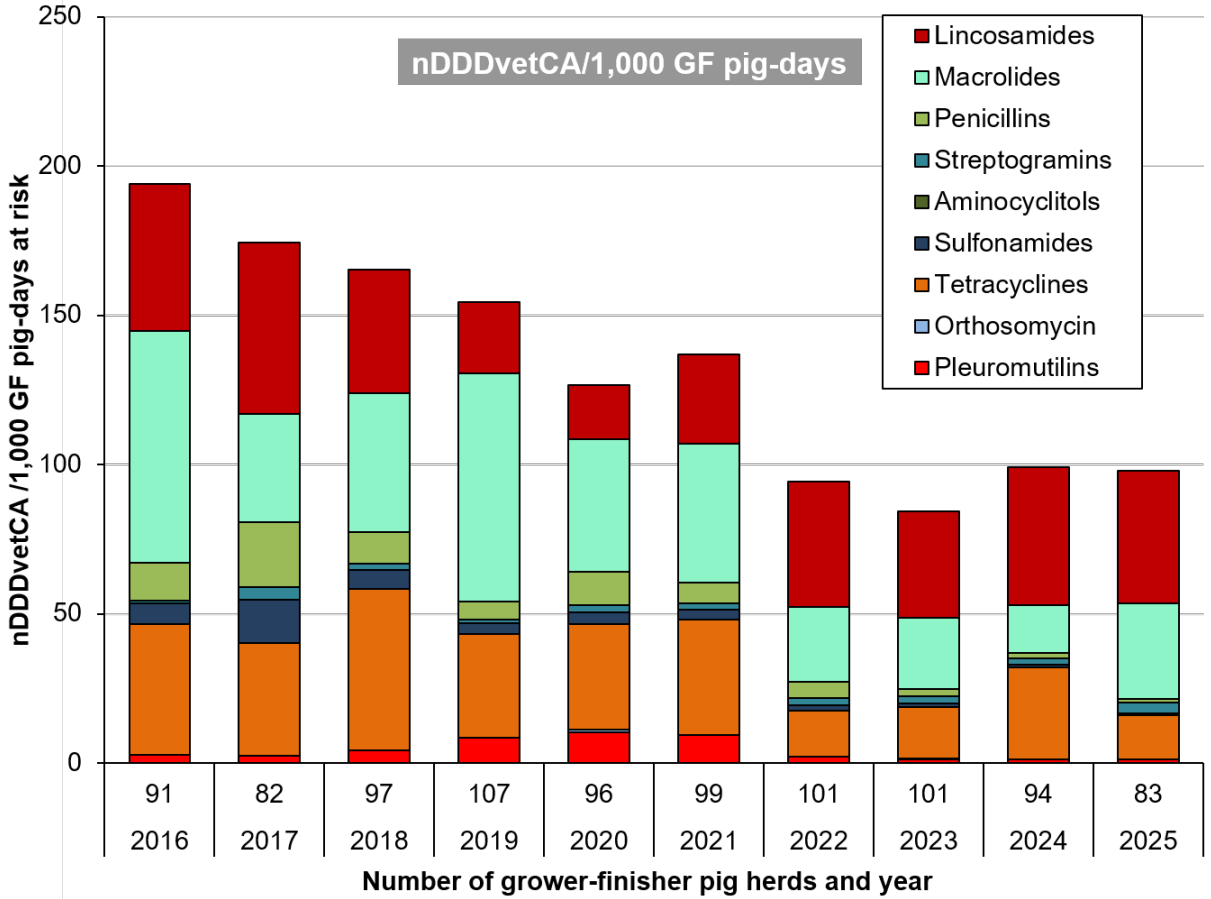
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Between 2024 and 2025, trends in the quantity of use differed by region and measure. In mg/kg biomass and in defined daily doses use increases in Ontario and decreased in the Prairies and Quebec.

In mg/kg biomass, in 2025, use was highest in Ontario. In nDDDvetCA/1,000 GF pig-days, use is slightly higher in the Prairies than Ontario. Use in feed remains lowest in Quebec using both indicators.

Quantity of use in feed





In defined daily doses:

MIAs: decreased by 56% since 2016**, decreased** by 20% since 2024

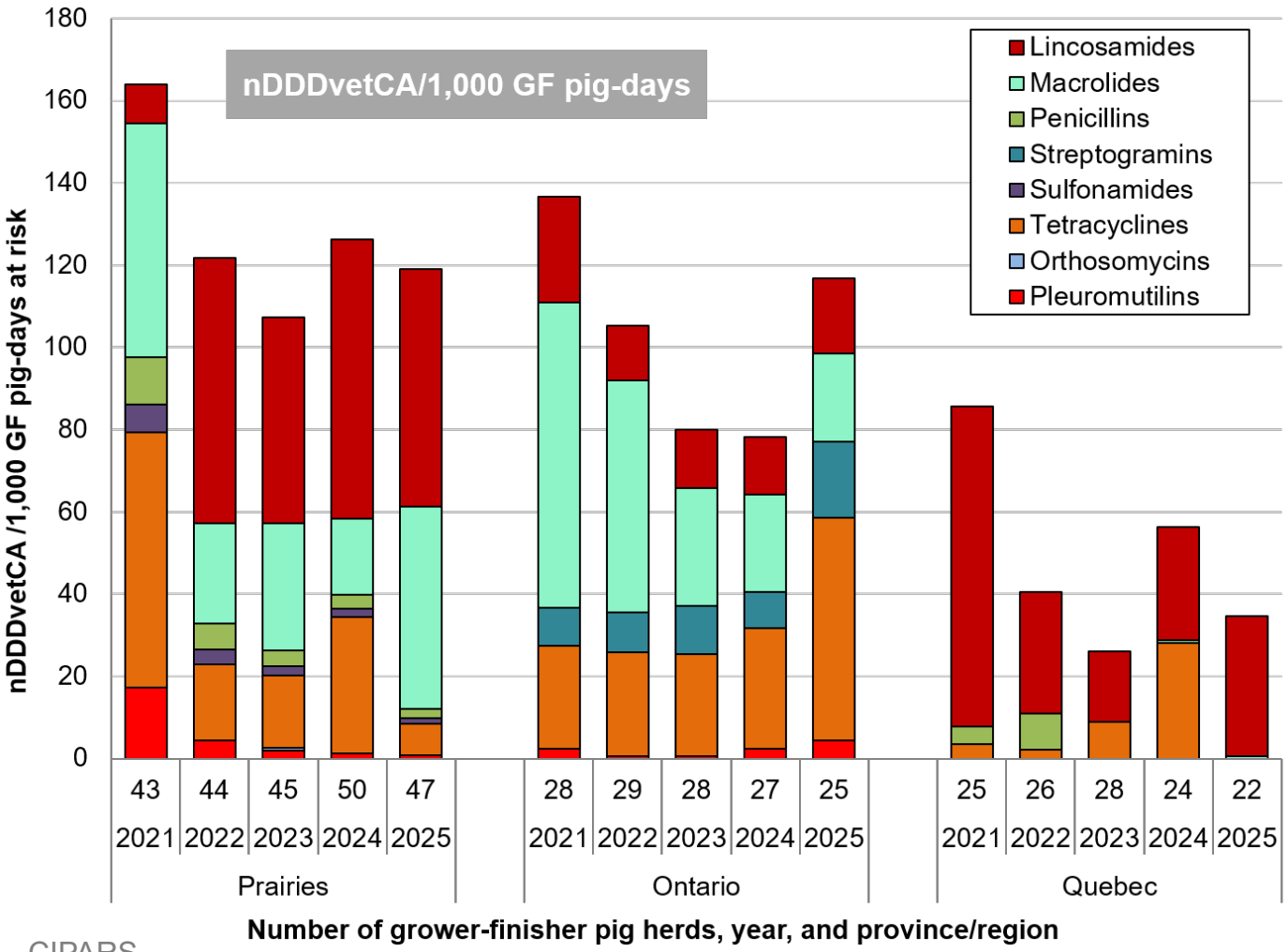
Tetracyclines: **decreased** by 69% since 2016, **decreased** by 52% since 2024

Macrolides: decreased by 68% since 2016, **increased** by 150% since 2024

Lincosamides: decreased by 17% since 2016, **decreased** by 4% since 2024

*Category IV antimicrobials including ionophores and flavophospholipols excluded from this analysis

Quantity of use in feed



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Prairies

- Decrease of 27% in quantity of MIA use in feed relative to 2021 (5-year trend)
- Decrease of 6% relative to 2024
- Macrolides: increase of 165% in quantity of use in 2025 relative to 2024
- Sulfonamides only used in the Prairies

Ontario

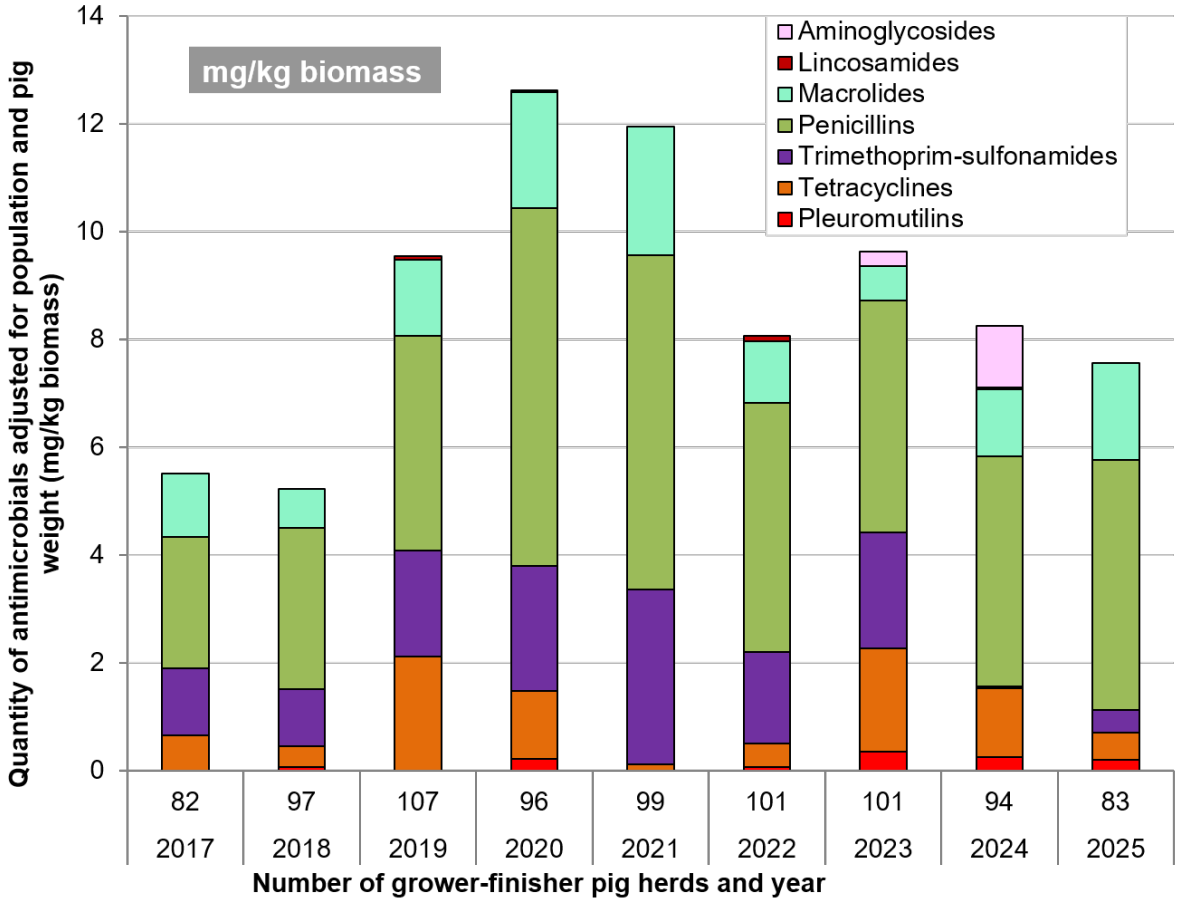
- Decrease of 15% in quantity of MIA use in feed relative to 2021 (5-year trend)
- Increase of 50% relative to 2024, due to increases in all MIAs aside from macrolides
- Streptogramins only used in Ontario

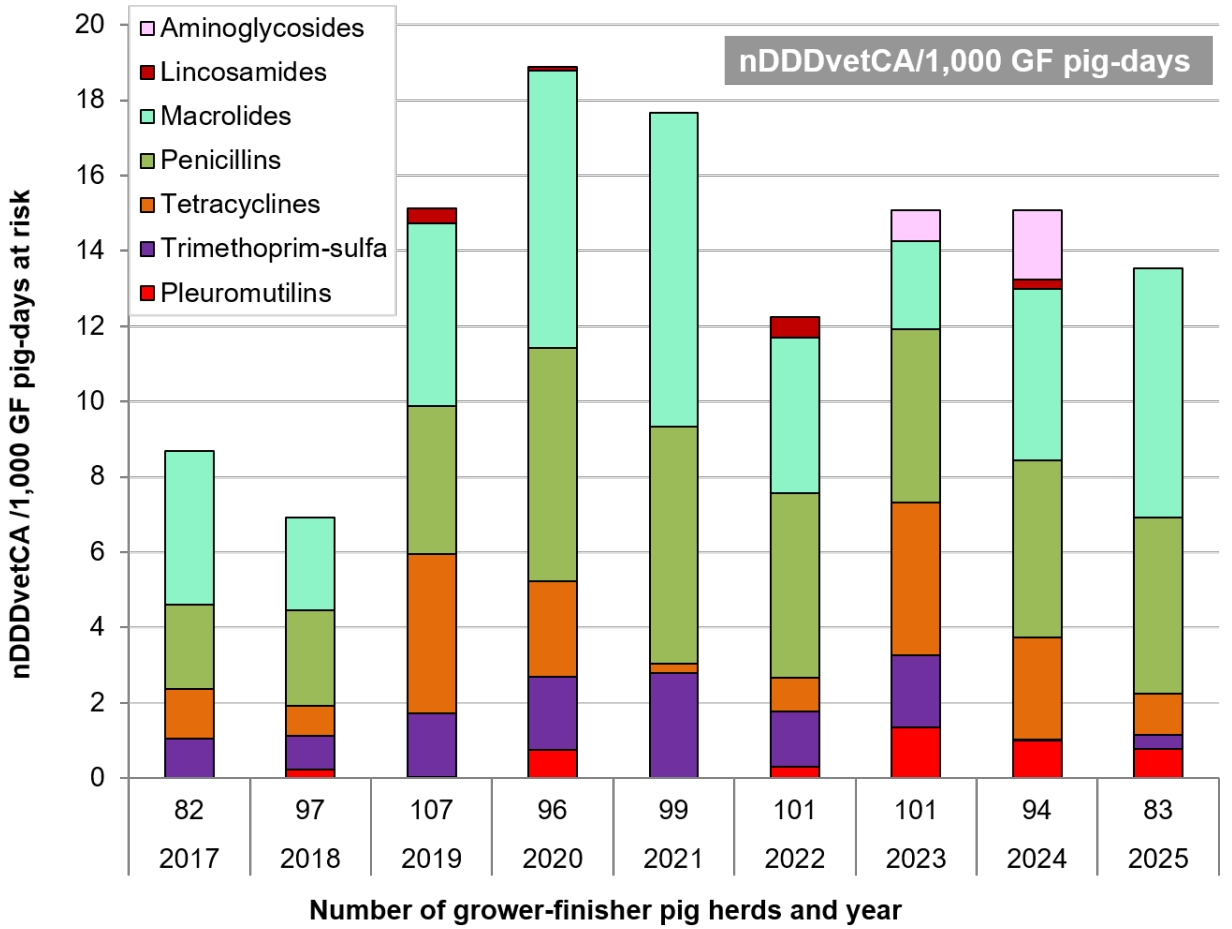
Quebec

- Decrease of 60% in MIA use in feed relative to 2021
- Decrease of 38% relative to 2024
- No tetracycline use reported in 2025; only lincosamides and macrolides reported

*Category IV antimicrobials including ionophores and flavophospholipols excluded from this analysis

Quantity of use in water





In defined daily doses:

MIAs: increased by 56% since 2017**, decreased** by 10% since 2024

Penicillins: **increased** by 107% since 2017, **increased** by <1% since 2024

Macrolides: increased by 63%% since 2017, **increased** by 45% since 2024

TMS: decreased by 64% since 2017, **increased** over 1000% since 2024 (very small quantity reported in 2024)

Tetracyclines: decreased by 16% since 2017, **decreased** by 60% since 2024

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Quantity of use in water

Prairies

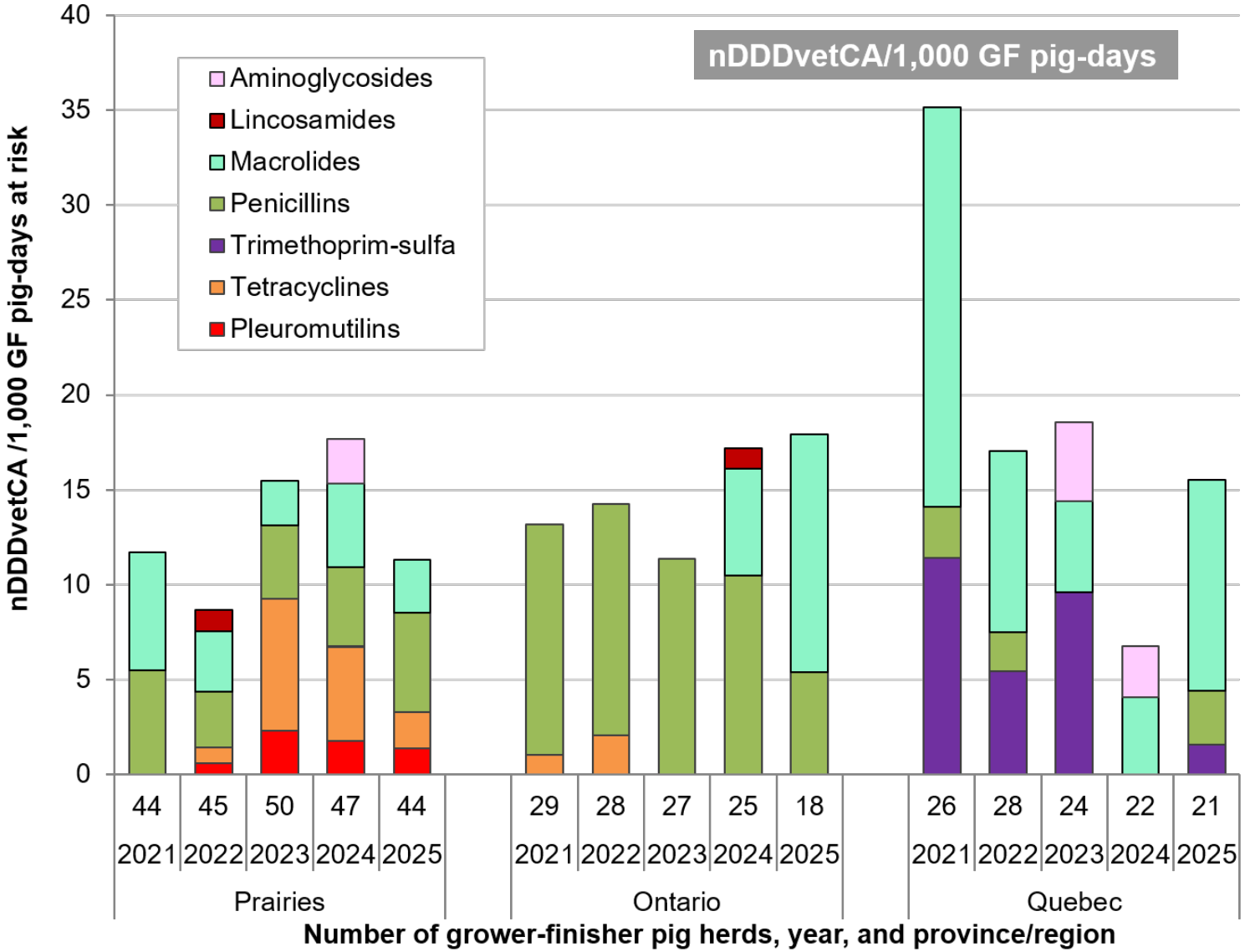
- Decrease of 3% in the quantity of MIA use relative to 2021, largely due to decreases in macrolide use
- Decrease of 36% in MIA use in water since 2024, due to decreases in all antimicrobials aside from penicillins

Ontario

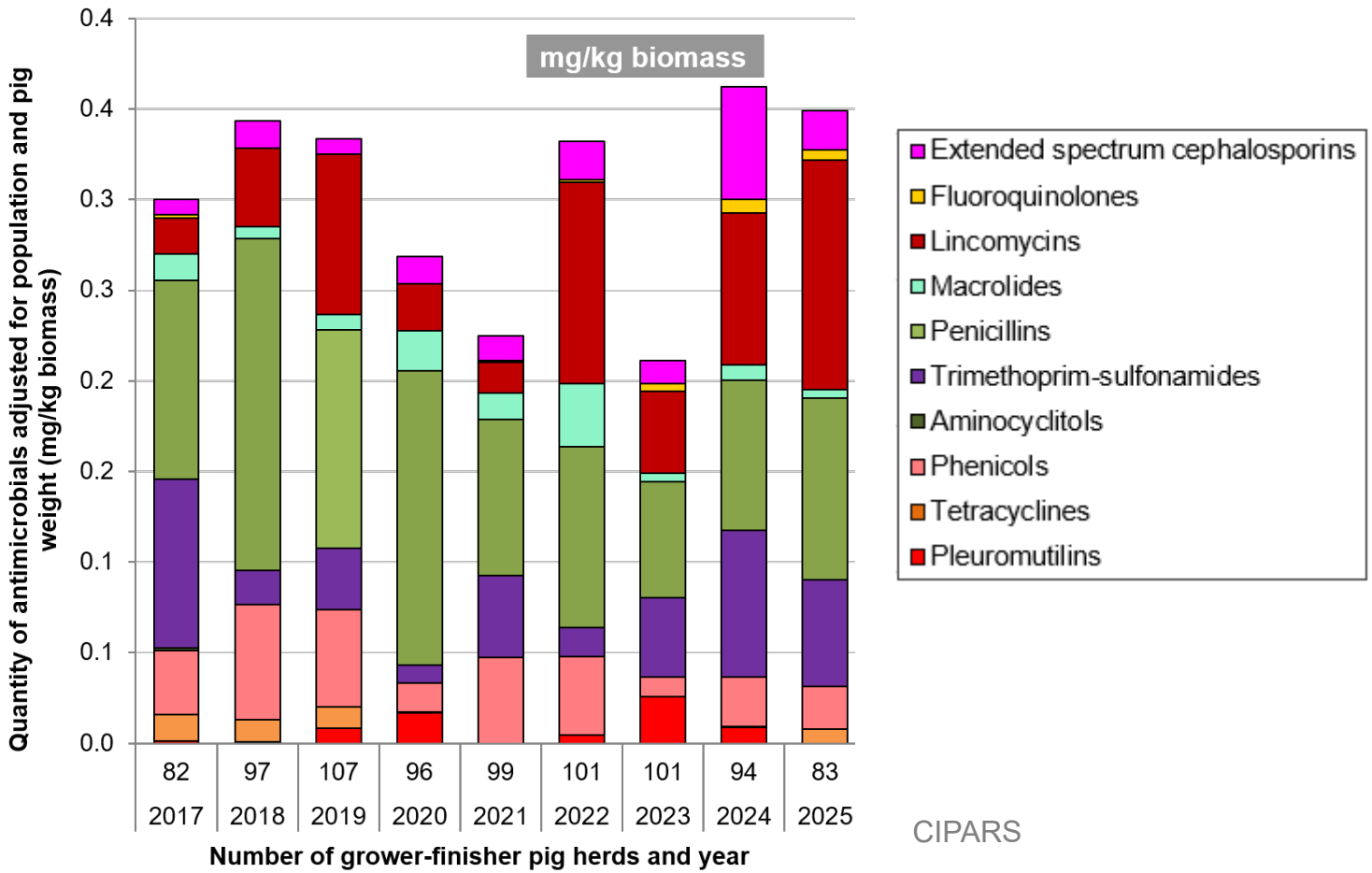
- Increase of 36% in the quantity of MIA use relative to 2021
- Increase of 4% in MIA use since 2024, only macrolides and penicillins reported

Quebec

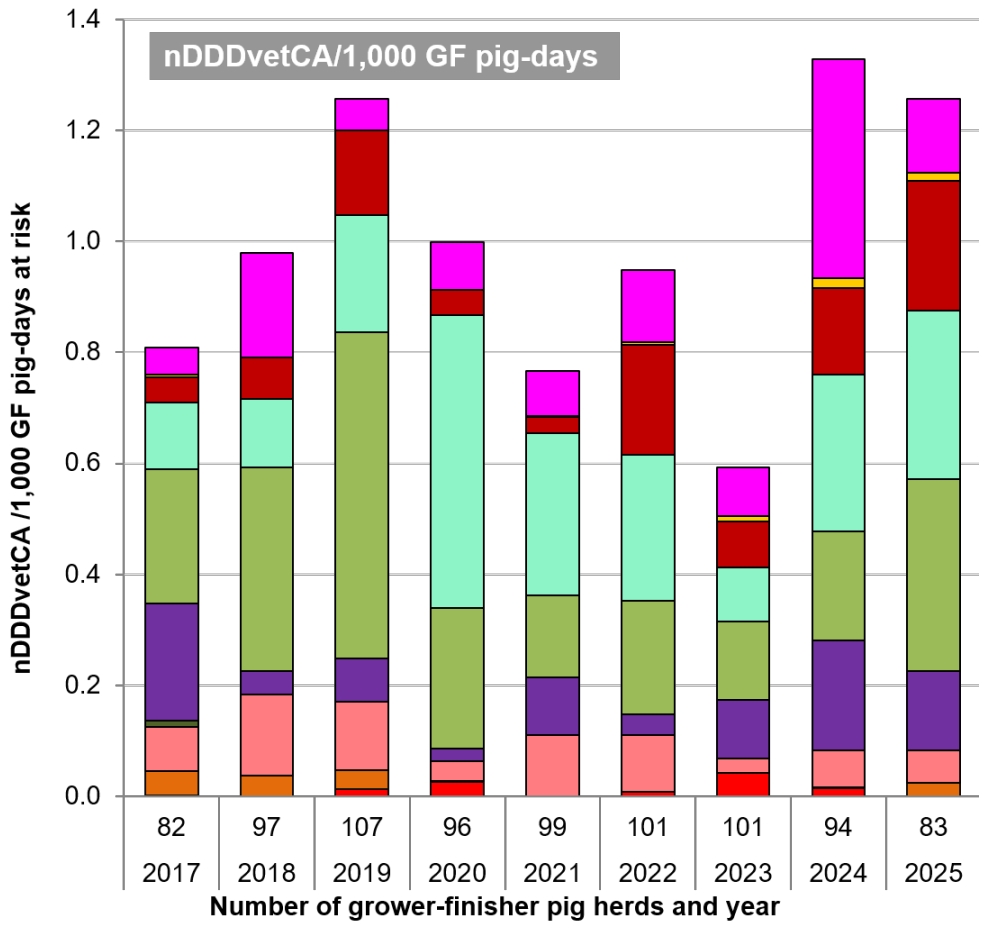
- Decrease of 55% in the quantity of MIA use relative to 2021
- Increase of 128% in MIA use relative to 2024
- After no reports of TMS use in water in 2024, TMS was reported in 2025



Quantity of use by injection



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In defined daily doses:

MIAs: increased by 56% since 2017, **decreased** by 5% since 2024

Penicillins: increased by 44% since 2017, **increased** by 76% since 2024

Macrolides: increased by 151% since 2017, **increased** by 8% since 2024

Lincosamides: increased by 419% since 2017, **increased** by 51% since 2024

3rd gen cephalosporins: increased by 174% since 2017, **decreased** by 66% since 2024

Quantity of use by injection

Prairies

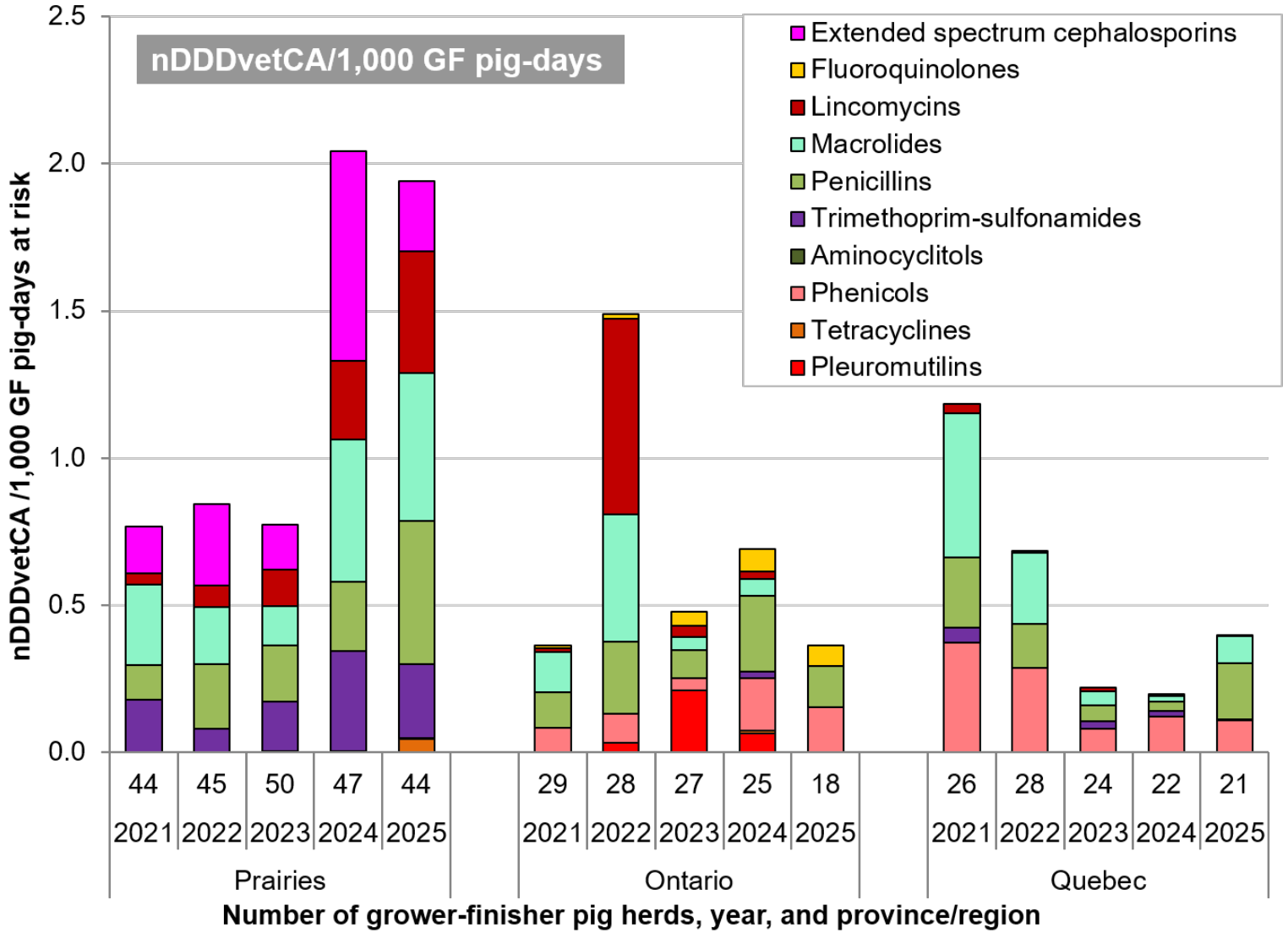
- Increase of 153% in the quantity of MIA use relative to 2021
- Decrease of 5% use relative to 2024
- 3rd gen cephalosporin use only in the Prairies

Ontario

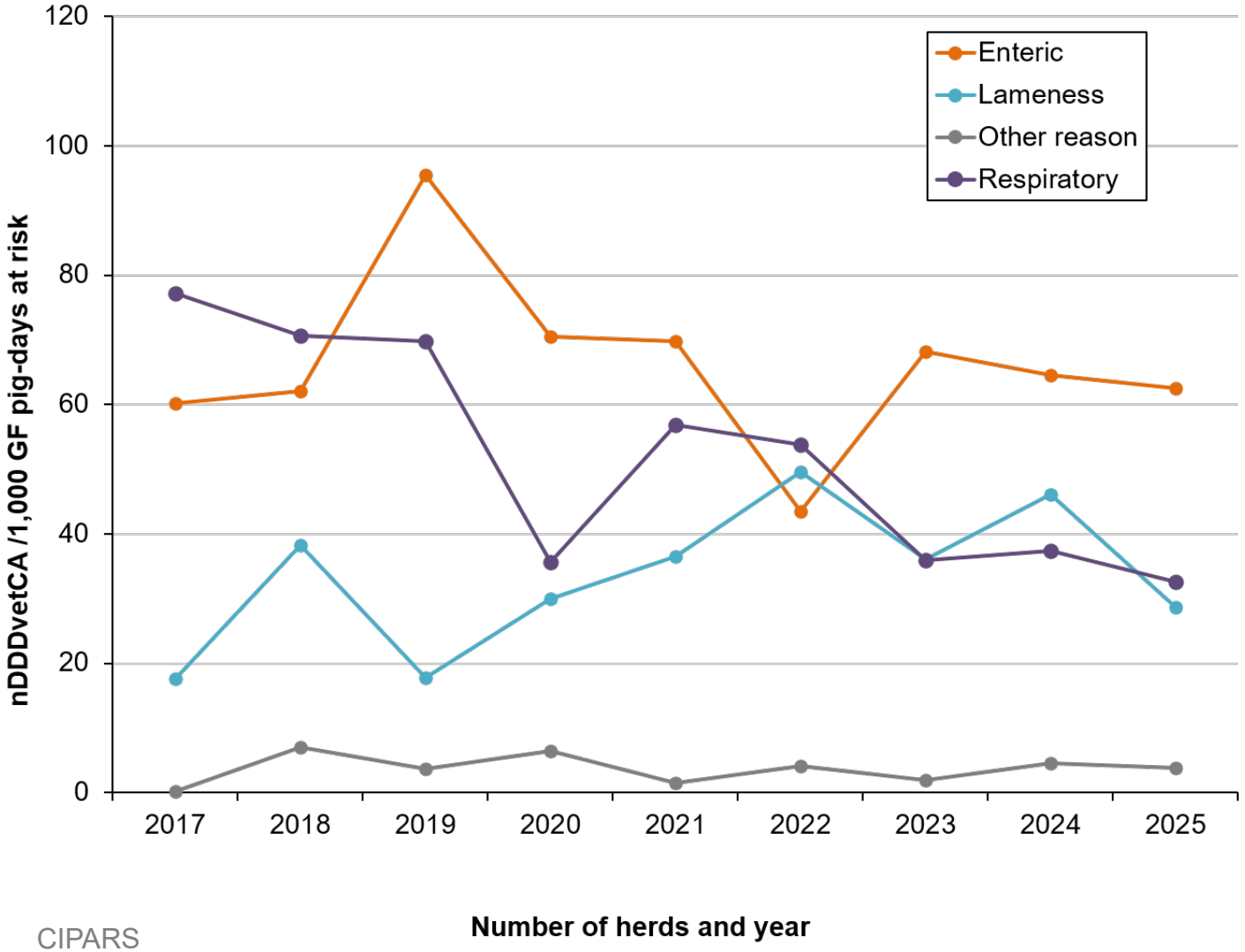
- Stable quantity of use in 2025 relative to 2021
- Decrease of 48% in MIA use relative to 2024
- Decrease of 8% in fluoroquinolone use since 2024

Quebec

- Decrease of 67% in the quantity of MIA use relative to 2021
- Increase of 100% in MIA use relative to 2024
- No Category I use



Reasons for use



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Since 2017:

- Respiratory disease – 58% decrease
- Enteric disease – 4% increase
- Lameness – 195% increase

Since 2024:

- Respiratory disease – 13% increase
- Enteric disease – 3% decrease
- Lameness – 38% increase

The quantity of use for respiratory disease is only slightly higher than the quantity of use for lameness in 2025.

Reasons for use

Prairies

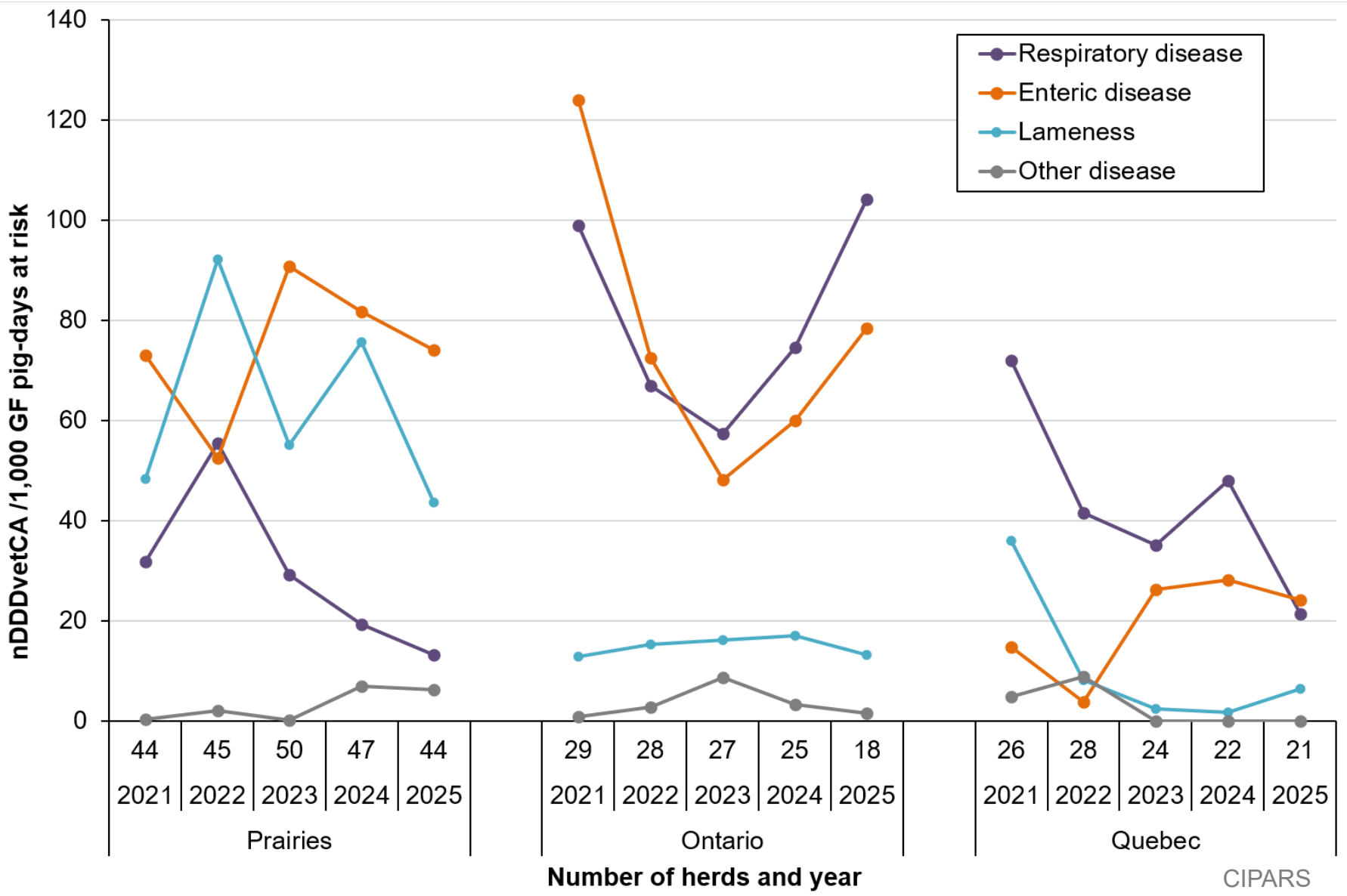
- The quantity of MIAs used for lameness decreased in 2025 relative to 2024 (by 42%)

Ontario

- The direction of the trends in the quantity of MIAs used for respiratory disease and enteric disease continue to be similar

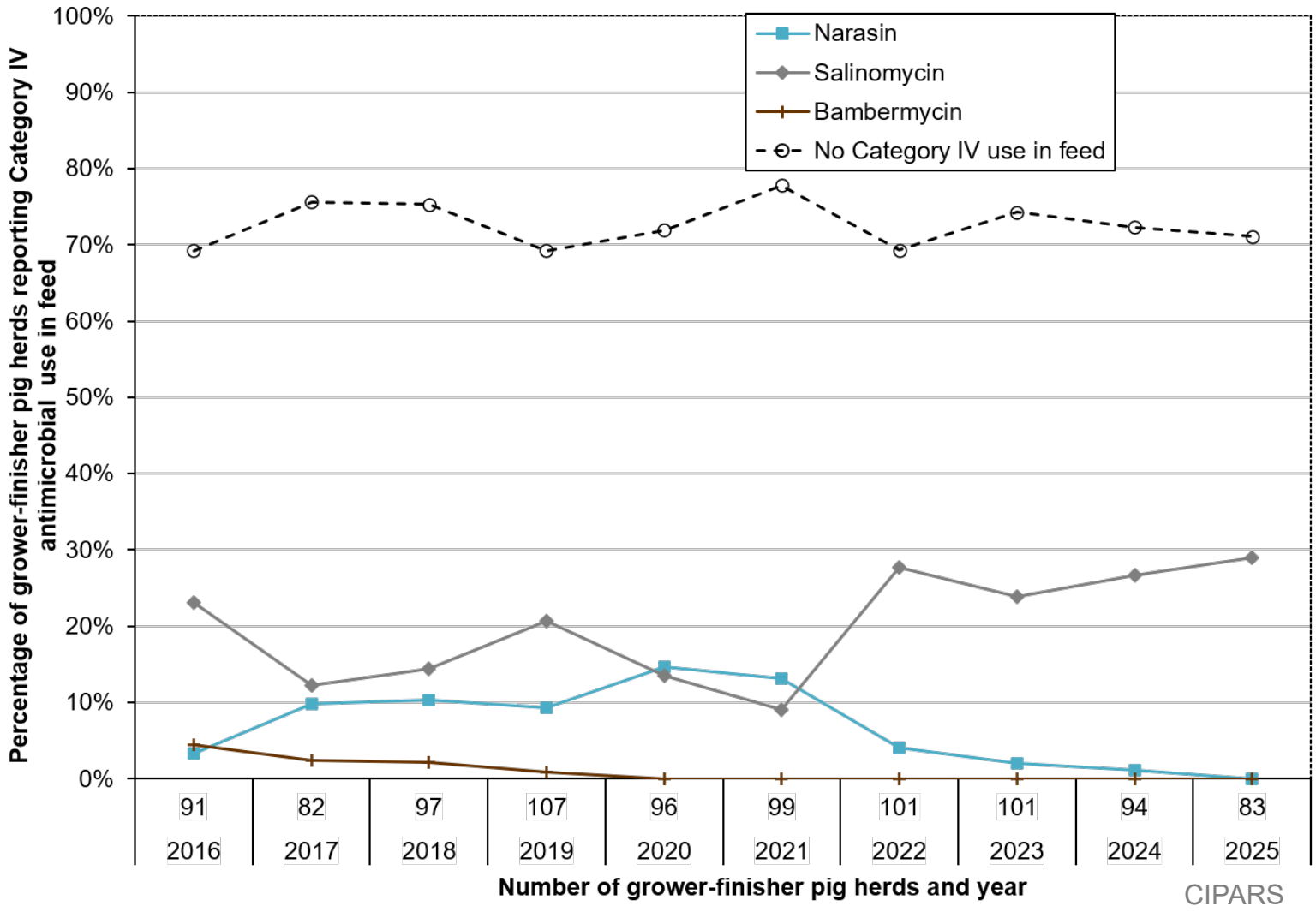
Quebec

- The quantity of MIAs used for enteric and respiratory disease were similar in 2025



Category IV use (Frequency)

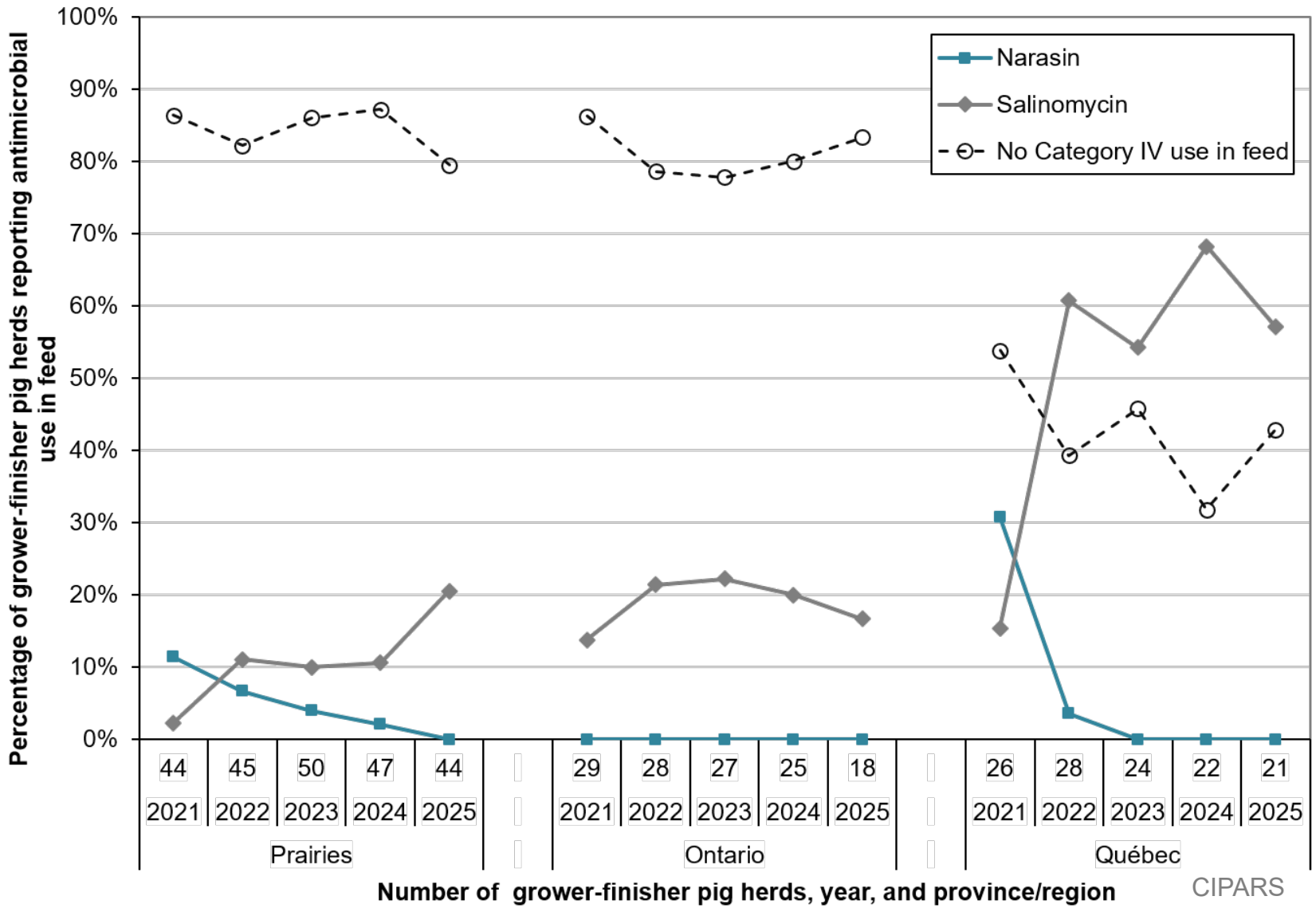
- The frequency of salinomycin use increased in 2022 and has largely replaced the use of narasin
- Otherwise, the percentage of herds using Category IV antimicrobials has ranged between 69.78%
- There has been no reported use of bambermycin since 2019



CIPARS

Category IV use (Frequency)

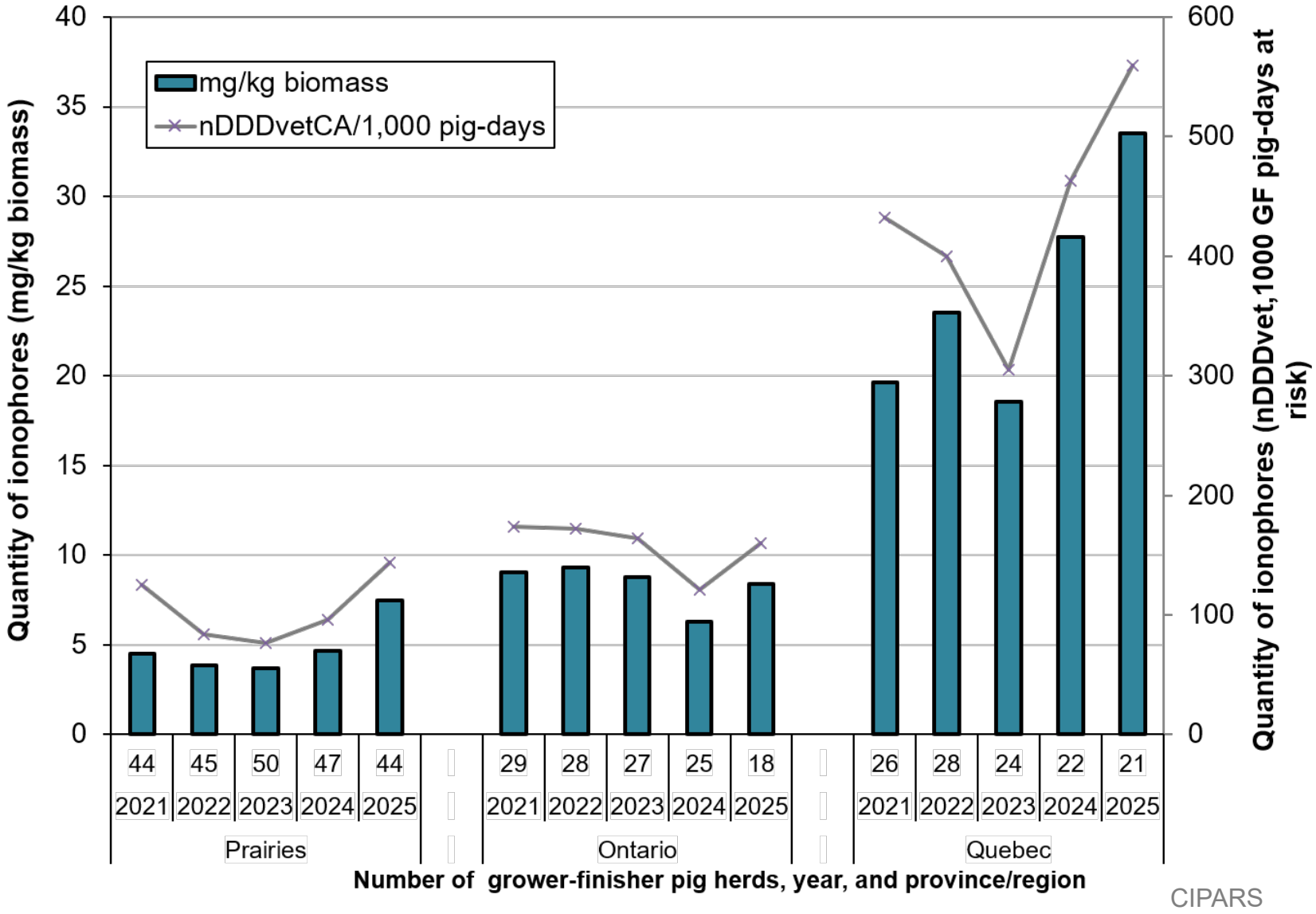
- Narasin use was not reported in any region in 2025
- Salinomycin use increased in the Prairies (by 60%) and decreased in Ontario (by 17%) and Quebec (by 16%)
- There has been no reported use of bambermycin since 2019



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Category IV use (Quantity)

- Relative to 2024, the quantity of ionophores used increased in all regions (measured in nDDDvetCA/1,000 GF pig-days)
  - 50% in the Prairies
  - 32% in Ontario
  - 21% in Quebec
- The quantity of ionophores used is higher in Quebec than in Ontario or the Prairies
- There has been no reported use of bambermycin since 2019



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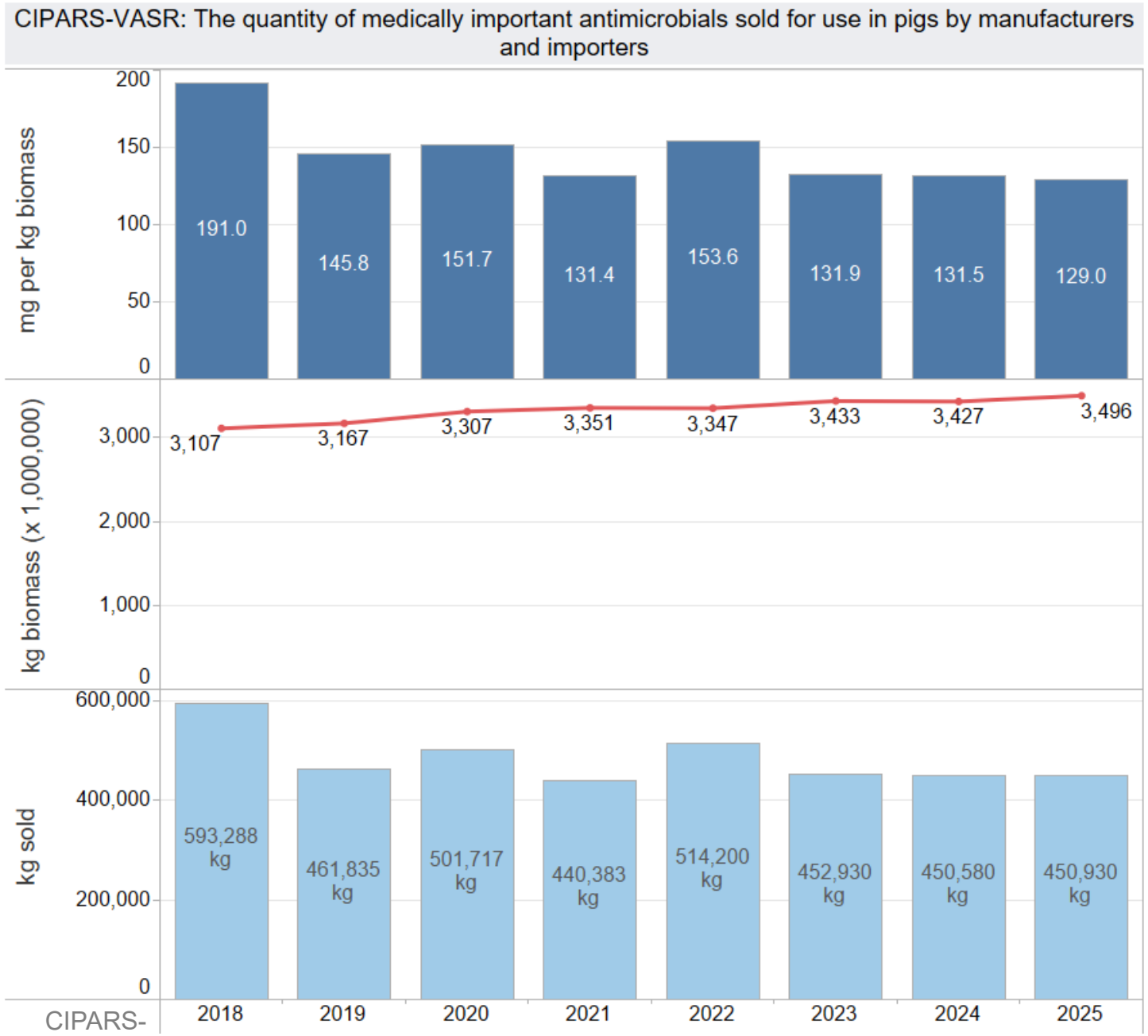
Sales data (VASR)

Manufacturers and importers

In 2025, the quantity of antimicrobials sold for use in pigs increased in kilograms and decreased after adjusting for biomass.

- pigs had the second highest quantity of antimicrobials sold, compared to other species groups
- approximately 450,930 kg (129 mg/kg biomass) were sold for use in pigs in 2025
- primarily Category II and III antimicrobials (54% of sales for pigs are tetracyclines)
- primarily for use in feed

There has been a small increase in the biomass of pigs produced since 2018.

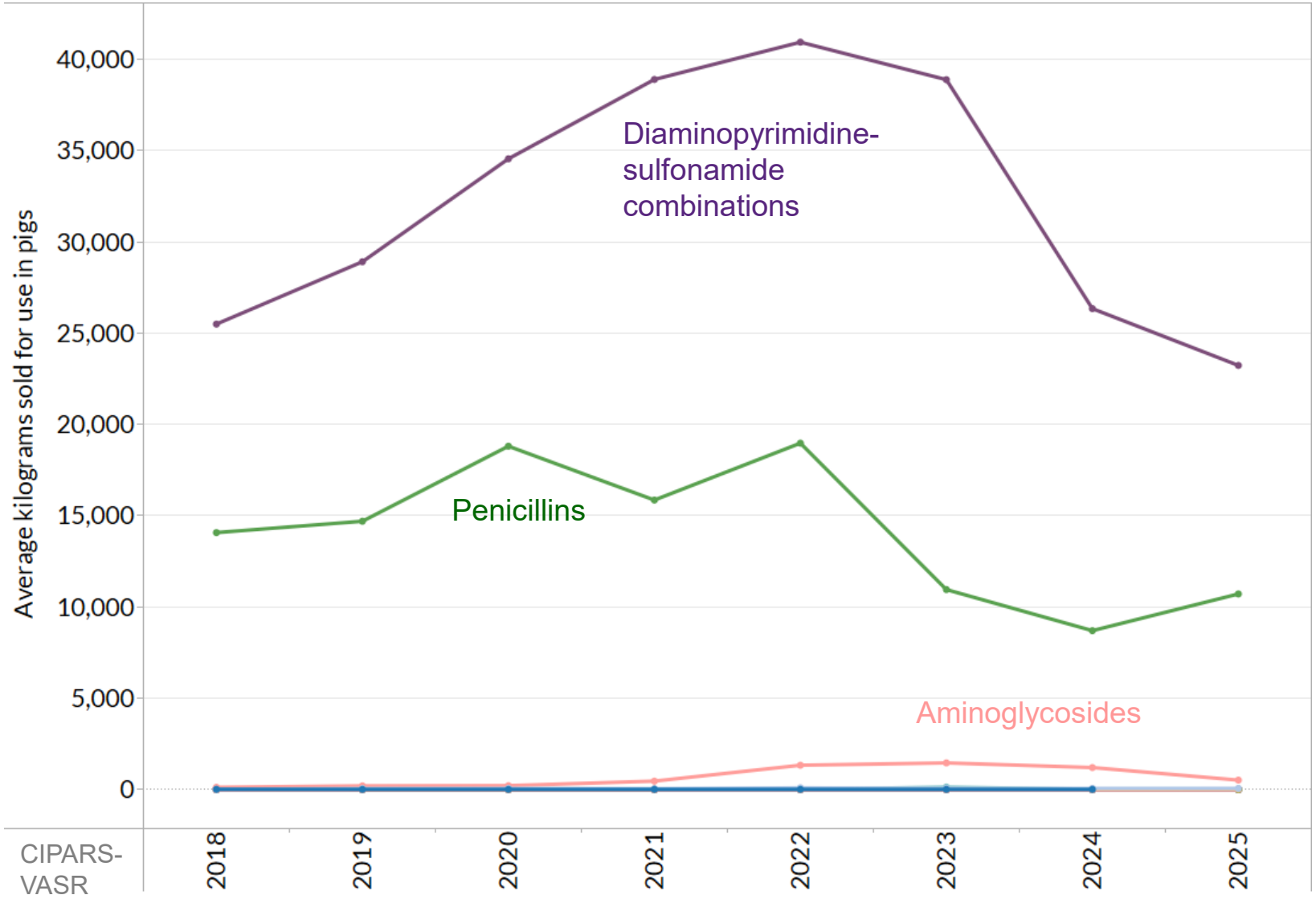


Sales data (VASR)

Compounders

Approximately **78%** of medically important antimicrobials reported by compounders were intended for use in pigs (down from 82% in 2024).

- ~ 34,000 kgs sold for use in pigs in 2025 (down from ~ 52,000 kg in 2023)
- primarily for use in water
- primarily sold in Quebec, followed by Ontario



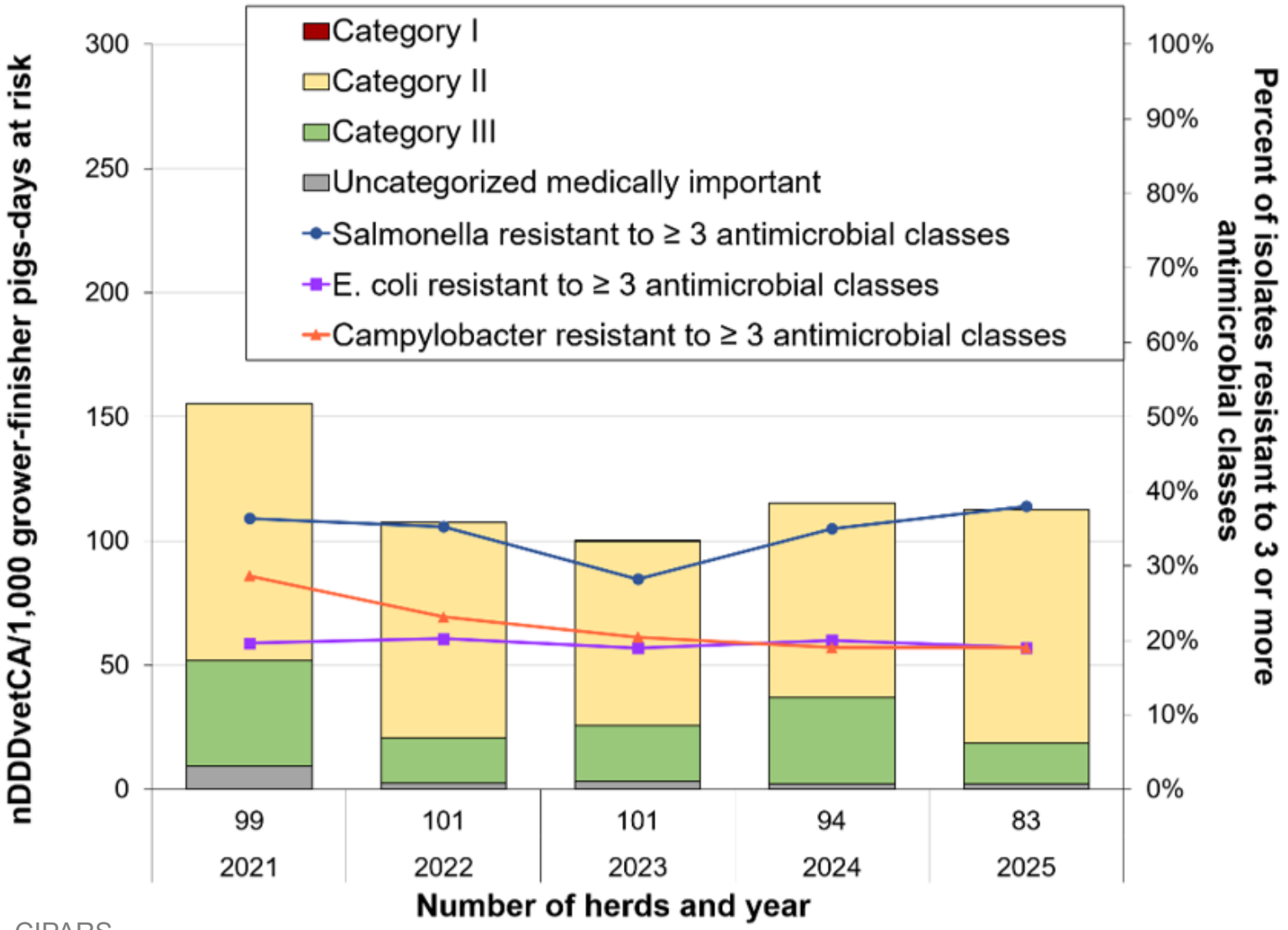


Integrated AMU and AMR

Public Health Agency of Canada
Agence de la santé publique du Canada

Canada

Integrated AMU and resistance to 3 or more classes



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Since 2021, there has been an overall decrease (27%) in the quantity of MIAs used.

- Category I: 77% increase
- Category II: 9% decrease
- Category III: 61% decrease
- Uncategorized MIA: 77% decrease

Percentage of isolates resistant to 3 or more classes:

- Similar between 2021 and 2025 for *Salmonella*
- Stable for *E. coli*
- Decreasing trend for *Campylobacter* (high to moderate)



Key messages

Key messages

Relative to 2024:

- The quantity of medically important antimicrobials used decreased by 29-42% depending on the measure used
- In feed, there were decreases in both the frequency and quantity of MIAs used Nationally, as well as in the Prairies and Quebec, and increases in Ontario
- In water and by injection there were decreases in the quantity of MIAs used
- By injection, there were decreases in Category I use in the Prairies (5%) and Ontario (8%)
- The quantity of use for respiratory disease, enteric disease, and lameness decreased Nationally
- The quantity of ionophores used increased in the Prairies (50%), Ontario (32%) and Quebec (21%)

Key messages

Other notable findings:

- Reports of positive PRRS status across all production stages were similar in Ontario (22%) and the Prairies (23%) in 2025
- Lincomycins were the class with the highest quantity of use in feed in 2025
- There was no reported chlortetracycline use in feed in Quebec in 2025
- The quantity of use in feed was similar in Ontario and the Prairies in 2025, while Quebec continues to use less antimicrobials in feed than Ontario and the Prairies
- The quantity of Category I antimicrobials (used by injection) increased by 77% relative to 2021
- The only ionophore reported in 2025 was salinomcyin; ionophore use is higher in Quebec than Ontario and the Prairies
- Approximately 78% of antimicrobials sold by compounders were intended for use in pigs, mostly for use in water

Where can I find more information?

CIPARS Interactive data visualizations

https://www.canada.ca/en/public-health/services/surveillance/canadian-integrated-program-antimicrobial-resistance-surveillance-cipars/interactive-data.html

CARSS Interactive data visualizations

Farm: https://health-infobase.canada.ca/carss/amu/results.html?ind=06

Sales: https://health-infobase.canada.ca/carss/amu/results.html?ind=05

CIPARS web pages

https://www.canada.ca/en/public-health/services/surveillance/canadian-integrated-program-antimicrobial-resistance-surveillance-cipars.html

Acknowledgements

Human (AMR):

- NML, Division of Bacteriology and Enteric Diseases and PulseNet Canada
- Provincial Public Health Laboratories
- FoodNet Canada Sentinel Sites (*Campylobacter*)
- National Enteric Surveillance Program (NESP)

Farm (AMR and AMU):

- Veterinarians, producers and component groups, and academic and federal partners who participate in the farm program
- Saskatchewan Agriculture
- Feedlot Cattle Surveillance - partial funding current & past: Canadian Agricultural Partnership in Alberta and Ontario, Alberta Cattle Feeders Association, Bayer Animal Health, Beef Farmers of Ontario, Beef Cattle Research Council, Alberta Beef Producers, McDonald's, Saskatchewan Cattle Feeders and Vetoquinol
- Dairy Cattle Surveillance – partial funding: Dairy Farmers of Canada Dairy Research Cluster as part of the Canadian Agricultural Partnership
- Fisheries and Oceans Canada (DFO)

Abattoir:

- Canadian Food Inspection Agency, abattoir operators, samplers and personnel

Retail and Water:

- Health Units and institutions that participate in FoodNet Canada
- Alberta Irrigation Districts Association
- Alberta Agriculture and Irrigation
- Participating water treatment plants

Clinical Animal Isolates:

- Provincial Animal Health Laboratories

Antimicrobial sales for animals:

- VASR: Health Canada's Veterinary Drugs Directorate and PHAC



Antimicrobial Use - humans:

- SHAMU (PHAC AMR Task Force) and IQVIA. The statements, findings, conclusions, views, and opinions expressed in this report are based in part on data obtained under license from IQVIA Solutions Canada Inc. concerning the following information service(s): Compuscript, from January, 2021 to December, 2025. All Rights Reserved. The statements, findings, conclusions, views, and opinions expressed herein are not necessarily those of IQVIA Inc. or any of its affiliated or subsidiary entities.

Antimicrobials Sold as Pesticides for use in Crops:

- Health Canada's Pest Management and Regulatory Agency

Feed Ingredients and Mixed Feeds:

- Canadian Food Inspection Agency



Contact Information - CIPARS Swine Farm Component

Dr. Angie Bosman

angelina.bosman@phac-aspc.gc.ca