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A Research on the Significance of Migrants' Social Capital in Disaster Risk Reduction and Recovery

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ABSTRACT

The study focuses on migrants (foreign residents) in instances of large-scale disasters. It addresses the key question: *How does the social capital of migrant collectives relate to the disaster risk reduction and recovery of their communities?* This research establishes that social capital is the intangible resource found in people`s social connections and interactions. This has been validated for a specific population during disasters, which are the migrants (foreign residents). Commonly perceived vulnerable groups during disasters, migrants are found to have capacities available through their existing (and potential) social relationships with individuals and institutions, to respond and improve their resilience in disasters.

Using combined qualitative and quantitative research instruments, it establishes the significance of migrant social capital in disasters through the development of three independent yet related studies. An initial study of social capital during disasters looked at the social connections of affected residents of Typhoon Haiyan (2013) in Tacloban City, Leyte, Philippines. Then, a qualitative study of Filipinos (foreign students and residents in Kesennuma City) during the 2011 Tohoku Earthquake, was made to identify the vulnerabilities and capacities specific to migrants. The former study established that disasters affect and alter people's social connections and relationships; while the latter confirmed that migrants' social connections are valid sources of disaster resilience. Combining the results from the first two studies, the third stage identifies the patterns and trends in disaster social capacities through a migrant-specific social survey to foreign residents in Sendai City. This chapter confirmed that pre-disaster social contacts are the sought connections during disasters, and post-disaster participations account as spaces to enhance social connections.

The study presented that migrants` social capital redefines familial and social relationships found in the porous boundaries of their *bonding* and *bridging* social capital. Also, migrant *linkages* provided opportunities to better access resources and information in occurrences of disasters. The permutations of these forms of social capital reveal the substantial social actors that defines their resilience to risk, engagement in recovery, and disaster risk reduction inclusion.

Keywords: *migrants, social capital, disaster risk reduction, disaster recovery*

A Research on the Significance of Migrants' Social Capital in Disaster Risk Reduction and Recovery

by

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This research is dedicated to all migrants (foreign residents) who move to their new homes (temporarily or permanently) all across the world.

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Lisette R. Robles
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CHAPTER ONE

INTRODUCTION TO THE STUDY

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Overview

Overview

Over the changing times, mankind continuously faces the challenges and predicaments from its irreversible evolution and development across time. Among the challenges confronted are the natural disasters that brought about certain alteration to human existence. However, these (disasters) are not mere realities of the present time. We have constantly been plagued by numerous natural calamities more than what can be filled in compendiums of disasters recorded. Based on the EM-DAT International Disaster Database, trends in reported natural disasters from 1900-2015 showed that the accumulated disasters started to escalate in the late 1940s. This includes earthquakes, floods, storms, drought and epidemic among others. The year 2000 has the most number of recorded catastrophes with a total of 527 identified disasters.

Concurrent to this, disasters continue to be expensive. In 2011, the total economic damage reached 364.093168 billion USD while having only 361 recorded disasters. Similarly, a geographic-based

perspective presented how the trends in disasters by continent showed that as early as the 1940s disasters continuous to increase affecting the 5 key geographic regions: Africa, Asia, Americas, Europe and Oceania. Asia had experienced the most number of disasters across the last five decades.

The successive instances of large-scale disasters globally led to an intense focus on forging policies and solutions to mitigate and recover from catastrophes. While disasters are perpetual occurrences across our lifetime, the escalating damages and concurrent impacts to every aspect of humanity led to such urgent considerations.

1. Migrants in disasters

With the emergent attention to the rise of catastrophic events, the infinitesimal theme on the role of vulnerable population in disaster is gradually taking prominence. Earlier researches had examined the notion that some groups in society are more prone than others to damages, losses, and sufferings in the context of differing hazards (Blaikie, et al. 2003). Inherent characteristics such as class, caste, ethnicity, gender, disability, age or seniority among others may have profound effects on the degree of impact and damage incurred. The combinations of these traits position migrants among the vulnerable population during disasters.

Both natural and manmade disasters impact nations, transgressing national boundaries, and thus becoming a concern for everyone. In looking at these disasters and its adverse effects and changes it makes to the lives of people, and how it alters the social structure of communities and even states; the particular concern for migrants and how they cope and survive disasters has not been fully explored. At this age of globalization and interconnectivity, migrants contribute to the socio-economic conditions and even to the social fabric of places to which they integrate. Thus, to look at how migrants address and mitigate disasters provides a promising point of entry to other pertinent issues of modern living.

Over the years, despite the economic and financial crisis, global migration continues to rise. Based on the UN Department of Economic and Social Affairs Population Division, trends in international migrant stock for 2015 included 243,700,236 persons moving across countries for various reasons such as personal safety, economic development or any further enhancement leading to an aspired upward social mobility. This increase in the number of people traversing countries becomes an important concern in disaster risk reduction and recovery. The International Organization for Migration (2012) emphasized that non-nationals, especially migrant workers and their families, have often remained invisible and thus not been accounted for humanitarian response mechanisms. Migrants are often time neglected in times of crises: either in areas of conflict or during disasters.

Parallel to the demands of the changing times, theoretical researches and real-life practices had been gradually recognizing the need to create more pro-active and inclusive policies to better integrate stakeholders in a more sustainable implementation of disaster risk reduction and recovery activities. Migrants are often found vulnerable to disaster risks and often times perceived as victims, because of certain limitations that may include language, limited rights, social protection, support or political recognition. Nevertheless, migrants may have distinct capacities to deal with and respond to disasters.

> *Diaspora groups make a major contribution to the disaster response, both directly through financial contributions as well as mobilizing strategic political action. The degree to which they are able to do so depends on their own socio-economic status and the extend to which they continue to identify with their homeland.* (International Organization for Migration 2007)

The recent trends showed the shift in perspective to situate disaster stakeholders in an empowering position. From the Hyogo Framework for Action (HFA) 2005-2015, focused on *building resilient nations and communities to disasters*; there was no direct mention of migrants and their role to mitigate the problem. However, migrants are implied as part of the *vulnerable groups* that were identified significant in planning for disaster risk reduction as appropriate (United Nations International Strategy for Disaster Reduction 2007). Over the changing times and evolving mobility of people, migrants emerge as significant consideration in the area of disaster risk reduction. In the 2015 3rd UNISDR World Conference on Disaster Risk Reduction (WCDRR) in Sendai City, the newly formulated framework specifically acknowledged *migrants* as essential stakeholders in reducing disaster risks:

> *(vi) Migrants contribute to the resilience of communities and societies and their knowledge, skills and capacities can be useful in the design and implementation of disaster risk reduction.* (Sendai framework for disaster risk reduction 2015 - 2030 2015)

This study explores these capacities of migrants that can potentially reduce their vulnerability, and thereby increase their resilience. More specifically, it probes into the intangible resource of *social capital*. While it remains a subject of contention as to its actual value, this study provides a more specific avenue to understand and see how these (re) established connections operates as a significant resource in times of catastrophic condition.

2. Social capital in the disaster context
Social capital had been repetitively emphasized in literatures parallel with *connections* and *networks*. Earliest identified study on social capital was by Lydia J. Hanifan (1916) referring to goodwill, fellowship, sympathy and social intercourse among the group of individuals and families in the

context of community participation in school performance. Since then, a gradual stream of scholars followed from the 1950s to 1970s by urban sociologists (Seeley, Sim and Loosely 1956), an exchange theorist (Homans 1961), an urban scholar (Jacobs 1961), and an economist (Loury 1977) explored this notion of social capital.

In the discussion on the significance of people`s connection as an intangible resource, social capital emerged as an important core concept. The more contemporary utilization of the social capital concept revolves in the importance of social connections/networks and its structure, and the dynamics in these relationships. Bourdieu (1985) considers social capital as the aggregate of actual or potential resources linked to a more or less institutionalized relationship of mutual acquaintance and recognition. Thus, this provides a collectively owned capital (*credential*) that entitles its member to credit. Coleman (1988) defined and used social capital in terms of its function. Social capital is understood to be a variety of entities with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors within the structure. Putnam (2000) expounds on social capital as the ''connections among individuals social networks and the norms of reciprocity and trust-worthiness that arise from them''. These are just among the popularized adapted definitions of social capital. The application of social capital reaches the more practical realms of various social and developmental institutes. The World Bank (Woolcock and Narayan 2000) used social capital to refer to institutions, relationships, and norms that shape the quality and quantity of a society's social interactions. Increasing evidence shows that social cohesion is critical for societies to prosper economically and for development to be sustainable. Social capital is not just the sum of the institutions, which underpin a society – "*it is the glue that holds them together*". Likewise, the Policy Research Initiative (2005) defines it as the networks of social relations that may provide individuals and groups with access to resources and supports.

As observed from the diversity of scholars looking at social capital, it confirms how the concept lends itself to the application in several disciplines and the range of approaches to fit its conceptual framework (Grootaert and van Bastalaer 2002). Hence, social capital as a theoretical concept represents an idea that encapsulate the significance of networks, connections and social relations; while opening itself to its applicability to a variety of disciplines.

2.1 Perspectives

The idea of social capital as a resource made it easily identifiable as an economic entity. Woolcock and Narayan (2000) discussed this development of social capital perspectives on the basis of economic development (see Table 1). The *communitarian view* perceives social capital to be inherently good, existing across the local level of organization. Though this creates a positive effect to the community welfare, it hinders the development of the community (Portes and Landolt 1996,

Rubio 1997). The assumption of a homogenous community creating high level of solidarity may not necessarily translate to economic development. Certain consequences of homogeneity such as colonialism, corruption, geographical exclusion, political exclusion and social polarization may cripple the expected effect.

The importance of the vertical and horizontal relations and associations defines the *network view*. Adapting from the works of Burt (2000), Portes (1998), and Massey (1998), this view is seen as a double-edged sword, providing a range of valuable services yet coming with a cost. On a community level, intra-community creates stronger bonds while the inter-community makes weaker bridges. Thus, social capital need to distinguished from the consequences that can be derived from them. The *institutional view* looks at social capital from the role and significance of the state. The community networks and civil society are largely the products of the political, legal and institutional environment. This perspective addresses macro-level policies, leaving behind the micro component that is also an important source that can be greatly affected by weak public institutions, mainly the poor.

Table 1. Summary of social capital perspectives
(Adapted from Woolcock and Narayan 2000; Massey 1998)

View	Description	Advantage	Disadvantage
Communitarian	Social capital is inherently good.	Creates positive effect to the community.	High level of solidarity does not necessarily translate to economics
Network	The importance of vertical and horizontal relations/ associations	Provides a range of valuable services for the community.	Sources of Social Capital need to be distinguished from the consequences derived from them.
Institutional	Community networks and civil society are largely the product of the political, legal and institutional environment	Addresses the MACRO policy concerns	Neglected the MICRO components
Synergy	Integrating the network and institutions	It is based on complementary and embeddedness between the citizen and the state.	The relation between the state and society can lead and degenerate to conflict, violence, war or anarchy.

The fourth perspective integrates the networks and institutions - the *synergy view*. Peter Evans (1992, 1995, 1996) sees the synergy between the government and the citizen action based on complementary (the mutually supportive relations between the public and private actors) and embeddedness (nature and extent of ties connecting the citizen and the public). The main goal is inclusivity; thus rather than citizens OR institutions, citizens AND institutions is encourage. However, this relation between the state and society should be taken cautiously as it can lead and degenerate to conflict, violence, war or anarchy as non-state entities (i.e. warlords, local mafias, and guerillas) become substitutes for power and authority (Woolcock and Narayan 2000).

In the disaster scenario, each perspective provides a substantial view on how social capital operates. From a communitarian view, Yamamura (2014) identified the correlation between social capital such as social networks and community participation, and how it contributed to the prevention and resilience to natural disasters by looking at 1995 Kobe earthquake and the development of volunteerism among the residents of the affected areas. Nakagawa and Shaw (2004) mainly explored the role of social capital in the post earthquake rehabilitation and reconstruction programs in two cases: Kobe, Japan and Gujarat, India. A network view prevailed to look how disaster management was implemented in both cases. Findings showed that in every stage of the disaster cycle (rescue, relief, and rehabilitation) the communities played the most important roles among other concerned stakeholders, with social capital and leadership in the community as basic attributes, universal in nature, irrespective of the development states of the country. Minamoto`s (2010) quantitative analysis on the livelihood recovery in post-tsunami Sri Lanka revealed the importance of formal networks, leadership and trust in community organization as important factors in livelihood recovery. This institutional perspective on social capital showed how newly established post-tsunami community was the source of the dark side of collective action from semi-forced participation. A synergistic view of social capital was implied in the study by Chamlee-Wright and Storr (2011). It showed how social capital in the form of collective narratives was leveraged to overcome post-disaster rebuilding. The narratives of non-state collective of Mary Queen Viet Nam (MQVN) community (an American-Vietnamese collective) in New Orleans showed how recovery strategy adopted by community members will depend on the resources that they can access, their expectations about their community's prospects for recovery, and community-level collective narratives. The goal of the group was not to overpower state entities but to create a voice for a migrant collective as they recover and rebuild.

2.2 Typology
The four perspectives provided a range of options on how to understand and analyze social capital. In the same way, social capital categories matter to properly comprehend the perspective it is utilized. Two common segregation of social capital were on the basis of its forms (Uphoff 2000, Uphoff and

Wijayaratna 2000) and the type of networks (Policy Research Initiative 2005, Narayan and Pritchett 1999, Aldrich 2012a).

The structural and cognitive forms categorized the social capital based on the type of contribution to the *mutually beneficial collection action* (MCBA) of the community (Uphoff 2000). The structural category looks at the importance of *roles, rules, precedents*, *procedures* and *networks* in the way people establish social interactions. It is fairly understood that networks and these established rules of relations defines the dynamics of social capital. On the contrary, the cognitive form categorically describes the existence of *norms, values, attitudes* and *beliefs* that encourage the people to cooperate and participate. While the structural forms *facilitate* MBCA, cognitive social capital is *conducive* for MCBA (Uphoff and Wijayaratna 2000). Cognitive social capital is intrinsic to people`s sense of values and attitudes, yet it necessitate the externally produced social norms to collectively execute a productive action.

The structural category, specifically the significance of social networks had been a popular trend in the analysis of social capital, including in disaster research (Burt 2000, Lin 1999, Woolcock and Narayan 2000, Nakagawa and Shaw 2004, Airriess, et al. 2008, Aldrich 2012a). These literatures capitalized on the importance of structures observed in the established social connections and networks among individuals and groups. Nonetheless, there is no clear demarcation between the structural and the cognitive. More so, the cognitive form compliments the more subjective composite of social capital (Narayan and Cassidy 2001, Newton 2001, Torche and Valenzuela 2011, Fukuyama 2001).

Social capital can also be classified based on the established relations between social actors. Fig. 1 shows a graphical representation of the typology of social capital to visualize the position and access they have among the various actors in their social network. Specific to this study, it intends to identify the social actors within/across these networks and connections in the context of a disaster scenario. More so, it looks at a particular population of concern, such are the migrants.
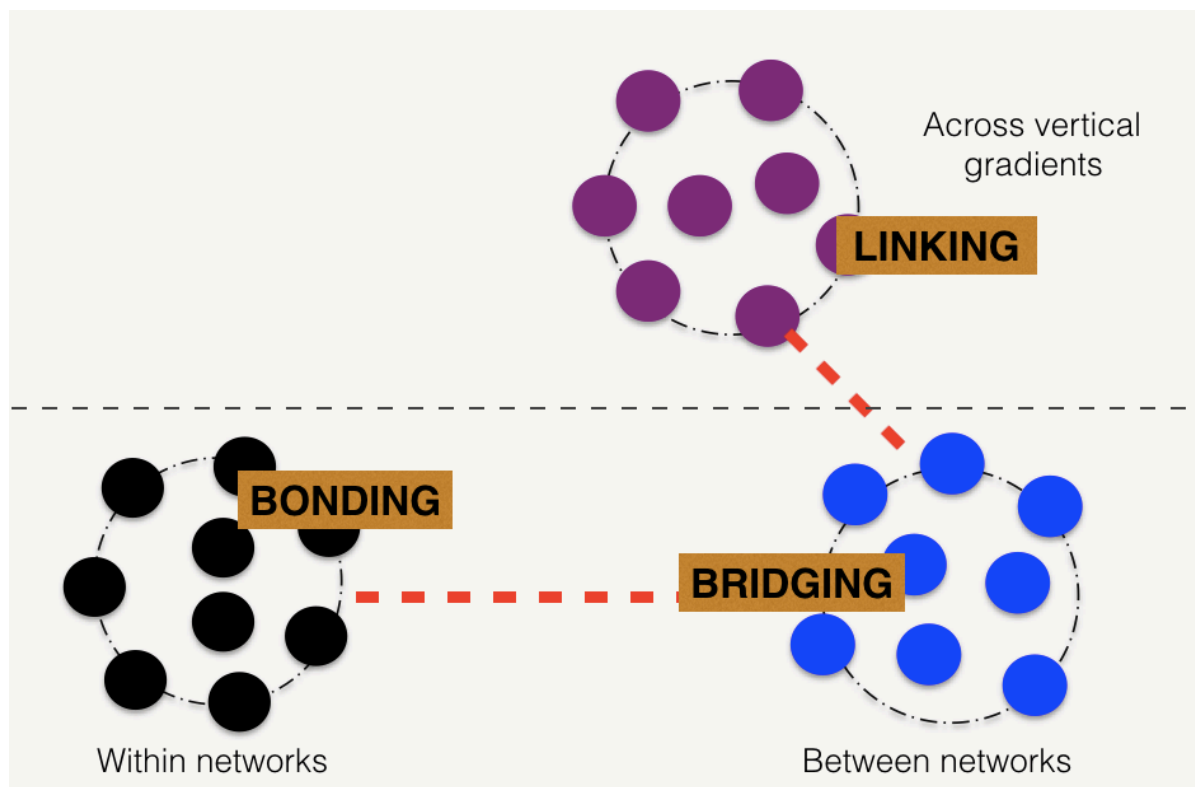
Figure 1 Social capital framework
(Adapted from Building Resilience: Social Capital in Post-Disaster Recovery. Aldrich, 2012)

Social capital is explained based on the social connections established. *Bonding* refers to that network of social relations that reinforce exclusive identities among a homogenous group, while *bridging capital* suggests the networks encompassing people across diverse social cleavages (Putnam 2000). *Linking social capital* considers the network of trusting relationships across [vertical] explicit, formal or institutionalized power or authority gradients in society (Szreter and Woolcock 2004). Woolcock and Narayan (2000) claimed that the different combinations of these social capitals are responsible for a range of crucial development and environmental outcomes. More than recovering from the disaster, these permutations of social capital constitutes to the maintenance of social order in the community.

With the multitude of available definitions, the particular explanation adopted by any study depends on the discipline and level of investigation to which it will be utilized (Robison, Schmid and Siles 2002). Recent years saw the emergence of studies focusing on social capital during disasters. Specific cases of how social capital affected both the response and recovery are present in literatures on disasters like the 1995 Kobe Earthquake (Nakagawa and Shaw 2004, Aldrich 2012a, Yamamura 2014), the 2004 Indian Ocean Tsunami (Minamoto 2010, Munasinghe 2007); 2005 Hurricane Katrina (Airriess, et al. 2008, Chamlee-Wright 2006, 2010, Aldrich 2012a); and the 2011 Tohoku Earthquake 2011 (Aldrich 2012a) among others. These growing literature elucidates how social capital operate in catastrophic conditions -- its successes and failures especially disaster recovery and response. Despite

this, the particular focus on migrants' social capital in disaster remains limited, often times encapsulated in case specific narratives (Airriess, et al. 2008, Park, Miller and Van 2010, Chamlee-Wright and Storr 2011).

In the perspective of disasters, recognized social capital scholars (Woolcock and Narayan 2000, Hawkins and Maurer 2010, Aldrich 2012a, 2012b) identified these three forms of social capital categorically describing the forms of relations and networks *(re)* established during disasters: *bonding, bridging* and *linking*. Aldrich (2012a) emphasized that individuals and localities do not bounce back from disaster solely through wealth, government aid or top-down leadership but through their neighbors, connections and social networks. This is the intangible resource we know as *social capital*. It can be unceasingly discussed and explained, but it can only be seen and better understood by its manifestations and the forms of social connections creates among individuals and communities. All connections appear as vectors of varying degrees of strengths or weaknesses, with applicability at different conditions and social circumstances.

3. Significance of the study

The collaboration of *disaster, social capital* and *migrants* exhausted a more limited number of literatures. Chamlee-Wright (2006, 2010) and Airriess, et.al. (2008) delved on how migrants effected resilience and recovery for their community exploring the social capital of Vietnamese Americans in New Orleans during Hurricane Katrina. It reiterates the significance of social capital to encourage the return to the community and recover from disaster. Both literatures offered exhaustive narratives of how social capital operates to contribute to the recovery of the affected communities.

The compounded qualitative and quantitative analysis of this study intends to cover and address these key questions: *How does social capital permeates in the social dynamics of migrants during disasters? Who are these agents of this capital? And, what are role does social capital assumes to support migrants /foreign resident in the disaster risk reduction and recovery?* These questions are directed to identify the social actors in the migrant network, and their functions to support migrants` disaster resilience and recovery.

The study revolves around the key concepts of disasters, social capital and migrants. *Disaster* incorporates the two other ideas. It acts as an independent variable that affects lives and properties regardless of any nationality, social, economic or political status. Thus, it is worth learning the forms of response and mitigation activated among individuals and communities, to lessen its effect in the future. Understanding *social capital* of people during disaster helps create feasible solutions from within their network and identify accessible resources for recovery.

This study looks into the less acknowledged population during disasters. It recognized that more than the vulnerabilities of *migrants* (foreign residents) their social capital can contribute in the recovery of their communities. Consistent with the 3rd WCDRR Sendai Framework, the study intends to highlight migrants as active agents in disaster risk reduction and recovery.

The study aims to contribute to limited yet emerging literature on the role of migrants during disaster. In a larger social context the study intends to examine migrant vulnerabilities and capacities to enhance disaster-related policies and potentially recommend migrant-inclusive disaster strategies for risk reduction and recovery.

4. Establishing the goals and objectives

The study's main purpose is to analyze and assess migrants' social capital in relation to the disaster risk reduction and recovery of their communities. It primarily assumes that the available forms of social connections inherent to migrants had contribution to their response and recovery.

More specific objectives of the study include:
- Understand the role of social capital during disaster and towards recovery.
- Identify and evaluate the role of migrant collectives (foreign residents) social capital in the development of disaster response and recovery of their communities; and
- Validate if there is a correlation between migrants social capital and the disaster recovery of communities.

In addressing the research's goals through appropriate methods for data gathering and analysis, it anticipate the following results:
- Identified indicators of social vulnerability for migrants, sources of social capital, resources, patterns and trends in social connections (bonding, bridging, linking) for disaster recovery, and impact to the community;
- A gained perspective and detailed comprehension of how migrant connections operate during disaster situations;
- An adaptable scheme to accommodate the participation/engagement of migrants (foreign residents) in the recovery of communities after disasters, and
- A confirmed correlation between migrants social capital and disaster recovery.

5. Defining terminologies

As understood, the discussion on social capital creates multiple layers of interpretation together with a number of related terms. For the purpose of this study, the following terms were operationalized in the context they will be used for the study.

a) **Migrant.** The term migrant was usually understood to cover all cases where the decision to migrate was taken freely by the individual concerned for reasons of "personal convenience" and without intervention of an external compelling factor; it therefore applied to persons, and family members, moving to another country or region to better their material or social conditions and improve the prospect for themselves or their family. (United Nations Educational, Scientific, and Cultural Organization 2016). IOM defines a migrant as any person who is moving or has moved across an international border or within a State away from his/her habitual place of residence, regardless of (1) the person's legal status; (2) whether the movement is voluntary or involuntary; (3) what the causes for the movement are; or (4) what the length of the stay is. (International Organization for Migration 2016)

b) **Disasters.** A process/event combining a potentially destructive agent/ force from the natural, modified, or built environment and a population in a socially and economically produced condition of vulnerability, resulting from a perceived disruption of the customary relative satisfactions of individual and social needs for physical survival, social order and meaning. (Hoffman and Oliver-Smith 2002).

c) **Social vulnerability.** Social vulnerability is often described using individual characteristics of people (age, race, health, income, type of dwelling unit and employment). It is partially a product of social inequalities – those social factors that influence or shape the susceptibility of various groups to harm and that also govern their ability to respond. (Cutter, Boruff and Shirley 2003)

d) **Social capital.** This is broadly defined as ''social networks, the reciprocities that arise from them, and the value of these for achieving certain goals" (Schuller, Baron and Field 2000) or ''the trust, mutual understanding, and shared values and behaviors that bind the members of human networks and communities and make cooperative action possible" (Cohen and Prusak 2001). A more targeted definition with reference to disaster research is networks of social capital ''facilitate a flow of information providing a basis for action and assisting in individual and community goal attainment" (Ritchie and Gill 2007). Social capital, however, is not a thing possessed by a community because a community is an outcome of social

relationships; only individuals or institutions are able to possess social capital ((DeFilippis 2001), as cited in Airriess, et al. (2008)).

e) **Social actors.** A social actor is any (human, animal, "artificial") agent such as a group of persons, an individual, an organized group (a company, a union, a party) who possess a common cognitive reference frame (composed, among others, by a common tradition, common knowledge and values, common routine practices, common communication means,…) (Stockinger 2005)

f) **Disaster risk reduction.** *Disaster risk reduction is everyone's business.* Disaster risk reduction includes disciplines like disaster management, disaster mitigation and disaster preparedness, but DRR is also part of sustainable development. In order for development activities to be sustainable they must also reduce disaster risk. On the other hand, unsound development policies will increase disaster risk - and disaster losses. Thus, DRR involves every part of society, every part of government, and every part of the professional and private sector. (United Nations Office for Disaster Risk Reduction)

g) **Recovery.** From Nigg (1995) recovery is not merely an outcome, but rather it is a social process that begins prior to disaster impact and encompasses decision making concerning restoration and reconstruction activities. It must be recognized that what takes place during the aftermath of disaster had its roots in the pre-disaster phases of response and recovery planning as well as mitigation implementation.

6. Frameworks

The totality of the research is encompassed in the succeeding conceptual and methodological frameworks. These circumscribe the structures in which the study is organized and analyzed.

6.1. Conceptual framework

With the composite of all the accumulated background on comprehending social capital, an explained disaster context, established goals and objectives to address migrants' disaster risk reduction and recovery, together with operationalized definitions; Fig. 2 presents the conceptual framework of the study.
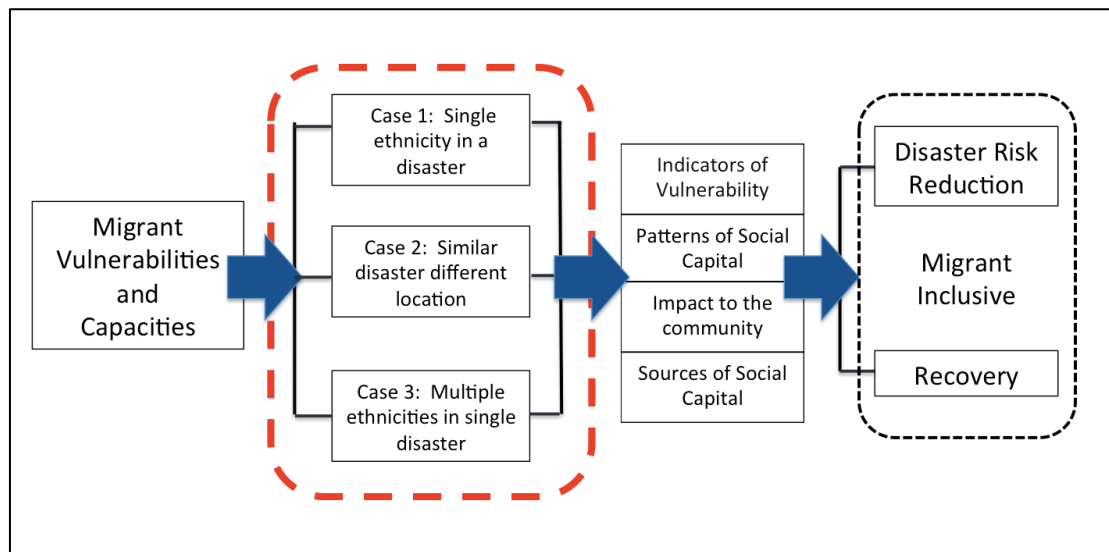
Figure 2 Conceptual framework diagram

Recent disaster-related policies recognized migrants as significant stakeholders in disaster risk reduction to have certain capacities to respond to disaster situations. The study claims that migrants, perceived vulnerable during disasters bear distinct capacities to cope and be resilient in catastrophic conditions (Blaikie, et al. 2003, International Organization for Migration 2007). By identifying these indicators of vulnerabilities (Cutter, Boruff and Shirley 2003), forms and sources of social capital (Aldrich 2012a, Woolcock and Narayan 2000, Chamlee-Wright 2010), and the (potential) impact of their capacities to their community, the available social capital in disaster risk reduction and recovery can be identified. Consequently, migrants` inclusivity in the larger schemes of disaster management can be identified.

This study aims to address its goals and objectives through three distinct yet interrelated cases that are explored. The study develops into three stages (see Fig. 2). Appropriate and selected cases are used for each stage of developing the whole research. The initial stage establishes the connection between social capital and disaster. Looking at the more specific case of migrants during disasters follows this. The last stage of the study attempts to apply if the analysis of migrants' social capital during disaster holds true and applicable to multiple ethnicities across the same disaster. The established relation between social capital and disaster, and how it applied to a particular population such as the migrants, is presented in the methodology organized for this study.

6.2. Methodological framework

A previous study (Robles 2014) had already explored the migrants' collective behavior and response during disaster. However, this was limited to introspecting the collective behavior and response of migrant students using oral narratives. The present study is a social research that uses a combined

qualitative and quantitative approach. This used the combined research instruments of interviews and social survey. Two frameworks that can highlight the significance of migrants' social capital during disasters guide the study:

1. From Gerteis (2002), *collective narratives [as methodology] are the sites where schemas take concrete empirical form*. Social capital is revealed in the collective narratives of the members of the community. The narratives of the disaster experiences serve as evidences on how social capital operates in its actual form. As people retold their experiences of the disaster, it reveals the actual extent and nature of their connection with other individuals or groups. Collective narratives following disasters is an empirical strategy for gaining insight into the interpretive schema that the individuals used to a.) Make sense of their circumstances, b.) Assess their capabilities and prospects for recovery; and c.) Decide on and sustain certain courses of action (Chamlee-Wright and Storr 2011). *Oral history* is significant in gathering narratives of disasters. The people recounts their stories of the disaster revealing their vulnerabilities, disaster behavior and response, capacities and ties made and rebuild. Focus group discussions help reveal the cohesive narrative of a group of people based on their collective experience of the disaster. On the other hand, the semi-structured interview with selected key information provides the depth in understanding and analyzing the forms of contacts and connections people make.

2. Bourque, Shoaf and Nguyen (1997) emphasized that *surveys provide a highly viable and excellent source of data about behavior during and after disasters, behavioral and attitudinal responses to disasters, and anticipatory behavior and attitudes about future disasters*. While narratives provide the depth for the study, recounting the experience to which the disaster was faced and addressed; it is also necessary to identify and analyze patterns and trend that may be adaptable to a larger context and even population. The use of social surveys as a research instrument for disaster studies presents the opportunity to recognize and analyze patterns and trends in disaster response and behavior across time. Since the study attempts to examine migrants' social capital across multiple ethnicities, the use of survey quantifies these trends and validates if the gathered narratives are representative patterns existing among different migrant groups.

Existing literatures had used both strategies of narratives and surveys in disaster research. However, these were commonly done independently. The preferred methodologies of combined qualitative (oral narratives) and quantitative (survey) attempts to cover a wider understanding of the relation between migrants` social capital and the disaster risk reduction and recovery of communities. The study aims to identify and analyze the social capital available to migrants (foreign residents) in disaster response

and recovery (see Fig. 3). The research builds on an initial study of social capital during disasters, looking at the social connections of affected residents of Typhoon Haiyan (2013) in Tacloban City, Leyte, Philippines. Then, a qualitative case study of Filipinos in Kesennuma City and selected Filipino students during the 2011 Tohoku Earthquake, was made to identify the vulnerabilities and capacities specific to migrants. The data generated from this two independent yet related studies will be utilized to identify the patterns and trends in disaster social capacities for migrants.

Below are the detailed discussions of the three stages of the study:

- **Stage 1. Social capital and disaster.** This initial stage of the study established the connection of social capital and disaster. It looked into the case of the affected coastal community during 2013 Typhoon Haiyan in Tacloban City, Leyte in the Philippines. In this part of the study, a household survey on people's network and information seeking behavior before, during and after the disaster were distributed to the affected residents. This establishes the general trends on people's connection and the disaster; and the significant actors and resources within their network.

	Stage 1	Stage 2	Stage 3
	Social Capital + Disaster	Migrants Social Capital + Disaster	Assessing Migrants' Social Capital (Multiple Ethnicity)
Case	Coastal Community in Typhoon Haiyan (2013)	Filipino Students in Japan and the Filipino Community in Kesennuma during 2011 Tohoku Earthquake	Foreign Residents in Sendai
Research Instrument	Social Survey, Focus Group Discussion (FGD), Resource Person Interviews	Focus Group Discussion (FGD), Personal Interviews, Resource Person Interviews	Social Survey, Resource Persons Interviews
	Indicators of vulnerability, related actors before, during and after disaster, mobility data	Indicators of migrant vulnerability, related actors before, during and after disaster, disaster resources	SOCIAL CAPITAL OF MIGRANT COLLECTIVES FOR DRR and RECOVERY OF COMMUNITIES

Figure 3 Methodological framework diagram

- **Stage 2. Migrants' social capital in disaster.** This stage explores the social capital in disaster of a more particular group - the migrants (foreign residents). This stage of the research used the qualitative method of oral history with a case study on the Filipino residents in Kesennuma City and Filipino students in Japan, in relation to their 2011 Tohoku disaster experiences. Disaster narratives from their experiences during the 2011 Great East Japan Earthquake were used to identify the forms of social connections before, during and after the disaster. Interviews and discussions with the Filipino residents and key resource persons worked as the sources of data for this section of the study. It intends to show that migrants' social capital comes from the different connections with their co-nationals and within their community and linkages

- **Stage 3. Assessing migrants' social capital (Multiple ethnicity).** This stage is the sum of the first two phases of the study. Analysis of the findings from both the cases of Typhoon Haiyan affected residents and the Filipinos migrants in Japan were used to formulate a migrant-specific disaster social capital survey. It verifies if the identified social capital for Filipino migrants are applicable to other nationalities in terms of disaster risk reduction and recovery programs. The migrant-specific social survey was distributed to the foreign residents in Sendai City. The city was the selected site, since it has the largest foreign resident population in the immediately affected region of the 2011 Great East Japan Earthquake (Total of 10,455 persons as of 2014) (Statistics Bureau, Ministry of Internal Affairs and Communications 2014).

7. Novelty of the study

The novelty and value of this study is found in both its contents and methodology. In terms of its thematic value, the study looks into the less acknowledged population in disaster (such are the migrants) as a subject of an academic investigation. It recognized that more than the vulnerabilities of foreign residents in instances of disasters, they have certain capacities (embedded in their social capital) that can contribute to increasing their resilience, reducing disaster risk and recovering from disasters. As previously stated, this research intends to contribute to the limited yet emerging literatures on the roles of migrants during disasters. This study`s content intends to gain its worth in the academic domain as well as in the scope of policy formulations.

Regarding its methodology, the study adopts a combined qualitative and qualitative approach. With the whole research`s intention to introduce an introspection on migrants` social capital in disasters, it necessitates the development of the study from establishing the connections of social capital in disasters, through validating those of migrants. Hence, each section of the study constitutes describing and measuring data to create cohesive and sensible discussions.
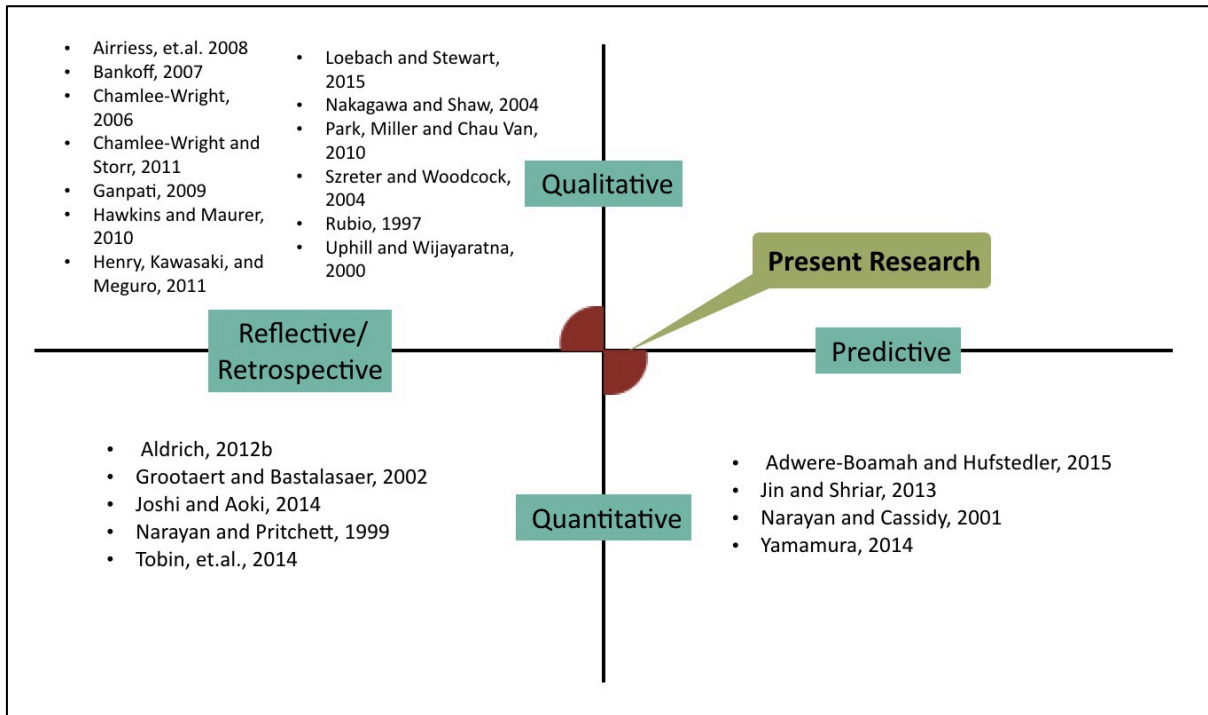
Figure 4 Plotting the study among other researches (by Methodology)

Fig. 4 presents of a number of researches and studies related to social capital and disasters organized by methodologies. These researches can be categorized based on the general methodological approach used (qualitative or quantitative approach) to establish this connection of social capital and disasters. On another hand, it can also be segregated depending on the perspectives to which it was presented. As a function of time, some studies are reflective/retrospective; where themes are reviewed and analyzed based on concluded events. The other one is more forward looking, in which subjects are predicted as the consequences of existing variables. The current study situates itself in the quadrant of the qualitative- reflective, and quantitative-predictive approaches. The initial stages of the study build this connection of social capital, migrants, and disasters based existing disaster experiences of the selected population. From here, a more generalized understanding of the migrants' social capital was validated by projecting their disaster-related preferences. These combined methodologies are necessary to create a substantial discussion and analysis of the entire study.

8. Chapter summaries

The study intends to contribute in the growing literature of social capital in the context of natural hazards and disasters. It evolved to establish this connection of social capital and disasters, to further introduce the exploration of disaster social capital in the context of the migrants/ foreign residents. Following the established framework and combining the quantitative and qualitative methodologies, the study intends to describe and predict the significance of migrants` social capital in disasters.

This manuscript is subdivided in five (5) key chapters. ***Chapter 1*** provided an overview of the study; justifying the significance and novelty of the study through the discussions of relevant literatures on social capital and disaster, operationalizing definitions, establishing the research framework, structuring the methodology, and highlighting the novelty of the study. ***Chapter 2*** continues to establish the position of social capital in the disaster literature; exploring the significance of trust in the choice of disaster contacts. It analyzed the case of the 2013 Typhoon Haiyan-affected residents in Tacloban, Leyte (Philippines) through combined group discussions and social surveys (N=190), identifying the preferred social actors across the disaster phases. ***Chapter 3*** focused on the disaster narratives of a specific ethnicity of migrants. Imploring on the 2011 Great East Japan Earthquake and the Filipinos in Japan, this chapter qualitatively identified the points of vulnerabilities, preferred social actors as disaster contacts, and opportunities for resilience specific to their conditions as migrants. ***Chapter 4*** validated the significance of migrants` social capital in disaster through a social survey conducted to foreign residents in Sendai City (N=132). The combination of demographic profile and pre-disaster social contacts were utilized to forecast their preferences in disaster risk reduction and their recovery. ***Chapter 5*** integrates the whole study, reevaluating the study`s objectives and validating the results. More so, the study is situated in the larger context of disaster research, identifying it`s position in the 2015 Sendai Framework and potentials for further studies.

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CHAPTER TWO

SOCIAL CAPITAL IN DISASTERS

CONTENT

1. Introduction

Disasters are among the constant realities in people`s lives; and the last five decades proved that the damages continue to escalate over time (CRED 2016). Large-scale disasters like the Kobe Earthquake (1995) Indian Ocean Tsunami (2004), Hurricane Katrina (2005), and the Great East Japan

Earthquake (2011) changed the environmental landscapes and posed the rethinking about the magnitude of disaster damages. In 2013, the strongest recorded typhoon in modern times (Typhoon Haiyan) traversed several countries in East Asia, and left a catastrophic impact across central Philippines. Natural disasters altered the geophysical landscapes, consequentially disrupting the economics, politics, and even the existing social fabrics. People's relations are interrupted, causing the need to adjust social connections to cope and advance their resilience. The catastrophes act as catalyst to these changes that either enhance or diminish their personal networks.

As Woolcock and Narayan (2000) puts it: *"It's not what you know, it`s who you know".* People establish connections at different situations and contexts. And disasters constitute to those settings where people (re) create connections to increase their capacity to respond and recover. While the resources are indispensable in addressing catastrophic conditions, human resources built in one's personal network of connections makes it possible. *Social capital* rationalizes this importance of social interactions and human (and institutional) connections as opportunities to access resources in certain circumstances.

The increasing literature on social capital, and its multiplicity of application in various disciplines prompt the formulation of typologies to categorize and understand them. Two complementary types according to form were expounded by Uphoff (2000, Uphoff and Wijayaratna 2000). The (a) *structural* category devices a more objective understanding of social capital; where roles, rules, precedents and networks *facilitate* mutually beneficial collective action. In the same way, the (b) *cognitive* category *predisposes* people how to socially behave and participate, through intrinsically constructed norms, values, attitudes and beliefs. Both forms are integrated to holistically explain the existence of social capital.

Schuller, Baron and Field's (2000) definition of *social capital* as "social networks, the reciprocities that arise from them, and the value of these for achieving certain goals", supports this emphasis on the structural form, placing importance on the networks of connections. In the context of the cognitive form of social capital, Cohen and Prusak (2001) define it as the "trust, mutual understanding, and shared values and behaviors that bind the members of human networks and communities and make cooperative action possible".

But how does social capital operate in the disaster context? As cited in (Airriess, et al. 2008) the networks of social capital in disaster "facilitate a flow of information providing a basis for action and assisting in individual and community goal attainment" (Ritchie and Gill 2007). In the same way it [social capital], is not a thing possessed by a community because a community is an outcome of social relationships; only individuals or institutions are able to possess social capital (DeFilippis 2001). Both characterizations weave these structural and cognitive components of social capital; where preferred social connections are vital links to access resource to mitigate risks and recover from disasters.

Along this stream, *trust* begets these social engagements and enhances people`s resilience to disasters. It`s a key components of social capital that facilitate social integration towards disaster recovery. Dynes (2006) discussed how social capital in instances of emergencies are embedded in community's social relations and networks among its members were trust is developed through the sense of obligation to help those in their linkages. Social capital emphasized how people's network and relations are meaningful resources in disaster mitigation and recovery, and Aldrich (2012a, 2012b) rationalize this by pointing to trust as an important element to implement collective action.

Bankoff (2007) stressed that social capital is constructed through trust that is freely given and reciprocated in due measure and appropriate time. The developed form of institutionalized relations, and this conception of a system of mutual assistance and support are the natural consequence of trust.

In the study of these human drawbacks during catastrophic conditions; human relations consequentially takes dynamic transitions with their social connections as noteworthy sources of resilience and recovery. Hence, it places value to social capital –the intangible yet equally important resource for individuals and on a larger stream, the community relevant to disaster response, mitigation and recovery (Aldrich 2012a).

Like human capital, social capital is difficult, if not impossible, to measure directly. Narayan and Cassidy (2001) and Newton (2001) are among those who tried to quantify social capital and trust. The former utilized a statistically valid survey of social capital in developing communities of Ghana and Uganda; and the latter analyze how social trust operates in society by looking at the 1991 World Values Survey data for the case of Finland and Japan. In both studies it was stressed how social capital

is not embedded in individuals, but in the *relationship* among them. Thus, social capital exists in the line that between the two nodes of connection; and for empirical purposes the use of proxy indicators is necessary (Grootaert and van Bastalaer 2002). However, contrast remains between the two forms of social capital (the structural and the cognitive), trust which fits as a cognitive indicator remains a subjective and an intangible concept.

As established in an earlier paper (Robles and Ichinose 2016), *Trust* is not possessed by an individual or community, but rather it lies between entities and can be better understood by its manifestations and forms of social connections established. It is contained in the network of relations that makes up social capital. Thus, trust can be best addressed by looking into established social connections through the available relevant social relations (both personal and formal) between individual and other social actors, implying the flow of trust between these nodes.

Consistent with the established definition of social capital contextualized in catastrophic conditions, the study is built on the key hypothesis that *people connects with people the trust*. Individuals and communities build network and relations based on anticipated gains or advantages. Thus, trust is a form of risk-taking; looking at the accessible connections made by people in compelling situations like disasters. Anchored on this assumption that trust courses through the various established connections with different social actors; the study uses a disaster social survey to illicit people's available contacts at three phases of a disaster (pre-disaster, during and post-disaster scenarios).

This chapter looks at social capital during disasters, with a focus on the case of the 2013 Typhoon Haiyan affected residents in Tacloban City, Leyte in the Philippines, and how their social connections with different social actors transformed because of the disaster. It answers two key questions: 1.) How does disaster change people's social connections? And 2.) How does people's trust with various social actors contribute to their disaster resilience and adaptation?

1.2 Typhoon Haiyan
By 4:40am PHT of November 7, Category 5 super-typhoon Haiyan made landfall in Guiuan Island (Eastern Samar, Philippines), traversing several islands in central Philippines with maximum sustained winds of 195 mph (See Fig. 5). By 2:00am of November 8, Typhoon Haiyan had left the

Philippines with extensive damages to properties, and rising death toll. Four million people were displaced particularly in the Visayas region; and with communication and transportation lines cut and destroyed; it placed the affected areas in high level of risks to health, safety and security.

Tacloban, Leyte was among the cities that experienced the powerful typhoon and storm surges. The extent of these storm surges reached 2km inland (Lagmay, et al. 2015), sweeping thousands of houses and structures along the coastal area. With houses in total rubbles or still in identified high-risk zones, residents were relocated to transitional homes to suffice their basic shelter needs as they await their permanent resettlement. The combination of the formal agencies, and the people in their personal networks became the significant confluence in their road to recovery. At present, affected residents continue to face various challenges as they recover from the life-changing damages and effects of Typhoon Haiyan. The study explores the interactions of 190 affected residents in Tacloban, Leyte with the various social actors and how it influenced their response and recovery from Typhoon Haiyan.
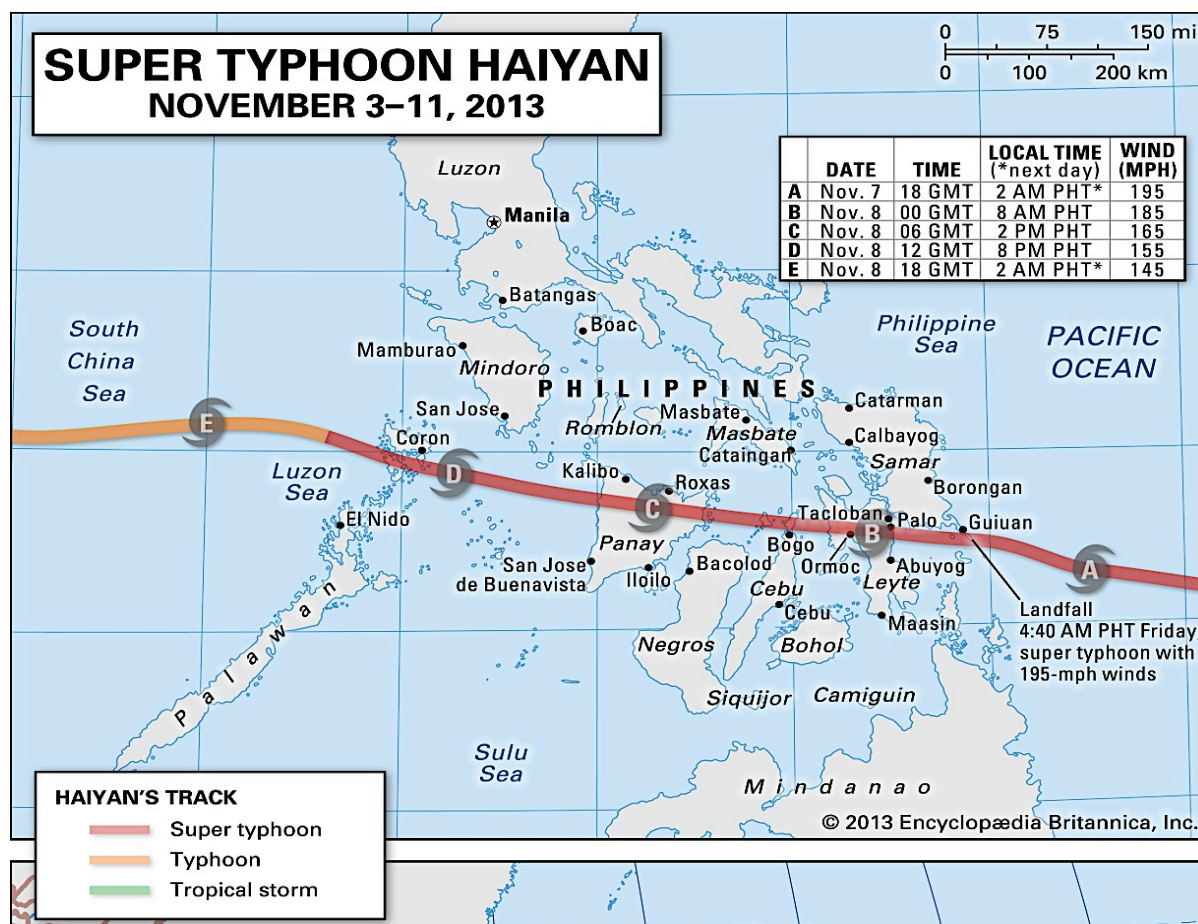
Figure 5 Track of Typhoon Haiyan (Source: Encyclopedia Britannica Inc.)

2. Methodology

This chapter establishes this significance of social capital within the disaster context. People's trust based on their social connections established at three time frames relative to the disaster were primarily identified and explained. The combined quantitative and qualitative data gathering methodologies were applied in this section of the research. All data are integrated to support the analysis of trust formation among Typhoon Haiyan-affected residents.

2.1 Social survey

A two-page survey, written in the local language was randomly distributed to residents previously dwelling along the coastal areas that were largely damaged from the storm-surges. A total of 190 respondents (each representing one household) voluntarily participated in the survey. The respondents were sought in five of the transitional housings provided for affected residents (see Fig. 6). The transitional sites and the number of respondents were as follow: Banato (18), IPI (72), Tacuranga (29), Homeless (39), and New Cawayan (32).

Date	Location	
2015.2.16	Banato	18
2015.2.16	New Kawayan	32
2015.2.16	IPI Bunkhouse	72
2015.2.17	Tacuranga	29
2015.2.17	Homeless	39
	Total	190

Figure 6 Map of transitional sites visited in Tacloban City, Leyte, Philippines
(Map data: Google 2015, ca. 1: 500m)

Table 2 Disaster time frames

Code	Description
T1	Period of time range from the first point of residence until before Nov. 7, 2013 (Typhoon Haiyan landfall)
T2	Period from Nov. 7, 2013 up to the time of transfer to transitional houses.
T3	Period from the time they moved to the transitional houses up to the date the survey was conducted, Feb. 2015)

The key domains covered in the survey included: 1.) Respondent's profile, 2.) Sources of disaster-related information, 3.) People in contact, and 4.) Modes of communication. Options for responses were author-designated with provisions for additional answers if necessary. To identify and present the changes in social connection across time, the survey focused on three time frames: 1.) Pre-disaster (T1), 2.) Disaster (T2), and 3.) Post-disaster (T3). Table 2 summarizes the time frames covered in this study. The survey was conducted in Feb 16 and 17, 2015, fifteen months after Typhoon Haiyan. Survey data were encoded and analyzed using SPSS (ver. 22) to generate both the descriptive and qualitative analysis of the study.

2.2. Interviews

The interviews served as expansions to the survey responses, providing specific details to support the analysis of the residents' social capital in the context of Typhoon Haiyan. Voluntary Focus Group Discussions (FGD) with respondents from four of the transitional sites visited, supplemented the surveys. Discussions lasted between 18 to 40 minutes depending on the participants' size and inputs. Discussion questions focused on the 2013 Typhoon Haiyan experiences, the availability of social connections, and insights about the disaster. All interviews were audio recorded with permission.

Additional interviews with selected key resource persons were made. This included consultations with representatives from World Bank and International Organization for Migration (Manila and Tacloban Offices). These international agencies are among the key non-partisan entities actively working at the ground level for the disaster recovery of the affected communities. More than responding to the immediate needs after the typhoon, these agencies among others have on the ground involvement in the recovery of communities mainly on resettlement and economic recovery.

2.3. Trust indicators and social actors

People's trust, shared values, attitudes and beliefs are cognitive social capital that is subjective and intangible yet necessary to execute a mutually beneficial collective action (Uphoff 2000). Hence, to quantify social capital, it is appropriate to substitute by measures of trust and the strength of norms, reciprocity and sharing (Grootaert and van Bastalaer 2002). People establish and maintain connections with persons and institutions that they trust. It can range from those people whom they have daily direct contacts to members of groups they just met. The primary intention of availing potential resource to increase their resilience in disasters justifies this (re) building of connections. In disasters, these are the *social actors* representing the available social capital for the individual and their community to advance their resilience, minimizing their risk and reaching recovery. Table 3 lists the disaster-relevant social actors hypothesized for this study, with its author-generated definition.

2.4. Predicting trust

The identified contacts with the several social actors in three time frames became specific attributes to each of the respondents. Each person has a unique set of individuals and institutions they connect, and thereby trust.

Trust in others involved predictability in the behavior of others (Torche and Valenzuela 2011). The knowledge of their choice of social actors in previous time frames helps *predict the odds* of their choice at succeeding period. This numerical analysis provides a more tangible and qualitative discussion of trust using descriptive data.

Table 3 List of social actors

Social Actors	Description
Civic Group	Community-initiated group for development
Disaster Relief	Social group engaged in the disaster response, management and recovery
Family	Individuals within the same household
Friend	Individuals with non-familial affinity to the respondent regardless of physical proximity
Government	State-related entity either in the local or national level
Neighbor	Individuals residing within the significant periphery of the resident
NGO	Social group engage with the community for development projects
Relative	People with familial affinity to the respondent regardless of physical proximity
Religious group	Social group or entity of religious origin

For this part of the study, a quantitative analysis using Multinomial Logistic Regression was used to verify this significance and odds of their choices. This statistical analysis fits the need to predict nominal dependent variable against more than one independent variable. In looking at various demographic characteristics and existing social contacts, the residents' preference in social contacts are identified. The study now validates if these attributes bear notable impact to their choice of social actors at each time frame. Using a 0.05 level of significance as margin, this regression analysis is used to classify subjects based on their set of predictor variables (choice of social actors) and analyzed the potential rational for these results.

Table 4 lists all the variables in the study that were selected from the survey. Two models were designed to validate this significance of social contacts across disaster. In both cases, predictors of preference were based on their age, status and choice of contact.

Model 1. Given their age, status and their contacts before Typhoon Haiyan, what are the odds to their preferred contact during the disaster? This model will determine if there is significance in people's age, status and pre-disaster contacts to their choice of contacts during disaster. More so, it will determine the odds or likelihood with such preferences. This model is numerically explained through Eq. 1.

Table 4 Summary of variables

Variable	Description
Pre-disaster contact (T1 Social Actor)	Respondents were asked to identify their choices of contact before Typhoon Haiyan: (1) Family, (2) Neighbor, (3) Relatives, (4) Government, (5) Religious, (6) Friends, (7) NGO, and (8) Civic group.
During disaster contact (T2 Social Actor)	Respondents were asked to identify their choices of contact during Typhoon Haiyan: (1) Family, (2) Neighbor, (3) Relatives, (4) Government, (5) Religious, (6) Friends, (7) Disaster Relief, (8) NGO, and (9) Civic group.
Post-disaster contact (T3 Social Actor)	Respondents were asked to identify their choices of contact after Typhoon Haiyan: (1) Family, (2) Neighbor, (3) Relatives, (4) Government, (5) Religious, (6) Friends, (7) Disaster Relief, (8) NGO, and (9) Civic group.
Age	Respondent`s age grouped in the following ranges: (1) 20-29, (2) 30-39, (3) 40-49, (4) 50-59, and (5) 60 and above.
Status	Respondent`s civil status: (1) Single, (2) Married, (3) Separated, and (4) Widowed.

Eq. 1

$$log\ \{T2\ Social\ Act/\ (1 - T2\ Social\ Act)\}$$
$$= \beta_0 + \beta_1 T1\ Social\ Actors + \beta_2\ Age + \beta_3 Status$$

Where βn is the regression coefficient, and a 0.05 level of significance (p < 0.05) was used to validate the study.

Model 2. This model looks at the preference in a post-disaster scenario, where affected residents identify their choice of contact after the disaster. Thus, the model use Eq. 2 to address the question: Given their age, status, and their contacts during the disaster, what are the odds to their preferred contact after Typhoon Haiyan? This model will determine if there is significance in people's age, status and disaster contacts to their choice of contacts once they recover from the disaster. More so, it will determine the odds or likelihood with such preferences.

Eq. 2

$$log\ \{T3\ Social\ Actors/\ (1 - T3\ Social\ Actors)\}$$
$$= \beta_0 + \beta_1 T1\ Social\ Actors + \beta_2 T2\ Social\ Actors + \beta_3\ Age + \beta_4 Status$$

Where βn is the regression coefficient, and a 0.05 level of significance (p < 0.05) was used to validate the study.

The combination of the survey result, interviews and regression analysis can substantiate the discussions on the different social actors available in each phase of the disaster.

3. Results

The numerical results from the survey provide the necessary information to define the respondents. It describes their demographic profiles, their social contacts and participation relative to their actual experience of the disaster.

3.1 Demographic descriptions

Three fourths of the survey respondents were female (74.2%) and only a quarter was male (25.8%). Majority of the respondents (75.5%) fall between the 20s to 40s-age range; with 29.8% are 20-29

years old. From the total respondents (N=190), 71.1 % (132) are married and 55% (104) of them were able to reach up to high school level of education. For each of the transitional sites visited, each house is assigned to a single household (nuclear or extended) with the mean value of 4.76 individuals residing in them.

Prior to the disaster (T1), 131 of the respondents confirmed having the available source of income like farming, fishing, business, and other forms of employment. Among the regular employment specifically identified was driving the *pedicab*. A common business for the residents is a small-scale general merchandise store located in their place of residence. However, the extensive damage and economic losses consequentially resulted in radical increase in unemployment. The unemployed amongst the respondents rose to 50% (95); and with residents previously relying on farming and fishing were reduced from 9.4% and 18.9% to 7.4% and 10.5% respectively. The environmental damage from the disaster brought losses to their sources of income.

These demographic data are the key attributes that define each of the respondents. As evident in occupation, disaster altered some of these attributes, and brought forth changes in their relation with particular social actors.

3.2 Comparative data

The survey served as a post-Typhoon Haiyan assessment, reflecting on the respondents identified contacts across the three phases of the disaster. The respondents identified key social actors across the three phases of the Typhoon Haiyan. Fig. 7 presents the cumulative summation of social actors selected by respondents in each the time frame. Respondents selected more responses after the disaster (T3); and the interaction with the family was consistently the most sought connection throughout the three phases with an average of 148.7 (78.2%) respondents choosing it. This is followed by interactions with neighbors and relatives at an average of 70.3 (37%), and 30.0 (15.8%) responses respectively. Also, their connections and contact with members of NGOs (8.9%), disaster relief team (8.8%), the government (7.5%), religious groups (6.3%), friends (5.6%), and civic groups (0.5%) were named.
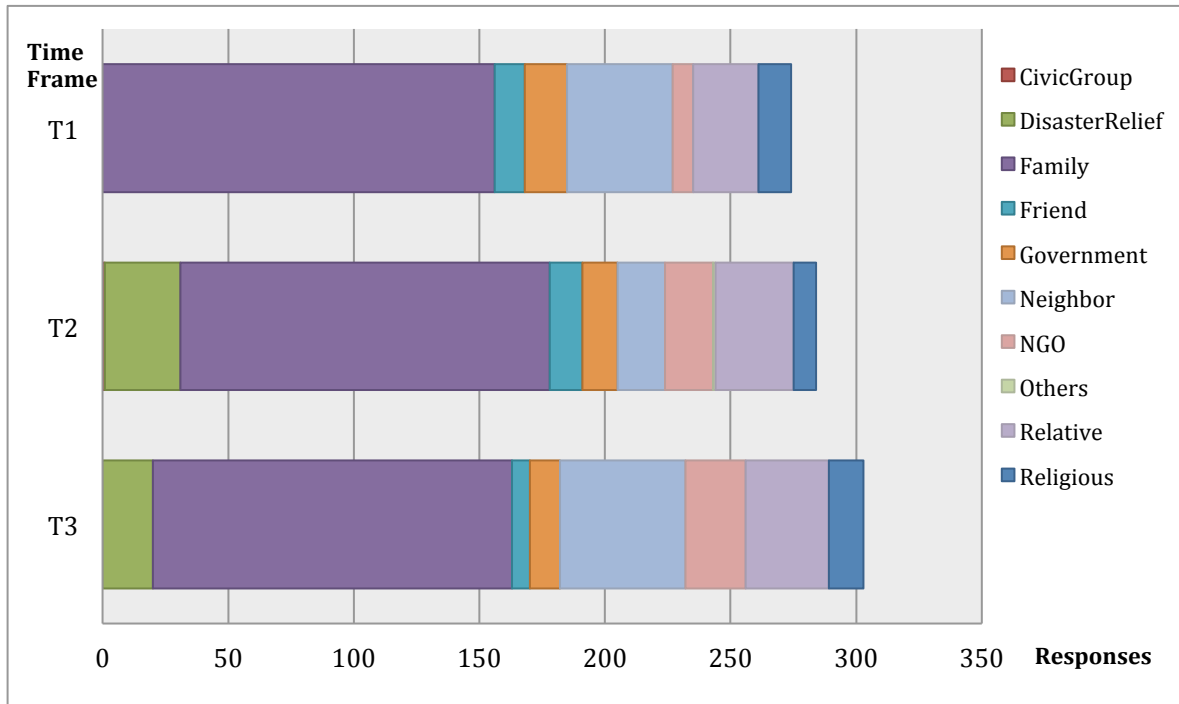
Figure 7 Cumulative distributions of social actors in three time frames
(Note: X-axis: total number of responses; Y-axis: Typhoon Haiyan time frame [see Table 2])

In the three designated time frames, the choice of social actors by the survey respondents varied. By calculating the percent difference for each social actor between two time frames, Fig. 8 shows these directional changes in connections between before and after the disaster. The period between the pre-disaster leading to the landfall of Typhoon Haiyan (T1→T2) showed important changes in their choice of social actors. The disaster brought a decreased connection with their family (-5.8%) and with their neighbors (-8.6%). Nonetheless, the disaster brought a heightened engagement with both the NGOs and disaster relief team with 3.7% and 10.3% increase respectively.

The period between the typhoon and the recovery of the residents (T2→T3) resulted in changes in their social connections as well. More survey respondents engaged with the religious group (1.5%), NGOs (1.2%), their relatives (0.1%) and their neighbors (9.7%) after the disaster. However, as the months passed after the typhoon, less people connected with the civic group (-0.3%), their friends (-2.2%), the government (-0.9%), the disaster relief team (-3.8%) and even their family (-4.0%).

Together with these descriptive comparisons, two models to predict the probabilities of the choice in social connections were validated using Multinomial Logistic Regression.
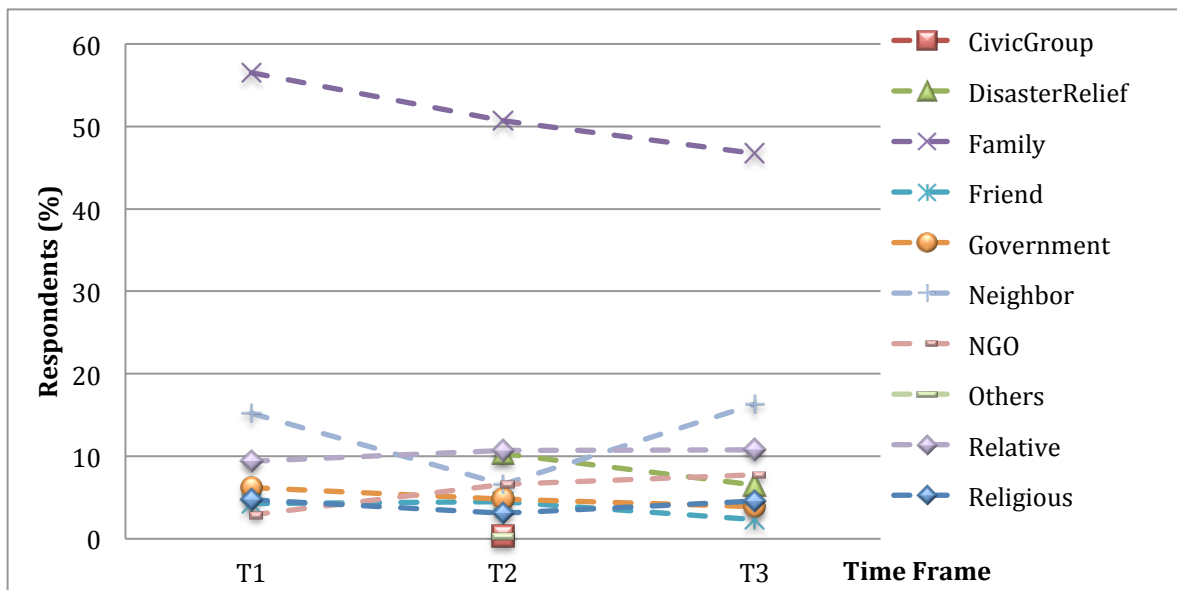
Figure 8 Changes in social connections
(Note: X-axis: Typhoon Haiyan time frames [see Table 2]; Y-axis: percentage of respondents who selected each social actor)

3.3 Regression modeling

As described, the multinomial logistic regression is utilized to calculate the odds to which people will consider certain social actors over the others based on the their existing contacts, status and age.

Model 1 fit within the significant p-value ($p<0.005$) thus making the model valid. Setting the pre-disaster contacts, age and status as predictors, Table 5 shows the list of significant relation between the predictors and the dependent variables (T2). This summary of parameter estimates for Model 1 shows that those who were in contact with neighbors before the disaster (T1) will significantly decrease ($B < 0$) contact with their family and the relief team during the disaster (T2); while those in contact with the government, religious group, and friends before the disaster (T1) are more likely ($B > 0$) to contact the government, religious and friend after the disaster (T2) respectively.

Table 5 Model 1 Summary of parameter estimates

DV: People's choice of contact during disaster (T2_Social Actors)	B	Std. Error	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
					Lower Bound	Upper Bound
Disaster relief						
T1_Neighbor	-1.39	0.64	0.03	0.25	0.07	0.87
Family						
T1_Neighbor	-1.69	0.49	0.00	0.19	0.07	0.49
Friend						
T1_Friend	2.65	1.10	0.02	14.18	1.65	121.74
Government						
T1_Government	2.72	0.99	0.01	15.18	2.20	104.69
Religious						
T1_Religious	3.32	1.32	0.01	27.79	2.10	367.56

Notes: Model X^2 = 116.766; p=0.005, -2 log likelihood =412.637. Pseudo R^2 (Cox and Snell = 0.348, Nagelkerke = 0.363, McFadden = 0.133). DV: dependent variable.

a. The reference category is: Relatives during disasters.

For purposes of brevity, only the significant odds were listed in this chapter. The summary of the parameter estimates can be interpreted as follows:

1. People who are in contact with their neighbors before Typhoon Haiyan were less likely to contact the disaster relief team than their relatives during the disaster.

2. People who are in contact with their neighbors before Typhoon Haiyan were less likely to contact their family than their relatives during the disaster.

3. People who are in contact with their friends before Typhoon Haiyan were more likely to contact their friend than their relatives during the disaster.

4. People who are in contact with the government before Typhoon Haiyan were more likely to contact the government than their relatives during disasters.

5. People who are in contact with the religious group before Typhoon Haiyan were more likely to contact the religious group than their relatives during disasters.

On the other hand, Model 2 validates the probability of the affected residents choice of contact after the disaster. With age, status, pre-disaster social contacts, and during disaster contacts as the independent variables, their choice of post disasters are identified. Table 6 provides the summary of parameter estimates for this model. It shows that before (T1) and during disaster (T2) those in contact

with their relatives had a significant decrease in odds (B < 0) in select contact like their family, neighbors, religious group, NGOs, and disaster relief after the disaster (T3). While their relatives refer to their kin, wherein there is established long-term trust, they can also be their neighbors. Textual interpretations of the parameter estimates from Model 2 are as follows:

1. People in contact with their relatives before Typhoon Haiyan, are less likely to contact NGOs, and their neighbors after the disaster.

2. People in contact with their relatives during Typhoon Haiyan are less likely to contact religious groups, the disaster relief team, the family, member of NGOs, and their neighbors compared to their relatives after the disaster.

The results from the social survey provided sufficient data to support the analysis in the changes in connections and to validate the odds of social connections across the disaster. To reiterate, the focus on social capital can be better understood through proxy indicators, and the study used the identified social actors as such. These can best explain the changes in social connections in disasters and justify their preferences of contact.

Table 6 Model 2 Summary of parameter estimates

DV: People's choice of contact after a disaster (T3_Social Actors)	B	Std. Error	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
					Lower Bound	Upper Bound
Religious						
T2_Relative	-2.76	1.36	.04	.06	.00	.90
Disaster Relief						
T2_Relative	-3.03	1.13	.01	.05	.01	.44
Family						
T2_Relative	-1.88	.63	.00	.15	.04	.53
NGO						
T1_Relative	-2.11	1.07	.05	.12	.01	.99
T2_Relative	-2.19	.95	.02	.11	.02	.72
Neighbor						
T1_Relative	-2.43	.84	.00	.09	.02	.46
T2_Relative	-1.55	.69	.03	.21	.05	.83

Notes: Model X^2 = 255.910; p=8.166 E-09, -2 log likelihood =438.208. Pseudo R^2 (Cox and Snell = 0.582, Nagelkerke = 0.606, McFadden = 0.267). DV: dependent variable.

a. The reference category is: Relatives after disasters.

4. Discussion

There are two key points to discuss and analyze: (1) the changes in connections and (2) preferences in social contacts. In both discussions, it supports the emphasis on social capital as a significant element in disaster risk reduction and recovery.

4.1 Changes in social connections

Disasters are intense periods of change where people affected take stock of their present conditions and reassess their normal behavior to develop adaptation strategies to meet the challenges they face (Bankoff 2003). It becomes a turning point to many transformations including the changes in social relations. Dynes (2006) stressed how social capital [i.e. networks and connections] changed after disasters. The interdependence with different social actors is a noteworthy point to observe in explaining social capital. Fig. 6 and 7 represents the changes in connections and interactions between the survey respondents and the various social actors. Based on combined survey results, literature reviews and interviews, there are four key factors to justify these changes in social connections.

1. *Fatality and disappearance.* From the 190 respondents, 74 of them claimed that a family member and kin perished because of the typhoon, and 53 respondents declared that some of their family members went missing because of the typhoon. Death and disappearance are primary reasons for immediate decrease in population, thereby a decrease in social connections, particularly those with familial relations. People mainly associate family members and relatives within their inner circle of connections, and thus they account these reductions as personal losses.

2. *Presence of emergent groups.* Emergent groups refer to entities that had no existence prior to the crisis; often transitory in existence but have a crucial function to the whole trans- and post-disaster response (Quarantelli and Dynes 1977). Emergent groups may be religious, non-profit, non-governmental, medical, or search and rescue; with the purpose directed to respond and aid in the recovery from the disaster. Due to massive damage to property, deaths, and threat to personal safety and security, Typhoon Haiyan reached international attention, prompting the arrival of different emergent groups. Relevant United Nation agencies together with World Bank, International Red Cross, International Organization for Migration, and

other humanitarian groups worked at the ground level of the disaster for recovery and rehabilitation. These emergent groups are in active collaboration with the local and national government in the Philippines. However, their presence is temporal and is driven to a specific goal to support in the rehabilitation and recovery of residents.

3. ***Change of residence.*** In general, the survey respondents can be categorized as *internally displaced persons (IDPs)*. The International Organization for Migration (2016) defines them as persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border. The characterization befits the condition of the affected residents from Typhoon Haiyan. The large-scale damage resulted for the need to be relocated in a much safer location. Specific to their condition and circumstances, affected residents were relocated at various transitional homes at varied times and distances from their original homes. These changes in location partially reconfigured their existing social connections. In the resettlement communities, it is possible that traditional support networks had broken down as individuals relocated and the new connections had not been fully established (Tobin, et al. 2014). The massive storm surge created inundations of 5-6 meters high floods causing thousands of homes to collapse (Lagmay, et al. 2015). The affected residents along the coastal area were relocated to several transitional sites. Because of this, previous system of neighbors and communities were lost as residents were transferred to random transitional sites. This relocation necessitated the (re) building of new connections with (some) new neighbors and establishing trust.

4. ***Disaster as a shared experience.*** Douglas (1994) claimed that misfortunes [are] often seen as opportunities for raising the level of solidarity. Disasters become validations of the existing connections and cooperation among individuals. For most of the affected residents, Typhoon Haiyan was a shared experience that bonds them and their communities. Typhoon Haiyan served as a shared experience, which activated a bond among those placed in a similar situation. Regardless if they were old neighbors or just new ones in the transitional homes, it

increased interaction as the affected residents faced and coped with the challenges of the disasters.

These identified factors justified the changes in connections with the different social actors. Can these connections with these social actors validate people's trust? Trust substantiates the interdependence of individuals with different social actors during disasters. These available contacts with social actors facilitate reciprocal exchanges and confidence that can mediate the challenges of the disasters.

4.2. Trust and predicting connections

As emphasized in Sec. 2.4 of this chapter, trusting others precedes the predictability in the behavior in others (Torche and Valenzuela 2011). While trust develops voluntarily and exists between individuals, it matures over time and is validated by experiences. Disasters are among the significant catalysts for these transformations. As a raised assumption in this study, trust is a factor that affects people's choice of social connections. Hence, is it possible to forecast their possible connections based on their prior established relations with various social actors? And can these explain the changes in social connection?

4.2.1 Social connections during the disaster

This case ranges from before the disaster until the onslaught of Typhoon Haiyan. Fatality and disappearances are possible reason for the decrease in contact with the family (Nigg 1995). Another valid reason is that individuals, together with their family, collectively see themselves as a single unit (Dynes 2006), and thus, their contact with their family is already inherent and need not be explained as a valid social connection than those with their neighbors and those they see as others.

The disaster relief team is among the emergent groups that surfaced during the disaster. While they are available to provide assistance to the affected residents; the shared experience of the disaster appeals more as an immediate recourse in times of the disaster. Social or interpersonal trust can be based upon immediate, first hand experience of others (Newton 2001). Hence, a deeper sense of trust is embedded among those who experience the same challenges and circumstances during the disaster.

Regression model 1 showed equivalent positive relation (B > 0) between the pre-disaster (T1) and

during disaster (T2) contact with the government, religious group and friends respectively. The government is one of the formal sources of assistance outside of their immediate sphere of social connection; and the damage from Typhoon Haiyan required collaborative efforts from various government agencies to respond, manage the disaster and restore social order. Also, the religious group is a likely agency for people to contact and communicate during the disaster. For most people, this group is located between the formal and personal networks of many people. It is the preconceived nature that religious institutions provide the necessary support and assistance to its members and mankind in general.

Friends before the disaster were found to have a likely probability to connect with their friends during disaster. Connection here works in two ways: as source or seeker of assistance. Since friendship implies an established level of trust, people who were in contact prior to the disaster are confident to trust and re-connect with friends.

Linkages with neighbors, government, religious group and friends implies trust exist between these social connections for the affected residents during the impact of Typhoon Haiyan. These connections have been very important for people to respond and adapt to the challenges of the disaster. More so, it is important to know and understand if the social connections during disaster will remain significant as they move towards their recovery and future schemes for mitigation.

4.2.2 Social connections after the disaster

Model 2, exploring the period from Typhoon Haiyan to Present, presents these preferred connections after the disaster. In the disaster context, individuals have the potentiality of playing many different roles: family members, neighbor, worker, and for everyone within the citizenship role (Dynes 2006). The shared experience of the disaster led people to collectively see themselves as a family unit. Even neighbors are treated as an extension of the family, whom they faced the disaster together.

Over a certain period of time, as people gradually recovers from the disaster; many of the affected residents moved from evacuation areas to various transitional sites. Inherent to the role of emergent groups, recovery and rehabilitation aid are temporal and geared to (re) build self-reliant communities. Same with the religious institutions, people find religious rituals and prayers as vital mechanisms for

maintaining inner strength under the stress of uncertainty during disaster. However, in the long run, the resident's trust with the social actors in their immediate networks (i.e. relatives) strengthens. In the last two years, residents engaged in various livelihood activities, operated and maintained by members of the community.

Trust is a form of risk-taking, where the potential to create connections is gauged based on the individual's expectations. Thus, the odds to contact during disaster (T2) rely on their choice of social actors prior to the disaster (T1). Pre-disaster social actors (T1) becomes the attributes specific to each of the respondents. The same applies for the probability of social actors contact in post-disaster (T3) based on their disaster (T2) contacts. The success of the established connections, in the two important phases of the disaster for response (during) and recovery (after), is the ability to gain access to the right resources in disaster. Thus, it reiterates the role of social capital in disaster (Ritchie and Gill 2007) as basis of action and goal attainment for the community.

5. Conclusion

This chapter specified a more tangible explanation on the significance of social capital during disaster. By working on both a descriptive analysis supported by social capital literature reviews, a probability analysis is also found as a useful methodology. Identifying the odds (probability) of people connecting with other social actors can help in better responding to calamities and disasters.

In a return visit to the Tacloban City in the early 2016 showed a number of changes since the survey was conducted in 2015. Among them is the transfer of affected residents to permanent housing sites. In addition, several residents had already found opportunities for employment through funding and training support from NGOs and other disaster-recovery related institutions. On the other hand, emergent groups already started to pull their mission out of the area, leaving the residents with the skills for recovery that can hopefully render sustainable opportunities not just for economic purposes but also for disaster risk reduction. With social changes like engagement with (old and) new neighbors, gained interaction with various NGOs and international organizations, and more active government communication; these interactions with various social actors continue to evolve and reconfigure to adapt to their present circumstances and conditions.

Disasters are meaningful catalysts of observable changes in social connections. Fatality and disappearances can primarily cause a relative decrease in contact and connections. The presence of emergent groups, and the shared disaster experience can potentially increase the available connections, while resettlement to the transitional homes can cause both. Trust in selected social actors enhances the resilience of individuals in adapting to disasters. These encourage residents to enhance their connections with their immediate circle of trust, gain self-reliance, and reduce vulnerability to disasters.

In times of disasters, we gravitate towards people we trust, and often times they matter in the choices and decisions we make. More so, natural disasters are powerful equalizers; confirming that it affects everyone regardless of race, gender, education, status, etc. Trust is the reason why individuals engage with others. Our connections with other people are the invaluable capital that we should nurture. In the end, it is a world of interconnectivity and linkages; and the challenges of disasters are best faced together.

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CHAPTER THREE

MIGRANTS' NARRATIVES OF DISASTERS

CONTENT

1. Introduction

Over the years, natural disasters continue to be compounded predicaments that bypassed the significance of physical distance. The problem of large-scale natural disasters fused with other complex issues faced by states and nations placed them at varied levels of vulnerabilities. Disaster research specialists had significantly emphasized *disasters* as processual phenomena rather than as isolated events temporarily demarcated by exact time frames (Hoffman and Oliver-Smith 2002). However, disasters are often recognized through their pivotal moments of impact during the catastrophic event. Perspectives in anthropological disaster research attempted to define *disaster as a process/event involving a combination of a potentially destructive agent(s) from the natural and/or*

technological environment and a population in a socially and technologically produced condition of environmental vulnerability (Oliver-Smith 1996). In such scenarios, disasters are best understood through tangible transformations that took place in the immediate environment making us aware of our vulnerability and the degree of resilience.

Disasters adverse effects changed people's lives, including the social structures of communities and even states. Within this frame, the migrants' particular concerns and how they cope and survive disasters has yet to be fully explored. In this age of globalization and interconnectivity, migrants contribute to the socio-economic condition and even to the social fabric of the places they integrate. Globalization is in itself a source of vulnerability (Kirby 2010, Gandy 2008); and labor, ranging from the physical to the highly-skilled activities are key reasons for these geographical movement. Hence, reflecting on how migrants addressed and faced crisis can provide an understanding parallel to the adaptability of the whole society as well.

It is one thing to experience a disaster within the bounds of one's homeland, and it is another thing to face and cope with it elsewhere. This chapter looks at the disaster narratives from a particular ethnicity of migrants. It primarily developed on the assumption that their characteristics based on their social conditions as migrants contributed to their social vulnerability in instances of disasters. It is also through these characteristics and their social capacities, that they weave forms of disaster adaptation that increases their social resilience.

As developed in Chapter 1, migrants are often categorized in disaster within the cluster of vulnerable population, susceptible to disaster risks, consequentially perceived as victims, brought about by certain limitations such as language, limited rights, social protection and support, etc. It is often neglected that they bear certain inherent capacities to deal and respond to catastrophic conditions.

In the context of international policies and frameworks in disaster risk reduction, there had been a shift to which migrants are understood and integrated. Initially, the Hyogo Framework of Action 2005-2015 conceptualized migrants as part of the vulnerable population that demands attention in the disaster risk reduction planning (United Nations International Strategy for Disaster Reduction 2007). The present times and improved mobility of people led to a shift towards recognizing migrants as essential stakeholders in reducing disaster risks (United Nations International Strategy for Disaster Reduction 2015). Consistent with such larger thematic changes, this research addresses the key question on *how migrant collectives` social capital contribute/enhance their social resilience during disasters.*

More than empowered members of the population during disasters, migrants can significantly

contribute in resolving the social challenges in their host country. The shift of the changing times turns its spotlight on the need to recognize their capacities; and among the neglected resources of migrants includes their diverse composite set of social connections.

Through the use of collective disaster narratives, this chapter explores the social vulnerabilities, and formations of their capacities for disaster responses and coping. More so, adapting the social capital conceptual framework, it identifies the significant social actors in their network that contributes to their resilience during and after the disaster.

While the study attempts to present this relation between resilience and social capital for migrants during disasters; this chapter narrows its perspective to the narrative of experiences from the Filipino migrants in Japan. The study is not the overarching valid response for migrants in general. However, their experiences reveal a cultural response and adaptation worth learning from.

2. Methodology

This study demonstrates the relation of migrant's social capital in disaster using a qualitative methodological approach. Each interview is a story in itself that walks us through the experience based on a personal account. Sometimes a particular event is permutated to a number of narratives by those involved. To speak of a disaster that took place in a particular place and time constitutes a retelling of a tragedy from all those who experience it.

This chapter initially draws on researches from various scholars and specialists to establish the three key ideas that will be analyzed: *social vulnerability, social resilience and disaster social capital*. These concepts should be carefully understood to further situate them to the specific disaster narratives of migrants. This is followed by presenting the narratives of specific migrant collectives and their narratives of the March 11, 2011 disaster. It is understood that migrants (despite the similar ethnicity) are situated in different circumstances that can contribute to their vulnerability and resilience. Thus, to compare and contrast these narratives, a select group of temporary migrants (the Filipino foreign students in Japan) and a long-term collective (Bayanihan Kesennuma Filipino Community) were contacted and interviewed. This chapter of the study was approached through the comparative review of its relation to the various social mechanisms to approach disaster risk reduction and recovery.

The highlight of this study is the use of disaster narratives to generate the details of the key social actors in their networks and discern these connections in their disaster recovery. Reiterating the methodological framework, Gerteis (2002) emphasized that *collective narratives [as methodology] are the sites where schemas take concrete empirical form*. Hence, social capital (as an intangible

resource) is revealed in the collective narratives from the community. These stories serve as evidence on how social capital operates in its actual form. As people retold their disaster experiences, it reveals the extent and nature of their social connections. Chamlee-Wright and Storr (2011) expound how collective narratives following disasters works as an empirical strategy for availing insight on how people make sense of their circumstances, assess their capabilities and prospects for recovery; and decide on and sustain certain courses of action. People recounts their stories of the disaster revealing their vulnerabilities, disaster behavior and response, capacities and ties made and (re)build.

For this part of the study, narratives of the Filipino students and the Filipino residents in Kesennuma City provided insights on the disaster response and sense of vulnerability experienced by migrants. The interviews with 30 Filipino students were completed as part of an earlier study (Robles 2014), looking at the disaster behavioral response mechanism for migrant collectives. The main parameters in including them was their physical presence in Japan during the afternoon of March 11, 2011 particularly those situated in the Tohoku Region and greater Tokyo area. The face-to-face interviews were made possible for most of the students in Tohoku and Tokyo. These were complemented with Skype interviews and questionnaires for those who were more difficult to reach. On the other hand, access and contact to the Filipinos in Kesennuma were made possible through personal introduction of known interviewees. A total of 3 visits with face-to-face group interviews within a period of one year since 2015 were made, together with continuous exchange of messages in social media. For both groups, firsthand accounts draw inquiry on the actual experiences during Japan 3.11, imploring on relationship dynamics, decision-making rationale during the situation and the reflections on the stay in Japan.

These narratives of disasters would encompass personal accounts of coping and dealing with calamities; where people's social dynamics and exchanges are subject to analysis and interpretation of the existing cultural system. The study of these narratives are expected to reveal the social connections available and accessible to migrants during the disaster whereby presenting the importance of people`s social capital in disaster mitigation and recovery.

2.1. Disaster research and collecting narratives

Narratives of disasters encompass personal accounts of coping and dealing with calamities. While these amass a bounty of data for the researcher, it should not be forgotten that these are also memories of those who personally faced, went through, and eventually survived such crises. Thus, these accounts from migrants (foreign residents) are key sources of information for this study and at the same time are significant fragments of their personal history. The narratives revealed the forms of social connections present (or absent thereof) in facing disasters. These narratives are anticipated to

show the social connections available to migrants during the disaster; thus accommodating the study's claim that people's social capital may contribute to their disaster resilience.

Just like poverty, *disaster is best seen in nostalgia*. The fact that people were able to look back implies something that had been faced and survived. The experience is a meaningful narrative of resilience and is a good source of learning, not just for those who confronted the actual crisis but also for a lager context of disaster mitigation and recovery.

3. Creating context

This chapter presented and analyzed ideas of resilience, vulnerability and social capital befitting the experience of a particular set of migrants. Such concepts are not mutually exclusive; rather these are weaved to a certain degree of connection between them, enriching the narratives of disasters that encapsulates the migrants experiences and social dynamics.

Resilience often appears in parallel with *vulnerability*, implying a cohesive relation between the two. Both have a causal relationship that affects individuals and even communities' capacities to face and address disasters. Based on combined literature reviewed on this topic, Table 7 sums up this enlisted relation between social vulnerability and social resilience in the context of disaster.

Adger (2000) defines both social vulnerability and social resilience in almost the same complementary lines. Social vulnerability accounts for the *exposure* of individuals to the impact made to the environmental changes, while social resilience is the ability to *adapt* to these changes. Social vulnerability are based on characteristics including age, race health income among others. These are inherent to the individual or group and thus contributing to their degree of susceptibility to greater risk to personal safety. On the contrary it is also this same set of vulnerabilities that dictates their ability to cope in changing conditions.

Looking at social vulnerability, it addresses the question on how much *cost* will the individual or community incur once disaster strikes. Instead of cost, resilience is validated through time. It addresses the question of *how long* will the community respond and recover from the disaster. The amount of time it takes to recover from an occurrence of a hazard affects not only the economic viability of a community, but also its social fabric or "glue" that keeps it together (Sapirstein 2006). The longer it takes to recover, the more likely it is that the community will break up – because of departures, economic stagnation, and rampant psychological and emotional distress. Thus, the elements of cost and time acts as main points for analyzing these two distinct (yet totally related) ideas. In fact, one variable is important to understand and strengthen the analysis of the other.

Table 7 Comparative summary of social vulnerability and social resilience

	Social Vulnerability	Social Resilience
Definition	Exposure of groups of people or individuals to stress as a result of impacts of environmental change. (Adger 2000)	Important component of the circumstances under which individuals and social groups adapt to environmental change (Adger 2000)
Indicators	Most often described using the individual characteristics of people (age, race, health, income, type of dwelling unit, employment) (Cutter, Boruff and Shirley 2003)	(Proxy Indicators) institutional change and economic structure, demographic change (Adger 2000)
How to analyze	Economic or human cost: How much will it cost if a hazard occurs in a given community and how many lives will be lost or affected (Sapirstein 2006)	Time: How long will it take for the community to respond to the event, self organize and incorporate the lessons learned before returning to a [new] normal way of functioning (Sapirstein 2006)

3.1. Social vulnerability

What accounts for our vulnerability? What makes people vulnerable during catastrophic conditions? Cutter, Boruff and Shirley (2003) described *social vulnerability* as a product of social inequalities; those factors that influence or shape the susceptibility of various groups to harm and govern their ability to respond. With this as basis, 17 factors were identified to influence man's social vulnerability. These factors covered a wide range of indicators to encompass all that can potentially affect the individual's sense of vulnerability. Included in these are concepts of socioeconomic status, gender, race and ethnicity, age, commercial and industrial development, employment loss, rural/urban, residential property, infrastructure and lifelines, renters, occupation, family structure, education, population growth, medical services, social dependence and the special needs populations. These social vulnerabilities vary in degrees of impact individuals or communities may experience. Nonetheless, these factors can potentially contribute to the form or response actuated. People are befit with social condition with a certain set of vulnerabilities in catastrophic conditions and consequently a particular set of resources naturally configured to address and augment these hazards; thus is their resilience.

3.2. Social resilience

It is important to emphasize that *resilience is not something imposed on people*; rather it necessitates voluntary participation by those involved (Sapirstein 2006). Resilience is confirmed based on the observed transformations that takes place in instances of disasters and the impact it creates to people`s lives and surroundings.

In Saperstein's (2006) *Social resilience: The forgotten dimension in disaster risk reduction,* it qualified the evolution of the four phases of resilience. More resilient communities are said to develop better (1) *response* by mobilizing their own resources quickly and effectively to face disasters regardless of any external assistance. As they face disasters, they (2) *self-organize* forming emergency response and recovery among civic organizations and the neighborhood to maintain social order. Community initiative is found important because it provides a sense of safety, control and predictability. Across time, significant points of disaster-related (3) *learning* are reflected and assessed. Disasters alter existing social fabrics and thus sometimes result to permanent changes to the communities. The process of (4) *adaptation* covers this chance to grieve and eventually adapt to these alterations and changes, ensuring people deals with the situation at hand, rather than romanticizing an idealized past or harboring anger and resentment at perceived or real failures of government.

All four components constitute to the development of social resilience during disasters. The range of time may vary, and the tendency to overlap among these components may exists; but this chronology of transition from one phase to another constitutes to a narrative of disaster that in turn attends congruent to a narrative of resilience.

3.3. Social capital in disasters

The theoretical value of social capital bears the duality of an advantage and disadvantage. While this concept can be applied to a multiplicity of disciplines to explain social phenomenon and reinforcing the significance of social dynamics; the potential to quantify it remains a challenge. The modern utilization of *social capital* as social science concept gave way to variety of interrelated definitions encompassing the idea. Bourdieu (1985) sees it the aggregate of potential or actual resources linked to [individual's] durable networks of mutual acquaintance and recognition. On another angle, Coleman (1988) approached it in terms function; where social capital exists within a certain social structure that facilitates actors [people] actions. In Putnam`s *Bowling Alone* (2000), it establish social capital as the connections of individuals social networks with norms of reciprocity and trust-worthiness. The three aforementioned are just a few, but among the prominent definitions of social capital constantly used in literature. Nonetheless, policy makers and institutions continue to utilize its definition along the lines of networks of social relations and interactions (Woolcock and Narayan 2000, Policy Research Initiative 2005). Together with *connections* and *networks*; the terms *trust, mutual understanding, communities* and *cooperative action* contribute in better understanding social capital.

Disasters are among the significant phenomenon that expose workings of these social dynamics. Social capital in disasters were discussed and analyzed against actual experiences of response and recovery several disasters like the 1995 Kobe Earthquake (Nakagawa and Shaw 2004, Aldrich 2012a, Yamamura 2014), the 2004 Indian Ocean Tsunami (Munasinghe 2007, Minamoto 2010); 2005

Hurricane Katrina (Airriess, et al. 2008, Chamlee-Wright 2010, Aldrich 2012a); and the 2011 Tohoku Earthquake (Aldrich 2012a). These works continue to grow and elucidate how social capital operate in catastrophic conditions; its success and failure especially in disaster recovery and response of communities.

A key characteristic of social capital is it's intangibility. During disasters, people`s connection matters as a source of resilience. Dynes (2006) emphasized how social capital is not located in each individual, as in human capital, but rather is embedded in social relationships and networks between and among members of a community. It can be unceasingly discussed and explained, but it is best seen and better understood by its manifestations and the forms of social connections established. *Bonding*, *bridging* and *linking* social capital provides the representations of the various forms of connections that exist among people (Hawkins and Maurer 2010, Aldrich 2012a). *Bonding* is easily identified as the social networks of exclusive identities and homogenous groups; while *bridging* refers to networks that are outward-looking and encompass people across diverse social cleavages (Putnam 2000). Across vertical gradients, *linking* social capital as a form of connection describes connections among people in positions of power that allow them to obtain resources from formal institutions (Policy Research Initiative 2005).

The narratives of migrants and the experience of disaster bespoke of this complexity of connections defying geographical boundaries and reframing social relations while addressing uncertainties. It is noteworthy to emphasize that the migrant experience may beget a modified form of resilience, and thus a particular network where they gain social capital. The nature of their stay in the host country modifies their form of response and adaptation to disasters.

4.0 Case analysis: Filipinos and Japan 3.11

In 2014, there are 217,585 documented Filipinos living in Japan (Statistics Bureau, Ministry of Internal Affairs and Communications 2016); and they consistently ranked the third largest foreign residents in the last five years. While it easy quite easy to find a co-national around because of the large population; concerting and organizing people of the same ethnicity on certain events maybe a challenge. Following the 2011 Great East Japan Earthquake, it created an opportunity to see this concern based on specific case of migrants.

Migration would generally be defined as the people's voluntary movement to better their social condition or any other purposes of upward mobility; however there are more specific categorization based on the purpose of their stay. Based from the Immigration Bureau of Japan (2016), there are 23 categories based on the activities they are authorized to engage and 4 main categories based on the personal relationship or status of authorized residence. While people are not limited to interactions

only among to the same people of the same category, the categories created greater tendencies to interact with people of the same nature of residents.

This distinction is quite clear to understand these differences in established social connections between the Filipino students and Filipino community in Kesennuma. While both are generally qualified as migrants (or foreign residents), the length and nature of their stay may matter significantly. The Filipino students accounted as among the temporary migrants; while their nature of stay is regular and documents their temporality is owed to their employment or academic-related purpose of stay (Opiniano 2007). On the other hand, long-term residents at those bound to a more permanent resettlement. This in effect creates a distinction in their capacities and even their limitations in their stay.

This section provided a digest on the profile and the 2011 disaster experience of the Filipino students and Filipino community in Kesennuma. This help draw the points of vulnerabilities and capacities they utilized as the respond and recover from the disaster.

4.1. 2011 Great East Japan Earthquake
At 14:46 JST (UTC +6) on March 11, 2011 a magnitude 9.0 (the largest earthquake recorded in Japan) shook Northeastern part of mainland Japan. It's hypocenter originated 130 km ESE off Oshika Peninsula (Hypocenter: 38° 6.2′ N, 142° 51.6′ E) with depth of 24km. A maximum of magnitude 7 was felt in Kurihara City of Miyagi Prefecture, around 6.0 is felt in 28 surrounding cities and towns in Miyagi, Fukushima, Ibaraki and Tochigi Prefecture; while magnitude 6- or weaker was observed nationwide from Hokkaido to Kyushu. This information was made available by the Japan Meteorological Agency (2011). This disaster was compounded by the tsunami that struck the fringes of the Tohoku region, with 9.3 or higher tsunami observed in Soma, Fukushima Prefecture, and 8.6m or higher in Ishinomaki, Miyagi Prefecture among others. As if these double devastations were not enough, the following days were raved with threats of nuclear turmoil from the damaged Fukushima Nuclear Plant. (See Fig. 9)

From that day on, it was inked in Japan's history as the Great Eastern Japan Disaster (東日本大震災 [Higashi Nihon Dai Shin Sai]) and would alternately be called [Japan] 3.11 or 2011 Tohoku Earthquake hereafter. Literatures and photographic representations of the disaster brought the rethinking of certain concerns that affected the Japanese society. Different people have different stories to tell. Sometimes a particular event is permutated to a number of narratives by those involved, creating a web of interconnected stories of a disaster that took place in a specific place and time. It constitutes a retelling of a tragedy from all those who experienced it.
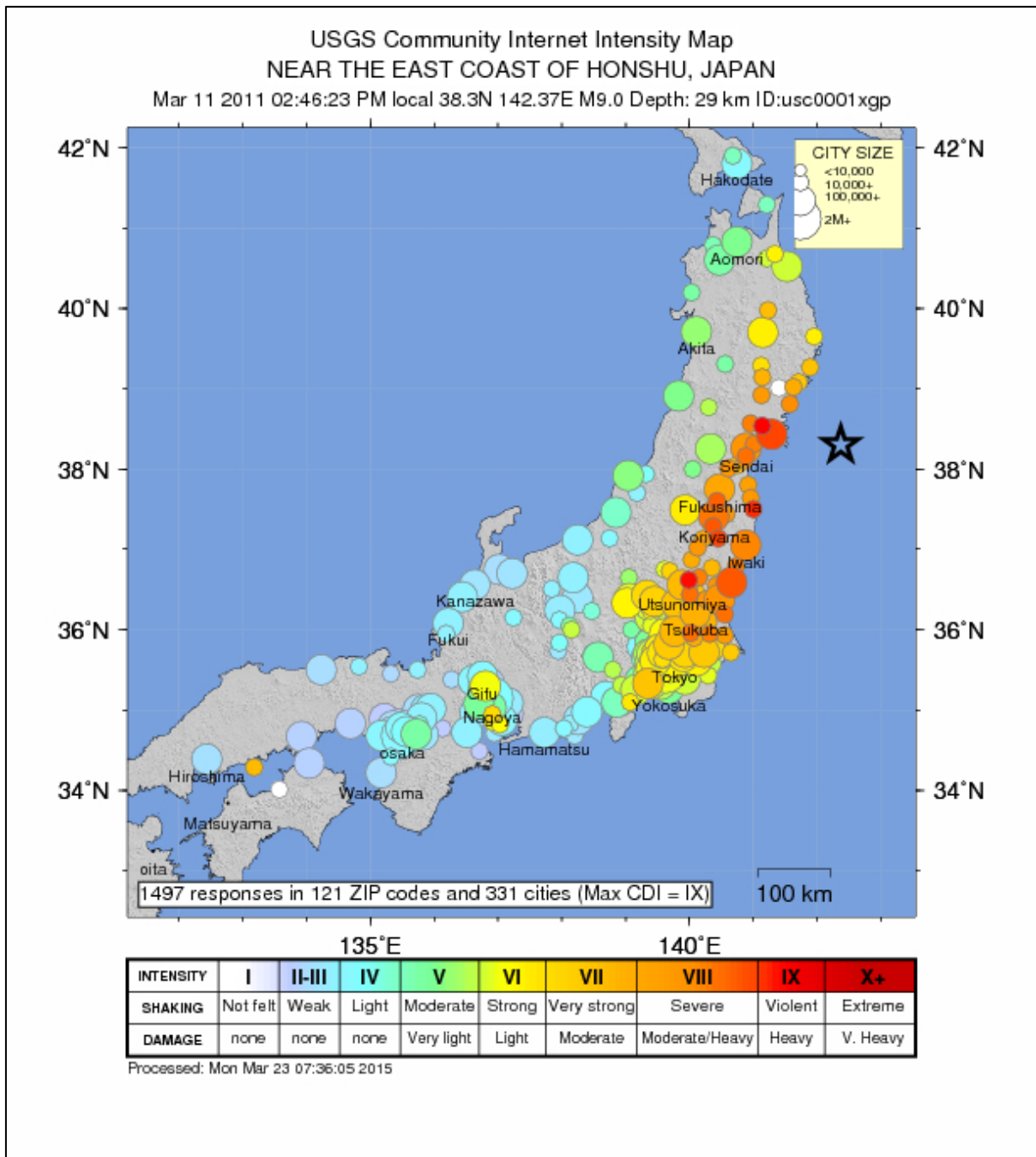
Figure 9 Map of seismic distribution (2011 Tohoku Earthquake, March 11, 2011)
(Source: US Geological Survey, ca. 1:100km)

According the National Police Agency Agency (Ministry of Foreign Affairs of Japan 2012) there are 15,853 recorded dead, 6,013 injured, and 3, 286 missing persons resulting from the tsunami and aftershocks, as of the their Feb 8, 2012 report. The Cabinet Office (2011) presented a rough estimate of damages in buildings and lifeline facilities to be about Y16.9 trillion and Y16-25 trillion as estimated by the Cabinet Office Disaster Management and Economic Analysis respectively (as cited in Kazama and Noda (2012)). The International Organization for Migration (2012) identified that

more than 700,000 foreigners, including permanent and temporary foreign residents, spouses of Japanese nationals, students and tourists, were present in the area that was hit by the earthquake and tsunami in March 2011; with 23 foreign nationals lost their lives and 173 were injured. While the total number of foreign residents who died or experienced damages because of the disaster where limited proportion in comparison to the total affected population, it is interesting to know and understand how foreign residents coped and survived the disaster.

4.2. Filipino students in Japan

A foreign student is understood as an individual whose nature of stay is mainly for scholastic reasons, with the absence of any family member in the immediate environment, and the stay in the host country is limited to the duration of the academic program. With such conditions, it is assumed that the kind of disaster response and coping behavior is quite different from other migrant groups or like the more long-term residents. As of May 2013, there are a total of 135,519 international students in Japan, from which there are 507 international students and 43 short-terms students from the Philippines (Japan Student Services Organization 2014). The Filipino students ranked 17th among the nationalities acquiring education in Japan.

It was earlier stated that Filipino foreign students earning education in Japan are living alone. They temporarily move away from their immediate family members – parents, relatives, and sometimes even from their spouses and children. With such circumstance, these students build connections with other students who are in the same conditions, chiefly from the same academic institution or similar affiliation from back in the Philippines. The tendency to lean towards co-nationals (other Filipinos) is the primary connection established, supplemented by the engagement recognized with other social institutions – like universities, church groups, and sometimes in their immediate communities. For the Filipino foreign students, social group is operationalized within the context of (re) established connections in Japan bound within the similar status of being students and co-nationals.

All the students interviewed and contacted shared that they face the primary challenge resulting from the 9.0 magnitude earthquake disaster. None of the interviewees lived along the tsunami-prone area and thus it was not a primary concern. The immediate problems were the concerns resulting from damages from the earthquake and the succeeding aftershocks. Like most of the people caught at different parts of Japan where seismic tremors were felt, they encountered the combined problems of communication disruptions, recurring aftershocks, transportation delays, and the challenges of the tough weather condition.

During the 3.11 disaster, it was repeatedly retold how the students sought their co-patriot, specifically fellow Filipino students attending the same university or residing in a nearby area. This was

accomplished through physical gathering at designated areas, contacts and exchanges via emails, Facebook, Twitter and text messages. For most of the students, the evening of March 11, 2011 was spent together. Either coincidental or intended, the resulting convergence for most of the students was comforting for the time being.

They continuously communicate with relatives back in the Philippines and monitor the news about the disaster situation. All interviewees confirmed that it was reassuring to be in company of fellow Filipinos, and in most instances with other students. Shelle (Interviewed by author, Sendai, May 6, 2012) shared how her fear of the recurring aftershocks, and the lack of mobile signal, led her to immediately pack clothes from her apartment and look for the other Filipino students back in campus. By the evening of March 11, she reached one of the halls of Tohoku University and met another Filipino student there. For Ricky (Interviewed by author, Tokyo, Sept. 10, 2012) a student in Tokyo, he was able to contact another student following the emergency tree devised by their sending organization (JICE) for all the students under their scholarship. They were able to confirm the safety and location of everyone hours after the first wave of the earthquake.

Since March 11, 2011 through the succeeding weeks after, the students mainly connect through social media particularly through the Facebook group. This was utilized as a site for information gathering and diffusion relevant to the issues of the earthquake, aftershocks, nuclear radiation, and other concerns on personal safety. The priority of the Filipino students collective across Japan is to provide support to the Filipino students in directly affected area, Tohoku region. Lea (Sendai, May 6, 2012), a student from Tohoku emphasized the importance of student networking during that time. When the Filipino students in the region needed to move out of the area; accommodation offers and financial assistance for temporary repatriation of Filipino students from Tohoku were made collectively by other Filipino students from different parts of Japan.

In addition, this collective of Filipino students within Japan did not remain exclusive in supporting Filipino students during this time of the disaster. It connected itself to other collectives and agencies to address their other co-nationals' needs and other victims. From among these, official agencies such as Philippine Embassy and the Philippine Assistance Group (PAG); and faith-based institutions (e.g. Franciscan Chapel Center, Kichijoji Catholic Church) were vital points of contact to volunteer and help other communities and collectives. Even prior to this disaster, the network of Filipino students had established connections (both in formal and informal channels) with these other institutions; thus cooperation with them is not something new.

After Japan 3.11, an active interest in disaster preparedness was made available for the Filipino students who arrive in Japan following the March 11, 2011 disaster. Disaster Preparedness Seminars

were initiated and organized, with Filipino students specializing in fields relevant to disasters and geoscience researches shared their understanding of the Great East Japan Earthquake. Also, a number of students had participated in volunteer works for the rebuilding projects in Tohoku. Filipino students in Tohoku, while they maintain contact with other Filipino students, also strengthened their ties with the other Filipinos in their local community. As people moved forward from this disaster, the established connections had been repeatedly activated when found emergent.

4.3. Filipino community in Kesennuma

The Filipino group in Kesennuma is perhaps a limited and homogenous Filipino collective in Japan. The group since formed in 1998 and is originally known as the Bayanihan Kokusai Tomonokai. After the March 11, 2011 disaster, it was officially renamed Bayanihan Kesennuma Filipino Community. By the time of the interview in 2015, there are only 76 Filipino women living in Kesennuma and all are married to Japanese men. Earlier generations of Filipinos in Kesennuma were previously entertainers working in the city that eventually married Japanese men; the much later generation arrived in Kesennuma through fixed marriages. Once things were settled, they come to Japan with totally (if not minimal) background on the language, culture and living. The Filipino group was primarily organized to give support to Filipinos living in the area, especially those who has recently moved.

Before the 3.11 disaster, Filipinos in Kesennuma had already been active in the community - participating in cultural presentations and volunteering in the elder homes. Often times they are in contact with the city hall for various activities. More so, their connection is not limited among the Filipinos in the area, but there are active connections with other foreign nationals in the area that they often engaged with at the workplace. Since the city is near the coast, fishery and working in seaport as the common job opportunities for most foreign residents.

Of the 75 members of the group, one Filipina was confirmed dead together with her Japanese husband. One of the interviewee and designated leader of the group (Rachel, Kesennuma, 2015 interview) was in the bullet train to Tokyo en route to Manila on the day of the earthquake. Due to the current situation, and the growing concern for her husband and children, she opted to cancel he flight instead. However, the damages to main transport lines resulted to her inability to return to Kesennuma that day. With all the difficulties to return to Tohoku and no contact in Kesennuma, she went to social media to post an update to confirm her safety. People within her network picked up on her post; and this became a significant point of contact the rippled effects on how the Filipino community respond to the disaster-affected co-nationals in Kesennuma.

Social media mattered in mobilizing connections and contacts among the Filipinos in Kesennuma. The group was sought and tapped by other groups and networks. This started in Facebook, were relatives and other agencies attempted to contact Rachel to reach and (potentially) contact relatives in the Kesennuma and nearby areas. People both in and out of Japan were asking information and calling to ensure the safety of family members. A key challenge after the disaster was accounting the Filipino residents in the affected areas. They know who the Filipino residents are; however details such as their whereabouts after the disaster were limited. When basic services partially resumed, official institutions such as the Kesennuma local government (through the Little International Embassy of Kesennuma City) and the Philippine Embassy in Japan communicated with the group to account its foreign residents and nationals respectively. The group identified the Filipino residents in the area, contacts were established and distribution of available support and assistance from the Philippine Consulate and other organizations were organized.

Despite the aftershocks, the damage left by the tsunami and the escalating threat from the nuclear radiation leak, only a handful of the Filipinos in Kesennuma temporarily left for the Philippines. The primary concern was the their family. Since all of them are married to Japanese men and thereby integrated in a Japanese household; the temporary repatriation means being separated from their immediate family and end even their extended family members (such as their in-laws). Hence, most of them opted to stay, and with a greater motivation to rebuild and recover after the disaster.

The large extent of damage from both the earthquake and the tsunami constrained the economic activities in the area. The aftermath of the 3.11 disaster led to the considerable entry of different groups like NGOs, NPOs, support groups and volunteers in their community. All external institutions and organizations were aimed to help and support the affected residents .Three key projects initiated by NPOs and NGOs resulted to long-term benefits for the Filipinos in the area: 1.) A disaster-relevant radio program, 2.) Caregiver training, and, 3.) English teacher training.

In June 2011, a multilingual community broadcasting from Kobe approached members of the Filipino group in Kesennuma to provide the technical facilities to air and broadcast through Internet-radio, a disaster-relevant program in mix Japanese, English and Tagalog languages. From the write-up made by the Public Relations Office (2012), the Filipino Kesennuma residents recount how they initially felt hesitant to broadcast and host the radio program. With the program's content including the disaster's impact in Kesennuma, people's experience and safety measure for future disasters; it received good feedbacks from listeners and was a venue for sharing ideas and the experience of the disaster. Aside from the Bayanihan Kesennuma Radio broadcast, other NGOs offered livelihood trainings to support foreign residents who lost their livelihood because of the disaster. Through the support of NPO Japan Association of Refugees, 24 Filipinos received caregiver certification trainings.

Currently, 9 of them are working at senior citizen and welfare centers in the area. Through these, Filipinos in Kesennuma were able to avail sustainable skills and start anew after the disaster.

At present, the group continues to support the Filipinos' living in the area. Based from the narratives of the Filipino residents, the 3.11 disaster was an opportunity to increase their social connections.

Before the disaster, their constant contact were limited to their families, friends (who often times are also Filipinos), their neighbors, the church and city hall. The 2011 Tohoku earthquake, expanded their network to create a more constant contact with the Philippine Embassy, other Filipino groups in Japan, and their local government. While not everyone in the collective have the same degree of interactions, there are acknowledged leaders who maintains these communication and echo information to everyone.

4.4. Points of social vulnerability

As established in the third section of this chapter, migrants bears set of vulnerabilities based on the confluence of their nature as migrants (foreigners) and their social characteristics. Seemingly, there is also an intrinsic capacity among them to be resilient during disasters. People's social condition complemented with certain set of vulnerabilities are often heightened in pivotal situations. Catastrophic conditions are those times when a particular set of means naturally configured to address and augment these hazards. And it is in such scenario that we observe both vulnerabilities and resilience in disasters.

The circumstance as a foreign resident together with culturally developed disaster response creates a distinct social vulnerabilities that dictates the coping and adaptive behavior in events of disaster. In general, social vulnerability is often described using individual characteristics of people such as age, race, health, income, type of dwelling unit and employment (Cutter, Boruff and Shirley 2003). These factors are greatly understood to influence or shape people's (perception of) susceptibility of various groups to harm; and thus dictating their ability to respond.

Table 8 summaries an inventory of identified vulnerabilities based from the narratives of the Filipino students and those in Kesennuma. Framed against the list of social vulnerability indicators identified in Cutter, Boruff and Shirley (2003), both the students and Filipino residents in Kesennuma found the socioeconomic status, race and ethnicity, infrastructure and lifelines, renters, and family structure as common points of vulnerability. For the Filipino students, education was an additional point of social vulnerabilities. The Filipinos in Kesennuma had additional vulnerabilities potentially related to their employment and occupation losses, the urban/rural divide, commercial and industrial development and residential property.

Table 8 Comparing the 2011 Tohoku Earthquake social vulnerability indicators for the Filipino students and Filipino residents in Kesennuma

Indicators (Adapted from (Cutter, Boruff and Shirley 2003))	Filipino Students in Japan	Filipino Community in Kesennuma
Socio-economic Status	✔	✔
Gender		
Race and Ethnicity	✔	✔
Age		
Commercial & Industrial Development		✔
Employment Loss		✔
Rural/Urban		✔
Residential Property		✔
Infrastructures & Lifelines	✔	✔
Renters	✔	✔
Occupation		✔
Family Structure	✔	✔
Education	✔	
Population Growth		
Medical services		
Social dependence		
Special needs population		

Socioeconomic status as source of social vulnerability covers the community`s ability to absorb and recover from the losses more quickly due to insurance, social safety nets, and entitlement programs (Cutter, Boruff and Shirley 2003). This is gauged on the basis of one's income, political power and prestige. Most of the Filipino foreign students in Japan acquire education in various educational institutions through financial subsidy. On the average, private and government scholarship grants apt amount to cover basic daily expenses with little room for personal savings. Hence financial freedom is quite limited if not curtailed. As for the Filipinas in Kesennuma, their financial freedom is within the bounds of their household's income. In some cases, some Filipinas would provide financial support to their family back in the Philippines as well.

In addition, *race and ethnicity* are also evident sources of vulnerability. Both language and culture often serves as barriers especially the access to post-disaster funding and residential locations in high hazard areas. In the linguistically unique setting of Japan, not all foreign nationals acquire the sufficient level of Japanese language to comprehend extensively technical details. Thus despite the availability of information through various media (television, radio, and internet), foreign nationals are placed at a disadvantage. Despite the formal language training incurred by the students, and the language learned from experience by the Filipino residents, they remain inept to fully understand the totality of the situation including the technical details of the radiation leak.

One source of vulnerability that was not fairly limited to the migrants is the *loss of sewers, bridges, water, telecommunications, and transportation infrastructure* compounds. The damages in these public utilities paralyzed not just the distribution and dynamics of resources and information during disasters for migrants. Instead, this was something experienced by everyone. From among the students interviewed, the breakdown in communication services after the strongest tremors in the afternoon of March 11, 2011 hindered the exchanges in messages even in social media. For the Filipino residents in Kesennuma, they had been temporarily disconnected from the rest of the Filipino in the area. With the combined impact of the earthquake and tsunami disabling various infrastructures, it was a challenge to confirm everyone's safety and provide immediate support.

Renters as a social vulnerability implies people`s condition as transient or those with insufficient resources for home ownership. With the high cost of living in Japan, renting residence is a common practice for most Japanese, long term foreign residents, and thus the students as well. This may well be included in their socio-economic capacity as foreign nationals.

Lastly, the *family structure* is one evident source of vulnerability for migrants. As the previous study (Robles 2014) asserts, the students often come to Japan by themselves, leaving behind their families in the Philippines. The position of being in a place far from the comfort and assurance of the family in the time of the disaster; creates a sense of vulnerability and necessitates the creation of disaster response strategies from among them. It's the same concept of a family structure that for longtime foreign residents, more than the main priority to keep everyone together during the disaster, the intention to stay or depart was assessed based on the things that greatly matters to the family – the children's education, housing, and occupation. This constitutes to their sense of rootedness at particular locations.

In addition to these 5 comparable social vulnerabilities for both the foreign students and the Kesennuma Filipino residents; the foreign student have *education* also as a pivotal point of social vulnerability during the disaster. With this as their main purpose of stay in their host country, it entails certain limitations anchored to the particular institutions they are affiliated.

While majority of foreign residents rent residences in Japan, there are those who lives in their own property; like those who are part of Japanese households. Like the social vulnerability related to the losses to social infrastructures, the vulnerability brought by damages to property is limited to migrants alone. This was selected to confirm that it is also affective of migrants during disasters.

For the permanent residents like the Filipinas in Kesennuma have other vulnerabilities related mainly to their source of income. Some *occupations* may involve the extraction of resources that maybe

severely impacted by a hazard event (Heinz Center for Science, Economics, and the Environment 2000). Kesennuma City's geographic location opened work opportunities related to fishing and other connected businesses. The 2011 tsunami created massive damage to the source of income in the city, specially those working in the fishing industry. These fish processing factories were the common occupation for a number of foreign residents in the area, including a number of Filipino. Hence, the challenge brought by the breakdown in their source of occupation is very much related to the vulnerability to their *commercial and industrial development*; and thereby connected to the losses in opportunities due to the *rural/urban* divide (Cutter, Mitchell and Scott 2000).

In summary, these are the identified commonalities and differences in the social vulnerabilities experienced by the select community of Filipino migrants. These social vulnerabilities may appear at varying degrees, and may not be representative of all migrants' migrants' vulnerabilities in times of disasters; however, it provides an understanding on the potential points of challenges for migrants that may require a certain degree of resilience.

4.5. Migrant's resilience

Saperstein's (2006) discussion on the development of the 4 components of response, self – organization, learning and adaption as contributing to individuals social resilience, is applicable to the circumstances of the migrants as well. *Response* varies across regions and cultures. More resilient communities are understood to respond better by developing means to mobilize their own resources quickly and effectively to face disasters regardless of any external assistance. Foreign residents bring with them to their host country their own sets of response to disasters based on their personal experience in the home country. Also, in the immediate post-disaster response, collective action is made by the community. This component identified as a form of *self-organization* includes emergency response and recovery among civic organizations and the neighborhood to maintain social order. Community initiative is important because it provides a sense of safety, control and predictability. Across the duration of the disaster, both the students and the Filipinos in Kesennuma experiences found ways to regroup and act collectively. The Filipino students in various parts of Japan were able to respond to the needs of the affected students and the co-nationals. In the same way, the affected Filipinos in Kesennuma confirmed each others safety, and maintained communication of significant information from formal institutions.

Significant *points of learning* surfaces during post-disaster reflections and assessments. The assessment of the positive and negative events encountered and the formulation of means to respond to disasters are significant to be able to move forward. For both the Filipino residents and the Filipino students, the key reflections include *preparedness* and *collective action*. The necessity to be always ready was heightened because of the disaster. Thus, for the students disaster information

dissemination were prioritized both in social media and personal gatherings. The interview with some Filipino residents in Kesennuma confirmed that both ideas are important. The aftermath of the disaster led the residents to consider the importance of their connectivity among themselves and their other co-nationals in Japan.

Finally, completing this sequential components of resilience is the phase of *adaptation*. Disasters alter existing social fabrics and thus sometimes result to permanent changes to the communities. Sometimes more than the damage to property and loss of socio-cultural landmarks, loss of lives occur. The process of adaptation covers this chance to grieve and eventually adapt to these alterations and changes ensures that people are dealing with the situation at hand, rather than romanticizing an idealized past or harboring anger and resentment at perceived or real failures of government. The 2011 Tohoku disaster led to an increased level of adaptations for both the students and the residents. A key development in their adaptation is identifying and recognizing the significant individuals ands institutions in their network in times of disasters.

While resilience implies the counterforce of people`s vulnerabilities during disasters, their social relations during these times adds to this layer of resilience; inherent not on the individual alone, but to the kind of relationship and interaction that developed with other members of community. Thus is their social capital.

4.6. Resilience and collective action

All four components constitute to the development of social resilience during disasters. The range of time may vary, and have a tendency for overlap among each of these components; but this chronology of transition from one phase to another creates this narrative of disaster that in turn attends congruent to a narrative of resilience.

Early disaster research specialists have already dealt with the topic of resilience (Quarantelli and Dynes 1977, Dynes 2006). However, thorough discussions were not made specific to this label. Rather, they are embedded in the rationales of disaster coping and response. Resilience is understood by its manifestations and the dynamics taking place as people respond to catastrophic conditions. Thereby making social connections to individuals and institutions to be significant element in gaining resilience. The circumstance as foreign residents together with their culturally developed disaster response create a distinct social vulnerability that dictates the coping and adaptive behavior in events of disaster. These social factors may influence or shape the susceptibility of various groups to harm and dictates their ability to respond (Cutter, Boruff and Shirley 2003). As resilience neutralizes people`s vulnerabilities during disasters; their social relations during these times adds to this layer of

resilience; inherent not on the individual alone, but to the kind of relationship and interaction that developed with other members of community.

Table 9 summarizes the social actors that the Filipino students and residents in Kesennuma were in contact during and after the disaster. Mapping this against Sapirstein's (2006) 4 components in the development of social resilience, the chart shows the identified connections during and after the disaster. Quarantelli and Dynes (1977) suggested the relation of social response and disaster, stressing that at times of disaster, the basic unit considered is not the individual but the group. Thus, people seek to find others whom they feel comfortable to be with in times of disaster.

During the disaster, the students respond and self-organized while maintaining contacts with other Filipinos in Japan, their academic colleagues, family in the Philippines, their friends in Japan and some with their neighbors. As for the Filipino in Kesennuma, the identified contacts during the disaster included their family both in Japan and in the Philippines, the other Filipinos in Kesennuma, their neighbors, other foreign residents and their contact with the local government. The modes of communication with these social actors varies from direct face to face communication, voice and video calls and communication in social media (Facebook, Line, Twitter, etc.).

People`s response and coping during disastrous situations partially defines their resilience. These are not enforced but are seen in the manifestations in their various actions. Collective action is acknowledged as an important facet in facing a disaster. For both the students and residents in Kesennuma, the collective action was exercised to immediately respond to disaster and to extend assistance to others. Also, the recent years showed how human connectivity transcended the physical togetherness creating an alternative (or more appropriately "supplementary") connection through social media. The poignant connection made through this virtual collective creates a powerful instrument that shortens distances and enhances togetherness especially in disasters (Hughes, et al. 2008, Slater, Nishimura and Kindstrand 2012). For both the experiences of the Filipino students and those in Kesennuma, social media played a significant mode to communicate safety and respond to the disaster. It was an effective means to connect to various social actors. The geographical distance between the people affected by the disaster and those whom they find significant in their network were bridged (shortened) through online communication. Thus, access to both material and emotional support were advanced; thereby increasing their resilience.

Table 9 List of social actors for the Filipino students and Filipino community in Kesennuma during and after the 2011 Tohoku Earthquake

	Resilience	Students	Kesennuma
During Disaster	**Response** **Self Organization**	Other Filipinos in Japan Academic colleagues Family (in PH) Friends (in JP) Neighbors	Other Filipinos in Japan Other Filipina in Kesennuma; City hall (for Int'l activities); Other foreigners; Neighbor, Family (Japan & PH)
Post-Disaster	**Learning** **Adaptation**	Other Filipinos Academic colleagues Family (in PH) Friends (in JP) Neighbors PH Embassy NGO & NPO Religious Institutions	Family (Japan & PH) Other Filipina in Kesennuma; City hall (for Int'l activities); Other foreigners; Neighbor, PH Embassy & Groups NGO & NPO Religious Institutions

The succeeding months (even years) after the disaster, were significant phases for disaster learning and adaption for all those affected. As the students reflected their learning and adapted to the changes brought by the disaster, communication with other Filipinos, their academic colleagues, families in both Japan and the Philippines, their neighbors continued. Some students reported a strengthen relation resulting from the shared experience of the disaster. In addition to these social actors, the collective of Filipino students (re)established their linkages with the Philippine Embassy, members of NGOs and NPOs, and those religious institutions.

One significant difference in the post-disaster conditions of the students and the Kesennuma residents, is the impact of the disaster. With the tsunami curtailing the means of livelihood, and resulting to property damages for most of the Filipino residents in Kesennuma; recovery greatly represents their disaster adaptation. Combined with their reflection on their disaster experience, the residents found opportunities to move forward from the disaster through their support and interactions with other Filipina in Kesennuma; local government; other foreigners; and their neighbors. Similar with the students they (re) create connections with the Philippine Embassy, NGOs and NPOs, and those religious institutions.

While there are similarities in the kind social actors and connections among the Filipino students and the Filipino community in Kesennuma, there still maybe disparity in the purpose of connections, especially to formal institutions and linkages like governmental and non-governmental institutions. Nonetheless, collectivity and solidarity in both the physical and virtual means strengthens people's resilience to address and face disasters. Over time people redefine and reformulate these forms of

coping, strengthening not just the individuals but the communities and institutions to which they belong.

5. Conclusion

In this chapter, migrants were introduced by recognizing the points of social vulnerability found specific to their conditions as migrants. However, this is not an endpoint but instead a starting point to identify the points of their social resilience. The comparative presentation on the disaster narratives from both the Filipino students and Filipino community in Kesennuma uncovers the importance of their social connections as they build they resilience.

The reassurance of having accessible connections serves as a valuable coping mechanism. Their coping mechanisms are not employed to reduce (nor eliminate) risks brought about by the disaster; instead they are utilized to accommodate the presence of risks, and eventually lessen the sense of vulnerability. The purpose is not to give justification to disasters but to find ways to manage their feeling of lack of security. This need and ability to create social connections during difficult times may be culturally constructed rather than institutionalized options in confronting crisis, thus furthering their social resilience.

The story of the Filipino migrants in Japan (particularly the students and Filipino community in Kesennuma) were stories of building capacities and resilience from their vulnerabilities attached to their condition as foreign residents. Other groups or nationalities may have their own story of resilience befitting their conditions during catastrophic conditions. Nevertheless, the bonds, bridges and linkages (re)built with the various identified social actors confirm that disasters are never faced alone, regardless of ethnicity and/or other social conditions. For all, the key is to be able to transform these vulnerabilities and turn them to capacities. That`s when we see and understand resilience as migrants in disasters.

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CHAPTER FOUR

MIGRANTS' SOCIAL CAPITAL AND DISASTERS

CONTENT

1. Introduction

In the 2012 International Organization for Migration workshop on *Protecting migrants during times of crisis: Immediate response and sustainable strategies,* a key point was primarily established:

(1) International migration will always be a factor in crises.
- Migration crises come in various shapes and sizes, but regardless of their nature or magnitude, the situation of migrants caught in crises has not received adequate attention in the past. (International Organization for Migration 2012)

Among the crises people (migrants or nationals) experience include natural and environmental disasters. Perry (2005) qualified disasters as social events in social time, disruptive to social intercourse, and should be understood in a context of social change (human and institutional adaptability). Over the years, more than disasters escalating proportional to the progress and development brought about by modern living, they are becoming internationalized.

But what do we recognize as *disasters*? Hoffman and Oliver-Smith (2002) emphasized disasters as processual phenomena rather than as isolated events temporarily demarcated by exact time frames. However, communities recognize its impact in a specific moment during this process. Perspectives in anthropological disaster research attempted to concisely define disaster as a process/event involving a combination of a potentially destructive agent(s) from the natural and/or technological environment and a population in a socially and technologically produced condition of environmental vulnerability (Oliver-Smith 1996).

In addition, disasters are appropriated as unscheduled events caused by nature or by human intervention (Khonder 2010). These make individuals and communities felt expose to risks and a certain degree of vulnerability in their sphere. Risk is understood to be a complex phenomenon that involves both the biophysical attributes and the social dimensions, wherein it involves threats of harm to people and nature but also to other things or ends that people value such as community or political freedom (Kasperson and Kasperson 1996). Disasters are among the sources of human risks where individuals are positioned to feel vulnerable. Risks appear in forms of hazards that are potential sources of damage. Hazards can either be environmental like hurricane, earthquake, even flooding; or technological threats like oil spills and nuclear threats. A few of the historically large-scale natural disaster included the 1755 Lisbon Earthquake, the Great Kanto Earthquake of 1923, the Indian Ocean Tsunami of 2004, the Mt. Pinatubo volcanic eruption in the Philippines in the1999, the 2010 Haiti Earthquake, and the 2013 Typhoon Haiyan among others. One of the memorable disasters in recent years is the 2011 Great East Japan Earthquake, which was exacerbated by a tsunami followed by nuclear radiation threats.

More than ever before, natural, technological and social disasters are becoming internationalized. They are intertwined with the course of human affairs in ways that were unimaginable decades ago. The rapid global movement of capital and standardization of information, the importance of disaster to geo-strategic policies, and the multinational growth of poverty and marginalization all have a bearing on our interpretation of calamity in the modern world ((Dembo, Morehouse and Wykle 1990) as cited in (Alexander 2005)). In the recent years, intense focus had been placed on forging policies and solutions to mitigate and recover from catastrophes. And while disasters are perpetual

occurrences across our lifetime, the escalating damages and concurrent impacts to every aspect of humanity led to such urgent considerations. With the growing attention to people in catastrophic conditions, the infinitesimal theme on the role of vulnerable population in disaster gradually took prominence. Earlier researches had examined the notion that some groups in society are more prone than others to damages, losses, and sufferings in the context of differing hazards (Blaikie, et al. 2003).

The UN Department of Economic and Social Affairs Population Division trends in international migrant stock (2015) accounted 243,700,236 persons moving across countries for various reasons such as personal safety, economic development or any further enhancement leading to an aspired upward social mobility. This increase the in number of people traversing countries now becomes an important concern in disaster risk reduction and recovery. Policy makers have put forward opportunities to include migrants in disaster risk reduction (DRR) policies and programs. However it was quite limited to the understanding that they are vulnerable members of the population that should be monitored and attended to. This perception has evolved over time. The increase of migrants and vulnerable population in general, necessitate the opportunity to include them not just as mere victims of disasters but as empowered stakeholders both in DRR and recovery. The story of the Vietnamese Americans in New Orleans during hurricane Katrina (Airriess, et al. 2008, Chamlee-Wright 2006, Chamlee-Wright 2010, Chamlee-Wright and Storr 2011) and the Filipino Community in Kesennuma City during the 2011 Tohoku Earthquake (Global Peace Foundation Japan 2013, Global Peace Foundation 2015, Public Relations Office, Government of Japan 2012, see Chapter 3) are just two of case examples that presents how migrants or foreign residents coped and recovered from disasters.

This shift in perspective was evident in the transitioning role of migrants presented in international frameworks on disaster. From the Hyogo Framework of Action for 2005 to 2015, migrants were included implicitly implying as part of the identified *vulnerable population* (United Nations International Strategy for Disaster Reduction 2007). Migrants together with children, women, people with disability among other minor and disadvantaged groups, were recognized to be significant considerations in disaster risk reduction provisions. Planning for the disadvantaged people are highly concentrated on measures to protect and mitigate disaster risks for these vulnerable groups. The 2015 3rd UNISDR World Conference on Disaster Risk Reduction (WDCRR) has heightened the sense of urgency to create a more sustainable framework coincidentally following the 2011 Great Japan Earthquake. The Sendai Framework for Disaster Risk Reduction 2015-2030 was articulated in March of 2015. This new forged framework provided this shift in how migrants (or vulnerable population) are acknowledged in a more active role in disaster risk reduction. With this more explicit recognition of migrants as essential stakeholders, the frameworks asserts this more active role to increase their resilience in disaster:

(vi) Migrants contribute to the resilience of communities and societies and their knowledge, skills and capacities can be useful in the design and implementation of disaster risk reduction. (Sendai framework for disaster risk reduction 2015 - 2030 2015)

To fully implement this new recognition of migrants' contribution in the disaster risk reduction of their communities, it necessitates identifying their skills and capacities to participate. Among these capacities that migrant can avail comes from their network of social relations within and across their spheres of connections; thus, *their social capital.*

While there have been studies that looked into these significance of social connections and how it operates in disasters (works like (Nakagawa and Shaw 2004, Minamoto 2010, Ganapati 2009, Munasinghe 2007); they are often times presented in a more *reflective/ retrospective* manner. People recall these established and formed connections and reflected how these social connections affected their disaster resilience. However, *predicting* potential social actors that can have significance to impact on how they cope and recover from disasters remain limited (Adwere-Boamah and Hufstedler 2015, Jin and Shriar 2013) (see Fig. 4). More so, those that can specifically apply to migrants are sparse.

This chapter addresses this issue of identifying potential people in the migrants network and how they contribute to their disaster response and recovery. Trusting people is a form of risk-taking, thereby it can be predicted. By using statistical modeling, this chapter sought these preferred people across this migrants network. Identifying these social actors and the *"odds"* to which they will prefer to likely/less likely contact in instances of disaster and during recovery can provide the idea of which social relations should be further enhanced and identify the potential activities to engage them.

1.1. Understanding social capital

In the modern development of social capital, the variety of definition created revolves around a number of key concepts such as *trust, mutual understanding, networks, communities* and *cooperative action*. Scholars see it as a collectively owned resource (Bourdieu 1985), or even as a function of a social structure (Coleman 1988). Putnam (2000) expounds on this connection in the context of reciprocity and trust-worthiness; while policy makers and institutions continue to utilize its definition along the lines of networks of social relations and interactions (Woolcock and Narayan 2000, Policy Research Initiative 2005).

A general understanding of social capital weaves the combined importance of the *cognitive* and *structural* components for it to be a fully effective resource that individuals and community can use (Uphoff 2000, Uphoff and Wijayaratna 2000) see Chapter 1, 1.3). The cognitive form lies on people's

more subjective notion of social connection, where the importance of social relations exist from *norms, values, attitudes* and *beliefs* that consequentially encourage the people to cooperate and participate. On the other hand, the structural form presents a more objective perspective of social capital, highlighting the *roles, rules, precedents*, *procedures* and *networks* in the way people create social interactions. The cognitive form provides the more subjective composite of social capital (Narayan and Cassidy 2001, Newton 2001, Torche and Valenzuela 2011, Fukuyama 2001); looking at the significance of trust and reciprocity in the development of people's social relations. This is then complemented by the structural form, to which the significance of social networks had been a running theme to a number of literatures (Burt 2000, Lin 1999, Woolcock and Narayan 2000, Nakagawa and Shaw 2004, Airriess, et al. 2008, Aldrich 2012a).

More often than not, social capital is best described and represented through the kind of social connections built thereby implying both the presence of trust the kind of connection built. Fig. 1 in Chapter 1 showed these graphically. *Bonding social capital* speaks to that network of social relations that reinforce exclusive identities among a homogenous group, in comparison to *bridging capital* that suggests the networks encompassing people across diverse social cleavages (Putnam 2000). *Linking social capital* considers the network of trusting relationships across [vertical] explicit, formal or institutionalized power or authority gradients in society (Szreter and Woolcock 2004). There can be varied permutations of these social capitals based on the existing social actors within the bounds of each type of connections. More so these combinations of social capital is responsible for a range of crucial development and environmental outcomes, as well as the maintenance of social order in the community (Woolcock and Narayan 2000).

Social capital can be malleably adapted with various definitions to different disciplines and levels of investigations (Robison, Schmid and Siles 2002). Disasters are among the emerging themes that sought to understand the importance of people's connections to bounce back from disasters and recover better. Literatures had shown how social capital operates in catastrophic conditions. Large scale disasters like 1995 Kobe Earthquake (Nakagawa and Shaw 2004, Aldrich 2012a, Yamamura 2014), the 2004 Indian Ocean Tsunami (Minamoto 2010, Munasinghe 2007); 2005 Hurricane Katrina (Airriess, et al. 2008, Chamlee-Wright 2006, 2010, Aldrich 2012a); and the 2011 Tohoku Earthquake 2011 (Aldrich 2012a); have been evaluated and analyzed to understand how social capital affected the success and failure especially in disaster recovery and response. While there already exist literature (Airriess, et al. 2008, Park, Miller and Van 2010, Chamlee-Wright and Storr 2011) that expound on this importance on migrant's social capital in disasters, it remains limited.

As aforementioned, even disaster social capital literatures often appear in a more *reflective* means to which people process the damages they incurred and the success of different choices they made. Thus,

this chapter attempts to provide an alternative view to people's social capital. More specifically, it predicts those specific to migrants; that by understanding people's diverse backgrounds and pre-existing connections with various actors it can identify the preferred connections during disasters and in recovery.

Migrants had been often described in disaster within the vulnerable population, susceptible to disaster risks, consequentially perceived as victims and always at a disadvantage. However, it is often overlooked that they bear certain inherent capacities to deal and respond to catastrophic conditions. Migrants (just like any categories of individuals) bear certain characteristics based on their social conditions as foreign residents in their host country, that contribute to their social vulnerability in instances of disasters. Nonetheless, it's also these characteristics and their social capacities, that they weave forms of disaster adaptation that increases their social resilience.

2. Background

While disasters are perpetual occurrences across our lifetime, the escalating damages and concurrent impacts to every aspect of humanity led to such urgent considerations. Simultaneously, individuals continue to move across countries and regions for personal safety, economic development or any supplementary enrichment leading to an aspired upward social mobility. Hence, the increase the in number of people crossing countries becomes an important concern mitigating risk and gaining recovery.

Burke, Bethel and Britt's (2012) discussion on the environment and public health expound how minorities are less likely to feel prepared for an emergency and to have an emergency plan compared to the general public. Migrants and seasonal farmworkers in North Carolina were found at a unique disadvantage due to the lack of understanding about their risk perception as well as language and literacy barriers. During the 2011 Tohoku Earthquake, key social vulnerabilities for foreign residents were heightened. The selection and access to trust-worthy information was a key disparity between nationals and foreign residents at that time (Henry, Kawasaki and Meguro 2011). While both populations sought disaster-related information; foreign residents experience a step-further challenge due to the lack of language comprehension vis-à-vis limited Japanese language skills.

More than understanding their vulnerabilities and challenges, this chapter intends to focus on foreign residents capacities, specifically their social capacities found in the (re) established social connections. Japan had been consistently included as a key destination for migrants. Based on the 2013 Estimates (Migration Policy Institute 2015) Japan ranked the 22nd destination and 64th sending country. The Statistical Bureau of Japan reported a total of 2,232,189 foreign national residents as of

2015, with China (665,847), Republic of Korea (457,772) and Philippines (229,595) as the leading countries of origin (Statistics Bureau, Ministry of Internal Affairs and Communications 2015).

Foreign residents are well dispersed around Japan; with most of them found around major cities and prefectural capitals (Ministry of Justice 2015). While there are a multitude of foreign residents in Japan, this chapter intends to focus on a single location, that is Sendai City. This preference to consider Sendai as the research site was on the basis of its proximity to the 2011 Great East Japan Earthquake. The city was not the focal point of the disaster but nonetheless; it is one of the major cities with the most number of foreign residents around the affected region.

2.1. Sendai City

Historically, Sendai City started as castle town in the 1600. Over the years it developed with the different facilities and city utilities to make it a modern city. In 1989, with the city's 100th year as an incorporated city, it was also the first designated city in the Tohoku region. In addition to this, based from the city's information (City of Sendai 2016), it has a reputation as an academic city based on the advanced research and development that takes place there.
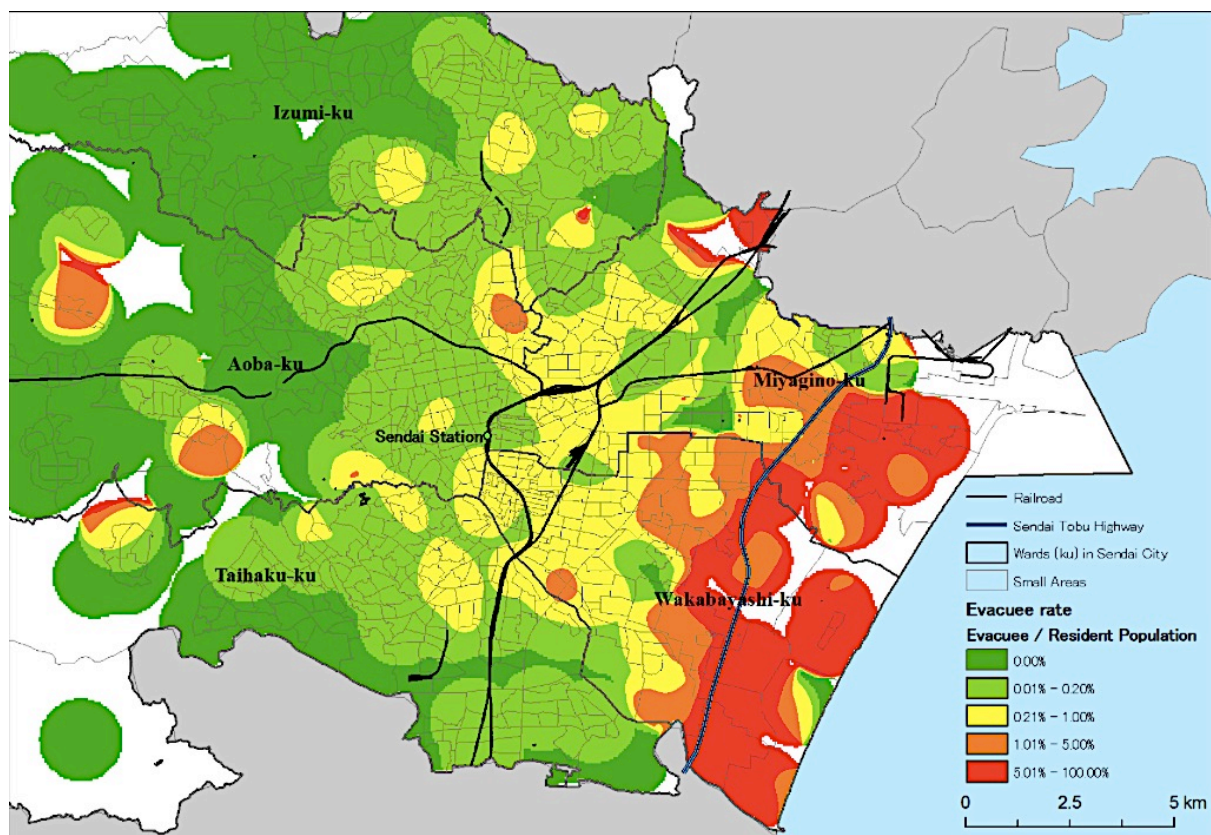
**Figure 10 Distribution of deaths and densities of evacuees
at their residential address, Sendai City (Adapted from (Isoda 2011))**

In 2011, Sendai was one of the urban centers in the northeast region of Japan that was affected by the Great East Japan Earthquake. More than the earthquake and aftershocks, some places were also affected by tsunami inundations. Fig. 10 presented an adapted graphical representation of deaths and evacuees from the 2011 Tohoku Earthquake (Isoda 2011). Based on the city's independent count (City of Sendai 2016), resident casualties reached 1,002 persons (554 males, 448 females), and injured individuals totaled 2275 (276 serious, 1999 minor injuries). Property damages for residential land reached a 5,728 lots while a total of 255,689 lots ranging from those with minor damages to buildings that were totally destroyed.

2.2. Foreign residents in Sendai

Sendai City was the selected research site for this Phase because of its location. It is one of the major cities with large migrant population located close to the center of the 2011 Tohoku Earthquake. As of April 30, 2016, there are a total of 11, 353 foreign residents in Sendai City with large fractions of the population coming from China (3,643), Korea (1,990), Vietnam (1, 202) and Nepal (1, 072) (Kikuchi 2016). Considered an academic city, Sendai houses 3,897 foreign students as the largest segment of its migrant population followed by 2,501 permanent residents. Two of the key challenges for foreign residents in Sendai City identified by the representative from the International Office are obtaining information given in Japanese and finding a job in Sendai.

Generally, foreign residents can avail the following supports from the International Office of the city as they move to the new environment: 1) Japanese language course for foreign residents, 2) international cultural understanding sessions at schools, 3) non-native Japanese children support, 4) subsidy for non-profit organizations to promote the international exchange in Sendai, and 5) disaster risk management for foreign residents (Horino 2015, Kikuchi 2016). Foreign residents in the city are encouraged to participate in the community through programs like disaster risk management activity, international education at schools, non-native Japanese children support. These are mainly sponsored by the local government through their international office, and information are disseminated by email magazine, website, radio and flyers. Nonetheless, word-of-mouth still stands as a strong medium to urge program participations. Prior to the 2011 Tohoku Earthquake, disaster risk management training were foreign residents can participate with the aid of disaster interpreter volunteers are already held. Training programs for disaster interpreter volunteers had since started in 2000. In 2015, Sendai City became the host to the 3rd World Conference on Disaster Risk Reduction. From there, the Sendai Framework for Disaster Risk Reduction 2015-2030 was formulated to precede the Hyogo Framework of Action (2005-2015).

Sendai City was selected as the research site because of its relevance to the 2011 Tohoku Earthquake. Its proximity to the center of the disaster and being one of the largest urban centers with large foreign

population makes it an interesting area to explore migrant social capital. While the social survey to validate social capital was only conducted in Sendai, the research can potentially be replicated to other cities to identify and recommend better inclusion of foreign residents to disaster related policies.

3. Methodology

This chapter explores the correlation between migrant's social connections and interaction with various social actors (social capital) and their disaster response and recovery. Trust is a form of risk-taking, thereby making it available to be predicted and quantified. *The study works on the assumption that migrant' individual characteristics, together with established contacts can contribute in their preference of sought connections during and after a disaster.* A social survey is the primary research instrument, supplemented by interviews with key resource persons. All data are integrated to support the analysis of predicting social capital related preferences among migrants/ foreign residents in Sendai City.

3.1. A migrants` social survey

A 36-question survey available in both English and Japanese were distributed to foreign residents in Sendai between July 01-September 15, 2016. An established contact with the SenTIA (Sendai Tourism, Convention and International Association), Sendai International (webpage group of foreign residents in Sendai), and personal connections were utilized to execute the survey. The distribution was made through online format (Google form), and was able to generate 132 valid responses. Fig. 11 presents the schematic diagram of the survey including the various data required in each part.
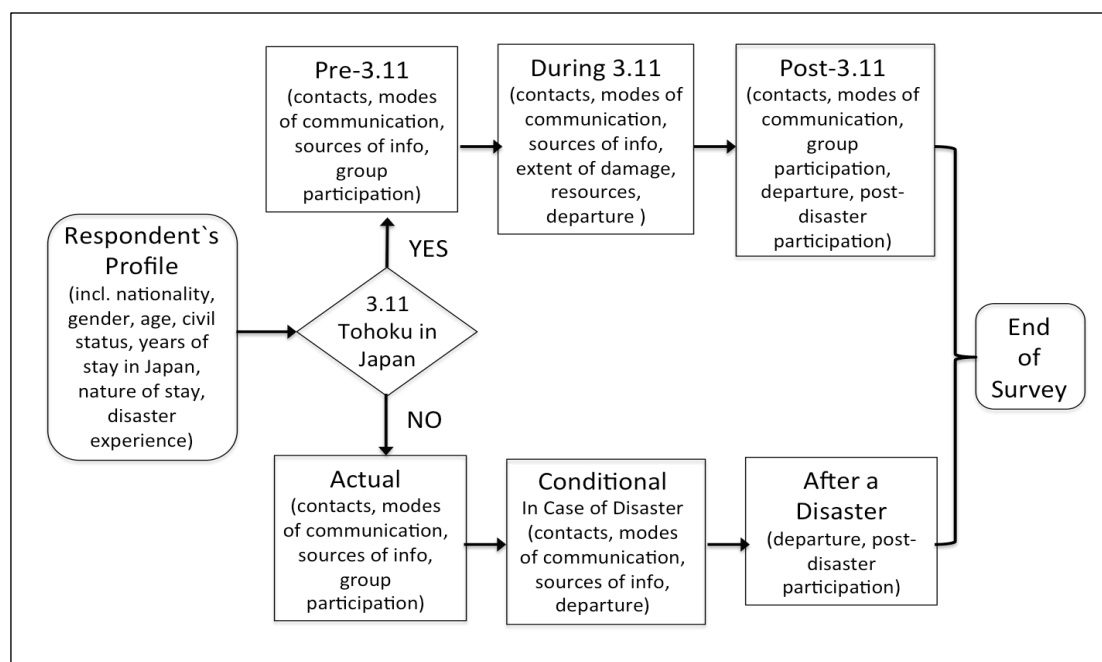
Figure 11 Migrant social capital survey schematic diagram

Below is the Outline of the Survey Questions that were used:

Respondent Profile

Q1. Name (Optional)

Q2. Nationality (Country of Origin)

Q3. Gender

Q4. Age

Q5. Civil Status

Q6. How many years have you been living in Japan?

Q7. Purpose of stay in Japan

Q8. How many people are in your household?

Q9. Type of residence

Q10. Please check any disaster you have experienced in your country

Q11. Were you in Japan during the 2011 Great East Japan Earthquake *

Migrants and the 2011 Tohoku Earthquake

A. Before the 2011 Tohoku Earthquake

Q12. Who did you usually contact before the 2011 Tohoku Earthquake?

Q13. How did you communicate with them?

Q14. Where did you get information?

Q15. Please check if you participate in any of the following groups

B. During the 2011 Tohoku Earthquake

Q16. Who did you contact during the disaster?

Q17. How did you communicate with them?

Q18. Where do you get information?

Q19. Extent of damage from the earthquake

Q20. What resources did you need at that time?

Q21. Did you consider leaving Japan at that time?

C. After the 2011 Tohoku Earthquake

Q22. Who are the people you are now in contact after the disaster?

Q23. How did you communicate with them?

Q24. Please check if you participate in any of the following groups

Q25. Do you consider living in Japan for a long time?

Q26. What kind of disaster-related activities will you be interested to join?

Migrants and Disasters

A. Actual

Q27. Who do usually contact/ communicate with?

Q28. How do you communicate with them?

Q29. Where do you get information?

Q30. Please check if you participate in any of the following groups

B. Conditional (In case of a disaster)

Q31. Who will you contact during a disaster?

Q32. How will you communicate with them?

Q33. Where will you try getting information?

Q34. Will you consider leaving Japan because of a disaster?

C. After a Disaster

Q35. What kind of disaster-related activities will you be interested to join?

Q36. Will you consider living in the same place after a disaster?

The respondents completed the survey within 10 to 15 minutes only. Those requiring multiple answers were indicated. All questions were provided with the appropriate choices with the exception of Q1. (Name) and Q2. (Country of Origin). Q1-Q10 established the profile of the respondent including that of age, gender, civil status, type of residence and number of persons in their household. It also includes migrant-specific information such as name of the home country, length of stay (in host country) and their purpose of stay (in the host country). A question on their disaster experience in their home country was also inquired.

Q11 is a key conditional question in the survey. Since the study anchors itself on the Migrant`s social capital and their 2011 Great East Japan Earthquake experience, the respondents are asked about their presence (in Japan) during the disaster. Q12-Q26 were designed to be answered by those who were in Japan during the 2011 Tohoku Earthquake; while Q27-Q36 were intended for migrants (foreigners) who were not in Japan at that time.

As earlier mentioned, the survey focused on their available connections across the three time frames of a disaster. For those answering Q12-Q26, questions were subdivided in relation to the 2011 Tohoku Earthquake (before the 2011 Tohoku Earthquake, during the 2011Tohoku Earthquake, and after the 2011 Tohoku Earthquake). As for those who were not in Japan during the 2011 disaster (those answering Q27-Q36), questions are divided into actual social connections, a hypothetical disaster scenario and a hypothetical post-disaster situation.

3.2 Social actors in the migrants network

The primary goal of this study is to exhaust all the available connections of foreign residents in the three phases of a disaster (may it be from their actual 2011 Tohoku Earthquake experiences or a supposed disaster scenario). For purposes of uniformity and consistency, the same set of choices (for social contacts) where given to the two types of respondents. Below is the list of choices of social connections in the three phases of disaster. Table 10 described all the social actors that appeared in the survey. These lists were designed based on the combined data from a previous survey (see Chapter 2) and the narratives of interviewed foreign residents and resource persons (see Chapter 3).

Table 11 presents the selection of social actors available in each time frame of disaster. The list was completed through the combined interviews with migrant respondents and literature reviews. Eleven of the identified social actors were present across the three phases of the disaster. The presence of the *Disaster Emergency Team* was only listed during and after the disaster.

Table 10 List of social actors for migrants

Social actors	Description
Classmates/ Co-workers	Individuals from the same educational institution or workplace as the respondent
Disaster emergency team	Social group engaged in the disaster response, management and recovery
Embassy/Consulate of home country	Diplomatic office from the country of origin in the host country
Family in Home Country	Individuals with familial ties to the respondent living in their home country
Family in Japan	Individuals with familial ties to the respondent living in Japan
Friend	Individuals with non-familial affinity to the respondent regardless of physical proximity
Local/ City government (Int'l Relations Section)	State-related entity in the local level in-charge of foreign residents
Neighbor	Individuals residing within the significant periphery of the resident
NGO/NPO	Social group engage with the community for development projects
Other foreign residents	Individuals with no direct familial or personal relations with the respondents, having different ethnicity/nationality
People from the same country	Individuals with no direct familial or personal relations with the respondents, having the same ethnicity/nationality
Relative	People with familial affinity to the respondent regardless of physical proximity
Religious group/ Faith-based organization	Social group or entity of religious origin

Table 11 List of migrants social actors across disasters

Pre-disaster	During disasters	Post-disaster
• Family in Japan	• Family in Japan	• Family in Japan
• Family in Home Country	• Family in Home Country	• Family in Home Country
• Friends	• Friends	• Friends
• Neighbors	• Neighbors	• Neighbors
• People from same country	• People from same country	• People from same country
• Other foreign residents	• Other foreign residents	• Other foreign residents
• Classmates /co-workers	• Classmates/co-workers	• Classmates/o-workers
• Religious/Faith-based Group	• Religious/Faith-based Group	• Religious/Faith-based Group
• NGO/NPO	• NGO/NPO	• NGO/NPO
• Local/City Government (International Relations Section)	• Disaster Emergency Team	• Disaster Emergency Team
• Embassy/ Consulate of Home Country	• Local/City Government (International Relations Section)	• Local/City Government (International Relations Section)
	• Embassy/ Consulate of Home Country	• Embassy/ Consulate of Home Country

3.3 Statistical models for migrants' social capital

This study intends to identify the relevant social connections migrants can access as they respond and recover from the disaster. Trust, together with the shared values and beliefs are the cognitive social capital than can facilitate their cooperation and participation (Uphoff 2000). In quantifying social capital measures of trust and the strength of norms, reciprocity and sharing can be substituted with more tangible references (Grootaert and van Bastalaer 2002). In such case, individuals and communities' established and maintained connections with persons and institutions can serve as valid measures of trust. In disasters, these are the *social actors* representing the available social capital for the individual and their community to advance their resilience, minimizing their risk and reaching recovery.

Torche and Valenzuela (2011) emphasized how trust in others involved the predictability in one's behaviors. Thus, trust can be validated through the presence (or absence) of social connections with individuals and other social institutions. In line with this, predicting social trust associated with the individual's social and demographic trust can be validated through regression modeling (Adwere-Boamah and Hufstedler 2015). This chapter seeks to show the empirical basis on how migrants' established social connections and demographic characteristics matters in their preference relating to their disaster response and recovery.

Using SPSS Ver. 22, Multinomial Logistic Regression was used to substantiate this significance and odds of their choice in social actors. As a statistical analysis, it fits the demand to predict a nominal

dependent variable against more than one independent variable. The respondents' (migrants) choice of social actors during and after a disaster can be identified in relation to the various demographic characteristics and existing social contacts they have. The study now validates if these attributes have notable impact to their choice of social actors during disaster response and recovery. Using a 0.05 level of significance as margin, this regression analysis is used to classify subjects based on their set of predictor variables (social connections and demographic characteristics) and analyzed the potential rational for these results.

Table 12 summarizes all the variables used in this study selected from the survey. Variables to represent migrants' social connection were address by their choice of contacts before (PreCont) and during (DurCont) a disaster. Basic demographic details included age, gender, and length of stay in the host country. Additional social details referred to were from their disaster experiences from their home country, the 2011 Great East Japan Earthquake experience, their current social participations and preferred post-disaster involvement (PostDisAct). Using all these variables, two models were designed to validate this significance of migrants' social contacts during the disaster and in its recovery.

There are two cases confirmed in this study: 1) migrants' preferences in disaster contacts (Model 3) and 2) their preferred post-disaster engagements (Model 4). The results of these models were examined to validate the study's assertion on the significance of migrant social capital in mitigating disaster risks and in recovery participation.

Model 3. Given the migrants/ foreigners` demographic profile, including their established pre-disaster contacts, what are the odds to their preferred contact during disaster? Eq. 3 determines if there is significance in the migrants' gender, age, status, length of stay and pre-disaster contacts; in their choice of people to communicate with during the times of the disaster. This will identify the preferred contacts during disaster response.

Eq. 3

$$log\ \{DurCont/\ (1 - DurCont)\} = \beta_0 + \beta_1 Gender + \beta_2 Age + \beta_3 Status + \beta_4 Stay + \beta_5 PreCont$$

Where β_n is the regression coefficient, and $p < 0.05$ level of significance to validate the study.

Model 4. Eq. 4 represents the mathematical model to describe the odds of post disaster participation based on the combined social and demographic profile, and pre-disaster contacts. This model looks at the likelihood migrants will engage in post disaster participation based on their age, gender, length of stay, their disaster experiences in their home country, pre-existing social participation, and their pre-disaster social contact.

Eq.4

$$log \{PostDisAct/ (1 - PostDisAct)\}$$
$$= \beta_0 + \beta_1 Gender + \beta_2 Age + \beta_3 Status + \beta_4 Stay + \beta_5 DisExp + \beta_6 PreCont$$
$$+ \beta_6 SocPart$$

Where β_n is the regression coefficient, and $p < 0.05$ level of significance to validate the study.

Table 12 Variable summaries for migrants' social capital

Variable	Description
Contacts during disaster (DurCont)	Respondents were asked their choices of contact during disaster: (1) Family in Japan, (2) Family in the home country, (3) Friends, (4) Neighbors, (5) People from the same country, (6) People from other country, (7) Classmates/ Colleague, (8)Religious/faith groups, (9) NGO/NPO, (10) Disaster/emergency team, (11) Local government-International Relations Office, and (12) Embassy/ Consulate.
Contacts before a disaster (PreCont)	Respondents were asked their choices of contact they usually contact (before a disaster): (1) Family in Japan, (2) Family in the home country, (3) Friends, (4) Neighbors, (5) People from the same country, (6) People from other country, (7) Classmates/ Colleague, (8)Religious/faith groups, (9) NGO/NPO, (10) Local government-International Relations Office, and (11) Embassy/ Consulate.
Disaster experience in home country	Respondents were asked the disasters they experienced in their home country: (1) Hurricane, (2) Flood, (3) Earthquake, (4) Tsunami/Storm Surge, (5) Volcanic, and (6) Other.
2011 GEJE experience	Single item from the survey on a dichotomous scale (0=Yes, 1=No): "Where you in Japan during the 2011 Earthquake?"
Social participation	Respondent`s participation in any of the following groups: (1) local neighborhood association, (2) ethnic group (people from the same country), (3) professional association, (4) faith-based association, (5) civic/ volunteer association, and (6) disaster prevention group.
Post-disaster activities (PostDisAct)	Respondents were asked their choice of post-disaster activities they will be interested to participate: (1) economic programs, (2) cultural activities, (3) environmental rehabilitation, (4) disaster information dissemination, and physical reconstruction.
Age	Respondent`s age grouped in the following ranges: (1) below 20, (2) 20-29, (3) 30-39, (4) 40-49, (5) 50-59, and (6) 60 and above.
Gender	0= Female, 1= Male
Status	Respondent`s civil status: (1) Single, (2) Married, (3)Divorce, (4) Separated, and (5) Widowed.
Length of stay	Respondent`s years of living in Japan grouped in the following ranges: (1) less than a year, (2) 1-3 years, (3) 4-5 years, (4) 6-10 years, and (5) more than 10 years.

4. Results

The results from the survey provided the essential information to define the respondents. It describes their demographic profiles, their social contacts and participation relative to their actual experience of the disaster. This section summarizes the results of the statistical modeling to predict the migrants' social capital relevant to their disaster response and recovery.

4.1 Demographic details

Table 13 gives the summary of the descriptive statistics resulting from the survey. From the 132 respondents who completed the survey, there's a minimal gap in gender balance with 53.79% (71) female and 46.21% (61) male. The age range for the 58.3% (77) of the respondents are concentrated in the 20 to 29 age group, with 71.21% (94) of them being single. This complements 73.48% (97) of the respondents living in Sendai City for purposes of studying or training.

Large distribution of the participants stays in Japan between the 1-3 years period (34.1%,45) followed by those living in Japan between 6 to 10 years (19.7%, 26). As for their disaster experience in their home country, 97.73% (129) had experienced at least one of those identified disasters. However, only 56.82% (75) of the respondents confirmed participation in social activities (even prior to a disaster).

From this information, it builds on the profile of the respondents matching the dominant pattern in the actual foreign residents of Sendai. As of April 2016, there are 11,353 recorded foreign residents, with the largest segment of the population (34.36%, 3897) being foreign students (Kikuchi 2016).

4.2 Predicting migrants connections during Disaster (DV: DurCont)

Using multinomial logistic regression, the odds to which people will consider certain social actors during disasters over the others based on the demographic details and their existing contacts were calculated.

Eq. 3 fits within the significant p-value (p<0.023) thus making the model valid. Using gender, age, status, length of stay and the pre-disaster contacts as predictors, Table 14 summarizes the list of significant relation between the predictors and the dependent variables (DurCont). A list of parameter estimates for Model 3 (Eq.3) can be summarized as follows:

1. Those in contact with family in Japan before the disaster are likely to contact their family in Japan during disaster rather than the Embassy/Consulate.
2. Those in contact with people from the same country before the disaster are likely to contact the people from the same country during disaster rather than the Embassy/Consulate.

Table 13 Frequency summaries from the migrant social capital survey

Variable	Frequency (N)	Valid Percentage
Demographic		
Gender	132	100.0
Male	61	46.2
Female	71	53.8
Age	132	100.0
below 20	1	0.8
20-29	77	58.3
30-39	45	34.1
40-49	9	6.8
Status	132	100.0
Single	94	71.2
Married	35	26.5
Divorce	3	2.3
Length of Stay	132	100.0
less than a year	35	26.5
1-3 years	45	34.1
4-5 years	18	13.6
6-10 years	26	19.7
more than 10 years	8	6.1
Purpose of Stay	132	100.0
Professional	15	11.4
Student/ Training	97	73.5
Skilled worker	6	4.5
Cultural activities	1	0.8
Permanent resident	3	2.3
Spouse/ children of Japanese national	3	2.3
Spouse/ children of permanent resident	7	5.3
Disaster Experience		
Hurricane	48 (129)	37.2
Flood	37 (129)	28.7
EQ	82 (129)	63.6
Tsunami/Surge	23 (129)	17.8
Volcanic	4 (129)	3.1
Other	17 (129)	13.2
2011 GEJE Experience	32 (132)	24.2
Social Participation (Pre-disaster)		
Pre_Local Neighborhood	7 (75)	9.3
Pre_Ethnic Group	26 (75)	34.7
Pre_Professional Association	18 (75)	24.0
Pre_Faith	14 (75)	18.7
Pre_Civic	39 (75)	52.0
Pre_Disaster	5 (75)	6.7

3. Those in contact with other foreigners before the disaster are likely to contact other foreigners during disaster rather than the Embassy/Consulate.

4. Those in contact with religious group before the disaster are likely to contact the religious group during disaster rather than the Embassy/Consulate.

5. Those between the age 20-29 and 30-39 years old are less likely to contact the local government rather than the Embassy/Consulate.

6. Those in contact with the local government are likely to contact the local government during disaster rather than the Embassy/Consulate.

Summing up the results of this model, pre-existing disaster contacts are predicted to be same preferred contact in instances of disasters. More so, the respondents within the age range 20-39 are more likely to contact the Embassy/Consulate than local government. Most of these respondents are students/trainees with a range of stay from 1-3 years.

Table 14 Model 3 Summary of parameter estimates

DV: People`s choice of contact during disasters	B	Std. Error	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
					Lower Bound	Upper Bound
Family in Japan						
PreCont: Family in Japan	5.40	1.28	0.00	220.19	17.89	2710.32
People from the same country						
PreCont: People from the same country	1.00	0.46	0.03	2.73	1.12	6.66
People from other country						
PreCont: People from other country	2.17	0.89	0.01	8.73	1.54	49.45
Religious/ Faith Groups						
PreCont: Religious/ Faith Group	5.25	1.41	0.00	190.83	12.02	3029.60
Local Government -Int`l Relations						
Age: 21-29	-3.59	1.82	0.05	0.03	0.00	0.99
Age: 31-39	-3.25	1.66	0.05	0.04	0.00	1.00
PreCont: Local Government-Int`l Relations Office	2.40	1.00	0.02	11.03	1.56	78.16

Notes: Model X^2 = 275.798; p=0.023, -2 log likelihood =1331.133. Pseudo R^2 (Cox and Snell = 0.300, Nagelkerke = 0.303, McFadden = 0.077). DV: dependent variable.
a. The reference category is: the contact with the Embassy during disasters.

4.3 Predicting migrants post-disaster participation (DV: PostDisAct)

The multiplicity of nominal predictors can be best confirmed using the Multinomial logistic regression. After a disaster, a number of activities for social participation are often made available. Hence, the various demographic profiles together with previous social participation, disaster experience in their home country and their pre-disaster contacts; can potentially affect the preference in post-disaster social participation.

Model 4 (Eq.4) with a level of significance of p< 0.00 (2.97 E-22) becomes a valid model. The parameter estimates for this model is available on Table 15. The table presents the list of all significant cases (p<0.05).

Below is a list of Model 4's results:

1. Those who experienced floods and EQs are less likely to participate in economic program than physical reconstruction.
2. Those participating in local neighborhood associations, ethnic groups, professional associations and civic groups are more likely to participate in economic program than physical reconstruction.
3. Single people are more likely than divorced respondents to participate in cultural activities, environmental programs and disaster information than physical reconstruction.
4. Professionals are less likely than spouses/children of permanent residents to participate in cultural activities, environmental programs and disaster info than physical reconstruction.
5. Students/trainee are less likely than spouses/children of permanent residents to participate in cultural activities and environmental programs than physical reconstruction.
6. Those who experienced hurricane, EQ, tsunami/surge and other disasters are more likely to participate in cultural activities than physical reconstruction, but those who experienced volcanic eruption are likely to do otherwise.
7. Those participating in ethnic groups are more likely to participate in environmental activities than physical reconstruction.
8. Those who experienced hurricane and other disasters are more likely to participate in disaster information than physical reconstruction, but those who experienced flooding and the 2011 GEJE are likely to do otherwise.
9. Those participating in ethnic groups, professional associations, and faith-based group are more likely to participate in disaster info than physical reconstruction.

Table 15 Model 4 Summary of parameter estimates

DV: Post Disaster Activities	B	Std. Error	Sig.	Exp (B)	95% Confidence Interval for Exp (B)	
					Lower Bound	Upper Bound
Eco Prog						
Disaster Exp: Flood	-2.01	0.53	0.00	0.13	0.05	0.38
Disaster Exp: Earthquake	-1.11	0.51	0.03	0.33	0.12	0.89
Soc. Part.: Local Neighborhood	2.70	0.86	0.00	14.81	2.77	79.26
Soc. Part.: Ethnic Group	2.18	0.63	0.00	8.85	2.59	30.21
Soc. Part.: Prof. Assoc.	2.45	0.60	0.00	11.63	3.57	37.92
Soc. Part.: Civic	1.33	0.48	0.01	3.78	1.49	9.61
Cultural						
Status: Single	2.52	0.85	0.00	12.38	2.36	64.92
Stay: Professional	-27.55	2.66	0.00	0.00	0.00	0.00
Stay: Student/ Training	-28.84	2.64	0.00	0.00	0.00	0.00
Disaster Exp: Hurricane	0.79	0.35	0.02	2.21	1.11	4.40
Disaster Exp: Earthquake	0.93	0.43	0.03	2.53	1.09	5.85
Disaster Exp: Tsunami/Storm Surge	2.72	0.77	0.00	15.11	3.35	68.20
Disaster Exp: Volcanic	-4.85	1.55	0.00	0.01	0.00	0.16
Disaster Exp: Other	2.29	0.56	0.00	9.88	3.31	29.42
Soc. Part.: Ethnic Group	1.00	0.45	0.03	2.73	1.13	6.58
Environmental						
Status: Single	1.95	0.88	0.03	6.99	1.23	39.63
Stay: Professional	-27.69	1.67	0.00	0.00	0.00	0.00
Stay: Student/ Training	-26.33	1.62	0.00	0.00	0.00	0.00
Disaster Exp: Volcanic	-3.26	1.63	0.04	0.04	0.00	0.93
Soc. Part: Ethnic Group	0.81	0.41	0.05	2.25	1.01	5.02
Disaster Info						
Status: Single	2.33	0.83	0.01	10.27	2.01	52.36
Stay: Professional	-29.08	0.74	0.00	0.00	0.00	0.00
Disaster Exp: Hurricane	0.84	0.32	0.01	2.31	1.23	4.33
Disaster Exp: Flood	-0.89	0.41	0.03	0.41	0.18	0.93
Disaster Exp: Other	1.49	0.51	0.00	4.44	1.63	12.14
2011 GEJE Experience	-1.67	0.74	0.02	0.19	0.04	0.80
Soc. Part.: Ethnic Group	1.38	0.44	0.00	3.99	1.70	9.38
Soc. Part.: Prof. Assoc.	0.92	0.38	0.02	2.51	1.19	5.30
Soc. Part.: Faith-based Group	0.80	0.36	0.03	2.22	1.09	4.53

Notes: Model X^2 = 385.567; p=0.00 (2.97 E-22), -2 log likelihood =1478.338. Pseudo R^2 (Cox and Snell = 0.317, Nagelkerke = 0.331, McFadden = 0.122). DV: dependent variable.
a. The reference category is: the preference to post disaster activity Physical Reconstruction.

As a result of this model, there is no found significance in the direct relation of their pre-disaster contacts and their preference in post-disaster social participation in the post-disaster recovery situation. However, other predictors significantly affect their preference in post-disaster social

activities- status, their status of stay in their host country and their existing social participation. Their pre-disaster social participations serve as "active spaces" for enhancing their social capital.

5. Discussions and analysis

It has been consistently stated in this study how social capital manifests through the forms of connections and networks that transpire between people (Woolcock and Narayan 2000, Aldrich 2012a, Hawkins and Maurer 2010). This framework to visualize the available social connections can be applicable to many areas of studies and specific populations. Hence migrants' disaster social capital can be graphically represented using this as well. Plotting the social actors identified in the survey through the adapted social capital framework (see Chapter 1, Fig.1), Figure 11 presents the various positions of social actors across a migrants' disaster network.

5.1. Migrant social actors

Bonding is referential to people within the immediate and exclusive network. For the migrants, there are the familial ties in both Japan and their home country, people from the same country and their friends. Despite the geographical distance, family in their home country remains an active component in their bonding social capital. *Bridging* social capital is easily understood as the lateral connections established across other networks. Generally, this may include people they meet in the workplace, classmates or their colleagues, other foreign residents, and neighbors. Foreign residents, who settle in a community, may sometimes have lesser interaction with their immediate surroundings (i.e. their neighbors), than people who live at farther places (i.e. co-nationals, family in home country). For the linguistically unique setting of Japan, language is a pronounced difference. The absence of an adequate common language to communicate sometimes inhibits social interactions.

Linking social capital refers to these connections individuals build with more institutionalized sources of power and authority. In instances of disasters, they (linking social capital) are the active agents for people to avail and access better information and resources. Inclusive of this are religious/ faith-based groups, NGO/NPO, disaster emergency team, international relations office, and the embassy/consulate from the home country. For the migrants, the connection built with the local government's international office and the officials from the consulate of the home country are quite specific to the conditions of migrants. Their active role within the migrants network during disaster is established based on their nature as foreign residents in their host country.
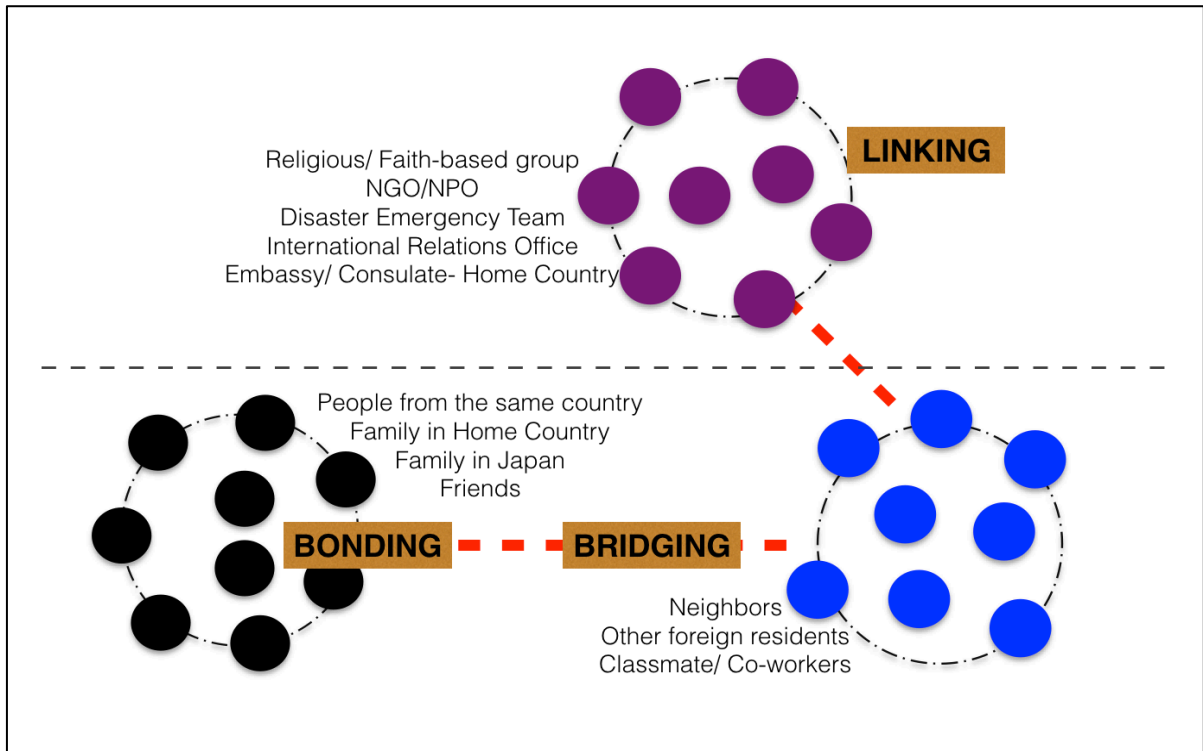
Figure 12 Modified migrant social capital framework

While the gap between linking and the other two forms of social capital are more easily recognized; the difference between bonding and bridging can sometimes be porous. This can potentially happen when social actors plays a duality (or even multiplicity) of role. To site an example, some Filipino students are attending the same educational institutions. Hence, at the instances of the 3.11 disaster, they immediately sought their friends (of the same nationality) who are attending the same university. This role can only be specifically narrowed to one depending on the form of connection to which they are recognized.

5.2 Migrants and disaster risk reduction

Disaster risk reduction is everyone's business (United Nations Office for Disaster Risk Reduction). Ideally, it should engage everyone with the ultimate goal of minimizing risk and losses and maximizing resilience. Hence, this inclusivity implies creating networks and connections; and migrants' connections matters in increasing their access to resources and empowering them.

The results of Model 3 (Eq. 3) confirmed this importance of pre-existing contacts to be the sought and preferred contacts during disaster. Family in Japan (if available) is significantly preferred to the Embassy/Consulate from home country. The immediate aftermath of the disaster necessitate confirming the safety of family members. This serves as the significant source of support for the individuals.

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But as confirmed, migrants often leave behind their family members in their home country, thus they create and establish connections with people whom they have a similar status and perhaps a similar ethnicity in the host country. Disasters are best faced as a collective single unit (Dynes 2006); thus people modify their network from their home country and establish a set of social support to enhance their ability to face disasters in their new place of residence. This may even include people of other nationality whom they have constant engagement like in their housing (shared housing, dormitories) and occupation (schools and other workplaces).

Non-familial entities like religious/faith-based groups are preferred contacts in times of disasters. Such institutions often establish connections to community prior to the disaster. Inherent to these groups' altruistic purpose to serve as a support group or an arbitrary family for some migrants seeking emotional support; disasters thus become another instance were support and assistance are activated. The Catholic Tokyo International Center is one of active faith-based groups that have active supports for migrants and refugees living in Japan. In 2011, members of this Tokyo-based group were phoned and asked to temporarily take in evacuees from the Fukushima area, mostly Filipino women married to Japanese men and their children (Masangkay 2012). By the times evacuees returned to their hometowns, information in foreign languages was provided together with opportunities for employment needs.

Based on the profile of the respondents, the age group of 20-39 corresponds mostly to foreign residents attending academic institutions. Foreign students are relatively present in their host country for a definite period of time. Thus, their presence whilst limited showed further engagement with institution related to their home country than the local government to their host country (Japan). People contact formal institutions related to their home country (e.g. embassy and consulate of the home country). This happen especially to nationals who intends to be accounted for and provided with further information and resources coming from their home country.

Enhancing migrants risk reduction commenced as they modify their social capital to fit their present conditions. The key to this is the presence of collectivity as the actions were executed. Specific to 2011 disaster in Tohoku, it partly redefines the idea of *kinship* for migrants. In instances of disasters, people have a potential of modifying their roles based on the multiplicity of obligations and expectations from the people within and across their networks (Dynes 2006). Most of the foreign residents would establish connections by the time they get to Japan. The common form of collective created is among co-nationals, or people of the same ethnicity. Foreign residents would frequently gather for activities like picnic, seasonal gatherings and other activities where they meet with people with the same ethnic origin. Thus, when the disaster took place, the likely course of taking concern for each other's safety was not much of a surprise.

However, both locally and in the transnational setting, migration decisions should account for a broader macro-level context (social, economic and geographic) in which individuals are embedded (Myers, Slack and Singlemann 2008). These characteristics and conditions befitting migrants contribute to the degree of social vulnerability that influence and shape the susceptibility to hazards and their ability to respond (Cutter, Boruff and Shirley 2003). The idea of kinship as the primary source of help during the disaster is redefined in a setting fit for the migrants situated away from their family. This ideal operates in parallel to M. Douglas's (1994) claim of misfortunes enhancing solidarity (Samuels 2013). These disasters had been validations of the existing connection and cooperation among individuals. Resources and information are important components in disaster risk reduction, this transpires across links and connections built among people.

5.3 Migrants and disaster recovery

Disaster literatures gradually recognized the necessity of social capital particularly in disaster recovery (Nakagawa and Shaw 2004, Aldrich 2012a, Joshi and Aoki 2014). Actions for social capital involve recognition, preservation/conservation and investment, to which "mutually beneficial collective action" and a sense of "shared thinking" in the community (Nakagawa and Shaw 2004). Post-disaster activities are good venue for social participation. Based from the survey data, 84 respondents are interested in participating in environmental programs, followed by cultural activities (72), disaster information dissemination (67), disaster reconstruction activities (56), and lastly economic programs (33).

Based from the modeling of Eq. 4, the disaster experiences in the home country showed significant value in predicting the preference in post-disaster participation. Those who experience disasters in their home countries are likely to be engage to various post-disaster activities. Based from the respondents, those who experience of typhoons and earthquakes in their home country are likely to participate in physical construction after. Also, the experience of hurricanes earthquakes and tsunami/ storm surges in their home country, invites participation to cultural activities after a disaster. Bankoff (2003) claims that the repeated experience of the disaster creates a sense of "normalized threat", thus it is not considered an alarming risk to safety. For migrants moving to their new place of residence, the prior experience of the disaster in the home country dampens this effect to one's sense of personal safety. Hence, post-disaster participation related to their recovery is not a threatening risk.

Post-disaster social participations are opportunities for engagement with other networks. Based from the survey responses, single foreign residents and spouses/children of permanent residents are more likely to engage to these various post-disaster activities. A feasible rationale for single people's engagement may root from the fact that there's more available time to participate. More so, it's a chance to expand one's personal network and socialize. As for the children and spouses of permanent

residents, opportunities for engagement are made available in forms of Parent Teachers Associations (PTA), neighborhood associations (自治会), and those activities sponsored by the local government. As previously explained, a number of activities prior to disasters are already made available to support foreign residents. These activities create spaces to participate and enhance their social connections.

Lastly, those with pre-disaster social engagements in activities with the same ethnicity, membership in professional associations, and in faith-based organizations; have higher likelihood to participate in post-disaster activities. Organized ethnic associations and the 2 other groups provided a variety of activities to enhance migrant welfare and resilience.

Civic participation serves as proxy indicator for social networks. Related to the environmental issues, participation in collective activities is strongly associated with the awareness of these issues and the tendency to participate in actions for their resolution (Jin and Shriar 2013). In the same way that in times of disaster, the membership to certain collectives can encourage better participation addressing the recovery. Migrants participation in post-disaster activities within people with the same ethnicity enhances *bonding,* those in professional associations promotes *bridging*, and those with the faith-based organization supports better *linking*.

In summary, disaster recovery entails enhancing connections across various networks. The variety of activities identified presents the different means to support the recovery process. However, each of these created recovery efforts will fail without people's participation. Migrants are presented with these varieties of activities to engage and participate. Each one addresses a general aspect of living that may be affected by the disaster that needs recovering from.

6. Conclusion

Wessendorf's (2013) study as sited in the literature review on *Social networks, social capital and migrant integration at local level* (Kindler, Ratcheva and Piechowska 2015) presented the importance of spaces of encounters and associations, and how the social relations in the neighborhood in Hackney were characterized by the co-existence of separation and mixing, as shown in the situation of the Vietnamese and Turkish people. Perhaps, this separation and mixing is the *paradox of social relations for migrants*. While migrants extends its networks through building connections with other networks; there simultaneously exist the need for self-preservation - thus the necessity to preserve and promote its identity as a migrant collective. Even in times of disasters, there still exist this paradox for migrants. As they gear towards better inclusion, there continues to be the need to maintain their collective. Disaster risk reduction presented this significance to confirm the safety among the

members of their migrant collective. As people respond and recover from the disaster, the need to expand and mix one's network becomes necessary.

This chapter of the study presented the need to predict social connections, not just for risk reduction but recovery too. Validating people trust through their preference in disaster contact helps people, particularly migrants to identify the sources of strong networks. However, other predictors made available through the migrants inherent characteristics such as age, gender, the length and the nature of the stay in host country can also contribute to their preference. The study has shown how the composition of migrants in the Sendai area primarily needs to gear support for mostly midterm migrants attending academic and research institutions. Thus, disaster risk reduction activities should be channeled through these institutions to better reach them. As explained (Kikuchi 2016) access to reliable disaster relevant information was among the key challenge faced by migrants during disasters. Preferences in post-disaster participation often appeared in various *linking* networks. Nonetheless, there is also other recovery-related activity that transpires in the migrants' ethnic (*bonding*) and professional (*bridging*) networks. Opportunities for these post-disaster activities are common spaces of encounters. People have the opportunity to meet people to increase their homogenous network, across other networks and in their connection for better accessible resources.

The study quantified the migrants' preference to connect with other people in times of disasters. While the study was limited to the surveyed foreign residents in Sendai, the use of the survey can be replicated to appraise the migrants in other cities. Each city creates a specific profile of its foreign residents. Nevertheless, this kind of survey can support improving migrants' support and identifying opportunities.

The aftermath of the 2011 Great East Japan Earthquake led to a further rethinking for residents (including foreigners) to recognize that foreign residents are not mere "guests" of the local community, and Japanese residents should treat them as full members of the local community (Kikuchi 2016). Inclusion is a two-way street. It needs not just the opportunities to engage but the desire and motivation as well. Social capital transpires between nodes, enhancing and establishing social connections and relation. Inclusion requires the collaboration among stakeholders and to do so, there is the need to recognize these capacities and be able to engage and be active partners in disaster risk reduction and recovery.

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CHAPTER FIVE

CONCLUSION: TOWARDS A MIGRANT-INCLUSIVE DISASTER RISK REDUCTION

CONTENT

1. Introduction
2. Chapter summaries
3. Significance of migrants in disasters
4. Migrants` social capital and an inclusive disaster risk reduction
    4.1. Bonding and bridging
    4.2. Migrants linkages
    4.3. Paradox of migrants' social relations
5. Research contributions
6. Opportunities for further study

1. Introduction

This chapter creates the full circle into this introspection on the significance of migrants' social capital in instances of disasters. The combination of three case studies provided the progressive development of the entire research. It addresses the key question: *How does the social capital of migrant collectives relate to the disaster risk reduction and recovery of their communities?*

Using the combined qualitative and quantitative research instruments, the study established the importance of migrant social capital in disasters through the development of three independent yet related studies. An initial research on social capital during disasters looked at the social connections of the affected residents in Tacloban City, Leyte, Philippines from Typhoon Haiyan (2013). Subsequently, a qualitative study of Filipinos (foreign students and residents in Kesennuma City) during the 2011 Tohoku Earthquake, was made to identify the vulnerabilities and capacities specific to migrants. The former study has established that disasters affect and modify people's social connections and relationships; while the latter confirmed that migrants' social connections during disasters are valid sources of social resilience. The combined results from the first two studies brought forth the third stage of the whole research, identifying patterns and trends in disaster social capacities

through a migrant-specific social survey of foreign residents in Sendai City. This chapter confirmed that the migrants' pre-disaster social contacts are the sought connections during disasters, and the post-disaster participations accounts as spaces enhancing social engagement.

The study established this relation of social capital available to migrants (foreign residents) and their disaster response and recovery. This moves in the direction cohesive to the emerging disaster-related policies recognizing migrants as significant stakeholders in disaster risk reduction with certain capacities to respond to disaster situations.

This chapter closes the whole study with the summary of each chapter. Together with this, it reiterates the significance of migrants in disasters, how various forms of social connections promote a disaster inclusive risk reduction, the study's contribution in the academic and policy contexts, and opportunities for prospective studies.

2.   Chapter summaries

The study revolves around the key terminologies of ***disasters***, ***migrants***, and ***social capital***. These were presented and discussed in each chapter of the study.

Chapter 1 established the conceptual framework together with the structural organization of the study. With social capital`s malleability to blend and be incorporated to other fields of study (Robison, Schmid and Siles 2002); the key challenge is to establish its value as an academic theme while presenting its relevance to local and international policies. With this multiplicity of perspectives to which social capital can be observed, the study observed a synergistic view of social capital (see Woolcock and Narayan 2000) to further emphasize this theme of migrant-inclusive disaster risk reduction and recovery. More so, the research focused on role of social capital and disasters, recognizing its cognitive form (i.e. [social] trust in disaster) and its structural form (i.e. forms of networks and connections). Through the used of combined qualitative (interviews, oral narratives, and focus group discussions) and quantitative (social survey with multinomial logistics regression modeling) research instruments, the whole research presented a supplementary interpretation to social capital and emerging role in disaster risk reduction and recovery.

Chapter 2 paved the way to further introduce social capital in disaster. Focusing on the case of the 2013 Typhoon Haiyan affected residents in Tacloban City, Leyte in the Philippines; the preferred social connections with different social actors were identified. This chapter provided a means to quantify social capital by identifying the presence of *trust* based on their preferred social connections across the three phases of a disaster. The combination of interviews, focus group discussion and regression modeling provided the potential justification in the changes in social connections during

disasters. Fatality and disappearances, the presence of emergent groups, the enforced change in residences and the recognition of disaster as shared experience were among the identified factors the contributed to this effect of disasters in people`s social connections and interactions.

A more migrant-specific discussion is made available in *Chapter 3*. People`s movement to various geographical area for purposes of upward social mobility, entails the combination of various points of vulnerabilities and resilience. By particularly focusing on a single ethnicity (nationality), the chapter identified the social actors available to midterm (i.e. Filipino foreign students), and long-term (i.e. Bayanihan Kesennuma Community) migrants. Using disaster narratives, the discussions focused on how social capital functioned for migrants as they face the disaster and find options for recovery. Based from the gathered disaster narratives, five pronounced vulnerabilities for migrants included: socio-economic status, race and ethnicity, infrastructure and lifelines, renters and family structure. These points of social vulnerabilities were augmented through the various social connections (re) established during and after the disaster. Among the significant social actors in their network included their families (in Japan and the Philippines), other Filipinos in Japan, colleagues, neighbors, home country embassy/consulate, and religious institutions.

Chapter 4 provided a general analysis on migrants` social capital in disasters. While most discussions on migrants` social connections reflected on the courses of action to which social capital re-enforced their disaster resilience and recovery; this section offered a predictive approach to identify potential social connections migrants` can avail. This part of the study presented this predictability in preferred social connections for risk reduction and recovery. By confirming people`s trust through their preference in disaster contacts, migrants` can identify the potential sources of strong networks. Migrants` inherent characteristics such as age, gender, the length and the nature of the stay in host country can also act as predictors of their preferences. A migrant-specific social survey on disaster social capital exhausted the actual and preferred social contacts across the disaster. This is supplemented by relevant demographic and social information from migrants (foreign residents) in a specific geographical area, such as Sendai City. Using multinomial logistic regression models for the statistical analysis of this study; it predicted the "odds" in social contacts during disasters and their preferred post-disaster social participation. This chapter confirmed that the pre-existing contacts with select social actors are the same sought connections during disasters. In addition, the length and nature of stay in the host country matters in their interest to participate in post-disaster programs. As recommendation for the research site, the composition of migrants in the Sendai area primarily needed to gear support for mostly midterm migrants attending academic and research institutions. Thus, disaster risk reduction activities should be channeled through these institutions to better reach them.

Each chapter provided individual and independent discussions. Nonetheless, once weaved together it creates a comprehensive discussion and analyze on the importance of migrants` social capital in disaster risk reduction and recovery.

3. Significance of migrants in disasters

Studies observed certain groups in society are more prone than others to damages, losses, and sufferings in the context of hazards. Migrants are among the vulnerable populations during disasters. Yet over the changing times and advancing mobility of people, migrants emerge as a significant consideration in the area of disaster risk reduction. The 3rd UNISDR World Conference on Disaster Risk Reduction (WCDRR) in Sendai City, acknowledged *migrants* as essential stakeholders in reducing disaster risks.

A condensed review of the study can be encapsulated in 4 points: *(1)* Migrants/foreign residents are automatically perceived victims, *(2)* However, they bear distinct capacities to deal and respond to catastrophic conditions, *(3)* People's connection serves as the intangible capital but necessary aspect of resilience, and *(4)* The presence of (re) established social connections within and across groups, as well as active linkages to formal institutions enhances this opportunity to develop and utilize their capacities. Point 1 refers to migrants' social vulnerabilities in instances of disasters. These are moderated through people's social resilience (Point 2) found in their social capital (Point 3). Point 4 indicates the kinds of social capital developed in a migrants' network of connections that matters in times of disasters.

The narratives of recovery as experienced by the Vietnamese-American community in New Orleans in the aftermath of Hurricane Katrina presented an inspiring story of rebuilding a community largely through the initiatives of this migrant group (Airriess, et al. 2008, Aldrich 2012a, Chamlee-Wright 2006, Chamlee-Wright 2010, Chamlee-Wright and Storr 2011). Such scenario provided an understanding on the significance of social engagement to build back better coming from a disaster. In the same way and as presented in this study, the experience of the Filipino community in Kesennuma explored how the disaster created opportunities for empowering migrants after the 2011 Tohoku Earthquake. Post disaster support opened prospects for economic and social empowerment. The large-scale damages incurred from the 2011 Tohoku disaster resulted to a number of migrants losing their jobs and source of income. This led to a career shift from factory workers to caregivers for elderly homes (Kamiya 2011, 2012, Global Peace Foundation 2015, Global Peace Foundation Japan 2013). Hence, more than gaining employment, a number of foreign residents in Kesennuma moved from working with fishes to taking care of people. Posited as empowered (and engaged) members of the population during disasters; migrants can significantly contribute to resolve the social predicaments in

their host country. Recent times turns its spotlight for the need to recognize their capacities, and among the neglected resources of migrants includes their composite set of social connections.

The abovementioned cases of Vietnamese-Americans during Hurricane Katrina, and the Filipinos in Kesennuma during the Tohoku Earthquake, are just two scenarios where migrants' participation contributed in the social and economic recovery of their communities. While both cases presented success stories of migrants` supporting the rebuilding of communities and empowering a vulnerable segment in society; it should be noted that there remains the challenges to have them [migrant collectives] recognized as active partners in recovery. However, the presence of (re) established social connections within and across groups, as well as active linkages to formal institutions enhances this opportunity to enhance and utilize their capacities, and recognize their potentials as contributing stakeholders in disaster management.

4. Migrants` social capital and an inclusive disaster risk reduction

Present trends in the disaster-related policies confirmed the necessity for further inclusion for the various stakeholders. At the onset of this study, there had already been a clear mention on the shift in perspective of migrants' role in disaster risk reduction (see Chapter 1). Existing policies were reformulated to accommodate the changes in achieving more sustainable and inclusive rules and programs.

In the context of migrants, there was transference in their role in disasters. From the Hyogo Framework for Action 2005-2015, dedicated on building resilient nations and communities to disasters, migrants were implied to be part of the vulnerable groups that were identified significant in planning for disaster risk reduction as appropriate (HFA 2005-2015) (United Nations International Strategy for Disaster Reduction 2007). With this framework expiring in 2015, the formulation of the succeeding charter, introduced in the 3rd UNISDR World Conference on Disaster Risk Reduction (WCDRR) in Sendai City, provided the shift in migrants' perspective specifically acknowledging migrants as essential stakeholders in reducing disaster risks.

More than contributing in the growing academic literature on social capital in disasters, the study supports its practical application related to actual policies for disaster risk reduction. The whole study predominantly supports the *Sendai Framework Priority of Action 1: Understanding Disaster Risk* consistent with its expected outcome of *(1.4) Building capacity to ensure that all sectors and countries have access to, understand and can use scientific information for better informed decision making* (United Nations International Strategy for Disaster Reduction 2015)*.* The research submits itself to the rethinking of policies in creating more integrative polices that would include and involve vulnerable populations. To fully realize this new recognition of migrants' involvement in the disaster

risk reduction and the recovery of their communities, it demands the identification of their specific skills and capacities to participate. And among these capacities that migrant can avail originates from the social connections within and across their spheres of connections.

4.1. Bonding and bridging

The social capital generated in people's *bonding* and *bridging* is easily contrasted in the context of the homogeneity or heterogeneity of connections established. Putnam (2000) segregates these connections with bonding social capital referential to the more exclusive identities among a homogenous group, while bridging capital is suggests the networks across diverse social cleavages. Bonding can easily be quantified to account to those with direct personal relations including those with familial ties and established social relations (e.g. family, friends, neighbors). On the other hand, bridging capital exist across horizontal networks, perhaps another collective or community (e.g. co-workers, classmates).

Since both networks exist in the lateral space, sometimes with similar needs and resources, the distinction between these two forms of social capital becomes unclear. Hence, as discussed in Chapter 4, the migrants' social capital presented the altered definition of *kinship*. In essence, bonds between the immediate family, neighbors, close fiends and colleagues provide the most sense of security in times of disasters. However, migrants' reshape these relations with various social actors based on their availability and presence (or absence thereof). According to Dynes (2006), disasters are among the situations people are inclined to modify their roles based on the multiplicity of obligations and expectations from the people within and across their networks. As for the migrants, despite geographical distance brought about by their present circumstances, the family remains an important entity that matters especially in decision-making. Nonetheless, new bonding happens with the people whom they shared a common disaster experience. The disaster in Tohoku partly redefines the idea of kinship among foreign residents, with the primary source of help during the disaster is reconfigured in a setting fit for the migrants and their specific conditions.

Despite these discussions, it still raises the question if such forms of social capital are quite specific to a particular ethnicity during disaster. A study by Agyeman (2015) supports this significance of social connections as a means to advance a better socio-economic integration for Africans in Japan. While the study does not delved directly on any disaster situation, it presented similar social actors across the forms of social capital like those in the Filipino migrants` networks. Family ties and ethnic associations were sources of *bonding* that provides support in settlement and integration. In-group networks from Japanese people, fellow Africans, and other English-speaking nationals were the forms of *bridging* connections available to them. And thirdly, *linking* social relations are available through educational institutions, influential members within and outside the African community, embassies

and migrant interest groups. Henceforth, this confirms that the presence of the three forms of social capital and the available social actors within them have likely parallels with other migrant groups.

Inclusivity naturally occurs in these forms of social networks. Migrants gravitate towards people whom they find a based commonality. This may exist in accordance to their ethnicity or even the similarity in their experiences and challenges. One noticeable and substantial social connection for migrants comes from the strengthening and involving in same-ethnicity collectives to support increased disaster resilience.

4.2. Migrant linkages

In defining social capital during disaster, it emphasized how these networks' *"facilitate a flow of information providing a basis for action and assisting in individual and community goal attainment"* (Ritchie and Gill 2007). Hence, social capital in disaster is geared to avail and access the necessary resources to improve individuals and communities' resilience. Although disaster researches have documented the increased engagement of bonding and bridging capital following emergencies and a generally positive relationship between social capital and recovery, the concept of linking social capital has been all but ignored. Linking social capital advances *distributive* and *procedural* justice that delivers tangible outcome towards disaster recovery (Loebach and Stewart 2015). This constitutes the vital functions of linking social capital in occurrences of disaster. Within Japan, the 2011 Tohoku disaster provided a strengthening of policies to be better inclusive of vulnerable populations. Disaster mitigation schemes may well be implemented prior to the Tohoku earthquake; however it was a source of reawakening to implement new policies that are adaptable to the changing times and its stakeholders.

Among the key challenges that can contribute to migrants' vulnerability in disaster is language (Cutter, Boruff and Shirley 2003). Within the linguistically unique setting of Japan, not all foreign residents may have sufficient Japanese language skills to comprehend extensively technical details. The challenge to discern and access trust-worthy information was a dilemma for both nationals and migrants; but foreign residents experience a step-further challenge due to the lack of language comprehension or limited Japanese language skills. (Henry, Kawasaki and Meguro 2011). Thus, despite the availability of information through various media (television, radio, and internet), foreign nationals are placed at a disadvantage.

Basic to the nature of linking capital is the interaction that transpires between the individual/community and the formal or institutionalized sources of power (Aldrich 2012c). It administers the formulation of rules and policies that intends to be beneficial to all stakeholders. Among the notable linkages are the government and other recognized official institutions. State-

identified institutions are the immediately acknowledged sources of information and relevant resources in disasters. Hence, the appropriation of sufficient funds to support disaster mitigations policies and programs are necessary.

The promotion of disaster prevention and mitigation measures (together with the maintenance of the aging infrastructure) for building national resilience is one of the highlights of the 2016 Fiscal Year budget. According to the Japan's Public Finance Fact Sheet (Ministry of Finance 2016), the allotment is made in the public works related expenditure (5,973.7 billion yen (＋0.0％)) at the same level compared with previous fiscal year, while enhancing measures for disaster prevention and mitigation as well as maintenance of aging infrastructure in a planned manner. Despite the government allocation in disaster mitigation schemes, the concentration appears focused on infrastructure related projects. While this addresses macro-level disaster mitigation plans for all its citizens; the need to address citizen social support such as disaster management education (particularly for migrants) seems delegated in the hands of the local government, and in most cases the stakeholders' initiatives.

In this period of excessive Internet usage, webpages and social media links are among the forerunners to channel information between the state and its citizenry. In the Portal Site on Policies for Foreign Residents (Cabinet Office, Government of Japan 2009), a multilingual one-stop-shop of relevant foreign resident information were made available. In addition to disaster-information guides, living information and other useful links were made accessible. While this effort appears on the national level, prefectural governments provide similar and more area-specific information that can support foreign residents. In a recent empirical review of the 47 prefectural capital websites, basic supports for foreign residents as well as disaster-relevant pages were accounted. Table 16 summarizes the features and details that are helpful to foreign residents relevant to disasters. As of August 2016, all prefectural capital websites have provisions to support foreign residents with information on settlement and disasters made available in multiple languages. Also, there is sufficient information that can be accessible to foreign residents especially in prefectures with large foreign resident population.

While these information are vital, they remain passive resources awaiting search queries from the residents. Hence, local government initiatives are instrumental venues for migrant participation and inclusion. Prefectural capitals would have international associations and offices to coordinate foreign residents' participation. More than disaster-related programs, migrants are invited to partake in other solidarity activities that can activate their better involvement in the community even prior to a disaster.

Table 16. Summary of an empirical review of the prefectural capital websites

Website Features/Details (As of Aug 2016)	Total (%)
Links available for Foreign Residents	47 (100%)
Available links for International Exchanges and Supports	39 (83.0%)
International Association (As available in the website)	20 (42.6%)
Living Information (Settlement) Support	46 (97.9%)
Disaster-Relevant Information (in Foreign Language)	44 (93.6%)
Available Foreign language options	47 (100 %)
Languages Available:	
English	47 (100 %)
Chinese	47 (100 %)
Korean	43 (91.5%)
Other languages: Russian, German, Spanish, Portuguese, Tagalog, Thai, French, Vietnamese and Italian	

Note: All 47 capital websites were searched and visited, reviewing the availability of foreign-resident relevant information and links, including language provisions.

In sum, formal institutions had initiated programs to promote enhance inclusion. The prefectural initiatives through community gatherings and disaster trainings created more direct engagement with the migrants, while improved access to websites made information constantly available and accessible. Migrants are given opportunities to participate and be included in disaster-related programs. This presents how the host country government (both in the prefectural and local levels) is an agent for linking capital for migrants to gain fair access to disaster-related information and resources.

Linking social capital transpires between two nodes, one of which are the formal agencies that supports the implementation of distributing resources and crafting procedures. However, at the other end of the spectrum are the migrants who are expected to actively participate and engage in such activities attuned to their needs.

4.3. Paradox of migrants' social relations

To reiterate, millions of people have been continuously traversing borders and countries to put forward their personal safety, advance their socioeconomic development and any other purpose that can result to an enhanced upward social mobility. As a consequence of this, diversity increased not just in demography but also in the social engagement that transpires. Wessendorf (2013, 2014) illustrates how this diversity in ethnicity was a normalized condition in a super-diverse London neighborhood. She presented how the difference in ethnicity, religion and language were common in the local residents social life. In addition, "commonplace diversity" was found to enhance the sense of civility that supports the community`s social order. While this may present an idealistic setting of co-

existence for both the nationals and migrants, it clearly reflects that contradictory existence of migrants in the host country.

The simultaneous reality of separation and mixing reflects the dynamics of social connections available to migrants. While foreign residents seeks opportunities for better community inclusion, through building contacts with other social networks; they concurrently maintains the need to preserve and promote its identity as a migrant collective. This paradox of migrants' appears even in the disaster setting. Disaster risk reduction presented this importance to confirm the safety among the members of their migrant collective (co-nationals). While doing so, there is also the need to integrate to the need to expand and mix one's network to achieve better inclusion. The combination of these mixing and separating social relations requires the right balance appropriate to one`s social condition and role. More than ever, this is one of the duality of roles (as a co-national and a foreign resident) portrayed by migrants that define their social connections and interactions.

5. Research`s contribution

As the key premises and objectives of the study were introduced in Chapter 1, it was also emphasized that the study aims to create even a miniscule impact in the academic stream and policy formulation relating to migrants and disaster. In the succeeding chapters, the study offered an alternative view in understanding this theme though the extensive presentations and discussions on how the social capital of foreign residents contributed to the disaster risk reduction and recovery efforts. This research`s significant addition is found in its novelty both in content and methodology. As earlier stipulated, the materials regarding migrants during disaster remains limited. More so, the much specific subject of migrants` social capital is scarce. Hence, this whole research presented a setting to broaden this acknowledgement of the thesis as both an academic and policy resource.

A significant finding in this study is how the various social actors in the migrants' network are situated in the 3 categorical forms of social capital and having definitive functions in enhancing their disaster mitigation and recovery. Each social actor within their bonding network, and across their bridging and linkages performs certain social roles to improve their resilience. While the study is framed mainly from a social science perspective, it presented that it is possible to quantify the preferred social actors based on the demographic and social data. The academic value of the study comes from the potential to predict the people`s preferences in social connections in instances of disasters, and to categorically define their functions and roles in one`s network of social relations. While people inherently assumed and conventionally accepts their preferences as the natural order of things, the study creates a conduit to comprehend these more on an objective setting guided by social theories such as social capital. At the end of this inquiry, the various forms of social capital were

identified complemented with the discussions on the modifications of these roles in the context of migrants.

In terms of policy formulation, the study generally adds to this rethinking on the position of foreign residents in the scope of disaster risk reduction and recovery. The discussions on the shift in migrants` function in disaster management provide an opportunity to better understand the forms of support and programs that are necessitated to support them. In a more specific perspective, the migrant-specific social survey tested in Chapter 4 offers itself as a suitable starting point in formulating appropriate policies and programs based on the perceived (and preferred) social connections and interactions. These migrant-specific and migrant-inclusive activities may include workshops and discussions. Such activities may have already existed and has already been implemented; nonetheless, by utilizing the information generated from a migrant-specific social survey it can address significant points that needs attention and enhance potentially valuable networks and connections during disasters. As mentioned, the study had been particularly distributed in a select population in just one city. However, the study can be duplicated to validate the existence of such patterns in others locations and areas. High risks areas with large migrant population can be examined in order to analyze and endorse better and sustainable policies to support them.

6. Opportunities for further studies

This whole research on migrants' social capital during disasters attempted to present a comprehensive means to understand this dynamics. With the combined descriptive and numerical discussions and analyses, it dealt with the disaster experiences of migrants (specifically foreign residents in Japan), identifying the significant social actors and predicting contact preferences.

Cohesive with the study's goal of adding in the growing literature within the area of migrants' social capital and disaster risk reduction, the study promotes this theme through presentations and prints. More than a contribution in the academic field, the study intends to actively offer recommendations in generating beneficial policies for migrants.

The research remains open for opportunities for other thematically relevant introspections like the risk management in urban sites and how migrants' social capital possesses value. The increasing mobility of people precedes this movement in various areas mainly places with high concentration of economic, social and political activities. These urban sites remain at risk if a definitive understanding of their population is not achieved. Thus, recognizing and supporting the various stakeholders empowers them with a better discernment of risks and useful recognition of their capacities in times of disasters. Urban centers include migrants' both in their daytime and evening population. Hence, risk management that is migrant-inclusive should also be given attention.

Aside from the theme, the composite of the research instruments utilized in the study can also advance appropriate studies. The social survey utilized in Chapter 4, together with the statistical models used quantified the migrants' preferred social connections with other people in times of disasters. While it was limited to the surveyed foreign residents in Sendai City, this can be replicated to assess the migrants in other cities. Every city creates a unique profile of its foreign residents. Hence, this kind of survey can support improving migrants' support and identifying opportunities.

In the end, the migrants' social capital remains the intangible resource inherent to everyone. The right permutations of bonding, bridging and linking social capital with relevant social actors defines the resilience individuals and communities have in addressing disaster risk reduction and recovery. More so, *inclusivity* demands the motivation to engage and be a part of a larger picture; thus the collaboration among stakeholders. To achieve this, people are encouraged starting by recognizing the inherent capacities, to be fully able to engage and be active partners in disaster risk reduction and recovery.

<p style="text-align:center">***</p>

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APPENDIX

SURVEY UKOL SA MGA UGNAYAN TUWING PANAHON NG SAKUNA

Ako po si Lisette Robles, kasalukuyan nag-aaral sa Japan. Ang survey na ito ay para malaman ang mga impormasyon tungkol sa mga uri ng personal koneksyon at ugnayan tuwing panahon ng sakuna. Kung maaari po paki sagutan ang maigsing survey na ito. Pakilagyan ng check (✓) ang inyong napiling sagot. Ang survey na ito ay tatagal ng 5-10minuto. Maraming Salamat po!

A. PERSONAL NA IMPORMASYON

1. Pangalan   _____

2. Kasarian   _____ Lalaki   _____Babae

3. Edad   _____20-29   _____30-39   _____40-49   _____50-59   _____60 o higit pa

4. Katayuan sa Buhay   _____ Dalaga/Binata _____May Asawa   _____Hiwalay _____Balo

5. Ilan ang miyembro ng pamilya   _____

6. Pinakamataas na Edukasyon: _____Elementarya _____High School   _____Kolehiyo

7. Gaano na katagal naninirahan sa komunidad? _____Mula pagsilang   Bilang ng taon:_____

B. BAGO ANG BAGYONG HAIYAN

1. Dating Tirahan   _____

2. Pinagkakabuhayan ___Magsasaka ___Mangingisda _____May Negosyo _____Empleyado
                              ___Wala   Iba: _____

3. Saan kumukuha ng impormasyon?
_____Telebisyon   _____Radyo   _____Dyaryo   _____Kapitbahay _____Kamag-anak
_____Internet   _____Pamahalaan _____Simbahan

4. Sino ang madalas kaugnayan?
_____Pamilya   _____Kapitbahay   _____Kamag-anak (sa barangay, ibang probinsya, sa abroad)
_____Pamahalaan _____Simbahan   _____ Kaibigan (sa barangay, ibang probinsya, sa abroad)
_____NGO   _____Sibikong Samahan   Iba:_____

5. Kabilang ka ba sa mga proyekto sa inyong lugar? ___Oo ___Hindi

6. Pamamaraan ng komunikasyon
_____personal (face to face) _____tawag sa telepono   _____sulat/telegrama
_____text   _____social media (Facebook) _____email   _____wala

C. PANAHON NG BAGYONG HAIYAN (November 2013)

1. Kinailangan nyo ba na lumipat ng tahanan? _____Oo   ___Hindi
    Kung Oo, Saan kayo lumikas? _____

2. May pumanaw ba sa inyong pamilya?   _____Oo   _____Hindi

3. May nawawala ba sa inyong pamilya?   _____Oo   _____Hindi

4. Ano ang mga hinarap na problema nung bagyo?
___ personal na kaligtasan ___ nawawala/nasawing kamag anak ___ nasirang bahay/mga gamit
___ pagkain at tubig   ___kuryente   _____ komunikasyon (signal)
iba pa:_____

5. Anung mga impormasyon na kanailangan noong panahon ng bagyong Haiyan?
_____ evacuation centers   _____relief goods ___ulat ng panahon   ___ nawawala/naapektuhan
_____ balita sa kuryente   Iba: _____

6. Saan/kanino kumukuha ng impormasyon?

____Telebisyon ____Radyo ____Dyaryo ____Kapitbahay ____Kamag-anak

____Internet ____Pamahalaan ____Simbahan ____Disaster relief team

7. Sino ang inyong Kinokontak noong

___Pamilya ___Kapitbahay ____Kamag-anak (sa barangay, ibang probinsya, sa abroad)

____Pamahalaan ___Simbahan ____ Kaibigan (sa barangay, ibang probinsya, sa abroad)

____Disater Relief Team ____NGO ____Sibikong Samahan

iba: _____

8. Pamamaraan ng komunikasyon

____personal (face to face) ____tawag sa telepono ____sulat/telegrama

____text ____social media (Facebook) ____email

Iba: _____

D. MATAPOS ANG BAGYO

1. Kasalukuyang tirahan _____

2. Pinagkakabuhayan ____Magsasaka ___Mangingisda ____May Negosyo

____Empleyado ___Wala Iba: _____

3. Sino ang madalas kaugnayan?

____Pamilya ____Kapitbahay ____Kamag-anak (sa barangay, ibang probinsya, sa abroad)

____Pamahalaan ____Simbahan ____ Kaibigan (sa barangay, ibang probinsya, sa abroad)

____NGO ____Sibikong Samahan ___MIyembro ng disaster relief/rehab

4. Pamamaraan ng komunikasyon?

____personal (face to face) ____tawag sa telepono ____sulat/telegrama

____text ____social media (Facebook) ____email

Iba: _____

5. Kabilang ka ba sa mga proyekto sa inyong lugar? ___Oo ___Hindi

6. Pangangailangan: ____tirahan ___trabaho ____gamot ____pagkain/tubig

____kuryente iba:_____

7. Pinag iisipan nyo ba na lumipat ng tirahan? ___Oo ___Hindi

Dahilan: _____

Kung oo, ____ ibang bayan ____ibang probinsya ____ibang bansa

MARAMING SALAMAT!

A Survey on Migrants Social Capital and Disasters

To the Survey Participant

Good day! I am Lisette Robles, a 3rd year Doctoral Student at Keio University, currently doing a research on migrants (foreign residents), social capital and disasters. This research survey is conducted to identify foreign residents social connections in relation to disasters. Your input can valuably contribute to recommend future policies for migrants in times of disasters.

This survey will only take 10-15 minutes to answer. All information will be treated confidential and are strictly used for research purposes only.

調査に参加される皆様へ

調査参加についてのお知らせ

はじめまして。
慶応義塾大学、博士課程三年に在籍しておりますロビレス　リセットと申します。
現在、日本における移民者の（foreign residents）社会資本、及び災害の研究を行っています。
本調査において皆様から得られた情報は、将来の災害時に際して、移民に対する政策・待遇への向上に大きく貢献します。

この調査は10分〜15分ほどかかります。調査は下記に用意いたしました選択肢を用いて行っていただきます。
この調査によって得た情報は、研究目的のみに使用し、その他には一切使用いたしません。

* Required

1. **Choose a language:** *
   Mark only one oval.

   ◯ English   *Skip to question 2.*

   ◯ 日本語   *Skip to question 39.*

Background

2. **Q1. Name (Optional)**

   ....

3. **Q2. Nationality (Country of Origin)**   *

   ....

4. **Q3. Gender** *
   Mark only one oval.

   ◯ Male

   ◯ Female

5. **Q4. Age** *

Mark only one oval.

- ( ) below 20
- ( ) 20－29
- ( ) 30－39
- ( ) 40－49
- ( ) 50－59
- ( ) 60 and above

6. **Q5. Civil Status** *

Mark only one oval.

- ( ) Single
- ( ) Married
- ( ) Divorce
- ( ) Separated
- ( ) Widowed

7. **Q6. How many years have you been living in Japan?** *

Mark only one oval.

- ( ) less than a year
- ( ) 1-3 years
- ( ) 4-5 years
- ( ) 6-10 years
- ( ) more than 10 years

8. **Q7. Purpose of stay in Japan** *

Mark only one oval.

- ( ) Professional
- ( ) Student/Training
- ( ) Skilled worker
- ( ) Cultural Activities
- ( ) Permanent Resident
- ( ) Spouse/ Children of Japanese national
- ( ) Spouse/Children of Permanent Resident
- ( ) Special Permanent Resident

9. **Q8. How many people are in your household?** *

   Mark only one oval.

   ◯ 1

   ◯ 2

   ◯ 3

   ◯ 4

   ◯ 5 or more

10. **Q9. Type of residence** *

    Mark only one oval.

    ◯ Shared house

    ◯ Dormitory

    ◯ Apartment/ Mansion

    ◯ Own House

11. **Q10. Please check any disaster you have experienced in your country (Check all that apply)** *

    Check all that apply.

    ☐ Hurricane/Typhoon

    ☐ Flooding

    ☐ Earthquake

    ☐ Tsunami/ Storm Surge

    ☐ Volcanic Eruption

    ☐ Other natural disasters

12. **Q11. Were you in Japan during the 2011 Great East Japan Earthquake** *

    Mark only one oval.

    ◯ Yes   *Skip to question 13.*

    ◯ No   *Skip to question 28.*

Migrants and the 2011 Tohoku Earthquake

Q12-Q26 are answered by those who were in Japan during the 2011 Tohoku Earthquake.

A. Before the 2011 Tohoku Earthquake

13. **Q12. Who did you usually contact before the 2011 Tohoku Earthquake? (Check all that apply)**

Check all that apply.

- [ ] Family in Japan
- [ ] Family in Home Country
- [ ] Friends
- [ ] Neighbours
- [ ] People from same country
- [ ] Other foreign residents
- [ ] Classmates /co-workers
- [ ] Religious/Faith-based Group
- [ ] NGO/NPO
- [ ] Local/City Government (International Relations Section)
- [ ] Embassy/ Consulate of Home Country

14. **Q13. How did you communicate with them? (Check all that apply)**

Check all that apply.

- [ ] Face to Face
- [ ] Phone calls
- [ ] Emails
- [ ] SMS (Text messaging)
- [ ] Social Media (Twitter, FB)

15. **Q14. Where did you get information ? (Check all that apply)**

Check all that apply.

- [ ] TV
- [ ] Radio
- [ ] Newspaper
- [ ] Online Sources (Websites)
- [ ] SMS/ Social Media
- [ ] Police Station
- [ ] Church/ Temple
- [ ] Government officials
- [ ] Personal contacts

16. **Q15. Please check if you participate in any of the following groups: (Check all that apply)**
Check all that apply.

- [ ] local neighborhood association
- [ ] ethnic group (people from the same country)
- [ ] professional association
- [ ] faith-based association
- [ ] civic/volunteer association
- [ ] disaster prevention groups

B. During the 2011 Tohoku Earthquake

17. **Q16. Who did you contact during the disaster? (Check all that apply)**
Check all that apply.

- [ ] Family in Japan
- [ ] Family in Home Country
- [ ] Friends
- [ ] Neighbours
- [ ] People from same country
- [ ] Other foreign residents
- [ ] Classmates/co-workers
- [ ] Religious/Faith-based Group
- [ ] NGO/NPO
- [ ] Disaster Emergency Team
- [ ] Local/City Government (International Relations Section)
- [ ] Embassy/ Consulate of Home Country

18. **Q17. How did you communicate with them? (Check all that apply)**
Check all that apply.

- [ ] Face to Face
- [ ] Phone calls
- [ ] Emails
- [ ] SMS (Text messaging)
- [ ] Social Media (Twitter, FB)

19. **Q18. Where do you get information? (Check all that apply)**
Check all that apply.

- ☐ TV
- ☐ Radio
- ☐ Newspaper
- ☐ Online Sources (Websites)
- ☐ SMS/ Social Media
- ☐ Police Station
- ☐ Church/ Temple
- ☐ Government officials
- ☐ Personal contacts

20. **Q19. Extent of damage from the earthquake? (Check all that apply)**
Check all that apply.

- ☐ Properties
- ☐ House
- ☐ Injury/ Casualty
- ☐ None

21. **Q20. What resources did you need at that time? (Check all that apply)**
Check all that apply.

- ☐ Food/ Water/ Medicines
- ☐ Shelter/ Evacuation Area
- ☐ Transportation
- ☐ Electricity/ Gas
- ☐ Telecommunication

22. **Q21. Did you consider leaving Japan at that time?**
Mark only one oval.

- ◯ Yes
- ◯ No

C. After the 2011 Tohoku Earthquake

23. **Q22. Who are the people you are now in contact after the disaster? (Check all that apply)**
Check all that apply.

- [ ] Family in Japan
- [ ] Family in Home Country
- [ ] Friends
- [ ] Neighbours
- [ ] People from same country
- [ ] Other foreign residents
- [ ] Classmates/co-workers
- [ ] Religious/Faith-based Group
- [ ] NGO/NPO
- [ ] Disaster Emergency Team
- [ ] Local/City Government (International Relations Section)
- [ ] Embassy/ Consulate of Home Country

24. **Q23. How did you communicate with them? (Check all that apply)**
Check all that apply.

- [ ] Face to Face
- [ ] Phone calls
- [ ] Emails
- [ ] SMS (Text messaging)
- [ ] Social Media (Twitter, FB)

25. **Q24. Please check if you particpate in any of the following groups: (Check all that apply)**
Check all that apply.

- [ ] local neighborhood association
- [ ] ethnic group (people from the same country)
- [ ] professional association
- [ ] faith-based association
- [ ] civic/volunteer association
- [ ] disaster prevention groups

26. **Q25. Do you consider living in Japan for a long time?**
Mark only one oval.

- ( ) Yes
- ( ) No
- ( ) Undecided

27. **Q26. What kind of disaster-related activities will you be interested to join? (Check all that apply)**

Check all that apply.

- [ ] Economic programs
- [ ] Cultural activities
- [ ] Environmental rehabilitation
- [ ] Disaster Information dissemination
- [ ] Physical reconstruction

Skip to "Thank You !."

Migrants and Disasters

Q27- Q36 are answered by those who arrived in Japan AFTER the 2011 Earthquake.

A. Actual Experience

28. **Q27. Who do usually contact/ communicate with? (Check all that apply)**

Check all that apply.

- [ ] Family in Japan
- [ ] Family in Home Country
- [ ] Friends
- [ ] Neighbours
- [ ] People from same country
- [ ] Other foreign residents
- [ ] Classmates /co-workers
- [ ] Religious/Faith-based Group
- [ ] NGO/NPO
- [ ] Local/City Government (International Relations Section)
- [ ] Embassy/ Consulate of Home Country

29. **Q28. How do you communicate with them? (Check all that apply)**

Check all that apply.

- [ ] Face to Face
- [ ] Phone calls
- [ ] Emails
- [ ] SMS (Text messaging)
- [ ] Social Media (Twitter, FB)

30. **Q29. Where do you get information? (Check all that apply)**

Check all that apply.

- ☐ TV
- ☐ Radio
- ☐ Newspaper
- ☐ Online Sources (Websites)
- ☐ SMS/ Social Media
- ☐ Police Station
- ☐ Church/ Temple
- ☐ Government officials
- ☐ Personal contacts

31. **Q30. Please check if you participate in any of the following groups: (Check all that apply)**

Check all that apply.

- ☐ local neighborhood association
- ☐ ethnic group (people from the same country)
- ☐ professional association
- ☐ faith-based association
- ☐ civic/volunteer association
- ☐ disaster prevention groups

B. Conditional (In case of a disaster)

32. **Q31. Who will you contact during a disaster? (Check all that apply)**

Check all that apply.

- ☐ Family in Japan
- ☐ Family in Home Country
- ☐ Friends
- ☐ Neighbours
- ☐ People from same country
- ☐ Other foreign residents
- ☐ Classmates/co-workers
- ☐ Religious/Faith-based Group
- ☐ NGO/NPO
- ☐ Disaster Emergency Team
- ☐ Local/City Government (International Relations Section)
- ☐ Embassy/ Consulate of Home Country

33. **Q32. How will you communicate with them? (Check all that apply)**
Check all that apply.

- [ ] Face to Face
- [ ] Phone calls
- [ ] Emails
- [ ] SMS (Text messaging)
- [ ] Social Media (Twitter, FB)

34. **Q33. Where will you try get information? (Check all that apply)**
Check all that apply.

- [ ] TV
- [ ] Radio
- [ ] Newspaper
- [ ] Online Sources (Websites)
- [ ] SMS/ Social Media
- [ ] Police Station
- [ ] Church/ Temple
- [ ] Government officials
- [ ] Personal contacts

35. **Q33. Where will you try get information? (Check all that apply)**
Check all that apply.

- [ ] TV
- [ ] Radio
- [ ] Newspaper
- [ ] Online Sources (Websites)
- [ ] SMS/ Social Media
- [ ] Police Station
- [ ] Church/ Temple
- [ ] Government officials
- [ ] Personal contacts

36. **Q34. Will you consider leaving Japan because of a disaster?**
Check all that apply.

- [ ] Yes
- [ ] No
- [ ] Undecided

C. After a Disaster

37. **Q35. What kind of disaster-related activities will you be interested to join? (Check all that apply)**

Check all that apply.

- ☐ Economic programs
- ☐ Cultural activities
- ☐ Environmental rehabilitation
- ☐ Disaster Information dissemniation
- ☐ Physical reconstruction

38. **Q36. Will you consider living in the same place after a disaster?**

Check all that apply.

- ☐ Yes
- ☐ No
- ☐ Undecided

Skip to "Thank You !."

Thank You !

This is the end of the survey. Thank you very much for your participation.

Stop filling out this form.

個人的な背景

39. **J1.名前　（任意）**

....

40. **J2. 国籍　（出身国）** *

....

41. **J3. 性別** *

Mark only one oval.

- ◯ 男性
- ◯ 女性

42. **J4. 年齢** *

Mark only one oval.

- ◯ 20歳以下
- ◯ 20-29歳
- ◯ 30-39歳
- ◯ 40-49歳
- ◯ 50-59歳
- ◯ 60歳以上

43. **J5. 婚姻状態** *

Mark only one oval.

- ◯ 未婚
- ◯ 既婚
- ◯ 離婚
- ◯ 別居
- ◯ 死別

44. **J6. 何年間日本に住んでいますか** *

Mark only one oval.

- ◯ 1年以下
- ◯ 1〜3年
- ◯ 4-5年
- ◯ 6-10年
- ◯ 10年以上

45. **J7. 日本での滞在目的** *

Mark only one oval.

- ◯ 一般職
- ◯ 学生
- ◯ 専門職
- ◯ 文化活動
- ◯ 永住市民
- ◯ 日本国籍保持者の配偶者・子供
- ◯ 永住権保持者の配偶者・子供
- ◯ 特別永住権者

46. **J8. あなたの世帯には何名いますか？** *

Mark only one oval.

- ◯ 1人
- ◯ 2人
- ◯ 3人
- ◯ 4人
- ◯ 5人以上

47. **J9. あなたはどのようなところに住まれていますか？** *

Mark only one oval.

- ⬭ シェアハウス
- ⬭ 寮
- ⬭ アパート・マンション
- ⬭ 一戸建（所有）

48. **J10. あなたは、故郷でどのような自然災害を経験されていますか？（該当するものにすべて丸をして下さい）**

Check all that apply.

- ☐ ハリケーン・台風
- ☐ 洪水
- ☐ 地震
- ☐ 津波
- ☐ 火山噴火
- ☐ その他の自然災害

49. **J11. 2011年の東北大震災を経験されていますか？** *

Mark only one oval.

- ⬭ はい　　*Skip to question 50.*
- ⬭ いいえ　　*Skip to question 65.*

外国人と2011年東日本大震災

J12-J26は2011年東北大震災時に日本に滞在していた人により回答.

A. 2011年東日本大震災の前に

50. **J12. 2011年の東北大地震の際にはどなたに連絡を取りましたか（複数回答可）**

Check all that apply.

- [ ] 日本国内の家族
- [ ] 外国にいる家族
- [ ] 友達
- [ ] 隣人
- [ ] 同じ出身国の人
- [ ] その他の在日外国人
- [ ] 同級生/同僚
- [ ] 宗教団体の人
- [ ] NGO/NPOの人
- [ ] 自治体（国際部の人など）
- [ ] 大使館や領事館の人

51. **J13. どのようにコミュニケーションを取りましたか。 (複数回答可)**

Check all that apply.

- [ ] 直接話した
- [ ] 電話で会話した
- [ ] eメールを通して
- [ ] SMS (メッセージ)
- [ ] ソーシャルメディア (ツウィッターやフェースブック)

52. **J14. どこから情報を得ましたか？（複数回答可）**

Check all that apply.

- [ ] テレビ
- [ ] ラジオ
- [ ] 新聞
- [ ] オンライン（ウェブサイト）
- [ ] SMS、ソーシャルメディア
- [ ] 警察
- [ ] 協会、寺
- [ ] 政府
- [ ] 個人的なつながり

53. **J15. 参加している団体を選んでください**

Check all that apply.

- [ ] 地域の団体
- [ ] 民族的な団体
- [ ] プロ集団
- [ ] 信仰的な団体
- [ ] 市民、ボランティア組織
- [ ] 災害予防団体

B. 2011東日本大震災時には

54. **J16. 災害時に連絡を取る人は（複数回答可）**

Check all that apply.

- [ ] 日本にいる家族
- [ ] 本国にいる家族
- [ ] 友人
- [ ] 隣人
- [ ] 出身国が同じ人
- [ ] 他の国の人々
- [ ] 同級生/同僚
- [ ] 宗教、信仰グループ
- [ ] NGO/NPO
- [ ] 災害チーム
- [ ] 自治体、政府
- [ ] 大使館、領事館

55. **J17. どのようにコミュニケーションを取りましたか。(複数回答可)**

Check all that apply.

- [ ] 直接
- [ ] 電話
- [ ] eメール
- [ ] SMS (メッセージ)
- [ ] ソーシャルメディア (ツイッターやフェイスブック)

56. **J18. どこで情報を得ましたか。（複数回答可）**

Check all that apply.

- ☐ テレビ
- ☐ ラジオ
- ☐ 新聞
- ☐ オンライン（ウェブサイト）
- ☐ SMS、ソーシャルメディア
- ☐ 警察
- ☐ 協会、寺
- ☐ 政府
- ☐ 個人的なつながり

57. **J19. 地震で被害を被ったものは何ですか。（複数回答可）**

Check all that apply.

- ☐ 財産
- ☐ 自宅
- ☐ 怪我、傷害
- ☐ なし

58. **J20. 何がその時必要でしたか.（複数回答可）**

Check all that apply.

- ☐ 食べ物、水、薬
- ☐ シェルター、避難所
- ☐ 交通機関
- ☐ 電気、ガス
- ☐ 通信設備

59. **J21. その時に日本を去ることを考えましたか。**

Mark only one oval.

- ◯ はい
- ◯ いいえ

C. 2011東日本大震災後

60. **J22. 災害時に連絡を取っている人はどなたですか. (複数回答可)**

Check all that apply.

- ☐ 日本にいる家族
- ☐ 本国にいる家族
- ☐ 友人
- ☐ 隣人
- ☐ 出身国が同じ人
- ☐ 他の国の人々
- ☐ 同級生/同僚
- ☐ 宗教、信仰グループ
- ☐ NGO/NPO
- ☐ 災害チーム
- ☐ 自治体、政府
- ☐ 大使館、領事館

61. **J23. どのようにコミュニケーションを取りましたか。(複数回答可)**

Check all that apply.

- ☐ 直接
- ☐ 電話
- ☐ eメール
- ☐ SMS (メッセージ)
- ☐ ソーシャルメディア (ツイッターやフェイスブック)

62. **J24. 参加している団体を選んでください.**

Check all that apply.

- ☐ 地域の団体
- ☐ 民族的な団体
- ☐ プロ集団
- ☐ 信仰的な団体
- ☐ 市民、ボランティア組織
- ☐ 災害予防団体

63. **J25. 長期間日本に住むことを考えていますか。**

Mark only one oval.

- ◯ はい
- ◯ いいえ
- ◯ 未定

64. **J26. 災害関連のどの活動に参加したいですか.（複数回答可）**

Check all that apply.

- [ ] 経済プログラム
- [ ] 文化活動
- [ ] 環境復興
- [ ] 災害情報の拡散
- [ ] 物理的復興

Skip to "ありがとうございました！."

外国人と災害

J27-J36は2011年東北大地震に日本ではない人による回答

A.実地経験

65. **J27. 通常どなたと連絡を取りますか.（複数回答可）**

Check all that apply.

- [ ] 日本にいる家族
- [ ] 本国にいる家族
- [ ] 友人
- [ ] 隣人
- [ ] 出身国が同じ人
- [ ] 他の国の人々
- [ ] 同級生/同僚
- [ ] 宗教、信仰グループ
- [ ] NGO/NPO
- [ ] 災害チーム
- [ ] 自治体、政府
- [ ] 大使館、領事館

66. **J28. どのようにコミュニケーションを取りますか. (複数回答可)**

Check all that apply.

- [ ] 直接
- [ ] 電話
- [ ] eメール
- [ ] SMS (メッセージ)
- [ ] ソーシャルメディア (ツイッターやフェイスブック)

67. **J29. どこから情報を得ますか．（複数回答可）**

Check all that apply.

- [ ] テレビ
- [ ] ラジオ
- [ ] 新聞
- [ ] ウェブ上の情報源 (ウェブサイト)
- [ ] テキスト・メッセージ/ ソーシャルメディア
- [ ] 警察署・交番
- [ ] 教会・寺院
- [ ] 政府機関
- [ ] ソーシャルネットワーク

68. **J30. 参加しているグループを選んでください．（複数回答可）**

Check all that apply.

- [ ] 地域の団体
- [ ] 民族的な団体
- [ ] プロ集団
- [ ] 信仰的な団体
- [ ] 市民、ボランティア組織
- [ ] 災害予防団体

B. 災害の場合には

69. **J31. 災害時に連絡を取るのはどなたですか。（複数回答可）**

Check all that apply.

- [ ] 日本にいる家族
- [ ] 本国にいる家族
- [ ] 友人
- [ ] 隣人
- [ ] 出身国が同じ人
- [ ] 他の国の人々
- [ ] 同級生/同僚
- [ ] 宗教、信仰グループ
- [ ] NGO/NPO
- [ ] 災害チーム
- [ ] 自治体、政府
- [ ] 大使館、領事館

70. **J32. どのようにコミュニケーションを取りますか。(複数回答可)**

   Check all that apply.

   ☐ 直接

   ☐ 電話

   ☐ eメール

   ☐ SMS (メッセージ)

   ☐ ソーシャルメディア (ツイッターやフェイスブック)

71. **J33. どのように情報を得ますか.（複数回答可）**

   Check all that apply.

   ☐ テレビ

   ☐ ラジオ

   ☐ 新聞

   ☐ ウェブ上の情報源 (ウェブサイト)

   ☐ テキスト・メッセージ/ ソーシャルメディア

   ☐ 警察署・交番

   ☐ 教会・寺院

   ☐ 政府機関

   ☐ ソーシャルネットワーク

72. **J34.災害により日本を去ることを考えていますか**

   Check all that apply.

   ☐ はい

   ☐ いいえ

   ☐ 未定

C. 災害後

73. **J35. どの災害関連の活動に興味がありますか。（複数回答可）**

   Check all that apply.

   ☐ 経済プログラム

   ☐ 文化活動

   ☐ 環境復興

   ☐ 災害情報の拡散

   ☐ 物理的復興

74. **J36. 災害後も同じ場所に住む予定ですか**

Check all that apply.

- [ ] はい
- [ ] いいえ
- [ ] 未定

Skip to "ありがとうございました！."

ありがとうございました！

This is the end of the survey. Thank you very much for your participation.

Stop filling out this form.

Untitled Section

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PUBLICATIONS

Robles, Lisette R., and Ichinose, Tomohiro (accepted) "Filipino Students Collective Narratives of the 2011 Tohoku Earthquake: A Perspective on Resilience Formation and Social Capital". Asian Studies: Journal of Critical Perspectives on Asia. (Tentative Publication: June 2017)

Robles, Lisette R., and Ichinose, Tomohiro (2016) "Connections, Trust and Social Capital in Disaster: A study on the 2013 Typhoon Haiyan affected residents in Leyte, Philippines". Journal of Environmental Information Science 44 (5): 79-86.

Robles, Lisette R. "From Toshokan to Bunko: Rethinking Public Libraries from the view of Japanese Grassroots Children's Libraries". *Asian Studies* 45 (2009): 17-32. Access: http://www.asj.upd.edu.ph/index.php/archive/168-asian-studies-45-1-2-2009-culture-and-society-in-asia

PRESENTATIONS

Robles, L., "Linkages in disasters: Perspective on a migrant inclusive disaster risk reduction and recovery". Conference Major Hazards and Migrants, Asylum Seekers and Refugees. Council of Europe EUR-OPA Major Hazards Agreement. Lisbon, Portugal, 14 October. 2016.

Robles, L. R., Ichinose, T. "Linkages in Disasters: A Perspective on Migrants Inclusivity in Disaster Risk Reduction". 6th International Disaster and Risk Conference IDRC Davos 2016. Davos, Switzerland, 28-August -1 September 2016.

Robles, L. R and Ichinose, T. "A narrative-based study on migrants behavior and response to disasters: 2011 Tohoku Earthquake and the Filipino students". Poster presented at Japan Geoscience Union Meeting 2015, Makuhari Messe International Conference Hall. May 25, 2015.

Robles, L. R. "Resilience beyond Territories: Foreign Students' Social Vulnerability and Resilience during Disasters". Paper presented at the 2014 DevNet Conference, From Vulnerability to Resilience: Partnerships for Development. University of Otago, Dunedin, New Zealand, 27-29 November 2014.

Robles, L. R. "#Bayanihan: Exploring the Filipino Disaster Coping and Response in the Virtual Environment". Paper presented at the 19th Young Scholars' Conference on Philippine Studies in Japan. IDEC, Hiroshima University, Hiroshima, 28-29 June 2014. English.

Robles, L. R. "Filipino Students' Narratives of Japan 3.11:A Perspective on Foreign Students' Social Resilience during Disaster". Paper presented at the 18th Annual Asian Studies Conference in Japan. Sophia University, Tokyo, 21-22 June 2014. English.

Robles, L. R. "Disaster Vulnerability and Coping in a Foreign Environment: The Narrative of the Pinoy Scholars in Tohoku During 3.11." Presented at 13th International Conference on Japanese Studies: The 3.11 Disaster of Japan: Vulnerability, Loss, and Social Transformation Japanese Studies Program, Ateneo de Manila University, Philippines. 5-26 January 2013. English.

Robles, L.R. "From Toshokan to Bunko: Rethinking Public Libraries from the view of Japanese Grassroots Children's Libraries" Presented at the 5th Asian Center Graduate Students' Conference: "Nationalisms in the era of Global Restructuring: Issues, Challenges and Prospects in Asia", UP Asian Center, 20 November 2009. English

SCHOLARSHIPS and GRANTS

2015 Taikichiro Mori Memorial Research Fund - Graduate Student Research Development Grant
Research on Social Capital of Migrant Collectives and the Disaster Recovery of Communities
April 2015 to March 2016

2016 Taikichiro Mori Memorial Research Fund - Graduate Student Research Development Grant
A Research on the Significance of Migrants` Social Capital in Disaster Risk Reduction and Recovery of Communities
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