

Influenza A virus infection in Norwegian pigs - active serosurveillance

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Presentation in Barcelona, ESFlu Cost Action



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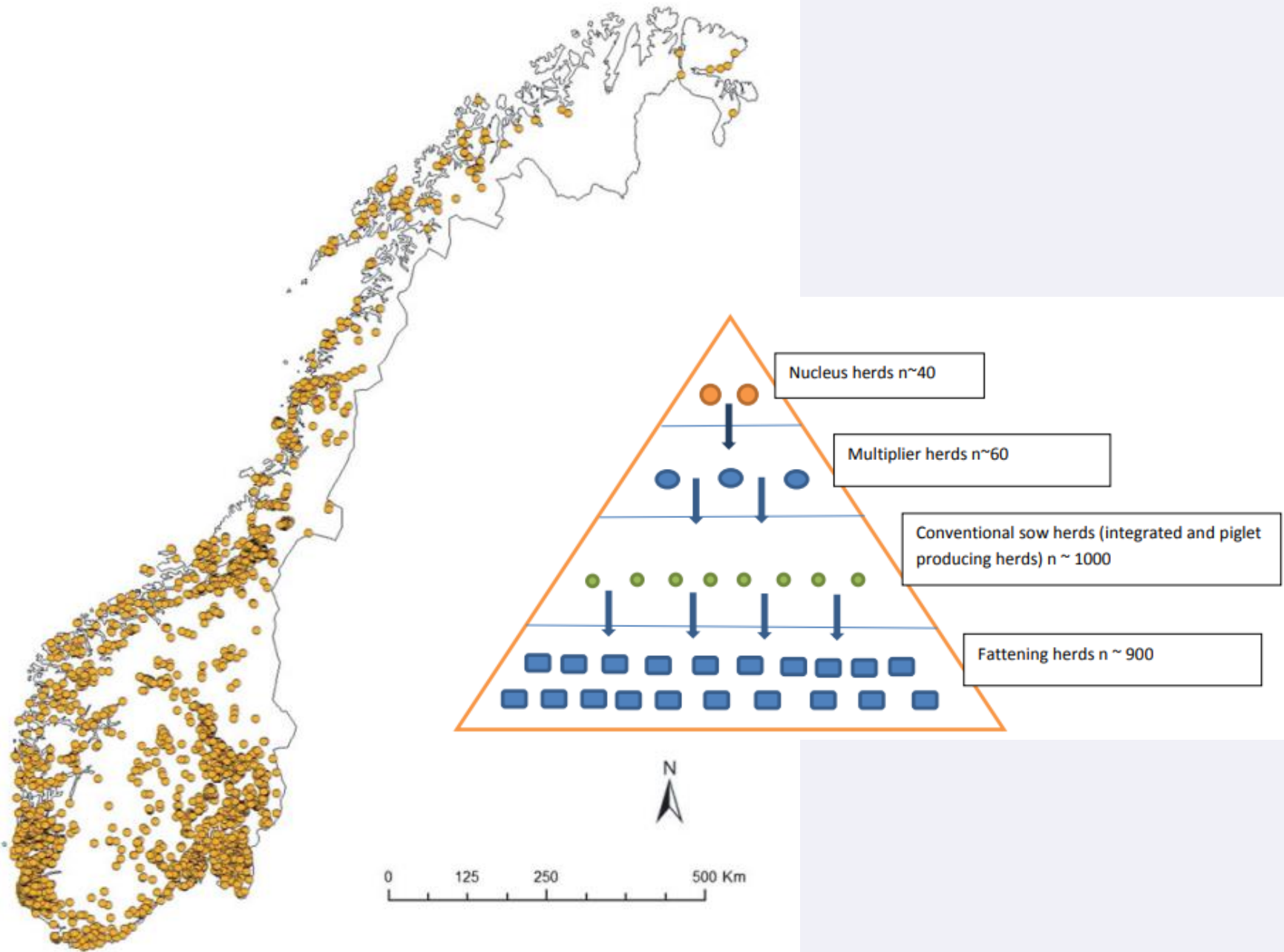


Fig. 1. Spatial distribution of pig herds ($n \approx 2000$) registered in Norway in 2014 [25].

Norwegian pig health status

Between 500 og 750 herds tested every year (100 breeding herds, 400 sow herds, 50 fattening herds)

TGE

PRRS

Aujeszky's

PED



PRCV

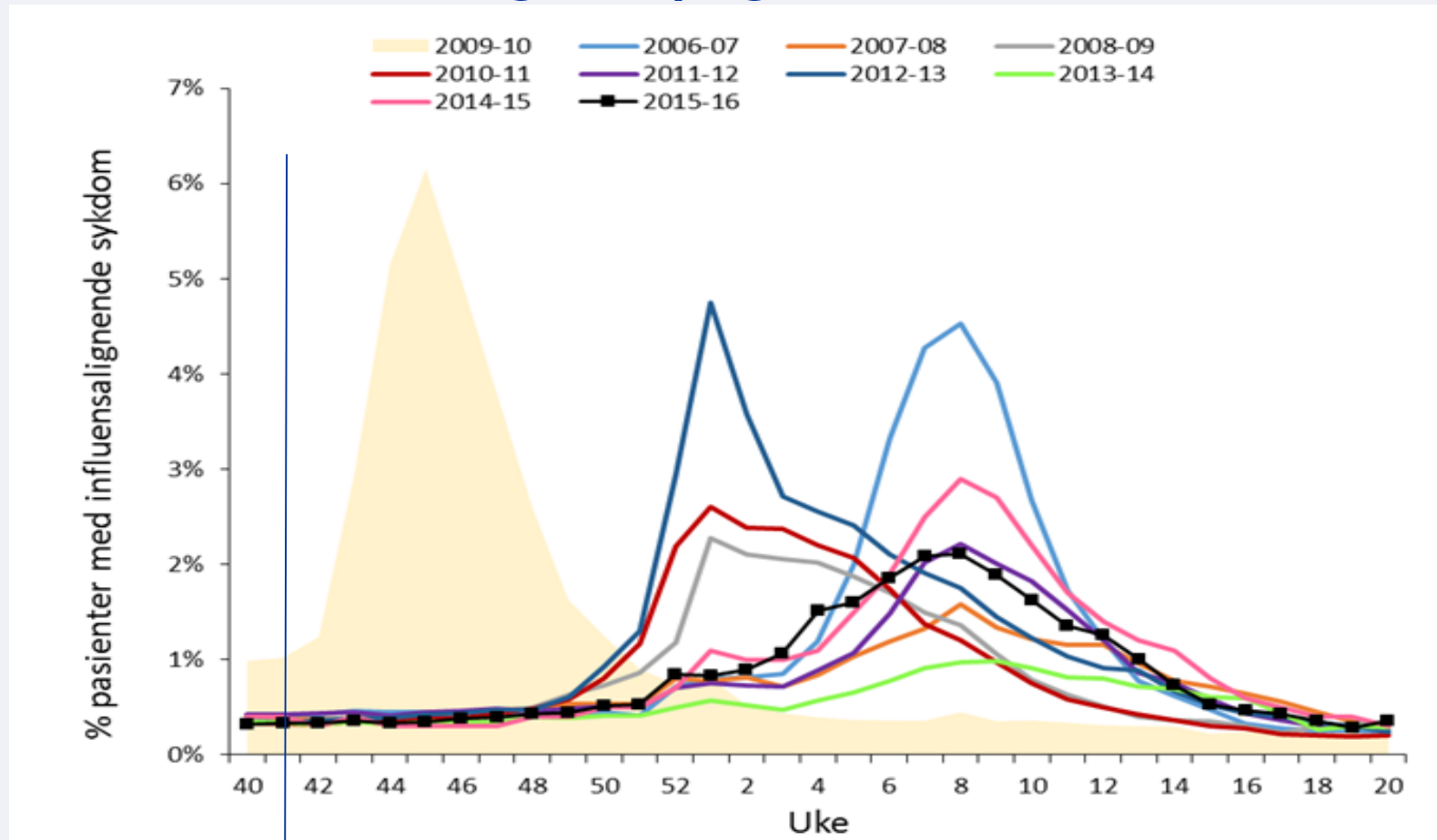
IAV

swIAVs endemic in European pigs (avian -H1N1, H1N2, H3N2) & H1N1pdm after 2009.

ELISA screening test for IAV Abs
HI test against 4 antigens



Emergence of H1N1pdm09 first in humans than in Norwegian pigs



Farm zero diagnosed on 10 October 2009



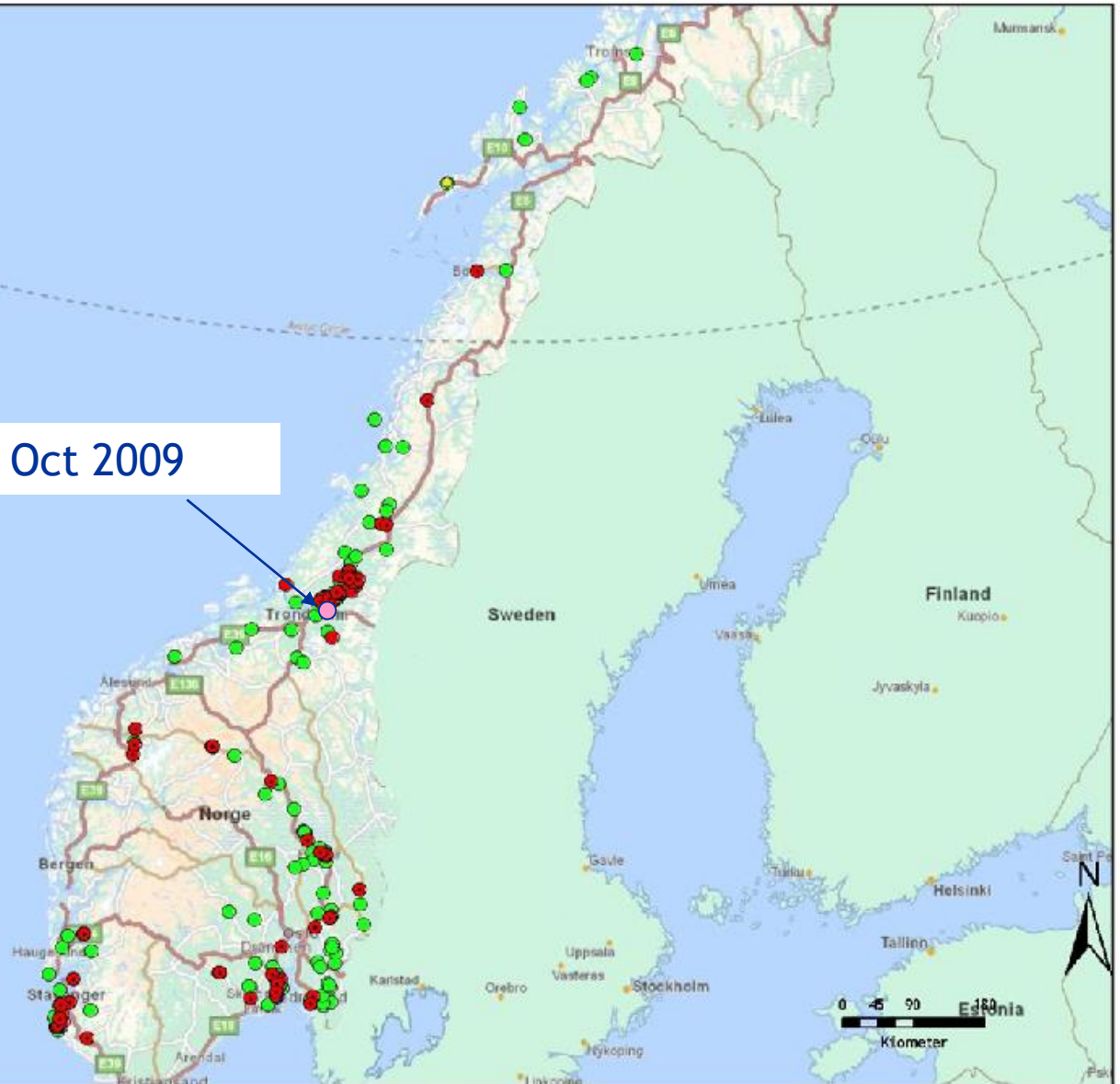
Svineinfluensa Norge
31.12.2009 09:00

- Positiv blodprøve
- Positiv
- Ikke avsluttet
- Negativ
- Oppfølgingsprøve

Index farm on 10 Oct 2009

Bruk av denne grafikk
tillatt når kilde oppgis.

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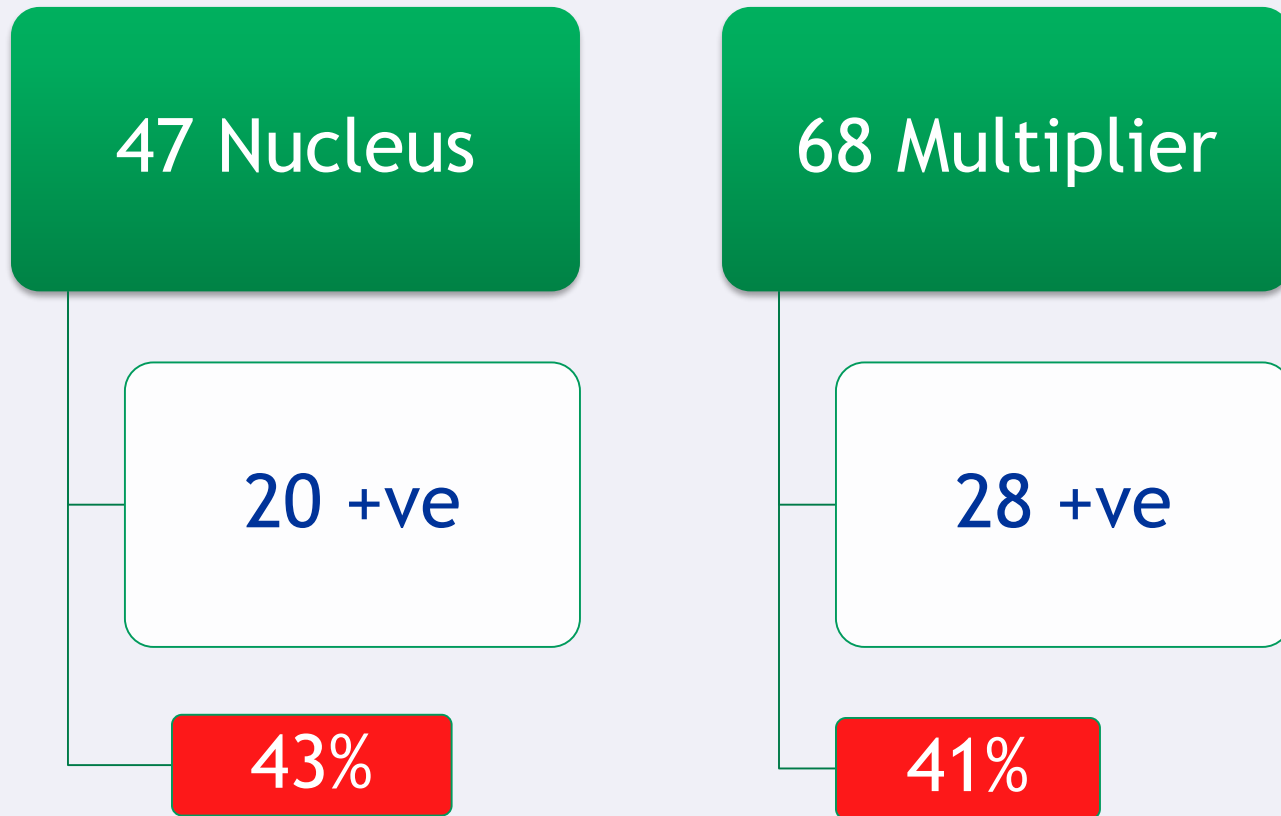
Influenza A(H1N1)pdm09 virus infection in Norwegian swine herds 2009/10: The risk of human to swine transmission



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Case Control studies on breeding herds (n=115) with highest biosecurity.

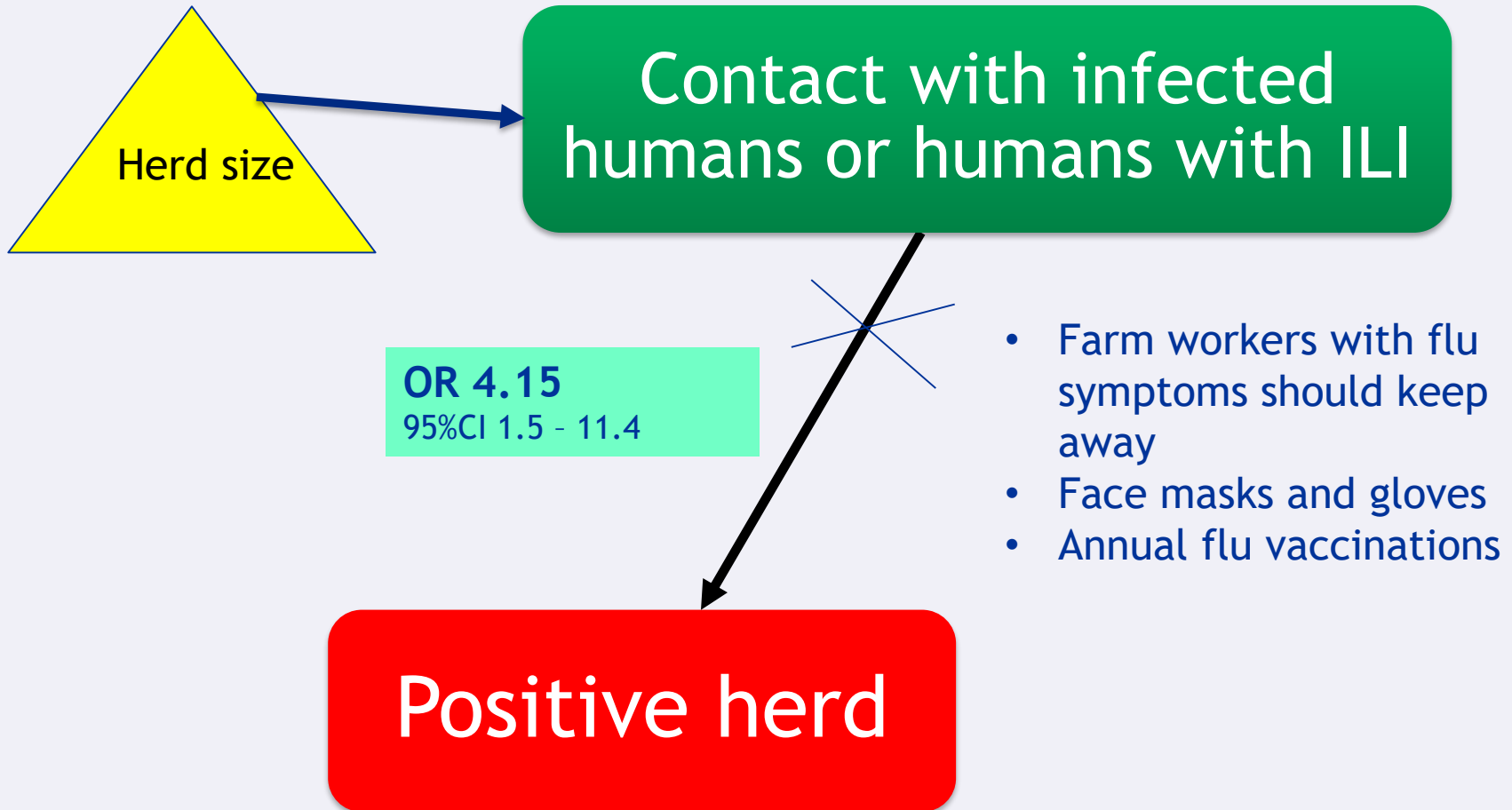


48 case herds and 67 control herds

19/48 or 40% positive herds had detectable clinical signs



Logistic regression analysis on risk factors



Occurrence and spread of influenza A(H1N1)pdm09 virus infection in Norwegian pig herds based on active serosurveillance from 2010 to 2014

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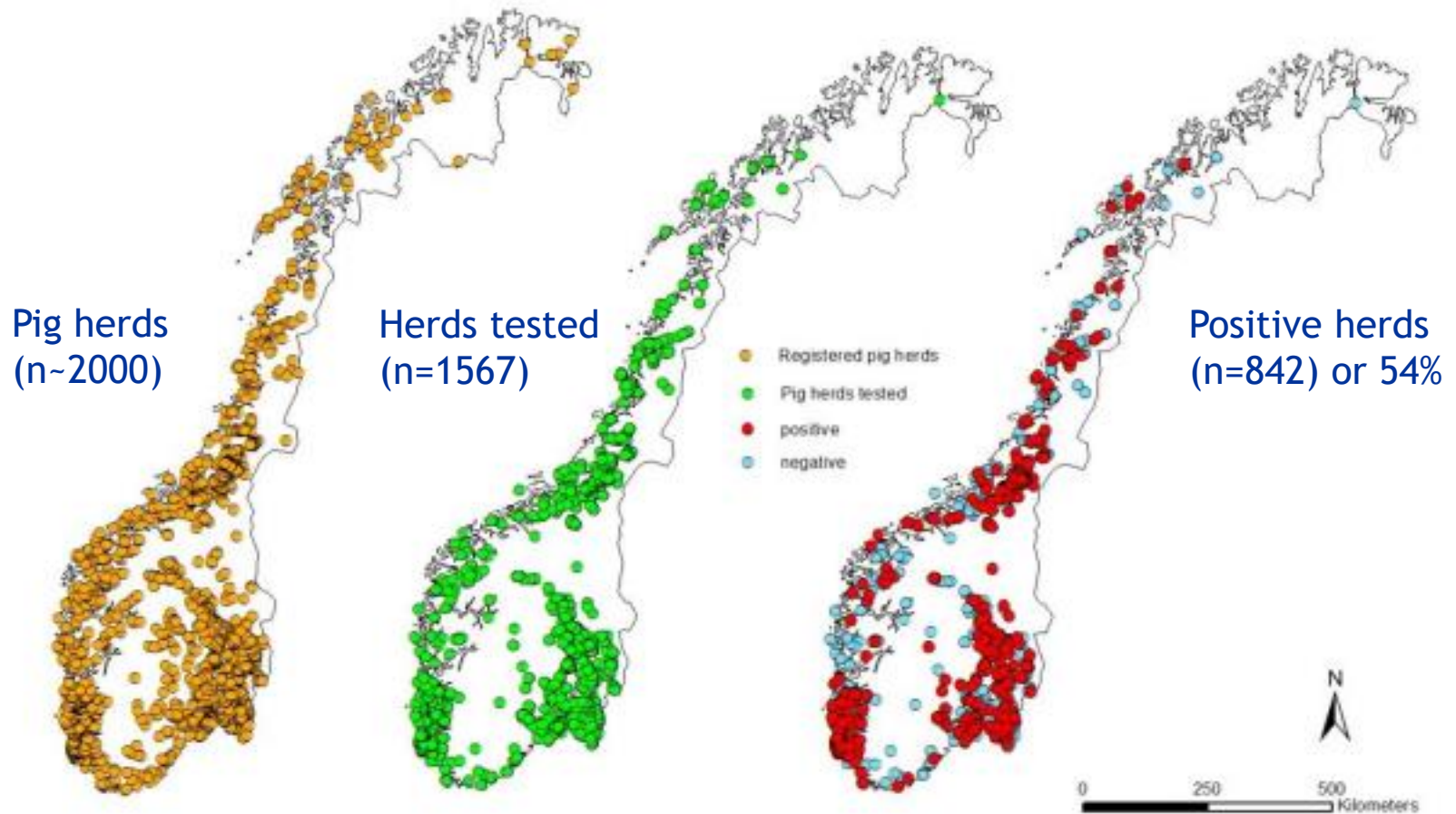
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Received 2 December 2015; Final revision 20 May 2016; Accepted 15 June 2016



Five years (2010-2014) 54% Cumulative herd prevalence



Serosurveillance of pig herds 2010 - 2014

Levels

Herds

Herd tests

pigs

Sampled

1567

5643

23036

Positives

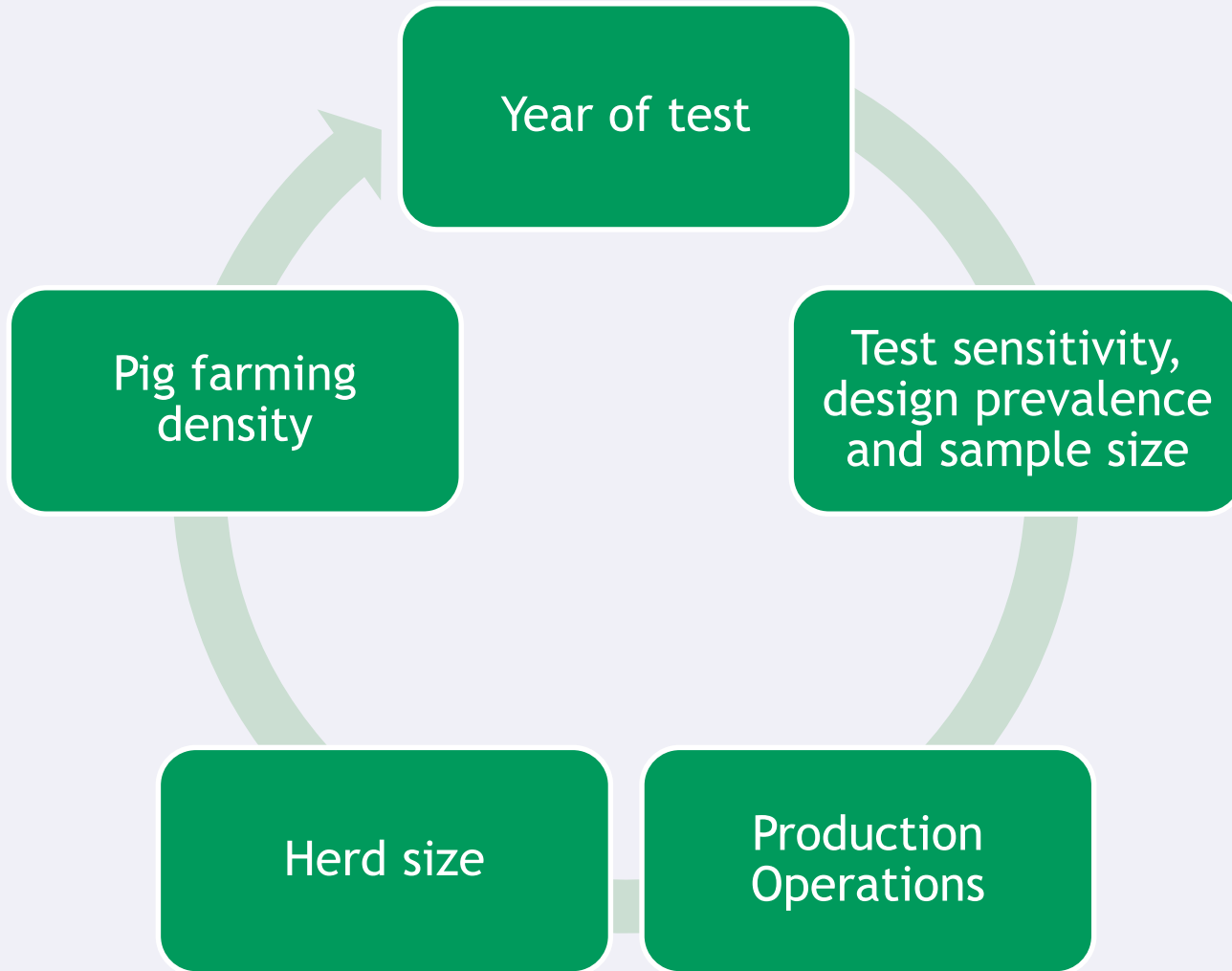
842 (54%)

2470 (44%)

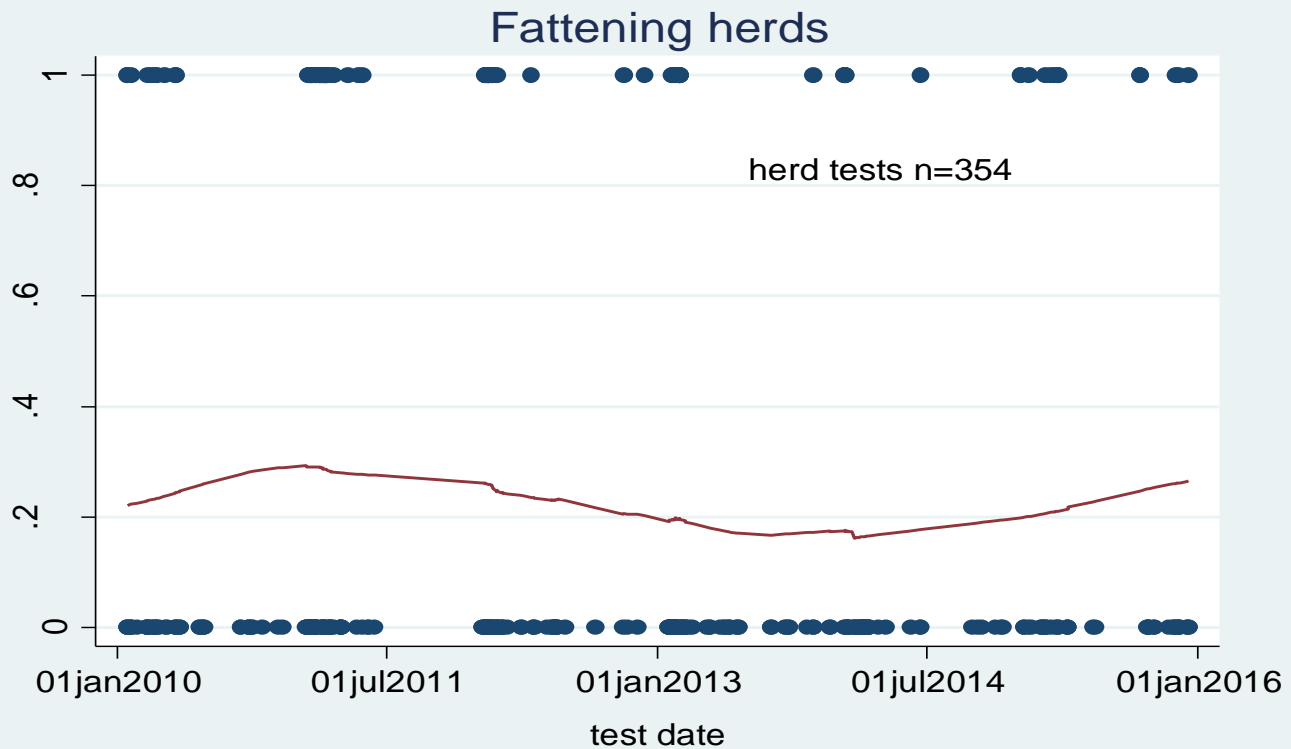
6513 (28%)



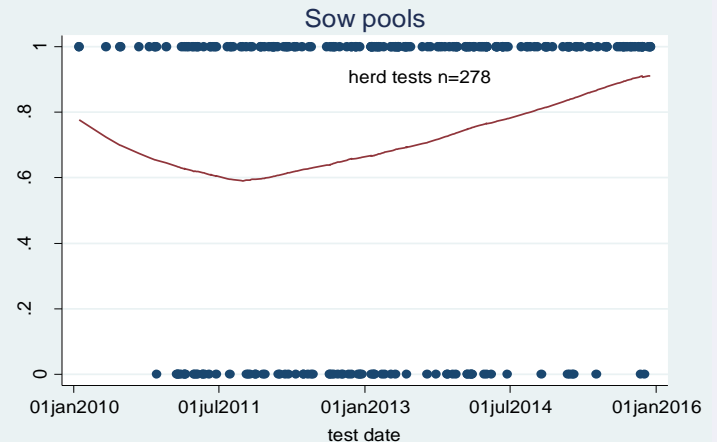
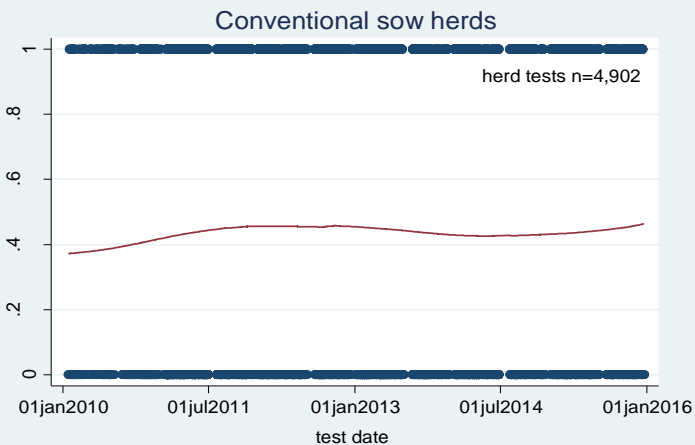
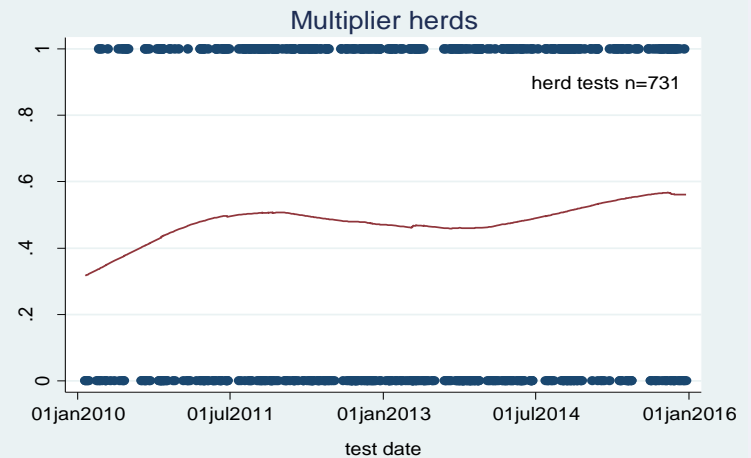
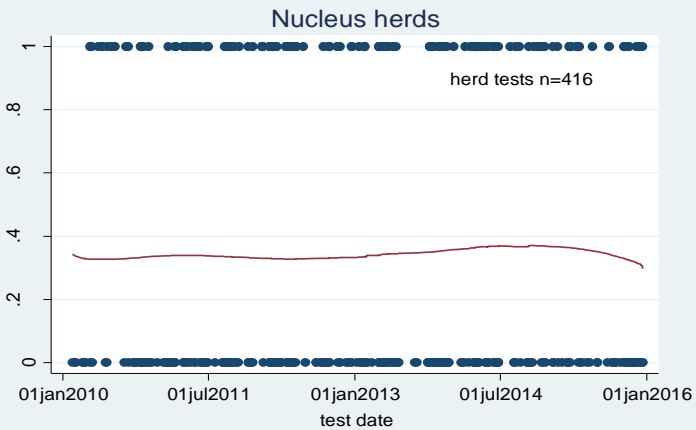
Likelihood of a herd being positive



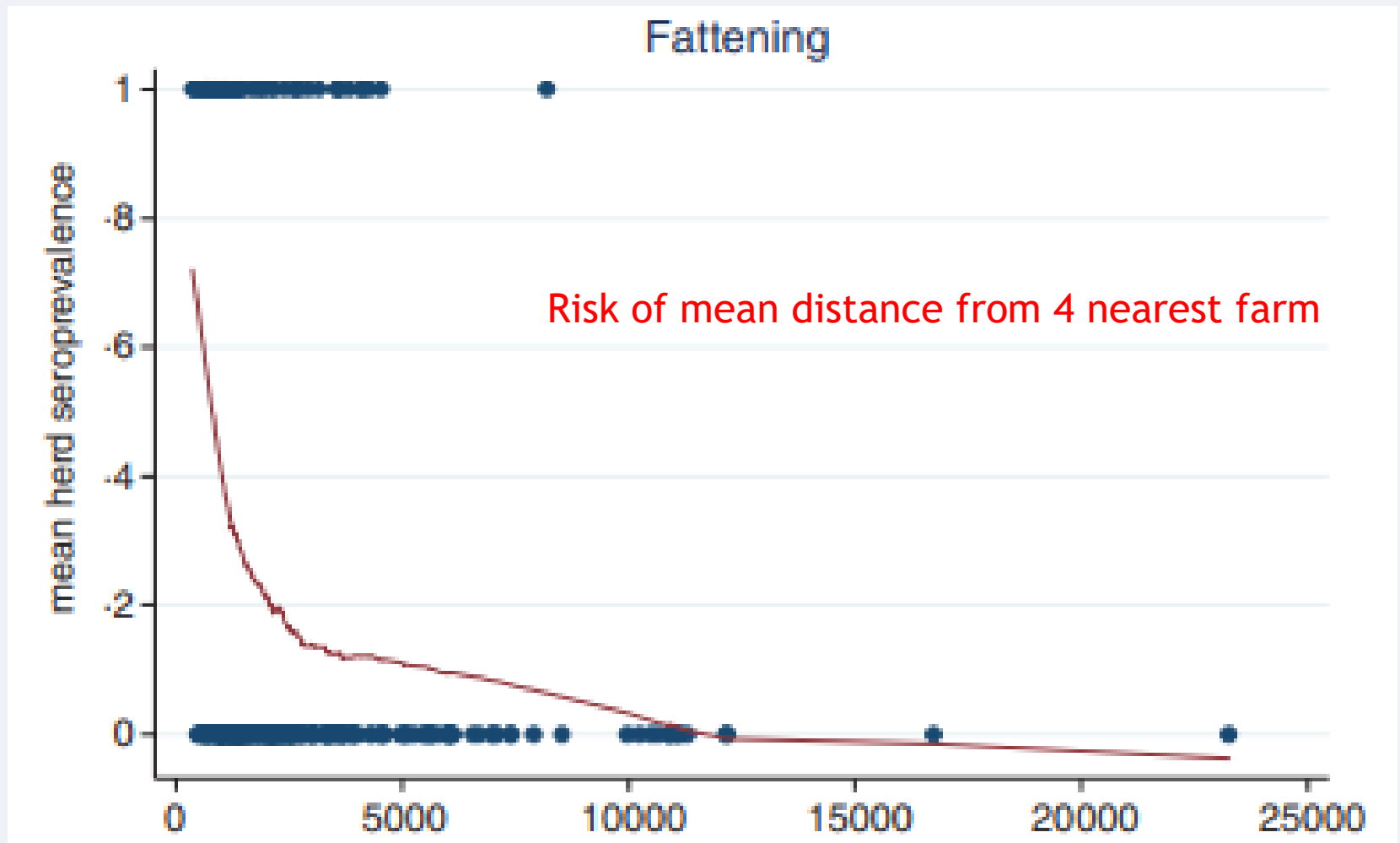
Herd seroprevalence, temporal patterns in fattening pig herds



Herd seroprevalence, temporal patterns by production type



Spatial risk on mean herd seroprevalence



Incidence risks by production type

Conventional sow herds



Conclusions of first IAV infection in Norwegian pigs

- Influenza A(H1N1)pdm09, introduced by humans, was mostly subclinical in Norwegian pigs. (40% of pig farmers reported morbidity)
- Like other SIVs, H1N1pdm is highly infectious, and can rapidly reach >90% prevalence in the herd
- Herd tests is highly sensitive with few pigs tested.
- Sow herds has higher probability of infection than finisher herds
- Running mean national herd seroprevalence ~45%
- Running mean herd incidence rates ~32%
- Herd prevalence follow in tandem with prevalence in the human population

Correlation of herd prevalence with human prevalence

