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Abstract

Recent research suggests that Internet usage can positively influence social capital in rural communities by fostering avenues for voluntary participation and creating social networks. Most of this research has examined whether Internet use is associated with participation in local organizations and social networks but not the means by which residents use the technology to learn about local activities. To address this gap in the literature, the authors use a mixed-methods approach in an isolated rural region of the western United States to evaluate how residents use their connections to maintain local social networks and learn about local community events and organizations. The authors show that Internet usage can play an important role in building social capital in rural communities, thus extending the systemic model of rural voluntary participation and community attachment. Implications for rural community development are addressed.

Keywords

Internet, social capital, civic engagement, social networks

In response to recent studies regarding the noted decline in community, scholars have started to explore the relationship between new technologies, such as the Internet, and levels of community attachment and civic involvement. Despite fears that widespread Internet use will lead to a decrease in localized social capital, some of this research has shown that the Internet can be used to connect local residents to each other and

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organizations (Boase, Horrigan, Wellman, & Rainie, 2006; Hampton, 2001; Haythornthwaite & Wellman, 1998; Stern, 2008). Other studies have built on this finding by exploring the relationship between community participation and degree of Internet usage (e.g., Hampton, 2003; Pigg, 2005; Simpson, 2005; Stern & Dillman, 2006), with a considerable number showing that Internet usage is positively related to community participation. This work had led to the suggestion that Internet usage can positively influence social capital in rural communities by fostering new avenues for communication and voluntary participation (Simpson, 2005; Wellman, 2001). Thus, the argument follows that new communication technologies lead to increased contacts and the broadening of one's social network as well as a new avenue to find information about participating at the local level. This issue may be more important in rural places, where the people rely on horizontal, or local, ties to get things done at the local level (see Allen & Dillman, 1994).

If the Internet is contributing to local social capital in rural places, it is important to consider the role of new technologies in rural community theory. Some recent research has developed theoretical models seeking to explain civic engagement and the roles of social networks in rural communities (e.g., Ryan, Agnitsch, Zhao, & Mullick, 2005). The findings from this work are consistent with previous rural community research in showing that local connections and shared interests build a community field (e.g., Wilkinson, 1991), a concept related to bonding and bridging social capital (Crowe, 2007; Putnam, 2000; Woolcock & Narayan, 2000). However, rural community theory is all but silent on the role of information and communication technologies.

We argue here that there are three limitations to previous research and theory. First, although research has been attentive to one aspect of the relationship between Internet usage and community participation in focusing on *whether* increases in usage affect civic participation as a whole, it has failed in taking the additional step to evaluate *how* rural residents use their connections to get involved. Furthermore, little attention has been given to whether community members are more likely to use the connections they make through the Internet to learn about particular types of local organizations. As a result of these two related limitations, we also know little about whether increases in Internet usage differentially affect certain domains of civic engagement (religious, service-based, or business-based organizations). Second, studies that have evaluated the ways people use their connections for networking or local discussions have focused on urban or suburban communities while largely ignoring the rural context. Third, the existing theories of rural social capital development have failed to integrate information and communication technologies into their models.

The purpose of this article is to address this gap by evaluating how rural community members use their connections to get involved at the local level and to maintain local social networks. Based on the current gaps in our knowledge of this area, our research is guided by three theoretically driven questions: (a) Do people use their Internet connections more locally (bonding to the community) or nonlocally (bridging to other places)? (b) Do people use the Internet to learn about local happenings, and if so, are they more likely to use their connections to learn about particular types of local

groups and/or organizations? and (c) Do local community interests and sentiments affect the way people use their connections? Finally, we take into account the influence of other factors (including employment, marital status, gender, income, educational attainment, community tenure, and amount of Internet use) to examine whether these variables have independent effects on the relationship between Internet usage and local social capital formation. The implications for understanding rural communities and social capital in the information age will be addressed.

The qualitative and quantitative data for this research come from a 2005 random sample survey of 1,315 residents and semistructured interviews in a rural geographic region in the western United States. This region is located more than 250 miles from any major metropolitan area. The interview questions and self-administered questionnaire included a number of measures concerning respondents' use of information and communication technologies, civic engagement, core social networks, and bonding and bridging activities.

Theoretical Background

What Is Social Capital?

Using Robert Putnam's (1993) definition, social capital generally refers to "features of social organization, such as networks, norms, and trust that facilitate coordination and cooperation for mutual benefit . . . and enhance[s] the benefits of investment in physical and human" resources (p. 35). In terms of its use in rural community sociology, the concept can trace its roots to Tocqueville's (1969) *Democracy in America* as well as to typological approaches, such as Durkheim's *mechanical* and *organic* solidarities (Lukes, 1985) and Tönnies' (1897/1957) *Gemeinschaft und Gesellschaft* (most often translated as community and society). These conceptual models are variously used to illustrate concerns about an increasing focus on individual needs versus community well-being and interaction (Loomis, 1940). In this context, social capital refers to the capacity of community members to work collectively, generating social benefits that strengthen the community.

Because of the emphasis on social interaction and community involvement, researchers conceptualize social capital as a collective product of voluntary participation, civic engagement, and social networks, that is, community members who support each other and often work together for a common, community-oriented goal (C. B. Flora & Flora, 2008; Kaufman, 1959; Wilkinson, 1991). La Due Lake and Huckfeldt (1998) argue that social capital "cannot be defined on the basis of individual characteristics, or even on the basis of individual organizational memberships, because social capital is not possessed by individuals. Rather, it is produced through structured patterns of social interaction" (p. 581). Furthermore, C. B. Flora and Flora (2008) suggest that social capital cannot be generated by individuals on their own and is therefore greater than the sum of its parts.

Social capital can have a significant influence on community development. It can improve local political systems, economic health, and even reduce levels of crime

and illness in American communities (Putnam, 1993). As a result, there is noted concern regarding the decrease of voluntary participation and civic engagement in recent years. Membership in many different types of voluntary and civic organizations has declined by up to 50%, the time Americans spend in clubs or other socializing activities has dropped, and collective participation in political matters has also declined. Putnam (1995) argues that social capital can reduce community conflict, facilitate local business, and improve social and civic relations as well as other crucial facets of healthy communities. The decline in social capital, therefore, has consequences not only on a local level but between communities as well. Thus, understanding the positive elements of social capital, as well as its sources, barriers, and consequences, is essential to understanding community development and interaction. Putnam (1993) identified the importance of examining practical methods of using existing social capital as well as issues related to building social capital. However, social capital is an inherently complex concept, involving many different variables inside and outside place-based communities. Indeed, social capital's influence on, for example, the community action infrastructure (J. L. Flora, 1998; Stern & Dillman, 2006) has led to further delineation of the "types" and measures of social capital (Putnam, 2000).

Social Capital Formation: Civic Participation and Social Networks

Levels of civic participation and other change-oriented activities are used to assess social capital formation within a community. Wilson (2000) suggests that these actions can include "any activity in which time is freely given to benefit another person, group, or organization" (p. 215). Wilson and Musick (1997) classify volunteering into formal and informal categories by denoting affiliation with organizations, assessing the altruism associated with the motivation to volunteer, and identifying informal "ways of helping." Thus, the social capital formation rests on collective efforts. As Wilson (2000) explains,

Social resources play a crucial role when volunteering means activism to bring about social change or when collective goods, such as safer streets, are the goal. In this case, anything that promotes social solidarity among members of a community, such as frequent interaction, increases the rate of volunteering. (p. 223)

Because of this relationship, the most often used proxy for this form of social capital is the total number of hours or days spent in voluntary activities or civic participation. However, Rotolo and Wilson (2006) suggest that the types—or "domains"—of civic participation are very heterogeneous. For example, although civic participation can include helping out the local chapter of Habitat for Humanity or working at a local soup kitchen, it also covers

canvassing for votes, raising awareness of public health problems, responding to emergencies, coaching a children's sports team, serving as a guide at the state

museum, teaching Bible study to the children of a congregation, or serving as treasurer for the local branch of the Rotary. (Rotolo & Wilson, 2006, p. 310)

Thus, it is important to consider these domains when studying civic participation.

Social networks are also critical in the formation of social capital. Social networks provide different types of support and can open up previously blocked opportunity structures. Furthermore, shared interests within localized social networks provide a collective sense of solidarity and responsibility (Oliver, Marwell, & Teixeira, 1985). In recent years, research on social networks has produced some key theoretical insights, including “networked individualism,” which broadly refers to the shift in relationships where individuals maintain a number of personal networks, regardless of geographical distance or interrelation (Wellman, Quan-Haase, Witte, & Hampton, 2001), similar to Webber’s (1963) “community without propinquity.” One of the key elements of this perspective is that some of these networks, or individuals within these networks, may be related to or know one another, and some may not; thus, network density is not a prerequisite for social capital formation.

It is important to note that the nature of these social relationships and networks also has an impact on the nature of individual civic participation. In other words, a relationship has been identified between these measures of social capital (Wilson & Musick, 1997). For example, research has shown that people with more local ties are more likely to join local voluntary groups because they have more chances to become aware of these opportunities; conversely, people with more extralocal ties are more likely to join nonlocal groups (see Stern & Fullerton, 2009). Furthermore, the more social ties one has in a voluntary group, the longer one will remain a member of that group (McPherson, Popielarz, & Drobnic, 1992).

Bonding and Bridging Social Capital

To tease out the different types of social capital from a place-based perspective, we turn to researchers’ definitions of bridging and bonding social capital. In terms of social networks, we can conceptualize *bonding social capital* as small sets of local ties where each individual knows of each other. The strength of ties involved in bonding social capital varies. For example, strong ties can include one’s closest friends and relatives. In regard to friends in rural communities, strong ties often live in the local area, which increases the likelihood that they all know each other (Stern & Fullerton, 2009). Another type of bonding capital would be participation in local, place-based groups or events, such as the Rotary, Parent-Teacher Association (PTA), or a local parade, as well as taking a leadership or organizational role in these groups or events. Bonding social capital can also include ties between local individuals via stronger ties.

Alternatively, *bridging social capital* can refer to acquaintance relationships that extend beyond the local territory (or extralocal ties) and that are endogenous to an individual’s local social network or community group. The place-based perspective highlights the importance of Burt’s (1992, 2005) structural holes argument.

He suggests that when an individual or group serves as a link among two or more previously unrelated entities, they are “bridging” a structural hole. This bridge works to aid in the insourcing of new information, resources, and ideas to any social group (Woolcock & Narayan, 2000). For example, a community leader may have acquaintances that take similar leadership roles in their own communities. These community leaders can discuss the challenges they have faced and strategies they have employed. Thus, this “bridge” allows for the influx of new information that can benefit the local communities. Another example might be a person who is simultaneously part of local and national organizations and uses their experiences from one to inform the other. Research supports the assertion that rural communities rely on these bridges for development (J. L. Flora, 1998; Sharp & Flora, 1999).

Civic participation and social networks have the potential to support both bridging and bonding capital (Crowe, 2007; Leonard & Onyx, 2003). For example, when a member of a local community group also participates in extralocal organizations, he or she is involved in both bonding and bridging capital. A person may be the leader of the local Kiwanis but is also an active member of a national environmental protection organization. In these examples, individuals are giving their time to the local community (bonding) while simultaneously bridging to extralocal groups (e.g., Burt, 1992). We conceive of a similar situation under the theory of networked individualism, where one is part of both localized and extralocal social networks, thus bonding and bridging.

Social Capital's Relationship to Rural Community Theories

Several theoretical models provide insight into how measures of social capital operate relative to social networks and community participation at the local level. For instance, M. M. Bell's (1998) dialogue of solidarities suggests that community interests and sentiments are important factors to understanding how communities function. M. M. Bell suggested that community members act out of personal and shared interests at the local level. Furthermore, he argued that these interests alone were necessary but insufficient for understanding people's local involvement. To fully stay civically engaged, a community member must be able to observe others benefiting from these actions. Sentiments, or an individual's social embeddedness, would dictate the type and level of community participation.

Kasarda and Janowitz's (1974) model of community attachment expanded on W. Bell and Force's (1956) work by emphasizing community status and affiliation patterns. Like W. Bell and Force, they examined social roles and community type by expanding the model to include factors such as community population size and density, length of residence, and age. They operationalized the idea of community attachment by identifying residents' community attitudes and sentiments and the different types of their local social networks. Kasarda and Janowitz argued that rural residents tend to have smaller and less dispersed social networks than urbanites. Furthermore, they found that individuals' length of residence is positively and significantly associated with community attachment. The relationship is unique for

rural populations, as “low population density and small community size . . . tend to have a positive influence on sense of community” (Kasarda & Janowitz, 1974, p. 335). However, they determined that length of residence and number of local social ties (friends) are the most important variables influencing community sentiment, not community type or social role. Indeed, in their systemic model, Kasarda and Janowitz show that length of tenure has an impact on the number of social bonds within a community and that a strong local social network positively influences community attachment. In a test of this model, Sampson (1988; see also Goudy, 1990, for replication of systemic model) found that social ties and length of residence had high relevance, whereas social roles and urbanization had low relevance on community sentiment.

These findings indicate that models of community attachment and community participation may have unique implications for rural areas. Wilkinson (1991) developed a complementary interactional model of rural community development that conceptualized social interaction as a “community field,” or the “network of social interactions that contains and integrates various community interests in a local society” (p. 87). The community field explains rural community development as a result of individual participation in activities focused on community change. Social networks play an integral role in community development efforts in that the sum of the purposive, positive efforts is greater than the individual input into a change-oriented activity, such as civic engagement. To describe the community field, Wilkinson examined variables such as past activities and accomplishments in a community. He concluded that rural communities were more likely to be based on supportive local affiliations and were therefore more likely to support community field. Sharp (2001) developed this idea further, suggesting that a more precise measurement of the community field could be obtained by direct analysis of current community networks and their capacity for change-oriented action. In particular, community networks could be evaluated by their ability to garner support, obtain resources, and mobilize community members for action. Sharp further argued that individual perceptions of the community field were related to the actual characteristics of social networks and structures.

Ryan et al. (2005) synthesized these models of community attachment as a framework to examine voluntary participation in rural populations. They used five factors to predict participatory, voluntary activity in rural communities. They noted the importance of socioeconomic status and tenure in a community in determining community attachment and found that both have significant ability to explain levels of community attachment but mostly through their relationship with local social ties. This importance of local social ties for predicting levels of attachment shows considerable consistency with the Kasarda and Janowitz (1974) systemic model.

One of the key features of the Ryan et al. (2005) voluntary participation model is that in addition to incorporating strong and weak local social ties and community participation, it includes M. M. Bell’s (1998) forms of community solidarity, interests, and sentiments, using them as a combined influence rather than as dichotomous factors. They found that involvement in local groups reflected interest-based solidarities,

whereas strong social ties have a greater influence on community attachment. Using this model, Ryan et al. present the possibility that the relationship between community attachment and civic participation can be conceptualized as a form of social capital for rural communities. In sum, social networks and civic participation are important to community solidarities, and these relationships are, to varying degrees, reciprocal (see also Granovetter, 1973; Katz & Rice, 2002; Wellman, 2001).

The Internet and Social Capital

A defining feature of the "Internet society" or information age is that everyday tasks and relationships can easily extend far beyond the spatial confines of a geographically bounded space (Allen & Dillman, 1994; Wellman, 1999). However, to date, rural community theory has been largely devoid of models that incorporate these new technologies. News and interest Web sites, e-mail, and chat rooms have all facilitated the creation of groups that are defined by personal commonalities, independent of locality. Many researchers have explored these new "community-multiplying" (Quan-Haase & Wellman, 2004) factors to assess whether the Internet is having an impact on social capital. Wellman et al. (2001) found that Internet use provided opportunities for increased communication and contact with friends, family, and acquaintances. In addition, users engage in social activities via the Internet as well as individualized activities. The Internet supports the development of extralocal communication and interaction (Stern & Dillman, 2006) and thus creates more opportunities to develop social capital by supporting social networks and by providing connections between individuals, groups, and organizations (Boase et al., 2006; Pigg & Crank, 2004; Stern & Dillman, 2006). For example, if a local organization, such as a PTA, is experiencing a difficult issue, listservs and other online social resources may provide information from groups that experienced similar obstacles. Internet use can also facilitate the development of online community through nonlocalized online groups that are defined by interest (C. B. Flora & Flora, 1995) and identity (Norris, 2002) and has the potential to bring more people together on the basis of like interests or experiences rather than through overcoming differences (Norris, 2002). However, the relationship between the Internet and social capital is highly dependent on context, such as the nature of the local political economy, which is changing rapidly as new Internet technologies and services are developing (Shah, Kwak, & Holbert, 2001).

Discourse on the impact of Internet use and its effect on rural geographic communities has made clear a concern that an increased involvement in online interest groups will eventually work to detract from local social capital. Despite early apprehension or "dystopic" views about these effects, research has failed to support these concerns. For example, Stern and Dillman (2006) found that "Internet users are more likely than others to be involved in the community, whether it is attending local events, being a member of an organization, or taking a leadership role in local undertakings" (p. 420). These positive effects may be a result of the complementary role that the Internet can play with telephone or face-to-face encounters. In this context, the Internet can serve

to increase communication regarding local events, increase recruiting efforts, and make community event organization easier (Shah et al., 2001). When Internet use is considered as a complementary source of information or mode of communication, one recognizes that there is a false dichotomy in online versus offline activities. Rather, these types of pursuits help facilitate "community networks," or groups of people who "share both virtual space and ongoing geographic space" (Katz & Rice, 2002, p. 119). Community networks connect nearby ties through e-mail, event postings, and other modes of communication, resulting in the development of "network capital" (Boase et al., 2006). If online and offline activities are complementary, increased levels of involvement in one's place-based community increase the chances that they will interact with others online (Matei & Ball-Rokeach, 2001). In addition, ties that are formed online are likely to continue in a local, offline context, offering further evidence that social relationships can transcend the online-offline context (Goodsell & Williamson, 2008; Hampton & Wellman, 2003; Wellman et al., 2001).

The concept of the Internet as a facilitator of local social capital development can be illustrated using the bonding and bridging social capital in the place-based perspective. Bridging and bonding are particularly relevant in the discussion regarding social capital and the Internet, as they illustrate the different functions online communities can serve in building local social capital. Norris (2002) suggests, "Online contact does bring together like-minded souls who share particular beliefs, hobbies, or interests, probably due to the hyperpluralism and ideological diversity widely evident on the Internet as well as widening social diversity" (p. 37). In this way, the Internet can facilitate the development of local groups and community that would not have otherwise had a chance to develop.

The bonding and bridging abilities of the Internet also provide unique ways to build new relationships by reducing certain barriers to community involvement. Internet-based groups and networks that are constructed around similar interests, backgrounds, or lifestyles can bypass social or cultural differences and focus solely on seeking out like-minded group members (McPherson et al., 1992; Norris, 2002). The Internet can provide an initial sense of anonymity and lack of social commitment when individuals first seek out group information; interested parties can go to a Web site, blog, or news posting to find information without having to commit to introducing themselves to a group or becoming more involved in the organization than they desire. Internet users such as individuals who are sick or have disabilities, caretakers, or people living too far away to attend meetings can use the Internet to overcome the barriers to participation in community activities. Finally, marginalized populations that are in many ways isolated from community activity feel more at ease participating in social organizations and activities through the relative safety of the Internet (McKenna & Bargh, 1998). Sproull and Kiesler (2004) estimate that between 10 million and 15 million people regularly participate in volunteer organizations through the Internet.

Considering that research shows that simply using the Internet does not detract from local interests and has the potential to build social capital by providing a supplemental medium for different community groups, the theoretical models discussed

earlier provide the framework for examining the relationship between participation in rural community groups, social networks, and use of the Internet. The Internet not only provides a medium for voluntary participation but also works to increase individual levels of participation in community groups (Wellman et al., 2001) and local organizations (Stern & Dillman, 2006). Hampton and Wellman's (2003) "Netville" study found that Internet users were more likely to have more social ties and higher levels of social capital and social involvement. Katz and Rice (2002) illustrate the relationship between Internet use and volunteering:

Those who see the Internet as good point to the ease with which the Internet can link those interested in certain volunteer activities with the organizations that need them. This cost-efficient coupling will stimulate more people to volunteer since their interests will be more fulfilled. Likewise, since it will be easier to get involved, more will do so and will mobilize resources and solve problems. (p. 11)

In this way, the Internet can build social capital through volunteer and community participation by supplementing real-life community gatherings (Sproull & Kiesler, 2005) and addressing spatial barriers to participation that are specific to rural areas (Wilkinson, 1991).

Previous research shows that different demographic groups have varying levels of community participation and use the Internet in different ways and to different degrees. To adequately explore the role of the Internet in rural areas, it is important to examine not only the community participators and nonparticipators but also the different types of participators. Differences in organizational, group, and social structure have effects on the ability to build different types of social capital (Gould, 1993; Robison & Flora, 2003), so it is logical to assume that different groups would use social capital-building tools differently as well. Portney and Berry (1997) found that members of different types of community organizations had differing levels of sense of community. People in groups where there were shared interests and sentiments, such as members in neighborhood associations, had a greater sense of community than members of other types of groups. McKenna and Bargh (1998) found differences in levels of group identity between participants in online newsgroups for marginalized individuals and participants in mainstream newsgroups. In addition, Norris (2002) found that Internet groups reinforced both bonding and bridging social capital, with an emphasis on bonding. In short, understanding the role of social capital and community involvement entails examinations of specific group types to provide meaningful insight into this relationship (Quan-Haase & Wellman, 2004). Research on the digital divide between rural and other types of communities has demonstrated the unique issues and barriers that rural communities face in using the Internet. Rural residents have repeatedly been found to lag behind other types of users in access (Norris, 2001), technology (Whitacre & Mills, 2006), and proficiency (Stern, Adams, & Elsassser, 2007). Thus,

rural communities face unique issues in building social capital as well in as the technological diffusion and proficiency in using the Internet.

Questions That Remain To Be Answered and Contributions of This Research

Despite the research outlined previously, there are many questions left unanswered. Most importantly, we still do not know whether the Internet serves as a “builder” of social capital; what we know from survey data is that increased Internet usage is not associated with a decrease in community participation. Research has failed to address whether Internet users use their connections more locally (bonding to the community) or nonlocally (bridging to other places). In addressing this gap, we can evaluate whether this technology serves more for bonding or bridging pursuits. Second, we seek to identify whether people are more likely to use their Internet connections to learn about particular types of local groups and/or organizations than they are about others. For example, do people search out information on religious groups as frequently as fraternal or business organizations? Finally, we believe that examining whether local community interests and sentiments influence the way people use their Internet connections will help us in evaluating the place of information and communication technologies in rural community theory. We will assess these issues while also taking into account factors that have historically influenced our outcome measures, such as age, education, employment, income, community tenure, gender, marital status, and degree of Internet use.

Method

The quantitative and qualitative data presented in this article come from a study of two adjacent small cities in an isolated region of the western United States. We used a random sample mail survey conducted in 2005 to obtain the quantitative data. We sampled 2,000 households with telephone listings. Despite the population concentration of the two cities, the surrounding countryside is sparsely populated. The rural nature of the region suggests fewer unlisted numbers than exist in larger cities (Lavrakas, 1987). We used an 11-page questionnaire and achieved a response rate of more than 69% (1,315 completed surveys). With the survey, we applied principles from the tailored-design method in our survey implementation processes, including three mail contacts (Dillman, 2000). The first contact contained a personally signed cover letter explaining the survey’s goals and content, a self-addressed stamped return envelope, a \$2 token incentive, and the questionnaire. Additionally, the cover letter requested that a household member 18 years or older with the most recent birthday complete the questionnaire to ensure that we received a balance of men and women. Two weeks later, we sent a follow-up postcard to all respondents, thanked those who had responded, and encouraged those who had not to please do so. Finally, about 2 weeks after the postcard, we sent a replacement questionnaire and return envelope to individuals who

had not yet responded along with a personally signed letter encouraging them to fill out the questionnaire.

To provide additional insights into the quantitative survey data, we drew from a set of open-ended responses to obtain the qualitative data; specifically, our survey provided respondents with a space in which to add any additional comments regarding Internet use and indicators of social capital. We also used results from semistructured interviews conducted before, during, and after the survey's implementation, which were attained through a snowball sample of local residents and members of the local government. The qualitative sample, thus, included members of the local community who varied by age, education, local experience, and income, similar to the survey sample.

Analytic Strategy

We begin our analysis with the quantitative results from the survey. To analyze the data, we used a variety of statistical tests based on the question we were addressing and the level of measurement, including chi-squares, paired-samples *t* tests, Spearman's rho, negative binomial regression, and proportional-odds models. We then turn to the qualitative data. We used a line-by-line coding approach to examine the open-ended responses regarding community participation, social networks, and Internet use. We allowed the codes relevant to community participation, civic engagement, social networks, and use of the Internet to emerge from the data and used our findings to provide additional insight to the analysis of our quantitative results.

Using the survey data and previous research, we created measures that capture bonding and bridging uses of the Internet and solidarities of interest and sentiment. In addition, we included some descriptive tables and figures as part of the analysis when they provided background for the multivariate tests. We specify our operationalization in the following sections. The descriptive statistics for these measures can be found in Table 1.

Bonding and bridging uses of the Internet. We used two different sets of measures to capture bonding and bridging uses of the Internet. First, we included a matrix-style question, which included four different ways that residents could use their connections for local purposes (bonding) and four for nonlocal purposes (bridging) (see Figure 1). Respondents were given the opportunity to indicate the amount to which they used the Internet to engage in a given activity on a scale from 1 to 5, where 5 meant *daily* and 1 meant *not at all*. The online activities included sending or receiving e-mail from relatives who live in the local area versus outside the local area, sending or receiving e-mail from other people who live in the local area versus outside the local area, accessing Web sites where one can buy things from businesses in the local area versus Web sites where one can buy things from businesses outside the local area, and getting information about events happening in the local area versus events happening outside the local area.

A second way we evaluated bonding social capital was by examining the number of local groups about which residents reported using the Internet to receive or find information. To create this variable, we started with a list of the local groups, clubs,

Table 1. Descriptive Statistics for Dependent and Key Independent Variables

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	Range
Bonding and bridging uses of the Internet				
Send or receive e-mail from relatives who live in the local area	726	2.33	1.45	1 (<i>not at all</i>) to 5 (<i>daily</i>)
Send or receive e-mail from relatives who live outside the local area	728	3.09	1.30	1 (<i>not at all</i>) to 5 (<i>daily</i>)
Send or receive e-mail from other people who live in the local area	725	2.80	1.44	1 (<i>not at all</i>) to 5 (<i>daily</i>)
Send or receive e-mail from other people who live outside the local area	730	3.25	1.34	1 (<i>not at all</i>) to 5 (<i>daily</i>)
Access Web sites where you can buy things from businesses in the local area	731	1.41	0.73	1 (<i>not at all</i>) to 5 (<i>daily</i>)
Access Web sites where you can buy things from businesses outside the local area	731	2.32	1.04	1 (<i>not at all</i>) to 5 (<i>daily</i>)
Get information about events happening in the local area	730	1.64	0.78	1 (<i>not at all</i>) to 5 (<i>daily</i>)
Get information about events happening outside the local area	729	2.07	0.98	1 (<i>not at all</i>) to 5 (<i>daily</i>)
Number of local groups for which Internet was used to receive or find information	666	0.25	0.66	0 to 7
Solidarity of interests				
Number of actions taken aimed at local community change	959	3.04	1.47	0 to 6
Number of local leadership activities	902	1.01	1.89	0 to 12
Number of local activities participated in during the past year	843	4.47	2.61	0 to 13
Solidarity of sentiments				
Degree of community attachment	706	3.62	1.24	1 to 5
How much feel a part of the community	849	5.63	1.51	2 to 8
Number of affective ties local	713	3.04	1.71	0 to 6

and organizations for the communities with help of the local chambers of commerce and qualitative data. We then organized these groups by type into nine categories (religious, fraternal, service, arts and cultural, union and professional, civic, family oriented, hobby and sport, and other). Finally, we asked respondents through what media they learned about (or were contacted by) these local groups, clubs, and organizations (i.e., Internet, newspaper, radio, or word of mouth). The resulting variable used in this analysis is the cumulative number of groups, clubs, and organizations (0 to 7) for which the Internet played a role in their participation.

Solidarities of interests and sentiments. We used three variables that demonstrate an investment in the local community to measure solidarity of interests. The first measure

How your internet connection gets used ▼	Daily ▼	2-3 times a week ▼	Weekly ▼	Less often ▼	Not at all ▼
A. To send or receive email from <u>relatives who live in</u> the Lewiston/Clarkston area who do not live with you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. To send or receive email from <u>relatives who live outside</u> the Lewiston/Clarkston area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. To send or receive email from <u>other people who live in</u> the Lewiston/Clarkston area.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. To send or receive email from <u>other people who live outside</u> the Lewiston/Clarkston area.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. To access web sites where you can buy things from businesses <u>in</u> Lewiston and Clarkston.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. To access web sites where you can buy things from businesses <u>outside</u> Lewiston and Clarkston	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. To get information about events happening <u>in</u> the Lewiston/Clarkston area.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. To get information about events happening <u>outside</u> the Lewiston/Clarkston area.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 1. Bonding and bridging uses of the Internet

assesses the total number of actions taken by a respondent that were aimed at community change. Respondents were given a list of activities (attending public meetings to discuss community issues or problems, striking, petitioning, and donating money)

and were asked to check all that apply. The variable score ranged from 0 to 6. The second variable was the total number of local groups, clubs, organizations, or events for which the respondent served as a leader or organizer (0 to 12). Finally, our third solidarity-of-interest measure was the total number of local groups, clubs, organizations, or events in which the respondent participated in the past year (0 to 13).

Consistent with previous work, we used variables that capture a personal connection to the community to measure the solidarity of sentiments. First, we asked respondents how attached they were to the local area, on a scale from 1 to 5, where 5 meant *very attached* and 1 meant *not attached at all*. Second, because we were dealing with two sister communities, we used two questions to ask respondents how much they “felt a part” of each community on a scale from 1 to 4, where 4 meant *very much* and 1 meant *not at all*. We summed the responses to the two questions and provided a score to each respondent (2 to 8). Finally, we asked respondents to name their three closest relatives and three closest friends and whether they lived in the local community. From these questions, we created a variable for which every respondent earned a score based on the number of their closest ties who lived locally (0 to 6).

Results

Quantitative Results

We begin the quantitative results with univariate analysis that allows us to examine whether residents believe the Internet is having a beneficial effect on people in their community—an issue that was somewhat equivocal when based on a relatively small number of qualitative interviews. Approximately 70% of respondents believed that the Internet is having a mostly or very beneficial effect on people in the area (Table 2). Interestingly, whereas nonusers were significantly more negative in their perceptions (Spearman's $\rho = .20, p < .001$), only about 13% believed that Internet use was having a negative effect on people who live in the local area. Thus, we can say that the dystopic view of the Internet is very much in the minority, even among residents who do not use the Internet.

Do people use the Internet more locally or nonlocally? We now turn specifically to Internet usage and an examination of whether people use their connections more locally or nonlocally, that is, for bridging or bonding. We first examined residents' local e-mail usage. Table 3 shows the number of people's three closest relatives and friends with whom they e-mail most frequently by the proportion of these social ties who live in the local area. Starting with family members, it is clear that people's e-mail use increases as a primary form of communication with these kin in proportion with the number of ties they have living outside of the local area (Spearman's $\rho = -.38, p < .001$). For example, approximately 96% of respondents who had all of their relatives living locally reported that they did not use e-mail with any of these ties. The same is true of friends, albeit to a slightly lesser degree (Spearman's $\rho = -.25, p < .001$). As the number of close friends living nonlocally increases, so too does the propensity to use e-mail as a primary means of

Table 2. Do People Think the Internet Is Good for Society?

	What kind of an effect do you think the Internet is having on most people who live in the Lewiston/Clarkston area?		
	Total sample (<i>n</i> = 769)	Internet users (<i>n</i> = 661)	Non-Internet users (<i>n</i> = 99)
Very bad	0.9	0.5	4.0
Mostly bad	3.8	2.9	9.1
Neutral	25.4	23.3	39.4
Mostly beneficial	48.4	49.9	37.4
Very beneficial	21.6	23.4	10.1

Differences between users (1) and nonusers (0): $\chi^2 = 39.72, p < .001$; Spearman's rho = .198, $p < .001$.

Table 3. Do People Use E-Mail With Their Local or Extralocal Affective Ties?

Use E-mail	Number of core ties who live in the local area							
	Family				Friends			
	None (<i>n</i> = 299)	One (<i>n</i> = 176)	Two (<i>n</i> = 114)	All (<i>n</i> = 114)	None (<i>n</i> = 90)	One (<i>n</i> = 131)	Two (<i>n</i> = 194)	All (<i>n</i> = 285)
None	44.8	60.8	69.3	96.5	43.3	52.7	59.3	72.6
One	18.7	15.3	21.9	1.8	18.9	25.2	26.3	20.4
Two	13.7	19.3	7.0	0.0	22.2	13.7	10.3	4.6
All	22.7	4.5	1.8	1.8	15.6	8.4	4.1	2.5

Family, Spearman's rho = $-.379, p < .001$; friends, Spearman's rho = $-.249, p < .001$.

communication. Thus, e-mail serves as a bridging form of communication among people's closest ties, because it seems to be used more often to allow residents to maintain core ties outside the local area rather than communicate at the local level.

Using e-mail among one's closest relatives and friends is one of several ways that the Internet can be used for bridging and bonding. In Table 4, we quantitatively explore four ways people can use their connections at the local (bonding) and nonlocal (bridging) levels. We start by comparing frequency of e-mail use for family and friends in general—that is, not one's closest ties, but all ties—locally and nonlocally. Starting with family, it is clear that respondents use e-mail more frequently for communication outside the local area ($t = -14.29, p < .001$); however, there is a positive and significant correlation between using e-mail with local family members and those who live outside the local area (Spearman's rho = .47, $p < .001$). Similar to what we observed with people's closest ties, people do use e-mail with more frequency among their local friends as opposed to local family members; however, they still use e-mail more

Table 4. Do People Use the Internet More Locally or Nonlocally? Paired-Samples *T* Tests and Spearman Correlations for Bonding and Bridging Internet Use

Internet use	<i>n</i>	<i>M</i>	Mean difference	Paired-samples <i>t</i> test	Spearman's rho correlation
Send or receive e-mail from relatives who live in the local area	723	2.33	-0.76	-14.29***	0.47***
Send or receive e-mail from relatives who live outside the local area		3.09			
Send or receive e-mail from other people who live in the local area	723	2.79	-0.46	-9.35***	0.54***
Send or receive e-mail from other people who live outside the local area		3.25			
To access Web sites where you can buy things from businesses in the local area	727	1.41	-0.90	-24.99***	0.47***
To access Web sites where you can buy things from businesses outside the local area		2.31			
To get information about events happening in the local area	726	1.62	-0.45	-12.99***	0.45***
To get information about events happening outside the local area		2.07			

Tests are based on frequency scale ranging from 1 (*not at all*) to 5 (*daily*).

† $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

frequently with friends who live outside the local area ($t = -9.35, p < .001$). Nonetheless, the data show that if respondents use e-mail frequently with local ties, they also do so with those residing outside the local area, albeit to a lesser degree (Spearman's rho = .54, $p < .001$).

In addition to e-mail, residents can use the Internet in other bonding and bridging ways. There are two examples for which we collected data: (a) the frequency with which people accessed Web sites where they could buy things from local businesses versus businesses outside the local area, or economic bonding and bridging, and (b) the frequency with which people accessed Web sites where they could learn about local events and happenings versus those outside the local area, or social bonding and bridging (bottom half of Table 4). Of all of our bonding activities, people frequented Web sites where they could buy things from businesses in the local area with the least regularity. Indeed, respondents were significantly more likely to spend time accessing businesses outside the local area ($t = -24.99, p < .001$). However, the frequency with which people access local and nonlocal businesses is positively related (Spearman's rho = .47, $p < .001$). Finally, people more frequently used the Internet to look for nonlocal events and happenings than those at the local level ($t = -12.99, p < .001$);

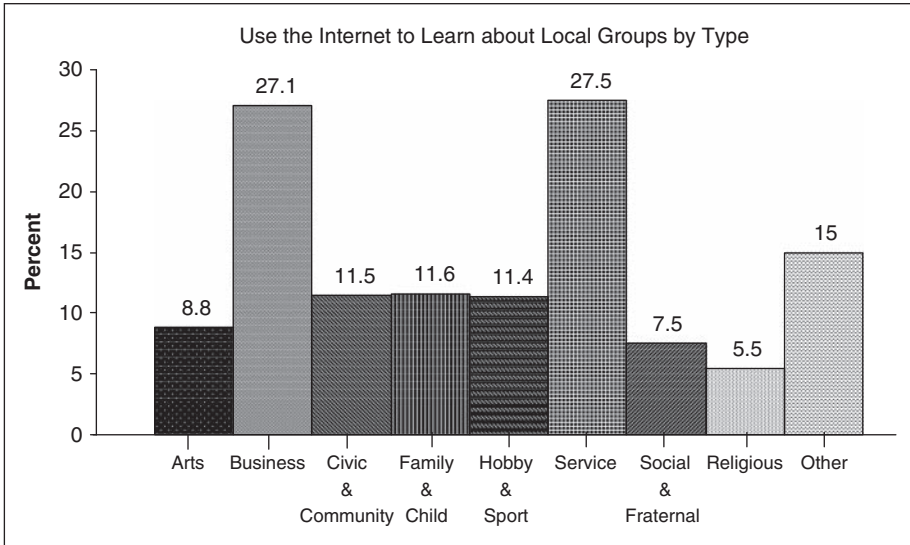


Figure 2. Do people use the Internet to learn about local groups?

however, there is a positive and significant relationship between the frequency of looking for local and nonlocal events and happenings.

What these data show quite clearly is that people more frequently use the Internet to engage in bridging activities. It is also clear that people use the Internet to bond, just at a lower level of frequency. Therefore, we now turn to a specific analysis of whether there are particular types of local groups or organizations with which the Internet is more readily used.

Are people more likely to use their Internet connections to learn about particular types of local groups and/or organizations than they are about others? Figure 2 shows our nine types of local groups and organizations and the percentage of participants in these groups who reported using the Internet to receive or find information. It is evident that the Internet played a role in the communication or information patterns of residents who were involved in business (e.g., unions or the Association of Local Realtors) and service groups (e.g., Rotary, Lions, or Kiwanis clubs). In both cases, about a quarter of members reported using the Internet in some capacity to participate in these groups. In civic and community, family and child, and hobby and sport groups, more than 10% of members used the Internet to receive or seek out information. Interestingly, members of religious groups were least likely to use the Internet to receive or find information, despite the fact that many of the religious institutions in the local area had Web sites and that emerging research shows that the Internet is playing a larger role in membership recruitment than in the past. We must note that in analyses not shown here, we found that very few residents used the Internet to find out about local events.

In Table 5, we show the results from negative binomial regression models for the effect Internet usage has on the number of days volunteered for all and domain-specific local groups while controlling for other factors, including education, employment, marital status, income, community tenure, and gender. In this table, we include the percentage change in volunteering for every unit increase in Internet usage for all of our different types of groups rather than total hours spent volunteering or the number of groups in which one was a member. Thus, the table represents a slight extension of previous studies that focused solely on generalized participation and Internet usage. Starting with participation in any local group, we see that there is a positive and significant relationship between Internet usage and total days volunteered. For every increase in Internet usage, there is a 49% increase in days volunteered. Turning to the domain-specific groups, we see in every case (with the exception of civic and community groups) that there is a positive and significant relationship between Internet usage and the number of days spent volunteering. However, a very small number of people reported volunteering in the civic and community groups, so the statistical findings must be taken with caution.

A shortcoming of previous work has been the exclusive focus on Internet usage and community participation. Taken together, our results from Figure 2 and Table 5 tell a story about whether and how the Internet is used for local participation. Both sets of findings show clearly that service and business groups and their members are effectively using information and communication technologies at the local level. The data also show that for all groups, the Internet has become part of the media multiplexity. If we want to assess the place of information and communication technologies in rural community theory, we believe that examining whether local community interests and sentiments influence the way people use their connections will provide us with this information.

Do local community interests and sentiments influence the way people use their connections to bond and bridge? In our final set of multivariate analyses, we examine the influence of community interests and sentiments on respondents' bonding and bridging Internet usages. We start with social bonding activities in Table 6 (i.e., frequency with which respondents used the Internet to e-mail local relatives and friends, learn about local happenings, learn about or communicate with local groups, and buy local goods). For each type of Internet usage, we examined the effects of community interests and sentiments independently, and then we included control variables in the third models. For e-mail with local relatives and friends, community interests and sentiments have some differential effects based on the type of relationship (i.e., relative or friend). In terms of interests, although participating in local activities (groups and events) is positively and significantly related to e-mailing local relatives and friends even after controlling for the effects of personal characteristics ($\text{Exp}[\beta] = 1.25, p < .001$; $\text{Exp}[\beta] = 1.17, p < .001$, respectively), taking local leadership roles has no relationship to the frequency with which people e-mail local relatives. However, taking local leadership roles is positively and significantly related to e-mailing local friends ($\text{Exp}[\beta] = 0.98, ns$; $\text{Exp}[\beta] = 1.17, p < .001$, respectively). When we turn to

Table 5. Summary of Negative Binomial Regression Models for the Effect of 1-Unit Increase in Internet Usage on Number of Days Volunteered for All and Domain-Specific Local Groups While Controlling for Other Factors ($N = 666$ for all groups)

Group	Amount of Internet use → Total days volunteered		
	Beta	Percentage change	Log likelihood
All groups	0.40***	+49	-955.39
Arts	0.17	+19	-272.89
Business	0.45*	+57	-248.99
Civic and community ^a	-0.04	-4	-94.14
Family and child	0.40*	+49	-382.99
Hobby and sport	0.45**	+57	-391.46
Service	1.11***	+203	-149.35
Social and fraternal	0.35*	+42	-322.84
Religious	0.30*	+35.2	-618.83
Other	0.43*	+53.9	-249.61

Other factors in the models include education, employment, marital status, income, community tenure, and sex. Full models are available upon request.

^aNumber of cases was <100.

† $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

sentiments, after taking into account the effects of our control variables, the number of affective ties living locally is positively and significantly related to the frequency with which individuals used e-mail with local relatives and friends ($\text{Exp}[\beta] = 1.31$, $p < .001$; $\text{Exp}[\beta] = 1.18$, $p < .001$, respectively). The other two measures of sentiment show no relationship to e-mail use at the local level. What we can infer from these data is that e-mail is playing a role in the way active community members maintain local social networks, particularly when their closest ties live locally.

Residents' use of the Internet to learn about local events and to communicate with or learn about local groups is clearly related to community interests but not sentiments. Specifically, we see that both taking local leadership roles and participating in local activities are positively and significantly related to the frequency with which people use the Internet to learn about local events ($\text{Exp}[\beta] = 1.12$, $p < .05$; $\text{Exp}[\beta] = 1.13$, $p < .01$, respectively). In addition, the data show that these two bonding activities are positively and significantly related to the number of local groups in which residents used the Internet as a tool for communication or information ($\text{Exp}[\beta] = 1.15$, $p < .001$; $\text{Exp}[\beta] = 1.20$, $p < .001$, respectively). Our final measure of bonding Internet use is the frequency with which respondents used the Web to purchase items from local businesses. Interestingly, the only factor beyond the influence of controls related to this dependent variable is the number of affective ties living locally. This measure of community sentiment is positively and significantly related to the frequency with which respondents used the Web to purchase items from local businesses ($\text{Exp}[\beta] = 1.20$, $p < .001$).

Table 6. Do the Solidarities of Interest and Sentiment Influence Bonding Uses of the Internet?

Variable	E-mail with local relatives			E-mail with local friends			Use Internet to learn about local events			Number of local groups that people use Internet to communicate with or learn about (NBREG)						
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	
<i>Solidarity of interest</i>																
Actions taken	0.91†	—	0.85*	0.97	—	0.89	1.03	—	1.12	1.39***	—	1.30**	1.03	—	1.08	
Local leadership	1.01	—	0.98	1.16***	—	1.17**	1.08†	—	1.12*	1.17***	—	1.15***	1.03	—	0.10	
Local activities	1.20***	—	1.25***	1.15***	—	1.17***	1.13***	—	1.13**	1.21***	—	1.20***	1.11**	—	1.07	
<i>Solidarity of sentiment</i>																
Attachment	—	1.21**	1.04	—	1.14*	0.98	—	1.11	1.10	—	0.99	0.93	—	1.09	1.13	
Feel a part	—	0.98	0.96	—	0.90	0.95	—	0.96	0.95	—	0.97	1.01	—	1.02	1.01	
Affective ties local	—	1.23***	1.31***	—	1.02	1.18**	—	1.01	1.09	—	0.94	1.01	—	1.08	1.24**	
<i>Other factors</i>																
Employed full-time	—	—	1.04	—	—	1.25	—	—	1.15	—	—	1.39	—	—	1.17*	
Married	—	—	0.85	—	—	0.84	—	—	0.52**	—	—	0.84	—	—	0.55*	
Gender (female = 1)	—	—	1.34†	—	—	1.37†	—	—	0.89	—	—	0.63*	—	—	1.06	

(continued)

Table 6. (continued)

Variable	E-mail with local relatives						E-mail with local friends						Use Internet to learn about local events						Number of local groups that people use Internet to communicate with or learn about (NBREG)						Use the Internet to buy local goods					
	1		2		3		1		2		3		1		2		3		1		2		3							
	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)						
Income	—	—	—	—	—	0.75***	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.76**						
Education	—	—	—	—	—	0.99	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.06						
Tenure	—	—	—	—	—	0.99	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.83***						
Degree of Internet use	—	—	—	—	—	3.39***	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.33***						
<i>n</i>	626	552	390	625	552	389	630	630	555	391	802	706	446	631	557	392														
Pseudo R ²	.02	.02	.07	.03	.01	.10	.03	.03	.01	.08	.14	.01	.22	.01	.01	.08									.08					

Tests are based on frequency scale ranging from 1 (not at all) to 5 (daily).

†*p* ≤ .10. **p* ≤ .05. ***p* ≤ .01. ****p* ≤ .001.

We now turn to bridging Internet use (Table 7). The dependent variables here represent some of the ways that respondents could use the Internet to bridge to people and interests outside of the local community. Starting with the effects of community interests and sentiments on the frequency of e-mail communication outside the local area, we can see that participating in local activities (community interest) is positively and significantly related to the frequency with which people e-mailed extralocal relatives but not friends ($\text{Exp}[\beta] = 1.13, p < .01$; $\text{Exp}[\beta] = 1.06, ns$, respectively). Among relatives and friends, the number of affective ties living locally (community sentiment) is negatively related to the frequency with which residents used e-mail to communicate with people outside the local area. When we take these latter findings and compare them with the bonding e-mail use previously discussed, it becomes clear that the nature of preexisting social relations influences the use of e-mail—that is, people will use e-mail locally and nonlocally depending on where their closest social ties are located. It serves to bond and bridge depending on the particular situation, regardless of demographics.

The frequency with which people used the Internet to learn about extralocal events does not show much of a relationship to our community sentiment or interest variables. Although there is a positive and significant relationship between the frequency with which residents who used the Internet learn about local events and their participation in local activities ($\text{Exp}[\beta] = 1.12, p < .05$), no such relationship exists for leadership, actions aimed at community change, or any of our other community sentiment variables. Turning to the use of the Internet to buy goods from extralocal businesses, we find that this variable is positively related to actions aimed at community change (community interest) but is not related to any other of our measures for community interests or sentiments. Again, this may indicate only that active participants use the Internet more than do other community members.

Qualitative Results

We used our qualitative data to provide additional context for the quantitative results. Although the survey data allowed us to examine communitywide data with descriptive and inferential statistics, many of the survey questions used in these analyses were constructed using the data provided in the early stages of the qualitative study. Thus, there is a direct link between the qualitative and quantitative results. Coding of the qualitative data revealed several themes. The most prominent theme was respondents' barriers to community participation and social involvement. Respondents volunteered additional information as to why they felt that they could not or chose not to engage in activities that would build social capital. A secondary theme dealt with challenges in Internet access and use. To reflect the issues faced by rural residents, we focus the analysis here to describe general problems with the availability of information about community groups and events as well as barriers that dealt with the Internet and Internet use. We then turn to themes dealing with

Table 7. Do the Solidarities of Interest and Sentiment Influence Bridging Uses of the Internet?

Variable	E-mail with extra-local relatives			E-mail with extra-local friends			Use Internet to learn about extralocal events			Use Internet to participate in extralocal events (LOGIT)			Use the Internet to buy extralocal goods		
	1 Exp(β)	2 Exp(β)	3 Exp(β)	1 Exp(β)	2 Exp(β)	3 Exp(β)	1 Exp(β)	2 Exp(β)	3 Exp(β)	1 Exp(β)	2 Exp(β)	3 Exp(β)	1 Exp(β)	2 Exp(β)	3 Exp(β)
<i>Solidarity of interest</i>															
Actions taken	0.96	—	0.96	1.07	—	1.02	1.10†	—	1.11	1.27***	—	1.21†	1.11†	—	1.15†
Local leadership	1.05	—	1.00	1.05	—	1.05	0.95	—	0.95	1.11*	—	1.12†	0.96	—	1.01
Local activities	1.11***	—	1.13***	1.06†	—	1.06	1.18***	—	1.12*	1.04	—	1.03	1.09**	—	1.01
<i>Solidarity of sentiment</i>															
Attachment	—	1.08	1.03	—	1.04	0.94	—	1.03	0.98	—	1.22**	1.19†	—	0.98	0.92
Feel a part	—	1.03	1.10	—	0.99	1.05	—	0.96	1.11	—	1.07	0.96	—	0.88†	0.91
Affective ties local	—	0.78***	0.84**	—	0.77***	0.84**	—	0.92†	0.98	—	0.77***	0.74***	—	0.95	1.09
<i>Other factors</i>															
Employed full-time	—	—	0.71	—	—	1.05	—	—	1.71*	—	—	0.92	—	—	1.83**
Married	—	—	1.59*	—	—	1.97**	—	—	0.66†	—	—	0.89	—	—	0.68†
Gender (female = 1)	—	—	1.38†	—	—	1.03	—	—	0.97	—	—	0.59*	—	—	0.90
Income	—	—	0.90	—	—	1.07	—	—	0.95	—	—	1.22*	—	—	1.05

(continued)

Table 7. (continued)

Variable	E-mail with extra-local relatives			E-mail with extra-local friends			Use Internet to learn about extralocal events			Use Internet to participate in extralocal events (LOGIT)			Use the Internet to buy extralocal goods		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)	Exp(β)
Education	—	—	0.96	—	—	0.94	—	—	1.18**	—	—	1.07	—	—	1.14*
Tenure	—	—	0.93*	—	—	1.01	—	—	1.01	—	—	0.99	—	—	0.96
Degree of Internet use	—	—	5.98***	—	—	7.98***	—	—	2.85***	—	—	0.93	—	—	2.67***
<i>n</i>	629	554	391	631	555	391	628	553	389	798	698	445	633	555	392
Pseudo R ²	.01	.02	.10	.01	.02	.10	.02	.01	.07	.05	.04	.11	.01	.01	.06

Tests are based on frequency scale ranging from 1 (not at all) to 5 (daily).
[†]p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001.

how the Internet was useful for information on community happenings and social ties maintenance.

Barriers to participation and Internet use. Although our quantitative analysis focuses on why and how people use the Internet to build different types of social capital, the qualitative data also highlight why participants did *not* engage in their communities in these ways. One important barrier to community participation was that either respondents did not feel like they were properly informed of area events or groups or they simply were not interested in the events and groups that were available. One respondent wrote, "I feel the advertising is terrible for local events. I hear about events through word of mouth mostly. Keeping people informed is the key to staying connected." Other responses reflected similar sentiments, suggesting that advertising was poor or the information regarding the events was not sufficient:

We have found that people around here assume that everyone knows the location of various events and use landmarks too often rather than street locations to identify where events will take place—(unless you ssknow the landmarks you won't have a clue where things are happening). This makes it more difficult for new-comers to participate in local activities/events.

The qualitative data also provided insight into the reasons participants felt that they could not use the Internet for the aforementioned purposes. Shah et al. (2001) note the potential role of the Internet to serve as an informational conduit, thus facilitating social and civic engagement. However, many (26) respondents faced barriers to using the Internet for this or other purposes. After refining the coding for these types of responses, we identified three recurring themes within this category: lack of skills to use or navigate the Internet, inadequate informational resources on the Internet, and use of alternative media for information-seeking purposes. The data here illustrate some of the implications for Web site management, Internet use, and leveling the digital playing field for rural residents.

Some respondents indicated that either they did not understand how to use the Internet to seek out information regarding local events, groups, and clubs or they felt that lack of skills regarding Internet use was a barrier to others. For example, one respondent wrote, "Is there a local [Web site] to gather information on local events? We do not get the newspaper, so I am limited to word of mouth or radio spots." Another respondent wrote, "In our areas: – we have poor or less than ideal newspaper. – do not have good cell service. Internet information and skills are not shared well." Similarly, a respondent added, "Not everyone is on the Internet and not all businesses give their addresses or phone numbers along with their Internet sites. Which at times creates a problem for non-Internet users."

The data indicated feelings that the resources for local groups, events, and businesses in the area were inadequate. Specifically, many respondents suggested a centralized Web site for the area to serve as a hub of information on local social and

civic opportunities, as seen in this illustrative quote: "Set up a website and advertise information about Lewiston and Clarkston. Make it interesting and fun, so you want to visit, not just read site." Another respondent wrote,

I use the Internet daily and feel that a L-C Valley Homepage that lists all community events with links to more information would be great a calendar style listing as well as a category listing—Golf, Theater, etc. If it was done well and was customized to my liking and interests I would make it my homepage.

Many responses reflected thoughts that the current Internet information regarding the area was either outdated or non-user friendly:

It would be great if more local businesses would utilize websites to advertise about the business and upcoming events. Many of the local businesses who do have websites include only basic information on the site, such as address and phone number. Area businesses should take advantage of this technology.

Some respondents felt that using the Internet to seek information regarding community activities was not effective: "I find the Internet less helpful for local events because it's not updated frequently."

Finally, the most prominent barrier to using the Internet to seek out information about local groups and events was that using alternative media was easier, more accessible, or more effective, as seen in this illustrative quote: "We are a family of three and all have cell phones and use them to stay in touch a lot. Radio ads are one of the main ways we find out about local events and also word of mouth." Another respondent explained that he or she stays in touch with the local community through face-to-face interaction rather than information available on the Internet: "We stay connected by being out and about on a daily basis: neighborhood walks, shopping, dining out, we visit with those we meet." Another response succinctly explains, "The telephone is so easy and cheap." Many respondents said that they relied on radio announcements and word of mouth to learn about social events.

Internet use and social involvement. Although some respondents detailed barriers to Internet use, others provided more in-depth information regarding the ways in which they used the tool to learn about events, develop social ties, and engage in civic activities. These responses were coded into two categories. First, some respondents detailed how they used the Internet and e-mail for bonding social capital, wherein they develop or maintain strong ties with local friends and family. For example, one respondent wrote, "We have a good group of friends. Many of our activities (kayaking, biking, camping) are done as a large group. We spend a lot of our time together but organization of these activities usually occurs via email." Some responses cited e-mail as a primary source of communication between local friends and family. Other responses noted the use of e-mail as a way to find out about local events: "I receive emails from University of Idaho Communications

Office about plays/movies, etc.” However, none of these responses described use of Web sites to find out about information; most mentioned personal e-mails and list-servs as ways to communicate or obtain information from local ties, such as the following: “As president of a group, I use email to notify them of meetings and other information. As principal of a school, I use email attachments to send faculty bulletins.”

The second category encompassed responses that support the quantitative results regarding Internet use for bridging social capital by describing use of the Internet and e-mail for developing and maintaining extralocal ties. One respondent described how he or she uses e-mail to stay in touch with people far away: “We are winter visitors to Arizona. We communicate mostly by email and telephone and some postal service. We are gone four to five months of the year.” Other respondents detail how they use the Internet to develop and maintain distant ties with people with similar interests. “Internet has allowed me to make and keep connection with clubs and organizations all over the U.S. I can check club calendars, race dates, and race results anytime, via club web sites, where before we did not know of their existence (clubs).” Another respondent described his or her own interest-based Web sites: “Have two genealogy web sites, both paternal and maternal, with MyFamily.com, where family members from Australia to England stay connected.”

Conclusions and Discussion

Do Rural Residents Really Use the Internet to Build Social Capital?

The quantitative and qualitative results from this study indicate that indeed some rural community members are using the Internet to build social capital. However, mediating factors, such as pervasiveness of Internet use within communities and levels of proficiency, may play a role in whether one uses the Internet for this purpose. Thus, the relationship is complicated. We believe that the findings and implications of this article can be best understood as four sets of interrelated conclusions and considerations.

First, in the qualitative phase of this research, it became apparent that many residents know little about local community Web sites and that they feel it is difficult to find out information about local happenings. Nonetheless, we saw clearly that some residents are using the Web to learn about local events and groups (bonding) and that these are the same people who connect to interests outside the local area (bridging). For example, using e-mail to get in touch with friends and relatives at a distance is positively related to using e-mail to connect to people in the local community. There is a similar relationship between buying products online locally and nonlocally and searching out local and nonlocal events. Thus, people use the Internet to both bond and bridge, findings consistent with the theoretical perspective inherent in theories of globalization (Wellman, 2001) and networked individualism (Hampton & Wellman,

2003), which suggest that we live in a world where we can interact and form relationships locally and nonlocally.

Second, we find there is support for the “Internet-as-facilitator” perspective (Boase et al., 2006; Hampton, 2001; Haythornthwaite & Wellman, 1998; Stern, 2008), as evidenced by the fact that respondents use the Internet to learn about local organizations and receive e-mails about local groups. As Internet usage increased, there were concomitantly higher levels of participation in almost every type of group. However, it was also clear that some groups may be better suited or deemed more appropriate for Web use in information seeking or communication. For instance, people participating in religious organizations (of which there were many with Web sites in this community) are not very prone to using this technology to learn about their local groups. This leads one to question whether the most firmly entrenched of institutions of social participation are also the ones that least need to adopt new means of communicating with their constituents. Overall, the findings across the different types of groups and organization leads us to support the work of Pippa Norris (2001, 2002), who suggests that the Internet is a vital tool for activating the active. That is to say, new media provide another tool for getting active people out and involved. We add to this that some organizations are better suited and have a greater need for technology as a conduit to participation than others.

Third, an important piece of the puzzle seems to be the role of e-mail as a conduit for information about local happenings versus our original belief in the role of the “community Web site.” Some people indicated that a community Web site with information about local events would be quite beneficial. However, the data seem to suggest that e-mail use is more prominent for finding out about local and nonlocal events and groups. Indeed, no one described accessing Web sites as a means of finding out about the events or groups in the qualitative responses; instead, they described e-mail as a way to keep in touch, schedule events, and receive information from local groups. This bears out in quantitative data as well. Importantly, this fits with the community theories suggesting that local social interaction is critical to community participation. For example, Kasarda and Janowitz (1974), Wilkinson (1991), and M. M. Bell (1998) all showed that interaction at the local level fosters sentiments that lead to community attachment, and Ryan et al. (2005) have shown that these feelings of embeddedness lead to community participation. We have found that e-mail is a medium for personal communication between both local and nonlocal ties and about local and nonlocal happenings. Furthermore, we have shown that the same people who use e-mail for contact with ties outside of the local area use it at high rates with people locally. Building on the theories of rural community participation, we suggest that because e-mail is interactional, it supports discussion about local community organizations and events, whereas if people go to a Web site, the experience is devoid of a personal connection. Typologically, then, e-mail falls on the *Gemeinschaft* end of the community information continuum. In other words, this may indicate that e-mail may serve to foster social capital more than do community Web sites.

Considerations notwithstanding, the three questions addressed in this article show that information and communication technologies have a place in rural community theory and deserve attention in rural community theory building. Theories of rural community attachment and civic engagement suggest that localized social ties lead to local sentiment, which in turn creates a sense of responsibility to local areas (e.g., M. M. Bell, 1998; Kasarda & Janowitz, 1974; Ryan et al., 2005; Wilkinson, 1991). Our findings further these theories by showing that local social ties are part of people's larger social networks and that e-mail and the Internet are important tools in the everyday social lives of people as well as the fact that people do use these technologies to engage in local happenings.

Finally, this article illuminates several unanswered questions and practical considerations that emerged in our theoretical review. First, how can rural communities better use information technologies? Despite a relatively large number of local Web sites, the qualitative data suggest that people were either unaware of their existence or failed to perceive them as helpful. Second, we must discuss the role of technological diffusion, adaptation, and proficiency in types of Internet usage—a theme consistent with burgeoning research on “digital inequality.” For example, we have shown that degree of Internet usage, a proxy of proficiency, continues to be an important predictor for using the technology to get involved in local events. If we couple this finding with research on the slow diffusion of broadband and other high-speed Internet technologies in rural areas, it leads us to wonder how rural communities will fare with the ever-increasing need to be technologically sophisticated. The qualitative responses clearly illustrate some of the implications for Web site management, Internet use, and leveling the digital playing field for rural residents. Web site content for rural and other types of residents must be easy to access and find, usable, relevant, and up to date. The results of this study indicate that rural residents may be willing to use the Internet for these purposes if material and information were more user friendly. Whether it is for communicating with a local friend through e-mail or finding out about whether a service group is meeting this week, the Internet is playing a role in helping rural community residents accomplish these social endeavors. Rural communities are very much a part of the Internet society, and our theoretical and empirical work must reflect this trend.

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