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ABSTRACT

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This study examines the impact of the Internet on rural community satisfaction, attachment and overall experience. With the geographic dispersion of social networks, the majority of the population has a greater need for long-distance social networking. The Internet has the potential to mitigate distance and connect social networks much faster than letter writing or face-to-face visits. While the Internet is available, to at least some extent, in rural communities in Utah, does it positively affect overall perceptions of community life? This study finds that this is not the case. There is a negative relationship between Internet use and community satisfaction and overall community experience. However, this study also finds that the type of Internet access available within the home has a positive effect on community attachment and overall community experience. The Internet is thus an important element of rural community life and should not be overlooked.

Keywords: community satisfaction, community attachment, community experience, communication use, Internet use, Internet access, rural

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INTRODUCTION

G. J. Lewis (1979) stated, "Considering that the majority of the world's population is still overwhelmingly rural it is surprising that more interest has [not] been shown by social scientists in towns and town dwellers (15)." Even in the United States, a sizeable proportion of the population (about 20%) lives in rural communities and towns. In spite of large numbers of rural residents, most research on rural communities relies on demographic comparisons using census data, small-scale surveys with limited generalizability, or large-scale surveys that treat "rural" as a monolithic entity to be contrasted against metropolitan and urban communities (Collins and Wellman 2010; Dutta-Bergman 2005).

While the rural population is sizable, it is widely dispersed across large geographic areas with varying economic conditions. The varied nature of rural areas, low population densities, and substantial differences in proximity to metropolitan areas makes it difficult to construct a widely applicable characterization of rural life. Any summary description of rural life becomes even more complex when economic and service availability differences are considered. For example, while the availability of Internet service and its use is almost ubiquitous in urban areas, access to Internet service is unpredictable in rural areas. High speed Internet service, like the telephone, has become a necessary utility in urban areas for networking, communication, business, and pleasure. Urban areas have had the utility of broadband Internet use for some time while many rural communities continue to have no service or limited Internet service. Further, there is unequal distribution of Internet among rural communities; some rural communities have access to the Internet while other rural communities do not (Economics and Statistics Administration 2010). Not only is there a "digital divide" between urban and rural communities,

there is also a significant digital divide between rural communities in different areas of the country.

While this digital divide between rural communities is certain to have differential effects on rural communities and rural life, the extent of those effects are largely unknown. Even though the provision of high-speed Internet service to all rural areas has become a presidential mandate (State of the Union Address 2011), few studies examine the impact of the Internet and other forms of communication on some of the most basic aspects of rural life (Boase 2010; Collins and Wellman 2010; Dutta-Bergman 2005; Malecki 2003).

Two of the most basic aspects of rural life in the study of rural community are community satisfaction and community attachment. Community satisfaction and community attachment are outcome measures of higher-order concepts, such as family connectedness, and create a better social experience as manifested through the concept of community experience. Even though the Internet has become a major form of communication, there is almost no research on how the Internet affects community satisfaction, community attachment, and overall community experience in rural communities. A notable exception is Dutta-Bergman's article on the effects of Internet use on community participation and community satisfaction. He found that communities with access to the Internet had higher levels of community participation, social capital, and community satisfaction (Dutta-Bergman, 2005). The purpose of this study is to look at the Internet's effect on people's perceptions of satisfaction, attachment, and overall experience with their community. What impact has Internet use in rural communities had on communication patterns among rural families and residents? Does the internet mitigate distance, space, place and help connect people to their social networks? Given that the Internet opens access to information and products and that Internet service varies considerably across rural

communities, how has this new communication medium differentially affected community satisfaction, attachment, and overall community experience in different types of rural areas?

BACKGROUND

This thesis will look at Internet use and its effects on rural community experience, satisfaction and attachment. While Internet use is a fairly straight forward concept to define and describe, many researchers have taken different approaches on how to conceptualize community satisfaction (Theodori 2001; Brown 2003a; Lewis 1979) and community attachment (Crowe 2010; Trentleman 2009; Theodori 2001; Brown 2003) and very few have looked at overall community experience (Brown, Xu, Barfield, and King 2000).

Community Experience

Community experience represents a higher order concept comprised of community attachment and community satisfaction (Brown et al., 2000). Although they have been treated as interchangeable ideas in the past (Kasarda and Janowitz, 1974; Landale and Guest, 1985), community attachment and community satisfaction should be viewed as separate and independent concepts that measure two different aspects of overall community experience (Brown et al., 2000; Theodori, 2001). Community experience seeks to "capture the holistic nature of everyday social interaction articulated in a locality, that which is primarily tied to the locality itself (community attachment) and that which is more global and tied to the larger culture and one's participation in it (community satisfaction)" (Brown et al., 2000).

Community Satisfaction

Community satisfaction, one of the two dimensions of community experience, has been studied for many decades in an effort to understand human commitments and dedication to place. Community satisfaction refers to people's "subjective evaluations of their own well-being as

measured by how well their local community meets their personal needs" (Brown 2003a:303). Further, community satisfaction is a multidimensional and emergent phenomenon; "emergent meaning that community satisfaction cannot be objectively measured across all communities, places and times. It emerges from the social interactions of people in a particular place and time" (Brown 2003a:305). Thus, satisfaction is a multidimensional experience tied to place, time, and interpersonal relationships.

One finding that tends to be fairly common in community satisfaction literature is that community satisfaction is relative (Brown 2003a; Brown 2003b; Lewis 1979). Measures of community satisfaction are continually changing because the relationship between community life and its effects on social life is constantly being redefined. Consequently, members of different communities will have their own way of assessing their needs, wants and overall community satisfaction. The measurement of community satisfaction is important because it is a window not only into social change but also into the ways that community residents are dealing locally with distance from goods and services, changing employment markets, social problems and access to life-sustaining healthcare.

Extensive research has studied indicators of satisfaction at both the individual and community levels of analysis. Looking at this research, at least five main indicators have been found to affect one's community satisfaction: perceived community satisfaction, access to goods and services, ties to one's community, personal characteristics, and demographics of one's community (Crowe 2010; Flaherty and Brown 2010; Matarrita-Cascante 2010; Auh and Cook 2008; Hur and Morrow-Jones 2008; Brown 2003a; Sirgy and Cornwall 2002; Theodori 2001; Filkins, Allen and Cordes 2000; Landale and Guest 1985; Wasserman 1982; Kassarda and Janowitz 1974).

Perceived Community Satisfaction

Residents usually rate their overall community satisfaction high and tend not to evaluate their communities negatively (Brown 2003a; Goudy 1977). Positive evaluations of community attributes have been found to be important in building satisfaction with one's community (Goudy 1977). Looking at perceived community satisfaction, Goudy (1977) found that "residents find most satisfying those communities in which they think they have strong primary group relationships" (380). Therefore, those with strong social networks, meaning they have a combination of strong and weak ties connecting them to other people (Granovetter 1973), tend to have higher rates of perceived community satisfaction. Landale and Guest (1985) found that a person's subjective satisfaction with their community, as well as their thoughts about moving, are strong predictors of mobility. Research on 'definition of the situation' as an indicator of community satisfaction has found that both the respondent's perception of the community as well as their subjective comparison of their community against an internalized standard needs to be examined to adequately measure overall community satisfaction (Deseran, Stokley and Steelman 1976). Thus, perceived community satisfaction is an important indicator of overall community satisfaction.

Access to Goods and Services

Research indicates that access to goods and services is an important indicator of community satisfaction. One's decision to move or stay within their community is presumably motivated by the desire to preserve, or in some cases advance, one's quality of life. Thus, it can be assumed that a person will make the decision to move when their needs are no longer being adequately met by their current situation, or in this case place of residence (Landale and Guest 1985). Residents whose needs are met have a propensity to have higher levels of community

satisfaction (Dutta-Bergman 2005). Such needs include access to goods and services, some of which are provided locally. Many rural communities, isolated in nature, are physically distant from many services such as healthcare, substantial employment opportunities, and access to consumer goods that are readily available in urban areas. Distance from these resources has been found to be a major determinant of community satisfaction; when resources are unattainable due to substantial distance, people characteristically report lower levels of community satisfaction (Filkins, Allen and Cordes 2000; Stinner and Van Loon 1992; Fried 1984).

Community satisfaction is, in part, determined by satisfaction with local government, local government services (such as water, garbage collection, and police protection), businesses and non-profit services, the availability of parks and libraries and the quality of public schools (Matarrita-Cascante 2010; Auh and Cook, 2009). Dutta-Bergman (2005) also found that communities with access to the Internet, and people within communities with access to the Internet, were more likely to be satisfied with their communities than those lacking access to the Internet. In general, satisfaction with the local services is a good indicator of overall community satisfaction.

Ties to One's Community

Ties to one's community and the presence of one's social network are key determinants in community satisfaction and one's decision to stay or move out of one's community (Crowe 2010; Auh and Cook 2009; Dawkins 2006; Filkins et al 2000). Goudy asserts that community satisfaction is related to the proportion of one's friends living within the community (Goudy 1977). He claims that "residents find most satisfying those communities in which they think they have strong primary group relationships" (1977:380). Similarly, Brower (2003) found that having friends and relatives physically close is a factor that positively affects community

satisfaction (Hur and Morrow-Jones 2008; Sirgy and Cornwell 2002; Freudenburg 1986). Filkines et al (2000) came to the same conclusion that there is a significant relationship between their indicators of social ties to the community (friends, relatives, and members of the community) and increased levels of community satisfaction. With social networks being an important component of community satisfaction, the theory of networking becomes central in understanding the effects of increased communication patterns, particularly with family and friends, on community satisfaction.

Personal Characteristics

Other factors found to influence the level of satisfaction with a community include age, education, gender, satisfaction with employment and duration of residence in the community (Hipp 2010; Theodori 2001; Richmond, Filson, Paine, Pfeifer, and Taylor 2000).

Age. Filkins, Allen, and Cordes' (2000) research indicates that age is positively associated with community satisfaction; as age increases, so does one's level of community satisfaction (Theodori 2001; Campbell et al. 1976; Filkins, Allen, and Cordes 2000; Goudy 1977; Marans and Rodgers 1975; Rojek, Clemente, and Summers 1975).

Education. Education is negatively associated with community satisfaction; as level of education increases, one's level of community satisfaction tends to decrease (Theodori 2001; Filkins, Allen, and Cordes 2000; Bradburn 1969; Campell et al. 1976; Filkins et al. 2000; Marans and Rodgers 1975; Miller and Crader 1979).

Gender. With regards to gender, females tend to have to have higher rates of community satisfaction than males (Theodori 2001; Filkins et al. 200; Schulze, Artis and Beegle 1963).

Employment Satisfaction. Job satisfaction, employment opportunities, job security, and income increase community satisfaction (Matarrita-Cascante 2010; Brown 2003). Brown (2003)

found that satisfaction with employment is an important economic variable influencing community satisfaction (Auh and Cook 2009; Filkins, Allen and Cordes 2000; Brown 2003).

Length of residence. Residential duration in a community has a significant, positive effect on community attachment and community satisfaction (Flaherty and Brown 2010; Auh and Cook 2009; Fleury-Bahi, Feloneau, and Marchand 2008; Kassarda and Janowitz 1974). Residents who live more than 10 years in a community are "more likely to be emotionally attached to the community and express more community satisfaction than short-term residents" (Auh and Cook 2009:379). Accordingly, residential stability has been found to increase community satisfaction (Hipp 2010).

Community Demographics

Lastly, ecological factors of the community are important indicators of community satisfaction. Dutta-Bergman (2005) stated, "Ecological factors, such as the area of dwelling, have been found to have profound effects on community satisfaction" (93). Barcus and Brunn (2010) describe one reason for having an attachment to a particular place is having an attachment to a certain 'landscape.' Previous research identifies physical appearance as the most important factor for increasing community satisfaction (Crowe 2010; Hur and Morrow-Jones 2008; Herting and Guest 1985).

Community Attachment

Debates regarding community attachment, the other aspect of community experience, date back to classical social theorists including Toennies, Marx, Weber, and Durkheim. These theorists were troubled with how modern society would ultimately affect community life (Crowe 2010). Wirth (1938), continuing the debate, asserted that "increasing population, density, and heterogeneity associated with urban life lead to fewer ties among individuals, which ultimately

leads to weaker emotional attachments to one's locality" (Crowe 2010:624). In the three decades to follow Goudy and Ryan's (1982) assertion that "little is known about the consequences of different levels of community attachment on either residents or community itself" (259), extensive research has investigated community satisfaction and attachment and their determinants (Flaherty and Brown 2010; Trentleman 2009; Theodori 2001; Brown 2003; Woldoff 2002; Milligan 1998).

According to Brown (2003), community attachment "refers to how sentimentally rooted a person is in a particular geographical community" (245). With the purpose of looking at the effects of the digital divide on rural communities, community attachment becomes just as important as community satisfaction in this study. And similar to community satisfaction, multiple factors have been found to be related to community attachment at both the individual and community levels of analysis.

A number of studies have looked at local social bonds and social interactions as measures of attachment (Crowe 2010; Cowell and Green 1994; Brown 1993; Sampson 1988; Guest and Lee 1983; Goudy 1977; Kasarda and Janowitz 1974). Sampson (1988) argued that high rates of mobility would limit opportunities for forming local social bonds and would negatively affect community attachment. With mobility being an important factor in attachment literature, duration of local residence cannot be overlooked. Findings on duration of residence show that length of residence is positively associated with community attachment; the longer a person resides in a community, the more likely they will be attachment to that community (Flaherty and Brown 2010; Theodori 2001; Theodori and Luloff 2000; Mesch and Manor 1998; Brown 1993; Kasarda and Jonowitz 1974). Regardless of the lack of consensus on other indicators of community attachment (ecological factors, urbanism versus rurality, etc) it "appears that all

indicators of attachment tap one's sense of rootedness to place" (Theodori and Luloff 2000:408). As Connerly and Marans (1985) noted, a sense of rootedness to a specific place can be considered synonymous with community attachment. One of the key components of community satisfaction, and arguably attachment, is networking (Dutta-Bergman 2005). Rural communities are people-rich areas and close knit communities where interaction is high and people interact with one another frequently (Keating and Phillips 2008).

Family Connectedness

One context for these high-frequency interactions is the family. The family is considered an institution and a "link along the generational heritage" (Bordone 2009:359). Contact with children is an important source of support within the family, but frequency of contact and type of contact have been found to depend on how physically close family members live to each other (Bordone 2009, Mulder and Cooke 2009). The introduction of the telephone and Internet, however, help mitigate this distance and has been found to increase connectivity within and between families (Barcuss and Brunn 2010; Mulder and Cooke 2009).

SOCIAL NETWORKING THEORY

This thesis will look at networking and its effects on family connectedness, community satisfaction, community attachment and overall community experience. If rural communities are really 'close knit' communities, in what ways do residents of rural communities interact with one another and maintain their social networks? Additionally, how do rural residents maintain social networks affected by distance?

Theory of Networking

The theory of networking describes the relationships and ties that connect people to one another and to larger groups and society (Granovetter 1973). Additionally, the process of

networking can be defined as the exchange of information and opportunities among individuals, groups or institutions (Kuo and Tsai 1986). Granovetter (1973), examined social ties and described the importance of connecting people through both individual and community-level connections and how this leads to the diffusion of information, ideas and opportunities (also referenced in Subrahmanyam and Greenfield 2008; Knack and Keefer 1997). Strong ties are characteristic of small, cohesive groups that share similar traits and have the same bonds, but are lacking any number of connections with people outside of their group. These are relationships associated with frequent contact and deep feelings of affection and obligation. Strong ties are similar to the bonding social capital described by Taylor (2004). Bonding social capital is typically described as the glue that holds networks and dense relationships together within communities; with bonding social capital, members are directly tied to other members within their network (Crowe 2010).

Conversely, weak ties are characteristic of large, loosely associated groups that are described as acquaintances rather than as friends. These relationships are characterized as being superficial with infrequent contact and easily broken bonds. Weak ties are synonymous with bridging social capital and are characterized by weak connections that only hold groups together superficially (Crowe 2010). Mesch and Manor (1998) found that weak ties, or locally- based relationships, are a minority of an individual's social ties. Regarding community attachment in urban communities, social relationships are spread throughout the city and beyond the confines of place. Thus, people are not necessarily attached to or tied to place (Mesch and Manor 1998). Physical place is important for people and community, but it is not necessarily *the* place that is important. Flaherty and Brown (2010) differentiate between place "(a socially constructed meaning imbued in a space)" and geographic community "(a set of interconnected social

relationships that occur in a space)" (506). They go on to assert that "a geographic community clearly creates place in a space in which it resides, but it is not the place, per se, nor is the place the community" (Flaherty and Brown 2010:506). Thus, rural residents may not be attached to one community, but rather they may spread their attachment over multiple places.

Within these places, a person's network is a compilation of both strong and weak ties, but strong social ties are the "relationships that generally buffer people from life's stresses and that lead to better social and psychological outcomes (Kraut et al 1998:1019)." Ryan, Agnitsch, Zhao, and Mullick (2005) find that strong ties (i.e. close personal adult friends) have a larger, positive effect on community attachment than weak ties (i.e. acquaintances) (Crowe 2010). In general, strong ties are supported by physical propinquity (Kraut et al 1998:1019). For people living in rural communities, however, these strong ties might exist at greater geographic distances.

The immediacy of modern communication patterns (Internet use and telephone use) have the potential to keep people attached to their networks more extensively than contacts that depend solely on face-to-face visits and letter writing (Dutta-Bergman 2005; Lye 1996). With the geographic dispersion of social networks, the majority of the population has a greater need for long-distance social networking. Research found that almost half of the elderly parents in the National Senior Citizen Survey (1968) had at least one child living approximately 150 miles away and one-third had a child living at least 500 miles away. In rural communities, the situation is very different in that family members tend to live in close proximity to one another (Wilson and Peterson 1988). Without the need to overcome physical distance to maintain a social network with at least some of their children, rural residents may not place as much reliance on the Internet to connect with their families. Conversely, many young people leave

rural communities for employment and the Internet might be beneficial in maintaining regular contact with these children. “Certainly, modern technology has made it extremely easy for people to communicate over long distances, which has assisted the modified extended family to maintain cohesion” (Dewit, Wister, and Burch 1988: 59). Dewit et al (1988) found that the physical distance that separates parents from children has a significant impact on mode of social contact. When parents and children are close, they more frequently engage in face to face contact and telephone conversations. As physical distance increases, face to face contact becomes less frequent and, instead, is replaced by “infrequent overnight visits, letter writing, and telephone conversations” (Dewit, Wister, and Burch 1988: 75). This research, although both interesting and applicable, was collected prior to wide-spread use of the Internet, especially in rural communities. The introduction of the Internet has changed how we conceptualize time and space (Scott 2009) and has transformed how some people maintain their social networks. Where the telephone requires both parties to be home (the caller and the one being called), the Internet allows messages to be sent and received at any given time, regardless if the receiver is home or not. Skype, similar to a telephone call but with an added face-to-face aspect, adds another possibility for maintaining networks affected by distance. With quicker and more efficient contact available via the Internet, social networks of rural community residents, as well as overall community satisfaction, attachment and experience, might not be negatively impacted by physical distance for those families affected and separated by physical distance. Therefore, the following relationships are expected to be found:

Hypothesis 1:

Rural residents that regularly use the Internet for networking (to contact family members, friends, close acquaintances and maintain their social networks) will be more satisfied with their community than those who do not use the Internet.

Hypothesis 2:

Individuals that use the Internet to connect to family, friends and close acquaintances and maintain their social networks will have higher levels of community attachment than those who do not use the Internet.

Hypothesis 3:

Similarly, rural residents that regularly use the Internet for networking (to contact family members, friends, close acquaintances and maintain their social networks) will have higher levels of overall community experience than those who do not use the Internet.

Internet Access

Distance from family aside, rural areas face different issues than their urban counterparts with regards to networking and maintaining strong social ties and social networks. There are two key factors that have the potential to influence access to technology, and consequently access to social networks, in rural communities. These factors are 1) individual versus community access issues and 2) personal effects of differential access to the Internet.

Individual vs. Community Access Issues

Access to technology, particularly Internet use, needs to be examined at both individual and community levels. As Dutta-Bergman (2005) surmised in his research, "The pivotal question is: do individuals who have access to new media differ from those individuals who do

not have access to new media in the context of…community satisfaction?" (91). Community satisfaction only measures one aspect of overall community experience, thus to Dutta-Bergman's research I also add the question of community attachment: do individuals who have access to the Internet differ in levels of community attachment from those lacking access? Some rural communities differ on types of Internet connection available to them because of physical location and this connection difference needs to be considered. Dutta-Bergman found that "access to the Internet is…critical" (2005:103). Individuals living in communities with access to the Internet are significantly more likely to be involved in the local community and its organizations as well as more satisfied with their community of residence (Dutta-Bergman 2005). He concludes that communities need to make the 'investment' and have access to the Internet (Dutta-Bergman 2005).

Along with community access issues, type of Internet connection also needs to be taken into account, especially with rural populations. Types of Internet connections include dial-up, DSL, broadband and satellite. Dial-up Internet uses existing telephone lines to connect to the Internet. Broadband access is high-speed Internet access with the ability to send and receive data at volumes and speeds far greater and faster than traditional dial-up Internet access over telephone lines. DSL service is broadband Internet access over existing copper telephone lines and satellite Internet access is access provided through the assistance of satellites (Kruger and Gilroy 2011). While the numbers of the broadband users continue to grow, research suggests that adoption rates of broadband connection in urban and high income areas are greater than they are in rural and low-income areas (Kruger and Gilroy 2011). The Pew Internet and American Life Project found that the "percentage of all U.S. adults with broadband at home is 70% for non-rural areas and 50% for rural areas" (Kruger and Gilroy 2011:5).

With access to the Internet and other technologies that potentially mitigate the effects of distance, social ties, and consequently social networks, can be more readily maintained. With greater access to these networking tools, residents can more easily stay connected with friends and family separated by distance (Dutta-Bergman 2005). The following relationship is expected to be found in the data:

Hypothesis 4:

> Individuals who live in rural communities with greater access to the Internet will be more satisfied with their communities than individuals who live in communities with more limited access to the Internet

Differential Access to the Internet

Internet use has been found, however, to vary by certain demographics including race, marital status, age, income and education (Economics and Statistics Administration 2010). Research has found that younger, white, better educated, and richer people are more likely to use the Internet as well as to maintain a higher level of social contact with their social networks (Zhao 2006; Hipp 2010; Theodori 2001). In rural communities, the average age of residents tends to be higher. The World Health Organization reported that the number of people aged 60 and over in the world's population will double from 11% in 2006 to 22% by 2050 (Sum et al. 2009:235). Within Utah, the percent of the population in the 20 to 34 age groups is greater within urban areas, while the percent of the population age 55 and over is greater within rural areas. Although race tends to be more homogonous in rural areas, both level of education and income are, on average, lower in rural areas than in urban areas throughout Utah (Rural Policy Research Institute 2007). From the networking perspective, higher levels of community satisfaction, attachment and overall experience are expected among those who have access to and who use the

Internet regularly to contact their family, friends and close acquaintances and maintain their social networks. With the expected Internet user demographics differing between rural and urban areas, social networks in rural areas may suffer more than their urban counterparts. Examining the Internet differential among residents of the same community, the following are expected:

Hypothesis 5:

> Rural residents who use the Internet for general use will be more satisfied with their communities than non-users of the Internet.

Hypothesis 6:

> Rural residents who use the Internet for general use will have higher levels of community attachment than non-users of the Internet.

Hypothesis 7:

> Rural residents who use the Internet for general use will have higher levels of overall community experience than non-users of the Internet.

In sum, not only is there a digital divide between persons residing in urban and rural communities, there is also a significant digital divide between rural communities depending on type of internet connection availability. The effect of this differential access to the Internet and other forms of networking on the strength of social ties that affect community satisfaction, attachment, and experience in rural areas is largely unknown. Research has examined the effects of strong and weak ties within social networks (Crowe 2010, Granovetter 1973), but we have not adequately examined the effects of different modes of communication and networking on community satisfaction and community attachment in rural communities (Collins and Wellman 2010). Dutta-Bergman's research focused on individual and community access to the Internet

and its effects on community participation and community satisfaction. This research will be furthered by examining individual access and type of community access to the Internet and how this connection facilitates building social ties, keeps residents connected with their social networks, and positively affects overall community attachment, satisfaction and experience.

DATA

Data for this study come from the 2008 Rural Utah Community study, a random sample of 1,282 residents from 24 rural communities from the most rural Utah counties (100% rural). These rural communities had populations of 1000 to 2500 people. Rural communities with less than 1000 population were not included in this study. The response rate to the multi-method survey design (telephone/mail) was 66 percent. Forty-seven percent of the respondents were male and the respondents varied in age from ages 17 to 98 (mean age = 60). Only 2 percent of the respondents were nonwhite, reflecting the largely white populations in these extremely rural Utah communities (urban areas in Utah are approximately 94% white). Education levels were not high. About 8 percent did not complete high school. Twenty-nine percent completed high school (compared to 31% in urban areas within Utah) and a high percentage completed one or two years of trade school or community college (39%). Only 24 percent completed a bachelor's degree or higher (compared to 27.3% of the Utah urban population). Seventy-nine percent of the population was currently married and 13 percent were widows/widowers. Most respondents were retired or homemakers with less than half stating that they were currently employed in a full- or part-time jobs. About 40 percent of the households had an annual income less than $40,000. Only 19 percent currently live on a farm or ranch but most owned those farms (84%) (Rural Policy Research Institute 2007).

METHODS

Outcome Variables

For this study, *community satisfaction* is measured using the following two questions measured on a seven point scale: (1) How satisfied are you with living in your community? (1=dissatisfied to 7=satisfied) and (2) Where would you rank your present community compared with your ideal community (1=the worst to 7=the best). These two questions were aggregated by taking the mean of both variables to form one measure, community satisfaction (1=dissatisfied to 7=satisfied).

Community attachment is measured using the following two questions measured on a seven point scale. (1) How well do you feel that you fit into your community? (1 = poorly to 7 = well) and (2) How much do you have in common with most of the people in your community? (1 = nothing to 7 = everything). These two questions will be aggregated by taking the mean of both variables to form one measure, community attachment (1=not attached 7=attached).

Community Experience is a composite of my aggregate variables *community satisfaction* and *community attachment.* The mean of both variables was taken, after multiple imputations were performed on both variables, and combined to form community experience (1=low level of overall community experience to 7=high level of overall community experience).

Explanatory Variables

Social Internet use is the average number of days per week (0 to 7) the respondent or someone in their household uses the computer for social activities such as sending emails to family and friends, blogging, and participating in chat groups. Social Internet use was made into a dichotomous variable (0=does not use the Internet for social activities and 1=uses the Internet

for social activities one or more times a week) to compare use versus non-use of the Internet for social activities.

Non-Social Internet use is the average number of days per week (0 to 7) the respondent or someone in their household uses the computer to bank, shop, search for information, check news, play games, watch movies or use other web services. Non-Social Internet use was made into a dichotomous variable (0=does not use the Internet for non-social activities and 1=uses the Internet for non-social activities one or more times a week) to compare use versus non-use of the Internet for non-social activities.

Some research has focused on the relationship between certain types of Internet connection and a person's ability to network (Collins and Wellman 2010; Malecki 2003) so *Internet Connection* is made up of three categories: 0=no Internet use, 1=uses dial-up Internet and 2=has/uses any other form of Internet connection (DSL, wireless, broadband, a satellite service, some other service). Respondents who did not have a working computer were coded as 0 (no Internet service).

Community Internet Connection is similar to *Internet Connection*, but describes the availability of the Internet at the community level. Information for this variable was acquired by contacting every community's city hall and asking what type(s) of Internet access is available within the community. Dummy variables were then created for each type of Internet access (dial-up, DSL, broadband, satellite, and wireless).

Control Variables

The following variables will be used as individual level controls: *Female* is a dichotomous variable (1 = female, 0 = male); *Age* is the respondents' age in years. *Married* is a dichotomous variable (1 = currently married, 0 = other); *White* (1=white 0=nonwhite); *Income* is

an ordinal variable measuring family (household) income. Income was assessed using a scale that ranged from 1 to 15 with each value originally representing a range (in $5,000 and $10,000 increments) of income. Each range was then set equal to the range's midpoint (for example $1 to $10,000=$5,000). *Satisfaction with Income* is how satisfied the respondent is with their income from all sources (1=dissatisfied and 7=satisfied). *Education* is a categorical variable with 5 categories (1=no high school degree, 2=high school degree or GED, 3=some college, 4=college degree, and 5=graduate degree). *Children* is the total number of biological, step and adopted children that belong to the householder (0=no living children 1=1 or more living children). *Children living in household* is the number of children currently living in the same household as the respondent; *Close Acquaintances* (sometimes referred to as density of acquaintanceship*)* *(*Freudenburg 1986) is the percentage of people each respondent knows on a first-name basis within their community (1=0 to 24 percent 2=25 to 49 percent 3=50 to 74 percent 4=75 to 100 percent); Employment status is represented by four dummy variables (*employed*, *unemployed*, *retired*, and *homemaker*); *Homeplace* is the proportion of one's life spent in the community (Flaherty and Brown 2010) calculated by dividing the duration of residence in the community (measured in years) by age.

The cubic version of age was added to the models because it was found that age was not represented by a straight line and, instead, was curvilinear. When a variable is nonlinear it breaks one of the assumptions of multiple linear regression models: linearity. Linearity assumes that "the mean value of Y for each specific combination of the X's is a linear function of the X's" (Hoffmann 2010:56). When this assumption is broken, we have specification error and quadratic versions of each variable that violates this assumption are added to the model. After scatter plots were run for every bivariate relationship, it was determined that there was a non-linear

relationship with age and community satisfaction, attachment and experience. The cubic version of age (age2) was added where needed. To test for non-additive associations present in the model (Hoffmann 2010), interaction terms, particularly with age (age*employment, age*income, etc), were created and added to each model but none were found to be significant.

Descriptive statistics (mean, standard deviation, minimum, maximum and percent of missing cases) for all study measures are presented in Table 1.

(TABLE 1 ABOUT HERE)

Missing Values

One-fourth of the variables had no missing data. The variables with the most missing cases were social Internet use (missing 35%), non-social Internet use (missing 35%), duration of residence (missing 17%) and income (missing 15%). All other variables in the model were missing 6% or fewer cases. There are several approaches to handling missing data such as dummy variable adjustment, mean substitution and listwise or pairwise deletion, but these methods can lead to biased results and estimates (Allison 2001) and may "reduce or exaggerate statistical power" (Acock 2005:1012). A common, and arguably more accurate, alternative to handling missing values is multiple imputation (Allison 2001). Multiple imputation creates several datasets using regression techniques based on the observed relationships among the variables in order to estimate the missing data (Acock 2005). The mean of the estimated values from the multiple datasets is used as the imputed value (Acock 2005). This process was used to account for missing data in this study. A total of 10 imputed data sets were created using MICE (Multiple Imputation by Chained Equations) in STATA Statistical Software Release 11 (Royston 2004).

ANALYSIS

The analysis proceeds in three stages, all of which use ordinary least squares regression. First, I model community satisfaction, community attachment and overall community experience and social Internet use. This set of analyses controls for individual demographic characteristics that have been found to affect Internet use (Economics and Statistics Administration 2010; Zhao 2006; Hipp 2010; Theodori 2001). It is hypothesized (see hypotheses 1-3) that rural residents that regularly use the Internet to connect to family, friends and close acquaintances and maintain their social networks will be more satisfied and attached to their communities and report higher levels of overall community experience than those who do not use the Internet. Second, I examine the relationship between community satisfaction and Internet access. Again, individual demographics were controlled for as well as city of residence and type of Internet connection available in each city. It is hypothesized (see hypothesis 4) that individuals living in rural communities with greater access to the Internet will report more overall community satisfaction than individuals living in communities with limited access to the Internet. Third, I assess the relationship between community satisfaction, community attachment, overall community experience and general Internet use. This set of analyses controls for individual demographics. It is hypothesized (see hypotheses 5-7) that rural residents who use the Internet for general use will be more satisfied and attached to their communities and report higher levels of overall community experience than non-users of the Internet. Tests for collinearity and multicollinearity (using the VIF post-estimation command) were conducted on all the variables in each of the seven models and no issues were found.

RESULTS

All results and statistics can be found in Tables 1 through 4. Internet access is a good indicator of both community attachment and experience whereas Internet use is not a good predictor of overall community satisfaction, attachment, and experience. Looking at results from hypotheses one, two and three (shown in Models 1, 2, and 3 respectively), there is support for the relationship between attachment and experience and type of access to the Internet but there is no statistical support for the relationship between satisfaction, attachment, experience and using the Internet for networking purposes. Consistent with prior research, Model 1 indicates that there is a positive and significant effect between community satisfaction and those who are younger, married, and those who are satisfied with their household income and who have more close acquaintances living in the community. Controlling for all the other variables in the model, every one unit increase in age is associated with a 0.21 unit decrease in community satisfaction. The quadratic (age^2) and cubic (age^3) versions of age were also significant in this model indicating that there is a nonlinear association between age and community satisfaction. The signs are negative, positive, and then negative corresponding to an initial negative association, subsequent positive association and finally a slight positive association. Thus, there is a cubic association between age and community satisfaction. About 14% of the variation in community satisfaction is accounted for by the variables in Model 1.

Model 2 shows that there is a positive effect between community attachment and duration type of Internet access as well as being female, younger, married, satisfied with one's household income with close acquaintances living in the community. Controlling for the effects of the other variables in the model, people who have any type of Internet access besides dial-up (DSL, broadband, wireless, satellite, etc), on average, report higher levels of community attachment

than those who have no Internet access within their home. The quadratic and cubic versions of age were also significant in this model indicating that there is a nonlinear association between age and community attachment. The signs are negative, positive, and negative corresponding to an initial negative association, subsequent positive association and finally a slight positive association. Thus, there is a cubic association between age and community attachment. About 24% of the variation in community attachment is explained by the variables in Model 2.

Similar to Model 2, Model 3 indicates that there remains a positive and significant effect with community experience and type of Internet access as well as among younger and married people who are satisfied with their total household income and who have close acquaintances living within the same community. Controlling for the effects of the other variables in the model, people who have any type of Internet access besides dial-up (DSL, broadband, wireless, satellite, etc), on average, report higher levels of community experience than those who have no Internet access within their home. The quadratic and cubic versions of age were also significant in this model indicating that there is a nonlinear association between age and community experience. The signs are negative, positive, and negative corresponding to an initial negative association, subsequent positive association and finally a slight positive association. Thus, there is a cubic association between age and community experience. About 21% of the variation in community experience is accounted for by the variables in Model 3.

(TABLE 2 ABOUT HERE)

Results from hypothesis 4 are shown in Model 4. Similar to Models 1 through 3, there is no statistical support for hypothesis four which assumed that individuals living in communities with higher levels of Internet access would be more satisfied with their communities than those living in communities with more limited Internet access. There is a positive effect between

community satisfaction and those who are younger and married and who are satisfied with their total household income with close acquaintances living with the community. Controlling for the effects of all the variables within the model, every one year increase in age is associated with a .18 unit decrease in community satisfaction. The quadratic and cubic versions of age were also significant in this model indicating that there is a nonlinear association between age and community experience. The signs are negative, positive, and negative corresponding to an initial negative association, subsequent positive association and finally a slight positive association. Thus, community satisfaction begins to increase among older residents after a certain point and then begins to decrease at a second point. About 14% of the variation in community satisfaction is accounted for by the variables in Model 4.

(TABLE 3 ABOUT HERE)

Contrary to prior research which assumes a positive relationship, I found a negative relationship between community satisfaction and community experience and non-social Internet use. Hypotheses 5, 6 and 7 predicted a positive effect between community satisfaction, attachment and overall experience but as seen in Models 5 and 7, there is actually a negative impact. Model 5 indicates that there is a significant and negative effect between non-social Internet use and community satisfaction and Model 7 shows a significant and negative effect between non-social Internet use and overall community experience. Thus, rural residents that use the Internet one or more days a week for non-social activities (to check the news, pay bills, play games, etc) have lower levels of community satisfaction and overall community experience. Statistically controlling for the other variables within the model, every one unit increase in Internet use is associated with a .21 unit decrease in community satisfaction. Also in Model 5, those who are younger, satisfied with their total household income, married and have more close

acquaintances living in the community have higher levels of community satisfaction. The quadratic and cubic versions of age were also significant in this model indicating that there is a nonlinear association between age and community satisfaction. The signs are negative, positive, and negative corresponding to an initial negative association, subsequent positive association and finally a slight positive association. It can be concluded that community satisfaction begins to increase among older residents after a certain point and then it begins to decrease at a different point. About 14% of the variation in community satisfaction is explained by the variables in Model 5.

As seen in Models 6, Internet connection was also found to be significant. Controlling for the effects of the other variables in the model, people who have any type of Internet access besides dial-up (DSL, broadband, wireless, satellite, etc), on average, report higher levels of community attachment than those who have no Internet access within their home. Those who are female, younger, satisfied with their total household income, have children living in the home, married and those that have more close acquaintances in living in the community report higher levels of community attachment. The quadratic and cubic versions of age were also significant in this model indicating that there is a nonlinear association between age and community satisfaction. The signs are negative, positive, and negative corresponding to an initial negative association, subsequent positive association and finally a slight positive association. Thus, similar to Model 5, it can be concluded that community satisfaction begins to increase among older residents after a certain point and then it begins to decrease at a different point. About 24% of the variation in community attachment is explained by the variables in Model 6.

In Model 7, I also find Internet connection is significant; controlling for the effects of the other variables in the model, people who have any type of Internet access besides dial-up (DSL,

broadband, wireless, satellite, etc), on average, report higher levels of community experience than those who have no Internet access within their home. I also find that those who are younger, satisfied with their total household income, married and have more close acquaintances living in the community also report higher levels of community experience. The quadratic and cubic versions of age were also significant in this model indicating that there is a nonlinear association between age and community satisfaction. The signs are negative, positive, and negative corresponding to an initial negative association, subsequent positive association and finally a slight positive association. Thus, similar to Models 5 and 6, it can be concluded that community satisfaction begins to increase among older residents after a certain point and then it begins to decrease at a different point. About 22% of the variation in community experience is explained by the variables in Model 7.

(TABLE 4 ABOUT HERE)

Overall, I found no support for my hypotheses which predicted a positive relationship between Internet use and community satisfaction, attachment and experience. I did find, however, a negative effect between non-social Internet use and community satisfaction and overall community experience. Further, Internet connection was found to be a significant indicator of community attachment and overall community experience.

DISCUSSION

Two of the most basic aspects of rural life in the study of rural community are community satisfaction and community attachment. Additionally, with community experience, these three concepts are central to rural research. Although the Internet is a wide-spread utility, there is almost no research on how the Internet affects community satisfaction, community attachment, and overall community experience in rural communities. Looking at previous

research (Dutta-Bergman 2005), I expected Internet access and Internet use (using the Internet for social networking purposes or for non-social use) to have a positive impact on people's perceptions of satisfaction, attachment, and overall experience with their community. I found that community attachment and community experience differ depending on the type of Internet use available within one's home. People that have a 'higher' form of Internet access (anything besides dial-up) were found to have higher levels of community attachment and experience than those with dial-up access or no access.

Contrary to previous research (Collins and Wellman 2010; Dutta-Bergman 2005), however, Internet use does not have a positive effect on these community outcomes. In two of the seven models there was a significant, negative effect between Internet use and two of the three outcome variables: community satisfaction and community experience. According to social networking theory and previous research, those that use the Internet to build and maintain their social networks have higher levels of community satisfaction and attachment (Dutta-Bergman 2005). There is potential for the Internet to keep people attached to their networks more extensively than letter writing, phone calls and face-to-face visits alone (Dutta-Bergman 2005; Lye 1996). Further, it can be argued that the geographic dispersion of rural social networks facilitates a need for long-distance social networking (Wilson and Peterson 1988) and the Internet is an efficient tool for filling that need. This is clearly not the case, however, with this rural sample. One explanation for this might be that having close acquaintances living within the same community as the respondent was found to be a significant indicator of community satisfaction, attachment and experience. If the majority, or at least a sizeable proportion, of the respondent's social network is living in the same community, the Internet might not play a significant role in maintaining one's social network. The hypotheses regarding social

networking theory assumed that there was distance to overcome in maintaining one's social network, but this might not be the case with the majority of this rural population.

Few studies have examined the impact of the Internet and other forms of communication on some of the most basic aspects of rural life (Boase 2010; Collins and Wellman 2010; Dutta-Bergman 2005; Malecki 2003) and this study adds one more element to this growing collection of research. Referring back to social networking theory and the discussion on the uniqueness of rural populations, there are several other possible reasons why my hypotheses were not supported by the data. First, we need to consider the theory of relative deprivation. The common adage, "The grass is always greener on the other side of the fence" seems applicable to Internet use in rural communities. Instead of the Internet helping rural residents feel less isolated and, consequently, more attached and satisfied, the Internet connects them to goods and services that they see as out of reach or missing from their life and community. James Davis (1959), in describing the theory of relative deprivation, explains, "If a person (ego) compares himself with a person (alter) when ego and alter differ in their deprivation, ego experiences a subjective feeling opposite in direction to the evaluation of alter's condition" (283). Or, stated differently, "When a deprived person compares himself with a non-deprived [person], the resulting state will be called "relative deprivation" (Davis 1959:283). The Internet might be the conduit, particularly for the younger populations, for realizing what their community lacks in comparison to other communities or places. This could then lead to decreased levels of community satisfaction, attachment and overall community experience.

Second, we might be looking at rural data from an urban perspective. Research has found that Internet use is almost omnipresent in urban areas (Moss and Townsend 2000) and consequently the Internet can be considered common, accessible, and a social necessity in urban

communities. Clearly this is not the case in all rural populations. With many friends, close acquaintances and family members living within the same community, rural populations might not have a need for the Internet, or at least not as extensively as their urban counterparts. Keating and Phillips (2008) describe rural communities as people-rich areas and close knit areas where interaction is high and people interact with one another frequently. The Internet might be an unneeded tool for maintaining contact and networks for people in this sample.

Another reason for lack of support for positive relationships between Internet use and community satisfaction, attachment and experience might be that people live in rural areas for a reason: they like the rural setting, with or without the Internet. Some people may like the isolated nature of their community and the Internet only detracts from that purposeful environment. With the Internet becoming an omnipresent tool around the world and throughout both urban and rural communities, the impact of this tool, particularly on networking, needs to be thoroughly examined.

Future research should explore the incongruency between these findings and those found by Dutta-Bergman (2005). Can the differences in findings be attributed to the differing nature of the rural populations or are the studies conceptually dissimilar? Every town in this rural Utah sample had at least dial-up Internet access available within their town boundaries whereas Dutta-Bergman's (2005) sample was compiled of towns with access as well as entire towns without Internet access. Interestingly, community attachment and community experience differ depending on the type of Internet use available within one's home. People that have a 'higher' form of Internet access (anything besides dial-up) were found to have higher levels of community attachment and experience. If this is the case, this information is essential to city planners wanting to increase levels of attachment and experience within their communities.

Further, more research needs to be conducted to try and replicate these findings in other states with different rural characteristics. If these findings hold true in other rural areas, this information can be key to not only city leaders and city planners, but to researchers examining the impact of the Internet and social networking in rural communities.

One other area of concern that should be reconsidered is the outcome variables used in this study. The outcome variables, community satisfaction and overall community experience should be reexamined. It has been argued that another indicator of community satisfaction, besides the two used in this study, is consumption (Brown 1993). Including a consumption aspect to the composite of community satisfaction might make it a better indicator of perceived community satisfaction. Lastly, community experience is purely a composite of community attachment and community satisfaction. Thus, all the data and findings are contributed to changes in the satisfaction and attachment variables. Further research should explore whether there are other indicators of overall community experience that could make community experience more accurate. Overall, the variables in my models only accounted for 14 to 24% of the variability in community satisfaction, attachment and experience which means there were some key variables left out of the models. Adding consumption variables as well as better operationalized networking variables might help explain more of the variation in community satisfaction, attachment and experience than Internet use and Internet access alone.

Although my hypotheses were not supported by the data, I still found that the Internet plays a key role in rural community life. Unlike Dutta-Bergman (2005) who focuses on individual and community access to the Internet, I shift the focus to social and non-social use of the Internet and the effects on community satisfaction, attachment and experience. With Internet access becoming ubiquitous even in rural communities, the focus of future research should be on

the effects of Internet use on different aspects of rural life. Further research is necessary to sufficiently measure the impact of Internet use on social networking and overall community experience throughout all rural communities.

REFERENCES

Acock, Alan C. 2005. “Working with Missing Values.” *Journal of Marriage and Family* 67:1012-1028.

Allison, Paul D. 2001. *Missing Data*. Thousand Oaks, CA: Sage Publications.

Auh, Seongyeon and Christine C. Cook. 2009. “Quality of Community Life among Rural Residents: An Integrated Model.” *Social Indicators Research* 94:377-389.

Barcus, Holly R. and Stanley D. Brunn. 2010. “Place Elasticity Exploring a New Conceptualization of Mobility and Place Attachment in Rural America.” *Swedish Society of Anthropology and Geography* 92(4):281-295.

Boase, Jeffrey. 2010. “The Consequences of Personal Networks for Internet Use in Rural Areas.” *American Behavioral Scientist* 53(9):1257-1267.

Bordone, Valeria. 2009. “Contact Proximity of Older People to their Adult Children: A Comparison between Italy and Sweden.” *Population, Space and Science* 15:359-380.

Brower, S. 2003. *Designing for Community*. College Park: University of Maryland Press.

Brown, Ralph B. 2003a. “Community Satisfaction.” Pp. 303-306, in *Encyclopedia of Community: From the Village to the Virtual World*. Edited by Christensen, Karen and David Levinson. Thousand Oaks, CA: Sage.

Brown, Ralph B. 2003b. “Community Attachment.” Pp. 245-246, in *Encyclopedia of Community: From the Village to the Virtual World*. Edited by Christensen, Karen and David Levinson. Thousand Oaks, CA: Sage

Brown, Ralph B., Xiaohe Xu, Melissa A. Barfield, and Brayden G. King. 2000. “Community Experience and the Conceptual Distinctness of Rural Community Attachment and Satisfaction.” *Research in Community Sociology* 10:427-446.

Brown, Ralph. 1993. “Rural Community Satisfaction and Attachment in Mass Consumer Society.” *Rural Sociology* 58(3): 387-403.

Campell, A., P. E. Converse, and W. L. Rodgers. 1976. *The Quality of American Life: Perceptions, Evaluations, and Satisfactions.* New York: Russell Sage.

Collins, Jessica and Barry Wellman. 2010. “Small Town in the Internet Society: Chapleau is No Longer an Island.” *American Behavioral Scientist* 53:1344.

Connerly, C. E. and R.W. Marans. 1985. “Comparing Two Global Measures of Perceived Neighborhood Quality.” *Social Indicators Research* 17:29-47.

Cowell, D. K and G. P. Green. 1994. “Community Attachment and Spending Location: The Importance of Place in Household Consumption.” *Social Science Quarterly* 75:637-655.

Crowe, Jessica. 2010. “Community Attachment and Satisfaction: The Role of a Community’s Social Network Structure.” *Journal of Community Psychology* 38(5): 622-644.

Davis, James A. 1959. “A Formal Interpretation of the Theory of Relative Deprivation.” *Sociometry*. 22(4): 280-296.

Deseran, Forrest A., Gary M. Stokley, Virginia P. Steelman. 1976. “Community Satisfaction as Definition of the Situation: Some Conceptual Issues.” *Rural Sociological Society Annual Meetings* New York, New York.

Dewit, David J., *Andrew* V. Wister, and Thomas K. Burch. 1988. “Physical Distance and Social Contact between Elders and their Adult Children.” *Research on Aging* 10(1):56-80.

Dutta-Bergman, Mohan. 2005. “Access to the Internet in the Context of Community Participation and Community Satisfaction.” *New Media & Society*. 7(1): 89-109.

Economics and Statistics Administration. 2010. “Exploring the Digital Nation: Home Broadband Internet Adoption in the United States.” National Telecommunication and Information Administration in the U.S. Department of Commerce.

Filkins, R., J. Allen, and S. Cordes. 1999. “Predicting Community Satisfaction Among Rural Residents: An Integrative Model.” *Center for Applied Rural Innovation*. 124-51.

Flaherty, Jeremy, and Ralph B. Brown. 2010. “A Multilevel Systematic Model of Community Attachment: Assessing the Relative Importance of the Community and Individual levels.” *The American Journal of Sociology* 116(2): 503-542.

Fleury-Bahi, Ghozlane, Marie-Line Felonneau, and Dorothee Marchand. 2008. “Processes of Place Identification and Residential Satisfaction.” *Environmental and Behavior* 43:344-362.

Freudenburg, William R. 1986. “The Density of Acquaintanceship: An Overlooked Variable in Community Research?” *American Journal of Sociology* 92(1):27-63.

Fried, M. 1984. “The Structure and Significance of Community Satisfaction.” *Population and Environment* 7(2): 61-86.

Goudy, Willis J., and Vernon D. Ryan. 1982. “Changing Communities” Pp. 256-263 in *Rural Society in the U.S.: Issues for the 1980s,* edited by D.A. Dillman and D.J. Hobbs. Boulder, CO: Westview.

Goudy, W.J. 1977. “Evaluations of Local Attributes and Community Satisfaction in Small Towns.” *Rural Sociology* 42:371-382.

Granovetter, Mark S. 1973. “The Strength of Weak Ties.” *American Journal of Sociology* 78:1360-1380.

Herting, J. and A. Guest. 1985. “Components of Satisfaction with Local Areas in the Metropolis.” *The Sociological Quarterly* 26:99-115.

Hipp, John. 2010. “What is the ‘Neighbourhood’ in Neighbourhood Satisfaction? Comparing the Effects of Structural Characteristics Measured at the Micro-neighbourhood and Tract Levels.” *Urban Studies* 47(12):2517-2536.

Hoffmann, John P. 2010. *Linear Regression Analysis: Applications and Assumptions*. United States of America.

Hur, Misun, and Hazel Morrow-Jones. 2008. “Factors That Influence Residents’ Satisfaction With Neighborhoods.” *Environment and Behavior* 40(5):619-635.

Kassarda, J.D. and M. Janowitz. 1974. “Community Attachment in Mass Society.” *American Sociological Review* 39:328-339.

Keating, N., and J. Phillips. (2008). A Critical Human Ecology Perspective on Rural Aging. In N. Keating (Ed.), *Rural Aging: A Good Place to Grow Old?* (pp. 1-10). Bristol: The Policy Press.

Knack, Stephen and Phillip Keefer. 1997. “Does Social Capital Have an Economic Payoff? A Cross-Country Investigation.” *The Quarterly Journal Of Economics* 112(4): 1251-1288.

Kraut, Robert, Michael Patterson, Vicki Lundmark, Sara Kiesler, Tridas Mikopadhay, and William Scherlis. 1998. “Internet Paradox: A Social Technology that Reduces Social Involvement and Psychological Well-Being?” *American Psychologist* 53(9): 1017-1031.

Kruger, Lennard G. and Angele A. Gilroy. 2011. ‘Broadband Internet Access and the Digital Divide: Federal Assistance Programs.” *Congressional Research Service*. RL30719. www.crs.gov

Kuo, Wen H. and Yung-Mei Tsai. 1986. “Social Networking, Hardiness and Immigrant’s Mental Health.” *Journal of Health and Social Behavior* 27(2):133-149.

Landale, Nancy S. and Avery M. Guest. 1985. “Constraints, Satisfaction and Residential Mobility: Speare’s Model Reconsidered.” *Demography* 22(2):199-222.

Lewis, G.J. 1979. *Rural Communities*. David & Charles Inc: London.

Lye, Diane N. 1996. “Adult Child-Parent Relationships.” *Annual Review of Sociology* 22:79-102.

Malecki, Edward J. 2003. “Digital development in rural areas: potentials and pitfalls.” *Journal of Rural Studies* 19:210-214.

Marans, R.W. and W. Rodgers. 1975. “Toward an Understanding of Community Satisfaction.” Pp. 299-352 in *Metropolitan America in Contemporary Perspective,* edited by A. Hawley and V.P. Rock. New York: Sage.

Matarrita-Cascante, Davide. 2010. “Changing Communities, Community Satisfaction, and Quality of Life: A View of Multiple Perceived Indicators.” *Social Indicators Research* 98:105-127.

Mesch, Gustavo S., and Orit Manor. 1998. “Social Ties, Environmental Perception, and Local Attachment.” *Environment and Behavior* 30:504-519.

Miller, M.K. and K.W. Crader. 1979. “Rural-Urban Differences in Two Dimensions of Community Satisfaction.” *Rural Sociology* 44:489-504.

Milligan, Melinda J. 1998. “Interactional Past and Potential: The Social Construction of Place Attachment.” *Symbolic Interaction* 21(1): 1-33.

Moss, Mitchell L. and Anthony M. Townsend. 2000. “The Internet Backbone and the American Metropolis.” *The Information Society*. 16:35-47.

Mulder, Clara H. and Thomas J. Cooke. 2009. “Guest Editorial: Family Ties and Residential Locations.” *Population, Space and Place*. 15:299-304.

Richmond, L., G.C. Filson, C. Paine, W.C. Pfeiffer, and J.R. Taylor. 2000. Non-Farm Rural Ontario Residents’ Perceived Quality of Life.” *Social Indicators Research* 50:159-186.

Royston, Patrick. 2004. “Multiple Imputation of Missing Values.” *Stata Journal* 4(3):227-41.

Rural Policy Research Insitute. 2007. “Demographic and Economic Profile: Utah.” Truman School of Public Affairs, University of Missouri-Columbia: http://www.rupri.org.

Ryan, Vernon, Kerry A. Agnitsch, Lijun Zhao, and Rehan Mullick. 2005. “Making Sense of Voluntary Participation: A Theoretical Synthesis.” *Rural Sociology* 70:287-313.

Sampson, Robert J. 1988. “Local Friendship Ties and Community Attachment in Mass Society: A Multilevel Systematic Model.” *American Sociological Review* 53:766-769.

Schultz, R., J. Artis and J.A. Beegle. 1963. “Measurement of Community Satisfaction and Decision to Migrate.” *Rural Sociology* 28:279-283.

Scott, James C. 2009. *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia*. New Haven CT: Yale University Press.

Sirgy, M. Joseph and Terri Cornwell. 2002. “How Neighborhood Features Affect Quality of Life.” *Social Indicators Research* 59(1):79-114.

State of the Union Address. 2011. www.whitehouse.gov/state-of-the-union-2011. Retrieved May 4, 2011.

Stinner, William F. and Mollie Van Loon. 1992. “Community Size Preference Status, Community Satisfaction and Migration Intentions.” *Population and Environment* 14(2):177-195.

Subrahmanyam, Kaveri and Patricia Greenfield. 2008. “Online Communication and Adolescent Relationships.” *The Future of Children* 18(10):119-146.

Sum, Shima; Markl Mathews, Mohsen Pourhasem, and Ian Hughes. 2009. “Rapid Communication: Internet Use as a Predictor of Sense of Community in Older People.” *Cyber Psychology and Behavior* 12(2):235-239.

Taylor, M. 2004. “Community Issues and Social Networks.” In C. Phiilpson, G. Allan, and D. Morgan (Eds.), Social Networks and Social Exclusion. Burlington, VT: Ashgate.

Theodori, Gene L. and A. E. Luloff. 2000. “Urbanization and Community Attachment in Rural Areas.” *Society and Natural Resources.*13:399-420.

Theodori, Gene L. 2001. “Examining the Effects of Community Satisfaction and Attachment on Individual Well-Being.” *Rural Sociology*. 66(4)618-628.

Trentelman, 2009. “Place Attachment and Community Attachment: A Primer Grounded in the Lived Experience of a Community Sociologist.” *Society and Natural Resources* 22(3):191-210.

Turner, H. A. (2007). “The Significance of Employment for Chronic Stress and Psychological Distress Among Rural Single Mothers.” *American Journal of Community Psychology* 40:181-193.

Wasserman, Ira M. 1982. “Size of Place in Relation to Community Attachment and Satisfaction with Community Services.” *Social Indicators Research* 11(4):421-436.

Wilson, Stephan M. and Gary W. Peterson. 1988. “Life Satisfaction among Young Adults from Rural Families.” *Family Relations* 37(1):84-116.

Woldoff, Rachael A. 2002. “The Effects of Local Stressors on Neighborhood Attachment.” *Social Forces* 81(1):87-116.

Zhao, Shanyang. 2006. “Do Internet Users Have More Social Ties? A Call for Differentiated Analysis of Internet Use.” *Journal of Computer-Mediated Communication* 11:844-862.

Table 1. Descriptive Statistics of All Variables, Rural Utah Community Study, 2008 (*N* = 1,291)

Variables	Mean	St. Dev.	Min.	Max.	% Missing
Satisfaction	5.70	1.24	1	7	1
Attachment	5.20	1.26	1	7	1
Experience	5.46	1.12	1	7	1
Internet Connection					
Dial-up	0.12	0.33	0	1	0
Other	0.40	0.49	0	1	0
Social Internet Use	1.64	1.40	0	7	35
Non-Social Internet Use	1.05	1.12	0	7	35
Female	0.534	0.50	0	1	2
Age	60.12	16.14	17	98	5
Married	0.79	0.41	0	1	2
White	0.96	0.19	0	1	2
Income	8.28	3.72	1	15	15
Satisfaction with Income	5.26	1.61	1	7	5
Education					
Grades 1-11	0.07	0.026	0	1	5
HS Graduate	0.29	0.45	0	1	5
Some College	0.41	0.49	0	1	5
Bachelor's Degree	0.013	0.34	0	1	5
Post-Bach Degree	0.10	0.30	0	1	5
Children	0.93	0.25	0	1	0
Children in House	1.13	1.74	0	11	0
Close Acquaintances	2.16	1.01	1	4	1
Employment Status					
Employed	0.46	0.50	0	1	6
Unemployed	0.04	0.19	0	1	6
Retired	0.40	0.49	0	1	6
Homemaker	0.10	0.30	0	1	6
Homeplace	0.43	0.27	0	0.99	6
Dial-up	0.13	0.34	0	1	0
DSL	0.91	0.29	0	1	0
Broadband	0.16	0.40	0	1	0
Satellite	0.04	0.19	0	1	0
Wireless	0.21	0.40	0	1	0

Table 2: Regression Coefficients, Social Internet Use on Community Satisfaction, Attachment, and Experience, Rural Utah Community Study, 2008 (*N* = 1,291)

Variables	Model 1: Satisfaction	Model 2: Attachment	Model 3: Experience
Social Internet Use	0.024	0.032	0.030
Control Variables			
Female	-0.017	0.151*	0.066
Age	-0.208**	-0.187**	-0.200***
Age^2	0.003**	0.003**	0.003**
Age^3	-0.000*	-0.000*	-0.000**
Married	0.217*	0.426***	0.326
White	-0.082	0.168	0.043***
Income	-0.015	-0.001	-0.007
Satisfaction with Income	0.173***	0.110***	0.141***
Close Acquaintances	0.205***	0.425***	0.317***
Children	-0.032	0.090	0.025
Children in household	0.039	0.010	0.026
Homeplace	-0.015	0.210*	0.098
Employment[a]			
Employed	0.086	0.007	0.99
Retired	0.123	0.117	0.176
Homemaker	0.206	0.216	0.263
Education			
Grade 1-11	0.071	-0.037	0.045
HS Graduate	0.142	0.175	0.185
Some College	0.124	0.241	0.211
Bachelor's Degree	0.127	0.135	0.157
Post-Bach Degree	-0.115	0.042	-0.011
Internet Connection[b]			
Dial-up	-0.022	0.129	0.058
Other	0.083	0.192*	0.138*
Constant	7.850	6.023	6.886
R^2	0.137	0.240	0.214

[a] Unemployed is the reference category

[b] No Internet is the reference category

* p <.05, ** p <.01, *** p <.001

Table 3: Regression Coefficients, Access to the Internet on Community Satisfaction, Rural Utah Community Study, 2008 (*N* = 1,291)

Variables	Model 4: Satisfaction
Control Variables	
Female	-0.023
Age	-0.178**
Age^2	0.003*
Age^3	-0.000*
Married	0.210*
White	-0.119
Income	-0.012
Satisfaction with Income	0.171***
Close Acquaintances	0.212***
Children in household	0.002
Homeplace	-0.017
Employment[a]	
Employed	0.096
Retired	0.142
Homemaker	0.248
Education	
Grade 1-11	0.067
HS Graduate	0.133
Some College	0.126
Bachelor's Degree	0.135
Post-Bach Degree	-0.110
Internet Connection[b]	
DSL	-0.220
Broadband	0.003
Satellite	-0.316
Wireless	-0.084
Constant	7.733
R^2	0.140

[a] Unemployed is the reference category
[b] No Internet is the reference category
* p <.05, ** p <.01, *** p <.001

Table 4: Regression Coefficients, General Internet Use on Community Satisfaction, Attachment, and Experience, Rural Utah Community Study, 2008 (*N* = 1,291)

Variables	Model 5: Satisfaction	Model 6: Attachment	Model 7: Experience
Non-Social Internet Use	-0.208*	-0.140	-0.175*
Control Variables			
Female	-0.034	0.144*	0.053
Age	-0.190**	-0.181**	-0.188**
Age^2	0.003**	0.003*	0.003**
Age^3	-0.000*	-0.000*	-0.000*
Married	0.201*	0.415***	0.313***
White	-0.103	0.153	0.024
Income	-0.017	-0.001	-0.009
Satisfaction with Income	0.170***	0.108***	0.138***
Close Acquaintances	0.210***	0.428***	0.321***
Children	0.015	0.100	0.054
Children in household	-0.006	-0.008**	-0.002
Homeplace	-0.066	0.181	0.058
Employment[a]			
Employed	0.061	-0.009	0.077
Retired	0.117	0.108	0.165
Homemaker	-0.203	0.207	0.256
Education			
Grade 1-11	0.071	-0.039	0.039
HS Graduate	0.125	0.166	0.168
Some College	0.117	0.241	0.204
Bachelor's Degree	0.129	0.137	0.156
Post-Bach Degree	-0.109	0.047	-0.009
Internet Connection[b]			
Dial-up	-0.059	0.100	0.025
Other	0.103	0.205**	0.077*
Constant	7.964	6.16	7.031
R^2	0.141	0.243	0.218

[a] Unemployed is the reference category
[b] No Internet is the reference category
* p <.05, ** p <.01, *** p <.001