U.S. CONSUMERS & MEAT DEMAND MONITOR

INTERNATIONAL MEAT SECRETARIAT

ECONOMICS WORKSHOP

PARIS, FRANCE

OCTOBER 18-19, 2022

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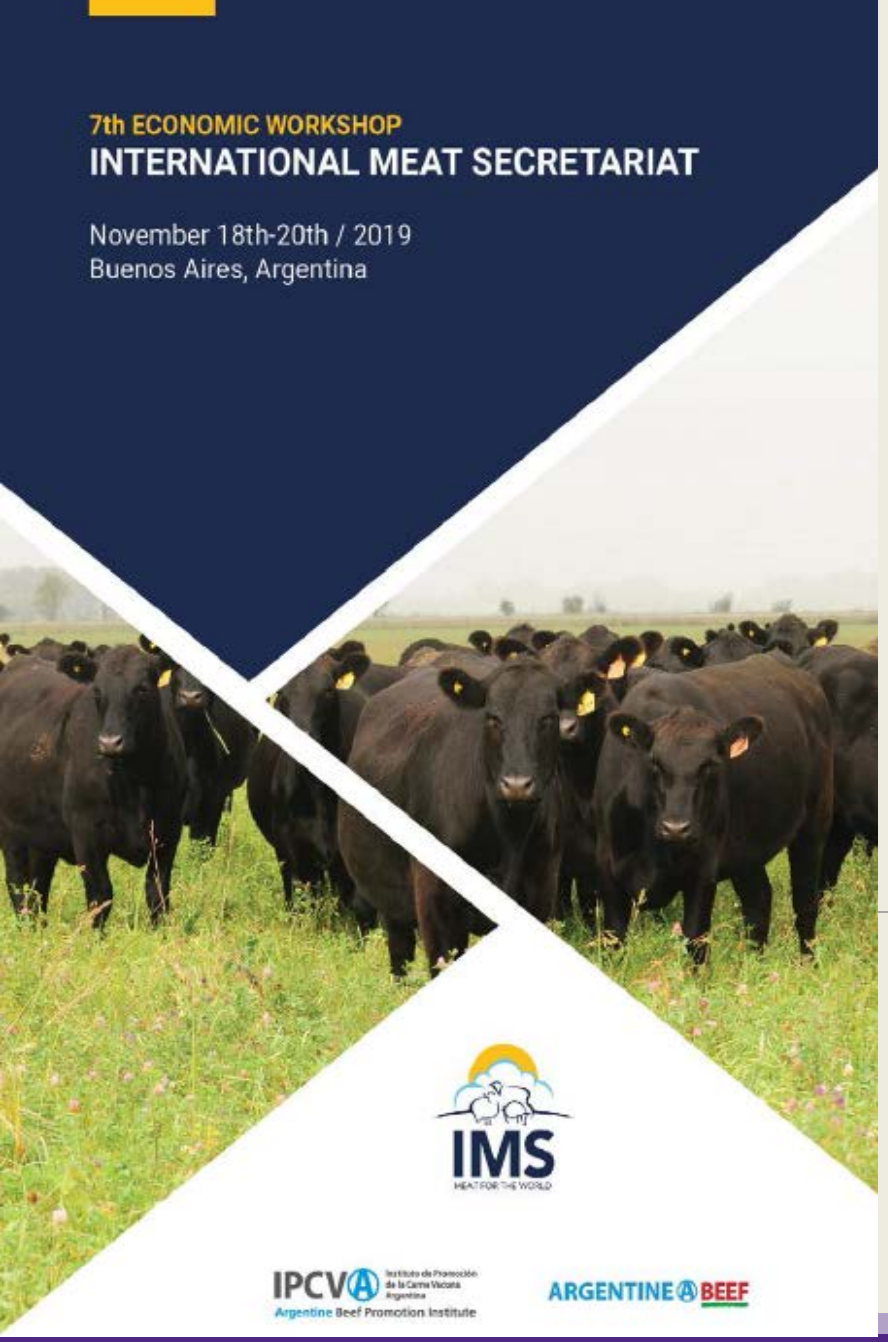
AgManager.info

Kansas State University | Agricultural Economics



Alternative Proteins Situation

BROAD OVERVIEW &

FRAMING FOR ECONOMIC DISCUSSION

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KANSAS STATE UNIVERSITY | Agricultural Economics

Outline & Goals

1. Consumption is NOT Demand

2. U.S. Meat Situation
   - 3-Legged Stool Concept
   - Meat Demand Monitor – Introduction & Insights Summary
   - Inflation Impacts Abound
   - Where We MIGHT Be Going

Demand is **NOT** Per Capita Consumption

2013 Beef Demand Determinants Study

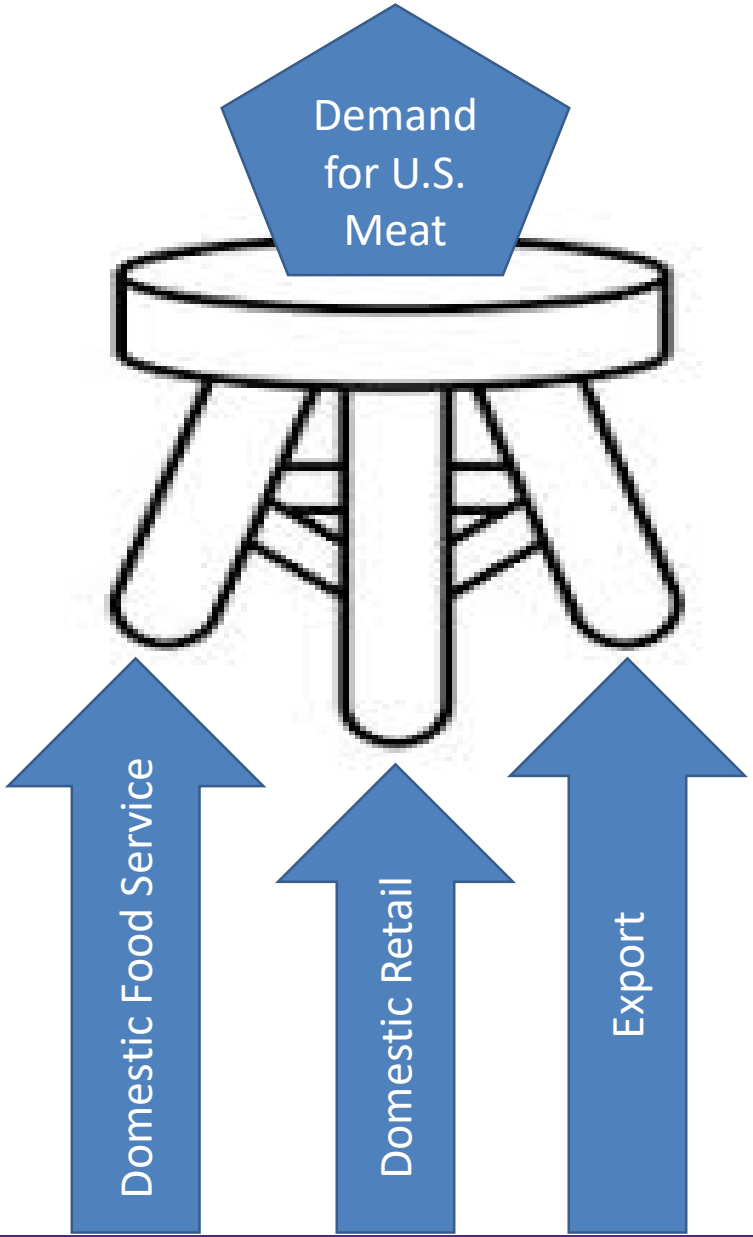
http://www.beefboard.org/evaluation/130612demanddeterminantstudy.asp

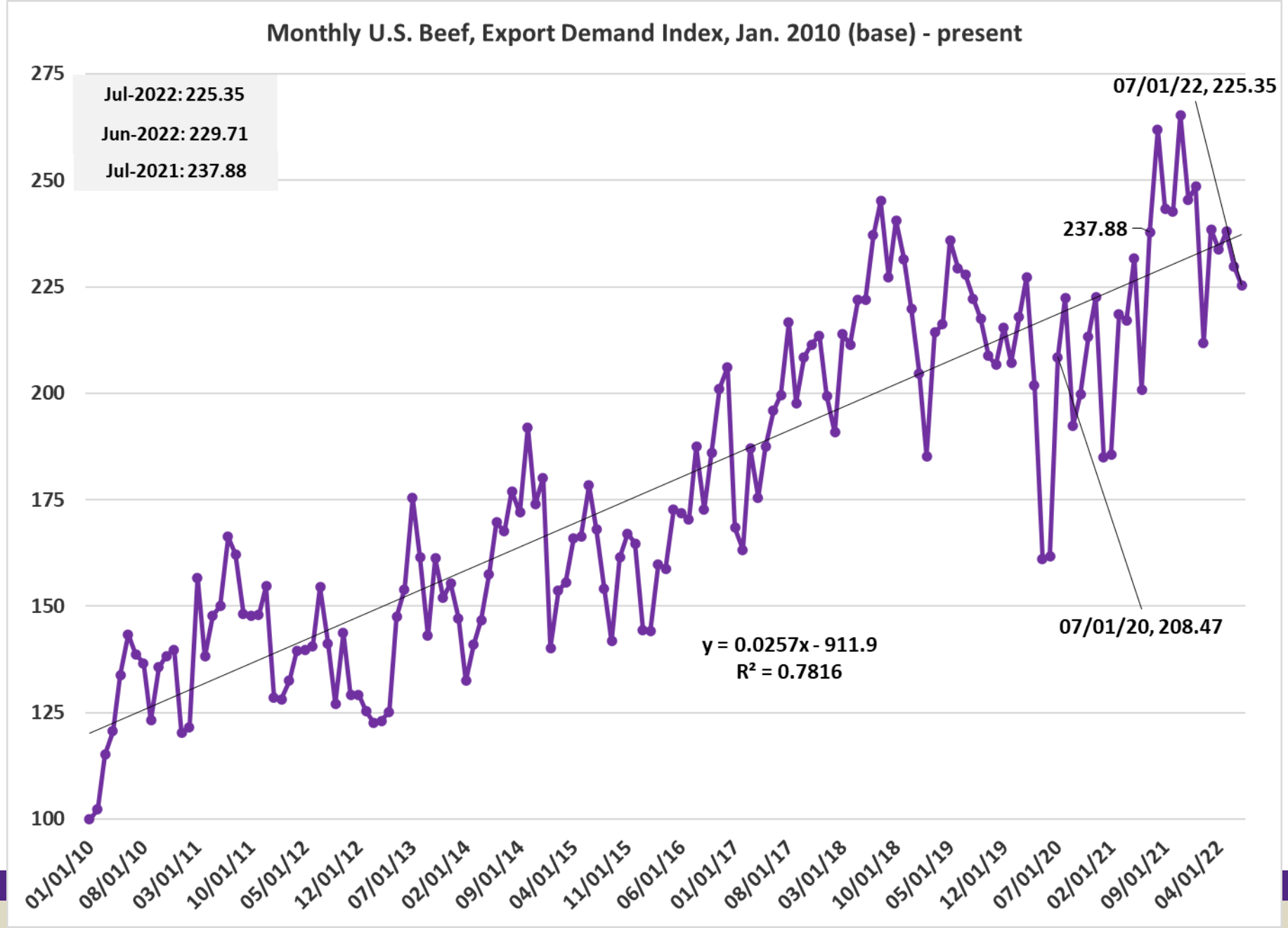
MARKETING > OUTLOOK

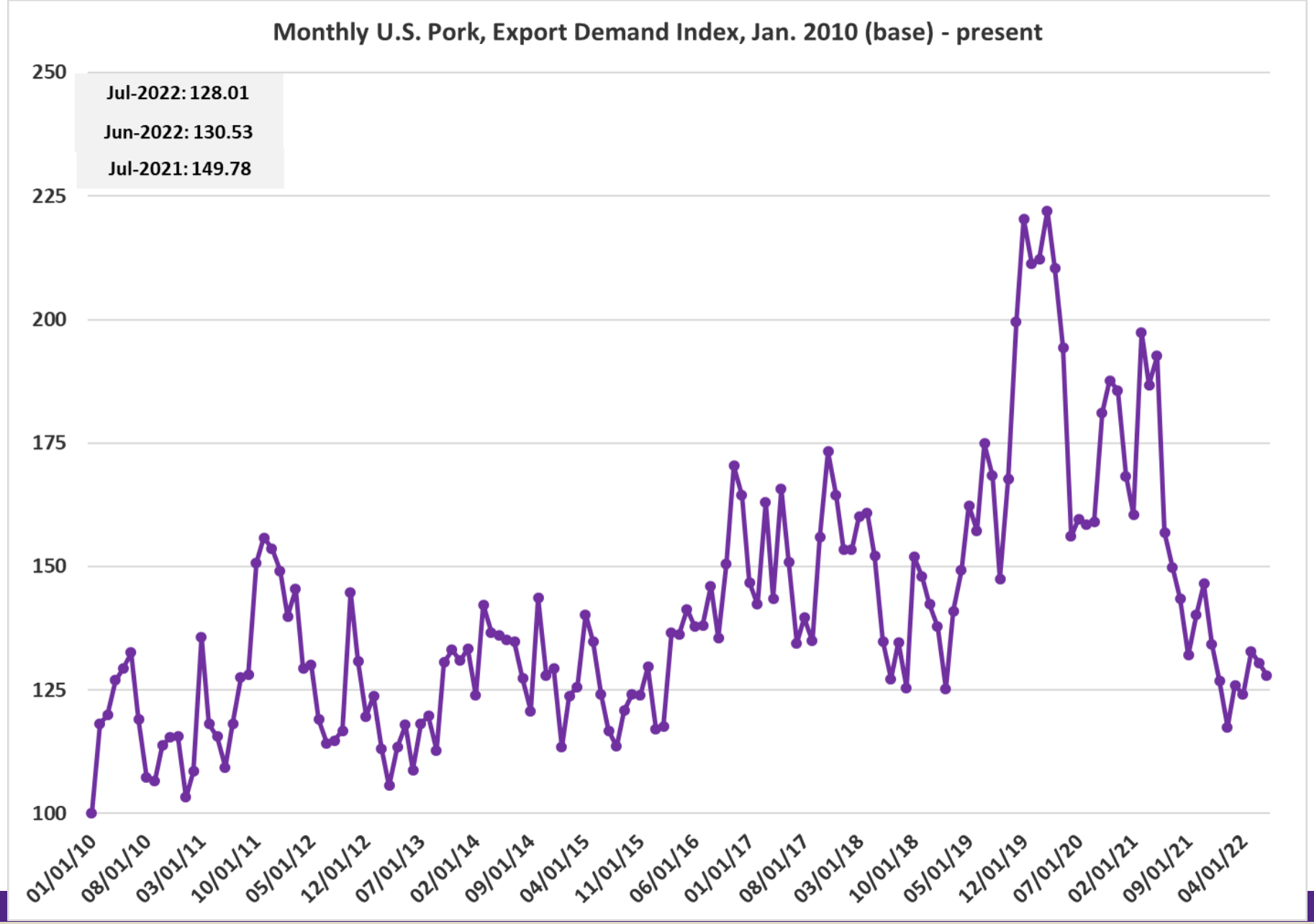
What's The Similarity Between Blue Jeans and Beef Demand?

Beef consumption and beef demand isn't the same thing. Here's an explanation.

Burt Rutherford | Sep 19, 2013


Demand for U.S. Meat
Domestic Food Service
Domestic Retail
Export


Monthly U.S. Beef, Export Demand Index, Jan. 2010 (base) - present
Jul-2022: 225.35
Jun-2022: 229.71
Jul-2021: 237.88
07/01/22, 225.35
237.88
07/01/20, 208.47
y = 0.0257x - 911.9
R² = 0.7816
275
250
225
200
175
150
125
100
01/01/10
08/01/10
03/01/11
10/01/11
05/01/12
12/01/12
07/01/13
02/01/14
09/01/14
04/01/15
11/01/15
06/01/16
01/01/17
08/01/17
03/01/18
10/01/18
05/01/19
12/01/19
07/01/20
02/01/21
09/01/21
04/01/22


Monthly U.S. Pork, Export Demand Index, Jan. 2010 (base) - present
Jul-2022: 128.01
Jun-2022: 130.53
Jul-2021: 149.78
250
225
200
175
150
125
100
01/01/10
08/01/10
03/01/11
10/01/11
05/01/12
12/01/12
07/01/13
02/01/14
09/01/14
04/01/15
11/01/15
06/01/16
01/01/17
08/01/17
03/01/18
10/01/18
05/01/19
12/01/19
07/01/20
02/01/21
09/01/21
04/01/22

Monthly Meat Demand Monitor, Methods, and Supporting Information

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Sign up for weekly email updates.

K-State College of Agriculture Links
Agronomy
Animal Science
Kansas Ag Mediation Service (KAMS)

Extension Agent Link

Livestock & Meat

- Projected Feeder Cattle Prices
- Cattle Finishing Returns
- Meat Demand
  - Maps - Meat Demand
  - Meat Demand Research Studies
  - Monthly Domestic Meat Demand Indices [USDA/BLS Data]
  - Monthly Export Meat Demand

Monthly Meat Demand Monitor [Survey Data]

Add to Favorites

The Meat Demand Monitor (MDM) project is funded in-part by the beef checkoff and the pork checkoff. Monthly reports and supporting documentation are available here.

BEEF. Funded in part by the Beef Checkoff.

K-STATE Research and Extension

pork checkoff

Meat Demand Monitor Dashboard (National Maps & State-Level Summaries)

LINK

Monthly Meat Demand Monitor

Title	Author	Date	Downloads
Meat Demand Monitor - August 2022	Tonsor	September 1, 2022	Downloads
Meat Demand Monitor - July 2022	Tonsor	August 5, 2022	Downloads
Meat Demand Monitor - June 2022	Tonsor	July 1, 2022	Downloads

Meat Demand Outdoes Meat Avoidance

Meat Science 190 (2022) 108843

Contents lists available at ScienceDirect

Meat Science

journal homepage: www.elsevier.com/locate/meatsci

Check for updates

U.S. perspective: Meat demand outdoes meat avoidance

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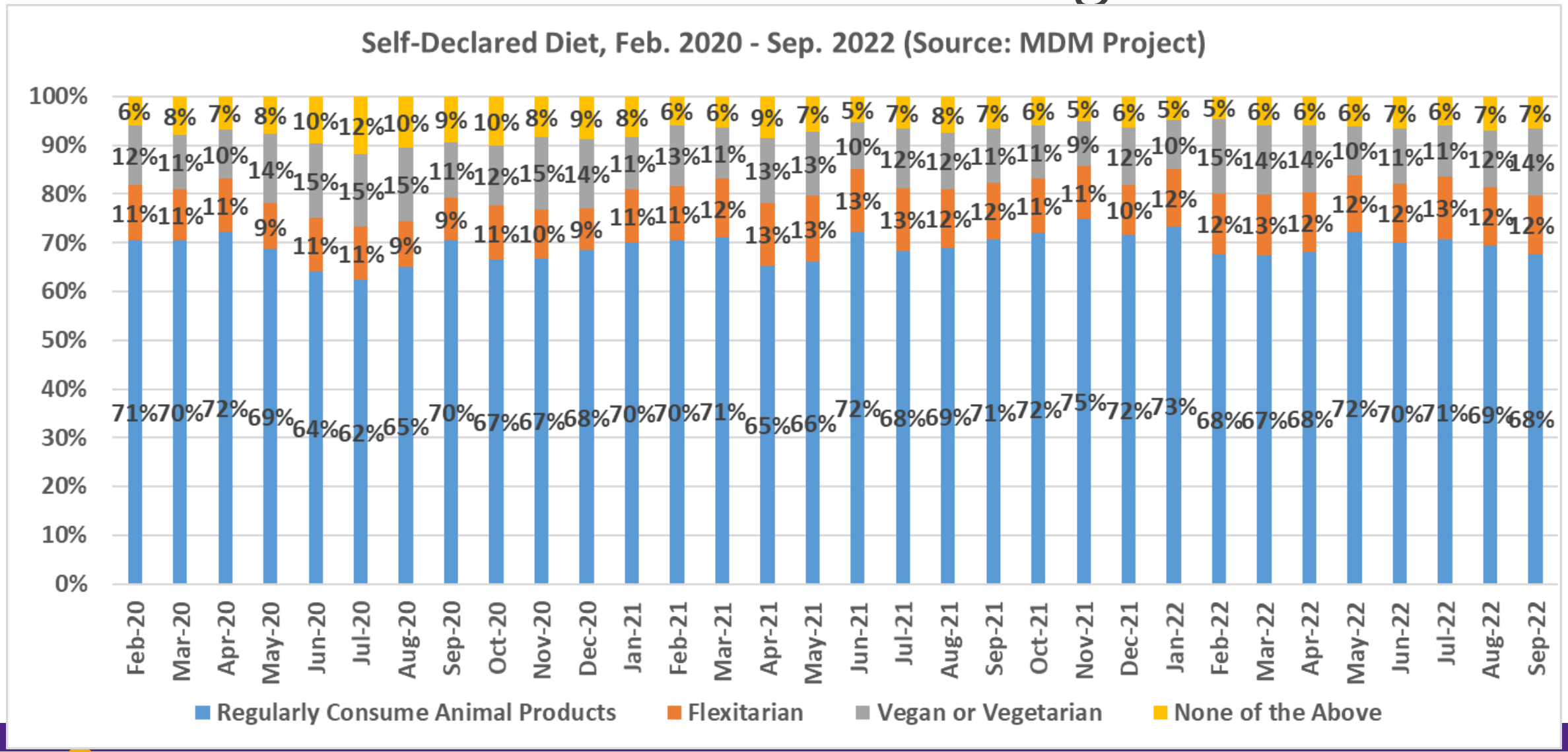
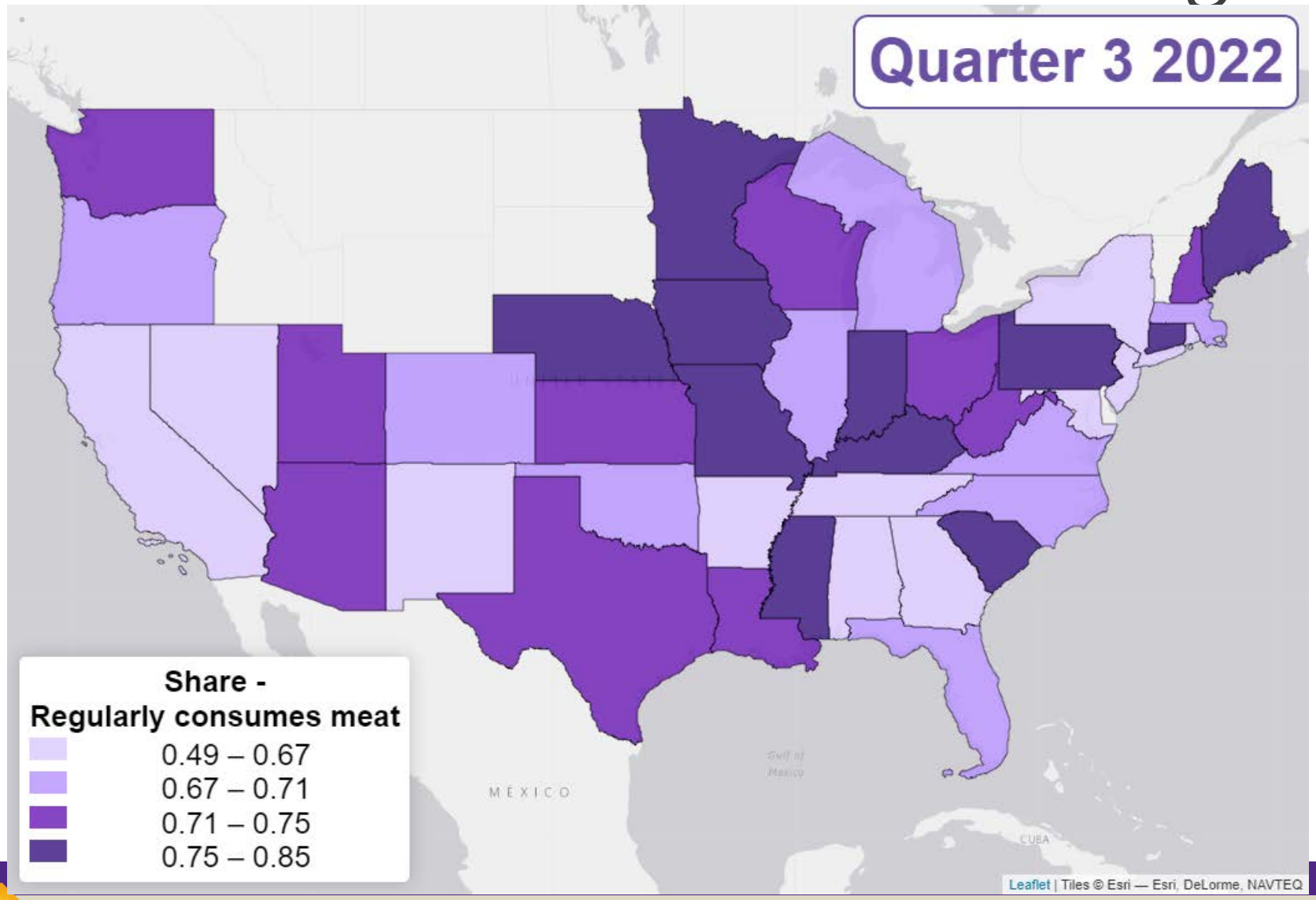
[b] Department of Agricultural Economics, Purdue University, United States of America

Self-Declared Diet Tracking



Self-Declared Diet Tracking



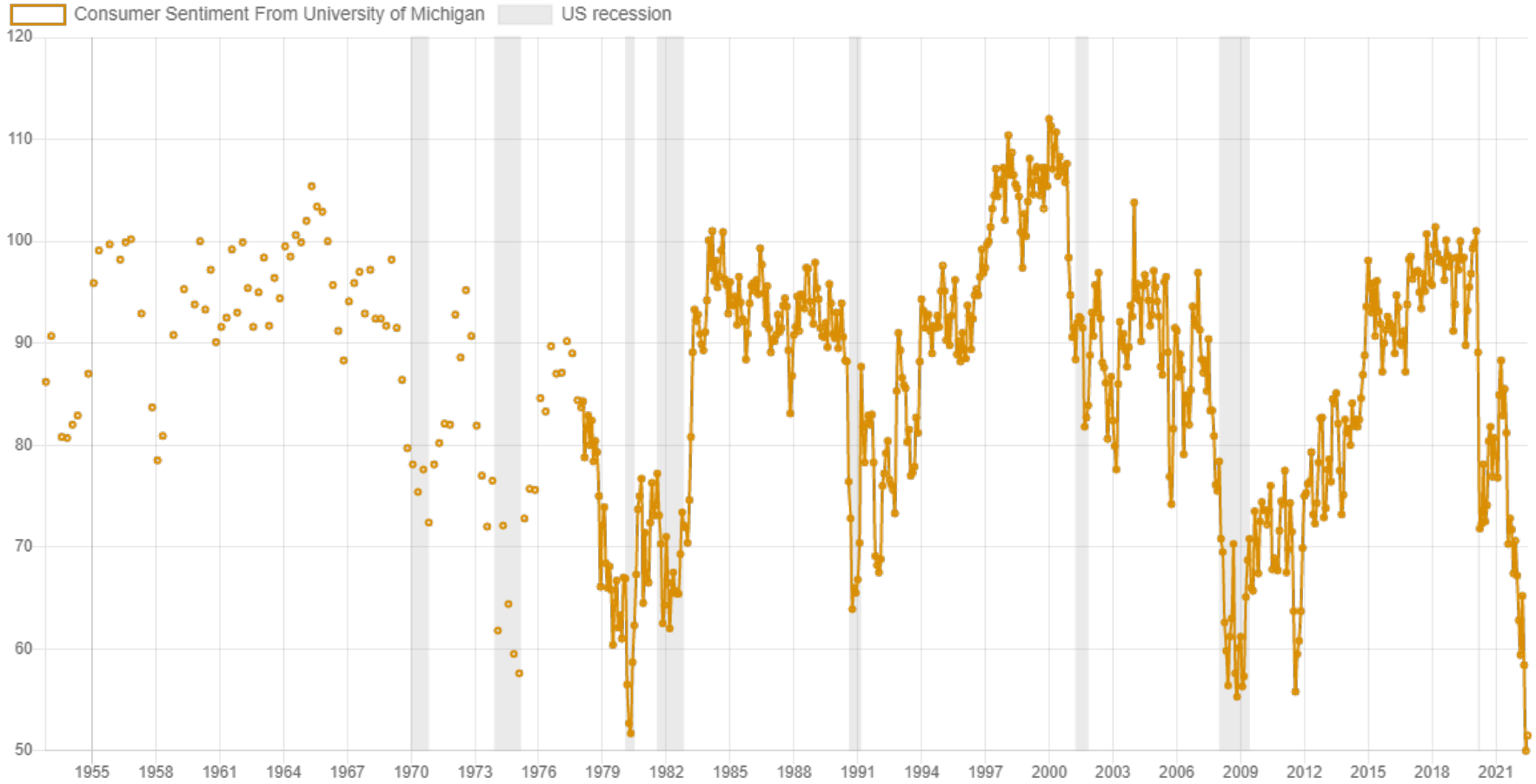
Q3-2022

Nationally: 69%

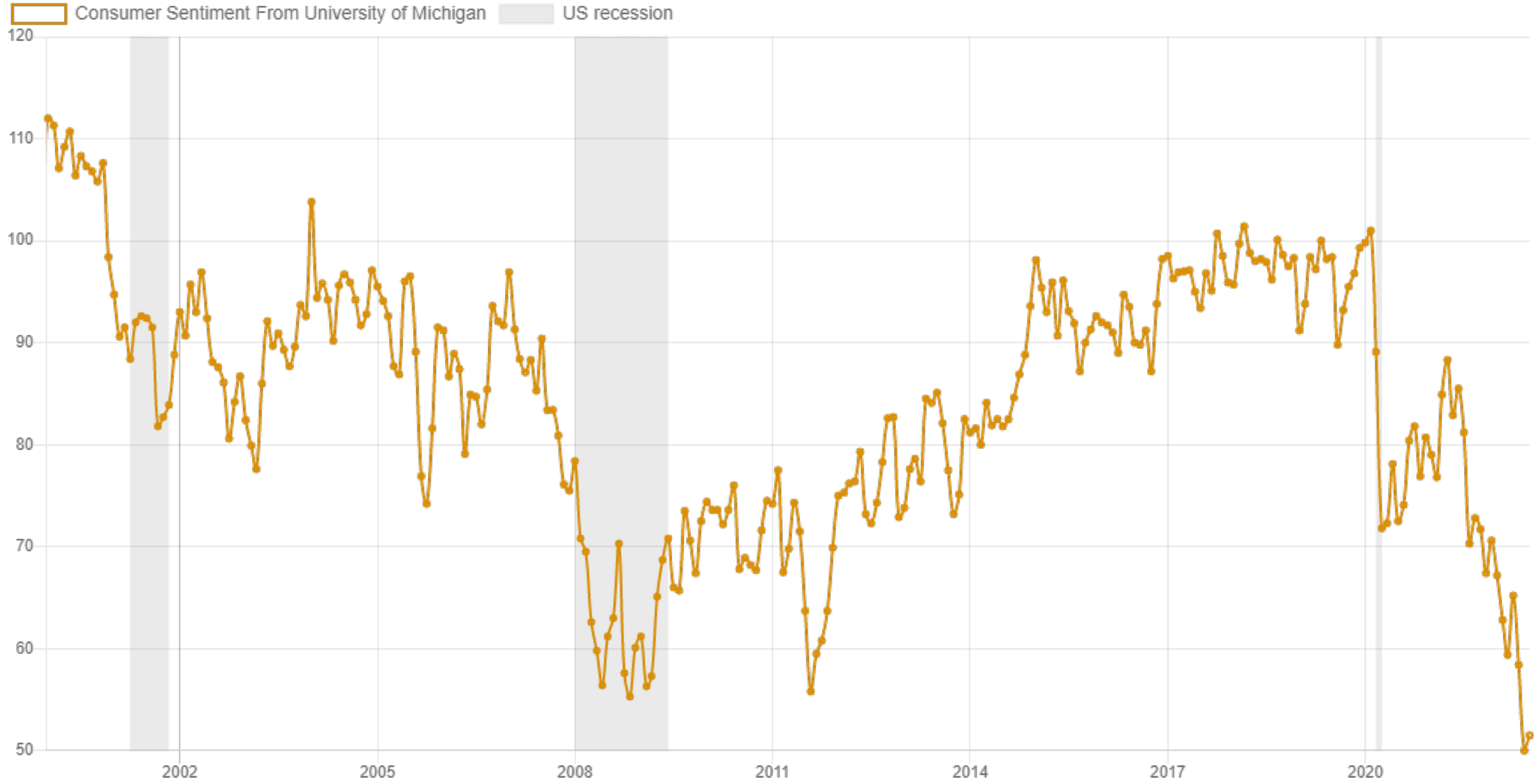
SC: 85%
KY: 83%
IA: 79%

NM: 49%
CA: 62%
NJ: 63%

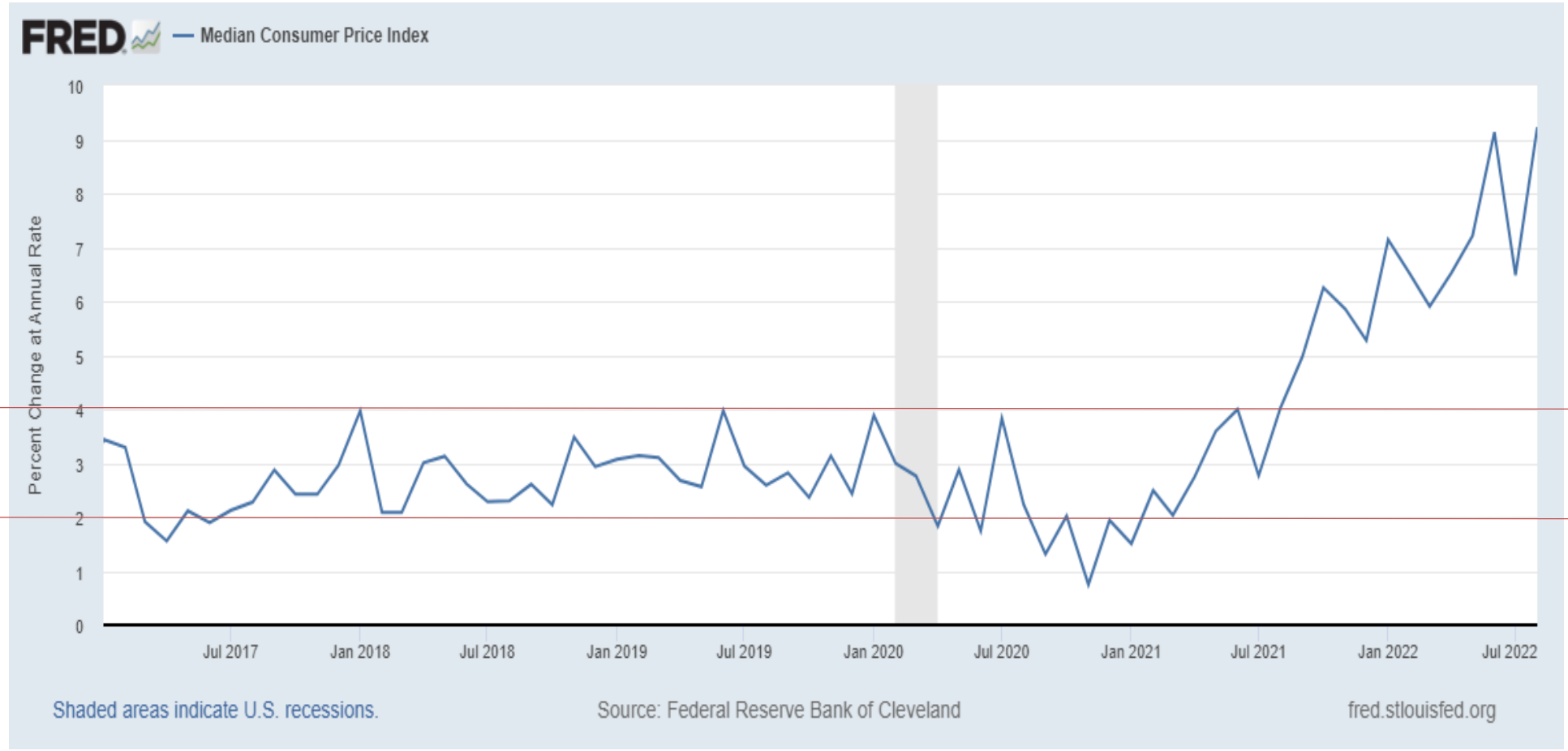
Consumer Sentiment Evolves & Matters for Meat Demand



Consumer Sentiment Evolves & Matters for Meat Demand

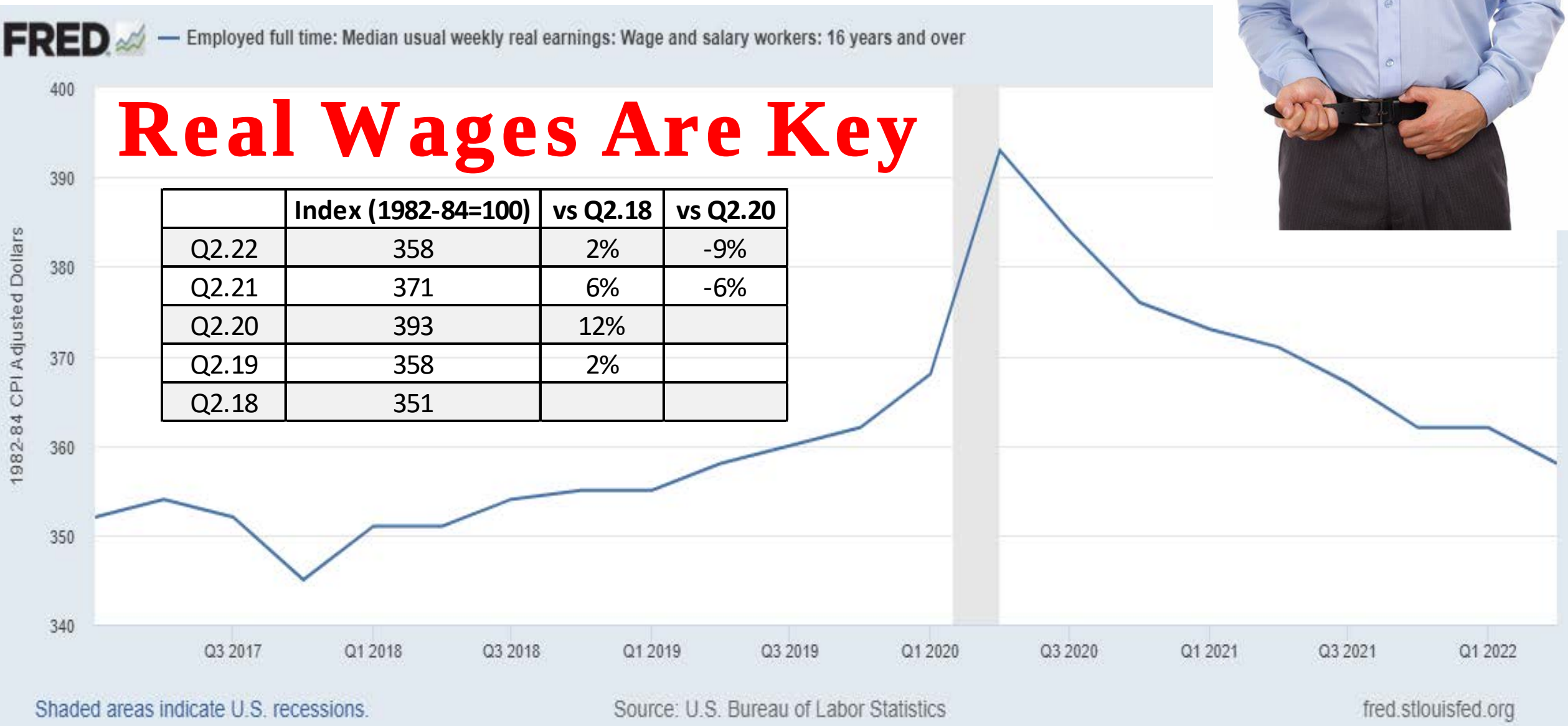


Inflation in U.S. Highest in 4 Decades

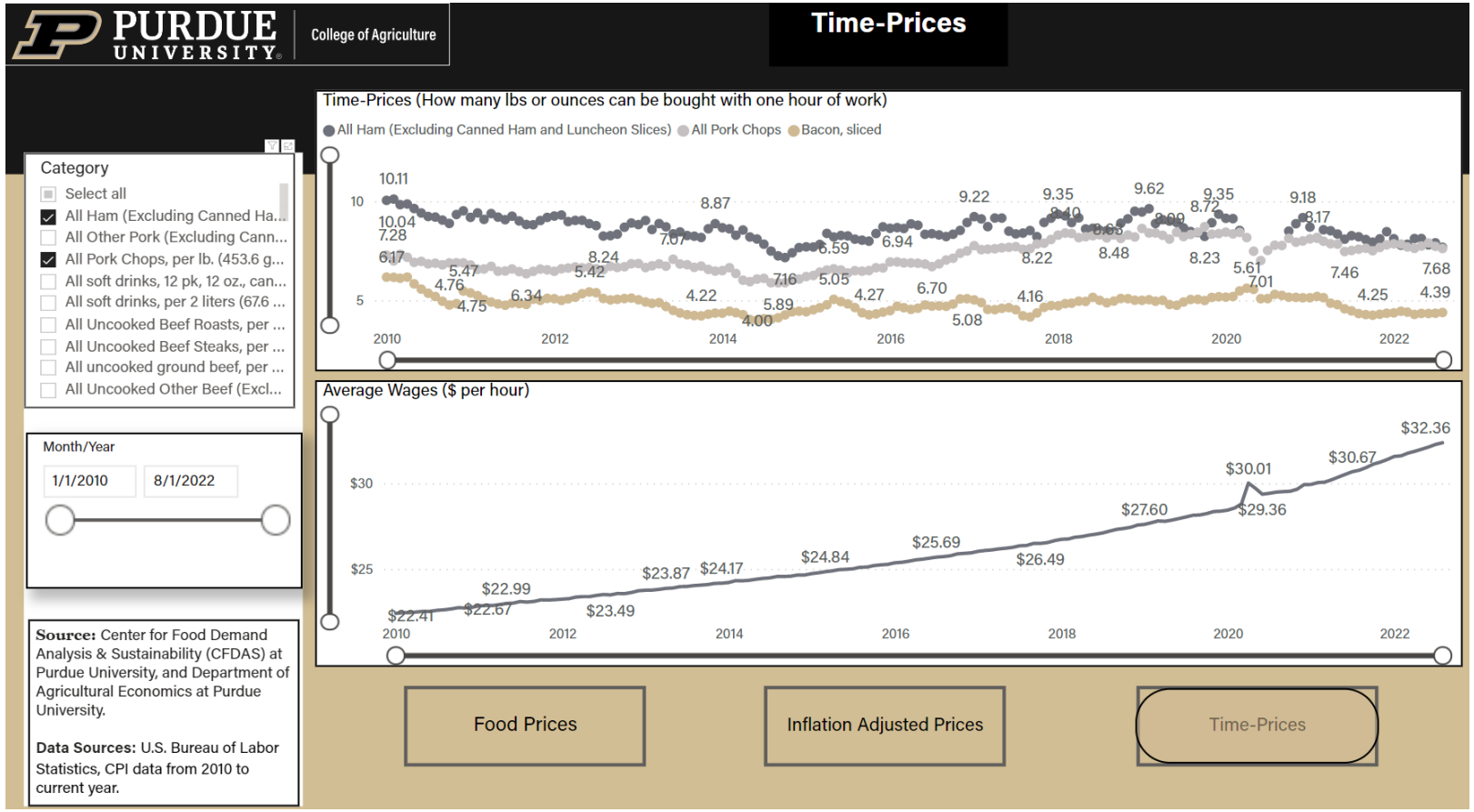


Real Wages Are Key

	Index (1982-84=100)	vs Q2.18	vs Q2.20
Q2.22	358	2%	-9%
Q2.21	371	6%	-6%
Q2.20	393	12%	
Q2.19	358	2%	
Q2.18	351		



Purdue's Dashboard: Pork Prices ($/lb) Relative to Average Wages ($/hr)



Jan. 2020, 1 hr work =

9.1 lbs ham
8.4 lbs pork chop
5.1 lbs bacon

Aug. 2022, 1 hr work =

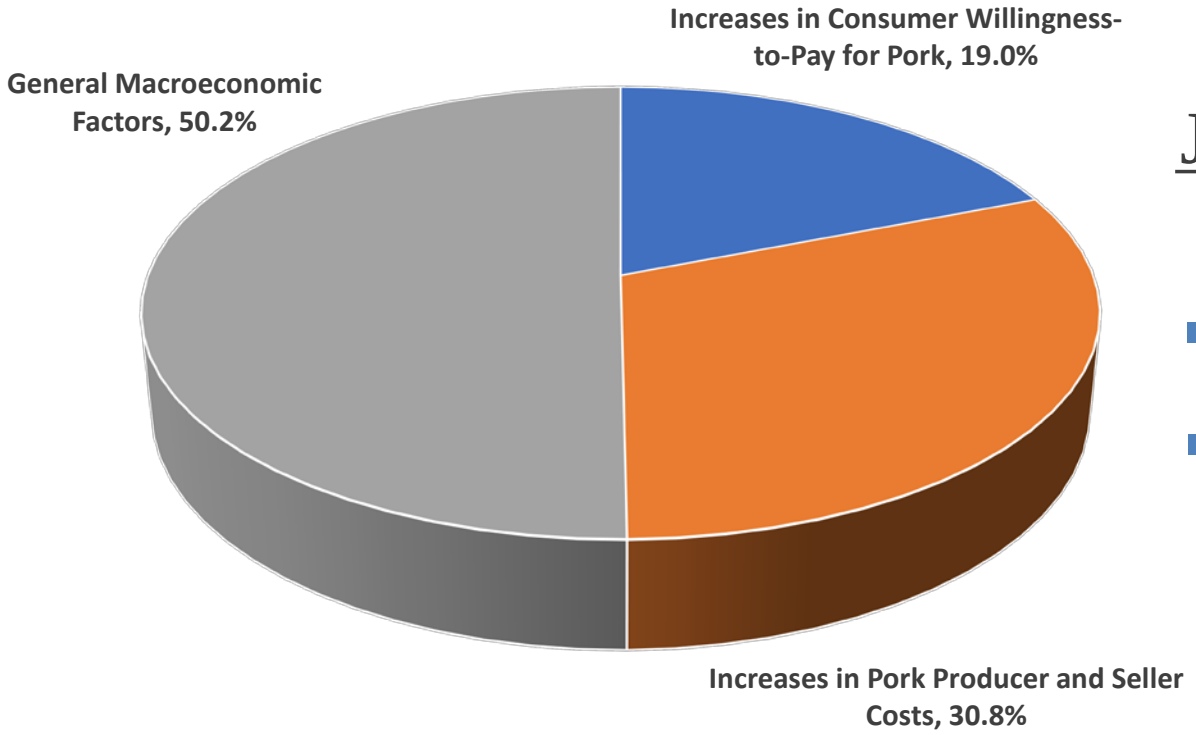
7.7 lbs ham
7.6 lbs pork chop
4.4 lbs bacon

What Underlies Higher Retail Pork Prices?

- Supply-Drivers
  - "Pushing up" prices?
- Demand-Drivers
  - "Pulling up" prices?
- Broader Macroeconomic Drivers
  - Historic increase in money supply underpin general inflation?

What Underlies Higher Retail Pork Prices?

Relative Drivers of Change in Retail Pork Prices
January 2020 to April 2022



Jan 2020 – Apr 2022, Nominal Retail Pork +27.3%

- +13.7% from macroeconomic pressures
- +8.4% from inner-industry supply-side factors
- +5.2% from pork demand factors

How is Elevated Inflation Impacting Pork Price Sensitivity?

Consider Econometric Evidence from IRI Data

- Jan 2017 – Aug 2022, 51 U.S. Retail Pork Markets (n=14,208)

Table 1. Own-Price Elasticity Estimates, Across CPI-Delineated Regimes (Mixed Model Approach)

CPI Regime	Loin	Ribs	Shoulder	Breakfast Sausage	Dinner Sausage	Bacon	Pork (Aggregate)
CPI Regime 1 (Under 2.5%)	-0.488	-1.286	-1.746	-3.972	-1.122	-1.773	-0.676
CPI Regime 2 (2.5%-3.0%)	-0.547	-1.399	-1.680	-4.141	-1.218	-1.798	-0.830
CPI Regime 3 (3.0%-4.0%)	-0.466	-1.596	-1.646	-4.068	-1.256	-1.783	-0.677
CPI Regime 4 (Over 4.0%)	**-1.003**	-1.467	-1.961	-4.299	-1.088	-1.789	**-1.246**

Additional Trends from the Meat Demand Monitor (MDM)

https://www.agmanager.info/livestock-meat/meat-demand/monthly-meat-demand-monitor-survey-data

How is Elevated Inflation Impacting Consumers?

Trends in Meat Demand Monitor (MDM)

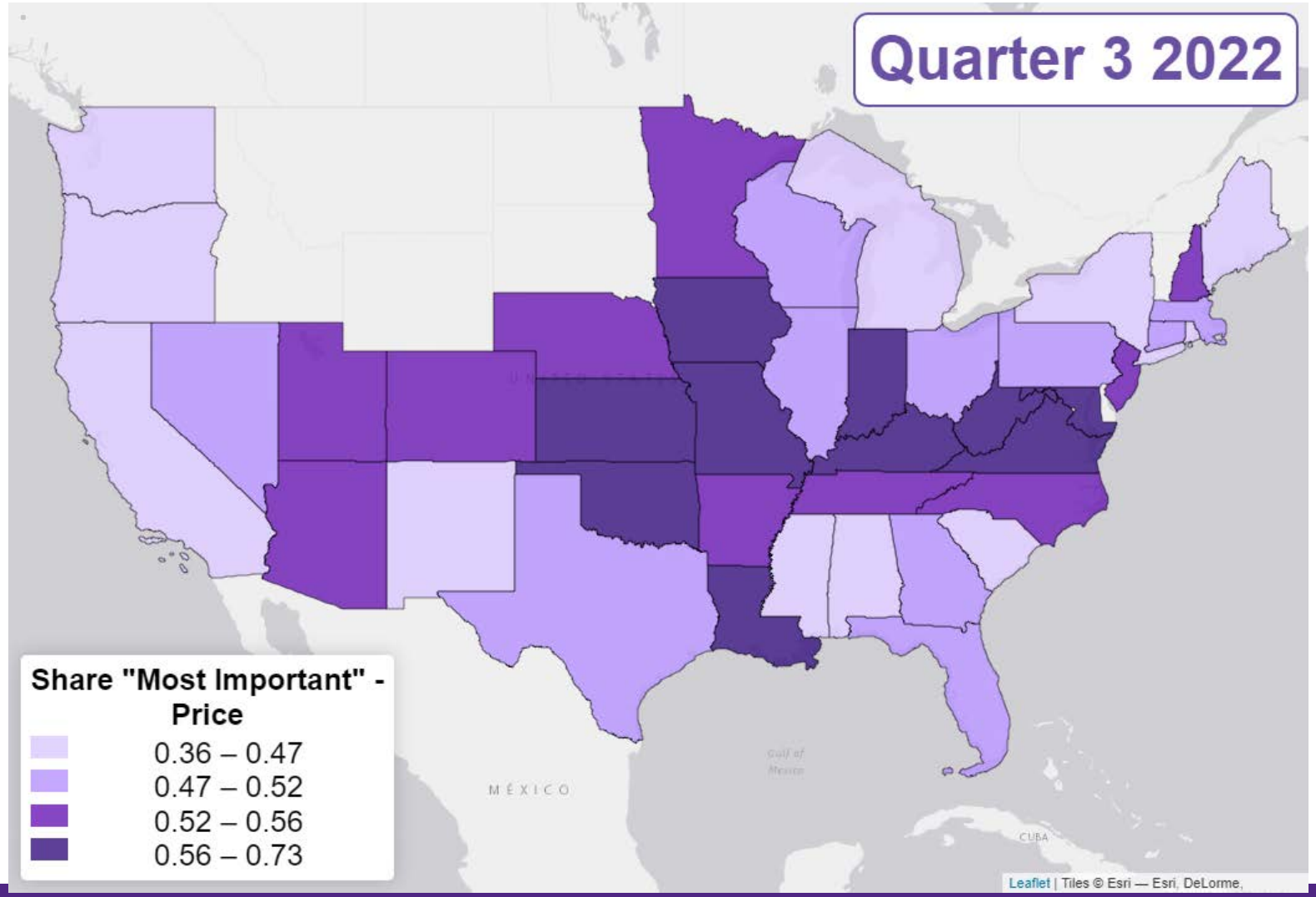
- Q3.2021 to Q3. 2022
  - Reported household income: down 0.3%
  - Spending on food for at-home consumption: up 4.0%
  - Spending on food for away-from-home consumption: up 3.0%

How is Elevated Inflation Impacting Consumers?

Trends in Meat Demand Monitor (MDM)

- Protein Values & Relative Role of Price
  - Q3.2021 45.7% indicated Price was a top 4 consideration
  - Q3.2022 49.5% indicated Price was a top 4 consideration

Where is Price Most Important in Protein Purchasing Decisions?



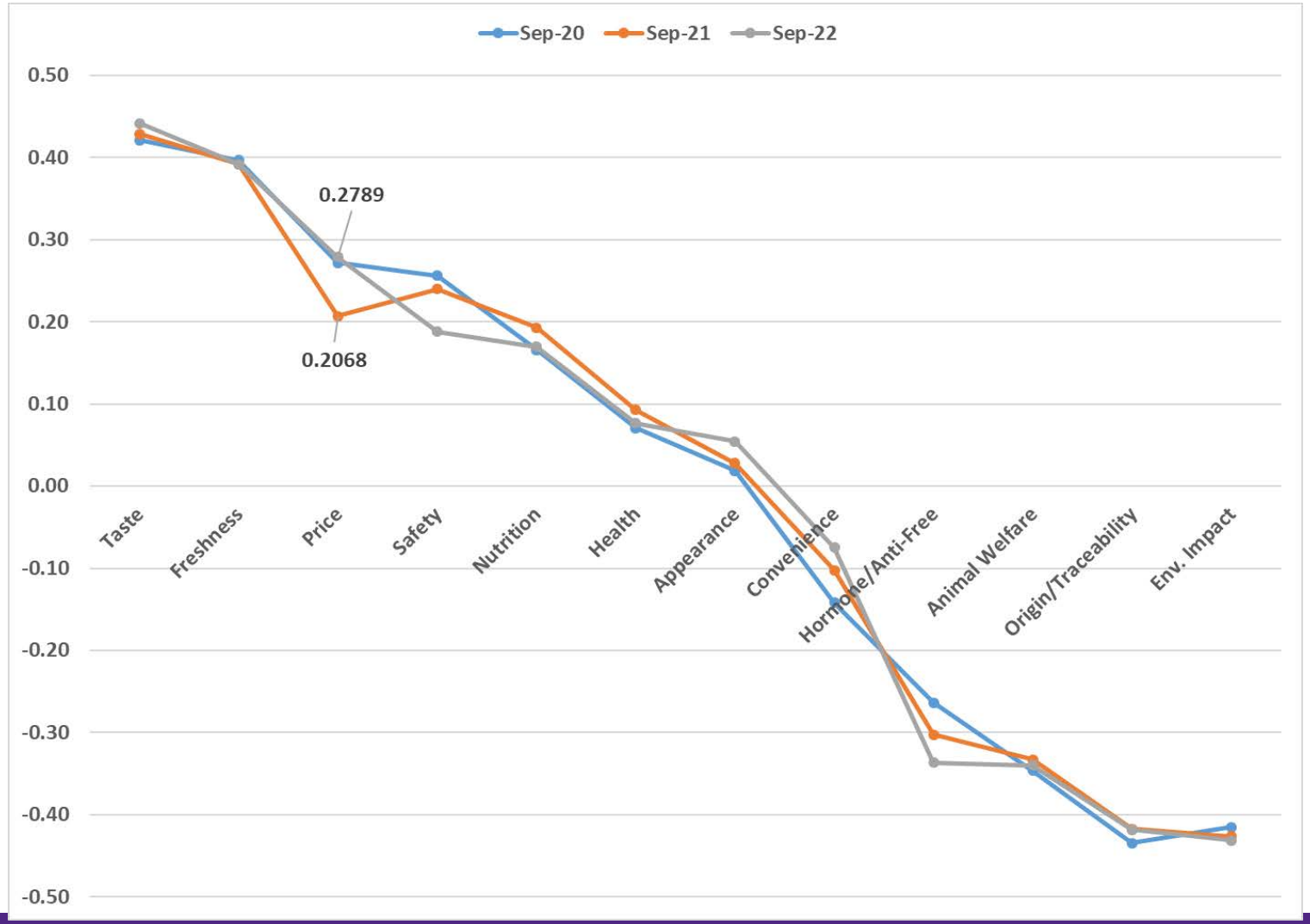
Q3-2022

Nationally: 50%

IA: 73%
WV: 73%

RI: 36%
WA: 40%

Protein Values (MDM): Sept 20, 21, & 22



<u>Sept 20</u>

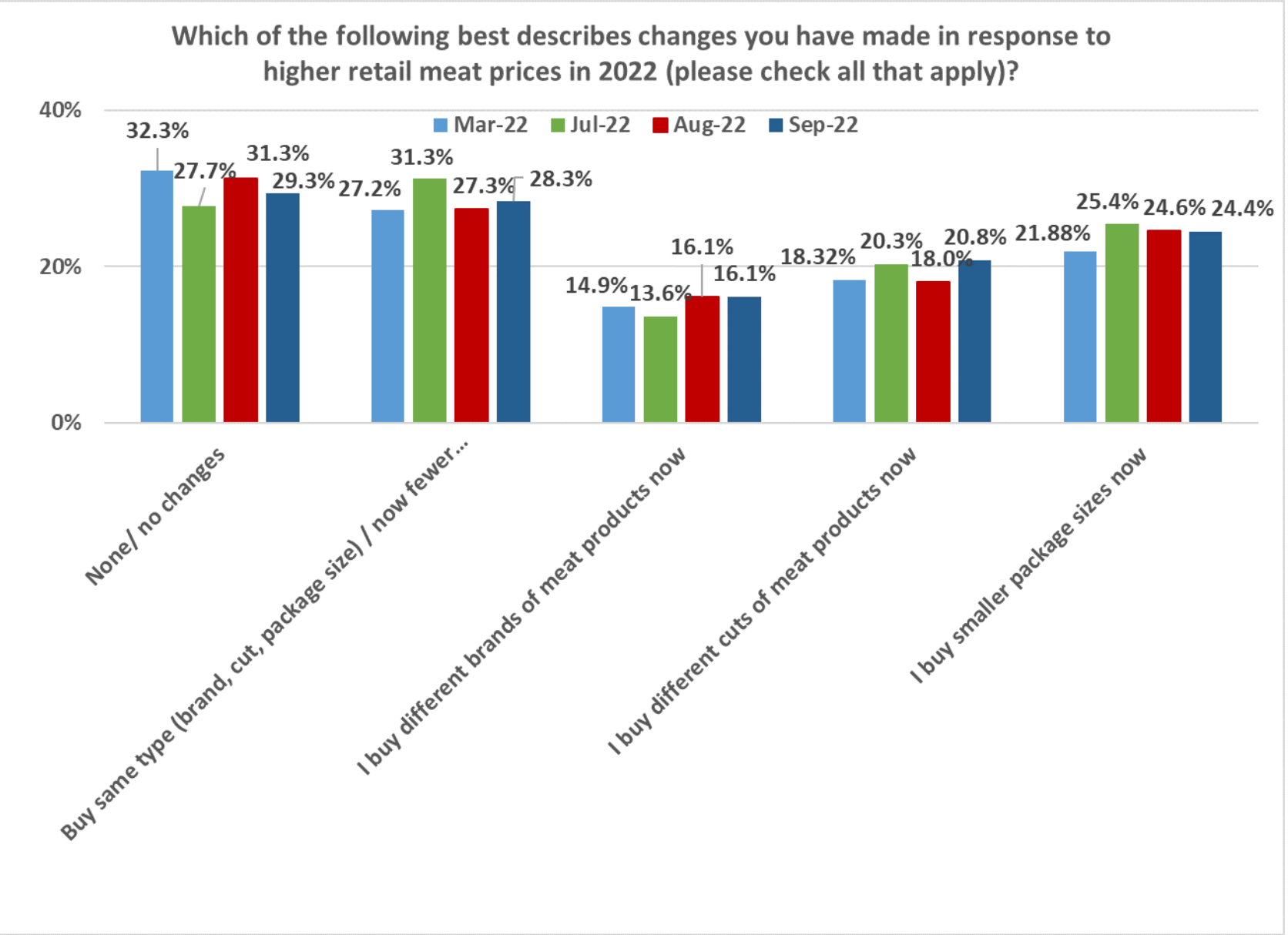
- Taste 1.6 x Price
- Convenience 2.9 x Env. Impact

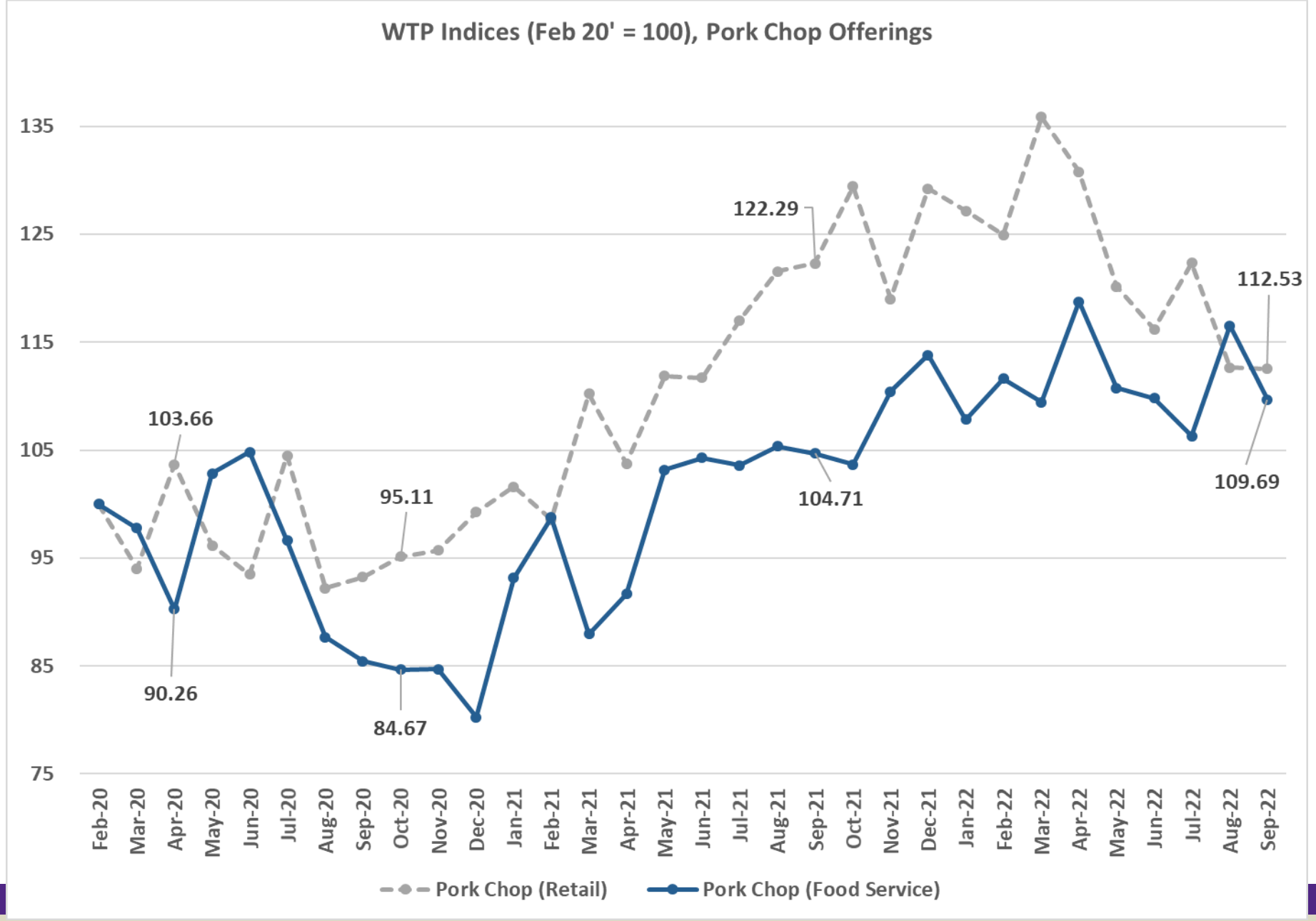
<u>Sept 21</u>

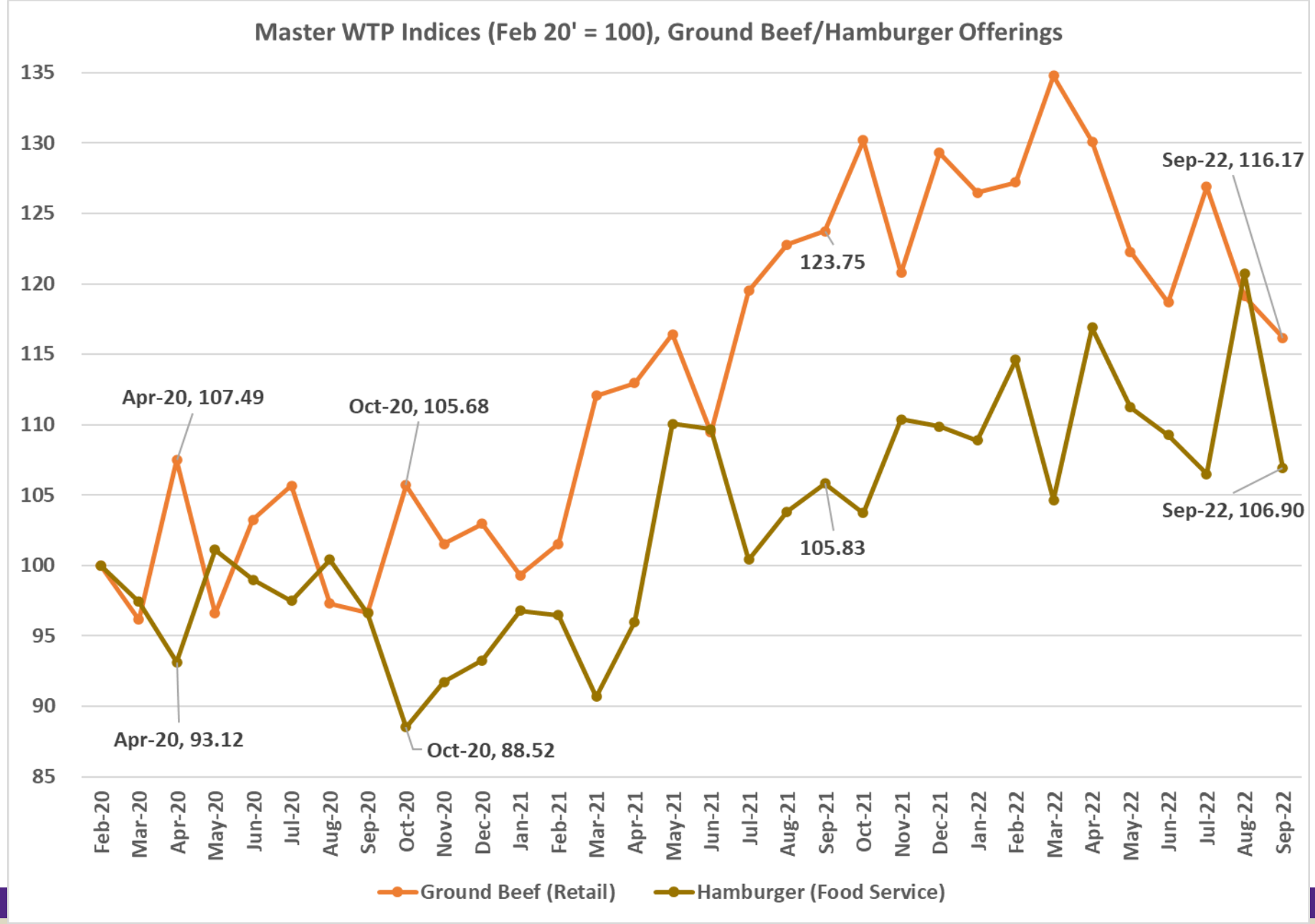
- Taste 2.1 x Price
- Convenience 4.2 x Env. Impact

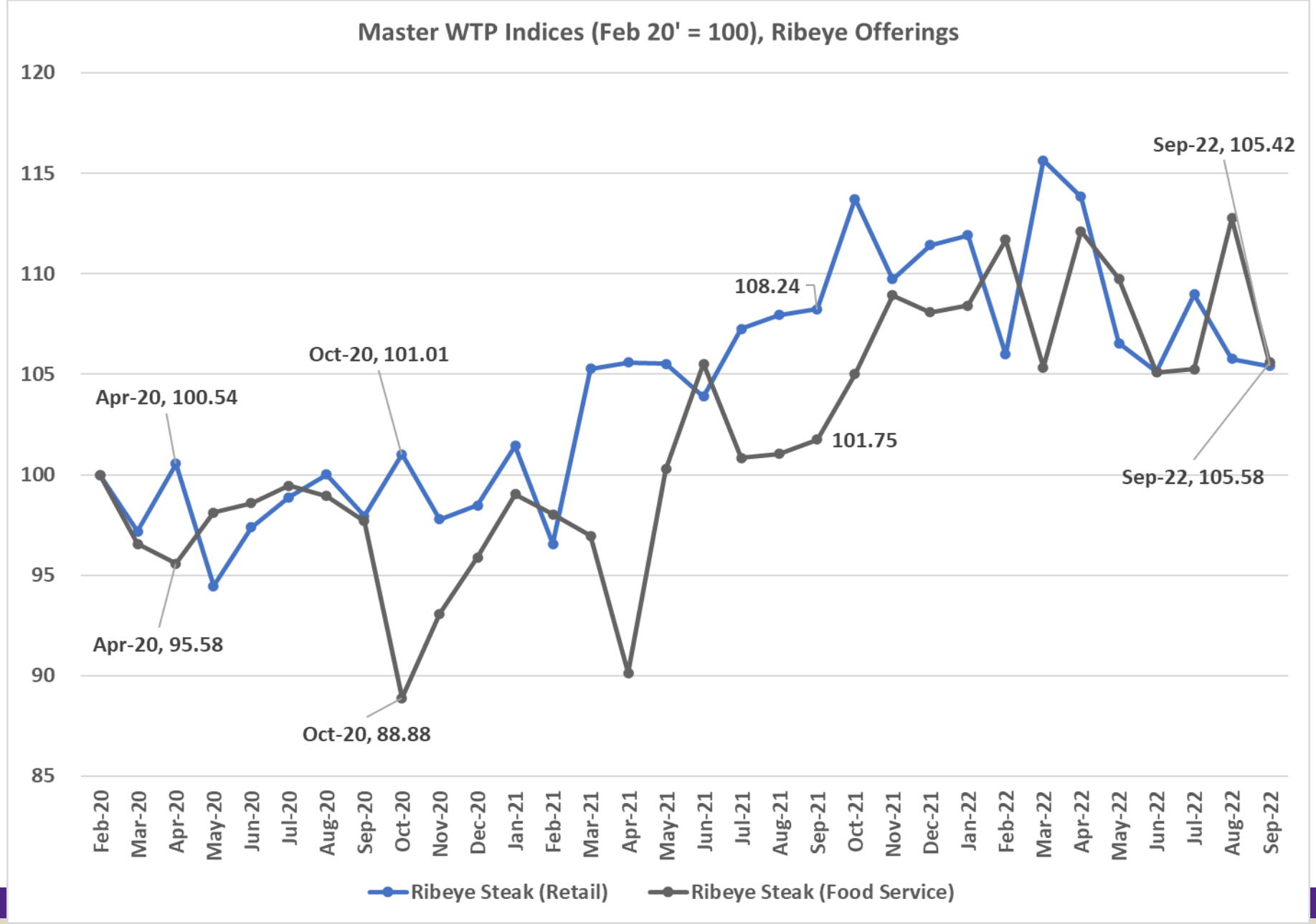
<u>Sept 22</u>

- Taste 1.6 x Price
- Convenience 5.8 x Env. Impact


Which of the following best describes changes you have made in response to higher retail meat prices in 2022 (please check all that apply)?
40%
20%
0%
Mar-22
Jul-22
Aug-22
Sep-22
32.3%
27.7%
31.3%
29.3%
27.2%
31.3%
27.3%
28.3%
14.9%
13.6%
16.1%
16.1%
18.32%
20.3%
18.0%
20.8%
21.88%
25.4%
24.6%
24.4%
None/ no changes
Buy same type (brand, cut, package size) / now fewer...
I buy different brands of meat products now
I buy different cuts of meat products now
I buy smaller package sizes now

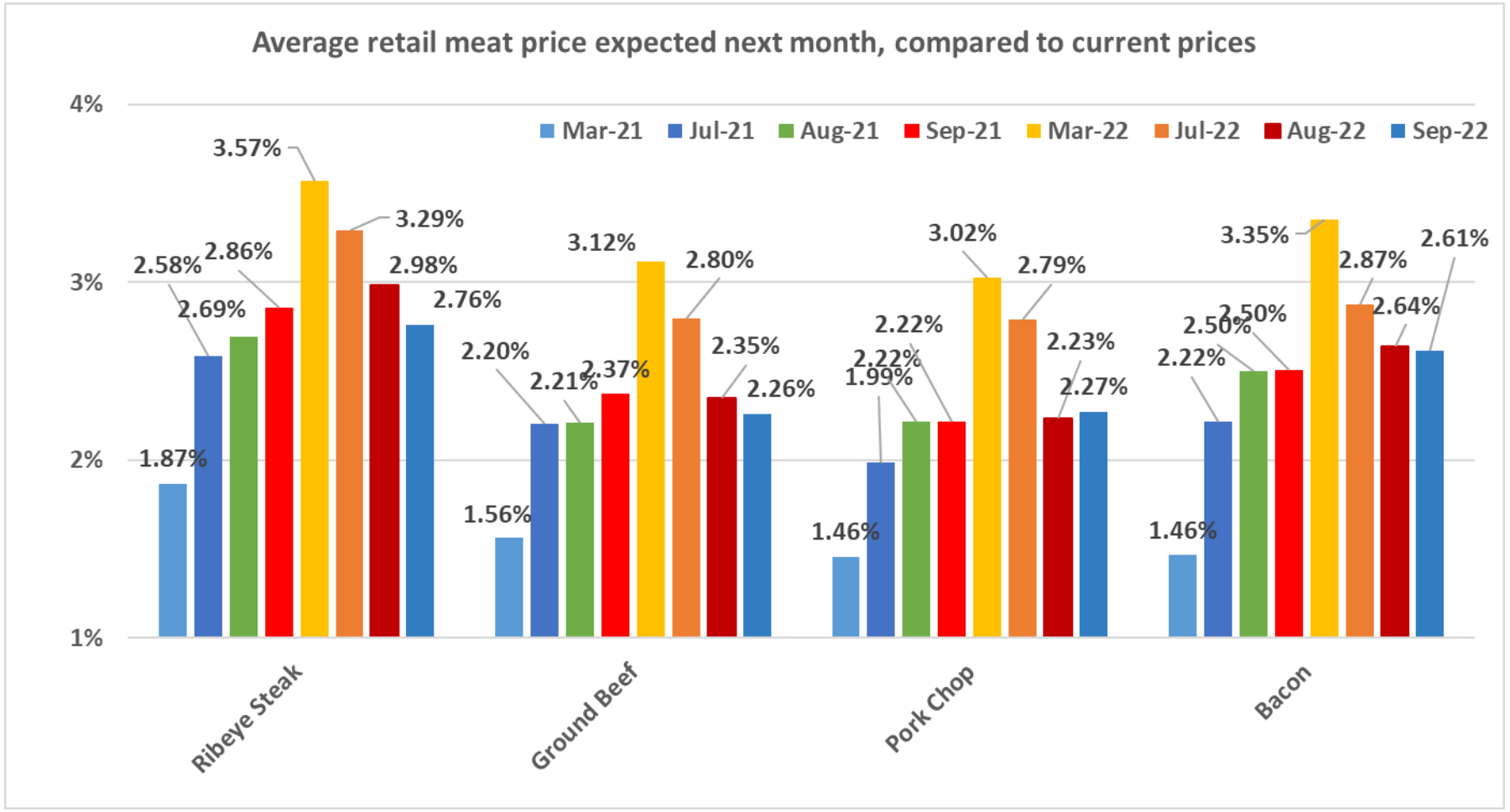

WTP Indices (Feb 20' = 100), Pork Chop Offerings
135
125
115
105
95
85
75
103.66
90.26
95.11
84.67
122.29
104.71
112.53
109.69
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Jan-21
Feb-21
Mar-21
Apr-21
May-21
Jun-21
Jul-21
Aug-21
Sep-21
Oct-21
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Pork Chop (Retail)
Pork Chop (Food Service)


Master WTP Indices (Feb 20' = 100), Ground Beef/Hamburger Offerings
135
130
125
120
115
110
105
100
95
90
85
Apr-20, 107.49
Apr-20, 93.12
Oct-20, 105.68
Oct-20, 88.52
123.75
105.83
Sep-22, 116.17
Sep-22, 106.90
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Jan-21
Feb-21
Mar-21
Apr-21
May-21
Jun-21
Jul-21
Aug-21
Sep-21
Oct-21
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Ground Beef (Retail)
Hamburger (Food Service)


Master WTP Indices (Feb 20' = 100), Ribeye Offerings
120
115
110
105
100
95
90
85
Sep-22, 105.42
108.24
Oct-20, 101.01
Apr-20, 100.54
101.75
Sep-22, 105.58
Apr-20, 95.58
Oct-20, 88.88
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Jan-21
Feb-21
Mar-21
Apr-21
May-21
Jun-21
Jul-21
Aug-21
Sep-21
Oct-21
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Ribeye Steak (Retail)
Ribeye Steak (Food Service)

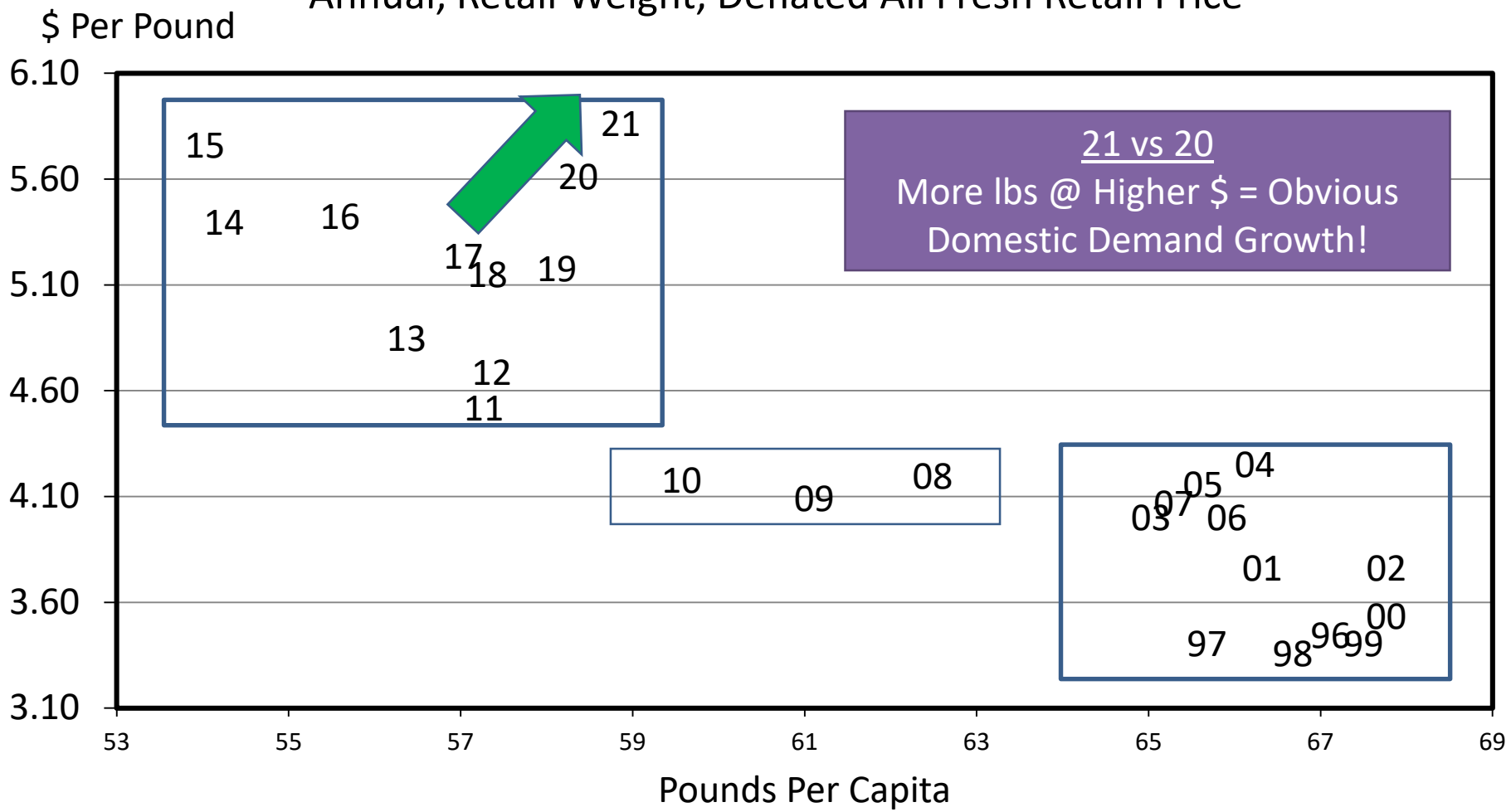
Where Are We Going?

Have Consumer Meat Price Expectations Begun to Peak?



BEEF PRICE-QUANTITY RELATIONSHIP

Annual, Retail Weight, Deflated All Fresh Retail Price



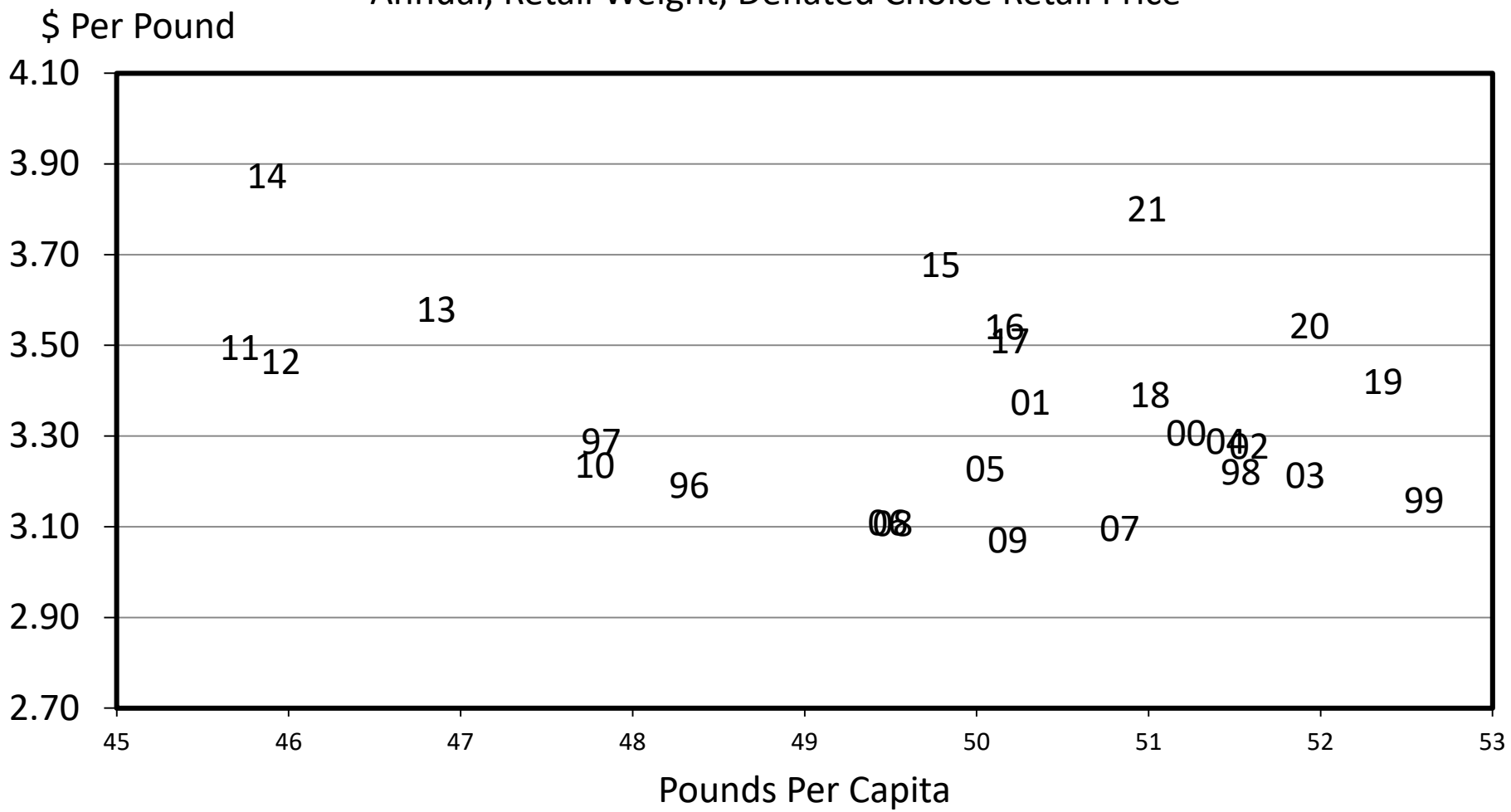
LMIC Per Capita Forecasts:
21: 58.9
22: 58.9
23: 57.2
24: 55.4

C-P-65A
06/30/22

LMIC Per Capita Forecasts:
21: 51.0
22: 50.9
23: 50.7
24: 50.9

PORK PRICE-QUANTITY RELATIONSHIP

Annual, Retail Weight, Deflated Choice Retail Price



H-P-12
03/29/22

USDA Baseline Projections

- Projections out to 2031

- *Report released annually, latest in Feb. 2022 (pre-Ukraine conflict)*

- Report, tables, etc. available here:
https://www.usda.gov/oce/commodity-markets/baseline

Long-Term Trajectory Projections: Perspective Framing

U.S. Meat-Livestock Projections

Table 19: Beef long-term projections

Item	Units	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	31' vs 21'
Total supply	Million lbs.	31,227	31,804	30,870	30,592	30,704	30,837	31,041	31,297	31,567	31,830	32,087	32,333	2%
Exports	Million lbs.	2,951	3,414	3,270	3,201	3,213	3,249	3,290	3,330	3,373	3,415	3,456	3,497	2%
Total disappearance	Million lbs.	27,561	27,750	26,960	26,757	26,851	26,923	27,071	27,276	27,494	27,706	27,916	28,121	1%
Per capita, retail weight	Pounds	58.4	**58.6**	56.8	55.8	55.6	55.4	55.3	55.3	55.4	55.4	55.4	55.5	-5%
Prices:														
Steers, 5-area 2/	$/cwt	108.51	121.06	128.75	134.94	135.48	137.24	137.73	138.08	138.66	139.63	140.86	142.55	18%
Feeder steers, Oklahoma City	$/cwt	135.45	144.80	155.50	171.19	171.80	174.39	174.91	175.14	175.76	177.06	178.83	181.41	25%
Beef cow inventory	1,000 head	31,339	31,158	30,555	30,534	30,596	30,663	30,797	30,946	31,091	31,227	31,350	31,460	1%
Total cow inventory	1,000 head	40,681	40,598	40,000	39,974	40,041	40,113	40,257	40,416	40,581	40,732	40,875	41,010	1%

Long-Term Trajectory Projections: Perspective Framing

U.S. Meat-Livestock Projections

Table 20: Pork long-term projections

Item	Units	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	31' vs 21'
Total production	Million lbs.	28,318	27,689	27,600	28,382	28,408	28,523	28,919	29,283	29,671	29,990	30,300	30,617	11%
Imports	Million lbs.	904	1,107	1,145	954	959	964	969	974	979	983	988	993	-10%
Total supply	Million lbs.	29,869	29,264	29,205	29,842	29,987	30,117	30,528	30,907	31,310	31,644	31,969	32,290	10%
Exports	Million lbs.	7,280	7,199	7,405	7,400	7,425	7,498	7,554	7,611	7,668	7,726	7,784	7,840	9%
Total disappearance	Million lbs.	22,121	21,605	21,295	21,822	21,932	21,979	22,323	22,636	22,972	23,238	23,505	23,770	10%
Per capita, retail weight	Pounds	50.6	49.7	49.6	50.5	50.4	50.1	50.5	50.9	51.3	51.5	51.7	52.0	5%
Prices:														
National base, live equivalent	$/cwt	43.18	69.45	60.50	58.64	55.31	52.97	49.57	46.80	45.54	45.45	46.06	47.37	-32%
Hog inventory, December 1, previous year	1,000 head	78,228	76,822	**74,750**	77,500	77,484	77,554	78,383	79,122	79,922	80,531	81,111	**81,705**	6%

Long-Term Trajectory Projections: Perspective Framing

U.S. Meat-Livestock Projections

Table 21: Young chicken long-term projections

Item	Units	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	31' vs 21'
Total supply	Million lbs.	45,188	45,224	45,661	46,970	47,721	48,427	48,850	49,494	49,934	50,381	51,063	51,707	14%
Change from previous year	Percent	1.7	0.1	1.0	2.9	1.6	1.5	0.9	1.3	0.9	0.9	1.4	1.3	
Exports	Million lbs.	7,367	7,491	7,410	7,599	7,730	7,858	7,987	8,116	8,245	8,374	8,503	8,653	**16%**
Disappearance	Million lbs.	36,991	36,974	37,476	38,498	39,014	39,579	39,860	40,362	40,659	40,964	41,503	41,991	14%
Per capita, retail weight	Pounds	96.2	95.8	96.8	98.6	99.2	99.9	99.9	100.4	100.5	100.5	101.1	101.6	6%
Change from previous year	Percent	1.2	-0.4	1.0	1.8	0.6	0.7	0.0	0.5	0.0	0.1	0.6	0.5	
Prices:														
Broilers, National composite	Cents/lb.	73.2	98.4	98.3	98.8	101.3	102.4	103.5	103.4	103.9	104.6	105.1	106.5	8%

GT's Thought Framing Suggestions


shutterstock

http://library.meatingplace.com/publication/frame.php?i=727245&p=72&pn=&ver=html5

"Any good business plan or policy needs a clearly stated goal… "

- Think global
- Manage local & focus on things you can influence

More information available at:

This presentation will be available in PDF format at:

http://www.agmanager.info/about/contributors/individual/tonsor.asp

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Utilize a Wealth of Information Available at AgManager.info

About AgManager.info

AgManager.info website is a comprehensive source of information, analysis, and decision-making tools for agricultural producers, agribusinesses, and others. The site serves as a clearinghouse for applied outreach information emanating from the Department of Agricultural Economics at Kansas State University. It was created by combining departmental and faculty sites as well as creating new features exclusive to the AgManager.info site. The goal of this coordination is to improve the organization of web-based material and allow greater access for agricultural producers and other clientele.

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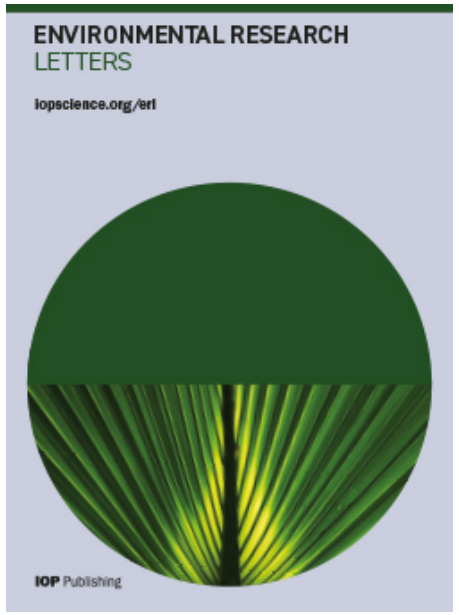

https://iopscience.iop.org/article/10.1088/1748-9326/ac4fda

".. For every 10% reduction in price or increase in demand for PBM, we estimate U.S. cattle production falls approximately 0.15%, U.S. cattle producers' economic welfare falls by $300 million per year, and U.S. consumer welfare rises by $513 million per year. "

https://www.agmanager.info/livestock-meat/meat-demand/meat-demand-research-studies/impact-new-plant-based-protein-1

http://library.alt-meat.net/publication/frame.php?i=727246&p=&pn=&ver=html5

- "K-State's Glynn Tonsor for one, believes a meat tax is not the only path to a more sustainable protein industry"

Received: 13 August 2021 | Accepted: 1 March 2022
DOI: 10.1002/aepp.13253

https://onlinelibrary.wiley.com/doi/epdf/10.1002/aepp.13253

FEATURED ARTICLE

AAEA Agricultural & Applied Economics Association WILEY

Market potential of new plant-based protein alternatives: Insights from four US consumer experiments

Glynn T. Tonsor[1] | Jayson L. Lusk[2] | Ted C. Schroeder[1]

Example findings:

Regular meat consumers are much less likely than those declaring an alternative diet (vegan, vegetarian, flexitarian, or other) to select a plant-based item when a beef item is available.

- Characteristics of consumers most likely to select plant-based proteins include younger, those with children under the age of 12 years, having higher household income, residing in a Western state, and affiliating with the Democratic party.

Changes in the price of beef and chicken have a much larger impact on consumer decisions to buy beef than the impact of changes in the price of plant-based offerings. This means plant-based burgers are relatively weak substitutes for beef.

- **…growth in the market share of plant-based alternatives is not entirely coming at the cost of reduced beef demand and indeed if a plant-based alternative simply replaces a substitute competitor (like a chicken sandwich) or reflects overall growth in protein demand, the impacts on beef demand are likely to be negligible.**

Food Policy 108 (2022) 102247

Contents lists available at ScienceDirect

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journal homepage: www.elsevier.com/locate/foodpol

https://www.sciencedirect.com/science/article/pii/S0306919222000306#

Regional and plant-size impacts of COVID-19 on beef processing

Justin D. Bina [a,*], Glynn T. Tonsor [a], Lee L. Schulz [b], William F. Hahn [c]

[a] Department of Agricultural Economics at Kansas State University, United States
[b] Department of Economics at Iowa State University, United States
[c] USDA Economic Research Service, United States

Example findings:

- Timing and magnitude of slaughter declines varied by region.
  - ***Limited evidence of plant-size impacts on COVID-19-related slaughter declines.***

"If additional physical capacity is added to the industry, it may not provide the widely-stated benefit of increased "resiliency." **It is often presumed there is a trade-off between efficiency and resiliency when considering industry structure**. However, limited evidence of plant-size COVID-19 impacts for most of 2020 suggests caution in presuming this tradeoff. If this trade-off exists, our work suggests it is short-lived."

Applied Economic Perspectives and Policy (2021) volume 43, number 1, pp. 4–23.
doi:10.1002/aepp.13101

https://onlinelibrary.wiley.com/doi/full/10.1002/aepp.13101

Featured Article

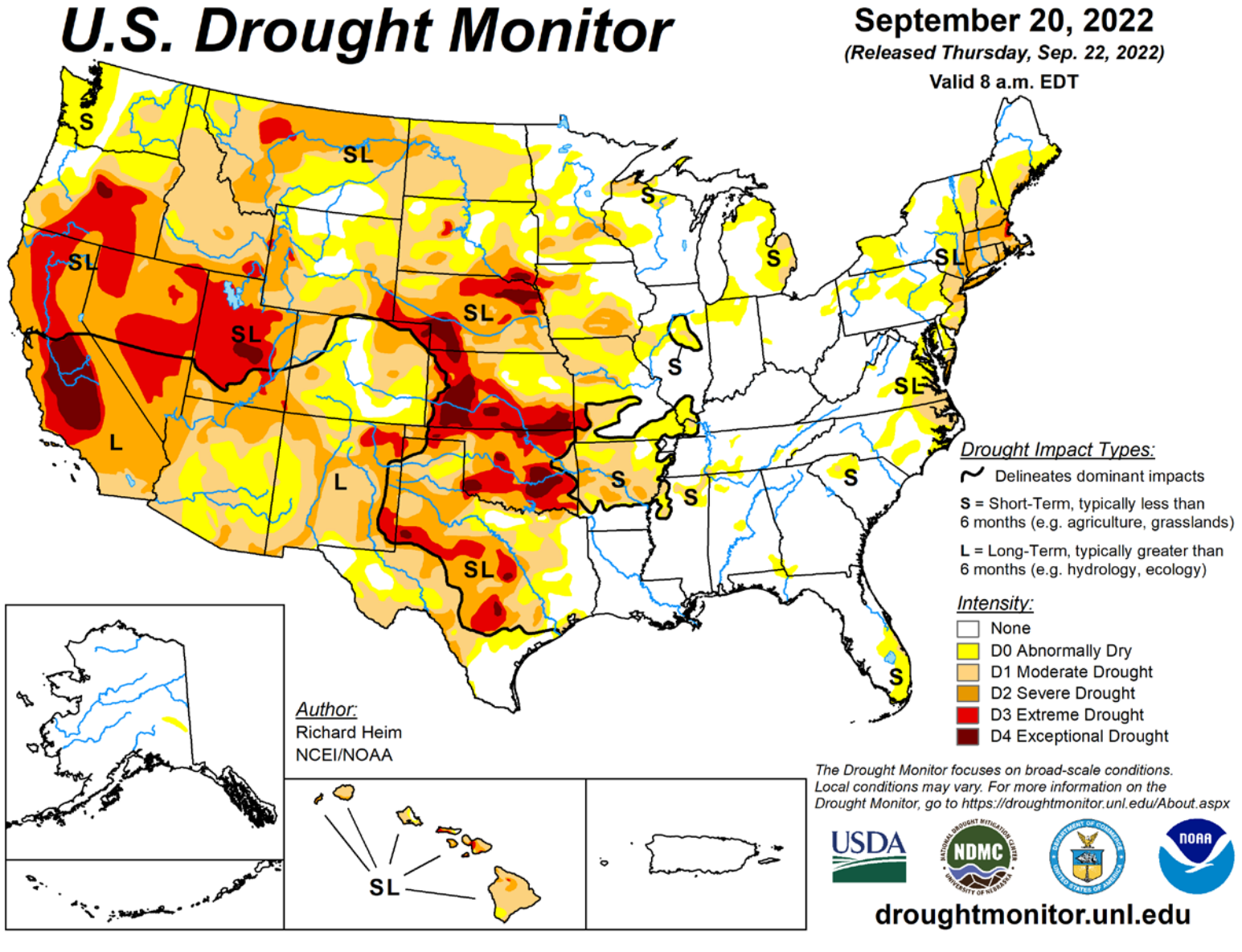
Beef and Pork Marketing Margins and Price Spreads during COVID-19

Jayson L. Lusk*, Glynn T. Tonsor, and Lee L. Schulz

Example findings:

- "We explore how such a massive supply shock would be expected to affect marketing margins even in the absence of anti-competitive behavior.
- Moreover, we document how margin measurements are critically sensitive to the selection of data and information utilized.
- Finally, **we conclude with some discussion around policy proposals that would pit industry concentration against industry coordination and economies of scale**."

Context on Beef Cow Herd Dynamics



AgManager.info

Beef Cows in states with 40% Good to Excellent		
Last year	Cows	% of Total
09/05/21	16181	**51.56%**
09/12/21	11933	**38.02%**
09/19/21	13111	**41.77%**
This Year		
09/04/22	9507	**30.08%**
09/11/22	10246	**32.42%**
09/18/22	9774	**30.92%**

Beef Cows in states with 40% Poor to Very Poor		
Last year	Cows	% of Total
09/05/21	8225	**26.21%**
09/12/21	7640	**24.34%**
09/19/21	7640	**24.34%**
This Year		
09/04/22	16339	**51.69%**
09/11/22	14411	**45.59%**
09/18/22	14840	**46.95%**

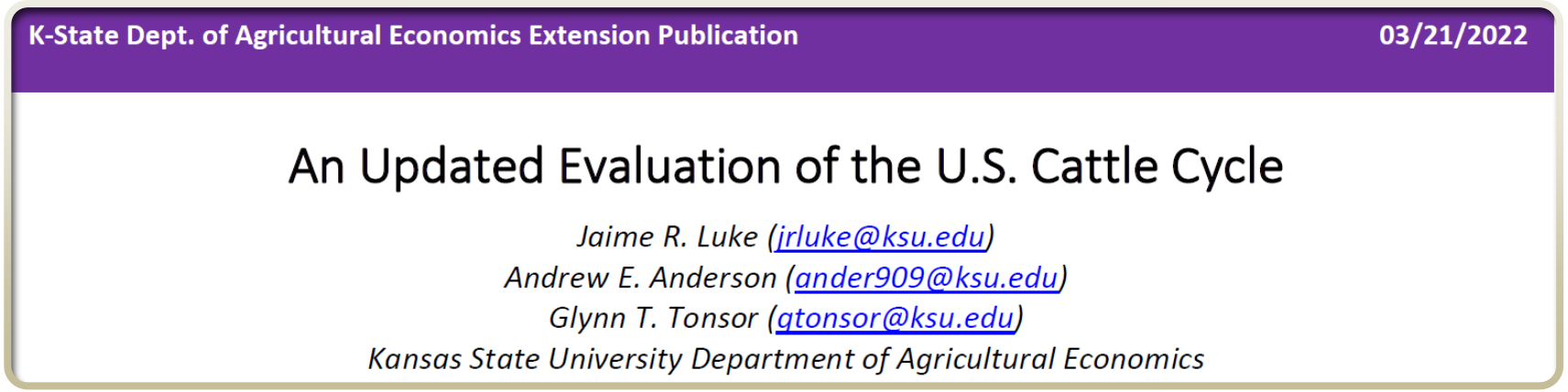
Context on Beef Cow Herd Dynamics

Number of Beef Cows by Region							
	Western	Great Plains	Southern Plains	Cornbelt	Northeast	Southeast	U.S. Total
2016	9.9%	29.4%	20.6%	14.7%	1.2%	23.8%	30,166
2017	10.0%	29.2%	21.0%	15.0%	1.3%	23.3%	31,171
2018	10.2%	29.1%	21.0%	14.9%	1.3%	23.2%	31,466
2019	10.0%	29.1%	21.5%	14.7%	1.4%	23.0%	31,691
2020	10.2%	28.9%	21.3%	14.8%	1.4%	23.2%	31,339
2021	10.1%	28.7%	22.0%	14.4%	1.3%	23.2%	30,844
2022	10.3%	28.0%	21.9%	14.8%	1.3%	23.4%	30,125

Context on Beef Cow Herd Dynamics

Western: AZ, CA, ID, NV, NM, OR, UT, WA
Great Plains: CO, **KS,** MT, NE, ND, SD, WY
Southern Plains: OK, TX
Cornbelt: IL, IN, IA, MI, MN, MO, OH, WI
Southeast: AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV

Context on Beef Cow Herd Dynamics



K-State Dept. of Agricultural Economics Extension Publication 03/21/2022

An Updated Evaluation of the U.S. Cattle Cycle

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- https://www.agmanager.info/livestock-meat/production-economics/updated-evaluation-us-cattle-cycle

Context on Beef Cow Herd Dynamics

Table 1. Beef Cow Inventory (000's head)

CATTLE CYCLE	AVERAGE	STD DEV	MIN	MAX	RANGE	RELATIVE RANGE*
1949-1958	21,772	3,867	15,919	25,659	9,740	44.7%
1958-1967	29,300	3,898	24,165	34,442	10,277	35.1%
1967-1979	39,505	3,520	34,708	45,711	11,003	27.9%
1979-1990	36,033	2,373	32,487	39,229	6,742	18.7%
1990-2004	33,688	909	32,454	35,318	2,864	8.5%
2004-2014	31,704	1,108	29,631	32,702	3,071	9.7%
2014-PRESENT	30,620	1,025	28,956	31,690	2,734	8.9%

* Relative range is calculated as 100*range/average.

ESTIMATED AVERAGE COW CALF COSTS

Total Cash Cost Plus Pasture Rent, Annual