

# **Welfare Standards for Beef- On-Dairy Animals**

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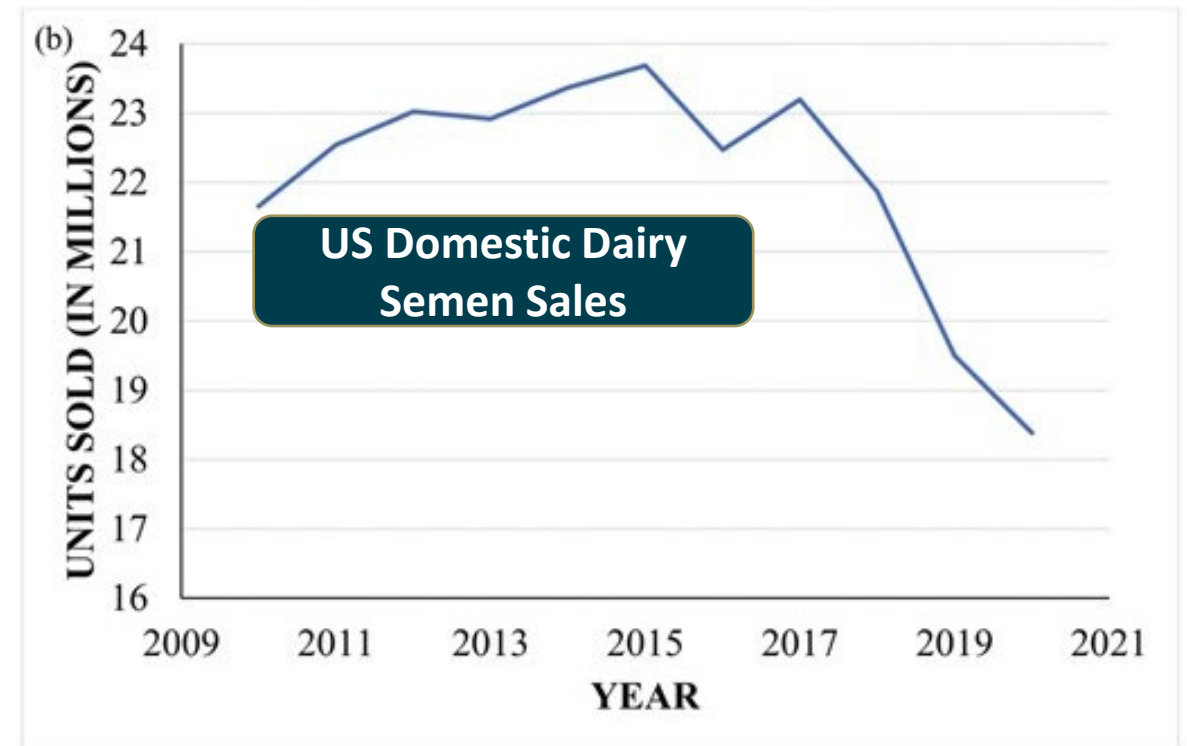
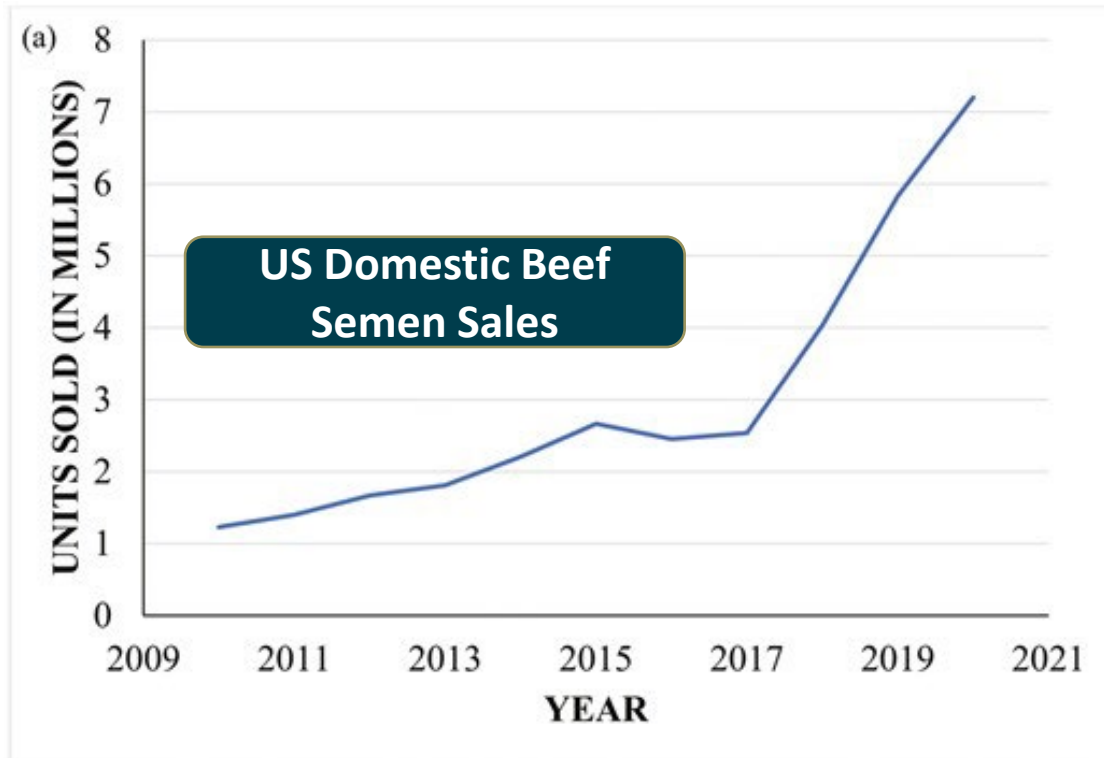


# A few terms...

- Dairy beef
- Surplus calves
- Dairy steers
- Beef-on-dairy/beef × dairy/BXD

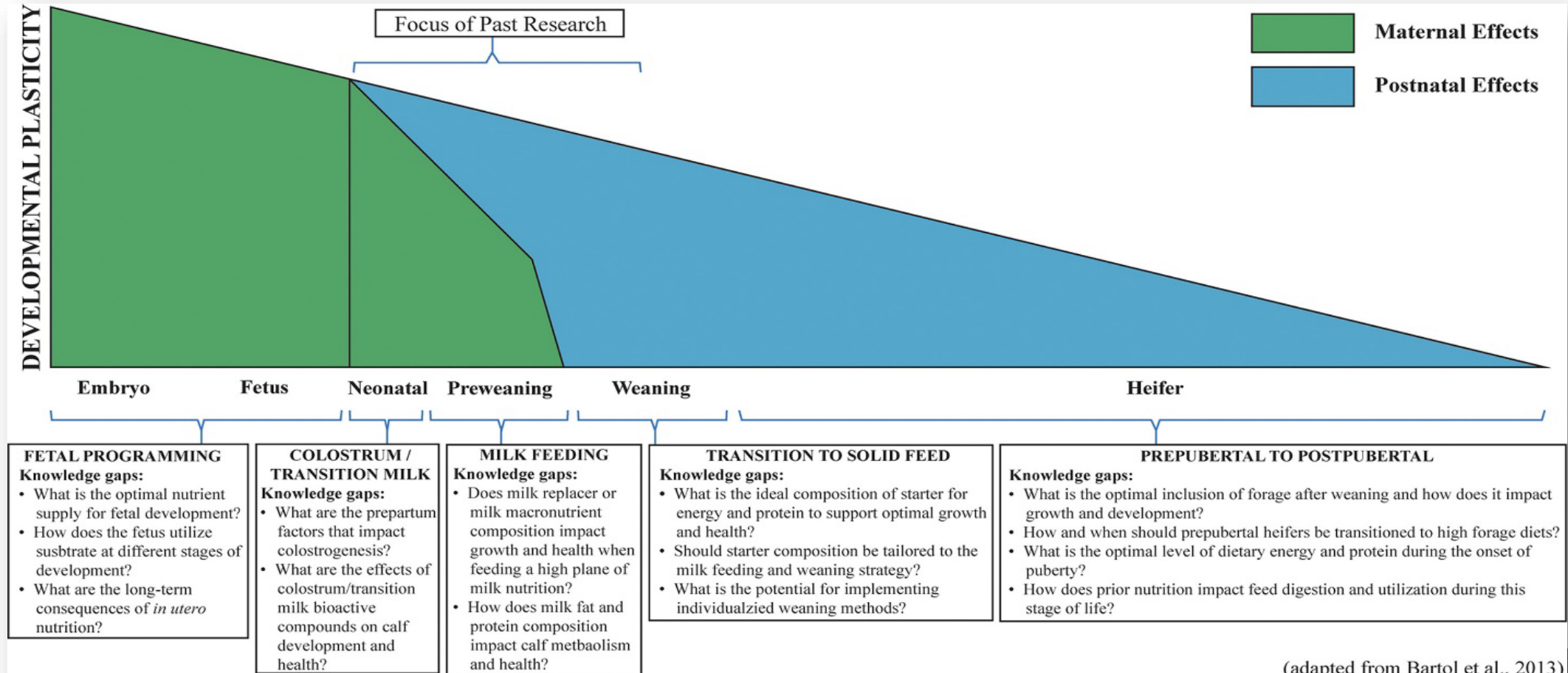


# What got a dairy scientist into beef research?



Basiel & Felix, 2022. TAS 6: txac025

# We have the opportunity in early life to direct long-term outcomes



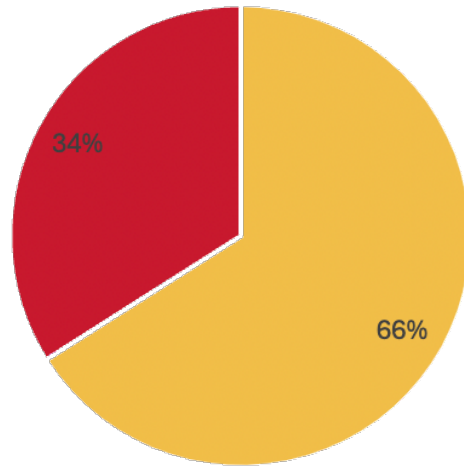
(adapted from Bartol et al., 2013)

# Where do BXD calves fit?



# 2024 Survey of Iowa Dairy Producers

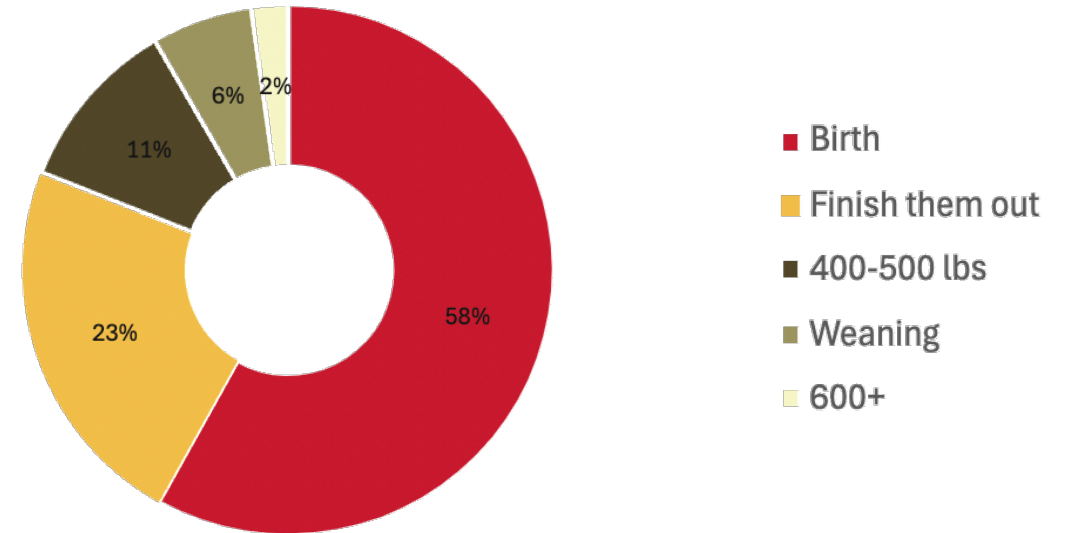
Do you currently use beef semen?



n = 247

■ Yes ■ No

Beef-on-dairy Marketing Timepoints



n = 179

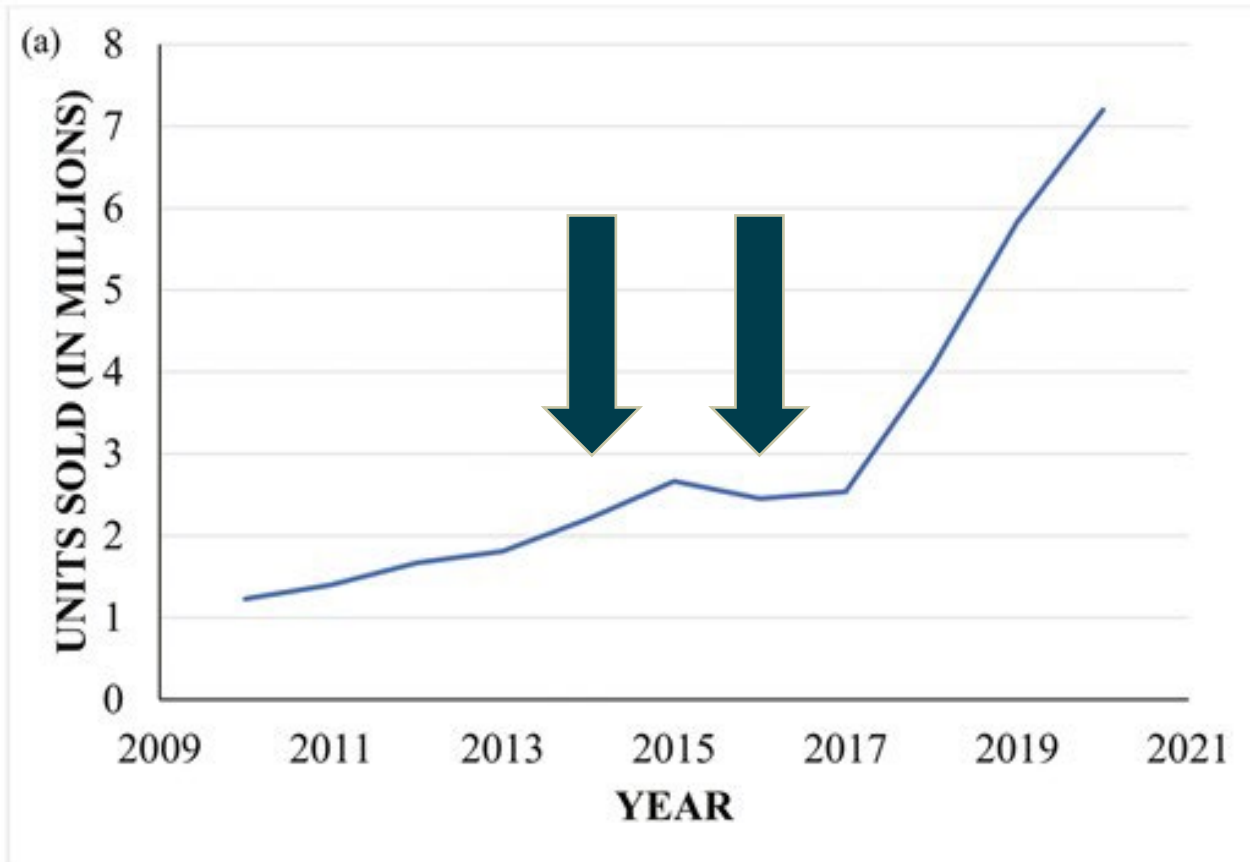
- Birth
- Finish them out
- 400-500 lbs
- Weaning
- 600+

# Calf prices are sky-high



Source: USDA via Lancaster Farming

# What do we know (or not know) about BXD calf welfare in the industry?



- NAHMS, 2014
- Pempeck et al., 2017



# What do we know (or not know) about BXD calf welfare in industry?

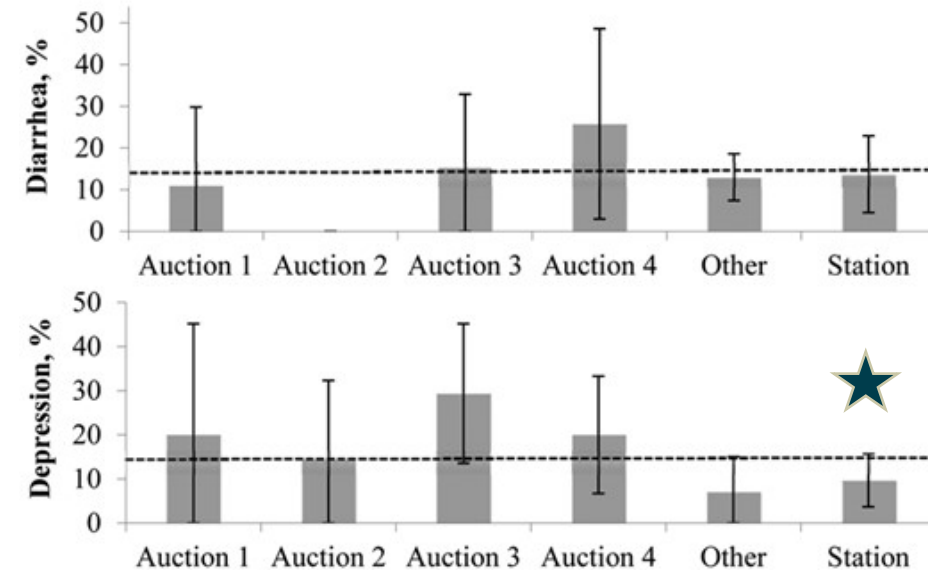
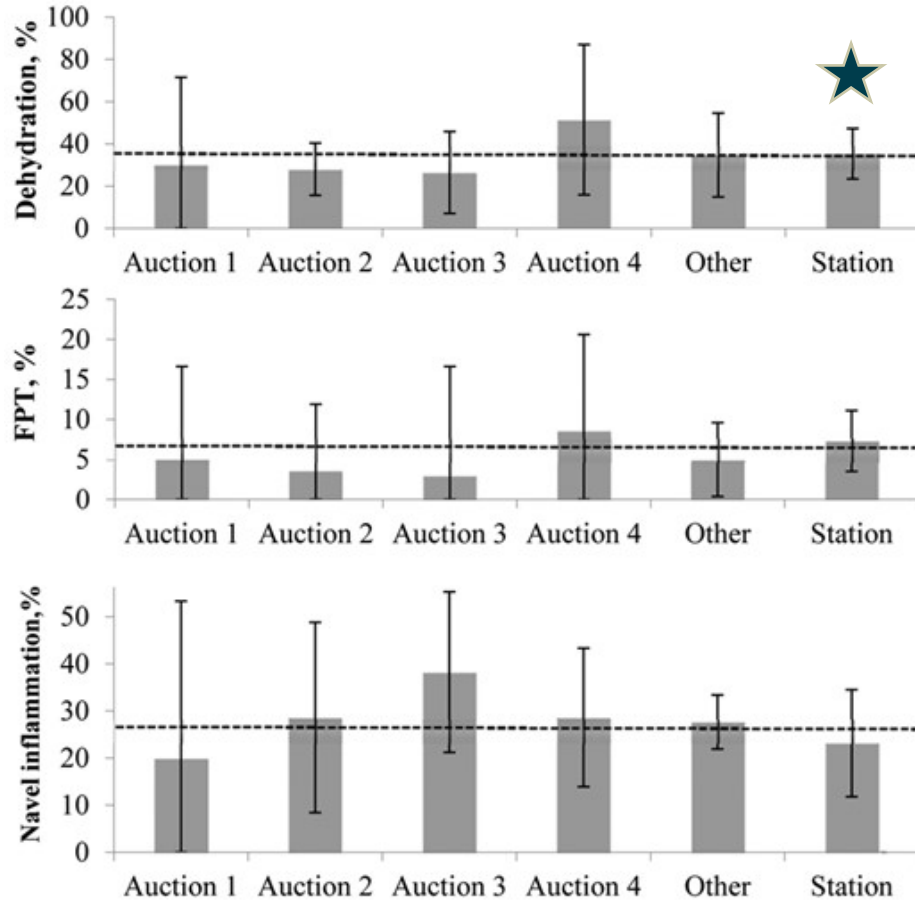


- Maggard et al., 2021
- Machuca et al., 2026
- Schafer et al., 2026;  
Locke et al., 2025

Source: USDA via Lancaster Farming

# Veal calf health on the day of arrival at growers in Ohio

★ Auction site influenced or tended to influence



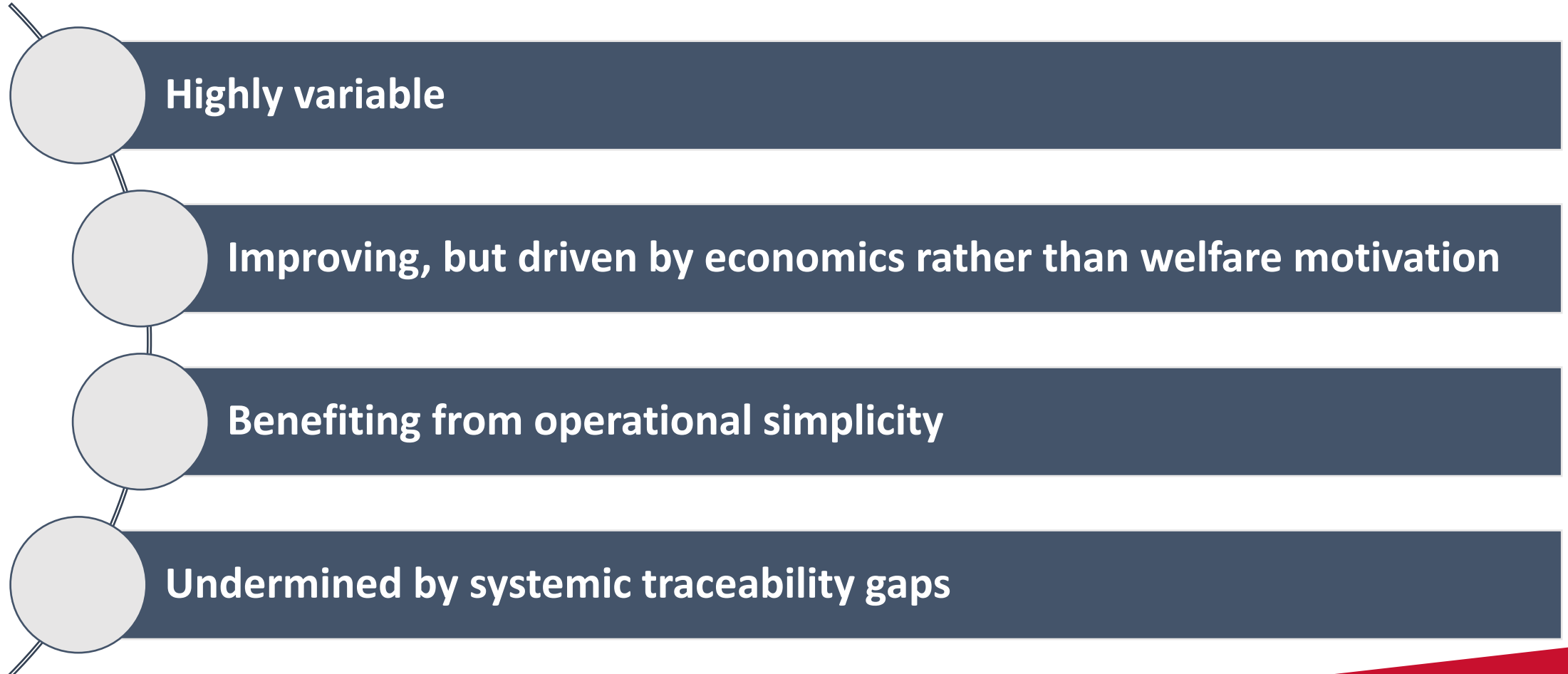
**“We conclude that there are many opportunities to intervene before the calves arrive at the grower to improve their health and welfare. Efforts should be made to reduce transport time and provide hydration and energy (glucose and electrolytes) at the auction, during transport, and on immediate arrival at the grower.”**

# How do you collect data on an industry that's evolving so rapidly?

- Key informant interviews
- 6 interviews with industry representatives from different regions in the US
- Summarized using methodology described in Braun & Clarke, 2006



# **BXD welfare management in the first three months of life is...**



# Supply chain & movement

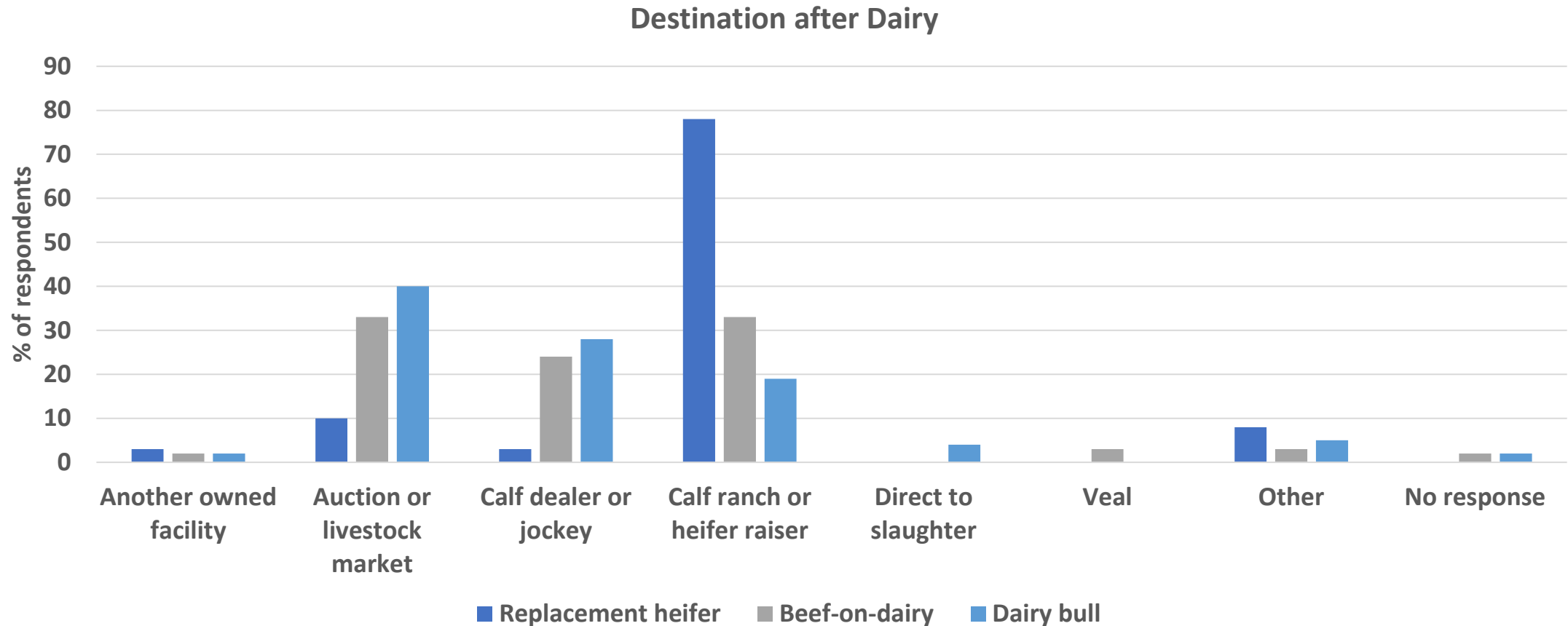
- **Regional differences drive supply chain structure**
- **Calf depots serve a distinct welfare staging function**
- **Farm size influences calf destination**
- **Most calves are transported at a young age, and industry experts suggest this may not be detrimental**
- **Specialization vs. mixed operations varies across growers**
- **The majority of dairies are moving calves off-farm**

# What are the destination options?

- Amish growers (NE)
- Calf depot for staging (MW, SE)
- Calf ranches (W)
- Sale barns (smaller dairies)
- Some raising their own



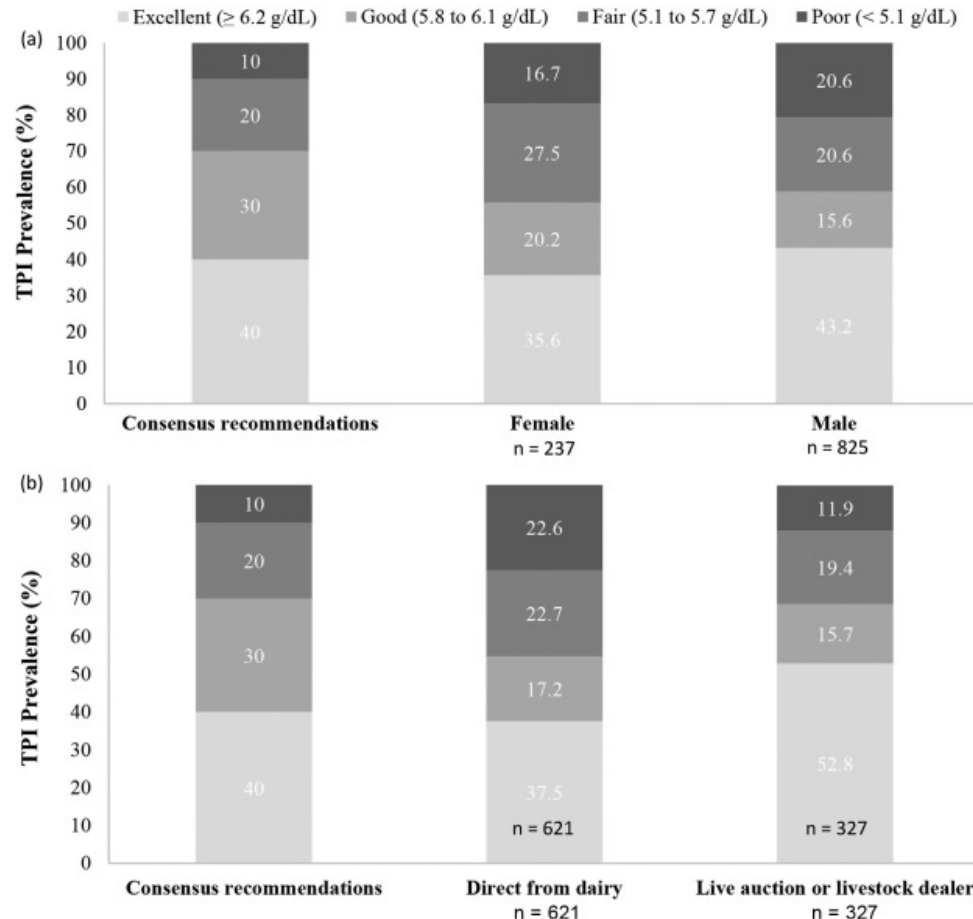
# Preweaning calf transportation practices in the United States: A cross-sectional survey



# **Calf processing & Day 1 management**

- **Colostrum as the primary welfare gap, with accountability mechanisms emerging**
- **Easier to treat all calves the same during processing (vaccines, navels, etc.)**

# Condition of surplus dairy calves during marketing: A cross-sectional study



Source affected...

- ✓ FTPI
- ✓ Diarrhea
- ✓ Depression

Sex affected...

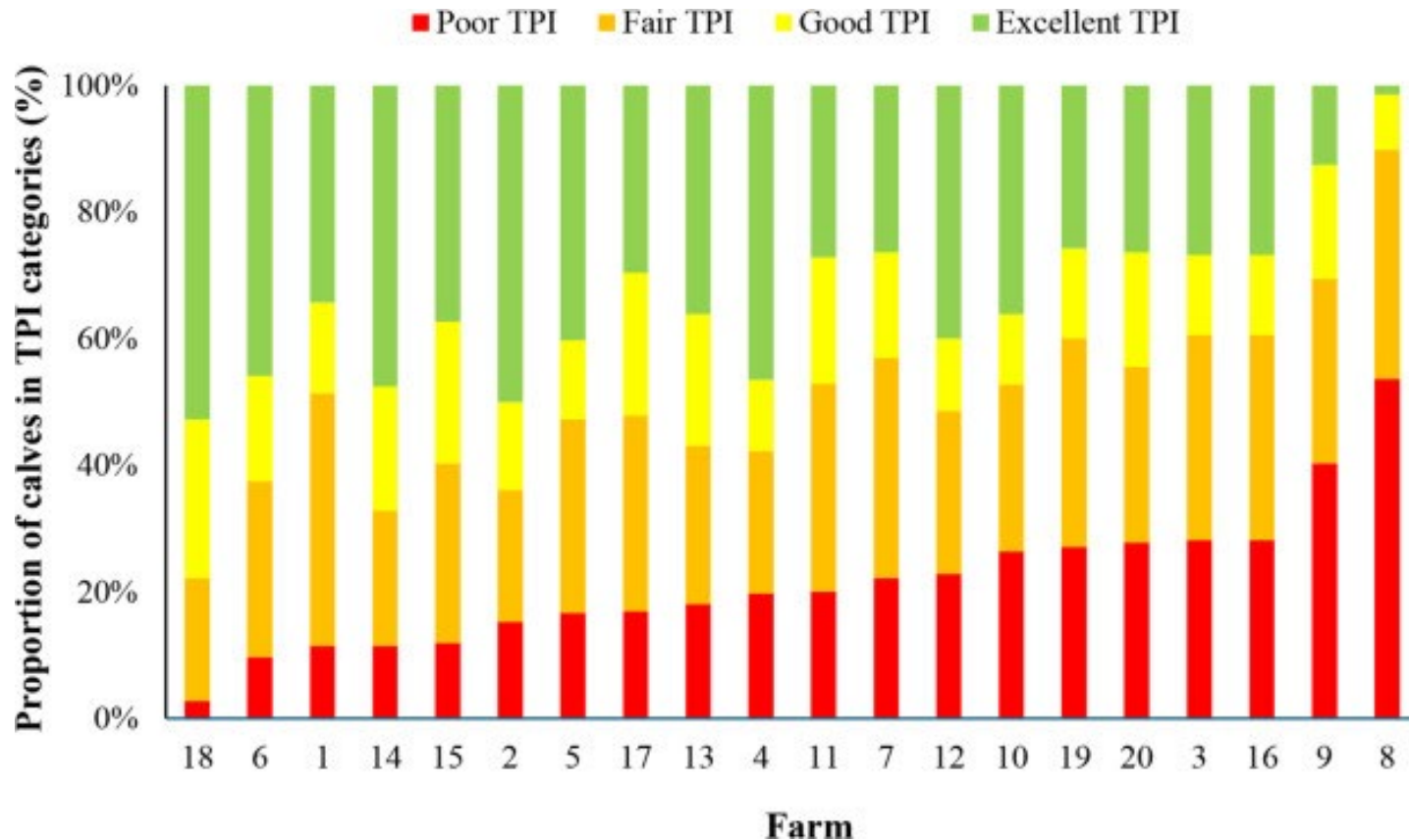
- ✓ Navel inflammation

BW affected...

- ✓ FTPI

Maggard et al., 2024. JDS 107: 2444

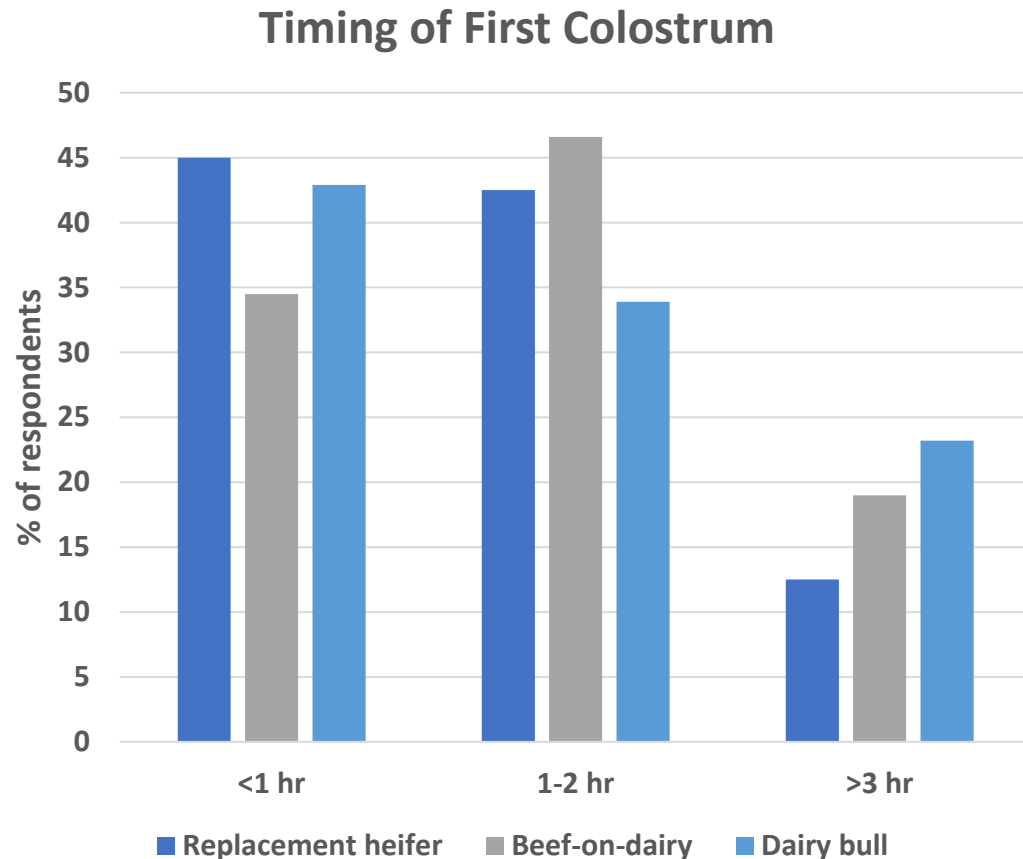
# Condition of calves on arrival at dairy-beef calf-raising farms in the Midwestern US



- TPI classification influenced risk of diarrhea
- Source type (auction vs. calf dealer vs. dairy farm) influenced FTPI

Schafer et al., 2026. JDS (in press).

# Preweaning calf transportation practices in the United States: A cross-sectional survey



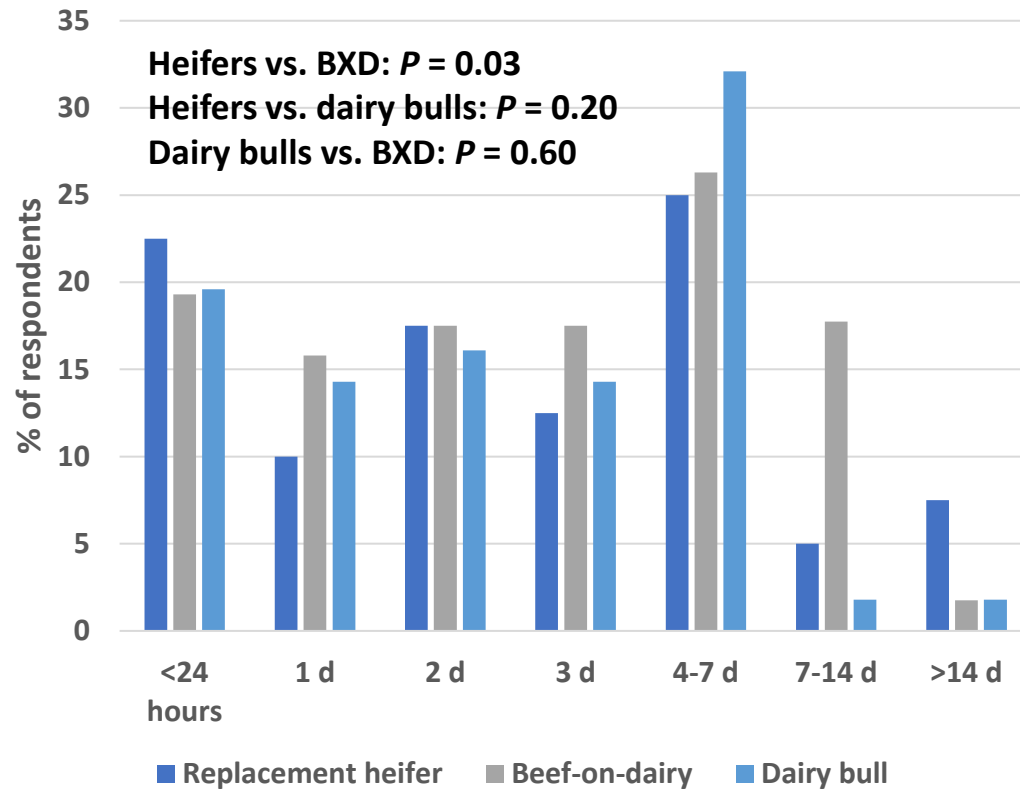
- Similar practices in total colostrum quality across calf classes
- Similar timing after birth to first feeding across calf classes

# Transportation

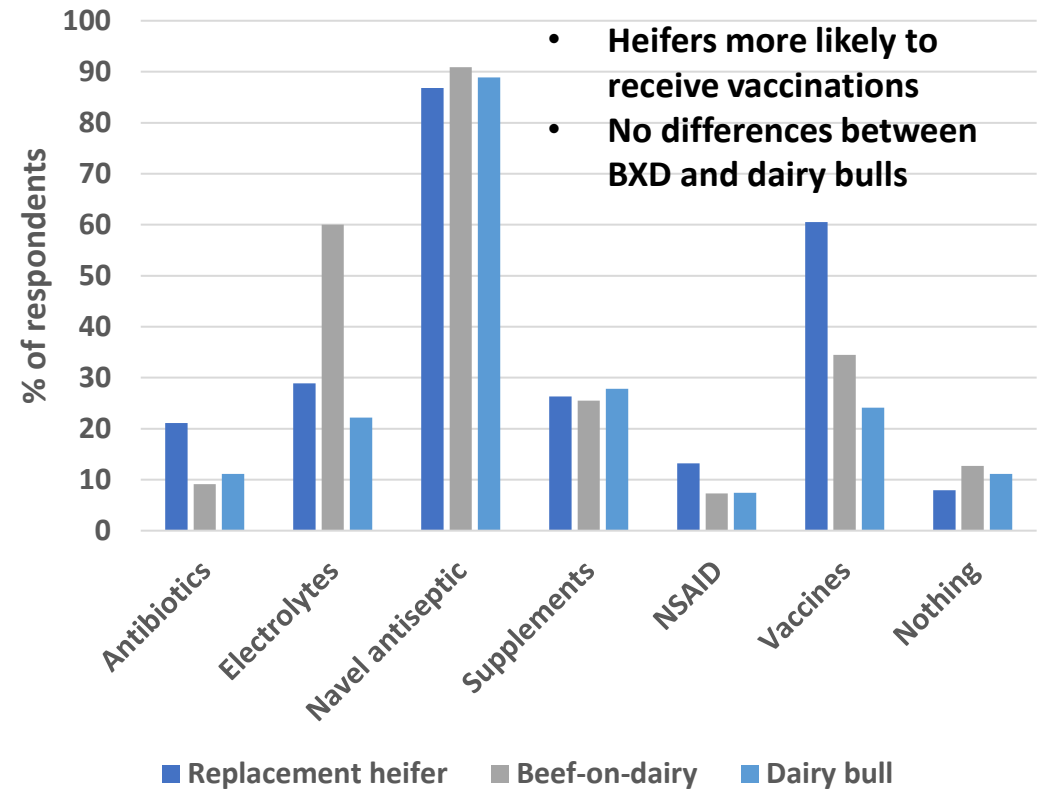
- **Transportation challenges for BXD calves are less distinct from replacement heifers than anticipated, with the exception of the sale barn pathway**
- **Multifactorial nature of transportation stress**
  - **Cominglings/number of trips vs. duration**
- **Lack of consensus on transportation prep**

# Prewearing calf transportation practices in the United States: A cross-sectional survey

## Age at Transport



## Preconditioning Practices



# Housing & management

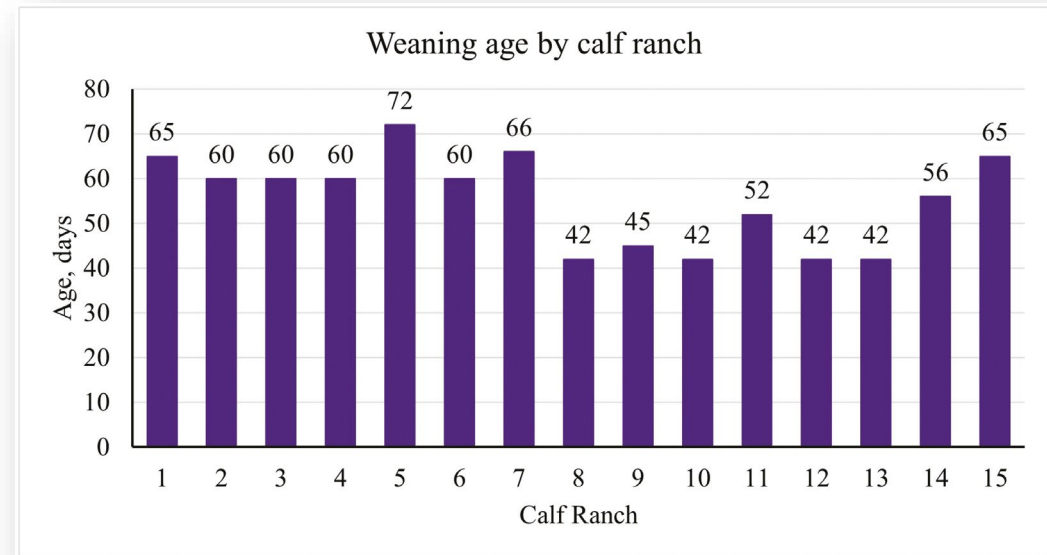
- **Individual housing as industry norm**
- **California-style wooden crates persisting despite welfare concerns**
- **Quality of individual housing varies even if the form is consistent. Ventilation is not always adequate.**

# Nutrition

- Investment in BXD calf nutrition is increasing but takes varied forms, driven primarily by economics rather than welfare motivation
- BXD genetic advantage buffers nutritional gaps
- Protocol standardization when raised together
- Twice daily feeding as industry standard
- Post-weaning as a black box for all calves
- Step-down weaning as emerging standard. Keep protocols simple (e.g., drop from 2x to 1x).
- Weaning age variability with BXD genetic influence. Not a lot of agreement across interviewees, and BXD will double birth weight sooner.

# Beef-on-dairy calf management practices in commercial calf ranches

- **15 calf ranches in 3 regions**
  - **High Plains ( $n = 7$ ):** Kansas, Texas, New Mexico
  - **Midwest ( $n = 6$ ):** Indiana, Ohio
  - **West ( $n = 2$ ):** California



Bigelow et al., 2025. TAS 9: txaf064

# Health

- **Treatment tracking exists but is inconsistent and low-tech**
- **Veterinarian-guided protocols are increasingly common**
- **Arrival management focused on scours prevention**
- **Antibiotic use is variable with emerging stewardship awareness**
- **Vaccine protocols are highly variable and producer-driven**
- **Scours and pneumonia are the dominant health challenges**

# Future considerations

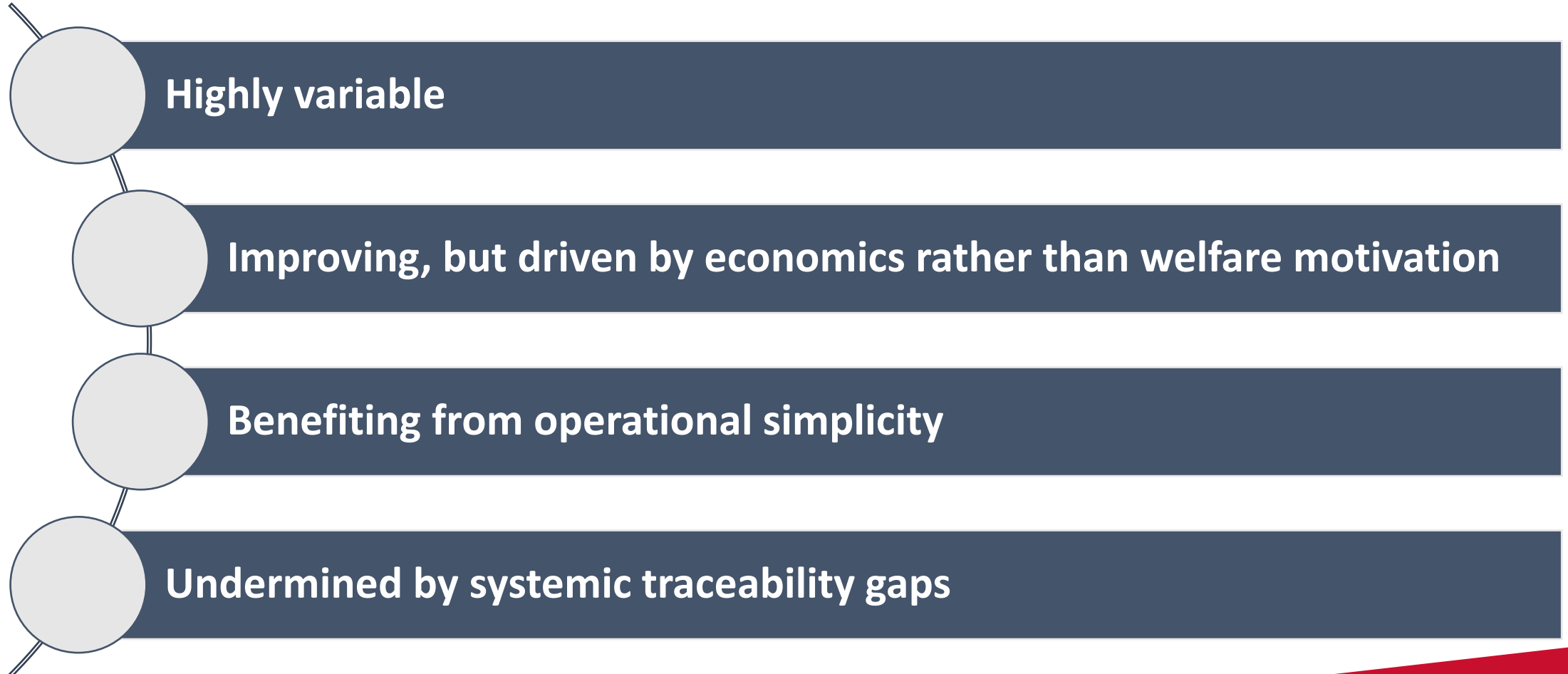


Industry-wide knowledge gaps that apply to BXD and replacements

The role of contracts in driving welfare accountability

Public perception as an industry concern

# **BXD welfare management in the first three months of life is...**



# Questions & Discussion

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