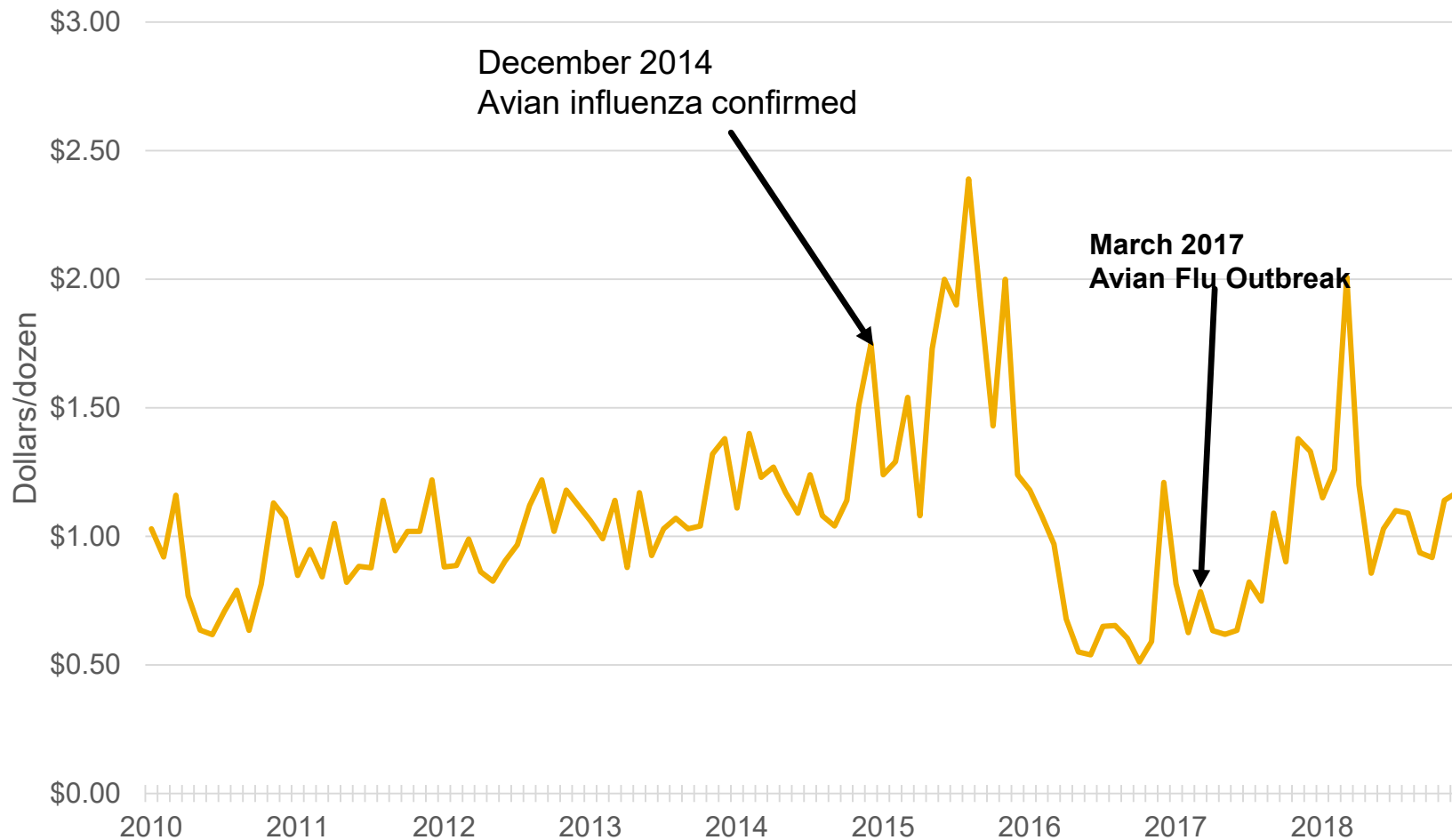


Ray Massey
Crops Economist

Economic Reasons to Improve and Maintain Biosecurity

Price Received for Eggs



Source: USDA NASS Quickstats

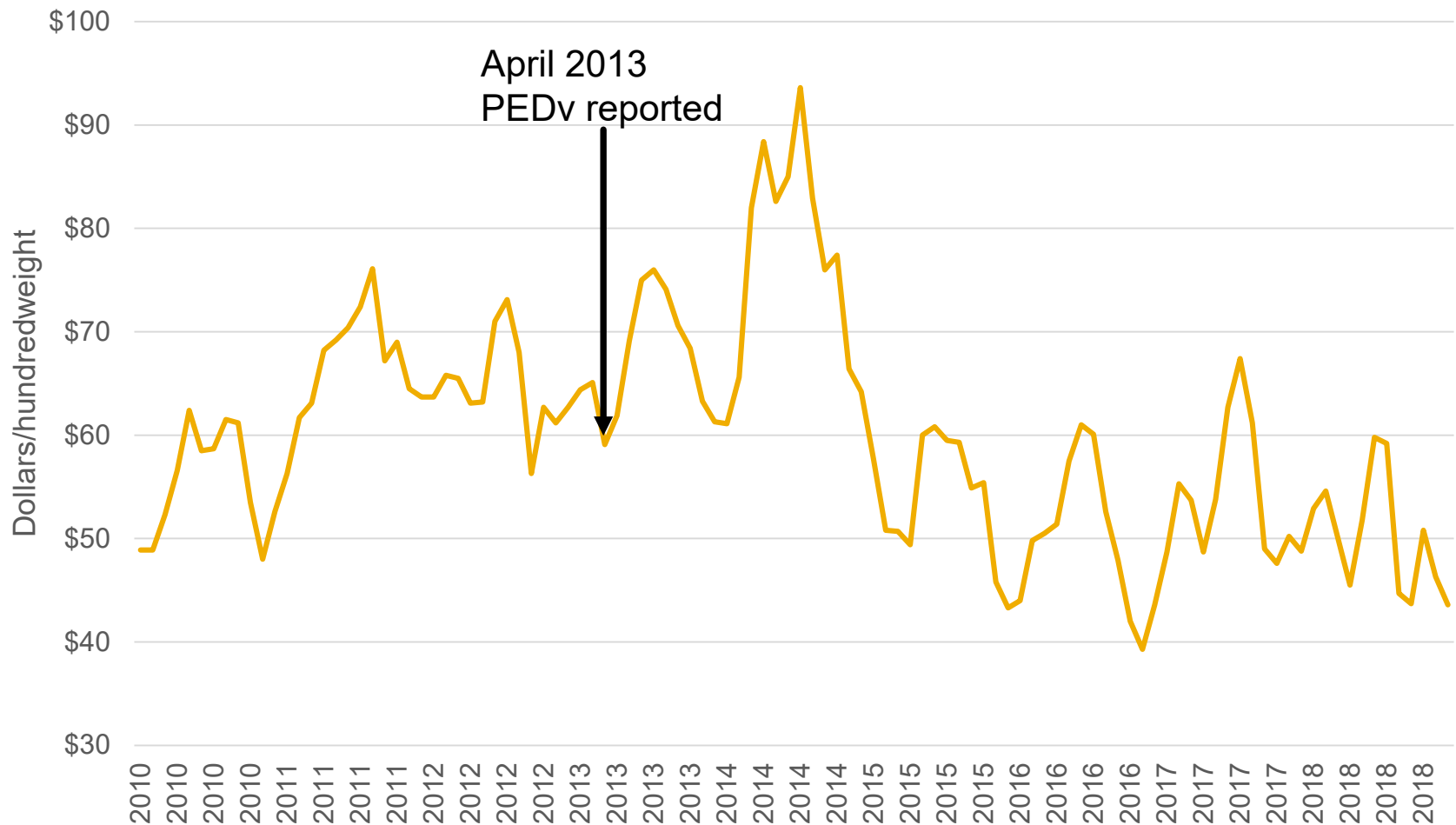
Cost of 2014-2015 Avian Influenza outbreak

- Brad Moline, a third-generation turkey farmer from Manson, Iowa,
 - were forced to destroy their entire flock, 56,000 turkeys housed in 12 barns
 - Lost at least two-thirds of their income for the year.
 - Incurred the costs of composting dead birds and disinfecting the barns
 - Faced the uncertainty of not being able to restock with baby birds

Cost of 2014-2015 Avian Influenza outbreak

- Economist Thomas Elam,
 - the cost of those lost birds was \$1.57 billion
 - the further costs to businesses that support farms, to egg and poultry wholesalers, and to food service firms, pushed the loss to \$3.3 billion.
- One of the perverse impacts of disaster is there are winners not always considered in economic analyses.
 - Those who clean up and rebuild
 - Those who have higher prices from supply shortages

Barrow and Gilt Prices



Source: USDA NASS Quickstats

Cost of 2013-14 PEDV Outbreak

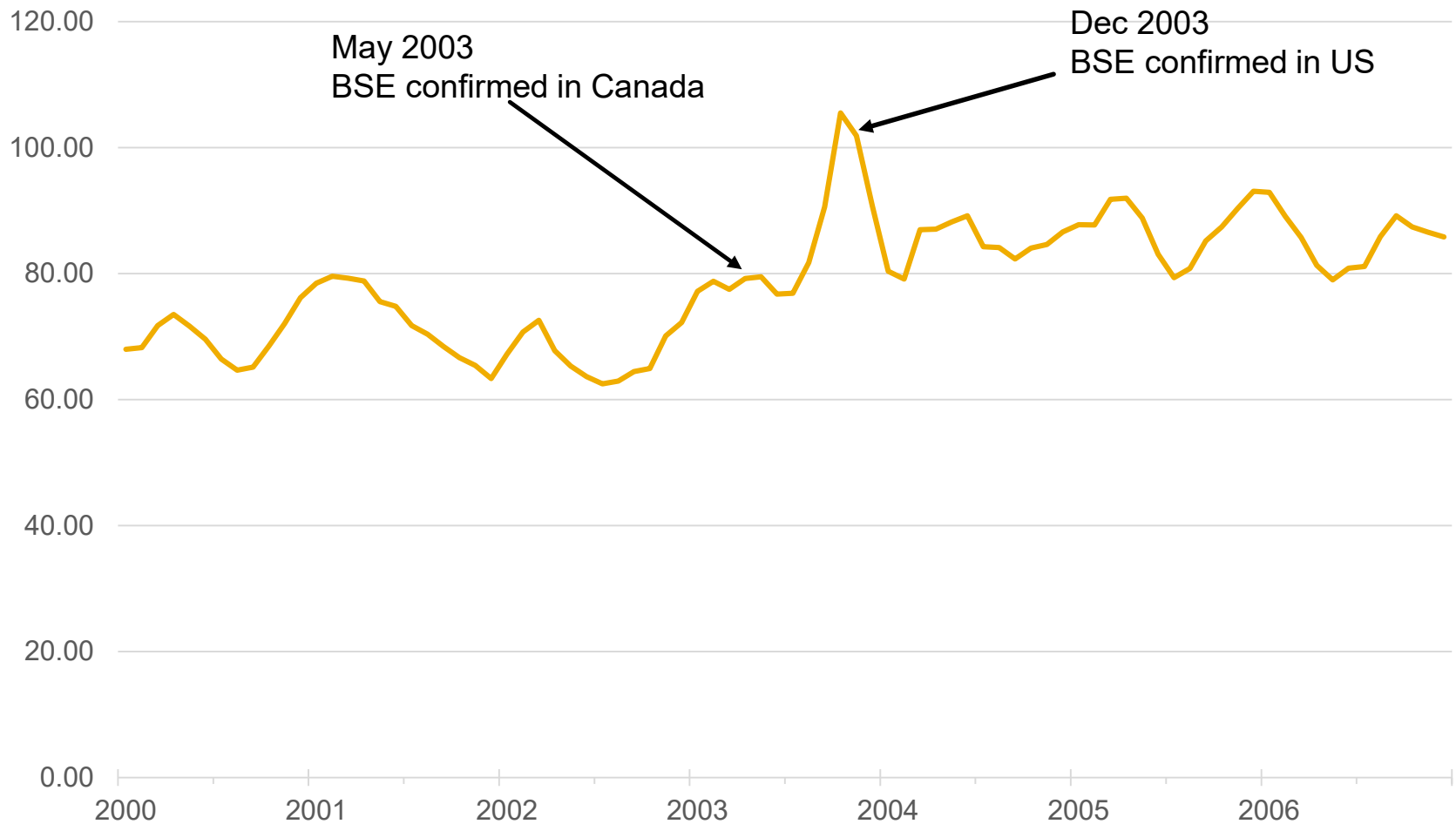
- Farrowing sows: decreased .25%
- Pigs Saved per litter: decreased 3.0%
- Number of pigs slaughtered: decreased 4.6%
- Carcass Weights: increased 3.3%
- Price of pork: increased 10.3%
- Overall economic situation for US hog producers: benefit
- Economic situation for producers breaking with PEDv: massive losses.

(Schulz and Tonsor. 2015. J. Anim. Sci.)

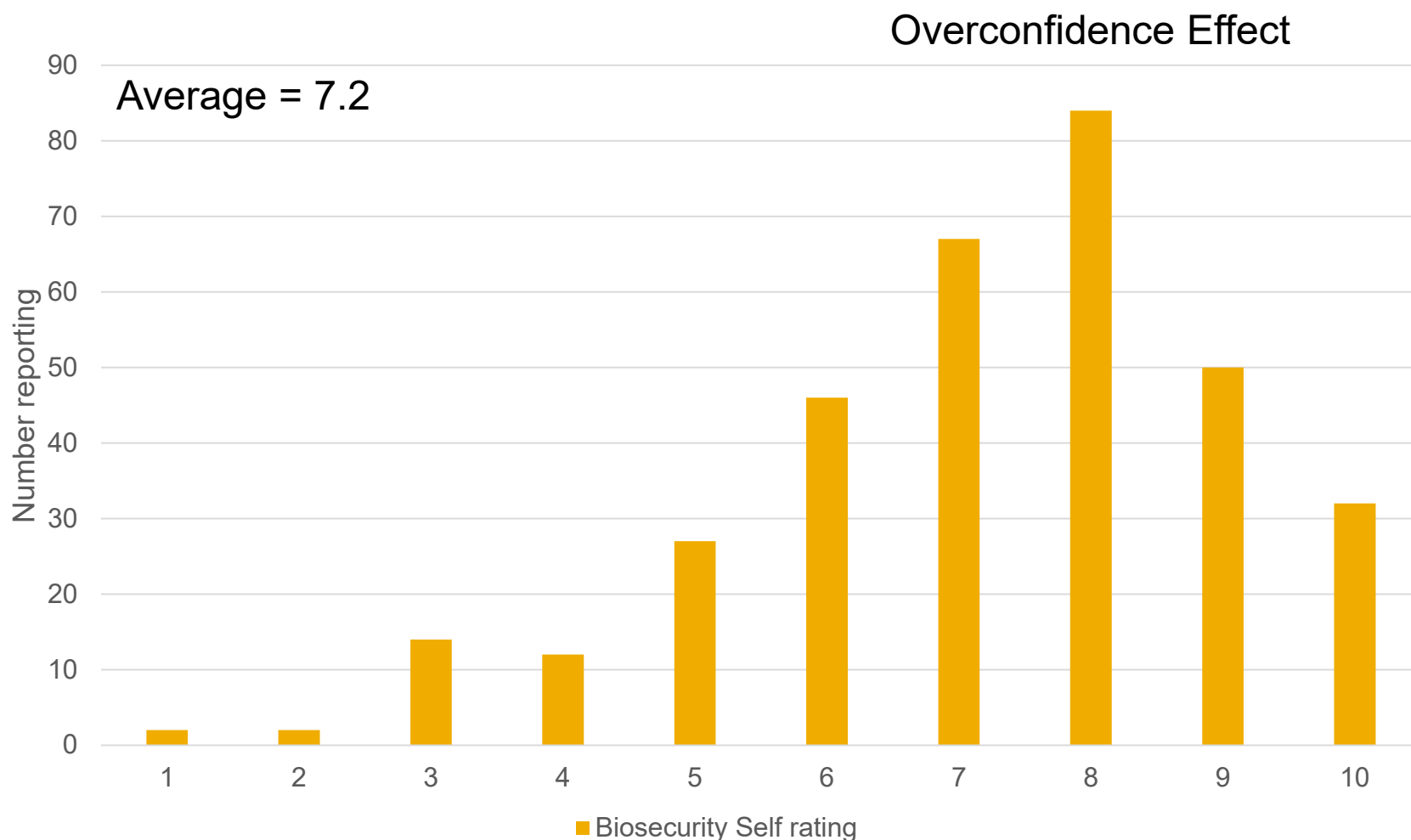
Biosecurity and Markets

- There may be an opportunity to benefit from market price changes due to outbreak of disease in the country.
- You have the opportunity to benefit IF you are one that does not get the disease.

Nebraska Steer Prices

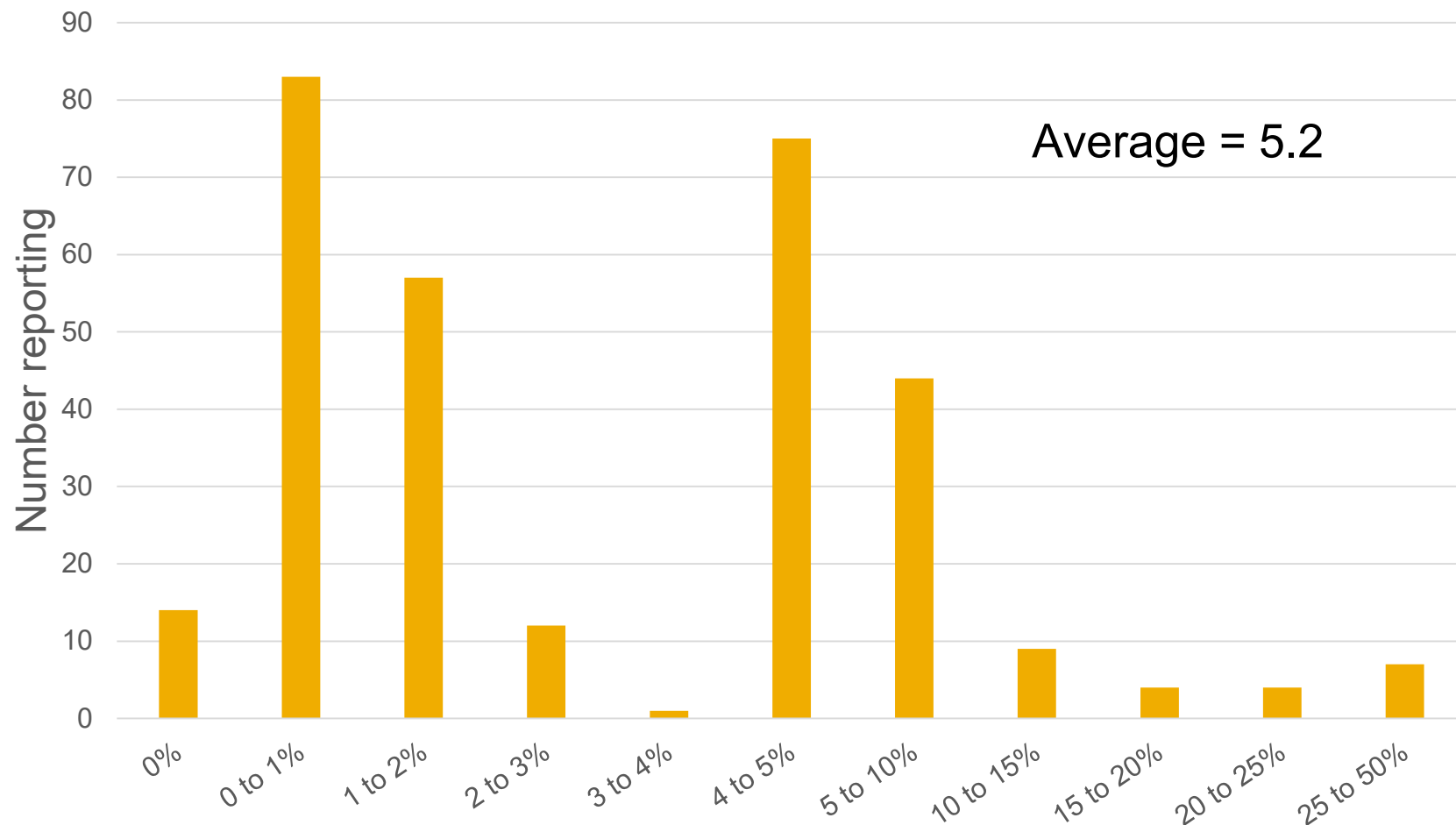


How would you rate the biosecurity of your operation compared to other operations in your area?



Source: Biosecurity and Health Management by U.S. Pork Producers 2017 Survey Summary

What percent of your total financial expenditure for swine production is annually spent on biosecurity?



Source: Biosecurity and Health Management by U.S. Pork Producers 2017 Survey Summary

Policy options

BSE is found in a cow in Saskatchewan, Canada . Should the U.S. ban all imports of Canadian beef into the U.S?

- Yes
- No

Economics of Biosecurity

1. Hazard Assessment: Prioritize different hazards
2. Management strategies and methods
3. Cost estimates of disease outbreaks

Hazard Assessment

Risk = probability x impact

- Probability
 - of entry
 - of spread
- Impact or likely consequences

Preventative measures are more desirable if:

- High probability of disease outbreak,
- The disease is highly contagious,
- The response strategies are less effective or more costly,
- The target is more valuable (e.g. human health, breeding stock).

Source: Elbakidze and McCarl (2005)

Adaptation is relatively more attractive when

- the invasion probability is relatively low and the probable damage modest;
- the effectiveness of adaptation is high;
- adaptation strategies and incentives of individuals are taken into account; and
- the decision-maker dislikes uncertainty regarding the outcome of the policies.

Source: Heikkila, 2008

Hazard Assessment and Insurance (or preventative measures)

- Risk = probability x impact
 - Probability = 2%
 - Impact = \$300,000 loss
- Estimates
 - Probability is likely very subjective
 - Impact can be very objective
- Estimating the impact is a helpful exercise in managing your farm.

Hazard Assessment and Insurance (or preventative measures)

- Risk = probability x impact
 - Probability = 2%
 - Impact = \$300,000 loss
- You would be willing to pay no more than \$6,000 ($2\% \times \$300,000$) for preventative measures.
- UNLESS there were other benefits to the \$30,000 such as employee comfort, efficiency, etc.

On-farm Financial Preparation

- Develop a response plan should a disease outbreak occur.
 - If disease occurs, the plan will give guidance when busy with other activities.
 - If disease never occurs, the plan probably helped in managing the business by helping you think through the production process.

On-farm Financial Preparation

Financial plan needs to consider **cash flow** problems in a worst case scenario

- Revenue will decrease while costs increase
- Discuss with your lender the likely line of credit you will need to meet cash flow.
- Specifically address:
 - Mortgage obligations
 - Communication with suppliers, buyers and contractors
 - Plan various options to fill that cash shortage

On-farm Financial Preparation

- Increased Costs – both labor and material estimates
 - Disposal (composting/ incineration)
 - Cleanup costs
 - Assume that costs will increase in a disease outbreak
 - Composting material (saw dust, straw, etc.) demand will increase
 - Labor may cost more for unfamiliar or unpleasant tasks
- Decreased Revenue
 - Estimate how long you will be without contract income, sales and/or manure income
 - USDA assistance?

USDA Appraisal and Indemnity

- APHIS has the authority to depopulate herds and flocks to contain or stop the spread of a disease.
- If depopulation occurs APHIS pays
 - Fair market value of animals destroyed
 - Materials destroyed that cannot be disinfected
- Iowa experience in 2017
 - USDA paid the integrator for the birds, not the grower
 - USDA paid more to clean old waterers than requested to buy new ones

Management Strategies

- Prevention
 - Eradication
 - Containment
 - Control
-
- Problem: private producers are not necessarily interested in diseases that cause large trade disruptions but where production losses may be modest (Heikkila, 2008)

Policy options

BSE is found in a cow in Oregon.
Should our major trade partners ban
all imports of U.S. beef into their
country?

- Yes
- No

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