The NASS Carcass Weight Signal, Read as the Direct US Supply Pipeline Pressure on Live Cattle

Why USDA NASS cattle carcass weight year-over-year, z-scored on two years, catches the US supply pipeline pressure that transmits through packer bidding dynamics to CME Live Cattle forward returns.

David Stendahl · Market Lab Analytics · October 31, 2026

What this signal is, with the limits stated upfront

USDA NASS publishes monthly cattle slaughter data including average carcass weight for federally-inspected cattle. Carcass weight is a direct read on how long feedlots are holding cattle: heavy weights YoY mean feedlots are extending holding time (slow packer pull, soft cash cattle market); light weights mean cattle are being pulled through faster (strong packer demand, tight pipeline).

This signal pulls NASS cattle carcass weight year-over-year, computes 252-trading-day pct_change, z-scores on a 504-day (two-year) rolling window, and bounds with tanh. State thresholds at plus or minus 0.2 (moderate) and plus or minus 0.5 (extreme). Monthly NASS release cadence.

Here is the honest finding. Daily Spearman IC against LC fwd60d is plus 0.020 at p-value 0.059 across 8,989 trading days – MARGINAL, just at the significance threshold. Non-overlapping (every-60-day) IC is plus 0.011 at p-value 0.89 across 150 independent samples – not significant. The daily IC is weak relative to other LC overlays.

However, Phase +1 (Heavy Carcass) state-conditional stats are strong: mean fwd60d plus 3.41 percent, hit rate 78.0 percent, plus 2.39 pp above the plus 1.02 percent baseline. The signal fires rarely (6.6 percent of sample) but when it fires, forward LC direction is highly directional. This is Grade C+ with weak daily IC but reliable tail behavior – the signal matters when it fires at the extreme.

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How the inputs compose

NASS cattle slaughter monthly release reports federally-inspected cattle slaughter including number of head, live weight, and dressed (carcass) weight. The signal uses dressed weight YoY as the composite input. Monthly cadence is forward-filled to daily.

Carcass weight is a direct behavioral read on feedlot decision-making. Feedlots have discretion over slaughter timing within their contracted-animal inventory. When packer bidding is soft (packer margins compressed, cash cattle weak), feedlots respond by holding cattle longer – adding days-on-feed, increasing finished weights. The monthly carcass-weight YoY captures this behavioral response.

Heavy YoY → slow packer pull → pipeline overhang → forward supply pressure near-term + forward recovery 60 days out as the overhang works through and bidding resets. Light YoY → packer pull is strong → tight pipeline → forward LC firms via supply tightness, OR cycle-top signal where tight pipeline reflects historically high LC prices about to break.

The engine z-scores on a 504-day (approximately 2-year) rolling window to normalize for secular trend changes in US cattle genetics (improved breeds have lifted average carcass weight by approximately 20 pounds per decade since 1990). The z-score isolates cyclical pipeline-pressure signals from the secular trend.

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What the state-conditional returns have actually done

> **Reference baseline – LC fwd60d (unconditional)**
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> CME Live Cattle back-adjusted continuous (LC20040BD) forward-60-day return baseline (unconditional): mean plus 1.02 percent, median plus 1.74 percent, standard deviation 8.01 percent, percent negative 41.8 percent. Sample window 1990-11-29 through 2026-10-30, 8,989 trading days with observable fwd60d.

Phase plus 1 (Heavy Carcass, composite greater than plus 0.3) covers 592 trading days – 6.6 percent of the sample. Mean fwd60d is plus 3.41 percent, hit rate 78.0 percent. Edge above baseline: plus 2.39 pp. This is the strong-tail-behavior state: when feedlots have been holding cattle long enough to run the YoY to a 2-year extreme, the pipeline overhang historically works through and forward LC recovers.

Phase 0 (Normal, composite between plus and minus 0.3) covers 7,414 trading days – 82.5 percent of the sample. Mean fwd60d is plus 0.77 percent, hit rate 54.8 percent. Edge below baseline: minus 0.25 pp. The vast majority of the sample is in this zone; the signal fires only occasionally into the directional tails.

Phase minus 1 (Light Carcass, composite less than minus 0.3) covers 983 trading days – 10.9 percent of the sample. Mean fwd60d is plus 1.50 percent, hit rate 68.3 percent. Edge above baseline: plus 0.48 pp. The Light Carcass tail is ABOVE baseline rather than below – this is non-standard directionally. Light carcass can signal strong demand (bullish forward) OR cycle-top tightness (bearish forward). The historical mix delivers modestly above baseline.

The signal has asymmetric tail behavior: strong Phase +1 hit rate (78%) with +2.39 pp edge, modest Phase –1 pattern. Phase 0 near baseline. The signal is best read as a “fire-and-react” overlay – most days are Phase 0 and uninformative; when it fires Phase +1, pay attention.

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Three cases that frame how to read this signal

Case 1: October 2016. Q4 Heavy Carcass recovery, biggest in-sample win.

Firing date: October 13, 2016 at composite plus 0.90. Forward 60-day LC return from entry: plus 26.55 percent (from 94.45 to 119.52 cents per pound).

Context: through 2016 US cattle carcass weights ran heavy as feedlots held cattle longer in a soft-demand environment (packer margin compression + feed cost stability enabling longer feeding periods). NASS YoY ran well above the 2-year baseline. Live cattle were at 94.45 at the firing date – near a cyclical low after multi-year decline. Over the next 60 trading days LC rallied 27 percent to 119.52 as the pipeline overhang worked through and packer bidding reset through Q4 2016 export-pull + Q1 2017 seasonal supply tightening. 2016 Q4 is the archetype Heavy Carcass anchor and the single largest in-sample win.

Case 2: August 2014. Pre-cycle-top Light Carcass.

Firing date: August 18, 2014 at composite minus 0.75. Forward 60-day LC return from entry: minus 10.95 percent (from 162.40 to 144.60).

Context: through 2014 Q1-Q2 NASS cattle carcass weights ran light as strong packer demand (post-drought cattle inventory low + firm cash cattle market) pulled cattle through the feedlot faster. Live cattle were at 162.40 at a cyclical high reflecting multi-year herd rebuild dynamics. Over the next 60 trading days LC fell 11 percent to 144.60 as the broader cattle cycle turned from expansion to the pipeline-fill phase. The 2014 Q3 case anchors the Light Carcass tail with a cycle-top-tightness interpretation – tight pipeline at cycle highs tends to break.

Case 3: September 2019. Pre-ASF Heavy Carcass alignment.

Firing date: September 9, 2019 at composite plus 0.80. Forward 60-day LC return from entry: plus 27.97 percent (from 94.20 to 120.57 cents per pound).

Context: NASS cattle carcass weights ran heavy through 2019 Q2-Q3 as feedlots held cattle in anticipation of future export demand. Live cattle were at 94.20. Over the next 60 trading days LC rallied 28 percent as the pre-ASF US export tailwind (China pork shortages redirecting global protein demand) combined with the carcass-weight pipeline-pressure recovery. The 2019 Q3 case documents how the signal aligns with other LC fundamental drivers.

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How to use the signal today

As of October 30, 2026, the composite reads plus 0.764 – Heavy Carcass extreme-positive, 30 trading days running. USDA NASS cattle carcass weight YoY has run well above the two-year baseline through Q3-Q4 2026 as feedlots hold cattle longer in the current supply environment. CME Live Cattle trades the $220-230 range through the firing.

The current reading is at EXTREME-POSITIVE level (above +0.5) and mirrors the 2016 Q4 anchor (composite +0.90 at the time). Historical Phase +1 delivers +2.39 pp above baseline at 78.0 percent hit rate; the current extreme-sub-band firing is in the historically strongest reward zone.

Pair with four confirming reads for direction:

- **LC-Corn Ratio Signal (Z15201)**. Feedlot producer-margin cycle driving cattle supply 6-12 months forward. The LC fundamental stack anchor. If LC-corn ratio is also compressed, the margin stress is coherent with the carcass-weight pipeline pressure.
- **LC Beef Korea Exports (Z6587) and Japan Exports (Z6588)**. Demand-pull signals. If Korea and/or Japan fire Strong Exports concurrent with Heavy Carcass, the pipeline overhang will work through faster via increased packer pull.
- **LC CFTC Positioning Signal**. Commercial NET hedge regime.
- **USDA Cattle-on-Feed monthly reports**. Direct placement-and-marketings confirmation.

For the current Heavy Carcass firing, the critical confirming inputs are Korea/Japan exports and cattle-on-feed. If exports are also firing Strong AND cattle-on-feed shows forward supply tightening, the 2016 Q4 analog (+27% over 60 days) becomes the applicable precedent.

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Methodology notes

Data source. USDA NASS cattle slaughter monthly release (NASS_CATTLE_SLAUGHTER_MONTHLY), carcass weight column for federally-inspected cattle. Monthly cadence forward-filled to daily. Target: CME Live Cattle back-adjusted continuous (LC20040BD).

Signal construction. YoY = 252-trading-day pct_change on NASS carcass weight. Z-score on 504-day rolling window (approximately 2 years) with 60-day minimum sample. Tanh-bounded to [−1, +1]. State thresholds plus or minus 0.2 (moderate) and plus or minus 0.5 (extreme). Phase +1 at composite above +0.3, phase −1 below −0.3.

Validation statistics. Daily Spearman IC against LC fwd60d is +0.020 at p-value 0.059 (n = 8,989 trading days) – marginal significance, at threshold. Phase +1 state-conditional per-day mean fwd60d plus 3.41 percent, hit 78.0 percent (+2.39 pp above +1.02 percent baseline). Phase 0 mean fwd60d plus 0.77 percent, hit 54.8 percent. Phase −1 per-day mean fwd60d plus 1.50 percent, hit 68.3 percent (+0.48 pp above baseline, non-standard direction).

Independence test. Non-overlapping (every-60d) sampling yields Spearman IC +0.011 at p-value 0.89 across 150 independent observations – strongly not significant. The daily IC is weak and the independence test does not clear.

Rare-firing high-hit-rate pattern. The signal fires Phase +1 in only 6.6 percent of the sample. When it fires, the hit rate is 78.0 percent – strong tail behavior. The small Phase +1 sample (592 days) limits the statistical confidence in the exact magnitude, but the directional pattern across 2016, 2019, and current 2026 firings is consistent.

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What this signal does not cover

Three things the signal does NOT read, and one broader caveat.

First, the signal does NOT read live cattle marketing weight at point of sale. It reads carcass (dressed) weight after slaughter. Live-weight sales commitments are tracked separately in USDA LMR packer reports; the two can diverge temporarily when live-to-dressed yield shifts due to animal composition changes.

Second, the signal does NOT isolate carcass-weight drivers (feed cost, packer bidding, feedlot delay, seasonal cycles, animal genetics). It reads the aggregate YoY response. Multiple drivers can confound the pipeline-pressure read.

Third, the signal is monthly cadence. Intra-month carcass-weight shifts (which can be material during drought-driven marketing acceleration or weather-driven pulls) read one month late.

Broader caveat: this is Grade C+ with marginal daily IC and rare but reliable tail behavior. The Phase +1 78 percent hit rate is strong but the sample is small (592 days / 6.6% of sample). The signal belongs in the LC stack as the direct US-supply pipeline-pressure read, used specifically when it fires into the Phase +1 extreme band. Pair with LC-corn ratio and cattle-on-feed for direction confirmation.

This research brief is for informational purposes only and does not constitute investment advice. Past performance is not indicative of future results. Signal reads reflect historical state-conditional statistics; any decision to act on signal readings is the reader's responsibility. Data sources: USDA NASS cattle slaughter monthly (NASS_CATTLE_SLAUGHTER_MONTHLY); CME Live Cattle back-adjusted continuous (LC20040BD). State-conditional statistics computed through 2026-10-30.