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Unifying Community Technology and Information and Referral Programs to End Digital Divide Disparities: Connecting Low-Income Populations to Health and Human Services

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Abstract

In recent years, funding for community technology (CT) programs has been greatly reduced. With the decline in government and foundation grants, and limited corporate support for programs in rural regions it is struggle to maintain a CT presence. This project investigates the effectiveness of Tuolumne County's CT InfoNet program in connecting the county's low-income residents to health and human services through a web-based Information and Referral (I&R) service. In light of decreased available funding and the increased competition among communities for a presence on policy agendas, existing CT/I&R programs must constantly evaluate their effectiveness in providing high quality programs that serve their respective communities and consider merging programs to survive in economic downturns.

Chapter 1:Introduction

Community Technology Counters Digital Divide

The *digital divide* is defined as the gap between those with access to computers and the Internet and those without (Clinton, 2000). Studies on the digital divide have shown that city-dwellers with higher incomes and more education predominantly have greater rates of access to technology. Likewise, non-whites and those who live outside metropolitan areas struggle to obtain access to computer technology and the Internet (Leigh & Atkins, 2001). Furthermore, the term digital divide has come to mean more than a division of technology but in its bigger meaning:

> [Technology] has been recognized as a new spin on divides that have existed for ages – such as those caused by differences in race, income, immigration status, disability status, and gender. Under this worldview, technology has become a tool to strengthen existing community efforts and to build new opportunities to bridge traditional divides. (Community Technology Foundation of California, 1999, p. 1)

In conjunction with the technology revolution of private sector markets during the 1990s, the government began changing the way they deliver social service systems from person-to-person interface and paper transactions to virtual interface. E-government now provides Internet systems for processing applications for immigrants, applying for professional licenses, renewing driver's license, obtaining tickets for public transportation, or even filing income tax returns.

In addition, educational institutions are integrating information technology into their programs. For example, Golden Gate University offers an online curriculum for working professionals and many of the Universities in California require students to have email accounts or process their applications by way of the Internet.

In the 1980s, Antonia Stone foresaw that people lacking access to computers risked being left behind in education and employment. Stone responded in 1983 by establishing the first

community technology centers (CTC) known as "Playing To Win" (Sargent, 2002). The network began with six centers in Boston, New York City, and Washington, D.C. (Sargent, 2002). Today many people in underserved communities use a range of CT programs to acquire computer and Internet training skills, connect with community resources, and access information. Stone's Playing To Win program became a catalyst in a community technology movement that tries to counter the digital divide. In 1995, the Playing To Win network received a five-year grant from the National Science Foundation to develop an additional 45 centers across the U.S. and the network became the Community Technology Centers' Network (CTCNet, 2004). Today the CTCNet contains over 4,000 locations — each tailored to the need of their communities, "including settlement houses, after-school programs, church programs, adult literacy programs, and alternative schools" (Sargent, 2002, p.1). In the early 1990s, the U.S. Departments of Commerce and Education developed federal granting programs for CT to help narrow the digital divide through innovative and experimental approaches.

Defining CT

"Community Technology is emerging in many forms and still in its experimental stage; it's an organization made up of many contributors, but has not yet been institutionalized" (Gorda, 2005). Hecht (1998, p. 9) lists eight general categories of work facilitated by CT programs: 1) government and democracy; 2) health and human services; 3) educational services and community involvement; 4) quality-of-life information; 6) discounted access to the information highway; 7) economic development; and 8) training.

Institutionalizing CT may be difficult with numerous community-based models and because part of their success has been in their ability to be formed out of a local vision. There is not one best representation that can fit all community technology needs. "Perhaps the simplest

message to take forward is that one size does not fit all, and there cannot be a franchise approach to addressing community needs effectively through technology. Instead, locally driven solutions must be supported" (Computers In Our Future, CCPF 2000, p. 1). CT programs are still very young — just over years and still in the innovative stage for developing programs that are using and providing information technology for low-income communities.

Therefore, many definitions of CT reflect this stage of discovery as it evolves with the help of CT professionals, beneficiaries, the technology industry, the policy community, the government, academia, and philanthropy. The Community Technology Foundation of California defines community technology as "projects that use technological tools in innovative ways to strengthen communities" (1999, p. 1). For the purpose of this report, CT is defined as nonprofit organizations that provide information and technology access and training to historically disadvantaged populations, such as women, minorities, and low-income individuals.

With so many CT initiatives sprouting out of local visions—connected to networks of similar projects, "right now, research should be based around context, context, and context" (Gorda, 2000). Gorda claims that planners and researchers must fight the urge to oversimplify conceptions of technology and its direct "impact" on people and places. In the political and economic wake of the dot com bust, the shift from a democratic administration to a republican administration — that views the digital divide as a nearly solved problem, and 9-11, the funding cutbacks for CT are experiencing a bust.

Community Technology and Information & Referral

With CT programs at risk, the technology industry and policy community can benefit by examining more closely the meaning and value CT programs bring to a community like Tuolumne County. InfoNet has won state and national attention for its innovation program

merging service principles from both the field of CT and I&R. Unlike the CT's history of ten years, community I&R programs have been in existence as part of the health and human service industry for nearly 50 years (AIRS, 2005). I&R programs help people navigate the maze of community services by connecting them to the services that best meet their needs. The Alliance of Information and Referral Systems (AIRS) describes I&R as:

> [People] in search of critical services such as emergency financial assistance, food, shelter, child care, jobs, or mental health support often do not know where to begin. Looking for help means locating dozens of phone numbers and/or websites (for those who have access), and then searching through a maze of agencies and services to make the right connection. I&R services were created to help people negotiate this maze; comprehensive and specialized I&R agencies now exist to provide linkages between the individual and the services available in their community (2005, AIRS.org)

I&R has traditionally been a phone-based service pushing to become institutionalized through 2-1-1 policy. 2-1-1 is a three-digit number recognized by the Federal Communication Commission as a number local communities can make available to access information on health and human services.

The traditional benefits underscored in a number of studies explain that CT programs provide benefits such as technology access and computer training to urban communities. Yet, there has been limited research on CT programs in rural regions and even less research conducted on CT programs that act as information and referral hubs. As community hubs, they enable people to use technology to improve their lives by obtaining local information on health and human services. "Developing scholarship on the digital divide is complicated by missing or limited datasets. In general, comprehensive longitudinal surveys have yet to collect adequate data on how technology factors affect the poor" (Gorda, 2003, p. 170).

Research Study

The purpose of this study is to investigate InfoNet, Tuolumne County's CT/I&R program

located in a rural community of California. After several community assessments in Tuolumne County demonstrated that one of the greatest barriers to CT is that residents in the area are unaware of available community services, several service providers and philanthropic organizations partnered to develop what became known as InfoNet

InfoNet provides a community website directory of health and human services and manages 12 Neighborhood Information Centers (NICs). The NICs are located at community-based organizations that offer free public access terminals and informal training and support. Locations include: libraries, a family learning center, a homeless shelter, a drop-in-center, a family resource center, job connection, a disability resource center for independent living, and the Kene-Me-Wu Family Healing Center for Native Americans. All of these community-based organizations provided an informal I&R component to their services. InfoNet has helped establish a CT service in Tuolumne County and develop a formal network of community-based I&R programs.

This paper analyzes InfoNet's ability to connect low-income populations with health and human services. This research paper asks: Are low-income residents of Tuolumne County finding health and human services through the InfoNet program? As sub-questions, the research seeks to answer: 1) How many clients does InfoNet serve? 2) How many health and human services are low-income residents of Tuolumne County finding while using InfoNet? 3) What types of health and human services are low-income residents in Tuolumne County finding when they use InfoNet? 4) How easy was it to find the health and human services that they needed?

Chapter 2: Literature Review

Purpose of the Literature Review

The literature review served as the basis of secondary data. The data from other literature came from government documents and studies prepared by CT and I&R professionals, coverage by the media, professional publications, and special interest groups. The secondary research provided information on the background of CT and I&R, information on types of clients served, common findings on their strengths and weaknesses, and information on such program's funding histories. Key features absent from the studies on CT/I&R programs became the basis for this research project.

Most of the existing CT literature has focused on how the availability of community technology centers improves computer literacy and job skills in urban communities; however, there has been little research specifically exploring the benefits of CT in rural communities and no studies on how CT provides I&R services in connecting low-income residents to health and human services. The purpose of the literature review is to assess:

1. Background information on CT and I&R programs, why they are funded, and populations served;
2. Ties between research to larger issues and paradigms of management, public administration, community development, public policy, nonprofit management, health and human services, and technology;
3. Previous research findings relevant to this study;
4. Various perspectives taken and where this research project relates to these debates and perspectives;
5. References documenting the effectiveness of CT and I&R;

6. Any information that reveals the significance of this study, and
7. Insights to help identify how this topic might supplement previous studies.

CT Background & Populations Served

Data from the article, *Falling Through the Net: Defining the Digital Divide* (1999) demonstrates that schools, libraries, and other public access points continue to serve groups without access at home. For example, certain groups — the unemployed or low-income populations — are far more likely to use CT to access the Internet (Children's Partnership, 2000). The Federal Department of Commerce conducted a study that reported of Internet users surveyed, 14.2% did not access the Internet at home; this suggests that people without home access likely log on to the Internet from another location such as school, work, or through a CT program (NTIA, 2002). The study reported that 38.2% of users without home access still accessed the Internet daily (2002). Another government report, *Community Technology Centers Program, Annual Performance Data* (2002, p.9) on grantees of the Office of Vocational and Adult Education states:

> Improving technology access for Americans who have limited access at home, school, or work is an important first step to improving opportunity, because access to computers and the Internet makes it possible to learn valuable skills and use information that can help individuals realize their dreams for education, career, and a brighter future (p.9)

The report also indicated that low-income Americans and ethnic minorities are among the most widely served by CT (2002).

A 2001 research study named "Computers in our Future" (CIOF) established the positive impact of 11 CT programs in California. The study's findings demonstrated that the 11 CT programs were able to reach traditionally disconnected populations. Seventy-nine percent of the

center's users were Latino/a, African American, Asian American and Native American (2001). In three years beginning in 1998, the 11 CT centers provided services to over 22,500 low-income Californians. More than a third of the participants used the centers for computer training; 13% used the CT to seek employment, and others used the CT program to obtain personally significant information. The report's summary concluded that these CT programs provided much needed assets to the communities they served.

The anecdotal evidence found in the CIOF research project demonstrated that low-income participants have benefited from CT programs by improving their performance at school and preparing them for employment; the programs also provided participants with a way to maintain a certain level of connectivity and reliably access information that enabled them to lead self-sufficient and productive lives (2001). A research study by Servon (2002) that surveyed 123 CTC managers found that three-quarters of the respondents targeted low-income populations and more than half offered programs for senior citizens and women.

CT Services & the Internet

Many CT programs are embedded within already established community-based organizations and use a holistic approach by enhancing the existing community services (Office of Vocational and Adult Education, 2002). Such CT programs can go beyond providing access for technology and also act as resource and referral centers — connecting users to personally significant information that can improve their lives (2002). Such reports have focused primarily on the ability of CT programs to connect beneficiaries with the work force through computer training and job search. Servon's CTC survey revealed that CTCs place strong emphasis on education and job readiness.

A report to the Ford Foundation (Davies, Pinkett, Servon & Schwartz, 2003) recommends CT and Community Development (CD) agencies align their efforts to broaden their impact on community change. The report recommends CTCs form this synergy by functioning as public spaces that include gathering spots for information and technology training and as a place for fostering community involvement and social interactions. *One More River to Cross* (2004) postulates that to be healthy and contributing members of society, everyone should have some way to access and use information technology. Access to information technology can help underserved people learn to use technology and teach them to apply technology to their daily lives in seeking and obtaining jobs, increasing their education level, finding and accessing health care services, planning finances, finding consumer information, and enjoying personal interests (Children's Partnership 2001, Benton Foundation 1997, Chow 1998).

With more and more low-income Americans gaining access to computers and the Internet through CT programs, Content Bank conducted a study to determine how low-income populations use the Internet, where they access technology, and what kinds of activities they use the technology to undertake (2000). Their investigation showed a high level of use among low-income Americans for self-improvement — online courses, job search or information. Of the 57% of Americans earning between $10,000 and $14,999 who use the Internet outside the home, the study found 20% use it for job-related tasks. The study discovered that local information was one of the most needed Internet resources. Content Bank found the lack of access to local information to be one of the four access barriers affecting low-income Americans. The study concluded that underserved Americans desired access to online content that would help them improve their overall lives. Though many studies indicate clients use CT to access additional information over the Internet, a comprehensive literature review does not provide details on the

type of information subjects searched for outside of employment searches or if any of the Internet searches at CTs linked the subjects to health and human services.

Funding CT

The ability to sustain CT programs has always been a challenge; dedicated funding sources in the past have been unreliable. Limited grant programs for CT started and ended after just a few years. Outside of government grants, foundation funding formed from corporate technology mergers such as the merger between SBC and Pacific Bell that established the Community Technology Foundation of California in 1998 and generated $50 million towards CT. Moreover, in 2001 a merger between GTE and Bell Atlantic formed Verizon and resulted in a Community Collaborative Fund managed by the California Consumer Protection Foundation; The Fund generated $25 million towards CT (Verizon, 2001; CTFC, 2005). Such mergers must be approved by the California Public Utilities Company to insure provisions for the public interest; these approvals result in the formation of CT foundations.

Recently, a new funding source has been slated following the passage of AB 855 in California (CCPF, 2004). CCPF noted that, the first initiative of its kind, AB 855 devotes 15% of revenues generated from leased wireless telecommunication facilities (e.g. cell towers on state property) to create a Digital Divide Fund. CCPF noted that this bill will eventually generate an estimated $3 to $6 million for the Digital Divide Fund annually, however it has only generated $165,000 in its first year of 2004. While new funding sources are emerging, other funding sources from the government and foundations that helped to start-up CT programs have shifted their focus away from CT programs. The 2005 federal budget eliminated the Technology Opportunities Program — a federal program used to fund CT — and the loss of that funding source directly impacted the InfoNet program investigated in this paper. Traditionally, private

sector technology industries have funded CT programs in areas where company employees work or reside; yet, recently many companies have shifted their funding to areas in developing countries (Melymuka, 2003). Gundrey's 2004 study explains the problem concisely:

> According to a 1999 Foundation Center survey, less than 1% of foundation funding goes to technology. Human services (including youth) accounted for 25%; education, 20%; health, 12%; arts and culture, 14%, and the environment, 7%. If you are running a "technology program," you are severely limiting your funding options. (p. 1)

CT Partnerships

With many funding shifts and budget shortfalls, new research studies like the one described by this paper will play a critical part in substantiating not only the primary benefits of CT but also any discovered secondary benefits of CT programs. Benefits from partnerships and mergers between community-based organizations may contribute to developing a greater community impact such as what could be gained when CT and I&R programs work collectively. This research study may help reveal how CT/I&R can bring additional value to communities while also contributing to their continued sustainability.

This research study on Tuolumne County's InfoNet program can help protect future funding for CT by evaluating the program's effectiveness in providing high quality services. This paper evaluates a dimension of CT not previously studied — CTs role in connecting low-income residents to health and human services through partnerships with I&R programs.

Information and Referral Background

I&R programs have long been the traditional point of contact for people in the community who require information about or linkage with human service providers. (Sales, 2002) Traditionally, I&R has been a phone-based program for linking people with health and

human services. I&R originated as part of the role for telephone operators during the early use of the telephone, but it didn't become part of the human service system until 1921 when the Service Information Bureau was formed to help people locate specific human services (The Center for Community Solution, 2004). By 1925, the Bureau was developed in several cities of the United States as a resource for returned servicemen of World War II (Ohio 2-1-1, 2005). In 1944, there were at least six I&Rs in the U.S. including Ohio, California, and New York (2005). Over the next 15 years, I&R was established in hundreds of communities (2005). The development was fueled by 1) a growth in the acceptance of social work as a profession; 2) the increasing breadth and complexity of tax-supported and voluntary services, and 3) the demand from organized labor and industry and business for a more intelligent interpretation and broader utilization of social services (Out of the Shadows, AIRS, 1995).

By 1973, the information and referral network established the Alliance of Information and Referral Systems (AIRS) to improve access to community resources for all people. (Ohio 2-1-1, AIRS, 2005) In conjunction with the United Way of America, AIRS adopted the National Standards for Information and Referral and expanded the network to share information and promote professionalism in the field of I&R (AIRS, 2005). Today, AIRS represents nearly 1,000 I&R services throughout the United States and Canada. I&R services respond to more than 50 million calls a year with over 5,000 I&R services existing throughout the United States and Canada (Ohio 2-1-1). I&R agencies, though limited, are funded by a diverse range of sources from United Way, local government, or specialized I&R departments such as the Department on Aging or Childcare (AIRS 2000)

I&R & Technology

With the development of the Internet and growth of technology, I&R programs have felt

the pressure to evolve with the advancements of new technology and have battled to preserve a quality of service that includes empathetic listening in what is referred to as the referral interview (Maas, 2000). The referral interview includes an interview process that analyzes the client's problems, assesses the needs, and facilitates a selection of suitable resources by navigating through their maintained database of health and human services (Maas, 2000 & Sales, 2000). I&R professionals stress that they are more than passive conduits to the information they maintain, but also contribute their skills in understanding the overall service delivery network (Sales, 2000). They view themselves as gatekeepers and translators of the social service system. Sales claims, "Direct access to human services information works very well for people who know what they need; but for the individual who is overwhelmed by his or her life situation and has no idea where to turn, raw information is of little value without some guidance in how to use it."(Sales, p. 2) Under no circumstances shall technology reduce or replace I&R supported access through a qualified I&R specialist. "The main role of technology is to enhance or strengthen person-to-person contact, not to reduce or eliminate such contact or to make it more difficult." (AIRS Standards, 2002, p.8) In fact, many I&Rs are only beginning to consider how to incorporate information and communication technology into their service delivery activities. I&R programs include database systems that can either be specialized to a certain population such as people with disabilities or seniors or are comprehensive in nature. Comprehensive I&Rs serve as the hub agency for managing the communities' central database for health and human service resources (Sales, 2000).

The information hubs have many opportunities to share their database with other organizations that provide I&R since their databases are now expanding onto the Internet. The information hub for each community needs to ensure that individuals and organizations outside

of the I&R programs have a variety of choices for accessing the centrally maintained data (AIRS Standards, 2002). With limited resources for social services, AIRS promotes cooperation and collaboration with other community groups to build a coordinated I&R system that ensures broad access to I&R services and avoids a duplication of effort. Society increasingly demands more options for accessing information and services. For example, the banking industry enables customers to conduct their financial business by walking in to a bank, calling a phone line, using an ATM, or logging online (Plevancic, 2002). "I&R services within the system may choose to be "full service" programs performing all necessary I&R functions within their designated service area; or may prefer to partner with one or more I&R services to share those functions" (AIRS standards, 2002, p.3).

I&Rs can continue to keep their human touch as they expand their services over the Internet. The Internet can enhance I&R programs by distributing health and human service information through multiple outlets that now include phone, computers with Internet, and community-based sites that provide I&R services (Plevancic & Marin, 2003). The idea is to develop a well-coordinated, well-publicized continuum of access points that enables people to find the information they need in the way that is most convenient for them. Pushing everyone through a case management process is just as dangerous as leaving everyone to their own devices with kiosks or the Internet. (Sales, 2000)

"A great partnership could be forged if I&Rs and CTCs work together to provide access to both valuable community content and community technology" (Plevancic & Marin, 2003, p.6).

Chapter 3: Methodology

Background

The review of literature addressing CT programs determined that there is a need for primary data on more CT programs — especially CT programs in rural communities or those experimenting with new types of partnerships and program mergers. The study's objective was to determine if residents of Tuolumne County, a rural community in California, are finding health and human services through their use of the InfoNet CT/I&R Program. Only by evaluating primary data can the true value and effectiveness of the InfoNet program be assessed.

The methodology was comprised of primary research methods that found both qualitative and quantitative information. The primary research included three sets of data from: 1) a focus group with program clients from 3 of the 12 NICs that target low-income beneficiaries (the drop-in-center, the homeless shelter, and the family learning center; 2) 103 questionnaires collected from all 12 NICs, and 3) the number of visitors and page views to the InfoNet program received between January 1, 2005 to March 31, 2005.

The questionnaires and website tracking system were designed to elicit quantitative information on the number of health and human services matched with the beneficiaries during their visit at the NIC. Furthermore, the questionnaire was administered to determine if the program beneficiaries found the services they sought and to evaluate the ease with which they found the information. The focus group collected qualitative information to discover any additional benefits from the InfoNet program such as the types of services users were finding, how they were using InfoNet, and recommendations for improvement.

The summary total for the number of InfoNet's visitors and page views also contributed to the primary data. A computerized website tracking system used quantitative data to track the

aggregate number of page visits and number of page views to every agency and program page within the InfoNet website.

The three data sets gathered analyzed answers to the following questions:

1. How many clients are served by InfoNet?
2. How many health and human services are low-income residents of Tuolumne County finding during their use of InfoNet?
3. What types of health and human services are low-income residents in Tuolumne County finding through their use of InfoNet?
4. How easy was it to find the health and human services that they needed?

The questionnaires were distributed on the desktop of the NIC computers through an Internet questionnaire, and later made available in hard copy format on the computer work stations. On-site staff at the NICs were trained to randomly administer the questionnaires to NIC clients following their use of the InfoNet computer. The questionnaire measured the number of health and human services that clients found, their ease of use, and whether they specifically found information that they targeted. After the first few days of administering the questionnaires, NIC staff requested paper versions due to a large demand for hard copies from clients. Some staff members said that the clients were concerned about the confidentiality of completing electronic questionnaires.

The target population for the data collection was low-income residents in Tuolumne County who use the InfoNet website and/or NICs. Low-income users comprise half of the NICs' clients since these NICs target and serve low-income groups, while the other 6 NICs are libraries that offer free computer Internet access to the public at-large but are generally utilized by low-income patrons. The subjects for the focus group were clients from the 3 of the 12 NICs that

target and serve primarily low-income populations: the homeless shelter, the family learning center, and the drop-in-center.

One focus group of 10 clients was conducted on April 12th of 2005. The focus group was given an hour to discuss their answers, issues, and concerns on the impact of CT in their community. To protect the privacy of the subjects, the NIC staff and focus group facilitator did not record subject names, addresses, emails, or any other personally identifiable information.

Limitations

Because the researcher for this study is an observer and project manager for the InfoNet program of five years, some bias may be construed in this final report. Results and findings may be impacted by internal validity such as selection, and design contamination (O' Sullivan, 2003, pp. 58-61). The project could be affected by statistical regression due to any changes in available services during the time in which the data are collected. For example, some services — such as the Energy Assistance program — are available for only a certain amount of time each year. More clients may be vigilant to this service during their use of InfoNet and select this program as a valuable resource if the program is active during their participation in the questionnaire or focus group. Likewise, they may not consider the Energy Assistance program valuable during periods of the program's inactivity.

Selection inaccuracies were difficult to avoid at the 12 NICs where the Internet questionnaire are administered. Though staff at the sites were trained by the researcher on managing the questionnaire, they may not have selected the subjects by closely following the random selection rules. Design contamination was likely to occur if subjects exchanged information about the questionnaire with other subjects. Furthermore, subjects may not have answered the questionnaire and focus group questions honestly if they felt that altering their

answers in any way influenced or controlled the project's outcome.

Definitions For the Purpose of this Study

1. Health and Human Services (as defined by Tuolumne County's InfoNet program):

(A) Services that assist individuals in becoming more self-sufficient, in preventing dependency, and in strengthening family relationships.

(B) Services that support personal, physical, and social development.

(C) Services that help ensure the health and well being of individuals, families, and communities.

(D) The continuum of programs that address human needs ranging from basic living needs (food, shelter, and health care) through life improvement services (education or government services) and life enhancement programs (fine arts, culture, and care for family pets or environmental wildlife).

3) Website Visits: occur when a remote site makes a request for a *page* on your server for the first time. As long as the same site keeps making requests within a given timeout period, they will all be considered part of the same visit. If the site makes a request to your server, and the length of time since the last request is greater than the specified timeout period (*default is 30 minutes*), a new visit is started and counted — and the sequence repeats. Since only *pages* will trigger a visit, remotes sites that link to graphic and other non-page URLs will not be counted in the visit totals, reducing the number of *false* visits.

4) Website Pages Views: are those URLs that would be considered the actual page being requested and not the individual items that make it up (such as graphics and audio clips). Some people call this metric *page views* or *page impressions*, and it defaults to any URL that has an extension of .htm, .html, or .cgi

Chapter 4: Analysis

Measurement Method

Because CT programs are unique to the needs of their communities, performance indicators must be specific to the context of the program being evaluated. For the most part, evaluations of CT have focused on individual outcomes such as job skills and access to employment opportunities; education and improved outlook on learning; technological literacy as a means to attain additional goals; new skills and knowledge; personal efficacy and effective outcomes; use of time and resources (Mark, Cornebise, & Wahl, 1997). In contrast, I&R programs are generally rated by the number of services matched with clients. Furthermore, because most programs are generally measured by the number of clients served, this factor was also taken into consideration for the evaluation analysis of InfoNet. Subsequently, for the purpose of this study the CT/I&R InfoNet program quantitatively measured outcomes and was considered to be successful 1) if 60% of the residents surveyed found at least one new service through their use of InfoNet; 2) if at least 60% found the service they were looking for; 3) if 75% found the InfoNet website program easy to use, and 4) if the website received at least 10% of the population in number of visitors per month (equivalent to 5,500 visits).

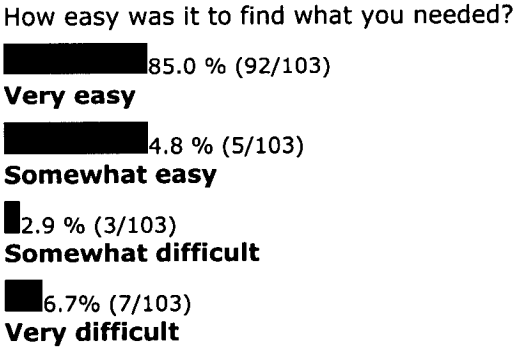
The data for this research project was collected and processed into an aggregate number of subjects who stated that their use of InfoNet enabled them to find at least one new service. If, for example, 85 subjects surveyed said they found at least one new service — this number was divided by the number of completed questionnaires — say 110. In this instance, the formula would be 85/110 = 77%. In this example, the surveys would demonstrate that 77% of respondents were able to find at least one new service during their use of InfoNet. This same formula was used for objectively calculating all relevant questions on the questionnaire. By

analyzing this data, I can quantitatively project the percentage of residents that benefit from InfoNet in Tuolumne County.

A visual presentation of the data is illustrated in the bar graphs below.

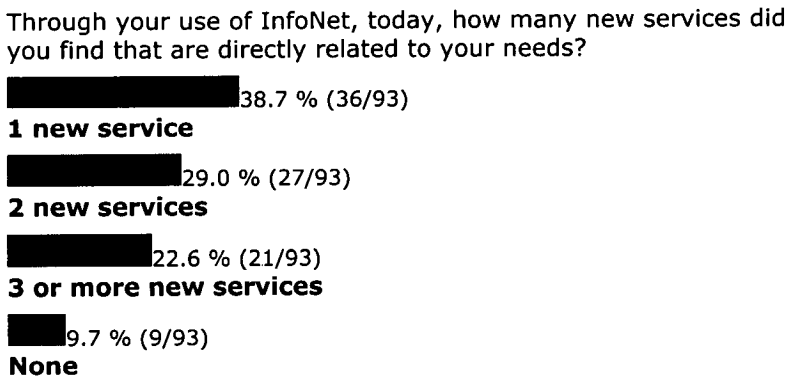
Questionnaire Data

Figure 1



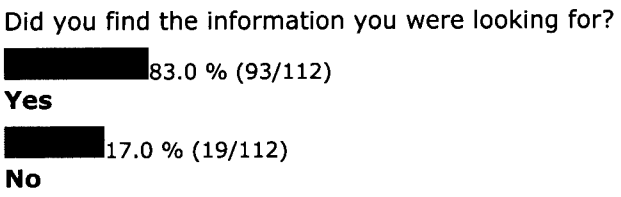
Seventy-five percent of those surveyed were expected to consider the InfoNet website easy to use for the program to be considered successful. Eighty-five percent considered InfoNet very easy to use, 4.8% considered it somewhat easy, 2.9% considered it somewhat difficult, and 6.7% considered it very difficult.

Figure 2



If the measurement tool indicated 60% of the subjects found at least one new service, than the program could be considered successful. The outcome demonstrated that 90% of all subjects surveyed found between one to three new services and one new service was most common. Ten percent of those surveyed did not find any new services.

Figure 3



Eighty-three percent stated that they found the information they sought, while 17% indicated they did not find the information they sought.

Additional data collected was demographic information. The majority of the people that completed the questionnaire were White 62%, Female at 67%, between the ages of 19-35 at 45% and 56% were a parent with children age five or under. Native Americans came in a glaring second at 26% probably due to an engaged partnership between the Native American Kene Me-Wu Family Healing Center and the InfoNet program. Latinos were third at 6.1%. Second in age range was 36-54 at 36%. More community outreach efforts for targeting special populations such as seniors could prove successful if staff and resources were available for conducting social computer and Internet classes. Such methods demonstrated to be a valuable form of promotion as proven by a local Internet and marketing company and a computer users group in near by Amador County.

Focus Group Data

The focus groups reported a great number of benefits from the use of CT, but some benefits were more significant because they were reported by all groups:

1. Communication. All the participants saw improved communication as an important benefit of using CT. Participants reported using email as a way of keeping in touch with family members in the US or overseas. In addition to improved communication, participants also reported that internet technology was a more affordable way of communicating with members of family.

2. Employment & Education. The focus group participants reported that they use technology to seek employment and education. They talked about doing job searches on the internet using word processing software to develop resumes or access online courses.

3. Access to information. All subjects reported the increased ability to access information using the internet. Participants reported accessing information for general knowledge; parents stated an ability to use technology for helping their children with academic progress; others talked about finding resources such as food, clothes, etc. In addition, some participants saw a benefit in the ability to bargain shop or online banking.

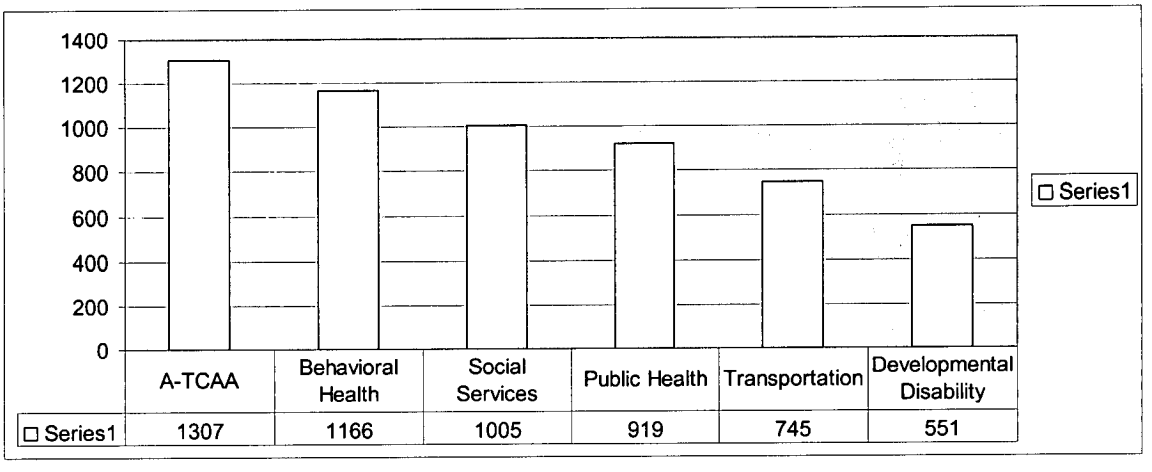
Overall, participants stated they used CT to access general information that impacted their basic needs. All participants reported that using CT to access social and government services that offered assistance was easier and more convenient. Participants also mentioned accessing healthcare information, information on nutrition, educational information, or searching for affordable housing. When participants were asked what new health and human services they found through their use of InfoNet, they described energy assistance programs, transportation,

legal services, housing, and programs for children, mental health and substance abuse.

Website Visitors Data

The InfoNet website received a total of 27,989 visits from January 1, 2005 to March 31, 2005; however, the tracking method used was not able to differentiate new visits from repeat visits. Of those visits, Amador-Tuolumne Community Action Agency (A-TCAA) received the most traffic with 1,307 visits during this quarter (See figure 4). A-TCAA is an umbrella organization that includes services such as the Food Bank, Homeless Shelter, Head Start, Family Learning Center, Mentor Program, Energy and Housing Resources, and Friday Night Live. Of A-TCAA's programs, Housing Resources and the Homeless Shelter received the most traffic. After ATCAA, Behavioral Health had 1,166 visits, Social Services had 1,005, Public Health had 919, Transportation had 745, and the Developmental Disability Agency had 551 visits.

Figure 4



Chapter 5: Conclusion and Policy Recommendations

Community members are accessing information on health and human services in a variety of ways. Even before the information technology revolution, I&R service providers were not the only method for residents to access information on community services. The most common method is probably still word of mouth. In fact, I&R could be considered the pioneers of CT. A common language and vocabulary between the two fields for knowledge-sharing would benefit both I&R and CT practitioners. There is a communication gap between the two programs, but significant overlap. Community services have many tools at their disposal for delivering services and making vital information available through a well-conceived continuum of access points.

It is the responsibility of community organizations to make their services as efficient and effective as their community resources enable them to do. One of the major roles and challenges of InfoNet's CT/I&R program was community outreach such efforts can be streamlined in communities by referring CT and I&R patrons to the two options for accessing health and human service information via telephone or computer Internet mediums located at the CTCs. In fact, a cost-effective community outreach team could be established that represents CT/I&R or other community service providers that includes representatives that are skilled in targeting special populations such as minorities, seniors, people with disabilities or isolated groups.

I&Rs have a history of storing a comprehensive catalog of health and human services for their local communities and a mission to provide access to information on health and human services. CT programs, though fairly young, are becoming known as the organizations providing public access terminals to the Internet for low-income populations — organizations with a mission to close the digital divide. This research demonstrates that I&R and CT can

collectively operate in bringing health and human service information to low-income residents through the Internet. This paper does not recommend that I&R programs discontinue their phone-based functionality, but instead suggests they enhance their program by establishing a presence at community technology centers. CT and I&R professional programs could collaborate to assist their patrons face-to-face in identifying community services through the community I&R web portal.

I&R and CT should work together in developing synergies that will integrate service provisions. Augmenting CT and I&R could be done by first bringing top leaders together to learn about each other's history and culture, develop a common language, and create strategies for how the two organizations can enrich their community service and policy efforts towards achieving institutionalization on a state and federal level. Mix top-down and bottom-up approaches to ensure a balanced range of community practice activities and approaches.

In the 1990s, collaboration and partnerships emerged for adapting to the changing environments of communities and government funding; today, company mergers are common, but need not be limited to the private sector. Market mergers can serve as examples for how mergers between nonprofit or public sector groups can enable the organizations to survive in economic downturns while also enhancing the services they provide the community.

The literature review in this paper confirmed that low-income residents are accessing online information to help them improve the quality of their lives. The research study's data substantiated the hypothesis that low-income residents are accessing health and human service information through their use of CT/I&R. The new benefits of the CT programs revealed in these studies demonstrates a need for CT and I&R professionals, philanthropists, technology industry leaders, and legislators to play an active role in ensuring these programs receive the sustained

funding and policy developments they need to continue providing benefits for future generations. Continued efforts to educate and share lessons learned on the diverse benefits that both CT and I&R programs can bring to local communities should be reinforced through a joint Public Education Campaign. CT and I&R organizations should stay tuned to corporate mergers and play an active role as negotiators with the Public Utilities Commission. Serving as watchdogs and stakeholders can help to insure local communities' interests are voiced in public matters.

People that are at a disadvantage need access and training on information technology in order to be not just consumers but producers in today's economy. They need connectivity to communicate across multiple mediums and to participate in a democratic society. Accessing health and human service information through CT and I&R is the first step in leveraging the past successes of telephone I&R and extending into computers and the Internet in order to achieve universal access.

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APPENDEX A

Questionnaire

Dear InfoNet/Neighborhood Information Center User, Please help us to serve you more effectively by taking a few moments to complete this brief form. Your confidentiality will be carefully guarded. Thank you for your valuable input.

1. Please select one of the options below.
    a. I am older than 18 years
    b. I am under 18 years (if you are under 18 then you must have guardian present to complete the rest of the form

2. Please select one of the options below.
    a. I understand the above information and willingly consent to filling out the questionnaire.
    b. I do not consent to filling out the questionnaire.

3. Through your use of InfoNet how many new resources did you find
    a. One new resource
    b. Two new resources
    c. Three or more new resources
    d. I found no new resources

4. What is your gender?
    a. Female
    b. Male

5. What is your age?
    a. 18 or under
    b. 19-35
    c. 36-54
    d. 55-61
    e. 62 and over

6. What is your race?
    a. White
    b. Latino
    c. Asian/Pacific Islander
    d. Native American
    e. African American

7. Do you have children age 5 or under?
    a. Yes
    b. No

APPENDIX B

Focus Group Questions

1. How do you benefit from using community technology like InfoNet?

2. How do you use community technology or InfoNet to access services and how can it impact your life when trying to access food, housing, employment, health services, etc.?

3. How do you benefit from using InfoNet?

4. What kind of resources were you able to find through InfoNet?