

# Managing for Carcass Value in the Current Price Environment

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# Current price environment

- Cattle are worth a lot of money
  - Fed cattle, feeder cattle, cows
- Beef is worth a lot of money
- Quality is worth a lot of money, but...
- Feed is worth a typical amount of money
- Labor is worth a lot of money
- Pickups, health care, etc. are worth a lot of money
- Money is worth a lot of money





# Today's topics:

- How cattle grow
  - Changes at the end of the feeding period
  - Understand the biology to manage the business
- Managing for carcass value and maximum profitability
  - New terminology
    - Incremental revenue
    - Incremental COG
  - What really drives value?







# The easiest quiz ever

Is this a  
feeder  
steer or a  
fed steer?

How do  
you know?











The fed steer is more than 2X  
as heavy as the feeder.

Is he 2X as tall?  
As long? As wide?





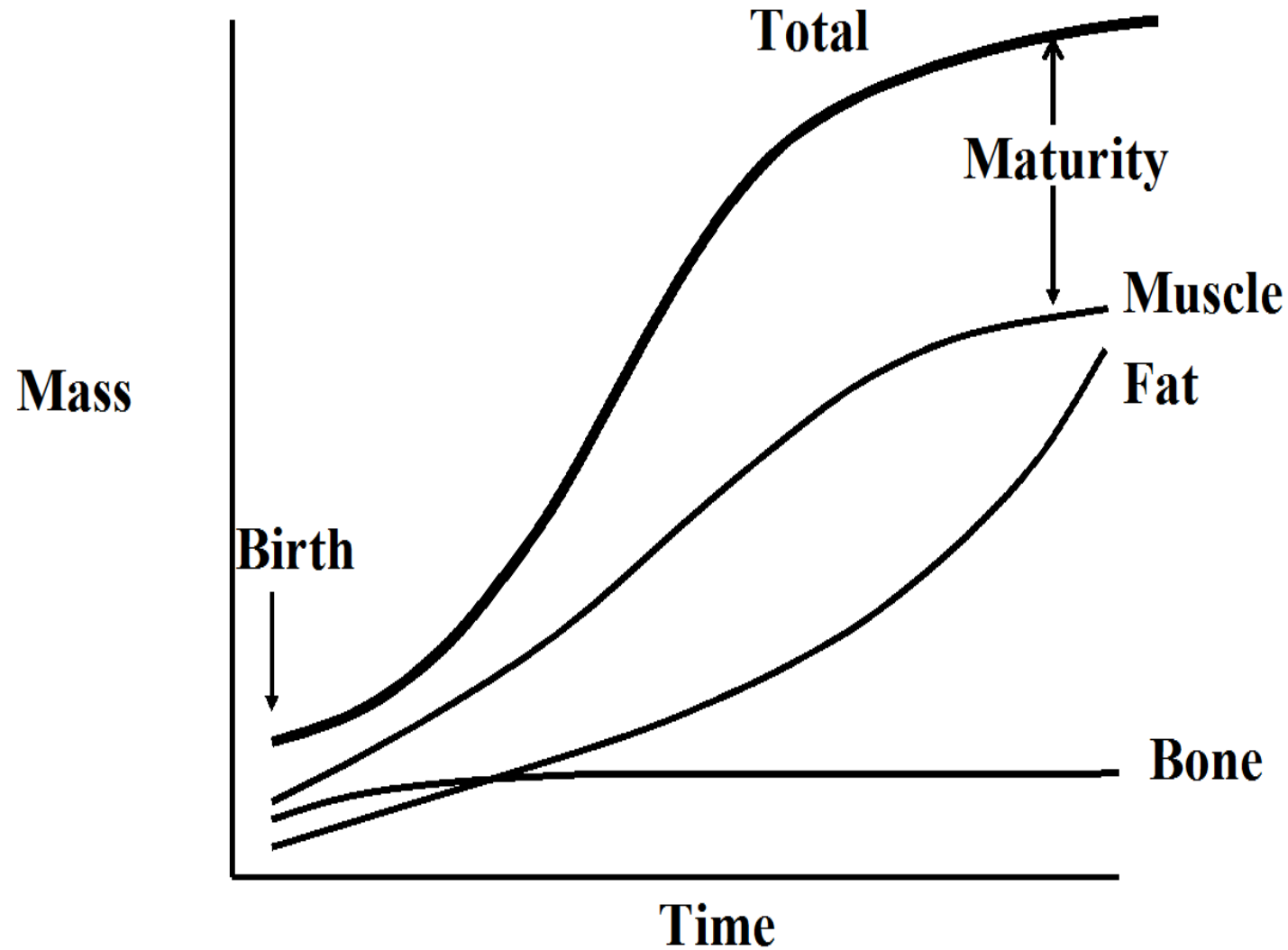
# Growth

- An adult is not just a larger version of a baby.
- A fed steer or heifer is not just a larger version of a feeder.
- Growth is a process, like reproduction, healing, respiration, digestion, etc.
- Understanding that process is critical to efficient feeding and managing for carcass value.





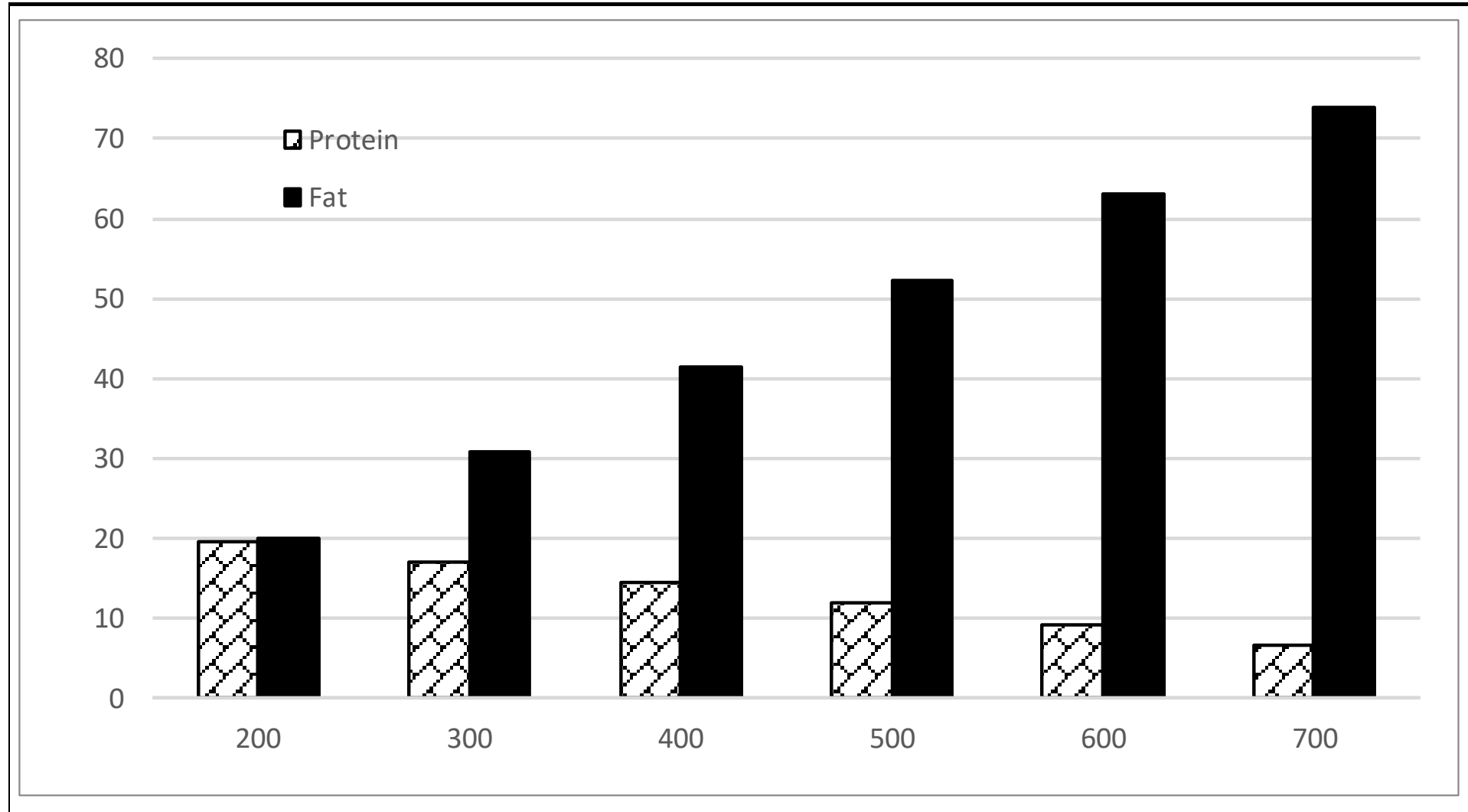
**Figure 1. Normal postnatal growth curves of bone, muscle, and fat.**





# Protein and fat gain per 100 kg of body weight gain

Adapted from Simpendorfer (1974)





# Changes that affect live performance:

- Feed consumption increases, plateaus and eventually may decrease
- Feed required for maintenance increases
- Energy content of gain increases
- Live weight gain slows
- Feed conversion (to live weight) becomes poorer





# Changes that affect carcass value:

- Dressing percentage increases
- Percentage of bone decreases
- Muscle weight increases, muscle percentage decreases
- Quantity and percentage of carcass fat increase
- Carcass weight gain, as a percentage of live weight gain, increases
- Marbling increases

All of these changes are related but they don't all happen at the same time or at the same pace.



# Growth

- Most growth of non-car carcass tissues occurs before cattle get to the feedyard
  - Nervous system
  - Bone
  - Digestive tract (sort of)
- In the feedyard, most growth is in carcass tissues
  - Muscle
  - Fat



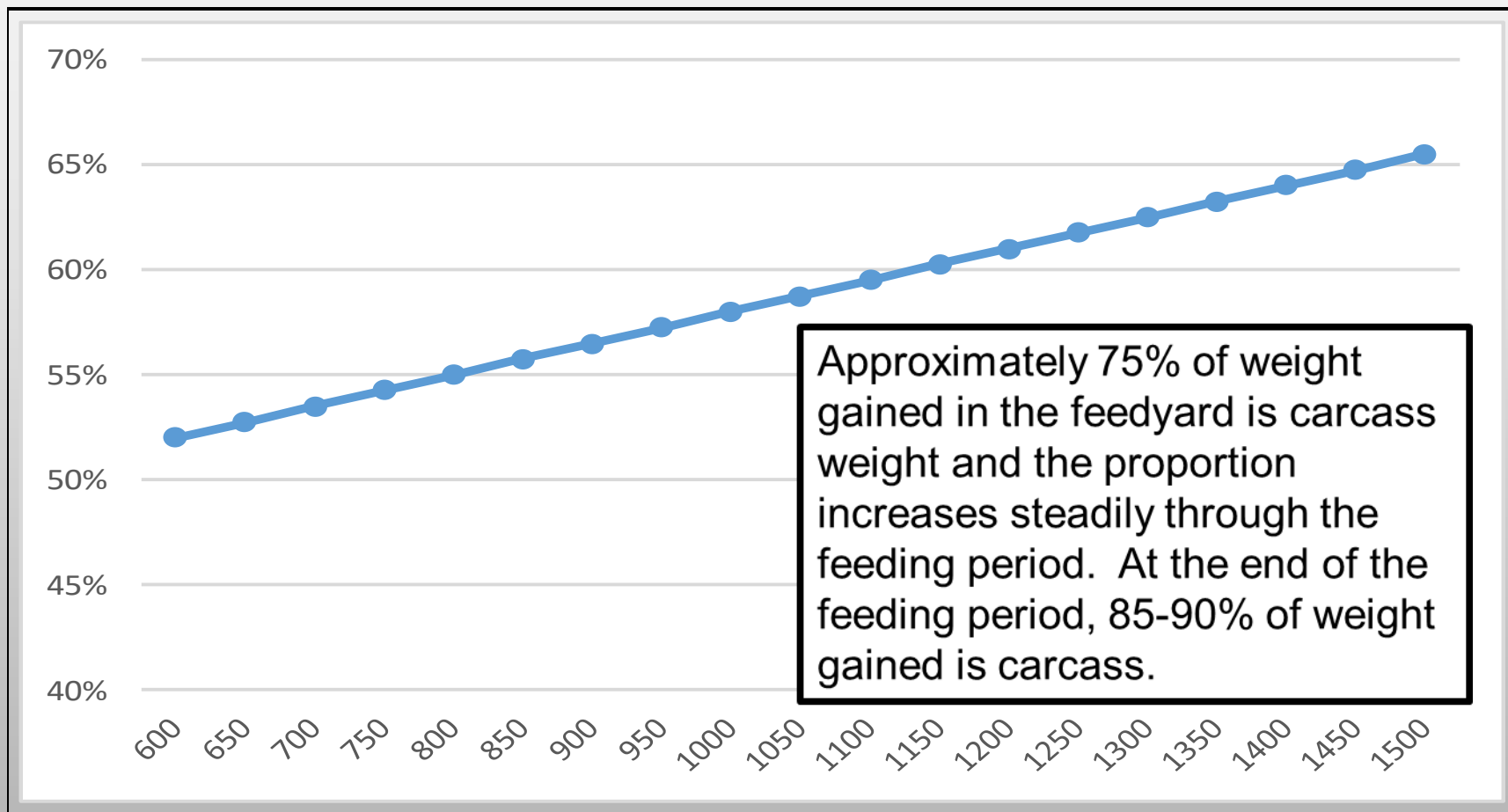


# Dressing percentage increases

Carcass weight is growing faster than non-carcass weight

An increasing proportion of live weight is in the carcass

Typical dressing percentage by weight



# Incremental dressing percentage

<u>Weight</u>	<u>DP</u>	<u>HCW</u>	<u>Gain</u>	<u>Incremental</u>
600	52.0%	312		
650	52.8%	343	30.9	61.8%
700	53.5%	375	31.6	63.3%
750	54.3%	407	32.4	64.8%
800	55.0%	440	33.1	66.3%
850	55.8%	474	33.9	67.7%
900	56.5%	509	34.6	69.2%
950	57.3%	544	35.4	70.8%
1000	58.0%	580	36.1	72.3%
1050	58.8%	617	36.9	73.8%
1100	59.5%	655	37.6	75.3%
1150	60.2%	693	38.4	76.7%
1200	61.0%	732	39.1	78.2%
1250	61.7%	772	39.9	79.8%
1300	62.5%	812	40.6	81.2%
1350	63.2%	854	41.4	82.7%
1400	64.0%	896	42.1	84.3%
1450	64.7%	939	42.9	85.7%
1500	65.5%	982	43.6	87.3%



# Thumb rules

At the end of a feeding period...

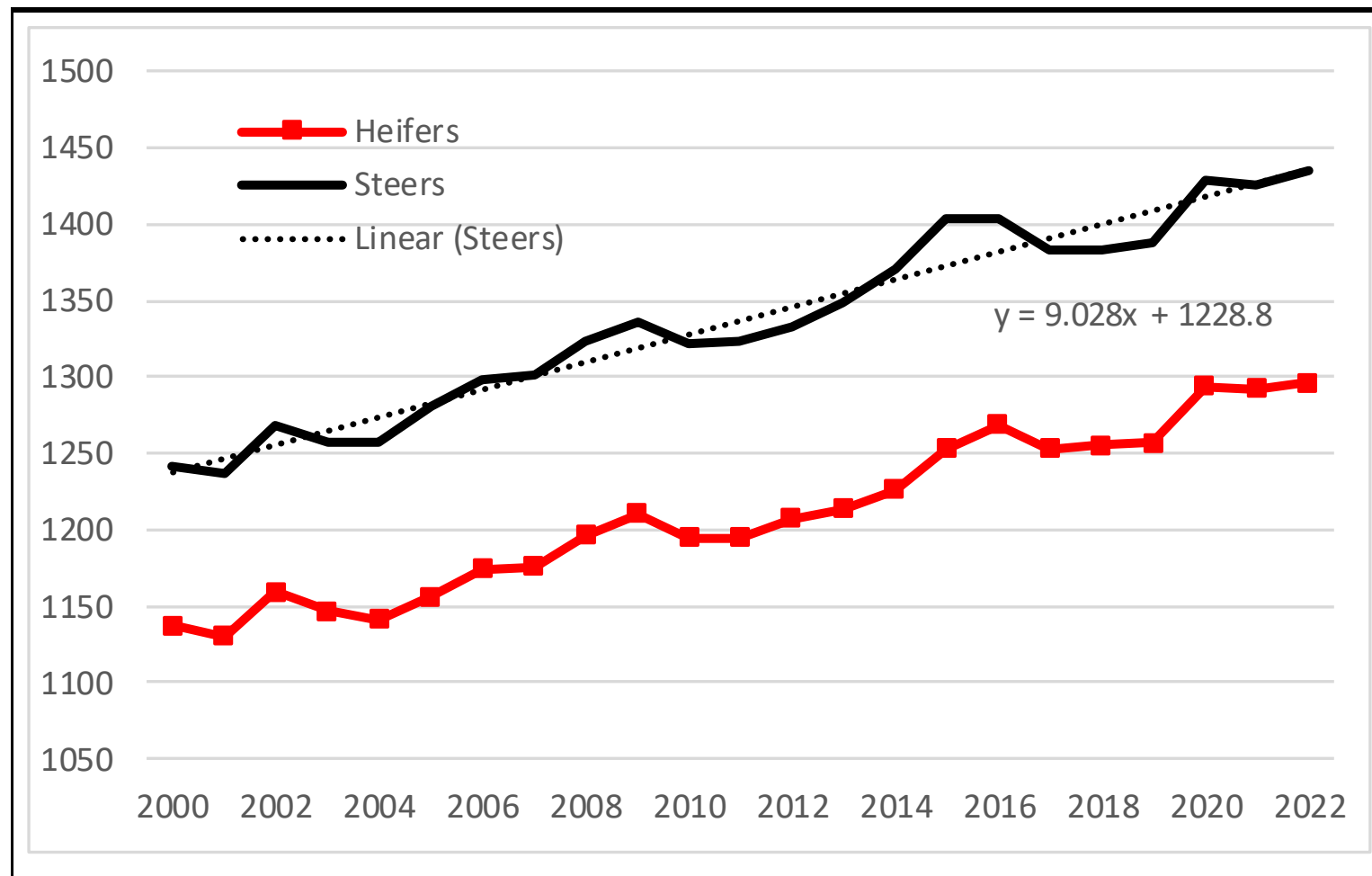
- Live weight gain slows to 80% of average
- 80% of live weight gain is carcass

Example – steers that will close-out at 3.75 lb per day are gaining about 3.00 lb of live weight per day at the end and 2.40 lb per day of carcass weight

Is the daily cost more or less than the value of 2.40 lb of carcass?



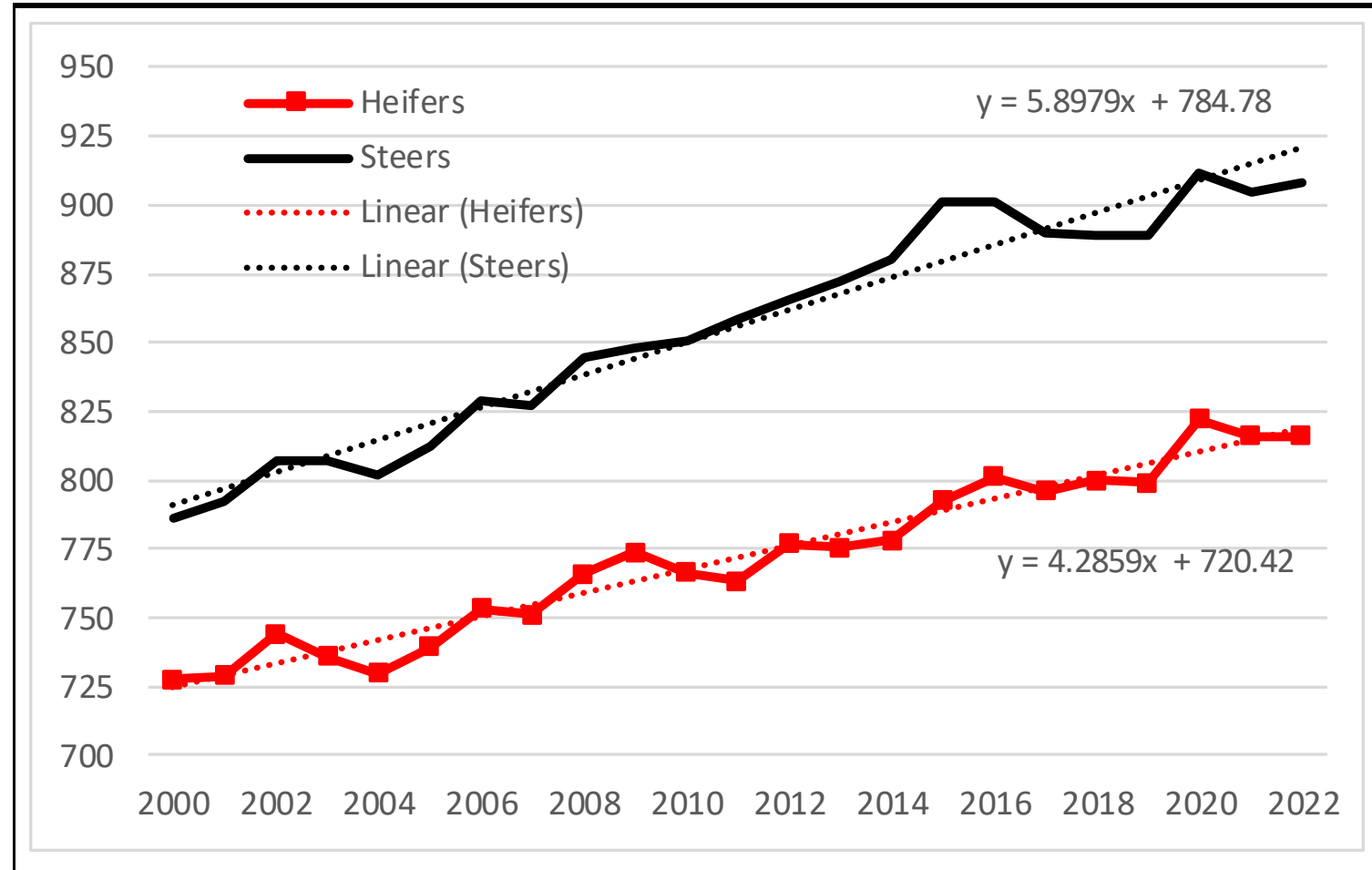
## Out weight by sex and year closed



Data courtesy of Elanco Knowledge Solutions



# Hot carcass weight by sex and year closed



Data courtesy of Elanco Knowledge Solutions

# New terminology

- Carcass cost of gain
- Incremental cost of gain

If selling carcass weight, pay attention to carcass cost of gain.

Profitability increases until incremental cost of gain exceeds the sale price.



## MWPMS Endpoint Selection Calculator

Pay weight in	lb/head	<b>750</b>
Delivered price	\$/cwt	<b>135.00</b>
Processing + treatment	\$/hd	<b>12.00</b>
Death loss	%	<b>1.0%</b>
Target days on feed	d	<b>165</b>
Average daily gain	lb/hd/d	<b>3.75</b>
Live weight	lb/head	1369
Feed consumption	lb/hd/d *	<b>23.00</b>
Feed conversion	F/G	6.13
Dressing percentage	%	<b>63.5%</b>
Carcass weight	HCW, lb	869
Feeder cost, \$/head		
Feed price	\$/ton *	<b>300.00</b>
Interest rate	%	<b>5.0%</b>
Yardage	\$/hd/d	<b>0.10</b>
Cost of production	\$/head	
Total cost	\$/head	
Live cost of gain	\$/cwt	
Carcass cost of gain	\$/cwt	
Live sale price	\$/cwt	
Carcass sale price	\$/cwt	
Revenue sold live	\$/head	
Profit (loss)		
Compared to target DOF		
Revenue sold carcass	\$/head	
Profit (loss)		
Compared to target DOF		



### Results by days on feed

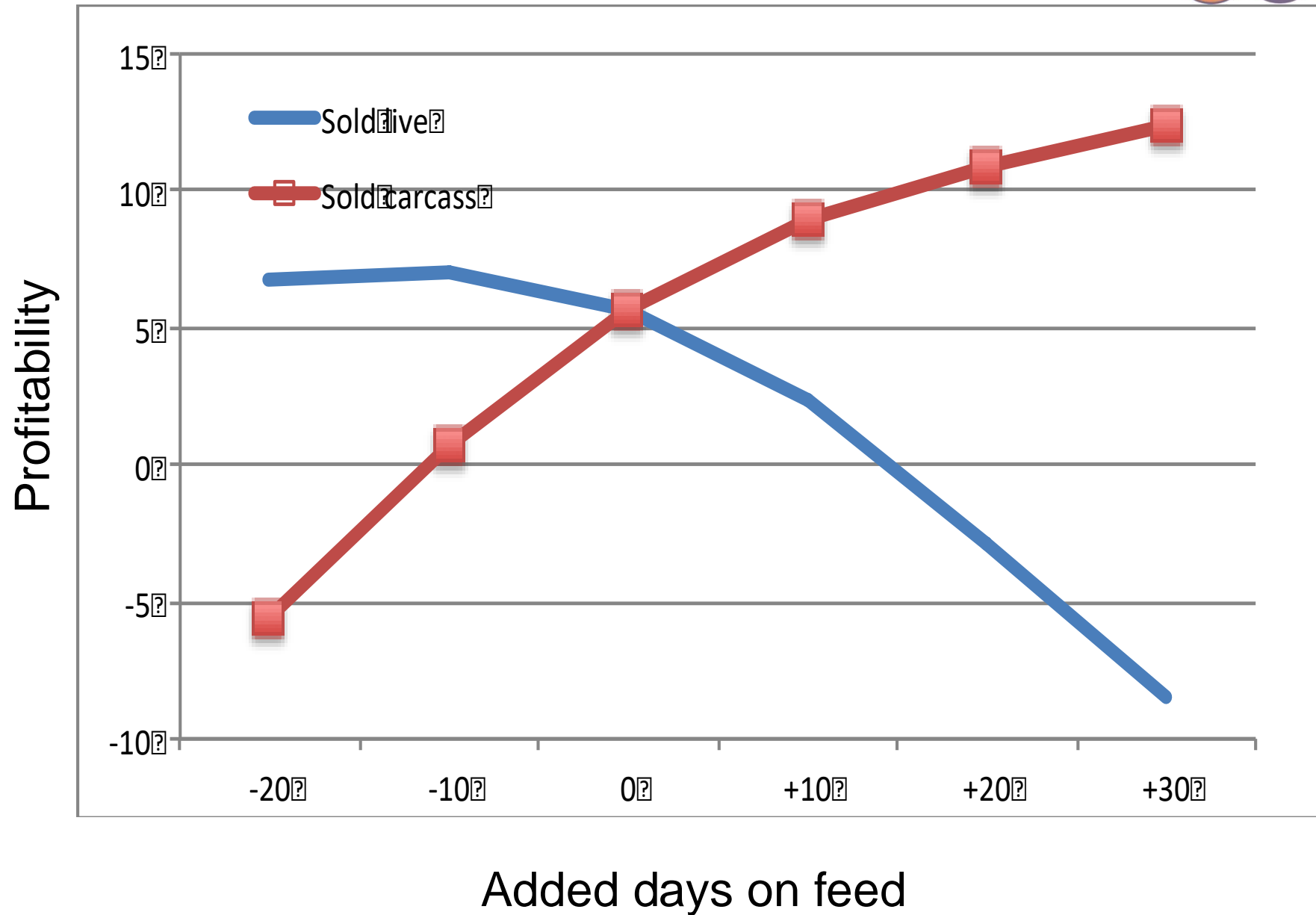
	145	155	Target 165	175	185	195
	3.85	3.80	3.75	3.70	3.65	3.60
	1308	1339	1369	1398	1425	1452
	22.80	22.90	23.00	23.07	23.12	23.12
	5.92	6.03	6.13	6.24	6.33	6.42
	62.98%	63.24%	63.50%	63.76%	64.02%	64.28%
	823.9	846.8	869.2	891.0	912.4	933.3
	1012.50	1012.50	1012.50	1012.50	1012.50	1012.50
	495.90	532.43	569.25	605.59	641.58	676.26
	25.04	27.15	29.32	31.53	33.79	36.08
	14.50	15.50	16.50	17.50	18.50	19.50
	545.16	584.80	624.79	664.34	703.59	741.56
	1557.66	1597.30	1637.29	1676.84	1716.09	1754.06
	97.65	99.29	100.98	102.60	104.20	105.64
	133.97	136.07	138.18	140.14	142.01	143.62
	<b>120.00</b>	<b>120.00</b>	<b>120.00</b>	<b>120.00</b>	<b>120.00</b>	<b>120.00</b>
	<b>189.00</b>	<b>189.00</b>	<b>189.00</b>	<b>189.00</b>	<b>189.00</b>	<b>189.00</b>
	1569.90	1606.80	1642.50	1677.00	1710.30	1742.40
	12.24	9.50	5.21	0.16	-5.79	-11.66
	7.03	4.29		-5.05	-11.00	-16.87
	1557.24	1600.42	1642.71	1684.08	1724.52	1764.02
	-0.42	3.13	5.42	7.24	8.43	9.96
	-5.83	-2.29		1.82	3.02	4.55

[Click here to view incremental results](#)



# Selling live vs. carcass

Midwest PMS LLC



# Incremental performance

\$325/t ration price (dry), 7% interest



Days	----Live----		--Carcass--	
	<u>F/G</u>	<u>COG</u>	<u>F/G</u>	<u>COG</u>
0-165	5.85	108.04	8.19	151.34
Next 10	8.12	147.33	10.76	195.32
Next 10	8.46	153.76	11.08	201.32
Next 10	8.62	157.22	11.15	203.23

# Growth Summary

- As cattle grow in the feedyard most of the weight gain is carcass tissues – muscle and fat
- Early on, cattle are not fat enough to sell, as they increase in weight they become more valuable
- If fed too long they get too heavy and/or too fat and lose value
- As they are fed, feed intake and cost increases
  - NRC modeling is not as accurate as using your own data
- The right marketing date maximizes value over cost and uses a dynamic model to integrate both

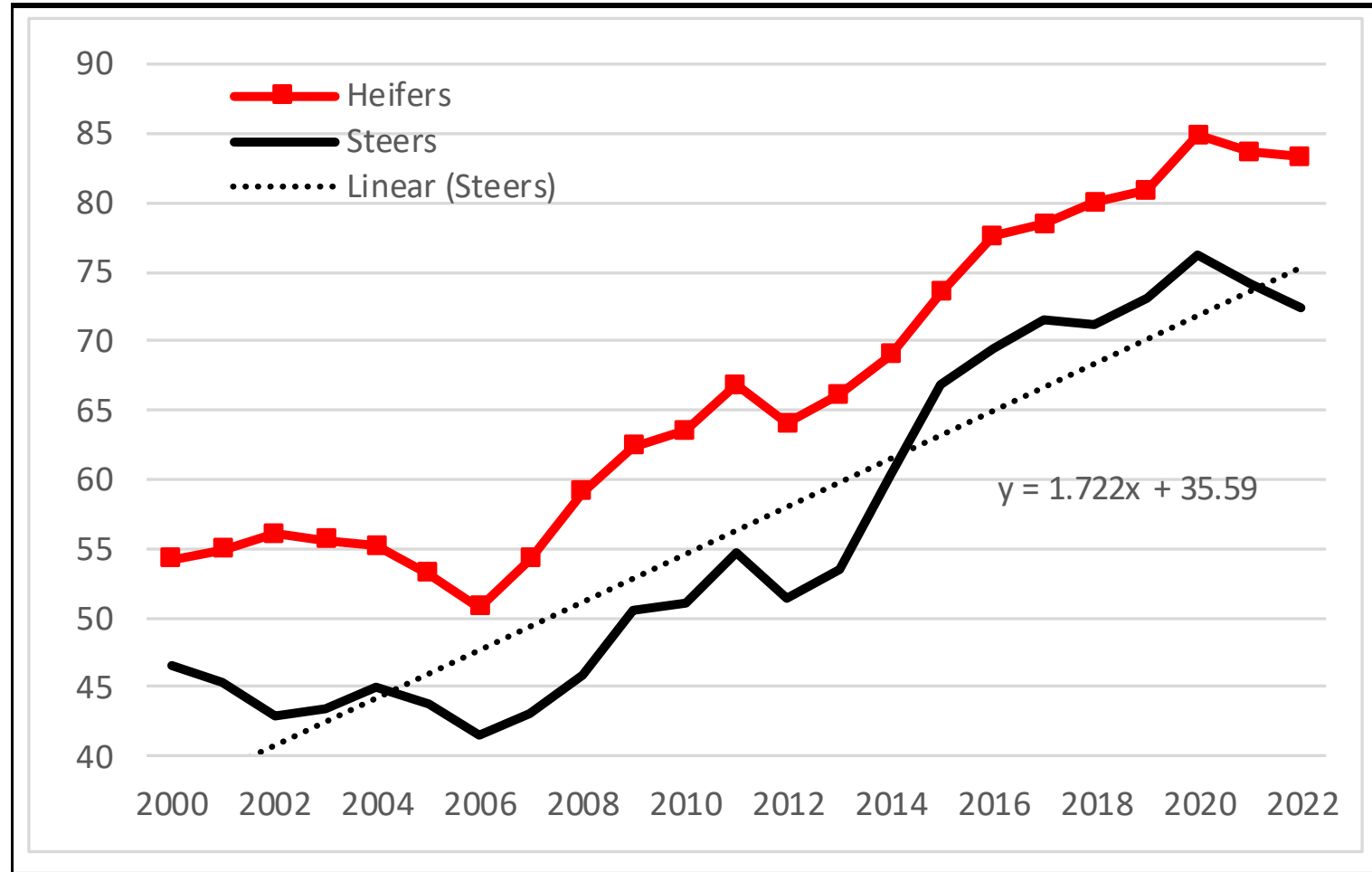




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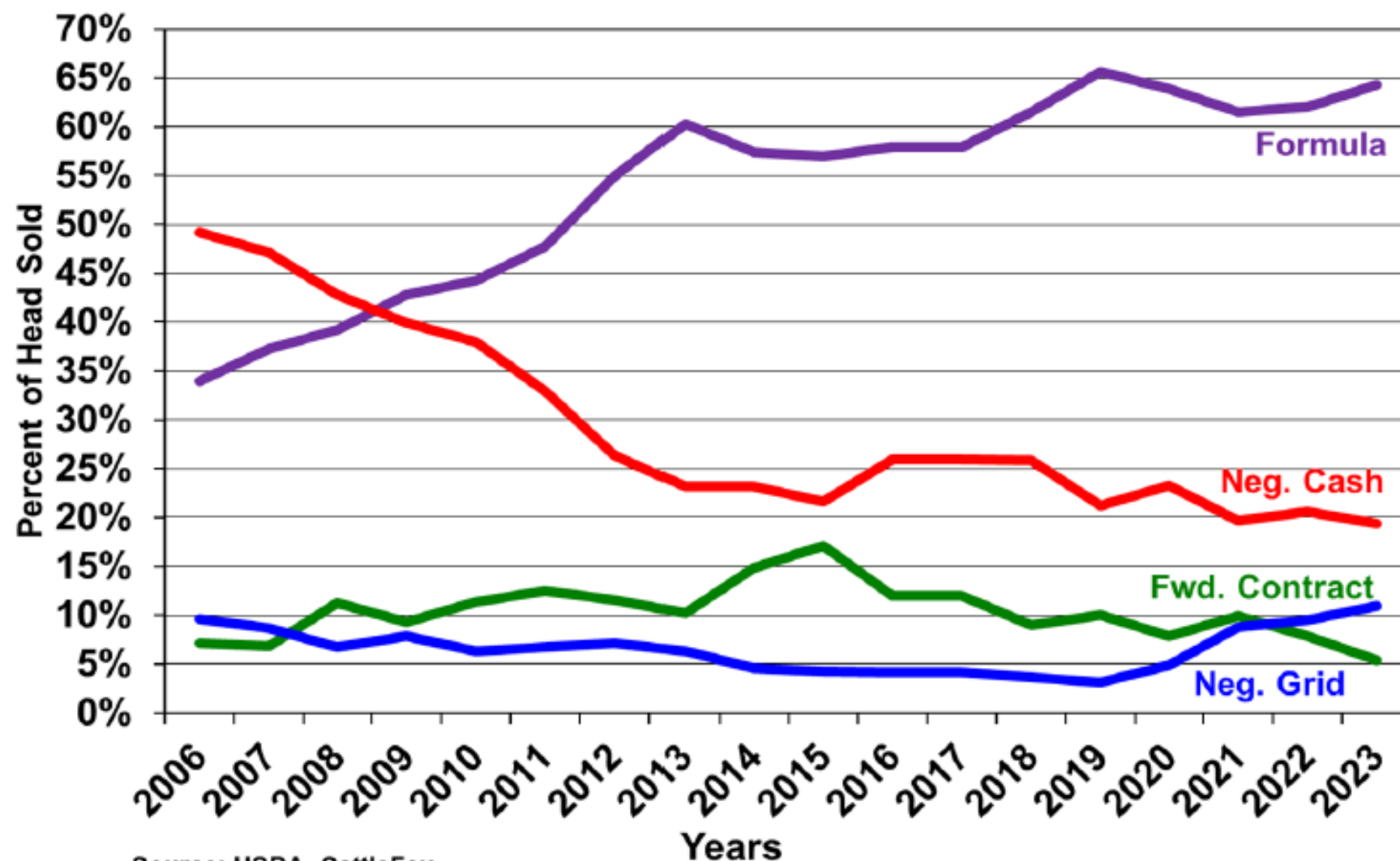


## Percentage Choice+ by sex and year closed



*Data courtesy of Elanco Knowledge Solutions*

## U.S. Fed Cattle Trade by Purchase Type

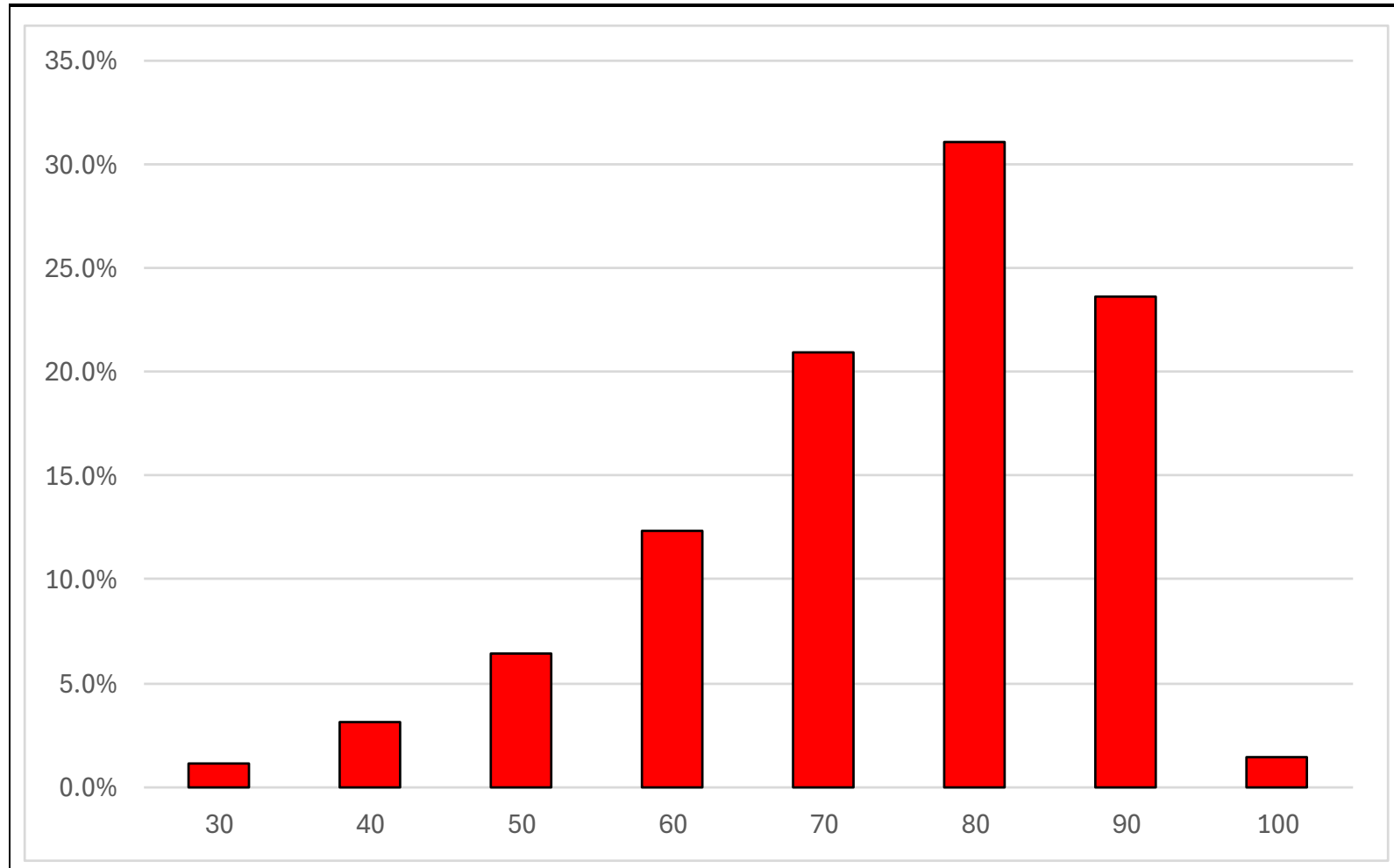


Source: USDA, CattleFax



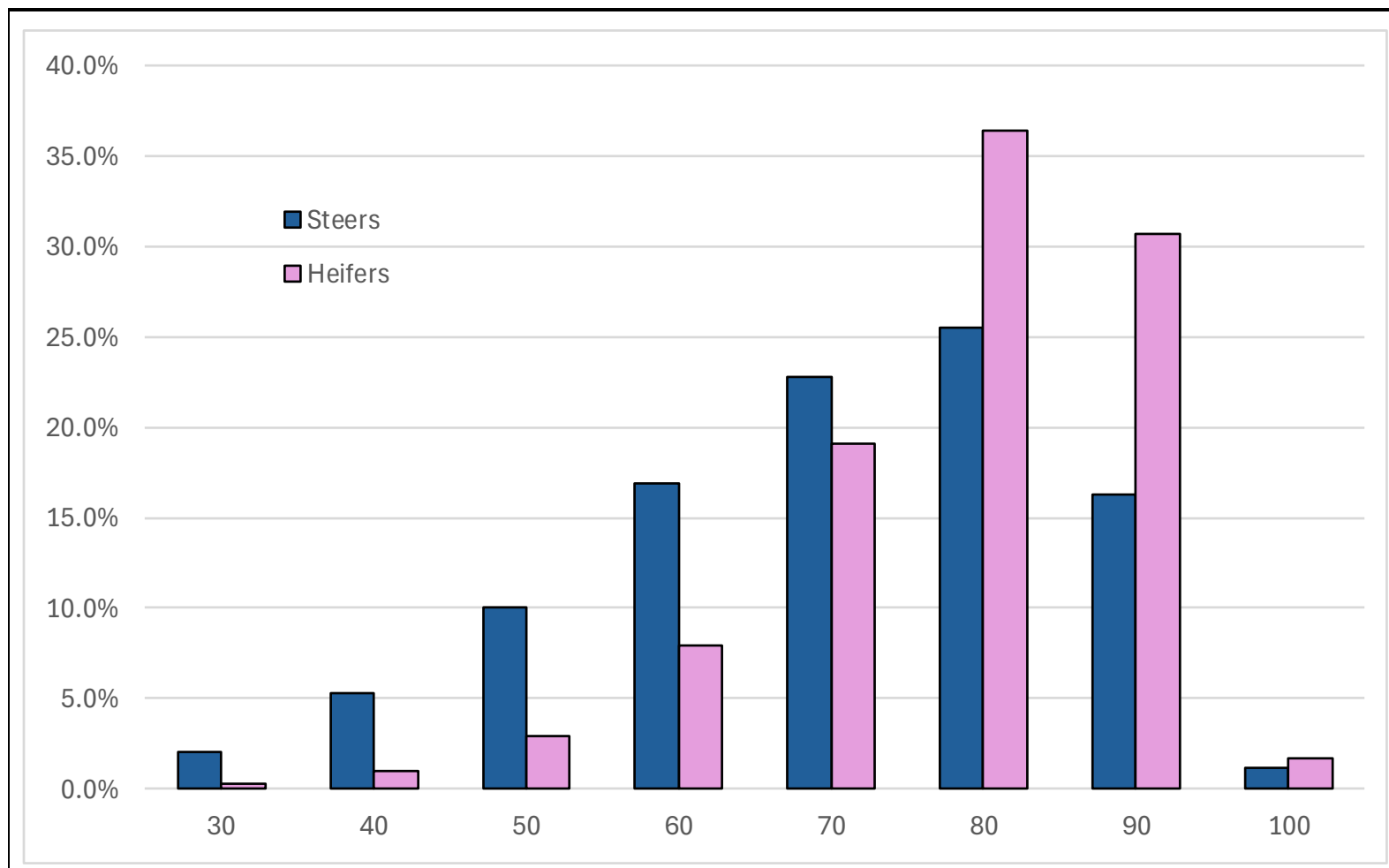
## Distribution of lots in Percentage Choice+ categories

Benchmark data 2019-2023



*Data courtesy of Elanco Knowledge Solutions*

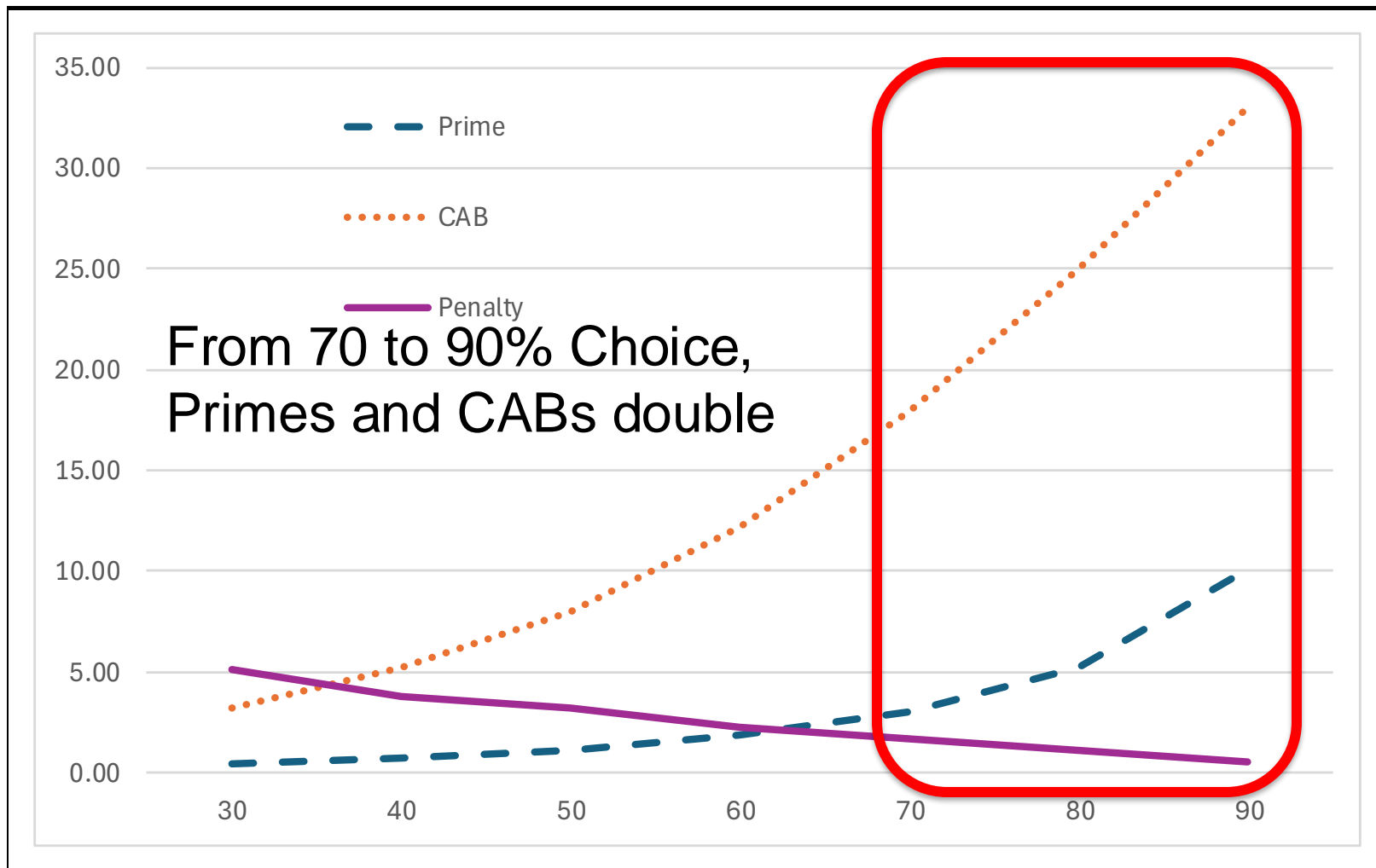
## Distribution of lots in Percentage Choice+ categories Benchmark data 2019-2023



*Data courtesy of Elanco Knowledge Solutions*

## Quality Grade Incidence in Percentage Choice+ categories

### Benchmark data 2019-2023



*Data courtesy of Elanco Knowledge Solutions*

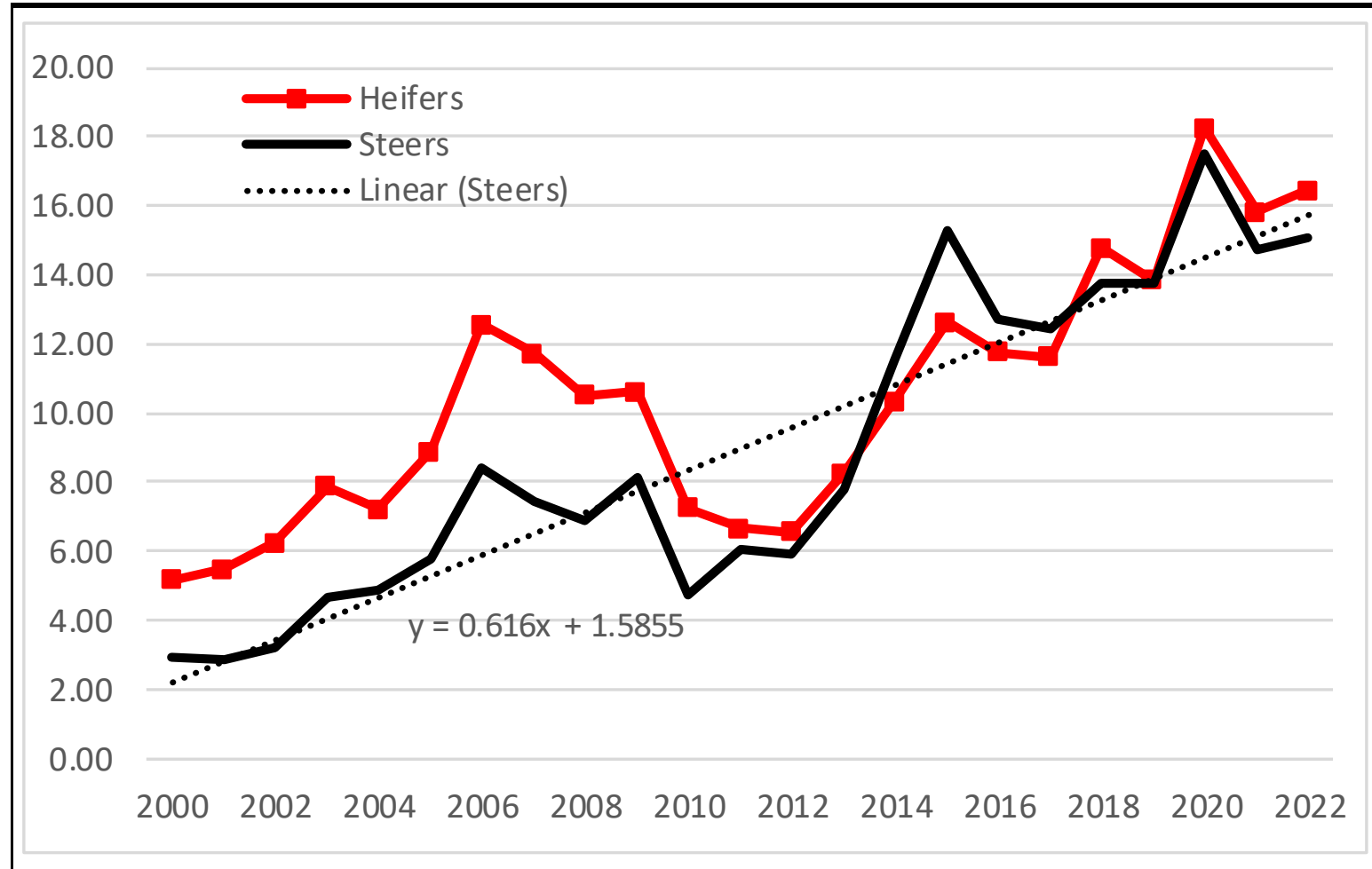


Pete's first rule of biology:

Everything is connected to  
everything

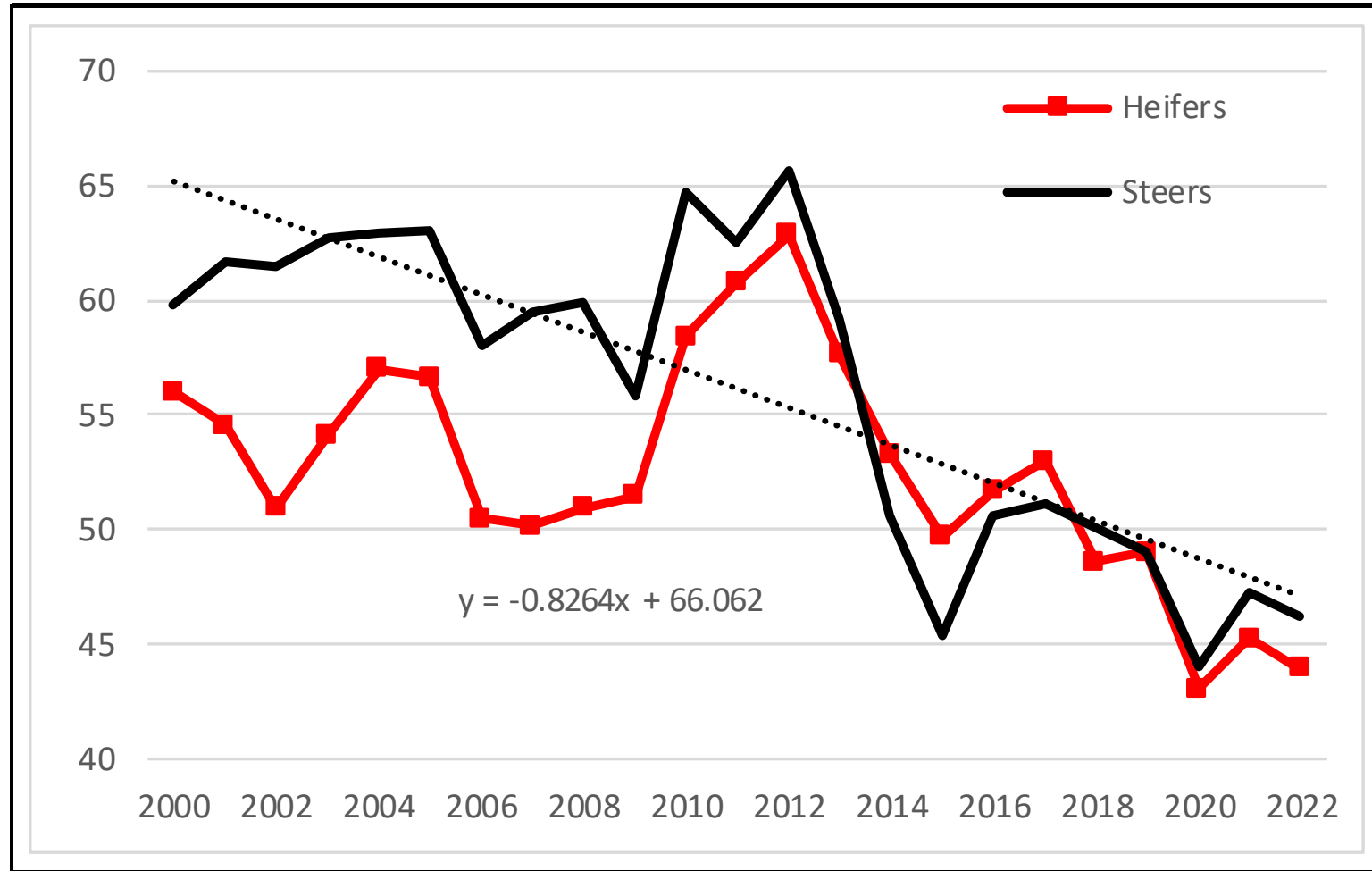


## Percentage YG 4+5 by sex and year closed



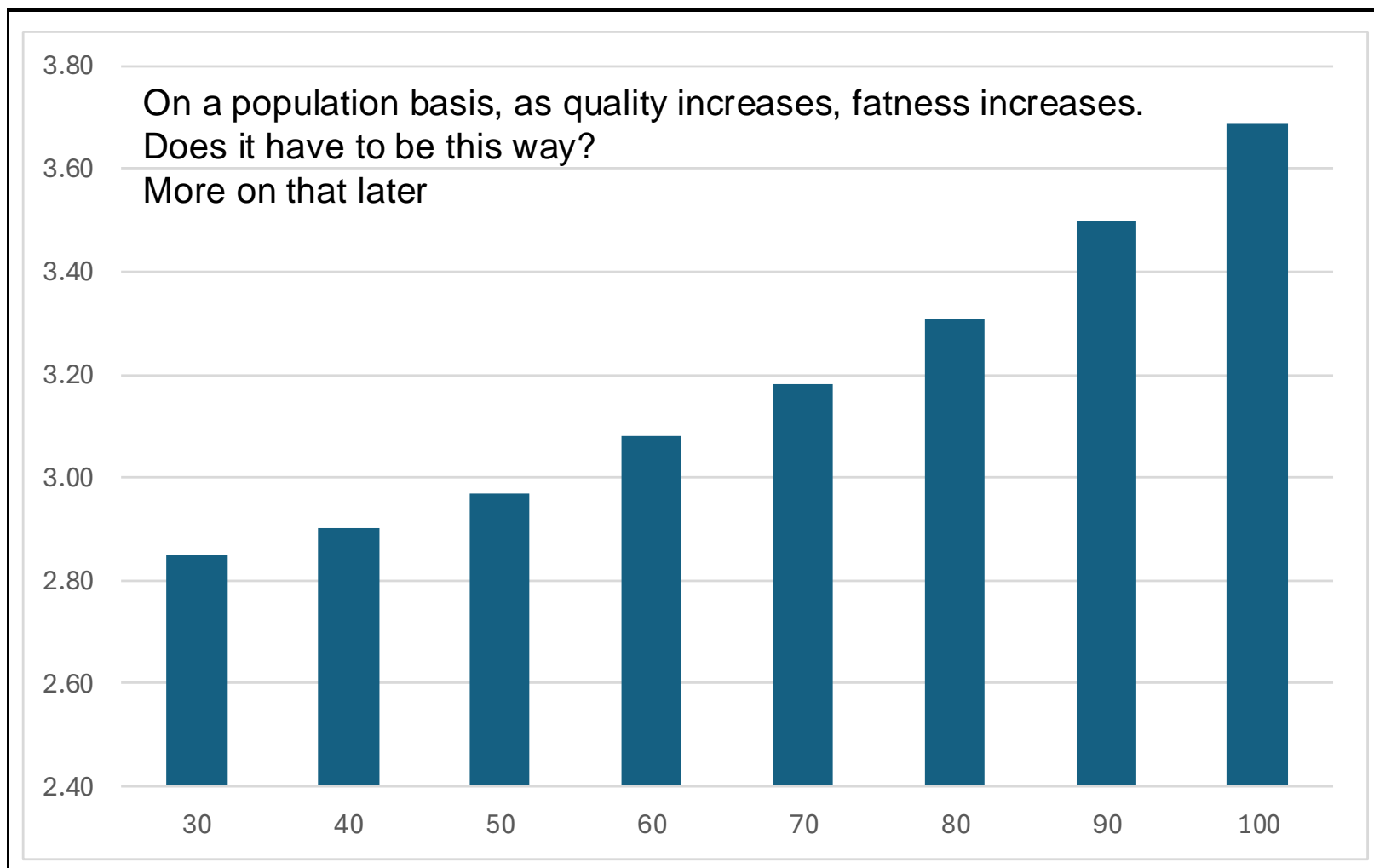
Data courtesy of Elanco Knowledge Solutions

## Percentage YG 1+2 by sex and year closed



*Data courtesy of Elanco Knowledge Solutions*

## Mean Yield Grade (modeled) in Percentage Choice+ categories Benchmark data 2019-2023



*Data courtesy of Elanco Knowledge Solutions*



## Distribution of carcass results based on pct Choice and higher

	-----Percentage Choice and higher-----					
	<u>0</u>	<u>20</u>	<u>40</u>	<u>60</u>	<u>80</u>	<u>100</u>
Prime	0.0	0.1	0.6	1.6	4.1	9.0
Premium	0.0	1.2	5.3	11.9	20.4	30.8
Choice	0.0	19.9	39.4	58.4	75.9	91.0
Select	67.0	65.4	56.2	39.0	20.0	0.0
Penalty	33.0	14.6	3.8	1.0	0.0	0.0

## Distribution of carcass results based on pct Choice and higher

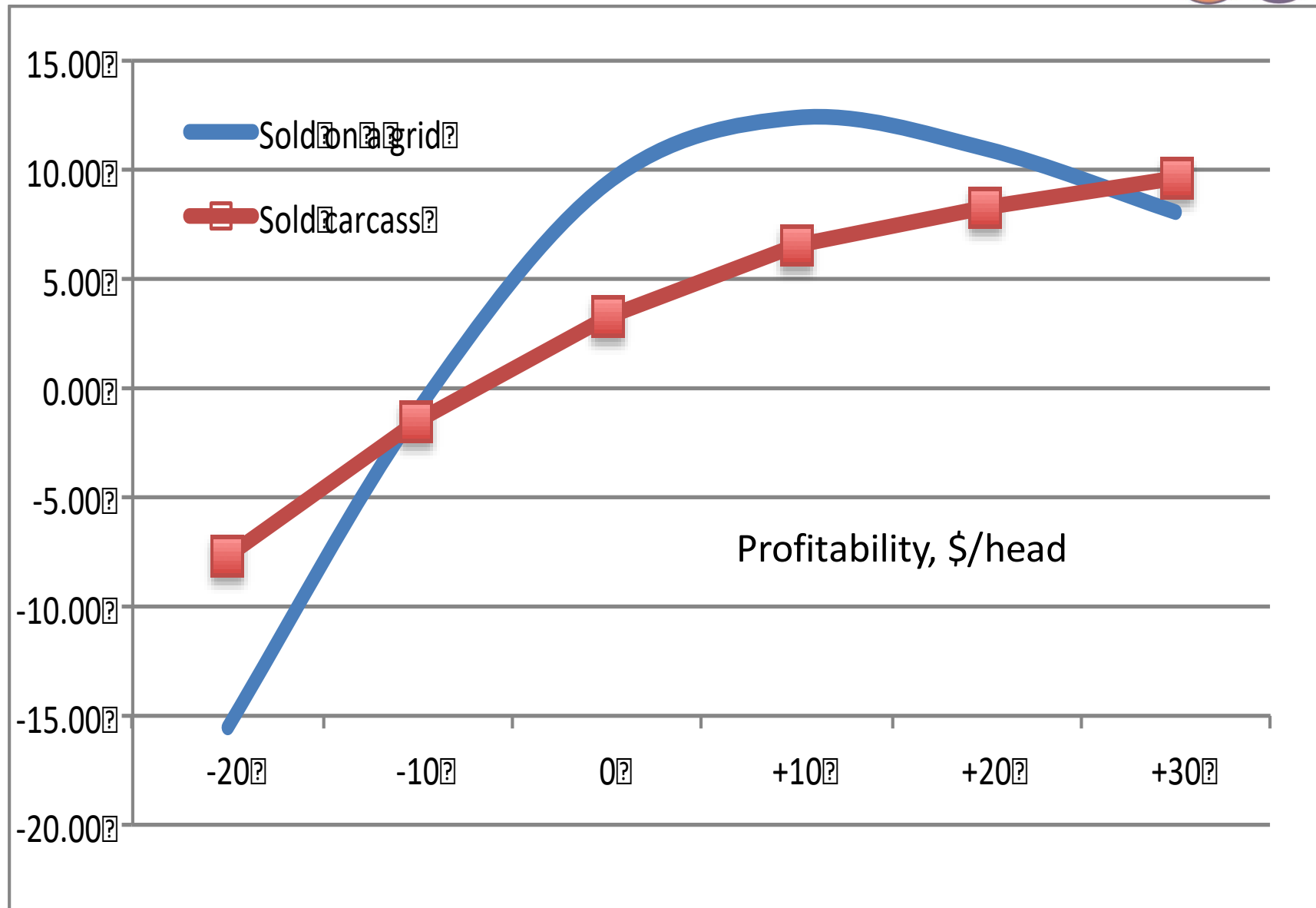
-----Percentage Choice and higher-----

	<u>0</u>	<u>20</u>	<u>40</u>	<u>60</u>	<u>80</u>	<u>100</u>
Prime	0.0	0.1	0.0	1.6	4.1	9.0
Premium	0.0	1.2	0.0	11.9	20.4	30.8
Choice	0.0	0.0	0.0	58.4	75.9	91.0
Select	6.0	0.0	0.0	39.0	20.0	0.0
Penalty	33.0	0.0	3.8	1.0	0.0	0.0
YG 1	4.0	0.0	0.0	11.3	4.7	1.1
YG 2	0.0	0.0	0.0	44.0	41.0	37.8
YG 3	0.0	27.4	0.0	39.7	42.2	37.1
YG 4	0.0	0.2	0.0	4.5	11.0	21.8
YG 5	0.0	0.0	0.0	0.5	1.1	2.2

# Carcass value changes over time

- Quality grade profile improves
- Yield grade profile becomes poorer
- Weight discounts increase
- On any given day, some individual animals are becoming more valuable, and some are becoming less valuable. The value of the entire group may be increasing or decreasing but it is always changing.
- It is common for value to increase as weight is added until penalties for heavies or YG4's accumulate. Value then decreases rapidly.





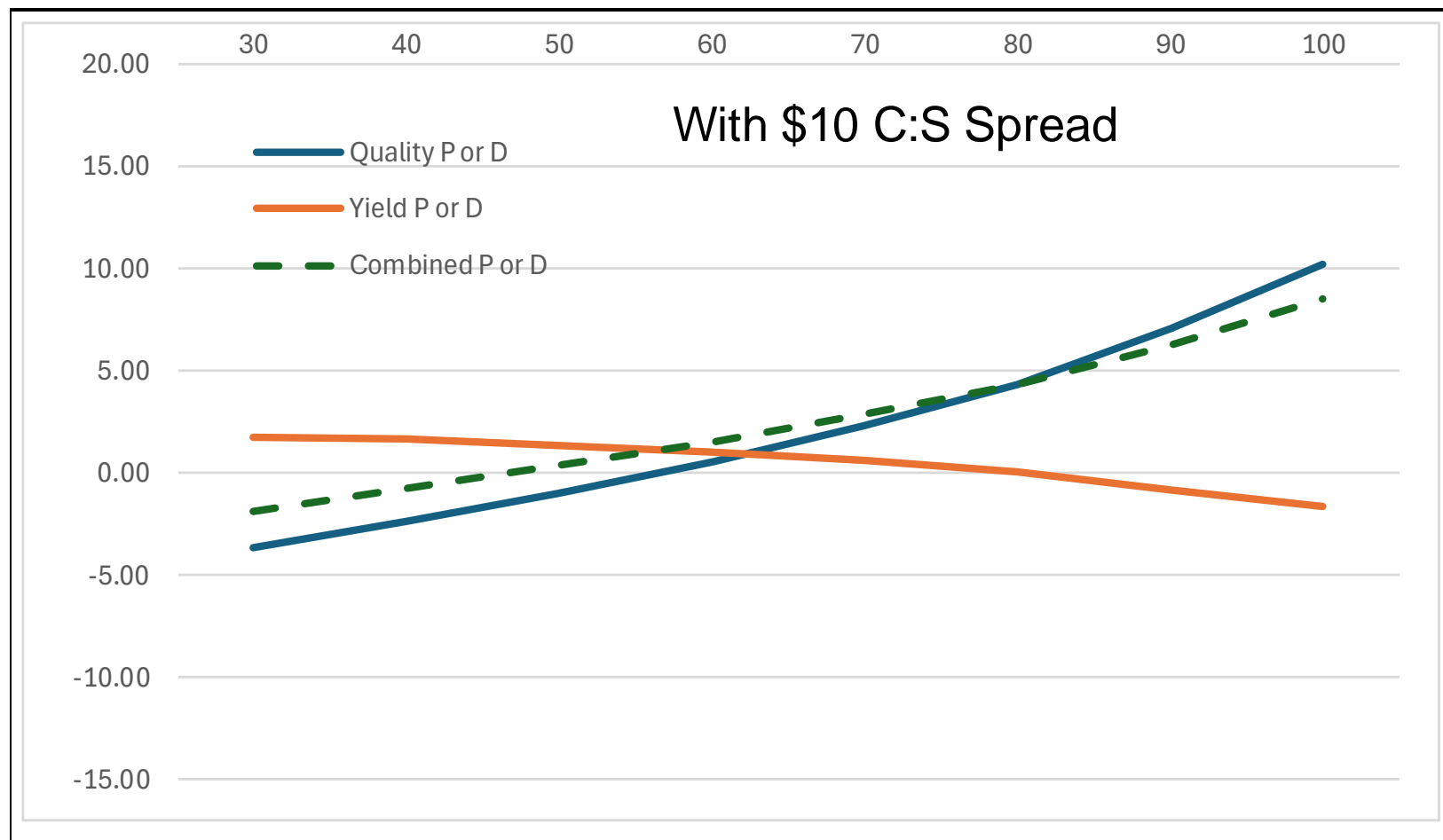


## Premiums or discounts by percentage Choice

		Choice or higher index (%)							
	P or D	30	40	50	60	70	80	90	100
Prime	30.00	0.11	0.22	0.34	0.56	0.91	1.56	3.01	5.88
CAB	6.00	0.19	0.31	0.48	0.73	1.07	1.50	1.98	1.89
Choice	6.00	2.13	2.69	3.26	3.81	4.34	4.79	5.04	4.82
Select	-14.00	-8.33	-7.13	-5.85	-4.54	-3.23	-1.94	-0.77	0.00
Penalty	-25.00	-0.91	-0.69	-0.53	-0.39	-0.28	-0.18	-0.08	0.00
YG 1	4.00	0.90	0.83	0.72	0.58	0.47	0.35	0.21	0.09
YG 2	2.00	0.87	0.86	0.84	0.80	0.76	0.69	0.57	0.45
YG 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YG 4	-10.00	0.13	0.09	-0.03	-0.19	-0.39	-0.66	-1.10	-1.58
YG 5	-15.00	-0.13	-0.15	-0.17	-0.21	-0.26	-0.33	-0.48	-0.60
Net QG P or D		-6.80	-4.61	-2.30	0.19	2.81	5.73	9.18	12.60
Net YG P or D		1.77	1.64	1.37	0.98	0.57	0.04	-0.81	-1.64
Combined		-5.04	-2.97	-0.93	1.17	3.38	5.77	8.38	10.95

Calculated based on data provided by Elanco Knowledge Solutions

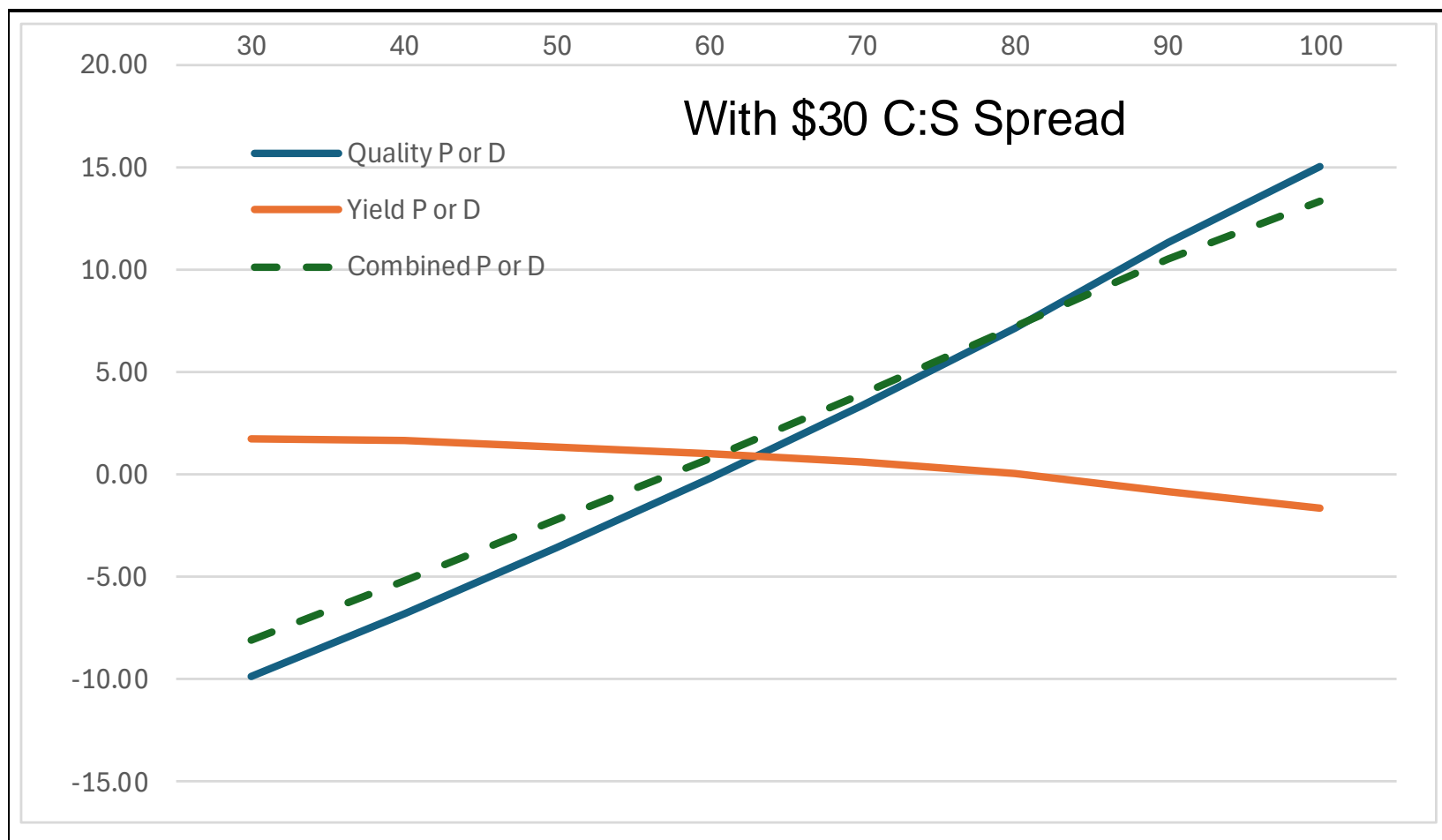
# QG, YG and combined premiums (\$/cwt) by percentage Choice Typical QG, YG premiums or discounts



Calculated using data provided by Elanco Knowledge Solutions

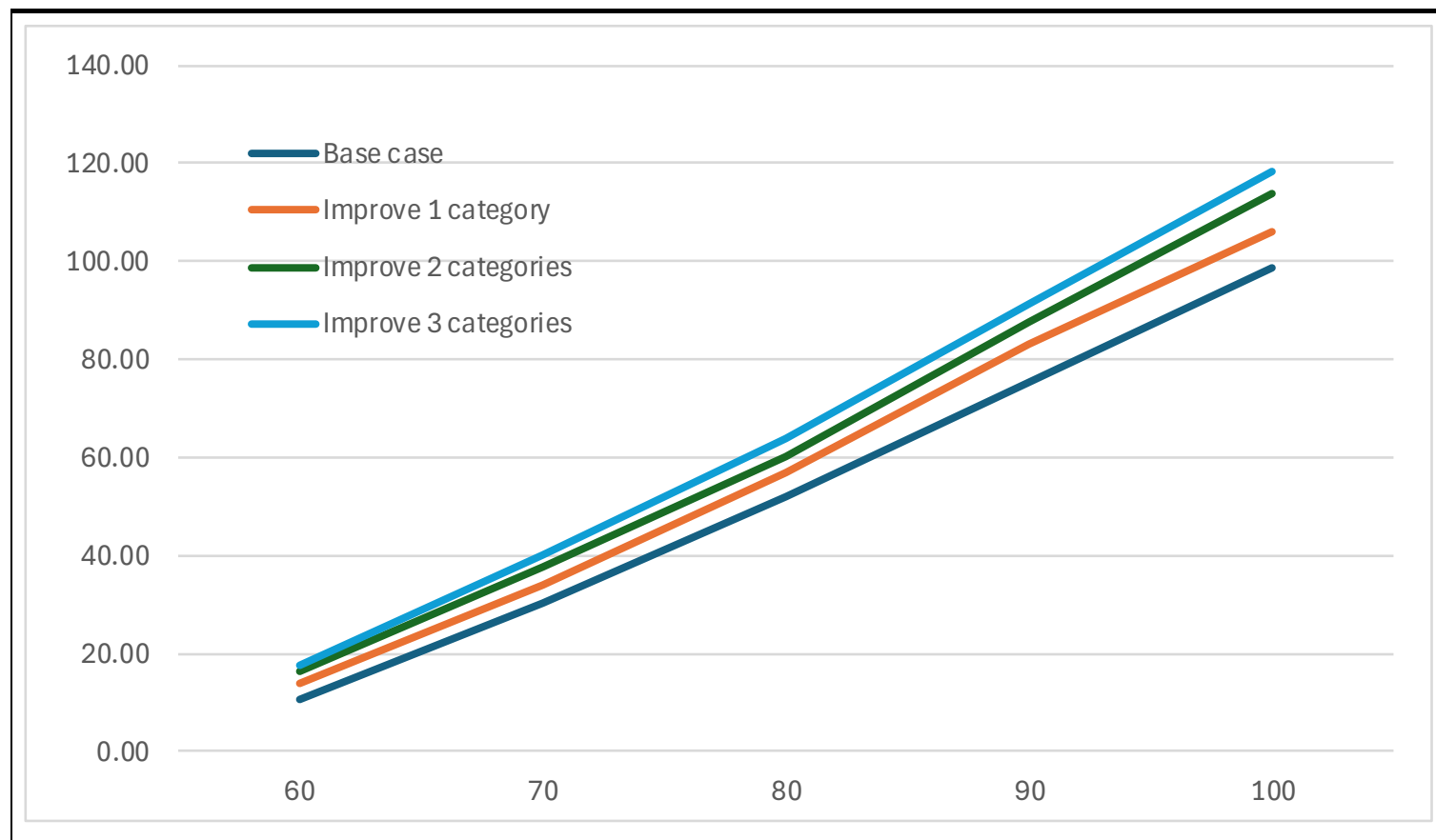
## QG, YG and combined premiums (\$/cwt) by percentage Choice

Typical QG, YG premiums or discounts



*Calculated using data provided by Elanco Knowledge Solutions*

## Combined premiums (\$/head) by percentage Choice With improved YG profile



*Calculated using data provided by Elanco Knowledge Solutions*





## Grid Comparison Calculator

Live bid: **\$170.00**

Dress, % **64.00**

Carcass bid: **\$268.00**

### Expected carcass performance:

Category	%	Category	%
Prime	<b>3.0</b>	YG 1	<b>6.0</b>
CAB	<b>22.0</b>	YG 2	<b>38.0</b>
Choice	<b>70.0</b>	YG 3	<b>43.0</b>
Select	<b>26.0</b>	YG 4	<b>12.0</b>
Standard	<b>0.0</b>	YG 5	<b>1.0</b>
No Roll	<b>1.0</b>		
		Heavy	<b>0.0</b>
Dark	<b>0.0</b>	Light	<b>0.0</b>
Out	<b>0.0</b>		
Totals	<b>100.0</b>		<b>100.0</b>

### Carcass summary:

Percent choice and up:	73.0
Percent CAB:	22.0
Percent YG 4 and 5:	13.0
Percent out:	0.0
Percent defect rate:	14.0

### Preliminary grid input:

Base Dressing Percentage	<b>63.8</b>
Base price	\$266.46
Base % Choice	<b>75.0</b>
Choice/Select spread, \$/cwt	<b>\$15.00</b>
Choice Price, \$/cwt	\$270.21
Select Price, \$/cwt	\$255.21

### Grid details, premiums or discounts, allowances:

Category	P or D	Allowance, %	Effect	Net
Prime <i>(Premium over Choice)</i>	<b>\$5.00</b>	0	\$8.75	\$0.26
CAB <i>(Premium over Choice)</i>	<b>\$1.50</b>	0	\$5.25	\$1.16
Choice			\$3.75	\$2.63
Select			(\$11.25)	-\$2.93
No Roll <i>(Discount from Select)</i>	<b>-\$15.00</b>	0	(\$26.25)	-\$0.26
Standard <i>(Discount from Select)</i>	<b>-\$25.00</b>	0	(\$36.25)	\$0.00
Dark Cutter <i>(Discount from Base)</i>	<b>-\$20.00</b>	0	(\$20.00)	\$0.00
Heavy Weight <i>(Discount from Base)</i>	<b>-\$30.00</b>	0	(\$30.00)	\$0.00
Light Weight <i>(Discount from Base)</i>	<b>-\$30.00</b>	0	(\$30.00)	\$0.00
Out Cattle <i>(Discount from Base)</i>	<b>-\$20.00</b>	0	(\$20.00)	\$0.00
YG 1 <i>(Premium from Base)</i>	<b>\$3.00</b>	0	\$3.00	\$0.18
YG 2 <i>(Premium from Base)</i>	<b>\$1.50</b>	0	\$1.50	\$0.57
YG 3 <i>(Premium or Discount from Base)</i>	<b>\$0.00</b>	0	\$0.00	\$0.00
YG 4 <i>(Discount from Base)</i>	<b>-\$16.00</b>	6	(\$16.00)	-\$0.96
YG 5 <i>(Discount from Base)</i>	<b>-\$21.00</b>	1	(\$21.00)	\$0.00
Other allowances, \$/cwt				<b>\$0.00</b>
Freight	<b>\$0.00</b>			\$0.00
Net premiums/discounts				\$0.65
Net carcass price:				<b>\$267.10</b>
Net live price:				\$170.95
Net live price minus live bid:				\$0.95

# Selling on a grid: What creates real value?

## Impact on 100 head



### Quality grade:

Increase Choice from 60% to 70%	+\$1994
Increase Choice from 70% to 80%	+\$2153
Increase Choice from 80% to 90%	+\$2342
Increase Choice from 90% to 100%	+\$2320
Increase Premium Choice by 10%	+\$1737
Increase Prime by 5%	+\$1350

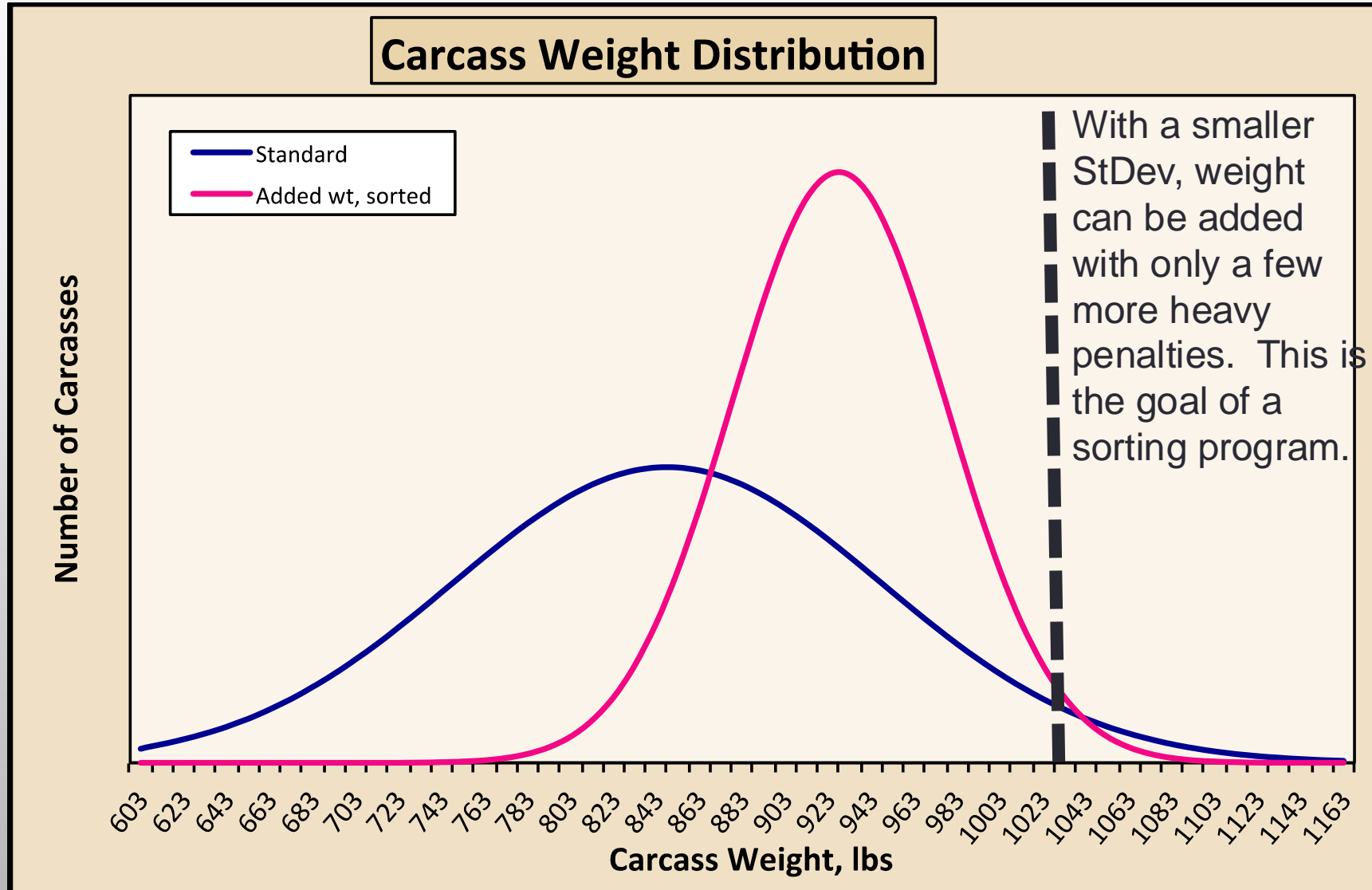
### Yield grade:

Increase Pct YG 2 by 10%	+\$180
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## Selling on a grid: What destroys value?

Lights	-\$165 each
Heavies	-\$300 each
Penalty QG	-\$180 each
>30 months	-\$150 each*
Dark cutters	-\$180 each

# Effect of uniformity or sorting





# Pounds vs premiums and discounts



Carcass changes required to equal 10 lb of HCW

		\$8 C:S Spread \$1.17/pt	
<u>Price/lb</u>	<u>Value</u>	<u>Pts required</u>	
2.40	24.00	20.5	
2.60	26.00	22.2	
2.80	28.00	23.9	
3.00	30.00	25.6	



## Carcass changes required to equal 10 lb of HCW

<u>Price/lb</u>	<u>Value</u>	\$8 C:S Spread \$1.17/pt <u>Pts required</u>	\$30 C:S Spread \$2.86/pt <u>Pts required</u>	YG 1's \$4/cwt <u>Pts required</u>	YG 4's \$-12/cwt <u>Pts required</u>	YG 4's \$-20/cwt <u>Pts required</u>
2.40	24.00	20.5	8.4	66.7	22.2	13.3
2.60	26.00	22.2	9.1	72.2	24.1	14.4
2.80	28.00	23.9	9.8	77.8	25.9	15.6
3.00	30.00	25.6	10.5	83.3	27.8	16.7

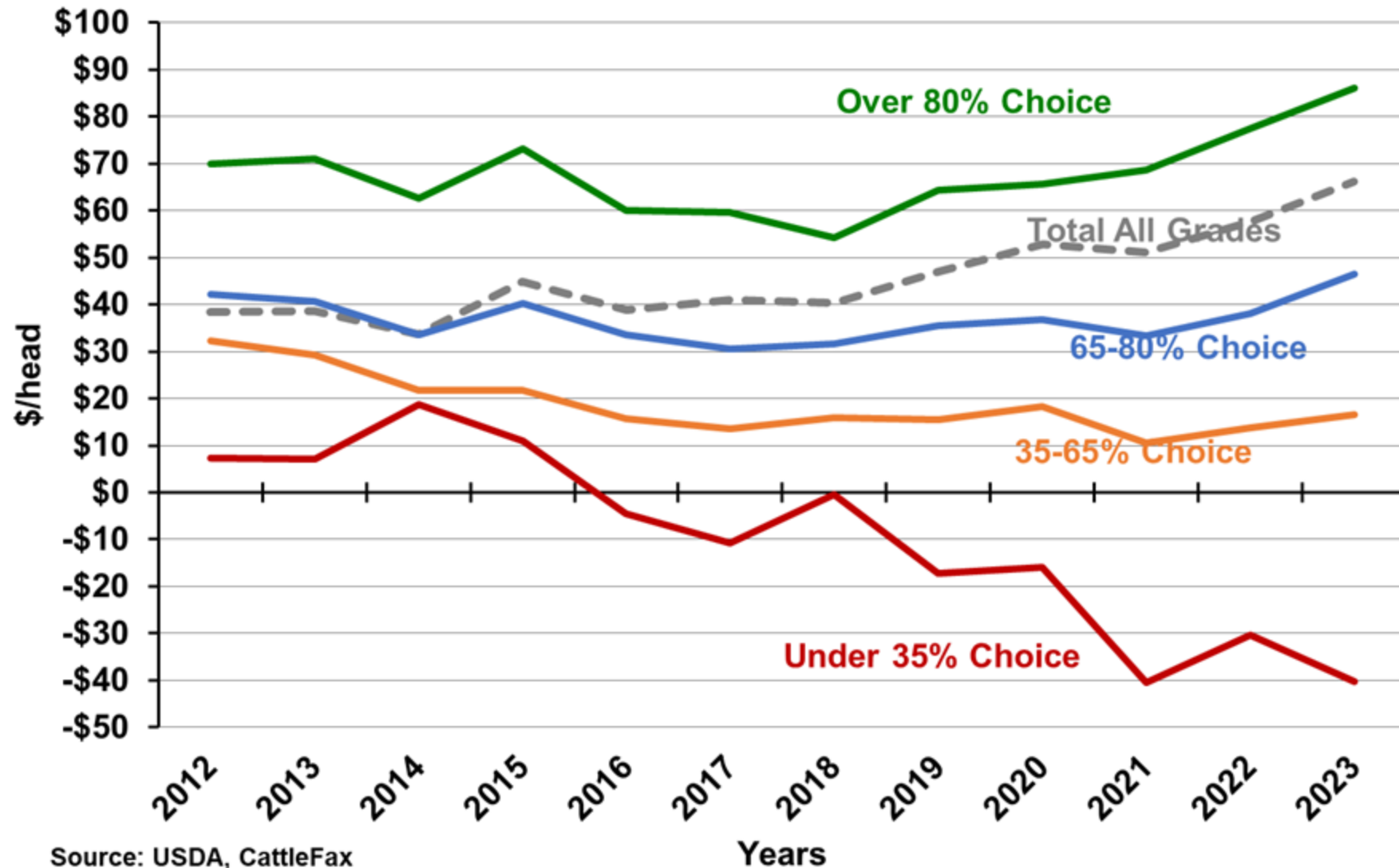


Carcass changes required to equal 10 lb of HCW, \$100/cwt COG

<u>Price/lb</u>	<u>Net Value</u>	<u>\$8 C:S Spread \$1.17/pt Pts required</u>	<u>\$30 C:S Spread \$2.86/pt Pts required</u>	<u>YG 1's \$4/cwt Pts required</u>	<u>YG 4's \$-12/cwt Pts required</u>	<u>YG 4's \$-20/cwt Pts required</u>
2.40	11.50	9.8	4.0	31.9	10.6	6.4
2.60	13.50	11.5	4.7	37.5	12.5	7.5
2.80	15.50	13.2	5.4	43.1	14.4	8.6
3.00	17.50	15.0	6.1	48.6	16.2	9.7



## Average Fed Cattle Premiums by Grade vs. Negotiated Cash



Source: USDA, CattleFax



# Selecting an endpoint

- Did all of those charts make you a little dizzy?
- There is no way you can do all of that in your head or by “eyeballing” the cattle.
- Plus, intake and conversion are constantly changing, the market is moving, and weather is coming.
- This is why you need to be able to accurately predict outcomes and optimize profitability
- Use spreadsheets and calculators... for a few years. Then use the next thing, which will be a lot better.



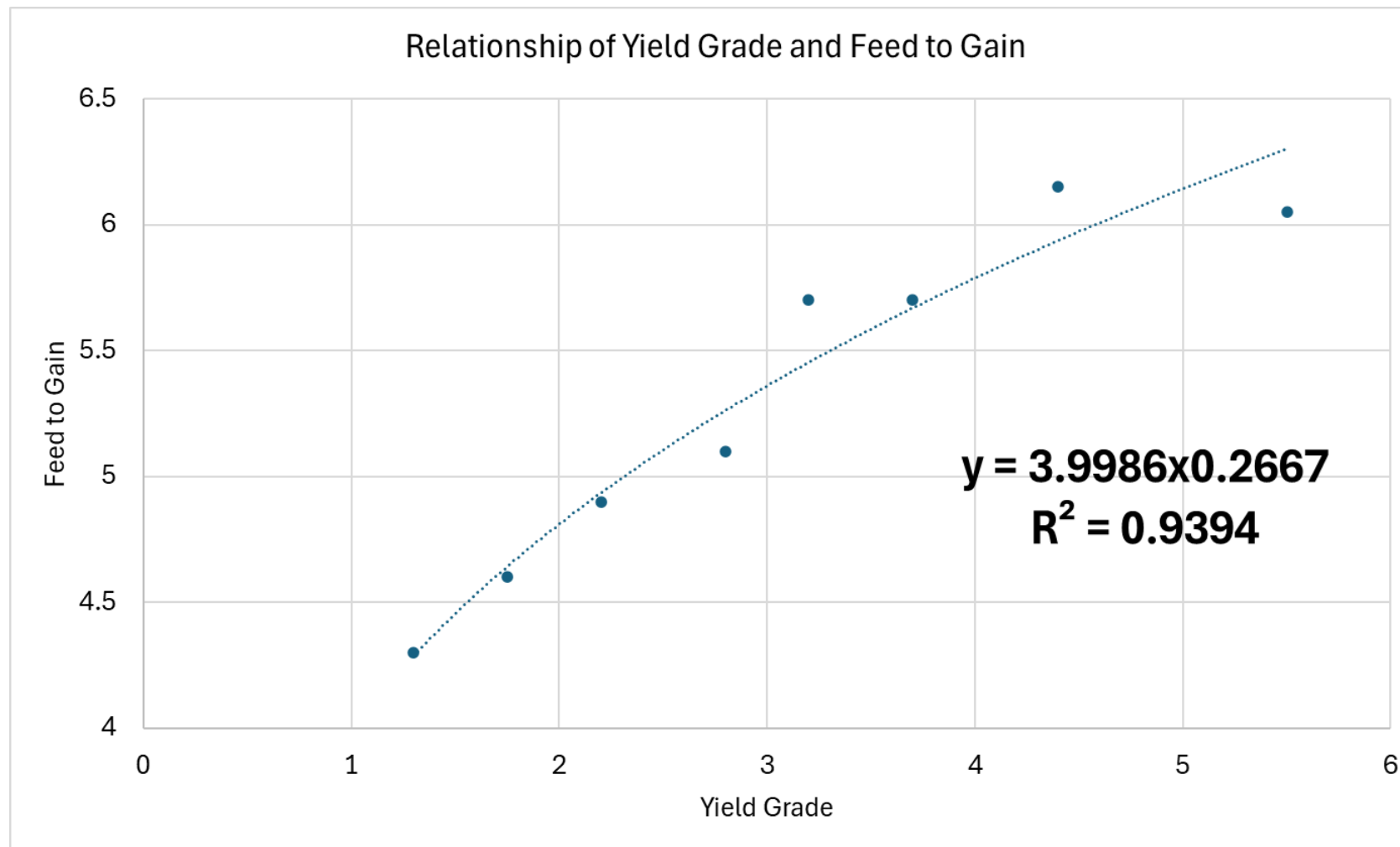
# Where do we go from here?



# Two opinions, one fact and a question

- Continuing to increase marbling would be a good thing
- Fat is expensive to put on
- Continuing to increase external fatness would be a bad thing
- Question – can we get more marbling without increasing external fat?





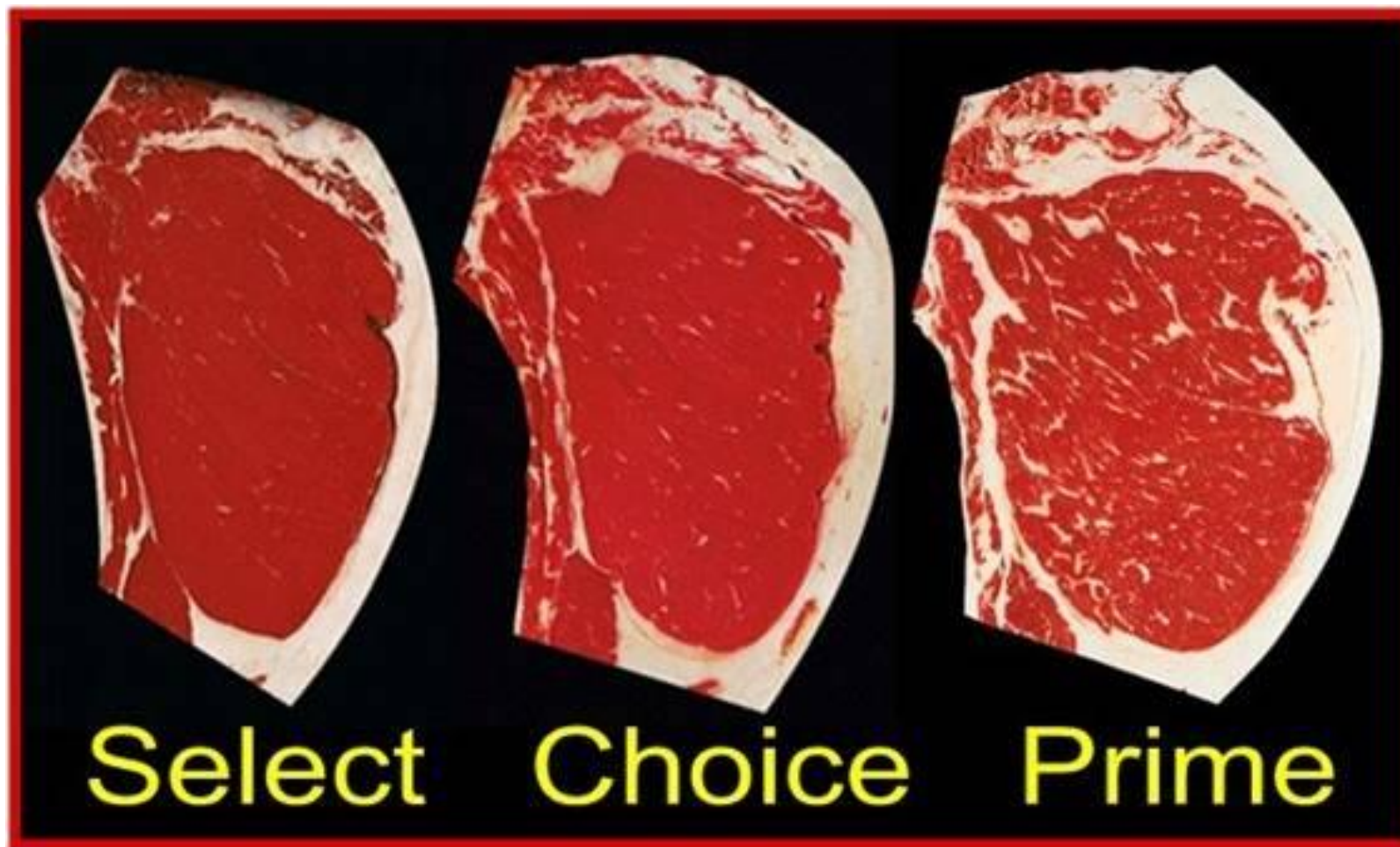
Source: Pritchard SDSU, personal communication

# Modeled data

<u>YG</u>	<u>DOF</u>	<u>F/G</u>	
3.0	159	6.42	} 13.38!
4.0	170	6.83	

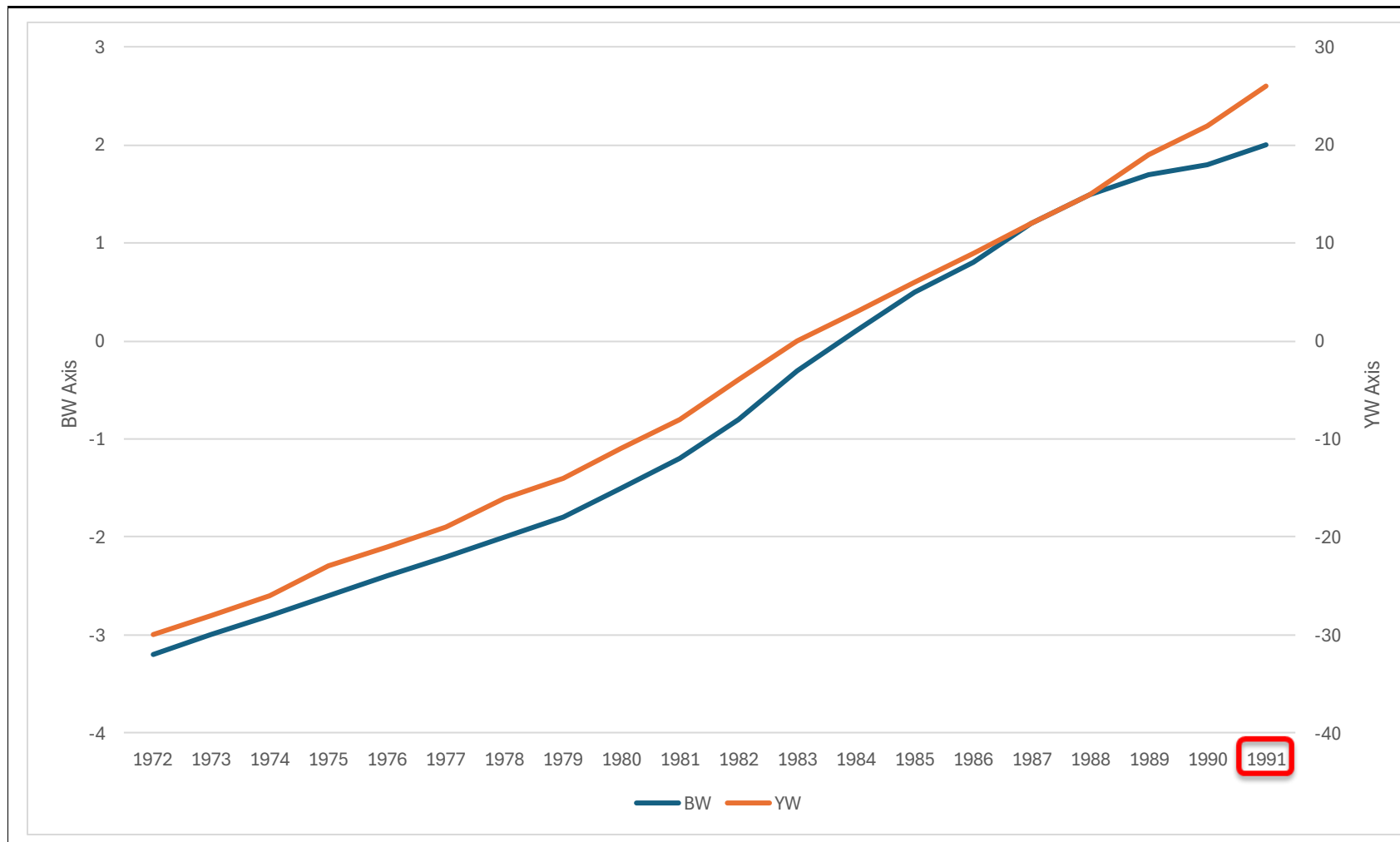
Fat is expensive



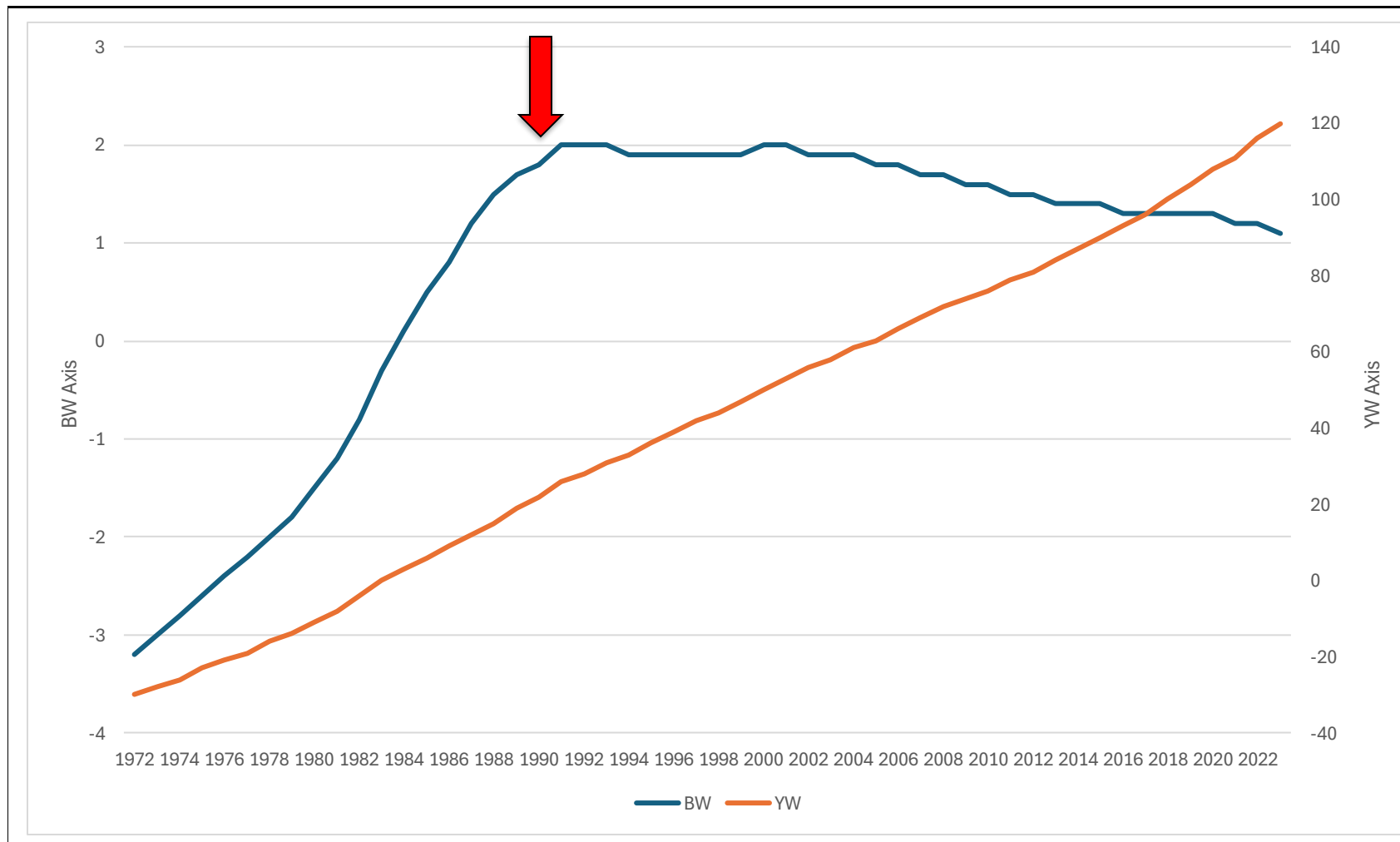


Where is most of the fat?  
Can we get more marbling without  
getting more external fat?

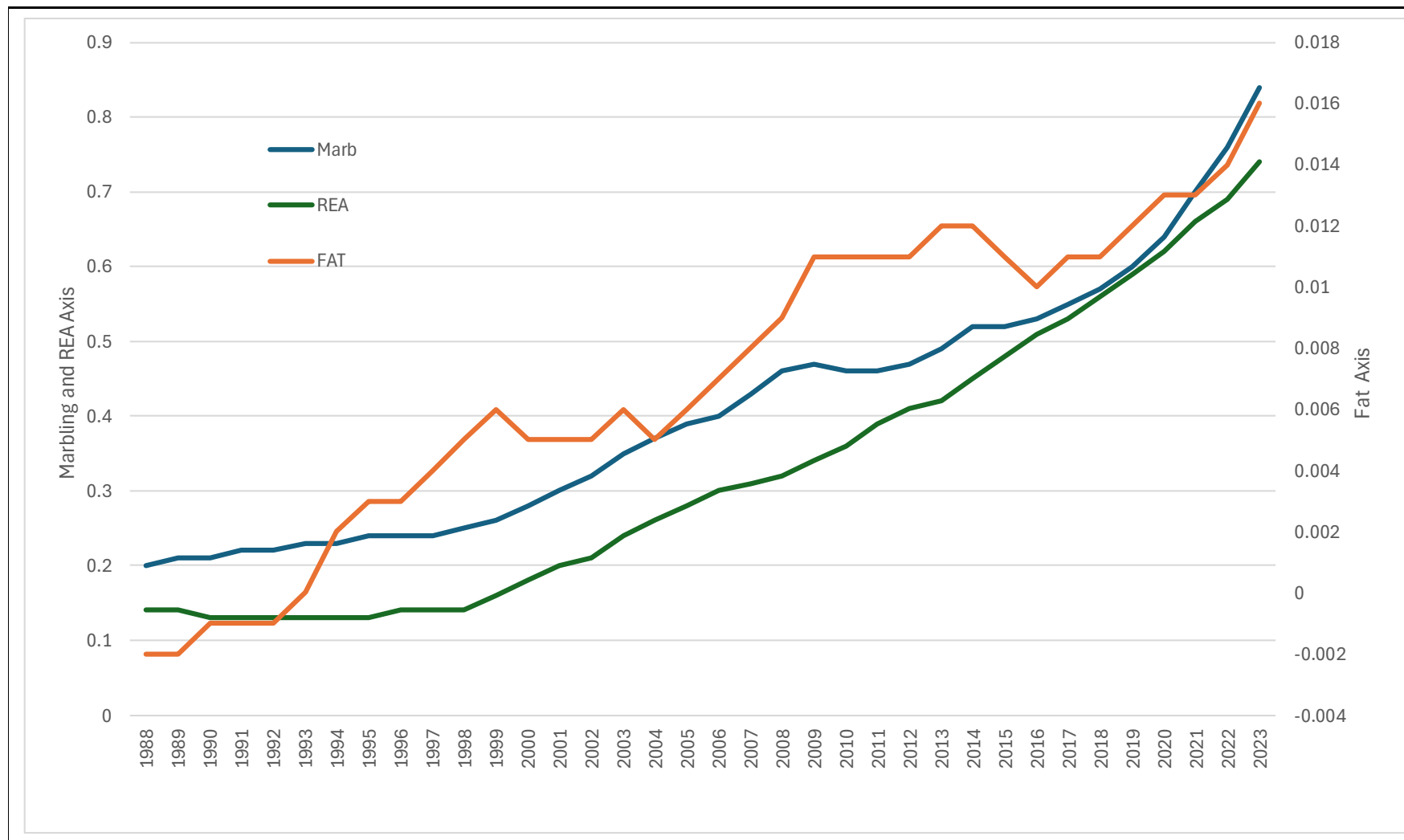
## Angus Genetic Trend for Yearling weight and Birth Weight



## Angus Genetic Trend for Yearling weight and Birth Weight



## Angus Genetic Trend for Marbling, REA and Fat Thickness



# Energy use

Corn required to change:

From YG 3 to YG 4	246.8 lb
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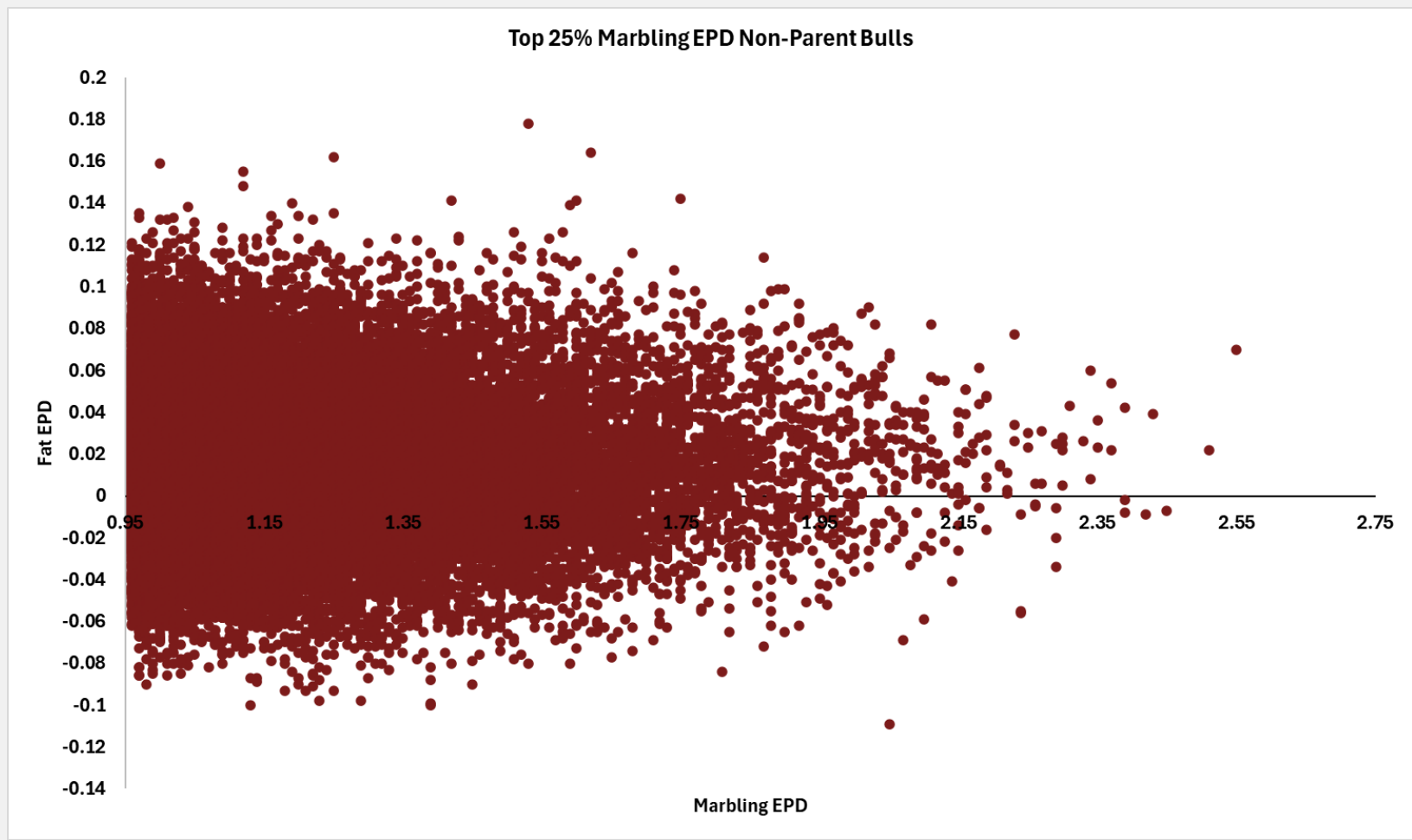
From Low Choice to Premium	13.2 lb
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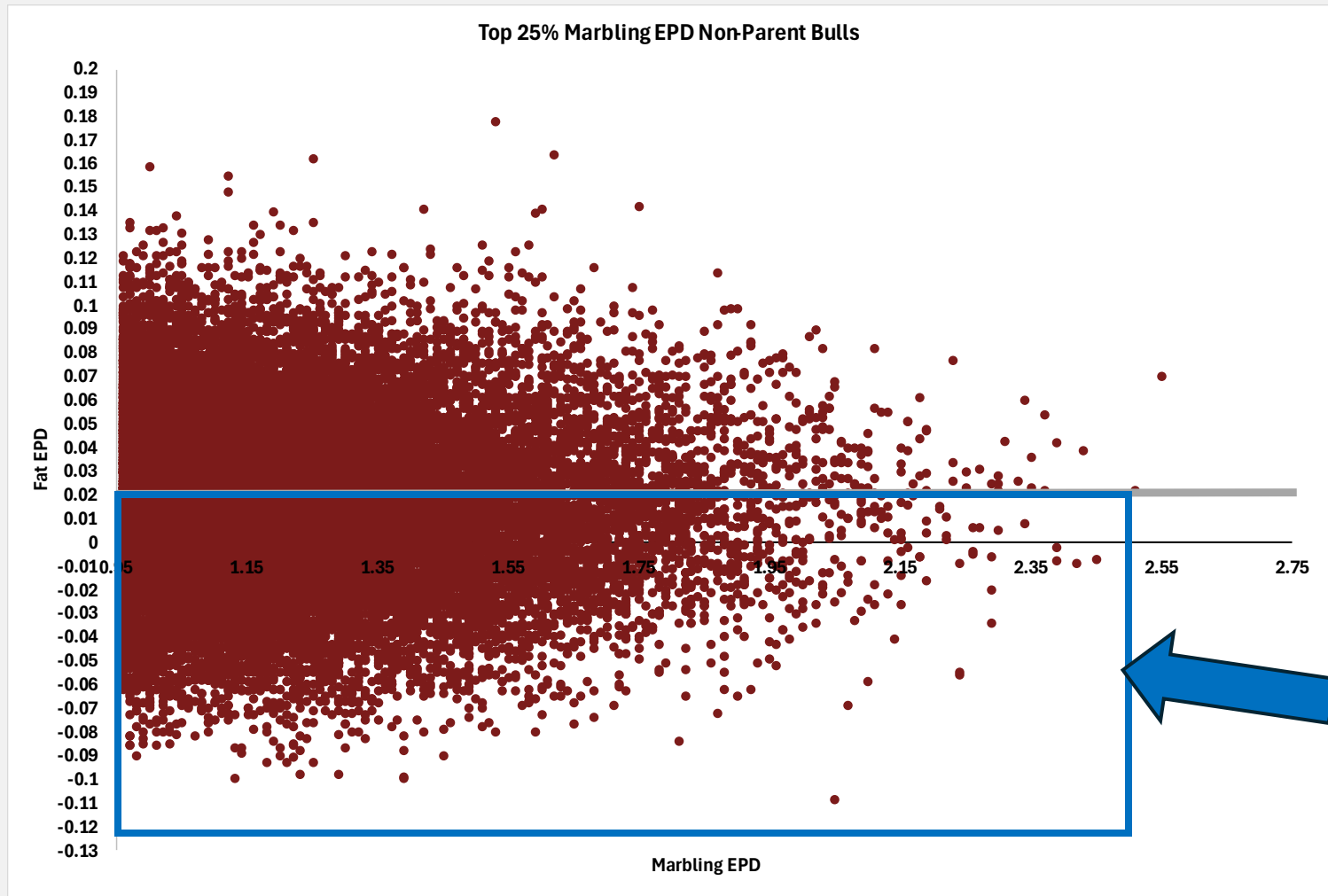
From Premium to Prime	26.4 lb
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Can we get more marbling without more external fat?









# Summary

- As cattle grow in the feedyard most of the weight gain is carcass tissues – muscle and fat
- Early on, cattle are not fat enough to sell, as they increase in weight, they become more valuable
- If fed too long, they get too heavy and/or too fat and lose value
- As they are fed, feed intake and cost increases but increasing dressing percentage usually makes more days beneficial
- The right marketing date maximizes value over cost and uses a dynamic model to integrate both



# Summary

- Because of incremental dressing percentage of 80%+, late days are typically profitable for carcass sellers
  - Until discounts are incurred
  - Unless feed is very expensive
  - But likely to be less profitable than a more efficient replacement animal
- Build carcass value change models, based on a specific grid
- Consider incremental revenue and cost, compared to the swap opportunity
  - Profitability per head space compared to per head
- Your business partner will have input, too



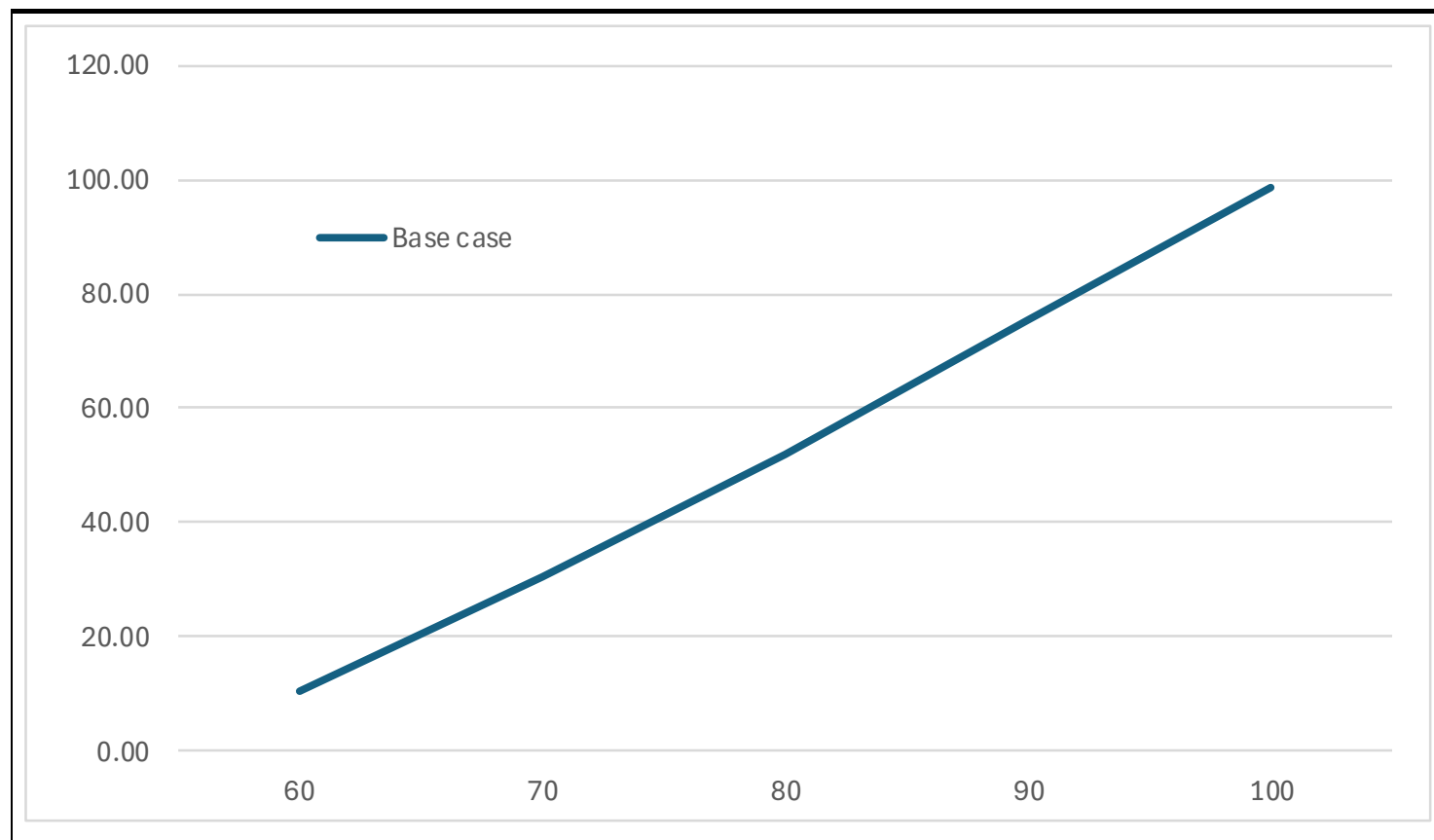


# Thank you!



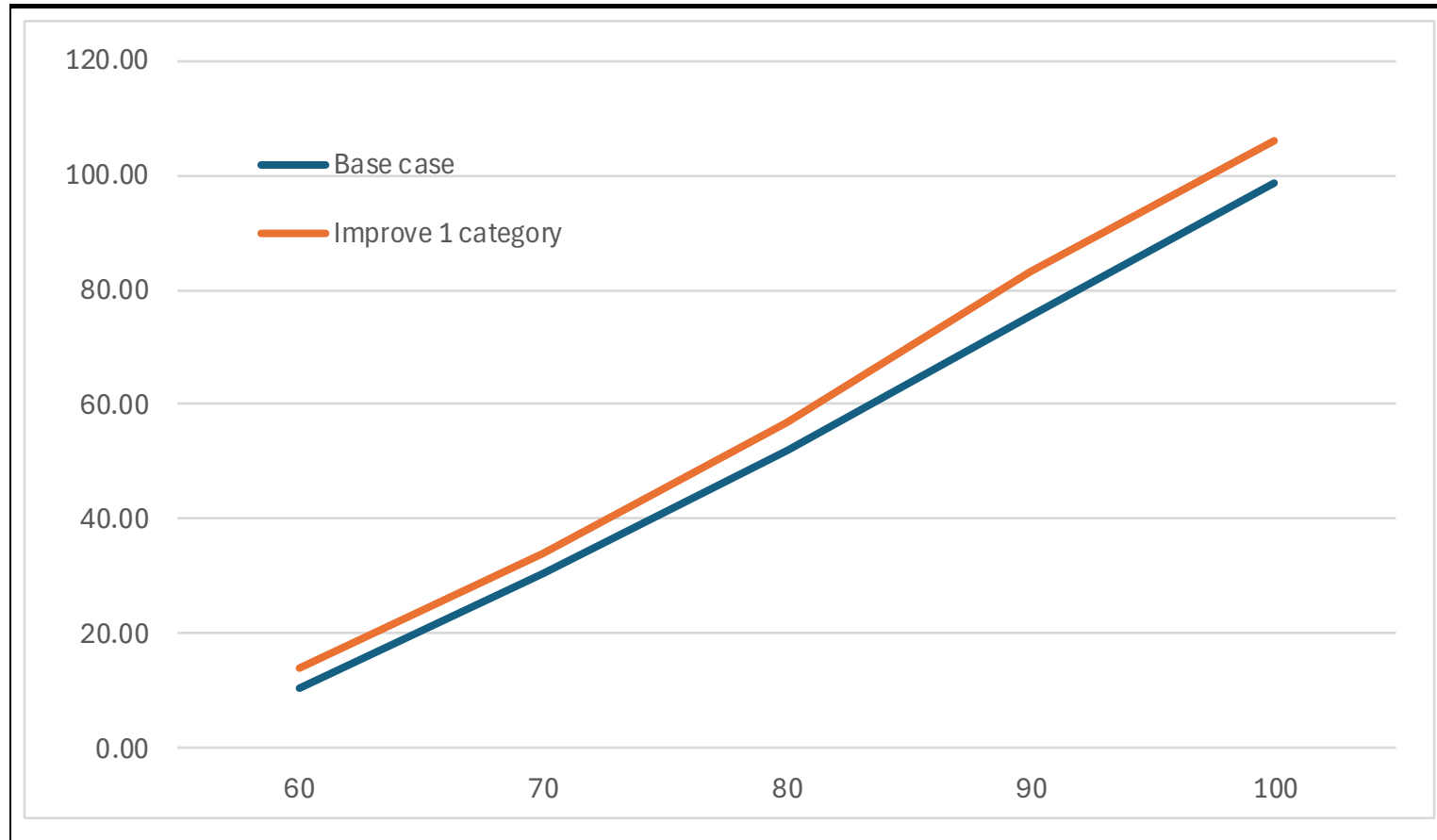


## Combined premiums (\$/head) by percentage Choice With improved YG profile



*Calculated using data provided by Elanco Knowledge Solutions*

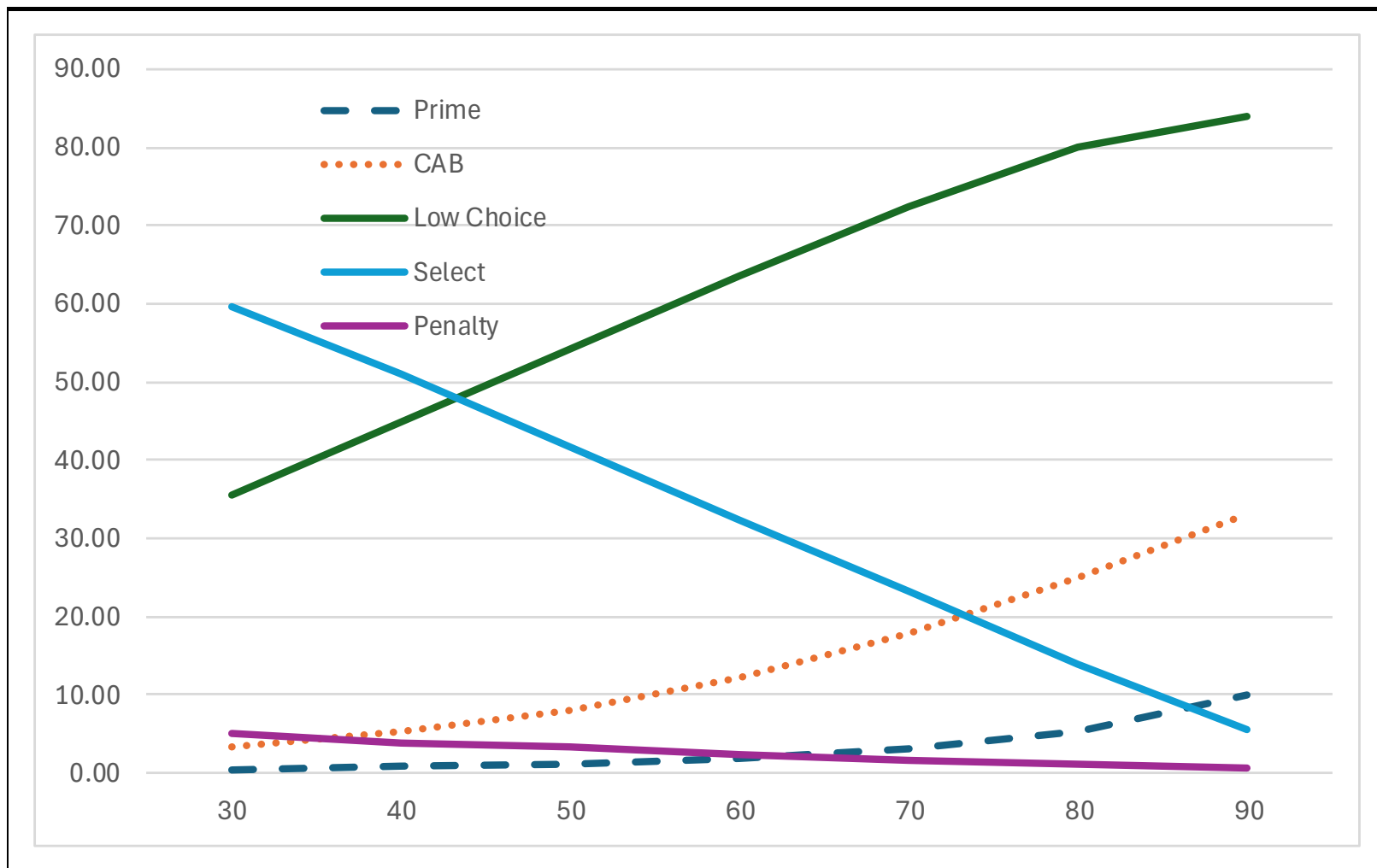
## Combined premiums (\$/head) by percentage Choice With improved YG profile



*Calculated using data provided by Elanco Knowledge Solutions*

# Quality Grade Incidence in Percentage Choice+ categories

## Benchmark data 2019-2023



*Data courtesy of Elanco Knowledge Solutions*