



**Leveraging herd management, genetics, and DHI by integrating all three data types into a new transition cow decision tool.**

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## What will we be covering?

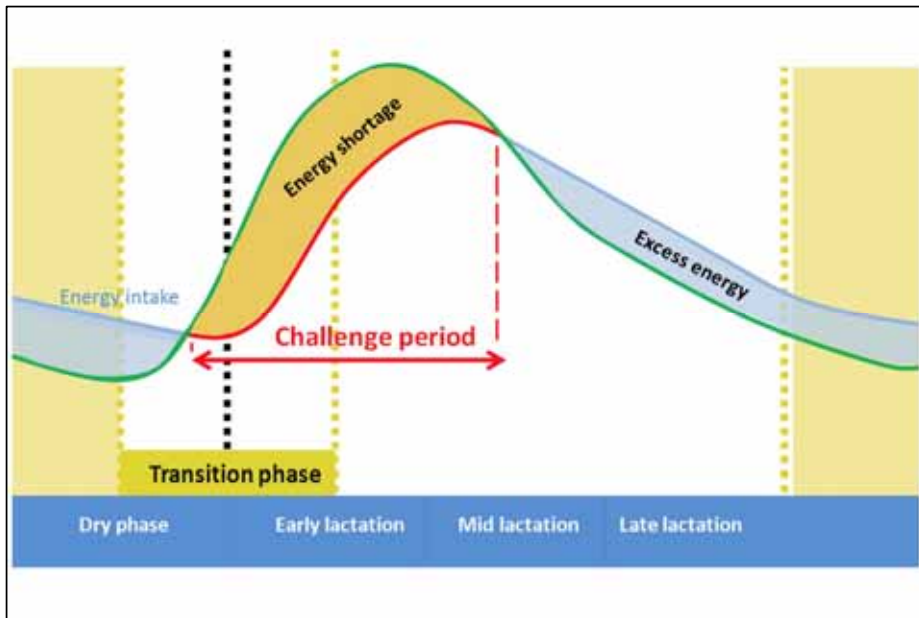
**1** Short background on Transition Cow Management

**2** What is Fresh Cow Index (FCI)?

**3** How is FCI data presented?

**4** Relationship between FCI and future performance

# What is the Transition Period?



The term "transition" refers to the process of a cow not producing milk (heifer, dry cow), calving, and then producing milk.

The transition period was traditionally the three weeks before calving and the three weeks following calving.

As we learned more about cow physiology, this period expanded to the 60 days before calving and the 30 days following.

These 90 days make up the transition period.

Source: University of Minnesota, Extension

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## Why does it Matter?



Within the two days after a cow calves, the energy needs of that cow more than double.

The metabolic stress associated with the increased energy demand can be dramatic.

How the cow handles this stress and moves through the transition period influences her production, health, ability to become pregnant again and ability to remain in the herd.

Source: University of Minnesota, Extension

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# Analyzing Transition Cow Problems



1

Comparing Predicted performance versus Actual

2

Fresh Cow Udder Health

3

Fresh Cow Turnover and Death rates

4

Dry Period Analysis

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## What is the Fresh Cow Index? (FCI)



FCI is the Ratio of energy corrected first test day milk yield and predicted energy-corrected milk (ecm) yield early in lactation

$(\text{First Testday ECM} / \text{Predicted ECM}) * 100$

>100 : Cows performed better than expected

<100 : Cows Under-performed

Developed in collaboration with Dr. Albert DeVries,  
University of Florida

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## Data used to calculate FCI



- Breed
- Calving month
- Region
- Milking Frequency
- Calving Ease
- PTA's
- Abortion
- Gestation Length
- Age at Calving
- Dam
- Performance
- Previous Lactation performance
- Lactation Number
- Days Dry
- Days in Milk
- Days Open

Calculated for Cows that had a 1<sup>st</sup> test day between 5-40 days in milk

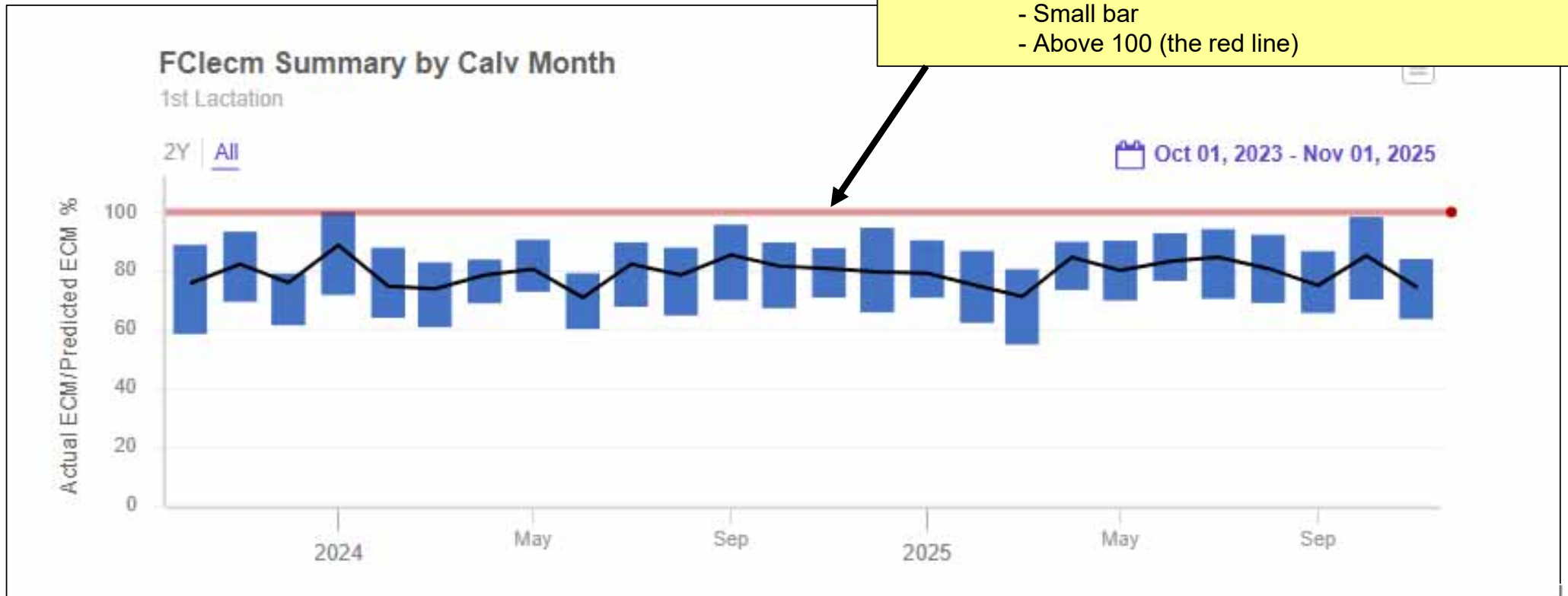
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## What sets FCI apart from other measures?

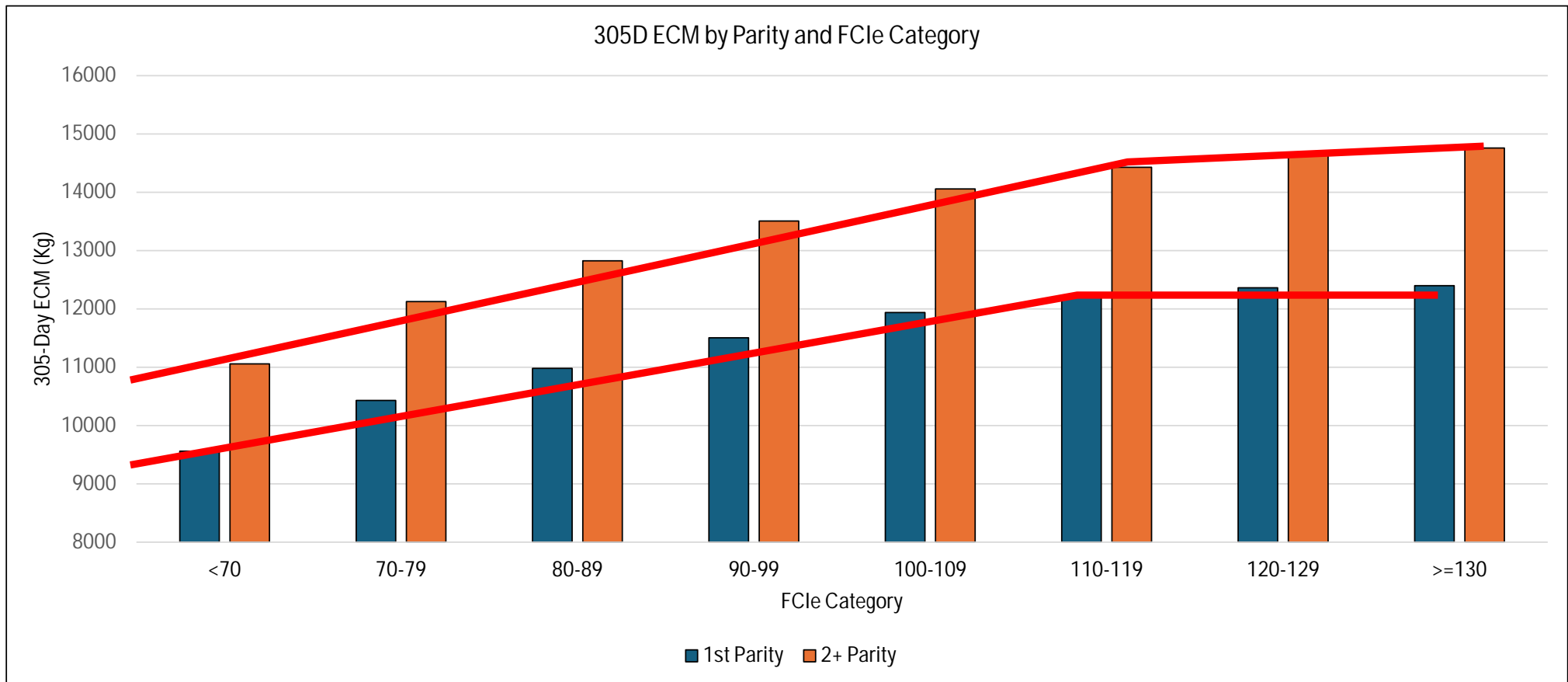
- 1 Includes data from all US regions
- 2 Data Set: 1M first lactation records and 2M older cow lactation records
- 3 Works for first and older lactation cows
- 4 FCI includes genetic data, production, reproduction and calving information
- 5 Offers an ECM and Milk only version

# FClecm by Calving Month

- Each bar represents the cows that calved in a particular month
- Width of the bar represents 25<sup>th</sup> – 75<sup>th</sup> percentile values
- The wider the bar the more variation between cows
- Median line is the 50<sup>th</sup> percentile
- Desired:
  - Small bar
  - Above 100 (the red line)



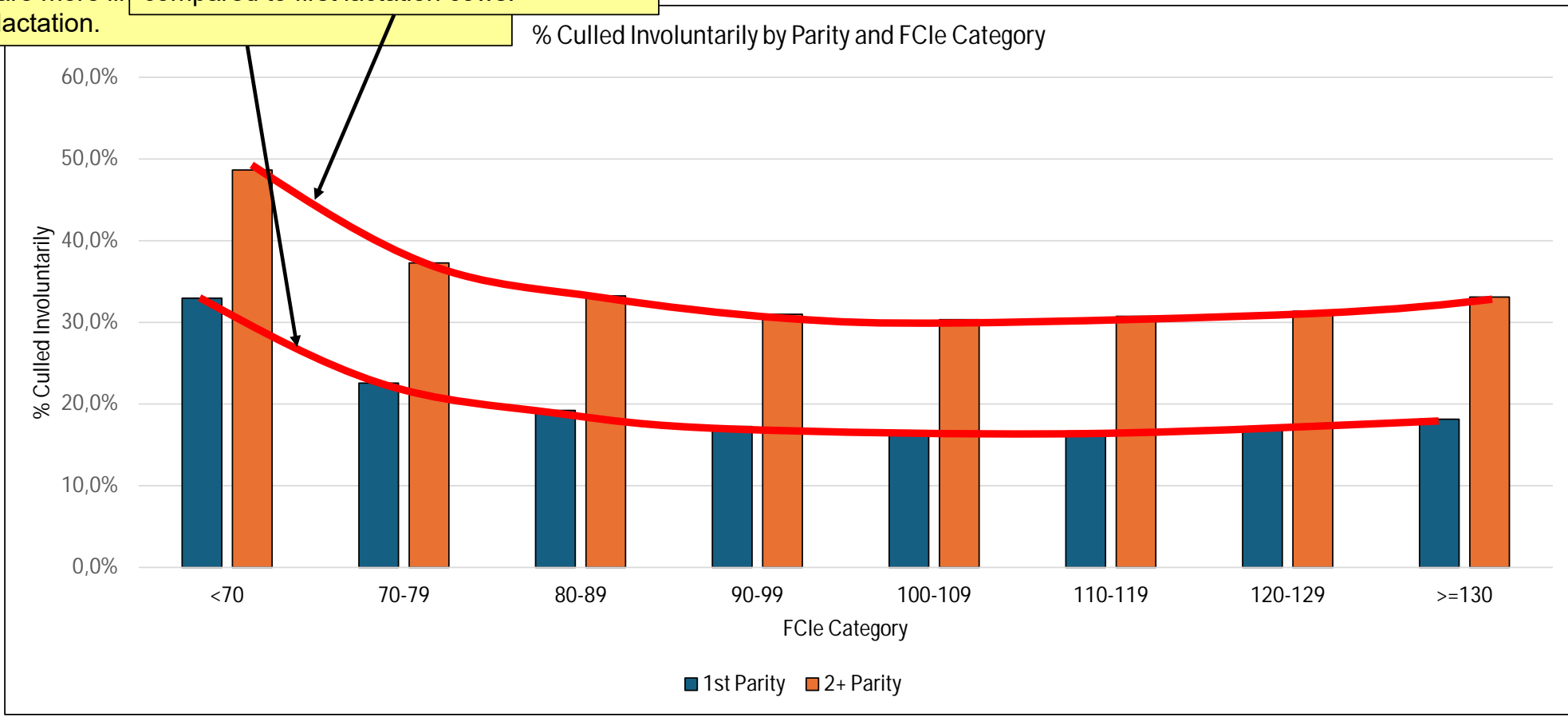
# Relationship to Subsequent Lactation Production



# Relationship to Subsequent Involuntary Culling

First lactation cows are more likely to be culled in the first lactation.

Second and later lactation cows with FCI values <80 are more likely to be culled as compared to first lactation cows.



# Relationship to Health Events

Cows less than 40 DIM FCI values <80 experienced higher number of cases of Mastitis and startup health issues such as Ketosis, Milk Fever, Metritis, Retained Placenta less than 40 DIM

## Less than 40 days in Milk

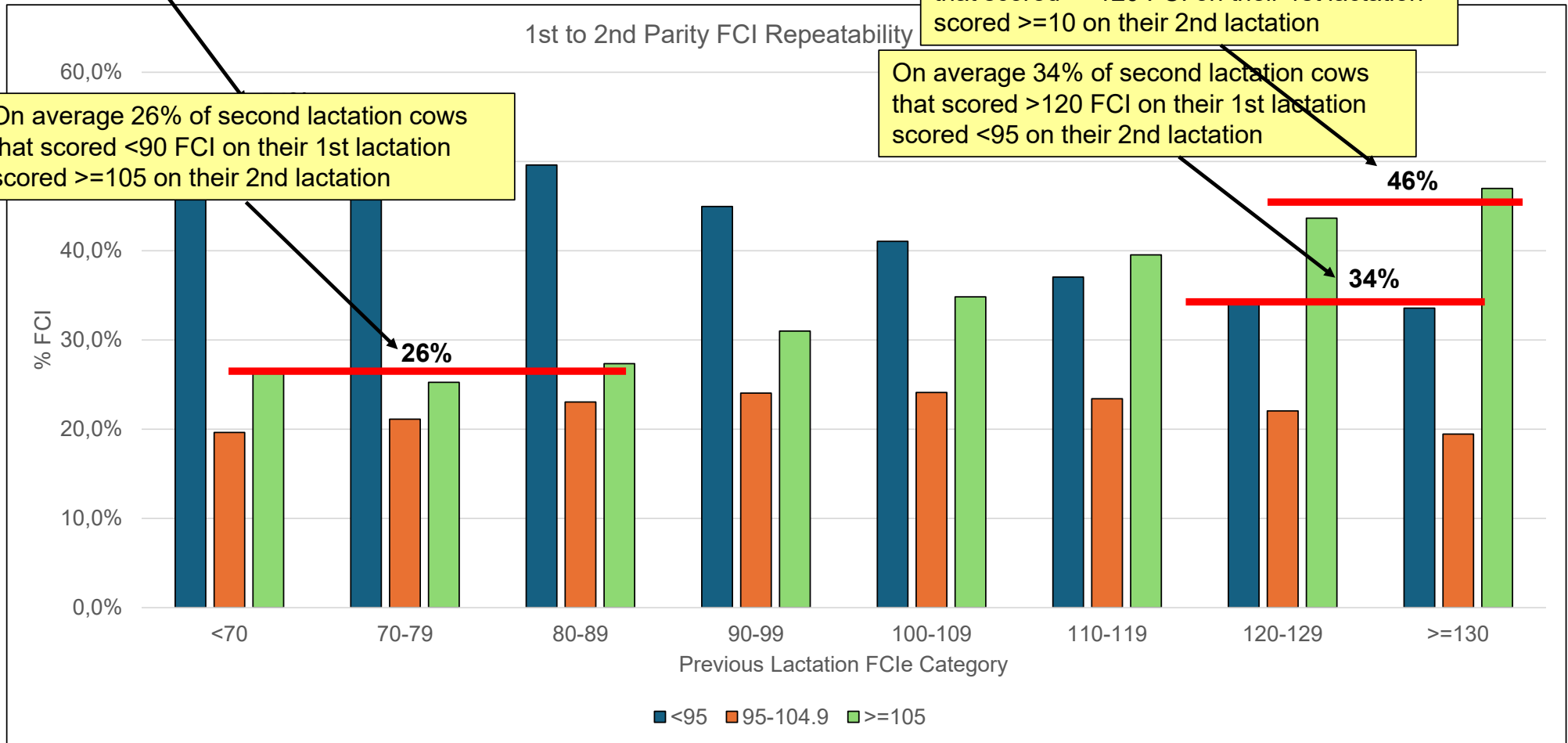
FCIe	% Mastitis		% Other	
	1st Lact	2+ Lact	1st Lact	2+ Lact
<70	↑ 3.4%	↑ 3.5%	↑ 10.2%	↑ 13.7%
70-79	↑ 2.4%	↑ 2.5%	↑ 7.2%	↑ 8.0%
80-89	1.8%	2.0%	↑ 5.2%	↑ 5.6%
90-99	1.5%	1.7%	4.1%	4.4%
100-109	1.3%	1.5%	3.6%	3.4%
110-119	1.2%	1.4%	3.2%	3.1%
120-129	1.2%	1.5%	3.3%	3.3%
>=130	1.3%	1.5%	3.4%	3.6%

## Past 40 days in Milk

FCIe	% Mastitis		% Other	
	1st Lact	2+ Lact	1st Lact	2+ Lact
<70	4.2%	7.0%	0.9%	1.1%
70-79	4.5%	8.2%	0.9%	1.0%
80-89	4.1%	8.2%	0.9%	1.1%
90-99	3.9%	8.2%	1.2%	1.2%
100-109	3.8%	8.2%	1.3%	1.4%
110-119	↓ 4.0%	8.3%	1.3%	↓ 1.6%
120-129	↓ 4.3%	8.2%	1.6%	↓ 1.9%
>=130	↓ 4.6%	8.6%	1.7%	↓ 2.5%

# FCI Repeatability

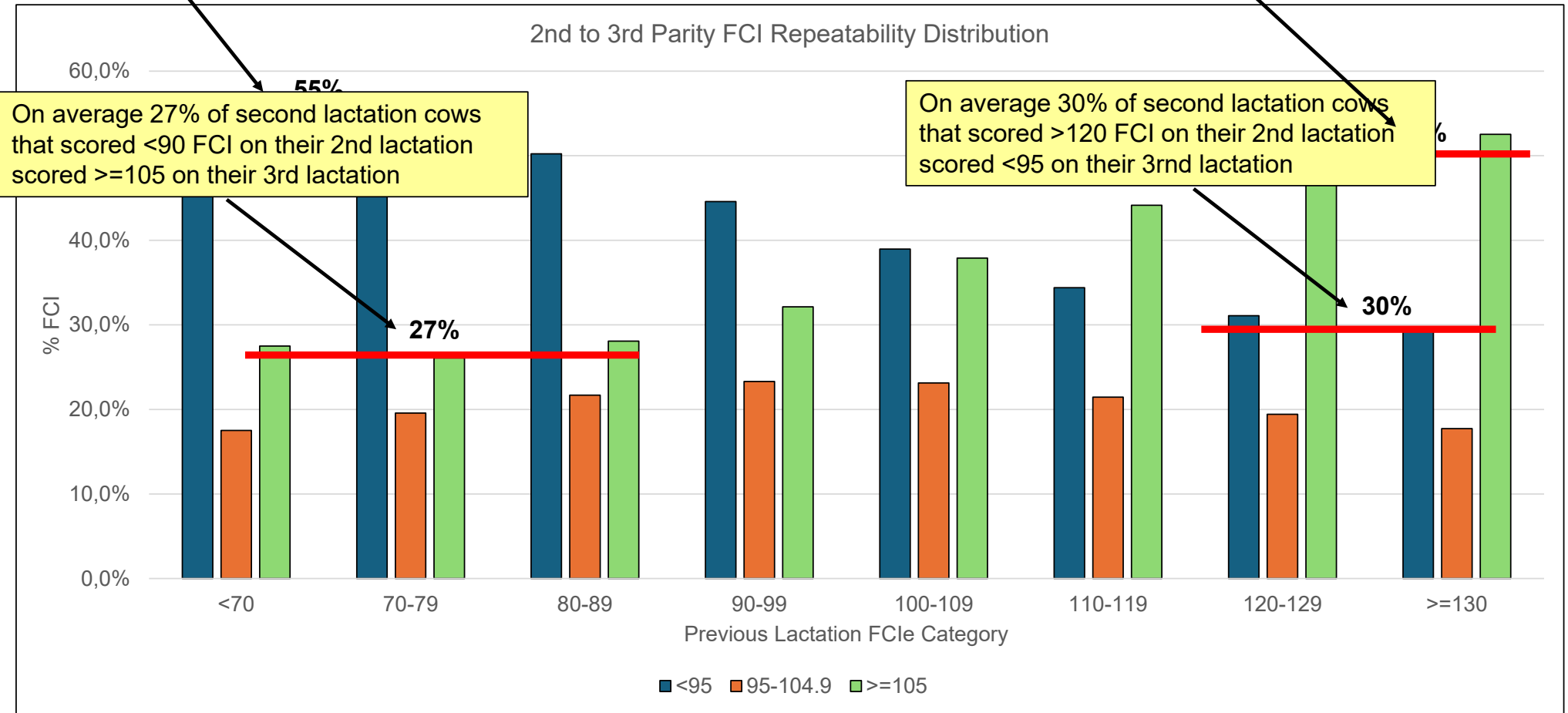
1st to 2nd Parity FCI Repeatability



# FCI Repeatability

On average 55% of third lactation cows that scored <80 FCI on their 2nd lactation scored <95 on their 3rd lactation

On average 50% of second lactation cows that scored >=120 FCI on their 2nd lactation scored >=10 on their 3rd lactation



On average 27% of second lactation cows that scored <90 FCI on their 2nd lactation scored >=105 on their 3rd lactation

On average 30% of second lactation cows that scored >120 FCI on their 2nd lactation scored <95 on their 3rd lactation

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# Summary

*Over 1.5 million cows grouped by 10 FCI increments starting at FCI less than 70 up to FCI greater than or equal to 130.*

## **1st lactation**

- *Culling rates - Decreased from 33% to 18.1%.*
- *Peak milk - Increased from 32 kg to 43 kg.*
- *305 Day ECM - Increased from 9560 to 12400 kg.*
- *Health – Lower early disease from 10.2 down to 3.4%*
- *Repeatability – FCI<90 has 50+% chance to repeat*

## **2nd+ Lactation**

- *Culling rates - Decreased from 48.7% to 33.1%.*
- *Peak milk - Increased from 43 kg to 60 kg.*
- *305 Day ECM - Increased from 11056 to 14760 kg*
- *Health – Lower early disease from 13.7 down to 3.6%*
- *Repeatability – FCI<90 has 50+% chance to repeat*

# Contact us



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