Abstract

Title of Document:	**VALUES AND SELF-PRESENTATION IN ONLINE COMMUNICATION BY STAKEHOLDERS RELATED TO HOMELESSNESS**
	Jessica A. Koepfler
Directed By:	Dr. Katie Shilton, College of Information Studies, University of Maryland
	Dr. Kenneth R. Fleischmann, School of Information, University of Texas, Austin

Values are guiding principles of what we consider important in our lives. They shape, and are shaped by, our information behaviors and interactions with technology. Design approaches that explicitly consider values can change the affordances of resulting technologies. This dissertation extends research related to values and information technology use and design within the social context of homelessness, a value-laden social issue in the United States. This study used both quantitative and qualitative content analysis to examine the values expressed in online communication (specifically, the 140-character posts on Twitter known as "tweets") by individuals who identified as homeless in their Twitter profiles. They were compared to the values expressed in the tweets of other stakeholders related to the issue of homelessness, including support organizations and homeless advocates, as well as a comparison group of individuals who did not identify with homelessness in their Twitter profiles. A key contribution of this study is an empirically tested coding manual for identifying salient values of Twitter users through their tweets. The application of this coding manual to Twitter users' timelines of tweets helped to characterize the ways in which values emerge from online communication, highlighting differences between the values expressed by individuals and organizations

on Twitter. The study also showed how Twitter users' self-presentation of their online profiles relates to their expressions of values. These findings show how the role of values in one's self-presentation online leads to important implications for the design of sociotechnical systems and for raising awareness about the intersection of technology use and homelessness in the 21st century. These insights are necessary for understanding information technology use by individuals who are relevant but often absent from the development of new information technologies.

Values and Self-Presentation in Online Communication by Stakeholders Related to
Homelessness

Jessica A. Koepfler

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Advisory Committee:

       Professor Katie Shilton

       Professor June Ahn

       Professor Kenneth R. Fleischmann

       Professor Alan Neustadtl, Dean's Representative

       Professor Beth St. Jean

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Chapter 1: Introduction

1.1 Motivation

Approximately 3.5 million people experience homelessness each year in the

United States (National Law Center on Homelessness and Poverty, 2007). Since the 2008

economic downturn and home foreclosure crisis, rates of homelessness have increased,

affecting a broader range of individuals, especially those from the American middle class

(Gould, 2011; Sermons & Witte, 2011). Due to a lack of certain material resources and

the prevailing stigma around homelessness (Harter, Berquist, Titsworth, Novak, &

Brokaw, 2005; Phelan, Link, Moore, & Stueve, 1997), participation in today's

information society can be challenging for individuals living in this condition. Despite a

lack of stable housing, however, research shows that many individuals gain access to the

Internet through mobile devices and personal computers (Eyrich-Garg, 2010, 2011; Le

Dantec & Edwards, 2008; Woelfer, Iverson, Hendry, Friedman, & Gill, 2011), as well as

public computer labs in libraries and other public spaces (Ayers, 2006; Becker, Crandall,

Fisher, Kinney, Landry, & Rocha, 2010), highlighting the importance of information and

communication access as a fundamental need.

A number of projects have emerged that bring together information technologies

and individuals experiencing homelessness in a variety of ways. Examples include the

Invisible People video blog (http://www.invisiblepeople.tv; Horvath, 2008) and the

STREATS website (http://www.streats.tv; International Humanities Center, 2006) among

others. The proliferation of social media sites like Twitter, a popular microblogging tool,

has affected the ways that marginalized individuals connect and engage in public

discourse. Perhaps the most influential site that has emerged is We Are Visible

(http://www.wearevisible.com; Horvath, 2010). This website encourages individuals

experiencing homelessness, or who have experienced it in the past, to use social media to

self-advocate, find social support, and help others. An individual experiencing

homelessness reflects on Twitter's potential to provide social support in the following

testimonial on the website:

> Before we got involved in social media, we felt no one cared we were
>
> homeless. I got mad and went to Twitter just to vent my frustrations. We
>
> soon met people, some homeless and some not, who all seemed to have
>
> one thing in common: they did care. For the first time in months, I felt we
>
> had a voice. This was a huge boost. Through Twitter, one person set up
>
> food being delivered to us. …we found a friend who made a flyer for us
>
> asking people if they had work, which has led to one job so far. I believe
>
> everyone can benefit from social media, and we try to help others in our
>
> area connect and have a voice too. (http://www.wearevisible.com;
>
> Horvath, 2010)

Sociotechnical projects like We Are Visible have the potential to shift not only

public perceptions about homelessness in the 21st century, but also notions of basic

human needs and the impact that information technologies and broadband access can

have on empowering and supporting the values of individuals who have become

disconnected from mainstream society.

In addition to individuals experiencing homelessness, support organizations and

advocates of homelessness are increasingly using sites like Facebook and Twitter to

advance their organizations through the sharing of information, increased transparency, and evoking the values of their organizations through branding and public relations strategies (Muralidharan, Rasmussen, Patterson, & Shin, 2011; Waters, Burnett, Lamm, & Lucas, 2009; Waters & Jamal, 2011).

Values expressed across a body of online communication (known as "tweets" on Twitter) may impact group formation, cohesion, and public perceptions of a group of people (Siegrist, Cvetkovich, & Roth, 2000). These insights are necessary for understanding information technology use by individuals who are relevant but often absent from the development of new information technologies (Berg, 1999). Stakeholders related to the social issue of homelessness are increasingly using Information Communication Technologies (ICTs), but those ICTs might not be designed to reflect their values. Design traditions such as Value Sensitive Design (Friedman, 1997) might take advantage of values in online communication for conceptualizing technology solutions, and for identifying potential criteria for future design of sociotechnical systems that are sensitive to multiple stakeholders' values (Berg, 2012; Wiener, 1950; Woelfer, Yeung, Erdmann, & Hendry, 2008). This dissertation is a first step towards identifying the salient values of the stakeholders related to homelessness and considering their implications for design.

1.2 Research Questions

This dissertation extends research related to values and design within the social context of homelessness through the following research questions:

1. To what extent and in what ways can content analysis methods reliably detect human values expressed through online communication?

2. What are the differences in the salient values expressed through online communication by stakeholder groups related to the issue of homelessness?

3. How can values differences and commonalities among stakeholder groups be characterized to inform values in design?

To address these questions, this study used quantitative and qualitative content analysis to examine the values expressed in tweets by individuals who identify as homeless in their Twitter profiles compared to the values expressed in the tweets of other stakeholders related to the issue of homelessness, such as support organizations and homeless advocates, as well as a comparison group of individuals who do not identify with homelessness in their Twitter profiles. I used Schwartz's Theory of Basic Human Values (1992, 1994) to identify differences and commonalities in the types of values expressed by the stakeholder groups (see also Schwartz, 2007; Schwartz & Bilsky, 1987, 1990). I used thematic analysis to probe significant findings identified in the quantitative analysis by exploring aspects of human values and information technology use at a more granular level.

1.3 Significance of Study

A key contribution of this study is an empirically tested coding manual for identifying salient values of Twitter users through their tweets. The results of this study help to characterize the ways in which values emerge from online communication, highlighting differences between the values expressed by individuals and organizations on Twitter. The study also shows how Twitter users' self-presentation of their online profiles relates to their expressions of values. The role of values in one's self-presentation online leads to important implications for the design of sociotechnical systems and for raising awareness

about the intersection of technology use and homelessness in the 21st century. These

insights are necessary for understanding information technology use by individuals who

are relevant but often absent from the development of new information technologies.

1.4 Defining Key Concepts

In the following sections, I describe the key concepts of this study. Each concept

is explicated and placed within the broader context of the research literature in Chapter 2.

1.4.1 Values

Values "are determinants of virtually all kinds of behavior that could be called

social behavior or social action, attitudes and ideology, evaluations, moral judgments and

justifications of self to others, and attempts to influence others" (Rokeach, 1973, p. 5).

They are criteria that people use to evaluate their behaviors, respond to people they

encounter, and make judgments about events. They help explain pro-social behaviors

such as charitable giving (Bennett, 2003; Schwartz, 2009a), choice of university major,

consumer purchases, environmental behavior, intergroup social contact, occupational

choice, religious observance, and voting (Bardi & Schwartz, 2003; Feather, 1995).

Values are more abstract than attitudes (Feather, 1995; Hitlin & Piliavin, 2004).

In contrast to norms, they are trans-situational and hierarchically organized in terms of

importance to an individual (Rokeach, 1973; Schwartz, 1992). Rather than needs, which

are biological in nature, values influence one's "cognitive-affective appraisal of a

situation in relation to both means and ends" (Feather, 1995, p. 1136). This dissertation

uses sets of relational values, defined by Schwartz (1992, 1994) for examining

quantitative differences in value expression. Using a set of values (i.e., the Self

Enhancement values set) rather than a singular value construct (i.e., *achievement*) helps to define value domains and increases reliability over single value constructs (Braithwaite & Law, 1985; Feather, 1986).

1.4.2 Values and Communication

People rely on affective considerations, like values, for making judgments. Values in communication are expressions that mediate participation in social activities, like political participation (Sotirovic & McLeod, 2010), and can in turn be mediated by information technologies, like social media (Jarvenpaa & Leidner, 1998). Values in communication have been studied most frequently through more formal contexts such as political speeches (a notable example being Martin Luther King's "I have a dream" speech [Conger, 1991; Shamir, Arthur, & House, 1994]) and public hearings or debates (e.g., the Net neutrality debate, Cheng, 2012; Cheng, Fleischmann, Wang, Ishita, & Oard, 2012; the Park51 and nuclear power controversies, Templeton & Fleischmann, 2011; the Homeless Hotspots debate, Koepfler, Templeton, & Fleischmann, 2012), and are discussed extensively in the literatures on social movements (e.g., Castells, 1983; Inglehart, 1990; Stern, Dietz, Abel, Guagnano, & Kalof, 1999), political discourse (e.g., Domke, Shah, & Wackman, 1998), and in marketing and branding studies (e.g., Balabanis, Mueller, & Melewar, 2002; Stride, 2006). Less attention has been given to the study of values in everyday communication, which is typically informal and less-structured than other forms of communication.

1.4.3 Values and Design

Value Sensitive Design is an approach to the design of technology that systematically accounts for human, social, and moral values throughout the design

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process (Friedman, Kahn, & Borning, 2006). Value Sensitive Design accounts for values as both inputs of design and outcomes of information technology use (Friedman, 1997).

This study expands the types of values typically under investigation in Value Sensitive Design by augmenting its values classification, which emphasizes values of moral and ethical import, with Schwartz's values from the social psychology literature, which include a broader range of value types. Schwartz's framework accounts for values conflicts and shared values, which provides a systematic approach to discussing value tensions among stakeholders, a critical aspect of values research in information science and human computer interaction studies (Czeskis, Dermendjieva, Yapit, Borning, Friedman, Gill, & Kohno, 2010; Fleischmann & Wallace, 2010; Miller, Friedman, Jancke, & Gill, 2007).

1.4.4 Homelessness

The U.S. Department of Housing and Urban Development's (HUD) definition of homelessness includes four broad categories of homelessness:

1. People who are living in a place not meant for human habitation, in an emergency shelter, or in transitional housing, or who are exiting an institution where they temporarily resided if they were in shelter or a place not meant for human habitation before entering the institution;

2. People who are losing their primary nighttime residence, which may include a motel or hotel or a doubled-up (i.e., shared living) situation, within 14 days and lack resources or support networks to remain in housing;

3. Families with children or unaccompanied youth who are unstably housed and likely to continue in that state; and

4. People who are fleeing or attempting to flee domestic violence, dating violence, sexual assault, stalking, or other dangerous or life-threatening situations related to violence; have no other residence; and lack the resources or support networks to obtain other permanent housing (National Alliance to End Homelessness, 2012).

This study emphasizes the diverse nature of experiences of homelessness through vignettes that highlight the range of ways individuals might choose to present their homeless identity (or not) through online communication on Twitter.

1.5 Dissertation Overview

Chapter 2 provides a review of the major literatures addressed in this study, including research on human values, online communication, and homelessness, as well as values and design research, which bridges the three literatures. Within these literatures, I make reference to some of my own early work and publications with regard to these topics that served as pilot studies for this dissertation.

Chapter 3 outlines the methods used to address the research questions, namely quantitative and qualitative content analysis, and describes the procedures used to develop the study sample and corpus of tweets.

Chapter 4 addresses the first research question, focusing on the development and testing of the coding manual. I describe the procedures I used to operationalize Schwartz's values classification scheme for content analysis of the tweets. I include a

description of the iterative process that I used to operationalize the codes, develop rules for coding, and calibrate researchers to the coding task.

Chapter 5 addresses the second research question, focusing on the quantitative differences in values expressions for the four groups under investigation. It also provides a qualitative characterization of the values in which each of the four values sets— Openness to Change, Self Transcendence, Conservation, and Self Enhancement—were expressed by each group.

Chapter 6 addresses the third research question, characterizing the quantitative findings from Chapter 5 through a qualitative analysis of the data. This chapter describes themes and patterns of values that emerged within each of the groups. In particular, it examines the relationship between Twitter users' values and the ways in which they present their stakeholder relationship to homelessness on Twitter through their tweets and their online profiles.

Chapter 7 discusses the empirical findings from Chapters 4 through 6, noting the challenges of studying values through content analysis, the differences in values expressed by individuals versus organizations, and differences in how Twitter users present their stakeholder identities through their values. The chapter discusses the implications for design raised by each of these contributions.

Chapter 8 concludes the dissertation with a summary of the study and its key findings. It describes the study's key contributions to the values and design literature and addresses the study's limitations through opportunities for future research.

Chapter 2: Literature Review

This chapter synthesizes the literature related to values research and homelessness with regard to information technology use and design, organized by the study's three research questions.

2.1 Content Analysis to Detect Values in Tweets

The first research question asks, to what extent and in what ways content analysis methods can be used to reliably detect human values expressed through online communication (i.e., tweets)? This question is supported by a brief review of values research in the social and information sciences starting in the 20th century. This historical backdrop highlights the challenges that values research has faced both theoretically and methodologically, and discusses how some of these issues are being addressed in the information sciences. I then provide literature on the use of content analysis for values research and the study of online communication.

2.1.1 Values Research in the Social Sciences

Values research gained traction in the 1970s following the Civil Rights movement in the United States (Spates, 1983). Researchers advanced the field by operationalizing the values construct and identifying and defining specific values held by individuals, societies, and cultures through empirical studies. Researchers developed new instruments to test these conceptualizations and compared findings in cross-cultural samples increasing the robustness of the findings across studies. Key to this movement was the research of Milton Rokeach. In his canonical work, *The Nature of Human Values* (1973), Rokeach positioned values research as central to all the social sciences (e.g., sociology,

anthropology, psychology, political science, education, economics, and others). He defined values as "enduring belief[s] that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode or end-state of existence" (p. 5). Through this conceptualization he was able to link values to cognitive, affective, and behavioral components of social and psychological studies. He explained that a person cognitively knows "the correct way to behave" (p. 7) based on personally held values; can be affectively for or against certain values, enacting or performing their values to evaluate events, situations, and other individuals; and, when activated, values can serve as intervening variables that lead to specific actions and behaviors.

Rokeach also proposed the concept of a *value system*, an individual's or group's "enduring organization of beliefs concerning preferable modes of conduct…along a continuum of relative importance" (p. 5). This notion of a "continuum of relative importance" became the foundation upon which much of values research is based today. Social psychologist Shalom H. Schwartz, whose values theory I discuss in more detail in the sections that follow, has investigated and expanded Rokeach's notion of a values system over the last two decades, developing a comprehensive, relational structure of values sets comprised of motivational value types. This structure allows researchers to not only identify values differences and commonalities among individuals and groups, but it also provides a theoretical basis, grounded in empirical work, for what those relationships mean.

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2.1.2 Values Research in the Information Sciences

Values research in the information sciences has also gained traction in the last three decades. This research space has explored how values relate to technology use and design, especially in the subfields of human-computer interaction, social informatics, and information ethics. In these fields, the values construct is applied across complex sociotechnical systems. Values can be implicated or accounted for at the intersections of individuals, institutions, and technologies within these complex systems. For example, values researchers in information science have focused on the social context of information technologies, examining the design, use, and social impact of deployed technologies within various contexts (Kling, 1996; Kling, Rosenbaum, & Hert, 1998). Researchers have considered the personal values of designers and engineers (Fleischmann & Wallace, 2010), as well as a variety of end users from blind and deaf-blind technology users (Azenkot et al., 2011) to individuals experiencing homelessness (Koepfler & Fleischmann, 2012; Koepfler, Shilton, & Fleischmann, 2013; Le Dantec & Edwards, 2008; Woelfer & Hendry, 2010). They have studied how values are surfaced in social settings, such as design labs, in which technologies are designed or deployed (Fleischmann, Wallace, & Grimes, 2011; Shilton, 2010; Shilton & Koepfler, 2013). They have investigated values as attributes of the technologies themselves made visible primarily through the affordances of their use (Friedman & Kahn, 2003; Friedman & Nissenbaum, 1996). Information science scholars have also taken up the task of identifying values embedded in digital content (Cheng, Fleischmann, Wang, Ishita, & Oard, 2010; Fleischmann, Oard, Cheng, Wang & Ishita, 2009; Fleischmann, Templeton, & Boyd-Graber, 2011; Morgan, Mason, & Nahon, 2011). Fleischmann (2014) provides a

synthesis of this literature suggesting a research agenda that continues to explore ways in which to incorporate values-thinking into the technology design and development process.

2.1.3 Complexity of Values

Values are a complex construct to measure and many research methods apply to their investigation. Shilton and colleagues (Shilton, Koepfler, & Fleischmann, 2013) developed a framework of six values dimensions that describe the source of values (e.g., people and technology) and attributes of values relevant to values research and the design of sociotechnical systems. The authors discuss the need for values researchers and designers to be more precise with their discussion of values to support cross-study comparisons and meta-analyses. They call attention to the fact that the exploration of certain values located in certain places in sociotechnical systems will impact the types of values that can be identified and measured (Shilton, Koepfler, & Fleischmann, 2014).

Researchers have used direct methods such as surveys and interviews and indirect methods like content analysis and unobtrusive observation. Direct methods provide researchers with the opportunity to collect data from a large number of people (i.e., surveys) or probe deeply about a participant's responses (i.e., interviews), but are affected by social desirability bias (Rokeach, 1973). Indirect methods (i.e., content analysis) mitigate this bias, but are hindered by a lack of contact with the participant, overemphasizing the researcher's perspectives of the data.

Both the research method and the research context may have an impact on the salience of values that emerge from a particular investigation. Salient values "consist of the individual's sense of what the important goals (ends) and/or processes (means) are

that should be followed in a particular situation" (Siegrist et al., 2000, p. 355). The qualifier "salient" implies that a combination of values will be more important in one situation or context than in another (Siegrist et al., 2000). For example, *privacy* may be more salient for an individual with regard to their personal health records in a workplace setting than at home with one's spouse or close friends. In the latter case, *disclosure* may be a more salient value as the sharing of such information leads to stronger social relationships. This dissertation reflects on the extent to which salient values emerge from 140-character texts (i.e., tweets) and documents the iterative process required to reliably identify values in informal communication (see Chapter 4).

2.1.4 Challenges of Measuring Values

Many values frameworks have been used to assess group and cultural differences based using a variety of research methods, with surveys and content analyses being the most common. Developing a framework for content analysis requires mutually exclusive categories and an iterative process for evolving the coding procedures and coding categories to ensure reliability (Krippendorff, 2004). In order to achieve mutually exclusive categories, researchers may need to shift their focus from finer-grained value constructs to more aggregate constructs. In order to achieve adequate reliability, researchers may need to shift their coding procedures, such as changing the unit of analysis to more accurately reflect their research questions and data corpus, in order to reach appropriate benchmarks (Krippendorff, 2004). These are common techniques deployed in content analysis. However, the finer details of a study that uses content analysis is often not described in publications due to the limitations of word counts and scholarly expectations to focus on research findings rather than on a detailed discussion

of the coding procedures. Studies of Twitter more generally often use bag-of-words approaches, which does not sufficiently address either the challenge of the grain size of values nor the question about reliability (for example, see work by Chen, Hsieh, Mahmud, & Nicols, 2014).

Studies that consider values in texts are no exception and very few published examples provide a detailed discussion of the changes made throughout the process of inter-coder reliability testing and coding manual development. One relevant exception in the information science field is the work by Cheng and Fleischmann (2010) and Cheng (2012). They conducted a meta-analysis of values classifications from the social and information sciences. They sought to develop a framework that would be useful for both survey and content analysis methods as well as synthesize the definitions used to operationalize values in each inventory. Their analysis generated the Meta-inventory of Human Values (MIHV), which was comprised of 16 values categories (Cheng & Fleischmann, 2010). Cheng (2012) noted the difficulty of consistently applying 16 values categories in a content analysis exercise. He plotted the iterative process he went through to refine the MIHV from 16 categories into a set of 6 meta-values to increase consistency and improve reliability between coders (2012, pp. 74–78). Koepfler and Fleischmann (2012), in the pilot study for this dissertation, applied the full set of 16 MIHV categories to set of Twitter data and identified similar challenges related to achieving minimum thresholds of inter-coder reliability.

In the values literature more broadly, reliability statistics are often lower than Landis and Koch's (1977) or Krippendorff's (2004) benchmarks highlighting the difficulty and magnitude of the task of reliably coding values. Cheng et al. (2010)

reported a wide range of reliability scores across the values of interest in their study with only two categories achieving substantial agreement (a kappa value between 0.61–0.80). Koepfler and Fleischmann (2012) noted similar challenges, reporting substantial agreement for two of the 18 values under investigation in their study. Woelfer and colleagues' (2013) work studying barriers and solutions to employment for the homeless using a Value Sensitive Design approach, reported inter-coder agreement using Cohen's kappa for the categories Barriers and Solutions at $\kappa = 0.76$ and $\kappa = 0.77$ respectively. Of the 28 sub-codes in the coding manual, four were above $\kappa = 0.70$, which was considered excellent agreement, 17 were in the range of $\kappa = 0.40$ and $\kappa = 0.70$ which was considered intermediate or good agreement, and seven were below $\kappa = 0.40$ which was considered poor agreement. The challenges raised by these studies motivate the first research question for this dissertation and emphasize the need to carefully consider the role of reliability in studying values through content analysis.

2.2 *Quantitative and Qualitative Values Research & Design*

The following sections motivate the second and third research questions regarding salient values expressed through online communication by stakeholder groups related to the issue of homelessness and values and design. They also provide background on the appropriateness of content analysis for answering questions about values differences within the context of informal communication and the social issue of homelessness. I begin with a high-level review of content analysis used in values research, followed by the study of values in both traditional modes of communication and online communication. I briefly discuss the type of informal communication under investigation in this study (i.e., tweets) and what it is we can hope to learn from them. I then describe

the Value Sensitive Design literature, and how this dissertation will address gaps in that work by using a framework from the social psychology field (i.e., Schwartz's Values Theory [1992, 1994]). I conclude the chapter with a brief review of the literature that addresses homelessness and the social services domain at the intersection of information and communication technologies.

2.2.1 Content Analysis in Values Research and Communication

Content analysis is a technique for "making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" (Krippendorff, 2004, p. 18). It is a non-invasive and unobtrusive method of inquiry often used in the analysis of communication. Content analysis has shown to be an effective method for studying abstract constructs such as values, beliefs, and attitudes within text-based communication (Cheng et al., 2010; Fleischmann et al., 2009; Holsti, 1969; Kahn, Friedman, & Alexander, 2005).

Values are often expressed linguistically, making communication texts a natural point of investigation for values researchers (Nordby, 2008; Schwartz, 2007). Exploring values across communication media has a strong tradition in the fields of advertising and consumer research. Bolchini, Yang, and Garzotto (2009) explored the communication design of branded websites using a values framework; Spiggle (1986) and Belk (1987) considered values within the context of comic books and newspaper comics; and Lin (2001) considered cultural values in Chinese television commercials. Studies of mass media, such as television, newspapers, and magazines, have used content analysis to identify cultural values. Seminal studies of periodicals conducted by Lowenthal (1944)

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and Albrecht (1956) supported the assumption that mass media reflected general cultural values and could be used to see how those values shifted over time.

With the increase in user-generated content on the Web, researchers have turned their attention from newspapers and magazines to analyzing the content of social media sites like Wikipedia, YouTube, Facebook, and Twitter. On Twitter, in particular, scholars have considered a wide variety of topics including self-disclosures of personal health information (Jamison-Powell, Linehan, Daley, Garbett, & Lawson, 2012), the role that Twitter has played in social movements and uprisings (Khondker, 2011; Starbird & Palen, 2012), and crisis relief (Heinzelman & Waters, 2010; Muralidharan, Rasmussen, Patterson, & Shin, 2011) among other topics. Sentiment analysis and public opinion studies have dominated this research space, taking advantage of (1) the large amount of communication data that Twitter provides in economical tweets of 140-characters, (2) Twitter's timeliness in reporting of current events, and (3) the broad range of users who participate on it (Bollen, Pepe, & Mao, 2009; Pak & Paroubek, 2010). These approaches to content analysis often use automated analysis through computational methods for natural language processing and text mining, which are much faster and less resource-intensive than manual coding. They have been particularly effective in studies related to political debates and elections, gauging voters' sentiment toward various issues that candidates might endorse (Diakopoulos & Shamma, 2010; Tumasjan, Sprenger, Sandner, & Welpe, 2010). However, basic measures of positive, negative, and neutral affect are limited when applied to other topics. For example, a sentiment analysis of tweets related to an earthquake found that tweets were overwhelmingly positive toward this natural disaster (Marcus, Berstein, Badar, Karger, Madden, & Miller, 2011). A review of the

content within the tweets showed that people were often expressing positive emotions towards the people suffering from the natural disaster, rather than commenting on the disaster itself. A values-oriented analysis might have referred to many of those comments as *benevolence* or *universalism*, which is more insightful than positive or negative sentiment alone.

While sentiment analysis and public opinion studies provide a snapshot of emotion related to events and topics, additional constructs, such as values, have the potential to enhance this picture by helping to explain why individuals are expressing various types of sentiment. Templeton and Fleischmann (2011) began to address this gap by examining the relationship between values and sentiment around controversial topics such as Park51 and nuclear power. This work has not yet been applied to social media data, however, and little research has looked explicitly at the ways that online communication through social media sites might reflect values. Morgan, Mason, and Nahon (2011) provide one example in their study of the English language version of Wikipedia. They studied the content generated by the editorial community and revealed value tensions among the values held by Wikipedians, the values articulated in Wikipedia's mission statement, and the values of Wikipedia readers more broadly. In one other study, Chen and colleagues (Chen, Hsieh, Mahmud, & Nicols, 2014) considered the role of personal values in social media texts. They used a bag-of-words approach using the Linguistic Inquiry and Word Count (LIWC) text analysis software to identify and interpret categories of words that might correlate with users' self-reported value-orientations on Reddit (http://www.reddit.com/), an online social news sharing

community. This dissertation contributes to this literature by studying values expressed through tweets.

2.2.2 Twitter, Values, and Artifacts of Self-presentation

Readers less familiar with social media sites might be wondering, what exactly is a tweet and what can we learn from this type of communication? Tweets emerged from the development of several systems related to the act of microblogging. Microblogging is a type of online informal communication in which individuals broadcast short text-based messages to a network of individuals (Zhao & Rosson, 2009). Twitter (founded in 2006; http://www.twitter.com) is currently the most popular microblogging tool in the United States. Twitter works on most devices through wireless, 3G (third generation mobile telecommunications), and even SMS (short message service) technologies. Due to its low technological barriers to entry, Twitter provides a space for multiple social groups to coexist, creating a unique set of authors, audiences, and communication norms (Marwick & boyd, 2011). Zhao and Rosson (2009) suggest that the informal communication that happens on a site like Twitter may increase the formation of weak ties and thus the sharing and gaining of novel information especially valuable to individuals trying to exit homelessness and organizations trying to support such individuals on limited budgets. The creation of these network ties is impacted both by how individuals present themselves in their profile spaces (comprised of short biographies, location information, and other self-reported details) and how they manage that self-presentation through their tweets.

A tweet is a unique type of informal communication in the form of 140-character posts. Through tweets and other syntax (the at-mention and at-reply [@], retweet [RT],

and hashtag [#]) Twitter users share and seek information and resources as well as express their values, attitudes, opinions, and beliefs about a topic (Java et al., 2007). Values expressed regularly in online communication like tweets may impact group formation, cohesion, and public perceptions of a group of people (Siegrist et al., 2000). As such, tweets, and the values they implicitly or explicitly express, are a form of self-presentation by individuals and organizations (Schau & Gilly, 2003; Lenhart, 2005). boyd (2004, 2006, 2007), Marwick and boyd (2011), Tufekci (2008), and other notable information and communications scholars have used Goffman's (1959) well-known dramaturgical approach and theory of impression management to ground social media activity as a type networked identity performance. However, the nature of Twitter and the digital traces it leaves behind in the form of a user's historical timeline of tweets suggests a slightly nuanced version of this theory.

As described by Hogan (2010), what happens in these spaces is not an active performance on a stage to a set of known audiences. Although the construction of a single tweet may be an ephemeral performance, the features and functions of Twitter's filtering and search tools reframe that tweet as an artifact of the recorded act that can be served up to unanticipated audiences through hashtags and keyword searches. Ontologically, a collection of recorded tweets, or artifacts, results in an exhibition where a performer and audience are less likely to share time and place (i.e., Goffman's front stage and back stage). Others can view the exhibition outside of the performer's initial conceptualization of their audience, if they ever had such a conceptualization to begin with. The permanent archive of Twitter content at the Library of Congress is one concrete example of the idea of tweets as artifacts that can be re-used and curated into any number of exhibitions. This

dissertation looks specifically at the Twitter user's association with the issue of homelessness and examines the extent to which one's collection of tweets creates a personal exhibition of that association through their tweets. It tests the assumption that users will present artifacts of communication that are consistent with their profiles (i.e., that Twitter users who identify as homeless in their Twitter profile will then self-present as homeless through their tweets). In the next section, I summarize the Human Computer interaction (HCI) literature on Value Sensitive Design, which provides context for considering the role of self-presentation and values in design.

2.2.3 Value Sensitive Design and Schwartz's Values Theory

Value Sensitive Design (VSD) emerged in the 1990s as a theory and set of methods to address the relationship between values and sociotechnical design (Friedman, 1997). VSD offers a very general definition for values as "what a person or group of people consider important in life" (Friedman et al., 2006). The framework and research emerging from it to date has emphasized "values with moral import" such as privacy, trust, human dignity, physical and psychological well-being, informed consent, intellectual property, and freedom from bias (Friedman & Freier, 2005, p. 368; Friedman, 1997).

There are three key elements to the theory and methods of VSD: (1) it is an interactional theory, (2) it employs a tripartite methodology comprised of conceptual, empirical, and technical investigations, and (3) it emphasizes both direct and indirect stakeholders. Friedman (2004) and Borning, Friedman, Davis, and Lin (2005) described each of these aspects as follows:

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1. As an interactional theory, VSD takes into account the ways in which individuals and society affect the development of technologies and also the ways in which technologies shape individuals and societies; in this way "values are viewed neither as inscribed into technology nor as simply transmitted by social forces" (Borning et al., 2005, p. 453).

2. The interactional theory is applied iteratively through a tripartite methodology of investigation.

   a. *Conceptual investigations* focus on values as they are conceived of theoretically or philosophically within the academic literature.

   b. *Empirical investigations* employ the full range of quantitative and qualitative research methods in the social sciences to study the relationship between people, information technologies, and values within their broader social contexts.

   c. Lastly, *technical investigations* consider how existing properties of technologies support or hinder human values, and also encompass the proactive design and evaluation of new technologies to support values identified in the conceptual or empirical investigations.

3. Each type of investigation in the tripartite methodology considers both direct and indirect stakeholders. These individuals are typically identified by their relationship to the information technology in question. Individuals who interact with the technology directly are considered direct stakeholders, and individuals who may not interface with the technology directly, but who might otherwise be affected by it, are considered indirect stakeholders.

As VSD has evolved through application to new domains and contexts, it has received a number of critiques and calls for refinement (Albrechtslund, 2007; Alsheikh, Rode, & Lindley, 2011; Le Dantec, Poole, & Wyche, 2009; Saab, 2008). Le Dantec and colleagues (2009) argued that the values of moral import emphasized in VSD were too prescriptive and privileged a "discursive definition of [moral] values over values that may be discovered or encountered through investigation, and produces systems that are aligned with these twelve values rather than those aligned with values expressed in the context of design" (p. 1141). Alsheikh et al. (2011) echoed this sentiment by commenting on the potential for overly-Western perspectives of values to dominate the VSD approach, resulting in values that were not culturally relevant to all design scenarios. VSD also does make explicit a framework for interpreting values in relationship to one another. The VSD literature mentions value tensions as a key challenge of multi-stakeholder approaches to design, yet does not suggest an empirically-grounded framework for understanding which types of values conflict with each other and when.

To address these concerns, this dissertation augments existing VSD approaches with Schwartz's Values Theory (1992, 1994). Schwartz provides a definition of values that is more specific than the VSD definition and links values explicitly with human action and communication. According to Schwartz, a value is "a belief pertaining to desirable end states or modes of conduct that transcends specific situations; guides selection or evaluation of behavior, people, and events; and is ordered by the importance relative to other values to form a system of values priorities" (Schwartz, 1994, p. 20). Schwartz (2007) summarized the consensus that many social science researchers (e.g., Feather, 1995; Inglehart, 1997; Kluckhohn, 1951; Rokeach, 1973) have come to

surrounding the main features and conceptions of basic values. He noted that values were beliefs, they referred to desirable goals and end states, they transcended specific actions and situations, they served as standards or criteria, they were ordered by importance, and the relative importance of values guided actions.

Augmenting Value Sensitive Design with Schwartz's Values Theory (1992, 1994) offers an opportunity to address some of these concerns. Schwartz's theory is appropriate for addressing a pluralism of values and their relationships to one another (see Figure 1). Schwartz's values classification includes 56 basic human values, ten motivational value types, and two orthogonal dimensions of four values sets. These values were recognized in samples from 67 nations across the globe and shown to motivate a variety of behaviors including choice of university major, consumer purchases, environmental behavior, occupational choice, religious observance, and voting, among others (Bardi & Schwartz, 2003; Schwartz & Bilsky, 1987; Schwartz, 1992; Schwartz, 2007).

Figure 1. Schwartz's Theoretical Model of Relations among Values (adapted from Schwartz, 2007, p. 270)
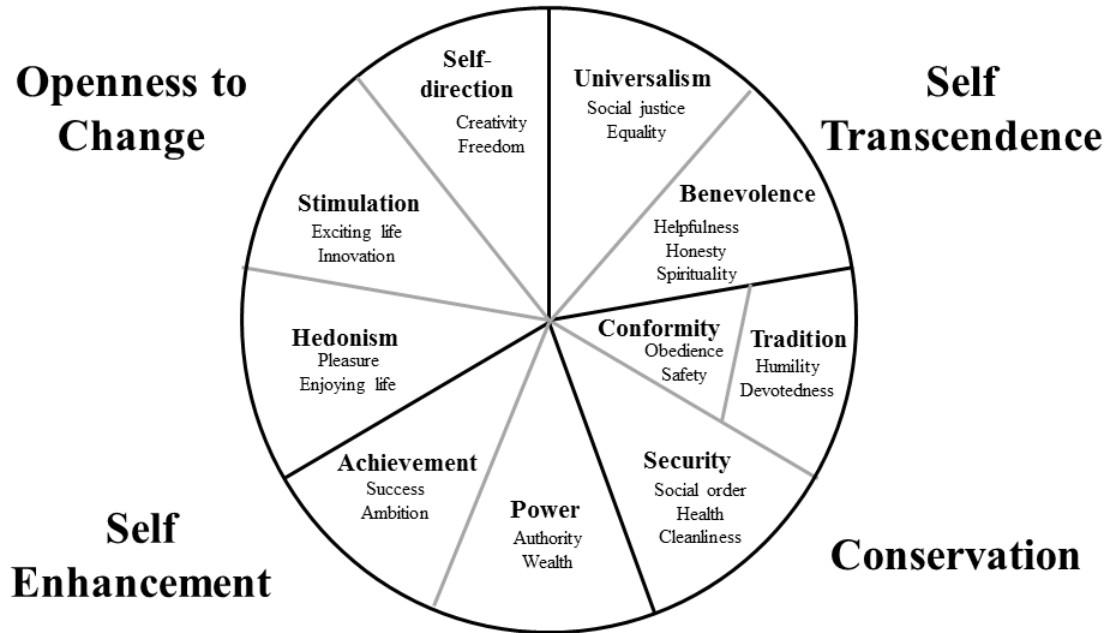
The hierarchical ordering of values and the extensive use of the framework in empirical studies to test its underlying theory across cultures indicates comprehensive coverage of values in the framework (Schwartz, 2009b; Schwartz & Bilsky, 1990; Schwartz & Boehnke, 2004). Where new, local values might emerge within various design contexts and information use environments, the values sets offer a way to conceptualize the relationship between emergent values within an existing framework that would allow for comparative studies without leading to deductive imposition, which is the idea that we are more likely to see what we want to see if we have a preconceived set of categories from which to study. The majority of Value Sensitive Design's values of moral import might be conceptualized within Schwartz's value set of Self Transcendence highlighting congruencies between those values and the Openness to Change and

Conservation values sets, while suggesting potential tensions with values in the Self
Enhancement values set.

As the figure above shows, Schwartz's classification of values creates a circular
structure of value relationships with two orthogonal dimensions that relate the value sets.
The two orthogonal dimensions of values sets (Self Enhancement vs. Self Transcendence
and Openness to Change vs. Conservation) directly address value tensions, which are
important for understanding the role of values across stakeholder groups and in debates
and controversies. Equally important are shared values, which may allow for ease of
communication and reduced uncertainty among groups and increased social trust
(Gillespie & Mann, 2004; Siegrist et al., 2000).

For the first dimension, *power* and *achievement* values emerge on the side of Self
Enhancement, which emphasizes the pursuit of self-interests. These occur opposite from
universalism and *benevolence* values on the side of Self Transcendence, which involve
the concern for the welfare and interests of others. For the second dimension, *self-direction* and *stimulation* values on the side of Openness to Change emphasize
independent action and readiness for new experiences, while *security*, *conformity*, and
tradition values on the side of Conservation emphasize self-restriction, social order, and
resistance to change. The tenth value, *hedonism*, shares a border with both the Openness
to Change and Self Enhancement sets, but has been shown to align more with Openness
to Change (Hinz, Brähler, Schmidt, & Albani, 2005).

Schwartz's Values Theory is also synergistic with Value Sensitive Design in
terms of exploring values and technology. For example, Schwartz (2007) found that
certain values have been shown to relate positively to technology adoption. Specifically,

stimulation related positively to early use of the Internet. The values adjacent to *stimulation* in his theoretical values structure, *hedonism* and *self-direction*, also related positively. In contrast, *conformity*, *tradition*, and *security*, which are opposing values in the structure, related negatively to adopting innovations. Such studies are limited however, and research applying Value Sensitive Design to information technology contexts fills an important gap in this area.

2.2.4 Homelessness, Information Technology, and Values

Lastly, I turn to the social issue of homelessness and the attention this topic has received in the VSD and social psychology literature with regards to values and technology. Each year roughly 3.5 million people in the United States experience homelessness (National Law Center on Homelessness and Poverty, 2007). Since the 2008 economic downturn and home foreclosure crisis, rates of homelessness have increased (Sermons & Witte, 2011). The ways in which people experience homelessness are diverse (Eyrich-Garg, Cacciola, Carise, McLellan, & Lynch, 2008). They may be sheltered or unsheltered, doubled-up or in transition, living in cars or campers, and experiencing homelessness episodically or chronically. The McKinney-Vento Act has resulted in programs for shelter, food, healthcare, and transitional housing, helping many Americans regain housing stability (National Coalition for the Homeless, 2006). One weakness of the Act is that it responds primarily to symptoms of homelessness rather than its causes or effects, leaving a gap in services for homelessness prevention or social support for individuals who have exited homelessness, or who might otherwise be unwilling to access social services. Online communities supported by tools like Twitter provide unique opportunities to bridge this gap.

Although individuals experiencing homelessness lack certain types of material resources, research shows that many individuals access web-based services through mobile devices, personal computers, and public computer labs in libraries and other public spaces (McInnes, Li, & Hogan, 2013). A national study found that 44% of people in households below the poverty line accessed the Internet at public libraries (Becker et al., 2010; Eyrich-Garg, 2011). A quantitative study in Philadelphia (Eyrich-Garg, 2010) and a qualitative study in Atlanta (Le Dantec & Edwards, 2008) found that many homeless individuals (both sheltered and unsheltered) had mobile phones that they used to connect with family, friends, and social service providers. Possession of mobile devices was also found to increase perceptions of safety and security among homeless young people (Woelfer et al., 2011; Woelfer & Hendry, 2011). Additionally, a study with homeless adults in Atlanta (Le Dantec & Edwards, 2008), highlighted mobile devices and Internet access as a basic human need on par with food and shelter, which were often easier to access than cell phone minutes.

Values research in the social sciences has not yet focused explicitly on the impact that experiences of homelessness might have on personal values and subsequent behaviors. Studies have shown, however, that factors such as traumatic experiences, economic hardship, social class, and unemployment can affect an individual's values (Feather, 1975, 1985; Inglehart, 1997). Feather (1985) found that the explanations people gave for events such as poverty and unemployment could be understood as both a product of an individual's internal value system as well as the effects of one's larger social context channeled through family, school, or other sources of influence. Inglehart (1997) found that people who suffered from economic hardship and social upheaval attributed

more importance to *power* and *security* values than those who lived in relative comfort and safety.

Design approaches that incorporate values promote an awareness of values throughout the technology design process for all of the stakeholders involved (Friedman, 1997; Friedman & Kahn, 1992; Friedman et al., 2006; Friedman & Nissenbaum, 1996). Information science and human-computer interaction researchers have explored values both to design systems for and with individuals experiencing homelessness, and to study the role of information technologies in homelessness experiences from the perspective of multiple stakeholders. For example, Le Dantec and colleagues (Le Dantec, Christensen, Bailey, Farrell, Ellis, Danis, Kellogg, & Edwards, 2010; Le Dantec, Farrell, Christensen, Bailey, Ellis, Kellogg, & Edwards, 2011) employed values in the design of a Community Resource Messenger at an emergency homeless shelter for single mothers. They emphasized the values of both the homeless mothers and the social service providers at the shelter in the development of this communication tool. Further, Woelfer, Hendry, and colleagues (Hendry, Woelfer, Harper, Bauer, Fitzer, & Champagne, 2011; Woelfer & Hendry, 2010) considered the values of homeless young people (aged 13–25) and shelter staff members while a community technology center was integrated into a homeless shelter in Seattle, WA. They found that stakeholder values emerged from two social contexts: life on the street and work in the technology center.

Popular discourse related to homelessness often starts from a deficit model. There has been a research emphasis in information science on digital "divides" rather than "bridges" (Eglash, 2002). Technologies are typically designed *for* end users who are underserved and marginalized rather than designed *with* them. Though these are valid

terms and concepts that provide a strong motivation for the growing body of research and

design in this area, they may over-emphasize a perspective of individuals experiencing

homelessness as recipients of technology and design solutions, rather than the creators

and community experts themselves. These concepts can perpetuate stereotypes and

overlook the assets that such individuals offer society more broadly, including the ways

in which individuals experiencing homelessness appropriate information technologies in

situationally-diverse and resource-constrained use contexts (Berg, 1999; Kretzmann &

McKnight, 1993). This dissertation explores the social issue of homelessness through the

perspective of multiple stakeholders and their values on Twitter. It offers design

implications from both top-down (designer to end user) and bottom-up perspectives.

Chapter 3: Methods

As described in Chapter 1, this study is focused on United States–based Twitter users who identified with the issue of homelessness, including individuals experiencing homelessness, advocates for homelessness, and support organizations related to homelessness, as well as a comparison group of U.S.–based Twitter users who did not associate with the issue of homelessness in their Twitter profiles. This chapter describes the purpose and rationale of the methods used to collect and manage the data for the study as well as the overarching strategy for quantitative and qualitative content analysis.

3.1 Data Collection & Management

3.1.1 Identifying and Validating an Application for Searching Twitter Profiles

Twitter, like other social networking sites, provides a profile space for users to describe themselves. This public self-identification and categorization affords researchers who are interested in studying specific users to conduct stratified random sampling based on a user's characteristics (Stutzman, 2006). Figure 2 provides an annotated screen shot of a Twitter profile highlighting the various points of data entry that Twitter users may provide about themselves (#1–5) as well as the real-time statistics about their Twitter use (#6–8). These pieces of information were all key components of the data that were analyzed in this study. The profile image was not collected or analyzed in the study.

Figure 2. Annotated Screen Capture of a Twitter User's Profile

1. Personal name; 2. Twitter username; 3. Bio; 4. Location; 5. Personal URL [if provided by user]; 6. Total number of tweets; 7. Total number of users this person follows (referred to as following or friends); 8. Total number of users who follow this person (followers) (screen captured on 12-26-2013)

There were three key groups of interest to this study for which I analyzed Twitter profiles: Twitter users who identified as homeless in their Twitter profiles, Twitter users who identified as advocates for the social issue of homelessness, and social service organizations who support individuals experiencing homelessness. A group of users who did not identify with the issue of homelessness in their Twitter profiles made up a final fourth group to serve as a baseline for comparison. To identify members of each of these groups, I needed a tool that would allow me to search Twitter users' profiles for the self-identifying keyword "homeless."

At the time of this study, Twitter's search tools were limited in their Boolean

functionality and search queries only extended to users' timelines of tweets rather than to

users' profile information such as bio, location, etc. Because this information is

interesting to individuals in marketing and media communications who wish to target

specific audiences in their social media strategies, third-party applications have been

developed to support searching using more advanced techniques. I needed a tool that

would allow me to search all of the components of the Twitter profile information for the

keyword "homeless" and one that would allow me to filter and then download those

results for data management and analysis.

I explored several applications for this study. I first considered Tweepz

(http://tweepz.com/), which I employed in my pilot study (Koepfler & Fleischmann,

2012). It supported advanced Boolean search and location filters to remove any non-U.S.

results, but it did not provide an easy mechanism for downloading the search results,

requiring that I copy and paste the data for each page of results one by one or manage an

RSS feed and extract data from it. I also explored Tweepsearch

(http://tweepsearch.com/), which supported search of Twitter biographies and provided a

convenient .csv export tool for downloading results. However, the application was in

Beta at the time of exploration (the tool is now defunct) and only allowed for searching of

profile data by typing in the name of at least one user and searching their friends and

followers, which would have limited the study to a snowball sampling approach. Finally,

I looked at FollowerWonk (https://followerwonk.com/bio) an application by Moz, an

established company dedicated to creating web analytics tools for marketing

(http://moz.com/). Although FollowerWonk did not include location-based filters, it had a

robust search tool, was backed by a reputable company, and allowed for the results to be downloaded in a .csv file (using a 30-day trial of an upgraded version of the application) for data cleaning and analysis efforts. Figure 3 shows an annotated screen capture of the key features of the FollowerWonk application that I used for this study.

Figure 3. Annotated Screen Capture of FollowerWonk Bio Search Features
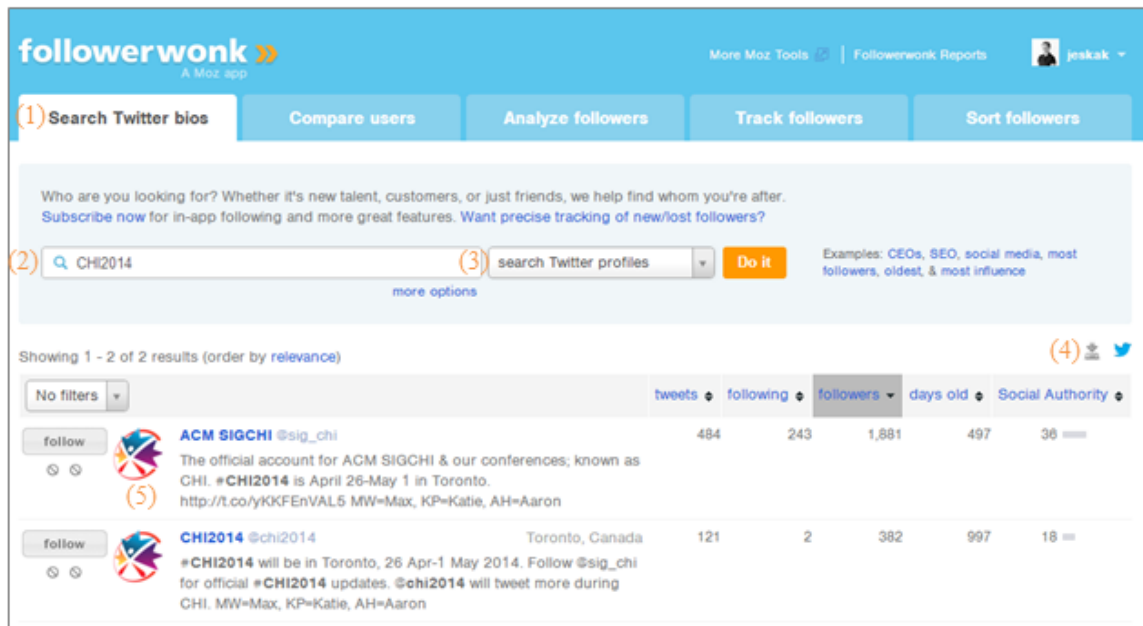
1. Search Twitter bios tab; 2. Keyword search box; 3. Profile search option; 4. Results download feature for Pro level accounts; 5. Search result with keyword in bold (screen captured on 12-26-2013)

I conducted several validation exercises of FollowerWonk to ensure it would meet the needs of the study. I examined the robustness of the database on which FollowerWonk runs its queries by searching the keyword "homeless" on both FollowerWonk and Tweepz. The keyword search on FollowerWonk on October 24, 2012, produced 6,191 search results whereas the same search on the same day using Tweepz produced only 2,903 search results. Although I could not confirm that

FollowerWonk queried the entire set of profiles on Twitter, I was able to confirm that the tool was far more robust than the previous tool I had used.

FollowerWonk requires that a user login with their Twitter account, so I was concerned that there might be a preferential algorithm running (something Google search results are prone to) that would change the results from one Twitter user to the next based on location, interest, or other types of variables. To test this, another Twitter user located in another state on another computer and I each created accounts on FollowerWonk and logged in with our Twitter credentials. We both ran the same query at the same time and retrieved the exact same search results, confirming that the system was not biasing results based on user location or Twitter account information.

Finally, I tested the timeliness of the search engine by first running a search for the keyword "chicken" and downloading a spreadsheet of the results. I then added the word "chicken" to my own Twitter user profile and re-ran the search. I did not show up in the search results immediately, but I showed up within 24 hours of the test, indicating near real-time results for the database on which the application runs its queries.

One limitation that was uncovered during the data collection process was that the maximum search results returned was 50,000 results per query. This was not a concern for the query for the three stakeholder groups associated with homelessness, which returned results well under that threshold. However, it became a concern for the development of the Comparison group, which was intended to represent general Twitter users more broadly. The details of this limitation of the tool are described in more detail below.

3.1.2 Generating a Proxy Population on Twitter

The first step in the data collection process required the creation of proxy populations from which to sample for the three stakeholder groups and the comparison group. I developed and implemented the following procedure for creating a proxy population of Twitter users for this study:

1. Identify keyword of interest (e.g., homeless)

2. Using a third-party tool (e.g., FollowerWonk) search for keyword in profiles using Boolean operators to disambiguate where possible (e.g., homeless -pet -pets)

3. Download database of search results for additional data processing

4. Code location data

    a. Use Google to look up latitude and longitude codes

    b. Use other pieces of profile data as necessary to determine location or disambiguate it (e.g., Manchester, NH vs. Manchester, England)

5. Remove superfluous results (e.g., song lyrics that use the keyword in them)

6. Remove non-English results

7. Code for stakeholder relationship to topic of interest (e.g., homeless advocate, support organization, etc.)

3.1.3 Generating a Proxy Population of Stakeholders

I began to implement this process on October 26, 2012. I conducted keyword searches in FollowerWonk and downloaded the search results files. In order to identify Twitter users who identified as homeless, homeless advocates, or homeless support organizations I conducted the following search: Homeless -pet -pets to find Twitter users

who had the word "homeless" in their profiles but not the word pet(s). The qualifier for not including the term "pet(s)" in the search query dramatically reduced the amount of noise in the data caused by animal support organizations and individuals who advocate for homeless pets, which were not relevant to this study. The query returned 6,886 Twitter users for post-processing.

3.1.4 Generating a Proxy Population of Comparison Users

To identify a comparison group of Twitter users who did not identify with the issue of homelessness was a bit more difficult. Simply typing "-homeless" did not trigger the search engine, because a single NOT operator was a non-computable query; it needed an initial keyword term from which to remove the qualifier "-homeless". I considered common words in the English language, such as "the," "and," and "a" thinking that they might capture a broad population of Twitter users, though certainly not all. I conducted the following searches: "the –homeless," "and –homeless," and "a –homeless." This method by no means produced a complete population of Twitter users who do not identify as homeless (Twitter surpassed 500 million registered users in June 2012; 140 million in the U.S. alone [Lunden, 2012]). However, it provided an extensive list of users returning a search result of "millions of results" in FollowerWonk (it did not provide an exact number). As I exported the results into the .csv format to begin a de-duplication process across the three spreadsheets, I learned that there was a download cap of 50,000 results. Once the three spreadsheets were combined and duplicates were removed, the resulting sample of Twitter users not associated with the issue of homelessness and who used one of the most common English words (a, and, the) in their profile, was 119,758.

The data were ordered by "relevance" when I downloaded them, but it was unclear what factors made the use of the word "the" in a profile more or less relevant than any other profile, but I needed a way to sample from this massive list of users. Since the study was concerned with values expressed in tweets, I decided to focus on the distribution of tweets across the results and use that to sample. I conducted a stratified sample of users in the search results to ensure that the tweet distributions for the comparison group were similar to the three stakeholder groups (as opposed to trying to control for other variables such as followers or following).

I first determined the range of tweets for each of the stakeholder groups (approximately one-quarter of the users had 25 tweets or fewer, approximately one-fifth had between 26–75 tweets, another one-fifth had between 76–250 tweets, one-quarter had between 251–1,000 tweets, one-tenth had between 1,001–3,200 tweets, and one-twentieth had between 3,201 up to 90,000 tweets in the stakeholders sample). I then conducted the "a -homeless" search query in FollowerWonk again, because it had yielded the greatest number of results previously. I filtered the search results by number of tweets and manually extracted comparison group users using a stratified random sampling technique. To do this, I navigated to a results page in the range of the number of tweets I was focusing on (e.g., 76–250 tweets) and used a random number generator (via http://www.random.org) to pick a number from 1 to 50 (the number of search results per page). I then selected that user from the page and continued to select from different results pages in the selected range until I had a similar proportion of users for the comparison group with a similar range of tweets as the stakeholder groups.

I clicked on each user to determine (1) if they were U.S.–based, and (2) if the

Twitter account represented an individual or an organization. If one of those two

conditions were not met, I continued moving through the results page until I found a user

who did meet those two criteria. The choice to only select individuals (and not

organizations) in to the comparison group was to alleviate the concern that the mix of

individuals and organizations in this group would cause too much additional noise in an

already heterogeneous group. I also oversampled and pulled 100 users to account for the

possibility that some of these users might not have original tweets or value-laden tweets,

allowing for a pool of participants to continue to pull from, if necessary, during the data

management phase.

3.1.5 Identifying Specific Stakeholder Groups

Focusing on the stakeholder data first, since the dataset was smaller and more

manageable for manual processing, I first coded all of the data for location by analyzing

the location data field of the Twitter profile data and then analyzing other parts of the

profile, such as the URL (if provided) or bio field, if this information was left blank.

Twitter users can express location in the following ways:

- Entering an actual location into the location box

- Allowing their mobile phone to share a longitude/latitude coordinate

- Identifying with a location in their bio or username

- Using terms that signal a location (i.e., names of U.S. universities)

For users who included latitude and longitude coordinates (a feature that some

devices do automatically for Twitter users), I entered the coordinates into Google Maps

to determine location. If a user included multiple locations and one of them was the U.S., I considered them U.S.–based and eligible for inclusion in the study.

During this pass of the data, I also removed individuals who were not identifying with the issue of homelessness but were rather using the term "homeless" in their profile as part of a song lyric or quote. For example, a popular Justin Bieber song in 2012 included the lyric "As long as you love me we could be starving, we could be homeless, we could be broke," which showed up as noise in the data and was removed. This was also noted as a theme in a recent study of the use of the word "homeless" in tweets more generally (Kim & Lin, 2013). Coding for location and removing superfluous users reduced the proxy population from 6,886 Twitter users who associated with the issue of homelessness to 4,107 Twitter users.

The final steps were to analyze the 4,107 Twitter user profiles for their stakeholder relationship to homelessness and to validate and clean any extraneous accounts that did not belong in the sample. I classified the individuals related to homelessness into stakeholder groups consistent with my earlier work (Koepfler & Hansen, 2012; Koepfler & Fleischmann, 2012) and others working in this domain (e.g., Le Dantec et al., 2010), while allowing for additional groups to emerge. I used the following coding scheme to determine users' stakeholder associations:

1. Homeless: user identified as "homeless" (includes "almost homeless") anywhere in profile

2. Formerly homeless: user identified as previously experiencing homelessness

3. Advocate: user identified as advocate for homelessness, as a donor or philanthropist related to the issue of homelessness, and/or identified as a volunteer

for homeless organizations or services to the homeless through church or other
means

4. Organization: an organization that provided support or services related to the
social issue of homelessness; included the following variations of organizations:

    i. Individuals who indicated that they represented the tweets for an organization through their personal profile (i.e., their person profile was dedicated to the organization)

    ii. Organizations that indicated they donated their profits or products to the homeless as part of their social philanthropy

    iii. Pseudo-organizations that might not have official corporation or LLC statuses but were organized to support the issue

    iv. Churches or other religious organizations

    v. Programs, such as after school programs or other organized official groups

5. Support individual: an individual who identified as working for a support
organization but who did not tweet for that organization exclusively from their
profile; included social workers, outreach workers, case managers, and healthcare
specialists related to homelessness, pastors, reverends, and dedicated researchers
to the topic

6. Project: a project, event, or campaign related to homelessness such as a
documentary film, book of poetry dedicated to the homeless, media campaign, or
game dedicated to the issue of homelessness

7. Non Applicable: users who used the word "homeless" as an adjective for something else unrelated to this study (e.g., homeless dog, homeless furniture), users who indicated that they were "homeless by choice," and users who had nonsensical or symbols based profile data that could not be coded into one of the above groups

I validated that the resulting set of users from this list were public accounts on Twitter that had tweets associated with them. Table 1 summarizes the funneling process used to determine the final proxy population for the stakeholder groups.

Table 1. Summary of Data Cleaning Procedures to Create Proxy Population for U.S.–based Stakeholders Related to Homelessness

	Description	Total
Stakeholders Related to Homelessness	Number of Twitter user profiles associated with homelessness pulled from FollowerWonk	**6,886**
U.S.–based	Number of profiles that provided location data and were U.S. based	**4,107**
Remove	Users to remove from dataset	**(-1,344)**
	• Duplicate Twitter handles	(-340)
	• Non-Applicable/Uncodable users	(-750)
	• Invalid or non-public accounts	(-254)
Final Proxy Population of U.S.–based Stakeholders Related to Homelessness	Total number of U.S.–based profiles associated with homelessness	**2,763**
	• Homeless	319
	• Formerly homeless	76
	• Advocate	430
	• Organization	1420
	• Support Individual	369
	• Project	149

For the purposes of this study, I narrowed the number of groups for investigation to the three that I felt were the most mutually exclusive (a prerequisite for content analysis and statistical group comparisons): Homeless, Advocate, and Organization.

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Based on the analysis of the profiles there seemed to be potential for overlap among individuals who identified as Homeless and Formerly homeless, Support Individuals with either Organizations or Advocates, and Projects with Organizations. The three selected stakeholder groups also seemed like plausible candidates for a future potential participatory design project for the development of social technologies related to homelessness using a values-sensitive design framework.

This detailed procedure for coding, cleaning, and managing the Twitter user profiles to create a proxy population of stakeholders related to the issue of homelessness took three months. Because I pre-screened users in the Comparison group as I was extracting them from the search results on FollowerWonk, the only additional data processing step for this group was to ensure that their timeline of tweets could be collected. If a user was not eligible for the other reasons described above (e.g., private account), then that user was discarded and a new user was randomly sampled until a final, comparable set of users was created.

3.2 Sampling

With a proxy population of users to draw from, I then began the sampling procedures. I used a stratified, simple random sampling procedure for selecting the sample of Twitter users to represent each of the groups in the study. I randomly sampled 50 users from the Homeless group, Advocate group, Organization group, and Comparison group. The number 50 was chosen both for practical and representative reasons. Due to the variability in the population sizes of each stakeholder group, I wanted a sample size that would adequately reflect both the smallest group (i.e., Homeless = 319

Twitter users) and largest group (i.e., Organization = 1,420 Twitter users) without skewing too far in either direction.

Further, as a general rule of thumb, I needed samples large enough to provide confidence when analyzing the data for group differences. For group sizes and between-group comparisons using nonparametric statistics, a useful heuristic is that samples less than 20 are considered "small," and samples greater than 20 are considered "large" (Corder & Foreman, 2009, pp. 99–118). Further I learned from my first study (Koepfler & Fleischmann, 2012), that the small group sizes of 17 Twitter users in the Homeless group and 15 individuals in the Comparison group were not adequate for fully addressing the research questions, suggesting the need for larger sample sizes to detect an effect.

Finally, I also needed to be able to code a reasonable set of tweets from users, so capping the total sample at 200 users (50 users per group) was an acceptable threshold for answering the research questions and pragmatically being able to manually code a large number of tweets across the sample.

I used a similar strategy for sampling tweets. I set a minimum threshold of at least 50 tweets per each of the 200 users' timelines and then drew a simple random sample of 50 tweets from each of the 200 users in the sample (10,000 tweets across all users in the sample). A simple random sampling approach allowed for each tweet within a user's timeline to have an equal probability of being included in the final sample. This approach accounted for issues that arose during the pilot study in which the time period of the tweets was heavily influenced by trending topics on Twitter and in the news. This allowed for a more representative sample of users' topical interests and communication

of values related to those topics. Figure 4 provides a graphic representation of the sampling procedures.

Figure 4. Graphic Representation of Sampling Procedures

Twitter Population
- 140 million U.S.-based Twitter accounts as of June 2012

Proxy Population for Study
- 2,763 U.S.-based Twitter profiles associated with homelessness

Study Sample
- 50 users from each of three stakeholder groups associated with homelessness and a fourth comparison group (total n=200)

Twitter user's timeline of tweets

Random sample of 50 tweets from timeline of each of 200 users (total tweets = 10,000)

Proportional sampling of each user's timeline would have been ideal for ensuring representative samples of tweets and subsequent value expressions, but that procedure becomes unwieldy for anyone with more than a few hundred tweets and was impractical for manual coding.

3.3 Quantitative Analysis

I began with a quantitative content analysis of the tweets by manually coding all 10,000 tweets in the sample based on the coding procedures and value definitions that I explain in Chapter 4, which follows. Once all of the data were coded, I used descriptive

statistics to summarize average Twitter use characteristics (followers, following, tweets) and values salience (Openness to Change, Self Transcendence, Conservation, and Self Enhancement) for each of the three stakeholder groups and the comparison group. I conducted tests of normality to determine whether parametric or nonparametric tests should be conducted. I then used appropriate statistical tests to compare and contrast the three stakeholder groups and to relate them to the baseline statistics for the comparison group. The specific tests that were used and their results are described in detail in Chapter 5.

3.4 Qualitative Analysis

To interpret the differences that emerged during the quantitative analysis, I explored the results in more detail using qualitative analysis. As described in Chapter 2 and operationalized in Chapter 4, Schwartz's classification of values creates a circular structure of values relationships with two orthogonal dimensions that relate the values sets. The two orthogonal dimensions of values sets (Self Enhancement vs. Self Transcendence and Openness to Change vs. Conservation) directly address value tensions, which are important for understanding the role of values across stakeholder groups and in debates and controversies. Equally important are shared values, which may allow for ease of communication and reduced uncertainty among groups (Gillespie & Mann, 2004), and increased social trust (Siegrist et al., 2000). I used this structure to determine whether group differences might point to potential value conflicts or shared values.

I also used the qualitative analysis to see what other patterns or themes might be emerging from that data that could impact the findings to help further explicate and point

to implications for theory and practice for values and design. As a result, this phase of analysis occurred concurrently to and following from the quantitative analysis. During the process of quantitative content analysis, I read through the entire data set of 10,000 tweets from 200 Twitter users three times and I read through a subsample of those tweets and users for the purposes of calibrating the coding manual several more times. Each round of reading led to qualitative insights into the data. I took detailed field notes totaling more 40 pages, while I moved through the coding manual calibration and quantitative coding process.

As I worked with a second researcher to calibrate the coding manual, I had the opportunity to talk through emerging trends and gain insights from that second researcher's perspective on the analysis. Those conversations were useful for helping to think deeply about the data and for applying common qualitative data analysis strategies such as the use of questioning and the constant comparative technique (Corbin & Strauss, 2008). I used questioning with the second researcher to probe the data, develop provisional themes, think beyond my own set of biases, and to become further acquainted with the data (Corbin & Strauss, 2008). From those conversations and series of questions, it became clear that themes related to self-presentation on social media would be important to consider further (Braun & Clark, 2006).

I used the constant comparative method as I read through the data multiple times for the quantitative coding procedures. This method allowed me to repeatedly consider the similarities and differences that were occurring in the data and to identify dimensions of themes that were emerging. For example, I was able to identify what self-presentation of homelessness might look like from one end of the spectrum, in which it appeared

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virtually absent from a user's sample of tweets, to the other end of the spectrum, where it seemed as if every tweet spoke to a user's profile association with homelessness. These findings are covered in detail in Chapter 6.

Although much of the qualitative analysis was conducted concurrent to the quantitative coding, I took care not to conflate the two exercises. If something relevant to the qualitative analysis occurred, I noted it in my field notes and moved back to the quantitative task at hand. Once the quantitative coding process was complete for that day, I then revisited my qualitative notes to think about them and consider them with my second researcher. I engaged in these practices in order to remain reflexive about my own role in the interpretation of the findings and to further enhance the interpretation of the results (Corbin & Strauss, 2008; Creswell & Miller, 2000).

Adding a qualitative component to the study had the advantage of helping to account for the complexity inherent in the study of values and the variegated nature of informal communication in tweets. In addition to providing additional context for the quantitative findings, the qualitative analysis pointed to areas for further research as described in Chapter 8.

3.5 Summary

This chapter described the procedures used to identify and sample Twitter users of interest for the study. After considering several options, I chose FollowerWonk as a third-party tool for searching Twitter bios. I used a keyword search using the word "homeless" to identify members of the three stakeholder groups. Selecting a random sample of users for the comparison group was more difficult and therefore I used modified data collection procedures for this group. An opportunity for further research would be to determine a

more efficient and effective method for drawing a random sample of Twitter users for a study such as this one.

I also described my sampling approach and justification. I used a stratified, simple random sampling procedure for selecting the sample of Twitter users to represent each of the groups in the study. I randomly sampled 50 users from the Homeless group, Advocate group, Organization group, and Comparison group. I set a minimum threshold of at least 50 tweets per each of the 200 users' timelines and then drew a simple random sample of 50 tweets from each of the 200 users in the sample (10,000 tweets across all users in the sample). Additional issues, such as unit of analysis, are described in detail in Chapter 4.

I also described the role of the quantitative content analysis and qualitative analysis approaches used (specifically questioning and the constant comparative methods) to address the research questions for this study. Figure 5 summarizes the components of the research study described throughout this chapter:

Figure 5. Summary of Study Design

Data Collection & Management	Quantitative Analysis	Qualitative Analysis	Interpretation
• Operationalize value concepts • Collect and manage data • Calibrate instructions and coders • Test coding procedures	• Quantitative content analysis • Analysis of tweets • Identify areas of interest for qualitative analysis	• Qualitative thematic analysis • Analysis of themes and patterns • Reflexivity and description	• Interpretation of quantitative and qualitative analyses • Contributions to existing research

Chapter 4: Developing a Coding Manual from Schwartz's Values

This chapter addresses the first research question for this study, which asked:

RQ1) To what extent and in what ways can content analysis methods reliably

detect human values expressed through online communication?

To answer this question, I describe the iterative process that I used to operationalize

Schwartz's values framework into codes, develop and refine rules for coding, and

calibrate researchers to the coding task. I also describe and report on the inter-coder

reliability measures conducted at multiple time points to determine the extent to which

content analysis methods could be deployed to reliably detect human values expressed in

tweets. I address the implications of the key changes and decision points made along the

way in Chapter 7 (Discussion).

The background information and instructions detailed in this chapter comprise an

empirically tested coding manual, a key contribution of this study, which values

researchers can use to identify performed, salient values in online communication.

Researchers who are interested in eliciting similar values dimensions from social media

texts can apply these same procedures and codes across other content domains of interest.

4.1 Framework Background

4.1.1 Values in Communication

As described in Chapter 1, the "values" concept has many definitions across a

variety of literatures. This coding manual draws primarily on the work of Schwartz

(1992, 1994, 2007), whose research is rooted in the field of social psychology. Schwartz

defines a value as "a belief pertaining to desirable end states or modes of conduct that

transcends specific situations; guides selection or evaluation of behavior, people, and events; and is ordered by the importance relative to other values to form a system of values priorities" (Schwartz, 1994, p. 20). As expressed through informal communication, like tweets, values emerge from texts that include evaluations, judgments, opinions, wishes, desires, beliefs, and describing how things ought to or should be in a given context. They help explain our actions, judgments, and preferences for different people, events, and activities. Over a collection of a user's tweets (i.e., one's timeline) a salient, or dominant, set of values emerges. These are important to identify because people's expressions of values contribute to group cohesion and personal identity and may have implications for the formation of design teams or for understanding the affordances of a particular design (Gaver, 1991; Siegrist et al., 2000; Wood & Smith, 2001).

Values in communication are expressions that mediate participation in social activities. Increasingly, they are mediated by information technologies, like social media (Jarvenpaa & Leidner, 1998) and tools used for communication and collaboration at a distance (Shilton & Koepfler, 2013). Values in communication have been studied most often around particular issues or debates. Examples include the Net neutrality debate (Cheng, 2012; Cheng et al., 2012), the Park51 and nuclear power controversies (Templeton & Fleischmann, 2011), and the Homeless Hotspots debate (Koepfler, Mascaro, & Jaeger, 2014; Koepfler et al., 2012) among others. Values in communication are also discussed extensively in the literatures on social movements (e.g., Castells, 1983; Inglehart, 1990; Stern et al., 1999), political discourse (e.g., Domke et al., 1998), and in marketing and branding studies (e.g., Balabanis et al., 2002; Stride, 2006). In this study, I

considered values in communication agnostic of a particular event or controversy. One benefit of that approach is that this coding manual can be used across contexts without concern for nuances inherent in a particularly charged social debate or movement.

4.1.2 Using Schwartz's Values Framework for Interpretation

The first step in developing this coding manual was to deploy Schwartz's values theory, which he originally developed and refined using survey methods, for the purposes of content analysis. Schwartz's research shows that groups and individuals coordinate with each other in pursuit of goals that are important to them by communicating specific values either implicitly or explicitly (1994). This suggests that values are expressed through oral or written communication with direct or indirect intentions by the communicator and that by looking at communication texts researchers can infer values of individuals and groups (see early work validating this approach from Cheng & Fleischmann, 2010; Koepfler & Fleischmann, 2011, 2012).

As Chapter 2 discusses, values are complex and difficult to disambiguate at a fine-grained level. For example, it is difficult to identify values of *success* separate from values of *ambition* in the Achievement value type, which may look very similar in human behaviors and in online communication. Further, two researchers' interpretations of specific values are likely to be affected by their cultural background, personal experiences, and personal values. For these reasons as well as results of previously documented challenges for reliably coding values (see Koepfler & Fleischmann, 2012), this coding manual uses the four sets of values proposed by Schwartz's values theory (1992, 1994) as the primary coding categories for quantitative content analysis.

The four values sets are Openness to Change (O2C), Self Transcendence (ST), Conservation (C), and Self Enhancement (SE). Schwartz's theory, grounded in years of empirical research using surveys with samples from 67 countries, organizes these sets of values in a structural relationship to one another. Figure 6 summarizes Schwartz's theoretical model of values relationships.

Figure 6. Schwartz's Theoretical Model of Values Relationships (adapted from Schwartz, 2007, p. 270)
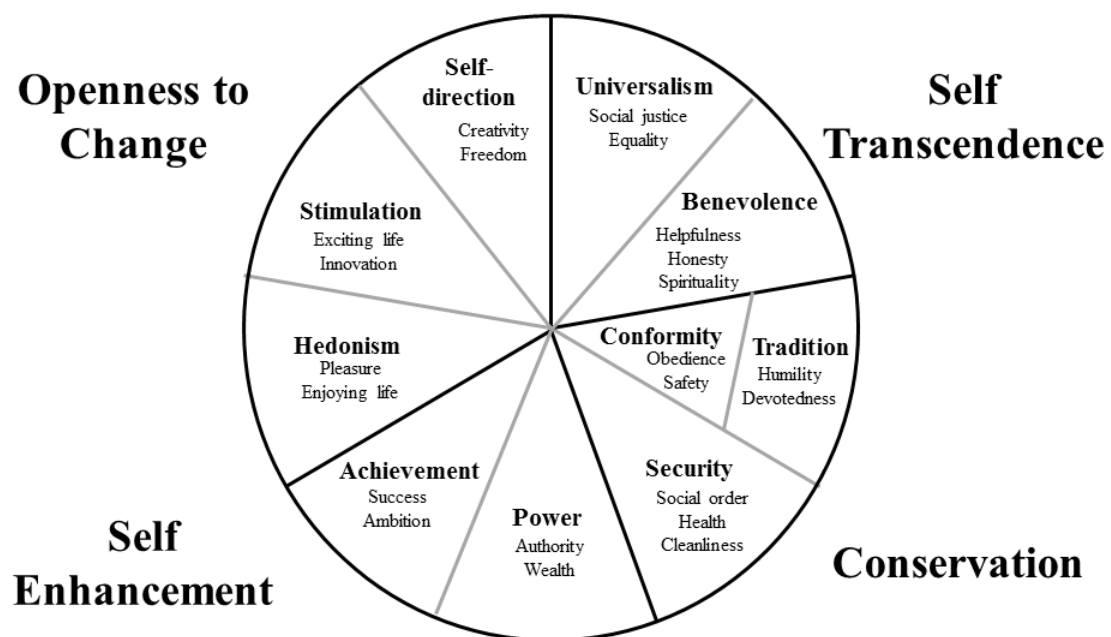
Schwartz's research has shown that values that are closer to each other on the circle are more likely to be similar or congruous with each other (e.g., O2C and ST values), whereas those that are farther apart are more likely to conflict (e.g., O2C and C values). His studies have shown that all of these values exist among groups and cultures, but that some values will be more dominant, or salient, with some groups more than others. For example, Western cultures may demonstrate Openness to Change values more saliently while Eastern cultures demonstrate Conservation values more saliently; however, both sides of the world exhibit all of the values to some degree.

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An advantage of this framework is that the four values sets provide mutually exclusive categories for coding (a requirement of quantitative content analysis) and their structural relationship to each other explicitly accounts for interpreting the meaning of values differences and similarities among stakeholder groups, which is of particular interest to values researchers and designers concerned with shared values and values conflicts in multi-stakeholder design (Czeskis et al., 2010; Fleischmann & Wallace, 2010; Miller et al., 2007).

As Figure 6 illustrates, Schwartz (1992, 1994) places *power* and *achievement* values in the Self Enhancement set, which emphasizes the pursuit of self-interests. These values are located opposite from *universalism* and *benevolence* values in the Self Transcendence set, which involves the concern for the welfare and interests of others. Schwartz places *self-direction* and *stimulation* values in the Openness to Change set, which emphasizes independent action and readiness for new experiences. These values are located opposite from *security*, *conformity*, and *tradition* values in the Conservation set, which emphasize self-restriction, social order, and resistance to change. *Hedonism* shares a border with both the Openness to Change and Self Enhancement values sets, but has been shown to align more with Openness to Change (Hinz et al., 2005), and is therefore included within that values set in this coding manual.

4.2 Identifying Original Broadcasted Tweets

Related to the idea of performed values, identifying tweets that could be considered original to the user and not part of a directed conversation was a necessary first step in data processing to ensure that the data under investigation were enacted by the user. At-replies or at-mentions (signified by the use of the "@" sign plus another

user's Twitter username at the beginning of a tweet, typically used to reply to another tweet) were not included in the study because the lack of the rest of the conversation made it difficult to interpret the meaning of the tweets and the corresponding values within them. This helped scope the study to focus on performed values that were communicated through publicly broadcasted tweets on Twitter. For example:

> Example: **@Victoryo AWESOME! Very happy about the opening of @TacoTown.** →This tweet is an at-reply, which is indicative of a direct conversation with one other user. Tweets of this nature were not included in the data corpus.

A tweet was considered original if at least some of the content in the tweet was from the Twitter user and it was not a reply to another person's tweet (as described above). This excluded re-tweets (reposting another user's tweet, symbolized by an "RT" at the beginning of the message content) and redundant tweets (reposted multiple times by the same user), and automatic tweets from third-party applications such as Foursquare (a location-based social network), Pandora (an Internet radio application), and ThatCanBeMyNextTweet (an application that auto generates new tweets by combining parts of an individual's recent tweets).

While a re-tweet was not considered an original tweet, a tweet that provided original commentary along with the re-tweet *was* considered original. The same was true of direct quotes in which Twitter users provided additional commentary either preceding or following the quote. I used the re-tweet or quote as context for interpreting the meaning of the user's commentary as can be seen in the following examples:

> Example: **Rly enjoyed it. Grt work! RT @tj_kelly Excited to present workshop on policy informatics with EJ. Join us! #conf13** → This tweet begins with original content from the author, followed by syntax (RT = retweet), a user handle (@tj_kelly), another user's tweet, and ends with a hashtag indicating a conference (#conf13).

Example: **"@NHIM: The ave annual income of #PublicHousing family is $13,404, too little to afford market-rate apt." We need public housing!** → The quote portion of the tweet provides context, and the user's commentary at the end of the tweet is original to the author.

In many cases, users provided links to images or additional content relevant to understanding the tweet. Users also incorporated hashtags and other Twitter syntax in their tweets. As part of the interpretation and coding effort, this manual suggests that researchers look up a URL or research the meaning of a hashtag in order to assess the tweet whenever necessary. In order to bind the dataset for a study, the additional information obtained from this effort should only be used to provide context; it should not be coded as well. For example, if a tweet redirected the reader to a longer blog post, the researcher should review the post for context, but only interpret and code the text in the tweet:

Example: **Fnly watching The Show - So far, it's good. I'll like it a lot more when I get over to my Seattle...http://tumblr.com/abc1122** → Following the link to this Twitter user's Tumblr clarified that The Show was a movie and that the Twitter user was reflecting on his or her relationship to watching a movie set in a town where they were from.

In cases where a tweet data corpus spans a broad time period, links may be broken, listed as private, or no longer active. In these instances, researchers should make a value assessment based on the information that is available.

As is common in informal communication more generally, tweets often included slang or acronyms. In these instances researchers should use a variety of web-based tools to help make sense of the components of the tweet including Urban Dictionary (http://www.urbandictionary.com) and Hashtags (http://www.hashtags.org/), among others.

4.3 Identifying Value-laden Tweets

4.3.1 Identifying Value-laden Versus Non–Value-laden Tweets

After identifying original broadcasted tweets, I then pre-coded the data to

determine whether they were expressive of values or not. Based on Schwartz's definition

of values, a value-laden piece of communication is more than a simple statement of

fact— it is evaluative of the subject being discussed. Values are expressed in tweets that

embody evaluations, judgments, opinions, and beliefs; in tweets that describe how things

ought to be or should be; and in tweets that indicate wishes and desires. The following

examples highlight tweets that are value-laden versus those that are not:

> Example:
> **I ate waffles today. #breakfast**. This tweet is simply a statement of fact.
>
> **I wish I had those waffles the guy next to me is eating. #hungry** This tweet expresses
> values through a wish or desire.
>
> Example: **Fnd new wi fi spot. Prolly only 4 or 5 parking spaces that would
> accommodate it.....** → This tweet is not value-laden. It does not provide an opinion or
> evaluation that would enable coders to ascribe underlying values to it.
>
> Example: **Big day tom. Hding to the State House to listen in on legislative meetings
> w/students! #lovethiswork** → This tweet is value-laden. The hashtag qualifier
> "#lovethiswork" indicates an evaluation of the work that user is doing.

During coding certain linguistic signals of value-laden tweets emerged. Words of

thanks, empathy, and hope all signaled the performance of values in tweets. Expressing

congratulations and appreciation were all expressions of approval, a form of judgment

indicating value-laden tweets. Tweets that expressed thanks to someone (the value object)

for doing something (the locus of values) were value-laden. Commands (i.e., telling

people to do something) signaled a form of value expression, because they indicated that

the Twitter user thought that action should be done or carried out. For example, phrases

like "join me for," "check out," and "follow me" were phrases that almost always signaled values.

Questions typically were not evaluative unless it was clear they were being used rhetorically. For example, this tweet: "How dare we turn our heads and spit on our kids and make sure they don't make us miss a step while walking in their beds?" is a rhetorical question that *would* be considered value-laden.

Tweets expressing apology or regret indicated an acknowledgment of how something should not be, highlighting how values might be expressed in the inverse. Although the statement is indicated in the negative, researchers should code the tweet as if it were expressed in its opposite, or positive, form. For example:

Example: **My brain is still numb - I am terrified of waking up to the snd of someone at my door.... http://tumblr.com/aabbcc345** → This tweet emphasizes fear of a negative situation, which implies the positive values of safety and security in the Conservation values set.

4.3.2 Value Objects, Locus of Values, and Underlying Values

One challenge of coding values is that specific words in the English language may signal certain types of values because they are perceived as synonymous with that word. However, the individual may not be expressing that value in particular. I refer to these as red herrings, which may distract a researcher from the most relevant or important values being expressed in the text unit. This is why "bag of words" approaches to automatically analyzing values are problematic. For example, the phrase "saving money," might initially signal the value construct of *wealth* in the Self Enhancement values set. However, the remaining context of the tweet may change the interpretation. If the user expresses that it is important to save money to help others then that indicates values of *benevolence* in the Self Transcendence values set. If the user expresses that it is important

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to save money to go on a super fun vacation, then that indicates values of *pleasure* and *stimulation* found in the Openness to Change values set. If the user expresses that it is important to save money because his or her family instilled that mentality in her, then that indicates values of *tradition* found in the Conservation values set. Finally, if the user expresses that saving money is important so she can become rich and achieve some personal goal then that points to values in the Self Enhancement values set.

To mitigate this problem, Cheng (2012) developed a process for identifying the value object and locus of values before determining the underlying values of a text unit. I have adapted his definitions for use in the analysis of values in tweets as follows:

- o The value object(s): the thing that is being evaluated/judged/desired by the Twitter user

- o The locus of value(s): the evaluative portion of the communication text that expresses one or more values through evaluation, judgment, opinion, wish, or desire

- o The underlying values: the types of values that are expressed most saliently that point the coder to the appropriate values sets for coding

The examples below highlight what these components of value-laden speech look like on Twitter. As the coding proceeded, it became clear that there were many instances in which a tweet did not contain the value object directly because it was being referenced in another tweet or in the overall theme of that user's tweets more generally. Section 4.4.3 describes the shift from coding the values of an individual tweet as the unit of analysis to coding values from the full sample of a user's tweets, which reduced the reliance on the presence of a value object for identifying values salience. The values object concept was

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still useful during coding, but it was not as critical as it was during the tweet-level

analyses in iterations 1 and 2 of coding described in more detail in the sections that

follow.

Example: **Been a good mornin so far w/HB sermon from @MikeShandler65 , walk through Bud Lake neighborhood and some @Coffee.** → This tweet has two *value objects* – "HB sermon from @MikeShandler65" and "walk through Bud Lake neighborhood and some @Coffee"; the *locus of value* is the individual's opinion that those things make for a "good mornin"; the underlying values which we can attribute "good mornin" to for each *value object* are *devout* in the Conservation values set and *enjoying life through leisure* in the Openness to Change values set.

Example: **Someone asked what I like to do for fun. I answered, "work, earn $$, impress clients, get stuff done." I guess that means I'm not normal?** → The *value object* is "what I like to do for fun"; the *locus of value* is "work, earn $$, impress clients, get stuff done" expressing how this individual thinks life ought to be; the underlying values are about achievement which fall in the Self Enhancement values set.

Example: **call me homeless or houseless, whatever tickles your fancy, I know who and what I am and I know I will be something great** → The *value object* is "I"; the *locus of values* is "know who I am and what I am and I know I will be something great"; the *underlying values* are about achievement (*self-respect* and *influential*) which are found in the Self Enhancement values set.

Example: **I have some $ for food and gas that will keep me going until something else breaks. #believe #homeless** → The *value object* is "I have some $ for food and gas"; the *locus of values* is "that will keep me going until something else breaks. #faith #homeless"; the *underlying values* are *security* and *faith* in the Conservation values set.

4.4 Iterating and Refining Coding Procedures

4.4.1 Training Procedures

I coded samples of 50 tweets from a total of 200 Twitter users for this study (50

tweets for each of 200 Twitter users equals 10,000 tweets). Twenty percent of the sample

was coded by two researchers (40 Twitter users with 2,000 tweets) for the purposes of

testing reliability of the coding rubric and iteratively refining the instructions, procedures,

and definitions of key constructs. I served as the primary coder for the study and coded 100% of the data. Rachel Magee, a PhD candidate from Drexel University's iSchool, served as the second coder for the study. She was familiar with, and had published studies based on, Twitter content and lived within close proximity to me allowing for frequent meetings for training and discussions of discrepancies.

Prior to engaging the coding task, I trained the secondary coder on the coding manual and she practiced applying the coding rubric to a small set of training data not included in this study. Through the training process, the secondary coder was able to freely ask questions of the rubric and its theoretical underpinnings. Together, we were able to discuss and reflect upon our assumptions about values and social issues related to homelessness, articulating the potential biases that we each brought to the coding process. We went through three major iterations of the coding manual before determining instructions and a process that supported the consistent and reliable detection of the most salient values in Twitter users' tweet samples. The sections that follow describe how the procedures for coding began initially in Iteration 1, and the changes we made in Iteration 2 and Iteration 3, resulting in a final set of procedures for coding the full dataset.

4.4.2 Iteration 1

In the first round of coding, we analyzed tweet samples from four individuals: one from the Homeless group, two from the Advocate group, and one from the Organization group. As a pre-step to dual coding, I had coded each user's tweet sample for original broadcasted tweets. I removed the non-original tweets and non-broadcasted tweets from the dataset we were using for coding, which resulted in a total of 120 remaining tweets across the four users for this first round. For each Twitter user, we independently read a

tweet, decided whether or not the tweet was value-laden and then, if so, coded the tweet as having the presence or absence of each of the values sets. Of the 120 original tweets, 63 of them were determined by one or both of us as being value-laden and these tweets were included in the inter-coder reliability test.

I used Krippendorff's Alpha, a commonly used reliability measure for content analysis of text units, for measuring inter-coder reliability (Hayes & Krippendorff, 2007). The advantage of using Krippendorff's Alpha over other reliability measures for this study is that it emerged out of the Communications field and content analysis more generally, which aligns with the methods of this study. Further, Krippendorff's alpha (Krippendorff, 2011):

- Can apply to any number of observers (not just two);

- Can apply to any number of categories, scale values, or measures;

- Can apply to any metric or level of measurements including nominal, ordinal, interval, and ratio;

- Can account for incomplete or missing data; and

- Can account for both small and large sample sizes and does not require a minimum sample size.

Alpha values approach a value of one as inter-coder agreement increases, and go to zero when there is no agreement beyond that which would be expected by chance (Stemler, 2001). Krippendorff calls for higher alpha values than Landis and Koch's (1977) more general benchmarks for Cohen's Kappa, which I had used in my previous pilot study (Koepfler & Fleischmann, 2012). Krippendorff's benchmarks state that researchers should rely only on variables with reliabilities above $\alpha = 0.80$, and consider

variables with reliabilities between $\alpha = 0.667$ to 0.80 only for drawing tentative

conclusions (Krippendorff, 2004, p. 241).

I used a web-based tool called ReCal to compute the reliability statistics for this

dissertation (http://dfreelon.org/utils/recalfront/; Freelon, 2010). ReCal is an easy-to-use,

well-tested, web-based inter-coder reliability calculator created by a Communications

professor at American University. Table 1 summarizes the results of the inter-coder

reliability results for the first round of coding. The results showed that we did not reach

the minimal threshold for drawing tentative conclusions for any of the categories. The

Self Transcendence category yielded the most promising reliability results of the four

categories. This values set also appeared most frequently in the subsample, which

increased our ability to consistently identify and code it. Conversely, Openness to Change

appeared infrequently in the dataset leading to a negative alpha despite relatively high

percent agreement. This indicated the need for a broader data sample that was more

representative of all of the categories and a refinement to the coding procedures.

Table 2. Iteration 1 Inter-coder Reliability Results for Values Sets

Category	Krippendorff's Alpha	Cohen's Kappa	Percent Agreement	N Cases
Openness to Change	-0.04	-0.03	91%	63
Self Transcendence	0.61	0.60	81%	63
Conservation	0.35	0.35	91%	63
Self Enhancement	0.42	0.42	83%	63

Although we felt comfortable with the values and their definitions, the coding

procedures used in this iteration introduced multiple points at which two coders might

disagree: (1) determining value-ladenness, and then (2) determining the presence or

absence of each of the values sets. The most difficult tweets to code were the tweets in

which it was unclear whether or not they were value-laden or what the value object was

due to lack of context within the tweet. Since we were focused on the original broadcasted tweets only and looking at single tweets in isolation, we were losing the additional contextual data that the user's Twitter profile and larger sample of 50 tweets might provide.

The lack of presence of all four of the values sets in the data sample was also a concern and we felt that incorporating more data from the Comparison group might yield the presence of all of the values sets in the data. Targeting specific types of data for reliability testing is consistent with Krippendorff's heuristic that "reliability data contain each category of units that the instrument distinguishes with equal and sufficiently large frequency" (2004, p. 239). In cases where there is no way to know from the start what the expected probabilities of each category of interest are, such as this one, Krippendorff suggests that researchers begin sampling and then add specific units to the sample to compensate for unequal proportions found in the test data as the inter-coder reliability process continues.

Based on these findings, we made three changes in preparation for Iteration 2:

1. Keep all tweets in a user's tweet sample in the dataset for additional context while tweeting.

2. Code for value-laden tweets and measure inter-coder reliability on that variable before coding for values sets and measuring inter-coder reliability a second time.

3. Look at data from a broader sample of users (i.e., the Comparison group) to try and elicit the full range of values sets more consistently in the test sample.

4.4.3 Iteration 2

For the second round of coding, we coded seven users from the Comparison group, with the anticipation that there might be more equal proportions of the values sets among a more diverse group of users. I pre-processed the data by identifying original broadcasted tweets, but kept all of the tweets in the dataset for context. Both coders then coded the full set of original broadcasted tweets ($n = 30$ original broadcasted tweets for each of the 7 users within the broader context of their sample of 50 tweets) for whether they were value-laden or not. Once this step was completed, we then tested our inter-coder reliability for value-ladenness before coding for values sets. Table 3 summarizes the results of the inter-coder reliability results for coding value-ladenness of the tweets only. The results showed low agreement between the two researchers.

Table 3. Iteration 2 Inter-Coder Reliability Results for Value-ladenness

Category	Krippendorff's Alpha	Cohen's Kappa	Percent Agreement	N Cases
Value-laden	0.43	0.46	75%	210

A closer examination of the data showed that the second coder was identifying more tweets as value-laden consistently more often than the primary researcher. We discussed the discrepancies, revisited the coding rules, and interrogated our potential biases related to the coding task. The second coder noted that her history of qualitative research and training in discourse analysis made it difficult for her ignore small nuances in the data, particularly at such a fine-grained unit of analysis as a single tweet. I noted that my background in conducting quantitative content analysis in the past made it easier for me to ignore less relevant nuances in the data in favor of applying a consistent set of

rules. We discussed how both approaches had their strengths and limitations in terms of the planned analyses for this study.

Rather than continue to refine the coding rules, conduct additional training specifically for this step, or identify and train a new coder, I made the decision to add coding for value-ladenness as a pre-processing step (occurring along with pre-processing for original broadcasted tweets), before beginning the process of two researchers coding for values sets. This decision was made based on the research questions, which were focused on values differences between groups and not value-ladenness more generally. This decision was also pragmatic in that one researcher could pre-process the data for original tweets and at the same time determine a tweet's value-ladenness reducing the amount of time it took to process and code the overall dataset.

Using the value-laden codes identified by the primary coder, we then proceeded to code the tweets for values sets. Of the 210 original broadcasted tweets, the primary coder had identified 108 of them as being value-laden. We coded these tweets and included them in the inter-coder reliability test.

Table 4 summarizes the results of the inter-coder reliability results for this round of coding. The results showed that we did not meet the minimum threshold for any of the values sets based on Krippendorff's benchmarks, but nearly all of the scores improved from the first round. Other studies, which used Cohen's Kappa as the guiding reliability metric, may have proceeded from here with substantial agreement for Openness to Change and moderate agreement for the other three categories. However, we felt that the process could benefit from further refinement and increased reliability, so we continued with a third Iteration.

Table 4. Iteration 2 Inter-coder Reliability Results for Values Sets

Category	Krippendorff's Alpha	Cohen's Kappa	Percent Agreement	N Cases
Openness to Change	0.65	0.65	84%	108
Self Transcendence	0.43	0.43	82%	108
Conservation	0.49	0.50	77%	108
Self Enhancement	0.55	0.55	83%	108

After the inter-coder reliability test was run, we met to discuss discrepancies and both described that there were certain tweets for which we lacked confidence in our codes due to the unique nature of tweets as a form of communication. We identified specific tweets that we were having difficulty with and discussed them in detail to determine whether the coding procedures or the descriptions of values required further refinement. Below is a list of representative examples of tweets that were difficult to code and the associated discussion for each:

Tweet: "There are so many pretty girls with Ugly personalities ..."

Discussion: The tweet was identified as value-laden because it presented a judgment about the personalities of pretty girls as being "ugly." The statement was written as a negation and therefore the value statement was interpreted in the inverse. The underlying value inherent in the user's assessment of the value object was difficult to determine due to the ambiguity of the qualifier "pretty." Did the user mean "nice" suggesting the expression of Self Transcendence values or was the statement as a whole more along the lines of not wanting people to break from a norm suggesting Conservation values? We determined that the latter values set (Conservation) was the better fit for this tweet.

Code: Conservation

Tweet: "Simply can't trust people that like mint chocolate chips."

Discussion: A strict interpretation of this tweet might suggest Conservation as the values set since the person evaluated "people" (the value object) as untrustworthy under the conditions of not liking mint chocolate chips. Similar to the tweet above, this might suggest a break from social norms for this Twitter user. However, looking at the context of the tweets within this user's sample showed that this user was most likely being sarcastic and generally tweeted about hedonistic or pleasurable things like food and entertainment throughout the tweet set. We determined that Openness to Change was a better fit for this tweet as an expression of hedonistic values such as enjoying food.

Code: Openness to Change

Tweet: Thanks to @paulospizzeria for having us today! #SoxRoadTrip [image link]

Discussion: The pizzeria was the value object and the evaluation was "thanks for having us today" expressing values of gratitude and an appreciation for helpfulness. The link connected to an image of four Red Sox baseball players with someone who was likely the pizzeria owner. The Twitter profile of this user showed that this individual was a baseball player for the Red Sox. These factors taken together pointed to benevolence values in the Self Transcendence category. We were also inclined to identify the Openness to Change values set in the tweet, due to its reference to a road trip and a large group gathering that was presumably

enjoyable, but that seemed like too much of an interpretation to make of the tweet. We agreed that if the Twitter user had added a qualifying statement such as "and we had a great time!" then this tweet would also be expressing Openness to Change. Simply talking about a road trip with one's own sports team, however, especially when that is part of one's daily work, was not necessarily enough to indicate an expression of the Openness to Change values set.

Code: Self Transcendence

This second round of coding showed that tweets can be highly nuanced and are best understood within the broader context of a Twitter user's profile and general tweeting habits. For example, knowing that a person tweeting about baseball is a professional baseball player might shape one's interpretation of that user's tweets when compared to a general baseball fan's tweets.

I discussed the challenges of coding individual tweets with members of my committee as well as other senior researchers at the 2013 Digital Societies & Social Technologies conference (see http://dev.sociotech.net/v2/archives/15608 for more details). These reflective discussions resulted in a major shift in the content analysis procedures. I decided to change the unit of analysis from an examination of values in a single tweet to the examination of values across a Twitter user's sample of tweets. The justification for this change was three-fold:

1. The need to incorporate additional context into the coding exercise to interpret any singular tweet suggested that a single tweet was not a particularly reliable unit of analysis.

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2. The eventual unit of analysis for statistical comparisons to address the research questions was intended to be at the level of the Twitter user, thus the coding procedures only needed to be reliable at that more aggregate level rather than at the level of each individual tweet for a particular user.

3. The theoretical framing of the study was concerned with salience of performed values, and salience relates not only to quantity but also to quality. Thus, the content analysis procedures needed to incorporate steps that adequately took both quality and quantity of values into account.

4.4.4 Iteration 3

I updated the coding manual and discussed the changes with the secondary coder. We agreed that this new approach felt more comfortable and would allow us to use more data (i.e., the Twitter profile, the broader context of tweets, and patterns in the user's expressions) to make interpretations about a Twitter user's expressed values. Using the new version of the coding procedures, we coded Twitter users' tweet samples by ranking the salience of each values set as Most salient (first), Second most salient (second), Third most salient (third), and Least salient (fourth). The new coding procedures preserved the overall approach of pre-processing data for original broadcasted tweets and value-ladenness, but increased the amount of context that we used to consider values salience at both a user and tweet level. The new procedures required an initial overall reading of a Twitter user's profile and full sample of 50 tweets to first get a feel for the Twitter user and their Twitter use habits. This accounted for the qualitative nature of salience. At this point, the most salient values set could emerge, but a second reading of the data was required at the more specific tweet level that made use of the coding procedures already

defined in the previous rounds. This accounted for the quantitative nature of salience. We used the two readings of the data together to determine the salience of values for the user.

More specifically, once we had completed an initial reading of the Twitter user's profile and tweet sample, we then more closely examined the value-laden tweets at an individual level. We considered these tweets as we had before, but within the full context of what we had already gleaned about the Twitter user and their tweet habits from the first reading of the data. As we analyzed the data, we made annotations about the values sets that we thought were most salient among each tweet. In cases where it was difficult to interpret a tweet's meaning, we were able to flag that tweet and move on to the next one and continue annotating the values sets that were more clearly expressed. Once we had examined the Twitter user as a whole based on his or her individual tweets, we determined which values set was the most salient for the Twitter user in terms of both quantity *and* quality. A step-by-step summary of this process is provided in Section 4.5 below.

I used the ReCal OIR tool to calculate Krippendorff's alpha for ordinal data (http://dfreelon.org/utils/recalfront/recal-oir/; Freelon, 2010). Krippendorff (2011) describes the differences in how the alpha metric is computed with nominal data (where two values either match or they do not) versus ordinal data (where values are ranks and the differences between ranks depend on how many ranks they are apart from each other) and other types of data (such as interval data in which values differ algebraically) in much more detail.

Table 5 summarizes the results of the inter-coder reliability results for the third round of coding using Krippendorff's alpha for ordinal data. Note that there is no

Cohen's Kappa equivalent for ordinal data and it is therefore not reported in the table.

The results showed that Openness to Change and Self Enhancement met the $\alpha = 0.80$

benchmark for reliability. Self Transcendence met the minimum threshold accepted by

Krippendorff for drawing tentative conclusions. Reliability for Conservation remained

below benchmark levels, as it had in previous efforts, due to fewer examples of this

values set emerging from the data making it difficult to detect consistently.

Table 5. Iteration 3 Inter-coder Reliability Results for Salience of Values Sets

Category	Krippendorff's Alpha (Ordinal)	Percent Agreement	N Cases
Openness to Change	0.90	75%	12
Self Transcendence	0.68	58%	12
Conservation	0.44	42%	12
Self Enhancement	0.93	83%	12

Since these results were promising, we met again to discuss discrepancies and

reflect on the new procedures. We both felt that the new approach allowed us to use

multiple points of evidence to draw conclusions about values salience. We felt that we

could consider the individual's profile as well as their overall Twitter use behaviors

across their random sample of tweets to get a sense of the user's tweeting habits and then

look more closely at the data at a finer-grained level. The process allowed for both

quantitative and qualitative approaches to making a determination about values salience.

We could determine frequency of values sets and then break ties based on the strength

and quality of the salience of a particular value across the user's sample of tweets.

Identifying value objects was still important, but there was a degree to which the

overall expression of a tweet could emerge more prominently through more qualitative

nuances. As one researcher noted in our post coding reflection: "I think what I like about

this is that it's this combination of feeling more confident about what I'm saying a user's

values might be, and also that there's more stuff to use to decide to say it with." This approach allowed us to see not just *what* people were saying in their tweets, but *how* they were saying it (e.g., we could discern sarcasm from other forms of rhetoric or Twitter use). At the tweet level during previous rounds of coding we had felt forced to interpret things that had less importance on a broader scale, such as someone saying "Happy Thanksgiving." As an individual tweet, this makes the value of tradition found in the Conservation values set seem important, but over the course of a user's tweets, we may find that their only expressions of Conversation are these normative statements of tradition common in American discourse, thus their salience should not be regarded with us much consideration as other values that user is expressing.

We also found that this approach was more in line with Schwartz's values theory, which provides a relational structure among the four values sets. His theory acknowledges that all values sets exist for people to some degree, but that some values will be more salient to some individuals in certain contexts than others. An ordinal ranking of the values sets was complimentary to that theoretical underpinning and also felt more comfortable overall as highlighted by the following conversation between the two coders:

Coder A: "I'm waffling on this user because it almost feels like an injustice for one value set to be higher than another."

Coder B: "Keep in mind that the framework indicates that everyone has all of these values, it's just that some will be more salient in some situations over others."

Coder A: "That's true. I feel better about that."

Coder A was reflecting on the fact that she felt some values were inherently more desirable than others. For example, she felt that Self Transcendence values were more desirable than Conservation values. We discussed the challenges of coding values when our own biases impact our moral judgment about which values are preferable at length. It was necessary to remind ourselves that Schwartz's theory does not ascribe a moral judgment on values (they are all created equal from a moral standpoint) and that it allows for all values to be expressed with different degrees of salience based on the situation at hand.

4.4.5 Dual Coding of the Data

For the final round of coding, we maintained the same procedures as in Iteration 3, but added Schwartz's value portraits from his questionnaire to the coding manual as a tool for further aiding our interpretation of a Twitter user's values sets (Schwartz, 2007). Schwartz's Portrait Values Questionnaire, or PVQ, is the survey instrument that underpins his values framework. The PVQ assesses people's value priorities using short verbal portraits. Each portrait describes a person's goals, aspirations, or wishes, which point to specific values. For each portrait, a respondent determines how much they are or are not similar to the person described by the portrait on a scale from 1–6, where 1 = *not like me at all* and 6 = *very much like me*. Two to three portraits represent each of the ten values that make up Schwartz's values framework. Schwartz notes that this is a small number for measuring a value construct, but that he needed a survey instrument short enough to fit into the European Social Survey (http://www.europeansocialsurvey.org/), which is deployed each year. The results of the survey become more reliable when the portraits are grouped by values set, similar to how I am using his values theory in this

study, rather than by the ten values. In previous work, I have adapted the PVQ for social

media contexts and found it to be an effective tool (Koepfler et al., 2013). These portraits

served as helpful illustrations for coding the types of people who might adhere to those

values most saliently. We could consider the extent to which a Twitter user was like the

various portraits, in the same way that the survey instrument asked a respondent to

consider how much they were like the portrait.

We then coded twenty percent of the dataset (40 Twitter users) across all four user

groups, with a higher proportion of Comparison users to try and ensure that all four

values sets were adequately accounted for in the exercise. All 40 Twitter users were

included in the final calculation of inter-coder reliability. Table 6 summarizes the results

of the inter-coder reliability test using Krippendorff's alpha for ordinal data. The results

showed that Openness to Change, Self Transcendence, and Self Enhancement all met the

$\alpha = 0.80$ benchmark. Conservation met the minimum $\alpha = 0.667$ threshold for drawing

tentative conclusions.

Table 6. Iteration 4 Inter-Coder Reliability Results for Salience of Values Sets

Category	Krippendorff's Alpha (Ordinal)	Percent Agreement	N Cases
Openness to Change	0.84	75%	40
Self Transcendence	0.85	58%	40
Conservation	0.67	42%	40
Self Enhancement	0.80	83%	40

Table 7 and Table 8 further explicate the inter-coder reliability findings. Table 7

shows the number of times each coder ranked each values set in the four possible

positions from most salient to least salient. Table 8 shows the inter-coder reliability when

data is transformed from ordinal to nominal data by making the rank position the variable

and the values set the category for coding.

Table 7. Iteration 4 Frequency of Ranking for Each Values Set by Two Coders (n=40)

Category	O2C		ST		C		SE	
	Coder A	Coder B	Coder A	Coder B	Coder A	Coder B	Coder A	Coder B
Most salient	11	11	13	14	3	4	13	11
Second most	8	8	9	8	9	7	14	17
Third most	8	7	10	8	15	20	7	5
Least salient	13	14	8	10	13	9	6	7

Table 8. Iteration 4 Inter-Coder Reliability for Rank Categories

Category	Krippendorff's Alpha (Nominal)	Percent Agreement	N Cases
Most salient	0.83	88%	40
Second most salient	0.56	68%	40
Third most salient	0.39	58%	40
Least salient	0.60	70%	40

These two tables highlight the fact that the variability between the two coders occurred most often when determining the Second and Third most salient values sets. We agreed more consistently on which values sets were Most salient and Least salient for each Twitter user; however, only the Most salient variable met the reliability benchmark for further statistical analysis (see Chapter 5). Future work should consider whether there are procedures that would help address the challenges associated with coding the Second and Third most salient values sets, including using potentially larger samples of users' tweets and developing additional rules for applying quantitative and qualitative interpretations of values salience to the data.

4.5 Final Coding Procedures & Codes for Determining Values Salience

The following list summarizes the step-by-step coding instructions that were refined, tested, and implemented for quantitative content analysis in this study. Table 9 provides

descriptions of each of the codes followed by examples from the dataset in Table 10 based on Schwartz's values framework.

Pre-Processing

1. Read the tweet for the first time, including looking up any unknown hashtags and following a URL if provided, to determine originality of the tweet: Does the tweet meet the inclusion criteria for being an **original broadcasted** tweet?

   o If NO, leave tweet in the dataset and continue coding.

   o If YES, indicate this by placing a "1" in the cell next to the tweet.

2. Does the user's sample have at least 30 original broadcasted tweets in it?

   o If NO, remove one of the non-original or non-broadcasted tweets from the user's sample and replace it with an original broadcasted tweet from the user's timeline as close to the same time period as possible until the user has at least 30 original broadcast tweets.

   o If YES, continue. NOTE: Users may have 30–50 original broadcasted tweets in their final sample for analysis.

3. Read through the original tweets and determine if they express values: Does each tweet indicate an evaluation, judgment, opinion, or belief that is personal to the Twitter user?

   o If NO, indicate this by placing a "0" in the cell next to the tweet.

   o If YES, indicate this by placing a "1" in the cell next to the tweet.

4. Does the user's sample have at least some value-laden tweets in it?

- o If NO, remove one of the non-value-laden tweets from the user's timeline and replace it with an original, value-laden tweet from the user's timeline as close to the same time period as possible.

  NOTE: There were no instances in the dataset for this dissertation in which a Twitter user did not have any value-laden tweets in their sample of original tweets. The smallest number of tweets found to be value-laden in a user's sample was 9 and the lowest percentage of value-laden tweets to original tweets was 24% (9 tweets out of 37 original tweets). The average across the entire sample was 68% (Min = 24%, Max = 98%, $SD =$ 16.5%). This was adequate for the purposes of the study and I would recommend to future researchers that they aim for a minimum of about 25% of the original tweets having value-laden characteristics.

- o If YES, continue.

Preparation

5. Prior to each session of data coding read through the coding manual and familiarize yourself with the coding procedures and coding categories (see Table 9).

Coding

6. Read through the full sample of 50 tweets and the Twitter user's profile information to identify who the user is, how they use Twitter, and what the values context(s) of their tweets are. At this point one or two salient value sets may emerge. Keep those in mind as you move to Step 2.

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7. Read through again and focus specifically on the value-laden tweets—it may be helpful to do some light coding and annotating at the tweet level to help with the overall assessment of values salience.

- o If the most salient underlying values of the tweet fall into the **Openness to Change** values set (the tweet expresses independent action and readiness for new experiences; it has underlying values such as *stimulation*, *self-direction*, *hedonism*, *innovation*, *creativity*, *excitement*, etc.), note O2C in the Notes column next to the tweet.

- o If the most salient underlying values fall into the **Self Transcendence** values set (the tweet expresses concern for the welfare and interests of others; it has underlying values such as *universalism*, *wisdom*, *equality*, *peace*, *helpfulness*, *honesty*, *loyalty*, *spirituality*, *meaning in life*, etc.), note ST in the Notes column next to the tweet.

- o If the most salient underlying values fall into the **Conservation** values set (the tweet expresses self-restriction, a desire for social order, or a resistance to change; it had underlying values such as *humility*, *devoutness*, *tradition*, *conformity*, *obedience*, *safety*, *security*, *health*, *cleanliness*, etc.), note C in the Notes column next to the tweet.

- o If the most salient underlying values fall into the **Self Enhancement** values set (the tweet expresses the pursuit of self-interests or the interests of others; it has underlying values such as *social power*, *authority*, *wealth*, *social recognition*, *capable*, *ambitious*, *influential*, etc.), note SE in the Notes column next to the tweet.

- o If you cannot identify the underlying values, make a note to revisit the tweet and continue coding.

- o If the tweet strongly expresses more than one values set, note both in the Notes column next to the tweet.

8. After you've coded the tweets for their most salient values, determine which values set is most salient for this Twitter user across their entire tweet sample. Mark a "1" in the cell that corresponds to the Most salient values set for that user in the Twitter Users spreadsheet.

    - o Refer back to the values definitions and the value portraits to help with this.

9. Determine which values set is the Second most salient for this Twitter user. Mark a "2" in the cell that corresponds to the value set and the user on the Twitter Users spreadsheet.

10. Determine which values set is the Third most salient for this Twitter user. Mark a "3" in the cell that corresponds to the value set and the user on the Twitter Users spreadsheet.

11. Determine which values set is the Least salient for this Twitter user. Mark a "4" in the cell that corresponds to the value set and the user on the Twitter Users spreadsheet.

12. In cases where there are ties or close ranking between two values sets, revisit the context of the user and consider the extent to which the values are expressed more strongly or dominantly than the others. For example if three value-laden tweets are annotated with a C and two are annotated with ST, reconsider the strength or

salience of those values within those tweets and across the dataset of the user—which ones are most clear and salient?

13. Make notes or justifications for your rankings to discuss with a second coder.

Table 9. Description, Values, and Value Portraits for each Values Set

Openness to Change (O2C):	**Self-Transcendence (ST):**
Twitter users whose tweets express desires, wishes, or evaluation related to independent action and readiness for new and/or enjoyable experiences.	Twitter users whose tweets express desires, wishes, and evaluations related to the welfare and interests of others.
Values in O2C	**Values in ST**
Stimulation: these values derive from the presumed organismic need for variety and stimulation in order to maintain an optimal level of activation; excitement, novelty, and challenge in life *Self-direction:* the defining goal of this value type is independent thought and action; choosing, creating, exploring *Hedonism:* derived from organismic needs and the pleasure associated with satisfying them; pleasure and sensuous gratification for oneself	*Universalism:* the motivational goal of universalism is understanding, appreciation, tolerance, and protection for the welfare of all people and for nature *Benevolence:* focus on concern for the welfare of close others in everyday interaction; the need for positive interaction in order to promote the flourishing of groups
Value Portraits for O2C • Thinking up new ideas and being creative is important to him. He likes to do things in his own original way. • He likes surprises. It is important to him to have an exciting life. • It is important to him to listen to people who are different from him. Even when he disagrees with them, he still wants to understand them. • Enjoying life's pleasures is important to him. He likes to "spoil" himself. • It is important to him to make his own decisions about what he does. He likes to be free to plan and to choose his activities for himself. • He looks for adventures and likes to take risks. He wants to have an exciting life. • He seeks every chance he can to have fun. It is important to him to do things that give him pleasure.	**Value Portraits for ST** • He thinks it is important that every person in the world be treated equally. He believes everyone should have equal opportunities in life. • It's very important to him to help the people around him. He wants to care for their well-being. • It is important to him to be loyal to his friends. He wants to devote himself to people close to him. • He strongly believes that people should care for nature. Looking after the environment is important to him.

Self-Enhancement (SE):	Conservation (C):
Twitter users whose tweets express desires, wishes, and evaluations related to the pursuit of self-interests.	Twitter users whose tweets express desires, wishes, and evaluations related to self-restriction, social order and safety, and resistance to change.
Values in SE	**Value Categories in C**
Power: emphasizes the attainment or preservation of a dominant position within the more general social system; social status and prestige, control or dominance over people and resources	*Tradition:* the motivational goal of tradition values is respect for, commitment to, and acceptance of the customs and ideas that one's culture or religion provides an individual
Achievement: the defining goal of this value type is personal success through demonstrating competence according to social standards	*Conformity:* the defining goal of this value type is restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms
	Security: the motivational goal of this value type is safety, harmony, and stability of society, of relationships, and of self
Value Portraits for SE	**Values Portraits for C**
• It is important to him to be rich. He wants to have a lot of money and expensive things.	• It is important to him to live in secure surroundings. He avoids anything that might endanger his safety.
• It's very important to him to show his abilities. He wants people to admire what he does.	• He believes that people should do what they're told. He thinks people should follow rules at all times, even when no one is watching.
• Being very successful is important to him. He likes to impress other people.	• It is important to him to be humble and modest. He tries not to draw attention to himself.
• It is important to him to get respect from others. He wants people to do what he says.	• It is important to him that the government ensures his safety against all threats. He wants the state to be strong so it can defend its citizens.
	• It is important to him always to behave properly. He wants to avoid doing anything people would say is wrong.
	• Tradition is important to him. He tries to follow the customs handed down by his religion or his family.

The example below shows a sample of an anonymized user's tweets from the

Comparison group. Reading through the sample, a coder can get a sense for this user's

Twitter use habits and general conduct. From the first reading, including following the

user's provided URLs for context (the URLs have been removed here to preserve

anonymity), the reader learns that the user expresses Self Enhancement saliently. Many

of the links go to video blogs featuring the user talking about tips for success and self-

achievement based on his methods/experiences. A closer inspection of the value-laden

tweets indicates that the user expresses all of the values sets at least once. Some of the

tweets express multiple values sets. In terms of both quantity and quality, the Self

Enhancement values set is the most salient followed by the Openness to Change values

set. The third and fourth rankings are more difficult to determine, but the Conservation

statements show up as qualitatively more salient— the tweets where Conservation values

are expressed are more clearly related to those values. Several of the tweets that

expressed Self Transcendence also expressed other values and were less salient to this

user's overall character. The final values salience rankings for this user were:

- Most Salient: Self Enhancement (SE)

- Second most salient: Openness to Change (O2C)

- Third most salient: Conservation (C)

- Least salient: Self Transcendence (ST)

Coding Example
- User Profile: CEO Game Plan Inc. – Venture Capitalist - Philanthropist – BC Alum
- Location: Boston, MA
- URL: gameplaninc.com
- Followers: 25,451
- Following: 110
- Tweets: 636

Table 10. Tweets from Coding Example

Tweet	Original	Value-laden	Notes on salient values
#sometimesyoumust Take 3 Steps Back to Take 5 Steps Forward.	1	0	
A motivating memorial day to everyone, let's be healthy and happy this season	1	1	C
Tek and Wakefield baseball charity event	1	0	
Poker with big papa [link]	1	0	
Get inspired by my YouTube Channel! http://www.youtube.com/user/	1	0	
#scambook : Wow finally a place that actually helps you get your $$ after being scammed! Go to: [shortened link]	1	1	C
Have to love it when @IvankaTrump Denies you! Thanks! [shortened link]	1	1	SE
Nobody is catching my baseball team this season.	1	0	
Masterprofits.com [shortened link]	1	0	
We are the CHAMPIONS! Bruins win Stanley Cup! Check out Boston Fans after winning: [YouTube link]	1	0	
[shortened link] Super motivating.	1	1	SE
For updates on my Videos Join Me: [shortened link]	1	0	
It is About Building Your social NETWORK!! [shortened link]	1	1	SE
PLEASE CLICK and LIKE to VOTE for me. I will send voters a money making tip. [shortened link]	1	0	
Everyone Follow @MrColins best guy in the biz, always has the inside scoop	1	1	ST
I made it on the Impact100 List! Being presented @ the White House today	1	0	

at 230 watch it here [shortened link]			
I started trading with Jim Fykes, and made over 80k since december. Consider this [shortened link] code Gingerbread50 gets 50% off	1	0	
Gr8t new show on HGTV remodeled, debuting	1	1	O2C
I knew Peyton was done with football, very hard injury to come back from #NFL	1	1	ST
Hey everyone! please follow my beautiful and talented lady @janeshoes ! check out her website [shortened link]	1	1	ST, SE
What is the deal with Erik Red? looked injured at end of last week's game!	1	1	O2C, SE
Just watched @TBrady express how happy he is to not be an insurance salesman. Cray cray.	1	1	O2C, SE
Seems that #jerrysandusky is paying his bills by selling crockpots on QVC. [shortened link]	1	1	?
I want Super Bowl Tickets @WesWelker! [shortend link] #GonnaHappen	1	0	
Teaming up with [shortened link] and [shortened link]	1	0	
I teams up with NHL [shortened link]	1	0	
"An idea that is dev'd and put in action is +important than an idea that exists only as an idea." Buddha	0	0	
tools become rusty, so does the mind; a garden uncared for soon becomes smothered in weeds; a talent neglected withers & dies -Ethel Page	0	0	
When I chased money, I didn't have enough. When I got my life on track and focused on giving up myself and (cont) [shortened link]	1	1	ST
Dedication involves making space for young ideas to take hold; every tree was once a seed & every company was an idea. B-Jorgensen	0	0	
If anyone is not willing to accept your p.o.v., try to see her p.o.v. -Lebanese Proverb	0	0	
Success is a ladder that can't B climbed w/your hands in ur pocket -Unkown	0	0	
If your actions inspire others to dream, learn, do and become more, then you are a leader. JQA	0	0	
If you play it safe in life, you have decided that you do not want to grow anymore. –S. Hufstedler	0	0	
Gut Check [shortened link]	1	0	
Some men have thousands of reasons why they can't do what they want, all	0	0	

they need is one reason why they can. –W. Whitney			
The moment a man ceases to progress, to grow, then his life becomes stagnant. –O. S. Marden	0	0	
Balance your thoughts with action. If you spend too much time thinking, you will never get it done. –B. Lee	0	0	
Come hear me speak 3/28 at 6p in Boston [shortened link]	1	1	SE
Many fail bc they do not get started, they do not let go. They do not overcome inertia. -W. C. Stone	0	0	
Good business leaders create a vision, articulate the vision, own the vision; relentlessly drive it to completion -JWelch	0	0	
It's impossible to win the race unless you try to run, impossible to win the victory unless you dare to battle. –R.M. DeVos	0	0	
There's no use saying, "We r doing our best." You have to succeed in doing what is necessary. -Churchill	0	0	
Best Advice Ever: [shortened link]	1	1	SE
A winner is someone who accepts failures & mistakes, picks up the pieces, and continues striving to reach her goals. -Dexter Y.	0	0	
Why NOW is a great time to go to Europe! [shortened link]	0	0	
NOW is a great time to go to Europe! [shortened link]	1	1	O2C
Ron Burton Training Village Speech [shortened link]	1	0	
Confidence- Act As If You've Got Some [shortened link]	1	1	SE
Giving Back w Bachman and Burton of WHYY [shortened link]	1	0	

Chapter 5: Comparison of Values across Stakeholder Groups

This chapter addresses RQ2, providing a detailed quantitative analysis comparing the most salient values of different stakeholder groups related to the social issue of homelessness. It also draws from the qualitative analysis to characterize the ways in which salient values were expressed by each group. The second research question for this study asked:

RQ2) What are the differences in the salient values expressed through

online communication by stakeholder groups related to the issue of

homelessness?

As described in Chapter 4, this study used content analysis to analyze samples of tweets from 200 Twitter users in four groups: (1) Twitter users who identified as homeless in their Twitter profiles (Homeless), (2) Twitter users who identified as homeless advocates in their Twitter profiles (Advocate), (3) Twitter users who identified as support organizations in their Twitter profiles (Organization), and (4) a comparison group of users who did not identify with homelessness in any specific way in their Twitter profiles (Comparison). I analyzed the data using SPSS Version 17.0, a statistical software package for the social sciences, using descriptive and nonparametric inferential statistics to determine differences between groups. Throughout the chapter, I provide brief descriptions of each nonparametric statistic the first time it is used for readers who may be less familiar with these tests. Tweets and profile names included in this chapter have all been modified slightly (shortened words elongated, long words shortened, links removed, etc.) to preserve anonymity of the Twitter users.

Results with a more conservative alpha level of $\alpha = 0.01$ indicated statistically significant group differences. I chose this alpha level instead of the more commonly used $\alpha = 0.05$ to account for the potential increase in Type I errors (e.g., false positives) due to the number of statistical tests that were run for the study. I do, however, report the results that met an alpha level of $\alpha = 0.05$ for the purposes of pointing to future work and to allow for comparisons with other studies in the literature. Readers should note that these findings are not considered to be as robust and may include false positives.

The first section of this chapter describes the general Twitter characteristics (i.e., followers, following, and tweets) of each group and reports on group differences for each variable. The next section reports the differences between stakeholder groups for most salient values and provides examples from the data to characterize these differences across stakeholder groups. The third section summarizes the key findings and points to the additional exploration covered by the qualitative analysis described in Chapter 6.

5.1 Twitter Use

5.1.1 Summary of Twitter Use Characteristics

As described in Chapter 3, the data for this study included a sample of Twitter users and samples of tweets from their timelines. The sample was made up of 200 Twitter users that represented 4 groups with 50 users in each group. Each Twitter user's timeline was represented by 50 randomly selected tweets for a total of 10,000 tweets across the sample. Three groups represented stakeholders related to the issue of homelessness and one group represented a comparison group of users who did not associate with the issue of homelessness in their Twitter profile. Table 11 provides a summary of Twitter use characteristics for the Twitter users in the sample.

Table 11. Twitter Use Characteristics across Stakeholder Groups

Characteristic		Group 1 Homeless	Group 2 Advocate	Group 3 Organization	Group 4 Comparison
Followers	Mean	434	407	590	25,504
	Median	75.5	148	286.5	22,732
	SD	1,088.5	592.7	871.1	21,637.3
	Min	0	6	13	35
	Max	4,940	2,806	5,076	97,528
Following	Mean	1,313	494	594	8,080
	Median	156.5	234.5	292.5	803
	SD	6,364.1	571.4	770.6	15,760.0
	Min	7	6	0	17
	Max	45,062	2,075	4,311	78,922
Tweets	Mean	4,342	3,256	775	2,176
	Median	415	735	293.5	643
	SD	11,530.3	5,768.3	1,085.1	4,756.6
	Min	51	58	62	54
	Max	60,127	25,114	5,039	27,524

The Homeless, Advocate, and Organization groups all had a similar distribution

of Twitter followers, but were dramatically different from the Comparison group, which

had an average Followers score nearly 5 times that of the other groups ($M = 25,504$, $SD =$

21,637.3). The standard deviation for the Homeless group ($SD = 1,088.5$) indicated a

significant amount of variability within the group for the Follower characteristic. The

same was true of the Comparison group, which had users who ranged in number of

followers from 35 to 97,528.

The number of other Twitter users that each group followed on average showed

similar variability, with the Homeless group and Comparison group both having high

standard deviations when compared to the Advocate and Organization groups. Again,

members of the Comparison group on average followed far more Twitter users than the

other three groups ($M = 8,080$, $SD = 15,760.0$).

The Homeless group had the highest average number of tweets out of the four

groups, but also had the highest standard deviation pointing to significant variability

among Twitter users in this sub-sample for this statistic. Advocates had the second highest average number of tweets, followed by the Comparison group and then the Organization group.

Overall, there was considerable variability for each of the Twitter use statistics that were collected for each group. It was not surprising that there was a lot of variability in the Comparison group, because the only thing they were known to share in common at the time of sampling was that they did not indicate a relationship with the social issue of homelessness in their Twitter profiles (and that they included the article "a," "an," or "the"). However, the variability within the Homeless group in particular suggested that there might be other factors at play leading to a lack of homogeneity across the group. This variability is explored in more detail in Chapter 6.

5.1.2 Group Differences for Followers Characteristic

The high variability within the groups for the Followers characteristic indicated the need for nonparametric statistics. I used the Kruskal–Wallis H-test to evaluate the differences between groups for their Followers characteristic. The Kruskal–Wallis H-test is a nonparametric statistical test for comparing more than two independent samples. This test is the equivalent to the parametric one-way analysis of variance (ANOVA) test, but does not make assumptions about the normality of the data. The test for the Followers characteristic showed statistically significant differences among the groups ($H_{(3)}=$ 103.74, $p < 0.001$) with a mean rank of 169.14 for the Comparison group, 95.50 for the Organization group, 78.40 for the Advocate group, and 58.96 for the Homeless group.

To determine which groups differed significantly, I conducted a *post hoc* analysis using the Mann–Whitney U test. This test is equivalent to the parametric Student's t-test

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and allows for pairwise comparisons to determine where the specific differences occurred among the groups. The test showed significant differences between the Comparison group and all other groups for number of followers (Homeless: $U = 80.00$, $p < 0.001$; Advocate: $U = 106.00$, $p < 0.001$; Organization: $U = 132.00$, $p < 0.001$).

Figure 7 through Figure 9 provide a graphical summary of the distributions of Twitter followers for each group. These figures visually display long tail distributions common to social media studies and show the variability of the Followers characteristic within and among the groups. The Comparison group (Figure 10 shows the flattest distribution of the four groups.

Figure 7. Distribution of Followers for the Homeless Group

Figure 7. Distribution of Followers for the Advocate Group
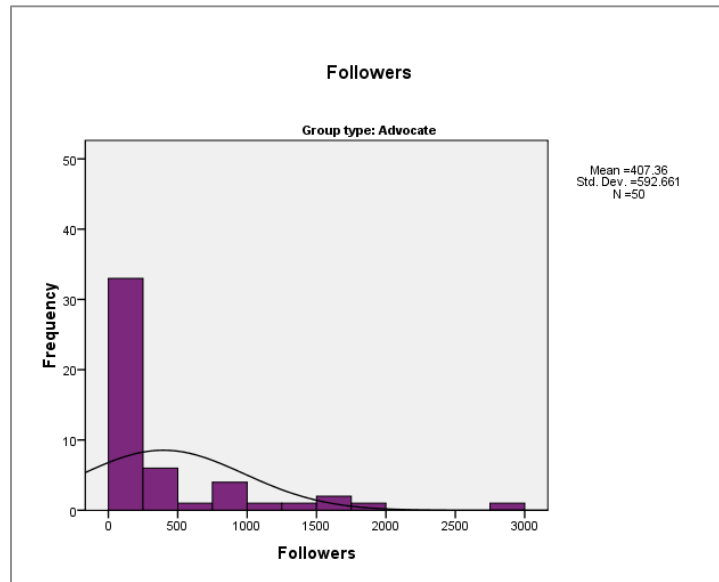
Figure 8. Distribution of Followers for the Organization Group
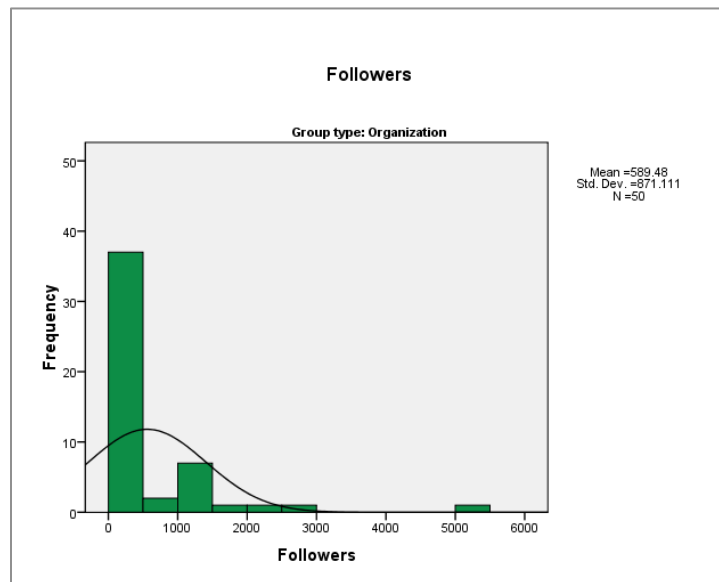
Figure 9. Distribution of Followers for the Comparison Group
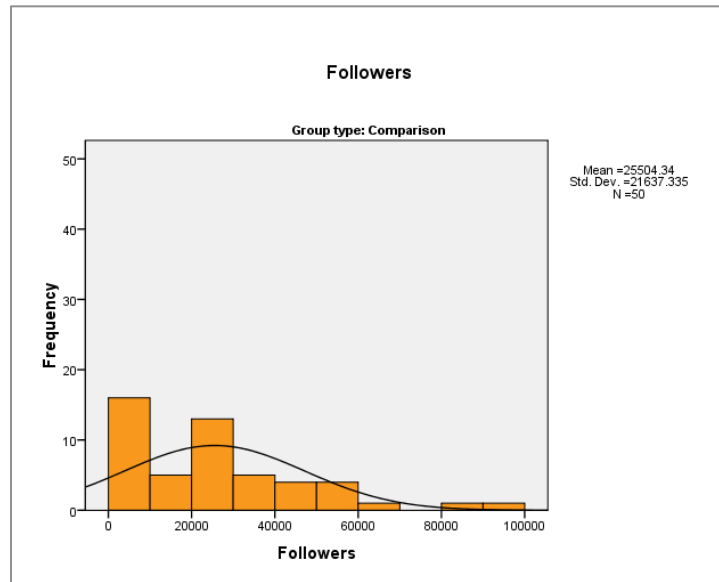
5.1.3 Group Differences for Following Characteristic

The Kruskal–Wallis H-test showed statistically significant differences among the groups for the Following characteristic (i.e., the average number of Twitter users each group follows) ($H_{(3)} = 16.72$, $p < 0.001$) with a mean rank of 126.43 for the Comparison group, 100.63 for the Organization group, 94.82 for the Advocate group, and 80.12 for the Homeless group.

The *post hoc* analysis showed significant differences between the Comparison group and the Homeless group ($U = 732.00$, $p < 0.001$) and the Comparison group and the Advocate group ($U = 836.00$, $p < 0.01$). There were differences at $p < 0.02$ ($U = 885.50$) between the Comparison group and the Organization group.

Figure 10 through Figure 13 provide a graphical summary of the distributions of the number of users that each group follows. Similar to Figures 7 through 10, these figures show a long tail distribution and show the variability of the Following characteristic within and among the groups. The Homeless group demonstrates the

biggest visual contrast between the left side of the graph and the right side of the graph

(Figure 11).

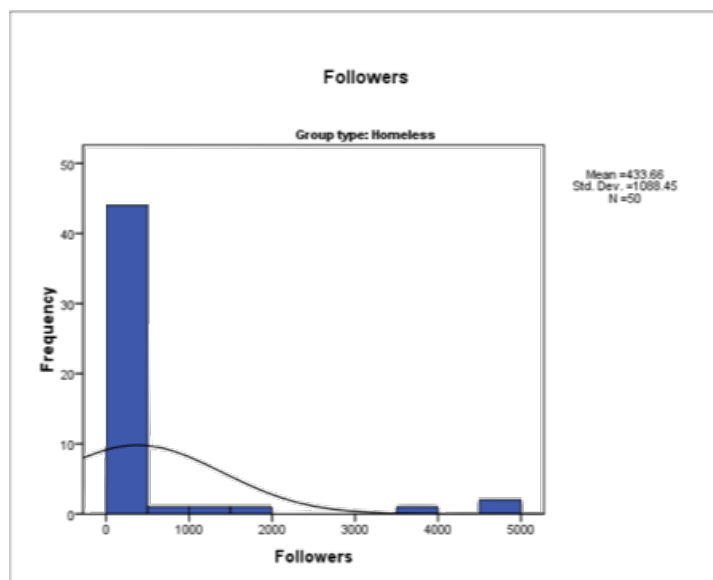**Figure 10. Distribution of Following for the Homeless Group**
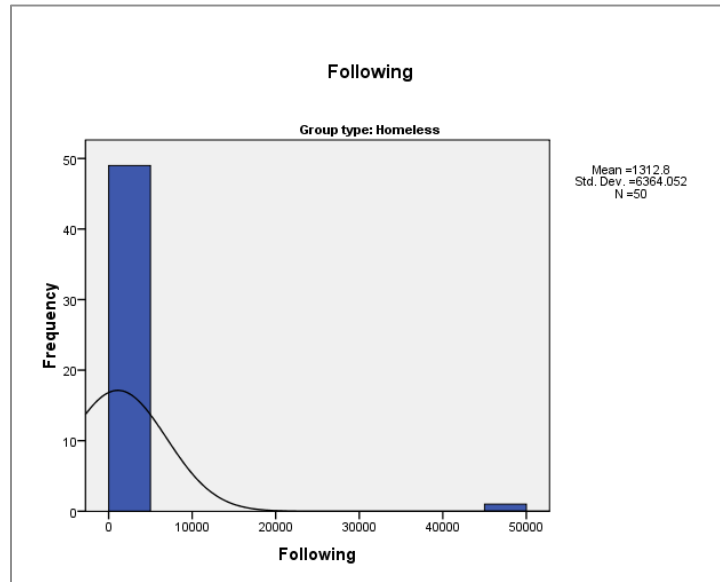
Figure 11. Distribution of Following for the Advocate Group
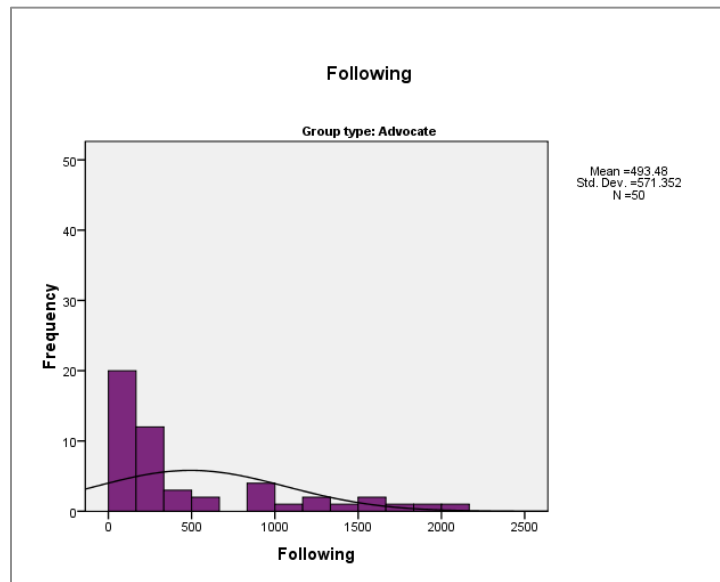
Figure 12. Distribution of Following for the Organization Group
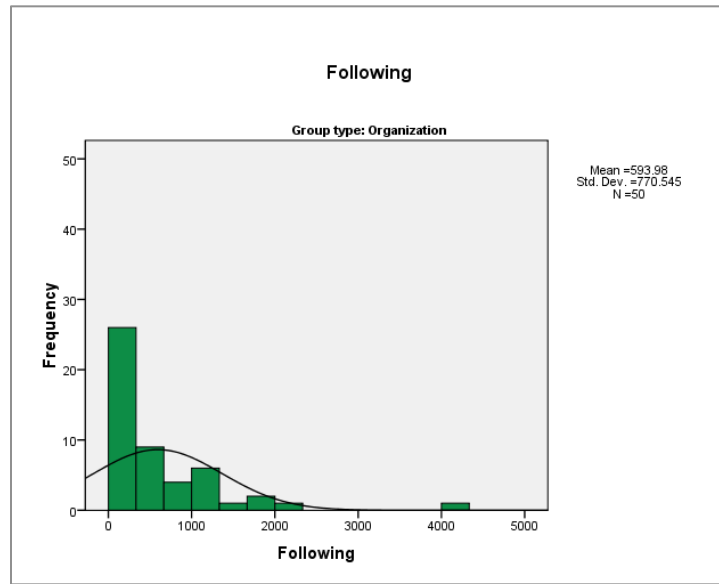
Figure 13. Distribution of Following for the Comparison Group
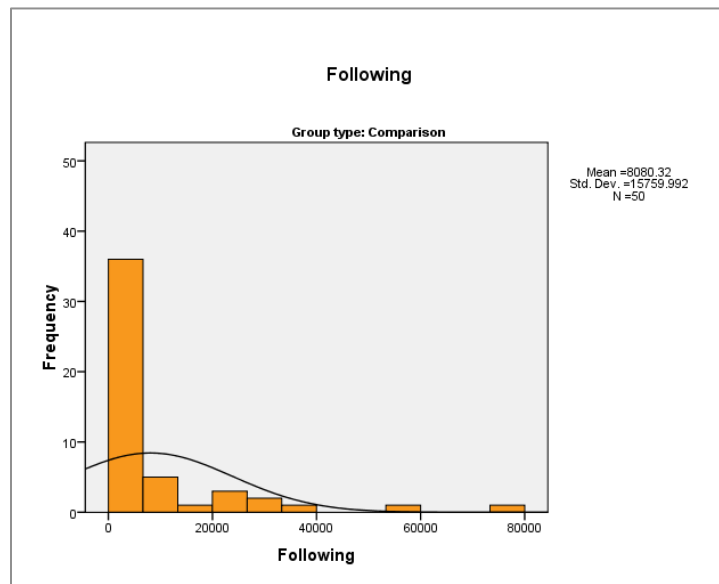
Digging deeper into the patterns of values salience within groups in relationship to their Twitter use statistics did not result in any meaningful findings or suggest additional explanations for this finding other than Twitter use varies widely in general. Many studies focus on tweets around specific topics or hashtags rather than on Twitter users more generally, and therefore studies in the literature often do not include

Followers and Following statistics for comparison here. Even the Pew Internet and American Life project and a study on the topic of "unfollowing" in Twitter (Kwak, Chun, & Moon, 2011) do not seem to report on these numbers in their Twitter studies. However, there are isolated examples that suggest this distribution within groups may be common. For example, in a study on social networking among members of Congress and of the Senate, Glassman and colleagues (Glassman, Straus, & Shogan, 2009, p. 11) found that Followers for House Representatives ranged from 130 to 13,000 followers (Mdn = 1,617), and Followers for Senate members ranged from 353 to 1.2 million followers (Mdn = 3,998).

5.1.4 Group Differences for Tweets Characteristic

There were no statistically significant differences among the stakeholder groups for their average number of tweets. There were no differences between the stakeholders groups when compared to the Comparison group, since this characteristic was used as a guide for stratified sampling of the Comparison group (see Chapter 3 for a detailed discussion of the procedures used to identify and sample users for each group in this study).

Figure 14 through Figure 17 provide a graphical summary of the distributions of number of tweets for each group. The graphs look very similar for all four groups for the Tweet characteristic.

Figure 14. Distribution of Tweets for the Homeless Group
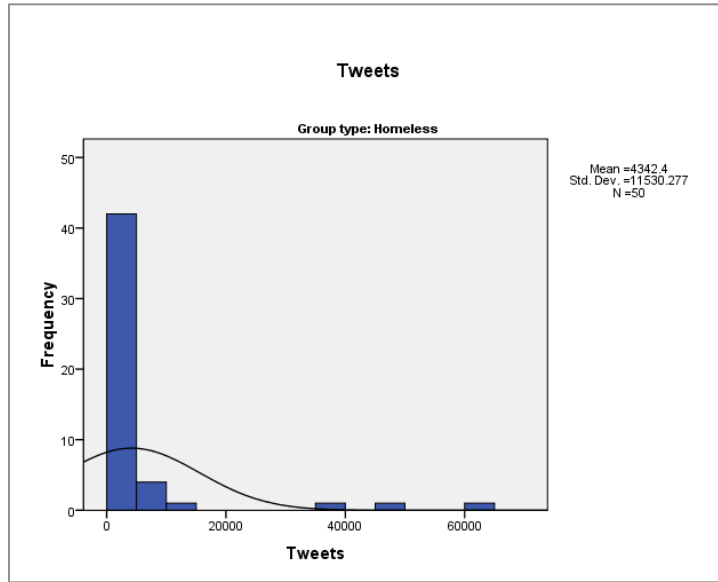
Figure 15. Distribution of Tweets for the Advocate Group
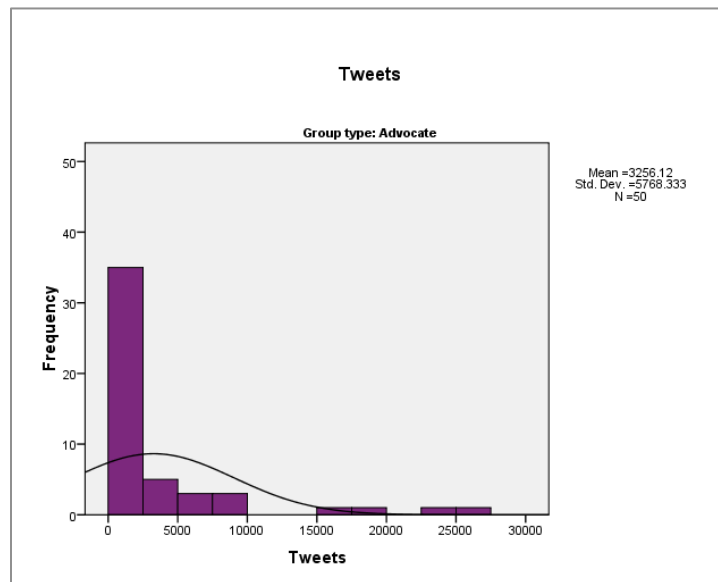
**Figure 16. Distribution of Tweets for the Organization Group**
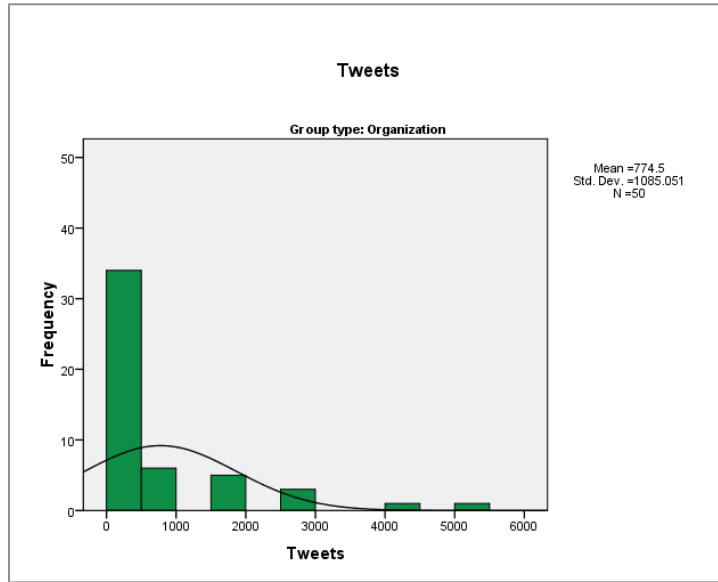
Figure 17. Distribution of Tweets for the Comparison Group
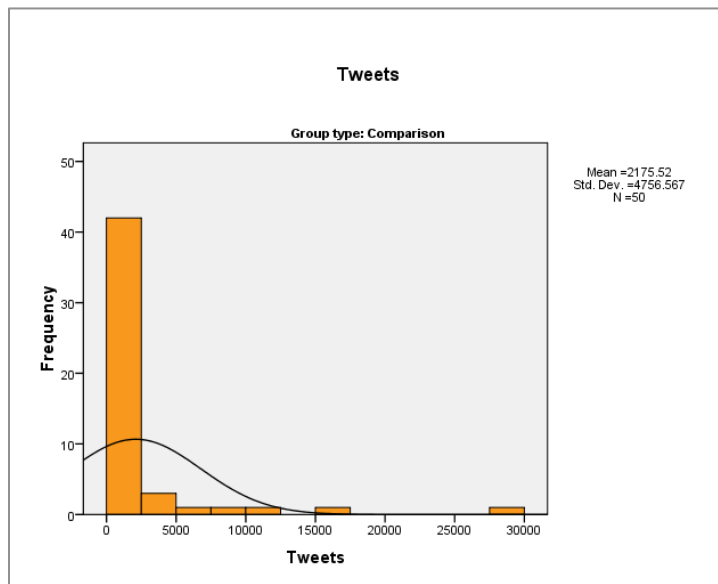
5.2 Values Salience

5.2.1 Summary of Value-Laden Tweets

The study required that each Twitter user have at least 30 original broadcasted tweets in their sample in order to be included in the final sample. There were no

minimum criteria placed on the number of value-laden tweets a Twitter user needed to have in order to be included in the sample. Table 12 summarizes the characteristics of the tweets in each stakeholder group on average; and shows that, on average, each group had similar numbers of original tweets, and of those tweets a similar proportion of value-laden tweets. The Organization group had the highest proportion of value-laden tweets on average, which is discussed in more detail at the end of this chapter. As described in Chapter 4, the original tweets and value-laden tweets were determined in a pre-processing step by one researcher prior to coding the dataset for values.

Table 12. Characteristics of Tweets for Each Group

		Group 1 Homeless	Group 2 Advocate	Group 3 Organization	Group 4 Comparison
Total	Mean	37	35	40	36
Original	SD	7.5	5.6	5.3	6.4
Tweets	Min	30	30	30	30
	Max	50	49	49	48
Percent	Mean	62%	68%	73%	69%
Value-laden	SD	17.1%	17.7%	14%	15.3%
of Original	Min	24%	26%	42%	37%
	Max	97%	98%	98%	97%

5.2.2 Group Differences for Value-Laden Tweets

An examination of the kurtosis and skewness of the distributions of value-laden tweets in the samples showed that the data did not meet the assumptions of normality needed for parametric statistics. The z-score for kurtosis fell within the desired range between -1.96 and +1.96 with $z_k = 0.380$, but the z-score for skewness did not ($z_{sk} = 2.08$). As a result, I used the nonparametic Kruskal–Wallis H-test to evaluate the differences between groups for their percentage of value-laden tweets. The test showed statistically significant differences among the groups ($H_{(3)} = 24.99, p < 0.001$) with a mean rank of 134.12 for the Organization group, 98.70 for the Comparison group, 88.51 for the

Advocate group, and 80.67 for the Homeless group. The *post hoc* pairwise comparisons

showed that the Homeless group differed significantly with a lower mean rank of value-

laden tweets in their samples from the Organization group ($U = 598.00$, $p < 0.001$).

5.2.3 Summary of Salient Values among Groups

        Table 13 summarizes the descriptive statistics for the salience of values sets

among each group's tweets. As described in Chapter 4, only the Most Salient rank met

the threshold for reliability. The results for the Second, Third, and Least salient ranks are

included here in support of comparisons with future research, should be considered less

robust.

Table 13. Salience of Value Sets by Group

		Group 1 Homeless	Group 2 Advocate	Group 3 Organization	Group 4 Comparison
Salience of Openness to Change	Most Salient	**40% (n=20)**	**54% (n=27)**	0% (n=0	**44% (n=22)**
	Second	28% (n=14)	16% (n=8)	4% (n=2)	40% (n=20)
	Third	18% (n=9)	12% (n=6)	34% (n=17)	8% (n=4)
	Least Salient	14% (n=7)	18% (n=9)	**62% (n=31)**	8% (n=4)
Salience of Self Transcendence	Most Salient	4% (n=2)	26% (n=13)	**82% (n=41)**	8% (n=4)
	Second	12% (n=6)	34% (n=17)	18% (n=9)	16% (n=8)
	Third	16% (n=8)	22% (n=11)	0% (n=0)	44% (n=22)
	Least Salient	**68% (n=34)**	18% (n=9)	0% (n=0)	32% (n=16)
Salience of Conservation	Most Salient	18% (n=9)	10% (n=5)	4% (n=2)	6% (n=3)
	Second	28% (n=19)	22% (n=11)	18% (n=9)	10% (n=5)
	Third	36% (n=18)	38% (n=19)	48% (n=24)	40% (n=20)
	Least Salient	8% (n=4)	30% (n=15)	30% (n=15)	**44% (n=22)**
Salience of Self Enhancement	Most Salient	38% (n=19)	10% (n=5)	14% (n=7)	42% (n=21)
	Second	22% (n=11)	28% (n=14)	60% (n=30)	34% (n=17)
	Third	30% (n=15)	28% (n=14)	18% (n=9)	8% (n=4)
	Least Salient	10% (n=5)	**34% (n=17)**	8% (n=4)	16% (n=8)

Notes: Scores highlighted in **green** indicate the most salient values set for that group. Scores highlighted in

red indicate the least salient values set for that group.

The most salient values set for the Homeless group on average was the Openness to Change values set (40%, $n = 20$), followed closely by Self Enhancement (38%, $n = 19$) and then Conservation (18%, $n = 9$). Self Transcendence was the least salient values set among the Homeless group on average. Figure 18 provides a graphical summary of the distribution of salient values from most to least salient for the Homeless group.

Figure 18. Distribution of Salient Values for the Homeless Group
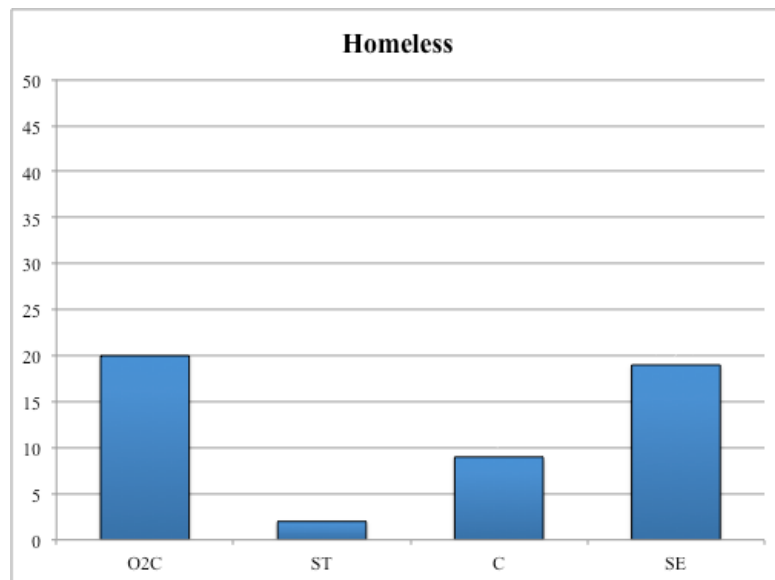
The most salient values set among the Advocate group was Openness to Change (54%, $n = 27$), followed by Self Transcendence (26%, $n = 13$). Conservation and Self Enhancement were the least salient values sets among the Homeless Advocates group on average. Figure 19 provides a graphical summary of the distribution of salient values for the Advocate group.

Figure 19. Distribution of Salient Values for the Advocate Group
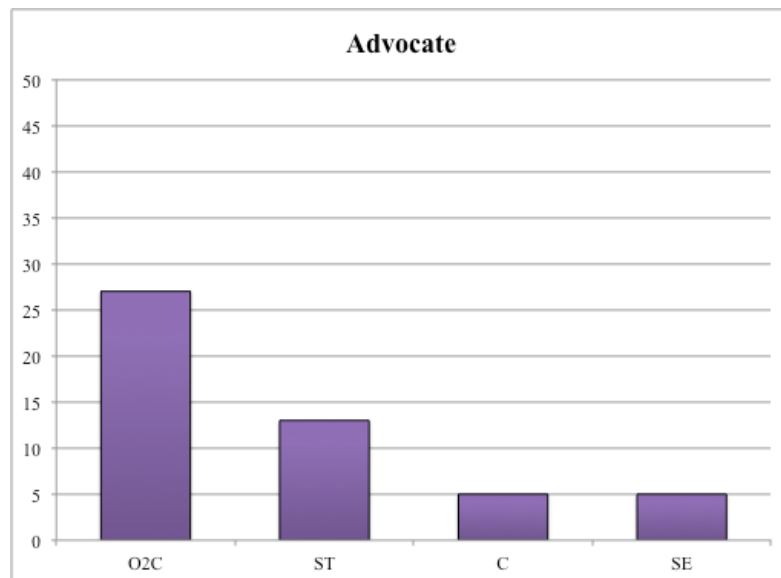
The most salient values set among the Organization group was Self

Transcendence (82%, $n = 41$), followed by Self Enhancement (14%, $n = 7$) and

Conservation (4%, $n = 2$). Openness to Change was the least salient values set among the

Organization group on average. Figure 20 provides a graphical summary of the

distribution of salient values for the Organization group.

Figure 20. Distribution of Salient Values for the Organization Group
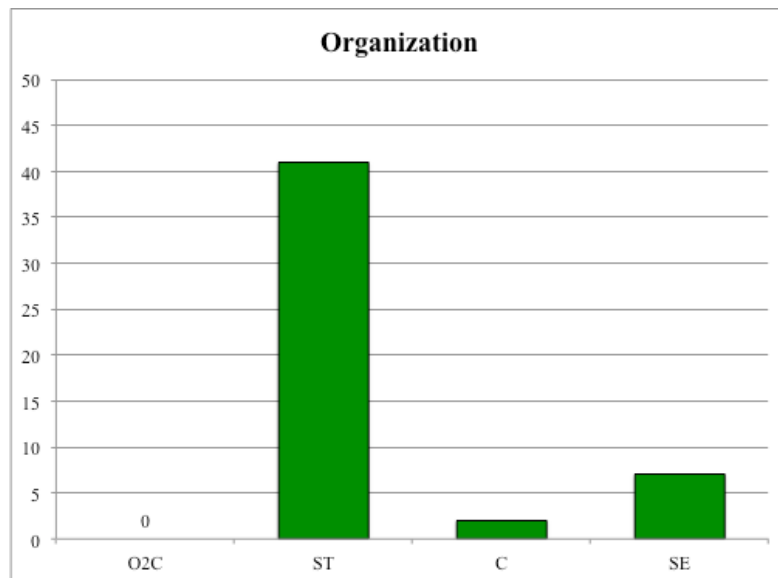
The most salient values set among the Comparison group on average was

Openness to Change (44%, $n = 22$) followed closely by Self Enhancement (42%, $n = 21$).

Self Transcendence and Conservation were the least salient values sets among the

Comparison group on average. Figure 21 provides a graphical summary of the

distribution of salient values for the Comparison group.

Figure 21. Distribution of Salient Values for the Comparison Group
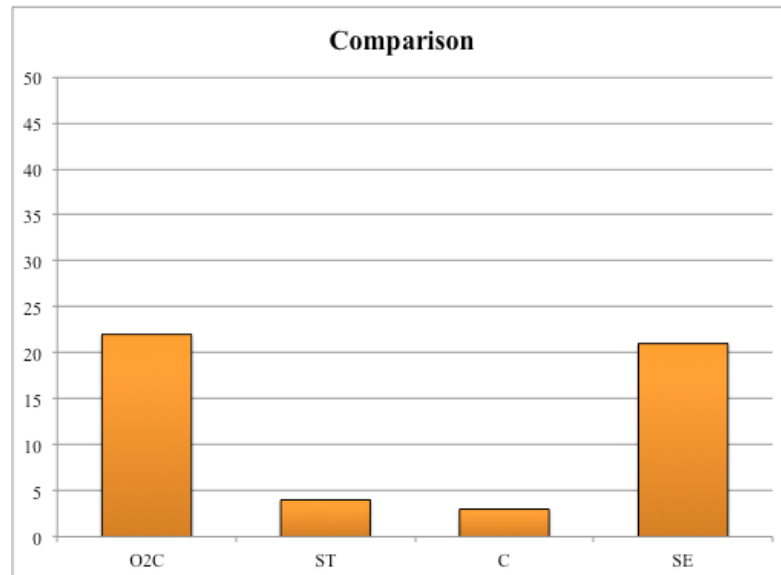
5.2.4 Group Differences for Most Salient Values Sets

As described in Chapter 4, only values coded as Most salient met the minimum

threshold for reliability. As a result, I only conducted statistical tests for values

differences based on the nominal categories for the Most salient rank. To determine

group differences for which values sets were most salient, I conducted the Pearson chi-

square test of independence, a nonparametric statistic used with non-normally distributed

nominal data. The chi-square test showed a statistically significant relationship between

the Group type variable and the Most salient values set variable ($\chi^2_{(9)} = 110.61$, $p < 0.001$,

$\varphi = 0.74$, V = 0.18). Figure 22 summarizes the distribution of the most salient values sets

by group type. Note that the Homeless group and Comparison group both share similar distribution patterns.

Figure 22. Distribution of Most Salient Values Sets by Group
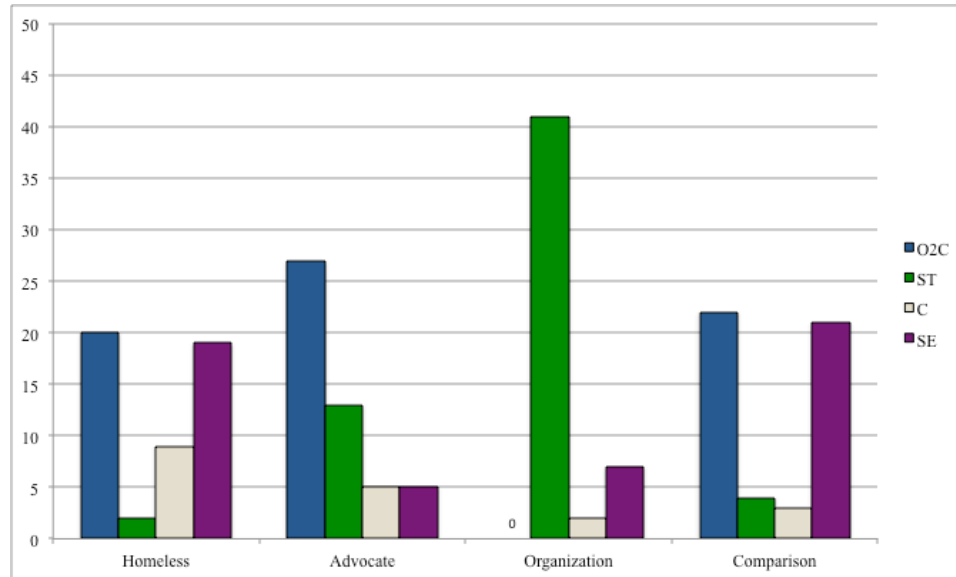
Four cells in the chi-square matrix had an expected count less than five, a violation of the assumptions of this test. Because they were all in the Conservation category, which showed up least frequently in the dataset overall and the expected counts were very close to 5 at 4.8, I continued with interpretation of the results and a *post hoc* analysis.

I used SPSS to compute standardized residuals for each cell to aid in the interpretation of the results. Standardized residuals with a positive value indicated that the cell was over-represented in the sample compared to the expected frequency. Standardized residuals with a negative value indicated that the cell was underrepresented in the sample compared to the expected frequency. Using a level of significance of $p <$ 0.01, the critical value for standardized residuals would be greater than +2.58 and less

than –2.58. Standardized residuals greater than +2.58 or less than –2.58 pointed to significant contributors to the chi-square relationship between the Group type variable and the Most salient values set variable. As the SPSS output in Table 14 shows, Group type significantly impacted the Self Transcendence value set for the Homeless, Organization, and Comparison groups. It also significantly impacted the Openness to Change values set for the Organization group.

Table 14. Chi-Square Table with Standardized Residuals: Group Type x Most Salient Values Set

		Most salient value set in user's tweet sample				
		O2C	ST	C	SE	Total
Comparison	Count	22	4	3	21	50
	Expected	17.3	15.0	4.8	13.0	50.0
	Std. Residual	1.1	**–2.8**	–.8	2.2	
Organization	Count	0	41	2	7	50
	Expected	17.3	15.0	4.8	13.0	50.0
	Std. Residual	**–4.2**	**6.7**	–1.3	–1.7	
Advocate	Count	27	13	5	5	50
	Expected	17.3	15.0	4.8	13.0	50.0
	Std. Residual	2.3	–.5	.1	–2.2	
Homeless	Count	20	2	9	19	50
	Expected	17.3	15.0	4.8	13.0	50.0
	Std. Residual	.7	**–3.4**	2.0	1.7	
Total	Count	69	60	19	52	200
	Expected	69.0	60.0	19.0	52.0	200.0

Notes: The bolded numbers indicate standardized residuals greater than the critical value of +2.58 or less than the critical value of –2.58 pointing to significant relationships between specific group types and values sets.

At the less robust significance level of $p < 0.05$, the standardized residuals greater than +1.96 and less than –1.96 show that Group type impacted the Self Enhancement values set for the Comparison group; the Openness to Change and Self Enhancement values sets for the Advocate group; and the Conservation values set for the Homeless group.

5.3 Characterizing Values Differences and Commonalities

The quantitative analysis presented in this chapter highlights two major findings related to values differences and commonalities: (1) Openness to Change was most salient for the Homeless group, Advocate group, and Comparison group whereas Self Transcendence was least salient for these groups; (2) Self Transcendence was most salient for the Organization group while Openness to Change was least salient for this group. Rather than seeing differences between groups based on their association with the issue of homelessness, we instead see the primary differences and commonalities occurring between groups of individuals (the Homeless, Advocate, and Comparison groups) and groups of organizations (the Organization group). In the following sections, I present data from the qualitative analysis, which helps to characterize these key findings across groups.

5.3.1 Characterizing Openness to Change

Openness to Change was a common value among the three groups of individuals: Homeless ($n = 20$; 40% had O2C as most salient values set); Advocate ($n = 27$; 54% had O2C as most salient values set); Comparison ($n = 22$; 44% had O2C as most salient values set). Expressions of Openness to Change values included all of Schwartz's (1994) smaller values concepts, including *self-direction*, *stimulation*, and *hedonism* values, and each of the groups demonstrated this variety of Openness to Change values. The examples below illustrate the different ways in which individuals expressed Openness to Change values in their tweets across each of the three groups (these tweets have been altered slightly to preserve anonymity):

- Enjoying life through entertainment (e.g., televisions shows, movies, sports, music, get-togethers)

  o "Modern Family is LITERALLY the best show" (Homeless Group)

  o "This is a nice night. Looks like we're gon' invite a cpl of them car-hobos under the tarp for a friendly barbeque." (Homeless Group)

  o "Got to the venue early. Too excited to wait until game time. Go Thunder!" (Advocate Group)

  o "At HS Homecoming…Let's go Braves! Looking sweet in new Adidas uniforms! ☺ A [shortened link]" (Comparison Group)

- Expressing hedonistic pleasures in food, sex, drugs, etc.

  o "I bought me a hash pipe…Can't wait to smoke Crack in it...I mean hookah!" (Homeless Group)

  o "Breakfast for dinner? Why not ☺ #PAbhc Even better with Jane Smith on the radio. [shortened link]" (Advocate Group)

  o "Grabbed my gorgeous wife in the sunroom. Best part of my day" (Comparison Group)

- Expressing stimulation values through excitement over new technologies and other innovations

  o "From a tiny seed, can spring a mighty forest. Dare to dream big." (Homeless Group)

  o "I got the chance and I'm gonna take it. I NEED MILLIONS OF FOLLOWERS #ifihadthechance" (Advocate Group)

      o "God doesn't want carbon copies He wants originals. So be yourself. Be

          original." (Advocate Group)

- Expressing an appreciation for creature comforts, such as the weather, etc.

      o "my blanket is a painter's mat and it actually ain't too bad at keepin me

          warm #Happy" (Homeless Group)

      o "Finally cold enough for Christmas music. #globalclimatechange"

          (Advocate group)

      o "it's getting up to 83 today in the northeast. Definitely #relaxinsaturday"

          (Comparison Group)

In contrast, Organizations ($n = 0$; 0% had O2C as most salient values set) rarely expressed Openness to Change values and none of the Organizations in the sample expressed this values set most saliently. When they did express these values, it was most often in combination with other values sets like Self Transcendence. Examples included reporting on fun or exciting events that were also geared towards raising money to support the organization's philanthropic efforts; reporting on the positive experiences of their clients; and wishing or hoping for positive experiences in the Openness to Change values set for other people to experience and enjoy. The examples below illustrate the ways in which Organizations embedded Openness to Change values in tweets along with other more salient values sets like Self Transcendence:

      o "Have a safe and great weekend" (Organization Group)

      o "John McCain is very funny. We are off to a good start at the Political

          Comedy Night fundraising event." (Organization Group)

- o "The Café girls are re-energizing on this hot day with hamburger sloppy joes and a side salad – Tasty!" (Organization Group)
- o "Congrats to OSU alum @sheriwilliamson for laying it all out at the #Olympics. Inspiring young girls everywhere to reach their goals." (Organization Group)

5.3.2 Characterizing Self Transcendence

Self Transcendence was a distinguishing values set for Organizations compared to the other three groups. Organizations ($n = 41$; 82% had ST as most salient values set) evoked Self Transcendence values by expressing concerns for the welfare of others, often related to issues of justice and equality; providing encouragement and support to other individuals and organizations; expressing gratitude and appreciation for those who have helped the organization and its mission; and making calls to action for others to join in and help support their mission. The examples below illustrate these themes:

- Expressing concern for the welfare of others often through justice and equality issues:
  - o "Being homeless isn't the only challenge. Being invisible to those around you is harder. We can't keep turning away." (Organization Group)
  - o "Bonus! The ALA are hiring thousands of Veterans and military spouses in the next 2 years. [shortened link]" (Organization Group)
  - o "Definitely. This captures your heart for the right reasons and make you understand the complexity of the issue...[shortened link]" (Organization Group)

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- Indicating encouragement in support of others, including others who are working to end homelessness and clients who are benefitting from the organization's efforts:

  o "Great news from Our Home: One of our residents got a well-earned $ raise today! [shortened link]" (Organization Group)

  o "great work! RT @ishsandel: @Food4Homeless I worked w/the homeless in LA for 3 years on a harm reduction project." (Organization Group)

  o "So proud of @SoulFound4U for its commitment to housing for homeless teens and young adults. Ribbon cutting today!" (Organization Group)

- Expressing gratitude and thankfulness for the support of others:

  o "TY to supporters, friends, and families who came out last night for Cinco de Mayo at Plaza de Sol across from our office!" (Organization Group)

  o "It's #TYTuesday! We r thankful for all our volunteers! What about you? #Charity #NonProfit" (Organization Group)

  o "Mature Chicas wld like to thank all who came out to support their annual Black& White event, it was a GREAT fundraising success." (Organization Group)

- Calls to action for other people to help support the organization's mission (these tweets also often incorporated Self Enhancement values as a way of organizational promotion):

  o "I nominate @TweetNonProfit for an Award in #activism because they give nonprofits a voice! RT" (Organization Group)

- o "From #Warminster Pantry: 382 families, 431 kids, 570 adults, 89 elderly used pantry in Nov. Community donations make all the diff! #endhunger" (Organization Group)

- o "If you are looking to volunteer during the week, plz JOIN US as we continue our mission of Neighbors Helping Neighbors [shortened link]" (Organization Group)

In contrast, the individuals expressed Self Transcendence values infrequently. The Advocate group ($n = 13$; 26% had ST as most salient values set) expressed them more often than the Homeless group ($n = 2$; 4% had ST as most salient values set) or Comparison group ($n = 4$; 8% had ST as most salient values set). The Advocate group's Self Transcendence expressions followed similar patterns to the Organization group's examples listed above. In addition, the Twitters users from the Advocate group as well as the Homeless and Comparison groups expressed Self Transcendence values predominantly through promoting and standing up for others, sharing information in support of charitable causes, and expressing gratitude or thankfulness. The examples below illustrate these themes:

- Expressing concerns for the welfare of others through promotion and standing up for others:
  - o "Through time I learnt everyone struggles to get by, even rich people. I am glad they have warm homes & wish that for All" (Homeless Group)
  - o "I got kicked off of Facebook for a month. Totally kicked off. It's a pile of shit, but who do you complain to? It's discrimination" (Homeless Group)

- o "Learn to do what is right! Seek justice for all, relieve the poor, and stand up to the oppressor. Defend the parentless, plead [shortened link]" (Advocate Group)

- o "My friend Daisy del Sol @iamdaisy is doing an amazing job hosting the #Grammy Awards. Congrats! [shortened link]" (Comparison Group)

- Sharing information to help or support others and charitable causes:

  - o "Time heals all wounds. But not when you are a Child in an Abusive home. Raise awareness. Donate tweets: [shortened link] #DT #spreadthis" (Homeless Group)

  - o "awesome source for dets on DC homeless and how to help. Check it out: [shortened link]" (Advocate Group)

  - o "1:5 ppl had H1N1 swine flu since spring 2009. Get the details here....[shortened link]" (Comparison Group)

- Expressions of gratitude or thankfulness

  - o "I love my roommate!! Thx for the prezi @Ashroomie :) #sosweet" (Advocate Group)

  - o "Shout out to @BUbasketball! Thx for supporting the @strikerfund" (Comparison Group)

  - o "We will announce the winner of our contest by Friday! Thank you for showing your support to my cafe." (Comparison Group)

5.4 Summary

To answer the second research question, this chapter reported on an analysis of the ways in which stakeholder groups expressed their most salient values in their tweets. A summary of the key findings from the analysis of values salience is as follows:

- The Organization group expressed the most value-laden tweets, significantly more than the Homeless group.

- Openness to Change was the most salient values set for the Homeless group, Advocate group, and Comparison group; whereas Self Transcendence was the most salient values set for the Organization group.

- The Homeless group and Comparison group looked most similar in terms of their salient values distributions.

- There was a relationship between group type and values salience: Self Transcendence emerged as the most salient values set *more than* would be expected for the Organization group whereas it emerged as most salient *less than* would be expected for all other groups; Openness to Change emerged as the most salient values set *less than* would be expected for the Organization group.

The qualitative analysis showed examples of how Openness to Change and Self Transcendence values were expressed by the groups in the study. Openness to Change, a salient value set common among individuals and nearly non-existent among Organizations, included examples of:

- enjoying life through entertainment

- expressing hedonistic pleasures in food, sex, drugs, etc.

- expressing stimulation values through excitement over new technologies and other innovations

- expressing an appreciation for creature comforts, the weather, etc.

Self Transcendence, a salient value set for Organizations and subset of Advocates, included examples of:

- expressing concern for the welfare of others through justice and equality issues

- indicating encouragement in support of others

- expressing gratitude and thankfulness for the support of others

- calls to action for others to help support their mission

The Homeless group, Comparison group, and remainder of the Advocate group expressed Self Transcendence values through promoting and standing up for others, sharing information in support of charitable causes, and expressing gratitude or thankfulness.

Chapter 6: Relationship between Self-Presentation and Values

This chapter addresses RQ3 by digging deeper into the data to further explicate the findings from Chapter 5 through a qualitative analysis, identifying potential implications for design, which are discussed further in Chapter 7. The third research question for this study asked:

RQ3) How can values differences and commonalities among stakeholders groups be characterized to inform values in design?

Going beyond the characterization of values differences and commonalities across stakeholder groups provided at the end of Chapter 5, this chapter identifies themes and patterns in the data related to self-presentation, which help account for the variability discovered within each group. It also considers how the variable of self-presentation relates to value expression in online communication.

6.1 Research Framing

As I began developing the coding manual (see Chapter 4), I found myself reading through tweets of individuals in the Homeless group wondering from time to time: "Is this person *really* homeless?" There would be cases in which none of the tweets in a Homeless Twitter user's tweet sample exemplified the types of things one might expect someone who identified as homeless to tweet about, such as concern for wealth and material possessions, concern for housing and employment, loss of connection with society or one's loved ones, etc. In other cases, a Homeless Twitter user's tweets would include thick sarcasm and bitterness making it difficult to determine if the person was experiencing homelessness, acting as if they were homeless, mocking homelessness, or

reliving a former homeless experience. This pattern raised the following sub-questions related to RQ3:

1. Why is the idea of someone being *really homeless* a common reaction to thinking about homelessness and ICTs?

2. What is the range of homeless experiences that are presented in user's tweets?

3. How do these artifacts of self-presentation relate to values, if at all?

In response to the first question, I revisited the literature on the social stigma associated with homelessness to consider why the combination of homelessness and ICTs continues to be a challenging topic. As described in Chapter 2, public perceptions of the stereotypical "homeless person" are derived from the unsheltered homeless, those who live on the street and are seen, but often marginalized (Phelan et al., 1997). Other experiences of homelessness, such as those who live out of cars or campers, those who are doubled-up, or others who may move through society without most people knowing that they are homeless represent "invisible" homelessness, a set of homeless experiences of which many people have no awareness.

This concept emerged from the data as well. As one of the Twitter users in the study sample noted: "The new homeless do not fit our old stereotypes. [shortened link]" (Advocate Group). This tweet linked to a news article about how the housing market downturn and ongoing economic recession in the Unites States have made homelessness more difficult to "see." The article pointed to the growing number of families and individuals who work blue-collar jobs, nursing the sick, caring for other people's children, vacuuming offices, driving cabs—all surviving paycheck to paycheck. In such a volatile economy, it only takes one thing to go wrong for these individuals to become

homeless. The decreasing social net provided by the U.S. government, stagnating minimum wage levels, and increasing demand on social services makes it ever more difficult to move out of homelessness despite continuing to work full time or more than full time.

The research presented in Chapter 2 also highlights that although individuals experiencing homelessness lack certain material resources, many have access to information and communication technologies through public libraries, computer labs in day shelters, and mobile technologies. This technologically-mediated experience of homelessness was also mentioned by Twitter users in this study's sample as described in the following tweets:

- "What have I learned from South by Southwest? I'm not the only homeless person with a smartphone." (Homeless Group)
- "I am at the library- aka my office. I spend many days here with other homeless or jobless people using the Internet, bathroom…" (Homeless Group)

Despite increasing connectedness through ICTs, which have the potential to increase social inclusion and reduce marginalization for individuals experiencing homelessness, the American public is slow to shift its perceptions around the issue of homelessness. This dissertation highlights the continued impressions that the general public has of homelessness and points to the importance of studies that help to shed light on the broad range of homeless experiences that exist both online and offline. The design implications of this finding on the importance of awareness raising and continued innovations in the social services sector are discussed further in Chapter 7.

6.2 Presentations of Stakeholder Associations in Tweets

In response to the question about the range of homeless experiences that were

presented in the sample, I conducted a thematic analysis exploring the range of

stakeholder identity presentation for Twitter users in the Homeless group as well as

Twitter users in the Advocate group. In the sections that follow, I provide vignettes that

illustrate the different ways in which Twitter users' tweets represented their stakeholder

association with homelessness. I present each theme along with two vignette examples,

which include a characterization of the user along with his or her salient values and a

selection of anonymized exemplary tweets. In the section after this I show how salient

values relate to these patterns of self-presentations of one's stakeholder association to

homelessness. This approach is in line with Woelfer and Hendry's (2012) portraits of

homeless young people using MySpace and Facebook and may have implications for the

portraits developed by Schwartz in his values theory (1994). In Chapter 7, I revisit these

ideas and provide implications and opportunities for social and technical design.

6.2.1 Presentations of Homelessness

Three themes emerged from the analysis, which fell along a continuum from

obvious self-presentation of homelessness in one's tweets, to no presentation of

homelessness in one's tweets, to presenting as multiple aspects of one's Twitter

profile. I describe these themes—(1) Homeless in Plain Sight, (2) The Invisible

Homeless, and (3) Multiple Identities—in detail in the sections that follow.

Theme: Homeless in Plain Sight

This theme represents Twitter users who associated with homelessness in their

online profiles and shared their challenges related to homelessness through their

tweets, such as lack of material possessions and access to power. Often they would mention the stigma and injustices faced by people experiencing homelessness.

Vignette 1:

@SheGRITS is a farm worker who tweets about challenges of homelessness related to charging her mobile device in her car in order to be able to stay connected to the outside world on Twitter. She describes social challenges of not being allowed to spend the night at her friend's place, because she is homeless, but being allowed to shower there. She expresses gratitude for her friends all pitching in to help her get enough gas money to go on an outing with them. She is a proud farmer and is grateful for her truck, which often provides her with shelter as well as a reliable tool for employment. Her most salient values are Self Enhancement followed by Conservation, Self Transcendence, and then Openness to Change.

Sample tweets:

- "my poor truck is gettin the crap beat out of it this week. busy time on the farm and I like it." (Self Enhancement)
- "I do not want to work with new people. I wanna be w/the guys. n the new peeps are all older n look down on me." (Conservation)
- "jimmy: 'we should go bogging' me: 'sorry, I cant afford it' everyone: starts giving me $ johnny: 'this tanks on us' true friends :)" (Self Transcendence)

- "I have to charge my phone in the farm trucks. battery is dead in mine so I need to charge it tonight." (Non-value-laden tweet)

Vignette 2:

@bumminit brings attention to his homeless experience by retweeting touristy-sounding tweets in his beach town and commenting on them from his unique perspective. His tweets raise tensions between the "haves" (i.e., tourists) and the "have nots" (those living in poverty in the same public space that the tourists visit). He tweets his opinions on state and national politics and reacts to the impact that inclement weather has on his daily routine. His tweets are often lewd and sarcastic showcasing a caustic bitterness towards mainstream society. His most salient values are Self Enhancement followed by Conservation, Openness to Change, and Self Transcendence.

Sample tweets:
- "I would ask him for about $3.50. RT @BTubs: What would you ask our Rep. if you had the opportunity? #citynews" (Self Enhancement)
- "Guess what has two thumbs, is hungry, without a job, little hope for the future and doesn't care about some politician's d*ck picture?" (Self Enhancement)
- "You know what I'm over? THIS LIFE. RT @GinaSol ALLERGIES. So rdy for spring to end." (Conservation)
- "Also, if you are wondering how i tweet. it's called THE LIBRARY ON CALHOUN. #chs" (Non-value-laden tweet)

Theme 2: The Invisible Homeless

This theme stands in contrast to the *Homeless in Plain Sight* theme. It includes Twitter users who associated with homelessness in their online profiles, but who left little to no digital traces of that experience in their tweets. These individuals portray an alternative set of homeless experiences that are typically outside most of mainstream society's awareness.

Vignette 1:

@punchdrunklove is a young adult focused as much as possible on enjoying life. His tweets reflect an enjoyment for recreational drug use, getting the munchies as a result, and going skateboarding whenever possible. The only hint that he may be in a precarious environment is when he describes an altercation with his older brother. His most salient values are Openness to Change followed by Self Enhancement, Conservation, and Self Transcendence.

Sample tweets:

- "SKATE or DIE yo! lmfao #online" (Openness to Change)

- "Dam, my bros drunk. said he's gon kick me in the face. I was gon say ow my silver caps, but then I told him I don't even have them anymore" (Conservation and Self Enhancement)

- "I've got the munchies!!!" (Non-value-laden tweet)

@jannalima describes herself using six different adjectives in her profile:

"Homeless. Jobless. Restless. Broke. Underwhelmed. Happy." Despite the first

five adjectives and what they might imply about her situation, she uses Twitter to

focus on the last adjective—the things that make her happy. She loves to tweet

primarily about two things: food and sports. Her most salient values are Openness

to Change followed by Self Enhancement, Conservation, and Self Transcendence.

Sample tweets:

- "The Broncos fans are so quiet this year. It's unusual, eerie and wonderful.
  #immature #sorrycharlie #mpg" (Openness to Change)

- "I won't stop until my plate is covered in gravy. #gravyisthebest"
  (Openness to Change)

- "Why I need a job: a. mom wants me to run out of $$$ so I have to go
  back home. b. I'm bored c. I need coin for the local food trucks." (Self
  Enhancement)

- "Brkfast for supper. Excuse me, dinner. Brkfast for 'dinner'." (Non-value-
  laden tweet)

Theme 3: Multiple Identities

The *Multiple Identities* theme represents the many individuals on Twitter who

articulate more than one identity and self-present as two or more of them

consistently through their tweets. These individuals reflect the extent to which

homelessness is one of many lived experiences that a person has. Their tweets

reflect a diversity of presentations in addition to homelessness, ranging from being a diva to an Apple brand apologist.

Vignette 1:

@Hmless_diva takes her job of being both homeless and a diva very seriously. Every tweet reinforces both aspects of her profile. She compares herself to other celebrity divas and is hopeful about finding name brand items at discount stores like the Salvation Army. Her most salient values are Self Enhancement followed by Openness to Change, Self Transcendence, and Conservation.

Sample tweets:

- "Someone just tried to put a dollabill in my blinged out tin can. I told him don't even think about it unless it's a Benjamin #panhandlinglikeadiva" (Self Enhancement)
- "I was saying 'Too hot' way before Kim Kardashian. Usually in reference to the sewer vent I was sleeping on. #divarules" (Self Enhancement)
- "#FF the wonderful and hilarious @LisaLampanelli. She's the bitchinest" (Openness to Change)
- "Going shoe shopping today. What do you think my chances are of finding Manolos at the Salvation Army?" (Non-value-laden tweet)

Vignette 2:

@Alleydogg loves Apple, hates Android, and hates President Barack Obama. He uses Twitter to make sure these key points of his profile are presented consistently to his followers. He presents some aspects of his homeless experience with

artifacts related to living paycheck to paycheck and missing out on TV shows

because he has to wash his clothes at a laundromat. His most salient values are

Openness to Change, Self Enhancement, Conservation, and Self Transcendence.

<u>Sample tweets:</u>

- "All you n*ggas watching the good HBO shows while I'm here washing my clothes!" (Openness to Change and Self Enhancement)

- "You're f*cking BILL GATES! #ButUGotThatiPhone" (Openness to Change)

- "Livin paycheck to paycheck #thuglife" (Self Enhancement)

- "#TeamObama does Obamacare cover me for my iPhone?" (Non-value-laden tweet)

6.2.2 Presentations of Advocacy and Organizational Identity

The themes and vignettes presented above showcase the diversity of what self-presentation through tweets looked like among individuals who identified as homeless in their Twitter profiles. Advocates showed a similar range of diversity in the extent to which they tweeted about their advocacy for homelessness when compared to other aspects of their profile that they may have portrayed. On the one hand there were individuals who used Twitter as an advocacy platform first and foremost and then mentioned other topics in their tweets such as commentary on the weather, television shows, or other entertainment. In other cases, individuals in the Advocate group tweeted most frequently in association with aspects of their profile that were employment related, suggesting that their job affiliation had a greater influence on their tweets than their

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advocacy affiliation. For example, one user performed her role as a salesperson for motorcycle hearses exclusively across all of the tweets in her sample and did not present as an advocate for homelessness in those tweets at all.

A review of the Comparison group showed similar findings. There were semi-famous users in the sample who enacted their various identities as famous baseball players, reality TV show participants, tennis players, or musicians. Other Comparison group users identified with many characteristics and showed great variety in their tweets compared to individuals who used Twitter as a specific self-branding tool.

Organizations, in contrast to individuals, often articulated their organizational mission in their profile and then presented that mission through all of their tweets. Consistently addressing that mission led to their most salient values being Self Transcendence for the vast majority of members in this group.

6.3 Relationship between Self-Presentation and Values

Finally, to explore the extent to which self-presentation was related to values, I drew upon the themes above to categorize each Twitter user in the Homeless group and Advocate group along a four-point categorical continuum from no presentation of stakeholder association to complete presentation of stakeholder association in their tweets. In line with the themes and vignettes presented above, individuals who exhibited little to no performance (categorized as "no performance") of their stakeholder relationship to homelessness in their tweets were similar to the individuals in the Invisible Homeless theme. These are Twitter users who present little to none of the stereotypical topics or concerns that society might expect them to, given their self-reported state of homelessness. Individuals who consistently exhibited their stakeholder

relationship to homelessness in their tweets (categorized as "complete performance") were more like the individuals in the Homeless in Plain Sight theme. These individuals express content related more explicitly to the types of things people might expect someone experiencing homelessness to talk about, such as commenting about jobs, housing, poverty, etc. Finally, individuals who received scores in the middle of the continuum (categorized as "some performance" or "moderate performance") presented their association to homelessness somewhere between the individuals I described in the Homeless in Plain Sight theme and the Invisible Homeless theme. I used a similar approach when qualitatively coding Advocates along a continuum of performed homeless advocacy. To explore values patterns within the groups, I conducted cross-tabulations between my qualitative categories of self-presentation and the Most salient values variable from the quantitative content analysis.

The cross-tabulation tables highlighted interesting potential patterns within each group. Figure 23 provides a graphical representation of what the distribution of Most salient values sets were along the self-presentation continuum for members of the Homeless group. The distribution graph highlights dramatically different patterns from one end of the continuum to the other. On the left-hand side of the graph, Twitter users who were less likely to present their homelessness through tweets were more likely to express Openness to Change values. The right side of the chart tells a different story. Twitter users who presented their homelessness through their tweets more consistently were more likely to express Self Enhancement values. This parallels findings from the pilot study (Koepfler & Fleischmann, 2012) that showed *wealth* (a Self Enhancement

value) to be a prominent value for Homeless Twitter users (among other values such as

helpfulness).

Figure 23. Distribution of Most Salient Values across Self-presentation Continuum for Homeless Group
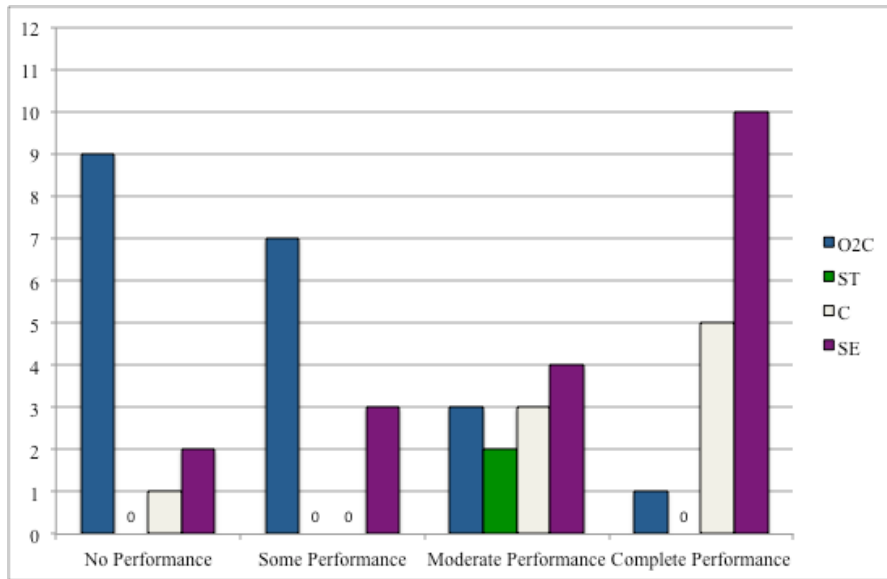
A similar pattern emerged within the Advocate group. Figure 24 provides a graphical representation of what the distribution of Most salient values sets were across the self-presentation continuum for members of the Advocate group. Just like the Homeless group, individuals on the left-hand side of the chart who did not present their Advocate profile in their tweets, expressed Openness to Change values most. On the right-hand side of the chart the story once again shifts and those whose tweets align closely with their Advocate profile expressed Self Transcendence values most.

Figure 24. Distribution of Most Salient Values across Self-presentation Continuum for Advocate Group
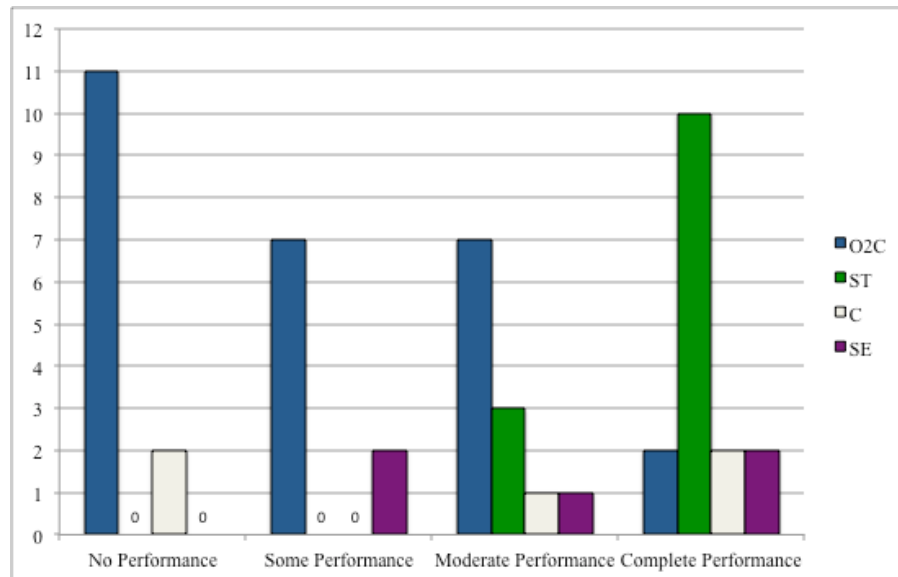
6.4 Summary

This chapter presented findings from the qualitative analysis, which pointed to ongoing challenges of the social stigma of homelessness and the ways in which technology use among the homeless in the 21st century is a prevalent though misunderstood or overlooked phenomenon by the general public. This finding has

implications for the need to raise greater awareness and consider what role technology might have in innovations in the social services sector more generally.

In juxtaposition to issues of stigma, the qualitative analysis uncovered a wide range of self-presentation among Twitter users in this study accounting for the substantial variability within groups previously described in Chapter 5. I identified and illustrated three themes of self-presentation among Homeless Twitter users from complete presentation of homelessness in one's tweets (Theme: Homeless in Plain Sight) to no presentation of homelessness in one's tweets (Theme: The Invisible Homeless) to expressing multiple identities at once (Theme: Multiple Identities). Twitter users in the Advocate group showed similar patterns including those who consistently presented advocacy and support for homelessness through their tweets, to those who presented no advocacy, to those who presented other identities first, like their employment identities. Organizations showed very little variability from their profile descriptions to their tweets, showcasing consistent messaging and performance of the organizational mission to their audiences.

Finally, clear patterns emerged between self-presentation and salient values. Advocates who consistently presented that identity through their tweets looked more similar to Organizations expressing Self-Transcendence values. Homeless Twitter users who consistently presented that identity through their tweets highlighted a pattern of values expressing Self Enhancement values. When members of either group did not attend to their respective stakeholder associations, they expressed Openness to Change values most. I consider the social and technical design implications for these findings in Chapter 7.

Chapter 7: Discussion

The purpose of this study was to extend research related to values and information technology use and design within the social context of homelessness, a value-laden social issue in the United States. This study used quantitative and qualitative content analysis to examine the values expressed in tweets and their relationship to factors such as association with the issue of homelessness in one's Twitter profile and self-presentation of that association in one's timeline of tweets. The following research questions guided the study:

1. To what extent and in what ways can content analysis methods reliably detect human values expressed through online communication?

2. What are the differences in the salient values expressed through online communication by stakeholder groups related to the issue of homelessness?

3. How can values differences and commonalities among stakeholder groups be characterized to inform values in design?

In this chapter, I discuss the challenges of studying values in tweets that I encountered while developing the coding manual and providing suggestions for continued refinements to the process of coding values and tweets in the future. I then consider the values differences and commonalities that emerged between individuals and organizations. Finally, I consider the implications of self-presentation through tweets. I discuss what this indicates about the affordances and use of Twitter, and raise ideas for how these findings contribute to aspects of design. While this study did not aim to have specific design implications for Twitter, it does offer a variety of ways to think about the design of social networks and large-scale open-ended systems like Twitter more broadly.

It also allows us to consider other aspects of design, such as recruiting individuals to participate in our values and design efforts and to consider the environmental and political context of our resulting technologies. I conclude by revisiting the social stigma of homelessness and the challenging juxtaposition of homelessness with ICTs in the 21st century.

7.1 Challenges of Studying Values in Tweets

7.1.1 Reliability of Content Analysis for Tweets and Values

As discussed in Chapter 2, values are a complex construct to measure, and researchers have struggled with consistently and reliably measuring them. In the values literature, reported reliability statistics are often lower than Landis and Koch's (1977) or Krippendorff's (2004) benchmarks, highlighting the difficulty and magnitude of the task of reliably coding for values. This study raised a number of challenges that are inherent in the study of values and informal communication during the development and refinement of the coding manual described in Chapter 4. Those challenges included diversity in research perspectives on values, which made consistently identifying values between two coders difficult. They also included challenges related to the unit of analysis and trying to make coding judgments with limited context.

A key contribution of this dissertation is the progress made towards a more rigorous approach to content analysis both for values and for Twitter data more generally by using Schwartz's values framework and a refined set of coding procedures. When compared to other studies in the field, the inter-coder reliability results showed that this method was effective and provides a baseline for future studies to compare to.

This study also showed that Schwartz's values framework was an effective tool for examining values in online communication and resulted in a broader range of values sets than are typically accounted for in the current values sensitive design literature, which focus on values of moral import (Friedman, 1997). This study emphasized Openness to Change values among all individuals (Homeless, Advocate, and Comparison group members) and Self Enhancement values among individuals who self-presented as homeless in their tweets. Most of the values of moral import, such as *human dignity*, *well being*, *informed consent*, and *freedom from bias* would fall into the Self Transcendence values set. Other values like *trust*, *privacy*, and *intellectual property* may fall within the Conservation values set. This study's resulting emphasis on the other half of the circle of Schwartz's framework suggests that values sensitive designers and researchers might be inadvertently missing values important to their end users if they focus on a narrow selection of values.

7.1.2 Balancing Reliability Expectations with Values

The change in coding unit of analysis from the individual tweet level to the sample of tweets of a Twitter user was a difficult decision to make. The procedures only considered 50 tweets from a Twitter user's timeline to make a judgment about the individual's values, which raises concerns for loss of precision. However, what may have been lost in terms of precision by this approach was gained in accuracy through more reliable coding procedures. The final version of the coding manual introduced qualitative assessments of salience along with the quantitative approach, such as comparing a Twitter user to Schwartz's portraits, which increased the validity of the coding manual to the study's theoretical framework. The overall coding approach yielded more reliable

results than previous inventory-based approaches (e.g., Cheng, 2012; Koepfler & Fleischmann, 2012).

Although the results were more reliable, they produced results at a very high level from a values perspective. Rather than looking specifically at values of *wealth*, for instance, a framework with four high-level values only allows researchers to consider a value like *wealth* in the context of all the other values represented by the Self Enhancement values set, including success, ambition, and authority. Values researchers should consider what the balance between granularity of values and the importance of strong reliability scores should be. As Krippendorff cautions:

> "The choice of reliability standards should always be related to the
>
> validity requirements imposed on the research results, specifically to the
>
> costs of drawing wrong conclusions." (2004, p. 242)

Neither the results of this study, nor the values research and design literature provide guidance on what grain size of values is most useful for contributing to design or from where those values should emerge, leaving open questions for further study. Is it more useful to know that people reliably differ on a high-level construct like Self Transcendence versus differing on a specific value like *helpfulness* with less reliability? When we design new technologies from a values-sensitive framework we hope that the design solution will affect someone's life, but where do the consequences lie? What are the possible negative impacts of incorrectly assigning a set of values to a person, a technology, or to a design solution?

I suspect that when we consider the values of end users, designers, and developers, these high-level values sets are satisfactory for considering what types of

values might find their way into new technologies or for considering potential conflicts among stakeholders in a participatory design group. When we consider the values that become concretized by the features and affordances of a designed or built system, however, finer-grained values might be more useful. By way of example, a social media platform designer who holds strong Openness to Change values, for example, might be more likely to embed features into a system like Twitter that support specific values in this set, such as *self-direction* values. At an even finer level we might be able to identify how aspects of the system, such as the ease of registering on the website or open-ended text boxes with few limitations and restrictions, like that of Twitter, support Self-direction sub-values of *creativity* and *freedom* of expression.

7.1.3 Best Practices for Coding Tweets

An unexpected challenge of the coding process was not operationalizing the values concepts, but interpreting the meaning and intention of the tweets themselves. In fact, the coding manual changed very little during each iteration of development in terms of refining the values definitions adapted from Schwartz, but it changed considerably in the coding procedures used for interpreting a user's tweets. It evolved from considering only data provided in a single tweet to the full context of the Twitter user, her profile data, and the broader context of the overall sample of the user's tweets. Unfortunately, there is no systematic codebook to guide two researchers through the coding of every possible scenario, syntax, and context that could arise in a tweet. Given the nature of informal communication and the ways in which users adopt Twitter for their own purposes, developing norms of use and creating new syntax (i.e., the hashtag), any manual would become obsolete almost as soon as it was created. This limitation of the

data leads to two recommendations for minimizing the challenges of coding tweets that can be adopted by other social media researchers:

1. Narrow the scope of the research questions as much as possible

2. Examine as much context surrounding a tweet or set of tweets as possible before making an interpretation

As this study showed, even with a narrow scope such as U.S.–based, English language Twitter users related to a specific social issue and only considering their original broadcasted tweets still resulted in a surprising amount of within-groups variability. Thus, narrowing the scope of a project like this as much as possible is recommended to help further reduce variability in future studies. When possible and appropriate, researchers should narrow the scope of their study. This can be accomplished in a number of ways. For example, researchers narrow the scope of their study by selecting people from the same culture (i.e., U.S. only tweets). Researchers should narrow the values context to one topic or event rather than a generalized set of tweets as used in this study. For example, rather than considering people associated with homelessness, researchers might focus on something like the debate surrounding Homeless Hotspots on Twitter as done by Koepfler, Mascaro, and Jaeger (2014) in their study. Researchers could also limit their dataset to a particular time period to reduce the number of different values contexts that might be present in the dataset. These narrowed approaches limit what researchers can say about Twitter users more generally, but they provide more depth and detail related to a specific event or time period, thus reducing the amount of variability that might be introduced into the content of the tweets. One caution about building a data corpus based on time period is that researchers must be aware of the

skewed results based on any major events that might trend in Twitter, such as a political scandal, natural disaster, or major celebrity event.

The second recommendation is that researchers should capture and retain as much context in the dataset as possible. This aspect of the coding process was critical to identifying value objects and understanding what evaluations users were making. Failing to look at all the various types of value objects while engaging with the content of the tweets would be like coding paragraphs of text without the subjects of the sentences. Looking at all the components of a tweet as well as looking at the overall context of the Twitter user's profile and timeline of tweets more broadly helps disambiguate when a tweet is sarcastic, self-promotional, humorous, or some other nuanced form of communication that can be missed when examining just 140 characters of text.

7.2 Values Differences and Commonalities

The quantitative results identified values differences and commonalities. However, rather than seeing these differences between groups based on their association with the issue of homelessness (for example, we may have expected to see shared values among the Organizations and Advocates and differences between the Advocates and Comparison group), the differences occurred between individuals and groups (i.e., shared values emerged between Homeless, Advocate, and Comparison groups and differences emerged between those groups of individuals and Organizations). This suggests that stakeholder association to homelessness is not as much of a differentiating factor as the social norms of Twitter use might be for individuals versus organizations when considering high-level values sets like Openness to Change, Self Transcendence, Conservation, and Self Enhancement.

Agnostic of a specific topic or concern, like homelessness, Twitter seems to support the expression of Openness to Change values for individuals. Twitter users who express Openness to Change values most saliently are those who express desires, wishes, or evaluations related to independent action and readiness for new and/or enjoyable experiences. The Openness to Change values set includes *stimulation*, *self-direction*, and *hedonism* values. This finding can be explained by two likely factors: (1) the types of people who self-select to adopt and use a site like Twitter; and, (2) the social norms of use by those people in that online space.

As described in Chapter 2, Schwartz's research has found that certain values have been shown to relate positively to technology adoption (2007). Specifically, Schwartz found that *stimulation* related positively to early use of the Internet. The values adjacent to *stimulation* in his theoretical values structure, *hedonism* and *self-direction*, also related positively. All three of these values types make up the Openness to Change values set. In contrast, *conformity*, *tradition*, and *security*, which are opposing values in the structure, related negatively to adopting technology. These values make up the Conservation values set, which was consistently the least salient values set among users across the sample regardless of group type. Thus, it seems plausible that the types of individuals who self-select to adopt and use a site like Twitter are also the types of people for whom Openness to Change values are inherently salient. They then continue to present those values through their tweets with greater salience than other types of values in conjunction with the norms of use. For example, critiques of Twitter highlight that it is a place where people post irrelevant content such as what they ate for breakfast or who their favorite sports team or celebrity might be (Johnson, 2009; Mcfedries, 2007). These types of

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tweets emerged in the data set, though often with more nuance than the critics would suggest, and pointed to important values in the Openness to Change values set.

Organizations of all kinds, by contrast, use Twitter primarily as a marketing tool. Much of the literature on organizational use of Twitter describes it as an electronic form of word-of-mouth marketing (Culnan, McHugh, & Zubillaga, 2010; Jansen, Zhang, Sobel, & Chowdury, 2009). Word-of-mouth is the type of marketing that is driven by customers telling their friends and neighbors about a product or service in which they are interested. Due to this phenomenon, we would expect an organization's tweets to align very closely with its overall mission. In the case of organizations that support individuals experiencing homelessness, it is not surprising that Self Transcendence is the most salient values set. Organizations who express Self Transcendence values most saliently are those who express desires, wishes, and evaluations related to the welfare and interests of others. The Self Transcendence values set includes *universalism* and *benevolence* values, which are externally focused on others rather than the self.

A recent study showed that nonprofit organizations on Twitter use social media as a one-way communication channel with less than twenty percent of their total tweets demonstrating conversations with stakeholders (Lovejoy, Waters, & Saxton, 2012). This type of one-way communication was also seen as the dominant communication mode for organizations in the dataset. Organizations consistently had more original tweets in their random samples than members of the other groups and those tweets were more frequently value-laden as well. This finding suggests an opportunity for organizations to reach out to their clients as a target audience for their public tweets to build stronger ties rather than pushing information more generally. When reaching out directly to homeless advocates

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and individuals experiencing homelessness it might be beneficial for group cohesion to express values of Openness to Change in addition to the Self Transcendence values (Siegrist et al., 2000). For example, rather than consistently reiterating the challenges of homelessness and presenting examples of clients they are helping, support organizations might also include tweets about ways in which they are engaging in stimulating activities and reach out to individuals to join them in activities that allow others to engage in and express values related to *stimulation*, *hedonism*, and *self-direction*. This should be done with care, however, given that negative public perceptions of homelessness continue to pervade the U.S. conscience, as previously described in Chapter 2 and revisited in Chapter 6. It is also possible that organizations are engaging with their clients and stakeholders in these ways, but that they are doing so privately rather than publicly to avoid public backlash and criticism.

7.3 Values Salience & Self-Presentation in Design

As described in Chapter 2, salient values "consist of the individual's sense of what the important goals (ends) and/or processes (means) are that should be followed in a particular situation" (Siegrist et al., 2000, p. 355). The qualifier "salient" implies that a combination of values will be more important in one situation or context than in another (Siegrist et al., 2000). In a design context, some values will be more central to design than others, and *salience* in use will depend upon a user's understanding of the system and its affordances as well as the user's information use environment (Taylor, 1991).

This study extends the idea of salient values to self-presentation of various aspects of one's Twitter profile. By selecting people with "homeless" in their profile, I expected a willingness on the part of users to self-present as homeless or as homeless advocates in

their tweets. I expected their association with homelessness to be salient within their tweets and that I could identify the values involved in this sort of self-presentation. But self-presentation was more varied than the profile data indicated. This suggested that the user profile and the user's tweets have different affordances for one's overall self-presentation. The artifacts of one's ongoing self-presentation (in this case tweets) is also as important for identifying members of a stakeholder group as one's profile data. It is not only who I say I am that matters, but also how I present that self through my actions.

To put this into a practical design context, imagine a situation in which a designer taking a values-sensitive design approach gets grant funding to create a new online community in which multiple stakeholders associated with homelessness work together to raise awareness and address other aspects of homelessness. An existing example of such a site that aims to do this, although not explicitly through a values-sensitive design approach, is We Are Visible (http://www.wearevisible.com). Going to a site like Twitter or Facebook to recruit stakeholders as part of a participatory design process would be one reasonable way to identify members of the target audience to help develop design concepts and become early beta users of the site when it launched. These are individuals who already use social media tools and who associate with homelessness in some way. How the designer chooses to search or filter for those potential stakeholders who might participate in her project should be influenced not only by how these individuals identify in their profile, but also by how they self-present through their tweets.

Another factor at play, though it was outside the scope of this study to consider empirically, is the role of the audience. Who do these groups envision as their audiences when they self-present aspects of their Twitter profiles and values through tweets, if any?

Studies of self-presentation on profile-based sites like Friendster, Myspace, and online dating sites, have shown that users who create profiles pay attention to their audiences (boyd, 2006; Ellison, Heino, & Gibbs, 2006). The dataset for this study placed emphasis on publicly broadcasted original tweets, which suggests a wide potential audience for users to consider. Hogan (2010) refers to this as the "lowest common denominator" of self-presentation. Building on boyd's (2007) notion of context collapse online, in which multiple audiences are collapsed into a single social context, Hogan asks,

> "If social network sites house more friends than are cognitively
>
> manageable, all of whom have access to one's content…then how do
>
> individuals manage to submit any content at all? Why is there not a sense
>
> of self-presentation paralysis?" (2010, p. 383)

Hogan's answer is that people do not need to consider everyone; they only need to consider (1) the intended audience: the audiences for whom they seek to present an idealized presentation (e.g., close friends) and (2) lowest common denominator audiences; the audiences who have access to their content but who may not be the intended audience (e.g., a parent, boss, case manager).

Due to the very public nature of Twitter, in which users provide wider access to content than other social media sites like Facebook, the lowest common denominator audience may be very difficult to articulate and many may choose not to imagine it at all (Hogan, 2010). For Organizations, their intended audiences are donors and volunteers; people from whom they are seeking support and participation. Their lowest common denominator audience, whom they may not even be aware of, could be potential clients (i.e., people who are experiencing homelessness and who use Twitter). For Homeless

individuals who self-present as such, the story is more complex. Studies of self-presentation on Twitter have focused on users who have many followers and who may have celebrity status or who engage in "micro-celebrity" practice, a learned self-branding practice afforded by the infrastructure and social norms of social media (Marwick & boyd, 2011). The Homeless Twitter users examined in this study, however, had significantly fewer followers than the Comparison group ($M_{(H)}$ = 434 followers, $SD_{(H)}$ = 1,088.5 vs. $M_{(C)}$ = 25,504 followers, $SD_{(C)}$ = 21,637.3). Who is the intended audience of their publicly broadcasted tweets? Who is the lowest common denominator? On the one hand, we might assume that it would be disadvantageous to self-present as homeless given the social stigma associated with this social status and the lowest common denominator audience of potential employers, case managers, and other institutional actor who might be a part of this audience. On the other hand, it may be that this social stigma is exactly what encourages someone who is marginalized from mainstream society in real life to perform this identity online.

One advantage that Twitter provides over other social network sites is that it affords users as much anonymity or pseudonimity as they choose to take on through their profiles and Twitter handles. It then provides an infrastructure for participation that does not require reciprocation (i.e., bi-directional friending) in the way that other social network sites do. The self-presentation of homelessness may support feelings of social inclusion, allowing individuals who are stigmatized or marginalized to continue to participate in a digital society while they move through physical aspects of life as "invisible" homeless. Anecdotal evidence from the PEN project, one of the earliest online community projects from the last decade of the 20th century, and testimonies on We Are

Visible (as quoted in Van Tassel, 1996, and Koepfler, Shilton, & Fleischmann, 2013) suggest that this is the case. A recent study by Jipson (2012) also found that individuals experiencing homelessness found equality and acceptance on social networking sites, as one participant in the study noted: "No one on the 'net cares if I didn't get a shower yesterday or smell some. They don't judge me, you know? … I feel accepted. I am accepted."

Designers of future ICTs targeted to the social services sector should consider the potential for social inclusion that a digital platform like Twitter affords and find ways to incorporate tools that enable each participant to have a voice in the space. A real-life example of this phenomenon is the Faces of Homeless Speakers' Bureau, which seeks to both empower the speakers (i.e., the individuals experiencing homelessness) and raise awareness about homeless issues to broad audiences (National Coalition for the Homeless, 2011). Like Twitter, this platform is open-ended and allows the communicator to craft his or her own story. The primary difference between this face-to-face model and the public broadcast model of Twitter is that participants in the Face of Homeless Speakers' Bureau have a known audience and can target their message appropriately. There are opportunities for third-party developers to create tools that would assist users, like the homeless and others in precarious positions of social stigmatization, to visualize both their intended audiences and their lowest common denominator audiences when crafting public messages. There are also opportunities for Twitter users to develop new syntax or norms of communication that could more effectively target those audiences. For example, in the same way that Twitter users created the hashtag syntax, which is now harnessed by Twitter's search engine to make topical content on Twitter more

discoverable, Twitter users experiencing homelessness might begin to implement an audience tag, perhaps something like <supportorgs> within a tweet. Such a tag might trigger a new backend algorithm to help amplify specific types of messages and values to specific audiences.

7.4 ICTs, Homelessness, & Designing for Social Innovation

Self-presentation of users' online profile through their tweets, alongside continued issues of stigmatization and social inclusion, highlight a broader narrative underlying this study. The intersection of technology and homelessness is a nontrivial topic. It has implications for how we think about information and the populations for whom we consider the impact of social technologies. It also has implications for the social issue of homelessness and the appropriation of technology by end users of all kinds.

At a minimum, this study raises awareness of the variety of homeless experiences that exist in public online spaces. They present a far more varied picture than the stereotypical street homeless experience most people consider. For example, Chapter 6 described Twitter users in the Homeless group ranging from a hard-working, young farm hand trying to make ends meet, an articulate political communicator frustrated with the disparity of economics in his tourist town, and a self-proclaimed "diva." ICT designers and developers interested in social innovation might consider opportunities to use this information and these vignettes to give people the opportunity to "walk a day in their shoes" and raise awareness about the variety of homeless experiences that exist. This practice is increasingly used to try and build empathy among those more fortunate to bridge the divide between the haves and have nots (Kim, 2013; Robinson, 2008), and number of projects have emerged that allow people to do just that. For example,

a project called "Homeless for a Day" (https://www.vayable.com/experiences/318-homeless-for-a-day), which allows visitors to San Francisco to register for a one-day tour to experience firsthand what it is like to be homeless in San Francisco, or a digital example of this concept like the social game called SPENT (http://playspent.org/). SPENT is an online game created to help people experience what it feels like to be street homeless.

Although these projects are inspiring, the story of homelessness that is presented through these projects is often still very one-sided, presenting only one type of homelessness, such as street homelessness, which is already highly visible. Through this dissertation, I suggest that raising awareness of the diversity of homeless experiences, from themes of being homeless in plain sight to the invisible homeless and expressing multiple identities (as described in Chapter 6), might begin to change people's perceptions of homelessness and potentially elevate public discourse about how to address the challenges of homelessness in our society. It may be easier for the public to relate to images of people who have a job and are working actively to try and make ends meet than to relate to images of people who have lost everything, may have struggles with mental illness or drugs, and live on the street.

Social innovation is an ongoing challenge in the social services sector. The health and human services sector struggles with finding funding and support for large-scale solutions, which require addressing much larger social inequities in economic and political models in the United States. Instead, efforts often result in Band-Aid solutions, which address symptoms of social issues, but often not the underlying causes (Westley & Antadze, 2010). It is important to engage individuals from vulnerable populations into the

mainstream economic, social, and cultural institutions of which technology is an embedded component. Not just as recipients of services, but as active participants and contributors, as the Twitter users in this study represent. Understanding that people become homeless for a broad range of reasons and experience homelessness in myriad ways might generate more innovative thinking to addressing the many variables related to homelessness.

Not only do new technologies bring attention to these issues, but also this attention and increased awareness may offer creative ways of addressing the issues. For example, beyond food and shelter, this study raises awareness about the importance of access to outlets for cell phone charging, as described in one of the vignettes in Chapter 6. As a result, cell phone charging stations may become more ubiquitous in public spaces to accommodate the need for charging and allowing all people, including those experiencing homelessness, to remain connected. Such stations might come with some method of storage for securing the phone, so that individuals using the service can go about their other activities without having to wait for their phone. For individuals in rural environments, solar-powered charging tools might be distributed or made available at low cost. Further, given that Twitter is at least one place where individuals experiencing homelessness are participating online, government forms might be made easily accessible through Twitter, perhaps pushed via SMS technology to accommodate the variety of phones individuals are using. Alternatively, homeless individuals might find each other and engage in grassroots activities to address and design for issues that are of importance to them.

7.5 Summary

This chapter discussed the challenges of studying values in tweets as well as the benefits of Schwartz's values framework and the importance of both data and values granularity for quantitative content analysis of values in tweets. The chapter then considered the values differences and commonalities that emerged between individuals and organizations, connecting the key findings back to Schwartz's studies on technology adoption. The discussion then turned to a consideration for the implications of self-presentation and broader ideas about innovation in the social services sector, leading to recommendations for future design. As described earlier in the chapter, this study did not aim to have specific design implications for Twitter. It did, however, offer ways to think values and the design of social networks and large-scale open-ended systems like Twitter more broadly including:

1. Opportunities for recruiting participants from social networks for multi-stakeholder design of new systems based on their expressed values

2. Considering ways to design for a better understanding of audience in large-scale social networks

3. Considering the role of social inclusion that large-scale open-ended systems like Twitter have and continuing to embody this affordance in new systems that might emerge

4. Keeping in mind the role of grassroots efforts from end users as they appropriate systems for their own purposes (e.g., hashtags and other syntax that could emerge)

5. Using the vignettes from this study to raise awareness and understanding of the breadth of homeless experiences in the 21st century to consider for design

6. Considering the overall environmental context of technology, such as designing for access to power, along with the development of our new systems to support continued access for all

In the following chapter, I revisit the key findings and summarize the implications that each finding had for method, theory, and practice. I also discuss the limitations of the study and point to opportunities for future work.

Chapter 8: Conclusion

This chapter concludes the dissertation with a summary of the study and its key findings. It describes the study's contributions to content analysis methods, to values and self-presentation theory, and to design practice. It also discusses the study's limitations, which lead to opportunities for future research.

8.1 Summary of Results & Contributions

It is important to note that through this dissertation, I did not aim to solve the issue of homelessness nor make the assumption that information technology is necessary or helpful to all individuals experiencing homelessness. Homelessness as a social issue stems from systematic issues of poverty and unaffordable housing alongside personal issues that run the gamut from job loss, natural disasters, and sudden or unexpected illness, to mental disabilities and substance abuse issues, to abusive relationships and other factors (Burt, 2001). However, this dissertation did help to shed further light on the role that technology can play in the complex issue of homelessness and highlighted even more diversity in the types of homelessness experiences that exist. Further, the study contributed to existing values research and design literature with an empirically tested coding manual for studying the salience of values expressed in tweets, an expanded consideration of the types of values that might be explored through Value Sensitive Design using Schwartz's Values Theory (1992, 1994), and findings that showed nuances in the ways in which people choose to identify in their social profiles and how they choose to present aspects of their profile through values expressed in everyday communication.

In summary, the first research question asked to what extent content analysis methods can be used to reliably detect human values expressed in tweets. Chapter 4 described the iterative process used to develop a coding manual and set of coding procedures that resulted in consistently reliable results for two coders. The key finding from this chapter was that both values and data granularity matter for achieving consistent coding results. Changing from a single tweet as the coding unit to a Twitter user's profile and a random sample of their tweets as the coding unit resulted in improved reliability measures. This study showed that Schwartz's values framework was an effective tool for examining values in online communication and resulted in a broader range of values sets than are typically accounted for in the current Value Sensitive Design literature.

The second research question asked "What are the differences in the salient values expressed through online communication by stakeholder groups related to the issue of homelessness?" Chapter 5 described the significant differences in salient values that occurred between individuals and groups. Openness to Change was the most salient values set among individuals regardless of affiliation with homelessness whereas Self Transcendence was the most salient values set among the organizations. These findings suggest that the types of people who self-select to use a site like Twitter as well as the social norms of Twitter use have an impact on what people talk about and how they express their values through that content. In contrast, the social norms of use for organizations on Twitter is to use it primarily as a marketing tool. Because the organizations in this study were focused on helping individuals experiencing

homelessness, it follows that they consistently marketed this mission by evoking values

of universalism and benevolence in the Self Transcendence set

The third research question asked how values differences and commonalities

among stakeholder groups can be characterized to inform values in design. Chapter 6

demonstrated that there were values differences and commonalities *within* groups, which

pointed to variations in self-presentation of one's associations with the issue of

homelessness. This highlighted a complexity and diversity of self-presentation that was

not anticipated at the start of the study. Individuals in the Homeless and Advocate groups

who also self-presented as such, consistently expressed values related to Self

Enhancement and Self Transcendence, respectively, rather than Openness to Change

values, which were evoked more often by individuals who did not self-present those

identities. This has implications for designers bringing together multiple stakeholder

groups in a values sensitive design project, suggesting that they should consider a

stakeholder's self-reported identity as well as their self-presentation of that identity

through their values.

Answering the third research question also raised issues related to the role of the

audience in users' self-presentation and values. It raised questions about who the "lowest

common denominator" audience for Homeless Twitter users might be, and whether or not

a consideration of that audience mattered when choosing to self-present. Choosing to

self-present as homeless through one's tweets may support feelings of social inclusion for

individuals who are typically marginalized in mainstream society, but able to express

their values and describe their experiences of homelessness on Twitter either

anonymously or pseudonomously. To further support this mode of self-expression, third

party developers may consider tools that would help Twitter users visualize their audiences (both intended and lowest common denominator). Alternatively, a bottom-up approach might show Twitter users developing a new form of syntax that would help indicate audiences in some meaningful way (perhaps specifically targeting particular audiences and excluding others by using this syntax), similar to the way that the hashtag syntax was adopted.

The study concluded with a discussion in Chapter 7 of the challenges that we still face in the United States related to negative and/or one-sided perceptions of homelessness. The findings challenge designers to continue to innovate in the social services sector and offered suggestions for using the vignettes described in Chapter 6 as inspiration for raising awareness about the diversity and range of homeless experiences that occur in the 21st century, both online and offline.

8.2 Limitations & Future Work

There are several limitations of this study that could be addressed through future research. First, it is important to note that individuals who use social media such as Twitter are a self-selecting population, as the findings for the second research question demonstrated. Their experiences may not be generalizable to the broader population of adults online, of stakeholders related to homelessness, or of users of other social media platforms. Second, it is important to reflect on the data that is not captured. This study focused on publicly broadcasted original tweets, which is just one of several types of communication that occurs on Twitter. Private messages and tweets from private accounts were not represented in the dataset. Further, some people may use Twitter extensively, but never use it for one-to-many communication, which excluded an

unknown number of individuals from the study. Future work might consider the ways in which values are expressed through non-original tweets, such as retweets, at-mentions, and via other methods, expanding the types of informal communication that are accounted for in a study.

Third, the decision to select 50 randomly sampled tweets to represent a Twitter user's entire timeline was necessary for logistical reasons but limits the findings. For Twitter users who tweeted less frequently, this number was more representative of their Twitter use and expressed values. For Twitter users who tweeted more frequently, this number was less representative. This may have been one reason why coding the second and third most salient values sets was difficult. Future work could address these challenges by considering practical ways to apply semi-automated coding procedures to allow for more consistently representative samples of tweets from each user (i.e., larger samples of tweets from users who tweet more frequently). Future work could also develop and test additional rules and procedures for applying quantitative and qualitative interpretations of values salience to the data to account for the second and third ranks of values salience.

Fourth, this study was limited in terms of its ability to be replicated. Like most Twitter studies, the use of third-party extraction tools or homegrown code has an impact on future replication. Third party tools can become defunct over the life of a study or before the study can be replicated by others. The platform itself can change its rules about how much data people can collect from it at any given point in time, as described in Twitter's Frequently Asked Questions site for Developers (https://dev.twitter.com/docs/faq). The lack of control on the part of the researcher and

the number of variables involved make the limitations of these studies in terms of replication quite substantial. Working with more stable archives, such as the Library of Congress Twitter collection should it ever be made available for research purposes, may be one way to combat this issue in the future.

Fifth, individuals have the ability to assume or project identities that exist only online. There could be inconsistencies between the actual values of an individual and those attributed to a potentially false or divergent identity through an observed online communication platform such as Twitter. Individuals who self-identify as homeless, homeless advocates, or other associations may do so falsely, or they may have failed to update their profiles to match any changes in their status as homeless or not. Also, many homeless Twitter users may intentionally or unintentionally avoid self-identifying as homeless, at least in their profiles, leaving open other experiences of homelessness that could not be captured using the methods described in this dissertation. One approach for future work might be to contact a sample of the studied Twitter users to verify and learn more about their offline identities, perhaps including interviews and/or surveys that could incorporate instruments such as the Schwartz Portrait Values Questionnaire (2007).

Further, a validation study that further investigates the connection between self-presentation and values would also be valuable. Using both directed and undirected methods, researchers might first ask people about their online profiles and personal values using something like the Portrait Values Questionnaire. They could then conduct an analysis of that individual's tweets to determine the extent to which those values are expressed. Researchers could then share those results back with the participants and ask them to reflect on the ways in which they feel their perceived values align (or not) with

their performed values, and to what extent the affordances and norms of use of the social platforms they use encourage or inhibit the expression of those personal values.

Finally, future work should consider how these findings play out in other domains or sociotechnical systems. This work may include other stakeholder groups that are affected by a broad issue such as disconnection, traumatic experiences, or environmental sustainability. They might focus on a micro-level group, such as stakeholders in a design team or across a work organization. This study may also be expanded to consider other information technologies that support informal communication including Facebook, blogs, Tumblr, or other new tools that arise in the future.

8.3 Conclusion

Values and information technology use are influenced by many factors. As a starting point, this dissertation focused primarily on the factors that are commonly considered in design research—one's relationship to a particular technology (i.e., Twitter) and one's relationship to the social context under investigation (i.e., homelessness). This study did, however, expand current understandings of how certain types of individuals experiencing homelessness with access to tools like Twitter express values through their communication. These findings have implications for values theory and design practice among various stakeholders related to the issue of homelessness. Understanding that people become homeless for a broad range of reasons and experience homelessness in myriad ways might generate more innovative thinking to address the many variables related to homelessness. Not only can new technologies bring attention to these issues, but they can also offer new ways of addressing them.

Appendix A

Final Coding Procedures & Codes for Determining Values Salience

The following list summarizes the step-by-step coding instructions that were refined, tested, and implemented for quantitative content analysis in this study. Table 15 provides descriptions of each of the codes followed by examples from the dataset in Table 16 based on Schwartz's values framework.

Pre-Processing

14. Read the tweet for the first time, including looking up any unknown hashtags and following a URL if provided, to determine originality of the tweet: Does the tweet meet the inclusion criteria for being an **original broadcasted** tweet?

    o   If NO, leave tweet in the dataset and continue coding.

    o   If YES, indicate this by placing a "1" in the cell next to the tweet.

15. Does the user's sample have at least 30 original broadcasted tweets in it?

    o   If NO, remove one of the non-original or non-broadcasted tweets from the user's sample and replace it with an original broadcasted tweet from the user's timeline as close to the same time period as possible until the user has at least 30 original broadcast tweets.

    o   If YES, continue. NOTE: Users may have 30–50 original broadcasted tweets in their final sample for analysis.

16. Read through the original tweets and determine if they express values: Does each tweet indicate an evaluation, judgment, opinion, or belief that is personal to the Twitter user?

    o   If NO, indicate this by placing a "0" in the cell next to the tweet.

   o If YES, indicate this by placing a "1" in the cell next to the tweet.

17. Does the user's sample have at least some value-laden tweets in it?

   o If NO, remove one of the non-value-laden tweets from the user's timeline and replace it with an original, value-laden tweet from the user's timeline as close to the same time period as possible.

    NOTE: There were no instances in the dataset for this dissertation in which a Twitter user did not have any value-laden tweets in their sample of original tweets. The smallest number of tweets found to be value-laden in a user's sample was 9 and the lowest percentage of value-laden tweets to original tweets was 24% (9 tweets out of 37 original tweets). The average across the entire sample was 68% (Min = 24%, Max = 98%, SD = 16.5%). This was adequate for the purposes of the study and I would recommend to future researchers that they aim for a minimum of about 25% of the original tweets having value-laden characteristics.

   o If YES, continue.

Preparation

18. Prior to each session of data coding read through the coding manual and familiarize yourself with the coding procedures and coding categories (see Table 15).

Coding

19. Read through the full sample of 50 tweets and the Twitter user's profile information to identify who the user is, how they use Twitter, and what the values

context(s) of their tweets are. At this point one or two salient value sets may emerge. Keep those in mind as you move to Step 2.

20. Read through again and focus specifically on the value-laden tweets—it may be helpful to do some light coding and annotating at the tweet level to help with the overall assessment of values salience.

   o If the most salient underlying values of the tweet fall into the **Openness to Change** values set (the tweet expresses independent action and readiness for new experiences; it has underlying values such as stimulation, self-direction, hedonism, innovation, creativity, excitement, etc.), note O2C in the Notes column next to the tweet.

   o If the most salient underlying values fall into the **Self Transcendence** values set (the tweet expresses concern for the welfare and interests of others; it has underlying values such as universalism, wisdom, equality, peace, helpfulness, honesty, loyalty, spirituality, meaning in life, etc.), note ST in the Notes column next to the tweet.

   o If the most salient underlying values fall into the **Conservation** values set (the tweet expresses self-restriction, a desire for social order, or a resistance to change; it had underlying values such as humility, devoutness, tradition, conformity, obedience, safety, security, health, cleanliness, etc.), note C in the Notes column next to the tweet.

   o If the most salient underlying values fall into the **Self Enhancement** values set (the tweet expresses the pursuit of self-interests or the interests of others; it has underlying values such as social power, authority, wealth,

social recognition, capable, ambitious, influential, etc.), note SE in the Notes column next to the tweet.

- o If you cannot identify the underlying values, make a note to revisit the tweet and continue coding.

- o If the tweet strongly expresses more than one values set, note both in the Notes column next to the tweet.

21. After you've coded the tweets for their most salient values, determine which values set is most salient for this Twitter user across their entire tweet sample. Mark a "1" in the cell that corresponds to the Most salient values set for that user in the Twitter Users spreadsheet.

- o Refer back to the values definitions and the value portraits to help with this.

22. Determine which values set is the Second most salient for this Twitter user. Mark a "2" in the cell that corresponds to the value set and the user on the Twitter Users spreadsheet.

23. Determine which values set is the Third most salient for this Twitter user. Mark a "3" in the cell that corresponds to the value set and the user on the Twitter Users spreadsheet.

24. Determine which values set is the Least salient for this Twitter user. Mark a "4" in the cell that corresponds to the value set and the user on the Twitter Users spreadsheet.

25. In cases where there are ties or close ranking between two values sets, revisit the context of the user and consider the extent to which the values are expressed more

strongly or dominantly than the other. For example if three value-laden tweets are annotated with a C and two are annotated with ST, reconsider the strength or salience of those values within those tweets and across the dataset of the user— which ones are most clear and salient?

26. Make notes or justifications for your rankings to discuss with a second coder.

Table 15. Description, Values, and Value Portraits for each Values Set

Openness to Change (O2C):	Self-Transcendence (ST):
Twitter users whose tweets express desires, wishes, or evaluation related to independent action and readiness for new and/or enjoyable experiences.	Twitter users whose tweets express desires, wishes, and evaluations related to the welfare and interests of others.
Values in O2C	**Values in ST**
Stimulation: these values derive from the presumed organismic need for variety and stimulation in order to maintain an optimal level of activation; excitement, novelty, and challenge in life *Self-direction:* the defining goal of this value type is independent thought and action; choosing, creating, exploring *Hedonism:* derived from organismic needs and the pleasure associated with satisfying them; pleasure and sensuous gratification for oneself	*Universalism:* the motivational goal of universalism is understanding, appreciation, tolerance, and protection for the welfare of all people and for nature *Benevolence:* focus on concern for the welfare of close others in everyday interaction; the need for positive interaction in order to promote the flourishing of groups
Value Portraits for O2C	**Value Portraits for ST**
• Thinking up new ideas and being creative is important to him. He likes to do things in his own original way. • He likes surprises. It is important to him to have an exciting life. • It is important to him to listen to people who are different from him. Even when he disagrees with them, he still wants to understand them. • Enjoying life's pleasures is important to him. He likes to "spoil" himself. • It is important to him to make his own decisions about what he does. He likes to be free to plan and to choose his activities for himself. • He looks for adventures and likes to take risks. He wants to have an exciting life. • He seeks every chance he can to have fun. It is important to him to do things that give him pleasure.	• He thinks it is important that every person in the world be treated equally. He believes everyone should have equal opportunities in life. • It's very important to him to help the people around him. He wants to care for their well-being. • It is important to him to be loyal to his friends. He wants to devote himself to people close to him. • He strongly believes that people should care for nature. Looking after the environment is important to him.

Self-Enhancement (SE):	Conservation (C):
Twitter users whose tweets express desires, wishes, and evaluations related to the pursuit of self-interests.	Twitter users whose tweets express desires, wishes, and evaluations related to self-restriction, social order and safety, and resistance to change.
Values in SE	**Value Categories in C**
Power: emphasizes the attainment or preservation of a dominant position within the more general social system; social status and prestige, control or dominance over people and resources	*Tradition:* the motivational goal of tradition values is respect for, commitment to, and acceptance of the customs and ideas that one's culture or religion provides an individual
Achievement: the defining goal of this value type is personal success through demonstrating competence according to social standards	*Conformity:* the defining goal of this value type is restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms
	Security: the motivational goal of this value type is safety, harmony, and stability of society, of relationships, and of self
Value Portraits for SE	**Values Portraits for C**
• It is important to him to be rich. He wants to have a lot of money and expensive things.	• It is important to him to live in secure surroundings. He avoids anything that might endanger his safety.
• It's very important to him to show his abilities. He wants people to admire what he does.	• He believes that people should do what they're told. He thinks people should follow rules at all times, even when no one is watching.
• Being very successful is important to him. He likes to impress other people.	• It is important to him to be humble and modest. He tries not to draw attention to himself.
• It is important to him to get respect from others. He wants people to do what he says.	• It is important to him that the government ensures his safety against all threats. He wants the state to be strong so it can defend its citizens.
	• It is important to him always to behave properly. He wants to avoid doing anything people would say is wrong.
	• Tradition is important to him. He tries to follow the customs handed down by his religion or his family.

The example below shows a sample of an anonymized user's tweets from the

Comparison group. Reading through the sample, a coder can get a sense for this user's

Twitter use habits and general conduct. From the first reading, including following the

user's provided URLs for context (the URLs have been removed here to preserve

anonymity), the reader learns that the user expresses Self Enhancement saliently. Many

of the links go to video blogs featuring the user talking about tips for success and self

achievement based on his own methods/experiences. A closer inspection of the value-

laden tweets indicates that the user expresses all of the values sets at least once. Some of

the tweets express multiple values sets. In terms of both quantity and quality, the Self

Enhancement values set is the most salient followed by the Openness to Change values

set. The third and fourth rankings are more difficult to determine, but the Conservation

statements show up as qualitatively more salient—the tweets where Conservation values

are expressed are more clearly related to those values. Several of the tweets that

expressed Self Transcendence also expressed other values and were less salient to this

user's overall character. The final values salience rankings for this user were:

- Most Salient: Self Enhancement (SE)

- Second most salient: Openness to Change (O2C)

- Third most salient: Conservation (C)

- Least salient: Self Transcendence (ST)

Coding Example

- User Profile: CEO Game Plan Inc. – Venture Capitalist - Philanthropist – BC Alum
- Location: Boston, MA
- URL: gameplaninc.com
- Followers: 25,451
- Following: 110
- Tweets: 636

Table 16. Tweets from Coding Example

Tweet	Original	Value-laden	Notes on salient values
#sometimesyoumust Take 3 Steps Back to Take 5 Steps Forward.	1	0	
A motivating memorial day to everyone, let's be healthy and happy this season	1	1	C
Tek and Wakefield baseball charity event	1	0	
Poker with big papa [link]	1	0	
Get inspired by my YouTube Channel! **http://www.youtube.com/user/**	1	0	
#scambook : Wow finally a place that actually helps you get your $$ after being scammed! Go to: [shortened link]	1	1	C
Have to love it when @IvankaTrump Denies you! Thanks! [shortened link]	1	1	SE
Nobody is catching my baseball team this season.	1	0	
Masterprofits.com [shortened link]	1	0	
We are the CHAMPIONS! Bruins win Stanley Cup! Check out Boston Fans after winning: [YouTube link]	1	0	
[shortened link] Super motivating.	1	1	SE
For updates on my Videos Join Me: [shortened link]	1	0	
It is About Building Your social NETWORK!! [shortened link]	1	1	SE
PLEASE CLICK and LIKE to VOTE for me. I will send voters a money making tip. [shortened link]	1	0	
Everyone Follow @MrColins best guy in the biz, always has the inside scoop.	1	1	ST
I made it on the Impact100 List! Being presented @ the White House today	1	0	

Tweet			
at 230 watch it here [shortened link]			
I started trading with Jim Fykes, and made over 80k since december. Consider this [shortened link] code Gingerbread50 gets 50% off	1	0	
Gr8t new show on HGTV remodeled, debuting	1	1	O2C
I knew Peyton was done with football, very hard injury to come back from #NFL	1	1	ST
Hey everyone! please follow my beautiful and talented lady @janeshoes ! check out her website [shortened link]	1	1	ST, SE
What is the deal with Erik Red? looked injured at end of last week's game!	1	1	O2C, SE
Just watched @TBrady express how happy he is to not be an insurance salesman. Cray cray.	1	1	O2C, SE
Seems that #jerrysandusky is paying his bills by selling crockpots on QVC. [shortened link]	1	1	?
I want Super Bowl Tickets @WesWelker! [shortend link] #GonnaHappen	1	0	
Teaming up with [shortened link] and [shortened link]	1	0	
I teams up with NHL [shortened link]	1	0	
"An idea that is dev'd and put in action is +important than an idea that exists only as an idea." Buddha	0	0	
tools become rusty, so does the mind; a garden uncared for soon becomes smothered in weeds; a talent neglected withers & dies -Ethel Page	0	0	
When I chased money, I didn't have enough. When I got my life on track and focused on giving up myself and (cont) [shortened link]	1	1	ST
Dedication involves making space for young ideas to take hold; every tree was once a seed & every company was an idea. B-Jorgensen	0	0	
If anyone is not willing to accept your p.o.v., try to see her p.o.v. -Lebanese Proverb	0	0	
Success is a ladder that can't B climbed w/your hands in ur pocket -Unkown	0	0	
If your actions inspire others to dream, learn, do and become more, then you are a leader. JQA	0	0	
If you play it safe in life, you have decided that you do not want to grow anymore. –S. Hufstedler	0	0	
Gut Check [shortened link]	1	0	
Some men have thousands of reasons why they can't do what they want, all	0	0	

they need is one reason why they can. –W. Whitney			
The moment a man ceases to progress, to grow, then his life becomes stagnant. –O. S. Marden	0	0	
Balance your thoughts with action. If you spend too much time thinking, you will never get it done. –B. Lee	0	0	
Come hear me speak 3/28 at 6p in Boston [shortened link]	1	1	SE
Many fail bc they do not get started, they do not let go. They do not overcome inertia. -W. C. Stone	0	0	
Good business leaders create a vision, articulate the vision, own the vision; relentlessly drive it to completion -JWelch	0	0	
It's impossible to win the race unless you try to run, impossible to win the victory unless you dare to battle. –R.M. DeVos	0	0	
There's no use saying, "We r doing our best." You have to succeed in doing what is necessary. -Churchill	0	0	
Best Advice Ever: [shortened link]	1	1	SE
A winner is someone who accepts failures & mistakes, picks up the pieces, and continues striving to reach her goals. -Dexter Y.	0	0	
Why NOW is a great time to go to Europe! [shortened link]	0	0	
NOW is a great time to go to Europe! [shortened link]	1	1	O2C
Ron Burton Training Village Speech [shortened link]	1	0	
Confidence- Act As If You've Got Some [shortened link]	1	1	SE
Giving Back w Bachman and Burton of WHYY [shortened link]	1	0	

References

Albrecht, M. C. (1956). Does literature reflect common values? *American Sociological Review, 21*(6), 722–729.

Albrechtslund, A. (2007). Ethics and technology design. *Journal of Ethics and Information Technology, 9*(1), 63–72.

Alsheikh, T., Rode, J. A., & Lindley, S. E. (2011). (Whose) values-sensitive design? A study of long-distance relationships in an Arabic cultural context. In *Proceedings of the 2011 ACM Conference on Computer Supported Cooperative Work* (pp. 75–84). New York, NY: ACM Press.

Ayers, S. (2006). The poor and homeless: An opportunity for libraries to serve. *The Southeastern Librarian, 54*(1), Article 13. Retrieved from http://digitalcommons.kennesaw.edu/seln/vol54/iss1/13

Azenkot, S., Prasain, S., Borning, A., Fortuna, E., Ladner, R. E., & Wobbrock, J. O. (2011). Enhancing independence and safety for blind and deaf-blind public transit riders. In *Proceedings of the 2011 Annual Conference on Human Factors in Computing Systems*. New York, NY: ACM Press, 3247-3256.

Balabanis, G., Mueller, R., & Melewar, T. C. (2002). The relationship between consumer ethnocentrism and human values. *Global Marketing 15*(3-4), 7–37.

Bardi, A., & Schwartz, S. H. (2003). Values and behavior: strength & structure of relations. *Personality & Social Psychology Bulletin 29*, 1207–1220.

Becker, S., Crandall, M. D., Fisher, K. E., Kinney, B., Landry, C., & Rocha, A. (2010). *Opportunity for all: How the American public benefits from Internet access at U.S. libraries*. Washington, D.C.: Institute for Museum and Library Services. Retrieved from http://www.gatesfoundation.org/learning/Documents/OpportunityForAll.pdf

Bennett, R. (2003). Factors underlying the inclination to donate to particular types of charity. *International Journal of Nonprofit and Voluntary Sector Marketing 8*(1), 12–29.

Belk, R. W. (1987). The role of the Odyssey in consumer behavior and consumer research. *Advances in Consumer Research 14*, 357–361.

Berg, A.-J. 1999. A gendered socio-technical construction: The smart house. In D. MacKenzie & J. Wajcman (Eds.), *The social shaping of technology* (pp. 301–313). Philadelphia, PA: Open University Press.

Berg, N. (2012, August 17). How Facebook and Twitter are helping the homeless. *The Atlantic.* Retrieved from http://www.theatlanticcities.com/technology/2012/08/how-facebook-and-twitter-are-helping-homeless/2984/

Bolchini, D., Yang, T., & Garzotto, F. (2009). Evaluating the communication design of branded websites - a value-based framework. In *Proceedings of the 27th ACM International Conference on Design of Communication* (pp. 70–80). New York, NY: ACM Press.

Bollen, J., Pepe, A., & Mao, H. (2009). Modeling public mood and emotion: Twitter sentiment and socio-economic phenomena. In *Proceedings of the Fifth International AAAI Conference on Weblogs and Social Media* (pp. 450–453). Palo Alto, CA: AAAI.

Borning, A., Friedman, B., Davis, J., & Lin, P. (2005). Informing public deliberation: Value Sensitive Design of indicators for a large-scale urban simulation. In *Proceedings of the 9th European Conference on Computer Supported Cooperative Work* (pp. 449–468). New York, NY: Springer-Verlag.

boyd, d. (2004). Friendster and publicly articulated social networking. In *Proceedings of the twenty-second annual SIGCHI conference on Human factors in computing systems* (pp. 1279–1282). New York, NY: ACM Press.

boyd, d. (2006, December). Friends, friendster and MySpace top 8: Writing community into being on social network sites. *First Monday, 11*. Retrieved from http://firstmonday.org/issues/issue11_12/boyd/index.html

boyd, d. (2007). Why youth (heart) social network sites: The role of networked publics in teenage social life. In D. Buckingham (Ed.), *Youth, identity, and digital media* (pp. 119–142). Cambridge, MA: MIT Press.

Braithwaite, V. A., & Law, H. G. (1985). Structure of human values: Testing the adequacy of the Rokeach Value Survey. *Journal of Personality and Social Psychology, 49*, 250–263.

Braun, V., & Clark, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology 3*(2), 77–101.

Burt, M. R. (2001). What will it take to end homelessness? Washington, DC: Urban Institute.

Castells, M. (1983). *The City and the Grassroots*. Berkeley, CA: University of California Press.

Chen, J., Hsieh, G., Mahmud, J. U., & Nicols, J. (2014). Understanding individuals' personal values from social media word use. In *Proceedings of the 17th ACM Conference on Computer-Supported Cooperative Work*. New York, NY: ACM Press.

Cheng, A.-S. (2012). *Values in the Net neutrality debate: Applying content analysis to testimonies from public hearings*. Unpublished dissertation. University of Maryland, College Park, MD.

Cheng, A.-S., & Fleischmann, K. R. (2010). Developing a meta-inventory of human values. In *Proceedings of the 73rd ASIS&T Annual Meeting on Navigating Streams in an Information Ecosystem, 47*(3), 1–10.

Cheng, A.-S., Fleischmann, K. R., Wang, P., Ishita, E., & Oard, D. (2010). Values of stakeholders in the Net neutrality debate: Applying content analysis to telecommunications policy. In *Proceedings of the 43rd Hawai'i International Conference on System Sciences*, 1–10.

Cheng, A.-S., Fleischmann, K. R., Wang, P., Ishita, E., & Oard, D. (2012). The role of innovation and wealth in the Net neutrality debate: A content analysis of human values in congressional and FCC hearings. *Journal of the American Society for Information Science and Technology, 63*(7), 1360–1373.

Conger, J. A. (1991). Inspiring others: the language of leadership. *Academy of Management Perspectives, 5*(1), 31–45.

Corbin, J., & Strauss, A. (2008). *Basics of qualitative research* (3rd ed.). Thousand Oaks, CA: Sage Publications Inc.

Corder, G. W., & Foreman, D. I. (2009). *Nonparametric statistics for non-statisticians*. Hoboken, NJ: John Wiley & Sons.

Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into Practice, 39*(3), 124–130.

Culnan, M. J., McHugh, P. J., & Zubillaga, J. I. (2010). How large U.S. companies can use Twitter and other social media to gain business value. *MIS Quarterly Executive, 342*. Retrieved from http://misqe.org/ojs2/index.php/misqe/article/view/342

Czeskis, A., Dermendjieva, I., Yapit, H., Borning, A., Friedman, B., Gill, B., & Kohno, T. (2010). Parenting from the pocket: Value tensions and technical directions for secure and private parent-teen mobile safety. In *Proceedings of the Symposium on Usable Privacy and Security* (pp. 1–15). New York, NY: ACM Press.

Diakopoulos, N. A., & Shamma, D. A. (2010). Characterizing debate performance via aggregated Twitter sentiment. In *Proceedings of the 28th International Conference on Human Factors in Computing Systems* (pp. 1195–1198). New York, NY: ACM Press.

Digital Societies & Social Technologies. (2013). http://dev.sociotech.net/v2/archives/15608

Domke, D., Shah, D. V., & Wackman, D. B. (1998). Moral referendums: values, news media, and the process of candidate choice. *Political Communication, 15*(3), 301–321.

Eglash, R. (2002, June). A two-way bridge across the digital divide. *The Chronicle Review*. Retrieved from http://chronicle.com/article/A-Two-Way-Bridge-Across-the/3567/

Ellison, N., Heino R., & Gibbs, J. (2006) Managing impressions online: Self-presentation processes in the online dating environment. *Journal of Computer-mediated Communication, 11*(2), 415–441. Retrieved from http://jcmc.indiana.edu/vol11/issue2/ellison.html

European Social Survey. (n.d.). http://www.europeansocialsurvey.org/

Eyrich-Garg, K. (2010). Mobile phone technology: A new paradigm for the prevention, treatment, and research of the non-sheltered "street" homeless. *Journal of Urban Health, 87*(3), 365–380.

Eyrich-Garg, K. M. (2011). Sheltered in cyberspace? Computer use among the "street" homeless. *Computers in Human Behavior, 27*(1), 296–303.

Eyrich-Garg, K. M., Cacciola, J. S., Carise, D., McLellan, A. T., & Lynch, K. (2008). Individual characteristics of the literally homeless, marginally housed, and impoverished in a U.S. substance abuse treatment-seeking sample. *Social Psychiatry and Psychiatric Epidemiology, 43*(10), 765–772.

Feather, N. T. (1975). Values and income level. *Australian Journal of Psychology, 27*, 23–30.

Feather, N. T. (1985). Attitudes, values, and attributions: Explanations of unemployment. *Journal of Personality and Social Psychology, 48*(4), 875–889.

Feather, N. T. (1986). Cross-cultural studies with the Rokeach Values Survey: The Flinders program of research on values. *Australian Journal of Psychology, 38*, 269–283.

Feather, N. T. (1995). Values, valences, and choice: The influence of values on the perceived attractiveness and choice of alternatives. *Journal of Personality and Social Psychology, 68*(6), 1135–1151.

Fleischmann, K. R. (2014). Information & Human Values. In G. Marchionini (Ed.), *Synthesis Lectures on Information, Concepts, Retrieval, and Services.* Chapel Hill, NC: Morgan & Claypool Publishers.

Fleischmann, K. R., Oard, D. W., Cheng, A.-S., Wang, P., & Ishita, E. (2009). Automatic classification of human values: Applying computational thinking to information ethics. *Proceedings of the 72nd Annual Meeting of the American Society for Information Science and Technology, 46*(1), 1–10.

Fleischmann, K. R., Templeton, T. C., & Boyd-Graber, J. (2011). Modeling diverse standpoints in text classification: Learning to be human by modeling human values. In *Proceedings of the 2011 iConference* (pp. 672–673). New York, NY: ACM Press.

Fleischmann, K. R., & Wallace, W. A. (2010). Value conflicts in computational modeling. *IEEE Computer Society, 43*(7), 57–63.

Fleischmann, K. R., Wallace, W. A., & Grimes, J. (2011). How values can reduce conflicts in the design process: Results from a multi-site mixed-method field study. *Proceedings of the 74th Annual Meeting of the American Society for Information Science and Technology, 48*(1), 1–10.

FollowerWonk. (n.d.). https://followerwonk.com/bio

Freelon, D. G. (2010). ReCal: Intercoder reliability calculation as a Web service. *International Journal of Internet Science, 5*, 20–33. Tools available at: http://dfreelon.org/utils/recalfront/ and http://dfreelon.org/utils/recalfront/recal-oir/

Friedman, B. (Ed.). (1997). *Human values and the design of computer technology.* New York, NY: Cambridge University Press.

Friedman, B. (2004). Value Sensitive Design. In W. S. Bainbridge (Ed.), *Encyclopedia of human-computer interaction* (pp. 769–774). Great Barrington, MA: Berkshire Publishing Group.

Friedman, B., & Freier, N. G. (2005). Value Sensitive Design. In K. E. Fisher, S. Erdelez, & E. F. McKechnie (Eds.), *Theories of information behavior: A researcher's guide* (pp. 368–372). Medford, NJ: Information Today.

Friedman, B. & Kahn, P. H., Jr. (1992). Human agency and responsible computing: Implications for computer system design. *Journal of Systems and Software*, 17, 7-14.

Friedman, B., & Kahn, P. H., Jr. (2003). Human values, ethics, and design. In J. A. Jacko & A. Sears (Eds.), *The human-computer interaction handbook* (pp. 1177–1201). Mahwah, NJ: Lawrence Erlbaum Associates.

Friedman, B., Kahn, P. H., Jr., & Borning, A. (2006). Value sensitive design and information systems. In P. Zhang and D. Galletta (Eds.), *Human-Computer Interaction and Management Information Systems: Foundations* (pp. 1–27). Armonk, NY: M.E. Sharpe.

Friedman, B., & Nissenbaum, H. (1996). Bias in computer systems. *ACM Transactions on Information Systems, 14*(3), 330–347.

Gaver, W. W. (1991). Technology affordances. In *Proceedings of the SIGCHI conference on human factors in computing systems: Reaching through technology* (pp. 79–84)*. New York, NY: ACM.

Gillespie, N. A., & Mann, L. (2004). Transformational leadership and shared values: The building blocks of trust. *Journal of Managerial Psychology, 19*(6), 588–607.

Glassman, M. E., Straus, J. R., & Shogan, C. J. (2009). Social networking and constituent communication: Member use of Twitter during a two-week period in the 112th Congress. Washington, DC: Congressional Research Service.

Goffman, E. (1959). *The Presentation of Self in Everyday Life.* New York: Anchor Books, Doubleday.

Gould, J. E. (2011, September 2). Down and out in L.A.: When the middle class goes homeless. *TIME Magazine.* Retrieved from http://www.time.com/time/nation/article/0,8599,2090997,00.html

Harter, L. M., Berquist, C., Titsworth, B. S., Novak, D., & Brokaw, T. (2005). The structuring of invisibility among the hidden homeless: the politics of space, stigma, and identity construction. *Journal of Applied Communication Research, 33*(4), 305–327.

Hashtags. (n.d.). http://www.hashtags.org/

Hayes, A. F., & Krippendorff, K. (2007). Answering the call for a standard reliability measure for coding data. *Communication Methods and Measures, 1*, 77–89.

Heinzelman, J., & Waters, C. (2010). Crowdsourcing crisis information in disaster-affected Haiti. United States Institute of Peace. Retrieved from

http://www.usip.org/publications/crowdsourcing-crisis-information-in-disaster-affected-haiti

Hendry, D. G., Woelfer, J. P., Harper, R., Bauer, T., Fitzer, B., & Champagne, M. (2011). How to integrate digital media into a drop-in for homeless young people for deepening relationships between youth and adults. *Children and Youth Services Review, 33*(5), 774–782.

Hinz, A., Brähler, E., Schmidt, P., & Albani, C. (2005). Investigating the circumplex structure of the Portrait Values Questionnaire (PVQ). *Journal of Individual Differences, 26*(4), 185–193.

Hitlin, S., & Piliavin, J. A. (2004). Values: Reviving a dormant concept. Current research, methods, and theory of values. *Annual Review of Sociology, 30*, 359–393.

Hogan, B. (2010). The presentation of self in the age of social media: Distinguishing performances and exhibitions online. *Bulletin of Science Technology & Society 30*, 377–386.

Holsti, O. R. (1969). *Content analysis for the social sciences and humanities.* Reading, MA: Addison-Wesley Publishing Company.

Homeless for a Day. (n.d.). https://www.vayable.com/experiences/318-homeless-for-a-day

Horvath, M. (2008). *Invisible People*. Retrieved from http://www.invisiblepeople.tv

Horvath, M. (2010). *We Are Visible*. Retrieved from http://www.wearevisible.com

Inglehart, R. (1990). Values, ideology, and cognitive mobilization in new social movements. In M. Waters (Ed.), *Modernity, critical concepts: Volume IV after modernity* (pp. 373–396). London: Routledge.

Inglehart, R. (1997). *Modernization and postmodernization: Cultural, economic, and political change in 43 societies.* Princeton, NJ: Princeton University Press.

International Humanities Center. (2006). *STREATS: Strive To Reach Educate And Transform Society.* Retrieved from http://streats.tv

Java, A., Song, X., Finin, T., &Tseng, B. (2007). Why we Twitter: Understanding microblogging usage and communities. In *Proceedings of the Joint 9th WEBKDD and 1st SNA-KDD workshop* (pp. 1-10). New York, NY: ACM.

Jarvenpaa, S. L., & Leidner, D. E. (1998). Communication trust in global virtual teams. *Journal of Computer-Mediated Communication, 3*(4), 0. Retrieved from http://jcmc.indiana.edu/vol3/issue4/jarvenpaa.html.

Jamison-Powell, S., Linehan, C., Daley, L., Garbett, A., & Lawson, S. (2012). "I can't get no sleep": Discussing #insomnia on Twitter. In *Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems* (pp. 1501–1510). New York: ACM Press, 1501-1510.

Jansen, B. J., Zhang, M., Sobel, K., & Chowdury, A. (2009). Twitter power: Tweets as electronic word of mouth. *Journal of the American Society for Information Science and Technology, 60*(11), 2169–2188.

Jipson, A. J. (2012). *Shall I Paint You a Protest: Marxist Analysis of Social Media*. Paper presented at the annual meeting of the American Sociological Association Annual Meeting, Colorado Convention Center and Hyatt Regency, Denver, CO. Retrieved from http://citation.allacademic.com/meta/p562628_index.html

Johnson, S. (2009, June 5). How Twitter will change the way we live. *TIME Magazine*. Retrieved from http://content.time.com/time/magazine/article/0,9171,1902818,00.html

Kahn, P. H., Jr., Friedman, B., & Alexander, I. S. (2005). Coding manual for "The distant gardener: What conversations in the Telegarden reveal about the user experience of human-telerobotic interaction". [Technical Report]. Seattle, WA: University of Washington, The Information School. Retrieved from http://vsdesign.org/publications/pdf/telegarden_technical_report.pdf

Khondker, H. H. (2011). Role of new media in the Arab Spring. *Globalizations, 8* (5), 675–679.

Kim, M. (2013). "Walk in their shoes": A pre-service teacher's reflection on working with homeless families. *Nation Forum of Teacher Education Journal, 23*(3), 1–11. Retrieved from http://www.nationalforum.com/Electronic%20Journal%20Volumes/Kim,%20MinJeong%20NFTEJ%20V23%20N3%202013.pdf

Kim, N., & Lin, J. (2013, November 2–6). *Perceptions regarding homelessness: Analyzing US tweets*. Paper presented at Proceedings of the 141st American Public Health Association Meeting and Exposition, Boston, MA.

Kling, R. (Ed.). (1996). *Computerization and controversy: Value conflicts and social choices* (2nd ed.). San Diego, CA: Academic Press.

Kling, R., Rosenbaum, H., & Hert, C. (1998). Social informatics in information science: An introduction. *Journal of the American Society for Information Science, 49*(12), 1047–1052.

Kluckhohn, C. (1951). Values and value-orientations in the theory of action: An exploration in definition and classification. In T. Parsons & E. Shils (Eds.), *Toward a general theory of action* (pp. 388–433). Cambridge, MA: Harvard University Press.

Koepfler, J. A. & Fleischmann, K. R. (2011). Classifying values in informal communication: Adapting the Meta-Inventory of Human Values for tweets. In *Proceedings of the 2011 ASIS&T Annual Meeting* (pp. 1-4).

Koepfler, J. A., & Fleischmann, K. R. (2012). Studying the values of hard-to-reach populations: Content analysis of Tweets by the 21st century homeless. In *Proceedings of the 2012 iConference* (pp. 48–55). New York, NY: ACM Press.

Koepfler, J. A., & Hansen, D. L. (2012). *We Are Visible*: Technology-mediated social participation in a Twitter network for the homeless. In *Proceedings of the 2012 iConference* (pp. 492–493). New York: ACM Press.

Koepfler, J. A., Mascaro, C., & Jaeger, P. T. (2014). Homelessness, wirelessness, and other states of invisibility: Critical reflections on the Homeless Hotspots project and the ensuing online discourse. *First Monday, 19*(3). Retrieved from http://firstmonday.org/ojs/index.php/fm/article/view/4846/3842

Koepfler, J. A., Shilton, K., & Fleischmann, K. R. (2013). A stake in the issue of homelessness: Identifying values of interest for design in online communities. In *Proceedings of the 6th International Conference on Communities & Technologies*. Retrieved from http://www.iisi.de/fileadmin/IISI/upload/C_T/2013/ct2013_proceedings_S1-4_Koepfler_Shilton_Fleischmann.pdf

Koepfler, J. A., Templeton, T. C., & Fleischmann, K. R. (2012). Exploration of values and frames in social media texts related to the Homeless Hotspots debate. In *Proceedings of the 2012 American Society of Information Science and Technology Conference* (pp. 1–4). New York, NY: ACM Press.

Kretzmann, J. P., & McKnight (1993). *Building communities from the inside out: A path toward finding and mobilizing a community's assets*. Evanston, IL: Institute for Policy Research.

Krippendorff, K. (2004). *Content Analysis: An Introduction to its Methodology* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Krippendorff, K. (2011). Computing Krippendorff's alpha-reliability. Departmental papers. Annenberg School for Communication Scholarly Commons. Retrieved from http://repository.upenn.edu/asc papers/43

Kwak, H., Chun, H., & Moon, S. (2011). Fragile online relationship: A first look at unfollow dynamics in Twitter. In *Proceedings of the 30th Annual Conference on Human Factors in Computing Systems* (pp. 1091–1100). New York, NY: ACM Press.

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*, 159–174.

Le Dantec, C. A., Christensen, J. E., Bailey, M., Farrell, R. G., Ellis, J. B., Danis, C. M., Kellogg, W. A., & Edwards, W. K. (2010). A tale of two publics: Democratizing design at the margins. In *Proceedings of the Conference on Designing Interactive Systems* (pp. 11–20). New York, NY: ACM Press.

Le Dantec, C. A., & Edwards, W. K. (2008). Designs on dignity: Perceptions of technology among the homeless. In *Proceedings of the 26th Annual SIGCHI Conference on Human Factors in Computing Systems* (pp. 627–636). New York, NY: ACM Press.

Le Dantec, C. A., Farrell, R. G., Christensen, J. E., Bailey, M., Ellis, J. B., Kellogg, W. A., & Edwards, W. K. (2011). Publics in practice: Ubiquitous computing at a shelter for homeless mothers. In *Proceeding of the 29th Annual SIGCHI Conference on Human Factors in Computing System* (pp. 1687–1696). New York, NY: ACM Press.

Le Dantec, C. A., Poole, E. S., & Wyche, S. P. (2009). Values as lived experience: Evolving value sensitive design in support of value discovery. In *Proceedings of the 28th Annual Conference on Human Factors in Computing Systems* (pp. 1141–1150). New York, NY: ACM Press.

Lenhart, A. B. (2005). *Unstable texts: An ethnographic look at how bloggers and their audience negotiate self-presentation, authenticity, and norm formation* (Unpublished master's thesis). Georgetown University, Washington, DC.

Lovejoy, K., Waters, R. D., & Saxton, G. D. (2012). Engaging stakeholders through Twitter: How nonprofit organizations are getting more out of 140 characters of less. *Public Relations Review, 38*(2), 313–318.

Lowenthal, L. (1944). Biographies in popular magazines. In P. F. Lazarsfeld & F. Stanton (Eds.), *Radio Research, 1942-1943*(pp. 516–518). New York, NY: Duell, Sloan, & Pearce.

Lunden, I. (2012, July 30). Analyst: Twitter passed 500M users in June 2012, 140M of them in US; Jakarta 'Biggest Tweeting' city. *TechCrunch*. Retrieved from http://techcrunch.com/2012/07/30/analyst-twitter-passed-500m-users-in-june-2012-140m-of-them-in-us-jakarta-biggest-tweeting-city/

Marcus, A., Bernstein, M. S., Badar, O., Karger, D. R., Madden, S., & Miller, R. C. (2011). TwitInfo: Aggregating and visualizing microblogs for event exploration. In *Proceedings of the 30th Annual Conference on Human Factors in Computing Systems* (pp. 227–236). New York, NY: ACM Press.

Marwick, A., & boyd, d. (2011). I tweet honestly, I tweet passionately: Twitter users, context collapse, and the imagined audience. *New Media & Society, 13*(1), 114–133.

McInnes, D. K., Li, A. E., & Hogan, T. P. (2013). Opportunities for engaging low-income, vulnerable populations in health care: A systematic review of homeless persons' access to and use of information technologies. *American Journal of Public Health, 103*(S2), e11–e24.

Mcfedries, P. (2007, October). Technically speaking: All a-Twitter. In Reports on the world of blogging – and its ramifications for social networking, *Spectrum IEEE, 44*(10), 84.

Miller, J. K., Friedman, B., Jancke, G., & Gill, B. (2007). Value tensions in design: The value sensitive design, development, and appropriation of a corporation's groupware system. In *Proceedings of the 2007 International ACM Conference on Supporting Group Work* (pp. 281–290). New York: ACM Press.

Morgan, J., Mason. R., & Nahon, K. (2011). Lifting the veil: The expression of values in online communities. In *Proceedings of the 2011 iConference* (pp. 8–15). New York: ACM Press.

Moz. (n.d.). http://moz.com/

Muralidharan, S., Rasmussen, L., Patterson, D., & Shin, J.-H. (2011). Hope for Haiti: An analysis of Facebook and Twitter usage during the earthquake relief efforts. *Public Relations Review, 37*, 175–177.

National Alliance to End Homelessness. (2012). Changes in the HUD Definition of "Homeless." Retrieved from http://www.endhomelessness.org/content/article/detail/3006

National Coalition for the Homeless. (2006). McKinney-Vento Act. [NCH Fact Sheet #18]. Retrieved from http://www.nationalhomeless.org/publications/facts/McKinney.pdf

National Coalition for the Homeless. (2011). Faces of Homelessness Speakers' Bureau. Retrieved from http://www.nationalhomeless.org/faces/

National Law Center on Homelessness and Poverty. (2007). Homelessness counts. Retrieved from http://www.endhomelessness.org/content/article/detail/1440

Nordby, H. (2008). Values, cultural identity, and communication: A perspective from the philosophy of language. *Journal of Intercultural Communication, 17*. Retrieved from http://www.immi.se/intercultural/nr17/nordby.htm

Pak, A., & Paroubek, P. (2010). Twitter as a corpus for sentiment analysis and opinion mining. In *Proceedings of the 7th international conference on Language Resources and Evaluation* (pp. 1320–1326). Valletta, Malta: European Language Resources Association.

Phelan, J., Link, B. G., Moore, R. E., & Stueve, A. (1997). The stigma of Homelessness: The impact of the label "homeless" on attitudes towards poor persons. *Social Psychology Quarterly, 60*(4), 323–337.

Robinson, C. (2008). Chapter 4: 'Felt homelessness': The contribution of qualitative approaches to homelessness research. In M. Tonts, P. J. Maginn, & S. M. Thompson (Eds.), *Studies in Qualitative Methodology Volume 10 – Qualitative Housing Analysis: An International Perspective* (pp. 91–114). Bingley, UK: Emerald Group Publishing.

Rokeach, M. (1973). *The nature of human values*. New York, NY: The Free Press.

Saab, D. J. (2008). An ethnorelative framework for information system design. In *Proceedings of the 14th Americas Conference on Information Systems* (pp. 1–14). Atlanta, GA: Association for Information Systems.

Schau, H. J., & Gilly, M. C. (2003). We are what we post? Self-presentation in personal web space. *Journal of Consumer Research, 30*(3), 385–404.

Schwartz, S. H. (1992). Universals in the content and structure of values: Theory and empirical tests in 20 countries. In M. Zanna (Ed.), *Advances in experimental social psychology* (Volume 25, pp. 1–65). New York: Academic Press.

Schwartz, S. H. (1994). Are there universal aspects in the content and structure of values? *Journal of Social Issues, 50*, 19–45.

Schwartz, S. H. (2007). Value orientations: measurement, antecedents and consequences across nations. In R. Jowell, C. Roberts, C. Fitzgerald, & G. Eva (Eds.), *Measuring attitudes cross-nationally: Lessons from the European Social Survey* (pp. 169–203). London: Sage Publications Ltd.

Schwartz, S. H. (2009a). Basic values: How they motivate and inhibit prosocial behavior. In M. Mikulincer & P. Shaver (Eds.), *Prosocial motives, emotions, and behavior: The better angels of our nature* (pp. 221–241). Washington, DC: American Psychological Association Press.

Schwartz, S. H. (2009b). Culture matters: National value cultures, sources and consequences. In C.-Y. Chiu, Y. Y. Hong, S. Shavitt, & R. S. Wyer, Jr. (Eds.), *Understanding culture: Theory, research and application* (pp. 127–150). New York: Psychology Press.

Schwartz, S. H., & Bilsky, W. (1987). Toward a universal psychological structure of human values. *Journal of Personality and Social Psychology, 53*, 550–562.

Schwartz, S. H., & Bilsky, W. (1990). Toward a theory of the universal content and structure of values: Extensions and cross cultural replications. *Journal of Personality and Social Psychology, 58*, 878–891.

Schwartz, S. H., & Boehnke, K. (2004). Evaluating the structure of human values with confirmatory factor analysis. *Journal of Research in Personality, 38*, 230–255.

Sermons, M. W., & Witte, P. (2011). State of homelessness in America: A research report on homelessness. Washington, D.C.: National Alliance to End Homelessness. Retrieved from http://www.endhomelessness.org/content/article/detail/4361

Shamir, B., Arthur, M. B., & House, R. J. (1994). The rhetoric of charismatic leadership: A theoretical extension, a case study, and implications for research. *The Leadership Quarterly, 5*(1), 25–42.

Shilton, K. (2010). Technology development with an agenda: Interventions to emphasize values in design. *Proceedings of the 73rd Annual Meeting of the American Society for Information Science & Technology, 47*(1), 1–10.

Shilton, K., & Koepfler, J. A. (2013). Making space for values: Communication and values levers in a virtual team. In *Proceedings of the 6th International Conference on Communities & Technologies*. Retrieved from http://www.iisi.de/fileadmin/IISI/upload/C_T/2013/ct2013_proceedings_S3-4_Shilton_Koepfler.pdf

Shilton, K., Koepfler, J. A., & Fleischmann, K. R. (2013). Charting sociotechnical dimensions of values for design research. *The Information Society Journal, 29*(5), 259–271.

Shilton, K., Koepfler, J. A., & Fleischmann, K. R. (2014). How to see values in social computing: Methods for studying values dimensions. In *Proceedings of 17th ACM Conference on Computer Supported Cooperative Work and Social Computing*.

Siegrist, M., Cvetkovich, G., & Roth, C. (2000). Salient value similarity, social trust, and risk/benefit perception. *Risk Analysis, 20*(3), 353–362.

Sotirovic, M., & McLeod, J. M. (2010). Values, communication, behavior, and political participation. *Political Communication, 18*(3), 273–300.

Spates, J. L. (1983). The sociology of values. *Annual Review of Sociology, 9*, 27–49.

SPENT. (n.d.). http://playspent.org/

Spiggle, S. (1986). Measuring social values: A content analysis of Sunday comics and underground comix. *Journal of Consumer Research, 13*, 100–113.

Starbird, K., & Palen, L. (2012). (How) will the revolution be retweeted?: Information diffusion and the 2011 Egyptian uprising. In *Proceedings of the ACM 2012 conference on Computer Supported Cooperative Work* (pp.7–16). New York, NY: ACM Press.

Stemler, S. (2001). An overview of content analysis. *Practical Assessment, Research & Evaluation, 7*(17). Retrieved from http://PAREonline.net/getvn.asp?v=7&n=17

Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: the case of environmentalism. *Human Ecology Review, 6*(2), 81–97.

Stride, H. (2006). An investigation into the values dimensions of branding: implications for the charity sector. *International Journal of Nonprofit and Voluntary Sector Marketing, 11*(2), 115–124.

Stutzman, F. (2006). An evaluation of identity-sharing behavior in social network communities. *Journal of the International Digital Media and Arts Association and Interactive Media Studies, 3*(1), 10–18.

Taylor, R. S. (1991). Information use environments. In B. Dervin & M. J. Voigt (Eds.), *Progress in communication sciences* (Volume X, pp. 127–255). Norwood, NJ: ABLEX Publishing Corporation.

Templeton, T. C., & Fleischmann, K. R. (2011). The relationship between human values and attitudes towards the Park51 and nuclear power controversies. *Proceedings of the American Society for Information Science and Technology, 48*(1), 1–10.

Tweepsearch. (n.d.). http://tweepsearch.com/

Tweepz. (n.d.). *Tweepz: Look who's tweeting*. http://tweepz.com/.

Tufekci, Z. (2008). Grooming, gossip, Facebook and MySpace. *Information, Communication and Society, 11*, 544–564.

Tumasjan, A., Sprenger, T. O., Sandner, P. G., & Welpe, I. M. (2010). Predicting elections with Twitter: What 140 characters reveal about political sentiment. In *Proceedings of the International AAAI Conference on Weblogs and Social Media* (pp. 1–8). Palo Alto, CA: Association for the Advancement of Artificial Intelligence.

Twitter. (n.d.). Frequently Asked Questions site for Developers. https://dev.twitter.com/docs/faq

Urban Dictionary. (1999-2012). *Urban Dictionary*. Retrieved July 11, 2012, from http://www.urbandictionary.com/

Van Tassel, J. (1996). Yakety-yak, do talk back!: PEN, the nation's first publicly funded electronic network, makes a difference in Santa Monica. In Rob Kling (Ed.) *Computerization and Controversy: Values conflicts and social choices* (2nd ed., pp. 547–551)*.* San Diego, CA: Academic Press, Inc.

Waters, R. D., Burnett, E., Lamm, A., & Lucas, J. (2009). Engaging stakeholders through social networking: How nonprofit organizations are using Facebook. *Public Relations Review, 35*, 102–106.

Waters, R. D., & Jamal, J. Y. (2011). Tweet, tweet, tweet: A content analysis of nonprofit organizations' Twitter updates. *Public Relations Review, 37*, 321–324.

Westley, F., & Antadze, N. (2010). Making a difference: Strategies for scaling social innovation for greater impact. *The Innovation Journal: The Public Sector Innovation Journal, 15*(2), 1–19.

Wiener, N. (1950). *The human use of human beings: Cybernetics and society*. Boston, MA: Houghton Mifflin.

Woelfer, J. P., Duong, T. T., & Hendry, D. G. (2013). Coding manual for barriers and solutions to employment for the homeless. UW School Technical Report. Retrieved from http://dub.washington.edu/djangosite/media/papers/IS-TR-2013-01-10.pdf

Woelfer, J. P., & Hendry, D. G. (2010). Homeless young people's experiences with information systems: Life and work in a community technology center. In *Proceedings of the 28th International Conference on Human Factors in Computing Systems* (pp. 1291–1300). New York, NY: ACM Press.

Woelfer, J. P., & Hendry, D. G. (2011). Designing ubiquitous information systems for homeless young people: Precaution and a way forward. *Personal and Ubiquitous Computing, 15*, 565–573.

Woelfer, J. P., & Hendry, D. G. (2012). Homeless young people on social network sites. In *Proceedings of the 29th International Conference on Human Factors in Computing Systems* (pp. 2825–2834). New York, NY: ACM Press.

Woelfer, J. P., Iverson, A., Hendry, D. G., Friedman, B., & Gill, B. T. (2011). Improving the safety of homeless young people with mobile phones: Values, form, and function. In *Proceedings of the 29th International Conference on Human Factors in Computing Systems* (pp. 1707–1716). New York, NY: ACM Press.

Woelfer, J. P., Yeung, M. W.-M., Erdmann, C. G., & Hendry, D. G. (2008). Value considerations in an information ecology: Printed materials, services agencies, and homeless young people. *Proceedings of the American Society for Information Science and Technology, 45*(1), 1–9.

Wood, A. F., & Smith, M. J. (2001). *Online Communication: Linking Technology, Identity, & Culture*. Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Zhao, D., & Rosson, M. B. (2009). How and why people Twitter: The role that microblogging plays in informal communication at work. In *Proceedings of GROUP '09* (pp. 243–252). New York: ACM Press.