



Improving the Sense of Security and Comfort for Temporary Shelter Residents



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Request for Proposal: Improving the Sense of Security and Comfort for Temporary Shelter Residents

Abstract

This Request for Proposal (RFP) is to aid the security and comfort of homeless residents at the Out of the Cold shelter at the Chinese Gospel Church. Out of the Cold's mission is to provide shelter, a hot meal, and a dignified environment for those without shelter. They strive to offer an environment that is compassionate and a safe haven for those who are in poverty. The Chinese Gospel Church offers this service once a week at their shelter on Thursdays. During the night hours, beds are arranged around the perimeter of the hall in the basement. These beds consist of simple mattresses that have no personalization or sense of security for the shelter attendees, thus affecting their quality of sleep.

Teams that approach this opportunity will have primary sources of contact with the individuals who volunteer with the Out of the Cold organization at the Chinese Gospel Church and the regular attendees of the weekly services. Teams will serve this community in order to create a solution that will provide the shelter attendees with safe and personalized sleeping conditions. The high-level objectives for this opportunity are to create a sense of security and private sleeping conditions for the shelter attendees while maintaining their dignity. The Out of the Cold volunteers at the Chinese Gospel Church are also primary stakeholders since they will be the ones in charge of organizing the sleeping conditions every Thursday as well as the cleanup that takes place after the attendees are gone.

There currently exists several solutions that have been implemented in similar situations, which design teams can readily base their designs off of and use to their advantage. However, design teams must keep in mind that these solutions are not fully applicable to this situation, primarily due to their lack of personalization, in addition to other detailed factors outlined in the RFP. The requirements that are outlined in the RFP will require teams to both adhere to societal regulations and to physical constraints presented by the location of the sleeping quarters in the Chinese Gospel Church. Lastly, this opportunity along with its solution has the potential to impact not only the Chinese Gospel Church and its weekly attendees, but also have a widespread impact across the city of Toronto and other Out of the Cold shelters, which may turn to this shelter as a reference point.

1. Introduction to Homelessness in Toronto

Poverty and homelessness in Toronto have been and continue to be a colossal issue that affects nearly 5300 people directly. [A1] More recently, however, the situation has become worse for those who are forced to spend nights on the street, primarily due to the extreme cold we often witness. Over the past week, three individuals have passed away overnight due to the worsening weather as well as other factors. [A3] As displayed by the figure below, staying dry as well as dressing in layers are a necessity for temperature between -10 to -27 degrees, which is not always possible for those who have minimal resources. [A4]

Wind Chill Hazards and What To Do			
Wind Chill	Exposure Risk	Health Concerns	What to Do
0 to -9	Low Risk	<ul style="list-style-type: none"> Slight increase in discomfort 	<ul style="list-style-type: none"> Dress warmly Stay dry
-10 to -27	Moderate Risk	<ul style="list-style-type: none"> Uncomfortable Risk of <u>hypothermia</u> and <u>frostbite</u> if outside for long periods without adequate protection. 	<ul style="list-style-type: none"> Dress in layers of warm clothing, with an outer layer that is wind-resistant. Wear a hat, mittens or insulated gloves, a scarf and insulated, waterproof footwear. Stay dry. Keep active
-28 to -39	High Risk: exposed skin can freeze in 10 to 30 minutes	<ul style="list-style-type: none"> High risk of <u>frostenip</u> or <u>frostbite</u>: Check face and extremities for numbness or whiteness. High risk of <u>hypothermia</u> if outside for long periods without adequate clothing or shelter from wind and cold. 	<ul style="list-style-type: none"> Dress in layers of warm clothing, with an outer layer that is wind-resistant Cover exposed skin Wear a hat, mittens or insulated gloves, a scarf, neck tube or face mask and insulated, waterproof footwear Stay dry Keep active
-40 to -47	Very High risk: exposed skin can freeze in 5 to 10 minutes	<ul style="list-style-type: none"> Very high risk of <u>frostbite</u>: Check face and extremities for numbness or whiteness. Very high risk of <u>hypothermia</u> if outside for long periods without adequate clothing or shelter from wind and cold. 	<ul style="list-style-type: none"> Dress in layers of warm clothing, with an outer layer that is wind-resistant. Cover all exposed skin. Wear a hat, mittens or insulated gloves, a scarf, neck tube or face mask and insulated, waterproof footwear. Stay dry Keep active.
-48 to -54	Severe risk: exposed skin can freeze in 2 to 5 minutes	<ul style="list-style-type: none"> Severe risk of <u>frostbite</u>: Check face and extremities frequently for numbness or whiteness. Severe risk of <u>hypothermia</u> if outside for long periods without adequate clothing or shelter from wind and cold. 	<ul style="list-style-type: none"> Be careful. Dress very warmly in layers of clothing, with an outer layer that is wind-resistant. Cover all exposed skin Wear a hat, mittens or insulated gloves, a scarf, neck tube or face mask and insulated, waterproof footwear. Be ready to cut short or cancel outdoor activities. Stay dry. Keep active.
-55 and colder	Extreme risk: exposed skin can freeze in less than 2 minutes	<ul style="list-style-type: none"> DANGER! Outdoor conditions are hazardous. 	<ul style="list-style-type: none"> Stay indoors.

Figure 1: Health concerns and solutions to risks involved when exposed to cold weather.



While the municipal government and several agencies invest both time and money to lessen the effects of homelessness, they are not always effective. An anonymous homeless individual from Toronto stated that staff working in shelters are often disinterested and various programs have deteriorated over time. [A2] “When asked about a particular experience with a health-care worker at a shelter, one responded, ‘[S]he just didn’t care. It was like you were a piece of meat.’ Another said of his experience with shelters, ‘I got treated [poorly] the first time over there, and I’m not going to get treated like that, I’m not going through that again. I’d rather sit here and die on a bench than go over there.’” [A5] This is definitely not the case with all homeless shelters, and as a group, we hoped to engage with a community that sincerely valued helping those who were less fortunate than themselves.

While there is no one solution that will solve the issue of homelessness, the responsibility falls on those who are able to help, no matter how small the contribution. “The underlying reasons for homelessness are so diverse and complicated to address, no matter how well-intentioned the steps which have been already taken...” [A3] According to Abe Oudshoorn, a registered nurse with a background in healthcare related to homelessness, one of the primary causes of homelessness is through circumstances beyond control of the individual, which can be traced back to childhood trauma and simply being born into poverty. [A6]

2. Background and Context

The primary reason our group chose to interact with a community involved with the homeless was significantly empathetic in nature. Allowing ourselves to view the world from the perspective of those who are less fortunate motivated us to pursue a community of this nature.

As citizens of Toronto and neighbouring cities, we can acknowledge that there is a very obvious stigma that comes along with the word ‘homeless’. According to the report ‘More Sinned Against than Sinning’ by Finding Home, research suggests that homeless people are more often victims of crimes than housed individuals. An additional survey was conducted where nearly 90% of the individuals who were surveyed responded that police treat wealthier individuals with more respect than those who are poor. [A7] These results in society show that those who are lower on the socio-economic spectrum are often mistreated in comparison to other members in society.

Based on the research we conducted regarding this situation, we sought to engage with a community who values people for their individuality, rather than the ‘label’ that society provides them. We came across an organization called Out of the Cold, which is based out of synagogues and churches that provide a temporary shelter for those who live on the streets during the cold winter months. Based on their actions and their community vision, their values are steadfast and include selflessness and respect towards all members of society.

2.1. Out of the Cold Site Visit

On Thursday, February 14, two of our group members conducted a site visit of one of the Out of the Cold locations, the Chinese Gospel Church. The Chinese Gospel Church hosts approximately 15 male individuals each Thursday and provides them with a meal, social time, as well as a place to sleep for the night. Other individuals are also welcome to attend for the meal and social time, however, there is a limit on the space available for sleeping [B4-16].

Two of our group members had the opportunity to interact with both the individuals partaking in the program as well as the volunteers [B4-11, 20]. We spoke to the volunteers about their experiences in assisting with the program as well as how they handle the duties they are assigned from week to week [B4-1-5]. We also interacted with the individuals partaking the program through various games and casual conversation about pop culture, sports, etc.

2.2. Issues Surrounding Subsidized Programs

Out of the Cold, as well as various other initiatives providing shelter for homeless individuals, are not perfect systems and can definitely be improved. Many services that provide shelter are often temporary due to the fact that they are voluntary based. This is also the case with Out of the Cold, which provides sleeping for the first 15 males who register on that particular day. Those who are not provided with sleeping arrangements leave the church at around 9:30 pm [B4-15]. Due to the fact that homeless individuals often change location from day to day, having a place that provides them with a strong sense of safety and security is desired, but not always achieved. According to an article titled ‘Understanding Research on Homelessness in Toronto’, evidence suggests that homeless individuals avoid voluntary services due to fear, intimidation, discrimination, relationship status, and pets [A8].

People are often not comfortable in new environments, which was also something that was apparent based on our site visit. Although there were numerous individuals conversing and playing games with one another, there was also a large group that kept to themselves, often avoiding personal interactions with those around them [B4-8, 9].

3. Community

3.1. Out of the Cold at the Chinese Gospel Church

The Out of the Cold foundation is an organization that is dedicated to helping individuals without a home during the harsh cold months in Canada. Their mission is, in their words, “to respond to the basic physical needs in a meaningful way”. [A9] Their typical services include providing hot, cooked food, clothing, overnight beds, medical care, personal hygiene, and transportation [A10]. This foundation also appeals to the humanistic side of the poverty epidemic. It provides a shelter that is free of judgement, and it strives to provide the compassion, dignity, and self-worth that these individuals need. According to

Dixon Hall, the Out of the Cold program specifically values respect, caring, compassion, integrity, accountability, equity and accessibility, second chances, dreams, and possibilities [A11].

Out of the Cold was originally a Catholic program founded by Sister Susan Moran at St Michael's College School, and it has grown to be an important part of Canada for its contributions to poverty. Churches, synagogues and mosques around Toronto now regularly provide shelter for those in need. John Tory, mayor of Toronto has even commemorated Susan Moran for her contributions to Canada and to the homeless community soon after she passed away in 2016 [A13]. "Sister Susan Moran was at the very heart of developing that model and making it work," said Mayor John Tory "She has left the city a lasting legacy that is deeply appreciated." [A13]

3.2. Volunteers

Out of the Cold heavily relies on volunteers and donations in order to help provide food, shelter, comfort and hospitality to the guests that utilize the program [A14]. Currently, there are over 2000 volunteers throughout various Churches and Synagogues who are hosting the program, coming from a variety of different backgrounds and ages. On an introductory video on their website, the ministry describes how members of the congregation volunteer bi-weekly in serving food to the visitors [A16]. Their team is also comprised of local students seeking to fulfil community service hours for their diploma. To help encourage people to volunteer, Out of the Cold provides sites all over the city so they are easily accessible and increase the likelihood of finding new volunteers [A14]. They also have a variety of different roles for their volunteers such as meal preparation, serving, cleaning, general maintenance, security, social programs, and donation programs so their volunteers can do what they enjoy most [A14]. Most volunteers are expected to work in shifts of either 4 to 8 hours of length, both in the afternoon and overnight (refer to Section 4 for a detailed representation of the volunteers' regular tasks).

3.3. Residents

Homeless residents at OOTC locations are valued dearly and provided with supporting assets. Dixon Hall provides them with the following services: nurses, blankets, laundry service, TTC tickets, maintenance staff, cell phone services. [A14] The visitors at the Chinese Gospel Church are able to receive these services every week. Upon arrival on Thursday nights, they are provided with a hot meal, social services as well as a mattress to rest upon at night. On the following day, they are given breakfast as well as a bagged lunch to go. Specific to this particular residence, residents are limited to 15 occupants and are only able to house male residents [A15].

3.4. Community Interactions

The first point of interaction with the community is with their volunteer coordinator Lloyd Kwong. Through their website, it was determined that email was the most appropriate form of

communication as their services run only weekly and that the contact persons were not always available [B5].

Our first reaction when entering the shelter was the surprise of the organization and commitment shown by the volunteers. We had a bias that this location would be very disorganized due to the fact that it was a small charity with minimal resources. However, when we walked in we were given a prepared schedule of the services as well as a description of each volunteer's commitment. We were then immediately given name tags and introduced to the volunteer coordinator Ken Hu.

Ken Hu is an experienced volunteer who has been a part of the organization for about 20 years and now serves as the dinnertime and social shift volunteer supervisor. He told us that one of the biggest issues is establishing a valid hour for lights out.

During social hour we observed the issue that certain people attempting to rest were disturbed. [B4] During the hour leading to lights out, some individuals lied on their mattresses while others spoke loudly or wandered around. Without any personal space, it was evident that it was difficult to sleep or have their own personal space. This issue was further highlighted when there was a friendly confrontation between a guest and director Ken Hu about shutting the lights off earlier.

4. Shelter Operations

The following is the service schedule specifically for the Chinese Gospel Church. The data retrieved is both from recorded observations upon visit and background research.

Out of the Cold at the Chinese Gospel Church Regular Schedule [A16]		
Time	Scheduled Activity	Description
3:00pm to 5:30pm	Setup	Volunteers setup the dining area, kitchen, intake area, foiler, volunteering sign-in area, and secure the building.
5:00pm to 8:00pm	Intake	Intake supervisor is required to work with security personnel to decide which guests are allowed. This is to ensure that the church operates in an orderly and peaceful manner. Furthermore, they complete forms, welcome the guests, and allow guests to proceed to the dining area.
5:30pm to 8:00pm	Dinner	Volunteers are expected to be at the dinner area at 5:45 pm to receive instructions from the shift



		instructor. Tasks typically consist of plating food, scraping food, washing dishes, serving food, and interacting with guests.
7:00pm to 10:00pm	Social	Social volunteers are required to help dinner shift volunteers with cleanup, interact with guests for conversations and games, ensure the kitchen is cleaned, and ensure the food is warmed for the newcomers.
11:30pm	Lights out	All guests are expected to be asleep at this time.
6:00am to 8:00am	Breakfast	Breakfast volunteers awaken the guests at 6:30 am. They also serve breakfast, clean the mattresses and dining areas for the next guests, and give bagged lunch to the guests upon exit.

Table-1: Out of the Cold at the Chinese Gospel Church Regular Schedule

5. Opportunity for Engineering and Design

After conducting a site visit of the Out of the Cold program at the Chinese Gospel Church and conducting our own research, we recognized a potential opportunity which can be addressed through the implementation of engineering design. One of the most glaring observations made by our group at the site visit was the social disconnect between various individuals participating in the program.

While the reason for this was not entirely clear due to these individual's introverted personality, there are various factors that may contribute to this behaviour, many of which are often psychological in nature. As stated in section 2.2, homeless individuals often avoid voluntary services because it instils a sense of fear and/or intimidation. According to Why Some Homeless Choose The Streets Over Shelters, which conducted a first-person interview on homeless individuals, many of them avoid homeless shelters because they feel judged, "Shapiro: So you felt judged in a shelter, is that what you're saying? Michael: Oh and not just judged but told that there was only one way for me to be a better person, and that was through whatever their perspective on faith was." Another individual who joined the interview had personal connections with various homeless individuals who were war veterans, who stated that sleeping indoors made them feel unsafe and with a lack of security [A17].

5.1. The Opportunity: Improving Safety and Security for Temporary Residents

Based on our research and first-hand experience, we scoped our opportunity to improve the safety and security for temporary residents. Individuals who are living on the streets often want a place where they do not feel judged that provides them with safety and a place they are comfortable being in. When conducting our site visit, our group recognized this as a potential opportunity based on our interactions and observations of the individuals participating in the program.

When we first entered the social area, we quickly noticed there was definite segregation between the individuals partaking program; a group that was socializing in the middle while the others sat in isolation around the perimeter of the room, either sleeping, reading, or talking to themselves. [B4-8, 9] A couple of them, simply based on their facial expressions and actions, seemed anxious and nervous in the environment. This may be explained by their lack of a permanent place of residence or by past trauma. Some of the homeless individuals were talking about a close friend who recently passed away due to alcohol, which could definitely have an impact on their social behaviour. [B4-12] Furthermore, when the mattresses were distributed to the 15 individuals who had arrived first, one resident specifically requested the slightly wider mattress because it was the one he was most accustomed to.

As highlighted by both our first-hand experience and our research regarding the psychological nature behind homelessness, providing individuals with a stronger sense of comfort and safety is key in ensuring the night they spend at the Chinese Gospel Church is as enjoyable as possible. Hence, the opportunity that will be targeted is designing a product that can be added to each individual's sleeping space that will both provide them with a greater sense of comfort and the ability to personalize their own space. According to an article by CNN titled 'Here's why you don't sleep well in a new place', during the first night of sleeping in a new location, half your brain may remain alert, and therefore, might interfere with regular sleep [A18]. For those without a home, the situation is even more complicated, considering the places they sleep may change from night to night. Therefore, providing them with a place they can personalize to their own liking and comfort may allow them to rest with a greater sense of safety and security.

5.2. Importance of the Issue at Hand

The need to optimize the level at which one sleeps at night is important for almost anybody, and even more so for those without a home. Lacking the appropriate quality and quantity of sleep each night can have detrimental effects on the individual over time.

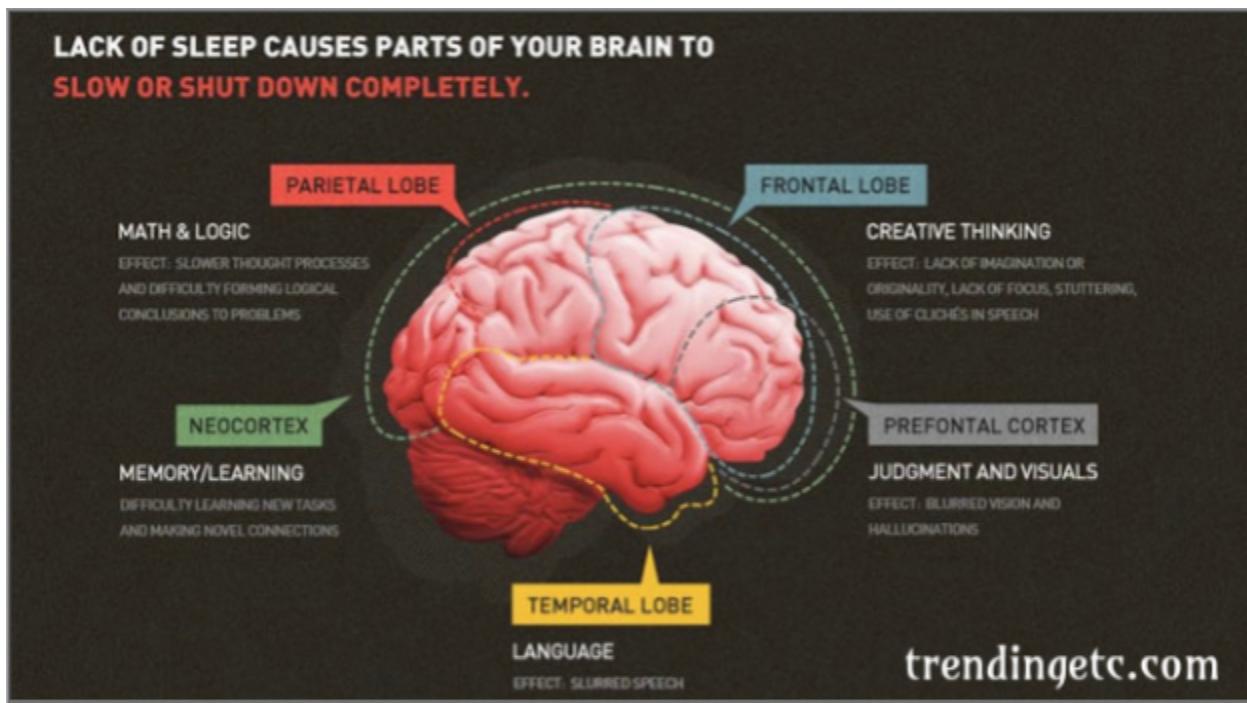


Figure 2: A visualization of the brain that has been deprived of sleep.

For homeless individuals, specifically, optimizing the time they have to sleep is a necessity. According to an interview by The Atlantic, Joe, a homeless individual highlighted the importance of sleep for those without a home because almost everything happens on somebody else's schedule (i.e. waking up on time in a shelter, moving a vehicle you are sleeping in, etc.). The 'chronic homeless man' from San Diego states that getting a good sleep is often much more important than food and water. This is because without a secure place to sleep, it is often dangerous and can lead to feelings of vulnerability, which can definitely be alleviated to a significant degree by allowing the individuals who participate in Out of the Cold to personalize a sleeping space that they feel more comfortable in [A19].

Sleep deprivation is also linked to various harmful social habits including drug abuse, mental illness, and higher rates of violence and aggression. It is commonly known that drug abuse and rates of violence are generally higher within the homeless community compared to those who have a permanent residence. Due to the strong correlation between sleep deprivation and these social behaviours, it can be concluded that sleep deprivation is one of the root causes that starts the recurring cycle of drug abuse and violence among homeless individuals [A20].

6. Stakeholders

6.1. Primary Stakeholders

6.1.1. The Chinese Gospel Church Out of the Cold Program Volunteers

In the context of the presented opportunity, the volunteers at the Chinese Gospel Church are one of the primary stakeholders. Though the attendees are the primary beneficiaries of the program, the attendees are changing weekly while the volunteers are the same for the entirety of the program. The volunteers at this organization are there because they wish to aid in the struggle against homelessness and share their faith with others. They value caring for others in all aspects, including providing an inclusive and safe environment for the attendees. Therefore, a solution that seeks to create a safe environment for the attendees would positively influence the volunteers experience as well.

6.1.2. The Chinese Gospel Church Out of the Cold Shelter Attendees

The attendees of the Out of the Cold program at the Chinese Gospel Church change weekly, but their main needs are unchanged. They come to the Church seeking shelter, food, and companion in a safe and judgement free environment. They also seek to maintain their dignity throughout this process. Currently, the sleeping arrangements provide below average privacy and this can lead to many attendees feeling unsafe and undignified. Thus, an opportunity focusing on ensuring privacy and a sense of safety in attendees would ensure that the attendees' dignity is maintained and that their interests are taken into account.

6.2. Secondary Stakeholders

6.2.1. The City of Toronto

The City of Toronto in 2015 launched an initiative to prevent the propagation of poverty throughout the city [A21]. The city recognizes that this is a rapidly growing issue and that it must be tackled. Our opportunity seeks to aid specifically in their goal to improve livability standards for those living below the poverty line and are currently in a state of homelessness. Our opportunity in alignment with the city's prosperity plans and thus it will be beneficial to the City of Toronto.

6.2.2. The Out of the Cold Foundation

There are several Out of the Cold foundations around the city of Toronto, and even more throughout Canada. This foundation seeks to, at its core, provide a safe shelter for those in need where they feel safe and are free of judgement. Our

opportunity to improve the privacy and sense of security of attendees works in conjunction with these values since it appeals directly to the organization's goals. Furthermore, our opportunity could be implemented across several Out of the Cold shelters, not only at the Chinese Gospel Church.

6.3. Tertiary Stakeholders (Out of the Cold Foundation Partnerships)

6.3.1. Community Care Access Center

The CCAC (Community Care Access Center) has partnered with Out of the Cold to help provide nurses at OOTC sites. [A22] According to Dixon Hall, the service that manages OOTC, these nurses play an “incredibly vital role” to their sites. OOTC claims that their homeless guests have difficulties accessing services and they are more vulnerable to health issues to the average person. The nurses attend to around 10-15 patients at each OOTC site. [A22] This helps reduce the cost and in turn increase the budget OOTC has for other assets.

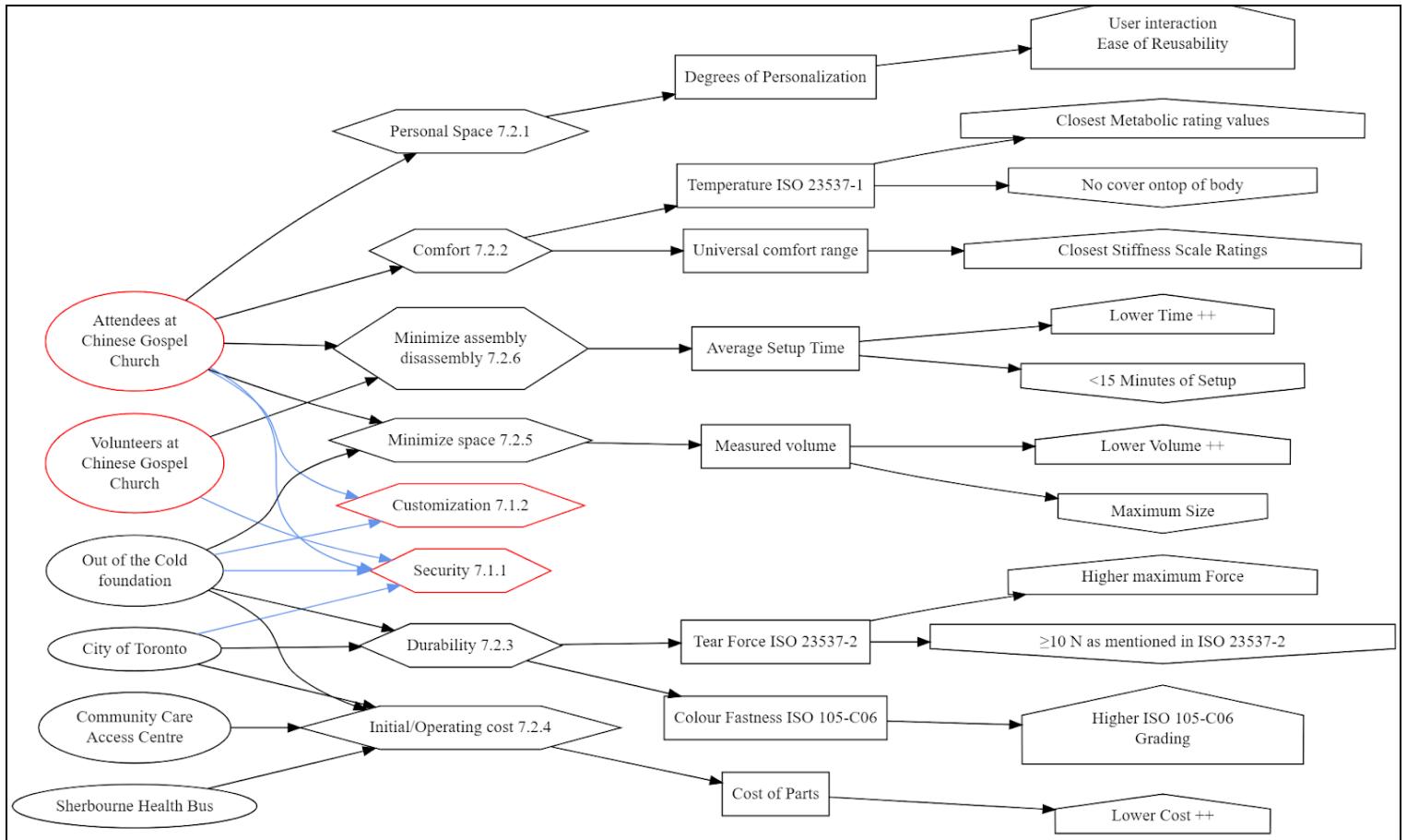
6.3.2. Sherbourne Health Bus

The Sherbourne Health Bus is an important partner to the Out of the Cold Foundation as they provide service to Blythwood OOTC on Saturdays. Similar to OOTC, they value social support and community health. [A23] Around 30 people occupy the bus each week to be taken to OOTC shelters. [A24] Although there is no operating history of these buses at the Chinese Gospel Church, if they, as well as the other churches have access to the buses, transportation services may be more convenient for the homeless that need to travel farther distances. Similar to CCAC, the extra transportation services relieve some of the cost for OOTC so they can use their budget for other assets.



Figure 3: CCAC locations across Canada.

7. Requirements



Graphical Legend

Shape	Requirement	Colour	Importance
Circles	Stakeholders	Red	Primary/ High Priority
Hexagon	Objectives	Black	Low priority
Square	Metrics	Blue	Key relation
House	Criteria		
Inverted House	Constraint		

7.1. High-level Objectives

- 7.1.1. Improve comfort and social tensions for residents at OOTC shelters by maximizing security and privacy of the sleeping areas. This should be achieved by creating a personal and private space for the homeless guests where they can feel safe and supported by the OOTC foundation.
- 7.1.2. Improving the comfort of homeless residents at OOTC shelters by allowing for customization of their sleeping areas. This is intended to make the guests feel more welcomed and feel safer at the shelters.

7.2. Detailed Objectives

- 7.2.1. **[DO1] To maximize personal privacy of sleeping space:** During our meeting with our stakeholders, we were informed that all the residents were all cluttered on the floor next to each other without any personal space. As mentioned in Section 5.1, creating a solution which promotes personal privacy will ease the tension between the different guests and help them feel more welcomed, safe, and secure. Although there are a variety of different existing solutions (refer to Section 8) which provide privacy and security, such as curtains, dividers, and tents, they fail to allow for customization and personalization of sleeping areas.

- **Metric & Criteria:** There are two major areas that we are concerned with when measuring personalization of the sleeping space. Firstly, personalization will be measured through user interaction. Allowing the user to personalize the device to their own liking will provide a greater sense of safety and security (refer to Section 4.1). Ease of reusability is also a key factor to consider. Considering that there are 15 new and incoming guests each week (refer to Section 1.1), creating a solution that is not reusable is not preferred for both the secondary stakeholders (e.g. City of Toronto) who provide them with funding, as well as the Chinese Gospel Church volunteers, who are required to manage all of these sleeping devices. Additionally, the existing solution (refer to 8.4) is also reusable which gives a sense of what the stakeholders are looking for. The table below will be used to evaluate the degree at which the solution can be personalized and customized for the guests, while still maintaining reusability for financial purposes (refer to Section 3.2):

	User interaction	Ease of Reusability
Inadequate	Complicated process to make modifications to the unit and	Personalization method to the unit is permanent and only applies to 1 guest at

	requires learning new skills	the church.
Satisfactory	User can make modifications without having to learn new skills	Personalization method is reusable and can be used and altered between different guests.
Outstanding	Comprehensive method of modification without any learning required	Personalization method is both reusable and can easily be setup for the next guest.

Table-2: Metrics used to determine the rating of DO1

7.2.2. [DO2] To maximize the comfort of the sleeping device: Several factors will be taken into account to measure the comfort of the sleeping device.

- **Metric #1 & Criteria #1:** Temperature of the material used. This will be measured in accordance with ISO 23537-1 Standards for comfort temperature of sleeping bags [A25, A32]. These standards are derived from a standard woman (25 years old, 60 kg, 1.60 m, 1.62 m² body surface area) who is in a relaxed sleeping posture and is not cold. The closest values measured to the following data will produce the highest rating (refer to ISO 23537-1 for calculations of each of these values):

a) basic metabolic heat production:	$M_b = 44,4 \text{ W/m}^2$
b) effective thermal resistance of the sleeping bag $R_{c,\text{eff}}$:	$R_{c,\text{eff}} = 0,9 \cdot R_c(1)$
c) effective water vapour resistance of the sleeping bag $R_{e,\text{eff}}$:	$R_{e,\text{eff}} = 60 \cdot R_{c,\text{eff}} / 0,52$

- **Metric #2 & Criteria #2:** According to Logan Block, content director of a well renowned mattress reviewing organization (which has previously partnered with several well known brands such as Casper), there is a *universal comfort* range for the firmness of mattresses [A26]. He claims that 80% of sleepers prefer a medium-feel mattress in the 5-7 range on the mattress firmness scale. Refer to Figure-4 for testing methods for mattress firmness [A27]. Mattresses that are measured closest to the 5-7 range will result in a higher rating. Refer to Table-3 for specific ratings, determined by calculating the closest values to the preferred range.

Extra Soft	Soft	Medium	Plush Firm	Firm
(1-2)	(3-4)	(5-6)	(7-8)	(9-10)
Incredibly Soft	Plush feel	Balanced surface	Firmer feel	Very hard
Extreme sinkage	Some sinkage with enough give	No excessive sinkage	Little to no sinkage	No sinkage at all
Poor spinal alignment	Best alignment for side sleepers	Excellent spinal alignment in all sleep positions	Postural correction for back & stomach sleepers	Spinal alignment for lower back pain in heavier persons
Poor Support	Most supportive for lightweight persons	Remarkable support for majority sleepers	Enhanced support for backache	Deliver therapeutic support

Figure 4: Mattress Firmness Testing Methods [A26].

	Inadequate	Satisfactory	Outstanding
Mattress Firmness Rating	1-2 Range (Extra Soft)	3-4 Range or 9-10 Range (Soft/Firm)	5-7 range (Medium/Plus h Firm)

Table-3: Ratings table for Mattress Firmness [A27].

7.2.3. [DO3] To maximize the durability of the solution: Maximizing the durability will both encourage Design for Reusability and Design for Cost. The existing sleeping mats are constantly moved between the storage room and the sleeping area [B1], which make them prone to being damaged. Creating a durable solution will allow for extended use, which in turn supports the financial concerns of the organization (as mentioned in Section 7.2.1).

- Metric #1 & Criteria #1:** This will be measured using ISO 23537-2 Standards for tear force of sleeping bags: measure the maximum force exerted by the material before tearing [A25, A32] using the ballistic pendulum method. Refer to ISO 13937-1:2000 for the full procedure of measuring tear force using the ballistic pendulum method [A33]. A higher value will result in a higher rating.

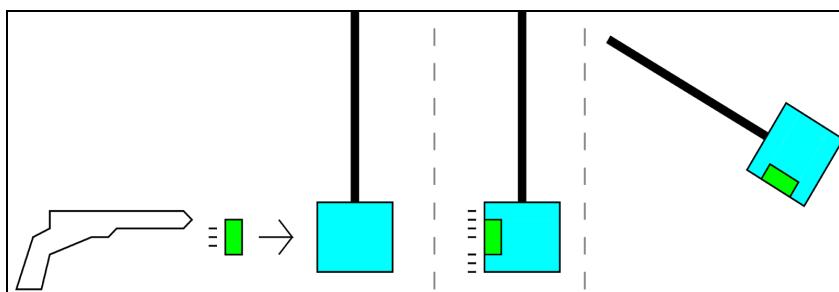


Figure 5: General procedure for the ballistic pendulum approach. Refer to ISO 13937-1:2000 [A33] for a more detailed understanding.

- **Metric #2 & Criteria #2:** The colour fastness to rubbing shall be measured in accordance to ISO 23537-2. There are several testing methods to test staining and change of color such as color fastness to rubbing (refer to ISO 105-X12), color fastness to washing (refer to ISO 105-C06), colour fastness to perspiration (refer to ISO 105-E04), and colour fastness to light (refer to ISO 105-B02) [A25, A32]. A higher grading exhibited from ISO 105-C06 will result in a higher rating.

6.2 Dry rubbing

Place the conditioned rubbing cloth (see 4.2 and 5.3), flat over the end of the finger with the weave parallel to the direction of rubbing finger. At a rate of one cycle per second, rub to and fro in a straight line 20 times, 10 times to and 10 times fro, along a track (104 ± 3) mm long on the dry specimen, with downward force of (9 ± 0.2) N (see 4.1.1 and 4.1.2). Remove test square and condition as in 5.3. Remove any extraneous fibrous material that might interfere with the rating.

6.3 Wet rubbing

Establish a technique for preparing rubbing cloth by weighing a conditioned piece of cloth, then thoroughly soak in distilled water and reweigh to ensure take-up of 95 % to 100 %. Follow the instructions for rubbing in 6.2.

NOTE As the level of soak of the rubbing cloth may dramatically affect ratings, other levels can be used. An example of a very commonly used level of soak is (65 ± 5) %.

Figure 6: An example of a color fastness testing procedure using the rubbing method, as per ISO 105-X12.

7.2.4. **[DO4] To minimize initial and operating costs:** The solution must be low cost for the shelter which heavily relies on donations and minimal funding. This will ensure it is feasible for the numerous constant and alternating residents (see 3.1).

- **Metric:** Measure the cost of all components required to assemble the sleeping device. Additionally, measure the labour cost to assemble such a device, and any necessary operating costs. Sum together these values.
- **Criteria:** Since the Chinese Gospel church is a small location for Out of the Cold of approximately 15 residents, (refer to Section 2.1) most of the funding goes towards necessities such as food. This limits the amount of money that can be spent on supplementary items. Thus, a lower cost will result in a higher rating.

7.2.5. **[DO5] To minimize the space taken up in both the storage room and sleeping areas:** During the conversion with our stakeholders at the Chinese Gospel Church, we were informed that the homeless guests were all sleeping closely next to each other in a clustered fashion. There is also very limited space in the storage room and the main hall [B1]. A design that is too large will be both difficult to store and will also reduce the space available to guests in the sleeping area, as the current design is already relatively compact in comparison to the other existing alternatives (refer to Section 8.4).

- **Metric & Criteria:** Measure the volume (m^3) of individual parts and sum together these values. A lower volume will result in a higher rating.

7.2.6. **[DO6] To minimize the assembly/disassembly of the design:** The unit must be able to be quickly assembled and disassembled since there is a dedicated time slot for setup which must be maintained (refer to Section 4).

- **Metric & Criteria:** Measure the average time (seconds) taken to setup the device. A lower time will result in a higher rating.

7.3. Constraints

- 7.3.1. **[DO2]:** The sleeping design will not incorporate a cover on top of the body like a sleeping bag. As mentioned in Section 3.3, residents are provided with blankets so adding extra cost and materials to the solution is not necessary. According to ISO 23537-1 Standards, temperature is primarily determined from the back of the body since it covers the most surface area, hence a top will neither be effective.
- 7.3.2. **[DO3]:** The tear force of shell and lining fabrics shall be ≥ 10 N as specified in ISO 23537-2.
- 7.3.3. **[DO5]:** The solution must not exceed $2 \times 2 \times 1$ (length, width, and height) feet in dimensions when being stored. This is the maximum space that can be allocated to the solution based on our recorded measurements of the storage room. This also takes walking space in the storage room into consideration (about 2 square foot per step) [B1].
- 7.3.4. **[DO6]:** According to the shelter operations (refer to Section 4), setup must be completed within 3:00pm to 5:30pm. During the engagement with stakeholders, it was recorded that approximately 15 minutes of this period is dedicated to the setup of sleeping mattresses. Hence, setup time must not exceed 15 minutes.

8. Reference Designs

8.1. Hospital Curtains

Hospital curtains are employed in rooms where several patients are located but must also be kept separated to meet regulatory standards of privacy and cleanliness [A28]. Under normal circumstances in a hospital, the set up of these curtains is minimal, but a takedown must be done at least biweekly in order to maintain the cleanliness of the curtains. It has been found, however, that hospitals do not regularly take down and clean these fixtures, leading to an accumulation of bacteria [A29]. In the Chinese Gospel Church, this regular weekly



Figure 7: Typical hospital curtains. Must be fixated to a supporting structure attached to roof when assembled

takedown would cause problems for the volunteers presented as they would have to dedicate extra time to place, remove, and clean these curtains in time for a prompt beginning to the service. Therefore, though viable, this solution is not applicable due to it being too time consuming for the volunteers to assemble and disassemble each week.

8.2. Room Dividers

Room dividers are commonly used in office and in shared living spaces to create a sense of privacy where a wall cannot be implemented. They are simple to use and easy to disassemble in order to be stowed away. Furthermore, these room dividers can be readily made by oneself. But, the creation of these room dividers is time-consuming, and many of those that are pre-manufactured are costly, with some costing up to CAD\$ 200 [A30]. Also, this solution requires an ample amount of storage, which the current storage room cannot provide [B2]. Therefore, this solution is not implementable as it is either too costly if it is bought, or too time consuming for volunteers to create, and there is not enough storage space for it.



Figure 8: Room dividers are a simple, but ineffective, solution due to their cost and size

8.3. Tents

Tents are as temporary shelters for individuals who are spending the night outdoors, commonly when camping. Though many consider that tents are an enjoyable way to spend the night in nature, they are in fact quite demeaning to use for those who are without shelter. Apart from completely isolating an individual from their environment and others, tents do not provide one with a sense of safety and belonging. Since tents completely block one from those around them, the attendees at the shelter will feel that they are not experiencing one of the core values exhibited by Out of the Cold; companionship. Furthermore, tents can lead to a sense of being quarantined, and of therefore being rejected by society due to being “different” and this perceived social isolation can lead to a host of health problems, including sleep deprivation [A31]. Therefore, a tent would fail to provide a sense of security and belonging to attendees. Also, the initial cost and maintenance of parts for the tents is quite elevated. There are many components that can become worn and broken over time and thus will need regular maintenance.



Figure 9: A tent is a commonly proposed solution, but it is not effective.

8.4. Sleeping Mattresses at OOTC Chinese Gospel Church

Currently, OOTC at the Chinese Gospel Church utilizes sleeping mattresses, as shown in Figure-1, for the homeless guests to sleep on. One of the primary concerns regarding this design is it's lack of privacy. The Chinese Gospel Church only accommodates 15 males, and our group was wondering as to why this was the case. According to our stakeholders, the space in the basement is not large enough to accommodate sleeping privacy for females as well [B4], and therefore restricts them from sleeping there at night. During our field notes it was also noted that the mattresses are currently very close to one another, and may contribute to a feeling of vulnerability among the participants of the program. Therefore, it may not be the most effective product to use when trying to accommodate both safety and security so other alternatives should be considered.



Figure 10: Sleeping mattresses currently used at the Chinese Gospel Church.

9. Conclusion

Out of the Cold is a selfless initiative that provides those who are less fortunate with food, shelter, and a strong sense of community. The Chinese Gospel Church, specifically, contributes to this cause through their values of community and cheerful giving. As student engineers, we recognize the tremendous impact this initiative can have on the lives of those around us and inspired us to become further involved in their community.

Based on our background research and observations from the site visit, we recognized a potential opportunity to further improve the experience of those partaking in the program. Getting a comfortable sleep has been stressed to be one of the most important needs for those living without a house and we decided to focus our attention on maximizing the quality of sleep and rest they receive. This will be achieved through designing a product which provides the individuals with a greater sense of safety and security by allowing their sleeping space to be personalized to their liking.

As a first year engineering design team, we hope to become further involved with the Out of the Cold community and providing for those who are less fortunate than ourselves.

10. Appendices

A. Journals, Articles, and Digital sources

[1] Canada Without Poverty. (2019). *Just the Facts | Canada Without Poverty*. [online] Available at: <http://www.cwp-csp.ca/poverty/just-the-facts/> [Accessed 15 Feb. 2019].

Housing

Homelessness is the most obvious expression of poverty's effect on housing, but it's not the only one. The following facts delve into housing instability and homelessness in Canada.

- **3 million** Canadian households are precariously housed (living in unaffordable, below standards, and/or overcrowded housing conditions).
- An estimated 235,000 people in Canada **experienced** homelessness in 2016, with roughly 35,000 people being homeless on any given night.
- Almost **1 in every 5** households experience serious housing affordability issues (spending over 50% of their low income on rent) which puts them at risk of homelessness.
- Three-quarters of Yukon's population live in **Whitehorse** where the average price of housing increased 80% over six years.
- Estimates place the number of homeless individuals living with a disability or mental illness as high as **45%** of the overall homeless population.
- In Toronto, there were **5,219 people** who were homeless in 2013 (the latest available data). Roughly half of the homeless population were on wait lists for affordable housing during the same period.
- Canada Mortgage and Housing Corporation predicts that its major national housing program funding will fall from **\$3.04 billion (2010) to \$1.68 billion by 2017** — a \$1.36 billion difference.
- According to new research, **spending \$10 on housing** and support for high-need chronically homeless individuals resulted in almost \$22 of savings related to health care, social supports, housing, and the justice system.
- Youth aged 16-24 make up about **20%** of the homeless population
- The number of older adults and seniors experiencing homelessness is rising, making up a combined **4%** of shelters users in 2016



[2] “r/toronto - First hand account of being homeless in Toronto.,” reddit. [Online]. Available: [https://www.reddit.com/r/toronto/comments/3hzqhm/first_hand_account_of_being_homeless_in_toronto/](https://www.reddit.com/r/toronto/comments/3hzqhm/first_hand_account_of_being_homeless_in_toronto/>.) [Accessed: 16-Feb-2019].

Posted by u/HogtownHomeless 3 years ago

First hand account of being homeless in Toronto.

Update: wow thanks to everyone! I'm desperately trying to respond to everyone but my phone is low on battery and I need to conserve it until I can plug in tomorrow. Thanks to everyone that offered help I'm going to try my hardest to meet up with you all. Also sorry for the response regarding the construction job I just don't want to disappoint folks with my lack of skill in that role. I'll respond more tomorrow. Thanks to you guys I know I'm going to beat this.

I'm using a throat at because I'm embarrassed to use my actual account.

I've been homeless for a few weeks now and I'm desperately trying to pull myself out of it. I don't think a lot of people truly understand what it's like so allow me to share my current life.

I managed my finances poorly and lost my job suddenly. Please have a savings account so you don't end up like me. The result of this is not due to addictions or alcohol or mental illness. I don't do drugs, brain still works fine, and couldn't afford a beer if I wanted it.

I worked in the tech industry and couldn't land a new job in time before losing the roof over my head. So this is where I'm at typing this on a slow iPhone 4 with a shattered screen. This thing is my life line and if anything were to happen to it I'd be screwed

So how does Toronto deal with its homeless population? Quite frankly it doesn't know what to do. The shelters here are dangerous and a waste with staff that are clueless and really don't care. You tell them you want to work and need help finding work and they just pat you on the had and say "oh that's nice". Toronto's "streets to homes" program is dead. The other day I inquired about how to get into that program and after much prodding on my part my caseworker finally admitted to me that the program burned its bridges with city landlords and now they can't provide homes for their clients. Best thin from that meeting was I got a shower.



[3] R. DiManno, "It's tough to be homeless in Toronto - and it's getting tougher," thestar.com, 17-Jan-2019. [Online]. Available: <https://www.thestar.com/opinion/star-columnists/2019/01/17/its-tough-to-be-homeless-in-toronto-and-its-getting-tougher.html>. [Accessed: 16-Feb-2019].

Opinion · Star Columnists

It's tough to be homeless in Toronto — and it's getting tougher

By **ROSIE DIMANNO** Star Columnist
Thu., Jan. 17, 2019

[f](#) [t](#) [e-mail](#) ...

The homeless, the *hard* homeless, build nests to survive.

Spinning a protective cocoon on the streets of Toronto.



[4] Climate Change Canada, "Wind chill index," [Canada.ca](http://canada.ca), 02-Jun-2017. [Online]. Available: <https://www.canada.ca/en/environment-climate-change/services/weather-health/wind-chill-cold-weather/wind-chill-index.html>. [Accessed: 16-Feb-2019].

[5] American Psychological Association. [Online]. Available: <https://www.apa.org/monitor/2009/12/shelter>. [Accessed: 16-Feb-2019].

'Like a piece of meat'

One obstacle to getting homeless people into housing programs is overcoming previous bad experiences they've had with shelters and support programs. Such incidents were documented by a 2007 study in the *Journal of General Internal Medicine* (Vol. 22, No. 7), which found that, of 17 homeless people surveyed, all of them felt like they were being "being ignored, rushed, brushed aside or treated rudely," according to the study. Thirteen reported they felt discriminated against and that they were dehumanized and disempowered when they visited community health-care centers. When asked about a particular experience with a health-care worker at a shelter, one responded, "[S]he just didn't care. It was like you were a piece of meat." Another said of his experience with shelters, "I got treated [poorly] the first time over there, and I'm not going to get treated like that, I'm not going through that again. I'd rather sit here and die on a bench than go over there."

Determining the kinds of experiences that encourage people to use housing services is the goal of Alisa Lincoln, PhD, MPH, a sociologist at Northeastern University in Boston. She and her colleagues interviewed 16 people living in the Safe Haven, a transitional shelter in Boston that gives residents their own lockable room and allows them to stay as long as they'd like. The residents Lincoln studied had active substance abuse issues and other mental illnesses such as schizophrenia, bipolar disorder and PTSD.

The researchers concluded that homeless people are looking for a place that respects them as fellow humans and adults; a place that feels like home and offers some privacy; and a place that doesn't have too many rules and restrictions. The theme of respect popped up in interviews over and over again, Lincoln says.

"For many people with a serious mental illness, being housed has meant accepting being treated like a child," she says.

One resident in the study stated that, "When [a Safe Haven staffer] brought me over and she told me I would have my own room and I would have my own key to the room, that clicked in my head. I don't care how bad it is, I don't care who lives there or anything else, it's got to be better than where I was."

Interestingly, even when they settled into the Safe Haven, residents still chose to occasionally sleep outside. The Safe Haven only requires residents to spend two nights a week at the shelter during their first month there.

"Some slept outside because they still had a network and a community on the street, but it seemed that people mainly slept outside because they were slowly adjusting from living outside to living inside," Lincoln says.

She says her research shows that unless shelters are willing to tailor their housing programs to seriously mentally ill homeless people's needs, then they are likely to remain homeless. Just to stay alive on the streets, people develop fierce independence, she says, so programs that don't respect that independence will often fail. Her research was published in an April 2009 article in the *American Journal of Orthopsychiatry* (Vol. 79, No. 2).

[6] "Abe Oudshoorn's Blog," Abe Oudshoorn's Blog. [Online]. Available:

<http://abeoudshoorn.com/blog/?p=16>. [Accessed: 16-Feb-2019].

The Root Causes of Homelessness in Canada

Sociologist Rob Rosenthal wrote an excellent paper ([Rosenthal, 2000](#)) exploring the simplistic perspectives in the public discourse of homeless persons as being either deserving or undeserving of aid. This is based on whether homeless persons are conceptualized as victims of their own irresponsibility, simply lacking in capacity, or victims of circumstances beyond their control. When we think about the causes of homelessness, it is helpful to hold the agency/structure dialectic, as proposed by sociologist Anthony Giddens ([Giddens, 1984](#)), in mind. Giddens defines 'agency' as being able to act freely, unconstrained by external forces, and 'structure' as the social institutions and norms that influence human relationships. Therefore, in looking at any individual case, we need to recognize that both personal agency and social structures play a role in one's current housing status.

[7] F. Godlee, "More sinning than sinned against," *Bmj*, 2015.

Policing and fairness

Respondents shared with most Canadians an appreciation of the necessity of policing to maintain law and order in society. However, they also believed that the police act unfairly in their treatment of racialized groups, the young, and the poor.

The respondents, most of whom were white and male, generally agreed with the statements that the police unfairly stop and question racial minorities or treat poor people worse than wealthy people. And they tended to disagree that the police were criticized too much or that it was rare for an innocent person to be jailed.

Respondents' gender or age did not significantly affect their responses. There were some differences by racial group: more Aboriginal people felt that innocent people are sometimes wrongly jailed; that the police treat males worse than females; and the poor worse than the rich. And fewer whites agreed that police treated people from some racial groups worse than others.

Table 1. Statements on policing and fairness

	Agree / strongly agree (%)
The police treat wealthy people better than poor people	90
The police treat people from some racial groups worse than people from other racial groups	90
We need police in this country to keep law and order	90
People from my racial group are more likely to be unfairly stopped and questioned by the police than people from other racial groups	[minority] 92 [whites] 39 [total] 61
The police treat young people worse than older people	60
The police treat males worse than females	53
Everyone has an equal chance of getting ahead in Canada	46
People criticize the police too much	35
It is rare for an innocent person to be wrongly sent to jail	25

Sylvia Novac, Joe Hermer, Emily Paradis, and Amber Kellen
7.2 More Sinned Against than Sinning? Homeless People as Victims of Crime and Harassment

www.homelesshub.ca/FindingHome
© Cities Centre, University of Toronto, 2009
ISBN 978-0-7727-1475-6



[8] J. Greene, "Urban Restructuring, Homelessness, and Collective Action in Toronto, 1980–2003," *Urban History Review*, vol. 43, no. 1, p. 21, 2014.

3.4 Absolutely Homeless

A number of people who are homeless rarely - and in some cases never - make use of shelters. The absolutely homeless refer to people who do not stay in paid accommodations or shelters, but rather, who live 'on the streets', in doorways, parks, on rooftops, under bridges, in tents and other public and semi-public places. Squatters are those who live in abandoned buildings, In many cases, homeless people move to the less crowded environments of the suburbs, where there are also fewer services (Ward, et al. 1998).

Research that only draws on shelter populations or other service users (through drop-ins, health services) excludes those who avoid such services. Anecdotal evidence suggests that many homeless people avoid services because of fear, intimidation, perceived discrimination

(homophobia, racism), relationship status (people who are partnered often avoid shelters that don't allow couples) and people with pets, for instance.

[9] “Out Of The Cold,” Out of the Cold Foundation | What's New. [Online]. Available: <https://outofthecold.org/>. [Accessed: 16-Feb-2019].



[10] “Out of the Cold,” Wikipedia, 24-Dec-2018. [Online]. Available: https://en.wikipedia.org/wiki/Out_of_the_Cold. [Accessed: 16-Feb-2019].

Out of the Cold

From Wikipedia, the free encyclopedia

Out of the Cold is a volunteer driven program run in many Canadian cities during the cold winter months serving [homeless](#) and [poor](#) community members. While initially a Catholic program started by Sister Susan Moran at [St. Michael's College School](#),^{[1][2][3][4]} it has grown into a multi-faith initiative, with community organizations such as churches, synagogues and mosques in a city taking turns providing food, hospitality and medical services.^[1] The program runs from about mid November to early April.

Those receiving the services are called guests. Guests are treated with care, respect and without judgment. Unlike other shelter programs, Out of the Cold does not generally require detailed registration.^[5]

[11] razor tie artery foundation announce new joint venture recordings | Razor & Tie. [Online]. Available: https://web.archive.org/web/20150912031952/http://www.ootc.ca/community_links.php. [Accessed: 16-Feb-2019].

[12] S. Israel, “Susan Moran, nun who co-founded Out of the Cold program, dead at 78 | CBC News,” CBCnews, 21-Dec-2016. [Online]. Available: <https://www.cbc.ca/news/canada/toronto/susan-moran-death-1.3906423>. [Accessed: 16-Feb-2019].

Sister Susan Moran, the Toronto nun known for founding the Out of the Cold shelters for homeless people, died on Sunday.

She was 78.

The Out of the Cold emergency shelters started in just a few Toronto church basements in 1987. They're now offered at 21 locations across the city, including synagogues and mosques.

- [Activists push to open Toronto armouries for emergency shelter](#)

Moran was known as a tireless advocate for some of Toronto's least fortunate residents. She was made a member of the Order of Canada in 2006.

"She was always out there, she was always at the Out of the Cold programs, she was always talking to people on the sidewalk, and she knew everybody by name," said Cathy Crowe, a street nurse and visiting professor at Ryerson University who worked with Moran.

[13] E. Mathieu, "Sister Susan Moran dedicated her life to helping the homeless," thestar.com, 22-Dec-2016. [Online]. Available: <https://www.thestar.com/news/gta/2016/12/21/sister-susan-moran-78-dedicated-her-life-to-helping-the-homeless.html>. [Accessed: 16-Feb-2019].

Sister Susan Moran dedicated her life to helping the homeless

By **EMILY MATHIEU** Investigative News reporter
Wed., Dec. 21, 2016



This winter, like she did every winter for most of her adult life, Sister Susan Moran would certainly have been spending her days and nights making sure people were out of the cold.

She was driven, she explained in one of the many stories chronicling her remarkably selfless life, by a singular mission to create a welcome, loving and warm place for those who struggled to do it for themselves.

[14] razor tie artery foundation announce new joint venture recordings | Razor & Tie. [Online]. Available: <https://web.archive.org/web/20150912092705/http://www.ootc.ca/volunteers.php>. [Accessed: 16-Feb-2019].

[15] "Core Values 宗旨," Chinese Gospel Church 華人福音堂. [Online]. Available: <https://chinesegospelchurch.net/about/corevalues/>. [Accessed: 16-Feb-2019].

1. **Church Planting** We value the church as God's primary way of working in the world.
2. **Strategic Partnerships** We are a member of the Associated Gospel Churches of Canada (AGC) and ascribe to their statement of faith, purpose, vision and values. A statement can later be put here on our other partnerships, like ACGC, etc
3. **Autonomy of Congregations** We believe that in our multi-lingual setting, each congregation must have its own identity and relative autonomy while being accountable to a central body, the Council, representing the membership.
4. **Evangelism** We are a missions-minded church believing in the Great Commission. Our mission field starts in Toronto, our Jerusalem, and extends to the uttermost parts of the world.
5. **Pioneering Spirit** We are open to what the Spirit of God leads us to accomplish because there will be diverse needs and opportunities at different times.
6. **Spiritual Formation** We are committed to the spiritual formation of each believer as evidenced by the fruit of the spirit.
7. **Training** We are committed to the training of all those whom God has given us so that they may be mature as Christian workers and leaders, as evidenced by the effective use of their spiritual gifts.
8. **Community** We believe that we are part of a community and must show the love of Christ in practical ways to one another and to our neighbours.
9. **Cheerful Giving** We recognize the need for funds and other resources to accomplish our share of God's work. His riches bless us and we want to bless others through our generous giving.
10. **Chinese Heritage** We affirm our roots as a church targeting those of Chinese descent. We endeavour to continue this Chinese ministry while also extending our reach to those of any ethnic background that the Lord opens to us.



[16] “Out of the Cold 避寒运动,” Chinese Gospel Church 華人福音堂. [Online]. Available: <https://chinesegospelchurch.net/ootc/>. [Accessed: 16-Feb-2019].

The Out of the Cold (OOTC) program is a volunteer initiative that consists of congregations from faith groups, community members and advocates who provide safe refuge, hospitality and emergency shelter to the homeless community throughout the City of Toronto. The mission of the Chinese Gospel Church Out of the Cold Program is to provide a safe, secure and warm environment where guests can eat, sleep and hear the Good News of Jesus Christ through our love in action, attitude and words.

This past season, the OOTC ministry ran every Thursday starting on **January 3, 2019** and ending on **March 28, 2019**.

If you are interested in serving in this ministry by cooking one of the meals, volunteering for one of the shifts (dinner, social or breakfast), or by any other means, please contact Lloyd Kwong at lsk@noc.gtanet.ca or 416-219-9591.

[17] “Why Some Homeless Choose The Streets Over Shelters,” NPR, 06-Dec-2012. [Online]. Available: <https://www.npr.org/2012/12/06/166666265/why-some-homeless-choose-the-streets-over-shelters>. [Accessed: 16-Feb-2019].

The screenshot shows the NPR website interface. At the top, there's a navigation bar with the NPR logo, sign-in, shop, and donate buttons. Below that is a secondary navigation bar with links for NEWS, ARTS & LIFE, MUSIC, SHOWS & PODCASTS, and SEARCH. The main content area features a play button icon and a timer showing 30:17. The title 'NATIONAL Why Some Homeless Choose The Streets Over Shelters' is prominently displayed. Below the title, it says 'December 6, 2012 · 1:00 PM ET Heard on Talk of the Nation'. A detailed description follows: 'Hypothermia kills an estimated 700 people experiencing, or at-risk of homelessness each year, according to the National Coalition for the Homeless. Every day, street outreach workers in cities across the nation go out into communities to encourage people on the street to take shelter, but many homeless people refuse.' There are also sections for 'Guests' and a transcript. On the left side, there are social media sharing icons for Facebook, Twitter, and Email, along with buttons for QUEUE, DOWNLOAD, EMBED, and TRANSCRIPT.

[18] J. Christensen, “Here's why you don't sleep well in new places,” CNN, 23-Jun-2017. [Online]. Available: <https://www.cnn.com/2016/04/21/health/poor-sleep-while-traveling/index.html>. [Accessed: 16-Feb-2019].

Story highlights



Half of your brain may stay awake to keep you safe from danger in a new environment



Birds sleep with one eye open and can turn off half their brain to get some rest



you are away from home, according to a study published in [the latest edition of Current Biology](#).



Related Article: The cure for your junk food cravings? Sleep

There's even a science-y name for this: first-night effect. The first-night results are so atypical, some researchers will toss them out. Wanting to understand why this happened, scientists at Brown University devised an unusual experiment.

[19] H. B. Olsen, “Homelessness and the Impossibility of a Good Night’s Sleep,” *The Atlantic*, 12-Feb-2018. [Online]. Available: <https://www.theatlantic.com/health/archive/2014/08/homelessness-and-the-impossibility-of-a-good-nights-sleep/375671/>. [Accessed: 16-Feb-2019].

(CNN) — Do you struggle to fall asleep and/or stay asleep when you are on the road? Don't blame your pillows or the sheets. Instead, blame your own hyper-vigilant brain.

It appears that half of our brain may remain alert when you sleep in a new location, at least on that first night

Scientists figured this out by watching a small group of people sleep in a lab and playing quite sounds by their ears. You may be thinking, "Who in the world would sleep well in a lab with a bunch of scientists staring at them?" But people who sign up for these sleep studies are decent sleepers, at least on the second night they are there.

Scientists have long known that results from the first night of most sleep experiments are usually a bit off.

- 30 -



“Without a doubt, sleep is the biggest issue for homeless people,” writes San Diego-based blogger and self-proclaimed “chronic homeless man” Kevin Barbieux, who writes under the name The Homeless Guy. Barbieux, who has alternated between transitional housing and no housing at all, updates his blog either through his donated laptop or by using the computers at his local library.

“Homeless advocates are always focused on what are believed to be the root causes of homelessness, and providing the basics of food shelter and clothing to those who do without,” he continues. “And although those things are important in their own way, they don't affect homeless people with the intensity that sleep does (or the lack thereof).”

For individuals without permanent housing, sleep is difficult to come by. When there's no way to secure your personal belongings, it's dangerous and frightening to be as vulnerable as we are when we're in a truly restful sleep.

As a result, sleep becomes a matter of when-you-can, where-you-can. And often, you just can't, leading to a host of other mental and physical ailments.

Sleep deprivation has also been linked to an increase in mental illness, drug abuse among teenagers, and higher rates of violence and aggression. Schizophrenia-like symptoms may also start to develop, which is problematic in a population that already experiences a higher-than-average likelihood of suffering from the disease.

[20] R. Gomez, S. J. Thompson, and A. N. Barczyk, “Factors Associated with Substance Use Among Homeless Young Adults,” *Substance Abuse*, vol. 31, no. 1, pp. 24–34, 2010.

INTRODUCTION

Go to:

The severity of substance abuse among homeless young adults is well documented. Drug use for homeless young people is higher in comparison to their housed counterparts [1]. Previous research has estimated that 39% to 70% of homeless youth abuse drugs or alcohol [2, 3]. Substance use in this population has been reported as two to three times higher than that found among non-homeless young adults. In nationally representative samples, marijuana has been identified as the drug of choice for homeless youth [4, 5]. Rates of cocaine use are four to five times higher and amphetamine use is three to four times higher among homeless youth compared to their housed counterparts [6]. In addition, Kipke and colleagues (1997) reported that 71% of their sample of homeless youth met criteria for an alcohol and/or illicit drug use disorder, while Mundy and colleagues (1990) found that 48% of homeless youth in their study met DSM-IV criteria for alcohol abuse or dependence and 39% met criteria for drug abuse or dependence.

[21] City of Toronto, “Poverty in Toronto,” Green Lane Landfill, 04-Dec-2017. [Online]. Available: <https://www.toronto.ca/city-government/accountability-operations-customer-service/long-term-vision-plans-and-strategies/poverty-reduction-strategy/poverty-in-toronto/>. [Accessed: 16-Feb-2019].

Fearing eviction, walking to save a token, always choosing the cheapest and least nutritious food, telling government agencies the same information over and over again, and worrying that the opportunities enjoyed by other children will be denied to yours. That's what life is like for too many Torontonians.

It hasn't always been like this. Back in the '70s, one in 10 adults were poor, not one in five; two in three neighbourhoods were middle income, not one in three; the majority of people looking for work qualified for employment insurance, not the minority; income supports assisted us in times of need, not food banks.

It used to be that education led to jobs, jobs led to stability, and social supports allowed us to get back on our feet if a crisis struck. That path is broken. Good jobs are increasingly hard to find. Almost half of Greater Toronto Area workers have temporary, contract, part-time jobs with variable hours, little stability, and no benefits.

Education remains a smart long-term investment, but it offers no immediate guarantees: almost one in four college graduates are working low-wage jobs. Employment Insurance is less accessible. Ontario Works rates lost more than half of their value in the last 20 years. Child care is unaffordable.

At the same time, life in Toronto is getting more expensive every day. Housing, transit, and healthy food are increasingly out of reach for people living on low wages and income supports.

The City of Toronto has been tackling these issues for many years. City strategies, programs, and services provide targeted supports to individuals, families, and neighbourhoods. We must continue to do the things that work, and do more of them. But that is not enough. We must also try new strategies to ensure that the benefits of growth and prosperity are widely shared – so that everyone can live in dignity.

[22] “LHIN Home and Community Care,” Who We Are. [Online]. Available: <http://healthcareathome.ca/>. [Accessed: 16-Feb-2019].

Community Care Access Centre

The Community Care Access Centre provides nurses to the OOTC sites. Given that homeless people have a difficult time accessing services and that they are more vulnerable than the average person to a variety of health issues, these nurses play an incredibly vital role to our sites. Nurses see about 10-15 people per site.

www.ccac-ont.ca

[23] “Sherbourne Health Centre,” Health Services for Toronto Central. [Online]. Available: <https://www.torontocentralhealthline.ca/displayservice.aspx?id=133762>. [Accessed: 16-Feb-2019].

Service Description: Health centre focused on family and community health * health professionals assess and treat non-life-threatening injuries or illnesses * referrals to other local health services and personal development groups

Community-led health teams develop programs to improve the social supports and conditions that affect long-term health

Acute Respite Care (ARC) - Short-term health care unit * offers 24/7 care for individual who are homeless, under-housed and/or socially isolated and need a place to recover from an acute medical condition, illness, injury or surgery

Diabetes Education Program - Supports for people living with prediabetes or diabetes one-on-one or group consultation on monitoring blood sugar levels, medications, healthy eating, exercise, and other lifestyle choices * registered nurse and dietitian on staff

Sherbourne Family Health Team - Medical care team focused on family and community health * coordinates patient care in order to assess and treat injuries or illness * team consists of doctors, nurses, nurse practitioners, social workers, dietitians, and other health care professionals

Supporting Our Youth (SOY) - Programs and services for lesbian, gay, bisexual, trans queer, and questioning youth

Services and Programs:

- [Youth Line](#)

[24] “Home,” Sherbourne Health. [Online]. Available: <http://sherbourne.on.ca/>. [Accessed: 16-Feb-2019].

Sherbourne Health Bus

The Sherbourne Health bus provides a service to Blythwood OOTC on Saturday's. The bus is well utilized by the guests coming to the program for both meals and over night. The staff on the health bus provide service to upwards of 30 people each week!!

www.sherbourne.on.ca

[25] “Requirements for sleeping bags,” International Standard, Oct. 2016. (ISO 23537-1:2016)

Requirements for sleeping bags —

Part 1: Thermal and dimensional requirements

1 Scope

This part of ISO 23537 specifies the requirements and test methods as well as provisions for labelling of adult sized sleeping bags for use in sports and leisure time activities.

This part of ISO 23537 does not apply to sleeping bags intended for specific purpose such as military use and extreme climate zone expedition. It does not apply to sleeping bags for children or babies.

NOTE 1 No prediction model exists for the determination of the limiting temperatures based on the thermal resistance of the sleeping bag for children and babies. Moreover, such a model for testing cannot be developed because the necessary controlled sleep trials with children or babies in climatic chambers are, out of ethical reasons, not permitted.

NOTE 2 The limit temperature for extreme climate conditions is seen to be -20 °C.

This part of ISO 23537 describes the method for the assessment of the performance in steady-state conditions of a sleeping bag with regard to the protection against cold.

NOTE 3 Sleeping bags without homogeneous fillings designed to provide local extra insulation in certain parts pose issues with the calibration and/or test procedure. Ongoing work continues to provide suitable means of establishing temperature ratings.

[26] SleePare, "5 Sure Shot Ways to Test Mattress Firmness In Store," SleePare. [Online]. Available: <https://www.sleepare.com/blogs/5-sure-shot-ways-test-perfect-mattress-firmness-store/>. [Accessed: 17-Feb-2019].

Extra Soft	Soft	Medium	Plush Firm	Firm
(1-2)	(3-4)	(5-6)	(7-8)	(9-10)
Incredibly Soft	Plush feel	Balanced surface	Firmer feel	Very hard
Extreme sinkage	Some sinkage with enough give	No excessive sinkage	Little to no sinkage	No sinkage at all
Poor spinal alignment	Best alignment for side sleepers	Excellent spinal alignment in all sleep positions	Postural correction for back & stomach sleepers	Spinal alignment for lower back pain in heavier persons
Poor Support	Most supportive for lightweight persons	Remarkable support for majority sleepers	Enhanced support for backache	Deliver therapeutic support

[27] L. Block, "Mattress Firmness Guide | Sleepopolis", *Sleepopolis*, 2018. [Online]. Available: <https://sleepopolis.com/guides/mattress-firmness-guide/>. [Accessed: 17- Feb- 2019].

Universal comfort mattresses are **made to suit the needs of most sleepers**. Most would describe these mattresses in the **5-7 out of 10 firmness range** (where 10 is the most firm). This firmness range is critically important, as **80% of sleepers prefer a medium-feel mattress in the 5-7 range**.

[28] “Cubicle Curtains & Privacy Curtains,” Healthcare Curtains. [Online]. Available: <https://www.healthcarecurtains.com/>. [Accessed: 16-Feb-2019].

Hospital Curtains and Cubical Tracks for Every Setting

Diamond Drapery has been a leading provider of hospital curtains and other products for more than forty years. Customers have depended on us for custom-made curtains that meet every regulatory standard and stand up to the environments they are used in. In addition to standard privacy curtains, we offer branded fabrics, antistatic and anti-microbial curtains, and proprietary cubicle tracks and hangers. Our ability to handle major installations is thanks to our large inventory of products ready to place in any hospital, clinical, or institutional setting.

[29] “Hospital privacy curtains may harbor dangerous germs,” ScienceDaily, 27-Sep-2018. [Online]. Available: <https://www.sciencedaily.com/releases/2018/09/180927215701.htm>. [Accessed: 16-Feb-2019].

Science News

from research organizations

Hospital privacy curtains may harbor dangerous germs

Date: September 27, 2018

Source: Elsevier

Summary: Without timely intervention, privacy curtains in hospitals can become breeding grounds for resistant bacteria, posing a threat to patient safety, according to new research.

[30] walmart.ca. [Online]. Available: <https://www.walmart.ca/en/home/home-decor/room-dividers/N-1484>. [Accessed: 16-Feb-2019].

[View Details](#) | [Edit](#) | [Delete](#)

Sort by:	Newest	Rating	Price	Popular	1 - 60 of 302 items				
	Costway Black 4 Panel Room Divider Privacy Screen		Costway White 4 Panel Room Divider Privacy Screen		Charlie Black Wood Framed 3 Panel Folding Screen				
	67" H 6 Panel Room Divider Classic Venetian Wooden		Winsome 94370 3-Panel Wood Folding Screen						
 0 Reviews	\$108.99	 0 Reviews	\$99.99	 18 Reviews	\$130.97	 0 Reviews	\$271.99	 211 Reviews	\$147

[31] A. B. Bhatti and A. U. Haq, "The Pathophysiology of Perceived Social Isolation: Effects on Health and Mortality," *Cureus*, 2017.

Abstract

Go to:

Perceived social isolation (PSI) is a deficit in normal human social interaction, which has been associated with negative health outcomes. However, the precise mechanisms through which PSI influences human health are not fully known. This review aims at bringing out what is known about these pathways through which social isolation affects human health. We searched PubMed, Medical Literature Analysis and Retrieval System Online (MEDLINE), Excerpta Medica dataBASE (EMBASE), Psychological Information Database (PsycINFO), and Cochrane Library in addition to secondary references from primary journal articles for the most relevant and recent information concerning the research topic. The keywords used were perceived social isolation, loneliness, health outcomes, cardiovascular effects, neuroendocrine effects, depression, and cognitive decline, in animal and human populations. There are clear linkages between PSI and the cardiovascular system, neuroendocrine system, and cognitive functioning. PSI also leads to depression, cognitive decline, and sleep problems. The mechanisms through which PSI causes these effects are neural, hormonal, genetic, emotional, and behavioral. The effects of PSI on health are both direct and indirect. There is a complex interconnected network of pathways through which PSI negatively influences health. These hypothetical pathways using which the effects of PSI have been explained form the base on which further analyses can be carried out.

[32] P. Bomme, "Integrated safety & quality framework for ATM/CNS technical services," 4th IET International Conference on Systems Safety 2009. Incorporating the SaRS Annual Conference, 2009. (ISO 23537-2:2016)

[33]“Textiles -- Tear properties of fabrics -- Part 1: Determination of tear force using ballistic pendulum method (Elmendorf)” International Standard. (ISO 13937-1:2000)

9 Procedure

9.1 General

Select the mass of the pendulum (6.2.2) so that the measurements taken from the test specimens give results between 15 % and 85 % of the full scale range of the corresponding measuring scale.

Check that the apparatus is set at zero. Move the pendulum to the raised position.

9.2 Mounting of test specimens

Position the test specimen in the jaws (6.2.4) so that the long side of the test specimen is parallel to the upper edge of the jaws. Clamp the test specimen centrally and with the bottom edges of the test specimen carefully set against the bottom stop of the jaws. Using the knife (6.2.5), cut a slit of 20 mm \pm 0,5 mm in the side opposite the notch, leaving a tear length of 43 mm \pm 0,5 mm.

9.3 Operation

Release the pendulum by depressing the pendulum stop (6.2.2). Restrain the pendulum on the return swing without disturbing the position of the pointer. Read the tear force in newtons off the measuring device to the nearest scale division or off the digital display. Depending on the type of apparatus used, the scale reading obtained may have to be multiplied by an appropriate factor as specified by the manufacturer of the test apparatus to obtain the result in newtons (see 10 and A.5). Check that the result is in fact within the zone between 15 % and 85 % of the full scale used. Repeat the test on at least five test specimens for each fabric direction.

Observe whether the tear proceeds along the direction of force and whether any threads slip out from the fabric rather than being torn. The test is considered correct if there is a) no slippage of threads out of the fabric, b) no slippage in the jaws, c) the tear is completed and remains within the 15-mm wide notched area. Other results shall be discarded.

If the test results from three or more out of the five test specimens have to be rejected, the method is unsuitable.

If agreed, test additional test specimens, preferably doubling the number of test specimens. In such cases, the reporting of the results shall also be agreed.

B. Field notes and Research

[1] Images Depicting the storage room used for the Out of the Cold programs at Chinese Gospel Church.

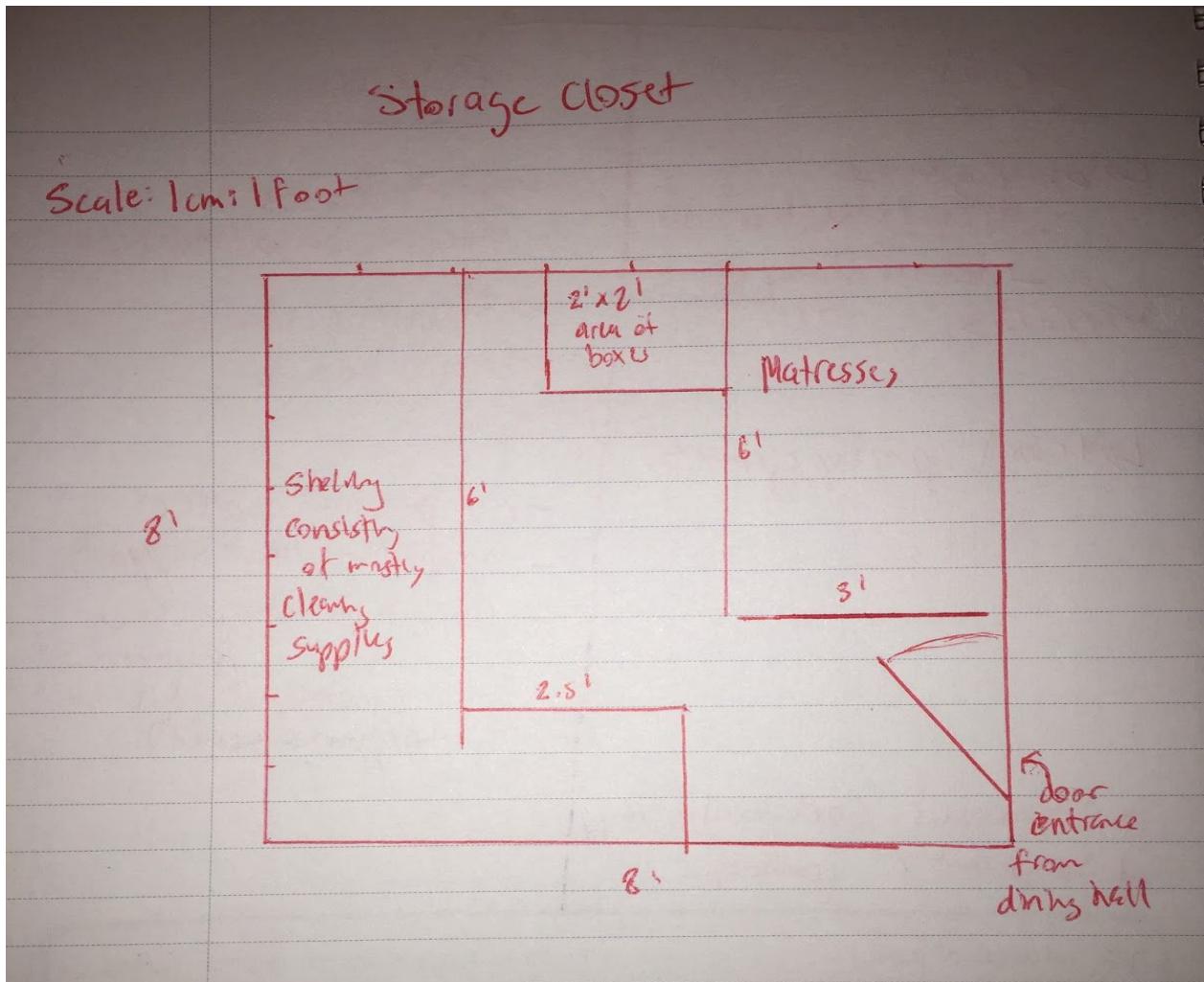
The room itself is 8'x 8'. The shelves of the space being taken up by foot supplies as well as dining and cleaning supplies.





[2] The kitchen at the Out of the Cold shelter. Food that was pre cooked can be seen inside the ice cream containers. Cutlery and plates are reused and kept inside the kitchen.

[3] Diagram of the storage room and how its space is being used. Currently the northeast corner is occupied by essential items stored inside cardboard boxes and mattresses. Shelves on the west side of the room are all full with the exception of the 2.5' x 2' shelf at the central shelf at the southern end of the room.



Chinese Gospel Church - Out of the cold

- volunteers very welcoming

- ① ↳ asked our group members who we were and why they were here
- ② ↳ seemed genuinely interested in learning more about us
- ③ ↳ at the beginning ⚡ seemed confused as to why engineers were spending time at a social program such as this
- ④ ↳ one of the volunteers was only volunteering for his second time, church asked him to help out (commutes from Scarborough)
- ⑤ ↳ another volunteer has been volunteering since she was 15 years old
- moved down to the general area, met some of the residents
- ⑥ ↳ had the chance to look at the kitchen, as well as where the storage space was (including board games and beds)
- ⑦ ↳ about 20 or so residents, definite separation between many of them
- ⑧ ↳ very social residents who were spending time talking to one another and playing board games (Scrabble)
- ⑨ ↳ many of the residents sat alone or slept, making minimal contact with those around them
- ⑩ ↳ introduced myself to two residents who were deep in a conversation with each other → I stayed and listened for a bit, but they seemed rather interested in their own conversation
- ⑪ ↳ Huston played chess with another resident, and he seemed very friendly and willing to play (carefully thought about every move.)
- ⑫ ↳ couple of residents were talking about another man who used to come to the place who passed away recently (had an issue with alcohol)
- ⑬ ↳ talked to a few more volunteers (only been here a couple of weeks) talked about how they cooked the meals the day before
- ⑭ ↳ asked about why the church only accommodated men → due to the small size of the church, they can't accommodate both men and women without appropriate separation



sS

[4] Chinese Gospel Church Out of the Cold Field Notes

[5] Email thread where we began contacting the Out of the Cold shelter

LK Lloyd Kwong <lsk@noc.gtanet.ca> Tue 02-05, 12:54 PM

Hi Hailin,

sorry I was not able to respond to you in time for last Thursday. In regards to information for the Out of the Cold program at CGC, I would suggest you visit our webpage and view the 7-8 minute Orientation video, it provides a general description of how the program is run at our site.

Our website link is: <https://chinesegospelchurch.net/ooc/>

If you would like to visit our site, I would suggest arriving around 7:45pm to observe our Social shift. Prior to this time, the site can be very busy as we are serving and then cleaning up after Dinner. If you do decide to visit, please let us know so I can let our shift manager know ahead of time.

Thanks,

Lloyd

HW Hailin Wang Wed 01-30, 4:46 PM

> Good evening Mr. **Kwong**.
>
>
> My name is Hailin and I am a part of a student engineering team interested in engaging with the Out of the Cold shelter. We are a team of four first-year students including Sepehr, Armaan, Ines and I. We are hoping to gain a better understanding of how this organization provides for those who are less fortunate, as well as possible issues that your community encounters. One of our group members saw a social media ad about how people can call to help those who are at risk due to the weather extremities. We were very fascinated by this initiative and hope to learn more by directly interacting with the community.
>
>
> If it is possible for us to observe some of the services you are providing this Thursday, we would greatly appreciate it.
>
>
> Kind Regards,
>
> Hailin Wang

[6] We are given contact for the volunteer Coordinator



Lloyd Kwong <lsk@noc.gtanet.ca>

Wed 02-13, 11:12 AM

Hailin Wang ↗



Reply all | ↘

Inbox

Hi Hailin,

the Social shift manager tomorrow is Ken Hu, you can ask for him when you arrive.

Thanks,

Lloyd

...

[7] Picture of the entrance to the Thursday Out of the Cold Services

