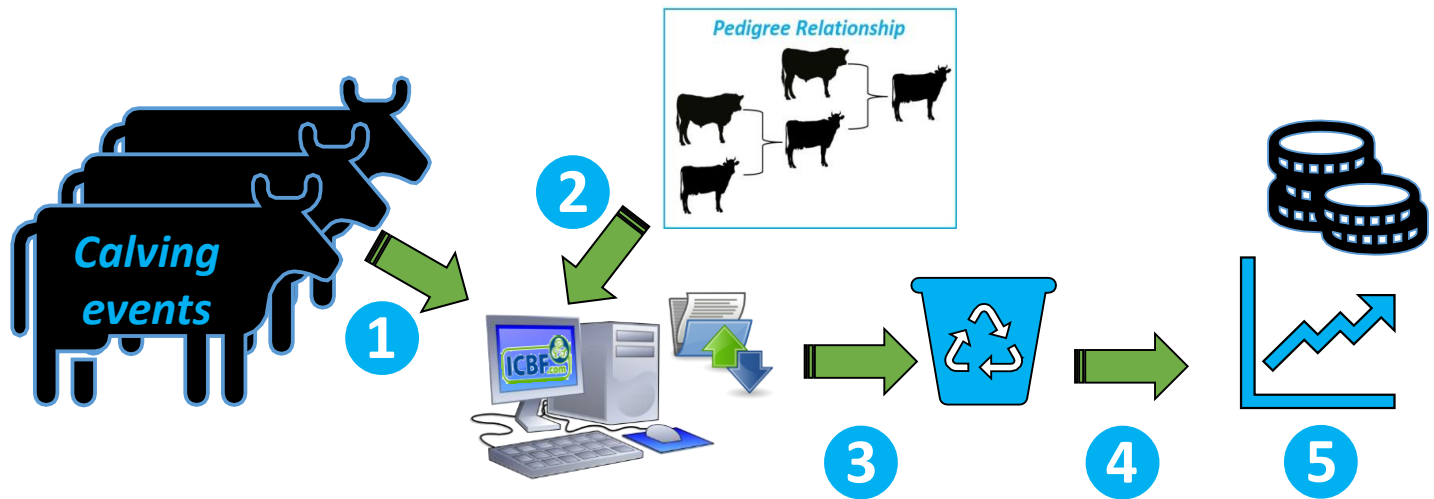


Changes to the Calving Evaluation

→ Used only in the Dairy Beef Index for Spring 2019



Genetic evaluation steps	Old calving evaluation	Changes to new calving evaluation
1	Farmer scored records of calving difficulty are recorded on-farm & transferred to the ICBF database	Additional farmer scored records of birth weight and birth size are recorded on-farm & transferred to the ICBF database
2	Sire & dam of each calf is recorded at birth & transferred to the ICBF database	No change
3	Strict editing criteria removes uninformative records	Stricter editing criteria removes additional uninformative records
4	Breeding values for calving difficulty are estimated for all animals together in the same analysis using the farmer scored records of calving difficulty and the available pedigree (and genotype) information	Breeding values for calving difficulty are estimated for dairy heifer, dairy cows, beef heifers, and beef cows, separately using the farmer scored records of calving difficulty, birth size, birth weight, and the available pedigree information
5	The output is a single-figure breeding value and reliability, that was deemed applicable for use on dairy heifers, dairy cows, beef heifers, & beef cows	The output is four separate breeding values and corresponding reliabilities for use on: 1) dairy heifers, 2) dairy cows, 3) beef heifers, & 4) beef cows. Economic values have been updated to consider that dairy farmers will only use more difficult calving beef bulls where a much higher price is paid for the resulting calf

Impact of Changing the Calving Evaluation

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- New calving evaluations provide a better indication of the expected calving difficulty when a bull is mated with a dairy heifer and separately when mated with a dairy cow
- Stricter editing criteria ensure only herds recording the most informative data influence the new calving evaluation
- The average calving difficulty has increased (Figure 1)
 - E.g., of the 75 beef bulls on the Active AI Bull List ranked on Dairy Beef Index (Jan '19), their genetic merit for calving difficulty has increased, on average, by 7 percentage units on the dairy heifer scale, or by 1 percentage unit on the dairy cow scale
 - The extent of the change is not the same for every bull
 - In general, the extent of the change is more pronounced on the dairy heifer scale compared to the dairy cow scale
 - The average extent of the change differs between breeds (Figure 1)
- The updated economic values consider that dairy farmers will only use harder calving beef bulls where a much higher price is paid for the resulting calf

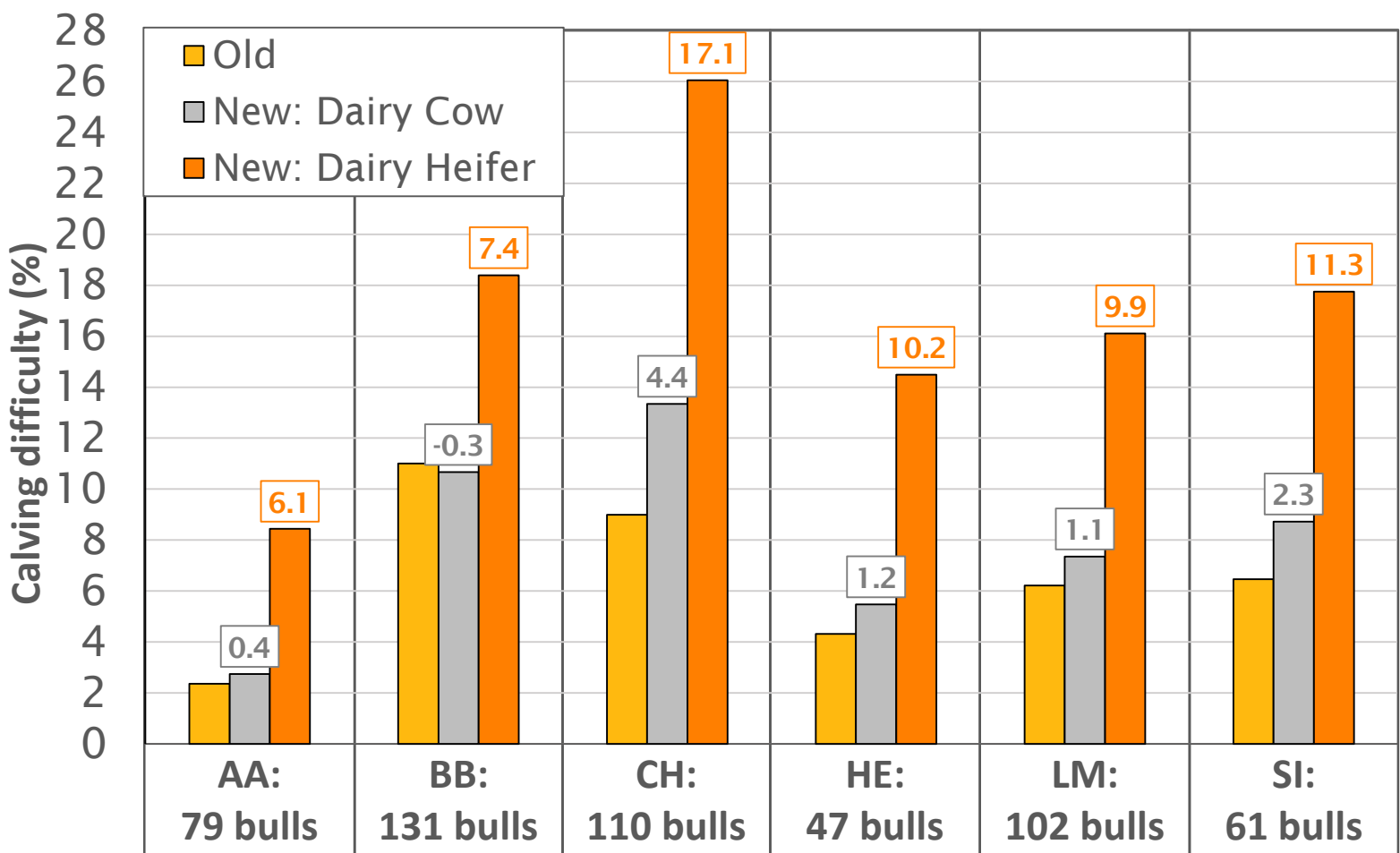


Figure 1. Comparison of the average calving difficulty per breed for Active beef AI bulls (Jan '19) based on the old versus new calving evaluation. Labels indicate the average change in calving difficulty between the old and new calving evaluation