ICAR & INTERBULL
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SLOVENIA

The use of beef semen in Italian Holstein cows

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Special Thanks: to Maurizio Marusi, Raffaella Finocchiaro, Chiara Franzoni, Mariasole Caccin, Mauro Penasa e Ferdinando Galluzzo, Gloria Manighetti

your **COW**
our **FUTURE**

OUTLINE

1. Italian beef market circumstances
2. *The skyline* of dairy cattle in Italy
3. Beef breeds used in Italian Holstein cows
4. Factors affect beef semen use
5. Breed effect on Stillbirth, Calving easy and Gestation lenght
6. Conclusions

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In Italy we produce 52% of beef

In Italy we import 48% of beef from abroad

Unicarve - Triveneto Beef Producers Association, 2023

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Italian beef cattle breeders take more abroad every year

1 billion euro

to buy young cattle (broutard/ristalli/weaned calves) to fatten

Slaughtering year 2021 - Vitellone/Scottona (12-24 months of age)		
item	**N. of animals**	**Animals in %**
Born in Italy	479.973	33.54
Imported abroad	**951.064**	**66,46**
Total need for Italy market	1.431.037	100

Year 2021: The number of young cattle purchased abroad to be fattened in Italy n. 951,064 x approximately 1,200 euros/head
= Euro 1,141,276,800

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INCREASE THE WEANED CALVES PRODUCED IN ITALY IN COLLABORATION WITH DAIRY COW BREEDERS!

- *Stipulate supply chain commercial agreements*
- *Use of sexed semen for internal replacement (dairy cow herds)*
- *Use of semen from beef bulls to obtain beef crossbreeds*
- *Application of quality and sustainability regulations*
- *Organize collection of unweaned calves in collection centers*
- *Organization of weaning centers*
- *Fattening in protected stables*
- *Certification of fattened cattle and use of the brand of Italian consortia*

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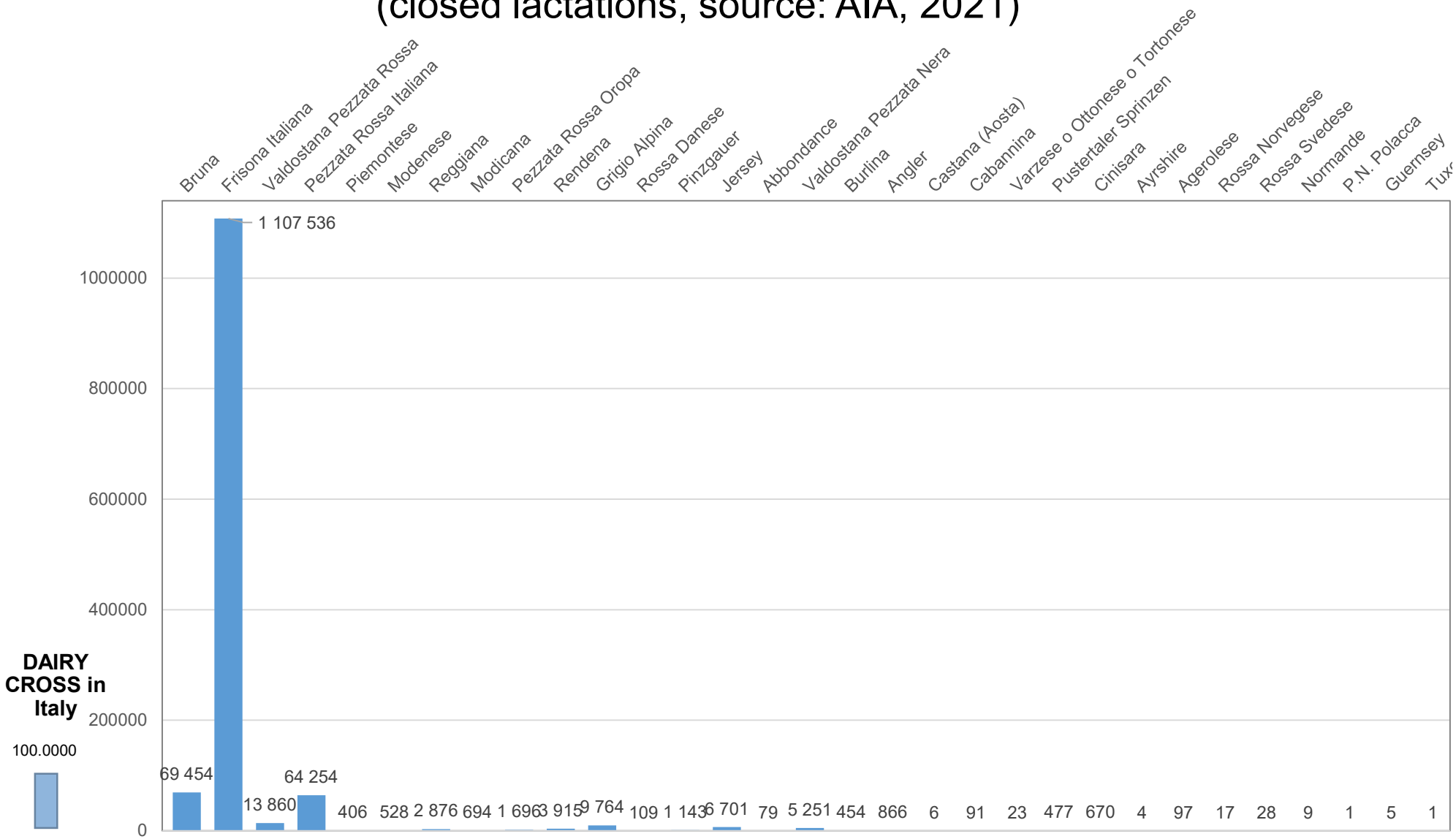
Italian dairy cattle skyline

31 dairy cattle breeds in milk recordings
(closed lactations, source: AIA, 2021)



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ANAFIBJ in numbers

- 2 Herdbooks (Holstein and Jersey)
- third one is working progress (Brown)
- ≈ **10.000** members
- **> 1.100.000 registered cows**
- ≈ **800.000** young stock
- 27 employes
- 6 bianconero magazine /year
- 70 breeding values
- 49 runs/yea

Records processed (2023)	Numbers
Pedigree data-records	20,863,419
Cow lactation records	32,822,933
Evalutaiotn Scoring records	11,287,374
Cows changing herds	2,769,903
Grade animals	15,851,240
Managment herd registration	58,379
Cow's Insemination records	69,991,452
Genealogical Certificate (2023)	5,142

ANAFIBJ is one of the 15 members of FEDANA

Federazione delle Associazioni Nazionali di Razza e Specie FedANA

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Italian Holstein population around the world

(WHFF, 2023)

Country	Rank	Total HF cows	Rank	HB-Registered HF cows	Rank	% of di Vacche Holstein iscritte su Totali
United States	1	7.990.000	5	1.000.000	6	12%
France	2	2.674.000	2	1.244.946	4	46%
Germany	3	2.345.673	1	1.656.116	3	71%
United Kingdom	4	1.600.000	6	650.000	5	41%
ITALY	5	**1.500.000**	4	**1.148.705**	2	**77%**
The Netherlands	6	1.152.495	3	1.152.495	1	100%

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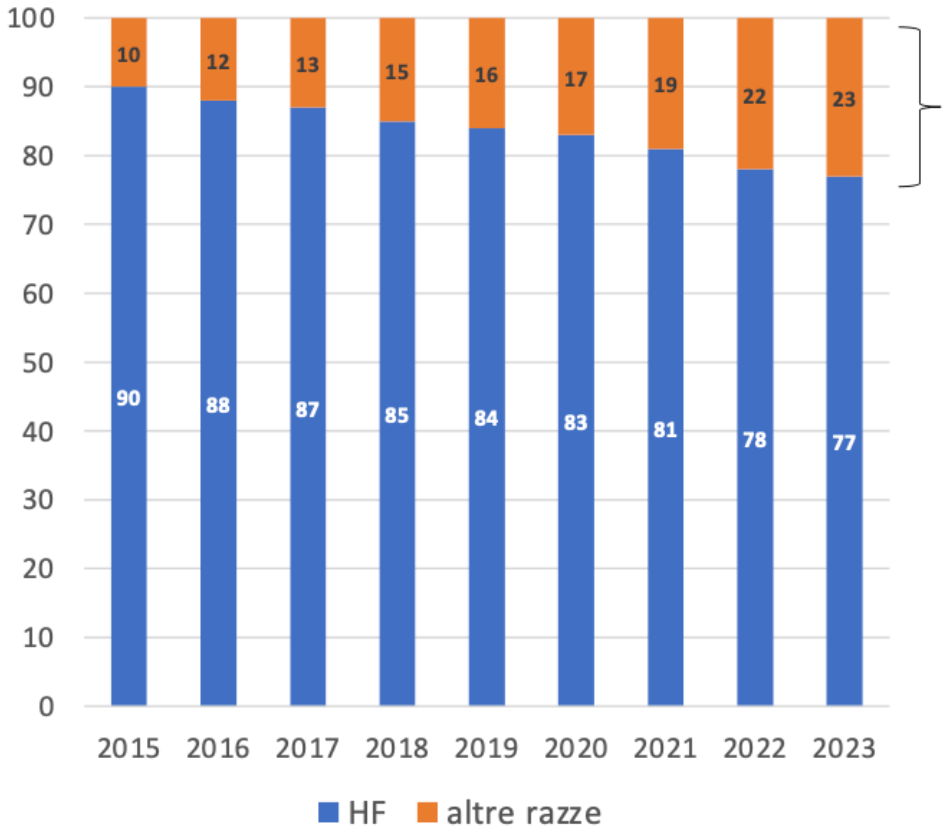
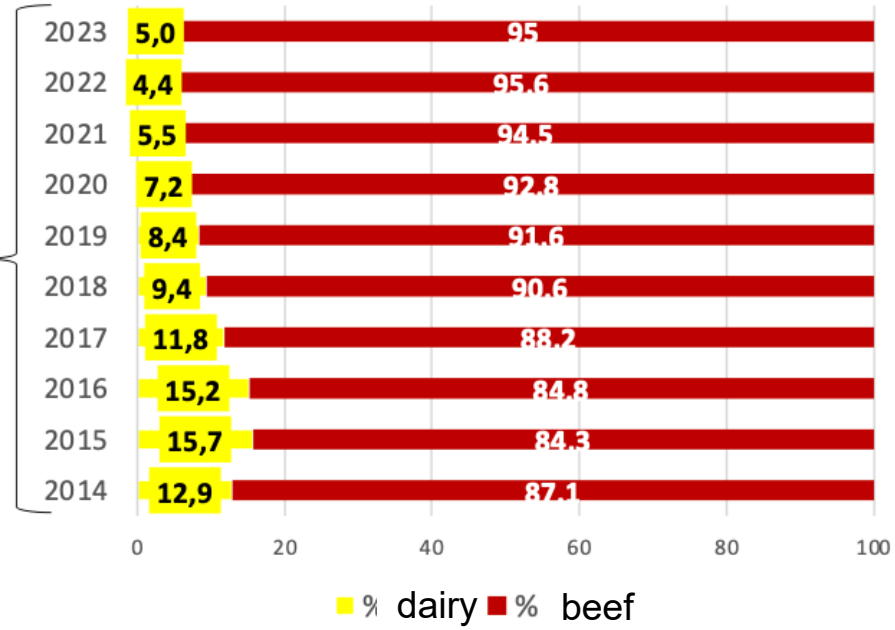
Crossbreeding and Beef on Dairy in Italian HF population



In 2030 we expected a 34% (trend is +**1.6% per year**)

Trend of inseminations with dairy-not-HF and beef breeds



Official data available on the Anafibj Ddabase, 2024

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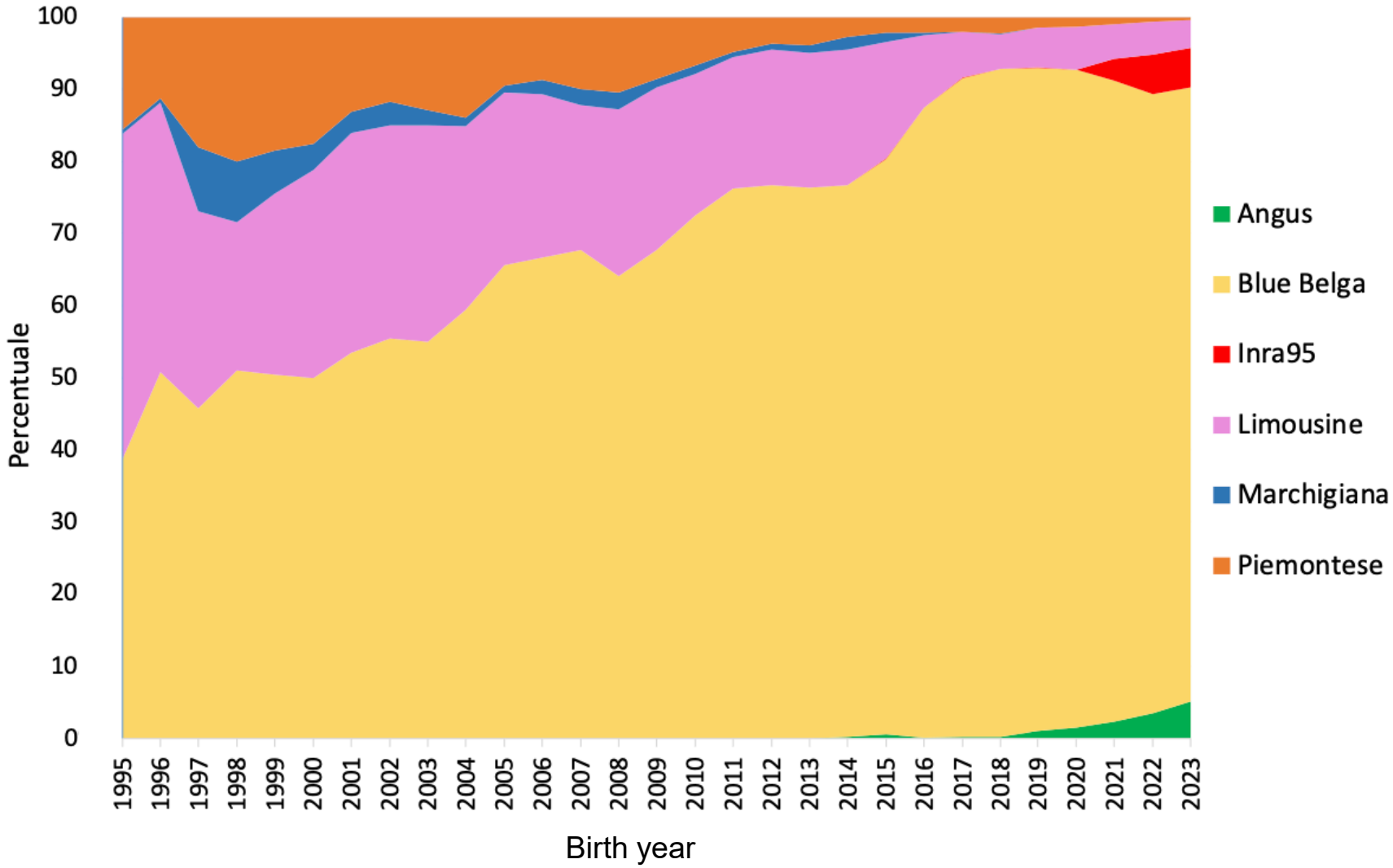
Trend of breed of sire use for BoD in Italian Holstein population



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Market average Value of males and females calves of different genotypes, (Trento province, FPA-TN)

	Breed	Avg. weight	Mean /Euro/kg	Average value	
Avg. 3,1 Euro / kg	Holstein Friesian (HF)	62,9	€2,07	€144,94	PURE
	Brown Swiss (BS)	71,1	€1,75	€124,67	
	Simmental (Sim)	72,8	€4,50	€327,79	
	Rendena	70,7	€3,64	€257,23	
	Alpine Grey (AG)	73,3	€3,65	€267,65	
Avg. 6,4 Euro /kg	BB x Brown Swiss	72,9	€6,48	€472,63	CROSS
	BB x Holstein Friesian	72,7	€5,58	€405,66	
	BB x Simmental	73,6	€7,42	€545,70	
	BB x Rendena	73,5	€6,70	€492,59	
	BB x Alpine Grey	73,7	€6,67	€491,33	
	Lim x Brown Swiss	72,7	€5,44	€395,40	

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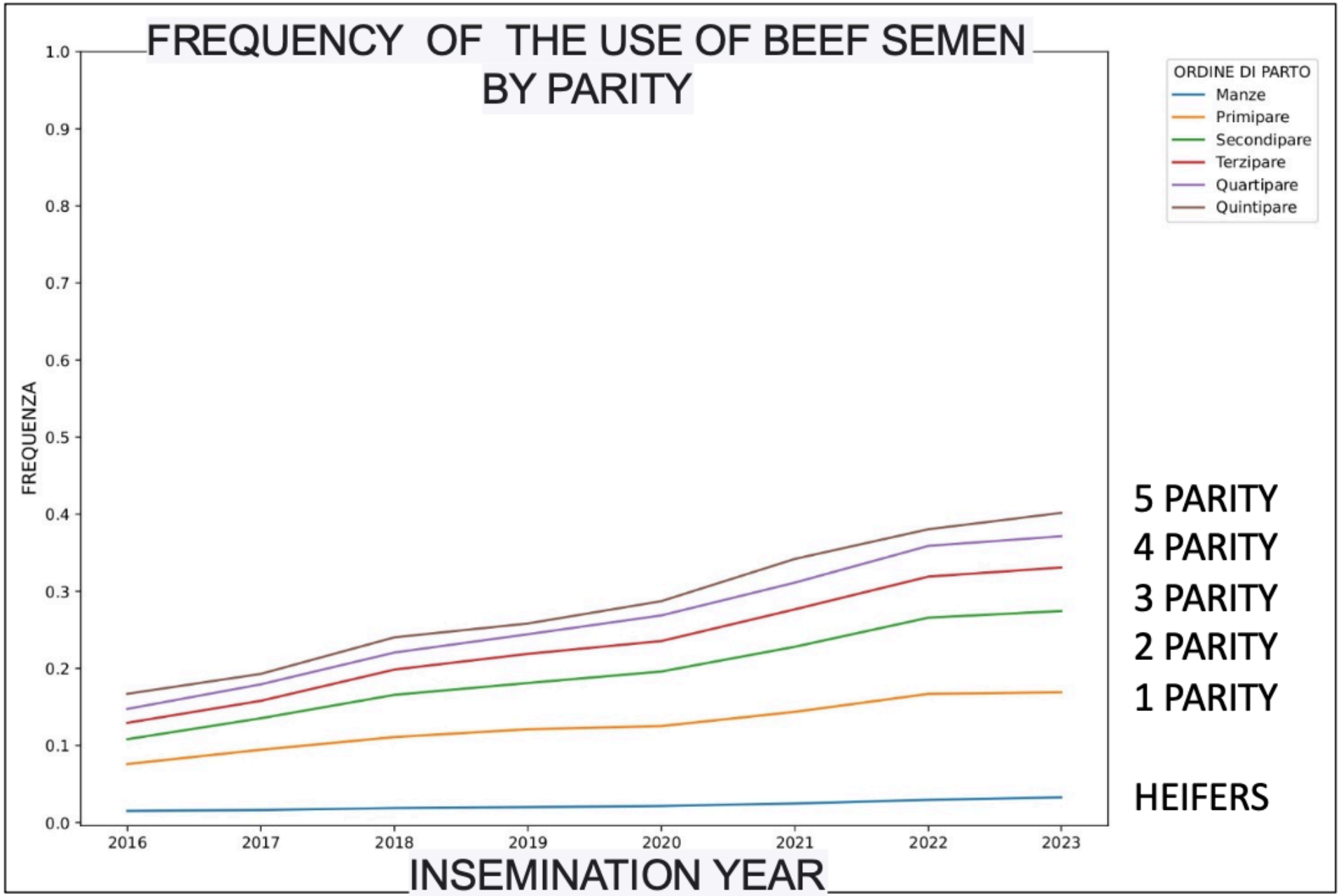

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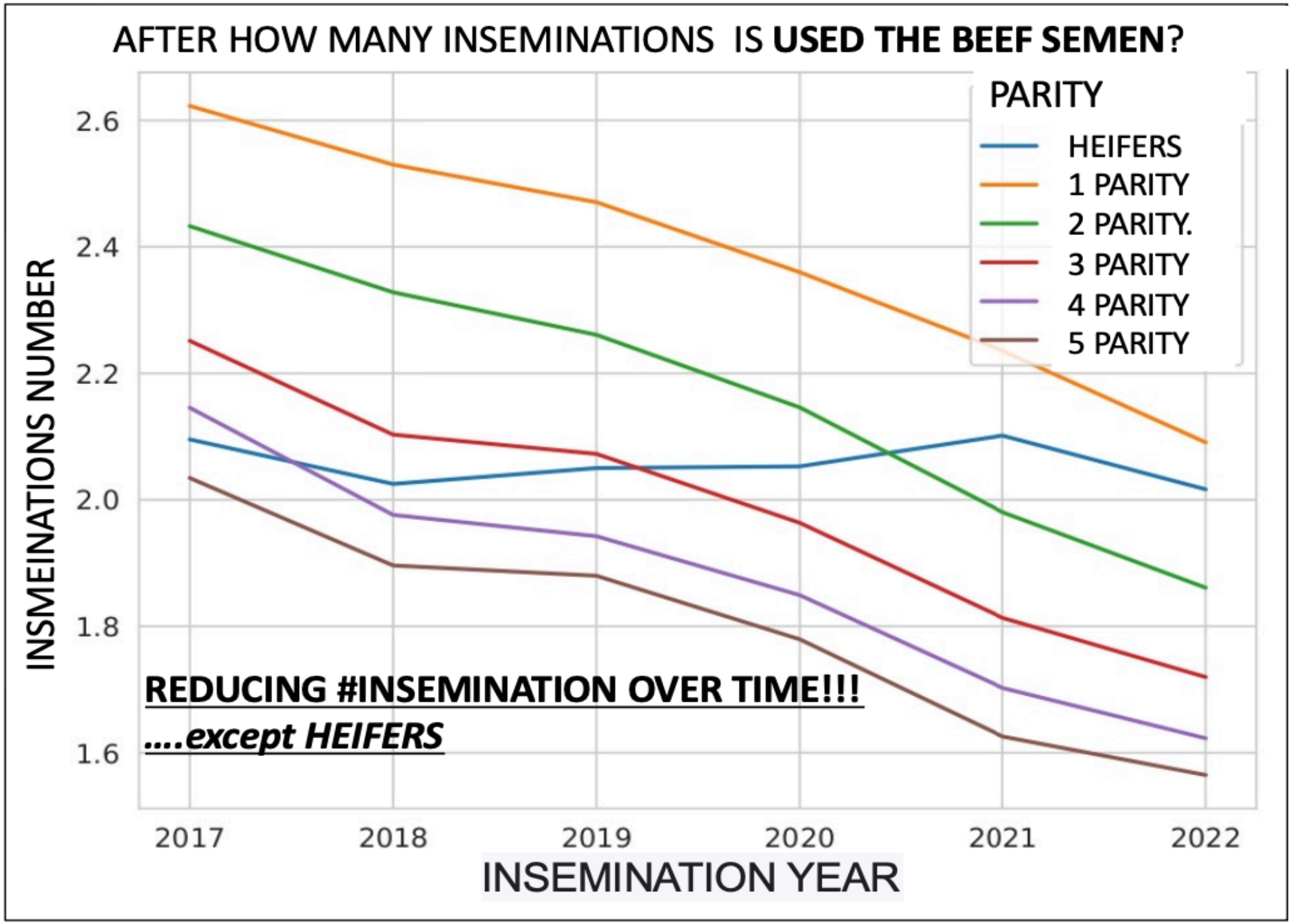

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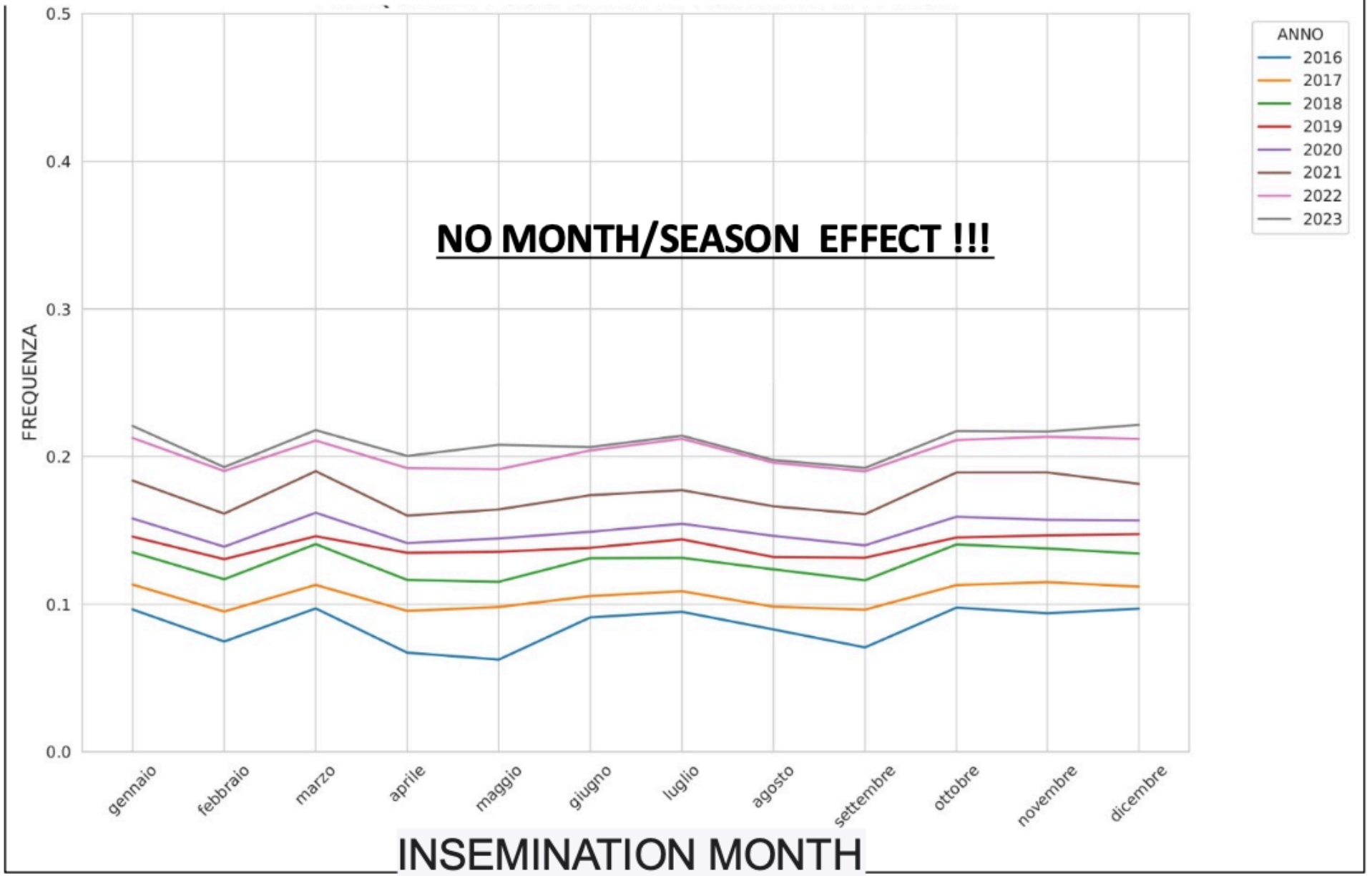
FREQUENCY OF THE USED OF BEEF SEMEN PER MONTH



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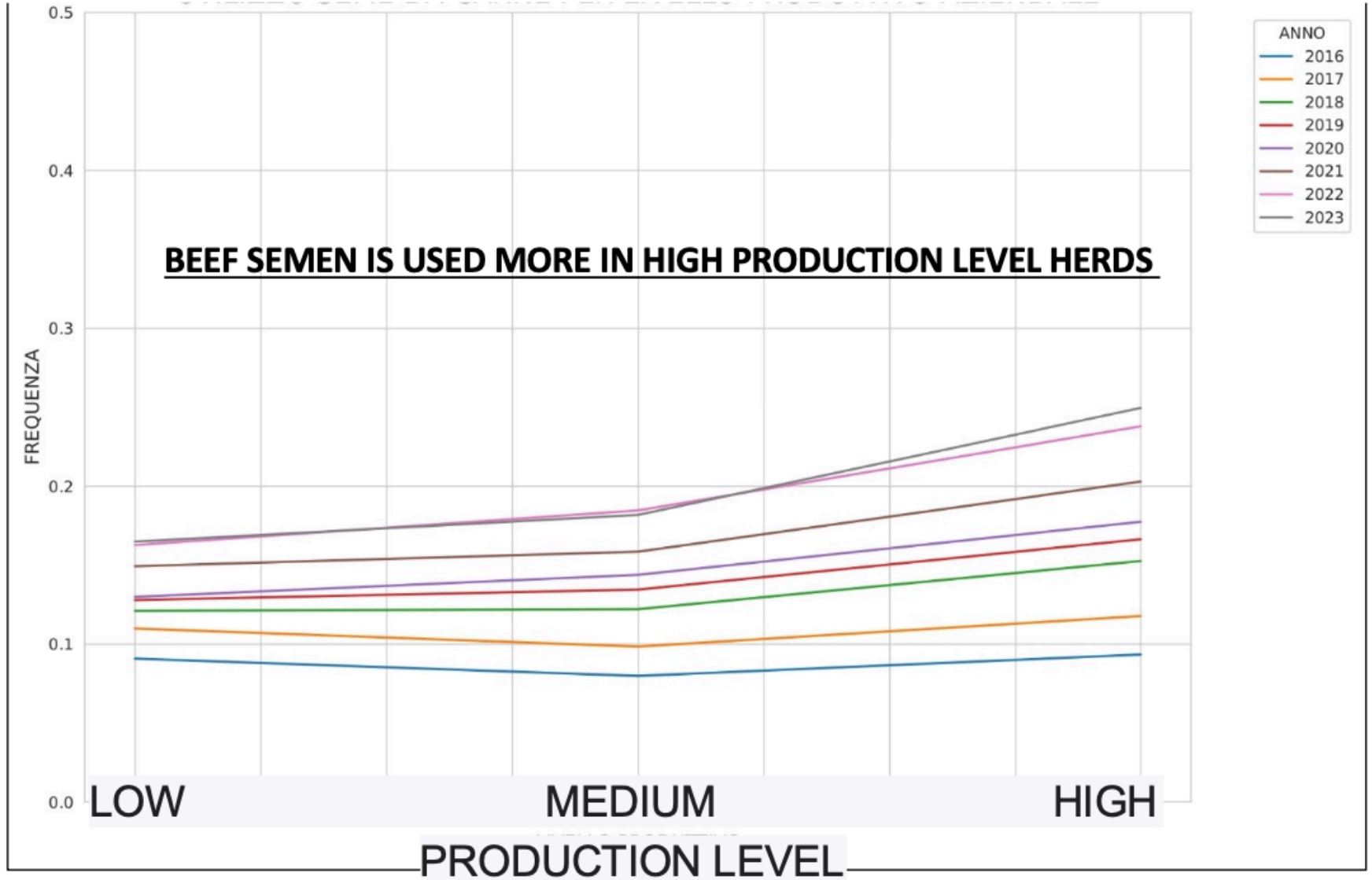
FREQUENCY OF THE USED OF BEEF SEMEN PER PRODUCTION LEVEL



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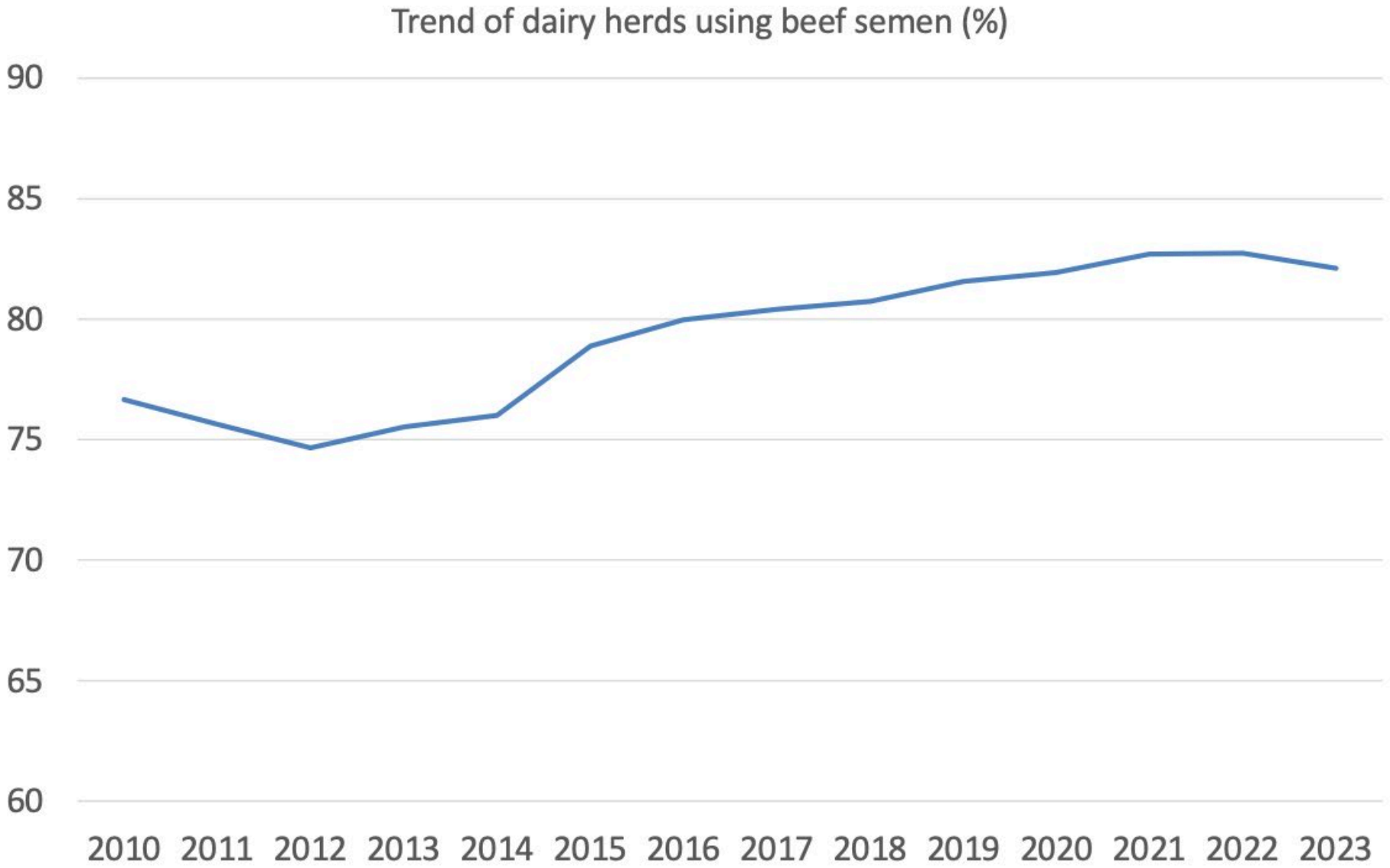

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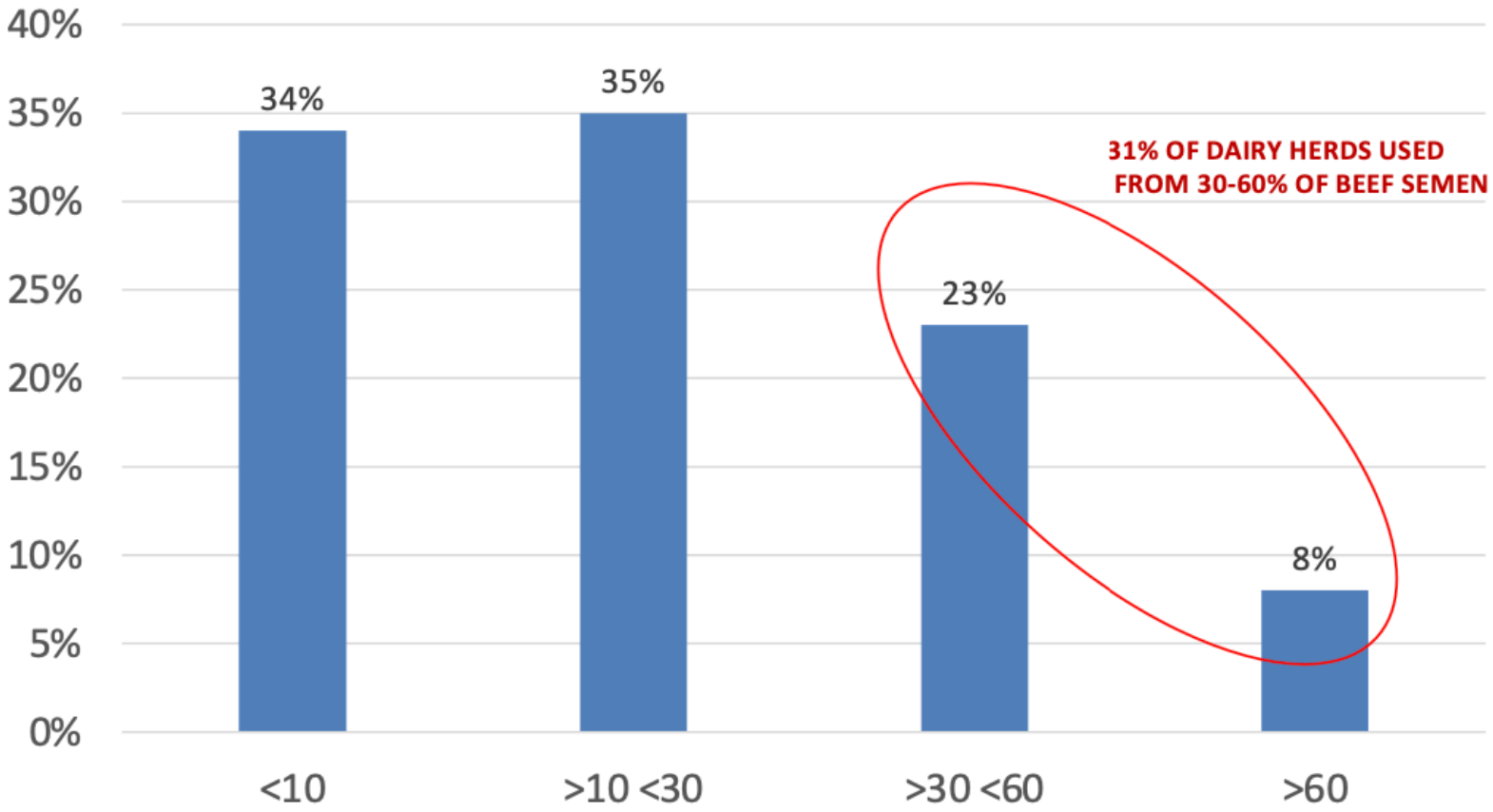
% of dairy herd for % of beef semen used



DAIRY HERDS classes for % of use BEEF semen within Holstein in official HB data of ANAFIBJ

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BREED EFFECT analyses for STILLBIRTH, CALVING EASY and GESTION LENGTH

EDITING

Starting observations (calvings) = 949,409

Editing:

- delete sire breeds which recorded a frequency <1%, i.e., Maremmana (30), Podolica (34) and Romagnola (69);
- delete cows for which we did not know date of birth;
- retention of cows born from 1985 onwards;
- retention of **calves born between 1995 and 2023**
- retention of parity orders from 1 to 10. Parities ≥5 were grouped in one class ('5');
- retention of records with the following **age at calving within parity**:
  - 18 ≤ cow age ≤ 40 for parity = 1
  - 30 ≤ cow age ≤ 58 for parity = 2
  - 42 ≤ cow age ≤ 76 for parity = 3
  - 54 ≤ age of cow ≤ 94 for parity = 4
  - cow age = any for parity ≥5
- retention of **herds for which the number of parity was ≥50** distributed over at least 5 years.

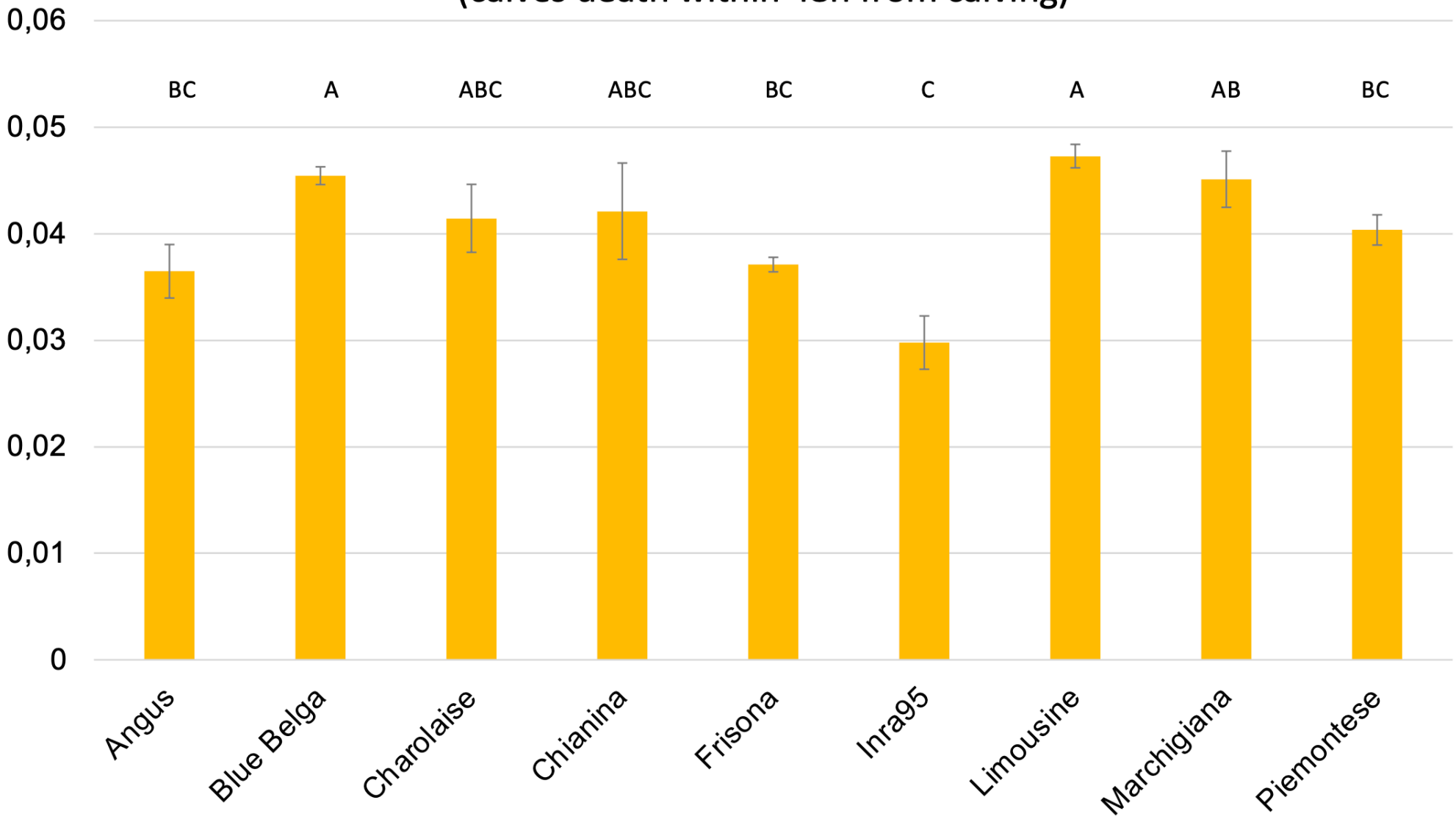
Final observations (calvings) = 807,985.

USING A GLINMIX PROCEDURE (SAS)

```
Y = birth_year_calf +calf_season +sire_breed +sex +parity +herd +cow (as random)
```

Stillbirth

(calves death within 48h from calving)



P<0.001

Belgian Blue, Limousine and Marchiana >> Inra95, Holstein, Angus

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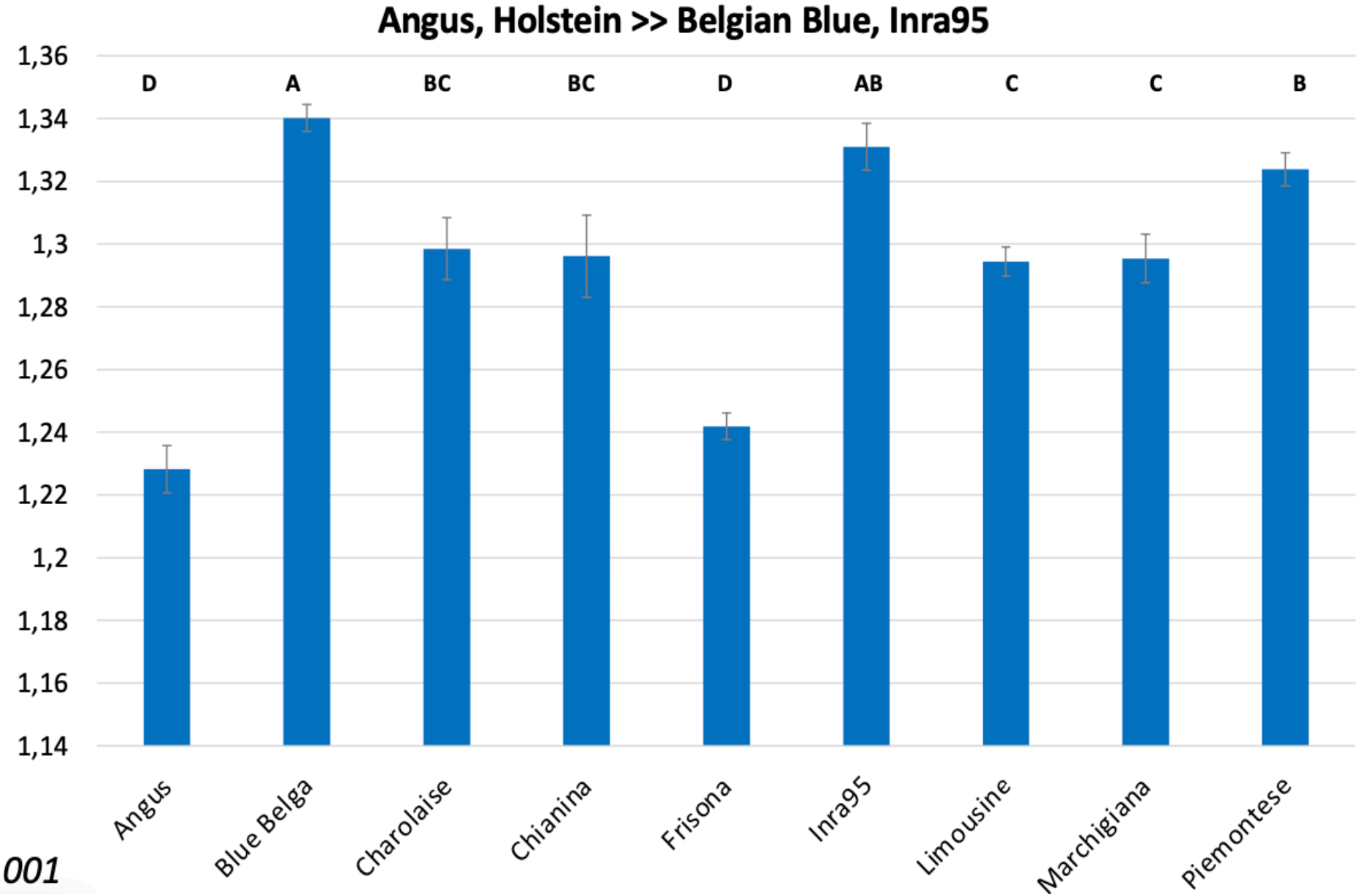
CALVING EASE

(1 = easy 2 = birth assisted by one person only 3 = cesarean section 4 = difficult part 5 = embryotomy



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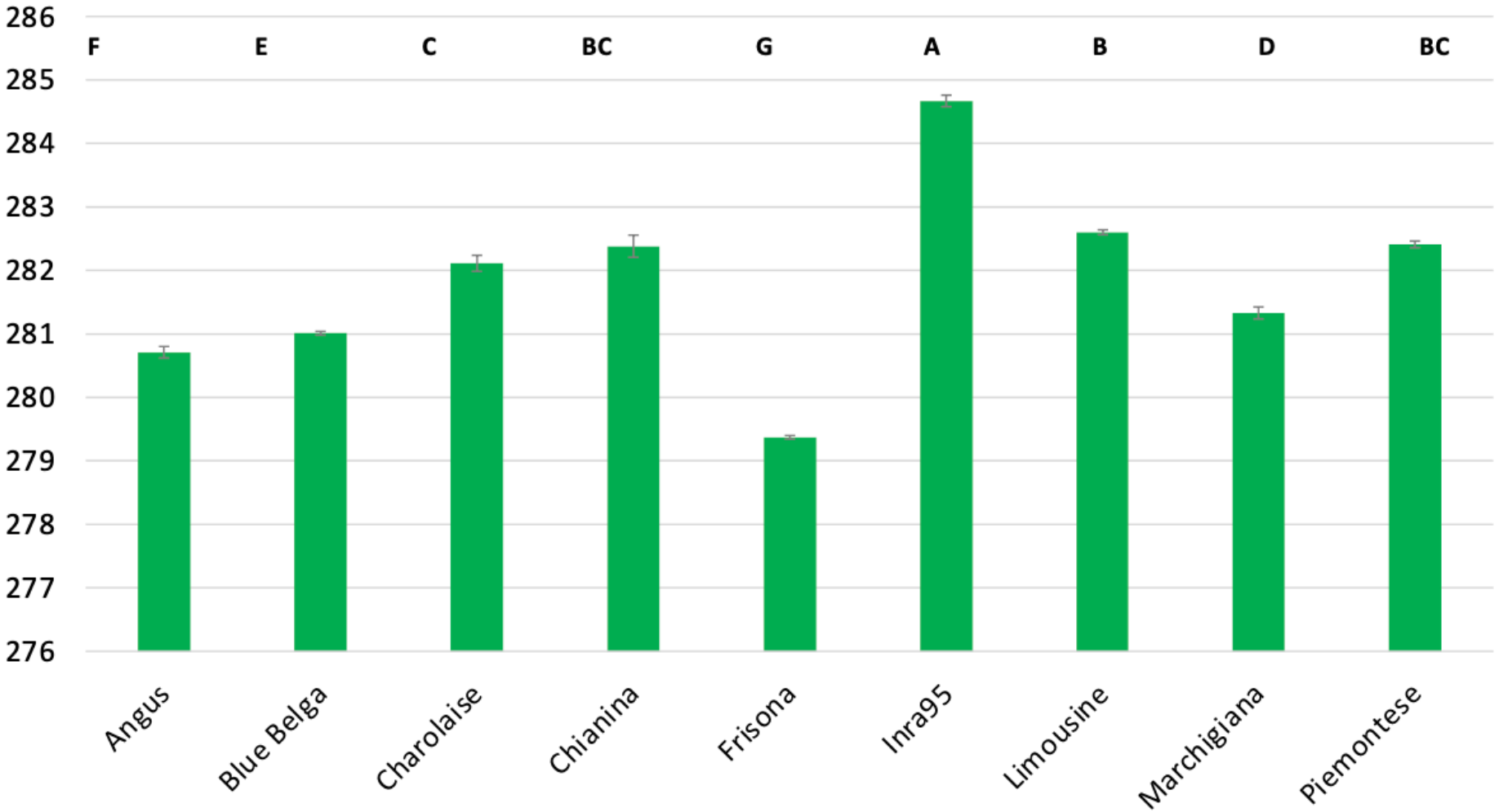
Gestation length (d)



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Inra95 >> Holstein (+5d)

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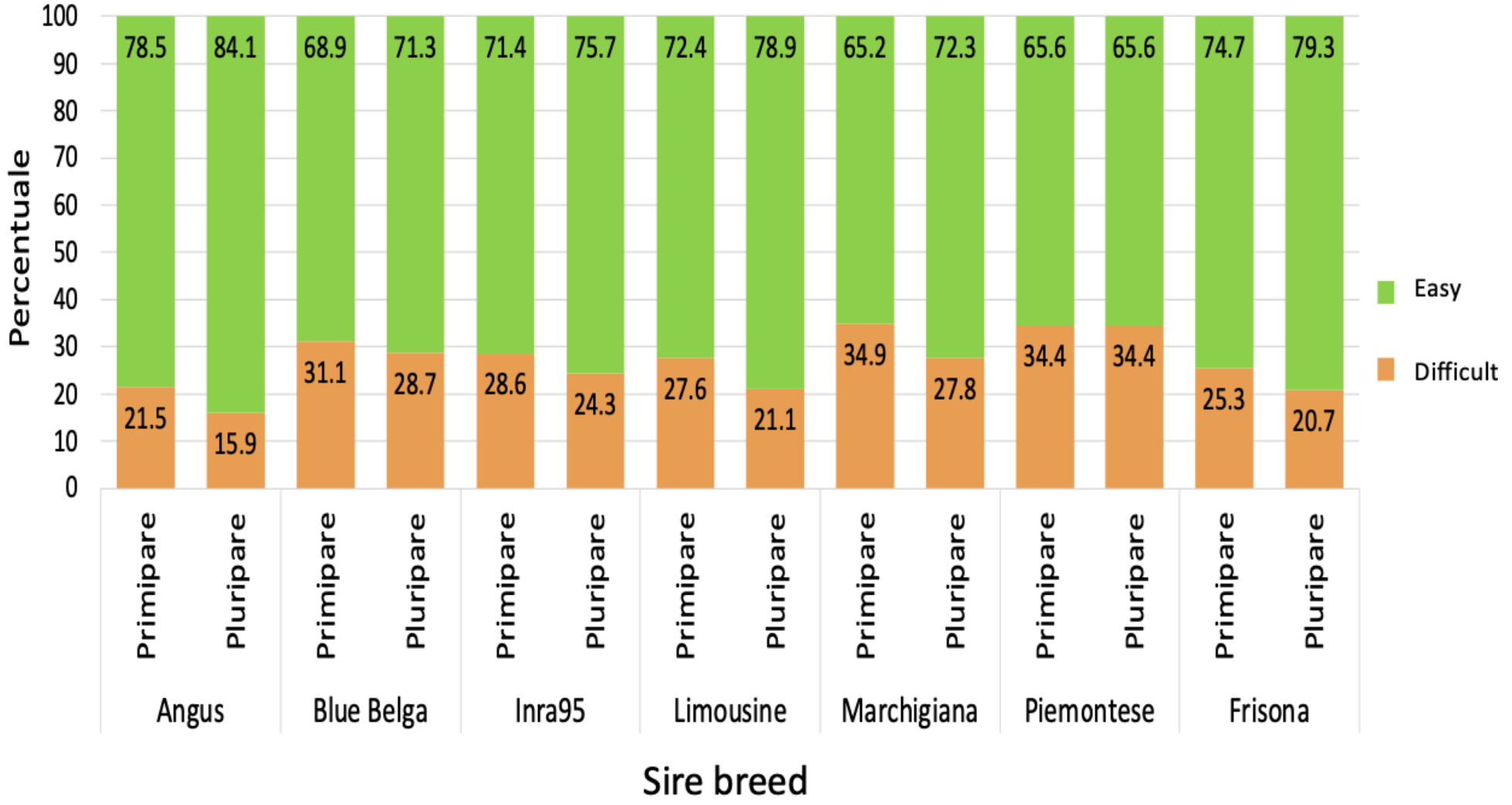
Parity effect on Calving easy for different breed of Sire



Multiparous cows showed a higher calving easy then primiparous, in avg. around -4%

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Conclusions

BoD is a **common practice in Italy** in Holstein populations and **its interest and use are growing**.

Farm profit can benefit from combining the use of sexed semen on the best heifers and cows and beef semen on cows exceeding the replacement needs.

The **sire beef breed has an impact** on the calving ease of the dam and stillbirth, and this has to be taken into account when BoD is used.

Anafibj developed a tool for the dairy farmers

(*ICAR Session 1a – Ferrari et al., 23 May 2024 - 8:54 a.m.*)

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Thank you for your attention

Martino Cassandro martinocassandro@anafi.it www.anafibj.it

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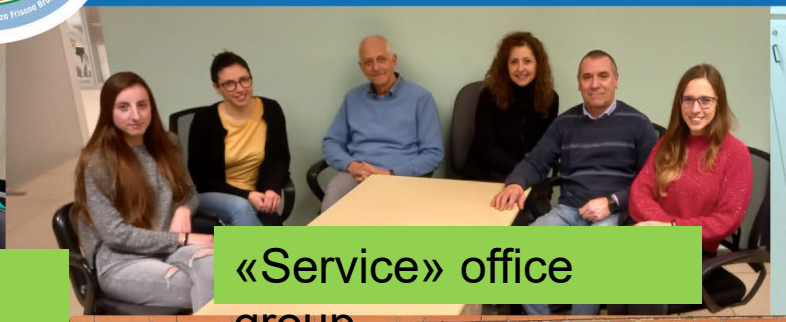
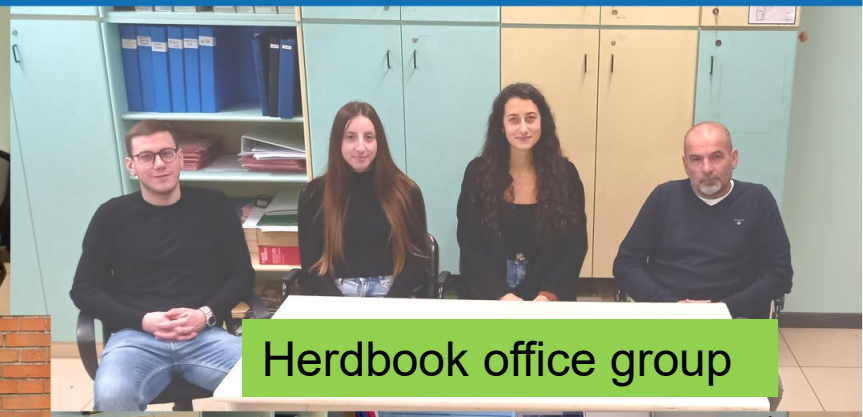
IL TEAM ANAFIBJ

Administration office group



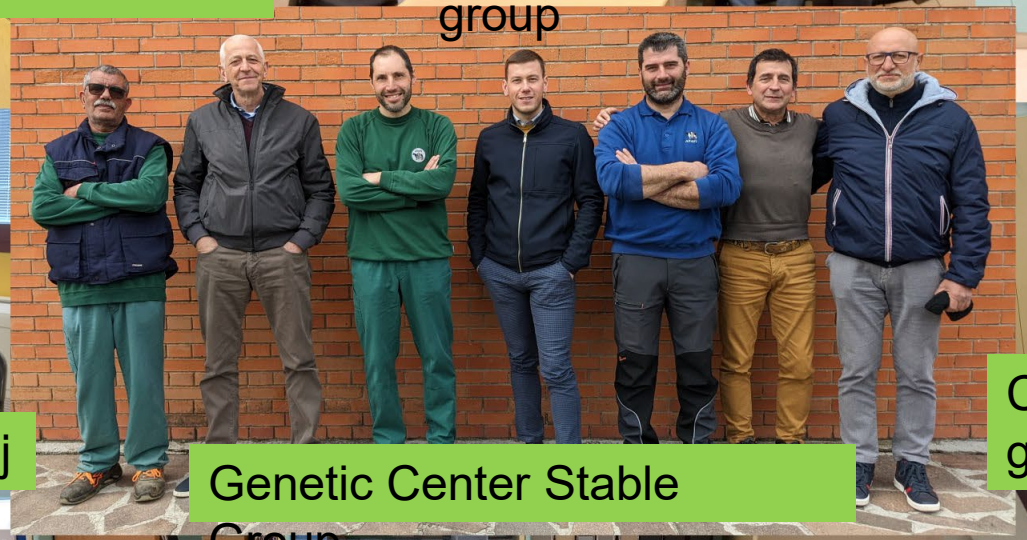
«Service» office group



Herdbook office group

President Anafibj

DG Anafibj



Genetic Center Stable Group

Conformation office group

Promotion office

IT office

R&D office group

Bianconero editorial

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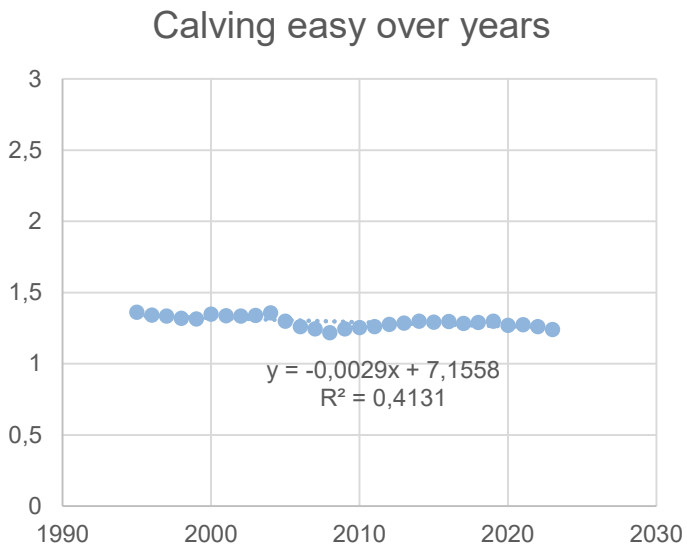
```
class  byear_calf calf_season sire_brd sex1 parity id_herd;
model sb (event='0')= byear_calf calf_season sire_brd sex1 parity id_herd/dist=binary link=logit;
random intercept / subject=id_cow;
lsmeans byear_calf calf_season sire_brd sex1 parity / ilink lines adjust=tukey;
run;

proc glimmix data = FINa1;
class  byear_calf calf_season sire_brd sex1 parity id_herd;
model ce3 = byear_calf calf_season sire_brd sex1 parity id_herd;
random intercept / subject=id_cow;
lsmeans byear_calf calf_season sire_brd sex1 parity / ilink lines adjust=tukey;
run;

proc glimmix data=FINa1;
class byear_calf calf_season sire_brd sex1 parity id_herd;
model gl = byear_calf calf_season sire_brd sex1 parity id_herd/ dist=normal link=identity solution
/*link=logit solution*/;
random intercept / subject=id_cow;
lsmeans byear_calf calf_season sire_brd sex1 parity/ilink adjust=tukey lines pdiff;
run;
```

Effect of Parity, Sex, Season and Year on CALVING EASE

Tukey-Kramer Grouping for parity Least Squares Means (Alpha=0.05)		
LS-means with the same letter are not significantly different.		
parity	Estimate	
1	1.3359	A
5	1.2869	B
4	1.2862	B
3	1.2815	C
2	1.2813	C

Tukey-Kramer Grouping for sex1 Least Squares Means (Alpha=0.05)		
LS-means with the same letter are not significantly different.		
sex1	Estimate	
male	1.3255	A
female	1.2633	B

Tukey-Kramer Grouping for calf_season Least Squares Means (Alpha=0.05)			
LS-means with the same letter are not significantly different.			
calf_season	Estimate		
winter	1.3007		A
autumn	1.2945		B
spring	1.2929	C	B
summer	1.2895	C	



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Effect of Sex on Gestation length, Calving ease, Stillbirth

Gestation length

Tukey-Kramer Grouping for sex1 Least Squares Means (Alpha=0.05)		
LS-means with the same letter are not significantly different.		
sex1	Estimate	
male	282.26	A
fema	281.42	B

Calving ease

Tukey-Kramer Grouping for sex1 Least Squares Means (Alpha=0.05)		
LS-means with the same letter are not significantly different.		
sex1	Estimate	
male	1.3255	A
female	1.2633	B

Stillbirth

Tukey-Kramer Grouping for sex1 Least Squares Means (Alpha=0.05)		
LS-means with the same letter are not significantly different.		
sex1	Estimate	
male	-2.8617	A
female	-3.4821	B

Effect of Parity on Gestation length, Calving ease, Stillbirth

Gestation length

Tukey-Kramer Grouping for parity Least Squares Means (Alpha=0.05)		
LS-means with the same letter are not significantly different.		
parity	Estimate	
5	282.49	A
4	282.35	B
3	282.13	C
2	281.68	D
1	280.57	E

Calving ease

Tukey-Kramer Grouping for parity Least Squares Means (Alpha=0,05)		
LS-means with the same letter are not significantly different,		
parity	Estimate	
1	1,3359	A
5	1,2869	B
4	1,2862	B
3	1,2815	C
2	1,2813	C

Stillbirth

Tukey-Kramer Grouping for parity Least Squares Means (Alpha=0.05)		
LS-means with the same letter are not significantly different.		
parity	Estimate	
1	-2.8790	A
5	-3.1888	B
4	-3.2528	C
3	-3.2665	C
2	-3.2724	C

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