

Characterization of a swine interstate movement network in Ohio using dashboard

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Certificate of Veterinary Inspection (CVI) records, the official documents that prove the listed animals have been inspected and meet all federal requirements, are widely used in modeling animal movement between states. Commuter Herd Agreements (CHA), which document inter-state animal movements within the same ownership instead of using a CVI, have been mostly neglected in previous analyses. The goal of this study is to map the directionality and frequency of swine movements in and out of Ohio and identify regions with intense movement events. After geocoding the addresses and grouping the movements based on their origin and destination counties, we were able to capture swine movement at the county level. An interactive dashboard was created in ArcGIS Dashboard synthesizing both CVI and CHA. The results show that compared to imports, Ohio swine exports have a much larger geographic distribution, with the most frequent movements occurring between Ohio and Indiana, Illinois, and Michigan. From May to October, CHA, constituting 6.3 percent of total records, accounts for 15.5 percent of the total number of animals transported, while CVI, making up 93.7 percent of the records, represents 84.5 percent of the moved population. This is the first attempt to use dashboard for pig movement visualization in Ohio with multiple data sources. In addition, a share of swine movements with substantial animal counts was not recorded by CVIs and may be neglected for traditional animal movement tracing approaches. This information should be incorporated to fill gaps in future animal movement mapping and disease transmission modeling.

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