

# NAV evaluation of udder linear and coordinate traits

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**November 2016**

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STØTTET AF  
mælkeafgiftsfonden

# Why use robotic milking data?

- **High genetic correlations** ( $\sim 0.90$ ) between udder linear and AMS traits
- **high heritabilities of AMS traits**
  - **→ Increased EBVs accuracy**
- **Information from multiple lactations**
  - **→ Accurate EBVs for 2<sup>nd</sup> and 3<sup>rd</sup> lactations**
- It is possible to get information from more herds than those enrolled in linear classifications today

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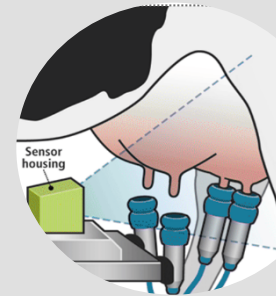
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1989

Denmark starts recording linear traits: Teat placement front (TPLF) and udder depth (UD)

2008

AMS udder coordinates for TPLF, TPLB, UD and UB are collected in Danish herds



## Linear and AMS traits Timeline

2006

Teat placement rear (TPLB) and udder balance (UB) are added to the recording

2016

First time EBVs for udder traits are published with the new model including AMS information



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# Data from AMS in genetic evaluation

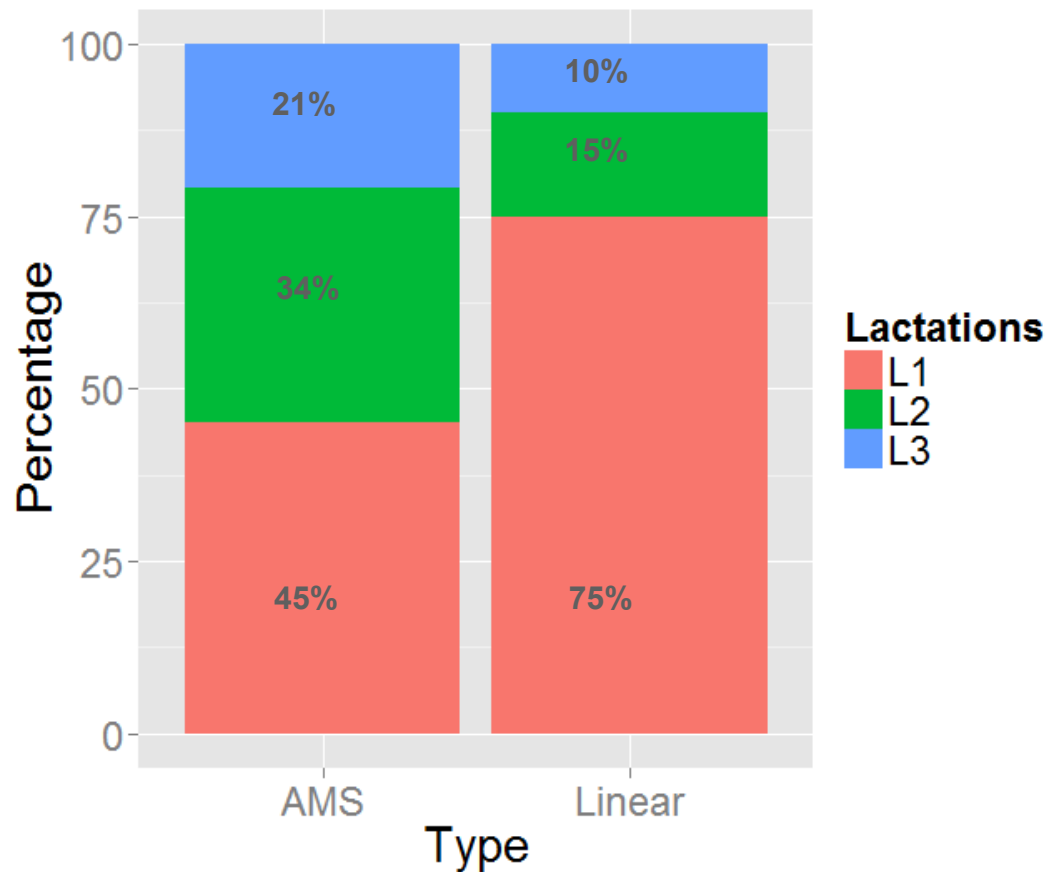
- Registrations from 2008
- Only Danish data
- 1. - 3. lactation
- Average of 30-60 DIM
- Correlated information to linear traits
- 4 traits (teat placement, udder depth and balance)

Dataset: 53.000 HOL, 3.400 RDC and 3.700 JER

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# Increased number of observations especially in later lactations from AMS



# Genetic parameters

Trait	Heritability Linear score, 1. lact			Heritability AMS, 1. lact	Genetic correlation, 1. lact,
	HOL	RDC	Jersey	HOL,RDC, JER	HOL,RDC, JER
Front Teat Place.	0.32	0.27	0.27	0.61	0.91
Rear Teat Place.	0.28	0.26	0.26	0.48	0.93
Udder Balance	0.16	0.16	0.16	0.48	0.90
Udder Depth	0.39	0.34	0.34	0.67	0.97

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# Changes

- **Bulls**
  - **Correlation: 0,99**
  - **Only few bulls change more than 2 index units**
- **Cows**
  - **Larger changes**

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# Changes - cows



**1 classification**  
(moderate heritability)



**1 classification**  
(moderate heritability)

**+ 3 lact. AMS**  
(high heritability + high corr.)

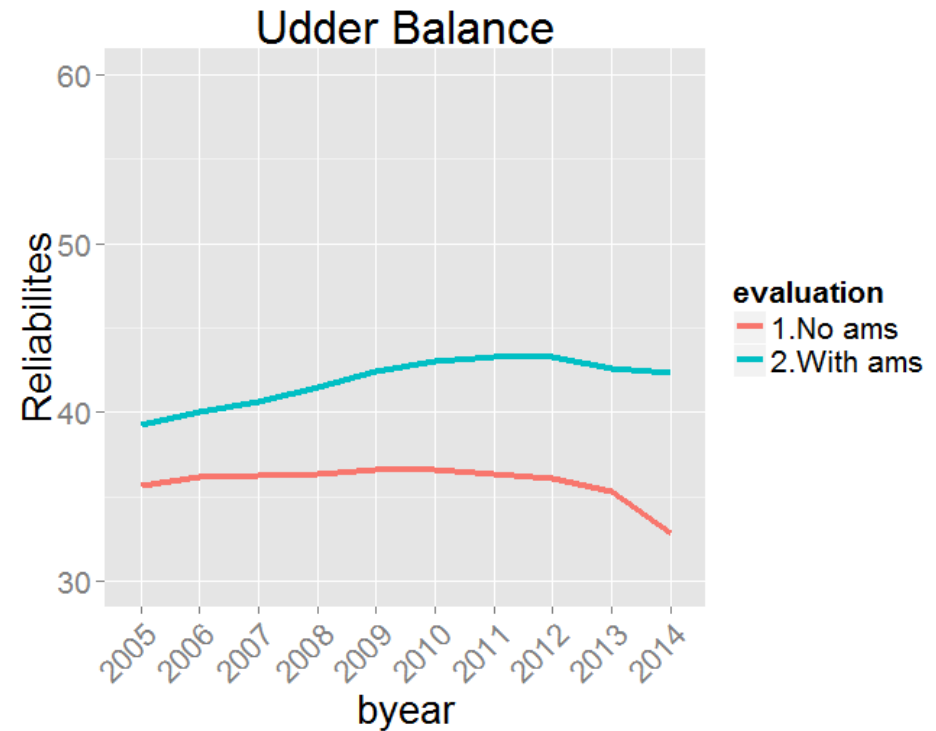
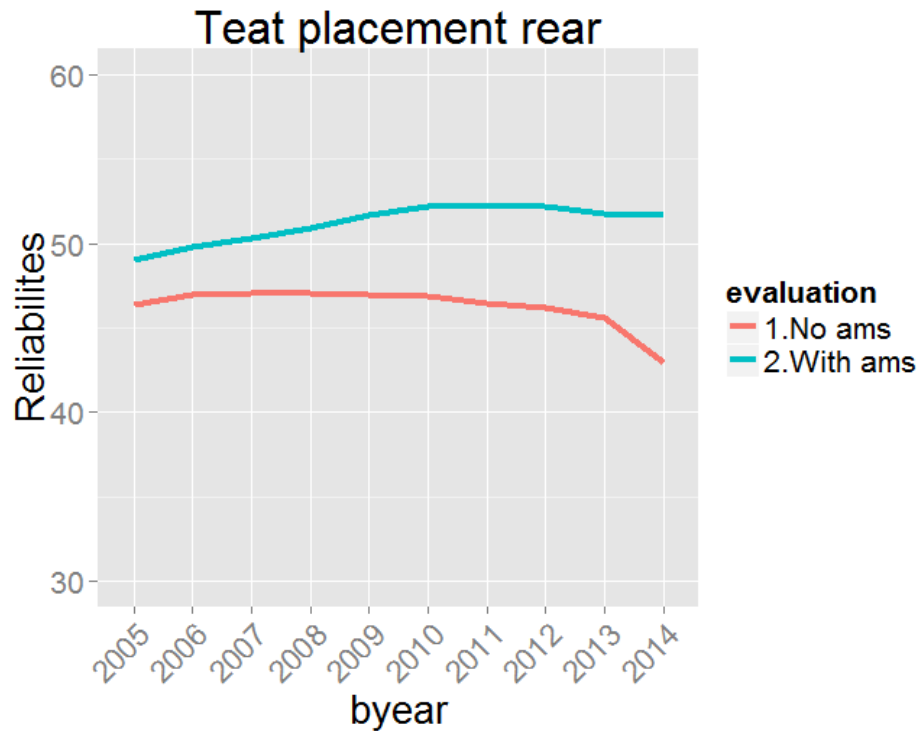
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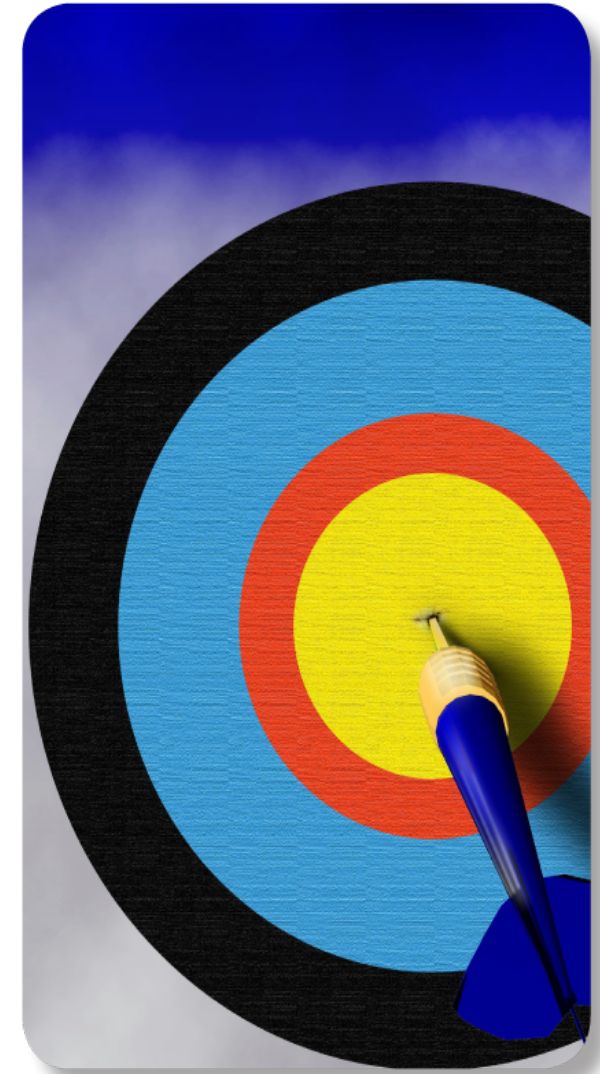


# Largest changes for (Danish) cows with AMS records



# Final remarks

- No change on the genetic trends
- **MORE Data: #3 lactations**
- **Higher reliability for cow EBVs in all 3 lactations**
- **Limited effect on the bulls EBV since they already have high reliabilities. Only a few bulls having many daughters with AMS data change more than 2 EBV units.**



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