

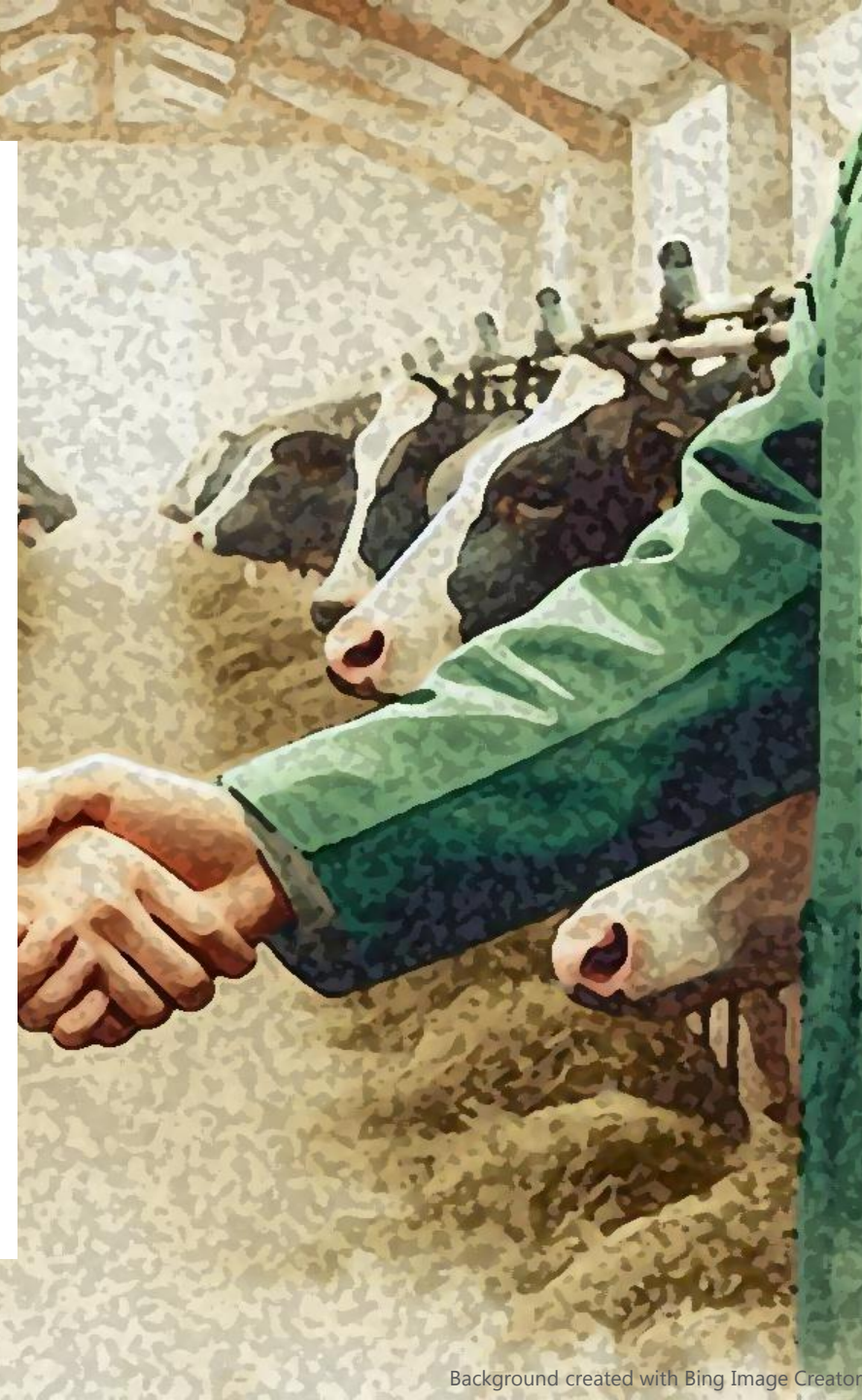
A virtual mastitis herd health case

Giving veterinary students the opportunity to self-directed explore principles of herd health advisory in dairy farms

Svenja Woudstra, Moritz Pfeiffer, Volker Krömker

Assistant Prof. of Cattle Health

KØBENHAVNS UNIVERSITET



Why develop a virtual herd health case?

- **In Denmark advisory is a big part of the work of practicing cattle veterinarians**
- During the veterinary study program however:
 - Only **little time** in the curriculum at KU **for cattle herd health related cases**
 - Students **rarely** get **the chance to self directed** and **at their own pace** work through a herd health case
 - Mostly during the differentiation (~ 6-12 students per year)
 - Students find it difficult to **understand the connection** between the treatment of **individual cases and advisory work**

Former experience with virtual teaching about herd health management:

■ FarmSkills4Vets

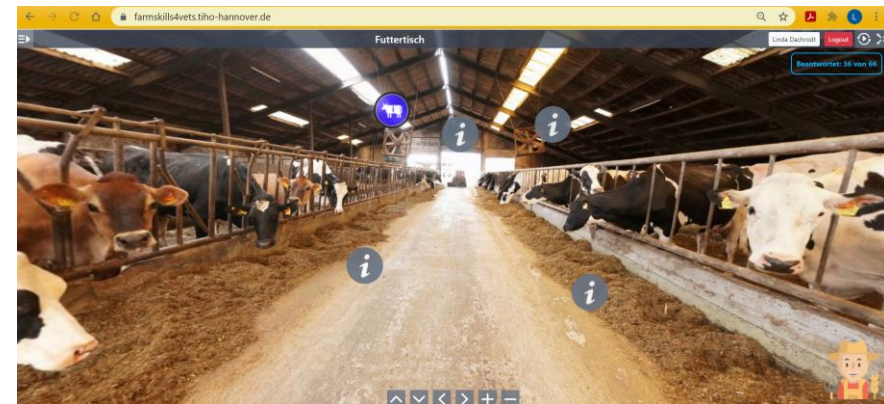


Linda Dachrodt, Heidi Arndt, Svenja Woudstra, Martina Hoedemaker

- Developed at the University of Veterinary Medicine Hannover

➤ Aim:

- Give them the chance to self directed explore a dairy farm
- Familiarize students with routine management in dairy herds
- Present basic tools of veterinary herd health advisory



https://www.researchgate.net/publication/355146529_FS4V-Presentation

Further development at KU

- All students go through "cattle week"
 - Visits to several cattle herds (some also in other courses)
 - Many practical exercises to use herd health tools (e.g. different scorings)
 - Development of a herd health case study
 - level of learning -> applying and analyzing
 - Understanding the connection between individual animal medicine and herd health advisory

Virtual case study – Part 1 the individual case

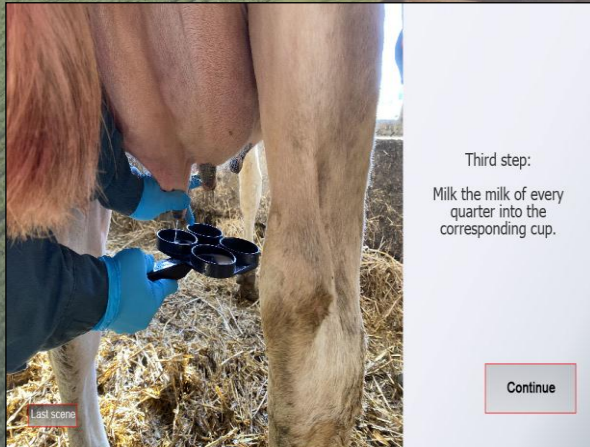


Clinical mastitis severity grades

Mastitis grades	Characterisation	Symptoms
mild	only changes of the milk	clots, changed colour, blood
moderate	Inflammation of the udder tissue	warmness, redness, swelling, hardenings, painfulness, ...
severe	Impaired general condition	Fever, hypothermia, reduced feed intake/anorexia, recumbency, sings of septicemia, ...

Examine the udder

Last scene

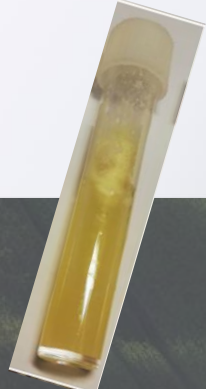


Multiple Choice

Which are the most probable diseases the cow might have?

- A) Clinical mastitis
- B) Sub-clinical mastitis
- C) Milk-fever
- D) Digital dermatitis
- E) Birth related injuries
- F) Calving paralysis
- G) Ketosis
- H) Metritis

Submit



Virtual case study – Part 2 the herd level

New infection risk during lactation Additional information !

Number of cows with SCC below threshold in previous testing and elevated SCC in current testing
 Total number of cows with SCC below threshold in previous testing x 100

Danish reference values with cut-off 200,000 cells/ ml milk		
25% lowest	median	25% weakest
8	11	13

* Conventional herd with milking parlor or rotary and Holstein or Danish red cows

Calculation example:

$\frac{1}{8} \times 100 = 12.5\%$

Go back

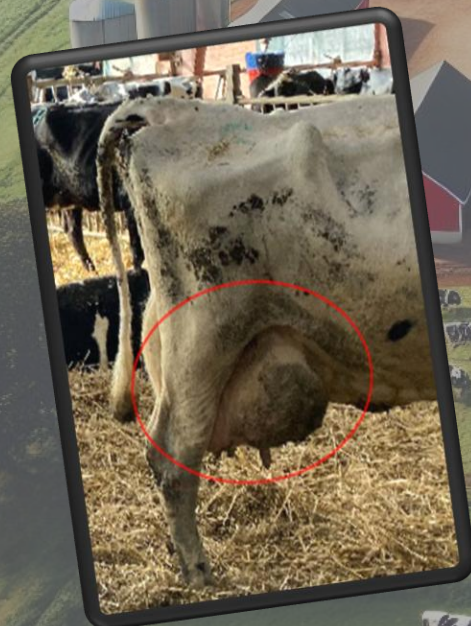
Key performance indicators (KPI)

- Represent **measurable metrics**
 - Help to evaluate for example herd health, productivity or animal welfare (e.g. How many cows show signs of lameness?)
 - Can be used to monitor the herds development over time (e.g. Are there more calves with respiratory disease in February this year than last year?)
 - Can be used to compare herds with each other (e.g. Is the mortality rate in my herd particularly high?)

For herd management they are important tools to

- Identify focus areas
- Assess the effectiveness of changes in management

Let's look at an udder health KPI overview



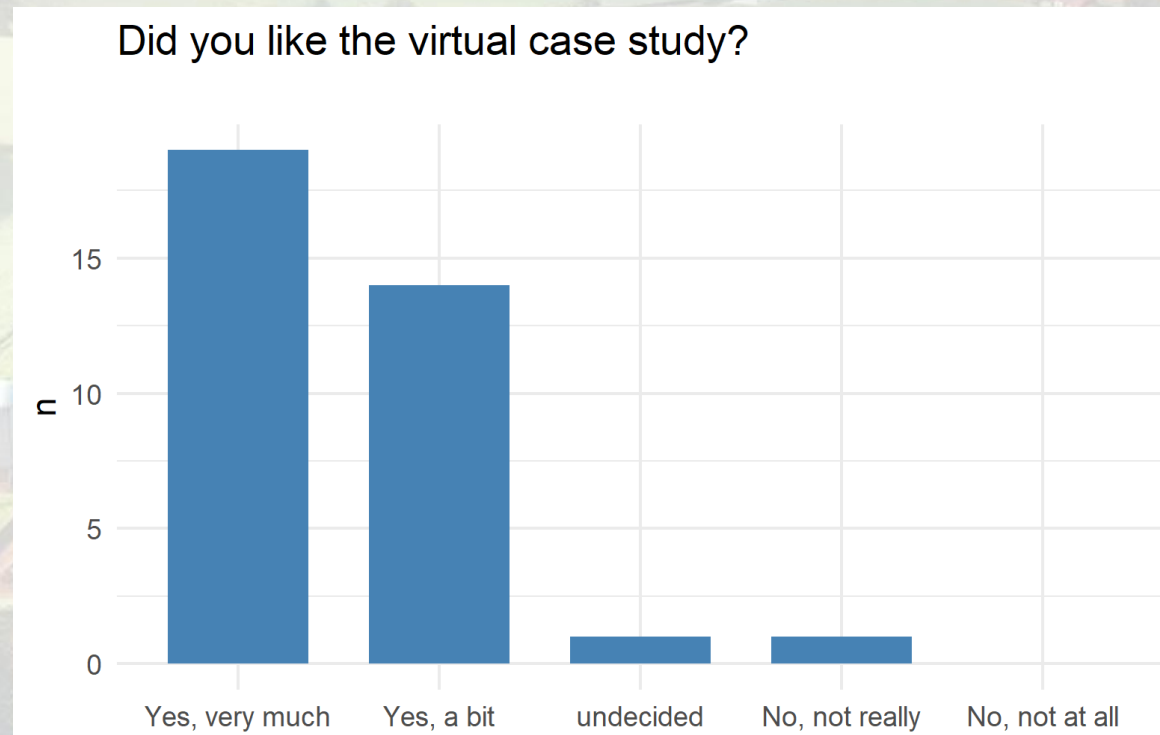
You look at the data and notice, that the highest occurrence of clinical mastitis cases is during the summer months.

1st test phase

- Access to the virtual case for ~ 170 students taking the course „Herd Health and Public Health (*Besætnings- og folkesundhed*)“ on Absalon
 - Last year bachelor students
- Exam relevant content
- Pre- and postevaluation via Survey exact
 - 50 pre-evaluations
 - 37 post-evaluations
 - 35 with matching „student code“

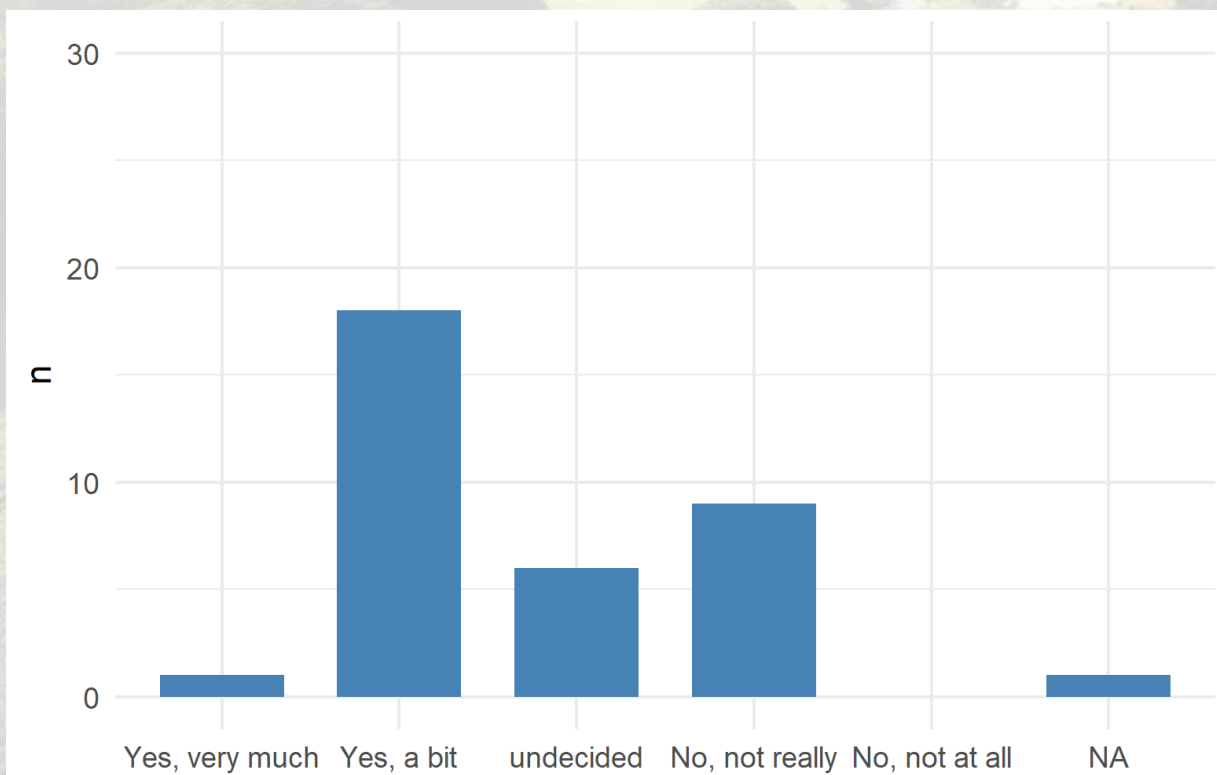
Did the students like the virtual case study?

(only those that filled out pre- and postevaluation)

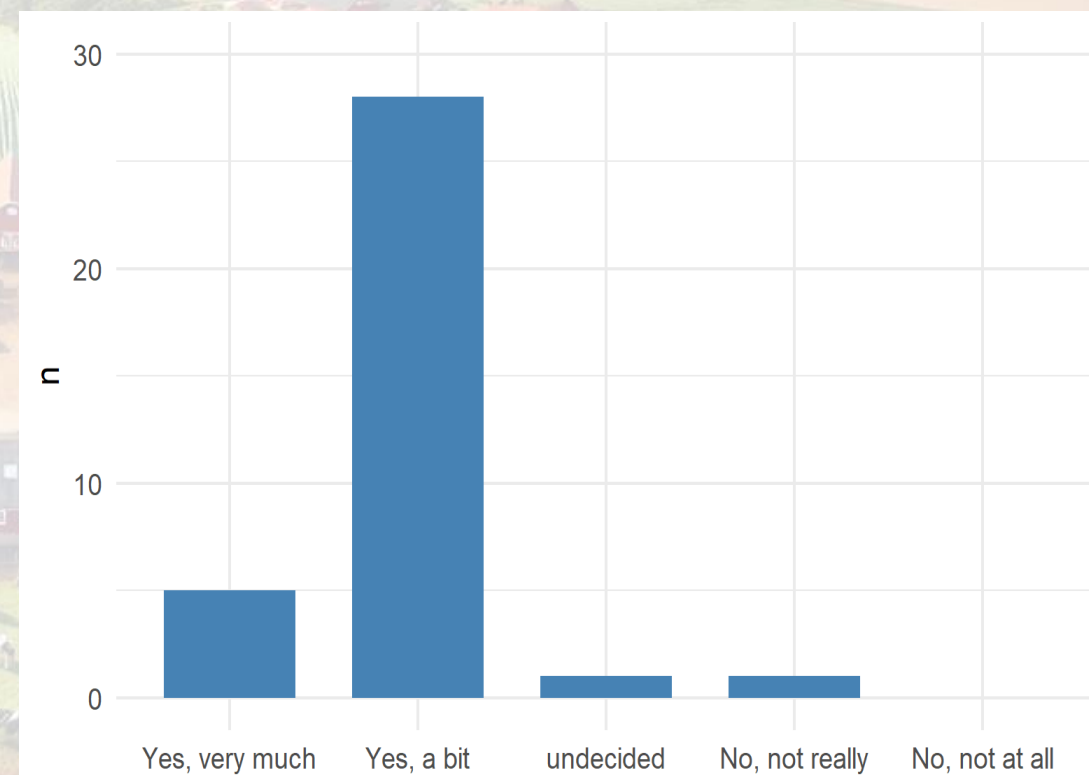


“Do you feel familiar with basic principles of herd health management in cattle farms?”

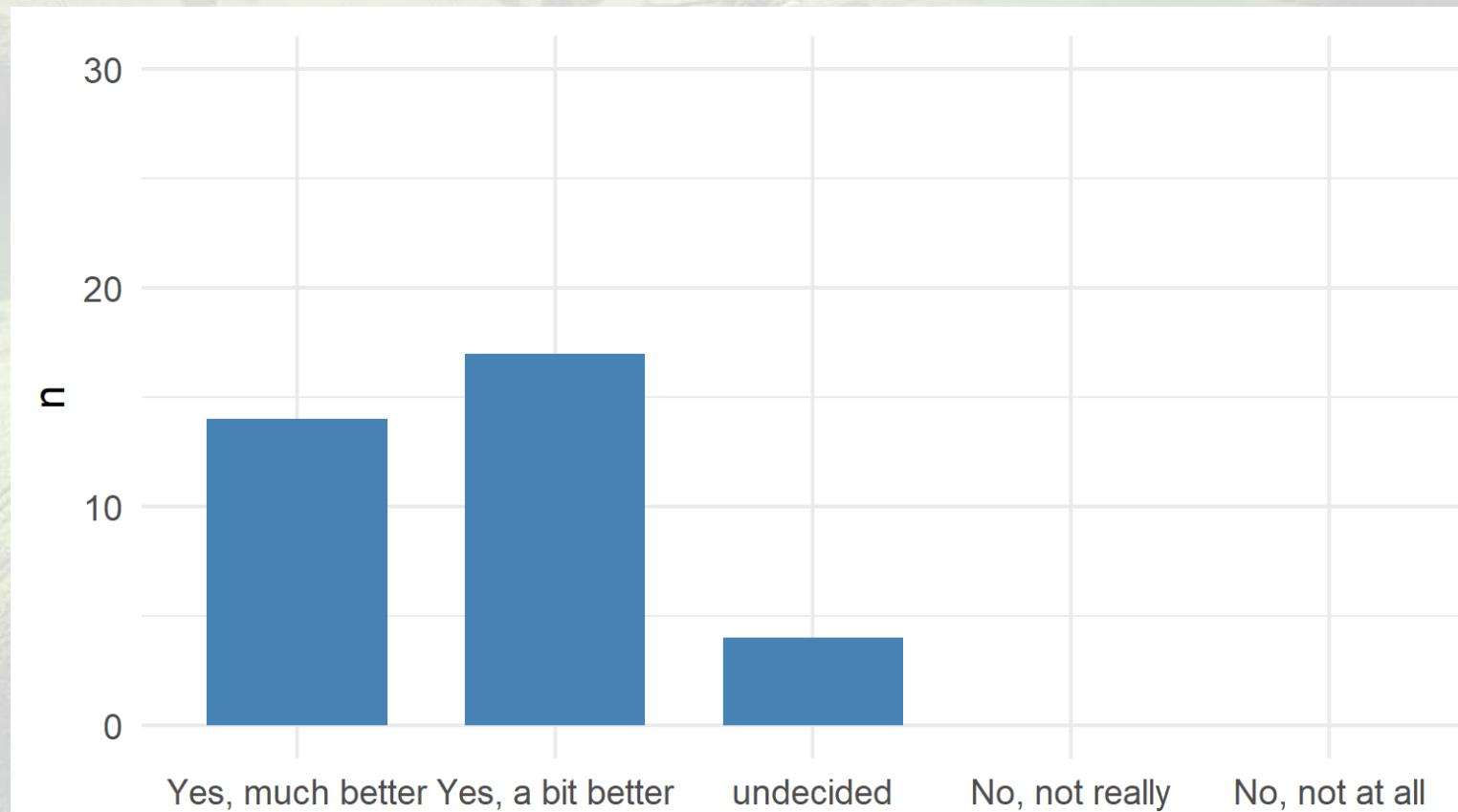
Pre-evaluation



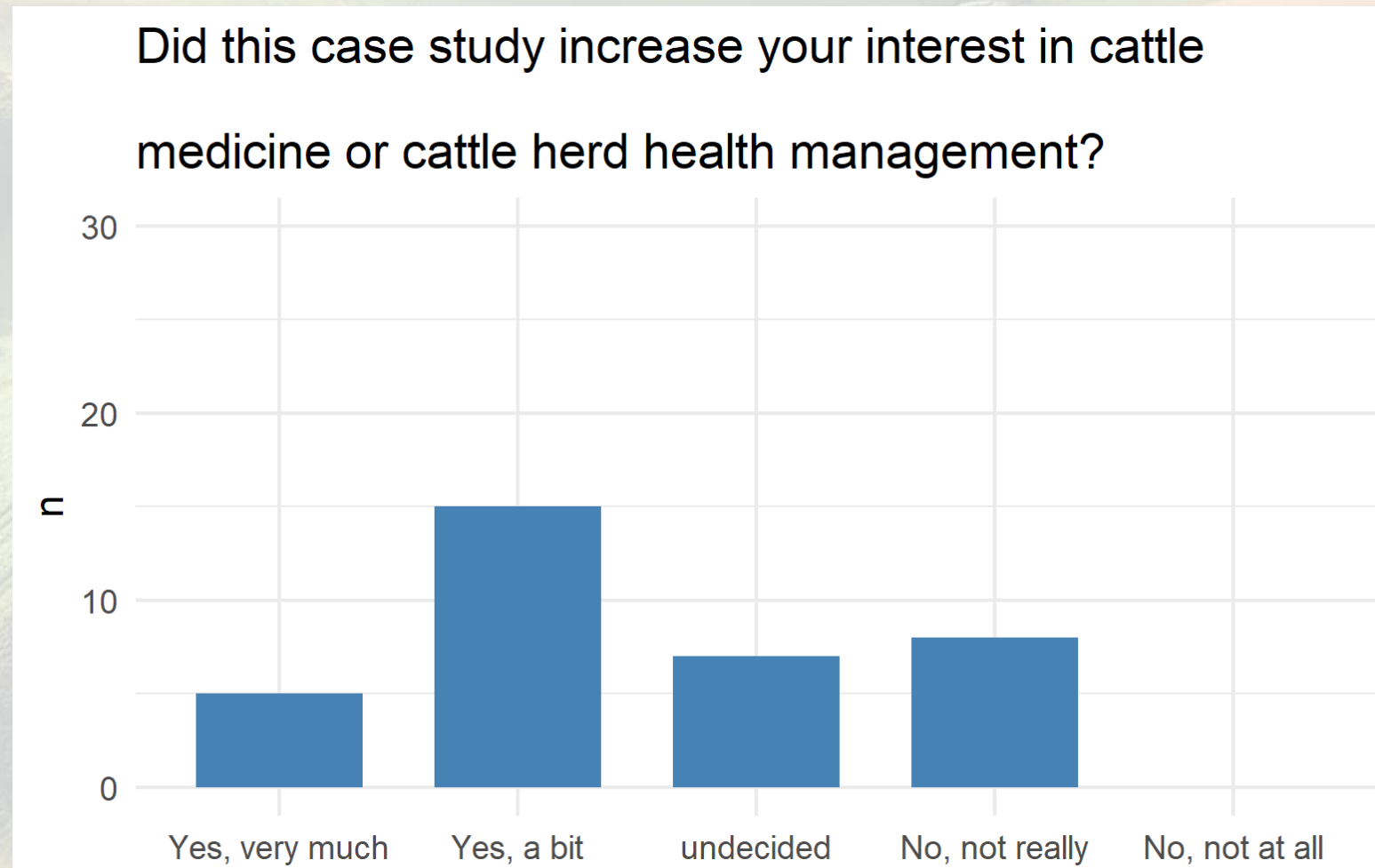
Post-evaluation



Did the case study help the students to better understand how to approach a herd level health problem?



Can such a case study help to increase interest in cattle medicine?





Summary

- The students
 - enjoyed the case study
 - felt more familiar with principles of herd health management
 - had a better idea of how to approach a herd health problem
- Plans for the future?
 - Develop more virtual case studies
 - inclusion of other media

Thank you for listening

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Thank you to

the **students** for testing,

Line Svennesen for reviewing the case study and

the **farmers** for allowing us to take pictures.



Moritz Pfeiffer, PhD student