

Attitudes such as distrust of government can cause swine farmers to resist animal biosecurity

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A farm visitor pets pigs during Open Farm Week at Union Brook Farm in Northfield VT. Credit: Union Brook Farm, Northfield VT

A new University of Vermont study [published](#) in *Scientific Reports* examines the social and psychological aspects of farmers' decisions about whether or not to implement biosecurity measures on pig farms. This is the first study to look at human behavior in biosecurity adoption among swine producers.

Through [survey data](#) and simulations, the scientists found that it is largely farmers' attitudes that have the biggest impact on farmers' decision-making strategies regarding implementing farm [biosecurity](#). Farmers' attitudes span a broad gamut from those who trust [government information](#) about diseases to a complete lack of belief that government recommendations can control an animal epidemic. Attitudes will then influence farmers' behaviors, such as when to contact their veterinarian, or when to ignore the signs of an outbreak.

Through surveys with over 440 swine producers, the scientists were able to discern farmers' perceptions about biosecurity adoption. They discovered that the farmers fell into three identifiable groups: Biosecurity Skeptics, Biosecurity Compliant, and Biosecurity Ultra-Compliant. These classification groups of pig producers significantly predicted their biosecurity actions or lack thereof.

Swine research is currently of the utmost importance, as the 2018 African Swine Fever (ASF) epidemic in China resulted in the culling of 40 million pigs. Between 2019 and 2021, Vietnam was forced to cull 6 million pigs. If the ASF were to infect the US swine population it would have devastating consequences. The United States holds a prominent position as both a producer and consumer of pork and pork products, and any disruption would have dire economic repercussions.

As of 2021, the pork industry directly and indirectly contributed about \$57.20 billion in value to the U.S. economy. A single confirmed ASF infection in the US swine population could bring down the entire

industry. Against this backdrop of global threat and impending calamity, policymakers must be able to create targeted communications that encourage biosecurity adoption, so as to reduce the likelihood of a US outbreak. In order to do that, they need more information about how to best influence producers to adopt biosecurity measures.

Probably the most important finding of the UVM study is that swine producer attendance at even a single eradication program did encourage biosecurity adoption, even among those in the Biosecurity Skeptics group. The biggest surprises of the study: Small-scale swine producers are the least likely to adopt biosecurity measures, and distrust of the government plays a key role in farmers' resistance.



A farm visitor pets pigs at Union Brook Farm in Northfield, VT during Open Farm Week 2024. Credit: Union Brook Farm, Northfield, VT.

One of the [principal investigators](#), Richmond Silvanus Baye, said he was inspired to do this research because of [a similar study done in 2012](#), which looked at cattle biosecurity adoption in the wake of the devastating Foot and Mouth Disease outbreak in the UK. During that epidemic, many cattle producers refused to allow the British Government onto their property to destroy infected animals, therein prolonging and worsening the outbreak.

The UVM investigators wanted to understand how it might be possible to move the needle on psychological resistance before an outbreak is underway. They examined how federal insurance programs, other indemnity programs, and educational outreach might be used to motivate [swine](#) producers' reporting of sick animals, as well as to improve biosecurity compliance to prevent an outbreak, or to lessen its impact should it arrive on US soil. Their research is grounded in the assumption that preventative measures are more efficient and cost effective than reactive or curative measures once an outbreak is underway.

According to principal investigator Asim Zia, one key takeaway from the study is that it shows a path for improvement if the USDA chooses to adopt a new approach.

"Current USDA biosecurity policy, incorporated in the Farm Bill, does not account for behavioral and psychological responses embedded in unconditional indemnity of losses from animal diseases such as African Swine Fever. This research shows that switching the current USDA policy from unconditional indemnity of losses to conditional indemnity, (conditional on adoption of biosecurity) will build more resilience against animal disease incursions in the US. The conditional indemnity approach will provide market incentives to pig producers to adopt biosecurity," says Zia.

Researcher Scott Merrill describes the importance of their study this

way: "These days almost all of the wicked problems that we are facing are inherently driven by human decisions, whether those problems are exceptionally large, such as climate change and food security, or more nuanced, such as the health of our livestock herds. Yet, much of the scientific inquiry into these problems revolves around things that are easier to test.

"For example, we spent a lot of time examining the effectiveness of vaccines but spent less time trying to make sure that people would be willing to get a vaccine. So, science that examines and incorporates findings on [human behavior](#) and how people make decisions can lead to substantial insights that have the capacity to really impact society, and reduce the costs associated with challenging problems."

Studying an impending global pandemic on the heels of COVID might make one feel pessimistic, that viruses cannot be contained by national borders, but Baye says he feels optimistic about their findings.

"Because an outbreak of this disease would have such a negative impact on our GDP, all the stakeholders will need to come together to nudge all the groups to become more compliant. The good news is that we have many pig producers in the Ultra Compliant and Compliant groups, and we've found that policies can be used to encourage the middle to adopt additional biosecurity measures.

"If we educate the skeptics, there is a lot we can do to encourage investment in biosecurity, so that gives us hope. If we encourage people enough, and understand what motivates them, then we might be able to prevent this from entering the U.S."

More information: Richmond Silvanus Baye et al, A latent class analysis of biosecurity attitudes and decision-making strategies of swine producers in the United States, *Scientific Reports* (2024). [DOI:](#)

[10.1038/s41598-024-67385-z](https://phys.org/news/2024-08-attitudes-distrust-swine-farmers-resist.html)

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