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NAV evaluation of Calf survival

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NAV evaluation of Calf survival

Calf survival:

- **Definition of calf survival**
- **Genetic parameters, data and model**

Preliminary results:

- **Economic value**
- **Genetics trends – correlations to other traits**

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Introduction to calf survival

- Survival (mortality) from birth to calving/slaugther
- Previously: 3 Danish reports *(Morten Hansen, Elise Norberg, Line Hjortø)*
  - Low heritabilities
  - But useful - due to large amount of data – data that are available already

Trait definition

Heifer period 1 (HP1): 2-30 days

If the heifer is slaughtered, exported, lost during days 2-30 then HP1 are missing

Heifer period 2 (HP2): 31-458

If HP1 = 0 (dead) then then HP2 are missing

If the heifer is slaughtered, exported, lost during day 31-458 then HP2 are missing

Bull period 1 (BP1): 2-30 days

If the bull is slaughtered, exported, lost during day 2-30 then HP1 are missing

Bull period 2 (BP2): 31-183 days

If HP1 = 0 (dead) then then HP2 are missing

If the bull is slaughtered, exported, lost during 31-184 then HP2 are missing

Genetic Parameters – a summary

Heritability

- HP1 and BP1: h^2 below 1% (1.5-2.0% in JER)
- HP2 and BP2: h^2 is 1-3%

Genetic correlations

- Period 1 – Period 2 correlations: 0.4 – 0.6
- Heifer – Bull correlations: Above 0.9

Data excluded

- Stillborn: Dead within 24 hours after birth (included in Birth index), abortions and defect calves
- Calves killed within 7 days after birth
- Multiple birth (twins, triplets)
- ET-calves, casterates
- Missing/not valid information on sex, herd, birth date, parity
- Breed not RDC(+FIC), HOL(+RED), JER

	DNK Born 1998 and later	FIN Born 2004 and later	SWE Born 1999 and later
Heifer calves	3,716,403	1,091,390	1,777,138
Bull calves	3,435,349	1,136,546	0
RDC (+FIC)	676,682	1,435,182	846,223
HOL (+RED)	5,776,756	790,805	919,398
JER	698,314	(1,949)	11,517

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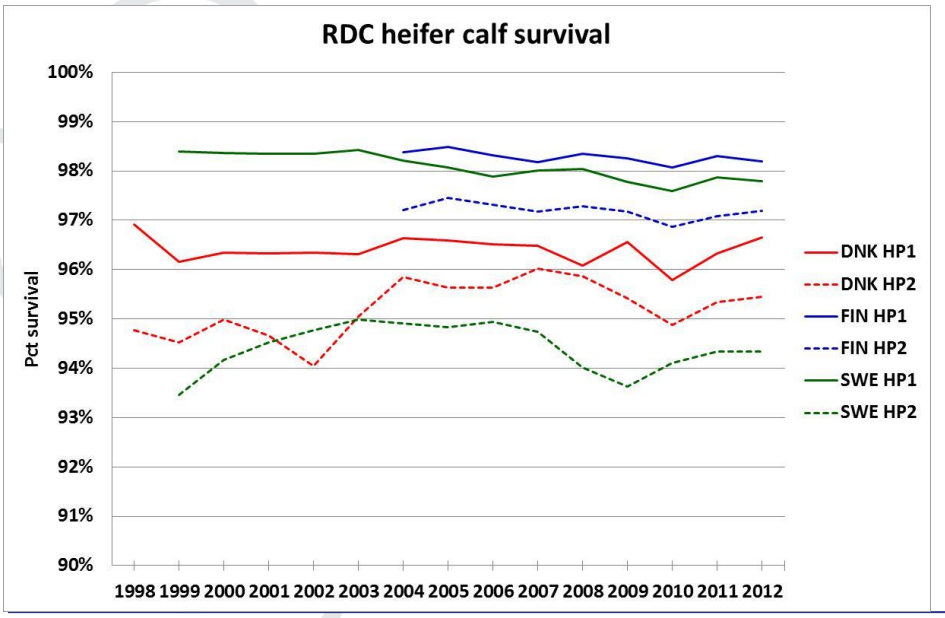

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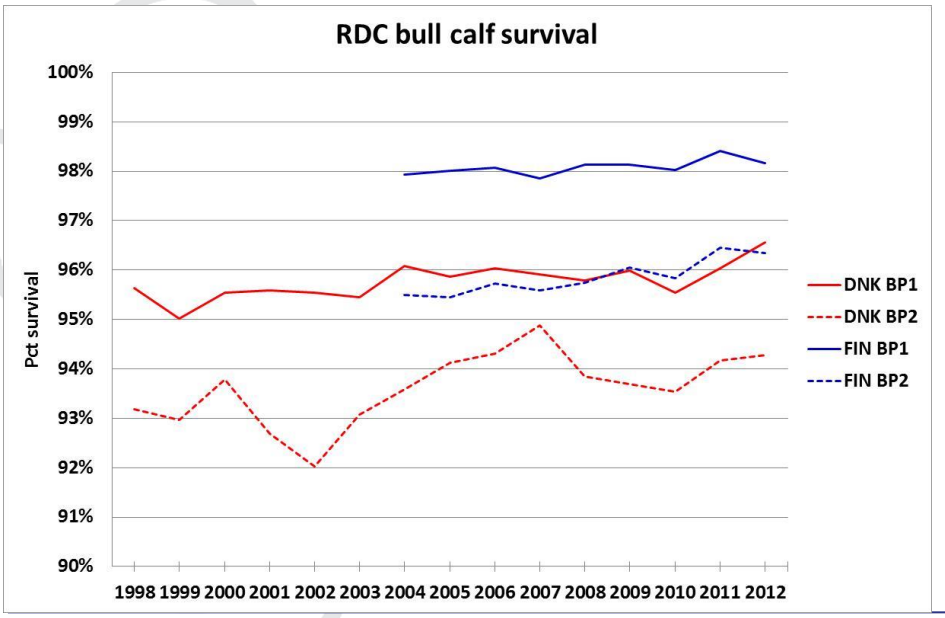

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Example:
2 Progeny groups – average survival

	Sire 1		Sire 2		Difference
	Number	%survived	Number	%survived	%survived
HP1: Heifers 2-30 days	3442	97.9%	4324	97.0%	0.8%
HP2: Heifers 31-458 days	2196	98.5%	4168	94.6%	4.0%
BP1: Bulls 2-30 days	2106	97.2%	4380	95.1%	2.2%
BP2: Bulls 31-183 days	2007	97.1%	4138	91.6%	5.4%

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Economic value calf survival (€)

Costs of a lost calf

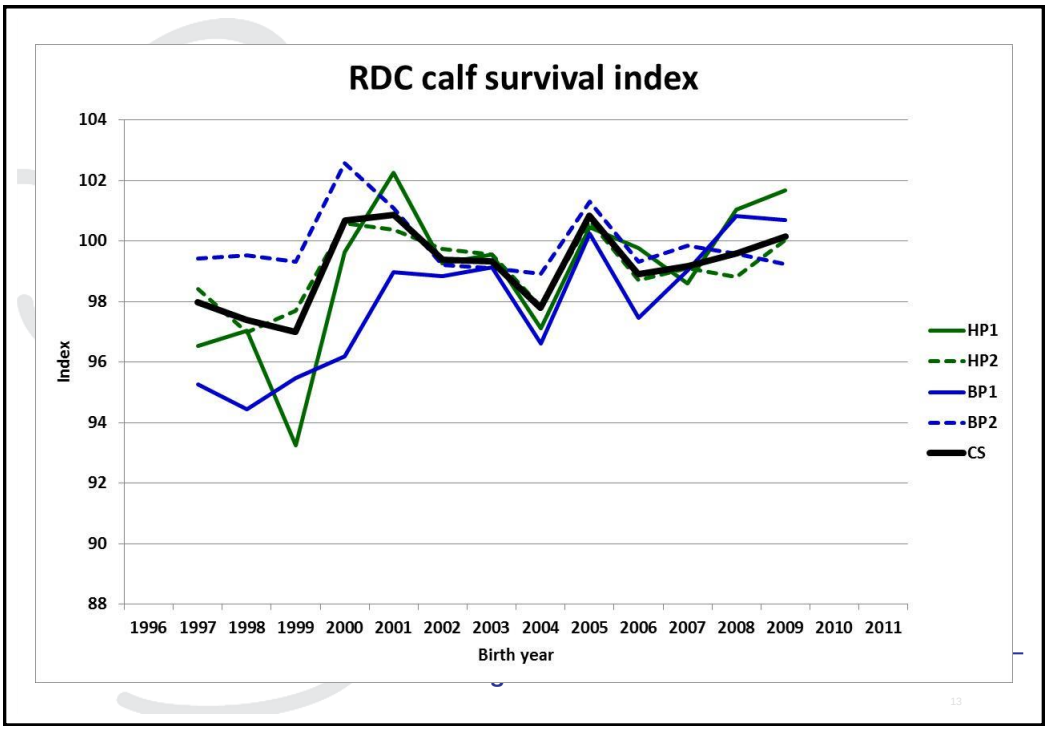
Same assumption as used in development of NTM-index (2008)
Preliminary results

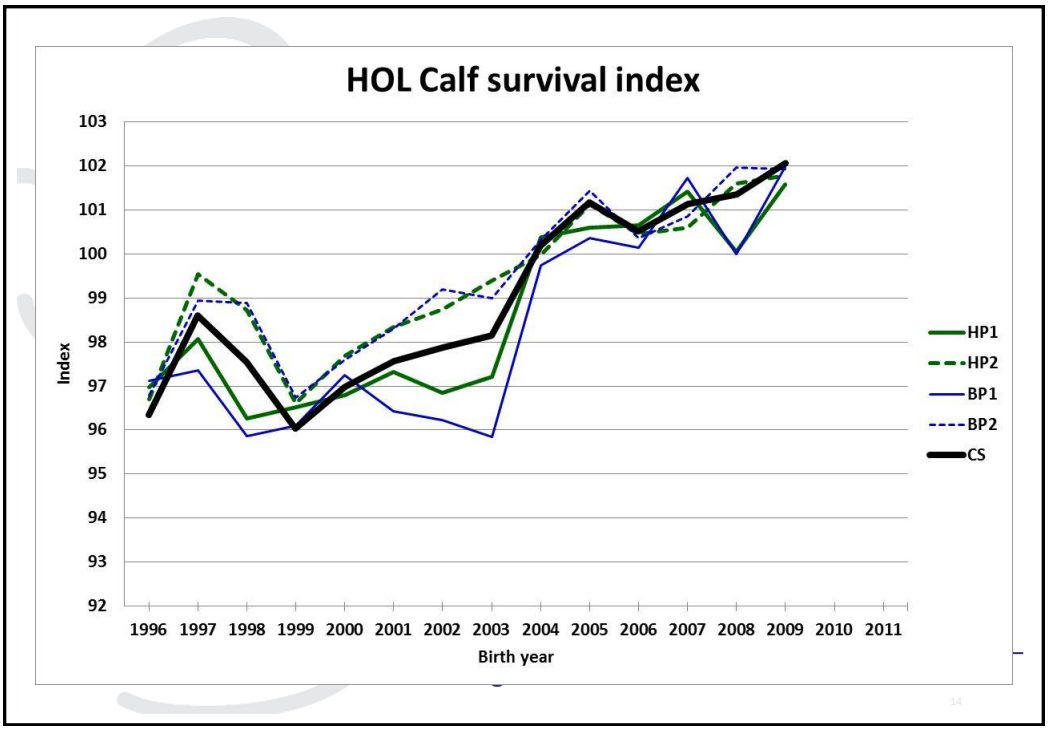
Trait	JER	RDC	HOL
HP1: Survival, heifers 2-30 days	200	355	345
HP2: Survival, heifers 31-458 days	240	415	405
BP1: Survival, bulls 2-30 days	27	143	129
BP2: Survival, bulls 31-183 days	79	202	179

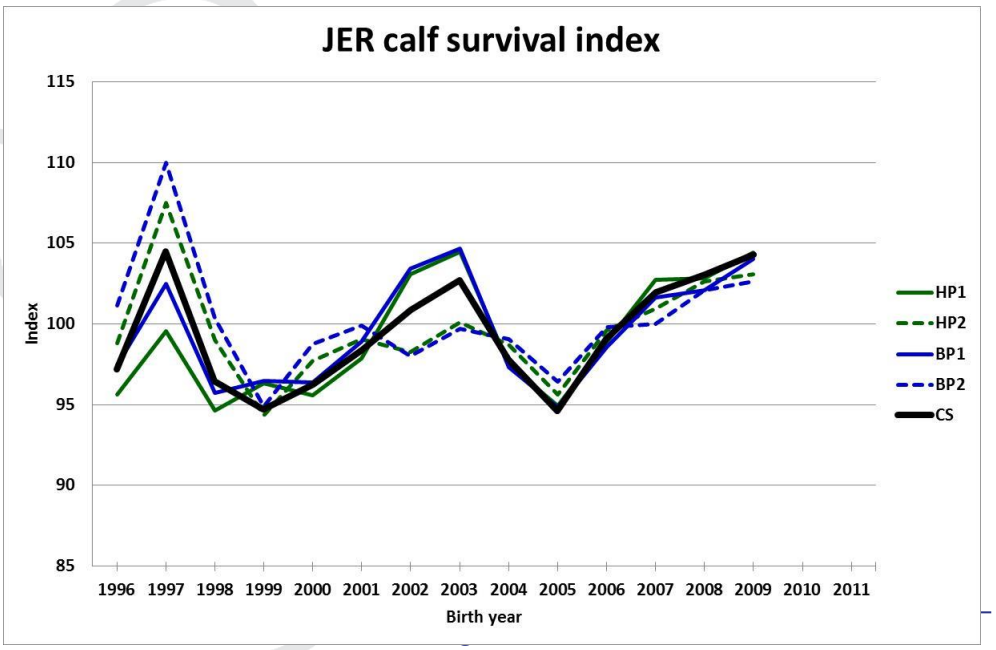
Economic value calf survival index(€)

Same assumption as used in development of NTM-index (2008)
Preliminary results

Trait	Unit	JER	RDC	HOL
Calf survival index	Index	1.01	1.59	1.08
Yield	*Index*	*6.80*	*8.27*	*7.60*
		Relative to Yield index		
Calf survival		0.15	0.23	0.16
Birth index		0.18	0.15	0.16


RDC calf survival index
104
102
100
98
96
94
92
90
88
Index
1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
Birth year
HP1
HP2
BP1
BP2
CS


HOL Calf survival index
103
102
101
100
99
98
97
96
95
94
93
92
Index
1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
Birth year
HP1
HP2
BP1
BP2
CS



Correlations with some NTM-traits

	RDC	HOL	JER
NTM	0.11	0.10	0.10
Longevity	0.17	0.15	0.06
Udder health	0.05	0.05	0.22
Other diseases	0.02	0.10	0.05
Claw health	0.03	0.14	0.05
Birth index	0.27	0.09	0.06
No of sires (2005-07)	*643*	*912*	*148*

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Other factors of importance

3 most important factors included in the model

- **Herd-effect**
- **Heterosis**
- **Seasonal variation (birth month)**
  - **DNK and SWE – no seasonal variation in FIN**
  - **Large for Period 1 – but small for period 2**

Status – summary - conclusion

- **Calf survival can be improved by breeding**
- **Slightly smaller amount of data (compared to stillbirth) – fewer years included – no bull calf survival available in SWE**
- **Some country differences in survival rates**
- **Remaining problems: Stability must be checked**
- **Calf survival index can be available in spring 2014**