

# Genetic evaluation for yield traits

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**NAV**



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# Data used in yield evaluation

- TD records of milk, protein and fat
  - DNK lact 1-3 from 1990 onwards
  - FIN lact 1-10 from 1988 onwards
  - SWE lact 1-3 from 1995 onwards
- HOL, RDC, JER, FIC
- Multi trait – multi lactation, AMS and CMS obs
- Fairly complex model for evaluation of EBVs
- Two step genomic evaluation

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# Improvements in the RDC traditional model

## Handled and implemented

- ✓ Data quality – better handling of AMS data
- ✓ Finnish Holstein data excluded from RDC model
- ✓ Genetic parameters – reduced heritabilities
  
- Adjustment for age at calving
- Need of old data, data from later lactations?
- Revising effects related to breeds and heterosis
  - Definition of phantom parent groups
- Heterogenous variance adjustment

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# Improvements in the RDC traditional model.. to come

## Handled and implemented

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# Single step

- In dairy cattle breeding, genomic selection involves selecting animals based on their genomic estimated breeding values (GEBVs) derived from genomic information.
- If genomic information is used for selection but is not integrated into all evaluation steps (e.g., traditional pedigree-based evaluations), future estimated breeding values (EBVs) can become biased. This happens because the relationship matrices used in traditional methods do not account for the genetic information influencing selection decisions.
- The genomic selection is accounted in Single-Step GBLUP > more accurate method for genetic evaluations in dairy cattle breeding.

# Single step for yield traits

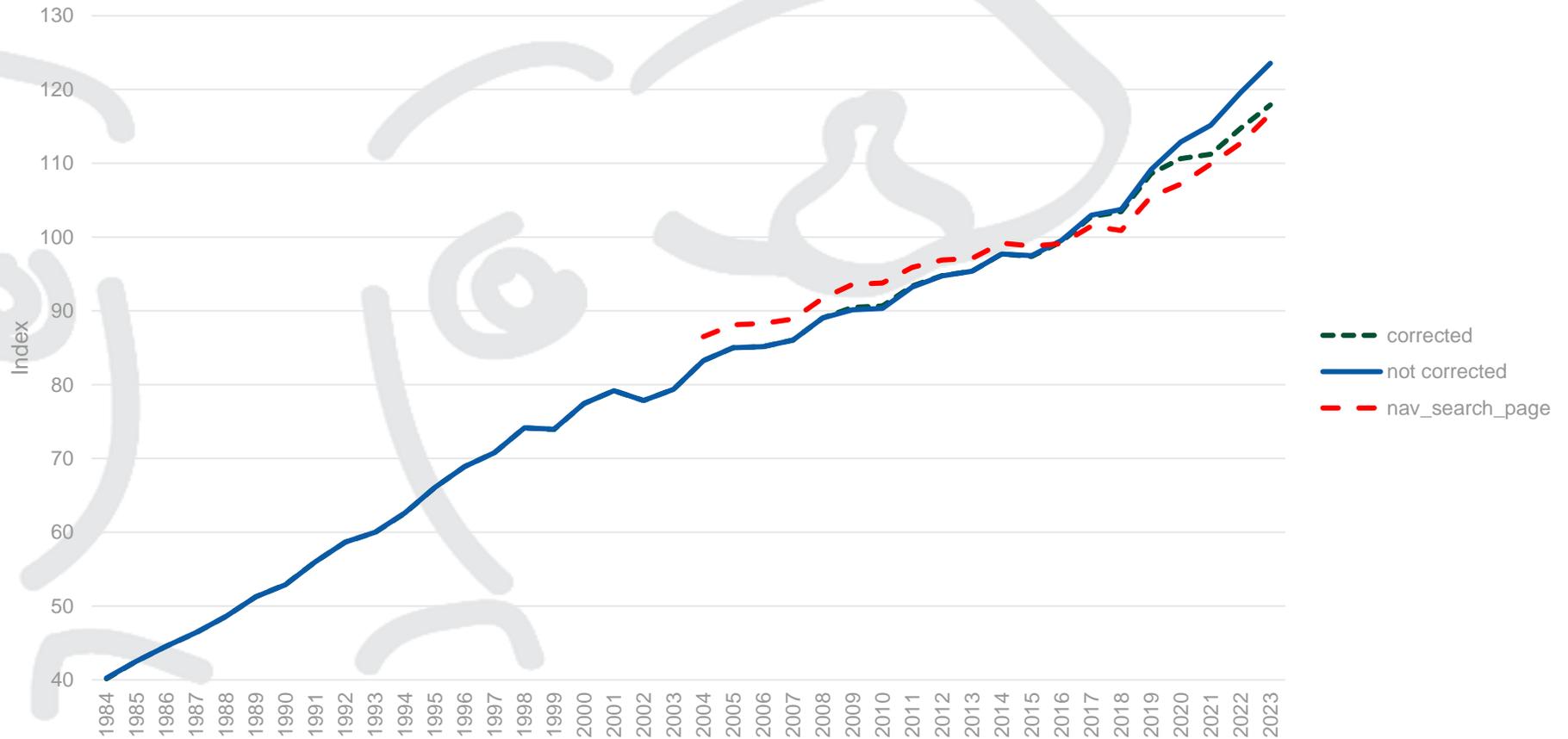
- **Intensive testing**
  - Genetic trend with single step is overestimated (bias), especially for animals with only genomic information, similar to other countries
  - GEBVs need to be post processed to remove the bias
    - Both male and female GEBVs, JER less than HOL and RDC
- Plan is to submit HOL single step yield to Interbull test run

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# Genetic trends: HOL herdbooked Nordic bulls, protein kg index

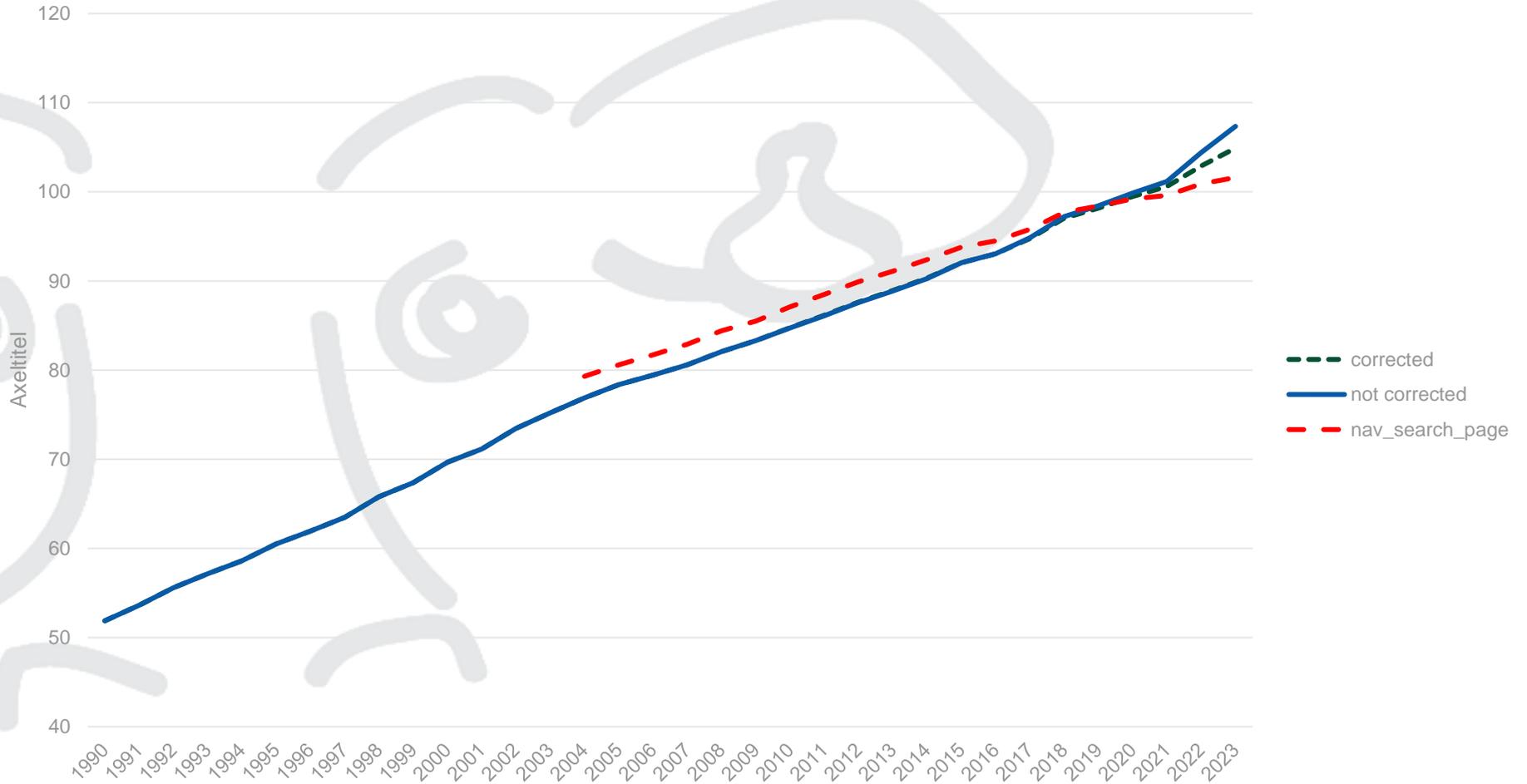


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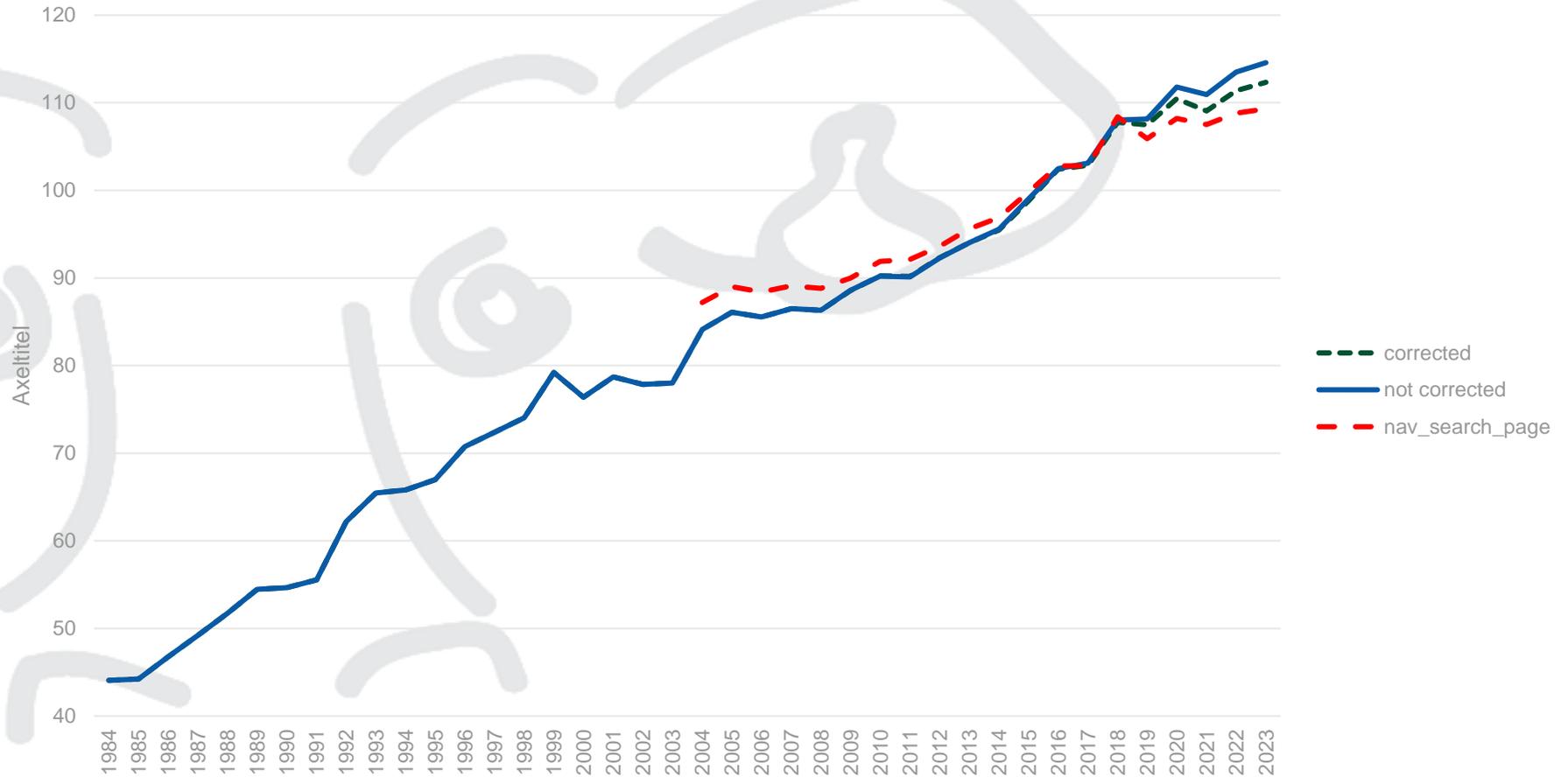


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# Genetic trends: Nordic RDC cows, protein kg index



# Genetic trends: JER herdbooked Nordic bulls, protein kg index



# New method in reliability calculation with single step by LUKE

- Somewhat higher estimates for young genotyped bulls than old method
  - HOL 5-6 percentage units
  - RDC and JER 4-5 percentage units

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# Summary

- **Some evaluation model improvements were made in RDC evaluation, more to come**
  - **Implications to HOL evaluation too**
- **Single step during 2025**
  - **Interbull test run required for HOL**
  - **New method in calculation of reliabilities**

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