TELEWORKING IN SILICON VALLEY: IMPLICATIONS FOR SOCIAL CAPITAL

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ABSTRACT

TELEWORKING IN SILICON VALLEY: IMPLICATIONS FOR SOCIAL CAPITAL

By Sheraden J. Nicholau

Utilizing indicators of social capital, this study investigates a potential relationship between work status (teleworking or non-teleworking) and levels of social capital among employees. The study also investigates a potential relationship between social capital indicators, working in Silicon Valley and using telecommunication technology tools at work. The data are from an online survey. The findings do not support the hypothesis that Silicon Valley employees have higher levels of social capital on multiple indicators, compared with employees working elsewhere. The findings also do not support the hypothesis that teleworkers have lower levels of social capital, compared with office-based workers. It cannot be determined that working in Silicon Valley or that teleworking have any direct effect on social capital. The findings do, however, provide some support for the third hypothesis. The amount of time spent using telecommunication technology tools at work negatively affects social trust, one social capital indicator.

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Teleworking in Silicon Valley: Its Implications For Social Capital

As researchers and theorists examine work organization and practices in the twenty-first century, a work production trend grows stronger. An increasing number of Americans are teleworking. The International Telework Association and Council, one of the largest and most cited telework/telecommute study agencies, reported 45.1 million Americans teleworking in 2005, a jump from 11.6 million in 1997 (ITAC 2002; 2005). Since aerospace engineer Jack Nilles coined the terms telework and telecommuting in the mid 1970s, this form of working has steadily grown in popularity (Nilles, Carlson, Gray and Hanneman 1976). This growth is due to the potential benefits this work arrangement can provide the employee, the employer and, perhaps, the larger community (Salomon and Salomon, 1984; Handy and Mokhtarian 1996).

In research and literature, the terms telework and telecommuting are frequently used interchangeably. Telework is described as any employment arrangement where work is performed in remote location from an employer's premises, such as an employee's home or satellite site, including the use of communication technologies to complete job tasks (Huws, Korte and Robinson 1990). Jack Nilles provided a distinction, however. Teleworking is the periodic or frequent work outside of the primary or principle office, either at home, a client's site, or in a telework center. Telecommuting implies the substitution of information and telecommunication technologies for the physical commute to work (Nilles 1998). Teleworking and telecommuting continue to be sociologically valuable areas of research, for the number of teleworkers is expected to

grow at an increasing rate in the next decade (ITAC 2002; 2005). Marshall (1998) provides a comprehensive and clear definition; the one that is utilized in this study. Teleworking is defined within research as employment performed from a home or satellite site (often utilizing telecommunication technology to perform job functions) in place of a more traditional office-based setting (Marshall 1998).

It is important to note that it is highly unlikely, due to the multidimensional and varying perspectives from which researchers approach the phenomenon, that a consensus on the "best" definition of teleworking or telecommuting will ever be achieved (Mokhtarian, Salomon and Choo 2005). It is also important to note that the difficulty in performing telework research stems primarily from the various and sometimes-disjointed definitions and inclusions that the conceptual term "telework" has been given by sociologists and economists. Most of the research shows inquiry starting from very different starting points with a plethora of varying understandings of what makes telework telework. This, in turn, leads to a great body of telework research that cannot be compared or contrasted due to the differences in conceptual criteria and methodologies.

While this study will focus on the broader term, teleworking, it is important to note that telecommuting-focused literature places emphasis on the removal of the employee's commute from home to office, and the potential benefits and consequences of that process.[i] Not only does this shift in work production we call teleworking often mean substantial lifestyle changes for the employee (e.g., time-management, work/personal life balance, commute cost-savings, work organization challenges, etc.) but means substantial changes for business as well (e.g., office space and cost savings, higher productivity, less

sick time utilized, communication/supervision challenges, etc.). Research findings indicate that telework has an overall positive effect on and is a financially beneficial arrangement for businesses, both in the private and public sector (Haddon and Lewis 1994; Raines and Leathers 2001; ITAC 2002; ITAC 2005). While teleworking has been held in high esteem among many businesses and areas of government, it is vital to continue exploration of the effects teleworking has on individuals and their communities.

Social Capital in Silicon Valley

For this research, Silicon Valley provides social science researchers with a unique perspective. Silicon Valley is a business and culture rich region spanning the counties of San Mateo, Santa Clara, Alameda and Santa Cruz[ii]. This geographical area possesses specific resources and a world-famous networking history that makes it an ideal spot for examining social capital. Social networks, like those found in Silicon Valley, are said to be cemented by social capital (Castilla, Hwang, Granovetter and Granovetter 2000). Specifically, social networking is defined as a set of actors (organizations or individuals) linked by ties and relationships, involving relational and structural trust. In Silicon Valley, these networks have particular importance in labor movement, influence, and innovation production (Castilla et al. 2000). Silicon Valley has a decentralized industrial system that thrives in international markets, in part, because of its regional networking. The region possesses expansive, yet close-knit social networks in addition to open labor markets. Open labor markets in this region have earned the reputation of nurturing

entrepreneurship and venture capitalist experimentation, starting in the 1970s (Saxenian 1994).

The boundaries of the social networks in Silicon Valley have often been studied for their flexible and porous qualities that result in joint-ventures, collaboration and information sharing between firms, local institutions, universities and start-ups (Saxenian 1994). Saxenian (1994) examined Silicon Valley's industry beginnings and it's competition with Boston's Route 128. Both were poised to be the world's leading center of technological innovation. What set Silicon Valley apart, Saxenian proposed (and what ultimately saved it during industry downturns and waves of international technological growth) were its regional culture of risk-taking, formal and informal cooperative practices and most importantly, the social networking. This social networking entailed local community participation and socializing, as well as association involvement and a sense of social trust. In the early days of the semi-conductor industry, it was fairly common for production engineers to call their friends at nearby competing firms for help when they ran out of chemicals or when quartz tubes broke (Saxenian 1994). Castilla et al. (2000) emphasized that it is Silicon Valley's networks, its most enduring source if creativity and vitality, that have created the specific economic and civic culture.

Despite this reputation, there is reason to believe that high-tech industries in Silicon Valley might influence lower levels in social capital, rather than high levels. High-tech employees often face the social wariness, overwhelming work demands and job insecurities of the entrepreneur, in a work-culture of intense competition, machismo and instability (O' Riain 2002). In addition to these factors affecting socialization and

community involvement, research has shown that these unpredictable and, at times, volatile work schedules and pressures can affect community and political engagement (O' Riain 2002). Silicon Valley has been described as a place of spatially divided classes, status and group memberships, a place without complex or overlapping social relationships. Some literature even go so far as to say that Silicon Valley is a perfect example of social capital, without traditional indicators of community involvement and connectiveness (Colclough and Sitaraman 2005).

The published Silicon Valley Community sample (Koch, Miller, Walesh and Brown 2001) taken out of the Social Capital Benchmark Survey (2000) suggested that in Silicon Valley, where business and technology networks are strong, individuals have weaker non-business ties to each other and their community. Additionally, the Silicon Valley portion of the Social Capital Benchmark Survey suggested that individuals in Silicon Valley give less of their time and resources to their local community. The study suggested that opportunity, perhaps, is the great divider between those who easily create informal, civic and community ties and those who struggle to do so. The researchers interpreted that the intense work demands in a high tech community create a barrier for civic engagement. Discussions such as these confirm that Silicon Valley is a valuable living laboratory of work-related social capital, as it applies to traditional workers and teleworkers who do business there.

The Link Between Telework and Social Capital Research

Social capital, as discussed theoretically in Bourdieu's (1983) writings and Coleman's (1988) work is based on the premise that social networks, ties and involvement in community issues and organizations build value for an individual and cohesion for a community. Social capital can be thought of as a currency, of sorts. The collective value leads those in such networks to give and do things for others in the greater institution or community (Putnam 1999). These networks and ties, in turn, strengthen bonds between individuals and social institutions. Social capital is defined as the value of social networks and ties that builds norms of reciprocity within and for the greater network or community (see Bourdieu, 1983; Coleman, 1988; Putnam 1999). Indicators are used, either separately or combined, to measure levels of social capital: community participation, group or association membership, civic engagement, level of socializing and measurements of social trust. The benefits of social capital can be examined and interpreted on the individual level, the work-institution level, and community level.

Social capital is measured at the individual level, primarily through activities and interactions. Education level is frequently identified as a strong predictor of social capital (Putnam 2000), thus it is often used as a control variable in research. Gender and age are also used to control for the possibility that males and females, young and older build social capital differently, in different levels (Wellman 1992; Michelson 1976). On an individual level, social capital has been called a buffer during stressful periods (Wilkinson 1996). On an individual level, social capital is particularly vital to nurturing

reciprocal relationships, particularly between civic participation and interpersonal trust (Brehm and Rahn 1997). An individual's confidence in larger institutions is necessary and telling of the strength of a society. This confidence results in social trust and reciprocal relationships, thus evolving into the benefits of social capital seen on a work-institution and community level. Social capital can help individuals leverage their skills and employability by combining what they know with others' skills and knowledge of an industry (Koch et al. 2001). It is no surprise, then, that work institutions typically value and nurture the behaviors and values that correlate with social capital. Social capital can act as a mechanism or tool that promotes confidence and cooperation within work institutions and governmental institutions (Koch et al. 2001).

On a community level, social capital is linked to healthier communities, lower suicide rates and lower violent crime rates (Helliwell 2003; Kennedy, Kawachi and Brainerd 1998). Communities function as social networks providing socialization, support, assistance and social control to members (Hampton and Wellerman 2003). Communities have also been described as "entrepreneurial social infrastructures" (Flora 1998: 489). On a community level, social capital can promote social wellness and economic prosperity. It allows institutions and organizations to pool information and resources in a way that cuts costs and increases efficiency for community members.

Putnam (1993; 2000), perhaps the most widely known social capital theorist, spoke of strong networks engaging in collective problem solving in ways that monitor and strengthen the bonds of local communities for individuals within them and for larger economic and social institutions. For Putnam (2000), the primary indicators and

facilitators of this are civic engagement and association membership. Other researchers report that communities with higher levels of social capital may be more successful at coming together to maintain local community services and amenities (Kawachi, Kennedy and Glass 1999). Higher levels of social capital indicators may also provide communities with more effective means for controlling deviant behavior. Subramanian, Kim and Kawachi (2002), for example, saw this occur when they measured social capital and deviant behavior. In examining the importance of social capital on an individual level, work-institution level and community level, it is clear that social capital plays a role in the solidification and longevity of a society, ideologically and economically.

While the focus of most telework research does not explicitly investigate a relationship with indicators of social capital, it has been determined that traditional, location-based employment may actually increase levels of social capital through the networks and ties built on the job (Wright and Cullen 2004). What are then needed in social science research are extensive examinations into telework's potential relationship to social capital accumulation. If work performed in traditional work settings is related to higher levels of social capital among employees, compared with the unemployed, then it is important to know whether the same can be said for telework.

To review, social capital is frequently measured through several indicators. The most popular indicators in work organization and sociological research are community participation, association membership, civic engagement, level of socializing and social trust (e.g. Putnam 1999; Coleman 1988). I will utilize these indicators to investigate a potential relationship between work status (teleworking or non-teleworking) and reported

levels of social capital among employees. Specific research carried out in a business-rich and culture-rich metropolitan area is paramount to understanding the potential benefits or costs in social capital. Silicon Valley, a business and culture rich region, provides an excellent location for this kind of research. Thus, the present study intends to examine employees in Silicon Valley, in addition to seeking respondents from across the nation. Finally, this study will investigate a potential relationship between Silicon Valley, telecommunication technology use and social capital. This study's goal is to support or reject the claim that work status (teleworking or non-teleworking) affects levels of social capital among employees. I hypothesize that employees in Silicon Valley will report overall higher social capital levels, compared with those working outside of the geographical area known as Silicon Valley.

To significantly contribute to the growing body of research in this emerging area of inquiry, the use of multiple, measurable factors to test for social capital in both a telework and traditional work environment are vital. Because of a lack of cohesive conceptual and operational consensus among researchers, I must acknowledge the issue of reliability within surveys measuring social capital. Past literature has frequently connected telework with one or two indicators of social capital. Review of the telework literature confirms that few published studies have looked at a potential relationship between telework and multiple indicators of social capital. I will explore this within contemporary social capital research, specifically how indicators of community participation, association membership, civic engagement, level of socializing and social trust have been utilized as empirical tools for social capital measurement. I will also

review indicators of social capital that have been addressed in telework research, within the last few decades.

Social Capital Measured Through Community Participation

The first indicator of social capital used in this research is community participation. Putnam (1993; 1999) famously discussed community association and participation as tools for measuring social capital in adult Americans. Cartland, Ruch-Ross and Henry (2003) found that decreased community association/ participation in community or institution settings indicated lowered social capital levels, which created visible, measurable withdrawal and isolation from an individual's peer-group. If this is true, the present study may be able to measure levels of social capital as indicated through individuals' community participation. Much of Pryor's (2005) research evaluated community participation as measurement of social capital, specifically time spent in public settings, visiting various clubs and social events and activities. Indeed, research set in a variety of settings tends to consider community participation to be an important factor in measuring an individual's social capital. Based on the literature, community participation should be used as a measurement indicator within the current study.

Social Capital Measured Through Association Membership

Association membership is a defining indicator of social capital, as shown through a variety of sociological research performed in the last decade. Researchers Astone, Nathanson, Schoen and Kim (1999) identified association membership (i.e. membership in community associations or clubs based on familial, institutional or social ties) as a critical factor in measuring social capital and the benefits that accompany it within larger institutions. In addition, Haddad and Maluccio (2003) found that measuring association membership in the local community is an excellent measurement for social capital accumulation. Consequently, their work showed that social capital accumulation correlates with financial gain. Criminologists at the University of Missouri- St. Louis identified organizational membership as a factor of social capital. In this case, decreased organizational membership, an indicator of decreased social capital, was to blame for social unrest and crime rates (Rosenfeld, Messner and Baumer 2001). This study was able to highlight the potential risks of low social capital within a community to those individuals living within.

Perhaps some of the more visible discussions of social capital involving association membership are Putnam's (1995; 1999; 2000) widely discussed studies. He presented what many in the field believe to be compelling data exposing the decline in reported levels of social capital in the U.S. within the last fifty years. Putnam specifically measured and documented social capital through levels of socializing and association membership (i.e. church associations, PTAs, bowling leagues, women's clubs). Within social capital theory and research performed in the last two decades, association

membership has frequently been used as a measurement indicator. Thus, association membership, otherwise known as group membership, is utilized as a measurement indicator for this current study.

Social Capital Measured Through Civic Engagement

Researchers and theorists have long measured social capital levels through civic engagement. Civic engagement can include voting and involvement in local political campaigns or issues. Putnam (1995; 1999; 2000) utilized civic engagement as an indicator of social capital and measured civic engagement through political participation numbers, voting habits, labor union membership and other civic organization membership records. According to Putnam's (1993; 1995) work, social capital facilitates the coordination and channels of communication that contribute to association decision-making and problem solving. This demonstrates the importance of social capital on an individual level and community level. Research data collected in other social networks have shown a relationship between an individual's level of political participation and political activism and other network-based social capital level indicators (Brown and Brown 2003). Thus, civic engagement is used as a measurement indicator in the current study.

Much of the social capital research that utilizes civic engagement as a primary indicator also introduces a variety of demographic variables that cannot be overlooked. Notably, these studies recognize that class status and education level are strongly tied to civic engagement. They interact in a positive relationship, because as an individual's

perceived or reported class status and education level rise, their perceived or reported civic engagement tends to rise. While the studies are careful not to suggest an exclusive, non-spurious relationship between social capital and civic engagement, most researchers believe that civic engagement is and should continue to be a powerful measuring factor for social capital on an individual and community level (Putnam 1995; 1999; 2000, Brown and Brown 2003).

A respondent's gender also affects social capital, particularly when examining civic engagement as a measurement for social capital. Lowndes' (2004) study reviewed the ways in which women utilize their social capital differently than do men, within the context of civic engagement and political behavior. The study concluded that while the women in the sample possessed the same amount of indicated social capital as the men in the study; the women appeared to use social capital differently. Specifically, the women in the study reported less engagement in formal political activity. However, the researcher noted that the women demonstrated social capital through informal political activity in their local neighborhood. This brings to light the importance of using local community civic engagement for measurement in social capital research, rather than simply using national voting behaviors or political office position holding. Additionally, past research has examined how an individual's age may play a role in their social capital level. Putnam (1995) cited that higher levels of civic engagement and association membership could be fairly consistently found among older individuals, compared to younger individuals. Thus, any social capital based research should include this sort of demographic identification.

Social Capital Measured Through Socializing

Level of socializing is yet another indicator of social capital, as utilized in this study. Putnam (2000) discussed socializing as informal social connections building social capital. He described, "Like pennies dropped in a cookie jar, each of these encounters is a tiny investment in social capital" (2000: 93). Putnam illustrated this point by describing the differences between the "machers", who engage in more formal, association membership-based activities, and the "schmoozers" who engage heavily in informal conversation and unstructured socializing (2000: 93-95). This difference in activity can be described as the difference between building citizenship and building friendships, two separate social capital building activities. Level of socializing is often measured through informal activities such as visiting neighbors or relatives, entertaining in the home, or perhaps attending a local celebration.

These measurements, which Putnam (2000) included in his study, prove to be troublesome when applied to the changing structure of socializing in a high-tech community. Researchers and theorists have long debated if the socializing and friendship building that occurs over text messages, e-mails and blogging are of the same value as that which occurs in neighborhoods, at parks and at a friend's home. Certainly we must make the distinction between sitting in front of a television and sitting in front of a computer monitor. The television can be seen as a form a technology that further alienates individuals from one another and from their communities. It is becoming popular opinion, however, that the computer monitor is more closely related to the

telephone. That is to say that, for better or worse, the computer monitor and other forms of telecommunication technology can be the catalyst for understanding evolving socializing.

Social Capital Measured Through Social Trust

The measurement of trust can be an abstract pursuit because of the subjectivity involved in identifying and defining what social trust looks like. Because of this, social trust is considered a most difficult and varyingly defined indicator of social capital. Despite this challenge, many prominent studies have used this particular measurement successfully. Social capital theorists Lappe and Du Bois (1997) described social capital as associative networks along with social trust, with social trust defined as the degree to which we feel we can expect strangers to do right by us. Social capital theorists utilize social trust as a tried-and-true indicator of social capital levels in individuals and in a community. In perhaps the most well known example, Putnam (1995; 1999) used social trust as a major factor in measuring and defining social capital. His research found an interesting, yet sensible chain of events. Declining social capital, as measured by individuals' loss of trust in one another, was traced by the authors to lead to a loss of individual's confidence in institutions at large. Haddad and Maluccio (2003) also determined that social trust in the local community is an excellent indicator for social capital. Based on their findings, they speculated that social capital levels directly contribute to economic stability and welfare. This, again, shows the benefit of social capital to a community and the individuals within the community. Traditionally, many

economic and sociological researchers have gathered social trust data to measure social capital levels among individuals. For this reason, social trust is used as a measurement indicator in the current study.

Telework and Indicators of Social Capital

While there is little mention of the social capital indicators, association membership and social trust, there is a fair amount of telework research examining the social capital indicators of community participation, level of socializing and civic engagement. Literature reviews and published research on the potential benefits and consequences of teleworking often report that teleworkers and those who rely on telecommunications technology often suffer isolation and a decrease in socializing with colleagues, family-life and the greater community. Telecommunication use for teleworkers has increased significantly, thus increasing the ease and efficiency in work-related communication. The number of U.S. teleworkers utilizing broadband connections jumped from 4.4 million in 2003 to 8.1 million in 2004 (Derringer Research Group 2004). There is much uncertainty regarding the effects telecommunication technology, particularly the Internet, have on the local community.

Literature starting from the 1800s has speculated how technological change can weaken and even destroy a community, through the isolation and disengagement of the individual from the neighborhood and public community. That is to say that society at large and the nation state might remain intact, however, the local community bonds are often those that begin to disintegrate. This disintegration leaves " … a mass society

without intermediate level communities to give them companionship, support, information, a sense of belonging, and a means of aggregating and articulating their hopes and grievances" (Hampton and Wellman 2003: 278). Hampton and Wellman (2003) found that the use of telecommunication technology, particularly the Internet, associates with increased communication with local community members and the increased participation in the public and private realm. Their research focused on a case study of sorts: a 109 home neighborhood, referred to as Netville. Hampton and Wellman (2003) asserted that online social interactions and social ties relying on telecommunication technology are not a separate and distinct social system, but rather enhance and build-up community connections and social networks that already exist. However, it's important to state the challenge in applying their findings back to a larger population, due to the case study's particular arrangement. These findings contradict Putnam's (2000) findings, which tied the increase of telecommunication technology with the decrease of neighborhood and local community involvement. Putnam's (2000) findings more closely mirror contrary conclusions. Telework research and discussions frequently cite isolation and less socializing as a potential and, at times, debilitating consequence of an employee's teleworking (Haddon and Lewis 1994; Agres, Edberg and Igbaria 1998; Raines and Leathers 2001; Montreuil and Lippel 2002, 2003; Foley 2004; Eitzen 2004).

Community participation's definition can vary from study to study, yet the definition usually involves the attendance or participation in public and voluntary meetings or activities. Telework research often focuses on the variable of community

participation as a manifestation of social belonging and community belonging. Community participation can be measured by asking about a sample's satisfaction in "socializing in small groups and fitting in with larger groups… access to the community, ability to attend special events, educational opportunities," (Vittgerso, Akselsen, Evjemo, Julsrud, Yttri and Bergvik 2003: 209). Bentley and Yoong (2000), using office-based and home office-based employees, found that teleworkers are less likely to engage in community participation. Their exploratory research centered on working hours and the amount of over-time or after-hours working each sample reported (Bentley and Yoong 2000). Decreased social capital, as indicated through decreased community participation, they discovered, could be considered a consequence of the common over-time and after-hours teleworking. While this provides interesting insight, there is concern how much of the decrease in community participation can be attributed to the over-time and after hours work in general, and not specifically to the act of teleworking.

In contrast, Kamerade and Burchell's (2004) telework research suggested that teleworking individuals who have more self-directed job tasks, compared with office-based workers, report increased community participation (45.8% to 28.6%). These findings were based on a large sample (over 32,000 respondents, 4.7% of which were teleworkers) in European countries. It is important to note, however, that this study did not consider other indicators of social capital (i.e. forms of association membership, informal socializing, etc.). While the dataset was large, it was from the European Working Conditions Survey, which, the researchers stated, measured the main variables rather crudely (Kamerade and Burchell 2004: 359). Nevertheless, they evaluated and

situated their research in response to Putnam's (2000) concerns of decreases in participatory social capital within the United States.

Inconsistencies in methodologies aside, this leads us to a rarely talked about debate in telework research, one labeled technological determinism (Kamerade and Burchell 2004). Consider that a large chunk of the telework literature reports increased isolation and less socializing, which would appear to go hand in hand with decreased community participation. Isolation or lack of socializing has been found to be correlated with low social capital levels. Despite this understanding, Kamerade and Burchell's (2004) study presents teleworking as a work-option that might allow employees to become increasingly participatory in their community. The current research will attempt to weigh in on this debate by measuring community participation levels as measurement indicators for social capital, comparing office employees and teleworking employees. Agres, Edberg and Igbaria (1998) presented a conceptual framework for telework. Their article cited Isaac Asimov's use of the term 'virtual society' where people grow more and more isolated from one another and require less of each other for day-to-day needs, dissolving community ties and participation (Agres et al. 1998: 71-77). These descriptions demonstrate the potential issues of decreased community participation within a telework lifestyle.

Teleworking, particularly teleworking where employees use telecommunication technology in place of physical contact with colleagues, seems to correlate with employee isolation in their professional and personal life. It is conceivable, then, that this lack of socializing is a telltale sign of lowered social capital levels. For a comprehensive

discussion on the debate of technology and the Internet's effects on community, see Hampton and Wellman (2003). Although previous literatures' findings may contradict one another, each study makes clear the importance of community participation as a measurement of social capital within telework research.

Businesses that have embraced teleworking have taken notice of this potential downfall. For example, IBM has been actively promoting flexible telework environments for decades, with approximately 40% of it's 330,000 employees working from home or on the road on any given day (Cooney 2007). Realizing that the potential isolation of teleworking can affect an employee's desire to telework, IBM has reinstated IBM Club, a built-in network of employees for purposes of socializing and morale building (Clooney 2007). IBM Club organizes activities for employees in a common geographical area, including intramural sports, picnics, movies and other social and recreational activities. The intention for IBM Club, which boasts approximately 90,000 members, is to provide employees with a way to network and create social ties with other employees in their geographical area (Cooney 2007). Level of socializing is a key factor for networking success, as it indicates strong social capital. It appears that the IBM Club, and similar work-sponsored or work-sanctioned activities, relies on just that.

In addition to community participation and level of socializing, civic engagement is another variable frequently included in telework research. Past studies tend to question telework's potential effects on an employee's civic engagement (Eitzen 2004; Kamerade and Burchell 2004). Civic engagement is sometimes discussed in literature as political participation, volunteer work or voting habits. Eitzen's (2004) study looked broadly at

telecommunications and loosely integrated telework. He specifically drew the connection between the isolation of teleworking with lower voting rates and lower levels of civic engagement in the community. Again, in contrast, Kamerade and Burchell (2004) found that teleworkers are more likely to report participation in political and trade unions as well as in charitable activities, compared with office-based workers. In summary, while Eitzen's (2004) work supported the idea that teleworking demotes levels of community participation and social capital building, Kamerade and Burchell's (2004: 345-347) work declared teleworking to be, *"*a community-friendly form of work." Although community participation, level of socializing and civic engagement are often included variables in telework research, social capital indicators of association membership and social trust are generally left out. It is unclear why they have been left out, despite their theoretical and historical importance to more-thorough measurement of social capital. As discussed previously, most research and literature evaluating telecommunication and telework's affect on social capital indicators cannot be closely compared due to the variety of studies using differing indicators, measurements and case studies. To fully understand whether a relationship between telework and social capital levels exists, it is logical that these multiple indicators be examined together.

Research Expectations

This study investigates a potential relationship between work status (teleworking and office-based working) and levels of social capital. I utilized the social capital

indicators of community participation, association membership, and civic engagement, level of socializing and social trust. This study also investigates a potential relationship between social capital indicators, working in Silicon Valley and using telecommunication technologies at work.

- I hypothesize that employees in Silicon Valley will report overall higher social capital levels, compared with those working outside of the geographical area known as Silicon Valley.
- I hypothesize that teleworking employees will report lower levels of social capital, compared with office-based workers.
- Additionally, I hypothesize that the increased use of telecommunication tools can, in part, explain why teleworking employees report lower levels of social capital compared with office-based employees when controlling for reported number of hours worked per week, race, income category, education level, gender, age and employment industry.

Methodology

Sample

The unit of analysis for the present study is individuals: office working and teleworking employees working in and outside of the geographical location known as Silicon Valley (i.e. California counties of San Mateo, Santa Clara, Alameda and Santa

Cruz). The study sampled both teleworking employees and office-based employees, allowing the comparison of two sample groups. The present study uses a non-probability sample, and convenience sampling. The total sample size for the present study equals 313 individuals.

Procedures

Data collection procedures began with attracting initial sampling units. These initial sampling units were attracted through postings on nine separate Silicon Valley-subject, sociological inquiry and/or teleworking-subject on-line discussion groups and on-line message boards. These include:

- Craigslist.com
- Yahoo groups: FISHnetSV, techsuniteSV, workfromhomejobs3, telecommute-telework, bay_area_telework (BATA), car lounge- employment forum, work_at_home_jobs, telecommute-jobs, WizardsofAU, teleworkers, and telecommuting_discussions, studentsofsoc, sociologists, sociology_today, cybersociology, aplyingsociology, sociology_alliance
- Usenet Newsgroups: ba.general and alt.support.telework

Additionally, respondents were attracted through physical postings at public and private businesses and educational centers and offices, local government and civic offices, phone communication, e-mail communication and person-to-person communication to professional and personal contacts of the researcher. (See Appendix II for actual physical and virtual posting wording and e-mail wording).

All participants were self-referred, and independently and anonymously took the on-line survey without any direct contact by the researcher. SurveyMonkey.com hosted the on-line survey. This site securely hosted and compiled data from the survey's responses. (See Appendix III for SurveyMonkey.com's privacy statement and security policy related to the collection of data from the hosted survey). The study's sample included teleworking employees in Silicon Valley, office-based employees in Silicon Valley, and teleworking or office-based employees outside of the geographical area of Silicon Valley, for a total sample size of 313 respondents. These postings requested office working and teleworking employees to fill out an on-line survey, hosted by surveymonkey.com. Additionally, those who completed the survey were asked to notify others, who either teleworked or office-worked in or outside of Silicon Valley, of the survey.

The period of time for data collection was approximately 2.5 months, starting in January of 2007. The use of e-mail communication, on-line message board communication and the hosted web-survey was considered to be an optimal sample and data collection strategy for this particular study due to the convenience factor for the sample subject and the cost-effectiveness and time-effectiveness for the researcher. My observations and first hand experiences have shown many Silicon Valley employees (teleworkers and office-workers) prefer e-mail to telephone or 'snail-mail' for communication purposes. The wording of the survey questions were constructed for the targeted sample, for teleworkers who are typically computer literate and college educated (Pratt, 1999).

Measures

The indicators of social capital were chosen for the survey instrument based on their reliable usage within previous studies, as discussed within the literature review. The survey was a closed-ended, on-line questionnaire, with questions developed by the present researcher and questions taken from previous social capital surveys, such as The GSS (1990-2002) and The Social Capital Community Benchmark Survey (2000). Responses were compiled by SurveyMonkey.com, and then scored and logged by the researcher using SPSS.

The operationalizations of the variables are as follows.

Dependent Variable: Level of Social Capital

Level of social capital is defined as the value of social networks and ties that builds norms of reciprocity within and for the greater network or community (see Bourdieu, 1983; Coleman, 1988; Putnam 1999). Five indicators were used to measure the level of social capital: 1. community participation, 2. group membership, 3. civic engagement, 4. level of socializing and 5. social trust.

1. Community participation is defined as an individual's presence and activity in their neighborhood, town or city in a way that allows them to feel a part of their neighborhood, town or city. Community participation was identified by the following questions from the questionnaire:

"How many times, in the last 12 months, have you attended any public meeting in which there was a discussion of local community or school affairs?" Possible responses were coded, "never"= 1, "once or twice"= 2, "three or four times"= 3, and "five or more times"= 4.

"How many times, in the last 12 months, have you attended a celebration, parade, or local sports or art event in your community?" Possible responses were coded, "never"= 1, "once or twice"= 2, "three or four times"= 3, and "five or more times"= 4.

2. Group membership is defined as membership in a community organization, club, or team that congregates on a regular basis and provides behavior, action and reciprocity norms. Group membership was identified by the following questions from the questionnaire:

"Are you a member of any non-work related groups, clubs, organizations or teams (i.e., church groups, sports teams, PTA, volunteer groups, book clubs, etc.)?" Possible responses were coded, "no"= 0 and "yes"= 1.

"If yes, how many non-work related groups are you a member of?" A type-in number box was included. Answers were coded based on the number of groups.

"How many of these groups meet only over the Internet?" A type-in number box was included. The answer is the number used in analysis.

"How many of these groups meet face-to-face?" A type-in number box was included. Answers were coded based on the number of groups.

3. Civic engagement is defined as performing duties or activities related to the administration of the town or city. Civic engagement was identified by the following questions on the questionnaire:

"Are you currently registered to vote?" Possible responses were coded, "no"= 0 and "yes"= 1.

"How interested are you in local political issues?" Possible responses were "not at all interested"= 1, "only slightly interested"= 2, "somewhat interested"= 3 and "very interested"= 4.

"In the last two years, have you voted in a local (non-national) election?" Possible responses were "no"= 0 and "yes"= 1.

4. Level of socializing is defined as the level at which an individual mixes socially with others. Level of socializing was measured by the following questions, asking the respondent:

"How many times, in the last 12 months, have you had friends over to your home?" Possible responses were, "never"= 1, "once or twice"= 2, "three or four times"= 3, and "five or more times"= 4.

"How many times, in the last 12 months, have you socialized with co-workers outside of work?" Possible responses were, "never"= 1, "once or twice"= 2, "three or four times"= 3, and "five or more times"= 4.

"About how often to you talk to or visit with your neighbors?" Possible responses were, "never"= 1, "once a year or less"= 2, "a few times a year"= 3, "about once a week"= 4, "a few times a week"= 5 and "just about everyday"= 6.

"For each of the following groups, indicate whether the group gives you a sense of community or feeling of belonging, or not: a) The people in your neighborhood, b) The people you work with, c) The people you have met online". Possible responses were "no-does not"= 1, "depends"= 2, "yes- does"= 3, and "don't know", which was coded as missing.

5. Social trust is defined as trusting in or believing in fellow members of the community and in the community as a singular unit. Social trust is a willingness to cooperate with others even if they do not have direct knowledge of them or direct contact with them. The variable, social trust, was broken down into three variables: general social trust, social trust within local community and social trust within the work environment. Social trust was measured by the following questions from the questionnaire:

"Generally speaking, would you say that most people can be trusted or that you can't be to careful in dealing with people?" Possible answers were "you can't be too careful"= 0, "most people can be trusted"= 1 and "don't know", which was coded as missing.

"Generally speaking, how much would you say that you can trust people in your local community?" Possible responses were "not at all"= 1, "only a little"= 2, "somewhat"= 3 and "a lot"= 4.

"Generally speaking, how much would you say that you can trust people you work with?" Possible answers were "not at all"= 1, "only a little"= 2, "somewhat"= 3 and "a lot"= 4.

<u>Independent Variable: Primary Work –Location Assignment</u>

Primary work-location assignment is defined as where an individual's paid work, for a company, is being performed. Primary work-location assignment was identified by the following question from the questionnaire: "As an employee, where do you perform the majority (more than 50%) of your assigned work activities?" Possible responses were, "from a home-office", "from a company office", "from a satellite-site or neighborhood work center" and "other". The response "other" was accompanied by a type-in answer space. Any other "other" that does fit the definition of a telework site, as defined earlier (Marshall, 1998), was included in that category. This variable was recoded to create the new dummy variable, 'Telework Based'. For 'Telework Based', the values included 0 = all other responses, including "from a company office" and 1 = "from a home office" and "from a satellite –site of neighborhood work center".

To verify, roughly, when an employee began working from their stated work-location, the following question was; "How long have you worked in your current work situation?" Possible responses were coded, "less than 6 months" = 1, "6 months to 1 year" = 2, "over 1 year, under five years" = 3 and "over 5 years" = 4. This question was used to help clarify the status of work-location assignment.

Control Variables

1. Telecommunication technology use is defined as the use of technology to communicate with others, typically over a distance. Telecommunication technology use was measured by the following questions:

"What, if any, forms of telecommunication technology do you use for business related communication?" The participant was asked to check all that apply. Possible responses

were “telephone”, “VOIP”, “web-conferencing”, “instant messaging”, “VPN”, “e-mail”, and “other”. The participant was asked to specify the response, “other”. This variable was recoded into a new variable, “telecommunication forms” with the values based on the number of telecommunication forms the respondent reported using for business related communication (one through seven types).

“On average, what percentage of your work time is spent using telecommunication technology (telephone, VOIP, web-conferencing, instant messaging, VPN, e-mail, etc.) for business related communication?” A space was provided for the respondent to type in a number. This variable was recoded into the new variable “telecommunication category”, which was coded “25% or less” = 1, “26%-50% “= 2, “51%-75%” = 3 and “76% or more” = 4 so that respondents’ answers can be compared with the Community Benchmark Survey’s (2000) findings from similar questions.

2. Number of hours employed per week is defined as the number of hours an individual works for pay in an average seven-day period. Number of hours employed per week was measured by the following: “On average, how many hours do you work for your primary employer per week?” Respondents typed in a number.

3. Education level is defined as the highest level of formal education an individual has acquired. Education level was measured by the following: “Choose what best describes your education level”. Possible answers were coded “less than high school”= 1, “high school diploma”= 2, “some college”= 3, “associates/junior college degree”= 4, “bachelor degree”= 5, “graduate level and beyond”= 6.

4. Gender is defined as an individual's subjective identification of a gender category. Gender was measured by asking the respondent: "Your Gender". Possible answers were coded into a dummy variable, "female"= 0 and "male"= 1.

5. Age is defined as the number of years an individual has lived. Age was measured by asking the respondent: "Your age (type in years)". A type-in number box was included. The new variable "Age category" was created and coded "18-34" = 1, "35-49" = 2, "50-64" = 3, and "65+" = 4.

6. Race was measured by asking the respondent: "Choose the race you most identify as". Choices were "African American/Black", "Caucasian/White", "American Indian/Native American", "Asian", "Hispanic/Latino (a)", "Bi-racial", "Pacific Islander", and "other (please specify)". Respondent's answers were dummy-coded into a new variable after data collection. The new Race (White) dummy variable was coded 0 = all others and "Caucasian / White" =1. It was the intention of this researcher to create additional Race dummy variables for Asian and Hispanic, but the sample size in each of those two categories was not large enough to warrant the creation of dummy variables for statistical purposes.

7. Income is defined as an individual's annual income from paid work, broken into categories. Income was measured by asking the respondent: "Your annual income category". Possible answers were the following categories: "under 25,000 dollars"=1, "25,000-49,999 dollars"=2, "50,000-74,999 dollars"=3, "75,000-99,999 dollars"=4, "100,000-124,999 dollars"=5, "125,000-149,999 dollars"=6 and "over 150,000 dollars"=7.

8. Employment industry is defined as the particular form or branch of economic or commercial activity that the respondent participates in for paid work. Employment industry was measured by asking the respondent: "Your employment industry category". The following categories were possible answers: "Advertising/Public Relations", "Arts/Entertainment/Publishing", "Banking/Financial", "Clerical/Administrative", "Construction/Facilities", "Customer Service", "Education/Training", "Engineering/Architecture", "Government/Military", "Healthcare", "Hospitality/Travel", "Human Resources", "Insurance", "Internet/New Media", "Law Enforcement/Security", "Legal", "Management/Consulting", "Manufacturing/Operations", "Marketing", "Non-Profit", "Pharmaceutical/Biotech", "Real Estate", "Sales", "Technology", "Telecommunications", "Transportation/Logistics" and "other (please specify)". Respondent's answers were dummy-coded for statistical purposes, after data collection into the new variable "Tech and Telecom Jobs" with values for all others = 0 and 1 = "Technology", "Internet/New Media" and "Telecommunications" industries.

9. In order to verify geographical location, the survey questionnaire included the question, "What postal zip code do you most often (more than 50%) work from?" For this study, geographical location was defined and measured through the employee's reported postal zip code. A space was provided for a type-in, five-digit zip code answer. If the participant works from a home office, neighborhood work center or a satellite site, the zip code of that location was entered. If the participant works primarily from a company office, the zip code of that location was entered. This was used to create the

new variable "Silicon Valley". The respondents' answers were recoded into 0 = all other zip codes nationwide and 1 = zip codes that fall in Silicon Valley, as defined earlier.

Post data-collection, exploratory factor analysis was utilized in scale development for level of socializing, civic engagement and community participation, to determine an acceptable Cronbach's alpha. A community participation scale, a socializing scale and a civic engagement scale were created. Social capital indicators association membership and social trust were measured through individual questions; no scales were created for these indicators. The social capital indicator social trust was broken down into three realms measured through three separate questions: social trust in the local community, social trust in the workplace and general social trust. Multi-variate analysis was used, in addition to descriptive statistics. Multiple regression, using listwise deletion, was used to examine the coefficients of the independent variable, work arrangement, and the other independent demographic variables as they explain the variance in the sample's social capital indicators. SPSS software was used to run all analyses.

In addition to comparing this study's findings to relevant findings and theories from the literature review, I will also be using a previous survey to discuss findings specific to Silicon Valley, out of The Social Capital Community Benchmark Survey (2000). This survey influenced the present survey's creation, and was particularly helpful because of the focus on social capital within communities. This survey was conducted by Taylor Nelson Sofres Intersearch Corporation by phone between July 2000 and November 2000. It was developed by the Saguaro Seminar at the John F. Kennedy School of Government with the involvement of a Scientific Advisory Group with social

capital theorists and researchers from across the globe. The national sample included 3000 respondents. Additionally, community samples were pulled, consisting of over 26,000 respondents. The Silicon Valley portion of the community sample, sponsored by the Peninsula Community Foundation and Community Foundation Silicon Valley, was made up of 1,500 respondents. Koch, Miller, Walesh and Brown (2001) published the findings from the Silicon Valley sample.

Results

Descriptive Statistics

Descriptive statistics for the variables used in further analysis are summarized in Table 1. In looking at the primary independent variable, work arrangement, the sample shows that approximately 85% of respondents reports working from a company office, while about 15% report teleworking from home or from a satellite site. The dependent variables, indicators of social capital, include the community participation scale, the socializing scale, the number group memberships, the civic engagement scale and the three social trust variables: general social trust, social trust in the workplace and social trust in the local community.

The scales created for this study give an overall understanding of respondents' reported levels of activities that indicate social capital. The respondents report a mean of 2.69 on the community participation scale (with a response range of 1.0 to 4.0 and a

standard deviation of .886). A full 51% of respondents report that they had attended five or more local community / local school public meetings in the last year. On average, respondents report attending community celebrations, parades or sporting events three to four times in the last year (36.8%). Responses for the socializing scale show a mean of 3.38 (with a response range of 1.33 to 4.67 and a standard deviation of .724). On average, respondents report socializing with friends, in their home, five or more times in the last year (71.1%). On average, they also report socializing with co-workers outside of the workplace five or more times in the last year (47.9%). On average, respondents talk to or visit with their neighbors about once per week (30.4%). Responses for the civic engagement scale show a mean of 1.52 (with a response range from .33 to 2.0 and a standard deviation of .422). The scale shows that on average, respondents report a relatively high level of civic engagement. Most report being registered to vote (89.6%) and most report voting in the last local election (73.9%). On average, respondents claim they are 'somewhat interested' in local politics (44.2%). The remaining social capital indicators are measured through individual questions, rather than scales.

Table 1 Descriptive Statistic for Variables

Variables	*Mean*	*Standard Deviation*	*Min.-Max. Values*	*n*
Dependent				
Community Participation Scale	2.69	.886	1-4	309
Socializing Scale	3.38	.724	1.33-4.67	310
Civic Engagement Scale	1.52	.422	0.33-2.00	310
Number of Group Memberships	1.52	.144	0-4	312
General Social Trust	0.58	…	0-1	291
Social Trust in Local Community	3.10	.649	1-4	309
Social Trust at Work	3.48	.612	1-4	308
Independent				
Length of Time with Current Employer	3.06	.965	1-4	306
Age Category	1.80	.863	1-4	299
Gender (male)	0.41	…	0-1	308
Education Level	4.85	1.23	1-6	311
Average Hrs. Worked Per Week	42.0	11.26	0-65	287
Annual Income Category	3.50	1.61	1-7	303
Race (White)	0.74	…	0-1	312
Telework Based	0.15	…	0-1	293
Silicon Valley	0.44	…	0-1	298
Time Using Telecommunication Tools at Work (% Category)	2.16	1.13	1-4	296
Technology and Telecommunication Employee	0.15	…	0-1	312

Responses for the number of group memberships variable show a mean of 2.58 (with a response range of 0 to 10 group memberships and a standard deviation of 1.43). A full 99% of respondents claim they are a member of at least one non-work group. Most respondents report they are members of less than three non-work groups (54.1%). Eighty-three percent claim that none of these groups meet over the Internet, which is surprising since so many respondents use at least one form of telecommunication technology for work (98.1%). For the variable general social trust, 58% of respondents report 'most people can be trusted'. About 63% of responses agree that they 'somewhat' trust those in their local community, while 25% felt they trust local community members 'a lot'. Fifty-four percent report trusting work colleagues 'a lot', while 41% report trusting work colleagues only 'somewhat'.

Looking at the independent and control variables shows that the mean number of telecommunication tools used at work, on average, is 3.11. In looking at the amount of time employees use telecommunication tools at work, about 32% of respondents report using telecommunication technology for more than half of their workday. The respondents report working an average of 42 hours per week in their primary job (with a response range from 0 to 65 hours). The education mean for respondents is 4.85. This reflects that, on average, respondents have earned a bachelors degree. In the sample, 59% of respondents are male and 41% are female. The 18-34 year age group is most represented, at 48%, while about 26% are in the 35-49 year age bracket, closely followed by the 50-64 year age bracket at 25%. The respondents' race distribution is as follows: approximately 75% identify as Caucasian / White, 9% identify as Asian, 7% identify as

Bi-racial or Multi-racial, 3% identify as Hispanic / Latino (a), 3% identify as Pacific Islander, 1% identify as African American / Black and a little less than 1% identify as Native American / American Indian. Some respondents, a little less than 2%, report their race as 'other'. The response 'other' includes East Indian, Middle Eastern, Russian Jewish and Sámi race identification. Since such small percentages of respondents identify as a non-white race, a dummy variable was created for the purpose of multiple regression. It would be beneficial for future studies to use a larger sample of non-white respondents to investigate a potential effect race has on social capital indicators and use of telecommunication technology and telework.

The mean annual income category for respondents reflects the 50,000 to 74,999 dollar bracket. Forty-three separate employment industries were identified, with a well-distributed sample. The most frequently identified employment industry is the education and training industry, with 17% of respondents identifying with that category. About 12% of respondents report working in a technology or telecommunications industry. The survey attracts respondents from across the nation. Approximately 56% of respondents report working, primarily, in Silicon Valley. The remaining 44% represent 22 states: New York, Minnesota, Illinois, Nevada, Florida, Arizona, North Carolina, Oregon, Washington, Virginia, Indiana, Connecticut, Colorado, Pennsylvania, Massachusetts, Maryland, Texas, Georgia, New Jersey, Tennessee, Vermont and counties in California outside of Silicon Valley.

Independent Samples t-test

The Independent Samples t tests are reflected in Tables 2 and 3. First I will discuss the significant and insignificant differences between teleworkers and office-based workers. Based on the survey responses, it appears that the annual income means of teleworkers and office-based workers vary significantly ($p \leq .05$). The mean annual income category for teleworkers within the survey is 4.02 (75,000-99,999 dollar range), compared with 3.42 (50,000-74,999 dollar range) for the company office-based workers. Annual income is the only significant difference found between office-based workers and teleworkers.

The following differences are noted between office-based workers and teleworkers in the study, although the findings are not significant and cannot be applied back to the population. Teleworkers in the study use telecommunication tools only slightly more frequently in the workplace (2.44) compared with office-based workers (2.15). The two groups report similar group membership, including similar face-to-face group membership and similar Internet group membership. Additionally, both groups report similar levels of civic engagement, socializing and community participation. Teleworkers and office-based workers in the study report similar levels of social trust. Interestingly, teleworkers report a very slight increase in local community trust (3.18), compared with office-based workers (3.06), while office-based workers report a very slight increase in work-colleague trust (3.50), compared with teleworkers (3.39). These findings do not support my hypothesis, for the findings show that teleworking employees and office-based employees have very similar levels of most social capital indicators.

Table 2 Frequencies and Independent Sample t tests for Each Variable by Work Arrangement

Variables	*Work Arrangement*	*n*	*Mean*	*St. Deviation*	
% Time Category Using Telecom Tools	Teleworker	41	2.44	1.20	
	Office Worker	241	2.15	1.12	
Face-to-face Group Member	Teleworker	26	1.00	.00	
	Office Worker	154	.98	.11	
Internet Group Member	Teleworker	25	.12	.33	
	Office Worker	151	.17	.38	
Civic Engagement Scale	Teleworker	44	1.50	.43	
	Office Worker	248	1.51	.42	
Socializing Scale	Teleworker	44	3.41	.76	
	Office Worker	248	3.36	.70	
Community Participation Scale	Teleworker	44	2.60	.94	
	Office Worker	248	2.73	.87	
# Of Group Memberships	Teleworker	44	1.56	1.46	
	Office Worker	249	1.49	1.44	
Race	Teleworker	43	2.84	1.55	
	Office Worker	247	2.61	1.38	
Annual Income Category*	Teleworker	41	4.02	1.90	
	Office Worker	245	3.42	1.52	
Age Category	Teleworker	42	1.74	.91	
	Office Worker	241	1.77	.82	
Gender (male)	Teleworker	42	.43	.50	
	Office Worker	248	.42	.49	
Education Level	Teleworker	43	4.79	1.26	
	Office Worker	248	4.85	1.22	
Avg. Hours Worked per Week	Teleworker	43	40.65	12.99	
	Office Worker	230	42.48	10.71	
Social Trust: Work	Teleworker	44	3.39	.65	
	Office Worker	248	3.50	.61	
Social Trust: Local Community	Teleworker	44	3.18	.65	
	Office Worker	247	3.06	.65	
Social Trust: General Trust	Teleworker	41	.46	.50	
	Office Worker	234	.58	.49	

* $p \leq .05$ level; ** $p \leq .01$ level; *** $p \leq .001$ level; + $p \leq .10$

Table 3 Frequencies and Independent Sample t tests for Each Variable by Employment Location

Variables	*Work Location*	*n*	*Mean*	*St. Deviation*
Face-to-face Group Member	Silicon Valley	81	1.00	.00
	Non Silicon Valley	104	.98	.13
Internet Group Member*	Silicon Valley	79	.10	.30
	Non Silicon Valley	102	.21	.41
Civic Engagement Scale**	Silicon Valley	131	1.45	.43
	Non Silicon Valley	167	1.58	.39
Socializing Scale	Silicon Valley	131	3.37	.68
	Non Silicon Valley	167	3.40	.73
Community Participation Scale	Silicon Valley	131	2.77	.84
	Non Silicon Valley	167	2.62	.91
# of Group Memberships	Silicon Valley	131	1.38	1.29
	Non Silicon Valley	167	1.61	1.53
Social Trust: General Trust	Silicon Valley	123	.55	.49
	Non Silicon Valley	158	.58	.49
Social Trust: Local Community	Silicon Valley	131	3.10	.60
	Non Silicon Valley	166	3.08	.69
Social Trust: Work	Silicon Valley	131	3.53	.57
	Non Silicon Valley	167	3.45	.63
Education Level	Silicon Valley	131	4.92	1.14
	Non Silicon Valley	167	4.75	1.29
Gender (male)	Silicon Valley	131	.43	.49
	Non Silicon Valley	166	.40	.49
Age Category***	Silicon Valley	128	1.60	.74
	Non Silicon Valley	162	1.93	.90
Annual Income Category	Silicon Valley	130	3.47	1.57
	Non Silicon Valley	164	3.52	1.64
Avg. Hours Worked per Week	Silicon Valley	122	41.48	10.97
	Non Silicon Valley	158	42.53	11.57
Telework Based	Silicon Valley	126	.12	.32
	Non Silicon Valley	156	.17	.38
% Time Category Telecom Tools	Silicon Valley	128	2.13	1.13
	Non Silicon Valley	160	2.16	1.14

* $p \leq .05$ level; ** $p \leq .01$ level; *** $p \leq .001$ level; + $p \leq .10$

At this point, I will discuss the significant and insignificant differences between employees working in Silicon Valley and employees working elsewhere in the United States. It appears, based on survey responses, that whether an employee belongs to an Internet-based group varies, depending on whether they work in Silicon Valley or elsewhere in the United States. This difference in the means is significant ($p \leq .05$). The mean number of group memberships that meet over the Internet for Silicon Valley employees within the survey is .101, compared to .216 for employees who work outside of Silicon Valley, and within the United States. Thus, the data show that employees outside of Silicon Valley are more likely to belong to one or more groups that meet over the Internet. This does not support the hypothesis that employees in Silicon Valley report higher social capital levels, as indicated by group membership. Where a respondent falls on the civic engagement scale also varies between those who work in Silicon Valley compared to those working elsewhere in the Unites States. The civic engagement scale means of Silicon Valley employees and of those who work elsewhere in the United States are significantly different ($p \leq .05$). The mean level of civic engagement for Silicon Valley employees within the survey is 1.45, compared with 1.58 for employees who work outside of Silicon Valley, and within the United States. Thus, the data shows that employees outside of Silicon Valley have a higher civic engagement mean, compared to Silicon Valley employees. This is another finding that does not support the hypothesis that Silicon Valley employees report higher levels of social capital, as indicated by civic engagement. Lastly, the mean age category in Silicon Valley was significantly different than the mean age category elsewhere in the United States ($p \leq .05$). The mean age for

Silicon Valley employees within the survey is 1.60, compared to 1.93 for employees who work outside of Silicon Valley, and within the United States. The data show that the employees outside of Silicon Valley are slightly older, compared with Silicon Valley employees who took the survey.

The following differences were noted between Silicon Valley employees and other employees in the United States, although the findings are not significant and cannot be applied back to the population. There is very little difference in face-to-face group membership averages, levels of socializing and community participation levels of Silicon Valley employees, compared with employees working elsewhere. Silicon Valley employees report overall lower group membership (1.38) compared with employees elsewhere (1.61). The two groups have similar levels of general social trust, work-colleague trust and local community trust. The two groups have a similar breakdown of office-based workers and teleworkers and use telecommunication tools at work for similar amounts of time. Based on the literature, I was expecting to see greater differences between Silicon Valley employees and employees elsewhere in the United States. These findings do not support my hypothesis, for Silicon Valley employees in this sample do not report higher levels of most social capital indicators. The few differences there are between Silicon Valley employees and employees elsewhere in the United States in this sample suggest the opposite.

Correlations

The correlations table, Table 4, describes the strength and direction between the surveyed independent variables and the dependent social capital indicating variables. The correlations do not support the hypothesis that employees in Silicon Valley report higher levels of social capital. While the findings do not lend support to the hypothesis that teleworkers report lower levels of social capital, they do lend support to the hypothesis that higher levels of telecommunication technology tool use at work correlate with lower levels of social capital, since general social trust is a social capital indicator. Certainly, there is at least a correlation between these two variables. The time using telecommunication tools at work (-.161) is significantly correlated with lower general social trust levels ($p \leq .05$).

For the social capital indicator and dependent variable community participation, as measured by the community participation scale, education level has the strongest, significant and negative correlation (-.191), followed by average hours worked in a week (-.149). Both of these correlations are significant ($p \leq .05$). The social capital indicator and dependent variable, level of socializing, as measured by the socializing scale, is significantly correlated with increased average hours worked per week (.244). This is statistically significant ($p \leq .05$). The civic engagement scale, another indicator of social capital, is significantly correlated with an older age bracket (.294), higher education level (.139) and racially identifying as Caucasian / White (.186). Once again, these findings are significant ($p \leq .05$).

For the dependent variable general social trust, an indicator of social capital, the analysis shows that age category (.218) and racially identifying as Caucasian / White (.241) are positively correlated and can be applied to the larger population. Social trust in the local community is positively correlated with age category (.261), education level (.211) and racially identifying as Caucasian / White (.151). The last dependent variable and social capital indicator is social trust at work. Education level (.177) is positively correlated with social trust at work. All of these findings are significant ($p \leq .05$).

Table 4 Correlations of Social Capital Indicators with Variables Used in Multiple Regression

Social Capital Indicators	*1*	*2*	*3*	*4*	*5*	*6*	*7*
Independent							
Telework Based	-.034	.055	.036	.000	-.116	.057	-.049
Silicon Valley	.055	-.030	-.153	-.071	-.069	-.016	.103
Time Using Telecommunication Tools At Work (% Category)	.013	-.096	-.049	.007	-.161*	-.104	-.123
Technology and Telecommunication Employee	.050	-.090	-.116	-.093	-.027	-.038	-.089
Length of Time with Current Employer	-.044	.155	.116	.081	.160	.168	.152
Age Category	-.056	.040	.294**	.139	.218*	.261**	.097
Gender (male)	.061	.055	-.059	-.068	.101	.006	-.021
Education Level	-.191**	.086	.139*	.106	.148	.211**	.177*
Average Hrs. Worked Per Week	-.149*	.244**	.027	.144	.107	.102	.046
Annual Income Category	-.098	.198	.172	.164	.123	.174	.071
Race (White)	-.066	.118	.186*	.040	.241**	.151*	.023

Dependent Variables: 1. Community Participation Scale, 2. Socializing Scale, 3. Civic Engagement Scale, 4. Number of Group Memberships, 5. Social Trust: General, 6. Social Trust: Local Community, 7. Social Trust: Work

* $p \leq .05$ level; ** $p \leq .01$ level; *** $p \leq .001$ level; + $p \leq .10$

Multiple Regression

For each of the seven social capital indicating variables, multiple regression analysis is run three times, for a total of 21 multiple regression runs utilizing listwise deletion (see Table 5, 6 and 7). The three multiple regression analyses per social capital indicator evaluates three different models. The basic model includes the seven basic control variables: length of time with current employer, age category, gender, education level, average hours worked per week, income category, and race. The extended model includes an additional two independent variables, the study's main independent variables: telework-based work and work in Silicon Valley. Thirdly, multiple regression evaluates a full model, which includes an additional two independent variables: time telecommunication tools are used for work and work in the technology and telecommunication industries.

The unstandardized coefficients show the effects of every independent variable on the dependent variables, while holding all other independent variables constant. The t tests evaluate the significance of the slopes. It is important to note that although many of the coefficients are weak in strength, those that are statistically significant ($p \leq .05$) are worth discussing. Relevant to the hypothesis, the regressions indicate that the amount of time using telecommunication tools for work does have a negative effect on one social capital indicator, general social trust. I hypothesized that an employee's amount of time using telecommunication tools for work would, in part, explain an employee's lower level of social capital. It appears that this is only true for general social trust. The coefficients show the strength and direction that the time spent using telecommunication

technology has on general social trust (-.056). Meanwhile, there appear to be no significant slopes for teleworking's effect or working in Silicon Valley's effect on social capital indicators. There is no evidence, based on the multiple regression findings, that working in Silicon Valley or teleworking has an effect on any indicators of social capital. Thus, there is no support for two of the study's hypotheses. In evaluating the regression models, working in Silicon Valley and teleworking, or both, do not have significant associations with social capital indicators ($p \leq .05$). The only coefficients worth noting for these variables are working in Silicon Valley's negative effect on civic engagement (-.087) and working in Silicon Valley's positive effect on social trust at work (.134). These are significant at the .10 alpha level.

At this time, I will review other significant associations that the regressions uncovered, at the .05 alpha level. When holding the other independent variables constant, education level and average hours worked per week have significant slopes, indicating that they have an effect on community participation. The coefficients show the strength and direction that education (-.138) and average hours worked per week (-.011) have on community participation, within the full model. These independent variables have the strongest significant associations in the regression models. Identifying as male also has an effect on general social trust, but only in the basic model. As more variables are added, identifying as male loses its ability to affect community participation. The R-square shows a 7.9% reduction of error in predicting community participation means. The basic model best explains community participation, with an adjusted R-squared of 4.6%. However, all three models are significant ($p \leq .05$).

Table 5 Unstandardized and Standardized Coefficients of Multiple Regressions (Basic, Extended and Full Models)

Dependent Variables	*Community Participation*			*Socializing*			*Civic Engagement*		
	1	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*
Independent Variables									
Telework Based	…	-.126	-.133	…	.119	.143	…	.043	.052
		-.051	-.053		.061	.073		.037	.044
Silicon Valley	…	.073	.078	…	-.005	-.022	…	-.080	-.087+
		.040	.043		-.003	-.016		-.096	-.104
Time Using Telecommunication Tools At Work (% Category)	…	…	-.000	…	…	-.065	…	…	-.007
			.001			-.104			-.020
Technology and Telecommunication Employee	…	…	.104	…	…	-.198	…	…	-.110
			.044			-.107			-.099
Length of Time with Current Employer	-.004	-.004	-.004	.084+	.085+	.078	-.008	-.009	-.010
	-.005	-.005	-.005	.116	.117	.107	-.019	-.020	-.023
Age Category	-.016	-.011	-.003	-.055	-.052	-.074	.124***	.116***	.107**
	-.015	-.011	-.003	-.066	-.062	-.089	.248	.233	.215
Gender (male)	.235*	.232+	.213+	-.069	-.070	-.045	-.097+	-.093+	-.074
	.130	.129	.118	-.049	-.049	-.032	-.115	-.110	-.088
Education Level	-.132**	-.137**	-.138**	.026	.029	.020	.040+	.043*	.043*
	-.179	-.185	-.186	.045	.049	.034	.115	.125	.124
Average Hrs. Worked Per Week	-.012*	-.011*	-.011*	.013**	.013**	.013**	-.000	-.000	-.001
	-.144	-.145	-.142	.200	.206	.204	-.007	-.011	-.017
Annual Income Category	-.023	-.018	-.022	.050	.044	.059+	.027	.027	.032+
	-.041	-.034	-.039	.114	.102	.135	.104	.105	.121
Race (White)	-.150	-.144	-.145	.177+	.181+	.180+	.155**	.143*	.145*
	-.073	-.069	-.070	.109	.112	.111	.160	.148	.149
Constant	3.969***	3.963***	3.943***	2.252***	2.215***	2.438***	.973***	1.012***	1.056***
R^2	.073	.078	.079	.101	.104	.128	.141	.151	.161
Adjusted R^2	.046	.043	.037	.075	.071	.088	.116	.120	.122
N	250	250	250	250	250	250	250	250	250

* p ≤.05 level; ** p ≤.01 level; *** p ≤.001 level; + p ≤.10

Table 6 Unstandardized and Standardized Coefficients of Multiple Regressions (Basic, Extended and Full Models) (Cont.)

Dependent Variables	*Group Membership*			*Social Trust (General)*		
	1	*2*	*3*	*1*	*2*	*3*
Independent						
Telework Based	…	-.007	.013	…	-.137	-.128
		-.002	.003		-.100	-.093
Silicon Valley	…	-.144	-.160	…	-.011	-.020
		-.049	-.055		-.011	-.020
Time Using Telecommunication Tools At Work (% Category)	…	…	.013	…	…	-.056*
			.010			-.127
Technology and Telecommunication Employee	…	…	-.316	…	…	.006
			-.082			.004
Length of Time w/ Current Employer	-.001	-.001	-.002	.032	.032	.028
	-.000	-.001	-.001	.061	.061	.054
Age Category	.154	.138	.116	.095*	.091*	.085*
	.089	.080	.067	.163	.155	.145
Gender (male)	-.420*	-.412*	-.353+	.055	.054	.043
	-.143	-.141	-.121	.055	.054	.043
Education Level	.091	.096	.100	.051*	.049+	.040
	.076	.080	.083	.127	.121	.099
Average Hrs. Worked Per Week	.016+	.015+	.014	.003	.003	.003
	.120	.116	.109	.072	.060	.067
Annual Income Category	.113+	.117+	.125+	-.009	-.001	.005
	.125	.130	.139	-.028	-.004	.018
Race (White)	.102	.077	.083	.243***	.235***	.230**
	.030	.023	.025	.212	.206	.201
Constant	-.118	-.018	.011	-.246	-.196	-.040
R^2	.069	.071	.077	.125	.135	.150
Adjusted R^2	.042	.037	.035	.099	.100	.108
N	250	250	250	238	238	238

* p ≤.05 level; ** p ≤.01 level; *** p ≤.001 level; + p ≤.10

Table 7 Unstandardized and Standardized Coefficients of Multiple Regressions (Basic, Extended and Full Models) (Cont.)

Dependent Variables	*Social Trust (Local Community)*			*Social Trust (Work)*		
	1	*2*	*3*	*1*	*2*	*3*
Independent						
Telework Based	…	.144	.153	…	-.045	-.031
		.082	.088		-.026	-.018
Silicon Valley	…	.052	.046	…	.144+	.134+
		.041	.036		.116	.109
Time Using Telecommunication Tools At Work (% Category)	…	…	-.036	…	…	-.043
			-.064			-.079
Technology and Telecommunication Employee	…	…	-.050	…	…	-.096
			-.030			-.059
Length of Time w/ Current Employer	.034	.035	.031	.086+	.086+	.082+
	.052	.054	.048	.135	.136	.129
Age Category	.153**	.163**	.155**	.021	.035	.023
	.204	.217	.207	.029	.048	.032
Gender (male)	.013	.008	.011	-.068	-.075	-.066
	.010	.006	.009	-.055	-.061	-.053
Education Level	.096**	.097**	.091**	.088**	.083*	.076*
	.184	.186	.176	.174	.163	.150
Average Hrs. Worked Per Week	.003	.004	.004	.001	.001	.001
	.050	.065	.067	.019	.026	.027
Annual Income Category	.012	.004	.010	-.000	-.002	.006
	.031	.010	.026	-.001	-.006	.016
Race (White)	.174+	.189*	.188*	.020	.043	.042
	.120	.130	.129	.015	.030	.029
Constant	1.960***	1.872***	1.983***	2.736***	2.655***	2.796***
R^2	.130	.138	.143	.056	.070	.080
Adjusted R^2	.105	.105	.103	.029	.035	.038
N	249	249	249	250	250	250

* p ≤.05 level; ** p ≤.01 level; *** p ≤.001 level; + p ≤.10

Next I look at the regression models for the dependent variable, level of socializing, as measured by the socializing scale. Holding the other independent variables constant, average hours worked per week has a slope that does not equal 0, thus as it increases it has a slight, yet significant, effect on level of socializing. The coefficients for the full model show the strength and positive direction that average hours worked per week (.013) has on socializing levels. This independent variable has the strongest significant association in this set of regression models. The R-square shows a 12.8% reduction of error in predicting socializing means. The full model best explains levels of socializing, with an adjusted R-squared of 8.8%. All three models, again, are significant ($p \leq .05$).

Now I look at the regression models for the dependent variable, civic engagement, as measured by the civic engagement scale. Holding the other independent variables constant, age category, education level, and being Caucasian all have slopes that do not equal 0. Thus, as age or education levels increase, or when a respondent identifies with being Caucasian, each has a significant, positive effect on civic engagement. The coefficients for the full model show the strength and direction that age category (.107), education level (.043) and identifying as Caucasian (.145) have on civic engagement. These independent variables have the strongest significant associations in this set of regression models. The R-square shows a 16.1% reduction of error in predicting civic engagement means, with an adjusted R-square of 12.2%. All three models are significant ($p \leq .05$).

Next I look at the regression models for the dependent variable, number of group memberships. Holding the other independent variables constant, identifying as male has a slope that does not equal 0. Thus, as a respondent identifies as male, the identification has a negative effect on number of group memberships. The coefficients for the models show the strength and direction that identifying as male (-.412) has on number of group memberships, within the extended model. It is important to note that as more variables are added to the model, being male loses some ability to affect the number of group memberships being reported, as it was only significant in the full model at the .10 alpha level. The R-square shows a 7.7% reduction of error, for this model, in predicting number of group memberships means. The adjusted R-square is 3.5% for the full model. However, the full regression model is not a significant predictor. The basic and extended regression models are significant ($p \leq .05$) and have respective R-squares of 4.2% and 3.7%.

The last sets of regression models are for the dependent variables measuring social trust: general social trust, social trust in the local community and social trust at work. Holding the other independent variables constant, age category and identifying as Caucasian each have a slope that does not equal 0, thus they have a significant, positive effect on general social trust. The coefficients for the full model show the strength and direction that age category (.085) and identifying as Caucasian (.230) have on general social trust levels. These independent variables have the strongest significant associations in the regression models. Education level also has an effect on general social trust, but only in the basic model. As more variables are added, education level

loses its ability to affect general social trust. Utilizing the full model, the R-square shows a 15% reduction of error in predicting general social trust means, with an adjusted R-squared of 10.8%. All three regression models for general social trust are significant ($p \leq .05$).

Regarding social trust in the local community, as a dependent variable, age category, education level and identifying as Caucasian each have a slope that does not equal 0, thus they have a significant positive effect on an individual's social trust in the local community. The coefficients for the full model show the strength and direction that age category (.155), education level (.091) and identifying as Caucasian (.188) have on social trust in the local community. These independent variables have the strongest significant associations in the regression models. The R-square shows a 14.3% reduction of error in predicting social trust in the local community means. The basic and extended models best explain social trust in the local community while taking the size of the model into account, with an adjusted R-squared of 10.5%, compared with 10.3% for the full model. All three regression models for social trust in the community are significant ($p \leq .05$).

Finally, for social trust at work, as a dependent variable, education level has a slope that does not equal 0. Thus, as education level increases it has a significant positive effect on social trust at work, while holding the other independent variables constant. The coefficients for the full model show the strength and direction that education level (.076) has on social trust at work. This independent variable has the strongest significant association in the regression models. The R-square shows an 8% reduction of error in

predicting social trust at work means. This full regression model has an adjusted R-squared of only 3.8%. All three regression models for social trust at work are significant ($p \leq .05$).

I will now summarize the findings for discussion. The t tests find a difference in civic engagement means and Internet group membership means between Silicon Valley employees and those working elsewhere; Silicon Valley employees have lower means for these variables. Teleworkers have higher annual income means, compared with office-based workers. The correlations find that the amount of time spent using telecommunication technology tools for work is correlated with lower social trust levels. Education is correlated with lower community participation, but higher civic engagement and higher social trust in the community and at work. The average hours worked per week is correlated with lower levels of community participation and less socializing. Older age is correlated with higher levels of civic engagement and higher levels of general social trust.

The runs of multiple regression find that the time spent using telecommunication tools for work has a negative effect on general social trust levels. Age has a positive effect on civic engagement, general social trust levels and social trust in the community. Identifying as male has a negative effect on group memberships. Education has a negative effect on community participation, yet has a positive effect on civic engagement, social trust at work and social trust in the community. The average hours worked in a week has a negative effect on community participation, but has a positive effect in levels of socializing. Identifying as Caucasian has a positive effect on civic engagement,

general social trust levels and social trust in the local community. These findings are worthy of discussion, as they assist in evaluating this study's hypotheses, as well as in adding comment to previous literature's findings.

Discussion

It appears as though there are no direct and causal implications teleworking or working in Silicon Valley has on social capital indicators. To place this study's findings into proper context, I will look back at the reviewed literature. First I will examine past claims regarding Silicon Valley. I cannot, from these analyses, determine that employees in Silicon Valley report overall higher levels of social capital. Saxenian (1994) praised Silicon Valley's social networks, entailing local community participation, socializing between start-ups, association membership and a sense of social trust within and outside of the workplace. The study's findings do not provide support for this claim. Koch et al.'s (2001) Silicon Valley portion of the Social Capital Benchmark Survey (2000) found higher social trust levels and lower civic and community engagement levels, compared with other metropolitan communities across the United States. This research suggests that working in Silicon Valley is correlated with lower levels of social trust in the community, lower numbers of group memberships, and lower levels of socializing. However, these findings are not significant and a causal relationship is not found. This implies that there is not a relationship between work in Silicon Valley and social capital indicators. Additionally, while I see a difference in civic engagement means between

Silicon Valley employees and employees working elsewhere, there is no support for a causal relationship.

Now I will comment on telework-based findings. Although interesting and expected after reviewing the literature, the findings do not provide significant support for the claim that teleworkers have overall lower levels of any social capital indicator, compared with office-based workers. The majority of teleworking studies that cite a direct connection to lower levels of socializing, less community participation and increased isolation (i.e. Haddon and Lewis 1994; Agres, Edberg and Igbaria 1998; Raines and Leathers 2001; Montreuil and Lippel 2002, 2003; Foley 2004; Eitzen 2004; Bentley and Yoong 2000) cannot be supported by this study. Conversely, this study's findings cannot support Kamerade and Burchell's (2004) study, since the present study does not show teleworkers as participating more in their community or having more civic engagement, compared with office-based workers, only that in this sample, their annual income is higher.

The Social Capital Community Benchmark Survey (2000) found that the intense work demands in a high tech community can create a barrier for civic and community participation. Indeed, the present study finds that longer work hours support this understanding. Working longer work hours does negatively affect community participation. O' Riain (2002) made a connection between high-tech employees' overwhelming work demands and the effect on socializing, community involvement and civic engagement. Along the same lines, Bentley and Yoong (2000) discussed the intense work hours, typical of the teleworker, affecting participation in the larger

community. This study does provide some support, stating that increased hours worked per week negatively affects community participation. In contrast, however, this study also finds that the more hours an employee works, on average, the higher the level of socializing. In relation to these studies, it would appear that it's not so much the particular employment industry that affects employees' social capital indicators. Rather, it's the amount of time spent working that has the greatest effect.

This leads to the only causal relationship finding relating to a hypothesis, which addresses the debate surrounding telecommunication technology and social trust. This study provides some support for telecommunication technology tools' role in one social capital indicator's accumulation, that of general social trust. Indeed, this study shows that the amount of time using telecommunication technology tools can, in part, explain lower levels social trust. This study does not, however, provide support for the claim that the use of telecommunication technology positively affects civic engagement, community participation and socializing as discussed in or Hampton and Wellman's (2003) work. This research also lends little support for Putnam's (2000) work or for Agres et al.'s (1998) discussion on the negative effects of a telecommunication technology-reliant society. Along the same lines, these findings do not support Eitzen's (2004) concerns that telecommunication technologies, among other forms of technology, demote levels of civic and social engagement.

Now I will discuss the findings in relation to commonly used demographic variables, frequently used as controls for social capital research. Haddad and Maluccio (2003) as well as Putnam (1995; 1999) discussed the connection between association

membership and social trust, as a social capital indicators, and financial gain for individuals and communities. I do not see significant support for this. Annual income has no significant effect on any social capital indicators. Past studies that have tied gender to levels of civic engagement (i.e. Lowndes 2004), are not supported by the present study. The present study shows no substantial connection between civic engagement levels and gender. It does, however, support the idea that identifying as male negatively affects the likelihood of group membership and perhaps community participation. Koch, Miller and Brown (2001) stated, in the Silicon Valley portion of The Social Capital Community Benchmark Survey, Hispanic-Americans and Asian-Americans were significantly less likely to experience a sense of community participation and belonging (through friends and neighbors) than Caucasians. While this study's findings do not support this, this study does see that identifying as Caucasian positively affects general social trust and social trust in the local community. This study also provides support for Koch et al. (2001) in finding the effect race has on civic engagement. Identifying as Caucasian positively affects civic engagement levels and social trust levels (both in general and in the local community).

Additionally, this research provides support for Putnam's finding that older individuals report higher levels of social capital indicators. Being older positively affects general social trust, social trust in the local community and civic engagement. This study supports the assumption that higher educated individuals demonstrate more trust in their local community and at work, as well as demonstrate increased civic engagement. This supports both Putnam's (1995; 1999; 2000) and Brown and Brown's (2003) work

connecting education to civic engagement. Surprisingly, however, this research sees that higher education in part explains lower, not higher, levels of community participation.

A study can only contribute as much to a sociological discussion as its methodologies will allow. This research has notable limitations. The acknowledgment of these limitations will provide reference and will benefit future studies in this field. Sample size is one clear limitation. While the sample size for this study is adequate for statistical analysis, it is only large enough to scratch the surface of social capital accumulation among individuals and within their community. Ideally, research of this kind should strive to sample a couple thousand respondents with a more balanced office-based / telework based split. In this study of 313 employees, 85% of respondents are office-based and only 15% were teleworkers. It is also important to note the sample selection bias. Respondents are self-referred and completed the online survey in full. This implies that the respondents are interested enough in the research topic to go to the web page and complete the survey with no prompting or assistance from the researcher. This also implies that the respondents are computer literate, have access to a computer and the internet, have a certain level of education, and can read and type in English. Using a sample with this narrow demographic limits the researcher's ability to apply findings to the general public. Those findings that are statistically significant can only be applied back to the specific population the sample was drawn from.

To reflect, it appears from this study's findings as though there are no direct implications that come out of teleworking in Silicon Valley. Rather, the findings suggest that education level, with a significant influence on five out of seven social capital

indicators, carries the most implications. In addition to further inquiry into the relationship between education and social capital, future studies would benefit from deeper examination into the effect race, age, and amount of work hours has on social capital indicators. These variables each have significant effects on at least two social capital indicators. Lastly, communities and businesses that rely heavily on telecommunication technology tools would benefit from deeper inquiry into the implications of decreased social trust, keeping in mind the continued growth of teleworking and the use of telecommunication technologies for work in metropolitan areas such as Silicon Valley, and beyond.

Appendix I: Online Questionnaire

Thank you for taking a few minutes to complete this anonymous, online survey. Your input is valuable, and will aid in social science research examining social and community relationship levels among office workers and teleworkers.

For questions and comments about this research, or to request a copy of the finished study, please e-mail the researcher, Sheraden Nicholau, at snichola@email.sjsu.edu. For additional concerns or complaints, please contact Dr. Yoko Baba, PhD, Sociology Department Chair at San Jose State University at 408.924.5320. For questions regarding your rights as a participant, please contact Dr. Pamela Stacks, Graduate Studies and Research, 408.924.2480.

For confidentiality, please do not include your name or e-mail address anywhere on the survey. Your confidential responses will be compiled by surveymonkey.com. The sole researcher, Sheraden Nicholau, will keep the compiled data securely. This survey and all responses are SSL encrypted.

This survey is to be completed on a voluntary and confidential basis. You may refuse to participate and may stop at any time without consequences or contact from the researcher. The results of this study may be published. No information that could identify you will be included. By competing this survey, you acknowledge and understand these terms and conditions.

Directions: Please click the answer which ***best describes*** you, your opinions and your recent experiences. Questions about employment are referring to your ***primary*** form of employment only.

1. As an employee, where do you perform the majority (more than 50%) of your assigned work activities?

From a home-office From a company office
From a satellite-site or neighborhood work center
Other (please specify) _____

2. How long have you worked in your current work situation?

Less than 6 months 6 months to 1 year
Over one year, under five years Over 5 years

3. What postal zip code do you work in, a majority of the time (more than 50%)?

(Please type in)
_____

4a. What, if any, forms of telecommunication technology do you use for business related communication? (Check those that apply)

Telephone VOIP (i.e. Vonage, Skype, etc.) Web-Conferencing
Instant Messaging VPN (virtual private network) E-mail
Other (please specify) _____

4b. On average, what percent of your work time is spent using telecommunication technology (i.e., telephone, VOIP, web-conferencing, instant messaging, VPN, e-mail, etc.) for business-related communication?
(type in percentage)
_____

5. How many times in the past 12 months have you…

a) …attended any public meeting in which there was a discussion of local community or school affairs?

Five or more times Three or four times Once or twice Never

b) …attended a celebration, parade, or local sports or art event in your community?

Five or more times Three or four times Once or twice Never

c) …had friends over to your home?

Five or more times Three or four times Once or twice Never

d) …socialized with co-workers outside of work?

Five or more times Three or four times Once or twice Never

6. About how often do you talk to or visit with your neighbors?

Just about every day A few times a week About once a week
A few times a year Once a year or less Never

7. For each of the following groups, indicate whether it gives you a *sense of community or feeling of belonging*- or not.

a) The people in your neighborhood
Yes-does Depends No- does not Don't Know

b) The people you work with

Yes-does Depends No-does not Don't Know

c) The people you have met online

Yes-does Depends No-does not Don't Know

8a. Are you a member of any non-work related groups, clubs, organizations or teams (i.e., church group, sports team, PTA, volunteer group, book club, etc.)?

Yes No (if not, skip to question #9)

8b. (If yes) How many non-work related groups are you a member of?

(type in number) _____

8c. How many of these groups meet only over the Internet?

(type in number) _____

8d. How many of these groups meet face-to-face?

(type in number) _____

9. Are you currently registered to vote?

Yes No

10. How interested are you in local political issues?

Very interested Somewhat interested
Only slightly interested Not at all interested

11. In the last 2 years, have you voted in a local (non-national) election?

Yes No

12. Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?

Most people can be trusted You can't be too careful Don't know

13. Generally speaking, how much would you say that you can trust people in your local community?

A lot Somewhat Only a little Not at all

14. Generally speaking, how much would you say that you can trust people you work with?

A lot Somewhat Only a little Not at all

15. On average, how many hours do you work for your primary employer per week?

(type in hours per week) _____

16. Choose what best describes your education level

Less than high school High school diploma Some college
Associates/Junior college degree Bachelor degree
Graduate level and beyond

17. Your gender

Male Female

18. Your age
(type in years) _____

(Please type in) _____

19. Choose the race you most identify as

African American / Black Caucasian / White American Indian / Native American
Asian Hispanic / Latino(a) Bi-racial / Multi-racial Pacific Islander
Other (please specify) _____

20. Your annual income category

Under 25,000 dollars 25,000-49,999 dollars 50,000-74,999 dollars
75,000-99,999 dollars 100,000-124,999 dollars 125,000-149,999 dollars
Over 150,000 dollars

22. Your employment industry category

Advertising / Public Relations Arts / Entertainment / Publishing
Banking / Financial Clerical / Administrative Construction / Facilities
Customer Service Education / Training Engineering / Architecture
Government / Military Healthcare Hospitality / Travel Human
Resources Insurance Internet / New Media Law Enforcement / Security Legal
Management / Consulting Manufacturing / Operations Marketing
Non-Profit Pharmaceutical / Biotech Real Estate Sales
Technology Telecommunications Transportation / Logistics
Other (please specify) _____

You have finished the survey!
Thank you for your valuable input. Your time and effort is appreciated and will make a difference. This research needs your continued help. Please send the link to this survey to other employed adults in the United States. Thank you.

Comments regarding these topics and issues

Appendix II: Physical and Virtual Postings

Are you ***employed*** in the United States?
Work in an ***office setting*** and/or you ***telework***?
Only have a few minutes to contribute to local research examining office workers' and teleworkers' social networks?

Then take the anonymous, SSL encrypted online survey! It's fast and simple!

https://www.surveymonkey.com/s.asp?u=890693137237

Your input is valuable, and will aid in social science research examining social and community relationship levels among office workers and teleworkers

If you:
a.) Work in Silicon Valley
b.) Work in an Office Setting and/or You Telework
c.) Only have a few minutes to contribute to local research examining office workers' and teleworkers' social networks

Then take the anonymous, SSL encrypted online survey! It's fast and simple!

https://www.surveymonkey.com/s.asp?u=890693137237

Your input is valuable, and will aid in social science research examining social and community relationship levels among office workers and teleworkers.

Appendix III: SurveyMonkey.com Privacy Information

As stated on the privacy page of the SurveyMonkey.com Website:

SurveyMonkey.com Information Collection

We will not use the information collected from your surveys in any way, shape, or form. In addition, any other material you provide us (including images, email addresses, etc.) will be held in the strictest confidence. In addition, we do not collect personally identifiable information about you except when you specifically provide this information on a voluntary basis. We will make every effort to ensure that whatever information you provide will be maintained in a secure environment.

Information Use

SurveyMonkey.com collects IP addresses for system administration and record keeping. Your IP address is automatically assigned to your computer when you use the World Wide Web. Our servers record incoming IP addresses. The IP addresses are analyzed only in aggregate; no connection is made between you and your computer's IP address. By tracking IP addresses, we can determine which sites refer the most people to SurveyMonkey.com. (Think of an IP address like your zip code; it tells us in general terms where you're from.)

Safe Harbor and EU Data Protection Requirements

We have met the Safe Harbor requirements on 11/29/2004. SurveyMonkey.com has been placed on the Safe Harbor list of companies accordingly. This list can be found at: **http://web.ita.doc.gov/safeharbor/SHList.nsf/WebPages/Oregon**.

General Security Policy

SurveyMonkey.com is aware of your privacy concerns and strives to collect only as much data as is required to make your SurveyMonkey experience as efficient and satisfying as possible, in the most unobtrusive manner as possible.

Notes

[i] For an in-depth and insightful examination on the differences in usage of the terms teleworking and telecommuting, see Mokhtarian et al. (2005).

[ii] Geographical location of Silicon Valley defined by
Joint Venture Silicon Valley. 2000 "Joint Venture's 2000 Index of Silicon Valley", Silicon Valley Network, San Jose, CA

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