

4<sup>th</sup> H&N  
DISTRIBUTOR  
CONFERENCE  
ISTANBUL

23<sup>rd</sup> to 26<sup>th</sup>  
OCT  
2023

# Unlocking the future of Poultry Genetics

**Dr. David Caverro Pintado**

ISTANBUL  
TURKEY  
2023



# Agenda

1. Current Situation
2. Analysis of PS Data
3. Future Perspectives

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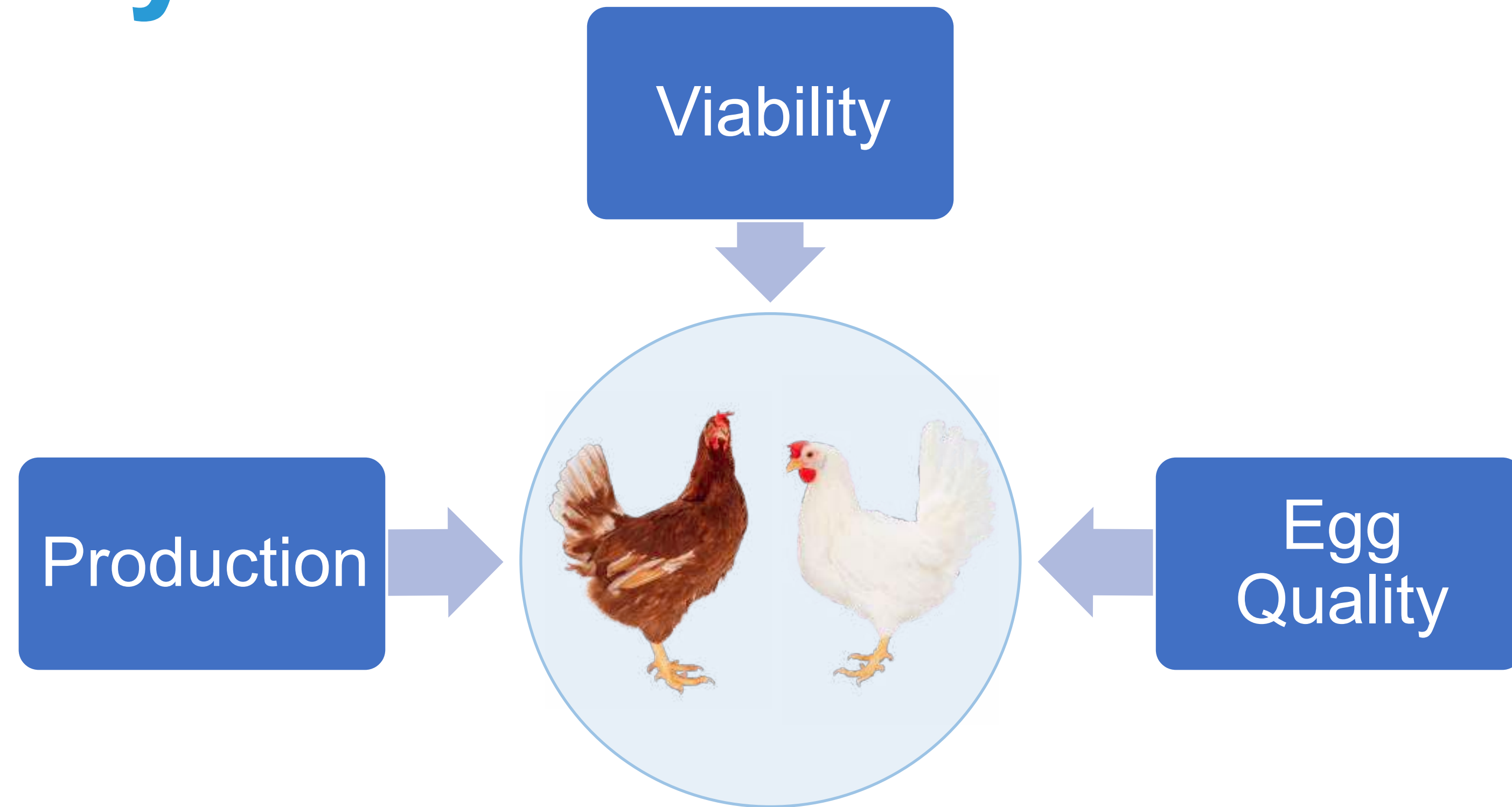




# 1. Part – Current Situation

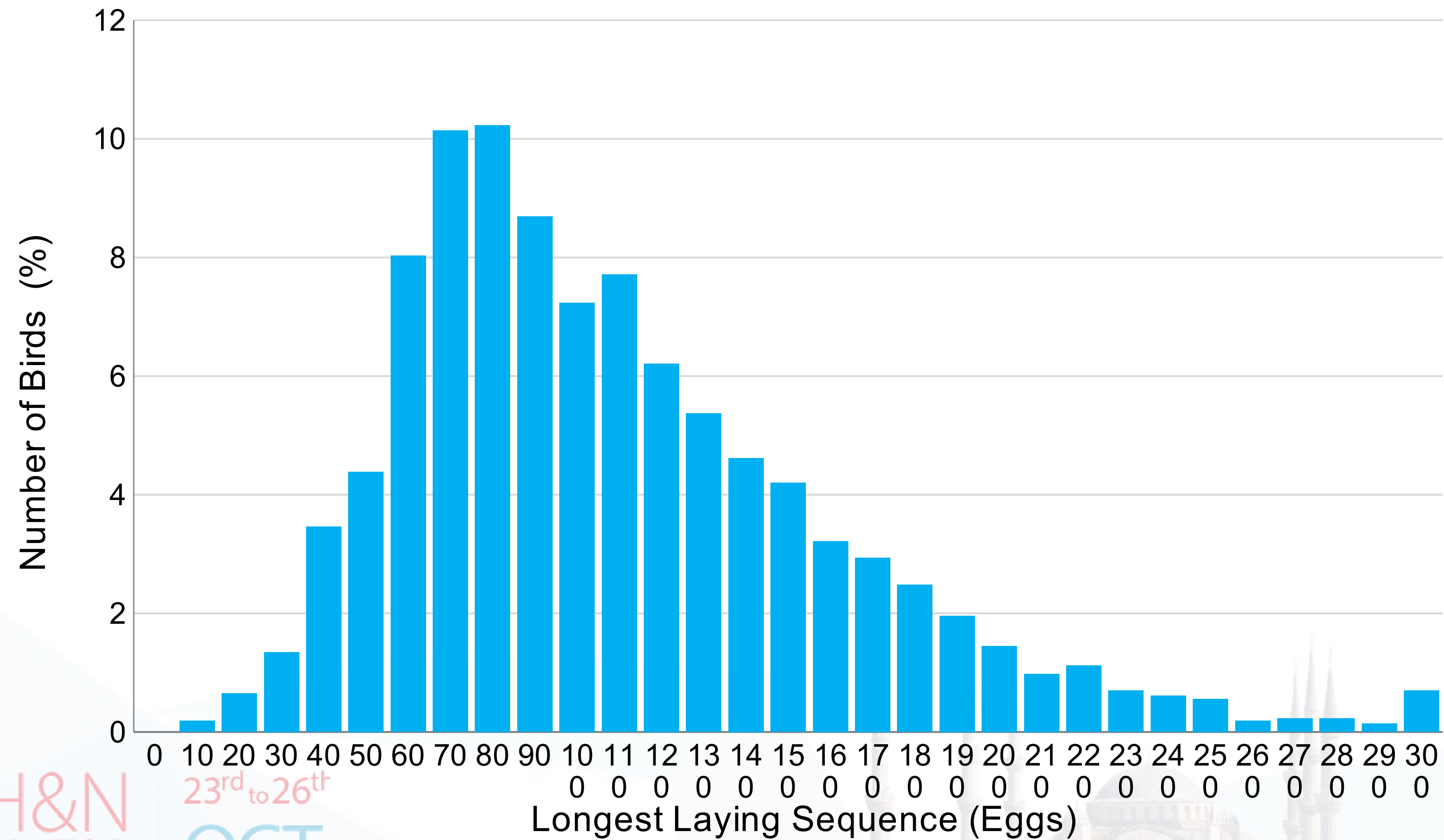


# Longevity





# Productivity



Genetic Trend at 100w



5 Eggs/HH per year

# Eggshell Quality

Genetic Trend at 90w



+0.8 N per year

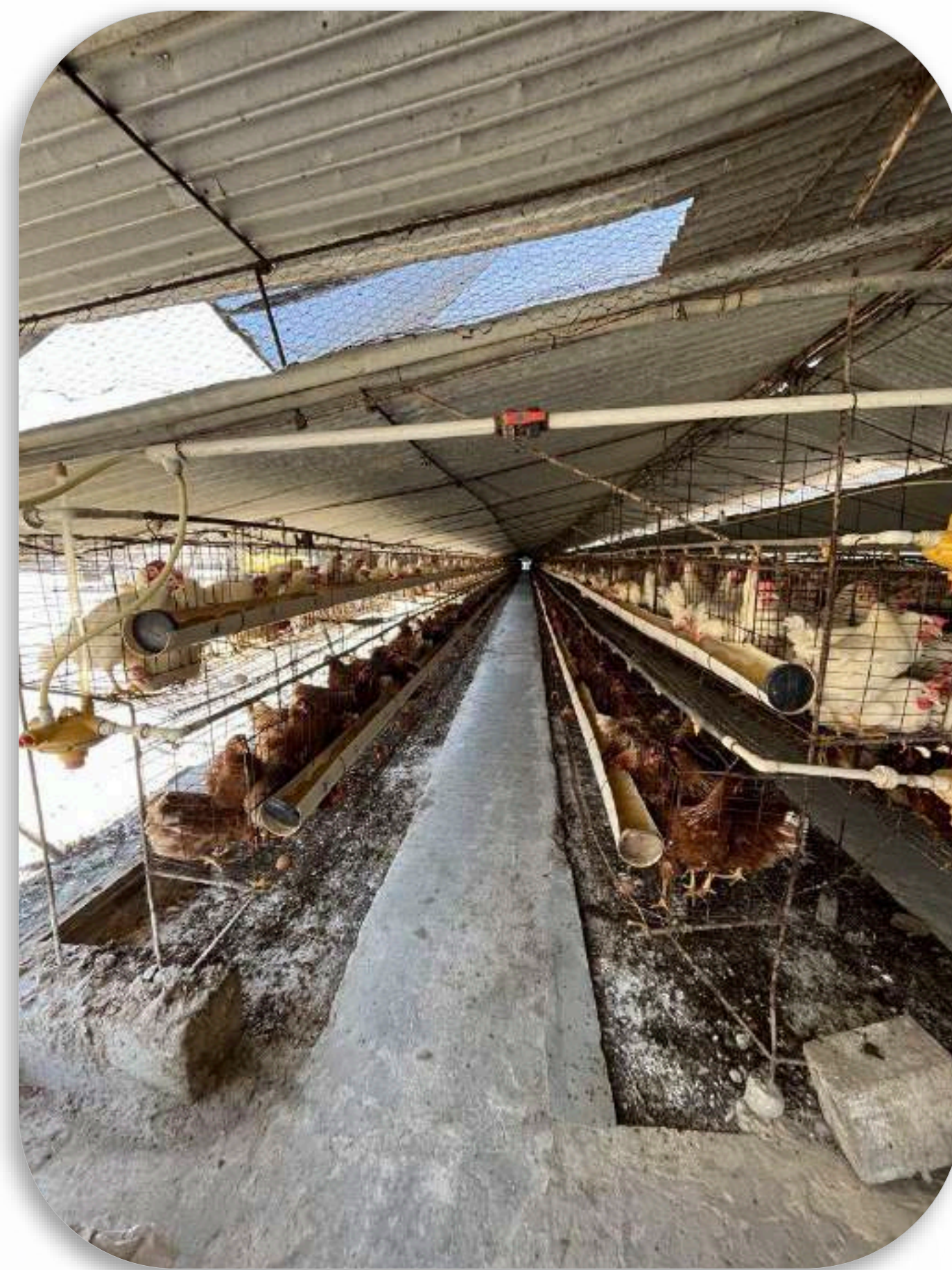


Breaking Strength (N)





# Viability



Increased cross-line testing capacity in 5 countries



# Resilience

Cross-line testing with different climates

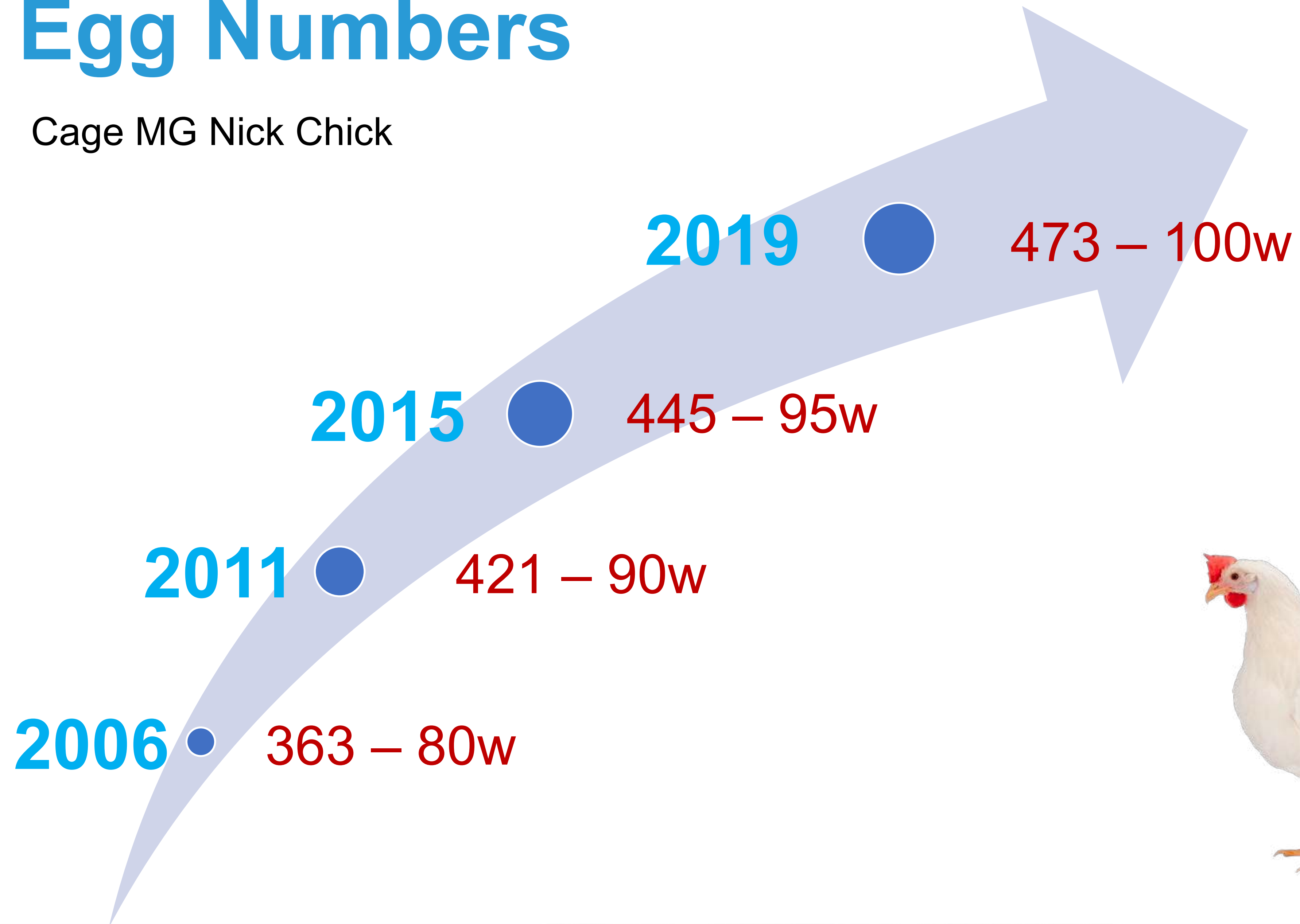
Variable density diets, quality of raw materials & presentation of the feed





# Egg Numbers

Cage MG Nick Chick



Every Year:  
+ 1 week  
+ 7 eggs

*Potentially:  
~1.5% less hens  
every year*





# Where is the limit?

Over 12k oocytes in the  
ovary at sexual maturity

(Nys and Guyot, 2011)





## 2. Part – PS DATA (Hatch 2020-2021)



KAI



KAI



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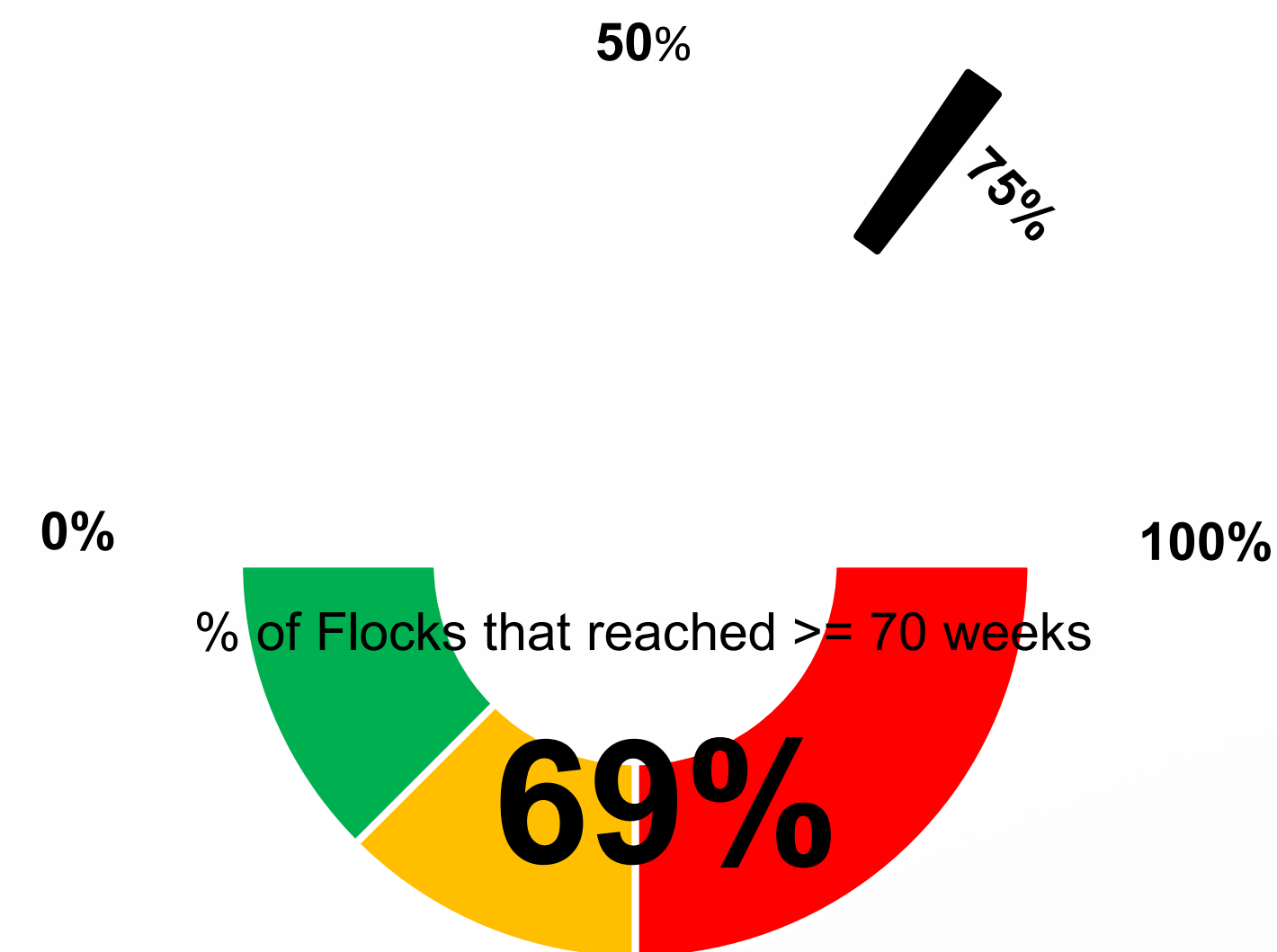
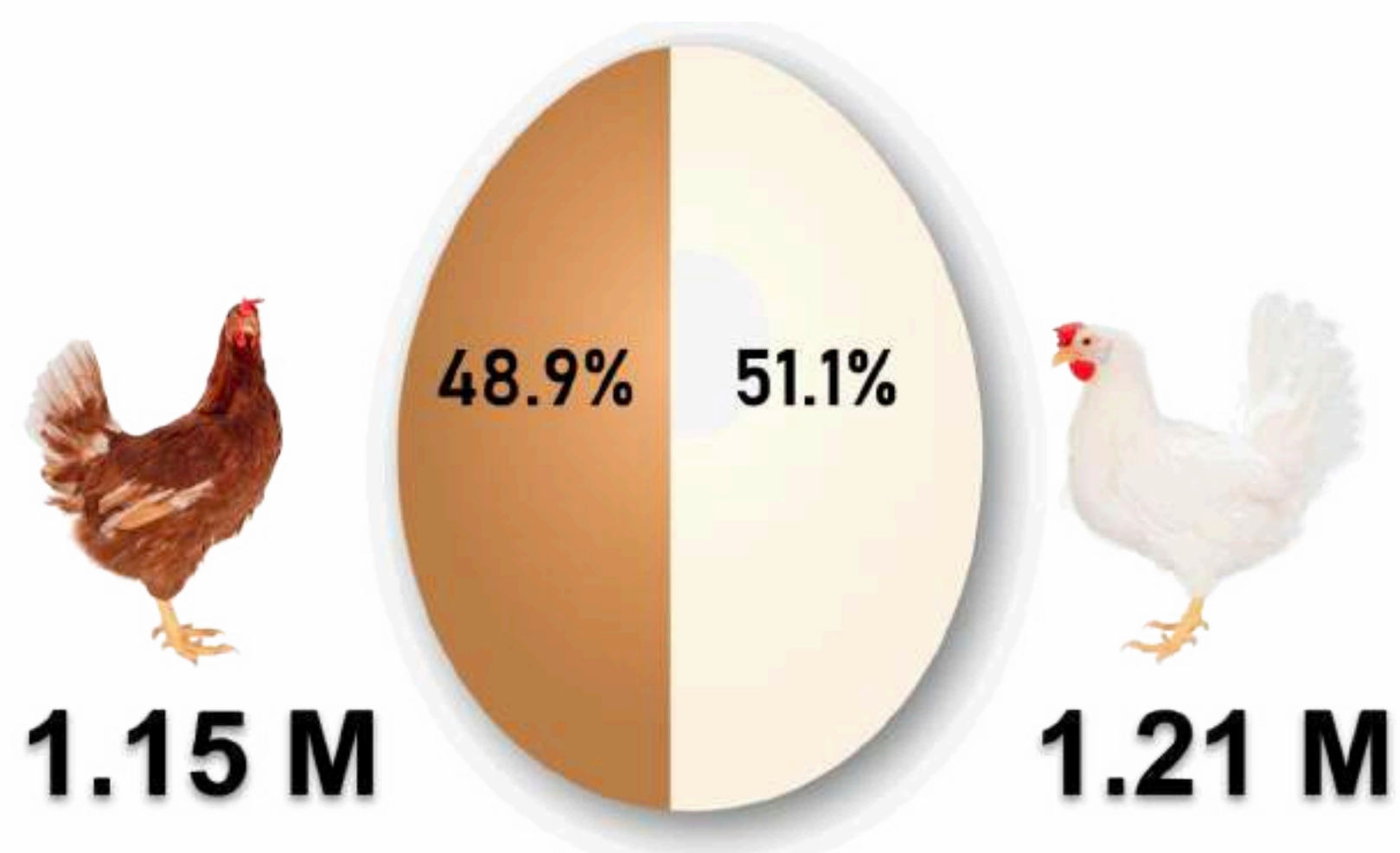
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# PS-Flock Data (2020-2021)

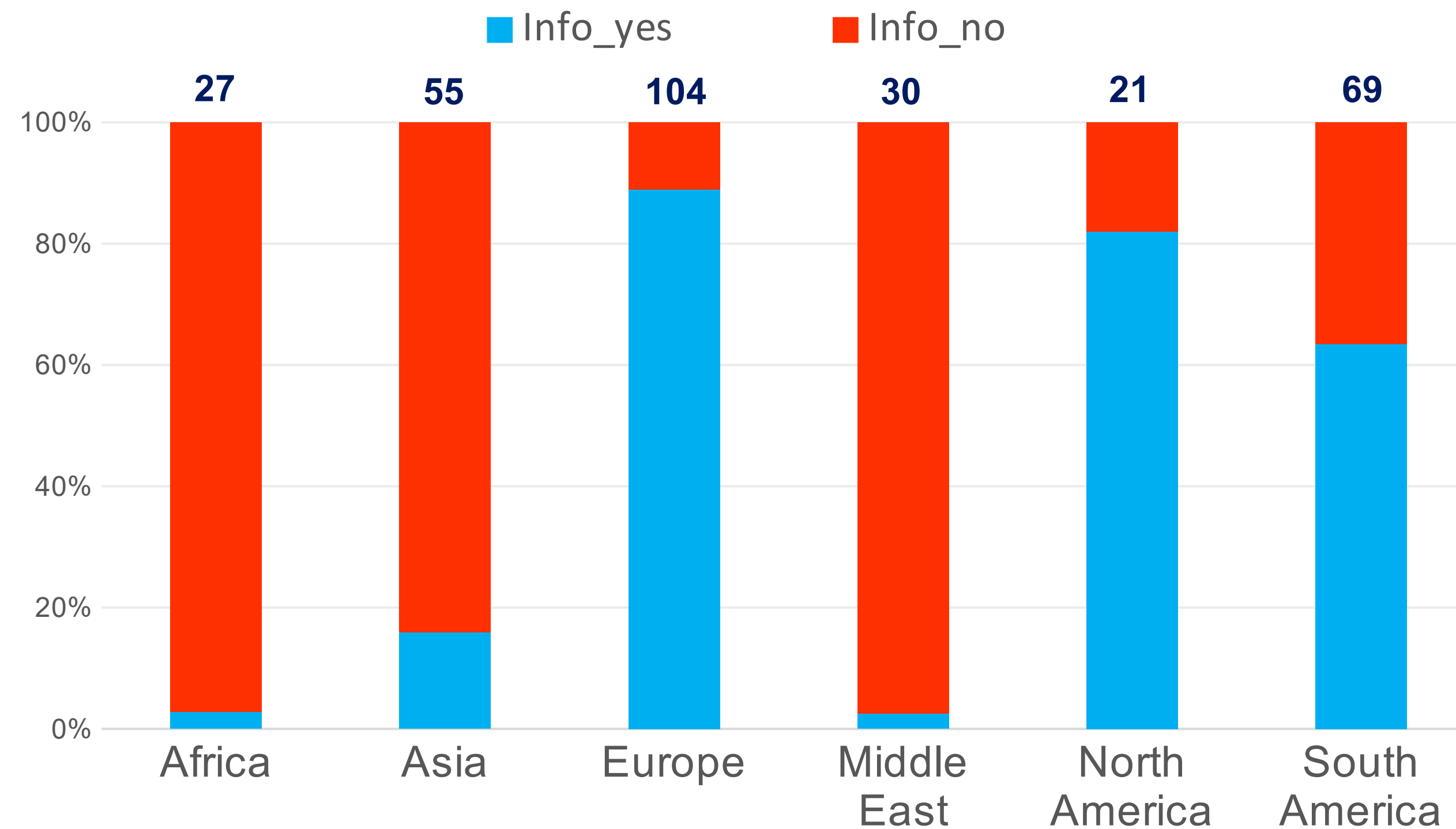
	Country	No. Flocks
1	Netherlands	50
2	Russia	29
3	Brazil	20
4	USA	13
5	Switzerland	12
6	Argentina	10
7	Guatemala	10
8	Colombia	6
9	Canada	5
10	Nepal	5
11	Portugal	5
12	Bolivia	4
13	Ecuador	4
14	France	4
15	Malaysia	4
16	Philippines	2
17	Sri Lanka	2
18	United Kingdom	2
19	Algeria	1
20	Hungary	1
21	Yemen	1
	<b>Total</b>	<b>190</b>





# Deliveries 2020-2021

- ✓ 306 PS-Deliveries
- ✓ Data: 174 (57%)



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# Comparison 2017-19 vs 2020-21

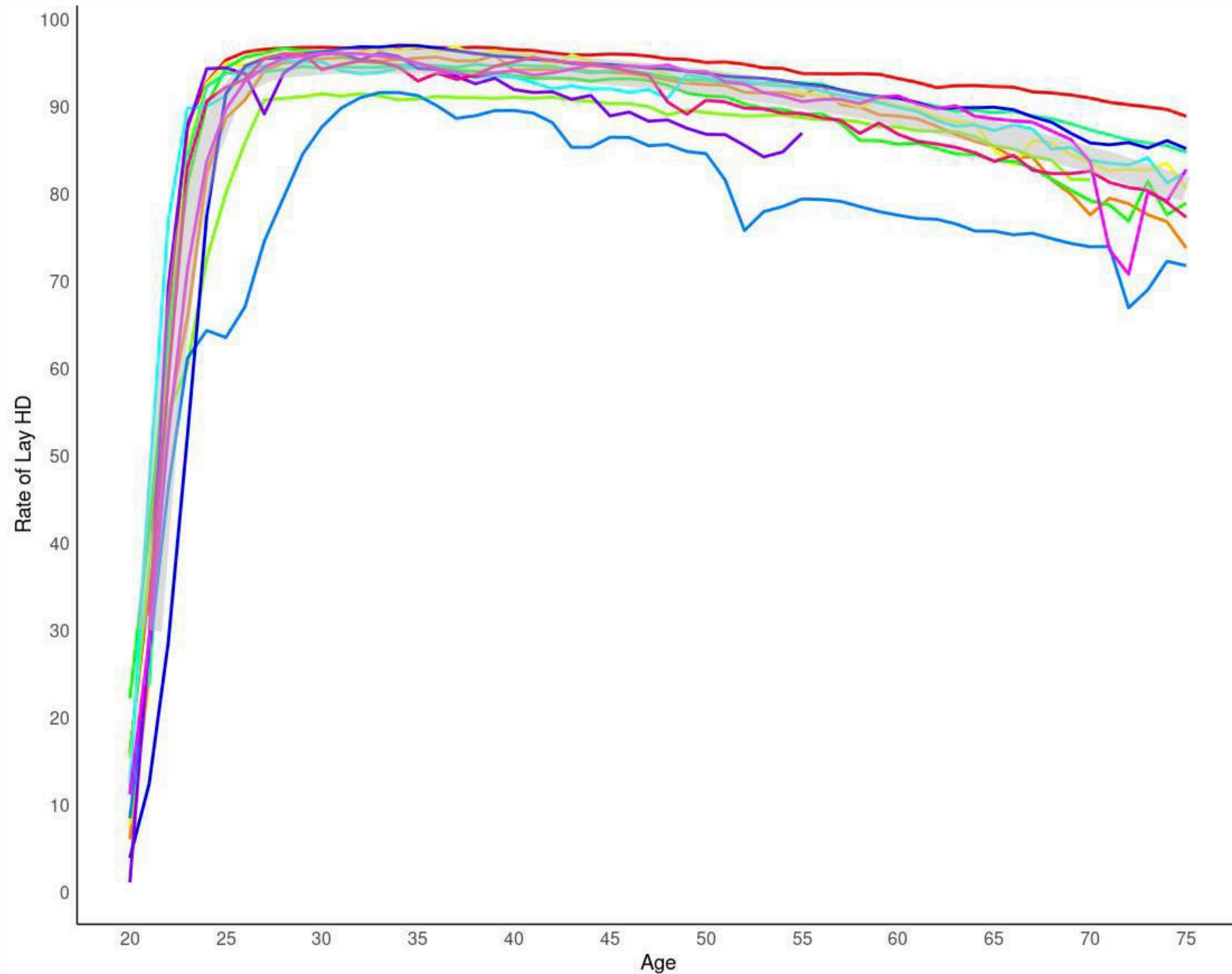
	White-PS		Brown-PS	
	17-19	20-21	17-19	20-21
<b>N Females (M)</b>	0.46	1.21	1.26	1.15
<b>N Flocks</b>	48	96	101	94
<b>Liv (%)</b>	92.5	93.0	91.1	92.0
<b>EN HH</b>	308.3	307.3	299.7	303.4
<b>Hatch (%)</b>	41.0	40.9	39.8	40.9

\* Av. at 70 weeks



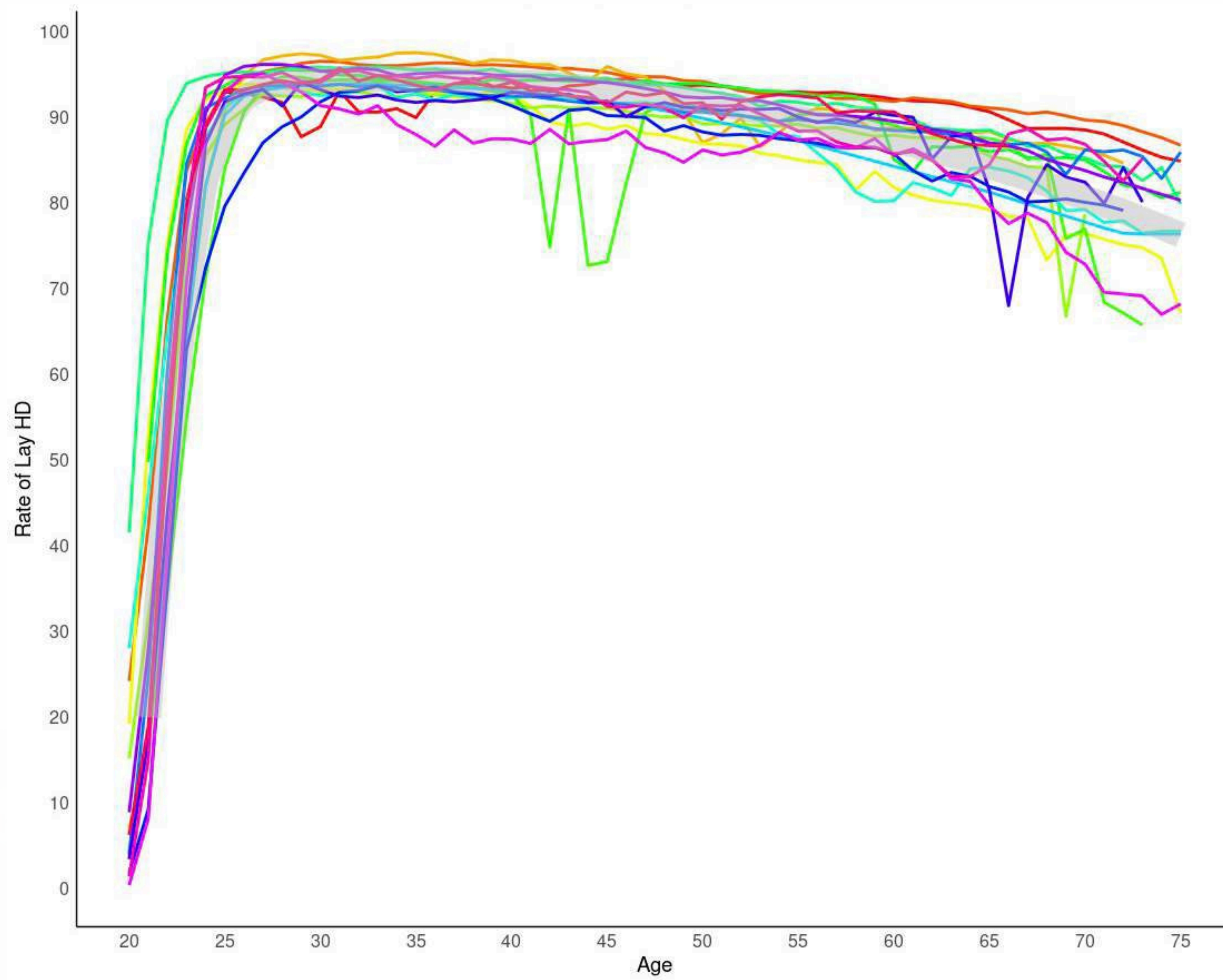


# HD Production – Countries White PS





# HD Production – Countries **Brown** PS

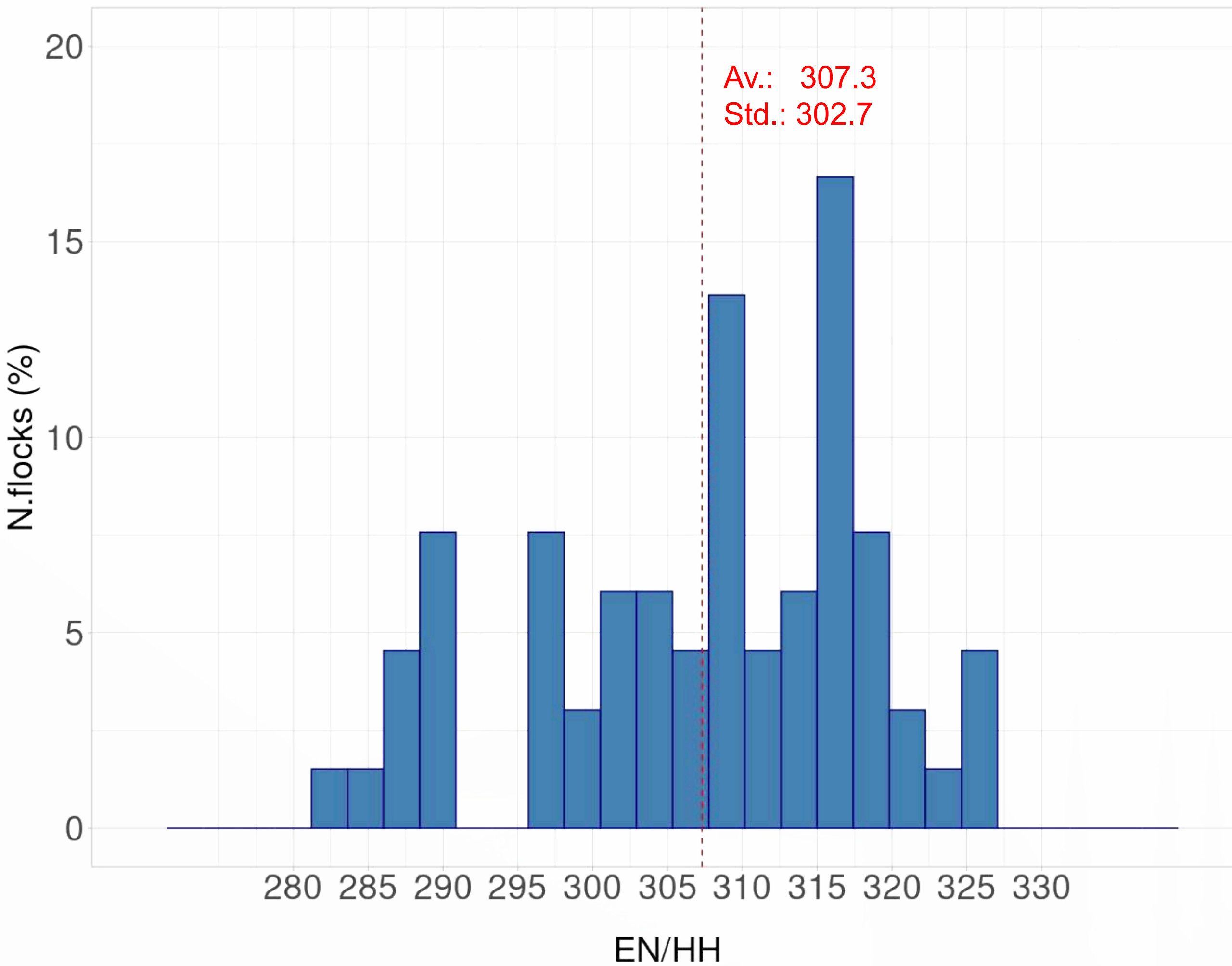




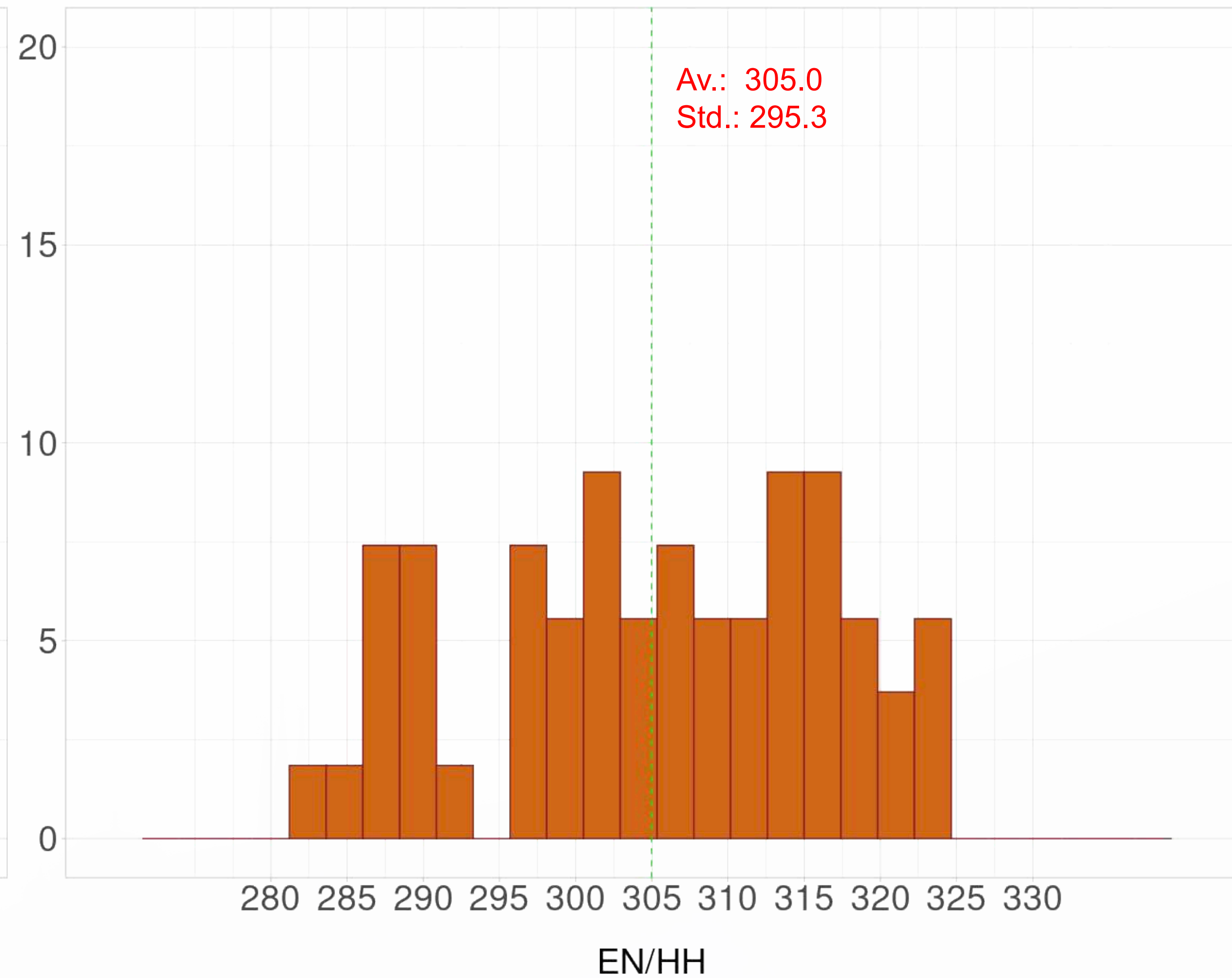
# Egg Number per Hen-Housed by 70 w



## H&N White PS



## H&N Brown PS

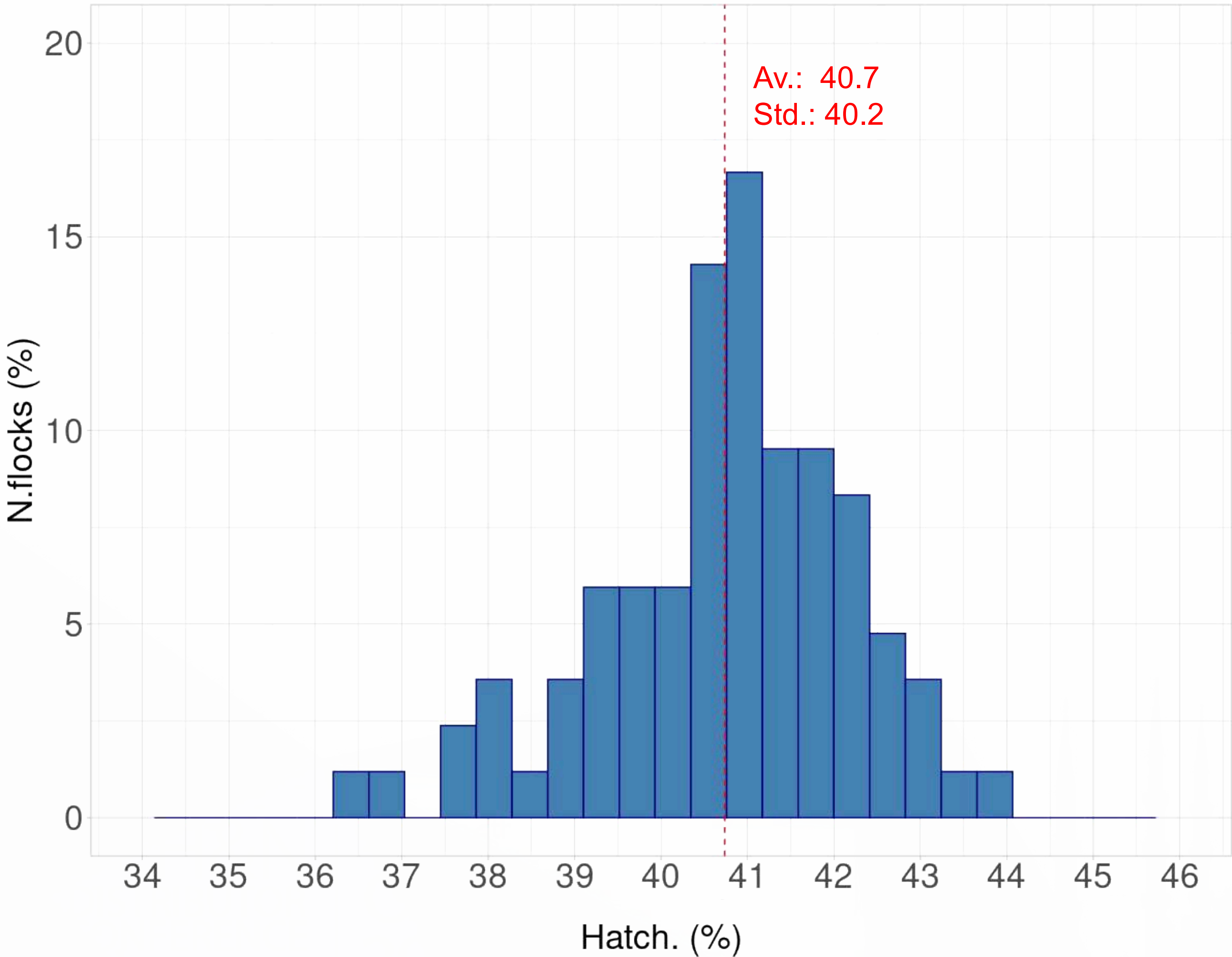




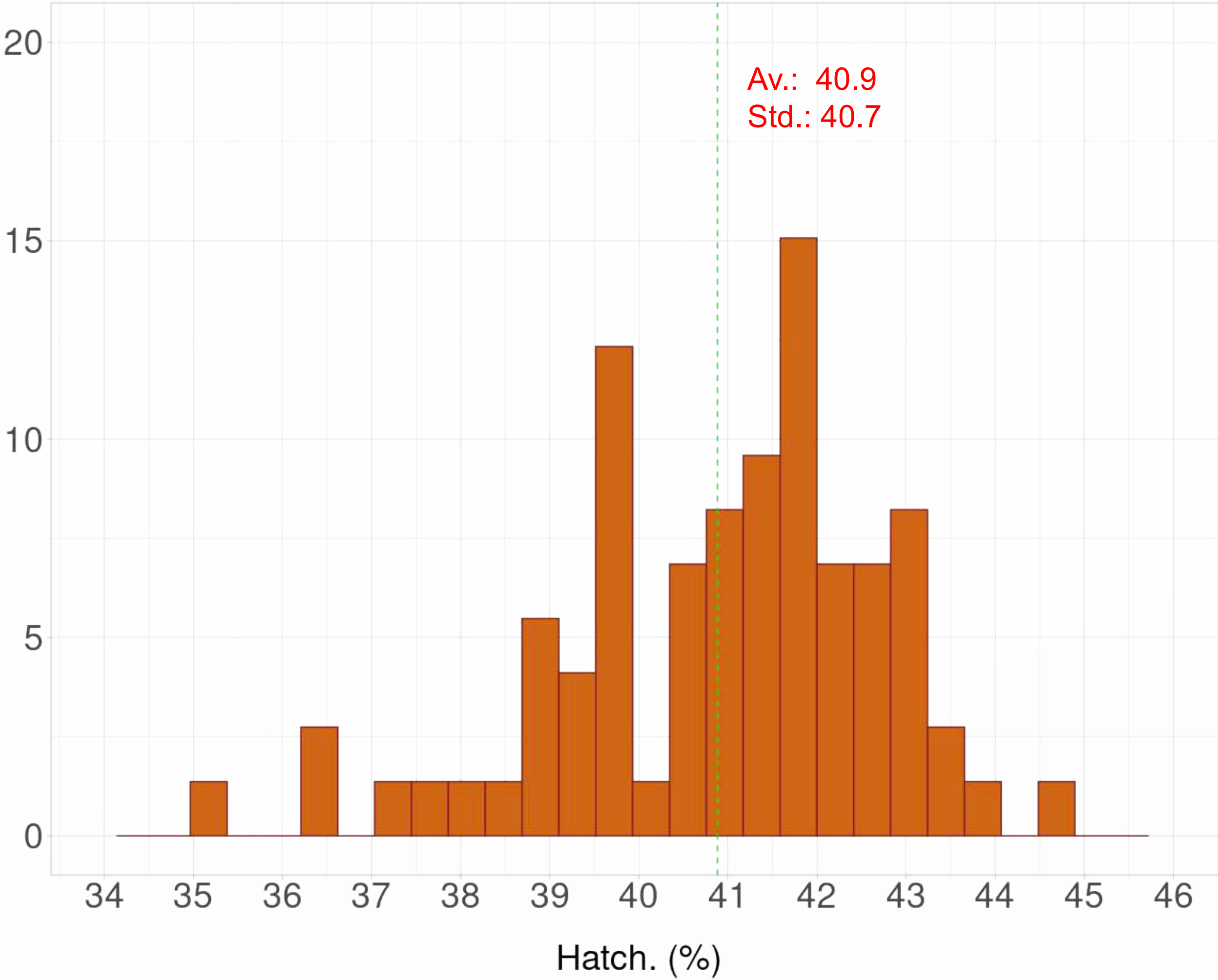
# Average Hatchability until 70 w



H&N **White** PS



H&N **Brown** PS

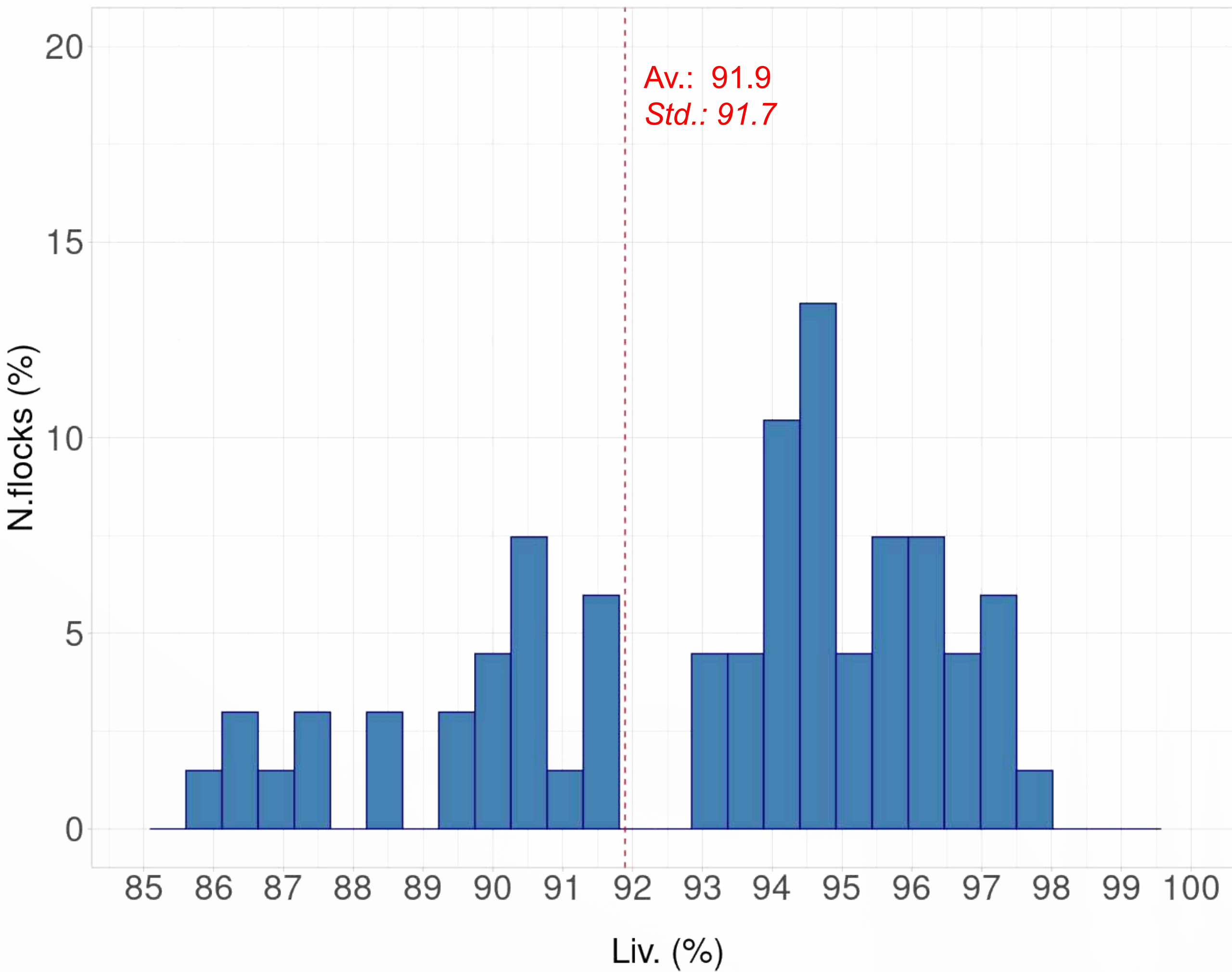




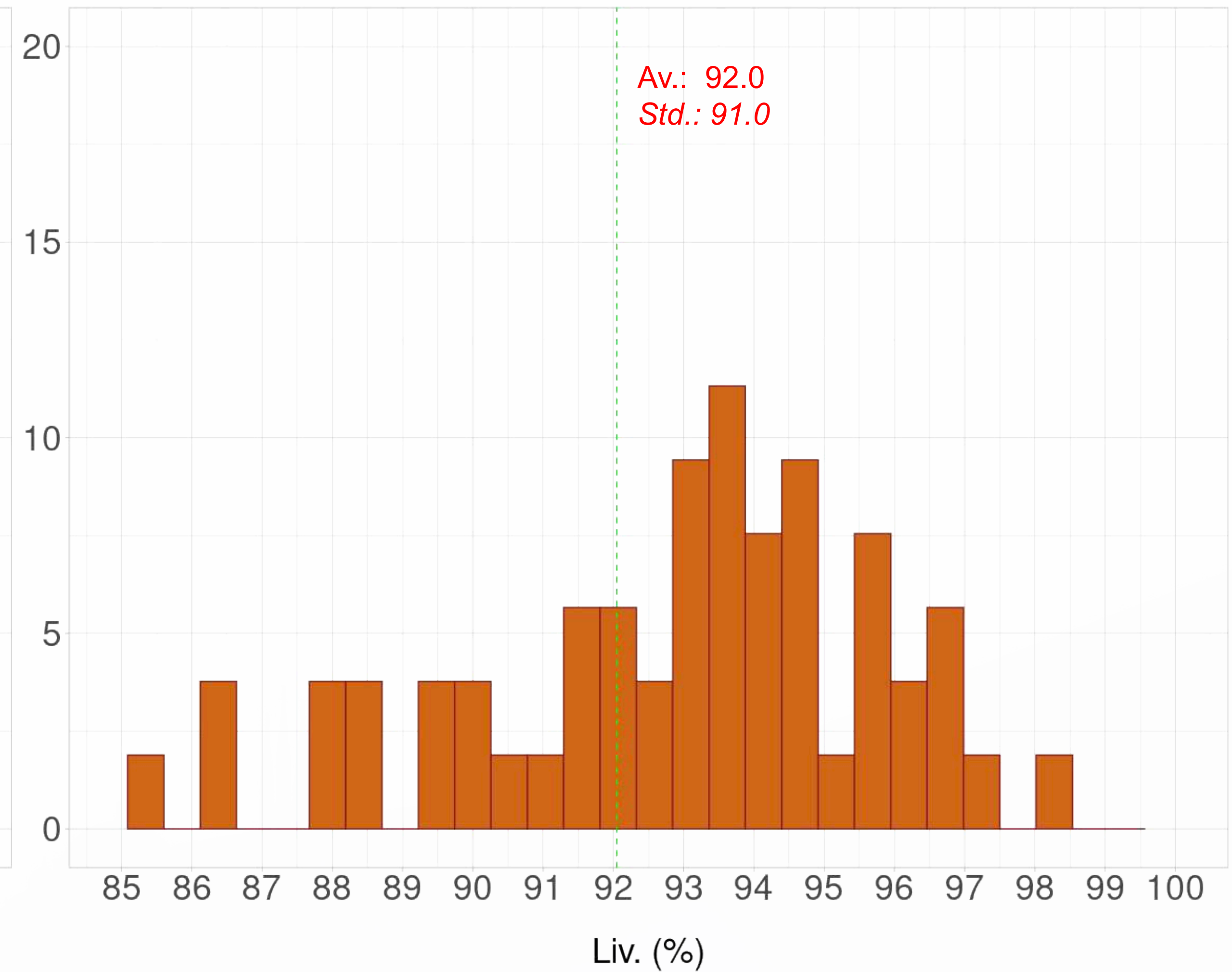
# Liveability by 70 w



## H&N White PS

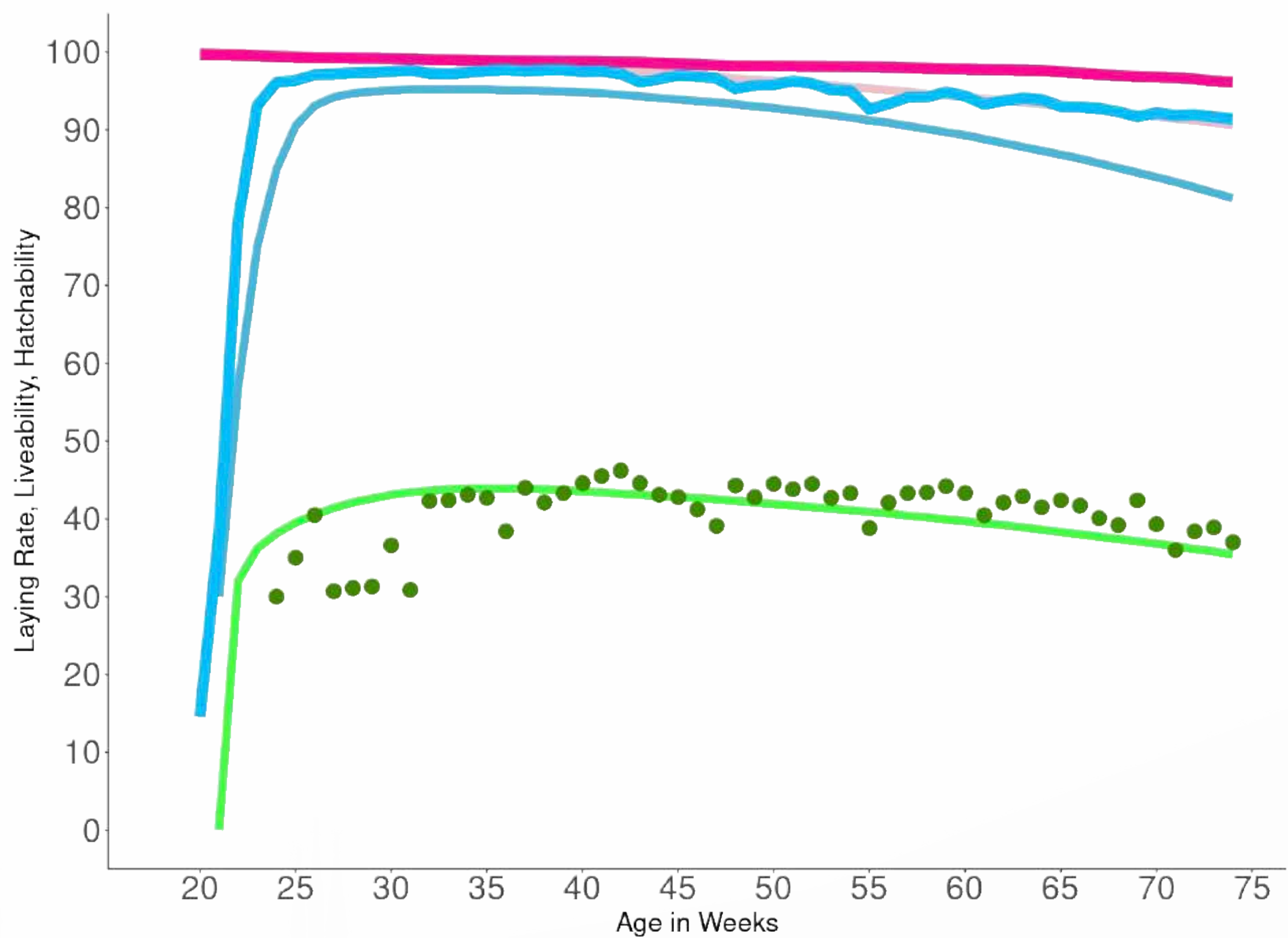
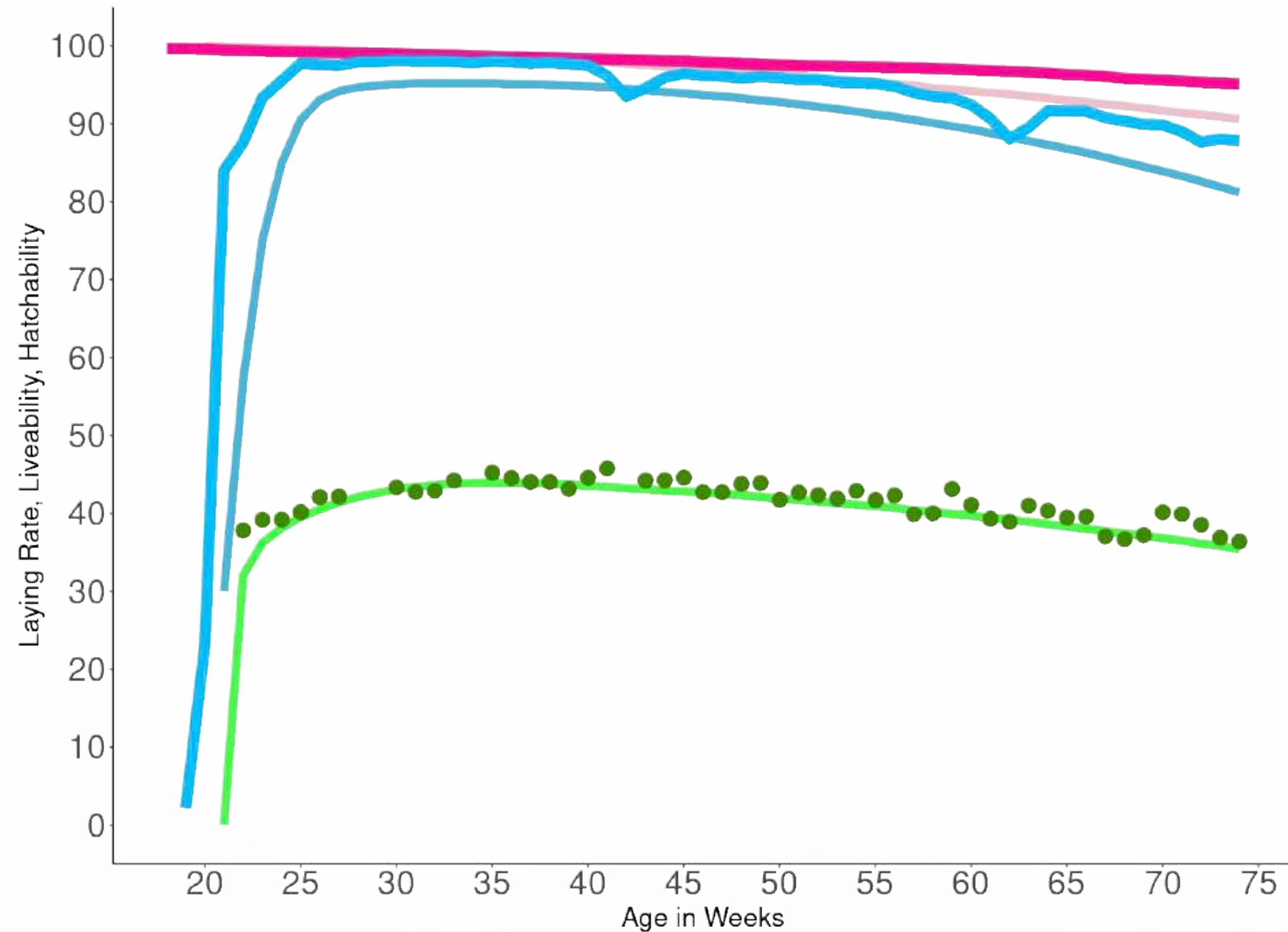


## H&N Brown PS





# Top PS-White Flocks 2020-2021



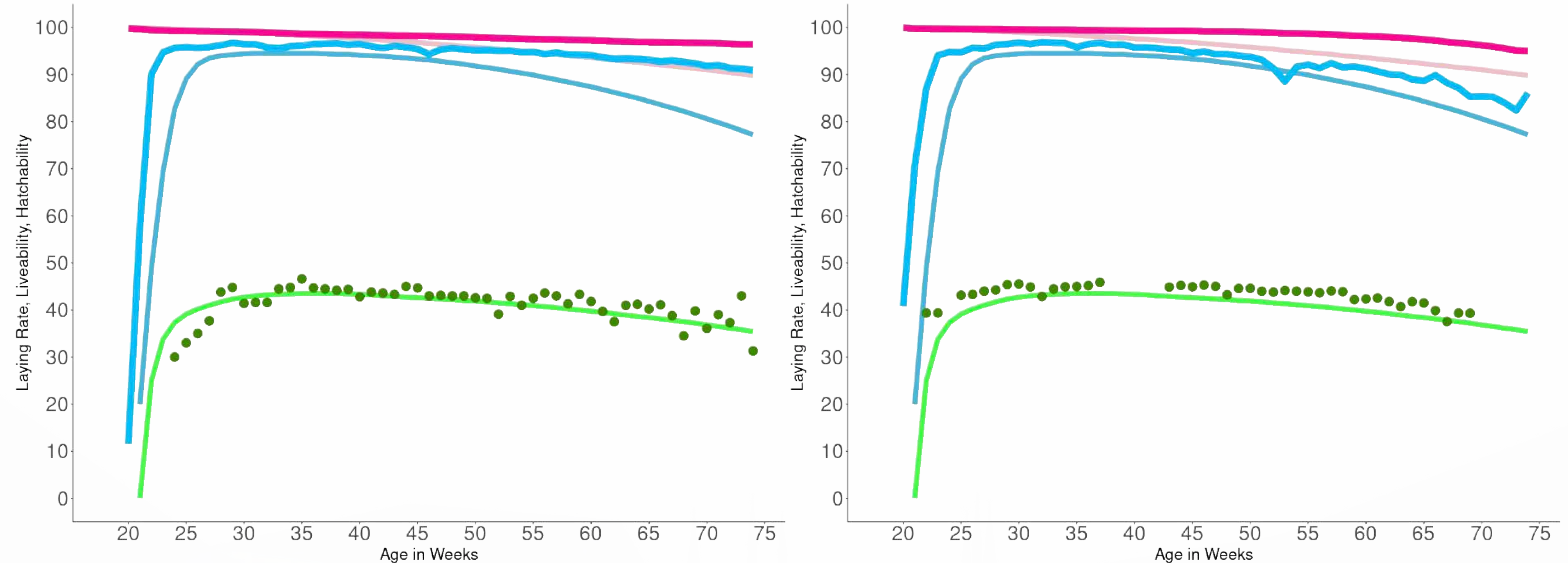
■ Liveability   
 ■ Std. Liv.   
 Prod. HD   
 ■ Std. Prod. HD   
 ■ Hatchability (SC)   
 ■ Std. Hatch.

	Flock I	Flock II		Flock I	Flock II
<b>PROD H.D.</b>	89.8	92.0	<b>HATCH.</b>	41.8	40.9
<b>ENHH</b>	326.0	325.2	<b>LIV</b>	95.6	96.8





# Top PS-Brown Flocks 2020-2021



■ Liveability   
 ■ Std. Liv.   
 Prod. HD   
 ■ Std. Prod. HD   
 ■ Hatchability (SC)   
 ■ Std. Hatch.

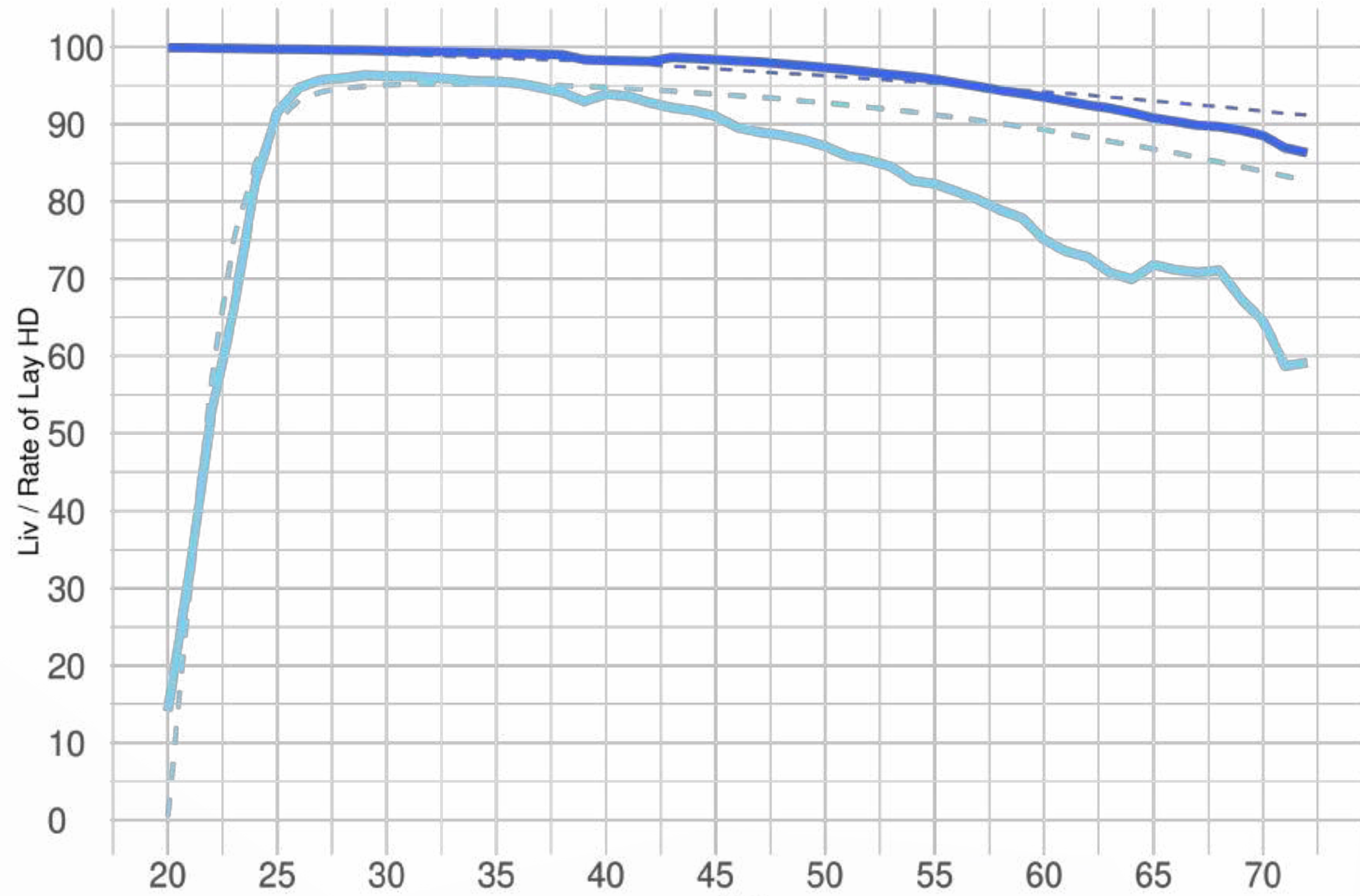
	Flock I	Flock II		Flock I	Flock II
<b>PROD H.D.</b>	91.8	85.3	<b>HATCH.</b>	41.5	43.2
<b>ENHH</b>	324.2	323.8	<b>LIV</b>	96.7	96.2



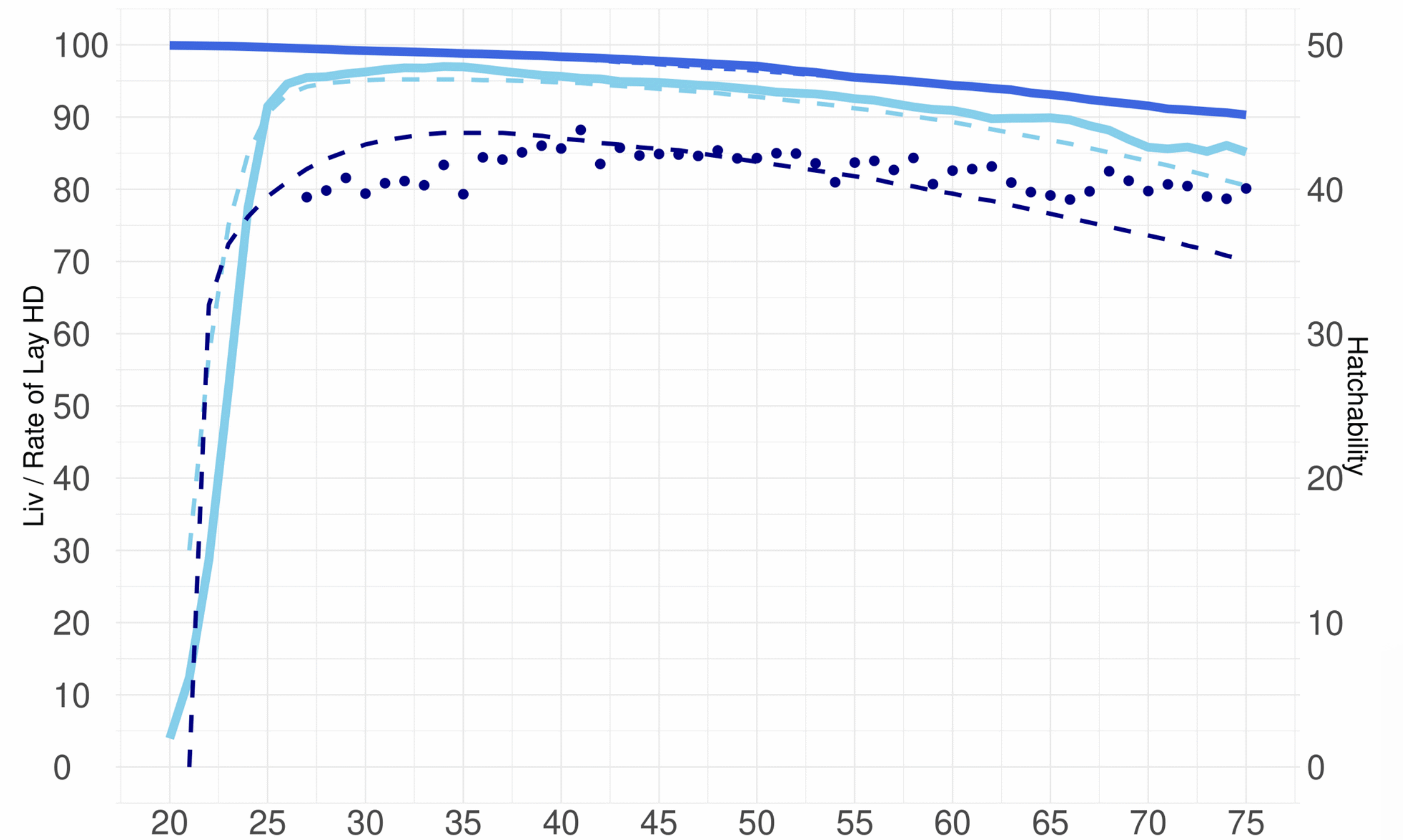


# Comparative: *Russia (PBP)*

2013-2018



2020-2021



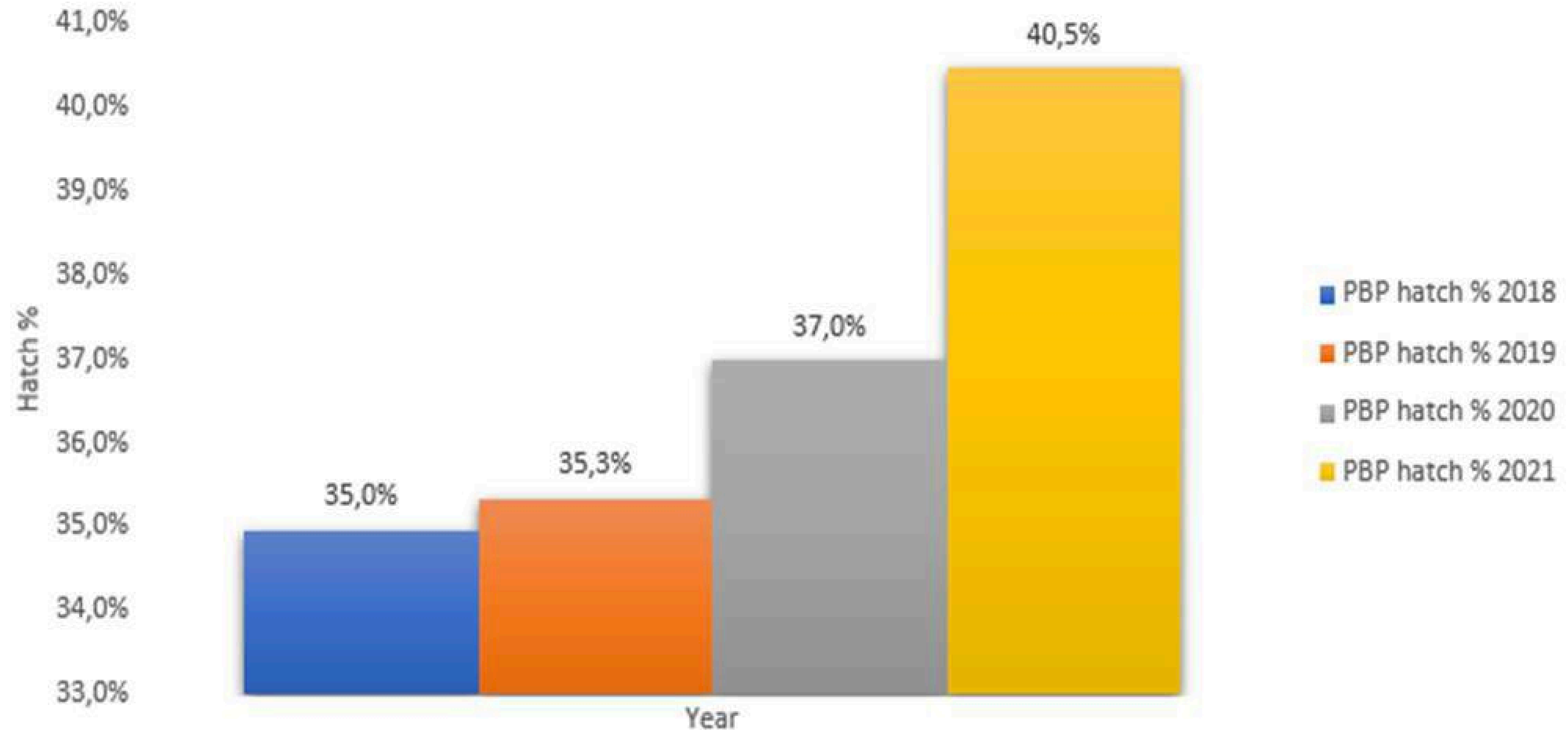
■ Hatch. (%)   ■ Rate of Lay HD (%)   ■ Liv. (%)





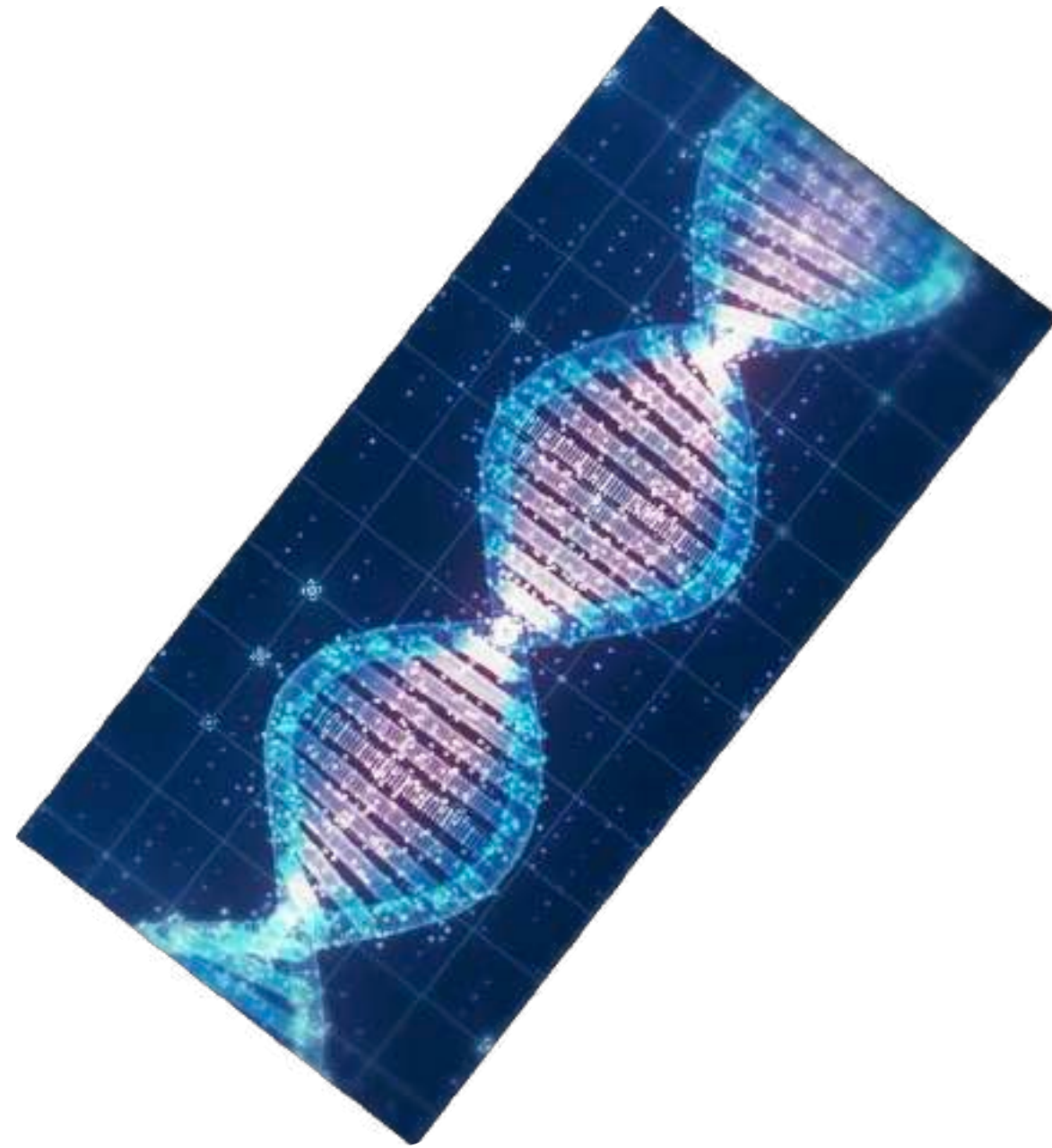
# Comparative: *Russia (PBP)*

Hatch % in PBP (average per year)





# 3. Part – Future Perspectives



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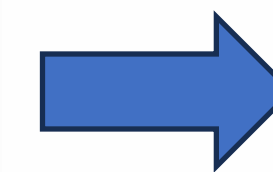
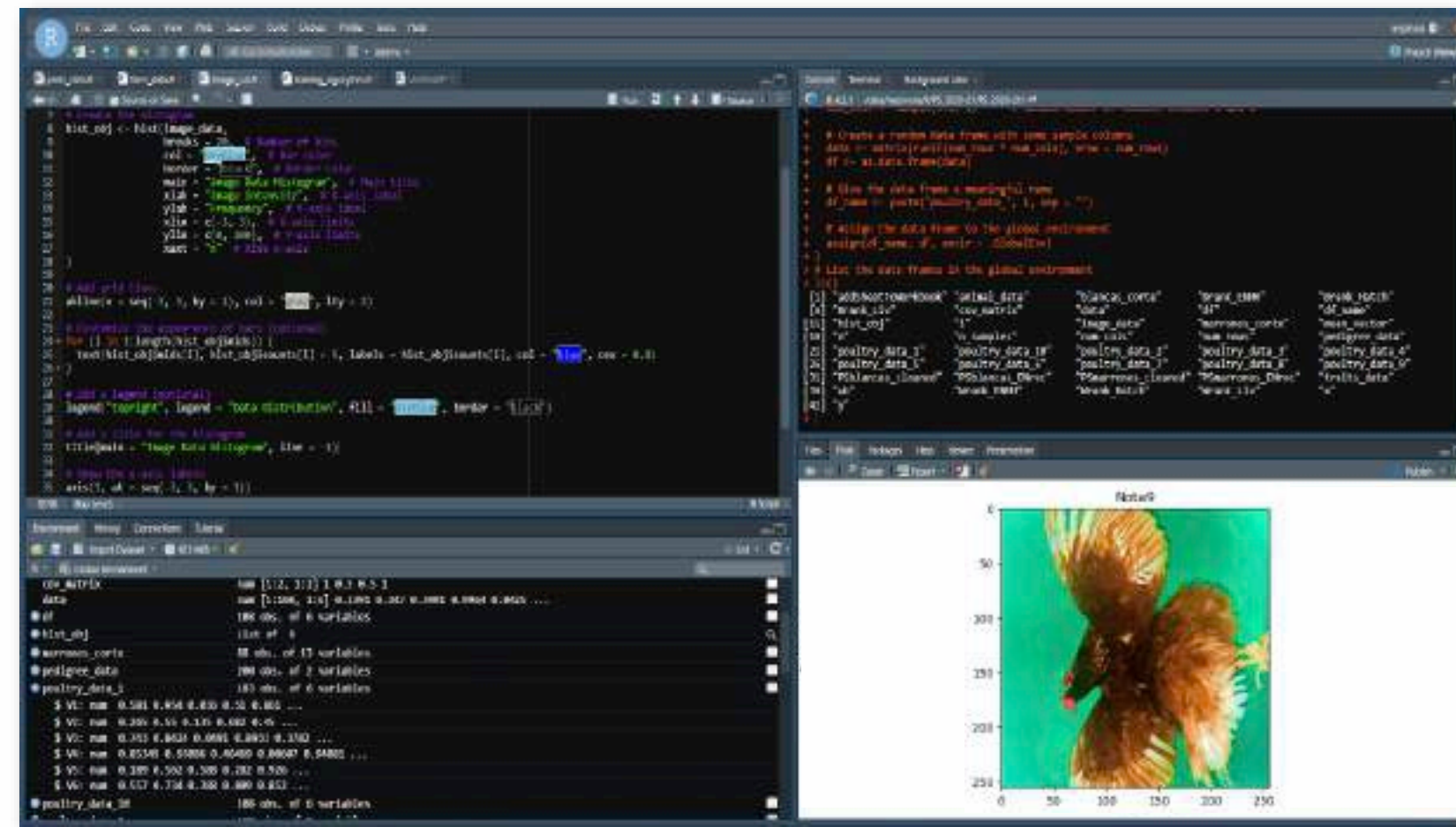
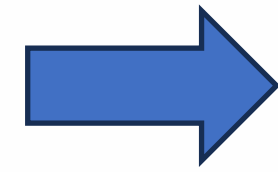
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# Feather Condition Scoring

*Automated scoring using Cameras + AI*



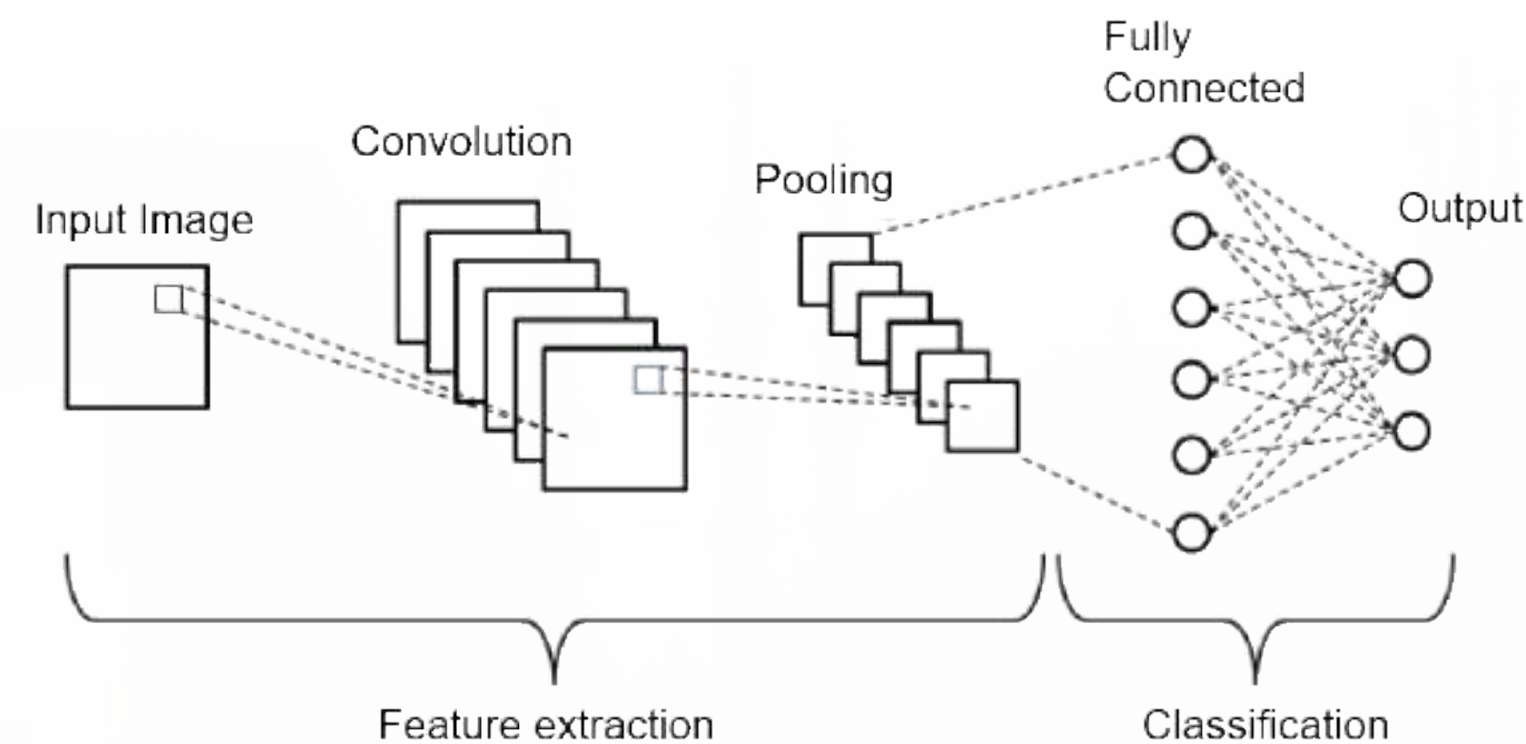
Farm Score:



AI Score:



7.38



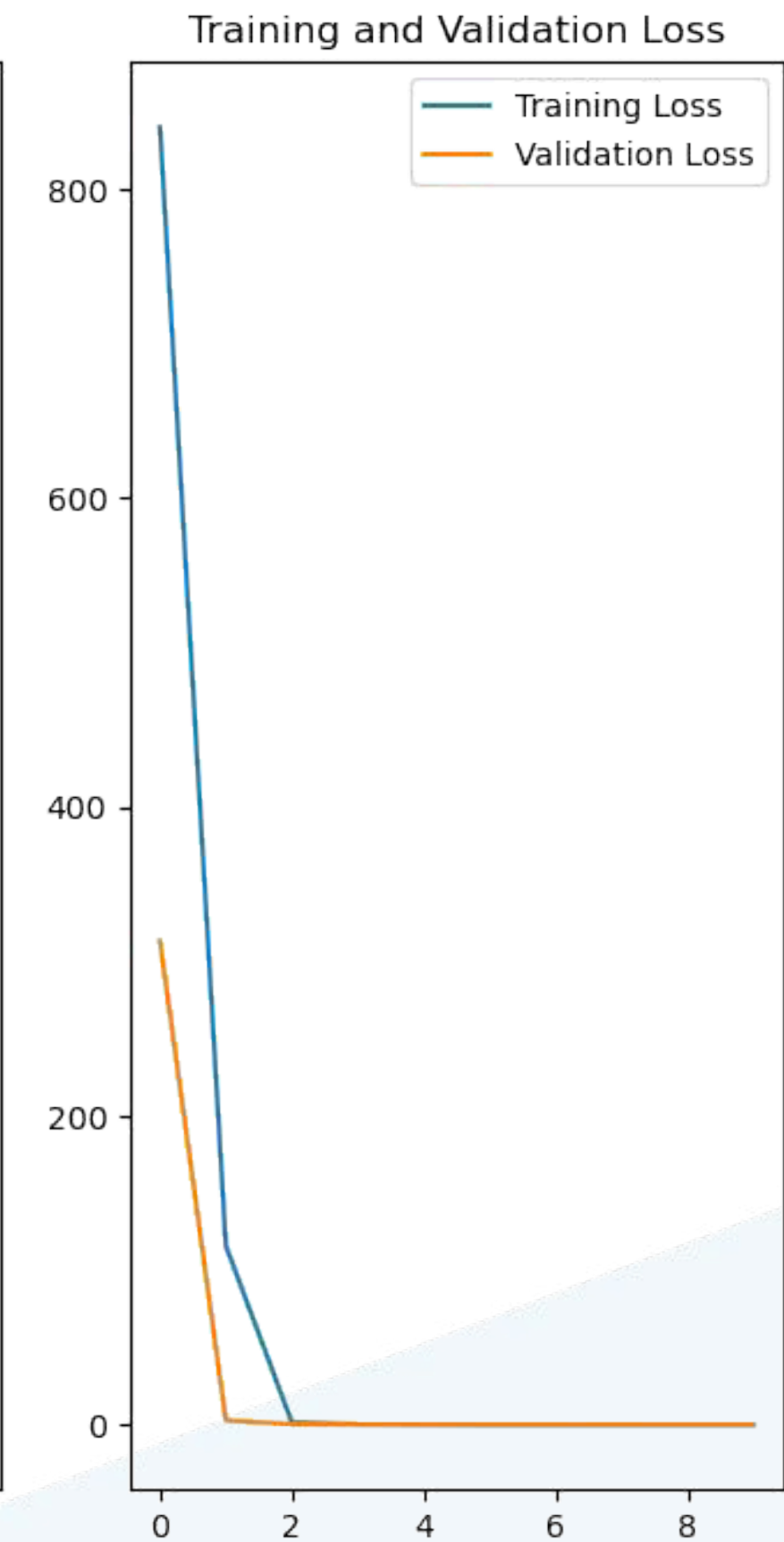
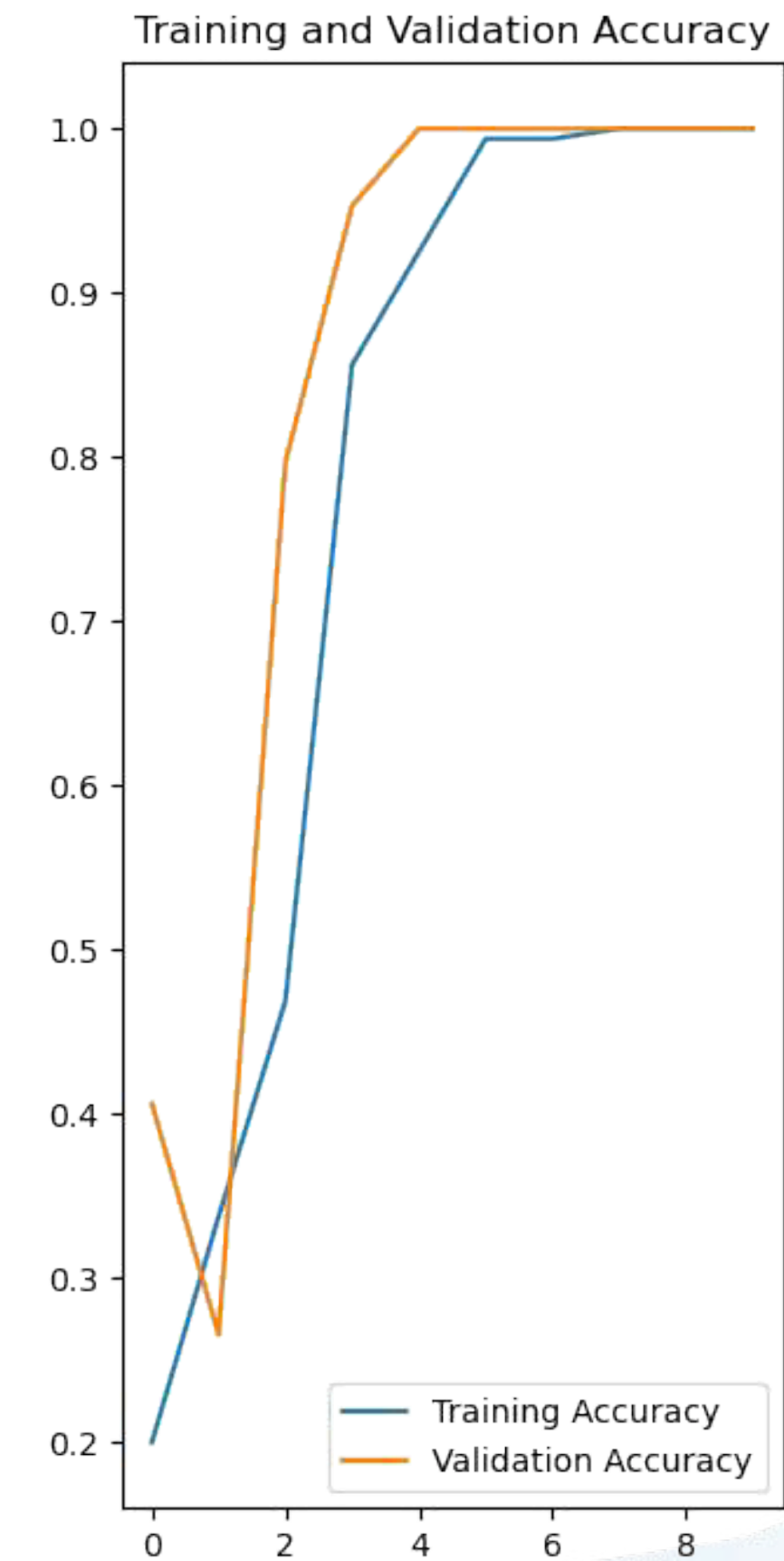
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# Feather condition scoring

## The AI-Algorithm

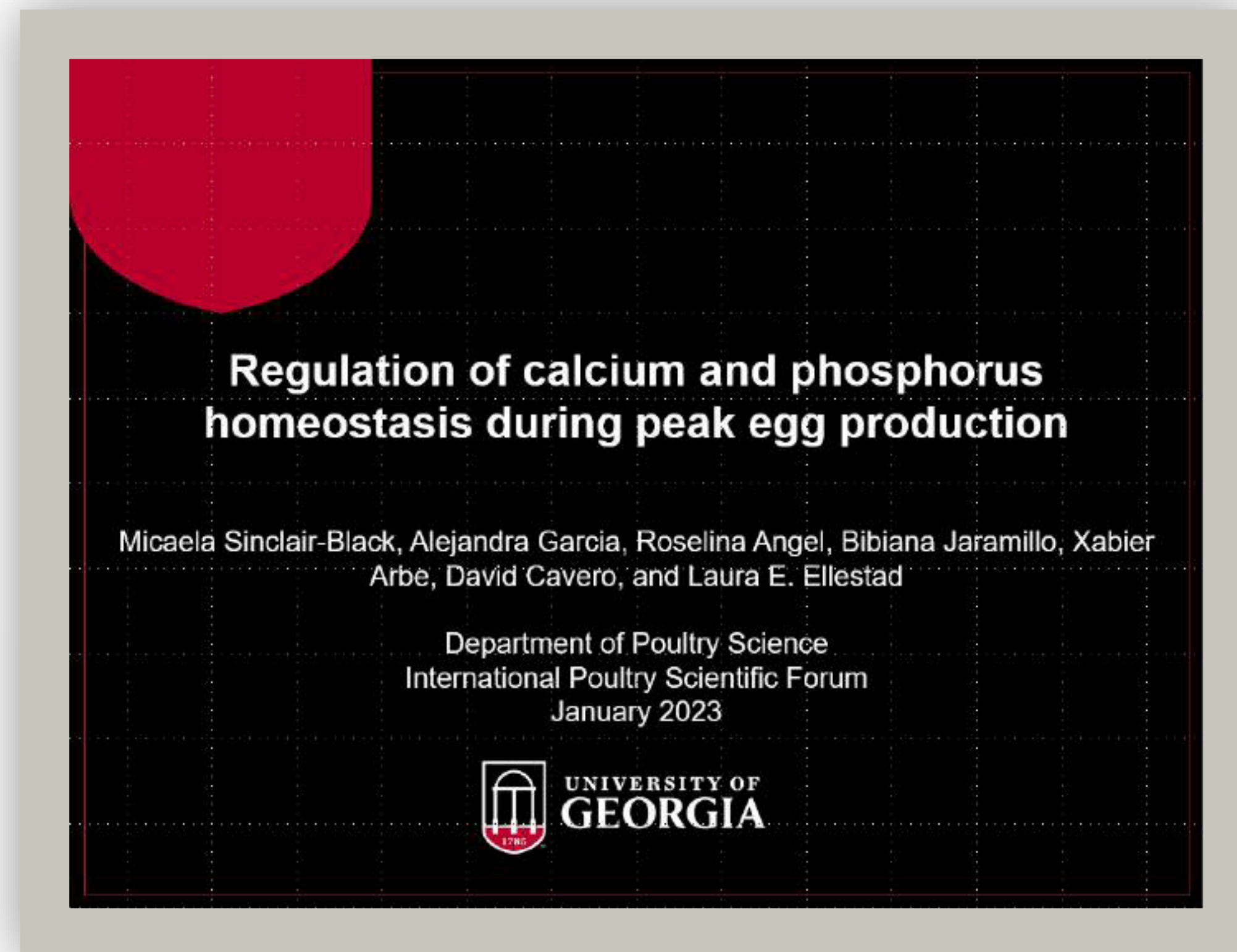
1. 300 Pictures (training, validation & test)
2. Was trained & validated
3. Classified correctly 100% of the test set





# Ca-P Metabolism in hens

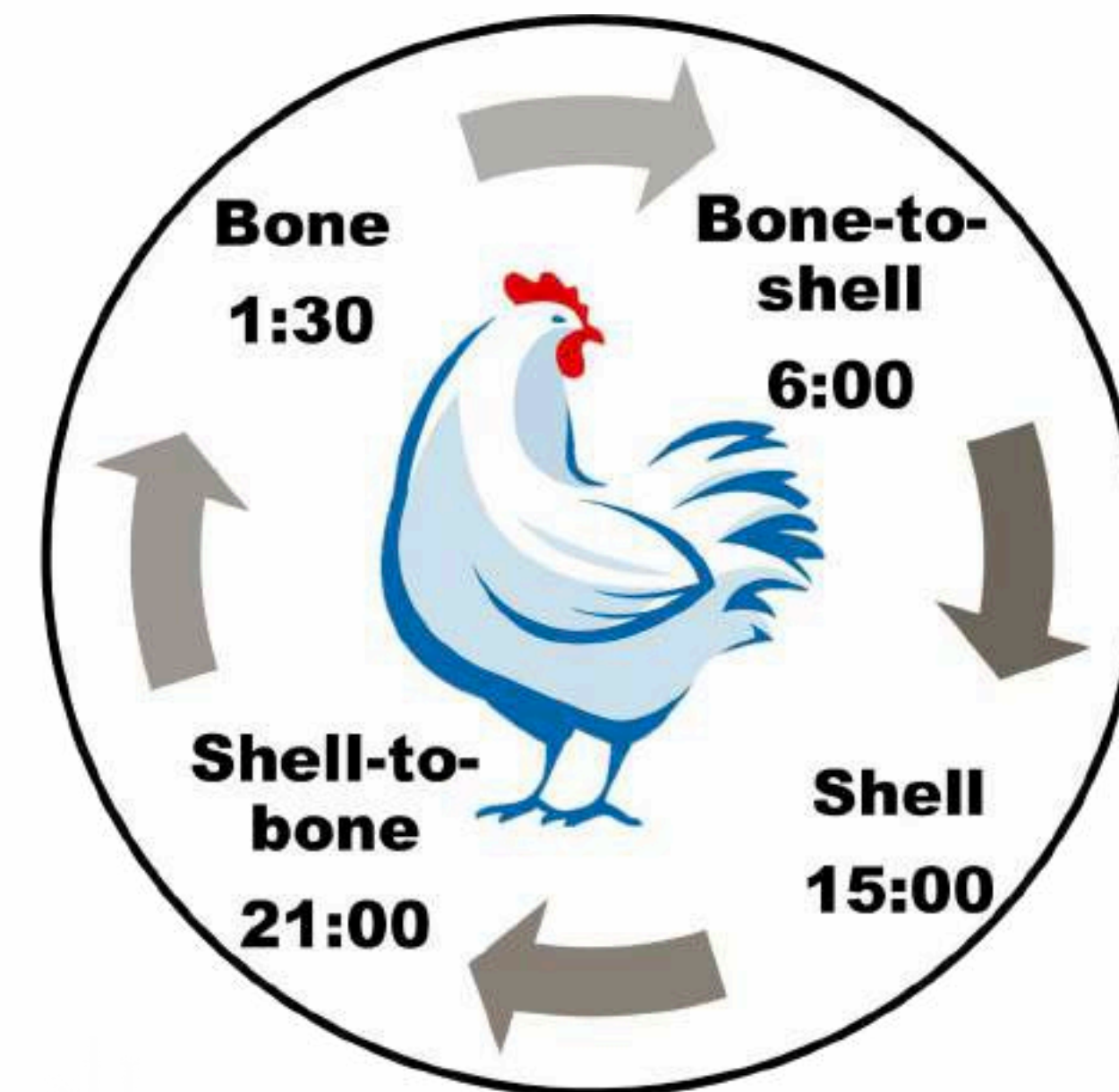

Ph.D. supervised by Dr. Laura Ellestad (started 2020)



**Regulation of calcium and phosphorus homeostasis during peak egg production**

Micaela Sinclair-Black, Alejandra Garcia, Roselina Angel, Bibiana Jaramillo, Xabier Arbe, David Caverro, and Laura E. Ellestad

Department of Poultry Science  
International Poultry Scientific Forum  
January 2023





# R&D Feed Trial

Turkey (Afyonkarahisar)



144 cages (720 hens)



Own feed mill



Own feed & EQ Lab



# Benefits of Genomic Selection

- ✓ Better accuracy
- ✓ Shorter generation interval
- ✓ More & faster genetic progress
- ✓ Optimum use of genetic variation





# Generation Interval - Past

Phenotypes

Pedigree

Rearing

Production

New Generation



X

Age (w)

0

17

64

108





# Automatic Nesting Boxes

Optimizing egg production in alternative systems

- Boost efficiency with automatic trap nests
- Analysing laying time patterns
- Additional investments in cage-free test

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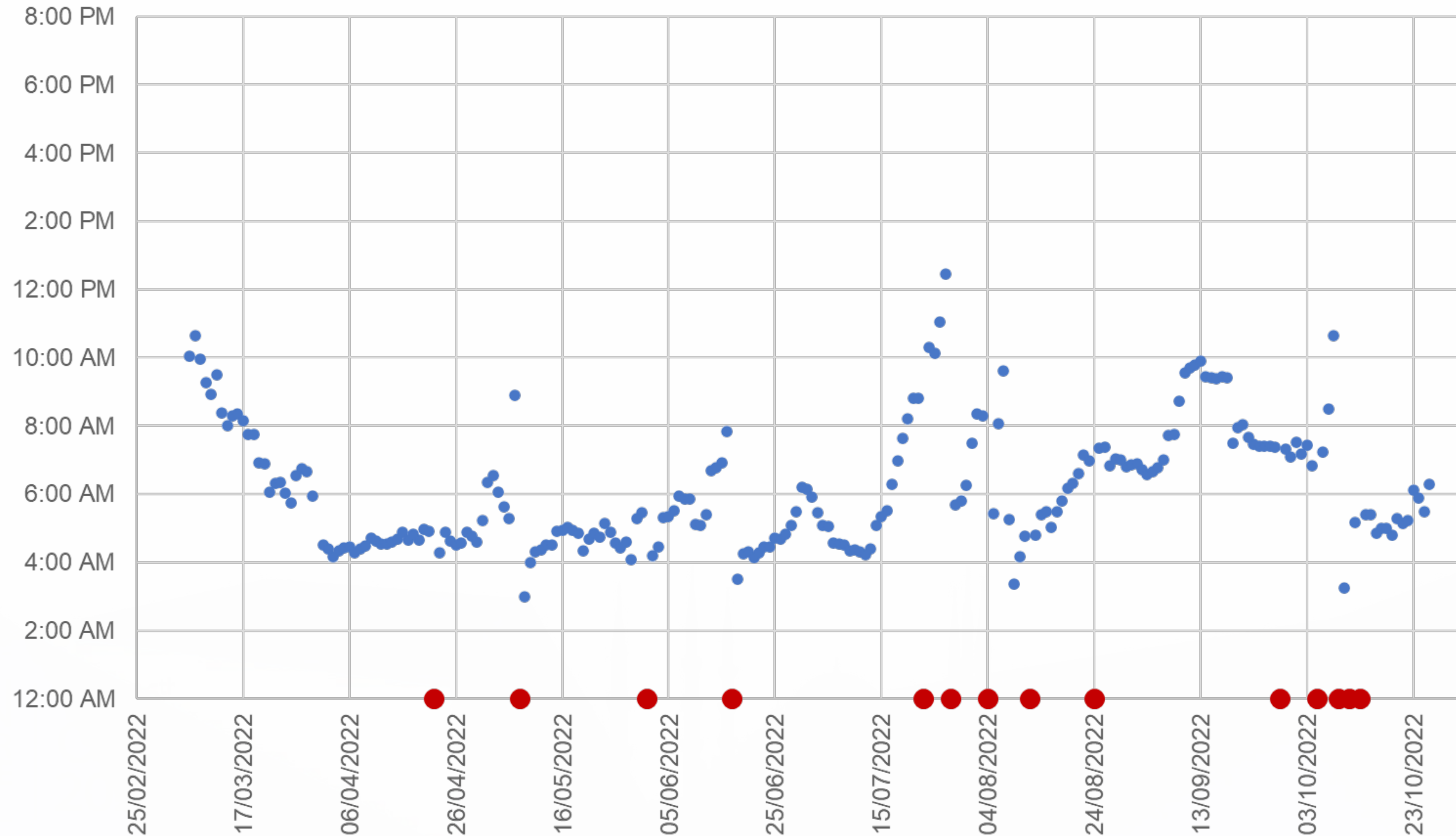






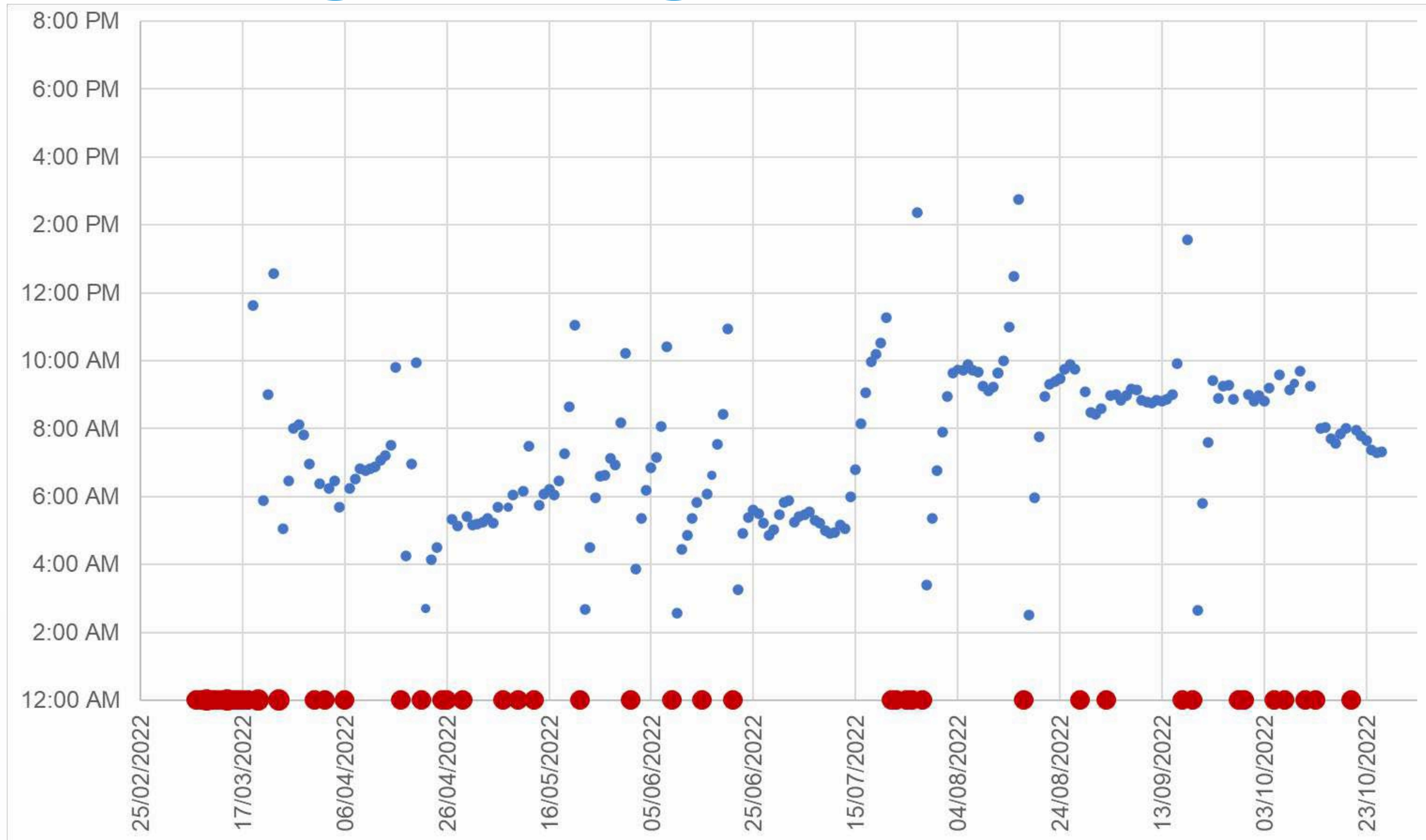


# Evaluating Nesting behaviour





# Evaluating Nesting behaviour





# Take-home messages

## *Driving Genetics Forward*

- ✓ Data - Flocks monitoring
- ✓ Test in different environments for more resilient birds
- ✓ Stay ahead in genetics - Using latest technology

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# Thank you

*...and enjoy Türkiye!*

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