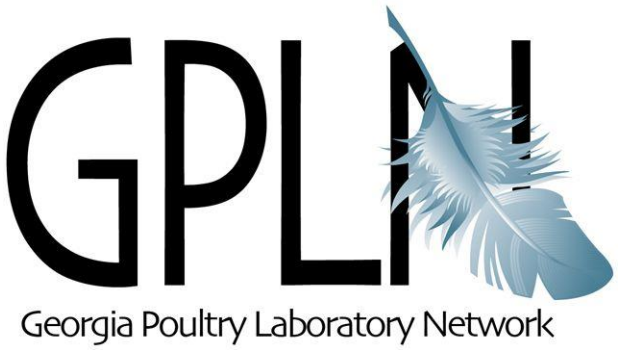
ELISA Titers in Georgia Poultry



2019-2020

ELISA Titers in Georgia Poultry

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 2019 and 2020 data. A few changes were made in this report after consultation with several veterinary colleagues.

General Comments:

- This report only includes flocks from Georgia complexes.
- 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.
- Geometric Mean Titers (LABELED BARS) and Coefficients of Variation (UNDER THE X AXIS) for all flocks within an age range are averaged.
- If less than 5 flocks were tested over the 2-year period, no data is shown.
- The positive cut-off for an individual bird sample is indicated on the graph as a horizontal line as a reference.
- The last 5 graphs of this report show yearly trends for IBV, REO, AE and IBD for critical age ranges in breeder and broilers.

Uses:

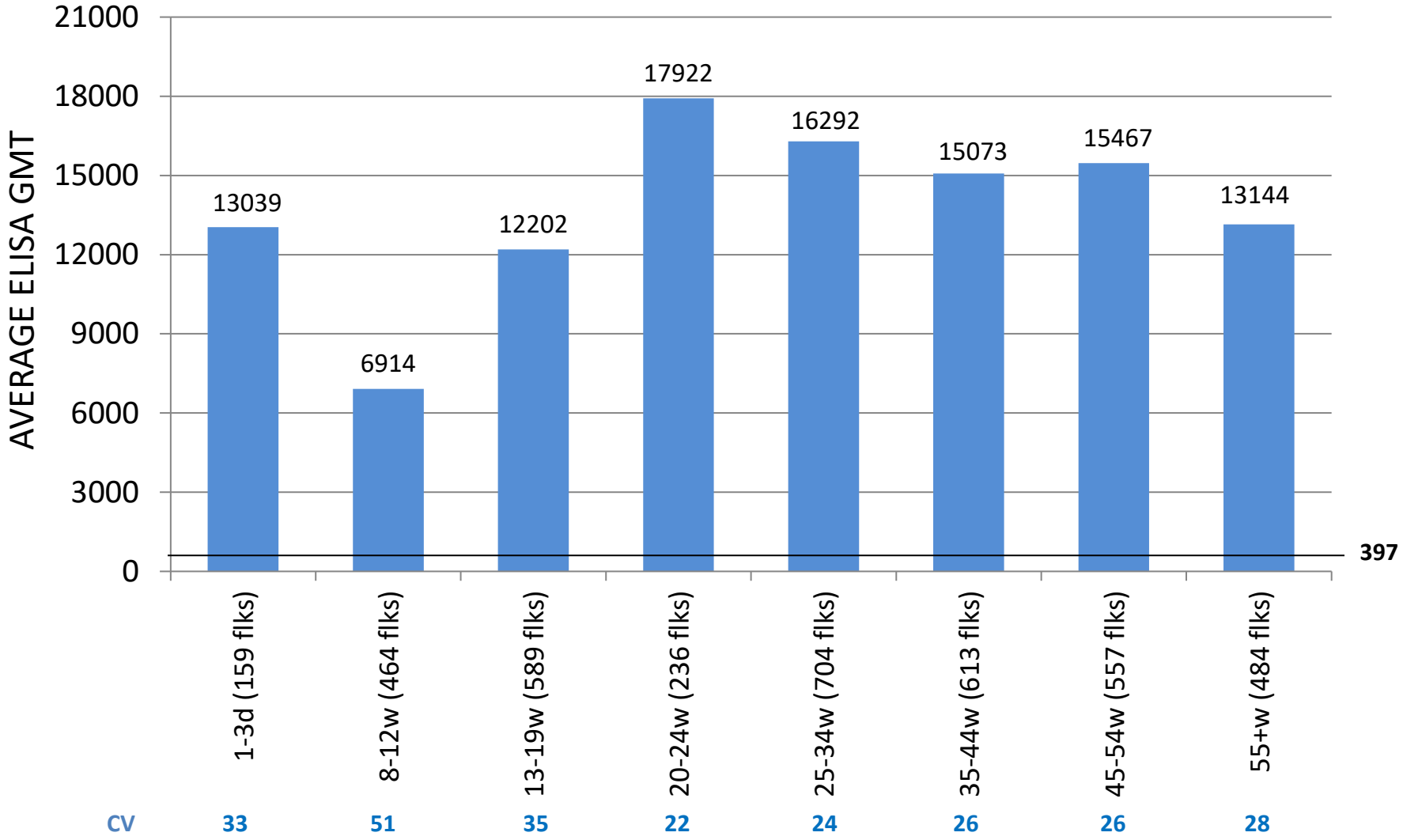
- Flock managers can utilize this data by comparing their own serological results against Georgia data for flocks falling within the same age ranges. They can also compare their own company baselines to GPLN's.
- Students can use this report to compare what is theoretically expected of flock responses 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, Luis Gomez and Guillermo Zavala for their input.

ELISA Titers in Broiler Breeders

- Age ranges were modified in this report (from last year's report) to better fit 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 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.
- The number of flocks per age range is 5 or greater.

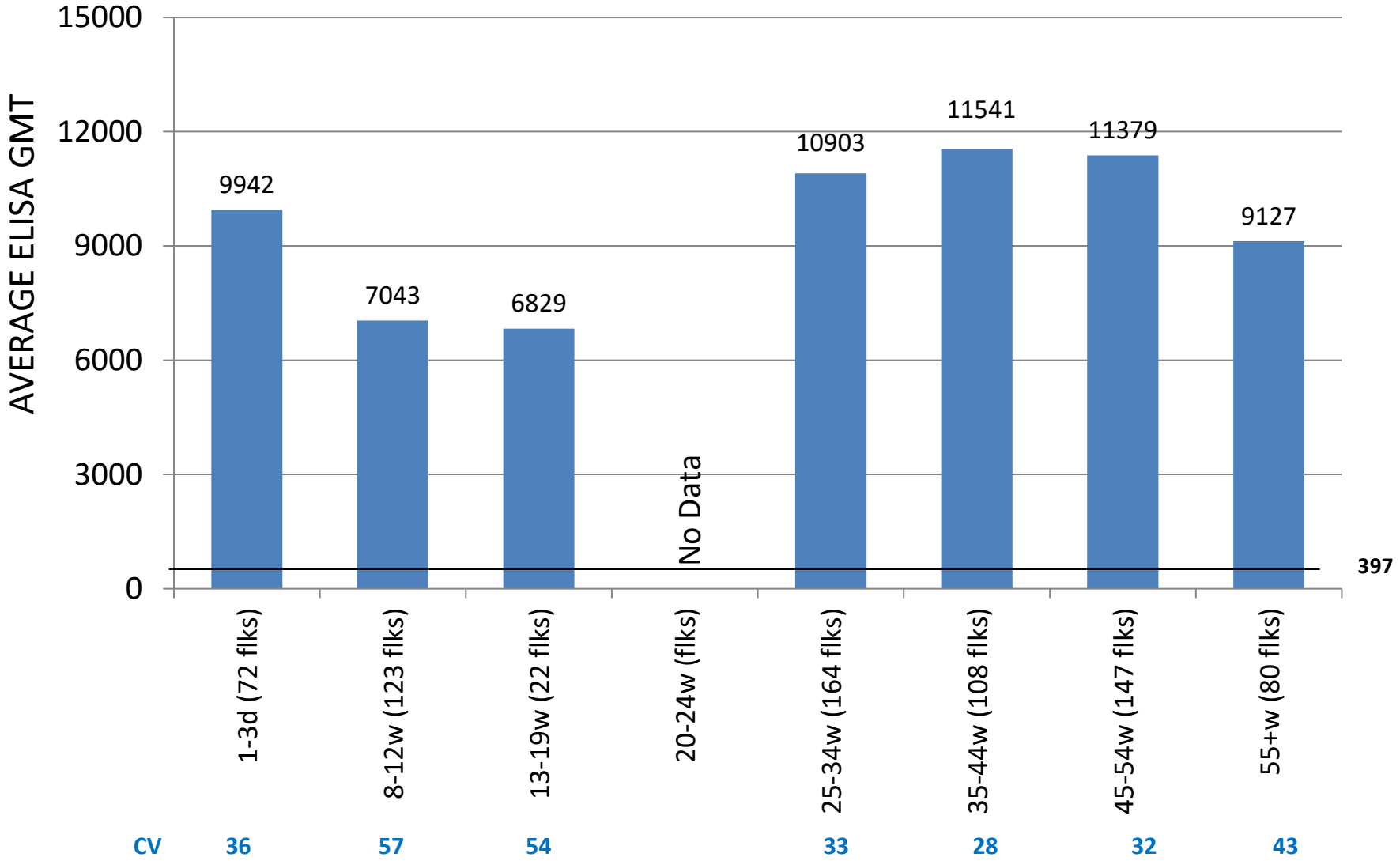
Breeder IBD-XR titers and CVs by age



Jan. 2019–Dec. 2020

Breeder IBV titers and CVs by age

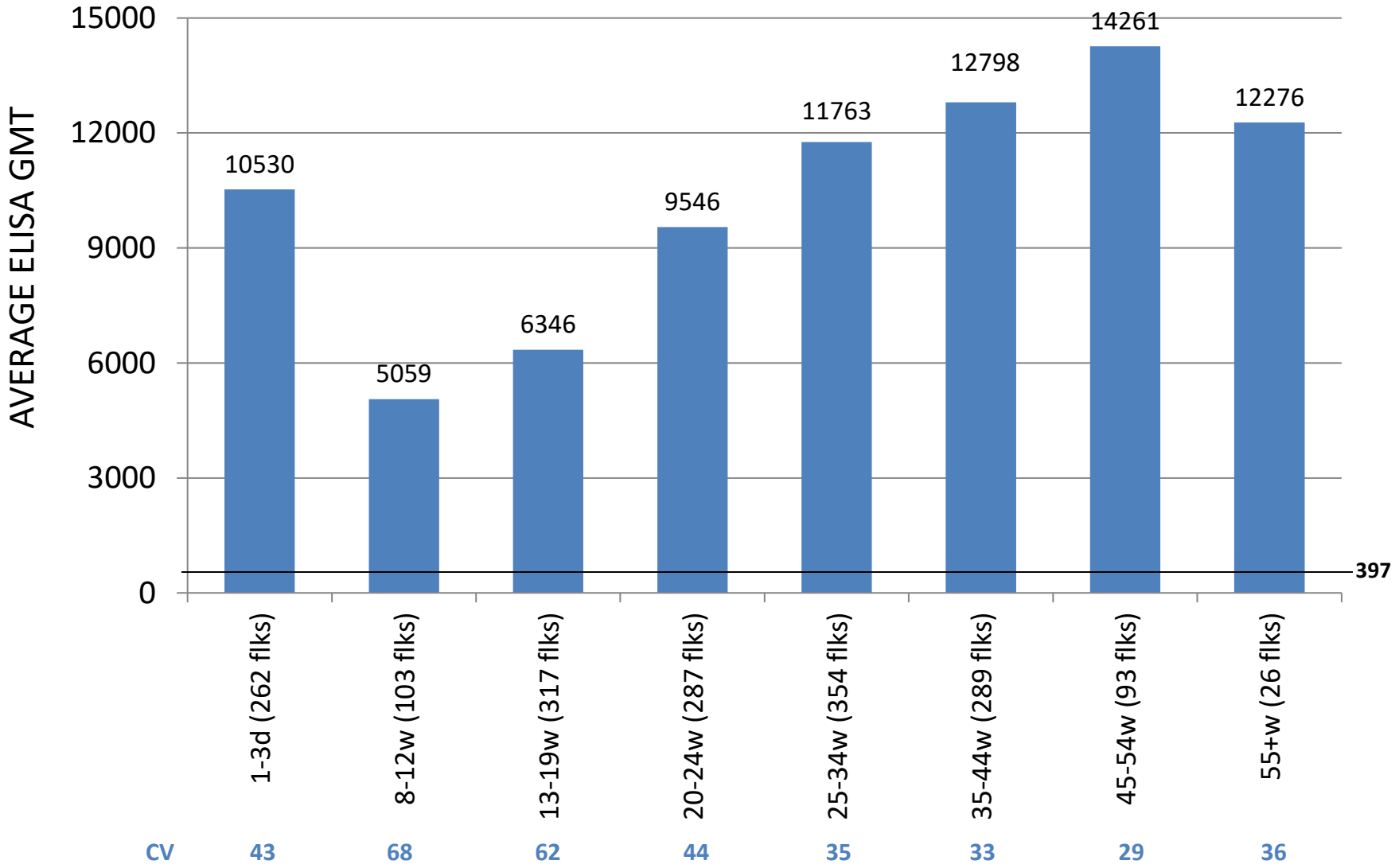
Complexes Vaccinating with Live IBV Vaccines



Jan. 2019–Dec. 2020

Breeder IBV titers and CVs by age

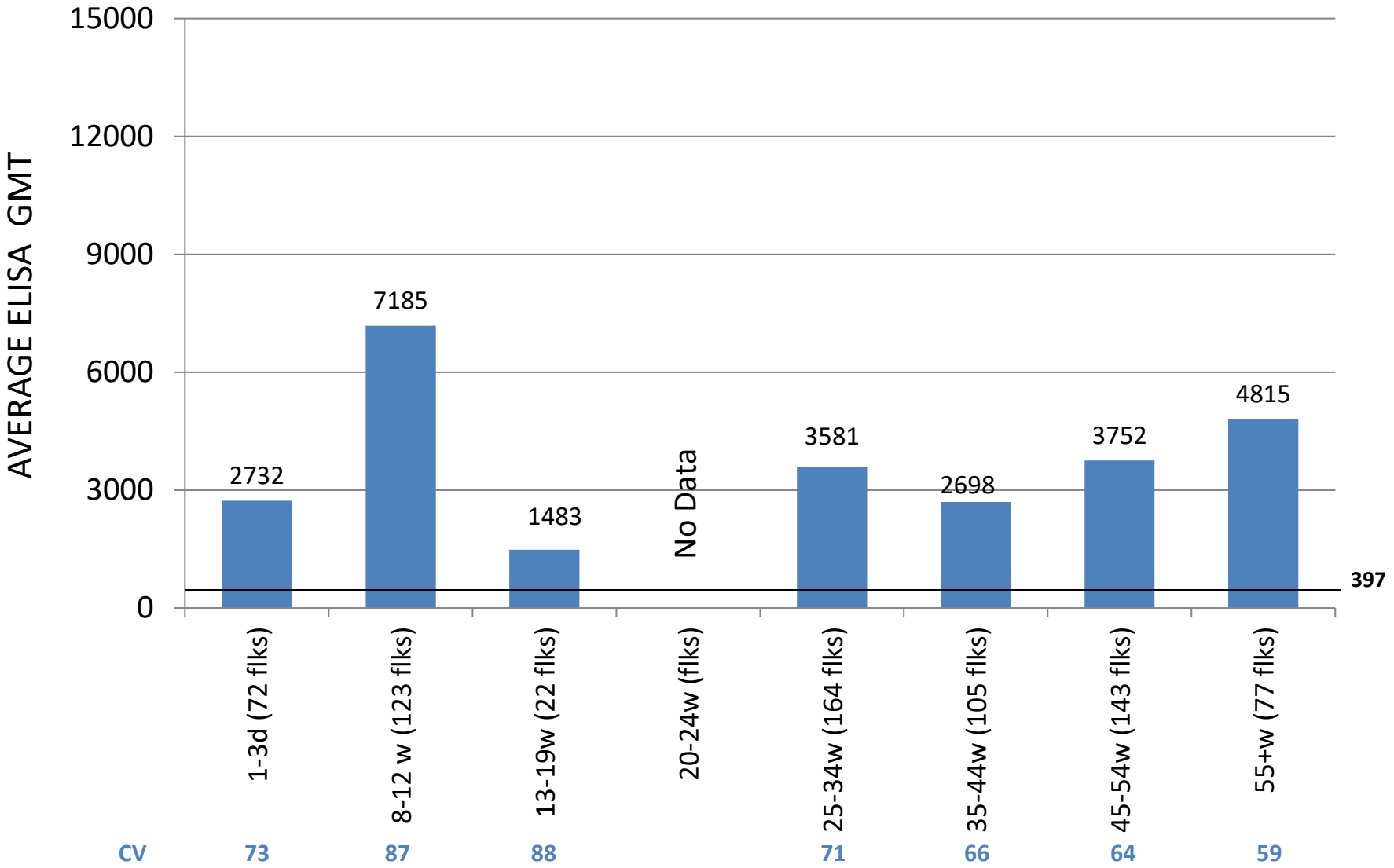
Complexes Vaccinating with Inactivated IBV Vaccines



Jan. 2019–Dec. 2020

Breeder NDV titers and CVs by age

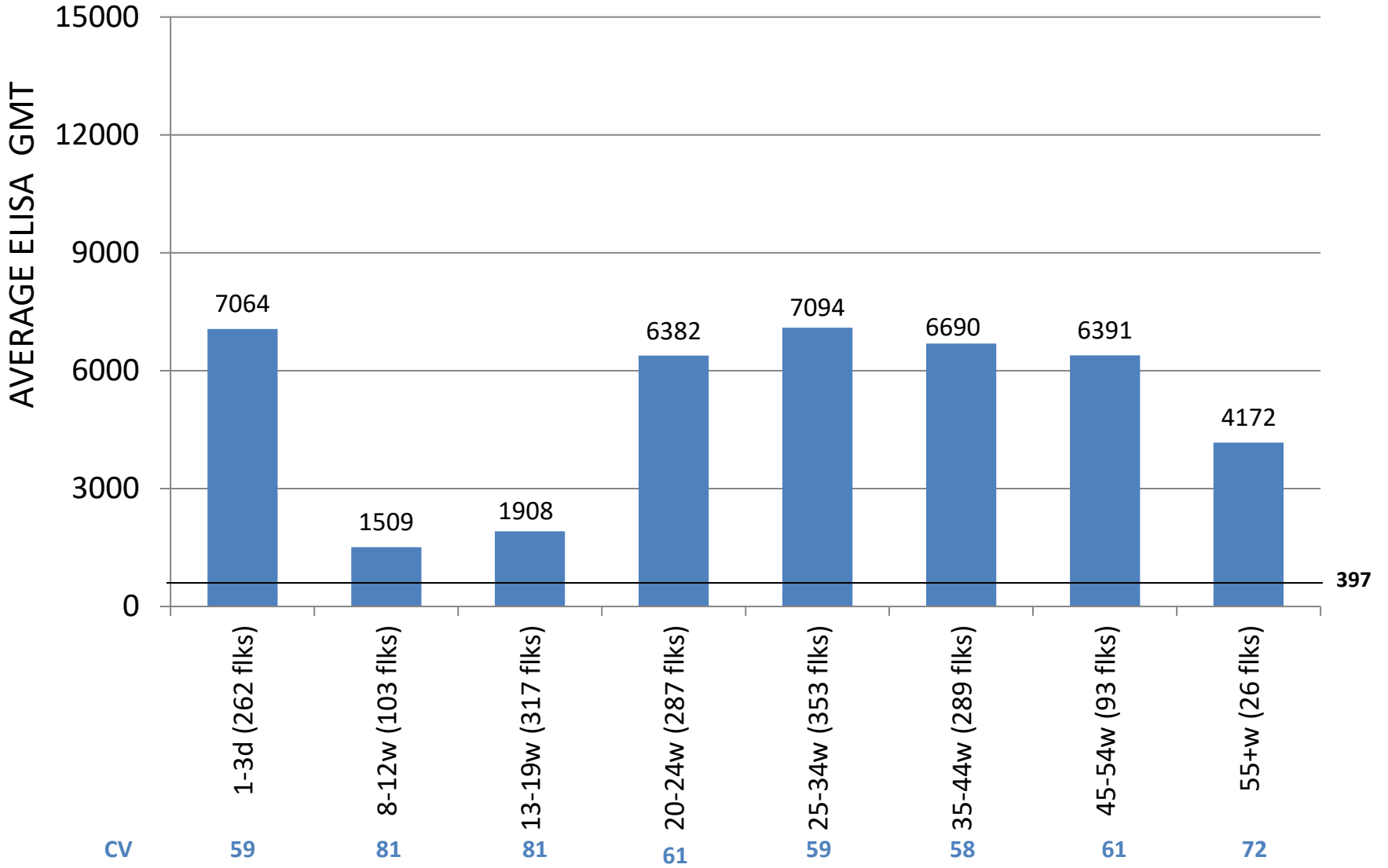
Companies Vaccinating with Live NDV Vaccines only



Jan. 2019–Dec. 2020

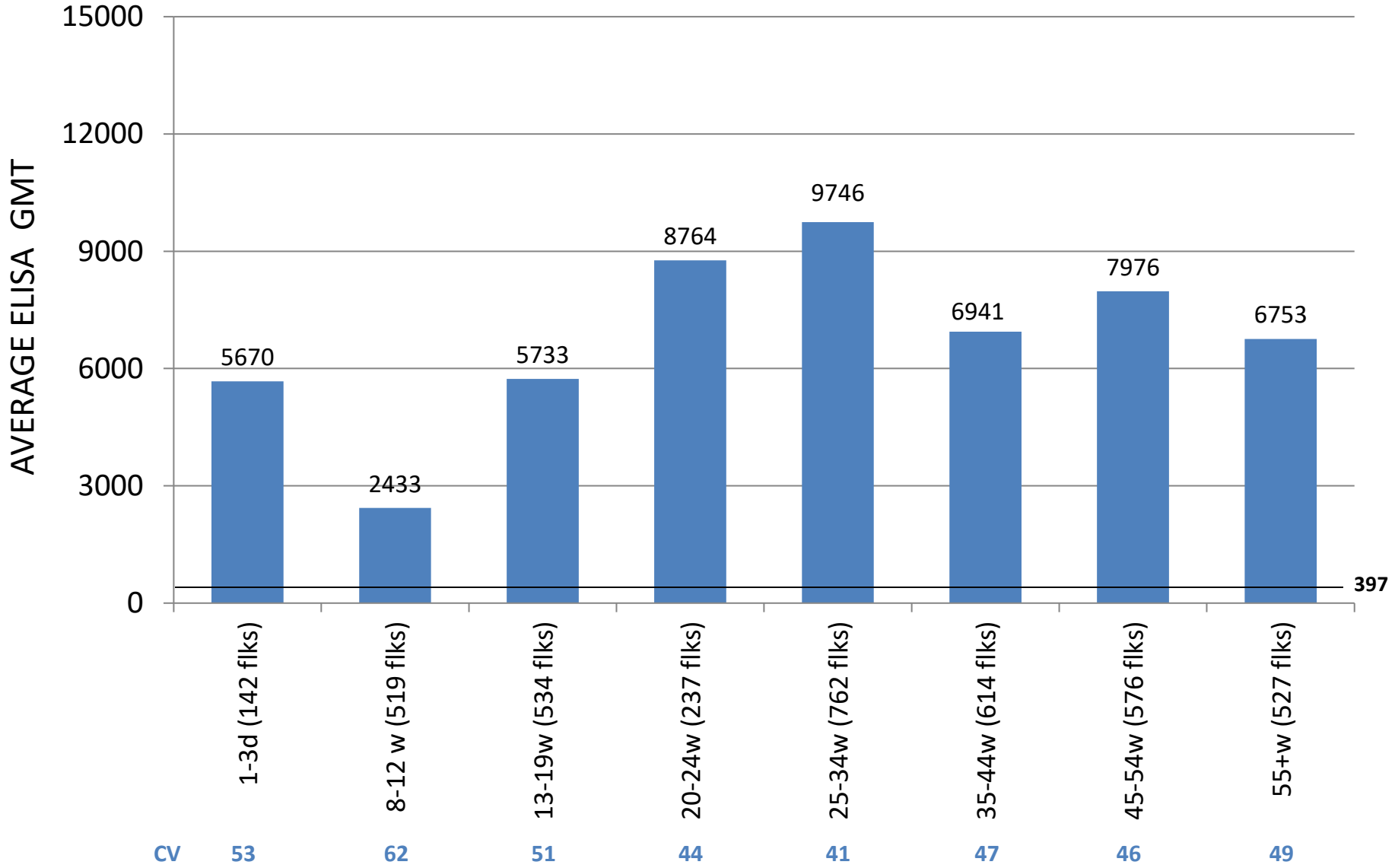
Breeder NDV titers and CVs by age

Companies Vaccinating with Inactivated NDV Vaccines



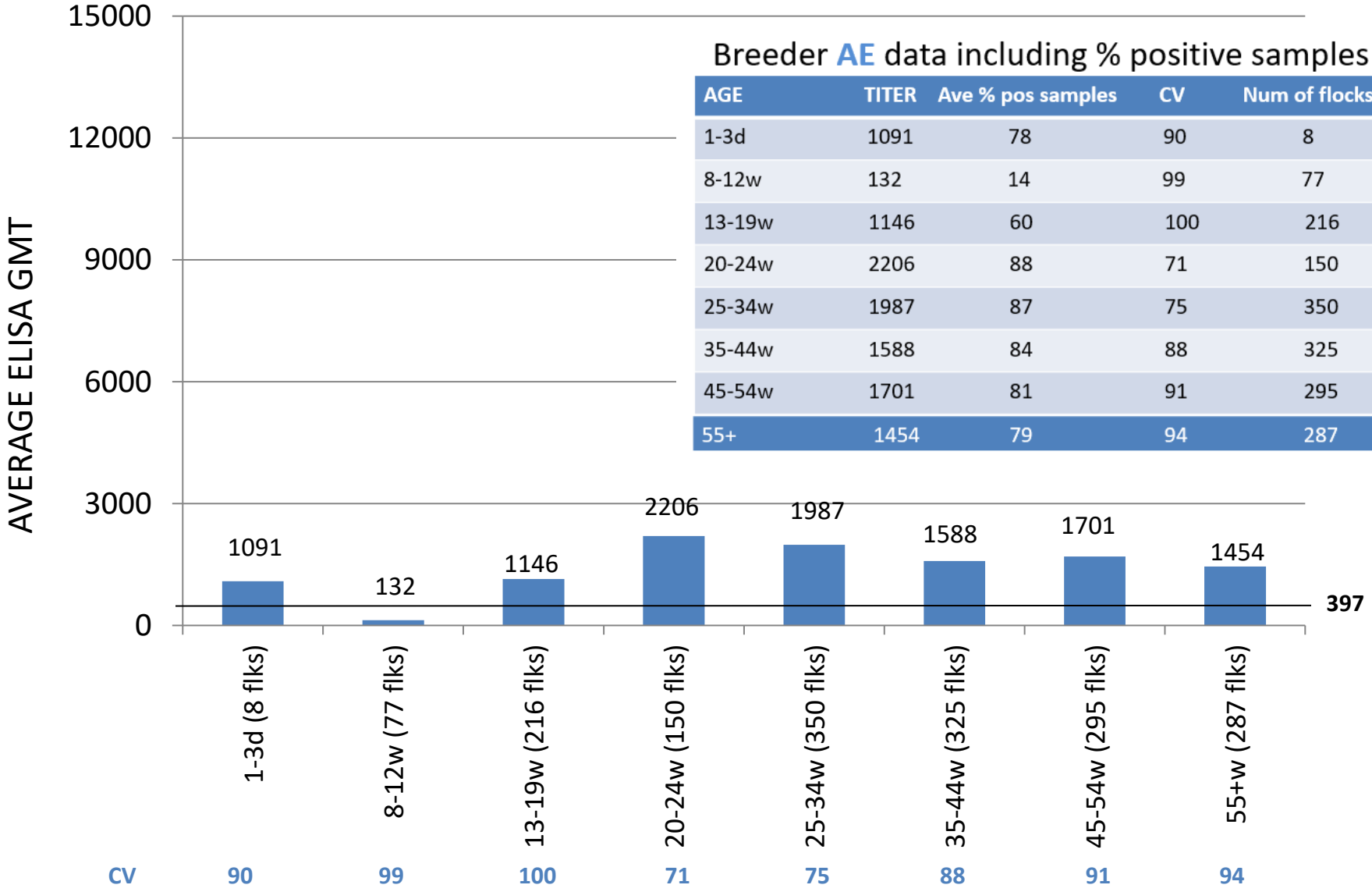
Jan. 2019–Dec. 2020

Breeder REO titers and CVs by age



Jan. 2019–Dec. 2020

Breeder AE titers and CVs by age



Breeder AE data including % positive samples

AGE	TITER	Ave % pos samples	CV	Num of flocks
1-3d	1091	78	90	8
8-12w	132	14	99	77
13-19w	1146	60	100	216
20-24w	2206	88	71	150
25-34w	1987	87	75	350
35-44w	1588	84	88	325
45-54w	1701	81	91	295
55+	1454	79	94	287

Jan. 2019–Dec. 2020

Breeder CAV % positive and CVs by age

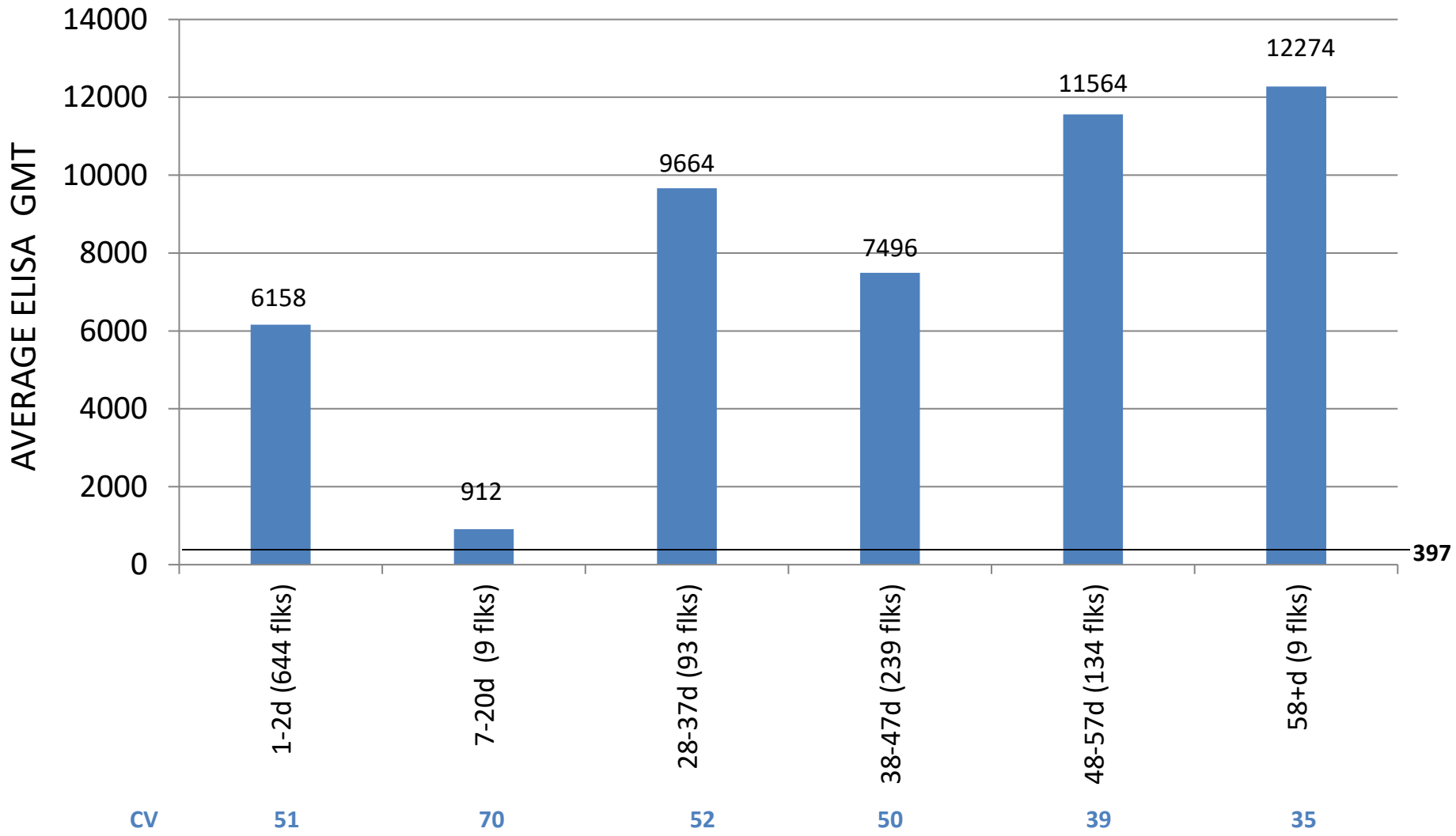
AGE	Avg % positive samples	CV	Num of flocks
1-3d	99	54	75
8-12w	96	65	190
13-19w	98	49	649
20-24w	100	41	153
25-34w	100	49	111
35-44w	100	49	74
45-54w	99	57	41
55+	100	41	17

Jan. 2019–Dec. 2020

ELISA Titers in Broilers

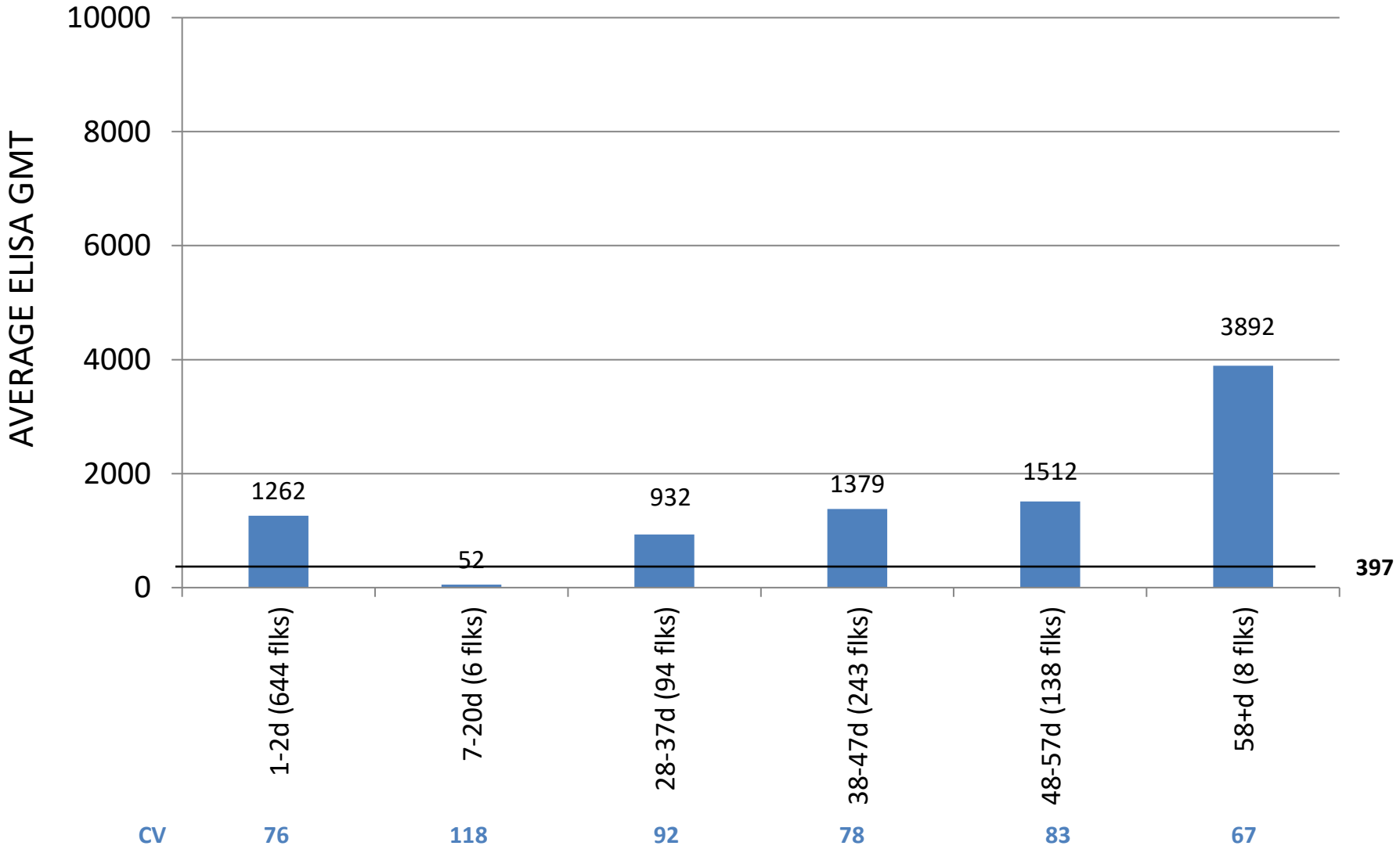
- Age ranges were modified in this report to better reflect the samples received at the laboratory.
- After 28 days of age, the larger age ranges (compared to previous reports) result in more consistent trends because of the larger numbers of flocks represented and also because of more diversity in sample 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



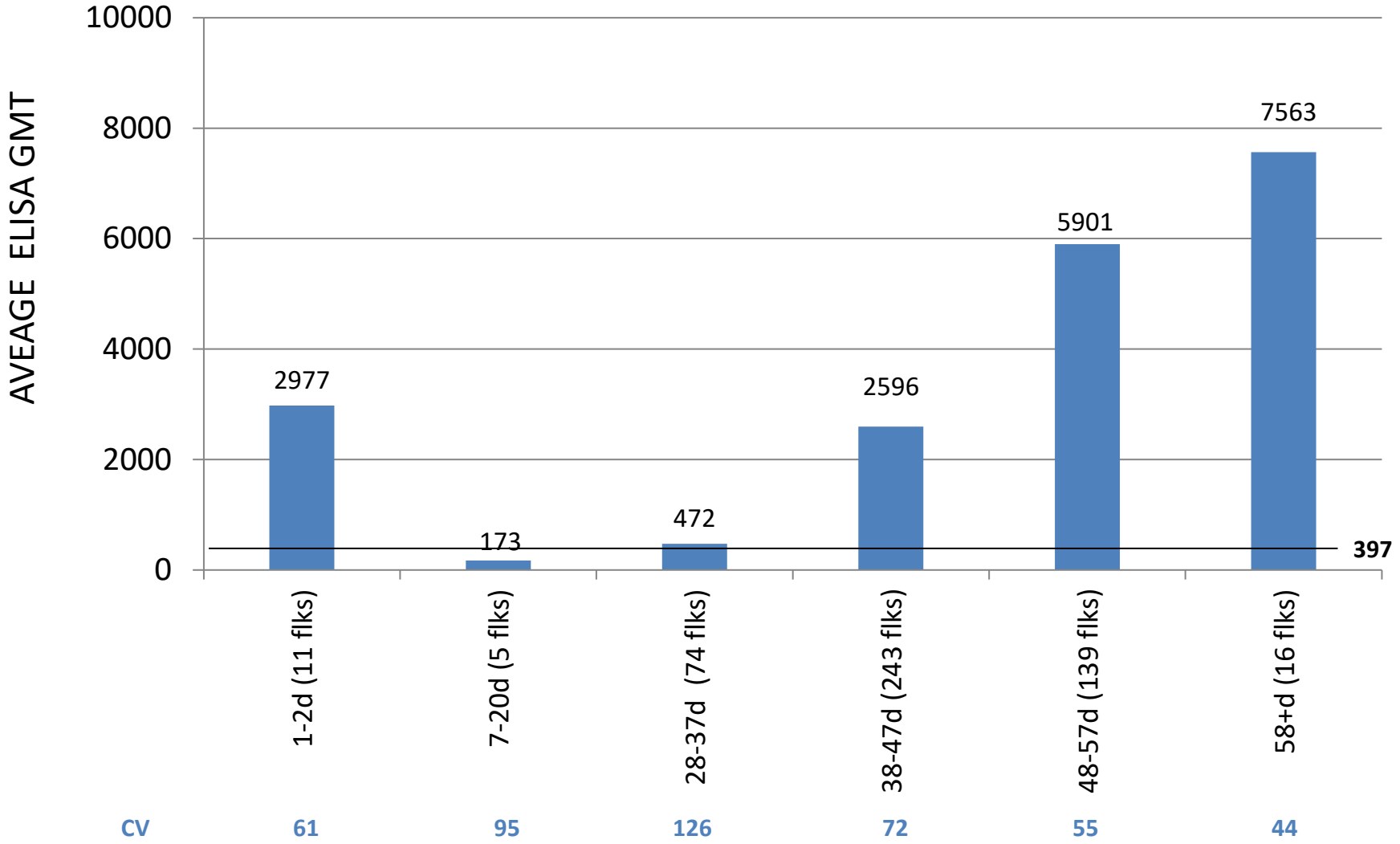
Jan. 2019–Dec. 2020

Broiler REO titers and CVs by age



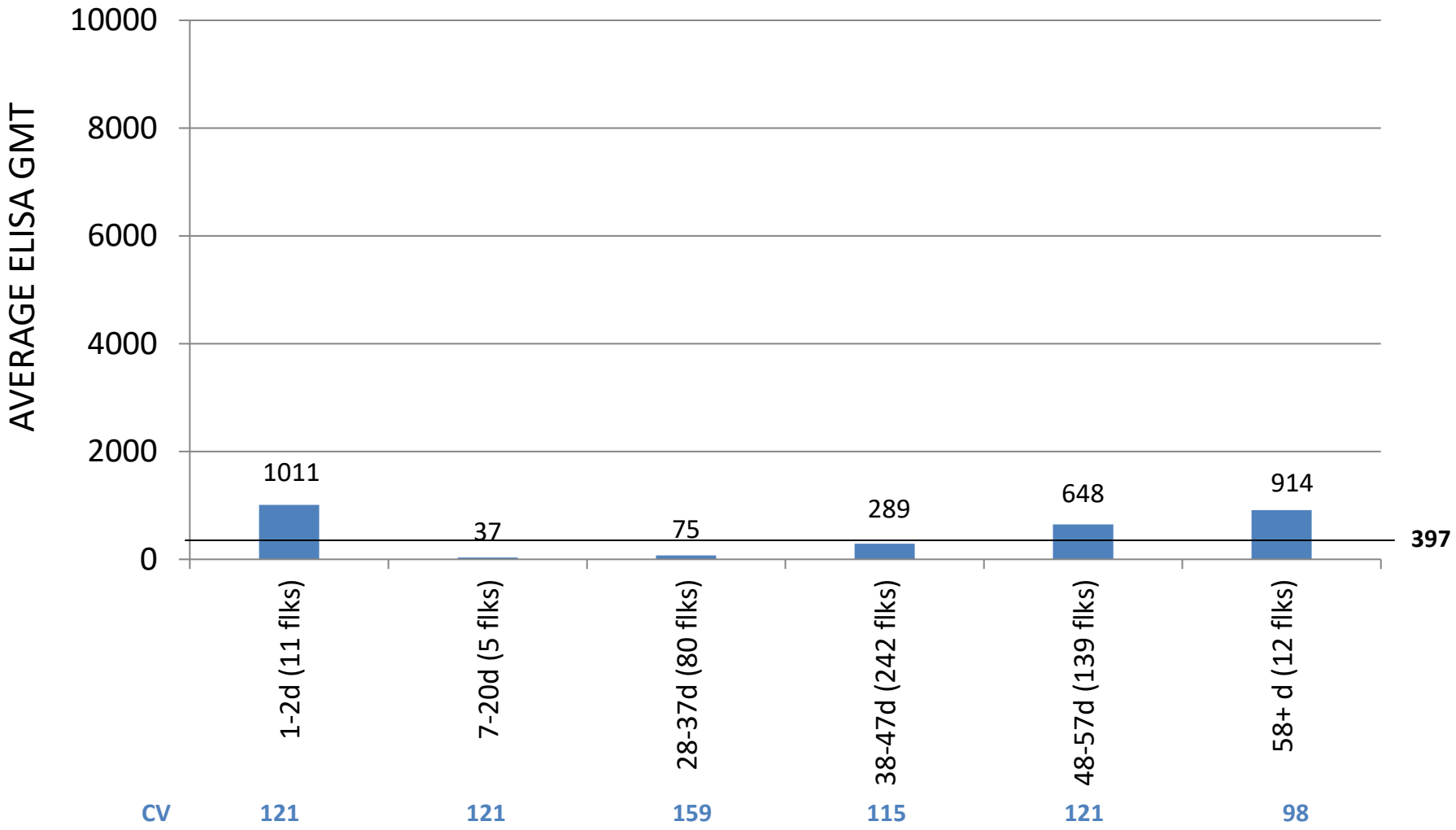
Jan. 2019–Dec. 2020

Broiler IBV titers and CVs by age



Jan. 2019–Dec. 2020

Broiler NDV titers and CVs by age



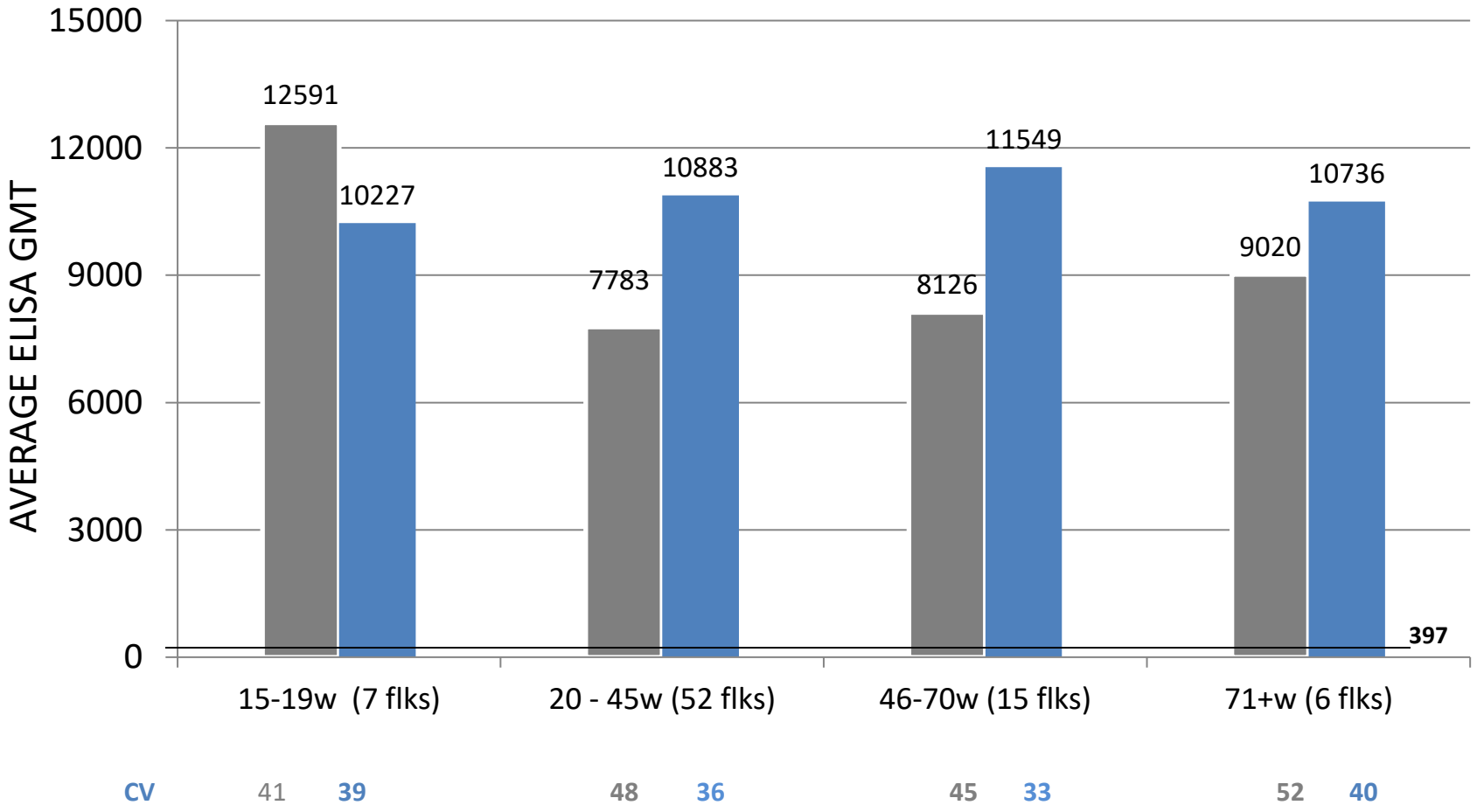
Jan. 2018–Dec. 2019

Jan. 2019–Dec. 2020

ELISA Titers in Commercial Layers

- 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.
- The number of flocks per age range is 5 or greater.

Layer NDV & IBV titers and CVs by age



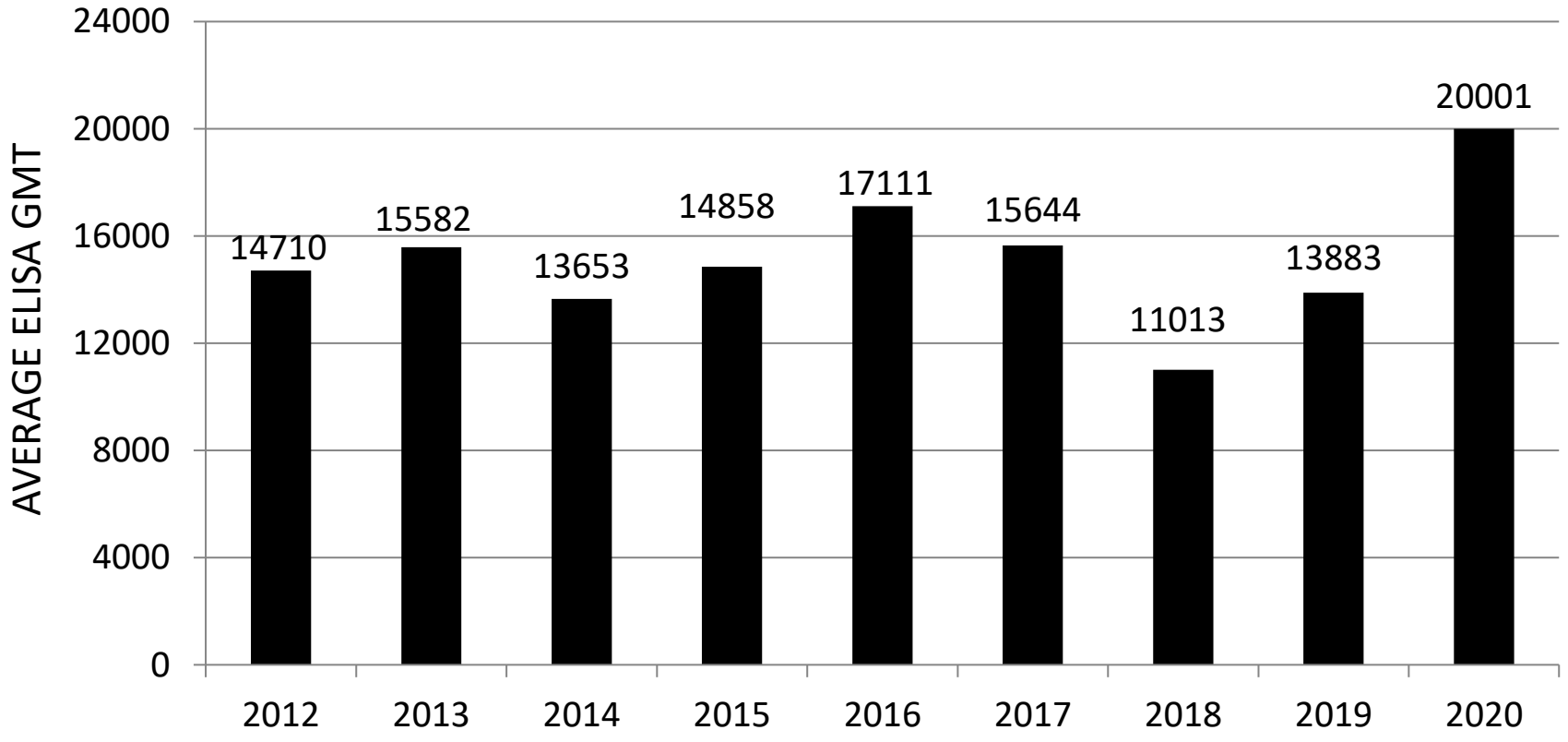
Jan. 2019–Dec. 2020

ELISA Titers over Time

The following 5 graphs show trends over time (2012-2020) for targeted agents and age ranges.

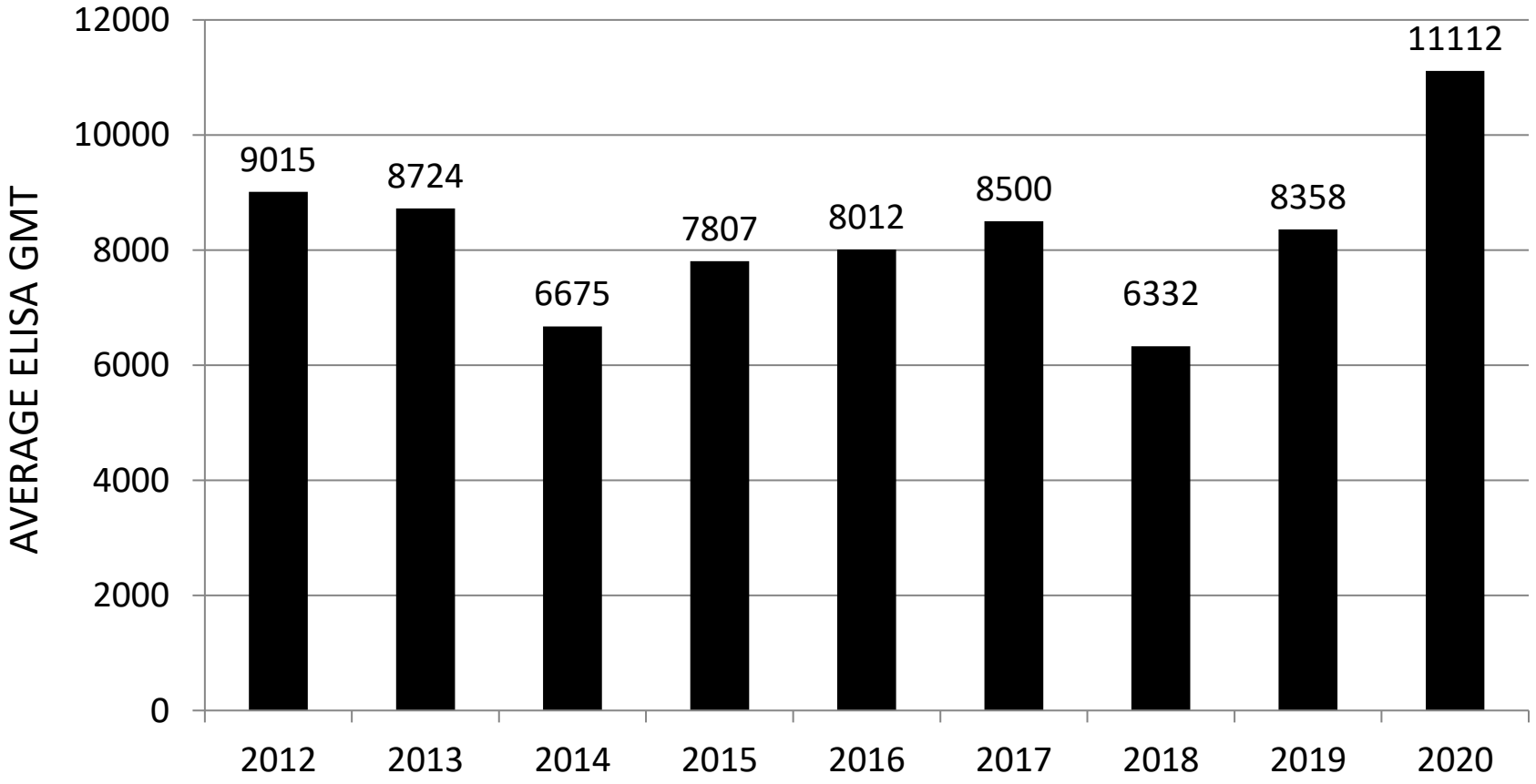
- Breeder IBD-XR titers at 22-26 weeks of age should be at their maximum. For that reason, this is a very popular age range for testing. Different vaccines are more immunogenic than others, and vaccination programs change over time, so that data point is interesting to compare year to year.
- Breeder 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.
- 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



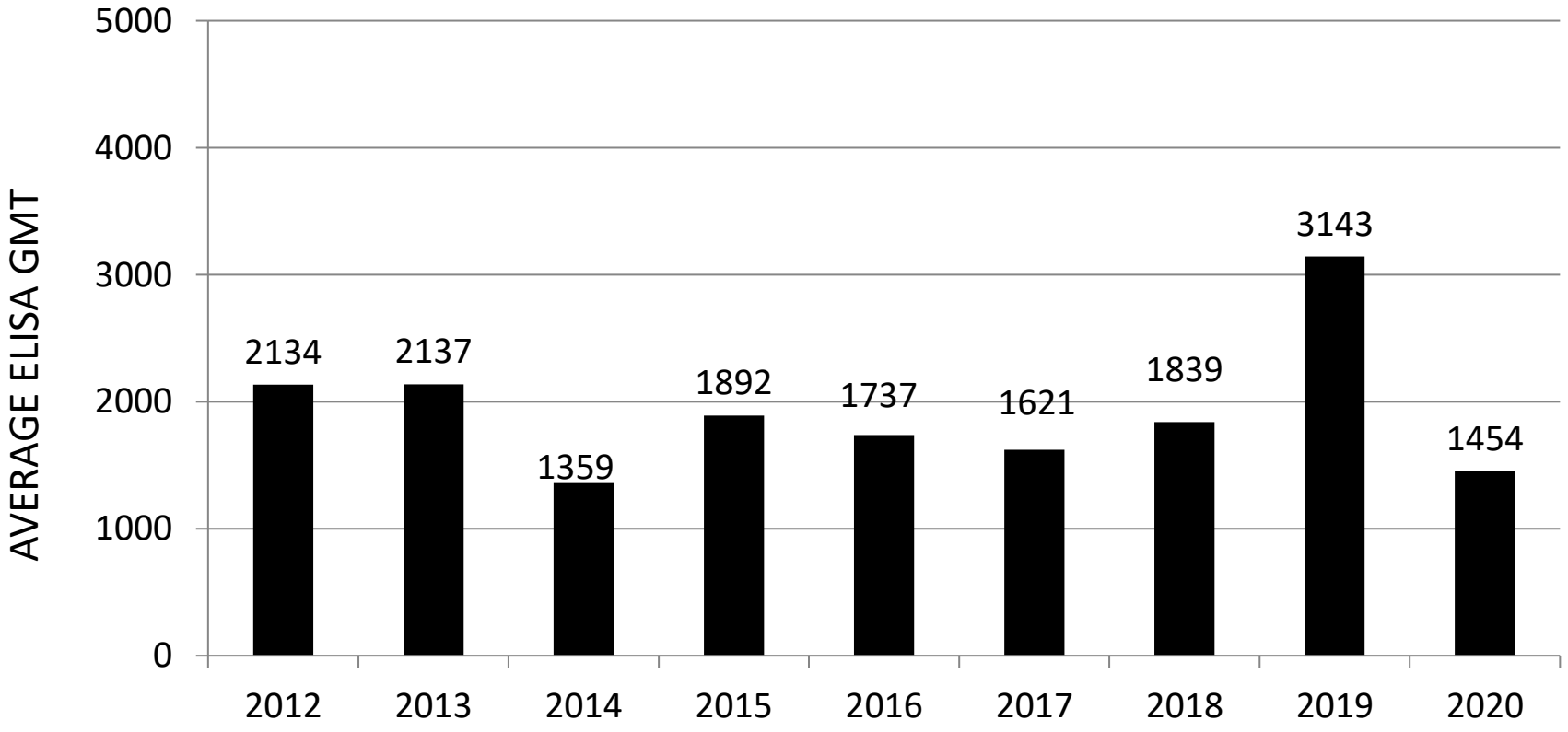
Jan. 2019–Dec. 2020

GA 22-26w REO titers in Breeders over time



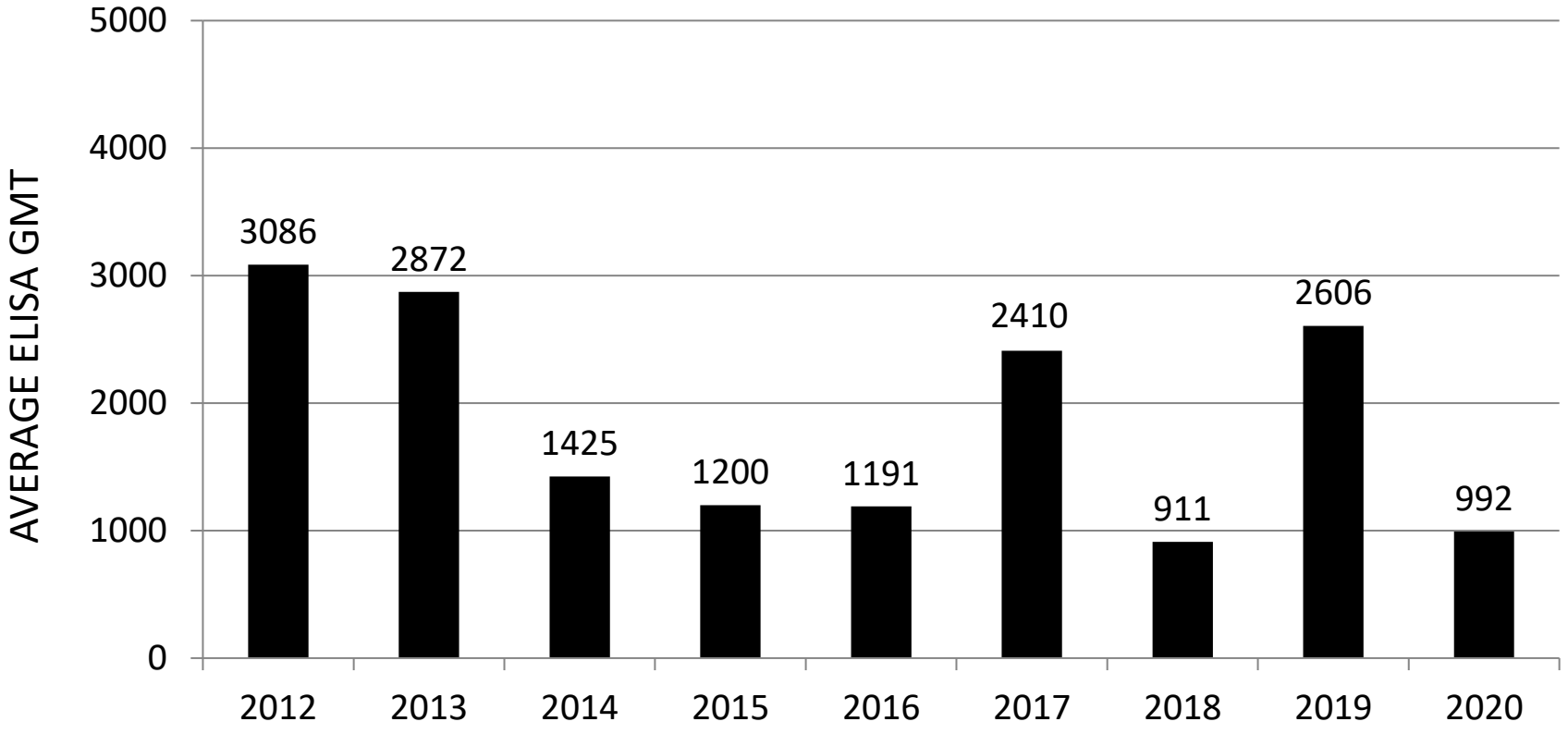
Jan. 2019–Dec. 2020

GA 20-24w AE titers in Breeders over time



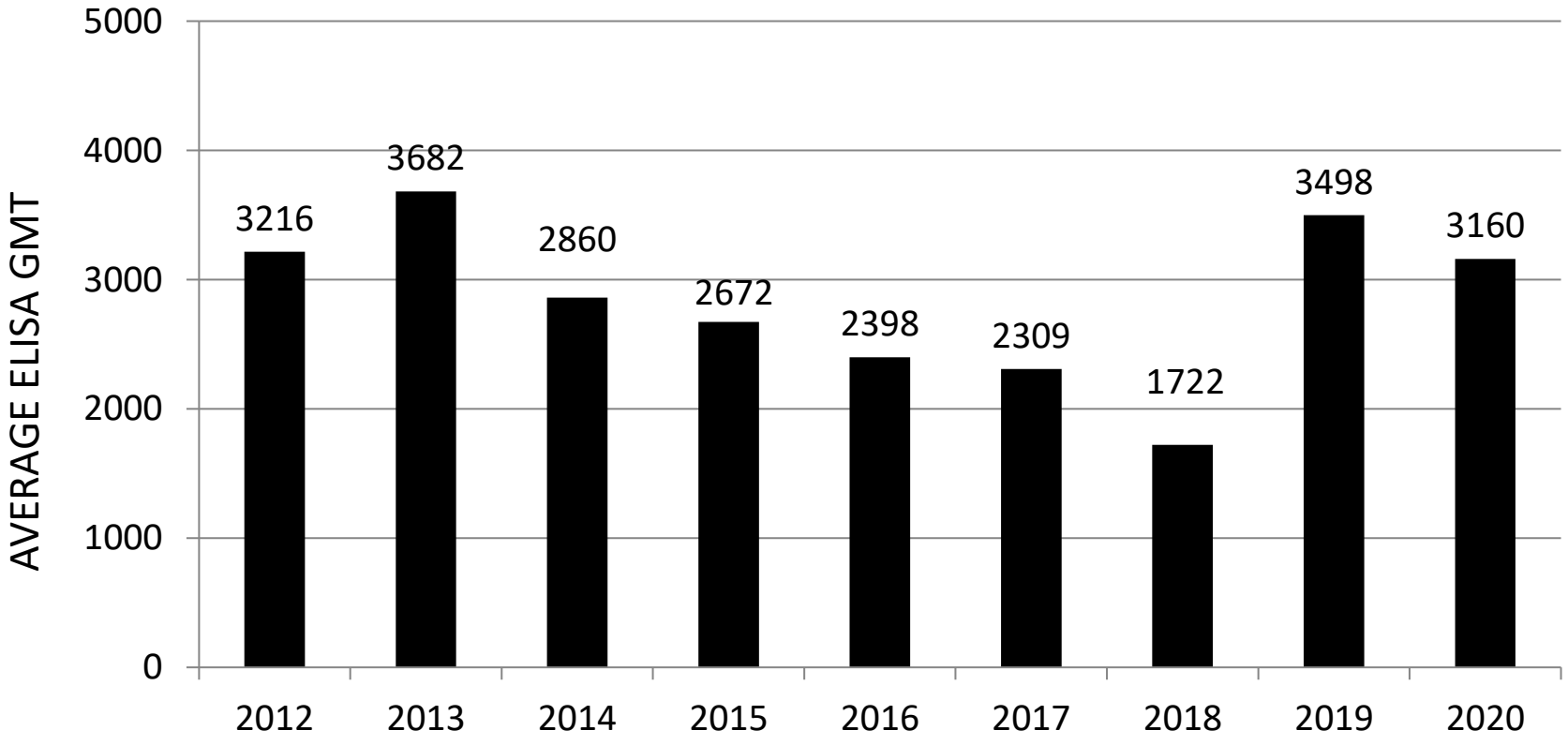
Jan. 2019–Dec. 2020

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



Jan. 2019–Dec. 2020

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



Jan. 2019–Dec. 2020