

**DEVELOPMENT OF A MEASURE OF HOARDING-RELATED RISKS**

by

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Development of a Measure of Hoarding-Related Risks

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## **Abstract**

The dysfunction associated with hoarding behaviour sometimes requires intervention from community agencies to reduce risks to occupants and the public. Unfortunately, current measures do not reflect a shared understanding of aspects of the home that are necessary for community service providers to assess in cases of hoarding. Providers differ in their understanding of risks in the home, as they do not consistently use the same measures to conduct assessments, nor are there standard guidelines of what needs to be assessed in hoarded homes. This study aimed to develop a measure that would reflect a collective understanding of essential hoarding-related health and safety risks in the home that require intervention. Study 1 involved a Delphi survey to create a list of items that are critical to assess in hoarded homes. This study identified 32 environmental risk factors to include in the risk assessment measure. Once this part was complete, the Home Environment Assessment Tool for Hoarding (HEATH) was created with these items grouped into five domains. In Study 2, another group of experts assessed the content validity of the resulting measure using the Content Validity Index method. At least 80% of participants endorsed clarity, relevance, and practicality of every item. The index for the overall scale was 0.996, providing strong evidence of content validity. These studies played an essential role in the creation of a risk assessment measure that can improve communication between agencies, track changes from interventions, and standardize risk assessment in hoarded homes.

## **Lay Summary**

Community providers intervene in hoarded homes due to risks associated with excessive clutter, but each agency operates differently, making cross-agency assessment and communication challenging. To bridge this gap, a risk measure is necessary to standardize assessments of hoarded homes. This research created a risk assessment tool that reflects a multidisciplinary understanding of the most essential aspects to assess in cases of hoarding. We recruited community-based human service providers to complete two studies. Study 1 used the Delphi method, which involves a multi-session asynchronous focus group, to identify the content that should be included on the measure. Study 2 examined content validity: the clarity, practicality, and relevance of different aspects of the measure. The final measure included 32 risk factors within five categories. This tool will improve communication between agencies and with clients as well as facilitate documentation of the effectiveness of programs.

## **Preface**

Under the supervision of Dr. Woody, I was responsible for data collection, data cleaning, analysis and authorship of the work presented in this thesis. The overall Delphi project was originally designed by Sheila Woody and Christiana Bratiotis. My input focused on the conceptualization and execution of the final project. The Delphi was approved by the UBC Ethics Committee (certificate # H20-03648). I designed the content validity study in collaboration with Sheila Woody and Christiana Bratiotis. I obtained ethical approval for the content validity study (UBC certificate # H21-03546), collected, cleaned and analyzed the data from this study. Four research assistants aided with data collection and analysis for the Delphi study. One research assistant under my supervision helped analyze the data for the Content Validity study.

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## CHAPTER 1

### **Hoarding Disorder and Community Involvement**

Hoarding disorder poses a risk to occupants and the community at large because of the dangers that can be associated with excessive clutter in the home (Bratiotis, 2013; Lucini et al., 2009; Steketee et al., 2001). Community agencies frequently become involved in these cases to reduce potential harm in hoarded homes (Lauster et al., 2016; Tompkins, 2015). Unfortunately, available risk assessment tools for hoarded homes are limited in their ability to inform and track changes from community interventions. This project involved the development of a risk assessment measure for use in intervention planning in hoarded homes. In this introduction, I will first provide some background on hoarding disorder and functional impairment resulting from clutter in the home. The following section will describe the involvement of community agencies that have the mandate, authority, and resources to intervene. Subsequent sections will describe both community interventions and mental health interventions for hoarding. I will then outline some currently-used measures of hoarding severity in community settings. Finally, I will illustrate why obtaining consensus from community providers is so important for the creation of this new tool.

#### **Hoarding: What is it?**

Hoarding presents both a private and public risk because of extreme accumulation of clutter in the home. Hoarding disorder is prevalent in the community, affecting an estimated 2.5% of the general population (Postlethwaite et al., 2019). The diagnostic criteria for hoarding includes difficulty discarding possessions, irrespective of the actual value of the items, and consequent accumulation of objects within the living space that impairs functional ability (American Psychiatric Association, 2013). Clutter may be so pervasive that it impedes activities

of daily living, such as cooking, cleaning, or maneuvering inside the home (Diefenbach et al., 2013; Steketee et al., 2001; Tolin et al., 2008). The extensive impact of clutter in the home creates a problem for the occupants and all other stakeholders involved.

Risks in hoarded homes can become of legitimate public interest when they are severe enough to present a concern to public safety. One situation of worry includes when the home is part of a multi-unit building and pests have spread to neighboring units. Another example involves fire and safety risks as large amounts of clutter can block fire exits or hinder emergency personnel from accessing the home (Gonzalez et al., 2016; Steketee et al., 2001). In some cases, these conditions can lead to injury or death of the resident (e.g., Baker, 2016; CBC News, 2011). Public agencies also have a stake in cases involving the presence of vulnerable residents in the home such as children, frail older adults, animals, or those with other constraints such as poor decisional capacity. In these situations, community providers must become involved to reduce the risk of harm to these individuals. Therefore, once the hazards in the home become severe enough to present a risk to public safety or a serious risk of harm to vulnerable residents, hoarding disorder changes from a private problem to one of public interest.

Hoarding behaviour and the accumulation of clutter can occur in the context of other conditions such as Prader-Willi Syndrome, Diogenes Syndrome, Parkinson's disease, Huntington's disease, frontotemporal dementia, and psychological disorders such as OCD (Tompkins, 2015). The distinction between hoarding disorder and these other conditions is critical in mental health care planning, but this differential diagnosis is not necessary for community providers who are concerned about the environmental risks regardless of specific diagnosis. For instance, Pertusa and Fonseca (2014) described several clinical examples of extreme clutter in the context of disorders other than hoarding, such as a client with

schizophrenia who collected papers related to his delusional beliefs. Eventually, his home was so full that he and his family could no longer stay in the residence.

The development and maintenance of hoarding involves a number of environmental, genetic, and cognitive factors. A deficit in information processing, emotional attachment problems, dysfunctional beliefs about the nature of possessions, and behavioral avoidance have all been theorized as contributing to hoarding (Frost & Hartl, 1996). This cognitive-behavioral model of hoarding includes characteristics such as perceiving possessions to be of high value, difficulty categorizing and organizing possessions, memory deficits (Woody et al., 2014), and impaired decision making about objects (Grisham et al., 2010). The development of hoarding is also influenced by genetics and environment. More than half of those with hoarding disorder report having a relative who also hoards (American Psychiatric Association, 2013), such as a parent which increases the likelihood of developing these behaviours (Dozier et al., 2016). Twin studies in adults estimate heritability to be 36 – 56% (Iervolino et al., 2009; Mathews et al., 2014; Taylor et al., 2010). Ivanov et al. (2017) subsequently estimated the heritability at age 15 to be about 33% for boys and 17% for girls, which is on the low end but still demonstrates genetic influence. Other causal factors might include a history of exposure to traumatic events, as those with hoarding disorder report a greater frequency of those events (Grisham et al., 2006; Samuels et al., 2008; Tolin et al., 2010).

### **Community Implications and Interventions**

Service providers, such as police, fire inspectors, or visiting nurses, become aware of hoarding through a variety of means. They may incidentally observe hoarded conditions when visiting the home for reasons unrelated to hoarding, or neighbors may complain about the home as a nuisance because of the clutter. Most commonly, officials discover hoarding through

referrals by housing providers who become aware of the conditions in the home (Kysow et al., 2020). If conditions in the home violate laws or regulations, community providers must intervene (Tompkins, 2015). Common regulatory issues involve violations of fire codes or city by-laws such as inadequate egress, accumulation of combustibles in the home, or not meeting community standards of exterior home aesthetics (Lauster et al., 2016). For instance, a hoarded home might have stacks of newspapers that block fire exits or large amounts of clutter outside the home. Although tackling hoarding is not necessarily part of the job description for most providers, they still need to decide how to approach such situations when they come to light during the normal course of their work.

Hoarding cases are quite complex due to the risks that span various fields such as health concerns, safety violations, and legal considerations. Frost et al. (2000) found that most hoarding cases (79%) seen by the health department also had involvement from at least one additional agency, and almost half of cases (49%) involved two or more agencies. The most frequently involved agencies were the fire department, department of ageing, and mental health (Frost et al., 2000). The presence of a multitude of risks requires a multiagency approach to ensure that the home returns to a safe state.

Despite multiagency approaches and frequent collaboration among providers, the primary targets for intervention still differs among agencies. For instance, the Vancouver-based Hoarding Action Response Team (HART) focuses on fire risks in the home because fire prevention officers represent half the team, whereas Metro Housing Boston assists those who are at risk of losing their housing subsidy and therefore prioritizes conditions that would violate lease agreements, and the Gatekeepers Program in Hamilton primarily assesses risks relevant to older adults who are at risk for self-neglect (Luu et al., 2018). These diverging priorities can

complicate the task of developing a clear intervention plan. Depending on which providers are involved, some aspects of the home may be neglected during assessment, meaning that different agencies might come to varied conclusions about the level of risk in the home.

The choice of which intervention to implement depends on the state of the home and factors such as the resident's willingness to cooperate. Community responses to hoarding include referrals for counseling, removal of items from the home (Chapin et al., 2010; McGuire et al., 2013), fines or other legal sanctions, condemnation of a poorly-maintained home (Lauster et al., 2016), or eviction (Cobb et al., 2007; Weiss & Khan, 2015). Cleanouts, which involve a mass removal of possessions within a short amount of time (Weiss, 2010), aim to return the home to a state of regulatory compliance. Intervention planning requires professional judgment and depends on the context. If the resident is a young adult without mobility issues, then a collection of objects on the stairs may not be of much concern. On the other hand, if the resident is an older adult who uses a mobility aid, then having anything on the stairs would be especially dangerous, necessitating the removal of these items.

Hoarding-related evictions occur when a tenant is in violation of their lease agreement, typically due to clutter posing a safety risk or property damage that occurs because of the accumulation of clutter (Weiss & Khan, 2015). In a study of New York City tenants seeking housing advocacy assistance, Rodriguez et al. (2012) found that 23% of individuals at imminent risk of eviction acknowledged hoarding behaviour as one of the precipitating factors.

Unfortunately, an eviction record or lacking landlord references can force people to live in low-quality housing (García & Kim, 2021; Gold, 2016) and increases the risk of homelessness. The use of evictions tends to benefit property owners and other residents but has high costs for the person who hoards and can be expensive for landlords.

Forced or coerced cleanouts can appear to be not only the easiest, but also the best, solution to reduce risk in hoarded homes. This intervention can be traumatic for the resident and is costly for those administering it, whether that be a community agency, the individual who hoards or their family, or the owner of the dwelling. Costs span beyond just removing items from the home, such as for re-housing individuals, administrative costs, and legal responses including evictions (Neave et al., 2017).

Both eviction and cleanouts can be damaging to clients' wellness and do nothing to change hoarding behavior, leaving the home to quickly return to an unsafe state. In some situations, these severe actions are the only option to make the home safe for the occupant. However, without the inclusion of mental health care to address cognitive, behavioural, and emotional aspects of hoarding, these invasive interventions can cause further harm. Some community providers have attempted to reduce the use of these strategies and instead use more collaborative harm reduction interventions (Kysow et al., 2020), as discussed below.

### **Cognitive Behavioural Therapy for Hoarding**

CBT begins with an assessment of hoarding symptoms, impairments, comorbidity, and safety concerns. Clients also receive psychoeducation about the cognitive behavioural model of hoarding. Clinicians offer further information tying together the client's specific hoarding behaviours, cognitions, and feelings. The clinician will teach skills like problem solving, decision making and organizing. They will also address clients' maladaptive thoughts related to the hoarding, such as a belief that they will forget events if they do not keep certain objects and overestimating the value of items. CBT aims to change the person's relationship with their possessions to make it less distressing to discard items and to limit acquisition.



Mental health treatment for hoarding focuses on conducting interventions inside the therapy office, sometimes also including home-based sessions to provide support and skills development related to sorting and discarding objects (Steketee & Frost, 2013). While CBT protocols recommend targeting safety concerns in the home, training manuals typically only give a brief description of this aspect of treatment. Instead, the focus for mental health clinicians is on how to look for opportunities to aid the client with discarding. CBT assessment for hoarding centres around cognition, acquisition, and clutter but not specifically on safety in the home. Therefore, while mental health practitioners can expertly teach skills and address psychological factors of hoarding, they may not be sufficiently aware of how to assess health and safety risks in the home.

CBT is the gold standard for hoarding, however it does have some limitations as it was designed for clients seeking mental health care and does not show similar effectiveness for all clients. Randomized control trials of both individual and group formats have shown the efficacy of this treatment (Gilliam et al., 2011; Muroff et al., 2014; Tolin et al., 2019). CBT has demonstrated particular effectiveness to reduce difficulty with discarding as per a meta-analysis by Tolin et al. (2015). Difficulty with discarding had an independent effect size of 0.89 (95% CI [0.63, 1.16]) using results from the Saving Inventory – Revised, Hoarding Rating Scale-Interview, the UCLA Hoarding Severity Scale, and the Hoarding Rating Scale-Self-Report. Clutter also has moderate changes (0.70, 95% CI [0.52-0.89]) from interventions, likely because of the short-term nature of many of these studies. Functional impairment may be the most difficult to shift, with an effect size of 0.52 (95% CI [0.38, 0.67]; Tolin et al., 2015).

The clients represented in CBT studies are limited to those with moderate to good insight into their condition and who are willing to engage in therapy to make changes. Most studies

involve samples of female participants between the ages of 49 and 74 (Rodgers et al., 2021) with European heritage (Fernández de la Cruz et al., 2016). The restricted samples in these studies do not demonstrate whether this form of treatment would be beneficial for the wide range of individuals with hoarding. In fact, CBT has demonstrated limited effectiveness for older adults, as found by Ayers et al. (2011) where only three out of 12 participants were classified as treatment responders. This is problematic as older adults experience worse hoarding symptoms, as evidenced by clutter level (Dozier et al., 2016), and have more functional impairment as a result of their clutter (Diefenbach et al., 2013). Finally, few mental health practitioners are trained in specialized CBT for hoarding, which limits the reach of this intervention. Alternative treatments and more representative studies of CBT are necessary to ensure effective interventions for hoarding.

### **Harm Reduction for Hoarding**

Harm reduction interventions originated in treatment for substance use disorders, and providers have started to apply this intervention to cases of hoarding (Bratiotis et al., 2019). Broadly, harm reduction approaches aim to decrease the risk of harm rather than to stop the harmful behaviour (Denning & Little, 2012), while attempting to do no more damage to the individual than their behaviour already causes (Tompkins, 2015). For instance, needle exchange programs provide sterile needles for drug use to reduce the risks associated with reusing or sharing this paraphernalia. Harm reduction is a multistep process, much like CBT, that requires flexibility and compassion from the person delivering the intervention. Initially, harm reduction focuses on providing the client with information about the approach (Tompkins, 2015). In the context of hoarding, this involves educating the resident about risks in the home with the goal of increasing insight into the severity and likely consequences of the problem. Further steps of harm

reduction for hoarding aim to reduce harm potential by moving objects to safer locations in the home, removing just enough objects in the home to reduce risk to an acceptable level, supporting the resident emotionally and helping them prioritize which possessions to keep. Examples of specific strategies include moving combustibles away from heat sources or assisting a client in general decluttering to reduce risks in the home. Harm reduction does not require clinical expertise or training and focuses on managing risk rather than eliminating symptoms.

Cases of hoarding that rise to the attention of community agencies differ in important ways from those who seek mental health care, the most prominent being that these clients generally do not volunteer for interventions. As many community-based clients are resistant to interventions, building a working alliance is the only way to build trust and to work in a client-centred way. Therefore, while this intervention takes place primarily in client's homes, much of the essential work takes place on the doorstep to create this relationship. Many clients who accept harm reduction interventions are motivated to maintain their housing, which has been threatened because of regulatory violations or risks in the home. Hence, harm reduction approaches frequently focus on doing only what is necessary to promote housing stability, health and safety, and the resident's general quality of life (Bratiotis et al., 2019), without focusing on other aspects of the hoarding. The shared goal in harm reduction for both the clients and the providers is for the home to be safe.

Fluctuating insight is likely a barrier for clients to accept assistance for hoarding. Clients may not see the severity of the situation, but they might have momentary clarity about potential consequences when someone such as a fire inspector is pointing out risks. Lack of awareness of the dangers in the home can make interventions difficult as residents are resistant to receiving assistance. Particularly, clients who come to the attention of authorities are at an increased risk

because of the high levels of clutter (Woody et al., 2020), prevalence of serious health problems (Bratiotis et al., 2011; Tompkins, 2015), and living in multiunit dwellings (Kysow et al., 2020). Harm reduction focuses on reducing the danger to a level where the resident is safe in their home. Therefore, clients who are resistant to interventions can engage in harm reduction, as it is a way to help them live safely and keep their residence with minimal change to their hoarding behaviour.

A multidisciplinary team is often necessary to reduce risks and achieve compliance with health and safety standards. These teams include professionals such as a fire inspector, building inspector, housing provider, mental health professionals or older adult services (Bratiotis et al., 2011). Most are ad hoc teams, meaning that the team works on a case-by-case basis, however there are a few permanent teams which will be mentioned in the subsequent paragraph. Team members take on responsibilities relevant to their training and job title, while consulting with the rest of the team in a collaborative to target a range of risks. Importantly, these team members represent different agencies who have various mandates and accordingly prioritize addressing distinct aspects of the home.

Outcomes that are important to these intervention teams include eviction prevention and a reduction in fire risks. Kwok et al. (2018) examined cases and records from the Vancouver Hoarding Action Response Team (HART), which included a fire inspector, a property use inspector, and two health care workers. Of 210 resolved cases, 171 had reached satisfactory status with regard to fire safety concerns. Kysow et al. (2020) conducted a follow-up study with 82 cases from the HART team, which then had a fire prevention officer, a psychiatric nurse, a clinical health supervisor, and a fire captain. The follow-up found significant reductions in clutter volume from the time of referral to the time the case was closed, and 52 cases met HART

clutter reduction goals. Of the 28 clients facing housing instability, only four clients were evicted, while two moved to another unit and two moved out of the building. (Kysow et al., 2020). Unfortunately, these studies did not obtain information related to distress or well being for the clients during or after the interventions. Additionally, while the Kwok et al. (2018) study reported a high amount of compliance for fire codes, the staggering amount of missing data (42%) indicates a need for thorough tracking to obtain complete results in the future. These preliminary studies demonstrate promise in reducing clutter in hoarded homes and risk to the resident by using harm reduction as a multidisciplinary team.

### **Assessment of Hoarding**

Mental health clinicians use several measures that focus on cognitions, acquisition, and general hoarding symptoms. The Saving Inventory – Revised (SI-R) is a self-report scale that measures saving and discarding behaviour, excessive acquisition of both free and purchased items, and excessive clutter (Frost et al., 2004). The Saving Cognitions Inventory (SCI; Steketee et al., 2003) and the Hoarding Rating Scale (Frost & Gross, 1993) both concentrate on cognitive aspects of hoarding such as beliefs related to discarding. CBT treatment manuals recommend assessments focused on psychological aspects of hoarding and neglect assessments of conditions in the home. These manuals do mention one measure to evaluate the home: the Activities of Daily Living for Hoarding scale (ADL-H; Frost et al., 2013). This measure has 15 items to assess difficulty in engaging in daily acts like preparing meals, sleeping, and maintaining hygiene. This scale can assess what areas of functioning need intervention and which are causing the most problems (Frost et al., 2013). Notably, the ADL-H does not directly assess conditions in the home but rather assesses functionality of the home (Steketee & Frost, 2013).

Both clinicians and community service providers utilize the Clutter Image Rating Scale (CIR). This scale is comprised of nine pictures of three different rooms (bedroom, living room, kitchen) representing varying levels of clutter. The assessor chooses which of the images reflects the state of clutter volume in the room on a scale of one (similar in appearance to an empty clean hotel room) to nine (clutter piled to the ceiling; Frost et al., 2008). A score of four or higher typically indicates clutter that is severe enough to require clinical intervention. The CIR is practical for use by anyone – including clients – as a low-cost and high-utility tool to quickly quantify clutter volume (Greig et al., 2020).

Although the CIR is easy to use and efficiently communicates valuable information about the state of the home, it only examines clutter volume. It does not speak to the risks in the home or client distress or functional impairment due to clutter (Steketee & Bratitotis, 2020). A home could have clinical levels of clutter volume but nevertheless meet basic health and safety standards. The CIR also does not readily capture reduction in risk after interventions (Tolin et al., 2015; Woody & Steketee, 2014). While the CIR is effective as a measure of clutter volume, this measure is not useful for community agencies who wish to assess the full state of a hoarding situation including environmental factors and the context of the home.

The HOMES Multidisciplinary Hoarding Risk Assessment is a useful checklist of health and safety risks in hoarded homes but does not quantify severity of risk. The HOMES checklist assesses five domains of risk impacted by hoarding behaviour: health-related household conditions, obstacles to movement in the home, the client's mental state, vulnerable occupants, and structural safety (Bratitotis et al., 2011). For example, health-related household conditions include the ability to use a bathtub or shower, prepare food, and sleep in a bed. Any provider can use the HOMES with no special training, and this measure is useful to communicate information

in an interdisciplinary setting (Luu et al., 2018). A downside of the HOMES is that it can be ambiguous, as the absence of a checkmark could indicate either missing data (due to inability to access some areas of the home) or lack of a problem (Luu et al., 2018). The checkmark format of the HOMES is also not helpful in measuring change over time due to its dichotomous rating and lack of scoring. Overall, the HOMES is a good measure to evaluate some risks in the home for intervention planning purposes, but it cannot be used to determine the effectiveness of interventions.

The Uniform Inspection Checklist (UIC; Matthews, 2017) was developed in collaboration with peer advisors and a hoarding task force who regularly inspect hoarded homes. This tool focuses on aspects of the home related to health, safety, and sanitary conditions. Some examples include accessibility of windows, functioning of appliances essential to daily living, and a lack of expired foods. These items fall into eight sections representing different areas of the home and general health and safety concerns. Assessors evaluate the items in the eight sections to determine if conditions in the home meet standards (pass) or do not meet standards (fail) and then indicate the priority of intervention for these different items (Matthews, 2014). This measure evaluates health and safety in the home and supports the creation of an intervention plan, but it does not indicate severity of risk or measure change due to intervention.

As this review makes clear, there are formal assessments for health and safety, but there is no agreed-upon practice of which measures service providers should use for risk assessments. For example, the Gatekeepers program in Hamilton, ON uses an organization-specific structured tool, HART uses the CIR and the HOMES, whereas Metro Housing Boston uses both established measures and an organization-specific assessment tool (Bratiotis et al., 2019). Furthermore, CBT treatment studies sometimes involve formal assessments of functional interference, but this is not

common practice. The ADL-H and the Sheehan Disability Scale (SDS) were noted by Tolin et al. (2015) to have been used in some CBT trials, but these were the only functional scales used. Bodryzlova et al. (2019) mentioned these functional measures in their review of the literature, but some reviewers do not place much of an emphasis on functional or home-related assessments, for instance Rodgers et al. (2021). The difference in measures used and the conceptualization of functional impairment expands the gap between clinical and community assessments. Although there is some overlap in measures and tools used by different agencies, no tool is used consistently by all providers, and the current measures do not cover all the uses necessary for intervention, limiting their usefulness.

A new assessment strategy for risks in hoarded homes is necessary to facilitate better interdisciplinary communication, assess treatment outcomes, and inform intervention planning. While some community agencies use harm reduction to reduce risk in hoarded homes, there are no guidelines on how to implement this intervention or what aspects of the home to target. An important knowledge gap is the efficacy of this intervention for hoarding behaviour, what factors might increase its effectiveness, or which clients would respond best. Having a measure to assess outcomes would support the development of evidence-based guidelines for intervention in hoarding. Finally, mental health clinicians could integrate this measure as part of their normal practice of assessment.

### **Achieving Consensus with the Delphi Method**

The creation of a new measure for hoarded homes must reflect the practical knowledge of those working with this community in conjunction with the current research literature about hoarding. Service providers are trained to determine environmental risks in the home related to their specific field but may not appreciate the value of a consistent and structured approach to



assessment. Psychologists and many others in the mental health field, on the other hand, have knowledge about hoarding and basic assessment practices but lack training on relevant environmental risks to assess in the home. Most current tools for hoarding were created by researchers and mental health professionals, indicating that the perspectives of clinicians are already prevalent in assessment measures. However, the involvement of community providers is necessary to ensure that the measure reflects environmental risks relevant to the broader community. The first step in creating such a measure is determining the highest priority assessment items and specific safety standards necessary for hoarded homes through expert consensus.

Consensus from those in the community who will use this tool and clinicians who have created measures in the past will contribute to the creation of a valid and reliable measure to use in hoarded homes. As clinicians and various service sectors differ in what they assess, discussion and consensus across disciplines will help to eliminate blind spots and provide a list of items that a generalist should evaluate in the home. Furthermore, consensus will provide a measure to facilitate multidisciplinary collaboration by providing guidance on what the team should assess. Without this consensus and integration of opinions from all these providers, some critical areas of the home may go unassessed, increasing the risk to the occupants and neighbours with shared walls. By obtaining consensus on inclusion of items from specialists, the tool that we create will cover the items that are necessary for a generalist to assess in hoarded homes.

Originally created by the RAND Corporation to obtain aggregate data and collect information from experts for the United States Air Force (Keeney et al., 2011), the Delphi method facilitates the development of consensus among experts based on their practical experience (Hsu & Sandford, 2007). Panelists who are experts in their field complete repeated

iterations of a survey about a particular topic (Dalkey & Helmer, 1963). After each round of the survey, panelists receive controlled feedback from each round that shows panelists' anonymous ratings and rationale for those ratings as well as statistical aggregation of panelist responses (Rowe & Wright, 2001). The goal is that ratings in each round are informed by the panelists' answers in the previous round to achieve consensus by repolling the experts after they consider the feedback (Dalkey & Helmer, 1963).

The Delphi method is particularly useful for questions in which there is no a definite answer (Lindeman, 1975). Additionally, if human judgment is the only source of information for a problem, the Delphi method can facilitate discussions (Rowe & Wright, 1999). The anonymity of the surveys and the use of controlled feedback facilitates the reduction in groupthink and group pressure (Hsu & Sandford, 2007). The Delphi method also inhibits outspoken individuals from dominating the discussion in group settings (Sames, 2003).

Limitations are also present for the Delphi method. There are no set guidelines regarding selecting experts for this process or for conducting Delphi studies in general (Keeney et al., 2006). Furthermore, attrition is a common problem in Delphi studies (Humphrey-Murto & de Wit, 2018). One potential reason for attrition is not understanding the feedback provided, meaning that it is important that participants understand the statements they receive during the rounds (Belton et al., 2019). There has been difficulty in replicating results from Delphi studies (Sames, 2003), raising some concerns over this method. Despite these limitations, the Delphi method is valuable to obtain information from experts on a topic that does not have a definite answer while inhibiting potential biases from group discussion.

### **Current Research**

This project used the Delphi method to obtain consensus from community experts on

the most important environmental risks to assess in hoarded homes. The initial round of the survey was developed through a scoping review and an expert interview study as preparatory work. This project was composed of two studies: Study 1 used the Delphi method to obtain the perspectives of expert community providers from a range of disciplines, and Study 2 assessed content validity of the resulting measure. Together, these studies aimed to:

1. Identify critical items to assess in hoarded homes to ensure basic health and safety,  
and
2. Evaluate the clarity, practicality, and relevance of the developed risk assessment  
measure.

## CHAPTER 2

### Study 1: Delphi Poll

This study used a modified Delphi approach to obtain consensus on which aspects of a hoarded home are crucial to assess for health and safety risks. While a traditional Delphi includes a qualitative first round to generate a list of survey items, a modified Delphi entails an extensive review of the literature to create a structured questionnaire (Keeney et al., 2011). Previously, our research team conducted a scoping review and expert interviews that informed the survey items for the first round. The scoping review focused on community harm reduction targets and strategies related to hoarding and identified 147 relevant documents of both published and unpublished literature, including articles about measures such as the HOMES and the Uniform Inspection Checklist. The expert interviews were structured conversations between a researcher and interviewee, both with extensive knowledge about community-based interventions for hoarding. Finally, the researchers' own experience in partnering with community organizations doing work with hoarding also informed the first round of the Delphi survey.

The Delphi method aims to achieve expert consensus by providing feedback about the panel's responses in earlier rounds to inform panelists' ratings in subsequent rounds (Hsu & Sandford, 2007). We defined consensus as more than 75% of individuals choosing the same response for a question (Diamond et al., 2014). The Delphi method conducts future rounds until there is agreement among the experts. After each round, researchers aggregate the results and items that did not obtain consensus continue to the next round. This study used three rounds, which is usually sufficient to achieve adequate consensus (Hsu & Sandford, 2007). Feedback for each round involves statistical data showing how panelists responded in the previous round (Keeney et al., 2011). Including comments of respondents' rationale for their rating facilitates

panelists changing their opinions more effectively than presenting statistical information alone (Rowe & Wright, 1996). In addition to presenting panelists' comments about their ratings, this study presented pie charts of response frequencies for each item to ensure that panelists could interpret the information even without statistical knowledge (Belton et al., 2019).

### **Advisory Team**

Khodyakov et al. (2020) suggested using an advisory board composed of stakeholders for the Delphi method as it can improve study content as the members assist in defining important concepts. The present study was a collaborative effort with an Advisory Team composed of relevant members of the community. This team consists of three individuals from the research team, a person with lived experience of hoarding, and community partners. In total, there were 10 members from British Columbia, Ontario, Alberta, and California. These partners provided essential input during the development of the project, including advice on items to include, recruitment procedures, and how to provide clear instructions for the providers.

### **Method**

#### ***Participants***

Delphi panelists must have a high level of experience related to the field as well as the ability to contribute practical insight (Pill, 1971). This study recruited service providers who had direct professional involvement in either the assessment or intervention of at least five hoarding cases in the past two years. Some exceptions were made, for example highly experienced hoarding experts who recently retired might have seen fewer cases in the previous two years despite having decades of experience prior to that; expertise was ascertained through phone conversations.

The panel consisted of 34 panelists from the United States and Canada, including experts from Alberta, British Columbia, Manitoba, and Ontario as well as California, Massachusetts, New York, and Washington. Panelists represented a range of service sectors including allied behavioral health, housing, first responders, code enforcement, animal welfare, and professional organizers. Attempts were made to recruit panelists from law and protective services, but these efforts were not successful, which is not surprising, as these two sectors are more rarely involved in cases of hoarding, so it is unusual to find professionals from these sectors who are highly experienced with hoarding.

### *Measures*

This survey asked participants to rate the importance of assessing potential risks in hoarded homes related to basic standards for health and safety (e.g., blocked stairs, combustibles near heat source). After the informed consent, panelists provided their age, gender, province or state, the number of hoarding cases they had seen professionally, and years of experience in their service sector. Care was taken to ensure a Grade 10 reading level for both the consent form and survey instructions. As shown in the screenshot in Appendix A, panelists rated each item on a scale of one to three where one indicates the item is critical for every service provider or care provider to assess and three indicates that the item is not a priority for basic health and safety standards. A textbox for comments was provided for each item so that panelists could provide a rationale for their rating, suggest alternate terminology that would be more typically used in their field or suggest other items that should be assessed. As recommended by Hsu and Sandford (2007), we used this feedback to improve the comprehensiveness and usability of the items. Appendix B shows the items presented in the first round.

## *Procedure*

Panelist recruitment efforts began with community organizations and individual service providers who have partnered with the researchers over the past 10 years, for example hoarding task forces, first responders, and psychologists. From that point onward, recruitment was by snowball sampling. Prospective panelists who contacted the lab were screened by telephone to confirm expertise and to determine their service sector. Three experts completed a pilot version of the survey: two from the housing sector and one occupational therapist and provided suggestions on how to better explain the Delphi purpose and procedure. The survey was presented on the Qualtrics platform hosted by UBC.

The study was launched once we had recruited 40 participants and had good representation across sectors; 34 panelists completed the first round. Before each round, participants attended a 15-minute videoconference orientation meeting led by an investigator and a graduate research assistant. These sessions began with an instructional PowerPoint presentation pre-recorded by the principal investigator. The presentation described the purpose of the Delphi and explained the instructions for that round of the survey, using screenshots and animations. In Rounds 2 and 3, the presentation explained the feedback that would be provided and explained how to interpret it. After the presentation, panelists' questions were answered, and the link to that round of the Delphi poll was provided. Instructions emphasized the limited space on this tool and that only the most critical items could be included. Panelists were asked to confine their discussions about the Delphi to the comments sections within the survey rather than having any back-channel conversations that would not be accessible to all panelists. These orientation sessions intended to create a more interactive feel to the project to reduce dropouts.

Items that obtained consensus (75% of respondents chose the same rating) were eliminated from subsequent rounds unless panelist comments suggested that substantive revisions were necessary to improve the item. Researchers edited items that did not achieve consensus according to panelists' comments and curated the rationale comments for concise presentation to panelists in the subsequent round. For each item that had not obtained consensus, we included one to three panelist comments explaining their reasons for rating the items the way they did. The uniqueness, understandability, and frequency of the rationales were considerations when deciding which comments to present to panelists.

Attrition is often a problem across the multiple rounds of a Delphi study (Belton et al., 2019; Humphrey-Murto & de Wit, 2018), so this study took several steps to retain and engage panelists. Frequent email communication boosts response rates (Turnbull et al., 2018) and reduces attrition (Belton et al., 2019), so we emailed panelists often between rounds and during the recruitment period. Each round of the survey was open for two weeks, and panelists who had not yet completed the survey after a week received a reminder email. After each round, we provided an email update on the status of the project and next steps. Panelists were invited to contact a research assistant to answer any questions from participants about problems during the process. The goal was for participants to feel like part of a team working towards a shared goal of creating a measure of risk assessment for hoarded homes. We also carefully monitored sector representation as the rounds progressed; only four panelists failed to complete all three rounds, and attrition did not impact sector representation.

Frequency distribution tables were generated to examine each question to determine the degree of consensus. If an item did not have 75% consensus after three rounds, the research team examined the scores and the comments from each round to decide whether to include the item in



the measure. As a general rule, if 75% consensus had not been achieved, decisions to retain or eliminate an item followed the majority of scores.

## Results

### Round 1

Round 1 included 43 items. As some participants left their survey open for days, calculations of the estimated completion time used a 12% trimmed mean to remove the most extreme values. Round 1 took approximately 38.65 minutes ( $SD=23.68$ ).

**Demographics.** The 34 panelists who completed Round 1 were predominantly from allied behavioural health. Table 1 lists the number of panelists from each sector. Most experts ( $n = 14$ ) had experience with at least 100 hoarding cases. Of the remainder, 11 had seen 26 to 99 cases and nine had participated in five to 25 cases. There were 26 female panelists (76%), seven male (21%) and one non-binary/third gender panelist (3%). Panelist age varied from 29 to 70 years ( $M=46.29$ ,  $SD=12.05$ ), and panelists had 2-30 years of experience with hoarding ( $M=11.07$ ,  $SD=7.35$ ).

**Consensus.** In Round 1, panelists showed consensus judgments on only six items and rated them all as critical to include; the other items did not have consensus. These results are in Table 2. However, one of these six items was modified due to panelist comments and went on to the second round despite achieving consensus.

**Table 1**

*Panelist Sector*

	Number of Participants			Round 3 Percentage
	Round 1 ( $N = 34$ )	Round 2 ( $N = 31$ )	Round 3 ( $N = 30$ )	
Animal welfare	2	2	2	7%

Code enforcement	6	5	5	17%
First responder	1	1	1	3%
Allied behavioural health	19	17	16	53%
Housing	5	5	5	17%
Professional organizer	1	1	1	3%

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### **Round 2**

Round 2 contained 44 items in total: 34 original items that had not gained consensus in Round 1, two compound items without consensus that had been split into three simple items each, and one compound item with consensus that had been split into two simple items. The estimated completion time as per the trimmed mean was 46.51 minutes ( $SD=16.38$ ). As shown in Table 1, of the 34 Round 1 panelists, 31 went on to complete Round 2.

### **Table 2**

#### *Consensus Items*

	Panelist Agreement	Round Consensus
<b>“Critical” Items</b>		
1. Ability for emergency responders to enter (with equipment)	97%	Round 1
3. Exterior doors accessible (can open at least 90°)	85%	Round 1
4. Stairs are safely usable	93%	Round 3
5. Main pathways within daily living spaces are at least 3 feet (90 cm) wide	87%	Round 2
6. Hallways allow emergency egress	83%	Round 3

9. Stove has 1-foot (30 cm) clearance and oven is clear	82%	Round 1
10. Fireplace has 1-foot (30 cm) clearance or is disabled	87%	Round 2
11. Heaters/radiators have 1-foot (30 cm) clearance*†	79%	Round 1
12. Space heater (if present) has 3-foot (91 cm) clearance	84%	Round 2
13. Smoke detectors work and have 1.5 feet (45 cm) clearance	85%	Round 1
16. No open flame used as a heat source (e.g., kerosene lantern, barbeque grill, fireplace)	85%	Round 1
18. No combustible items (e.g., clothing, cardboard) beside or on top of heat source	94%	Round 2
25. Carbon monoxide (CO) alarms work and have 1.5 feet (45 cm) clearance	87%	Round 3
34. Floor boards, stairs, porch are stable	81%	Round 2
38. No evidence of electrical problems (e.g., overloaded circuit)	77%	Round 2
39. In-home care services can be provided	80%	Round 3
40. Medical equipment can be used*	81%	Round 2
41. Medications accessible	84%	Round 2
43. Hazardous materials (e.g., fireworks) properly stored	87%	Round 2
11a. Radiators have clearance	93%	Round 3
11b. Furnace has clearance	97%	Round 3
20b. Heating is usable in winter	81%	Round 2
21a. Access to usable toilet	83%	Round 3
“Important” Items		
7. Interior doors passable (can open at least 90°)	84%	Round 2
8. Stacks or piles no more than 4 feet (120 cm) high	77%	Round 3

15. Extension cords are not coiled or under combustible materials (e.g., clothing, cardboard)	81%	Round 2
26. Absence of mold, mildew, or chronic dampness	87%	Round 2
27. No spoiled or rotting food	90%	Round 2
28. No excessive garbage build-up	90%	Round 2
31. No standing water	80%	Round 3
32. No evidence of insect or rodent infestation	90%	Round 2
33. No contaminated objects (e.g., used toilet paper or tampons)	81%	Round 2
35. No water damage on floors or walls (e.g., caving walls)	77%	Round 2
36. Roof does not leak	81%	Round 2
37. *No evidence of plumbing problems (e.g., clogged drain, leak)	90%	Round 2
20a. Electricity is functioning	77%	Round 3
29. No visible water leaks	80%	Round 3
“Not a Priority” Items		
23. Washing machine, clothes dryer (if present) are usable	91%	Round 2
30. No foul odors	77%	Round 3
42. No accumulated clutter outside the residence (e.g., porch, yard, common area)	84%	Round 2

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Note: Items marked with \* were modified based on comments. Items marked with † were modified to be included in the next round.

**Consensus and stability.** As shown in Table 2, there was consensus on 22 of the 44 items presented in this round. The remaining 22 items carried over to Round 3. Three of the items that we examined had a change of less than 15% in score from Round 1 to Round 2. Even

though these items showed little evidence of change in opinion, some of the panelists' comments seemed likely to be persuasive. Accordingly, these items were included in the final round.

### ***Round 3***

Round 3 included 22 items. This round took approximately 35.4 minutes using a trimmed mean ( $SD=19.66$ ). Only one panelist from Round 2 failed to complete Round 3 (due to scheduling conflicts). Consensus was obtained on 12 of the 22 items (shown in Table 2). The 10 items that did not have consensus can be found in Table 3. Two of the items had a change of less than 15% in score from Round 2 to Round 3. This was taken into consideration when determining the items to maintain for the final measure.

### ***Delphi Comments***

Throughout the rounds of the Delphi, panelists commented on the items to describe the reasons behind their ratings, suggested modifications or new items, and any other thoughts they wanted to share. The following sections describe some of these comments and how they influenced the measure.

Table 3

Non-Consensus Items

Item	<u>Round 1</u>			<u>Round 2</u>			<u>Round 3</u>		
	Critical	Important	Not a Priority	Critical	Important	Not a Priority	Critical	Important	Not a Priority
2. Sleeping room(s) have unobstructed emergency exits	50%	41%	9%	26%	45%	29%	57%	43%	0%
14. Electrical appliances and cords are in good condition (no exposed or frayed wires)	41%	53%	6%	42%	48%	10%	60%	40%	0%
17. Resident does not smoke in the home	18%	53%	29%	13%	58%	29%	7%	70%	23%
44. Hot water tanks have clearance	N/A	N/A	N/A	42%	45%	13%	37%	63%	0%
19. Access to safe and secure sleeping space	9%	38%	53%	6%	29%	65%	7%	20%	73%
20c. Hot water is functioning	N/A	N/A	N/A	10%	58%	32%	3%	63%	33%
21b. Bathtub/shower is usable	N/A	N/A	N/A	3%	58%	39%	0%	57%	43%
21c. Sink is usable	N/A	N/A	N/A	19%	52%	29%	3%	73%	23%
22. Kitchen appliances (refrigerator, freezer, stove, oven) are usable	29%	53%	18%	3%	61%	35%	0%	47%	53%
29. No visible urine or feces	38%	53%	9%	23%	61%	16%	37%	63%	0%

A primary purpose of the comments was to facilitate discussion among panelists to reach a thoughtful consensus. These comments are described below in more detail.

Fire safety was frequently rated as critical to assess, as the consequences of ignoring fire risks can be grave. Panelists made it clear that the increased risk of fires in hoarded homes is an essential consideration that must be assessed. One type of comment focused on clearance from “obvious heat/ignition source[s]”, as panelists noted fire codes and regulations. A second example of is window clearance for emergency exit as one provider stated, “at least 1 window in each room is standard code in many places” (Round 1). Items related to fire safety obtained consensus quickly, so that few comments were presented to the panelists. Instead, the focus in subsequent rounds was on less well-known fire risks, such as those related to electrical cords (e.g., “Compressed cords can start fires because there is no space for the heat to dissipate. This has killed people in hoarded homes in our area on multiple occasions”, Round 2). Another related comment was, “People do not understand that fraying cords are not the only risk.” (Round 2).

Panelists also frequently commented on clear pathways for emergency exit, for emergency response personnel to enter the home, and for preventing trips and falls. First responders require space for their equipment, at least the “Minimum space needed to get stretcher in; firefighters with gear” (Round 1). Panelists had some disagreement about sleeping room windows being unobstructed for a “Quick escape in the event of a fire wherever household members sleep” (Round 1). Other panelists did not think having a clear window was essential if “windows could not be used as exits” (Round 1) such as in high-rise apartments. Risks of tripping or falling also provoked disagreement, with some panelists pointing to the importance of

clear pathways (ex. “critical because of the risk of falls”, Round 1), but others noting, “Not critical as paths can be widened, items pushed out of the way, as needed” (Round 2).

Comments related to health and squalor had two main categories: risk of illness from squalor and health problems that may be exacerbated by home conditions. The resident’s health was the central concern related to these items. For instance, a carbon monoxide detector is critical because, “of this silent killer's nature, this is true of all cases, and not just hoarded homes” (Round 3). Another type are comments was biohazards in the home created due to pest infestations, urine or feces present in the home, not having a working toilet, or excessive accumulation of garbage. A working toilet is essential: “Persons in hoarded homes that cannot access the toilet will go in the home no doubt which poses health risks for all” (Round 3). Residents can experience deteriorating health conditions if in-home health care services are denied. One provider emphasized, “I spend countless hours trying to get supports who then refuse to go in due to conditions (yet we continue to have to see client and try to problem solve). These lack of supports very often lead to death or hospitalization” (Round 3).

A set of comments that was unexpected focused on clearance to conduct repairs on appliances. Smoke detectors were one of these items where clearance was needed not only to allow the appliance to function, but also to “access to change batteries” (Round 1). A similar comment was made for the stove as clearance allows for “repairs” and to “view outlet” and “cords” to ensure they are in working condition. Comments related to repairs were not as high on the priority list for some providers but does demonstrate a unique consideration for those from certain fields.

For each round, researchers modified items ranging from simple clarifications, complete rewording, or separating the items into further items. In Round 1, 13 items were edited to clarify



meaning, whereas six items were modified in Round 2. Based on panelist comments, one item (“Air vents are unobstructed”) was removed as irrelevant. Compound items (e.g., “heaters/radiators”) were separated into multiple simple items (e.g., “heaters” and “radiators”) so panelists could rate the priority of individual. Based on panelists’ comments, 10 new items were added for Round 2 and none for Round 3. The second-round items are in Appendix C, whereas Round 3 items are in Appendix D.

A few examples will illustrate the type of clarification panelists recommended. Some panelists recommended more detail to clarify the risk. For example, one participant suggested to, “Rephrase to include human feces or urine?” for the item referencing “No visible feces (outside of a pet’s box)” (Round 1). The item was changed to include urine as well, and the “pet’s box” part was deleted. Panelists also debated the relevance of items pertaining to rooms or appliances that are not in use. The addition of “through daily living spaces ” modified the item about clear pathways. Similarly, “Fireplace has 1 foot (30 cm) clearance” was modified by adding, “or is disabled” to ensure the appliance is safe.

Panelists objected to some quantifiers (“clear”, “safe”, or a specific unit of measurement) due to their subjectivity or lack of feasibility to assess. One panelist remarked, “Not sure what defines ‘clear’ versus navigable” (Round 1). Similarly, panelists stated that stairs only need to be clear enough for certain tasks such as, “clear enough for emergency access and movement, but not completely clear” (Round 1). This item was changed to “Stairs are safely usable”, and other items were altered in a similar way to indicate egress. For some items related to heat sources, specific distances included in the items caused tension. Some participants did not like the clearance measurements (ex. “tripping up on the 3 feet again - 'has sufficient clearance' might be better”) whereas others advocated for this clearance (ex. “3 feet clearance to any ignition source-

heater, fireplace, stove, baseboard heater, etc.”). Due to this disagreement and the hope to evaluate the importance of the risk separate from the details of the distance, we removed some of these measurements for Round 3 and then later held a formal consultation about the appropriate distances with fire and building inspectors who had served as panelists. These experts are aware of the regulations and laws for distance requirements to ensure safety in the home. One item, “Sprinkler head clearance”, was added at this point based on fire inspector recommendations during this consultation.

Researchers curated the comments for presentation to panelists in the subsequent round to filter out those that did not reflect the intended generalist nature of the tool, simply stated agreement with previous comments or labeled the category, or that were difficult to comprehend. Many of the comments included five words or less, while others simply labeled the type of concern, for instance fire safety, health risk, or lack of egress. Some of the panelists offered a rationale that was particular to their setting rather than broadly applicable (e.g., “perspective from multi-agency – health perspective”). In the second and third rounds, many panelists simply indicated “agree with previous comments” without adding new content; this type of comment was not presented as part of the feedback panelists received.

A common type of comment that was not presented as feedback involved how risk *severity* would be appraised, rather than whether a given item *should be assessed* for level of risk. An example of this type of comment is the observation that risk associated with stacks or piles of items depends on “sturdiness” and “stability”, and risk associated with some pests, such as bedbugs, are more critical than others. Panelists remarked that only one of a given amenity is required (e.g., “At least one working toilet or means to void”, Round 1) and deliberated about the priority of some risks. For instance, one panelist said, “I’ve struggled with this one. If the

hallways lead to rooms that are being used, then this is critical. If they lead to unused rooms, important but not critical” (Round 3). These comments demonstrate the challenge that panelists faced in judging the content of the items without seeing the context of the format and structure of the measure (which had not yet been developed at the time of the Delphi) as well the need for training to develop professional judgment about factors that increase the severity of items such as the presence of multiple amenities and which pathways are cluttered.

### **Delphi Discussion**

The priority of the Delphi study was to determine critical items to include in the measure and to exclude items that were not a priority. Of the items presented to panelists, 23 were critical with consensus, 14 were important, and three were judged as not a priority. The items with the most consensus were related to fire safety, and most often these risks were rated as critical. Items related to egress were the second most likely to obtain consensus. The items that had the least consensus were those related to health and wellness in the home. This is likely because these items are not set out in regulations, are more subjective to assess, and are perhaps less commonly assessed in current practice.

All items judged as critical were retained for the measure, and all items rated as not a priority were eliminated. Items that were important and 10 items without consensus were reviewed by the researchers once the Delphi process was complete. To make decisions about whether to include these items in the measure, we evaluated the panelist ratings across rounds, the comments, and the final score distribution. As a general rule, items were excluded if fewer than 10% of panelists rated it as critical in the final round, but some items were modified based on the Round 3 comments and retained. In total, 31 items remained and were included in the draft measure. These items are in Appendix E.

The Delphi process informed the researchers about what risks to include in the measure as well as how panelists thought through the process. A central point was that panelists found comments helpful to change their responses but also to stand firm in their decisions. For the final round, one person commented, “I am the minority but even after 20 mins of thinking and a discussion with a colleague, I am maintaining my position that this is critical” in reference to stacks and piles higher than 4 feet. Even though their rating did not agree with the majority, they stood firm in their position and were not swayed by the group process. This suggests the panelist deliberated very seriously to ensure they were providing accurate responses.

Panelist comments also touched on a larger debate about what community service providers have legitimate authority to assess or require in a client’s home. Which risks *must* be addressed relates to enforcement power and local legal standards. This was particularly the case for fire safety. Housing type is related to these legal codes and enforcement, such as in the case of a person who owns their home. Landlords have some power to enforce safety in their tenant’s home. However, clients in their own homes can choose to live without some amenities and conditions related to health and safety, such as having a safe sleeping space, functioning electricity and hot water, or water leaks. Without codes or regulations, providers are left without the “legislative ‘teeth’ to do anything about it”. In relation to some items that were not part of by-laws or codes, some panelists stated, “I would feel really uncomfortable telling someone what they can and cannot do in their own home”.

Panelists made it clear that training would be a key part of the implementation of this measure. Throughout all the rounds panelists noted that they would not know how to assess some of the items, or that people in other fields would likely be unaware of how to assess them. Several example items were the functioning and appropriate clearance for carbon monoxide

detectors, structural integrity (floorboards, stairs, porch are stable), evidence of electrical problems (e.g., overloaded circuit, buried cords), and storage of hazardous materials. Some of these items “might be tough to observe in person” or “aren’t visible until you have started decluttering and items have left the home”. This was noted particularly for “initial visit[s]” as it can take some time to declutter and recognize some of these problems. Relatedly, some panelists pointed to items that are “not something I check in my field”, which demonstrates that overall risk assessments for hoarding might not yet be a common practice, as many providers only assess the areas that are related to their mandates. One panelist in Round 2 observed, “[T]his is all making me think that training for those who will be using the finalized assessment tool would be critical, to help expand generalist knowledge from all areas like code enforcement, first responders (how to check CO detectors, etc.) and the type of equipment that should be brought in- measuring tapes, etc.”. Training will therefore be essential for accurate assessments of risk in the home.

The Delphi process enabled us to create a risk assessment tool to be used in hoarded homes. Through this study, providers emphasized the potential fire, structural, health, and safety risks that can be detrimental to residents, neighbours, and anyone who enters the home. This focus on safety and the in-depth participant engagement demonstrates the importance that panelists place on this issue and their desire to aid in the creation of this tool. With the knowledge garnered from this study, the research to develop this tool moved to assessing content validity.

## CHAPTER 3

### Study 2: Assessment of Content Validity

In consultation with the Hoarding Research Partnership Advisory Team and on the basis of the results of the Delphi study, researchers created the Home Environment Assessment Tool for Hoarding (HEATH). Researchers took inspiration for the format from the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Goodman, Price, Rasmussen, Mazure, Delgado, et al., 1989; Goodman, Price, Rasmussen, Mazure, Fleischmann, et al., 1989). Like the Y-BOCS, the HEATH begins with a checklist that is an overview of content (symptoms in the case of the Y-BOCS and risks for the HEATH) that will subsequently be rated on a severity scale. Furthermore, the Y-BOCS has separate sections for rating severity of obsessions and compulsions, similar to the HEATH which includes five domains to guide the assessor in rating the problem areas. Both members of the research lab and the Advisory Team independently grouped the items into conceptual domains and offered potential names for these categories. This information was reviewed and synthesized to represent five categories: Fire Safety, Health and Wellness, Structural Integrity, Squalor, and Safe Pathways.

The Content Validity Index (CVI) provides an indication of strength of evidence for content validity. Assessing content validity was of particular importance for this project to confirm the results from the Delphi survey. The CVI assessed the evidence of content validity of individual items on the scale (I-CVI) and of the entire scale (S-CVI; Lynn, 1986). Overall, the I-CVI provides researchers with information on whether experts judge each item to be related to the intended construct (Polit & Beck, 2006). The S-CVI indicates the strength of content validity evidence for the entire scale (Polit & Beck, 2006).

Experts who had not participated in the Delphi study were recruited to rate the relevance, practicality, and clarity of each item of the HEATH. Participants also rated each domain, the instructions, rating scales, and the overall measure. As the scores are dichotomized to obtain content validity scores, a four-point Likert scale (with no neutral response option) was used as recommended by Davis (1992). Participants are also invited to comment on any aspect of the measure including the items, the categories, or the other sections of the survey.

## **Method**

### ***Participants***

Study 2 recruited experts who have worked with hoarding for at least three years and who did not participate in the Delphi poll. The recruitment procedures and criteria were similar to the Delphi survey except for three differences. The first was that we wanted more expertise as the number of participants was going to be half that of the Delphi, therefore we recruited those who had seen at least 10 hoarding cases within the past three years, although exceptions were made in the case of recently retired experts or those who had not actively evaluated hoarding cases in the past three years because of circumstances such as the COVID-19 pandemic. Recruitment was limited to Australia, Canada, the United States, and the United Kingdom as the health and safety standards in these regions are similar. The wide range of regions will hopefully play a role in ensuring that this tool will have widespread applicability for assessment of hoarded homes.

This study had 12 female participants (80%) and three male (20%), for a total of 15 study completers. Participant age ranged from 29 to 53 years ( $M=50.33$ ,  $SD=8.56$ ). Participants had from three to 16 years of experience in their field ( $M=9.33$ ,  $SD=3.94$ ), with many having worked with over 100 cases of hoarding (40%). The remaining participants had seen 46 to 75 cases (20%), 15 to 46 cases (27%), or fewer than 15 cases of hoarding (13%). Most were experts from

the disciplines of allied behavioural health or housing. Collaboration with other disciplines was very common with over half indicating they regularly collaborated with other providers, around 20% of respondents collaborating with other providers on half of their cases, and the remainder only occasionally collaborating.

### ***Measure***

Participants completed an online survey that included questions about participant demographics and asked participants to rate the relevance, clarity, and practicality of different aspects of the measure. Lower scores indicate less clarity, relevance, and practicality whereas higher scores indicate the inverse. In addition to asking participants to rate the clarity of the instructions, the survey used a surprise recall test asking participants to explain the instructions in their own words a few pages later. In the final part of this questionnaire, participants rated the clarity and uses of the scale for different settings and types of clients. Experts could make comments to offer insight beyond the ratings about ways to improve the measure. These comments provide perspective from the participants as we move into future phases of the validation of the measure. The instructions and consent form did not exceed a Grade 10 reading level. Appendix F includes a screenshot of the poll.

### ***Procedure***

Recruitment occurred through community partners, our research registry, and snowball sampling. For participants who were unknown to the researchers, a phone screen occurred to confirm expertise. The experts subsequently received an email with a link to the online survey on the UBC Qualtrics platform. The consent form appeared at the start of the survey. Participants rated the practicality, relevance, and clarity of different aspects of the measure; a comments box



appeared at the end of each section. Participants received reminder emails if they had not completed the questionnaire after one week.

### ***Data Analysis***

The I-CVI (item content validity index) is the proportion of experts who agree or strongly agree with a statement about the measure (Vakili & Jahangiri, 2018). Accordingly, the I-CVI represents the percentage of respondents who agreed that the area of the survey (e.g., item or domain) was clear, feasible, or relevant to assessment of environmental risk related to hoarding behaviour. An item or domain with a score of higher than 0.79 are acceptable, those with a score of 0.70-0.79 require some modification, whereas any items with a score below 0.70 are unacceptable and should be removed (Vakili & Jahangiri, 2018). For our purposes, other areas of the tool such as the instructions and domains of the measure were scored in a similar way. The scale CVI (S-CVI) is the average of the relevance I-CVI for all the items (Polit & Beck, 2006). For the S-CVI, a rating of 0.90 or higher demonstrates acceptable content validity (Polit & Beck, 2006).

A few pages after rating the clarity of the tool's instructions, the survey presented a free recall test in which participants described the instructions in their own words. The researchers then scored these responses dichotomously based on whether the response showed adequate understanding of the instructions. For instance, someone who simply stated that the instructions described how to "assess risk in the home" would not receive a score indicating understanding, whereas someone who described the steps involved in making the assessment seemed to have understood.

As suggested by Vakili and Jahangiri (2018), we collected comments regarding potential changes to make to the items or scale, and other narrative comments that could add perspective.

Two researchers then evaluated the comments and rationale to determine if any changes should be made to the scale. These results were brought to the larger lab and Advisory Team to finalize the scale.

## **Results**

In the first section of the survey, participants evaluated the clarity of the instructions on the scale. These instructions had a clarity score of 0.86, meaning that 86% of respondents agreed or strongly agreed that the HEATH instructions are “clear”. The surprise recall test suggested that 73% of participants understood and recalled the instructions. These participants clearly articulated all the steps required in using the HEATH. It is not completely obvious as of now whether the remaining participants fully understood the instructions, but this could be something important to focus on in training to ensure an in depth understanding.

Participants next rated the format of the checklist and the rating scale, which both received high scores. The rating scale had a validity score of 1.0, a clarity score of 0.93, and a practicality score of 0.93. The individual item checklist was rated as clear (0.87). This indicated no mandatory changes for these aspects of the HEATH.

A CVI was calculated for each domain, item, and the scale overall. All CVI values exceeded the 0.79 cut-off for acceptability. As shown in Table 4, most domains had perfect CVI scores of 1.0 for relevance and practicality, the only exception being Safe Pathways with a CVI of 0.93 on both these aspects of content validity. Clarity ratings, although not perfect, were very strong for Safe Pathways, Fire Safety, and Structural Integrity. Health and Wellness and Squalor both had perfect agreement (1.0) on their relevance, clarity, and practicality.

At the item level, all Squalor items had perfect (1.0) scores on clarity, practicality, and relevance. These are likely commonly encountered and objective problems that providers see

when going into hoarded homes, making them easy to recognize and important in the minds of providers. The Delphi procedure had resulted in items that participants judged to be relevant to assessing environmental risk in hoarded homes; only two items did not have perfect scores in this category, “Furnace/hot water tank has 3-feet (1m) clearance” and “In-home care services can be provided”. The latter item had a practicality CVI of 0.80, relevance 0.93, and clarity of 0.87.

**Table 4**

*Content Validity Index Scores for Domains and Individual Items*

Domain	Feasibility	Relevance	Clarity
Safe Pathways	0.93	0.93	0.93
CVI Range for Items	1	1	0.93-1
Fire Safety	1	1	0.93
CVI Range for Items	0.87-1	0.93-1	0.93-1
Structural Integrity	1	1	0.87
CVI Range for Items	0.87-1	1	1
Health and Wellness	1	1	1
CVI Range for Items	0.80-1	0.93-1	0.87-1
Squalor	1	1	1
CVI Range for Items	1	1	1

Examples of items that did not have perfect agreement on clarity include “Emergency responders can enter (with equipment)” and “Hazardous materials (e.g., fireworks) are stored in the home,” which both had scores of 0.93. Seven items did not have perfect feasibility scores including “Extension cords coiled or under combustibles (e.g., clothing)?” and “Obvious leak in

the roof”. For items without perfect feasibility or clarity scores, the comments centered around having more objective standards or training to be clearer about how to assess these risks. Furthermore, participants noted the challenges of assessing some items because the level of clutter in the home can hide or hinder visual inspection.

The S-CVI was calculated as an average of the relevance I-CVIs and was nearly perfect with a score of 0.996. As is evident by looking at the relevance column in Table 4, participants found the items on this measure to be relevant to assess risk in hoarded homes.

Participants all (100%) agreed that the purpose of the instrument was clear and that the tool was organized in a coherent way. They also all indicated that they could see themselves using this tool for clients who are open to assistance as well as for those who are resistant. The mean rating from providers was 4.4 out of 5 indicating whether the provider could see themselves using the tool. Participants were unanimous in their view that the HEATH would be useful to track progress on hoarding-related interventions and to communicate with other professionals. Participants’ most frequent cross-disciplinary collaborations were with housing inspectors and social services. The least frequent collaborations were with animal welfare workers. Based on their experience, all participants agreed that this tool would be useful for fire inspectors and housing inspectors, and 88% of participants believed this tool would be useful for mental health services. Most participants also agreed on the utility of the HEATH for social service (81%), animal welfare workers (80%), and health services (79%).

### ***Participant Comments***

Comments from the experts were helpful to make changes to clarify the language of the tool. Some of the comments recommended simplifying the “dense” instructions. One participant queried, “What is the ‘context of the home’ – I have a guess – but am not sure that everyone

would understand this”. Based on these and other comments, the researchers made revisions to the instructions. We also edited the items to be worded with the same valence in response to one participant’s observation, “Some items listed are positive/desirable (working, have clearance) while some are negative/problematic (coiled/under combustibles)”.

For the 0-2 rating scale for each domain, some providers noted that using a 0 as the lowest number on the scale “implies no risk but with this tool it means ‘low risk’”. I understand that if you are filling this part out you’ve already said there is some risk. The numbering might just confuse people a little bit”. Other providers stated that they liked this scale as “the chunking of low-moderate-high get[s] the general idea of risk” and “is clear and concise”, therefore no other changes were made.

Reflected in the lower CVIs, participants expressed some concerns around “In-home care services can be provided”. Some examples included that “social care services are wide and varied”, “as long as one room or area in the home is able to be accessible for services”, and “what type of in-home care?”. Due to the confusion on this item regarding the type of care services, it was revised to “In home health care or support services can be provided”.

The symbol on the checklist that was used to signal which of the items were a risk in the home presented some challenges. One participant stated that the symbol, “may be misconstrued as ‘Not Applicable’ as opposed to being an area of concern”. Overall, the score on this section was within acceptable limits for inclusion, and neither participants nor the Advisory Team were able to suggest a better alternative symbol, so no changes were made.

Despite minor edits based on participant comments, the expert providers in this study were clear that the finalized HEATH would be useful and essential in their practices. One participant commented, “I think this will be an excellent tool especially for supportive and social

housing providers”. Another said, “I think it is fantastic. It clearly identifies numerous issues that we see in the field. I would use this myself. I also think it would help clients identify hoarding behavior”. Overall, the tool appears useful for a wide range of sectors and allows providers to use the tool for its intended purpose.

### **Content Validity Study Discussion**

All the items from the Delphi study met content validity criteria for retention as all CVI scores were above 0.80. The items in the Fire Safety category had the most wide ranging scores with some high and some lower content validity, but this category had the most items which likely contributed to this variation. The domain with consistently perfect agreement was Squalor potentially demonstrating that these risks are commonly known to be applicable and essential to assess in hoarded homes. The S-CVI was almost perfect, indicating strong evidence for the relevance of these items to assessment of environmental risk in hoarded homes.

On the surprise recall test, only 73% described the instructions accurately. This could mean that while the instructions seemed clear when the panelists read and rated them, the instructions were not memorable as participants moved through other sections in the survey. Furthermore, participants may not have understood the free recall question, as many provided a general response about the purpose of the measure (e.g., “assess the stage of hoarding in a unit”). The overall impression from this result is that providers understood the instructions when reading them attentively, but they did not commit them to memory as they only briefly viewed them for the purpose of assessing their clarity.

Participants in this study made many points related to the use of professional judgment to determine the seriousness of the items and the need for training to evaluate the risks. One example involved egress where participants noted that some areas were more important than

others (e.g., “Some hallways are more important than others”) and that the importance depended on use: “For example I had a family with a second-floor hallway leading to bedrooms where nobody slept – that hallway required a passageway but the specific width was negotiable”. To use this or any other assessment, each provider has to make a judgment about what level of seriousness represents a danger to the occupants and others. Training is required to develop this professional judgment, and participants pointed to information assessors would be looking for to determine risk in the home, such as, “In homes where the floors or stairways have a lot of contents it may be hard to see the stability of areas. It may be helpful to add a little bit about what the assessor would be looking for and how significant for it to be a risk”. The use of this scale by those with expertise in hoarding was not disputed, however one participant stated, “I worry that those receiving a referral with varying different ‘experiences’ might score differently”. The need for training and guidance for those using the scale for the first time was a primary concern among the participants.

The general consensus from participants in this study was that the HEATH is valuable and would benefit them in their line of work. Participants noted that the measure would be useful “with some folks we work with” so they can “discuss as we are completing and take it as an opportunity to educate on what is Fire Safety, Safe Passage, etc.”. The different sections on the tool such as the checklist and the summary rating scale are described as “valuable and able to assess what’s happening in a room”. Specific aspects of the tool, such as the colour coding of the summary rating scale and the checkbox format for the items, aid in this process. Overall, participants thought that the tool would be useful for professionals from a range of discipline and would potentially replace the use of multiple tools to streamline the process of risk assessment.

## CHAPTER 4

### Overall Discussion

The project outlined in this thesis finalized a list of the most important environmental risk items to assess in hoarded homes, thereby developing and beginning to validate a measure to assess these risks. This measure will allow providers to track changes from interventions, improve inter- and intra-agency communication, and ensure more consistent assessments of hoarded homes. Through collaborating with providers from service sectors that work with hoarding, we have created a tool with communicative value for all community agencies to assess dangerous risks in the home. The two studies described in this thesis composed the initial steps necessary to prepare this tool for field trials and further psychometric testing.

The resulting measure created through the Delphi and content validity studies has 32 items within five domains representing the most essential risks to assess in hoarded homes. The items had good consensus among Delphi panelists from diverse sectors. The content validity results were also strong, with high content validity indices for item clarity, relevance, and practicality. The HEATH accordingly represents community providers' consensus on the most essential items to assess in hoarded homes.

#### **Delphi Process: Consensus and Comments**

Consensus is the main goal of Delphi studies to obtain full agreement from panelists, but most studies do not persist until consensus is achieved. This study obtained consensus (at least 75% agreement) and low stability on most of the items, potentially resulting from the use of high-quality comments provided as feedback during the rounds. At the end of our project, only 10 of the cumulative 49 items presented to panelists did not have consensus, which is comparable to earlier studies (Ahmed et al., 2021; Vogel et al., 2019). Complete consensus is



rarely achieved as pointed out by Diamond et al. (2014) who outlined that reaching consensus was the stopping point in only 23.5% of the studies in their review; the vast majority of studies stopped when they had reached the intended number of rounds.

Stability is comparable to consensus in Delphi studies, as it is an indicator of whether an item needs more debate or if panelists have stable diverging opinions. The stability for our study was low, as only five items had less than 15% change in score throughout the whole process. At a glance, this seems like a concerning finding indicating instability in opinions, however there are two things to consider. The first is that stability only looks at the items that have not obtained consensus, meaning that these are items panelists are still deciding how to rate. The second consideration is low stability shows that panelists were influenced by other panelists' comments to change their ratings in a move towards consensus, which is one of the functions of the Delphi method. Therefore, while stability in the context of Delphi can indicate entrenched disagreement, the lack of stability here shows that panelists were working towards coming to an agreement about how to rate the risks. The combination of the low stability and high consensus seems to demonstrate that the comments provided compelling arguments that influenced panelists' responses in each round.

Panelist comments created a discussion forum, with many participants noting that they changed their mind because of the rationales from other panelists. For instance, many comments from the second and third rounds simply stated "swayed by comments" or something of a similar nature. The thoughtful comments also demonstrated panelists' investment in the creation of this tool. Providing high-quality rationales for numeric ratings is key to facilitating consensus in Delphi studies (Bolger et al., 2011). In addition, researchers' curation of the comments provided panelists with implicit guidance about the types of feedback that would be valuable. However,

panelists' comments also made clear that they were simply invested in the topic and happy to share their expertise.

Ratings from the Delphi rounds suggested panelists' certainty about what items were *critical* to assess in hoarded homes but less agreement about which items were *not a priority*. Panelists achieved rapid consensus on fire risks (most often judged to be critical) but showed more variability in their consideration of risks related to health and wellness. This may indicate that fire risks are more common knowledge while health and wellness might be less frequently discussed in the field, leading providers to be less confident about the possibility of imminent threat. Furthermore, health and wellness factors may be more dependent on the resident's context (e.g., age, physical condition), in contrast to fire risks such as keeping combustibles away from heat sources, which are relevant for anyone anywhere. All the items presented in the rounds were developed from other measures and previous literature, meaning that they had all been deemed as important items to assess for one purpose or another. Deciding which of these is "not a priority" was likely a difficult task for panelists.

We achieved excellent retention, losing only four panelists to dropout. Communication was an important strategy undertaken to reduce attrition. Between-round emails reminded participants about the study, informed them of our progress, and discussed the next steps. In virtual orientation sessions, one of the principal investigators explained the feedback. These Zoom orientation meetings also allowed panelists to see each other and to meet the research team in face-to-face meetings, which can reduce attrition (McKenna, 1994). These virtual meetings created a sense of panelists being on a team of experts in which their contribution was valued. The orientation sessions also facilitated panelists scheduling a specific time to complete the survey; most panelists finished their survey directly after the orientations.

## **Content Validity**

The content validity study confirmed the results from the Delphi project of the items that are crucial to assess, with all items that were developed through the Delphi rated as being relevant to assess risk in hoarded homes. These content validity results help to address a frequent critique of Delphi studies, which is poor replicability (Sames, 2003). In this case, the scale content validity had 99.6% agreement on the relevance of the items on the scale, higher than many other studies (Halek et al., 2017; Miller, 2017; Shrotryia & Dhanda, 2019). Participants believed the HEATH is a clear, feasible, and practical tool to use when assessing hoarded homes. All the domains and items showed acceptable to excellent content validity.

Content validity study participants expressed praise for the potential utility of the tool. One comment was, “The tool is well organized and captures all of the required information to determine risks and to guide next steps. It is easy to understand and use and does not require any specialization. I believe that it could easily be used by anyone who encounters hoarding. Very well done. I would use this tool and would encourage others to use it.” Participants also emphasized the usefulness of this measure for creating intervention plans. One comment that explained all these points said, “This is a comprehensive tool that could take place of completing multiple tools and condensing it to one tool. The tool can also allow for those being assessed to gain insight and understand the areas of safety and concern to work on. Tools like this can also help guide everyone involved on developing a plan to address the hoarding situation. I would be very interested in using this tool once completed in our hoarding support program”. Overall, the HEATH appears useful for a wide range of sectors.

## **Panelists**

In Delphi studies, the quality of the panelists is more important than the sheer size of the panel (Wester & Borders, 2014). In our case, high quality meant having highly experienced panelists from different service sectors. First responders and code enforcement have been well represented in previous literature, as fire code violations, clearance from heat sources, and access to fire exits are well-known concerns. Housing providers and inspectors are also often represented as they might encounter squalor or clutter outside of the home more often. In contrast, allied behavioural health professionals, who tend to focus more on the individual's functioning in the home, including access to medication, ability to receive home-based health services, or tripping hazards, are less represented. The combination of all these providers gave us a well-rounded view of the problem. For our content validity study, we recruited highly experienced participants from diverse sectors. The sample of 15 experts was in line with not having too many participants, which can induce conflicts or information overload (Rowe & Wright, 2001). Including these different perspectives increases the external validity of the findings and ensures that the tool was developed in collaboration with end users.

Some researchers (Barrington et al., 2021; Sinha et al., 2011) have advocated for including non-professional participants, such as clients, in Delphi studies when feasible. However, we did not include clients in the Delphi panel because clients would not have had the relevant expertise for knowing which environmental risks are critical to assess. Clients do have expertise about the language and how they might want providers to use the tool collaboratively with them, therefore we decided to consult with clients on these topics in a separate step.

## **Items Included in the Measure**

Fire safety was at the forefront of panelists' thoughts due to the potential fatalities resulting from these concerns as well as regulatory (fire code) requirements. The gravity of fire concerns in hoarded homes is exemplified in a study from Australia that found that 24% of preventable fire-related fatalities occurred in hoarded homes during the period of review, despite those homes representing only 0.25% of fire incidents overall (Lucini et al., 2009). Fire risks are commonplace in hoarded homes because of clutter near heat sources and the high volume of combustible materials. Residents can become trapped in their home because of a lack of egress (e.g., CBC News, 2011, 2013b). The amplified danger and chance of serious injury is a prominent concern demonstrating the need to adhere to fire codes, including working smoke alarms, clear emergency exits, and keeping combustibles away from heat sources (Brisco et al., 2015; Edmonton Hoarding Coalition, 2016).

Unhealthy home conditions can also present risks to the resident. Providers agreed on some important health considerations that arise in hoarded homes, such as accessibility of in-home health care and functioning utilities. Lack of utilities such as water and heat is related to personal hygiene (Steketee et al., 2001) and significant distress and impairment (Tompkins & Hartl, 2009). Without clear pathways and space to provide care, home healthcare or social support services might be refused (Seniors Association of Greater Edmonton, 2013) and the use of medical equipment can be hampered (Bratiotis 2011). Clutter can thereby indirectly create problems with managing medical conditions (Tompkins, 2015). Some Delphi panelists were less immediately aware of these risks, which are particularly important for residents with certain vulnerabilities and can create problems for all clients.

Conditions in the home can also directly create health concerns. Fecal matter in the home can “lead to bacterial issues, therefore [it] is a basic health and safety issue”, in the words of one panelist. Hazards in the home that require assessment include spoiled food, human waste and pests (Patterson, 2014), and any other type of condition that could contribute to disrepair and odors in the home (Bratotiis et al., 2011). These types of unsanitary conditions in the home can cause illness for the resident, attract more pests, and cause a general state of damage to the home (Bratotiis 2011). Eradicating pests in the home can be difficult (Baker et al., 2014) and very expensive (Murphy, 2014).

Falls and injuries due to accumulated clutter are substantive risks, especially because many clients who hoard are older adults. Those who are frail or who use a mobility device to maneuver through the clutter face an increased challenge (Tompkins & Hartl, 2009). Stairs especially need to be clear, as “cluttered stairs are also a tripping and falls hazard” as noted in the Delphi and in previous literature (Saltus et al., 2011; Tompkins & Hartl, 2009). Structural problems, resulting from flooding (Bratotiis et al., 2011) that can lead to in floorboards sagging (J. Baker et al., 2014), can also precipitate injuries in the home. High clutter accumulation is a prime concern for this risk, therefore necessitating strategic removal to prevent injuries. When these risks are found in the home, experts recommend harm reduction strategies to create safe pathways that can be maneuvered to decrease the risk.

### **The HEATH as a New Measure**

The HEATH includes items a generalist should assess in hoarded homes, similar to previous measures such as the HOMES (Bratotiis et al., 2011) and the Uniform Inspection Checklist (UIC; Matthews, 2017). The HEATH represents an advance in that it can be used to track changes due to interventions and provide ratings of the severity of risk in the home.

Accordingly, the HEATH will allow researchers to aggregate data across agencies and to determine the effectiveness of harm reduction interventions for hoarding. The CIR (Frost et al., 2008) is the measure most commonly used by those who are conducting home-based assessment of hoarding, but it does not assess risk in the home, only clutter volume. Other measures are narrow in their scope such as the Home Environment Index (HEI; Rasmussen et al., 2014) for assessment of squalor or the Activities of Daily Living – Hoarding (ADL-H; Frost et al., 2013) scale. The HEATH can be used as a stand-alone tool or can be used in conjunction with tools like the CIR.

The HEATH is designed for use by professionals to assess the home and not as a self-assessment tool, however this is a possible future direction to encourage safety in the context of hoarding. Other agencies have created tools for clients to inform them about what aspects of the home might present a risk. One checklist created by the Philadelphia Hoarding Task Force (2019) focuses primarily on safe pathways. The Wellington-Guelph Hoarding Network (2013) checklist shows 10 different areas and specific steps to achieve safety goals focused on clutter, egress, sanitation, and health in the home. These tools tend to be simple and narrow in scope to be of benefit to clients. The HEATH provides good guidance for intervention planning, will have language screened by lived experience advisors, and allows clients to see their progress through decreases in risk severity. All these aspects of the measure make it a potential asset for client use and a future avenue of investigation to learn how this could be facilitated.

For clinicians, the benefits of the HEATH are twofold. First, the HEATH provides a list of risks in the home for the clinician to be aware of when conducting interventions in the home. As described in Chapter 1, current measures for clinicians focus on psychological and behavioural aspects of hoarding. However, clinicians also conduct interventions in the home that

include discarding sessions during which the client learns and practices decision-making and prioritizing skills. Choosing an area of the home to start decluttering should be influenced by risk considerations, which is beyond the training that mental health clinicians typically receive. Second, the HEATH allows clinicians to monitor progress in terms of whether treatment is resulting in changes that increase the client's (and their family's) safety. The HEATH is a useful new measure for clinicians whose assessment of hoarding focuses more on the intrapsychic features, neglecting conditions in the home that are relevant for treatment planning.

### **Ethical Considerations**

Hoarding is a condition with ethical complexity because this behaviour occurs in the home, a normally private space, but can lead to severe risks, necessitating discussion around what conditions require mandatory intervention. Some codes and regulations make this distinction clear, however not every aspect of hoarding is covered by these legal standards. The experts in our studies made this debate a prominent point of their discussion. They noted that they were not only being asked to determine what risks need to be assessed in the home, but they also had to grapple with the distinction between a basic standard of living required to meet building and fire codes or to protect vulnerable residents versus what are individuals allowed to do in their own homes. This study was not designed to resolve this debate, but the things that we have learned are important to discuss for future training and interventions.

Providers become aware of hoarding in the home and then work towards promoting safety in this setting, however this might infringe upon a client's autonomy to live how they want in a private space. Hoarding is a very personal matter as interventions, primarily with community involvement, must occur in the client's home and involving the client's possessions. An initial concern revolves around providers entering the home when intervention is necessary, as in



extreme cases the right to privacy comes into conflict with public safety regulations that need to take precedence. Community involvement in hoarding often starts on the doorstep as forced intervention is not something taken lightly, nor is this something feasible in all cases. Tenants must allow their housing provider to enter their home if enough notice is provided, and other officials can enter the home under specified conditions, such as when a vulnerable person is at risk.

A second ethical consideration involves determining whose interests are relevant in relation to safety in the home. Hoarding behaviour can impact a number of individuals such as landlords who want to maintain their property and family members who want to receive help for their loved one. A complex example includes an accumulation of clutter outside the home as these items are no longer private, as they are out in the open, but they are still personal possessions. If a neighbour complains that the items are infringing on their property or attracting pests, it is difficult to balance the rights of both stakeholders and to support the client's autonomy. Another example encompasses safety for vulnerable residents, as determining what home conditions necessitate person removal or forced interventions is challenging. For instance, Older Adult Protective Services intervene in cases of self-neglect, meaning that the providers have the legal authority to intervene when an older adult is functioning at a level that presents a severe and imminent risk to their health. This can include objective factors such as taking their medication or meeting other medical needs, and it can also include more subjective concerns such as bathing or grooming (Godfrey & Dacey, 2019). The stakeholders present in different cases and the rules that are imposed bring up ethical discussions about how to protect privacy and autonomy for the clients in spite of competing interests. Avoiding unethical interventions can be done by focusing on the risks in the home and working collaboratively with the client.

Another important debate the Delphi panelists raised involved what is a “quality of life” problem versus a “basic standard of living”, essentially what constitutes a severe enough risk to infringe upon the client’s autonomy. Bratiotis and Woody (2014) note that not being able to sleep in the bed or engage in other quality of life tasks such as cooking in their kitchen does not require immediate intervention. Instead, providers have a higher threshold for what conditions necessitate intervention (Bratiotis & Woody, 2014). This was echoed in the Delphi where one panelist stated, “I think safety and health take critical precedence over comfort and quality of life in early [harm reduction]”, as being unable to sleep in a bed is not a severe enough risk to compromise the client’s autonomy. On the other hand, fire risks are a major concern that can pose a danger not only to the resident but also to neighbours and first responders. Imminent fire risks would therefore supersede the right to autonomy in the home, meaning the residents would have less of a choice around whether to take steps to reduce this risk. The tensions resulting from this ethical consideration were obvious in the comments and ratings of the panelists when determining what items were critical.

Panelists frequently relied on legal standards (building codes and regulations) to inform their judgments about an acceptable basic standard of living. Violations to safety codes or vulnerable residents give some service providers a right to comment on the condition of a resident’s home. Without the legal power established by regulations, some providers do not feel that they have the right to “tell someone what they can and cannot do in their own home”, even if there are risks. For many concerns, however, there are no bylaws or codes to rely on, which some panelists expressed as a problem for enforcement. For example, one panelist emphasized that for urine and feces in the home, “I think that this is important, BUT, Public Health legislation (in Ontario at any rate) doesn't give Health Inspectors grounds to consider the

presence of feces or urine to be health hazards. So while it might be important, we don't have the legislative 'teeth' to do anything about it". Enforcing standards for health and safety is fraught with ambiguity in the absence of codes or other legal standards to provide a rationale for intervention. Therefore, determining the risks that require intervention, the threshold of danger for forced intervention, and the ways to use codes to support client and public safety are all important considerations.

### **Limitations**

Limitations exist in any study and can impact the implications to be drawn from the results. The limits of our expert participants in terms of jurisdiction and discipline might restrict the generalizability of this measure for those who are not similar in context to our participants. All the participants came from the United States, Australia, the United Kingdom, or Canada, although most were from Canada. That means that these results and this scale might not generalize to other countries with different rules and regulations. For instance, the regulations for private homes might differ where some countries have more or less restrictions about what conditions can be enforced. For sector, we were able to recruit individuals from all relevant service sectors except for legal services and protective services. This allowed us to obtain results that reflect what a generalist should assess in hoarded homes. We did not obtain input from child protective services, for example, although these professionals often focus solely on risks to a child in the home and therefore would be less likely to have knowledge about relevant risks for a generalist to assess.

Another limitation was that some items never attained consensus in the Delphi panel. The lack of consensus could have been because participants did not want to step out of their specialty stance. For instance, someone from fire services might have been unwilling to change their rating

to indicate that any item related to fire prevention was less than “critical” in its importance. In terms of the low stability, perhaps panelists were unsure of their responses as some of the items were not related to their field or expertise, which may have influenced them to move towards the majority opinion. To mitigate the limitations from the lack of consensus, we carefully examined panelists’ quantitative ratings and their comments to determine which items to include on the measure. These items were then included in the content validity study which would confirm whether the items that did not obtain consensus should be included on the scale. These steps were essential to confirm that the items included on the measure, even those that did not have consensus in the Delphi, are relevant to assess in hoarded homes.

The HEATH also has limitations. This measure presents a list of items that are relevant to assess in hoarded homes, however it does not provide guidance on intervention steps. For instance, those who work in agencies such as code enforcement can enforce actions to reduce risk in the home. Mental health clinicians can prioritize clinical interventions to target these problems in the home. However, the distinction between what steps would be best or necessary depending on the risks is not present with the tool; that is up to the professional judgment of the provider, which can limit the utility of the scale. Finally, another limitation is that the HEATH attempts to establish what are necessary risks to target in the home, which made the consensus process more challenging. That is to say, panelists worked to distinguish living conditions that represent a lifestyle choice from conditions that represent a threat to public health or safety or an imminent risk to a vulnerable person who is unable to make such choices for themselves.

### **Next Steps**

The HEATH aims to assess a shared understanding of aspects of health and safety risks commonly observed in hoarded homes. Through this assessment, we have created a broad

measure of risks in the home that can be used for intervention planning and tracking changes from interventions. This measure is informed by harm reduction for hoarding, to address problems related to hoarding without necessarily removing all the objects in the home. There are currently no studies that demonstrate the effectiveness of harm reduction interventions or guidelines to implement this intervention in hoarding. This tool will be beneficial in future efforts to evaluate the outcomes of harm reduction approaches as well as clinical interventions. This topical exploration will be helpful to the creation of new harm reduction programs in addition to providing a clear outline of targets for intervention to ensure that no areas are being missed during assessments.

This project accomplished the first two steps necessary to create a psychometrically sound measure to assess environmental risks in the home that are detrimental to health and safety of the residents. The research team also plans to create a second tool to guide professionals in assessing the client's psychological, physical, or social capacity that, combined with the environmental risks, inform intervention planning (Tompkins, 2015). Other measures such as the HOMES (Bratiotis et al., 2011) and the Wellington-Guelph Hoarding Response assessment tool (2013) both include contextual factors such as pets in the home. Taking account of both conditions in the home and client characteristics can better guide harm reduction efforts in hoarding.

Currently, we are in the pilot phase of field trials with community partners to determine whether this measure is reliable, valid, and works effectively within their settings. For instance, we will examine inter-rater reliability in agencies that use two providers for initial in-home assessments. Known-groups validity can be evaluated in agencies that do regular assessments of all units in multifamily dwellings (including residents with and without hoarding behaviours).

With such an analysis, we can determine whether the new scale can accurately classify known hoarding cases. Finally, some of our community partners have a severity threshold for service eligibility which will provide us with a means of determining criterion-related validity. This evaluation would be more challenging as there are no gold standard measures with which to make a comparison. However, the HEATH results will be used to predict these agencies' decisions on service eligibility. All the above steps will ensure that we create a measure that is valid and useful for both research and community settings.

Ultimately, the HEATH can play a role in standardizing assessment and intervention practices as well as structuring some types of training for clinicians and service providers who enter clients' homes. Furthermore, this tool will clarify and improve knowledge among different providers about the risks that should be assessed in the home. Rarely do providers learn about necessary intervention targets for professionals from disciplines outside their own, so outlining the potential risks and educating providers about how to judge these areas is essential to ensure that no critically important areas are missed when assessing conditions in the home.

Training on tools is essential to ensure consistent administration, ratings, and to help providers feel confident when using a measure. To achieve this goal, there are numerous possibilities for types of training that would benefit the providers such as communities of practice to share knowledge about how to assess certain risks, particularly in communities that have formed networks of agencies who are all working with hoarding in some way. An important goal, therefore, is to create training materials to accompany the rollout of the HEATH, such as a video showing some of the things to look for and how to use the measure. Specific aspects to explain include how to make severity ratings, what to include as comments in the "areas of concern" box, and how to interpret the instructions. Determining the severity of the risks requires

professional judgment, which can take some time to develop, and training materials can help with this process. Training to ensure consistency in responses and assessments will be necessary for service providers to accurately use this tool to assess hoarded homes.

This tool represents a list of the highest priority assessment items and enriches the knowledge base about important issues to assess in hoarded homes. The hope is to create a tool with two components. The first is the environmental section described in this project. The second will assess different contextual aspects of the individual that might be relevant to interventions such as the client's psychological, physical, or social context. While more psychometric testing is required to evaluate the measure, this tool represents the first steps necessary to improve the care provided to those who hoard. This Delphi survey is the first to our knowledge that has been used to create a risk measure for hoarding homes. The content validity study had strong results indicating that our measure is prepared for the next steps required. The tool will be helpful in creating a shared understanding across agencies and sectors of inspection items in hoarded homes. The measure will play a role in consistent assessment in these situations and will be beneficial to track changes from interventions. The partnership between the researchers and community providers has also been strengthened to allow for better collaboration in the future. The Delphi survey and content validation are central to the creation of a risk assessment measure that will be integral to community intervention for those who hoard.

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## Appendix A

### Rating Scale Used in the Delphi Poll

<b>1</b>	<b>Critical</b> content that must be assessed by all service providers to ensure basic health and safety standards
<b>2</b>	<b>Important</b> content, but not critical to basic health and safety
<b>3</b>	<b>Content is not a priority</b> or is not relevant to basic health or safety standards

Please rate the following environmental risks:

Ability for emergency responders to enter/gain access (with equipment)

- Critical
- Important
- Not a priority

Optional comments to explain the rationale for your response or to suggest alternative wording.

---

## Appendix B

### Environmental Risks Round 1

#### Emergency Egress

1. Ability for emergency responders to enter/gain access (with equipment)
2. Living room and bedroom windows unobstructed for emergency exit
3. Exterior doors fully accessible (can open at least 90°)

#### Pathways

4. Stairs clear
5. Main paths through rooms at least 3 feet (90cm) wide
6. Hallways clear
7. Interior doors passable (can open at least 90°)
8. Stacks or piles no more than 4 feet (120 cm) high

#### Fire risks

9. Stove has 1-foot (30 cm) clearance and oven is clear
10. Fireplace has 1-foot (30 cm) clearance
11. Heaters/radiators have 1-foot (30 cm) clearance
12. Space heater (if present) has good clearance and heavy-duty extension cord
13. Smoke detectors work and have 1.5 feet (45 cm) clearance
14. Electrical appliances and cords are in good condition (no exposed or frayed wires)
15. Extension cords are not coiled or under combustible materials (e.g., clothing, cardboard)
16. No open flame used as a heat source (e.g., kerosene lantern, barbeque grill, fireplace)
17. Resident does not smoke in the home
18. No combustible items (e.g., clothing, cardboard) beside heat source

#### Appliances/Utilities

19. Can sleep in bed
20. Electricity, heating, and hot water are usable
21. Toilet, bathtub/shower, sinks are usable
22. Kitchen appliances (refrigerator, freezer, stove, oven) are usable
23. Washing machine, clothes dryer (if present) are usable

#### Air Quality

24. Air vents are unobstructed
25. Carbon monoxide (CO) detectors work and have 1.5 feet (45 cm) clearance
26. Absence of mold, mildew, or chronic dampness

#### Sanitation

27. No spoiled or rotting food
28. Garbage is contained in receptacles
29. No visible feces (outside of a pet's box)
30. No foul odors



- 31. No standing water
- 32. No evidence of insect or rodent infestation
- 33. No contaminated objects (e.g. used toilet paper or tampons)

#### Structural Integrity

- 34. Floor boards, stairs, porch are stable
- 35. No water damage on floors or walls
- 36. Roof does not leak
- 37. No evidence of plumbing problems (e.g. clogged drain)
- 38. No evidence of electrical problems (e.g. overloaded circuit)

#### Medical Needs

- 39. In-home care services can be provided
- 40. Medical equipment accessible
- 41. Medications accessible

#### Other Environmental Risks

- 42. No accumulated clutter outside the residence (e.g. porch, yard, common area)
- 43. No storage of hazardous materials (e.g. fireworks)

## Appendix C

### Round 2 Items

Note: \* indicates an item that has been modified or created through participant comments in Round 1.

#### Emergency Egress

2. \*Sleeping room windows unobstructed for emergency exit (Original: Living room and bedroom windows unobstructed for emergency exit)

#### Pathways

4. \*Stairs are safely usable (original: Stairs clear)
5. \* Main pathways within daily living spaces are at least 3 feet (90 cm) wide (original: Main paths through rooms at least 3 feet (90cm) wide)
6. \* Hallways allow emergency egress (original: Hallways clear)
7. Interior doors passable (can open at least 90°)
8. Stacks or piles no more than 4-feet (120 cm) high

#### Fire risks

10. \*Fireplace has 1-foot (30 cm) clearance or is disabled (original: Fireplace has 1-foot (30 cm) clearance)
- 11a. \*Radiators (if present) have 3-feet clearance (original: Heaters/radiators have 1-foot (30 cm) clearance)
- 11b. \*Furnace (if present) have 3-feet clearance (original: Heaters/radiators have 1-foot (30 cm) clearance)
12. \* Space heater (if present) has 3-foot (91 cm) clearance (original: Space heater (if present) has good clearance and heavy-duty extension cord)
44. \*Hot water tanks (if present) have 3-feet clearance
14. Electrical appliances and cords are in good condition (no exposed or frayed wires)
15. Extension cords are not coiled or under combustible materials (e.g., clothing, cardboard)
17. Resident does not smoke in the home
- 18 \* No combustible items (e.g., clothing, cardboard) beside or on top of heat source (original: No combustible items (e.g., clothing, cardboard) beside heat source)

#### Appliances/Utilities

19. \*Access to safe and secure sleeping space (original: Can sleep in bed)
- 20a. \*Electricity is functioning (original: Electricity, heating, and hot water are usable)
- 20b. \*Heating is usable in winter (original: Electricity, heating, and hot water are usable)
- 20c. \*Hot water is functioning (original: Electricity, heating, and hot water are usable)
- 21a. \*Access to usable toilet (original: Toilet, bathtub/shower, sinks are usable)
- 21b. \*Bathtub/shower is usable (original: Toilet, bathtub/shower, sinks are usable)
- 21c. \*Sink is usable (original: Toilet, bathtub/shower, sinks are usable)
22. Kitchen appliances (refrigerator, freezer, stove, oven) are usable
23. Washing machine, clothes dryer (if present) are usable

### Air Quality

- 25. \* Carbon monoxide (CO) alarms work and have 1.5 feet (45 cm) clearance (original: Carbon monoxide (CO) detectors work and have 1.5 feet (45 cm) clearance)
- 26. Absence of mold, mildew, or chronic dampness

### Sanitation

- 27. No spoiled or rotting food
- 28. \* No excessive garbage build-up (original: Garbage is contained in receptacles)
- 29. \* No visible urine or feces (original: No visible feces (outside of a pet's box))
- 30. No foul odors
- 31. No standing water
- 32. No evidence of insect or rodent infestation
- 33. No contaminated objects (e.g. used toilet paper or tampons)

### Structural Integrity

- 34. Floor boards, stairs, porch are stable
- 35. \* No water damage on floors or walls (e.g. caving walls) (original: No water damage on floors or walls)
- 36. Roof does not leak
- 37. No evidence of plumbing problems (e.g. clogged drain)
- 38. No evidence of electrical problems (e.g. overloaded circuit)
- 45. \*No visible water leaks

### Medical Needs

- 39. In-home care services can be provided
- 40. Medical equipment accessible
- 41. Medications accessible

### Other Environmental Risks

- 42. No accumulated clutter outside the residence (e.g. porch, yard, common area)
- 43. \*Hazardous materials (e.g., fireworks) properly stored (original: No storage of hazardous materials (e.g. fireworks))

## Appendix D

### Round 3 Items

Note: \* indicates an item that has been modified or created through participant comments from Round 2.

#### Emergency Egress

2. Sleeping room(s) have unobstructed emergency exits

#### Pathways

4. Stairs are safely usable
6. Hallways allow emergency egress
8. Stacks or piles no more than 4 feet (120 cm) high

#### Fire risks

- 11a. \*Radiators have clearance (original: Radiators (if present) have 3-foot clearance)
- 11b. \*Furnace has clearance (original: Furnace (if present) have 3-foot clearance)
44. \*Hot water tanks have clearance (original: Hot water tanks (if present) have 3-foot clearance)
14. Electrical appliances and cords are in good condition (no exposed or frayed wires)
17. Resident does not smoke in the home

#### Appliances/Utilities

19. Access to safe and secure sleeping space
- 20a. Electricity is functioning
- 20c. Hot water is functioning
- 21a. Access to usable toilet
- 21b. Bathtub/shower is usable
- 21c. Sink is usable
22. Kitchen appliances (refrigerator, freezer, stove, oven) are usable

#### Air Quality

25. Carbon monoxide (CO) alarms work and have 1.5 feet (45 cm) clearance

#### Sanitation

29. No visible urine or feces
30. No foul odors
31. No standing water

#### Structural Integrity

45. No visible water leaks

#### Medical Needs

39. In-home care services can be provided

## Appendix E

### Final Items from the Delphi

Ability for emergency responders to enter (with equipment)  
Absence of mold, mildew or chronic dampness  
Carbon monoxide (CO) alarms are working  
Electrical cords are intact (no exposed or frayed wires)  
Electricity, heating, and hot water are usable  
Extension cords are not coiled or under combustible materials (e.g., clothing, cardboard)  
Exterior doors accessible (can open at least 90°)  
Floorboards, stairs, porch are stable  
Furnace/hot water tanks have 3-feet (1 m) clearance  
Hallways clear for safe passage  
Radiators have 1-foot (30 cm) clearance from combustibles  
In-home care services can be provided  
Main paths through daily living space clear for safe passage  
Medical equipment/medication accessible  
No contaminated objects (e.g., used toilet paper, tampons)  
No electrical problems (e.g., overloaded circuit)  
No evidence of insect or rodent infestation  
No open flame used as a heat source (e.g., kerosene lantern)  
No spoiled or rotting food  
No storage of hazardous materials (e.g., fireworks)  
No visible urine or feces  
No visible water leak  
Refrigerator/freezer are usable  
No obvious leak in the roof  
Smoke alarms work and have 3-feet (1m) clearance  
Stacks or piles lower than 4 feet (120 cm) high  
Stairs clear for safe passage  
Stove/oven has 1-foot (20 cm) clearance from combustibles  
Space heater/fireplace has 3-feet (1 m) clearance  
Sprinkler heads have 1.5 feet (45 cm) clearance  
Toilet, bathtub or shower, sinks are usable  
Windows in sleeping room(s) are clear for emergency exit

## Appendix F

### Content Validity Question Example

	The item is useful to assess Safe Pathways risks.				The item is clear.				The item can be assessed in most hoarded homes.			
	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree
1.Exterior doors are accessible (can open at least 90°)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.Windows in sleeping room(s) clear for emergency exit?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.Emergency responders can enter (with equipment)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.Main paths through daily living space clear for safe passage?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree
5.Hallways clear for safe passage?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.Stacks or piles lower than 4-feet (120 cm)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.Stairs clear for safe passage?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>