

## SWINE HEALTH

**Title:** PEDV infection risk factor analysis – NPB #14-278

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### Abstract

Porcine Epidemic Diarrhea virus and Porcine Reproductive and Respiratory Syndrome virus are two economically important diseases of swine production in the United States of America. The objective of this study was to assess patterns of co-infection of these two diseases using data from a group of voluntary participants enrolled in the Swine Health Monitoring Project in the Midwest region of the United States of America. First, disease clusters were identified using a multinomial space-time scan statistic. Then, multivariate regression model was fit to quantify associations between farm level management factors and disease outcomes including if the farm was located in a disease cluster. Finally, another regression model was used to identify associations between diseased farms within and outside of disease clusters. Five significant space-time disease clusters with two or more herds were identified as being co-infected, infected with either Porcine Epidemic Diarrhea virus or Porcine Reproductive and Respiratory Syndrome virus only, or infected with neither virus. After controlling for being within a high-risk space-time disease cluster, county density was significantly associated with being infected with Porcine Epidemic Diarrhea virus alone or with Porcine Reproductive and Respiratory Syndrome virus, whereas high biosecurity including bio-aerosol filtration was significantly associated with lower odds of being in any disease category. Efforts could be directed at identifying better ways of implementing strict biosecurity practices that are common among filtered farms as well as encouraging the development of regional control projects in these areas as a means mitigating these pathogens, and potentially other pathogens, in swine dense, high risk regions of the United States of America.

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