



The timing and treatment of tail biting in fattening pigs

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Outline

- Introduction
- Data and methods
- Results
- Conclusions

Introduction I

- TB is one of the most common animal welfare problems
 - Finland: 11.7% of pigs (Valros et al. 2004), 69% of batches (Heinonen et al. 2001)
 - Sweden: 6.2% and 7.2% tail lesions in two slaughterhouses (Keeling & Larsen 2004).
 - Meat inspection records show less tail lesions: e.g. <1 % in Denmark (Schroeder-Petersen & Simonsen 2001), 4% in Norway (Fjetland & Kjaerstad 2002)
- Multiple risk factors such as
 - Lack of stimuli, inadequate enrichment / straw
 - Slatted floors
 - High stocking density
 - Inadequate access to feed
 - Distortions in ventilation, water or feed supply
 - The mixing of animals

Introduction II

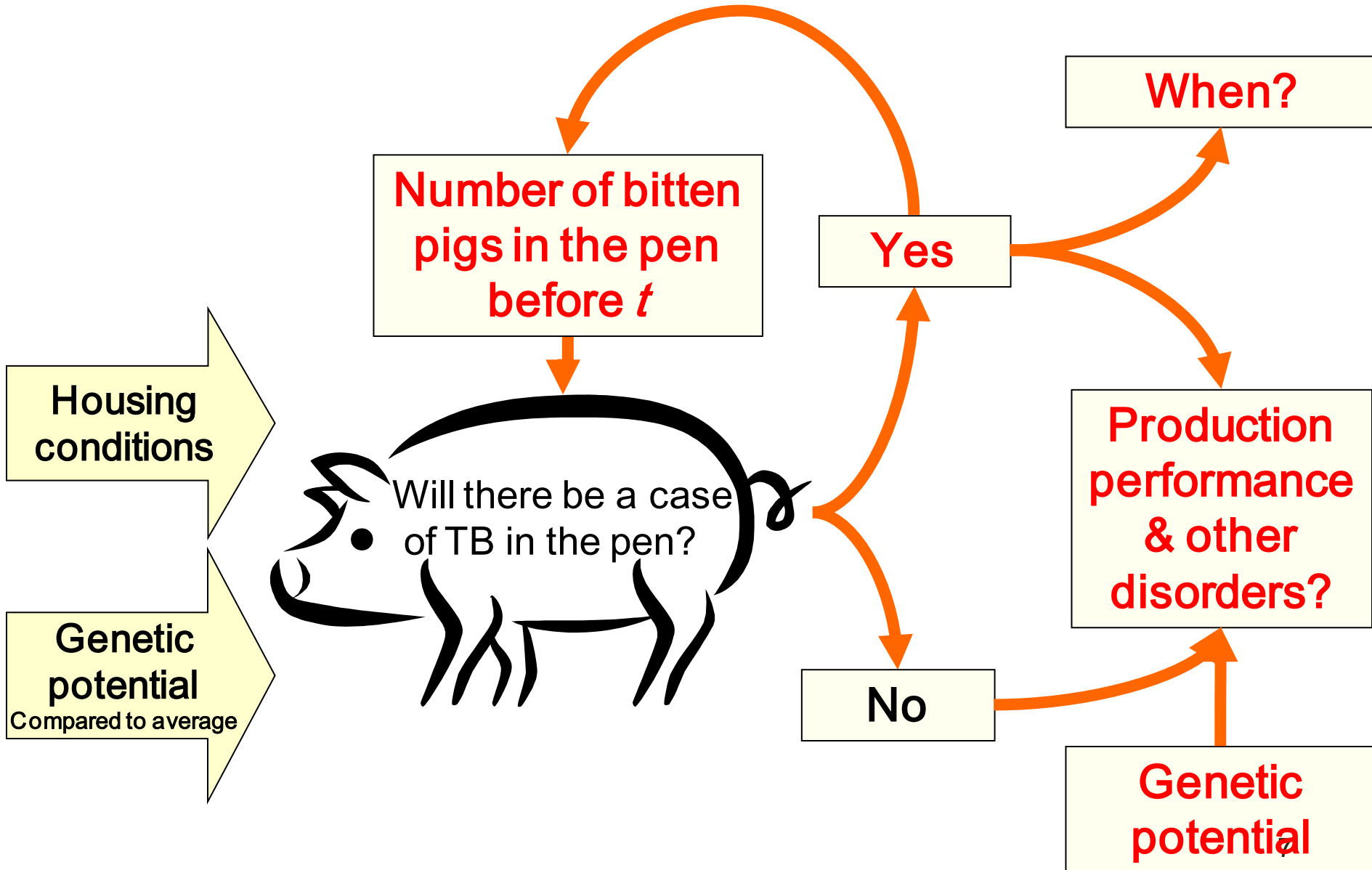
- The prevalence of TB varies by breed and sex
- Information on the genetic merits of pigs is required to identify true effects of TB on production performance, because breed and sex affect also growth, leanness and other production traits in pigs
- Possible impacts on production performance
 - Reduced growth (e.g. Wallgren & Lindahl (1996) estimated -5% to -10%) and feed conversion ratio
 - Extra treatment and medication costs
 - Increased carcass condemnations and mortality
- The goal of this study was to analyse
 - 1) the timing of TB in a pen,
 - 2) how TB affects production performance and health of bitten pigs and
 - 3) the economic importance of the disorder.

Data

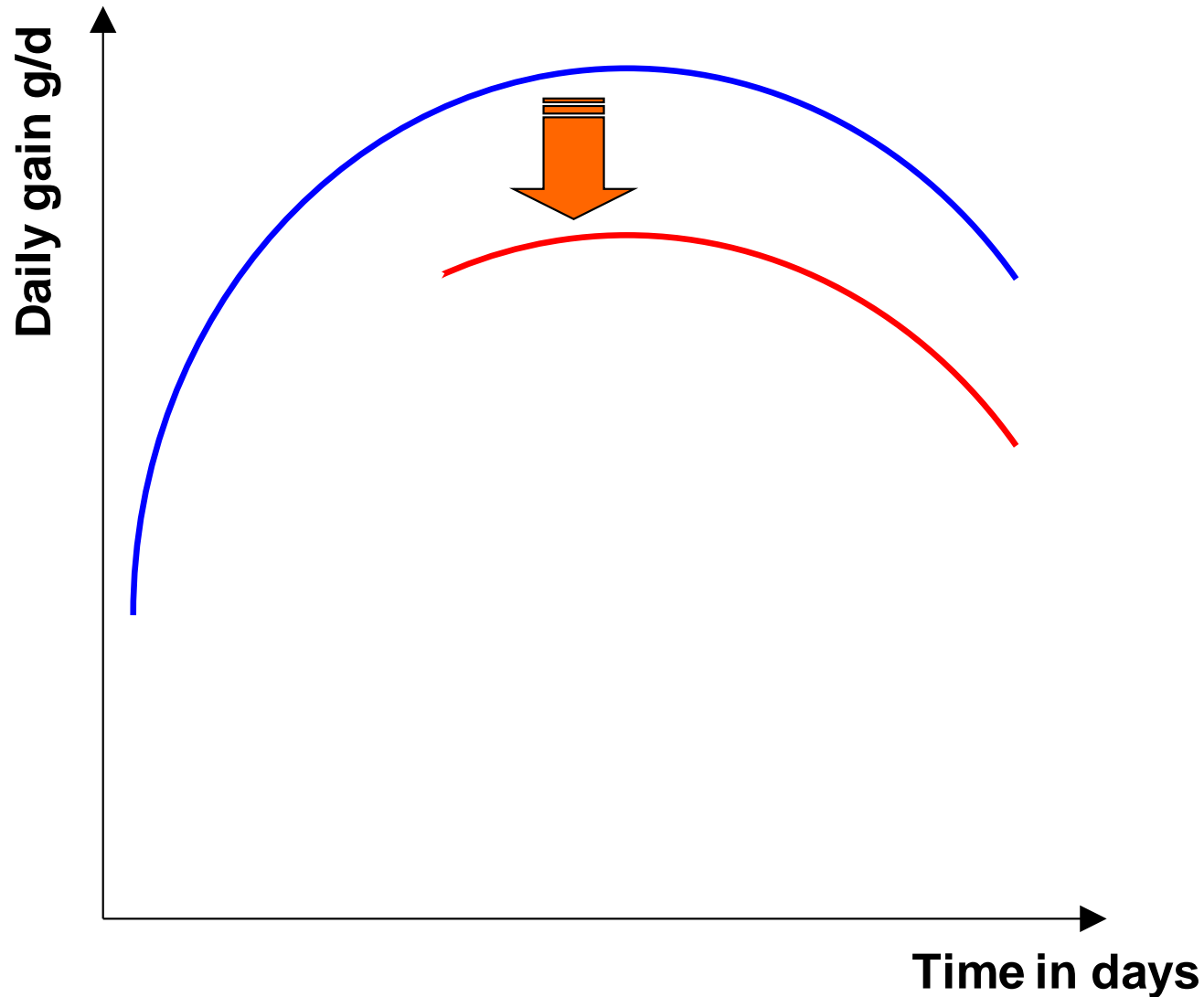
- Individual records for altogether 6812 Finnish Landrace, Yorkshire and their crossbreed pigs (boars 30.3%, females 29.9%, castrates 39.8%) with undocked tails
- Data covered approximately two first years (2007-2008) after starting up the farm
 - Since 2007, the prevalence of TB at the farm has decreased significantly
- *Ad lib* three-phase feeding, automatic feeding stations.
- Pigs fattened on average 91 days (ca. 30 kg to 120 kg)
- On average, 11 pigs per pen.
- All health problems (minor and major) were recorded, treated according to the advice of the herd veterinarian
 - TB usually medicated with penicillin injections for 3 to 5 days, the tails of pigs in the pen covered with tar and pelleted feed distributed on the floor
- Breeding values for 3863 pigs

Methods

- Non-parametric Mann-Whitney U-tests and χ^2 tests were used to study the differences between the tail biting victims and other pigs
- The occurrence of TB and other symptoms
 - Conditional probability of a new case of TB given the number of previously observed cases of TB in the pen
 - Adjusted according to genetic potential of pigs
- The costs of tail biting outbreaks were simulated with a stochastic dynamic simulation model modified from Niemi & Sevón-Aimonen (2009)
 - Adjust the growth potential of lean and fat in the pig (cf. Sandberg et al., 2006)

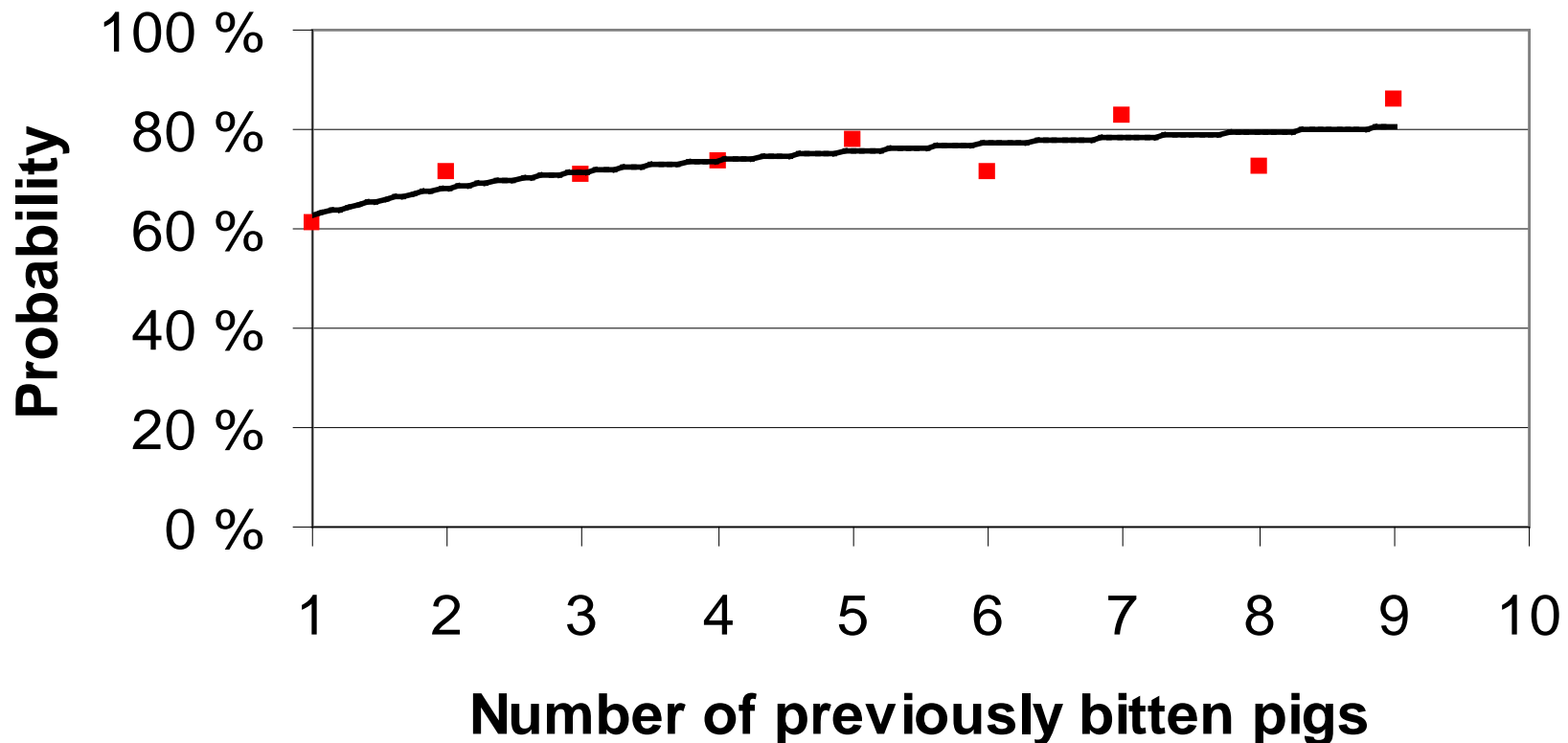


Impacts on production performance

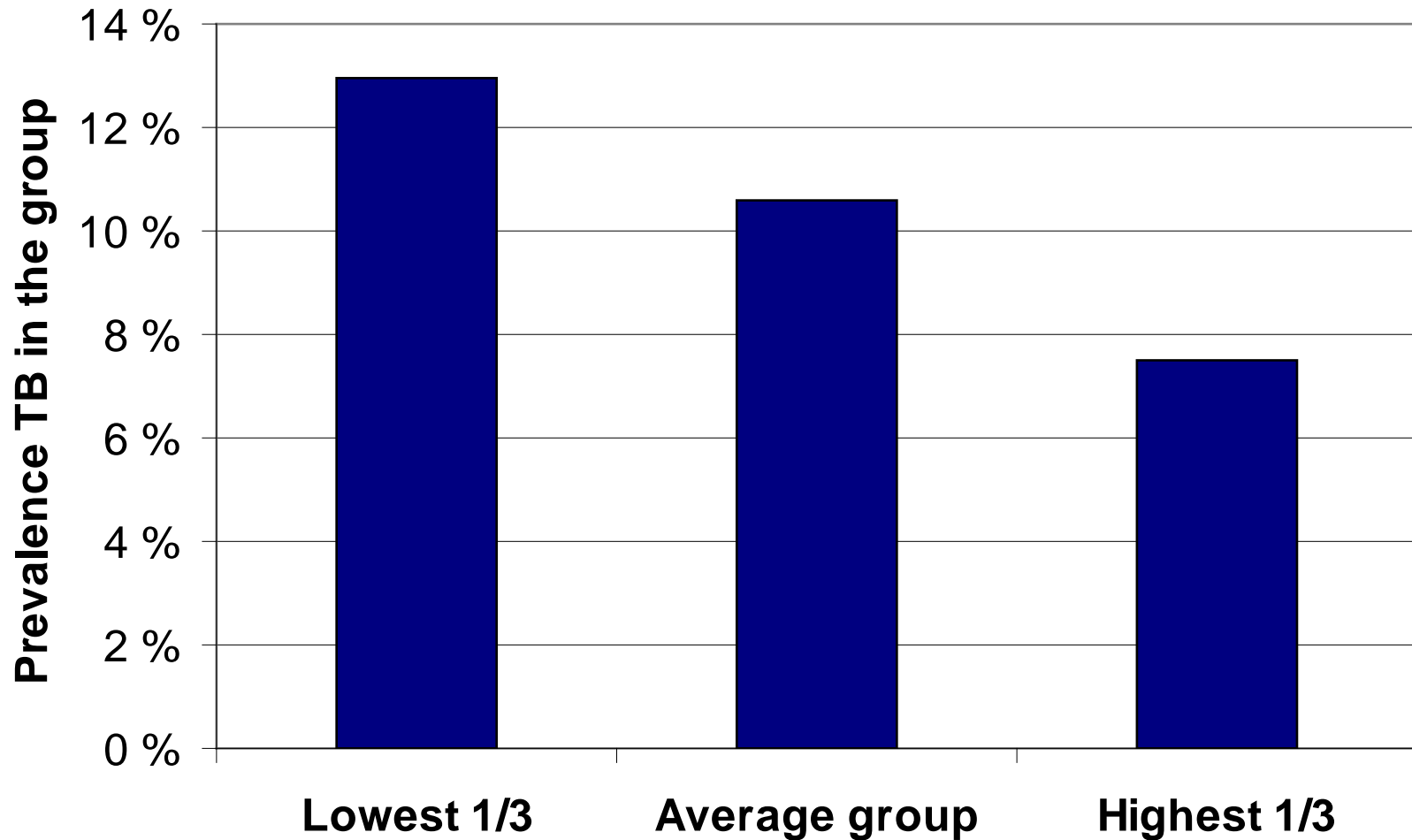


Conditional probability

It is likely that more pig(s) will be bitten when x pigs in the pen have been bitten



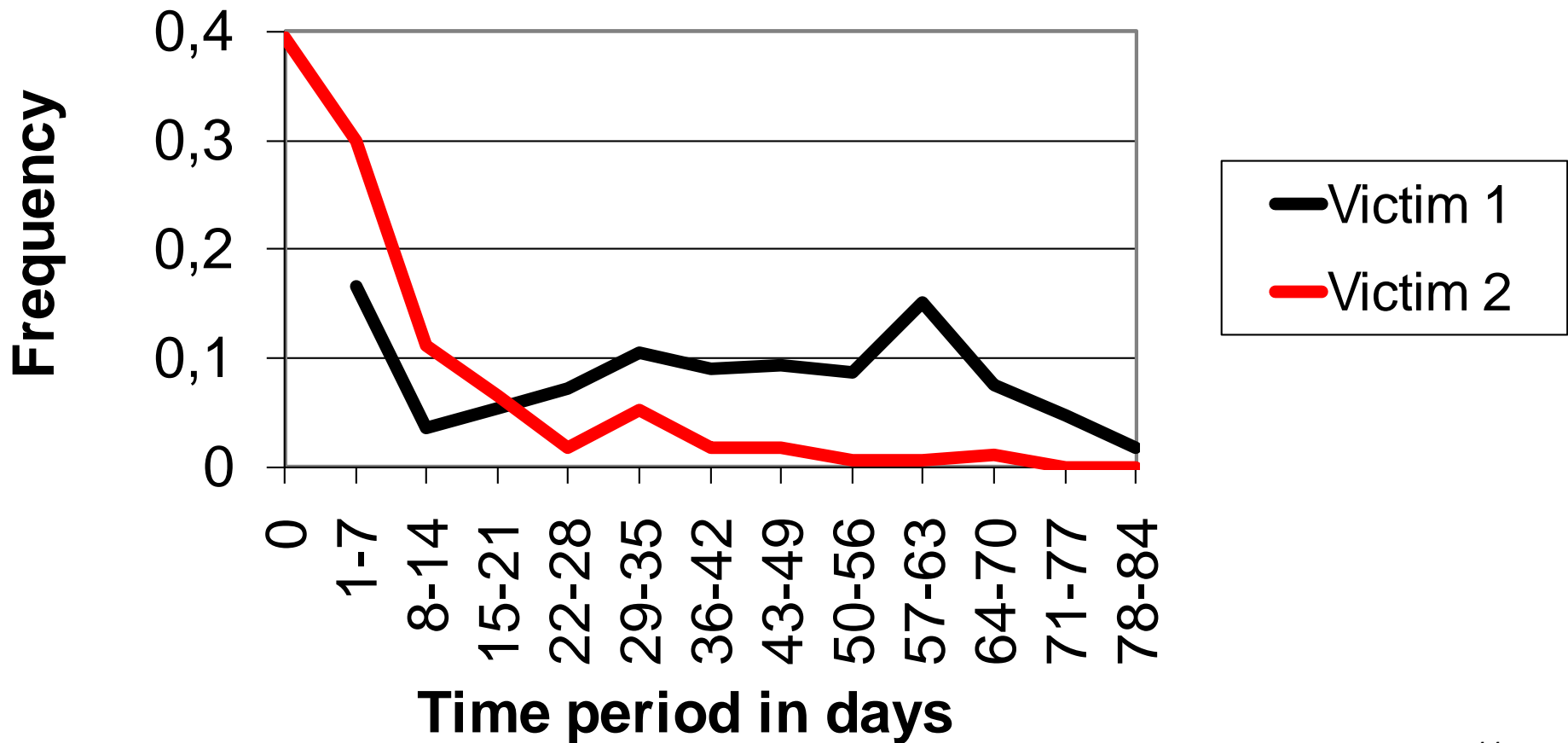
Tails are bitten more frequently on pigs which have a poor genetic ADG



N=1236-1281 pigs per group

The second victim soon after the first!

First case is hardly ever 2-3 weeks before slaughter



(Days after arriving at the farm or days after the first case)

Average daily gain (g/d)

- Castrates have the largest difference in median ADG between victims and non-victims
- Differences within breeds similar

Sex	Phenotypic difference ¹	Genetic difference ¹
Boars	11.0 n.s.	9.8 *
Female pigs	38.0 ***	15.0 ***
Castrated pigs	63.5 ***	19.4 ***
All	29.5 ***	13.8 ***

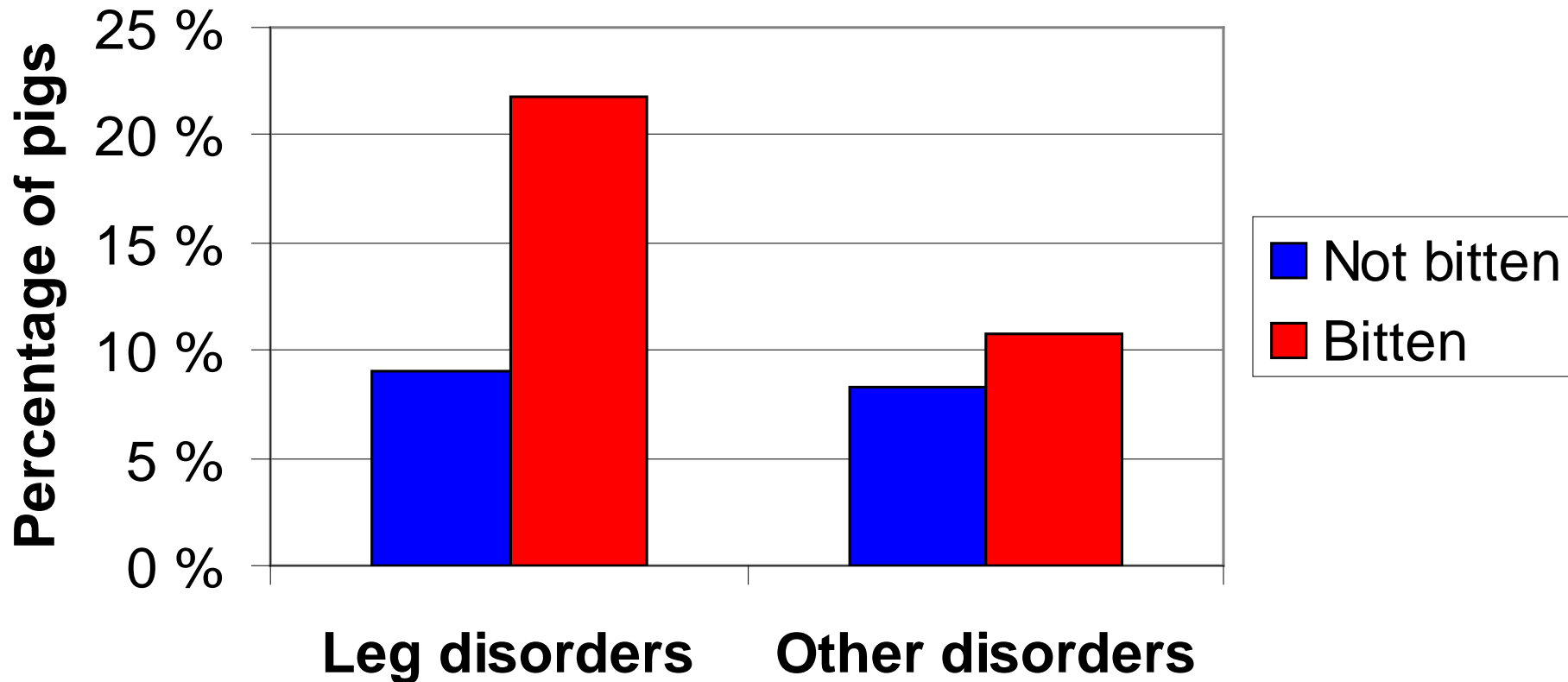
¹ Significance levels (Mann-Whitney U-test), *=P<0.05; ***=P<0.001; n.s.=not significant. Measurements excluding pigs eliminated from the experiment.

Average daily gain (g/d)

- After tail biting occurred, the ADG of victims decreased by between 7% and 11%.
- Even 15-21% decreases were observed in cases where the fattening of the pig was not continued as planned (3.5% of pigs)
 - The fattening could be continued, for instance, in a hospital pen
 - The prevalence of tail biting among these pigs was 34%

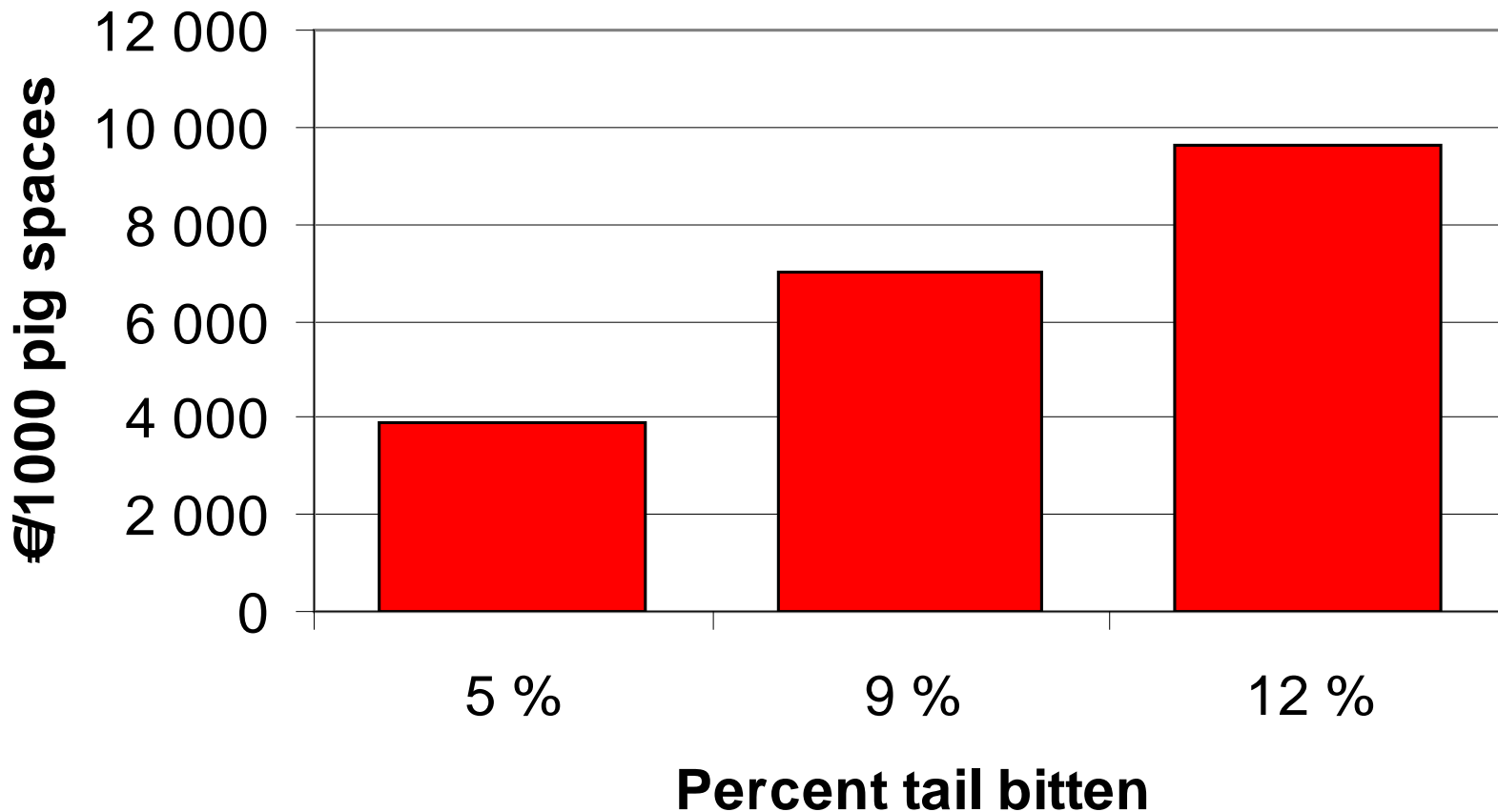
TB and other health disorders

- Bitten pigs also have more other disorders
 - The number of leg disorders per pig was 2.2-fold



Simulated costs of TB

- The costs of were simulated for a 1000 pigs finishing farm for a given level of TB risk



Conclusions

- The victims of TB have a reduced growth potential
- In addition, victims of TB have reduced growth rate
- The victims are likely to suffer more frequently from other health disorders than pigs with non-bitten tails
- Tail biting was often preceded by leg disorders and followed by reduced appetite, which may be associated with reduced growth rate of victims of tail biting
- The costs of TB were particularly heavy when medication was needed and when the fattening of the victims could not be continued as planned
- As TB behaves like an epidemic, immediate response to tail biting is important to prevent further cases and economic damage.

Thank you for your attention!

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