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# Typhoon Haiyan survivors at the resettlement sites: Covid-19 pandemic realities and challenges



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## ABSTRACT

More than 15 thousand households have been relocated in Tacloban North, Philippines, after typhoon Haiyan devastated the city in November 2013. While still recovering from the longer-term impacts of the typhoon, these households are currently enduring the impacts of the Covid-19 pandemic. This paper reports the contemporary realities and challenges Haiyan survivors face at the resettlement sites of Tacloban city, Philippines based on the inputs of 19 key informants we interviewed from September to November 2020. Our data reveal that Covid-19 exacerbated survivors' access to essential social services such as water, education/learning, and health care. The inadequate shelter space forces survivors to apply non-engineered house repairs or stay out of the house despite quarantine, lockdown, and physical distancing protocols. The pandemic has significantly increased survivors' livelihood insecurity resulting in a surging incidence of hunger, petty crimes, and neighborhood conflicts. This paper brings to the fore typhoon survivors' contemporary, precarious, and challenging conditions in resettlement sites. Almost ten years since Haiyan, this paper explores the extended pathways of Haiyan survivors' strained and uneven recovery hampered by the contemporary public health crisis that is the Covid-19 pandemic.

## 1. Introduction

In 2013, typhoon Haiyan (local name: Yolanda) caused massive destruction in Central Philippines. Typhoon Haiyan, a Category 5 super typhoon, registered as one of the world's most devastating disasters, with close to US\$2 trillion estimated damages and 6300 deaths [38]. In late 2019, SARS-COV-2, a novel coronavirus, first detected in China [3,27], became a vector of the current pandemic. This highly transmissible disease, named Covid-19 by the United Nations' World Health Organization [51], exposed and exacerbated society's deeply entrenched challenges and revealed wide-and-deep bottlenecks in local, national, and international public health systems.

Given the disease's novel nature and unpredictable development in the early phase of its transmission, some governments rapidly implemented preventive measures to manage the spread of the virus from one coast to another. Among these measures, strict and militarized lockdowns have been commonly used and abused in the Philippines [13]. Since March 2020, the Philippine government has imposed one of the strictest and longest lockdowns in the world [40]. In late March 2021, the government re-instituted the Enhanced Community Quarantine (ECQ) measure in its national capital region and surrounding cities and municipalities. ECQ is the strictest

of the country's community quarantines, reflecting increased Covid-related risks.

Prompted by national government directives, provincial, municipal, and city local government units (LGUs) have immediately enforced place-based emergency measures to control Covid-19 transmission, including lockdowns, community quarantines, and travel bans. One of these LGUs is Tacloban City, home to around 250,000 individuals and the center of commerce of the Eastern Visayas region which was severely damaged by typhoon Haiyan [34,35]. The city government imposed strict community quarantine measures, especially during the 2nd and 3rd quarters of 2020. Although more than eight years have passed since Haiyan, some segments of the city's population, especially those relocated, are still recovering from the disaster's physical, economic, and social impacts, which were further exacerbated by other ensuing hazards including typhoons and earthquakes. The pandemic had particularly exacerbated the risks faced by Haiyan survivors who were resettled in the northern part of Tacloban.

The extant literature reveals that typhoon Haiyan and its impacts in Tacloban City are well-studied (e.g., [4,5,11,12,14,19–22,28,29,34,35,37,41,43–46,49,52]). There are also studies published about the impacts of the pandemic on frontline healthcare workers [18], higher education institutions [10,31], students' psychological health [47], and Indigenous Peoples [15] in the Philippines which exposed

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the local and national government's dismal investments in public health.

Little, however, is known on how the Covid-19 pandemic impacts the lives, livelihoods, and well-being of Haiyan survivors in permanent disaster resettlement sites. Our paper explores the answer to this research gap by reporting three pressing thematic challenges Haiyan survivors face at the various resettlement sites in Tacloban North, Philippines. We aim to prompt local and transnational researchers to explore and understand the complex implications of the pandemic on typhoon survivors in the Philippines and beyond. Ultimately, our report aims to help policymakers review national and local policies and programs for Haiyan survivors at the resettlement sites.

## 2. Research site and context

The Philippines is a hazard-prone country with over 110 million people [50]. The country is highly susceptible to geophysical instabilities, such as volcanic eruptions and earthquakes [28], and meteorological and hydrological hazards like typhoons and floods [7]. Climate change has also been affecting the Philippines in terms of increasing weather extremes and rising sea levels [7,42]. On the other hand, in March 2021, when the first draft of this paper was written, the Philippines Department of Health reported over 747,000 Covid-19 cases, of which more than 13,000 died [17]. As of January 2022, the country has 3.36 million confirmed cases and more than 53,000 deaths from Covid-19 [30].

Tacloban, a highly urbanized city in the northern tip of Leyte, is the capital of the Eastern Visayas region. Tacloban and the adjoining municipalities and provinces suffered significant casualties and massive displacements from the onslaught of typhoon Haiyan in 2013 [16,44]. Following the Haiyan disaster, the Tacloban city government allocated around 80 ha of land in the northern district (henceforth, Tacloban North), about 40 km away from the city center, as 'safe areas' to build new settlements, where survivors who used to live in coastal zones (now declared 'no-build' areas) could relocate.

In the city government's 2014 Tacloban Recovery and Redevelopment Plan (TRRP), Tacloban North has been labeled the 'promised land' for Haiyan survivors. The TRRP aims to "provide housing options; ensure supply of adequate land; prepare supportive plans and policies; and ensure basic services and economic opportunities" [48]. The TRRP initially targeted constructing 10,000 permanent duplex and row houses - the so-called *Pabahay* or Housing projects - and providing "health, education, and protective services" and "economic revitalization" projects. From 2014 onwards, survivors' vulnerable conditions prevailed and revealed multiple dislocations and dysfunctions in these 'territorialized' relocation sites [52] and in the processes of relocating them. People living in the *Pabahay* sites reported new challenges, including its far distance from their sources of livelihoods [23]; people's lack of access to potable water [19,26], and reproductive health products and services [36]; the low quality and small sizes of the houses [19]; the excessive delay in the construction of critical infrastructures, such as school buildings [6]; and the poor communication and lack of transparency in resettlement processes [41]. Altogether, this plethora of challenges led to 'sub-standard recovery and the failure to improve the living conditions of many survivors' [19].

Tacloban North is now home to at least 31 permanent *Pabahay* villages/communities dispersed across eleven barangays (village-level communities). Available data that we obtained from the Tacloban City Housing and Community Development Office shows that the National Housing Authority (NHA), a state-level government agency, developed 17 of these *Pabahay* sites with 14,479 housing units. Some 11,100 houses have already either been raffled or awarded to select beneficiaries; yet less than 65% were occupied and used as of June 2020. Apart from these government-initiated housing projects, nongovernment organizations, foundations, and other private agencies built other resettlement sites.

This study was conducted at nine *Pabahay* or resettlement sites in Tacloban North, Philippines (see Fig. 1). These resettlement sites are Villa Diana, SM Cares village, Dreamville CRS Housing, Ridgeview Park,

Greendale 1 and 2, Habitat village, GMA Kapuso village, North Hill Harbours 1 and 2, and Pope Francis village. We considered the early permanent resettlement sites that were constructed/occupied and the availability and accessibility of barangay leaders and homeowners' associations' officials (research informants) in selecting these sites.

## 3. Methods and analysis

Strictly following pandemic-related protocols, we remotely and personally interviewed 19 key informants from nine permanent resettlement sites from September to November 2020 at Tacloban North, Philippines. These informants include six barangay officers, nine homeowners' association officers, three officers from the city government (disaster risk reduction and management/ DRRM, city development and planning, and housing departments), and four primary school educators (two teachers and two principals). We deemed this number of informants sufficient since they provided adequate, relevant, and enough information to obtain data saturation [9]. This paper is not an attempt to generalize and reflect the absolute realities and challenges all Haiyan survivors face [9]. Rather, our aim is to explain and understand our informants' contextual realities and experiences to explore the differential impacts of the Covid-19 pandemic on their lives and communities [9]. We selected the informants based on their strategic position and knowledge since they can be considered local leaders at the resettlement sites. The village leaders interviewed were either the barangay captain or first councilors, while the homeowners' association officers were their associations' presidents or vice presidents. Another important constraint that the first author considered was the difficulty in conducting in-person fieldwork at the time of data gathering due to the strict implementation of the city's community lockdowns and quarantine protocols. Inasmuch as the authors wanted to obtain data from the Haiyan survivors themselves, the critical and risky situation on the ground warranted choosing the least risky fieldwork and informant selection approach to protect the lives of both the residents and the researchers.

The first author initially contacted them over the phone to give them an overview of the study (e.g., objectives, rights as key informants) and the intention to seek their consent to be interviewed. After obtaining their consent, the informants and researchers agreed on the schedule and manner of the interview (remote or face-to-face). After the discussions, the first author reminded the informants to contact her for clarification or retraction of their answers which none of them did. For those who opted to be interviewed face-to-face, the first author either went to the permanent housing site or met some informants in the city center. The informants preferred the latter if they had official business to the town center, such as visiting a government office or purchasing essential items. On the other hand, of the four city government officers who agreed to be interviewed, half opted for face-to-face while the other half chose to be interviewed via mobile phone.

While this exploratory qualitative study did not receive approval from an Ethics Review Board, we adopted a relational approach in key informant interviews. This approach in interviewing adheres to humanist ethos, reflexive learning, and ethical treatment of all participants [24]- essential principles in researching during the pandemic. Both authors are social scientists trained on ethical and honest data collection techniques involving human research participants. The first author/interviewer has solid social capital networks in the select *Pabahay* sites and Tacloban City, and over 20-year research experience. Both authors are Haiyan survivors and have modest Haiyan-related publications focused on Eastern Visayas in the last five years, giving them an in-depth understanding of the local socio-political, economic, and cultural sensitivities in conducting this study.

We selected our informants using opportunistic sampling depending on the willingness of the informants to be interviewed. Interviews lasted between 30 and 60 min and strictly followed health protocols: wearing of facemasks and observing a 2-m physical distance. The interviewer obtained verbal informed consent from all informants. All interview data were conducted in *Waray-Waray* (the local language) and not audio-recorded but instead written on fieldnotes. We thematically analyzed our data to distill the

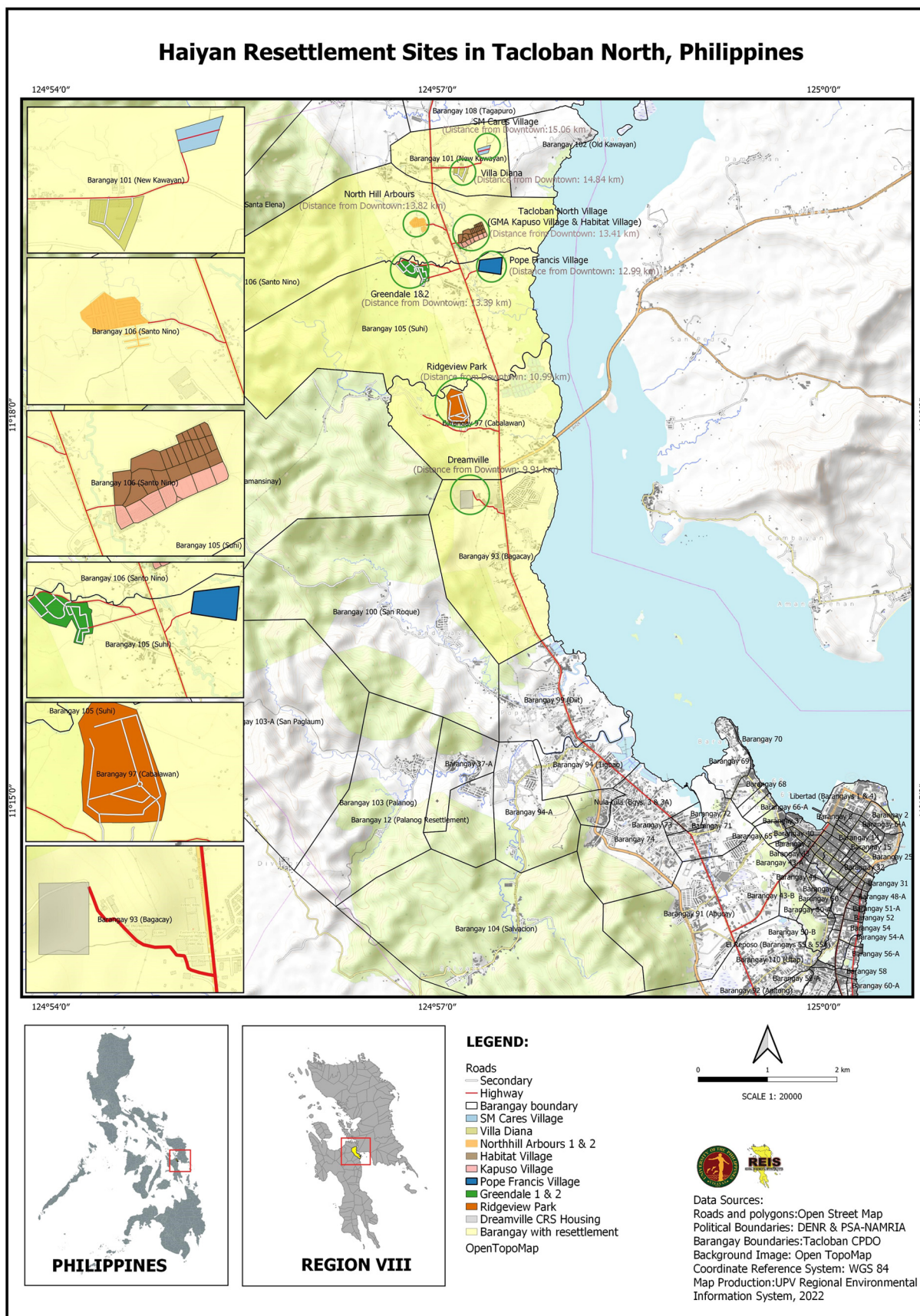


Fig. 1. Location of the nine research sites at Tacloban North, Tacloban City, Philippines.

pressing challenges faced by Haiyan survivors at Tacloban North resettlement sites amidst the current pandemic. The first author wrote the first draft of the findings based on her field notes. The authors discussed these findings to dissect and categorize the similarities and differences of the data obtained from each informant. The authors then coded these data and grouped them to develop sentence themes [8] that encapsulate the realities and significant challenges typhoon Haiyan survivors are experiencing at the resettlement sites during the Covid-19 pandemic. We report and expound on these thematic findings in the next section.

#### 4. Findings

Typhoon Haiyan devastated countless homes in Tacloban city and compounded the challenges faced by the already vulnerable and marginalized low-lying coastal communities in the city. Many residents of these communities have low capacity and few livelihood assets to prepare, cope with, and recover from the damage. Typhoon Haiyan, therefore, intensified peoples' pre-existing precarity, especially the urban poor who are already experiencing different levels of economic hardships as a form of disaster. Fast-forward and more than eight years after the typhoon, some survivors face increased vulnerabilities and challenges due to the Covid-19 public health crisis and its subsequent impacts on lives and livelihoods. Below we report three of these critical challenges.

##### 4.1. Tacloban North's inaccessible location affects survivors' access to essential social services such as water, learning, and health care

Haiyan survivors in resettlement sites have long endured the lack of access to a stable and clean water supply. Potable water is only and limitedly available at the GMA Kapuso and Habitat villages through a private provider. All other Pabahay sites receive water from a delivery truck/water tank weekly. Water-related challenges became more problematic with Covid-19, which highlighted the need to practice good and proper hygiene (e.g., regular washing of hands and bathing). Some households share communal water faucets since their homes do not have connections from the waterline (see Fig. 2). Our informants reported that some residents poorly observe physical distancing when fetching water from the communal tap.

In terms of education, there are still resettlement housing sites in Tacloban North that do not have primary classrooms/schools. Before the pandemic, only North Hill 1, GMA Kapuso, and Habitat villages had

newly constructed elementary schools (see Fig. 3). This situation forces other pupils living in other resettlement sites to attend different elementary schools in Tacloban North. The abrupt adoption of online learning because of the pandemic posed a significant challenge to parents and students due to inadequate internet infrastructures [10], especially in Tacloban North. This situation forced some students to defer their studies until in-person learning resumes.

According to our informants (teachers and principals), teachers usually provide and release individual subject modules every week to pupils. The parents and guardians pick these modules instead of the pupils since the government prohibited all children from going out as they are considered at-risk and vulnerable from Covid-19. They observed, however, that most pupils fail to submit their modules on time. The two most prominent reasons for this include a) mothers getting sick therefore failing to pick up the learning modules on time, and b) parents not knowing the subject matter and therefore not assisting their children (see Fig. 4). On the other hand, some parents are highly involved in answering their children's learning modules, prompting the teachers to contemplate their students' quality of learning or education.

In terms of health services and infrastructures, Tacloban North's only available or easily accessible health facility is the Suhi Health Station. Currently, a healthcare facility is under construction at the GMA Kapuso and Habitat villages. Tacloban North is located outside and far from the city center, forcing survivors to have minimal access to quality health care services [36]. Since the pandemic, survivors declined seeking health care for fear of contracting Covid-19 and instead resorted to using natural remedies like medicinal plants and local therapies.

##### 4.2. Inadequate space of resettlement houses forces survivors to apply non-engineered house repairs or stay out of the house despite quarantine, lockdown, and physical distancing protocols

The row housing units (40 square meters) in Haiyan resettlement sites are small (see Fig. 5). With one open space for cooking and sleeping, compliance with physical distancing protocols was almost impossible. The small space and inferior housing quality push some households- at least those who can afford- to undertake non-engineered extensions (e.g., back, front yards, or second floor) without considering the structural danger of these repairs to their neighbor's housing unit. We observed non-engineered



Fig. 2. A resident in SM Cares village resettlement site fetching water from the communal faucet.



Fig. 3. The primary school building located at the GMA Kapuso village resettlement site.



Fig. 4. Pupils from Habitat and GMA Kapuso villages answer their educational materials or learning modules together. (Faces were intentionally blurred to protect their privacy.)

house repairs in North Hill Arbours 1 and 2, Villa Diana, Dreamville, Ridgeview, Habitat, and SM Cares villages.

Households that do not have the financial capacity to conduct these repairs endure the direct and indirect impacts of the scorching tropical weather. With Tacloban's daily temperature reaching beyond 30 degrees centigrade, some survivors- such as youths- prefer staying outdoors despite the risks from the virus compared to staying with their families inside their “oven houses”. Consequently, our informants observed that teenagers tend to consume illegal drugs and engage in risky sexual encounters due to their preference to stay outside their homes. Our informants attributed these behaviors to the negative impacts of the suspension of face-to-face classes, school closures, and maladaptation to the pandemic [39].

#### 4.3. Livelihood insecurity resulted in a surging incidence of hunger, increasing petty crimes, and neighborhood conflicts

For Covid-19 relief assistance, Mayor Alfred Romualdez's government had provided one whole piece of chicken, a kilogram of fish, and more than 10 kg of rice. Through its social welfare and development agency, the national government also provided cash aid to select low-income families through the Social Amelioration Program [14,15]. Yet, these aides were not enough to support Haiyan survivors to weather the storm brought by Covid-19. According to all informants, the pandemic has directly impacted the livelihoods and income of survivors in Tacloban North- most of whom engage in precarious and unsustainable livelihoods. On-site job workers and on-call service providers severely felt a decrease or absence of household income due to lost wages/job loss. Consequently, this condition drove some households to become dependent on the goodwill of their family and friends to survive daily. However, this dependence is short-lived as those who usually support them also need support.

Other emerging challenges reveal the rise of neighborhood conflicts and the surging incidence of petty thefts in Tacloban North. According to the six barangay officers and nine homeowners' associations' officers, most neighborhood conflicts arose from neighbors' arguments over malicious social media posts to verbal and physical attacks. An example of this is a person under home quarantine from suspected Covid-infection who went out of their house to stab a neighbor shortly after midnight when people were sleeping.



Fig. 5. Sample rowhouses in Villa Diana, Tacloban North, Philippines.

## 5. Conclusion

This paper reports the realities and challenges typhoon Haiyan survivors experience at Tacloban North resettlement sites during the Covid-19 pandemic. The current pandemic exacerbated survivors' access to essential social services such as water, education/learning, and health care. The inadequate shelter space also forces survivors to apply non-engineered house repairs or stay out of the house despite quarantine, lockdown, and physical distancing protocols. The pandemic has also increased survivors' livelihood insecurity resulting in a surging incidence of hunger, petty crimes, and neighborhood conflicts. While some of our informants readily attributed these problems to the pandemic, we argue that these challenges are consequences of various actors' poor development choices and actions during the contentious processes of post-Haiyan recovery and rehabilitation. The resettlement of Haiyan survivors from their dangerous coastline homes to far-flung Pabahay sites in Tacloban North increased their pre-existing challenges rather than decreased them. These challenges reflect the erosion of their livelihoods and incomes, which debilitated their socio-economic conditions further than their pre-Haiyan lives.

The pandemic, compounded by poor government actions and decisions, has further narrowed Haiyan survivors' options to increase their capacity to respond to and adapt to contemporary risks [25,32,33]. This exploratory study, thus, recommends public and other social institutions critically reflect upon relocation, resettlement, and re-housing as strategies for disaster risk reduction. Reducing the challenges and vulnerabilities of disaster survivors is not only a function of spatially transferring them away from high-risk places but also one that requires guarantees of access to various social capitals and social services [1,2,15,45]. To that end, the Tacloban City government must thoroughly examine and confront the inferior quality of resettlement houses and the lack of survivor inputs to decisions that affect their lives. Most importantly, the local government should also scrutinize the unintended consequences of their past decisions to ensure that future risk management does not (re)create and/or exacerbate peoples' everyday challenges [21,32,49].

To our knowledge, this study is the first to report Typhoon Haiyan survivors' challenges amidst the current Covid-19 pandemic. Our findings may help policymakers and development program implementers better

understand the Haiyan survivors' issues and challenges so that government and private institutions can plan and execute post-pandemic programs responsibly. However, like in any other exploratory qualitative study, this paper has limitations. We want to highlight two of these. This research did not receive any ethics approval from the first author's Institutional Review Board due to the absence of such a mechanism in the first author's institution at the time of data gathering. However, proper ethical practices involving human research participants have been observed in gathering data for this paper. The second author contributed in terms of the in-depth and formal analysis and rigorous writing of this paper. Second, we acknowledge that our findings are heavily reliant on the inputs of key informants to whom we have access. Our data, thus, may fail to reveal the depth and degree of how our identified challenges- and equally, if not more important, are the challenges we were unable to unravel- differentially impact each Haiyan survivor or household in Tacloban North, Philippines. Further studies, therefore, need to be conducted to address these gaps.

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## Ethics statement

This research did not obtain ethics approval from an Institutional Review Board. However, proper protocols in research involving human participants have been observed in gathering data for this study.

## Declaration of Competing Interest

The authors declare no conflict of interest in this study.

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## References

- [1] Aldrich D. Fixing recovery, social capital in post-crisis resilience. *J Homel Secur.* 2010;6:1–10.
- [2] Aldrich DP. *Building resilience: Social capital in post-disaster recovery.* The University of Chicago Press; 2012.
- [3] Allam Z. The first 50 days of COVID-19: a detailed chronological timeline and extensive review of literature documenting the pandemic. *Surveying the Covid-19 Pandemic and its Implications.* Elsevier; 2020. p. 1–7. <https://doi.org/10.1016/B978-0-12-824313-8.00001-2>.
- [4] Atienza MEL, Eadie P, Tan-Mullins M. *Urban Poverty in the Wake of Environmental Disaster: Rehabilitation, Resilience and Typhoon Haiyan (Yolanda).* Routledge; 2019.
- [5] Blanco DV. Disaster governance in the Philippines: issues, lessons learned, and future directions in the Post-Yolanda Super Typhoon Aftermath. *Int J Public Adm.* 2015;38(10):743–56. <https://doi.org/10.1080/01900692.2014.979198>.
- [6] Board J. Dislocation and Dysfunction Hang Over Lives of Tacloban Evacuees, Five Years after Typhoon Haiyan. *CNA*; 2018. <https://www.channelnewsasia.com/news/asia/typhoon-haiyan-tacloban-5-years-on-problems-10899748>.
- [7] Bollettino V, Alcayna-Stevens T, Sharma M, Vinck P, Dy P, Pham P. Public perception of climate change and disaster preparedness: Evidence from the Philippines. *Clim Risk Manag.* 2020;30:100250. <https://doi.org/10.1016/j.crm.2020.100250>.
- [8] Bryman A. *Social research methods.* 5th ed. Oxford University Press; 2016.
- [9] Corbin JM, Strauss AL. *Basics of qualitative research: Techniques and procedures for developing grounded theory.* 4th ed. SAGE; 2015.
- [10] Cuaton G. Philippines Higher Education Institutions in the time of COVID-19 Pandemic. *Revista Romaneasca Pentru Educatie Multidimensionala.* 2020;12(1Sup2):61–70. <https://doi.org/10.18662/rrem/12.1sup2/247>.
- [11] Cuaton GP. A post-disaster gendered value chain analysis on seaweed farming after Super Typhoon Haiyan in the Philippines. *J Enterpr Commun People Places Global Economy.* 2019;13(4):508–24. <https://doi.org/10.1108/JEC-11-2018-0091>.
- [12] Cuaton GP. A post-disaster study of a women-led handicraft industry in rural Philippines. *J Enterpr Commun People Places Global Economy.* 2019;13(4):489–507.
- [13] Cuaton GP, Caluza LJB, Neo JFV. A topic modeling analysis on the early phase of COVID-19 response in the Philippines. *Int J Dis Risk Reduct.* 2021;61:102367. <https://doi.org/10.1016/j.ijdr.2021.102367>.
- [14] Cuaton G, Su Y. Indigenous Peoples and the COVID-19 Social Amelioration Program in Eastern Visayas, Philippines: perspectives from social workers. *J Indig Soc Develop.* 2020;9(3):43–52.
- [15] Cuaton G, Su Y. Local-indigenous knowledge on disaster risk reduction: Insights from the Mamanwa indigenous peoples in Basey, Samar after Typhoon Haiyan in the Philippines. *Int J Dis Risk Reduct.* 2020;48:101596. <https://doi.org/10.1016/j.ijdr.2020.101596>.
- [16] Curato N. *Democracy in a time of misery: From spectacular tragedy to deliberative action* (First edition). Oxford University Press; 2019.
- [17] DOH. *COVID-19 Tracker Philippines* [Government-owned]. DOH COVID National Data; 2021. <https://ncovtracker.doh.gov.ph/>.
- [18] Dy LF, Rabajante JF. A COVID-19 infection risk model for frontline health care workers. *Network Model Anal Health Informat Bioinformat.* 2020;9(1):57. <https://doi.org/10.1007/s13721-020-00258-3>.
- [19] Eadie P. Typhoon Yolanda and post-disaster resilience: Problems and challenges. *Asia Pac Viewp.* 2019;60(1):94–107. <https://doi.org/10.1111/apv.12215>.
- [20] Eadie P, Atienza ME, Tan-Mullins M. Livelihood and vulnerability in the wake of Typhoon Yolanda: Lessons of the community and resilience. *Nat Hazards.* 2020;103(1):211–30. <https://doi.org/10.1007/s11069-020-03984-z>.
- [21] Ensor J, Tuhkanen H, Boyland M, Salamanca A, Johnson K, Thomalla F, et al. Redistributing resilience? Deliberate transformation and political capabilities in post-Haiyan Tacloban. *World Dev.* 2021;140:105360. <https://doi.org/10.1016/j.worlddev.2020.105360>.
- [22] Espina EA, Canoy NA. Unpacking the post-Haiyan disaster resettlement narratives of young Filipino women informal settlers in Tacloban City, Philippines. *Disasters.* 2021;45(1):107–25. <https://doi.org/10.1111/disa.12416>.
- [23] Fitzpatrick D, Compton C. Beyond Safe Land: Why security of land tenure is crucial for the Philippines' post-Haiyan recovery. *OXFAM*; 2014; 28 [Briefing Paper]. <https://oxfamlibrary.openrepository.com/bitstream/handle/10546/324557/bp-beyond-safe-land-security-tenure-philippines-110814-en.pdf;jsessionid=1EBDEC09C86D90AF609EF384659EAB45?sequence=1>.
- [24] Fujii LA. *Interviewing in social science research: A relational approach.* 1 ed. Taylor & Francis Group: Routledge; 2018.
- [25] Gaillard JC. *People's Response to Disasters in the Philippines: Vulnerability, Capacities and Resilience.* Palgrave Macmillan Ltd; 2015.
- [26] Go JR. Post-typhoon Haiyan: Housing and Water Problems in Resettlement Areas – Balloons & Bullets. School of Politics & International Relations, University of Nottingham; 2016. <https://nottspolitics.org/2016/09/13/post-typhoon-haiyan-housing-and-water-problems-in-resettlement-areas/>.
- [27] Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet.* 2020;395(10223):497–506. [https://doi.org/10.1016/S0140-6736\(20\)30183-5](https://doi.org/10.1016/S0140-6736(20)30183-5).
- [28] Iuchi K, Jibiki Jr Y, R. S., & Santiago, R.. *Natural Hazards Governance in the Philippines.* Oxford Research Encyclopedia of Natural Hazard Science; 2018, February 26. <https://doi.org/10.1093/acrefore/9780199389407.013.233>.
- [29] Iuchi K, Maly E. residential relocation processes in coastal areas: Tacloban City after Typhoon Yolanda. *Coming Home after Disaster Multiple Dimensions of Housing Recovery.* 1st ed. Routledge; 2017. p. 258 <https://www.routledge.com/Coming-Home-after-Disaster-Multiple-Dimensions-of-Housing-Recovery/Sapat-Esnard/p/book/9781498722865>.
- [30] JHU CSSE. ArcGIS Dashboards; 2022. [https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html?fbclid=IwAR1AP8IOJmERJft\\_PzNtH\\_VqacIPN1v7nAnewafnooMeIjgqDN\\_FULD1Oc#/bda7594740fd40299423467b48e9ecf6](https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html?fbclid=IwAR1AP8IOJmERJft_PzNtH_VqacIPN1v7nAnewafnooMeIjgqDN_FULD1Oc#/bda7594740fd40299423467b48e9ecf6).
- [31] Joaquin JJB, Biana HT, Dacela MA. The Philippine Higher Education Sector in the Time of COVID-19. *Front Educat.* 2020;5. <https://doi.org/10.3389/educ.2020.576371>.
- [32] Kelman I. *Disaster by choice: How our actions turn natural hazards into catastrophes* (New product). Oxford University Press; 2020.
- [33] Kelman I, Gaillard JC, Lewis J, Mercer J. Learning from the history of disaster vulnerability and resilience research and practice for climate change. *Nat Hazards.* 2016;82(1):129–43. <https://doi.org/10.1007/s11069-016-2294-0>.
- [34] Lim Mangada L. Post-Haiyan adaptation and institutional barriers to women survivors in Tacloban. *Philippine Polit Sci J.* 2016;37(2):94–110. <https://doi.org/10.1080/01154451.2016.1196855>.
- [35] Maly E, Sakurai A, Aure F, Caintic MCI, Iuchi K. Voices from communities relocated to Tacloban North after Typhoon Yolanda. *IOP Conference Series: Earth and Environmental Science.* 630. 2021:012013. <https://doi.org/10.1088/1755-1315/630/1/012013>.
- [36] Mangada L, Cuaton G. Fertility, sex, and reproductive health dynamics after typhoon Yolanda in Tacloban North, Philippines. *Soc Sci Diliman: A Philippine J Soc Change (SSD).* 2020;16(1):20.
- [37] Mangada LL, Su Y. Achieving human security after a disaster: the case of the Haiyan widows. *Philippine Polit Sci J.* 2019;40(1–2):153–81. <https://doi.org/10.1163/2165025X-12340006>.
- [38] NDRRMC. Final report re effects of typhoon “Yolanda” (Haiyan). <http://ndrrmc.gov.ph/>; 2014.
- [39] Ogueji IA, Okoloba MM, Demoko Ceccaldi BM. Coping strategies of individuals in the United Kingdom during the COVID-19 pandemic. *Curr Psychol.* 2021. <https://doi.org/10.1007/s12144-020-01318-7>.
- [40] Olanday D, Rigby J. Inside the world's longest and strictest coronavirus lockdown in the Philippines. *The Telegraph*; 2020. <https://www.telegraph.co.uk/global-health/science-and-disease/inside-worlds-longest-strictest-coronavirus-lockdown-philippines/>.
- [41] Opdyke A, Javernick-Will A, Koschmann M. Typhoon Haiyan Shelter Case Studies. University of Colorado Boulder; 2017; 116 [https://www.colorado.edu/lab/gpo/sites/default/files/attached-files/opdyke\\_et\\_al\\_2017\\_typhoon\\_haiyan-shelter\\_case\\_studies.pdf](https://www.colorado.edu/lab/gpo/sites/default/files/attached-files/opdyke_et_al_2017_typhoon_haiyan-shelter_case_studies.pdf).
- [42] Perez RT, Feir RB, Carandang E, Gonzalez EB. Potential Impacts of Sea Level Rise on the Coastal Resources of Manila Bay: A Preliminary Vulnerability Assessment. In: Erda L, Bolhofer WC, Huq S, Lenhart S, Mukherjee SK, Smith JB, Wisniewski J, editors. *Climate Change Vulnerability and Adaptation in Asia and the Pacific: Manila, Philippines, 15–19 January 1996* (pp. 137–147). Springer Netherlands; 1996 [https://doi.org/10.1007/978-94-017-1053-4\\_13](https://doi.org/10.1007/978-94-017-1053-4_13).
- [43] Quan RJ. The Philippines: Beyond resilience: Protecting the rights of internally displaced persons in Dulag, Leyte, in the wake of Super Typhoon Haiyan. In: Scott M, Salamanca, editors. *Climate Change, Disasters, and Internal Displacement in Asia and the Pacific: A Human Rights-based Approach.* 1st ed. Routledge; 2021. p. 250 <https://www.routledge.com/Climate-Change-Disasters-and-Internal-Displacement-in-Asia-and-the-Pacific/Scott-Salamanca/p/book/9780367857875>.
- [44] Su Y, Mangada L. “Selling the Dead”: More dignified options needed to assist widows in post-disaster recovery after Typhoon Haiyan. *World Develop Perspect.* 2020;19:100210. <https://doi.org/10.1016/j.wdp.2020.100210>.
- [45] Tan-Mullins M, Eadie P, Atienza ME. Evolving social capital and networks in the post-disaster rebuilding process: The case of Typhoon Yolanda. *Asia Pac Viewp.* 2020;n/a(n/a). <https://doi.org/10.1111/apv.12268>.
- [46] Tanyag M. Resilience, Female Altruism, and Bodily Autonomy: Disaster-Induced Displacement in Post-Haiyan Philippines. *Signs J Women Cult Soc.* 2018;43(3):563–85. <https://doi.org/10.1086/695318>.
- [47] Tee ML, Tee CA, Anlacan JP, Aligam KJG, Reyes PWC, Kuruchittham V, et al. Psychological impact of COVID-19 pandemic in the Philippines. *J Affect Disord.* 2020;277:379–91. <https://doi.org/10.1016/j.jad.2020.08.043>.
- [48] TRSDG. *Proposed Tacloban Recovery and Rehabilitation Plan* [Government Plan]. [https://logcluster.org/sites/default/files/trp\\_updated\\_mar\\_21\\_public\\_forum.pdf](https://logcluster.org/sites/default/files/trp_updated_mar_21_public_forum.pdf); 2014.
- [49] Tuhkanen H, Boyland M, Han G, Patel A, Johnson K, Rosemarin A, et al. A typology framework for trade-offs in development and disaster risk reduction: a case study of Typhoon Haiyan Recovery in Tacloban, Philippines. *Sustainability.* 2018;10(6):1924. <https://doi.org/10.3390/su10061924>.
- [50] United Nations Population Division. *Philippines Population (2021)—Worldometer*; 2021. <https://www.worldometers.info/world-population/philippines-population/>.
- [51] WHO. *Listings of WHO's response to COVID-19.* <https://www.who.int/news/item/29-06-2020-covidtimeline>; 2020.
- [52] Yee DKP. Constructing reconstruction, territorializing risk: Imposing “no-build zones” in post-disaster reconstruction in Tacloban City, Philippines. *Crit Asian Stud.* 2018;50(1):103–21. <https://doi.org/10.1080/14672715.2017.1407663>.