A Million Reasons Why Conformation Matters Study

Relationships Between 1st Lactation Average SCS and Conformation

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Data

- Holstein Association USA official classification scores were used for linear classification data
- The first classification score for a cow assigned in her first lactation was used for analyses
- Official DHIA records were used for production and culling data
- Only cows born after 1/1/90 were included in analyses
- Only test dates after 1/1/00 were included in test day analyses

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Data

- Lactations starting between 1/1/00 and 8/27/21 were included in analyses
- For lifetime production analyses only first 6 lactations were included
- Only cows calving for first time before 1/1/16 were included in lifetime analyses
- Only animals with complete 305-day lactations were included in 305-day milk analyses
- All DHIA data was edited to remove biologically unlikely test day results

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Data

- Only 1st lactation records with age at first calving between 18 to 35 months were included
- Lactation records with milking frequencies >3 were removed
- After edits, 937,603 cows were available for analyses
- 5,496 unique herds were represented in the data set
- Cows were only included in the final analysis if there were at least 5 herdmates in their herd, year, and season of calving

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Analyses

- Cows were categorized into quartiles for each trait with approximately the same number of cows categorized into each category
- The CORR Procedure of SAS 9.4 ® was used to calculate correlations between type and production traits
- The FREQ Procedure of SAS 9.4 ® was used for the percent of cows surviving to 6 years old analyses
- The MIXED Procedure of SAS 9.4 ® was used for modeling 1st lactation ECM, SCS, lifetime DIM, and lifetime ECM using a compound symmetry covariance structure. Subject was herd-year-season. Milking frequency was a covariate in the 1st lactation ECM model
- LSMeans are presented with statistical significance presented at $p<0.05$

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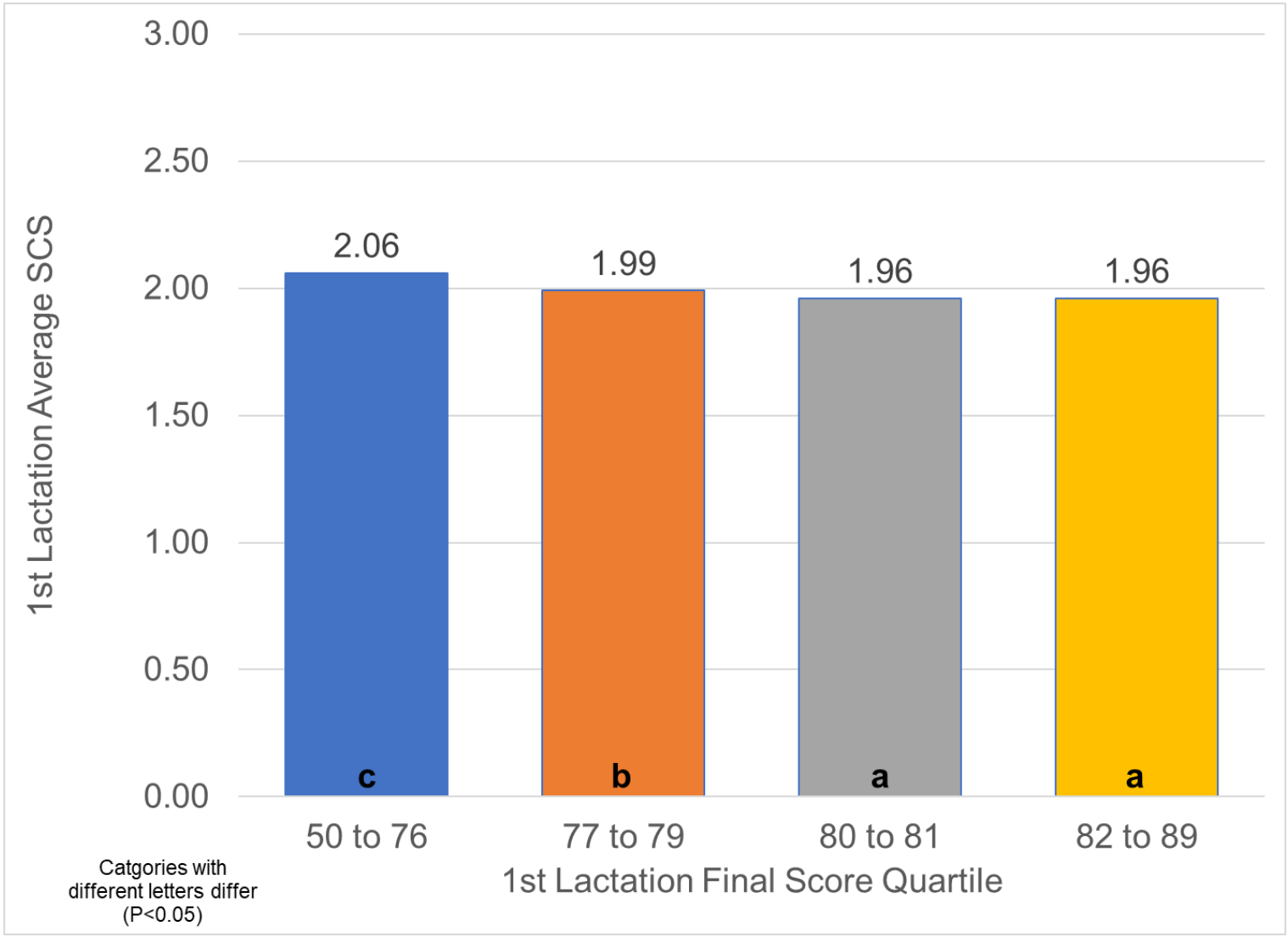
1st Lactation Average SCS by 1st Lactation Final Score Quartile



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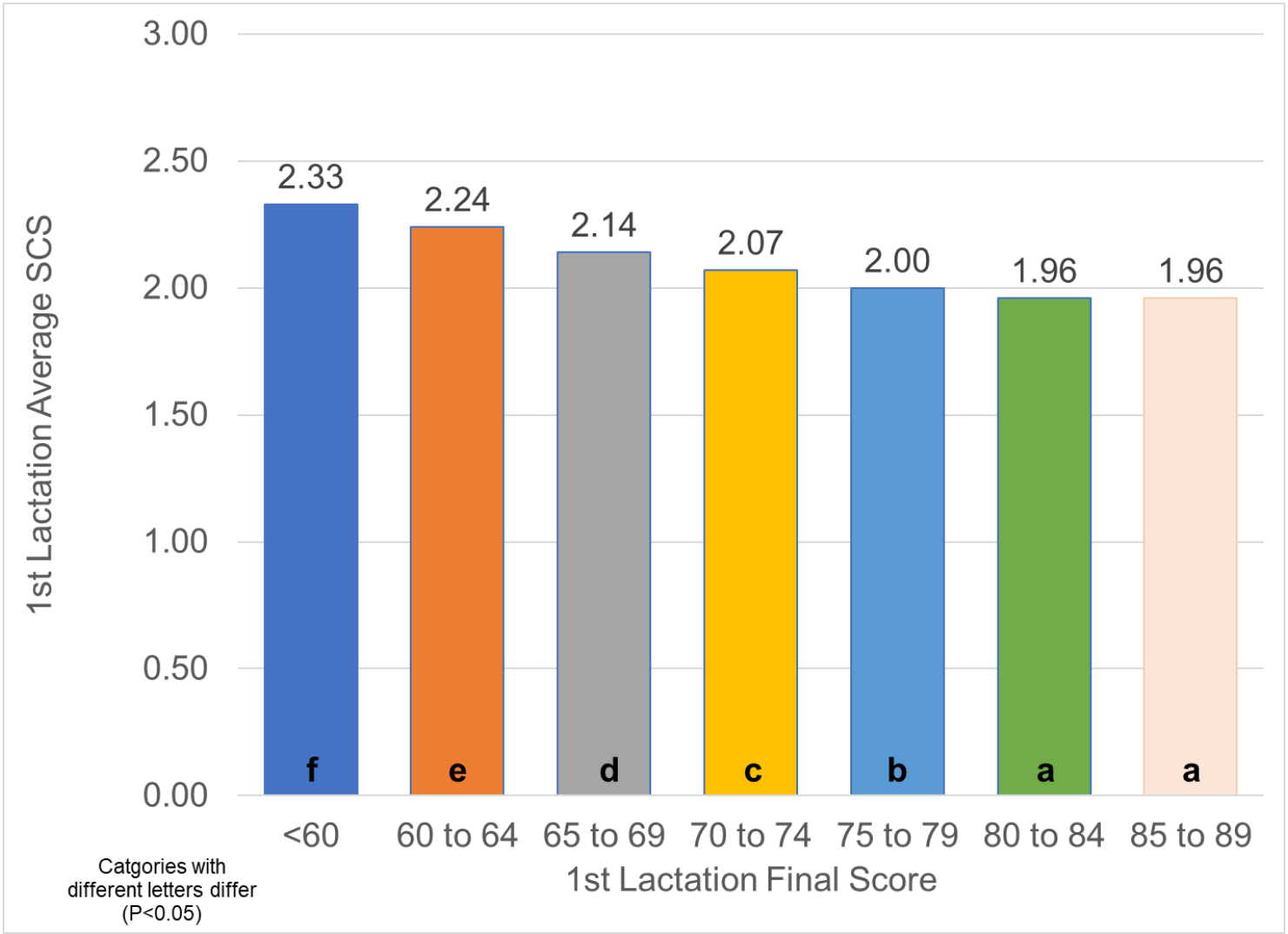
1st Lactation Average SCS by 1st Lactation Score Category



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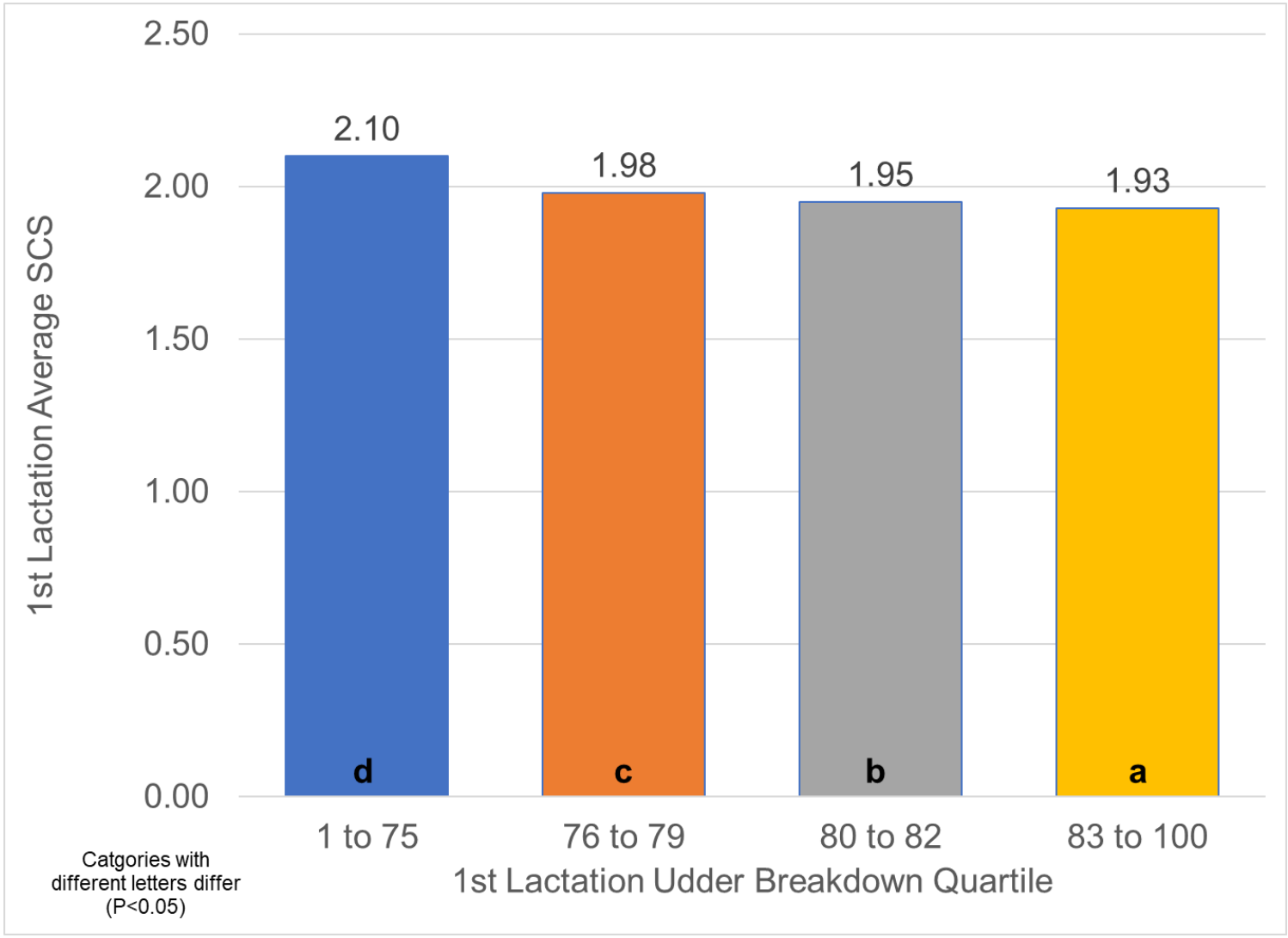
1st Lactation Average SCS by 1st Lactation Udder Breakdown Quartile



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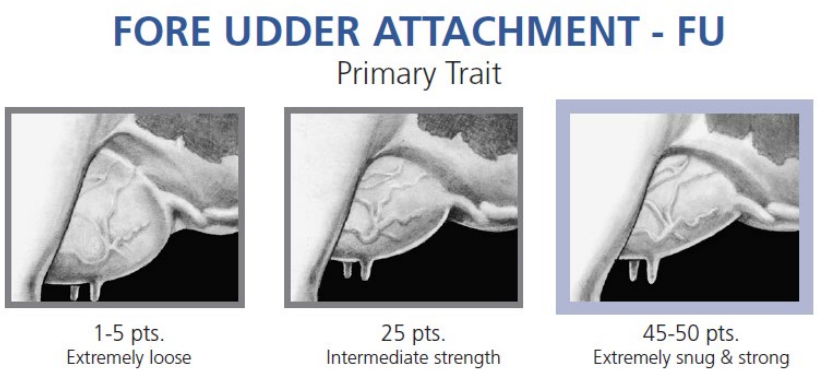
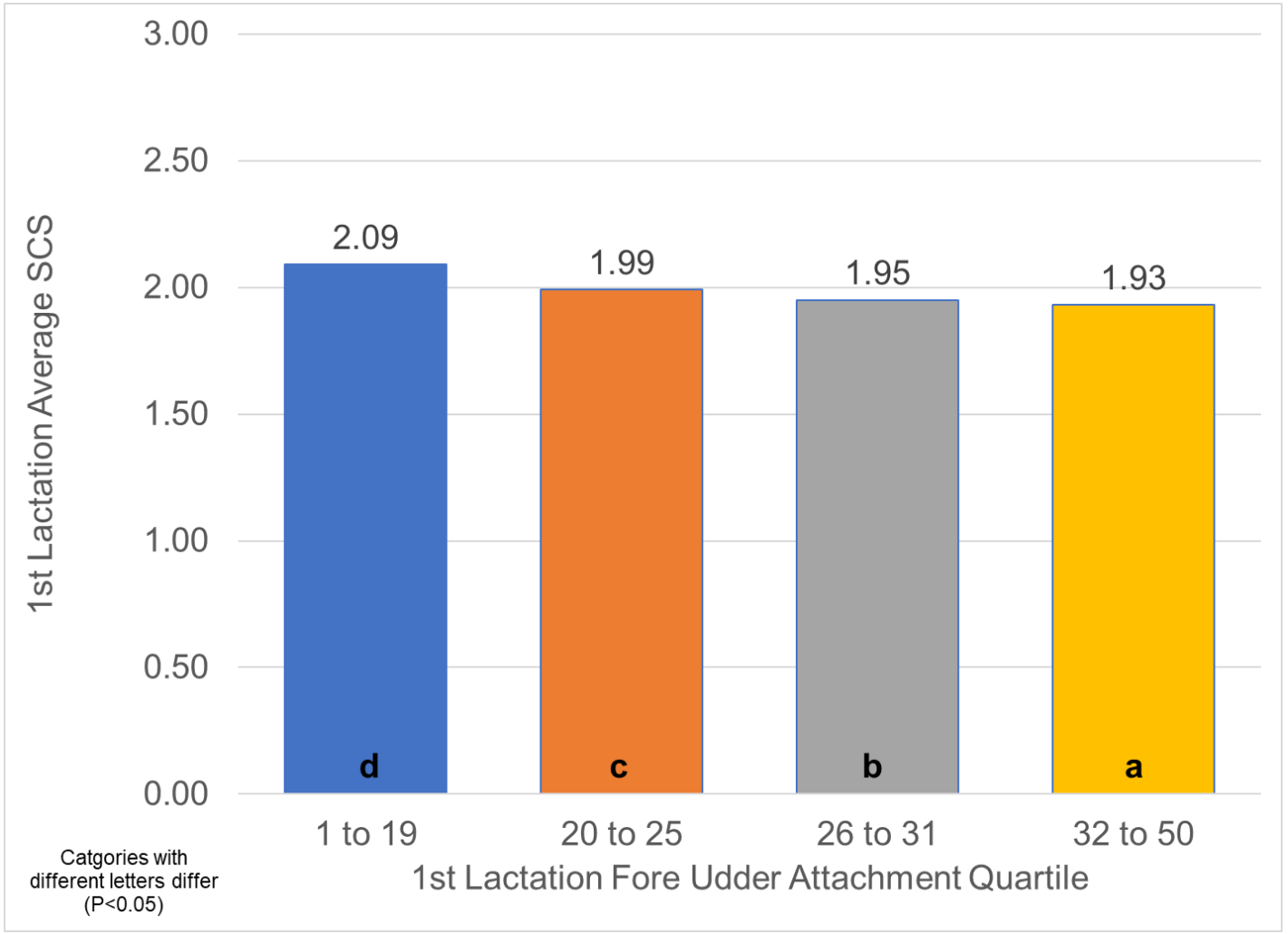
1st Lactation Average SCS by 1st Lactation Fore Udder Attachment Quartile





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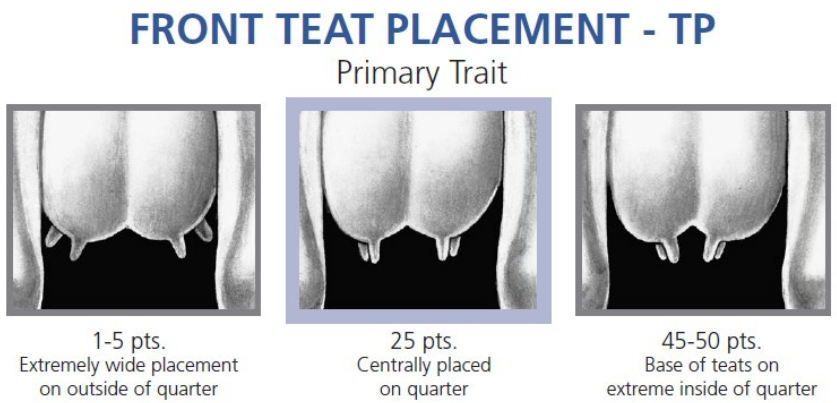
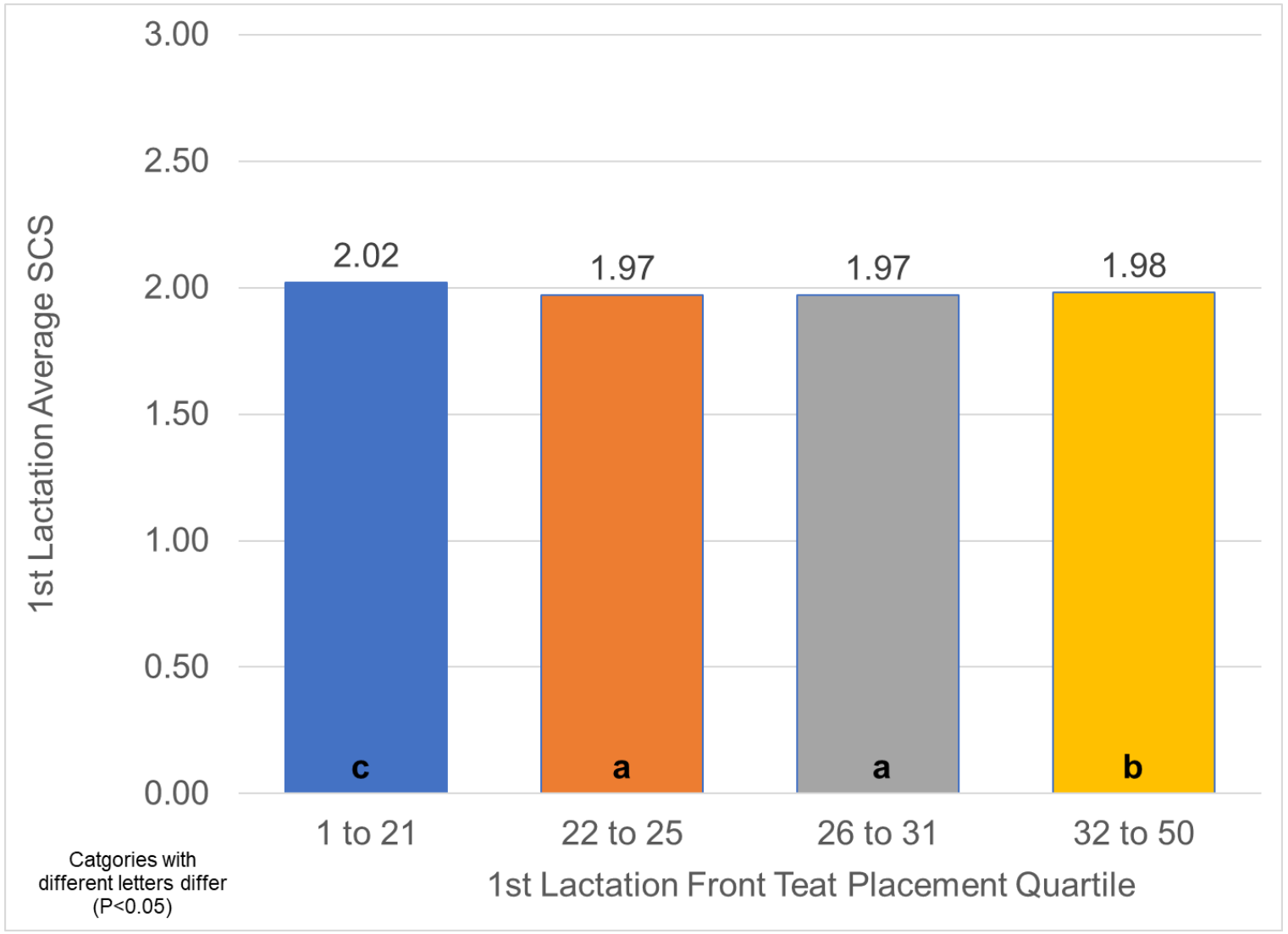
1st Lactation Average SCS by 1st Lactation Front Teat Placement Quartile





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1st Lactation Average SCS by 1st Lactation Rear Udder Height Quartile

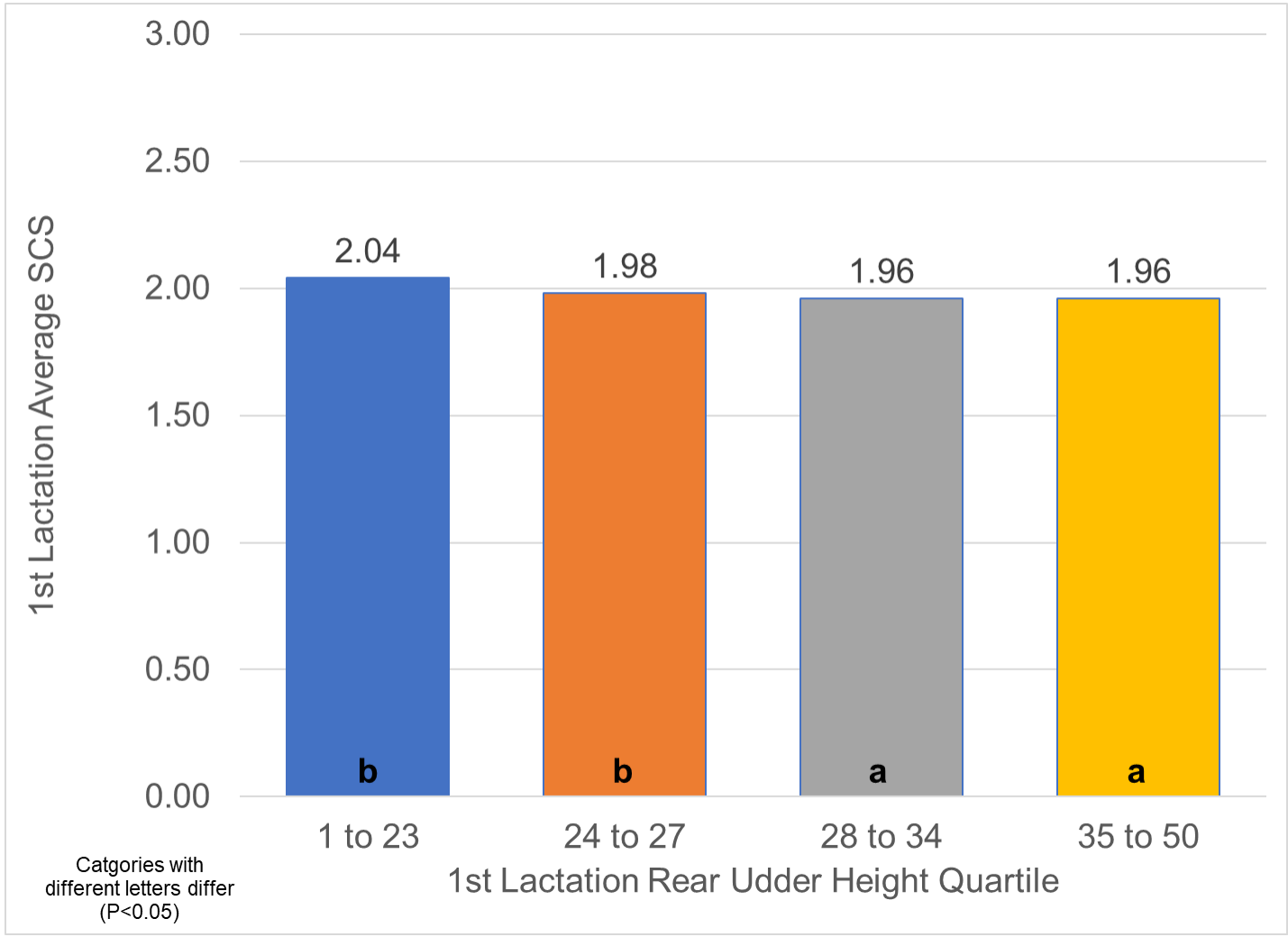
REAR UDDER, HEIGHT - UH

Primary Trait

1-5 pts.
Extremely low

25 pts.
Intermediate height

45-50 pts.
Extremely high



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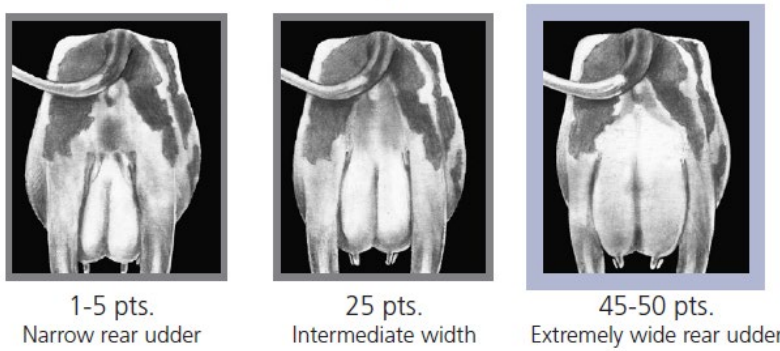
1st Lactation Average SCS by 1st Lactation Rear Udder Width Quartile

REAR UDDER, WIDTH - UW

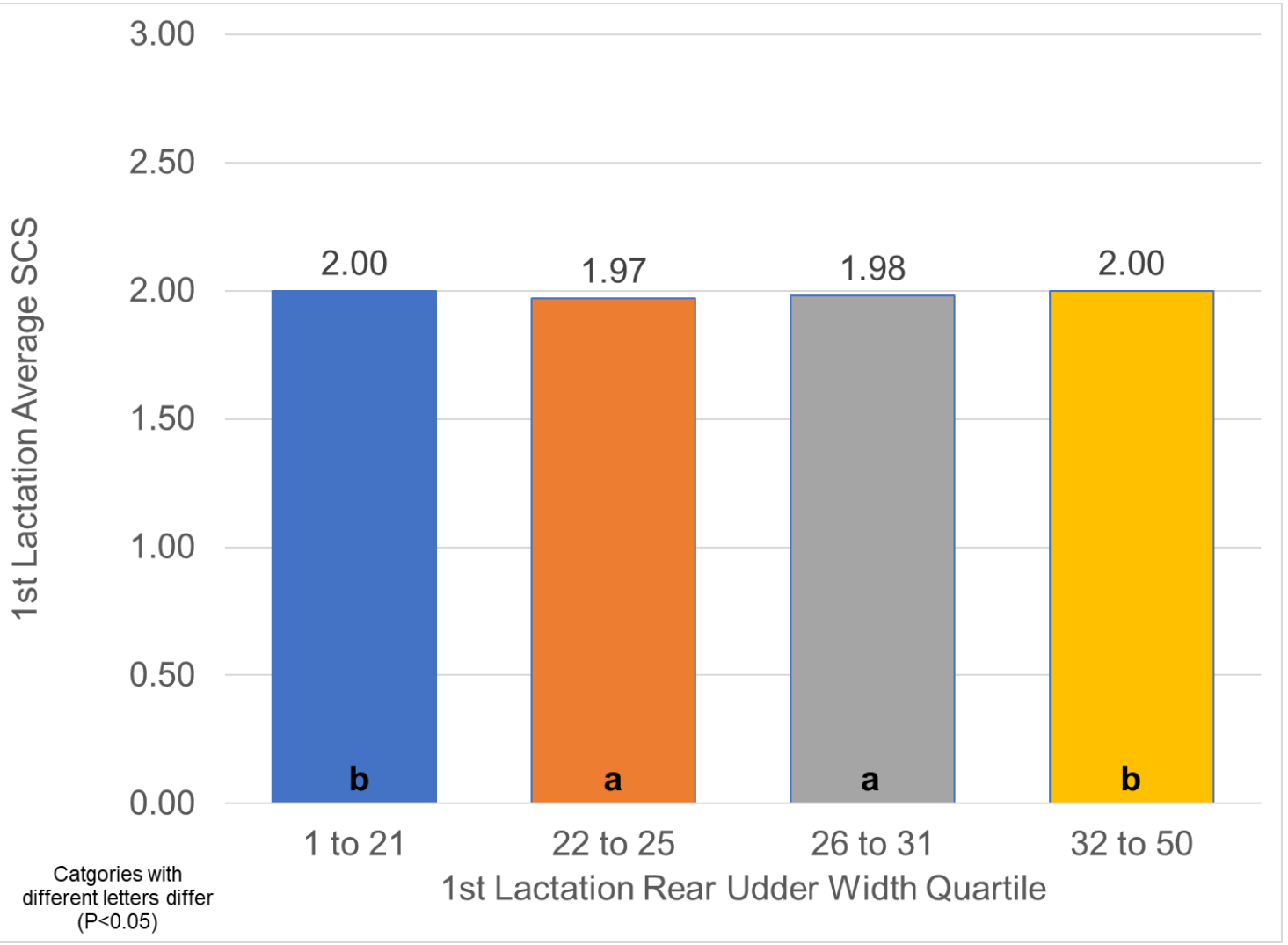
Primary Trait



1-5 pts.
Narrow rear udder

25 pts.
Intermediate width

45-50 pts.
Extremely wide rear udder



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1st Lactation Average SCS by 1st Lactation Teat Length Quartile

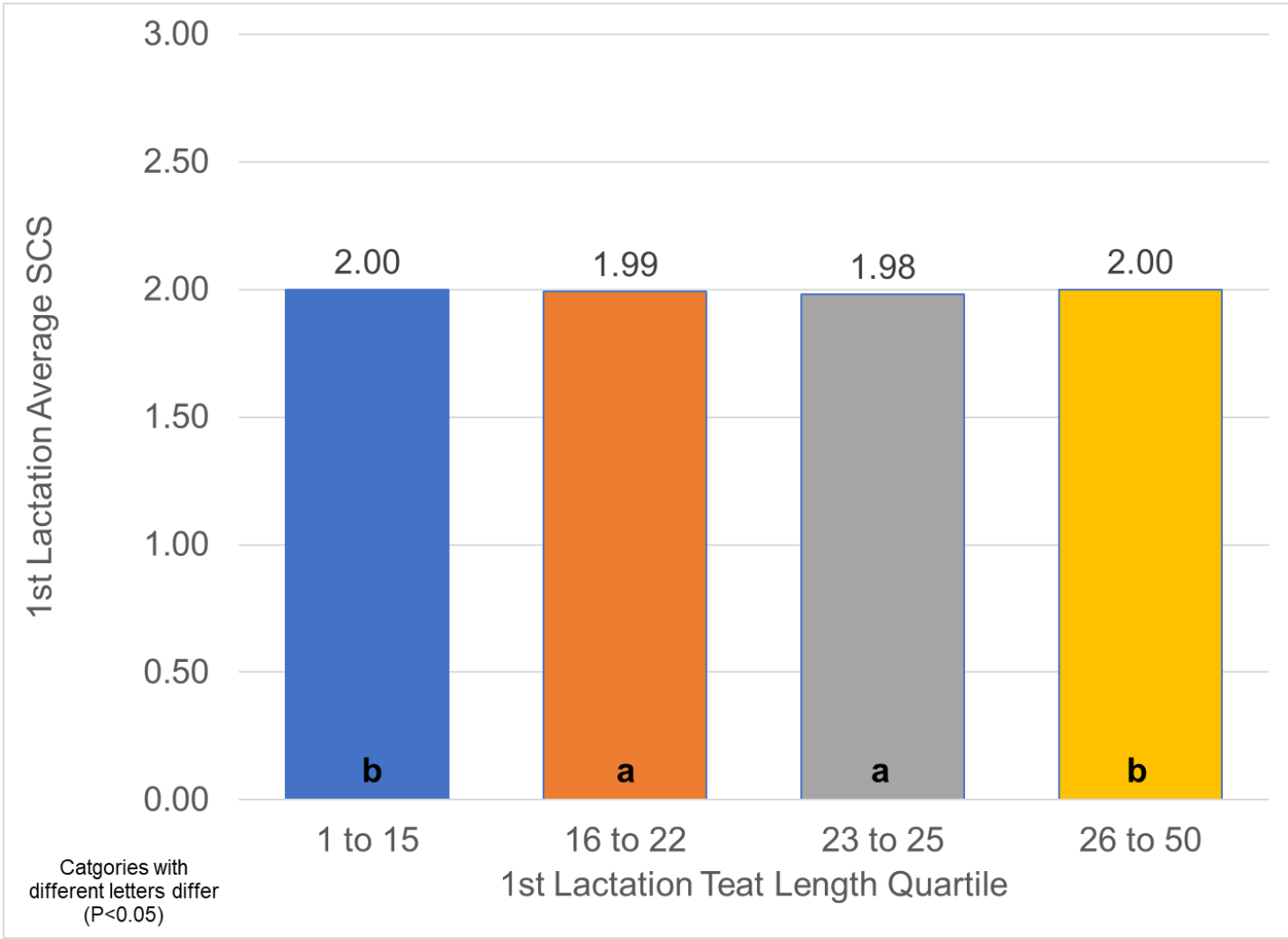
FRONT TEAT LENGTH - TL

Primary Trait

1-5 pts.
1-1/4 inches or smaller

25 pts.
2-1/4 inches

45-50 pts.
3-1/4 inches or longer



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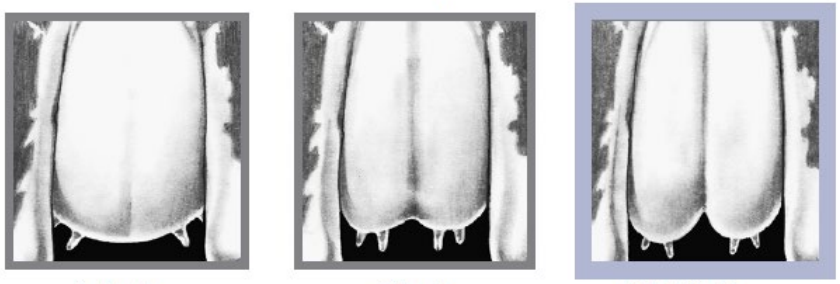
1st Lactation Average SCS by 1st Lactation Udder Cleft Quartile

UDDER CLEFT - UC

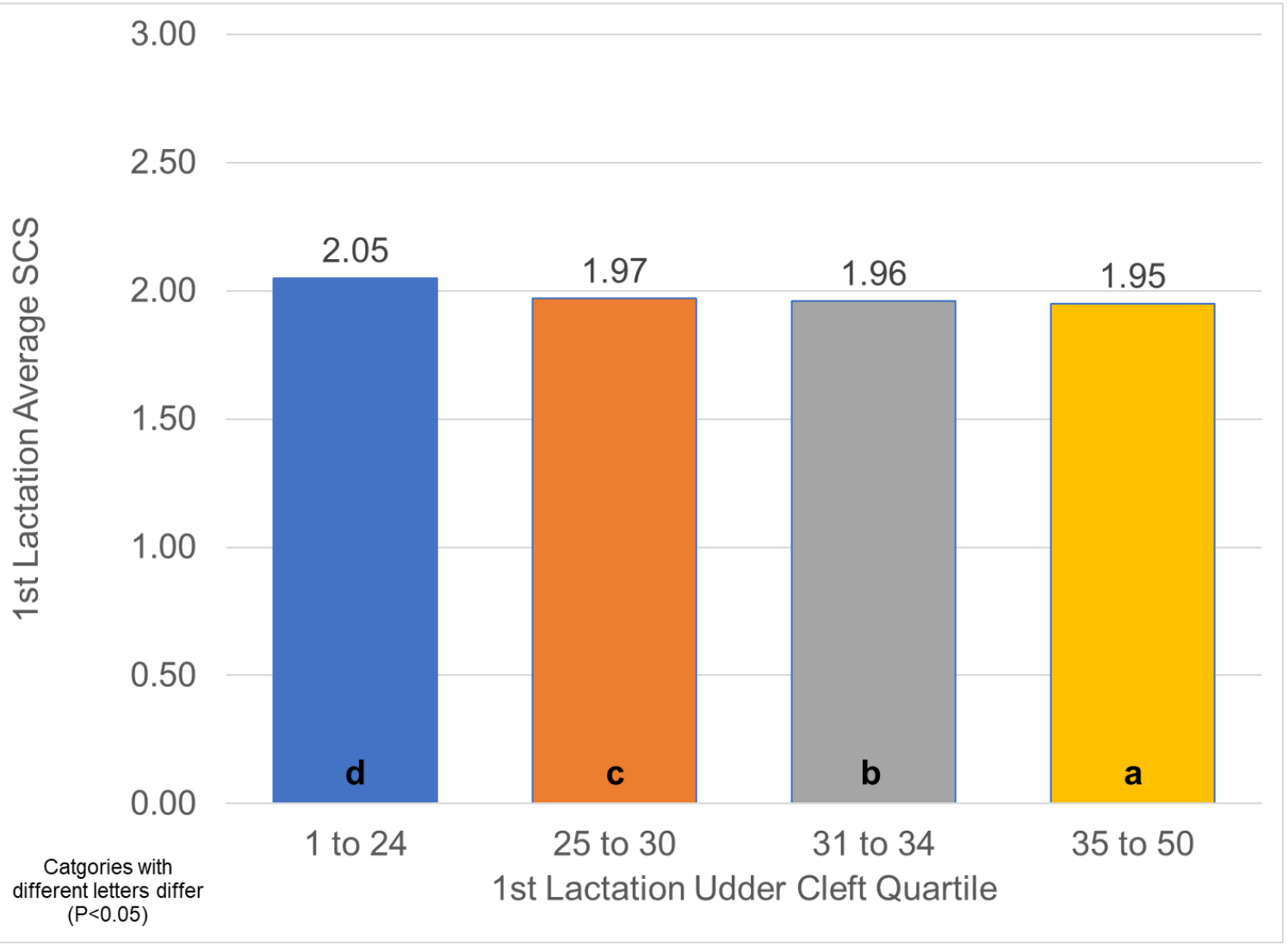
Primary Trait



1-5 pts.
Weak cleft

25 pts.
Intermediate

45-50 pts.
Extremely strong cleft



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1st Lactation Average SCS by 1st Lactation Udder Depth Quartile

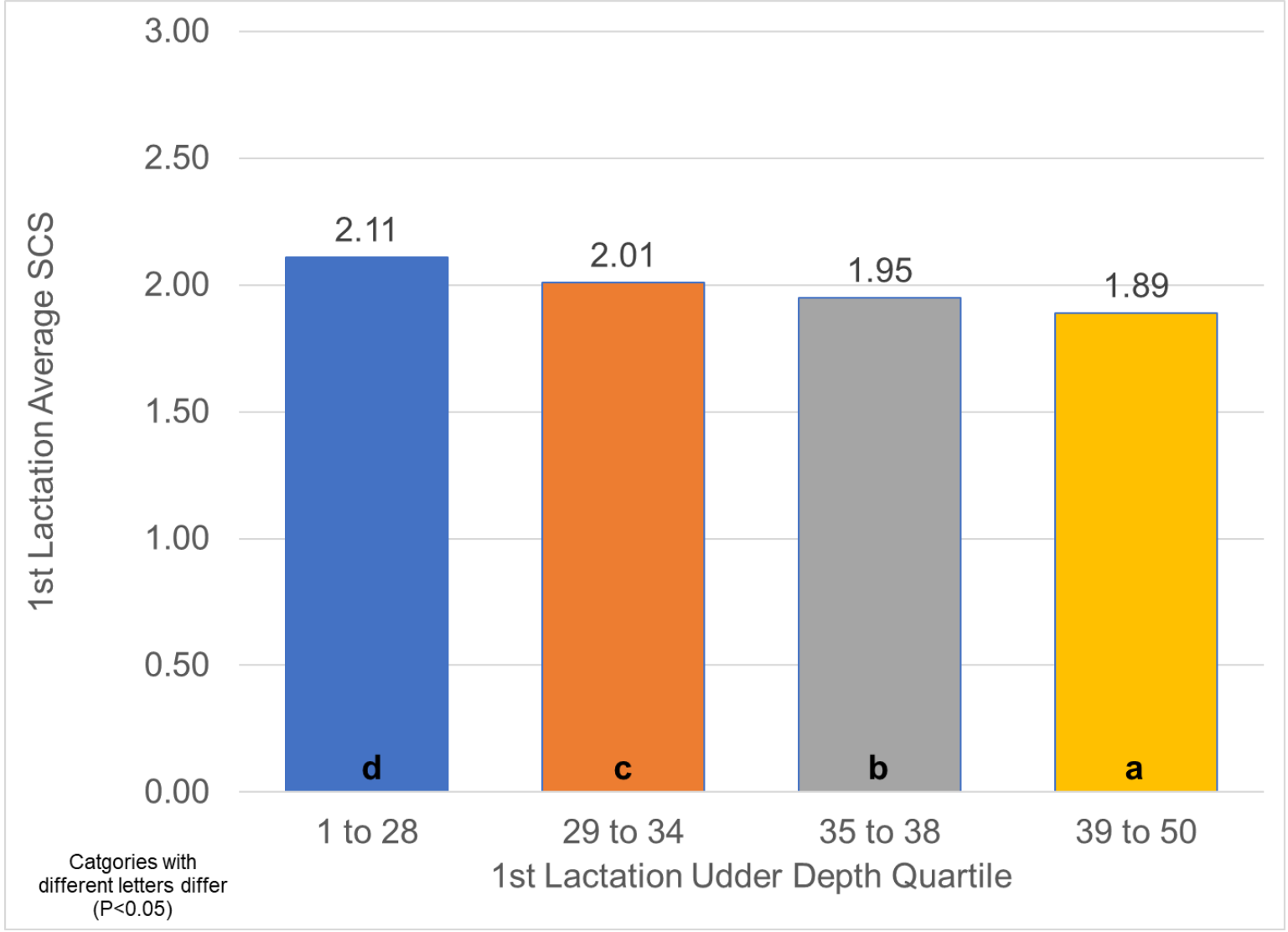
UDDER DEPTH - UD

Primary Trait

1-5 pts.
Very deep udder floor well below hocks

25 pts.
Udder floor above hocks

45-50 pts.
Extreme height of udder floor above hocks



Catgories with different letters differ (P<0.05)

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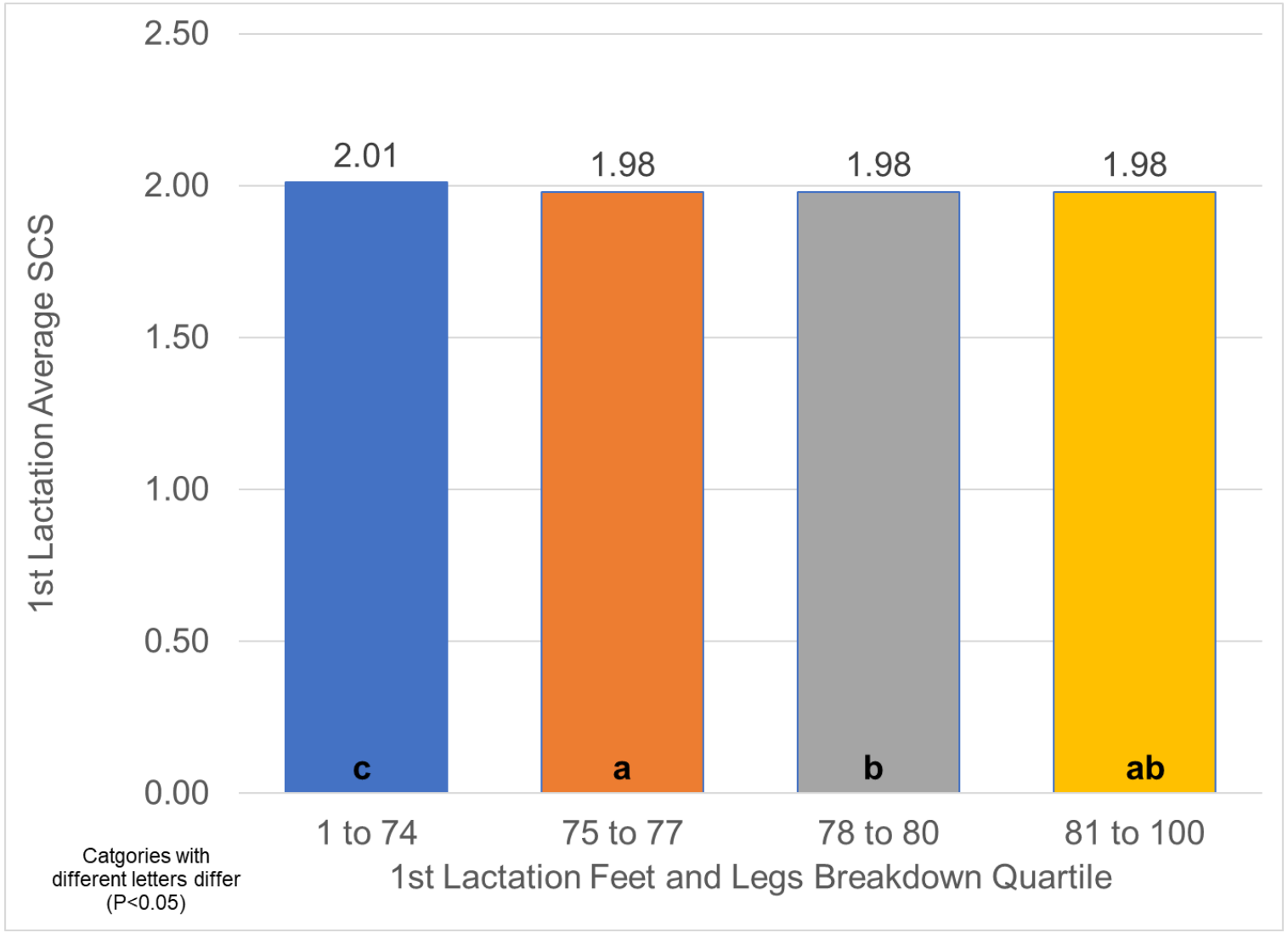
1st Lactation Average SCS by 1st Lactation Feet and Leg Breakdown Quartile



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1st Lactation Average SCS by 1st Lactation Foot Angle Quartile

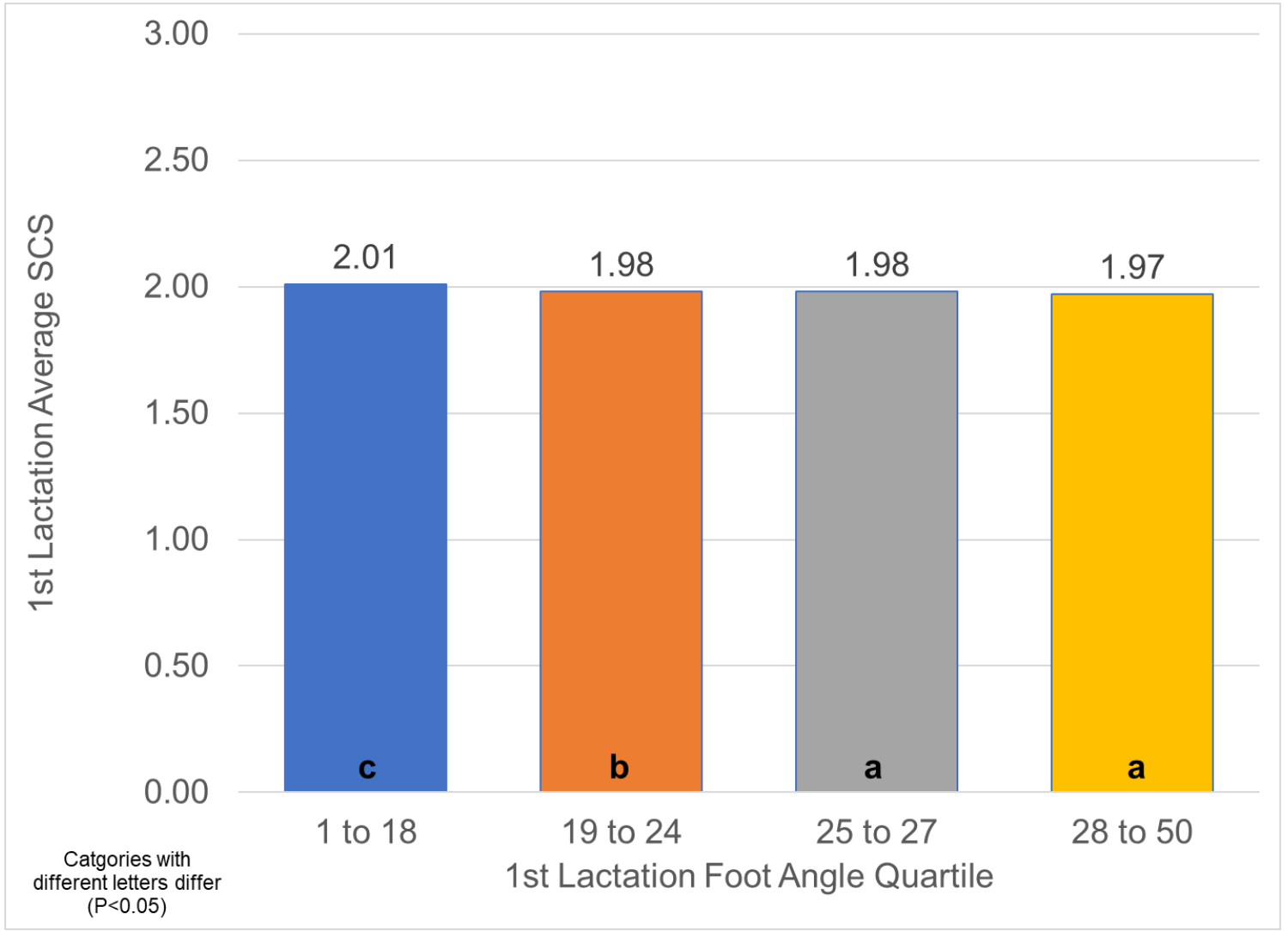
FOOT ANGLE - FA

Primary Trait

1-5 pts.
Extreme low angle

25 pts.
Intermediate angle

45-50 pts.
Extremely steep angle



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1st Lactation Average SCS by 1st Lactation Rear Legs Side View Quartile

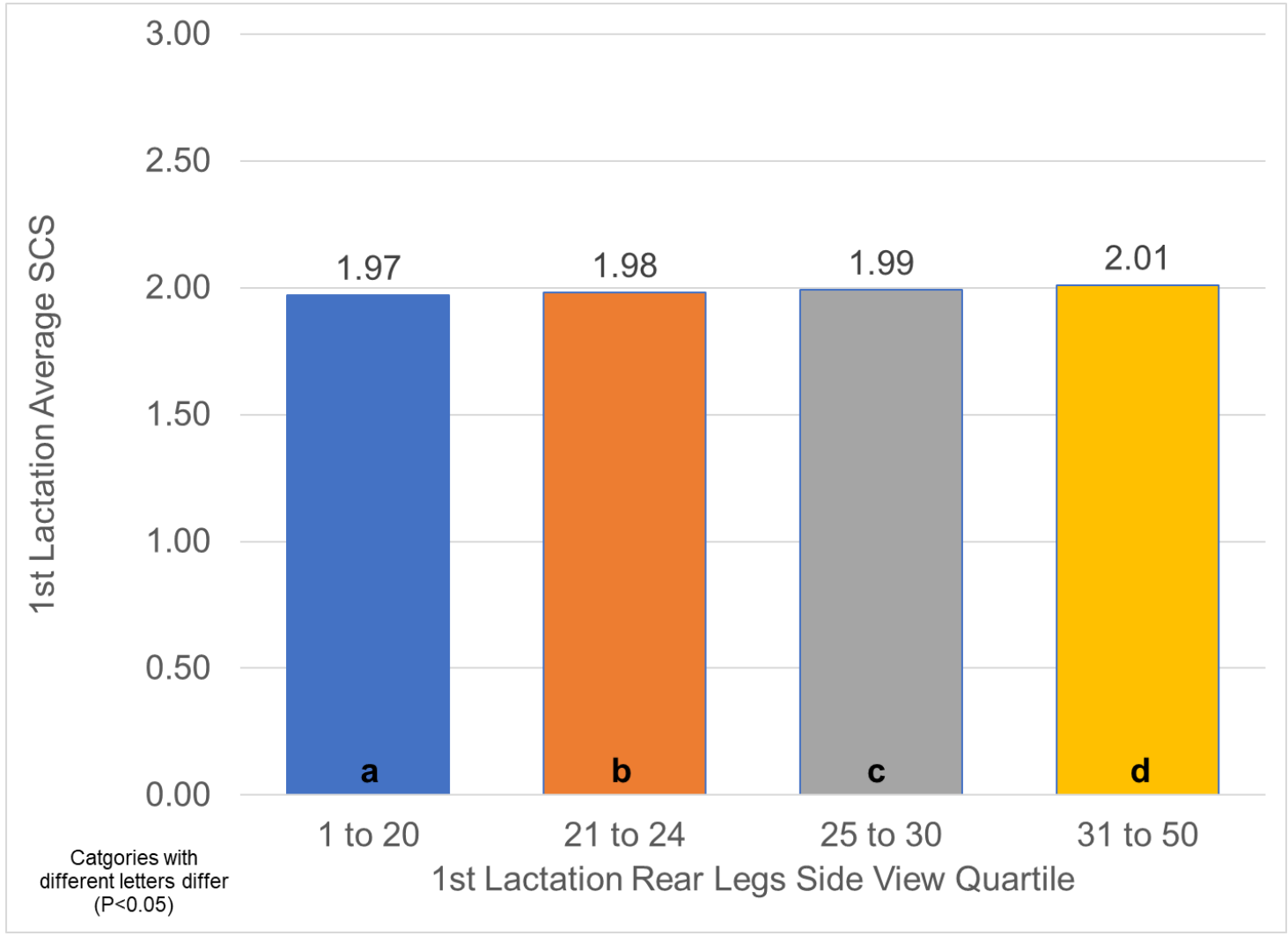
REAR LEGS, SIDE VIEW - LS

Primary Trait

1-5 pts.
Posty and straight

25 pts.
Intermediate set in hock

45-50 pts.
Extremely sickled



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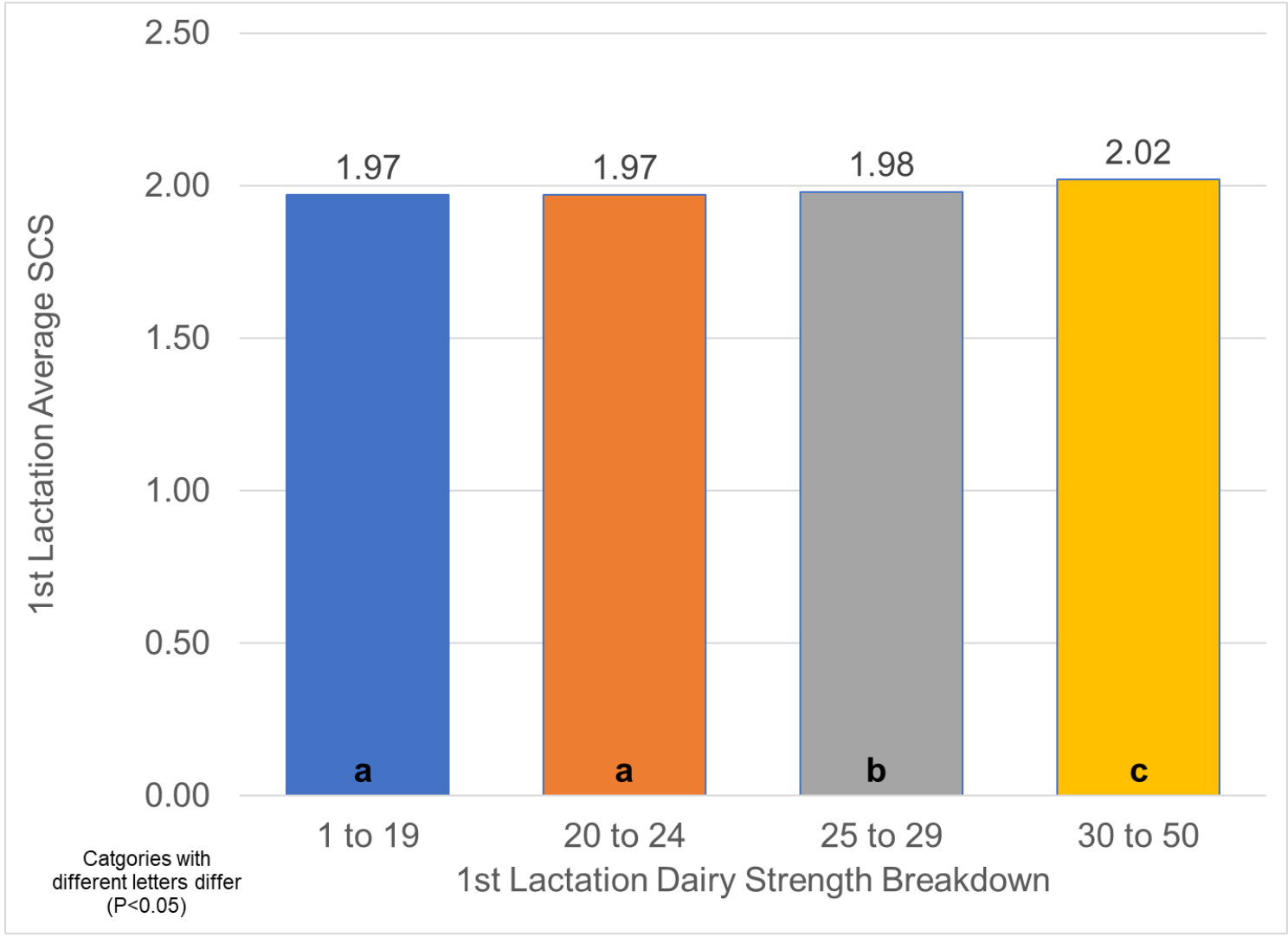
1st Lactation Average SCS by 1st Lactation Dairy Strength Breakdown Quartile



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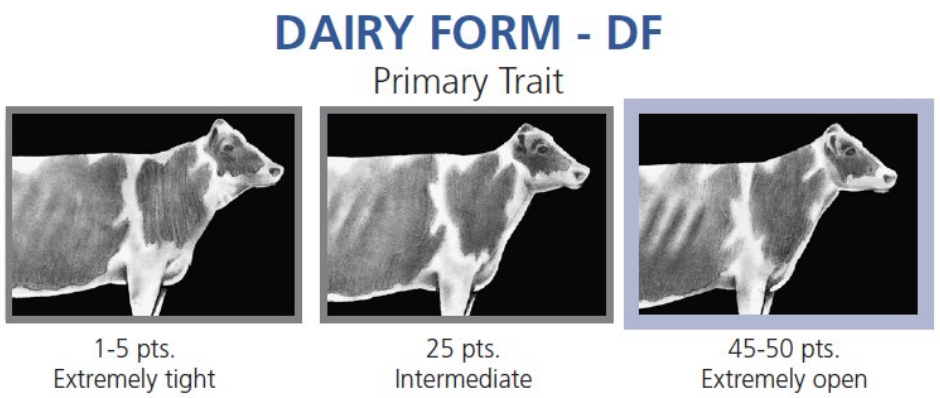
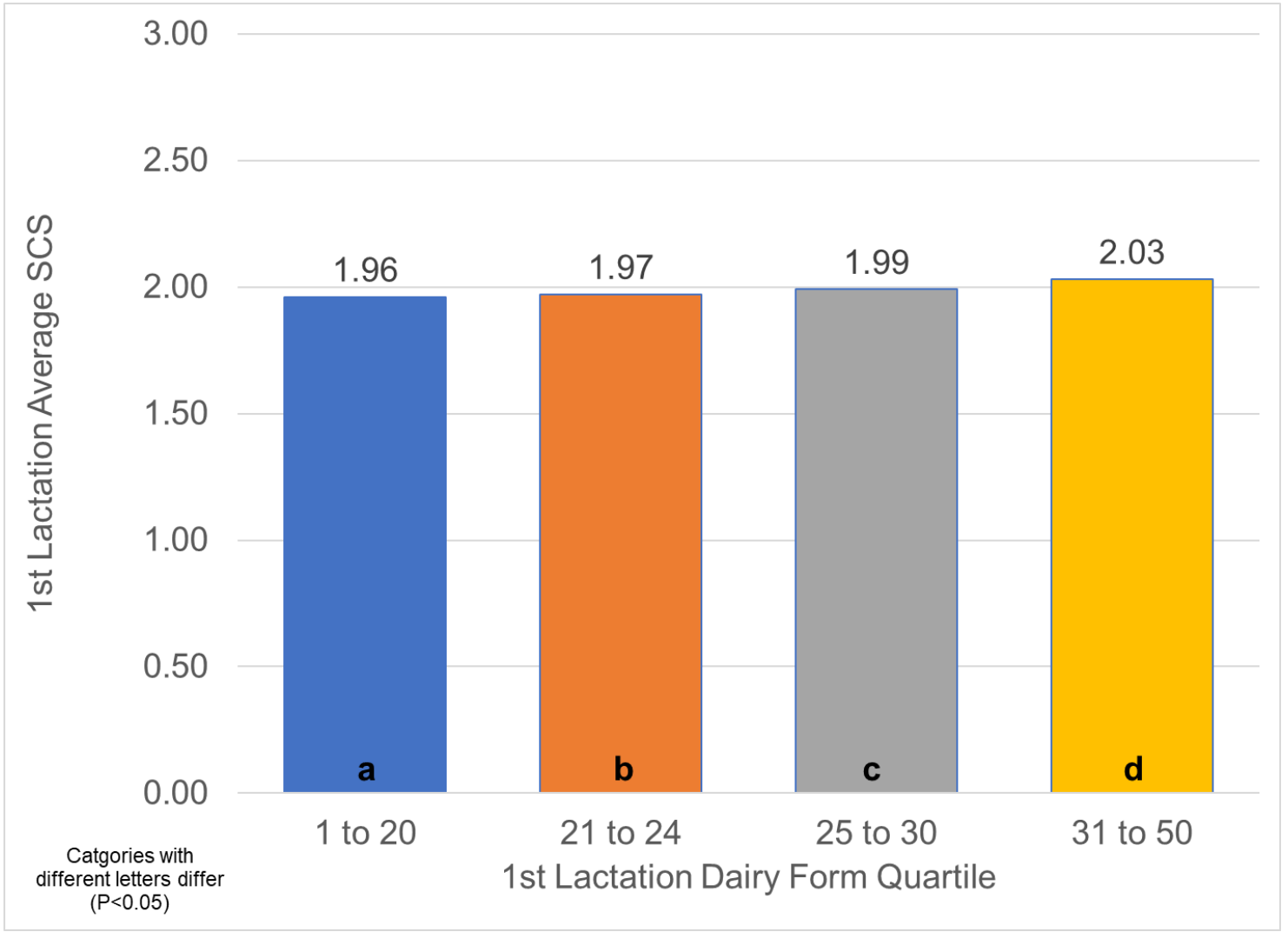
1st Lactation Average SCS by 1st Lactation Dairy Form Quartile





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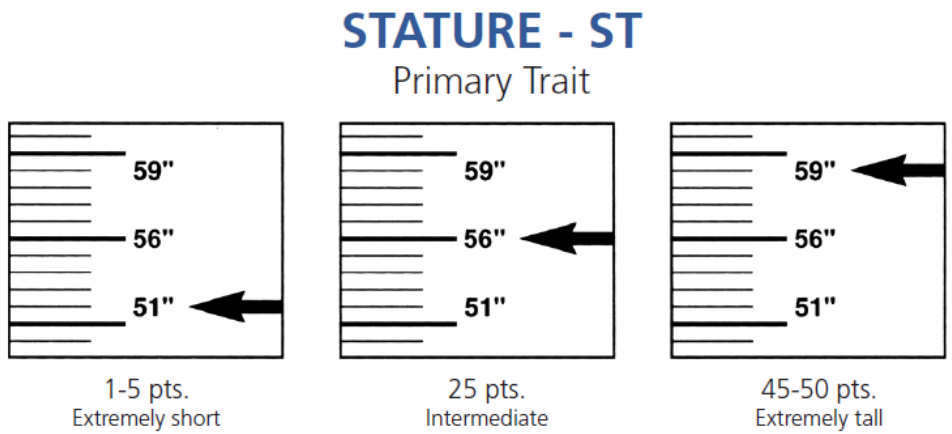
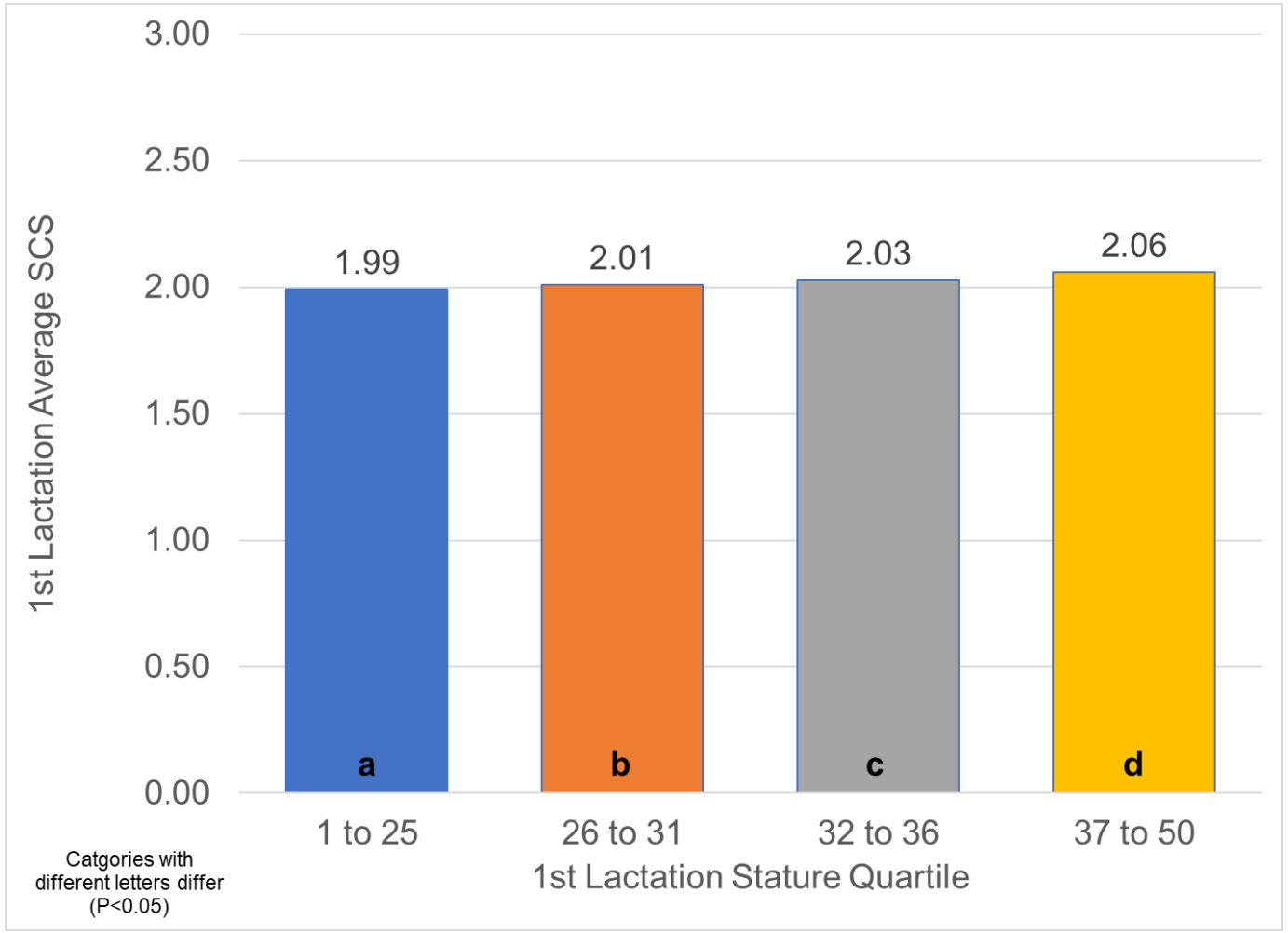
1st Lactation Average SCS by 1st Lactation Stature Quartile





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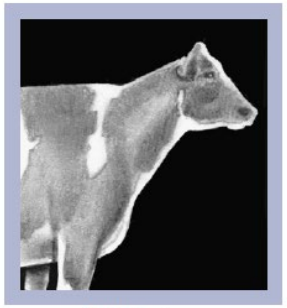
1st Lactation Average SCS by 1st Lactation Strength Quartile

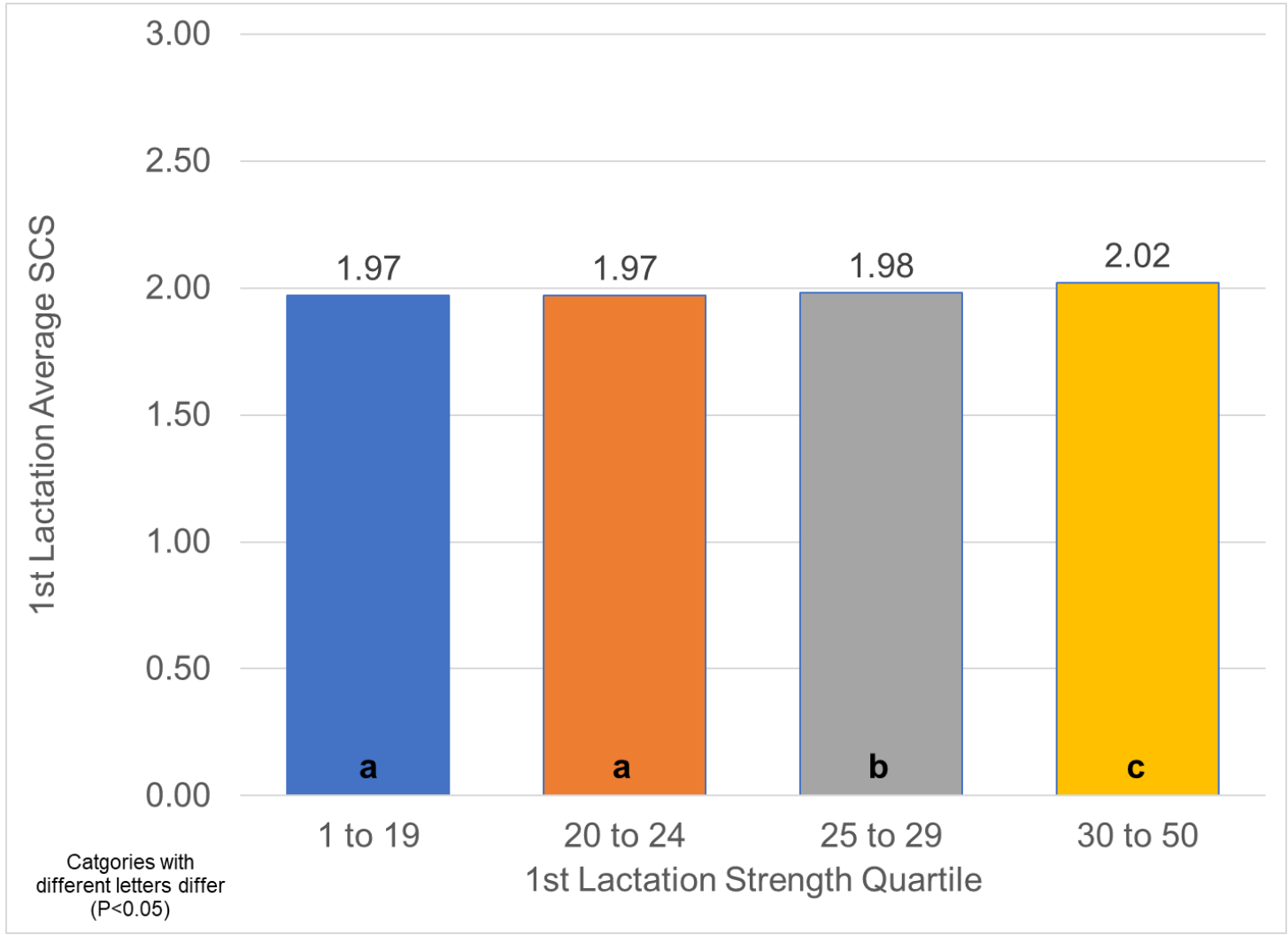
STRENGTH - SR
Primary Trait

1-5 pts.
Extremely narrow and frail

25 pts.
Intermediate



45-50 pts.
Extremely strong & wide



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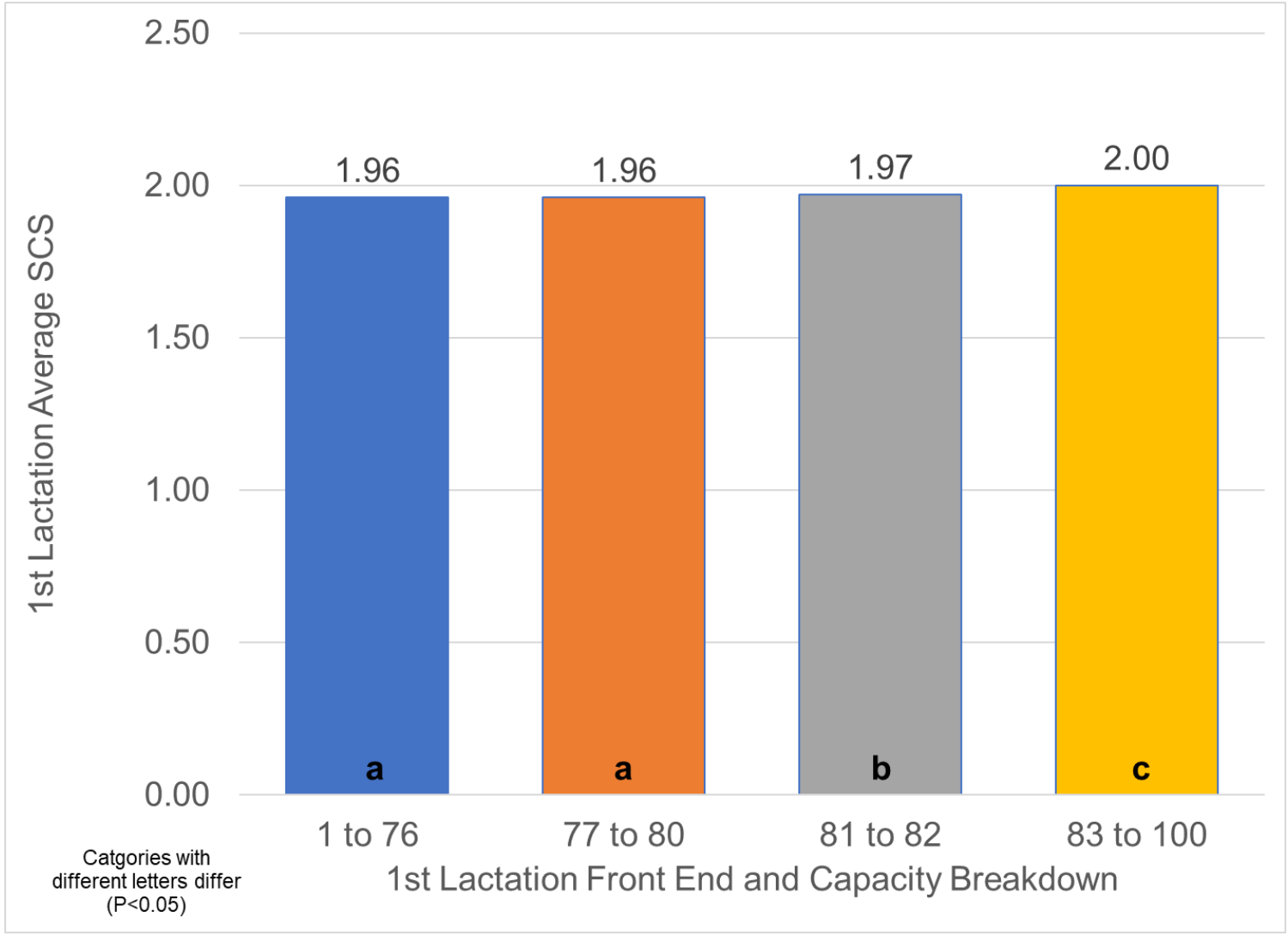
1st Lactation Average SCS by 1st Lactation Front End and Capacity Breakdown Quartile



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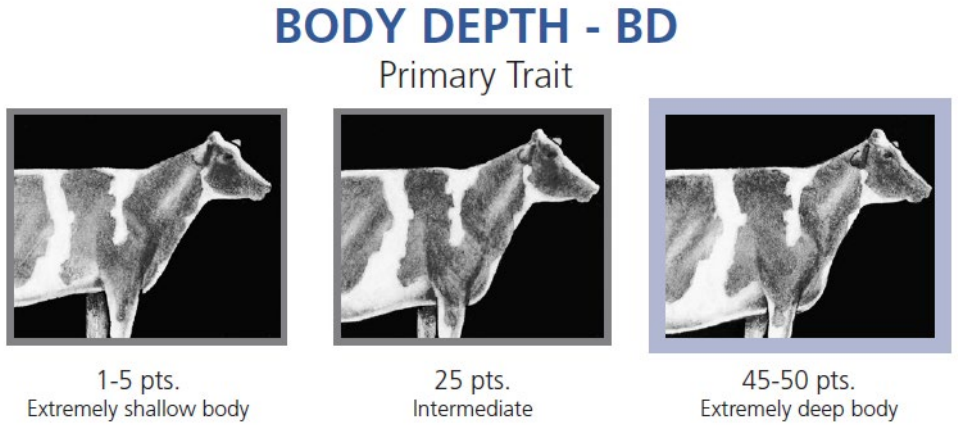
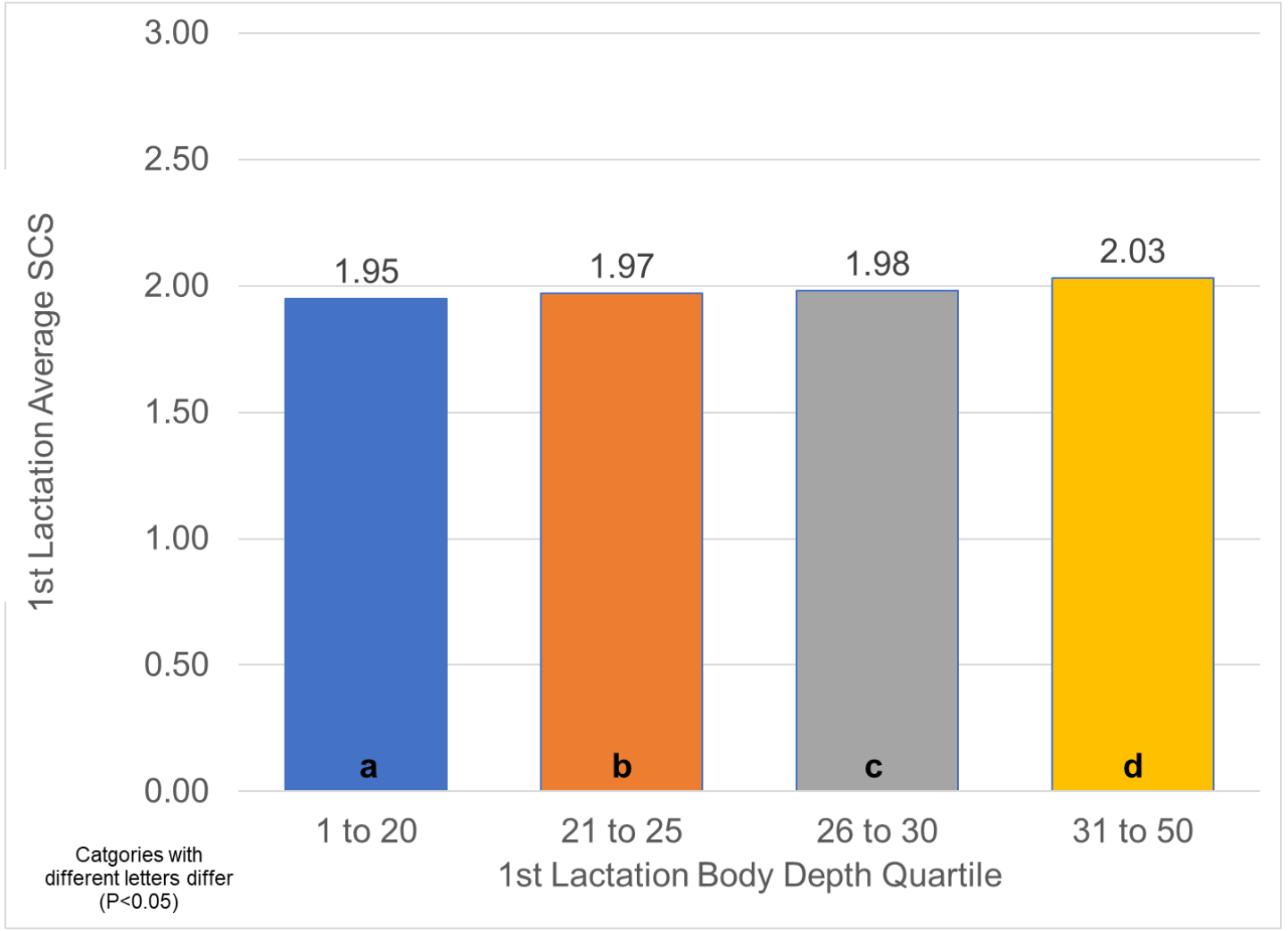
1st Lactation Average SCS by 1st Lactation Body Depth Quartile





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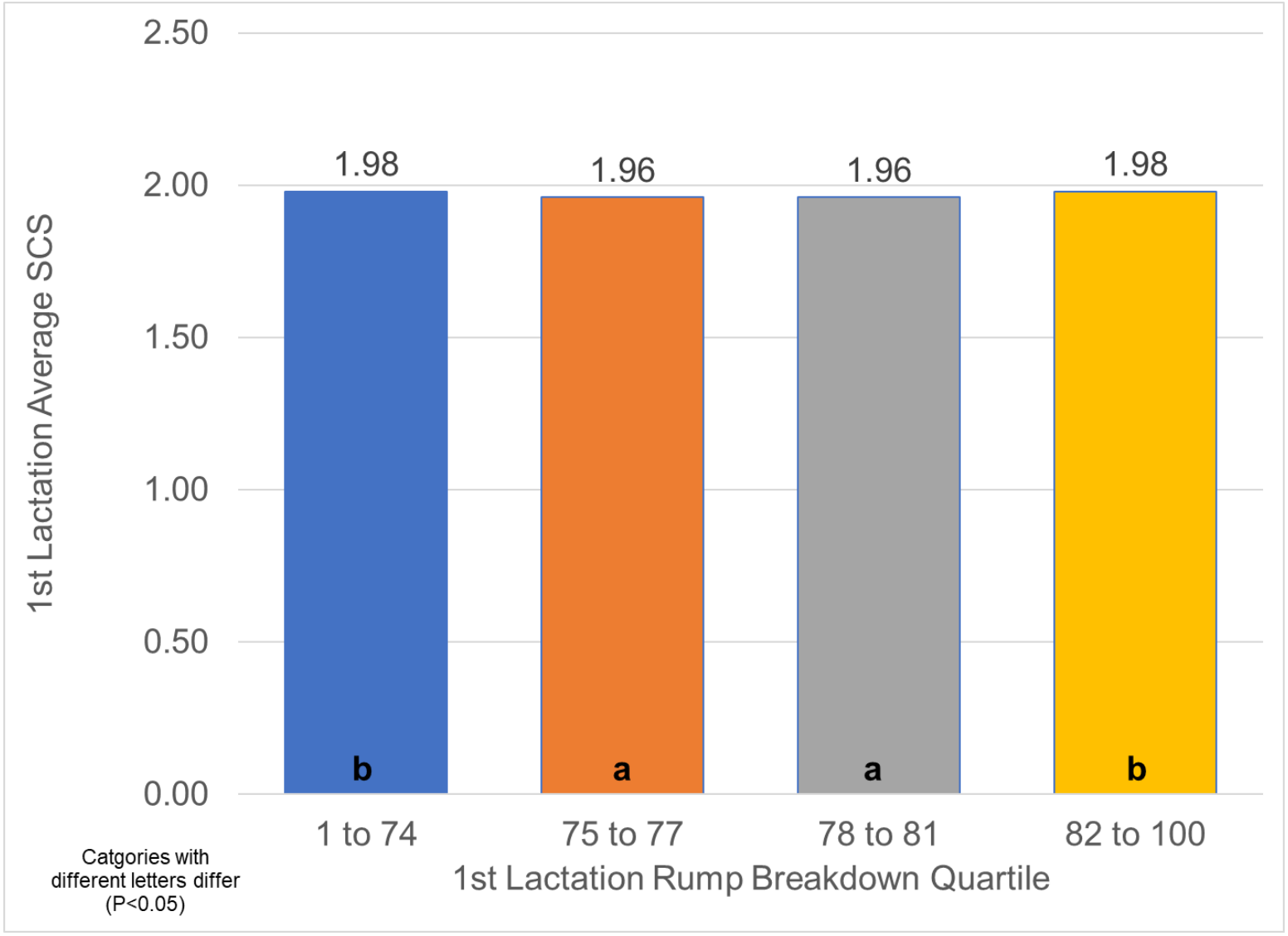
1st Lactation Average SCS by 1st Lactation Rump Breakdown Quartile



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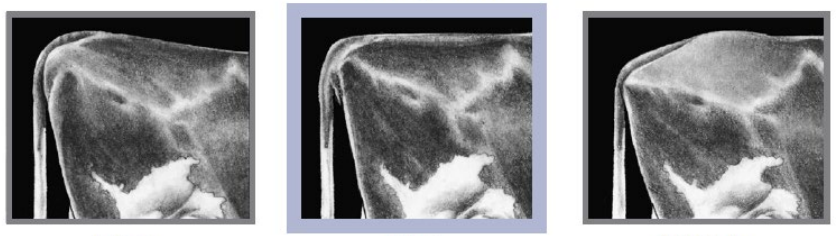
1st Lactation Average SCS by 1st Lactation Rump Angle Quartile

RUMP ANGLE - RA

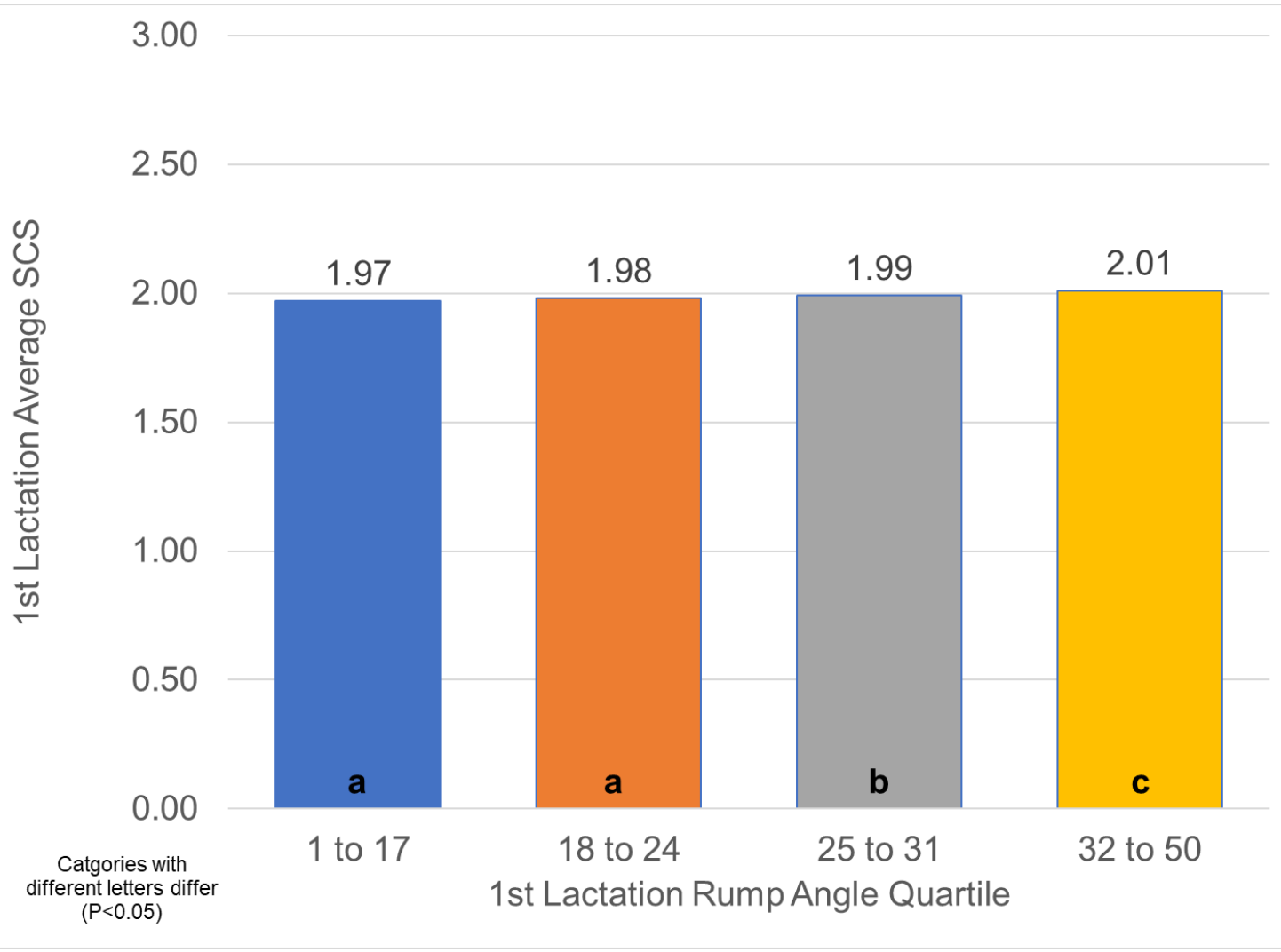
Primary Trait



1-5 pts.
Pins clearly higher than hooks

25 pts.
Slight slope from hooks to pins

45-50 pts.
Extremely sloped from hooks to pins



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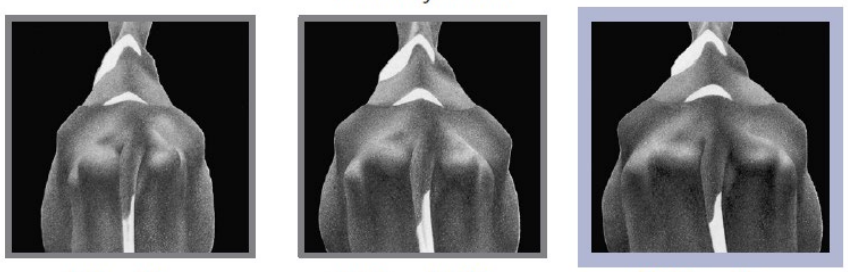
1st Lactation Average SCS by 1st Lactation Thurl Width Quartile

RUMP WIDTH - RW

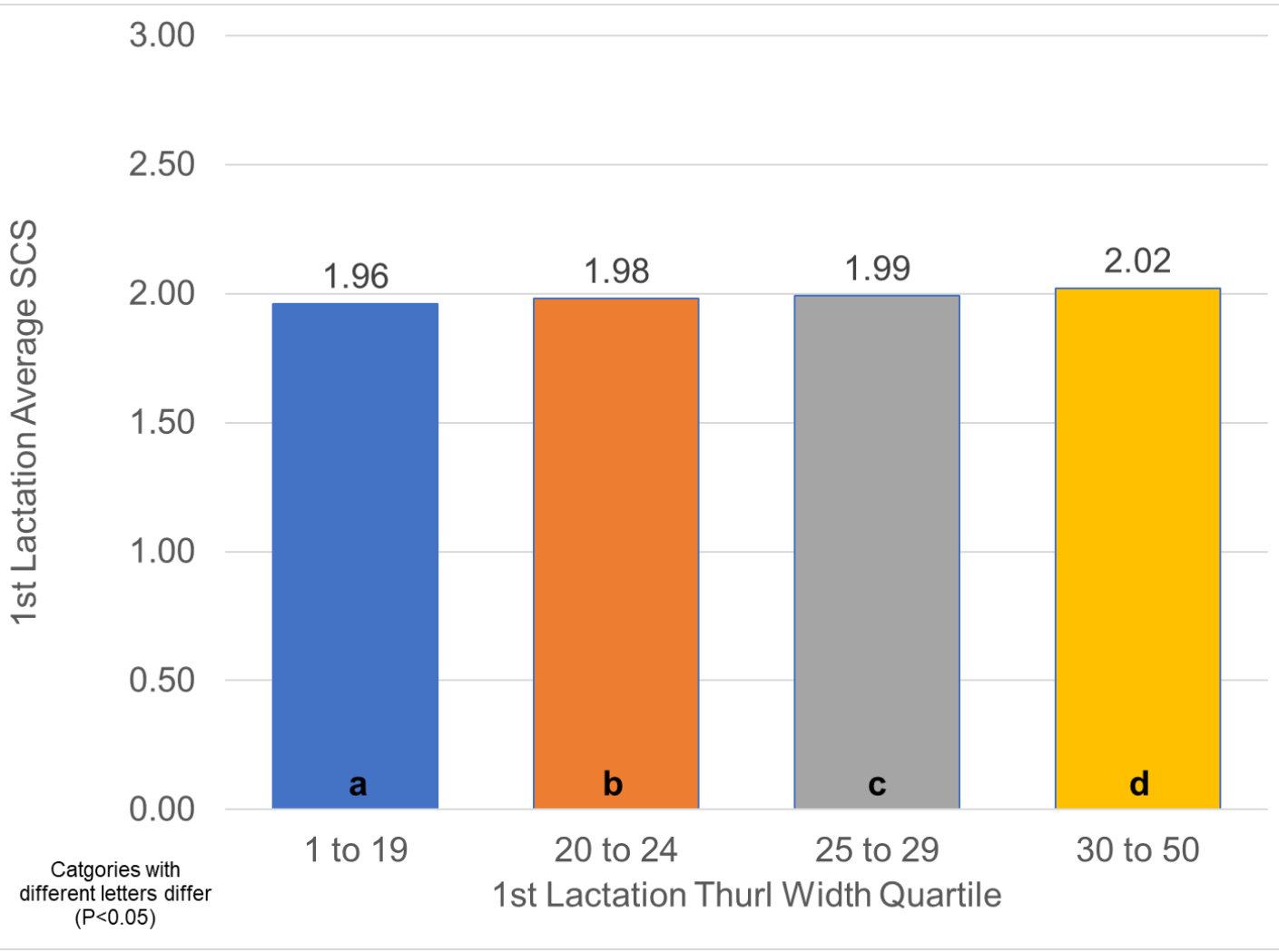
Primary Trait



1 pt. = 2″
Extremely narrow

25 pts. = 4-1/2″
Intermediate width

50 pts. = 7″
Extremely open



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