

Genomic Evaluation for Clinical Mastitis in Czech Holstein



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OBJECTIVES

Genomic breeding values

for Clinical Mastitis (CM)

by Multi-trait linear model

- Udder health traits
- Udder exterior traits

The Diary of Diseases and Medication

- The national cattle health monitoring system
- On-line health recording form
- Simplified key of diagnoses based on the ICAR recommendations

Records of clinical mastitis (CM)

- Collected by farmers
- Voluntarily registered in the Diary

Prerequisite of genomic evaluation for disease resistance

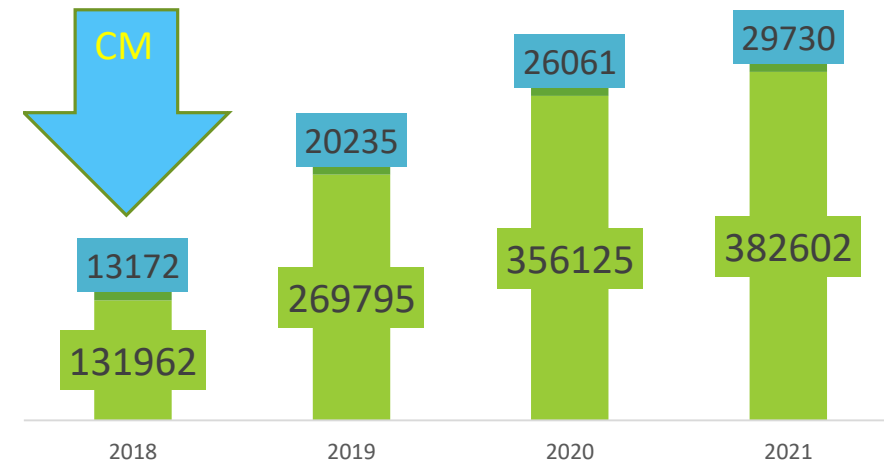
- **The Diary of Diseases and Medication**

- *2014-2017, started in 2017*

- *Institute of Animal Science*
- *Czech Moravian Breeders' Corporation*
- *Veterinary Research Institute*

- **Genotyping**

- *Holstein Cattle Breeders Association of the Czech Republic.*



DATA

79,431 phenotyped Holstein cows

132,614 lactations

CM lactation incidence 19.91 %

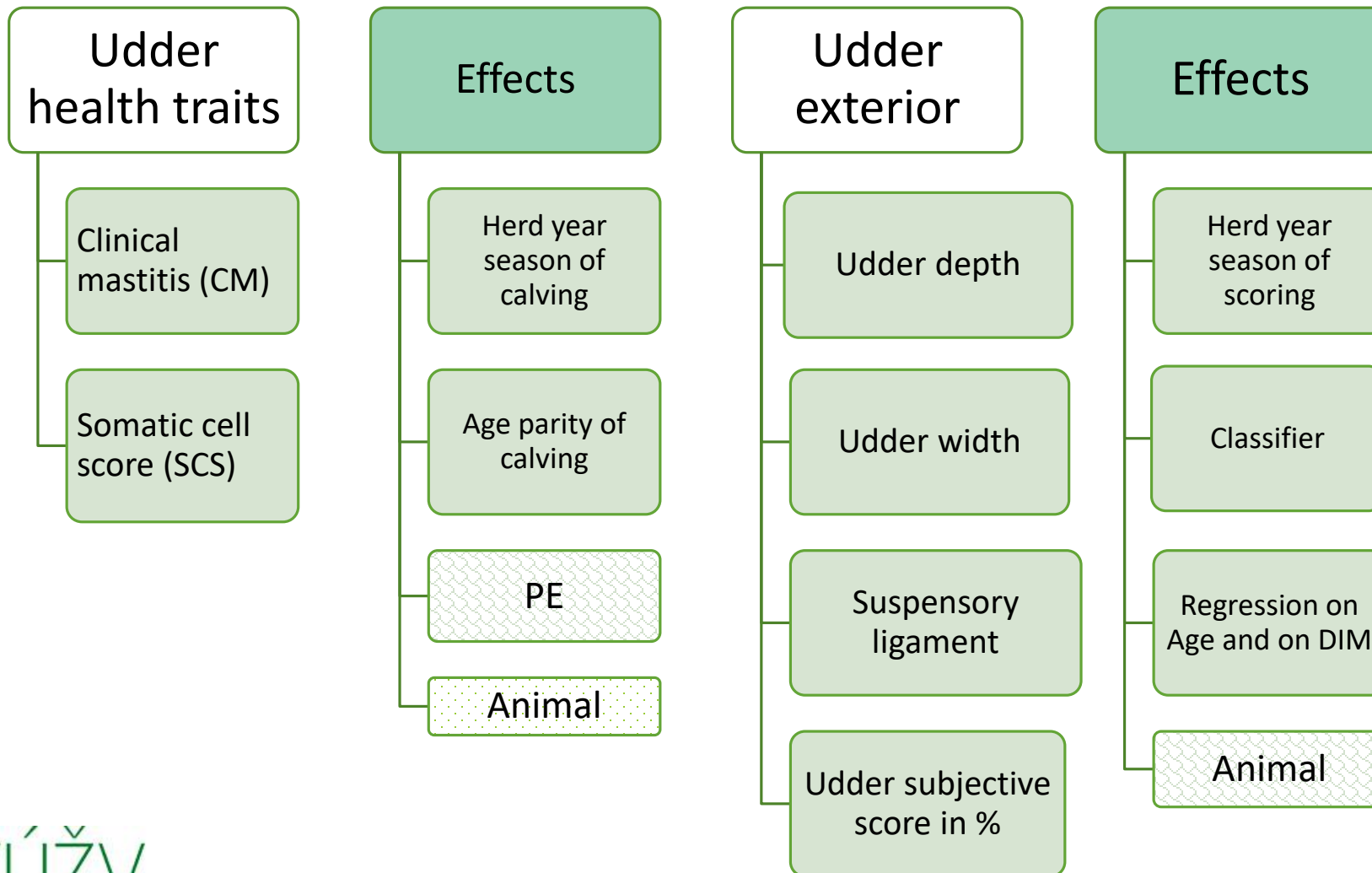
Cows calved between 2017 and 2021

104 herds

Pedigree involved 208,217 animals.

TRAITS

MODEL EQUATIONS



Genomic Information

Genotyped animals

35,472 animals

5,377 Bulls

573 young Bulls

1,595 Bulls with daughters with phenotype

14,941 Cows

8,370 Cows with phenotype

15,154 Heifers

Computed by

BLUPF90 family
of programs

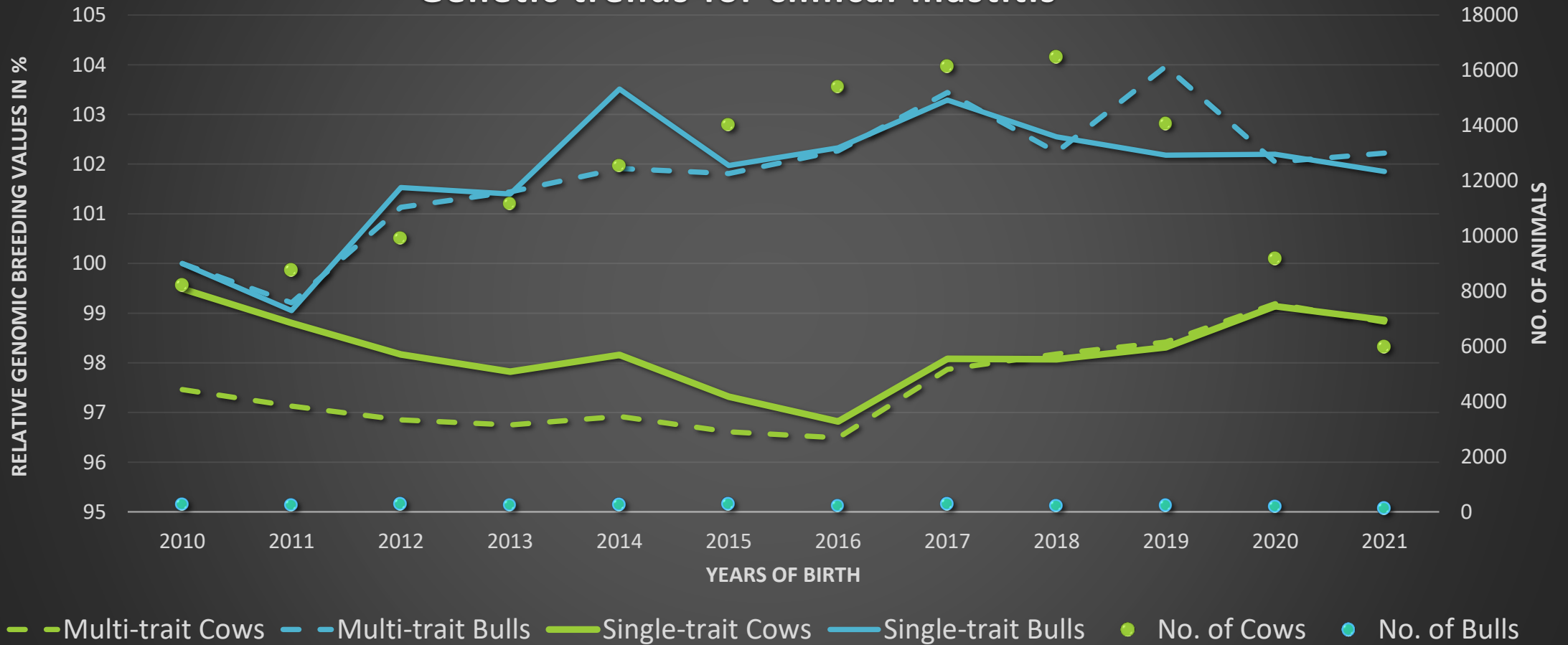
Ignacy Misztal et
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Heritability

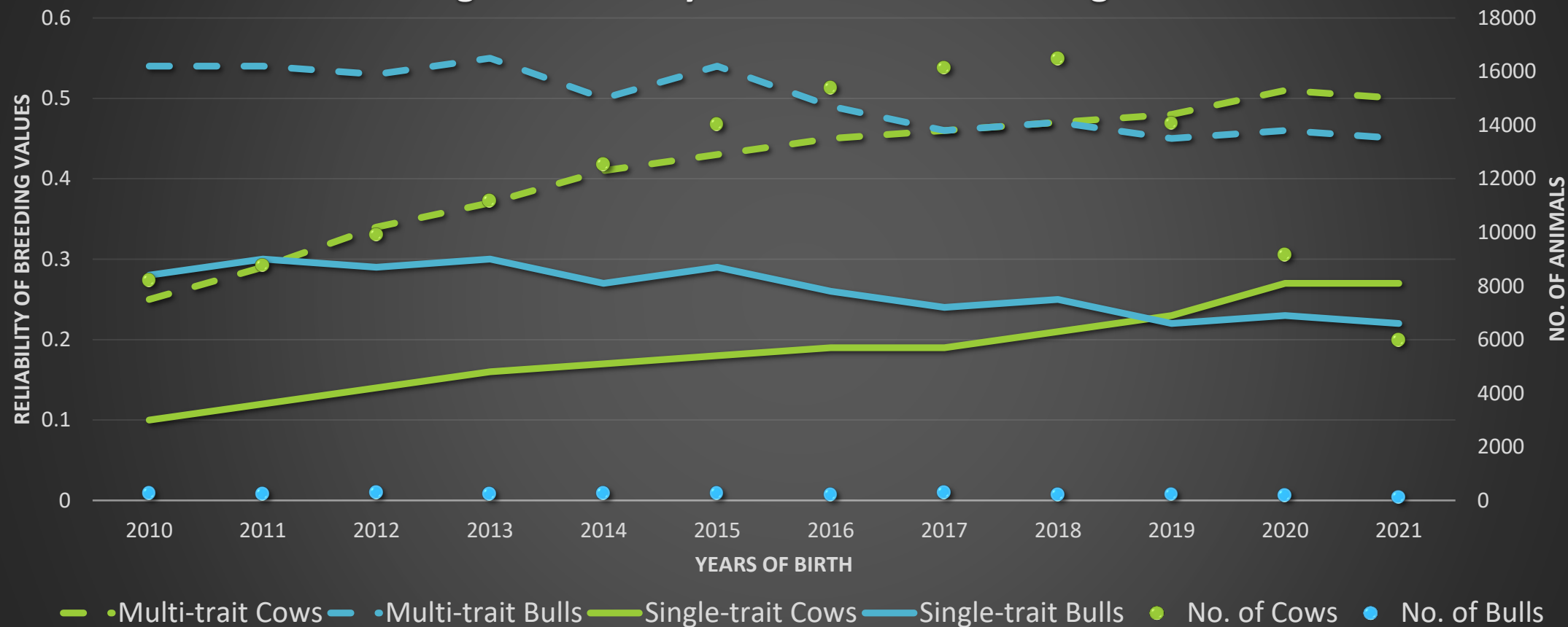
Genetic correlation



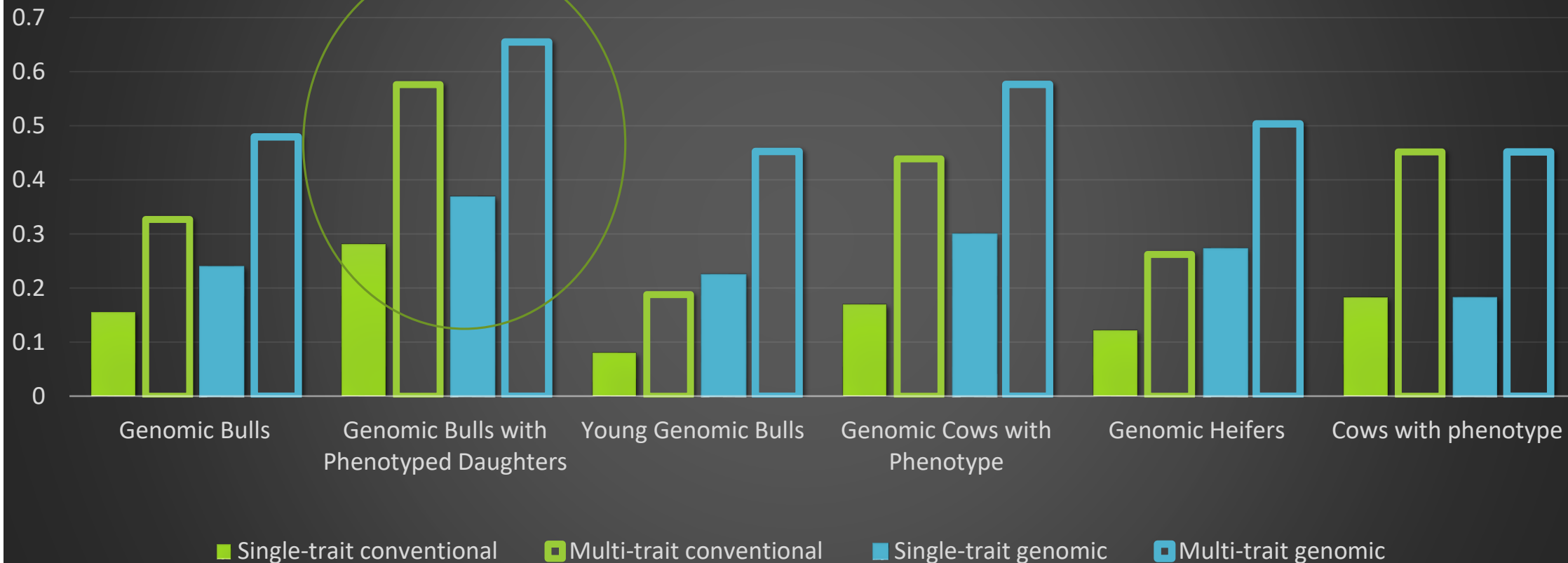
Genetic trends for clinical mastitis



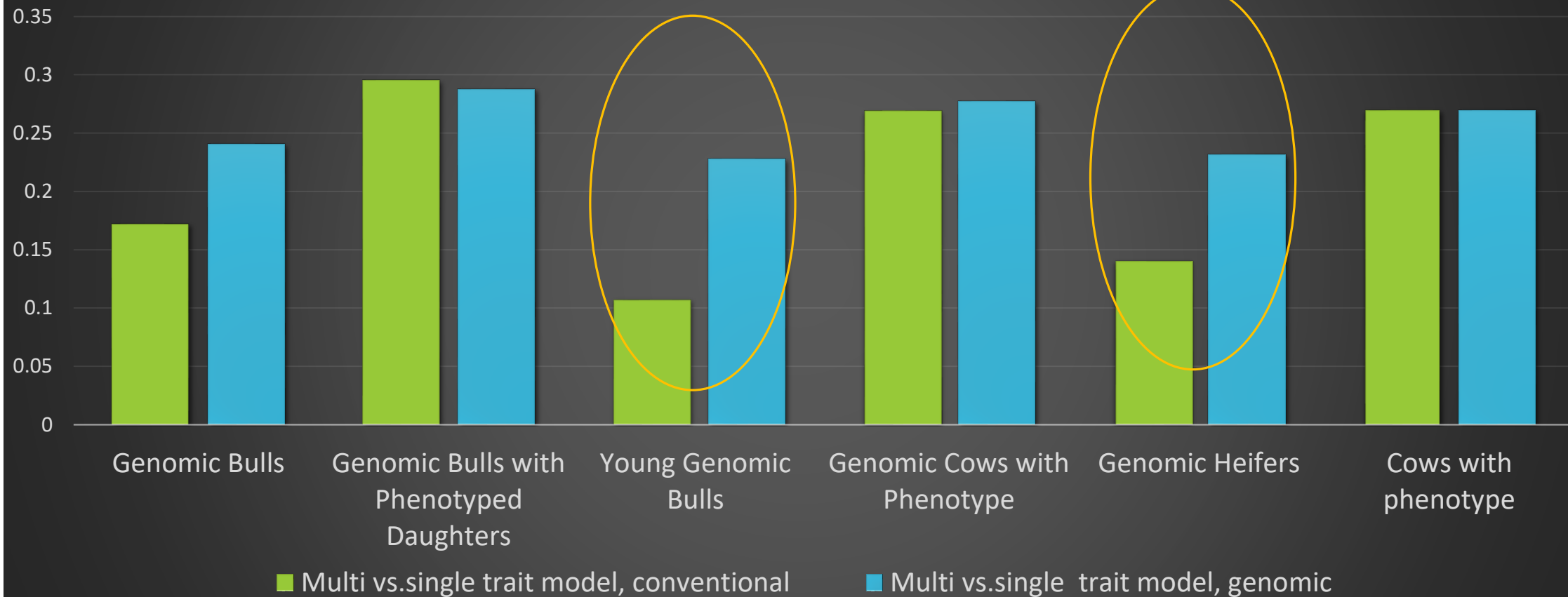
Average Reliability of Genomic Breeding Values



Average reliability



Increase in reliability



Conclusions

- ❑ High reliability of breeding values due to multi- trait model
- ❑ Multi-trait model can be employed for increasing clinical mastitis resistance in Czech Holstein cattle
- ❑ Genomic evaluation by single-step method is suitable for health traits in Czech Holstein cattle



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