

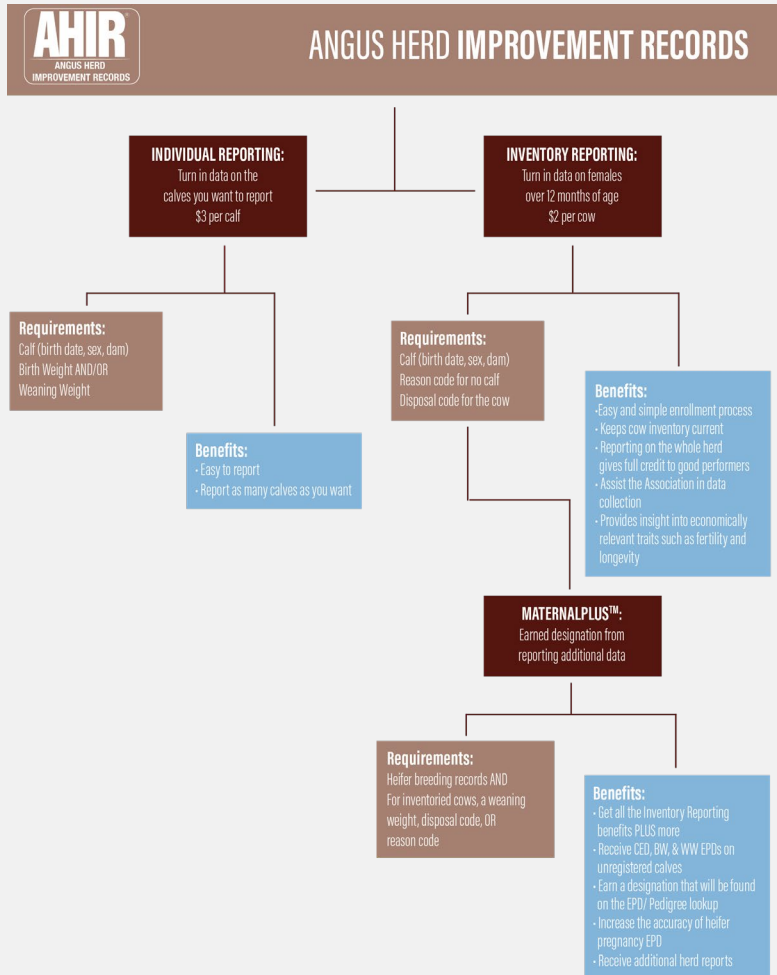
# American Angus Association: Fertility Update

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Kelli Retallick-Riley, AGI President



# AHIR Inventory Reporting



- Voluntary inventory reporting.
  - Fall and Spring Enrollment
  - 2014
  - 97,094

Poss Blueblood 6502 Reg: AAA +\*18631711 Cow

Birth Date: 02/03/2016 Tattoo: 6502

Parentage: SNP      Genomic: GGPLD      Genomic Prog: 51

Parents Qualified



# Ongoing trek to longevity

## Using Random Regression Models to Genetically Evaluate Functional Longevity Traits in North American Angus Cattle

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Affiliations + expand

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### Abstract

This study aimed to propose novel longevity indicators by comparing genetic parameters for traditional (TL; i.e., the cow's lifespan after the first calving) and functional (FL; i.e., how long the cow stayed in the herd while also calving; assuming no missing (FLa) or missing (FLb) records for unknown calving) longevity, considering different culling reasons (natural death, structural problems, disease, fertility, performance, and miscellaneous). Longevity definitions were evaluated from 2 to 15 years of age, using single- and multiple-trait Bayesian random regression models (RRM). The RRM fitting heterogeneous residual variance and fourth order Legendre polynomials were considered as the optimal models for the majority of longevity indicators. The average heritability estimates over ages for FLb (from 0.08 to 0.25) were always higher than those for FLa (from 0.07 to 0.19), and higher or equal to the ones estimated for TL (from 0.07 to 0.23), considering the different culling reasons. The



Dr. Hinayah Rojas de Oliveria - Lactanet

# The data – researching the trait

- Cows born after 1990
- Must have calved before 30 months of age with a minimum age of first calving at 19 months
- Maximum culling age was 20 years (more on this)
- 527,283 records from USA & 77,260 records Canada

# Different culling code classes.

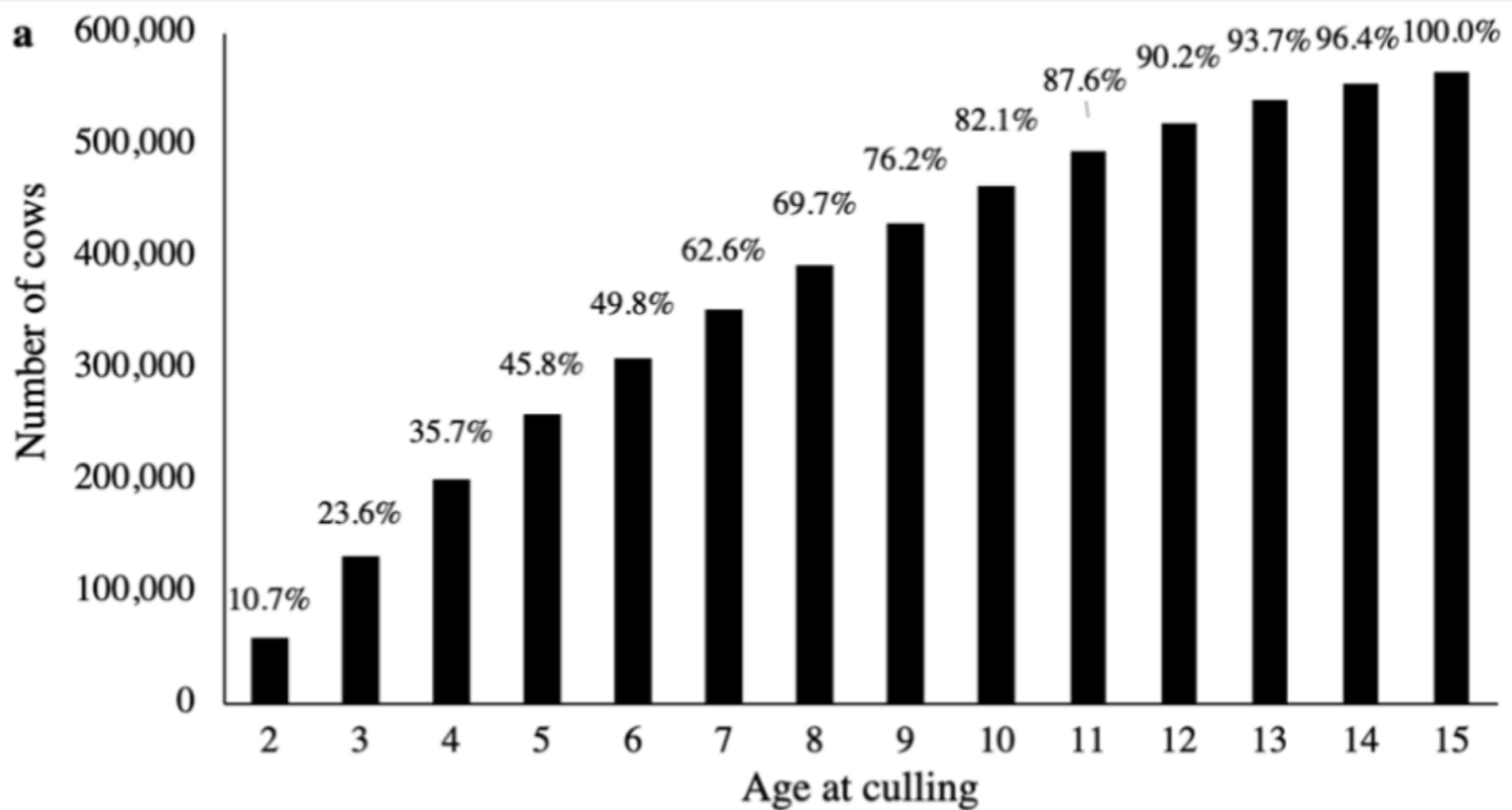
**Table 1.** Description of the different groups of culling reason in North American Angus cattle.

Group	Class	N	N <sub>Total</sub>
Natural Death	Died due to non-apparent reasons	55,232	150,229
	Culled due to age	94,997	
Structural Problems	Eye problem	499	24,804
	Body structure	13,101	
	Teat and udder conformation	5845	
	Rectal prolapse	73	
	Vaginal prolapse	103	
	Feet conformation	5183	
Disease	Illness or disease	4994	4994
Fertility	Fertility	124,696	154,419
	Missed calving opportunity	29,723	
Performance	Productivity or progeny performance	53,837	62,005
	Temperament	8168	
Miscellaneous	Culled as miscellaneous	44,563	208,092
	Sold as commercial	163,529	
All Reasons	All	604,543	604,543

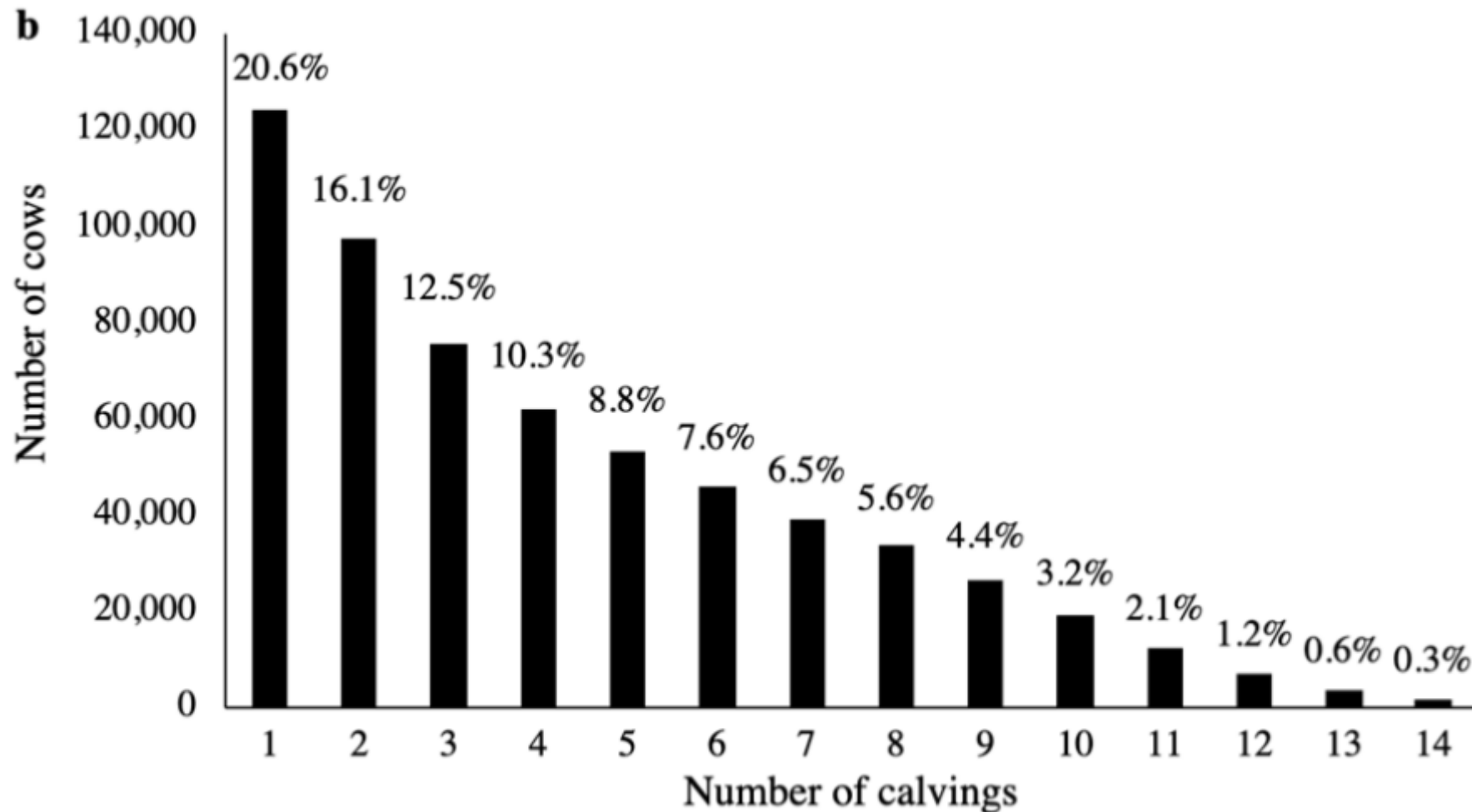
# Average Culling Age

Culling Reason	All	3-12 Years
Natural Death	0.15 ± 0.02	0.17 ± 0.02
Structural problems	0.17 ± 0.03	0.21 ± 0.02
Disease	0.19 ± 0.04	0.23 ± 0.02
Fertility	0.07 ± 0.05	0.09 ± 0.01
Performance	0.08 ± 0.06	0.10 ± 0.01
Miscellaneous	0.07 ± 0.07	0.09 ± 0.01
<b>All</b>	<b>0.09 ± 0.08</b>	<b>0.09 ± 0.01</b>

Number of cows by culling age (cumulative; (a)) and by number of calvings (b). Age at culling equal to 15 included cows culled from 15 to 20 years-old.

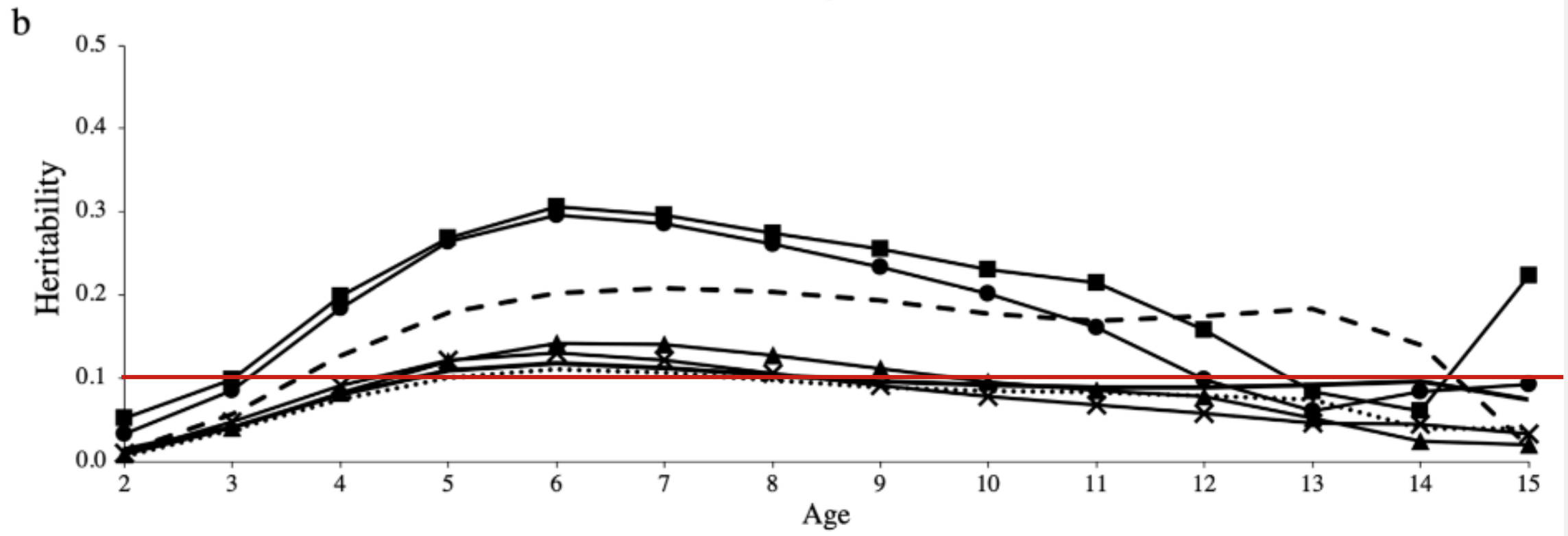


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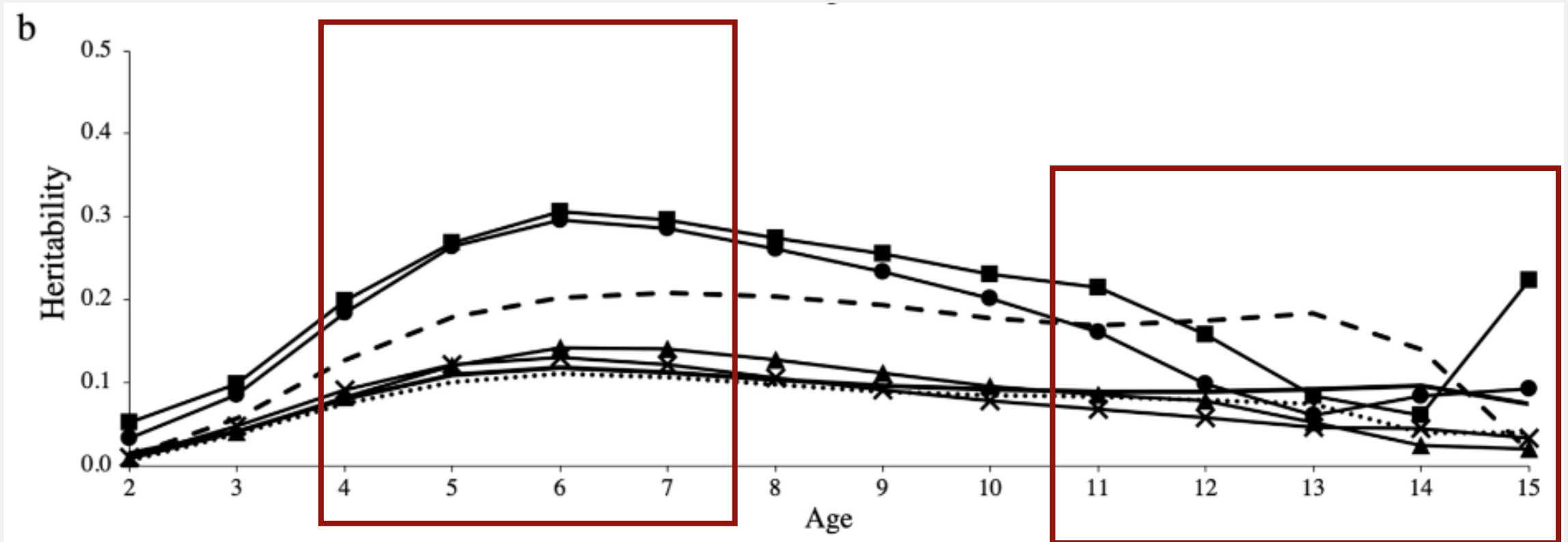
# Functional longevity with missing records also had the highest combined heritability estimates



# Finding Angus's target population

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<b>All</b>	<b>0.09 ± 0.08</b>	<b>0.09 ± 0.01</b>

# Functional longevity with missing records also had the highest combined heritability estimates



# Ongoing work.....

Still ratcheting down our production model.

Predicted number of cumulative calves.

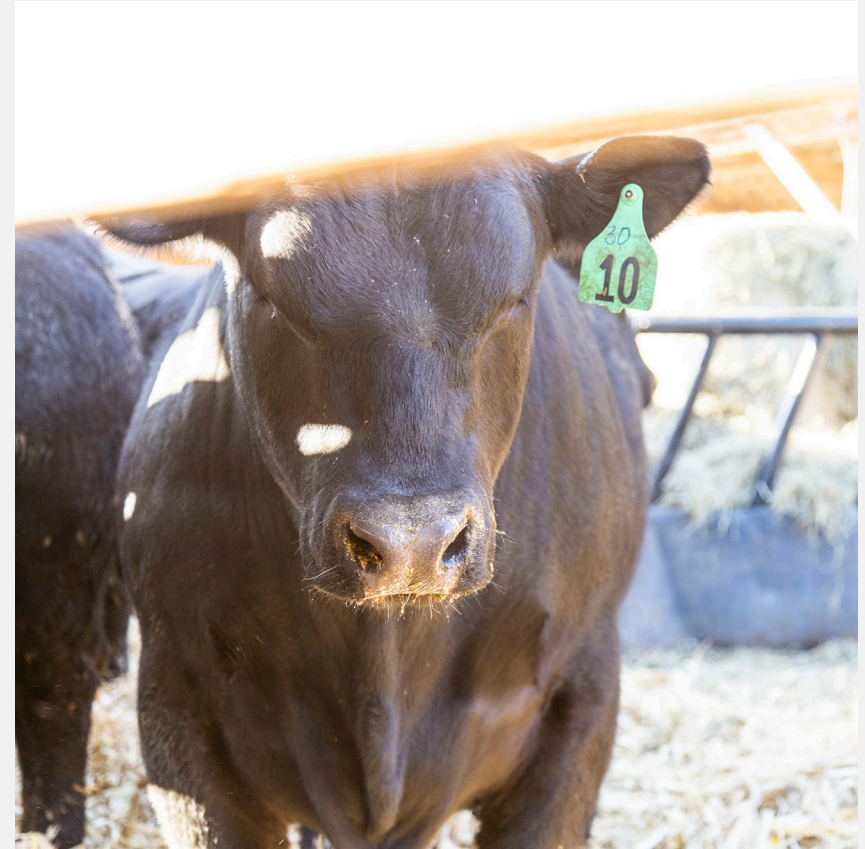


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# It's not about the individual cow.

- Genetic improvement for this traits isn't about the individual female.
  - Some Angus females will be in the herd and calve every but may not have the BEST longevity EPD.
  - It is about the aggregate information provided by a sire's daughters.



# Roll out to the industry in a research format

- Research EPDs
  1. A.I. Sires with an obtained amount of accuracy
  2. Individual cowherds that are enrolled on the AHIR Inventory Reporting System
- Work to fit this trait inside of the Maternal Weaned Calf Value (\$M) subsequently \$C



**Thank you for listening!**