

CHALLENGES IN PREPAREDNESS, RESPONSE AND RELIEF FOR PEOPLE WITH SPECIAL NEEDS IN TIMES OF DISASTERS FOLLOWING THE GREAT EAST JAPAN EARTHQUAKE

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ABSTRACT

Three major challenges were identified and their possible solutions were proposed in preparedness, response and relief measures for People with Special Needs in times of Disasters (PSND) following the 2011 Great East Japan Earthquake. First, recent developments in preparedness measures for PSND in Japan have been uncritically relying on the assumption that hazard maps represent “correct” estimates of future hazardous events, which are based on maximum probable event (MPrE) framework. In reality, however, maximum possible event (MPoE) has occurred in Tohoku regions. This has tremendous implications for fundamentally re-thinking entire hazard estimation process from MPrE to MPoE framework. Second, counter-disaster measures for PSND have focused mainly on warning and neighborhood-based evacuation assistance activities. Needs for shelters and temporary housing units that are specially designated for PSND arose following the earthquake. However, their provision was neither systematic nor universal due to the lack of pre-planning. More detailed guidelines for specially designated shelter and temporary housing operation need to be developed in order to address this issue. Third, people with disabilities (PWD) became invisible in shelters and communities or in eyes of local government administrators. This is due to the fact that majority of PWDs did not ask for help in evacuation shelters because they felt general shelters were not “barrier free” and unresponsive to their functional needs. Furthermore, many local government administrators felt hesitant to release PSND registry to NGOs and self-help organizations that were eager to check where-about and current situations of PWDs. This was due to the fear of breaking Personal Information Protection Bylaw despite the fact that the Bylaw provides exceptional conditions, where the onset of disaster is clearly one of these exceptional conditions. Further elaboration and education on the use of personal information of PSND during disaster period are needed among public and local government administrators.

Keywords: people with special needs in times of disasters (PSND), the Great East Japan Earthquake, maximum probable event, maximum possible event, specially designated shelters and temporary housing for PSND, personal information protection bylaw

1. INTRODUCTION

1.1 Counter-disaster measures for PSND in Japan

The issue of special needs population gained high attention after 2004 when a series of natural disasters hit the Japanese Archipelago. Those included July Niigata-Fukushima flood, October typhoon 23 and October Niigata Chuetsu earthquake disasters, wherein notably more than 60% of the victims were over the age of 65. As a response to these tragedies, Japan's Cabinet Office established a committee on "Communicating Disaster Information and Evacuation and Sheltering Assistance for the Elderly and Other Population during Heavy meteorological and Other Disasters." The committee published the first edition of the "Evacuation/Sheltering Assistance Guideline for People with Special Needs in Times of Disasters" in the following March 2005. After the guideline publication, the term *saigaiji-youengosha* or People with Special Needs in Times of Disasters (PSND) was popularized in place of *saigai-jakusha* or Disaster Vulnerable Population. PSND is defined as "a person who is able to function daily, whereby living independently given the proper resources and services when necessary".

Following another series of heavy rainfall, flood and land slide disasters in the year 2005, another Cabinet Office committee conducted field research of the 2005 meteorological disaster sites and revised the evacuation and sheltering assistance guideline in March 2006. The 2006 guideline emphasized 1) establishing a special team in each municipal government that was in charge of coordinating assistance to the target population, 2) encouraging the information sharing of special needs population within the local government and, if possible, with local community organizations such as neighborhood associations and community emergency and response team, and 3) planning individualized evacuation and sheltering procedures for each PSND.

In the following fiscal year 2006, the committee on PSND continued working on more detailed procedures and workflows in order to collect, to share information on PSND and to make individualized evacuation and sheltering assistance plans. In March 2007, the committee published the "Report on Preparedness Procedures for PSND." The 2007 report emphasized the establishment of a system to assist PSND by facilitating cooperation between the local/municipal government disaster management department and its health and welfare department. The role of the disaster management department is to provide local hazard information, while the health and welfare department provides information on potential vulnerabilities within the target population. The 2007 report encouraged the use of map where potential vulnerable individuals such as the frail elderly and people with disabilities (PWD) are projected onto multiple hazard layers such as flood, landslide and seismicity. The map can help identify who are at more risk because of their functional needs as well as of their geographic locations.

Since the publication of the 2006 guideline and the 2007 report, the Fire and Disaster Management Agency (FDMA) has requested every municipality in the country to formulate its own master plan that directs policy formation on PSND assistance, to identify potential target groups, to clarify ways to collect and share

their personal information. Based on the master plan, municipalities have been further encouraged to start project planning to assign local resident helpers to each individual PSND in time of evacuation. According to the survey conducted by FDMA, as of April 1, 2011, 1,262 out of 1622 municipalities (76.8%) finished formulating PSND assistance master plan and additional 349 municipalities (21.2%) were expected to finish within one year. Similarly, 864 (52.6%) municipalities reported that they have finished creating and have been updating the PSND directory. 684 (41.5%) municipalities said that they were currently in the process of making the directories. Municipalities have been working hard even on assigning local residents/helpers to each PSND for evacuation, much more time consuming process. 361 (22.0%) reported that they have completed the assignment, 998 (60.7%) in the process, and 285 (17.3%) not yet initiated (FDMA, 2011).

1.2 Kobe PSND Mapping Project

Tatsuki and Comafay (2010) reported the 2008 Kobe PSND Mapping Project, which was characterized by a combined use of GIS and the social survey in order to assess overall hazard vulnerability of PSNDs. In response to the FDMA request as explained in the above, 1.5- million-resided Kobe city administration collated separate social service recipient databases, resulting in an integrated registry involving one hundred and twenty thousand individuals who were considered being potentially vulnerable in time of disaster. The registry database identified 4,329 people with physical disabilities in 107- thousand-resided Hyogo Ward. The 2008 project geocoded and mapped them on land slide, flood and tsunami hazard layers. 914 individuals were found residing in hazardous areas (see figure 1).

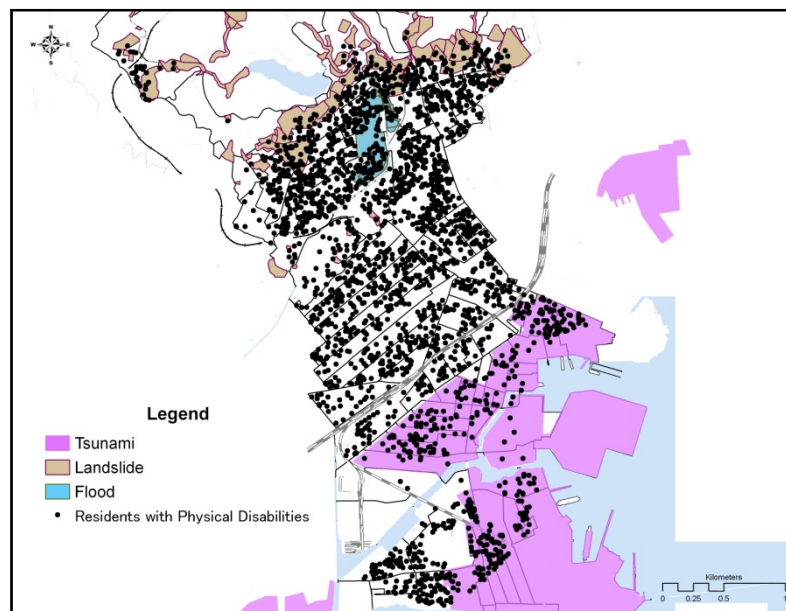


Figure 1: Persons with disabilities living in Kobe's Hyogo ward (N= 4,411)

These 914 individuals were then visited by interviewers and 612 or 67% responded to a structured questionnaire which measured demographics (i.e., age

and gender), levels of disability, social isolation, housing fragility, and physical immobility. The 2008 project was based on the person-in-environment model of vulnerability, which defined hazard vulnerability (V) as a function of hazards (H), person (P), and environment (E) factors or $V = f(H, f(P, E))$ as illustrated by figure 2.

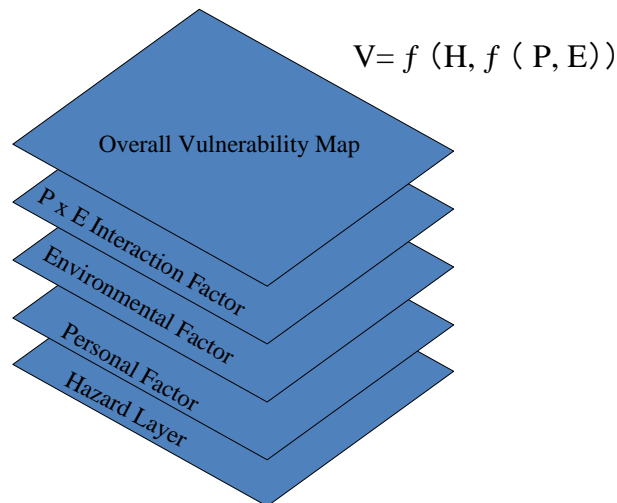


Figure 2: Person-in-Environment model of mapping hazard vulnerability

Based on the model, an overall vulnerability score was then calculated as a function of hazards and the five variables for each respondent. As a result, 17% of those who responded were found the most vulnerable and requiring priority assistance in time of disaster (see figure 3).

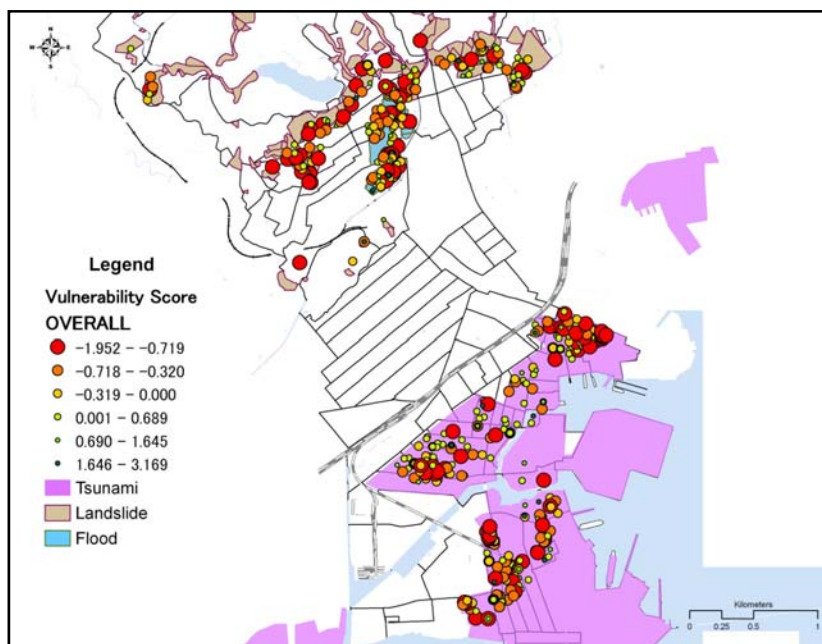


Figure 3: Overall vulnerability scores mapped on to hazard layers

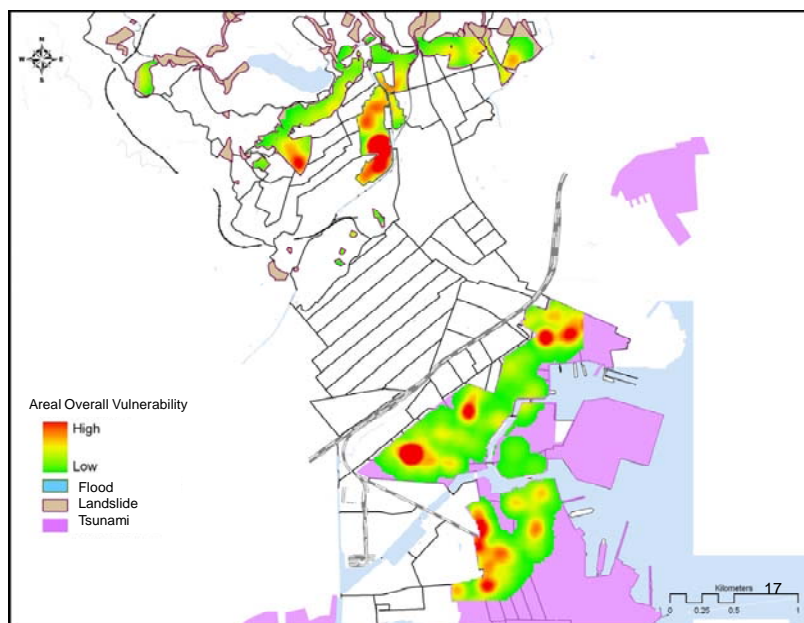


Figure 4: PSND kernel density estimation weighted by overall vulnerability index

Furthermore, a social vulnerability weighted kernel density map of people with special needs was created (see figure 4). This map indicated which particular areas require more human resources for assisting a special needs population for evacuation and sheltering. The project product maps helped representatives from special needs groups, community emergency response teams, community social services, and emergency management centers initiate evacuation and sheltering assistance planning in the project areas.

The 2008 Kobe PSND mapping project was an attempt that aimed to provide a standardized method using individual social vulnerability mapping as analysis tool to identify more comprehensively the risks that could affect a given community. This could help different stake holders, special needs groups, community emergency response teams, community social services, and emergency management centers initiate evacuation and sheltering assistance planning in high risk communities.

2. THREE CHALLENGES IN PSND COUNTER-DISASTER MEASURES AFTER MARCH 11, 2011

Despite the above mentioned nation-wide efforts on PSND counter-disaster measures in recent years, serious problems confronted municipalities, communities, PSNDs and their families at the onset of March 11 Great East Japan Earthquake Disaster. From three reconnaissance missions conducted by the author team in March and April, at least three major challenges were identified in preparedness, response and relief measures for PSND. Those were namely 1) challenges on identifying people at risk by re-thinking “correct” hazard estimates, 2) challenges on pre-planning specially designated shelters for people with special needs, and 3) challenge on utilizing personal information on PSND. Each challenge is explained in the following sections.

2.1 Challenges on identifying people at risk: Re-think “correct” hazard estimates

Recent developments in preparedness measures for PSND in Japan have been uncritically relying on the assumption that hazard maps represent “correct” estimates of future hazardous events. As figure 5 in the below illustrates, this turned out to be a horribly wrong assumption. Hazard maps were created according to *maximum probable event* (MP_rE) framework. In reality, however, *maximum possible event* (MP_oE) has occurred in Tohoku regions. This has tremendous implications for fundamentally re-thinking entire hazard estimation process from MP_rE to MP_oE framework.

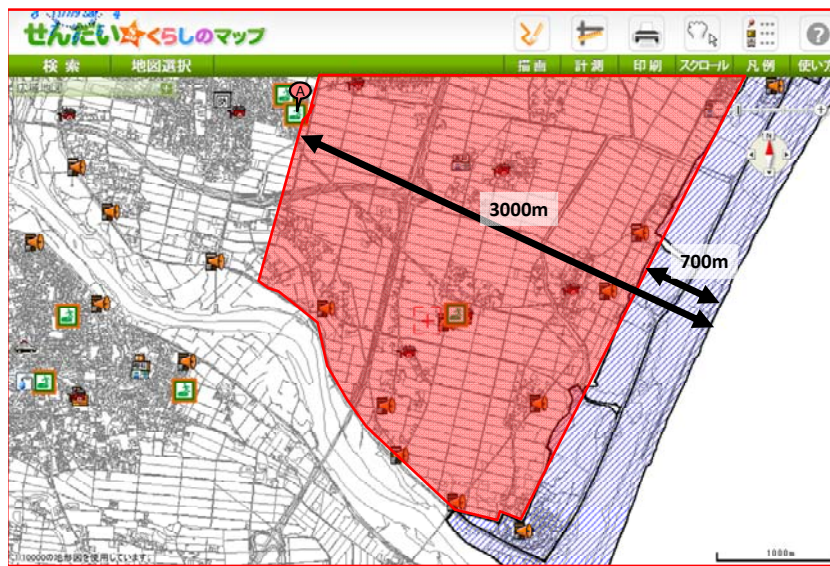


Figure 5: Tsunami hazard map and actual inundation east of Rokugo Junior high school, Wakabayashi ward, Sendai city

In the previous section, the person-in-environment model of hazard vulnerability (V) was introduced as a function of hazard (H), person (P) and environment (E) factors or $V = f(H, f(P, E))$. In practice, hazard factor was estimated by *maximum probable event* framework and therefore the model could be represented as $V = f(MP_rE, f(P, E))$. The challenge here is to replace *maximum probable event* hazard estimate with an alternative hazard estimate by incorporating *maximum possible event* framework. The modified person-in-environment model will therefore be represented as $V = f(MP_oE, f(P, E))$.

2.2 Challenges on pre-planning specially designated shelters for people with special needs

As was described in the introduction, counter-disaster measures for PSND have been focusing mainly on warning and neighborhood-based evacuation assistance activities. Needs for shelters and temporary housing units that were specially designated for PSND arose following the March 11 earthquake. However, their provisions were neither systematic nor universal due to the lack of pre-planning. This is partly due to the fact that the 2006 guideline or the 2007 report has not

provided detailed procedures on sheltering assistance planning for PSND. The concept of specially designated shelter for PSND or *fukushi-hinansho* emerged in 2004 from the discussions by the committee on “Communicating Disaster Information and Evacuation and Sheltering Assistance for the Elderly and Other Population during Heavy meteorological and Other Disasters.” It was recognized that general evacuation shelters as shown in figures 6 and 7 were not capable of responding to special or functional needs of PWD and the frail elderly. Functional needs include those in “communication, medical needs, maintaining functional independence, supervision, and transportation” (Kailes and Enders, 2007, p.234) that arise in times of disaster. The committees on PSND assistance, however, have not spent enough time to clarify requirements for, procedures or guidelines of specially designated shelters. Most hazards that the PSND committees have been studying since 2004 have mainly been meteorological and therefore sheltering needs were short-term and considered being less life-threatening than evacuation needs.



Figure 6: School Gym Shelter at Rokugo junior high school, Sendai City (April 6, 2011)



Figure 7: Arahama Residents on the 1st Floor Classroom at Hakken junior high school (April 6, 2011)

The March 11 earthquake disaster created a situation where a very large number of people rushed to general shelters and the length of stay was relatively long, creating high functional needs from PSND. This apparently required alternative shelters. Disaster hit municipalities responded to this situation in un-uniform manners. In the case of Sendai city, the city administration had already made pre-planned arrangements/compacts for alternative sheltering service with 52 local social service providers prior to the March event. Some of those compacted shelters conducted study seminars and practice drills in the previous year. Thanks to these preparations, some responded to the city administration request quickly and the other even voluntarily initiated sheltering operations. In total, 26 shelters operated and served about 260 individuals in Sendai city (see figure 8).



Figure 8: Specially Designated Shelter at Miyagino Day Service Center for PWD, Sendai City (April 5, 2011)



Figure 9: Specially Designated Shelter at Yugakukan Sport Center Gym, Ishinomaki City
(<http://road.nippon-foundation.or.jp/2011/04/007-fcd1.html>)

Downtown center of Ishinomaki city was badly damaged by March 11 tsunami forcing more than thirty thousand people or about one fifth of its population in general shelters at its peak. A medical doctor helping one of a large general shelters strongly demanded the city administration that an alternative shelter be provided for the frail elderly, PWDs and those out-patients that did not require intensive medical care from the tsunami unaffected Ishinomaki Red Cross hospital. The city temporally designated Inai junior high school gym and then later moved the 20 to 30 shelter occupants to Yugakukan sport center gym (see figure 9) on March 29. Yugakukan gym eventually accepted about 130 people including PSNDs and their family members. Yugakukan shelter was staffed initially by most of Ishinomaki Municipal hospital doctors, nurses and social workers who lost their work place due to the tsunami attacks. Volunteer doctors, nurses, social workers, nursing care workers and public administrators from other prefectures came to the Yugakukan shelter and assisted the operation from early April.

It should be noted that Ishinomaki city was renowned for its city wide community-based evacuation planning initiatives for PSNDs. The city was recognized as one of the ten model municipalities on PSND preparedness master planning as early as year 2004. By the end of year 2010, 401 out of 421 administrative districts in the city completed individualized evacuation planning for each PSND in the neighborhood. The city's master plan for PSND, however, did not include planning on specially designated shelters. Inai junior high school and later Yugakukan shelter operations were all improvised by city hospital doctors and nurses with the support from the city. The city, however, was not aware of special service provision clause in Disaster Relief Act that qualified additional financial compensations on top of general service provisions from the national government. It was not until almost the end of April that the city formally designated Yugakukan as the specially designated shelter for PSND. To sum up, specially designated shelters operated in Ishinomaki city but the operation remained lacking formal logistic support foundation for a prolonged period of time.



Shunpoen Nursing Home Shelter (April 7, 2011)



Ochiai Nursery School Shelter

(<http://www.toshinkai.or.jp/image/C8EFBAD2C3CFC7C9B8AFCAF3B9F0.pdf>)

Figure 10: Specially Designated Shelters at Shunpoen Special Nursing Home (Top) and Ochiai Nursery School (Bottom)

Like Ishinomaki, more than twelve thousand or one sixth of Kesenuma city population rushed to general shelters after the earthquake and tsunami in March. Until April, the frail elderly, PWDs and small children were all mixed with other evacuees who looked after those in needs at general shelters. In some shelters, partition cardboards were used to separate PSNDs from general evacuees in order to provide some privacy. On April 7, the city administration

officially opened the first specially designated shelter for PSND on an unused nursery school site (see figure 10). In the following two weeks, additional four

specially designated shelters were opened. Shunpo-en special nursing home for elderly (see figure 10) was one of those four new specially designated shelters. It was serving 60 elderly residents as well as more than one hundred general evacuees and some PSNDs from the neighborhood after the March disaster. Those PSNDs were taken care of by the home staff workers. The director, however, was afraid of financial burden to run specially designated shelter for an extended period of time. Later in April, the city administrators learned that official designation would allow additional care service provision from Disaster Relief Act. This was on top of the provision of regular service hours as prescribed by long-term care insurance scheme. This alleviated tremendous financial burden which the city and/or the designated shelters like Shunpo-en home might have had to bear otherwise. In other words, Kesenum city also lacked pre-planning on specially designated shelters and the administration was not aware of legal framework (i.e. Disaster Relief Act special service provision clause) to operate these shelters.

In conclusion, municipalities other than Sendai city did not have compacts on specially designated shelter operations with social service providers. It took nearly three weeks for Ishinomaki and Kesenuma to formally designate such shelters after the earthquake. It was learned that they were hesitant because they believed their facilities would not meet the standard for specially designated shelters, as outlined in pre-disaster planning manuals. Additionally, many local officials were unaware of the special service provision clause of the Disaster Relief Act covering shelters for people with special needs. Nonetheless, these kinds of sheltering operations did emerge. Had the local municipalities officially declared that they were operating special-needs shelters, they would have been eligible for additional resources at the onset of the event from both the national and prefectural governments. More detailed guidelines for specially designated shelters and temporary housing operation for PSNDs need to be developed in order to address this issue.

2.3 Challenges on Utilizing Personal Information on People with Special Needs in Times of Disasters

Among different types of PSNDs, people with disabilities (PWD) were invisible in shelters and communities or in eyes of local government administrators. This was due to the fact that majority of PWDs did not ask for help in general shelters because they felt general shelters were not “barrier free” and unresponsive to their functional needs. Furthermore, many local government administrators felt hesitant to release PSND registry to NGOs and self-help organizations that were eager to check where-about and current situations of PWDs. This was due to the fear of breaking Personal Information Protection Bylaw despite the fact that the Bylaw provides exceptional conditions, where the onset of disaster is clearly one of these exceptional conditions. In fact, Minamisoma city officials did release that information to a local NGO, and in Higashimatsushima, members of groups who worked on behalf of disabled persons, such as the Japan Disability Forum, were allowed to accompany public health nurses on their home visits. Other cities might have been using similar approaches, but it appeared that in most affected areas officials were unaware of the needs of mentally ill and developmentally

disabled persons and had not attempted to initiate outreach efforts for those populations. As of June 2011, Japan Disability Forum announced that they were able to meet 1,386 PWDs in person from their outreach project in Miyagi prefecture. This number (1,386) accounted for only 2.6 % of 53,511 persons who were registered to be PWD in the affected areas. Researchers and advocates for persons with disabilities were unable to determine what was happening with large numbers of survivors with disabilities. Further elaboration and education on the use of personal information of PSND during disaster period are needed among public and local government administrators.

CONCLUSION

This paper first introduced recent developments on counter-disaster measures for PSNDs in Japan. Based on three reconnaissance missions in March and April three major challenges and their possible solutions in preparedness, response and relief measures for PSND were presented. First, challenges on identifying people at risk were illustrated. This would require re-thinking from *maximum probable event* to *maximum possible event* framework. Second, challenges on operating specially designated shelters for people with special needs were identified. Further elaboration of the guideline on sheltering was suggested. Third, challenges on utilizing personal information on PSND during disaster were presented. Further elaboration and education on this matter was recommended.

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