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Has the Value of Information about Performance Tested Bull Traits Changed Over Time?

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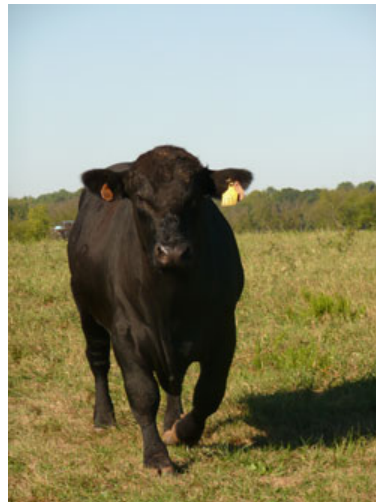
Bull Prices

- How are bull prices set?
 - Phenotypic traits
 - Performance
 - Expected Progeny Differences (EPDs)



Bull Prices

- Why are producers willing to pay different prices for a bull?
 - Ideal traits depends on their herd, market, and genetics



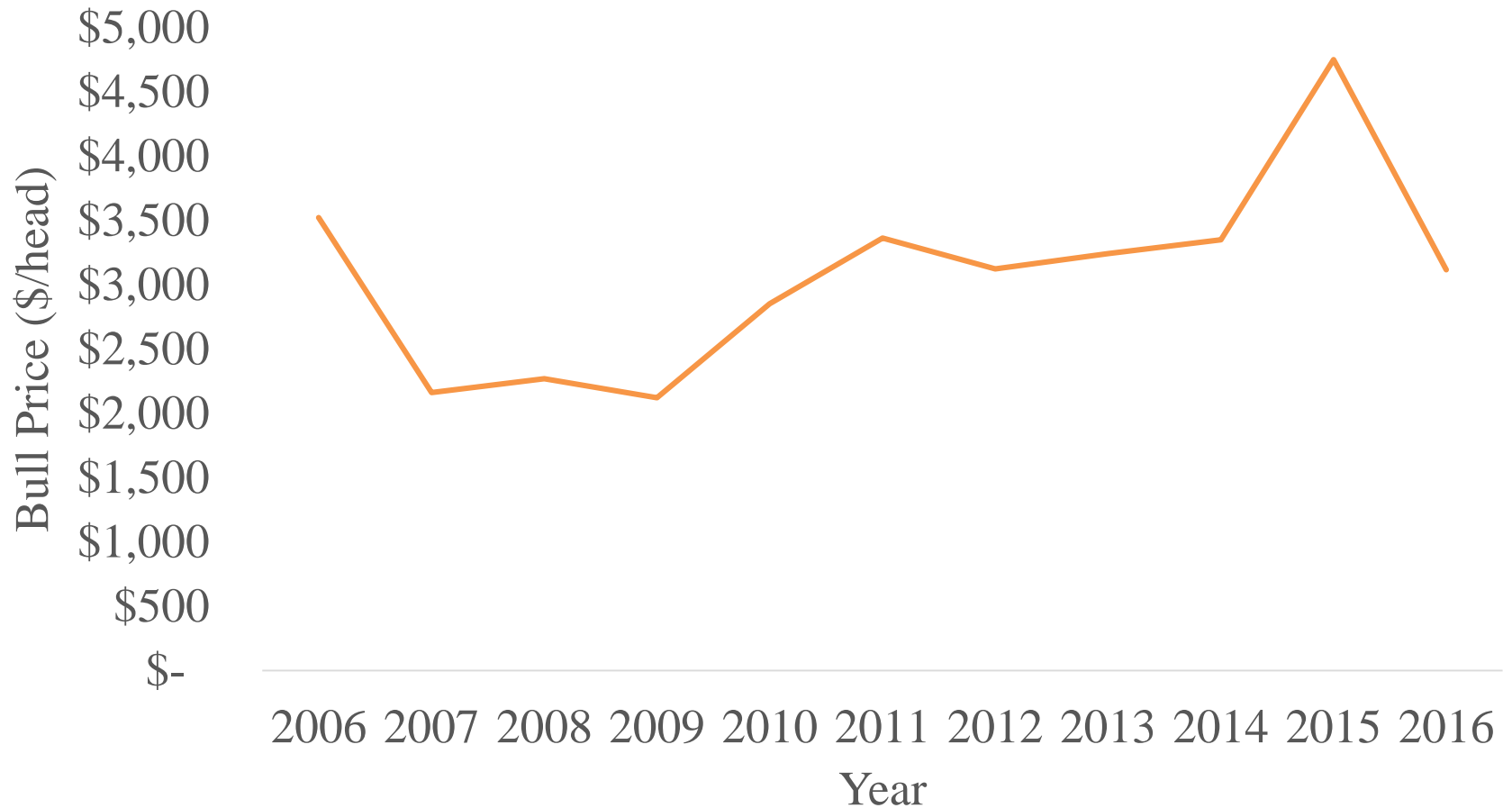
Previous Studies

- Early studies show producers' value of EPD measurements was small relative to phenotypic traits and performance measurements
- More recent studies show EPDs are the most valuable information to producers
- Are producers valuing bull traits differently today than in the past?

Objective

- Determine producers' value for phenotypic traits, performance measurements, and EPDs over time
- We used eleven years (2006-2016) of junior and senior bull sale data from the UT bull performance testing auction

Data





Data Challenges

- Birth Weight EPD, Weaning Weight EPD, and Yearling Weight EPD were highly correlated
 - Created “project growth EPD” which was Weaning Weight EPD minus Birth Weight EPD
 - Dropped Yearling Weight EPD
- Many bulls had missing EPDs for marbling, ribeye area, fat thickness and carcass weight
 - Created a variable =1 if bull is missing carcass trait EPD & 0 otherwise
- Age and weight were correlated
 - We dropped age and added month as a proxy for age

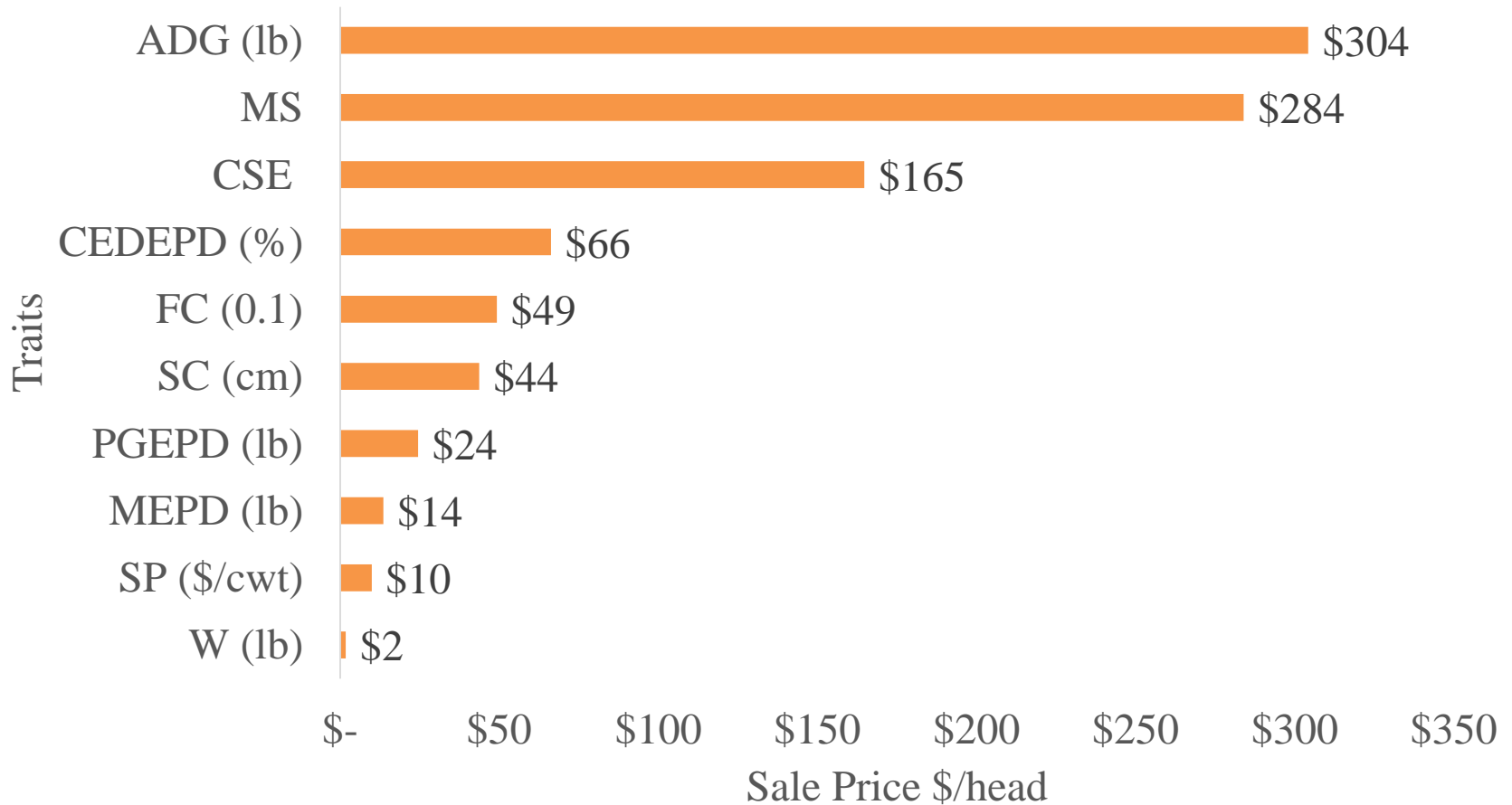
Data

Summary Statistics of Dependent and Independent Variables					
Variable	Symbol	Number of Observations	Mean	Minimum	Maximum
Sale Price in \$ 2016 (\$/head)	P	1,098	3,005	801.25	8,355.00
Birth Weight EPD (lb)	BEPD	1,089	2.09	-2.00	6.50
Weaning Weight EPD (lb)	WWEPD	1,093	51.20	0.34	81.00
Projected Growth Rate EPD (lb)	PGEPD	1,089	49.15	-2.06	78.50
Calving Ease Direct EPD (%)	CEDEPD	1,072	5.51	-11.00	59.00
Milk EPD (lb)	MEPD	1,092	25.24	0.26	85.00
Missing Carcass EPDs	MISS	1,098	0.30	0.00	1.00
Average daily gain (lb/day)	ADG	1,097	4.57	3.07	6.39
Weight (lb)	W	1,097	1,367	951.00	1,790.00
Frame Score	FS	1,098	6.05	5.00	7.80
Scrotal Circumference (cm)	SC	1,050	36.49	30.00	47.00
Month Sold	MS	1,098	0.62	0.00	1.00
Steer Price in \$ 2016 (\$/cwt)	SP	1,098	148.15	103.00	261.00
TAEP Cost-Share Eligible	CSE	1,098	0.76	0.00	1.00

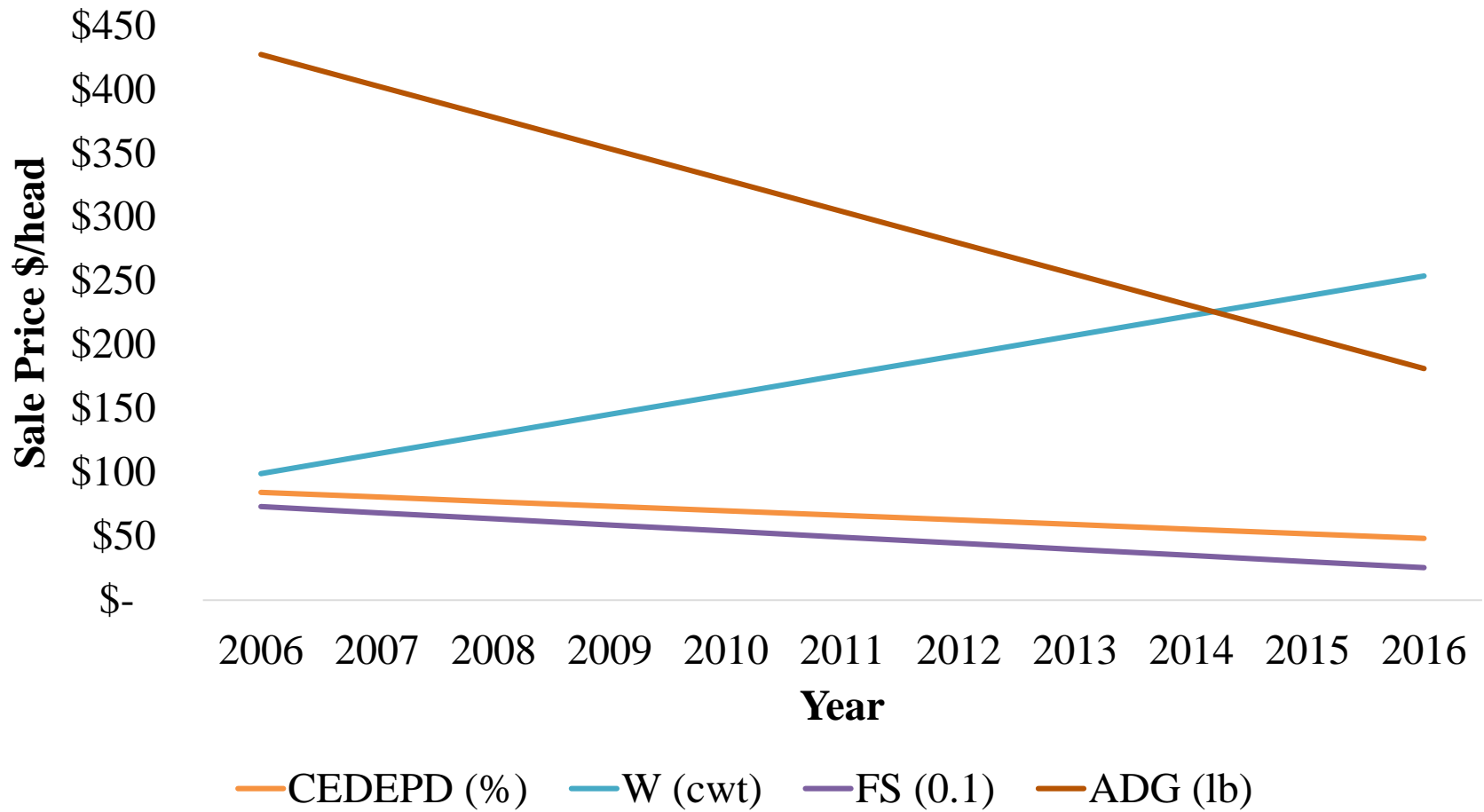
Economic Modeling

- We estimated the impact of these traits on the sale price of the bull
- We also multiplied year by each trait to indicate if prices for each trait has changed over time
- We corrected heteroscedasticity across years

Average Impact of Each Factor on Sale Price



Changes in Producers' Value of Bull Traits over Time



Take Home

- Producers find value in several different traits including EPDs and TAEP cost-reimbursement
- The results indicate that producers' value for bull characteristics that are related to bull size and calving difficulty has changed over time
- Results might be useful for bull sellers to know the value of traits and potentially educating cow-calf producers on selecting bulls