

THIRD SECTOR ORGANIZATIONS AND EARTHQUAKE RECOVERY PLANNING IN CHRISTCHURCH, NEW ZEALAND

Nicole S. Hutton (nhutton@mail.usf.edu)
Graham A. Tobin (gtobin@usf.edu)
Linda M. Whiteford (lwhiteford@usf.edu)
University of South Florida

INTRODUCTION

On September 4, 2010, an earthquake struck rural Canterbury and the most deadly of over 2,000 aftershocks devastated the Christchurch Central Business District on February 22, 2011 (Ardagh et al. 2012). Questions have arisen regarding population dynamics (Love 2011), marginalized groups, health and social care, and overall recovery efforts. Addressing some of these concerns are various non-profit, non-governmental, and faith based groups, collectively referred to as Third Sector Organizations (TSOs). By providing an alternative to and back-stopping government and private health and social services, TSOs are able to build resiliency following a natural disaster, and are especially able to identify and address unmet needs within their target audiences and maintain a sense of community within their operating areas. The nature of community recovery, also changes the role of TSOs in formal and grassroots efforts over time. In New Zealand, TSOs have shared community health burdens with government and private practices since the 1990s (Larner and Craig 2005) and have championed healthcare policy measures for ethnic minorities (Came 2014). Nevertheless, the earthquakes have presented challenges to TSOs. An inventory of 92 TSOs four months after the earthquakes, 106 one year after, and 454 two years after by Carlton and Vallance (2013) shows that although many TSOs have emerged to address earthquake related issues, other TSOs may have been unable to re-establish themselves outside areas with earthquake damage found to be too severe to inhabit by the Canterbury Earthquake Recovery Authority (CERA). Others reported “burn-out” and 52 were inactive or closed because of shifting needs during recovery. This research identifies shared experiences across the third sector in Canterbury to illuminate shifting roles in mid to long-term earthquake recovery.

BACKGROUND

The recovery from the 2010 and 2011 earthquakes overlap but synergies and challenges of the experience of the TSOs serving marginalized groups can be compared. The 17th World Congress on Disasters and Emergency Medicine found resilience in the broader community to be high following the February 2011 earthquake attributed primarily to proximity of the 2010 earthquake, practice drills for pandemic scenarios, and interagency collaboration (Humphrey 2011). Despite coordinated efforts the elderly, indigenous, and disabled populations as well as those in highly damaged areas reported poor communication, differential cultural awareness, and diminished access to medical supplies and community networks (Johnston et al. 2011; Lambert and Mark-Shadbolt 2012; Phibbs et al. 2012). Further, rebuilding efforts, have displaced some organizations and create increased need for services for immigrant construction workers arriving in Christchurch (Chang-Richards et al. 2012). Best practices in collaborative efforts following a disaster have been studied for a variety to disasters in New Zealand showing that community involvement is crucial but gaps remain regarding the role of the third sector in community recovery (Johnston et al. 2011).

Following a natural disaster, when marginalized groups may have heightened distrust of government, TSOs are often able to ensure that communications and services are appropriate (Tobin and Montz 1997). TSOs have been engaged in formal partnerships with the government in New Zealand through projects associated with health, education, and minority issues since the 1990's with some of the most impactful initiatives emerging from social mapping and mediation (Larner and Craig 2005). These types of partnerships are increasingly common in welfare governments and are seen to build resilience by increasing functional redundancy and community engagement.

Over time, TSOs in partnership with government and private sectors may impact all aspects of the progression of vulnerability posed in the Pressure and Release model: root causes, dynamic pressures, and unsafe conditions (Wisner et al. 2003). However, for TSOs, government partnerships both add reporting requirements and reduce political barriers to care (Dattani 2012). Geographic Information Systems (GIS) and other information sharing technologies leveraged through partnerships offer tools to quickly assess shifts in populations that may be used for supply mapping, identification of population shifts, and long term education on chronic vulnerabilities (Cova 1999; Johnson 2000). This research uses relocation information of TSOs' offices and vulnerability factors identified by TSO leadership to determine changing areas of vulnerability through GIS mapping of census data.

METHODS

A survey of TSO office locations was undertaken from public address listings in November 2013 and compared to pre-2011 sites to identify relocation and consequent shifts in service areas following the earthquakes. An additional qualitative survey of TSOs was undertaken through telephone interviews with leaders of health and social service related TSOs as identified through Community Information Christchurch (CINCH) in August and September 2014. A third source of information was obtained from transcripts of Plains FM radio interviews (Torstonson 2014) from broadcasts between July 2012 to March 2013 and an update issued in February 2014. Analysis of these survey data and interviews provides perspectives on how TSOs have been involved in and impacted by mid- to long-term recovery efforts. Vulnerability maps of the Christchurch region were generated based on the criteria identified by local TSO leadership with data weighted based on their perceptions of prevailing problems. These vulnerability maps were then compared to vulnerability maps developed by Hutton et al. (2014) based on income discrepancies from two years before the first earthquake, 2008, to two years after the most deadly earthquake, 2013, as reported in the New Zealand censuses (Christchurch City Council 2003, 2006). Vulnerability indicators were derived from Cutter's (2006) vulnerability metrics, a matrix of seventeen measures. Six of Cutter's (2006) metrics were excluded from this analysis or were represented by multiple indicators (as defined in Hutton et al. 2014) due to the nature of this study, development levels in New Zealand, and available census data. To incorporate TSO input into the vulnerability assessment, social assistance and renting were weighted as two points each, income based vulnerability components were weighted at one and a half points each, and other indicators valued at one point. The additional weight of community identified vulnerability factors reflects findings from Emrich (2005). The Formula including TSO input is as follows:

$$\text{Increased Vulnerability} = \text{socio-economic status} + (\text{gender} * 1.5) + (\text{age} * 1.5) + (\text{ethnicity} * 1.5) + \text{employment loss} + (\text{renters} * 2) + (\text{birthplace} * 0.5 + \text{occupation} * 0.5) + (\text{family type} * 0.5 + \# \text{children} * 0.5) + \text{education} + \text{population} + (\text{social dependence} * 2)$$

The total possible vulnerability score TSO based weighting is 14.5, compared to 12.5 income based weighting, and 11 unweighted.

RESULTS

Twenty three organizations were identified through the CINCH website, of these five moved following the earthquake, five were sharing space with other organizations, and seven experienced no change as of November 2013. For those organizations that moved, the farthest move was within four miles of the original location and the average relocation was just over two miles.

The majority of TSOs in Christchurch throughout the recovery process reported shared struggles originating from displacement and increased complexity of community needs. Organizations almost unanimously described increased stress on staff, who were dealing with their own recovery as well as serving the community, evident in increased demand for counseling services. For TSOs whose offices were damaged, permanent spaces were just becoming accessible in 2014, with many having worked at home or in mobile units during the interim. Especially for groups impacted by both the 2010 and 2011

earthquakes (e.g. Methodist Mission) nontraditional outreach methods became the norm. TSOs dealing with youth (e.g. White Elephant) and elderly populations (e.g. Alzheimer's' Canterbury) noted that without their offices, clients were often deprived of places to socialize.

For organizations working with the economically marginalized (e.g. City Mission) displacement was particularly problematic because many housing units were uninhabitable. Despite widespread insurance coverage, rents in Christchurch were perceived to have increased, and for those with limited savings non-insured moving expenses and repairs exacerbated instability. The housing market in 2014 is now showing signs of recovery. Also by 2014 attention was focusing on rent gouging and tenants' rights to improved housing conditions in large cities throughout New Zealand (e.g. Tenants Protection Association).

Many social service TSOs took on additional consulting to navigate earthquake insurance issues and provide community meals in 2012 and 2013. For example, New Brighton Community Garden saw an increase in attendance as residents sought a place to interact. Friends of the Linwood Cemetery comforted families with connections to historic Christchurch by compiling oral histories and records in 2012 and 2013. Recognizing the importance of these connections to monuments lost in the earthquake, the City Council endeavored to reunite broken headstones with the appropriate plots going into 2014. Other organizations, however, saw a decrease in their clientele following the earthquakes. Meals on Wheels and the Pacific Trust reported in 2013 that their numbers were returning but not quite back to normal as a result of the 2011 earthquakes.

Even TSOs that disengaged after the response phase saw an impact on fundraising; World Vision, for example, reported decreased international disaster fundraising from areas outside of Christchurch due to donations sent for the earthquake, but within Christchurch donations increased because people could more easily relate. By 2014 organizations such as the Red Cross, and Parenting and Community Neighborhood Trust (PCNT) were phasing out earthquake specific programs and returning to their more traditional community roles. A new system of clustering small TSOs based on region, implemented by the Ministry of Social Development in 2014 for training and feedback on organizational effectiveness priorities, was noted by PCNT. An increased emphasis in planning was apparent in 2014, and technologic fixes, such as the cloud for data management in recovery, were reported by several organizations resulting directly from displacement and variable programmatic needs.

TSOs working with health and families in particular reported increased complexity of needs by their clients and continued restructuring to improve minority care. For example, a new initiative from February 2013 to June 2014 instigated by the 'All Right' campaign raised awareness of mental health impacts through sidewalk advertisement; a program that is now under review to better reach Pacific families. Rural Support Trust reported that although emotional states of farmers returned to pre-disaster levels faster than in the city, there was temporarily a heightened profile for their work long-term work with suicide prevention in rural populations through 2013. Increases in family violence were reported by all participating health TSOs regardless of direct mission (e.g. City Mission, Family Planning, Pacific Trust, etc.) in both 2012-2013 and 2014 indicating continued need for trauma counseling across Canterbury.

Unfortunately, small TSOs were not formally represented on CERA until late 2012 and only a limited number participated in the surveys of recovery efforts. Consequently, a number of recovery priorities voiced by TSOs as early as 2012 are still a concern including: green space, signage friendly to language impaired, gentrification, housing conditions, appropriate rents, youth spaces, and elderly accessible cityscapes. Special interest TSOs (e.g. Migrant Center and Mental Health Foundation) sent reports of lessons learned to Civil Defense and CERA by 2012 or 2013. Larger TSOs already operating in Christchurch experienced different reactions based on perception of their work; the Red Cross, for example, had representatives on emergency management committees in advance of the earthquakes and continues to be invited to recovery planning venues; World Vision, on the other hand, had to lobby to

provide assistance during the initial response period because its expertise in disaster response was perceived as being focused on developing countries. All interviewed TSOs collaborate with other TSOs and government agencies to prevent overlap and refer services readily. For example, the Christchurch District Health Board and Red Cross have begun dementia and Maori research respectively to improve sensitivity of future programs to minority groups.

Outside of the earthquake, several new policies have changed the way TSOs operate nationally. The Methodist Mission and PCNT report increased barriers to receipt of social assistance within Christchurch. Also revisions to the Crimes Act and Family Funded Care Act have altered reporting and care provision opportunities (Family Planning). In fact, niche health concerns, such as reproductive health, were not reportedly specifically addressed in recovery efforts, but rather relied on strong ongoing national campaigns around the issue to ensure continuation of services and disaster related supply provision.

Common vulnerability concerns of Christchurch-based TSOs expressed during interviews were rents and social assistance. The 2013 Census data indicate that median rents have risen 38.9 percent, renting has become 8.63 percent and social assistance 1.74 percent more common in Christchurch since 2006. The target audience of TSOs in Christchurch is also of interest as TSOs often emerge to address a community need. Dependent age groups (those 19 and under and 65 plus), women, and ethnic groups, however, have decreased -0.69 percent, -0.81 percent, and -1.40 percent respectively in the Christchurch City District. These trends are not alarmingly higher than national changes: 0.04 percent lower median rent, 2.25 percent higher numbers of renters, 5.55 percent lower social assistance, 0.26 percent lower dependent population loss, 0.67 percent lower female population, 0.21 percent higher ethnic population loss. Nevertheless, trends reported by TSOs may reflect more localized patterns, and increased vulnerability at the local level correlates with earthquake impact distribution.

Love (2011) states that damage to homes from the earthquake is found in pockets within each ward. Five wards have 2 percent or less damage, whereas, the most damaged wards have 5.6 percent and 6.6 percent damage. The average would, therefore, misrepresent local trends at 2.9 percent. Within the Christchurch City District, renters increased in 71 percent of wards, whereas female population increased in 57 percent of wards, social assistance increased in 57 percent of wards, ethnic groups in 43 percent, and dependent ages decreased in all wards. For example, 82 percent of area units saw an increase in ethnic groups, 37.6 percent in female population, 64.8 percent increase in renters, 53.6 percent in those receiving social assistance and 41.6 percent in dependent age groups. All of these factors should be integrated into geographic vulnerability analysis to determine if relocation required of TSOs and their target audiences following the 2010 and 2011 earthquakes has altered capacity of or demand for TSO services.

Weighting from Hutton et al. 2014 was derived from regional average weekly income discrepancies for individuals with vulnerable characteristics. Income rose fifteen percent for women in the region. Income rose 6.6 percent for those over 65 and 3.9 percent for those within working age 19 and under. This grouping was constructed using census data to explain vulnerability indicators but may overlook issues specific to youth or elderly populations. Since this is not in line with the regional average and TSOs are specifically concerned with age related issues, further analysis of shifts in these age groups follows: population ages 0-19 did not increase in any ward within Christchurch, Christchurch City District or New Zealand but increased in 20 percent of area units; population ages 65+ did not increase in any ward within Christchurch but did increase at the Christchurch City District level, in New Zealand, and 47.2 percent of area units. Similar discrepancies in regional income for ethnic groups, also grouped based on census data for use as a vulnerability indicator, require additional analysis as well based on reports from TSOs that groups are not being represented separately in recovery efforts. Ethnic groups as a whole rose in line with national income increases 17.0 percent and 17.1 percent respectively, but there were wide discrepancies between ethnic groups ranging from 17.9 percent increase for those classified as 'Other' to -28 percent for Middle Eastern Latin American African (MELAA) in Christchurch, and 19.5 percent for 'Other,' and no

change for Pacific Islanders nationally, which may also be amplified in smaller units of analysis (Statistics New Zealand Income 2014). Looking more in depth at ethnic population changes, all ethnic groups have increased in New Zealand and Christchurch City District except for those categorizing themselves as other. European, Pacific, and Asian ethnicities have increased in 71 percent of wards, MELLA in 86 percent and Maori in 57 percent. Ethnicity in area units were increased as follows: European up 67.2 percent, Maori up 60 percent, Pacific up 53.6 percent, Asian 56 percent, MELLA 52.8 percent and Other up 2.4 percent.

Figure 1 provides the national, district, and ward unit comparisons of TSO factor weighted, income factor weighted, and unweighted vulnerability scores. As seen in Figure 1, No wards were affected by both vulnerability indicators identified by TSOs or all three indicators weighted for income based purposes (gender, age, and ethnicity) indicating that vulnerability is factor specific on a small scale rather than a regional phenomenon. Three out of seven wards were affected by TSO based weighting whereas they were not impacted by income based weighting. Christchurch City District was impacted by one TSO based vulnerability component and New Zealand by both.

TSO based weighting affected ninety-one out of one hundred twenty-five area units. Both TSO weighted factors were evident in fifty-four area units. Income based weighting change was identified in sixty-two area units. Both income and TSO factors affected sixty area units. In Figure 2 area units are differentiated by what type of weighting if any influenced the vulnerability score. Figures 3 depicts the distribution of area unit vulnerability scores across the district.

Areas to the north east of the CBD show no or low increases in vulnerability. Areas on the outskirts of the CBD other than those in the south increased in vulnerability due to TSO identified factors, as seen in Figure 2. Whereas income alone affected areas to the south west even farther from the CBD. No weighting factors impacted the most outlying area units on the south west and north west corners of the map. In the CBD, or to the north east of the CBD no weighting contributed to the analysis.

Figure 3 shows that area units in the north west and west of the central business district (CBD) increased most in vulnerability score as well as those on the Banks Peninsula and Akaroa Harbor. To the south of the CBD area units reflected mid to upper range vulnerability as well. Areas on the west border of the district have relatively low vulnerability increase scores. Coastal areas north of the Peninsula show mid-range increased vulnerability scores including areas on the north coast of Lyttleton Harbor. Twelve area units had no vulnerability increases and only one area unit had the highest score with no area units of the second highest score indicating discrepancy in concentration of vulnerability increases. Further, there is a patch of mid range vulnerability increase above Lyttleton Harbor. Vulnerability increases to the north and west of the CBD is more of a mosaic. The most northern and southern area units in the district though show area units with high vulnerability right next to those with low vulnerability increase scores.

DISCUSSION

Relocation of TSO offices has affected only a fraction of the TSOs investigated and those which have been affected were able to relocate within a four mile radius of their original location. For some, damages increased collaboration through shared office space, but many are burdened by the need to support mobile units, in home office operations, and updated technology for data storage because of damages and limited access to former offices. As TSOs transition to more regular activities from response related outreach efforts, organizational effectiveness and strategic planning have become a priority to ensure that issues, such as access and cultural sensitivity of earthquake related programs, do not get left behind. Through partnerships within the third sector and with government entities developed before and after the earthquake the voice of the third sector has seen gains for tenure and mental health. Continued assistance for stressed TSO practitioners, attention to family violence, and assessment of appropriate representation is needed to capitalize of strong connectivity.

National, district, and ward level comparisons of weighting show that national attention received by some of the most pertinent issues for earthquake recovery in Christchurch are in line with broader national trends more so than income based vulnerability contributors that do not appear at all on the conglomeration district level. Area unit comparisons of different weighting reflect that TSOs have identified factors widely spread over the urban and coastal areas of Christchurch that address issues in more northern area units and along city outskirts than income based criteria alone. Perhaps TSOs are identifying compounding factors for many vulnerable areas and indicating where areas that previously did not experience vulnerability have begun to following the earthquakes.

Area unit vulnerability scores show that ward level analysis leads to over simplification of vulnerabilities. For example, on the Banks Peninsula, there are both high and low vulnerability increase scores but the ward has a mid-range score due to averaging. Further, Lyttleton Harbor is completely excluded from ward level analysis because it is represented by a community board rather than as a ward but has mid-range vulnerability scores. Although other wards reflect more of a mosaic of vulnerability, the distribution of vulnerability and vulnerability factors within them is needed for local TSOs with specific community concerns, limited funding, and outreach capacities.

CONCLUSIONS

Existing and emergent TSOs in Christchurch have risen to the challenge of maintaining business as usual and continue to evolve to the demands of a recovering city on their staff, organization, and clients. Although organizational improvements cannot be completely attributed to earthquakes as technology updates over time and strategic planning must account for national policy changes unrelated to the earthquake, some additional focus on reorganization was related to earthquake experiences. Mental health, community connectivity, and tenure issues have been greatly bolstered as a result of the earthquakes. Changes in the demographics of minority populations and livelihood expenses may show minimal difference on larger scales in terms of numbers or seem comparable to national trends, but TSOs are attuned to the needs of their communities' and must continue to champion access to family, age, and culturally appropriate health services as part of and beyond earthquake recovery. Especially, representation of small TSOs in recovery planning is low and may limit participation in national policy debates. Also, ethnic consulting must extend beyond Maori representatives to capture the variety of needs amongst all ethnic groups. In addition to income based analysis, the factors for which many TSOs address as part of their mission, TSOs surveyed suggest that additional weight should be given to rent and social assistance for vulnerability analysis. There was a strong commitment to capacity and resilience building voiced by TSO leadership and evident in increased collaborative efforts following the earthquakes. Through strong organizational effectiveness practices and amplified collaboration with government and private providers, TSOs can build capacity before upcoming disasters and contribute to a more resilient Christchurch. Response to increased winter 2014 flooding in areas where subsidence occurred reported (Red Cross and PCNT) exemplifies continuation of adaptation of services.

TSO identified compounding vulnerability factors, increased rents and difficulty in obtaining social assistance, are aligned with national trends although at the district level only one factor is evident. Wards of increased vulnerability concern may have been overlooked by income based analysis alone. Although rent and decreased social assistance may be relevant vulnerability factors for TSOs in Christchurch, the dissemination is not aligned with large political boundaries and may correlate more with catching up to a national trend with the earthquake as an instigator rather than a strictly earthquake related emergence. Although TSO and income based weighting showed some overlap, because TSOs may already address underlying marginalization factors, such as gender, age, and ethnicity, TSO based weighting, from factors specifically compounded by the earthquake aftermath, is more prevalent than income based in area units near the CBD, which may be due to short moves caused by earthquake damages and repairs. Low vulnerability increases and exclusion from weighting in the CDB may be due to dense development while

areas to the north east may be caused by red zoning of residential areas heavily impacted by ground movement during the February 2011 earthquake and deemed uninhabitable by CERA. Rezoning may also contribute to increases in vulnerability in suburbs to the north west and west of the CBD where residents of red zoned and businesses with demolished buildings in the CBD areas are relocating. TSOs in the south of the CBD reported shifted emphasis to earthquake related issues that may have bolstered vulnerability issues they had been addressing for a longer time. Other TSOs would suggest that a shorter term gentrification of urban areas near the CBD is at fault for the mosaic surrounding the east side of the CBD. There was also significant damage in the Port Hills and Lyttleton Harbor, correlating with increased vulnerabilities in that area but potentially attributable to coastal trends. Both income and TSO based indicators are evident along the coast of Akaroa Harbor as well. Investigation into coastal vulnerability beyond earthquake related increases is needed.

Other trends, including national economic downturn from before the earthquakes may account for some of the population shifts. Also, the seven year time frame between censuses, the latter delayed due to the impact of earthquake response on sampling, comprises a longer term of analysis than a typical census comparison for New Zealand of five years. Despite these complicating factors, it is evident that from four years before the first earthquake in September 2010 to two years after the 2011 earthquake, vulnerability has increased nationally and to some extent at the district and ward levels due to TSO based indicators. Area units, however, the finest level of analysis, are most useful for TSOs that may have relocated due to the proximity of new office locations to previous ones- within four miles of the original location. Further research is needed to determine long-term trends from past censuses, and to show variation in ethnic and age related vulnerability at the area unit level, and to identify the extent of vulnerability increases in each unit of analysis.

APPENDIX

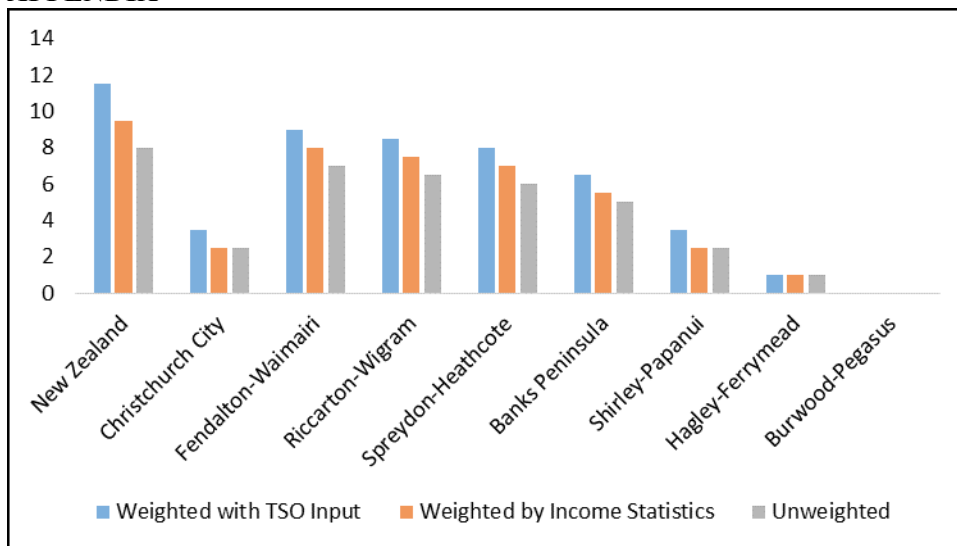


Figure 1: Weighted and Unweighted Vulnerability at National, District, and Ward Levels

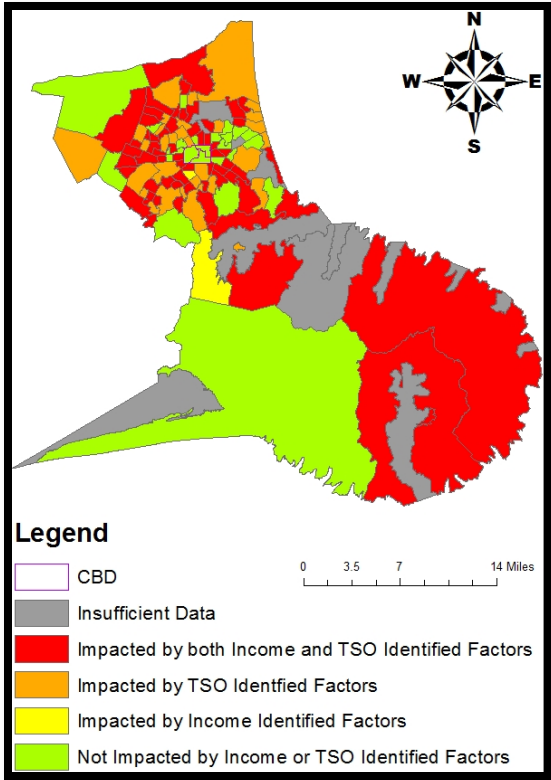


Figure 2: Area Unit Level Vulnerability Comparison of Income Based and TSO Based Weighting Impacts

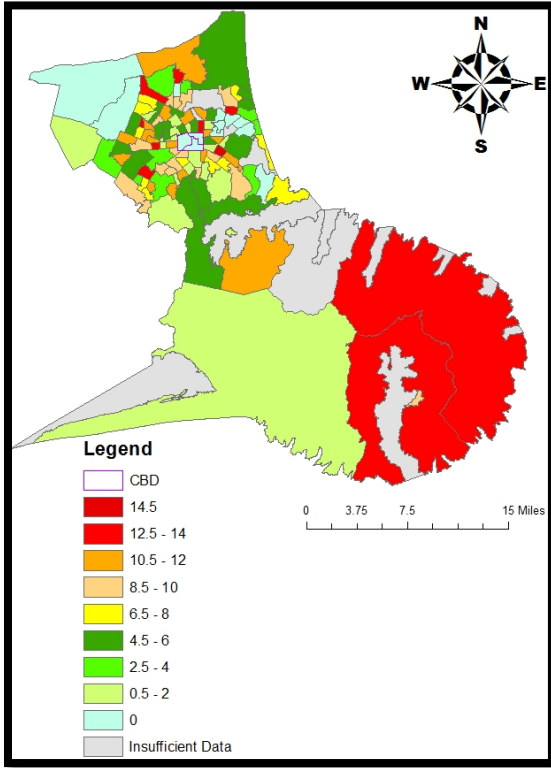


Figure 3: Area Unit Level Vulnerability with Income and TSO Based Weighting

REFERENCES:

- Ardagh, M. W. S. K. Richardson, V. Robinson, M. Than, P. Gee, S. Henderson, L. Khodaverdi, J. McKie, G. Robertson, P. P. Schroeder, J. Deeley. 2012. The Initial Health-System Response to the Earthquake in Christchurch, New Zealand, in February 2011. *The Lancet* 379: 2109-21115.
- Came, H. 2014. Sites of institutional racism in public health policy making in New Zealand. *Social Science and Medicine* 106: 214-220.
- Carlton, S. and S. Vallance. 2013. *An inventory of community led and non-governmental organizations and initiatives in post-earthquake Canterbury*. Natural Hazards Platform and GNS New Zealand, 199 pp.
- Christchurch City Council. 2014. Census 2006. <http://ccc.govt.nz/cityleisure/statsfacts/census/index.aspx> Last Accessed 4 June 2014.
- Christchurch City Council. 2014. Census 2013. <http://ccc.govt.nz/cityleisure/statsfacts/census/index.aspx> Last Accessed 4 June 2014.
- Cova, T. J., 1999: GIS in emergency management. *Geographical Information Systems: Principles, techniques, and management Second ed. Volume II*, P. A. Longley, M. F. Goodchild, D. J. Maguire, and D. W. Rhind, Wiley Inc., 845-858.
- Cutter, S. 2006. *Hazards, Vulnerability, and Environmental Justice*. Oxford, UK: Earthscan Publications Ltd.
- Dattani, P. 2012. Public value and performance management in third sector organizations. Third sector performance. G. Manville and R. Greatbanks. *Management and finance in not for profit and social enterprise*. London. UK: Ashgate Publishing Ltd.
- Emrich, C. T. 2005. *Social Vulnerability in United States Metropolitan Areas: Improvements in Hazard Vulnerability Assessment*. Doctoral Dissertation, University of South Carolina, pp. 209.
- Hutton, N. S., G. T. Tobin, and L. W. Whiteford, 2014: Third sector organizations, population dynamics, and changing vulnerabilities following the 2011 earthquake in Christchurch, New Zealand. *Papers in Applied Geography* 37: 279-288.
- Johnson, R., 2000: GIS technology for disaster and emergency management. White Paper, Environmental Systems Research Institute Inc., 6pp.
- Johnston, D. J. Becker, M. Coomer, S. Cronin, M. Daly, E. Doyle, S. Glassey, B. Glavovic, R. Houghton, M. Hughes, S. Johal, S. Jolly, G. Leonard, L. Patterson, P. Peace, W. Sanders, K. Stuart, R. Tarrant, H. Taylor, I. de Terte, L. Timar, R. Tuohy, K. Wright, D. Paton, S. Reese, K. Ronan, T. Wilson, 2011: Exploring elements of an effective recovery process. Proc. Of the Ninth Pacific Conference on earthquake Engineering, Auckland, NZ, NZSEE, 8pp.
- Lambert, S. and M. Mark-Shadbolt. 2012. *Maori experiences and expressions of leadership through the Christchurch Otautahi earthquake*. Proceedings of the 5th Biennial International Indigenous Development Conference, Auckland, NZ, pp. 242-247.
- Larner, W. and D. Craig, 2005: After neoliberalism? Community activism and local partnerships in Aotearoa New Zealand. *Antipode*: 402-424.
- Love, T. 2011. *Population movement after natural disasters: A literature review and assessment of Christchurch data*. Sapere Research Group Ltd., 26pp.
- Phibbs S. R., E. Woodbury, K. J. Williamson, and G. A. Good. 2012. Issues experienced by disabled people following the 2010-2011 Canterbury earthquake series: evidence based analysis to inform future planning and best practice guidelines for better emergency preparedness. *GNS Science Report* 2012/40.
- Statistics New Zealand. 2014. Income for all people by region, and total response ethnic group (2008 onwards). <http://nzdotstat.stats.govt.nz/wbos/Index.aspx?DataSetCode=TABLECODE7462> Last Accessed 28 August 2014.
- Tobin, G. A. and B. E. Montz, 1997: *Natural Hazards: explanation and Integration*. The Gulliford Press 388 pp.

Torstonson, S. 2014. *Connected*. Council of Social Services Christchurch. Plains FM Radio Broadcast Transcripts, Christchurch, NZ, July 2012 – March 2013.

Wisner, B., P. Blaikie, T. Cannon, and I. Davis, 2003: *At risk: Natural hazards, people's vulnerability and disasters*. 2nd Ed., Routledge, 471 pp.