ELISA Titers in Georgia Poultry Flocks 2024-2025

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Georgia Poultry Laboratory Network

ELISA Titers in GA Poultry Flocks

Welcome to the 2024-2025 GA Titers baseline document!
This is also available on GPLN's website in electronic form.
Please call us or use customerservice@gapoultrylab.org with any questions or feedback!

How to use this document:

- Flock managers can utilize this data by comparing their own serological results against Georgia data for flocks falling within the same age ranges. They can also compare their own company baselines to GPLN's.
- The report can also be used to compare what is theoretically expected of flock responses to vaccination and field exposure versus what is observed from Georgia flocks.
- Note that the GA baselines should not be expected to reflect titers found in other areas of the US, other countries, or those obtained from different kit manufacturers.

ENJOY!
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Special thanks to those who gave us input over the years:
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ABBREVIATIONS USED IN THIS DOCUMENT:
AE: avian Encephalomyelitis
CAV: Chicken Anemia Virus
CV: coefficient of variation
ELISA: Enzyme Linked Immunosorbent Assay
GMT: Geometric Mean Titer
GPLN: Georgia Poultry Laboratory Network
IBD: infectious Bursal Disease
IBV: Infectious Bronchitis
IRC: Internal Reference Control
L-K: Vaccinated with live virus followed by killed vaccine in pullets
L-LP: Vaccinated with live virus in pullets followed by live virus during production
L-PO: Vaccinated with live virus in pullets only
N/A: Not Applicable
NDV: Newcastle Disease Virus
REO: Reovirus
XR: Extended Range
WKS: weeks

ELISA Titers in Georgia Poultry Flocks

Every year, GPLN aggregates ELISA titers by poultry production type and age ranges covering the data from the previous 2 years. This report summarizes the **2024 and 2025 data.**

General Comments:

- This report only includes flocks from Georgia complexes and production units.
- The poultry industry uses serology to monitor flocks for the presence/absence of disease and for vaccination monitoring. Included in this report are vaccine monitored flocks only. No diagnostic case data is included.
- All flock results are verified. ELISA tests include kit and internal reference controls (IRC). The IRC is a field sample with an expected titer range that is diluted just like the field samples in the test, as opposed to the kit controls that are pre-diluted.
- Kit used: IDEXX.
- The number of flocks represented for each data point is between parentheses next to the age range on the x-axis.

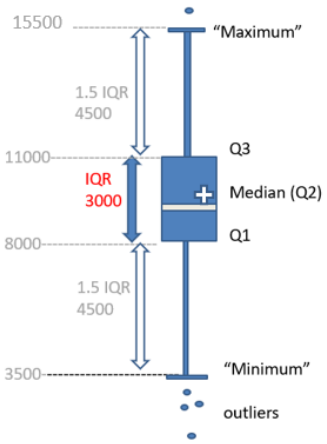
BAR GRAPHS:

- Each bar represents the average of GMTs for all flocks in the database for that bird type and age range.
- The CV's found under the x-axis are the average of coefficients of variation for all flocks in the database for the corresponding bird type and age range.
- The positive cutoff for an individual bird sample (397 for most kits) is represented on the graph as a horizontal line (for reference).
- The last 5 graphs on this report show yearly trends (one year, not two) for IBV, REO, AE and IBD for critical age ranges in breeders and broilers.

BOX PLOTS:

- The box plots display the data in a manner that gives a better understanding of the variability of the average flock titers within a population of flocks. A detailed explanation is below.

Tukey Box and Whisker plot explained

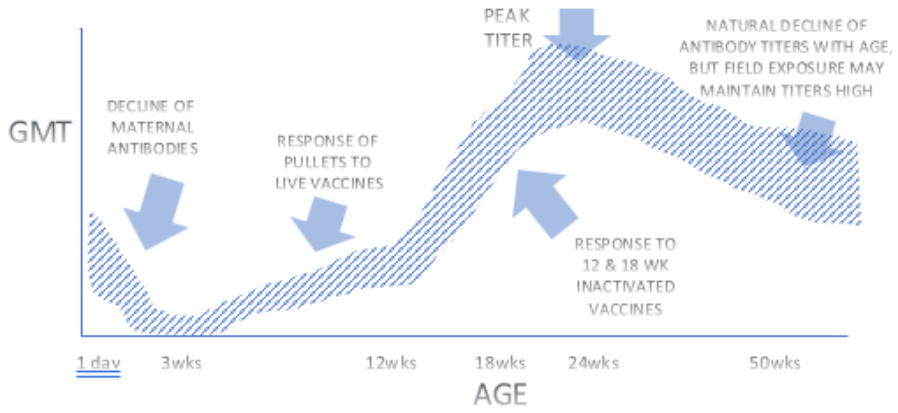


- The median (line in the box) is the middle value of the dataset.
- The cross is the mean.
- The box contains 50% of the values.
- The IQR (inter quantile range) is the difference between the values on top and bottom of the box.
- The minimum and maximum (whiskers) are calculated at 1.5X the IQR
- Any values higher or lower than the min and max (whiskers) are the outliers.
- If the distribution is normal (it often is not), the outliers are <1% (0.70%) of the data.

ELISA Titers in Broiler Breeders

1. Age ranges are the same as for previous reports. They fit the functional ages in the life of a breeder and fit the timing of the vaccination responses as explained and illustrated below.

- *The 1-day GMTs represent the level of maternal antibodies in day old pullets and cockerels coming from grandparent flocks.*
- *GPLN receives very few, if any, samples from young pullet flocks between 1 day and 8 weeks of age. During that period, the following would be expected: at 2-4 weeks of age, titers would be very low due to the decline of maternal antibodies. After 4 weeks of age, titers would be steadily increasing due to live vaccinations and field exposure.*
- *The 8-12wks titers represent the response to natural field exposure in pullets, as well as the response to vaccinations with live primers given during the first 12 weeks of life.*
- *The 13-19wks titers represent the response to natural field exposure in pullets, as well as the response to vaccinations with live primers and to the first inactivated vaccination, given at or around 12 weeks of age.*
- *The 20-24wks titers represent the response to natural field exposure in pullets, as well as the response to vaccinations with live primers and to the first inactivated vaccination, given at or around 12 weeks of age plus the response to the second inactivated vaccination given at or around 18 weeks of age.*
- *The rest of the life of breeder flocks is divided in 10-week increments.*



2. All complexes and production units represented in this report are vaccinating their pullets twice with inactivated vaccines against IBD and REO.

3. The breeder NDV and IBV data is split between 3 vaccination strategies:

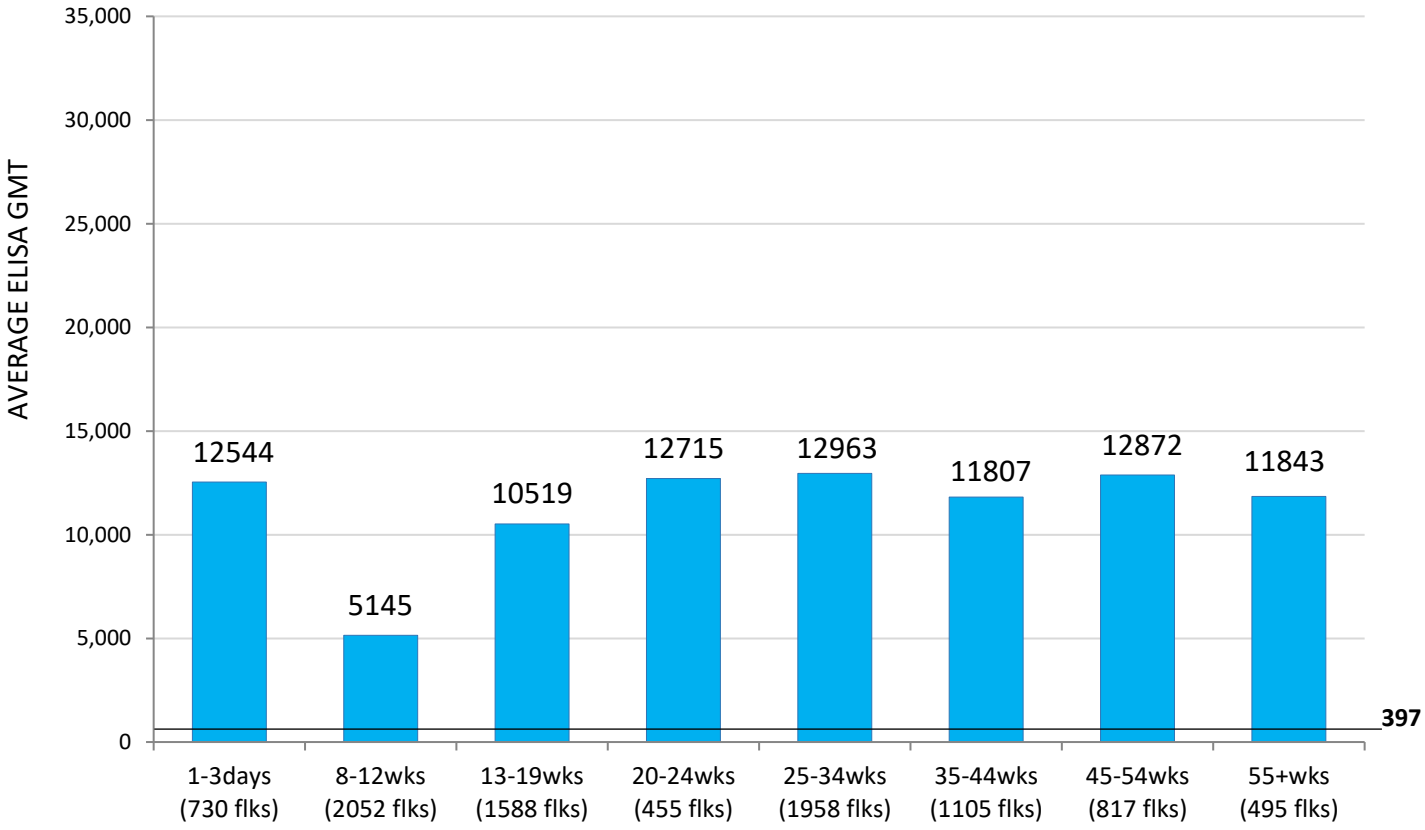
- complexes that vaccinate pullets only with live vaccines (L-PO for LIVE-PULLETS ONLY)
- complexes that use live vaccines followed by inactivated vaccines in pullets (L-K for LIVE and KILLED vaccines in pullets)
- complexes that vaccinate pullets with live vaccines and continue using live vaccines during production. (L-LP for LIVE Vaccination in PULLETS and LIVE vaccination DURING PRODUCTION)

4. The CAV and AE data are presented in tabular form in addition to bar graphs (or boxplot) including the % positive data.

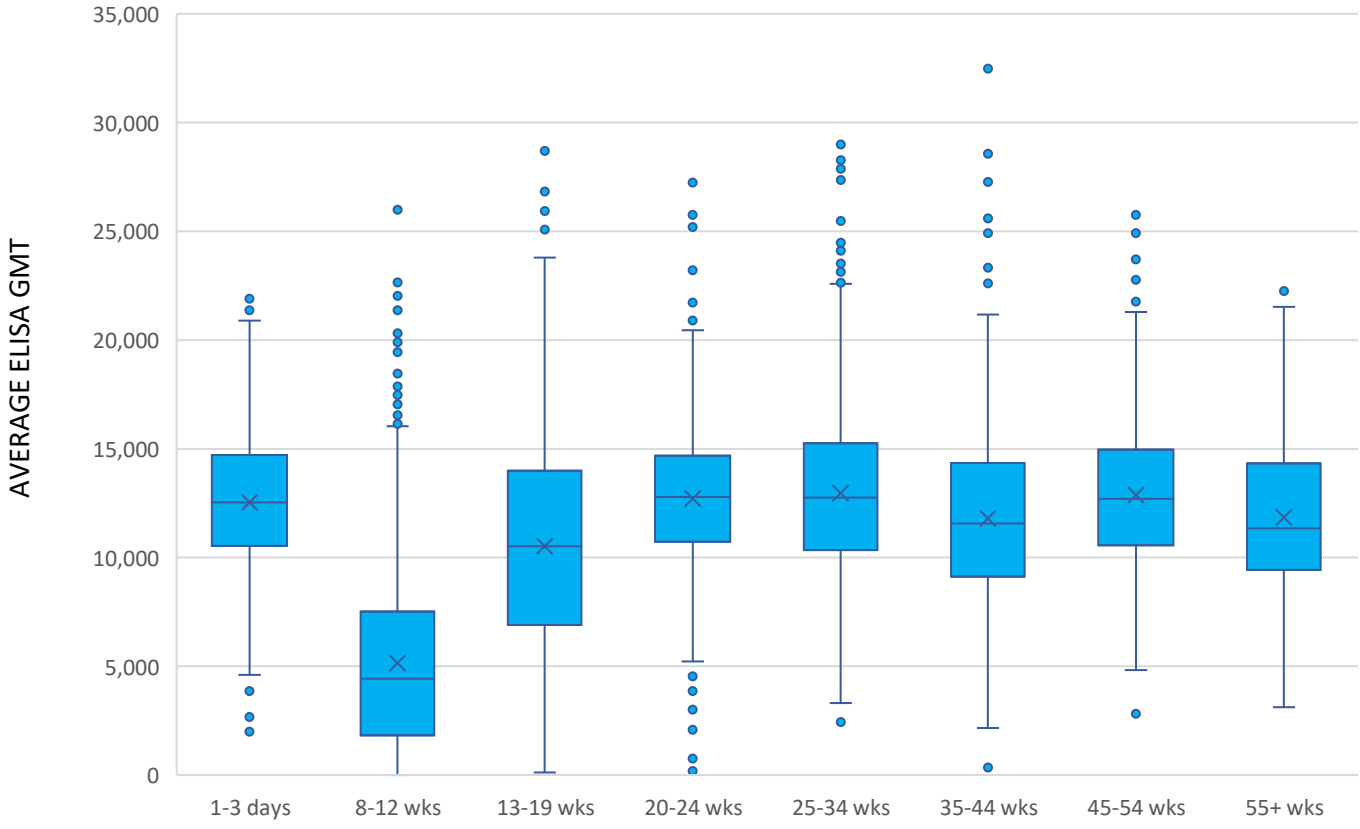
5. The number of samples per flock in this series is 10 or greater.

6. Note that the y-axis range of values are the same on the bar graph and on the boxplot found on the same page.

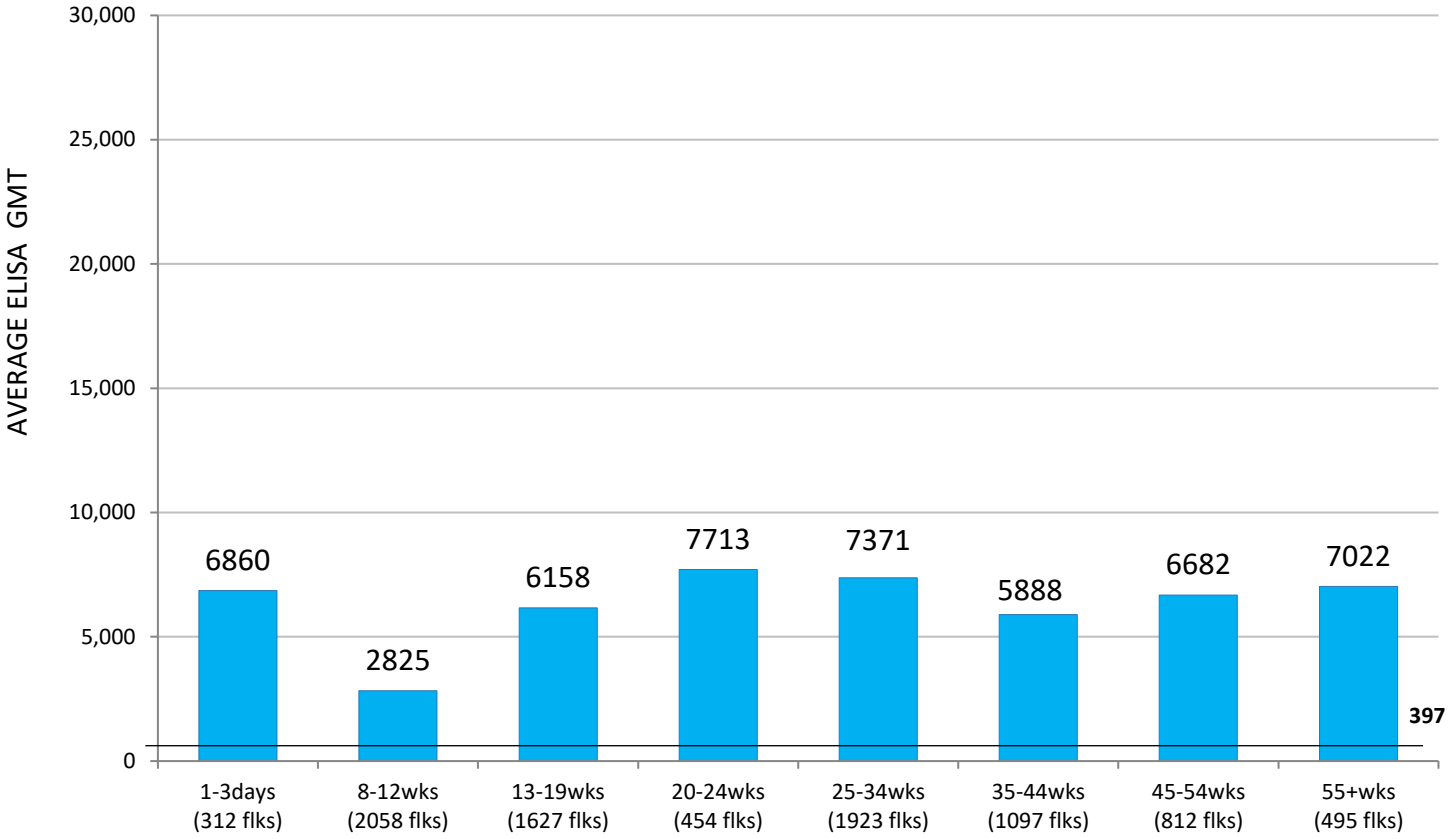
Broiler Breeder IBD-XR titers



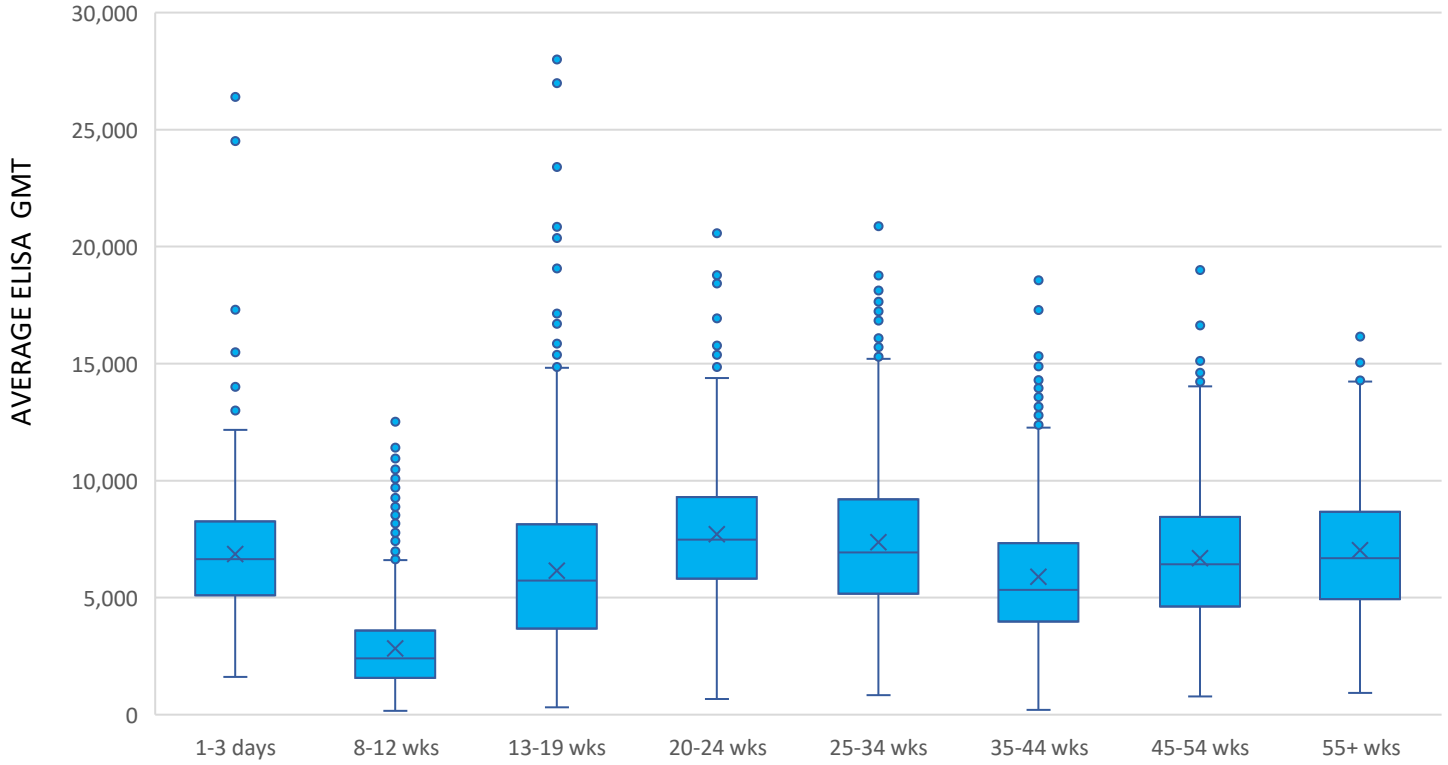
CV	22	62	34	24	25	26	24	28



Broiler Breeder REO titers

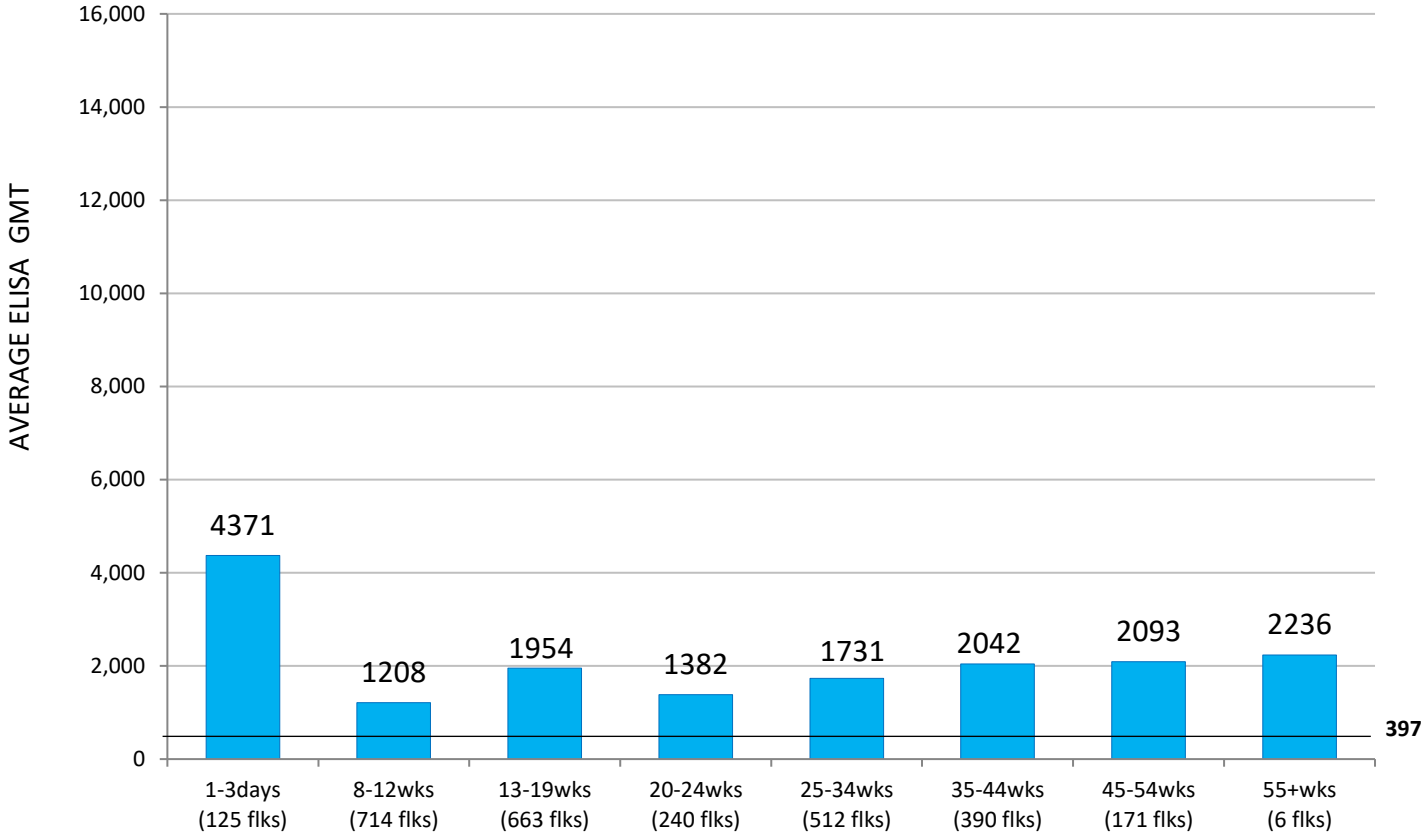


CV	43	54	42	38	40	44	40	40

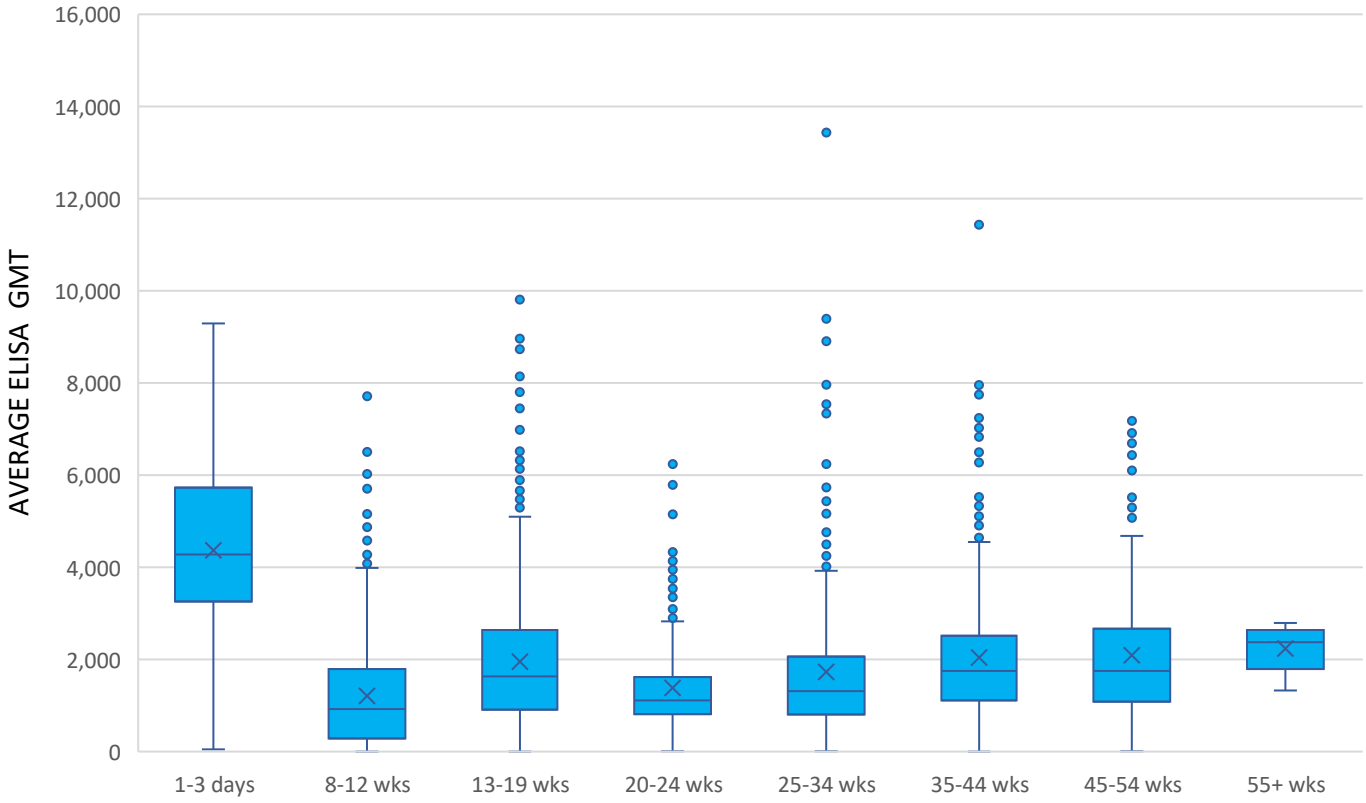


Broiler Breeder NDV titers

L-PO programs (Live vaccines in pullets only)

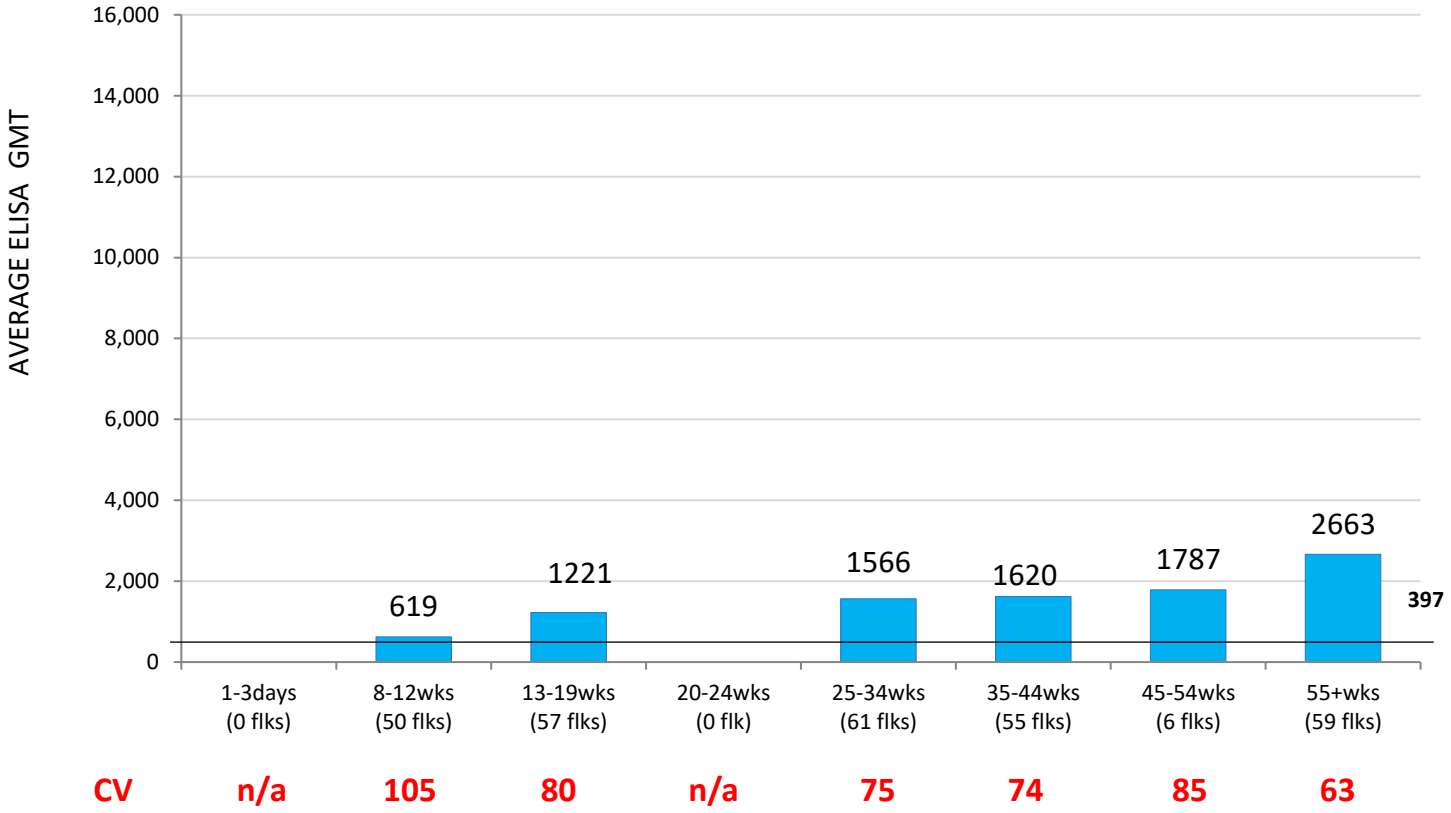


CV	45	93	71	64	76	66	67	60

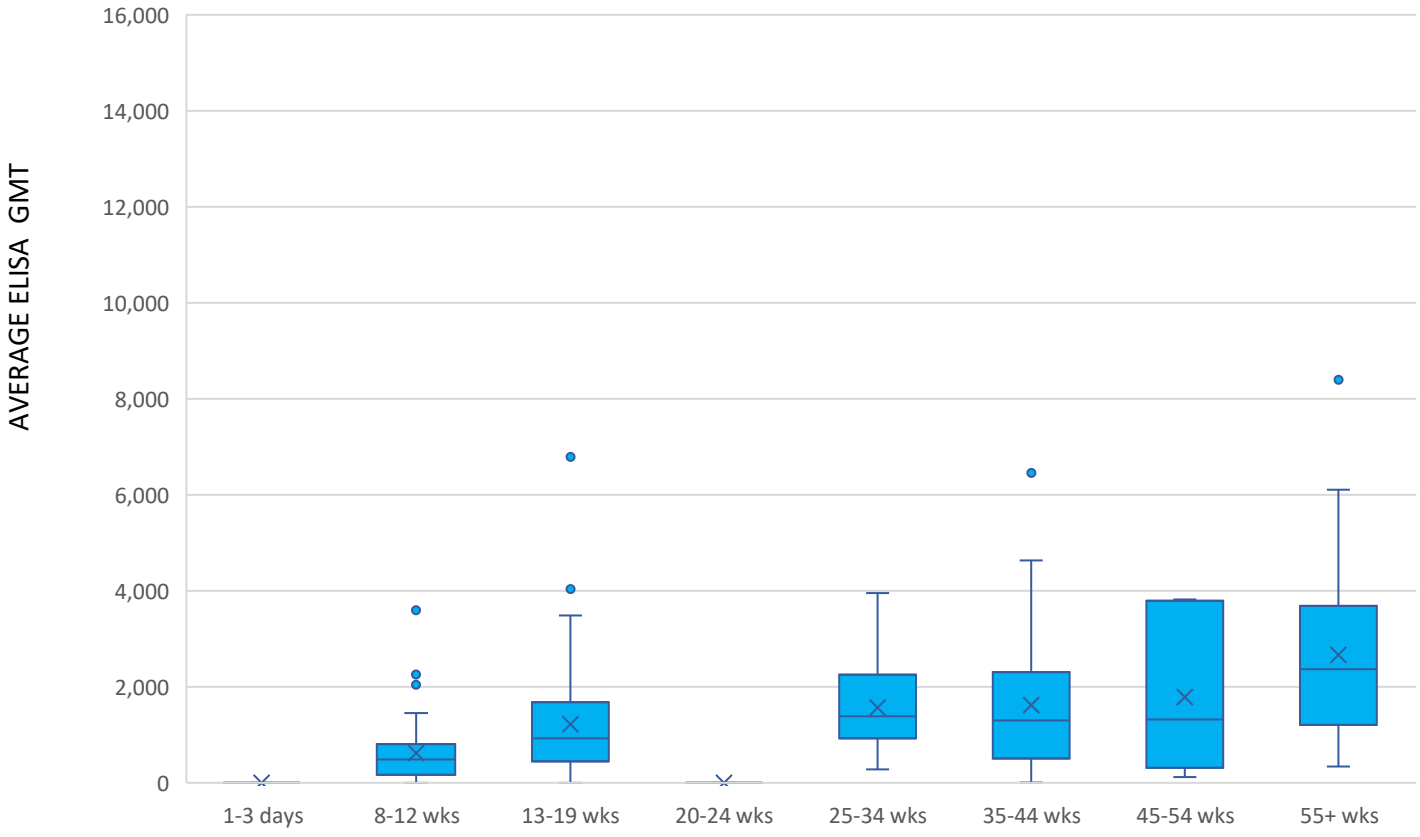


Broiler Breeder NDV titers

L-LP programs (Live vaccines in pullets and during production)

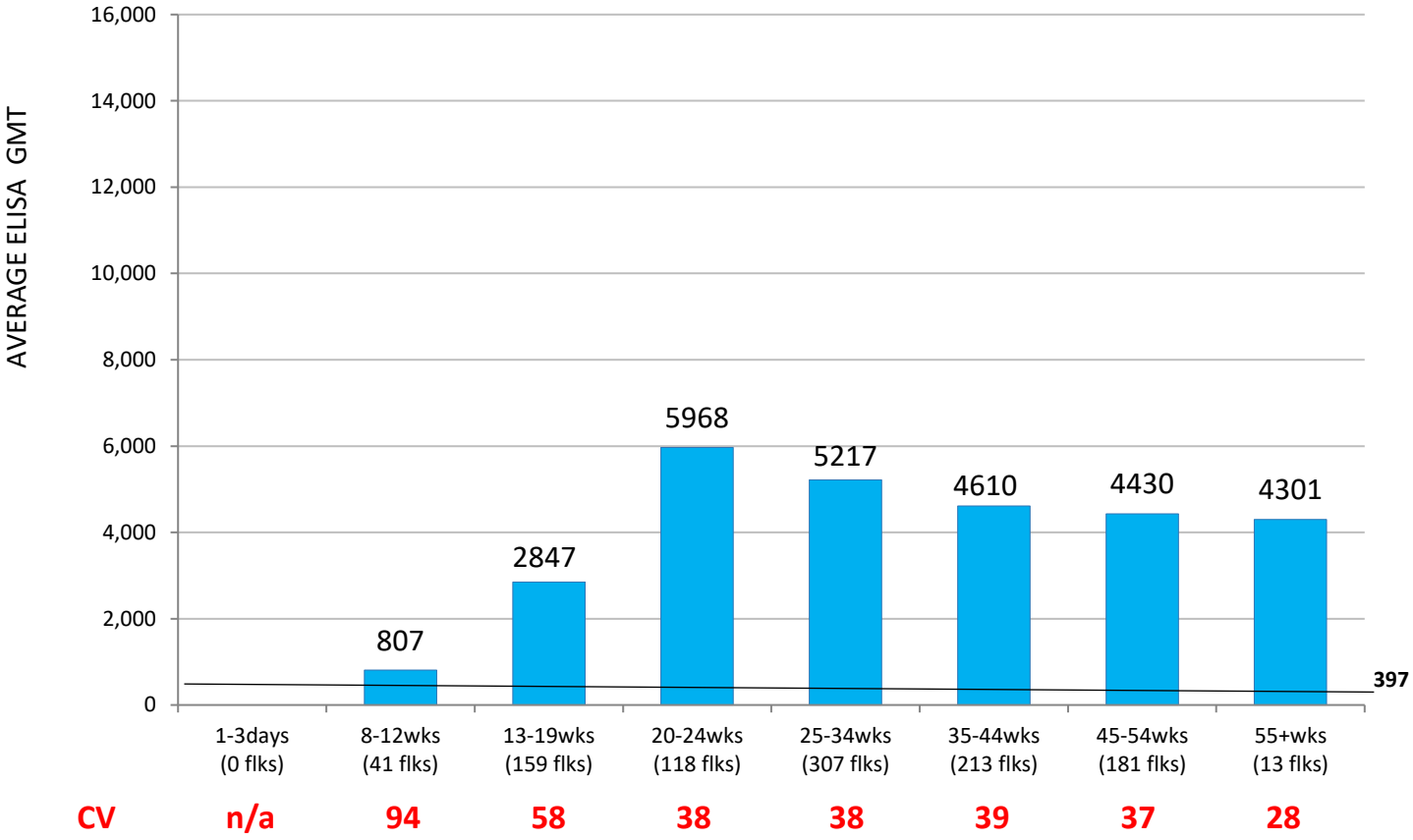


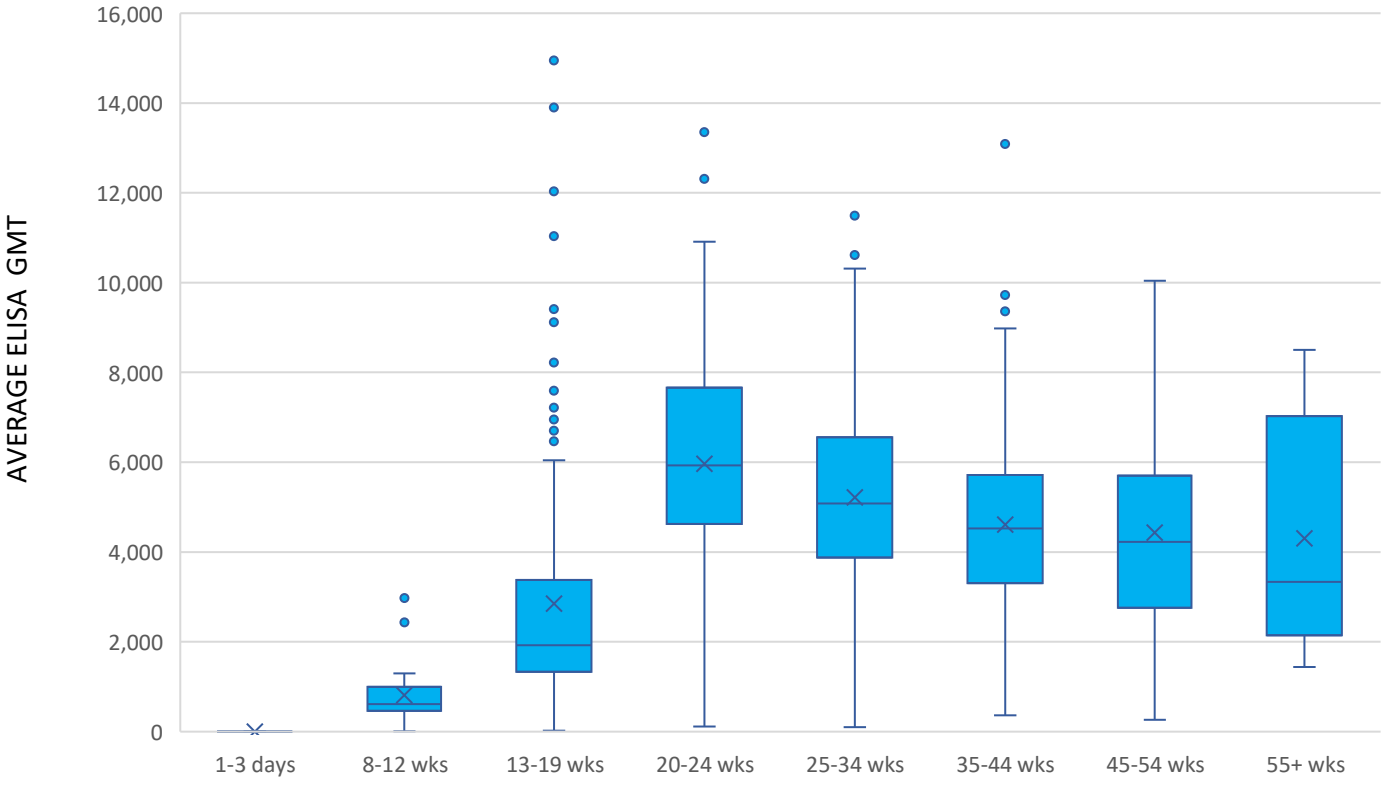
CV	n/a	105	80	n/a	75	74	85	63



Breeder NDV titers

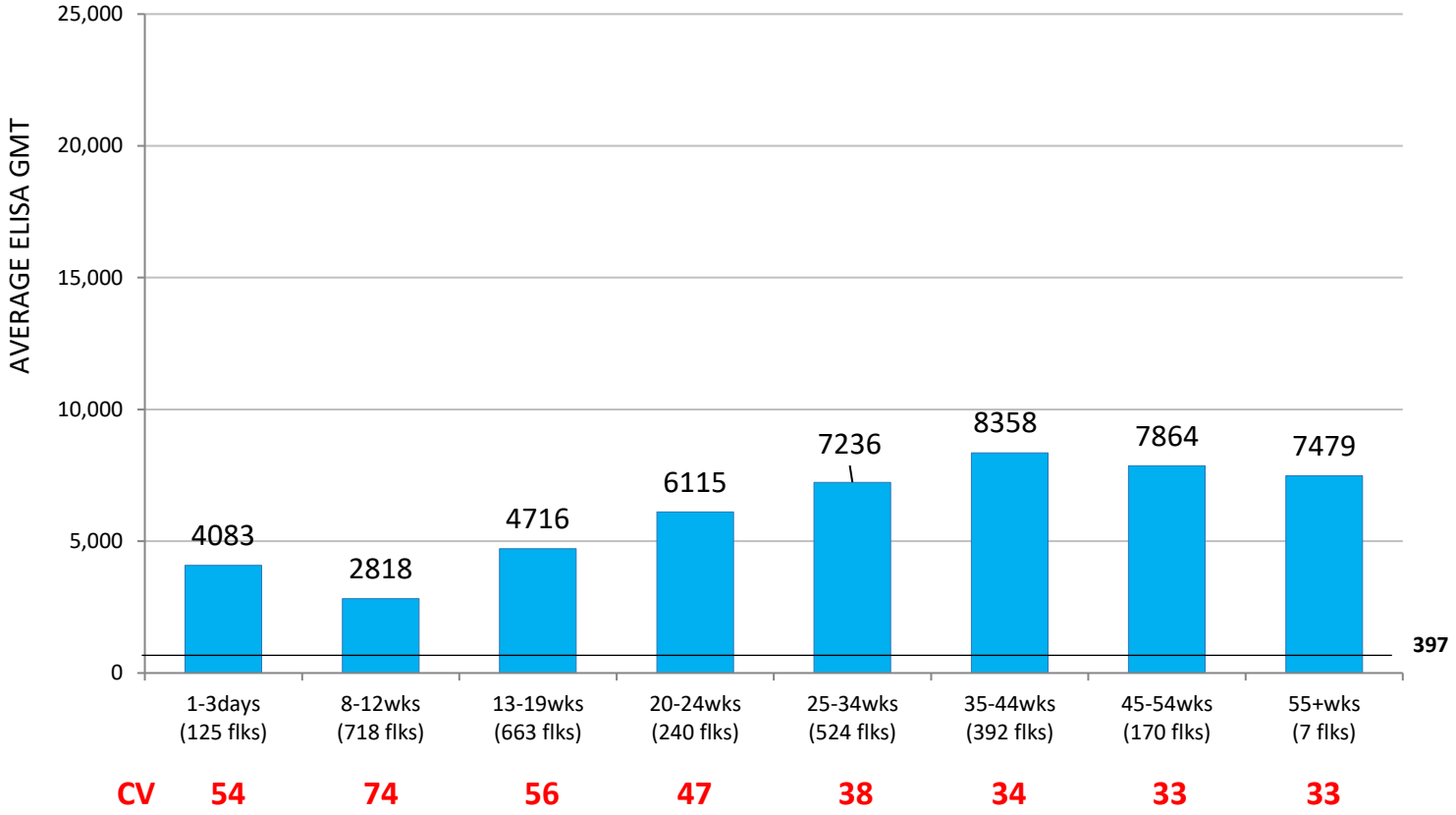
L-K Programs (Live and inactivated vaccines in pullets)

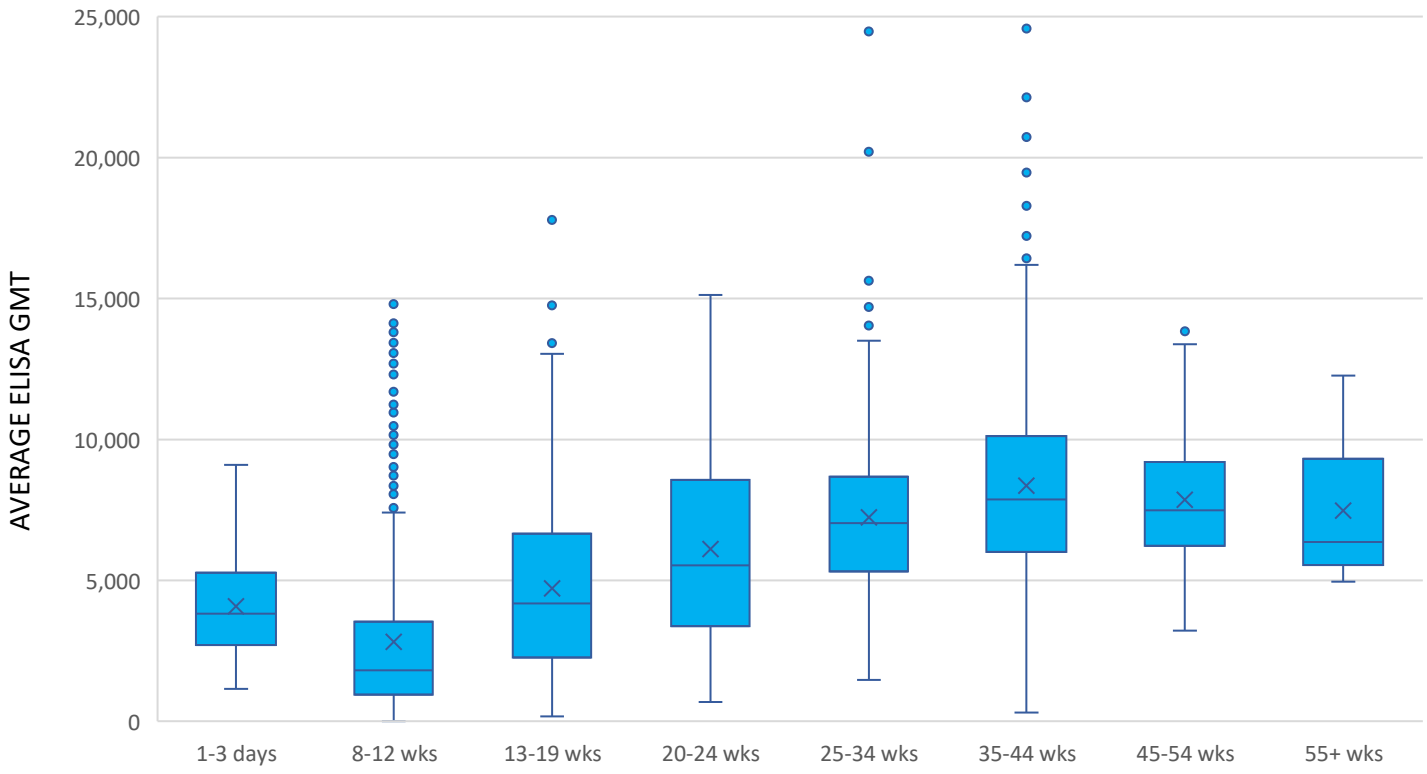




Breeder IBV titers

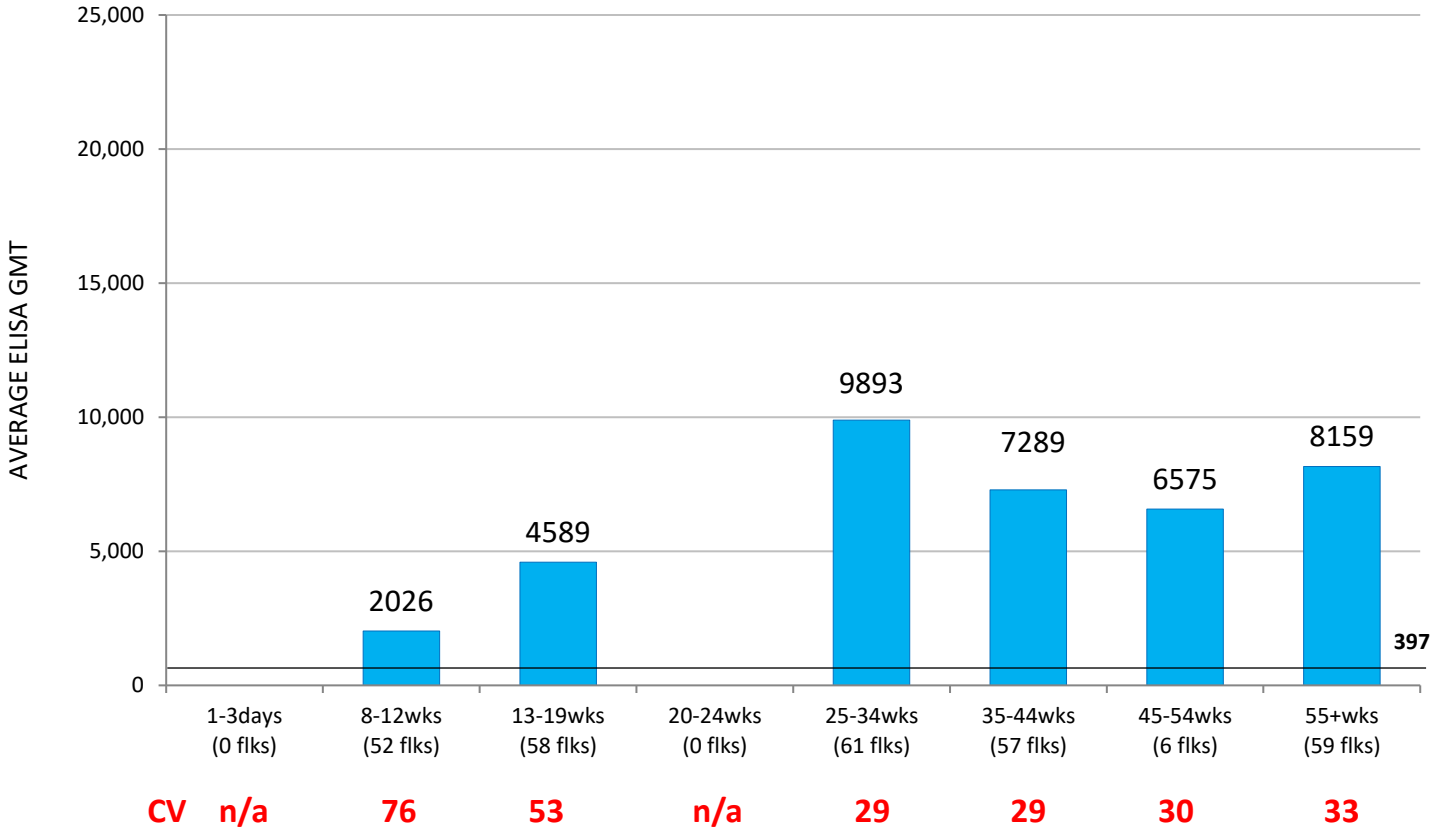
L-PO programs (Live vaccines in pullets only)

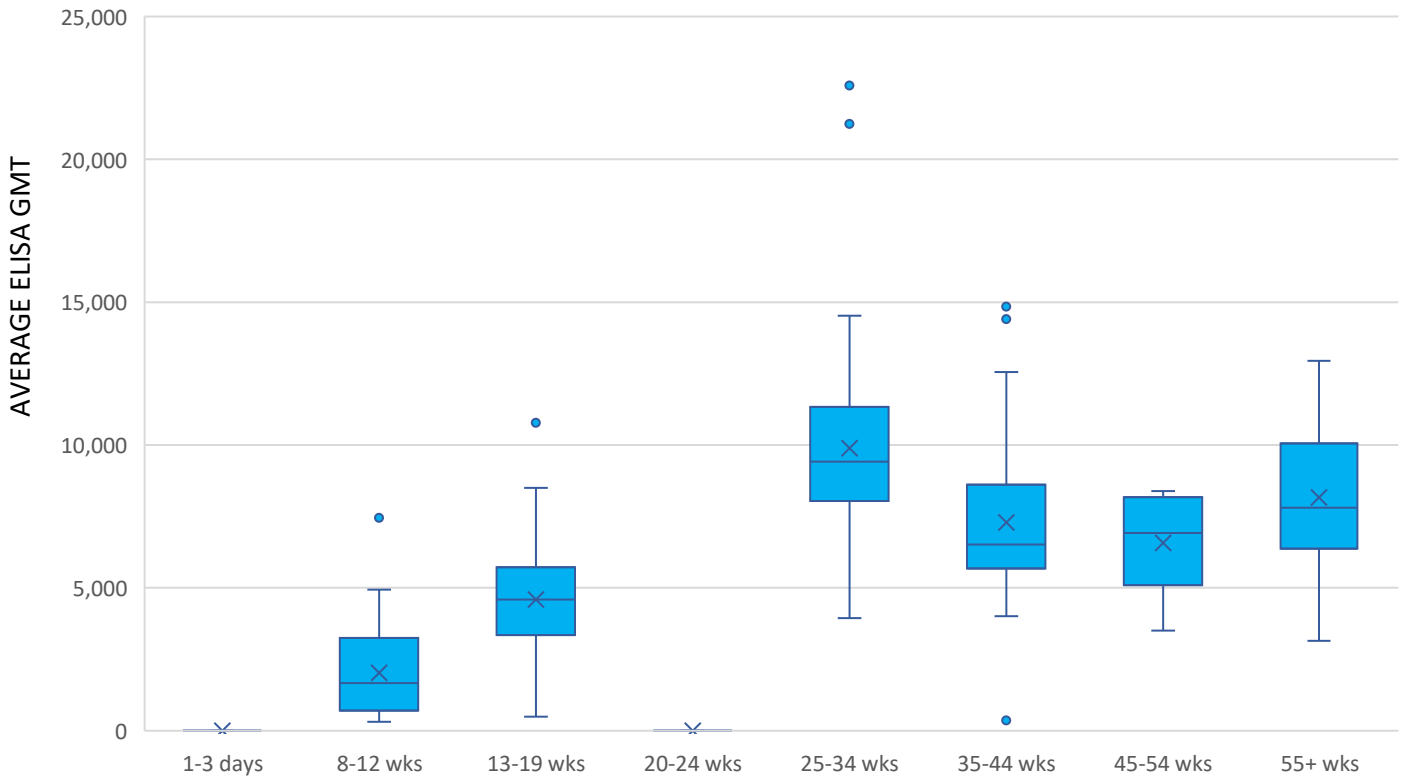




Breeder IBV titers

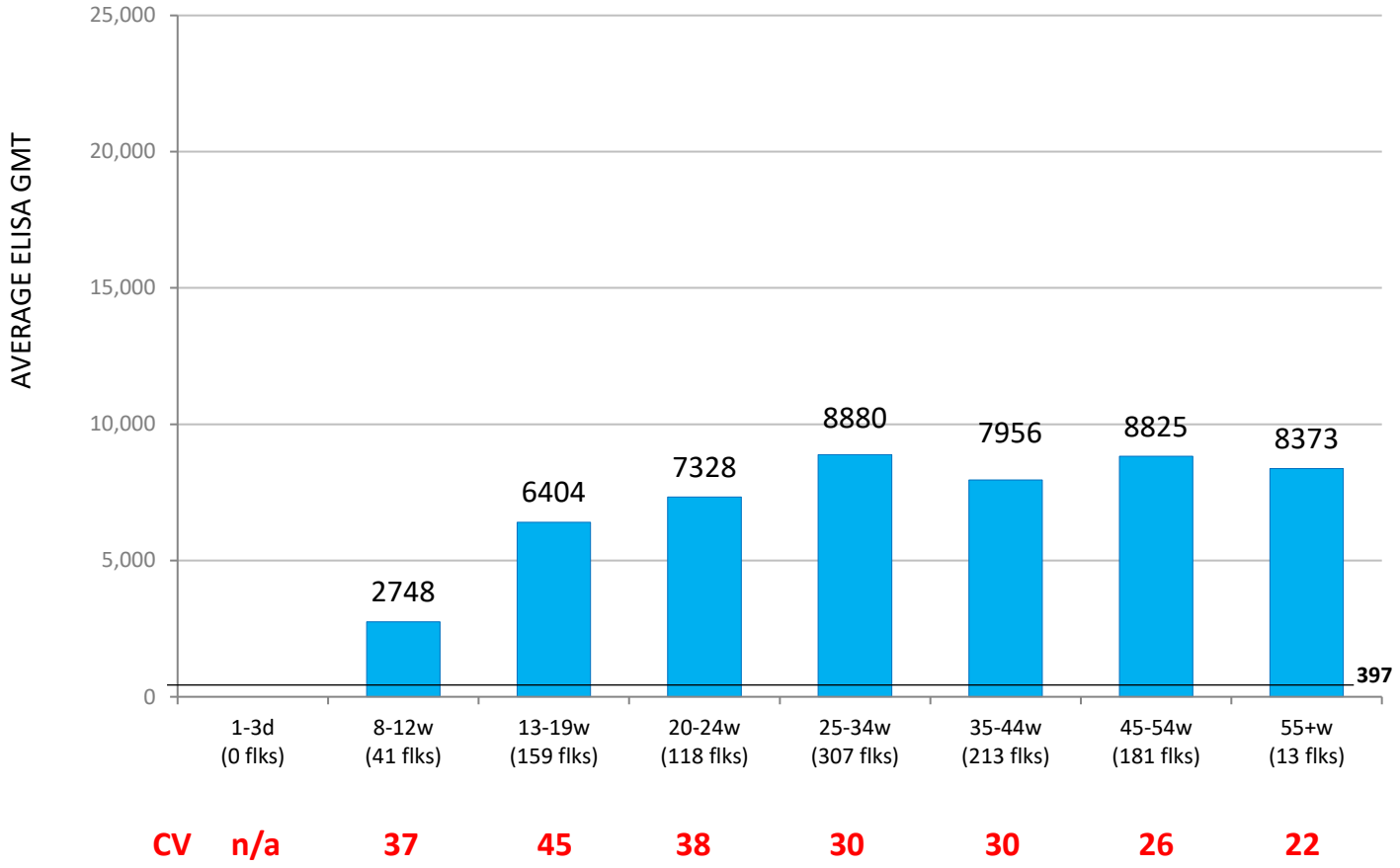
L-LP programs (Live vaccines in pullets and during production)

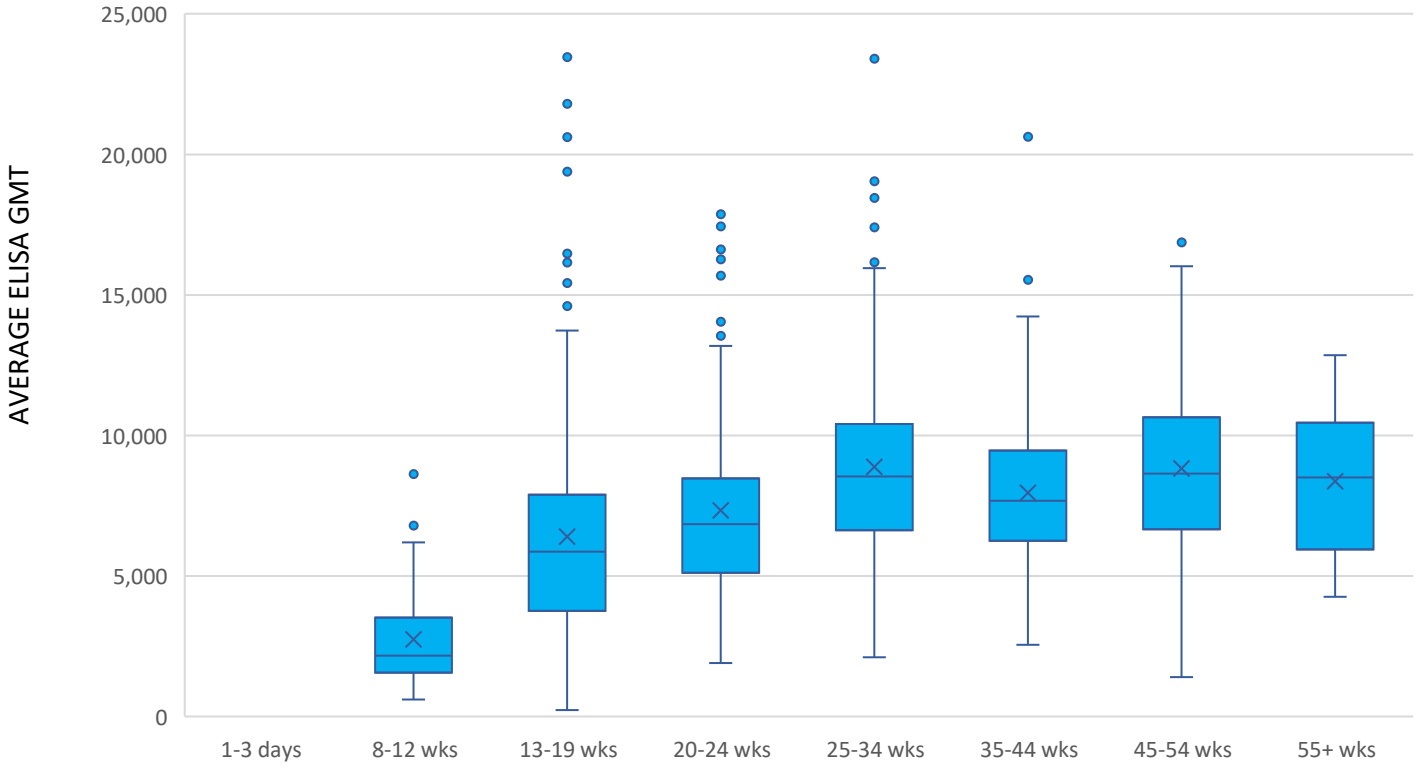




Broiler Breeder IBV titers

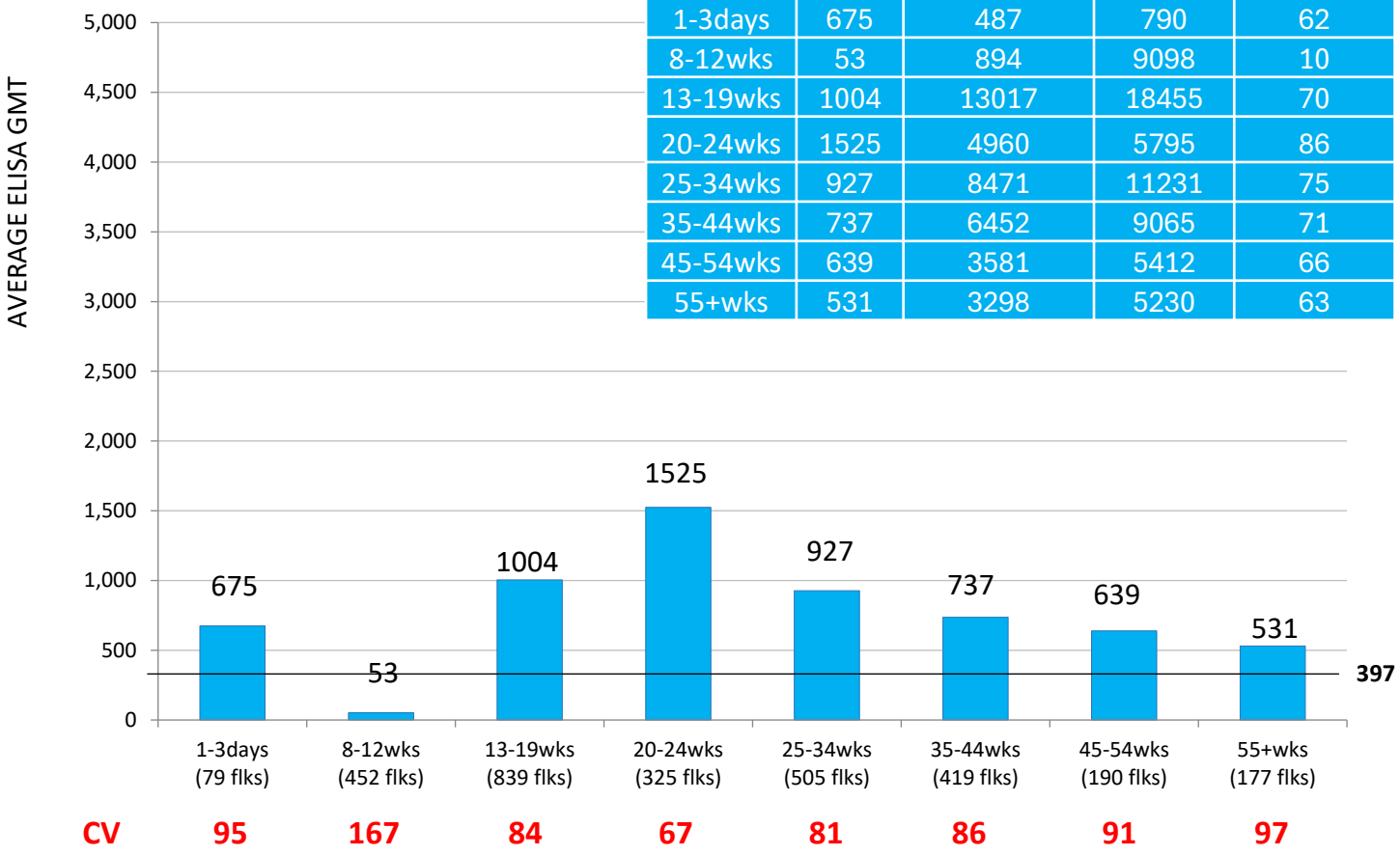
L-K programs (Live and inactivated vaccines in pullets)



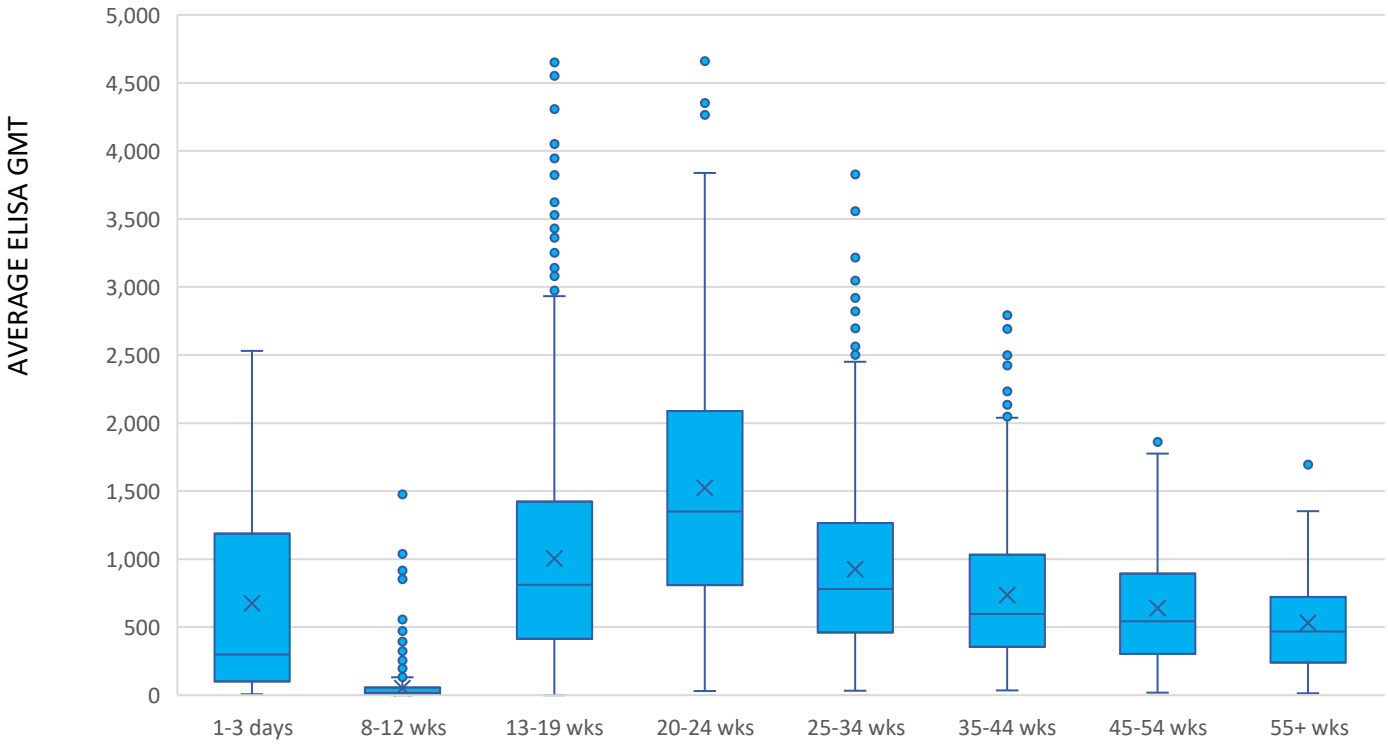


Broiler Breeder AE titers

Age Range	Avg GMT	#POSITIVES	# TESTED	% Positive
1-3days	675	487	790	62
8-12wks	53	894	9098	10
13-19wks	1004	13017	18455	70
20-24wks	1525	4960	5795	86
25-34wks	927	8471	11231	75
35-44wks	737	6452	9065	71
45-54wks	639	3581	5412	66
55+wks	531	3298	5230	63

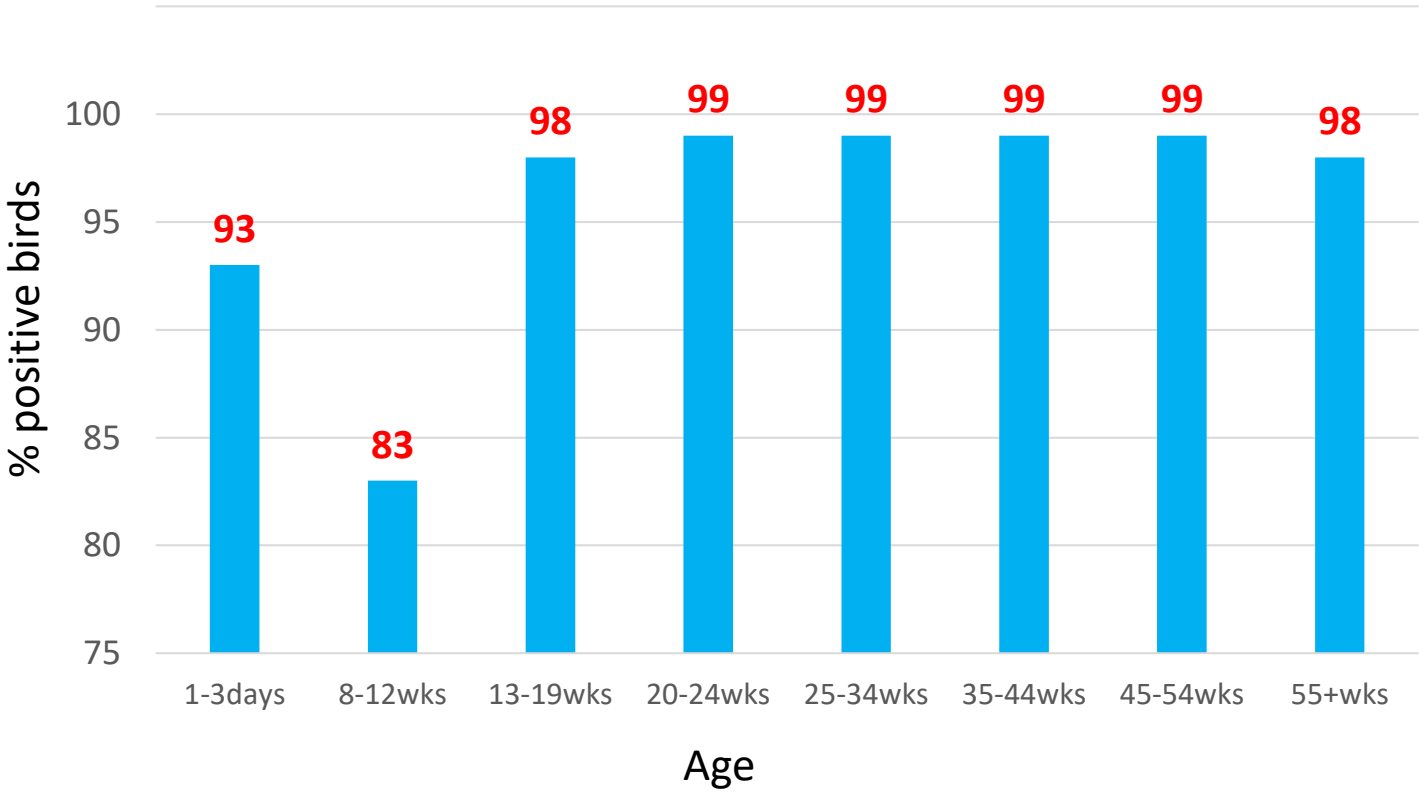


CV	95	167	84	67	81	86	91	97



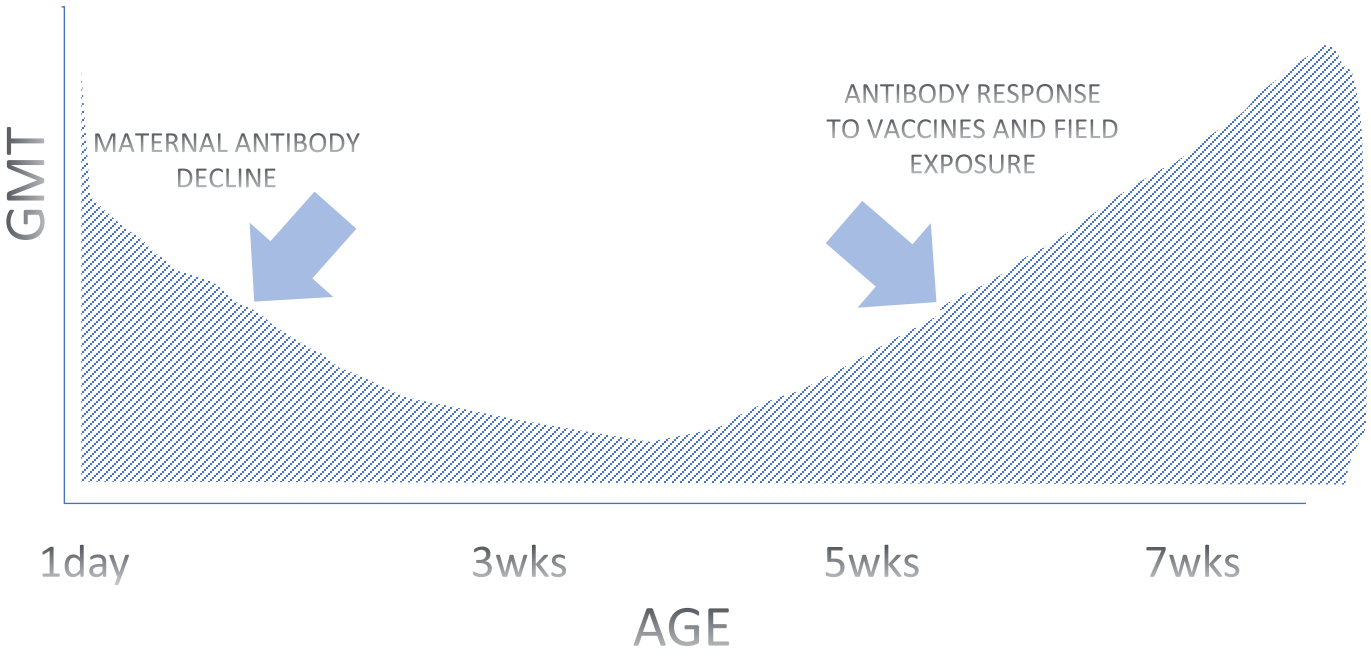
Broiler Breeder CAV % positive

Age	# Flocks	% POSITIVE BIRDS	CV
1-3days	131	93	97
8-12wks	529	83	94
13-19wks	1539	98	76
20-24wks	336	99	78
25-34wks	836	99	89
35-44wks	696	99	93
45-54wks	501	99	97
55+wks	279	98	117

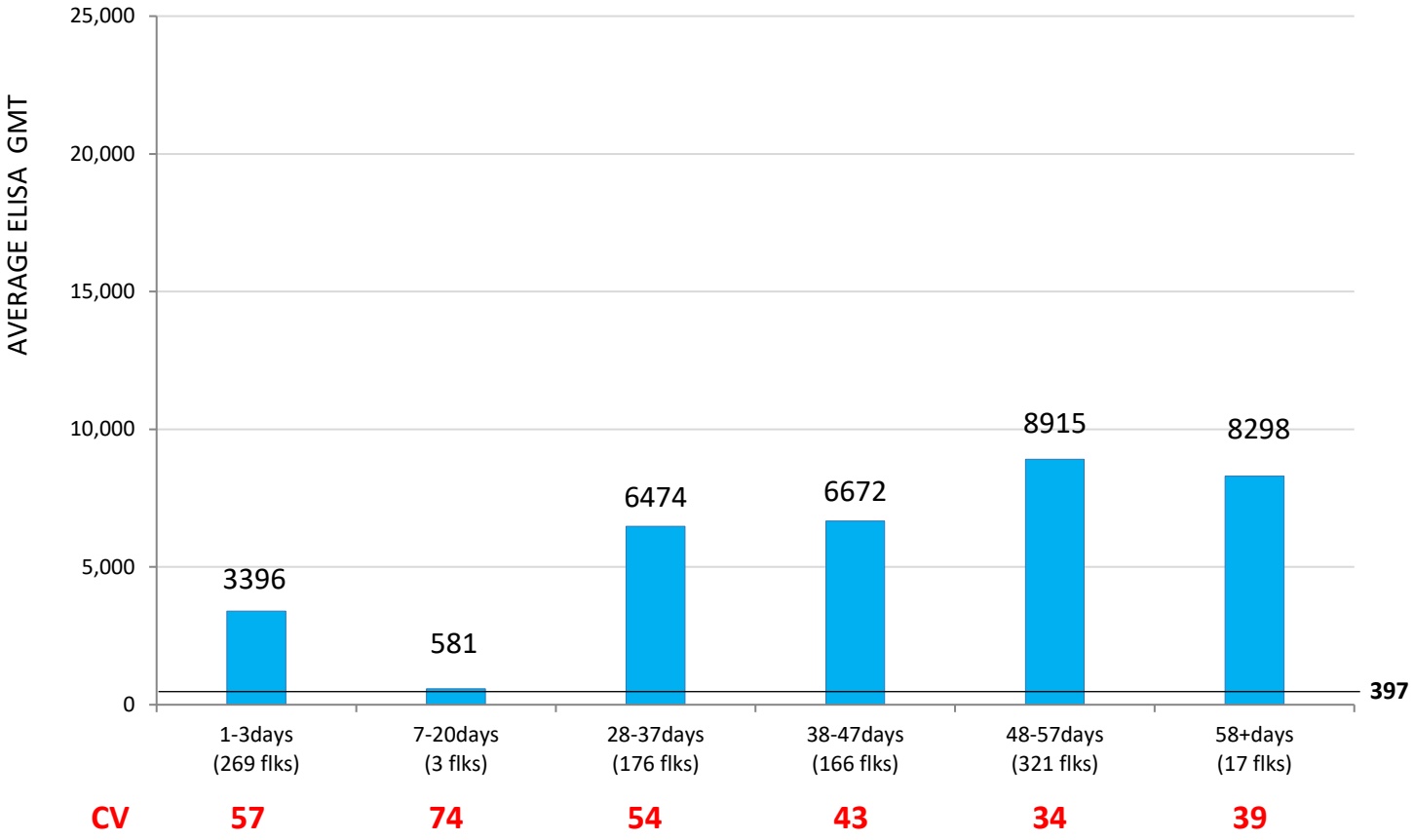


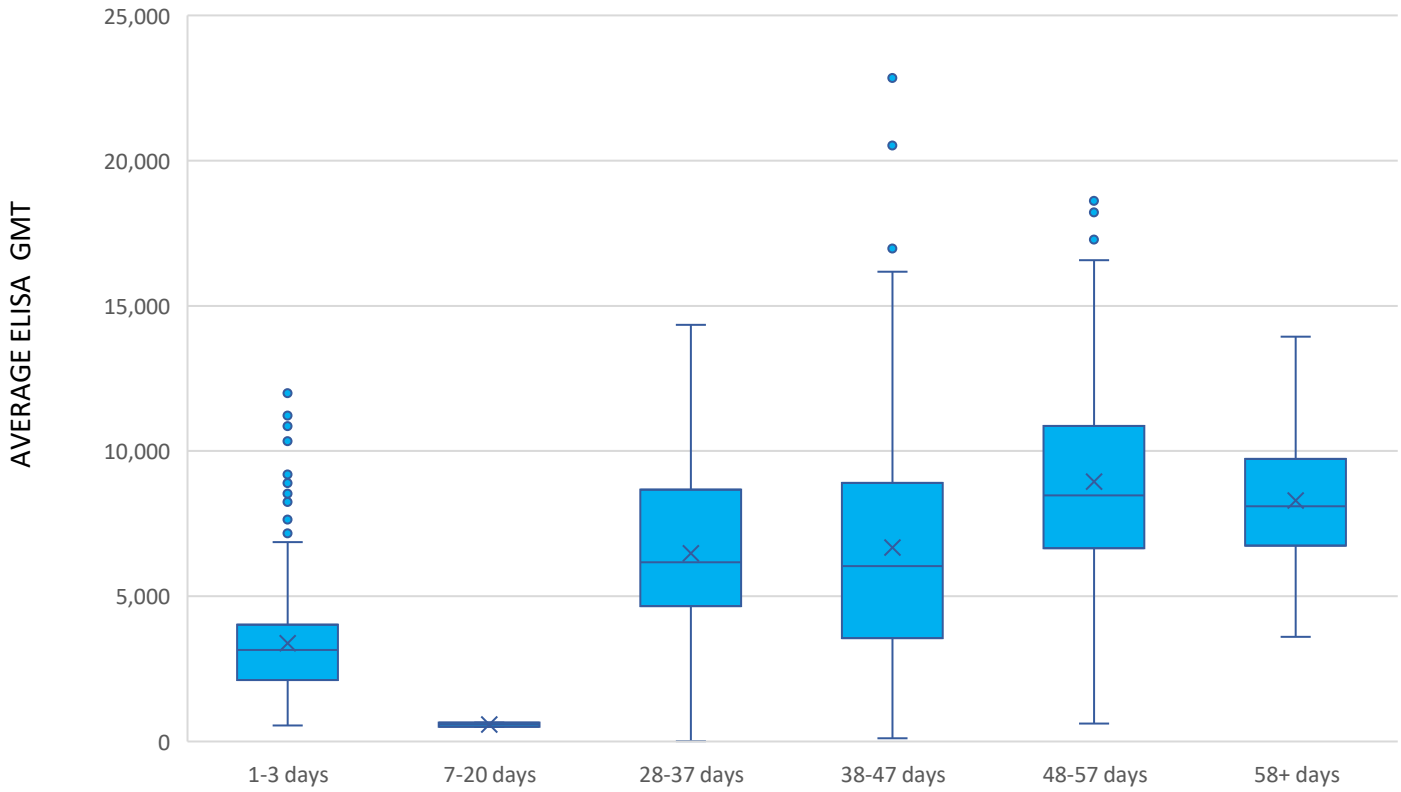
ELISA Titers in Broilers

- Age ranges are divided in 6 groups: 1-3 days, 7-20 days, 28-37 days, 38-47 days, 48-57 days and 58+ days.
- GPLN receives very few broiler samples between 7 and 27 days of age. This age range reflects the maternal antibody decline after hatching.
- After 27 days of age, the increase in titers is due to a combination of vaccine response and field exposure. See schematic below.
- The number of samples per flock in this series is 10 or greater.
- Note that the y-axis range of values are the same on the bar graph and on the boxplot found on the same page.

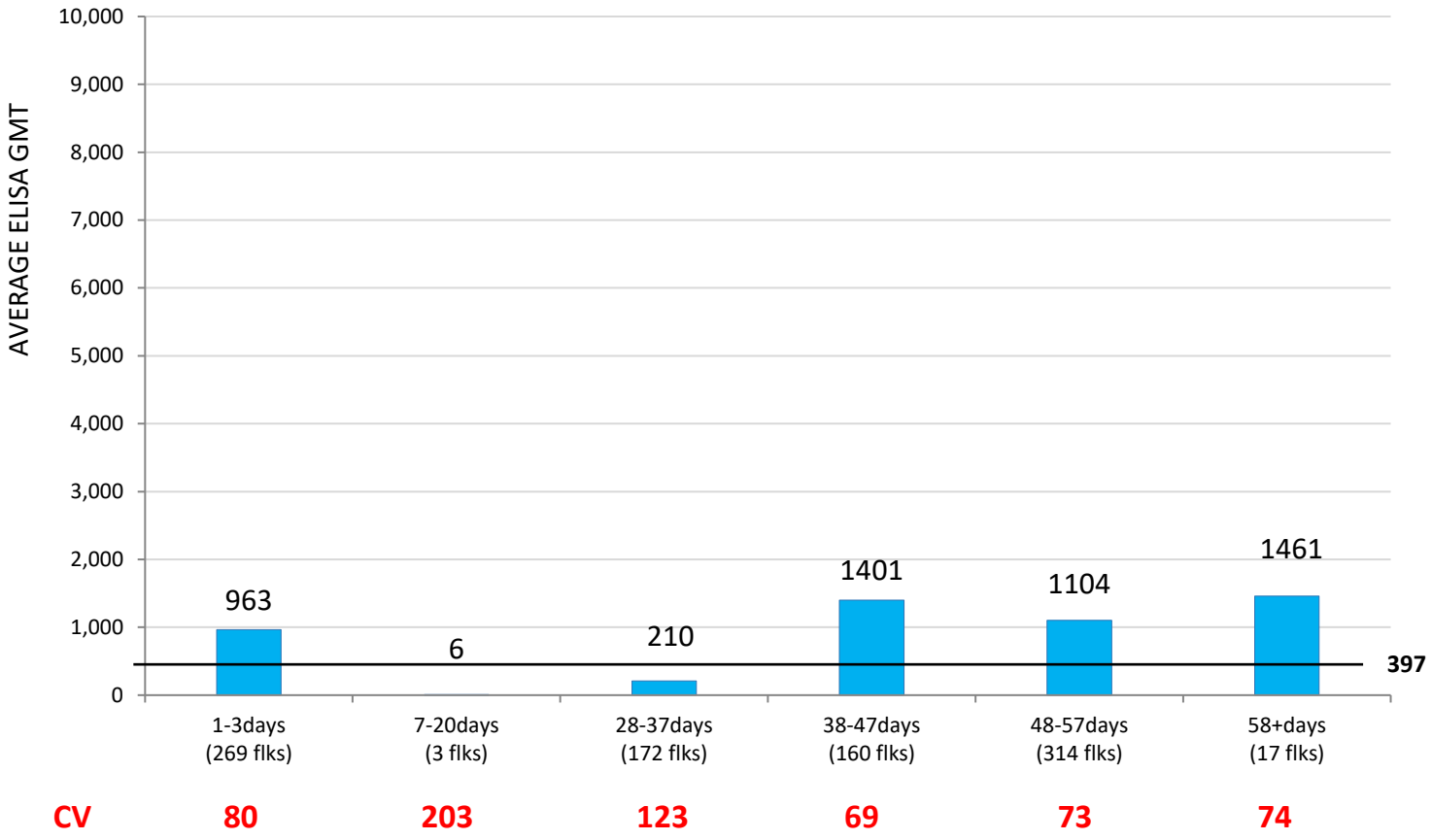


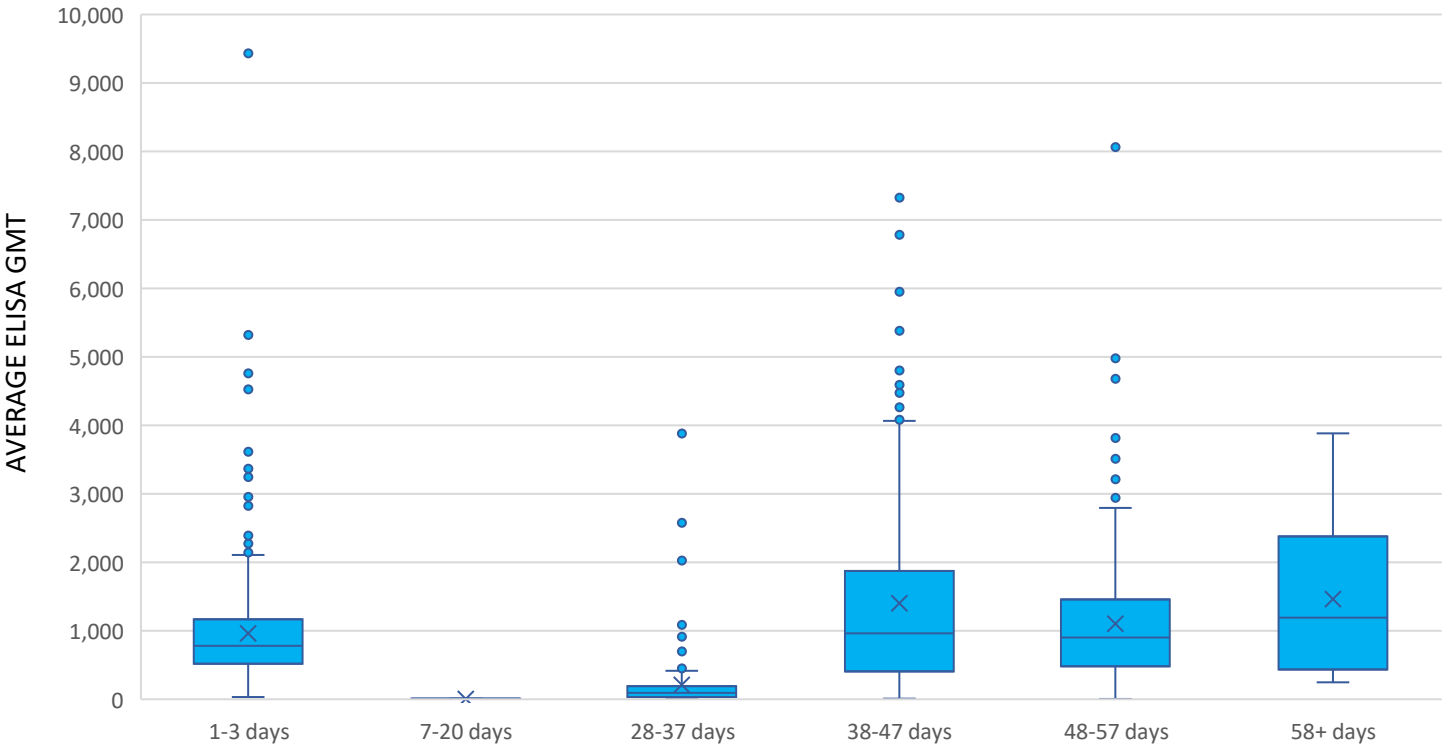
Broiler IBD-XR titers



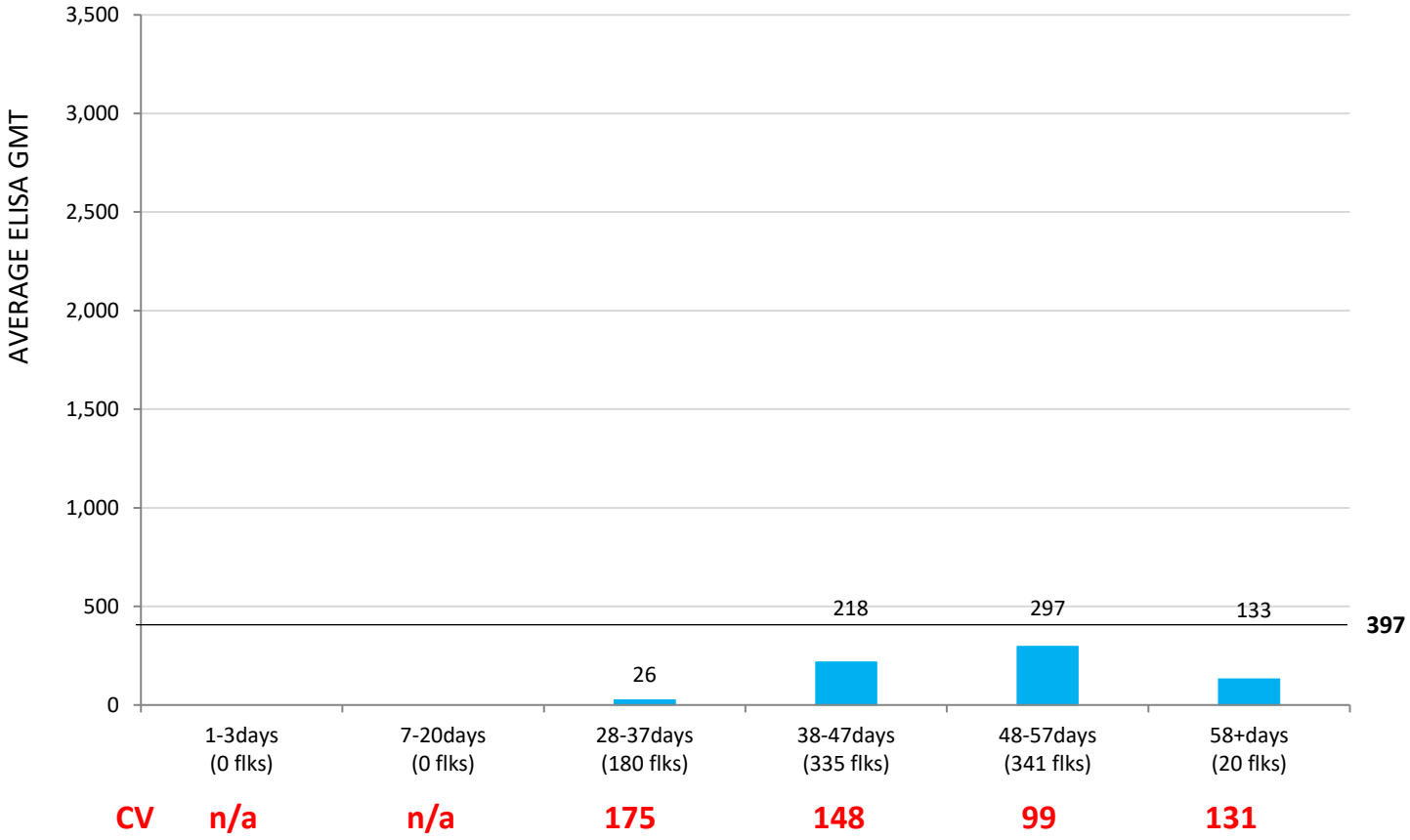


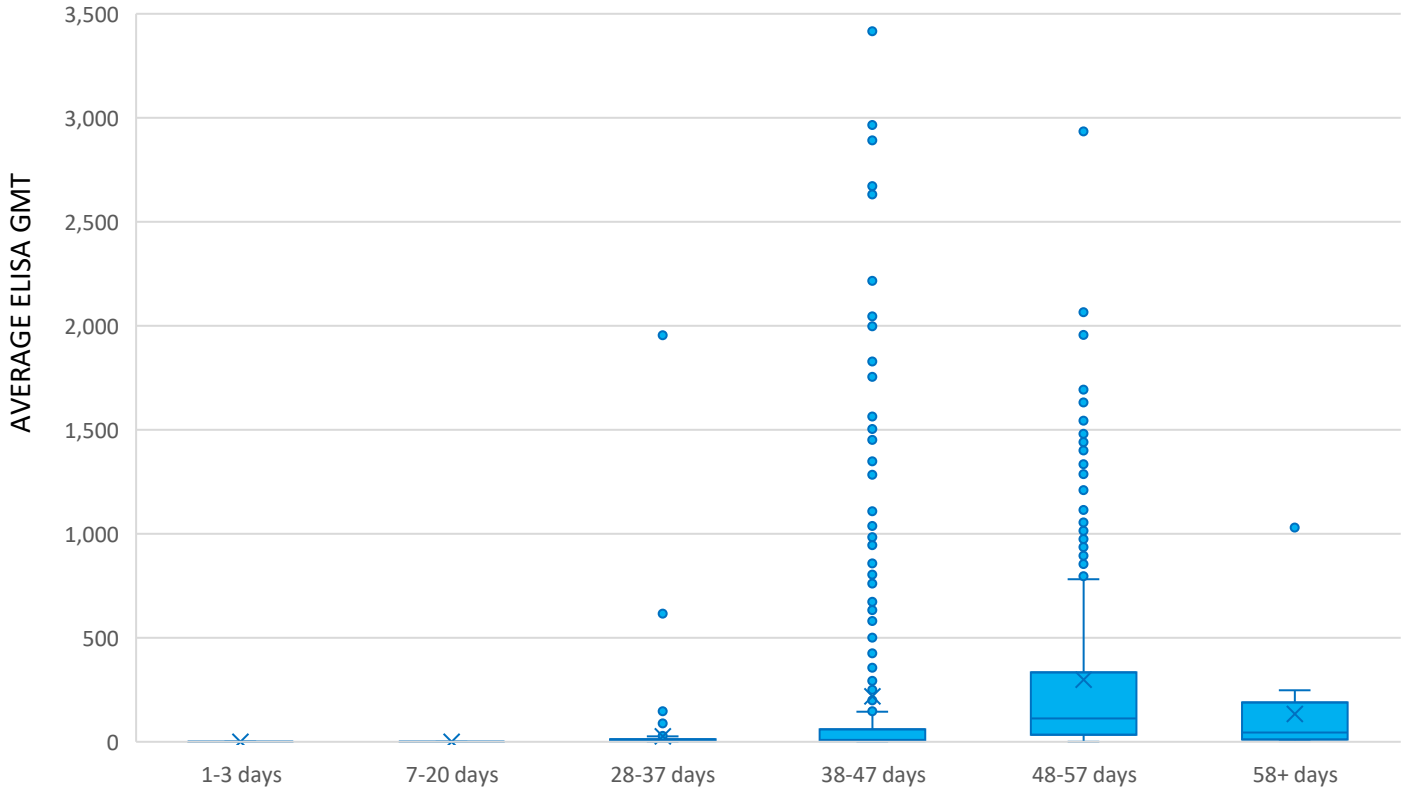
Broiler REO titers



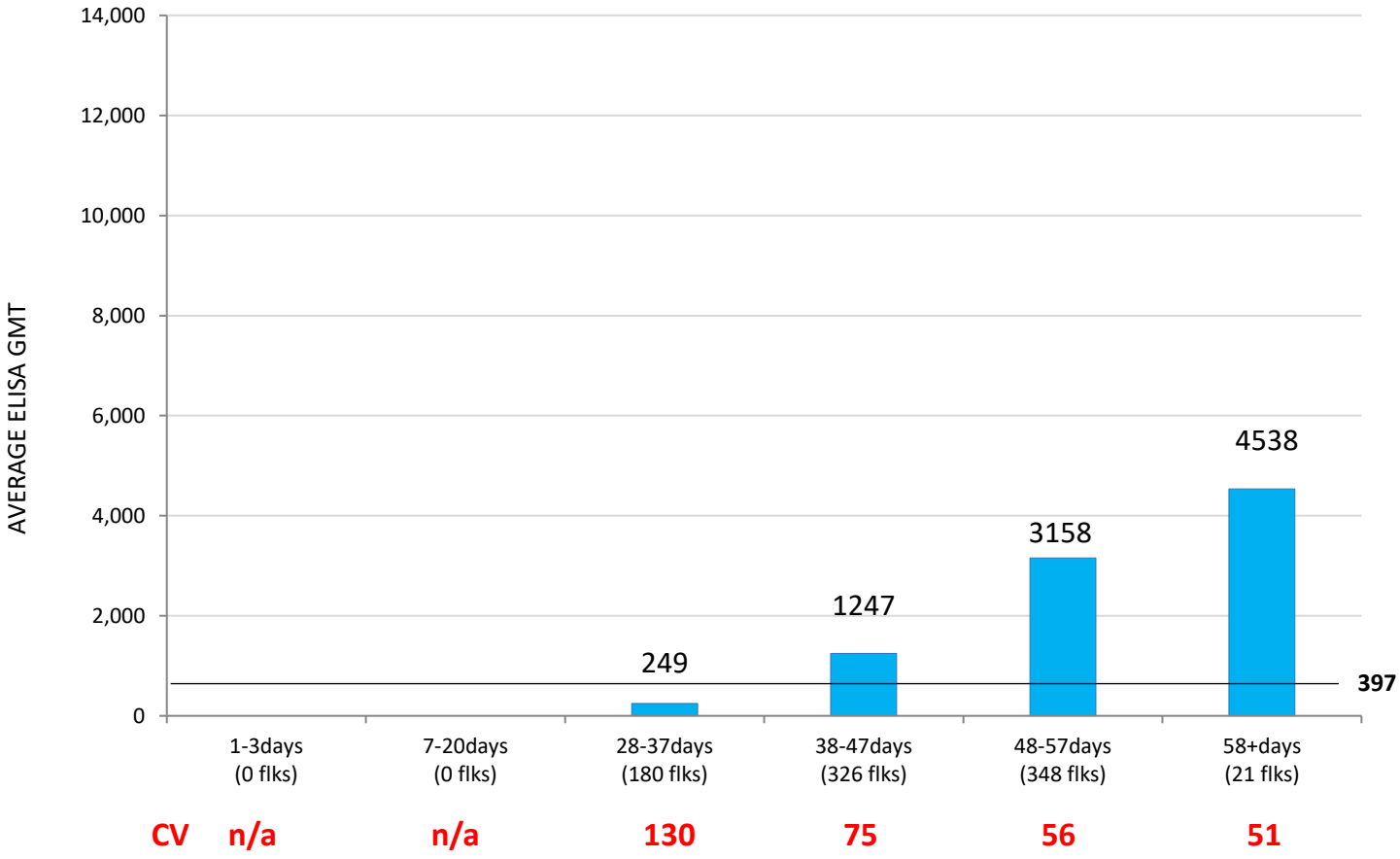


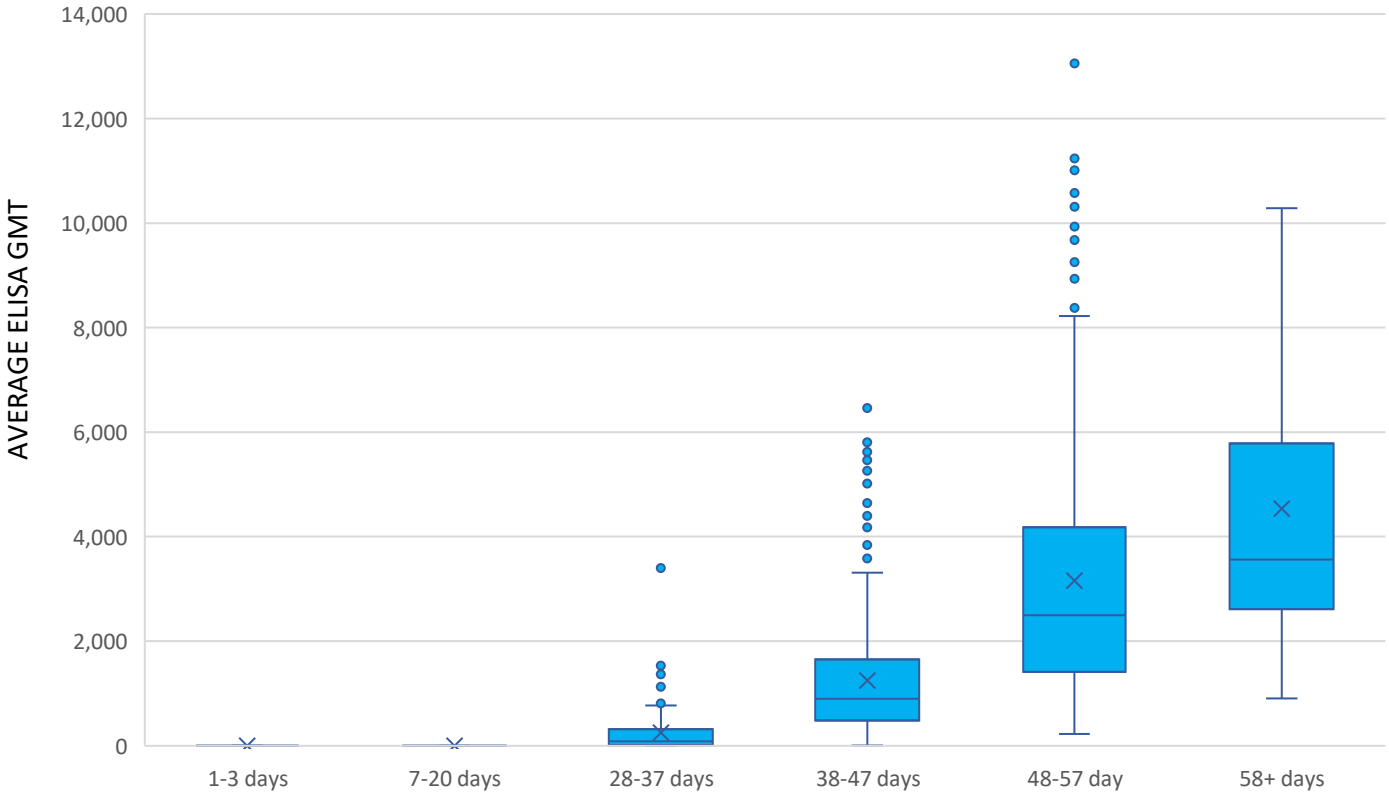
Broiler NDV titers





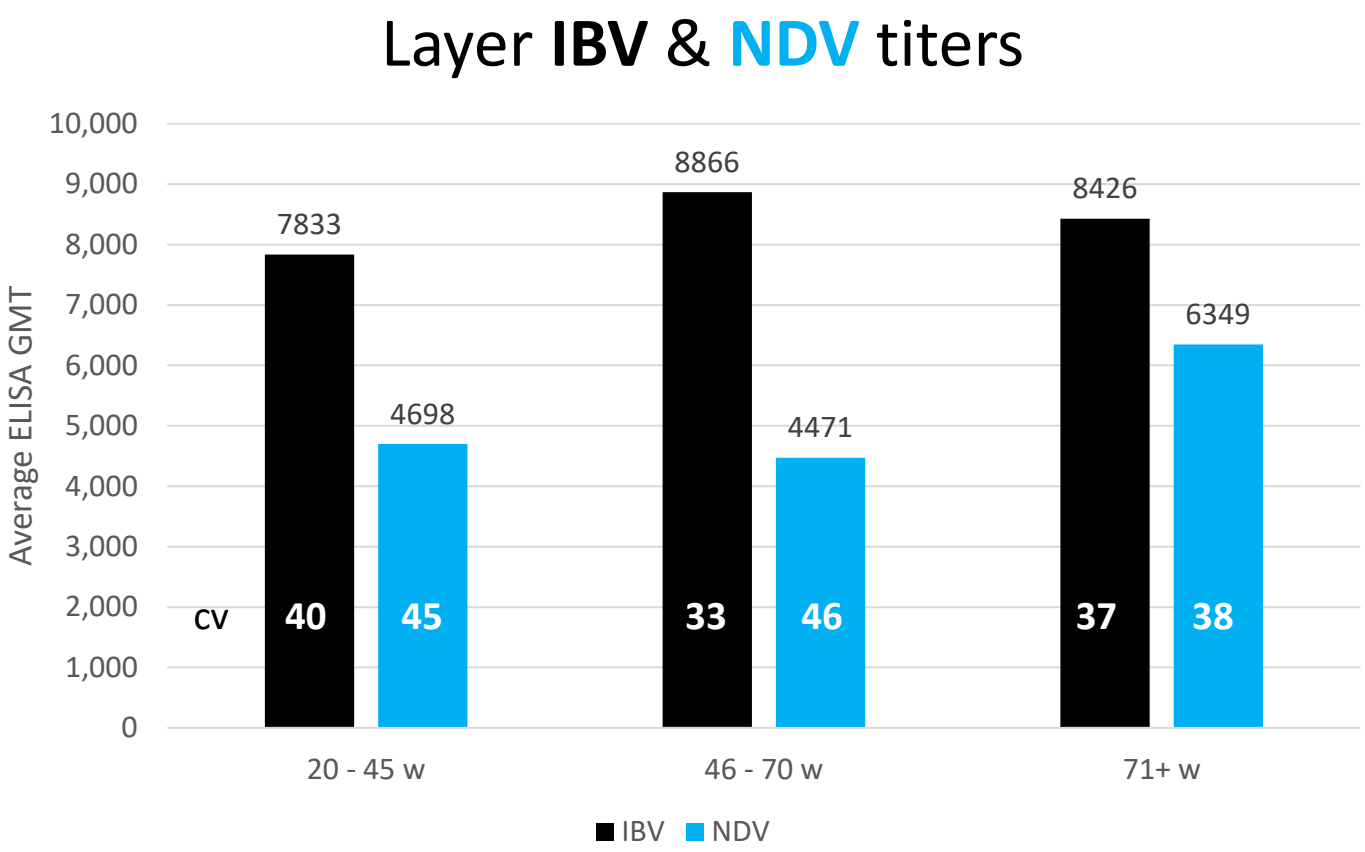
Broiler IBV titers





ELISA Titers in Commercial Layers

- Age ranges were kept the same as previous years.
- GPLN receives relatively few samples for vaccine monitoring from Georgia commercial layer flocks and Georgia commercial layer pullet flocks.
- The number of samples per flock in this series is 10 or greater.



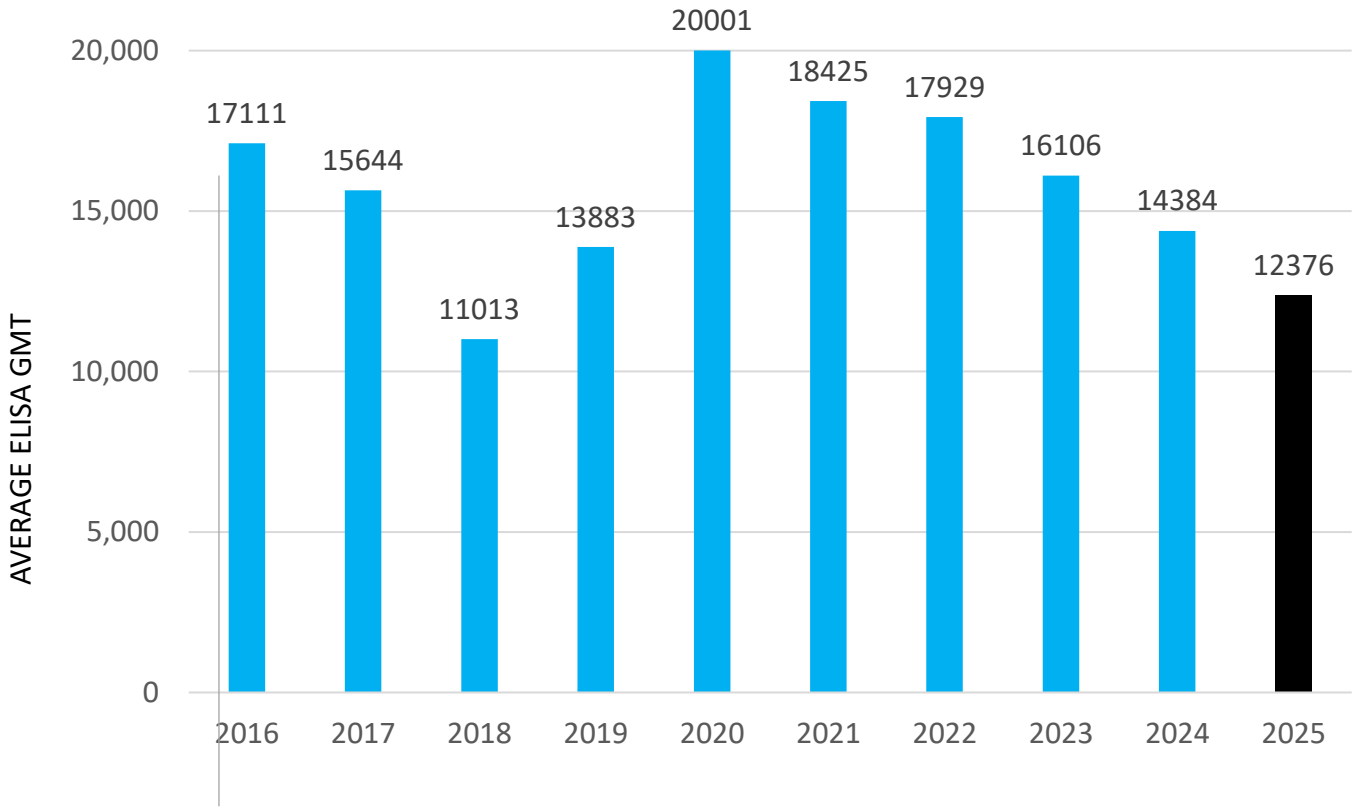
Number of flocks	**52**	**27**		**26**	**12**		**10**	**9**

Trending of ELISA Titers over Time

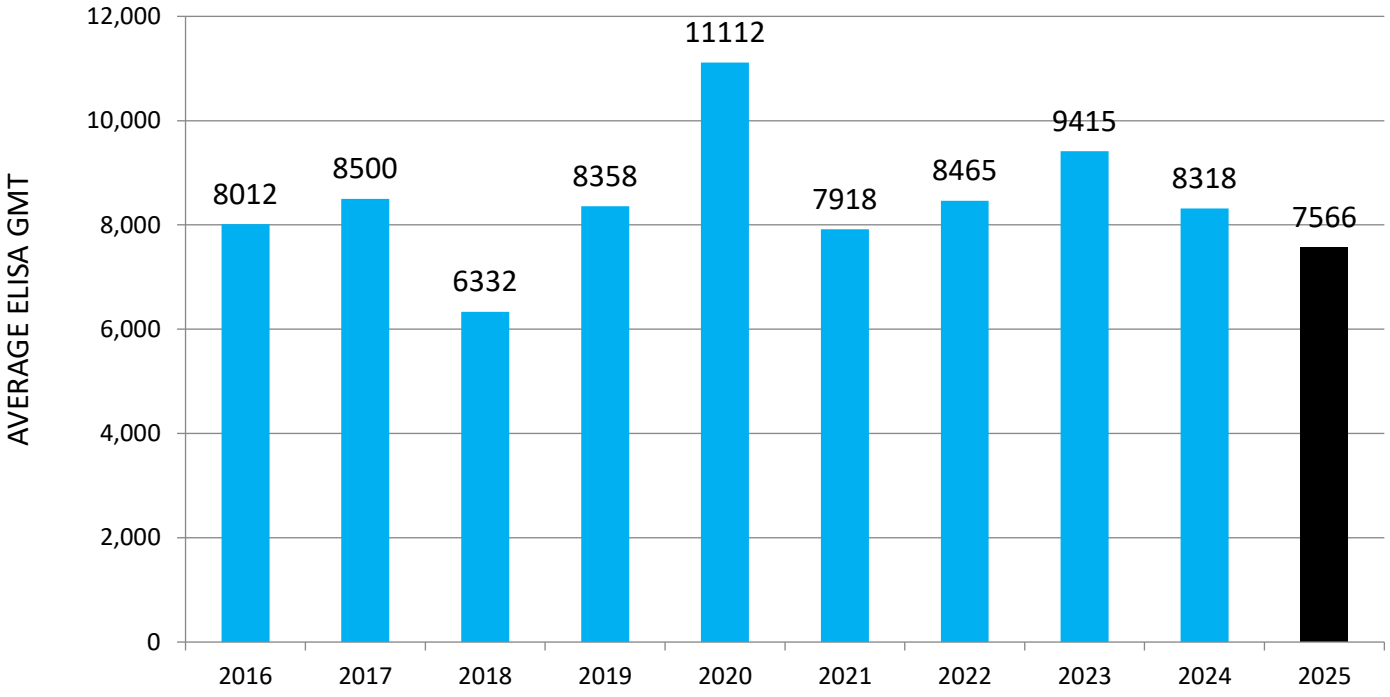
The following 5 graphs show trends over a 10-year period (**2016-2025**) for targeted agents and age ranges.

- Breeder IBD-XR titers at 22-26 wks of age should be at their maximum. For that reason, this is a very popular age range for testing. Different vaccines are more immunogenic than others, and vaccination programs change over time, so that data point is interesting to compare year to year.
- Breeder REO titers at 22-26 wks of age follow the same logic as IBD-XR titers. For REO, several companies use autogenous vaccines in addition to conventional ones, bringing the total number of REO inactivated vaccine injections to 3 or 4 in some cases.
- Breeder flocks are expected to seroconvert to AE before they start production. At 20-24 wks, all birds and flocks should be positive and show their peak vaccine titers.
- Broiler processing age REO titers are mostly an indication of REO field exposure, and so are broiler processing age IBV titers.

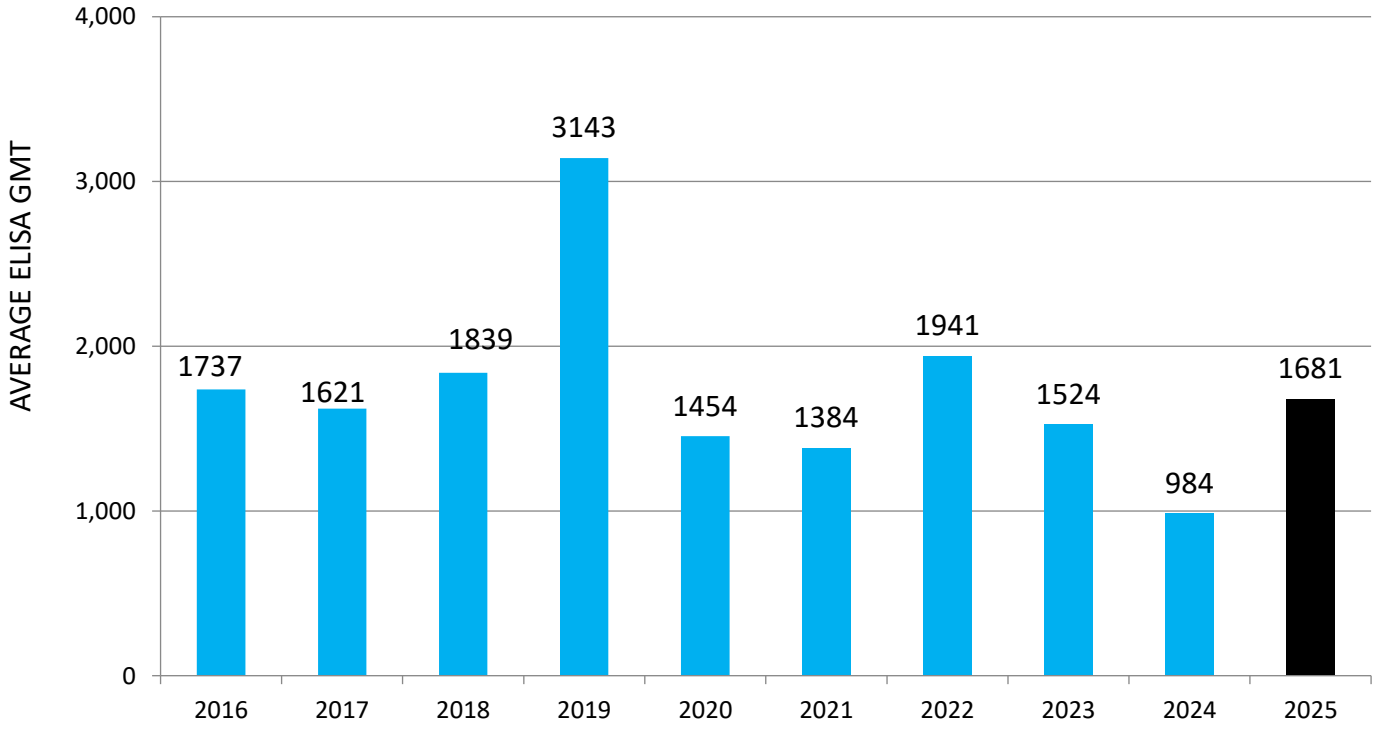
GA 22-26wks **IBD-XR** titers in Breeders over time



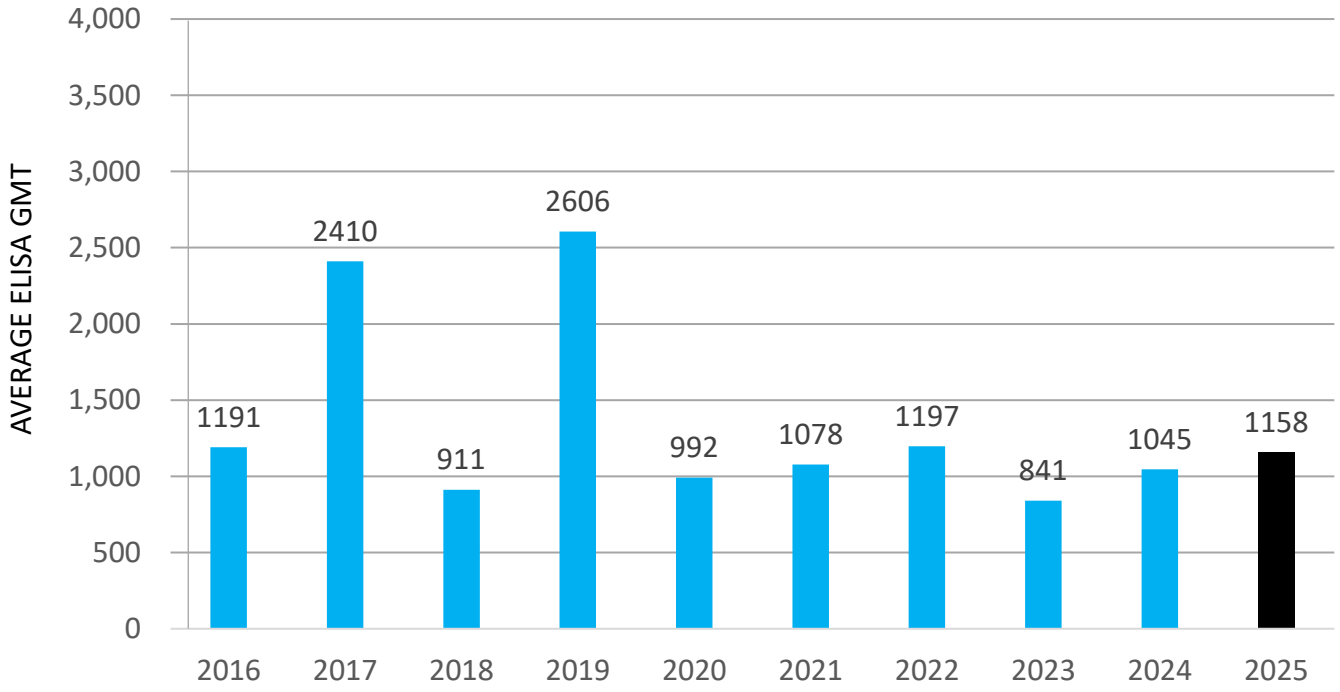
GA 22-26wks **REO** titers in Breeders over time



GA 20-24wks **AE** titers in Breeders over time



GA Processing Age (35+ days) REO titers in Broilers over time



GA Processing Age (35+ days) IBV titers in Broilers over time