Environmental factors of attitude formation toward organic and conventional milk:
A study of interpersonal networks and interactions of milk consumers in California

THESIS

Presented in Partial Fulfillment of the Requirements for the Degree Master of Science in
the Graduate School of The Ohio State University

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The Ohio State University
2017

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Abstract

This study analyzed the social media use and interpersonal interactions of consumers of organic and conventional dairy milk. Guided by the Theory of Planned Behavior and Social Cognitive Theory, the study was conducted to better understand if the decision to purchase organic or conventional milk is influenced by norms and attitudes established via human and online social interactions. A content analysis using Sysomos MAP and an online Qualtrics survey were utilized to gain insight into behaviors, attitudes, and interactions of 308 milk consumers in various geographical regions of California. This study expands on previous research in traditional media and human social networks by specifically studying platforms in new media and their association to users’ decisions made about milk products. The findings indicate that urban, suburban, and rural consumers differ in some ways in their online and interpersonal interactions related to milk information, as well as their perceptions of organic versus conventional milk. Based on the findings of the study, differences in personal networks and exposure to certain messaging in varying regions might perpetuate a more positive, confident, and informed view of organic or conventional milk products in some areas more so than others.
Dedication

This research is dedicated to the dairy farmers of the California Central Valley.
Acknowledgements

Many thanks to Dr. Annie Specht and Dr. Emily Buck for their endless guidance, advice, and especially their patience. Thanks also to the many people in the department of Agricultural Communication, Education, and Leadership who have been a great source of support throughout the process.
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Chapter 1: Introduction

To some, organically classified food products are heralded as “safer, healthier, and more environmentally friendly than conventionally produced alternatives” (Yiridoe, Bonti-Ankomah, & Martin, 2005). Others may hold a more indifferent, or perhaps negative, perception of the organic label. Nonetheless, organic products have taken hold on grocery market shelves. Based on the 2014 Organic Survey by the USDA National Agricultural Statistics Service (NASS), sales of organic products overall have increased by 72% since 2008. Milk was the top commodity accounting for $1.08 billion in organic sales, a 44% increase since 2008. What was once a niche market has continued to grow and expand through increased production and marketing both nationally and globally.

Characteristics of the Milk Market

Awareness of these changes in consumer demand within the dairy industry is essential to organic producers and conventional milk producers alike. According to the 2017 Estimated Fluid Milk Products Sales Report by the USDA Agricultural Marketing Service, conventional fluid milk sales decreased by 0.4% between 2015 to 2016, a startling fact when compared to the organic milk sales, which saw a 2.4% increase during the same year (USDA, 2017). A study by Kiesel and Villas-Boas (2007) found that the presence of the USDA Organic seal and the NOP (National Organic Program) label greatly affected consumer purchasing behavior. In this way, labeling policies are
contributing to the perception that organic milk products are safer, healthier, and more nutritious despite the evidence that organic and conventional milk are virtually identical (Smith-Spangler et al., 2012; Palupi et al.; 2012, Forman & Silverstein, 2012).

“Organic milk is a ‘gateway’ product category for organic food” (Ching-Hsing, Hooker, Jones, & Sam, 2011, p. 311). In other words, the dairy industry is often the means through which consumers make a decision to switch from conventional to organic products. With sales in decline, conventional milk producers are under pressure to encourage increased milk consumption, while the growth of the organic milk market adds pressure through product competition and marketing strategy. It would be beneficial for dairy industry leaders in communications, marketing, and campaigning to investigate the ways in which they can best address consumer perceptions of their products. Through this study, the researcher sought to gain insight into the primary channels from which consumers seek out and receive information about various milk products. In doing so, professionals in the industry can have an understanding of how they can better provide information that is scientific, effective, and factual to consumers. Rather than believing false or misleading assumptions about what the organic label means, consumers might be more prepared to make an informed decision based on the characteristics and production standards of milk products – whether they be organic or conventional.

Alternative Products

When discussing milk markets and competition, alternative products cannot be ignored. There are lactose-free products still made with dairy that allow individuals with allergies to consume them without adverse effects, but there are also plant-based
alternatives such as soy, almond, or coconut beverages made without cow’s milk. A rise in popularity of these dairy-free items leads market analysts to believe there will be a 10% increase in plant-based alternative sales in the United States by the year 2024, with almond milk projected to be the fastest-growing category (Grand View Research, 2016). These products have brought concern to dairy producers, with some now calling for fair differentiation between these alternative beverages and cow’s milk: “Dairy industry groups say the labeling of plant-based products as milk implies that they have the same nutritional value as milk that comes from cows and animals when they may not” (“Almond Milk Hurting Farmers?”, 2017). These products are important to consider when looking at the milk market as a whole, as these many alternatives compete with dairy milk of all types: conventional, organic, or lactose-free.

The State of California and Dairy Campaigns

As a state responsible for the production of hundreds of different crop varieties, California can be seen as a mecca for agriculture. Despite recent years marked by drought conditions in the reservoir-dependent Central Valley, the state’s Mediterranean-type climate continues to deliver high-volume produce and income for the state. According to L.A. Times writers Karen Ross and Daniel Sumner (2015), “many of the most healthful and desirable foods and beverages grow on California farms and ranches. California, after all, helped start the farm-to-plate movement, and it's not an exaggeration to say that agriculture is tied to the state's identity from harvest (Cesar Chavez) to table (Alice Waters)” (p. 9). Californians’ pride in their food can be seen in the prevalence of TV advertising focused on food and beverages sourced from the state. Blue Diamond
Almond Growers is one company that has recently capitalized on high consumer demand by aggressively marketing their products through high-profile venues like the Rio de Janeiro Summer Olympics to bring in record revenue (The Sacramento Bee, 2016).

Perhaps the most widely known agricultural campaigns in California, however, is a product of the California Milk Advisory Board and their happy dairy cows. “The Happy Cows advertising campaign has enjoyed unprecedented success in the realm of dairy commodity marketing, but its content has proved controversial” (Specht, 2010). Their pastoral portrayal of dairy cows was criticized by many as being untrue to the modern way dairy farms look and function in California. The California Milk Advisory Board (CMAB) has since shifted to a producer-focused approach in getting to know the California dairy families through documentaries and interviews, as well as a natural ingredient-focus in their “Return to Real” commercials and content.

Another well-known advertising push came from the California Milk Processor Board and their “Got Milk?” campaign. Throughout its 20-plus-year history, “research shows that "got milk?" has become the most remembered tagline in beverage history, outstripping those of beer and soft drink companies” (Goodby, 2013, p. 9). This decades-long presence of television campaigns and print advertising, especially dairy-related, is important to consider when studying consumers in the state of California. Not only has there been a long-lasting presence, but also much national and global attention has been paid to these campaigns.

By better understanding the ways in which individuals receive and conceptualize messages, we can gain insight into the imagery, values, and product traits that resonate with consumers and through which channels they receive information. Sources of attitude
formation in consumers of organic milk may include exposure to advertisements, labeling, human social networks, or social media. Knowing how and where attitudes are formed is key to learning how to capture and influence consumers in a way that could be used in milk marketing. Studying individuals who live in varying geographic areas may also provide a look at how different consumers come to make decisions about organic milk products versus conventionally produced milk.

Problem Context and Statement

Demand for organic food products is increasing globally, with milk products accounting for 15% of all organic sales, second only to fruits and vegetables (U.S. Economic Research Reserve, 2016). While this provides opportunity for growth and diversity within the dairy industry, it has been met with conflicting consumer perceptions and understanding of the differentiation between organic and conventional milk. Confusion and ambiguity often surround the meaning of labels, terminology, and farming practices. Consumer attitudes and purchasing behaviors regarding organic and conventional milk products can affect producers, processors, the commodity market, government policy, and regulations. If consumer attitudes are influenced by misinformation rather than sound knowledge, they can have a negative impact on the dairy industry worldwide as well as consumers’ ability to make informed decisions.

Consumers need to have access and exposure to science-based facts regarding organic and conventional milk products, so they are able to make informed purchasing decisions. Agricultural communicators should explore the best strategies through which they can reach and effectively educate a large number of consumers. By analyzing
consumer behavior in varying regions based on their online and interpersonal interactions, we can gain insight into the ways communicators may improve agricultural literacy amongst consumers who need it most.

Purpose and Research Questions

Through this study, the researcher specifically hoped to determine if interactions on various social media platforms or in real-world contexts leads to purchasing decisions within the realm of milk products. To gain a deeper understanding of why individuals purchase certain types of milk, it is necessary to learn how the attitudes and beliefs that guide their behavior are formed. By identifying the main channels through which consumers of milk seek out and/or receive information regarding dairy products, the researcher can begin to see how these channels might influence attitudes and behaviors. The purpose of this study is to find the most effective methods and channels through which professional communicators can educate and inform consumers so they can make informed purchasing decisions when they see the organic label. This study was guided by three research questions:

RQ1: Which channels and influencers, both online or personal, do organic and conventional milk consumers primarily use to acquire information regarding milk products?

RQ2: Do online influencers of information about milk products identified by the researcher align with prolific individuals reported by milk consumers?

RQ3: How do consumers in different geographic regions compare in their perceptions of organic versus conventional milk?
Limitations of the Study

Overall, this study focuses on one piece of a larger conceptual framework, the individual environment. The influence of one’s environment on attitude-behavior development is assumed to function with motivation to perform certain behaviors. This study did not account for the motivation aspect of these processes and focused only on the external factors in consumers’ social environments.

The researcher utilized a survey instrument to conduct the study which introduces several limiting factors. The presence of a five-item scale, for example, often allows respondents to more frequently select the middle choice. While the researcher did not notice results that appeared to be strongly centered, it is something to be considered. The survey also utilized many different question types, and the researcher did not group questions by subject. A more structured survey with clear sections and subsequent questions would provide a greater ability to gauge participant perceptions and attitudes in a more in-depth statistical analysis.

The inclusion of an unlimited range of survey participant ages provides a broad view of the overall milk consumer market, however, this may have had an adverse impact on social media analyses. If older respondents are less active on social media compared to younger respondents, their inclusion could impact assessment of the most effective platforms and channels for communication. And, finally, reliability of the survey instrument was done simply by collaboration between the researcher and the committee members. Conducting a test-retest of the instrument was not an option given limited funding due to working with a survey company as well as a short time frame to complete the study.
Definition of Terms

Constitutive Definitions

- Organic milk: Milk produced following the protocols outlined by the USDA certified organic guidelines
- Conventional milk: Milk produced under conventional farm management practices as outlined by farm commodity organizations
- Influencer: An individual who, because of their visibility within a group or network of individuals, plays a strong role in the spread of information
- Agricultural literacy: The ability to comprehend, discern, and communicate basic information about the agricultural industry and its products
- Norms: A principle of right action binding upon the members of a group and serving to guide, control, or regulate proper and acceptable behavior (Merriam-Webster.com, n.d.)
- Attitude: a mental position, feeling, or emotion with regard to a fact or state (Merriam-Webster.com, n.d.)

Operational Definitions

- Interpersonal network: The people in an individual’s network that they engage in human interaction with, not just online or using technology, but in-person
Chapter 2: Review of Literature

This study was intended to address the issue of inconsistent perceptions of organic and conventional milk to determine what external influencers may be guiding consumer decision-making. Environmental aspects such as social media and real-world interactions in an individual’s social networks were taken into consideration. The research questions used to address this issue were: 1) Which channels and influencers, both online or personal, do organic and conventional milk consumers primarily use to acquire information regarding milk products? 2) Do online influencers of information about milk products identified by the researcher align with prolific individuals reported by milk consumers? 3) How do consumers in different geographic regions compare in their perceptions of organic versus conventional milk?

Theoretical Framework

*Theory of Reasoned Action (TRA)*

Reasoned Action Theory, rooted in the psychology of human behavior, can be applied to marketing strategy and consumer behavior in the realm of food campaigns, grocery-store advertising, and brand promotion. The theory poses the basic assumption that behavior results from conscious deliberation. It defines attitude formation as a process in which the individual’s belief system becomes associated with certain behaviors, and encourages one to favor these certain behaviors over time (Yzer, 2013).
In this sense, the researcher can use the theory to assess the ways in which attitudes toward certain food types develop, and how these attitudes will likely influence their behavior to purchase or avoid certain products. By identifying an individual’s beliefs and attitudes, the researcher can find the best ways to construct and deliver messages that effectively engage behavior change via attitude. There have been studies in which researchers draw upon attitude formation in relationships to sustainable food options. One such study found that a generally positive interest in, and attitude toward, these sustainable products led to a greater intention to buy them (Vermier & Verbeke, 2006).

When studying attitude-behavior effects like this, it is important to keep in mind the principles outlined by Yzer: 1) predicting a behavior is more precise than predicting general behavioral categories; 2) predicting specific behaviors is more precise than predicting broad or general behaviors; and 3) the compatibility principle that behavior is more predictable if it is measured at the same level of specificity as the consumer’s beliefs, attitudes, and intentions. In the case of an individual purchasing milk at a local grocery store, for example, one would consider what attitude led to the precise behavior of choosing to buy conventional milk instead of organic, or vice-versa. This establishes a level of specificity more narrow than preference when buying drinks in general, or beyond that, buying food and drinks in general. By following these principles when conducting this study, according to Yzer (2013), the researcher should be able to more precisely predict behavior, allowing for more effective persuasion in communicating. When looking at the persuasion effectiveness, by being able to accurately predict specific behaviors, there is greater ability to market and advertise to achieve a certain behavior.
The Theory of Reasoned Action also provides detail about the role that intention and norms play in the interaction between attitude and behavior. Intention is the desire of an individual to engage in a specific behavior, so if there is a high level of intention, it is said that the likelihood of performing the behavior is high as well. As indicated by Fishbein and Ajzen (1975), intentions seemed to be the most reliable indicator of volitional behavior, based on the attitudes and norms toward performing the behavior. Norms play into this in the way they define what others might think about one’s actions and how that behavior might appear to others. In a study by Lee (2011), researchers found that norms and beliefs developed through peer influence and were the greatest predictor of “green,” or environmentally-friendly, purchasing. When applying this to the milk example, it can be said that consumers who go to the store needing milk are more likely to buy organic milk if a) they strongly intend to buy an organic variety when they

**Figure 1. Theory of Reasoned Action model**

The Theory of Reasoned Action model as developed by Fishbein and Ajzen (Shepherd and Sparks, 1994). Attitude as influenced by behavior beliefs and outcomes and subjective norms as influenced by norms and motivation, are two separate processes as influenced by norms.
walk into the store and b) they believe that those in their social circle would see this decision as an acceptable or positive behavior. This theory offers the ability to understand the formation of an attitude-behavior relationship and the way persuasive communication can influence this process.

The Theory of Reasoned Action addresses the ways in which attitude and subjective norms can influence behavior, but it asserts that these two influences are separate from each other. Hale et al. (2002) suggested that the influence norms and beliefs have on behavior are correlated. Rather than being separate processes, they present the idea that both may have an effect, and that a person’s beliefs shape both norms and attitudes, and are therefore likely to coincide. One of the drawbacks of the Theory of Reasoned Action is the notion that norms are difficult to measure and therefore predicting their influence can be difficult.

Social Cognitive Theory

The ways in which an individual’s social environment affects his or her decision-making plays a large role in this research. The Social Cognitive Theory connects the relationship between the events or people external to someone and the ways in which they influence that person’s perceptions toward, and motivation to perform, certain behaviors. In this case, as the researcher looked at preferences for organic and conventional milk, consumers might be informed by an individual’s social media use and exposure to certain content as well as the activities or events in their social environment.
Bandura (2001) outlined a set of subfunctions, or steps, an individual goes through until ultimately performing a certain behavior. The first subfunction of the theory, attentional processes, asserts that an individual observes behaviors or acquires information from the media and his or her personal network. For example, if someone is highly concerned with buying and consuming organic milk, he or she might be more inclined to follow social accounts on Twitter or Facebook, or view talk shows that provide information about organic agricultural practices and statistics. These media may become a source of influence for the individual as he or she is exposed to posts, discussions, and promotional information. Based on the second subfunction, retention processes, this environmental media reinforcement would be translated into memory codes (Bandura, 2001). If the users and networks that consumers associate with encourage and promote the superiority of different milk production practices, the individual will eventually internalize this belief. Entering into the third subfunction of the theory, production processes, these symbolic memory codes lead to the actions that support these codes (Bandura, 2001). This assumes, for example, that due to the
observation and internalization of actions within the individual’s network that support organic milk, he or she will establish and perform the same behaviors (i.e., buying organic milk).

The researcher would expect the Social Cognitive Theory to help shed light on the processes an individual undergoes due to social influences when making purchasing decisions related to milk products. This would assist communicators in finding ways to influence the social environment in certain areas (rural, suburban, urban) where a negative perception of conventionally or organically produced milk is prevalent. This theory provides an explanation as to how attitudes are formed, which can provide a better understanding of norm and attitude development as they play into the Theory of Reasoned Action to influence behavior.

Conceptual Framework

The researcher’s conceptual framework, shown in Figure 3, is derived from the Reasoned Action Theory as outlined by Yzer (2013) and Bandura’s Social Cognitive Theory of Mass Communication (2001). The models for each theory can be seen in Figures 1 and 2 on pages 11 and 13, respectively. The revised model in Figure 3 illustrates the attitude-behavior process as a whole beginning with environmental influencers along with motivation to form attitudes and beliefs. Over time, with intention to act in accordance with these beliefs, individuals performed the behavior. This study specifically focuses on various environmental factors that may influence attitude-formation, resulting in consumers’ intention to purchase organic or conventional milk.
Conceptual Framework including aspects of the Theory of Reasoned Action and Social Cognitive Theory, highlighting the environmental factors of the attitude-behavior relationship that this study focuses on.

Related Literature

Many studies have been conducted to explore the effects of information on individuals’ tendency to purchase certain products. Many of the studies focus on the influence of traditional media outlets, such as print ads, labeling, television, and spoken word.

Theory of Reasoned Action

In a study by Eagly and Chaiken (1993), researchers studied the role self-identity plays within the theory of reasoned action as it relates to organic food choice. From the study researchers found that when people self-identified “as ‘green consumers’ or as concerned about ‘green issues,’” (p.219) their intention to purchase organic produce was higher and more predictable as seen in Figure 4.
Focusing on the attitude-behavior portion of the theory, a study of individuals’ desire to conserve water used the theory of reasoned action to better understand these processes at play. The researchers augmented the model to fit their environmental focus, and results indicated that environmental values and past behavior that aligned with those values made people more likely to look for information regarding water conservation (Trumbo & O’Keefe, 2005). This supports the theory’s assumption that existing attitudes and experiences influenced desire to continue following similar conservation behaviors.

As the TRA states, attitude and subjective norms function as separate processes and influence behavior differently. In a study of milk consumers, researchers applied principles of the Theory of Reasoned Action in a campaign promoting low-fat milk options as a nutritious choice. The researchers found that because their messaging focused on the product’s features and benefits, rather than the actions of those in the consumer’s influential network, the study had a much greater impact on attitude than on subjective norms (Booth-Butterfield & Reger, 2004). This indicates that certain wording and presentation of messages are important components in influencing an individual’s
behavior choices and can’t be ignored while studying the influence of their social networks.

Overall, these three things (intention to purchase, past behaviors when aligned with values, and messaging about product features) all have been shown to influence purchasing behavior or desire to act in a certain way. The purpose of this study is to determine whether these elements ring true for organic milk purchasing. By assessing consumer networks and social groups and norms within this study, the researcher hopes to find whether messaging within social networks has any influence on subjective norms. In this way this study might be seen as a compliment to the 2004 study by Booth-Butterfield and Reger study targeting attitude through a focus on product features and benefits in the messaging. The researcher will be looking more closely at the behaviors and content produced by an individual’s social networks to see if this has any influence on norm development, another component of attitude development.

**Social Cognitive Theory**

Most of the literature surrounding Social Cognitive Theory and food focuses on children and school lunch or educational programs. These applications still resonate with this particular study because of their interest in the ways children act or behave with regard to food choice as influenced by their family, peers, and school programs. One such study concerned with “Farm-to-School” nutrition programs applied a multitude of components from the Social Cognitive Theory to determine in what ways program directors can best encourage healthful and local food consumption amongst students. Through the researchers’ assessment of a specific farm-to-school programs, they found
that the more successful activities related to the program had touched on many constructs of the Social Cognitive Theory (Berlin, Norris, Kolidinsky, & Nelson, 2013) While this study maintained focused on healthy and local food choice, the researcher is interested in whether similar approaches (or lack thereof) encouraging young people to choose organic and non-organic products can provide insight into whether this choice can be influenced through programs, peers, and exposure.

In a study conducted by Lin and Hsu (2013), the researchers tried to find a model of “green” or environmentally sustainable consumer behavior using a foundation in social cognitive theory. Researchers concluded that green consumer behavior was closely related to lifestyle values and tendencies, supporting their hypothesis that Social Cognitive Theory is one of the primary processes that supports green consumer behavior. On the other hand, expected outcomes of green behavior, climate change, and mass media were low indicators of practicing green consumer behavior. In the event that an individual perceives organic products as being more environmentally friendly, sustainable, or “green” compared to their counterparts, this study may hint at reasons for consumption of organic produce rather than conventional.

While Social Cognitive Theory is used extensively in nutrition and health research, there appears to be a lack of research concerned with food purchasing behavior based on the perceived health benefits of different types of food. Many of these studies are focused on the environmental influences that inform attitudes and behaviors regarding healthy versus unhealthy food decisions. Through this study, the researcher hopes to look closer at the various constructs of Social Cognitive Theory at play when individuals make the decision to purchase organic milk based on the view that it is a perceived healthier,
safer, or more environmentally friendly option. These constructs range from development of attentional processes via any external influence, online or in person, to retention processes that begin to translate into actions and behaviors as they become more and more embedded in an individual’s attitude toward organic food.

**Influence of Social Media and Interpersonal Networks**

Previous research has focused on human networks and mass media influence as they influence milk-related decisions. Norms have been shown to play a significant role in consumer desire to purchase organic products, but understanding how these norms develop depending upon the different sources from which consumers obtain information is not entirely clear. In a study by Vaterlaus, Patten, Roche, and Young (2015) the researchers studied the ways in which social media influenced health food choices of young adults. They found that overall one’s network on social media influenced them to expand food choices through recipe posts and sharing their own diet and exercise experiences, but that these behaviors also distracted from time spent performing healthy behaviors due to excessive time spent on social media. This would imply that interactions on social media do have an effect on an individual’s decisions related to food choices. In a study by Lee (2011), researchers found that norms and beliefs were developed through peer influence and were the greatest predictor of “green,” or environmentally friendly, purchasing. These studies indicate that exposure to food production information via environmental or other special interest groups as well as personal interactions may also influence norm development, and this information may seem more viable and readily accepted if the individual has not already received information from agricultural sources.
By looking at the different channels and networks through which consumers receive or seek out information related to food and beverages, it may become clearer as to which would be most effective for message delivery. Vermeir and Verbeke (2006) found that, in general, providing information regarding sustainable consumption leads to higher personal importance of sustainability amongst consumers, while Rousu, Huffman, Shogren, and Tegene (2004) found that information specifically coming from environmental sources about genetically modified products were valued higher among study participants.

Cost, Accessibility, and Labeling

Several studies have indicated that intent to purchase organic products is dependent upon cost and accessibility (Akaichi et. al., 2008; Krystallis et. al., 2006; Ching-Hsin et. al., 2011), as well as a connection between high value of organically labeled products with positive attitudes and willingness to pay a higher premium (Kiesel & Villas-Boas, 2007; Krystallis et. al., 2006; Vermeir & Verbeke, 2006). These perspectives indicate that there are two distinct groups: those who trust the credibility or value of the labels and advertising of organic products enough to pay a higher price, and those who are not willing to purchase organic products. Understanding what factors are influencing these different valuations may be revealed in an assessment of consumers’ social media interactions and networks as they relate to information about organic and non-organic milk products.

A study by Akaichi, Nayga, and Gil (2012) found that when presented with negative and positive information about organic farming, consumers were more willing
or less willing to pay a premium price, respectively. This indicates that information from a traditional media source, when presented to a customer, has the ability to influence his or her desire to purchase depending on the type of information presented. In a 2007 study by Kiesel & Villas-Boas, researchers found that both price and the presence of a USDA Certified Organic label were most indicative of desire to purchase organic milk. Researchers concluded that the benefits of milk companies participating in the USDA certified organic label outweighs the costs due to the observation that consumers value the label enough to pay a higher premium. However, this study however did not account for prior knowledge or information that participants had previously encountered related to organic and conventional milk. Although these studies have focused on traditional advertising and presentation of information, this study sought to account for the influence online platforms and affiliations beyond traditional media outlets may have on milk consumers. The literature found in relation to this study provides a lens through which to approach the needs and existing discoveries in the field of attitude-behavior and food choice. Expanding these studies in a way that applies specifically to attitudes toward milk products and milk purchasing may provide insight into possible interpersonal and social media influence on consumer perceptions of these labels and options they are faced with. Through this study, the researcher hoped to expand on previous research by going beyond traditional media to include human social groups as well as new media, and in doing so, increasing the understanding of how interactions with others and social media content might affect users’ decisions about milk products in different ways.

This study offers an opportunity to identify the ways in which Social Cognitive Theory can be applied to social media to assess its influence on consumer perceptions.
The Theory of Reasoned Action used within the social media environment may reveal its role in demonstrating or promoting behaviors that may lead an individual to perform certain purchasing behaviors when choosing milk products. Understanding the various influences on purchasing decisions like cost, accessibility, label evaluations, and perceived environmental sustainability are all important to consider in addition to the area of an individual’s social environment.
Chapter 3: Methods

This study was conducted to analyze the social media and human interpersonal networks of consumers of dairy milk to determine what might be influencing their decision to purchase organic or conventional milk. Guided by the Theory of Reasoned Action and the Social Cognitive Theory, the researcher focused on the environmental factors of attitude-behavior development. The researcher employed two separate approaches to data collection to answer the three research questions: 1) Which channels and influencers, both online or personal, do organic and conventional milk consumers primarily use to acquire information regarding milk products? 2) Do online influencers of information about milk products identified by the researcher align with prolific individuals reported by milk consumers? 3) How do consumers in different geographic regions compare in their perceptions of organic versus conventional milk? A social media analysis program called Sysomos MAP was used in conjunction with an online survey to offer opportunities for comparison of pre-identified and self-report results of online users.

Instrumentation

Social media content and activity related to milk production practices was collected using Sysomos MAP (Media Analysis Platform), an online data gathering platform. This allowed the researcher to address Research Question 2 to determine the amount of content related to milk information present on major social media platforms.
and the engagement level of users in those contexts and to identify prevalent networks, groups, and user accounts. A content analysis of social media using Sysomos MAP was performed, filtering for content relevant to the topic of interest. The following search queries were used to identify prevalent profiles, users, or individuals who produce content related to either organic or non-organic dairy products in only the state of California: “(milk OR "organic milk" OR dairy OR "dairy farm" OR "dairy farming") AND NOT (sheep OR goat OR soy OR almond).” Certain alternative products were filtered out, as the scope of this study included dairy cow’s milk only. The date range was limited to six months, from May 1, 2016, to November 1, 2016. This was done to ensure the researcher had access to the live data throughout the research process. Due to the amount of access granted to content on certain platforms, the researcher focused on Twitter, blogs, and traditional news sources. Platforms like Facebook and Instagram are limited in access and scope on Sysomos relative to others, with Facebook being highly protected and Instagram allowing for only single-word search queries.

The online survey was then used to collect participants’ personal accounts of their interactions on social media related to milk products and other items. The instrument was written to address each of the research questions. Question 27, the final survey question, was omitted for analysis, as responses indicated that the question had been misinterpreted. The first block of questions, shown in Figure 5, inquired about the social network, region, demographics, and education level of both the participants and individuals in their social networks. The second block of questions was used to identify where individuals seek out and retrieve information about milk production, see examples in Figure 6.
The third section of the survey was used to understand individuals’ existing knowledge of and exposure to information about milk production, while a fourth section accounted for the participants’ perceptions of milk production. Examples of questions asked can be found in Figure 7 and Figure 8.
**Figure 7.** Sample survey items related to exposure and knowledge of milk production.

<table>
<thead>
<tr>
<th>How often do you see social media posts about milk products and/or dairy farming?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
</tr>
<tr>
<td>A lot</td>
</tr>
<tr>
<td>Occasionally</td>
</tr>
<tr>
<td>Rarely</td>
</tr>
<tr>
<td>Never</td>
</tr>
<tr>
<td>How much knowledge of milk products and/or dairy farming would you say you have?</td>
</tr>
<tr>
<td>A great deal</td>
</tr>
<tr>
<td>A lot</td>
</tr>
<tr>
<td>A moderate amount</td>
</tr>
<tr>
<td>A little</td>
</tr>
<tr>
<td>None at all</td>
</tr>
</tbody>
</table>

**Figure 8.** Sample questions related to perceptions of milk production and quality.

<table>
<thead>
<tr>
<th>How concerned are you with milk products and/or dairy farming standards?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely</td>
</tr>
<tr>
<td>Very</td>
</tr>
<tr>
<td>Moderately</td>
</tr>
<tr>
<td>Slightly</td>
</tr>
<tr>
<td>Not at all</td>
</tr>
<tr>
<td>How nutritious would you consider organic milk?</td>
</tr>
<tr>
<td>Extremely</td>
</tr>
<tr>
<td>Very</td>
</tr>
<tr>
<td>Moderately</td>
</tr>
<tr>
<td>Slightly</td>
</tr>
<tr>
<td>Not at all</td>
</tr>
<tr>
<td>How safe would you consider regular (conventional) milk?</td>
</tr>
<tr>
<td>Extremely</td>
</tr>
<tr>
<td>Very</td>
</tr>
<tr>
<td>Moderately</td>
</tr>
<tr>
<td>Slightly</td>
</tr>
<tr>
<td>Not at all</td>
</tr>
</tbody>
</table>

The survey concluded with a fifth section related to individuals’ actual milk purchasing preferences and behaviors. An example of this question block can be seen in Figure 9.
**Validity**

The researcher reviewed the literature and consulted with individuals to ensure search terms and queries used within Sysomos MAP were accurate and produced a representative view of the social media landscape. Content validity of the survey instrument was determined by the research committee with extensive training and experience in the areas of social media research, the agricultural landscape, survey formulation, qualitative research, quantitative research, consumer and purchasing behavior, campaign strategy, the dairy industry, and public relations.

**Data Collection and Procedures**
A comparison between those who affiliate with groups who prefer organic milk online and those who prefer conventional milk was done using a cross-sectional, Qualtrics-generated online survey. A sample of 308 survey participants was generated by a Qualtrics team, by providing team members with a target population based on demographics and region. The survey was distributed to participants throughout the state of California before responses were sorted by geographic region based on self-reported answers about where they currently live; (urban, suburban, or rural) until a quota of at least 100 completed responses was reached for each region. California was chosen because of its large agricultural presence in existence with very large and densely populated urban areas along the coast. The researcher hoped this would offer a unique array of perspectives and experiences between different geographic areas. The survey was not limited to a certain age range or gender; the only parameters were for state and geographic region. Qualtrics handled the contact and collection process as participants completed and submitted the survey. The survey of participants was used to determine social groups, networks, or blogs to which participants belong, including, but not limited to, pro-organic or pro-conventional groups, environmental networks, agricultural bloggers, or food science groups. The survey also accounted for typical purchasing preferences and behavior, including type of milk and frequency of purchasing milk. Amount of discussion in human social networks regarding milk and milk production, and perceptions of different types of milk were also included in the survey.

Initially, the researcher analyzed the differences between organic and conventional consumers based on survey responses collected. Results from the Sysomos MAP content analysis were then compared to important users identified by participants in
the Qualtircs survey to determine if online user activity was reflected similarly or differently that reported in the survey. The researcher then used the results of survey demographics to compare urban, suburban, and rural participants against others to determine if certain perceptions of organic and conventional milk are perpetuated in different geographic areas. For scaled survey items, the researcher used IBM SPSS Statistics to calculate frequencies, analysis of variance (ANOVA), and perform post-hoc comparisons of consumer-reported perceptions.
Chapter 4: Findings

The researcher approached the issue of inconsistent perceptions of organic and conventional milk despite their minute differences by conducting a Qualtrics survey and a Sysomos MAP Data Analysis. Through this study, the researcher hoped to shed light on online and in real-world interactions that might be influencing milk purchasing behavior. By drawing upon the Theory of Reasoned Action and Social Cognitive Theory, the researcher was able to narrow their focus to the environmental aspects of the attitude-behavior process.

Data were analyzed to determine if consumers’ interpersonal and online social groups had any influence on their decision to purchase organic or conventional milk. An analysis was conducted by first comparing regional differences and then differences between the two types of consumers. The overall population was comprised of approximately 100 respondents from each geographic region; 102 urban, 104 suburban, and 102 rural for a total of 308 survey participants. Geographic region was self-reported by participants in the survey and quotas for each region were met using these responses. The regional comparisons were more statistically comparable due to their similar population size, though the even numbers are not representative of the distribution of Californians living in these regions. According to the 2010 U.S. Census, 95% of Californians live in urban regions, the highest of any state (Lambert, 2012). (Because the census only classifies areas as urban or rural, there is no data for suburban populations).
The number of self-reported conventional consumers in the survey \((n=222)\) was disproportionately larger than the number of organic consumers \((n=76)\). While any comparisons between organic and conventional consumers cannot necessarily be extrapolated to a larger population, this does still offer some insight into the important differences between the two types of consumers.

Demographics and Purchasing Behaviors

After filtering out incomplete responses and non-responses, 308 participants completed the survey, thirty-five percent were male \((n=108)\) and 65% were female \((n=200)\), while actual state gender distribution is almost exactly equal (U.S. Census Bureau, 2015). The average age of participants was 43 years old with a standard deviation of 15 years, the average age in the state is 35.8 (U.S. Census Bureau, 2015). Less than 3 percent of respondents had less than a high school education; 20.1% were high school graduates; 28.8% had some college education; 9.7% had a two-year degree; 26.3% received a four-year degree; and 12% had a graduate or professional degree. The participants were contacted to meet quotas of 100 people per geographic region: urban, suburban, and rural. Final totals for each region were 102 urban, 104 suburban, and 102 rural. About a quarter of respondents \((n=72)\) indicated that they prefer to purchase organic milk, 68.9% \((n=213)\) said they prefer to buy conventional milk, and 7.5% \((n=23)\) of the participants indicated that they purchase alternative products.
In terms of purchasing preferences, consumers were asked what items they look for on a milk carton, its label, or in the milk case that help them decide which item to buy. Figure 10 shows that conventional consumers overall were more concerned with price and sell-by date. Organic consumers tended to focus more on looking for the organic designation as well as things like pasture-raised or grass-fed compared to conventional consumers. Conventional consumers also reported pasteurization and homogenization to be of much higher importance compared to organic consumers. For a detailed look at percentages for each item, see the chart in Figure 10.

As for purchasing preference overall, not just comparing organic or conventional consumers, participants were also asked what type of milk they prefer to buy and how often. Tables 1 and 2 provide a look at consumer preferences for these items.

<table>
<thead>
<tr>
<th>Frequency Bought</th>
<th>Organic</th>
<th>Conv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every couple days</td>
<td>25.0</td>
<td>20.3</td>
</tr>
<tr>
<td>Every week</td>
<td>44.7</td>
<td>41.9</td>
</tr>
<tr>
<td>Every couple weeks</td>
<td>18.4</td>
<td>23.9</td>
</tr>
<tr>
<td>Every month</td>
<td>3.9</td>
<td>9.0</td>
</tr>
<tr>
<td>Every couple months</td>
<td>3.9</td>
<td>3.6</td>
</tr>
<tr>
<td>Never</td>
<td>3.9</td>
<td>1.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Organic</th>
<th>Conv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skim</td>
<td>15.8</td>
<td>11.3</td>
</tr>
<tr>
<td>1%</td>
<td>13.2</td>
<td>9.9</td>
</tr>
<tr>
<td>2%</td>
<td>22.4</td>
<td>34.7</td>
</tr>
<tr>
<td>Whole</td>
<td>28.9</td>
<td>40.9</td>
</tr>
<tr>
<td>Other</td>
<td>14.5</td>
<td>1.4</td>
</tr>
<tr>
<td>None</td>
<td>5.3</td>
<td>1.8</td>
</tr>
</tbody>
</table>

It seems that purchasing frequency is similar for both conventional and organic consumers, with a majority of consumers purchasing milk at least every week or every couple days. Most consumers indicated they preferred to buy 2% or whole milk.
Figure 10. Important characteristics for milk product choice by consumer type.

Most important label characteristics as reported by organic and conventional consumers when purchasing milk.
RQ1: Which channels and influencers, both online or personal, do organic and conventional milk consumers primarily use to acquire information regarding milk products?

*Sources of Milk Information*

Looking at the study population as a whole, respondents indicated that they see information about milk on TV most frequently and they ‘occasionally’ or ‘rarely’ come across information about milk online. If they were to actively seek out information they would likely turn to the Internet to learn more. In an open-ended format, respondents were given the opportunity to discuss where they usually *seek out* information about milk, and the most common source mentioned was some form of online outlet such as Facebook, Google, or online news articles \((n=139)\), while the grocery store \((n=39)\), TV \((n=37)\), and ‘other people’ \((n=32)\) followed. When it comes to incidental exposure, respondents were asked in an open ended-format where they generally happen to *come across* information about milk. In this category, TV was the most popular channel \((n=131)\), followed by online sources \((n=87)\), as well as grocery stores \((n=47)\) and ‘other people’ \((n=47)\). The overall least-reported sources of information were print media and individuals directly involved in agriculture, as shown in Table 3. Examples of online sources mentioned in the open-ended responses included Google, social media platforms, health sites, and blogs. Sources relating to grocery stores or markets included labels, personnel, and in-store advertisements. Print sources mentioned by respondents included magazines and newspapers (both major and local). As for ‘other people,’ respondents included family, friends, doctors, or teachers. TV sources included commercials and local news station coverage.
Table 3. Frequency of information seen from various online and offline sources compared to frequency of information sought on various sources.

<table>
<thead>
<tr>
<th>Source</th>
<th>Freq. Sought</th>
<th>Freq. Came Across</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online</td>
<td>139</td>
<td>87</td>
</tr>
<tr>
<td>Grocery Store</td>
<td>39</td>
<td>47</td>
</tr>
<tr>
<td>TV</td>
<td>37</td>
<td>131</td>
</tr>
<tr>
<td>Other People</td>
<td>32</td>
<td>47</td>
</tr>
<tr>
<td>Print</td>
<td>19</td>
<td>28</td>
</tr>
<tr>
<td>Those Working in Ag</td>
<td>11</td>
<td>15</td>
</tr>
</tbody>
</table>

Of the 308 survey participants, 76 reported that they prefer to buy organic milk while 222 prefer conventional milk; the remaining participants did not have a preference or they choose to buy alternative products. Of the 76 organic purchasers, 40 said they purposefully seek out information about milk from online sources (53%) and 11 said their local grocery stores and markets (15%). When asked where they simply come across information, however, 37% (n=28) reported TV while 23 reported online sources (30%) and 14 said print sources (18%). Of the 222 conventional consumers, 45% (n=99) reported that they sought out information from online sources, 32 reported TV (14%), and 29 reported ‘other people’ (13%). As for where they come across information, the largest number, 103 respondents, reported TV (46%) and 64 reported online sources (29%), while the third most frequent category, reported by 40 respondents, was ‘other people’ (18%). Unlike the organic consumer data set, a handful of conventional consumers also cited their own personal experience with dairy farming as a source of information about milk products (3%).

There was a large difference between organic and conventional consumers in terms of exposure to milk-related content online. Table 4 provides a side-by-side comparison of the amount of milk related content that individuals report seeing on their social media networks. Here a much higher percentage of organic consumers reported
always seeing milk information on social media, while a much larger percentage of conventional consumers report never seeing milk information in their social media networks.

Table 4. Perceived frequency of exposure to milk information on social media.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Organic Consumers (n=76)</th>
<th>Conventional Consumers (n=222)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Always</td>
<td>18</td>
<td>23.68%</td>
</tr>
<tr>
<td>A lot</td>
<td>5</td>
<td>6.58%</td>
</tr>
<tr>
<td>Occasionally</td>
<td>21</td>
<td>27.63%</td>
</tr>
<tr>
<td>Rarely</td>
<td>19</td>
<td>25.00%</td>
</tr>
<tr>
<td>Never</td>
<td>13</td>
<td>17.11%</td>
</tr>
</tbody>
</table>

Participants were then able to select from several major platforms listed where they feel they see, or have seen, information about milk. As presented in Table 5, Facebook took the lead for both organic and conventional consumers, while the remaining platforms appear to be less common or consistent in terms of where milk information can frequently be found.

Table 5. Perceived frequency of exposure to milk information on social media by platform.

<table>
<thead>
<tr>
<th>Platform</th>
<th>Organic Consumers (n=76)</th>
<th>Conventional Consumers (n=222)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Facebook</td>
<td>50</td>
<td>66%</td>
</tr>
<tr>
<td>Instagram</td>
<td>17</td>
<td>22%</td>
</tr>
<tr>
<td>Twitter</td>
<td>15</td>
<td>20%</td>
</tr>
<tr>
<td>Pinterest</td>
<td>13</td>
<td>17%</td>
</tr>
<tr>
<td>Blogs</td>
<td>3</td>
<td>4%</td>
</tr>
</tbody>
</table>

The online channels that the researcher focused on in the Sysomos MAP analysis (Twitter and blogs) appear to be much less prevalent than Facebook, where consumers reported seeing milk information in the survey. As mentioned in Chapter 3, Sysomos offers limited access to these more popular platforms such as Facebook, Instagram, and Pinterest. For almost all categories, more organic consumers indicated that they see
information about milk products on major social media outlets compared to conventional consumers.

*Interpersonal Networks*

In order to gain a clearer picture of the interactions and relationships between individuals and their social environment, respondents were asked a series of short-answer questions about their human social networks. Participants were first asked to discuss whether they consider themselves to be similar or different from those in their social groups in terms of general beliefs, opinions, and values. They were then asked to expand on their answer as to why they feel this way. A majority (79%) of organic consumers said they share similar views, opinions, and beliefs as those in their social circle, citing reasons like:

- "I live in a liberal environment. Most of my friends are Democrats."
- "We believe in the same things such as how we raise our children, the shows we watch and some of the things the world is growing through."
- "Same religious beliefs child rearing practice and sense of values family first!"

A majority of conventional consumers also said they share similar views, opinions, and beliefs as those in their social circle, citing reasons like:

- “Similar political and ethical beliefs. We enjoy some of the same things such as music, theater, appreciation of different art forms, etc.”
- “We are employed, educated people with a work ethic, and raised to discuss matters and work out differences. We believe in exchange of ideas and study facts when we do so. We also enjoy nature, wine, travel”
• “We share similar beliefs in terms of social responsibility, left leaning politics, activities we like to do, food we like to eat and economic background”

In the same format, participants were then asked about their background, family, education, and other characteristics as compared to their social group. More than two-thirds (67%) of organic consumers said they are generally of similar background, upbringing, and education level as those in their social circle. Reasons included:

• "Grew up around the same area or education wise at similar level."
• "Our parents are similar in age. We grew up in the suburbs in nice houses, played sports, went to church and were expected to focus on school, sports or other group activities."
• "We were all raised poor, went to the same schools and our parents were friends."

About 65% of conventional consumers said they are generally of similar background, upbringing, and education level as those in their social circle:

• “For the most part yes. We all have an education, some more than others. We were to respect our country and our American flag.”
• “Most of my social circle grew up in the same oppressed community. We all went to the same school and church. We all swam at the same city pool. Everyone knew everyone.”
• “Yes, we all worked, either graduated from college or spent some time in college. We came from families in which both parents worked outside the home.”

Overall, most of the reasons given in the first open-answer question involved political and religious beliefs, hobbies, and perspectives on parenting. As for similarities in upbringing and background, many common responses included community connections,
familial values, education level, and socioeconomic status. A fairly even percentage of both organic and conventional consumers reported themselves to be considerably alike to those in their social groups. Some, however, did indicate their differences. Common reasons included embracing open-mindedness and differences, race and religion, politics, or coming from a different region or part of the world.

Next, survey respondents were asked about the level of discussion about milk that occurs between themselves and their friends and family. On a scale of 1 to 5, 1 being always discussed and 5 being never discussed, in terms of discussion with their friends, organic consumers averaged 3.21 while conventional consumers averaged 3.82. This means organic consumers were slightly more likely to discuss milk products with their friends than conventional consumers. Discussion with family was slightly more frequent for both groups, with organic consumers averaging 3.04 out of 5 and conventional consumers 3.59. Again, conventional consumers did report slightly less frequent discussion about milk products than organic consumers.

**RQ2: Do identified online influencers of information about milk products identified by the researcher align with prolific individuals reported by milk consumers?**

*Sysomos MAP*

When conducting the online search using Sysomos MAP, the Boolean search query was used to filter for tweets, blogs, and traditional news sources in the state of California during a six-month period of May 1, 2016, to November 1, 2016. This search returned a wide range of conversations and user types. Upon analysis of the online influencers surrounding the topic on Twitter, the researcher gathered the names and
Twitter names of the most active users in terms of related content and network influence as identified by Sysomos. For the most part, leading users were either activists who were motivated to discourage followers from consuming dairy products or natural health proponents who claimed there were negative health consequences for consuming dairy. There were some outlier individuals who were impartial, sought to defend agriculture, or aimed to promote milk for a variety of reasons. Table 5 includes the primary users of medium to high authority within this community.

Table 6. Leaders in Twitter Community surrounding conversations about milk identified by Sysomos.

<table>
<thead>
<tr>
<th>User name</th>
<th>Twitter Handle</th>
<th>Auth Level</th>
<th>User Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roger Bezanis</td>
<td>@rogerbezanis</td>
<td>10</td>
<td>Natural Health Information</td>
</tr>
<tr>
<td>PETA</td>
<td>@PETA</td>
<td>10</td>
<td>Activism</td>
</tr>
<tr>
<td>Peta2</td>
<td>@peta2</td>
<td>10</td>
<td>Activism</td>
</tr>
<tr>
<td>iHerb Inc</td>
<td>@iherb</td>
<td>10</td>
<td>Natural Health Information</td>
</tr>
<tr>
<td>Tasting Table</td>
<td>@tastingtable</td>
<td>10</td>
<td>Food Trends</td>
</tr>
<tr>
<td>Jon Weinhofen</td>
<td>@jonaweinhofen</td>
<td>10</td>
<td>Activism</td>
</tr>
<tr>
<td>Whole Foods Market</td>
<td>@wholefoods</td>
<td>10</td>
<td>Health Information</td>
</tr>
<tr>
<td>Food and Wine</td>
<td>@foodandwine</td>
<td>10</td>
<td>Food Trends</td>
</tr>
<tr>
<td>Defending Beef</td>
<td>@defendingbeef</td>
<td>8</td>
<td>Agricultural Promotion</td>
</tr>
<tr>
<td>HuffPost Green</td>
<td>@huffpostgreen</td>
<td>10</td>
<td>Environmental</td>
</tr>
<tr>
<td>Dr. Joseph Mercola</td>
<td>@mercola</td>
<td>10</td>
<td>Natural Health Information</td>
</tr>
<tr>
<td>TriplePundit.com</td>
<td>@triplepundit</td>
<td>9</td>
<td>Environmental</td>
</tr>
<tr>
<td>UCLA Athletics</td>
<td>@uclaathletics</td>
<td>9</td>
<td>Sponsorship</td>
</tr>
<tr>
<td>Michael Ruhlman</td>
<td>@ruhlman</td>
<td>10</td>
<td>Food Trends</td>
</tr>
<tr>
<td>The Food Lab</td>
<td>@thefoodlab</td>
<td>10</td>
<td>Food Science Information</td>
</tr>
<tr>
<td>Civilized Caveman</td>
<td>@cookingcaveman</td>
<td>9</td>
<td>Health Food Recipes</td>
</tr>
<tr>
<td>Joe Cross</td>
<td>@joethejuicer</td>
<td>10</td>
<td>Health Food Recipes</td>
</tr>
<tr>
<td>Michelle Cehn</td>
<td>@michellecehn</td>
<td>8</td>
<td>Activism</td>
</tr>
<tr>
<td>Physicians Committee</td>
<td>@PCRM</td>
<td>9</td>
<td>Natural Health Information</td>
</tr>
<tr>
<td>Vinnie Tortorich</td>
<td>@vinnietortorich</td>
<td>8</td>
<td>Health Information</td>
</tr>
<tr>
<td>Follow Your Heart</td>
<td>@followyourheart</td>
<td>8</td>
<td>Vegan Health</td>
</tr>
<tr>
<td>Monterey Holistic</td>
<td>@MBHolistic</td>
<td>8</td>
<td>Natural Health Information</td>
</tr>
<tr>
<td>Health Ranger</td>
<td>@healthranger</td>
<td>10</td>
<td>Natural Health Information</td>
</tr>
<tr>
<td>Ag &amp; Nat Resources</td>
<td>@UCANR</td>
<td>8</td>
<td>Agricultural Education</td>
</tr>
<tr>
<td>Agri-Pulse</td>
<td>@agripulse</td>
<td>9</td>
<td>Agricultural News</td>
</tr>
<tr>
<td>Sustainable Table</td>
<td>@eatsustainable</td>
<td>9</td>
<td>Non-Large Agriculture Info</td>
</tr>
</tbody>
</table>
Using the same search in Sysomos, the researcher collected news sources based on amount of content produced that aligned with the search query, also known as number of “mentions” that fall within the search parameters. By looking at those who produced the most mentions, the researcher could identify who was most involved in this topic of conversation. Those that were highlighted were primarily regional newspapers in largely populated areas of California, as seen in Table 7. The top two sources with the most mentions matching the search query were the *Sacramento Bee* (594 mentions) and the *Fresno Bee* (358 mentions). These are both in predominantly agricultural areas of the California Central Valley, with Sacramento being the state’s capital. Most articles in the more urban areas were focused on recipes, food recalls, or menu items, while the sources located in agricultural areas tended to include these same topics in addition to industry updates.

Table 7. News sources with the most mention of content relevant to the search queries.

<table>
<thead>
<tr>
<th>News Source</th>
<th>Website</th>
<th># of Mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sacramento Bee</td>
<td>sacbee.com</td>
<td>594</td>
</tr>
<tr>
<td>Fresno Bee</td>
<td>fresnobe.com</td>
<td>358</td>
</tr>
<tr>
<td>Press Democrat</td>
<td>pressdemocrat.com</td>
<td>108</td>
</tr>
<tr>
<td>Mercury News</td>
<td>mercurynews.com</td>
<td>104</td>
</tr>
<tr>
<td>LA Weekly</td>
<td>laweekly.com</td>
<td>52</td>
</tr>
<tr>
<td>The Press Enterprise</td>
<td>pe.com</td>
<td>45</td>
</tr>
<tr>
<td>Orange County Weekly</td>
<td>ocweekly.com</td>
<td>44</td>
</tr>
<tr>
<td>NBC Bay Area</td>
<td>nbcbayarea.com</td>
<td>30</td>
</tr>
<tr>
<td>Daily News</td>
<td>dailynews.com</td>
<td>28</td>
</tr>
<tr>
<td>San Francisco Weekly</td>
<td>sfweekly.com</td>
<td>11</td>
</tr>
</tbody>
</table>

Sysomos MAP was used to identify prevalent blogs by number of mentions, using the same process as with the news sources. Table 8 shows identified blogs in order of number of mentions related to the search query within their site content. Most blog content is related to recipes or discounts; some were filtered for their lack of relative
content, including one blog in which the name contained the word “dairy” with no connection to the dairy industry.

Table 8. Blogs with the most mention of content relevant to the search query.

<table>
<thead>
<tr>
<th>Blog URL</th>
<th># of Mentions</th>
<th>Blog Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>foodgawker.com</td>
<td>272</td>
<td>Recipes</td>
</tr>
<tr>
<td>makeupandbeauty.com</td>
<td>219</td>
<td>Health Effects</td>
</tr>
<tr>
<td>bargainbabe.com</td>
<td>97</td>
<td>Coupons</td>
</tr>
<tr>
<td>epretailnews.com</td>
<td>83</td>
<td>Industry news</td>
</tr>
<tr>
<td>gimmefreebies.com</td>
<td>46</td>
<td>Coupons</td>
</tr>
<tr>
<td>thedieline.com/blog</td>
<td>43</td>
<td>Industry news</td>
</tr>
<tr>
<td>marinmommies.com</td>
<td>36</td>
<td>Family Health</td>
</tr>
<tr>
<td>pasadenanow.com/living</td>
<td>30</td>
<td>Recipes</td>
</tr>
<tr>
<td>cornucopia.org</td>
<td>29</td>
<td>Small Farming</td>
</tr>
<tr>
<td>vegnews.com</td>
<td>24</td>
<td>Activism</td>
</tr>
</tbody>
</table>

Survey Results and Conclusions

In order to compare the presence of high authority users on social networks as identified by Sysomos to those reported by consumers themselves, the survey included several questions related to online activity and names of frequently seen entities engaged in the topic of milk products. Respondents were asked to share the names of individuals, organizations, companies, or brands who they have seen discuss milk products and/or dairy farming on social media. Participants identified over 100 entities in total. Table 9 provides the names of those that were reported more than once. The most commonly mentioned names covered a wide range of production practices from organic to conventional to non-GMO and alternative products. Most were name brands such as Lucerne, Clover Stornetta, and Borden. Others were the names of grocery stores like Whole Foods and Target, which sell a variety of milk types. A few of those mentioned were government-related (USDA), promotion-related (California Happy Cows campaign), or activism-related (PETA).
Table 9. Most reported entities who discuss milk on social media.

<table>
<thead>
<tr>
<th>Name</th>
<th>Freq</th>
<th>Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizon</td>
<td>7</td>
<td>Organic</td>
</tr>
<tr>
<td>Clover Stornetta</td>
<td>6</td>
<td>Organic, Non-GMO</td>
</tr>
<tr>
<td>Crystal</td>
<td>6</td>
<td>Conventional</td>
</tr>
<tr>
<td>Real California Milk</td>
<td>6</td>
<td>Neutral</td>
</tr>
<tr>
<td>Foster Farms</td>
<td>5</td>
<td>Conventional, Organic</td>
</tr>
<tr>
<td>Lucerne</td>
<td>5</td>
<td>Conventional</td>
</tr>
<tr>
<td>Alta Dena</td>
<td>4</td>
<td>Neutral</td>
</tr>
<tr>
<td>Got Milk?</td>
<td>4</td>
<td>Neutral</td>
</tr>
<tr>
<td>Nestle</td>
<td>4</td>
<td>Conventional</td>
</tr>
<tr>
<td>Organic Valley</td>
<td>4</td>
<td>Organic, Non-GMO</td>
</tr>
<tr>
<td>PETA</td>
<td>4</td>
<td>Non-Dairy</td>
</tr>
<tr>
<td>Silk</td>
<td>4</td>
<td>Non-Dairy</td>
</tr>
<tr>
<td>Knudsen</td>
<td>3</td>
<td>Conventional</td>
</tr>
<tr>
<td>Kroger</td>
<td>3</td>
<td>Conventional, Organic</td>
</tr>
<tr>
<td>Lactaid</td>
<td>3</td>
<td>Conventional</td>
</tr>
<tr>
<td>Target</td>
<td>3</td>
<td>Conventional, Organic</td>
</tr>
<tr>
<td>Tillamook</td>
<td>3</td>
<td>Conventional</td>
</tr>
<tr>
<td>Ben &amp; Jerry’s</td>
<td>2</td>
<td>Non-GMO</td>
</tr>
<tr>
<td>Berkeley Farms</td>
<td>2</td>
<td>Conventional</td>
</tr>
<tr>
<td>Borden</td>
<td>2</td>
<td>Conventional</td>
</tr>
<tr>
<td>California Happy Cows</td>
<td>2</td>
<td>Neutral</td>
</tr>
<tr>
<td>Carnation</td>
<td>2</td>
<td>Conventional</td>
</tr>
<tr>
<td>USDA</td>
<td>2</td>
<td>Neutral</td>
</tr>
<tr>
<td>Walmart</td>
<td>2</td>
<td>Conventional, Organic</td>
</tr>
<tr>
<td>Whole Foods</td>
<td>2</td>
<td>Organic, Conventional</td>
</tr>
</tbody>
</table>

Three blogs were reported by participants as sources who discuss milk products frequently: pinchofyum.com, wholefoods.com, and realmilk.com. Whole Foods blog was the only source that also showed up in the Sysomos MAP search with relation to the search query. As discussed in Research Question 1, some respondents did indicate that some of the information they get comes from news sources – both major and local. Specific stations or names, however, were not given.
RQ3: How do consumers in different geographic regions compare in their perceptions of organic versus conventional milk?

Respondents were asked several Likert-type scaled questions to measure perceptions of milk products. Respondents were asked to indicate their level of self-perceived knowledge of milk products, concern with milk product standards, perceived nutritious value of conventional milk, perceived nutritious value of organic milk, perceived safety of conventional milk, and perceived safety of organic milk. Respondents answered on a scale of 1 to 5, with 1 being a great deal/extremely and 5 being none at all. Table 10 provides average perceptions by region, a visual representation can be seen in Figure 11.

Table 10. Average consumer perceptions of milk by geographic region.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Urban</th>
<th>Suburban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Self-Perceived Milk Knowledge</td>
<td>2.84</td>
<td>3.29</td>
<td>3.33</td>
</tr>
<tr>
<td>Overall Concern with Milk Products</td>
<td>2.75</td>
<td>2.79</td>
<td>3.01</td>
</tr>
<tr>
<td>Perceived Nutritious Value of Conventional Milk</td>
<td>2.29</td>
<td>2.59</td>
<td>2.52</td>
</tr>
<tr>
<td>Perceived Nutritious Value of Organic Milk</td>
<td>2.16</td>
<td>2.33</td>
<td>2.41</td>
</tr>
<tr>
<td>*Perceived Safety of Conventional Milk</td>
<td>2.23</td>
<td>2.57</td>
<td>2.53</td>
</tr>
<tr>
<td>*Perceived Safety of Organic Milk</td>
<td>2.01</td>
<td>2.25</td>
<td>2.44</td>
</tr>
</tbody>
</table>

Means based on a scale of 1-5, 1 being a high level, 5 being a low level. *Indicates means between regions were significantly different at p<.05.

The one-way analysis of variance (ANOVA) revealed insignificant differences between regions (urban, suburban, or rural) in three of the six categories; overall concern with milk products regardless of type, perceived nutritious value of conventional milk, and perceived nutritious value of organic milk. There were, however, statistically significant differences between the geographical regions among three of the categories: self-perceived knowledge of milk products, perceived safety of conventional milk, and perceived safety of organic milk. With a level of significance set at .05, the between-group differences were identified using the Games-Howell post-hoc comparison.
Figure 11. Average consumer milk perceptions by geographic region.

Graphic representation of average consumer perceptions of milk by geographic region. Means were measured on a scale of 1-5, 1 being a high level and 5 being a low level.

Table 11 shows the average perceived knowledge about milk products for each geographic area. This was measured on a scale of 1 to 5, 1 being a great deal of knowledge and 5 being none at all. Urban consumers had overall higher self-perceived knowledge of milk products at 2.84 out of 5 when compared to the averages of the other regions; suburban (3.29) and rural consumers (3.33).

Table 11. Self-reported knowledge of milk products by geographic area.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urban</strong></td>
<td>102</td>
<td>2.8431</td>
<td>2.8431</td>
<td>.11468</td>
</tr>
<tr>
<td><strong>Suburban</strong></td>
<td>104</td>
<td>3.2981</td>
<td>3.2981</td>
<td>.10835</td>
</tr>
<tr>
<td><strong>Rural</strong></td>
<td>102</td>
<td>3.3333</td>
<td>3.3333</td>
<td>.09885</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>308</td>
<td>3.1591</td>
<td>3.1591</td>
<td>.06316</td>
</tr>
</tbody>
</table>

Means based on a scale of 1-5, 1 being a high level of knowledge, 5 being a low level of knowledge.
The Games-Howell post-hoc comparison identified significant difference between the urban consumers and suburban consumers at a .012 level of significance and specially between urban and rural consumers at a .004 level of significance. Table 12 provides a detailed look at between-group differences and significance levels.

Table 12. Games-Howell post-hoc comparison of perceived milk knowledge between geographic regions.

<table>
<thead>
<tr>
<th>Current Neighborhood (I)</th>
<th>Current Neighborhood (J)</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>Suburban</td>
<td>-.45494*</td>
<td>.15777</td>
<td>.012</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>-.49020*</td>
<td>.15140</td>
<td>.004</td>
</tr>
<tr>
<td>Suburban</td>
<td>Urban</td>
<td>.45494*</td>
<td>.15777</td>
<td>.012</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>-.03526</td>
<td>.14667</td>
<td>.969</td>
</tr>
<tr>
<td>Rural</td>
<td>Urban</td>
<td>.49020*</td>
<td>.15140</td>
<td>.004</td>
</tr>
<tr>
<td></td>
<td>Suburban</td>
<td>.03526</td>
<td>.14667</td>
<td>.969</td>
</tr>
</tbody>
</table>

Perceived safety of conventional milk was another area in which consumers differed. Table 13 provides the average level of consumers’ self-reported level of concern by geographic region on a scale of 1 to 5, 1 being extremely safe, and 5 being not at all safe. Urban consumers reported the highest average perceived level of conventional milk safety at 2.23 out of 5. Suburban consumers averaged 2.57 and rural consumers averaged 2.53 out of 5.

Table 13. Self-reported perceived conventional milk safety between geographic areas.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>102</td>
<td>2.2255</td>
<td>.92176</td>
<td>.09127</td>
</tr>
<tr>
<td>Suburban</td>
<td>104</td>
<td>2.5673</td>
<td>.98301</td>
<td>.09639</td>
</tr>
<tr>
<td>Rural</td>
<td>102</td>
<td>2.5294</td>
<td>.98208</td>
<td>.09724</td>
</tr>
<tr>
<td>Total</td>
<td>308</td>
<td>2.4416</td>
<td>.97183</td>
<td>.05538</td>
</tr>
</tbody>
</table>

Means based on a scale of 1-5, 1 being a high level of perceived safety, 5 being a low level of perceived safety.

The Games-Howell post-hoc comparison in Table 14 shows that participants from urban regions reported notably higher levels of perceived safety of conventional milk than did suburban consumers at a .029 level of significance between the two regions.
Differences between urban and rural consumers or suburban and rural consumers were not statistically significant.

Table 14. Games-Howell post-hoc comparison of perceived conventional milk safety between geographic regions.

<table>
<thead>
<tr>
<th>Current Neighborhood (I)</th>
<th>Current Neighborhood (J)</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>Suburban</td>
<td>-.34182</td>
<td>.13274</td>
<td>.029</td>
</tr>
<tr>
<td>Urban</td>
<td>Rural</td>
<td>-.30392</td>
<td>.13336</td>
<td>.061</td>
</tr>
<tr>
<td>Suburban</td>
<td>Urban</td>
<td>.34182†</td>
<td>.13274</td>
<td>.029</td>
</tr>
<tr>
<td>Suburban</td>
<td>Rural</td>
<td>.03790</td>
<td>.13692</td>
<td>.959</td>
</tr>
<tr>
<td>Rural</td>
<td>Urban</td>
<td>.30392</td>
<td>.13336</td>
<td>.061</td>
</tr>
<tr>
<td>Rural</td>
<td>Suburban</td>
<td>-.03790</td>
<td>.13692</td>
<td>.959</td>
</tr>
</tbody>
</table>

As for organic milk safety, Table 15 provides a look at the average level of concern reported by region. Both suburban and rural consumers indicated lower perceived safety of organic milk than urban consumers. Urban consumers averaged 2.01 out of 5 on a scale of 1-5, 1 being extremely safe and 5 being not at all safe. Suburban consumers averaged 2.25 and rural consumers averaged 2.44 out of 5.

Table 15. Self-reported perceived organic milk safety between geographic areas.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>102</td>
<td>2.0098</td>
<td>.80216</td>
<td>.07943</td>
</tr>
<tr>
<td>Suburban</td>
<td>104</td>
<td>2.2500</td>
<td>.91110</td>
<td>.08934</td>
</tr>
<tr>
<td>Rural</td>
<td>102</td>
<td>2.4412</td>
<td>1.06774</td>
<td>.10572</td>
</tr>
<tr>
<td>Total</td>
<td>308</td>
<td>2.2338</td>
<td>.94674</td>
<td>.05395</td>
</tr>
</tbody>
</table>

Means based on a scale of 1-5, 1 being a high level of perceived safety, 5 being a low level of perceived safety.

Urban and rural consumers had significantly different perceptions of the safety of organic milk. This was the category where the greatest between-group differences arose as shown in Table 16. The difference between the averages of urban and rural consumers was measured at a .004 level of significance.
Table 16. Games-Howell post-hoc comparison of perceived organic milk safety between geographic regions.

<table>
<thead>
<tr>
<th>Current Neighborhood (I)</th>
<th>Current Neighborhood (J)</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>Suburban</td>
<td>-.24020</td>
<td>.11954</td>
<td>.113</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>-.43137*</td>
<td>.13223</td>
<td>.004</td>
</tr>
<tr>
<td>Suburban</td>
<td>Urban</td>
<td>.24020</td>
<td>.11954</td>
<td>.113</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>-.19118</td>
<td>.13842</td>
<td>.353</td>
</tr>
<tr>
<td>Rural</td>
<td>Urban</td>
<td>.43137*</td>
<td>.13223</td>
<td>.004</td>
</tr>
<tr>
<td></td>
<td>Suburban</td>
<td>.19118</td>
<td>.13842</td>
<td>.353</td>
</tr>
</tbody>
</table>

Overall, some of the Likert-type scaled responses returned insignificant results while others differed significantly. Aside from the three areas of significant difference presented in detail above, consumers of varying geographical regions of California were relatively similar in their perceptions of milk. According to the results displayed in Table 10 and Figure 11 most consumer averages measured toward the lower side of the 1 to 5 scale, indicating higher confidence in the various perceptions participants were asked about.

For a comparison of milk preference by region, the researcher cross examined participant responses for type of milk (conventional, organic, or other) and geographic area (urban, suburban, or rural). These results can be seen in Figure 12 where it is clear that most participants prefer to purchase conventional milk in all regions. The regions classified as urban indicated the highest percentage (34%) of consumers who prefer organic milk. Urban consumers also reported the lowest overall preference for conventional milk compared to suburban and rural areas. Rural consumers appeared to be the most homogenous group as conventional milk was the preferred choice in the highest percentage (75%) among the regions, while accounting for the smallest percentage of consumers who prefer organic milk (15%) across all regions. Suburban consumers fell in
between these two ends with 21.15% of consumers choosing organic and 69.23% choosing organic.

**Figure 12.** Milk purchasing preference by geographic region.

Comparison of purchasing preference by region the respondent is from. Results are displayed in percentages to account for slightly different population sizes.
Chapter 5: Conclusion

By analyzing online and real-world social networks and interactions of consumers the researcher hoped to gain a clearer picture of the environmental influences on people’s perceptions of organic or conventional milk. According the the Theory of Reasoned Action and the Social Cognitive Theory, one’s environment contributes to attitude development and ultimately leads to performing a certain behavior. A survey instrument and a content analysis of Sysomos MAP were used to help in answering the three research questions: Which channels and influencers, both online or personal, do organic and conventional milk consumers primarily use to acquire information regarding milk products? Do identified online influencers of information about milk products identified by the researcher align with prolific individuals reported by milk consumers via survey? How do different geographic regions (urban, suburban, and rural) compare in their perceptions of organic versus conventional milk?

To answer these questions, an analysis of online platforms and users on Sysomos MAP was conducted, along with an online survey of 308 Californian consumers. While there may have been relatively few significant differences found between the various geographic regions and between the two types of consumers, some findings from the data collection were very interesting and telling. Where there were statistically significant differences, some conclusions can be drawn about these consumers and their information
sources for milk products. Looking to the conceptual framework developed in Chapter 2, there are clear areas where environmental aspects of attitude development appear to have an affect on the consumers who participated in this study. Differences in perceptions between some regions and consumer types indicates that an individual’s social networks and surroundings may have an affect on their purchasing decisions.

*Sources of information for organic and conventional consumers*

Internet and television were the main sources of information overall for organic and conventional consumers. Aside from the internet and television, there were distinct differences in secondary and tertiary sources for conventional and organic consumers. As we saw in Table 1. A larger percentage of organic consumers indicated that they see their grocery store or local market as a source of information, while stores were not a prevalent source for conventional milk consumers. This indicates that local stores and supermarkets may be important channels for reaching and educating organic consumers in California. Based on the outcomes of organic consumer responses and the assumptions of Social Cognitive Theory, leaning on social media and in-store communication channels may be the best way to reach organic consumers and influence their perceptions of milk.

The conventional consumers had higher reports of both seeking out and coming across information from other people. The emphasis on other people as sources of information among conventional consumers indicates that interpersonal relationships and connections are an important avenue for dissemination of information. For continued loyalty to and trust in conventional products, conventional consumers might be best
reached through in-person community events or programs to more effectively reach their interpersonal networks in addition to prevalent online platforms reported.

In terms of using social groups as a source of information for consumers, the researcher hoped to see whether or not consumers were looking to their friends, family, and other members of their interpersonal network to learn about milk by asking respondents about the amount of discussion they engage in about milk products. The difference between the two groups in terms of amount of discussion was small, although there was a pattern of slightly higher percentages for organic consumers. This was not a significant amount, but could still be an indication that milk is a topic of discussion occurring more frequently among consumers of organic milk. Further research could delve deeper into these conversations to determine if these consumers are surrounded by those who are more involved and engaged in discussion surrounding milk product labels and standards. Interpersonal interactions like these may be the key to understanding how the Theory of Reasoned Action might explain individuals who choose to buy organic because they feel their family and friends would view that as more positive behavior than buying conventional. This would more clearly determine possible connections between environmental characteristics and the individual’s purchasing decisions due to attitude formation.

*Online and televised sources of milk information*

Overall, television and online channels appear to be the primary way to reach the largest number of consumers, both organic and conventional. Based on an overall comparison between data collected on Sysomos MAP and those collected through the
survey, there is little overlap between prevalent sources of information found on Sysomos and those reported by survey participants. Whole Foods and PETA were the only two entities that appeared in both data collection processes. A large number of prevalent brands and users identified by the Sysomos search on Twitter were connected to recipes, activism, beauty, or alternative health information. Few of the most active or influential users were actual brands of milk products or businesses. Almost all of those reported in the survey, however, were either brands who produce milk products or outlets for selling them. This indicates that while some entities may produce a lot of content related to this topic, consumers are seeing information from different groups, typically those involved in the industry that people are used to seeing on labels and perhaps in organic or conventional product advertising. The lack of intersection between the content found on Sysomos MAP and the sources reported by participants hints that the most prevalent social media accounts in the minds of consumers are actually the brands selling dairy products, rather than the groups producing content online with a certain agenda or goal. This could mean there is a large opportunity for brands to be more active in providing educational and factual information to inform consumers.

A large number of consumers in California said most of what they see about dairy is on TV, indicating that this is still an important channel for getting information to consumers. This could be in part due to the prevalence of dairy marketing campaigns on TV in California over the past few decades. We did see in Table 3 that while many report seeing more information on TV than online, more are going online to seek out information. This seems to indicate that consumers aren’t passively seeing milk information online without seeking it out. This could be an opportunity to explore
advertising so that more people are seeing milk-related information without searching.

The assumptions of the Theory of Reasoned Action take an individual’s environmental influences and attitudes into consideration in predicting the type of behavior he or she will perform. Based on the results of this survey, Californians in general tend to hold a more positive attitude toward these products. We would expect similar findings from Social Cognitive Theory, in which exposure to certain messages and influencers will lead to development of certain beliefs and perspectives, and eventually result in behavior that supports those beliefs. The same could be said for organic milk advertising and dissemination of information. If some consumers are exposed to larger numbers of advertisements and more discussion promoting organic milk in certain regions, according to these theories they become more likely to trust and purchase organic products. By asking respondents about their perceptions of milk the researcher was able to get a better idea if this was happening in different regions, and found that consumers in these regions tended to hold similar perspectives of milk quality and nutrition of both organic and conventional milk. Based on these theories and these findings, there could be reason to assume that consumers in California are exposed to relatively positive information and messaging about milk products.

**Regional differences and similarities in perceptions of milk**

In many ways, consumers in rural, urban, and suburban areas did not present very different perceptions of milk products, especially regarding nutrition and milk production standards. Perhaps the idea that drinking milk provides health and nutrition benefits is salient among consumers, despite some questions they may have about its safety. There
were some clear differences among the three groups when it came to their concern with the safety of milk and how knowledgeable consumers consider themselves to be about milk products. Based on the Theory of Reasoned Action and Social Cognitive Theory, we can speculate about the differences in perceived self-knowledge of milk and perceived safety of milk. If consumers in different geographical areas are expressing significant differences in safety perceptions, according to these theories we would assume the consumers are being exposed to different messages regarding organic and conventional milk safety. Urban consumers reported higher overall confidence in the safety of organic milk products. While they reported slightly less confidence in conventional milk product safety compared to organic, they still averaged higher than both suburban and rural consumers. This comparatively higher confidence in milk product safety could indicate that there is in fact information being communicated in urban regions, especially considering their higher self-perceived knowledge level. Significantly more urban consumers perceived organic products to be safe than did rural consumers. This also seems to hint at the issue that trust and confidence in organic milk is overall higher, perhaps such messages are being perpetuated in these areas in places like grocery stores where organic consumers seem to report acquiring milk-related information. This might be an opportunity to fill a gap in communication in urban regions, while they appear to have more exposure to information than the other consumers, this could still mean there is room to shape a more equal view of organic and conventional milk.

The higher self-perceived knowledge of urban consumers’ compared to suburban and rural consumers could be an indication that they are more frequently seeing or seeking out information from their social networks. In this sense, urban consumers may
feel more confident in the knowledge they do have regardless of who or where it is coming from. According to the TRA, if urban consumers perceive themselves to be more knowledgeable, they might be placing a large amount of confidence in their interpersonal connections or social networks as being credible and trustworthy, leading them to follow suit in their actions. Perhaps their perceived knowledge is sourced from individuals in their interpersonal and online networks as well as regional advertising, marketing, and community events or activities. The lower self perceived knowledge of rural and suburban consumers could possibly be an indication that urban consumers are exposed to more information – regardless of the source – and thus, they feel more knowledgeable compared to the other two groups. It could, however, be a result of suburban and rural consumers being exposed to mixed or conflicting information about milk products, leading to confusion or questioning about what they know about milk.

The differences in perceived safety of milk, both organic and conventional, among the general population of participants is an indication that there needs to be improved communication about the distinction between organic and conventional milk products. If consumers are to be informed and educated when choosing what product to buy, this requires an understanding of what scientifically supported differences actually exist between those products available to them.

Recommendations for future research

Future research could benefit from several changes or additions to this study. Assessing milk-related content among those who fall in the age ranges who are most active on social media would paint a clearer, perhaps more accurate, picture of online
activity. Filtering out individuals of a significantly higher age may result in less association with traditional media channels and more accurate social media platform analysis. A deeper analysis of interpersonal conversations between friends and family would be another area to expand using focus groups. Doing so might help determine what ideas and information are being shared and communicated within social networks. Asking about events, activities, farmers markets, and other similar community activities could also provide insight into local, more interpersonal, sources of information besides friends and family.

Another recommendation for future research focuses on the makeup of the study population. If researchers seek an equal number of organic and conventional consumers this would allow for a different approach to this study. Comparing tendencies, perspectives, and social networks of the two types of consumers would allow for a look at the different ways in which they obtain information about milk that might have led them to make these purchasing decisions.

Recommendations for Professionals

There are several items found in this study that can be of great value to those working in the dairy industry. The findings highlight several major channels where consumers seek out information, primarily online, and where they are seeing it in passing, mostly television. Both of these avenues seem to be important areas for communicators and marketers to consider when directing messages to capture the largest number of consumers making it important to continue engaging all consumers online and on television. At the same time, because fewer consumers report passively seeing
information online, marketing professionals can explore ad space opportunities online to get more eyes on educational content in a way that attracts and resonates with consumers without them having to actively seek it out.

The overall concept that online platforms are the main channel for all surveyed consumers is something that dairy producers should keep in mind as well. Forming an online presence, as many have dairy farmers have started doing, could be an important step in continuing to establish credibility and transparency with consumers. Dairy brands also should consider taking an active role in promoting and educating milk if they aren’t already. Consumers seem to readily recall prevalent brands rather than activist groups or opinion-based content online, indicating that this is a marketing opportunity the dairy industry should continue to exploit.

If the organic-purchasing population is the target audience, then the results of this study indicate that places like grocery stores and farmer’s markets are another go-to source for these types of consumers. Enhancing communications in these local stores and supermarkets would be the next best way to target organic consumers beyond online and televised outlets. Conventional consumers tend to lean on other people such as family, friends, educators, and others in their local network. Considering these characteristics when planning outreach efforts, activities, and events will be useful in reaching these audiences beyond online and televised outlets.

Differentiating between geographic regions is also important when it comes to tailoring information to suit a specific population. By analyzing perceptions, the researcher hoped to determine whether or not communicators needed to influence the social environment in certain communities or regions if they appeared to be promoting a
negative view of milk production. Overall, however it appeared that urban, suburban, and rural consumers were similar in their perceptions and had a generally positive view of milk products. The issue of safety is one that seems to be in the minds of urban consumers, especially with regard to conventional milk. Considering this when planning or coordinating communications and events in more densely populated regions might make for more safety- and trust-focused messaging. The tendency for urban consumers to consider their knowledge of milk to be greater than was reported by urban and suburban consumers only heightens the need for these consumers to have information that is sound and research-based. Community program professionals could pursue more programs and events in rural and suburban regions, especially where there is limited agricultural exposure, to boost a sense of knowledge and and literacy for consumers in these areas.


Booth-Butterfield, S., & Reger, B. (January 01, 2004). The message changes belief and the rest is theory: the "1% or less" milk campaign and reasoned action. Preventive Medicine, 39, 3, 581-8.


Appendix A: Survey

Q2 By clicking "yes" below, you consent to participate in the survey.
   - Yes
   - No

**Condition: No Is Selected. Skip To: End of Block.**

Q3 What is your gender?
   - Male
   - Female

Q4 What year were you born?

Q5 What is your highest level of education achieved?
   - Less than high school
   - High school graduate
   - Some college
   - 2 year degree
   - 4 year degree
   - Graduate or professional degree

Q6 How would you describe the neighborhood/area you currently live in?
   - Urban
   - Suburban
   - Rural
   - Other: _________________

Q7 How would you describe the neighborhood/area you grew up in?
   - Urban
   - Suburban
   - Rural
   - Other: _________________
Q8 Would you say individuals in your social circle generally share similar views, opinions, beliefs, etc.?
   ☐ Yes. Please explain the ways in which you are similar:

☐ No. Please explain the ways in which you differ:

Q9 Would you say individuals in your social circle are generally of similar background, upbringing, education level, etc.?
   ☐ Yes. Please explain the ways in which you are similar:

☐ No. Please explain the ways in which you differ: ____________________

Q10 Please discuss where you mainly come across information about milk products and/or dairy farming. (Other people, online, news sources, TV, search engines, etc.)

Q11 Please discuss where you mainly seek out information about milk products and/or dairy farming. (Other people, online, news sources, TV, search engines, etc.)

Q13 Please list the names of any individuals, organizations, companies, or brands that you are familiar with who discuss milk products and/or dairy farming on social media.
Q14 How much knowledge of milk products and/or dairy farming would you say you have?
   - A great deal
   - A lot
   - A moderate amount
   - A little
   - None at all

Q15 How often do you see social media posts about milk products and/or dairy farming?
   - Always
   - A lot
   - Occasionally
   - Rarely
   - Never

Q16 How often do you and your friends discuss milk products and/or dairy farming?
   - Always
   - A lot
   - Occasionally
   - Rarely
   - Never

Q17 How often do you and your family discuss milk products and/or dairy farming?
   - Always
   - A lot
   - Occasionally
   - Rarely
   - Never

Q18 How concerned are you with milk products and/or dairy farming standards?
   - Extremely
   - Very
   - Moderately
   - Slightly
   - Not at all

Q19 How nutritious would you consider regular (conventional) milk?
   - Extremely
   - Very
   - Moderately
   - Slightly
   - Not at all
Q20 How nutritious would you consider organic milk?
- Extremely
- Very
- Moderately
- Slightly
- Not at all

Q21 How safe would you consider regular (conventional) milk?
- Extremely
- Very
- Moderately
- Slightly
- Not at all

Q22 How safe would you consider organic milk?
- Extremely
- Very
- Moderately
- Slightly
- Not at all

Q23 What type of milk do you prefer to buy?
- Skim (Fat Free)
- 1%
- 2%
- Whole
- Other (please indicate)
- None

Q24 What type of milk production/dairy farming practice do you look for when buying milk?
- Organic
- Regular (conventional)
- Other (please indicate)

Q25 How often do you buy milk?
- Every couple days
- Every week
- Every couple weeks
- Every month
- Every couple months
- Never
Q26 What are the main things you look for on a carton of milk that help you decide which milk to buy? Please select all that apply.

- Lowest price
- Sell-By Date
- Appealing label design
- rBST free
- a2
- Raw
- Pasteurized/Ultra-Pasteurized
- Homogenized
- Non-GMO
- Organic
- Grass-Fed
- Local
- Pasture-Raised
- Other (please indicate) __________________
- None

Q27 In Column 1, select the box next to any entities that you are familiar with. In Column 2, indicate your feelings toward the entities you have selected in Column 1. If you are unfamiliar with one of the entities, please leave both columns blank for that item.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Select any you are familiar with</th>
<th>Indicate your feelings toward only the entities you have selected in Column 1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Dairy Council</td>
<td>☐</td>
<td>Negative ○</td>
</tr>
<tr>
<td>Food Babe</td>
<td>☐</td>
<td>Neutral ○</td>
</tr>
<tr>
<td>Dairy Good</td>
<td>☐</td>
<td>Positive ○</td>
</tr>
<tr>
<td>Mercy for Animals</td>
<td>☐</td>
<td></td>
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<tr>
<td>PETA</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Dairy Council of California</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Vegan Future</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Organic Pastures</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>----------------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Vegan News Net</td>
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<td></td>
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<tr>
<td>Farm Babe</td>
<td></td>
<td></td>
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<tr>
<td>Hoard's Dairyman</td>
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<td></td>
</tr>
<tr>
<td>Whole Foods Market</td>
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<tr>
<td>Other</td>
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Appendix B: Budget

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<tr>
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<td>Qualtrics Panel</td>
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<td>1,200.00</td>
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<td><strong>AAAE 2017 National Conference</strong></td>
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### Appendix C. Timeline

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<tr>
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<th>2017</th>
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<td>Jan/Feb</td>
<td>Mar/Apr</td>
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<tr>
<td>Literature Review</td>
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<tr>
<td>Develop Research Questions</td>
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</tr>
<tr>
<td>Write Draft of Ch.1-3</td>
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<td>X</td>
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<tr>
<td>Submit Draft of Ch. 1-3 to advisor</td>
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<td></td>
</tr>
<tr>
<td>Revise Ch. 1-3 using advisor feedback</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Revise Ch. 1-3 using committee feedback</td>
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<td></td>
</tr>
<tr>
<td>Formally propose Thesis</td>
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<tr>
<td>Revise proposal using committee feedback</td>
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<td></td>
</tr>
<tr>
<td>Submit proposal to IRB</td>
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<td>X</td>
</tr>
<tr>
<td>Await IRB approval</td>
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<td></td>
</tr>
<tr>
<td>Conduct study</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Analyze Results</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Write Draft of Ch. 4-5</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Revise chapters 4-5 using advisor feedback</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Submit draft of proposal to committee</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Revise proposal using committee feedback</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Submit final proposal draft to graduate school</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Thesis defense</td>
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<td></td>
</tr>
</tbody>
</table>
## Appendix D. IRB Forms

### 2017E0048: Social Media and Interpersonal Influence on Consumer Perceptions Toward Fluid Milk

#### Study 2017E0048 - Identification

<table>
<thead>
<tr>
<th>Title of Study*</th>
<th>Social Media and Interpersonal Influence on Consumer Perceptions Toward Fluid Milk</th>
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<tbody>
<tr>
<td>Principal Investigator*</td>
<td>Annie Specht (specht.21)</td>
</tr>
<tr>
<td>Study Department*</td>
<td>ACEL (11180)</td>
</tr>
<tr>
<td>Department Signer</td>
<td>Unsigned</td>
</tr>
</tbody>
</table>

#### Principal Investigator - Annie Specht

<table>
<thead>
<tr>
<th>Contact Information</th>
<th>Academic Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email: <a href="mailto:specht.21@osu.edu">specht.21@osu.edu</a></td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>Phone: 6142921626</td>
<td>ACEL (11180)</td>
</tr>
<tr>
<td>COI</td>
<td>College of Food, Ag &amp; Environ (11000)</td>
</tr>
<tr>
<td>✓ Completed (Expires: 06/30/2017)</td>
<td>PI Eligibility</td>
</tr>
<tr>
<td></td>
<td>✓ Eligible</td>
</tr>
</tbody>
</table>
Study Personnel

Enter all Ohio State study team members below. External collaborators will be entered on a different page. Study team members should only be listed in one category (i.e., PI, co-investigator, or key personnel).

Co-investigators and key personnel are defined as individuals who participate in the design, conduct, or reporting of human subjects research. At a minimum, include individuals who recruit participants, obtain consent, or who collect study data.

Additional contacts can also serve in another role on the project.

All individuals listed as Ohio State study team members will have access to all submitted information, including completion status of team members’ administrative and training requirements (CITI, COI disclosure), and may edit submissions on behalf of the principal investigator.

Electronic signatures are required of all Ohio State investigators named on the submission.

Study Team

Co-Investigator - Ashlan Wickstrom

<table>
<thead>
<tr>
<th>Contact Information</th>
<th>Academic Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email: <a href="mailto:wickstrom.9@osu.edu">wickstrom.9@osu.edu</a></td>
<td>Graduate Teaching Associate</td>
</tr>
<tr>
<td>Phone:</td>
<td>ACEL (11180)</td>
</tr>
<tr>
<td>COI</td>
<td>College of Food, Ag &amp; Environ (11000)</td>
</tr>
</tbody>
</table>

✔ Completed (Expires: 06/30/2017)

Activities Performed

Protocol development/study design; Data analysis/interpretation; Reporting results; Manuscript preparation;

Funding and Financial Conflicts

If the research is federally funded and involves a subcontract to or from another entity, an IRB Authorization Agreement may be required. Contact ORRP for more information.
Is the research funded or has funding been requested?*

- □ Yes
- ■ No
- □ Pending

Is any support other than monetary (e.g., drugs, equipment, etc.) being provided for the study?*

- □ Yes
- ■ No
- □ Pending

Provide a copy of the grant application or funding proposal.

Uploaded Files

No files have been uploaded.

Financial Conflict of Interest

All Ohio State investigators and key personnel must have a current COI disclosure (updated as necessary for the proposed research) before IRB review. Examples of financial interests that must be disclosed include (but are not limited to) consulting fees or honoraria; stocks, stock options or other ownership interests; and patents, copyrights and royalties from such rights. For more information, see Office of Research Compliance COI Overview and eCOI.

Please indicate if any Ohio State University investigator (including principal or co-investigator), key personnel, or their immediate family members has a financial conflict (including salary or other payments for services, equity interests, or intellectual property rights) that would reasonably appear to be affected by the research, or a financial interest in any entity whose financial interest would reasonably appear to be affected by the research. Select ‘none’ if no financial conflicts exist.*

- ■ None
- □ Annie Specht
- □ Ashlan Wickstrom
Location of Research

Research to be conducted at locations other than approved performance sites may require a letter of support or another institution’s approval if personnel are engaged. See OHRP Engagement Guidance or contact ORRP at irbinfo@osu.edu or 614-688-8457 for more information.

Ohio State Approved Research Sites
You have listed no Ohio State approved research sites.

Domestic Research Sites – Non-Ohio State Locations

| Qualtrics, LLC | 333 W River Park Dr  
Provo, UT |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter of support / IRB approval</td>
<td>Uploaded Files</td>
</tr>
</tbody>
</table>

No files have been uploaded.

International Research Sites
You have listed no international research sites.

Type of Research

Select the appropriate option below based on the type of review required for the research.

Exempt research: This option should be selected for research that involves human subjects that is not subject to regulations requiring IRB review and approval. Final determination is made by ORRP staff.

Expedited or full IRB-reviewed research: This option should be selected for review by the Biomedical Sciences, Behavioral and Social Sciences, or Cancer IRBs at Ohio State including research reviewed through either expedited or full board processes. This option should also be selected for any research which will be ceded to another non-Ohio State IRB, such as WIRB, NCI CIRB, or another external institution.

Don't know: This option should be selected if the investigator is uncertain whether the research is exempt or should be reviewed by an IRB.
What type of review is required for your project?

- Exempt research
- Expedited or full IRB-reviewed research (includes WIRB, NCI CIRB and other external IRB review)
- Don't know (screening questions to determine if exempt research)

## Exempt Categories

Please check the categories of exemption for which you are applying. You may check more than one box. Research that includes both exempt and non-exempt activities cannot be determined to be exempt. All research activities to be conducted at all locations for proposed research must fall under one or more of the categories listed below.

### Category #1

Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as:

- research on regular and special education instructional strategies
- research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods

- Apply for category #1

### Category #2

Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:

- information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; AND
- any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation

- Apply for category #2
**Category #3**

Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under Category 2, IF:

a. the human subjects are elected or appointed public officials or candidates for public office, OR

b. federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter

☐ Apply for category #3

**Category #4**

Research, involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified directly or through identifiers linked to the subjects.

☐ Apply for category #4

**Category #5**

Research and demonstration projects which are conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine:

a. public benefit or service programs;

b. procedures for obtaining benefits or services under those programs;

c. possible changes in or alternatives to those programs or procedures; OR

d. possible changes in methods or levels of payment for benefits or services under those programs

☐ Apply for category #5

**Category #6**

Taste and food quality evaluation and consumer acceptance studies,
a. if wholesome foods without additives are consumed; OR
b. if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.

☐ Apply for category #6

### Exempt Justification

Describe how the proposed research meets the criteria for exemption. Reference the exemption category or categories ([IRB Exemption Categories](#)) and the category’s corresponding requirements.

This study will analyze perceptions of milk products across varying age ranges, and demographic groups. In order to gather this information, the study will be conducted using a survey. The survey will only include individuals aged 18 and above. All personal information and responses will be de-identified and the topic of research is of little to no risk.

### Summary of the Research

Briefly summarize the purpose and procedures of the proposed research using non-technical language that can be readily understood by someone outside the discipline. Use complete sentences.

The purpose of this study is to analyze social media use and interpersonal interactions by consumers of organic and conventional milk as well as the platforms used to obtain information about dairy products. Guided by the Theory of Planned Behavior and Social Cognitive Theory, the study is being conducted to understand purchasing tendencies and patterns as influenced by norm and attitude development through human and online social interactions. A content analysis using Sysomos MAP and an online Qualtrics survey will be utilized to obtain data related to individual and group behaviors, attitudes, and interactions. This study expands on previous research in traditional media and human social networks by studying platforms in new media and their effect on users’ decisions made about milk products.
The purpose of this study is to analyze social media use and interpersonal interactions by consumers of organic and conventional milk as well as the platforms used to obtain information about dairy products. Guided by the Theory of Planned Behavior and Social Cognitive Theory, the study is being conducted to understand purchasing tendencies and patterns as influenced by norm and attitude development through human and online social interactions. A content analysis using Sysomos MAP and an online Qualtrics survey will be utilized to obtain data related to individual and group behaviors, attitudes, and interactions. This study expands on previous research in traditional media and human social networks by studying platforms in new media and their effect on users’ decisions made about milk products.

Provide the estimated beginning and end dates of the project

| Beginning Date* | 02/01/2017 |
| End Date*       | 04/30/2017  |

**Research Methods & Activities**

Use the boxes provided below to provide information on all interventions and activities that are to be performed in the research. Based on the selections chosen in the list of activities and components, completion of additional form pages may be necessary to provide required information for IRB review.

Check all research activities and/or components that apply.*

- Audio, video, digital, or image recordings
- Existing data, not publicly available
- Existing data, publicly available
- Focus groups
- Internet or e-mail data collection
- Observation of participants (including field notes)
- Oral history (does not include medical history)
- Record review (which may include PHI)
- Specimen research (must be existing at time of application)
- Surveys, questionnaires, or interviews (group)
- Surveys, questionnaires, or interviews (one-on-one)
- Taste-testing
- Other (Specify)
Number of Participants

The number of participants is defined as the number of individuals who agree to participate (i.e., those who provide consent or whose records are accessed, etc.) even if all do not prove to be eligible or complete the study. The total number of research participants may be increased only with prior IRB approval.

Provide the total number of participants (or number of participant records, specimens, etc.) for whom you are seeking Ohio State University approval.*

350 participants

□ Unlimited participant numbers

Total number of participants* 350

Participant Population

Specify the age(s) of the individuals who may be included in the research:*

18-35

Specify the participant population(s). Check all participant groups that apply.*

■ Adults
□ Children
□ Student research pools (e.g., psychology, linguistics)
□ Non-English speaking
□ Unknown (e.g., research using secondary data/specimens, non-targeted surveys, program protocols)
□ Other

Describe the characteristics of the proposed participants, and explain how the nature of the research requires/justifies their inclusion.*

The proposed participant group ranges in age from 18-35 years (Millennial generation) due to the prevalence of social media use and involvement in a rising movement toward 'green' or 'safety' concerns with agricultural food products. The participants will be from urban, suburban, and rural areas within the state of California. Selecting participants from this state is ideal for the progressive viewpoints in the urban areas as well as their proximity to rural, agricultural areas throughout much of the state. All genders and education levels will be included in order to get a broad view of perceptions of dairy products across varying populations.
'green' or 'safety' concerns with agricultural food products. The participants will be from urban, suburban, and rural areas within the state of California. Selecting participants from this state is ideal for the progressive viewpoints in the urban areas as well as their proximity to rural, agricultural areas throughout much of the state. All genders and education levels will be included in order to get a broad view of perceptions of dairy products across varying populations.

Participant Identification, Recruitment and Selection

Participant Identification

Describe how potential participants will be identified (e.g., advertising, individuals known to the investigators, record review). Explain how the investigator(s) will gain access to this population, as applicable.*

Participant identification and selection will be handled by Qualtrics.

Participant Recruitment and Selection

Describe the recruitment process, including the setting in which recruitment will take place. Enter ‘not applicable’ if the research involves only record review and no participant interaction.*

Participant recruitment will be handled by Qualtrics online.

Incentives to Participate

For more information regarding incentives for participation, see the ORRP policy, Recruiting Methods, Recruiting Materials, and Participant Compensation.

Will participants receive compensation or other incentives (e.g., free services, cash payments, gift certificates, parking, classroom credit, travel reimbursement) to participate in the research study?*

☐ Yes  ■ No
Indicate the consent process(es) and document(s) to be used in the study. Check all that apply.

- □ Informed Consent - Form
- ■ Informed Consent - Unsigned/Verbal Script/Online
- □ Assent - Form
- □ Assent - Verbal/Online/Unsigned
- □ Parental Permission - Form
- □ Parental Permission - Unsigned/Verbal Script/Online
- □ Translated Consent/Assent - Form(s), Script(s), etc. (provide only English version)
- □ Not Applicable (existing data or specimens)
- □ Other (Specify)

Provide copies of all documents, as applicable.

<table>
<thead>
<tr>
<th>Uploaded Files</th>
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<tbody>
<tr>
<td>Consent Form.pdf</td>
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<tr>
<td>Uploaded by Ashlan Wickstrom on 01/20/2017</td>
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Describe the consent process. Explain when and where consent will be obtained and how subjects and/or their legally authorized representatives will be provided sufficient opportunity (e.g., waiting period, if any) to consider participation.^

Consent will be obtained in the online Qualtrics questionnaire. Clicking the URL in the survey email will take participants to the opening page, which will consist of an informed consent document explaining the purpose of the research and outlining the minimal risks and rewards involved. At the bottom of the informed consent form, participants will be asked to click on "Yes, I consent to participate" or "No, I do not consent to participate." Respondents who click on "Yes" will be taken to the opening page of the survey, while those who click on "No" will be taken to a page thanking them for their time.

- □ Not Applicable

Privacy of Participants
Describe the provisions to protect the privacy interests of the participants.*

The data will be handled by Qualtrics, LLC. They will collect and de-identified survey results.

Does the research require access to personally identifiable, private information?*

☐ Yes  ■ No

**Confidentiality of Data**

Explain how information is handled, including storage, security measures (as necessary), and who will have access to the information. Include both electronic and hard copy records.*

The initial data will be handled by Qualtrics and de-identified. Basic demographic information will be collected, and identifying information such as email addresses will not be included with the rest of the survey data. De-identified data will be maintained for a period of at least 5 years after study completion per the Ohio State Research Data policy.
The Ohio State University Consent to Participate in Research

**Study Title**: Social Media and Interpersonal Influence on Consumer Perceptions Toward Fluid Milk

**Researchers**: Dr. Annie Specht and Ashlan Wickstrom

This is a consent form for research participation. It contains important information about this study and what to expect if you decide to participate.

Your participation is voluntary.

Please consider the information carefully. Feel free to ask questions before making your decision whether or not to participate. If you decide to participate, you will be asked to indicate you consent by clicking “Yes” below.

**Purpose**: The purpose of this study is to identify consumer engagement with both online and in-person social networks in regards to milk products and milk production. The survey should take no more than 10 minutes to complete.

**Procedures/Tasks**: You are being asked to complete an online survey. The questionnaire contains multiple choice, short answer, and scaled item questions regarding your personal knowledge, perceptions, and purchasing tendencies of milk products.

**Duration**: This survey should take no more than 10 minutes to complete.

You may leave the study at any time. If you decide to stop participating in the study, there will be no penalty to you, and you will not lose any benefits to which you are otherwise entitled. Your decision will not affect your future relationship with The Ohio State University.

**Risks and Benefits**: This study offers minimal risk of breach of confidentiality. Safeguards are described below. This study offers no immediate benefit to you. Incentive to participate is described below.

**Confidentiality**: Efforts will be made to keep your study-related information confidential. All identifiable information, including email addresses and images, will be removed from survey data and stored on a secure drive.
with access limited to study personnel. There may be circumstances where this information must be
released. Also, your records may be reviewed by the following groups (as applicable to the research).

- Office for Human Research Protections or other federal, state, or international regulatory
  agencies;
- The Ohio State University Institutional Review Board or Office of Responsible Research
  Practices;
- The sponsor, if any, or agency (including the Food and Drug Administration for FDA-regulated
  research) supporting the study.

We will work to make sure that no one sees you survey responses without approval. But, because we
are using the internet, there is a chance that someone could access your online responses without
permission. In some cases, this information could be used to identify you.

Incentives:
No incentives will be provided for you participation in this study. However, the results of this survey
may be used to better understand consumers of dairy products and to improve messaging and
educational opportunities for consumers of milk products.

Participant Rights:

You may refuse to participate in this study without penalty or loss of benefits to which you are
otherwise entitled. If you are a student or employee at Ohio State, your decision will not affect your
grades or employment status.

If you choose to participate in the study, you may discontinue participation at any time without
penalty or loss of benefits. By signing this form, you do not give up any personal legal rights you may
have as a participant in this study.

This study has been determined Exempt from IRB Review.

Contacts and Questions:

For questions, concerns, or complaints about the study, or you feel you have been harmed as a result
of study participation, you may contact Dr. Annie Specht at 614-292-1626.

For questions about you rights as a participant in this study or to discuss other study-related concerns
or complaints with someone who is not a part of the research team, you may contact Ms. Sandra
Meadows in the Office of Responsible Research Practices at 1-800-678-6251.