

Fostering Social Capital in Economically Distressed Communities

Tawanna R. Dillahunt

University of Michigan, School of Information
105 S. State Street, Ann Arbor, MI 48109
tdillahu@umich.edu

ABSTRACT

Past Information and Communication Technology (ICT) literature suggests that engaging in meaningful activities with ICTs may be related to socio-economic security, social inclusion, empowerment, and increased social capital. However, we identify a pervasive lack of understanding in existing literature, which raises an important research question: how can we build social capital where little social capital exists? We conducted a preliminary study to explore whether and if so, how, individuals in an economically distressed population with limited social capital use technologies to increase social capital and achieve socio-economic security. We contribute details about barriers affecting social capital (e.g., difficulties finding and making the right connections and an overall lack of trust within communities). We also suggest ways in which ICTs can assist populations that could benefit most from increased social capital and economic security.

Author Keywords

Economic mobility; sustainability; social capital; ICTD

ACM Classification Keywords

H.5.m. Information interfaces and presentation: Misc.

INTRODUCTION

In today's economy, it is becoming more and more difficult for individuals, especially those from low-income households in the U.S. to improve their economic status [17]. The Economic Recession of 2007-2009 resulted in employment decline; an increase in the number of participants withdrawing from an active labor force; and an increase in "underemployment," or number of individuals working part-time [37].

Findings from the Equality of Opportunity Project (EOP) show dramatic differences in economic outcomes based on geography alone [6]. Research presents no direct solutions to foster upward mobility; however, income inequality,

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than the author(s) must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from permissions@acm.org.

CHI 2014, April 26 - May 1, 2014, Toronto, Ontario, Canada
Copyright is held by the owner/author(s). Publication rights licensed to ACM.
ACM 978-1-4503-2473-1/14/04...\$15.00.
<http://dx.doi.org/10.1145/2556288.2557123>

racial segregation, quality of K-12 schools, and intergenerational mobility significantly correlate to low rates of upward mobility among lower-income communities. In fact, researchers have found that one of the strongest predictors of upward mobility in lower-income populations were correlates of social capital and family structure [6].

Social capital can be defined as "the information, trust, and norms of reciprocity inherent in one's social networks" [39 p.153], and economists and sociologists alike recognize the benefits and economic value of social capital [3, 32, 39]. Having social capital has been shown to be useful for gaining access to education and exploring job opportunities. Computer-mediated communication research suggests that online communities already high in social capital are most likely to succeed [26, 28], which could lead to "the rich getting richer" [20 p.28]. Identifying ways to foster social capital in areas low in social capital remains unexplored [6]. Given the findings of the EOP, perhaps crossing geographic boundaries to bridge areas low in social capital to areas high in social capital is key. This is consistent with economics literature, which suggests that ties providing access to otherwise unattainable information is most useful for activities such as a job search [25].

Recent HCI-related literature examines the effect social media has on social capital [4] and investigates the use of online sites directly. Contrary to prior findings, this research found that communication with strong ties on Facebook was predictive of finding employment after the loss of a job [4]. Prior research suggests that users of social network sites tend to have higher levels of bridging social capital than non-users [14]. Are the findings from [4] an example of "the rich getting richer?"

While it is known that engaging in meaningful activities with ICT technologies could lead to socio-economic security, social inclusion, empowerment [31], and increased social capital, it is less known if this is true for those low in social capital. And if so, it is unclear what activities are considered meaningful for these populations in terms of reaching socio-economic security. Our research seeks to address these questions by providing insight into the types of barriers economically distressed populations face, particularly those that relate to social capital.

We focus our understanding on how technology can foster social capital in the context of economic mobility within

areas experiencing economic decline. We target a population in a city known for its collapsed auto industry, which led to high unemployment rates, white flight [18], racially segregated neighborhoods, and poverty. Our population consists of those left behind—those unable to afford to relocate and those deeply rooted in a place they consider their home. We target a population in the largest city to file for bankruptcy in the U.S.—Detroit, MI [30].

We conducted a preliminary study with 28 Detroiters that involved gathering interview data, conducting technological assessments and social capital surveys, and holding a scenario-based design session influenced by [2,11]. The primary goals of the study were to: understand the resources the population used to get ahead, or achieve upward mobility; determine how individuals accessed these resources; and identify access limitations, or barriers. The design-based scenario sessions clarified obstacles and allowed us to investigate ways in which technology could help resolve problems related to lack of access to information, resources, jobs, and services. We extend prior research by investigating means in which economically distressed individuals can use ICTs to build social capital.

Next, we review related work, which provides context regarding the effects of social capital on employment within our target population and the impact ICTs can have on it. We then describe our methods and present an analysis of our results. We also contribute a preliminary understanding of how to better position HCI technologies to foster social capital among vulnerable populations in an effort to improve economic status.

RELATED WORK

Prior research has shown that social capital plays a significant role in class reproduction and upward mobility. Having social capital has been shown to be a factor in acquiring human capital e.g., education and physical capital, or financial assets that lead to development and growth [3]. Though prior research shows ICTs can increase social capital, a concern is that the increase is only shown in populations already high in social capital. In addition, research suggests that the effects of social capital may vary according to education and income.

Social capital as it relates to economic mobility

Social capital is defined as “the information, trust, and norms of reciprocity inherent in one’s social networks” [39, p.153]. Putnam describes two types of social capital as “bonding” and “bridging” [32]. Bonding social capital is associated with strong ties, or ties among close friends and family. These ties are usually found within a homogenous group. Bridging social capital, on the other hand, is associated with weaker ties such as acquaintances, distant friends, and colleagues.

Putnam argues that “bridging” ties, those ties that connect people across lines of race, class, ethnicity, and age, are especially valuable [32]. Similarly, Granovetter argues that

weak ties, or those ties between people with few common friends (e.g., bridging ties), are better sources of information [21]. Karlan et al. suggest that weak ties are most useful for job searches because they provide access to otherwise unattainable information [25]. Some research, however, shows that strong ties, or ties between close friends or family, are more important. For example, when ties are to be exploited as social collateral (i.e., when you need people to vouch for you and put their own reputation on the line in the process), strong ties may be more valuable [25]. We acknowledge that both types are important, but depending on one’s current access to social capital, one or the other may be more important.

Factors affecting social capital: income and education

Past research suggests that tie-strength may vary based on a person’s educational background. Erickson and Yancey found that the effects of using weak ties to find current jobs led to higher income for a group of well-educated respondents; however, among the poorly educated (e.g., less than high school), the use of weak ties appears to have led to a reduction in income [16]. This may explain why less-well-educated individuals rely on strong ties for jobs.

Fukuyama associates trust with social capital [19]. In fact, Guiso et al. suggest that trust, or social capital, matters most when education levels are low and law enforcement is weak [23]. Past research finds that civic engagement (e.g., membership in civic and political organizations) and interpersonal trust are correlated [27] and that the effect of trust is stronger among less educated people. Finally, additional research emphasizes that low levels of trust toward others are generally associated with high levels of trust within subgroups, such as the family [19]. Trust enables people to do business with each other, and doing business is what creates wealth [24]. Without trust, economic mobility may not be possible. Therefore, communities that lack trust are at a disadvantage.

Disadvantaged populations and social isolation

Earlier research suggests that networks among disadvantaged individuals do not offer opportunities for social interactions that could lead to advancement [12]. Others have found that networks for low-income populations are less beneficial for job seekers [35].

Socially isolated individuals living in high-poverty neighborhoods lack social networks with ties that act as bridges to established institutions and individuals. Networks in these areas do not offer opportunities for social interactions that could result in advancement because of the homogeneity. In other words, the family and friends who make up these networks are likely to be from the same social circles. As a result, economic mobility is a challenge for people living in these conditions [13].

Results of a study of 105 in-depth interviews with low-income blacks from the “Southeast County of Michigan,” suggests that informal job networks among blacks were less

useful in helping job seekers find employment [35]. In an attempt to understand patterns of social support in communities of concentrated poverty, the author reasoned that black job holders were hesitant to refer strong ties, such as friends and family out of fear they would lose their jobs if the work of the people they recommended was substandard. This contradicts the finding of Karlan et. al that strong ties are more valuable in exploiting social collateral (i.e., when you need people to vouch for you and put their own reputations on the line) [25]. This may also imply a lack of trust between low-income job seekers and their strong ties.

There is limited research on ICTs designed to increase economic mobility in areas experiencing economic decline. Given the poor opportunities for finding bridging ties and for networking effectively, future technologies could help address this gap [6]. Existing technologies such as Facebook could identify possible bridging ties, but do these populations use social networking tools in this way?

Social capital and ICTs

Some researchers argue that ICTs can increase social capital by promoting civic engagement on matters of public concerns [1]. However, community informatics research finds that we cannot ensure that communities will engage around technology alone; users must be able to engage with relevant content and meaningful applications [20].

Past ICT research shows that the existence of Information Technologies, particularly for low levels of social capital, creates networking infrastructure that encourages the formation of social capital [5]. Today, ICTs provide access to training and skills (e.g., YouTube videos, Coursera, Lynda.com) and social support. In terms of access, the digital divide is also smaller than what it was just a few years ago. According to the 2012 Biennial Media Consumption Survey, minorities are adopting laptops, mobile tablets, and mobile phones and going online in greater numbers [29]. Additionally, the social and collaborative nature of the Internet today may be helping to generate income for individuals and groups worldwide [40]. Despite the existing infrastructure, it is unclear if and how ICTs are being used to generate social capital among vulnerable populations when those with low levels of social capital still struggle economically.

Much of the ICT-related literature examines the effect social networking sites have on social capital and the different effects of communicating with strong versus weak ties [4]. Burke and Kraut examined this distinction on Facebook and found that communication with strong ties was predictive of finding employment in three months following the loss of a job whereas weak ties were not as instrumental [4]. This suggests that in Facebook, strong ties are more useful than communication with weak ties in terms of gaining employment after a job loss. However, results from the Biennial Media Consumption Survey find that those with lower incomes and education (less than a

high school diploma) have lower technology adoption rates than those with higher income and education [29], and past research finds that strong ties in economically disadvantaged areas are not as effective [35].

Researchers propose that future studies explore the differences between the value of strong and weak ties in online spaces to help determine if these inconsistencies are due to different participant populations, measures, or the types of questions asked [22]. An open question is how these differences can be resolved through the use of information and communication technology. Our study broadly explores the feasibility of using such technology to build social capital in vulnerable areas. In addition, we seek to better understand what type of social capital is needed, i.e., could bridging or bonding ties increase access to economic opportunities?

METHOD

We conducted a mixed-methods exploratory study consisting of in-depth interviews, participant surveys, and a design-scenario exercise modeled after [2,11]. In collaboration with sociologists seeking to understand downward mobility in Detroit, MI, we, from an HCI perspective, sought to understand how ICTs could offer solutions to individuals in areas of severe economic decline—particularly from the perspective of building social capital.

As we were collaborating with researchers at the start of a larger and longer-term study, we recruited participants primarily from USA Data, a service offering targeted mailing lists to consumers. Sociologists targeted African Americans aged 35-45 living in Detroit because of their likelihood to experience downward mobility due to local manufacturing shutdowns. We also employed other methods of recruiting such as word of mouth and advertising through a local community center.

In-Depth Interviews

Twenty-five of 30 interviewees completed surveys; as a result, we include data from participants who completed both interviews and surveys. Interviews lasted one to two hours and were digitally recorded at coffee shops, libraries, and a local community center. We gave participants \$30 in compensation for their time.

The goal of the interview was to understand the challenges of populations facing economic hardship, the strategies used to get ahead, the key resources identified in accessing these resources, and aspects of social capital (e.g., social trust, reciprocity, and community involvement).

Surveys

Following the interview, we gave participants a 25-30 minute paper survey to assess their levels of social capital. We used questions from the Social Capital Community Benchmark survey to gauge social trust, reciprocity, and community volunteerism [36]. To confirm prior research in this group and to analyze feasibility of using certain

ID	Gender	Participation	Education	Household Income (2012)	Total Household Members	Occupation
P1	M	I,S	Bachelor's degree	\$75K - 100K	2	Entrepreneur
P2	F	I,S,SD	Graduate or professional degree	\$75K - 100K	1	Electrical Engineer
P3	F	I,S,SD	Bachelor's degree	<\$20K**	4	Youth Specialist
P4	F	I,S,SD	Associate's degree	\$20 - 30K**	9	Student, Unemployed, Entrepreneur
P5	F	I,S,SD	High school diploma (including GED)	<\$20K**	3	Quality Control
P6	F	I,S	High school diploma (including GED)	\$20K-30K*	3	Housekeeping
P7	M	I,S,SD	Some graduate training	>\$100K	6	Case Manager
P8	M	I,S,SD	Some college	\$50-75K	1	Postal Worker
P9	F	I,S	High school diploma (including GED)	\$30K-50K	3	Quality Control
P10	F	I,S,SD	Some college	\$30K-50K	2	Student Advisor
P11	F	I,S	Associate's degree	\$30K-50K	4	Care management technician
P12	F	I,S	Less than high school (Grade 11 or less)	<\$20K**	4	Unemployed
P13	F	I,S,SD	Some college	\$30K-50K	3	Chrylser
P14	F	I,S	Some graduate training	\$30K-50K	3	Caregiver
P15	F	I,S,SD	Graduate or professional degree	\$30K-50K	2	Human Resources Generalist
P16	F	I,S	Some graduate training	\$20K - 30K**	7	Community Health Worker
P17	F	I,S	Graduate or professional degree	\$20K - 30K**	4	Self-employed
P18	F	I,S	Less than high school (Grade 11 or less)	>\$100K	5	Homecare
P19	F	I,S	Associate's degree	\$50K-75K	2	Postal Worker
P20	M	I,S	High school diploma (including GED)	\$75K-\$100K	2	Facilities Manager
P21	F	I,S	Some graduate training	>\$100K	3	Manager
P22	F	I,S	Some college	\$20 - 30K*	3	Customer Service
P23	F	I,S	Bachelor's degree	\$75K-\$100K	6	Senior Analyst, Provider Consultant
P24	F	I,S	Associate's degree	\$50K-75K*	8	Computer and electronics technician
P25	M	I,S	Graduate or professional degree	\$75K-\$100K*	1	College Administrator
P26	F	SD	N/A	N/A	NA	Entrepreneur
P27	M	SD	N/A	N/A	NA	Unemployed
P28	F	SD	N/A	N/A	NA	N/A

Table 1 - Participants (M=Male, F=Female; I=Interview, S=Survey, SD=Scenario-based Design; Asterisks indicate level of poverty as per (http://www.teachersforhealthykids.org/images/uploads/2012_FPL_Guidelines.pdf): **=Below 130% Federal Poverty Level, *=Within 130-135% Federal Poverty Level; N/A=Not available

technologies, we conducted a technological assessment as a part of our survey. We used questions from an existing Community Technology Survey [7]. These questions helped us understand the technologies the population had access to; if and how participants were already using the technology to find employment-related resources; and whether certain connections, or ties, were necessary to access these resources. For example, if Internet access is available, do participants use it for economic and educational development? Are they aware of economic and educational resources online? The survey included questions about job availability—specifically, what job opportunities were available in the area.

Scenario-based design session

We recruited 12 participants, nine of whom participated in our interviews for our scenario-based design session. We took a user-centered approach to help describe how people used systems to achieve goals, accomplish work tasks, or perform other activities. We not only found scenarios useful in identifying problems and focusing on solutions [2], they also worked well for encouraging reflection and discussion among individuals [11].

We wanted to understand how groups used their social capital, bridging ties, and strong ties to work through each problem. We sought to understand how participants accessed these resources and how ICTs could contribute to finding bridging ties that could create strong ties.

Our session lasted three hours and consisted of three parts: an icebreaker activity in which participants were given 15 minutes to meet and connect with other participants; a user-scenario activity in which participants split into smaller groups to work through problems identified in our interviews; and a brainstorming activity in which users were asked to think of technologies that could aid in addressing the problems and obstacles. We took detailed notes throughout the activities and digitally recorded the individual sessions following the icebreaker. In addition to monetary compensation given for participation, we also provided food.

Icebreaker and scenarios activity

The icebreaker allowed participants to meet others and “create new ties.” To do this, participants were given pen and paper to keep track of each person they met. They were then asked to identify three things they had in common with them. At the end of the 15-minute session, participants introduced the person they met to the rest of the group.

The scenarios activity allowed participants to work through a set of individual circumstances (see Table 2) as a group and to discuss how they would resolve the problem. There were four groups of three participants, with each group drawing at random one of the five scenarios derived from interviews. In working through them, each group had to consider the resources available to resolve the given situation; discuss where to go to access the resources;

Scenario 1	Renee recently completed her degree in business entrepreneurship because she heard from her friends that it was the best degree to get. However, now that she has the degree, she has not been able to find employment because she does not have enough experience.
Scenario 2	Sharon is a cashier at McDonalds. She graduated from high school 15 years ago. Sharon was told that "education is key" and is the path to a good and stable career. However, Sharon took out a loan for her mother three years ago, which her mother never paid back. As a result, Sharon does not have good credit and she is not confident that she can secure a school loan. Sharon does not know if she should go to community college first to try for an associates degree, or if she should try to get her bachelor's degree. She was told that getting a master's degree is the best path but she is unsure what her major should be. Sharon becomes uncertain of her situation and questions if college is even a realistic goal.
Scenario 3	Aaron was released from prison with a class A felony (Assault With Intent to Commit Armed Robbery). However, when in prison, he learned skills such as painting, carpentry, and food service. Aaron is also good at fixing things. He helped his neighbors fix their lawnmower, their car, and their son's computer. Aaron has been looking for a job for 2 months and has not had any luck. Aaron attends church regularly. He has friends but they are also looking for jobs. Aaron is living with 5 friends from high school but they all face an eviction and need to be out in 3 months. Aaron has to find work and needs to find a place to live.
Scenario 4	Nasir recently lost a job making \$28/hour. After going online and searching for work, he found and accepted a job making \$9/hour. He has to drive 20 minutes by car or 45 minutes to get there by bus. Nasir knows that this is not enough to sustain his mortgage but he took the job anyway. His two kids, Anthony and La'Shay, 9 and 10, are out of school for the summer. Anthony and La'Shay's mom is in jail and unable to provide assistance. Nasir does not like that he has to leave his kids alone, but he has to make ends meet. Nasir heard that a few jobs were being advertised online but he does not know how to apply to them.
Scenario 5	Gemille is a single parent of a 5-year old boy, Nathan. Nathan has serious asthma and has had terrible allergies since moving into their new home. Gemille's car has been giving her trouble and she cannot afford to fix it. She worries that if she needs to call an ambulance for her son, their response will be too slow. Gemille's new neighborhood is not totally vacant but she has heard about a series of break-ins. As a result, she has not left her house to meet her neighbors.

Table 2 - Scenarios derived from interviews

review the tools that could be used to access the resources; and identify contacts to obtain the resource.

The group goal was to find a solution that was both realistic and feasible according to all group members. A group member documented responses on large sticky-notes, which would be discussed later with the entire group. Each group member assumed one of three roles: the designated "resource" person who was responsible for identifying both internal and external resources; the "scribe" who captured the answers to questions presented in each scenario; and the "troubleshooter" who was charged with identifying potential barriers to problem resolution. We provided each group with a list of potential resources captured from our interviews and surveys. After working through each scenario (~35 minutes), each group presented its scenario, which included a discussion of how the group worked through the problem (including resources they used) and any obstacles or barriers encountered in reaching a solution. The full session lasted 1.25 hours.

Brainstorming

For the final activity, participants were asked to reflect on the problems identified in each scenario and to discuss common challenges. We then asked participants for their definitions of technology and to think of the technologies they used in general. As a group, we then reflected on each problem and discussed how technology could or could not be used to resolve an issue. Participants were encouraged to be creative in their thinking, to build upon the ideas of others, and to create solutions that may not even exist today. This exercise allowed groups to "make apparent" the underlying issues and barriers at hand and allowed us to clearly state how the technology is being used, or can be used, to work through problems.

DATA ANALYSIS

The author reviewed and analyzed the first 16 digitally

recorded interviews to prepare for the scenario activity (e.g., to record resources and barriers). The interviews were structured and responses to two key questions were captured: 1) what strategies do you use to get ahead (i.e., to succeed in life), and 2) what are some obstacles you have faced? Though surveys provided demographic information, interview confirmation trends related to social capital, and an understanding of which resources participants accessed via technology, the small number of responses did not permit statistical analyses. In addition to analyzing the scenario activity to identify barriers, resources, and solutions noted by each group, this activity was transcribed and coded for elements of social capital such as bridging ties, strong ties, and reciprocity.

RESULTS

This section includes results from our interviews, surveys, and scenario-based exercises. Survey results suggested trends among our participants and also confirmed what participants revealed in interviews, i.e., get-ahead strategies and barriers encountered. Our scenarios, however, provided the most insight into how participants worked through and overcame barriers and how they used technological and human resources to solve problems.

In-Depth Interviews (N=25)

In their interviews, participants described strategies to get ahead and barriers that prevented them from doing so. All participants indicated that education was essential (see Table 2). Many individuals shared similar stories, so we integrated common themes into our scenarios and modified them as needed to prevent participants from recognizing their personal stories and/or situations.

Surveys (N=25)

A majority of our participants stated that they have access to the Internet at home (92%). Those accessing the Internet from home do so via cable (Comcast/Xfinity, AT&T, etc.),

WiFi, and/or smart phone. Only one person (4%) reported not accessing the Internet at all. The remaining individual without home Internet accessed the Internet via friends and family, the library, and at community centers. Common uses of the Internet were to check or send email, get the news or weather, find community resources, find educational resources, and to look for jobs. The Internet was used least to generate income (e.g., sell goods and services, advertise). We derived the list of resources in Table 3 from surveys.

Though our participants used the Internet to search for jobs, few knew of local jobs available. Eight participants were aware of job openings at fast food restaurants and a “plethora of professional jobs” (e.g., tech-related, accounting, medical field positions), and temporary services, factory jobs, and hospital jobs as noted in the survey. The remaining respondents stated that there were either no jobs available or that they did not know of any jobs available. Though factory jobs provide on-the-job training and require limited skills, participants felt that strong communication, computer literacy, software coding and problem-solving skills were needed. Education and transportation were also included as necessary elements in finding employment. All respondents felt they had the skills required to get the jobs available—the only exception was P1 who stated that he did not have the necessary coding, or programming skills. He was aware, however, of Lynda.com, a site that would help him to attain these skills.

In terms of social capital, particularly in the sense of finding bridging ties, more than half of our participants met others at work (16), at school (15), and through mutual friends (14). In regards to finding close ties, less than 35% met others through family members (5), at neighborhood events (5), or online (6). Less than 25% met others at church (5) (a place to find both bridging and close ties).

Trust is another key factor in social capital. Our participants trusted people from their church or place of worship, followed by the people they worked with more than people in their neighborhood. Least trusted among respondents were neighbors and local store employees.

Scenario-based design session (N=12)

Icebreaker and Scenarios

Since none of the participants knew each other before the session, we used an icebreaker to help them get acquainted. We observed that after meeting everyone at their respective tables, three participants (P4, P15, P26) met individuals from other tables, while the others remained at their tables.

The scenario activity showed us how groups worked *through* problems and reached solutions. We were able to see how participants used resources and how their use of them was sometimes ineffective because the identified resource itself was insufficient, e.g., speaking to an under-informed educational counselor. The scenario-based design activity validated barriers identified from our interviews

such as community distrust. The method was also effective in showing us examples of how these barriers prevented groups from reaching their goals. The activity informed us of participants’ primary resources. The scenario activity results show how ICTs could help overcome certain barriers so that individuals and groups can reach better solutions.

The effects of social capital on group solutions

Groups used bonding ties, e.g., their family, friends, and/or the church as resources to help them resolve scenario issues. For scenarios one and three, these resources helped groups reach solutions with few barriers; however, for scenarios two, four, and five, this method was ineffective. We see where aspects of social capital such as building stronger communities, reciprocity, and finding bridging ties to different groups could benefit these communities.

When working through scenario three, P3 cited how a church member, a convicted felon, worked through a similar situation. She stated that no one would offer him a job; however, “*eventually he found somebody who gave him a chance.*” The person giving him a chance provided him with skills that would be beneficial for construction and “*he started his own kind of construction company where he does a lot of plumbing and different things like that, so he makes it his point to hire other convicted felons because he knows how hard it was for him.*” When working through scenario 3, the group made an exception based on the type of felony: “*I mean, he robbed somebody. I mean, I don't think we really made a big deal about that as opposed to him being a murderer, you know.*”-P3. Participants suggested resources such as career-placement advisors, temporary agencies, friends and family, the church, Red Cross, and the local Coalition On Temporary Shelter (COTS). The group also felt that Aaron, the main character in scenario three, could find odd jobs using the skills “*that he learned in there [prison], you know, to make money on the side jobs, hustling*” –P3. Participants relied primarily on bridging and strong ties via church or close friends to reach individuals or groups outside of their networks.

One group was able to get through two scenarios (one and four), as they did not identify significant barriers as a group. P15, for example, worked in human resources. She was aware of and knowledgeable about conducting Internet searches; calling 2-1-1, a call search center; and networking with friends and church members. Although she helped her group work through scenarios easily, other group members identified barriers that often went unseen, which we discuss

Barriers	Shortage of services like EMS, poor schooling and college preparation, having a police record, limited work available, “greedy” politicians, neighborhood instability (drugs, violence, high renter population—people come and go), high energy bills, computers eliminating jobs
Resources	Community, government aid, family, books, courses, healthcare schools
Solutions, or strategies to get ahead	Education, having drive, focus, faith and determination, strong networks

Table 3 - Barriers, resources and strategies to get ahead (per interview and survey results)

later. However, this group stressed the importance of finding resources outside of Detroit. Another key takeaway from this group was P15's explanation of the importance of having networks in general: *"All my friends and family, whenever they have a human resource question...even if they have a friend of a friend or a family member, they always refer them to me... Some people utilize me all the time, so that's in your network."* When asked if she would help strangers, she gave an example of how she helped a stranger serendipitously: *"This waiter he came over and says, 'You're in here all the time, what is the name of the company that [you] work for?' I told him, and he said... 'You know what? I'm looking for a job...' I said sure... Have your resume [next week] and he didn't know how to prepare resumes and he said he would ask a friend. ...he stepped out because he was curious."*

Barriers affecting social capital

The two most significant barriers affecting social capital included finding bridging ties to those with more resources, often located outside of the community, and dealing with issues of trust within the community. Another social-capital related issue was the treatment of newcomers to the community in which participants described feeling isolated.

Our participants often mentioned seeking resources outside of Detroit because the service providers often seemed friendlier and less stressed. However, outside resources were not always willing to help. For example, one female participant expressed successful use of social capital among her co-workers. Unfortunately, she did not feel that she, herself, could benefit in the same way. *"I've worked outside of the city. So, I was always around this melting pot of people where it was, where I was with Asians, Hispanics, the Palestinians, the Arabs. I was out there with all of them until the last seven months or so... When I'm out there, I get this whole different culture thing. Everybody is helping everybody, well, maybe not me but...they gravitate to each other and they are willing to share and help each other and if something happened, everybody responds real quickly."* She described how after work, she went home to drug users and individuals with negative attitudes. *"Yes, the Detroit mentality level, the mentality is horrible. When I'm coming home... everybody's high [from marijuana or drug use]...I come home and [there is] attitude when I go to the store, attitude when I go here."* So while she witnessed the positive effects of social capital, or bridging ties, she was not able to benefit. Her situation at home was no better.

While it seems that bridging ties are needed to access resources outside of the community, there is also a need to create stronger ties within the community. However, doing so requires trust. Based on the association between trust and social capital [19], it is unlikely that an individual or group will reap the benefits of social capital without trust. Unfortunately, the results of our survey and scenario activity suggested a lack of trust in neighborhoods, local stores and in the local government.

In response to scenario five, group members considered the reliability and trustworthiness of neighbors. Ideally, the character in the scenario would have met her neighbors and turned to them for assistance. However, P8 shared some insight: *"You want to get to know your neighbors, you don't necessarily want to meet them. Cause we had an incident where one of the people [in their group] said that, you know, they met 'Pookie and Ray Ray' [stereotypical nicknames for community members not contributing to society and known for doing bad things] and then two weeks later their house was broken into."*

Unsurprisingly, our participants also described issues of distrust for the city. Participants described new structures being built such as jails and bridges though the city lacked resources such as Emergency Medical Services (EMS), transportation and good schools. They did not understand, nor trust the reasons why they were without basic necessities. *"You have millions of dollars, or trillions of dollars. You all see [what] we going to use for that; how come we can't face the issues of, you know, transportation, the police, EMS, all of that? ...we keep laying off teachers, closing schools"* –P13.

Finally, P4 described feelings of isolation when she moved to Detroit. She moved from a nearby city and described needing to "fit in" so that you don't look like an outsider. She described a lack of resources to help her fit in and feel a part of the community: *"...my family is originally from Jamaica. So, we're like scared. So, a lot of things that I need to know, or our family needed to know, there's nobody to really show us, or tell us, because my mom doesn't know. She's from a whole other country, so there should've been some type of something there to help her at that time so she could pass it on, you know, filter out."* In addition to trust, there is a need for resource sharing and a way to connect people through similarities to avoid isolation.

Barriers encountered and how technology plays a role

Participants described barriers they encountered when going through scenarios. These included finding the right resources, and more specifically, finding the *right person* to speak with within a particular organization. Participants described tension when accessing the resources they needed—as mentioned earlier, these tensions occurred primarily within the city of Detroit. Finally, some participants described technology as a barrier.

When working through scenario two, group members suggested speaking with school counselors for guidance and discussed no barriers. However, an outside group member (P10) interjected: *"People will tell you these things, you have to have to know, or you have to have a worker that's that good that she going to tell you."* P28 added, *"If you are real cool with your counselor, they'll send you an email letting you know when the funding is coming back in."* In other words, simply going to a counselor was not sufficient. Participants had to find the counselors willing to access the best information.

Participants described feelings of frustration when discussing this problem and felt those providing resources lacked empathy for others and were working primarily for money, not to provide assistance to others: “...*a lot of people are getting into these careers because of the money, and they don't have people skills, they don't bother, they don't talk to me, and that's what's wrong with a lot of social workers. They're in it for a paycheck, they're not in it because they want to help people*” –P8.

Another issue was described as being unique to black communities: “...*growing up in a black community and a black family, you were told, you don't air your dirty laundry, you don't put yourself, you don't put your business out there and I think that has been a hindrance in the black community a lot too, because people will not talk amongst one another to, maybe I need to lean on you for whatever reason*” –P8.

In some cases, technology was seen as a barrier as some individuals were unsure how to best use it. In other cases, technology was also blamed for society’s loss in values. A couple of groups leveraged Google as a resource (scenarios 1, 4); however, some participants did not know how to search, or what to search for. P10’s statement provides some context: “*So when you google stuff- If you ask it, if you put in the right questions. You may need to have to do some further research.*”

P8 and P13 blamed a loss of values on technology. “*We're losing our values. Technology in some way has a big part of that*”–P8. “*Sometime these grown folks, they care more about video games than buying food*”–P13.

Using technology to work through problems

We asked participants for their definitions of technology. Responses included computers, iPhone/cell phones, tablets, email, text, Skype, Netflix, Roku boxes (streaming media), video games, robots, and devices used to make life easier and to seek resources. In response to the question of how technology could help resolve some of the issues raised in the scenario, participants responded that proper structure needed to be in place to help ensure fair and just assistance. Some of the resources could lead to finding jobs. Participants felt that those providing resources provided unsatisfactory service and offered ways to hold them accountable for providing better assistance. P13 shared that her sister’s company monitored employee calls to customers to encourage friendlier service; P27 shared how she used Google to reach the person in charge and received immediate assistance. Other participants went so far as to suggest replacing unsympathetic humans with robots. Finally, since there is no way to pre-determine who could provide help, participants saw the value in sharing problems to increase the number of serendipitous connections.

DISCUSSION

The key question raised in this research is how can we bootstrap social capital where little social capital exists?

Prior literature suggests that those with little social capital may not benefit from ICTs. Consistent with this, our participants did not mention sites such as LinkedIn or Facebook, despite the need to increase serendipitous connections. An open question from this research is whether these populations are less likely to know about using technologies *because* they lack social connections or are limited by systemic issues such as lack of empowerment [10, 15]. It is also possible that participants had no mental model for these technologies to be used in this way. Finding employment to gain economic mobility requires networking and having the right connections. We provide a set of implications and considerations for future technology as they relate to fostering social capital where little exists. We conclude with a set of technological limitations.

Technological Implications

In terms of fostering social capital, our results suggest an overall lack of weak *and* strong ties in the community. We as researchers and designers must increase the opportunities for these populations to create weak ties by increasing shared spaces with heterogeneous communities and to strengthen strong ties by building trust and identity within these communities. Finally, we must pursue opportunities to create technologies that better connect groups and individuals to those in authority.

Fostering weak ties: Our participants described experiences with weak ties. For example, some sought resources outside of Detroit and described friendlier service. However, one participant described a “melting pot of people” at work but felt like an outcast herself. Consistent with findings from [6], Robert and Nardi found in a study of technology use among the homeless, that it is important to form social ties across socioeconomic groups [34]. They suggested finding commonalities between groups with high social capital and those with low social capital. Technology already connects individuals across dimensions such as hobbies, goals and conditions (e.g., health). Can we also ensure these connections occur across socioeconomic status? In [34], the wealthy and the poor often shared spaces; however, the shared spaces with heterogeneous groups in our population were limited (e.g., work). How can technology increase the opportunities of sharing common physical spaces across socioeconomic groups?

Could location-based applications (e.g., Foursquare) incentivize connected individuals to broaden their networks by attending events outside of their communities? A study exploring engagement around energy consumption suggested that the built environment, specifically open and shared spaces, increased social interaction and engagement around a community-based application [9]. Leveraging the built environment along with open and shared spaces could increase the likelihood of building trusting relationships across both heterogeneous and homogenous groups. However, these issues could involve issues of urban planning and/or perhaps deeper systemic issues such as

spatial inequality. What role, if any, does technology play in identifying and raising these issues [8]?

Fostering strong ties

Our results indicated community distrust. As Resnick suggests, ICTs can only be used successfully for community development after its users have established a shared identity, trust in each other, or some other form of social capital [33]. Past research suggests the value of strong ties and the need for people to vouch for one another. Sites such as TaskRabbit and AirBnB leverage the sharing economy [38]. These platforms help connect people to individuals within a community to provide basic skills and services (e.g., painting, carpentry, babysitting), or resources (e.g., housing, transportation). These platforms could also provide opportunities for those with little to no job history and for those with prison records to build reputations and link to external networks (weak ties), which could lead to more serendipitous connections and trust. How can we leverage technology to mitigate the risk people among these populations may have in vouching for one another?

“Linking” or “vertical” social capital

We described how P27 used Google to contact the person in charge directly, and received immediate service. The use of Google to “link social capital,” as Woolcock introduced, connects groups and individuals to those in authority [39]. Similarly, in discussing crime-prevention technologies that empower communities, Erete states, “we must go beyond ‘horizontal’ social capital, [i.e., strong ties]” and suggests that technology support “vertical” social capital, or “linking” social capital [15].

Though Detroiters distrusted government employees, creating ways to foster “linking,” or “vertical” social capital is needed to hold those in positions of power accountable [15]. The use of technology to solve problems was limited to “Googling,” employers monitoring phone calls, and use of robots. Exploring ways to encourage civic engagement and creative uses of ICTs by those in economically distressed areas is an open opportunity for future research.

Technological Limitations

We acknowledge that systemic issues exist beyond our control; this work does not address broader societal issues such as income or social inequality. In fact, resolving these issues with ICTs may be far reaching. I, however, remain optimistic that technology can play a role in addressing some of the issues raised in this research. What is telling is how individuals currently define and perceive technology (e.g., as devices, a means to obtain resources).

As researchers, designers and educators, perhaps we should work to brand technology as a platform for empowerment.

CONCLUSION AND FUTURE WORK

We have presented the results of a preliminary study that identifies an absence in current HCI research. Specifically, there is a lack of understanding of how individuals in economically distressed areas can connect to others in less

distressed conditions. Due to barriers such as distrust of community members and the local government, there is a significant need to foster weak ties by creating opportunities to share spaces across socioeconomic groups and to foster strong ties by creating identity and building trust within these communities. Linking ties, or fostering vertical social capital, is critical for accountability but may be ineffective without strong community [9, 15].

Insights from participatory design have played a key role in our initial research and will continue to play a key role in our research going forward. Our plans are to work within these communities to better understand opportunities for fostering social capital. We will also seek to understand perspectives from stakeholders such as potential employers and social service agency employees.

ACKNOWLEDGEMENTS

I would like to thank participants of this study and the Detroit Center. Thanks Jessica Welburn and Kennedy Turner for leading interviews, and Lisa Gonzalez, Jasmine Jones and Amanda Richardson for their support. Thanks to UMSI faculty, Sheena Erete, Susan Wyche and anonymous reviewers for their feedback. This research was supported by the UM Ford School of Public Policy and the NSF under grant IIS-1352915.

REFERENCES

1. Alkalimat, A. and Williams, K. 2001. “Social capital and cyberpower in the African American community: a case study of a community technology center in the Dual City.” In *Community Informatics: Community Development through the Use of Information and Communication Technologies*, L. Keeble and B. Loader (editors). London: Routledge.
2. Bødker, S. (2000). Scenarios in user-centred design – setting the stage for reflection and action. *HICSS* 32.
3. Bourdieu, P. 1986. “The forms of capital.” pp. 280-291 in *Readings in economic sociology*.
4. Burke, M. and Kraut, R. (2013). Using Facebook after losing a job: Differential benefits of strong and weak ties. *CSCW 2013*.
5. Calabrese, A. & Borchert, M. (1996). Prospects for electronic democracy in the United States: rethinking communication and social policy. *Media, Culture & Society*, vol. 18, no. 2, pp. 249 –268.
6. Chetty, R., Hendren, N., Kline, P., Saez, E. (2013). The EOP, Summary of Project Findings. As of 1/7/14, <http://www.equality-of-opportunity.org/>.
7. City of Minneapolis Community Technology Survey. Overcoming the Digital Divide. March 2012.
8. Dillahunt, T. (2013). Creating resilient communities for post-sustainable times. *CHI 2013 Post-sustainability workshop*.
9. Dillahunt, T. and Mankoff, J. (2014). Understanding factors of successful engagement around energy

consumption between and among households. *CSCW 2014 (to appear)*.

10. Dillahunt, T., Mankoff, J. 2011. In the dark, out in the cold. *XRDS* 17, 4 (June 2011). pp. 39-41.
11. Dillahunt, T., Mankoff, J., Paulos, E. (2010). Understanding conflict between landlords and tenants: Implications for energy sensing and feedback. *UbiComp 2010*, pp. 149-158.
12. Domínguez, S. (2011). *Getting ahead: Social mobility, public housing, and immigrant networks*. New York, NY: NYU Press, 2011.
13. Domínguez, S. and Watkins, C. 2003. "Creating networks for survival and mobility: Social capital among African-American and Latin-American low-income mothers." *Social Problems* 50(1): 111-135.
14. Ellison, N., Vitak, J., Gray, R., Lampe, C. (In press). "Cultivating social resources on Facebook: Signals of relational investment and their role in social capital processes." *J Comput-Mediat Comm*.
15. Erete, S. "Empowerment through community crime-prevention technologies." *ACM Interactions* 2013.
16. Erickson, E. and Yancey, W. (1980). "Class, Sector and Income Determination." Unpublished manuscript, , Temple University.
17. Foroohar, R. (2011, November 14). What ever happened to upward mobility? *Time*.
18. Frey, W.H. Brookings Institution and UM Social Science Data Analysis Network's analysis of 1990, 2000, and 2010 Census Decennial Census tract data.
19. Fukuyama, F. (1995). *Trust: The social virtues and the creation of prosperity*, Free Press.
20. Gaved, M. & Anderson, B. 2006. The impact of local ICT initiatives on social capital and quality of life. Chimera Working Paper Number: 2006-06.
21. Granovetter, M.S. 1973. "The strength of weak ties." *American Journal of Sociology*. 78(6):1360.
22. Gray, R., Ellison, N., Vitak, J., & Lampe, C. (2013). Who wants to know? Question-asking and answering practices among Facebook users. In Proceedings of the 16th Annual Conference on Computer Supported Cooperative Work and Social Computing. NY: ACM.
23. Guiso, L., Sapienza, P., Zingales, L. (2004). The role of social capital in financial development. *American Economic Review*, 94, pp. 526-556.
24. Hartford, T. (July 21, 2010). The economics of trust. *Forbes*.
25. Karlan, D., M. Mobius, T. Rosenblat, and A. Szeidl, *Trust and social collateral. The Quarterly Journal of Economics*, 2009. 124(3): p. 1307-1361.
26. Kavanaugh, A. and Patterson, S. J. (2002). The impact of community computer networks on social capital and community involvement in Blacksburg. The internet in everyday life. Wellman, B. and Haythornthwaite, C. Malden, MA, Blackwell Publishers: 325 - 344.
27. Knack, S. and Keefer, P. (1996). "Does social capital have an economic payoff?" a cross-country investigation," *The Quarterly J. of Econ.*, 112(4): 1251.
28. Kraut, R., Kiesler, S., Boneva, B., Cummings, J.N., Helgeson, V. and Crawford, A.M. (2002). "Internet paradox revisited." *J. Soc. Issues* 58(1): 49-74.
29. Lopez, M., Gonzalez-Barrera, A., Patten, E. Closing the digital divide: Latinos and technology adoption (2013). From the People & the Press June 2012 Biennial Media Consumption Survey. <http://tinyurl.com/bpsqtfyf>.
30. Mathews, R. (2013, July 18). Detroit bankrupt: To see Detroit's decline, look at 40 years of federal policy.
31. O'Neil, D. 2002. "Assessing community informatics: a review of methodological approaches for evaluating community networks and community technology centres." *Internet Research: Electronic Applications and Policy*. 12(1): 76-102.
32. Putnam, R. 2000. *Bowling alone: The collapse and revival of American community*. Simon & Schuster: New York.
33. Resnick, P. Beyond bowling together: SocioTechnical capital. Chapter 29 in "HCI in the new millennium," ed. by John M. Carroll. Addison-Wesley. 2002. pp. 247-272.
34. Roberson, J., Nardi, B. (2010). Survival needs and social inclusion: Technology use among the homeless. *CSCW 2010*. pp. 445-448.
35. Smith, S. 2007. *Lone pursuit: Distrust and defensive individualism among the Black Poor*. New York: Russell Sage Foundation.
36. Social capital community benchmark survey, 2000. Roper Center, Public Opinion Archives.
37. Sum, A. and Khatiwada, I. (2010). "The nation's underemployed in the 'Great Recession' of 2007-09." *Monthly Labor Review* 133(11): 3-15.
38. The rise of the sharing economy. (2013, March 9). *The Economist*.
39. Woolcock, M. 1998. "Social capital and economic development: Toward a theoretical synthesis and policy framework." *Theory and Society*. 27:51-208.
40. Wyche, S., Schoenebeck, S., and Forte, A. (2013). "Hustling online: Understanding consolidated Facebook use in an informal settlement in Nairobi," *CHI 2013*.