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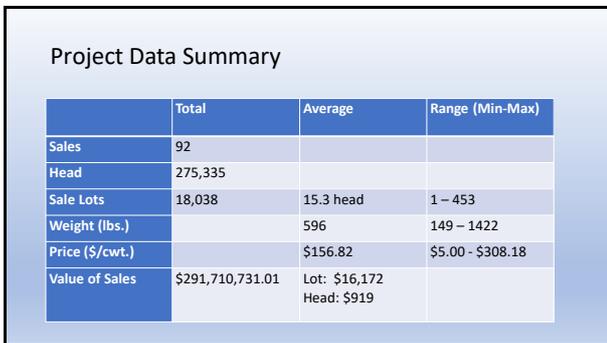
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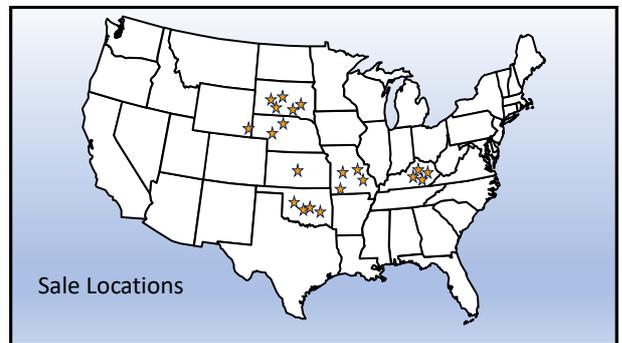
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### Data Location Summary

State	Locations	Sales	Lots	Head	Avg. Lot	Lot size range
Kansas	1	1	230	2019	8.8	--
Kentucky	4	7	1891	8090	4.3	2.3 - 5.0
Nebraska	2	6	997	20529	20.6	15.8 - 21.6
Missouri	4	11	2751	16948	6.2	3.7 - 15.4
Oklahoma	4	31	5411	70957	13.1	2.5 - 21.7
South Dakota	5	28	5426	136150	25.6	16.6 - 36.7
Wyoming	1	8	1332	20642	15.5	--

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### Hedonic Modeling

- Multi-Variate Regression Analysis
- Account for market conditions by date and location
- Determine the value of individual characteristics
- Large data set = statistical significance

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### Multi-Variate Regression Model

$$\begin{aligned}
 Basis_i &= \beta_0 + \beta_1 \ln(head_i) \\
 &+ \beta_2 \left( \frac{avgwt}{100} \right)_i + \beta_3 \left( \frac{avgwt}{100} \right)_i^2 + \sum_{j=1}^3 \beta_{2+j} Gender_{ij} + \beta_7 Wean_i + \beta_8 Vaxx_i \\
 &+ \beta_9 Health_i + \sum_{j=1}^{10} \beta_{9+j} Hidecolor_{ij} + \sum_{j=1}^2 \beta_{19+j} Horn_i + \sum_{j=1}^3 \beta_{21+j} Condition_{ij} \\
 &+ \sum_{j=1}^5 \beta_{24+j} Muscling_{ij} + \sum_{j=1}^4 \beta_{29+j} Frame_{ij} + \sum_{j=1}^3 \beta_{32+j} Fill_{ij} + \beta_{37} Uniform_i \\
 &+ \sum_{j=1}^7 \beta_{37+j} Certification_{ij} + \sum_{j=1}^2 \beta_{44+j} Brahman_i + \beta_{47} Natural_i + \beta_{48} Cripple_i \\
 &+ \beta_{49} Badeye_i + \sum_{j=1}^{21} \beta_{49+j} Location_{ij} + \sum_{j=1}^5 \beta_{70+j} Month_{ij} + \mu_i + \epsilon_i
 \end{aligned}$$

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### Value Factors: Lot Size

Lot Size (Head)	Premium (\$/cwt) (Relative to 1 head)	Marginal Premium (\$/cwt)
2	\$4.99	
3	\$7.91	\$2.92
4	\$9.98	\$2.07
5	\$11.58	\$1.60
10	\$16.57	\$4.99
20	\$21.56	\$4.99
30	\$24.48	\$2.92
40	\$26.55	\$2.07
50	\$28.15	\$1.60
60	\$29.46	\$1.31
70	\$30.57	\$1.11
80	\$31.53	\$0.96
90	\$32.38	\$0.85
100	\$33.14	\$0.76

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### Value Factors: Animal Characteristics

Comparison Base	Variable	Estimate	Std. Error	t-value
	Weight	-14.62***	1.086	-13.46
	Weight <sup>2</sup>	.416***	.086	4.86
Steers				
	Heifers	-18.698***	.487	-38.43
	Bulls	-7.392***	.862	-8.58
	Rep. Heifers	-20.094***	2.096	-9.59
#1-2 Muscling				
	#1	2.91**	1.48	1.97
	#2	-.631	1.039	-0.61
	#2-3	-6.061	3.719	0.103
	#3	-24.31***	2.555	-9.51
Medium Frame				
	Large	-2.669***	1.033	-2.58
	Medium/Large	-1.406	.946	-1.49
	Small	-1.514	6.006	-0.25

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### Value Factors: Animal Characteristics

Comparison Base	Variable	Estimate	Std. Error	t-value
Black-hided				
	Black mixed	-1.93***	.502	-3.84
	Red	-5.252***	.817	-6.43
	Red mixed	-2.945***	.678	-4.34
	Hereford	-9.932***	1.304	-7.62
	White/Gray	-5.152***	.789	-6.53
	Dairy/Longhorn	-32.521***	4.628	-7.03
	Mixed Low Quality	-28.057***	4.468	-6.28
	Mixed High Quality	-5.597***	.722	-7.75
	Beef-Dairy Cross	-29.618***	6.688	-4.43
	Brahman Influence	-8.935***	2.315	-3.86
	Minimal Brahman	-6.165***	.966	-6.38

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### Value Factors: Management Practices

Comparison Base	Variable	Estimate	Std. Error	t-value
Unweaned				
	Weaned	4.475***	.649	6.89
Unvaccinated				
	Vaccinated	1.966***	.578	3.40
No Horns				
	Horns	-8.465***	1.563	-5.42
	Minimal Horns	-6.198***	1.324	-4.68
Average Flesh				
	Thin	.466	1.566	0.30
	Fleshy	-4.024***	1.37	-2.94
Average Fill				
	Full	-15.153***	3.035	-4.99
	Gaunt	-16.295**	7.173	-2.27
Not Certified				
	OQBN	4.524***	1.539	2.94
	Integrity Beef	10.39***	1.61	6.45
	NHTC	1.204	1.418	0.85
Conventional				
	Natural	-.884	.97	-0.91

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### Value of Management Factors

<b>Steer 550 Lbs. (20 head lot)</b>	<b>Bull w/horns 550 Lbs. (1 head)</b>
• Lot Size: \$21.56/cwt. = \$118.58/head	• No Castration: -\$7.39/cwt. = -\$40.66/head
• Weaning: \$4.48/cwt. = \$24.61/head	• Horns: -\$8.47/cwt. = -\$46.56/head
• Vaccination: \$1.97/cwt. = \$10.81/head	
<b>Total \$154.00/head</b>	<b>Total -\$87.22/head</b>

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### Location

Comparison Base	State	Sale	Estimate	Std. Error	t-value
OKC National					
	Oklahoma	OKC West	2.045	2.495	0.82
		McAlester	-5.581**	2.23	-2.47
		Woodward	.581	1.884	0.31
	Kansas	Salina	4.016*	2.355	1.71
	Kentucky	Springfield	-19.088***	.973	-19.62
		Campbellsville	-12.745***	2.263	-5.63
		Stanford	-9.218***	3.253	-2.83
		Richmond	-7.562**	3.282	-2.30
	Missouri	F&T Livestock	-1.583	2.845	-0.56
		Joplin	0.66	2.824	0.23
		EMCC	1.371	2.169	0.63
		Kingsville	4.546**	2.234	2.03

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### Location

Comparison Base	State	Sale	Estimate	Std. Error	t-value
OKC National					
	Nebraska	Ogallala	9.474***	2.285	4.15
		Valentine	11.071***	2.378	4.66
	South Dakota	Faith	4.012	2.639	1.52
		Ft. Pierre	-0.569	2.362	-0.24
		Hub City	-5.157**	2.149	-2.40
		Mitchell	-1.799	1.922	-0.94
		Philip	3.616	3.039	1.19
	Wyoming	Torrington	10.236***	2.024	5.06

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