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Abstract

Focusing on two rural cities in Minnesota, this paper analyses ways in which these communities have gone about providing information technology to their citizens. This paper will explain why one city has chosen to take an entrepreneurial approach to networking and the other city has chosen a more collaborative approach, promoting equal access for its citizens. Based on interviews, focus groups, and surveys in the two cities, we find that these divergent approaches are related to fundamental cultural differences in the two communities. One city seems to have a more pronounced reservoir of social capital, meaning that people in this community tend to be more trusting, have more cohesive social ties and are prone toward collaboration. Cooperation and social trust, particularly among community leaders, seem to have played large roles in triggering the development of a community electronic network. Moreover, we discover that political engagement and interpersonal trust among the citizenry in this city seem to be pivotal in sustaining and perpetuating the community endeavor.

Keywords: Social capital; Community electronic network; Rural technology; Trus; Digital divide

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1. Introduction

In the realm of computer technology, the collective goal of many communities is to remain competitive and afloat during the rapid influx and expansion of technology. Due to the digital divide[1] and threats of falling too far behind their urban counterparts, rural areas, in particular, must formulate solutions to technological pressures. In our study, social capital helps to explain why two rural communities, faced with similar technological challenges, chose to address them in markedly different ways. We evaluate one community in Grand Rapids, Minnesota that succeeds in creating and sustaining a community electronic network and another in Detroit Lakes, Minnesota that is unsuccessful at cultivating such a project. We find that social capital, or a healthy stock of community trust and cohesion, seems to have been important in instigating and sustaining Grand Rapids' community electronic network. At the same time, a lack of trust and cooperation in Detroit Lakes helps to explain its more individualistic, entrepreneurial electronic network.

2. Introducing social capital

Social capital is defined as the norms and social relations embedded in the social structure of societies that enable people to coordinate action to achieve desired goals (World Bank, 2000). It is described as a feature that communities possess to varying degrees, with the key elements being social trust and civic engagement (Coleman, 1988, 1990; Putnam, 1993, 2000). Putnam (2000) explains, "Whereas physical capital refers to physical objects and human capital refers to properties of individuals, social capital refers to connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them" (2000, p. 19). In this sense, social trust is the individual-level internalization of norms of reciprocity, which facilitates collective action by allowing people to take risks and to trust that fellow citizens will not take advantage of them (Putnam 1993, 2000; Brehm and Rahn, 1997).

Putnam (1993, 1995a, b, 2000) has argued for the political importance of social capital and sparked an ongoing debate over the character and nature of its role in collective outcomes (Levi, 1996; Skocpol, 1996; Tarrow, 1996; Foley and Edwards, 1996, 1997; Schneider et al., 1997; Booth and Richard, 1998; Fuchs et al., 1999). Social capital has been credited with facilitating a number of positive social and political results including lower high school dropout rates (Coleman, 1988); improved public health (Kawachi et al., 1997); increased voter turnout (Knack and Kropf, 1998); greater institutional responsiveness, and even the success of democracy itself (Putnam, 1993).

[1] The digital divide is the recurring finding that access to new information technology is differentially distributed by income, education, race and urban–rural settings.

Social capital gives communities the ability to cooperate, to overcome collective action dilemmas and to organize for mutual benefit. In *Making Democracy Work*, Robert Putnam (1993) contends,

> Success in overcoming dilemmas of collective action and the self-defeating opportunism that they spawn depends on the broader social context within which any particular game is played. Voluntary cooperation is easier in a community that has inherited a substantial stock of social capital, in the form of norms of reciprocity and networks of civic engagement (1993, p. 167).

Even political scientists outside the social capital genre acknowledge the importance of trust and norms of reciprocity in creating successful, collective outcomes. Elinor Ostrom, in her book *Governing the Commons*, analyses how cooperative community institutions perpetuate themselves and remain successful. She notes, "establishing trust and establishing a sense of community are…mechanisms for solving the problem of supplying new institutions" (p. 43). Moreover, "when individuals have lived in such situations for substantial time and have developed shared norms and patterns of reciprocity, they possess social capital with which they can build institutional arrangements for resolving Common Pool Resource (CPR) dilemmas" (p. 184).

3. Social capital and community electronic networks

Community electronic networks are intended to provide greater access to both the Internet and electronic communication tools that can be utilized on a much broader basis than traditional types of communication. Consequently, the question of whether electronic media help or hinder the development of social capital and civic communities has drawn much recent attention. Some scholars believe that community electronic networks may fulfill a number of civic goals including community cohesion, informed citizenship, access to education and training, public participation and enhanced quality of life (Schuler, 1994; Anderson et al., 1995; Kavanaugh and Patterson, 2001).

Still, others are concerned that computer technologies may weaken social connectedness. Believing that face-to-face interaction may be essential to the development of social trust, Putnam (1995a) asks, "What will be the impact, for example, of electronic networks on social capital? My hunch is that meeting in an electronic forum is not the equivalent of meeting in a bowling alley—or even in a saloon—but hard empirical research is needed" (p. 76). Kraut et al. (1998) also ignited apprehension about the possibility of technology use eroding social connections when they found that Internet use seemed to encourage loneliness and depression, based on a panel study conducted during 1995–1996. In more recent follow-up studies conducted during 1998–1999, they found much more positive effects, including evidence that the Internet enhances social relationships and individual well-being (Kraut et al., 2002).

Much of the research to date applying the concept of social capital to community electronic networks has focused on the ways in which community networks, on-line relationships and virtual communities influence the growth of social capital and social connectedness (Calabrese and Borchert, 1996; Kling, 1996; Wellman et al., 1996). These studies assume that the causal arrow flows mainly from the community electronic network to social capital.

Blanchard and Horan (1998) argue, however, that whether computer-mediated communication increases social capital depends on the extent to which virtual communities develop from strong, preexisting face-to-face social ties that have already been established. Fukuyama (1995) claims in a similar vein that, "Societies where computer networking will really take off are the ones in which technology can ride on top of existing social networks" (p. 80). Thus, the potential character of an electronic network appears to derive at least in part from the social structures already present in a community that enable diverse entities within the community to cooperate rather than compete to achieve a common goal. Research from several domains provides support for Fukuyama's (1995) proposition. Organizational studies, for example, imply that the implementation and success of computer networks rest on social networks and culture already in place (Sankar, 1988; Rubinyi, 1989; Ashburner, 1990; Pickering and King, 1995; Kanungo, 1997). Also, Kavanaugh and Patterson (2001) find that the Blacksburg Electronic Village (BEV) community electronic network in Blacksburg, Virginia seemed to enhance community involvement for the segment of the population already high in community concern and social capital at the onset of the project. Over time, these involved individuals experienced more of a gain in social capital than their non-involved counterparts. Consistent with these studies, we find that social capital is critical for explaining the creation and perpetuation of electronic networks in Grand Rapids and Detroit Lakes. While these two cities faced similar technological pressures, they dealt with these challenges in very different ways. In Grand Rapids, where social trust and norms of reciprocity were prevalent, a community-based network emerged. In contrast, the city of Detroit Lakes, with its more individualistic community culture, created an electronic network much more akin to a business than a community-wide endeavor.

4. Rural approaches to technology diffusion

Both Grand Rapids and Detroit Lakes are rural cities in Minnesota, with populations of 7000–9000 people. Like many rural areas in the United States, these two cities have been lagging behind their urban counterparts in terms of technological development and Internet access. According to the National Telecommunications and Information Administration (NTIA) (2000) report, the urban–rural divide has become less severe over the last several years; however, at the time the projects in Grand Rapids and Detroit Lakes began to develop, this gap was prominent. The NTIA (1999) report revealed that Americans living in rural areas lagged behind other areas in terms of Internet access, regardless of income level. At the lowest income levels, those in urban areas were more than twice as likely to have

Internet access than those earning the same income in rural areas. And a high-income household in an urban area was more than 20 times as likely as a rural low-income household to have Internet access (NTIA, 1999).

In terms of information technology, people in Detroit Lakes and Grand Rapids faced similar concerns and needs. Their urban counterparts were making technological strides, and these two rural towns had to come to terms with the fact that their technological deficiencies could affect the health of local businesses and disadvantage them in attracting new high-tech companies to their areas. Moreover, they faced the possibility of young people leaving home and moving to the Twin Cities or other larger metropolitan areas.

Because it has become a concern to the United States government, the NTIA has been evaluating the digital divide since 1994. Although these gaps have begun to diminish in recent years, there is still a persistent division between the technological "haves" and "have-nots" (NTIA, 2000). In addition to NTIA's efforts to track the digital divide since 1994, the Telecommunications and Information Infrastructure Assistance Program (TIIAP) of the United States Department of Commerce has been a source of funding for communities interested in addressing this issue.

While this funding exists, it nevertheless takes innovative, forward-looking communities to take advantage of such options. This paper will focus on one such community (Grand Rapids, Minnesota), which sought funding from the TIIAP to increase the community's access to and use of the national information infrastructure and to reduce disparities in access levels among community residents. Some aspects of this community project—referred to as GrandNet (and later ItascaNet)—include free access to Internet-linked computers at public buildings like the schools and the library, as well as free computer-training programs for local residents.

5. Community electronic networks in grand rapids and elsewhere

GrandNet is just one of several community networks across the country; more well-known networks include Santa Monica's Public Electronic Network (PEN) in California and BEV in Virginia. The goals of such technological ventures have included enhanced community cohesion, access to education and training, political participation, combating the digital divide and providing Internet access for all (Schuler, 1994; Anderson et al., 1995; Cohill and Kavanaugh, 2000). Local leaders in Santa Monica designed and implemented PEN in 1989, seeking to encourage greater public access to Internet technology. They made public terminals available in libraries, senior citizens' centers, and neighborhood community centers. When compared to the actual demographic profile of Santa Monica, those using the access sites have been only marginally representative of diverse and disconnected social groups. At the same time, though, these sites have allowed disenfranchised groups to participate in email discussions, which have facilitated collective political activity (Rogers et al., 1994).

The BEV project began in 1993 as a result of partnership between Bell Atlantic, Virginia Tech University, and the town of Blacksburg, Virginia. Many of its users have ties to the university, although the general public also actively utilizes public

access terminals. Since the beginning of BEV, computer use in Blacksburg has increased. Over 90% of the Blacksburg population now has Internet access, and over 400 local businesses and 150 community groups have their own Web sites (Carroll and Rosson, 1996; Carroll et al., 1999; Kavanaugh and Cohill, 2000). Researchers have also found a link between civic engagement and Internet use in this community. According to Kavanaugh and Cohill (2000), a 1996 random sample telephone survey of local area residents revealed a positive correlation between civic involvement and Internet use. Similarly, in a 1999 follow-up survey, 22% of respondents reported increased community involvement since they began using the Internet.

Potential enhancements to the BEV system may be even more encouraging of community cohesion and interaction. Carroll et al. (2001) discuss ways in which a recent project called MOOsburg has been developed to enhance community connectivity on the BEV network. This multi-user domain allows participants to not only access community-oriented web pages but also interact in real time with other people in their town.

Similar to research groups analysing of BEV and PEN, our team has been studying the development of GrandNet in Grand Rapids since its inception in 1995. To facilitate this research, we have identified a second Minnesota city, Detroit Lakes, to serve as a comparison community. We determined its suitability based on a cluster analysis of demographic and social factors among counties across Minnesota. From this analysis, we concluded that Becker County, the county in which Detroit Lakes is located, was the best match for Itasca County, the county in which Grand Rapids can be found (see Appendix A). The two cities both serve as their county seats, are approximately the same size, and are statistically similar on a variety of social indicators, such as unemployment rates and number of children living in poverty.

Instead of setting up a community electronic network and seeking help from the TIIAP to help minimize the digital divide as in Grand Rapids, Detroit Lakes has taken an entrepreneurial approach to networking. While Detroit Lakes did develop an electronic network called LakesNet, this community has not chosen to pursue projects promoting more equal access to technology among its citizenry.

The difference in these two approaches to technology access gives us an interesting opportunity to explore the reasons why these two communities, faced with similar technological concerns and needs, chose such different courses of action. In this paper, we discuss results from interviews, focus groups and surveys that we suggest reveal fundamental cultural differences in the two communities. When compared to Detroit Lakes, Grand Rapids has a more pronounced reservoir of community trust, cohesion and norms of collaboration. As we will show, cooperation and social trust in Grand Rapids, particularly among its community leaders, played large roles in prompting the development of its community electronic network.[2] Moreover, we

[2] Just as leadership can be important to the development of a community-oriented technological project, it may also impede its progress. When these projects initially form, they are often under the supervision of elected or appointed personnel who represent the will of the citizenry, at least in theory. As the projects develop and require more technological expertise to grow, they may slowly fall under the supervision of technological experts and leaders, who may or may not be accountable to and concerned with the community as a whole. We believe that, in this sense, these projects may have difficulty retaining the

find that political engagement and interpersonal trust among Grand Rapids citizens seem to be pivotal in sustaining and perpetuating such a community endeavor. Before delving into the cultural differences between these two communities, it is important to explain the impetus behind the development of the electronic networks in Grand Rapids and Detroit Lakes and to describe the ways in which they have evolved.

6. Electronic networks develop in two towns

In these two rural communities, the push for creating electronic networks came from the elite strata.[3] Local elites were frustrated that they lacked the infrastructure that would provide Internet access to community organizations and residents at an affordable, reasonable cost. However, even though the two cities faced similar dilemmas and needs, leaders in the two communities went about addressing the issue of information technology in notably different ways.

In Grand Rapids, the local school district superintendent called a meeting among the representatives of five community organizations, "which, like the one he led, were struggling with limited financial resources to enhance telecommunications needs" (GrandNet website, 1996). These five organizations included the local school district, Itasca Community College, Itasca County Human Services, Itasca Development Corporation and the Grand Rapids Public Library. These representatives embarked on a collaborative effort to bring technological access to Grand Rapids, applying for and receiving funding from the TIIAP and the Blandin Foundation, a well-endowed private foundation based in Grand Rapids. This project has allowed community organizations and members to "share information and to access the Internet and its resources...The GrandNet program has also trained scores of area citizens to use the Internet and email" ("The Community Speaks," in the *Itasca Herald Review*, 8–31–97). Along with these initial goals of increasing familiarity with new technologies and public access to computers and the Internet, the GrandNet partners also envisioned an ambitious long-term goal of providing computers to every household in the community. While that egalitarian ideal has not yet been realized, access to technology has become much more pervasive in the community.

In Detroit Lakes, the supervisor of the city government's Public Utilities division realized the need to bring Internet access to community organizations and citizens, and responded by establishing a city owned and operated electronic network, LakesNet. His office worked independently, invested city government funds in the necessary infrastructure, and off-set these costs by selling dial-up Internet access to

(*footnote continued*)
egalitarian character and goals that originally propelled them. At this time, we do not have concrete data to support this theory but intend to explore it in future research.

[3] In this paper, the term "elites" refers to people in community leadership positions, particularly those who have influenced and continue to affect projects and policies dealing with information technology. Elite community members include people in governmental roles (like the cities' mayors) civil service positions (like the local head librarians), and those in the business community.

community members and organizations at a moderate monthly rate. According to the supervisor of LakesNet, "People were very excited at first. The focus at the onset was not on making money; instead, our focus was on bringing fiber to the customer... LakesNet now has 1200 dial-up customers" (Personal interview, 5-2-00).

These "founding stories" exist in sharp contrast: in Grand Rapids, local elites pursued a more communitarian, collective approach to providing Internet access, while elites in Detroit Lakes approached the issue from a profit-based business model. Why did these communities, faced with similar needs, turn to different approaches—one choosing an egalitarian, collaborative approach, focused on extending access to everyone; and the other choosing an entrepreneurial approach, extending access to paying customers? We believe these divergent approaches stem from different community cultures. Grand Rapids and Detroit Lakes vary in terms of trust and community concern, both of which are key elements of social capital. We believe that these differences have important implications for predicting the influence of computer use and technology access in two towns.

7. Comparing community cultures

Grand Rapids and Detroit Lakes have divergent political cultures, which help to explain their divergent approaches in addressing the issue of information technology. Citizens in Grand Rapids are more prone to collaboration, seem more concerned about improving communication, and are more concerned about equality in their community. As we will show below, in Detroit Lakes citizens appear to be more individualistic and business-minded.[4]

Our previous comparisons of Grand Rapids and Detroit Lakes substantiate this assertion that community culture seems to be a key component in predicting the development and maintenance of a community electronic network (Borgida et al., 2002; Sullivan et al., 2002a, b). Results from mass surveys and focus group discussions reveal clear evidence that in Grand Rapids, where one can find a community electronic network, social trust, egalitarian goals and community concern is apparent among regular citizens. In contrast, in Detroit Lakes, where one finds a business-like electronic network, trust and cooperation are less apparent. Our next sections will explore our previous work in more detail, discussing results from a mass survey conducted in 1997 and focus group meetings conducted during 2000. We will also present new findings, including interviews with elites gathered beginning in 1997 and additional focus group data from the 2000 discussions.

8. Previous findings from survey data

Results from a mass survey administered to a random sample of citizens in both communities shed light on cross-community similarities and differences

[4]The evidentiary basis for these claims is discussed in the following sections.

(Sullivan et al., 2002a, b). In Grand Rapids, where a community electronic network exists, individual economic and political variables help to explain peoples' technology use. In Detroit Lakes, without a similar community project, economic variables alone predict technology use. In other words, people who are politically engaged are able to gain technology access in Grand Rapids, but people in Detroit Lakes do not have this option.

8.1. Survey methods and measures

In 1997, we conducted a baseline survey of 1000 households each in Grand Rapids and Detroit Lakes. The sample for each community was randomly selected from phone book listings (40%) and voter registration records (60%) to balance socioeconomic biases associated with each source. The response rate was approximately 40% for each community (Grand Rapids $n = 404$, Detroit Lakes $n = 401$).[5]

The 10-page surveys we mailed to citizens during September of 1997 included about 65 questions and measured citizens' attitudes toward computer use, technology ownership, attitudes toward the community and the community electronic project, interpersonal trust, political engagement, membership in civic organizations, as well as various demographic indicators. The surveys were identical for the two cities except that we asked citizens in Grand Rapids about GrandNet and those in Detroit Lakes about LakesNet.

Utilizing the individual-level survey data, we were interested in evaluating a number of variables. For both communities, we created measures of economic and political resources. Our measure of *economic resources* included education level, family income, subjective social class and employment status. *Political resources* consisted of a number of items measuring respondents' psychological engagement with public life, a principle component being social trust. In addition to trust, this scale included political knowledge (Delli Carpini and Keeter, 1996), political interest, political efficacy, and alienation, all drawn from the General Social Survey (GSS). In addition to measuring psychological engagement in politics, we also included measures of *political behavior*, such as membership in civic organizations and acts of political participation (voting, contacting public officials, working on local or national problems).

We then estimated a structural equation model to compare the impact of economic and political resources, as well as actual political behavior on computer use, awareness of GrandNet, and support for GrandNet in Grand Rapids. Our theoretical orientation led us to anticipate that there would be significant differences

[5] A comparison of the demographic characteristics of our survey respondents in each community to the 1990 US. Census data reveal that our respondents were more highly educated and had higher incomes, compared to the populations in each community. While this does reflect a socioeconomic bias in our survey respondents, the degree of bias is similar in each community, making it unlikely that comparisons between the two towns will be compromised.

between citizens in the two communities in the roles that political resources and behavior would play in predicting technology use.

To assess the roles of various types of resources in shaping use and attitudes toward technology, we developed measures of technology ownership, computer use, computer training, degree of personal comfort with computers and belief in the social value (or lack thereof) of computers. The construct of *technology ownership* was measured by asking about ownership and plans to buy a home computer, Internet/modem connection, fax machine and cell phone. The construct of *computer use* included questions about home computer use, work-related computer use, public computer use (e.g. public library) and Internet computer use. *Computer training* included questions asking about training in word-processing, database use, Internet use, spreadsheet use and electronic mail. The two constructs of *computer comfort* and *computer social value* were based on a combination of items from previously published computer attitude scales.[6]

We also created some measures that applied only to Grand Rapids—two constructs representing *awareness* of GrandNet's presence in the community and *support for* GrandNet. GrandNet awareness was a function of three indicators that asked whether the respondent had used GrandNet, heard of GrandNet, or heard others talk about GrandNet. Support for GrandNet was based on 10 statements of possible effects that GrandNet could have on the community.

8.2. Expectations

Prior to analysing the data, we hypothesized that political resources (which included interpersonal trust and other measures of psychological political engagement) would influence computer use and computer attitudes at least in part through their impact on political behavior. People who are more trusting of others and who are more concerned about politics should be more motivated to vote, talk about politics, and to actively participate in their community. Also, we expected political behavior to affect computer use and attitudes differently in each community. In the presence of a community electronic network in Grand Rapids, political behavior should have an impact on computer use because individuals who are actively involved in the community should be more likely to learn about the project and also be more likely to become interested in the personal and social uses of computers. We therefore expected that citizens who were more knowledgeable about, and active in, the community would be more knowledgeable about, and more likely to participate in, information technology. In the absence of such an established community network in Detroit Lakes, we expected differences in political knowledge, involvement and behavior to be unlikely to lead to differences in computer attitudes and sophistication, apart from existing differences in economic circumstances.

[6] These include a computer attitude scale developed by Pinto and Nickell (1987), Coover and Delcourt's (1992) Adult-Attitudes Toward Computers Survey (ATC), and Popovich et al. (1987) Attitudes Toward Computer Usage Scale (ATCUS).

We hypothesized that the relationship of economic resources to technology ownership and computer use should be similar in the two communities, since these relationships are determined in large part by market forces that operate similarly across the country, particularly in geographically and demographically close communities. Again, because of the GrandNet project and its public dimension, we expected that the effects of political resources on political behavior, community attitudes, and computer attitudes would be much stronger in Grand Rapids than in Detroit Lakes.

8.3. *Survey results*

As a result of these considerations, we used multi-group LISREL analyses to evaluate the two communities.[7] The impact of economic resources on technology ownership proved to be very strong in both communities. Technology ownership in turn also had a strong effect on computer use in both Grand Rapids and Detroit Lakes. Regardless of community, if citizens had access to financial resources, they were far more likely to own technology.

As expected, the predictors of computer use were different in the two communities. Among Grand Rapids residents, computer use was explained in part by political behavior, while economic resources had only an indirect influence through technology ownership. Among residents of Detroit Lakes, the pattern was just the opposite. Economic resources were a very powerful predictor of computer use, both directly and indirectly through technology ownership, while political behavior had no significant impact. Thus, there were profound differences in the role of political resources and behavior in providing access to computer use in the two communities. In both cities, political resources had a strong and significant impact on political behavior, but only in Grand Rapids did engaging in political behavior have a significant (and positive) impact on computer use.

We also examined whether political and economic resources affected knowledge and support of GrandNet, the electronic community network in Grand Rapids. Since the GrandNet electronic community network was a civic project, we expected that political resources and political behavior would enhance knowledge of and support for GrandNet.

Our results confirmed that political behavior did lead to awareness of the electronic community network. In fact, the effects of political behavior on awareness of GrandNet were more than twice as strong as those of personal computer comfort, providing impressive evidence that this community electronic network project was indeed a product of more general civic awareness and involvement in the community.

In summary, our survey results revealed that political factors, such as political interest, interpersonal trust and behavior played a prominent role in predicting

[7] We allowed almost all of the parameters to vary between the two communities except for two that we made equal, which were parameters that represent the impact of economic resources on technology ownership and of ownership on computer use. For information on the full LISREL model and precise coefficients, see Sullivan et al. (2002b).

computer use and attitudes in Grand Rapids, especially when compared to Detroit Lakes. In Detroit Lakes, economic resources alone seemed to drive technology use and attitudes. Moreover, political factors also predicted awareness and support for Grand Rapid's community electronic network. This suggests that political resources are important in the maintenance and perpetuation of a community electronic network. In Grand Rapids, people who are more involved in politics and their communities are more likely to utilize computers, know about the community network, and actively support the project. In Detroit Lakes, people who are active in the community and high in interpersonal trust are no more likely than those who are not to utilize new technologies. For more information about this analysis, please refer to Sullivan et al. (2002b).

9. Previous findings from focus group content analyses

In addition to the surveys that we carried out in the two communities, we also conducted focus groups in both cities in December of 2000. We then conducted content analyses of the group discussions, in order to quantify and compare the extent to which participants in each city answered our questions with a general sense of community concern versus more individualistic considerations.

9.1. Focus group methods

We selected focus group participants from respondents who had previously completed mail surveys and indicated that they would be willing to participate in such a group. We used our survey data to select samples of about 10 participants per group meeting who were diverse by age, gender and socioeconomic resources.

We designed these discussions to assess community members' attitudes on a host of issues related to our study, including general opinions about the community and its strengths and weaknesses, the extent of residents' experiences with computers and the Internet and their perceptions of those technologies, and attitudes towards their community's involvement in fostering the availability of information technology. The structured focus group protocols were identical for the two cities except that in Grand Rapids questions were asked about GrandNet, whereas those in Detroit Lakes referred to LakesNet.

Our research team performed a content analysis of the focus groups' transcripts, coding the moderator's and the participants' comments. Two members of the research team coded the transcripts for each community using a standard coding scheme, with inter-coder agreement rates of 88.5% for moderator statements and 84.5% for participant statements.

Statements were categorized as reflecting individualistic, interpersonal or community-oriented issues and concerns. Comments coded *individualistic* included references to personal computer use, individual initiative, responsibility, choice and individual privacy concerns. Comments reflecting *interpersonal* themes included discussion of computer-mediated interpersonal communication and concerns over

face-to-face communication and increasing social isolation. *Community-oriented* comments made reference to the local community or economy, public institutions, civic organizations or community concerns such as public access to technology or education.

9.2. Expectations

We hypothesized that the focus group participants in Grand Rapids, where the community culture seems to be more interconnected, trusting and open to collaboration, would be more likely to discuss and consider the entire community and its needs, rather than just weighing individualistic or interpersonal considerations. In contrast, we predicted that participants in Detroit Lakes would be more likely to talk about individual or interpersonal concerns, at the expense of community considerations.

9.3. Results

These focus group analyses provide further evidence that cultural differences exist among the citizenries of Grand Rapids and Detroit Lakes. Focus group participants in Grand Rapids did in fact exhibit more community concern and awareness in their discussion of technology access and community electronic networks, when compared to those in Detroit Lakes (Borgida et al., 2002).

The focus group content analysis revealed that Grand Rapids focus group participants made significantly more community-oriented statements than their Detroit Lakes counterparts. Participants in Detroit Lakes made twice as many comments reflecting interpersonal concerns as Grand Rapids participants, reflecting greater concern about social isolation and decreasing face-to-face interaction. The percentage of individualistic comments was not statistically different across the two communities.

We made sure that these results were not skewed by differences in moderator questioning—the types of questions and comments made by the moderators were consistent across both focus groups, with the majority of comments reflecting community-oriented themes.

10. Focus group statements

In addition to the systematic content analysis we conducted, the statements made by focus group participants also help us to understand community differences. In our previous work, we report focus group statements that are indicative of the communities' cultural differences (Borgida et al., 2002). Here we share new, additional data from the focus groups that illustrate the way in which these two towns diverge in terms of levels of interpersonal trust and community-mindedness. The focus group statements that we present in the next sections correspond to results from the more systematic focus group content analyses discussed earlier. These

statements help to illustrate the nature of cultural differences between Grand Rapids and Detroit Lakes, one town being more trusting and community-oriented than the other, and how these cultural differences seem to shape citizens' attitudes about technology.

10.1. Focus groups in Detroit Lakes

In these groups, it was much more frequent in Detroit Lakes to hear skepticism about community-based approaches to issues, as well as support for competition and market-based solutions for solving problems. As seen in the exchange below, the participants were not enthusiastic about public institutions providing computer access to the citizenry. Instead of this community-centered approach to addressing this issue, they preferred to leave it in the hands of the private market.

> *Moderator*: Some people think that it is a community's responsibility to provide access [to those who need a way in to the Internet]. Do you think it should be left to the government, civic groups, or to private business? What do you think about that? Is it a community responsibility at all?
>
> *Detroit Lakes Participant* 1: I think not. I don't feel that it would be a community responsibility. But they may do it as a gesture of goodwill.
>
> *DL Participant* 2: Microsoft is giving away billions of dollars. We should get our fingers on some of that.
>
> *DL Participant* 1: I don't think we expect the community to buy that for us.
>
> *DL Participant* 3: I would tend to agree with the lady next to me. I would think that would be picked up eventually by those various companies. They're interested in putting this out. And we have enough welfare fringes and benefits. I think that for the most part, I think this is something we're capable of doing on our own....

In Detroit Lakes, we also observed an overall enthusiasm for competitiveness in the community, especially among businesses. For instance, one participant notes in passing,

> I wish we did have more competition [between businesses in the community]. For one thing, it's healthy and the other thing is, hey, it's better for the customer. You know...try to get customers. I think it's a good deal. And I personally feel that it [the city of Detroit Lakes] has a chance to grow and I'd like to see it grow.

This sentiment seems to be widely shared among people in Detroit Lakes. They feel strongly that competition is the key to the community's economic success, and they are concerned about the extent to which Detroit Lakes develops (or fails to develop) economically.

In addition to their affinity for competitiveness and market-based solutions, as well as their distaste for community-based solutions to public issues, the Detroit Lakes focus group participants also exhibited skepticism about people in general. That is, they made comments that showed a lack of interpersonal trust. In the example below, a Detroit Lakes participant reveals concern for the extent to which

information technology can "enable" the ill will of people participating on the Internet.

> *Moderator*: What do you hear other people in Detroit Lakes saying about the Internet? What kinds of things are people saying? What are their concerns? Perhaps concerns about privacy? Are there concerns about children using the Internet? Or are you perhaps excited about the new opportunities?
>
> *DL Participant*: I've heard a lot of people (especially friends) talk about the safety of their children with chat rooms and stuff. Also, a while back, there were some friends of mine. Someone got a hold of their name, their kids' names, and other family information and was actually thinking of doing harm to them. So that's a lot of their [people in the community] concerns there. It's a trap. You know, if you're on the Internet, there's no protection. Anyone, even criminals in jail, can get all of the information they want. They run scams through it. We've seen tons of scams....

It is certainly true that most people (in Detroit Lakes, Grand Rapids, or elsewhere) are concerned about the development of Internet-fueled crimes. The focus group meetings gave us the impression that the people in Detroit Lakes are a bit more likely to exhibit a fear of other people—a lack of faith in the world at large—when compared to those in Grand Rapids. The next section discusses the responses from the focus group participants in Grand Rapids, revealing that its citizenry seems a bit more trusting, less inspired by competitiveness in the community, and more supportive of community-based solutions for addressing issues of Internet access.

10.2. Focus groups in Grand Rapids

In contrast to substantial concerns regarding Internet crimes voiced by the Detroit Lakes focus group participants, the concerns expressed by the people in Grand Rapids were much more subdued. In fact, when explicitly asked about their concerns and worries about the Internet, the participants shifted the discussion to more positive issues. As illustrated in the exchange below, they began discussing community Internet programs for the elderly.

> *Moderator*: Do you hear people worried about buying things over the Internet, or worried about privacy—their own personal information being available? Is that something you're concerned about?
>
> *Grand Rapids Participant* 1: Absolutely. I'm too old to be able to understand the stuff—I'd like to be able to use one, but I know I can't understand it. My son, last year they put all these darn computers in at work and it's upsetting everyone. You go along and you learn more about it. I'd really like to learn but...
>
> *GR Participant* 2: Do you know that we have the SeniorNet here, where senior citizens are learning the Internet? They have courses in that and senior citizens are teaching it, and it's just for senior citizens. It's called SeniorNet. And it's right in Grand Rapids, and it's advertised next to the Community College, and it's only senior citizens using it.

Not only did the participants refuse to contemplate issues of mistrust, concern and threat, but they also generated an exchange that exemplifies community awareness, an enthusiasm for community projects, and a genuine concern for each other. This stands in stark contrast to the response (to essentially the same moderator prompt) by the participant in Detroit Lakes, who exhibited more concern about security and a general feeling of threat regarding the Internet and issues of privacy.

When compared to those in Detroit Lakes, the participants in Grand Rapids were also more prone to support community-based projects and endorse public solutions to the city's problems. Recall that the people in Detroit Lakes seemed skeptical about government intervention and were more supportive of market-based solutions to the city's problems. The except below from the Grand Rapids focus group illustrates the willingness of people there to embrace government involvement in addressing the issue of the digital divide.

> *Moderator*: Who do you think needs to take care of them [people in the community left behind in terms of technological ability]? Is that the responsibility of the community, the government? Whose responsibility is it to make sure there's not this divide, or that people are not left behind?
>
> *GR Participant* 1: The community. Every individual has their own problem, so you have to set up a governmental unit that will do the best they can. You know that it's not a perfect world, but you have to start someplace, and you have to help the ones that need help. Actually, they will learn, and they'll be interested...it'll just take time.

As the conversation progressed, the participants began to discuss the digital divide in more depth. They exhibited a genuine concern about the disparity issue and seemed to have a sense of the problem's severity and its implications for the community. As the following quotation reveals, the participants also seem genuinely concerned about the degree to which groups of people may miss technical opportunities.

> *GR Participant:* I believe that computers should be accessible within the library. It's just another information device. And the libraries have been around for how many hundreds of years.... I think the issue is though, that all of our younger people, the students, they've all had access to technology. The issue is the people who are out in the workforce who don't necessarily have it in the workplace. That seems to be the group forgotten—the lonely group that doesn't have access to the funds to buy computers. They weren't trained in school and don't use it at work. And I think I saw a statistic that 40% of the population has never used the Internet–they know about it certainly, but they've never seen it, never used it, don't have access to it. It's a terrible waste....

All in all, these excerpts from the focus groups in Detroit Lakes and Grand Rapids illustrate the extent to which these two communities differ in terms of community culture. This evidence corresponds to the focus group content analysis that we discussed earlier, as well as the results from the mass surveys. These differences help to explain the ways in which the two communities have approached information

technology, one more community-oriented and one more entrepreneurial. The next section reveals that community differences are not only apparent at the level of the mass citizenry, but they are also evident among the cities' leaders. Elites in Grand Rapids are more prone toward collaboration and community-building, when compared to their Detroit Lakes counterparts.

11. Elite interviews

In this paper, the term "elite" refers to people in community leadership positions, particularly those who have influenced and continue to affect projects and policies dealing with information technology. In Grand Rapids, when dealing with technological demands, the elites pursued a community-oriented, cooperative network, much in line with the character and ideals of those who live in the city. At the same time, the leaders of Detroit Lakes sought a more market-based solution to Internet access, reflecting this city's enthusiasm for competition, individualism and strong businesses.

11.1. Methods

Our research team conducted a series of interviews with local elites directly involved in the cities' electronic networks or particularly interested in technology. We talked with the city mayors, principals and teachers in the school districts, business leaders, librarians and other private and public personnel involved in technological decision-making. The research team began conducting face-to-face, phone and email interviews with elites in Grand Rapids beginning in 1997, and we have been conducting interviews with elites in Detroit Lakes since 1999.[8]

Compared to the mass survey we conducted of regular citizens in Grand Rapids and Detroit Lakes, elite interviews have been much more targeted, individualized and in-depth. Except for a few email surveys conducted early in 1997, we have not conducted these interviews with a standard protocol or specific set of questions, mainly because the people we have interviewed vary so much in the roles they play in the community and the projects they oversee. Approaching the interviews, our goals were mainly to gain information about the interviewee's job or project, how long they had been in their leadership position, how long they had worked with technological issues, and how the interviewees planned to accomplish the goals of their projects. We also tried to find out how the interviewees felt about technological advances in the community and, often, how they felt about the community in general.

[8] Obviously, there is a time differential between the two cities—we began conducting elite interviews in Grand Rapids before we did in Detroit Lakes. At the outset of our project, we were mainly interested in the Grand Rapids community project and incorporated Detroit Lakes into our studies to serve as a comparison community for our mass survey analyses. As time progressed, we became increasingly interested in the character of Detroit Lakes' electronic network and began comparing the two communities in more detailed ways.

The phone interviews we have conducted range from 15 to 45 min. We have taken written notes of exchanges instead of asking permission to tape record, on the assumption that interviewees would feel more comfortable and be more candid. The face-to-face interviews we conducted usually ranged from about 30 min to an hour. We scheduled these meetings well in advance and planned them so that two to three members of our research team could be present. Because we did not tape record the exchanges, researchers who attended took detailed, written notes and compared information for accuracy after the meetings.

At face-to-face meetings, we consistently encouraged elite interviewees to share any written information or publications that would increase our understanding of the projects they oversee. We have found that these documents, in addition to information we locate ourselves (over the Internet, for instance), have greatly enhanced our understanding of community technological projects and/or have given us ideas of how elites promote these projects to regular citizens. This paper consults such literature written by elites, such as the TIIAP grant proposal written by the GrandNet team in Grand Rapids and brochures written about the GrandNet and LakesNet projects.

11.2. Expectations

Our expectations were that general impressions from elite meetings and literature would reveal clear community differences. We predicted that elites in Grand Rapids should exhibit more trust, community concern and more of a tendency to want to collaborate with other elites in the community. Preliminary historical analyses of the two cities have revealed distinct elite traditions in the two communities, with leaders in Grand Rapids supporting and implementing community-wide projects and leaders in Detroit Lakes carrying out endeavors independently and for individual gain. Also, due in part to cultural differences and other historical circumstances, Grand Rapids developed a tradition of public–private partnership and a desire to bridge community divisions that did not seem to develop in Detroit Lakes (Boese, 1984; Boese and Cain, 1991; Borgida et al., 2002).

A key facet of Putnam's (1993) theory of social capital is the extent to which attitudes of trust and norms of reciprocity transcend time and retain consistency over long periods of time. In his extensive case study of Italy, for example, he located the roots of differences between the northern and southern regions in social patterns originating centuries ago. Likewise, we believed that these historical differences in the leadership between Grand Rapids and Detroit Lakes would be apparent in more recent elite interviews. As the next two sections reveal, our results were consistent with these expectations.

11.3. Trust and community concern among elites in Grand Rapids

The interviews we conducted with elite community members in both Grand Rapids and in Detroit Lakes do not lend themselves to the quantitative content analysis that we carried out on the focus group meetings. Still, we wish to share

general impressions derived from the meetings and direct quotations from interviews. Our general findings suggest that elites in Grand Rapids exhibit a clear tendency toward cooperation and concern for the community as a whole, including the less fortunate.

From the beginning of GrandNet, elites in Grand Rapids approached the issue of technology diffusion in a collaborative manner. In a 1997 interview, a representative of the Itasca Development Corporation (a business-oriented agency) mentioned that the School Superintendent "knew many of us in the community were concerned about the whole issue of telecommunications, knew about a grant possibility, and pulled us together for a short meeting." This initial, collaborative step laid the groundwork for a rather extensive attempt to bridge gaps between major organizations in the community and between various sectors of society. Recall that one of the original goals of the project was to provide computers for every household in Grand Rapids. While they have not actually realized this goal, it is still a strong indicator of the project's initial focus on bridging technological divisions.

A computer technician in the public school district involved with the development of the project describes what he expected from the community project, when asked to comment on it in 1997.

> I see it opening a whole new tool for communication in our area. I see it closing the gap between the technologically literate and the illiterate. I see some duplication of services that the partners have now diminishing. I also see further collaboration on other objectives increasing because we have shown that it can be done.

Elites in Grand Rapids consistently cite, not only hopes for improving communication between organizations, but also the goal of providing Internet access and training to those in need. Posted on GrandNet's website in 1998 one could find detailed information about the project, headed with the following quotation from the Report of the Commission on Freedom and Equality of Access to Information.

> Knowledge is power how freely and how equally citizens have access to knowledge determines how freely and how equally they can share in the governing of our nation and in the work and rewards of our society.

From these examples, it is apparent that the city's historical patterns have carried over into the present day—they have laid groundwork for community projects that benefit everyone in the town and not just particular sectors of society. They have also generated a custom of elite sharing and collaboration. Elites themselves acknowledge a tradition of collaboration in the city; a report prepared in 1998 describing the community electronic project (GrandNet) states,

> This GrandNet partnership is not a new collaboration. Indeed, it has appeared in the past as a partnership between Itasca Community College and School District 318 to share data, articulate agreements and ease student transition from high school to college.

11.4. Individualism and entrepreneurship among elites in Detroit Lakes

In contrast to leadership in Grand Rapids, elites in Detroit Lakes rarely made mention of a need for community collaboration or bridging the divide between the rich and poor. Instead, they were much more interested in improving economic growth and making the city a competitive community. The goal of LakesNet is not necessarily to make money on the project; however, the design is much like that of a business. They refer to citizens that use the network as "customers," and they do indeed charge them for the service. When asked about the goals of the project, the supervisor of LakesNet says,

> The focus from the onset was...on bringing fiber to the customer. Goals for LakesNet have also been to attract new business to the community and to keep residents.

Standing in clear contrast to the Grand Rapids gathering at the onset of GrandNet—where the superintendent called heads of the community together for a meeting—the electronic network in Detroit Lakes has remained a rather closed-off project. The director of the Public Utilities did consult others in the community, but only to see if they would be willing to utilize the Internet service *as paying customers*. In an interview in 2000, he recalls his actions during the implementation of LakesNet, the electronic network in Detroit Lakes.

> I hired someone (I can't remember who) to go to the County, area hospitals, businesses to see if they would be interested in being connected. And if so, if they would be willing to pay $50 or so a month to have access. Most would not commit but were interested.

When asked to explain why he did not reach out to other organizations in developing technology solutions, the instigator of LakesNet was at a loss for words. He said that it really did not occur to him—to branch out and form broader partnerships—even if only to attain financial help.

LakesNet formed in 1997, and not long after, a powerful, private Internet service provider came to Detroit Lakes—thus creating notable competition. In interviews with the leaders of LakesNet (those involved with the Public Utilities in Detroit Lakes), as well as representatives from this new Internet service provider, they cite "personality conflicts and turf issues" as a main reason for their inability to collaborate. Moreover, they mention lapses in communication—mainly, the other party's unwillingness to approach and jumpstart a dialogue and an unwillingness to listen.

In addition to facing dilemmas of trust and cooperation, people in Detroit Lakes are also more likely to complain about feeling isolated and frustrated with the lack of communication between organizations and members of the community. The supervisor of LakesNet has interacted with leaders from other communities in state-wide utilities meetings, and he volunteers a comparison between Detroit Lakes and a neighboring city, Alexandria.

> We would try to bring together people with different points of view to talk together about LakesNet. They are doing such things in Alexandria, MN. In Alexandria, it is easier for people to come together, because the community seems behind them so much more. [In Alexandria,] different markets—different businesses—work together and do not emphasize 'us against them.' They are not as competitive as they are here. Here, people want to own it and that's that. Competitiveness keeps our businesses from getting together. In Alexandria, there are about five different business leaders that are bonding and are determined to do it together.

There is also a sense that the leaders of Detroit Lakes, and the city as a whole, lack direction with regard to technology. A prominent business leader in the city notes, "Detroit Lakes seems to lack vision; we don't have a strong sense of where we're going." Moreover, the city's community education director told us that the community of Detroit Lakes is hesitant to accept change and that most people are closed to new ideas. Not only do elites cite frustration with the lack of dynamic leadership in Detroit Lakes, but citizens also notice this void. In the 2000 focus group session conducted in Detroit Lakes,[9] the group discussed community involvement and technology. A woman who had recently moved to Detroit Lakes from a larger city suggested that there was a need for more effective public leadership on this particular issue:

> I think what we probably need in Detroit Lakes is some energetic leaders to kind of bring to the limelight of the community what kind of opportunities exist that we can do with the Internet. You know, I would love with my work to set up programs between the schools and the students and my [senior citizens'] residence, and hooking up on email, on a weekly or monthly basis, where they can communicate and do those intergenerational programming types of things.

In sum, comparison of elite interviews in the two towns confirms historical patterns and reveals that community leaders in Grand Rapids are more forward-thinking, trusting and prone to collaboration. They also seem more concerned about improving communication between individuals, groups and organizations in the community, as well as focused on the goal of equality in their community. In Detroit Lakes, collaboration does not seem to come as naturally for its leaders. These elites tend towards individualism, are more business-minded, and they also have difficulty building and maintaining open lines of communication with one another.

12. Summary and conclusions

This paper examines the implementation of electronic networks in two rural Minnesota towns. The aim of the networks has been to help the communities keep up with global technological progress by increasing access to the Internet. After

[9] We refer here to the focus group meeting in Detroit Lakes discussed earlier in the paper, which consisted of a group of about 10 ordinary (non-elite) citizens.

years of planning and preparing, community leaders in Grand Rapids, Minnesota implemented GrandNet in 1997. This community electronic network made Internet-linked computers available to students in the public schools and citizens in the public library, and it offered free computer training classes to the community. Instead of a community-wide approach as seen in Grand Rapids, leaders in Detroit Lakes created LakesNet. This project, rooted in the Public Utilities division of the city government, offers citizens Internet access at a regular monthly fee—much like any private Internet service provider would.

This paper attempts to shed light on why—though faced with the same basic informational and technological needs—one city, Detroit Lakes, chose to take an entrepreneurial approach to networking and the other city, Grand Rapids, chose a more collaborative approach, promoting equal access for its citizens. Based on surveys, focus groups and elite interviews carried out in the two cities, we find that these divergent approaches reflect more fundamental cultural differences in the two communities. When compared to Detroit Lakes, Grand Rapids has a wealth of social capital, as evidence by community trust, cohesion and norms of collaboration. Cooperation and social trust in Grand Rapids, particularly among its innovative community leaders, helped to instigate the development and character of its community electronic network. These findings illustrate the importance of considering the role played by elite political culture, especially when considering projects or policies that are strongly driven by community leaders.

Moreover, we discover that the cultural differences in the two communities are also manifest among the mass publics. In Grand Rapids, ordinary citizens seem to agree with the elites that it is the government's responsibility to promote technology diffusion, particularly to those who have been left behind. People in Grand Rapids seem to be community-minded, especially when juxtaposed against the individualism in Detroit Lakes.

Finally, we establish that cultural attitudes among citizens in Grand Rapids—those of civic concern and trust—seem to be important in sustaining and perpetuating the community electronic network. Indeed, our structural equation models utilizing the survey data revealed that respondents who are involved in their communities and high in trust are more likely to be supportive of computers and their impact on society, as well as supportive of the community electronic network GrandNet.

As noted earlier, in much of the previous research applying the concept of social capital to community electronic networks, the causal arrow is assumed to point from the network to social capital. The focus of this paper has been to uncover the extent to which pre-existing social connections shaped the character of community electronic projects in two particular rural communities. We consistently find that community culture seems responsible for the divergent approaches that Grand Rapids and Detroit Lakes took in the development of their technological infrastructure.

In our future research, we plan to analyse ways in which these different types of electronic networks affect various aspects of community life. Ideally, community electronic networks like the one found in Grand Rapids may fulfill a number of civic goals including community cohesion, informed citizenship, access to education and training and public participation (Shuler, 1994; Anderson et al., 1995). Given the

present concern among political scientists over the apparent decline in social capital in American society in recent decades (Putnam, 2000), and the concurrent decrease in political participation, especially voting (Rosenstone and Hansen, 1993), community electronic networks may represent a potentially significant technologically based approach to the problems of civic and political non-involvement. Determining whether the networks' goals of community building, increasing political engagement, and reducing digital inequalities succeed should be based in part on more extensive empirical study.

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Appendix A. Selection of control community through cluster analysis

To select a control county to compare with Itasca County, the home of the GrandNet Project, we performed a cluster analysis of all Minnesota counties using the variables listed in the table below. We standardized the data values using z-score transformations, used squared Euclidean distances as the proximity measure, and used the average linkage between groups as the clustering method. The first time Itasca County was placed in a cluster was when it was added to one that already contained two counties: Becker and Carleton. That cluster later added six more counties, but the core of the cluster was Becker, Carleton and Itasca Counties. As noted in the text, for substantive reasons, we selected Becker County as the best control group.

Data obtained from DATANET (maintained by Minnesota Planning's Land Management Information Center)	Data obtained from the 1990 US Census
Population (1995 projection)	Age
Sex—percentage male (1995 projection)	Per capita income
Justice system expenditures (1992)	Number of people
Liquor sales (1992)	...at various education levels

Monthly unemployment rates (1996)
Number of

...households (1995 projection)
...married-couple households (1995 projection)
...school suspensions (1992–1993)
...runaways (1994)
...juvenile apprehensions (1994)
...dropouts (1993–1994)
...infant mortalities (1992–1994 total)
...low birth-weight babies (1994)
...mothers under 18 (1994)
...babies whose mothers had no prenatal care (1994)
...homicides (1993)
...criminal offenses—by type of offense (1993)
...arrests (1993)
...drug arrests (1993)
...DWI arrests (1993)
...chemical dependency programs (1994)

Number of people

...65 and over (1995 projection)
...19 and under (1995 projection)
...in labor force (1995 projection)
...on probation (1993)
...in detox (1992)
...in chemical dependency programs (1993)

Number of children
...in poverty (1989)
...on AFDC (1995)
...reporting abuse, neglect (1994)
...placed out of home (1993)
...receiving free school lunches (1993–1994)
...identified as disabled
...with interest, dividend, or net rental income
...with farm self-employment income
...with nonfarm self-employment income
...with wage income
...with public assistance income
...at each extreme of income scale
...employed in financial industry
...employed in service industry
...employed in public industry
...employed in basic industry
...in homes where a Native American language is spoken
...with manual occupation
...with technical occupation
...with service occupation
...with laboratory occupation
...below poverty level, by age group
...who are Native American
...who are non-Native American non-White
...enrolled in public schools
...enrolled in private schools
...living in urban areas
...living in rural areas

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