



Improving the Wheels on the Car: Hoof Health and Mobility

Ashley Ling, PhD

World Dairy Expo | Madison, WI | October 1, 2025

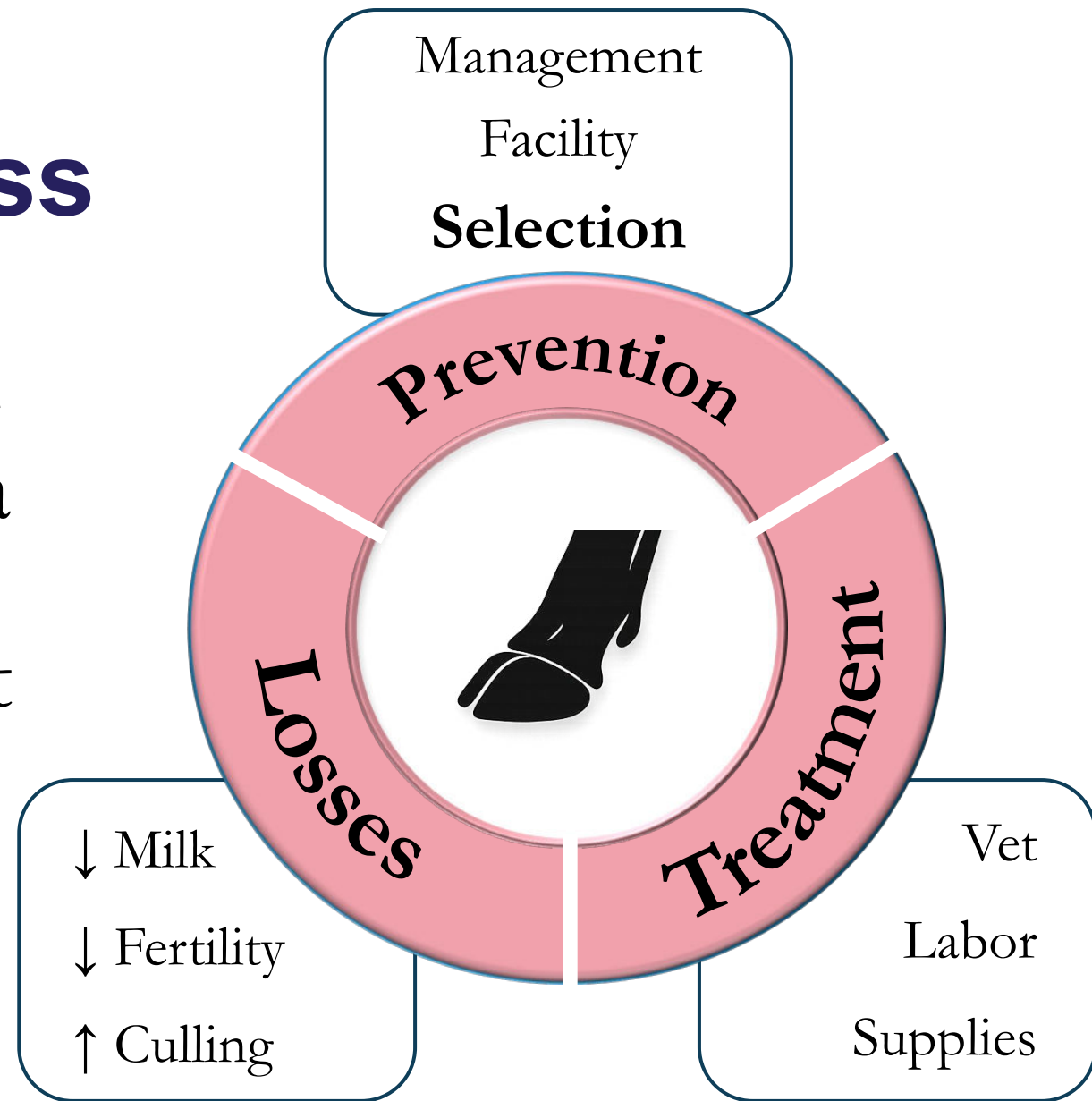


Introduction:

No Hoof, No Cow

The Cost of Lameness

- ▶ Herd lameness prevalence 23-70% in North America (Herringstad et al., 2018)
- ▶ Per cow costs estimated at \$120 to \$330 (Liang et al., 2017)



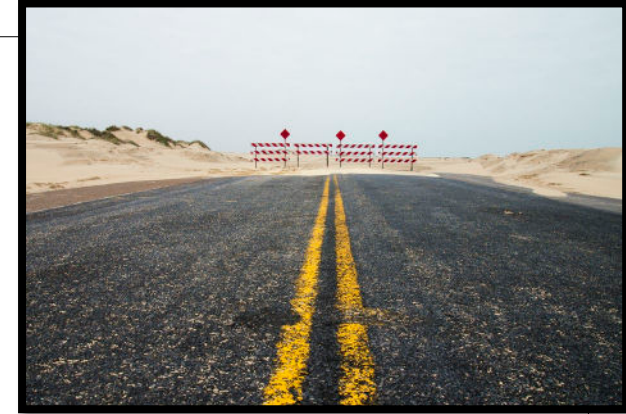
Production Losses: The Indirect Cost of Lameness



- ▶ Daily milk yield
~1.1-3.3 lbs/day
lower in lame
COWS (Warnick et al., 2001)

- ▶ Calving to
conception ~12-
40 days longer

(Lucey et al., 1986; Hernandez et al.,
2001; Alawneh et al., 2011)

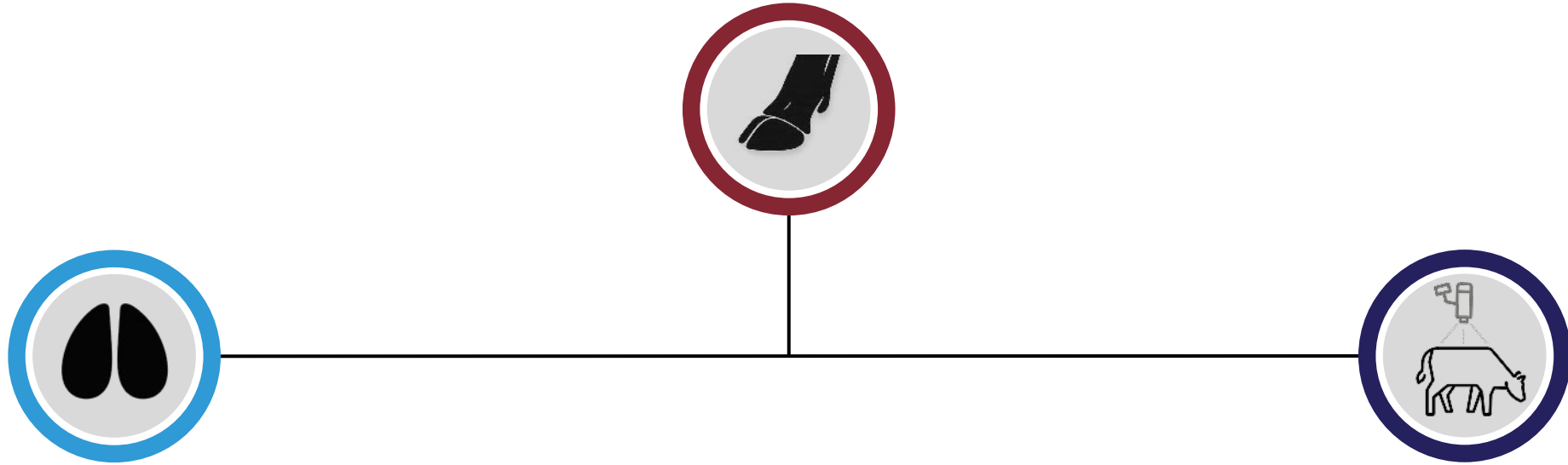


- ▶ 10-20% of
involuntary
culling (Green et al.,
2002; Cha et al., 2010)

Fewer Replacements, Older Herds

- ▶ Heifer replacement inventory down ~17% from 2015, while total dairy inventory holds steady (USDA-NASS)
- ▶ Expect more lactation 3+ cows
- ▶ Lameness risk increases significantly in lactations 3+ (Oehm et al., 2019)
- ▶ Selection for lameness resistance can help set up older cows for success

Hoof Health and Mobility: A two-sided solution to lameness



Hoof Health: Hoof lesion incidence sourced from trimmer records

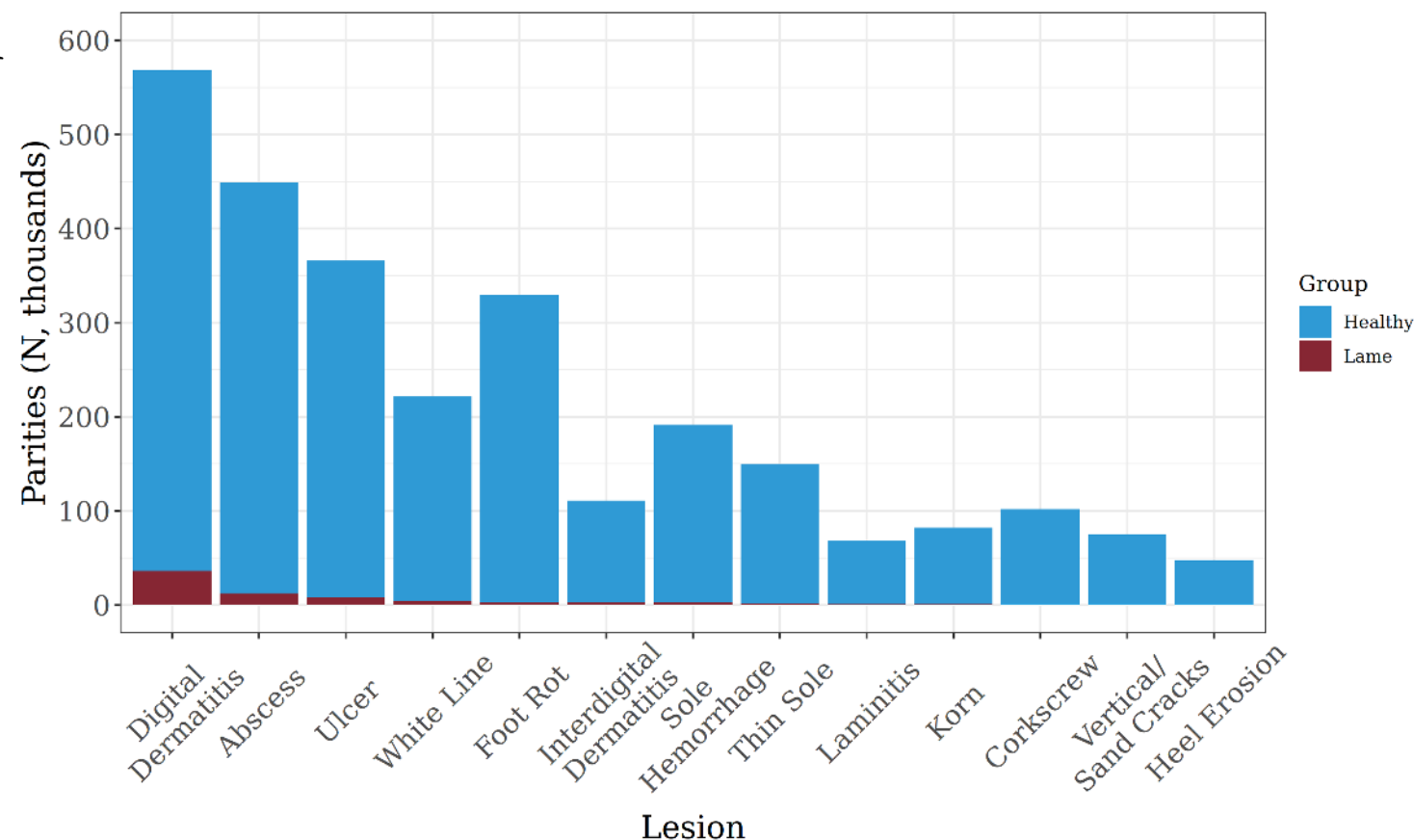
Mobility: Daily camera-generated mobility scores

Hoof Health

Development of a Hoof Health Trait



- ▶ 100k lesion events from trimmer records
 - 686 herds
 - 131k cows
 - 262k parities
 - 2009 to 2024
- ▶ Will be modeled similarly to traditional health traits



Future Implementation of a Hoof Health Trait

- ▶ Plan is for initial release of two correlated hoof health traits:
Infectious and **Non-Infectious** Lesions

- Ulcer
- White Line Separation
- Sole Hemorrhage
- Thin Sole
- Laminitis
- Vertical/Sand Cracks
- Corn/Fibroma
- Corkscrew
- Non-Foot/Upper Leg/Other

Infectious

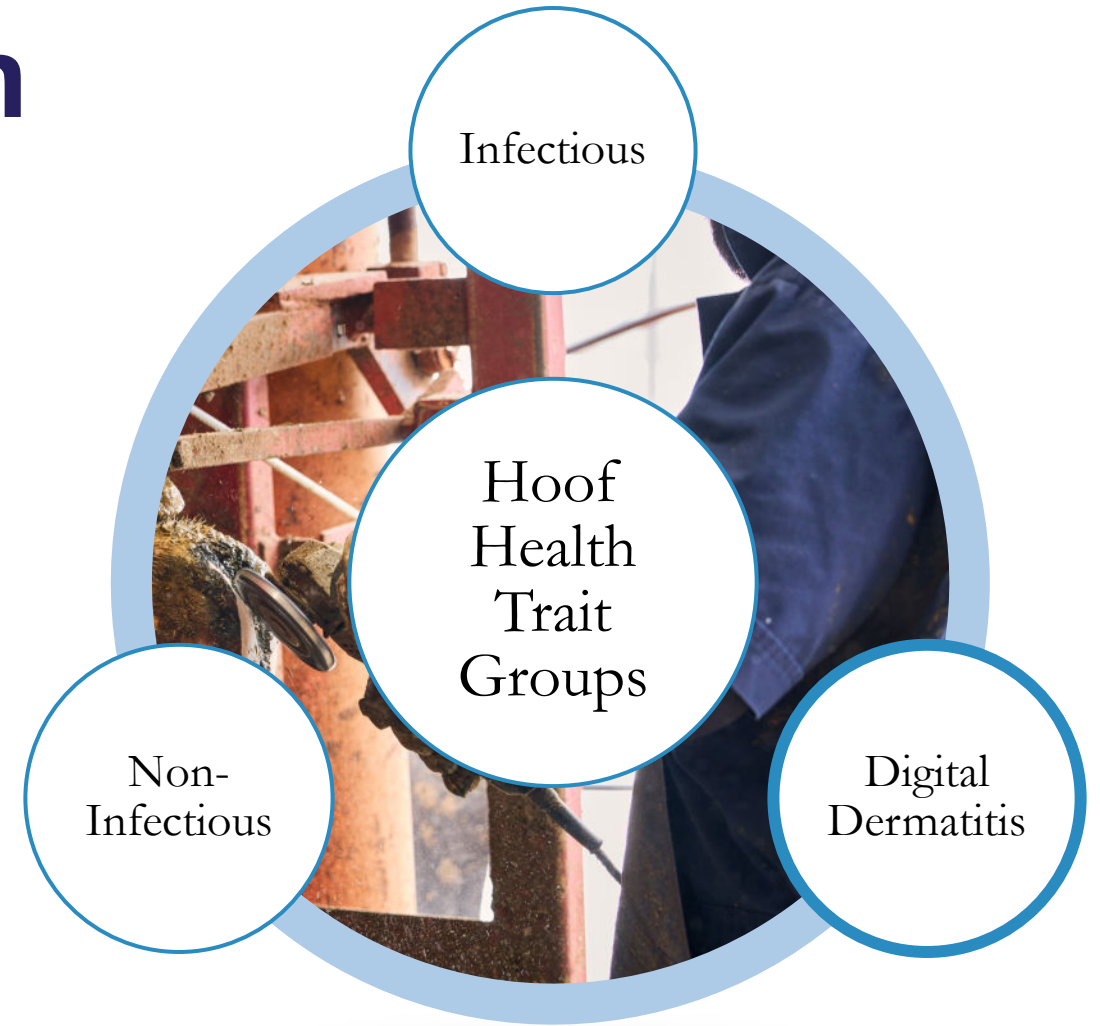
- Digital Dermatitis
- Abscess
- Interdigital Dermatitis
- Heel Erosion
- Foot Rot

Hoof Health Trait Groups

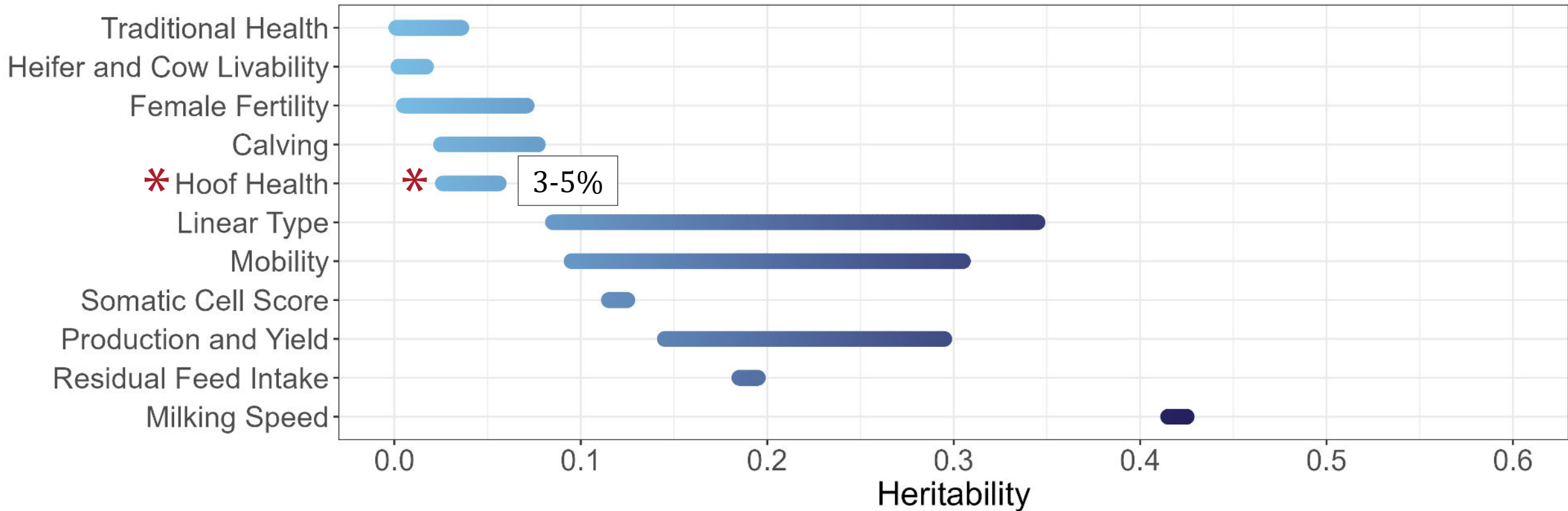
Non-Infectious

Future Implementation of a Hoof Health Trait

- ▶ Plan is for initial release of two correlated hoof health traits: **Infectious** and **Non-Infectious** Lesions
- ▶ As records increase, certain lesions may become separate traits
- ▶ Ex: HOOF\$



Hoof Health is Heritable



Updates to Format 6

- ▶ Addition of **TRIM** event code
- ▶ Addition of laminitis (**LS**) and vertical wall/sand cracks (**VW**) cause of lameness codes



Contributing Your Hoof Health Data

- ▶ **Producer partners make innovation possible!** Ask your DRPC if your data is being contributed
- ▶ Watch out for educational materials on lameness data collection from our partners at University of Minnesota



Mobility

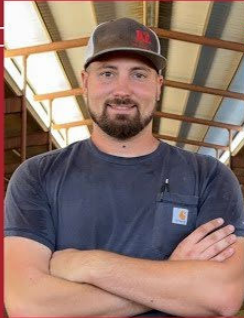
Mobility (and More!) at the 2024 Producer Panel



www.youtube.com/@CouncilonDairyCattleBreeding

Producer Panel

Using Cow Data for Progress On and Off the Farm



Skylar Gericke
Triple G Dairy



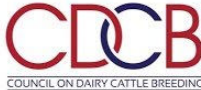
Matt Hendel
Hendel Farms



Jordan Matthews
Rosy-Lane Holsteins



Katie Schmitt, CDCB
Moderator



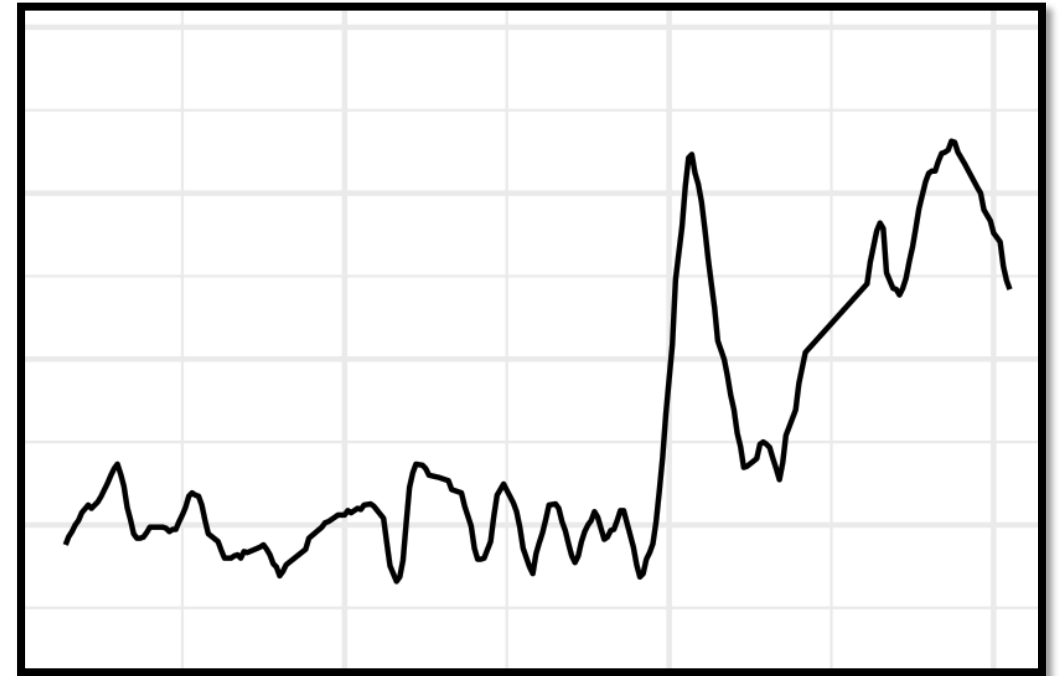
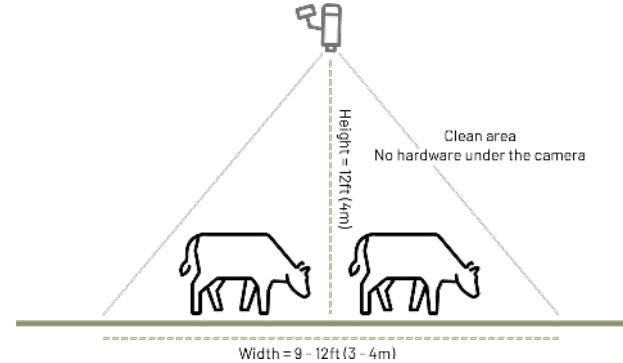
CDCB
COUNCIL ON DAIRY CATTLE BREEDING

CDCB Industry Meeting

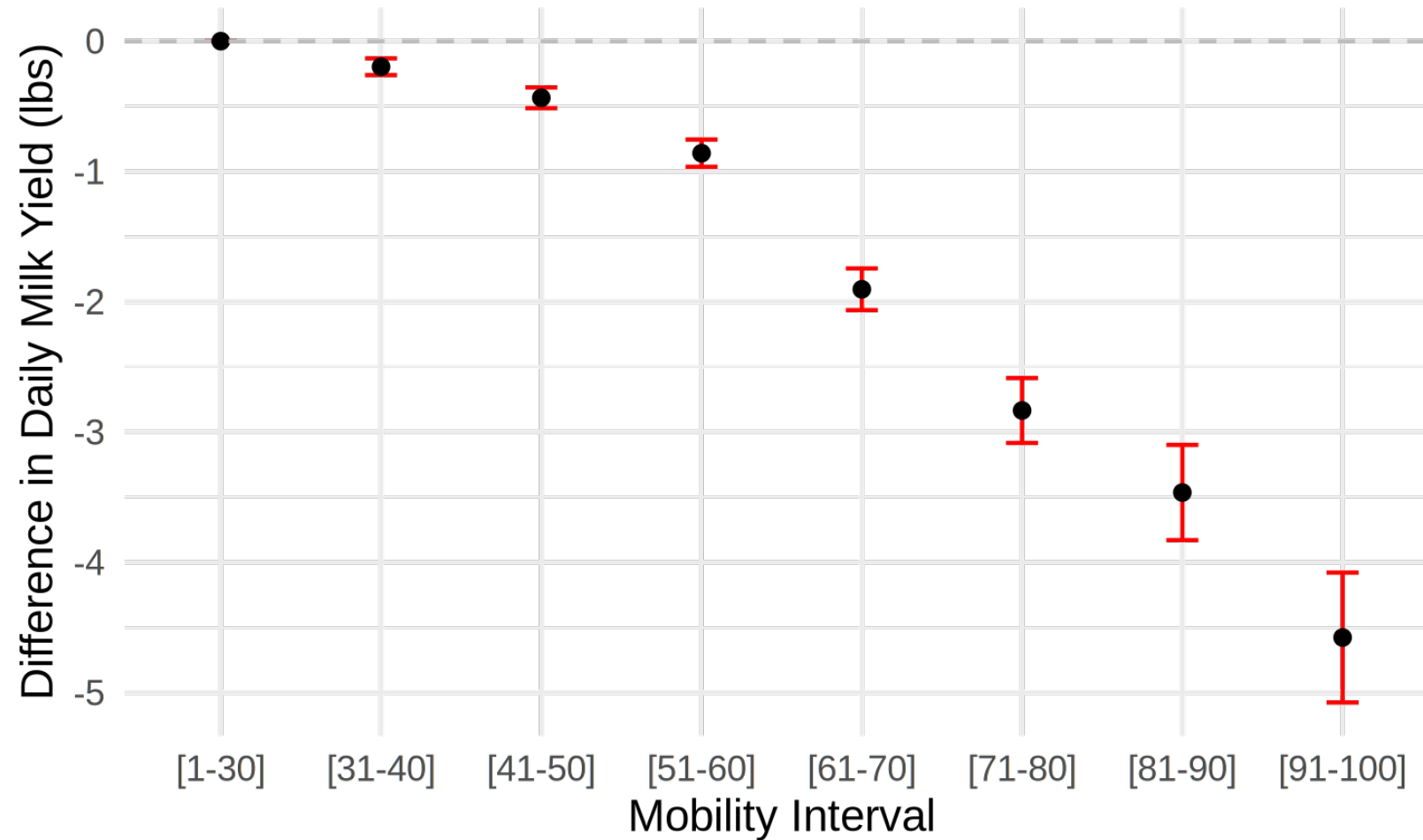
Madison, Wis. | October 2, 2024

Daily Mobility Scores

- ▶ In R&D
- ▶ Scaled 1 (Healthy) – 100 (Lame)
- ▶ 6 participating commercial farms
- ▶ 63k cows with ~14 million daily mobility scores (and growing)
 - Also have: 600k trim events
- ▶ Daily data: highly dimensional!

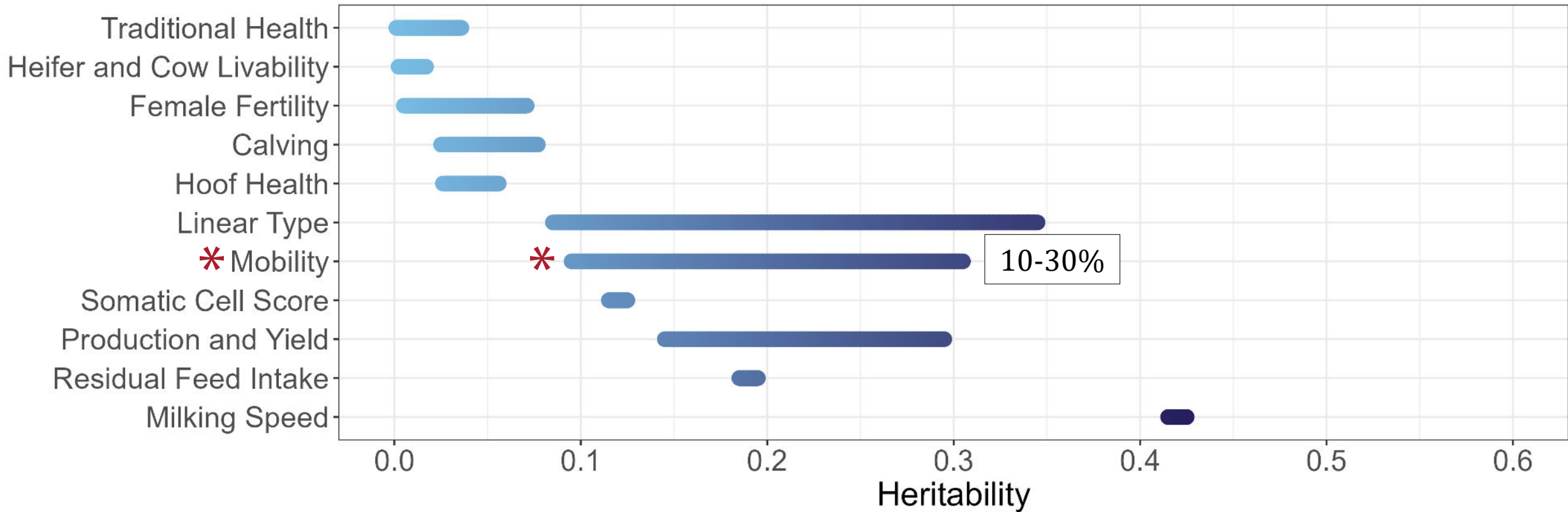


Lame Cows Produce Less



Ling et al., 2025

Mobility is Heritable



The Future of Mobility

- ▶ \$2 million to support collection of camera-generated **mobility scores** and high-quality **trimmer records** on commercial dairies
- ▶ Will allow data collection on 60k cows over 3 years

allowing for faster treatment. But technology alone is not enough. By integrating artificial intelligence with hoof health records, genetics and on-farm practices, we are creating a more complete picture of lameness and a better understanding of how to work with farmers to prevent it.”

DR. GERARD CRAMER

University of Minnesota College of Veterinary Medicine



FFAR Grant Develops Solutions to Prevalent & Costly Dairy Cow Lameness

August 4, 2025 St. Paul, MN



Key Takeaways and Future Directions

- ▶ We can select for cows more resistant to lameness
 - Hoof Health: 3-5% heritability, on par with fertility and calving
 - Mobility: 10-30%, on par with milk yield and production
- ▶ Hoof Health: Finalizing R&D, implementation is on the horizon
- ▶ Updates to Format 6 will include TRIM event code and two new cause of lameness codes (laminitis and vertical/sand cracks)
- ▶ Mobility: Acquiring more data, in R&D

Producers: Ask your DRPC if your data is being contributed and keep an eye out for materials on lameness data collection!



COUNCIL ON DAIRY CATTLE BREEDING