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Effects of Increased Pork Hot Carcass Weights. I: Chop Thickness Impact on Consumer Visual Ratings[1,2]

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Abstract: The objective of this study was to evaluate the effect of increased pork hot carcass weights on consumer visual acceptability and purchase intent ratings of top loin chops cut to various thicknesses in a price labeled versus unlabeled retail display scenario. Pork loins ($N = 200$) were collected from 4 different hot carcass weight groups: light weight (LT; less than 111.8 kg), medium-light weight (MLT; 111.8 to 119. kg), medium-heavy weight (MHVY; 119.1 to 124.4 kg), and a heavy weight group (HVY; 124.4 kg and greater). Loins were fabricated into 4 pairs of chops of specified thicknesses (1.27, 1.91, 2.54, and 3.18 cm). One chop from each pair was assigned to be packaged with or without a label. Consumers assessed chops for appearance, desirability, and purchase intent. For both appearance and purchase intent ratings, chops from HVY carcasses were given more desirable ($P < 0.05$) ratings compared to LT chops. Consumers gave greater ($P < 0.05$) appearance ratings to thicker cut chops. There was a hot carcass weight × chop thickness interaction ($P < 0.05$) for the percentage of consumers that indicated the chop was desirable overall. Regardless of hot carcass weight group, chops with a thickness of 1.27 cm had the lowest ($P < 0.05$) percentage of consumers indicate they were desirable overall. A greater ($P < 0.05$) percentage of consumers indicated "yes" they would purchase chops cut to a thickness of 2.54 cm compared to all other thicknesses. Additionally, there was a greater ($P < 0.05$) percentage of consumers who indicated they would purchase unlabeled chops compared to labeled chops. These results, within the population sampled, indicate that carcass weight and chop thickness can affect consumer preference and thus should be considered by retailers when marketing fresh pork loin chops.

Keywords: consumer preference, heavy pigs, hot carcass weight, pork quality, visual evaluation
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Introduction

Hot carcass weights of pigs have been steadily increasing in the United States as the pork industry has been successful in their efforts to increase growth efficiency and improve genetic selection of lean-type pigs (Wu et al., 2017). These advancements have resulted in a

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trend for hot carcass weights to increase by an average of 0.59 kg/yr since 1995 (USDA-NASS, 2019). If this trend continues, it will impact hot carcass weight as well as the resulting size, weight, and the thickness of the resulting retail cuts from these carcasses. It is currently unknown what effect these changes will have on consumer acceptance and purchase intent of pork sold at retail.

The preferences consumers have when purchasing fresh meat are important to the meat industry, as consumers will not purchase a product that does not meet their expectations (Font-i-Furnols and Guerrero, 2014). Consumers are typically more willing to purchase fresh pork in a retail setting if the product has visual characteristics that they consider desirable (Dransfield et al., 2005). Historically, research has indicated that consumers rely heavily on color and marbling when purchasing fresh pork in a retail setting (Brewer et al., 2001; Norman et al., 2003), but it is unclear if these traits remain the major drivers when portion size is altered due to increased carcass weights. Within the beef industry, research has shown consumers more readily select thicker cut steaks compared to thinner cut steaks (Sweeter et al., 2005). Furthermore, in some instances, consumers find thickness, rather than price, to be the most important factor in fresh beef steak selection (Leick et al., 2012). As these previous studies indicate, consumers rely heavily on thickness when making purchasing decisions. Chop thickness will inevitably be impacted by increased pork carcass weight as the industry continues to utilize portion-controlled cutting for chops at retail. As carcass weights increase, it will result in thinner portion-controlled chops (Leick et al., 2011) and will ultimately impact consumer purchase decisions. However, there are no studies currently demonstrating how consumer purchase intent is affected by variability in chop size and thickness in fresh pork. Therefore, the objective of this study was to determine the impact of increased carcass weight and varying chop thicknesses on consumer preference and purchase intent of pork top loin chops.

Materials and Methods

The Kansas State University (KSU) Institutional Review Board approved the procedures used in this study (IRB 7440.4, Nov. 2017).

Loin collection, fabrication, and packaging

The pigs used in this study were intentionally raised to reach heavier live weights compared to today's industry standard. Briefly, Lerner et al. (2018) described how 976 pigs were fed to reach heavier market weights to determine the impact of space allotment on growth performance. Pigs used in this experiment were originated from common genetic lines (PIC 327 boar × Camborough female) to be representative of the US commercial swine industry. At the commercial farm, pigs were allotted to 1 of 6 pen floor space or marketing treatments selected to elicit differences in final body weight. All pigs utilized for carcass and meat quality response criteria were marketed at the final barn marketing over 2 d. At the conclusion of the 160-d trial, pigs were transported to a commercial Midwest processor where harvest took place on 2 separate days over a 3-d period. At harvest, carcasses were sorted by hot carcass weight into a light group (LT; under 111.8 kg), medium light group (MLT; 111.8 to 119.1 kg), medium heavy group (MHVY; 119.1 to 124.4 kg), and heavy group (HVY; 119.1 to 124.4 kg). Twenty-five whole boneless pork loins (Institutional Meat Purchase Specification #413; North American Meat Institute, 2014) from each weight treatment group were selected from random carcasses on each harvest day (N = 200). They were then vacuum packaged and transported to the KSU Meat Laboratory and stored at 2 to 4°C until fabrication.

Loins were fabricated on Day 7, 8, or 9 postmortem (32 to 36 loins/d) the morning prior to consumer visual panels. Loins were cut immediately posterior to the *M. spinalis dorsi* and the posterior end of the loin was used for all analyses. Posterior loin sections were then fabricated from anterior to posterior with consecutively cut chops paired. Each pair was cut to 1 of 4 predetermined chop thicknesses (1.27, 1.91, 2.54, and 3.18 cm) using a cutting guide with the order of the thicknesses randomized for each loin. After fabrication, chops were individually weighed, and pressed on blotting paper (Whatman gel blotting paper, 46 × 57 cm, grade 601; Sigma-Aldrich, St. Louis, MO), with the blotted chop outline traced to later measure chop length, width, and loin eye area. Care was taken during blotting to ensure that the size of the chops were not distorted due to thickness. Chop length and width were measured at the widest and longest points on the chop outline (Fig. 1). Loin eye area was measured using a USDA grid with equally spaced dots measuring in 0.6 cm^2, excluding accessory muscles surrounding the *M. longissimus dorsi.* Length, width, and loin eye area for each chop was measured by 2 different KSU team members and the values were averaged for each measurement.

One chop from each thickness pair was designated to labeled consumer visual analysis and the mirror chop was designated to unlabeled visual panels. Chops

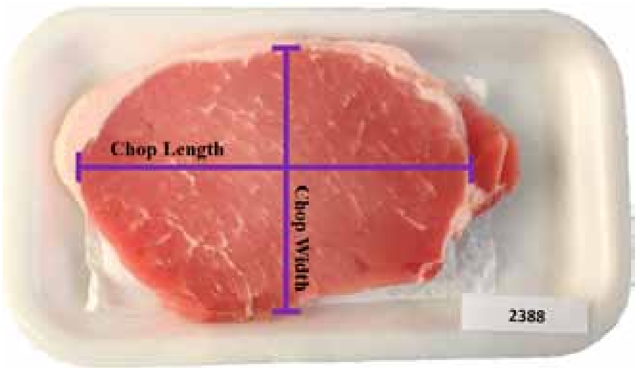

Figure 1. Dimensional measurements for pork top loin chops.

designated for unlabeled visual panels were individually placed on styrofoam trays (#17S, white; Dyne-a-Pak, Toronto, ON, Canada) with an absorbent pad. Chops designated for labeled panels were individually placed with an absorbent pad on larger styrofoam trays (#34, white; Dyna-Pak) to accommodate the label without covering the chop. All chops were then overwrapped with a PVC film (HIYG Gold Stretch Meat film, O_2 transmission rate = 1191 cm^3/0.065 m^2/24 h, Berry Plastics Corporation, Evansville, IN). Additionally, for chops assigned to labeled visual panels, a KSU Meat Laboratory fresh meat product label containing cut identifications, package weight, package price/lb., and total price was placed on the right side of the package to avoid covering the chop (Fig. 2). Price per lb was determined by averaging prices at local grocery stores to obtain an average price ($4.52/lb) for the Manhattan, KS, area in the week prior to panels. Both labeled and unlabeled packages were labeled with an individual 4-digit code. Chops were held at 2 to 4°C until consumer panels were conducted.

Immediately prior to consumer visual evaluation, instrumental color readings and visual color and marbling scores were determined. Instrumental color values were assessed through the packaging using a Hunter Lab Miniscan spectrophotometer (Illuminant A, 2.54-cm aperture, 10° observer, Hunter Lab Associates Laboratory, Reston, VA). Visual color and marbling scores were assigned by a trained KSU team member according to the National Pork Producers Council pork quality standards (National Pork Producers Council, 1999). Additionally, chops were vacuum packaged immediately after consumer panels, aged to 10 d postmortem, and frozen at –40°C prior to further analyses (Rice et al., 2019).

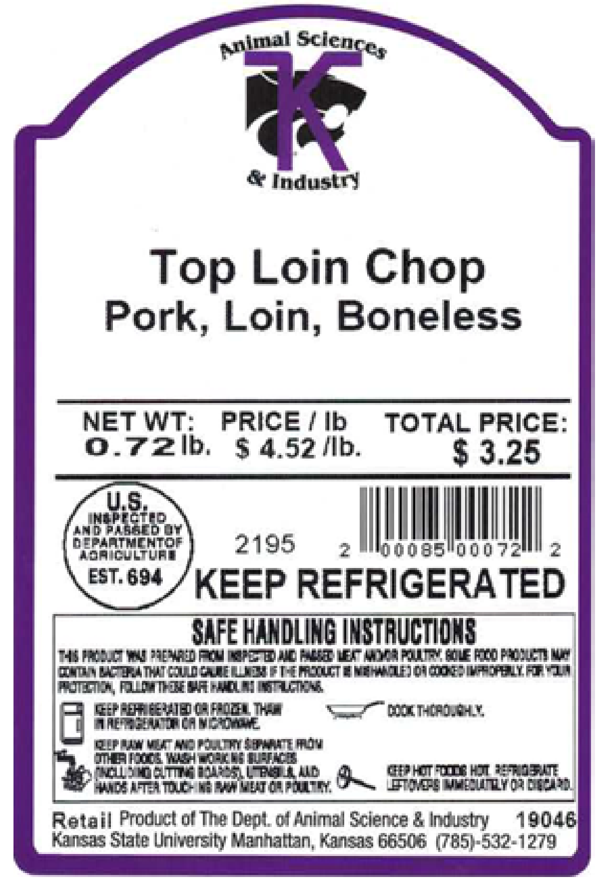

Figure 2. Kansas State University fresh meat label used on labeled pork chops in consumer visual sensory panels.

Consumer visual panels

Panelists (*N* = 393) were recruited from Manhattan, KS and surrounding areas and paid for their participation. Panels were conducted in the KSU Color Laboratory. Panelists were provided an electronic tablet (Model 5709 HP Stream 7; Hewlett-Packard, Palo Alto, CA) with a digital survey (Version 2417833; Qualtrics Software, Provo, UT) to evaluate chops. Appearance and purchase intent were evaluated on continuous line scales with anchors at 0 (extremely undesirable/extremely unlikely to purchase), 50 (neither desirable or undesirable/would neither purchase or not purchase), and 100 (extremely desirable/extremely likely to purchase). Consumers were also asked to determine if each chop was desirable or undesirable (yes/no) overall and if they would or would not purchase each individual chop. If the consumer indicated they would not purchase a chop, they were then prompted to indicate a reason why: "color", "firmness", "chop size", "chop thickness", "marbling", "external fat", or "other". For labeled chops, consumers were given additional options of price/lb, total package price, and

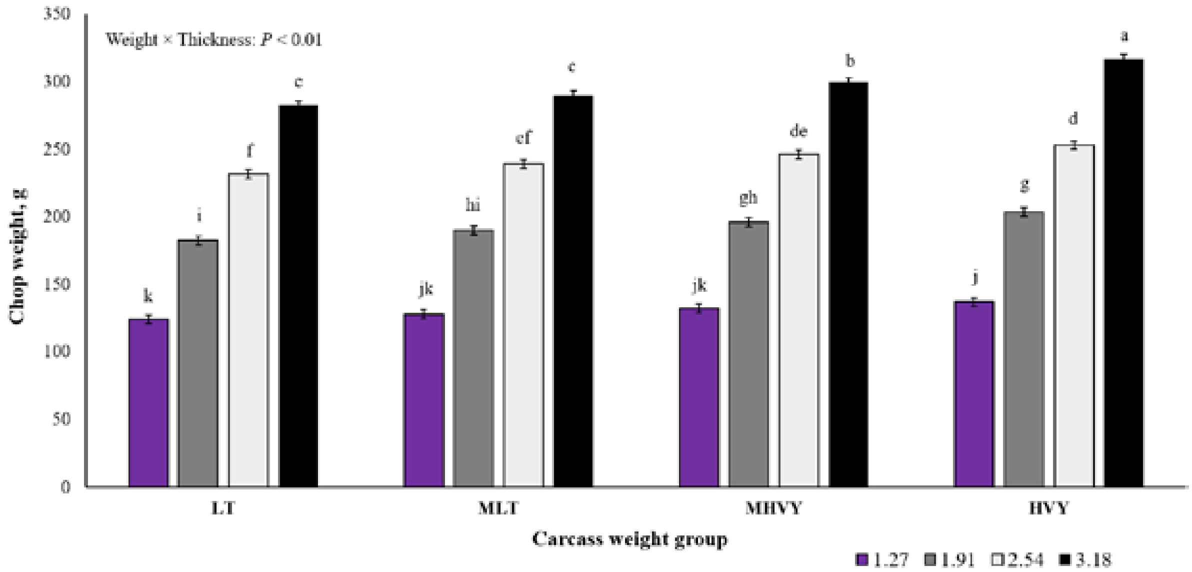

Figure 3. Hot carcass weight × chop thickness interaction ($P < 0.01$) for pork top loin chop weight (g) of chops from 4 different hot carcass weight groups and 4 different chop thicknesses. [abcdefghijk]Least squares means lacking a common superscript differ ($P < 0.05$). Carcass weight groups: LT = under 111.8 kg, MLT = 111.8 to 119.1 kg, MHVY = 119.1 to 124.4 kg, and HVY = 124.4 kg and above.

total package weight. If the consumer chose “other”, they had the opportunity to type an open-ended response. Consumers could select more than one reason for a “no” response. Each panel consisted of 8 panelists. Both labeled and unlabeled chops were displayed in 2 separate coffin style cases (model DMF8; Tyler Refrigeration Corp., Niles, MI) at 2 to 4°C under fluorescent lights (32 W Del-Warm White 3000°K; Phillip Lighting Co., Somerset, NJ) which emitted an average intensity of 2230 ± 34 lx to replicate a retail experience. Panelists were first asked to fill out a demographics survey and, after further instructions, were taken to a retail case containing the 16 unlabeled packages (one from each weight treatment × chop thickness combination). The survey program randomly assigned the order each chop was viewed by each consumer. After completing the evaluation of the first case, consumers were prompted by the survey to proceed to the second case containing labeled packages with the paired chops from the unlabeled evaluations, and chops were evaluated using the same procedures described above. Panels were conducted over 6 d, with 8 to 9 panel sessions per day, with each panel session consisting of 8 panelists. Each panel lasted approximately 30 min and each consumer was only allowed to participate once.

Statistical analyses

Statistical analyses were performed using the PROC GLIMMIX procedure of SAS (SAS Version 9.4; SAS Inst. Inc., Cary, NC). Data were analyzed as a split-plot design. The model included the whole plot factor of weight treatment and subplot factors of chop thickness, label type, and all interactions. For all acceptability data, a model with binomial error distribution was used. For all analyses, the Kenward-Roger approximation was used and α was set at 0.05. The PDIFF option was used to separate means when the overall treatment effect or effect of interactions were significant ($P < 0.05$). For interactions, the SLICE option was used to restrict comparisons to within a single factor.

Results

The effect of hot carcass weight and chop thickness on chop size

There was a hot carcass weight × chop thickness interaction ($P < 0.05$) for chop weight represented in Fig. 3. As chop thickness increased, the chops from all weight treatments became heavier ($P < 0.05$) compared to thinner chops. Additionally, within each thickness, chops from the HVY weight treatment were heavier ($P < 0.05$) than chops form the LT weight treatment. But as chops became thinner, fewer differences were found among the weight treatment groups, with no difference ($P > 0.05$) found among the 3 lightest weight treatments when chops were cut to 1.27 cm. The main effects of hot

Table 1. Least squares means for size measurements and subjective color and marbling scores of pork top loin chops

	Loin eye area, cm^2	Width, cm	Length, cm
Carcass weight[1]			
LT	72.4[c]	7.3	12.0[b]
MLT	75.1[bc]	7.4	12.0[b]
MHVY	76.2[b]	7.5	12.2[b]
HVY	80.9[a]	7.7	12.6[a]
SEM[2]	1.17	0.10	0.10
P-value	< 0.01	0.07	< 0.01
Chop thickness, cm			
1.27	74.9[b]	7.5	12.3[a]
1.91	75.9[ab]	7.4	12.1[b]
2.54	77.1[a]	7.5	12.4[a]
3.18	76.4[a]	7.5	12.1[b]
SEM[2]	0.71	0.09	0.06
P-value	< 0.01	0.84	< 0.01

[a–c]Least squares means within weight treatment or chop thickness differ ($P < 0.05$).

[1]Carcass weight groups: LT = under 111.8 kg, MLT = 111.8 to 119.1 kg, MHVY = 119.1 to 124.4 kg, and HVY = 124.4 kg and greater.

[2]SEM = (largest) of the least square means in the same section of the same column.

Table 2. Hot carcass weight × chop thickness interaction ($P = 0.04$) for instrumental lightness (L*)[1] color readings

Carcass weight[2]	Chop thickness, cm 1.27	1.91	2.54	3.18
LT	58.7[ab]	58.1[b]	58.4	58.4
MLT	58.8[a]	58.7[a]	58.5	58.3
MHVY	58.0[b]	58.1[b]	58.0	57.9
HVY	58.6[ab]	58.0[b]	58.1	58.4
SEM[3]	0.50	0.50	0.50	0.50
P-value	0.02	0.04	0.08	0.06

[a,b]Least squares means within a chop thickness differ ($P < 0.05$).

[1]L* = lightness; 0 = black and 100 = white.

[2]Carcass weight groups: LT = under 111.8 kg, MLT = 111.8 to 119.1 kg, MHVY = 119.1 to 124.4 kg, and HVY = 124.4 kg and greater.

[3]SEM = (largest) of the least square means in the same column.

carcass weight and chop thickness for chop size measurements are reported in Table 1. As hot carcass weight increased, there was an increase ($P < 0.05$) in loin eye area, with chops from the HVY weight treatment being larger than all other weight categories, and chops from LT weight treatment being smaller ($P < 0.05$) than all other treatments, other than MLT. Additionally, chops from the HVY hot carcass weight treatment were longer ($P < 0.05$) than all other weight treatments, which were all similar ($P > 0.05$) in length. However, no differences ($P > 0.05$) were found among all weight treatments for chop width. There was also an increase ($P < 0.05$) in chop size due to chop thickness. Chops with a thickness of 2.54 and 3.18 cm had a greater ($P < 0.05$) loin eye area compared to chops with a thickness of 1.27 cm, with chops cut to a thickness of 1.91 cm being similar ($P > 0.05$) in loin eye area to all thicknesses. There were no differences ($P > 0.05$) in chop width among all chop thickness treatments. For chop length, chops cut to a thickness of 1.27 and 2.54 cm were similar ($P > 0.05$) with greater ($P < 0.05$) chop lengths than chops cut to thickness of 1.91 and 3.81 cm. Although there were statistical differences for loin eye area and chop length when chops were cut to different thicknesses, these differences were minimal (all treatments differing by no more than 2.2 cm^2 and 0.3 cm).

Chop color and marbling

There was a hot carcass weight × chop thickness interaction ($P < 0.05$; Table 2) for L* color readings. Chops cut to a thickness of 1.27 cm from the MLT carcasses had greater ($P < 0.05$) L* values (lighter) compared to chops from the MHVY carcasses. Additionally, chops cut to a thickness of 1.91 cm within the MLT carcasses had greater ($P < 0.05$) L* values compared to chops from all other hot carcass weight treatments. No differences ($P > 0.05$) were found among weight treatment groups when chops were cut to either 2.54 or 3.18 cm. There was a label type × chop thickness interaction ($P < 0.05$; Table 3) for a* values (redness). With the exception of chops cut to a thickness of 2.54 cm, labeled chops had greater a* values compared to unlabeled chops.

There was also a hot carcass weight × chop thickness interaction ($P < 0.05$; Table 4) for visual marbling scores. When chops were cut to a thickness of 2.54 cm, chops from the HVY hot carcass weight treatment group had greater ($P < 0.05$) subjective marbling scores compared to chops from both the LT and MHVY weight treatment groups, with chops from the MLT weight treatment being similar ($P > 0.05$) to all other weight treatments. When the chops were cut to a thickness of 3.18 cm, chops from the MLT and HVY weight treatments were similar ($P > 0.05$) for visual marbling scores and greater ($P < 0.05$) than chops from the LT and MHVY hot carcass weight groups. No differences ($P > 0.05$) were found among weight groups for visual color scores when chops were cut to 1.27 or 1.91 cm thicknesses.

The main effect for instrumental chop color and visual chop color and marbling are presented in Table 5. For instrumental color readings, no differences ($P > 0.05$) were found for both a* and b* color readings

Table 3. Label type × chop thickness interaction (P = 0.03) for instrumental redness (a*)[1] color readings for pork top loin chops from carcasses of various weights cut to 4 chop thicknesses

	Chop thickness, cm			
Label type[2]	1.27	1.91	2.54	3.18
Labeled	18.7[a]	17.7[a]	17.5	17.5[a]
Unlabeled	18.2[b]	17.5[b]	17.4	17.3[b]
SEM[3]	0.08	0.08	0.08	0.08
P-value	< 0.01	0.03	0.06	< 0.01

[a,b]Least squares means within a chop thickness differ (P < 0.05).

[1]a* = redness; –60 = green and 60 = red.

[2]Package label: labeled packages contained price and weight information on a label on the package and unlabeled packages did not contain a label.

[3]SEM = (largest) of the least square means in the same column.

Table 4. Hot carcass weight × chop thickness interaction (P = 0.02) for visual marbling scores[1] for pork top loin chops from varying hot carcass weights with 4 different chop thicknesses

Carcass	Chop thickness, cm			
weight[1]	1.27	1.91	2.54	3.18
LT	2.4	2.3	2.2[b]	2.2[b]
MLT	2.4	2.5	2.5[ab]	2.6[a]
MHVY	2.3	2.4	2.3[b]	2.2[b]
HVY	2.5	2.5	2.6[a]	2.6[a]
SEM[3]	0.10	0.10	0.10	0.10
P-value	0.20	0.10	< 0.01	< 0.01

[a,b]Least squares means within a chop thickness differ (P < 0.05).

[1]Marbling score: 1 to 10, according to the National Pork Board marbling standards.

[2]Carcass weight groups: LT = under 111.8 kg, MLT = 111.8 to 119.1 kg, MHVY = 119.1 to 124.4 kg, and HVY = 124.4 kg and greater.

[3]SEM = (largest) of the least squares means in the same column.

among hot carcass weight treatment groups. However, b* was affected by chop thickness as chops cut to a thickness of 1.27 also had greater (P < 0.05) b* (more yellow) readings compared to all other treatments. There were no differences (P > 0.05) between label types for L* values, but labeled chops possessed greater (P < 0.05) b* values compared to unlabeled chops.

There were no differences (P > 0.05) among hot carcass weight treatment groups for visual color scores. However, chops cut to a thickness of 1.27 cm had a lower (P < 0.05) visual color scores compared to all other treatments, which were similar (P > 0.05). Additionally, labeled chops had a greater (P < 0.05) visual color scores compared to unlabeled chops, while no differences (P > 0.05) were found between label types for visual marbling scores.

Consumer demographics

The data obtained from the demographics portion of the survey are summarized in Table 6. Of the 393 consumers who participated, over half (52%) were female, and a majority were Caucasian (82.4%). Additionally, 60.2% were between the ages of 20 to 39 yr and 29.6% were over the age of 40. A majority (53.0%) of consumers indicated they had obtained a college degree or had completed post-graduate work. Of these consumers, 90.7% ate pork from 1 to 5 times a week, and 82% preferred their pork cooked from medium to well done. Consumers indicated the most important palatability trait when consuming pork was flavor (42.9%).

Additionally, consumers were asked what quality trait was most important to them when purchasing fresh pork in a retail setting. The greatest percentage (32.8%) of consumers indicated that price/lb was the most important purchasing motivator followed closely by color (30.3%), and chop size (13.7%).

Visual consumer ratings

Consumers were asked to indicate on a continuous line scale an overall appearance rating and their purchase intent for each sample (Table 7). Both appearance and purchase intent ratings were affected by hot carcass weight treatment. For both appearance and purchase intent ratings, chops from the HVY and MHVY hot carcass weight treatment groups were similar (P > 0.05; within 1.5 units) and had greater (P < 0.05) ratings than chops from the LT hot carcass weight treatment (>2 units different). Chops from the MLT hot carcass weight treatment were similar (P > 0.05) to both the MHVY and LT weight treatments (all differed by ≤ 2 units). As chop thickness increased, there was an increase (P < 0.05) in consumer appearance ratings, with chops cut to thicknesses of 2.54 and 3.18 cm being similar (P > 0.05) and having greater (P < 0.05) appearance ratings compared to all other thicknesses. Chops cut to thicknesses of 2.54 and 1.91 cm were similar (P > 0.05) and had greater (P < 0.05) purchase intent ratings compared to chops cut to a thickness of 1.27 cm. Chops cut to thicknesses of 1.91 and 3.18 cm were similar (P > 0.05) for consumer purchase intent ratings. Chops cut to a thickness of 1.27 cm had both the lowest (P < 0.05) consumer appearance ratings and consumer purchase intent ratings. There were no differences (P > 0.05) between label types for both appearance and purchase intent ratings.

In addition, consumers were asked to indicate "yes" or "no" on whether the appearance was desirable and

Table 5. Least squares means for the main effect for L*, a*, and b*, and visual color and marbling scores for pork top loin chops of varying thicknesses from different hot carcass weight groups

Treatment	L*[1]	a*[2]	b*[3]	Color[4]	Marbling[5]
Carcass weight[6]					
LT		17.7	16.1	4.0	2.2[c]
MLT		17.6	16.0	4.1	2.5[ab]
MHVY		17.8	16.0	4.1	2.3[bc]
HVY		17.8	16.1	4.2	2.6[a]
SEM[7]		0.17	0.17	0.77	0.09
P-value		0.86	0.91	0.37	0.02
Chop thickness, cm					
1.27			16.4[a]	4.0[b]	2.4
1.91			15.9[b]	4.1[a]	2.4
2.54			15.9[b]	4.1[a]	2.4
3.18			15.9[b]	4.1[a]	2.4
SEM[7]			0.09	0.04	0.05
P-value			< 0.01	< 0.01	0.11
Package label[8]					
Labeled	58.3		16.2[a]	4.2[a]	2.4
Unlabeled	58.2		15.9[b]	4.0[b]	2.4
SEM[7]	0.17		0.09	0.04	0.05
P-value	0.18		< 0.01	< 0.01	0.89

[a–c]Least squares means within carcass weight, chop thickness, or package label type differ ($P < 0.05$).

[1]L* (lightness; 0 = black and 100 = white).

[2]a* (redness; –60 = green and 60 = red).

[3]b* (yellowness; –60 blue and 60 = yellow).

[4]Color scale: 1 to 6, according to the National Pork Board Color Standards.

[5]Marbling score: 1 to 10, according to the National Pork Board Marbling Standards.

[6]Carcass weight groups: LT = under 111.8 kg, MLT = 111.8 to 119.1 kg, MHVY = 119.1 to 124.4 kg, and HVY = 124.4 kg and greater.

[7]SEM = (largest) of the least square means in the same section of the same column.

[8]Package label: labeled packages contained price and weight information on a label on the package and unlabeled packages did not contain a label.

if they would purchase the package. There was a hot carcass weight × chop thickness interaction ($P < 0.05$; Table 8) for the percentage of consumers who indicated "yes" the overall chop appearance was desirable. Within all weight treatments, the lowest ($P < 0.05$) percentage of consumers rated chops with a thickness of 1.27 cm as "yes" they were desirable overall (all ≤54%). Additionally, chops with a thickness of 3.18 cm had a lower ($P < 0.05$) percentage of consumers who indicated they were desirable compared 1.91 and 2.54 cm chops in both the MLT and MHVY weight treatments. For the percentage of consumers who indicated "yes" they would purchase, no differences ($P > 0.05$) were found among hot carcass weight treatments (62.0 to 66.8%). A greater ($P < 0.05$) percentage of consumers (73.9%) indicated "yes" they would purchase chops cut to a thickness of 2.54 cm compared to all other thicknesses, with the lowest ($P < 0.05$) percentage of consumers (45.9%) indicating "yes" they would purchase chops cut to a thickness of 1.27 cm. Additionally, a greater ($P < 0.05$) percentage of consumers indicated "yes" they would purchase chops in unlabeled packages compared to chops in labeled packages.

If a consumer indicated "no" they would not purchase a certain chop, the survey would then prompt the consumer to give more information as to why they would not purchase. There was a hot carcass weight × chop thickness interaction ($P < 0.05$) for the percentage of consumers who indicated "no" they would not purchase due to chop "size" presented in Table 9. A greater ($P < 0.05$) percentage of consumers indicated "no" they would not purchase chops cut to a thickness of 1.27 cm due to chop "size" within the LT, MLT, and MHVY hot carcass weight treatments. No differences ($P > 0.05$) were found among chop thicknesses for the percentage of consumers who indicated "no" they would not purchase due to chop "size" within the HVY hot carcass weight treatment. There was also a chop thickness × label type interaction ($P < 0.05$; Table 10) for the percentage of consumers who indicated "no" they would not purchase due to "color". For chops cut to thicknesses of 1.27 and 1.91 cm, a greater ($P < 0.05$) percentage of consumers indicated they would not purchase due to "color" for unlabeled chops. However, there was the opposite effect for chops with a thickness of 3.18 cm, with a greater ($P < 0.05$) percentage of consumers that indicated "no" they would not purchase labeled chops due to "color". No differences ($P > 0.05$) were found between label types for chops cut to a thickness of 2.54 cm.

The main effect data for the reasons stated by consumers for not intending to purchase are presented in Table 11. There were no differences ($P > 0.05$) among hot carcass weight treatments for the percentage of consumers who indicated "no" they would not purchase due to chop "firmness", "marbling", "thickness", "external fat", "shape", "purge", "price/kg", "total package weight", "total package price", or "other".

Chop thickness did impact the reason consumers indicated they would not purchase chops. A greater ($P < 0.05$) percentage of consumers indicated "no" they would not purchase chops cut to a thickness of 1.91 cm compared to 1.27 cm thick chops due to "firmness". However, chops cut to a thickness of 2.54 and 3.18 cm were similar ($P > 0.05$) to all other thicknesses for the percentage of consumers who would not purchase due to "firmness". For "marbling", chops with a thickness of 1.91 and 2.54 cm were similar ($P > 0.05$),

Table 6. Demographic characteristics of consumers ($N = 393$) who participated in consumer visual panels

Characteristic	Response	Percentage of consumers
Gender	Male	48.0
	Female	52.0
Household size	1 person	15.1
	2 people	24.2
	3 people	18.4
	4 people	25.0
	5 people	7.9
	6 people	9.4
Marital status	Married	43.1
	Single	56.9
Age	Under 20	10.2
	20 to 29	46.9
	30 to 39	13.3
	40 to 49	12.8
	50 to 59	9.7
	Over 60	7.1
Ethnic origin	African-American	1.8
	Asian	4.1
	Caucasian/white	82.4
	Hispanic	5.1
	Mixed race	4.1
	Native American	0.5
	Other	2.0
Income	Under $25,000	26.1
	$25,000 to $34,999	10.0
	$35,000 to $49,999	11.3
	$50,000 to $74,999	13.3
	$75,000 to $99,999	13.0
	$100,000 to $149,999	14.6
	$150,000 to $199,999	7.4
	> $199,999	4.1
Education level	Did not graduate high school	0.3
	High school graduate	9.2
	Some college/technical school	37.5
	College graduate	31.3
	Post college graduate	21.7
Most important palatability trait when consuming pork	Tenderness	31.6
	Juiciness	25.4
	Flavor	42.9
Most important visual trait when purchasing fresh pork	Chop color	30.3
	Chop firmness	2.3
	Chop size	13.7
	Marbling	9.7
	Price/kg	32.8
	Total price	9.9
	Other	1.3
Preferred degree of doneness when consuming pork	Rare	1.4
	Medium rare	12.0
	Medium	26.1
	Medium well	28.1
	Well done	27.8
	Very well done	4.6
Weekly pork consumption	1 to 5 times	90.7
	6 to 10 times	7.7
	11 or more times	1.6

Table 7. Least squares means for consumer ($N = 393$) visual ratings for appearance and purchase intent for chops of various thicknesses from carcasses of various weight groups

Treatment	Appearance rating[1]	Purchase intent rating[2]	Percentage that would purchase[3]
Carcass weight[4]			
LT	61.1[c]	58.9[c]	62.0
MLT	62.1[bc]	59.7[bc]	63.7
MHVY	63.1[ab]	60.9[ab]	65.9
HVY	64.5[a]	62.2[a]	66.8
SEM[5]	0.90	0.10	0.80
P-value	< 0.01	< 0.01	0.08
Chop thickness, cm			
1.27	54.8[c]	51.9[c]	45.9[d]
1.91	64.1[b]	63.2[ab]	71.5[b]
2.54	66.3[a]	64.3[a]	73.9[a]
3.18	65.7[a]	62.3[b]	65.0[c]
SEM[5]	0.80	0.91	0.77
P-value	< 0.01	< 0.01	< 0.01
Package label[6]			
Labeled	62.8	60.2	63.2[b]
Unlabeled	62.7	60.7	66.0[a]
SEM[5]	0.74	0.84	0.66
P-value	0.83	0.36	< 0.01

[a–c]Least squares means within the same main effect (carcass weight, chop thickness, and package label) differ ($P < 0.05$).

[1]Consumer appearance ratings: 0 = extremely undesirable; 100 = extremely desirable.

[2]Consumer purchase intent ratings: 0 = extremely unlikely to purchase; 100 = extremely likely to purchase the chop.

[3]Percentage of consumers who indicated "Yes" they would purchase the chop.

[4]Carcass weight groups: LT = under 111.8 kg, MLT = 111.8 to 119.1 kg, MHVY = 119.1 to 124.4 kg, and HVY = 124.4 kg and above.

[5]SEM = (largest) of the least squares means in the same section of the same column.

[6]Package label: labeled packages contained price and weight information on a label on the package and unlabeled packages did not contain a label.

with a greater ($P < 0.05$) percentage of consumers who indicated they would not purchase due to "marbling" compared to chops cut to a thickness of 1.27 and 3.18 cm. Among chop thickness groups, chops cut to the thicknesses of 1.27 and 3.18 cm were similar ($P > 0.05$), with the greatest ($P < 0.05$) percentage of consumers who indicated they would not purchase due to chop "thickness". Additionally, chops cut to a thickness of 1.91 cm had the lowest ($P < 0.05$) percentage of consumers who indicated they would not purchase due to chop "thickness". For "total package weight", a greater ($P < 0.05$) percentage of consumers indicated they would not purchase chops cut to a thickness of 3.18 cm compared to chops cut to both 1.91 and 2.54 cm. For "total package price", a greater

Table 8. Hot carcass weight × chop thickness interaction ($P = 0.02$) for the percentage of consumers who indicated "yes" the chop was overall desirable.

Chop thickness, cm	Carcass weight[1] LT	MLT	MHVY	HVY
1.27	54.0[c]	55.9[c]	57.2[b]	61.8[c]
1.91	73.1[a]	73.6[a]	73.9[a]	70.3[b]
2.54	70.5[ab]	73.5[a]	73.6[a]	78.5[a]
3.18	65.8[b]	66.4[b]	71.6[a]	69.7[b]
SEM[2]	2.20	2.20	2.20	2.10
P-value	< 0.01	< 0.01	< 0.01	< 0.01

[a–c]Least squares means within the same column differ ($P < 0.05$).

[1]Carcass weight groups: LT = under 111.8 kg, MLT = 111.8 to 119.1 kg, MHVY = 119.1 to 124.4 kg, and HVY = 124.4 kg and greater.

[2]SEM = (largest) of the least squares means in the same column.

($P < 0.05$) percentage of consumers indicated they would not purchase chops cut to a thickness of 3.18 cm compared to chops cut to both 1.91 and 1.27 cm. There were no differences ($P > 0.05$) found between label types for the percentage of consumers who indicated "no" they would not purchase a chop for chop "firmness", "marbling", "thickness", "external fat", "purge", and "other".

Discussion

As hot carcass weights in the US pork industry increase, there should be an expected increase in the size of the retail cuts that come from these carcasses. This relationship between hot carcass weight and yield was demonstrated in pork by Cisneros et al. (1996) who observed an increase in the weight of boneless trimmed cuts as slaughter weight increased. Additionally, other studies in beef have yielded similar results (Abraham et al., 1980; Leick et al., 2011). Many different factors can affect consumer purchasing decisions. Although there are many sub-factors, visual sensory characteristics such as lean color, marbling, cut size and thickness, in addition to price have been shown to drive consumer purchasing decisions (Font-i-Furnols and Guerrero, 2014). In a study by Leick et al. (2012) that evaluated ribeye, sirloin, and top loin beef steaks of varying hot carcass weights and steak thicknesses, the authors asked consumers to rank factors such as color, marbling, steak thickness, price, and texture for steaks. For all cuts, they reported consumers ranked visual factors such as color, marbling, and steak thickness to be more important when making purchasing decisions than price (Leick et al., 2012). Additionally, consumers placed a great deal of value on the steak thickness, indicating that thick-

Table 9. Hot carcass weight × chop thickness interaction ($P = 0.02$) for the percentage of consumers who indicated "no" they would not purchase the chop due to chop size

Chop thickness, cm	Carcass weight[1] LT	MLT	MHVY	HVY
1.27	22.9[a]	19.0[a]	20.0[a]	12.2
1.91	16.4[b]	12.4[b]	9.8[b]	7.6
2.54	8.6[c]	14.3[ab]	8.1[b]	10.7
3.18	10.6[c]	9.8[b]	10.7[b]	11.8
SEM[2]	2.60	2.68	2.31	2.47
P-value	< 0.01	0.03	0.01	0.07

[a–c]Least squares means within hot carcass weight differ ($P < 0.05$).

[1]Carcass weight groups: LT = under 111.8 kg, MLT = 111.8 to 119.1 kg, MHVY = 119.1 to 124.4 kg, and HVY = 124.4 kg and above.

[2]SEM = (largest) of the least squares means in the same column.

Table 10. Chop thickness × label type interaction ($P < 0.01$) for the percentage of consumers who indicated "no" they would not purchase due to chop color

Label type[1]	Chop thickness, cm 1.27	1.91	2.54	3.18
Labeled	7.8[b]	19.4[b]	19.6	13.6[a]
Unlabeled	12.8[a]	25.8[a]	23.1	8.6[b]
SEM[2]	1.24	2.23	2.29	1.42
P-value	< 0.01	0.03	0.23	< 0.01

[a–c]Least squares means in the same column differ ($P < 0.05$).

[1]Package label: labeled packages contained price and weight information on a label on the package and unlabeled packages did not contain a label.

[2]SEM = (largest) of the least squares means in the same column.

ness was the most important purchasing factors when selecting sirloin steaks (Leick et al., 2012). Fewer studies have evaluated consumer purchasing motivators for pork, but the published work has suggested consumers rely heavily on color and marbling when making their purchasing decisions (Brewer et al., 2001; Norman et al., 2003). Therefore, it is important that as carcass weights increase in the US swine industry, the subsequent increase in size of chops will not lead to negative effects on the quality traits of color and marbling. It is also important that consumers find the resulting increase in the size of retail cuts acceptable.

The effect of hot carcass weight and thickness on chop size measurements

It is well documented that as hot carcass weight increases, there is a subsequent increase in the size of retail cuts (Abraham et al., 1980; Cisneros et al., 1996; Leick et al., 2011). Ultimately this size increase can result in thinner chops within a portion-control cutting setting (Dunn et al., 2000). As expected, in this study there was a hot carcass weight × chop thickness interaction for chop weight. As chop thickness increased, the chops from all weight treatments became heavier compared to chops from the thinner thicknesses. Cisneros et al. (1996), evaluated the effect of pig slaughter weight, sex, and breed type on yield. They reported as slaughter weight increased, there was also an increase in loin weight; however loin eye area was not compared across weight treatments. Similar results were reported by Leick et al. (2011), who used portion-controlled cutting on beef carcasses from different hot carcass weight treatments and reported there was an increase in longissimus muscle area as hot carcass weights increased. Additionally, those authors also reported that as *longissimus* muscle area increased, there was a decrease in steak thickness due to portion-controlled cutting to specified weights (Leick et al., 2011). In the current work, the use of portion-controlled cutting was not possible due to the lack of access to the proper equipment. Thus, the different thicknesses used were chosen to best represent this reduction in chop thickness commonly seen with heavier cuts with larger loin eyes associated with weight-based portion-controlled cutting.

The effect of hot carcass weight, chop thickness, and label type on chop color and marbling

The pork industry uses lean color and marbling informally to determine potential eating quality. There have been conflicting results in the studies that have assessed both instrumental color and subjective color and marbling scores of pork carcasses with increasing hot carcass weights. Studies such as Park and Lee (2011) and Durkin et al. (2012), have assessed the impact of increased hot carcass weight on color and observed no differences in L* values. In the current study, as weight increased, there was a hot carcass weight × chop thickness interaction for L* color readings. These differences were very small and do not reflect the other studies that reported greater differences in L* values due to increased weight in pigs (Virgili et al., 2003; Latorre et al., 2004; Harsh et al., 2017).

There was also label type × chop thickness interaction for a* values (redness). With the exception of chops cut to a thickness of 2.54 cm, labeled chops had greater a* values compared to unlabeled chops. Though these differences were minor, this interaction may be explained by the methods in our study. Although all chops were allowed an adequate amount of time for oxygenation (bloom) before color readings were taken (greater than 1 h), color readings were mea-

Table 11. Least squares means for the percentage of consumers (N = 393) that responded "no" they would not purchase the chop for various reasons

Treatment	Firmness	Marbling	Thickness	External fat	Purge	Price/kg[1]	Package weight, kg	Package price	Other
Carcass weight[2]									
LT	2.1	20.4	30.7	1.3	< 0.1	2.8	1.1	1.4	2.8
MLT	2.8	20.7	28.5	1.6	< 0.1	2.6	1.3	2.0	1.9
MHVY	2.6	22.1	33.5	1.9	0.3	3.4	2.2	2.9	1.8
HVY	3.1	21.6	36.3	1.9	< 0.0	4.4	1.5	1.7	1.5
SEM[3]	0.64	1.36	1.07	0.54	0.13	0.70	0.67	0.67	0.62
P-value	0.72	0.93	0.09	0.84	0.48	0.39	0.63	0.38	0.52
Chop thickness, cm									
1.27	1.6^{b}	13.7^{b}	48.7^{a}	< 0.1	< 0.1	2.1	2.1^{ab}	0.2^{c}	1.0^{c}
1.91	4.1^{a}	30.4^{a}	16.5^{c}	1.6	< 0.1	3.1	< 0.0^{b}	1.6^{bc}	2.9^{a}
2.54	2.8^{ab}	28.6^{a}	22.6^{b}	2.3	< 0.1	3.8	< 0.0^{b}	2.3^{ab}	1.5^{bc}
3.18	2.6^{ab}	15.8^{b}	48.1^{a}	1.8	0.3	4.6	2.5^{a}	3.7^{a}	2.6^{ab}
SEM[3]	0.71	1.15	0.99	0.48	0.13	0.98	0.58	0.67	0.55
P-value	< 0.01	< 0.01	< 0.01	0.23	0.52	0.06	0.04	< 0.01	0.02
Package label[4]									
Labeled	2.3	20.1	33.0	1.3	0.2				2.1
Unlabeled	3.0	22.3	31.3	2.0	< 0.1				1.9
SEM[3]	0.41	0.96	0.65	0.35	0.09				0.40
P-value	0.14	0.29	0.08	0.16	0.19				0.61

a–c Least squares means in the same main effect (carcass weight, chop thickness, and package label) in the same column differ ($P < 0.05$).

[1]Price for each package at $4.52/lb.

[2]Carcass weight groups: LT = under 111.8 kg, MLT = 111.8 to 119.1 kg, MHVY = 119.1 to 124.4 kg, and HVY = 124.4 kg and above.

[3]SEM = (largest) of the least square means in the same section of the same column.

[4]Package label: labeled packages contained price and weight information on a label on the package and unlabeled packages did not contain a label.

sured on all unlabeled chops before labeled chops, during the time period when the labels were being applied to the labeled treatment. We believe that the extra time needed to label packages could have allowed labeled chops a greater amount of time to bloom and possibly could explain the observed differences in a* value, as well as the label type difference main effect for b* and visual color scores. Previous work has indicated that an a* value change of greater than 0.589 is needed for consumers to detect a difference in redness (Zhu and Brewer, 1999), indicating that the differences in the current study related to labeling type would not be detectable by consumers. Another study that utilized a scanning spectrophotometer measured color differences of chicken breast samples cut to 0.5, 1.0, and 1.5 cm and reported that differences in thickness could affect L*, a*, and b* values (Sandusky and Heath, 1996), though the authors offered no potential cause. Although the current study used pork, our results are consistent with Sandusky and Heath (1996) for a* and b* values. Moreover, there were no differences detected among hot carcass weight treatment groups for visual color, but there were differences in visual color scores between chop thicknesses; however, this difference was very small, with all treatments within 0.1 units.

In addition to color, marbling has been found to be an important visual cue for consumers when purchasing fresh pork in a retail setting (Fernandez et al., 1999; Brewer et al., 2001; Rincker et al., 2008). Although there were differences found for visual marbling scores in the current study, these differences did not favor either lighter or heavier hot carcass weights. Additionally, the observed differences in marbling were very small, with at most a 0.4 unit difference between any 2 weight treatments. This is further supported by the lack of difference found among the weight treatments when evaluated for the chemical percentage of intramuscular fat content, with all weight treatments differing by no more than 0.2% (Rice et al., 2019). These results are contradictory to similar studies that have reported increased marbling scores as hot carcass weight increased (Cisneros et al., 1996; Huff-Lonergan et al., 2002; Park and Lee, 2011; Harsh et al., 2017).

The effect of hot carcass weight and chop thickness on visual consumer ratings

Visual sensory factors are a cornerstone for the purchasing decisions consumers make at the fresh meat retail case. These visual factors include lean color, marbling, chop size, and cut thickness (Font-i-Furnols and Guerrero, 2014). As hot carcass weights increased, there were significant differences in some of these visual factors that consumers were able to detect in the current study. When consumers were asked to evaluate the overall appearance of chops and purchase intent on a line scale, for both appearance and purchase intent, consumers gave higher ratings as hot carcass weight treatment increased, indicating that consumers found the chops from the heavier carcasses to be more appealing overall and had a greater intent to purchase them. It is noteworthy that the reported differences, though different, were small in magnitude (<3.5 units). This is contradictory to a study by Sweeter et al. (2005) that assessed how increased ribeye area in beef steaks affected consumer purchasing decisions in a retail store by determining how long it took for each steak to be purchased at a local grocery store. They reported that there were no differences in the amount of time the steaks of different sizes stayed on the shelf (Sweeter et al., 2005). The authors concluded that hot carcass weight did not impact consumer purchasing decisions, unlike the current study where consumers preferred chops from heavier carcasses. Perhaps this difference between the current work and the study by Sweeter et al. (2005) is due to the related size difference in *longissimus* muscle area between pork and beef. It is plausible that the larger longissimus muscle in beef from heavier weight carcasses surpasses a consumer threshold for tolerance for ribeye size; whereas with the smaller longissimus muscle in pork, there is a greater relative increase in size that will be tolerated by consumers and an acceptance threshold for size that was not surpassed in the current study with the carcass weight ranges evaluated.

In addition to hot carcass weight, chop thickness impacted consumer ratings. Consumers found thicker chops to be more appealing; however, they were more willing to purchase chops with a thickness of 2.54 cm. This indicates that consumers prefer chops that are thicker, and is consistent with similar studies conducted in beef. Leick et al. (2011) asked consumers participating in their visual study with portion-controlled cut beef steaks from different hot carcass treatments, which visual trait was most important when purchasing beef steaks in a retail setting. For both top loin and sirloin steaks, consumers indicated that cut thickness was the most important trait, and the authors hypothesized that consumers felt they were getting more for their money with thicker cut steaks, even though the steaks were all cut to the same weight (Leick et al., 2011). In a follow-up, Leick et al. (2012) performed a similar study but added price as a factor. Again, when consumers were asked to rank the most important factors when purchasing beef steaks, and for all 3 cuts, color, marbling, and thickness were all ranked higher than price, and thus indicated consumers placed a greater importance on visual cues, and less on price. Additionally, they reported that consumers in the greater household income brackets selected a greater percentage of the least expensive ribeye steaks in comparison to consumers in the lower income brackets (Leick et al., 2012). This led the authors to conclude that a factor other than price impacted consumer selections of ribeye steaks. The results of the current study also reflect this, as the impact of carcass weight and chop thickness on the consumer purchase intent ratings was not dependent on knowing the price of the product (labeled vs. unlabeled), indicating consumers assessed the merit of these factors independently when determining their likelihood to purchase the product.

In addition to the appearance and purchase intent, consumers in the current study were asked a “yes” or “no” question on if the chop’s overall appearance was desirable, and if they would purchase the chop. Within all hot carcass weight treatment groups, chops cut to a thickness of 1.27 cm had the lowest percentage of consumers who indicated “yes” they were desirable. Similarly, in beef, Maples et al. (2018) used a digital survey to assess how beef steak thickness impacted consumer purchasing decisions and reported that a majority of consumers disliked thinner steaks. Although hot carcass weight did not impact the percentage of consumer who indicated “yes” they would purchase a chop, chop thickness was affected. A greater percentage of consumers indicated “yes” they would purchase chops from the middle thicknesses (1.91 and 2.54 cm), compared to chops cut both the thinnest or the thickest thickness. This indicates that when making a purchasing decision, although consumers like the appearance of the thicker chops, they can be cut too thick as well as too thin for the consumers to actually purchase them. Additionally, when asked if they would or wouldn’t purchase a chop, a greater percentage of consumer indicated “yes” they would purchase samples that were unlabeled. This could indicate that consumers were more willing to purchase chops that had no pricing information and demonstrating that price could play a greater role in consumer purchasing decisions when purchasing fresh pork what is indicated by previous authors with beef. It is noteworthy that the methods used in the current work relied on the consumers’ responses as to whether or not they would purchase the chops instead of using a victory auction or other methods commonly used to measure purchase intent where the consumers would have actually purchased the products. Therefore, the results of the current study should be interpreted as such, as it is unknown how the results related to the consumers' purchase intent would have been impacted if they would have been required to actually purchase the products as opposed to simply indicating their willingness to purchase them.

If a consumer in the current study indicated "no" they would not purchase a chop, the survey would then prompt the consumer to give more information as to why they would not purchase. Of particular note, the percentage of consumers within each weight treatment who indicated they would not purchase a chop due to "size", was dependent on chop thickness. For all of the carcass weight groups other than the HVY group, the greatest percentage of chops identified as a "no" for purchase due to "size" was the thinnest (1.27 cm) group. But, within the HVY treatment, thickness had no impact. In the current study, "size" was intentionally undefined as a point to not prompt consumers to think about and notice differences in and consider loin eye area when evaluating chops in the case, unless that was a common consideration for the individual consumer. Thus, in our study "size" is likely a reflection of both loin eye size as well as thickness. This is reflected as in the lighter weight treatments, the thinner chops had a greater percentage of samples that would not have been purchased due to "size", whereas as in the HVY weight treatment, even the thinnest chops met consumer acceptance levels for "size". These results also indicate that while in the current study we were able to produce chops that were too small, we were not able to produce chops that were too large for consumers.

However, thickness alone had a large impact on consumer intent to purchase. Both the thinnest (1.27 cm) and the thickest (3.18 cm) cut chops had the greatest percentage of consumers who indicated they would not purchase the chops due to their thickness. In the study by Leick et al. (2011), consumers gave greater ratings to thicker cut steaks, and the authors hypothesized it was due to consumers thinking they were getting more compared to thinner steaks with a greater eye area, despite all steaks being cut to the same weight (Leick et al., 2011). In the current work, both the thinnest (1.27 cm) and the thickest (3.18 cm) cut chops had fewer consumers indicate they would purchase them compared to the middle 2 thicknesses, further indicating that chops can be cut both too thin and too thick for consumer preferences. This is further supported by the consumers who indicated they would not purchase the chops due to "package weight". As chop thickness increased, there was an increase in package weight which subsequently increased the package price. A greater proportion of consumers indicated they would not purchase the thickest and thinnest chops due to "package weight", indicating that some of the packages were both too heavy and too light for consumers. This increase in package weight resulted in a concurrent increase in the package price. As chop thickness increased, a greater percentage of consumers indicated "no" they would not purchase due to package price. Therefore, as both package weight and price increased, it negatively impacted purchasing decisions. Though these results from the visual portion of the current study do not necessarily indicate price as the most important factor considered by consumers when purchasing pork, they do indicate that price is a consideration, and for some consumers, will be the primary reason for not purchasing the product of heavier weights. Similar results have been shown in beef. In a victory-auction scenario, Platter et al. (2005) reported consumers were willing to pay more for higher quality steaks, but the number of bids by consumers was greater for the less expensive steaks, providing evidence of the importance of price and the level of consumer-to-consumer variation in price tolerance for consumer purchasing decisions. It is noteworthy that 42.7% of consumers in the current study self-reported in the demographics survey that price was the most important factor when purchasing pork. However, results from the visual evaluation would indicate that other factors, specifically chop thickness, are as, if not more important drivers of consumer purchasing intent than price. These results are consistent with previous work who have indicated that other visual factors, including thickness, can be more important to consumer purchasing intent than price alone (Savell et al., 1989, Leick et al., 2012).

Overall, carcass weight, chop thickness, and label type affected consumer overall desirability and purchase intent for fresh pork. Consumers indicated that chops from heavier carcasses and thicker chops were more desirable. Additionally, consumers were more likely to purchase chops with a thickness of 2.54 cm, indicating that chops could become too thick as well as too thin for acceptance. As pork carcasses continue to become heavier with increased industry efficiencies, the resulting cuts will also increase in size. Results from the current work indicate that despite the associated increases in chop size, consumer desirability and purchase intent will not be negatively impacted.

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