

A practical approach to early intervention to reduce sow mortality

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An integrated approach to improve whole herd pig survivability

<https://pigliability.org>

Jason Ross, Joel DeRouchey, Michael Tokach, Jason Woodworth, Kara Stewart, Nick Gabler, Anna Johnson, Aileen Keating, Daniel Linhares, Suzanne Millman, John Patience, Chris Rademacher, Stephan Schmitz-Esser, Lee Schulz, Kent Schwartz, Ken Stalder, Amanda Chipman, Kristin Olsen

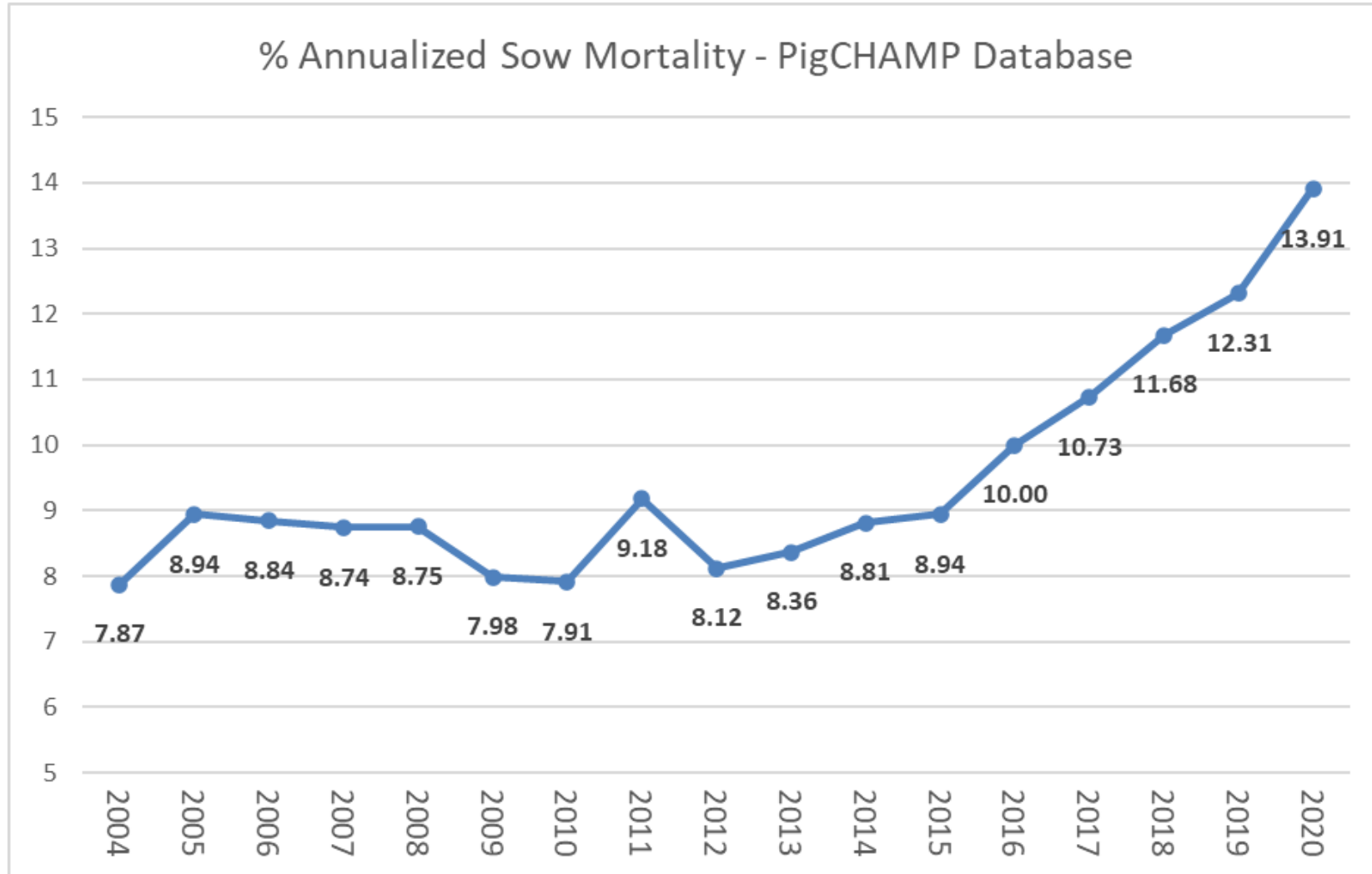
**5 year grant
\$2 Million USD**



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Sow Mortality (2004-2020)

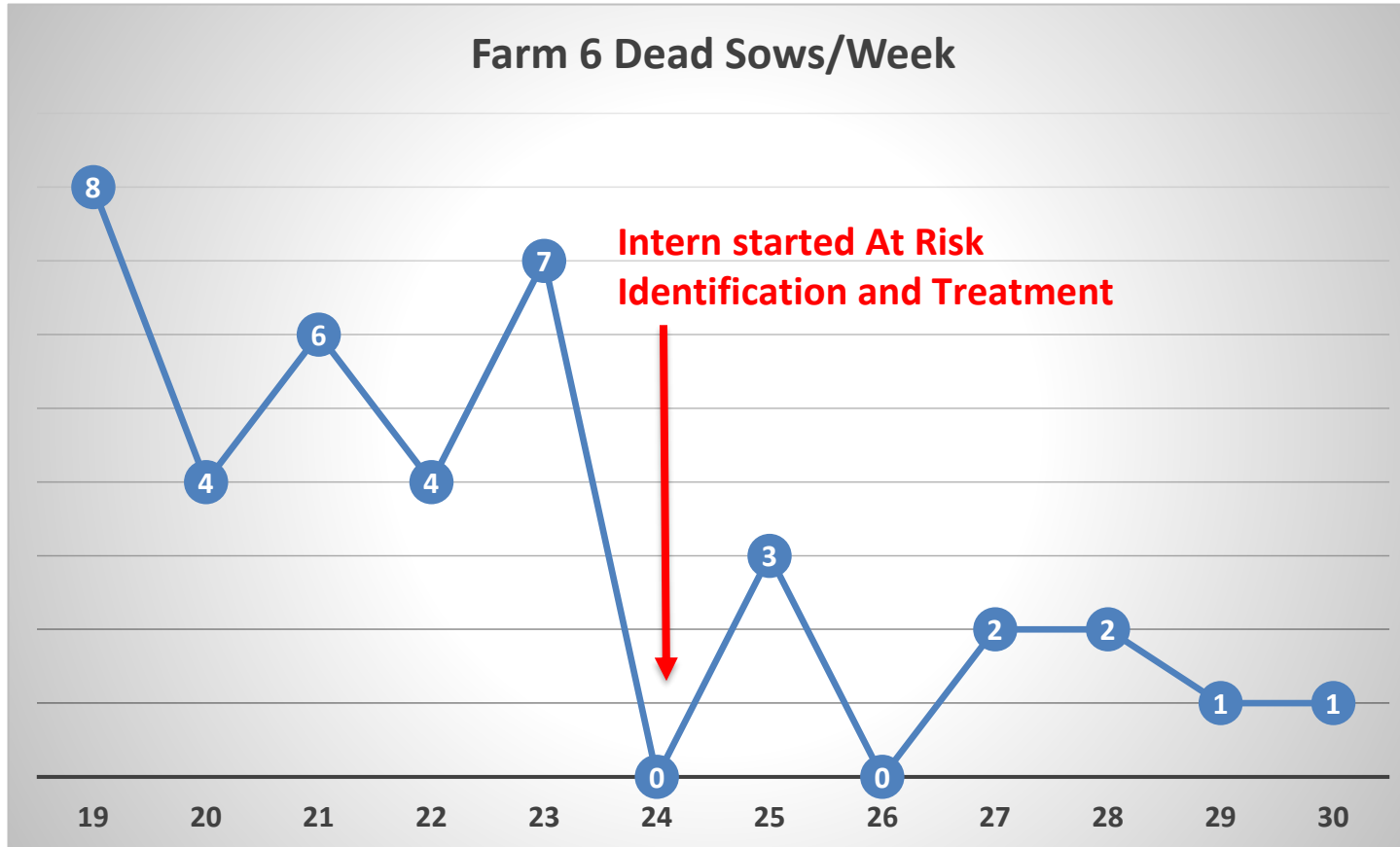


PigCHAMP >
Benchmarking

~ 350 farms

~685,000 sows

Weekly Sow Deaths - 2600 head sow farm



- **2010 Summer Intern Project**
- 7-week project
- Monday-Friday
- Walking Gestation Barns after morning feeding
 - Identifying At Risk Sows
 - Appropriately treating At-Risk sows

Intern left Week 31 → 5-8 deads per week again

Sow Mortality- Project Objectives

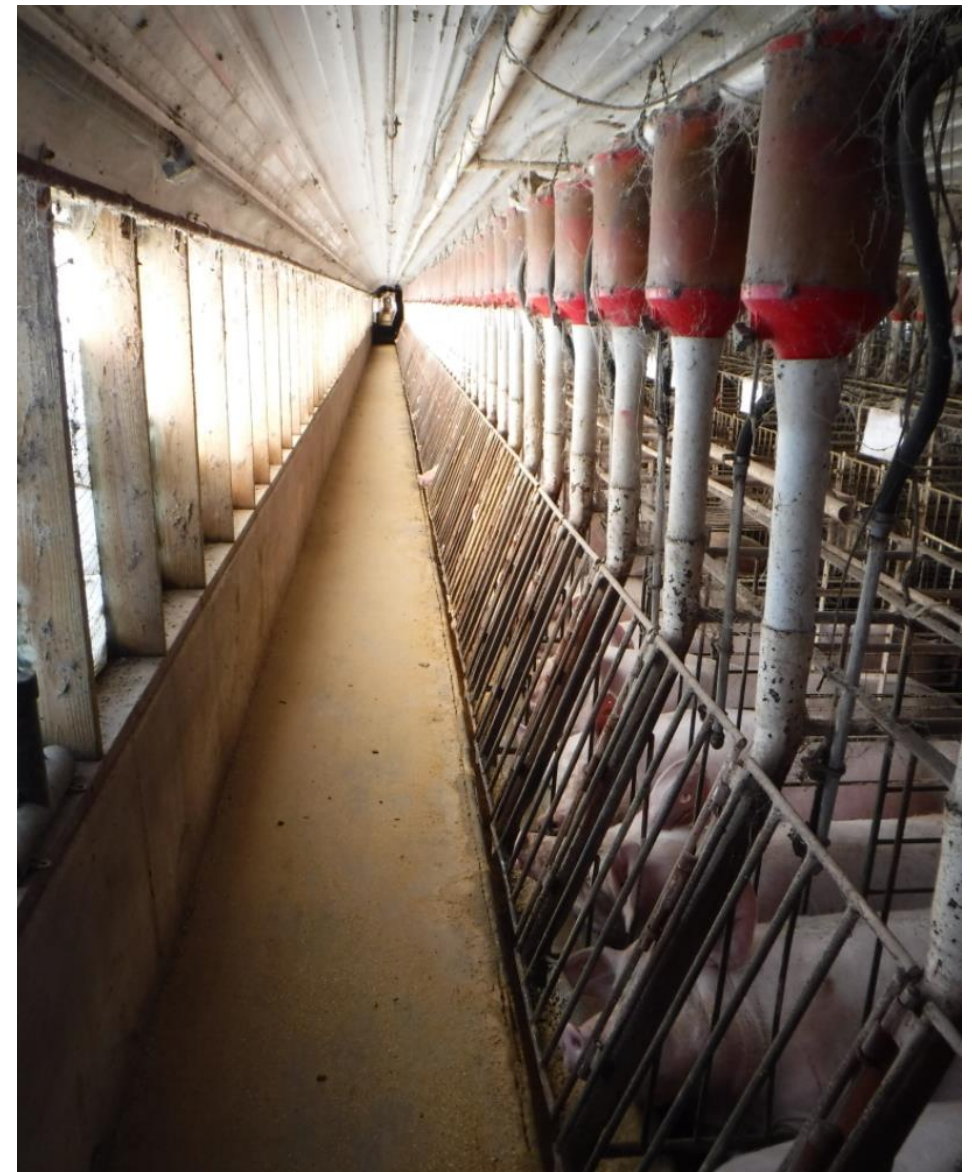
- **Primary Objectives:**

- Can we see a reduction in sow mortality by increased emphasis on identifying and treating disadvantaged sows.
- What is the time requirement to do this on a daily basis?
 - ROI calculation on the additional labor cost
- Can this protocol be transferred to farm staff and continue to maintain the mortality reduction?



Farm Background

- 4000 head sow farm in Iowa
- 3 breeding and gestation buildings
 - Stall breeding and gestation
 - **No evaluation done in farrowing**
- PRRS and Mhp Positive
- Mash feed in drop boxes
 - Fed once per day in AM
- 17% current sow mortality
- Training done June 7-18, 2021



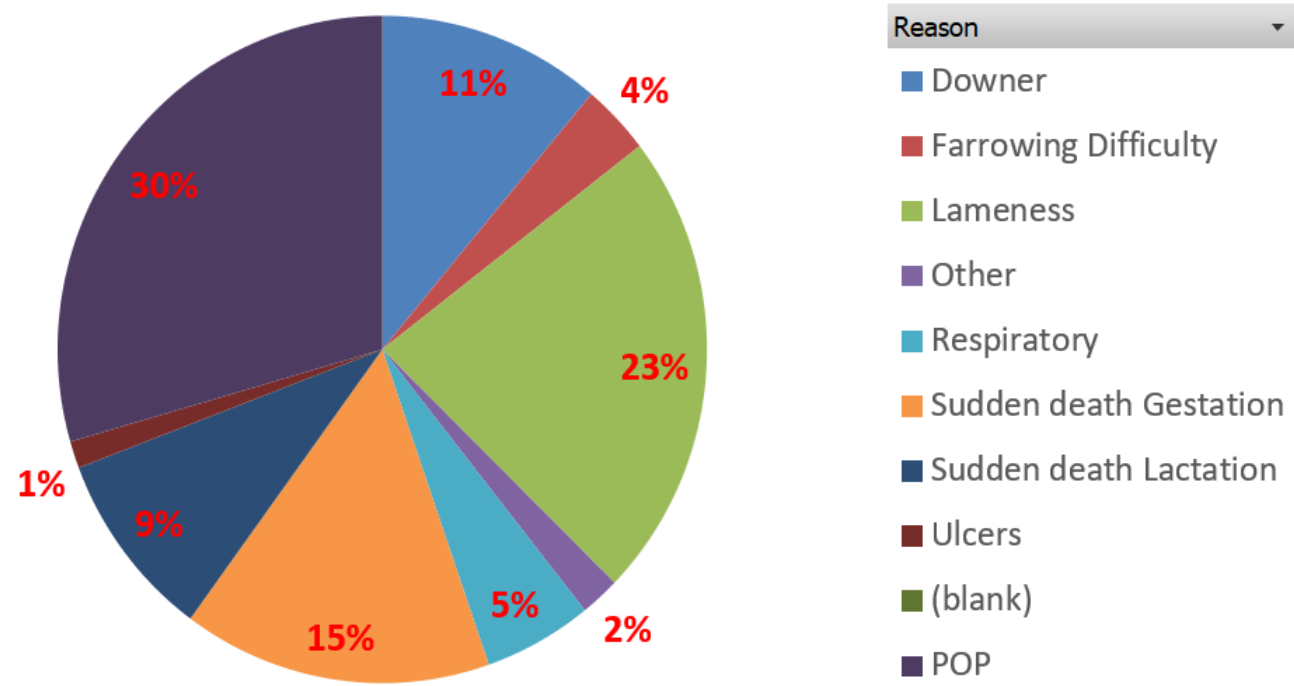
Farm Background

- **Sow Mortality Reasons**

- January – June 2021
- Pelvic Organ Prolapses – 30%
- Lameness and Downers - 34%
- Sudden Deaths – 24%

Count of Reason

Mortality by Reason 2021



Farm Treatment Protocol

Condition	Fever	No Fever	Secondary Option
Off Feed	Flunixin-S + Oxytetracycline (Agrimycin 200 or Noro 300)	Flunixin-S	Naxcel / Ceftiflex, and Dexamethasone (farrowing only)
Lame / Downer / Bad Legs	Flunixin-S + Linco	Flunixin-S, and Linco	Naxcel / Ceftiflex, and Dexamethasone (farrowing only)
Mastitis	Dexamethasone + Oxytetracycline (Agrimycin 200 or Noro 300)	Dexamethasone + Oxytetracycline (Agrimycin 200)	Consult with Vet Services
Discharge / Retained	Flunixin-S + Oxytetracycline (Agrimycin 200 or Noro 300)	Oxytetracycline (Agrimycin 200 or Noro 300)	Naxcel / Ceftiflex, and Dexamethasone (farrowing only)
Diarrhea	Tylan 200	Tylan 200	Naxcel / Ceftiflex
Abortion	Flunixin-S	No treatment	Oxytetracycline (Agrimycin 200 or Noro 300) if a discharge or retain
Respiratory	Flunixin-S + Oxytetracycline (Agrimycin 200 or Noro 300)	Oxytetracycline (Agrimycin 200 or Noro 300)	Naxcel / Ceftiflex, and Dexamethasone (farrowing only)

Identification and Training

- 1 ISU Vet + 1 Gestation Barn Staff
- Walked B&G barns as sows were being fed.
 - 1 in front and 1 behind
- Any females not eating or up at the feeder were flagged by hanging card.
 - Come back later to assess and treat
- **Goal** – Finish identifying at-risk sows before they lay down post-eating.
 - 30 minutes per barn/room





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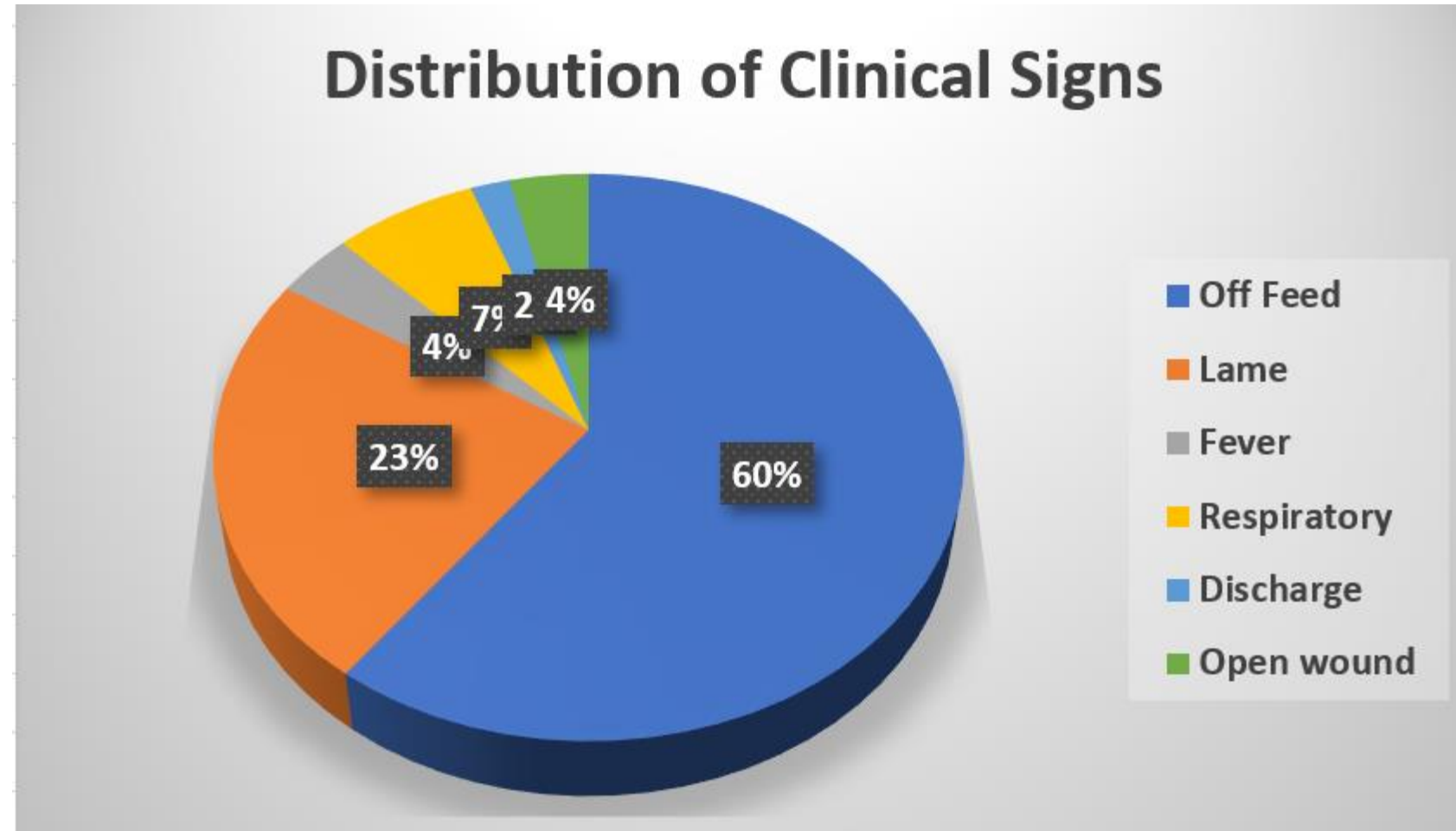
Follow Up Examination and Treatment

- **When it works best for the staff**
- Staff decides when to come back and assesses the sow and decides to treat.
- Some farms may treat during identification while others may do later in the day while other tasks are completed (breeding, heat checking, etc)
 - Treatments according to farm SOP by symptom



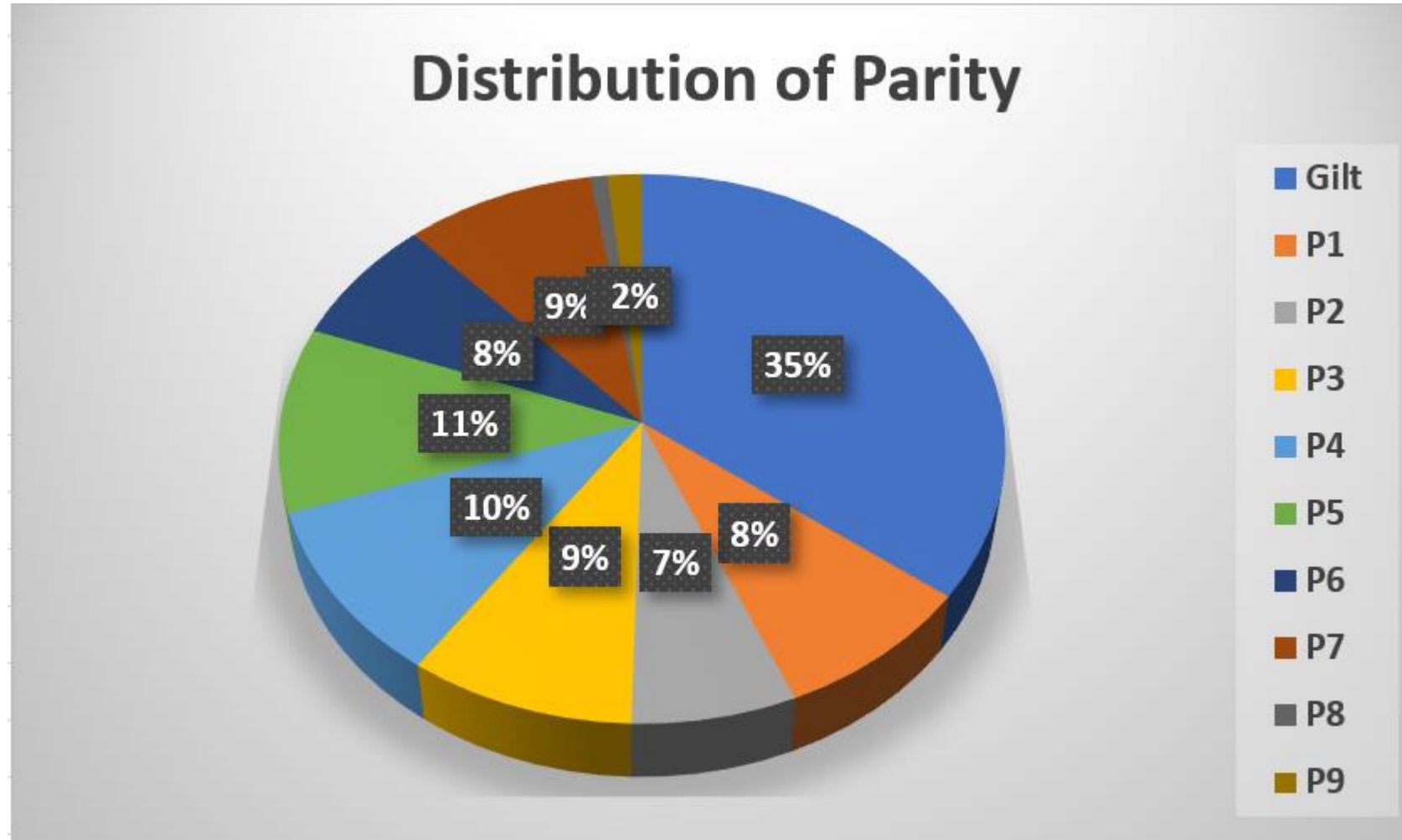
Clinical Signs – 2 week evaluation

- Off-feed was primary sign
- 30% had 2 symptoms
 - Most common is off-feed + lame



Parity

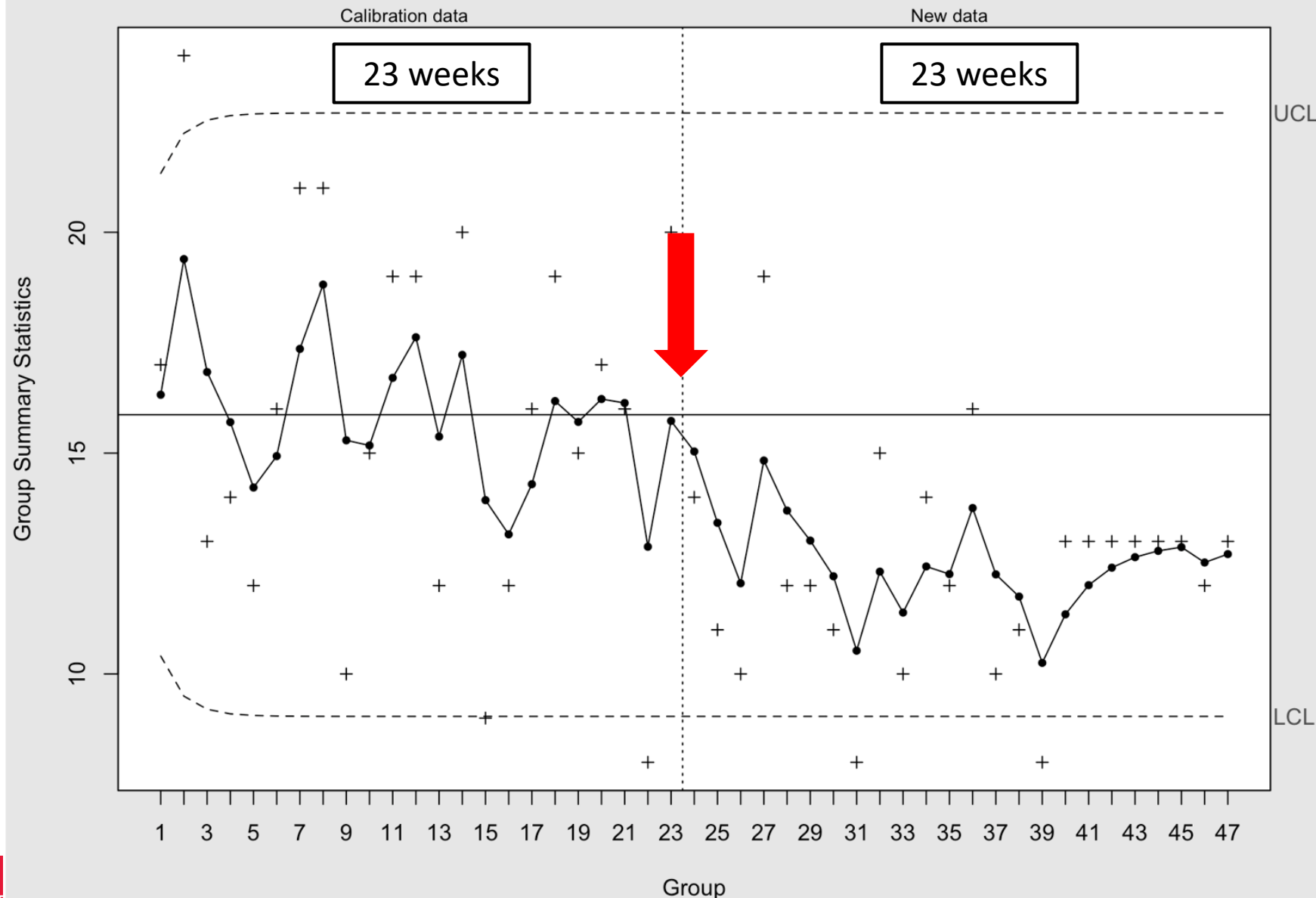
- Gilts were the primary parity that were identified as at-risk
 - Not adjusted for parity distribution of farm.



Evaluation of Training

- Weekly sow deaths per week
 - 4.25% reduction in annualized sow mortality
 - 16.75% to 12.5%
- Chi-squared test for proportions (before and after training)
 - $p=0.007$

Sow deaths/week EWMA SPC



Number of groups = 47
Center = 15.86957
StdDev = 4.553514

Smoothing parameter = 0.4
Control limits at 3*sigma
No. of points beyond limits = 0

What is 4.25% worth?

- ISU Economic Opportunity Model
 - Opportunity cost of losing pregnant females
 - Additional cull sow income
 - Fewer replacement females
- **\$50 USD per sow**
 - 4800 sows = \$240,000 USD per year
 - 4800 sows @ 25 PSY = 120,000 wean pigs/year
- **\$2.00 USD per weaned pig savings**

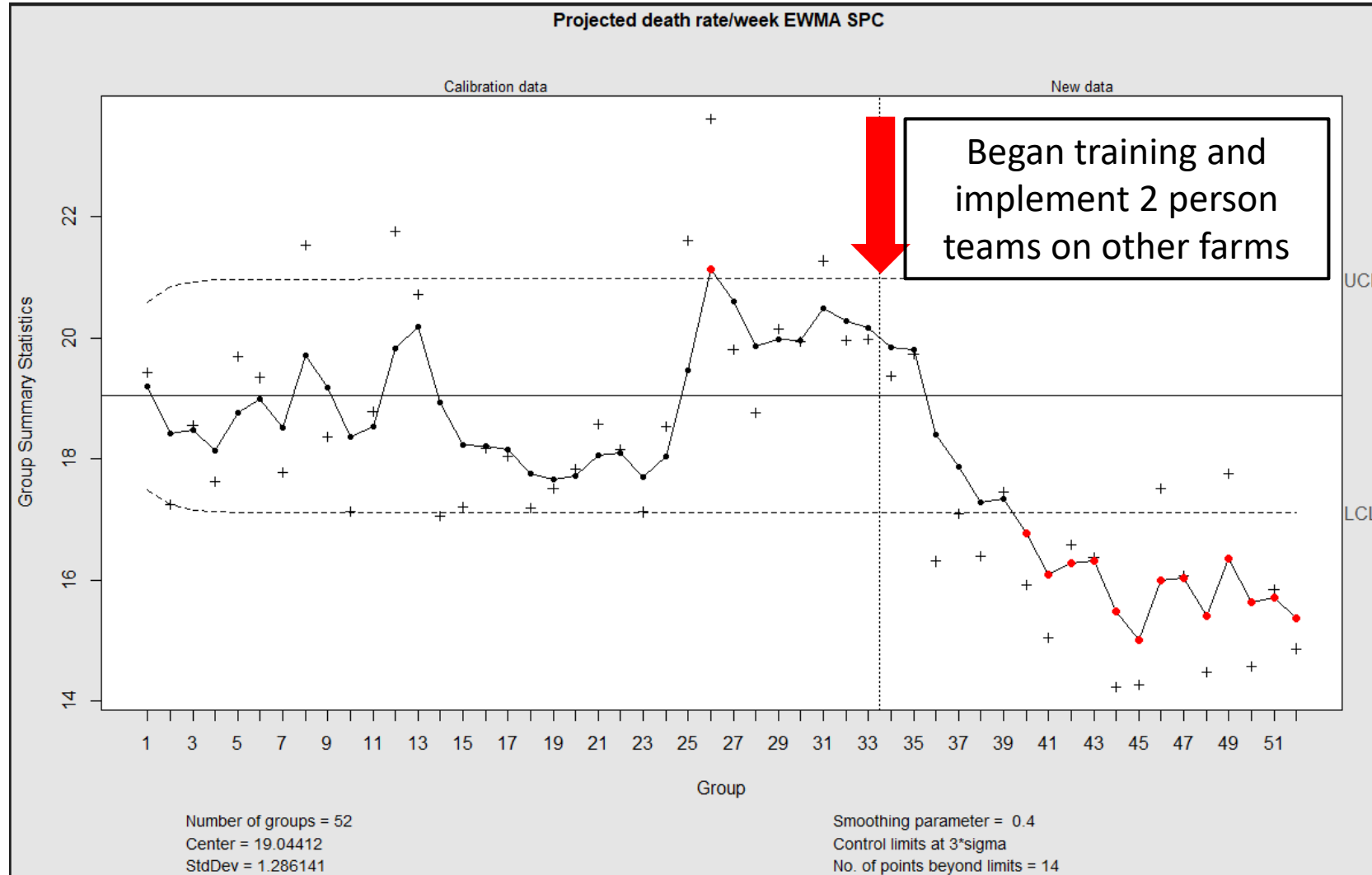
<https://www.extension.iastate.edu/agdm/livestock/html/b1-79.html>

The screenshot shows a webpage from Iowa State University's Extension and Outreach department. The page title is "Assessing Economic Opportunity of Improving Mortality Rate in Breed-to-Wean Swine Production". The author is Russ Eckert, an extension livestock specialist. The page includes a PDF icon and a link to the full document. The text discusses the challenges of high death loss in sow farms and the potential economic benefits of improving mortality rates. It mentions that the upper 10 percent of herds for sow mortality had an average death rate of 21.30% in 2021, while the lower 10 percent had a death rate of 7.30%. The page also includes contact information for the Iowa Pork Industry Center and a link to the National Pork Board and the Foundation for Food and Agriculture Research grant #18-147.

Time Series

- Time commitment = average 2 hours per day for at-risk identification for 2 people.
 - Identification of at-risk females can be done while walking the barn, sweeping feed into trough and doing barn checks
 - Vary based on herd size and number barns/rooms
- 1 hour per day for follow up treatment for 1 person to do the actual treatments (minimize treatment variation)
- **Additional 0.5 FTE**

System wide implementation (n=40 farms)



Phase II

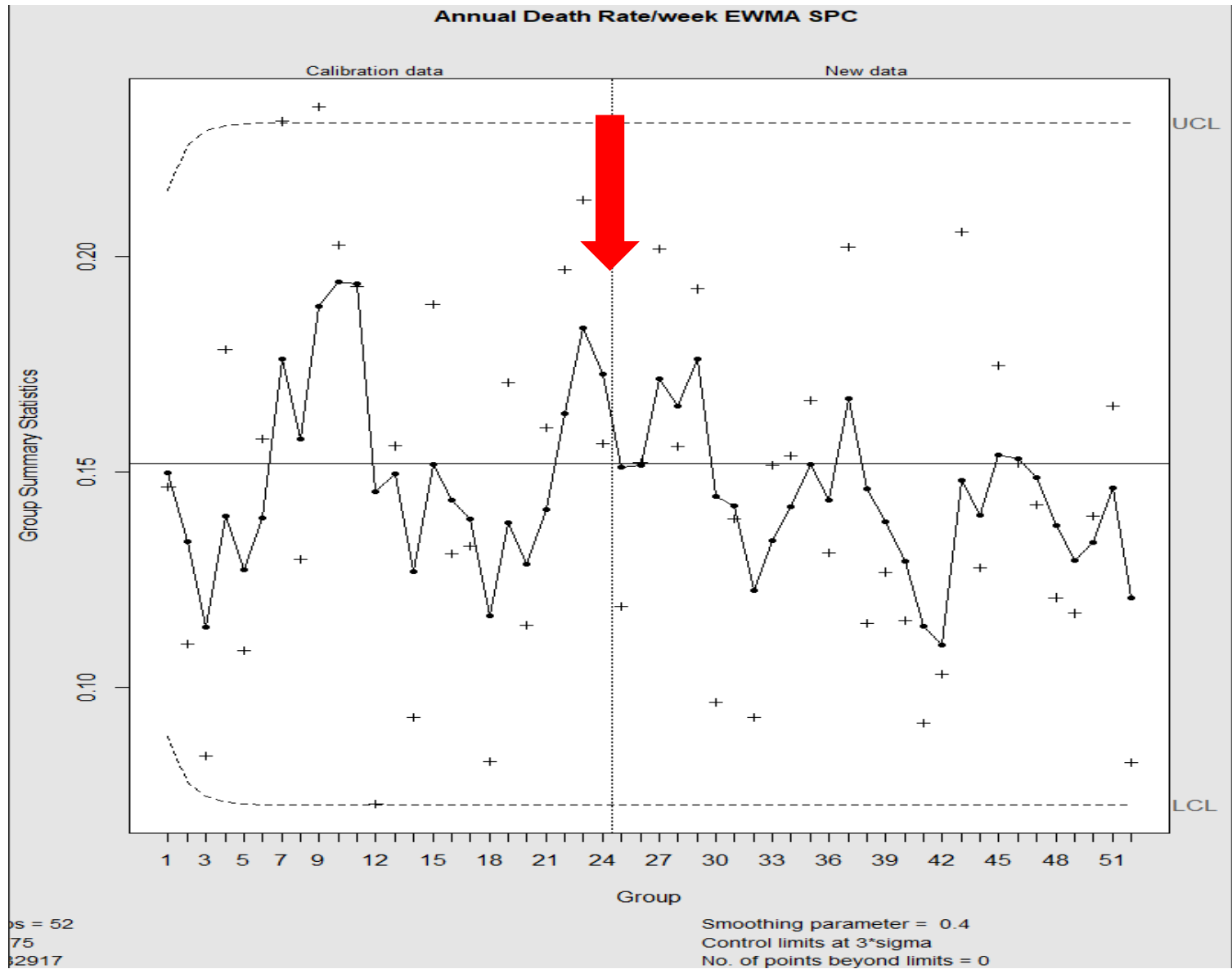
- Repeat on Pen Gestation Farm
 - 4200 head sow farm
 - Stalls from Breeding to 55 days gestation
 - Pens from 55 days gestation to farrowing
 - May 4-11, 2022
 - Training farm and senior sow service staff



Group housed farm experience

- Observations

- Took a little longer – 3 hours for 3-4 man teams
 - 4 buildings + training
 - 2 man teams are still key
- Vulva biting in pens
 - Particularly in tighter stocking density
- Gilt treatments – off feed during stall acclimatization and Mhp infection
- Difficult to interpret off feed during post-weaning and around breeding
 - Longer time periods for gilts than sows
- Gilts and sows that are difficult to get up may suffer from front leg lameness, even though they may not show it.



Pen Gestation Sow Mortality

Before	After
15.2%	14.0%



Summary

- We have not prioritized early detection and individual sow treatments, particularly in breeding and gestation
 - Lack of appetite → Fantastic early indicator in once per day fed animals
 - By the time we treat them, it may be too late
 - Individual Sow Care = Individual Pig Care
 - Treat them as “A” pigs, not as “C” pigs
- Easily implementable
 - Just flag off-feed sows while feeding and sweeping in AM
 - Come back and treat later when appropriate.

Acknowledgements:

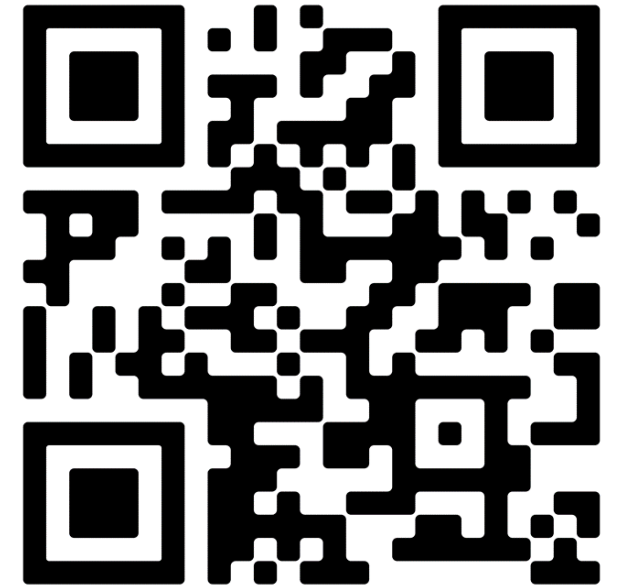


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- Dr. Cesar Moura
- ISF – Sow 010
- Dr. Pete Thomas



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Questions?

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