

Third Sector Organisations and Earthquake Recovery Planning in Christchurch, New Zealand

Nicole S. Hutton and Graham A. Tobin, School of Geosciences, University of South Florida, and Linda M. Whiteford, Department of Anthropology, University of South Florida

Abstract

Following the February 2011 Christchurch earthquake, citizens increasingly turned to third sector organisations (TSOs) for social services. Spatial patterns of traditional vulnerability metrics from the 2006 and 2013 census were interpreted, based on surveys of local TSOs. TSOs were found to have maintained business as usual, and evolved to the demands the recovering city was making on their organisations and clients. Weighted vulnerability indices demonstrated that the vulnerability factors of renting and social assistance were identified by TSOs as being amplified by the earthquake. These raised vulnerability in 54 to 65 per cent of the area units in the Christchurch City District.

Keywords

Third sector organisations; vulnerability; recovery; New Zealand

Introduction

On 4 September 2010 an earthquake struck rural Canterbury, causing some damage and raising vulnerability concerns. This was followed by many aftershocks, the most deadly of which occurred on 22 February 2011 and devastated the city of Christchurch (Ardagh et al. 2012). Over 180 people died in the February event: buildings were destroyed, homes

wrecked and services compromised. The destruction of the central business district was particularly severe, with the iconic cathedral damaged and many hotels and businesses rendered unusable (Baird & Pampanin 2011; Johnson & Mamula-Seadon 2014).

Questions have arisen regarding population dynamics (Tobin 1999; Whiteford & Tobin 2009; Love 2011), marginalised groups, health care, social services and overall recovery efforts following disasters. Various non-profit, non-government and faith-based groups, collectively referred to as third sector organisations (TSOs), address some of these concerns (Hudson 2009). By providing an alternative to, and a backup for, government and private health and social services, TSOs build resilience following a natural disaster, identify and address unmet needs within their target populations, and maintain a sense of community within their operating areas (Oliver-Smith 1999). The nature of community recovery also changes the role of TSOs in formal and grassroots efforts over time (Bourk & Holland 2014).

In New Zealand, TSOs have shared community health burdens with government and private practices from the 1980s (Larner & Craig 2005), and championed healthcare policy measures for ethnic minorities (Came 2014). Formal TSOs promote community wellbeing through factors identified as priority areas of the Canterbury Earthquake Recovery Authority: health, safety, economic and environmental services (Nicholls et al. 2013; CERA 2015). TSOs in Christchurch incorporate voluntary groups, small and large civil society organisations, and shadow state organisations, and they represent a range of advocacy and service capacities similar to those identified by Carey and Ayton's (2013) *Not-for-profit Typology for Health Promotion* based on interactions within welfare states. There is also a significant contribution to community resilience from informal and indigenous associations (Vallance 2011; Kenny 2015), as well as connections with neighbours, family and friends, but this was beyond the scope of our research.

Vulnerable communities that typically rely on TSOs increase the burden on those organisations following a disaster, due to compounded or emergent needs. Without strong relationships between the third sector and the emergency management authority, it is difficult to

maximise resources and install a sense of local ownership for recovery (Parkin 2012). An inventory of ninety-two 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 emerged to address earthquake-related issues, other TSOs may have struggled to re-establish themselves outside areas with earthquake damage. Still others reported 'burn-out', and fifty-two became inactive or closed because of shifting needs during recovery (Vallance & Carlton 2013). Our research identifies shared experiences across formally organised TSOs in Christchurch City District to illuminate shifting areas of need based on vulnerability in mid- to long-term earthquake recovery.

Background

In many ways, the earthquakes of 2010 and 2011, along with the aftershocks, present a complicated picture of recovery, although there are synergies and challenges through which the involvement of the TSOs serving marginalised groups can be compared. Humphrey (2011) found resilience in the broader health community to be high following the February 2011 earthquake, as a result of proximity in time to the 2010 earthquake, practice drills for pandemic scenarios and interagency collaboration. However, in spite of 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 community networks (Johnston et al. 2011; Lambert & Mark-Shadbolt 2012; Phibbs et al. 2012). Furthermore, rebuilding efforts have displaced some organisations and altered the demographics of various suburbs (Stevenson et al. 2011).

TSOs can bring the voice of their sector and that of the communities they serve to government-based management bodies through advocacy and partnerships, which is certainly true in New Zealand. As TSOs in the country have become more integrated with government structures over the past two decades, advocacy and social service delivery strategies have become more organic and responsive to the political climate (Elliot & Hague 2013). The ability to interpret language and foster sensitivity to

marginalised issues positions TSOs to be intermediaries for those most affected by the earthquakes (Phillips & Smith 2012). Best practices in collaborative efforts following a disaster have been studied for a variety of disasters in New Zealand, showing that community involvement is crucial but gaps remain regarding the role of TSOs in community recovery (Johnston et al. 2011).

Following a natural disaster, when marginalised groups may have a heightened suspicion of government, TSOs ensure appropriate means of communications and service delivery (Tobin & Montz 1997). Further, TSOs in New Zealand engage in formal partnerships with the government through projects associated with health, education and minority issues, with some of the most impactful initiatives emerging from social mapping and mediation (Larner & Craig 2005). These types of partnerships are increasingly common in welfare governments and build resilience by increasing functional redundancy and community engagement (Phillips & Smith 2012).

The collaborative partnerships involving TSOs, governmental agencies and the private sector can impact human vulnerability at various levels. Indeed, such collaborative activities may counter some of the root causes and entrenched cultural norms that create vulnerabilities in the first place (Wisner et al. 2004; Parkin 2012). However, for TSOs, while government partnerships can reduce political barriers to care, they can also complicate practices by adding more stringent reporting requirements (Dattani 2012).

Geographic Information Systems (GIS) and other information-sharing technologies leveraged through partnerships offer tools to quickly assess changing demographics. These techniques may be used for supply mapping, identification of population shifts, and long-term education on chronic vulnerabilities (Cova 1999; Johnson 2000). Community input was used by emergency governance authorities in the initial response period to collect crowd data through aerial images and hence to identify damaged areas quickly (Barrington et al. 2011). The current research incorporates community data into analysis of recovery by using vulnerability factors, identified by TSO leadership, to determine

changing areas of marginalisation. These vulnerability factors, derived from census data, were mapped using GIS.

Methods

The goals of this study were twofold: i) to identify TSO managers' perceptions of vulnerability, based on complexities of care and operations; and ii) to assess geographically the implications of these perceived vulnerability contributors on traditional vulnerability metrics. An in-depth qualitative survey of formally organised 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. Originally, ninety-eight TSOs were selected, based on the primary mission of the organisation and continuation of local operations in Christchurch following the earthquakes, but ultimately only twelve participated. Christchurch has been an area of heavy research since the earthquakes, which may have reduced participation rates (Paton et al. 2015). Further, the abbreviated timeframe of the study prevented some organisations from participating. The TSOs' experiences recorded for this study, therefore, represent exploratory research into vulnerability trends that may impact the operations of the third sector more broadly.

The data from the self-conducted in-depth phone surveys were combined with transcripts of eleven Plains FM radio interviews conducted by Torstenson (2014) with local TSOs, broadcast between July 2012 and February 2014, to increase the quantity and diversity of the participants. One organisation, Council of Social Services, was included in both the survey and radio interviews, and provided a longer-term view of its operations. The temporal range of these interviews allows for a view of mid- to long-term recovery concerns. Themes were extracted from the collective responses to identify community vulnerabilities perceived by the third sector to have emerged as a result of the earthquakes.

Vulnerability maps of the Christchurch region were generated using GIS and were based on the criteria identified by local TSO leadership, with data weighted according to their perceptions of prevailing problems

reported in surveys and radio interviews. Vulnerability indicators were derived from Cutter’s (2006) social vulnerability index, a matrix of seventeen measures and adapted to the New Zealand context. Eleven of Cutter’s (2006) metrics were included: socioeconomic status, gender, age, ethnicity, employment loss, renting, occupation, family type, education, population and social dependence. These maps expanded upon vulnerability maps developed by Hutton et al. (2015), which identified the contribution of income-based vulnerability to marginalised populations in Christchurch. Accordingly, the area unit level of analysis was used for detailed geographic analysis and compared to district and national level changes.

A weighting factor was used to show areas of increased vulnerability, derived from demographic changes between 2006 and 2013 in the number of citizens identifying with factors associated with vulnerability (Christchurch City Council 2006; Christchurch City Council 2013). 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 were valued at one point. This weighting system was used to clearly identify the varying contributions of income and TSO-identified vulnerability factors, without obscuring the impact of traditional metrics. The weighting strategy reflects findings from Emrich (2005), that community-identified factors should carry additional weight. Further research is needed to determine long-term trends from past censuses, 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. TSO input was represented in the vulnerability formula as follows:

$$\begin{aligned} \text{Increased Vulnerability} = & \text{socioeconomic status} + (\text{gender} * 1.5) + \\ & (\text{age} * 1.5) + (\text{ethnicity} * 1.5) + \text{employment loss} + (\text{renters} * 2) + (\text{birth-} \\ & \text{place} * 0.5) + (\text{occupation} * 0.5) + (\text{family type} * 0.5) + (\text{\# children} * 0.5) + \\ & \text{education} + \text{population} + (\text{social dependence} * 2) \end{aligned}$$

The total possible vulnerability score for TSO-based weighting is 14.5.

Results

Interview and Transcript Comparisons

The majority of TSOs in Christchurch throughout the recovery process reported shared struggles originating from displacement and increased complexity of cases. Tables 1 and 2 hold the relevant response themes, as reported by TSO managers in the self-conducted survey and radio transcripts. Themes included: office relocation, reports of access issues received from clients, expansion of target population to meet post-disaster shifts in service demand, increased complexity of cases served, and changes made to outreach practices to maintain access and comprehensive service delivery.

Although office relocation directly affected just under half of the participants, access issues were reported by a majority of clients. Similarly, less than half of the participants reported expansion of their target populations as a result of the earthquakes, but the majority altered their outreach methods to maintain services. Despite variation within the third sector regarding how shifting demands were met, fifteen of the twenty-one interviews noted increased complexity of care provision. These trends indicated that vulnerability identified through increasingly complex cases that reported after the earthquakes were not just geographic in nature but had underlying socioeconomic causes.

The majority of participating TSOs collaborated with other TSOs and with government agencies to prevent duplication and to refer services as a part of modified outreach. For example, the Christchurch District Health Board and Red Cross were both researching dementia issues and Maori needs as an ethnic group of particular concern, due to the relevance of their agency capacity to recovery efforts and protection under the Treaty of Waitangi, respectively, to improve sensitivity of future programs to under-represented groups. Migrants Centre benefited from Maori agency connections as well as collaboration for combined response efforts under the Multicultural Council, which allowed them to address increasingly complex cases. The changing ethnic composition of the area was also a concern for family support and

Table 1 TSO manager responses to in-depth surveys

	Offices relocated	Clients reported access issues	Expanded target population	Cases increased in complexity	Outreach in methods changed
Family Planning		✓		✓	
298 Youth		✓		✓	✓
Neighbourhood Trust		✓	✓	✓	✓
City Mission		✓	✓	✓	✓
Avebury House		✓		✓	✓
Meals on Wheels				✓	✓
Rural Support Trust					✓
Project Lyttelton			✓		✓
Community Garden Association		✓	✓	✓	
Council of Social Services	✓		✓	✓	✓
Red Cross			✓	✓	✓
World Vision	✓		✓	✓	✓

Check marks indicate that the manager identified this theme as affecting the organisation as a result of the earthquakes.

health practitioners due to varying cultural norms regarding behaviour. However, as reported by Family Planning and 298 Youth, health concerns not directly related to mental health, such as reproductive health, were not 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.

Aside from the earthquake, partnerships contributed to maintenance of services and capacity to engage emergent audiences or address increased complexity of care by providing a continuous voice to TSOs in national policy forums. Several new policies changed the way TSOs operated at the national level shortly before and following the earthquakes. The Methodist Mission, the City Mission and Neighbourhood Trust,

Table 2 TSO representative responses recorded in Plains FM interviews

	Offices relocated	Clients reported access issues	Expanded target population	Cases increased in complexity	Outreach methods changed
Mental Health Foundation	✓				✓
Alzheimer's Canterbury		✓		✓	✓
Migrant Center	✓	✓		✓	✓
Pacific Trust	✓	✓		✓	
Methodist Mission	✓				✓
White Elephant Trust	✓	✓			✓
New Brighton Community Garden			✓	✓	✓
Friends of the Linwood Cemetery			✓	✓	
Tenants Protection Agency	✓	✓		✓	✓
Community House	✓	✓	✓		✓
Council of Social Services	✓		✓		✓

Check marks indicate that the representative identified this theme as affecting the organisation as a result of the earthquakes.

Source: Adapted from Torstonsen 2014.

for instance, reported increased barriers to receipt of social assistance within Christchurch.

Census Data Analysis

The most common vulnerability concerns of Christchurch-based TSOs expressed during interviews were rents and social assistance. The 2013 census data indicated that median rents in Christchurch since 2006 rose 38.9 per cent, and the percentage of people renting rose by 8.63 per cent. Similarly the percentage of those receiving social assistance increased

1.74 per cent. Dependent age groups (those nineteen and under, and sixty-five plus), women and ethnic groups, however, decreased (−0.69 per cent, −0.81 per cent and −1.40 per cent, respectively) in the Christchurch City District. These trends are not alarmingly higher than national trends: 0.04 per cent lower median rent, 2.25 per cent higher numbers of renters, 5.55 per cent lower social assistance, 0.26 per cent lower dependent population loss, 0.67 per cent lower female population, and 0.21 per cent higher ethnic population loss. Nevertheless, trends reported by TSOs may reflect more localised patterns, and increased vulnerability at the local level probably correlates with earthquake impacts.

Spatial Patterns

Love (2011) found that damage to homes from the earthquake appeared in pockets across Christchurch. Some suburbs had 2 per cent or less damage, whereas the most damaged areas had up to 6.6 per cent damage (Love 2011). Analysis of vulnerability at the area unit level illuminated the mosaic of geographic effects of and socioeconomic results of damages identified by Love (2011). Eighty-two per cent of area units increased in ethnic populations, 37.6 per cent in the female population and 41.6 per cent in dependent age groups all identified as increased vulnerability factors due to income in Hutton et al. (2015). In addition, 64.8 per cent of area units increased in renters, 53.6 per cent in those receiving social assistance, both factors identified as compounding vulnerability by TSOs. All of these factors were integrated into the weighted geographic vulnerability analysis to determine if TSO perception of marginalisation components from the 2010 and 2011 earthquakes was geographically significant (see Figure 1).

Vulnerability was factor specific on a small area scale, rather than as a regional phenomenon, reconfirming the findings of Hutton et al. (2015). Christchurch City District was impacted by one TSO-based vulnerability component, and New Zealand by both. TSO-based additional weighting of rents and social dependence affected ninety-one out of the total 125 area units. Both TSO weighted factors were evident in fifty-four area

Figure 1 Christchurch City District area units: increased vulnerability change – combined income- and TSO-based weighting, 2006 to 2013

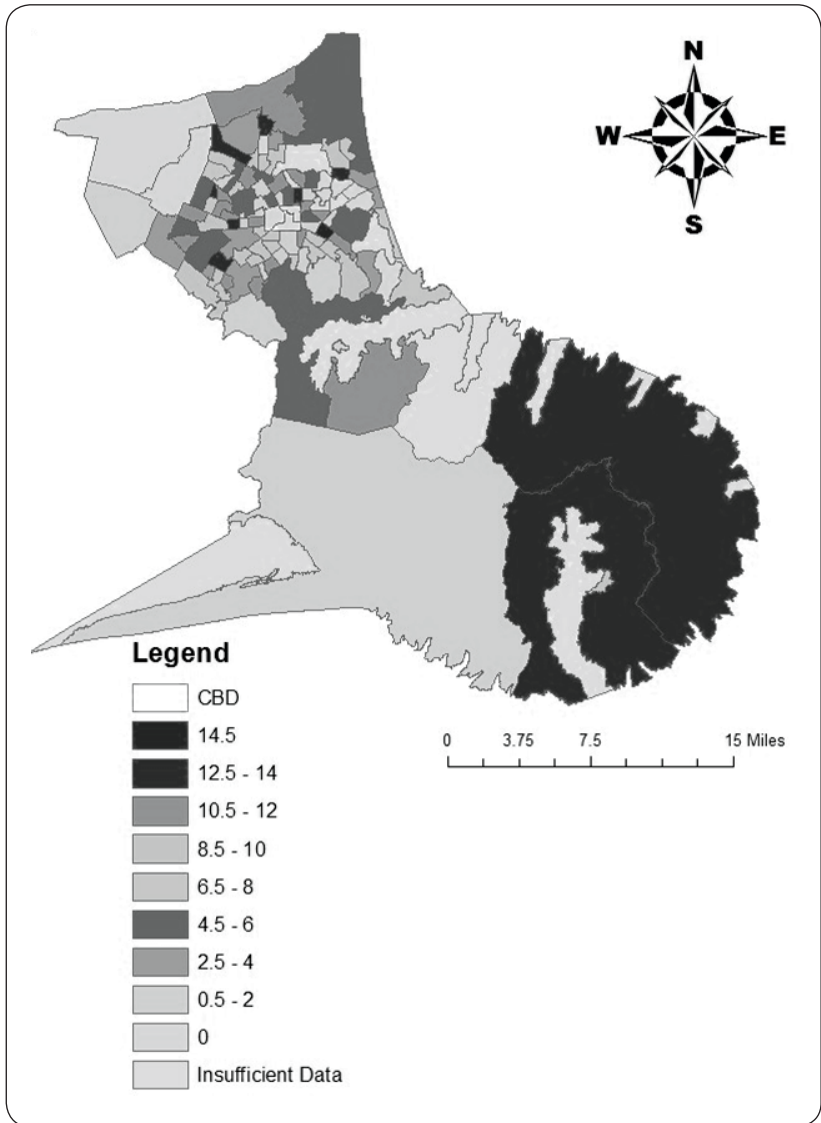
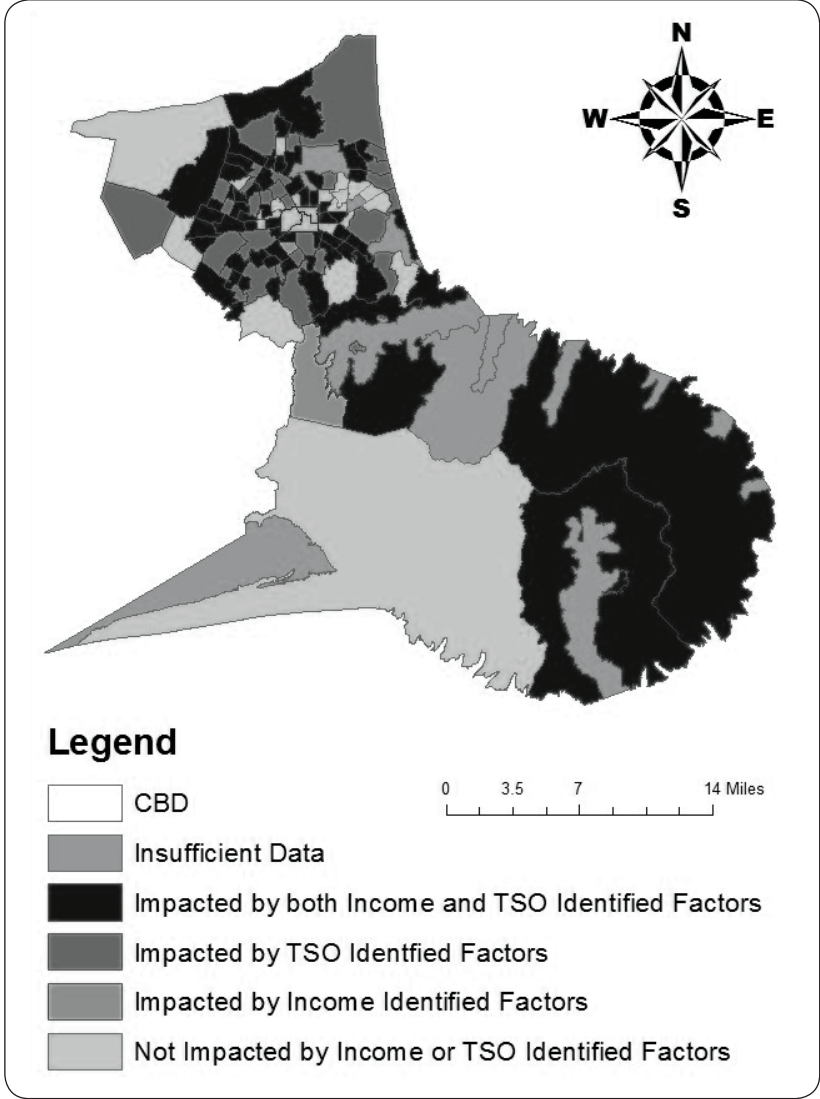


Figure 2 Christchurch City District area units: increased vulnerability change of income-based and TSO-based weighting impacts, 2006 to 2013



units. Income-based weighting change was identified in sixty-two area units. A combination of income and TSO factors affected sixty area units.

In Figure 2, area units were differentiated by the type of weighting, if any, which influenced the vulnerability score. This comparison indicates which areas experienced marginalisation that was evident based on the difference in their income, the advocacy priorities of TSOs, both or neither. TSOs addressed factors contributing to marginalisation prior to the earthquakes, but newly marginalised groups and compounded vulnerabilities for previously marginalised groups emerged due to the earthquakes. Areas impacted by TSO-identified factors may have indicated earthquake-related emergence of marginality. Areas with both income- and TSO-related factors impacting their vulnerability indicated compounded pre-existing vulnerability.

Figure 1 depicts the distribution of weighted area unit vulnerability change across the Christchurch City District. Areas to the north-east of the Christchurch central business district (CBD) showed no or low increases in vulnerability between 2006 and 2013, in part due to the red zone. Area units in the north-west and west of the CBD increased most in vulnerability score between 2006 and 2013, 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 had relatively low vulnerability increase scores. Coastal areas north of Banks Peninsula showed mid-range increased vulnerability scores, including areas on the north coast of Lyttelton Harbour. Further, there was a patch of mid-range vulnerability increase above Lyttelton Harbour.

Vulnerability increases to the north and west of the CBD showed more of a mosaic. The northernmost and southernmost area units in the district, though, exhibited area units with high vulnerability right next to those with low vulnerability increase scores. Twelve area units had no vulnerability change 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.

Areas on the outskirts of the CBD to the south-west, south-east and west, where businesses and residential demands were directed due to

damages in the CBD and the surrounding suburbs to the north-east, increased in vulnerability, as defined by TSO- and income-identified factors (see Figure 2). Areas in the east and north also reflected increased vulnerability based on change in vulnerable populations indicated by TSO- and income-based weighting, due to their proximity to the red zone. Further, Lyttelton Harbour and the Port Hills, to the south-east of the city, were impacted by both vulnerability identifiers. The east, a traditional area of poverty (Conradson 2008), on the other hand, had some areas with only TSO-identified and others with both types of vulnerability contributors evident. Whereas income alone only affected areas to the south, further from the CBD, no weighting factors impacted the most outlying area units on the south-west and north-west corners of the map, perhaps due to the more rural nature of these outskirts.

Discussion

Interview and Transcript Comparisons

For TSOs whose offices were damaged, permanent spaces were just becoming accessible in 2014, with many having established offices at home or in mobile units in the interim. For some, damages increased collaboration through shared office space, but many were burdened by the need to support mobile units, in-home office operations and updated technology for data storage, such as usage of the cloud, because of damages and limited access to former offices; other organisations saw that process as parallel to the earthquakes. Methodist Mission, which was damaged in both the 2010 and 2011 earthquake, reported that especially for groups impacted by both earthquakes, non-traditional outreach methods became the norm. Both youth- and the elderly-focused TSOs, including White Elephant and Alzheimer's Canterbury, respectively, noted that without their offices, clients were also deprived of places to socialise (Torstonson 2014).

For the City Mission and many organisations working with economically marginalised individuals, displacement was particularly problematic because many housing units were uninhabitable. Large

residential areas within the city were placed in the red zone, meaning that dwellings were to be razed. Perhaps not surprisingly, rents in Christchurch were perceived to have increased, and for those with limited savings, non-insured moving expenses and repairs exacerbated the instability.

The housing market in 2014 was showing signs of recovery. Also, by 2014 TSOs were able to provide quantitative advocacy efforts to attract government attention to rent-gouging and tenants' rights. As a result of long-term commitments by local community-based TSOs, and by nationally connected advocates with local offices, such as the Tenants Protection Association, improved housing conditions in large cities in Christchurch and throughout New Zealand became a policy priority (Torstonson 2014).

Organisations almost unanimously described increased stress on staff who were dealing with their own recovery as well as serving the community, as evidenced by an increased complexity of cases. Further, many social service TSOs, including the City Mission and Neighbourhood Trust, took on additional consultants to navigate earthquake insurance issues and provided community meals in 2012 and 2013. Further, 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. Recognising the importance of these connections to monuments lost in the earthquake, as 2014 began the City Council was endeavouring to reunite broken headstones with the appropriate plots (Torstonson 2014).

Elderly-focused organisations, such as the Avebury House and Neighbourhood Trust, increased their community outreach following the earthquakes to address increases in reported loneliness of older residents. Other organisations, 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 still not quite back to normal (Torstonson 2014).

TSOs working with health and families, in particular, experienced increased complexity of needs from their clients and continued

restructuring services to improve care for minorities. For example, a new initiative from February 2013 to mid-2016, instigated by the 'All Right' campaign, raised awareness of mental health impacts through sidewalk advertisement – a program that was under review at the time of the study to reach a wider range of ethnicities. Rural Support Trust reported that although the emotional states of farmers returned to pre-disaster levels faster than those of city residents, there was temporarily a heightened profile for their long-term work with suicide prevention in rural populations through 2013.

Increases in family violence were reported by all participating health TSOs, regardless of their direct mission: Family Planning, 298 Youth, the City Mission and Neighbourhood Trust in both 2012–2013 and 2014 indicated a continued need for trauma counselling across Canterbury. Successful advocacy campaigns and capacity to refer complex mental health cases to appropriate resources after presentation at health- and community-focused TSOs was perceived by participating TSO managers to bolster wellbeing awareness following the earthquakes.

Larger TSOs already operating in Christchurch experienced engagement opportunities based on perceptions 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.

Small TSOs were not formally represented on the Canterbury Earthquake Recovery Authority until late 2012, despite increased outreach efforts to the emergency authority and local government. Only a limited number participated in the initial government-based surveys for recovery planning. Special-interest TSOs, such as Migrant Centre and Mental Health Foundation, sent reports of lessons learned to Civil Defence and CERA in 2012 or 2013 to directly address their issues (Torstonson 2014). However, a number of recovery priorities voiced by TSOs as early as 2012 were still perceived as an outstanding concerns in 2013 and 2014; these included green space, signage friendly

to the language-impaired, gentrification, housing conditions, appropriate rents, youth spaces and elderly accessible cityscapes (Torstonsen 2014).

As TSOs transitioned outreach to more regular activities from response efforts, access to services by marginalised groups and cultural sensitivity of earthquake-related programs was not left behind. Response to increased winter 2014 flooding in areas where subsidence occurred by the Red Cross and Neighbourhood Trust exemplified continued adaptation of services.

Census Data Analysis

National and district-level comparisons of weighting showed that the national attention received by some of the most pertinent issues for earthquake recovery in Christchurch were in line with broader national trends, more so than income-based vulnerability contributors, which did not appear at all at the district level. Area unit comparisons of different weighting reflected that TSOs identified factors widely spread over the urban and coastal areas of Christchurch that addressed issues in more northern area units and along city outskirts than income-based criteria alone. TSOs recognised compounding factors for many vulnerable areas with pre-existing vulnerable populations that comprised their baseline target population through increased presentation of complex cases and indicated marginalisation expansion following the earthquakes based on increased demand for services.

Spatial Patterns

Although TSO- and income-based weighting showed overlap in fifty area units (because TSOs may already address underlying marginalisation factors, such as gender, age and ethnicity), one of both TSO-based weighting from factors specifically compounded by the earthquake aftermath was prevalent in ninety-one area units and income-based in only sixty-two 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 have resulted from dense development, while areas to the north-east were affected by

red zoning of residential areas. Rezoning may also have contributed to increases in vulnerability in suburbs to the south-west and west of the CBD, where residents of red-zoned areas and businesses with demolished buildings in CBD areas temporarily relocated. TSOs in the south of the CBD reported a shifted emphasis to earthquake-related concerns that may have bolstered vulnerability issues they had been addressing for a longer time. Other TSOs suggested that a shorter-term gentrification of urban areas near the CBD was at fault for the mosaic surrounding the east side of the CBD. There was also significant damage in the Port Hills and Lyttelton Harbour, correlated 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. Coastal vulnerability changes beyond earthquake-related increases are evident.

Other trends, including national economic downturn prior to the earthquakes, may account for some of the population shifts (Pierpiekarz et al. 2014). Also, the seven-year gap between censuses, the latter of which was delayed due to the impact of the 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 was evident that from the first earthquake in September 2010 to two years after the 2011 earthquake, vulnerability increased nationally and to some extent at the district level, as demonstrated by the TSO-based indicators. Area units, however, the finest level of analysis, were most reflective of TSO-identified vulnerability factors and, consequently, most useful for TSOs whose target population reported access issues.

Conclusions

TSOs in Christchurch rose to the challenge of maintaining business as usual, and continue to evolve to meet the demands the recovering city was making on their organisations and clients. Although organisational 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 reorganisation of outreach was related to earthquake experiences.

Through ongoing advocacy within the third sector and with government entities, the voice of the third sector leveraged gains for tenants and mental health. Continued services for complex mental health needs, assessment of appropriate representation and quantitative data sharing is needed to capitalise on strong cross-sector connectivity in Christchurch. Representation of small TSOs in government-formed recovery planning forums further reflected the need for collective advocacy by the third sector. In particular, ethnic consulting by trusted TSOs must be incorporated into planning beyond Maori representatives to capture the variety of needs amongst non-indigenous ethnic groups.

TSO-identified compounding vulnerability factors, increased rents and difficulty in obtaining social assistance aligned with national trends, although at the district level only rent was evident. Rent and decreased social assistance may be relevant vulnerability factors for TSOs' communities in Christchurch, but the dissemination was not fully 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.

TSOs, however, were attuned to the needs of their communities' at the area unit level of analysis, and must continue to champion underlying factors of marginalisation, such as access to family-, age- and culture-appropriate health services, as part of and beyond earthquake recovery. In addition to income-based vulnerability, the factors which many TSOs address as part of their mission, the TSOs surveyed suggested that additional weight should be given to rent and social assistance for vulnerability analysis. These factors were found to contribute to vulnerability in 54 to 65 per cent of the area units in the Christchurch City District, and overlap with income-based vulnerability in 40 per cent of area units. Additional research is needed to determine appropriate weighting schemes for community-identified vulnerability factors. Through quantitative communication of shifting realities of their target populations and amplified collaboration with government providers,

TSOs can build community capacity before upcoming disasters and contribute to a more resilient Christchurch.

These recommendations reflect the variances in TSO and government organisational cultures and will help build better partnerships for long-term service provision outside of natural disaster scenarios, through resource sharing based on mutual understandings of vulnerabilities. In other developed urban areas, the resources and connections of TSOs should be considered when allocating representation in planning authorities and assessing vulnerability contributors to improve utilisation of local knowledge in decision-making.

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ABOUT THE AUTHORS

NICOLE S. HUTTON is a graduate student in the School of Geosciences, University of South Florida, 4202 E. Fowler Ave (NES 107), Tampa, FL 33620 USA. Her research interests include natural hazards and demography. Email: nhutton@mail.usf.edu.

GRAHAM A. TOBIN is a professor in the School of Geosciences, University of South Florida, 4202 E. Fowler Ave (NES 107), Tampa, FL 33620 USA. His research interests include natural hazards and water resources. Email: gtobin@usf.edu.

LINDA M. WHITEFORD is a professor in the Department of Anthropology, University of South Florida, 4202 E. Fowler Ave (SOC 107), Tampa, FL 33620 USA.. Her research interests include policy analysis and evaluation, disasters and health, global health, and humanitarian ethics. Email: lwhiteford@usf.edu.