

Heifer Raising Analysis Report

Skyview

UMN Team

2024-08-28

Introduction

This is an summary of the heifer raising data and performance of purchased and KDD heifers since heifers went to KDD

Description of animals gone to KDD

Table 1 shows descriptive information of the calves that have gone to KDD since 2023-07-21.

Table 1: Descriptive info of calves that went to KDD

| Variable | Overall | Holstein | HoJo | Missing | Other | JE |
|--------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | N = 2,786 | N = 1,151 | N = 1,048 | N = 471 | N = 110 | N = 6 |
| Disease Status | | | | | | |
| Healthy | 1,004 (36%) | 373 (32%) | 311 (30%) | 284 (60%) | 34 (31%) | 2 (33%) |
| Pneumonia | 866 (31%) | 369 (32%) | 307 (29%) | 154 (33%) | 35 (32%) | 1 (17%) |
| Diarrhea | 263 (9.4%) | 90 (7.8%) | 161 (15%) | 0 (0%) | 10 (9.1%) | 2 (33%) |
| Ear | 104 (3.7%) | 57 (5.0%) | 26 (2.5%) | 15 (3.2%) | 6 (5.5%) | 0 (0%) |
| Navel | 14 (0.5%) | 6 (0.5%) | 6 (0.6%) | 0 (0%) | 2 (1.8%) | 0 (0%) |
| Multiple | 535 (19%) | 256 (22%) | 237 (23%) | 18 (3.8%) | 23 (21%) | 1 (17%) |
| 1st Weight (lbs) | 215 (200, 234) | 218 (202, 234) | 209 (194, 218) | 345 (225, 466) | 210 (195, 224) | 205 (188, 215) |
| Unknown | 45 | 22 | 17 | 2 | 4 | 0 |
| Age at 1st weight (lbs) | 90 (85, 95) | 91 (86, 94) | 89 (82, 92) | 187 (90, 213) | 86 (78, 92) | 82 (81, 85) |
| Sold | 226 (8.1%) | 97 (8.4%) | 76 (7.3%) | 46 (9.8%) | 5 (4.5%) | 2 (33%) |
| Back at Skyview | 1,365 (49%) | 455 (40%) | 450 (43%) | 408 (87%) | 48 (44%) | 4 (67%) |
| Days at Grower | 527 (507, 549) | 520 (500, 542) | 530 (514, 556) | NA (NA, NA) | 528 (507, 556) | 533 (518, 551) |
| Unknown | 1,829 | 696 | 598 | 471 | 62 | 2 |

Growth of Heifers

Figure 1 shows how calves are growing at KDD according to their breed and the disease status.

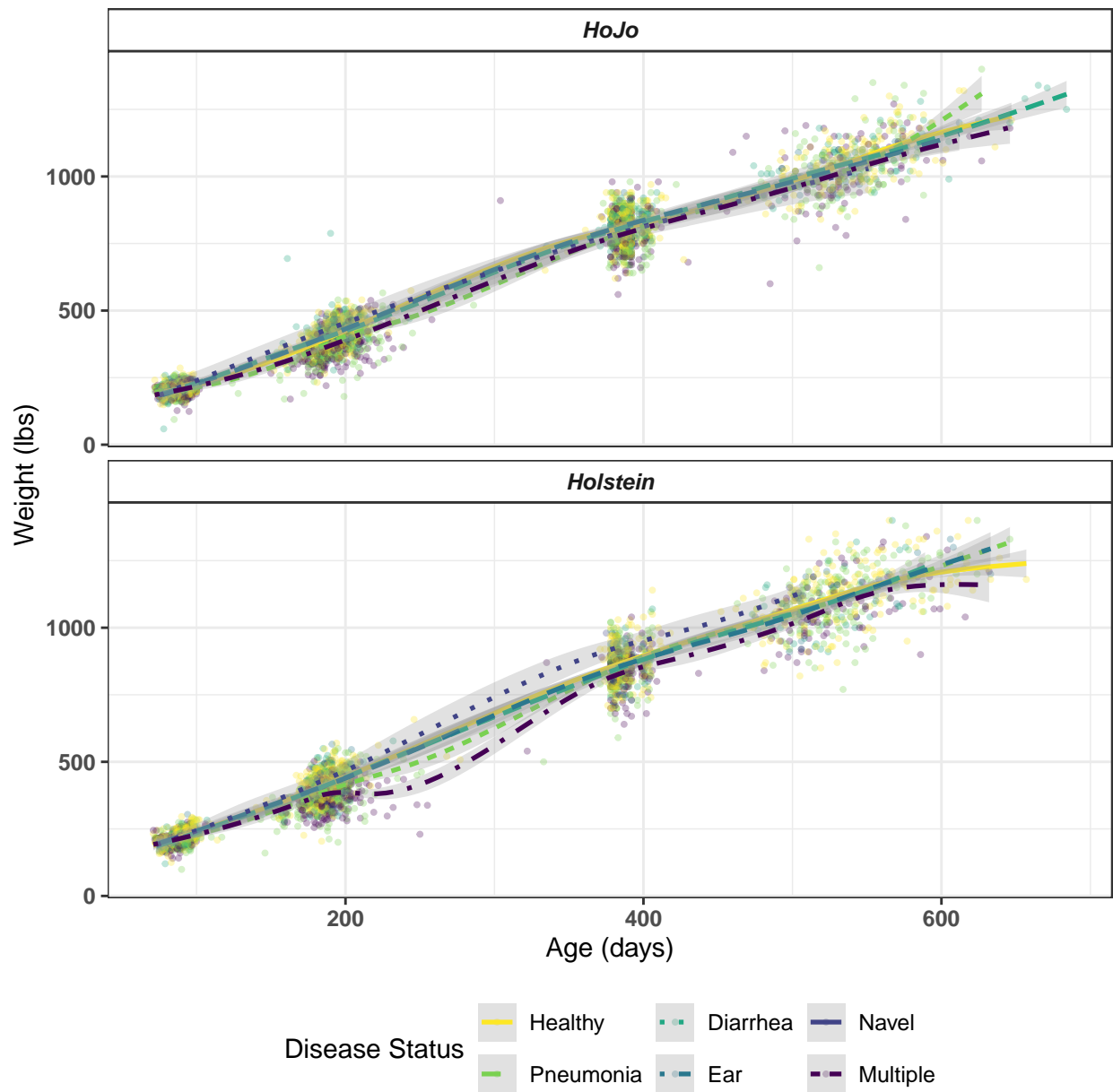


Figure 1: Disease does not seem to impact weights

Growth Rate Table

Table 2 show the growth rates for animals that have returned to Skyview according to their breed and disease status.

Table 2: Growth rates for animals that have returned to Skyview

| Disease Status | Average Daily Gain (IQR) at the Grower | | |
|----------------|--|-------------------|-------------------|
| | Overall | Breed | |
| | | Holstein, N = 455 | HoJo, N = 450 |
| Healthy | 1.96 (1.81, 2.11) | 2.04 (1.91, 2.18) | 1.87 (1.76, 1.99) |
| Pneumonia | 1.95 (1.81, 2.11) | 2.04 (1.93, 2.18) | 1.84 (1.74, 1.93) |
| Diarrhea | 1.91 (1.77, 2.02) | 2.03 (1.81, 2.21) | 1.86 (1.76, 1.96) |
| Ear | 1.94 (1.79, 2.08) | 2.00 (1.84, 2.12) | 1.84 (1.77, 1.91) |
| Navel | 2.09 (2.12, 2.16) | 2.18 (2.14, 2.19) | 1.73 (1.73, 1.73) |
| Multiple | 1.89 (1.74, 2.04) | 1.96 (1.85, 2.09) | 1.83 (1.70, 1.96) |

Effect of Disease on Age of Return Home

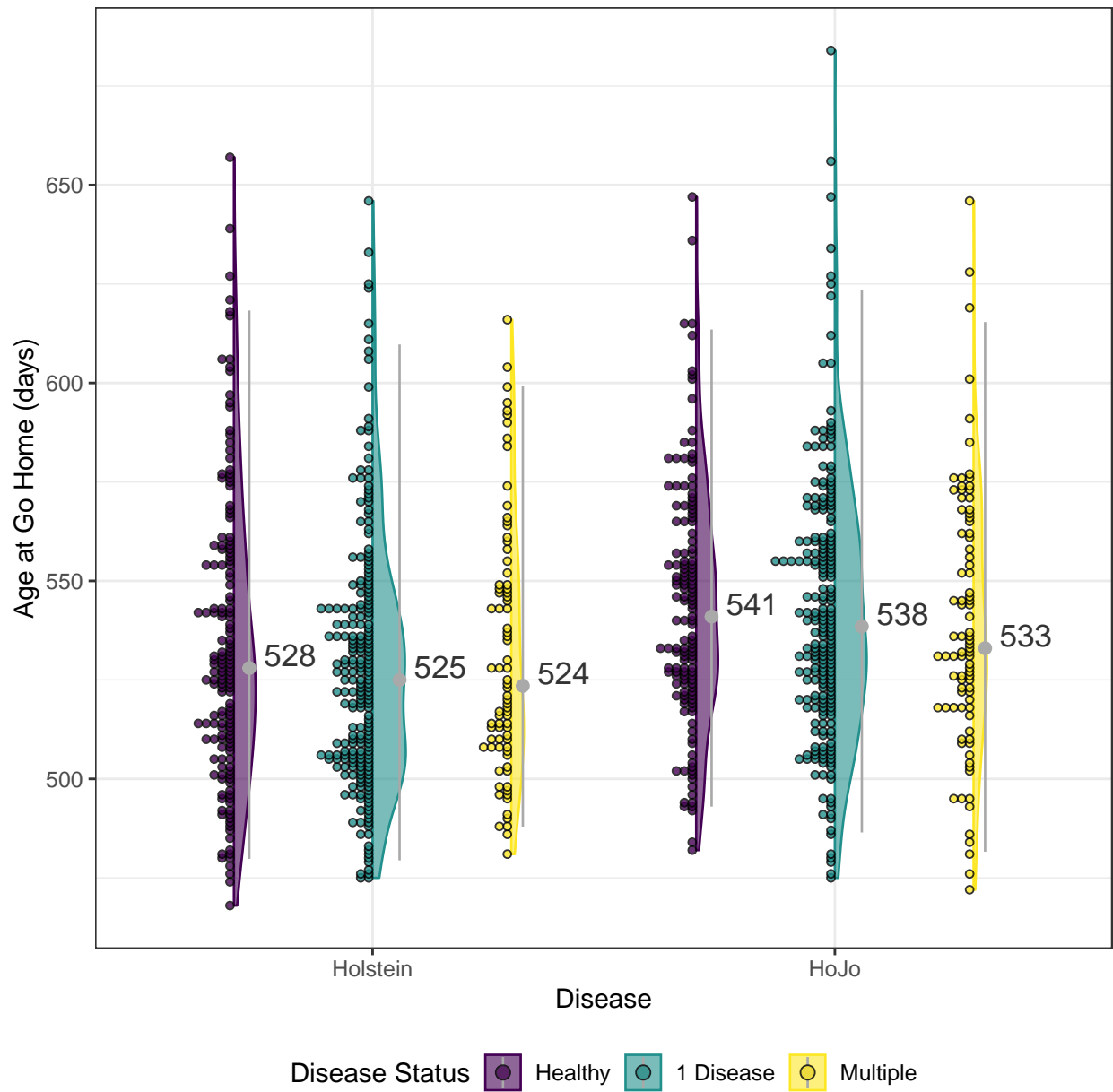


Figure 2: Effect of Disease on age of returning to Skyview

Performance of Purchased vs KDD (Holstein Only)

Comparison of purchased heifers vs KDD heifers is show in Figure 3. This for Holsteins only has not a lot of HoJo's are milking yet. The higher cull rate and the 2-3 lbs difference at 4 and 8 weeks raises the question if that is enough of a difference to pay to raise more heifers at KDD.

Table 3: Descriptive data on KDD and purchased animals that freshened at Skyview

| Variable | KDD | Purchased | Difference | 95% CI |
|------------------------------------|-------------------|-------------------|------------|--------------|
| | N = 474 | N = 772 | | |
| Days in Close Up | 11 (8, 15) | 9 (1, 15) | 0.80 | -0.55, 2.2 |
| Age fresh (days) | 680 (665, 706) | 721 (678, 765) | | |
| Times sick during Lactation | | | -0.20 | -0.32, -0.09 |
| 0 | 255 (54%) | 337 (44%) | | |
| 1 | 139 (29%) | 248 (32%) | | |
| 2 | 47 (9.9%) | 110 (14%) | | |
| 3 | 20 (4.2%) | 54 (7.0%) | | |
| 4 | 12 (2.5%) | 18 (2.3%) | | |
| 5 | 1 (0.2%) | 5 (0.6%) | | |
| Times mastitis | | | -0.03 | -0.14, 0.08 |
| 0 | 322 (68%) | 517 (67%) | | |
| 1 | 108 (23%) | 176 (23%) | | |
| 2 | 30 (6.3%) | 50 (6.5%) | | |
| 3 | 11 (2.3%) | 26 (3.4%) | | |
| 4 | 2 (0.4%) | 2 (0.3%) | | |
| 5 | 1 (0.2%) | 1 (0.1%) | | |
| Milk in Week 1 (lbs) | 41 (35, 47) | 40 (35, 47) | 0.01 | -1.1, 1.2 |
| # with No Test | 7 | 15 | | |
| Milk in Week 4 (lbs) | 63 (55, 71) | 62 (51, 71) | 1.8 | 0.08, 3.5 |
| # with No Test | 27 | 56 | | |
| Milk in Week 8 (lbs) | 77 (66, 87) | 73 (64, 84) | 3.1 | 1.0, 5.1 |
| # with No Test | 69 | 123 | | |
| LS First Test | 2.10 (1.10, 3.60) | 2.40 (1.20, 4.10) | -0.35 | -0.60, -0.11 |
| % Sold/Died | 89 (19%) | 204 (26%) | -7.6% | -13%, -2.8% |

Milk Production

Figure 3 compares average daily milk production at week 1, 4 and 8.

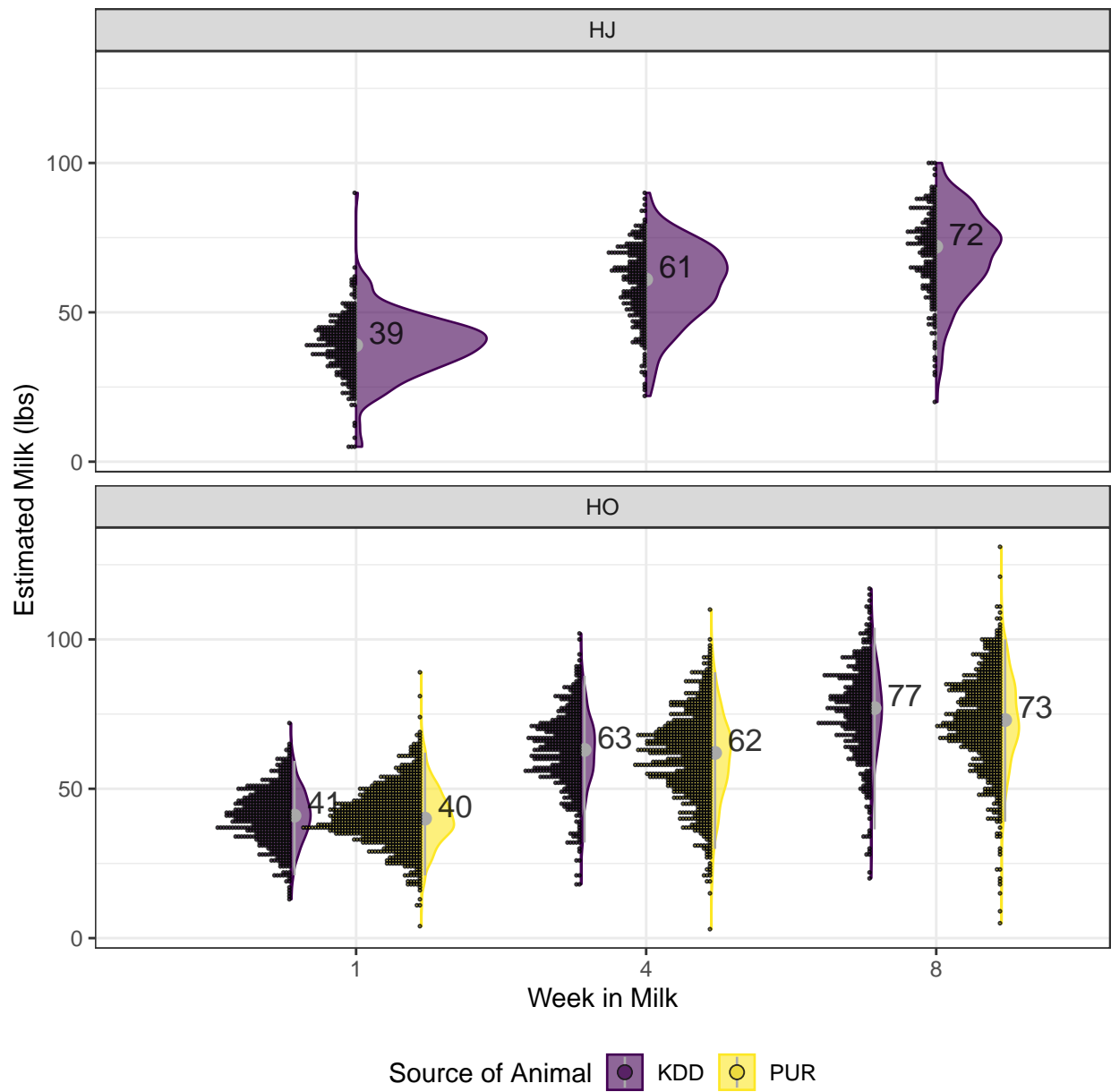


Figure 3: KDD heifers make more milk

Table 4: Disease as calf does not seem to impact performance early in lactation

| Variable | Healthy | 1 Disease | Multiple |
|------------------------------------|-------------------|-------------------|-------------------|
| | N = 118 | N = 174 | N = 57 |
| Days in Close Up | 11 (8, 15) | 11 (7, 14) | 10 (8, 13) |
| Age fresh (days) | 679 (665, 704) | 678 (665, 693) | 676 (662, 695) |
| Times sick during Lactation | | | |
| 0 | 66 (56%) | 107 (61%) | 33 (58%) |
| 1 | 31 (26%) | 42 (24%) | 15 (26%) |
| 2 | 13 (11%) | 14 (8.0%) | 6 (11%) |
| 3 | 3 (2.5%) | 5 (2.9%) | 3 (5.3%) |
| 4 | 5 (4.2%) | 5 (2.9%) | 0 (0%) |
| 5 | 0 (0%) | 1 (0.6%) | 0 (0%) |
| Times mastitis | | | |
| 0 | 78 (66%) | 125 (72%) | 42 (74%) |
| [!h] 1 | 27 (23%) | 34 (20%) | 10 (18%) |
| 2 | 10 (8.5%) | 8 (4.6%) | 4 (7.0%) |
| 3 | 2 (1.7%) | 5 (2.9%) | 1 (1.8%) |
| 4 | 1 (0.8%) | 1 (0.6%) | 0 (0%) |
| 5 | 0 (0%) | 1 (0.6%) | 0 (0%) |
| Milk in Week 1 (lbs) | 41 (34, 48) | 41 (34, 47) | 37 (33, 42) |
| # with No Test | 1 | 5 | 0 |
| Milk in Week 4 (lbs) | 65 (54, 71) | 63 (54, 70) | 62 (55, 70) |
| # with No Test | 10 | 12 | 1 |
| Milk in Week 8 (lbs) | 78 (64, 87) | 76 (66, 85) | 77 (65, 85) |
| # with No Test | 20 | 34 | 7 |
| LS First Test | 2.00 (1.00, 3.38) | 2.10 (1.00, 3.48) | 2.20 (1.10, 3.30) |
| % Sold/Died | 18 (15%) | 21 (12%) | 3 (5.3%) |

¹ N = n; Median (IQR); n (%)

Impact of Disease on Milk Production

For animal raised at KDD the following graph and table show impact of disease on productivity

Impact of Disease on Milk Graph

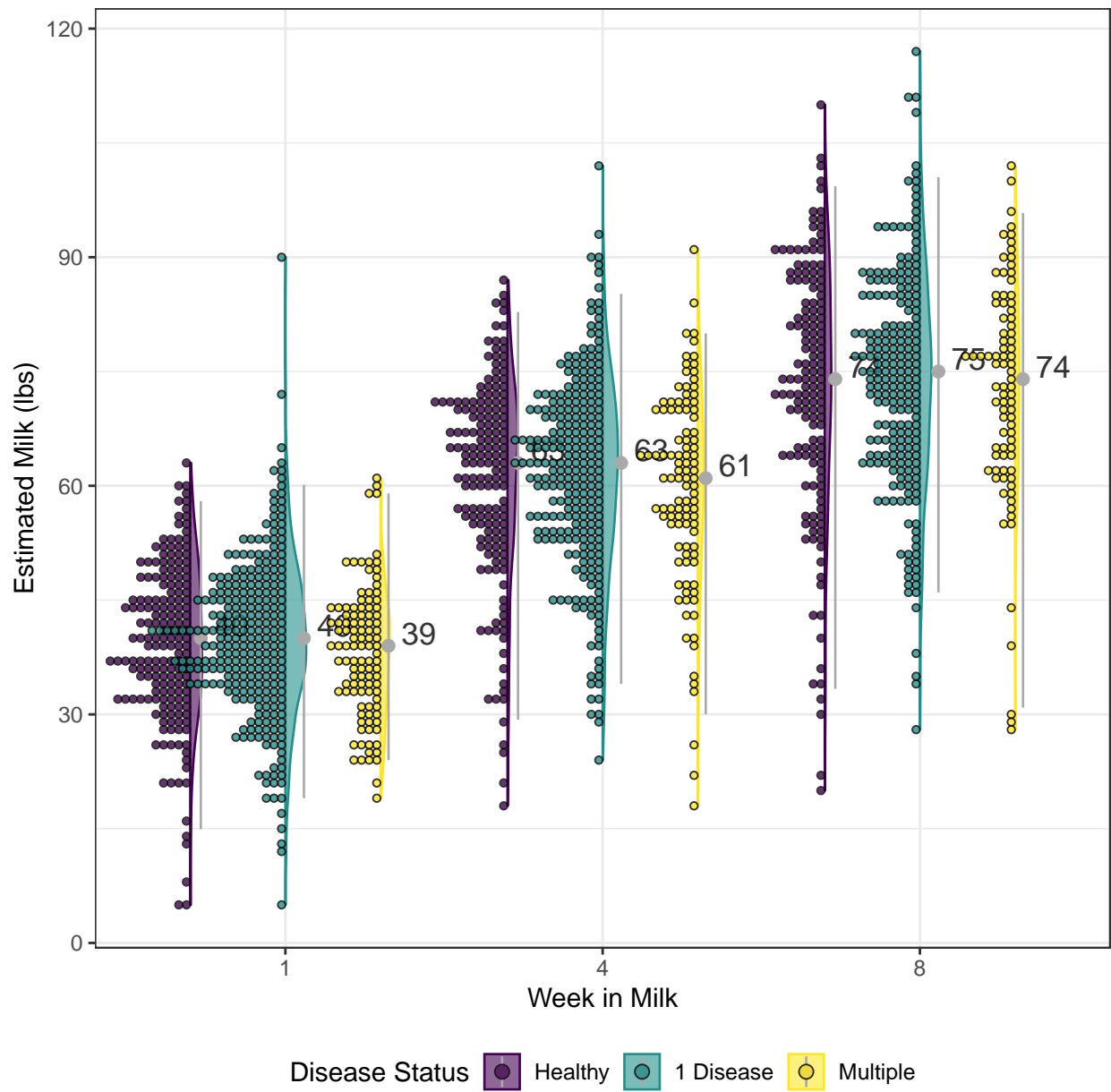


Figure 4: Having a disease as a calf does not impact milk

Culling Differences between KDD and purchased animals

Data is presented as survival curves and tables. Survival curves should be interpreted as the longer the line stays close to 100%, the better. The faded out areas indicate the uncertainty around the estimated line. If the shaded areas overlap the lines are basically the same. Survival time is counted as time from calving.

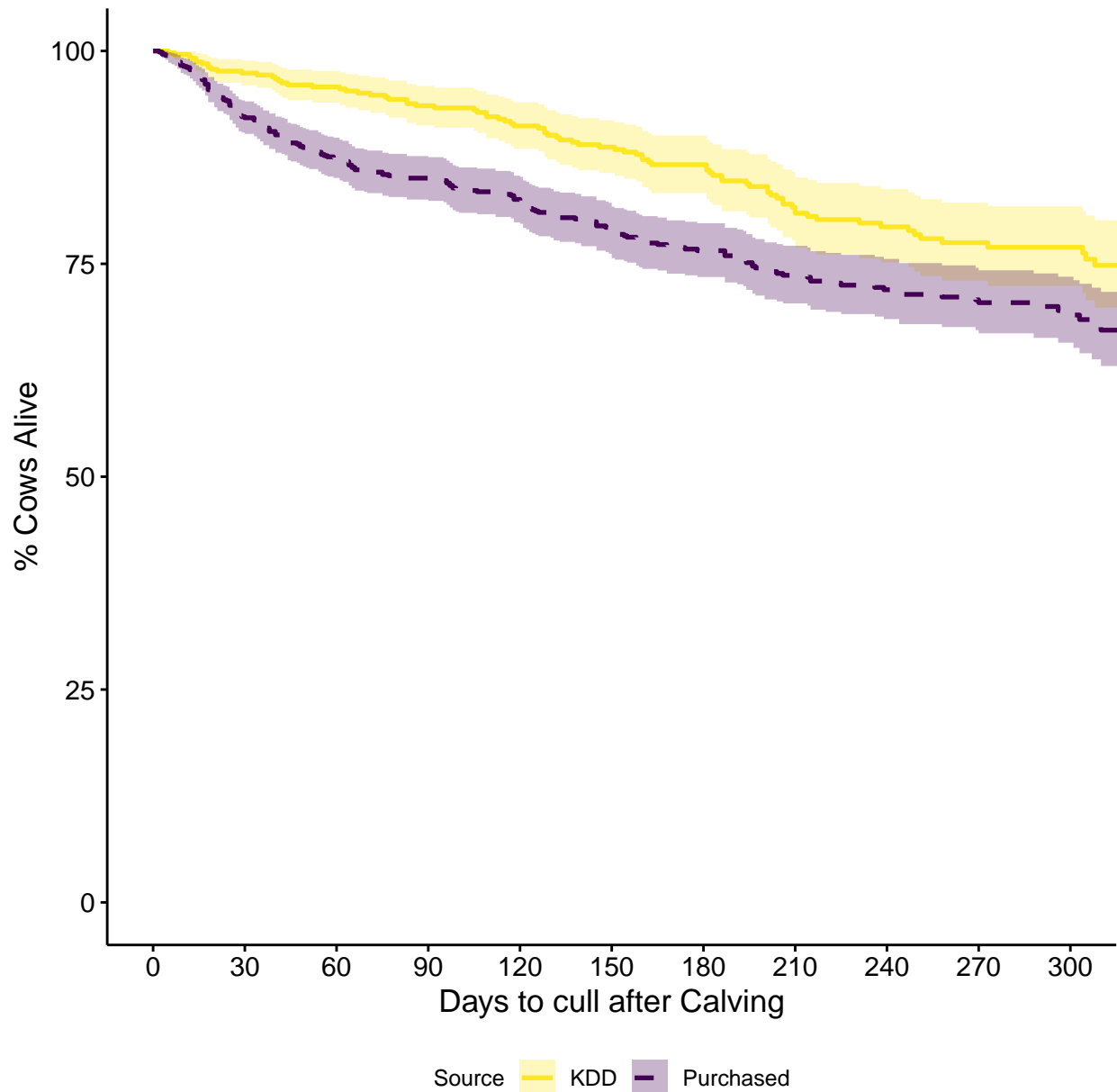


Figure 5: KDD heifers last longer

Table 5: Probability of being culled is much higher for purchased heifers

| Source | Probability of Culling (Confidence Interval) at | | | | |
|-----------|---|-------------------|-------------------|-----------------|----------------|
| | 30 Days | 60 Days | 90 Days | 180 Days | 300 Days |
| KDD | 2.6% (1.1%, 4.0%) | 4.2% (2.3%, 6.1%) | 6.4% (4.1%, 8.7%) | 13% (9.9%, 17%) | 23% (18%, 28%) |
| Purchased | 7.8% (5.9%, 9.7%) | 13% (10%, 15%) | 15% (12%, 18%) | 23% (20%, 27%) | 30% (27%, 34%) |

Impact of days in close up on Culling

A possible explanation for purchased animals not last as long is that they do worse with shorter days in close-up. The graph and table below support this.

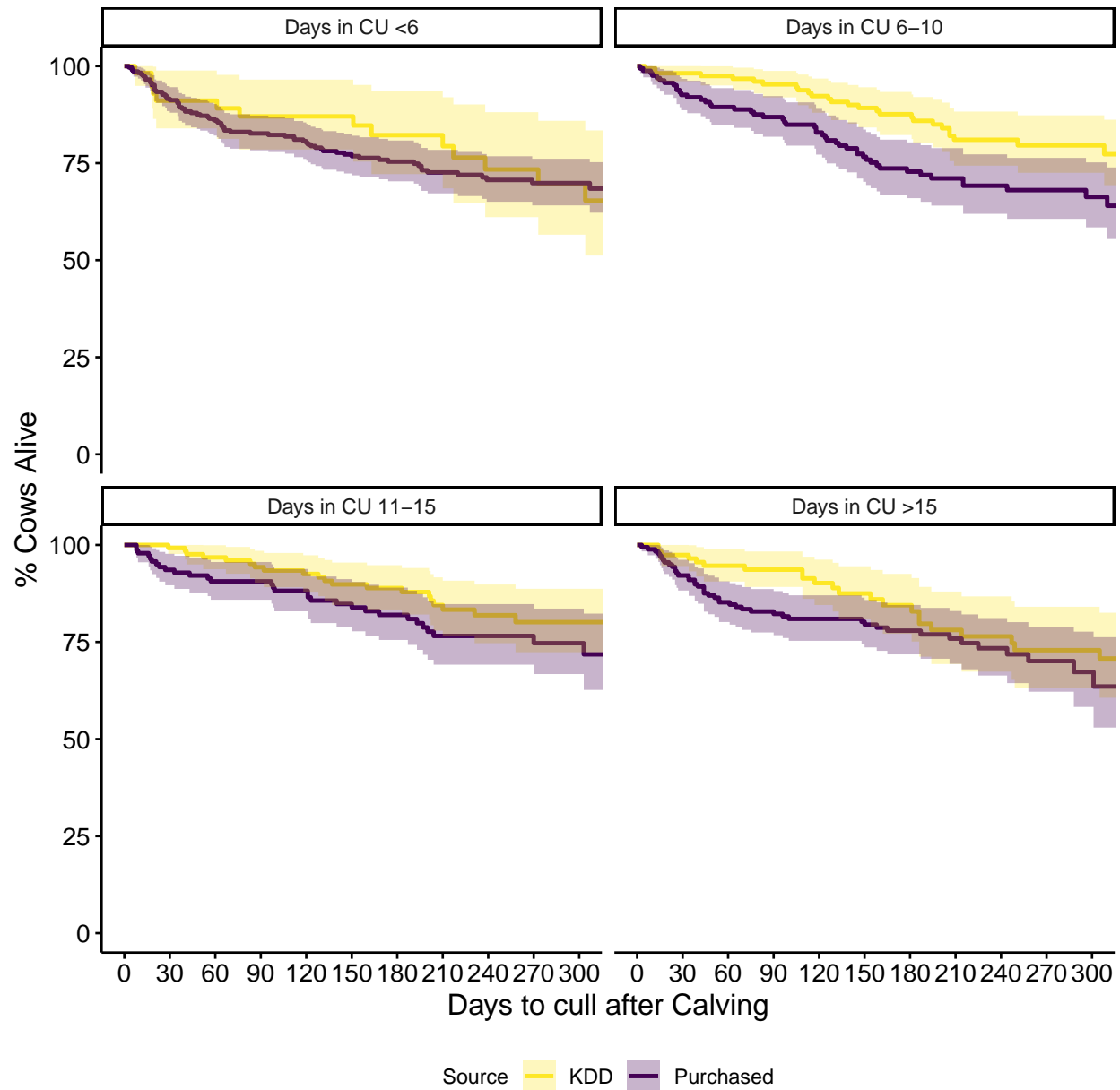


Figure 6: The sweet spot for days in close up is > 10 days

Table 6: 1st lactation cows from KDD that spend >6 days in the close-up pen get culled the least.
Purchased cows need at least >10 days

| Source | Probability of Culling (Confidence Interval) at | | | | |
|--------------------------|---|--------------------|-------------------|-----------------|----------------|
| | 30 Days | 60 Days | 90 Days | 180 Days | 300 Days |
| Days in CU <6 | | | | | |
| KDD | 8.9% (1.1%, 16%) | 8.9% (1.1%, 16%) | 13% (3.5%, 21%) | 18% (6.4%, 28%) | 30% (14%, 43%) |
| Purchased | 8.8% (5.4%, 12%) | 14% (9.8%, 18%) | 17% (13%, 22%) | 25% (19%, 30%) | 30% (24%, 36%) |
| Days in CU 6-10 | | | | | |
| KDD | 1.8% (0%, 3.9%) | 2.6% (<0.1%, 5.0%) | 4.7% (1.2%, 8.1%) | 12% (6.7%, 18%) | 20% (13%, 27%) |
| Purchased | 7.4% (3.3%, 11%) | 11% (5.7%, 15%) | 13% (7.7%, 18%) | 27% (20%, 34%) | 34% (25%, 42%) |
| Days in CU 11-15 | | | | | |
| KDD | 0.8% (0%, 2.3%) | 3.2% (<0.1%, 6.2%) | 5.7% (1.5%, 9.7%) | 11% (5.2%, 17%) | 20% (11%, 28%) |
| Purchased | 6.4% (2.3%, 10%) | 9.4% (4.4%, 14%) | 9.4% (4.4%, 14%) | 18% (11%, 24%) | 25% (16%, 33%) |
| Days in CU >15 | | | | | |
| KDD | 2.6% (0%, 5.4%) | 5.4% (1.1%, 9.4%) | 6.4% (1.7%, 11%) | 16% (7.4%, 23%) | 27% (16%, 37%) |
| Purchased | 7.9% (3.8%, 12%) | 15% (9.4%, 20%) | 18% (12%, 23%) | 22% (15%, 28%) | 33% (22%, 42%) |