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US consumer perception survey of animal welfare in broiler stunning

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From a poultry welfare perspective, stunning methods used in processing are among the most debated topics within the industry. There are two commercial stunning methods: electrical and controlled atmosphere stunning. However, it has yet to be determined whether one is superior to the other. An online survey was conducted to assess consumer perception of stunning and animal welfare. A total of 986 responses were collected from regular American chicken meat consumers. The objective knowledge assessment showed that 10% of respondents knew what stunning is, while 22% had a conceptual understanding of animal welfare. Consumers still prioritize food safety and pricing over animal welfare-enhanced products. When participants were segmented according to their knowledge of poultry processing, 18% of consumers were considered “high knowledge.” This study contributes to a better understanding of consumer perception of poultry welfare, which may help guide industry practices.

KEYWORDS

poultry welfare, broiler processing, controlled atmosphere stunning, electrical stunning, consumer awareness

1 Introduction

As the global population continues to grow, the agricultural sector is compelled to innovate and shift toward intensive production systems to meet the increasing food demand. While these systems effectively ensure food supply, they have raised concerns regarding the welfare of animals within these systems (Sweeney et al., 2022). In particular, poultry are among the production animals with the fewest animal welfare standards. For example, poultry are not protected under the Animal Welfare Act in the United States (United States Department of Agriculture, 2002; Section 2 of the Animal Welfare Act, 7 U.S.C. 2132 g.3) or the Humane Slaughter Act (United States Department of Agriculture, 1978; Section 1902 of the Humane Methods of Slaughter Act, 7 U.S.C. 1902 a). Some voluntary welfare guidelines have been established by commodity groups or certification programs run by nonprofit organizations, which companies can choose to follow to ensure ethical production and processing—such as the National Chicken Council’s “Broiler Welfare Guidelines and Audit Checklist” (National Chicken Council, 2022). Recently,

growing concern for ethical and sustainable food products has led the food industry to adopt more conscientious practices. Consumers' demand for transparency and accountability in the products they buy is reflected in the growing preference for claims or labels that represent high-quality and ethically conscious agricultural practices, such as the USDA Organic label, No Antibiotics Ever (NAE), and Certified Humane (Lang and Rodrigues, 2022). These provide consumers with assurance that the product they are purchasing follows specific production or processing practices of interest, thereby adding value to the product.

Humanely produced/processed products are derived from practices that prioritize the well-being of animals throughout their lives, including handling, feeding, housing, stunning, and slaughter (Stucki, 2020; United States Department of Agriculture, 2002). This concept is rooted in farming practices that aim to improve the overall quality of life for animals. Product labeling is one way to inform consumers of reliable quality, but the lack of standardized regulations (Verbeke, 2009) and consumer misunderstanding or misinterpretation reduces the impact of products bearing these labels or claims.

One important welfare practice is the use of stunning in poultry processing plants to ensure a painless and unconscious slaughter (Berg and Raj, 2015). Electrical stunning (ES) is the most common method used for stunning birds in the poultry industry in the United States. During electrical stunning, an electric current is administered to the birds, disrupting normal activity and causing an epileptiform seizure that leads to unconsciousness (Raj and Tserveni-Gousi, 2019). Alternatively, controlled atmosphere stunning (CAS), more commonly practiced in Europe, involves the administration of gas or a mixture of gases in a controlled environment that causes hypoxia, leading to unconsciousness (Hoen and Lankhaar, 1999). CAS methods are viewed as more humane for broilers, as they eliminate the need for live unloading and live shackling of birds, thereby preventing the occurrence of pre-stun shocks or birds missing the electrical water bath (Riggs et al., 2023). The stunning method that companies choose not only affects the birds but also has a potential impact on consumer perception, especially for those who prioritize humanely processed products.

Understanding consumer perception of broiler welfare is crucial, as consumers may drive the market. Multiple factors can shape consumer perception, such as experience, religion, knowledge, and ethical or moral views. Therefore, this study aims to assess consumers' perspectives on broiler stunning and their views on animal welfare (AW), as these insights may inform decision-making within the industry, guide key stakeholders, and potentially impact regulations and welfare policies.

2 Materials and methods

2.1 Survey development

The questionnaire was formulated based on a preliminary review of the literature and the input of subject-matter specialists.

The survey consisted of 30 questions, including three attention checks and two brief definitions of stunning and animal welfare (AW). The questionnaire was divided into three sections: sections one and two aimed to assess respondents' knowledge and perception of broiler stunning and AW; the third comprised socio-demographic questions. Respondents were asked one open-ended question regarding poultry welfare and stunning, followed by four additional open-ended questions if their initial response was "Yes" or "Maybe." A 7-point Likert scale was employed to assess respondents' purchasing decision-making factors (1 = Not a priority, 4 = Neutral, 7 = Essential priority) and perspectives regarding the impact of poultry welfare practices (1 = No concern, 4 = Neutral, 7 = Biggest concern).

2.1.1 Stunning knowledge and perception assessment

The survey began and ended with a self-assessment question on poultry welfare knowledge in the United States to observe changes in consumer perception (Appendix A). To support their initial self-assessment, respondents were asked questions regarding broiler processing and their understanding of "stunning" in this context. Those who indicated familiarity with the term were required to provide a brief definition. Respondents were then presented with a definition of stunning and subsequently asked whether animals should be stunned. Follow-up questions were required for those who answered "Yes" or "No".

Respondents were also queried on stunning methods used for broilers. Those who answered "Yes" were asked to list the methods they knew. To understand consumer purchasing decision-making, respondents were asked to rank on a Likert scale (1 = Not a priority to 7 = Essential priority) the factors they consider when buying chicken (e.g., organic, food safety, price) and to identify the attributes they associate with humanely processed foods (e.g., healthier, more expensive, more sustainable).

2.1.2 AW knowledge and perception assessment

Respondents were asked to briefly define poultry welfare before being provided with a definition of animal welfare (AW) (Appendix A). This was done to avoid a learning bias. They were then asked about their concerns regarding the welfare of chickens raised and slaughtered in the United States. Respondents were asked to assess the influence of certain practices on AW using a 7-point Likert scale. One question identified respondents' primary source of information and whether they had seen any media stories regarding poultry welfare.

To assess consumer perception of AW, respondents were asked to rank animal production industries from most to least concerned about animals, based on their perceptions. Additionally, respondents were asked to answer true/false questions about the general meat production process to determine their level of knowledge.

2.1.3 Socio-demographic

The last section of the survey focused on gathering respondents' socio-demographic information. The demographic questionnaire

included age, gender, household income, education level, and ethnic origin.

2.2 Survey

An online survey was conducted in November and December of 2023. Recruitment and data collection were performed by Qualtrics^{XM} (Qualtrics, Provo, Utah, USA), an experienced management software company specializing in consumer science. The survey was launched on November 20, 2023, and data were collected until the target sample size ($n = 1,000$) was reached. Screening criteria required respondents to be at least 18 years of age, living in the United States, and frequent chicken meat consumers (more than 2–3 times per month). Respondents were required to provide informed consent prior to beginning the survey by signing a consent form. They received financial compensation for their time if their answers met the predetermined criteria. Predetermined criteria were enforced to automatically terminate participants who answered attention-check questions incorrectly throughout the survey. Fraudulent participants were identified using a minimum completion time of 5 min, and off-topic responses were excluded from open-ended questions. A total of 1,166 responses were collected, and 180 were disqualified. The final sample size for data analysis was 986.

This study was reviewed and approved by the Institutional Review Board at Auburn University (#23–532 EX 2310).

2.3 Data analysis

Quantitative and qualitative data analyses were performed depending on the question type. Knowledge assessment questions were quantified and reported as percentages, number of participants, or arithmetic means (with corresponding standard errors). Ratings of factors influencing consumers' purchasing decisions regarding chicken meat were quantified using arithmetic means and standard errors. Data from the check-all-that-apply (CATA) question—regarding consumer views on humanely processed chicken meat—were reported as percentages of response frequencies.

For the open-ended questions (definitions of stunning and animal welfare), answers were considered correct if they implied that stunning involves “inducing unconsciousness,” “desensitizing,” “electrical shocking,” “incapacitating,” or “numbing” the animal. Responses that implied death as a result of stunning were categorized as incorrect. The open-ended question on animal welfare definition was analyzed using thematic analysis, and specific keywords for each category were identified.

- Welfare oriented: “more humane”, “humane care”, “humanely”.
- Conceptual understanding: “Wellbeing”, “healthy”, “care”, “basic needs”.
- Uncertain/No opinion: “I don’t know”, “Not sure”, “No opinion”.

- Claims/Labels oriented: “free range”, “organic”, “pasture raised”, “organically fed”.
- Cruelty concerns: “suffering”, “less cruelty”, “not abused”.
- Ethical treatment: “ethical treatment”, “respect”, “moral treatment”.
- Regulatory: “guidelines”, “act”, “policy” “standards”.
- Others: Outside of identified categories.

3 Results and discussion

3.1 Demographics

A total of 986 responses that met all criteria were recorded for the final analysis. Respondents were representative of the average American population. Table 1 details the sociodemographic characteristics of the survey respondents. Individuals aged 46–65 represented the highest proportion among participants (34.0%).

In this survey, the female-to-male ratio was 54.3% to 44.9%. Respondents self-identified their ethnic background, with “White or Caucasian” being the most prevalent group, encompassing 63.9% of respondents, followed by “Hispanic or Latino” (14.5%) and “Black or African American” (11.4%).

Results showed that the majority of participants fell within the three lowest income brackets: 28.8% of respondents indicated their annual income was between US\$25,000–US\$49,999, 23.1% fell within the US\$50,000–US\$74,999 range, and 21.9% reported an income between US\$0–US\$24,999.

A majority of respondents indicated high school or GED as the highest level of education completed (41.0%). Additionally, 23.0% reported having completed a 4-year college degree, while 21.0% specified a 2-year college degree. Participants were primarily located in suburban areas (47.5%), followed by urban areas (32.4%); rural areas were the least represented (20.2%).

TABLE 1 Sociodemographic characteristics of online survey participants¹ ($n=986$).

Variable	Number (%)
Age	
18–30	176 (18.0)
31–45	252 (26.0)
46–65	331 (34.0)
>65	227 (23.0)
Gender	
Female	535 (54.3)
Male	443 (44.9)
Non-binary	6 (0.6)
Prefer not to say	2 (0.2)

(Continued)

TABLE 1 Continued

Variable	Number (%)
Ethnicity	
Asian or Pacific Islander	38 (3.9)
Black or African American	112 (11.4)
Hispanic or Latino	143 (14.5)
Multiracial or Biracial	35 (3.5)
White or Caucasian	630 (63.9)
Others	20 (2.0)
Prefer not to say	8 (0.8)
Income	
\$0-\$24,999	216 (21.9)
\$25,000-\$49,999	284 (28.8)
\$50,000-\$74,999	228 (23.1)
\$75,000-\$99,999	110 (11.2)
\$100,000-\$149,999	86 (8.7)
\$150,000-\$199,999	30 (3.0)
\$200,000-\$249,000	15 (1.5)
\$250,000-\$299,000	9 (0.9)
\$300,000 and up	8 (0.8)
Education level	
Less than high school	33 (3.0)
High school diploma or GED ²⁾	401 (41.0)
2-year college degree	211 (21.0)
4-year college degree	229 (23.0)
Graduate degree (Master's, Doctorate)	112 (11.0)
Residential zones	
Rural area	199 (20.2)
Suburban area	468 (47.5)
Urban area	319 (32.4)

¹⁾ Regular chicken meat consumers in the US (consuming more than 2–3 times a month).

²⁾ GED, General Educational Development.

3.2 Stunning knowledge and perception assessment

Respondents were asked to self-assess their knowledge of poultry welfare in the United States using a 7-point Likert scale, with 1 being “not at all informed” and 7 being “extremely well informed” (Q1 and Q30 in [Appendix](#)). As shown in [Figure 1](#), results showed statistical differences in consumers’ perceived knowledge.

Respondents considered themselves slightly informed regarding poultry welfare before starting the survey (3.65 ± 0.05), and their overall knowledge perception increased after completing the survey (4.73 ± 0.05).

Participants were provided with three questions to objectively assess their knowledge of poultry processing (Q2, Q3, and Q5 in [Appendix](#)). Out of the total participants, 337 (34.2%) indicated that they knew how chickens are processed for meat, suggesting that fewer than half were familiar with broiler processing.

Respondents were subsequently queried on their familiarity with animal stunning. Of the total respondents ($n = 986$), 185 (18.8%) indicated familiarity with the term “stunning.” Among those, 104 (10.5%) were able to provide an accurate definition of “stunning” in the context of animal processing, indicating that approximately 10% of poultry consumers had a general understanding of how chicken meat is processed.

Furthermore, respondents were asked to identify the different stunning methods used in broiler processing. A total of 87 participants (8.8%) indicated familiarity with the stunning methods used before broiler processing. However, in the open-ended question asking participants to list these methods, only 35 individuals (3.5%) demonstrated knowledge of the stunning methods currently applied within the poultry industry—namely, electrical stunning and controlled atmosphere stunning (CAS).

To gain deeper insights into the factors influencing consumers’ purchasing decisions regarding chicken meat, participants were asked to rate various factors based on the degree to which each influenced their purchasing decisions (Q6 in [Appendix](#)). According to [Figure 2](#), consumers indicated “food safety” as the primary factor, rating it the highest with a mean score of 6.06 ± 0.041 —considered a “high priority” on a 7-point Likert scale. Pricing emerged as the second most important consideration, with a mean rating of 5.65 ± 0.039 .

Animal welfare—encompassing both humane processing and the conditions of animals in farming—ranked third and fourth, suggesting notable interest in humanely produced products. Specifically, “humanely processed animals/meat” received a mean score of 4.87 ± 0.056 , and “welfare of animals in a farming setting” received a mean score of 4.87 ± 0.055 .

To further investigate consumer perceptions of humanely processed/slaughtered products, participants were asked to check all that applied (CATA) from a range of attributes that best described their views on humanely processed chicken meat (Q7 in [Appendix](#)). As shown in [Figure 3](#), the results reflected divided views among consumers: 31% of respondents considered these products to be “safer.” While the other half (31%), see “no difference” compared to regular products. The attribute “higher quality” was the third most frequently selected (27%), followed by “healthier” (24%).

Among those who selected “other” (2%), the most frequent responses were “I don’t know,” followed by “more ethical,” “morally better,” and “subject to more regulations.”

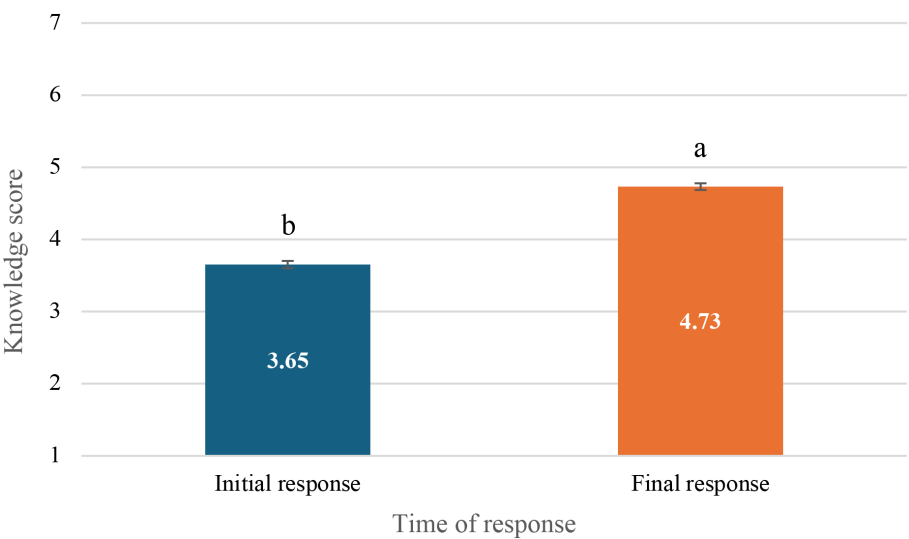


FIGURE 1
Self-perceived knowledge changes before and after completing the online survey using the regular chicken meat consumers in the US (n=986)¹⁾. ¹⁾ Different letters represent significant differences among samples; error bars represent standard errors. A 7-point scale used (1= Not at all informed, 7=Extremely informed).

3.3 AW knowledge and perception assessment

Participants were asked to provide a definition of AW based on their personal perception (Q8 in [Appendix](#)). Of these, 32% were classified as having a welfare-oriented understanding of the AW concept ([Figure 4](#)). The responses from this group included:

“Caring for the life and quality of conditions for chickens until they are killed.”, “The welfare and quality of life of the poultry.”, “Poultry welfare encompasses the physical and mental wellbeing of domesticated birds raised for meat, eggs.”, “This refers to the care, feeding, and general treatment of poultry so as to maintain adequate production, reproductive cycles, and to help ensure the healthy condition of chickens, and flocks”.

Respondents exhibited divided views in the second category; some demonstrated a conceptual understanding of the term (22%). The perceptions of those who exhibited a conceptual understanding were as follows:

“The conditions in which poultry chickens live while they are alive”, “The state of the birds’ living arrangements, how many there are in a pen, how they are fed and treated generally, and how they are slaughtered”, “The term defines the upbringing and growth of a chicken and how it is treated before being processed for consumption”, “How the birds live and are cared for while being raised and transported”.

Meanwhile, 22% of respondents expressed views that differed from the identified categories. Their definitions of AW were categorized as follows:

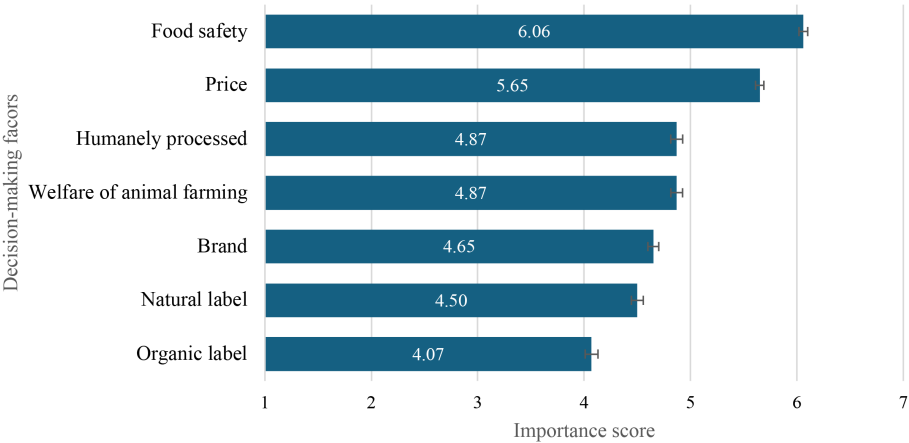


FIGURE 2
Importance of chicken meat purchase decision-making factors among regular chicken meat consumers in US (n=986)¹⁾. ¹⁾ Error bars represent standard error. A 7-point scale was used to assess importance (1 = Not a priority, 4 = Neutral, 7 = Essential priority).

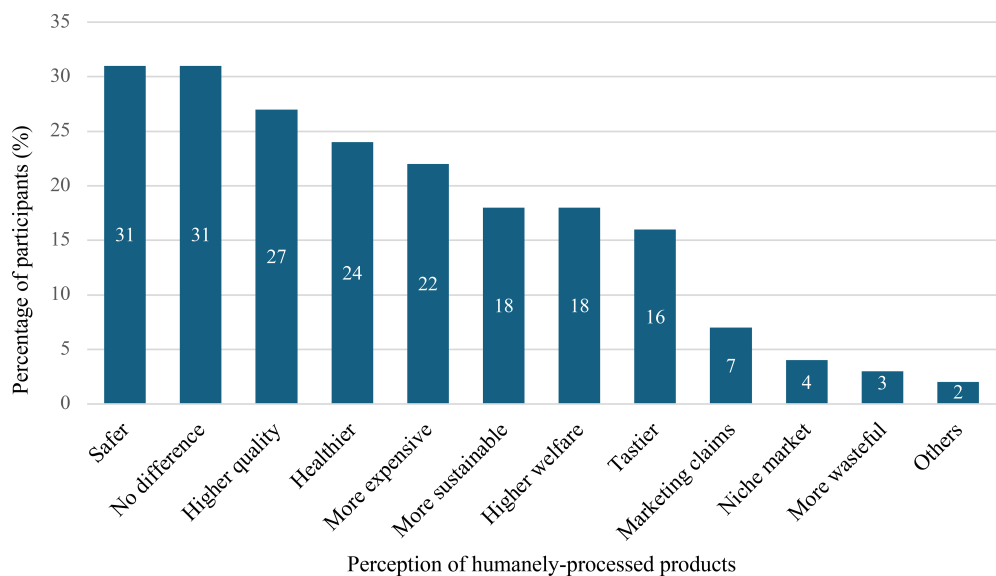


FIGURE 3
US Regular chicken meat consumers¹⁾ perception of humanely processed products using Check-All-That-Apply (CATA) (n=986). ¹⁾ Refers to consumers who consume chicken more than 2–3 times a month.

- Humane slaughter or processing: “Poultry welfare is the way of killing animals like chicken to make food”, “Poultry welfare is probably the process of how they clean chickens to sell them with”.
- A negative or uninterest towards welfare: “I don’t care”, “No one cares”, “Poultry welfare is a nonsense term that animal rights activists/militant vegans use to try to make you feel guilty about being omnivorous”, “People that have alternate views on things that we don’t agree with”.
- Economic support: “Animals that get govt asst”.
- Personal beliefs: “It’s something I don’t usually think about since I saw my great swing a live chicken around to break its neck”, “Used to farm, my chickens were in a pen. They were fine”.
- Mixed or inaccurate definitions: “Chickens would be healthier and be tastier and safer”, “It’s meat that is safe to eat”.

These types of responses indicate a lack of consumer understanding of the topic. A portion of respondents associated

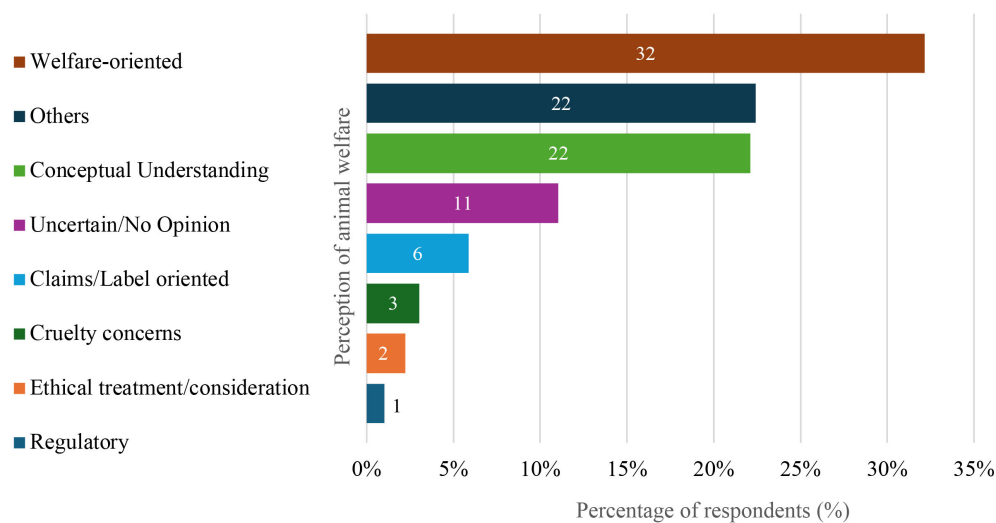


FIGURE 4
Identified categories representing consumers¹⁾ perception of animal welfare (n=986)²⁾. ¹⁾ Regular chicken meat consumers in the US (consuming 2–3 times a month). ²⁾ This figure shows the results of an open-ended question asking for definitions of animal welfare. Responses were identified by a specific keyword in each category.

TABLE 2 Assessment of online survey participants¹⁾ knowledge of the poultry industry for segmentation.

Statements	Overall (%, n=986)	Consumer segmentation		
		High knowledge (%, n=183)	Average knowledge (%, n=575)	Low knowledge (%, n=228)
Chickens are fed hormones to increase their growth. (False)	69 (7) ²⁾	34 (19)	30 (5)	5 (2)
Cage-free eggs come from birds that have access to the outside. (False)	692 (70)	155 (85)	450 (78)	88 (39)
Meat Chickens (broilers) are raised until 5 months old. (False)	67 (7)	49 (27)	17 (3)	1 (0.4)
Chickens are required to be raised with a minimum of 4 hours of darkness per day. (True)	178 (18)	121 (66)	55 (10)	3 (1)
Turkeys/meat chickens are raised cage-free. (True)	242 (25)	79 (43)	158 (27)	6 (3)
Sick animals are not allowed to be processed. (True)	583 (59)	146 (80)	406 (70)	32 (14)

¹⁾ Regular chicken meat consumers in the US (consuming more than 2–3 times a month).
²⁾ Number of participants that correctly answered the statement provided (Percentage).

AW with claims or labels found in animal-derived products (6%) such as “organic,” “sustainable,” and “free-range,” among the definitions provided as follows:

“Humanely raised poultry would have space to pasture”, “letting them live free range and slaughtering in the most humane way possible”, “Organic”, “Pasture based farms represent a dramatic welfare improvement for egg laying chickens.” A minority of participants associated the welfare of animals with cruelty concerns (3%), while 2% considered AW to be related to ethical treatment and consideration toward animals, and only 1% considered AW as being strictly regulatory.

Assessing consumer interest regarding poultry welfare was of interest to the study. Participants were asked to indicate their level of concern for the welfare of chickens raised and slaughtered in the US using a 7-point scale (Q9 and Q10 in [Appendix](#)). The mean concern level for the welfare of chickens raised was 4.66 ± 0.05 , while concern for chickens at slaughter was 4.61 ± 0.05 .

Respondents were also asked to rank animal-derived industries based on the perceived level of welfare provided to their animals (Q15 in [Appendix](#)). Results indicated that the beef industry was perceived as the most committed to the wellbeing of their animals, followed by the poultry industry in second place and the pork industry in third. Respondents believed that fish receive the least attention with regard to AW.

3.4 Consumer segmentation

Given that consumers vary in their knowledge of food processing methods, respondents were classified based on their knowledge level. To assess this, six statements were provided, and respondents could answer “true,” “false,” or “I don’t know” (Q18 in [Appendix](#)). A 3-point scoring system was used: correct answers received 1 point, incorrect answers 2 points, and “I don’t know”

responses 3 points. Respondents who scored ≤ 10 were classified as “Highly Knowledgeable” (HK), those with scores between 11–14 were identified as “Average Knowledgeable” (AK), and those who scored between 15–18 were identified as “Low Knowledgeable” (LK). According to this criterion, 183 respondents were classified as HK, 575 as AK, and 228 as LK ([Table 2](#)).

Overall, 70% of respondents correctly answered the cage-free eggs statement, a trend that persisted across all knowledge groups. This statement received the highest rate of correct responses, with the HK group notably achieving 85% accuracy. When asked whether turkeys and broilers are raised cage-free, the LK group had the lowest rate of correct responses. When asked whether sick animals are allowed to be processed, respondents were overall highly knowledgeable about this topic—59% of survey participants accurately responded, indicating that processing sick animals is prohibited. Likewise, the HK and AK groups exhibited high accuracy, with 80% and 70% correct responses, respectively.

A cross-examination was conducted considering respondents’ knowledge level, education level, and exposure to poultry farming ([Table 3](#)). The findings indicate that the majority of consumers, regardless of segmentation, have never been exposed to a farm environment. Notably, among participants without farm exposure, the majority had a high school or GED diploma as their highest level of education. The results show that most consumers are not obtaining their knowledge from an academic degree or from direct (current or previous) exposure to farm animals.

Understanding consumers’ primary source of information provides insights into their knowledge base, the quality of that information, and the relevance of the chicken welfare topic to them (Q12 in [Appendix](#)). A total of 37% of respondents indicated the internet as their primary source of information on animal welfare, and 24% selected social media. The results of [McKendree et al. \(2014\)](#) contrast significantly, as 56% of participants in that study indicated they did not have a source of animal welfare information.

TABLE 3 Distribution of farm exposure and education level across knowledge groups from online survey (n=986)^{1,2}.

Level of knowledge	High knowledge (n= 183)			Average knowledge (n=575)			Low knowledge (n=228)		
	Currently (n=29)	Previously (n=40)	Never (n=114)	Currently (n=27)	Previously (n=64)	Never (n=485)	Currently (n=3)	Previously (n=13)	Never (n=211)
Farm exposure									
Level of education									
Less than high school	1 (3) ²	0 (0)	4 (4)	3 (12)	2 (3)	15 (3)	0 (0)	0 (0)	8 (4)
High school diploma or GED	15 (52)	17 (43)	46 (40)	10 (38)	25 (39)	191 (39)	1 (33)	4 (31)	91 (43)
2-year college degree	2 (7)	12 (30)	30 (26)	5 (15)	18 (28)	103 (21)	0 (0)	1 (8)	41 (19)
4-year college degree	4 (14)	7 (18)	27 (24)	7 (27)	12 (19)	116 (24)	2 (67)	4 (31)	50 (24)
Graduate degree (Master's, Doctorate, etc.)	7 (24)	4 (10)	7 (6)	2 (8)	7 (11)	60 (12)	0 (0)	4 (31)	21 (10)

¹ Regular chicken meat consumers in the US (consuming more than 2–3 times a month).

² Number of respondents (percentage).

4 Discussion

4.1 Stunning knowledge and perception assessment

This represents a 15.4% increase in mean knowledge perception among respondents when comparing before and after the survey. Previous studies have found that consumers, regardless of their knowledge, experience, or background, may be persuaded when provided with information (Bei and Widdows, 1999); therefore, this could explain the increase in consumers' perceived knowledge of the topic. Although consumers with a higher knowledge level may not change their self-assessment, those with low prior knowledge may have learned from this survey.

This suggests that most consumers lack knowledge about stunning, and that exposure to information related to poultry processing and its implications for animal welfare is necessary. Evidence from international studies indicates that individuals with prior experience or knowledge in this domain often exhibit negative responses toward intensive agricultural practices (Queiroz et al., 2018). Enhancing consumer knowledge of animal welfare can generate increased demand for ethical poultry standards. Furthermore, individuals with high knowledge in this area are more likely to advocate for labels or claims that reflect ethical processing and welfare standards.

Inflation has significantly impacted prices of animal protein sources; the U.S. Bureau of Labor Statistics (2021) reported a 10.5% price increase in meats by the end of 2021. In 2024, the average price (in USD) for beef was 6.15 and for chicken 3.05, almost a 50% price difference (Shahbandeh, 2024). Font-I-Furnols and Guerrero (2025) underscore the influence of pricing in purchasing decisions. Evidence from prior research in Mexico indicates that price is a driver of change in meat consumption, Estévez-Moreno and Miranda-de la Lama (2022) found a relationship between preference for cheaper animal protein sources (chicken) over higher-priced options (beef), especially among middle- to low-income households. A previous study reported similar results, where respondents expressed concern for overall AW, but it was not reflected as a driving factor due to the prioritization of other attributes such as price, taste, and health (de Jonge and van Trijp, 2013).

Often, brands position themselves in the market with claims, and consumers associate brands with specific attributes. This can make branding a major driver in purchasing decisions (Alonso et al., 2020). Previous studies found that consumers of organic labels view them as indicators of safer, healthier, or higher-quality products (Yiridoe et al., 2007; Shafe and Rennie, 2012; Schleenbecker and Hamm, 2013), and that these consumers are typically highly educated, have high income levels, and are younger females (Van Loo et al., 2010; Nie and Zepeda, 2011). The majority of participants in this study were not classified as either high income or highly educated. Thus, the lower ranking of the organic label in our study aligns with previous research.

Concern for food safety or safe products for consumption emerges as one of the primary factors consumers consider when

thinking about meat consumption or purchases (Alonso et al., 2020). The divided views (“safer” vs. “no difference”) reflect where consumers currently stand regarding humanely processed or slaughtered products. Notably, de Graaf et al. (2016) found similar results: consumers associate humanely processed products with attributes such as “safer,” “better quality,” “tastier,” and “healthier.” Among those who selected attributes not listed (2%), the most frequent responses were “I don’t know,” followed by “more ethical,” “morally better,” and “subject to more regulations”.

4.2 AW knowledge and perception assessment

Other studies have also found that consumers associate claims and labels with higher welfare (Harper and Makatouni, 2002). Despite multiple studies having refuted this erroneous belief, it still prevails among consumers (Esquivel-Hernandez et al., 2016; Cogburn et al., 1989). While consumers may possess a certain level of knowledge regarding AW, there remains a degree of detachment or lack of familiarity with the subject.

Results indicate that although consumers demonstrate some level of concern, it is not their primary concern at the moment. This suggests that other factors may be influencing the result, such as lack of knowledge, lack of interest, or central tendency error—which refers to the tendency of assessors to select the middle score when using a scale (Sharif et al., 2017). However, other studies have reported increasing concern for the impact of animal production systems on AW in other countries (Alonso et al., 2020).

Other studies have evaluated consumers’ willingness to pay for products from different species. Results indicated that consumers were mostly concerned about beef and dairy cattle, followed by poultry (hens and broilers), fish, and lastly pig farming (Alonso et al., 2020). Although pigs may vary in welfare positioning, cows and chickens remain topics of greater interest in the context of AW.

4.3 Consumer segmentation

This observation potentially accounts for respondents’ high knowledge of the cage-free eggs statement, given that such preferred labels provide production/processing-related details. In previous studies, when consumers were asked about the proportion of broilers raised in cage-free production systems in the United States, respondents predominantly selected from two categories: 0–19% and 20–49% (Lusk, 2018).

Given that humans acquire knowledge from experiences throughout their lifetime, participants were surveyed on their experience with poultry and categorized accordingly. Individuals who had previously visited or were currently exposed to farms were more often found in the HK and AK groups. As the majority of consumers possess average to low knowledge on this topic, the key factor is where they are obtaining their information regarding animal

welfare. Individuals often form personal attitudes or perceptions about topics they may not be fully knowledgeable about.

To illustrate this, the National Science Board (National Science Board, 2018; 2020) analyzed several surveys conducted in the United States from 2001 to 2020. Among these were surveys exploring public attitudes toward specific science- and technology-related issues, including pollution, climate change, non-fossil fuel alternatives, and genetically engineered foods. Despite the scientific consensus indicating their safety, genetically engineered foods were still considered extremely or very dangerous by 40% of Americans.

Human perception is shaped by stimuli throughout one’s lifetime; therefore, additional educational efforts should be considered to improve consumer understanding and support evidence-based decision-making regarding animal welfare in the poultry industry. This reflects the broad availability of information for consumers today. However, according to the National Science Board (2020), scientific community information is not equally accessible across all segments of society, regardless of social background. Based on these results, it is considered necessary to make greater efforts to provide reliable information through accessible platforms—such as the internet and social media—to improve consumer awareness of animal welfare.

5 Conclusion

Despite growing awareness and appreciation for welfare-conscious products, animal welfare considerations remain secondary in consumer purchasing decisions. The primary factors influencing consumer choices continue to be food safety and pricing. While consumer welfare concerns predominantly focus on the beef industry (ranked first), there is potential for increased attention toward poultry welfare.

Additionally, this survey confirmed changes in consumer awareness through the observed improvement in self-assessed knowledge perception before and after the survey. However, there remains a clear gap in consumer knowledge of the poultry industry. Therefore, increasing the availability of reliable resources would benefit both the public and all stakeholders involved. This information may also provide valuable insights to policymakers and key industry stakeholders to support the development of poultry welfare regulations, encourage modifications in industry practices, and offer value-added products that align with consumer interests.

As with most surveys, general limitations include potential response bias due to the disconnect from real-life purchasing contexts. An *in situ* study may provide more accurate insights into consumer behavior regarding preferred stunning methods.

In response to evolving consumer concerns, government and industry may consider evaluating the adoption and application of humanely processed labels as communication tools to enhance animal welfare standards, balancing the interests of consumers and key stakeholders.

Data availability statement

The original contributions presented in the study are included in the article/**Supplementary Material**. Further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by the Institutional Review Board at Auburn University (#23-532 EX 2310). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

LB-D: Writing – original draft, Methodology, Data curation, Visualization, Investigation, Formal Analysis. JA: Validation, Writing – review & editing, Visualization. BB-C: Methodology, Validation, Writing – review & editing. SC: Validation, Supervision, Methodology, Project administration, Writing – review & editing, Conceptualization, Resources, Funding acquisition.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fanim.2025.1620566/full#supplementary-material>

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