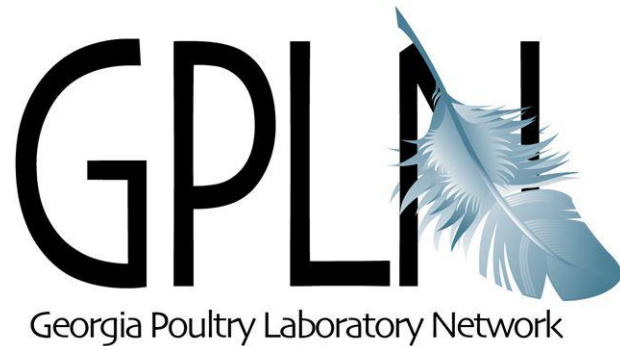


# ELISA Titers in Georgia Poultry



2020-2021

# ELISA Titers in Georgia Poultry

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Every year, GPLN aggregates biennial ELISA titers by poultry production type and age ranges covering the data from the previous 2 years. This report summarizes the 2020 and 2021 data.

## General Comments:

- This report only includes flocks from Georgia complexes.
- The poultry industry monitors flocks for the presence/absence of disease and for vaccination monitoring. Included in this report are monitored flocks only. No diagnostic case data is included in this report.
- All flock results are verified. They have valid 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.
- All data is in the graphs, regardless of the number of flocks represented. The number of flocks represented for each data point is between parentheses next to the age range on the x axis. Please note that a few data points represent only 1 or 2 flocks. The last 5 graphs of this report show yearly trends for IBV, REO, AE and IBD for critical age ranges in breeder and broilers.

# ELISA Titers in Georgia Poultry

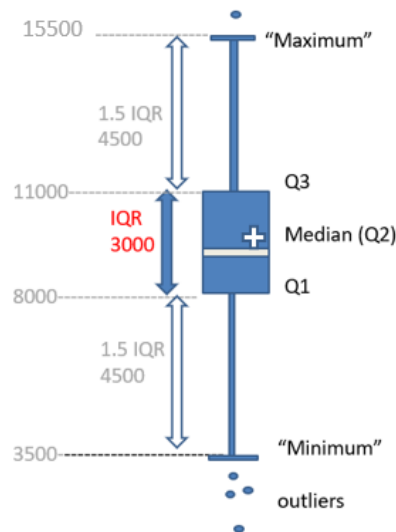
## BAR GRAPHS:

- Each bar represents the average GMT of all flocks in the data base for that bird type and age range.
- The cv is the average of all coefficients of variation for all flocks in the data base for that bird type and age range. The cv data is located under the x axis.
- The positive cutoff for an individual bird sample on the graph is a horizontal line (as a reference).
- The last 5 graphs on this report show yearly trends (one year, not two) for IBV, REO, AR and IBD for critical age ranges in breeders and broilers.

## NEW ON THIS REPORT: BOX PLOTS

- We are introducing box plots to display the data to get 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 GA Poultry

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## Uses:

- 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.
- Students can use this report to compare what is theoretically expected of flock responses to vaccination and field exposure versus what is observed from Georgia flocks.
- The GA baselines should not be expected to reflect titers found in other areas of the US or in other countries.

*Thanks to Brenda Glidewell, Anita Hamrick, Len Chappell, Roy Berghaus, Lydia Atherton, Dave Fernandez, Luis Gomez and Guillermo Zavala for their input with the box plots.*

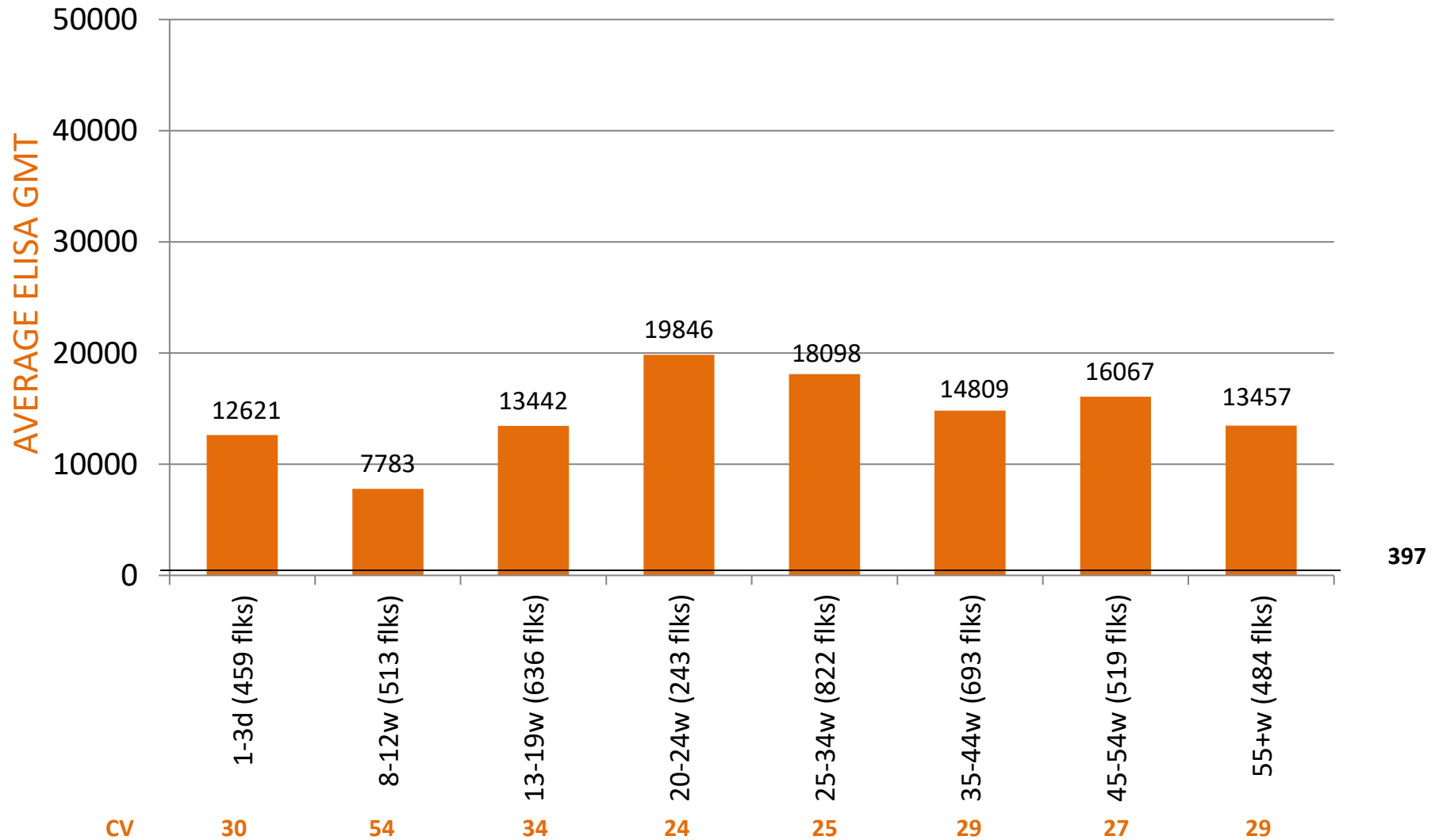


# ELISA Titers in Broiler Breeders

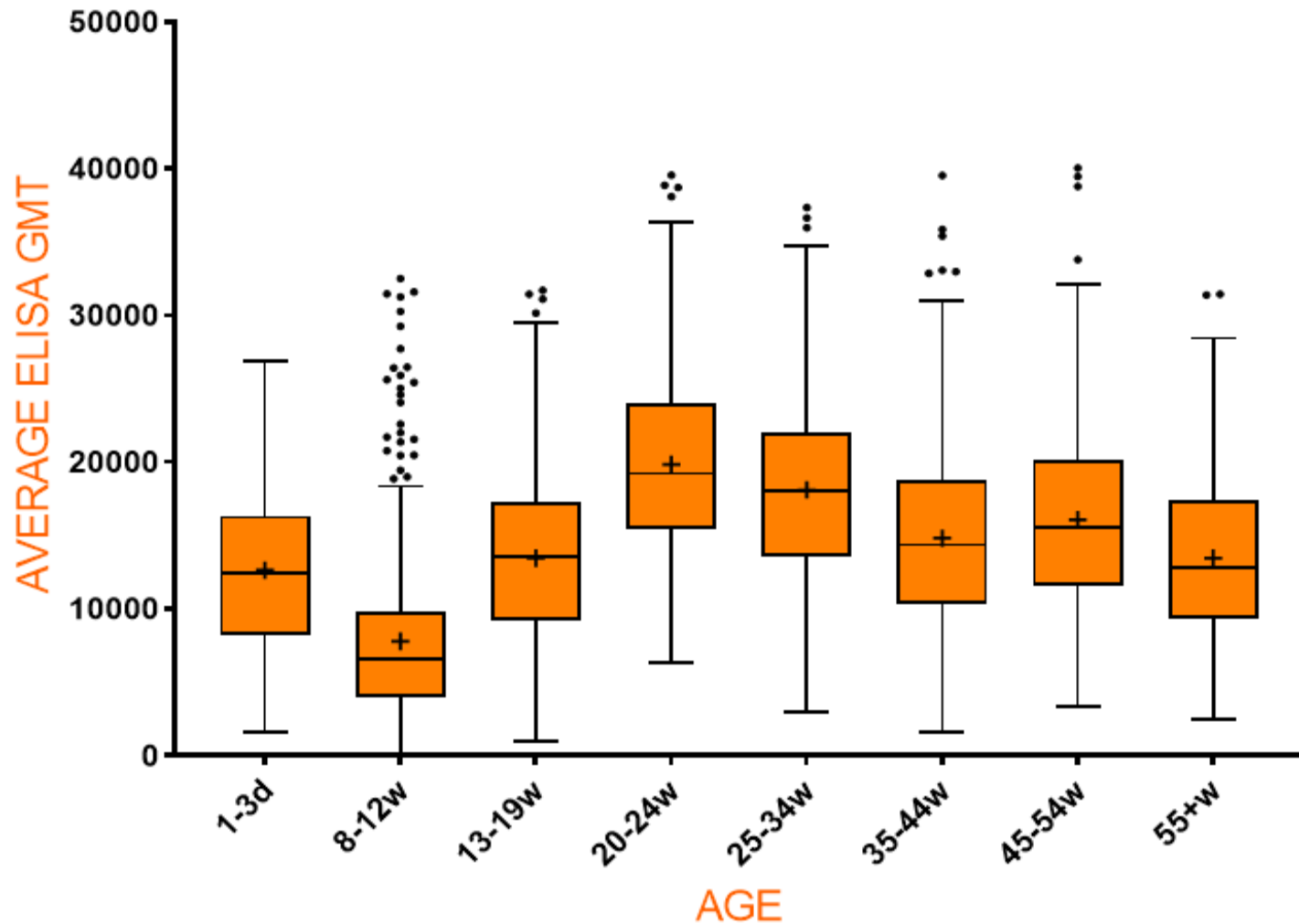
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- Age ranges are the same as for the last report. They fit the functional ages in the life of a breeder and better fit the timing of the vaccination responses as explained below.
  - *1d represents the level of maternal antibodies in day old pullets and cockerels coming from the grandparents.*
  - *GPLN does not receive any samples from young pullet flocks between 1 and 8 weeks of age. During that period of time, 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.*
  - *8-12w represents the response to the natural exposure in pullets, as well as all the vaccination with live primers.*
  - *13-19w represents the response to the natural exposure in pullets, as well as all the vaccinations with live primers and the first inactivated vaccination, given at 11-12 weeks of age.*
  - *20-24w represents the response to the natural exposure in pullets, as well as all the vaccinations with live primers and the first inactivated vaccination, given at 11-12 weeks of age plus the second inactivated vaccination given at 18 weeks of age.*
  - *The rest of the life of breeder flocks was split in 10-week increments (instead of 5 weeks on previous reports) for larger sample sizes and smoother trend curves.*
- All complexes represented in this report are vaccinating their pullets twice with inactivated vaccines.
- The breeder NDV and IBV data was split between 1. companies that only vaccinate pullets with live vaccines (L-O), 2. those that vaccinate the breeders in production with live vaccines (L-L), and 3. those that use live vaccines followed by inactivated vaccines in pullets (L-K).
- The CAV and AE data are now presented in tabular form and the % positive birds are included in the tables.
- The number of samples per flock in this series is 12 or greater.

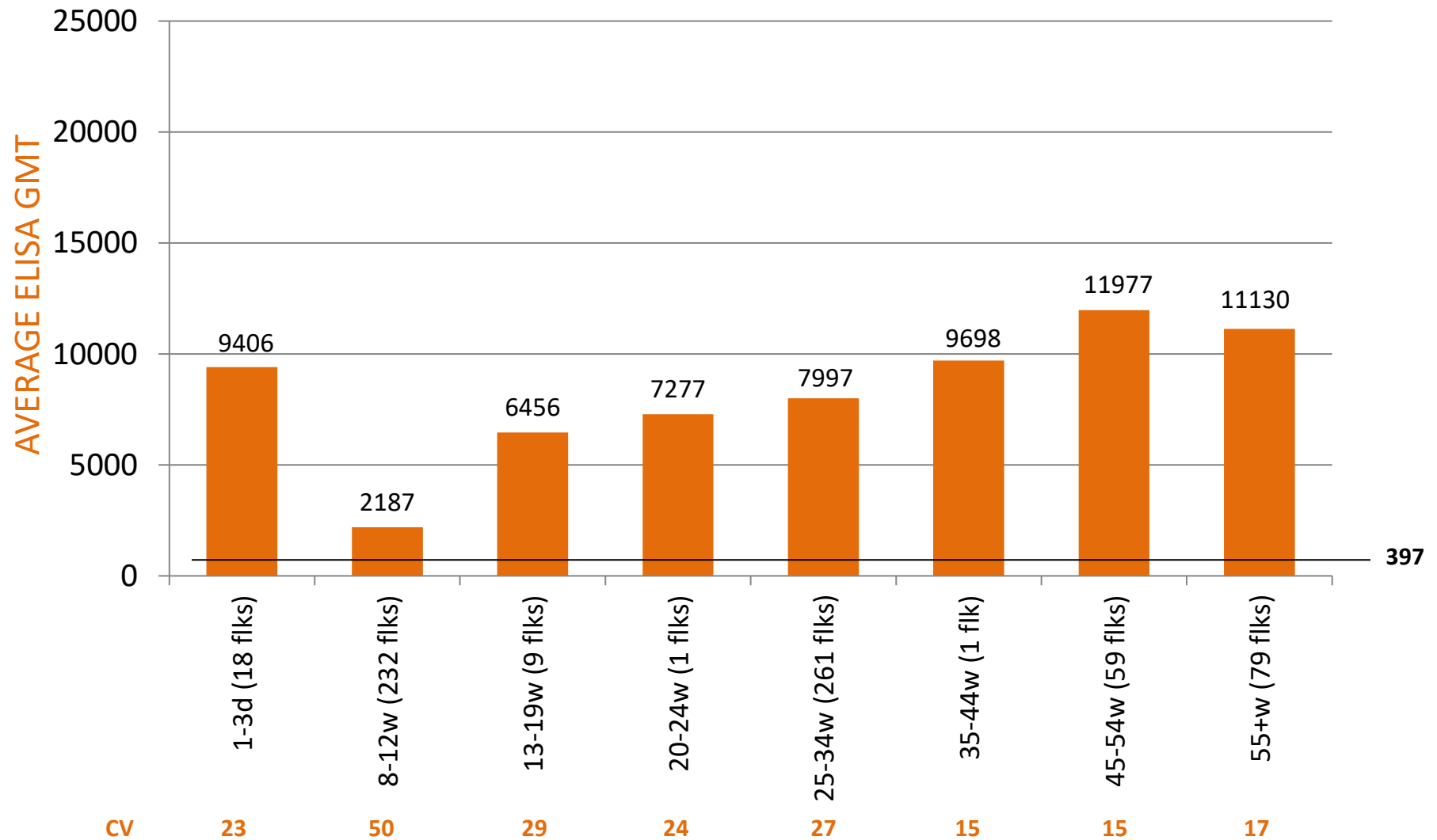
# Breeder IBD-XR titers and CVs by age



# BREEDER IBD-XR GMT TITERS

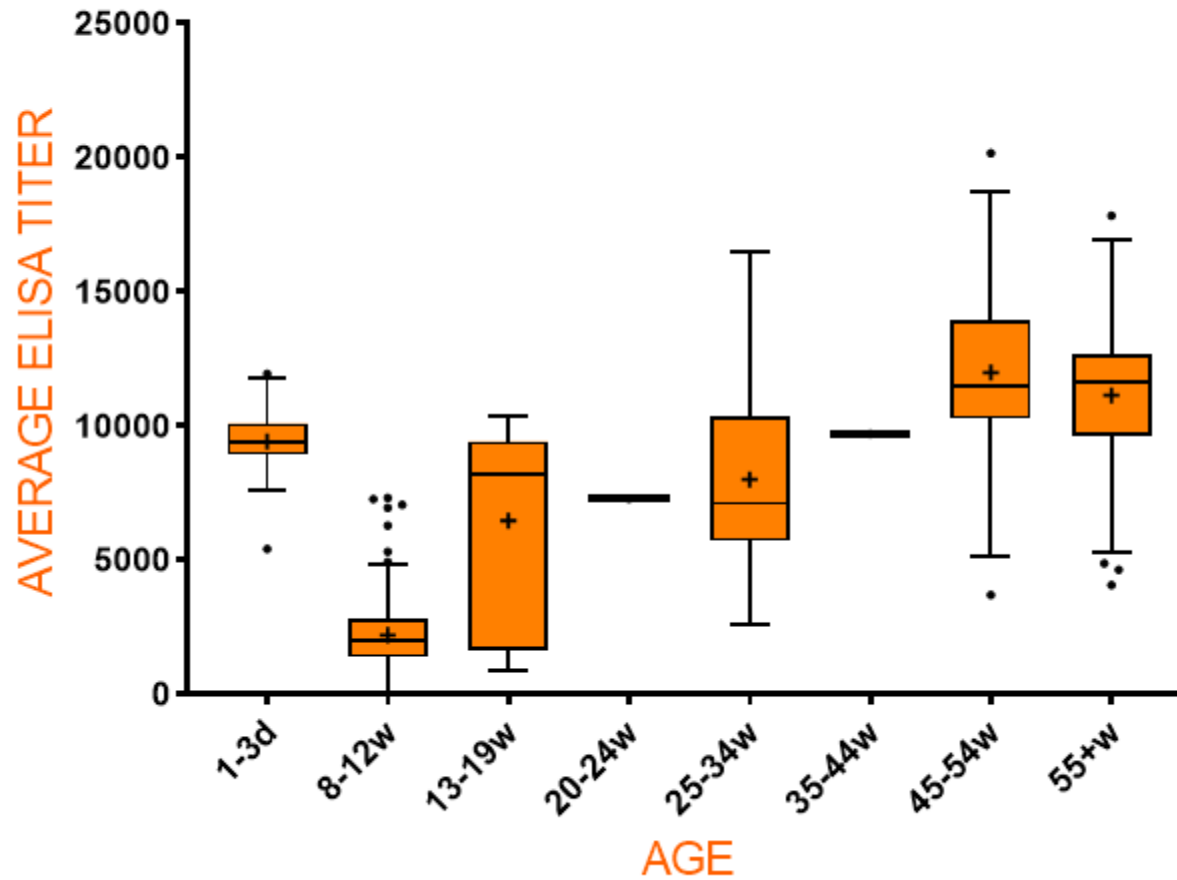


# Breeder IBD-Classic titers and CVs by age

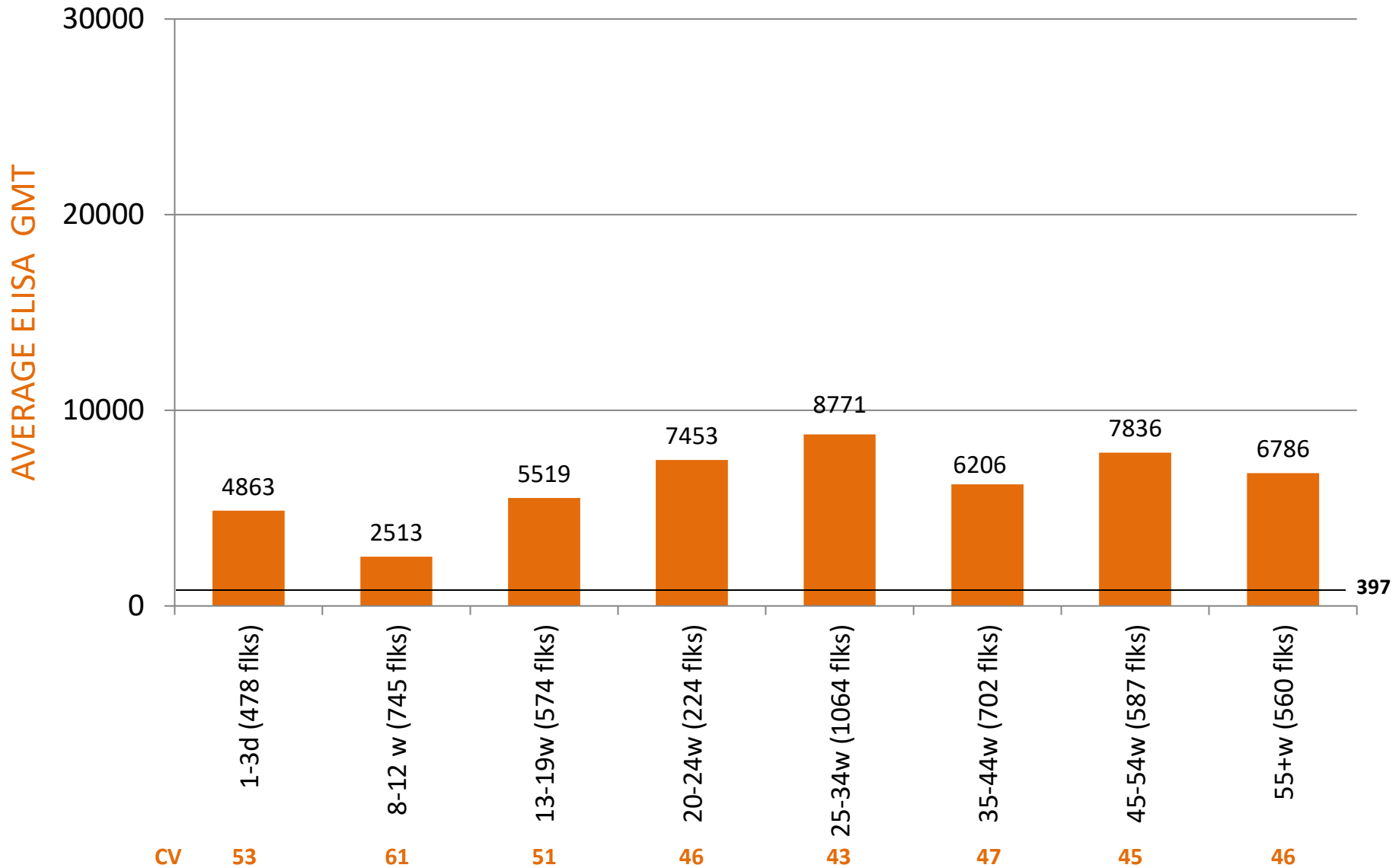




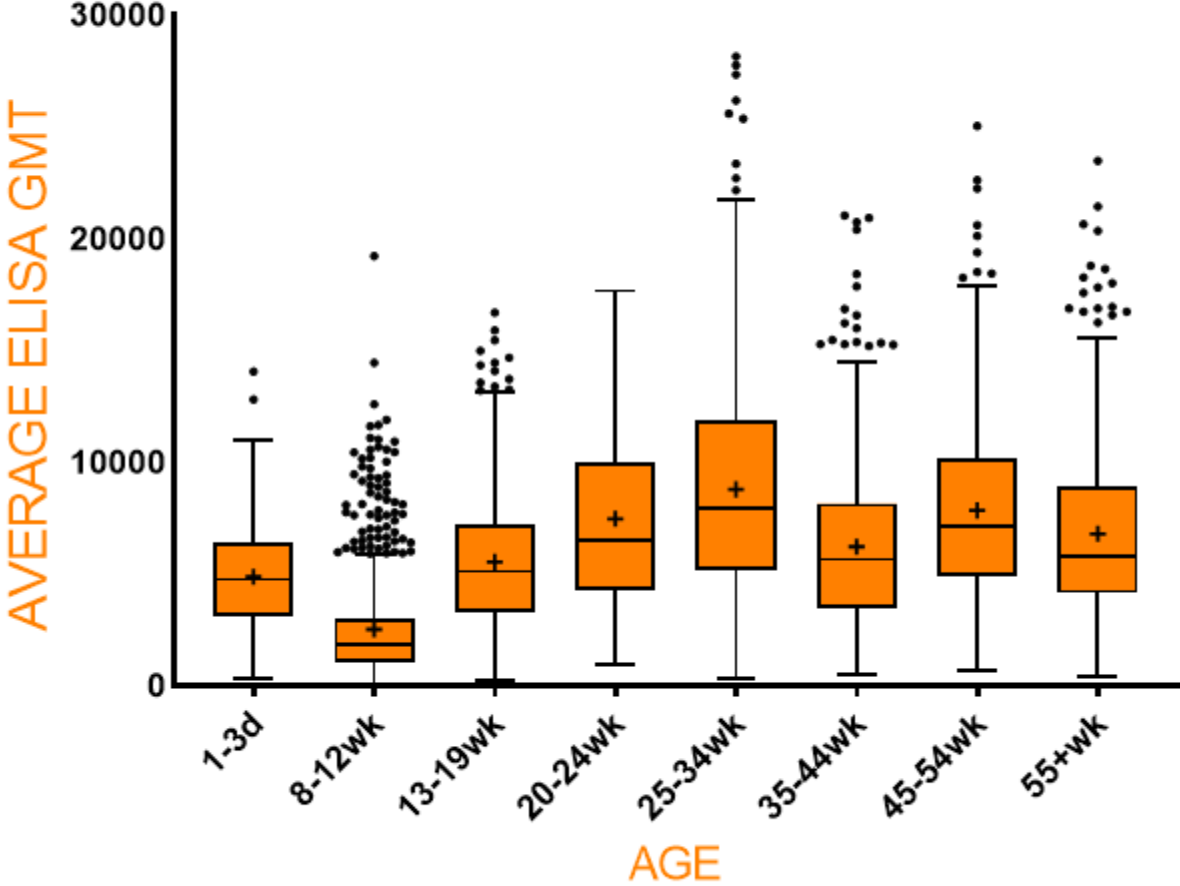
# BREEDER IBD-Classic GMT TITERS



# Breeder REO titers and CVs by age

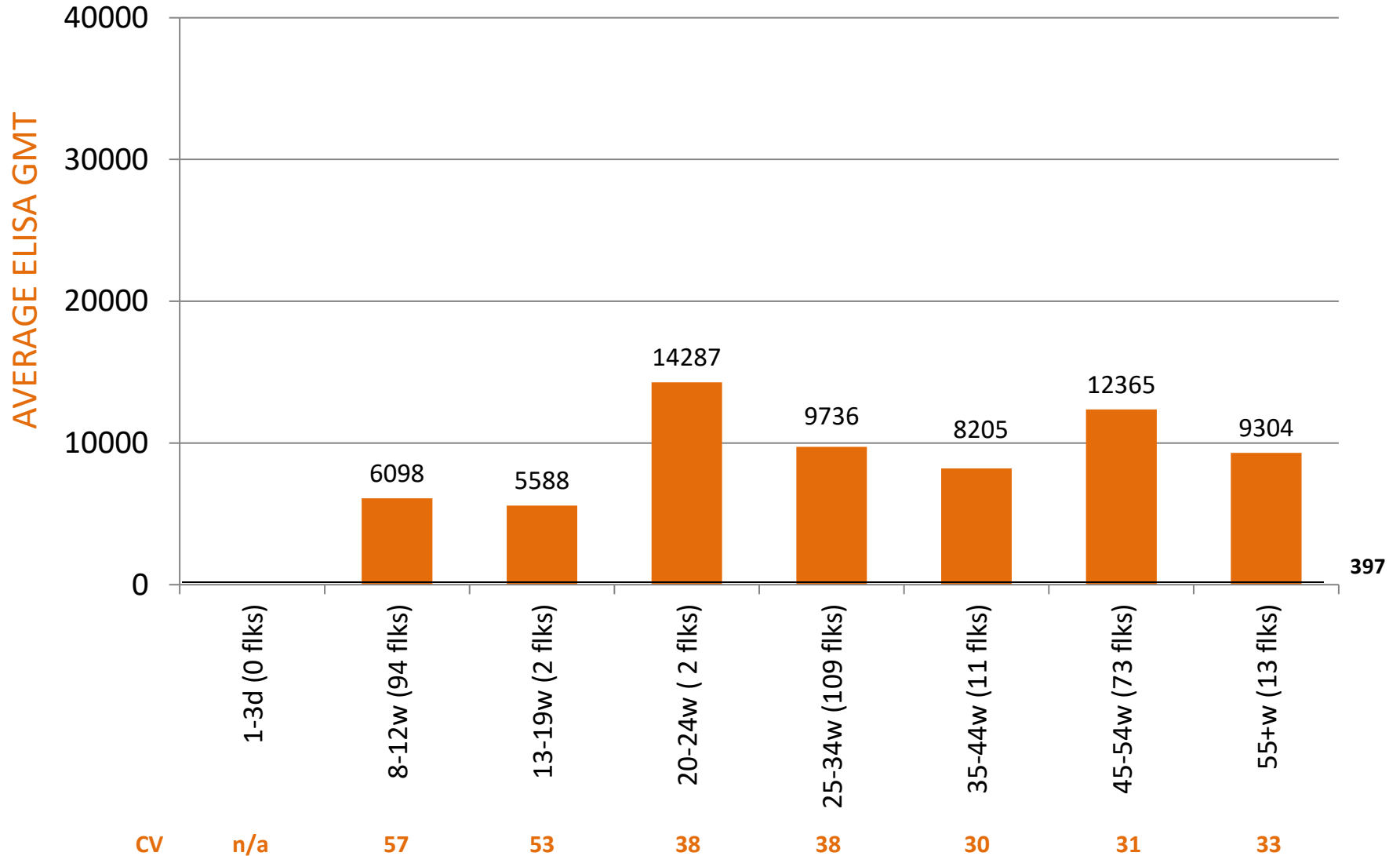


# BREEDER REO GMT TITERS

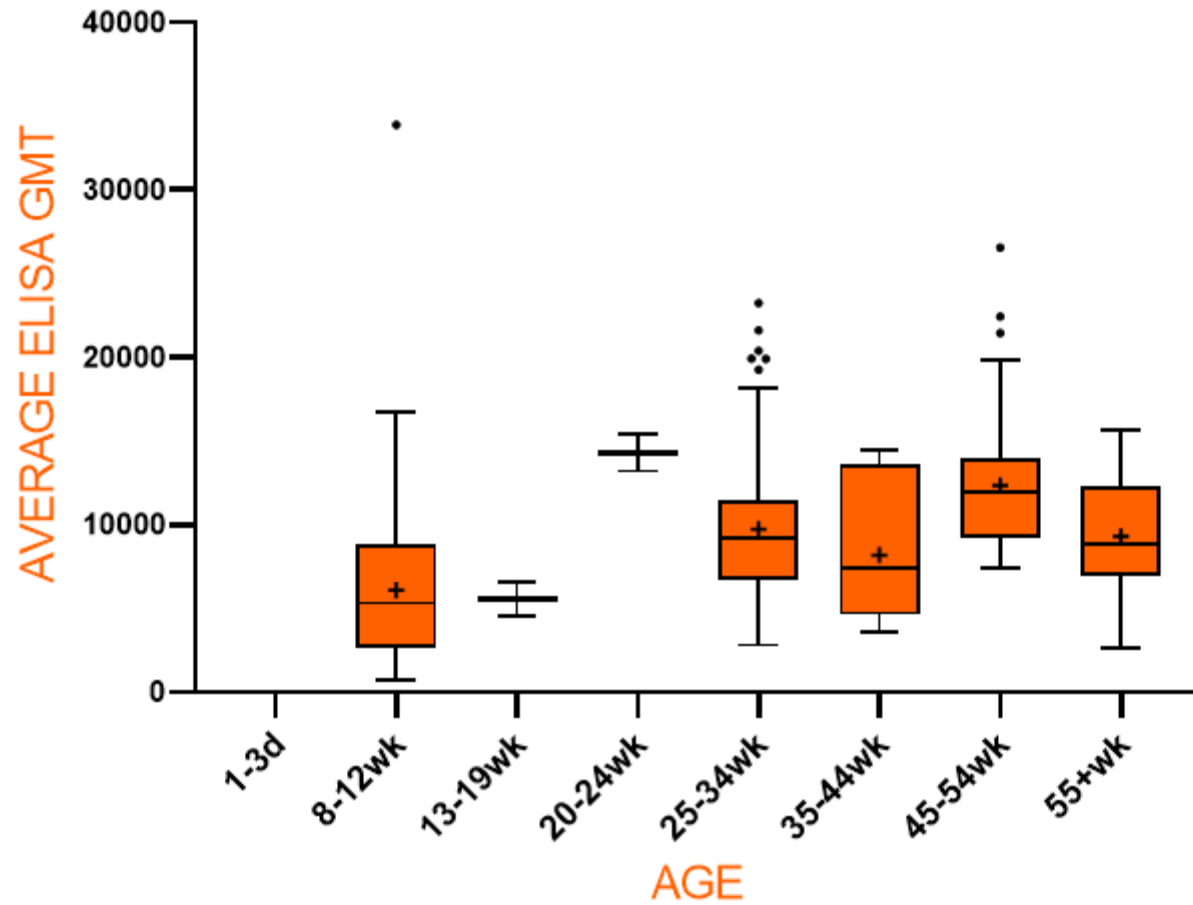


# Breeder IBV titers and CVs by age

Complexes Vaccinating with IBV Vaccines (L-O)

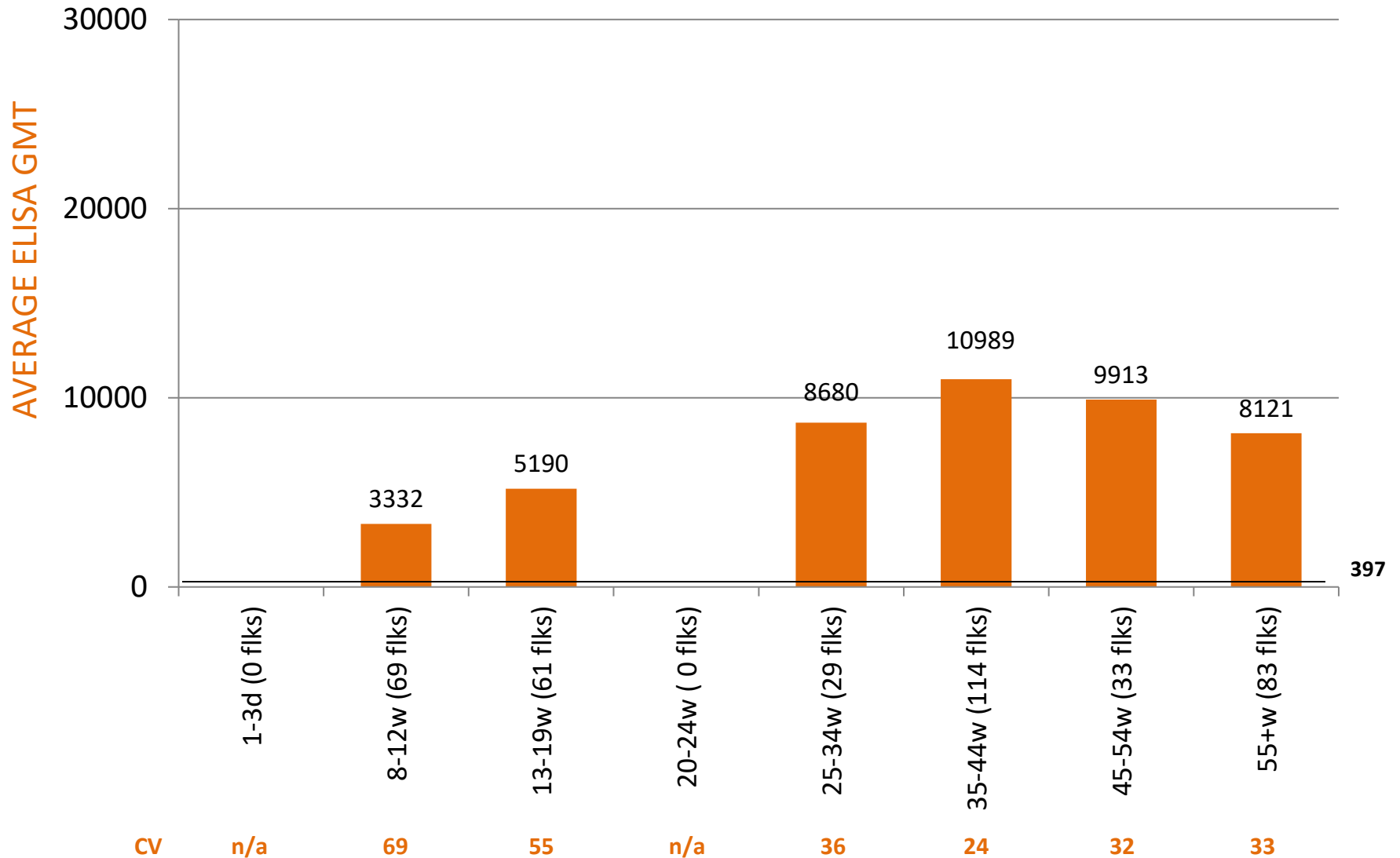


# BREEDER IBV GMT TITERS (L-O PROGRAMS)

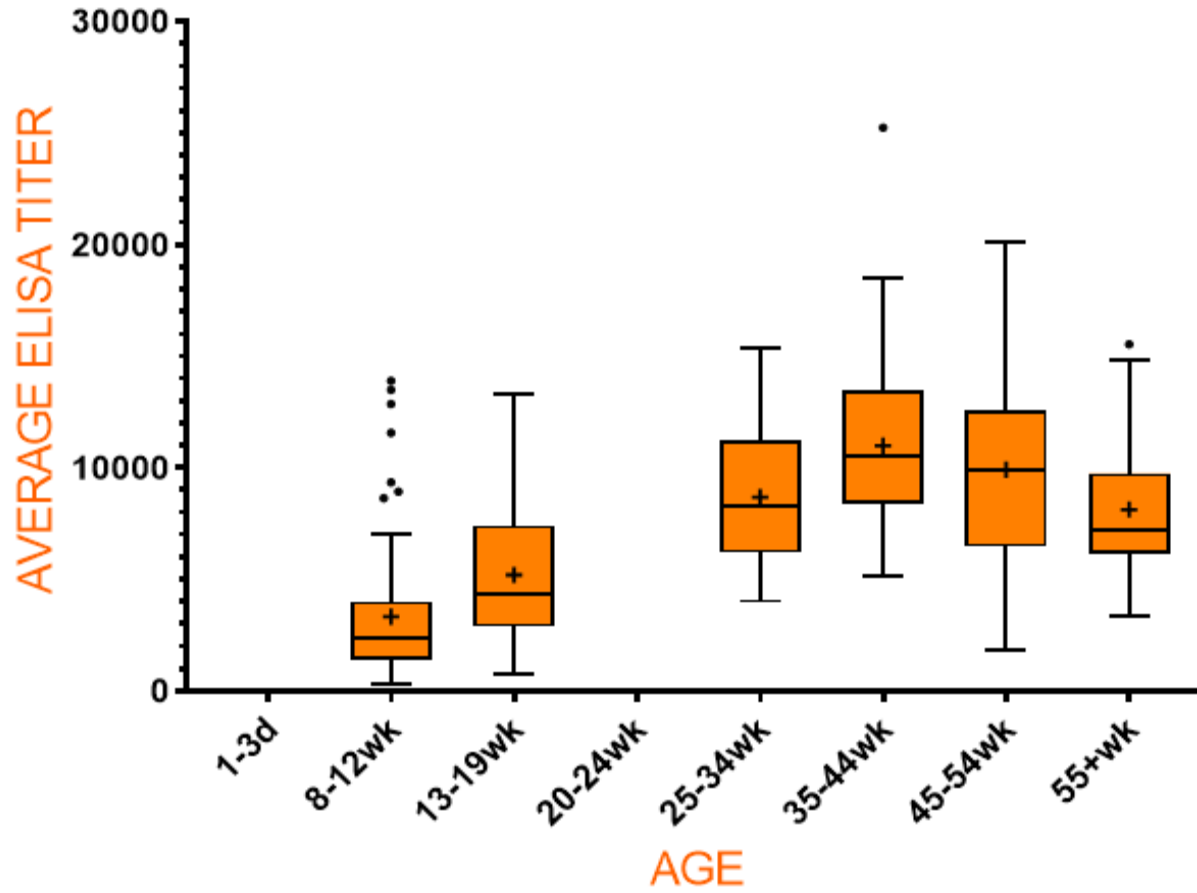


# Breeder IBV titers and CVs by age

Complexes Vaccinating with the (L-L) programs

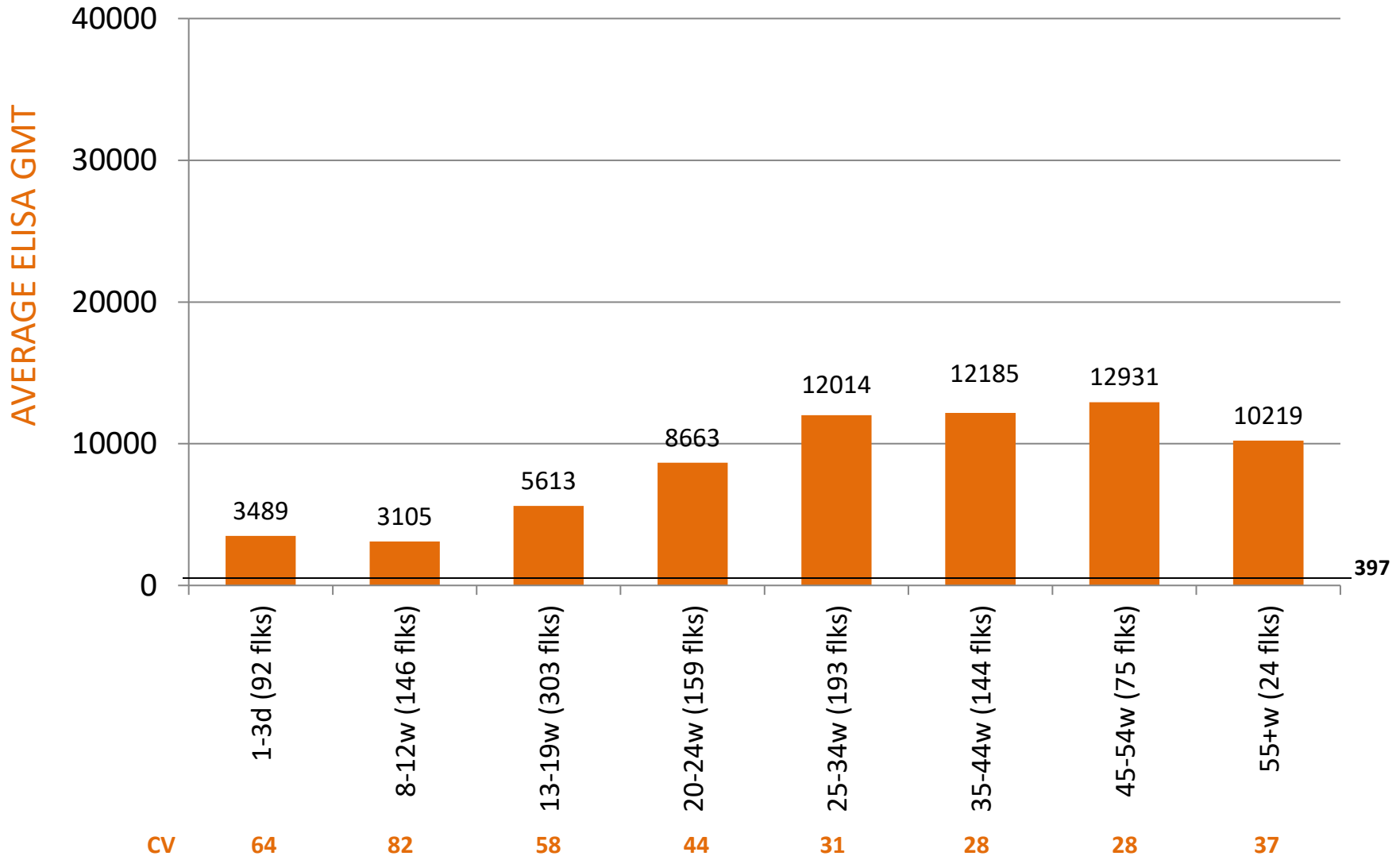


# BREEDER IBV GMT TITERS (L-L PROGRAMS)



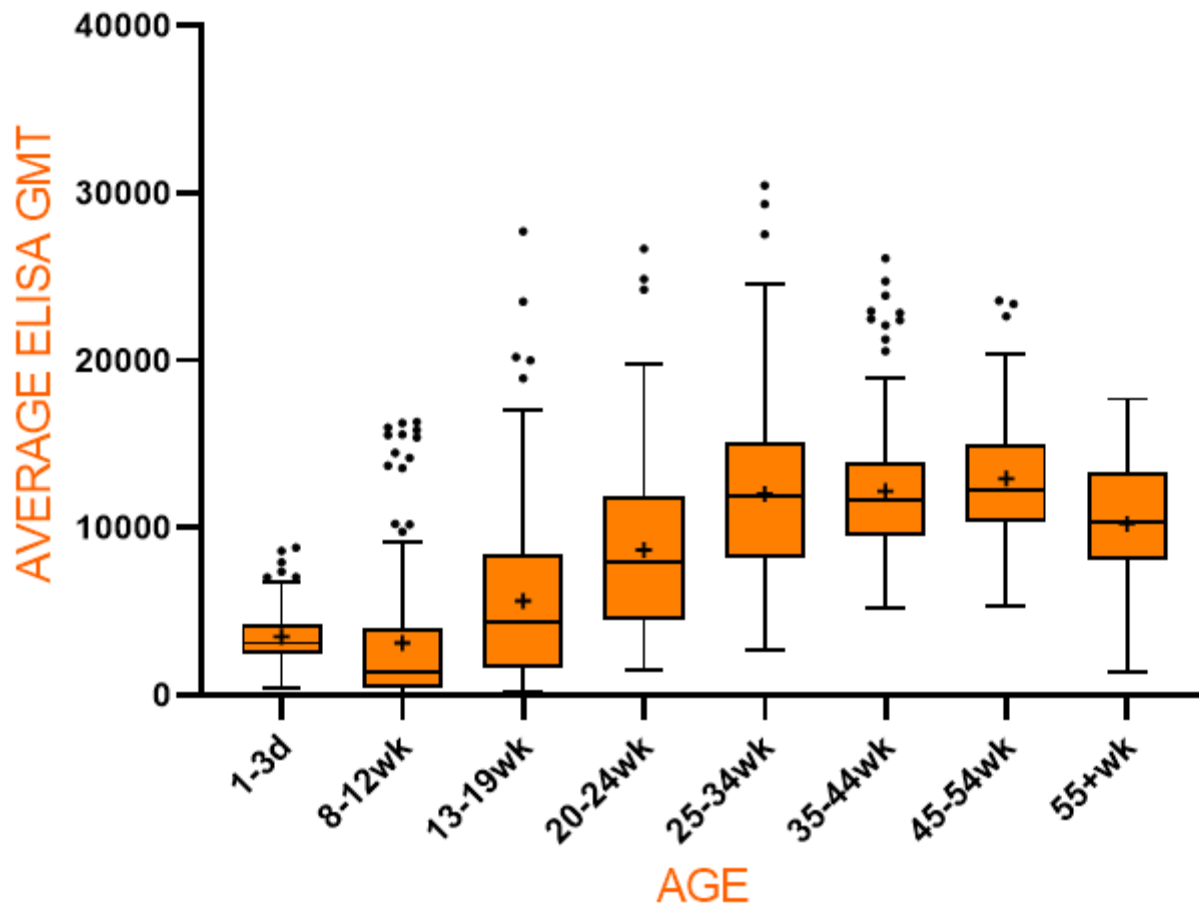
# Breeder IBV titers and CVs by age

Complexes Vaccinating with the L-K programs



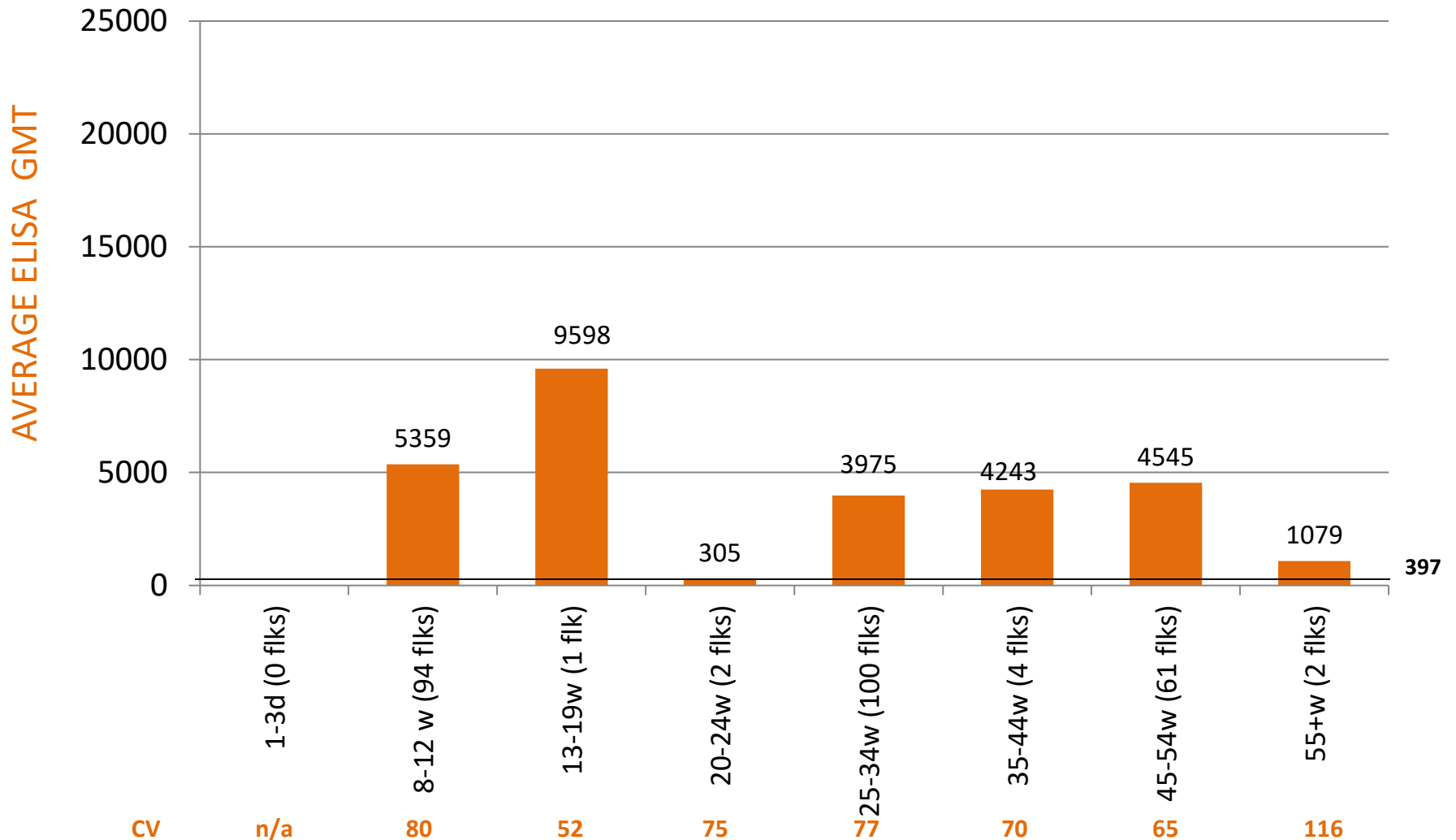


# BREEDER IBV GMT TITERS (L-K PROGRAMS)

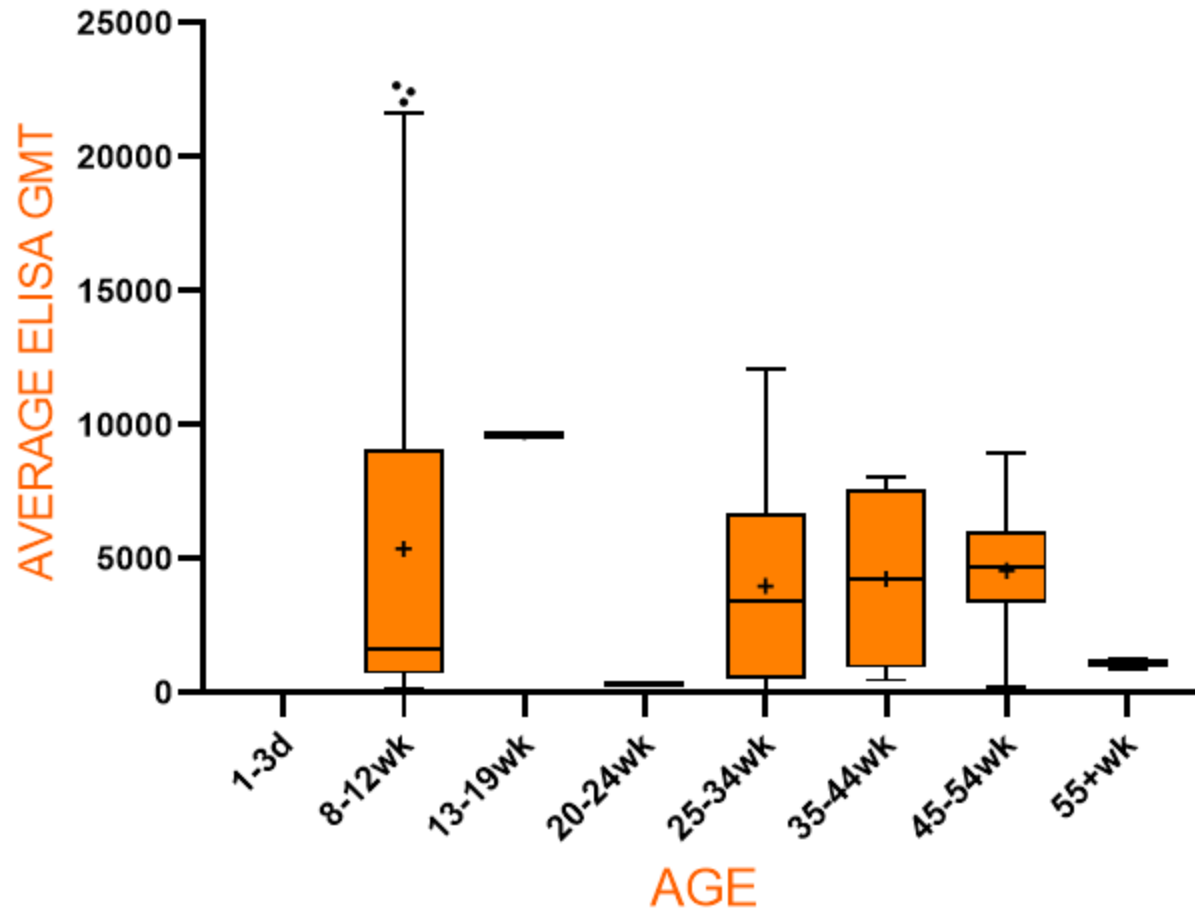


# Breeder NDV titers and CVs by age

Companies Vaccinating with the L-O programs

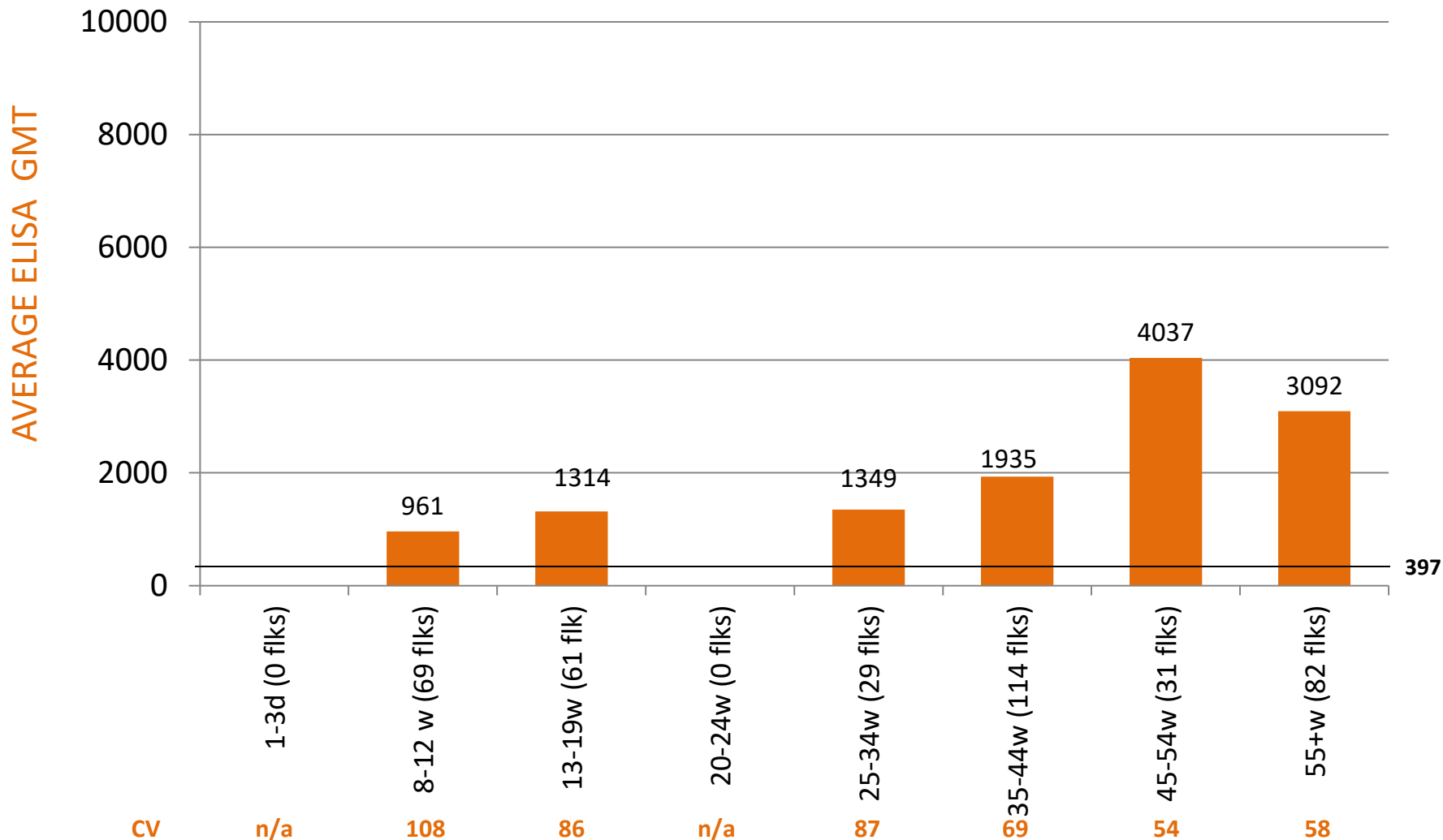


# BREEDER NDV GMT TITERS (L-O PROGRAMS)

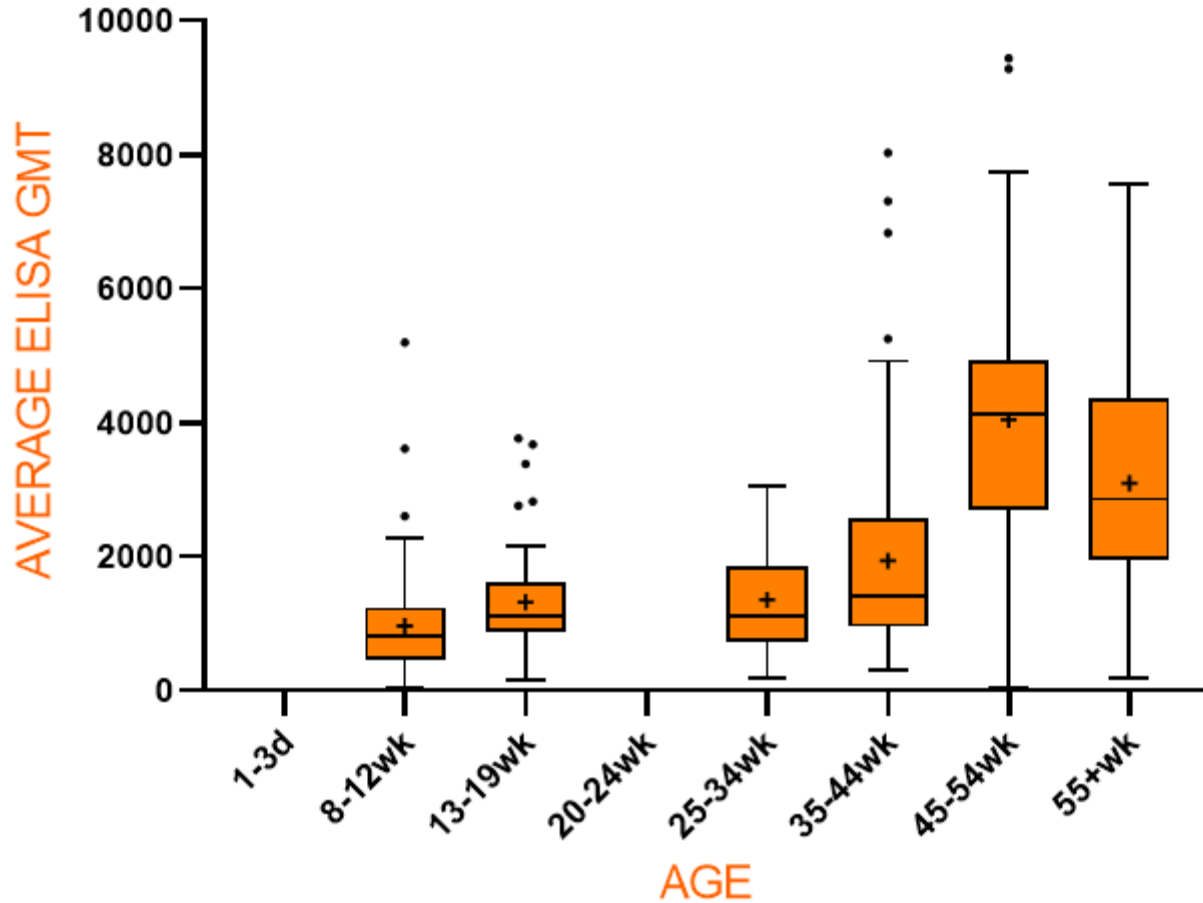


# Breeder NDV titers and CVs by age

Companies Vaccinating with the L-L programs

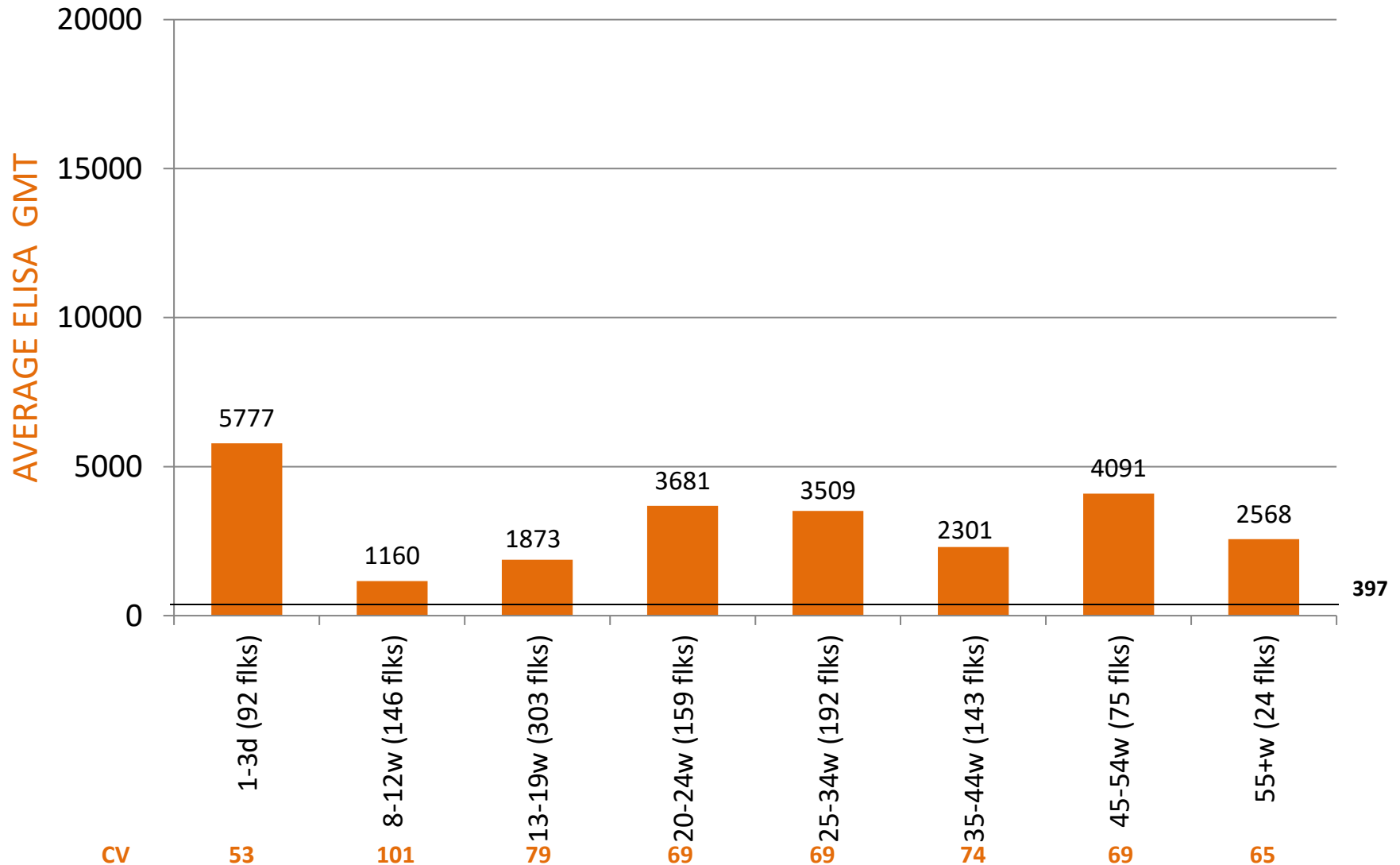


# BREEDER NDV GMT TITERS (L-L PROGRAMS)

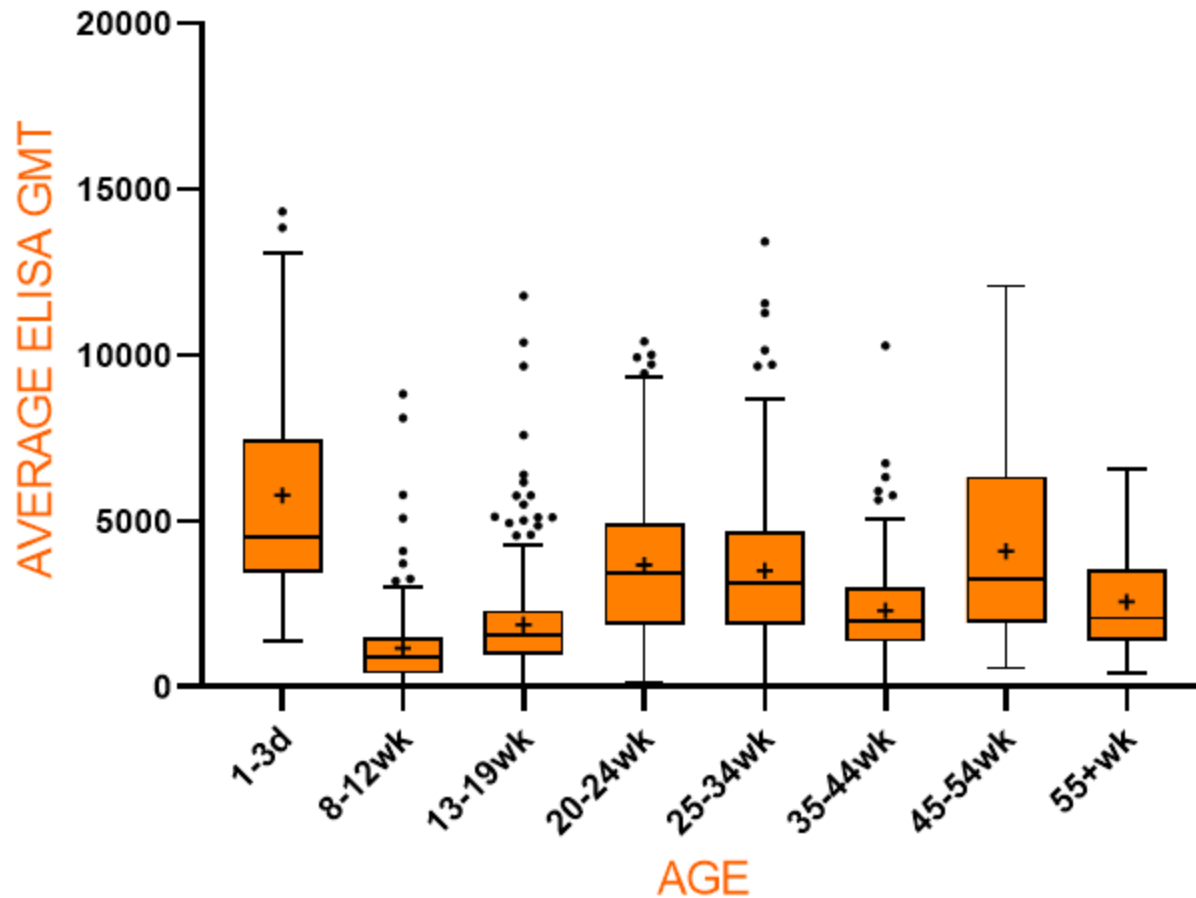


# Breeder NDV titers and CVs by age

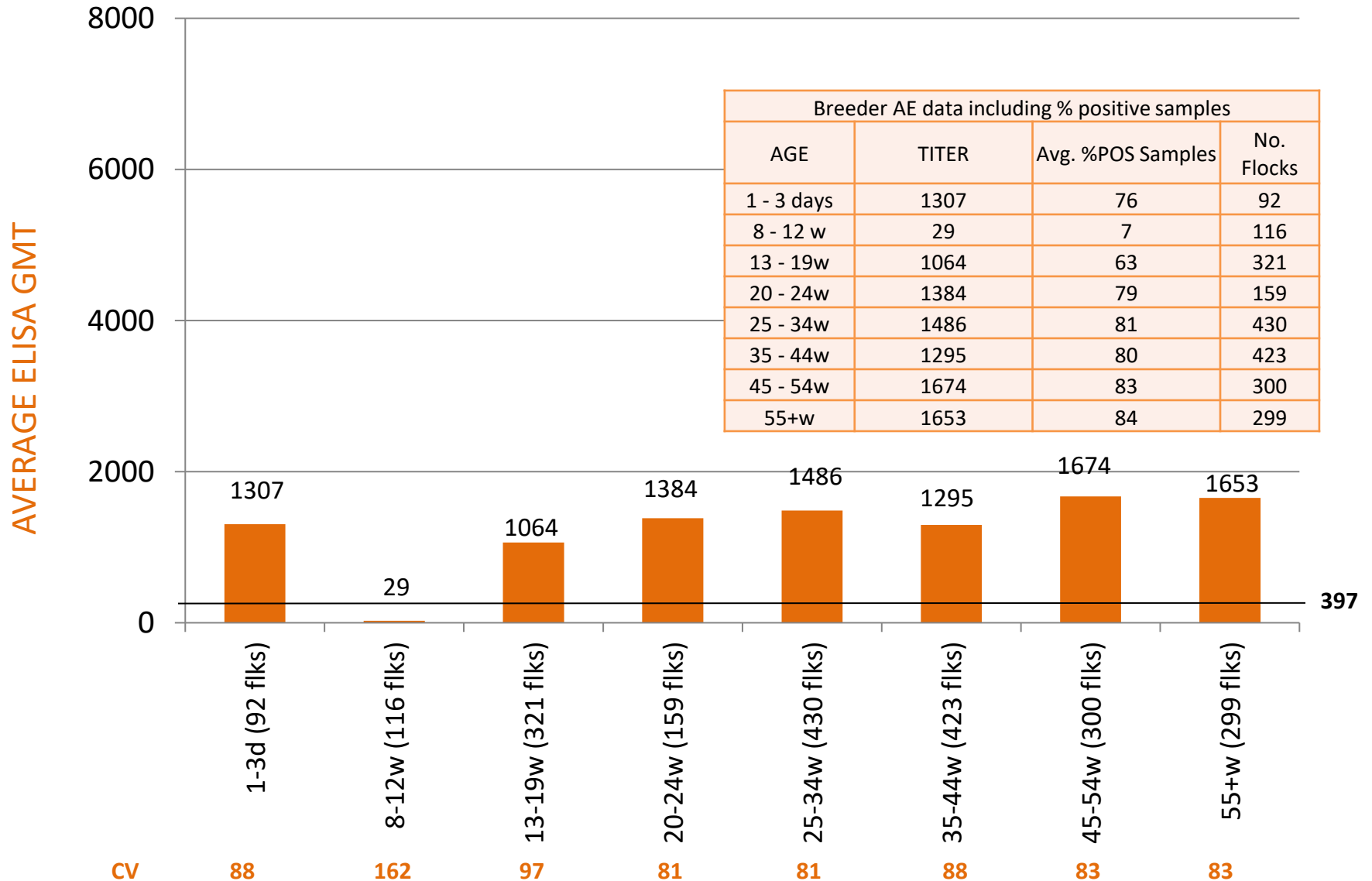
Companies Vaccinating with L-K Programs



# BREEDER NDV GMT TITERS (L-K PROGRAMS)

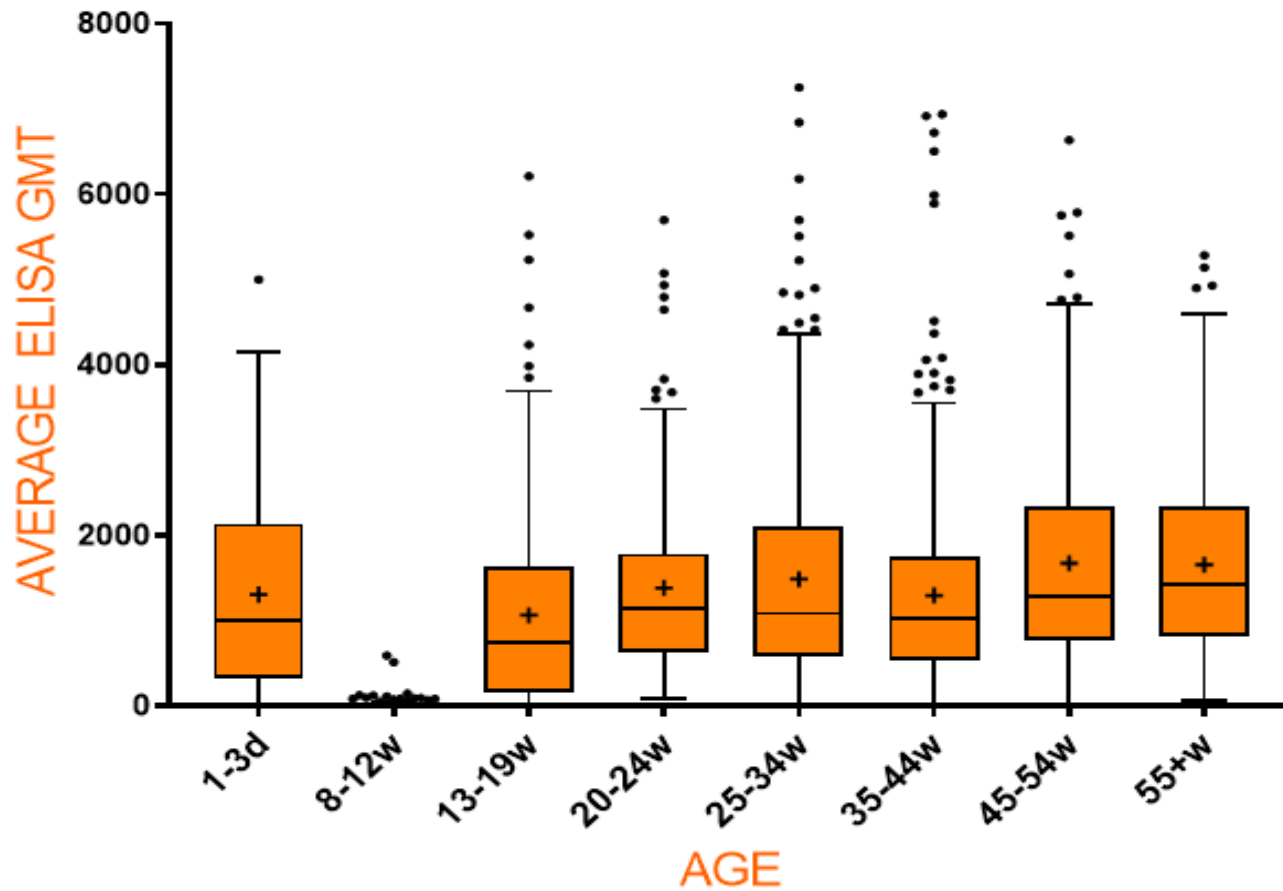


# Breeder AE titers and CVs by age





# BREEDER AE GMT TITERS



# Breeder **CAV** % positive and CVs by age

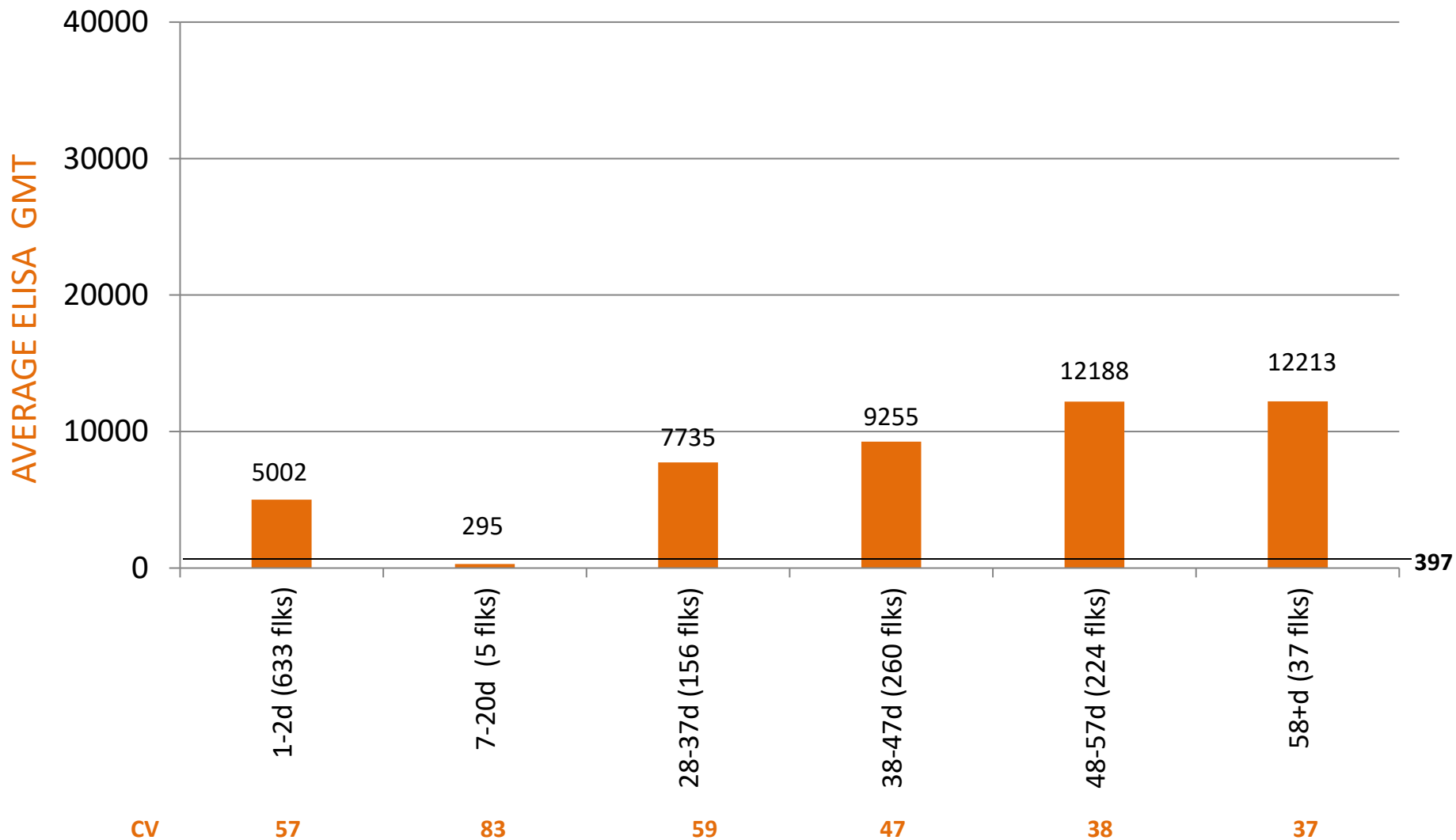
AGE	Avg % positive samples	CV	No. of flocks
1-3d	96	80	91
8-12w	94	77	229
13-19w	98	53	723
20-24w	99.6	39	166
25-34w	99	50	192
35-44w	99.4	48	145
45-54w	99	66	76
55+w	100	45	19

# ELISA Titers in Broilers

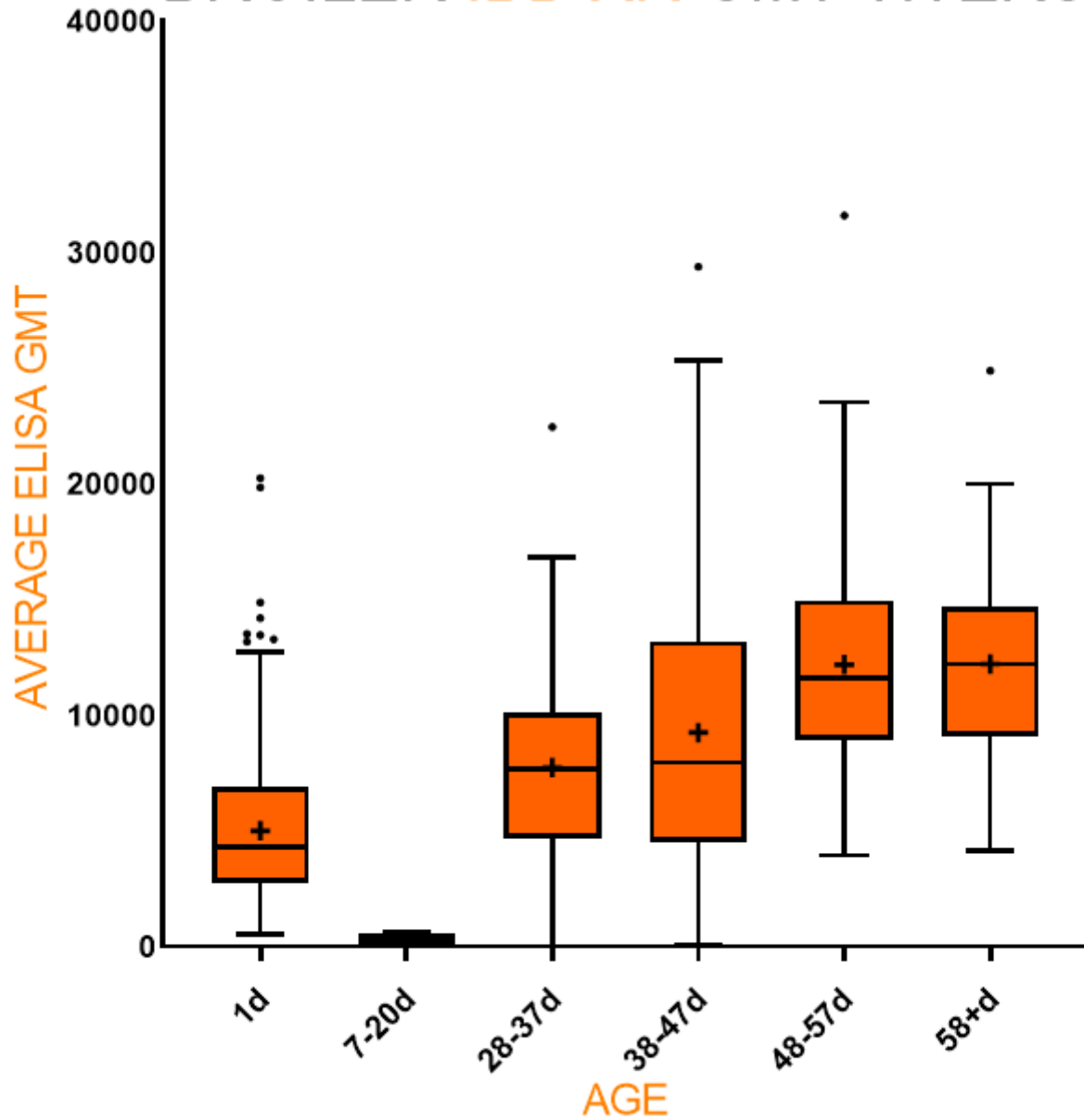
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- Age ranges were modified in this report to better reflect the samples received at the laboratory.
- After 28 days of age, the larger age ranges (compared to previous reports) result in more consistent trends because of the larger numbers of flocks represented and also because of more diversity in sample submitters for each age range.
- 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.
- The number of samples per flock in this series is 10 or greater.
- The number of flocks per age range is 5 or greater.

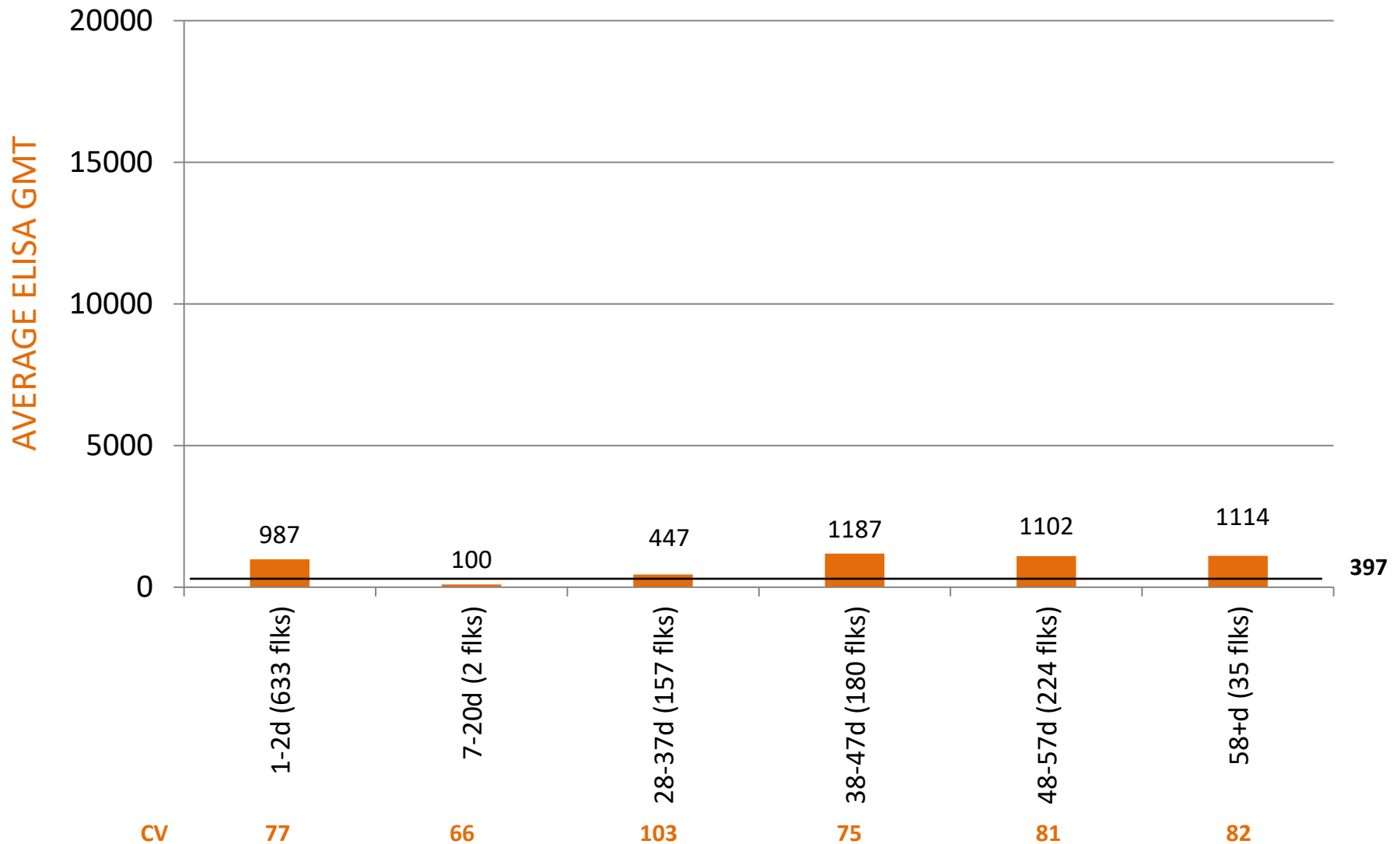
# Broiler IBD-XR titers and CVs by age



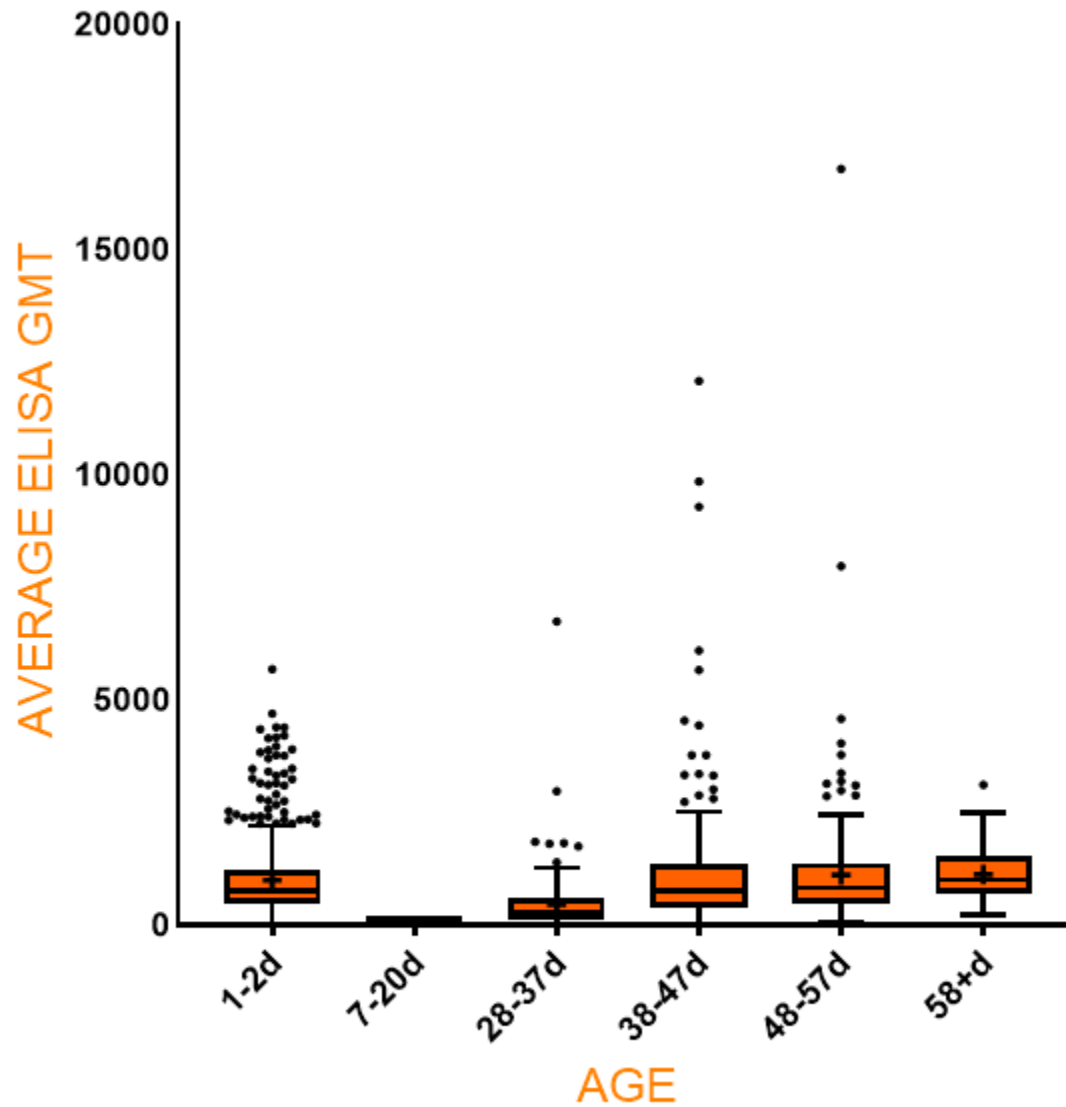
# BROILER IBD XR GMT TITERS



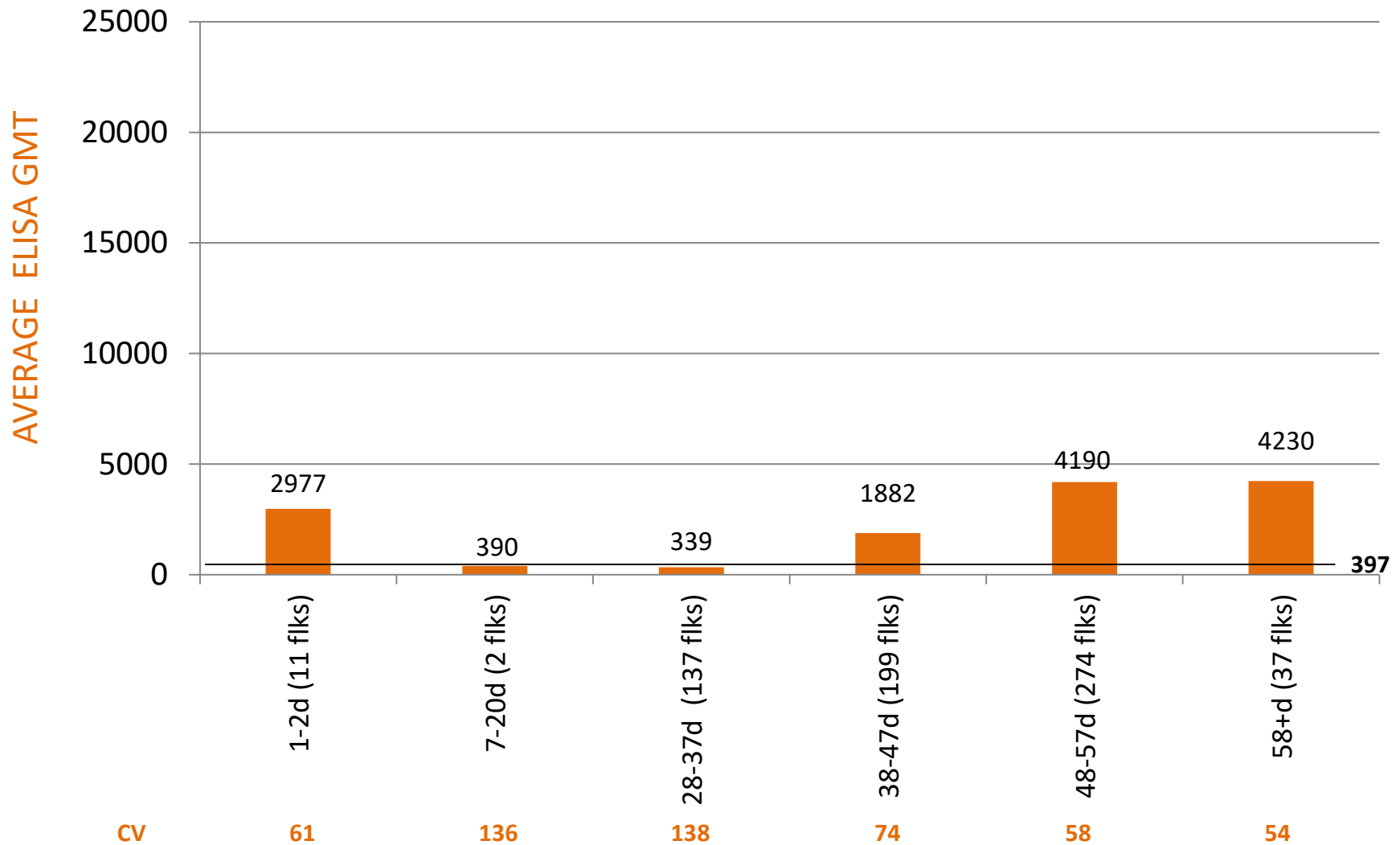
# Broiler REO titers and CVs by age



# BROILER REO GMT TITERS

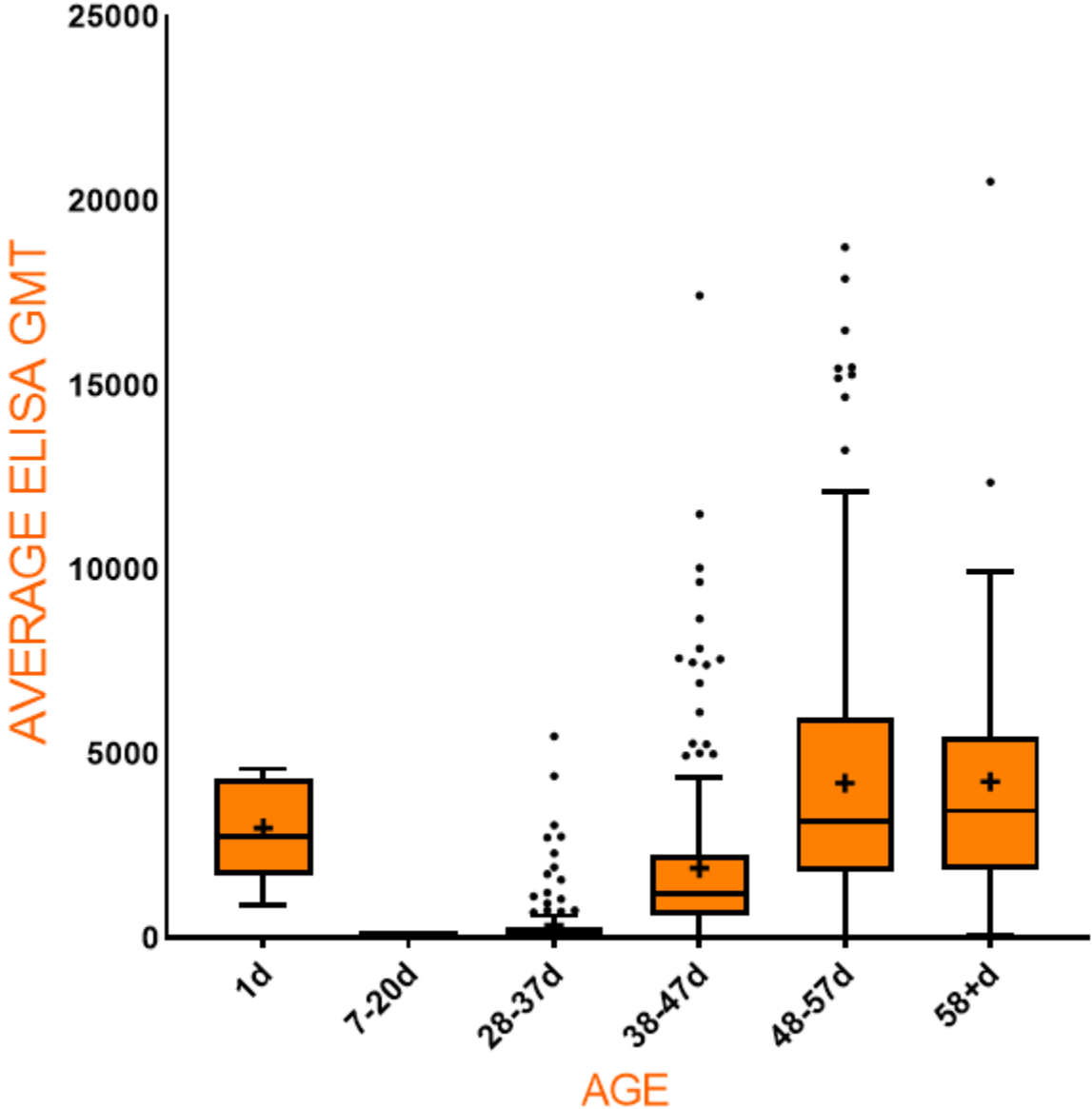


# Broiler IBV titers and CVs by age

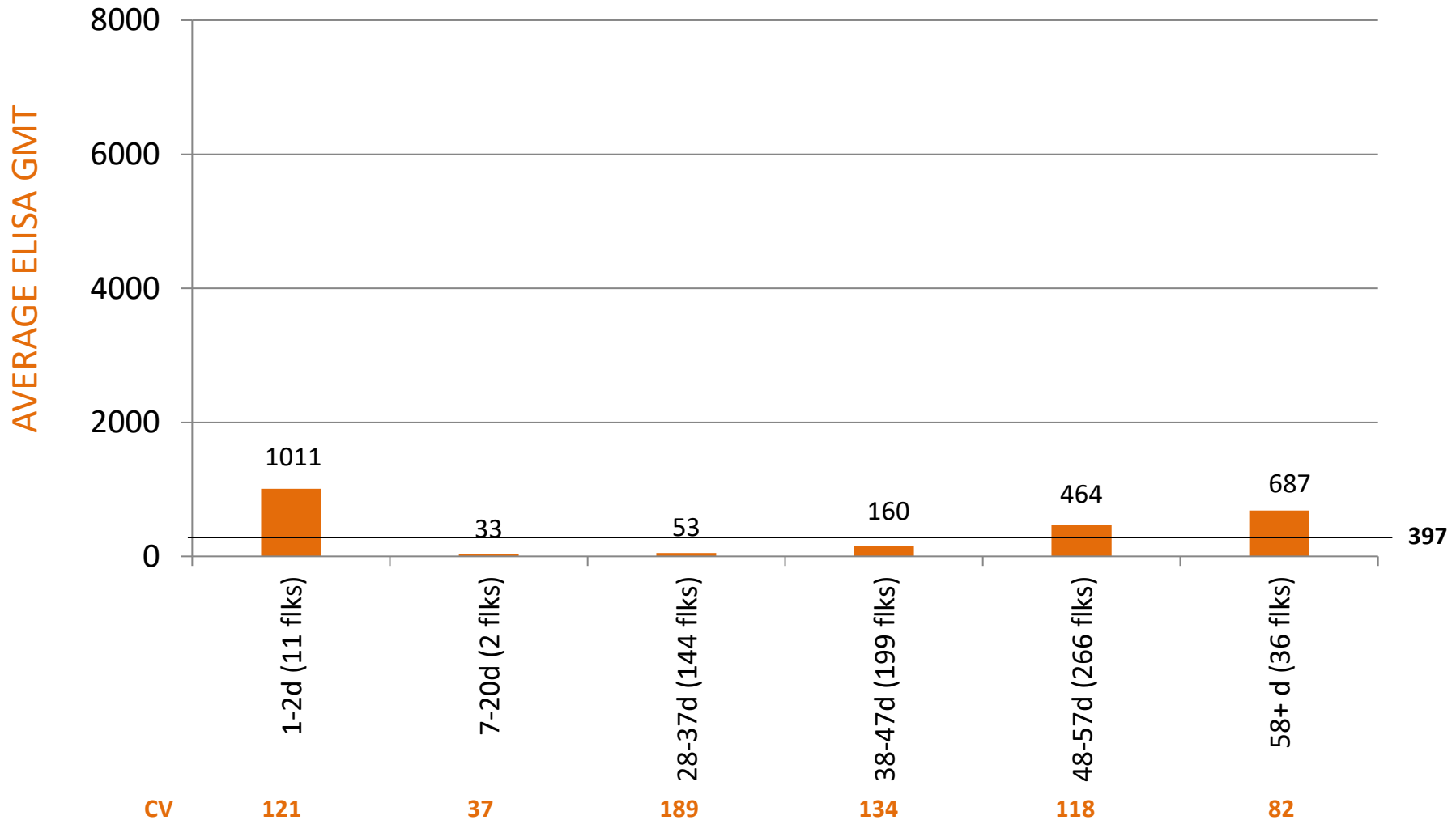




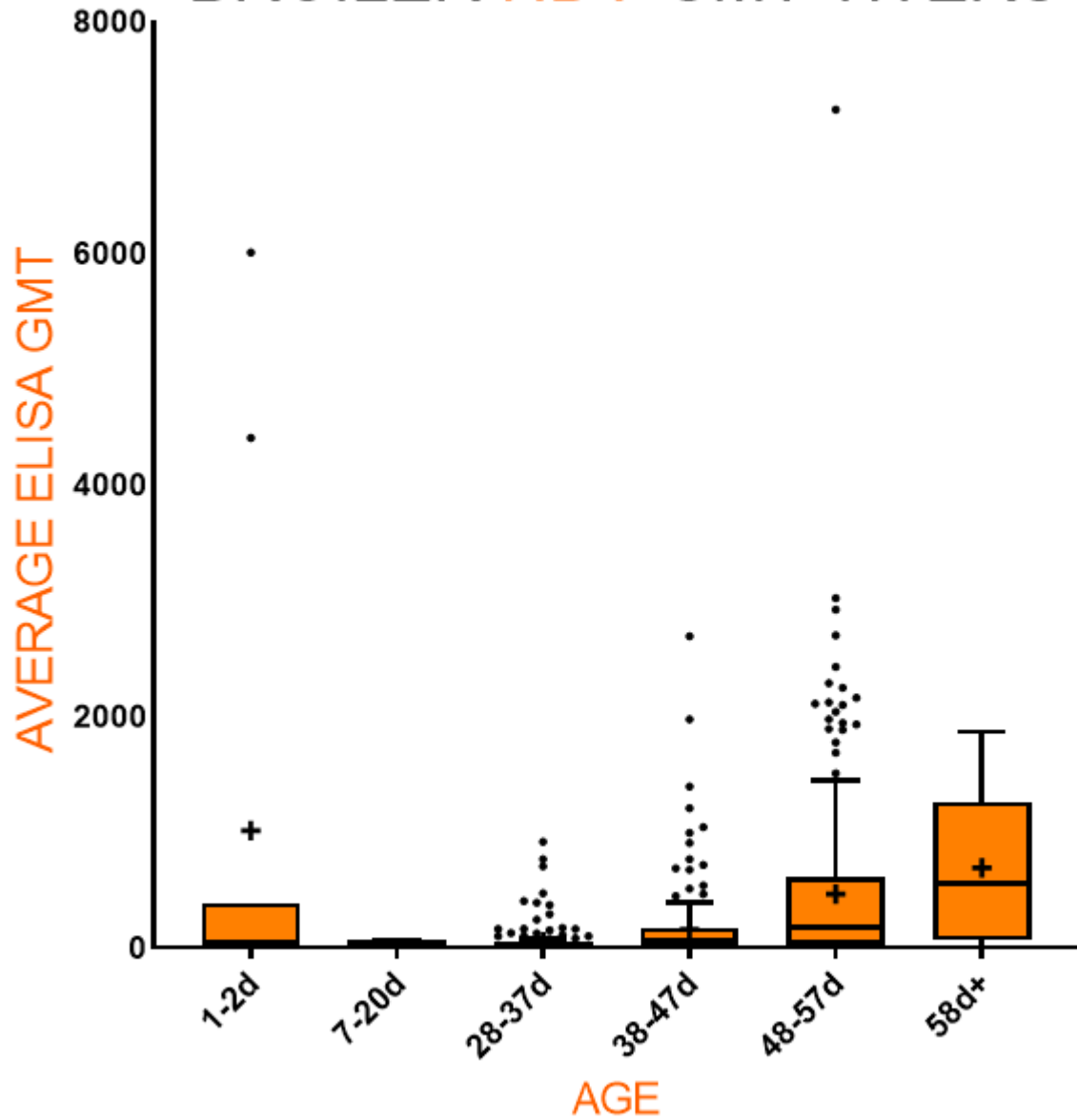
# BROILER IBV GMT TITERS



# Broiler **NDV** titers and CVs by age



# BROILER NDV GMT TITERS

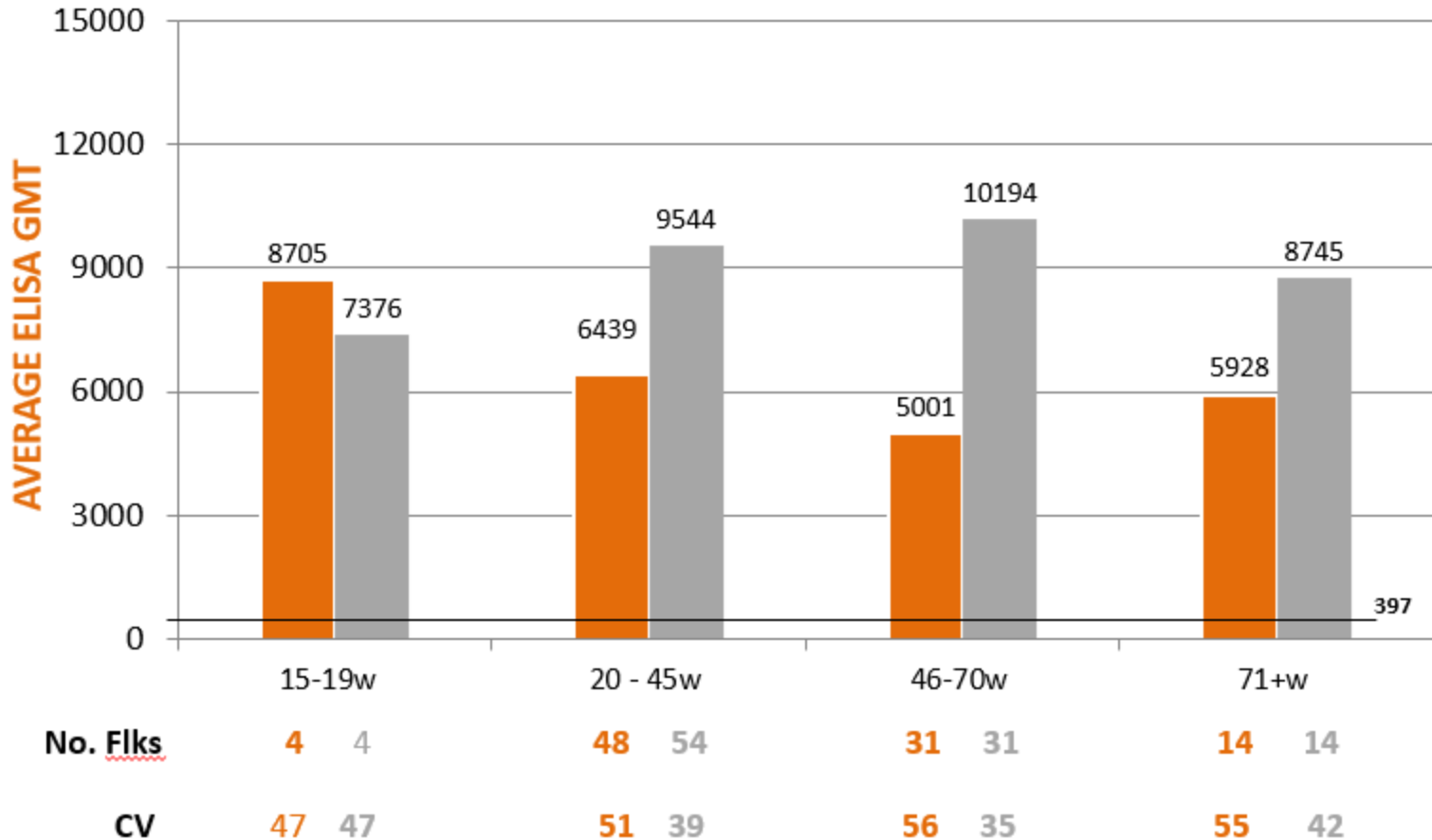


# ELISA Titers in Commercial Layers

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- Age ranges were kept the same as previous years.
- Unfortunately, GPLN receives relatively few samples for vaccine monitoring from commercial layers, and none from commercial layer pullets.
- The number of samples per flock in this series is 10 or greater.

# Layer **NDV** & **IBV** titers and CVs by age



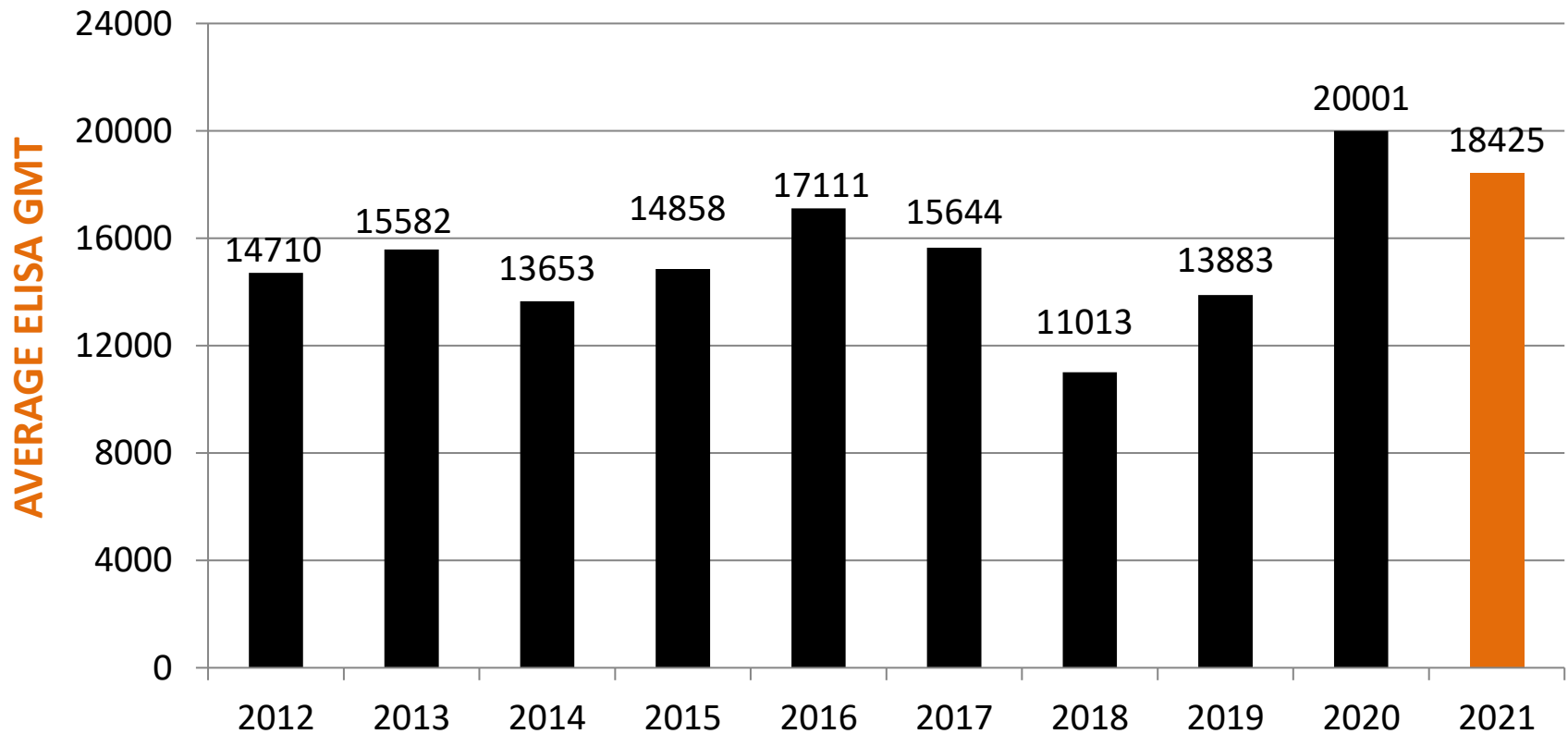
# Trending of ELISA Titers over Time

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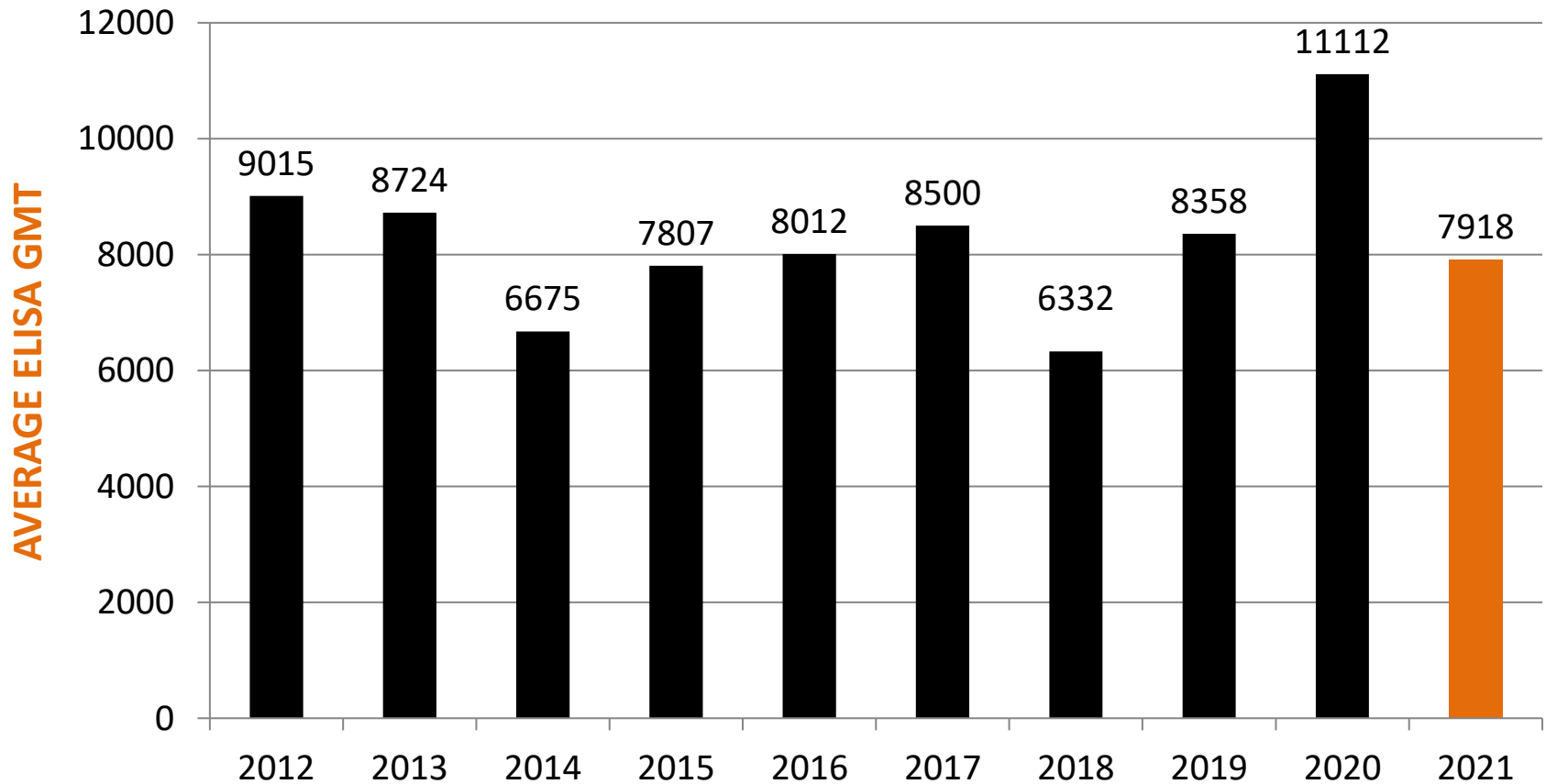
The following 5 graphs show trends over time (2012-2021) for targeted agents and age ranges.

- Breeder IBD-XR titers at 22-26 weeks 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 weeks 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 weeks, all birds and flocks should be positive and show their peak vaccine titer.
- Broiler processing age REO titers are mostly an indication of REO field exposure, and so are broiler processing age IBV titers.

# GA 22-26w IBD-XR titers in Breeders over time

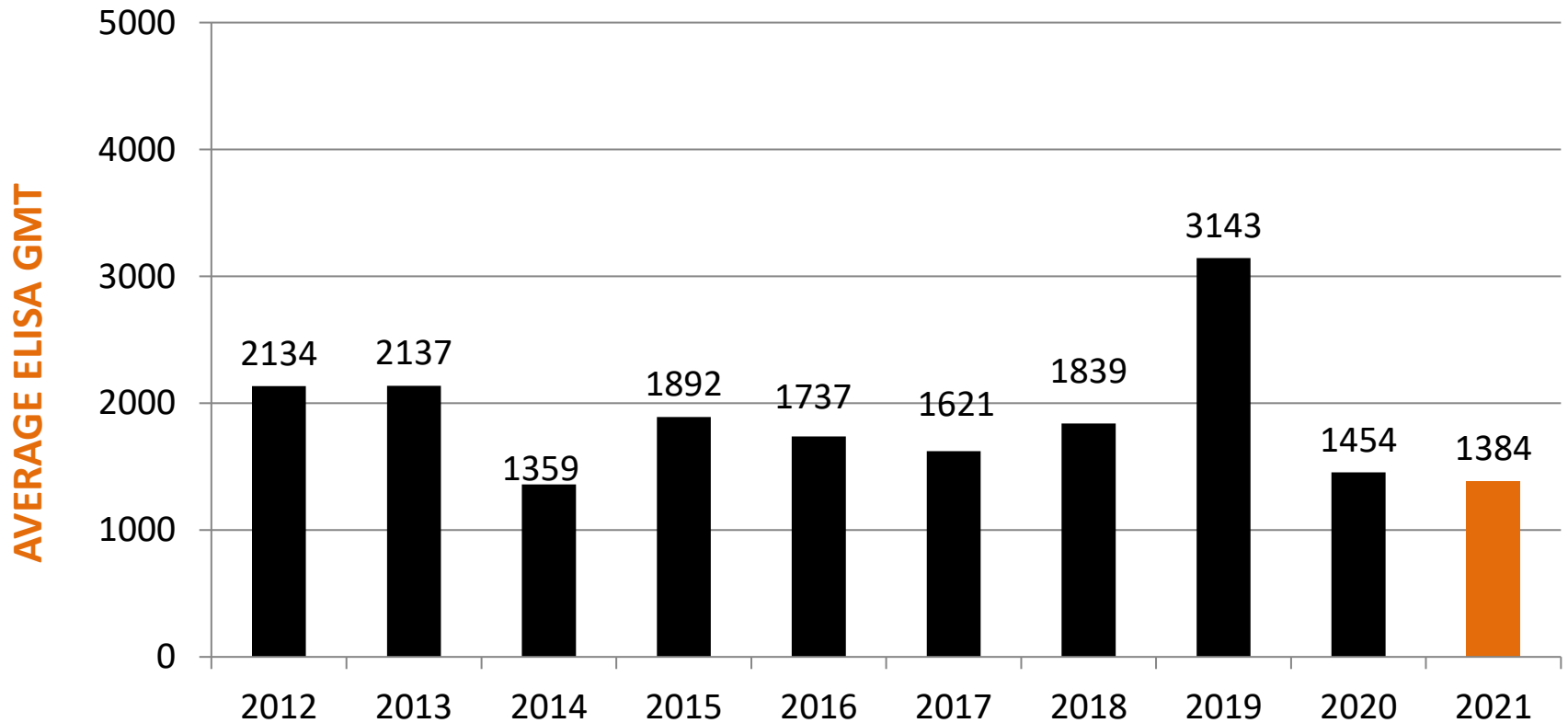


# GA 22-26w REO titers in Breeders over time

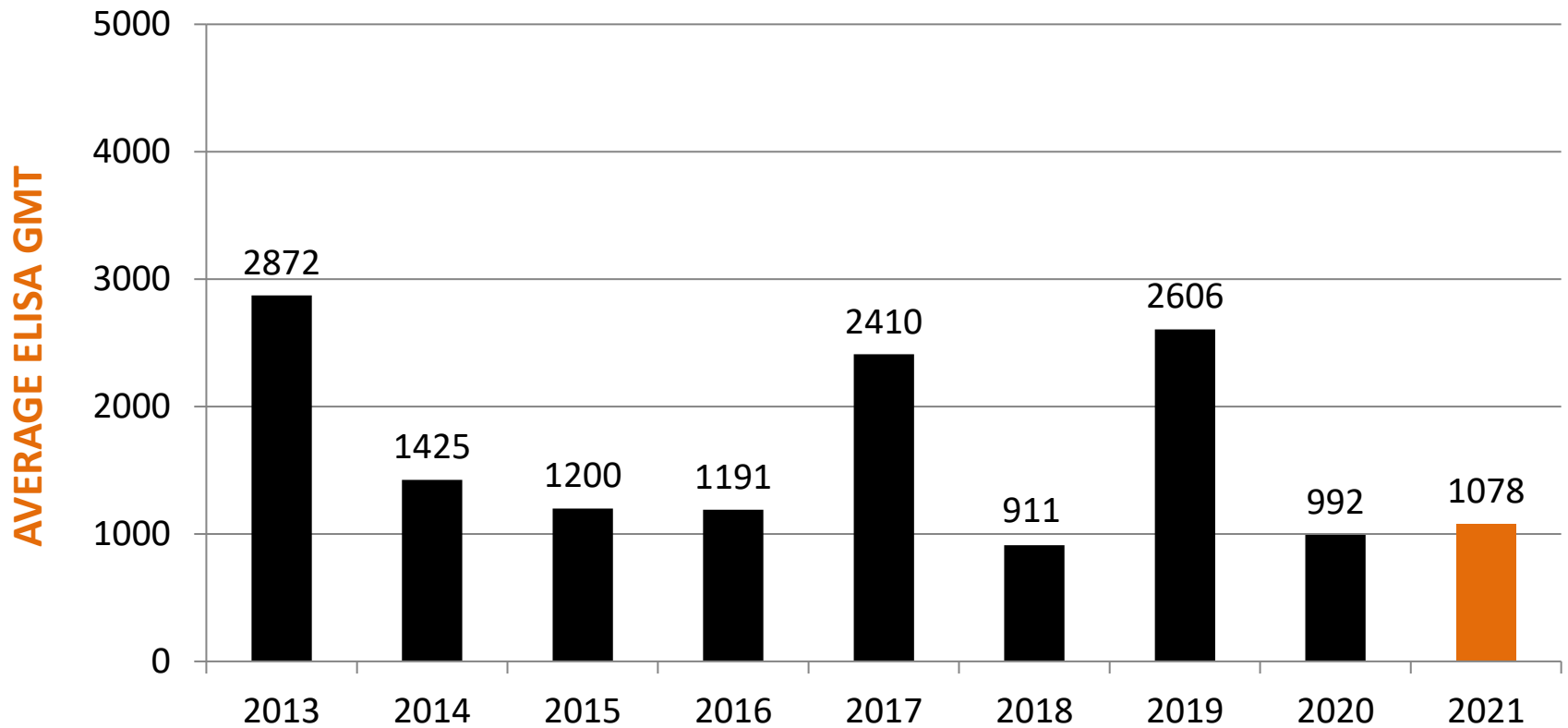




# GA 20-24w AE titers in Breeders over time



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



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

