**The Availability of Local Social Capital and its Influence on Community Resilience after a Disaster**

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**Abstract:**

As the global community faces significant environmental and national security challenges, understanding and enhancing community resilience is a high priority for public policy. An important feature of the ‘resilient community’ identified in the literature is the availability of local social capital. Scholars suggest local social capital enables residents to respond to change and/or adversity in that it provides perceptions of cohesion and coordination, support and care. Yet studies that examine the salience of local social capital to community resilience rely exclusively on post-disaster accounts as the sudden and unexpected nature of disasters makes it exceedingly difficult to gather pre-event data. In this study we draw on longitudinal survey data from the Australian Community Capacity Study. Survey data were collected before a major flooding event in 2011 and was repeated 15 months after the disaster. These data provide a unique opportunity to examine the influence of local social capital that existed **prior** the flood on the functioning of the community **after** a disaster. Here we consider social cohesion and trust, bonding and bridging social capital, reciprocated exchange and levels of volunteering on post flood community resilience. Contrary to the literature, while social capital exhibits protective effects under average conditions, we find that prior levels of community social capital do not predict resilience post a disaster.

**Introduction**

 Internationally the concept of *community resilience* is increasingly important in disaster related practice and policy. Consequently scholars are attempting to better understand the community characteristics/elements critical for community resilience. In the social science literature, community resilience is broadly understood as a positive adaptation to a change extending beyond practical disaster response, resource management or social networking and influenced by many levels of the social system and the community mechanisms that occur before and after a particular disaster (Adger et al., 2005; Forgette and Boening, 2009; Norris et al., 2008). Yet there is limited agreement on what community resilience is or how it is achieved. Although theoretical and empirical understandings of resilience are well developed in ecology, engineering, physics and psychology, the specific concept of community resilience is at an early stage of development in the social sciences despite its wide spread uptake in public policy.

 As it is presently understood, community resilience refers to a complex, multidimensional, multilayered process which can only truly be examined in the face of collective adversity or strain. Norris et al. suggest community resilience is “a process linking a set of adaptive capacities to a positive trajectory of function and adaptation after a disturbance” (2008: pp130). This definition emphasises the inherent internal and extra-local conditions, resources and mechanisms that allow a geographical community to absorb impacts and cope with an event. It also provides for the re-organisation, change and adaptation that occur post the event and considers the inter-relationship between the key processes and capacities necessary for community resilience.

 In the literature, social capital, or the benefits that accrue to individuals and groups through membership in social networks, is viewed as particularly important to a community’s resilience post a disaster (Breton, 2001; Kimhi and Shamai, 2004; Magis, 2010). As Norris and her colleagues (2008) state, any study of community resilience should include a focus on social capital. To date scholarship that considers the relationship between social capital and community resilience only does so in the post disaster context. At the time of writing, there are no studies that comprehensively examine community social capital pre and post a disaster. This is because the sudden and unexpected nature of disasters makes it exceedingly difficult to gather data on the resources, processes or mechanisms considered important for community resilience before a catastrophic event occurs.

 In late 2010, however, a longitudinal study – the Australian Community Capacity Study (ACCS) – collected a third wave of survey data from over 4,000 residents living in 148 suburbs across the Brisbane Statistical Division. This survey contained several indicators of social capital and community capacity. Shortly after the survey was completed, Brisbane experienced an extreme flooding event impacting over 175,000 people and resulting in $7.5 billion dollars damage making it the most costly natural disaster in Australia’s history. Over 150 suburbs were inundated to varying degrees. Of these, 45 suburbs were in the ACCS catchment and many of these were among the most severely affected in Brisbane. For the first time, therefore, baseline data exist on the prior capacity of Brisbane communities to respond to disaster.

 In this paper we draw on these two waves of survey data to examine the effect of a disaster on the availability of local social capital on community functioning post the disaster. In what follows, we provide details on the Brisbane flood event followed by a necessarily brief summary of the social capital literature. We then describe the Australian Community Capacity study, our variables of interest and our analytic strategy. We conclude with an overview of our results and the implications of our study for community resilience research and practice.

**LITERATURE REVIEW**

**The Brisbane Flood Disaster**

 The 2011 Brisbane flood event reflects Kreps’ (1984: 312) sociological definition of a disaster which he defines as an event “observable in time and space, in which societies or their larger subunits (e.g. communities, regions) incur physical damages and losses and/or disruption of their routine functioning”. In January 2011, Brisbane, the state capital of Queensland, Australia, experienced a significant flooding event. This was triggered by torrential rainfall across most of the State of Queensland in the days and weeks leading up to the event. Many areas in the Brisbane catchment, like Toowoomba and Lockyer Creek experienced what some have referred to as inland Tsunamis which occurred without warning killing 23 people (ABC News, 2011). Other areas further downstream had some time to evacuate, though many were unable to undertake activities to preserve homes and belongings in time.

 The flood waters peaked on the 13th of January. In the worst affected areas, few homes or streets escaped inundation and numerous homes were flooded to the roofline. In addition to the toll on personal properties, the central business district, local shopping centres and businesses were badly affected in Brisbane and Ipswich (two major cities in the Brisbane Statistical Division). Infrastructure such as the commuter ferry system (the Citycat), major arterial roads, riverside pedestrian facilities and many low lying sporting and recreational amenities were lost. Additionally many thousands of residents were without power for several days and many suburbs were completely inaccessible by road.

 Despite the devastation, one of the ‘good news’ stories to come out of the flood was the mobilisation of a ‘mud army’ in which friends, neighbours and strangers rallied to assist those affected. As the flood waters rose, the Queensland Premier called on residents to ‘band together’ in helping each other sand-bag their homes and business and move their belongings to higher ground (ABC News, 2011). Once the clean-up commenced, tens of thousands of volunteers turned up to designated registration centres to participate in the clean-up, prompting Brisbane’s Mayor to encourage residents to assist neighbours, friends and family first. From the accounts of media reports, in some communities neighbours who had never spoken to one another were now working together, sharing information, food, homes and equipment.

 The outpouring of pro-social behaviour post a disaster as seen in Brisbane is not uncommon. For the most part, scholars find that the majority of people behave in rational, constructive ways following a disaster (Goltz, Russell and Bourque, 1992; James and Wegner, 1980; Johnson, Feinberg and Johnston 1994; Quarantelli and Dynes 1977) and are unlikely to engage in anti-social behaviour (Tierney, Lindell and Perry, 2001). At least in the immediate period following a disaster, what emerges is what some have called an altruistic or therapeutic community (Barton, 1970; Fritz, 1968), though the persistence of the characteristics that define such a community over time is unlikely, especially in areas that had lower level of trust and fewer social connections prior to the disaster occurring (Nilson, 1985; Perry and Lindell, 2003).

**Social Capital and Community Resilience**

 As disasters tend to occur in special geographical areas, to better understand the macro level influences that lead to greater community resilience, many scholars have identified the characteristics of particular places that allow them to respond to and recover from a disaster event (Kirschenbaum, 2004). For the most part, studies of this kind have centred on the socio-structural features of larger macro areas like cities, counties or states that may promote, or threaten, community resilience such as economic vulnerability, (Cutter et al., 2003; Cutter et al., 2008) and socio-demographic vulnerability (Cutter et al., 2003; Cutter et al., 2008).

 A growing body of literature is beginning to consider how resources and social processes endogenous to the local community, like the availability of social capital influence disaster preparedness, risk perception and community resilience post a disaster event (Breton, 2001; Kimhi and Shamai, 2004; Magis, 2010; Norris et al., 2008; Patterson, 2002). Of these endogenous processes, the availability of local social capital is considered to be of significant importance, at least in theory, in promoting community resilience as social ties and networks can enable communities to respond to change or adversity whilst retaining core functions (Paton and Johnston, 2001).

 Social capital has a long history in the social sciences and is viewed as a necessary feature of social organisation. In the literature, social capital is largely considered a social good[[1]](#footnote-1) and is defined as the social networks and relationships and the norms and benefits that emerge from these networks (referred to as structural and cognitive social capital respectively – see Uphoff, 1999). Coleman (1988, 1990) defines social capital as a public-good existing in “the structure of relations between actors and among actors” (Coleman, 1988: S98). Coleman saw social capital’s primary function as facilitating action through the mutual development of obligations and expectations, shared norms, effective sanctions and a working trust of local institutions and people. He believed norms of trustworthiness and reciprocity were created and maintained in part by the level of closure in social networks, the stability of social networks and the existence of a collective ideology.

 Similarly, Putnam (2000:19) defines social capital as a resource that exists as “connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them” (see also Putnam, 1995). Putnam perceives social ties as integral to achieving social order. He acknowledges the importance of dense networks to the formation and maintenance of social capital, but believes social capital could also be generated or destroyed by episodic, singular and anonymous encounters. Putnam posits that social networks have two functions: to facilitate dense social ties that are responsible for in-group loyalty, mobilising solidarity and creating norms of specific reciprocity; and disseminate information and opportunities, to link the community to external assets and to create norms of generalised reciprocity. Central to each is the importance of trustworthiness with generalised social cohesion and trust positioned as the more crucial emollient for complex societies (Putnam, 2000).

Interest in social capital theory has expanded significantly in the last two decades. Two core themes dominate theory and research. The first theme centres on the importance of networks. The notion of networks or social ties is present in almost all discussions of social capital with a focus on either the *existence* or the *quality* of linkages or ties (see Woolcock, 1998). Network relations are considered to be “more or less dense interlocking networks of relationships between individuals and groups” (Onyx and Bullen, 2000: 24). Paxton (1999) and Western, Stimson, Baum and Van Gellecum (2005) refer to these associations as either informal or formal relationships existing between individuals (e.g. friendship networks) or between individuals and organisations (e.g. memberships or connections to voluntary organizations or groups). These networks are also referred to as bonding and bridging social capital respectively (see Putnam, 2000; Woolcock, 1998). In essence, these connections provide the resources needed to “solve collective problems and pursue specific goals in a large society” (Paxton, 1999: 6).

The second dominant theme in the literature surrounds the notions of trust and reciprocity or “the norms governing behavior in these social structures or social networks” (Western et al., 2005: 1097). Trust is central to social capital theory for, as Coleman (1988) in particular stressed, not only would group functioning be inhibited without it, but the networks central to the formation of social capital could not exist if trust were not present. Reciprocity, although strongly linked to trust, is likened to a code of conduct among people (Putnam, 2000) and is viewed as a pro-social mechanism playing a vital role in community or group interactions.

**Social Capital and Community Resilience: The Empirical Evidence**

 In the wider literature, there is strong evidence demonstrating the relationship between social capital and a range of health and educational outcomes (Coleman, 1988; Drukker, et al. 2003; Hendryx and Ahern, 2001; Israel, Beaulieu and Hartless, 2001; Kawachi et al., 1997; Noguera, 2001). In the disaster literature the evidence of social capital’s impact on community resilience is less clear. Networks, reciprocity and the provision of support are theorised as critical in promoting community resilience post a disaster (Breton, 2001; Kimhi and Shamai, 2004; Magis, 2010; Norris et al., 2008; Patterson, 2002). For example, Kirschenbaum (2004:101) suggests that social networks, a key feature of social capital, allow for the sharing of information about past survival behaviour, provide the resources necessary to cope post a disaster and act as a “crucial bridge in a complex communication link affecting disaster behaviours” (2004:101; see also Hurlbert et al., 2001). Others contend that social networks enable communities to respond to change or adversity whilst retaining core functions as they generate familiarity, perceptions of cohesion and coordination, support and care (Barrera, 1986; Paton and Johnston, 2001).

 Presently, there is limited information on how community social capital develops over time. There is even less evidence on whether or not the level of social capital in a given community has any influence on post disaster functioning as the unexpected nature of disasters renders pre and post disaster comparisons exceptionally difficult. Thus for the most part the importance of social capital to community resilience is gleaned from proxy census variables or studies that examine the impact of networks, social cohesion and trust on preparedness behaviours, risk assessments or post event recollections of community capacity (Hawkins and Maurer, 2010; Kim and Kang, 2010; LaLone, 2012; Mullins and Soetanto, 2013; Murphy, 2007). As Aldrich (2012:399) argues “studies investigating social capital and disaster have relied on qualitative and impressionistic evidence from a few cases…or quantitative evidence from individual-level surveys”. Therefore, while some evidence shows that some communities recover at a faster rate than others (Aldrich, 2012; Storr and Haeffele-Balch, 2012), whether this is due to the prior social capital of the area is only assumed through post event analyses. To further complicate the story, the one study that comprehensively considers the pre-disaster functioning of a community finds that social networks, trust and reciprocity may exert protective effects post a crisis, but may have little effect on preventing mortality during the crisis (Browning et al., 2006).

**The Present Research**

In this paper we integrate longitudinal survey data and census and other administrative data of over 4,000 residents living in 148 communities in Brisbane, Australia. Drawing on pre and post disaster survey data and controlling for a range of suburb socio-demographic variables, we examine the extent to which social networks, levels of social cohesion and trust and the frequency of neighbouring before the flood contributed to the ability of the community to deal with social problems after the flood event.

**METHOD**

**The Australian Community Capacity Study**

This study draws on survey data from the Australian Community Capacity Study (ACCS). The ACCS is a longitudinal panel study of urban communities in Australia that is supported by Australia Research Council funding (Mazerolle et al., 2007; Mazerolle et al., 2012; Wickes et al., 2011). The overarching aim of the ACCS is to understand and analyse the key social processes associated with the spatial and temporal variation of crime and disorder across urban communities. The current study employs two waves of data collected in 2010 and 2012 representing the third and fourth wave of the ACCS conducted in the Brisbane Statistical Division (BSD), respectively. Brisbane is the state capital of Queensland and the third largest city in Australia with a population of approximately 1.9 million people. The ACCS sample comprises 148 randomly drawn suburbs with a residential population ranging from 245 to 20,999 (total suburbs in the BSD = 429 with a residential population ranging from 15 to 21,001). The ACCS suburbs[[2]](#footnote-2) include those that are adjacent to the central business district and those located in peri-urban areas that have experienced large increases in population growth.

Our proposed methodology comes with the well-known problem of defining geographical communities. While we are sensitive to the complexities of defining this concept, we will use suburb boundaries as our unit of analysis. Suburbs, while they may not fully incorporate residents’ experience of community, are nevertheless, a readily recognisable unit of analysis for residents and can also be easily matched with population census data. Our respondents will belong to many “communities” (be they religious, ethnic, sporting or otherwise), therefore we directed our survey questions to the respondents in a way that encourages them to focus firstly on their residential community.

**The ACCS Survey Participants**

The Brisbane ACCS Wave 3 and 4 samples comprise 4403 and 4132 participants respectively. The wave 3 ACCS sample comprises 2248 longitudinal participants and an additional top up sample of 2155. The wave 4 ACCS sample comprises 2473 longitudinal participants (these respondents have participated in both waves 3 and 4 of the ACCS and comprise the sample for the first analysis) and an additional top up sample of 1659. Participants were randomly selected (using random digit dialing). The consent and completion rate for the ACCS was 68.52 percent and 46.27 percent for wave 3 and wave 4, respectively (for further information see Mazerolle et al., 2012; Wickes et al., 2013). This rate represents the number of interviews completed proportional to the number of in-scope contacts.

The ACCS survey was conducted by the Institute for Social Science Research at the University of Queensland. Trained interviewers used computer-assisted telephone interviewing to administer the survey which lasted approximately 24 minutes. The in-scope survey population comprised all people aged 18 years or over who were usually resident in private dwellings with telephones in the selected communities. Wave 3 of the ACCS survey was conducted from 25 August to 15 December 2010. As community resilience is a process that occurs over a period of time (Norris et al., 2008), we wanted to allow sufficient time to pass to enable us to detect sustained resilience or persistent dysfunction. Thus Wave 4 of the ACCS survey was conducted from 14May to mid-August 2012, approximately 15 months after the Brisbane flood event.

Of the 148 communities comprising the ACCS sample 43 were directly impacted by rising flood waters (see Figure 1). The socio-economic profile of these areas ranged from very low (AUD727 median weekly household income) to very high (AUD2716 median weekly household income). The median weekly household income for the flooded areas did not statistically differ from that of non-flooded suburbs (AUD 1584 and AUD1524 respectively). Of note, an independent samples t-test (t=.237, 146 df, ns) showed the attrition rate was not statistically different in the flooded or non-flooded in the Wave 4 sample (see Appendix 1). Further, a total of 46 percent (total n=1915) of Wave 4 ACCS participants reported that they had been impacted by the flood event.

<<Figure 1 Here>>

 **Administrative data**

In addition to the ACCS survey data we use data from the Queensland Reconstruction Authority (QRA), to assess flood impact at the community level, and census data from the Australian Bureau of Statistics (ABS). In our analyses we examine a range of community socio-structural characteristics as both independent variables of interest and controls. These measures are described in further detail below.

**Variable Information**

*Outcome Variable*

 Norris and her colleagues (2008) suggest that the community resilience is an adaptation to a given event and must be assessed objectively from the indicators that are used to predict community resilience. This is necessary if scholarship is to differentiate community resilience from the adaptive capacities, like social capital, that might influence community resilience, or the adaptation of a community post a disaster event.

Although community resilience or an adaptation post a disaster event is considered a process in the literature, Norris et al. (2008) argue that community resilience does manifest itself in particular ways. They suggest that community resilience can be evidenced through a community’s wellness post a disaster event. In our paper we use the perceived level of community problems post the flood disaster as an indicator of collective functioning/wellness. The use of this measure is defensible for two reasons. First, the presence of community problems, like neighbourhood disorder, suggests that local residents are not able to effectively regulate the behaviour of others in their community. Thus communities with many problems are those where residents are unable, or unwilling, to remedy local incivilities. Second, the presence of neighbourhood disorder is the starting point of a spiral of neighborhood decline that encourages outward migration of the most resourced and capable residents and reduces the capacity of remaining businesses and residents to engage in informal regulation of people in their community (Skogan, 1990; see also Steenbeek and Hipp, 2011). For the purposes of this paper, we propose that if community problems increase after the flood, the community has not adapted well in the post flood environment. However, if community problems decrease post the flood we could assume that a community has adapted positively after the flood.

 To measure *community problems* respondents were asked to rate on a scale of one (no problem) to three (a big problem) the severity of seven different incivilities in their community (for a full list of items comprising the scale see Appendix 3). The community problems scale yielded a Cronbach’s alpha reliability statistic of .785. This scale of community problems is used extensively in the criminological literature, is highly cited and rigorously tested across various contexts (including Australia, the study site of the current research) over the last 30 years (Sampson and Raudenbush, 2004; Skogan, 1990; Taylor, 2001; Wickes et al., 2013; Zahnow, et al., 2013).

*Independent Variables*

 The key goal of this paper is to assess whether or not the level of social capital in a given community prior a disaster has a direct impact on post disaster functioning. In all our analyses we employ pre-flood measures of social capital from the ACCS Wave 3 survey. In line with the social capital literature, we include measures that capture the level of social cohesion and trust and the density of social networks prior the flood. Details of our measures follow:

 Social Cohesion and Trust: For many scholars, social cohesion is considered an important mechanism for network development and group functioning (Coleman, 1988; Putnam, 2000). While there is no agreed definition of social cohesion, it is commonly understood as a pro-social good that represents a sense of belonging and attachment and brings about positive outcomes for the collective (Markus and Dharmalingam, 2009). In essence it symbolises a working trust and a general willingness of residents to work together (Sampson, Morenoff and Gannon-Rowley, 2002) and represents what Uphoff (1999) has labeled cognitive social capital. To capture *social cohesion and trust*, we computed a scale (alpha .891) that comprises four items from the ACCS (see Appendix 2 for a list of these items). Approximately 12 percent of the variation in social cohesion and trust is attributable to differences across communities. We then aggregated this scale to the level of the community to capture the level social cohesion and trust.

 Bonding and Bridging Social Capital: In line with the social capital literature, we included two items from the ACCS Wave 3 Survey to measure bonding and bridging social capital or structural social capital (Uphoff, 1999) has labeled cognitive social capital. To capture the level of bonding social capital, we calculated the suburb mean response to an individual item capturing the number of friends and relatives lived in the respondents’ local community (1= none; 2= one or two; 3= three or four; 4= five or six; 5= seven or eight; 6= nine or ten; 7= more than ten). To capture the prevalence of more instrumental relationships with fellow community residents we included the suburb mean response to an individual item measuring respondents’ number of acquaintances in the local community (1= none; 2= a few; 3= many; 4= most of the people in the community). The total variation attributable to the suburb for both bonding and bridging social capital was 4.23 percent and 3.48 percent respectively.

 Reciprocated Exchange: Drawing on the earlier work of Sampson, Morenoff and Earls (1999) and Sampson’s more recent focus on “activated ties” (Sampson, 2013, p.20), we assess the influence of a community’s reciprocated exchange on community resilience post the Brisbane flood disaster. We use an index constructed by combining three items from the ACCS Wave 3 survey that ask residents to comment on how often (never; rarely; sometimes; often): 1) you and people in your community do favors for each other; 2) visit in each other’s homes or on the street?; and 3) ask each other advice about personal things such as child rearing or job openings. These items are identical to those used in previous research (Sampson, Morenoff and Earls, 1999). Further these items depict what Woldoff (2002, p.97) classifies “more intense neighbor relationships”. We computed a *reciprocated exchange* scale from three ACCS survey items (for a full list of items comprising the scale see Appendix 2). The scale yielded a Cronbach’s alpha reliability statistic of .887) and the variation in this scale attributed to the suburb was 5.26 percent.

 Local Organisations: In addition to the availability of informal networks, we also included a measure of known community services/organisations. Kirschenbaum (2004) refers to community based services as “macro-neighbourhood” networks. These services provide a link to the wider community and are “less intimate than family networks or micro neighbour based neighbourhoods” (Kirschenbaum, 2004: 107). In the ACCS Wave 3 survey, we asked residents to indicate whether or not particular services were available in their community, for example Neighbourhood Watch, religious organisations, ethnic or nationality clubs or business/civic groups (for a full list of services see Appendix 2). To account for compositional effects, we created a community level version of these measures, by calculating the mean number of services reported by residents. The variation in local organisations attributed to the suburb was 13.1 percent.

 Volunteering Activity: Putnam (2000) suggests that volunteering is a key feature of civic behaviour and an important indicator of social capital. In order to capture the level of volunteering in a given community, we integrate information from the ABS 2006 census data. Our measure of volunteering therefore represents the percentage of people in a community aged over 15 years that engaged in any kind of volunteering behaviour in the last 12 months.

*Control Variables*

 In the disaster literature, Cutter and her colleagues (2003; 2008) identify a number of socio-economic characteristics that may increase social vulnerability to environmental hazards. Of particular interest to this paper are the following indicators of social vulnerability: Socio-Economic Status; Race and Ethnicity, Population Composition and Housing Tenancy.

 Social-Economic Status: To capture socio-economic status we used two variables from the 2006 ABS Census data: the percentage of people living in *low income households* and the percentage of *unemployed people* actively seeking employment. Low income households are those in which the total weekly household income is less than $799. The measure of unemployment captures the percent of residents who report that they are currently not employed but are participating in work search activities and would be available to start work within four weeks.

 Race and Ethnicity: To measure race and ethnicity we included two measures. Given the importance of the concentration of indigenous residents in the Australian context on perceptions and attitudes (Dunn et al., 2004; Griffiths and Pedersen, 2009; Shaw, 2000), we include the *percentage of Indigenous residents*. Further we include a Blau index of *language diversity*. The Blau index is defined as:

1 - Σ$p\_{i}^{2}$ (1)

where *p* is the proportion of group members in a given category and *i* is the number of different categories. This index captures the amount of variation, on a specific characteristic, among a group of individuals. A perfectly homogenous group would receive a score of 0 while a completely heterogeneous group would receive a score of 1. ABS census data from 2006 was used to calculate suburb level language diversity[[3]](#footnote-3). While we recognise that ethnic diversity encompasses more than just language, previous research shows that language diversity is more consequential for community social processes in the Australian context (Leigh, 2006; Wickes, et al., 2013).

 Population Composition: Given that social vulnerability for community resilience may be impacted by the age composition of the community and community size (Cutter, et al., 2003), we include three indicators of population composition drawn from the ABS 2006 Census data. The first is the *percent of children* aged 0 to 14 years in the community. The second is the *percent of elderly people* in the community measured by the percentage of residents aged over 65 years. Our third measure of population composition is the *total persons* living in a given suburb.

 Housing Tenancy: The final vulnerability domain we control for in our models is housing tenancy. Here we include two measures from the ABS 2006 Census data. The first is *residential stability* which assesses the percent of people living at a different address five years ago. The second is the percent of residents who are renting.

 Flood Impact: In the months following the Brisbane flood the QRA collected data across several key community functioning indictors including: schools and community infrastructure opened; individuals and households affected by the disaster; small businesses affected by the disaster; insurance data; power data and; percentage of state-owned roads damaged and repaired (The Queensland Reconstruction Authority, 2011). Using these data, we created a dummy variable to indicate whether or not a community had been flood affected.

 The summary statistics for the variables included in the analyses are presented in Appendix 2.

**Analytic Approach**

The goal of this research is to examine whether or not communities with higher levels of social capital show greater resilience to the flood event. To do this we construct an Ordinary Least Squares (OLS) regression analysis for the aggregate suburb variables.  Here we examine the prior effect of social capital on perceptions of community problems post-flood. The aggregate OLS multiple regression equation is defined as:

*yj = (b0 + b1X1 + b2X2 +…+ bnXn) +*$ε$*j*

Where *yj* is the dependent variable, *b1X1* is coefficient of the predictor 1, *b2X2* is the coefficient of predictor 2 and *bnXn* is the coefficient of the nth predictor, and $ε$ is the error term.

**RESULTS**

**Pre-flood predictors of post-flood community problems**

 The literature reports an association between community social processes and community resilience (Paton and Johnston, 2001). Further, research has long established a number of socio-demographic correlates of community social processes (Sampson, Raudenbush and Earls, 1997) which can be assumed to impact community resilience at least indirectly. In Model 1 we therefore include several community-level socio-demographic control variables that may be important for predicting community resilience post a disaster event. Additionally in this model we include a pre-flood measure of community problems as a control. In Model 1 we also add the QRA suburb flood status.

Not surprisingly, our results indicate that perceived community problems pre-flood is the most significant predictor of post-flood perceptions of community problems (β= 0.574, p<0.001). Community level unemployment is positively associated with perceived community problems (β= 0.028, p<0.05) (see Table 1). Communities impacted by the flood reported fewer community problems post the flood event when compared to non-flooded communities (β= -0.051, p<0.01). An independent samples t-test reveals that reported community problems in flooded suburbs (mean = 1.56) were not significantly different from non-flooded suburbs (mean =1.60) at Wave 3 (t= 1.213, df 142, ns). However, in Wave 4 community problems in flooded suburbs (mean = 1.44) were significantly lower when compared to non-flooded suburbs (1.53) (t=2.491, df 142, p<.05). We come back to this finding in the discussion.

<<Table 1 Here>>

In Model 2 we add our measures of social capital from the ACCS Wave 3 Survey (social cohesion and trust, reciprocated exchange, bonding/bridging social capital and knowledge of community organisations). We also include the 2006 ABS measure of volunteering. Results from this model provide evidence that some pre-flood indicators of social capital predict post-flood community problems. After controlling for previous reports of community problems, we find that community social cohesion is associated with lower levels of perceived community problems post-flood (β= -0.134, p<0.05). Additionally, perceived community problems are also lower in communities where a greater percentage of residents volunteered prior to the flood event (β= -0.007, p<0.01). Yet the results of this model do not indicate that bonding or bridging social capital, reciprocated exchange or knowledge of community organisations have any independent effect on community resilience. Flooded communities (β= -0.051, p<0.01) remains a significant predictor of lower community problems post-flood and higher levels of unemployment also retains its significance (β= 0.030, P<0.05).

Next we examine a number of interaction terms to ascertain whether or not the impact of social capital on reported community problems post the Brisbane flood were different for flooded communities compared to non-flooded communities. We did this for our measures of social cohesion and trust, reciprocated exchange, bonding/bridging social capital, knowledge of community services and levels of volunteering. Considering the significant association between unemployment, and prior community problems, we include interaction terms for these variables as well.

Model 3 indicates that none of the interaction terms were significant. Pre-event community characteristics, including indicators of social capital, were not important predictors of post disaster functioning in communities impacted by the flood. As in previous models greater perceptions of community problems pre-flood (β= 0.469, p<0.001) and higher unemployment (β= 0.032, p<0.05) predict greater perceived disorder post-flood while higher rates of volunteering (β= -0.007, p<0.05) and higher levels of social cohesion (β= -0.160, p<0.05) predict lower levels of perceived disorder at the community level post-flood. However, there are no differences in the impact of these variables on community problems for flooded or non-flooded communities.

**CONCLUSION**

 The goal of this paper was to examine the relationship between levels of pre-disaster social capital and the ability of disaster impacted communities to respond to local social problems after the event. In particular we were interested if the existence of pre-flood social networks, levels of social cohesion and trust, reciprocated exchange and volunteering behaviour predicted community resilience post an exogenous shock. We find that despite the centrality of social capital to community resilience as theorised in the literature, there is no difference in the relationship between social capital and community problems in flooded or non-flooded communities. Similar to Browning and his colleagues’ study of the 1995 Chicago heat wave, we find that although levels of social cohesion and trust and volunteering behaviour were important in reducing local community problems under normal conditions, there was no ‘added’ effect of social capital on regulating these problems in post flood environments. We offer several reasons for these excepted findings below.

 As evidenced in his classic research on disaster, Fritz (1961, see also Drabek and McEntire, 2003; Dynes, 1970; 1994; Quarantelli, 2005) argued that traumatic events encourage convergence behaviour – where people come together to address collectively held needs. This statement is strongly supported in many studies of post disaster behaviour. For example, Lemieux (1998) found that following ice storms (associated with long term blackouts) in Canada, all crimes bar property crime decreased post the storm period. Similarly Zahran and colleagues (1999) reveal that following natural disasters in Florida between 1991 and 2005, communities experienced an immediate decrease in all crime types excluding domestic violence (see also Tucker, 2001). The post disaster experience is therefore generally characterised by decreases in social problems (Quarantelli, 1994). As Quarantelli (1986:5) concludes, “if disasters unleash anything it is not the criminal in us, but the altruistic”.

 Our results provide some evidence of this as community problems significantly decreased in flooded suburbs when compared to non-flooded suburbs after the flood. There is also anecdotal evidence of convergence and altruistic behaviour across the Brisbane Statistical Division after the Brisbane flood event. Volunteers from across the Brisbane Statistical Division were bussed into areas to assist with the post flood clean-up. Donations of appliances, furniture, clothing and food were in such abundance, local charities had to put a hold on receiving further goods (MacDonald, 2012). Looting was condemned with the Mayor of Ipswich (the second largest city in the Brisbane Statistical Division) and the Police Commissioner who advised would be looters that the consequences for anti-social behaviour would be swift and severe (Feeney 2011). We contend that the convergence evidenced post the Brisbane flood event was not spatially concentrated in particular suburbs. Instead, the flooding event may have had a generalising effect, bringing together people from flooded and non-flooded communities in prosocial and mutually beneficial activities. This, we argue, may have lessened the need of residents to rely on local social capital to in the post disaster phase.

 Linked to this, we suggest that local social capital did little to encourage community resilience post the flood event as the economic and social capital available to the residents of flooded communities in Brisbane stemmed from extra-local sources. Federal, state and local economic resources were distributed to suburbs that needed help. Further, situational information and advice on donating funds or volunteering services were prolifically distributed through Twitter, the Queensland Police Service and other authoritative sources’ social media sites (Bruns et al., 2012). As Bruns and colleagues (2012: 48) argue this information reached “its immediate audience and was passed along and thus amplified many times over”. Thus, although community resilience is proposed to emerge from community-level resources, we argue that local community resources may have played a minor role in the capacity of suburbs to ‘bounce back’ after the Brisbane flood. Instead living in an affluent society with a relatively well functioning and well-resourced system of governance and communication may be more important for community resilience when compared to the availability of local networks and resources. We hope that our planned case studies in several flooded suburbs will further explicate the role of city, state and federal actors in generating community resilience post the Brisbane flood.

 Finally, we suggest that our findings may indicate that, in time, most communities affected by a disaster, return to pre-disaster functioning (Anderson-Berry and King, 2005). Certainly in extreme cases, disaster events can “force open whatever fault lines once ran silently through the structure of the larger community, dividing it into divisive fragments” (Erikson, 1994: 236). However, our results concur with those of other studies that indicate communities affected by disaster usually return to pre-disaster functioning. For example, Sweet (1998) surveyed resident perceptions of “community” in a rural town in New York state one month after a severe ice storm and compared findings to a survey conducted three years prior the disaster. Residents reported that community solidarity temporarily increased in the immediate aftermath of the storm but returned to pre-disaster levels by one month post the disaster.

 While our results extend our understanding of the importance of pre-flood social capital to post flood community resilience, there are two caveats to consider. First, in our analyses we only examine the influence on social capital on flooded and non-flooded communities. At the time of writing we do not have access to a severity index that could measure the variation in the impact of the flood and the temporality of the flood effects in a given area. As Norris et al (2008) suggests, individuals living in the most affected areas that continue to function at a diminished capacity for the longest period of time post-disaster may perceive their communities as less resilient. We hope that future research will allow for the construction of such an index at a spatially refined resolution to assess if there is an interaction between social capital, flood severity and community resilience after the flood event.

 Another caveat relates to our focus on indicators of social capital. Norris and her colleagues (2008) note that several adaptive capacities are important for encouraging community resilience post a disaster. Social capital is only one of the four adaptive capacities linked to community resilience. Another important adaptive capacity is community competence which encapsulates, among other things, community action and collective efficacy. It is possible, as Browning et al. (2006) point out, the protective effect of social capital may work through these other processes. Sampson and his colleagues contend that collective efficacy represents the process of activating or converting social ties into desired outcomes of the collective (Sampson et al., 1999). Acknowledging the strength of social ties and the significance of formal and voluntary organisations to a community’s wellbeing, Sampson (2001: 521) argues that the mere existence of such ties are not sufficient, as the ‘‘collective capacity for social action, even if rooted in weak personal ties” is the more proximate social mechanism for understanding between community variations in social problems. We hope that future research will bear out the relevance of this argument as it relates to post disaster community resilience.

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Figure 1. Map of flooded and non-flooded ACCS suburbs



Table 1: Results for Ordinary Least Squares (OLS) regression analysis examining the effect of community social capital pre-flood on perceptions of community problems post-flood

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Model 1 |  | Model 2 |  | Model 3  |  |
| Suburb flood status | -0.051 | \*\* |  | -0.051 | \*\* |  | -0.380 |  |
| Volunteering activity | -0.007 | \*\* |  | -0.007 | \*\* |  | -0.007 | \* |
| Percent low income households | -0.0002 |  |  | -0.0004 |  |  | -0.001 |  |
| Percent children | 0.003 |  |  | 0.003 |  |  | 0.003 |  |
| Percent elderly | 0.002 |  |  | 0.001 |  |  | 0.0003 |  |
| Language diversity | -0.064 |  |  | -0.053 |  |  | -0.044 |  |
| Percent Indigenous | 0.009 |  |  | 0.005 |  |  | 0.011 |  |
| Percent renting | -1.5e-05 |  |  | -0.001 |  |  | -0.001 |  |
| Percent unemployed looking for work | 0.028 | \* |  | 0.030 | \* |  | 0.032 | \* |
| Residential stability | -0.002 |  |  | -0.002 |  |  | -0.002 |  |
| Total persons | 1.12e-06 |  |  | 8.80e-07 |  |  | 5.87e-07 |  |
| Community problems scale pre-flood | 0.574 | \*\*\* |  | 0.481 | \*\* |  | 0.469 | \*\*\* |
| Social cohesion and trust scale |  |  |  | -0.134 | \* |  | -0.160 | \* |
| Local Organisations |  |  |  | 0.022 |  |  | 0.015 |  |
| Reciprocated exchange |  |  |  | 0.096 |  |  | 0.167 |  |
| Bridging social capital |  |  |  | -0.007 |  |  | -0.028 |  |
| Bonding social capital |  |  |  | -0.002 |  |  | 0.014 |  |
| Suburb flood status X social cohesion and trust |  |  |  |  |  |  | 0.100 |  |
| Suburb flood status X reciprocated exchange |  |  |  |  |  |  | -0.031 |  |
| Suburb flood status X bonding social capital |  |  |  |  |  |  | -0.066 |  |
| Suburb flood status X bridging social capital |  |  |  |  |  |  | 0.148 |  |
| Suburb flood status X local organisations |  |  |  |  |  |  | 0.012 |  |
| Suburb flood status X volunteering activity |  |  |  |  |  |  | -0.001 |  |
| Suburb flood status X percent unemployed looking for work |  |  |  |  |  |  | -0.024 |  |
|  |  |  |  |  |  |  |  |  |
| Intercept | 0.636 | \*\*\* |  | 0.983 | \*\* |  | 1.091 | \*\*\* |
| $$R^{2}$$ | 0.811 |  |  | 0.823 |  |  | 0.823 |  |
| *\*\*\* p < 0.01(two-tail test), \*\* p < .01(two-tail test), \* p < .05 (two-tail test) Unstandardized coefficients.*  |  |

Appendix 1. ACCS Wave 4 attrition rates by flooded and non-flooded suburbs

|  |  |  |  |
| --- | --- | --- | --- |
| **Suburb- Flooded** | **Attrition (%)** | **Suburb- Non Flooded** | **Attrition (%)** |
| Anstead (Brisbane City) | 28.57 | Albany Creek (Pine Rivers Shire) | 33.33 |
| Barellan Point (Ipswich City) | 34.21 | Alexandra Hills (Redland Shire) | 23.91 |
| Bellbird Park (Ipswich City) | 30.23 | Annerley (Brisbane City) | 31.81 |
| Camira (Ipswich City) | 35.55 | Ashgrove (Brisbane City) | 27.77 |
| Chelmer (Brisbane City) | 32.25 | Bald Hills (Brisbane City) | 30 |
| Chuwar (Ipswich City) | 25 | Bardon (Brisbane City) | 22.22 |
| Collingwood Park (Ipswich City) | 30.76 | Beachmere (Caboolture Shire) | 15.38 |
| Corinda (Brisbane City) | 27.27 | Belmont (Brisbane City) | 30 |
| Dinmore (Ipswich City) | 23.52 | Bethania (Gold Coast City) | 26.47 |
| Doolandella (Brisbane City) | 24.24 | Boronia Heights (Logan City) | 31.81 |
| Durack (Brisbane City) | 32.5 | Bray Park (Pine Rivers Shire) | 27.08 |
| Dutton Park (Brisbane City) | 28.12 | Brendale (Pine Rivers Shire) | 27.02 |
| Fairfield (Brisbane City) | 25.71 | Browns Plains (Logan City) | 33.33 |
| Gailes (Ipswich City) | 36.36 | Bunya (Pine Rivers Shire) | 25 |
| Goodna (Ipswich City) | 33.33 | Burbank (Brisbane City) | 28.94 |
| Graceville (Brisbane City) | 18.18 | Burpengary (Caboolture Shire) | 29.54 |
| Greenslopes (Brisbane City) | 31.37 | Caboolture (Caboolture Shire) | 44.23 |
| Inala (Brisbane City) | 27.02 | Caboolture South (Caboolture Shire) | 37.5 |
| Jamboree Heights (Brisbane City) | 17.24 | Calamvale (Brisbane City) | 31.91 |
| Jindalee (Brisbane City) | 21.73 | Camp Mountain (Pine Rivers Shire) | 24 |
| Karalee (Ipswich City) | 30.3 | Capalaba (Redland Shire) | 36.53 |
| Karana Downs (Brisbane City) | 28.12 | Capalaba West (Brisbane City) | 23.07 |
| Kelvin Grove (Brisbane City) | 31.11 | Cashmere (Pine Rivers Shire) | 32.6 |
| Kholo (Brisbane City) | 16.66 | Cedar Creek (Pine Rivers Shire) | 28.57 |
| Moorooka (Brisbane City) | 17.14 | Chandler (Brisbane City) | 18.51 |
| Mount Crosby (Brisbane City) | 21.05 | Clear Mountain (Pine Rivers Shire) | 28.12 |
| Mount Ommaney (Brisbane City) | 31.03 | Cleveland (Redland Shire) | 30.61 |
| Newmarket (Brisbane City) | 25 | Closeburn (Pine Rivers Shire) | 25.92 |
| North Ipswich (Ipswich City) | 31.57 | Cornubia (Logan City) | 32.25 |
| Oxley (Brisbane City) | 25 | Daisy Hill (Logan City) | 29.26 |
| Paddington (Brisbane City) | 33.33 | Dakabin (Pine Rivers Shire) | 32.25 |
| Pallara (Brisbane City) | 31.57 | Dayboro (Pine Rivers Shire) | 27.27 |
| Pine Mountain (Ipswich City) | 25.92 | Deception Bay (Caboolture Shire) | 31.57 |
| Pullenvale (Brisbane City) | 32.43 | Donnybrook (Caboolture Shire) | 32.43 |
| Red Hill (Brisbane City) | 32.07 | Draper (Pine Rivers Shire) | 29.41 |
| Redbank (Ipswich City) | 27.02 | Drewvale (Brisbane City) | 36.84 |
| Riverview (Ipswich City) | 25 | Eatons Hill (Pine Rivers Shire) | 27.08 |
| Salisbury (Brisbane City) | 31.57 | Ellen Grove (Brisbane City) | 26.31 |
| Seventeen Mile Rocks (Brisbane City) | 23.52 | Forest Lake (Brisbane City) | 30.15 |
| Sherwood (Brisbane City) | 30 | Forestdale (Logan City) | 33.33 |
| Sinnamon Park (Brisbane City) | 27.65 | Godwin Beach (Caboolture Shire) | 30.76 |
| Tennyson (Brisbane City) | 28.57 | Griffin (Pine Rivers Shire) | 27.77 |
| Woolloongabba (Brisbane City) | 33.33 | Heritage Park (Logan City) | 36.98 |
| Yeerongpilly (Brisbane City) | 34.21 | Highvale (Pine Rivers Shire) | 25.49 |
| Yeronga (Brisbane City) | 25 | Hillcrest (Logan City) | 30.55 |
|  |  | Joyner (Pine Rivers Shire) | 19.35 |
|  |  | Kallangur (Pine Rivers Shire) | 28.2 |
|  |  | Kingston (Logan City) | 23.52 |
|  |  | Kippa-ring (Redcliffe City) | 26.82 |
|  |  | Kuraby (Brisbane City) | 23.4 |
|  |  | Kurwongbah (Pine Rivers Shire) | 18.75 |
|  |  | Lawnton (Pine Rivers Shire) | 23.25 |
|  |  | Logan Central (Logan City) | 31.11 |
|  |  | Loganholme (Logan City) | 33.33 |
|  |  | Loganlea (Logan City) | 22.58 |
|  |  | Mackenzie (Brisbane City) | 20 |
|  |  | Mango Hill (Pine Rivers Shire) | 20.45 |
|  |  | Meadowbrook (Logan City) | 37.25 |
|  |  | Meldale (Caboolture Shire) | 25.92 |
|  |  | Morayfield (Caboolture Shire) | 22.91 |
|  |  | Mount Cotton (Redland Shire) | 32.43 |
|  |  | Mount Glorious (Pine Rivers Shire) | 36.66 |
|  |  | Mount Nebo (Pine Rivers Shire) | 17.64 |
|  |  | Mount Pleasant (Pine Rivers Shire) | 28.57 |
|  |  | Mount Samson (Pine Rivers Shire) | 26.47 |
|  |  | Murrumba Downs (Pine Rivers Shire) | 31.25 |
|  |  | Narangba (Caboolture Shire) | 33.92 |
|  |  | Ningi (Caboolture Shire) | 22.44 |
|  |  | Ocean View (Pine Rivers Shire) | 28.88 |
|  |  | Ormiston (Redland Shire) | 29.41 |
|  |  | Parkinson (Brisbane City) | 27.5 |
|  |  | Petrie (Pine Rivers Shire) | 33.33 |
|  |  | Redbank Plains (Ipswich City) | 26.08 |
|  |  | Regents Park (Logan City) | 31.11 |
|  |  | Rochedale (Brisbane City) | 33.33 |
|  |  | Rothwell (Redcliffe City) | 29.72 |
|  |  | Runcorn (Brisbane City) | 26.82 |
|  |  | Samford Valley (Pine Rivers Shire) | 33.33 |
|  |  | Samford Village (Pine Rivers Shire) | 32.25 |
|  |  | Samsonvale (Pine Rivers Shire) | 28.57 |
|  |  | Sandstone Point (Caboolture Shire) | 30.76 |
|  |  | Shailer Park (Logan City) | 25.58 |
|  |  | Sheldon (Redland Shire) | 18.75 |
|  |  | Slacks Creek (Logan City) | 30.95 |
|  |  | Springfield (Ipswich City) | 32.3 |
|  |  | Springfield Lakes (Ipswich City) | 39.58 |
|  |  | Springwood (Logan City) | 29.41 |
|  |  | Strathpine (Pine Rivers Shire) | 23.68 |
|  |  | Stretton (Brisbane City) | 27.02 |
|  |  | Sunnybank Hills (Brisbane City) | 26.31 |
|  |  | Tanah Merah (Logan City) | 22.85 |
|  |  | Tarragindi (Brisbane City) | 25.86 |
|  |  | The Gap (Brisbane City) | 25 |
|  |  | Thornlands (Redland Shire) | 22.5 |
|  |  | Toorbul (Caboolture Shire) | 32.55 |
|  |  | Underwood (Logan City) | 30.61 |
|  |  | Upper Brookfield (Brisbane City) | 20 |
|  |  | Upper Caboolture (Caboolture Shire) | 28.78 |
|  |  | Warner (Pine Rivers Shire) | 30.23 |
|  |  | Waterford (Gold Coast City) | 25.8 |
|  |  | Whiteside (Pine Rivers Shire) | 22.58 |
|  |  | Wights Mountain (Pine Rivers Shire) | 11.53 |
|  |  | Woodridge (Logan City) | 36 |

Appendix 2. ACCS Items – Community Problems and Social Cohesion Scales

|  |  |  |  |
| --- | --- | --- | --- |
| Social Cohesion Scale | Community Problems Scale | Frequency of Neighbouring Scale | Knowledge of Local Services |
| People around here are willing to help their neighbours? Would you say you strongly agree, agree disagree or strongly disagree?This is a close-knit community? Would you say you strongly agree, agree disagree or strongly disagree?People in this community can be trusted. Would you say you strongly agree, agree disagree or strongly disagree?People in this community do not share the same values. Would you say you strongly agree, agree disagree or strongly disagree? | DrugsPublic DrinkingPeople loitering or hanging around People being attacked or harassed because of their skin colour, ethnic origin or religionVandalism and/or graffitiTraffic problems such as speeding or hooningYoung people getting into trouble | How often do you and people in your community do favours for each other? Often, sometimes, rarely or never?How often do you and people in your community visit in each other’s homes or on the street? Often, sometimes, rarely or never?How often do you and people in your community ask each other for advice about personal things such as child rearing or job openings? Often, sometimes, rarely or never? | Community newsletter or bulletinCrime prevention programNeighbourhood watchReligious organisationsEthnic or nationality clubsBusiness or civic groups |

Appendix 3. Summary statistics for ACCS, ABS Census and QRA Variables

|  |  |  |  |
| --- | --- | --- | --- |
|  | ACCS Wave 3(N=4403) |  | ACCS Wave 4(N=4132) |
|  | Min | Max | Mean | SD |  | Min | Max | Mean | SD |
| ***Community measures*** |  |  |  |  |  |  |  |  |  |
| Suburb flood status (0=no; 1=yes) | - | - | - | - |  | 0 | 1 | 0.303 | 0.459 |
| Social cohesion and trust  | 3.094 | 4.283 | 3.657 | 0.251 |  | 3.052 | 4.276 | 3.690 | 0.267 |
| Reciprocated exchange | 2.368 | 4 | 2.811 | 0.235 |  | 2.334 | 3.556 | 2.800 | 0.2189 |
| Local Organisations | 0 | 4.864 | 2.619 | 1.697 |  | 0 | 5 | 2.337 | 1.699 |
| Bonding social capital | 2.933 | 6.929 | 4.201 | 0.660 |  | 2.5 | 6.4 | 4.296 | 0.721 |
| Bridging social capital | 2.150 | 3.066 | 2.448 | 0.189 |  | 2.067 | 3.267 | 2.446 | 0.200 |
| Community problems scale | 1.241 | 2.081 | 1.604 | 0.191 |  | 1.179 | 2.094 | 1.515 | 0.194 |
| Volunteering activity | 10.120 | 37.229 | 18.040 | 4.828 |  | 11.162 | 33.791 | 19.438 | 5.362 |
| Percent low income households | 0 | 47.317 | 6.17 | 4.79 |  | 8.447 | 46.407 | 22.235 | 9.104 |
| Percent children (aged 0-14 years) | 12.003 | 32.373 | 22.360 | 4.322 |  | 11.985 | 29.661 | 21.866 | 4.071 |
| Percent elderly (aged 65 plus years) | 2.478 | 26.361 | 9.551 | 4.731 |  | 3.439 | 29.005 | 10.795 | 4.648 |
| Language diversity | 0.073 | 0.784 | 0.271 | 0.152 |  | 0.066 | 0.716 | 0.287 | 0.164 |
| Percent Indigenous | 0 | 9.080 | 1.662 | 1.579 |  | 0 | 9.088 | 1.929 | 1.627 |
| Percent renting | 2.505 | 51.137 | 24.367 | 12.515 |  | 5.079 | 57.429 | 27.389 | 13.408 |
| Percent unemployed looking for work | 0.763 | 6.038 | 2.839 | 1.026 |  | 1.416 | 8.146 | 3.869 | 1.276 |
| Residential stability | 23.540 | 79.320 | 43.050 | 8.892 |  | 15.833 | 74.087 | 38.996 | 10.211 |
| Total persons | 305 | 21001 | 6045.960 | 4918.778 |  | 279 | 22807 | 6632.501 | 5428.859 |

1. We note, however, that other studies highlight the dark side of social capital. For example, for some communities strong kith and kinship ties may impede the ability to stem disorder (Pattillio, 1998); serve to exclude those who do not ‘belong’ (Carsen, 2004; Fine 2001); or foster a parochial culture that does little to assuage the effects of poverty (Wilson, 1987). [↑](#footnote-ref-1)
2. In Australia, suburbs are similar to census tracts in the U.S. context, but they can be larger as they are not determined by population. In all models we control for the variation in the suburb population. Further as residents are directed to think about their residential community when responding to the survey questions, we refer to suburbs as communities throughout this paper. [↑](#footnote-ref-2)
3. The Blau index was calculated using the following ABS census language categories: Northern European; Southern European; Eastern European; Southwest Central Asian; Southern Asian; South East Asian; Eastern Asian Languages; Australian Indigenous Languages; English Only. [↑](#footnote-ref-3)