FRAMING FLU: A CONTENT ANALYSIS OF PRINT MEDIA COVERAGE OF INFLUENZA DURING THE 2006-07 FLU SEASON

by

DOUGLAS E. JORDAN

(Under the Direction of Leara Rhodes)

ABSTRACT

This study involved a content analysis of 339 print media articles published during the 2006-07 influenza season related to influenza (flu), avian influenza (bird flu), pandemic flu and vaccination. Articles were collected from newspapers, websites, broadcast media sites, magazines and news networks/news wires. The purpose of the study was to identify the predominant frames and topics found in print media coverage of flu. Secondary goals examined the tone of influenza articles towards vaccination and CDC and assessed how often CDC's key public health messages for influenza were conveyed in print media coverage. Results demonstrated that media coverage of influenza was commonly framed through the use of subject matter experts, medical statistics and CDC's key messages. Other findings revealed that pandemic flu was the most common topic covered, followed by flu cases, avian influenza, the influenza vaccine, the flu season and pandemic preparedness.

INDEX WORDS: Flu, Seasonal Flu, Bird Flu, Pandemic Flu, Pandemic, Influenza, Avian Influenza, Framing, Framing theory, Content Analysis, Centers for Disease Control and Prevention, CDC, Flu Shot, Flu Vaccine, Vaccination

FRAMING FLU: A CONTENT ANALYSIS OF PRINT MEDIA COVERAGE OF INFLUENZA DURING THE 2006-07 SEASON

by

DOUGLAS E. JORDAN

B.B.A., Emory University, 2001

A Thesis Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

MASTER OF ARTS

ATHENS, GEORGIA

2008

FRAMING FLU: A CONTENT ANALYSIS OF PRINT MEDIA COVERAGE OF INFLUENZA DURING THE 2006-07 SEASON

by

DOUGLAS E. JORDAN

Major Professor:	Leara Rhodes
Committee:	Karen King Jeff Springston

Electronic Version Approved:

Maureen Grasso
Dean of the Graduate School
The University of Georgia
August 2008

DEDICATION

Dedicated in loving memory to my father: Donald E. Jordan, Jr.

ACKNOWLEDGEMENTS

Special thanks to Dr. Leara Rhodes for helping me see this project to completion, despite us both enduring personal loss and other hurdles along the way. Special thanks to Dr. Brian Reber and Dr. Karen King for their dedication, time and support during their busy summer schedules. Special thanks to Dr. Jeff Springston for his exemplary generosity and assistance. I would also like to thank Alan Janssen, CDC, for his helpful discussions and data. Special thanks to Dr. Dan Jernigan, deputy-director of CDC's Influenza Division and Dr. Carolyn Bridges, associate-director of science of CDC's Influenza Division for their time and support.

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER 1

INTRODUCTION

Media play an important role in promoting public health by warning and educating the public about health threats. Influenza, commonly known as flu, is an example of a public health threat that often draws considerable media coverage, and for a reason. Each flu season in the United States, on average, 5-20 percent of the population gets the flu, more than 200,000 people are hospitalized from flu complications, and 36,000 people die from flu (Centers for Disease Control and Prevention [CDC] "Key Facts about Influenza," 2007). And while yearly hospitalization rates and deaths associated with seasonal flu are significant, these numbers can sometimes appear small in comparison to the consequences of a flu pandemic.

A pandemic (i.e., a worldwide outbreak of disease) can occur when a new strain of flu emerges in people and spreads easily from person to person. During the 1918 flu pandemic, researchers estimate that 50 million people died worldwide, including some 675,000 Americans (CDC "Small Changes in 1918," 2007). According to recent Federal estimates, a modern pandemic could cause illness in 30 percent of the U.S. population and result in the deaths of up to two million Americans.

Avian influenza, commonly known as "bird flu," is an infection caused by influenza viruses that naturally occur in birds. Wild birds can carry the viruses, but usually do not get sick from them. Domesticated birds, however, such as chickens, ducks and turkeys, can get severely ill and die from the viruses. Infection with avian influenza viruses in domestic poultry causes two forms of disease with low and high virulence. The low virulence form, also known as the "low pathogenic" form, usually causes only mild symptoms. However, the highly virulent form, also known as the "highly pathogenic" form, spreads easily through flocks of poultry. Highly

pathogenic avian influenza causes disease that affects multiple internal organs and has a mortality rate that can reach 90-100 percent among poultry, often within 48 hours (CDC "Key Facts about Avian Influenza," 2008; Pandemicflu.gov "Avian Influenza (Bird Flu)," 2008).

One strain of highly pathogenic avian influenza virus, the avian influenza A (H5N1) virus (a.k.a., the "HPAI H5N1 virus" or simply "H5N1 virus") has become endemic in much of Asia and has spread to parts of Europe, the Near East and Africa (Pandemicflu.gov "Avian Influenza (Bird Flu)," 2008). In addition to affecting birds, the H5N1 virus has also infected humans.

Human cases of infection with H5N1 virus were first recognized in 1997, when the virus infected 18 people in Hong Kong, China, resulting in six deaths. H5N1 virus does not usually infect people, but infections with these viruses continue to occur in humans. Most of these cases have resulted from people having direct or close contact with H5N1-infected poultry or surfaces contaminated with the virus (Pandemicflu.gov "Avian Influenza (Bird Flu)," 2008).

According to recent reports from the World Health Organization, over 380 cases of human infection with avian influenza A (H5N1) viruses have been reported worldwide since 1997, resulting in over 240 deaths – a mortality rate of over 60 percent (2008). There have been isolated reports of human-to-human transmission of the virus, but these cases have been rare and un-sustained (CDC "Key Facts about Avian Influenza", 2008; Pandemicflu.gov "Avian Influenza (Bird Flu)," 2008).

Influenza viruses change over time, and therefore, scientists are concerned that H5N1 virus could one day be able to spread easily among humans. Because these viruses do not commonly infect humans, people would have little or no immune protection against them. If H5N1 virus were to gain the capacity to spread easily from person to person, an influenza

pandemic could begin (CDC “Key facts about avian influenza,” 2008; Pandemicflu.gov “Avian influenza (bird flu)”, 2008).

With stakes this high, it is important that people understand the public health threat posed by each of the three different kinds of flu: seasonal, pandemic and avian, as well as the actions people can take to protect themselves. Each flu season, the Centers for Disease Control and Prevention in Atlanta, Georgia, spends a considerable amount of resources and money to promote flu awareness. Meanwhile, the media play a similar role in drawing public attention to seasonal flu, the seasonal flu vaccine, bird flu and pandemic flu.

However, the question remains: How good of a job do the various print media do to inform the public about issues related to flu? And is CDC doing its job to properly inform the media of the important public health issues related to seasonal flu, avian flu and pandemic flu?

Many people have misconceptions about seasonal flu and the seasonal flu vaccine. Some people confuse flu with the common cold. Others think you can catch flu by getting a flu shot – a misunderstanding that has convinced some people not to get vaccinated. For the record, the flu shot actually consists of inactivated virus, and cannot cause influenza infection (CDC “misconceptions,” 2008). Do media do enough to counter these misconceptions? And do media properly convey CDC’s core messages to inform and educate the public about flu?

Currently, little analysis of these issues has been made publicly available to the scholarly community. CDC conducts its own media surveillance to analyze characteristics of media coverage of flu. Although funding has fluctuated for such projects in the past, CDC is currently working on building and enhancing its capacity to locate and analyze media coverage of influenza through computer-assisted textual analysis software and other media monitoring technologies. However, CDC conducts this work for internal use.

For the sake of contributing to the scholarly community and furthering academic discussion, this study has been made publicly available. Its purpose is to address – through a content analysis of print media articles – answers to the questions asked above and to qualitatively determine the answers to other questions as well.

For example, what are the major flu topics found in print media coverage of flu? Do articles about seasonal flu outnumber articles related to pandemic flu or avian flu? Are print media biased against CDC or vaccination? This research has sought to determine the answer to these questions as well.

Previous studies have shown the impact media can have on public opinion and behavior. A study by Nelson et al. (1997) showed that news stories that presented a controversial rally as an issue of free speech caused people to view the rally more positively than news stories that presented the rally as a disruption of public order. Results from the study suggested that media can affect public opinion by dictating the perceived importance of certain issues.

Another study by Iyengar and Simon (1993) found that media coverage of the Persian Gulf Crisis and Persian Gulf War affected public opinion on several political issues. Media coverage caused people to view the Gulf War as the most important political topic. Furthermore, it led some people to judge President George Bush's overall job performance by his foreign policy performance. Lastly, media coverage caused people to express greater support for a military versus diplomatic response to the crisis.

These examples convey the impact media coverage of an issue can have on public opinion and behavior. Therefore, it is important to determine not only what topics media focus upon, but also the structures and techniques media use to convey these messages to the public. For that purpose, framing theory has been chosen.

Justification for Choosing Framing Theory to Conduct this Research

Framing theory has been used before to analyze media coverage of public-health topics. A study by Tian and Stewart (2005) explored the news frames associated with media coverage of Severe Acute Respiratory Syndrome (SARS) in 2003. The study compared how CNN and BBC framed the SARS crisis by conducting a computer-assisted textual analysis of online news articles published by both networks.

Tien and Stewart's study is significant because it demonstrates a precedent for using framing theory to understand media coverage of a public health topic. Flu, like SARS, is a respiratory illness with world-wide implications and impact.

The goal of this study is to conduct a framing analysis of media coverage of the flu season. By determining the frames used to communicate flu related articles to the public, this study will shed light upon the frames that are most salient in society's understanding of flu.

These studies are examples of the impact media can have on public opinion and behavior. Further exploration of the quality of media reporting on issues related to flu could be beneficial to CDC and to journalism research and theory.

For CDC, such a study would provide valuable information about flu-related health topics that should be better explained or emphasized. For the media – and the study of communication and communication theory – this study will provide insight into how well media sources frame important public health topics related to seasonal flu, pandemic flu and avian flu.

CHAPTER 2

THEORETICAL SECTION: FRAMING

Media centric theory, discussed by McQuail (2000), is a theoretical perspective of media that supports the view of mass media as primary movers in social change. How well media relay CDC's messages to the public could be of significant importance to public health.

To determine whether the public health messages contained in media coverage of flu matches that of CDC, communications theories are needed. For the purpose of this study, framing theory will be used as the theoretical basis. The following information helps to explain framing theory, how frames are created by media, and the impact frames may have on people's beliefs and attitudes.

Defining Framing

Many mass communications researchers have provided a definition for framing theory and how it works. Cappella and Jamieson (1997) compare the concept of framing to the frame of a house, which provides the basis upon which the rest of the house is built. "The act of framing determines what is included and excluded, what is salient and what is unimportant . . . it focuses the viewer's attention on its subjects in specific ways" (Cappella & Jamieson, p.38).

Cappella and Jamieson (1997) also compare framing to how a photographer frames his/her subjects: "when photographers take a picture, the objects in the picture are presented in a setting and bound together" (p.38). Like a photographer, the media focus on certain angles, themes and concepts when drafting articles.

According to Entman (1993), "to frame is to select some aspects of perceived reality and make them more salient in a communicating context, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation"

(p.52). According to Entman's definition, framing can be a way of communicating certain judgments or moral beliefs. Capella and Jamieson (1997) said: "salience and selection emphasize that framing includes not only what is made prominent, but also what is left out, treated as secondary, tertiary, or less" (p.45). So not only is the point of view, problem definition or moral judgment presented in an article important, but those aspects that are left out are important as well.

Tian and Stewart (2005), who draw their definition of framing from Entman, compare framing to the concept of storytelling. Applying Tian and Stewart's concept of storytelling to Entman's definition, it becomes apparent that a storyteller would necessarily emphasize certain aspects of a story over others. And the characters of the story would be presented in a way that emphasizes certain aspects of their personality over others.

Frames also provide the context within which people think about and react to a story. According to Minsky (1975), understanding and reacting to a set of propositions depends on the context within which the propositions are set. Without context, the mind cannot understand.

For example, a study by Kahneman and Tversky (1984) showed that simple word changes can produce significant differences in the choices people make. The context in which people read a story affects how they think about it.

Kahneman and Versky (1997) explain that framing works because of the context frames create. Cappella and Jamieson (1997) said frames evoke and bring into conscious awareness "a pre-existing set of knowledge, including concepts, procedures, and most importantly, their interconnections" (p.42.) Cappella and Jamieson explain below:

> "Framing provides context that in turn activates prior knowledge. The activated knowledge in cooperation with the text produce an understanding of the text that neither alone can supply. Framing then serves as an explicit context within

> which texts are interpreted (and through these interpretations, judgments rendered), and information recalled" (p.42).

Frames not only provide context, they also provide a means to remember previous knowledge and beliefs upon which to better understand a topic and pass judgment. Cappella and Jamieson (1997) said frames "activate knowledge, stimulate stocks of cultural mores and values, and create contexts within which what are typically called media effects are produced" (p.47). They explain that "frames are not just ways of representing news content; they have implications for processing news, and are the predictive basis for observed effects of news formats on citizens" (p.47). In summary, frames provide an explanation for the effects news content has on people.

Iyengar and Kinder (1987) proposed a model of framing effects with the main idea that news frames activate certain inferences, ideas and judgments. They, however, focused primarily on how news frames can affect people's views of political issues, policies and politicians.

Iyengar's model suggests that frames activate inferences based in knowledge already held by the audience. These inferences are evoked by the messages read or watched. According to Cappella and Jamieson (1997), the inferences allow for a form of communication where some things can be left unsaid, yet the audience can fill in the blanks by inferring what meaning was intended. However, as Cappella and Jamieson later point out, the inferences may sometimes be "misleading, misdirected or simply false" (p.42). This provides another example of how media frames and audience frames can be different. However, it also shows the importance of frames in constructing meaning.

According to Entman (1993), "Frames, then, define problems—determine what a causal agent is doing with what costs and benefits, usually measured in terms of common cultural values; diagnose causes—identify the forces creating the problems; make moral judgments—evaluate causal agents and their effects; and suggest remedies—offer and justify treatments for

the problems and predict their likely effects" (p.52). In short, a frame provides a way to understand a set of events, and generally speaking, framing is a way of drawing attention to certain issues of features of an issue while minimizing attention to others (Cappella & Jamieson).

All of these definitions and explanations of framing suggest that framing can play a significant and pervasive role in the creation and interpretation of news; however, it is important not to define framing too broadly. Cappella and Jamieson (1997) concluded that some scholars have over generalized the definition of framing theory to include "the way the story is written or produced, including the orienting headlines, the specific word choices, the rhetorical devices employed, the narrative form, and so on" (p.39). Under this interpretation they reason that "any production feature of the verbal or visual text would seem to qualify at least as a candidate for framing the news," which according to them, is far too broad a definition of framing (p.39).

As a result, Cappella and Jamieson (1997) created a narrower definition of framing, which states: "news frames are those rhetorical and stylistic choices, reliably identified in news, that alter the interpretations of the topics treated and are a consistent part of the news environment" (p.39-40) In their view, framing is a general process, but one that deserves study when "particular frames carried by specific stylistic and rhetorical devices are reliably identified and consistently utilized" (p.40). Basically, Cappella and Jamieson think that studies of framing should focus only on frames that are significant and consistently used to explain or judge certain issues.

They devised three criteria to identify, measure and evaluate framing effects. First, the frame should have "identifiable conceptual and linguistic characteristics" (Cappella & Jamieson, 1997, p.47). Second, it should be "commonly observed in journalistic practice" (Cappella & Jamieson, p.47). Third, the frames "should be able to be reliably distinguished from other

frames" (Cappella & Jamieson, p.47). These three criteria provide a means for determining significant news frames, as opposed to insignificant frames that may derive from any perceived from stylistic or syntactical news writing.

Where Frames are Found and How They are Created

According to Cappella and Jamieson (1997), "frames may be explicit components of messages, implied by word or name selections in the text of the message, or even activated in the audience without the audience's awareness that activation has taken place" (p.44). Here they explain that some frames are hidden and others can be overtly obvious, but the question remains: how are frames created?

Pan and Kosicki (1993) describe some of the ways that journalists can create frames in news. They claim that news texts can be divided in four broad organizing structures: syntactical, thematic, script, and rhetorical. And they explain that syntactical structures do not involve grammar, but instead, involve typical sequences of headlines, lead episode, background, and closure (1993; as cited in Cappella & Jamieson, 1997). Thematic structures, according to Pan and Kosicki, represent a thesis pertinent to a problem. For example, the thesis that genetic factors may be related to rates of autism in children. They also mention scripts, which they define as standard story lines that create narrative tension. Cappella and Jamieson (1997) provide an example of a script, for example: "the success of candidates doing 'better than expected' in primaries (even with 17 percent of the vote) and the dismal failure of those doing 'worse than expected'" (p.46).

Pan and Kosicki (1993) describe rhetorical devices as stylistic choices that help convey the character of the account. Presenting a picture of a person happy or sad, or providing a poll of how people feel about a certain issue is an example of a rhetorical device. Overall, Pan and

Kosicki's approach promotes thinking of framing in terms of the methods used by journalists to present news.

Interpreting Frames

Reese (2001) says frames are the "organizing principles that are socially shared and persistent over time, that work symbolically to meaningfully structure the social world (p.11). Here frames are presented as something socially shared, thus implying journalists are not the only ones who create frames. In fact, the way the news is framed by journalists and how the audience frames news may be the same or different (Gamson, 1992).

Based on the concept that readers may interpret frames differently than the writers who frame the news intend, Cappella and Jamieson (1997) said that the framing of news cannot be assumed to influence the public's attitudes, knowledge and behavior in all circumstances. They claim, "even if framing effects are present and significant, the effects of personal experience, even indirect experience, or influence from others can mask or even reverse the effects of framing alone" (p.49). Not all frames will have the impact intended.

Also, some events may be interpreted using more than one frame. According to Gandy (2001), different frames may define an event or issue and cause this same event or issue to be understood in different ways.

Scheufele (1999) explains that framing effects involve interaction between three different kinds of actor: internal sources and media organizations, journalists and audience. Despite the fact that frames can arise from the interactions between these three sources, according to Scheufele, only two kinds of frames exist.

The two kinds of frames explained by Scheufele (1999) are media frames and individual frames. Individual frames are frames as perceived by the audience, whereas, media frames are

created by the media. This gets back to Cappella and Jamieson's argument that readers and writers may create and perceive frames differently.

According to Scheufele (1999), both media frames and individual frames can be independent (i.e., a cause) or dependant (i.e., an effect). For example, how media frame articles about abortion can have an effect on an individual reader's views. The media's framing of abortion then becomes an independent frame that causes an effect. Likewise, an individual reader may already have a view on abortion (an independent frame) that determines how he or she interprets a media article on the topic. How the media's framing of abortion affects the individual reader would then be dependant upon the individual's own frames.

Scheufele (1999) explains that media frames and individual frames can be broken down into four interrelated framing processes The first framing process involves the framing of media by journalists and others in news organizations applying news values and news angles. The second process involves how framed news reports are transmitted to individuals. The third process involves how members of the audience accept news frames. Lastly, the fourth process (which takes a longer period of time) involves how the media reacts to feedback from individuals. If the audience agrees with the frames used, that may reinforce the media's tendencies to frame certain topics similarly over time (Scheufele). In this way, frames can be self enforcing, gaining momentum through their use by journalists and acceptance by the public.

Framing Effects Can and Do Occur

In response to the view that media effects have generally been hard to detect in the past, Cappella and Jamieson (1997) explain that successful persuasion is likely to occur when a message falls in accordance with an audience's pre-existing beliefs. Basically, audiences are more inclined to agree with a frame when the frame conveys certain beliefs, values or knowledge

already held by the audience. Should the audience not agree with the frame, they are more likely to go elsewhere to find information that corroborates their views or beliefs. It is then, perhaps, most important for frames to address the knowledge or beliefs directly that people agree or disagree with, with the hope that this direct confrontation will help initiate behavioral change.

Cappella and Jamieson (1997) discuss the idea of a cumulative process of increased cynicism which they refer to as the spiral of cynicism as a media effect. The spiral of cynicism, as they describe it, is a self-reinforcing attitude that the public has towards politicians. According to the authors, when journalists frame political events strategically, they activate existing beliefs and understandings shared by the public that view politicians as corrupt, influenced by self-interested lobbyists, guided by the need to be re-elected, etc. Part of the reason is that media consistently frame politics in terms of battles (i.e., who won, who lost), corruption, and personal interests. The way media frame coverage of political events then reinforces the public's already existing attitude and beliefs concerning politicians, and the result is a spiral of cynicism. The public agrees with the frames media use to cover politics, and therefore, the process is self-enforcing.

Recently, there has been a growing body of public health research related to the impact of message frames on people's behavior and interpretations of public health messages. Several studies have demonstrated the impact of message framing in affecting rational choice and behavior.

Kahneman and Tversky (1981) showed that questions pertaining to the loss of human lives could be framed in ways that changed a person's perceptions of health issues. Shen (2007) demonstrated that message framing affected how people process persuasive health messages.

Results from Shen's study showed that advantage framing produces stronger positive emotions in people, whereas disadvantage framing produces stronger negative emotions.

Another study by Rivers et al. (2005) demonstrated that message framing could influence whether women attending a community health clinic would choose to receive a Pap test. Findings from the study supported River's hypothesis that loss- and gain-framed messages could influence health behaviors. However, the persuasiveness of these messages depended on the risk involved in performing the behavior. Loss-framed messages, which emphasize the costs of not detecting cervical cancer early (i.e., a risky behavior), and gain-framed messages, which emphasize the benefits of preventing cervical cancer (i.e., a less risky behavior), were the most persuasive in motivating women to obtain a Pap test.

A study by Maheswaran and Meyers-Levy (1990) demonstrated that the persuasiveness of framed messages may not only be related to loss- and gain-frames, but also to the level of processing (i.e., cognitive thinking) a person must engage in order to comprehend the message. Findings of the study support the view that positively framed messages may be more persuasive when people are not required to engage in significant consideration of the message, while negatively-framed messages may be more persuasive when the message requires significant thought to comprehend. Similar findings were published by Robyn LeBoeuf and Eldar Shafir (2003).

All of the above cited studies suggest message framing can have a significant impact on public health behaviors. Therefore, it is important to consider how media frame public-health messages directed towards the public.

Agenda setting

It is important to understand the difference between framing and agenda-setting, which is a related concept. Denis McQuail (2000) defines agenda setting as "a process of media influence (intended or unintended) by which the relative importance of news events, issues or personages in the public mind is affected by the order of presentation, the greater is the importance attributed by the news audience" (p.491). Simply stated, agenda setting is a theory of communication that posits that the media can affect the public's perception of the importance of news by covering certain stories/articles more than others. For example, Anna Nicole Smith's death received significant media coverage in the United States. This may have led some individuals to perceive her death as important or newsworthy.

Entman (1993) explains that frames may have an agenda-setting function because they give exposure to certain topics while forcing others into the background. But, as Entman also points out, framing is more than agenda setting, because framing provides a way to think about events, in addition to giving exposure to certain topics over others.

According to Scheufele (1999), framing analysis is related to agenda setting research in that it is concerned with selection and salience. However, while agenda setting research focuses on the selection and salience of issues, framing analysis pays special attention to the aspects or attributes of the issues.

Although this research will not seek to measure agenda setting, it is important to distinguish between agenda setting and framing for the purpose of justifying the decision to use framing within this study.

Media Priming

Media priming is another communications theory related to framing and agenda setting. Media priming refers to a media effect which posits that media can impact people's judgments on issues by giving those issues more or less prominence (McQuail, 2001; Cappella & Jamieson, 1997). For example, if the issue of the war in Iraq is receiving the most news coverage, then people's evaluation of the President will be more closely tied to the President's performance on handling the war in Iraq than other, less covered topics.

Iyengar and Kinder (1987) found that political issues that received more news attention had an impact on people's judgments of politicians who had some direct responsibility for those issues.

Unlike agenda setting, media priming posits that the media are responsible both for the ranking of issue importance and also for how voters judge their leaders on ranked issues (Cappella & Jamieson, 1997). Media affect the impact issues have on judgments by giving those issues more and less prominence. However, media priming—like agenda setting—does not involve how issues are treated in news coverage. Instead, it deals solely with the frequency in which these issues are covered (Cappella & Jamieson, 1997).

CHAPTER 3

RESEARCH QUESTIONS

Primary Question:

1) What are the major news frames and topics found in print media coverage of influenza (flu)?

Secondary Questions:

2) Are different frames used in print media coverage of avian influenza (bird flu), pandemic influenza (flu) and seasonal influenza (common flu)? If so, how do the frames differ for each?

3) Based on the number of articles published using certain frames and flu topics, which frames and flu topics get the most media attention?

4) Do negative stories about flu, flu distribution, flu vaccine or CDC outnumber neutral or positive stories?

5) Do the frames used by print media articles corroborate the key messages of CDC? (See section on CDC's key messages)

CHAPTER 4

METHODOLOGY

Research consisted of a content analysis of print and electronic media articles pertaining to seasonal flu, bird flu or pandemic flu. A content analysis is a standard technique for analyzing texts and identifying news frames (Cappella & Jamieson, 1997; Reber & Berger, 2005).

Articles for the study were manually selected by the primary researcher/coder from a pool of public-health articles distributed internally to CDC staff through via CDC's intranet page and posted by a service called CDC Connects. The primary researcher/coder selected these articles based on their relevance to influenza and the interests of CDC's Influenza Division. The primary researcher is a public health communications specialist working at CDC, who regularly distributes articles related to flu to internal Influenza Division staff daily.

Although the articles used in the study were gathered from CDC's internal intranet, all of the articles are publicly available and could be found via a title search of each publication's archives. It is also possible that some--but not all--of the articles could be found through title and publication searches conducted through Yahoo.com, Google.com or Lexis-Nexus.

The pool of articles from which the flu-related articles used in the study were extracted were searched for, selected and provided to CDC Connects via an external contractor, who did not wish to be identified in this study. Neither a master list of sources from which the articles were selected nor a master list of search terms used to find the articles was able to be obtained for proprietary reasons.

The majority of articles provided to CDC were collected through a manual review of major news outlets and through some proprietary algorithms. Search engines such as Google and Yahoo were used; however, the contractor said these sources were not reliable for finding all

relevant articles, so manual review of major, regional and state-specific news sources was conducted. The pool of articles provided to CDC Connects by the external contractor was selected based on each article's perceived relevance to CDC, as determined by the contractor.

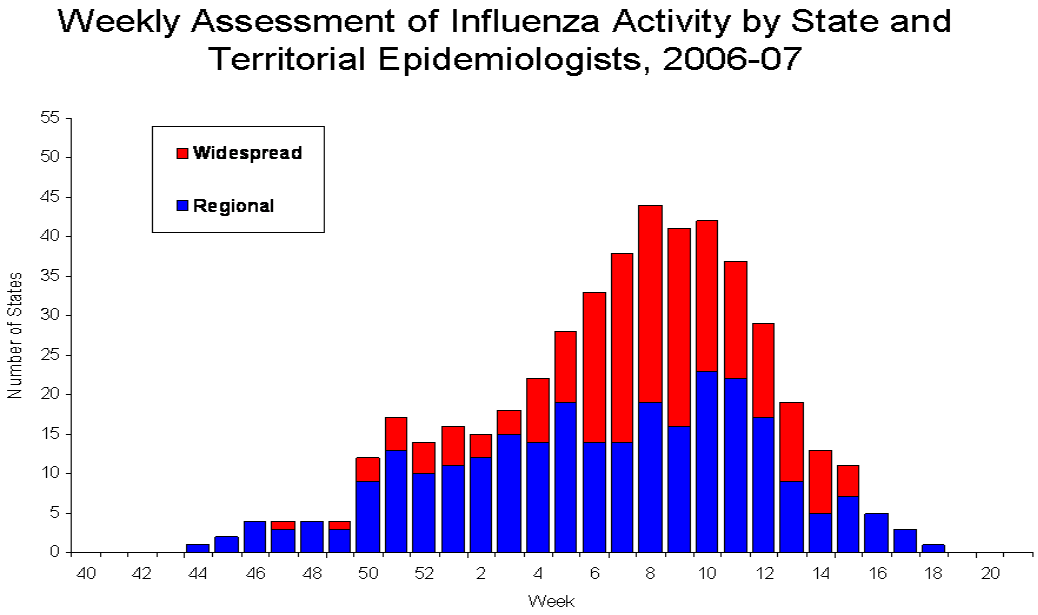
All of the articles used in the study were chosen from one of five types of print media: newspapers, news networks / wire services (e.g., Reuters, the Associated Press, UPI, etc.), websites (e.g., WebMD), broadcast media (e.g., NBC) and magazines.

Because a list of search terms for finding these articles could not be obtained for proprietary reasons, and because a master list of sources was also unavailable for proprietary reasons, additional efforts were made to ensure this study could be replicated by other researchers.

A comprehensive list of all articles used in the study, inclusive of titles, sources of publication and publication dates, was compiled and is available for review in appendix C. This will serve to benefit others who wish to attempt to replicate the findings of this study.

Articles used in the study were published during the 2006-07 flu season, which is defined by the period of time from October 1, 2006 to September 31, 2007. The earliest article used in the study is dated November 15, 2006, and the latest article is dated May 30, 2007. Articles were selected within this time frame in order to capture media coverage of flu during the span of time when flu activity increased, peaked and declined in the United States.

The following figure is useful for explaining the purpose of using this time frame:

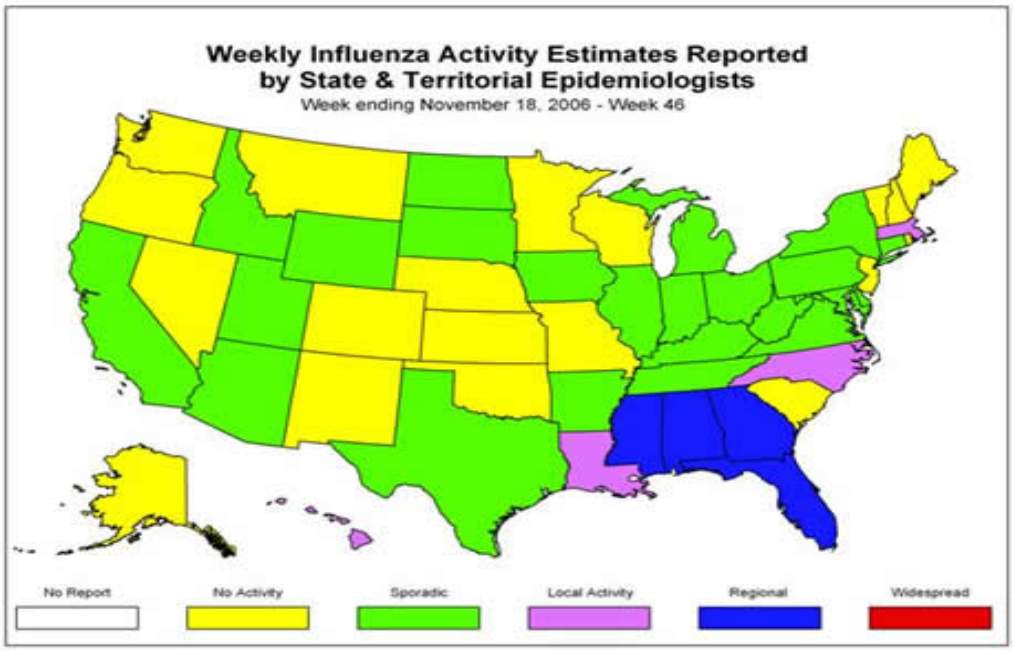


[Figure 4.1: Weekly Assessment of Influenza Activity by State and Territorial Epidemiologists]

The preceding figure 4.1 was created by CDC based on data collected by State and Territorial Epidemiologists (CDC "2006-07 Flu Season Summary," 2007). The first article used in the study was dated November 15, 2006. This date falls within MMWR (Mortality and Morbidity Weekly Report) Week 46 (November 12-18, 2006) (CDC "Weekly Report: Influenza Summary Update," 2006). According to the influenza weekly report for MMWR week 46, a low level of influenza activity was reported in the United States at that time (2006). This is confirmed by the diagram above, which shows low level influenza activity during week 46. The diagram also shows how influenza activity picks up significantly after week 46, peaking in Week 8 (February 18-24, 2007), and decreasing significantly near week 18 (April 29 – May 5, 2007).

As previously stated, the last article used in this study was dated May 30, 2007. This covers through week 18. As shown in the diagram, the span of time between MMWR Week 46 and Week 18 covers the period within which the majority of flu activity was taking place in the United States. As a result, articles have been chosen that were published over the course of this time period.

The following figure displays the activity per state during week 46, according to data reported by State and Territorial Epidemiologists. This chart shows that the North East, Midwest and West regions of the United States reported no flu activity or sporadic flu activity during this time period, when the first articles captured for use in the study were published. The South East region is an exception. As displayed on the map, most states in the South East region of the United States were experiencing local or regional flu activity at this time. This information has been included for reference purposes.



[Figure 4.2: Weekly Influenza Activity Estimates Reported by State and Territorial Epidemiologists – Week Ending November 18, 2006 – Week 46]

Each article chosen was manually analyzed for topics and news frames, which where both inductively and subjectively identified. Once analyzed, data was entered into a Microsoft Excel spreadsheet.

There is an established precedent for using framing theory to analyze frames in news content specific to public health, including news content related to infectious respiratory diseases (a category that includes flu). For example, a study by Tian and Stewart (2005) explored the news frames associated with media coverage of Severe Acute Respiratory Syndrome (SARS) in 2003. For the methodology of their study, Tian and Stewart used a computer-assisted textual analysis. This approach was selected because it allowed specific news frames to be identified in a matter that could be reproduced and verified by others.

According to Semetko and Valkenburg (2000), there are two general approaches to framing analysis: the inductive and deductive approach. The inductive approach involves forming loosely-defined assumptions of the frames that may exist in a news article. After the assumptions are formulated, researchers then try to identify all of the possible frames (Gamson, 1992; Semetko & Valkenburg, 2000).

In comparison, the deductive approach starts by researchers forming stronger presupposed assumptions of the frames that may exist in a news article. Certain frames are predefined, and the researchers then examine the manner and frequency within which these frames occur in a news article (Semetko & Valkenburg, 2000).

Tian and Stewart (2005) chose to use the inductive approach in their framing analysis of the SARS crisis. Their reason for choosing the inductive approach was that it provides more flexibility in identifying news frames that the researchers could easily overlook when predefining their frames before actually looking at the research data.

For a similar reason, this study used an inductive approach as well. News frames were identified inductively as they appeared in news articles. Once a news frame or major topic was identified, it was added as a column category in an Excel spreadsheet. Articles that produce "hits" for each news frame and major topic were counted in the spreadsheet. For the purpose of this study, a "hit" is defined as an instance in which a particular topic or frame is identified in a news article. If an article registers a "hit" for a particular topic or frame, that hit is only counted once by the coder in the coding sheet. In addition, information about the name of the article, date of publication, source of publication, etc., were preserved along with a hit for each of the other news frames included in the article.

This research was conducted using a human review process involving two researchers. The second researcher performed an inter-coder reliability check of 57 articles (16.8 percent of the total articles analyzed in the study), and correlation coefficients were calculated to test the reliability of the review instrument. Computer-assisted textual analysis was not used. There are several benefits and drawbacks to this approach: Drawbacks include: 1) the review process is more time consuming than using a computer-based program; 2) there is an element of researcher bias because frames and topics are subjectively identified, as opposed to identified through a computer; 3) the ability for other researchers to replicate the study is negatively impacted because of possible researcher bias

Benefits to not using a computer-based textual analysis include: 1) the identification of frames was done by two human researchers trained to identify frames difficult to extricate by computer analysis, and a reliability test will ensure consistency in the research; 2) a manual review process may be more likely than a computer to identify frames based on the fact that frames are created through and identified by human interpretation and conceptualization. A

computer identifies frames by finding similar groups of words among different news articles, which is a limited process for identifying complex frames. A computer has difficulty identifying contrasting viewpoints, such as found in conflict frames, which pit the opinions of different sources against one another; 3) some frames that involve the "tone" of an article -- whether negative, positive or neutral -- might prove difficult for a computer-based program to detect; 4) while time consuming, a human-based content analysis does not require a need to purchase costly content analysis programs. Comparing drawbacks to benefits, there is adequate support for the conclusion that a more detailed and accurate conceptualization of news frames can be gathered through a qualitative, human-based content analysis as opposed to a computer-based content analysis. Content analyses using human researchers have been used in other framing studies, such as a study by Bryan Reber and Bruce Berger (2005) that used a human-based content analysis to identify frames in Sierra Club messages.

The Microsoft Excel spreadsheet was used to track the following information:

- **The date the article was published** (e.g., 11/15/2006)
- **Title of the article** (e.g., "Nursing home staff, residents both need shots: study")
- **Source of publication**, (e.g., The New York Times)
- **A unique ID** for each article corresponding to the electronic file name of the article as it is displayed on the hard drive of the computer used for analysis (e.g., 1115024). Once the primary analysis of the data is complete, all electronic copies of the articles used for analysis will be copied onto an electronic storage device for reference. All of the articles will be searchable by the unique ID tracked in the Excel spreadsheet.
- **Total articles used in the study**. The Excel spreadsheet count each article used in the study once, and provides a total tally of all articles studied.

- **Frames** identified for each article were made into columns. For example, if an article discussed seasonal flu, vaccination, and deaths among children (pediatric deaths), then each of these topics would have been entered into the Excel Spreadsheet as a column, and this particular article would receive a hit under each of these topic columns. Frames were subjectively chosen based on their perceived importance in analyzing each article and the hypotheses for study. There was no limit to the number of frames created; however, most articles will relate to one or several frames and major topics.
- **Tally of frames**. The Excel spreadsheet was designed to automatically tally the number of articles that contained each of the frames and major topics identified. This provided data on the percent of total articles that covered specific frames and topics. It also demonstrated which frames dominate media coverage of flu during the flu season. All of the proposed hypotheses were analyzed by looking at these tallies of frames and topics, and when necessary, they were compared to the content of CDC's public health messages.

Description of Topics and Frames/Coding Instructions

The description of topics and frames/coding instructions is located in appendix A along with an addendum.

CHAPTER 5

RELIABILITY TESTING OF CONTENT ANALYSIS CATEGORIES

Holsti (1969) said, “if research is to satisfy the requirement of objectivity, measures and procedures must be reliable; i.e., repeated measures with the same instrument on a given sample of data should yield similar results” (p.135). Therefore, in the interests of objectivity, a reliability check was conducted on each of the topic and framing categories used in the content analysis for this study.

The reliability check was conducted with the assistance of a second coder, who was a Ph.D. level student also from the University of Georgia. Out of the 339 articles analyzed in the study, 57 (16.81 percent) were selected to test reliability. The articles were chosen by selecting every sixth article, starting with the first. Articles were ordered according to their unique document ID number, starting with the lowest number and progressing to the highest.

Coding sheets were developed incorporating the unique document ID numbers for the articles chosen for the reliability test. The articles chosen for the reliability test were printed and labeled according to their unique document ID number. Once the second coder filled the coding sheets, the resulting entries were entered into an Excel spreadsheet to compare against the coding choices made by the original coder. Tallies were maintained of the total number of agreements and disagreements between the coders for each topic category and frame category across all 57 articles chosen. Then, a correlation coefficient was calculated for each topic and frame category to determine the reliability of each variable. The correlation coefficient was calculated based on the formula described by Holsti (1969) and is described below:

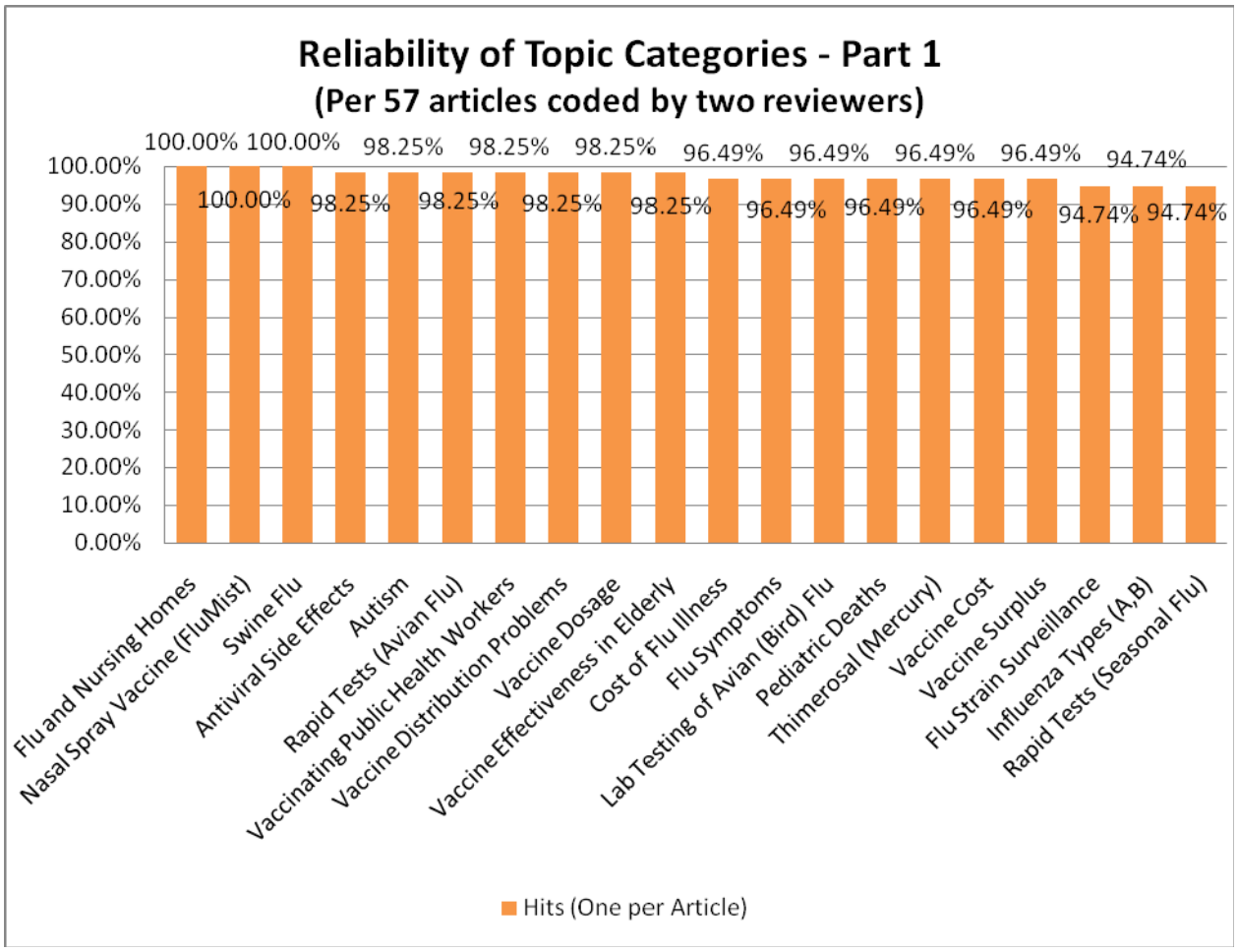
Coefficient of reliability = 2M / (N1 + N2)
M = the number of coding decisions on which the two coders are in agreement
N1 and N2 = the number of coding decisions made by coder 1 and coder 2, respectively (p.140).

Correlation coefficients were also calculated for all topics averaged together and for all frames averaged together for the purpose of obtaining overall reliability.

According to Holsti (1969), reliability is impacted by a coder's skill, insight, experience, clarity of categories and coding rules which guide their use – as well as the degree of ambiguity in the data. In addition, Holsti said, "Experimental studies have demonstrated that training prior to coding can significantly increase the level of intercoder agreement" (p. 135).

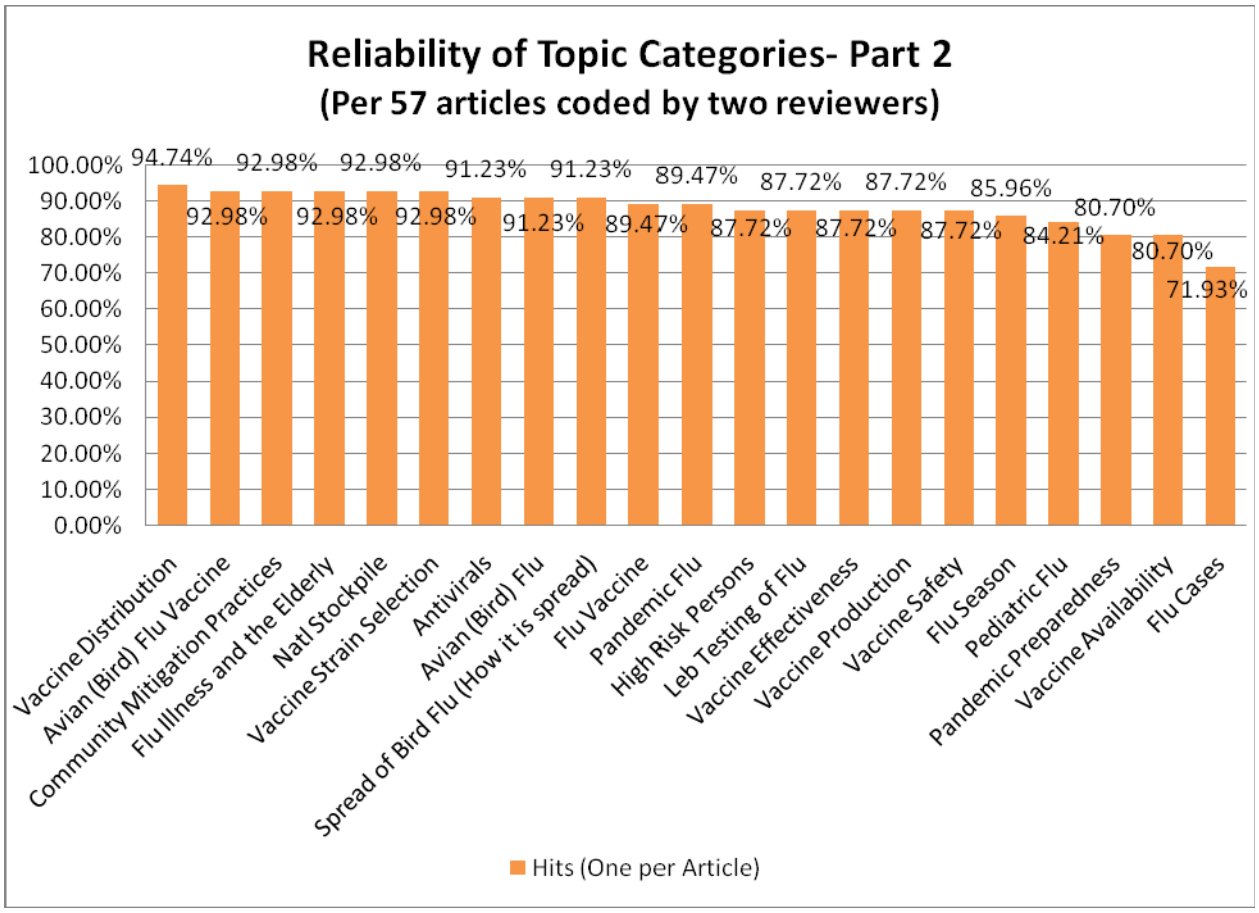
Time was taken to teach the second coder the coding instructions and to answer questions related to interpreting the different categories of topics and frames. Six practices articles were chosen – none of which were part of the reliability test – to help acquaint the second coder with the coding process.

Results of the inter-coder reliability test are presented below. A correlation coefficient was calculated for the reliability of all 41 topic categories (calculated as an average of the reliability coefficients for each topic category), and it was determined to equal 92.73 percent. A second correlation coefficient was calculated for the reliability of all 30 framing categories (calculated as an average of the reliability coefficients for each framing category), and it was determined to equal 88.60 percent. The following figures show the correlation coefficients that were calculated for each individual topic category and framing category.



[Figure 5.1: Reliability of Topic Categories – Part 1]

Figure 5.1 and 5.2 present data on the reliability of topic categories. The topics are arranged in order of highest to lowest reliability. In the first chart above (Part 1), the top 20 most reliable categories are listed, and even the categories that received the lowest reliability scores in this chart were reliable, with correlation coefficients of 94.74 percent. The second chart presents the reliability of the remaining 21 topic categories. The reliability scores range from 94.74 percent at the high end to 71.93 percent at the low end. For the purpose of this study, scores over 80 percent will be considered reliable.



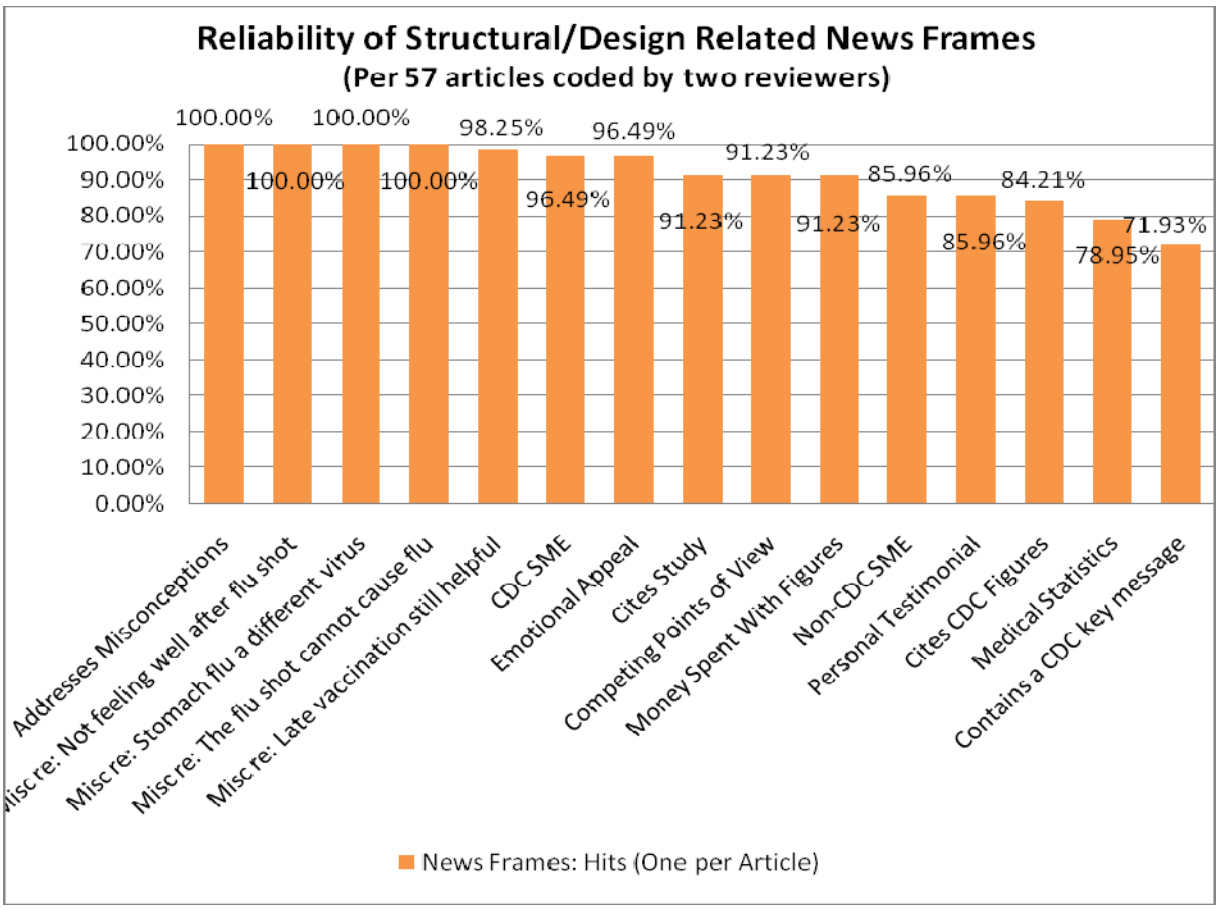
[Figure 5.2: Reliability of Topic Categories – Part 2]

According to Holsi (1969), "when pretesting reveals poor agreement among coders, the analyst should be alert to the possibility that the source of disagreement lies in the categories rather than the judges . . . especially if coder training fails to resolve the problem, there is good reason to suspect that the categories are ambiguously defined, inappropriate to the data, or in some other way deficient" (p.136). So in the instance of the topic category entitled "flu cases," having a reliability coefficient of 71.93 percent could be the result of the topic categories being too ambiguously worded in the coding instructions, especially considering that efforts were already taken to train the second coder.

Holsti (1969) said that previous experiments have shown that fully and exhaustively explaining coding categories can help to improve inter-coder reliability. However, Holsti recognizes that not all categories can be exhaustively defined. Other methods for improving reliability include conducting a computer-based analysis, which fell outside of the research pursuits of this study, or adding additional coders, which would prove too time consuming at this point in the study. Therefore, the most practical solution remains to better define the topic and news frame categories that produce a reliability coefficient under 80 percent.

Figure 5.3 and 5.4 display the reliability of framing categories. Figure 5.3 presents the inter-coder reliability of the 15 structural/design related framing categories, which are arranged in order of highest to lowest reliability.

As shown in Figure 5.3 on the following page, reliability of structural/design related framing categories ranged from 100 percent to 71.93 percent. There were two categories that scored below the acceptable range of 80-100 percent. The first was the “medical statistics” category, which had a reliability coefficient of 78.95 percent. And the second category was “contains a CDC key message,” which had a reliability coefficient of 71.93 percent.

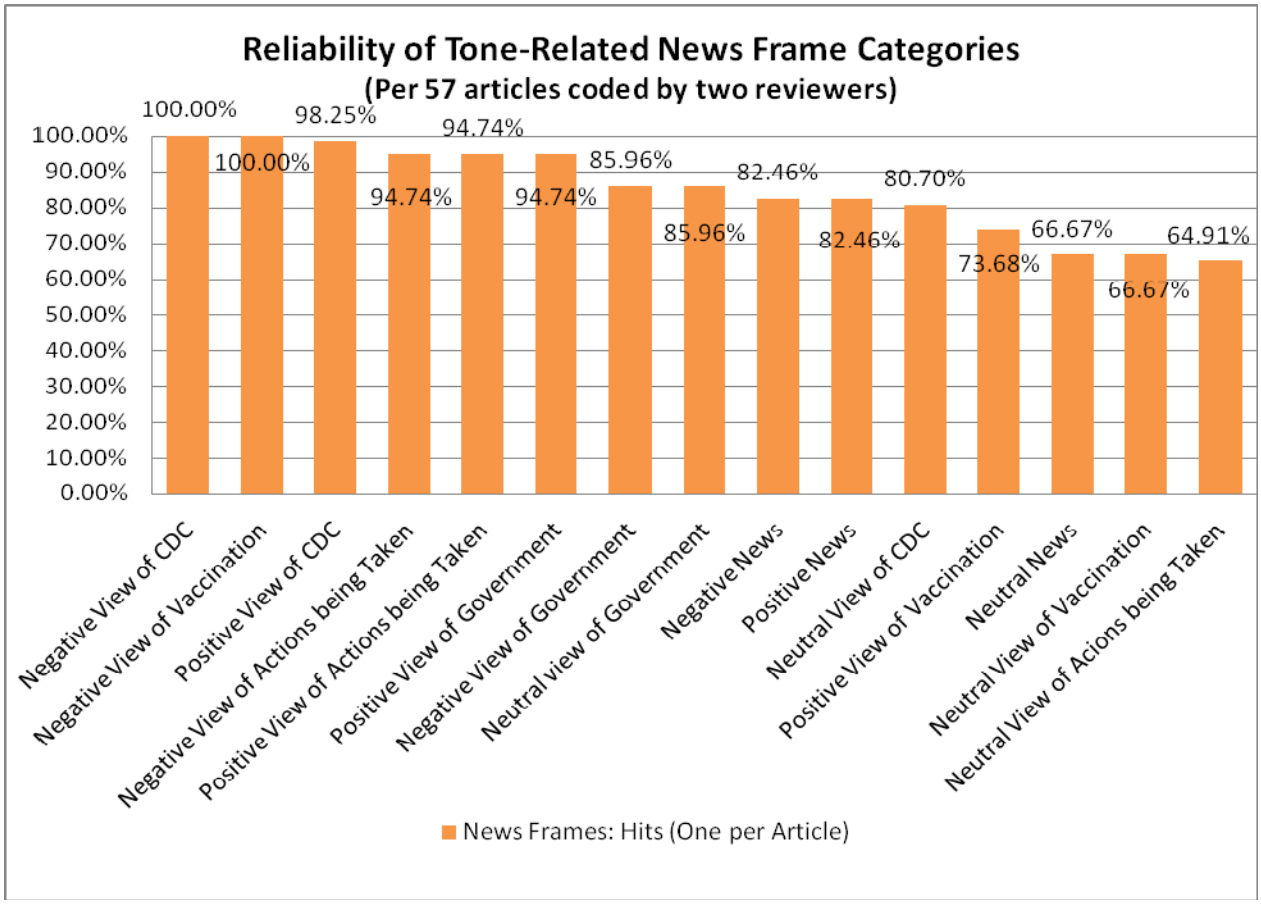


[Figure 5.3: Reliability of Structural/Design-Related News Frames]

As previously explained, the best way to improve the reliability of these categories will be to exhaustively – or at least in a more detailed and example driven method – describe the categories and how to code them in the coding instructions. For this purpose, revised coding instructions for these categories have been written and can be found within the addendum to the descriptions of topics and frames / coding instructions located within appendix A.

Figure 5.4 on the following page displays the reliability results for the 15 tone-related news frame categories, arranged in order of highest to lowest reliability. As shown in the figure, reliability of tone-related news frame categories ranged from 100 percent to 64.91 percent. There

were four categories that scored below the acceptable range of 80-100 percent, and one category that scored less than 1 percent above 80 percent.



[Figure 5.4: Reliability of Tone-Related News Frame Categories]

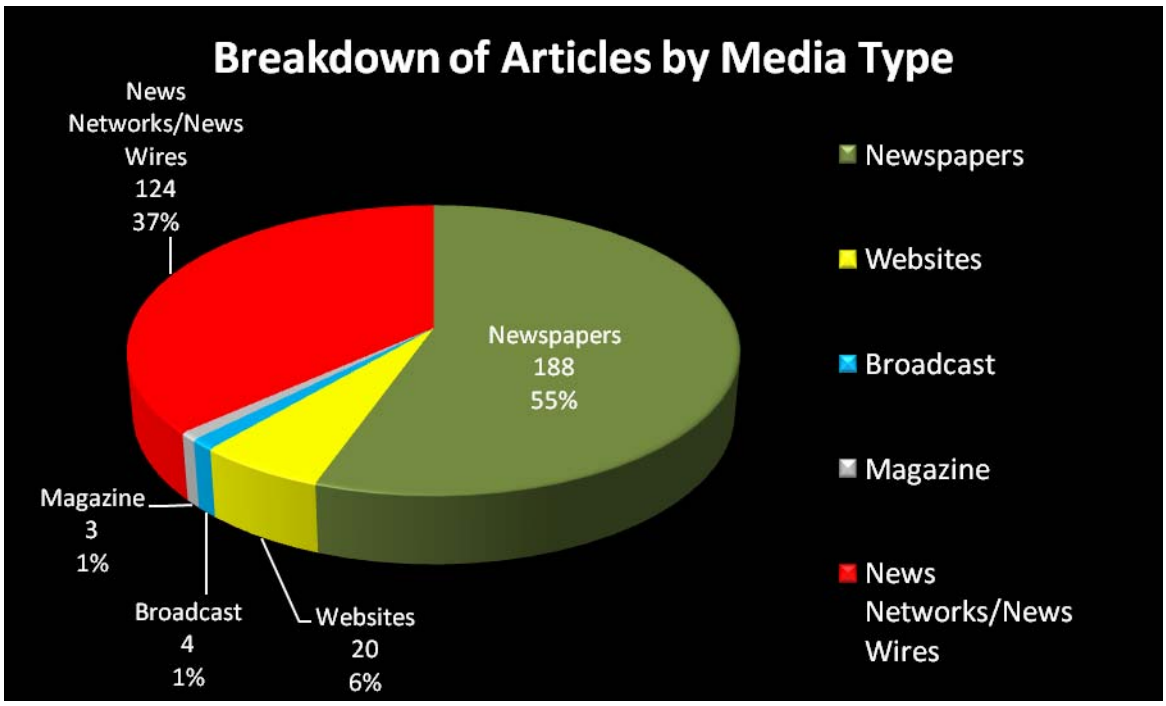
The four categories that scored below 80 percent are listed as follows: “positive view of vaccination (73.68 percent), “neutral news” (66.67 percent), “neutral view of vaccination” (66.67 percent) and “neutral view of actions being taken” (64.91 percent). The reason for the low reliability of these categories may be two-fold: 1) because these categories involve interpretation of tone, they may simply be highly subjective; or 2) it is possible that these categories were not defined with adequate examples or specificity in the coding instructions. To address the latter concern, revised coding instructions were written and can be found within the addendum to the descriptions of topics and frames / coding instructions located in appendix A.

CHAPTER 6

RESULTS

A total 339 print media articles were analyzed as part of the study. Articles were selected from five types of media, including: newspapers, news networks/wire services, websites, broadcast news, and magazines. Articles were selected from 129 unique sources, the majority of which were city newspapers (dailies). An alphabetical listing of all media sources used in the study can be found in appendix C.

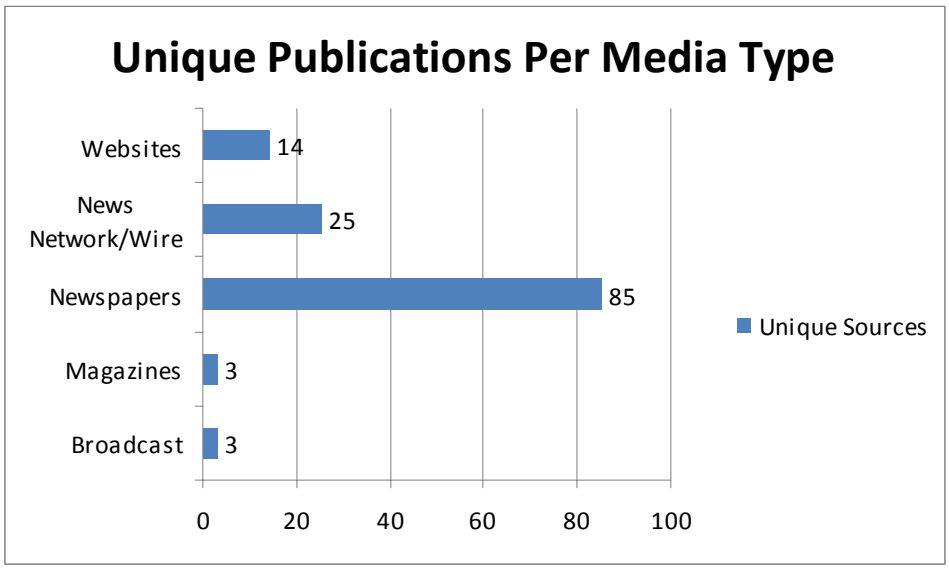
As shown in Figure 6.1 below, the majority of articles studied came from newspapers, which accounted for 188 total articles and 55 percent of all articles used. Newspapers included daily papers associated with cities across the country, major U.S. newspapers and a select few international newspapers.



[Figure 6.1: Breakdown of Articles by Media type]

The second largest group of articles was selected from news networks/wire services, such as the Associated Press, Reuters and United Press International. News networks/wire services accounted for 124 total articles and 37 percent of all articles studied.

Websites, broadcast media and magazines accounted for a combined 27 articles, which is only 8 percent of all articles studies. The specific breakdown of articles selected from websites, broadcast media and magazines is displayed in the Figure 6.1.



[Figure 6.2: Unique Publications per Media Type]

Figure 6.2 above shows the number of unique publications per media type from which articles were captured. As shown in the figure, the study encompassed articles from 14 unique websites, 25 unique wire services (most of which, however, were subsidiaries/sub-entities of the Associated Press), 85 unique newspapers, 3 unique magazines, and 3 unique broadcast sites. Note that some of the websites used in the study were the online websites of some city newspapers or broadcast media (e.g., AJC.com and CNN.com).

Results from the content analysis of all 339 articles were entered onto an Excel Spreadsheet. Because the spreadsheet tracked the "media type" of each article (i.e., whether an article came from a newspaper, magazine, website, etc.), this study was able to show aggregate results (i.e., data inclusive of all media types) in addition to results broken down by media type. Aggregate data collected from all print media sources (i.e., newspapers, newswires, news websites and broadcast news) will be presented first to show the overall results across all news categories examined in the study.

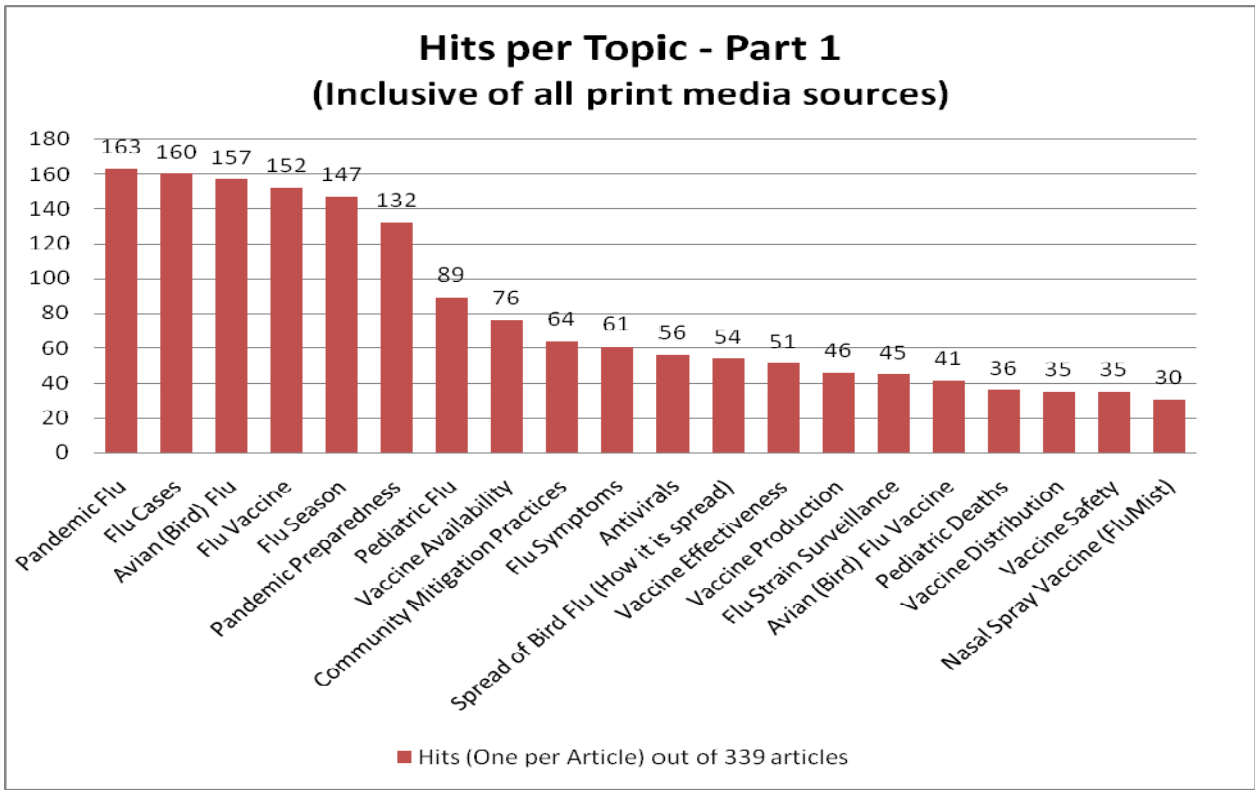
Aggregate Print Media Results

The primary research question asks: What are the major news frames and topics found in print media coverage of influenza (flu)? Influenza, in this case, refers to all kinds of influenza, including seasonal flu, bird flu and pandemic flu.

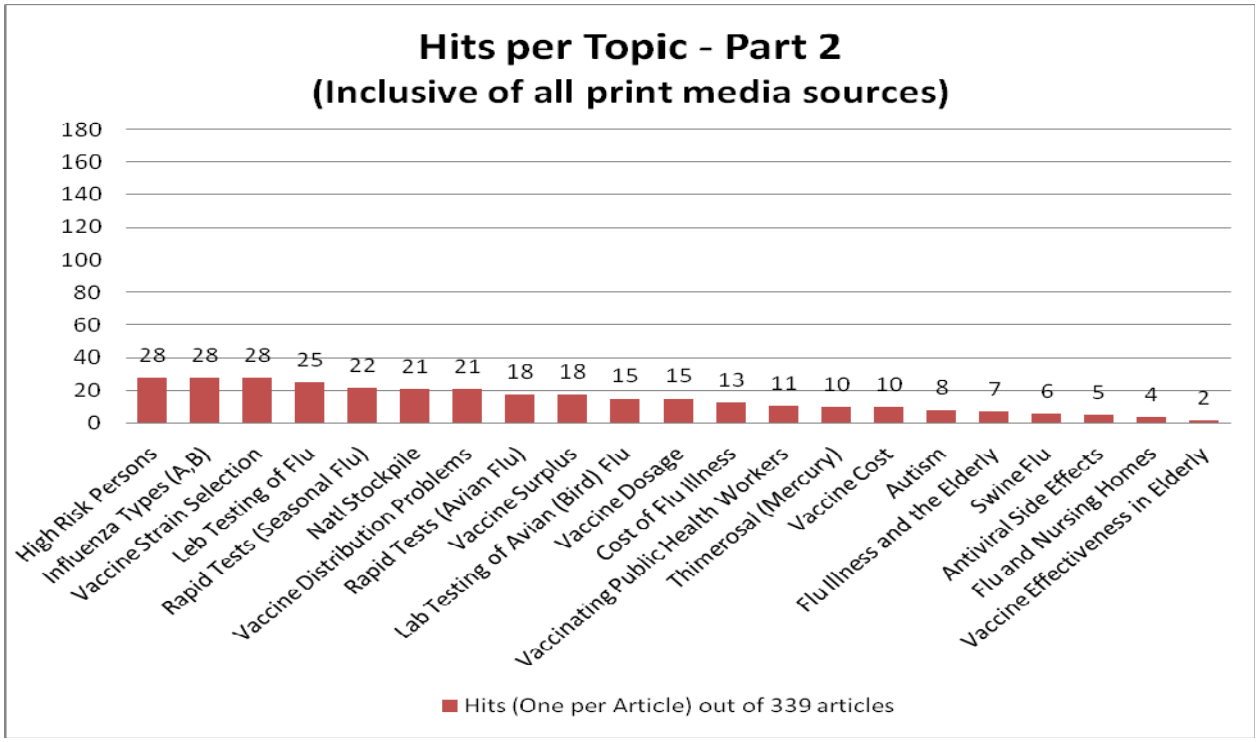
Figure 6.3 and 6.4 on the next page show the topics that generated the most hits across all 339 articles. This data is inclusive of all media sources (i.e., newspapers, news networks/wire services, websites, broadcast media and magazines).

As shown in Figure 6.3 on the next page, the top six topics most frequently covered in news were:

1. pandemic flu (163 hits out of 339 articles: 48%)
2. flu cases (160 hits out of 339 articles: 47%)
3. avian (bird) flu (157 hits out of 339 articles: 46%)
4. flu vaccine (152 hits out of 339 articles: 45%)
5. the flu season and (147 hits out of 339 articles: 43%)
6. pandemic preparedeness. (132 hits out of 339 articles: 39%)



[Figure 6.3: Hits per Topic – Part 1 (Inclusive of all print media sources)]



[Figure 6.4: Hits per Topic – Part 2 (Inclusive of all print media sources)]

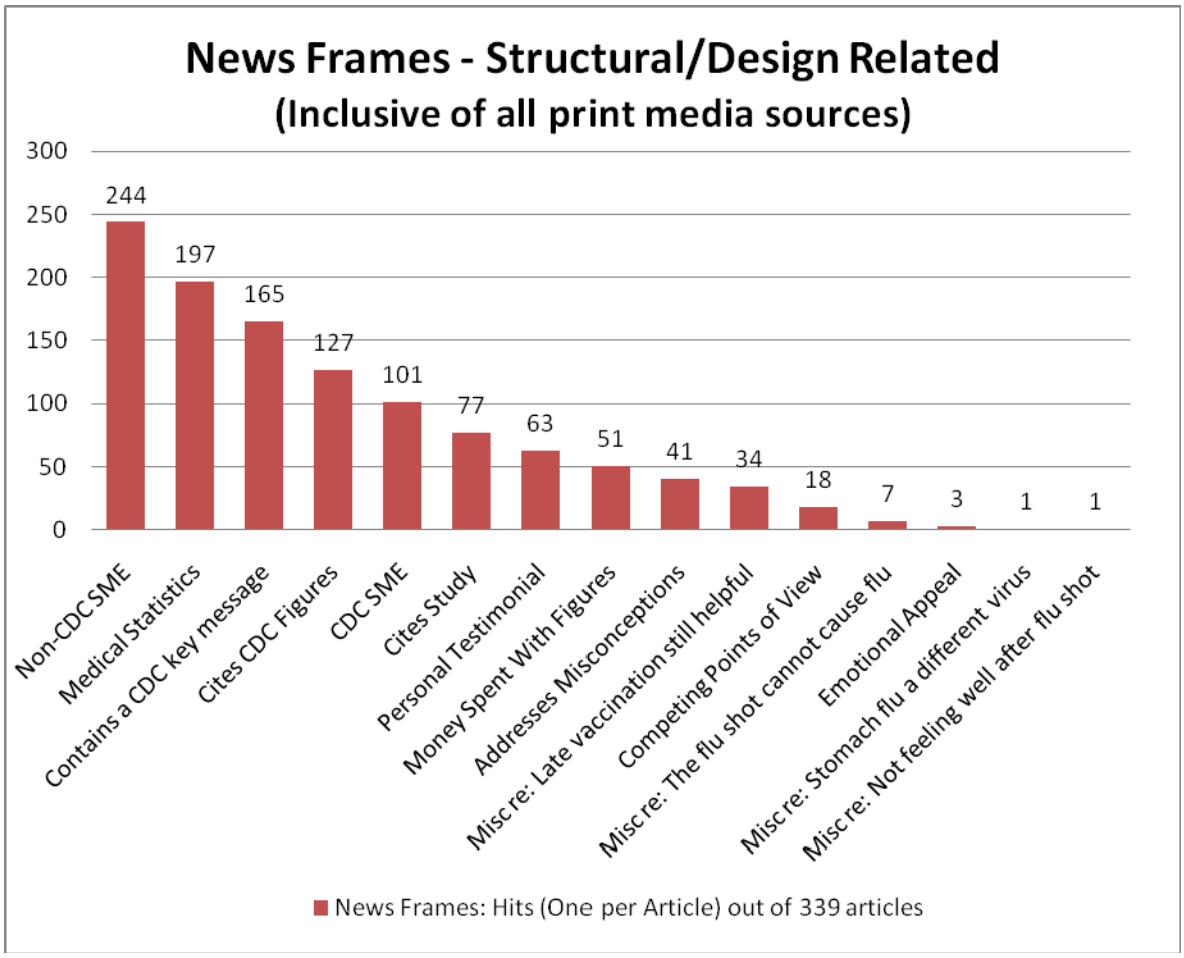
These topics dominated media coverage of flu (inclusive of all categories of flu: bird flu, seasonal flu and pandemic flu). Other significant, but less covered, topics included pediatric flu, vaccine availability, community mitigation practices, flu symptoms, antivirals, spread of bird flu (how it is spread), vaccine effectiveness, vaccine production, flu strain surveillance, avian (bird flu) vaccine, pediatric deaths, vaccine distribution, vaccine safety and nasal spray flu vaccine (FluMist®), in that order. Note: a description of each of these topics is included in the methodology section.

Figure 6.4 shows additional topic hits for the other topic categories, but less than 30 out of the total 339 articles contained a hit for each of those topics listed.

The figures on the following page show the number of hits related to news frames identified in each of the 339 total articles, inclusive of all types of print media used in the study. Figure 6.5 shows hits for structural/design-related frames. Structural/design-related frames are news frames that involve the structure or design of an article. More specifically, these frames involve the structural techniques writers use to convey meaning to the reader.

As shown in Figure 6.5 on the next page, some structural and design-related news frames were commonly associated with articles about flu, bird flu and pandemic flu. The following six structural/design related news frames received the most hits across all types of print media used in the study:

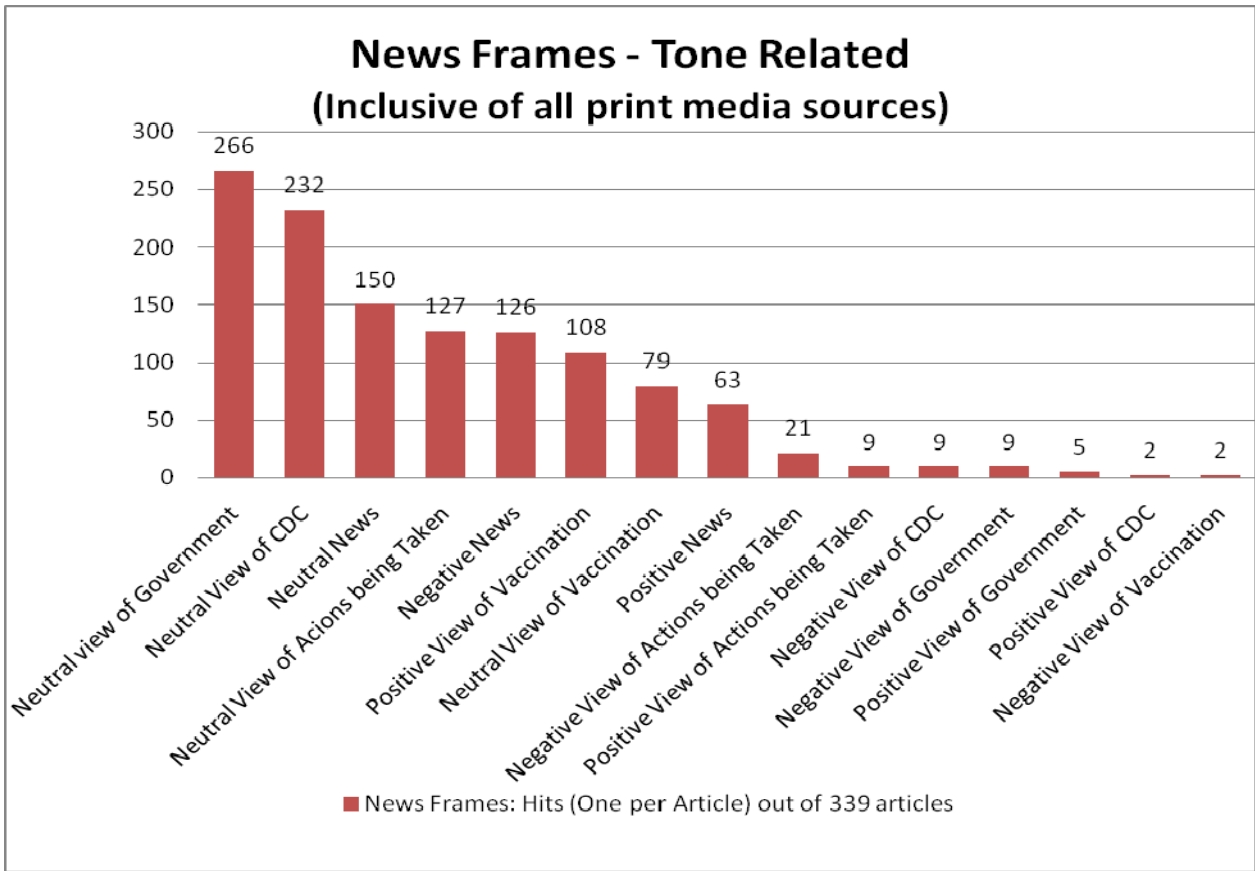
1. Cites “Non-CDC SME” (244 hits out of 339 articles: 72%)
2. Uses “Medical Statistics” (197 hits out of 339 articles: 58%)
3. “Contains a CDC Key Message” (165 hits out of 339 articles: 49%)
4. “Cites CDC Figures” (127 hits out of 339 articles: 37%)
5. Cites “CDC SME” (101 hits out of 339 articles: 30%)
6. “Cites study” (77 hits out of 339 articles: 23%)



[Figure 6.5: News Frames – Structural/Design Related (Inclusive of all print media sources)]

Figure 6.5 also shows the remaining list of structural/design-related news frames that received hits in the study.

Figure 6.6 on the following page displays hits for tone-related news frames across all 339 articles used in the study. Tone-related frames are news frames that involve an article's overall tone, or its tone towards certain topics. These frames are intended to convey tone to the reader.



[Figure 6.6.: News Frames – Tone Related (Inclusive of all print media sources)]

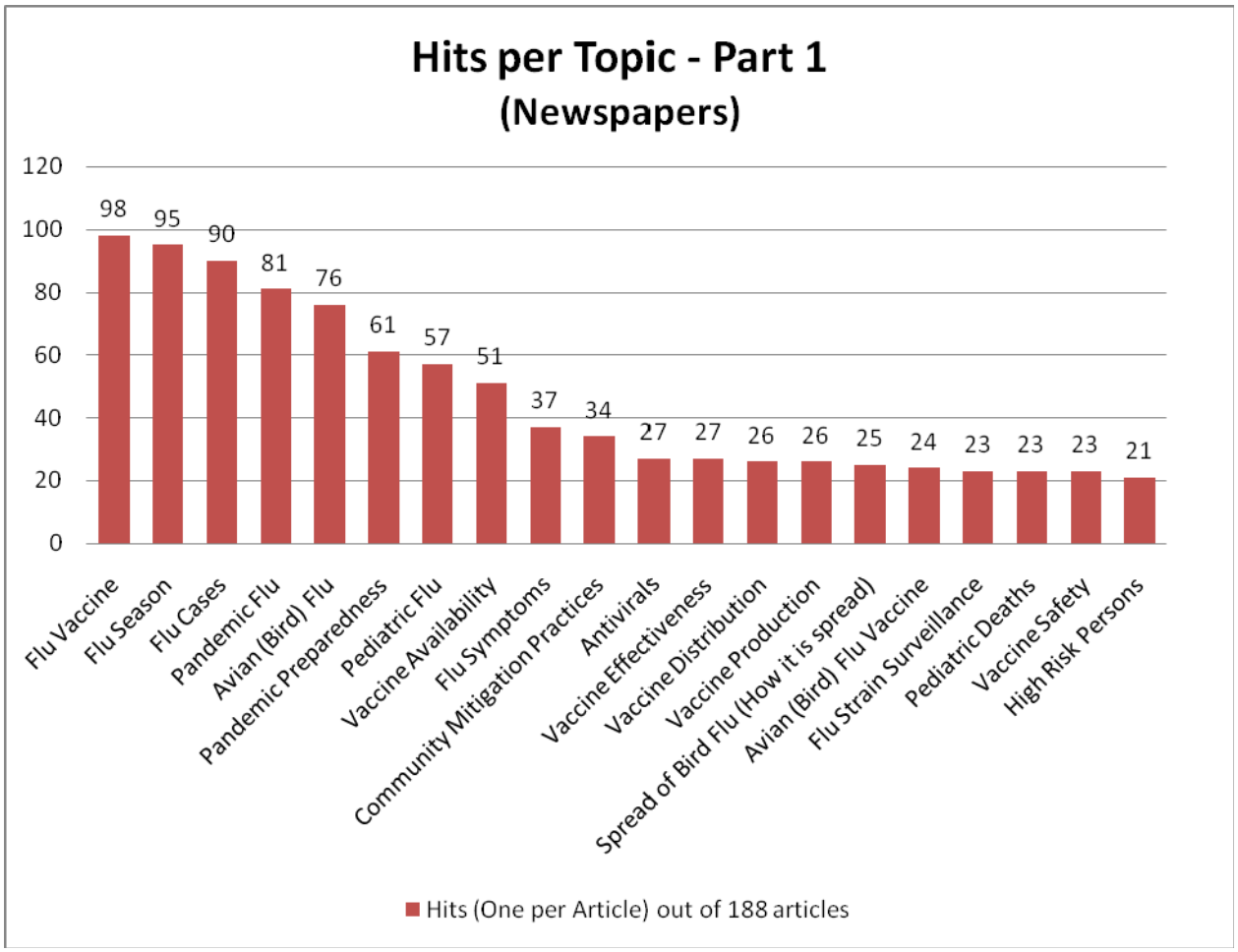
Figure 6.6 above shows the top six tone-related news frames that were commonly associated with print media coverage of flu (inclusive of seasonal flu, bird flu and pandemic flu) across all types of print media used in the study. The most common tone-related news frames are listed below:

1. Neutral view of government (266 hits out of 339 articles: 78%)
2. Neutral view of CDC (232 hits out of 339 articles: 68%)
3. Neutral news (150 hits out of 339 articles: 44%)
4. Neutral view of actions being taken (127 hits out of 339 articles: 37%)
5. Negative news (126 hits out of 339 articles: 37%)
6. Positive view of vaccination. (108 hits out of 339 articles: 32%)

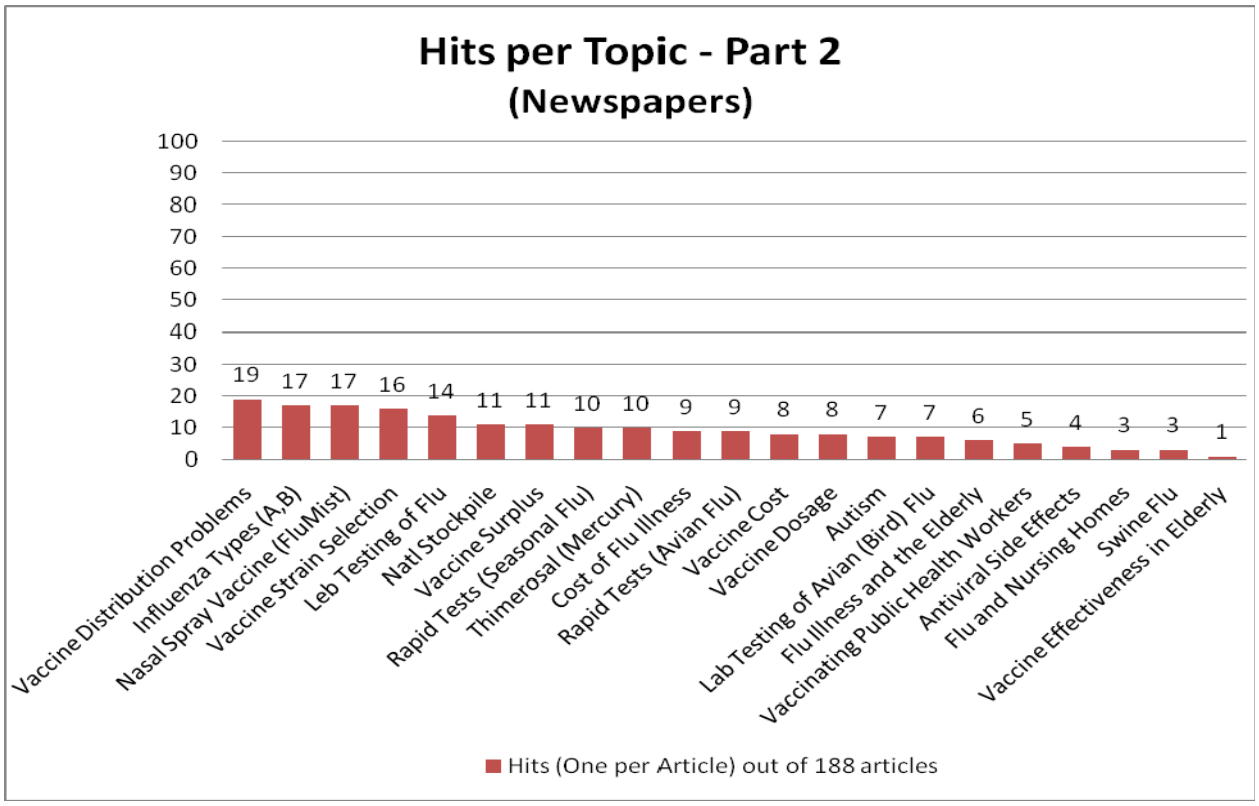
The remaining list of structural/design-related news frames is presented in the Figure 6.6, as well as the number of hits for each.

Newspapers

The previous section displayed the major topics and news frames found in articles from all types of print media. This section will look specifically at data collected from newspapers. The purpose is to determine whether the major topics and news frames found in newspaper articles are similar to those found when all print media sources are combined. The figures below show hits for each topic across all major newspaper articles.



[Figure 6.7: Hits per Topic – Part 1 (Newspapers)]

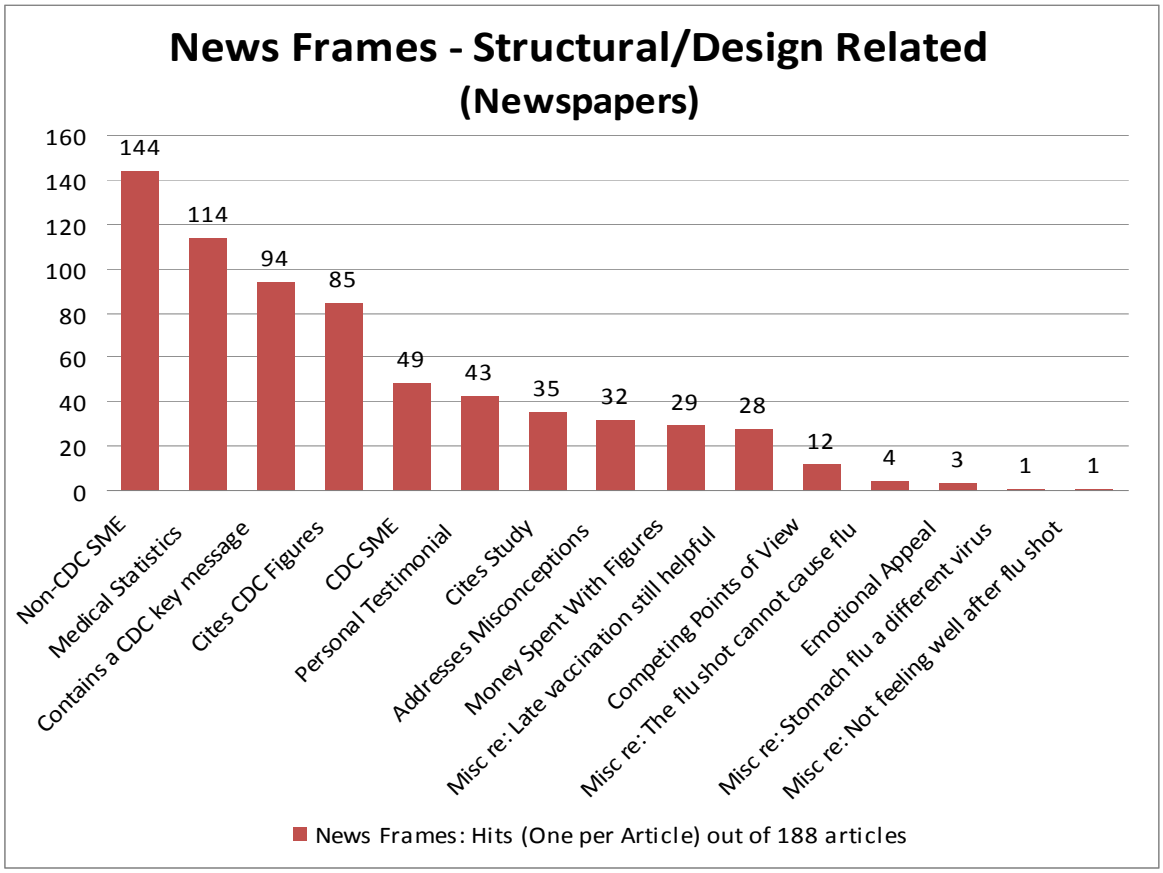


[Figure 6.8: Hits per Topic – Part 2 (Newspapers)]

Newspaper articles accounted for 188 total articles in the study. The top six major topics found in newspapers are listed below:

1. Flu vaccine (98 hits out of 188 articles: 52%)
2. Flu season (95 hits out of 188 articles: 50%)
3. Flu cases (90 hits out of 188 articles: 48%)
4. Pandemic flu (81 hits out of 188 articles: 43%)
5. Avian (bird) flu (76 hits out of 188 articles: 40%)
6. Pandemic preparedeness. (61 hits out of 188 articles: 32%)

As shown above, when data from newspaper articles is isolated and viewed separately from other print media sources, the major topics are emphasized in a different order. Newspapers tend to focus more on flu vaccine and seasonal flu than pandemic flu and bird flu, although significant emphasis is placed on those topics as well. The list of remaining major topics for newspapers can be found in the rest of figure 6.7 and 6.8.

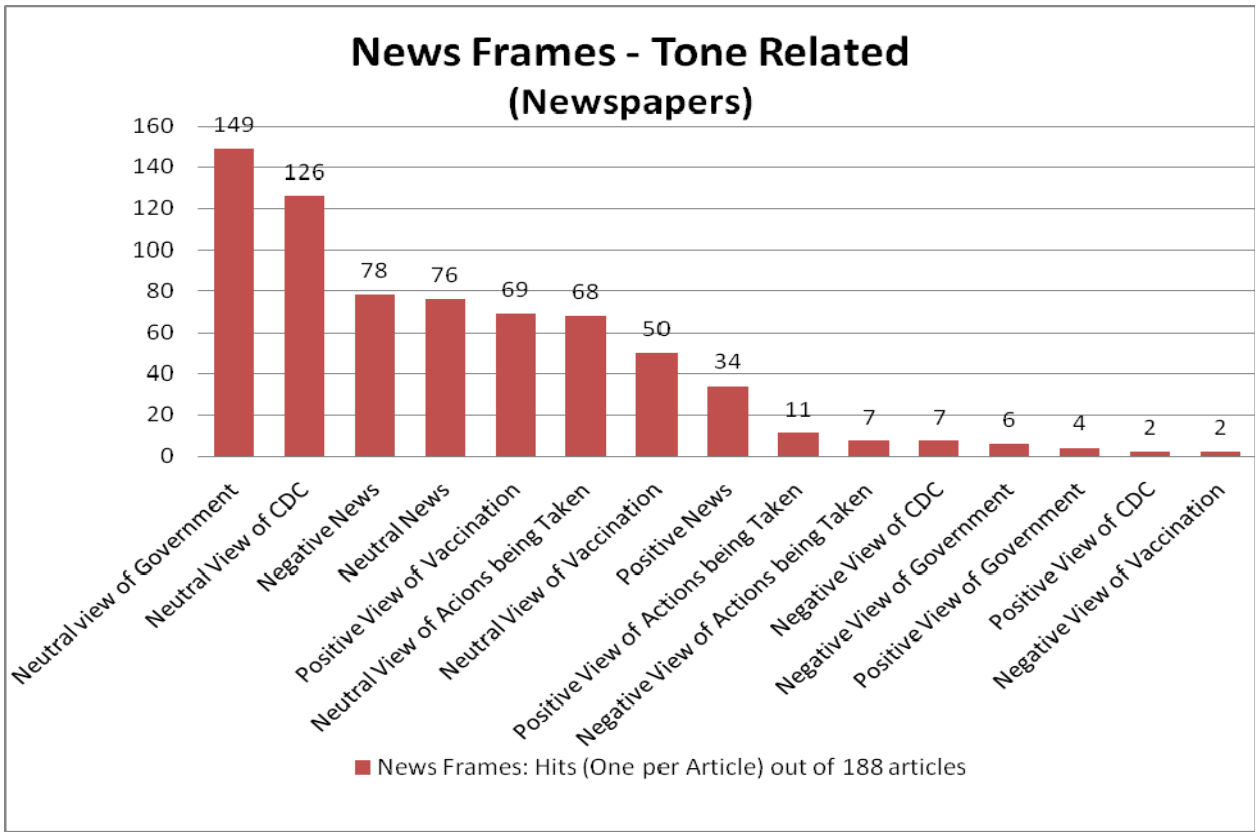


[Figure 6.9: News Frames – Structural/Design Related (Newspapers)]

Figure 6.9 and 6.10 show the news frames found in the 188 total newspaper articles.

The major structural/design related frames are listed in Figure 6.8, and the top six are listed below:

1. Cites "Non-CDC SME" (144 hits out of 188 articles: 77%)
2. Uses "Medical Statistics" (114 hits out of 188 articles: 61%)
3. "Contains a CDC Key Message" (94 hits out of 188 articles: 50%)
4. "Cites CDC Figures" (85 hits out of 188 articles: 45%)
5. Cites "CDC SME" (49 hits out of 188 articles: 26%)
6. Uses personal testimonial (43 hits out of 188 articles: 23%)



[Figure 6.10: News Frames – Tone Related (Newspapers)]

The structural/design related news frames found in newspapers are similar to data compiled from all print media sources. The one exception is a slightly stronger emphasis on use of personal testimonials over cited studies. Otherwise, there is still a significant emphasis on using non-CDC subject matter experts and medical statistics in flu-related stories. It is also good to see that at least 50 percent of newspaper articles contain a CDC key message and at least 45 percent cite CDC figures.

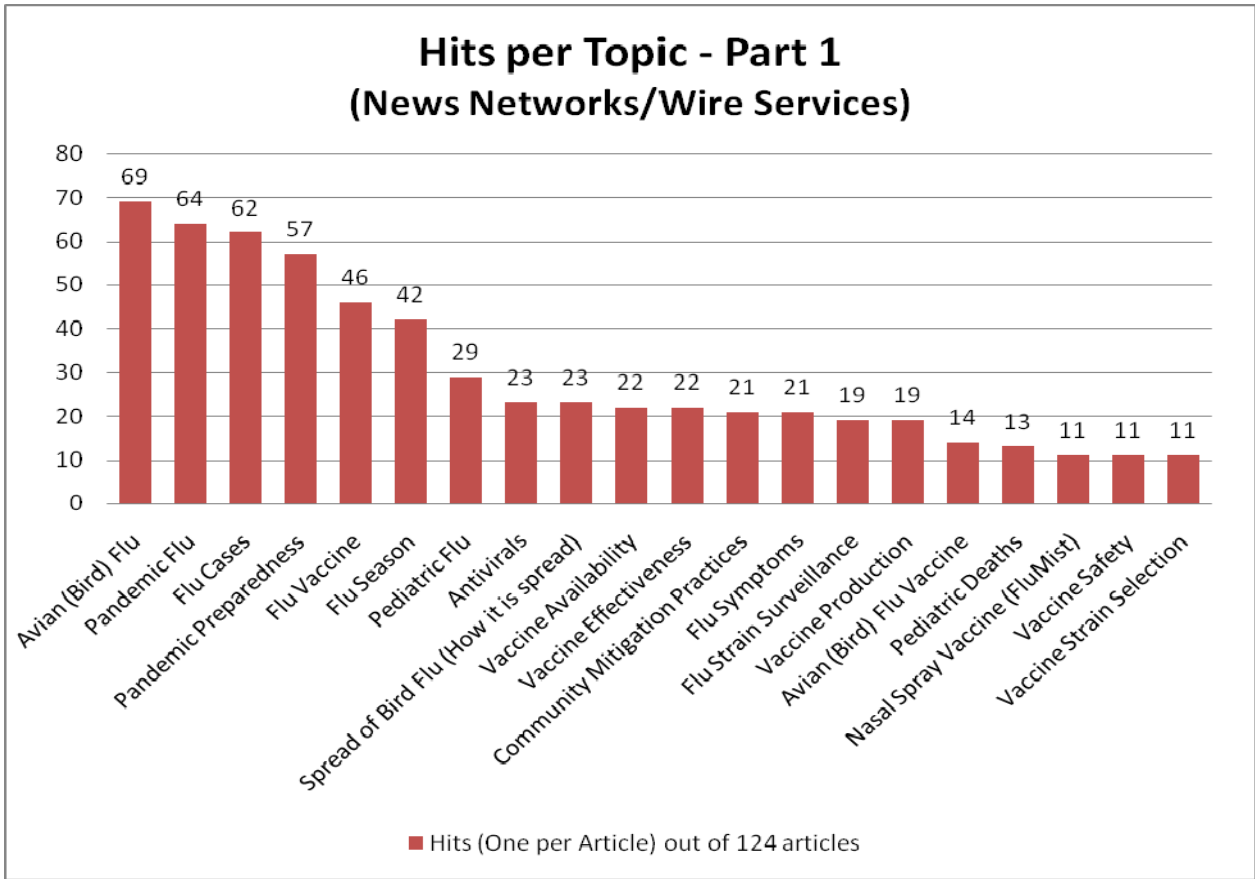
The top six tone-related news frames in newspaper articles are listed as follows:

1. Neutral view of government (149 hits out of 188 articles: 79%)
2. Neutral view of CDC (126 hits out of 188 articles: 67%)
3. Negative news (78 hits out of 188 articles: 41%)
4. Neutral views (76 hits out of 188 articles: 40%)
5. Positive view of vaccination (69 hits out of 188 articles: 37%)
6. Neutral view of actions being taken (68 hits out of 188 articles: 36%)

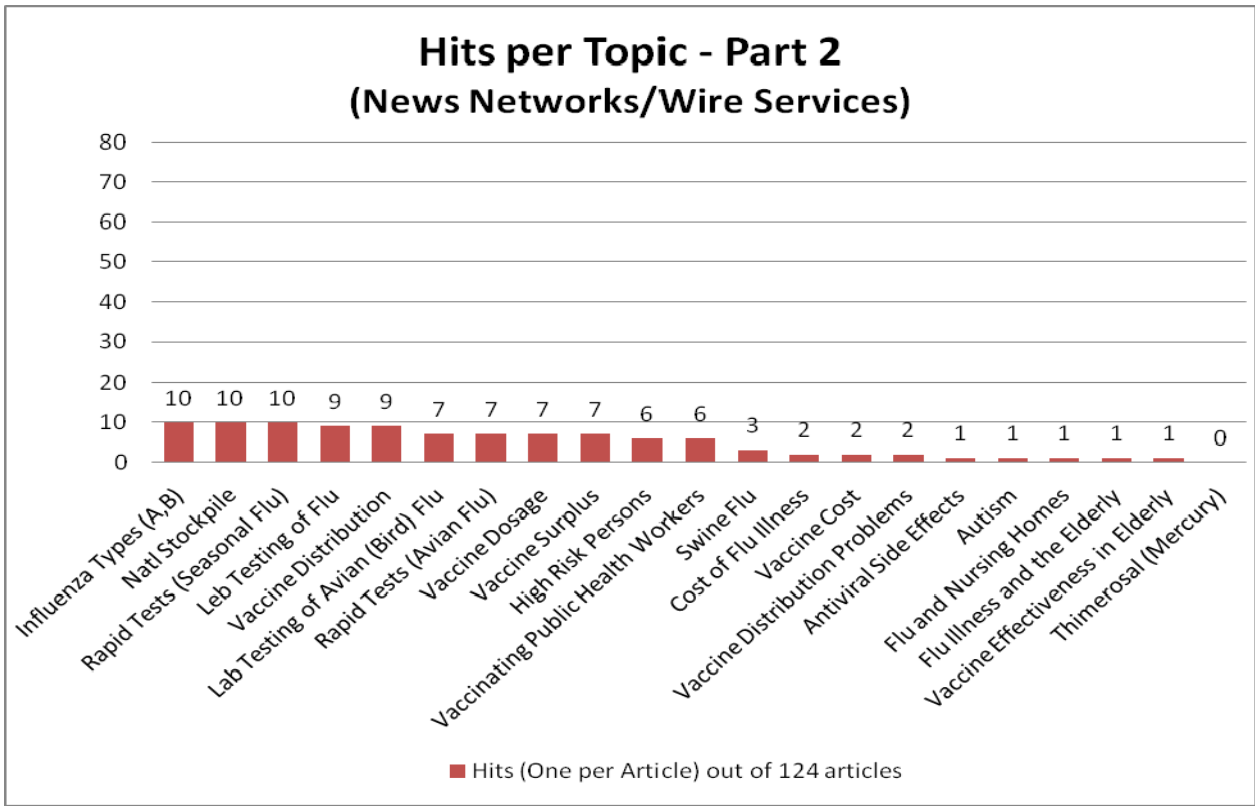
Although newspapers articles exhibit a predominantly neutral view of government and CDC, which similar to data obtained from all print media sources, there is a slightly higher emphasis on negative news stories. Neutral news stories are comparately common as well, and at least 37 percent of the newspaper articles reviewed conveyed a positive view of vaccination. This compares favorably with the only 1 percent of articles that present a negative view of vaccination.

News Networks/Wire Services

The following figures examine the major topics and frames found only in articles published by news networks/wire services. There were 124 total articles obtained from news networks/wire services in the study.



[Figure 6.11: Hits per Topic – Part 1 (News Networks/Wire Services)]



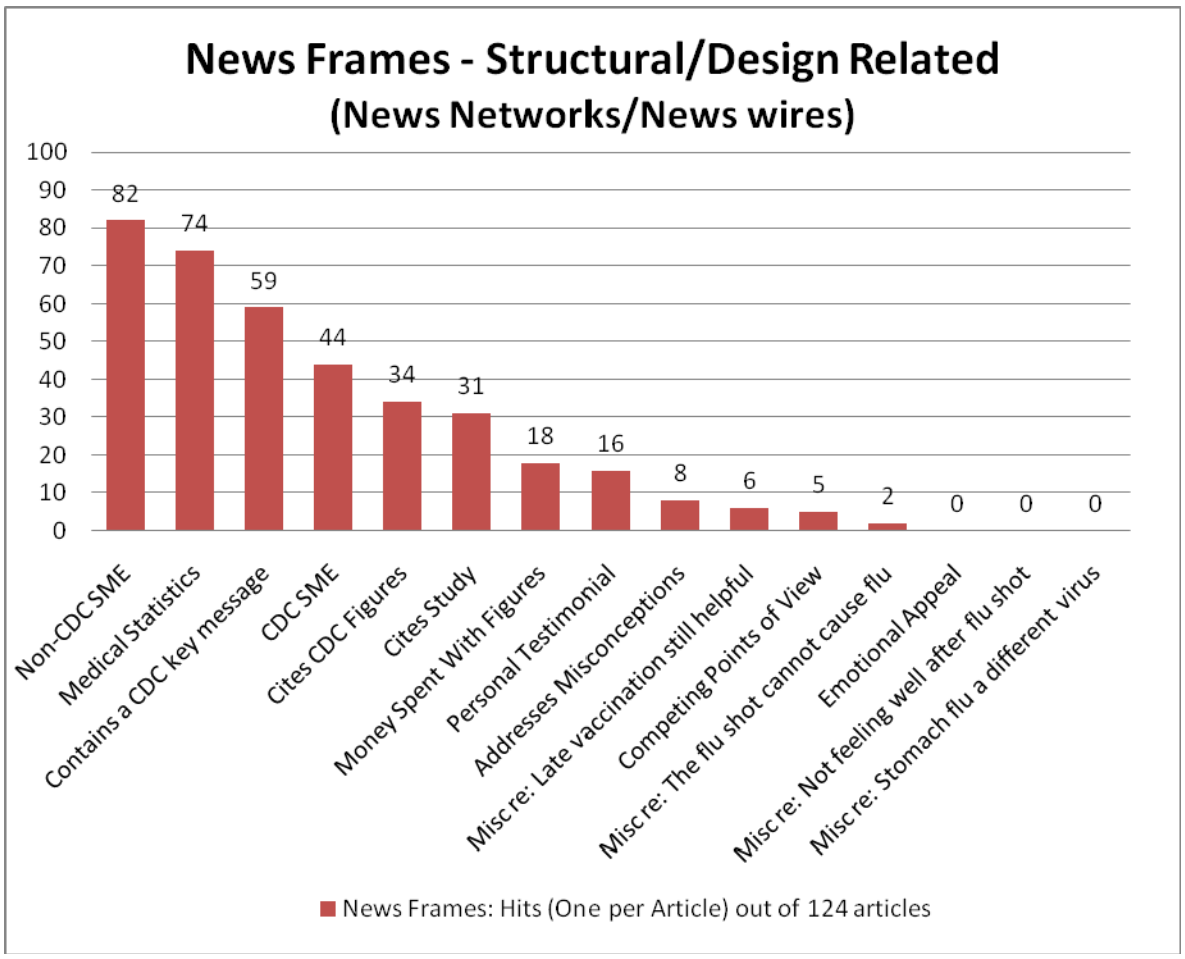
[Figure 6.12: Hits per Topic – Part 2 (News Networks/Wire Services)]

The major topics found in articles published by news networks/wire services are listed below:

1. Avian (bird flu) (69 hits out of 124 articles: 56%)
2. Pandemic flu (64 hits out of 124 articles: 52%)
3. Flu cases (62 hits out of 124 articles: 50%)
4. Pandemic preparedness (57 hits out of 124 articles: 46%)
5. Flu vaccine (46 hits out of 124 articles: 37%)
6. Flu season (42 hits out of 124 articles: 34%)

When articles published by news networks/wire services are isolated from the rest of the print media articles, major topics were emphasized in a different order. Bird flu was the predominant topic covered, followed by pandemic flu. Flu cases (a category that includes cases of both bird flu and seasonal flu) also received a significant amount of attention. When compared to newspapers, news networks/wire services emphasized bird flu and pandemic flu over seasonal flu.

The following figures display news frames found in articles published by news networks/wire services.

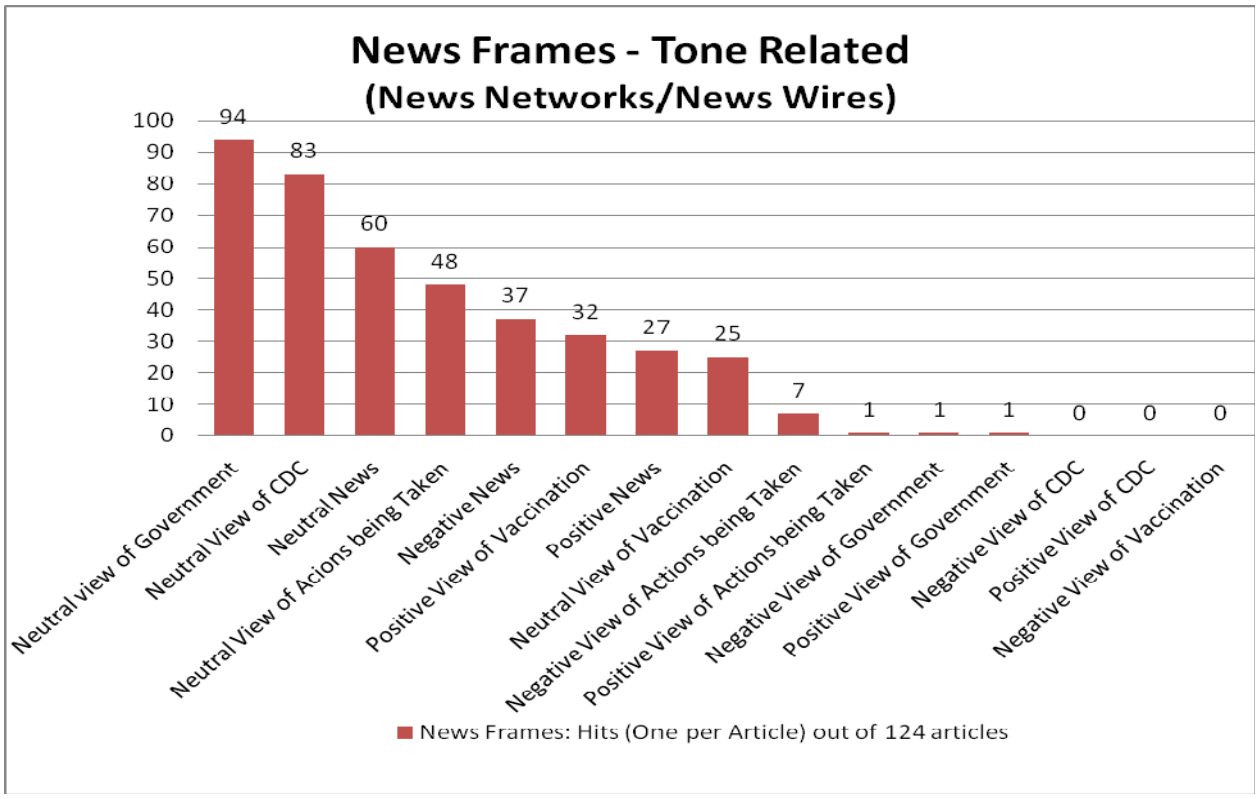


[Figure 6.13: News Frames – Structural/Design Related (News Networks/News Wires)]

The major structural and design-related news frames found in articles published by news networks/news wires are presented in Figure 6.12, and the top six are presented below:

1. Cites “Non-CDC SME” (82 hits out of 124 articles: 66%)
2. Uses “Medical Statistics” (74 hits out of 124 articles: 60%)
3. “Contains a CDC Key Message” (59 hits out of 124 articles: 48%)
4. Cites “CDC SME” (44 hits out of 124 articles: 35%)
5. “Cites CDC Figures” (34 hits out of 124 articles: 27%)
6. Cites study (31 hits out of 124 articles: 25%)

This data suggests that articles published by news networks/news wires also are commonly framed in terms of quotes from non-CDC subject matter experts. News network/news wire articles also rely heavily on use of medical statistics. At least 48 percent of these articles contained a CDC key message.



[Figure 6.14: News Frames – Tone Related (News Networks/News Wires)]

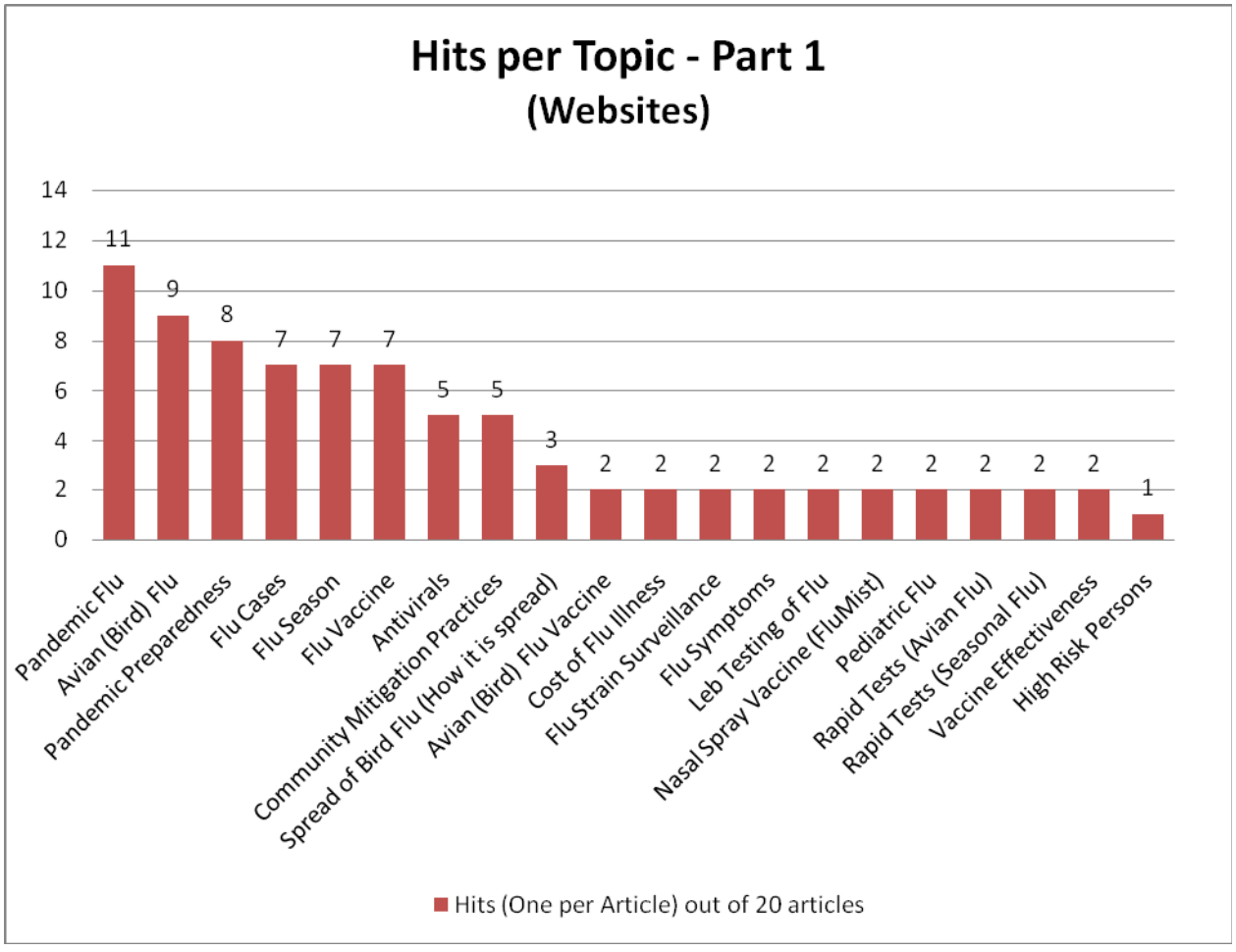
The major tone-related news frames found in articles published by news networks/news wires are presented in the second chart above, and the top six are presented below:

1. Neutral view of government (94 hits out of 124 articles: 76%)
2. Neutral view of CDC (83 hits out of 124 articles: 67%)
3. Neutral News (60 hits out of 124 articles: 48%)
4. Neutral view of actions being taken (48 hits out of 124 articles: 39%)
5. Negative news (37 hits out of 124 articles: 30%)
6. Positive view of vaccination (32 hits out of 124 articles: 26%)

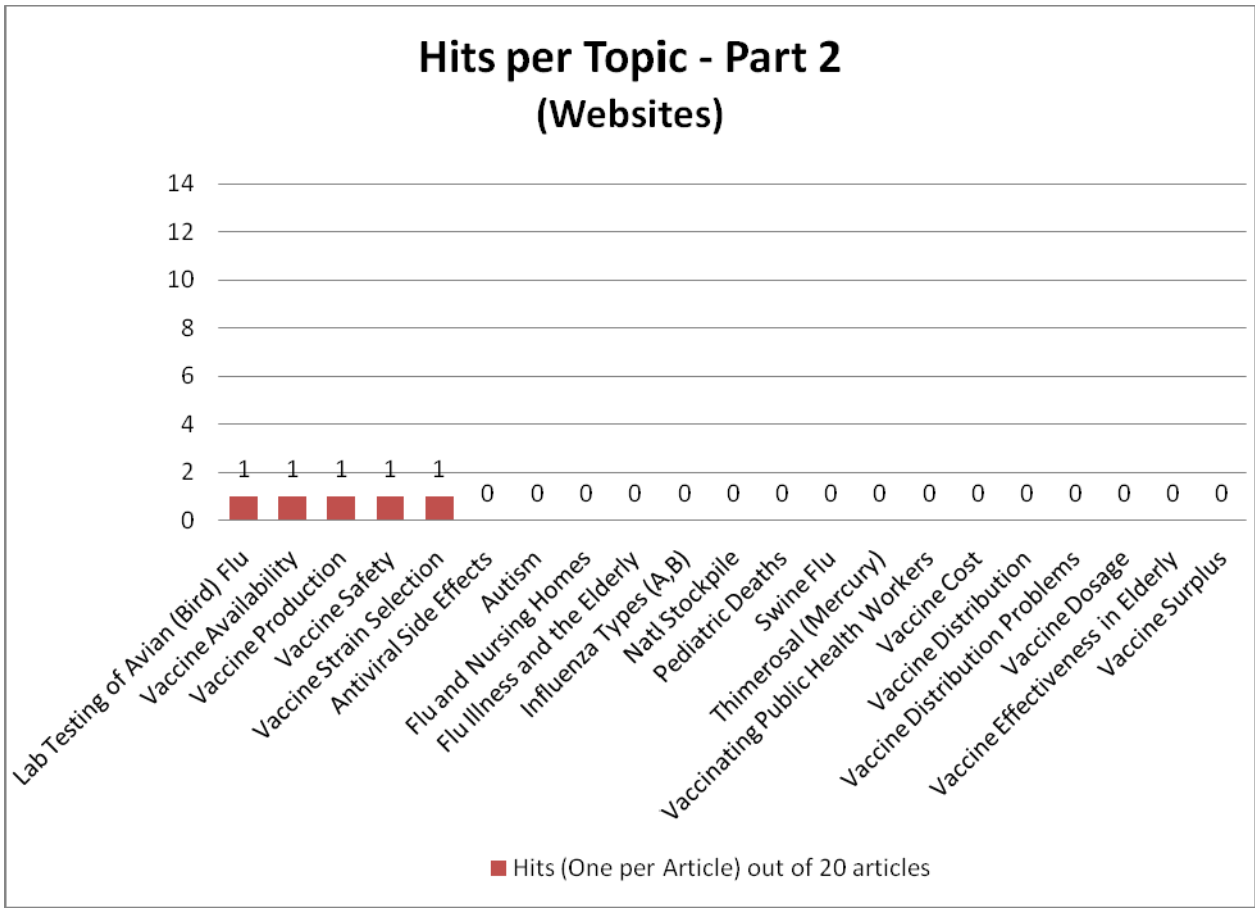
Articles by news networks/news wires also maintained a predominantly neutral view of government and CDC. At least 48 percent of the articles were neutral in tone. Negatively toned news was also common and represented 30 percent of all articles published by news networks/news wires.

Websites

The following charts examine the major topics and frames found in news articles from websites. There were 20 total news articles from websites analyzed in the study, which accounted for 6 percent of all news articles studied across all types of print media.



[Figure 6.15: Hits per Topic – Part 1 (Websites)]



[Figure 6.16: Hits per Topic – Part 2 (Websites)]

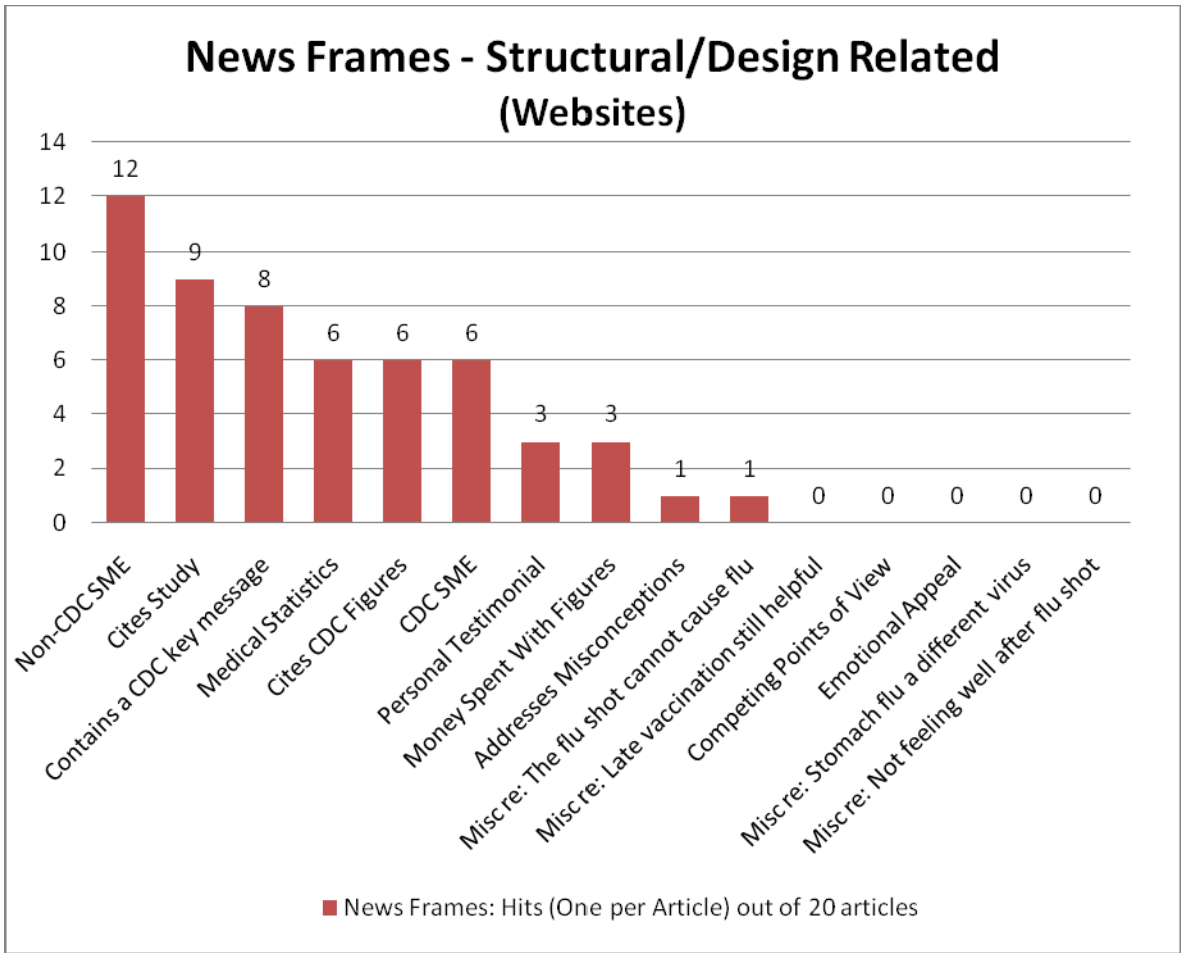
The major topics found in articles from websites are presented in figures 6.15 and 6.16, and the top six topics are listed below:

1. Pandemic flu (11 hits out of 20 articles: 55%)
2. Avian (bird flu) (9 hits out of 20 articles: 45%)
3. Pandemic preparedness (8 hits out of 20 articles: 40%)
4. Flu cases (7 hits out of 20 articles: 35%)
5. Flu season (7 hits out of 20 articles: 35%)
6. Flu vaccine (7 hits out of 20 articles: 35%)

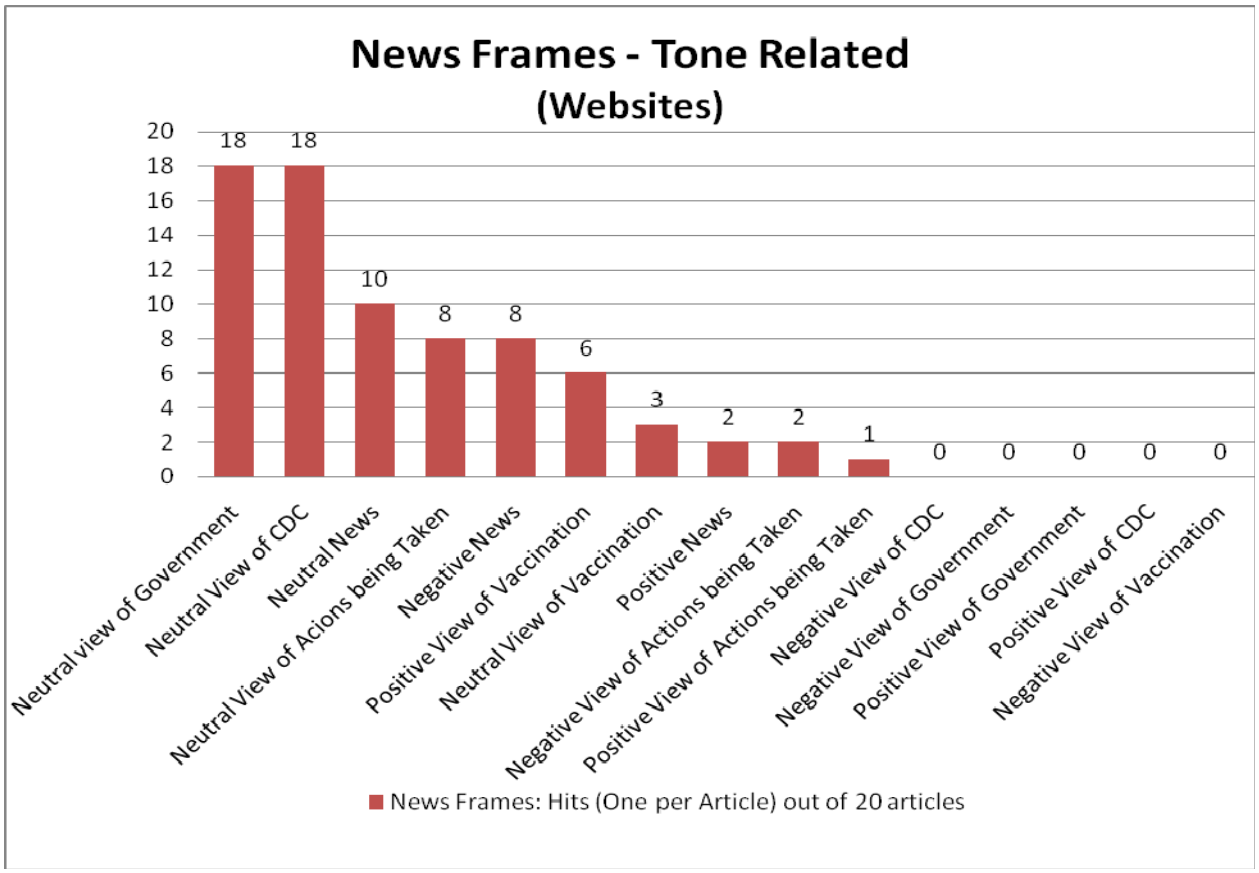
Fewer articles from websites were analyzed in this study when compared to the number of articles analyzed from newspapers and news networks/wire services. However, the major topics found in news network articles were similar. Over half (55 percent) of the articles discussed

pandemic flu and 45 percent mentioned bird flu. Pandemic preparedness was also a popular topic mentioned in 40 percent of articles published by websites. The major topics for website articles were similar to those of news networks/wire services: both types of print media emphasized pandemic flu and bird flu over seasonal flu.

The figures below present the major news frames found in articles from websites:



[Figure 6.17: News Frames – Structural/Design Related (Websites)]



[Figure 6.18: News Frames – Tone Related (Websites)]

The major structural and design-related news frames found in articles published by news networks/news wires are presented in Figure 6.17, and the top six are presented below:

1. Cites "Non-CDC SME" (12 hits out of 20 articles: 60%)
2. Cites Study (9 hits out of 20 articles: 45%)
3. "Contains a CDC Key Message" (8 hits out of 20 articles: 40%)
4. Cites "medical statistics" (6 hits out of 20 articles: 30%)
5. "Cites CDC Figures" (6 hits out of 20 articles: 30%)
6. Cites "CDC SME" (6 hits out of 20 articles: 30%)

Although numbers are small, data suggests that articles published by websites are also commonly framed in terms of quotes from non-CDC subject matter experts. This is similar to data obtained from newspapers and news networks/wire services. Website articles were also commonly framed in terms of studies (45 percent of total articles from websites referenced a study). Similar to data

collected from newspapers and news networks/wire services, website articles often contained a CDC key message (40 percent articles from websites, compared to 50 percent and 48 percent of articles from newspapers and news networks/wire services, respectively). Use of CDC figures was also a common frame found in 30 percent of all articles from websites, along with quotes from CDC subject matter experts, also found in 30 percent of total website articles. This is comparable to data obtained from newspapers (26 percent cited CDC SMEs, 45 percent cited CDC figures) and news networks/wire services (35 percent cited CDC SMEs, 27 percent cited CDC figures.)

The major tone-related news frames found in articles published by websites are presented in Figure 6.18, and the top six are presented below:

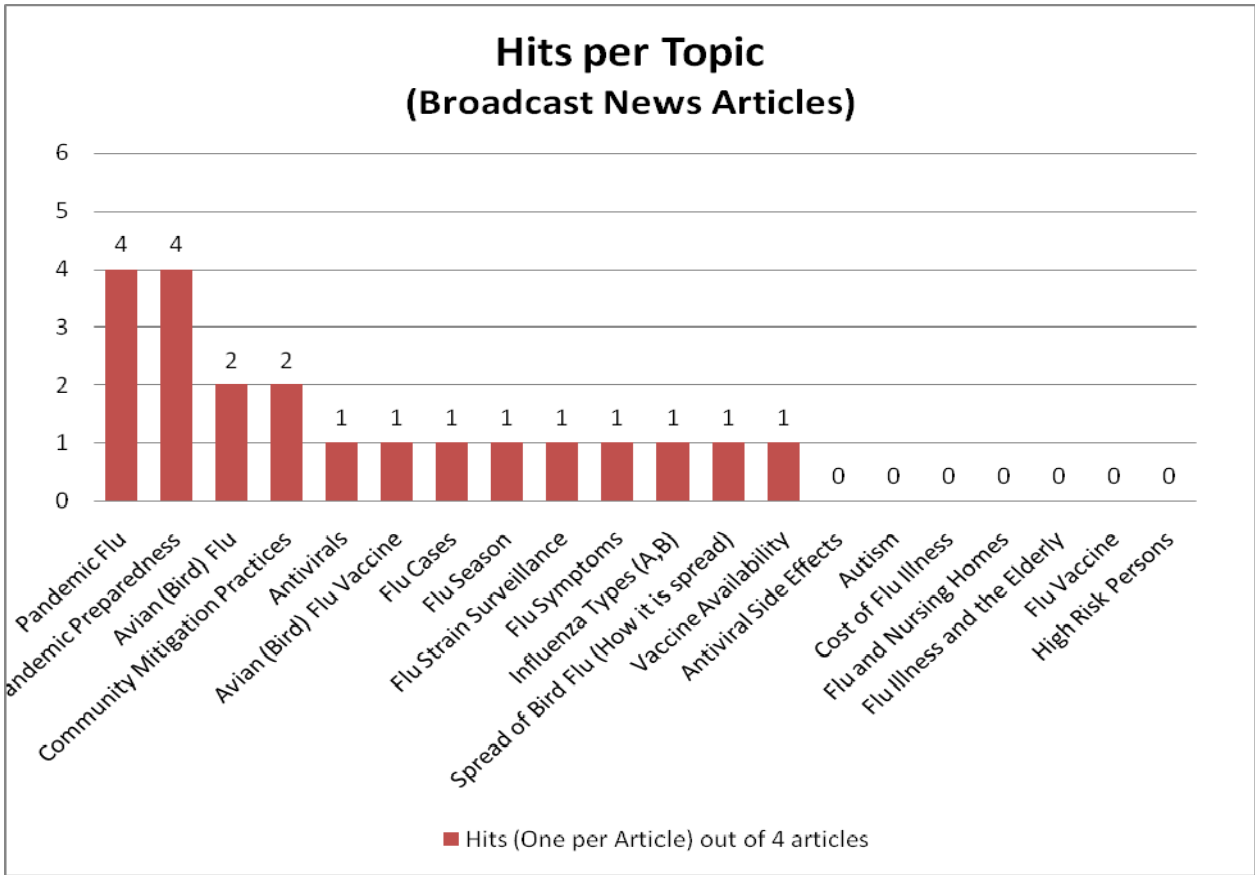
1. Neutral view of government (18 hits out of 20 articles: 90%)
2. Neutral view of CDC (18 hits out of 20 articles: 90%)
3. Neutral news (10 hits out of 20 articles: 50%)
4. Neutral view of actions being taken (8 hits out of 20 articles: 40%)
5. Negative news (8 hits out of 20 articles: 40%)
6. Positive view of vaccination (6 hits out of 20 articles: 30%)

Articles by websites also maintained a predominantly neutral view of government and CDC. At least 50 percent of the articles were neutral in tone. Negatively toned articles were also common and represented 40 percent of all articles published by websites. Websites articles generally framed vaccination favorably: 30 percent of total articles conveyed a positive view of vaccination, as compared to zero articles that presented a negative view of vaccination.

Broadcast

The following figures present the major topics and frames found in articles published by broadcast news sources. There were only four total articles obtained from broadcast news sources, which accounted for only 1 percent of total articles analyzed in the study.
Based on this small number, results are unlikely to be representative of all broadcast news

sources. However, data presented in the charts below will demonstrate whether the topics and frames found in these articles correlate with those found in newspapers, news networks and websites.



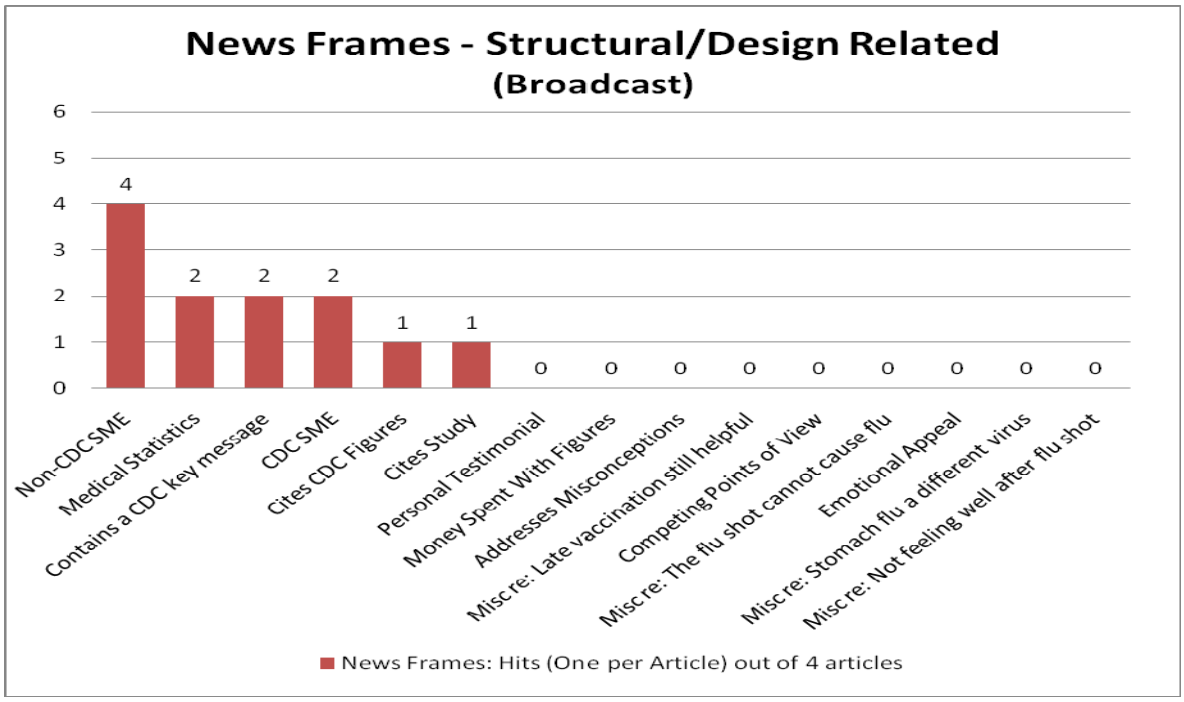
[Figure 6.19: Hits per Topic (Broadcast News Articles)]

The major topics found in the four total broadcast news articles are presented in Figure 6.19 above, and the top six topics are listed below:

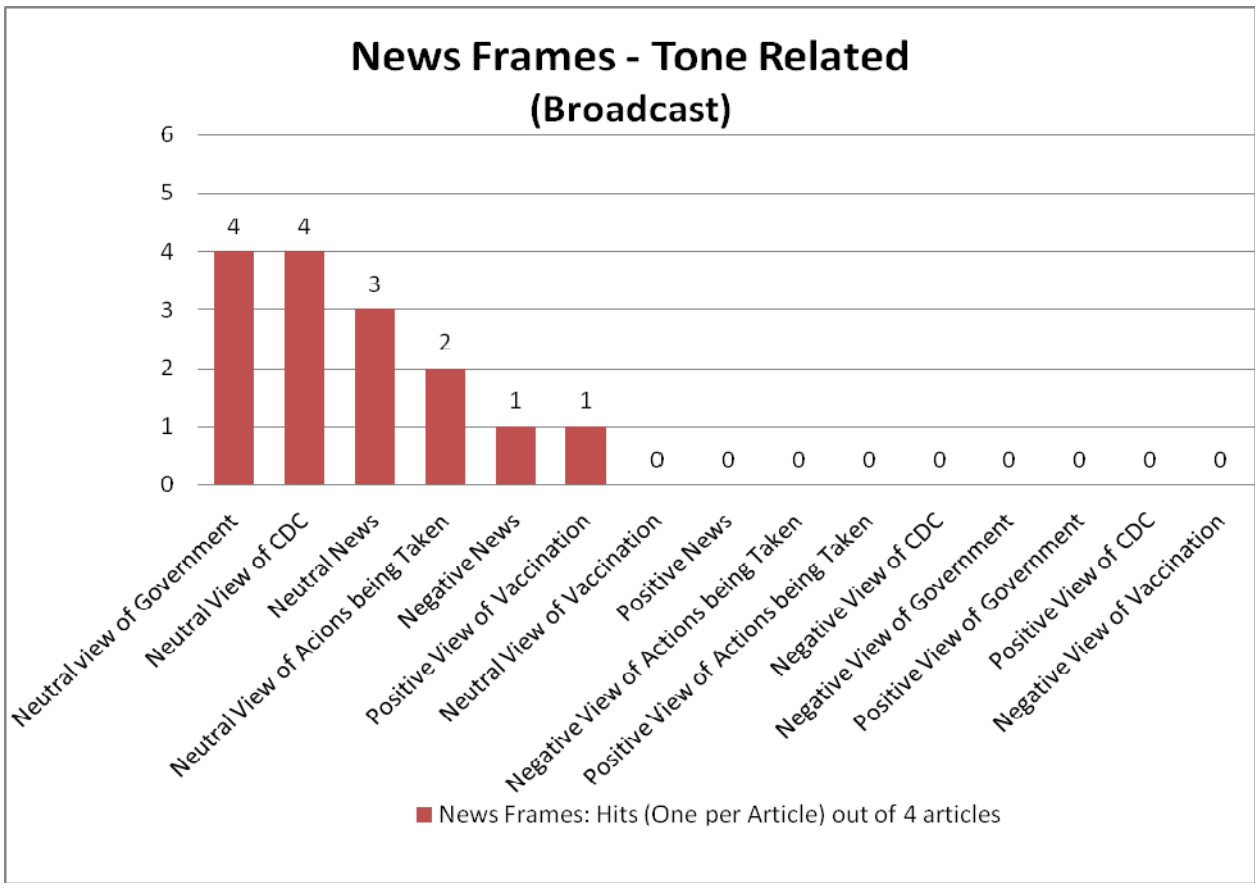
1. Pandemic flu (4 hits out of 4 articles: 100%)
2. Avian (bird flu) (4 hits out of 4 articles: 100%)
3. Pandemic preparedness (2 hits out of 4 articles: 50%)
4. Flu cases (2 hits out of 4 articles: 50%)
5. Flu season (1 hit out of 4 articles: 25%)
6. Flu vaccine (1 hit out of 4 articles: 25%)

Only four broadcast news articles were captured and analyzed in this study, which is significantly smaller than the number of articles captured and analyzed from newspapers, news networks/wire services and websites. However, the major topics found in broadcast articles were similar to those found in the other types of print media analyzed above. In fact, the ordering of major topics for broadcast articles matched that of websites. All four broadcast news articles discussed pandemic flu and bird flu. Half of the articles (2) discussed pandemic preparedness. Flu cases (inclusive of both avian and seasonal flu) were also mentioned in half (2) of the four articles. One quarter of the articles mentioned the flu season and flu vaccine.

The figures below present the major news frames found in the four broadcast media articles analyzed in the study. Because of the relatively small number of broadcast news articles captured, the results are unlikely to be representative of all broadcast news coverage of flu, bird flu and pandemic flu. The articles were analyzed to determine whether the news frames they contained were similar to those found in other types of print media.



[Figure 6.20: News Frames – Structural/Design Related (Broadcast)]



[Figure 6.21: News Frames – Tone Related (Broadcast)]

The major structural and design-related news frames found in broadcast news articles are presented in Figure 6.20, and the top six are listed below:

1. Cites “Non-CDC SME” (4 hits out of 4 articles: 100%)
2. Cites “Medical Statistics” (2 hits out of 4 articles: 50%)
3. “Contains a CDC Key Message” (2 hits out of 4 articles: 50%)
4. Cites “CDC SME” (2 hits out of 4 articles: 50%)
5. “Cites CDC Figures” (1 hit out of 4 articles: 25%)
6. “Cites Study” (1 hit out of 4 articles: 25%)

As indicated by the ordering of the structural/design-related frames listed above, the frames found in each of the four broadcast news articles are similar to those found in the other types of print media. These frames match the same hierarchy of structural/design related frames found in articles published by news networks/news wires. All four broadcast news articles used quotes

from a non-CDC subject matter expert(s). Two of the four articles cited medical statistics, contained a CDC key message or cited a CDC subject matter expert. Also consistent with other types of print media, a quarter (1 out of 4) of the broadcast media articles cited CDC figures or a study.

Tone-related news frames found in broadcast news articles are presented in Figure 6.21, and the top six are listed below:

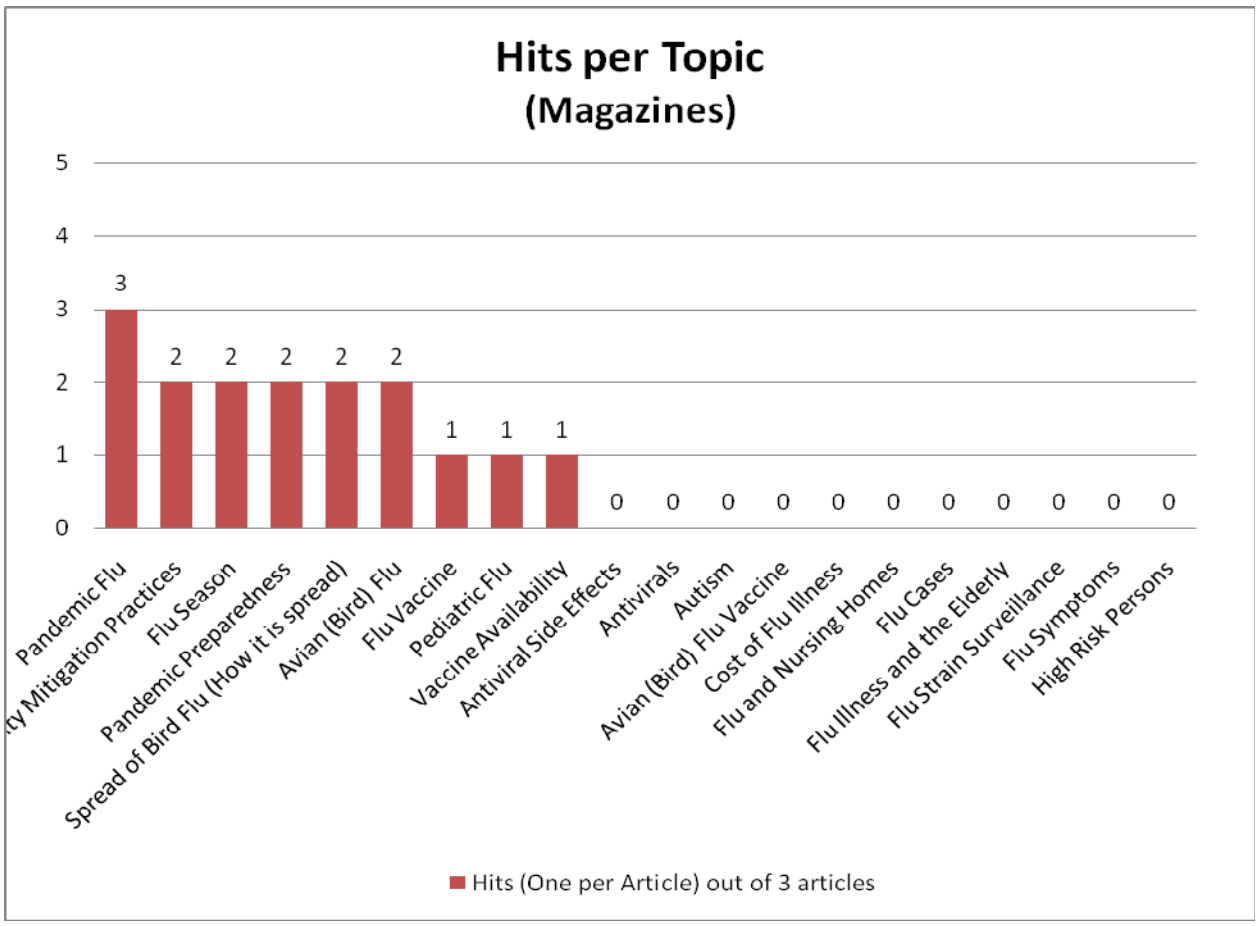
1. Neutral view of government (4 hits out of 4 articles: 100%)
2. Neutral view of CDC (4 hits out of 4 articles: 100%)
3. Neutral news (3 hits out of 4 articles: 75%)
4. Neutral view of actions being taken (2 hits out of 4 articles: 50%)
5. Negative news (1 hit out of 4 articles: 25%)
6. Positive view of vaccination (1 hit out of 4 articles: 25%)

Consistent with other types of print media, broadcast news articles were neutrally framed towards government and CDC. The tone of the articles was primarily neutral as well: three out of the four total articles (75 percent) conveyed an overall neutral tone. Two out of the four articles presented a neutral stance towards actions taken or described (typically by the article's subjects) in the article. And finally, one out of four articles conveyed a negative overall tone or a positive view of vaccination.

Magazines

The following figures present the major topics and frames found in articles published by magazines. Only three total articles were captured and analyzed from magazines in the study, which accounted for only 1 percent of total articles.

Based on this small number, results are unlikely to be representative of all magazine articles on seasonal flu, bird flu and pandemic flu. However, data presented in Figures 6.22 through 6.24 below will demonstrate whether the topics and frames found in these articles correlates with those found in the other types of print media analyzed in the study.



[Figure 6.22: Hits per Topic (Magazines)]

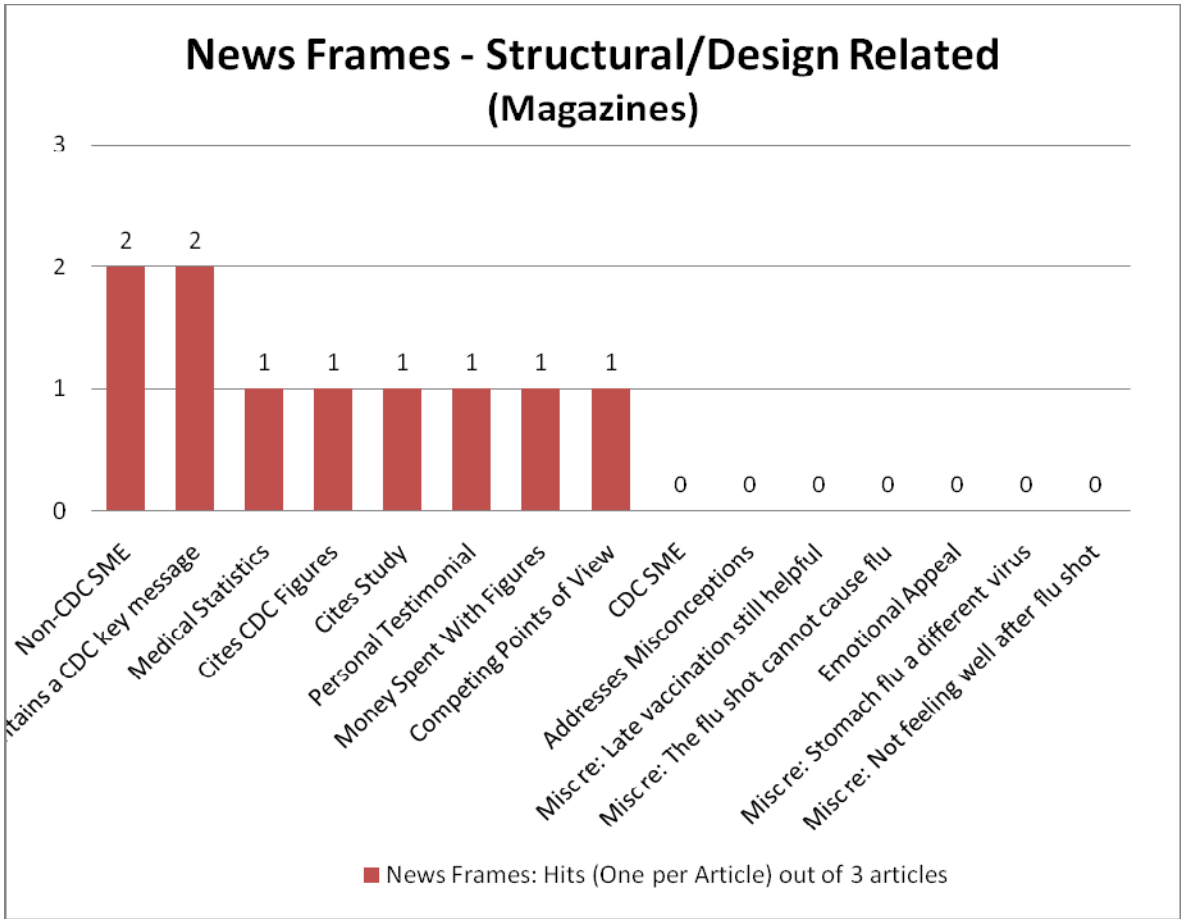
The major topics found in the three articles captured and analyzed from magazines are presented in Figure 6.22 above, and the top six topics are listed below:

1. Pandemic flu (3 hits out of 3 articles: 100%)
2. Community mitigation practices (2 hits out of 3 articles: 67%)
3. Flu season (2 hits out of 3 articles: 67%)
4. Pandemic preparedness (2 hits out of 3 articles: 67%)
5. Spread of bird flu (how it is spread) (2 hits out of 3 articles: 67%)
6. Avian (bird) flu (2 hits out of 3 articles: 67%)

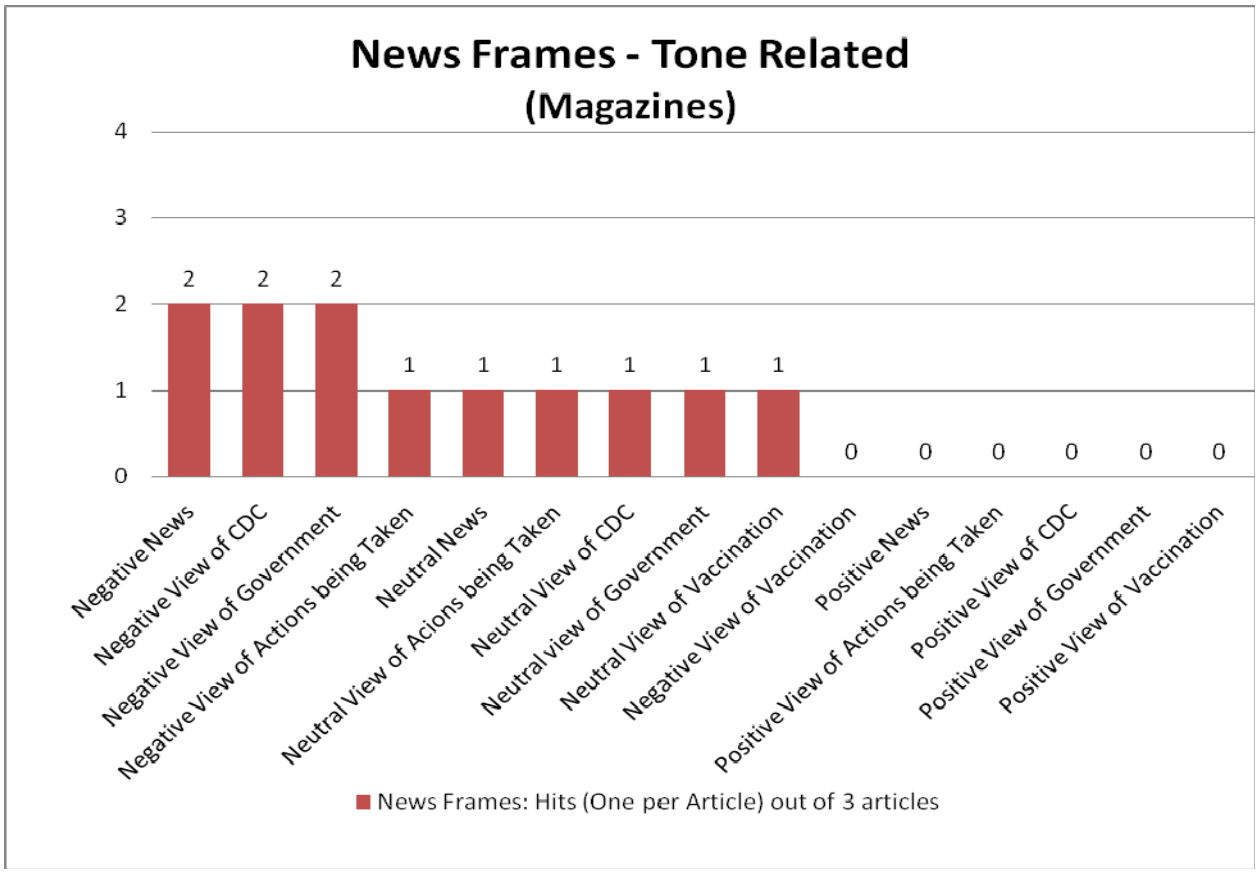
Only three articles from magazines were captured in this study, which is similar to the number of broadcast articles captured, but still small when compared to the articles captured from websites, news networks/wire services and newspapers. As indicated by the data above, magazines articles

focused primarily on pandemic flu. All three magazine articles discussed pandemic flu. Two out of three magazines articles also discussed community mitigations practices (a topic related to pandemic flu), pandemic preparedness, the flu season, bird flu and spread of bird flu (how it is spread).

The figures below present the major news frames found in articles from magazines. Because only three magazines articles were captured in the study, the results are unlikely to be representative of all magazine coverage of flu, bird flu and pandemic flu. The articles were analyzed to determine whether the news frames they contained were similar to those found in other types of print media.



[Figure 6.23: News Frames – Structural/Design Related (Magazines)]



[Figure 6.24: News Frames – Tone Related (Magazines)]

Structural and design-related news frames found in each of the three magazine articles are presented in Figure 6.23, and the top six are listed below:

1. Cites “Non-CDC SME” (2 hits out of 3 articles: 67%)
2. “Contains a CDC Key Message” (2 hits out of 3 articles: 67%)
3. Cites “Medical statistics” (1 hit out of 3 articles: 33%)
4. Cites “CDC figures” (1 hit out of 3 articles: 33%)
5. “Cites study” (1 hit out of 3 articles: 33%)
6. Contains a “personal testimonial” (1 hit out of 3 articles: 33%)

Two of the three total magazine articles cited a non-CDC subject matter expert and/or contained a CDC key message. This is consistent with frames used by other types of print media. One out of three magazine articles contained a personal testimonial, or cited medical statistics, CDC figures or a study.

Tone-related news frames found in the three magazine articles are presented in Figure 6.24, and the top six are listed below:

1. Neutral view of government (2 hits out of 3 articles: 67%)
2. Neutral view of CDC (2 hits out of 3 articles: 67%)
3. Neutral news (2 hits out of 3 articles: 67%)
4. Neutral view of actions being taken (1 hit out of 3 articles: 33%)
5. Negative news (1 hit out of 3 articles: 33%)
6. Positive view of vaccination (1 hit out of 3 articles: 33%)

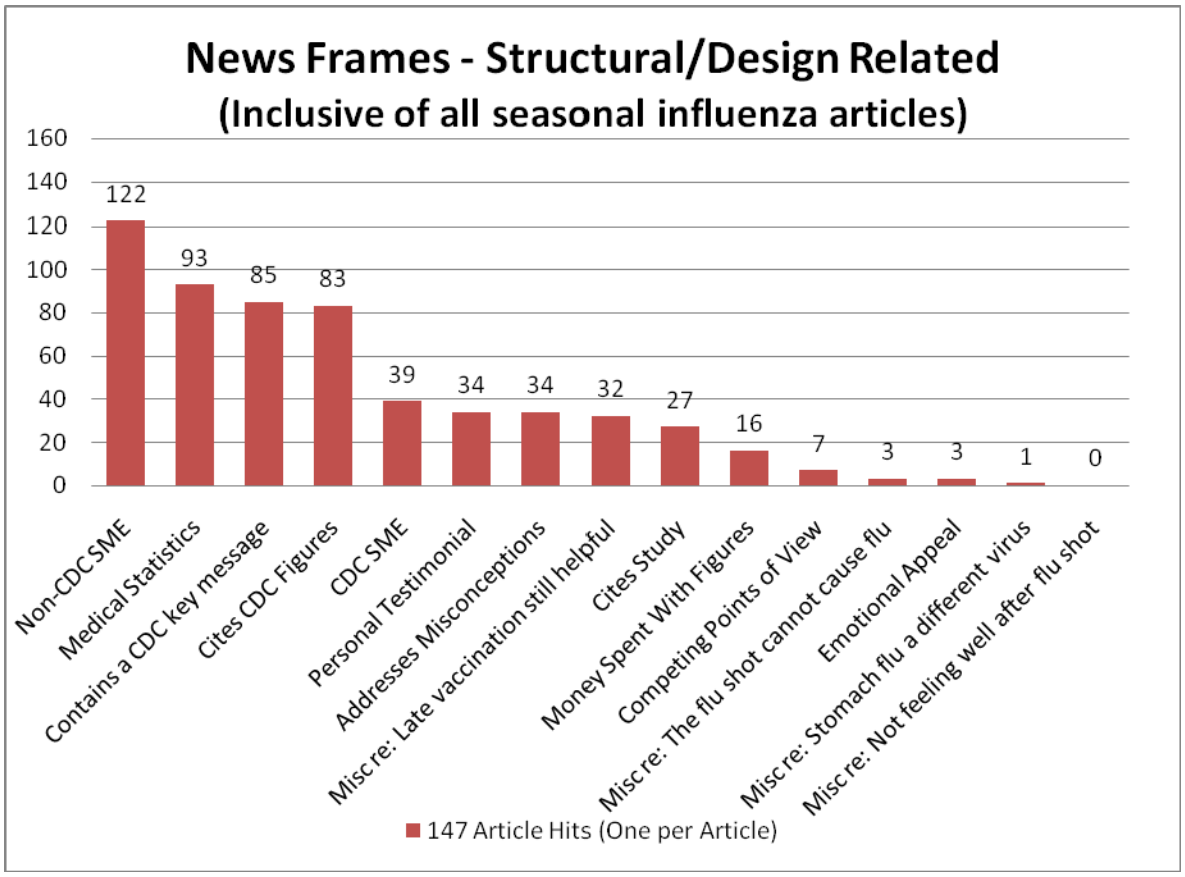
Two out of three magazines articles presented a neutral view of government and CDC. Likewise, two out of the three articles were framed in an overall neutral tone. One out of the three articles presented a neutral view of actions being taken (usually by the subject matter of the article). Also, one out of three articles was negatively framed and/or conveyed a positive view of vaccination.

Secondary Research Questions

Results for 1st Secondary Research Question:

The first additional research question asks: Are different frames used in print media coverage of avian influenza (bird flu), pandemic flu and seasonal flu? If so, how do the frames differ for each?

To answer this question, data from the Excel spreadsheet was reorganized. The data in the spreadsheet was filtered so that articles that contained hits for the following specific topics: “flu season,” “avian (bird) flu” and “pandemic flu” were isolated from the rest of the data. The following figures display the news frames specific to articles that provided a hit for the “flu season” topic.



[Figure 6.25: News Frames-Structural/Design Related (Inclusive of all seasonal influenza articles)]

As stated at the bottom of Figure 6.25 above, there were 147 articles that provided a hit for the "flu season" topic. This topic was used to isolate articles that discussed seasonal flu. Note, some articles may have discussed more than one type of flu (e.g., articles could discuss both avian (bird) flu and pandemic flu, in which case these articles would be analyzed twice, once for the bird flu frames analysis and once for the pandemic flu frames analysis).

As demonstrated by Figure 6.25, several frames were commonly found in articles that provided a hit for the "flu season" topic category. These frames are listed below

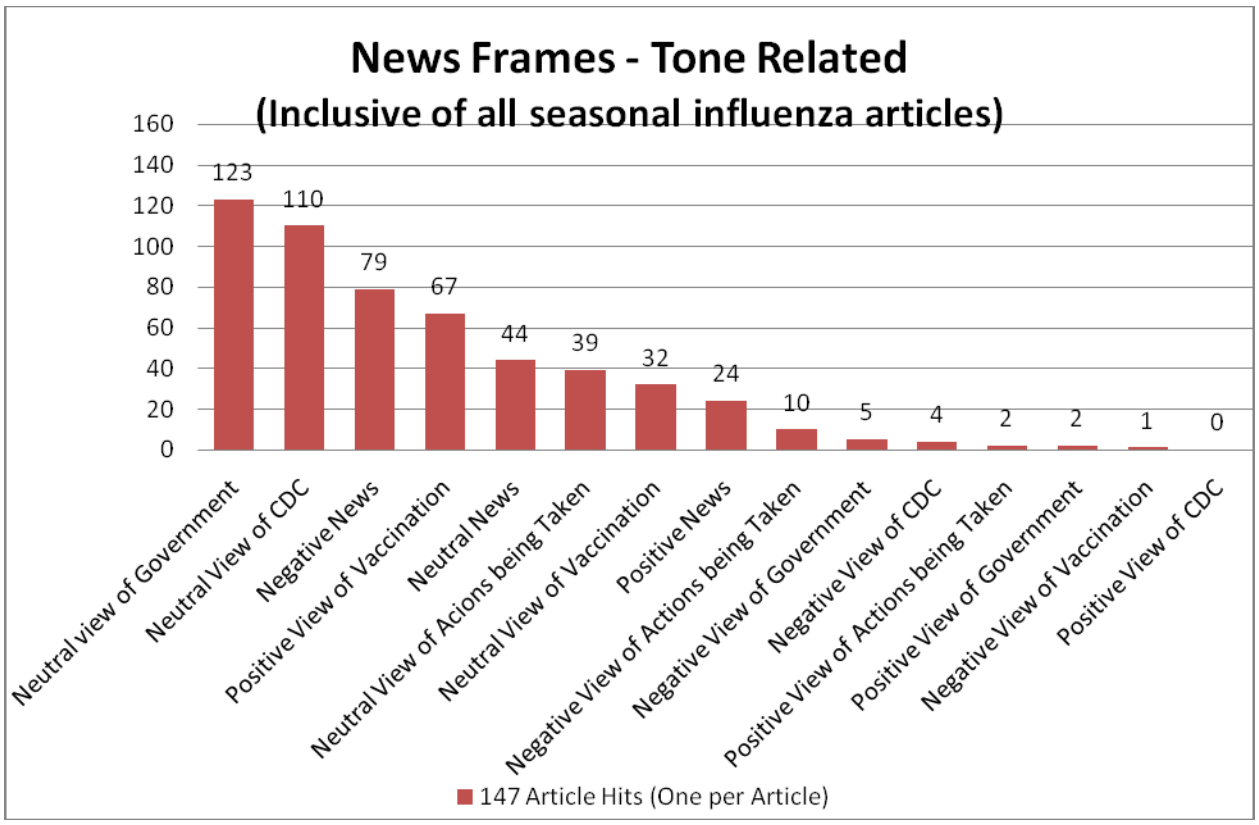
1. Non-CDC SME (122 hits out of 147 articles: 83%)
2. Medical Statistics (93 hits out of 147 articles: 63%)

3. Contains a key CDC message (85 hits out of 147 articles: 58%)
4. Cites CDC figures (83 hits out of 147 articles: 56%)
5. CDC SME (39 hits out of 147 articles: 27%)
6. Personal Testimonial (34 hits out of 147 articles: 23%)
7. Addresses Misconceptions (34 hits out of 147 articles: 23%)
8. Myth/Misconception Re: Late vaccination still helpful (32 hits out of 147 articles: 22%)
9. Cites Study (27 hits out of 147 articles: 18%)
10. Money Spent with Figures (16 hits out of 147 articles: 11%)
11. Competing points of view (7 hits out of 147 articles: 5%)
12. Myth/Misconception Re: The flu shot cannot cause flu (3 hits out of 147 articles: 2%)
13. Emotional Appeal (3 hits out of 147 articles: 2%)
14. Myth/Misconception Re: Stomach flu a different virus (1 hit out of 147 articles: 1%)

As shown above, 83 percent of seasonal flu articles used a non-CDC subject matter expert as a source of information. The use of medical statistics was also common, as it accounted for 63 percent of all seasonal flu articles. Over half of seasonal flu articles contained a CDC key message (58 percent) or cited CDC figures or statistics (56 percent). A little over a quarter of the total seasonal flu articles cited CDC subject matter experts (27 percent).

Less than a quarter of total seasonal flu articles addressed common misconceptions about flu or the flu vaccine (23 percent). Of these articles, the most common myth or misconception addressed was that late vaccination is still helpful (22 percent). Other myths and misconceptions were not addressed as often. For example, only 2 percent of articles addressed the fact that the flu vaccine cannot cause flu illness, and only one article (less than 1 percent of total articles) addressed the common myth/misconception that stomach flu is often associated with viruses or bacteria not associated with flu.

The following figure presents hits for tone-related news frames specific to articles that provided a hit for the “flu season” topic.



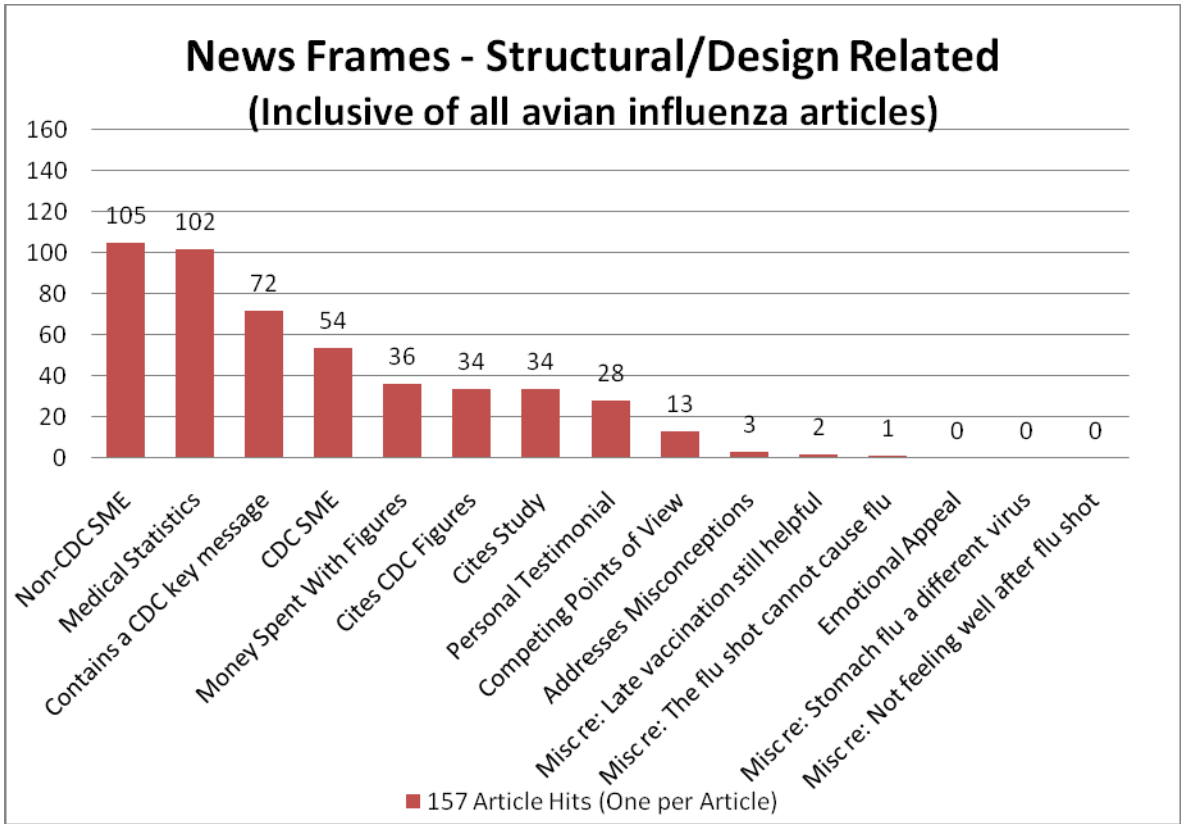
[Figure 6.26: News Frames – Tone Related (Inclusive of all seasonal influenza articles)]

As demonstrated by Figure 6.26 above, several tone-related news frames were commonly found in articles that provided a hit for the "flu season" topic category. These frames are listed below

1. Neutral View of Government (123 hits out of 147 articles: 84%)
2. Neutral View of CDC (110 hits out of 147 articles: 75%)
3. Negative News (79 hits out of 147 articles: 54%)
4. Positive View of Vaccination (67 hits out of 147 articles: 46%)
5. Neutral News (44 hits out of 147 articles: 30%)
6. Neutral View of Actions being Taken (39 hits out of 147 articles: 27%)
7. Neutral View of Vaccination (32 hits out of 147 articles: 22%)
8. Positive News (24 hits out of 147 articles: 16%)
9. Negative View of Actions being Taken (10 hits out of 147 articles: 7%)
10. Negative View of Government (5 hits out of 147 articles: 3%)
11. Negative View of CDC (4 hits out of 147 articles: 3%)
12. Positive View of Actions being Taken (2 hits out of 147 articles: 1%)
15. Positive View of Government (2 hits out of 147 articles: 1%)
16. Negative view of vaccination (1 hit out of 147 articles: 1%)

As shown above, the majority of seasonal flu articles presented a neutral view of government (84 percent) and CDC (75 percent). Negatively toned articles were also common, accounting for 54 percent of all articles related to seasonal flu. However, 46 percent of seasonal flu articles presented a positive view of vaccination, which compares with 22 percent that presented a neutral view and less than 1 percent that presented a negative view. Articles that had an overall neutral tone accounted for 30 percent of all seasonal flu articles, and positive stories only accounted for 16 percent. Negative views towards CDC or government were rare, only accounting for 3 percent of total seasonal flu articles each.

The next figures display news frames specific to articles that provided a hit for the "avian influenza" topic.



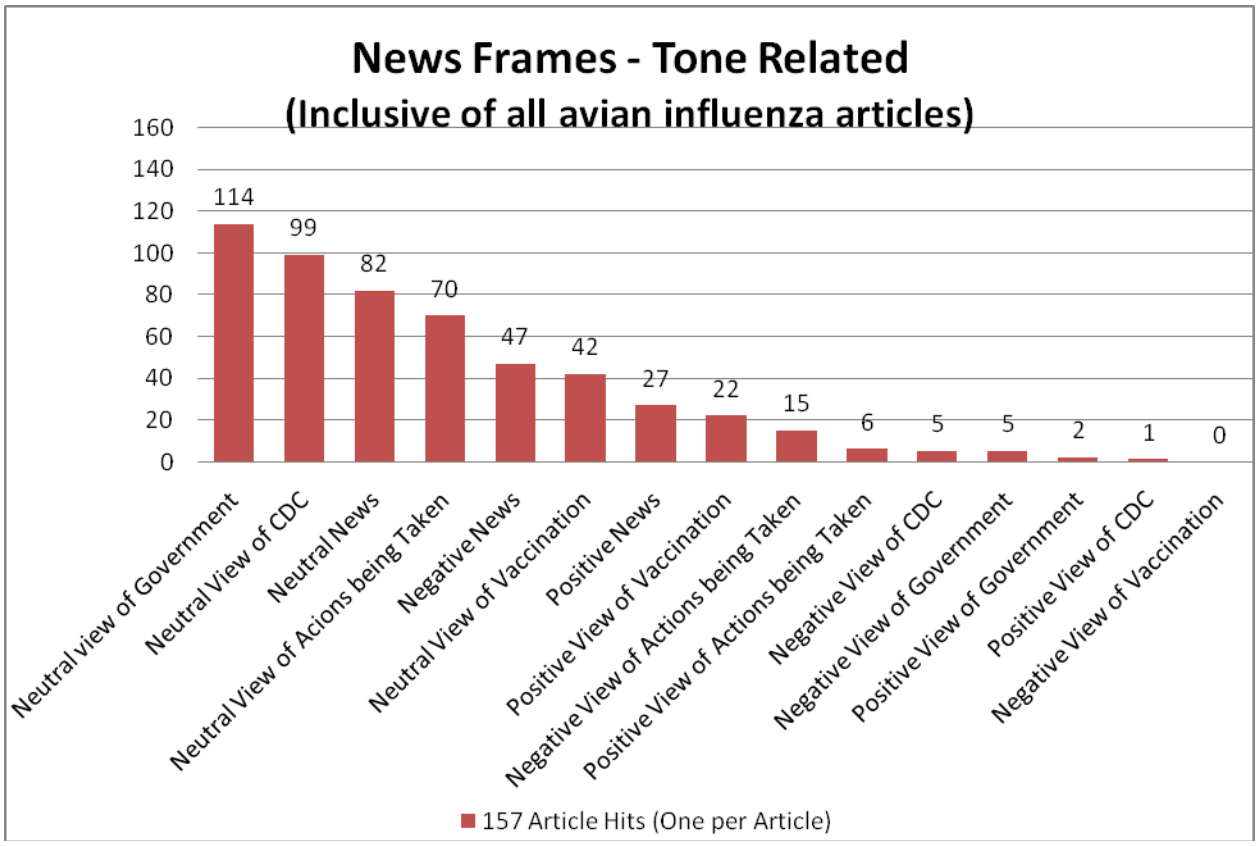
[Figure 6.27: News Frames – Structural/Design Related (Inclusive of all avian influenza articles)]

Figure 6.27 displays hits for structural/design related news frames that were coded from articles related to avian influenza (bird flu). A total of 157 articles were related to "avian influenza." Several structural/design related frames were commonly found in articles that received a hit for the "avian influenza" topic category. These frames are listed in order of greatest to least hits below:

1. Non-CDC SME (105 hits out of 157 articles: 67%)
2. Medical Statistics (102 hits out of 157 articles: 65%)
3. Contains a key CDC message (72 hits out of 157 articles: 46%)
4. CDC SME (54 hits out of 157 articles: 34%)
5. Money Spent with Figures (36 hits out of 157 articles: 23%)
6. Cites CDC Figures (34 hits out of 157 articles: 22%)
7. Cites Study (34 hits out of 157 articles: 22%)
8. Personal Testimonial (28 hits out of 157 articles: 18%)
9. Competing points of view (13 hits out of 157 articles: 8%)
10. Addresses Myths/Misconceptions (3 hits out of 157 articles: 2%)
11. Myth/Misconception Re: Late vaccination still helpful (2 hits out of 157 articles: 1%)
12. Myth/Misconception Re: Stomach flu a different virus (1 hits out of 157 articles: 1%)

As shown above, avian influenza articles commonly cited non-CDC subject matter experts (67 percent) and medical statistics (65 percent). Fourty-six percent of avian influenza articles contained a key CDC message, and 34 percernt cited a CDC subject matter expert. Avian influenza articles also looked at issues related to how much money was spent (23 percent), typically by states or the government, to prepare for a future avian influenza outbreak or related event. CDC Figures were cited in 22 percent of the articles, and use of personal testimonials was used in 18 percent of the articles. Avian influenza articles were less likely to address myths and misconceptions (2 percent), likely because all of the myths and misconceptions about flu that were captured in the study related directly to seasonal flu.

The following figure presents hits for tone-related news frames specific to articles that provided a hit for the "avian influenza" topic.



[Figure 6.28: News Frames – Tone Related (Inclusive of all avian influenza articles)]

As demonstrated by Figure 6.28 above, several tone-related news frames were commonly found in articles that provided a hit for the "flu season" topic category. These frames are listed below

1. Neutral View of Government (114 hits out of 157 articles: 73%)
2. Neutral View of CDC (99 hits out of 157 articles: 63%)
3. Neutral News (82 hits out of 157 articles: 52%)
4. Neutral View of Actions Being Taken (70 hits out of 157 articles: 45%)
5. Negative News (47 hits out of 157 articles: 30%)
6. Neutral View of Vaccination (42 hits out of 157 articles: 27%)
7. Positive News (27 hits out of 157 articles: 17%)
8. Positive View of Vaccination (22 hits out of 157 articles: 14%)
9. Negative View of Actions being Taken (15 hits out of 157 articles: 10%)
10. Positive View of Actions being Taken (6 hits out of 157 articles: 4%)
11. Negative View of CDC (5 hits out of 157 articles: 3%)

12. Negative View of Government (5 hits out of 157 articles: 3%)
13. Positive View of Government (2 hits out of 157 articles: 1%)
14. Positive View of CDC (1 hit out of 157 articles: 1%)

As listed above, neutral views of government (73 percent) and CDC (63 percent) were also common in articles that discussed avian influenza (bird flu). Neutral stories overall accounted for 52 percent of all articles about bird flu. Stories that took a neutral view of actions being taken – typically by states, CDC or other government agences – to prepare for an avian influenza outbreak or related medical event accounted for 45 percent of total avian influenza articles. Negative news accounted for 30 percent of total bird flu articles, but only 3 percent of total bird flu articles expressed a negative view of CDC or government. Twenty-seven percent of articles expressed a neutral view of vaccination and 14 percent presented a positive view of vaccination. No articles related to bird flu presented a negative view of vaccination.

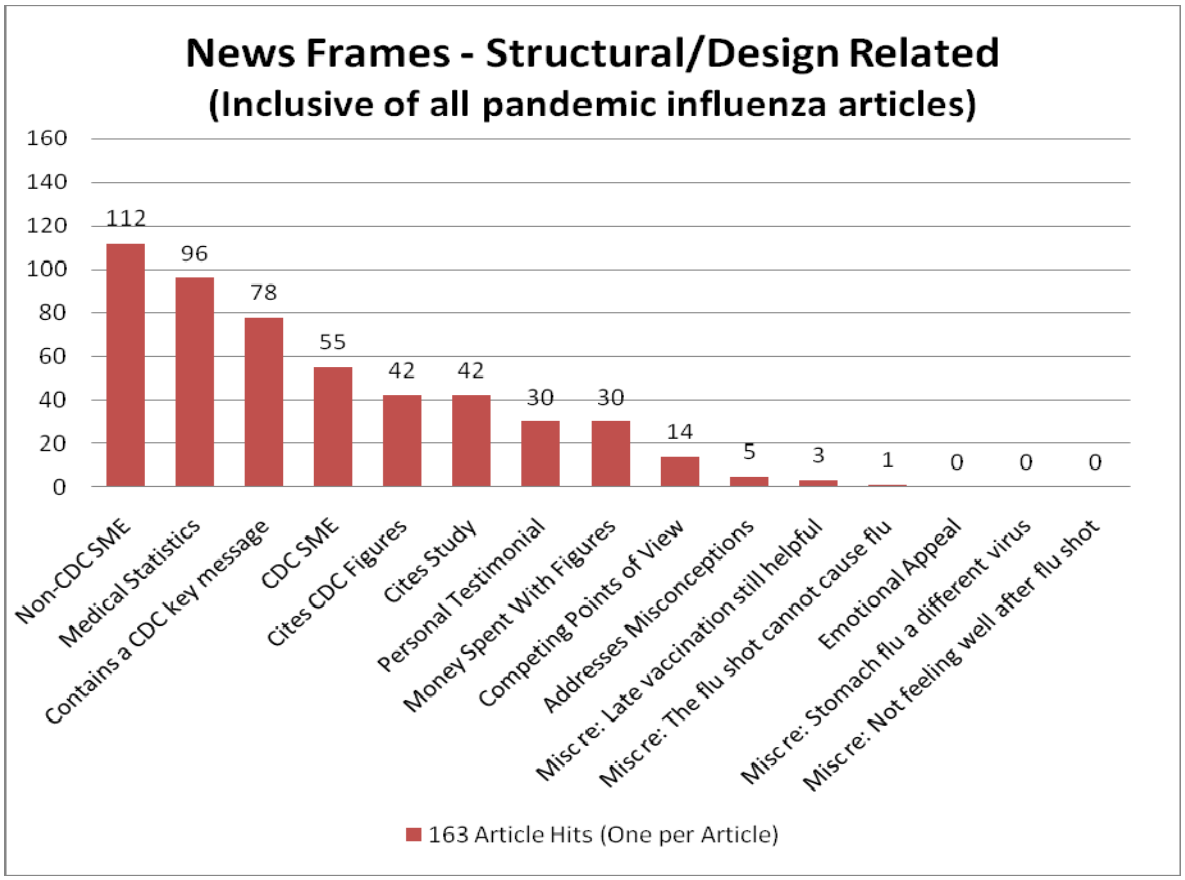
The next figures display news frames specific to articles that provided a hit for the "pandemic flu" topic.

Figure 6.29 on the following page displays hits for structural/design related news frames that were coded from articles related to pandemic flu. A total of 163 articles provided hits for the "pandemic flu" topic, and several structural/design related frames were commonly found in these articles.

These frames are listed in order of greatest to least hits below:

1. Non-CDC SME (112 hits out of 163 articles: 69%)
2. Medical Statistics (96 hits out of 163 articles: 59%)
3. Contains a key CDC message (78 hits out of 163 articles: 48%)
4. CDC SME (55 hits out of 163 articles: 34%)
5. Cites CDC Figures (42 hits out of 163 articles: 26%)
6. Cites Study (42 hits out of 163 articles: 26%)
7. Personal Testimonial (30 hits out of 163 articles: 18%)
8. Money Spent with Figures (30 hits out of 163 articles: 18%)
9. Competing points of view (14 hits out of 163 articles: 9%)
10. Addresses Myths/Misconceptions (5 hits out of 163 articles: 3%)

11. Myth/Misconception Re: Late vaccination still helpful (3 hits out of 163 articles: 2%)
12. Myth/Misconception Re: The flu shot cannot cause the flu (1 hit out of 163 articles: 1%)

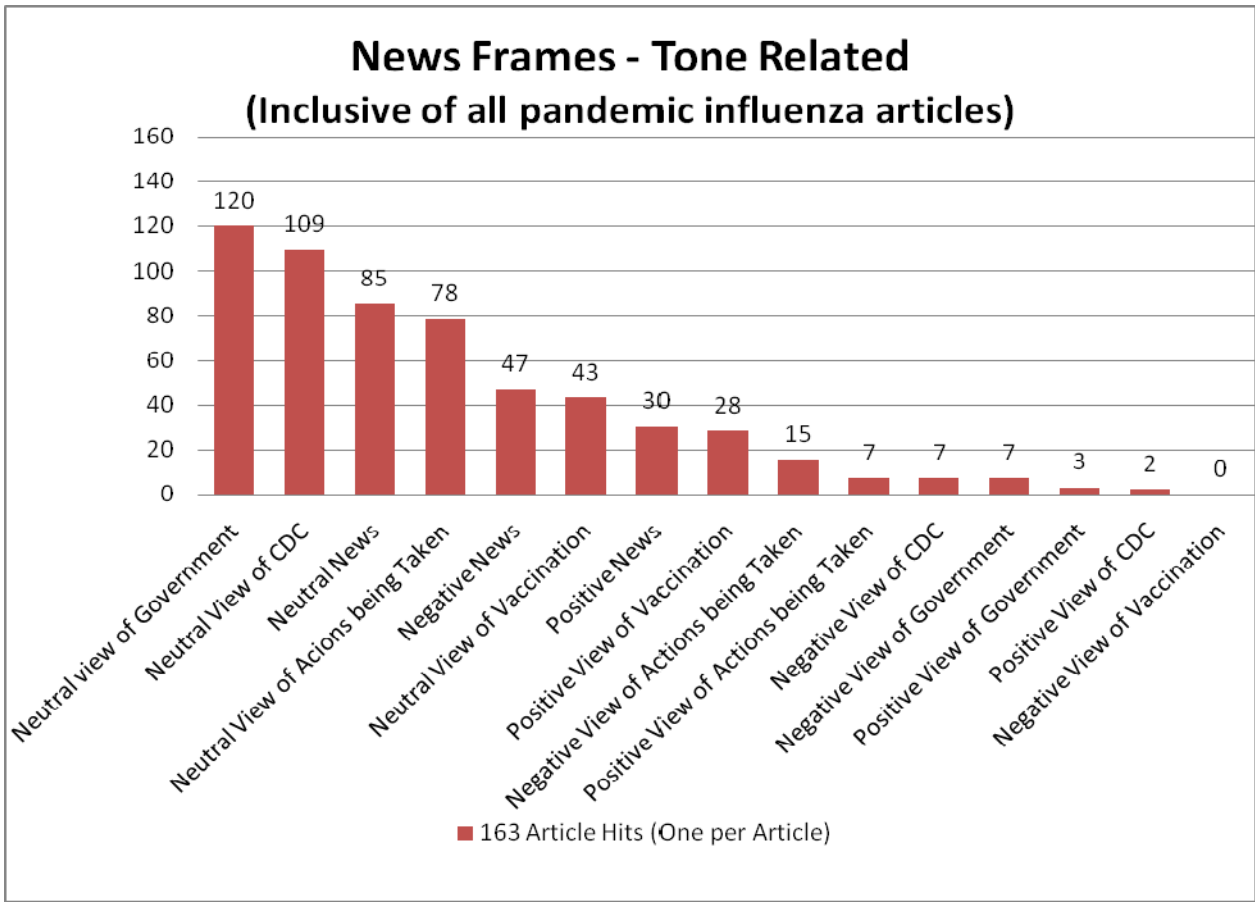


[Figure 6.29: News Frames – Structural/Design Related (Inclusive of all pandemic influenza articles)]

As shown above, the structural/design related frames found in pandemic flu articles were similar to those found in seasonal flu and bird flu articles. Once again, pandemic articles commonly cited non-CDC subject matter experts (69 percent) and medical statistics (59 percent). Fourty-eight percent of articles contained a key CDC message, 34 percent cited CDC subject matter expert/s, and 26 percent cited CDC figures. Twenty-six percent of pandemic flu articles cited a study. No pandemic flu articles contained an emotional appeal, which is generally similar to a results found from analysis of avian and seasonal flu articles.

Only a few seasonal flu articles contained an emotional appeal, and these articles generally involved flu deaths in children (pediatric deaths). A few pandemic flu articles addressed myths and misconceptions, but that is because these specific articles also discussed issues related to seasonal flu. Articles that generated a hit on the coding sheet for pandemic flu (or the other categories of flu) were not mutually exclusive, and may have also registered a hit for seasonal or bird flu. As a result, some articles were counted twice in the analysis of this question.

The following figure presents hits for tone-related news frames specific to articles that provided a hit for the "pandemic flu" topic.



[Figure 6.30: News Frames – Tone Related (Inclusive of all pandemic influenza articles)]

As demonstrated by the table above, several tone-related news frames were commonly found in articles related to pandemic flu. These frames are listed in order of greatest to fewest hits below:

1. Neutral View of Government (120 hits out of 163 articles: 74%)
2. Neutral View of CDC (109 hits out of 163 articles: 67%)
3. Neutral News (85 hits out of 163 articles: 52%)
4. Neutral View of Actions Being Taken (78 hits out of 163 articles: 48%)
5. Negative News (47 hits out of 163 articles: 29%)
6. Neutral View of Vaccination (43 hits out of 163 articles: 26%)
7. Positive News (30 hits out of 163 articles: 18%)
8. Positive View of Vaccination (28 hits out of 163 articles: 17%)
9. Negative View of Actions being Taken (15 hits out of 163 articles: 9%)
10. Positive View of Actions being Taken (7 hits out of 163 articles: 4%)
11. Negative View of CDC (7 hits out of 163 articles: 4%)
12. Negative View of Government (7 hits out of 163 articles: 4%)
13. Positive View of Government (3 hits out of 163 articles: 2%)
14. Positive View of CDC (2 hit out of 163 articles: 1%)

Similar to results obtained from seasonal flu and bird flu articles, pandemic flu articles presented a largely neutral view of government (74 percent) and CDC (67 percent). Neutral stories in general accounted for 52 percent of all pandemic flu articles, and articles that presented a neutral view of actions being taken – typically by states or government agencies to prepare for a pandemic – accounted for 48 percent of all articles.

Articles with an overall negative tone accounted for 29 percent of total pandemic flu articles, while positive news articles accounted for 18 percent. Seventeen percent of all pandemic flu articles presented a positive view of vaccination, whereas 26 percent presented a neutral view. Around 4 percent of articles expressed a negative view of CDC and government. No pandemic flu articles contained a negative view of vaccination.

Results for 2nd secondary research question:

The second additional research question asks: Based on the number of articles published using certain frames and flu topics, which frames and flu topics get the most media attention?

Data presented for the primary research question provides an answer to this question. A list of the top 15 topics, structural/design-related news frames and tone-related news frames has been provided below in order of highest to lowest hits. These lists are inclusive of all print media sources.

Flu Topics (all types of print media combined)

1. pandemic flu (163 hits out of 339 articles: 48%)
2. flu cases (160 hits out of 339 articles: 47%)
3. avian (bird) flu (157 hits out of 339 articles: 46%)
4. flu vaccine (152 hits out of 339 articles: 45%)
5. the flu season and (147 hits out of 339 articles: 43%)
6. pandemic preparedeness. (132 hits out of 339 articles: 39%)
7. Pediatric flu (89 hits out of 339 articles: 26%)
8. Vaccine availability (76 hits out of 339 articles: 22%)
9. Community mitigation practices (64 hits out of 339 articles: 19%)
10. Flu symptoms (61 hits out of 339 articles: 18%)
11. Antivirals (56 hits out of 339 articles: 17%)
12. Spread of bird flu (how it is spread) (54 hits out of 339 articles: 16%)
13. Vaccine effectiveness (51 hits out of 339 articles: 15%)
14. Vaccine production (46 hits out of 339 articles: 14%)
15. Flu strain surveillance (45 hits out of 339 articles: 13%)

As shown above, 48 percent of overall flu articles discussed pandemic flu, followed by bird flu (46 percent) and seasonal flu (43 percent). Flu cases were commonly cited (47%), and stories that discussed the flu vaccine.were also common (45 percent). Overall, news articles also commonly referenced pandemic preparedness (39 percent) and flu illness in children (26 percent).

Structural/Design Frames (all types of print media combined)

1. Cites “Non-CDC SME” (244 hits out of 339 articles: 72%)
2. Uses “Medical Statistics” (197 hits out of 339 articles: 58%)
3. “Contains a CDC Key Message” (165 hits out of 339 articles: 49%)
4. “Cites CDC Figures” (127 hits out of 339 articles: 37%)
5. Cites “CDC SME” (101 hits out of 339 articles: 30%)
6. “Cites study” (77 hits out of 339 articles: 23%)
7. Personal testimonial (63 hits out of 339 articles: 19%)
8. Money spent with figures (51 hits out of 339 articles: 15%)

9. Addresses misconceptions (41 hits out of 339 articles: 12%)
10. Misconception re: late vaccination still helpful (34 hits out of 339 articles: 10%)
11. Competing points of view (18 hits out of 339 articles: 5%)
12. Misconception re: the flu shot cannot cause flu (7 hits out of 339 articles: 2%)
13. Emotional appeal (3 hits out of 339 articles: 2%)
14. Misconception re: stomach flu a different virus (1hit out of 339 articles: 0.2%)
15. Misconception re: not feeling well after flu shot (1hit out of 339 articles: 0.2%)

Analysis of structural and design-related frames revealed that 72 percent of total articles cited non-CDC subject matter experts. Use of medical statistics was also significant and accounted for 58 percent of all media articles. Forty-nine percent of articles contained a CDC key message, 37 percent cited CDC figures and 30 percent cited CDC subject matter experts. Twelve percent of total articles addressed misconceptions about flu or the flu vaccine, and the most common misconception addressed dealt with late vaccination, i.e., the articles addressed the fact that getting vaccinated in December or later was still helpful in order to correct the misconception that getting vaccinated later in the season is not helpful. Overall, only one article addressed the misconception that many people have about stomach flu being a type of flu – it isn't. Also, only one article addressed the misconception that a flu shot will make you feel sick.

Overall, few articles were written to appeal to the reader in an emotional way.

Tone-Related Frames (all types of print media combined)

1. Neutral view of government (266 hits out of 339 articles: 78%)
2. Neutral view of CDC (232 hits out of 339 articles: 68%)
3. Neutral news (150 hits out of 339 articles: 44%)
4. Neutral view of actions being taken (127 hits out of 339 articles: 37%)
5. Negative news (126 hits out of 339 articles: 37%)
6. Positive view of vaccination. (108 hits out of 339 articles: 32%)
7. Neutral view of vaccination (79 hits out of 339 articles: 23%)
8. Positive news (63 hits out of 339 articles: 19%)
9. Negative view of actions being taken (21 hits out of 339 articles: 6%)
10. Positive view of actions being taken (21 hits out of 339 articles: 6%)
11. Negative view of CDC (9 hits out of 339 articles: 3%)
12. Negative view of government (9 hits out of 339 articles: 3%)
13. Positive view of government (5 hits out of 339 articles: 1%)
14. Positive view of CDC (2 hits out of 339 articles: 0.6%)

15. Negative view of vaccination (2 hits out of 339 articles: 0.6%)

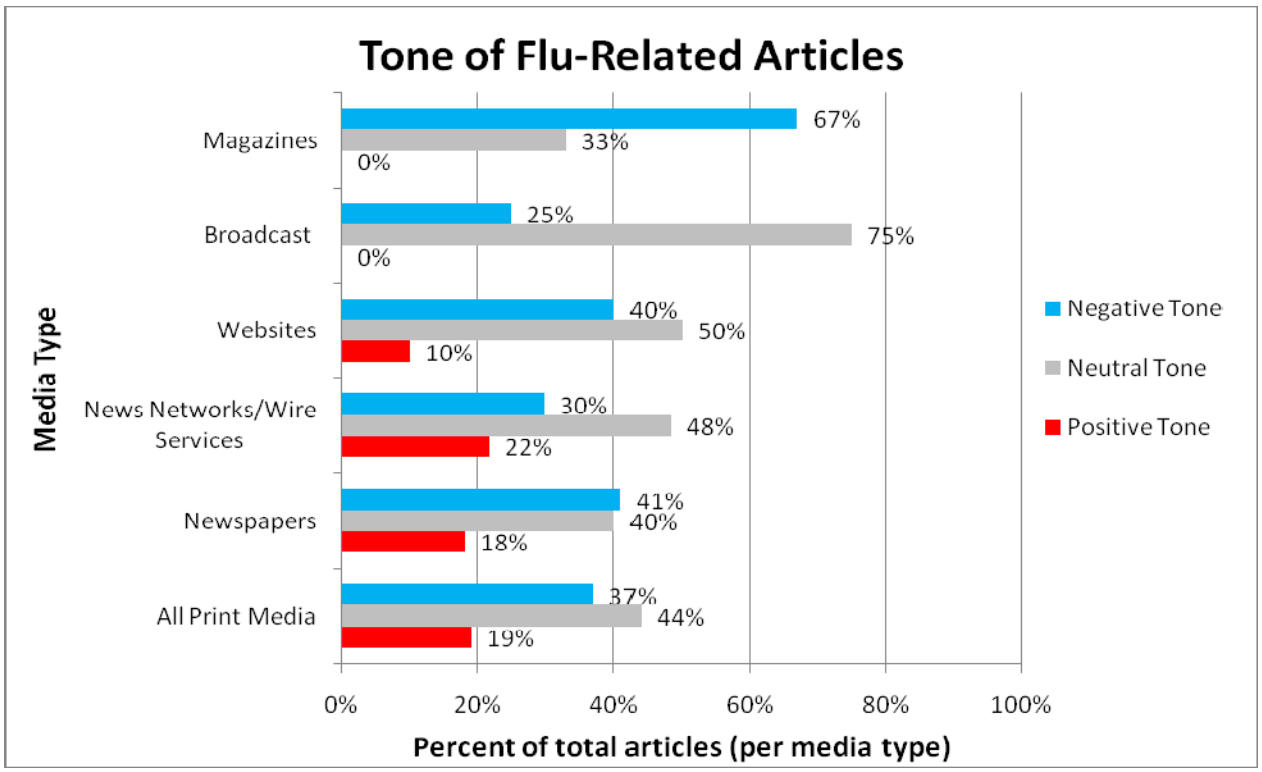
Analysis of aggregate data demonstrated that the tone of flu-related articles was largely neutral. For example, 78 percent of total articles presented a neutral view of government, and 68 percent expressed a neutral view of CDC. Also, neutral news accounted for 44 percent of total articles. Negative news was also common and accounted for 37 percent of total media coverage. Based on total articles, 32 percent expressed a positive view of vaccination, followed by neutral views of vaccination, 23 percent. Only two out of 339 articles presented a negative view of vaccination. Negative views of CDC and government were also uncommon, and accounted for only 3 percent of total articles.

Results for 3rd secondary research question:

The third additional research question asks: Do negative stories about flu, flu distribution, flu vaccine or CDC outnumber neutral or positive stories?

To answer this question, it is helpful to look at sub-sets of data for each part of the question. First, data will be presented on the overall balance of negative, neutral and positive news stories related to flu (inclusive of seasonal flu, avian flu and pandemic flu). Figure 6.30 below presents the percent of articles for each media type that had a negative, neutral or positive tone.

Data from all print media, which is shown at the bottom of Figure 6.30 on the following page, indicated that 44 percent of total flu-related articles analyzed in the study had a neutral overall tone. Negatively toned articles made up 37 percent of all articles analyzed, and the remaining 19 percent had a positive tone. So overall, print media coverage of flu was predominately neutral or – to a lesser degree – negative.



[Figure 6.31: Tone of Flu-Related Articles]

As displayed in Figure 6.31, the tone of flu articles varied across the different types of print media analyzed. Although only three magazine articles were captured in the study, 67 percent (2 articles) were negative and one was neutral. Articles from broadcast media were largely neutral (75 percent) or negative (25 percent), and no positive stories were captured.

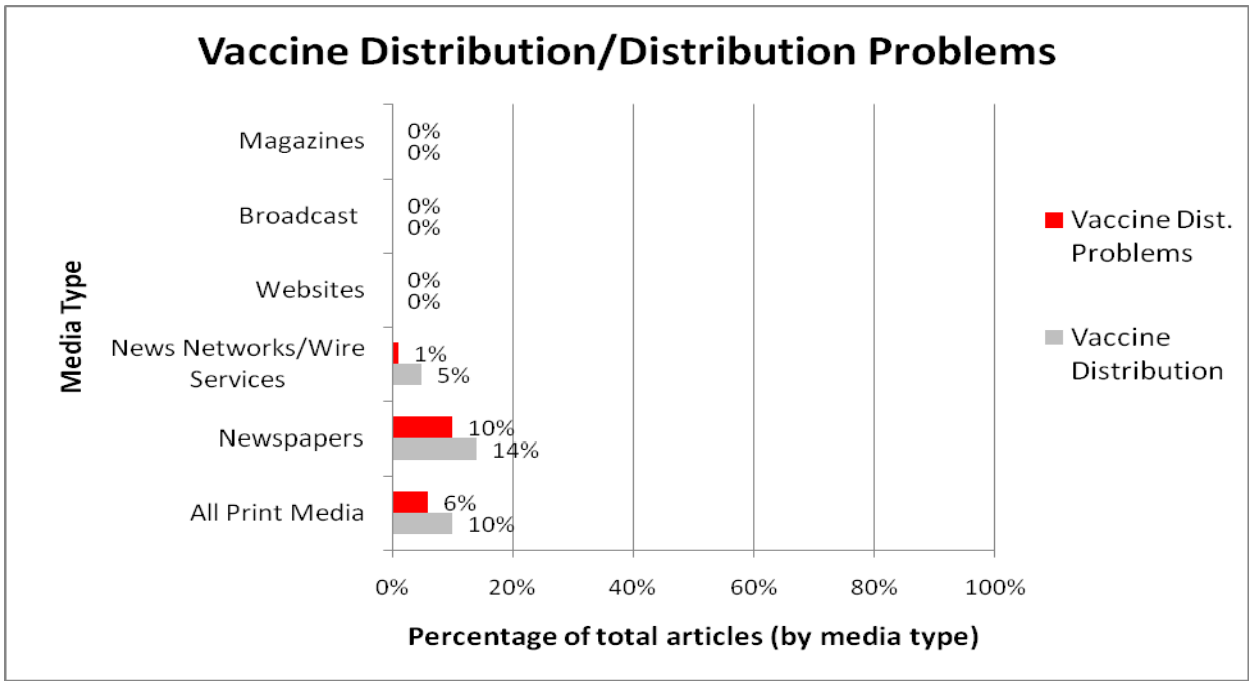
Half of the articles from websites were neutral, 40 percent were negative, and only 10 percent were positive. Newspaper articles were closely split between negative (41 percent) and neutral (40 percent), with positive stories only accounting for 18 percent. And finally, articles by news networks/wire services were largely neutral (48 percent), followed by negative articles (30 percent) and positive articles (22 percent).

The next part of the question seeks to determine the tone of stories related to vaccine distribution. In order to interpret whether articles took a negative or positive stance towards the

issue of vaccine distribution, two topic variables were reveiwed: 1) hits for vaccine distribution and 2) hits for vaccine distribution problems, which served as a variable to measure negativity towards this topic. These two variables are related, because in order for an article to discuss vaccine distribution problems, the article must first discuss vaccine distribution. Therefore, the variable "vaccine distribution problems" functions as a subset of all articles that discussed "vaccine distribution."

These two variables only appeared in two combinations. The first combination occured if an article generated a hit for vaccine distribution, but not vaccine distribution problems. The second combination occured if an article generated a hit for both vaccine distribution and vaccine distribution problems.

Figure 6.32 below presents data on the percent of total articles that discussed vaccine distribution and/or vaccine distribution problems, and breaks down the results for each type of media.



[Figure 6.32: Vaccine Distribution/Distribution Problems]

At the bottom of Figure 6.32, statistics are presented for all print media. Results show that 10 percent of all articles captured in the study discussed vaccine distribution, and 6 percent of all articles discussed vaccine distribution problems. Because of the relationship between these two variables, it is reasonable to say that 60 percent of all articles that discussed vaccine distribution also discussed vaccine distribution problems. This suggests that the majority of media coverage of vaccine distribution issues was focused on its negative aspects.

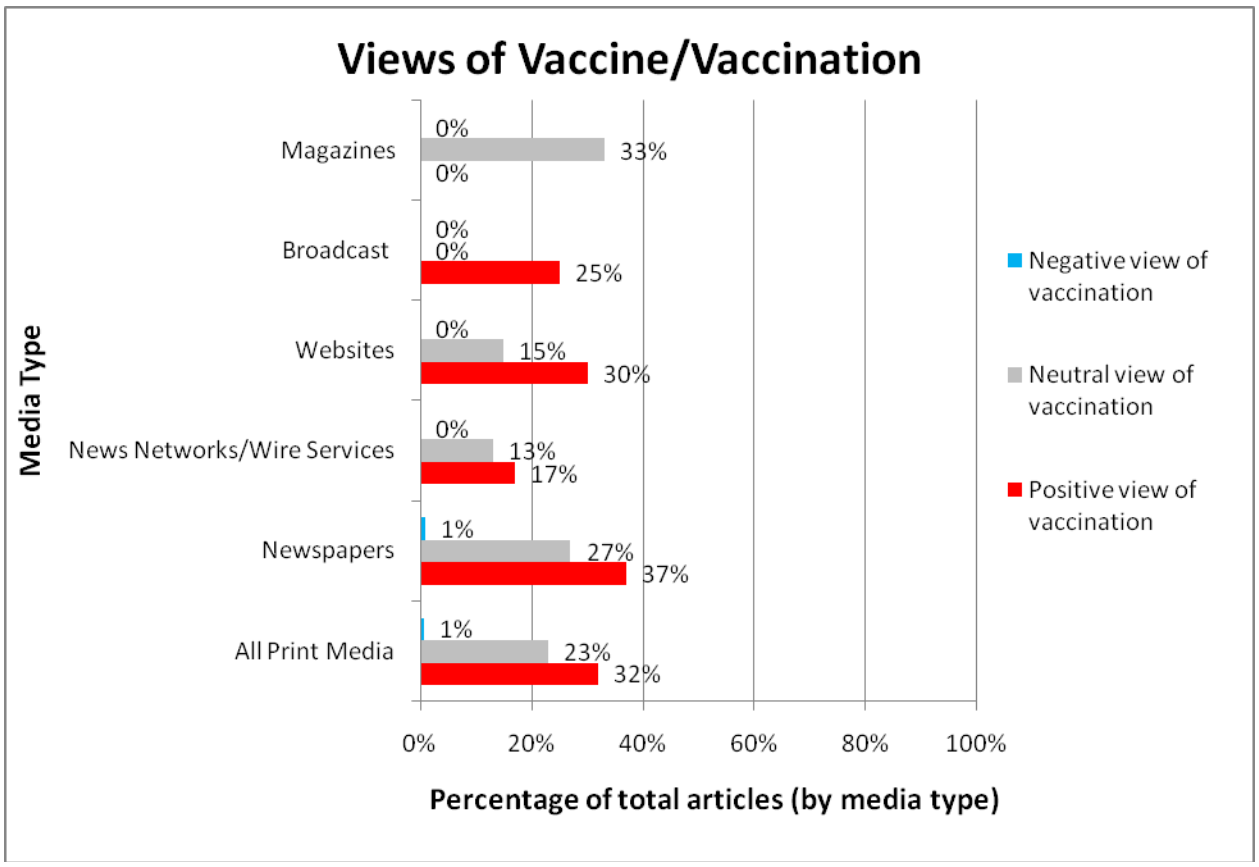
Figure 6.32 also shows the breakdown of hits for vaccine distribution and vaccine distribution problems across the other types of media studied. None of the articles captured by magazines, broadcast media or websites discussed issues related to vaccine distribution. However, newspaper and news networks/wire services did cover the issue. Among newspapers, 14 percent of total articles discussed vaccine distribution and 10 percent discussed vaccine distribution problems. Therefore, about 71 percent of newspaper articles focused on the negative variable: vaccine distribution problems.

Among news networks/wire services, negative coverage was lower, as 5 percent of total articles discussed vaccine distribution, and only 1 percent discussed vaccine distribution problems.

To answer the next part of the question, the tone of articles towards flu vaccine/vaccination will be examined. Figure 6.33 on the following page presents data collected on views of vaccine/vaccination.

Data for all print media is presented as the bottom of Figure 6.33. Results show that 32 percent of all print media articles had a positive view of vaccination, whereas 23 percent had a neutral view and only 1 percent had a negative view. Therefore, the majority of news articles that

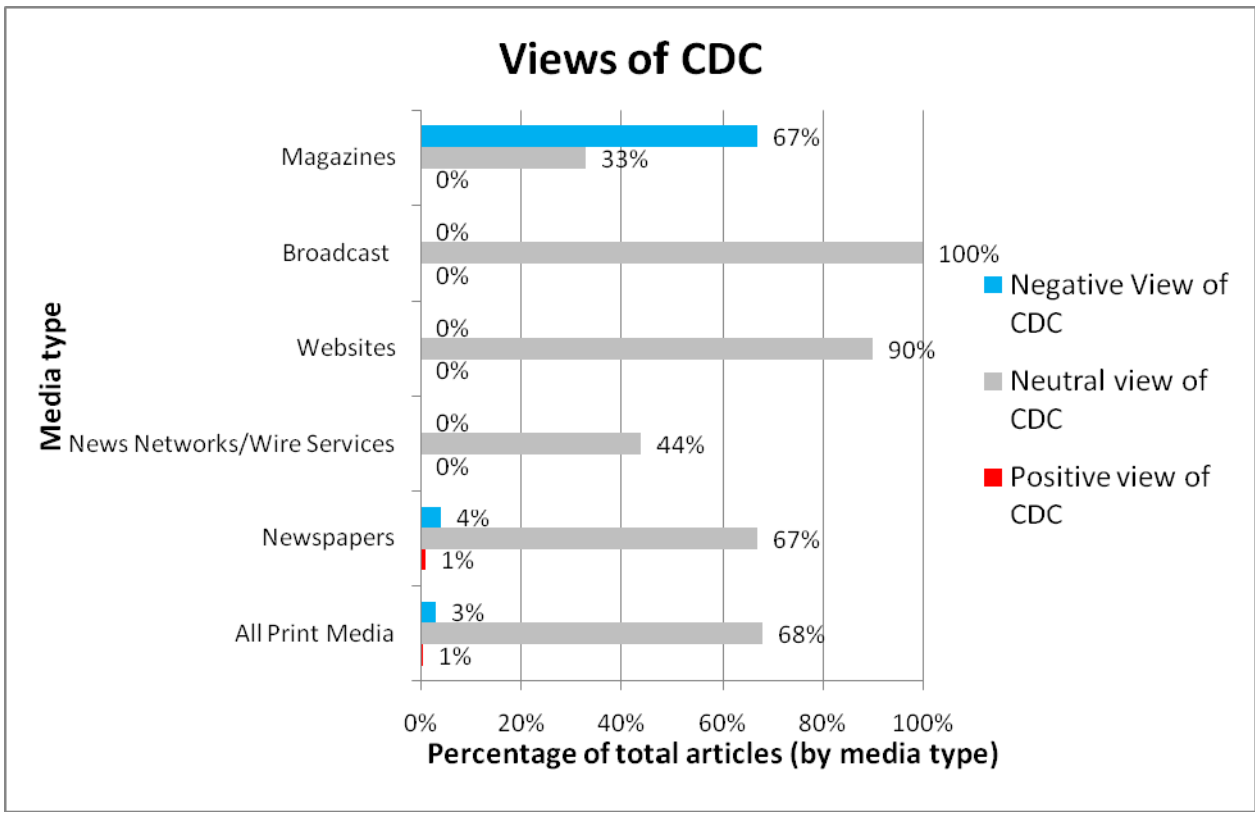
were relevant to flu vaccine/flu vaccination had a positive view of it. Subsequentally, most other articles were neutral, with a minority being negative.



[Figure 6.33: Views of Vaccine/Vaccination]

When the data is broken down by media type, the results are similar. Articles from newspapers, news networks, websites and broadcast media were all consistently positive towards flu vaccine and vaccination. The one exception was magazines, which presented a neutral view. However, it is important to note that only three magazine articles were captured by the study, and only one of the three articles was relevant to flu vaccine, so the results are not generalizable to overall magazine coverage of flu vaccine or flu vaccination.

The final part of the question seeks to determine the general tone of articles towards CDC. Results are shown in the table below.



[Figure 6.34: Views of CDC]

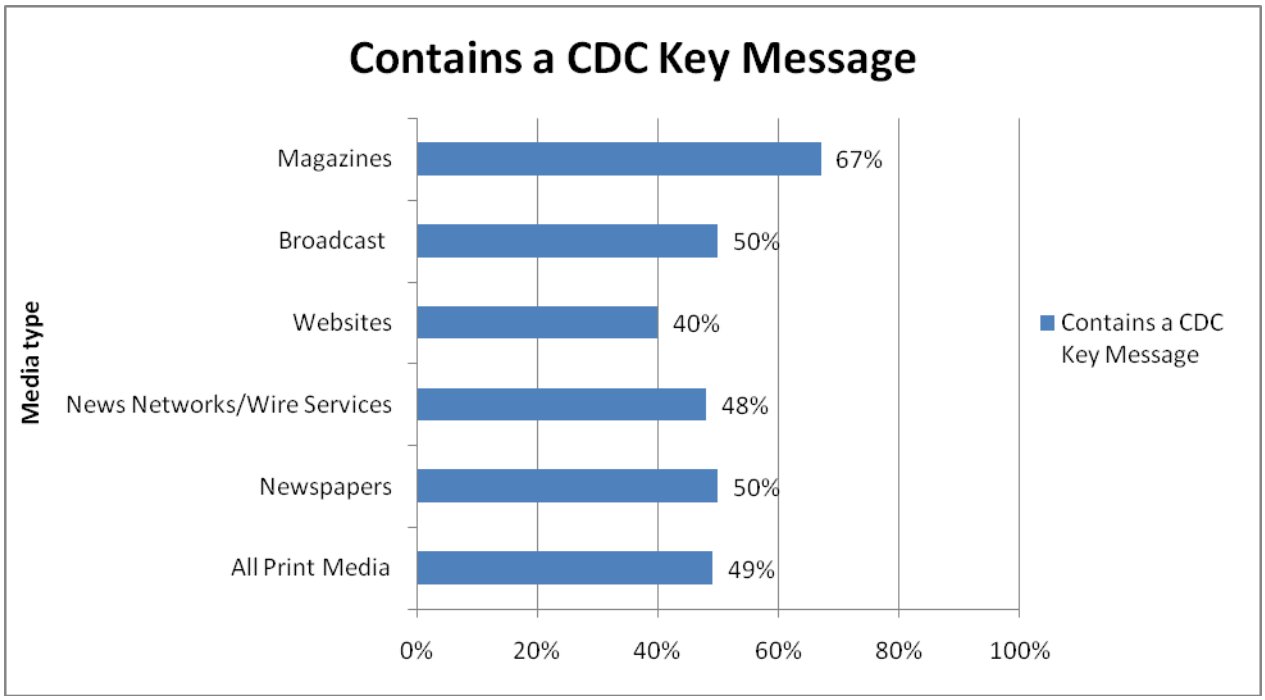
At the bottom of Figure 6.34 above, results for all print media are displayed. Data compiled from the content analysis showed that 68 percent of all media articles studies had a neutral view of CDC. This compares with only 3 percent of articles that had a negative view of CDC and 1 percent of articles that had a positive view. The remaining 28 percent of articles did not mention CDC, and therefore, were ineligible to be counted. Articles published by news networks/wire services, websites and broadcast media were entirely neutral towards CDC. The one exception was magazines, of which two of three articles had a negative view of CDC, and

the remaining article had a neutral view. Based on total articles studied, it is clear that the majority of media coverage was neutral towards CDC.

Results for 4th secondary research question:

The fourth additional research question asks: Do the frames used by print media articles corroborate the key messages of CDC? (See section on CDC's key messages)

There are different ways of analyzing and answering this question. One method is to count the number of articles that produced a hit for the "contains a CDC key message" category, which is listed under structural/design related frames. The following figure presents these results by media type.



[Figure 6.35: Contains a CDC Key Message]

As shown by the bottom of Figure 6.35 above, 49 percent of all print media articles studied contained a CDC key message. Looking at articles by media type, there are some differences in

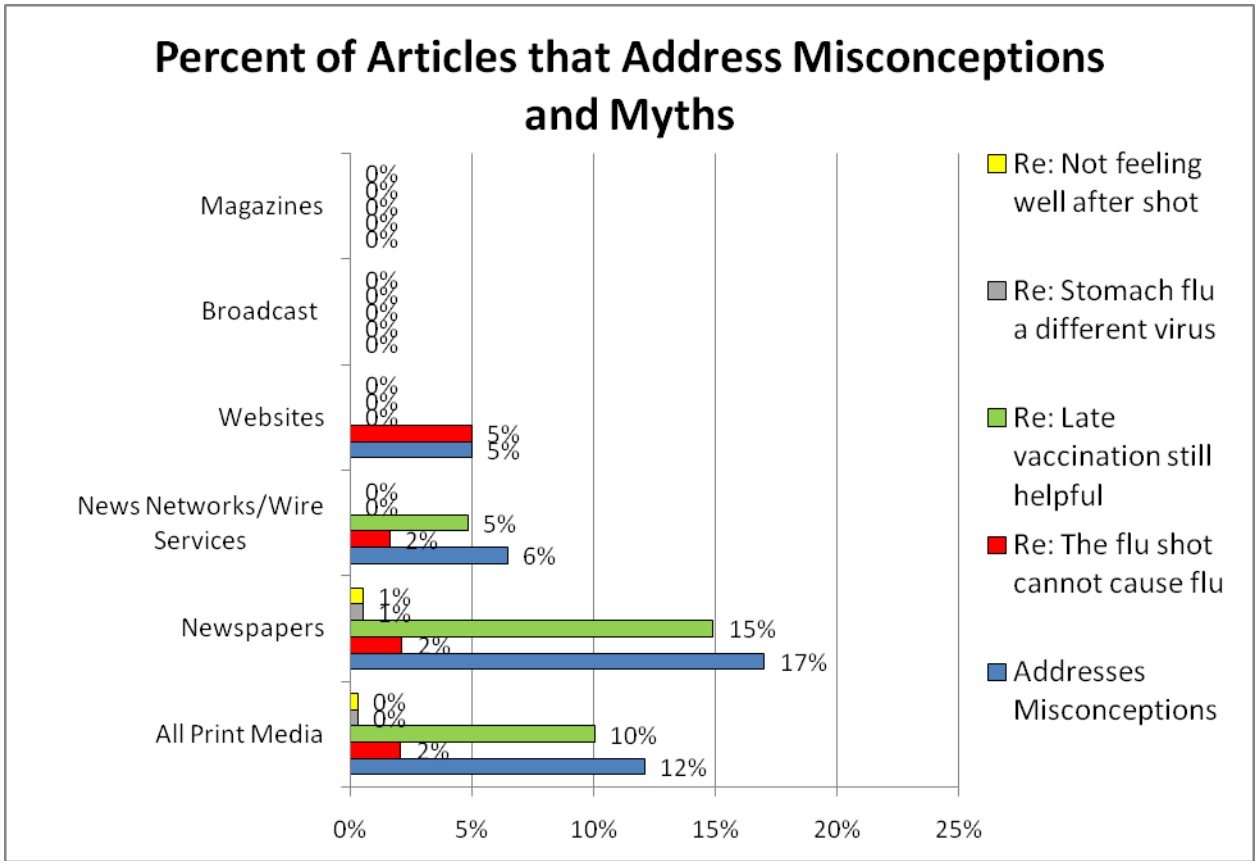
the percentage of total articles by media type. Newspapers were similar to overall results, as 50 percent of total newspaper articles contained a CDC key message. Results for news networks/wire services were also similar, as 48 percent of total news network/wire services articles contained a CDC key message. Websites were comparatively less likely to convey CDC key messages, as 40 percent of total website articles contained a CDC key message. Broadcast media articles, although few in number, matched newspapers with 50 percent of articles conveying a CDC key message. Magazines had the highest percentage of total articles that produced a hit for the "CDC key message" category: 67 percent. However, magazines had the fewest number of articles captured in the study – only three – so these results are likely not representative of overall magazine coverage.

Another method of answering whether print media articles corroborated CDC key messages is to examine whether articles addressed misconceptions and myths about seasonal flu and the flu vaccine. Several of CDC's key messages involve correcting peoples' misconceptions about influenza, particularly regarding the flu vaccine. (The only misconceptions and myths examined in this study were related to seasonal flu and the flu vaccine.) Misconceptions and myths involving avian influenza (bird flu) or pandemic flu were not included in the study because identifying them was not as easy or obvious. Also, most of the misconceptions and myths identified involved peoples' reasons for not obtaining an influenza vaccination.

Vaccines for avian influenza (bird flu) are being stockpiled by the government, but are not being made publicly available, and pandemic vaccines cannot be produced until a number of months after a pandemic virus emerges. Therefore, misconceptions and myths regarding pandemic flu and bird flu are not as closely tied to peoples' beliefs concerning vaccination. By

determining what misconceptions people have of the flu vaccine, CDC can better tailor its key messages regarding vaccination.

A list of and definitions for all of the misconceptions and myths analyzed in the study are provided in the methodology section. The figure below displays the percent of media articles that addressed myths and misconceptions – including each specific myth and misconception – by media type.



[Figure 6.36: Percent of Articles that Address Misconceptions and Myths]

Results for all print media are shown at the bottom of Figure 6.36. Among all articles studied, 12 percent addressed common myths and misconceptions about seasonal flu and the flu

vaccine. Out of all print media articles, 10 percent addressed the myth/misconception that vaccination is only helpful if received at the beginning of the season. In order to correct the myth/misconception, these articles re-affirmed CDC's key message that getting a flu vaccination in December or later can still be beneficial, since the flu season typically peaks in late January or February (CDC "Misconceptions about influenza," 2008). It should be noted that all specific myths and misconceptions are a sub-set of the total number of articles that generated a hit under the "addresses misconceptions" category. Therefore, it is appropriate to conclude that 10 divided by 12 or 83.3 percent of all articles that addressed misconceptions specifically provided the message that late vaccination was still helpful.

Other myths and misconceptions were not as common. For example, the myth/misconception that received the second highest number of hits involved the idea that people can catch the flu from the flu vaccine. Articles that addressed this myth informed readers that the flu vaccine does not, in fact, cause flu. Only two percent of all print media articles addressed this myth. Like the previous myth category, the "flu shot cannot cause flu" category is a subset of all articles that received a hit for the "addresses misconceptions" category. Therefore, it is appropriate to conclude that 2 divided by 12 or 16.6 percent of all articles that generated a hit for the "addresses misconceptions" category also generated a hit under the "flu shot cannot cause flu" category. Five percent of articles from websites addressed this myth (one out of the 20 articles), and two percent of articles from both news networks/wire services and newspapers addressed this myth.

No articles captured from magazines or broadcast media addressed myths or misconceptions, but this was likely a result of the study not capturing enough articles from either type of media.

Two other myths and misconceptions were also extremely rare: less than 1 percent of total articles addressed the misconception regarding the flu shot making people feel ill or become sick; and less than 1 percent of total articles addressed the myth/misconception that stomach flu is actually not a type of flu. Out of all the types of media analyzed, only newspaper articles addressed these myths and misconceptions.

Summary of Results for Research Questions

The primary research question sought to determine the major news frames and topics found in print media coverage of flu. When articles on pandemic flu, avian flu and seasonal flu were ranked by overall number of hits, results showed that articles about pandemic flu received the most hits, followed by avian flu-related articles and lastly, seasonal flu. Looking beyond the different kinds of flu, several topics received significant attention. For example, the topic that received the second highest number of hits was "flu cases," which suggests that reports of human flu cases compel media coverage. Articles about flu vaccine were also very common, suggesting that issues related to flu vaccine also drive media coverage. Pandemic preparedness was another common topic, because when discussing pandemic flu, many articles also describe the steps that are being taken to prepare for it. Many stories discussed pediatric flu (flu illness in children), and about 40 percent of these stories addressed deaths in children caused by flu.

When results were sorted by media type (e.g., newspapers, websites, broadcast, magazines and news networks/news wires), differences in the ranking of these major topics were observed. For example, newspaper articles produced the most hits for "flu vaccine" topic, followed by hits for flu season and flu cases. As compared to overall results, newspapers placed more emphasis on seasonal flu than pandemic flu and avian flu.

In comparison, news networks/wire services focused primarily on avian flu, followed by pandemic flu and lastly, seasonal flu. In contrast, articles from websites and broadcast media focused primarily on pandemic flu. Therefore, these subtle differences between the emphasis placed on certain topics becomes apparent when data from each of the different types of media is separated and compared.

However, the differences observed between the different types of media did not correlate with major differences in the frames used in the articles. Data from the content analysis revealed that the frames that received the most hits were fairly similar across all types of media. For example, the most common structural/design-related frames across all types of print media were as follows: use of a non-CDC subject matter expert, use of medical statistics, use of a CDC key message, and use of CDC figures. There were some exceptions. For example, websites emphasized studies more than medical statistics and CDC key messages, although those topics still ranked high among website articles when measured by the number of hits received.

Upon examining data for tone-related frames, most types of media exhibited neutral views of government and CDC. Articles expressing negative views of CDC were typically less common than articles expressing neutral views, with the exception of magazines, which were uniquely negative towards CDC and government. It is not clear why magazine coverage was more negative than other print media. Only three articles from three magazines were captured in the study. The magazines captured included Computerworld, Slate Magazine and Weekly Standard. It is possible – and likely – that the tone-related framing results for magazines are biased simply because so few articles were captured. However, there is also a possibility that the writing style contained in magazines articles – which tends to be more creative and opinionated when compared to newspaper articles – is better suited to stating criticism. A review of popular

topics found in magazine articles found that all three articles discussed pandemic flu. Two of the three articles were critical of government planning for a pandemic and/or the hype surrounding avian flu (Fumento, 2006).

The first secondary research question asked whether different frames were used in print media coverage of avian flu, pandemic flu and seasonal flu. Results demonstrated that the top three frames for seasonal flu articles, pandemic flu articles and avian flu articles were the same. Use of non-CDC subject matter experts was the most common frame found among all three kinds of flu, followed by use of medical statistics and finally, use of a CDC key message. Seasonal flu articles were commonly framed using CDC figures, followed by use of CDC subject matter experts. In comparison, avian flu articles were more commonly framed using CDC subject matter experts followed by monetary figures for money being spent to combat avian flu. Pandemic flu articles were also framed through use of CDC subject matter experts, followed by use of CDC figures.

When tone-related frames were compared between avian, pandemic and seasonal flu articles, results demonstrated that the frames were similar. The majority of tone-related hits for each kind of flu revealed a predominantly neutral view of government, a neutral view of CDC and overall neutral stories across all three kinds of flu.

The second secondary research question asked which frames and flu topics received the most media attention based on the number of articles published. As previously stated, based on aggregate data, pandemic flu was the most popular topic, followed by flu cases, avian flu, flu vaccine, seasonal flu (the flu season), pandemic preparedness and pediatric flu. Other hot topics included vaccine availability, community mitigation practices, flu symptoms and antivirals. In terms of structural/design- related frames, use of non-CDC subject matter experts was the most

frequently cited frame, followed by use of medical statistics, CDC key messages, CDC figures, CDC subject matter experts, studies, personal testimonials, and money spent with figures. Tone-related frames remained largely neutral towards CDC and government.

The third secondary research question asked whether negative stories about flu, flu vaccine distribution, flu vaccine or CDC outnumber neutral or positive stories. For every type of media except magazines, articles were primarily neutral, followed by negative articles and lastly, positive articles. As previously mentioned, Magazines were uniquely negative overall. However, as previously stated, this may be the result of having captured too few articles.

Newspapers and news networks/wire services were the only types of media to discuss vaccine distribution. Aggregate data reveals that overall, 60 percent of articles that discussed vaccine distribution also discussed vaccine distribution problems. Looking specifically at newspapers, 71 percent of newspaper articles that discussed vaccine distribution also discussed vaccine distribution problems. In comparison, 20 percent of articles from news networks/wire services that discussed vaccine distribution also discussed vaccine distribution problems. Therefore, we can conclude that negative stories about vaccine distribution outnumbered positive stories in newspapers.

In contrast, views of vaccine/vaccination among all types of media were generally positive – and to a lesser degree – negative with the exception of magazines, which took a neutral view. Overall views of CDC among all types of media were also neutral, except magazines, which again exhibited a negative view.

The fourth secondary research question asked whether the frames used by print media articles corroborate the key messages of CDC. Aggregate results revealed that 49 percent of all articles related to seasonal flu, avian flu or pandemic flu contained a CDC key message. Fifty

percent of newspaper and broadcast articles contained a key message, as well as 48 percent of articles from news networks/wire services. This compares with 40 percent of websites articles and 67 percent of magazine articles.

Data regarding common myths and misconceptions about flu revealed that only 12 percent of all print media addressed common myths and misconceptions about flu. Seventeen percent of newspaper articles addressed myths and misconceptions; however, 88 percent of those myths and misconceptions addressed dealt with the fact that late vaccination can still be helpful. Only about 2 percent or less of all articles addressed other common misconceptions, such as the fact that the stomach flu is not a type of flu, the flu shot cannot cause you to get the flu, and other misconceptions about why some people do not feel well about being vaccinated.

CHAPTER 7

LIMITATIONS

There are limitations to conducting a content analysis without the use of computer software. Limitations already mentioned in the methodology section include coder bias, which can negatively impact the reliability of variables, and therefore, the ability of others to accurately replicate the findings of the study. Inter-coder reliability testing revealed that seven variables used in the study were not as reliable as desired, including: "flu cases" (71.93 percent), "medical statistics" (78.95 percent), "contains a CDC key message" (71.93 percent), "positive view of vaccination" (73.68 percent), "neutral news" (66.67 percent), "neutral view of vaccination" (66.67 percent), and "neutral view of actions being taken" (64.91 percent). These categories had correlation coefficients that scored below the acceptable range of 80-100 percent. The reason for the low reliability of these categories may be two-fold: 1) because many of these categories involved interpretation of tone, they may simply be subjective; or 2) it is possible that these categories were not defined with appropriate specificity in the coding instructions. To address the latter concern, revised coding instructions were written for these categories and can be found within the "addendum to the descriptions of topics and frames / coding instructions."

Another limitation may involve validity, which according to Holsti (1969), is defined as "the extent to which an instrument is measuring what it is intended to measure" (p.142). More specifically, the type of validity at issue here is commonly referred to as content validity or face validity. A category for "seasonal flu" was not created in the study. The reason for this is that media do not refer to seasonal flu as "seasonal flu." Instead media typically refer to seasonal flu as simply "flu." The problem with this is that flu is a general term that can refer to any of the three kinds of flu. Bird flu, pandemic flu and seasonal flu are all technically kinds of flu. For

example, an article may refer to the deadly "flu" of 1918, but we know the 1918 flu was a pandemic flu, and therefore, should not be coded as "seasonal flu." Media typically use the terms "pandemic flu" when discussing pandemic flu and "avian influenza," "bird flu," or "H5N1" when discussing bird flu.

Therefore, the only category of flu that presents a problem for accurate coding purposes is "seasonal flu." For the purposes of this study, stories that discussed the "flu season" were counted as "seasonal flu" stories. The justification for doing this is that all "flu season" stories involve seasonal flu. However, not all stories about "seasonal flu" mention the "flu season." As a result, it is possible that the total number of seasonal flu stories are underrepresented in the data collected for this study.

For example, data from the content analysis demonstrated that 147 articles mentioned the flu season. Because of the relationship between "the flu season" topic category and "seasonal flu," these 147 articles were counted as the total number of "seasonal flu" articles. However, data from the "addresses misconceptions/myths" frame category suggested that this 147 figure may represent an undercount of seasonal flu articles.

The reason for this possible undercount is that all of the misconceptions/myths analyzed in this study involved seasonal flu, as opposed to bird flu or pandemic flu. Therefore, all articles that addressed misconceptions/myths should have been counted as seasonal flu articles – even though they might also discuss bird flu and pandemic flu, and therefore, also have been counted for those categories as well.

Overall hits for the "addresses misconceptions/myths frame category revealed that 41 articles discussed misconceptions and myths. However, when the content analysis data compiled in the Excel spreadsheet was sorted and filtered to only show data related to articles with hits for

the “flu season” category, only 34 articles were found that also had hits for the “addresses misconceptions/myths” frame category. This implies that there were at least seven more articles relevant to “seasonal flu” than were counted in the “flu season” category. Therefore, the total number of seasonal flu articles is actually closer to 154, which compares to 157 avian influenza articles and 163 pandemic influenza articles.

Another possible limitation is the fact that the primary researcher/coder in this study works at CDC. The benefit of this relationship with CDC is that this researcher is intimately familiar with the subject matter, which helps to ensure reliable coding. However, being closely invested in the research can also represent a limitation, as it can complicate the perception of remaining objective, neutral and unbiased.

The fact that only three magazine articles were captured in the study represents another limitation. Results for magazines were unique, because when tone-related frames were compared to other types of media, the results for magazines were more negatively framed towards CDC and government. As previously stated, it is not clear why magazine coverage was more negative than other print media. Only three articles from three magazines were captured in the study. The magazines captured included Computerworld, Slate Magazine and Weekly Standard. It is possible – and likely – that the tone-related framing results for magazines are biased simply because so few articles were captured. However, there is also a possibility that the writing contained in magazines articles – which tends to be more creative and opinionated when compared to newspaper articles – is better suited to stating criticism. A review of the popular topics found in magazine articles found that all three articles captured discussed pandemic flu. Two of the three articles were critical of government planning for a pandemic and/or the hype surrounding avian flu (Fumento, 2006). The assertion can be made that because of the small

number of magazine articles captured in the study, it is not relevant, significant or helpful to report findings for magazines. Even with statistical weighting, the results for magazines are unlikely to be accurate. However, the goal of the content analysis was to interpret data from all articles captured to the fullest extent possible. For this reason, results for magazines were analyzed and presented along with the findings for other media, except with the warning that the results shown are unlikely to be representative of overall magazine coverage of flu (under the assumption that more than three flu-related magazine articles were published at the time of the study).

Another possible limitation involves the use of Holsti's correlation coefficient instead of Scott's Pi for the reliability testing of categories. Holsti's correlation coefficient is a common measure of reliability, but Scott's Pi is considered a more accurate measure because it corrects for the possibility the results are impacted by chance. As a result, the reliability of the categories measured in this study may appear lower using Scott's Pi than Holsti's correlation coefficient. If future efforts are made to publish the findings of this study in scholarly journals, a possible recommendation may be to recalculate the reliability results using Scott's Pi.

CHAPTER 8

CONCLUSIONS

The content analysis of print media articles has revealed some characteristics of print media coverage of flu during the 2006-07 flu season. Although some journalists have claimed there is growing media and public fatigue of coverage of avian and pandemic influenza, the content analysis revealed that articles related to pandemic and avian flu were more common than seasonal influenza articles (Fumento, 2006). Overall, however, the numbers were close: 163 articles discussed pandemic flu, whereas 157 discussed bird flu and 147-153 (see limitations section for explanation of this range) addressed seasonal flu. It was not uncommon for a single flu article to discuss more than one type of flu. For example, articles that discussed bird flu sometimes also explored the possibility that a bird flu virus could cause the next pandemic. Furthermore, some articles that discussed seasonal flu also described bird flu or pandemic flu to help the reader distinguish between them.

In addition to quantifying the media coverage of each type of flu, the content analysis also revealed that certain topics attracted a considerable amount of media attention. For example, 160 articles (47 percent of total) described a human flu case or cases. Because these articles were written during the course of the flu season, this data suggests that coverage of flu is correlated with flu illness. This is not surprising, since media have an interest in reporting on issues that impact human health in a timely manner.

Another popular topic related to flu was flu vaccine. One hundred fifty-two articles (45 percent of total) discussed the flu vaccine, making it the fourth most popular topic. It is important to note that the flu vaccine category did not factor in hits for articles that discussed bird flu

vaccine. The content analysis found that among all articles captured in the study, 41 (12 percent of total articles) produced hits for the avian "bird" flu topic category.

In general, issues related to vaccination placed prominently in media coverage of flu. Fifteen topics were identified in media coverage of flu that related to vaccination. They are listed as follows: flu vaccine, vaccine availability, vaccine effectiveness, vaccine production, avian (bird) flu vaccine, vaccine distribution, vaccine safety, nasal spray vaccine (FluMist®), vaccine strain selection, vaccine distribution problems, vaccine surplus, vaccine dosage, vaccinating public health workers, vaccine cost, and vaccine effectiveness in the elderly.

Of these topics, some received more media coverage than others. For example, the "vaccine availability" topic generated 76 hits, and therefore, received coverage in 22 percent of all flu-related media articles captured in the study. The reason for this is likely simple: two years earlier, in 2004, there was a national influenza vaccine shortage when the British government suspended operations of the Chiron vaccine production plant in Liverpool, England, because of bacterial contamination (Health Affairs, 2005).

Media outlets may have been trying to consciously inform the public during the 2006-07 flu season that there was not a similar vaccine shortage. In fact, 46 articles (14 percent of total) discussed vaccine production. However, this does not suggest that all media coverage of vaccines and vaccination was favorable. Many media outlets picked up on problems with the distribution of vaccine. Thirty-five articles (10 percent of total articles) discussed vaccine distribution, and among those, 21 (60 percent of articles related to vaccine distribution) reported on vaccine distribution problems experienced by doctor's offices and health clinics at the beginning of the season.

However, the content analysis showed that the tone of vaccine-related stories was largely positive, accounting for 108 articles (32 percent) of total media coverage of flu. In comparison, neutral views of vaccination accounted for 79 articles (23 percent of total), and negative stories accounted for only 2 articles (less than 1 percent of total coverage). The fact that so few articles were negatively framed in terms of vaccination is a positive for CDC. Each year, at the beginning of the flu season, CDC conducts national campaigns and partners with organizations and public awareness groups to promote vaccination, particularly among groups of people determined to be at high risk of complications from flu. But herein lies one of the other problems with media coverage of flu, according to the content analysis. Only 28 articles (8 percent of total) described the kind of medical conditions or age groups that placed people at high risk of complications from flu. These complications can be serious and lead to hospitalization or death.

Of related interest is the general lack of articles captured in the content analysis that related to "vaccinating public health workers," "flu illness and the elderly", "flu and nursing homes," and "vaccine effectiveness in the elderly." Beginning with the topic of vaccinating public health workers, only 11 (3 percent of total) articles discussed this topic. The lack of coverage on this issue is concerning because public health workers play an important role in public health by caring for the sick and protecting the health of those whom they provide care. When public health workers neglect to get vaccinated, they endanger the lives of the people they care for, particularly those people at high risk of complications. Preferably, there would be more media coverage of this topic, to promote awareness of this issue among health care workers as well as the public, so as to encourage vaccination rates within this group.

The next issue is flu illness in the elderly. Only 7 articles (2 percent of total) covered this issue. People over 50 years of age are considered at high risk of influenza complications. At even

higher risk are people in nursing homes, who tend to be older than 50. Only 4 articles (1 percent of total) discussed the topic of flu and nursing homes, and only 2 (less than 1 percent of total) articles covered vaccine effectiveness in the elderly, making it the least covered topic. Each of these topics arguably deserves more coverage.

Next, news frames will be discussed. Data collected from all print media sources revealed several dominant structural/design-related frames in flu-related articles (inclusive of seasonal flu, bird flu and pandemic flu articles). The "non-CDC SME" category is an example. This frame was found in articles that quoted non-CDC subject matter experts for their professional opinion or advice. The non-CDC SME frame was identified in 244 (72 percent of total) articles, and its prevalence suggests that coverage of flu is largely driven by input from subject matter experts.

CDC subject matter experts were also commonly cited in flu-related stories, accounting for 101 (30 percent of total) articles. Taking both CDC and non-CDC subject matter experts into account, it is reasonable to conclude that subject matter experts play a dominant role in conveying public health messages to the public. The fact that journalists rely so heavily upon subject matter experts is a good thing for CDC, since subject matter experts are expected to know flu intimately, and therefore, can properly explain flu issues to the public in a way consistent with CDC's key messages.

Another common structural/design related news frame found in 197 (58 percent of total) articles was "medical statistics." It is plausible that journalists use medical statistics to help readers understand the burden flu places on society. The common use of medical statistics may also suggest that many journalists consider medical statistics an important tool for communicating flu information to their readers.

"Cites CDC figures" was another category of medical statistics that functioned as a subset of the "medical statistics" category. One hundred twenty-seven articles (37 percent of total) referred to CDC figures. On average, 36,000 people die from flu each year in the United States. This is an example of a CDC figure that is also a medical statistic. This statistic on flu deaths was commonly cited in stories related to seasonal flu. It is an important statistic, because it also functions as a CDC key message. Its purpose is to help the public understand the burden of flu and to encourage people to take steps to protect themselves and their loved ones.

In addition to examining which structural/design related frames were commonly found in news coverage of flu, it is also important to ascertain which frames were not common. One such frame was "competing points of view." Only 18 (5 percent of total) articles featured competing points of view. There are several explanations for why so few of these stories were found. One possible explanation is that it goes against the interests of public health to feature a point of view that contradicts that of a medical expert. Data from this study has already shown that most – if not a significant number – of flu articles cite subject matter experts. If journalists were to seek out competing points of view to contradict these subject matter experts, then readers wouldn't know who to believe and how to protect themselves against flu. Clearly, this would go against the journalists' interests in serving the public and communicating important health messages.

Another frame not commonly found in flu coverage was use of an "emotional appeal." Such stories are specially written to appeal to readers' emotions. Only 3 (less than 1 percent of total) articles were framed to have an emotional impact on readers. Possibly the most memorable example came from the St. Petersburg Times and detailed the overwhelming anguish of a family who had lost a child to flu. There is no obvious answer as to why journalists rarely employ emotional appeals when writing about flu.

One possible explanation is that journalists want to communicate public health messages to the public in a way that is clear, understandable and not convoluted by emotion. It is also possible that some readers may not want to read stories that make them sad or do not like journalists to manipulate them emotionally. If writing in an emotional way causes certain readers to tune out, then that could negate the intended purpose of communicating an important public health message. Another explanation is that perhaps emotional appeals do not mesh well with medical statistics and citations from subject matter experts, which this study has shown are more commonly employed in flu articles.

Other frames deserved additional attention as well. As stated in the introduction, some people have misconceptions about flu. One of the research objectives for this study was to determine whether print media do enough to address these common myths and misconceptions. A structural/design related frame entitled "addresses misconceptions" was used to analyze this issue. Out of 339 total articles studied, 41 (12 percent of total) addressed common myths and misconceptions about flu. However, it is important to note that all of the common myths and misconceptions analyzed in this study related to seasonal flu. As a result, it is perhaps helpful to look at these articles as a percentage of the total articles related to seasonal flu. Since 147 articles discussed seasonal flu, about 28 percent of articles related to seasonal flu addressed misconceptions. However, data analysis showed that some misconceptions received more attention than others. The most common misconception addressed by media was the belief that getting vaccinated late in the flu vaccine is of no benefit. Eighty-three percent of articles that discussed misconceptions addressed this specific misconception. These articles told their readers that late vaccination was still helpful.

However, other misconceptions were covered far less frequently. Only 16.7 percent of articles that addressed misconceptions (2 percent of total articles studied) told readers that the flu shot cannot cause flu. Far fewer articles addressed other popular misconceptions, such as the belief that the flu shot can make you sick or the belief that stomach flu is a type of flu – it isn't, flu is a respiratory disease, not a gastrointestinal disease (CDC "Misconceptions about influenza," 2008). Therefore, this study's findings suggest media—and perhaps CDC—need to do more to address these myths and misconceptions.

Next, tone-related news frames will be discussed. The data analysis has shown that articles about flu tend to be framed neutrally. Neutral news accounted for 150 (44 percent of total) articles. Following this trend, views of CDC and government were also neutral, consisting of 232 (68 percent of total) and 266 (78 percent of total) articles, respectively. This is not surprising. Journalists strive for objectivity. And other findings from the study have shown that many flu articles cite subject matter experts, scientific studies and/or medical statistics – all of which are bound by science, which is an objective and systematic pursuit of fact.

However, not all flu-related articles were neutral. Negative news was reported in 126 (37 percent of total) articles. The reason for this is likely the fact that many flu articles (47 percent of total articles) discuss flu cases. Articles about flu outbreaks and flu cases tend to represent negative news. After all, getting the flu is nothing to be happy about. And articles that discuss pediatric deaths represent especially bad news. Also, articles about vaccine distribution problems also tend to be negative. When vaccine is not available, no one is happy -- with the exception of those looking for an excuse not to get a shot.

Positive stories accounted for 63 (18.5 percent of total) articles captured in the study. Most positive stories involved one of several types of topics, such as: a scientific study with

positive findings for improving public health; a government (or local) initiative with positive implications for handling bird flu or a future pandemic; or a promising new product or vaccine, etc.

Findings regarding views of vaccination were also positive: 32 percent of all print media articles presented a positive view of vaccination, compared to 23 percent with a neutral view, and 1 percent with a negative view.

In addition to examining overall results, it is also important to compare and contrast results from the five types of print media studied, which included: newspapers, news networks/news wires, websites, broadcast and magazines.

One noticeable difference between the types of print media was the ordering of flu-related topics, based on which topics were found in articles most often. For example, newspaper articles most often discussed flu vaccine, followed by seasonal flu, flu cases, pandemic flu, bird flu and pandemic preparedness.

Articles from news networks/news wires, however, focused most often on bird flu followed by pandemic flu, flu cases, pandemic preparedness, flu vaccine and finally, seasonal flu.

Articles from websites, broadcast news and magazines all focused most often on pandemic flu. Following pandemic flu, website articles and broadcast news articles both focused on issues related to bird flu, pandemic preparedness, flu cases, seasonal flu and flu vaccine. However, magazine articles commonly referenced community mitigation practices, seasonal flu, pandemic preparedness, bird flu and spread of bird flu. Thus, there are clear differences in the emphasis placed on certain flu-related topics based on the type of print media analyzed.

Although differences were apparent in the topics emphasized most often in the five types of print media studied, the data analysis revealed structural and designed related frames were often similar. For example, the content analysis demonstrated that articles from newspapers, news networks/wire services, websites, broadcast news and magazines all cited non-CDC subject matter experts most often. Also, all types of media frequently used medical statistics and included CDC key messages and figures. This suggests that the five types of media frame flu in a similar way using similar conventions.

Likewise, tone-related frames found in articles from the five types of media also bore similarities. Views of CDC were consistently neutral, with the exception of articles from magazines, which were predominantly negative towards CDC. However, it is important to note that only three magazine articles were studied, so it is difficult to place much weight on that result.

Views of vaccination were also similar between the five media types, with most media having generally positive views of vaccination, followed – to a lesser extent – by neutral views. Once again, the only exception was magazines, which presented a neutral view. However, as previously stated, there were only three articles from magazines captured in the study, one of which discussed vaccination. Negative views of vaccination were extremely rare in all types of media.

Implications for CDC

This study has shown that media observe and communicate CDC's key messages. This finding is important because it suggests that CDC's communications efforts do have a media impact. However, our findings have demonstrated that media do not provide enough attention to common myths and misconceptions about flu. Misconceptions, such as the idea that you can get

the flu from the flu shot or that the "stomach flu" is a type of flu, continue to persist among the public. Therefore, these topics represent areas where CDC should refocus and improve its communications efforts.

Other findings determined that media reporting on issues related to flu is framed in a scholarly matter that relies heavily upon non-CDC subject matter experts, CDC subject matter experts, studies, medical statistics and CDC figures. Most CDC experts are morally and professionally comfortable with this approach. However, it may be worth studying whether emotionally-framed messages have a greater impact on peoples' acceptance of public health messages. Previous studies by Kahneman and Tversky (1981) and Maheswaran and Meyers-Levy (1999) have shown that gain- and loss-framed messages can positively impact peoples' acceptable of public health messages.

Implications for Future Research

This research has opened up possibilities for additional studies. The findings have demonstrated that seasonal flu, avian flu and pandemic flu are all similarly framed through the use of scholarly sources, such as non-CDC subject matter experts, medical statistics, studies and CDC subject matter experts. This raises the question of how this scholarly framing is interpreted by the general public, who reads these articles. As discussed in the theory section, frames can be interpreted in different ways by different people, who draw upon their pre-existing knowledge and beliefs when conceptualizing and judging media messages. A future study can attempt to determine whether the general public agrees and identifies with the scholarly framing used by journalists in flu-related articles. This research has shown that very few flu-related print media articles use emotional appeals when discussing flu. It could be useful to determine how effective

emotional appeals are in communicating public health messages, and how such framing techniques impact readers' acceptance of public health messages.

REFERENCES

Cappella J.N. and Jamieson, K.H. (1997). *Spiral of Cynicism*: *The Press and the Public Good.* New York: Oxford University Press.

Centers for Disease Control and Prevention. (2007, May 7). Key Facts About Avian Influenza (Bird Flu) and Avian Influenza A (H5N1) virus. Retrieved Dec 9, 2007, from http://www.cdc.gov/flu/avian/gen-info/facts.htm

Centers for Disease Control and Prevention. (2007). 2006-07 Flu Season Summary. Retrieved April 1, 2008, from http://www.cdc.gov/flu/weekly/fluactivity.htm

Centers for Disease Control and Prevention. (2007). Key Facts about Influenza and the Influenza Vaccine. Retrieved on September 8, 2007, from http://www.cdc.gov/flu/keyfacts.htm

Centers for Disease Control and Prevention. (2007, November 16). Key facts about Seasonal influenza (flu). Retrieved on June 26, 2008 from http://www.cdc.gov/flu/keyfacts.htm

Centers for Disease Control and Prevention. (2007, October 19). Key Facts about Seasonal flu Vaccine. Retrieved on June 26, 2008 from http://www.cdc.gov/flu/protect/keyfacts.htm

Centers for Disease Control and Prevention. (2008, February 15). Misconceptions about Influenza and the Influenza Vaccine. Retrieved April 30, 2008 from: http://www.cdc.gov/flu/about/qa/misconceptions.htm

Centers for Disease Control and Prevention. (2007, February 1). Small Changes in 1918 Pandemic Virus Knocks out Transmission. Retrieved on September 8, 2007, from http://www.cdc.gov/media/pressrel/2007/r070201.htm

Centers for Disease Control and Prevention. (2007, October 22). Vaccine Safety. Retrieved on June 26, 2008 from http://www.cdc.gov/vaccinesafety/concerns/thimerosal.htm

Centers for Disease Control and Prevention. (2006, November 24). Weekly Report: Influenza Summary Update. Retrieved April 1, 2008, from http://www.cdc.gov/flu/weekly/weeklyarchives2006-2007/weekly46.htm

DesRoches, C.M. (2005). America's Response to the 2004 Vaccine Shortage. *Health Affairs*, 24 (3), 822-831.

Entman, R.M. (1993). Framing: Toward Clarification of a Fractured Paradigm. *Journal of Communication*, 43, 51-58.

Food and Drug Administration. (2008, June 3). Thimerosal in Vaccines. Retrieved on June 26, 2008, from http://www.fda.gov/cber/vaccine/thimerosal.htm

Fumento, M. (2006, December 25). The Chicken Littles Were Wrong: the Bird Flu Threat Flew the Coop. *Weekly Standard*.

Gamson, W. (1992). *Talking Politics*. Cambridge: Cambridge University Press.

Gandy, O.H. Jr. (2001). Epilogue—Framing at the horizon: A retrospective assessment, 355-377. In Reese, S.D., et al. (Eds). *Framing public life: Perspectives on media and our understanding of the social world.* Mahwah, New Jersey: Lawrence Erlbaum Associates.

Gans, H.J. (1979). *Deciding What's News: A Study of the CBS Evening News, NBC Nightly News, Newsweek, and Time*. New York: Vintage Books.

Holsti, O.R. (1969). *Content Analysis for the Social Sciences and Humanities*. Massachusetts: Addison-Wesley Publishing Company.

Iyengar, S. & Kinder. (1987). *D.R. News That Matters.* Chicago: University of Chicago Press.

Iyengar, S. & Simon, A. (1993). News Coverage of the Gulf Crisis and Public Opinion: A Study in Agenda Setting, Priming and Framing. *Communication Research*, 20(3), 365-383.

Kahneman, D. & Tversky, A. (1984). Choices, Values, and Frames. *American Psychologist*, 28, 107-128.

Kahneman, D. & Tversky, A. (1981).The framing of decisions and the psychology of choice. *Science*, 211(4481), 453-458.

LeBoeuf, R.A & Shafir, E. (2003). Deep thoughts and Shallow frames: on the susceptibility of framing effects. *Journal of Behavioral Decision Making*, 16 (2), 77-92.

Maheswaran, D. & Meyers-Levy, J. (1990). The influenza of message framing and issue involvement. (1990). *Journal of Marketing Research*, 27 (3), 361-367.

McQuail, Denis. McQuail's Mass Communication's Theory. (2000). 4th ed. Sage Publications. California.

Miller, M.M. & Riechert, B.P. (2001). The spiral of opportunity and frame resonance: Mapping the issue cycle in news and public discourse. In Reese, S.D. et al. (Eds.) *Framing public life: Perspectives on media and our understanding of the social world.* Mahwah, New Jersey: Lawrence Erlbaum Associates.

Minsky, M. (1975). A Framework for Representing Knowledge. in Winston, P.H. (Eds.) *The Psychology of Computer Vision*. New York: McGraw Hill.

Nelson, T.E, et al. (1997). Media framing of a Civil Liberties Conflict and its effect on tolerance." *The American Political Science Review*, 91(3), 567-583.

Russell, N.W., Just, M.R., & Crigler, A.N. (1992). *Common Knowledge: News and the Construction of Political Meaning*. Chicago: University of Chicago Press.

Pandemicflu.gov/Avianflu.gov. (2007). General information. Retrieved on December 9, 2007, from http://www.pandemicflu.gov/general/index.html

Pandemicflu.gov/Avianflu.gov. (2008). Avian influenza (Bird Flu). Retrieved on June 16, 2008, from http://www.pandemicflu.gov/general/avian.html

Pan, Z. & Kosicki, G.M. (1993). Framing Analysis: An approach to News Discourse. *Political Communication*,10, 55-75

Reber, B.H. & Berger, B.K. (2005). Framing analysis of activist rhetoric: How the Sierra Club succeeds or fails at creating salient messages. *Public Relations Review*, 31, 185-195.

Reese, S.D. (2001). Prologue: Framing public life: A bridging model for media research. In. Reese, et al. (Eds.) *Framing public life: Perspectives on media and our understanding of the social world*. Mahwah, New Jersey: Lawrence Erlbaum Associates.

Rivers, S.E. et al. (2005).Message framing and pap test utilization among women attending a community health clinic. *Journal of Health Psychology*, 10, 65-67.

Scheufele, D.A. (1999). "Framing as a theory of media effects." *Journal of Communication*, 49(1), 103-122.

Semetko, H.A. & Valkenburg, P.M. (2000). Framing as a theory of media effects. *Journal of Communication*. Vol. 49(1), pp.103-122.

Shen, L. & Dillard, J.P. (2007). The Influence of Behavioral Inhibition/Approach Systems and Message Framing on the Processing of Persuasive Health Messages. *Communication Research*, 34, 433-467.

Tankard, J., Hendrickson, L.; Silberman, J.; Bliss, K. & Ghanem, S. (1991). Media Frames: Approaches to Conceptualization and Measurement.

Tian, Y. & and Stewart, C.M. (2005, November). Framing the SARS Crisis: A Computer-Assisted Text Analysis of CNN and BBC Online News Reports of SARS. *Asian Journal of Communication*,15(3), 289-301.

Woodward , J.L., and Franzen, R. (1948). A study of coding reliability. *Public Opinion Quarterly*, 12, 253-257.

World Health Organization. (2008). Cumulative Number of Confirmed Human Cases of Avian Influenza A (H5N1) Reported to WHO. Retrieved on June 16, 2008, from http://www.who.int/csr/disease/avian_influenza/country/cases_table_2008_05_28/en/index.html

APPENDICES

APPENDIX A - DESCRIPTION OF TOPICS AND FRAMES/CODING INSTRUCTIONS:

Description of Topic Categories

Antivirals: Influenza antiviral medications refer to the class of drugs known as neuraminidase inhibitors, which includes oseltamivir (Tamiflu®) and zanamivir (Relenza®). Any time an article refers to oseltamivir, zanamivir, Tamiflu, Relenza or neuraminidase inhibitor, the coder should mark a hit under this topic on the coding sheet.

Antiviral Side Effects: If an article refers to any adverse events or side effects that can occur from taking influenza antiviral drugs, this column should be checked. An example of antiviral side effect includes reports from Japan of children experiencing delirium or self-injury after taking the drug.

Autism: Articles that discuss autism in relation to vaccination or flu vaccine should receive a hit under this topic on the coding sheet. Note: articles that mention autism are also likely to mention thimerosal (a preservative in flu vaccine that contains mercury).

Avian (Bird) Flu: Avian influenza (bird flu) refers to influenza (flu) viruses that originate in birds. The term “bird flu” can also refer to illness caused by avian influenza viruses. There are several different strains of avian influenza, including avian influenza A (H5), (H7) or (H9) viruses. Public health experts are most concerned about avian influenza A (H5N1) – media commonly refer to it as H5N1. Avian influenza A (H5N1) viruses have caused death in humans and have become endemic in birds in some parts of the world. Any time an article refers to a bird flu virus described above, a check should be placed under the “Avian (Bird) Flu” topic on the coding sheet.

Avian (Bird) Flu Vaccine: This topic should be marked on the coding sheet when an article discusses bird flu vaccines. This includes bird flu vaccines being stockpiled by the U.S. government or bird flu vaccines in developmental or testing phases by pharmaceutical companies.

(Non-Pharmaceutical) Community Mitigation Practices: Community mitigation practices refer to preventive actions that do not involve drugs, but that can help prevent the spread of flu, particularly during a pandemic. Examples include closing schools or businesses to avoid spread of illness and cancelling social gatherings, such as church activities, sports events, etc. Businesses starting work-from-home policies are also an example. Finally, wearing facemasks or respirators also falls under the category of community mitigation practices. An article that mentions any of these practices should receive a hit in the "community mitigation practices" topic column.

Cost of Flu Illness: Articles that discuss the cost of becoming sick from flu should receive a hit under this topic column on the coding sheet. Examples of costs of flu illness include days of work missed, money or productivity lost by businesses, and medical expenses incurred by individuals, etc.

Flu Cases: If an article mentions a person(s) who has flu illness (including both seasonal and avian flu), the "flu cases" topic column should receive a hit on the coding sheet.

Flu Illness and the Elderly: If an article mentions flu illness among older people (age 50 or older), this column should receive a hit.

Flu and Nursing Homes: If an article mentions flu illness in nursing homes, this column should receive a hit.

Flu Season: Articles that discuss the flu season should get a hit under this column. This column should also be given a hit if the flu season is not expressly mentioned but implied. For example, if an article says "this is the time to get vaccinated," one can infer that the article is talking about flu season. This column should also be checked for articles that mention seasonal flu.

Flu Strain Surveillance: Flu strain surveillance refers to activities associated with monitoring or tracking circulating strains of seasonal, avian or pandemic influenza. This topic should receive a hit on the coding sheet if an article discusses strain surveillance activities. Flu strain surveillance is important because it helps public health officials determine which strains to include in the flu vaccine for each year. It also helps scientists to detect how influenza viruses change over time. It is important to monitor circulating strains of avian influenza also because changes in bird flu viruses could make these viruses more transmissible, and therefore, more likely to become a pandemic-capable strain.

Flu Symptoms: If an article mentions symptoms associated with seasonal flu or bird flu, this column should receive a hit. Symptoms associated with seasonal flu include the following: fever (usually high), headache, extreme tiredness, dry cough, sore throat, runny or stuffy nose and muscle aches. Stomach symptoms, such as nausea, vomiting and diarrhea can also occur, but are more common in children than adults. These symptoms are usually referred to as "flu-like symptoms." Symptoms of avian influenza in humans have ranged from typical human influenza-like symptoms to eye infections, pneumonia, severe respiratory disease and other life-threatening conditions. The symptoms of influenza may depend on which virus caused the infection (CDC "Key facts about avian influenza," 2008)

Flu Vaccine: Articles that mention flu vaccine, such as the flu shot or nasal spray flu vaccine (FluMist®), should receive a hit under this column. This topic should not be checked if an article

discusses avian (bird) flu vaccine. There is a separate topic made specifically for bird flu vaccines.

High Risk Persons: High risk persons are people at high risk of experiencing complications from influenza. Examples of people at high risk include: 1) children aged 6 months until their 5th birthday, 2) pregnant women, 3) people 50 years of age and older, 4) people of any age with certain chronic medical conditions, and 5) people who live in nursing homes and other long-term care facilities (CDC "Key facts about seasonal influenza," 2008)

Influenza Types (A,B): Articles that talk about types of flu viruses, such as influenza A (H1), A(H3) or B viruses, should receive a hit under this column. Articles that mention types of flu illness typically mention flu cases or flu strain surveillance.

Lab Testing of Flu: This topic should receive a hit if an article discusses laboratory tests for seasonal influenza. This topic should NOT receive a hit if an article discusses laboratory tests for avian influenza (bird flu). There is a separate topic column for articles that discuss bird flu. Types of influenza tests include rapid tests, RT-PCR (reverse transcriptase polymerase chain reaction), serological assay, etc.

Lab Testing of Avian (Bird) Flu: This topic column should receive a hit on the coding sheet if an article discusses laboratory tests for avian influenza (bird flu). Types of influenza tests include RT-PCR (reverse transcriptase polymerase chain reaction), serological assay, etc.

Nasal Spray Vaccine (FluMist®): The nasal spray vaccine (sold as FluMist®) is sometimes referred to as LAIV for Live Attenuated Influenza Vaccine. Unlike the flu shot, the nasal spray vaccine contains live, attenuated (weakened) viruses, and is administered by a nasal sprayer. It is approved for use only among healthy* people 2-49 years of age who are not pregnant (CDC "Key facts about seasonal flu vaccine," 2008).

National Stockpile: This column should receive a hit if an article discusses the strategic U.S. National Stockpile. This stockpile contains face masks, respirators, antiviral medications, such as Tamiflu®, and medical supplies that could prove important during a public health crisis. Articles that discuss the U.S. stockpile should receive a hit under this topic column on the coding sheet. **Note: Articles that discuss the national stockpiles of other countries (without mentioning the U.S. National Stockpile) should not receive a hit under this topic column. This topic is solely focuses on the U.S. National Stockpile.

Pandemic Flu: This column should receive a hit if an article discusses pandemic flu. Note: there is a difference between pandemic flu and avian influenza (bird flu), however, if an article discusses the possibility of an avian influenza virus mutating into a pandemic virus, then this column should receive a hit.

Pandemic Preparedness: This topic column should receive a hit on the coding sheet when an article discusses activities or events related to pandemic preparedness. For example, if an article talks about a small town holding a meeting to discuss pandemic flu, that article would qualify to receive a hit under this column.

Pediatric Deaths: Pediatric deaths are deaths that occur among children. Any article that discusses children dying as a result of influenza (flu) or bird flu related complications should get a hit under this topic column.

Pediatric Flu: Any article that discusses children becoming infected or exposed to influenza (flu) or avian influenza (bird flu) should get a hit under this topic column.

Rapid Tests for Avian Flu: CDC is currently collaborating with outside organizations to develop quick, reliable and precise rapid tests to identify human cases of avian influenza (bird

flu) virus infection. Any article that mentions these tests or development of these tests should receive a hit under this topic column.

Rapid Tests for Seasonal Flu: Rapid tests for seasonal influenza allow clinicians to quickly determine if a patient has flu. These tests are an important tool in tracking the spread of influenza illness, and rapid tests provide doctors with a means to quickly identify and treat influenza cases. Some rapid tests can distinguish between influenza A and B viruses, but none can subtype influenza viruses or determine the specific strain of influenza causing illness. That kind of testing is more time-consuming and requires sophisticated laboratories.

Spread of Bird Flu (How it is spread): If an article discusses how bird flu is spread from birds to humans, humans to humans, or birds to birds/other animals, the article should receive a hit under this column. For example, an article may say that most human infections with avian influenza (bird flu) occur as a result of close or direct contact with infected birds, bird droppings or surfaces. Such an article would receive a hit under this topic column on the coding sheet.

Swine Flu: Swine flu is a type of flu that originates in pigs. If an article discusses influenza viruses that originate in pigs or human infections that have resulted from swine flu, then that article should receive a hit under this topic column.

Thimerosal (mercury): Thimerosal is a mercury-containing preservative used in some vaccines and other products since the 1930s. As a precautionary measure, thimerosal was removed from all routinely recommended childhood vaccines since 2001, with the exception of some influenza (flu) vaccines. CDC maintains that there is no convincing scientific evidence of harm caused by the low doses of thimerosal in vaccines, except for minor reactions, like redness and swelling at the injection site. Preservatives are used in vaccines as a means to prevent the growth of harmful micro-organisms, particularly bacteria and fungi (Food and Drug Administration [FDA]

"Thimerosal in Vaccines," 2008; CDC "vaccine safety," 2008). Today, the inclusion of thimerosal in the flu shot remains a controversial subject among some parents and autism advocates, who believe the preservative is dangerous for young children and can cause autism. CDC and the majority of outside public health experts have been unable to identify a link between autism and thimerosal-containing vaccines. Any article that discusses thimerosal should receive a hit under this topic column on the coding sheet.

Vaccine Availability: If an article discusses the availability of vaccines, then this topic column should receive a hit on the coding sheet. For example, if an article mentions that flu vaccine is available at local doctor's offices and some retailers in the area, then that article would receive a hit under this topic column on the coding sheet.

Vaccine Cost: An article that discusses the cost of vaccine for consumers should receive a hit under this column. For example, if an article says that people can get a flu shot for $25, then this column should get a hit. Note: this column is unrelated to the cost of vaccines for manufacturers. If an article discusses how Glaxo Smith Kline spent $10 billion on producing vaccines, it should not generate a hit under this column. Instead, a hit would go under a framing category called "money spent with figures."

Vaccine Distribution: If an article discusses how vaccine is being distributed, then it should receive a hit under this topic column. For example, Fulton County public health officials reported receiving 30,000 doses of vaccine last week from distributors. An article that contains a statement like this would receive a hit under this topic column on the coding sheet.

Vaccine Distribution Problems: If an article discusses problems related to vaccine distribution, then it should receive a hit under this column. Examples of vaccine distribution problems include a clinician claiming he/she didn't receive enough vaccine or any at all.

Vaccine Dosage: Articles that discuss vaccine dosage will explain how many times a person must be vaccinated to be fully immunized or will explain the amount of vaccine in a dose (e.g., 0.5 mL pre-filled syringe). Any article that mentions these things should receive a hit under this topic category on the coding sheet. Note: An article that says something along the lines of: "Cobb County received 20,000 doses of flu vaccine" should NOT receive a hit under vaccine dosage. Such articles would instead receive a hit under the "vaccine distribution" column topic.

Vaccine Effectiveness: Articles that discuss how effective flu vaccines are in preventing influenza infection and illness should receive a hit under this column. Note: this column and the "vaccine effectiveness in elderly" column below are not mutually exclusive – some articles may deserve hits for both topic columns on the coding sheet.

Vaccine Effectiveness in Elderly: Articles that discuss how effective the flu vaccine is in preventing influenza infection and illness in the elderly should receive a hit under this topic column on the coding sheet.

Vaccine Production: If an article discusses how influenza vaccine is produced, then this topic column should receive a hit on the coding sheet. Other examples of vaccine production include articles that discuss the amount of vaccine produced by manufacturers.

Vaccinating Public Health Workers: If an article discusses the need to vaccinate public health workers (e.g., nurses, physicians, emergency medical technicians, paramedics, etc.), then this topic column should receive a hit on the coding sheet.

Vaccine Safety: Articles that discuss the safety of influenza vaccines should receive a hit under this topic on the coding sheet. This includes articles about the safety of thimerosal in vaccines, articles about vaccines and autism, and articles that discuss studies of vaccine side effects.

Vaccine Strain Selection: Articles that discuss how influenza (flu) strains are chosen for use in the flu vaccine for the Northern and Southern Hemispheres should receive a hit under this topic column on the coding sheet. Vaccine strain selection is closely related to flu strain surveillance. That is because public health experts monitor circulating flu strains to determine which strains to include in the seasonal flu vaccine each year.

Vaccine Surplus: A vaccine surplus occurs when manufacturers of influenza vaccine produce more vaccine than is used or needed in a season. In the past, it was more common to experience vaccine shortages than surpluses. However, CDC and the Advisory Committee on Immunization Practices (ACIP) have recently expanded age-based recommendations for influenza vaccination. In addition, other government efforts have aimed to encourage vaccine manufacturers to produce flu vaccine and to do so in larger quantities, so as to prevent future vaccine shortages and develop capacity for a future flu pandemic. Articles that discuss a vaccine surplus should receive a hit under this topic column on the coding sheet.

Description of Frame Categories

Structural/Design Related (alphabetical with explanations)

Note: structural or design-related frames involve the techniques used to write an article. These frames can involve the points of view shown, the methods by which the article is presented to the reader, the methods by which issues are illustrated and points are made, etc. The frames presented below fall into this category.

Addresses Misconceptions/Myths: If an article addresses misconceptions or myths about flu, then it should receive a hit in this column. Examples of myths or misconceptions include:

1) The belief the flu shot can cause people to get the flu.

2) The belief the flu shot makes people feel sick.

3) The belief that it is too late to get vaccinated in December or later.

4) The belief the “stomach flu” is a type of flu. (Except in young children, flu is primarily a respiratory disease that does not cause intestinal complications).

Re: the flu shot cannot cause flu: A common misconception about the flu shot is the belief that a person can actually get the flu from the vaccine. This is a myth. Articles that address and dispel this myth should receive a hit under this frame column on the coding sheet.

Re: late vaccination still helpful: Another common misconception about flu vaccine is that the vaccine is only helpful if received at the beginning of the season. Although people should attempt to get vaccinated as early as possible, getting vaccinated in December or later can still be helpful. Articles that address this misconception and encourage people to still get vaccinated later in the season should receive a hit under this frame column on the coding sheet.

Re: stomach flu a different virus: Many people confuse “stomach flu” with actual flu. According to CDC, many people use the term "stomach flu" to describe illnesses with nausea, vomiting or diarrhea. These symptoms can be caused by many different viruses, bacteria or even parasites. While vomiting, diarrhea, and being nauseous or "sick to your stomach" can sometimes be related to the flu – more commonly in children than adults – these problems are rarely the main symptoms of influenza. The flu is a respiratory disease and not a stomach or intestinal disease (CDC “Misconceptions about influenza,” 2008). Articles that address this misconception should receive a hit under this frame column on the coding sheet.

Re: not feeling well after shot: Some people avoid receiving a flu vaccination because they believe the flu shot will make them sick. This misconception is related, but slightly different than the belief that the flu shot actually gives you the flu. The most common side effect of the flu vaccine in adults is soreness at the injection site, but this usually lasts less than two days. The

soreness is often caused by a person's immune system making protective antibodies to the killed/inactivated viruses in the vaccine (CDC "Misconceptions about influenza," 2008).

CDC SME (Subject Matter Expert): An article should receive a hit for this frame column on the coding sheet if it cites a CDC spokesperson as a source of information. For example, "Glenn Nowak with the CDC in Atlanta said there is a record amount of vaccine available today." This would qualify as a CDC SME. Prominent CDC spokespeople typically associated with flu include Dr. Nancy Cox, Dr. Joseph Bresee, Dr. Carolyn Bridges, Curtis Allen, Dr. Tim Uyeki, Christine Pearson, Glenn Nowak and Dr. Julie Gerberding. Of course, other spokespeople not listed above may be cited, but the important thing is that the person being cited is affiliated with CDC.

Cites study: An article should receive a hit under the "cites study" frame column on the coding sheet if it cites a medical study (or other study). Here is an example: A new study claims flu viruses thrive in cold weather, which may explain the seasonality of flu.

Cites CDC Figures: CDC publishes medical statistics and figures related to influenza in the United States. For example, each year in the United States, on average:

- 5% to 20% of the population gets the flu.
- More than 200,000 people are hospitalized from flu complications.
- About 36,000 people die from flu (CDC "key facts about seasonal influenza," 2008).

These are commonly cited CDC figures; however, there are others. For example, each week during the flu season, CDC releases an influenza surveillance report called "FluView." The FluView report provides detailed information on influenza activity which can be "widespread," "sporadic," etc. If an article cites CDC figures or statistics, it should receive a hit under this frame column on the coding sheet.

Competing Points of View: An article should receive a hit in this column if the article sets up a debate between two points of view. This usually involves sources that disagree with one another, and can involve human sources contradicting other human sources, studies contradicting human sources, studies contradicting other studies, etc. For example, CDC says it's time to get a flu shot, but Zed Clampet, 65-year-old farmer, says he does just fine without one.

Contains a CDC Key Message: There are a number of different CDC key messages associated with seasonal, avian (bird) and pandemic flu. For a detailed list of CDC key messages please see the section in the appendix on "CDC Key Messages" (further below).

Emotional appeal: Articles that use this frame will appeal to the reader on an emotional level. For example, "Each year, many parents experience the tragic loss of a child to the burden of influenza, a loss that can be prevented through vaccinated."

Personal Testimonial: A personal testimonial is an expression of opinion from a person being cited or interviewed in an article. Many articles may cite subject matter experts, in which case the article should receive a hit under the "CDC SME" or "Non-CDC SME" frame columns on the coding sheet; however, the information provided by subject matter experts doesn't become a personal testimonial until the subject matter expert goes beyond stating facts and starts stating opinions. Sometimes reporters interview normal people to get their opinion. For example, "Jim Baker is a 50-year-old farmer who avoids getting a flu shot each year. 'I know myself,' he said, 'and I just don't think I need a vaccine to be healthy.'" This is an example of a personal testimonial.

Medical Statistics: If an article cites medical statistics or figures, then it should receive a hit under this frame column on the coding sheet. Anytime an article references CDC figures (another frame listed above), the medical statistics frame column should receive a hit on the

coding sheet. For example, 200,000 people in the United States are hospitalized because of flu illness each year. This is an example of a medical statistic.

Money Spent w/ figures: This frame should receive a hit on the coding sheet whenever an article discusses how much money has been spent (or will be spent) by pertinent parties in the article. For example, "CDC has given $10 million in contacts to four companies to develop rapid diagnostic tests capable of identifying avian influenza A (H5N1) within hours." This is an example of an instance where the "money spent w/ figures" frame should be checked.

Non-CDC SME (Subject Matter Expert): If an article cites a subject matter expert that is not affiliated with CDC, then this frame column should receive a hit on the coding sheet. Typically, articles will cite public health experts from state health departments, WHO and academia. Articles may also interview nurses and physicians.

Tone Related Frames (Alphabetical with Explanations)

Tone related frames are frames that convey a sense of positive, negative or neutral attitudes towards subjects. The frames below are designed to determine the tone of an article towards its subject matter, as well as the tone of an article towards CDC, government and vaccination.

Positive News: Positive news stories contain subject matter that can be viewed as good news by the reader. For example, "CDC reports light flu activity this year" or "Novavax reports bird flu vaccines are effective" are both examples of positive news. However, the headline alone does not determine the tone of an article. The coder should also look at the lead paragraph and nut graph as well before determining an article's tone.

Neutral News: Neutral news stories contain subject matter that cannot be viewed as either good or bad. Alternatively, a neutral story may contain subject matter that is balanced between good and bad news. For example, "U.S. flu expert to testify before Congress" is an example of a

neutral story**.** Another example is "new study suggests flu viruses thrive in cold weather." These stories are neither positive nor negative and simply convey information about public events or studies. These stories do not imply that the studies or events they are presenting have either positive or negative connotations.

Negative News: Negative news articles contain subject matter that can be viewed as bad news by the reader. For example, "China meeting warns of bird flu mutation risk" or "Deadly bird flu found in British turkeys" are examples of negative news articles. Again, the coder should make this determination by looking at the headline, the lead paragraph and the nut graph.

Positive view of actions being taken: Not every article discusses the actions being taken by people or organizations that are the subject matter of an article, so frames related to an article's tone towards "actions being taken" do not always deserve a hit on the coding sheet. For many articles, this category will remain blank. Here is an example of an article that takes a positive view of actions being taken: "Our editors agree: CDC is making the right move by allocating $10 million towards the development of better rapid tests to detect bird flu." In this example, the author of the article – or in this case, the publication itself – is expressing approval of CDC's action. Whenever the author of an article expresses a positive opinion of an action being taken by an article's subject matter, then this category should receive a hit on the coding sheet.

Negative view of actions being taken: Again, not every article discusses the actions being taken by people or organizations that are the subject matter of an article, so frames related to an article's tone towards "actions being taken" do not always deserve a hit on the coding sheet. For many articles, this category will remain blank. Here is an example of an article that takes a negative view of actions being taken: "We agree, CDC needs to do a better job of filling the many overseas public health positions that, thus far, have gone unfilled."

Neutral view of actions being taken: Again, not every article discusses the actions being taken by people or organizations that are the subject matter of an article, so frames related to an article's tone towards "actions being taken" do not always deserve a hit on the coding sheet. For many articles, this category will remain blank. Here is an excerpt from an article that takes a neutral view of actions being taken: "The U.S. Centers for Disease Control and Prevention said on Monday it had awarded $11.4 million for developing new, quick tests for influenza to four U.S. companies." This statement shows that the subject of this article, CDC, is taking an action. The action consists of CDC giving money to companies to develop new, quick tests for influenza. There is no judgment made as to whether this action represents a good or a bad thing, the action is simply presented as a matter of fact. Actions that are not judged by the author of an article or that simply present statements of fact should be marked as neutral. To provide another example, consider this excerpt: "CDC held one of four focus group sessions in Syracuse, New York, to obtain feedback from local residents regarding their feelings about community mitigation strategies during a pandemic." Here again, CDC's action is stated as a matter of fact, and the author of the article does not place judgment on the action.

Positive view of CDC: Articles that present a positive view of CDC will express a favorable opinion on activities or actions conducted by CDC. Overall, stories that present a positive view of CDC will be rare. In order for a story to have a positive, negative or neutral view of CDC, it must first mention CDC or someone who is affiliated with CDC. Note: If an article has a positive view of CDC, it generally also has a positive view of government.

Neutral view of CDC: Articles that present a neutral view of CDC will mention CDC but not associate CDC with a positive or negative connotation, activity or event. Such stories may

simply use CDC as an authoritative source of public health information, in which case, CDC will remain a neutral source of information. Overall, stories that present a neutral view of CDC will be common. Again, in order for a story to have a positive, negative or neutral view of CDC, it must first mention CDC or someone who is affiliated with CDC. Note: If an article has a neutral view of CDC, it generally also has a neutral view of government.

Negative view of CDC: Articles that are framed in terms of a negative view of CDC will mention CDC and associate CDC with a negative connotation, activity or event. For example, "We believe CDC hasn't done enough to fill important overseas public health positions." This is an example of an article taking a negative view of CDC, it's also an article that takes a "negative view of actions being taken." Again, in order for a story to have a positive, negative or neutral view of CDC, it must first mention CDC or someone who is affiliated with CDC. Note: If an article has a negative view of CDC, it generally also has a negative view of government.

Positive view of Government: Sometimes an article may not mention CDC, but instead, will mention the government or a U.S. government agency, such as the FDA. Articles that are framed in terms of a negative view of government will associate government agencies or government-affiliated individuals with a positive connotation, activity or event. In order for a story to have a positive, negative or neutral view of government, it must first mention a government agency or government-affiliated individual. Note: If an article has a positive view of CDC, it generally also has a positive view of government.

Negative view of Government: Articles that are framed in terms of a negative view of government will associate government agencies or government-affiliated individuals with a negative connotation, activity or event. Note: In order for a story to have a positive, negative or neutral view of government, it must first mention a government agency or government-affiliated

individual. Note: If an article has a negative view of CDC, it generally also has a negative view of government by association.

Positive view of Vaccination: Articles that are framed in terms of a positive view of vaccination will explain the benefits of vaccination. Many of these articles will cite CDC's recommendation that vaccination is the best protection against flu illness. Other articles may use subject matter experts to communicate the importance of vaccination. Overall, these articles will convey the sense that influenza vaccination is beneficial.

Neutral view of Vaccination: Articles that are framed in terms of a neutral view of vaccination will acknowledge or describe vaccination, but not express an opinion regarding whether vaccination is recommended or beneficial. For example, "MedImmune petitions FDA to lower age-based recommendations for its FluMist® nasal spray influenza vaccine." This statement mentions influenza vaccine, but does not associate it with a negative or positive connotation or opinion. Other examples of articles that are neutrally framed towards vaccination may present both sides of a debate. For example, "autism advocates claim vaccines have harmed children, but CDC officials insist no evidence of a link between autism and vaccines has been found." This is an example of an article that presents two opposing viewpoints on vaccination, and as a result, takes a neutral stance towards the issue.

Negative view of Vaccination: Articles that are negatively framed towards vaccination may emphasize the view that vaccines are harmful, ineffective or should be avoided. For example, "Mike Thompson, a local farmer said: "The 1976 swine flu vaccine made people sick, so rather than take my chances, I choose to avoid vaccines."

Addendum to the Description of Topics and Frames / Coding Instructions

This addendum to the coding instructions was created to address categories that when tested for inter-coder reliability produced correlation coefficient with values lower than 80 percent. Detailed results of the inter-coder reliability test can be found within the section entitled "reliability testing of categories used in the content analysis."

Flu cases: This category should receive a check on the coding sheet when an article discussed people who have developed a case of seasonal flu illness or bird flu illness. For example, if an article contains a statement, such as, "Indonesia reports two new human cases of avian influenza A (H5N1) virus infection," then the flu cases category should receive a check on the coding sheet. The same rule applies to seasonal flu cases. For example, the statement "Texas has reported two pediatric deaths from flu this season" would receive a check under the flu cases category, in addition to the "pediatric flu" and "pediatric deaths" categories. If an article contains a statement like, "WHO has reported 330 human cases of avian influenza A (H5N1) infection, then this article would also deserve a check on the coding sheet. However, statements, such as "CDC says, on average, flu kills 36,000 people each year in the United States," would not qualify as containing content relevant to "flu cases." Instead, those types of statements would receive a check under the "medical statistics" and – in this particular case – "Contains a CDC Key Message" category.

Medical Statistics: This category should receive a check on the coding sheet when an article discusses medical statistics of any nature. CDC medical statistics include statements, such as "on average, flu kills 36,000 people each year in the United States" or "on average, 200,000 people are hospitalized from flu-related complications each year in the United States." Other examples

of medical statistics include WHO tallies of human deaths from bird flu infection or statements involving percentages, such as “90 percent of flu related deaths occur among the elderly.”

Contains a CDC Key Message: In addition to the instructions and examples of CDC key messages already provided, it is also important to consider messages provided by CDC subject matter experts when coding for this category. If a CDC subject matter expert recommends a course of action, then this can be considered a CDC key message. CDC figures also count as CDC key messages. Statements such as, “on average, flu kills 36,000 people each year in the United States” and “on average, 200,000 people are hospitalized from flu-related complications each year in the United States” are examples of CDC key messages as well as “CDC figures” and “medical statistics.”

Positive View of Vaccination: Generally, an article will take a positive view of vaccination when a subject matter expert – either from CDC or elsewhere – recommends that people go out and obtain a flu shot. These articles will generally endorse vaccination or the benefits gained from vaccination. If an article demonstrates positive statements or attitudes towards vaccination, but also demonstrates negative views, i.e., shows both sides/points of view, then the article will no longer qualify as a positive view of vaccination, but instead, will represent a neutral view of vaccination.

Neutral News: Neutral news typically falls into one of two categories. The first category of neutral stories involves articles that discuss events that do not have a positive or negative connotation. For example, “WHO representatives are hosting a pandemic preparedness meeting in Geneva involving over 140 countries to assess current issues related to ongoing preparations to combat a future pandemic.” This is an example of neutral news. The meeting does not have a positive or negative connotation. If it said, “WHO meeting determines global plans to combat a

pandemic are insufficient," then this would be an example of negative news. To the contrary, if it said, "WHO meeting determines substantial progress made in global efforts to combat future pandemic," then this would be considered positive news. The second type of neutral news story involves articles that contain both positive and negative news. For example, a headline such as, "Missouri reports having light flu season so far, but activity increasing" contains both a positive and negative message. The fact that Missouri has had a light flu season so far is a positive message, but it is counterbalanced with the negative message that flu activity is now increasing.

Neutral view of vaccination: As a prerequisite for this category to receive a check on the coding sheet, the article must discuss influenza vaccine and vaccination. Once this requirement is met, the story must present a view of vaccination this is neither positive nor negative. For example, a story that informs people that vaccine is available but does not tell people to go out and get vaccinated should be considered neutral. This is different from a story that says vaccine is available and health experts recommend people go get vaccinated – such a story would be marked as positive towards vaccination.

Neutral View of Actions Being Taken: This category can be difficult to code correctly. The first step is to determine whether the story focuses on a particular individual, group of individuals, company or country. If not, then this category should be skipped entirely on the coding sheet. However, if the coder determines that the article does discuss one of the above, then the coder must determine if the article discusses a particular action being carried out by this individual/individuals/ company/country. If so, then the coder must determine whether the action taken carries a negative or positive connotation. If the connotation associated with this action is neither negative nor positive, then the article should receive a mark for this category.

For example, “The governor of Texas has called for a meeting with local health officials to discuss whether the state is adequately prepared for a pandemic.” In this case the governor of Texas is conducting an action: holding a meeting. However, the meeting does not have a positive or negative connotation associated with it, so it can be considered a neutral action. If the article said, “Governor of Texas has called for a meeting to discuss pandemic preparedness far later than other governors” then suddenly the action takes a negative connotation, and can no longer be considered neutral.

Articles that take a “neutral view of actions being taken” can also feature actions that have both a negative and positive connotation. For example, “Although Governor Martin of Oklahoma is assembling health officials to discuss pandemic planning years after other states have held similar meetings, better this work be conducted now than at the start of a pandemic, when it will be too late.” This example contains both negative and positive elements, which when considered together, indicate a neutral tone towards the action being taken.

APPENDIX B - CDC KEY MESSAGES

CDC has developed different key messages for each of the three categories of flu: seasonal flu, avian flu and pandemic flu. CDC's key messages can be found on the CDC public website at www.cdc.gov/flu.

The landing page for CDC's "Take 3" flu campaign is located at http://www.cdc.gov/flu/protect/preventing.htm. On this page, the three component messages of the "Take 3" campaign are individually explained. Also available for download on this page are "Take 3" posters/flyers, audience-specific informational articles for seniors and parents and close contacts of young children, and public service announcements (PSAs).

CDC also presents key flu messages during National Influenza Vaccination Week (NIVW). Information about NIVW is posted on CDC's website at http://www.cdc.gov/flu/NIVW/NIVW2008-index.htm. On this page, people can access resources for health professionals and partners, a letter from Dr. Gerberding to health care workers, an NIVW press release, and information about late season activities beyond NIVW.

Seasonal flu key messages

CDC communicates several key messages to the public regarding seasonal flu. Referred to during the 2007-08 season as the "Take 3" campaign, these core concepts represent CDC's key messages to the public on seasonal flu, and are listed as follows:

1. Take time to get vaccinated: the best way to prevent the flu is by getting a flu vaccination each year.
2. Take everyday preventive actions: Cover your nose and mouth with a tissue when you cough or sneeze, avoid close contact with people who are sick, wash your hands often,

and stay home when you are sick. These simple steps can help prevent respiratory illnesses like the flu.

3. Take influenza antiviral medications when instructed to by a physician: When used early (within 48 hours of symptom onset), influenza antiviral medications can be effective for prevention and treatment of the flu.

Other CDC key messages for seasonal influenza include CDC flu statistics and figures. For example, each year in the United States, on average:

- 5% to 20% of the population gets the flu.
- More than 200,000 people are hospitalized from flu complications.
- About 36,000 people die from flu (CDC "Key Facts about seasonal influenza (flu)," 2008).

Avian influenza (bird flu) key messages

The threat posed by bird flu viruses, particularly avian influenza A (H5N1), has been a key concern of CDC since human infections with bird flu viruses first occurred in Asia in 1997. The following messages present an interpretation of CDC's key messages on bird flu.

1. Avian influenza is an infection caused by avian influenza (bird flu) viruses. These influenza viruses occur naturally among birds. Avian influenza is very contagious among birds and can make some domesticated birds, including chickens, ducks, and turkeys, very sick and kill them (CDC "Key facts about avian influenza," 2008).

2. Highly pathogenic avian influenza A (H5N1) virus is an influenza A virus subtype that occurs mainly in birds and is highly contagious among birds, causing high mortality among domestic poultry (CDC "Key facts about avian influenza," 2008).

3. Usually, “avian influenza virus” refers to influenza A viruses found chiefly in birds, but infections with these viruses can occur in humans. The risk from avian influenza is generally low to most people, because the viruses do not usually infect humans (CDC “Key facts about avian influenza,” 2008).
4. (WHO) has reported human cases of avian influenza A (H5N1) in Asia, Africa, the Pacific, Europe and the Near East (CDC “Key facts about avian influenza,” 2008).
5. H5N1 virus from person-to-person has been rare, limited and un-sustained. However, this epizootic continues to pose an important public health threat (CDC “Key facts about avian influenza,” 2008).
6. Because all influenza viruses have the ability to change, scientists are concerned that H5N1 viruses one day could be able to infect humans more easily and spread easily from one person to another (CDC “Key facts about avian influenza,” 2008).
7. There is little pre-existing natural immunity to H5N1 virus infection in the human population. If H5N1 viruses gain the ability for efficient and sustained transmission among humans, an influenza pandemic could result, with potentially high rates of illness and death worldwide (CDC “Key facts about avian influenza,” 2008).

Pandemic influenza key messages:

1. A pandemic is a global disease outbreak. A flu pandemic occurs when a new influenza virus emerges for which people have little or no immunity, and for which there is no vaccine. The disease spreads easily person-to-person, causes serious illness, and can sweep across the country and around the world in very short time (Pandemic Flu.gov “General Information,” 2008)

2. It is difficult to predict when the next influenza pandemic will occur or how severe it will be. Wherever and whenever a pandemic starts, everyone around the world is at risk. Countries might, through measures such as border closures and travel restrictions, delay arrival of the virus, but cannot stop it (Pandemic Flu.gov "General Information," 2008)

3. Health professionals are concerned that the continued spread of a highly pathogenic avian H5N1 virus across eastern Asia and other countries represents a significant threat to human health. The H5N1 virus has raised concerns about a potential human pandemic because:

    - It is especially virulent
    - It is being spread by migratory birds
    - It can be transmitted from birds to mammals and in some limited circumstances to humans, and
    - Like other influenza viruses, it continues to evolve (Pandemic Flu.gov "General Information," 2008)

Since 2003, a growing number of human H5N1 cases have been reported in Asia, Europe, and Africa. More than half of the people infected with the H5N1 virus have died. Most of these cases are all believed to have been caused by exposure to infected poultry. There has been no sustained human-to-human transmission of the disease, but the concern is that H5N1 will evolve into a virus capable of human-to-human transmission (Pandemic Flu.gov "General Information," 2008).

APPENDIX C - TABLE OF ARTICLES USED

[Table 1: Table of Articles Used]

Date Published	Source	Title	Unique ID
11/15/2006	Birmingham (Ala.) News	Flu cases signal early season outbreak of type A and B appears mild, not disruptive	1115026
11/15/2006	Reuters	Nursing home staff, residents both need shots: study	1115024
11/15/2006	Wilmington (Del.) News Journal	Sussex infant Del.'s first flu cases of season	1115027
11/16/2006	Dow Jones Newswires	FDA gets new Tamiflu data on Behavior Events	1117037
11/17/2006	AP Nebraska	CDC seeks community input about flu pandemic plans	1120028
11/17/2006	Atlanta Journal-Constitution	Flu-shot distribution too feverish	1117039
11/17/2006	Dow Jones Newswires	Michigan confirms first flu case	1120029
11/18/2006	Atlanta Journal-Constitution	Fulton lacks shots for flu	1120026
11/19/2006	Lincoln (Neb.) Journal Star	Preparing for a pandemic	1120022
11/19/2006	Syracuse (N.Y.) Post-Standard	Controlling Pandemic Influenza	1120024
11/20/2006	Dow Jones Newswires	US government continues to add to bird flu vaccine stockpile	1121014
11/20/2006	Wilmington (Del.) News Journal	Doubt cast over the efficacy of flu shots British medical analysis says studies are flawed	1120019
11/21/2006	Richmond (Va.) Times-Dispatch	Kaine gives the flu campaign a gubernatorial shot in the arm	1121012
11/24/2006	Tacoma (Wash.) News Tribune)	State Sidesteps Flu Bug So Far	1127031
11/26/2006	Baltimore Sun	Less Sun, More Sneezing	1127018
11/26/2006	New York Times	Awaiting lengthy lab confirmation of bird flu risks treatment delays, studies find	1127006
11/26/2006	Park Hills (Mo.) Daily Journal	A Worst Case Scenario - Health Department Considers Plan for Bird Flu Pandemic	1127029
11/26/2006	Raleigh (N.C.) News & Observer	N.C. Arms Against Threat of Flu Pandemic	1127023
11/27/2006	AP Iowa	Health Officials Push to Increase Demand for Seasonal Flu Shots	1128016
11/27/2006	AP New Mexico	New Mexico Hasn't Reported Any Flu Cases	1128019
11/27/2006	Associated Press	Feds Says There is Enough Flu Vaccine	1128009
11/27/2006	Beaver County (Pa.) Times	New Worry: Too Much Vaccine	1127016

11/27/2006	CNN.com	Flu Could Cost Employers $10 Billion	1128017
11/27/2006	Sacramento (Calif.) Bee	Big Push Touts Flu Shots - A Record Supply of Vaccine Prompts Immunization Blitz	1127014
11/27/2006	Springfield (Mo.) News-Leader	Flu on Health Officials' Agenda - Vaccinations Are Available to Healthy, At-risk Individuals	1127010
11/27/2006	Springfield (Mo.) News-Leader	Drug Safe, Doctors Say - Doctor's Downplay Tamiflu Warnings	1127012
11/28/2006	Arizona Daily Star	It's Official: Flu Season is Here, So get that shot	1128014
11/28/2006	Atlanta Journal-Constitution	Health Officials Insist on Flu Shots	1128003
11/28/2006	New York Times	Sick of the Flu	1128011
11/28/2006	Seattle Post-Intelligencer	Most Kids Don't Get Flu Shot Follow ups	1128012
11/28/2006	United Press International	Flu Vaccines Plentiful Amid Low Demand	1129015
11/29/2006	Hartford (Conn.) Courant	Late Flu Shots Limit Vaccinations	1129003
11/29/2006	Raleigh (N.C.) News & Observer	Surviving the Flu	1129013
11/29/2006	Springfield (Mass.) Republican	Flu Appearing in Western Mass	1129009
11/29/2006	Springfield (Mo.) News-Leader	It's Not to Late to Get Influenza Vaccination	1129011
12/1/2006	Providence (R.I.) Journal	It's the Season for Flu Shots	1201037
12/4/2006	Reuters	US CDC Contracts for New, Faster Bird Flu Tests	1205017
12/4/2006	Reuters	Henry Schein Cuts '06 Earnings Outlook	1205025
12/4/2006	United Press International	CDC Awards $11.4 M for Bird-Flu Rapid Tests	1205020
12/5/2006	Associated Press	CDC Awards Money to Develop Quick Tests	1206006
12/5/2006	Manchester (N.H.) Union Leader	Groups Throughout State to Receive Pandemic Grants	1205024
12/5/2006	United Press International	CDC Seeks Bird Flu Diagnostic Tests	1206040
12/5/2006	USA Today	Why Your Child Needs a Flu Shot: The Medical Consensus is in: the benefits outweigh any risks	1205021
12/5/2006	Wall Street Journal	Four Firms Win Flu-Test Grants	1205019
12/6/2006	CNN.com	Bird Flu Virus 'Still Smoldering," U.S. Expert Says	1207060
12/7/2006	Salt Lake (Utah) Tribune	Advisors Tell State to Buy Meds for Flu Pandemic	1207058
12/10/2006	AP South Dakota	State Readies for the Potential Pandemic Flu Outbreak	1211128
12/10/2006	Canadian Press	Health Minister Releases Updated Pandemic Flu Plan for Health Sector	1211130
12/11/2006	Baltimore Examiner	Local Agencies Rally Together to Develop Tests for Avian Flu	1211127
12/13/2006	Associated Press	Study: Flu Shots Better than FluMist	1214042

12/13/2006	Canadian Press	Studies Back Vaccinating Kids to Cut Flu Spread; killed vaccine best in adults	1214007
12/13/2006	HealthDay	Studies Support Flu Vaccine's Effectiveness	1214046
12/13/2006	Washington Times	Free Flu Vaccines Draw Few to Clinics	1214050
12/13/2006	WebMD	Flu Vaccines Compared	1214044
12/14/2006	Baltimore Examiner	Schools May be New Front Line Against Viruses	1214041
12/14/2006	Baltimore Sun	Flu Vaccine for Youth Can Aid Families	1214038
12/14/2006	Miami Herald	Children on Medicaid Waiting for Flu Shots	1214048
12/14/2006	Reuters	Pandemics that Have Ravaged Mankind	1215032
12/14/2006	Reuters Health	Wide Variation Seen in Kids Given Flu Shots in U.S.	1215005
12/15/2006	(Nashville) Tennessean	Flu Season Officially Opens in Midstate, "right on time"	1215030
12/15/2006	Bismarck (N.D.) Tribune	Sporadic Cases of Flu Reported Around North Dakota	1215031
12/18/2006	AP South	Northwest Georgia County's Schools Reopen After Flu Outbreak	1219011
12/19/2006	Arizona Daily Star	2 New Flu Cases Reported; Total at 6: Low Number Good News to Officials Who Credit People Heeding Pleas	1219012
12/19/2006	Associated Press	Quidel Gets License to Flu Test	1220016
12/19/2006	GovExec.com	Systems to Monitor Flu Pandemic Not Ready	1220019
12/19/2006	Green Bay (Wisc.) Press Gazette	Influenza Cases Remain Low: Common Viruses May Not Be Part of Specific Reports	1219013
12/20/2006	Baltimore Examiner	U. Md. To Test Vaccine to Bird Flu	1220017
12/20/2006	Boulder (Colo.) Daily Camera	CU Licences Flu Technologies: San Diego Co. Set to Bring Detection Methods to Market	1220005
12/25/2006	Weekly Standard	The Chicken Littles Were Wrong: The Bird Flu Threat Flew the Coop	1219014
12/27/2006	New York Times	2 More Die as Bird Flu Continues Spreading to Humans in Egypt	1227022
12/27/2006	Reuters	Bird Flu's Spread Around the Globe	1228013
12/27/2006	Tampa (Fla.) Tribune	Flu Bug is Here, But So Is Vaccine	1227020
12/28/2006	(Cocoa) Florida Today	Florida One of Nation's Three Hot Spots	1228006
12/28/2006	AP New Jersey	N.J.'s Flu Season a Late Arrival	1229010
12/28/2006	Chattanooga (Tenn.) Times Free Press	Flu Cases in State Up, Say Officials	1228010
12/28/2006	Hackensack (N.J.) Record	Flu Season Arrives in N.J.	1229011
12/28/2006	Newark (N.J.) Star-Ledger	N.J.'s Flu Season a Late Bloomer, But Bergen Case Proves it's Here	1228011
12/28/2006	Stuart (Fla.) News	CDC Says It's Widespread in Florida; But No Shortage of Flu Vaccine	1228008
12/28/2006	Tuscaloosa (Ala.) News	Residents Urged to Tap Surplus of Flu Shots	1229007
12/28/2006	Minneapolis (Minn.) Star Tribune	Flu Shots Go Unused - And Unwanted	1228004

12/29/2006	Birmingham (Ala.) News	CDC to Probe Severe Pediatric Flu in Area	1229003
12/29/2006	Tuscaloosa (Ala.) News	Ironic that there are Excess Flu Shots	1229009
1/4/2007	Houghton (Mich.) Daily Mining Gazette	Slow Start to Flu Season in Copper Country	105044
1/4/2007	Xinhua News Agency (China)	People Urged to Get Flu Shot to Avoid Flu Outbreak	105043
1/5/2007	Atlanta Journal-Constitution	Bird Flu Vaccine Testing Begins	105045
1/5/2007	Lawrence (Kan.) Journal World	Health Leaders Confirm Flu's Here	108030
1/5/2007	Washington Post	New Policy Means More Children's Shots	105009
1/6/2007	AP Iowa	Iowan Gets Swine Flu Which Rarely Jumps From Pigs to Humans	108033
1/6/2007	Xinhua News Agency (China)	New Human Bird Flu Vaccine Virus Developed in China	108032
1/10/2007	Canadian Press	1918 Flu Virus, Recreated in Winnipeg, Triggered Overwhelming Immune Response	118021
1/11/2007	Associated Press	Bird Flu Picks Up Speed Across Asia	111048
1/13/2007	Myrtle Beach (S.C.) Sun News	Cases of Flu Rise on Coast: North Carolina Has Higher Number During December	116032
1/14/2007	Canadian Press	Father Ruled Out in Latest Cluster of Indonesian Bird Flu Cases	116034
1/15/2007	Reuters	Bird Flu's Spread Around the Globe	116037
1/16/2007	Missoulian (Missoula, Mont.)	Flu Activity Sporadic Around State, CDC Reports	116030
1/16/2007	Salt Lake (Utah) Tribune	U. Gets Grant to Study Response to Outbreaks	116017
1/16/2007	Wall Street Journal	Risk of Bird-Flu Pandemic Seen as "Permanent Threat"	116039
1/17/2007	Associated Press	1918 Killer Flu Tested on Monkeys	118017
1/17/2007	Canadian Press	Winnipeg Lab one of two in the world to recreate, house Spanish Flu Virus	118019
1/17/2007	Reuters	Deadly Clue to 1918 Spanish Flu Virus Uncovered	118025
1/18/2007	New York Times	New Strain of Bird Flu Found in Egypt is Resistant to Antiviral Drug	118023
1/18/2007	San Francisco Chronicle	Animal Tests Provide Insight into 1918 Flu Virus	118012
1/18/2007	Washington Post	1918 Flu Virus Limited the Immune System: Body's Effort to Fight was Often Deadly	118015
1/19/2007	Honolulu Advertiser	UH Seeks OK to Import Bird Flu for Research	119036
1/22/2007	AP Business	Novavax Says Bird Flu Vaccines Effective	123016
1/22/2007	Dow Jones Newswires	Rapid' Flu Tests Have Moderate Effect on Antibiotic Use	123017
1/23/2007	Baltimore Examiner	This Year's Flu Lasting Longer Than Usual	123015
1/23/2007	Rochester (N.Y,) Business Journal	UR Flu Expert to Testify to Congress	124007

1/23/2007	Wall Street Journal	Rapid Flu Tests Found to Reduce Antibiotic Use in Adult Patients	123019
1/24/2007	Honolulu Star-Bulletin	U.H. Gets Approval to Import Avian Flu	125010
1/24/2007	Reuters	U.S. Not Scared Enough of Bird Flu, Senate Told	125008
1/25/2007	Connecticut Post	Flu Season off to a Slow Start in State	125012
1/25/2007	GovExec.com	Health Agencies Again Sound Alarm on Flu Pandemic	126021
1/25/2007	New York Times	For the Good of the Herd	125033
1/25/2007	Omaha (Neb.) World-Herald	Vaccine Safety Debate to Resume	125036
1/25/2007	Reuters	Require Flu Shots for Health Workers, Group Says	126019
1/25/2007	USINFO (Department of State)	U.S. Navy, Egyptian Scientists Fight Global Illness, Infection Mild Resistance to Anti-viral Drug Found in Egyptian Avian Flu Victims	126054
1/26/2007	San Francisco Chronicle	Flu Shots Urged for Health Workers: Mandatory Vaccines Would Protect Patients, Experts Say	126005
1/29/2007	Reuters	Bird Flu's Spread Around the Globe	130046
1/30/2007	AP Arkansas	Flu Cases on the Rise in Arkansas	131040
1/30/2007	Reuters	China Meeting Warns of Bird Flu Mutation Risk	130045
2/1/2007	Agence France Presse	Protein on Flu Virus May be Key to Preventing Pandemic; Study	202053
2/1/2007	Associated Press	Flu Advice Would Vary Under U.S. Plan	202015
2/1/2007	Associated Press	CDC Practices for the "Big One"	202039
2/1/2007	Associated Press	Government Prepared for Bird-Flu Pandemic, drug makers eye costs	202041
2/1/2007	Associated Press	Altering Virus Coats May Halt Flu Spread	202047
2/1/2007	Canadian Press	Early and Layered Measures to Limit Spread Should Mitigate Pandemic Influenza: CDC	202018
2/1/2007	CBC (Canada)	Changing Coat of 1918 Flu Virus Stops its Spread	202056
2/1/2007	Dow Jones Newswires	U.S. Government Unveils Pandemic Severity Index	202032
2/1/2007	HealthDay	U.S. Health Officials Unveil Flu Pandemic Plan	202034
2/1/2007	McClatchy Newspapers	CDC Develops System to Gauge Severity of Pandemic	202029
2/1/2007	Newscientist.com	Pandemic Flu May be Only Two Mutations Away	202054
2/1/2007	Reuters	New Bird-Flu Plan Advises When to Close Schools	202026
2/1/2007	Reuters	Experts Check into Rash of U.S. Child Flu Deaths	202043
2/1/2007	Reuters	Small Changes Stop Flu Virus Spread, Study Finds	202051
2/1/2007	United Press International	U.S. Officials Issue Pandemic Guidelines	202038
2/1/2007	Voice of America	U.S. Establishes Flu Pandemic Severity Rating	202036

2/2/2007	ABC News	Life in the Time of a Pandemic: Disease Containment Strategies Have Major Economic, Social Implications	205018
2/2/2007	Biloxi (Miss.) Sun-Herald	"Let's Educate Them Like It's a Storm" Pandemics Get Hurricane Index	205021
2/2/2007	Los Angeles Times	U.S. Issues Guidelines for Flu Crisis	202010
2/2/2007	New York Times	Closings and Cancellations Top Advice on Flu Outbreak	202021
2/2/2007	Reuters	U.S. Will Categorize Pandemics like Hurricanes	202028
2/2/2007	Reuters	CORRECTED: U.S. Experts Check into Severe Child Flu Cases	205027
2/2/2007	San Francisco Chronicle	Flu Pandemic Warnings Rated Like Hurricane Alerts: Global Outbreak Could Force School Closures, Event Cancellations	202012
2/2/2007	St. Paul (Minn.) Pioneer Press	Flu Shot Clinic Scheduled After Boy Dies	202045
2/2/2007	USA Today	Drastic Plans Unveiled to Fight Pandemic: Schools Could Shut down; workplaces could change	202024
2/2/2007	Washington Post	CDC Issues Guidelines for Battling Flu Pandemic; School Closings Likely, But Restricting Travel Not Suggested	202004
2/2/2007	Washington Post	Tiny Mutations Can Limit Influenza Spread, Study Finds Recreated Spanish Virus Less Contagious After Changes	202049
2/3/2007	Birmingham (Ala.) News	Threat of Flu Starts to Wane in State: Influenza Hit Alabama Early and Hard this Year	205025
2/4/2007	Canadian Press	CDC Tests Pandemic Readiness in Drill that Pretends Bird Flu Cases are in U.S.	205005
2/4/2007	New York Times	Deadly Bird Flu Confirmed in British Turkeys	205035
2/4/2007	Sunday Times (Great Britain)	Early Suspicions: Waterfowl are Likeliest Carriers	205031
2/4/2007	Washington Post	In Drill, CDC Practices for Influenza Pandemic: Agency Uses Mock Outbreak to Ready for Disaster	205015
2/4/2007	Washington Post	Bird Flu Detected in Turkey Farm in England	205033
2/5/2007	Computerworld	CDC's Flu Severity Index has Advice for IT: How Bad Does a Pandemic Have to be Before Employees Telecommute?	206067
2/5/2007	Daily Telegraph (Great Britain)	Gene Research	205029
2/5/2007	FOXNews.com	CDC Guidelines Aim to Help Communities Fight Pandemic	206064
2/5/2007	GovHealthIT.com	CDC to Realign Biosense to Focus on Most Populous Cities	206030
2/5/2007	Newsday (Melville, N.Y.)	Don't Discount Bird Flu: President's Advisor Warns Against Apathy, Sees Pandemic Threat as Real, Urges Faster Drug Development	205023

2/6/2007	Daily Champion (Nigeria)	FG Tasked on Bird Flu	206068
2/6/2007	Financial Times	Indonesia Withholds Genetic Samples of Bird Flu Virus	207020
2/6/2007	NewRepublic.com	Bird Flu Hasn't Gone Away'; It's Gotten Worse.	208018
2/6/2007	Philadelphia Inquirer	Fact: No Link of Vaccine, Autism	206070
2/6/2007	Reuters	Anthrax Memories Dog CDC Head in Times of Bird Flu	207003
2/6/2007	Slate Magazine	The Survivalist Returns: What's Wrong with the CDC's New Pandemic Planning Guide.	207027
2/6/2007	Wilmington (Del.) News Journal	New Federal Flu Rating Will Provide Timely Warning for the States	206066
2/7/2007	New York Times	Indonesia May Sell, Not Give, Bird Flu Virus to Scientists	207005
2/7/2007	Occupational Hazards	OSHA Unveils Pandemic Flu Guidance	208020
2/7/2007	Reuters	FACT BOX: Bird Flu's Spread Around the Globe	207029
2/7/2007	San Antonio (Texas) Express-News	After Slow Start, The Flu is on the Rise	207022
2/7/2007	United Press International	U.S. Overdue for Bird Flu, Experts Warn	208016
2/7/2007	Wall Street Journal	Avian Flu: Preventing a Pandemic: Indonesia Refuses to Share Bird-Flu Virus for Research	207018
2/7/2007	Wall Street Journal	From Bird to Person	207024
2/7/2007	Wichita (Kan.) Eagle	You Name It, Someone is Likely Out Sick with It	207049
2/8/2007	Associated Press	Students Wear Masks to Try and Stop Flu	209006
2/9/2007	Canadian Press	B.C. Reports First Pediatric Death this Year; U.S. Numbers Rising	212045
2/9/2007	Houston Chronicle	Houston Dodges Major Outbreak of Flu	209048
2/10/2007	(Cocoa) Florida Today	Wheldon Seeks to Banish Mercury from Vaccines	212050
2/10/2007	Milwaukee (Wisc.) Journal-Sentinel	Flu Killed Child, City Officials Suspect	212043
2/11/2007	Minneapolis (Minn.) Star Tribune	Could Flu Vaccines at School Keep Kids Well?	212047
2/11/2007	Washington Post	Wash Your Hands! And Stay Home? That's a Harder Question.	212042
2/13/2007	Allentown (Pa.) Morning Call	What Flu Season?	213031
2/13/2007	AP Minnesota	Minneapolis Firefighter, Duluth-area Child Die of Flu	214016
2/13/2007	AP Nebraska	Lincoln Girl Dies After Contracting Flu	214020
2/13/2007	Associated Press	Experts Fear Bird Flu May Spread During Lunar New Year, Millions on the Move Across Asia	214025
2/13/2007	Omaha (Neb.) World-Herald	Flu Kills Previous Health Lincoln Girl	214018
2/14/2007	(Nashville) Tennessean	In Tennessee, Flu Expected to Peak by Early March	214021

2/14/2007	AP Minnesota	Latest Child Flu Victim is Identified	215030
2/14/2007	Bloomberg	MedImmune's FluMist Spray More Effective in Children than Shots	215022
2/14/2007	HealthDay	Nasal Spray Flu Vaccine Beats Shots for Kids Under Five	215025
2/14/2007	Omaha (Neb.) World-Herald	Rare Flu Complication Hit Quickly	215031
2/14/2007	Ottawa Citizen (Canada)	We are Still Not Ready	214022
2/14/2007	United Press International	Analysis: Live Flu Vaccine Protects Kids	215027
2/15/2007	AP Nebraska	Children Show Severe Flu Symptoms, Similar to Girl Who Died	216086
2/15/2007	Baltimore Sun	Flu Spray is Better than Shot for Kids	215017
2/15/2007	Minneapolis (Minn.) Star Tribune	More Flu Vaccine on its Way to Minnesota	215029
2/15/2007	New York Times	Flu Spray Most Effective for Children, Study Finds	215015
2/15/2007	New York Times	Scientists Warn that Bird-Flu Virus Remains a Threat	215033
2/15/2007	St. Louis Post-Dispatch	Nasal Spray is a Better Flu Vaccine for Kids than Shots	215020
2/15/2007	USNews.com	Children's Health: Better Protection from the Nasal Spray Flu Vaccine	216088
2/16/2007	Associated Press	Child Flu Deaths Have Schools Worried	220056
2/16/2007	New York Times	Indonesia's Avian Flu Holdout	216089
2/16/2007	Seattle Post-Intelligencer	Second Girl Dies of Flu-Like Illness	216084
2/16/2007	Wall Street Journal	Bird-Flu Vaccine is a Fact; Need for it is Questionable	216090
2/17/2007	Lexington (Ky.) Herald-Leader	Flu Cases Increasing Across State	220054
2/17/2007	New York Times	Indonesia Offering Samples of Bird Flu for Vaccines	220059
2/17/2007	Seattle Post-Intelligencer	Flu Link Confirmed in Death of Second Young Girl	220051
2/17/2007	Seattle Times	Health Officials Confirm 2nd Girl Died from Flu Complications	220049
2/18/2007	Reuters	Bird Flu Study has U.S. Students Hiding Faces	220006
2/18/2007	Seattle Times	Third Child's Death Wasn't from Flu, Officials Say	220047
2/19/2007	Seattle Post-Intelligencer	Girls' Deaths Stoke Flu Fears	220044
2/20/2007	AP Nebraska	Nebraska Official Says Flu Sufferers Getting Better	221027
2/20/2007	New York Times	Sniff and the Flu	220058
2/20/2007	San Antonio (Texas) Express-News	Girl, 16, Dies of Flu at Santa Rosa Unit	221025
2/20/2007	Washington Post	Quick Study: A New Digest on New Research on Major Health Topics	220057

2/21/2007	Wall Street Journal	CDC Panel Meets Over Vaccines	221003
2/23/2007	Department of State USINFO	U.S. Officials Offer Pandemic Flu Aid in Egypt, Switzerland	226026
2/24/2007	Charlotte (N.C.) Observer	Influenza Jumps Again in State, Officials Say	226025
2/24/2007	Chattanooga (Tenn.) News Free Press	Flu Activity Nears 3,000 Local Cases	226023
2/26/2007	Indianapolis (Ind.) Star	Despite Hype, Area Flu Count Called Average	226021
3/1/2007	AP Business	Future's Market Created for Bird Flu	302059
3/1/2007	Dallas Observer	Shoot Up Your Kid	307013
3/2/2007	Houston Chronicle	Spike in Flu Cases Take 4 Lives	302057
3/7/2007	Hackensack (N.J.) Record	Flu Cases Spike in New Jersey	307011
3/11/2007	Associated Press	U.S. Struggles with BioTerror Defenses	312006
3/11/2007	Chicago Tribune	CDC Study Unmasks Much More	312009
3/11/2007	Deseret Morning News (Salt Lake City, Utah)	Flu Season Finally Winding Down with Fewer Cases than Past Years	312012
3/13/2007	Greenwich (Conn.) Time	Flu Vaccines Tossed After Late Shipment	313024
3/15/2007	Financial Times	Jakarta Refuses to Give Bird Flu Samples to WHO	316035
3/15/2007	United Press International	U.S. Wargame Tests Asian Flu Response	316034
3/18/2007	Canadian Press	Doctors Who Have Treated Bird Flu Cases Meet to Share Treatment Info	319029
3/18/2007	Houston Chronicle	A "Hot List" on Bird Flu Survival	319032
3/19/2007	United Press International	Analysis: Asian Game Flu Pandemic Response	320029
3/21/2007	Associated Press	Millions of Flu Shots to be Destroyed	321003
3/21/2007	Business First of Buffalo (N.Y.)	Buffalo Company Takes on Flu	322015
3/21/2007	Kyodo News Agency (Japan)	Gov't Suspends Use of Anti-flu Drug Tamiflu for Teens	321010
3/22/2007	AP Kansas	Report: Bird Flu May Kill 22,000 Kansans	323032
3/22/2007	Buffalo (N.Y.) News	ZeptoMetrics gets $5 Million Flu Contract	322007
3/23/2007	AP New Mexico	State Reports 69 Pneumonia, Flu Deaths this Season	326052
3/23/2007	Atlanta Journal-Constitution	Group: Pandemic Could Cost U.S. $683 Billion	323034
3/23/2007	Honolulu (Hawaii) Star-Bulletin	Damage Estimate Spurs Anti-Flu Effort	323030
3/23/2007	Lexington (Ky.) Herald-Leader	Flu Pandemic Could Kill 33,000 in Kentucky	323028
3/23/2007	Vietnam News Agency	Intl. Organizations Help Prevent Bird Flu in Laos	326053
3/26/2007	AP New Jersey	Sickened Airline Passengers Had Seasonal Flu, CDC Says	327011
3/26/2007	Bloomberg	Continental Hong Kong Flight Has Seven Ill Passengers (Update 1)	327014

3/26/2007	CNN.com	Sickness on Hong Kong Flight Non-threatening	327013
3/26/2007	Reuters	Some Passengers Ill on Hong Kong - New Jersey Flight	327012
3/26/2007	Wall Street Journal	Poor Countries Seek Pact on Avian Flu Vaccines	326050
3/26/2007	Wall Street Journal	Drug Panel Says Benefit of Tamiflu Exceeds Risk	326054
3/27/2007	Associated Press	Indonesia Ends Bird Flu Sample Boycott	328017
3/27/2007	Canadian Press	Hong Kong Flight Held at New Jersey with Montreal-bound Passengers Ill	328011
3/27/2007	Houston Chronicle	Ill Passengers on Continental Flight Spark Investigation	327010
3/27/2007	New York Times	Scientists Hope Vigilance Stymies Avian Flu Mutations	327005
3/27/2007	Newark (N.J.) Star-Ledger	"Sick" Flight is Held at Newark Airport	327003
3/27/2007	Wall Street Journal	Groups Consider Funding Bird-Flu-Vaccine Stockpile	327015
3/28/2007	New York Times	Indonesia to Send Bird Flu Samples, with Restrictions	328015
3/28/2007	Philadelphia Inquirer	Preparing for a flu pandemic, false alarm rings bells	328012
3/28/2007	South China Morning Post (Hong Kong)	U.S. Took Right Action to Hold Plane After Passengers Fell Ill, Says HK	328003
3/28/2007	Wall Street Journal	Indonesia, WHO Reach Pact on Bird Flu Samples	328014
3/29/2007	Raleigh (N.C.) News & Observer	GSK Gave Up on Flu Drug, Suit Says	329040
3/30/2007	CNN.com	Is it the Flu? Get the Fast Flu Test	402021
3/30/2007	Mass High Tech	BioTech Survives Bad Break; Flu Kit Gets CDC Nod	404012
4/1/2007	Boston Globe	Disease Trackers Report 2nd Mild Flu Season	402018
4/2/2007	AP Business	Novavax Shares Jump as Flu Vaccine Shows Potential in Pre-Clinical Studies	403005
4/2/2007	Washington Business Journal	Novavax Stocks Soars After Vaccine Report	403009
4/3/2007	ABC News	Anti flu Drugs Losing Punch	404008
4/3/2007	Bloomberg	CSL Seeks U.S. Approval of Flu Shot, Plans 2007 Sales (update 2)	404011
4/3/2007	HealthDay	Study Finds Some Resistance to Flu Drugs	404010
4/4/2007	Deseret Morning News (Salt Lake City, Utah)	Utah Influenza Report Paints a Dire Picture	404014
4/4/2007	Milwaukee (Wisc.) Journal-Sentinel	Study Sees Shifting Tamiflu Resistance	404006
4/6/2007	HealthDay	Nation's Focus on Health Risks Posed by Globalization	409006
4/8/2007	Vietnam News Agency	U.S.-funded Human Influenza Prevention Project Approved	410014
4/10/2007	Associated Press	Insect-Based Flu Vaccine Shows Promise	411027

4/10/2007	HealthDay	Flu Vaccine Grown in Insect Cells Called a Promising Alternative	411023
4/11/2007	Reuters	Flu Vaccine Grown in Caterpillar Cells is Safe	411029
4/11/2007	USA Today	Flu Vaccine Emerges from Caterpillar Cells	411025
4/16/2007	Newsday (Melville, N.Y.)	Study Says Vaccine Made Inside Caterpillar Cells is Safe, Effective, Faster to Produce than Traditional Methods	416054
4/16/2007	Reuters	U.S. to Have 127 Million Flu-Vaccine Doses	420012
4/17/2007	Associated Press	FDA Approves First Bird Flu Vaccine	418011
4/17/2007	HealthDay	U.S. Approves 1st Bird Flu Vaccine	418002
4/17/2007	New York Times	How (and How Not) to Battle Flu: A Tale of 23 Cities	417002
4/17/2007	Reuters	U.S. Approves First Bird Flu Vaccine for People	418013
4/18/2007	New York Times	First Vaccine Against Avian Flu is Approved as Interim Measure	419022
4/18/2007	Reuters	Flu Triggers Heart Attacks, Study Shows	419020
4/18/2007	USA Today	FDA Licenses Vaccine vs. Bird Flu Infection	419024
4/18/2007	USA Today.com	Groups work to make child flu vaccinations a priority	419017
4/18/2007	Wall Street Journal	Sanofi Bird-Flu Vaccine is Granted FDA Approval	418008
4/18/2007	WebMD	Flu May Raise Heart Attack Risk	419018
4/19/2007	Associated Press	U.S. Health Officials Try to Ensure TV Realism; "Law & Order, " "24" Consult with CDC	420006
4/20/2007	Associated Press	132 M Doses Ready for Upcoming Flu Season	420010
4/20/2007	Honolulu Star-Bulletin	CDC Picks Isles as Epidemic Outpost	420004
4/20/2007	Reuters	Tamiflu Key to Treat Bird Flu, Avoid Steroids: WHO	423076
4/20/2007	St. Petersburg (Fla.) Times	A Life is Lost, Way too Young	420014
4/21/2007	Honolulu Advertiser	CDC to Set Up Isle Field Office	423008
4/22/2007	Deseret Morning News (Salt Lake City, Utah)	Many Adults Don't Get Vaccines	423003
4/22/2007	Honolulu Advertiser	Isle Security Tight for Deadly Viruses	423012
4/23/2007	Disaster News Network	Question is "When," not "If" for Pandemic	426062
4/25/2007	AJC.com	CDC Memo	426010
4/26/2007	Atlanta Journal-Constitution	Overseas CDC Jobs go Unfilled	426005
4/26/2007	Reuters	Roche Says Tamiflu Capacity Outstrips Demand	426065
4/27/2007	Reuters	US Health Agency Stages Bird-Flu Wargame	430003
4/27/2007	USA Today	Tamiflu Maker to Reduce Output of Anti-Viral Drug	427025
5/1/2007	Canadian Press	Influenza Claims Life of 2nd Child this Season	502004
5/2/2007	Atlanta Journal-Constitution	OUR OPINIONS: Jobs Hurdle Creates Crisis for CDC	502002
5/4/2007	Associated Press	Masks May Not Help Against Super-Flu	507012

5/4/2007	NPR.org	In a Pandemic, Authorities Face Daunting Tradeoffs	507005
5/5/2007	Atlanta Journal-Constitution	Congress Asks CDC to Explain Hiring Plan	508003
5/5/2007	Newsday (Melville, N.Y.)	Area Resources Scant in Event of Pandemic	507010
5/7/2007	CQ Homeland Security	Wildlife Monitoring Could Provide Clues on Pandemics	508024
5/7/2007	USINFO (Department of State)	U.S. Agency Issues Guidance for Public Facemask Use in Pandemic	508027
5/8/2007	Financial Times	The Marketing of Medicine to Calm Fears	509027
5/9/2007	Atlanta Journal-Constitution	CDC Must Have a Raise, Not Cuts, Chief Tells House	509002
5/9/2007	Reuters	Bird Flu Not Only Pandemic Risk, U.S. Experts Warn	509026
5/14/2007	AP Business	FDA: FluMist Effective for Kids Under 5	515019
5/14/2007	Dow Jones Newswires	FDA: FluMist Effective in Young Kids, but more Wheezing	515028
5/15/2007	Baltimore Examiner	More Staph Infections Part of Flu Deaths	515010
5/15/2007	Baltimore Sun	FDA Signals Approval for FluMist for Kids Under 5	515022
5/15/2007	Washington Post	FDA Review Finds FluMist Vaccine to be Effective in Young Patients	515027
5/15/2007	Washington Times	FluMist Eyed for Youngest Children	515020
5/15/2007	Wilmington (Del.) News Journal	FDA Backs FluMist Spray for Young Children	515025
5/18/2007	Joplin (Mo.) Globe	Speaker: Gov't Doing Little to Prepare for Next Flu Pandemic	518025
5/19/2007	Escanaba (Mich.) Daily Press	Expert Says Global Flu Threat Real	521003
5/22/2007	Augusta (Ga.) Chronicle	Officials Urge Flu Pandemic Preparations	522025
5/22/2007	Reuters Health	Some Health Staff Wouldn't Work During a Pandemic	523029
5/23/2007	Associated Press	Tiffany Thiessen Fights "Pandemic" in New Movie	524025
5/23/2007	Associated Press	Deal on Sharing Bird Flu Samples Allows for "Exceptions": WHO	524026
5/25/2007	Dow Jones Newswires	Update: MedImmune Gets FDA Warning Letter; FluMist OK Delayed	529079
5/26/2007	Washington Post	Iomai Flu Vaccine Patch Fails Early Stage Testing	529081
5/26/2007	Washington Post	FDA Delays Approval of FluMist	529082
5/27/2007	Canadian Press	Virus Sharing Debate Raises Intellectual Property Concerns	529076
5/28/2007	AP Wyoming	City May Offer Drive-Through Shots	529066
5/28/2007	Associated Press	Antibodies Point to New Bird Flu Therapy	529072
5/28/2007	Bloomberg	Bird Flu Infects Two People in Wales After Outbreak (Update 1)	529070

5/28/2007	Boston Globe	As Deadly as Ever, Avian Flu Proves a Persistent Foe	529067
5/29/2007	Associated Press	FDA Warning Won't Stall Flu Vaccine	530105
5/29/2007	Reuters	Blood of Bird Flu Victims Offers Treatment: Study	529074
5/29/2007	Reuters	New Device Detects Avian Flu Strains Fast	530100
5/30/2007	Wall Street Journal	FDA Warns MedImmune On FluMist	530102
5/30/2007	Washington Post	FDA Finds Problems at FluMist Factory	530103