Effects on survival at birth in meat sheep breeds

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Introduction

- 120 000 ewes in about 10 000 flocks in Denmark
- 30 breeds - Texel, Shropshire, Oxford Down and Suffolk the most widespread
- Lamb survival is the crucial factor for sheep productivity
- Lamb mortality around 10-20 % in EU

- The greatest number of losses is reported especially within the first day after birth
- Environmental and management conditions affect survival rate considerably
- Knowledge on systematic and other factors are crucial for selection schemes and genetic evaluation

Objective

Analysis of important factors affecting survival at birth in the main sheep breed populations in Denmark

Materials and methods

- Data from 1992 to 2006
- Survival at birth recorded within 24 h after birth
- Birth weight, litter size and lambing difficulty

	No. animals in data
Texel	61 953
Shropshire	46 159
Oxford Down	30 701
Suffolk	16 343

- Statistical analyses carried out with generalized linear model
- Application of logistic link function
- SAS GLIMMIX macro
- LS means estimated on logit scale and back-transformed using inverse link function

Model: Survival at birth (SB)

SB = Sex
+ Litter size
+ Parity
+ Lambing difficulty
+ Year of birth
+ Lambing season

+ Linear regression of SB on birth weight
+ Quadratic regression of SB on birth weight

Results

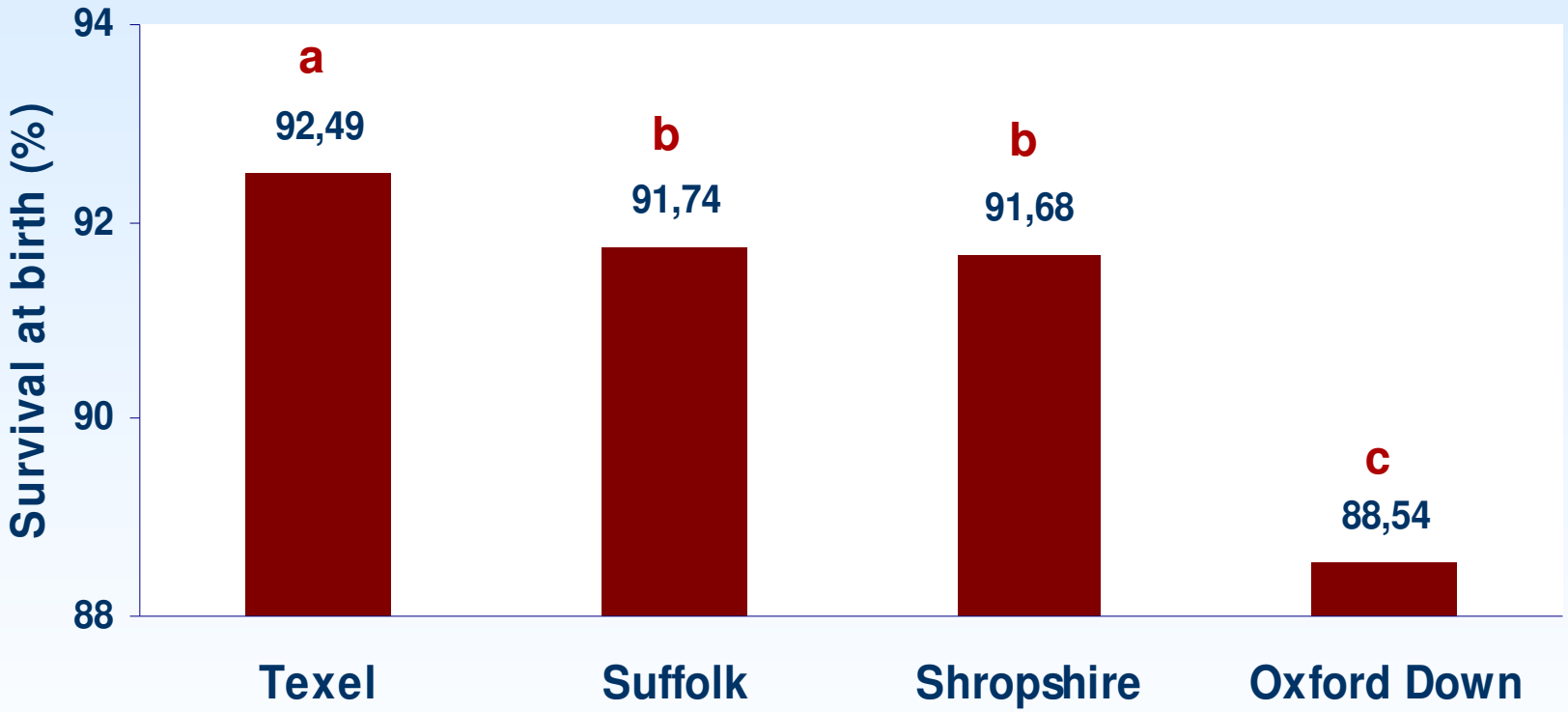
Means of analysed traits

	SB (%)	BW (kg)	LS (lamb)	LD (%)
Texel	**92.5**	**4.5**	**1.7**	**5.2**
Shropshire	**91.7**	**4.2**	**1.7**	**5.3**
Oxford Down	**88.5**	**4.4**	**2.0**	**4.5**
Suffolk	**91.7**	**4.7**	**1.8**	**4.9**

SB – survival at birth, BW – birth weight,

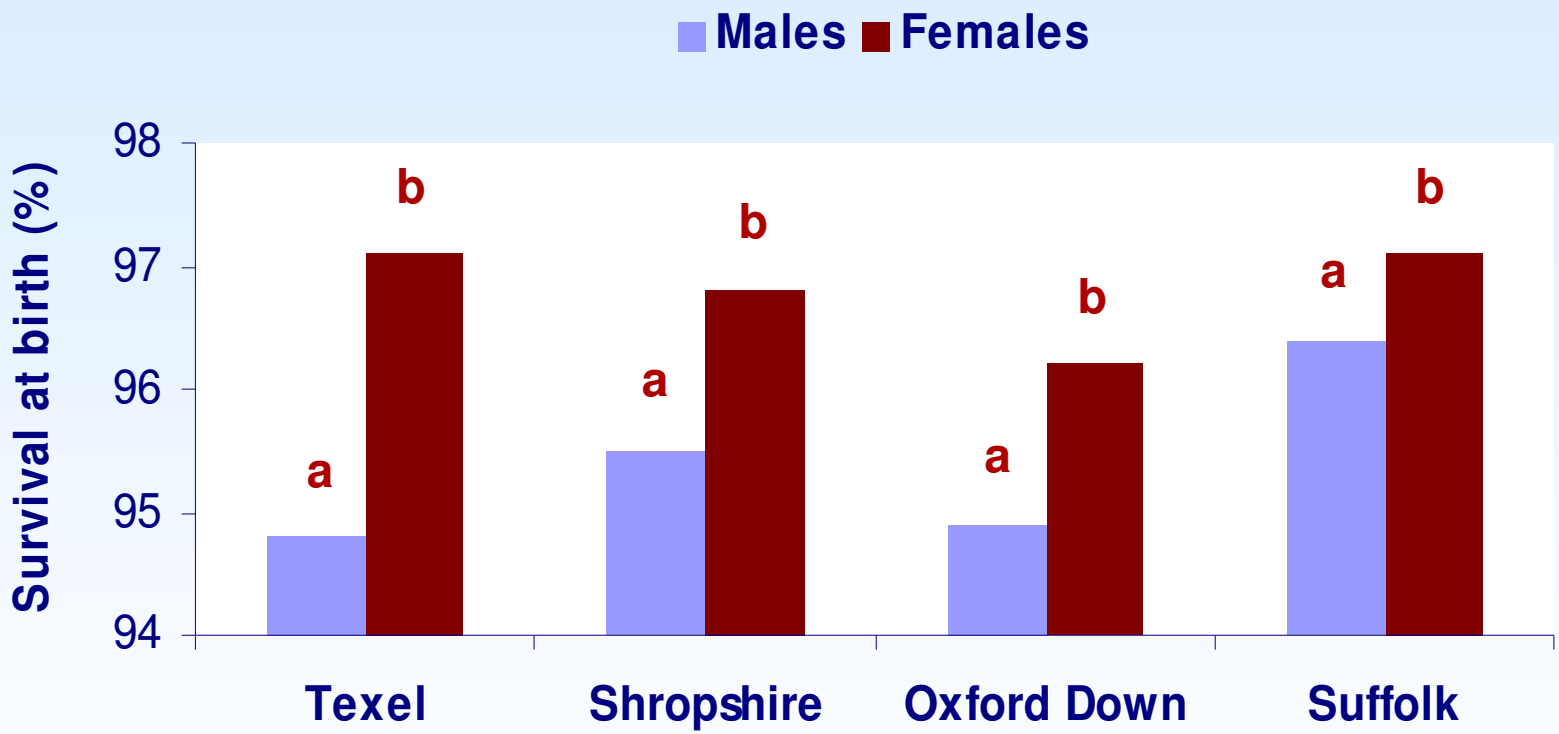
LS – litter size, LD – lambing difficulty

LS means of survival at birth by breed



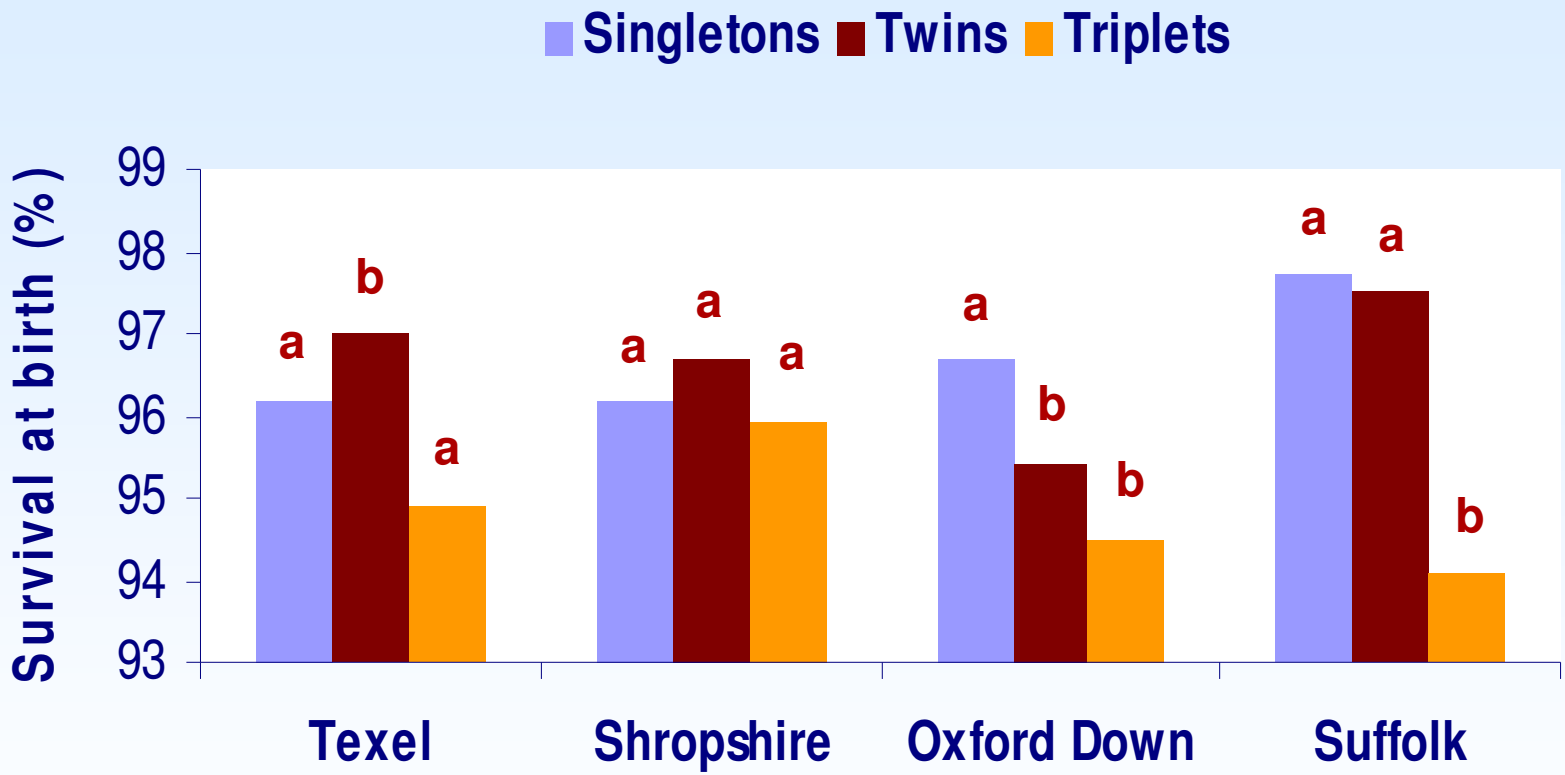
Standard errors: 0.05 – 0.11; $p < 0.01$

LS means of survival at birth by sex



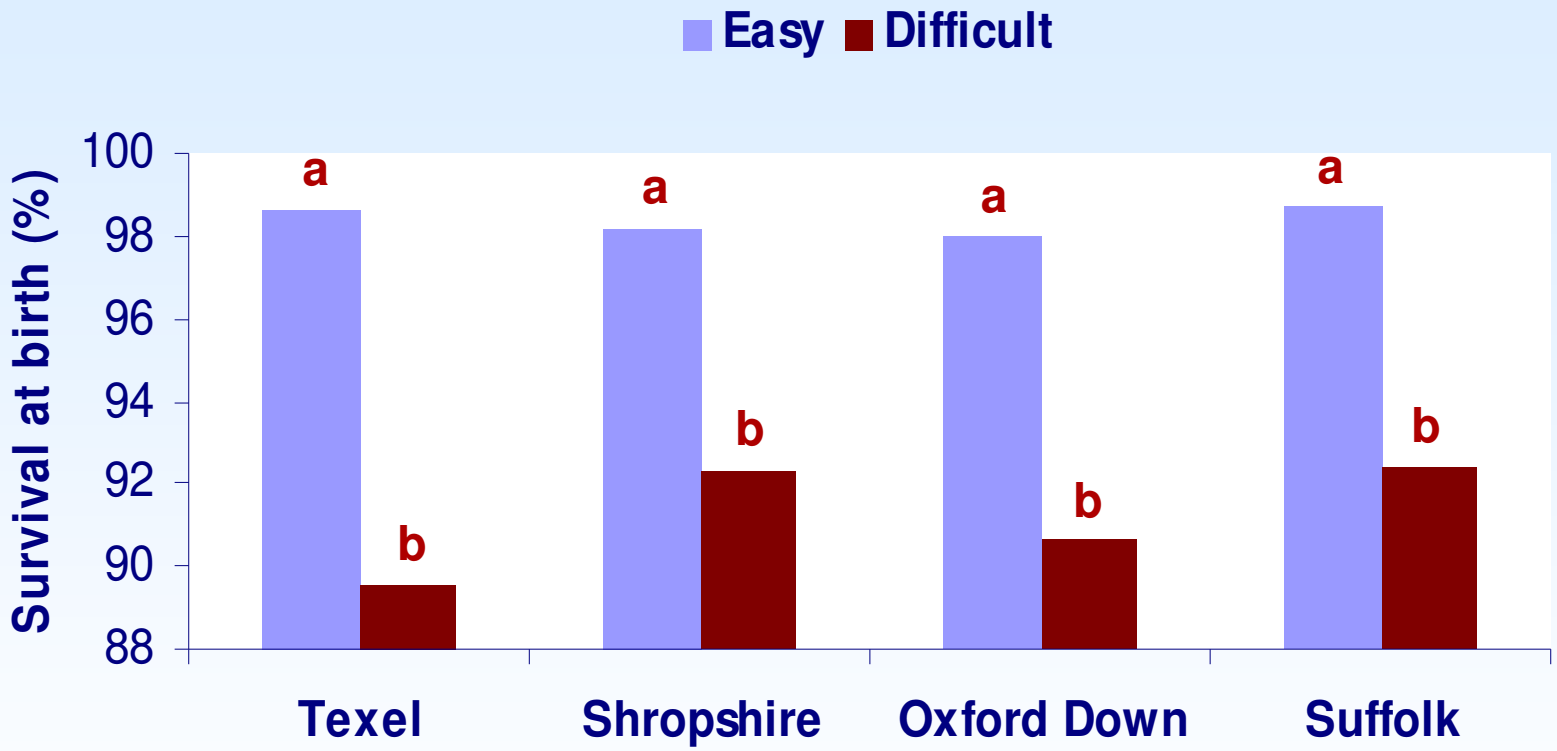
Standard errors: 0.2 – 0.4; $p < 0.05$

LS means of survival at birth by litter size



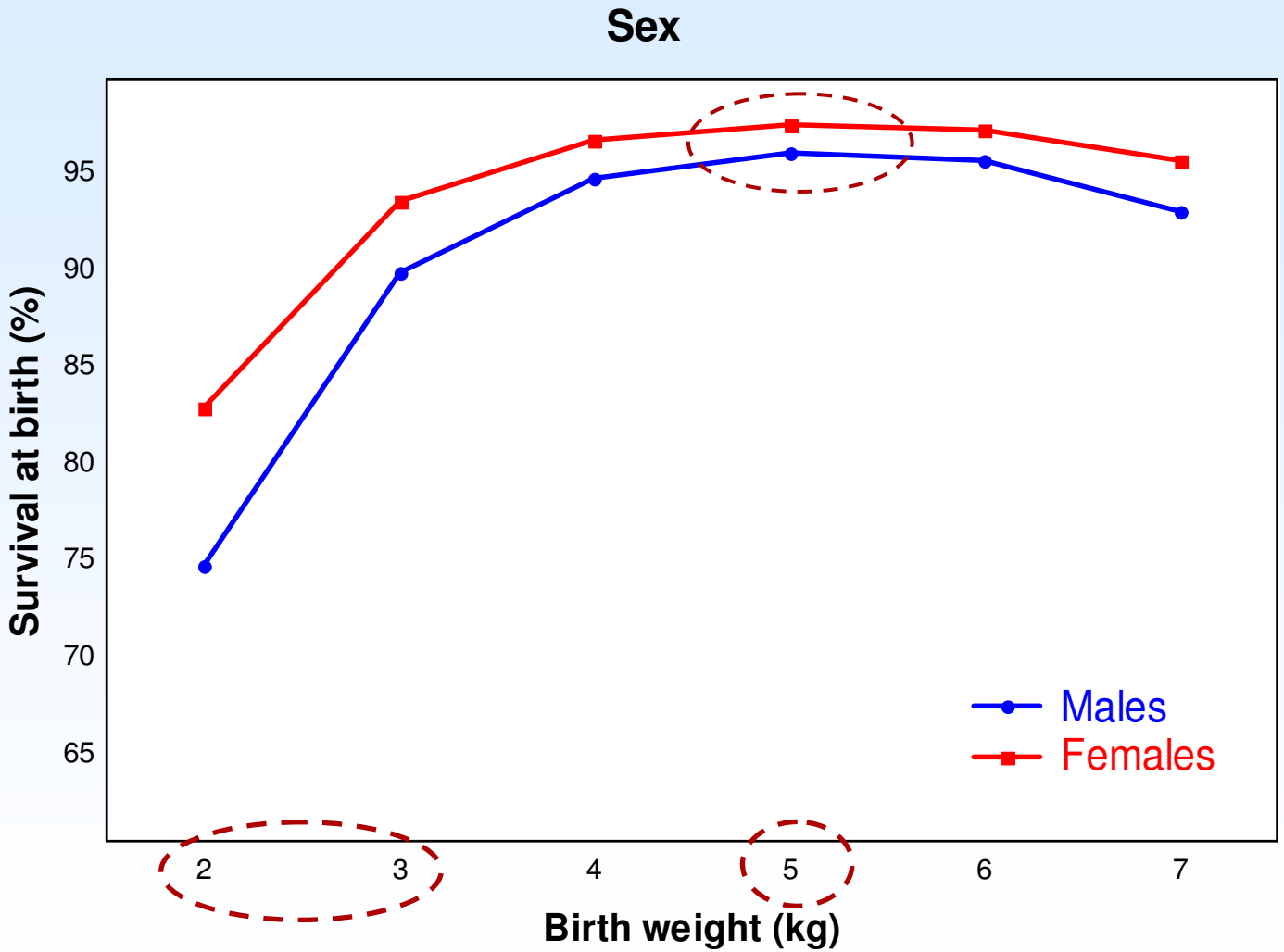
Standard errors: 0.2 – 0.9; $p < 0.05$

LS means of survival at birth by lambing difficulty

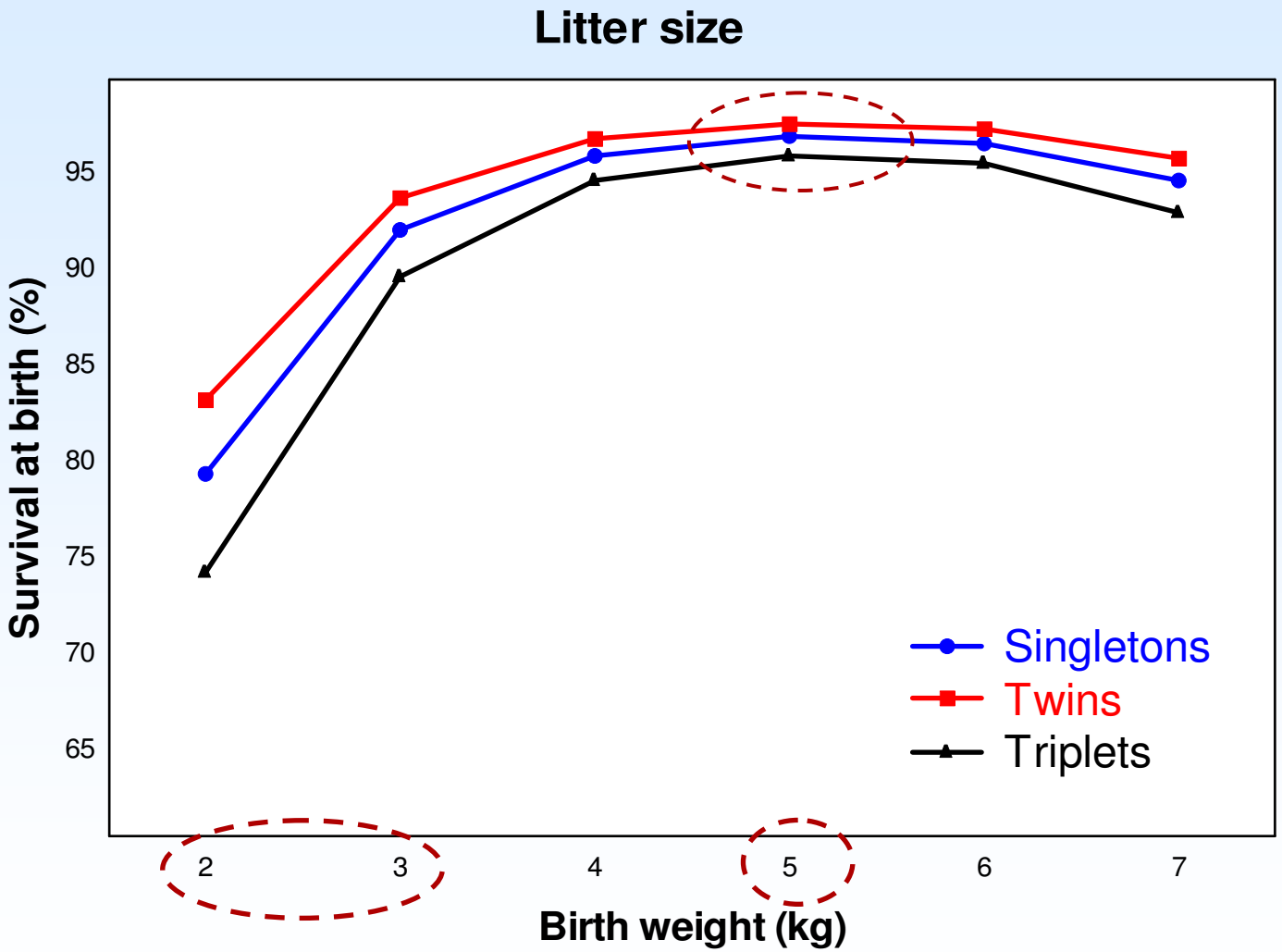


Standard errors: 0.1 – 1.3; $p < 0.001$

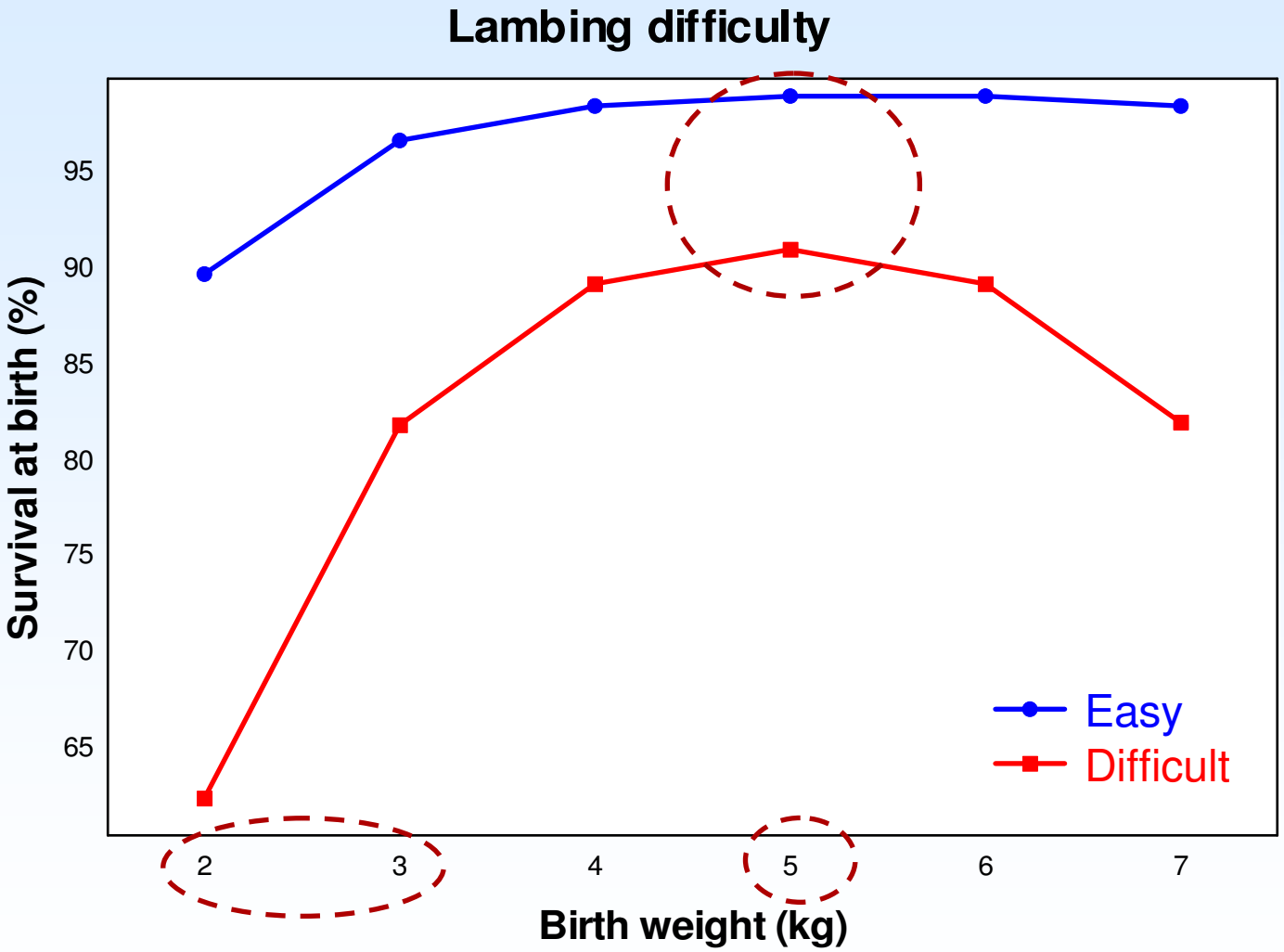
Effect of birth weight on survival at birth



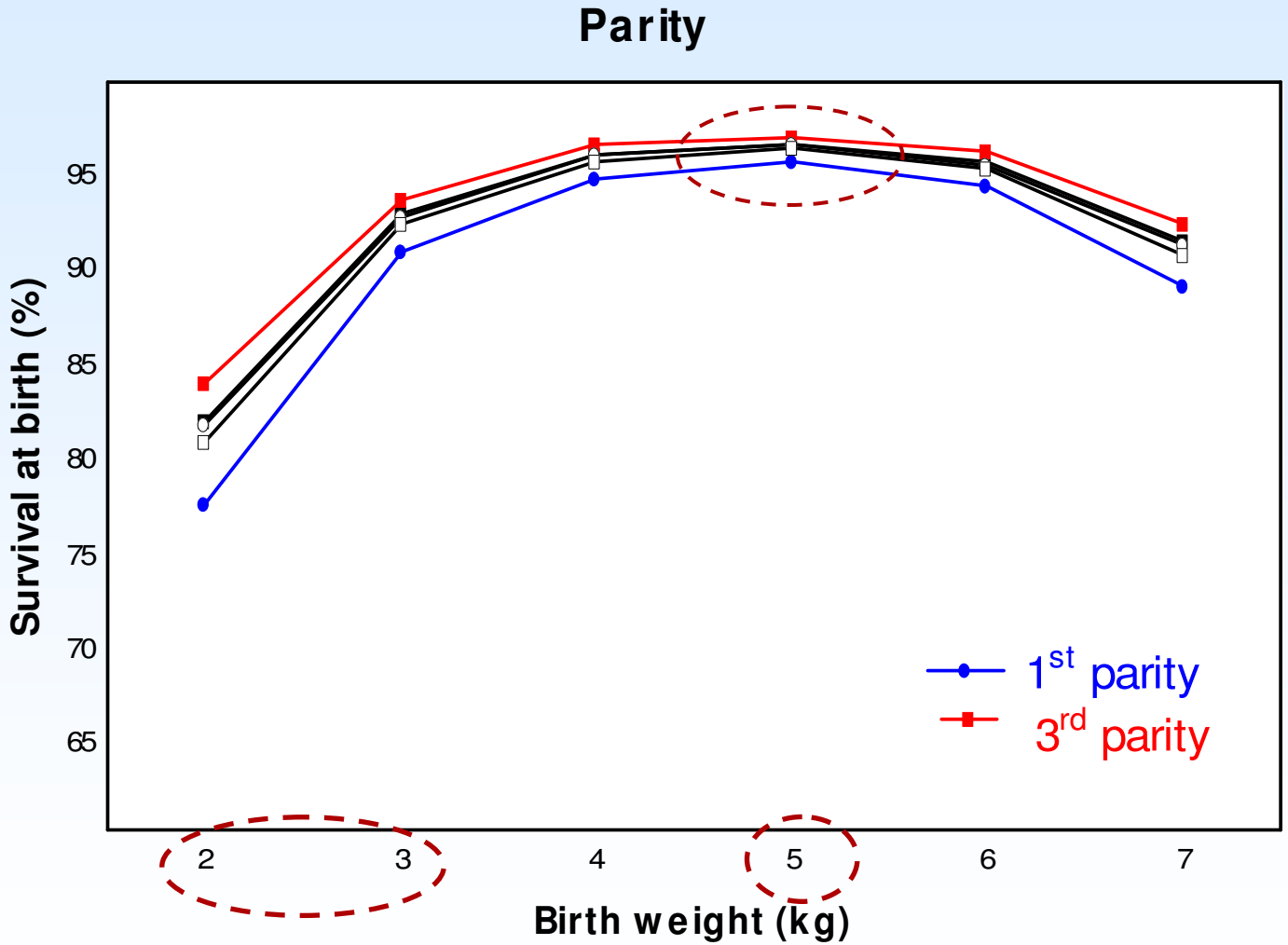
Effect of birth weight on survival at birth



Effect of birth weight on survival at birth



Effect of birth weight on survival at birth



Conclusions

- Male lambs, difficult lambing, first parity

  => low rate of SB
- Increasing litter size does not necessarily cause decrease in SB
- Heavier lambs are more likely to survive than lambs with low birth weight
- Optimum birth weight rather higher than average birth weight

  => verification of genetic association between SB and birth weight


Thank you for your attention!
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