

CONSUMER PREFERENCES AND WILLINGNESS TO PAY FOR GOAT MEAT

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Small Ruminant Short Course, 2023

OBJECTIVES



Understand consumers' preferences for meat products in the US, specifically goat meat



Examine market segments of consumers



Identify the role of information messages on consumer preferences for goat meat



Provide targeted marketing tools for future informational advertisements of goat meat

BACKGROUND & MOTIVATION

- Increase in popularity and demand for goat meat over the last few decades
 - *The demand for goat meat exceeds its supply, the US is a net importer of goat meat*
 - *Most of the imported meat is frozen, whereas customers prefer fresh goat meat*
- Limited literature that focuses on U.S. consumers' preferences and willingness to pay for goat meat
 - *Studies have found that the main target market for goat meat is older consumers who prioritize healthier meat options*

DATA

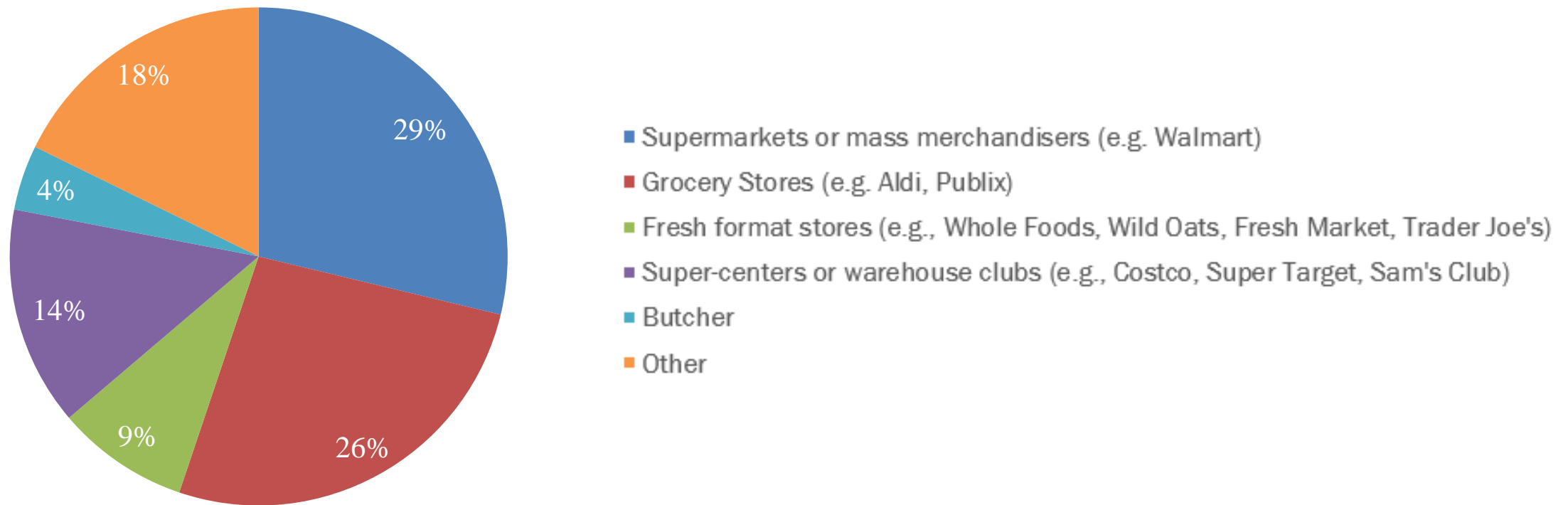
Study 1: July–September, 2021

- Sample of 1015 adult Floridians (Qualtrics)
- Responsible for at least 50% of grocery shopping decisions
- Treatments: health, environmental, health and environmental

Study 2: September–January, 2022

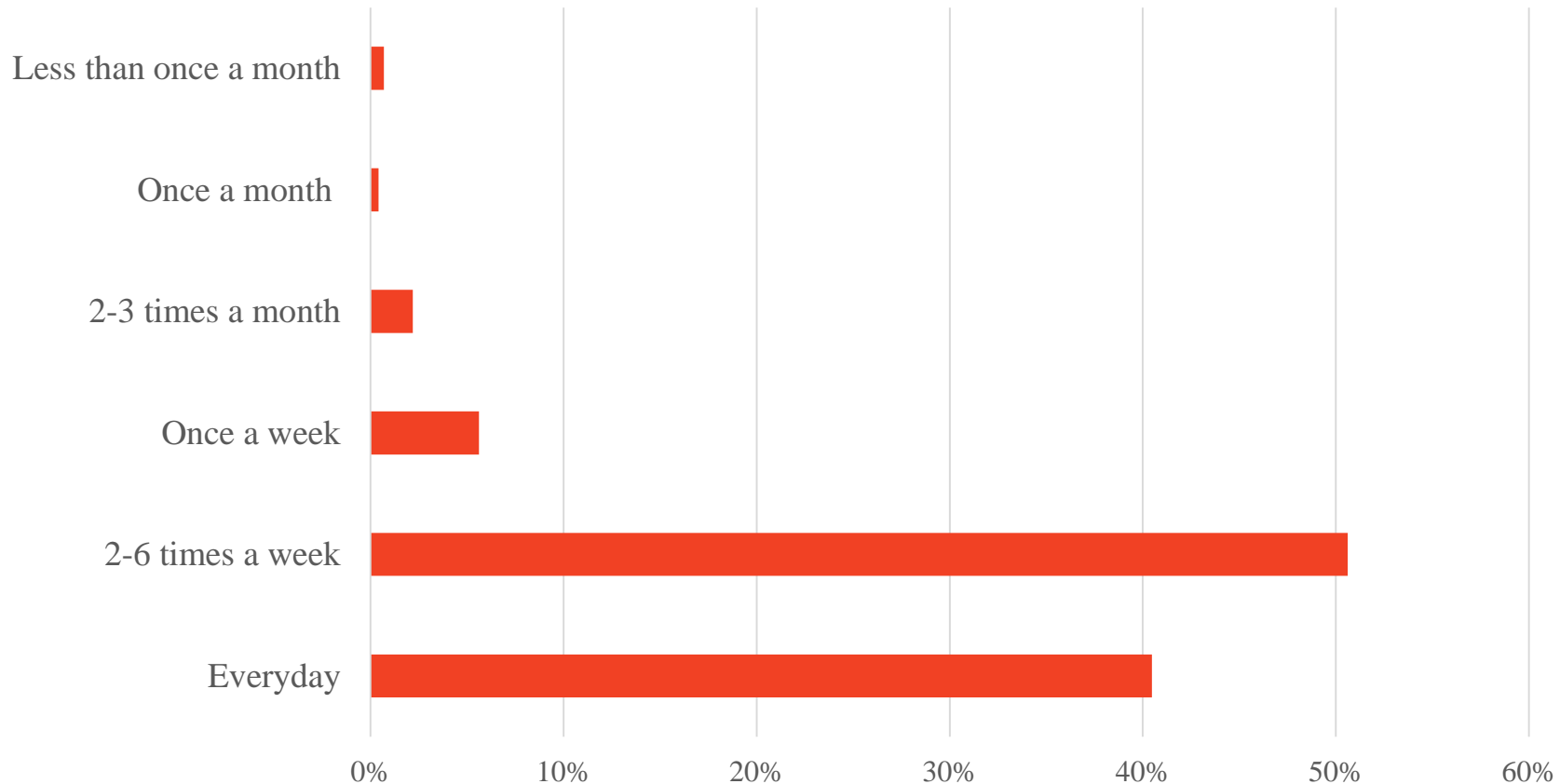
- Sample of 724 US adults (Qualtrics)
- Responsible for at least 50% of grocery shopping decisions
- Treatments: Pictorials, and recipe

➤ Figure 1: Main locations where consumers purchase meat

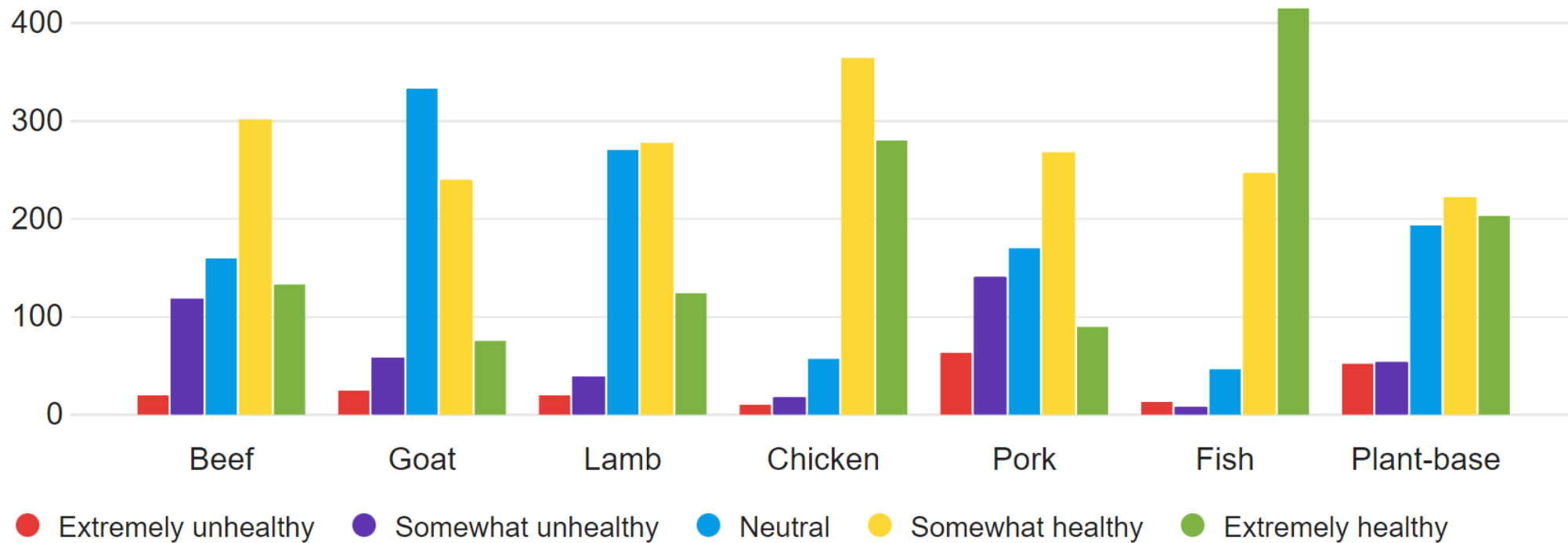


Data Source: Survey data collected from September to January 2022 in an online survey by M. Hambaryan, Dr. J. Lai, Dr. B. Kassas, University of Florida

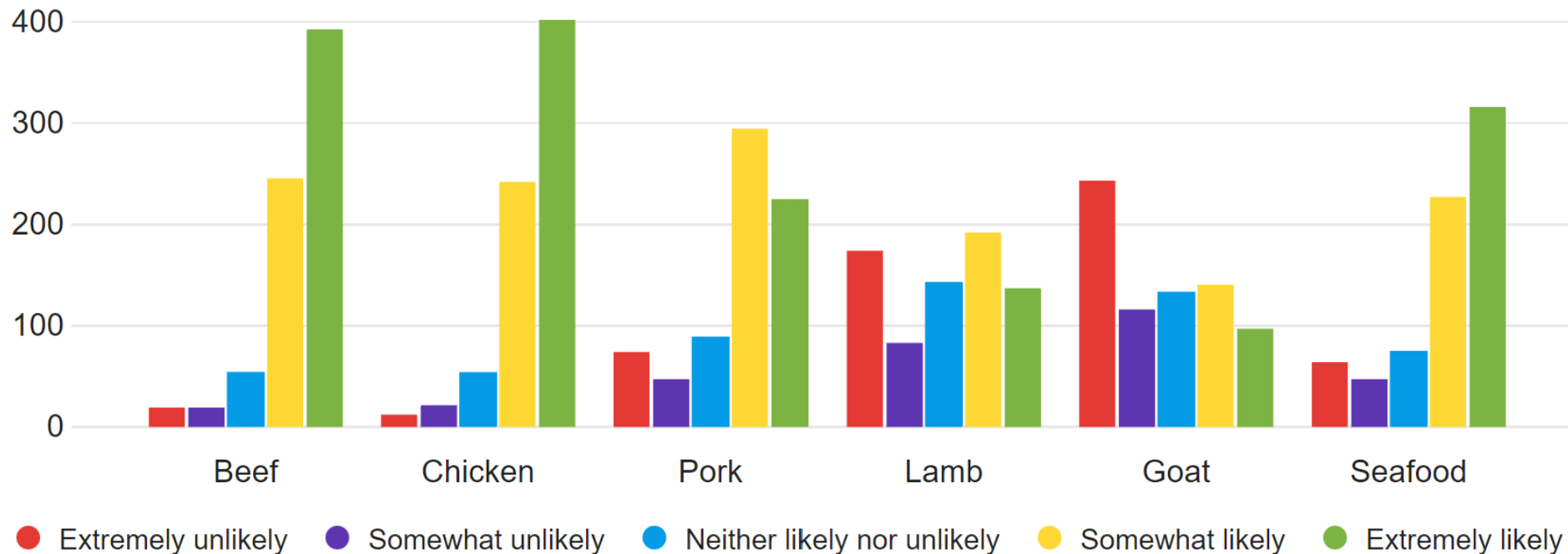
➤ Figure 2: Meat consumption Frequency



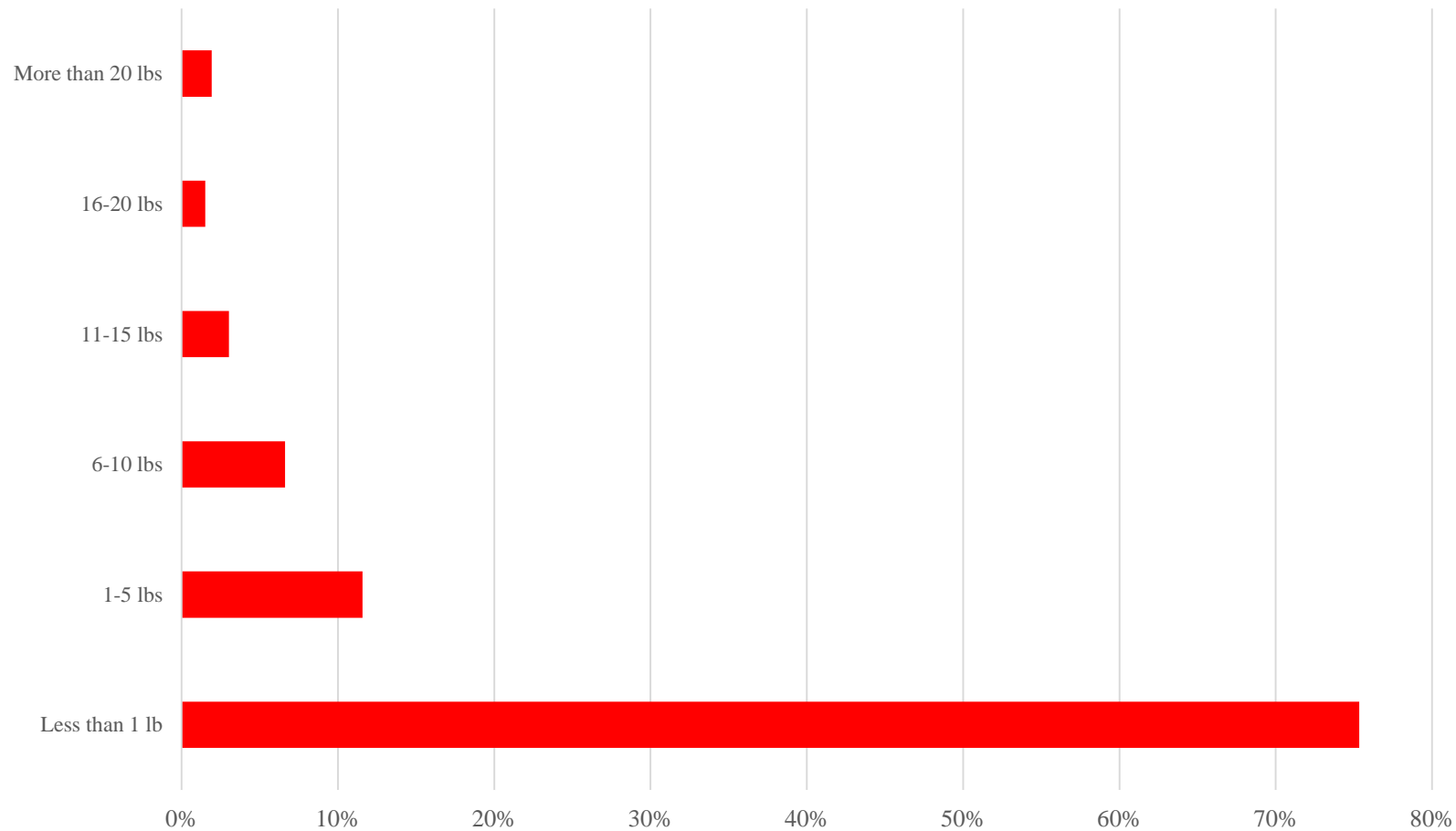
➤ Figure 3: Perceived Healthiness of Meat Products



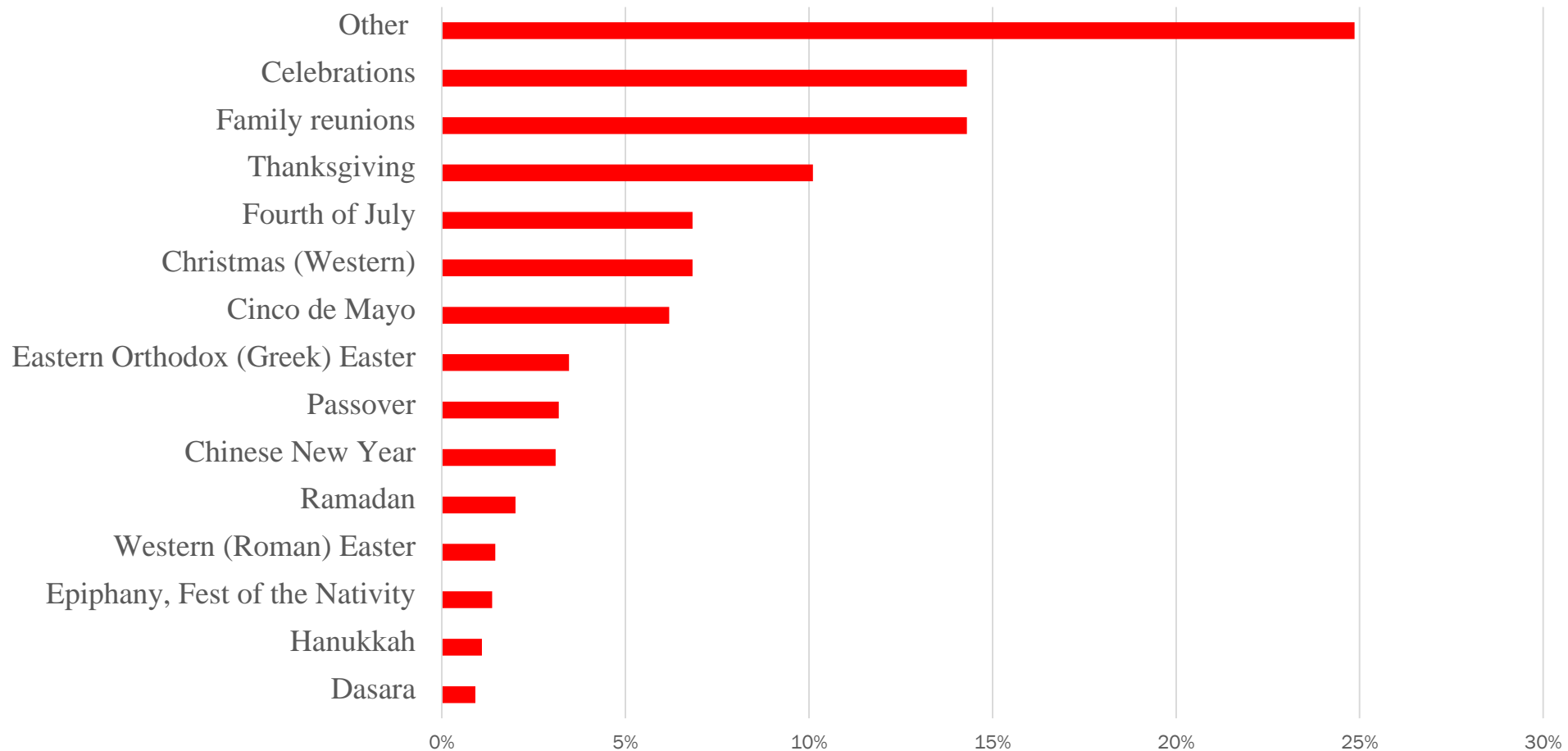
➤ Figure 4: Consumers' likelihood to try new dishes with meat



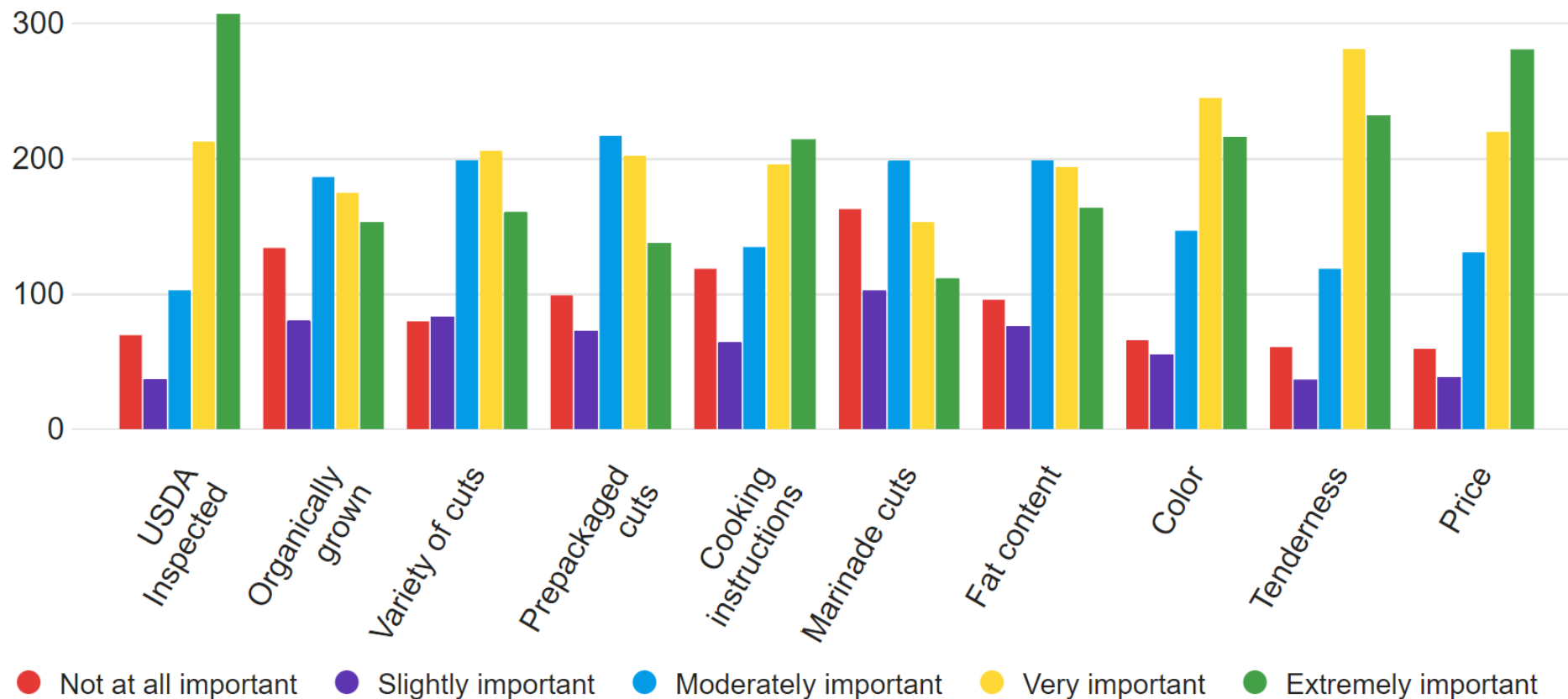
➤ Figure 5: Goat Meat consumption over the past 3 months



➤ Figure 6: Special Occasions where consumers will consider buying goat meat



➤ **Figure 6: Importance of Attributes When Purchasing Goat Meat**



SURVEY DESIGN

➤ Health Benefit Information Presented to the Survey Participants

Thank you for your participation so far. Please read the information below carefully before proceeding to the next stage of the questionnaire.

Did you know about these health benefits?

Goat meat is a very healthy source of protein. Goat meat is low in fat, cholesterol, sodium, and calories. It is also very rich in protein, iron, and potassium. For this reason, goat meat can be very good for your heart and blood pressure. In fact, switching to goat meat can extremely improve the health of Americans and help them avoid heart disease, which is a major cause of death in the US.

SURVEY DESIGN

➤ Environmental Benefit Information Presented to the Survey Participants

Thank you for your participation so far. Please read the information below carefully before proceeding to the next stage of the questionnaire.

Did you know about these environmental benefits?

Raising goats is cheap and environmentally friendly. Goats require little pasture to grow, which means that farmers can raise more goats than other farm animals using the same farm size. Also, goats help restore pasture quality by eating grassy weeds. Goats are considered browsers, rather than grazers, which means they preserve root systems and soil nutrients when they feed.

SURVEY DESIGN

Study 1: Information Nudges to Promote Preferences for Goat Meat

Attributes	Levels
Price (\$/lb)	3.49, 3.99, 4.49, 4.99, 5.49
Fresh from FL	Yes or No
Quality	Higher or Lower
Organic Certified	Yes or No
USDA Inspected	Yes or No

SURVEY DESIGN

➤ Choice sets

	Beef Option	Goat Option	None
Price	\$4.99	\$4.99	I would
Fresh From Florida	No	Yes	NOT
Quality	Higher	Higher	choose
Organic Certified	No	Yes	either of the
USDA Certified	Yes	No	two options.
	Beef Option	Goat Option	Neither Options
I would choose the:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

RESULTS

Table 1: Willingness to Pay Estimates (\$/lb)

Variable	Full	Control	Health	Environment	Health & Environment	p-value		
	Mean [95% CI]	Mean [95% CI]	Mean [95% CI]	Mean [95% CI]	Mean [95% CI]	Health vs Control	Env. vs Control	H&E vs control
Fresh from Florida	0.44 [0.21, 0.68]	0.18 [-0.75, 0.35]	0.54 [0.03, 1.09]	0.59 [0.18, 0.99]	0.63 [0.22, 0.99]	0.03	0.01	0.01
Quality	2.81 [2.41, 3.15]	3.19 [2.34, 4.05]	2.90 [2.04, 3.80]	2.66 [1.94, 3.31]	2.49 [1.77, 3.14]	0.68	0.83	0.89
Organic Certified	0.01 [-0.24, 0.24]	0.05 [-0.56, 0.62]	-0.35 [-0.91, 0.15]	0.14 [-0.29, 0.62]	0.12 [-0.30, 0.50]	0.83	0.38	0.41
USDA Certified	1.69 [1.37, 2.02]	2.03 [1.16, 2.89]	2.02 [1.22, 2.73]	1.78 [1.22, 2.41]	1.11 [0.62, 1.58]	0.53	0.68	0.97
Neither Option	-7.22 [-8.17, -6.32]	-6.92 [-8.85, -4.81]	-7.96 [-9.82, -5.87]	-6.65 [-8.30, -5.06]	-7.28 [-8.99, -5.79]	0.75	0.43	0.66
Goat Option	-3.86 [-4.37, -3.34]	-5.77 [-7.28, -4.33]	-4.20 [-5.36, -2.82]	-3.59 [-4.51, -2.72]	-2.42 [-3.19, -1.68]	0.05	0.01	0.00

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RESULTS

Table 2: Latent class model

	Beef	Niche Beef	Goat Meat
	Consumers	Consumers	Consumers
Price	-0.638***	-0.610	-0.343***
Fresh from Florida	0.012	-0.621	0.101***
Quality	0.878***	1.401*	0.613***
Organic Certified	0.216**	0.009	-0.132**
USDA Certified	1.226***	-0.056	0.075
Neither Option	-2.190***	-7.320*	-3.100***
Goat Meat	-3.303***	-6.082***	0.216***
Class Membership %	16.1	32.3	51.6

Notes: *, **, *** represent statistical significance at 10%, 5%, and 1% respectively;

RESULTS

Table 3: Latent class model

	Beef	Niche Beef	Goat Meat
	Consumers	Consumers	Consumers
Male		0.874***	1.203***
Age		-0.132***	-0.4444***
Black or African American		0.993***	1.594***
Asian		-0.606	-0.366
Other Race		-0.346	-0.540**
Hispanic		1.018***	1.367***
Income		-0.047	0.084***
Education		-0.188***	-0.001





Notes: (1) *, **, *** represent statistical significance at 10%, 5%, and 1% respectively;
(2) Log likelihood = -3929.2.

SURVEY DESIGN

➤ Pictorial

Q10.1

Which of these dishes do you find more appetizing?

<p>1. Birria</p> 	<p>3. Chivo guisado</p> 
<p>2. Kebabs</p> 	<p>4. Tengkleng</p> 

Birria

Kebabs

Chivo guisado

Tengkleng

SURVEY DESIGN

➤ Recipe

Q11.1

Which of these recipes do you find more appetizing?

<p>1. Birria Extremely tender goat meat, roasted chili peppers, garlic, cumin, bay leaves, thyme, onions, coriander, and lime.</p>	<p>3. Chivo guisado Pieces of goat meat, onions, bitter oranges, garlic, tomatoes, wild oregano, and Scotch bonnet peppers.</p>
<p>2. Kebabs Boneless goat meat, almost ripe peaches, olive oil, runny honey toasted flaked almonds, chopped mint, salt, and freshly ground black pepper.</p>	<p>4. Tengkleng Goat cuts, coconut-milk-based broth, turmeric, galangal, lemongrass, cumin, coriander, garlic, and onions.</p>

- Birria
- Kebabs
- Chivo guisado
- Tengkleng

SURVEY DESIGN

Study 2: Effect of images and recipes on goat meat consumption and willingness to pay

Attributes	Levels
Price (\$/lb)	2.99, 6.57, 10.15, 13.74
Meat type	Beef or Goat
Packaging	Store Wrap, Vacuum, or MAP
Freshness	Fresh or Frozen

SURVEY DESIGN

➤ Choice sets

In the following shopping scenario, please choose the option you would be most satisfied with when purchasing 1 pound of a shoulder-cut meat for household consumption:

	Option A	Option B	Option C	Option D
Price	\$10.15	\$13.74	\$6.57	I will not choose any option
Meat	Goat	Beef	Goat	
Packaging	MAP	Store Wrap	Vacuum	
Freshness	Frozen	Fresh	Frozen	

	Option A	Option B	Option C	Option D
I would choose:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

RESULTS

Table 4: Willingness to pay

Variable	Full	Control	Pictorial	Recipe	<i>p</i> -value		
	Mean [95% CI]	Mean [95% CI]	Mean [95% CI]	Mean [95% CI]	Pict. vs Control	Rec. vs Control	Pict. Vs Rec.
Goat Meat	-14.69 [-16.37, -13.29]	-13.57 [-16.14, -11.43]	-15.94 [-19.20, -13.23]	-15.03 [-17.97, -12.61]	0.890	0.791	0.672
MAP	-1.29 [-2.04, -0.48]	-1.80 [-2.97, -0.55]	-1.30 [-2.75, 0.26]	-0.76 [-2.09, 0.64]	0.297	0.123	0.706
Vacuum	1.40 [0.79, 2.11]	0.21 [-0.74, 1.31]	2.16 [1.09, 3.42]	1.99 [0.83, 3.34]	0.007	0.015	0.422
Fresh	4.89 [4.17, 5.60]	4.54 [3.43, 5.64]	5.38 [4.06, 6.68]	4.85 [3.60, 6.10]	0.162	0.352	0.279
Neither	-23.70 [-25.86, -21.56]	-23.19 [-26.62, -19.82]	-23.32 [-27.27, -19.42]	-24.38 [-28.14, -20.68]	0.522	0.679	0.353

95% confidence intervals were calculated for WTP using the Krinsky Robb bootstrapping method

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95% confidence intervals were calculated for WTP using the Krinsky Robb bootstrapping method

DISCUSSION

- FL consumers prefer a lower price, Fresh from Florida, high quality, and USDA-certified attributes, and they are indifferent about whether a product is organically certified or not.
- Males, black and African Americans with higher incomes, as well as those who are of Hispanic descent, are more likely to prefer goat meat. In addition, goat meat consumers (51.6 % of the survey respondents) value quality, and Fresh from Florida attributes in meat.
- Information about health and/or environmental benefits can positively impact consumer perceptions and preferences toward goat meat. This type of information messaging can reduce the discount that consumers apply to goat meat compared to beef.

DISCUSSION

- On average US consumers prefer a lower price, beef meat compared to goat meat, vacuum packaging compared to store wrap packaging, and fresh meat compared to frozen.
- We found that in general respondents want an average \$13.64 discount and that showing pictures or recipes from goat meat will not increase willingness to pay.
- Finally, rather than concentrating on images or recipes, one of the most successful marketing strategies would be to highlight the health and environmental benefits of goat meat.

NEXT STEPS

- Our team is continuing to identify broader marketing opportunities for growers.
- Researching other differentiating factors that consumers care about such as environmental sustainability.
- Developing marketing strategies that can effectively communicate to consumers and drive demand for small ruminant meats and willingness to pay.
- New research will provide further insights into consumer demand and preferences for small ruminant meats and products.



THANK YOU!
QUESTIONS?



FOOD AND
RESOURCE
ECONOMICS

METHODS

- Random parameter logit model

$$U_{nit} = V_{nit} + \varepsilon_{nit}$$

$$V_{nit} = \beta_0 + \beta_1(\text{price}) + \beta_2(\text{flfresh}) + \beta_3(\text{quality}) + \beta_4(\text{organic}) + \beta_5(\text{goat}) + \beta_6(\text{neither}) + \varepsilon$$

$$V_{nit} = \beta_0 + \beta_1(\text{price}) + \beta_2(\text{goat}) + \beta_3(\text{MAP}) + \beta_4(\text{VC}) + \beta_5(\text{fresh}) + \beta_6(\text{neither}) + \varepsilon$$

- Willingness to pay for each attribute

$$WTP_k = -\left(\frac{\beta_k}{\beta_p}\right)$$

- Krinsky and Robb, and Poe Test

Lamb and Variety Meat Retail Identification Cuts¹

Brian Estevez, Chad Carr, and Larry Eubanks²

Lamb and Variety Meat Retail Identification Cuts includes all of the lamb and variety meat cuts, primals, and cooking methods that are included in the Florida 4-H Meat Judging Contest. This contest, coordinated by the Florida 4-H Animal Sciences program, develops life skills through activities related to the processing of beef, pork, and lamb, including retail identification, meat quality factors, and cooking methods.

1. This document is 4HASP03, one of a series of the 4-H Youth Development Department, UF/IFAS Extension. Original publication date December 2017. Reviewed February 2021. Visit the EDIS website at <https://edis.ifas.ufl.edu>.

2. Brian Estevez, Extension agent II, 4-H Youth Development Department, UF/IFAS Extension Escambia County; Chad Carr, associate professor, state meat Extension specialist; and Larry Eubanks, coordinator of research programs, Department of Animal Sciences; UF/IFAS Extension, Gainesville, FL 32611.

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Lamb Retail Identification Cuts

Breast



Ribs (Denver Style)



Leg



American Style



Center Slice



Frenched Style



Leg Roast (Bnls)



Sirloin Chop



Sirloin Half

Loin



Loin Chop



Loin Roast

Cookery Method



Dry



Dry/Moist



Moist

Rib



Rib Chop



Rib Chop (Frenched)



Rib Roast



Rib Roast (Frenched)

Shoulder



Arm Chop



Blade Chop



Square Cut (Whole)

Various



Shank

Variety Meat Retail Identification Cuts

Heart/ Kidney



Beef Heart



Pork Heart



Lamb Heart



Beef Kidney



Pork Kidney



Lamb Kidney

Liver/ Oxtail



Beef Liver



Pork Liver



Lamb Liver



Oxtail

Tongue/ Tripe



Beef Tongue



Pork Tongue



Lamb Tongue



Tripe