



Project Background

Sow mortality has significantly increased in the past five years in the U.S. swine industry, but the industry lacks strategies to reduce the occurrence of pelvic organ prolapses (POP) on the farm because we do not understand the true root causes contributing to the increase of prolapses.



The Iowa Pork Industry Center at Iowa State University, with funding from the National Pork Board, initiated an **industry-wide survey** involving U.S. swine breeding herds to **identify potential risk factors that will be used to direct our next steps** to prevent prolapses on sow farms.

The project included:

- 104 Sow farms across the US
- About 385,000 sows total
- 85 farms from larger production systems and 19 independent producers
- Range in sow inventory from 600-10,000 sows
- Farms located in 15 US states

Project Design

Information was collected on:

Whole herds

- Weekly prolapse incidence for 1 year
- Management practices (breeding and farrowing)
- Nutrition (formulations, management, antibiotic usage, feed analysis)
- Facility type (housing type, water and feed delivery, ventilation)
- Performance records

Individual animals

- Tail length
- Body condition score
- Perineal score (high or low risk of prolapse)

Table 1. Summary of inventory and mortality for 104 farms from 15 U.S. states.

| | Average Bred Sow Inventory | Prolapse Incidence (Prolapses/1,000 sows/week) | Annualized Total Mortality | Annualized Mortality from prolapses | Annualized Non-Prolapse Mortality |
|--------------------|----------------------------|--|----------------------------|-------------------------------------|-----------------------------------|
| Average | 3,713 | 0.52 | 12.7% | 2.7% | 10.0% |
| Minimum | 614 | 0.07 | 4.1% | 0.3% | 3.4% |
| Maximum | 10,606 | 1.98 | 23.8% | 10.3% | 21.4% |
| Standard Deviation | 2,000 | 0.34 | 4.0% | 1.8% | 3.4% |
| Total | 386,166 | | 100% | 21% | 79% |



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Project Outcomes

- A **perineal scoring system** was developed to assess risk of prolapse – sows with a higher perineal score are more likely to prolapse
- **Identification of several different risk factors** that need further investigation to verify their causality for increased prolapse risk and potential mitigation strategies
- Building an **ongoing collaboration** with commercial farms from multiple production systems across the US swine industry for field research, allowing comparisons within and between production systems.



Factors that DO NOT seem to influence prolapse incidence

- Tail length
- Herd size
- Farrowing assistance strategies (induction and sleeving protocols)
- Artificial insemination hygiene

Additional funding has been secured from the National Pork Board and the Foundation for Food and Agriculture Research (FFAR) to investigate how to increase whole herd survivability. Please find out more about our collaborative efforts and stay up to date with our research at <https://piglivability.org>.

Future Directions

Areas that need more investigation according to our data because **these could influence prolapse incidence**:

- Bump feeding (especially sows with lower body condition score (BCS))
- BCS (thinner sows were more likely to prolapse than over conditioned sows)
- Water treatment systems
- Antibiotic usage in feed
- Blood biomarkers in sows with high risk of prolapse compared to low-risk sows

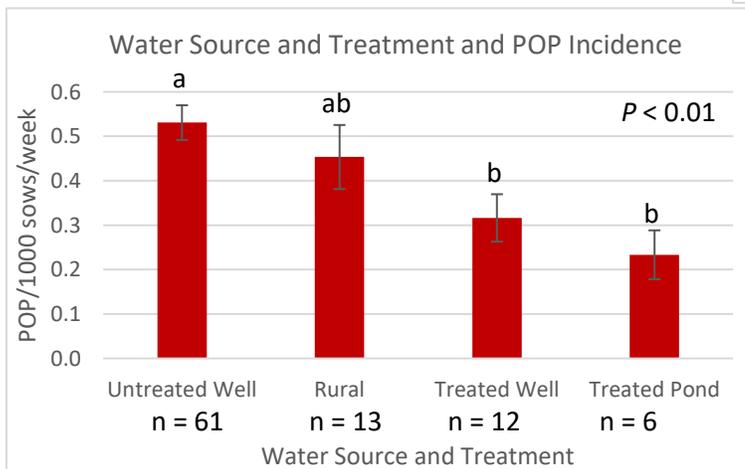
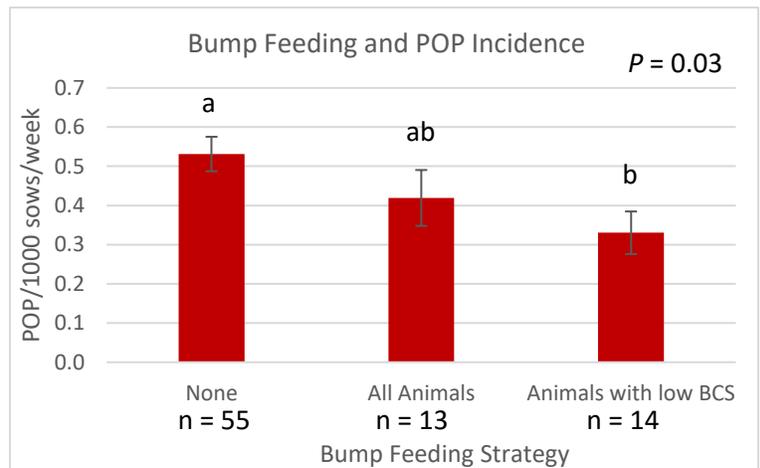


Figure 1 (above). Farms that bump fed sows with lower body condition score (BCS) had lower prolapse incidence. 55 farms did not use bump feeding, 13 farms bump fed all animals, and 14 farms only bump fed those considered to have a low BCS. Bars with different superscripts differ significantly ($P < 0.05$).

Figure 2 (left). Farms with untreated well water had higher prolapse incidence compared to treated well and treated pond water. Farms with rural water were not different in prolapse incidence from treated or untreated water. Bars with different superscripts differ significantly ($P < 0.05$).