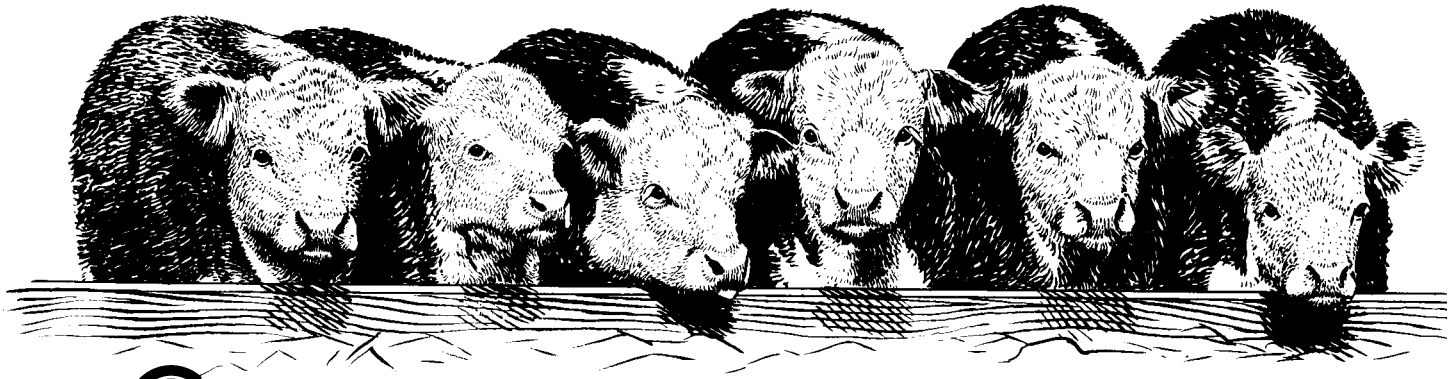
Buying and Selling Feeder Cattle

The Impact of Selected Characteristics on Feeder Cattle Prices



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Introduction

Weaned steers and heifers that have not been placed in a feedlot or breeding herd comprise a large share of the total cattle inventory in Kansas. Despite the size of this sector, little is known about feeder cattle economics because of variability in weights and prices and geographical differences in management practices. Results of this Kansas State University study provide cattle producers information about the effect of various characteristics on feeder cattle prices and can be used as a guide when making feeder cattle marketing or management decisions.

Studies conducted by Kansas State University in 1986/1987 and 1993 found sex, weight, lot size, health, uniformity, condition, fill, muscling, frame size, breed, presence of horns, time of sale, market location, and feeder cattle and corn futures prices significantly influenced prices of 600- to 899-pound steers and heifers at Kansas auctions. Results also showed a structural change occurred between 1986/1987 and 1993 in the price-characteristics relationship for 600- to 899-pound feeder cattle at Kansas auctions.

Prices paid for feeder cattle are influenced by a variety of characteristics:

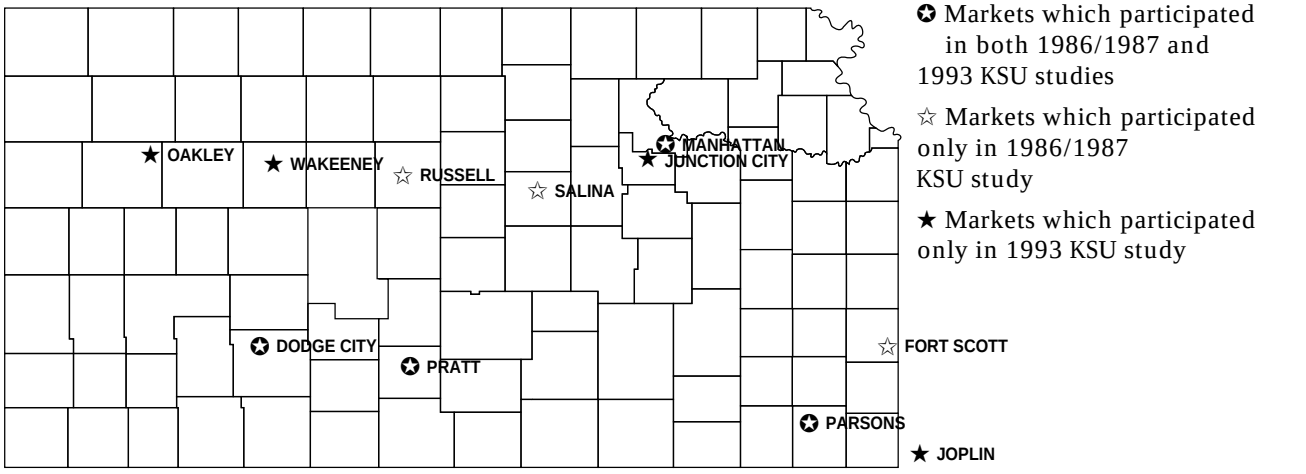
- Sale prices of feeder cattle are affected most by producing and marketing healthy calves. The largest discounts assessed to steers and heifers in both periods were for sick or lame cattle and to animals with lumps.
- Small-framed and light-muscled cattle received large price discounts.
- Price premiums exist for larger lot sizes. The largest lot size premiums were paid for heavyweight steers and heifers in lot sizes ranging from 65 to 75 head.

Data Description

To test whether characteristic values changed over time, data were collected at two different stages in the cattle cycle: fall 1986/spring 1987 and spring and fall of 1993. Data were collected at seven weekly Kansas feeder cattle auctions in 1986/1987: Dodge City, Fort Scott, Manhattan, Parsons, Pratt, Russell, and Salina. Eight markets were included in the 1993 study: Dodge City, Junction City, Manhattan, Oakley, Parsons, Pratt, WaKeeney, Kansas; and Joplin, Missouri. Figure 1 shows market locations for each study. Data were collected at four of the same locations in 1986/1987 and 1993. Evaluators for both data collection periods received the same training, further facilitating comparisons across periods. Fall 1986 data were collected from October 29,1986, through December 13, 1986, and spring 1987 data were collected from March 19, 1987, through April 15, 1987. Data collection during 1993 took place from March 15 through April 17 and from November 1 through December 11.

Evaluators recorded price per hundredweight for each lot. Individual lots of cattle were evaluated with respect to 10 animal characteristics (sex, breed, frame

Figure 1. **Markets Involved in 1986-87 and 1993 Feeder Cattle Studies**



size, muscling, fill, condition, horns, health, uniformity, and average weight per head). Data recorded for each lot included the time of sale, lot size, market location, nearby feeder cattle futures price, and nearby corn futures price. The combined data set consisted of information collected on 15,272 lots of heavyweight steers and heifers for a total of 189,566 head. Thirty-six percent of the cattle were sold in 1986/1987 and 64 percent were marketed in 1993. Sixty-seven percent of the cattle were steers and 33 percent heifers in 1986/1987 compared with 61 percent steers and 39 percent heifers in 1993. During 1986/1987, 52 percent of the lots sold in the fall and 48 percent sold in the spring, whereas 47 percent of the lots sold in the fall and 53 percent in the spring during 1993.

Significant changes in the general price level during the 7 years between the two data sets (summarized in table 1) were accounted for by deflating feeder lot price and the feeder cattle and corn futures prices using the USDA NASS Production Items price index (1993=100). This made it possible to examine price differences over time in real terms, independent of inflation.

The physical characteristics and external market conditions examined accounted for around 60 percent of the variation in heavyweight feeder cattle prices. Tables 2 through 9 report the price changes attributable to specific characteristics for heavyweight steers. Price changes for heavyweight heifers are reported in tables 10 through 17. All figures in this bulletin should be used as a **part** of the decision-making process, not as the sole selection criteria with respect to any feeder cattle characteristic.

Statistical tests were conducted to detect whether the discounts and premiums were significantly different from zero. Premiums and discounts having at least a 95-percent probability of being different from zero are identified in the tables with an asterisk. Consequently, price differentials not noted with an asterisk should be interpreted with caution since they have a greater than 5 percent probability of not being statistically different from zero. Each table reports the price changes, positive or negative, associated with the presence of a trait relative to a "base" animal. All premiums and discounts are relative to a healthy, large-framed, heavily muscled Hereford without horns sold in average fill and flesh during the first quarter of the sale at a particular market.

Purchased Characteristics

Unlike cow-calf producers, who can directly affect several economically important traits through genetic selection, feeder cattle buyers can only influence these traits through their cattle purchases. Breed, frame size, and muscling are among those important physical traits cattle producers control when trading heavyweight steers and heifers.

Breed effects on price: Tables 2 and 10 detail the premiums and discounts associated with cattle breed. Compared with Hereford cattle, Angus steers received a price premium in 1993 after selling at a discount in 1986/1987. Exotic (or Continental) steers and heifers did not sell at significantly different price levels relative to Herefords in 1986/1987, but received a premium in 1993. Feeder steers with one-fourth or less

Table 1. **Average Nominal Feeder Cattle Prices, 1986/1987 and 1993**

	600-699 Lbs ($/cwt)	700-799 Lbs ($/cwt)	800-899 Lbs ($/cwt)
Steers, 1986/1987	$63.68	$62.98	$61.23
Steers, 1993	$83.15	$80.90	$79.11
Heifers, 1986/1987	$59.48	$58.91	$55.69
Heifers, 1993	$79.59	$78.38	$74.39

Brahman breeding shifted from selling at a discount to Herefords in the earlier period to no significant price differential in 1993. Among the remaining breeds, the price relationships changed little during the study period. Cattle with dairy, Longhorn, and more than one-fourth Brahman breeding received similar discounts in both periods.

Effects of muscling on feeder cattle prices: Feeder cattle buyers prefer heavily muscled cattle (tables 3 and 11). Compared with heavy-muscled steers and heifers, medium- and light-muscled feeder cattle received considerable price reductions. The light-muscled discount for heavy-weight steers increased by $9.90 per hundredweight from 1986/1987 to 1993. Increased concern about carcass quality in recent years apparently contributed to larger discounts for steers not expected to produce desirable carcasses.

Influence of frame size on prices: Frame size was determined by estimating the weight at which an animal would finish. Price differentials associated with frame size are found in tables 4 and 12. Large-framed steers sold for $1.16 per hundredweight more than lower medium-framed steers in 1993, indicating buyers preferred large-framed feeder cattle. While upper medium-framed steers did not sell for a significantly different price than large-framed cattle, steers and heifers in the small-frame category received a discount of around $9 per hundredweight compared with their large-framed counterparts. Large-framed feeder cattle are desirable because their growth patterns and finish weight are more acceptable to the cattle feeding and meat processing industries than small-framed animals.

Management and Nutrition Characteristics

The manner in which cattle are managed and fed can have a large effect on various feeder cattle characteristics. Producers have some control over weight at time of sale, health, condition, and the presence of horns.

Effect of weight: Weight had a greater effect on feeder cattle prices in 1993 than in 1986/1987, as shown in figures 2 and 3. Differences in feeder cattle prices across weights depend on the relative profitability of backgrounding and finishing pro-

Table 2. **Effects of Breed on Feeder Steer Prices, 600-899 Lbs (1993 $)**

Breed	1986/1987		1993	
	Percent of Pens (%)	Price Change ($/cwt)	Percent of Pens (%)	Price Change ($/cwt)
Hereford	10.6	Base	5.3	Base
Angus	7.5	-1.09*	6.0	1.79*
Hereford-Angus crosses	23.5	0.31	12.7	1.78*
Other English crosses	1.8	-2.14*	2.3	0.43
Exotic crosses	26.7	0.09	44.5	1.95*
Brahman, 1/4 or less	7.3	-1.91*	6.4	0.42
Brahman, more than 1/4	1.5	-4.79*	1.1	-3.46*
Dairy	6.3	-9.09*	5.8	-8.86*
Longhorn	1.2	-6.59*	0.8	7.96*
Mixed breeds	13.6	-0.75*	15.0	1.39*

* Indicates significantly different from zero at the .05 level.

grams. Moreover, expected fed cattle prices, feeder cattle prices, corn prices, interest rates, and feeding performance all affect cattle feeding profitability. Since corn and feeder cattle futures prices are explicitly accounted for in this study, the larger weight discounts observed in 1993 can be attributed to differing expectations about anticipated feeding performance, interest rates, and fed cattle prices.

Effect of health problems: Unhealthy cattle received considerable price discounts (tables 5 and 13). Cattle that come out of stocker or backgrounding programs in poor health are penalized because unhealthy cattle have higher death losses, require more labor to handle, and are less efficient on feed than healthy cattle.

Effects of condition on feeder cattle price: Premiums and discounts for condition scores are found in tables 6 and 14. Steers designated as fleshy were discounted when sold in the spring, but received a premium during the fall. In the spring, fleshy cattle often receive a discount because of buyers' concerns that fleshy cattle will not convert feed or gain as well on grass as cattle in average condition. Conversely, fleshy steers sell for higher prices in the fall because they are perceived to be better equipped physically to enter the cold winter months, and buyers expect fewer health problems with fleshy cattle through the course of the winter.

Price effects of horns: The presence of horns on feeder cattle influenced price in 1986/1987 and 1993 (tables 7 and 15). If all steers in a lot had horns, buyers assessed a $2.30 per hundredweight discount in 1993. That discount most likely results from the increased opportunity for injury among horned cattle fed in confinement and added handling costs. However, heifers with horns did not receive a significant price discount in 1993.

Table 3. **Effects of Muscling on Feeder Steer Prices, 600-899 Lbs (1993 $)**

	1986/1987		1993	
Muscling Characteristic	Percent of Pens (%)	Price Change ($/cwt)	Percent of Pens (%)	Price Change ($/cwt)
Heavy	93.0	Base	92.6	Base
Medium	6.7	-4.15*	7.0	-3.50*
Light	0.3	-5.40*	0.3	-15.30*

* Indicates significantly different from zero at the .05 level.

Table 4. **Effects of Frame Size on Feeder Steer Prices, 600-899 Lbs (1993 $)**

	1986/1987		1993	
Frame Size	Percent of Pens (%)	Price Change ($/cwt)	Percent of Pens (%)	Price Change ($/cwt)
Large	21.8	Base	38.6	Base
Upper medium	66.2	-0.04	51.8	0.06
Lower medium	11.3	-2.10*	9.1	-1.16*
Small	0.8	-5.19*	0.5	-8.93*

* Indicates significantly different from zero at the .05 level.

Marketing Characteristics

Several marketing characteristics affect sale prices for feeder cattle. Lot size, degree of fill, time of sale, and weight uniformity are all under a cattle operator's control prior to sale time. Decisions made during this important phase can net significant returns to buyers and sellers.

Effect of lot size on feeder cattle prices: Economically significant price premiums were paid for larger lot sizes of uniform feeder cattle in 1993. Figures 4 and 5 detail price responses to increasing lot size for heavyweight steers and heifers. The largest premiums were

Table 5. **Effects of Health on Feeder Steer Prices, 600-899 Lbs (1993 $)**

	1986/1987		1993	
Health Condition	Percent of Pens (%)	Price Change ($/cwt)	Percent of Pens (%)	Price Change ($/cwt)
Healthy	78.3	Base	85.6	Base
Dead hair or mud	17.7	-1.31	10.1	-1.11*
Stale	1.3	-6.78*	1.4	-5.06*
Sick	0.5	-23.08*	0.4	-17.95*
Bad eye	0.8	-5.46*	0.7	-2.83*
Lame or lumps	1.4	-13.15*	1.6	-14.00*

* Indicates significantly different from zero at the .05 level.

Table 6. **Effects of Condition on Feeder Steer Prices, 600-899 Lbs (1993 $)**

	1986/1987		1993	
Condition Characteristic	Percent of Pens (%)	Price Change ($/cwt)	Percent of Pens (%)	Price Change ($/cwt)
Very thin	0.3	1.06	0.2	0.12
Very Thin, Fall**	—	-4.23	—	—
Thin	9.1	-0.74	17.4	-0.10
Thin, Fall**	—	-1.31*	—	-1.71*
Average condition	70.5	Base	67.7	Base
Fleshy	19.8	-1.06*	14.4	-1.34*
Fleshy, Fall**	—	-0.79*	—	0.98*
Fat	0.3	-2.38	0.3	-2.24
Fat, Fall**	—	-0.43	—	-0.57

* Indicates significantly different from zero at the .05 level.

**Fall effects must be combined with the non-seasonal variable to estimate the total effect of the characteristic in the fall.

realized for steers and heifers sold in lot sizes ranging from 65 to 75 head. In 1993, a lot size of 65 steers sold at an average premium of $6.37 per hundredweight relative to the price paid for a one-head lot. Cattle buyers prefer to purchase feeder cattle in larger lot sizes. Buyers prefer to buy cattle in truckload lots to minimize health problems associated with commingling cattle from several different sources and because buying cattle in larger lots reduces the chance cattle will have to be kept overnight before a truckload has been accumulated. Cattle shipped the day they are purchased tend to have fewer health problems. The convenience factor of buying feeders in truckload lots from one ranch source, in addition to health considerations, probably explains the premiums paid for larger lot sizes.

Price influence of fill: Feeder cattle sold with above-average fill received price discounts. Price differentials for different degrees of fill are reported in tables 8 and 16. While full cattle received a small discount, tanked (excessively full) steers were docked $11.54 per hundredweight (heifers were discounted $9.04) versus cattle in average fill. Feeder cattle sold in these degrees of fill are discounted because buyers prefer not to buy cattle with a great deal of temporary water or forage weight in their gut.

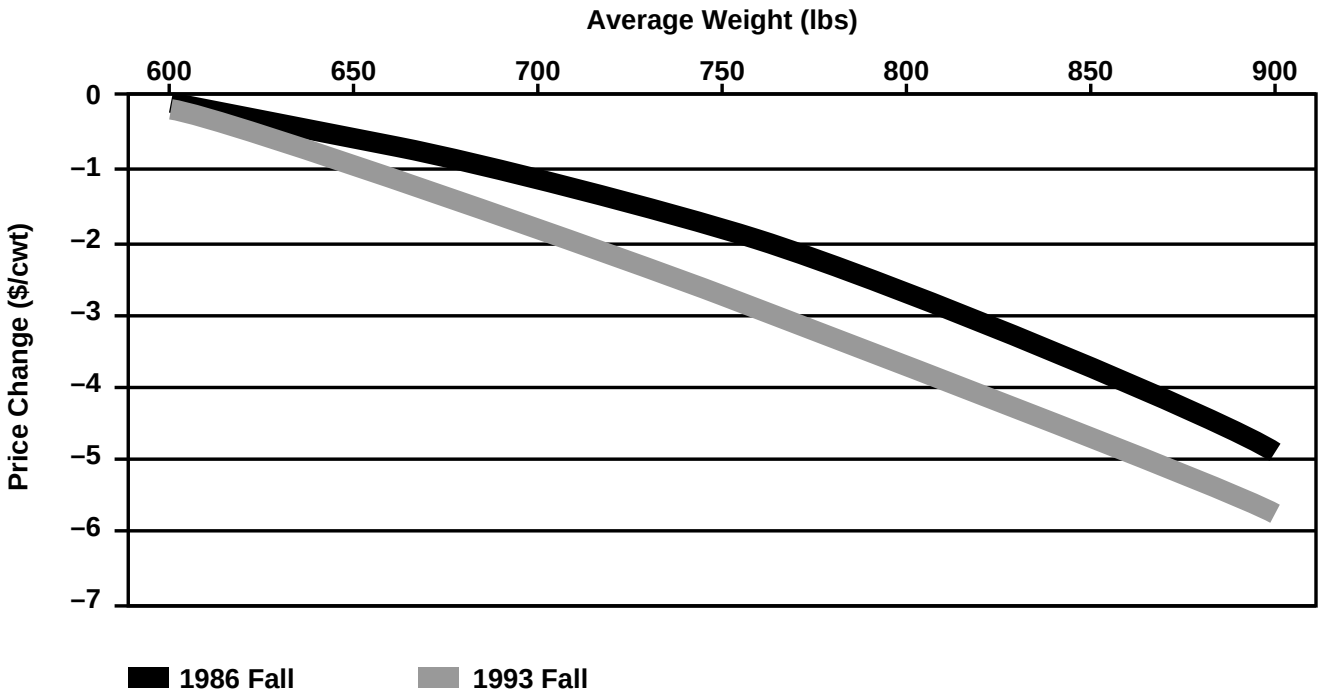
Effect of time of sale on feeder cattle prices: Feeder steers sold in the second and third quarters of the sale received higher prices than steers sold in the first quarter of the sale in 1993. Feeder heifers sold in the second quarter of the sale received a small premium relative to heifers sold in the first quarter, but time of sale did not affect prices of heifers in the third or fourth quarters. Price differences associated with time of sale are detailed in tables 9 and 17.

Weight uniformity within a lot and feeder cattle prices: Buyers discounted lots of nonuniform feeder steers $0.50 per hundredweight in 1993, which was consistent with the discount applied in 1986/1987. However, heavyweight heifers did not receive a significant discount for lack of uniformity in 1986/1987 or 1993.

Conclusions

This study confirmed earlier Kansas State University research that found weight, lot size, uniformity, health, condition, fill, frame size, muscling, breed, time of sale, and feeder cattle and corn futures prices all significantly influenced feeder cattle auction

Figure 2. **Effect of Weight on 600-899 lb. Steer Prices in Fall**



prices. When 1986/1987 and 1993 research results are compared, it reveals a structural change in the Kansas feeder cattle auction market occurred. Increased discounts for undesirable traits (light muscling, small frame size, unhealthy cattle) and greater premiums for increased lot size stand out among these changes. These results imply price discounts for several important characteristics can be avoided through careful management and marketing of feeder cattle.

Buyers and sellers of feeder cattle should understand the price effects of feeder-cattle characteristics change with time. Accordingly, producers should be wary of relying upon dated pricing information when making management and marketing decisions.

Table 7. **Effects of Horns on Feeder Steer Prices, 600-899 Lbs (1993 $)**

Characteristic	1986/1987		1993	
	Percent of Pens (%)	Price Change ($/cwt)	Percent of Pens (%)	Price Change ($/cwt)
No horns	76.5	Base	67.7	Base
Some horns	14.2	0.20	27.1	0.08
All horns	9.3	-0.61*	5.2	-2.30*

* Indicates significantly different from zero at the .05 level.

Figure 3. **Effect of Weight on 600-899 lb. Heifer Prices in Fall**

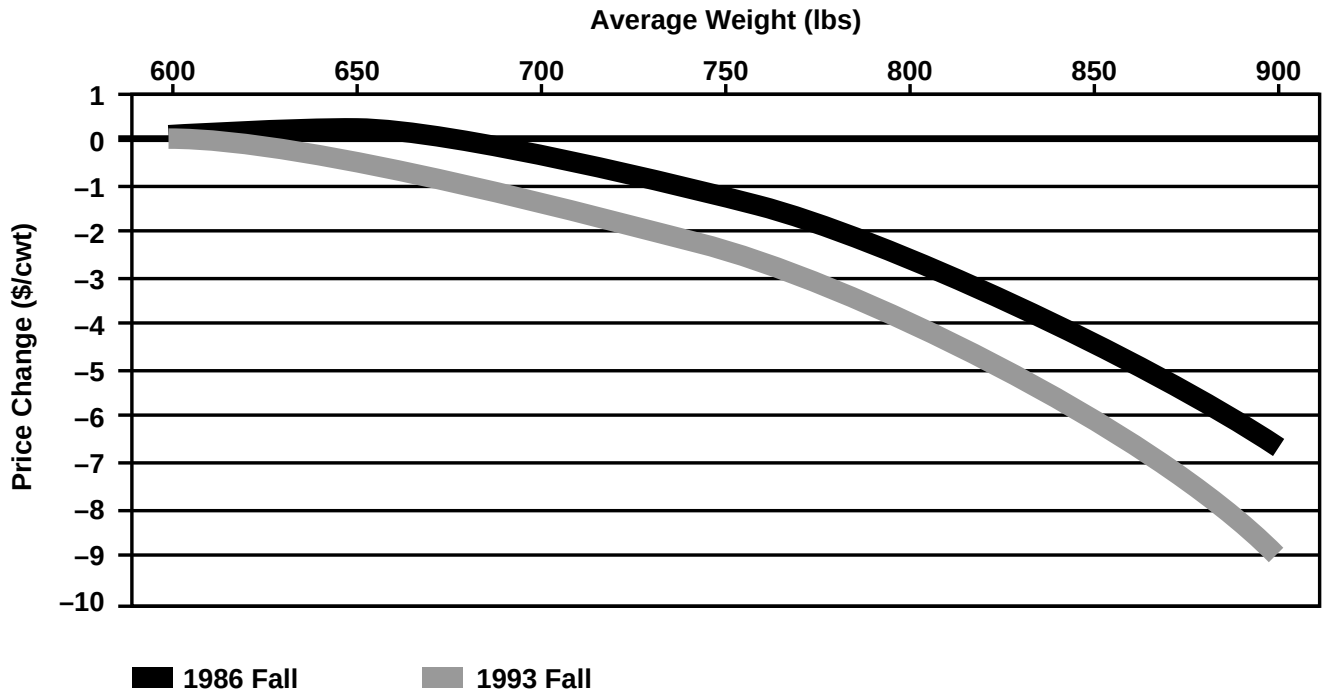


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Table 8. **Effects of Fill on Feeder Steer Prices, 600-899 Lbs (1993 $)**

Fill Characteristic	1986/1987 Percent of Pens (%)	1986/1987 Price Change ($/cwt)	1993 Percent of Pens (%)	1993 Price Change ($/cwt)
Gaunt	1.8	0.66	1.0	1.05
Shrunk	15.7	0.10	21.6	0.28
Average fill	68.8	Base	61.8	Base
Full	13.3	-1.76*	15.9	-0.84*
Tanked	0.4	-0.79	0.6	-11.54*

* Indicates significantly different from zero at the .05 level.

Figure 4. **Lot Size Impact on 600-899 lb Steer Prices**

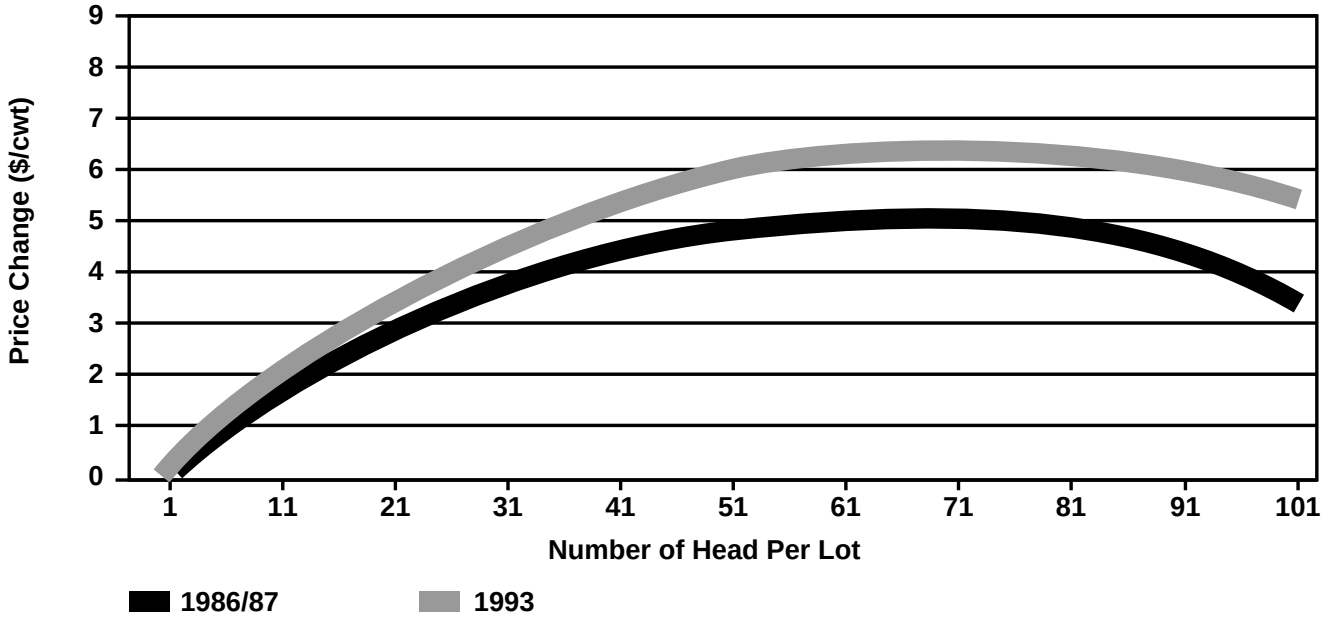

Figure 5. **Lot Size Impact on 600-899 lb Heifer Prices**

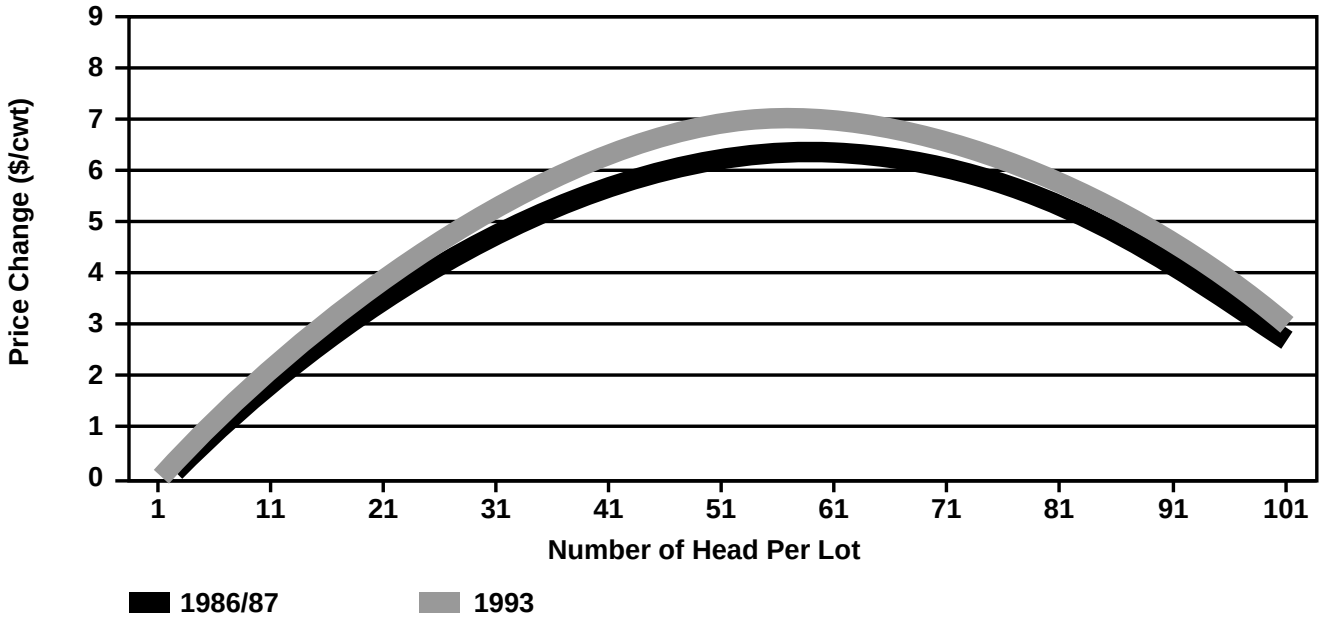

Table 9. **Effects of Time of Sale on Feeder Steer Prices, 600-899 Lbs (1993 $)**

Quarter of Sale	1986/1987		1993	
	Percent of Pens (%)	Price Change ($/cwt)	Percent of Pens (%)	Price Change ($/cwt)
Quarter 1	18.1	Base	17.8	Base
Quarter 2	49.2	1.81*	49.2	1.14*
Quarter 3	29.6	1.27*	31.6	0.64*
Quarter 4	3.1	1.18*	1.4	0.22

* Indicates significantly different from zero at the .05 level.

Table 10. **Effects of Breed on Feeder Heifer Prices, 600-899 Lbs (1993 $)**

Breed	1986/1987 Percent of Pens (%)	1986/1987 Price Change ($/cwt)	1993 Percent of Pens (%)	1993 Price Change ($/cwt)
Hereford	11.6	Base	6.2	Base
Angus	8.5	-1.52*	7.4	0.34
Hereford-Angus crosses	26.4	-0.09	16.2	1.33*
Other English crosses	1.5	-2.14*	2.2	1.27*
Exotic crosses	26.5	0.45	42.7	1.23*
Brahman, 1/4 or less	6.4	-0.75	4.6	-0.42
Brahman, more than 1/4	1.3	-4.01*	1.0	-4.30*
Dairy	1.1	-12.63*	1.0	-10.39*
Longhorn	1.2	-5.55*	0.8	-7.14*
Mixed breeds	15.4	-0.60	17.9	1.20*

* Indicates significantly different from zero at the .05 level.

Table 11. **Effects of Muscling on Feeder Heifer Prices, 600-899 Lbs (1993 $)**

Muscling Characteristic	1986/1987 Percent of Pens (%)	1986/1987 Price Change ($/cwt)	1993 Percent of Pens (%)	1993 Price Change ($/cwt)
Heavy	98.2	Base	97.8	Base
Medium	1.6	-4.35*	2.1	-1.98*
Light	0.2	-7.64*	0.1	-11.83

* Indicates significantly different from zero at the .05 level.

Table 12. **Effects of Frame Size on Feeder Heifer Prices, 600-899 Lbs (1993 $)**

Frame Size	1986/1987 Percent of Pens (%)	1986/1987 Price Change ($/cwt)	1993 Percent of Pens (%)	1993 Price Change ($/cwt)
Large	16.2	Base	31.7	Base
Upper medium	71.0	-0.23	54.3	-0.67*
Lower medium	12.0	-3.14*	13.5	-1.94*
Small	0.8	-9.77*	0.6	-9.13*

* Indicates significantly different from zero at the .05 level.

Table 13. **Effects of Health on Feeder Heifer Prices, 600-899 Lbs (1993 $)**

Health Condition	1986/1987 Percent of Pens (%)	1986/1987 Price Change ($/cwt)	1993 Percent of Pens (%)	1993 Price Change ($/cwt)
Healthy	79.6	Base	87.5	Base
Dead hair or mud	17.0	-1.51*	9.4	-0.41
Stale	0.8	-6.13*	1.0	-4.03*
Sick	0.2	-13.58*	0.2	-21.22*
Bad eye	1.2	-5.45*	0.5	-3.14*
Lame or lumps	1.2	-13.58*	1.3	-13.45*

* Indicates significantly different from zero at the .05 level.

Table 14. **Effects of Condition on Feeder Heifer Prices, 600-899 Lbs (1993 $)**

Fill Characteristic	1986/1987 Percent of Pens (%)	1986/1987 Price Change ($/cwt)	1993 Percent of Pens (%)	1993 Price Change ($/cwt)
Very thin	0.5	-1.12	0.3	-10.94*
Very thin, Fall**	—	—	—	—
Thin	8.5	-0.67	16.2	-0.33
Thin, Fall	—	-0.65	—	-2.42*
Average condition	70.2	Base	66.3	Base
Fleshy	20.3	-1.24*	16.3	0.05
Fleshy, Fall	—	1.19*	—	-0.35
Fat	0.5	2.53	0.9	-3.51*
Fat, Fall	—	-3.76	—	-1.08

* Indicates significantly different from zero at the .05 level.

**Fall effects must be combined with the non-seasonal variable to estimate the total effect of the characteristic in the fall.

Table 15. **Effects of Horns on Feeder Heifer Prices, 300-599 Lbs (1993 $)**

Characteristic	1986/1987 Percent of Pens (%)	1986/1987 Price Change ($/cwt)	1993 Percent of Pens (%)	1993 Price Change ($/cwt)
No horns	80.2	Base	69.0	Base
Some horns	11.8	-0.37	26.2	0.12
All horns	8.8	-1.07*	4.8	-0.89

* Indicates significantly different from zero at the .05 level.

Table 16. **Effects of Fill on Feeder Heifer Prices, 600-899 Lbs (1993 $)**

Fill Characteristic	1986/1987 Percent of Pens (%)	1986/1987 Price Change ($/cwt)	1993 Percent of Pens (%)	1993 Price Change ($/cwt)
Gaunt	1.3	-1.27	0.8	-1.70
Shrunk	14.1	0.01	19.4	0.93*
Average fill	69.7	Base	64.0	Base
Full	14.1	-3.14*	14.9	-1.61*
Tanked	0.8	-11.22*	0.9	-9.04*

* Indicates significantly different from zero at the .05 level.

Table 17. Effects of Time of Sale on Feeder Heifer Prices, 600-899 Lbs. (1993 $)

Quarter of Sale	1986/1987 Percent of Pens (%)	1986/1987 Price Change ($/cwt)	1993 Percent of Pens (%)	1993 Price Change ($/cwt)
Quarter 1	17.6	Base	21.9	Base
Quarter 2	57.3	2.32*	48.2	0.71*
Quarter 3	23.3	1.83*	28.8	-0.32
Quarter 4	1.8	0.73	1.0	-0.72

* Indicates significantly different from zero at the .05 level.

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Readers interested in information about the effect of selected characteristics on calf prices are referred to *Improving the Value of Your Calf Crop: The Impact of Selected Characteristics on Calf Prices.* MF-2142, Cooperative Extension Service, Kansas State University, January 1996.

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