

Journal of Rural and Community Development

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Citation:

Besser, T. (2013). Resilient small rural towns and community shocks.
Journal of Rural and Community Development, 8(1), 117-134.

Publisher:

Rural Development Institute, Brandon University.



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Editor:

Dr. Doug Ramsey



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Resilient Small Rural Towns and Community Shocks

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Abstract

What distinguishes resilient small towns from those that fail to recover from the shock of a natural disaster or plant closing? We define resilient towns as those that maintain or enhance residents' quality of life following a shock. Previous studies suggest that towns with a combination of moderate bonding social capital, high bridging social capital, and high local capitalism will be more resilient, as compared to other shocked towns. These expectations were tested using longitudinal data gathered before and after shocks, from a relatively large sample of small rural towns located in one Midwestern state. Findings demonstrate that the quality of life declined in all sampled towns over the decade; however, higher levels of bonding and bridging social capital in 1994 were associated with a smaller decline in quality of life between 1994 and 2004. These findings suggest that building linkages within and across diverse groups is an effective strategy for shock preparedness and general community betterment.

Keywords: bonding social capital, resilience, quality of life, civic engagement

1.0 Introduction

The devastation left by hurricanes, tornados, floods, and closed or downsized employers has heightened interest in how communities respond to major challenges. In this study, sudden events that represent a significant threat to the local economy are referred to as "shocks". Some towns and cities effectively maintain residents' quality of life after a shock, while others are less successful (Norris et al., 2008). Places that are able to recover their pre-shock quality of life are defined as resilient communities (Cutter et al., 2008). Given the near constant state of economic restructuring and the ever present threat of natural and manmade disasters, understanding what differentiates resilient towns from their non resilient counterparts is critical. Considerable recent scholarly attention has been devoted to this topic. However, Murphy (2007) noted that our understanding of the social factors associated with resilience has been hampered by the dearth of longitudinal studies conducted in towns before and after the occurrence of shocks. The goal of the study presented in this paper was to partially address such shortcomings through the examination of longitudinal data from a relatively large sample of towns, some of which have experienced a shock between the waves of data gathering.

The focus of this analysis was small rural towns: towns with fewer than 10,000 residents and non-adjacent to metropolitan areas. Even though shocks affect cities of all sizes, small rural towns find themselves in particularly vulnerable positions with regard to responding to and recovering from such events and processes. They possess fewer resources and receive less governmental, non-profit organization, and public attention to help them deal with recovery. Many scholars relegate small

rural towns to little more than “hinterlands”: places that supply labor and natural resources to metropolitan areas and whose destinies are determined by global and regional cities (Davidson, 1990; Sassen, 1994). Others maintain that rural towns are not totally at the mercy of macro forces (Flint & Luloff, 2005; Green & Haines, 2002; Magis, 2010; Norris et al., 2008) and are able to influence their destiny and, by extension, partially determine whether or not they can rebound post shock.

Past research has suggested one factor that distinguishes resilient towns from those unable to recover from a shock: social capital present in the town before the advent of shock (Chamlee-Wright & Storr, 2011; Murphy, 2007; Norris et al., 2008). Social capital is defined as relationships between people, characterized by trust and norms of reciprocity (Putnam, 1993; 2000). Trusting relationships between residents are associated with higher levels of civic engagement (e.g. voting in elections and involvement in community improvement projects). Residents in towns with more social capital and civic engagement have experience working together successfully to solve problems; therefore, they should be better able than other towns to bounce back post shock.

Another community asset that may promote resilience is “local capitalism”, or the proportion of businesses in an area owned by local residents. Prior research has concluded that places dominated by small, locally owned businesses experience greater economic stability and a higher level of resident socio-economic well being, as compared to places where large and/or absentee owner businesses predominate (Corolleur & Courlet, 2003; Halebsky, 2010; Lyson & Tolbert, 1996; Piore & Sabel, 1984; Pyke & Sengenberger, 1992; Tolbert et al., 1998; Varghese et al., 2006; Young & Lyson, 1993). This may be due to local business owners having a greater stake in the general welfare of the community than do managers of branch plants located in town, and have more control over company policies regarding community involvement. At the same time, non-locally owned businesses represent linkages to outside resources that could help the community recover from shocks (Nordin & Westlund, 2009). The relationship between ownership location and a business’ commitment and support for the community may also be mediated by the social climate of the community itself (Besser, 2002; Galaskiewicz, 1997; Grant, Jones & Tautner, 2004). Despite the mixed findings represented by previous scholarship, for the purposes of this analysis I propose that towns with a higher proportion of business that is locally owned will have more resident involvement in community leadership and be committed to community betterment, than do towns with lower levels of local capitalism; as a result, they will be better able to rebound from a shock.

The remainder of this paper elaborates upon the rationale linking social capital, civic engagement, and local capitalism with community resilience. Propositions derived from the literature review were assessed through an analysis of longitudinal data gathered in 1994 and 2004 from 99 small towns in one U.S. Midwestern state. This analysis helped determine if towns with higher levels of social capital, civic engagement, and local capitalism in 1994 were more resilient after experiencing a significant loss of employment or a natural disaster than similarly shocked towns with lower levels of resources. In the final section, I discuss how the findings can be utilized by local leaders and policy makers to increase the resilience of small towns.

1.1 Community Social Capital and Civic Engagement

“While community vulnerabilities are real and of consequence, so too are the abilities of communities to act” (Flint & Luloff, 2005, p.400). Through this passage, Flint and Luloff were referring to natural resource communities that are often perceived to be controlled by outside forces. These are towns that depend upon logging, mining, farming, and fishing as the mainstay of their economies, and are particularly subject to the exogenous forces of the world market, government regulations, and corporate decisions. Flint and Luloff argued that community disasters result from the intersection of hazards and community capacity to anticipate and respond to the hazard. Social capital is one resource that may enhance the capacity of a community to anticipate and respond to hazards.

Recent research has confirmed that social capital is a resource that can be used to facilitate community action. In a study of U.S. Midwestern rural towns, Agnitsch et al. (2006) concluded that communities with high social capital were more likely to initiate public good projects than towns with lower levels. Social capital, along with a combination of natural and built capitals, was perceived by leaders in rural towns in the Northwest U.S. to be associated with economic development (Crowe, 2008). The advantage that social capital conferred on locations was reflected in its positive association with civic engagement and voluntarism (Putnam, 2000; Wilson & Musick, 1997), aggregate levels of self reported health (Poortinga, 2012), effective local government (Putnam, 1993; Rice, 2001), lower levels of crime (Deller & Deller, 2010; Messner et al., 2004), and generally positive economic outcomes (Crowe, 2008; Flora et al., 1997; Knack & Keefer, 1997; Narayan, 1999; Putnam, 1993; Stiglitz, 1996; Tiepoh et al., 2004).

However, social capital has not always been used to benefit the common good. Tight knit groups can employ social capital to exclude outsiders and impose their will on others (Portes & Landolt, 1996; Portes, 1998). One need only think of the solidarity and destructiveness of criminal gangs and white supremacist groups to recognize the potential “downside” of social capital. Particularly relevant in the community context are the “growth machine” groups identified by Logan and Molotch (1987). These groups consist of developers and real estate owners who promote a specific kind of economic development that benefits their special interests without regard to its impact on the general community, or with the unexamined belief that their gain will eventually benefit all residents.

To address this shortcoming, scholars refined their conceptualizations with the introduction of bridging and bonding social capital (Gittell & Vidal, 1998; Narayan, 1999; Woolcock, 1998). Bridging social capital refers to relationship links between members of diverse groups, while bonding social capital refers to the ties within groups of individuals who share demographic characteristics and/or ideological propensities. Exclusive groups with high bonding social capital (such as criminal gangs and growth machine groups) are less likely to work for the good of the community as a whole, and less able to access resources represented by interpersonal links to diverse additional groups (Flora, 1998; Granovetter, 1973; Narayan, 1999).

Bridging social capital is created through weak ties (less frequent interaction and less emotional intensity) between members of two or more tightly knit groups. These ties are also characterized by trust and norms of reciprocity between the linked individuals and groups, but to a lesser degree than those associated with bonding

ties. Linkages, trust, and reciprocity across diverse groups engenders an orientation that promotes the welfare of the community as a whole, instead of particular special interest groups (Flora, 1998; Putnam, 2000). Despite the dangers to community welfare represented by strong bonding social capital in exclusive groups, it is more effective than bridging social capital at motivating people to become involved and work for group goals; therefore, a combination of high bridging social capital and moderate levels of bonding social capital is likely to be most advantageous for community resilience (Agnitsch et al., 2006; Putnam, 2000).

Social capital is often conflated with civic engagement; in fact, some studies measure social capital by assessing levels of civic engagement (Putnam, 2000; Putnam et al., 2003). In this study, the two concepts were treated as discrete variables. Civic engagement consists of residents' involvement in public affairs through voting, volunteering to serve as community leaders, working on community betterment projects, etc. Social capital's contribution to community resilience is through its posited ability to generate civic engagement.

Bridging social capital and civic engagement should be reciprocally related: higher levels of trusting relationships among diverse sets of people should encourage them to become involved in local affairs, and involvement in local affairs and organizations should result in more trusting relationships across diverse groups. It is difficult to envision one existing without the other. On the other hand, bonding social capital may discourage or encourage civic engagement, depending on the homogeneity of the town. Homogeneous communities, those with few economic, social, racial, and religious differences, do not require bridging social capital to build common identity, shared values, and generalized trust. Under such circumstances, civic engagement and high bonding social capital are mutually reinforcing. However, high bonding social capital in heterogeneous communities may discourage civic engagement, as residents work more frequently for their own group causes (religious, social, racial, and economic) and less commonly for general community betterment.

1.2 Community Shocks, Social Capital, and Resilience

Scholars studying community disasters can provide insight into likely community responses to shocks and, by extension, to community resilience. Early studies did not explicitly consider social capital as a factor in shock response; however, findings indirectly reinforced its importance in successful shock responses. Two types of shocks have been identified in community disaster research: corrosive community shocks (Freudenburg & Jones, 1991) and consensus crisis shocks (Drabek, 1986). This categorization was based primarily on the outcomes of a shock to community welfare, creating a corrosive or a consensus atmosphere, but the outcomes were originally assumed to be caused by the nature of the shock itself.

The conceptualization of corrosive community shocks originated in research concerning community responses to environmental disasters and controversial development projects, such as toxic waste facilities, prisons, and casinos. Albrecht et al.'s (1996) study of four communities selected as sites for nuclear waste disposal facilities, illustrated how a shock can be corrosive for the community. They described how the "opportunity" to be the location of a disposal facility revealed latent differences in attitudes concerning economic development and environmental quality within the communities themselves; additionally, some community residents believed the potential damage from the disposal site would fall disproportionately on

them, and that the proponents would reap the majority of benefits. This perception, that proponents were attempting to realize their sectoral interests at the expense of general community welfare and the specific welfare of less advantaged groups, caused animosity within the communities that persisted after the siting decision was reached. This study suggested that communities without strong pre-shock bridging social capital were more likely to be suspicious of claims about the benefits of shocks initiated by a special interest group, and believe that change would result in a general decreased quality of life for the community.

The loss of a major employer is a significant blow to a community and may result in corrosive community responses. Dudley's (1997) examination of Kenosha, WI, following the loss of its Chrysler plant, revealed that latent animosity among professionals and local business owners toward unionized blue collar workers shaped the community's explanation for the shock and recovery strategies. The loss of the town's major employer provided "proof" to the professional class and state policy makers of the superiority of their "culture of the mind", as opposed to the blue collar workers' "culture of the hand", and provided justification for their business friendly recovery policies. Following this logic, losing an employer is a corrosive shock if some residents believe they will bear a heavier burden of the costs, or when the loss reveals latent group, class, or racial differences among residents that in better economic times were less obvious or inconsequential.

Natural disasters have at times been conceptualized as consensus crisis shocks (Couch & Kroll-Smith, 1994; Drabek, 1986; Erikson, 1994). When confronted with such shocks, community residents rally together to solve the common problems posed by the disaster. Erikson (1994, p.231) argued that natural disasters can strengthen cohesiveness within a community, as local entities are unlikely to be blamed for the negative consequences of what is perceived to be an "act of God". Disagreements between individuals and groups are put aside in responding to the disaster and rebuilding. Responding to a consensus crisis event might therefore enhance both bonding and bridging social capital.

Examinations of the responses to, and aftermath of, hurricane Katrina have provided an important corrective to the notion that natural disasters are consensus crisis shocks. As with employment loss shocks and environmental shocks, the response to the flooding caused by the hurricane was associated with residents' pre-hurricane social and economic circumstances; for example, residents in St. Bernard's Parish had high bonding social capital and low bridging social capital before the hurricane (Chamlee-Wright & Storr, 2011). Residents viewed their neighborhood as tight knit, self-reliant, and hard working. Even though the parish was devastated and had to be evacuated, Chamlee-Wright and Storr (2011) concluded that the cohesiveness of the neighborhood encouraged a significant share of residents to move back and rebuild following the disaster. In this situation, strong bonding social capital before the flood was critical to disaster recovery given the ineffectiveness of government and outside resources (or bridging social capital) in providing immediate assistance.

On the other hand, Patterson et al. (2010) have cautioned that high bonding social capital can be detrimental when it encourages an inflated sense of self-efficacy among residents that dissuades them from preparing adequately or evacuating when necessary. It may also harm effective preparations for, and response to, a crisis if it discourages tight knit neighborhoods and socioeconomic classes from developing linkages with dissimilar others. For New Orleans as a whole, several analysts have

contended that the lack of pre-shock bridging social capital across race and class lines turned hurricane Katrina into what is characterized here as a corrosive community event (Berke & Campanella, 2006; Burns & Thomas, 2006). Residents of some neighborhoods perceived that the risks and costs of the natural disaster were not shared equitably, as manifested in poor levee maintenance, lax disaster preparedness, and ineffective governmental response in their area.

A review of the aforementioned literature suggests that communities with moderate bonding social capital and high levels of bridging social capital prior to a shock, will be more likely to experience increased or stable quality of life post shock. This is contrasted with the post shock quality of life in otherwise similar communities that have lower levels of pre-shock bonding and bridging social capital. The corrosive shock literature suggests that communities with high bonding social capital may be less effective in responding to a shock unless they also have high bridging social capital.

1.3 The Role of Local Capitalism in Community Resilience

The business sector is a major contributor to community welfare, beyond their role in providing jobs and tax revenue. In many communities, business owners and managers provide substantial support for local betterment projects and serve as leaders for non-profit and public agencies (Galaskiewicz, 1985; 1997; Tolbert, 2005; Tolbert et al., 1998; Varghese et al., 2006); therefore, their role in helping communities respond to shocks is an important consideration. Logic suggests that local capitalists (those that live in the town where their business operates) will be more committed to the general welfare of the community than will absentee owners, and are more willing to provide their resources and personal leadership to promote the general welfare. There are several reasons for the anticipated greater commitment of local capitalists to the community: their business success is linked more directly to the prosperity of the local community than the success of absentee owners of branch businesses who operate in many locations (Besser, 2002; Halebsky, 2010); the local quality of life affects the owners of local businesses personally; their children attend local schools; they utilize local public, medical, cultural, and recreational services and facilities; they are more likely to be known personally by local leaders and may therefore be more amenable to a personal invitation to provide assistance for community needs (Galaskiewicz, 1985; 1997; Oliver, 1984); and lastly, since they control their businesses, local owners are able to provide whatever community support their resources and consciences dictate. Managers of branch facilities may wish to provide similar support to the community but are often limited by headquarter policies.

One way to ascertain community welfare contribution by local business is to examine economic and social capital factors before and after the loss of local businesses following a big box retail store opening in a rural county. Halebsky's (2010) study of this situation in a rural New York county suggested that a larger share of revenue generated by big box stores leaves the county than occurs with locally owned retail stores. Equally important for the question examined in this paper, the loss of the local businesses represents a major threat to community social capital. The decrease in the number of local businesses means there are fewer business owners to serve as community leaders; moreover, empty storefronts on Main Street diminish the gathering place function of the downtown, further reducing community social capital.

The greater commitment of locally owned businesses to community welfare may also be reflected in their environmental practices. Grant et al. (2004) discovered that absentee owned chemical businesses were more likely to pollute the local community than locally owned chemical businesses, but this outcome was eliminated in communities with high levels of civic engagement. They speculated that this effect occurred because active local institutions (churches, civic organizations, etc.) instilled a higher commitment to local community among absentee businesses, which served to discourage them from polluting. Active local institutions may have also been more effective in communicating levels of pollution to local residents and empowering them to express their views, or perhaps the effect occurred because absentee owned businesses with a propensity to pollute were more likely to avoid towns with high civic engagement.

Grant et al.'s (2004) research suggested a more complicated, reciprocal association between civic engagement and the commitment of business owners/managers to the community than previously theorized. Additionally, since the topic examined in this analysis was community resilience, it is possible that absentee owned businesses represented a bridge between the community and outside resources that could be used to rebound after a shock. This was illustrated in Nordin and Westlund's (2009) case study of a Swedish tourism town. The purchase of the ski lift and one of the resort hotels by outside corporations brought in professional management skills and financial capital that helped to revitalize the town.

In spite of the mixed research findings regarding local capitalism's role in community resilience, for the purpose of this analysis I proposed that communities with a larger proportion of local capitalists would have a larger pool of local resources available to effectively rebound from a shock, as compared to places with a greater share of absentee businesses. Accordingly, I expected that small towns with a higher level of local capitalism would be more resilient in responding to a shock.

This examination focused on small rural town resilience; however, within the "small town" category, variation in population size may impact social capital, local capitalism, and community resilience. Towns with 7,000 residents obviously have the potential to mobilize more volunteers to help with shock recovery than do towns of 700 residents. As previously indicated, towns with very small populations are likely to be more homogeneous than larger towns. In such places, the concept of bridging social capital is less salient and may not differ from bonding social capital. Furthermore, smaller towns may have higher levels of local capitalism because they are less attractive to large multi-site businesses. To ascertain the impact of social capital, civic engagement, and local capitalism on community resilience, the potentially confounding influence of population was controlled for in the analyses.

2.0 Research Design

The data used to measure social capital, civic engagement, and community quality of life were gathered from two surveys conducted in 1994 and 2004 of residents in 99 small towns of the Midwestern U.S. state of Iowa. Shock information was gathered from interviews conducted in 2005 with key informants in these towns. One town was selected at random from each of the state's 99 counties, from a pool of towns that were not contiguous to a metropolitan city and that had a 1990 population between 500 and 10,000. One hundred and fifty residents, plus 15 replacements, were randomly selected in both study waves from each town's

telephone directory.¹ In each wave, approximately 15,000 respondents were contacted using a modified total design method (Dillman, 1978).² In 50% of the households, the female household head was asked to respond, and the male household head was asked to participate in the remainder. The response rate was 72% (10,798 respondents) in 1994 and 67% (10,050 residents) in 2004, which is considered to be an acceptable rate for mailed questionnaires (Dillman et al., 2009). Comparison of the demographic characteristics of the sample and town populations from 1990 and 2000 U.S. Census data revealed no significant differences. The survey results were aggregated to create town level measures of bonding and bridging social capital, civic engagement, and quality of life. Table 1 contains the exact wording for component items regarding the bonding social capital and bridging social capital indices and their descriptive statistics.

2.1 Operationalization of Variables

Bonding social capital was operationalized as a factor scaled index comprised of three questions that assessed the extent to which residents felt close to others in the town. These items formed a single dimension, with factor loadings exceeding .80. The Cronbach's alpha coefficient was sufficient at .88 in 1994 and .84 in 2004 for this variable (Kim & Mueller, 1978). The index for bridging social capital utilized four items in assessing generalized trust and the extent to which community norms supported a public good orientation. Once again, the magnitude of the factor loadings and Cronbach's alpha coefficients (.82 and .86) indicated acceptable reliability for this index. All component questions for the social capital variables were recoded before factor scaling, so that a higher score on the factor scaled index equated to a higher level of social capital. Two variables measured civic engagement: 1) the community average on a question that asked respondents to indicate their level of activeness in the community on a four point Likert scale (1 = *not at all active* to 4 = *very active*), and 2) the proportion of respondents in a town who reported they had participated in a community improvement project in the last twelve months.

The dependent variable in this analysis was the change in the quality of life in each town from 1994 to 2004. Researchers support utilizing subjective assessments as valid indicators of quality of life (Andrews & Withey, 1976; Argyle, 1996; Sirgy et al., 2000; Sirgy & Cornwell, 2001); accordingly, the index for quality of life was composed of three items measuring residents' overall satisfaction with government services, non-governmental services, and the town in general. Respondents provided an overall rating of their local government and non-governmental services (*poor/fair/good/very good*) after they were asked to rate specific services provided by each sector. The final question asked: "Overall, (town) has more things going for it than other communities of similar size" (response categories were a Likert scale with 1=*strong agree* to 5= *strongly disagree*, reverse coded). Responses to these items were aggregated to the community level by calculating the proportion of respondents in each town who rated the overall services as *good* or *very good*, and the proportion of who *agreed* or *strongly agreed* that the town had more things going for it. The proportions were then averaged to create one quality of life measure for each community, with a range of 1 to 100 in 1994 and 2004. Factor scale analysis determined that the items measuring quality of life were internally consistent and sufficiently reliable (Cronbach's alpha = .81 and .84).

The indicator of local capitalism was taken from the National Establishment Time Series (NETS) Database, purchased from Walls and Associates. This business

generates lists of establishments with Dunn and Bradstreet numbers, their addresses, sales revenue for each year, and status as a standalone, headquarters, or branch establishment. To determine the proportion of businesses in a town that are locally owned, all establishments in the NETS database in each of the 99 sample towns were selected for 1994 and 2004. Each establishment was identified as a stand alone firm, a headquarters, or a branch of another firm. Local businesses were operationalized as standalone and headquarters establishments located in the town. The sum of all businesses in a town in the given year served as the denominator for determining the proportion of businesses that were local in that year.

Table 1. *Bonding and Bridging Social Capital: Descriptive Statistics (N=99)*

	1994		2004	
	Mean	S.D.	Mean	S.D.
Bonding Social Capital				
1. On a scale of 1 to 7 where 1=friendly and 7=unfriendly, rate <u>town</u>	2.43	.25	2.52	.30
2. Being a resident of <u>town</u> is like living with a group of close friends ¹	2.48	.24	2.51	.20
3. Our neighborhood is closely knit ¹	2.69	.18	2.86	.16
Cronbach's alpha	$\alpha = .88$		$\alpha = .84$	
Bridging Social Capital				
1. On a scale of 1 to 7 where 1 = trusting and 7=not trusting, rate <u>town</u>	2.84	.30	3.05	.29
2. Clubs and organizations are interested in what is best for all residents ¹	2.27	.17	2.46	.18
3. Residents of <u>town</u> are receptive to new residents in leadership positions ¹	2.72	.17	2.87	.18
4. I think that "every person for themselves" is a good description of how people in <u>town</u> act (reverse coded) ¹	3.56	.18	3.40	.21
Cronbach's alpha	$\alpha = .82$		$\alpha = .86$	

¹ Response categories are 1 = strongly agree to 5 = strongly disagree

To learn about the shocks experienced by each town, mayors, city clerks, and county extension directors were contacted in 2005 and asked to name eight to ten community members who were knowledgeable about the local economy. Seven hundred individuals were identified and contacted for an interview, 636 of whom agreed to participate, for a 90.9% cooperation rate. Each informant was asked to identify all sudden events having occurred between 1990 and 2004 that had significant impact on the local economy; however, 2004 shocks were excluded from this analysis, having reasoned that a survey taken in 2004 would not accurately detect the impact of a 2004 shock on community welfare. For each shock, informants were asked to report if the event was positive or negative in its consequences; internally or externally originated; planned or unplanned; the date of

the event; and to rate the severity of the event on the local economy on a scale of 1 (*not very severe*) to 5 (*extremely severe*). Events that were identified by at least two informants in the community and had an average severity rating of at least 2.0 (averaged across all informants, including those who did not identify the event), were defined as shocks. Since some towns experienced more than one shock, the severities of all shocks of a particular kind were summed as a way to consider the cumulative impact of multiple shocks. The identified events were then aggregated into seven categories. In this examination, two categories of events were considered: natural disasters and the loss or downsizing of a major employer (between 1994 and 2003). Shock severity was calculated as the sum of the individual severity scores for the natural disaster and employment loss events experienced by the town.

3.0 Findings

Twenty six towns in the sample experienced at least one employer loss or downsizing shock and six had a natural disaster shock between 1994 to 2003 that included four floods and two tornados. Two towns experienced both a natural disaster and the loss of employment shock. In total, 30 towns had a natural disaster and/or an employment loss shock during this time period. The average shock severity for towns with an employment loss shock was 3.31 with a range of 2.0 to 7.3, indicating that some towns had more than one of these shocks. Four towns had shock severity greater than 5. For natural disaster towns, the range of shock severity was 2.0 to 4.4 with an average of 3.36.

The descriptive statistics for all towns and the two categories of shocked towns are displayed in Table 2. Since bonding and bridging social capital are factor scaled indices, the mean is 0 in both years, making a determination of the change over the decade impossible. Statistics in Table 2 demonstrate that the quality of life on average decreased in all sampled towns. The towns that experienced a natural disaster shock started the decade at a lower level, and therefore declined less than other towns. The overall decline in quality of life for shocked and non shocked towns necessitated careful interpretation of the statistics assessing the relationship between predictors of resilience and change in the quality of life. It also underscored the value of having non shocked towns for comparative purposes. Without the comparison it would have been easy to conclude that the decline in the quality of life in shocked towns resulted totally from the shocks themselves.

Table 2. *Descriptive Statistics for Shocked Towns and All Sampled Towns*

	All (N=99)		Loss of or Downsized Employer (N=26)		Natural Disaster (N=6)	
	1994	2004	1994	2004	1994	2004
Population	1803	1889	1590	1644	1744	1859
Quality of life	59.05	50.98	59.75	49.05	53.99	50.93
Percent of businesses that are local	94.59	92.37	94.25	92.40	95.61	91.57
Average resident activeness in community (1= not at all active, 4 = very active)	2.34	2.18	2.38	2.19	2.32	2.11
Percent residents participated in community project in last year	50.59	52.47	51.60	53.90	47.08	47.09
Average shock severity (1=not very severe to 5 = extremely severe)			3.31 (S.D. = 1.66)		3.36 (S.D.=1.37)	

Towns in all three categories also experienced a loss of local capitalists from 1994 to 2004; although, roughly 92% of businesses were still locally owned in 2004 with little variation between towns. Findings concerning the change in civic engagement were mixed: the activeness of residents declined slightly for all towns and shocked towns, while the percent of residents who reported they had participated in a community betterment project in the last year increased slightly for all towns and towns with an employment loss shock, but remained essentially the same in natural disaster towns.

The correlations between 1994 predictor variables and the change in the quality of life for all sampled towns are displayed in Table 3. Population size is not distributed normally; therefore, the log 1990 population was used in the analyses. Since the research question pertained to the change in the quality of life after a shock, I calculated a quality of life change variable (2004 qol – 1994 qol) for the bivariate and multivariate analyses. To interpret the relationship of other variables to the change in the quality of life variable, it was necessary to keep in mind that on average the quality of life decreased over the decade for all towns. The positive relationship between log population and quality of life change suggested that small rural towns with more population experienced a greater decline in quality of life between 1994 and 2004. The significant negative relationships between bonding and bridging social capital and activeness with quality of life change indicated that towns with higher levels of these qualities experienced less of a decline in quality of life. The percent of businesses that are local, participation levels, and shock severity were not associated with the change in quality of life. Local capitalism was negatively associated with size of town and positively related to bonding social capital and activeness. The strong negative correlation between size of town and bonding social capital suggested the possibility of a spurious relationship between local capitalism, bonding social capital, and activeness. The multivariate analyses that follows served to assess this possibility.

Table 3. *Correlation Coefficients for Predictor Variables and Change in the Quality of Life (2004qol – 1994qol) in All Towns (N=99)*

	1	2	3	4	5	6	7
1. Change in the quality of life (2004qol – 1994qol)							
2. Log 1990 population	.29**						
3. 1994 percent of businesses that are local	-.16	-.44**					
4. 1994 bonding social capital	-.30**	-.54**	.21*				
5. 1994 bridging social capital	-.36**	-.32**	.11	.78***			
6. 1994 average activeness in the community	-.21*	-.28**	.19*	.61***	.50**		
7. 1994 percent participated in last year	-.13	-.06	.15	.42**	.41**	.76***	
8. Shock severity	-.11	-.01	-.02	.00	.01	.13	-.01

*p <.05, **p<.01, ***p<.001 one tail tests

Bonding social capital and bridging social capital were highly correlated with each other ($r = .78$), as were activeness and participation ($r = .76$). This posed the problem of collinearity for the multivariate analyses; as a result, each was entered separately in the regression equations. As anticipated, bonding and bridging social capital were both significantly related to the civic engagement variables, but

unexpected was the lack of significance of shock severity with any of the variables. The zero correlations for all sampled towns revealed that towns with more bonding and bridging social capital tended to have fewer residents, higher levels of resident activeness and participation, and experienced a smaller decline in the quality of life between 1994 and 2004, as compared to other towns.

To shed light on how the predictor variables influenced the change in the quality of life for all towns net of each other, hierarchical regression analysis was adopted. According to the statistics presented in Table 4, log 1990 population was positively associated with the change in the quality of life until the social capital variables were controlled. Local capitalism was not significant in any of the models. Bonding social capital in 1994 was significantly related to the change in the quality of life in Model 2, as was bridging social capital in 1994, demonstrated in Model 3. Concerns about collinearity prevented me from including both bridging and bonding social capital in the same models; however, the standardized coefficient for bridging social capital was larger than the coefficient for bonding social capital, and F statistic and the adjusted R square for Model 3 are larger than those statistics for Model 2. This suggested that bridging social capital in 1994 had a stronger association with the change in the quality of life than did bonding social capital.

Table 4. *Predictors of Change in Quality of Life (2004qol – 1994qol) for All Towns (OLS Regression) Standardized Coefficients (N=99)*

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Log 1990 population	.26*	.15	.16	.16	.16	.16
Local capitalism						
1994 Percent local businesses	-.05	-.05	-.06	-.06	-.06	-.06
Social capital						
1994 Bonding social capital		-.21*				
1994 Bridging social capital			-.30**	-.30*	-.31**	-.30**
Civic engagement						
1994 Avg. activeness in community				.01		
1994 Percent participated in last year					.02	
Shock severity						-.11
Adj. R ²	.06	.09	.14	.13	.13	.14
F	4.43**	4.12**	6.24**	4.63**	4.64**	5.01**

* = p <.05, ** = p <.01 one tailed tests

Bridging social capital was not reduced when the civic engagement and shock severity variables were controlled. The non-significant coefficients for the civic engagement variables indicated that bridging social capital was not affecting change in the quality of life through civic engagement; rather, it was acting independently on quality of life for all towns, shocked or not. In the models predicting the change in quality of life for the full sample of 99 towns, shock severity was not significant. Apparently, experiencing a negative shock did not affect the change in the quality of life from 1994 to 2004 for these small rural towns, even when other factors were controlled.

The adjusted R squares for Model 3 through 6 demonstrated that only roughly 14% of the variance in the change in quality of life in these towns was explained by the predictor variables. The statistics in Models 2 through 6 suggested that small rural towns with more bonding and bridging social capital in 1994 experienced less of a decline in quality of life from 1994 to 2004. Bridging social capital appeared to be a stronger predictor of the ability of towns to maintain their quality of life than did bonding social capital. Population size, local capitalism, civic engagement, and shock severity were not significantly related to the change in quality of life over the decade.

To examine how social capital and local capitalism affected the change in the quality of life in shocked towns alone, the correlations presented in Table 5 were calculated. The probability level for statistical significance was relaxed to $p < .1$ one tail, due to the small number of shocked towns. The results demonstrated that resilient towns, those that were better able to maintain the 1994 level of quality of life after a natural disaster and/or a major employment loss, had higher levels of bonding and bridging social capital and higher reported resident activeness in civic affairs in 1994, as compared to non resilient towns. When controls were added in the partial correlation analyses, the picture remained the same except that bonding social capital was not significant when bridging social capital was controlled. This supported the conclusion reached from the statistics shown in Table 4 concerning the relative strength of bonding and bridging social capital in predicting future quality of life. According to these findings, bridging social capital is more important than bonding social capital in maintaining community quality of life for shocked and non shocked towns alike. Its association with quality of life is direct and does not occur through civic engagement. Neither local capitalism nor shock severity is significantly related to change in communities' quality of life. The absence of association between local capitalism and quality of life may be partially attributed to the lack of variation in levels of local capitalism in the sampled towns.

Table 5. *Zero and Partial Correlation Coefficients for Predictor Variables and Change in the Quality of Life (2004qol – 1994qol) for Shocked Towns (N=30)*

	Zero order	With Log 1990 Population Controlled	With 1994 Bonding Social Capital Controlled	With 1994 Bridging Social Capital Controlled
Log 1990 population	.21		.02	.14
1994 percent of businesses that are local	-.16	-.07	-.08	-.18
1994 bonding social capital	-.37*	-.32*		-.10
1994 bridging social capital	-.45**	-.42*	-.28 [†]	
1994 average activeness in the community	-.30 [†]	-.25 [†]	-.13	-.16
1994 percent participated in last year	-.20	-.18	-.11	-.12
Shock severity	.03	.01	.01	.04

[†]p<.10, * p<.05, **p<.01 one tail tests

4.0 Conclusion

The negative consequences of shocks on cities, towns, and individuals are a frequent topic, and rightly so, in popular media, scholarly publications, and policy makers' agendas. The destructive aftermath of hurricanes, tornados, and floods

rivets our attention and solicits empathy and support for the victims. The sudden loss of a major employer is less dramatic, but may cause as much or more individual and community harm. Both types of shock force changes upon communities and require them to marshal their resources in order to respond. Some communities do so more effectively than others. Such rebounding following a significant shock is termed “resilience”. The question prompting this analysis focused on what differentiates resilient small rural communities, those that effectively maintain or enhance residents’ quality of life after a shock, from non-resilient communities. Understanding the factors associated with resiliency can assist rural community residents and policy makers prepare for future shocks.

A review of previous studies led to the expectation that towns with a combination of moderate bonding and high bridging social capital, along with high local capitalism, would be more resilient than other shocked towns. The mechanism whereby social capital and local capitalism would contribute to resilience was anticipated to be through their role in promoting effective civic engagement. Those expectations were tested using the longitudinal data provided by a study of a relatively large sample of small towns in one Midwestern U.S. state. The shocks included were natural disasters and the sudden loss or downsizing of a major employer. Thirty of the sampled towns experienced at least one of these shocks between 1994 and 2003. The nature of this data set allowed me to partially address the ad hoc, cross sectional, small sample limitations of previous studies of shock aftermath. Similarly, including shocked and non-shocked towns was a way to control for historical changes that might have led to the observed alterations in quality of life instead of the shock, social capital, civic engagement, or local capitalism.

Findings revealed that, on average, all towns in the sample experienced a decline in residents’ perception of the local quality of life from 1994 to 2004; however, the towns that lost the least had higher levels of bonding and bridging social capital in 1994. Shocked towns with more bonding and bridging social capital in 1994 were more likely to sustain their 1994 quality of life than were other shocked towns; in fact, the levels of social capitals in 1994 were more important in predicting changes in quality of life than were severity of the shock, population size, local capitalism, and civic engagement. While both kinds of social capital were significant in maintaining post shock quality of life, bridging social capital appears to have been more important. The impact of the two types of social capital on resilience was not through their positive association with civic engagement; rather, high social capital before a shock was associated with maintenance of quality of life after the shock, but not because it encouraged people to get involved in the community.

Another way in which social capital might have affected resilience was through its anticipated influence on the contribution of businesses to community betterment. Indeed, the percent of local businesses was positively related to bonding social capital and the level of resident community activeness; however, it was not related to the change in quality of life before or after controlling for additional factors. One possible explanation may be that in rural towns, locally owned businesses are overall less successful, employ fewer people, pay lower wages, and offer fewer benefits than do branch plants. Absentee owned businesses may also provide linkages to resources from outside the community that help to maintain quality of life; thus, any contribution locally owned businesses might make to the quality of life through greater support for and involvement in the community may be offset by the less lucrative employment opportunities and their fewer ties to outside

resources. Understanding the mechanism whereby social capital affects community resilience and the role local businesses play in community resilience are important areas for future research.

The good news provided by this research is that bridging social capital can act as inoculate against the perils of negative shocks. Towns that are accepting of new residents in leadership positions, where residents in general are perceived to be trusting, and that possess a spirit of looking out for the best interests of all residents, have a higher quality of life in general; moreover, towns with these characteristics are better able to maintain that quality of life even after losing an employer or experiencing a natural disaster.

5.0 Endnotes

1. To assess the adequacy of the telephone directory as a sampling frame, comparisons of sample characteristics to census figures were conducted. Results of these comparisons indicated that the sample was representative of the population based on a 99 % confidence interval (Ryan et al., 1995).
2. The 1978 edition of Don Dillman's *Mail and Telephone Surveys: The Total Design Method* (Wiley & Sons: NY) was the original source of Dillman's highly regarded strategies for increasing response rate in survey methodology. This edition of his survey methodology book was used to guide the 1994 study.

6.0 References

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