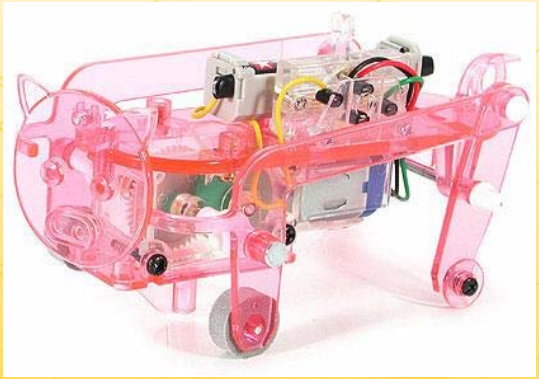
Why is lameness underestimated?

John Deen

UNIVERSITY OF MINNESOTA



UNIVERSITY OF MINNESOTA

Sow vs cow lameness?

- Little published
- Little measured, especially prospectively
  - We rarely trim feet
- Few diagnostic regimes
- Few interventions have been available
- Most common intervention, culling, not tested
  - Replacements usually available
- Low emphasis in many welfare codes

UNIVERSITY OF MINNESOTA

Why Lameness?

- Common site of harsh interactions with environment
- Common site of functional inhibition of pigs
- Common concern of public
- Readily evident and measurable problem and response

UNIVERSITY OF MINNESOTA

Lameness definition

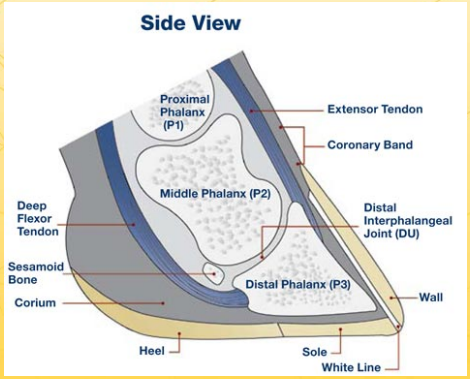
- **Aberrant behavior**
  - **Gait**
  - **Willingness to walk**
  - **Willingness to stand**
- **Limb pathology with subsequent iInhibition of functional activities**

Hiding Behavior

		During Feeding		
		lame	non-lame	total
During being moved	lame	15	1	16
	non-lame	9 (38%)	23	32
	total	24	24	48

$\chi 2 = 15.844$, df=1, p-value < 0.0005

Ballerina's are tough!



Courtesy Zinpro Performance Minerals

Four Functions to Flourish

- **F**eed – take in adequate nutrition
- **F**ight – compete and adapt in difficult conditions (disease, heat etc)
- **F**light – avoid difficult adverse conditions
- **R**eproduction – replacement

Are Flourishing Animals Fine?

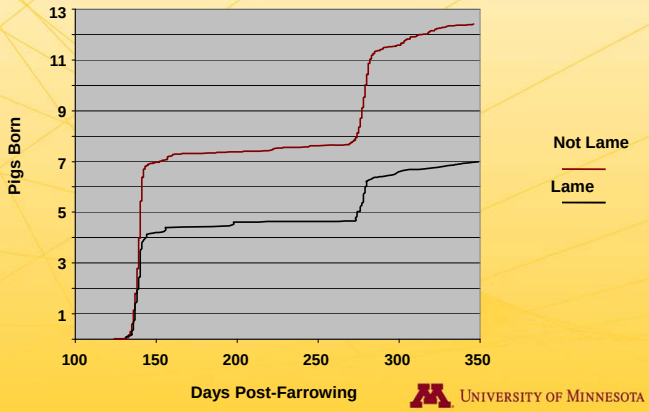
1. Yes – they are functioning well
   (the performance axiom)
2. Yes – affective states are designed to ensure proper function
   (evolutionary biology)
3. Maybe… but is it *natural*

Compromised Pigs

- Pain
  - A signal to create compensatory behaviors
  - gait, movement, standing
- Inflammation
  - a broader signal to physiologically compensate
  - food consumption, utilization, reproduction
- Death
  - a failure to adequately compensate

UNIVERSITY OF MINNESOTA

Cumulative sum of pigs per sow farrowed



UNIVERSITY OF MINNESOTA

Lameness Effects	Non-Lame	Lame
Pigs born/day	0.049	0.028
Days to removal	137	90
Avg days in herd	215	147
Replacement rate	49%	67%
Mortality/removals	0.24	0.35
Calculated Productivity		
Pigs produced by sow	10.5	4.1
Pigs produced by replacement	6.6	8.7
Pigs produced	17.1	12.8

UNIVERSITY OF MINNESOTA

Estimates of sensitivity and specificity of lameness assessment using a latent class model

	Sensitivity	Specificity
Lame	82%	84%
UL	90%	89%
LL	60%	67%

UNIVERSITY OF MINNESOTA

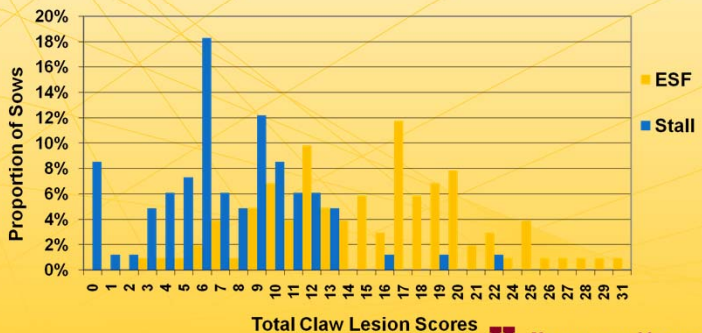
Odds ratios of risk factors associated with sow loss

Risk factors	35 d post farrowing		Before next parity	
	Odds ratio	Confidence interval	Odds ratio	Confidence interval
Piglets born alive	0.813***	0.745 – 0.887	0.916**	0.869 – 0.965
Average LFI (kg)	0.656*	0.454 – 0.947	0.827NS	0.670 – 1.022
Non lame vs. lame	0.260***	0.147 – 0.461	0.626*	0.430 – 0.912
Parity 1 &2 vs. >5	0.181***	0.082 – 0.397	0.548**	0.377 – 0.795
Parity 3 to 5 vs. >5	0.285***	0.163 – 0.498	0.558***	0.407 – 0.765

NS – not significant; *** <0.001; ** <0.01; * <0.05

UNIVERSITY OF MINNESOTA

Proportion of sows with different levels of total claw lesion scores in pens with ESF and in stalls



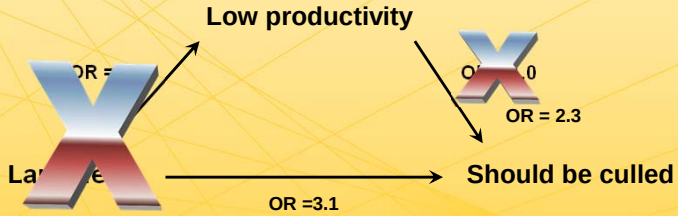
UNIVERSITY OF MINNESOTA

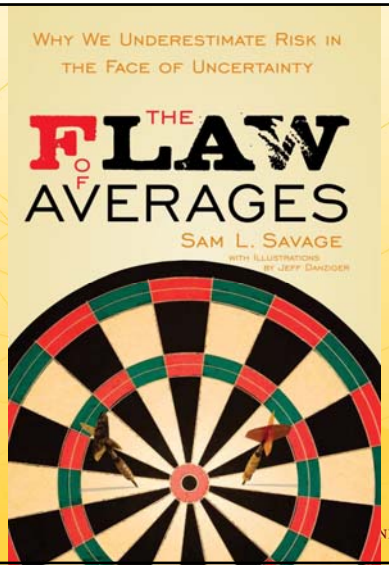
Putting lameness in the mix of sow decisions

- It is a multicost disease:
  - Welfare
  - Replacement
  - Productivity
  - Labor
  - Logistics
- It is treated by culling
- It is not measured
- It is not well controlled

B. Abandonment of weak or sick pigs in general pig population. As noted, weak or sick pigs are often not isolated or removed from the general pig population in a timely manner—if at all.

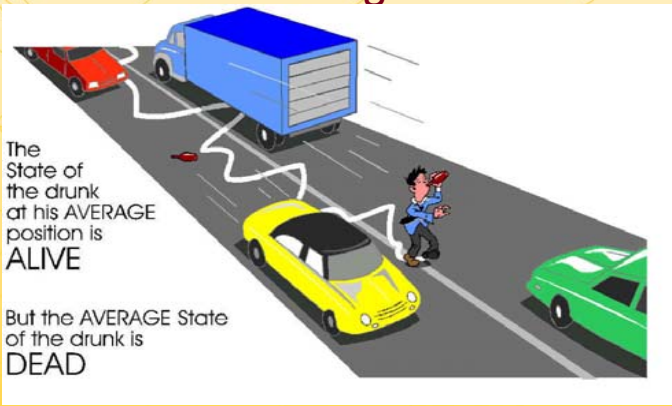
Path model for sow retention





NIVERSITY OF MINNESOTA

The Flaw of Averages



UNIVERSITY OF MINNESOTA

UNIVERSITY OF MINNESOTA

Opportunities

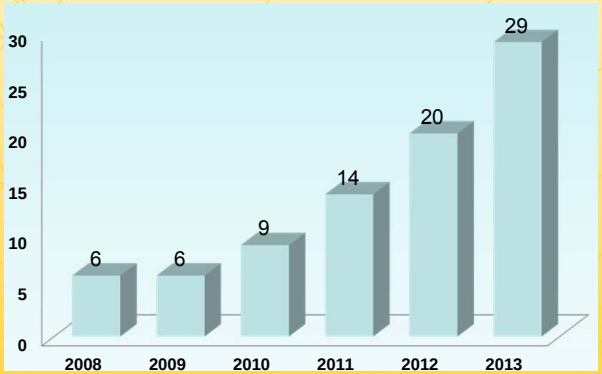
- Increased sow retention
  - Lameness
  - Reproduction
- Stable gilt requirements
- Decreased variation in output
- Lower gilt production costs
- Better welfare
- Ease of production

UNIVERSITY OF MINNESOTA

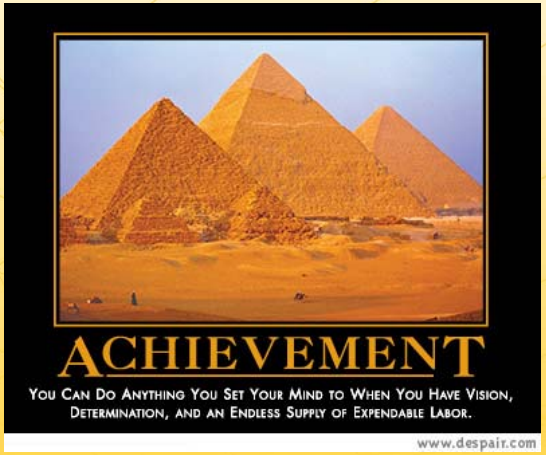
Profits is a driving force

- ***Facility utilization***
- Replacement costs
- Salvage costs
- Progeny quality
- Logistics
- $161- $447 per lameness diagnosis

Publications on sow lameness (non-infectious)



University of Minnesota



University of Minnesota