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Poultry Production Messaging: A Content Analysis of Three National Newspapers from 1994 to 2014

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Poultry Production Messaging: A Content Analysis of Three National Newspapers
from 1994 to 2014

Poultry Production Messaging: A Content Analysis of Three National Newspapers
from 1994 to 2014

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science in Agricultural and Extension Education

by

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University of Arkansas
Bachelor of Science in Agricultural Education, Communications and Technology, 2013

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This thesis is approved for recommendation to the Graduate Council.

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Abstract

Consumers are increasingly concerned with the use of antibiotics and hormones in poultry production, and the news media is the primary way consumers gain knowledge about this subject. This study assessed articles about antibiotic and hormone use in poultry production from the New York Times, USA Today, and the Wall Street Journal from 1994 to 2014. This study employed a content analysis methodology to assess selected articles ($n = 139$) for key messaging about antibiotic and hormone use in poultry production, article tone, article framing, and article journalistic quality. Data gathered from key messages were assessed for emergent themes that were reported as frequencies, and data gathered about tone, framing, and journalistic quality were assessed for frequencies and significant differences between media outlets ($p < .05$).

Five emergent themes were evident in the analysis of these articles: 1) *consumers awareness of and concern for antibiotic/hormone use in poultry production* (41.0%, $n = 57$); 2) *the role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria* (40.3%, $n = 56$); 3) *regulation of antibiotic use in poultry production* (36.0%, $n = 50$); 4) *purpose of antibiotic/hormone use in poultry production* (32.4%, $n = 45$); and 5) *transparency of antibiotic use poultry production practices* (13.7%, $n = 19$). Articles were written with primarily a neutral or negative tone, and the human interest and responsibility frames were evoked most frequently. Articles showed the most quality in terms of selectivity of information included in the articles, while displaying the lowest percentage of quality in objectivity.

Conclusions were drawn from the findings, and recommendations were made for agricultural communicators and journalists, as well as for public relations in the poultry industry. These included a stronger focus on understanding and addressing consumer concern about antibiotic and hormone use in poultry production, increased transparency, and improved relations

with media contacts who cover antibiotic and hormone use in poultry production issues.

Additionally, future research recommendations are made, including qualitative research to understand why journalists and gatekeepers set agendas and how they frame articles about antibiotic and hormone use in poultry production and stronger research focus on determining the link between antibiotic use in poultry production and increased antibiotic-resistant bacteria.

Acknowledgements

Completing this thesis has been a group effort, even though I have been the one doing most of the physical labor. I have to first thank my wife, Hanna, who has walked beside me, put up with my stress, and loved and supported me throughout this endeavor. I also want to thank my mom and dad, who have never once questioned all the time I've devoted to education and who have also loved and supported me throughout this time of my life. I want to thank my grandpa Wayne, who nearly every night told me that it would all be worth it someday. I could not have made it through this thesis, or much of my college career, without the guidance of Dr. Leslie Edgar, and I am forever thankful for her lessons in the classroom and her good example outside of the classroom. To Dr. Don Johnson I have to say thank you for guiding me through the sometimes murky waters of data analysis and for his guidance throughout this process. Drs. H.L. Goodwin and Karen Christensen have also added invaluable insights into this project, and I am truly grateful for their guidance as well. Finally, I need to thank my Heavenly Father for hearing the many prayers I have offered about this thesis, for He has allowed me to learn more than just the findings of this research by completing this project.

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CHAPTER I

Introduction

Overview of the Literature

Understanding the production methods that provide the public with food is of growing importance and concern for the modern consumer. One area consumers are concerned with is the use of antibiotics and hormones in food production processes, stemming from the somewhat murky understanding consumers have about the effects these substances have on food (Brewer & Rojas, 2006; Hwang, Roe, & Teisl, 2005). In the mid-20th century, antibiotic use became prevalent in American agriculture, as researchers began to understand the economic implications of including small amounts of antibiotics in the feed of livestock (Gustafson & Bowen, 1997). In contrast to the use of antibiotics in the three major livestock sectors, hormones are only used in the beef industry and are not permitted for use in the pork and poultry industries (American Meat Institute [AMI], 2009). Antibiotics play an important role in poultry production, helping to treat illnesses in a therapeutic fashion and improving the size and quality of poultry in a growth-promoting capacity (Singer & Hofacre, 2006). Consumer perceptions of poultry as a quality food source are important to understand because poultry production is an important part of the agricultural landscape of the U.S. (Poultry Federation, 2014; United States Department of Agriculture [USDA], 2014).

Consumers gather much of their understanding of the food production system from media (Malone, Boyd, & Bero, 2000). Agriculture is not heavily covered in the media, but media coverage of agricultural issues still plays a role in influencing the public's perceptions and voting choices, which ultimately affects legislation (Kuykendall, 2010). Newspapers play an important role in informing the public of agricultural information (Reisner, 2005). The role of newspapers

is particularly important for informing local residents of agricultural areas because they are the most accessible form of media for these residents (Reisner, 2005). Information disseminated by newspapers inherently reflects the views of the journalists and editors who write and determine content for the outlet (Reisner, 2005). The way journalists and editors interpret and view a story is the way it is presented to the public in the newspaper (Reisner, 2005). Newspaper articles are subject to agenda setting theory and framing theory, which are a media outlet's ability to tell readers *what* are the salient issues and *how* to think about those issues, respectively (McCombs & Shaw, 1972; Scheufele & Tewksbury, 2007).

Need for the Study

As noted, the issue of antibiotic and hormone use is especially salient in the poultry industry, where, like other agricultural sectors, consumer opinions of antibiotics and hormones effect consumer purchasing behavior (Brewer and Rojas, 2007; Hwang et al., 2005; USDA, 2014). Often, what consumers do know about agricultural processes they primarily glean from media (Malone et al., 2000; Reisner, 2005), and newspapers are a form of media readily available to communities from which they learn about agricultural practices in their area and across the country (Reisner, 2005; Reisner & Walter, 1994). Newspapers, as well as other media outlets, often provide information about issues through the lenses of agenda-setting and framing (McCombs & Shaw, 1972; Scheufele & Tewksbury, 2007). The way journalists portray agricultural issues may be based more on their understanding of how to make the story into an article than on their understanding of an agricultural practice (Reisner, 2005). Consumers are now more removed from the farm than ever because of urbanization and technology (Leising, Pense, & Igo, 2000), thus they are more willing to accept a journalist's account of an agricultural issue as expert opinion because of their lack of understanding. Because the public (consumers)

gains most of its knowledge of the use of antibiotics and hormones in the poultry industry from media (Kuykendall, 2010; Panach, 2007), there is a need to examine the messaging to identify and determine the extent of agenda setting and framing present, both of which have the potential to change consumer behavior by influencing what consumers think about and how they think about it. The importance of newspapers in communicating agricultural material makes newspapers articles an appropriate context to study messaging about antibiotics and hormones (Reisner, 2005). A better understanding will lead to recommendations for agricultural communicators who struggle with a public that does not adequately understand the poultry production processes that provide consumers with an inexpensive source of protein (Poultry Federation, 2014).

Statement of the Problem

Poultry production is an important source of food and an integral part of the agricultural landscape in the U.S. (Poultry Federation, 2014; USDA, 2014), and consumers are concerned with the use of antibiotics and hormones in the production processes of the industry (Hwang et al., 2005). Consumers gain a majority of their knowledge of agriculture from media, and newspapers are especially adept at influencing consumer perceptions of agricultural (Kuykendall, 2010; Malone et al., 2000). Because consumer opinion and understanding of a product drives consumer behavior there is a need to understand the messages that select media (i.e. newspapers) elicit about antibiotic and hormone use in poultry production so the agricultural communicators and the poultry industry can address misconceptions that may be present.

Purpose Statement

The purpose of this study was to assess the content of three national newspapers about antibiotic and hormone use in poultry production for key messaging, tone, framing, and quality,

so that recommendations can be made to improve media coverage of antibiotic and hormone use in poultry production.

Objectives:

Specific objectives for this study were to:

1. Describe key messages in selected newspaper articles about antibiotic and hormone use in poultry production;
2. Identify the tone of selected newspaper articles about antibiotic and hormone use in poultry production;
3. Identify the framing of selected newspaper articles about antibiotic and hormone use in poultry production;
4. Determine the journalistic quality of selected newspaper articles about antibiotic and hormone use in poultry production; and
5. Determine if significant differences ($p < .05$) exist between selected media outlets' framing, tone, and quality of articles about antibiotic and hormone use in poultry production.

Definitions

- Agenda setting – the correlation between the emphasis the media places on a certain issue and the importance the public attributes to the issue as a consequence (McCombs & Shaw, 1972).
- Antibiotic – a drug that is used to kill harmful bacteria and to cure infections (Merriam-Webster, 2014).
- Editor – a person who is in charge of and determines the final content of a newspaper, magazine, or multi-author book (Oxford, 2014).

- Editorial – an article of comment or opinion, usually on the editorial page (Mencher, 2010).
- Feature – story emphasizing the human interest or entertaining aspects of a situation (Mencher, 2010).
- Framing – the idea that how an issue is characterized by the media influences how the issue is understood by the public (Scheufele & Tweeksbury, 2007).
- Hormone – a natural substance that is produced in the body and that influences the way the body grows or develops (Merriam-Webster, 2014).
- Journalist – a writer for a news medium (Merriam-Webster, 2014).
- News – live and current news in contrast to features (Mencher, 2010).
- Poultry – domesticated birds kept for eggs or meat (Merriam-Webster, 2014).

Limitations

The nature of this content analysis research presented some limitations. Primarily, the need for a search in Lexis Nexis and ProQuest to gather a population for the study created some problems. One of these problems is the unreliability of the search engines to return an identical set of articles based on different search times, despite searching with the same terms. Depending on the time of a search, the searcher may not return the same set of results between two different searches; the differences are minimal, but the unreliability could cause problems for replication of this study. Additionally, the search terms used were as restrictive as possible while allowing for a population to be drawn, yet they were not sufficient to completely remove articles that did not fit the context of the research. This left the decision of inclusion of articles based on context up to the researcher, which could also cause problems for replication of this study.

CHAPTER II

Literature Review

Consumers are increasingly concerned about the substances that are fed and used in the production of the food they eat. In particular, the use of antibiotics and hormones is a point of interest for the modern consumer. A study conducted by Hwang et al. (2005) found that of the eight food production and processing technologies assessed in the study, consumers were most concerned about artificial growth hormones and were intermediately concerned about antibiotics. Brewer and Rojas (2007) noted that consumers may be concerned with the use of antibiotics and hormones because they “are poorly understood by consumers [and] may have potentially dangerous or unknown long-term effects” (p. 12). There are many factors that have contributed to the increased awareness of the use of food safety issues such as the use of antibiotics and hormones in food, including media attention; greater consumer understanding of the interconnectedness of agricultural production techniques, food quality, and human and environmental safety; and greater awareness of the relationship between diet and health (Lynch & Lin, 1994).

The U.S. Poultry Industry

In the U.S., poultry is an important part of the agricultural landscape. In fact, the U.S. poultry industry is the world’s largest meat producer and the second largest meat exporter in the world (Poultry Federation, 2014). Americans consume poultry at a considerably higher rate than beef or pork, with a per person consumption average of 80 pounds of chicken and 17 pounds of turkey each year. In 2013, the value of poultry production and sales was \$44.1 billion, an increase of 15% from the previous year (USDA, 2014). The majority of production revenue in the U.S. poultry industry can be attributed to broilers, which garnered 70% of the total

production value and accounted for \$30.7 billion of production value. Of the states that have broiler production, Georgia, Alabama, and Arkansas rank the highest in number of birds produced (USDA, 2014). In terms of value of production of broilers, Georgia, Arkansas, and North Carolina hold the top three rankings, respectively (USDA, 2014).

In the last half century, poultry production in the U.S. has evolved from disparate, locally-oriented businesses to a highly efficient industry (National Chicken Council, 2012). The poultry industry in America is designed around vertical integration; namely, large poultry companies own and operate hatcheries, feed mills, and processing plants (Boehler, 2010). In this design, growers are contracted by the companies, known as integrators, to raise the birds, but the integrators retain ownership of the birds during the growing process (Boehler, 2010). Once the growers have raised the birds to market weight, the integrator retakes possession of the birds and completes the production process in the processing plant (Boehler, 2010). Processing plants typically further process birds into cut-up and value-added products, which consumers prefer more now in comparison to the traditional whole bird (National Chicken Council, 2012).

Antibiotics and Hormones in Poultry Production

The use of antibiotics in feeding regimens of livestock became prevalent following World War II, when researchers began to understand the commercial implications of the inclusion of small amounts of antibiotics in feed, which promoted better growth and feed efficiency (Gustafson & Bowen, 1997). Antibiotics are normally administered to large groups of animals through feed or drinking water, and in cattle this medication is often supplemented with injections (Gustafson & Bowen, 1997). Antibiotics are not controversial in and of themselves, but the extent and type of antibiotics used in the feed supply of livestock is (Gustafson & Bowen, 1997). The controversy for most of the general public lies in the question of whether or not

inclusion of antibiotics in the food supply of livestock increases antibiotic resistances in human bacterial flora (Gustafson & Bowen, 1997).

One sector of the agriculture industry that relies on antibiotic feeding regimens is the poultry production industry. There are two primary divisions of antibiotic use in the poultry industry: therapeutic antibiotics and growth-promotant antibiotics (Singer & Hofacre, 2006). Some of the same antibiotics that are used to promote growth and feed efficiency are also shown to be effective at controlling endemic diseases in large groups of livestock and poultry (Gustafson & Bowen, 1997). Growth-promotant antibiotics are often the same kind of antibiotics used in the therapeutic capacity, only they are administered in much smaller doses in the feed of birds to improve body weight, feed efficiency, and/or growth rates (Singer & Hofacre, 2006). Therapeutic antibiotics are used when a disease has been introduced to a farm, and the poultry veterinarian for the farm must decide if the disease can be treated with an antibiotic, and if so, what dosage of the antibiotic should be administered (Singer & Hofacre, 2006). Therapeutic antibiotics are often administered to sick birds in the water supply because it is not physically or economically feasible to administer individual doses to birds (Singer & Hofacre, 2006). Therapeutic antibiotics are primarily used in the poultry industry to combat *Escherichia coli*, which is the most prominent disease effecting the poultry industry (Singer & Hofacre, 2006). Yet, the number of therapeutic antibiotics used to treat *E. coli* is limited; because of this, it can be speculated that the limited treatment options for this disease has resulted in many years of selection pressure and eventual resistance to certain kinds of antibiotics (Singer & Hofacre, 2006). Before an antibiotic is approved and used in poultry production, it is vetted in rigorous toxicology and pharmacokinetic studies mandated by the FDA and USDA (Donoghue, 2003). In contrast to U.S. policies, growth promotion use of antibiotics in the

European Union has been banned since 2006 based on concerns of the role growth-promoting antibiotics play in increased development of antimicrobial resistance and the transference of this resistance to animal to human microbiota (Castanon, 2007).

Another growing concern among consumers is whether or not the food they purchase and eat has been given or exposed to hormones during production. Of the three major meat industries in the U.S., hormones are only approved and used in the beef industry, and the use of hormones or steroids has never been allowed in the pork or poultry industry (AMI, 2009). Despite consumer concern, “careful federal regulation and oversight of the use of hormones should assure consumers that beef from cattle raised with approved hormones is safe and wholesome” (AMI, 2009, p. 2). The concern for issues associated with hormones holds little bearing on the poultry industry considering the illegality of their use (USDA, 2012).

Agriculture and the Media

In today’s culture, the news media fills an important role as the primary way for the general public to gain access to health-related information as new scientific information becomes available (Malone et al., 2000). The scientific facts offered by the media are often thought to speak for themselves, which leaves the task of evaluating the implications of the science and determining what action to take based on that understanding to the general public (Malone et al., 2000). Among the scientific community, agricultural science plays an important role in the general public’s health and well-being, yet it is under represented in media coverage; research conducted by Reisner and Walter (1994) indicated that neither general newspapers or agricultural newspapers provided readers with complete and adequate coverage of agricultural issues. Despite the limited coverage, media coverage has an effect on the general public’s “perceptions of agriculture, specific legislation, and their voting choices” (Kuykendall, 2010, p. 45). One way

that newspapers effect perceptions is through the tone of articles, which Hyde defines as the overall impression left with the reader after reading an article (Hyde, 2001). In previous research about agricultural issues and media coverage conducted by Panach (2007), the tone of an article was measured as either positive, neutral, or negative. Despite the importance of tone on effecting perceptions, Hyde (2001) noted that defining tone is not a precise science and that it is based on the combined activity of rhetorical variables in an article.

Newspapers have a particularly important role in providing the general public with information about agriculture, as Reisner (2005) found in research conducted on newspaper coverage of swine farming. An important distinction the author made in the research about newspaper coverage of swine farming is that “what newspapers report is the picture to which the residents of a local community have easy public access” (Reisner, 2005, p. 2,712). It is important to note that newspapers inherently reflect the views of the reporters who write the articles found within their pages; reporters ask questions and listen for answers that fit an internalized script of what they feel should be included in a story (Reisner, 2005). News reporters often write stories based on their conception of the most important things to include in a story. For example, a reporter covering swine farming who thought the odor of hog houses was an important aspect of the story would ask questions of interviewees about the smell of hog operations, which the interviewees may not have elicited otherwise (Reisner, 2005). Because consumers are more removed from agriculture because of urbanization and technology (Leising et al., 2000), they are more willing to accept a journalist’s portrayal of agricultural issues as an accurate depiction because of their own lack of understanding of agriculture.

One group of individuals uniquely equipped to provide the general public with information about agriculture is agricultural communicators. This group of individuals possesses

the necessary skills to communicate agricultural messages effectively to the public not involved in agriculture (Hartenstein, 2002). Hartenstein (2002) also pointed out that as the general public becomes less familiar with agriculture, agricultural communicators are needed “to provide timely, accurate information on current issues and events” (p. 3). Agricultural communicators should possess skills in writing, editing, project management, problem solving, critical thinking, listening, marketing, public speaking, and visual communication in addition to having a broad knowledge of agriculture (Hartenstein, 2002).

Theoretical Framework

Agenda setting.

In research McCombs and Shaw (1972) conducted about the role of mass media in political campaigns, an important distinction is made concerning how media affects how the public learns; namely, the public learns more about the issues on which the media places the most emphasis. This ability of the media to set the pace and emphasis for what the public knows about an issue is known as the agenda-setting function of media (McCombs & Shaw, 1972). This research suggests that individual news media outlets paint an imperfect picture of the actual climate surrounding an issue, but the composite of many media outlets often has an agenda-setting function on media consumers (McCombs & Shaw, 1972). The effect of agenda setting is prominent especially in regard to influencing which issues the public views as salient (i.e. accessible) (Scheufele & Tewksbury, 2007). Agenda setting is not so much focused on what the issue is about, but more so on the amount of time and attention given to the issue, which carries a more potent effect with the audience (Scheufele & Tewksbury, 2007).

Agenda setting could well be the basis of the business model for newspapers. An important concept to note is the primary concepts behind newspapers, namely, to produce

readers, not news (Conboy & Steel, 2008). By focusing efforts on tailoring news to meet an audience, newspapers can more effectively generate revenue and/or exert influence over readers (Conboy & Steel, 2008). Through engaging in agenda setting, newspapers cater to what they think their audience will want to hear, thus generating readers.

Previous research has used agenda setting to describe the effect of media on consumer understanding and confidence. Bharad, Harrison, Kinsey, Degeneffe, and Ferreira (2010) found that media coverage “has a significant and negative impact on consumer confidence in the safety” of the U.S. food system (p. 11). These researchers also noted a negative impact on consumer confidence in the preparedness of the food system to deal with food safety events (Bharad et al., 2010). Furthermore, an increase in mass media coverage of food safety issues is enough to lead to a decline in consumer confidence and an increase in the belief that the national food supply system is not prepared to deal with any problems that would arise (Bharad et al., 2010). Research results point to the mass media’s role as an influential and important component of changing consumer attitudes (Bharad et al., 2010).

Framing.

Framing is a way of understanding how an issue is characterized in media affects how the public views the issue (Scheufele & Tewksbury, 2007). It is based on the assumption that characterization of an issue in a news report can have an influence on how an audience understands it (Scheufele & Tewksbury, 2007). Framing is used by journalists to “present information in a way that resonates with existing underlying schemas among their audiences,” which does not necessarily mean that journalists intentionally spin news stories in a certain way or try to deceive their audiences (Scheufele & Tewksbury, 2007, p.12). Essentially, framing is an invaluable tool for presenting complex issues to audience members so they can understand

them based on the schema and constructs they already possess (Scheufele & Tewksbury, 2007). Framing also describes “how people use information and presentation features regarding issues as they form impressions” (Scheufele & Tewksbury, 2007, p. 12). Framing is a mechanism that pertains to message construction more than to media effects, and it is the way the media causes an audience to define *how* it thinks about an issue as opposed to *whether* it thinks about an issue (Scheufele & Tewksbury, 2007).

Valkenburg, Semetko, and Vreese (1999) identified four common frames, which they used in their research to categorize frames and how they cause readers to think and recall. The *conflict* frame highlights the tension between individuals, groups, or institutions. The *human interest* frame brings an individual’s perspective or emotional angle to the presentation of an event, issue, or problem. The *responsibility* frame presents an issue in such a way as to attribute responsibility, positively or negatively, to a group, organization, or institution. Lastly, the *economic consequences* frame focuses on how an individual, group, organization, country, or region will be affected economically by an issue or event.

Framing has been included in other content analyses of agricultural issues. Panach (2007) used framing as a simplified theoretical concept that explained a frame as the guiding theme of the article that was being analyzed to assess newspaper coverage of a water quality dispute between the state of Oklahoma and the Arkansas poultry industry. In the case of media coverage of the water quality dispute described in the research, six frames were identified that were similar to Valkenburg and colleagues’ (1999) research (Panach, 2007). Of the six frames identified, the education and responsibility frames were the most common (Panach, 2007). The researcher speculated that the frequency of the education frame was evidence of “fair reporting and quality public relations efforts on all sides of the issue” (Panach, 2007, p. 62). Because of

the focus of the study, responsibility was a frame that was expected to be found as “editors and journalists feel it is necessary to depict this turmoil in their stories and newspapers to engage readers” (Panach, 2007, p. 63).

In a similar fashion, Kuykendall (2010) used framing as a basis for understanding newspaper portrayal of the 2008 California Proposition 2 in their coverage. Kuykendall’s (2010) research showed that a dominant portion of opinion pieces, like columns and editorials, were framed through the topic of animal welfare as they described California Proposition 2, which was “probably a topic about which many readers are passionate” (p. 48). The frames in newspaper-generated content were more likely to not include animal welfare, replacing it with endorsements, economic impact, political, and results frames (Kuykendall, 2010).

Summary of Literature

Food safety is at the forefront of consumer concern about the food supply in the U.S. (Hwang et al., 2005). One part of the food supply that plays an important role in the U.S. is the poultry industry, which is an integral part of the agriculture sector and economy (Poultry Federation, 2014; USDA, 2014). Increasingly, consumers are concerned with the processes and substances that are used to raise the livestock that provide them with beef, pork, and poultry. As of late, consumers are particularly interested in the use of antibiotics and hormones in the food supply, and this is particularly true in the case of poultry (Hwang et al., 2005). Consumers learn most of what they know about science and agriculture through media, yet information consumers receive from media is intrinsically expressed through the lens of the media outlet (Malone, et al., 2000). Media often tells the public what the most salient issues of the day are, which is known as the agenda-setting function of media (Scheufele & Tewksbury, 2007). Media also tells the public how to view certain issues, which is known as framing (Scheufele & Tewksbury, 2007).

With this in mind, there is a need to determine how agenda setting and framing have an effect on the public's opinion of antibiotic and hormone use in poultry production.

CHAPTER III

Methodology

Restatement of Purpose Statement

The purpose of this study was to assess the content of three national newspapers about antibiotic and hormone use in poultry production for key messaging, tone, framing, and quality, so that recommendations can be made to improve media coverage of antibiotic and hormone use in poultry production.

Restatement of Objectives:

Specific objectives for this study were to:

1. Describe key messages in selected newspaper articles about antibiotic and hormone use in poultry production;
2. Identify the tone of selected newspaper articles about antibiotic and hormone use in poultry production;
3. Identify the framing of selected newspaper articles about antibiotic and hormone use in poultry production;
4. Determine the journalistic quality of selected newspaper articles about antibiotic and hormone use in poultry production; and
5. Determine if significant differences ($p < .05$) exist between selected media outlets' framing, tone, and quality of articles about antibiotic and hormone use in poultry production.

Research Design

This study utilized content analysis, which allows researchers to objectively, systematically, and quantitatively describe the overall content of communication (Berelson,

1952). Kolbe and Burnett (1991) further explained content analysis as an “observational research method that is used to systematically evaluate the symbolic content of all forms of recorded communications” (p. 243). Furthermore, Kolbe and Burnett (1991) noted that content analysis can be conducted on a multitude of levels, like images, words, roles, so that the research opportunities in content analysis are widespread. Weber (1990) defined content analysis as a research method that utilizes a set of procedures to make valid inferences from text, and the inferences drawn from content analysis can be about the sender(s) of the message, the message itself, or the audience. The data to be analyzed are the text of newspaper stories in print pertaining to antibiotic and hormone use in poultry production, specifically, the key messaging, tone, frame, and article quality of the news stories portrayed by the journalists who wrote the stories.

Content analysis is often misconceived as merely word counts. Although word counts can play an important role, it is not the main focus of the analysis methods. What makes content analysis “particularly rich and meaningful is its reliance on coding and categorizing data” (Stemler, 2001, para. 11). Content analyses that involve both quantitative and qualitative methods are often the most effective (Weber, 1990). A key concept in content analysis is the grouping of many similar words into content categories that describe the text more succinctly, identified as key words in context (KWIC) (Weber, 1990). Stemler (2001) noted that a good rule to follow is to utilize frequency counts of words of potential interest, and then use a KWIC search to test for consistency of word usage. KWIC was used to ensure semantic validity, which, according to Krippendorff (1980), exists when words that are placed in the same category hold similar meaning or connotation when examined by persons familiar with the language.

Population and Sample

The population for this study included news articles, feature stories, and editorial/opinion pieces from selected newspapers. Newspapers were selected based on their reach and readership, specifically selecting the largest newspapers nationally. The newspapers selected for analysis were the New York Times, USA Today, and the Wall Street Journal. Only full-length articles were analyzed, and articles written earlier than 1994 were not included in this study. This 20-year time span was selected because it was thought adequate to identify trends in media coverage, changes in poultry production antibiotic/hormone use methods, and increases in consumer concern about food production processes (Brewer & Rojas, 2007; Gustafson & Bowen, 1997).

The population for these three newspapers was determined by searching Lexis Nexis Academic (New York Times and USA Today) and ProQuest (Wall Street Journal) using the search phrase “antibiotic! OR hormone! w/5 chicken OR poultry” for Lexis Nexis and the search phrase “(antibiotic OR hormone) NEAR/5 (chicken OR poultry)” for ProQuest. Articles before 1994 were excluded from the search. Using these search terms narrowed findings to articles with the words “antibiotics” or “hormones” within five words of the words “chicken” or “poultry”. The initial population searches were completed on 9 January 2015, which returned 316 articles. A sample size of 174 articles was calculated using a 95% confidence level and a 5% confidence interval (Creative Research Systems, 2012).

The sample size for each outlet was determined based on the percentage it comprised of the population. The New York Times comprised 57% of the population ($n = 99$), USA Today made up 16% of the population ($n = 28$), and the Wall Street Journal comprised the remaining 27% of the population ($n = 47$). For each outlet sample, articles were selected based on the

percentage each year contributed to the whole outlet sample. To ensure that a random selection was made, the article titles and year of publication for the entire population of articles were input into a Microsoft Excel spreadsheet, and the randomization function was used to assign each article a random number. The articles were then filtered in ascending order by year and randomization number using the filter function in Excel, and the specified frequency for each year was chosen from the filtered list (see Appendix A). To acquire and store the articles, the researcher downloaded and saved electronic versions (Microsoft Word) of the articles from Lexis Nexis and ProQuest.

During data collection, it became apparent that some articles fit the search criteria but, when analyzed more closely, did not fit the context or scope of the research. It was not possible to narrow the search any further and attain a more precise population, so 35 articles were not analyzed, bringing the sample size to 139. Table 1 contains population and sample size per year and outlet and the sample size per year for the full sample. The 35 articles that were not included met one or more of the following criteria: (1) the article was not a true journalistic article (i.e., news briefs); (2) the article fit the search terms, but did not specifically fit the context of poultry production (i.e., “a salmonella outbreak linked to raw *chicken* from California involves several *antibiotic*-resistant strains” [Weise, 2013]); and/or (3) the article fit the search terms, but the words carried no connotation regarding production practices (i.e., “food lovers can have delivered to their doorsteps items like antibiotic-free chicken drumsticks” [Miller, 2005]). A full list of articles not analyzed can be found in Appendix B.

Table 1

Number of Articles Analyzed and Population for Each Outlet per Year

Publication Year	Sample (<i>n</i> = 139)	New York Times (<i>N</i> = 181)	New York Times Sample (<i>n</i> = 99)	USA Today (<i>N</i> = 51)	USA Today Sample (<i>n</i> = 28)	Wall Street Journal (<i>N</i> = 84)	Wall Street Journal Sample (<i>n</i> = 47)
1994	1	1	1	1	0	0	0
1995	0	1	1	1	0	0	0
1996	3	5	3	2	1	1	1
1997	4	11	6	0	0	0	0
1998	5	7	4	1	0	1	1
1999	7	10	5	3	2	0	0
2000	7	9	5	3	2	1	1
2001	8	11	6	3	2	2	1
2002	9	11	6	4	3	7	4
2003	2	4	2	1	0	0	0
2004	3	5	3	1	0	3	1
2005	4	9	5	1	0	4	2
2006	5	6	3	2	0	5	3
2007	10	12	6	1	0	9	5
2008	9	8	4	3	2	8	4
2009	2	7	4	4	3	0	0
2010	6	7	4	3	2	3	2
2011	6	8	4	2	1	5	3
2012	13	18	10	3	2	5	3
2013	19	14	8	7	5	17	9
2014	16	17	9	5	3	13	7

Instrumentation

To guide the content analysis used in this research, as well as to maintain consistency in evaluation, a code sheet was developed by the researcher. The first question of the code sheet assesses the type of article being analyzed, namely, whether the article was a news, feature, or editorial piece. The type of article was determined based on characteristics of the writing. News stories were characterized as such when they followed the inverted pyramid and were focused on timely, newsworthy topics. Feature stories were named as such when written using block format

and were focused on human interest or entertaining aspects of a situation. Editorial pieces were characterized as such when they were letters to the editor or opinion pieces run by the media outlet.

The second question was created to assess the frame of the article, namely, conflict, economic consequences, human interest, responsibility, or inconclusive/multiple (Valkenburg et al., 1999). Article frame was determined by matching the article to the best definition of the four frames noted by Valkenburg and colleagues (1997). The *conflict* frame highlighted the tension between individuals, groups, or institutions. The *human interest* frame brought an individual's perspective or emotional angle to the presentation of an event, issue, or problem. The *responsibility* frame presented an issue in such a way as to attribute responsibility, positively or negatively, to a group, organization, or institution. The *economic consequences* frame focused on how an individual, group, organization, country, or region will be affected economically by an issue or event. If an article exhibited more than one frame it was labeled multiple, and if a frame was not exhibited the article was labeled inconclusive.

The third question assessed what the focus of the article was: antibiotics, hormones, or both. The fourth question was designed to assess the article's messaging about antibiotic and hormone use in poultry production, asking the coder to list the key messages. The fifth question assessed the portrayal of antibiotic/hormone use in poultry production as either positive, neutral, or negative (Panach, 2007). Tone for each article was determined by analyzing the article completely and in context; based on construction, quotes, and sources a tone measure of either positive, negative, or neutral was assigned for the article's portrayal of antibiotic/hormone use in poultry production.

The last 12 questions assessed article quality on 12 qualities of good writing identified by Mencher (2010): accuracy, attribution, verification, completeness, fairness, balance, objectivity, brevity & sufficiency, selectivity, incorporation of human interest, evidence of reporter's responsibility, and journalistic style. These questions assessed whether the article exhibited each of the 12 qualities with either a yes, no, or can't tell response. Articles that definitely exhibited the quality were assigned a "yes", and articles that definitely did not exhibit the quality were assigned a "no". When the coder was unclear as to whether or not the article exhibited the quality it was assigned a "can't tell" response. To aid in ease of data collection and storage, an online coding system was created in Qualtrics based on the code sheet developed by the researcher. The code sheet used in analysis can be found in Appendix C.

Prior to data analysis inter- and intra-coder reliability was addressed. To ensure inter-coder reliability the lead researcher and the researcher's committee chair selected five articles from the population and analyzed each of the articles separately. After both coders had completed coding one article, percent agreement was calculated using hand calculations, and the coders compared analyses and reconciled differences through negotiating (Weber, 1990). This was repeated for each article until all five had been analyzed. Typically, an agreement level of 80% is acceptable for inter-coder reliability (McMillan & Schumacher, 2010), and in this instance the two coders' agreement level was between 83.3% and 98.1% when coding the five articles together. Because the lead researcher and committee chair calculated agreement levels greater than 80% on the five articles, the lead researcher completed the coding singlehandedly. Intra-coder reliability was accounted for by the creation and use of a code sheet during analysis, which ensured coding was conducted similarly for each article. To ensure validity for the qualitative portion of this content analysis, the researcher engaged in prolonged and persistent

field work, reported findings with low-inference descriptors, and sought agreement on emergent themes present with the committee chair prior to reporting findings. The use of code sheets to analyze the articles also serves as an audit trail of the research.

Data Analysis

The content analysis methodology used in this research incorporated both quantitative and qualitative components. Quantitative data was gathered and analyzed for article type, article focus, article frame, article tone, and journalist; these constructs were analyzed for frequencies using Microsoft Excel. After the initial frequency analysis, Chi-square analysis was conducted to determine if significant differences ($p < .05$) existed between the outlets' framing of articles and to determine if significant differences ($p < .05$) existed between outlets based on tone using SAS 9.3 (Cary, NC). Additionally, the data gathered from the portion of the code sheet that dealt with the 12 quality indicators was analyzed for frequencies. The positive-response frequencies (i.e. "yes") for each of the quality constructs were analyzed using one-way Chi square analysis to determine if significant differences ($p < .05$) existed between the outlets and the mean positive response frequency for the entire sample using SAS 9.3 (Cary, NC).

The qualitative portion of this research dealt with categorizing emergent themes gathered regarding key messaging about antibiotic/hormone use in poultry production. Using KWIC analysis, the researcher analyzed each article to determine messaging about antibiotic/hormone use in poultry production, which were reported as short phrases on the code sheet. Additionally, the researcher downloaded electronic versions of the articles for analysis and used the comments feature in Microsoft Word to highlight keywords and phrases that supported the messaging derived from the article. Because Qualtrics was utilized the phrases entered into the code sheet for each article were downloaded as entries into an Excel spreadsheet. Utilizing the spreadsheet

and following the constant comparative method (Lincoln & Guba, 1985), similar phrases used to describe messaging about antibiotic/hormone use in poultry production were grouped together as emergent themes. The occurrences of each of these themes were then reported as frequencies.

CHAPTER IV

Results

The content analysis methodology used in this study quantified characteristics and yielded themes and a measure of the article's quality for the articles that were analyzed as a part of the sample. The use of content analysis methodology provided an appropriate mixture of quantifiable characteristic and qualitative thematic data. Not only were quantifiable data about characteristics and article quality gathered, but the qualitative portion of the content analysis revealed a rich set of emergent themes that describe the content of the writing about antibiotic and hormone use in poultry production. The results from the data are discussed in the order they appeared on the code sheet—article characteristics, emergent themes and tones, and article quality.

Article Characteristics

Selected article characteristics were assessed as a part of the content analysis; these characteristics included article type (i.e. news, feature, or editorial), article focus (i.e. antibiotics, hormones, or both), article frame (i.e. conflict, economic consequences, human interest, responsibility, inconclusive, or multiple), and journalist. Over one-half of the articles analyzed were news articles (56.8%), followed by feature articles (27.3%); only 15.8% of the total articles were editorial pieces. Comparatively, USA Today and the New York Times had higher percentages of editorial pieces about antibiotic/hormone use in poultry production (22.2% and 21.3%, respectively) than the Wall Street Journal (2.4%). Alternately, the Wall Street Journal ran a higher percentage (68.3%) of news articles about antibiotic/hormone use in poultry production than either of the other two outlets (53.8% New York Times; 44.4% USA Today). Regarding article focus, a majority of the articles focused on antibiotics, representing 77.7% of

the sample. A small percentage of the total sample of articles dealt directly with hormones as their focus (8.6%), and 13.7% focused on both antibiotics and hormones in poultry production. The Wall Street Journal and USA Today both had higher percentages of articles about strictly hormones (17.1% and 11.1%, respectively) than articles that were about both antibiotics and hormones (7.3% and 0%, respectively). Article frame was also assessed, and the most prevalent frame for the full sample was the human interest frame (27.3%), followed by the responsibility (21.6%) and conflict frames (18.7%). Chi-square analysis was used to determine if significant differences existed between the outlets in regard to framing. Because of the small sample size of USA Today it was excluded from this test; whereas, it did not yield enough data for each frame type to be analyzed. The Wall Street Journal ran significantly more ($p < .001$) articles framed with the economic consequences frame (29.3%) than the New York Times (5.0%). Additionally, the New York Times ran significantly more ($p = .03$) articles framed with multiple frames (20.0%) than the Wall Street Journal (4.9%). Selected characteristics assessed for each article in the sample and each outlet are listed in Table 2. The most prolific journalists were: Marian Burros for the New York Times (11.3%), Elizabeth Weise for USA Today (16.7%), and Laurie Burkitt and Julie Jargon for the Wall Street Journal (12.2%). Appendix A includes journalists for each article include in the sample.

Table 2

Article Types, Focus of Articles, and Frame of Articles

	Sample (N = 139)		New York Times (n = 80)		USA Today (n = 18)		Wall Street Journal (n = 41)	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Article Type								
News	79	56.8	43	53.8	8	44.4	28	68.3
Feature	38	27.3	20	25.0	6	33.3	12	29.3
Editorial	22	15.8	17	21.2	4	22.2	1	2.4
Focus of Article								
Antibiotics	108	77.7	61	76.3	16	88.9	31	75.6
Hormones	12	8.6	3	3.7	2	11.1	7	17.1
Both	19	13.7	16	20.0	0	0.0	3	7.3
Frame of Article								
Conflict	26	18.7	12	15.0	4	22.2	10	24.4
Economic consequences	16	11.5	4	5.0	0	0.0	12	29.3
Human interest	38	27.3	24	30.0	4	22.2	10	24.4
Responsibility	30	21.6	20	25.0	5	27.8	5	12.2
Inconclusive	6	4.3	4	5.0	0	0.0	2	4.8
Multiple	23	16.5	16	20.0	5	27.8	2	4.8

Emergent Themes

Each article was analyzed for emergent themes to determine types of messages being delivered about antibiotic or hormone use in poultry production. There were five emergent themes identified based on article analysis, and the majority of articles contained at least one, if not more, of these themes. Those emergent themes were: 1) *consumers awareness of and concern for antibiotic/hormone use in poultry production*; 2) *the role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria*; 3) *regulation of antibiotic use in poultry production*; 4) *purpose of antibiotic/hormone use in poultry production*; and 5) *transparency of antibiotic use poultry production practices*. Table 3 includes complete emergent theme frequencies and percentages for the full sample and individual outlets.

Table 3

Emergent Themes about Antibiotic and Hormone Use in Poultry Production

Theme	Full Sample (<i>N</i> = 139)		New York Times (<i>n</i> = 80)		USA Today (<i>n</i> = 18)		Wall Street Journal (<i>n</i> = 41)	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Consumer concern	57	41.0	31	38.8	5	27.8	21	51.2
Antibiotic resistance contribution	56	40.3	35	43.8	11	61.1	10	24.4
Regulation	50	36.0	28	35.0	9	50.0	13	31.7
Purpose of antibiotic/hormone use	45	32.4	26	32.5	7	38.9	12	29.3
Transparency of practices	19	13.7	12	15.0	2	11.1	5	12.2

Theme 1: Consumer awareness of and concern for antibiotic/hormone use in poultry production.

The most prevalent emergent theme found in the sample of articles was *consumer awareness of and concern for antibiotic/hormone use in poultry production* (41.0%, *n* = 57). This theme was found in 38.8% (*n* = 31) of articles in the New York Times, 27.8% (*n* = 5) of articles in USA Today, and 51.2% (*n* = 21) of articles in the Wall Street Journal. Keywords that denoted this theme included “antibiotic-free, consumers, consumer demand, cuisine, hormone-free, and increased demand.” Articles that displayed this theme typically implied that consumers are or should be aware of the use of antibiotics or hormones in the poultry they purchase. An article from USA Today embodied this aspect of the theme: “Everyone said the antibiotic-free chicken was doomed to fail, Shaich says. They said it was too expensive and too difficult for consumers to understand the value of paying more. Wrong” (Horovitz, 2009, p. 1B). Additionally, these articles implied that poultry raised without antibiotics or hormones should be desired more by consumers than poultry raised with antibiotics or hormones. Oftentimes, articles with this emergent theme pointed to the superior quality of poultry raised without

antibiotics or hormones as the primary reason why consumers are or should desire antibiotic- or hormone-free poultry. The superior quality was based on the health benefits of poultry raised without antibiotics or hormones or on the culinary benefits of using antibiotic- and hormone-free chicken. Both of these topics are exemplified in this quote from a New York Times article:

The fans of free-range champion the bird's wholesome diet, which generally includes no hormones or antibiotics. They also praise its old-fashioned chicken flavor and its character, which is another way of saying toughness. Such people are willing to pay up to three times more per pound for taste, nostalgia and the possibility of a more healthful meal. (O'Neill, 1996, p. 83)

Another context involved in this theme is the portrayal of antibiotic- and hormone-free poultry as more natural than poultry raised with antibiotics and hormones. This aspect of the theme was listed as another reason why consumers are or should be aware of antibiotic and hormone use in poultry production. An example of this aspect can be found in this section from an article in the New York Times:

Chipotle believed it had the right message already in its emphasis on more natural food. The company had shifted to more naturally grown produce and to beef, pork and chicken produced without antibiotics. It then set a goal of trying to make its customers more aware of sustainable ways to farm. (Olson, 2012, p. 2)

A subtheme associated with the consumer awareness theme is *antibiotic- and hormone-free chicken is a marketing tactic*. This subtheme was found in nine articles (15.7%) that contained the consumer awareness theme. When present, this subtheme informed the reader about the use of antibiotic- and hormone-free poultry as a way for poultry companies to differentiate themselves from competitors, as seen in this article from the Wall Street Journal:

Tyson's unexpected move follows months of confusion surrounding its hot-selling Raised Without Antibiotics chicken, which the company touted as part of a \$70 million advertising campaign launched last summer. In an investor meeting in February, Tyson Chief Executive Richard Bond said the antibiotic-free product significantly boosted Tyson's chicken sales. The company's retailers also were able to charge a premium for the product, while attracting new consumers. (Etter, 2008, p. B.2)

Theme 2: The role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria.

The consumer awareness theme was followed closely in prevalence by *the role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria* (40.3%, $n = 56$). This theme was found in 43.8% ($n = 35$) of articles in the New York Times, 61.1% ($n = 11$) of articles in USA Today, and 24.4% ($n = 10$) of articles in the Wall Street Journal.

Keywords that denoted this theme included “antibiotic-resistant, bacteria, fluoroquinolones, human diseases/illnesses, immune, and nontherapeutic use.” When this theme was present in articles the writing evoked the idea that the use of antibiotics in poultry production contributed to increased levels of antibiotic-resistant bacteria in the U.S. The theme can be seen in this article from USA Today:

The government wants meat and poultry producers to stop giving antibiotics to their animals to make them grow faster. The reason: Dangerous bacteria that can kill people have been growing resistant to the drugs, which can leave humans at risk of getting infections that can't be controlled. (Weise, 2012, p. 3A)

When an article exhibited this theme the writing attributed responsibility for the increase in antibiotic resistance primarily to the use of antibiotics in poultry production instead of the overuse of antibiotics in human medicine. This aspect of the theme can be seen in this article from the New York Times: “The Union of Concerned Scientists has estimated that as much as 70 percent of antibiotics used in the United States is given to healthy chickens, pigs and cattle to encourage their growth or to prevent illnesses” (Harris, 2009, p. 18).

While this theme was prevalent, some articles acknowledged that measures for the amount of antibiotics used in poultry production were in conflict between agriculture and non-agriculture groups. An article from USA Today that referenced the Union of Concerned

Scientists estimate of 70% also noted: “The report’s estimate is far higher than the 17.8 million pounds of antibiotics used in livestock that was reported a year ago by the Animal Health Institute, which represents veterinary drug companies” (Manning, 2001, p. 8D). Despite the theme pointing to the role of antibiotic use in poultry production as a cause for antibiotic-resistant bacteria, some articles highlighted the dearth of scientific information about the subject.

One article from USA Today stated:

The FDA in 1978 proposed removing penicillin and tetracycline from the list of antibiotics approved for nontherapeutic use, but the effort was thwarted by Congress, which cited a review by the National Academy of Sciences that found the potential hazards to human health were “neither proven nor disproven”. (Manning, 1999, p. 6D)

The previous quote also highlights a more subtle aspect of this theme that merits consideration—the use of phrasing in articles that implicates nontherapeutic use of antibiotics in the poultry industry as the major cause for antibiotic-resistant bacteria. As characterized by the sample, nontherapeutic use refers to the use of antibiotics in poultry production for reasons other than to prevent or treat disease. An article from the New York Times exemplified this aspect of the theme:

In written testimony to the House Rules Committee, Dr. Joshua Sharfstein, principal deputy commissioner of food and drugs, said feeding antibiotics to healthy chickens, pigs and cattle – done to encourage rapid growth – should cease. And Dr. Sharfstein said farmers should no longer be able to use antibiotics in animals without the supervision of a veterinarian. Both practices lead to the development of bacteria that are immune to many treatments, he said. (Harris, 2009, p. 18)

When articles exhibited this theme they sometimes named specific antibiotics used in poultry production. These antibiotics were almost always antibiotics used in human and animal production and were cited as contributing factors for increased antibiotic-resistant bacteria. One of the most commonly mentioned class of antibiotics were

fluoroquinolones, which are mentioned in this article in the New York Times: “The Food and Drug Administration says the drugs, known as fluoroquinolones, are a ‘significant cause’ of human infections by resistant campylobacter bacteria, contracted primarily by eating chicken”. (AP, 2000, p. 32)

Theme 3: Regulation of antibiotic use in poultry production.

The third emergent theme identified in this study was *regulation of antibiotic use in poultry production* (36.0%, $n = 50$). This theme was found in 35.0% ($n = 28$) of articles in the New York Times, 50.0% ($n = 9$) of articles in USA Today, and 31.7% ($n = 13$) of articles in the Wall Street Journal. Keywords that denoted this theme included “banning, Food and Drug Administration, and government.” When this theme was found in an article it typically highlighted current regulation practices or pointed toward the need for regulation of antibiotic use in poultry production. The presence of this theme often coincided with the presence of *the role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria*. Essentially, articles with this theme called for the regulation of antibiotic use in poultry production because the negative effects these practices have on human health and wellbeing. This section of an article from the New York Times depicted this aspect of the theme: “The government proposes to ban two antibiotics given to poultry, citing evidence that their use is causing people to become ill from drug-resistant bacteria” (AP, 2000, p. 32). Often, articles that exhibited this theme pointed toward the need for more regulation of antibiotic use in poultry production. Some articles cited scientific sources that called for more regulation, as seen in this editorial piece in the New York Times: “Last month, the New England Journal of Medicine reported that drug-resistant bacteria were present in meat purchased at supermarkets in the Washington, D.C., area. An accompanying editorial recommended that the use of

nontherapeutic antibiotics in farm animals be prohibited” (Silbergeld & Walker, 2001, p. 23).

Sometimes the articles cited non-agriculture groups that called for more strict regulation of antibiotics in poultry production. This section of an editorial from USA Today was written by the executive director of the Animal Legal Defense Fund:

This potential nightmare scenario is precisely why the Animal Legal Defense Fund recently submitted a first-of-its-kind legal petition asking the U.S. Department of Agriculture to protect animals and consumers by mandating proper labels on meat and poultry products derived from animals given antibiotics. (Blank & Wells, 2013, p. 9A)

Articles that exhibited this theme sometimes referenced legislation or government oversight that dealt with antibiotic use in poultry production. This excerpt from a Wall Street Journal article highlights a ban of an antibiotic in 2005:

Fearing that the animal drug Baytril – used to fight infections in chickens – could pose health risks to humans, the Food and Drug Administration decided to ban its use in poultry. The decision yesterday to restrict the Bayer AG antibiotic, which takes effect Sept. 12, marks the first time that the agency has ended the use of an animal drug because of worries that it could lead to antibiotic-resistant pathogens in humans. (Matthews & Goldfarb, 2005, p. B.1)

Articles that mentioned legislation or government oversight often criticized governmental agencies for not acting quickly or purposefully enough, as noted in this excerpt from a USA Today article: “At a hearing this week, a congressional committee will consider legislation that would help phase out the excessive use of antibiotics in animals. Government would do well to move ahead before new superbugs emerge” (USA Today, 2010, p. 8A). Articles that exhibited a call for increased regulation also placed little faith in producers to change antibiotic use tactics without the institution of some regulation other than self-regulation. The previously mentioned article from USA Today goes on to say this:

The history of such calls for self-regulation shouldn’t make anyone optimistic that food producers will act on their own. Giving animals antibiotics in their feed makes them grow bigger more quickly, which cuts producers’ costs. As long as producers

can claim that the evidence of harm to humans is murky, they're not likely to voluntarily raise their cost of doing business. (USA Today, 2010, p. 8A)

A subtheme present in articles with the regulation theme was *European regulation of antibiotic use in poultry production*. This subtheme was found in six articles (12.0%) with the regulation theme present. When this subtheme was present, the article highlighted the fact that poultry producers in European countries used fewer antibiotics than U.S. producers. This excerpt from a New York Times article highlights this aspect of the subtheme:

The United States also uses far more antibiotics in livestock than many other nations, according to Pew. Animals raised for food in America are given about six times as much antibiotics as are animals in Norway and Denmark, for example. (Tavernise, 2014, p. 12)

Articles with this theme pointed to the stricter regulations European countries have for the use of antibiotics in poultry production, as seen in this article from the Wall Street Journal:

The U.S. has more lenient policies on the use of antibiotics in animals than a number of other countries. European countries have banned producers from using such drugs to promote growth if they are important for human use, and the European Union will require members to end the use of all antibiotics for animal growth by next year. The U.S. still allows such use. (Mathews & Goldfarb, 2005, p. B.1)

Theme 4: Purpose of antibiotic/hormone use in poultry production.

The fourth theme that emerged from the sample of articles about antibiotic and hormone use in poultry production was *purpose of antibiotic/hormone use in poultry production* (32.4%, $n = 45$). This theme was found in 32.5% ($n = 26$) of articles in the New York Times, 38.9% ($n = 7$) of articles in USA Today, and 29.3% ($n = 12$) of articles in the Wall Street Journal. Keywords that denoted this theme included “nontherapeutic, promote growth, and treat or prevent disease.” Articles that exhibited this theme provided readers with a definition of the purpose of antibiotic or hormone use in poultry production. Very few articles dealt with the purpose of the use of

hormones in poultry production. But there was conflict between the articles that were written about hormone use; one side can be seen in this article from the Wall Street Journal:

The fact is, no poultry sold in the U.S. has any hormones added to it. The use of added or artificial hormones isn't allowed in the production of chickens, turkeys, eggs or other poultry in this country. The notion that poultry producers give the animals hormones is a myth. If consumers are looking for "hormone-free" chicken, they could look at any brand in any store. (Lobb, 2006, p. A.15)

The conflicting viewpoint can be seen in another article from the Wall Street Journal:

And oh, that bird! Big as a fox terrier, dumb as a post (turkeys don't know enough to come in out of the rain and can, in effect, kill themselves from exposure if not forced to take shelter). They put battery chickens to shame, in size, in hormone consumption. (Sokolov, 2007, p. W.1)

The majority of articles with this theme were focused on the purpose of antibiotic use in poultry production. The role of antibiotics in poultry production fell under one of three classifications: 1) to prevent or treat disease, 2) to promote growth, or 3) both. Some articles with this theme characterized the purpose of antibiotic use in poultry production strictly for the prevention or treatment of disease, as seen in this Wall Street Journal article excerpt:

Ron Phillips, a spokesman for the Animal Health Institute in the U.S., said antibiotics use in the American poultry and livestock industry, when administered properly, are key in keeping the animals disease free and an important part of meat production. (Murphy, 2012, p. B.7)

This article from the Wall Street Journal characterized the purpose as for both reasons:

"Livestock owners feed millions of pounds of antibiotics such as penicillin each year to cattle, hogs, chickens and turkeys to prevent disease and promote rapid growth" (Tomson, 2011, p.

D.1). Other articles with this theme represented the purpose of antibiotic use in poultry production as strictly for growth promotion, such as this section of a New York Times article:

"About 80 percent of all antibiotics used in agriculture, roughly one-third of all the antibiotics

used in the United States, are fed to livestock and poultry to promote growth, not to treat illness” (Goldburg, 1999, p. 26).

A subtheme that was present in some articles with the purpose of antibiotics/hormones theme was *antibiotic and hormone use are part of modern farming practices*. This subtheme was present in four articles (8.9%) with the purpose of antibiotics/hormones theme. When this subtheme was present the article invoked the idea that antibiotic or hormone use is part of industrial or cruel modern farming practices. This section of an article from USA Today depicts this subtheme accurately:

But at least humans usually have to be sick and get a prescription from a doctor to obtain an antibiotic. Not so with pigs, chicken, cattle and other “food animals,” which routinely get the drugs to make them grow faster and bigger and ward off diseases they might get from being crowded together in modern factory farms. (USA Today, 2010, p. 8A)

Theme 5: Transparency of antibiotic use in poultry production practices.

The fifth emergent theme embodied in the selected articles was *transparency of antibiotic use in poultry production practices* (13.7%, $n = 19$). This theme was found in 15.0% ($n = 12$) of articles in the New York Times, 11.1% ($n = 2$) of articles in USA Today, and 12.2% ($n = 5$) of articles in the Wall Street Journal. Keywords that denoted the presence of this theme included “estimates, monitor, reluctant, and skeptical.” Those articles that exhibited this theme primarily indicated there is a lack of transparency about antibiotic use in poultry production. This was evident in articles that referenced different measures of the amount of antibiotics used in poultry production offered by agriculture and non-agriculture groups. In this excerpt from a New York Times article, data was referenced from the Union of Concerned Scientists as reporting differing amounts than agricultural groups: “A public interest group warned that antibiotics are being used on farm animals much more heavily than the drug and livestock industries have reported”

(Grady, 2001, p. 2). One article from the New York Times made reference to the lack of any government monitoring system that would provide accurate measurements of antibiotic use: “The government does not monitor antibiotic use and the companies are often reluctant to publish details or label their products” (Barboza & Day, 2003, p. 1). The latter half of the previous quote also exemplifies another aspect of this theme; namely, poultry producers were often held responsible for the lack of transparency surrounding this issue. This is represented in this section of an article from the New York Times: “Agriculture officials said they changed their minds about the first label when they realized that Tyson was feeding its chickens animal medications called ionophores, which the agency considers antibiotics. Tyson disputed that claim” (Martin, 2007, n.a.). Additionally, some articles that exhibited this theme pointed toward the need for better research on the subject of antibiotic use in poultry production, as seen in this article from USA Today:

The report’s estimate is far higher than the 17.8 million pounds of antibiotics used in livestock that was reported a year ago by the Animal Health Institute, which represents veterinary drug companies. Exact data on the quantity of drugs fed to livestock have been hard to come by. (Manning, 2001, p. 8D)

Tone

In addition to themes, each article was analyzed for its tone about antibiotic/hormone use in poultry production. Articles were assessed as either positive, neutral, or negative in regard to this construct. Over half (55.4%) of the articles analyzed were neutral in tone about antibiotic/hormone use in poultry production. Most (43.9%) of the remaining articles were written with a negative tone about antibiotic/hormone use in poultry production, with less than 1% written with a positive tone. When assessed for significant differences between the outlets, significantly more ($p < .05$) articles were written with a negative tone in the New York Times (62.3%) compared to the Wall Street Journal and USA Today (19.7% and 18.0%, respectively).

Table 4 includes complete tone frequencies and percentages for the full sample and individual outlets.

Table 4

Tone of Articles about Antibiotic and Hormone Use in Poultry Production

	Full Sample (<i>N</i> = 139)		New York Times (<i>n</i> = 80)		USA Today (<i>n</i> = 18)		Wall Street Journal (<i>n</i> = 41)	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Positive	1	0.7	1	1.2	0	0.0	0	0.0
Neutral	77	55.4	41	51.3	7	38.9	29	70.7
Negative	61	43.9	38	47.5	11	61.1	12	29.3

Article Quality

The quality of each article was analyzed based on a group of constructs identified by Mencher (2010) that represent the characteristics of quality journalistic writing. Of the 12 constructs, the articles displayed the sufficiency quality indicator at a higher percentage than any other indicator (96.4%), followed by the human interest quality indicator (95.7%). The quality indicator represented the least in this group of articles was the objectivity indicator, accounting for 69.1% of articles that definitely displayed this construct. Quality indicators could be indicated as uncertain (i.e. can't tell) in addition to exhibiting and not exhibiting the indicator; the indicator that was exhibited the most uncertainly was the verification of reality indicator with 20.1% of all articles represented with some uncertainty. Table 5 includes article quality construct frequencies and percentages for the entire sample and each outlet.

Table 5

Article Quality Indicator Frequencies and Percentages

Quality Indicator Questions	Yes		Can't tell		No	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Is the article accurate?	111	79.9	19	13.6	9	6.5
Does the article include attribution?	112	80.6	16	11.5	11	7.9
Does the article verify the reality of the situation?	104	74.8	28	20.1	7	5.1
Is the article complete in its coverage?	118	84.9	13	9.3	8	5.8
Is the article fair?	106	76.3	23	16.5	10	7.2
Is the article balanced?	109	78.4	14	10.1	16	11.5
Is the article written objectively?	96	69.1	17	12.2	26	18.7
Is the article brief, yet sufficient?	134	96.4	5	3.6	0	0
Does the article exhibit selectivity?	124	89.2	14	10.1	1	0.7
Does the article incorporate human interest?	133	95.7	2	1.4	4	2.9
Does the article showcase the reporter's responsibility?	112	80.6	16	11.5	11	7.9
Is the article written well?	132	95.0	4	2.9	3	2.1

Note. $N = 139$.

Additionally, quality indicators were assessed for significant differences between the outlets regarding whether or not articles exhibited the quality indicator using one-way Chi-square analysis. The Wall Street Journal had significantly higher percentages of articles containing the accuracy (95.1%, $p = .01$), attribution (97.6%, $p = .006$), verification of reality (90.2%, $p = .02$), completeness (97.6%, $p = .02$), fairness (92.7%, $p = .01$), balance (97.6%, $p = .003$), objectivity (92.7%, $p = .001$), and responsible reporting (95.1%, $p = .02$) quality indicators when compared to the mean frequency of articles containing these constructs for the entire sample. Table 6 includes significant differences between outlets and the sample mean frequency for each quality construct.

Table 6

Chi Square Analysis of Individual Outlet Article Assessments

	Full Sample	New York	USA Today		Wall Street		
	(<i>N</i> = 139)	Times (<i>n</i> = 80)	(<i>n</i> = 18)		Journal (<i>n</i> = 41)		
	Yes	Yes	Yes	Yes	Yes	Yes	
	%	%	X^2_a	%	X^2_a	%	X^2_a
Quality Indicators							
Is the article accurate?	79.9	75.0	1.2	66.7	1.9	95.1	5.9*
Does the article include attribution?	80.6	72.5	3.3	77.8	0.1	97.6	7.6**
Does the article verify the reality of the situation?	74.8	70.0	1.0	61.1	1.8	90.2	5.2*
Is the article complete in its coverage?	84.9	80.0	1.5	77.8	0.7	97.6	5.1*
Is the article fair?	76.3	70.0	1.7	66.7	0.9	92.7	6.1*
Is the article balanced?	78.4	71.3	2.4	66.7	1.5	97.6	8.9**
Is the article written objectively?	69.1	61.3	2.3	50.0	3.1	92.7	10.7**
Is the article brief, yet sufficient?	96.4	95.0	0.5	94.4	0.2	100.0	--
Does the article exhibit selectivity?	89.2	86.3	0.7	83.3	0.6	97.6	3.0
Does the article incorporate human interest?	95.7	92.5	2.0	100.0	--	100.0	--
Does the article showcase the reporter's responsibility?	80.6	75.0	1.6	72.2	0.8	95.1	5.5*
Is the article written well?	95.0	96.3	0.3	94.4	0.0	92.7	0.4

Note. * $p < .05$; ** $p < .01$. ^aOne-way Chi square analysis comparing outlet frequencies to the sample frequency for each construct.

CHAPTER V

Conclusions

The findings derived from the data collected in this research were sufficient to meet the stated research objectives because a conclusion was drawn regarding each of the five objectives. Conclusions are presented according to matching objectives.

Objective 1: Key messages

The analysis of each article to determine messaging about antibiotic/hormone use in poultry production led to the categorization of emergent themes. These emergent themes were: 1) *consumer awareness of and concern for antibiotic/hormone use in poultry production*; 2) *the role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria*; 3) *regulation of antibiotic use in poultry production*; 4) *purpose of antibiotic/hormone use in poultry production*; and 5) *transparency of antibiotic use poultry production practices*.

The first emergent theme, *consumer awareness of and concern for antibiotic/hormone use in poultry production*, coincides with previous research, which shows that consumers were concerned about the use of antibiotics and hormones in food production (Hwang et al., 2005). With the idea that newspapers focus on producing readers, not necessarily news, as their business model (Conboy & Steel, 2008), the fact *consumer awareness of and concern for antibiotic/hormone use in poultry production* was a prevalent theme is understandable. As the research by Hwang and colleagues (2005) demonstrated, consumers are aware of and concerned with the use of antibiotics and hormones in poultry production, thus the New York Times, USA Today, and the Wall Street Journal tailored their news to the audience. This focus on what is important to the reader enabled the media outlets to exert an agenda-setting function, which coincides with previous research that perpetuates a lack of consumer confidence in the safety of

the U.S. poultry industry (Bharad et al., 2010). Furthermore, the fact that these media outlets chose to increasingly cover antibiotic and hormone use in poultry production in a way that evoked a consumer awareness theme was likely enough to decrease consumer confidence in the poultry industry based strictly on frequency of media coverage of this issue (Bharad et al., 2010).

The consumer concern theme also led readers to believe that antibiotic- and hormone-free poultry was superior in quality to poultry raised with antibiotics and hormones. The mere frequency of articles that evoked the consumer awareness theme was enough to exert an agenda setting function, but the fact that these articles influenced *how* readers thought about an issue points toward a framing effect of these articles as well (Scheufele & Tewksbury, 2007). Essentially, the prevalence of this theme informed readers that antibiotic and hormone use in poultry production is something consumers should be aware of and concerned for, and the content of this messaging implied that consumers should be wary of the use of antibiotics and hormones in poultry.

The second emergent theme revealed was *the role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria*. As Gustafson and Bowen (1997) noted, the general public is mostly concerned with the question of whether or not antibiotic use in poultry production contributes to increased antibiotic-resistant bacteria that could affect humans. Again, the emphasis these three media outlets placed on this theme, due to its importance to readers, point toward their agenda-setting power (McCombs & Shaw, 1972). While the emphasis of this theme informed readers *what* to think about, the fact that these articles pointed toward nontherapeutic uses (i.e. growth-promotant) as the primary cause for increased antibiotic-resistant bacteria informed the readers *how* to think about this issue. This theme also highlighted the conflict between agricultural and non-agricultural measures of the quantity of antibiotics used

in poultry production, which served to exacerbate the distrust in poultry production methods readers incurred from reading the articles (Bharad et al., 2010). The fact that articles with this theme referenced both agricultural and non-agricultural research about this issue likely leaves readers unsure of how to evaluate implications of the science and of what the best course of action is based on the results (Malone et al., 2000).

The third emergent theme that represented key messaging was *regulation of antibiotic use in poultry production*. Research conducted by Kuykendall (2010) noted the media's ability to affect not only the general public's conception of agriculture but the specific legislation surrounding the issue. The presence of this theme, which emphasized the need for regulation of antibiotic use in poultry production, sets an agenda for readers to consider the implementation of these stricter regulations (McCombs & Shaw, 1972). The effects of this agenda-setting function can even be seen in the articles over the course of time analyzed, as this theme's context evolved from calling for stricter regulation to referencing legislation or government oversight banning the use of an antibiotic in poultry production in 2005. Additionally, this theme carried a subtheme: *European regulation of antibiotic use in poultry production*. Journalists write based on their perception of what are the most important aspects of a situation to include in the story (Reisner, 2005), and the presence of this subtheme points to the idea that some reporters find it important to reference the more progressive (i.e. stricter) regulation of antibiotics in poultry production in European countries when setting the agenda for increased regulation in the U.S.

The fourth emergent theme was *purpose of antibiotic/hormone use in poultry production*. This theme highlighted the three outlets' agenda-setting capacity to inform readers of the use of antibiotics and hormones in poultry production; by placing emphasis on this issue the articles increased consumer distrust in the purpose of antibiotic use in poultry production (Scheufele &

Tewksbury, 2007). Hormones were represented in this theme less frequently than antibiotics, but conflicting information was present in this theme regarding hormones as some articles cited the illegality of their use (USDA, 2014) and others pointed to the higher quality of hormone-free poultry. The antibiotics portion of this theme was conflicting as well, either noting the purpose as therapeutic only, nontherapeutic only, or a combination of both. The portrayal, and thus framing, of the purpose of antibiotic use was dependent largely on the context of the article and what the journalist understood to be the most important aspects of the situation (Reisner, 2005). A subtheme that coincided with the purpose of antibiotics and hormones theme was *antibiotic and hormone use are part of modern farming practices*. This subtheme informed readers *how* to feel about this issue that the media outlets had set as an agenda; namely, the purpose of antibiotic and hormone use in poultry production contributes to modern industrial agricultural practices, which were often described as cruel by the journalists.

The final emergent theme was *transparency of antibiotic use in poultry production practices*. The crux of the transparency issue set forth as an agenda by these media outlets is the lack of consistent data representing actual antibiotic use in poultry production. Again, the presence of this agenda fuels consumer distrust of agricultural practices (Scheufele & Tewksbury, 2007), but more importantly that displaced trust is returned to the non-agricultural groups that point to higher estimates of the amount of antibiotics used in poultry production. As a part of this theme, poultry producers were held directly responsible for the lack of transparency, which could be attributed to the lack of complete and adequate coverage of this issue (Reisner & Walter, 1994). This lack of complete and adequate coverage is exacerbated by lack of research and lack of transparency from producers, which were both exemplified in articles with this theme.

Objective 2: Tone

Each article's tone regarding antibiotic/hormone use in poultry production was assessed based on the researcher's understanding of the complete article and context, including construction, quotes, and sources. The majority of articles were written in a neutral tone, closely followed by a negative tone. Taking into consideration the messages portrayed in these articles, these media outlets have not only set the agenda for these topics, but have done so in a method that can be characterized as anything but positive. A negative or neutral tone in most of these articles can be seen as a contributing factor to the increased distrust in antibiotic and hormone poultry production practices that previous research shows these articles led to merely by communicating about these issues (Bharad et al., 2010). Additionally, the neutral and negative tones of the majority of these articles points toward the understanding journalists have of these issues, which is the primary source for determining what to include in articles (Reisner, 2005). The power of the media to influence consumer attitude of a subject is important when considering the tone of these articles; whereas, consumers who read the majority of these articles were provided neutral or negative portrayals of antibiotic and hormone use in poultry production (Bharad et al., 2010).

Objective 3: Framing

The most prevalent frame used in the articles assessed in this research was the human interest frame (27.3%), followed by the responsibility (21.6%) and conflict frames (18.7%). Framing is used by journalists to construct messages and is the basis for the way these media outlets caused readers to define *how* they think about antibiotic and hormone use in poultry production (Scheufele & Tewksbury, 2007). With this in mind, the three outlets represented the most articles under the human interest frame, meaning they influenced readers to think about

antibiotic or hormone use in poultry production through an emotional perspective (Valkenburg et al., 1997). The responsibility framed articles attributed responsibility to a group, organization, or institution, thus leading readers to think that antibiotic and hormone use in poultry production—and the issues surrounding it—are the responsibility of some group (Valkenburg et al., 1997). Finally, the articles framed under conflict led the readers to see the tension between groups, which in the case of this research were consumers, government, integrators, non-agricultural groups, and poultry producers (Valkenburg et al., 1997). Collectively, the characterization of these three frames in over half of the articles analyzed influence the audience (Scheufele & Tewksbury, 2007) to understand that antibiotic and hormone use in poultry production is an issue that should be viewed emotionally, with responsibility for issues attributed to one or more groups, who may or may not be in conflict with each other. These frames represent underlying schemas held by these audiences that journalists use to present information so that it easily resonates with readers (Scheufele & Tewksbury, 2007). Considering newspapers need to generate readership, the inclusion and spread of these frames represent the media outlets' efforts to reach audience members (Conboy & Steel, 2008).

Objective 4: Article Quality

Based on Mencher's (2010) 12 constructs of good writing, the articles were assessed for their journalistic quality. The sufficiency quality indicator was displayed at a higher percentage than any other (96.4%), meaning these article contained enough information to be classified as succinct and terse without taking up unnecessary space (Mencher, 2010). The majority of articles were written with necessary information; journalists communicated their message sufficiently and contributed clearly to the agenda-setting function of the article. The quality indicator least represented in this set of articles was the objectivity indicator (69.1%). Non-

objective journalism is not free of explicit instances of the reporter's opinions or feelings that does not contain verified facts about what has been said and done (Mencher, 2010). Essentially, the lack of objectivity in more than 30% of the articles analyzed indicates these three media outlets show some neglect for a basic premise of quality journalistic practice in favor of a stronger focus on editorializing and partiality. This focus on editorializing and impartiality could contribute to the increased distrust in antibiotic and hormone use in the poultry production that is the effect of the agenda-setting function (Bharad et al., 2010). Additionally, the articles showed a lack of quality in the constructs that were the most important for transmitting a neutral story, which contributed to the large percentage of articles that were written in a negative tone. Besides objectivity, the articles lacked in verification of reality (74.8%), fairness (76.3%), balance (78.4%), and accuracy (79.9%). These article quality indicators effect not only the tone of articles, but serve as the basis for the framing these articles exhibited based on the journalists understanding of the issues (Scheufele & Tewksbury, 2007).

Objective 5: Differences in Media Outlets

The three media outlets showed differences regarding framing, tone, and article quality. The Wall Street Journal (29.3%) had a significantly higher percentage ($p < .001$) of articles framed with an economic consequences frame than the New York Times (5.0%) (USA Today was excluded because it did not have a sufficient amount of data to analyze). This represents the difference in schemas that journalists at both outlets expect their readers to have (Scheufele & Tewksbury, 2007); the Wall Street Journal framed articles about antibiotic and hormone use in poultry production through an economic consequences frame so that its readers could easily incorporate this topic into their existing schema. Additionally, the New York Times (20.0%) ran significantly more ($p = .03$) articles with multiple frames than the Wall Street Journal (4.8%).

This implies that the New York Times runs articles about antibiotic and hormone use in poultry production that cater to either individuals with diverse schema or different groups of individuals with different schemas while trying to influence *how* these groups view the issue (Scheufele & Tewksbury, 2007).

Concerning tone, the New York Times (62.3%) ran significantly more ($p = .04$) articles using a negative tone than USA Today (18.0%) and the Wall Street Journal (19.7%). Taking into account the role tone can play in agenda setting, the New York Times not only perpetuates distrust in antibiotic and hormone use in the poultry industry through increased coverage, but it does so more potently than the other two outlets by including a negative tone more regularly than the other two outlets (Bharad et al., 2010). This finding also points to the fact that reporters at the New York Times could potentially be more wary about antibiotic and hormone use in poultry production than reporters at the other two outlets because reporters typically write based on their understanding of what is important in an article (Reisner, 2005).

When compared to the overall mean percentages using one-way Chi-square analysis, the Wall Street Journal had significantly higher ($p < .05$) percentages of articles exhibiting the quality indicators accuracy, attribution, verification of reality, completeness, fairness, balance, objectivity, and responsible reporting when compared to the mean. The Wall Street Journal's articles about antibiotic and hormone use in poultry production were more well-written than the complete set of articles, which means that the agenda these articles set is closer to journalistic perfection (Mencher, 2010). Essentially, the Wall Street Journal's quality articles contribute a more honest representation of the publication's agenda (Bharad et al., 2010).

Discussion, Recommendations, and Implications

The conclusions drawn from the data collected as a part of this content analysis provide an underpinning for recommendations for agricultural communicators, public relations in the poultry industry, and future research. The data and conclusions point toward the need for improved agricultural communications practices including a deeper understanding of consumer concerns and awareness, increased transparency in coverage of the antibiotic and hormone use practices of poultry producers, and stronger relationships with communicators outside of the agricultural discipline. The recommendations for public relations in the poultry industry include increased transparency surrounding the subjects of the purpose of antibiotic and hormone use in poultry production and the role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria and improved relations with media sources outside of agriculture. One recommendation can be made for journalists outside of agriculture; namely, to improve the quality constructs of writing that were lacking journalists who write about antibiotic and hormone use in poultry production should develop stronger relationships with poultry industry contacts. Finally, implications for future research include a focus on determining best practices to increase agricultural entities' relations with media outside of agriculture, on examining the relationship between the agenda-setting function regarding antibiotic and hormone use in poultry production and consumer behavior, and for understanding the link between antibiotic use in poultry production and increased levels of bacteria.

Agricultural Communicators

The general public gains most of its understanding of agriculture from news media (Malone et al., 2000), and agricultural communicators are uniquely equipped to inform the public about these issues. This study revealed three recommendations for agricultural communications

practices including a deeper understanding of consumer concerns and awareness, increased transparency in coverage of the antibiotic and hormone use practices of poultry producers, and stronger relationships with communicators outside of the agricultural discipline. First, agricultural communicators should act upon a deeper understanding of consumer concerns and awareness. The fact that the New York Times, USA Today, and the Wall Street Journal knew enough about their audiences to write stories that set agendas and framed issues speaks volumes about the importance of the role tailoring writing to the attitudes the reporter wants to evoke in the reader plays in generating readers and revenue (Conboy & Steel, 2008). What is important to the consumer should be what agricultural communicators write to set an agenda about, setting the pace and emphasis for what the public knows about antibiotic and hormone use in poultry production as they are uniquely equipped to do (McCombs & Shaw, 1972). Hwang and colleagues (2005) noted that consumers were concerned about the use of antibiotics and hormones in poultry production, and this theme was prevalent in the analysis of articles in this research, which can be attributed to the media outlets' understanding of audience.

Understanding audience is good, but when media outlets set agendas and frame articles that carry a neutral or negative tone about antibiotics it only contributes to distrust in agriculture (Bharad et al., 2010). Increasing trust in agricultural practices should be the role of agricultural communicators, who understand agriculture and communication. For agricultural communicators to begin to increase consumer trust of antibiotic and hormone use practices in poultry production they must first accurately understand the concerns of consumers and then craft agendas and frames that tell the audience not only that they should be thinking about antibiotic and hormone use in poultry production, but the correct way to think about this issue.

Not only should agricultural communicators put more emphasis on understanding the concerns of consumers, but they should also seek to improve transparency about antibiotic and hormone use in poultry production. Brewer and Rojas (2007) pointed toward the lack of understanding of the use of antibiotics and hormones as one of the reasons for consumer concern of this issue. Furthermore, the findings of this research point toward a lack of understanding of antibiotic use in poultry production in consumer concern for antibiotic use in poultry production's role in increased antibiotic-resistant bacteria. Yet, the fact that this research also noted the lack of consistent research about antibiotic use in poultry production's role in increased antibiotic-resistant bacteria between agriculture and non-agriculture groups points toward the need for improved transparency in the dissemination of this information. Bharad and colleagues (2010) noted that any media coverage on food safety issue is enough to lead to a decline in consumer trust, and this condition is only exacerbated when readers see the poultry industry pitted against consumer groups in a research controversy. It is the place and role of an agricultural communicator to transparently display information about antibiotic and hormone use in poultry production outside of the realm of media, so that the possibility of increased consumer distrust Bharad and colleagues (2010) referenced is minimized. These extra-media displays of transparency could take a number of forms including social marketing campaigns and public relations strategies.

Finally, agricultural communicators should do a better job of creating and maintaining relationships with media contacts outside of agriculture. This study supports the idea that the way an issue is characterized in media affects how the public views the issue (Scheufele & Tewksbury, 2007), as noted in the analysis of framing in the sample of articles. The two most prevalent frames used in these articles were human interest and responsibility, and these are the

characterizations of the issue journalists felt would resonate with readers (Scheufele & Tewksbury, 2007). Essentially, journalists frame articles based on their understanding of what is important in an issue, and this understanding can be molded or modified depending on issue or topic. Thus, this is an opportunity to build relationships with media contacts outside of agriculture who are framing the articles written about antibiotic and hormone use in poultry production. Agricultural communicators should serve as the mouthpiece for the poultry industry, specifically building relationships with media who write articles about antibiotic and hormone use in poultry production and influencing what those reporters find as the most appropriate way to characterize these issues. From the articles analyzed in this research the most prolific authors were Elizabeth Weise (USA Today), Laurie Burkitt and Julie Jargon (Wall Street Journal), and Marian Burros (New York Times). Agricultural communicators should identify and build relationships with journalists like these who cover antibiotic and hormone use in poultry production with a focus on changing article framing options through transparent education of antibiotic and hormone use procedures in poultry production.

Poultry Industry Public Relations

The analysis of these articles that dealt with antibiotic and hormone use in poultry production yielded two recommendations for public relations in the poultry industry including increased transparency surrounding the subjects of the purpose of antibiotic and hormone use in poultry production and the role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria and improved relations with media sources outside of agriculture. First, the poultry industry relies on the use of antibiotics to not only treat diseases but promote growth (Singer & Hofacre, 2006), which uniquely situates it as the source for information regarding the purpose of these practices. Yet, this is an area of controversy as indicated by this

emergent theme in the findings. Some reporters characterized this practice as only for growth promotion, while other characterized it for both treatment and promotion; and each of these characterizations sets for an agenda of what the readers should be thinking about in regard to antibiotic use in poultry production (McCombs & Shaw, 1972). The poultry industry should focus on improving public relations with media and consumers surrounding this issue by improving the transparency of their messaging to these two constituent groups regarding the need for and purpose of antibiotic use in poultry production. Hormones are not legal for use in poultry production (USDA, 2014), and this concept should be communicated more transparently as well. The public relations efforts to improve transparency in this issue could likely be handled by an industry group, like the Poultry Federation or National Chicken Council, which should serve as the mouthpiece for integrators through educational efforts for media and consumers alike.

Poultry industry public relations should also focus on improving transparency about the role of antibiotic use in poultry production in increased antibiotic-resistant bacteria, which was another emergent theme revealed through this study. Consumers are already concerned with the potential effect antibiotic use in poultry production could have on increased levels of antibiotic-resistant bacteria, and this is primarily because of a lack of understanding (Brewer & Rojas, 2007). Again, the poultry industry is uniquely situated to communicate through public relations efforts the truth about this situation. As revealed through this study, there is a lack of consistent research about this topic that was cited by media analyzed in this study regularly, but the media in this case set an agenda that still points toward antibiotic use in poultry production contributing to increased levels of antibiotic-resistant bacteria. It should be the role of poultry industry public relations to improve the image of this aspect of poultry production, so that a different, more

positive agendas can start to be implemented. Completing this task could once again fall to an industry group that could act as a mouthpiece for the integrators through media education on the issue.

Additionally, poultry industry public relations should improve relations with media outside of the agricultural industry. As noted by this study, three media outlets outside of the agriculture community can have a significant impact through agenda setting and framing of articles about antibiotic and hormone use in poultry production; the effect of media on consumers in regard to agricultural perception has been noted in previous research as well (Malone et al., 2000). The articles analyzed in this study were framed most prevalently through human interest and responsibility frames based on the perception of what the journalists thought were the schemas readers could most easily identify with (Scheufele & Tewksbury, 2007). Also, most articles were written with either a neutral or negative tone. As with agricultural communicators, there is an opportunity to build relationships with reporters who often write articles about antibiotic and hormone use in poultry production. As public relations experts at individual integrators and at industry groups begin to build relationships with journalists, framing can become more focused on the purpose of antibiotic use in poultry production, which is not primarily focused on human interest but on scientific results that improve food production. Information and education can also be targeted at these media relationships that will help those journalists who are primarily neutral in tone become more positive and those journalists who are primarily negative become more neutral and eventually more positive.

Journalists

In the same way the findings point toward the need for agricultural communicators and poultry industry public relations to build better relationships with reporters outside of agricultural

communications, there is also a need for journalists to develop stronger relationships with poultry industry contacts. The findings highlighted a lack of qualities of good writing that affect tone and framing across the board for articles about antibiotic and hormone use in poultry production; considering that journalists frame articles based on their understanding of issues (Scheufele & Tewksbury, 2007), there is a lack of understanding about antibiotic and hormone use in poultry production. To combat the lack of objectivity, verification of reality, fairness, balance, and accuracy, journalists who cover issues about antibiotic and hormone use in poultry production should make efforts to build relationships with contacts in the poultry industry. This is not necessarily to say that journalists should cover the antibiotic and hormone issues in the exact way these poultry industry contacts desire, but building relationships and including quotes from sources in the poultry industry will improve these quality constructs.

Future Research

Based on the findings and conclusions, future research should focus on gaining deeper understanding of how journalists and gatekeepers set agendas and frame articles about antibiotic and hormone use in poultry production, determining best practices to increase agricultural entities' relations with media outside of agriculture, and examining the relationship between the agenda-setting function regarding antibiotic and hormone use in poultry production and consumer behavior. Additionally, research outside the field of agricultural communications should delve deeper into understanding the link between antibiotic use in poultry production and increased levels of antibiotic-resistant bacteria. First, qualitative research in the form of focus groups or interviews should be conducted to understand how journalists and gatekeepers decide on what agenda will be set about antibiotic and hormone use in poultry production and how those articles will be framed. Also, pertinent recommendation for both agricultural communicators

and public relations in the poultry industry is to build relationships with media outside of agriculture, and future research should focus on the best ways for this to be accomplished. True experimental research could also assess the effect on consumer behavior the agenda-setting function of articles about antibiotic and hormone use in poultry production exert based on purchasing of poultry. Finally, this study pointed out the need for research to further clarify the contribution of antibiotic use in poultry production to increased levels of antibiotic-resistant bacteria, and this should be a focus of research for poultry scientists; more revealing data about this subject could help future efforts to improve transparency in the poultry industry.

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Appendices

Appendix A

Outlet	Title	Date	Year	Section	Author	Random
New York Times	Personal Health; Why the food you eat may be hazardous to your health.	10/5/1994	1994	Section C	J.E. Brody N.N.	0.642438114
New York Times	A New Danger in Strep Season	2/19/1995	1995	Section 13CN	Doniger	0.322528608
New York Times	Defining 'Free Range'	12/5/1996	1996	Section C	R.C. Auletta	0.04190727
New York Times	FOOD; Nothing Tough About It	10/6/1996	1996	Section 6	M. O'Neill	0.286137129
New York Times	A LA CARTE; Once a Diner, Now Some Added Specialties	4/21/1996	1996	Section 13LI	R.J. Scholem	0.438492573
New York Times	Eating Well; A New Goal Beyond Organic: 'Clean Food'	2/7/1996	1996	Section C		0.501830461
New York Times	Free Range? Natural? Sorting Out Labels	11/13/1996	1996	Section C		0.526834952
New York Times	TAINTED IMPORTS – A special report.; Imports Swamp U.S. Food-Safety Efforts	9/29/1997	1997	Section A	J. Gerth & T. Weiner	0.01164828
New York Times	Who's to Blame for Tainting American Poultry?; The Market Rules	10/27/1997	1997	Section A	M. Silverberg	0.139484361
New York Times	NEWS SUMMARY	10/20/1997	1997	Section A	None listed	0.225075305
New York Times	The Bacterium and the Chicken	10/21/1997	1997	Section A	None listed	0.314411493
New York Times	U.S. to Subject Organic Foods, Long Ignored, to Federal Rules	12/15/1997	1997	Section A	M. Burros	0.360097678
New York Times	Health Concerns Mounting Over Bacteria in Chickens	10/20/1997	1997	Section A	M. Burros	0.523336878
New York Times	Has Old-Time Chicken Flavor Flown the Coop? Who's to Blame for Tainting American Poultry?;	3/5/1997	1997	Section C		0.631194184
New York Times	Regulators vs. Rights	10/27/1997	1997	Section A		0.64101142
New York Times	Health Food Stores Expand with Demand	10/12/1997	1997	Section 14WC		0.721868282
New York Times	NEWS SUMMARY	12/15/1997	1997	Section A		0.887484388
New York Times	What 'Natural' Means	12/18/1997	1997	Section A		0.981970082
New York Times	A New Spray for Chickens Helps Control Salmonella	3/20/1998	1998	Section A	M. Burros	0.050583563
New York Times	Eating Well; U.S. Eases up on Irradiation, Antibiotics	8/26/1998	1998	Section F	M. Burros	0.16767313

New York Times	Vegetarian Wisdom from Dr. Spock Eating Well: Success for New Federal Standards on	6/23/1998	1998	Section A	M. Blessing	0.218899643
New York Times	Meat and Poultry	10/14/1998	1998	Section F	M. Burros	0.257029164
New York Times	Some Human Risk is Seen from Drugs in Food Animals	7/10/1998	1998	Section A		0.446207219
New York Times	Raising Safer Chickens	3/20/1998	1998	Section A		0.52123349
New York Times	Superbugs	8/23/1998	1998	Section 6		0.607919379
New York Times	DESTINATIONS; Not the Market to Pick Up a Quart of Milk	12/12/1999	1999	Section 14NJ	J. D'Agnesse	0.036589867
New York Times	Ladies and Gentlemen, The Roast Chicken	9/22/1999	1999	Section F	A. Hesser P.	0.179808198
New York Times	Control Antibiotic Use	11/7/1999	1999	Section 4	Lieberman	0.291538605
New York Times	High-Tech Plants May Threaten Us, Too U.S. to Allow Organic Label on Some Meats and	5/25/1999	1999	Section A	R. Goldberg	0.311507798
New York Times	Poultry	1/15/1999	1999	Section A	M. Burros	0.388824622
New York Times	U.S. Antibiotics Countered by Foreign Meat, Study Says	5/20/1999	1999	Section A		0.40840366
New York Times	Bacteria Cases in Denmark Cause Antibiotics Concerns in U.S.	11/4/1999	1999	Section A		0.773384069
New York Times	From Gravy to Jus, Now 'Amish' is Trendy Bacteria Resistant to Powerful Antibiotics are	3/17/1999	1999	Section F		0.811717078
New York Times	Discovered in Chicken Feed	2/26/1999	1999	Section A		0.913388036
New York Times	INSIDE	2/26/1999	1999	Section A		0.967852608
New York Times	Ban Sought on 2 Antibiotics for Poultry	10/29/2000	2000	Section 1	AP	0.187384577
New York Times	Public Interests; A Shot in the Dark	6/30/2000	2000	Section A	G. Collins	0.294807724
New York Times	Developing a (Sort of) Chicken Soup for the Sickly Chicken	1/18/2000	2000	Section F	AP	0.577114109
New York Times	If It Walks and Moos Like a Cow, It's a Pharmaceutical Factory	5/1/2000	2000	Section A	C.K. Yoon	0.586372711
New York Times	A Chill in the Air for Free-Range Chickens	7/26/2000	2000	Section F	R. Gold	0.627202894
New York Times	PULSE; The Bird Most in Demand	3/26/2000	2000	Section 9		0.628540005
New York Times	PERSONAL HEALTH; The Telltale Signs of Sore Throat Danger	2/22/2000	2000	Section F		0.635989199

New York Times	PERSONAL HEALTH; Ways to Stop Extreme Allergic Reactions	8/22/2000	2000	Section F		0.748215601
New York Times	Treatment Tied to Increased Multiple Births	7/6/2000	2000	Section A		0.912680906
New York Times	January 7 – 13; Another Antibiotics Warning	1/14/2001	2001	Section 4	D. Grady E.K. Silbergeld & P. Walker	0.123897283
New York Times	What if Cipro Stopped Working?	11/3/2001	2001	Section A		0.182971958
New York Times	Drug for Poultry Stirs Resistance Concerns	10/30/2001	2001	Section F	P.J. Hiltz	0.226945415
New York Times	OFF THE MENU A World of Food Choices, and A World of Infectious	11/21/2001	2001	Section F	F. Fabricant	0.282418442
New York Times	Organisms	1/30/2001	2001	Section F	J.E. Brody	0.327342902
New York Times	A Vegetarian Solution	1/15/2001	2001	Section A	E. Forel	0.473667132
New York Times	Studies Find Resistant Bacteria in Meats	10/18/2001	2001	Section A		0.504738729
New York Times	New Market Concentrates on Organic Food	2/14/2001	2001	Section F		0.589045302
New York Times	EATING WELL; The Truth Behind the Feel-Good Labels	3/14/2001	2001	Section F		0.705270194
New York Times	It Came. It Clucked. It Conquered.	3/21/2001	2001	Section F		0.794754625
New York Times	EATING WELL; Shopping for Antibiotic-Free Meat	1/17/2001	2001	Section F		0.894634685
New York Times	A Food Supply Without Antibiotics	2/15/2002	2002	Section A	M. Smith	0.108475378
New York Times	A Food Supply Without Antibiotics	2/15/2002	2002	Section A	M. Smith	0.190630836
New York Times	NEWS SUMMARY	2/10/2002	2002	Section 1	None listed	0.26062722
New York Times	NEWS SUMMARY POULTRY INDUSTRY QUIETLY CUTS BACK	2/13/2002	2002	Section A	None listed	0.355663336
New York Times	ON ANTIBIOTIC USE World Briefing Europe: Russia: U.S. Poultry Still	2/10/2002	2002	Section 1	M. Burros	0.390788559
New York Times	Non Grata World Briefing Asia: Shrimp and Chicken	4/11/2002	2002	Section A	S. Tavernise	0.41941677
New York Times	Scrutinized in Europe	3/20/2002	2002	Section A		0.638933862
New York Times	February 10-16: NATIONAL; HEALTHIER CHICKEN	2/17/2002	2002	Section 4		0.722891619
New York Times	Russia's Latest Export: Bad Jokes About U.S. Chickens	3/2/2002	2002	Section A		0.753575092
New York Times	Antibiotics in the Poultry Industry	2/13/2002	2002	Section A		0.756171954
New York Times	A Food Supply Without Antibiotics	2/15/2002	2002	Section A		0.882347822

New York Times	Henry Saglio, 92, 'Father' of Poultry Industry	12/21/2003	2003	Section 1	A. O'Connor D. Barboza & S. Day	0.152853487
New York Times	McDonald's Seeking Cut in Antibiotics in Its Meat	6/20/2003	2003	Section C		0.228324144
New York Times	Fast Food, No Fast Antibiotics	6/22/2003	2003	Section 4		0.355652457
New York Times	Animal Welfare's Unexpected Allies	6/25/2003	2003	Section C		0.996179482
New York Times	Naturally Satisfying	7/25/2004	2004	Section 14	K. Ensminger	0.004132873
New York Times	Fast-Food Heaven Expo Offers High-Tech Tools to Make the Most of Chicken	9/5/2004	2004	Section 14	K. Ensminger	0.040186565
New York Times	Famous Chefs! Sumptuous Food! Luxuriant Settings!	1/31/2004	2004	Section A	A. Jacobs	0.531455038
New York Times	Odors, Crowds and Traffic: A Shopper's Cornucopia	1/21/2004	2004	Section F		0.548922191
New York Times	McDonald's Takes Steps On Its Antibiotic Promise	11/28/2004	2004	Section 14WC		0.787810051
New York Times	Organic Salmon March on Jersey City	1/12/2005	2005	Section F	M. Burros	0.068697722
New York Times	BUSINESS DIGEST	7/24/2005	2005	Section 14NJ	J. Miller	0.269481515
New York Times	Down-Home Comfort with an Upscale Bent Officials May Spend Billions to Stockpile Influenza Drug	7/29/2005	2005	Section C	None listed	0.277359064
New York Times	In Quest of the Perfect Roast Chicken	9/18/2005	2005	Section 14WC	E. DeNitto	0.435199934
New York Times	Citing Human Threat, U.S. Bans a Poultry Drug Sharpton Joins With an Animal Activist Group in Calling for a Boycott of KFC	10/7/2005	2005	Section A	G. Harris	0.484075186
New York Times	Mold? Mildew? Odors? New Towels Fight Back	2/23/2005	2005	Section F		0.593028842
New York Times	Putting Profit Above Health	7/29/2005	2005	Section A		0.618596295
New York Times	Companies and Critics Try Collaboration	2/2/2005	2005	Section C		0.802684089
New York Times	Tyson Finds a Label for Its Antibiotic-Free (Well, Almost) Chicken	9/11/2005	2005	Section F		0.900578756
New York Times	Chicken with Arsenic? Is that O.K.?	4/12/2006	2006	Section F	M. Greger C.H. Deutsch	0.077846801
New York Times	Eat at Your Own Risk	5/17/2006	2006	Section G		0.312160097
New York Times	Free or Farmed, When Is a Fish Really Organic?	4/5/2006	2006	Section F	M. Burros	0.316172025
New York Times	The Windsurf's Up on the Columbia River	4/12/2006	2006	Section F		0.332993911
New York Times		11/28/2006	2006	Section A		0.687042817
New York Times		5/12/2006	2006	Section F		0.808377937
New York Times		12/21/2007	2007	Section	A. Martin	0.189062055

New York Times	China Moves to Refurbish a Damaged Global Image	7/29/2007	2007	Section A	D. Barboza	0.206676294
New York Times	Tyson to Sell Chicken Free of Antibiotics Assembled Off Site, the Somewhat Homemade Family Dinner	6/20/2007	2007	Section C	AP	0.208831046
New York Times	China Moves to Refurbish a Damaged Global Image	9/29/2007	2007	Section C	A. Tugend	0.210333433
New York Times	China Moves to Refurbish a Damaged Global Image	7/29/2007	2007	Section A	D. Barboza C.M.	0.30868105
New York Times	Learning How Local Food Can Be	12/2/2007	2007	Section 14WE	Wetzler	0.32557822
New York Times	Antibiotics in Feed	9/28/2007	2007	Section		0.353078677
New York Times	Satisfying Picky Eaters is No Picnic U.S. Withdraws Approval for Tyson's Antibiotic-Free Label	4/22/2007	2007	Section 4A		0.362706624
New York Times	Fish Just Off the Hook at a Place that Spells It	11/20/2007	2007	Section C		0.570204991
New York Times	Even Free, the Price Wasn't Right	5/27/2007	2007	Section 14WC		0.926830434
New York Times	John Sieburth, 79: Studied Various Types of Marine Life	1/17/2007	2007	Section C		0.945534011
New York Times	Tyson to Stop Calling Chicken Antibiotic-Free	1/9/2007	2007	Section C		0.969692745
New York Times	Middle Eastern Spinach with Spices and Yogurt	6/3/2008	2008	Section C	Reuters M.R.	0.030594694
New York Times	Tyson Foods Sues U.S.D.A Over Antibiotic Rules	8/29/2008	2008	Section	Shulman	0.192642377
New York Times	Tyson Told to End an Antibiotic Claim	6/14/2008	2008	Section C	Reuters	0.216911078
New York Times	In Brooklyn, Every Palate is an Island	4/23/2008	2008	Section C	S. Clifford	0.25937585
New York Times	Camels Go Easily Through the Eyes of Admirers	8/24/2008	2008	Section TR		0.262505926
New York Times	Pure and Simple Economics	3/17/2008	2008	Section A		0.279131213
New York Times	Sorting Through the Claims of the Boastful Egg Administration Seeks to Restrict Antibiotics in Livestock	11/1/2008	2008	Section B		0.368785725
New York Times	Food for the Soul	9/17/2008	2008	Section F		0.89861141
New York Times	Taste of New Mexico with an Organic Twist	7/14/2009	2009	Section A	G. Harris	0.06757151
New York Times	This 'Green' Is Not a Color	8/23/2009	2009	Section WK	N. Kristof	0.083993929
New York Times	Dressing Down the Chicken Nugget	7/12/2009	2009	Section CT	P. Brooks	0.420636775
New York Times	In War on Cancer, Old Ideas Can Lead to Fresh Directions	11/8/2009	2009	Section NJ	K. Feeney	0.476404842
New York Times	Taste of New Mexico with an Organic Twist	5/13/2009	2009	Section D		0.702305565
New York Times	Taste of New Mexico with an Organic Twist	12/29/2009	2009	Section A		0.736363575
New York Times	Taste of New Mexico with an Organic Twist	7/12/2009	2009	Section CT		0.760153183

New York Times	More than Just a Deli	8/22/2010	2010	Section NJ	K. Feeney	0.084069761
New York Times	Antibiotics and Agriculture	6/30/2010	2010	Section A	None listed	0.190527293
New York Times	For Some, 'Kosher' Equals Pure	1/13/2010	2010	Section D	K. Severson J.	0.235806005
New York Times	Jidori Chicken, New Kid in the Coop	4/21/2010	2010	Section D	Steinhauer	0.270498148
New York Times	Cows on Drugs	4/18/2010	2010	Section WK		0.277332817
New York Times	Well, Is It Organic or Not?	7/15/2010	2010	Section E		0.285470545
New York Times	The Spread of Superbugs	3/7/2010	2010	Section WK		0.97965594
New York Times	In a World of Tastes, No Easy Labels	6/5/2011	2011	Section WE	E. DeNitto	0.094549626
New York Times	THELEWALA	5/18/2011	2011	Section D	O. Strand	0.212590618
New York Times	Touches of the Mediterranean	8/14/2011	2011	Section NJ	T. La Gorce	0.246015962
New York Times	Turkey Plant May Be Link To Illnesses	8/3/2011	2011	Section B	W. Neuman	0.258489094
New York Times	Cargill Issues Meat Recall After Turkey Tied to Illness	8/4/2011	2011	Section B		0.467645769
New York Times	Defying a Stereotype with Gourmet Dishes	7/31/2011	2011	Section CT		0.817489995
New York Times	A Kosher Chicken From Murray's Coop	4/6/2011	2011	Section D		0.823265627
New York Times	Perdue Goes to the Farm with an Earnest Approach	6/27/2011	2011	Section B		0.858478546
New York Times	Cooking	12/2/2012	2012	Section BR	W. Grimes	0.009328148
New York Times	Where Cows are Happy and Food is Healthy	9/9/2012	2012	Section SR	N.D. Kristof	0.02863998
New York Times	An Animated Ad with a Plot Line and a Moral	2/10/2012	2012	Section B	E. Olson	0.02898203
New York Times	Brooklyn's Home-Court Advantage	12/12/2012	2012	Section D	L. Mishan	0.031323421
New York Times	Arsenic in Our Chicken?	4/5/2012	2012	Section A	N.D. Kristof	0.058749084
New York Times	In Hopes of Healthier Chickens, a Pennsylvania Company Adds Oregano to the Diet	12/26/2012	2012	Section B	S. Strom	0.191973272
New York Times	New Prescription Requirement Will Cut Use of Antibiotics in Livestock, F.D.A. Says	4/12/2012	2012	Section A	G. Harris	0.200563079
New York Times	Steps Set for Livestock Antibiotic Ban	3/24/2012	2012	Section A	G. Harris	0.318672172
New York Times	Farm Use of Antibiotics Defies Scrutiny	9/4/2012	2012	Section D	S. Tavernise	0.349487149
New York Times	Inside the Times	1/5/2012	2012	Section A	None listed	0.375582979
New York Times	The Organic Food Balance	7/15/2012	2012	Section BU		0.551970858
New York Times	Citing Drug Resistance, U.S. Restricts More Antibiotics for Livestock	1/5/2012	2012	Section A		0.562498599

New York Times	Antibiotics off the Farm	4/16/2012	2012	Section A		0.619786408
New York Times	Safety of Chicken Meat	4/16/2012	2012	Section		0.626370537
New York Times	Antibiotics in Livestock	4/19/2012	2012	Section		0.642824809
New York Times	Antibiotics in Livestock	12/17/2012	2012	Section		0.776460063
New York Times	A Chicken Without Guilt	3/11/2012	2012	Section SR		0.899675726
New York Times	F.D.A. Creeps Forward	1/11/2012	2012	Section A		0.95607929
New York Times	Front Burner	9/25/2013	2013	Section D	F. Fabricant	0.210137418
New York Times	Urban Schools Aim for Environmental Resolution Social Media as a Megaphone to Push Food Makers to Change	12/2/2013	2013	Section A	M. Wines	0.251395257
New York Times	F.D.A. Restricts Antibiotic Use for Livestock	12/12/2013	2013	Section A	S. Tavernise	0.577266681
New York Times	An Abundance of Options	7/21/2013	2013	Section LI	J. Starkey	0.57845323
New York Times	Truths About Grades, and the Coldest Cold on Earth	12/17/2013	2013	Section D	D. Quenqua	0.641535283
New York Times	Selling Products by Selling Shared Values	2/14/2013	2013	Section B	S. Elliott	0.658142365
New York Times	Concerns About Jerky Pet Treats	11/5/2013	2013	Section D	N. Bakalar	0.663688207
New York Times	Corrections Report on U.S. Meat Sounds Alarm on Resistant Bacteria	11/25/2013	2013	Section A		0.672483733
New York Times	A Science Project with Legs	4/17/2013	2013	Section		0.701701928
New York Times	Antibiotics and the Meat We Eat	11/5/2013	2013	Section D		0.739599843
New York Times	Should You Eat Chicken?	3/28/2013	2013	Section A		0.790415346
New York Times	F.D.A. Bids to Regulate Animal Food, Acting After Recall and Deaths	10/16/2013	2013	Section		0.83435057
New York Times	In Queens, Chickens Clash with the Rules	10/26/2013	2013	Section A		0.990238062
New York Times	The Use of Antibiotics in Farm Animals	4/19/2014	2014	Section A	C. Kilgannon K. Siegner, E.P. Carlin, & M. Solomon	0.019938991
New York Times	In China, McDonald's and KFC Cut Supplier	8/6/2014	2014	Section A		0.094412154
New York Times	Antibiotics in Livestock: F.D.A. Finds Use is Rising	7/22/2014	2014	Section B	N. Gough	0.135928945
New York Times	For Some Veal Calves, the Pasture is Home	10/3/2014	2014	Section A	S. Tavernise	0.158611575
New York Times		8/13/2014	2014	Section D	B. Paynter	0.234625817

New York Times	Chick-fil-A Commits to Stop Sales of Poultry Raised with Antibiotics	2/12/2014	2014	Section B	S. Strom	0.259809083
New York Times	The Fat Drug	3/9/2014	2014	Section SR	P. Kennedy	0.375499905
New York Times	The F.D.A. Blatant Failure on Food	7/31/2014	2014	Section A	R. Reichl	0.464742792
New York Times	Suit Accuses Kroger of Deceit on Poultry Antibiotics in Animals Tied to Risk of Human Infection	2/13/2014	2014	Section B	Reuters	0.613460092
New York Times	Food Safety in China Still Faces Big Hurdles	1/28/2014	2014	Section A		0.626160463
New York Times	Antibiotics Eliminated in Hatchery, Perdue Says	7/24/2014	2014	Section B		0.631883707
New York Times	Around a Sardinian Table, a Fractious Debate	9/4/2014	2014	Section B		0.704099974
New York Times	Farmland	5/14/2014	2014	Section A		0.818359886
New York Times	Major Hurdles Still Remain in Trade Talks	5/9/2014	2014	Section C		0.835999088
New York Times	Superbugs' Kill India's Babies and Pose an Overseas Threat	6/3/2014	2014	Section		0.853036527
New York Times	We Kills Germs at Our Peril	12/4/2014	2014	Section A		0.883366047
New York Times	Flesh-eating bug': Swift, deadly / Horror stories send chills across nation	4/29/2014	2014	Section D		0.931554577
USA Today	Sparks fly over Japan official's WWII remark	6/10/1994	1994	Final Edition International Edition		0.274171533
USA Today	Whole Foods to gobble up rival Fresh Fields	8/11/1995	1995			0.299645278
USA Today	Food stores go upscale Gourmet trend feasts on food variety, safety	6/19/1996	1996		T. Lowry	0.623514588
USA Today	Why relabel old eggs?	4/30/1996	1996			0.785921136
USA Today	Corralling the causes of a growing disease risk Antibiotic resistance has feedlots riding herd on food chain	4/23/1998	1998			0.822111403
USA Today	Like a resistant strain, the debate won't go away	6/15/1999	1999		R. Davis	0.078634707
USA Today	Doctors reimplant ovary in woman	6/15/1999	1999		A. Manning	0.099455288
USA Today	San Francisco's new International Terminal sends you off in style	9/24/1999	1999			0.682829525
USA Today	Drugs found in tap water Teen discovers antibiotics in public supplies; scientists fear 'superbugs'	12/12/2000	2000		None listed K.	0.133939567
USA Today	FDA, turkey farmers debate health of feast	11/8/2000	2000		Fackelmann	0.22921148
USA Today		11/20/2000	2000			0.865252632

USA Today	Remember Sept. 11 victims with stamps	11/26/2001	2001	B. Nienaber, D. Wallinga	0.058494918
USA Today	Healthy livestock given more antibiotics than ever	1/9/2001	2001	A. Manning	0.343754044
USA Today	Blame livestock antibiotics for infections	10/11/2001	2001		0.95657194
USA Today	High bacteria in poultry raises alarm	12/11/2002	2002	E. Weise	0.02754976
USA Today	Hamburger with those fries? Buyers beware	7/10/2002	2002	E. Schlosser	0.339294284
USA Today	U.S.-Russian fight over drumsticks imperils trade ties	3/25/2002	2002	B. Nichols	0.37175764
USA Today	Can fast-food titans thrive on healthful fare?	9/30/2002	2002		0.637612038
USA Today	Cut antibiotic use in food animals	7/9/2003	2003		0.025455945
USA Today	Vaccine shortage points to global risk, experts say	11/1/2004	2004		0.153446807
USA Today	FDA pulls poultry drug, cites health risk	7/29/2005	2005		0.213578222
USA Today	'Natural' chickens take flight; Four top producers end use of antibiotics	1/24/2006	2006		0.439821926
USA Today	NASA needs funds	10/4/2006	2006		0.721157682
USA Today	Bans on antibiotics for poultry may not work; Resistance could be passed down	3/8/2007	2007		0.261760155
USA Today	British Invasion hits grocery stores; Fresh & Easy arrives to take on the big guys in the USA	4/7/2008	2008	B. Horovitz	0.105915129
USA Today	Report spots risks in animal farm practices; Food production takes too big a toll, it says	4/30/2008	2008	E. Weise	0.599298542
USA Today	Gifts that are good for you; Here are fresh alternatives to same old fruit basket	12/18/2008	2008		0.693393159
USA Today	Spring allergies burst forth with the buds	3/16/2009	2009	J. Lloyd	0.236794718
USA Today	Panera bakes a recipe for success; CEO's contrarian strategy sees growth, rising sales	7/23/2009	2009	B. Horovitz	0.337748816
USA Today	'Panicology' is the antidote to a panic-stricken world; Stat guys analyze what scares us, add dose of skepticism	5/19/2009	2009	J. Lloyd	0.754288943
USA Today	Farming on a human scale; Documentary spreads the word of Polyface's 'natural patterns'	4/22/2009	2009		0.888724535
USA Today	Non-profit Panera uses honor system; Customers asked to pay 'fair share' to help those who can't	5/18/2010	2010	B. Horovitz	0.565233442
USA Today	To protect humans, curb antibiotic use in animals	7/12/2010	2010	None listed	0.631686974

USA Today	Is organic always best?; Taking stock of benefits is complicated	12/21/2010	2010			0.885448566
USA Today	Kids, eat as I say, not as I eat; Busy parents often focus on making children's diets healthy but neglect their own	2/2/2011	2011		M.B. Marcus	0.238642814
USA Today	Outcry after recall of turkey; Safety advocates call for better response	8/5/2011	2011			0.547747131
USA Today	FDA: Stop giving antibiotics to animals 'Pink slime' uproar overshadows more serious food safety threats; OUR VIEW	4/12/2012	2012		E. Weise	0.154066364
USA Today	Fuel your metabolism, smartly; Healthful balance of carbs can help keep the weight off	4/17/2012	2012		None listed	0.224599671
USA Today	Salmonella outbreak spurs call for more action	7/25/2012	2012			0.898872462
USA Today	FDA moves timidly against antibiotic use on farms	12/19/2013	2013		E. Weise	0.063244422
USA Today	Salmonella shows drug resistance; Latest outbreak in the West puts many in hospital	12/26/2013	2013		None listed	0.308696976
USA Today	Cut use of antibiotics in humans, livestock	10/9/2013	2013		E. Weise L. Blank & S. Walls	0.554040976
USA Today	National parks go local for healthy food options; Travelers can graze the new menus this summer	9/23/2013	2013			0.633200799
USA Today	Yum Brands' China problem	6/5/2013	2013		N. Hellmich	0.731434794
USA Today	Effort to curb antibiotics on farms shows little progress	2/6/2013	2013			0.878075383
USA Today	In America, a healthful feeding frenzy	10/28/2013	2013			0.98239343
USA Today	Chick-fil-A tries to fly in new direction; Chain shifts its focus to food, growth after anti-gay controversy	6/5/2014	2014		B. Horovitz	0.126608838
USA Today	'Lunch lady' gets a makeover; Schools revamp how meals are made, ordered	4/8/2014	2014		B. Horovitz	0.221093355
USA Today	Panera to give all food additives the heave-ho; Company says they're out by end of 2016	12/26/2014	2014		H. Malcolm	0.611160002
USA Today	Perdue cuts way back on use of antibiotics on chickens	6/3/2014	2014			0.830060045
Wall Street Journal	Drug makers go all out to squash 'superbugs'	9/4/2014	2014			0.876585319
Wall Street Journal	Entrepreneur Bets Chickens Will Click	6/25/1996	1996	B1	E. Tanouye	0.040629136
Wall Street Journal		4/1/1998	1998	NE1	J. Krasner	0.589158309

Wall Street Journal	FDA May Ban Drugs Of Bayer and Abbott Used to Treat Poultry	10/30/2000	2000	B2	None listed	0.221159443
Wall Street Journal	Corrections & Amplifications	4/30/2001	2001	A2	None listed	0.066758244
Wall Street Journal	Purina Mills Cited For Flouting Rules On Animal Feed	4/16/2001	2001	C3		0.788855687
Wall Street Journal	World Watch	6/6/2002	2002	A11	D.I. Oyama	0.068386878
Wall Street Journal	The Pedigreed Porterhouse --- Once for Foodies, Boutique Meat Now Has Herds of Buyers; Yuck, Is That a Turkey Neck?	9/6/2002	2002	W12	P. Bhatia	0.133439771
Wall Street Journal	Cattle Prices Plummet, Pressured By Weight of Lean-Hog Tumble	4/11/2002	2002	C15	J. Cote	0.502951663
Wall Street Journal	FDA Restricts Antibiotic Use In Livestock to Protect People	9/12/2002	2002	D4	S. Kilman	0.703648293
Wall Street Journal	Perdue Will Stop Using Antibiotic Linked To Resistant Bacteria	3/1/2002	2002	B6		0.721889038
Wall Street Journal	Moscow Lets U.S. Poultry Back In	4/15/2002	2002	A13		0.830789114
Wall Street Journal	Tyson Foods to Curb Its Use in Chickens Of Antibiotic Targeted for Ban by FDA	2/20/2002	2002	B12		0.894867627
Wall Street Journal	Resurrecting Genes Helps Scientists Learn About Extinct Species	4/30/2004	2004	B1	S. Begley	0.137782664
Wall Street Journal	Ruling Supports FDA in Its Bid To Ban an Antibiotic in Poultry	3/17/2004	2004	D14		0.195768418
Wall Street Journal	Shelling Out for Designer Eggs; Farmers Launch New Varieties Aimed at Healthy Eaters; Raising a Vegetarian Egg	3/17/2004	2004	D1		0.540164249
Wall Street Journal	Poultry's New Pecking Order; 'Air-Chilled' Processing Is Latest Effort to Boost Flavor – and Price – of Birds	6/23/2005	2005	D1	K. McLaughlin	0.150398214
Wall Street Journal	FDA Bans Use Of Antibiotic In Poultry	7/29/2005	2005	B1	A.W. Mathews & Z. Goldfarb	0.258900985

Wall Street Journal	FDA Questions Use of Antibacterial Soaps; Hearing Will Probe Possible Link To Drug-Resistant Bacteria; No Clear Benefit Over Plain Soap?	10/18/2005	2005	D1		0.539220548
Wall Street Journal	Concern Grows About Antibiotic Use in Food; Limited FDA Ban Comes As Ranchers, Retailers Pitch Range of Drug-Free Products	8/2/2005	2005	D1		0.765962198
Wall Street Journal	Politics & Economics: FDA to Ban Poultry Use of 2 Drug Types on Flu Fears	3/21/2006	2006	A4	J. Zhang	0.182009395
Wall Street Journal	Hormone-Less Chicken? Sure, We Won't Squawk	1/20/2006	2006	A15	R.L. Lobb	0.590795146
Wall Street Journal	The Informed Patient: Preventing the Tragedy of Misdiagnosis; Kaiser, VA Lead Effort To Provide Doctors With Tools That Help Improve Accuracy	11/29/2006	2006	D1	L. Landro	0.716858865
Wall Street Journal	Whole Foods Fare's Pricey? Check Out Shares; Upscale Organic Chain Presents Solid Growth, but Rivals Loom And Analysts Turn a Bit Jittery	1/13/2006	2006	C1		0.877901976
Wall Street Journal	Arby's Turns to Chicken to Feed Profits	3/1/2006	2006	B3F		0.898238481
Wall Street Journal	Tyson Dealt Blow on No-Antibiotic Label	11/20/2007	2007	A3	L. Etter	0.080846966
Wall Street Journal	SmartMoney: Commodities to Consider	9/2/2007	2007	3	R. Pearlman	0.089406228
Wall Street Journal	Politics & Economics: Safety Becomes a Hot Trade Issue; As China and U.S. Cite Import Concerns, Fears Grow Rules May Be Abused	7/16/2007	2007	A4	A. Batson & L. Etter	0.252672067
Wall Street Journal	Pecking at Bigger Profits; Tyson Latches Onto Antibiotic-Free Trend, Sets Sights on Golden Egg of Packaged Food	6/26/2007	2007	C1	K. Richardson	0.297480196
Wall Street Journal	WEEKEND JOURNAL; Food & Drink – Thanksgiving: Cold Turkey	11/17/2007	2007	W1	R. Sokolov	0.338028592
Wall Street Journal	Tyson Foods Inc. : Fresh Chicken in Markets To Be Antibiotic-Free	6/20/2007	2007			0.489390533
Wall Street Journal	Corrections & Amplifications	11/23/2007	2007	A2		0.552914326
Wall Street Journal	Tyson Foods Reaches Agreement Over Labels	12/21/2007	2007	A4		0.61344512

Wall Street Journal	When Buying Organic Makes Sense – and When It Doesn't	1/16/2007	2007	D1		0.877857744
Wall Street Journal	U.S. News: Farming Critics Fault Industry's Influence	4/30/2008	2008	A4	E. Williamson	0.064489422
Wall Street Journal	Tyson Is Ordered to Pull Antibiotic-Free Label by June 18; Russia and Japan Suspend Imports Of Arkansas Chicken	6/4/2008	2008	B9	L. Etter & S. Kilman	0.098904607
Wall Street Journal	Corporate News: Tyson Files Suit Against USDA On Chicken Label	6/16/2008	2008	B4	L. Etter	0.12358575
Wall Street Journal	Corporate News: Tyson Pulls Antibiotic-Free Label; Claim on Packages Of Chicken Products Stirred Discord	6/3/2008	2008	B2	L. Etter	0.198875364
Wall Street Journal	Business and Finance	6/16/2008	2008	A1		0.40554088
Wall Street Journal	Tyson Foods Inc.: Judge Bars Ads Touting Antibiotic-Free Chicken	4/23/2008	2008	D8		0.538301711
Wall Street Journal	Tyson Adjusting Advertising After Complaints	1/26/2008	2008	A12		0.801513312
Wall Street Journal	Business and Finance	6/3/2008	2008	A1		0.850115613
Wall Street Journal	City News – Lunchbox / KyoChon: The Other KFC	12/20/2010	2010	A27	R.M. Fillion	0.626328027
Wall Street Journal	Health & Wellness: FDA Warns On Antibiotics In Livestock	6/29/2010	2010	D3	S. Kilman	0.85403971
Wall Street Journal	Corporate News: Corporate Watch	1/15/2010	2010	B4		0.971051981
Wall Street Journal	U.S. News – Remembrances: Chicken Tycoon Remade Dinnertime	1/7/2011	2011	A4	S. Kilman	0.148187566
Wall Street Journal	Antibiotics In Pork Draw More Scrutiny By Inspectors	9/13/2011	2011	D1	B. Tomson	0.19928049
Wall Street Journal	U.S. News: Turkey Recall Revives Battle Over Antibiotics	8/13/2011	2011	A3	B. Tomson	0.571656397
Wall Street Journal	World News: New Front Emerges in Clone Wars --- Europe Regulators Prepare Restrictions To Cloning, as Argentina Forges Ahead	12/1/2011	2011	A16		0.651767392

Wall Street Journal	City News – Lunchbox / Purbird: Chicken, No Hormones	9/7/2011	2011	A18		0.713431419
Wall Street Journal	Corporate News: KFC Feels Heat in China --- TV Report on Suppliers Improperly Using Antibiotics Complicates Sales Decline	12/20/2012	2012	B7	C. Murphy	0.047364774
Wall Street Journal	Corporate News: China Food-Safety Crackdown --- New Rules Follow Reports of Antibiotics Used by Local KFC Chicken Suppliers	12/28/2012	2012	B5	C. Murphy	0.053914504
Wall Street Journal	Corporate News – Remembrances: Amgen’s First CEO	4/24/2012	2012	B6	S. Miller	0.059205212
Wall Street Journal	Corporate News: Yum Gets Support on Safety --- Shanghai Officials Say Food Samples Met Standards, Pledge More Investigations	12/24/2012	2012	B3		0.526558218
Wall Street Journal	U.S. News: FDA Told to Act on Farm Antibiotics	3/24/2012	2012	A6		0.873065107
Wall Street Journal	Corporate News: China Woes Put Dent in Yum Brands	1/9/2013	2013	B3	L. Burkitt & J. Jargon	0.03343198
Wall Street Journal	World News: North Korea Culls Thousands Of Birds to Contain Deadly Flu	5/22/2013	2013	A10	J.S. Kwaak	0.05204774
Wall Street Journal	Corporate News: Yum Details China Missteps --- More Innovation Was Needed After KFC Safety Scare, Restaurant Owner Says	10/10/2013	2013	B7	L. Burkitt & J. Jargon	0.13774783
Wall Street Journal	Corporate News: ‘Challenging’ Month for McDonald’s	2/9/2013	2013	B3	B.F. Rubin	0.204126625
Wall Street Journal	An Atlantic Trade Opportunity	2/19/2013	2013	A14	None listed	0.24323458
Wall Street Journal	Corporate News: China Woes Weigh on Yum --- Parent of KFC and Pizza Hut Now Expects Earnings Per Share to Decline in 2013	2/5/2013	2013	B4	J. Jargon	0.264253355
Wall Street Journal	Earnings: Starbucks Enjoys Sales Jolt From Its U.S., China Stores --- Profit Jumps 13% as Company Maintains Growth Where Others Have Stumbled	1/25/2013	2013	B4	A. Gasparro	0.293247559
Wall Street Journal	Tyson Hatches a New China Strategy --- Chicken Processor Opens Its Own Farms, Avoiding Local Coops, to Address Food-Safety Concerns	12/10/2013	2013	B1	D. Kesmodel & L. Burkitt	0.362226867

Wall Street Journal	Corporate News: Food Industry Won't Fight Antibiotics Rule --- Farmers, Ranchers Say Efforts to Curb Drug Overuse in Healthy Livestock Already in Place; Drug Suppliers See No Impact	12/13/2013	2013	B4	K. Gee	0.371808214
Wall Street Journal	Earnings: McDonald's Issues Cautious Forecast	1/24/2013	2013	B4		0.49154098
Wall Street Journal	Corporate News: FDA Acts to Reduce Antibiotics in Livestock	12/12/2013	2013	B5		0.525956211
Wall Street Journal	Corporate News: KFC Apologizes Amid China Probe --- Yum Unit Concedes Missteps Related to Investigation of Suppliers' Use of Antibiotics in Chicken	1/11/2013	2013	B7		0.529650838
Wall Street Journal	KFC's China Flap Holds Lessons for Investors	1/12/2013	2013	B1		0.548644213
Wall Street Journal	Business and Finance	2/5/2013	2013	A1		0.55624865
Wall Street Journal	Free Trade and Obama's Rule by Fiat	12/26/2013	2013	A12		0.684130261
Wall Street Journal	Corporate News: Yum Brands' Sales Slump in China	4/11/2013	2013	B2		0.895319989
Wall Street Journal	Corporate News: Yum Pares Suppliers in China --- Quality Fears Prompt Fast-Food Chain to Cut Ties With Some Chicken Providers	2/26/2013	2013	B10		0.937326023
Wall Street Journal	City News -- Metro Money: New York Restaurants for the Single-Minded	2/1/2014	2014	A16	A. Kadet	0.096796277
Wall Street Journal	In the Gut: The Mix of Bacteria Can Affect Weight	11/18/2014	2014	D1	M. Beck	0.167468668
Wall Street Journal	Ahead of the Tape	10/7/2014	2014	C1	S. Jakab	0.265859139
Wall Street Journal	Corporate News: New Yum CEO Must Clean Up Fast-Food Menu	12/12/2014	2014	B5	J. Jargon	0.290495858
Wall Street Journal	Tyson Has Good Relations With Our Many Suppliers	3/18/2014	2014	A14	G. Mickelson	0.344757548
Wall Street Journal	KFC's Crisis in China Challenges Ingenuity of Man Who Built Brand	1/13/2014	2014	B1	J. Jargon & L. Burkitt	0.468445415

Wall Street Journal	Earnings: McDonald's Appeal Suffers in China As Rivals Eat the Company's Lunch	10/23/2014	2014	B4	L. Burkitt	0.469280912
Wall Street Journal	Corporate Watch	3/28/2014	2014	B4		0.497870446
Wall Street Journal	How We Eat: Shoppers Push Meat Industry To Wean Itself Off Drugs	11/4/2014	2014	A1		0.558719925
Wall Street Journal	OFF DUTY --- Eating & Drinking: A Delicious Prescription --- Chefs and doctors are teaming up to create health food you might actually crave	3/15/2014	2014	D1		0.651851809
Wall Street Journal	U.S. News: Antibiotics Get Shot in Arm --- White House Unveils Measures to Curb Resistant Bugs and Develop New Drugs	9/19/2014	2014	A5		0.904843618
Wall Street Journal	City News – Lunchbox / ReViVer: For Health Nuts, Lunch by the Numbers in Hell's Kitchen	8/5/2014	2014	A16		0.921757109
Wall Street Journal	Corporate News: More Woes for Yum and McDonalds in China	7/22/2014	2014	B3		0.97972906

Note. Highlighted articles represent sample selection.

Appendix B

1. A New Danger in Strep Season, New York Times
2. TAINTED IMPORTS -- A special report.; Imports Swamp U.S. Food-Safety Efforts, New York Times
3. NEWS SUMMARY, New York Times
4. A Food Supply Without Antibiotics, New York Times
5. NEWS SUMMARY, New York Times
6. NEWS SUMMARY, New York Times
7. Organic Salmon March on Jersey City, New York Times
8. BUSINESS DIGEST, New York Times
9. Officials May Spend Billions to Stockpile Influenza Drug, New York Times
10. China Moves to Refurbish a Damaged Global Image, New York Times
11. Food for the Soul, New York Times
12. Taste of New Mexico with an Organic Twist, New York Times
13. This 'Green' Is Not a Color, New York Times
14. More than Just a Deli, New York Times
15. In a World of Tastes, No Easy Labels, New York Times
16. Turkey Plant May Be Link To Illnesses, New York Times
17. Cooking, New York Times
18. Inside the Times, New York Times
19. For Some Veal Calves, the Pasture is Home, New York Times
20. Whole Foods to gobble up rival Fresh Fields, USA Today
21. San Francisco's new International Terminal sends you off in style, USA Today
22. Hamburger with those fries? Buyers beware, USA Today
23. British Invasion hits grocery stores; Fresh & Easy arrives to take on the big guys in the USA, USA Today
24. Spring allergies burst forth with the buds, USA Today
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26. Non-profit Panera uses honor system; Customers asked to pay 'fair share' to help those who can't, USA Today
27. Salmonella outbreak spurs call for more action, USA Today
28. Salmonella shows drug resistance; Latest outbreak in the West puts many in hospital, USA Today
29. 'Lunch lady' gets a makeover; Schools revamp how meals are made, ordered, USA Today
30. Drug makers go all out to squash 'superbugs', Wall Street Journal
31. Corrections & Amplifications, Wall Street Journal
32. Resurrecting Genes Helps Scientists Learn About Extinct Species, Wall Street Journal
33. The Informed Patient: Preventing the Tragedy of Misdiagnosis; Kaiser, VA Lead Effort To Provide Doctors With Tools That Help Improve Accuracy, Wall Street Journal
34. An Atlantic Trade Opportunity, Wall Street Journal
35. Tyson Has Good Relations With Our Many Suppliers, Wall Street Journal

Appendix C

Coding Sheet

Articles focused on Poultry Antibiotics and Hormones

Article outlet:

Section in which the article ran:

Title of article:

Journalistic writer/author (name):

Number of words in the article:

Type of article:

- Hard news** – coverage of live and current events, uses the inverted pyramid, usually less than 500 words
- Feature** – emphasizes the human or entertaining aspects of a situation, uses block format, usually 500 words or more
- Editorial** – an article of comment or opinion, usually found in the editorial section

Frame of article:

- Conflict** – highlights the tension between individuals, groups, or institutions
- Economic consequences** – focuses on how an individual, group, organization, country, or region will be affected economically by an issue or event
- Human interest** – brings an individual's perspective or emotional angle to the presentation of an event, issue, or problem
- Responsibility** – attributes responsibility to a group, organization, or institution
- Inconclusive/multiple**

What is the focus of the article?

Antibiotics Hormones Both

What is (are) the key message(s) portrayed about antibiotic/hormone use in the poultry industry in this article? *(with representative lines that support each them)*

How is the use of antibiotics/hormones in the poultry industry portrayed in this article?
(circle one)

Positive Neutral Negative

Questions 1 through 13 should be coded as either 0 (no), 1 (can't tell), or 2 (yes).

1. *Is the article accurate?* ____
 - Article is written using **quotes** from sources
 - Article incorporates **authoritative, knowledgeable, and reliable** human sources and **relevant, reliable** physical sources
2. *Does the article include attribution?* ____
 - Article gives **credit** to sources of information
3. *Does the article verify the reality of the situation?* ____
 - Article contains information that portrays **reality**
 - Article does not **misrepresent** or **fail to cover** certain parts of a situation
4. *Is the article complete in its coverage?* ____
 - Article provides **full coverage** of the situation
 - Article does not leave readers **uninformed**
5. *Is the article fair?* ____
 - Article includes **relevant** information
 - Article **does not attempt** to **mislead** or **deceive** the reader
 - Article is **straightforward**
 - Article **does not implicate** innocent parties
6. *Is the article balanced?* ____
 - Article includes information from **all parties** with stakes in the situation
 - Article includes **past comment** if no current comment was gathered from one party
 - Article lists attempts to **contact** if **no comment** was given by a concerned party
7. *Is the article written objectively?* ____
 - Article is free of **explicit instances** of the **reporter's opinions or feelings**
 - Article contains verified **facts** about what has been **said and done**
 - Article is an account of a situation from an **impartial** and **independent** observer
8. *Is the article brief, yet sufficient?* ____
 - Article is **succinct** and **terse**
 - Article does take up **unnecessary space**
9. *Does the article exhibit selectivity?* ____
 - Article includes only **needed information**
10. *Does the article exhibit clarity?* ____
 - Article displays **reporter's understanding** of the situation or subject

- Article uses **short sentences, everyday language, coherence, and logical story structure**
- 11. *Does the article incorporate human interest?* ____
 - Article is told in **human terms** by incorporating **sources involved in the situation**
- 12. *Does the article showcase the reporter's responsibility?* ____
 - Article represents **reporter's commitment to the story, to journalism, and to the public**
- 13. *Is the article written well?* ____
 - Article follows **AP Style**
 - Article uses **appropriate writing style** (i.e. inverted pyramid or block format)