

Correlation between the time between PRRSv infections and swine density

Key point:

- No strong correlation between the time between PRRSv infections and swine density

Last week we discussed association between the time between PRRSv infections and herd PRRSv status.

We found that provisionally negative and negative herds (status 3, 4) had the longest inter break interval and status 2 herds had a disappointingly short interval. This week we analyzed the association between the time between consecutive PRRSv infections and the density of surrounding swine herds, sows and sows / pigs for each herd. High swine density can result in intensive interaction among herds of different sizes and biosecurity levels. Therefore, we hypothesized that time between breaks should decrease as swine density in a region increases.

Starting with the data set of 189 herds with 2 PRRSv breaks we removed 103 herds that had no data on surrounding number of pigs and sows (1). The density of surrounding swine herds and pigs was calculated for the remaining 86 farms by dividing USDA reported number of swine herds, sows and sows / pigs by the size of the county (2).

Unexpectedly, we did not find a significant correlation between the time between infections and swine density as measured by swine herds (p-value 0.10), sows only (p-value 0.20) or sows and pigs (p-value 0.57).

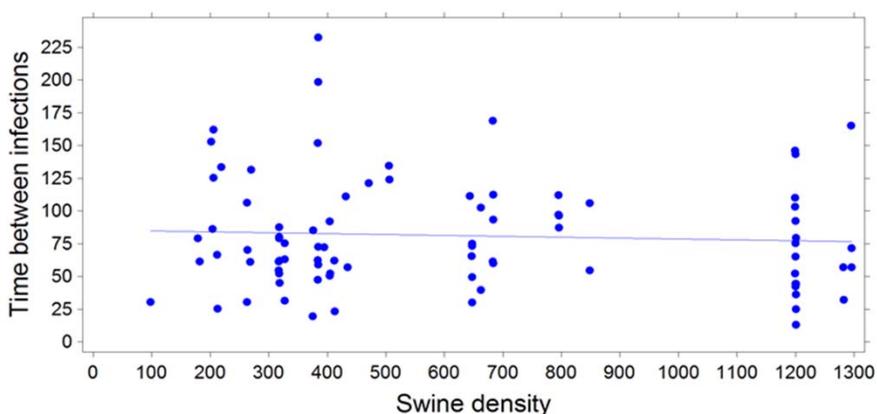


Figure 1: Time between PRRSv infections (weeks) and swine density (sow and pigs)

We expected population density to have a marked effect on the time between infections. Mousing et al, 1997 reported that the herd size was not related to the risk of PRRS seropositivity (3). However, serological surveys in Mexico reported high PRRSv prevalence in herds located in major swine production areas. Areas with less swine production activities had a low prevalence of PRRS virus (4).

The lack of correlation between density and time between breaks might be explained because the measure we used for density was at county level and may therefore lack resolution at the herd level. Or, the USDA data may be inaccurate. USDA numbers of swine data were available for only 34 counties of the 79 counties (43%) that represented our original 189 herds.

Thank you for your participation and ongoing support.

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References:

1. http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/Minnesota/.
2. <http://quickfacts.census.gov/qfd/states/27000.html>
3. Mousing, J., Permin, A., Mortensen, S., Botner, A and Willeberg P. 1997. A case-control questionnaire survey of risk factors for porcine reproductive and respiratory syndrome (PRRS) seropositivity in Danish swine herds. *Veterinary Microbiology*, 55: 323-328.
4. The probability of transmission of Porcine Reproductive and Respiratory Syndrome virus (PRRSv) to naive pigs via fresh meat. 2005. *The EFSA Journal*, 239: 1-85.