

Perceptions of Animal Agriculture and Meat Products:
Spotlights on Indiana, Illinois, Michigan, Ohio and Wisconsin

By Ann Cummins, Dr. Nicole Olynk Widmar and Dr. Candace Croney



Published by the Center for Animal Welfare Science at Purdue University
RP.2015-03 | June 2015

Executive Summary

Researchers at Purdue University conducted an online survey of 1,029 consumers who resided in Illinois, Indiana, Michigan, Ohio and Wisconsin in July 2014. This project was intended to aid in developing an understanding of the perceptions of animal agriculture, attitudes toward the growth of livestock sectors, household consumption patterns of livestock products and lifestyle choices, such as visiting agritourism sites and other leisure or educational activities. The majority of residents in the five-state study area believed that agriculture is important to their state. Respondents, overall, were supportive of growth in the livestock sectors, had not experienced negatives from livestock operations and did not believe livestock operations are environmentally harmful. As for ensuring the proper handling and treatment of animals with respect to welfare, consumers indicated that they believed the farmer has the highest ability, of those parties in the supply chain, to influence and ensure proper treatment. Production practices of concern continue to include housing of pigs at different stages of the rearing process, especially in crates. The research team investigated consumers' unease regarding production processes and asked questions that sought to understand consumers' self-perceived and true level of knowledge about the pork production process.

Keywords: agritourism, animal welfare, consumer perceptions, pork production

Background Information

Many U.S. consumers, even within the Midwest where much of the large-scale agricultural production occurs, are unfamiliar with agriculture. Currently, only 1.5 percent of the U.S. population is employed in agriculture (Bureau of Labor Statistics, 2013), leaving many people unexposed to food production processes. This unfamiliarity has resulted in an increased curiosity among consumers regarding where their food comes from and how it is produced. Consumers can familiarize themselves with modern food production processes in many ways. They can explore special interest groups; follow social media; read articles from a variety of government, industry and university sources; or visit agritourism locations for a more hands-on experience.

Livestock production is one specific sector of U.S. agriculture that has seen increased interest by residents. Consumers' perceptions of animal production practices — farm size of animal-rearing operations, housing systems used and management practices employed — have impacted U.S. food production in recent history. The most commonly used systems across the livestock sector allow for efficiencies that facilitate an abundance of reasonably low-cost food products, but these systems have become increasingly contentious.

The U.S. is the world's largest meat consumer on a per capita basis (USDA, 2005). Pork consumption per capita is ranked third in the U.S., following beef and chicken (USDA, 2005). Americans consume an average of 51 pounds of pork per person per year (USDA, 2005). The five-state region examined in this survey (Illinois, Indiana, Michigan, Ohio and Wisconsin) makes up 18 percent of total U.S. pig sales (in number) (USDA, 2012). Also, these states represent 18 percent of the sales value for pigs in the United States (USDA, 2012). Both Illinois and Indiana are within the top five states in pork sales, with \$1.5 and \$1.3 billion, respectively (USDA, 2012).

Research Methods and Data

Purdue University researchers conducted an online survey in July 2014 with individuals residing in Indiana, Illinois, Michigan, Ohio and Wisconsin. Using the Internet instead of traditional mail or phone to collect responses has become an increasingly common survey method since the late 1990s (NTIA and ESA, 2013). Internet surveys, with their lower costs and rapid completion times, are becoming increasingly popular (Louviere et al., 2008; Gao and Schroeder, 2009; Olynk, Tonsor and Wolf, 2010; Tonsor and Wolf, 2010; Olynk and Ortega, 2013). Hudson et al. (2004) found that Internet surveys did not exhibit non-response bias. In addition, Fleming and Bowden (2009) and Marta-Pedroso, Freitas and Domingos (2007) found no significant differences when comparing results of Web-based surveys, conventional mail questionnaires and in-person interviews. According to Dillman (2007), the Web survey is “a much more sophisticated survey method which has far more flexibility and power.” Global Market Insite (GMI), a large opt-in survey panel manager, provided the sample of participants, and the research team used Qualtrics, an online survey tool, to collect responses.

The survey included various aspects of household and individual demographics as well as questions looking at familiarity with animal agriculture, pork purchasing behaviors, agritourism experience, and consumer perceptions of pork production and livestock products. The targeted sample was representative of the five-state region in terms of gender, age, pre-tax income and state of residency. Respondents had to be at least 18 years old and currently reside in one of the five targeted states.

Summary Statistics and Respondent Demographics

The survey sample contains 1,029 completed individual responses. **Table 1** compares the survey demographics with the census statistics¹ for population by state of residency, age, gender and income. As seen in **Table 1**, the sample had slightly more female and older respondents than desired. **Table 2** lists the participants’ education levels. This sample is slightly “overeducated,” with 98 percent of respondents having graduated from high school and 43 percent receiving a bachelor’s degree at minimum. For comparison purposes, 87 percent of Americans 25 and older were at least high school graduates and 30 percent had completed at least four years of college (U.S. Census Bureau, 2012). This sample’s education may differ from national statistics in that in order to participate, an individual had to be literate, have access to a computer with an Internet connection and possess an e-mail address.

Researchers hypothesize that relationships or experience with animals (of any species) may influence perceptions of livestock animals. Past work found that 66 percent of U.S. households owned a pet, with 48 percent and 41 percent of households owning dogs and cats, respectively (McKendree and Widmar, 2013). Similarly, this survey found 47 percent of participants owned at least one dog, and 39 percent owned one or more cats. Given that the study looked primarily at meat consumption, focusing on pork and perceptions of pig treatment, it is informative to know that 3 percent of respondents were vegetarian and 2 percent were vegan. Comparatively, a 2008 study found that 3.2 percent of the U.S. population was vegetarian and 0.5 percent vegan (Vegetarian Times, 2008).

¹ Census statistics for population by state, age and gender are from U.S. Census Bureau (2010-2012). Census statistics for income are from U.S. Census Bureau (2008-2012).

Table 1. Sample Summary Statistics (n=1,004)

Variable Description	Survey	Census
	Frequency (%)	Frequency (%)
Female	54%	51%
Age		
18 to 24 years	7%	13%
25 to 44 years	36%	35%
45 to 64 years	38%	35%
65 years and over	19%	17%
Household Income		
Less than \$25,000	25%	23%
\$25,000-\$34,999	11%	11%
\$35,000-\$49,999	15%	14%
\$50,000-\$74,999	19%	18%
\$75,000-\$99,999	13%	12%
\$100,000-\$149,999	13%	13%
\$150,000 or more	4%	9%
Region		
Illinois	28%	28%
Indiana	14%	14%
Michigan	21%	21%
Ohio	23%	25%
Wisconsin	13%	12%

Table 2. Sample Summary Statistics (n=1,004)

Variable Description	Survey
	Frequency (%)
Education	
Did not graduate from high school	2%
Graduated from high school	20%
Attended college, no degree earned	22%
Attended college, associate or trade degree earned	13%
Attended college, bachelor's (BS or BA) degree earned	27%
Attended college, advanced (MS, Ph.D., law school) degree earned	14%
Other	1%
Vegetarian	3%
Vegan	2%
Pet Owner	
Cat owner	39%
Dog owner	47%
Household has experienced in the past six months:	
Divorce	4%
New marriage	4%
Moving	13%
Death	12%
Serious illness	16%
Start of new job	13%
Loss of job	9%
Serious financial distress	19%
Political Affiliation	
Democratic Party	32%
Republican Party	26%
Independent	30%
None of the above	13%
Race	
White, Caucasian	86%
Black, African American	7%
Asian, Pacific Islander	3%
Mexican, Latino	2%
American Indian	0.5%
Other	1%

Findings and Discussion

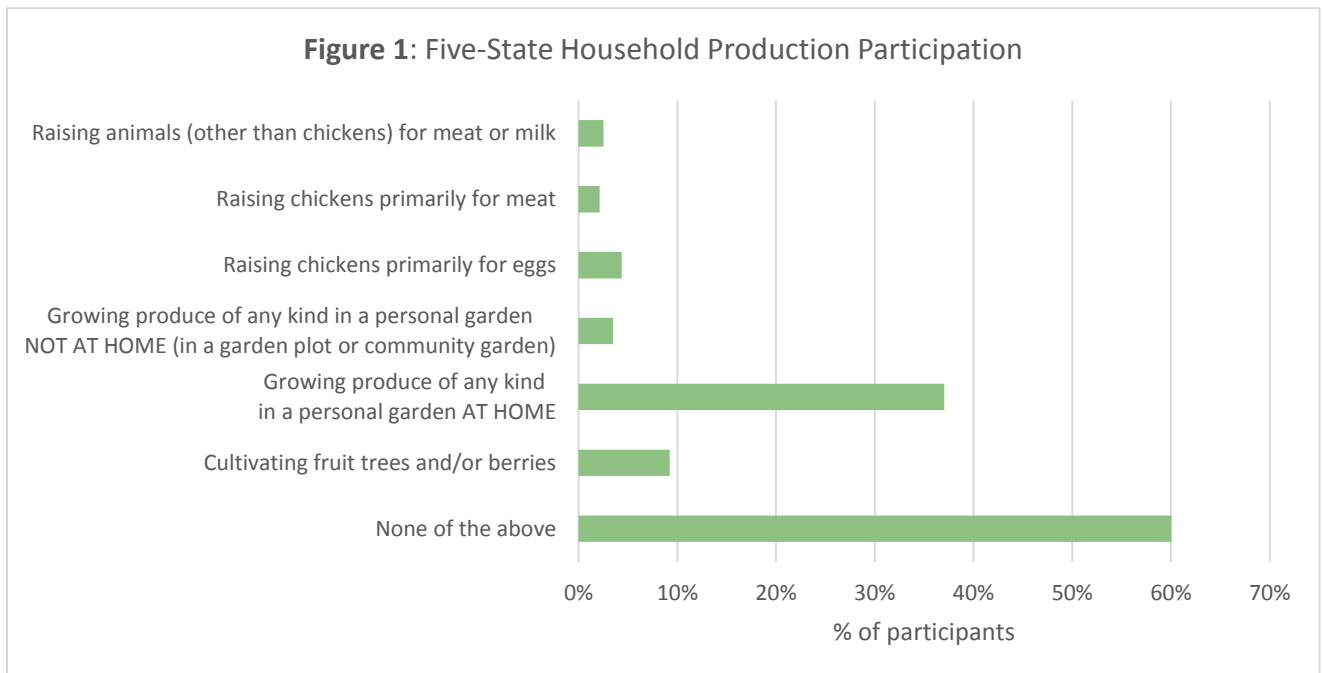
Household's Relationship to Food Production

The research team used whether or not respondents had direct relationships to agricultural businesses to better understand their proximity to food production. Eighty-nine percent of respondents indicated that they had no direct relationship to an agricultural business in terms of operation or ownership. Three percent indicated that they owned or operated a farm business (in any capacity including a partnership or part-owner), and 8 percent reported they had a family member or relative who owned or operated a farm business.

Even if consumers do not own or operate a farm, they can be involved in food production for personal consumption. Researchers asked study participants to identify which type of food-producing activities their household participated in during the last three years, if any. They chose from the following options:

- Cultivating fruit trees and/or berries
- Growing produce of any kind in a personal garden at home
- Growing produce of any kind in a personal garden not at home (in a garden plot or community garden)
- Raising chickens primarily for eggs
- Raising chickens primarily for meat
- Raising animals (other than chickens) for meat or milk

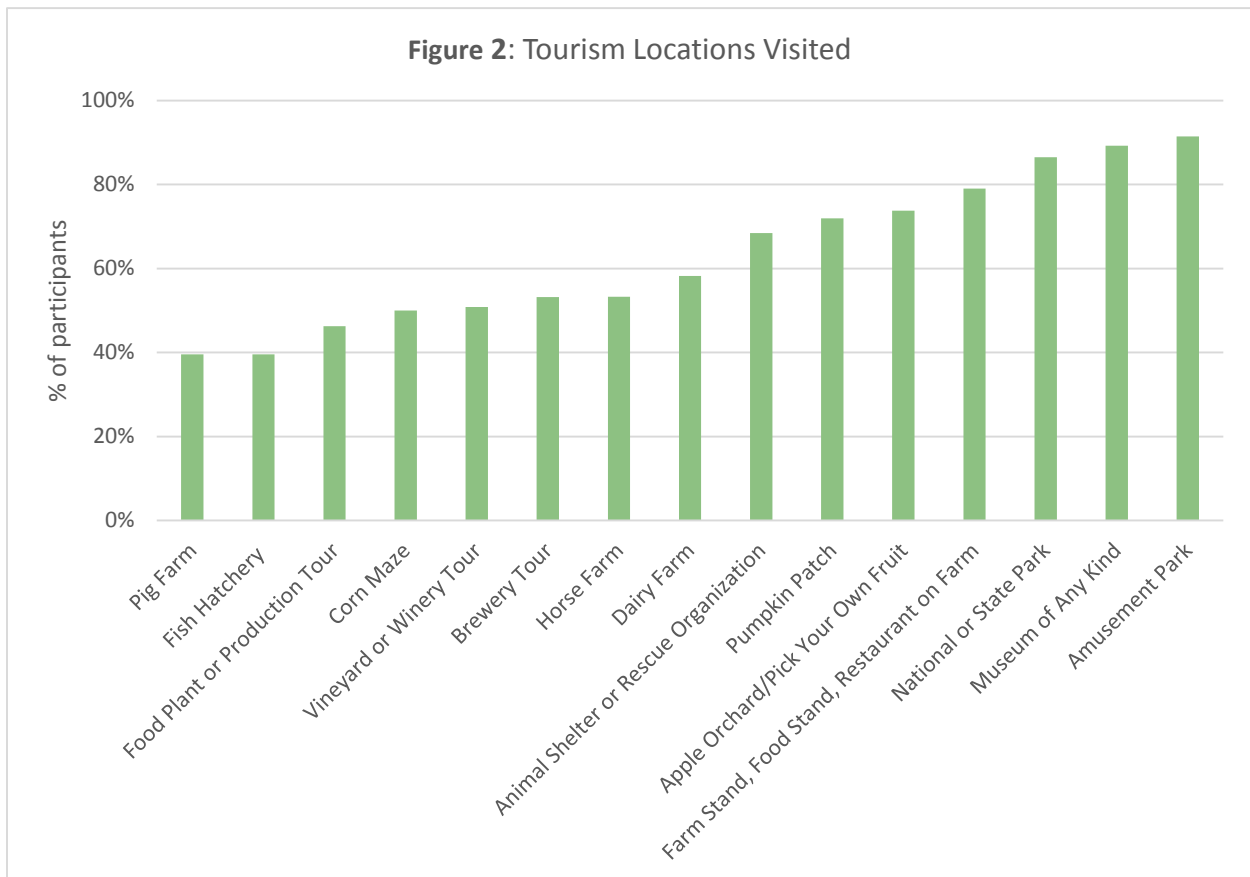
The most common household food production practice is, not surprisingly, growing a personal garden at home (**Figure 1**). Thirty-seven percent of respondents indicated that they had a personal garden at home in the last three years. The second most common activity was cultivating fruit trees and/or berries with 9 percent of participants reporting this activity. In total, 60 percent of respondents reported their households did not participate in any of the activities listed in the last three years.



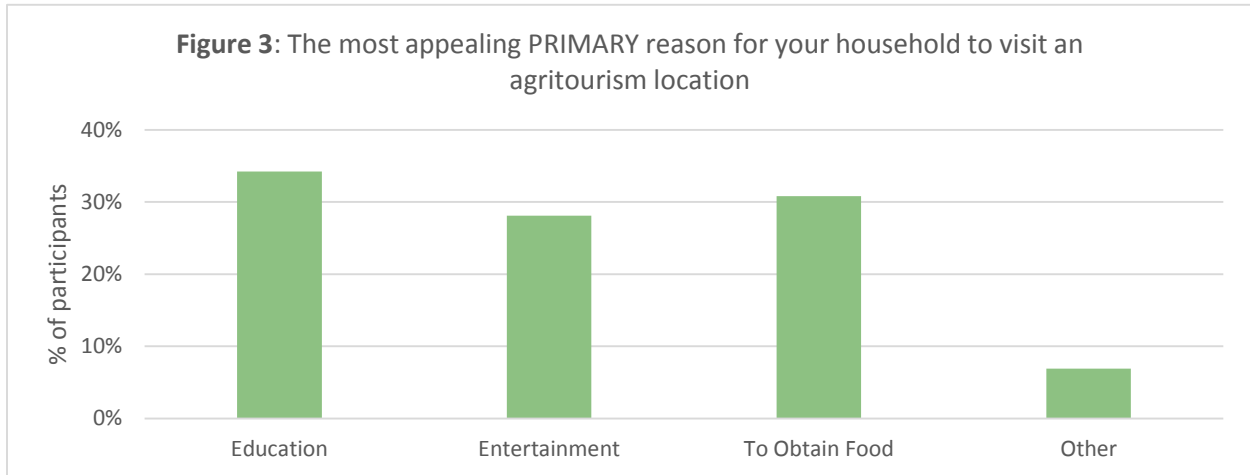
Household's Tourism Experiences

In addition to having direct relationships, individuals can develop some level of familiarity with or appreciation for food production by visiting agricultural operations or agritourism locations. The survey asked respondents three questions to better understand their tourism activities, focusing specifically on agritourism. First, participants indicated the last time they visited 15 different tourism location types including museums, amusement parks, animal-related operations and food production locations. Then, another question asked respondents about the distance they traveled for tourism. The third question asked respondents to provide their primary reason for visiting an agritourism location.

Approximately 50 percent of participants reported that they traveled more than 250 miles (total round trip) from their home to an attraction or for a family outing in the previous six months. When asked about visits to different attraction types, 4 percent of respondents said that they had never been to any of the options listed. There were 14 percent of respondents who indicated they had gone to five or fewer of the operations; 37 percent had gone to between six and 10 of the operations; and 45 percent had gone to 11 or more. **Figure 2** shows the participants who visited each of the potential tourism locations. Amusement parks, museums and national or state parks were the top three most visited operation types with 91 percent, 89 percent and 86 percent of participants visiting, respectively. Meanwhile, pig farms, fish hatcheries and food plants or production tours had the fewest visits.



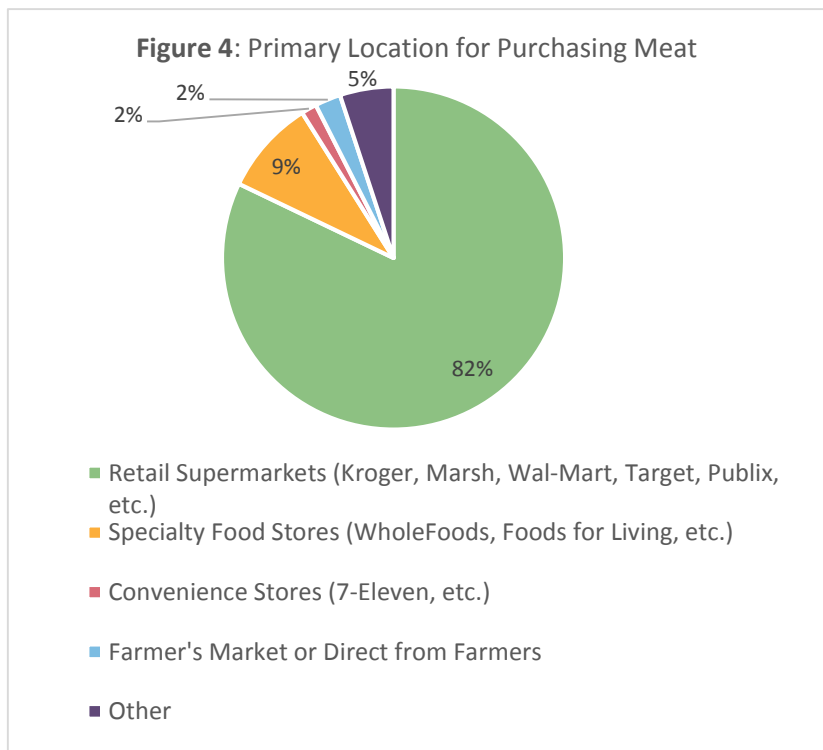
When asked about the most appealing primary reason for visiting an agritourism location, 34 percent of respondents selected education, 30 percent chose to obtain food items, and 28 percent indicated entertainment (**Figure 3**). (In addition, 7 percent selected an option other than these three as the primary reason their household would visit an agritourism location.)



Household Food Consumption

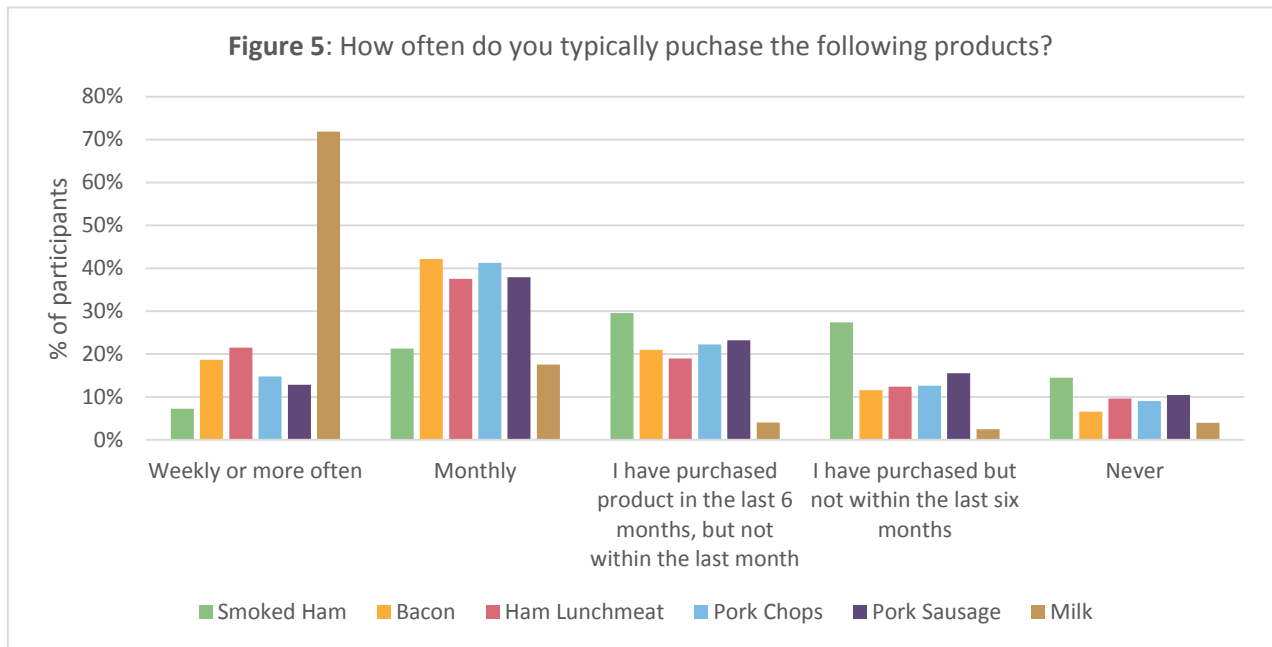
The research team investigated household consumption and purchasing patterns for various food products in a subset of questions within the survey instrument. These questions asked about household weekly food spending, purchasing locations for different food categories and frequency of purchase for pork products.

Participants indicated the primary location for purchasing four distinct food categories: dairy, meat, produce/fruit/vegetables and “all other food.” Not surprisingly, for every category, the majority of participants said that the primary purchase location is a retail supermarket, as opposed to specialty food stores, convenience stores, farmer’s markets, directly from farmers or other. Specifically looking at the meat category (**Figure 4**), 82 percent of respondents identified the retail supermarket as their primary location for purchasing meat, followed by 9 percent at



specialty food stores, 5 percent from other locations, 2 percent at farmer’s markets or directly from farmers and 2 percent from convenience stores.

The majority of respondents, 85 percent, had purchased pork products in the last 12 months. Participants also identified their household’s purchasing frequency for various pork products (as well as milk, for comparison). **Figure 5** illustrates the results. Most participants purchased bacon, ham lunchmeat, pork chops and pork sausage on a monthly basis.

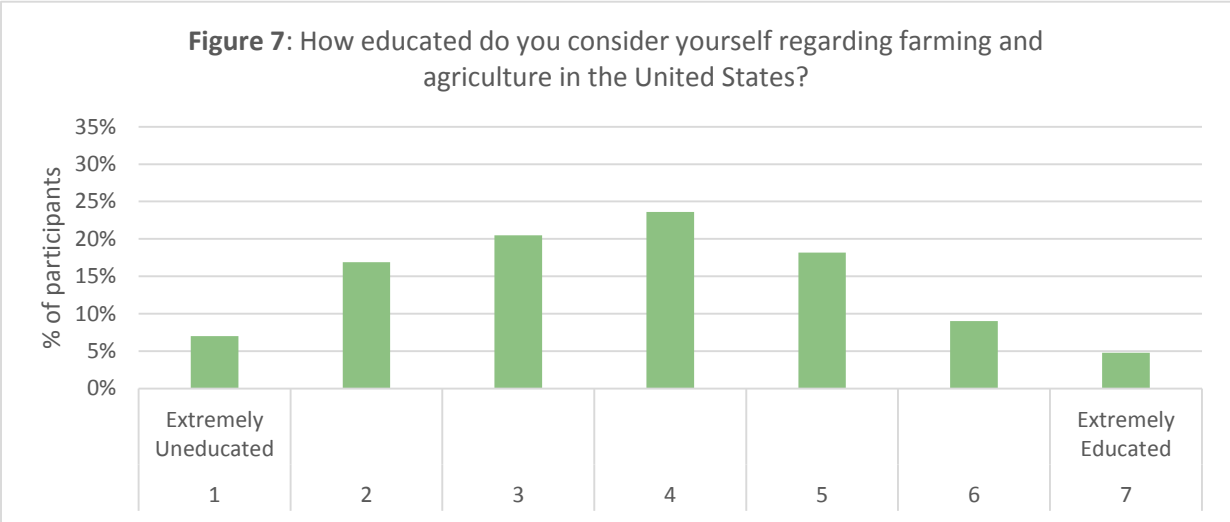
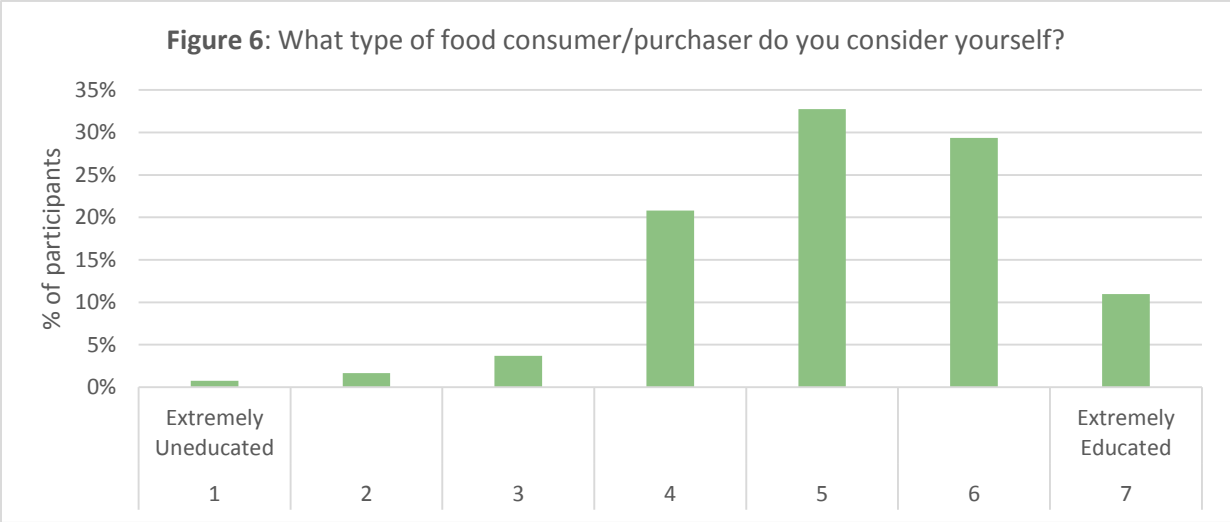


Familiarity with Livestock Agriculture

Researchers collected information on participants’ self-reported familiarity with animal agriculture to gain a better understanding of how educated or informed consumers are, or perceive themselves to be, about livestock production. The survey asked two specific questions:

- 1) What type of food consumer/purchaser do you consider yourself? (**Figure 6**)
- 2) How educated do you consider yourself regarding farming and agriculture in the United States? (**Figure 7**)

Respondents answered the questions using a scale of one (extremely uneducated) to seven (extremely educated). The mean response to the type of food consumer/purchaser was 5.15, while the mean response to how educated they considered themselves regarding farming and agriculture in the United States was 3.75. These results imply participants considered themselves relatively uneducated about food production and agriculture, but educated about food consumption.



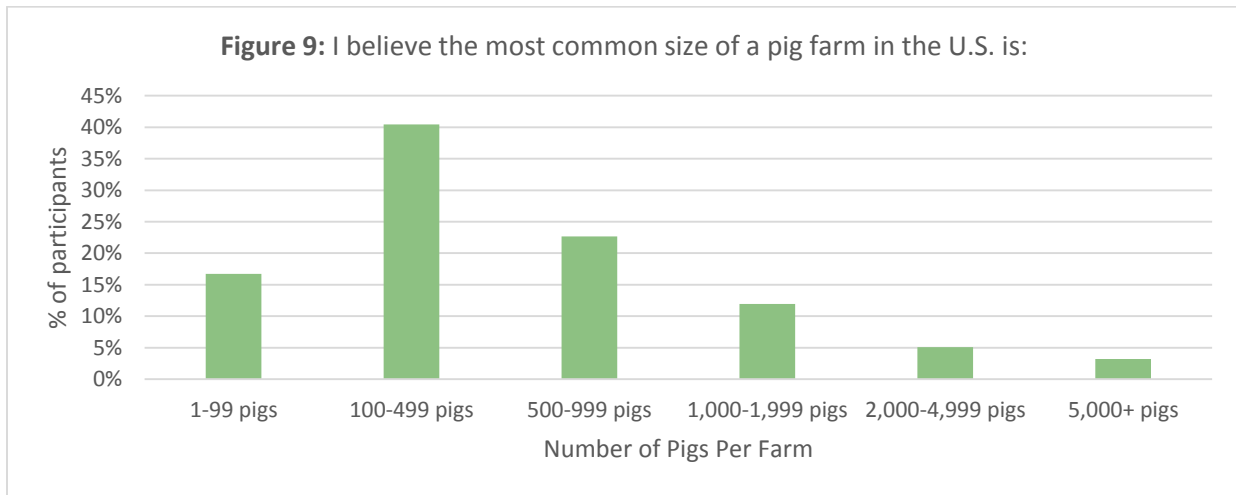
The survey also asked respondents several questions about animals in general to gain insight as to how familiar individuals might be with livestock (and food, more generally) production. Participants reported the life expectancy in years (decimals were allowed) for a dairy cow on a dairy farm, beef cow on a beef (cow-calf) farm/ranch, egg producing/laying hen, indoor house cat and pig raised for pork (**Table 3.**).

Table 3. Life Expectancy Estimates of Various Animals

	Dairy Cow	Beef Cow	Egg Producing Hen	Indoor House Cat	Pig Raised for Pork
Mean	10.75	6.23	5.28	13.06	4.04
Median	10	5	5	14	3
Mode	10	5	5	15	2

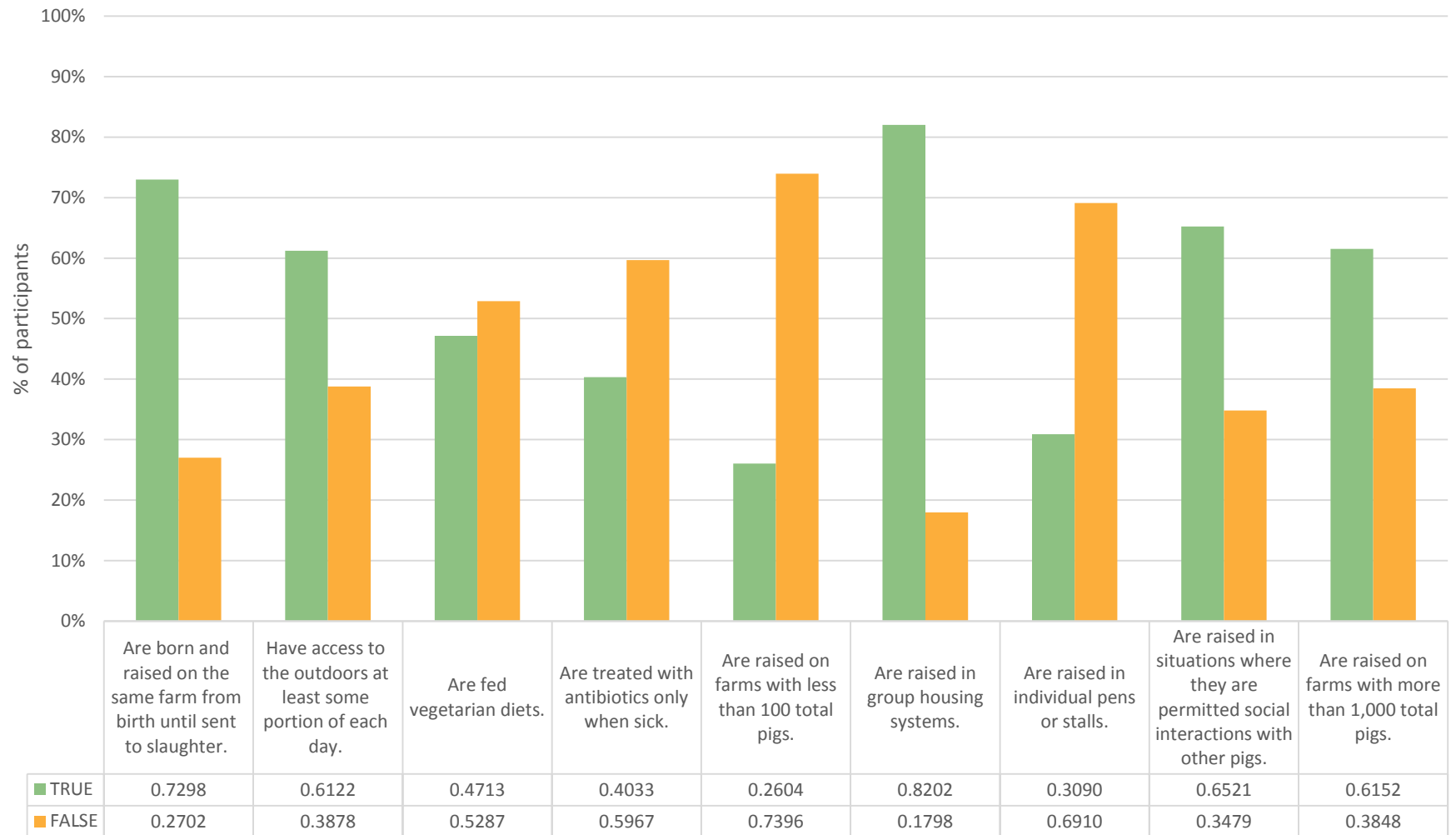
With the single exception of the indoor house cat, the mean, median and mode life expectancies reported for the animals were all higher than the actual average age. The significant overestimation of the mean ages is interesting. Do perceptions of animals' life expectancies in production systems impact perceptions of their welfare? The research team may explore the possible relationships between life expectancy and perceptions of welfare in future studies.

In order to determine respondents' level of knowledge about U.S. pork production, the survey asked participants to indicate 1) what they believe is the most common size of a pig farm, and 2) what farm size represents a majority of the U.S. operations used to produce pork. According to the USDA-NASS (2013), 71 percent of U.S. pig farms have zero to 99 pigs. Only 5 percent of U.S. pig farms have more than 5,000 pigs (USDA-NASS, 2013). The majority of U.S. pigs, 62 percent, are raised on farms with more than 5,000 pigs (USDA-NASS, 2013). This means that while the majority of pig farms are small, most pork originates from a few large operations. The results, as seen in **Figures 9 and 10**, show that participants believed the most common pig farm size is 100 to 499 pigs, which is slightly larger than reality. They also thought that the majority of pork is produced on a farm that has far fewer pigs than is typical for U.S. pork suppliers.



To further gauge participants' knowledge about U.S. pork production, the researchers presented nine true-or-false statements regarding pigs raised for pork in the United States. Most respondents believed the majority of pigs are born and raised on the same farm, have access to the outdoors for some portion of each day and are not fed vegetarian diets. They also thought that the pigs are treated with antibiotics in times other than when sick, are raised in group housing systems where they are permitted to have social interactions with other pigs and live on farms with more than 1,000 total pigs (**Figure 11**). The majority of responses were incorrect, demonstrating that study participants are generally unfamiliar with how pork is currently raised.

Figure 11: To the best of my knowledge, the majority of pigs raised for pork in the United States:

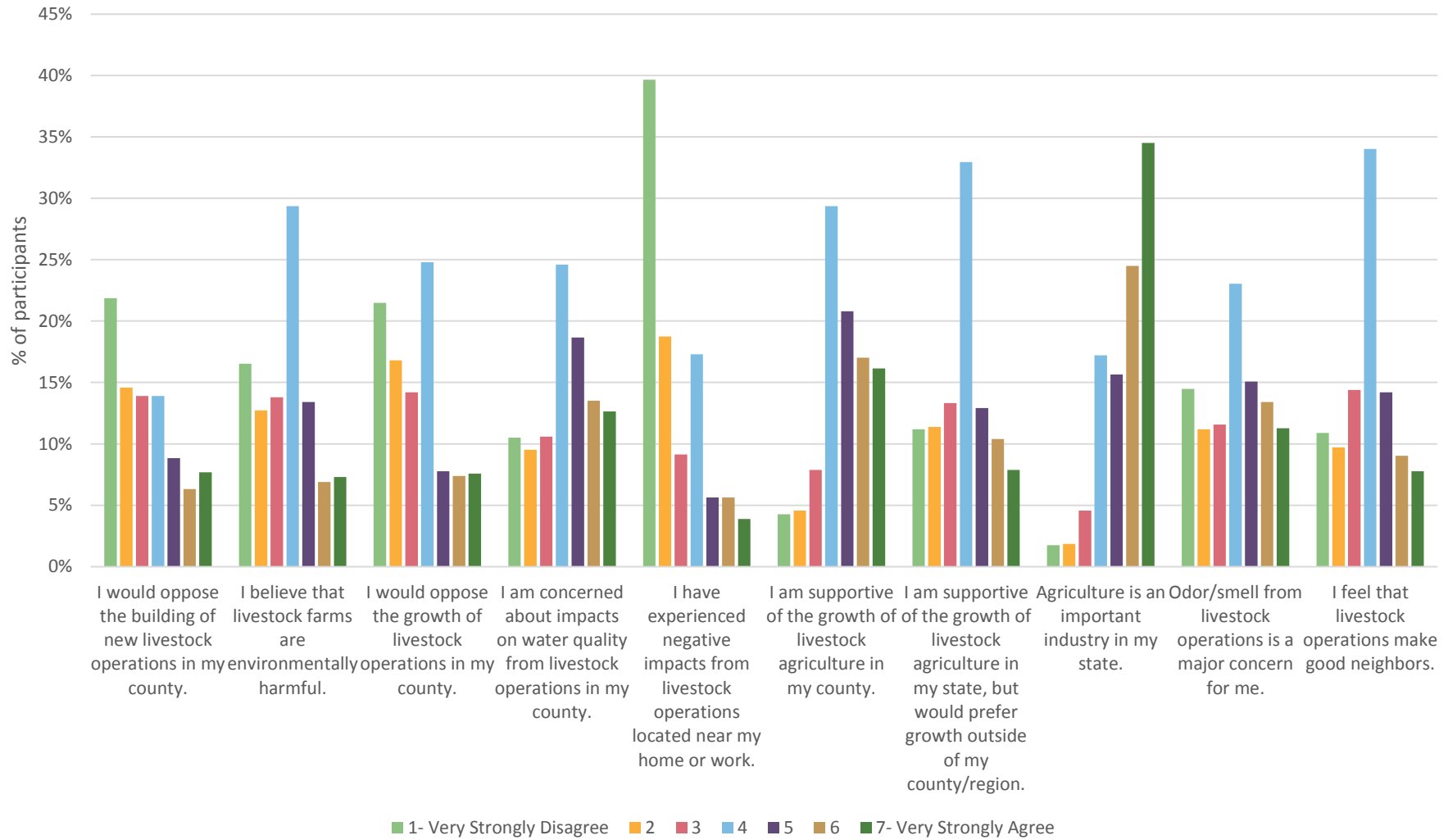


Views on Livestock Production and Growth

To identify residents' views on livestock production, the survey asked participants about growth and expansion of livestock operations in their home states. Using a scale of one (strongly disagree) to seven (strongly agree), respondents recorded their level of agreement with statements about the growth of animal agriculture. **Figure 12** illustrates the findings.

Most participants, 75 percent, believed the agriculture industry is important to their state of residence. They also indicated that they would not oppose the building or growth of livestock operations in their county. Most participants were supportive of the growth of livestock agriculture in their county. Thus, the majority of respondents were generally in favor of livestock operation growth. The most common response to the statement that livestock operations make good neighbors was neutral. The majority, 68 percent, disagreed to some level with the statement, "I have experienced negative impacts from livestock operations near my home or work." More respondents indicated some level of disagreement (rather than neutral or some level of agreement) implying that they did not believe that livestock farms are environmentally harmful.

Figure 12: Perspectives of Consumers on Animal Agriculture Growth

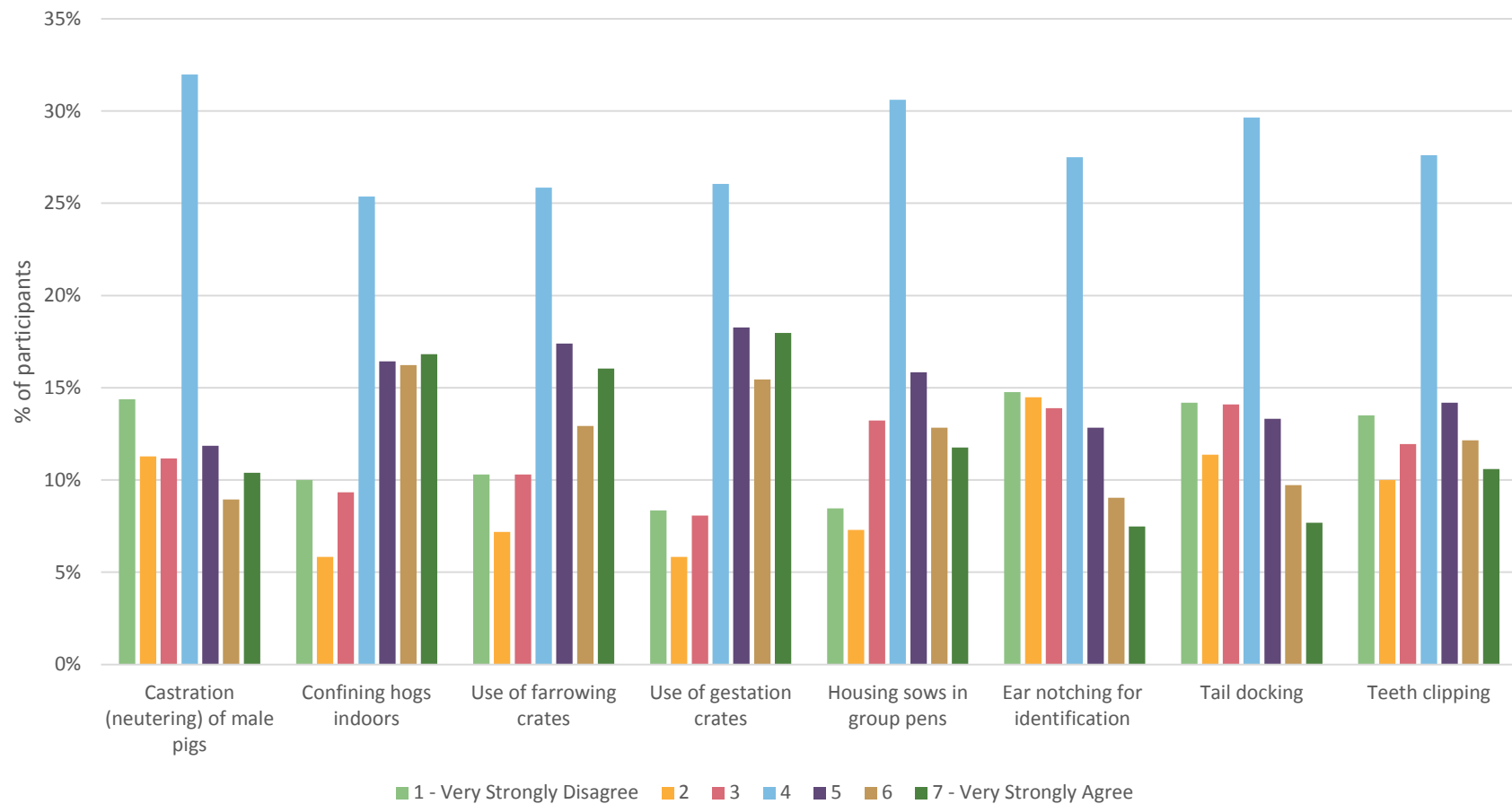


Perceptions of Animal Welfare

This survey asked participants to review a list of practices related to the welfare/humane treatment of pigs and indicate, on a scale, their level of agreement or disagreement that the practice negatively impacted the welfare of the pigs (**Figure 13**).

The most common response for each practice listed was a “four” or neutral. This response can be interpreted two different ways, either “respondent does not know” or “respondent has no strong feelings either way.” When looking to those who selected something other than neutral, more consumers believed that confining hogs indoors, using farrowing or gestation crates and housing sows in group pens seriously reduced the welfare/humane treatment of pigs. On the other hand, participants indicated that castration (neutering) of male pigs, ear notching for identification and tail docking were all practices that did not seriously reduce the welfare/humane treatment of pigs. The practice of teeth clipping, however, is interesting in that there was approximately the same percentage of participants who felt it seriously reduced the welfare of pigs as those who believed it did not. Other than the practice of teeth clipping, these findings are identical to those of McKendree and Widmar (2013), which hypothesized that the potential reason people are more accepting of castration, ear notching, tail docking and teeth clipping is because these are common or known practices for household pets and that “respondents could also assume that pigs, like pets, are given analgesia or anesthesia during ear notching, castration and tail docking” (McKendree and Widmar, 2013).

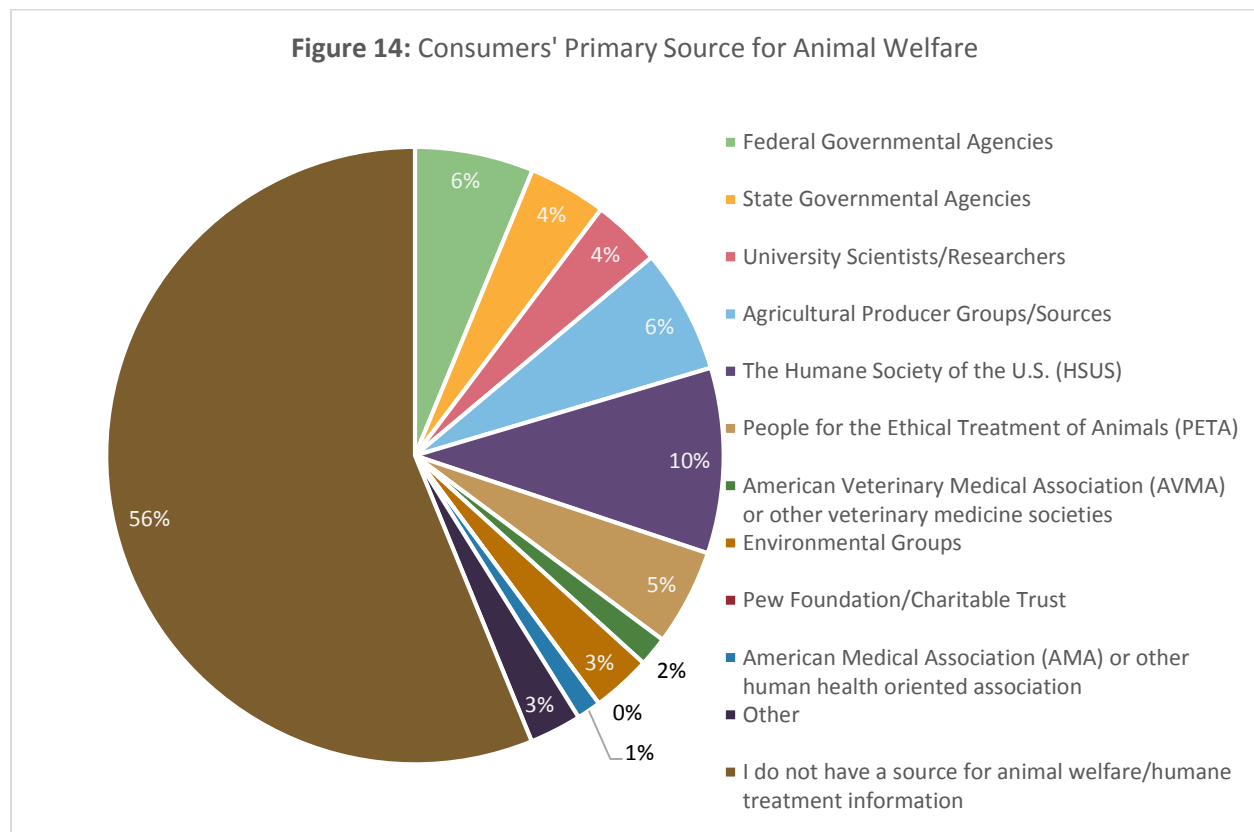
Figure 13: How much do you agree that the following practices seriously REDUCE the welfare/humane treatment of pigs?



People who have a source for animal welfare information tend to have higher concerns for animal welfare (McKendree et al., 2014). According to McKendree et al. (2014), “Understanding the primary sources of information that are used by the general public is key in understanding to whom consumers look for guidance on animal welfare issues.” This survey asked respondents to indicate their primary source for animal welfare information. **Figure 14** presents these findings. The majority of participants, 56 percent, indicated that they had no source for animal welfare information. This is a smaller percentage than what Cummins et al. (2015) found in an Indiana-only survey. Sixty-three percent of Indiana residents in that study did not have a primary source for animal welfare information. However, this result does match the McKendree et al. (2014) study, which found that 56 percent of their national survey respondents did not have a source for animal welfare information.

McKendree et al. (2014) examined relationships between the different sources and consumers’ reported concern for animal welfare. They discovered that the differences in levels of animal welfare concern were better correlated with having or not having a source, rather than which sources were used (McKendree et al., 2014). That said, the top-selected primary sources of information in this study were the Humane Society of the United States (HSUS), federal government agencies and agricultural producer groups/sources. These match the findings of Cummins et al., 2015. McKendree et al. (2014) also reported the HSUS as the most common source used for animal welfare information.

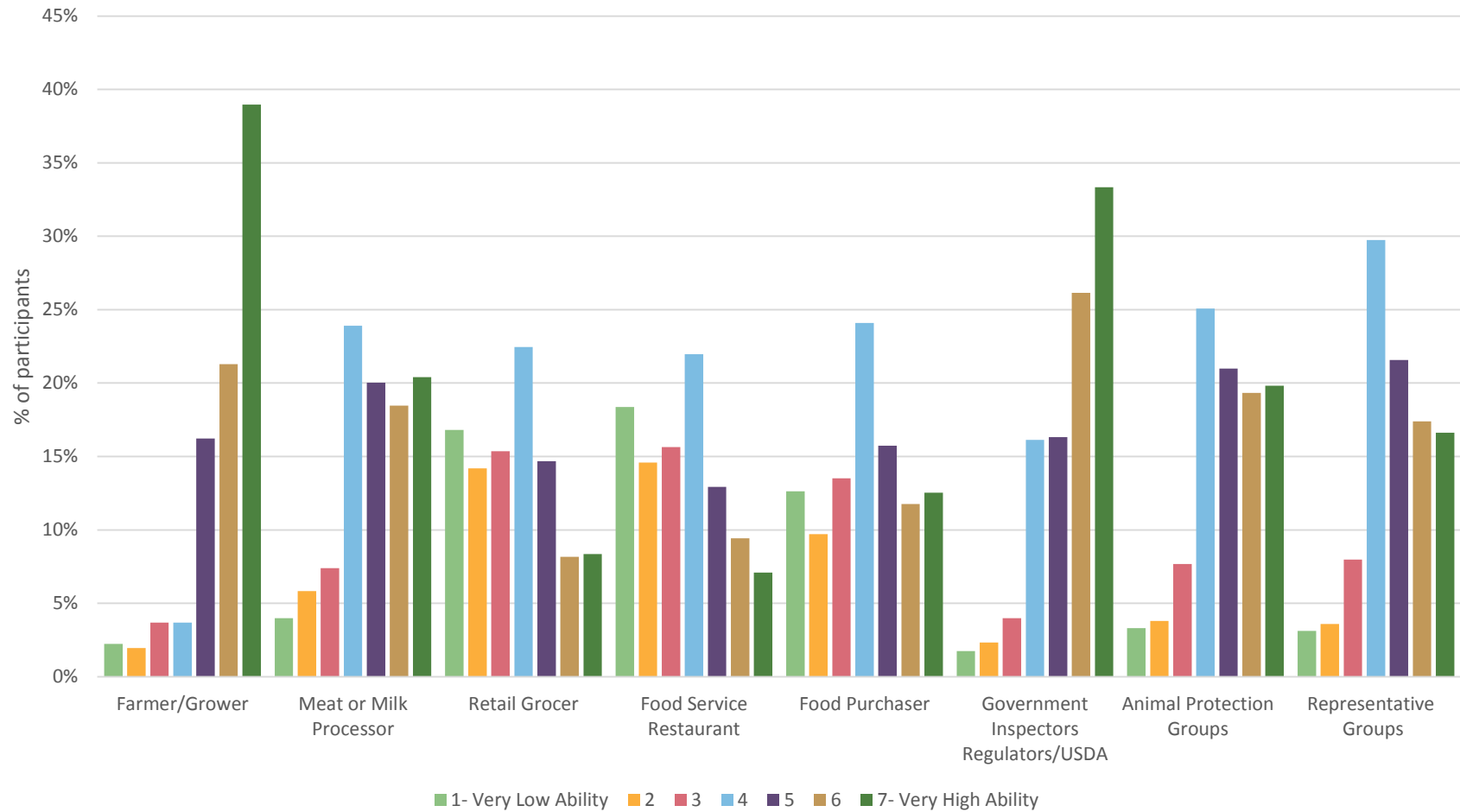
Compared to McKendree et al. (2014), there was a slightly larger percentage of respondents in this survey who said that their primary source was state government agencies (2 percent compared with 4 percent). This study’s results, however, do match with those published by Cummins et al. (2015) specifically about Indiana residents.



The survey asked participants to rate the ability different parties have to influence and ensure the proper animal welfare/humane treatment practices. These parties included: farmer/grower, meat or milk processor, retail grocer, food service restaurant, food purchaser (consumer), government inspectors/regulators/USDA, animal protection groups and animal industry representative groups.

Approximately 39 percent of participants indicated that the farmer/grower group had a very high ability to influence and ensure proper animal treatment practices. This was larger than any other party in the supply chain. Participants also perceived government inspectors/regulators/USDA, animal protection groups and meat or milk processors to have a high level of influence on the treatment practices. Retail grocers, food service restaurants and food purchasers have little influence on proper animal welfare practices, according to the survey respondents. **Figure 15** presents the complete findings.

Figure 15: How much ability does each of the following parties have to influence and ensure proper animal welfare/humane treatment practices?



Researchers also asked participants if they had reduced their pork consumption in the last three years due to concerns of animal welfare/humane treatment or handling. Fourteen percent of participants answered “yes.” Of that group, the mean consumption reduction was 56 percent. These findings match those of McKendree and Widmar (2013), who conducted a nationwide survey and found that 14 percent of U.S. consumers reduced their pork consumption by an average of 56 percent due to animal welfare concerns. However, Cummins et al. (2015) reported that only 9 percent of Indiana residents reduced their pork consumption by an average of 59 percent due to animal welfare concerns.

Fair Oaks Farms (FOF)

This study included elements that assessed the impacts of agritourism on consumer perceptions of agriculture and animal welfare. In order to study this in relation to pork production, the survey asked respondents if they had heard of and/or had visited Fair Oaks Farms (FOF)². Eighteen percent of respondents said they had heard of FOF, and of that group, approximately 38 percent had visited. Thus, 7 percent of the survey respondents had visited FOF. The majority, 63 percent, came with their family and 38 percent had visited multiple times.

Respondents who had either heard of or been to FOF answered additional questions regarding their experience and perspectives. Researchers also compared their responses to the rest of the survey with those who had not heard of or been to FOF to see if differences existed between the groups in demographics, household lifestyle, consumption behaviors, familiarity with animal agriculture, views on animal agriculture growth and views on animal welfare. The research team compared the two groups using crosstabs and z-scores generated in SPSS. All findings referenced as being statistically significant are significant at the 5 percent level.

Participants who had heard of FOF shared their perspectives on the operation’s credibility. The majority of participants, 53 percent, felt the pigs were raised in above average conditions. Forty percent believed the pigs were in average conditions, and 6 percent thought the pigs were in below average conditions. Similarly, the majority of those who have heard of FOF, 54 percent, believed the cows were raised in above average conditions; 39 percent felt the cows were raised in average conditions; and the remaining 6 percent thought the cows were raised in below average conditions.

Participants also indicated if they felt the practices employed at FOF with respect to environmental management and preservations were above average, average or below average. The majority, 51 percent, selected above average. Forty-one percent of respondents chose average, and 8 percent reported below average. Of those who had heard of FOF, the largest group believed the welfare/humane treatment conditions under which pigs and dairy cows are raised at FOF was good and excellent, respectively. They chose from the following options: very poor, poor, fair, good and excellent.

² Fair Oaks Farms is located in Fair Oaks, Indiana. “The goal for Fair Oaks Farms is to educate the public about modern farming procedures while providing a transparent look at everything we do, taking care of our animals and our planet and providing the best, most nutritious products to our customers” (from <http://fofarms.com/blog/>).

Lifestyle Differences

The study compared and contrasted demographic factors between the two groups of respondents – those who had heard of or been to FOF and those who had not. A larger percentage of those who had been to FOF were male. Those who had heard of or been to FOF tended to be younger. They also had higher levels of income and education compared to those who had not visited FOF. A larger percentage of those who had been to FOF had pets, as well.

A larger percentage of those who had been to or heard of FOF indicated that they had a family member or relative who owned or operated a farm or that they owned and operated a farm.

Tourism Differences

When examining the differences in tourism between the two groups, a larger percentage of people who had been to FOF said that they have traveled more than 250 miles (round trip) from their home to visit an attraction of any kind. Also, a larger percentage of those who had been to FOF attended most other attractions investigated in the study, implying that those who visited FOF tended to be tourists.

Consumption Differences

A larger percentage of people who had been to FOF had reduced pork consumption in the last three years due to animal welfare concerns, as opposed to those who had not been to FOF. There was also a larger percentage of FOF visitors who self-reported to be vegan or vegetarian.

Familiarity with Animal Agriculture Differences

A larger percentage of people who had visited FOF considered themselves highly educated about food. They also identified themselves as educated about farming and agriculture in the United States.

When asked about the common size of pig farms, a larger percentage of those who had been to FOF were more correct about the size of farms where pigs are raised for pork. However, they did not answer differently than those who had not been to FOF regarding the most common size of a general pig farm in the United States.

The series of true/false questions about management practices on U.S. pig farms showed differences between those who had been versus those who had not been to FOF. A larger percentage of people who had been to FOF believed the following statements were true: Pigs are fed vegetarian diets; pigs are raised on farms with less than 100 total pigs; pigs are raised in individual pens or stalls; and pigs are raised on farms with more than 1,000 total pigs. All of the other true/false statements investigated had no statistically different responses based on if respondent had been to FOF or not.

Views on Animal Agriculture and Growth Differences

For those who had been to FOF compared with those who had not, many differences in perspectives about animal agriculture and growth of operations are identified. A larger percentage of those who had visited FOF agreed to all of the statements studied. However, one statement – Agriculture is an important industry in my state. – did not have statistically different responses based on whether the respondent had been to FOF.

Animal Welfare Perceptions Differences

Practices

The study examined differences in animal welfare perceptions based on if respondents had been to FOF. A larger percentage of FOF visitors agreed that castration (neutering) of male pigs, confining hogs indoors, using farrowing crates, housing sows in group pens, ear notching for identification, tail docking and teeth clipping seriously reduced the animal welfare of pigs.

Sources of Animal Welfare Information

Respondents identified their primary source of animal welfare information. A larger percentage of those who had been to FOF had a source for animal welfare information.

Conclusions and Impacts

The Midwest is responsible for a large portion of the total pork (and livestock) production in the United States. The five-state region (Indiana, Illinois, Michigan, Ohio and Wisconsin) examined in this study is responsible for approximately 18 percent of the total U.S. pig sale value. While pig farms certainly exist in these five states, most residents are still unfamiliar with the production practices associated with raising pigs. Yet, they do generally consider themselves educated about food production and uneducated about agriculture. While only a small percentage are directly employed in agriculture, 40 percent of respondents indicated that they have been involved in some form of household food production in the last three years. The majority of participants said they were generally supportive of growth in the livestock industry and believed that agriculture is important in the state they reside. They were concerned with animal rearing practices involving the use of crates for pork production and believed that of all the parties in the chain, the farmer has the highest ability to influence and ensure proper treatment of animals in the production process.

References

- Bureau of Labor Statistics. (2013, December). Employment by major industry sector. Retrieved from http://www.bls.gov/emp/ep_table_201.htm
- Cummins, A., Olynk Widmar, N., Croney, C., Fulton, J. (2015). Perception of Indiana State Residents: Animal Agriculture and Meat Products in 2014. Center for Animal Welfare Science, Purdue University. RP.20015-01. Retrieved from: <http://www.vet.purdue.edu/CAWS/files/documents/051815PerceptionofIndianaStateResidents.pdf>
- Dillman, Don A. (2007). Mail and Internet Surveys: The Tailored Design Method: 2007 Update with New Internet, Visual and Mixed-mode Guide. 2nd ed. Hoboken, N.J: John Wiley.
- Fleming, C. M. and Bowden, M. (2009). Web-based surveys as an alternative to traditional mail methods. *Journal of Environmental Management*, 90, 284-292.
- Gao, Z. and Schroeder, T. (2009). Effects of additional quality attributes on consumer willingness-to-pay for food labels. *American Journal of Agricultural Economics*, 91, 795–809.
- Hudson, D., Seah, L., Hite, D., and Haab, T. (2004) Telephone presurveys, self-selection, and non-response bias to mail and internet surveys in economic research. *Applied Economics Letters*, 11, 237–240.
- Louviere, J. J., Islam, T., Wasi, N., Street, D. and Burgess, L. (2008). Designing discrete choice experiments: do optimal designs come at a price? *Journal of Consumer Research*, 35, 360–375.
- Marta-Pedroso, C., Freitas, H., and Domingos, T. (2007). Testing for the survey mode effect on contingent valuation data quality: A case study of web-based versus in-person interviews. *Ecological Economics*, 62, 388–398.
- McKendree, M.G.S., Olynk Widmar, N. (2013). Consumer Perceptions of Livestock Products and Animal Welfare. Center for Food and Agricultural Business, Purdue University. CAB RP 13.1. Retrieved from <<http://agribusiness.purdue.edu/files/resources/r-7-2013-mckendree-olynk-widmar.pdf>>.
- McKendree, M.G.S., C.C. Croney, and N.J.O. Widmar (2014). Effects of demographic factors and information sources on United States consumer perception of animal welfare. *Journal of Animal Science*, 2013. Retrieved from <https://www.animalsciencepublications.org/publications/jas/pdfs/92/7/3161?search-result=1>
- National Telecommunications and Information Administration and Economics and Statistics Administration in the US Department of Commerce. (2013). exploring the Digital Nation: America’s Emerging Online Experience. Retrieved from:

- http://www.ntia.doc.gov/files/ntia/publications/exploring_the_digital_nation_-_americas_emerging_online_experience.pdf
- Olynk, N. J., Tonsor, G. T., and Wolf, C. A. (2010). Consumer willingness to pay for livestock credence attribute claim verification. *Journal of Agricultural and Resource Economics*, 35, 261–280.
- Olynk, N.J., and Ortega, D.L. (2013) Consumer preferences for verified dairy cattle management practices in processed dairy products. *Food Control*. 30, 298-305.
- Tonsor, G.T., and Wolf, C.A. (2010). Drivers of resident support for animal care oriented ballot initiatives. *Journal of Agricultural and Applied Economics*, 42(3), 419-428.
- U.S. Census Bureau. (2012). Statistical abstract of the United States: 2012. Retrieved from <http://www.census.gov/compendia/statab/2012/tables/12s0229.pdf>
- U.S. Census Bureau (2010-2012). DP05: ACS Demographics and Housing Estimates: 2010-2012 American Community Survey 3-Year Estimates. Accessed June 24, 2014 at: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_12_3YR_DP05&prodType=table
- U.S. Census Bureau. (2008-2012). DP01: Selected Economics: 2008-2012 American Community Survey 5-Year Estimates. Accessed June 24, 2014 at: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_12_5YR_DP03&prodType=table
- USDA. (2005). Factors Affecting U.S. Pork Consumption/ LDP-M-130-01. Retrieved from http://www.ers.usda.gov/media/326138/ldpm13001_1_.pdf
- USDA. (2012). Hogs and Pigs – Inventory and Sales 2012 and 2007. 2012 Census of Agriculture. Accessed May 22, 2015 at: http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_US_State_Level/st99_2_012_012.pdf
- USDA-NASS. (2013, February). U.S. Hog Operations Number of Operations and Percent of Inventory, 2012. Retrieved from http://nass.usda.gov/Charts_and_Maps/Hogs_and_Pigs/hopinve.asp
- Vegetarianism in America. *Vegetarian Times*. Retrieved from http://www.vegetariantimes.com/features/archive_of_editorial/667

Funding Acknowledgement

Researchers at Purdue University developed the concept for this study in collaboration with Fair Oaks Farms, Belstra Milling Co., Indiana Pork and Indiana Soybean Alliance. Indiana Pork and Indiana Soybean Alliance provided the funding for the study. Researchers at Purdue University conducted the study and analysis without input, collaboration, sharing of survey design or participation in data collection by the funders, Fair Oaks Farms or Belstra Milling Co. in order to avoid biases or the perception of biases arising from working with industry groups.