

Embedding Indigenous Knowledge into Housing Design with the Homebuilding Students in Wasagamack and Garden Hill First Nations, Manitoba, Canada

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ABSTRACT

Wasagamack and Garden Hill First Nations in Island Lake, Manitoba, are experiencing a housing crisis, with severe overcrowding. This article describes a research analysis of local materials, building skill levels, environment, demographics, and cultural aspects completed by graduate students in interior design as part of collaborative design/build activities, training programs, and community workshops. This study is part of a First Nation community/university partnership. Healthy, culturally appropriate, resilient single- and extended-family homes were designed using local materials and labour. This pilot project offers a pathway to build capacity to fill the gap of 150,000 homes in a way that advances cultural, health, social, and economic development. Further, a decolonizing policy and the provision of adequate infrastructure, such as access roads, in Indigenous reserves are needed to create a sustainable home-building ecosystem.

RÉSUMÉ

Les communautés autochtones Wasagamack et Garden Hill à Island Lake au Manitoba font face à une crise du logement, y compris un surpeuplement sévère. Cet article décrit une analyse de recherche des matériaux locaux, des niveaux d'habileté en construction, de l'environnement, de la démographie et des aspects culturels complétée par des étudiants diplômés en design d'intérieur dans le cadre d'activités de design et de construction collaboratives, de programmes de formation, et d'ateliers communautaires. Cette étude fait partie d'un partenariat entre les communautés autochtones et l'université. Utilisant des matériaux et de la main-d'œuvre locaux, une équipe a conçu des domiciles sains, appropriés culturellement et résilients, soit pour une famille ou pour une famille élargie. Ce projet pilote ouvre une piste pour procéder à la construction de domiciles afin de combler un manque de 150 000 logements de manière à faire avancer le développement culturel, sanitaire, social et économique. En outre, une politique de décolonisation et la création d'une infrastructure adéquate telle que des routes d'accès dans les réserves autochtones sont nécessaires afin de créer un écosystème durable pour la construction de logements.

Keywords / Mots clés : housing, Indigenous, Northern, remote, inadequate housing / logements, autochtone, nordique, isolé, logements inadéquats

INTRODUCTION

First Nation communities are hotspots for inadequate and unsuitable housing, due largely to the *Indian Act* (Statistics Canada, 2022). Worse housing outcomes are attributable to the racialized law of the *Indian Act* legalizing discrimination against Indian reserves (IR). Compared to the broader Canadian population, more than six times the number of people on IRs live in inadequate housing needing major repairs (Statistics Canada, 2021a). Structural, mechanical, architectural, flood, or electrical hazards lead to inadequate housing needing major repairs for inhabitants' health and safety (United Nations, 2023). Further, IR houses are overcrowded, making housing unsuitable. This article explores a decolonizing approach to housing design with local postsecondary Anisinew homebuilding students and Elders in two First Nations in northeast Manitoba's Island Lake.

Wasagamack and Garden Hill First Nations in Island Lake, Manitoba, have some of the worst housing conditions in Canada. A community-university partnership started to explore improving housing in September 2018, which resulted in the formation of the Mino Bimaadiziwin (MB) Homebuilders. Mino Bimaadiziwin means good life as the creator intended. This post-secondary community-led education program trained 70 Indigenous students intent on building capacity and building houses for a better life (Oni, Martin, Bonnycastle, Wood, & Thompson, 2023; Mino Bimaadiziwin Partnership, 2020).

Working alongside the students and Elders in Island Lake, as part of the Mino Bimaadiziwin Homebuilders program, Catrina Salles developed her interior design graduate research practicum, which this article profiles. These designs and the Homebuilder program also led to the co-author, Shirley Thompson, producing an expert report to support the class action suit by Chief Elvin Flett in Island Lake, Manitoba. Chief Flett of St. Theresa Point First Nation leads the national class action litigation against the Attorney General of Canada for "damages caused by its negligence in creating and failing to remedy the lack of access to adequate housing on First Nation Lands" (Flett vs SCC, 2023, p. 3). This class action aims to hold the Government of Canada accountable for the IR housing crisis, asking for \$5 billion in compensation for past negligence, and demanding the federal government provide adequate housing to First Nations people on IRs (McCarthy Tétrault, 2024).

This article seeks to understand the needs and opportunities for housing design partnerships with First Nations, particularly the Homebuilding students (called Homebuilders) in Garden Hill and Wasagamack First Nations. These Island Lake First Nations lack infrastructure, including sufficient houses, access roads, and pipes, depending on cisterns or barrels for water and sewage. To understand the IR housing crisis, this article first looks at Canada's *Indian Act*. Second, IR housing adequacy is compared with off-reserve housing in Canada. Third, the high rate of overcrowding of First Nations people in IR houses is discussed. Wasagamack and Garden Hill First Nations housing statistics are profiled regarding overcrowded and inadequate housing. The Mino Bimaadiziwin Homebuilder postsecondary student program that designed and built houses is then introduced. The method of the community engagement process, home visits and participatory building work with the Mino Bimaadiziwin Homebuilder students, is profiled. Local Indigenous knowledge and materials are considered in creating designs for single- and extended-family homes. This research analyzing a community-academic partnership for designing and building homes contributes to the current literature on First Nations solutions to housing issues.

DIFFERENT LAWS AND POLICIES FOR HOUSING ON INDIAN RESERVES

Indian reserve housing (IR) is recognized as a distinct type of tenure (Statistics Canada, 2021b). Canada applies different laws and policies for IR housing, under the *Indian Act*. Statistics Canada found that neither rental nor ownership terms applied to this unique category of IR housing, due to “historical and statutory reasons” (Statistics Canada, 2021b):

For historical and statutory reasons, shelter occupancy on IRs or settlements does not lend itself to the usual classification by standard tenure categories. Therefore, a special category, ‘dwelling provided by the local government, First Nation or Indian band,’ has been created. (Statistics Canada, 2021b, para. 1)

The *Indian Act* (1985, s. 18 (1)) outlines who can live on the IR. Off-reserve, everyone, including First Nations and other Indigenous people, can own homes and apply for a mortgage to build or buy their house, but not on IR land. Statistics Canada (2021b) notes that people living in IR housing are restricted to those registered under the *Indian Act*: “Households who live in a dwelling on an Indian reserve or settlement are a First Nation or Indian band” [para. 1].

Financing for IR housing is very restricted. Land on IRs cannot be mortgaged to finance housing. The *Indian Act* (1876, s. 11) voids mortgages from banking institutions or other lenders, stating:

All mortgages or hypothecs given or consented to by an Indian and all leases, contracts and agreements made or purporting to be made by any Indian, whereby persons or Indians other than Indians of the band are permitted to reside or hunt upon such reserve, shall be absolutely void. [p. 5]

On IRs, the sole mortgage financier is the Canada Mortgage and Housing Corporation (CMHC). Even then, a ministerial guarantee is required, creating huge bureaucracy (Zingel, 2020). Canada can grant or withhold a certificate of possession, requiring many conditions. Many restrictions exist on the federal government solely responsible for funding IR housing. Through the discriminatory restrictions, First Nations people typically have no options for design, homeownership, and financing IR housing (Allary, Thompson, & Mallory-Hill, 2023; Oni et al., 2023; Indian Act, 1985).

HISTORICAL AND STATUTORY REASONS FOR DIFFERENT RULES FOR INDIAN HOUSING ON RESERVE

The *Indian Act* positions the Crown as the legal trustee to control First Nations peoples’ land, resources, and housing. The legal basis for this paternalistic legal relationship is the *Indian Act* (1876, s. 3-12) statement that a “person means an individual other than an Indian.” [p. 3]. Canada’s legal position that “Indian” people are not “persons” gives the crown trusteeship over land and resources on IRs and off-reserves.

Legal discrimination against First Nations people is racialized (Blacksmith, Thompson, Hill, Thapa, & Stormhunter, 2021). The *Indian Act* (1985, s. 4(1)) uses the term “race of aborigines,” to apply to “Indian,” not including Inuit (Indian Act (1985, s. 4(1)), stating: “A reference to this Act to an Indian does not include any person of the race of aborigines commonly referred to as Inuit” [para 27]. Canada currently excludes First Nations people from legal person status based on the *Indian Act* (1876), and the *Indian Act* (1985, s. 5).

First Nations people do not have title to the reserve land they live on, under Crown trust laws. The Crown, according to the *Indian Act* (1876, s. 6), holds title rather than the First Nations people living on the Indian reserve. Without title, the colonial government manages the land for their colonial interests, which differs radically from First Nations peoples' interests.

Most land in Canada is not IR land. Indian reserve land makes up only 0.02 percent of Crown Land (Joseph, 2018). Indian reserves vary in size from 640 acres to 20 acres per family of five. British Columbia reserves are the smallest (Indigenous Foundations, 2023) at 20 acres per family. This small size led to First Nation leaders protesting IR insufficiency for future generations:

From the late 1860s, First Nation leaders had protested their small reserves in every way they could, claiming, fundamentally, that their people would not have enough food and that their progeny had no prospects. In retrospect, they were right (Harris, 2002). [p. 121]

Canada segregated and imprisoned First Nations people on IRs (Joseph, 2018). A pass from the Indian Agent was required to leave IRs from their inception to 1935 (Joseph, 2018). Imprisoning First Nation people on IRs freed up land in Canada for newcomers to settle on (Ballard, 2012). Canada took the good, productive land for "the progress of white settlement," as Canada's Indian Reserve Commissioner Alexander McKinley explained in 1876:

This Government does not desire to see apportioned any unnecessarily large reserves such as would interfere with the progress of white settlement (ICTINC, 2023). [para. 9]

As a result of government policy, IRs are often small, swampy, unproductive, and isolated from settlements. Homes on land with a high-water table are at greater risk for flooding. Once flooded, homes quickly become inadequate. Water intrusion and dampness in housing frequently occur in IR housing (Kirychuk, Russell, Rennie, Karunanayake, Roberts, CSeesequasis et al., 2022; Larcombe, Nickerson, Singer, Robson, Dantouze, McKay, & Orr, 2011). A 2022 study found that 67 percent of all houses in IR census subdivisions in Canada had some flood exposure, and many have high flood risk: "All high-risk CSDs [census-subdivisions] are located in Indian reserve" [p. 834]. The only exception was "the Carmacks village (VL) in the Yukon" (p. 834), which is home to the Little Salmon/Carmacks First Nations, although it is not an IR (Chakraborty, Thistlethwaite, Minano, Henstra, & Scott, 2021).

In Manitoba and across Canada, IR housing is heavily and inequitably impacted by unnatural water fluctuations due to hydro flooding and floodwater diversion (Ahmed, Geebu, & Thompson, 2019; Ballard, 2012; Standing Committee on Indigenous and Northern Affairs, 2022; Thompson, 2015; Thompson & Suzuki, 2022). Most houses, if flooded, require major repairs. Water damage and dampness, if not corrected in short order, can structurally deteriorate the home and cause mould and fungi growth (mildew). Studies show a correlation between dampness, increased damage, deterioration of buildings, and increased mould growth (Thistlethwaite, Minano, Henstra, & Scott, 2020).

The federal government's management of IR housing started in the 1960s and 1970s. The lack of proper planning for population growth, maintenance, and repair meant that IR homes were overcrowded and in disrepair by the 1980s (Belanger, 2016). Houses on many IRs were built without adequate services such as piped water, sewage, and road access to service centres, particularly in

the prairies (Hill, Bonnycastle, & Thompson, 2020). More than one-sixth (122 reserves) of the 633 reserves in Canada lack road access in 2024 (Thompson et al., 2023).

The *Indian Act* undermines creating healthy housing conditions on IRs (Zingel, 2020). Bailie and Wayte (2006) found the Canadian government's control of IR housing, under the *Indian Act*, perpetuates colonialism's deep-rooted effects, reducing self-determination and well-being. Carrière, Bougie, Kohen, Rotermann, and Sanmartin (2016) found higher disease rates for First Nations people living in IR housing compared with any other group, including Métis, Inuit, and off-reserve First Nations people. Disease rates for First Nations people living on IRs were three to five times higher than for non-Indigenous people. Rates for First Nations people living on IRs were almost five times higher for endocrine, nutritional, and metabolic diseases (rate ratio [RR] = 4.9) and three times higher for mental and behavioural disorders (RR = 3.6), respiratory system diseases (RR = 3.3), and injuries (RR = 3.2). Many health studies associate increased disease rates with inadequate and/or overcrowded housing on IRs. The rate of hospitalization for respiratory tract infection was quadrupled (OR = 4.09) for First Nations people living on IRs, and more than double for off-reserve First Nations people than other people in Canada (Carrière et al., 2016).

INDIAN RESERVE HOUSING IS INADEQUATE

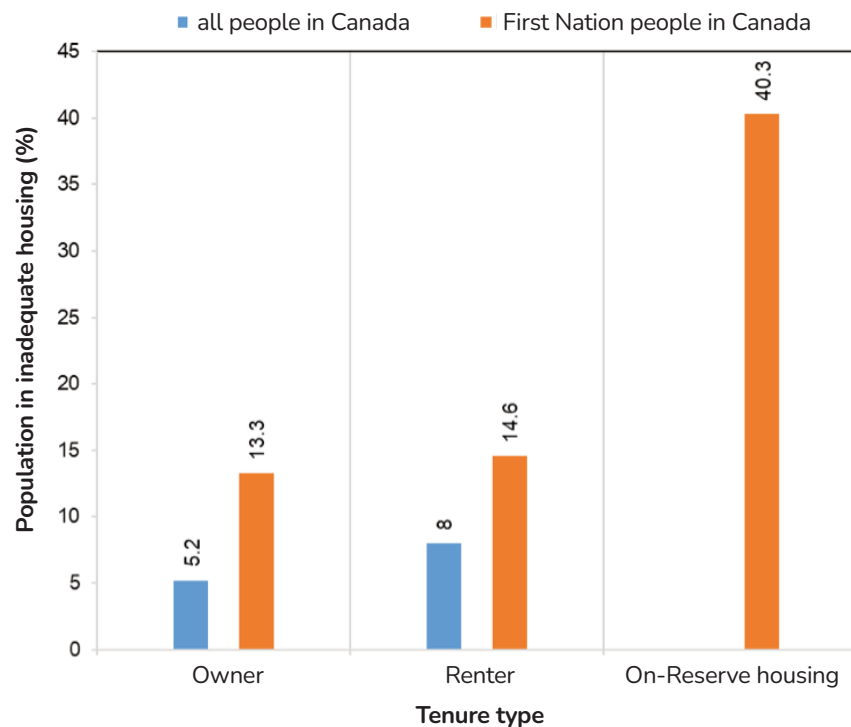
Housing on IRs is often inadequate, needing major repairs to protect inhabitants from extreme weather conditions, health hazards, or safety concerns. Substantive health risks are associated with inadequate IR housing including infant death (Shapiro, Sheppard, Mashford-Pringle, Bushnik, Kramer, Kaufman, & Yang, 2021), pre-term births (Shapiro et al., 2021), physical injuries (FNIGC, 2012), respiratory illness (Kovesi, Mallach, Schreiber, McKay, Lawlor, Barrowman, et al., 2022), and other diseases (Adegun & Thompson, 2021; Jones, Chiba, Fallone, Thomson, Hunt, Jacobson, & Goodman, 2012; Minuk, Zhang, Wong, Uhanova, Bernstein, Martin, et al., 2003; Eusebi, Zagari, & Bazzoli, 2014; Bernstein, 1999; Sinha, Martin, Sargent, McConnell, & Bernstein, 2002). Housing inadequacy is impacted by physical location, size, layout, building materials, quality, and ventilation (Rolfe, Garnham, Godwin, Anderson, Seaman, & Donaldson, 2020; FNIGC, 2012; Elash & Walker, 2019).

Higher Rates of Inadequate Housing for First Nations People on Indian Reserves

Forty percent of people living on Canada's IRs (93,015 people) live in inadequate housing (Statistics Canada, 2022). The inadequate housing rate for Canadians is much lower at 6.2 percent, with homeowners at 5.2 percent and renters at 8 percent. First Nations people on IRs experience inadequate housing at much higher rates than off-reserve First Nations and other Canadian people for both renters and homeowners, as shown in Figure 1 (Statistics Canada, 2022).

The number of First Nations people living in inadequate IR housing has been high for many decades. The rates were 40 percent in 2021, 49 percent in 2016, and 46 percent in 2011 (Statistics Canada, 2022). The inadequate IR housing rates for Manitoba are higher yet, as shown in Figure 2. In 2021, 47 percent of First Nations people lived in inadequate IR housing in Manitoba, which is 7 percent above that for Canada for the same census. In the rate of inadequate IR housing for First Nations people in Manitoba was 53 percent in 2016 and 52 percent in 2011 (Statistics Canada, 2022).

Figure 1: Inadequate housing rates for renters and owners in Canada compared with Indian reserve housing

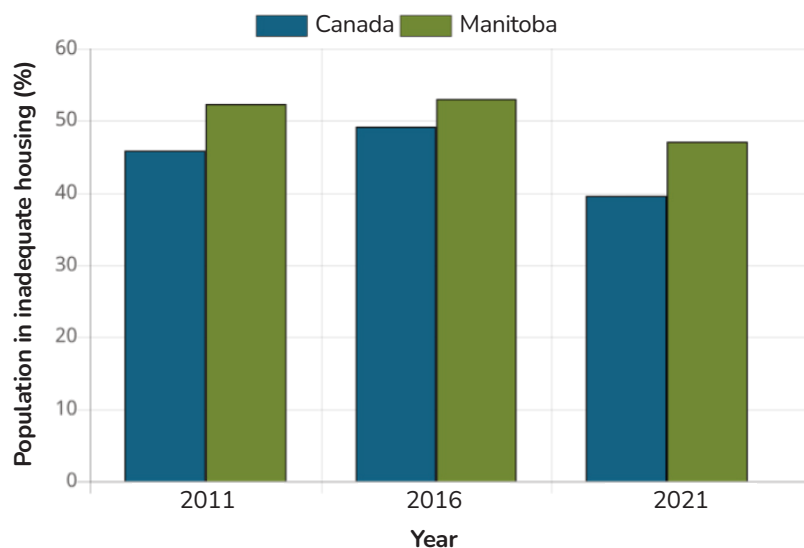


Source: Thompson, 2023

Impacts of Inadequate Water and Sewage Systems in Indian Reserve Housing

People need access to adequate water and sewage infrastructure in the home to prevent disease (World Health Organization, 2004). The lack of piped safe water in IR housing increases the spread of disease (Hennessy, Ritter, Holman, Bruden, Yorita, Bulkow, et al., 2008; Curtis & Cairncross, 2003; Boyce, 2001) for *H. Pylori* (Eusebi et al., 2014), COVID-19 (Adegun & Thompson, 2021), H1N1 flu (Elash & Walker, 2019), and viral hepatitis (Minuk et al., 2003). Many First Nations communities live under boil water advisories, without safe water for drinking or bathing. A national survey found about one-third (36%) of First Nations adults did not perceive their main water supply in their reserve home to be safe for drinking year-round (FNIGC, 2012).

Figure 2: Inadequacy of housing on Indian reserves for all ages in Canada compared with Manitoba



Source: Statistics Canada, 2021b

Inadequate Housing for First Nations People: Health Risks

Inadequate housing issues pose health risks. The need for major household repairs is associated with a moderately increased infant death risk in First Nation communities (Shapiro et al., 2021) and higher rates of children's respiratory illness (Kovesi et al., 2022). First Nations mothers living in inadequate IR homes had "slightly higher rates of preterm birth and substantially higher infant mortality rates" (Shapiro et al., 2021, p. 910). Inadequate IR housing is linked to higher rates of many diseases including respiratory tract infections and asthma, and higher levels of carbon dioxide, dust, mould, mildew, and endotoxins occur (Carrière et al., 2016). Inadequate air exchange contributes to the rampant spread of tuberculosis and COVID-19, made worse by overcrowding (Larcombe et al., 2011).

Overcrowding in Indian Reserve Housing

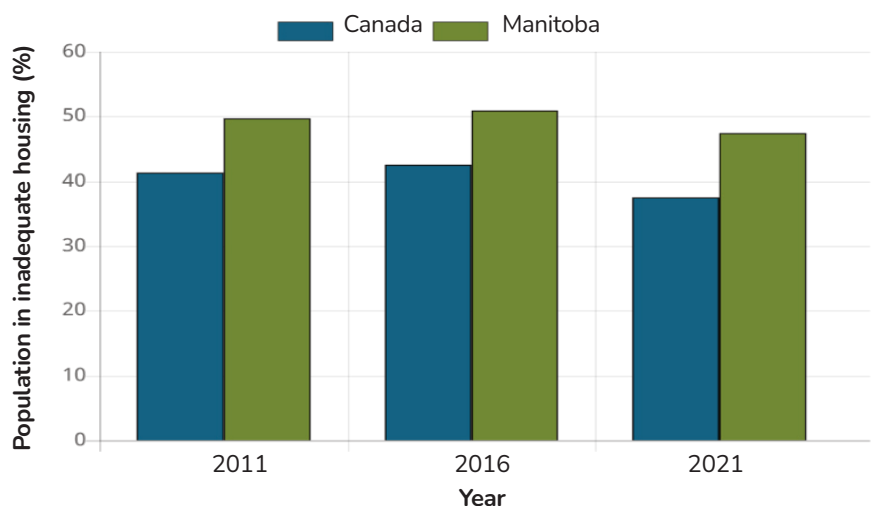
Smaller homes with bigger families on IRs result in extreme overcrowding (Kovesi et al., 2022; Statistics Canada, 2021; Larcombe et al., 2011). The National Occupancy Standard defines unsuitable housing as overcrowded based on the adequacy of bedrooms for the size and composition of the household (Statistics Canada, 2022). Overcrowding in homes is linked to increased spread of tuberculosis (Larcombe et al., 2011).

Overcrowded housing occurs on most IRs but reaches extreme levels in remote and rural communities (Harvey, 2016; Statistics Canada, 2023). The Assembly of First Nations (AFN, 2022) explains that decades of federal underfunding means \$44 billion is required to meet current housing needs. This funding is needed to repair the major issues with 80,000 existing IR houses and build approximately 150,000 housing units to house the current population suitably and adequately (AFN, 2022). A further \$16 billion is required to meet housing needs in 2040 for a rapidly growing population (AFN, 2022).

Unsuitable Housing Rates in Indian Reserves Results in Extreme Overcrowding

Overcrowding creates unsuitable housing in Canada's IRs. First Nations people living in IR housing experienced four times higher overcrowding housing rates (38 percent) than other Canadians (9.7 percent) in 2021 (Statistics Canada, 2022). Figure 3 shows high rates of around 40 percent for First Nations people living in unsuitable IR housing in Canada for the last 15 years (Statistics Canada, 2022). The rates reached 43 percent in 2016 and 42 percent in 2011 (Statistics Canada, 2022). Manitoba's inadequate IR housing rates for First Nations people were still higher, reaching 50 percent.

Figure 3: Unsuitable rates for First Nations people living in IR housing in Canada and Manitoba



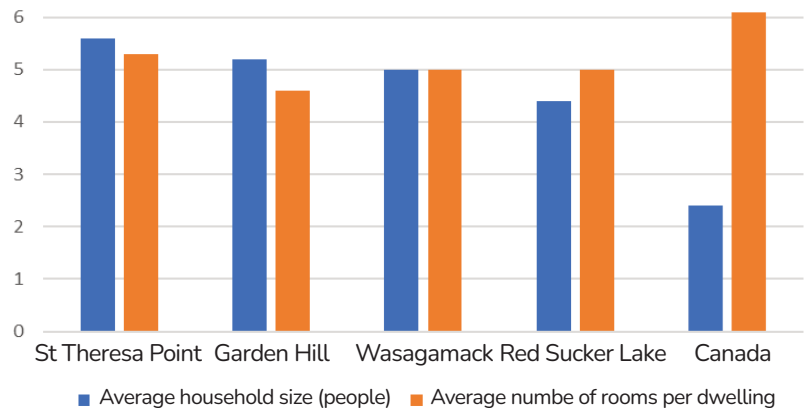
Source: Statistics Canada, 2022.

SMALLER HOUSES AND LARGER FAMILIES IN ISLAND LAKE

The four Island Lake community's housing supply is low with small houses and big families (Statistics Canada, 2023). Housing is challenged by high population growth in Island Lake. For example, population growth from 2016 to 2021 was 17 percent for Garden Hill First Nation and 49 percent for Wasagamack First Nation (Statistics Canada, 2023). People returned from off reserve to the IR in large numbers during COVID-19 to live with their families. Also, very high birth rates are causing the population to grow rapidly, while house building is not keeping up, averaging about 1 percent of homes per year (Statistics Canada, 2023).

Despite all four of the IRs in Island Lake having higher numbers per household, the average home size is half that of Canada (Statistics Canada, 2023). The average size of five rooms in Wasagamack includes a dining room, living room, kitchen, and bedrooms but not washrooms and hallways. Figure 4 shows that St. Theresa Point Indian Reserve has an average household of 5.6 people and Wasagamack has five people, compared with Canada's 2.4-person average household (Statistics Canada, 2023).

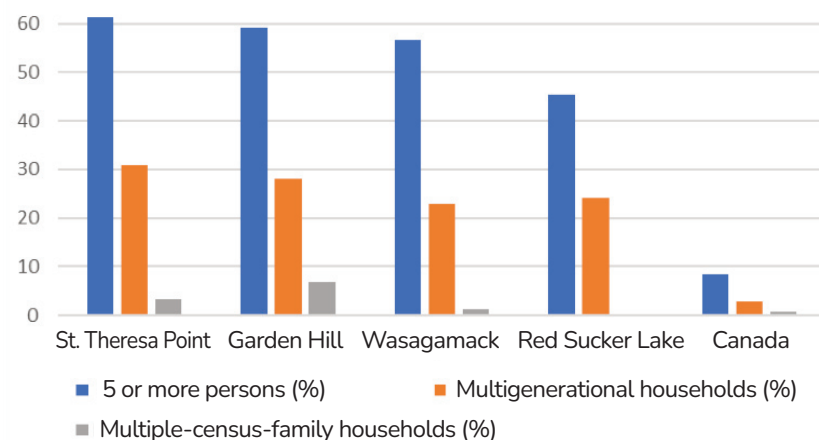
Figure 4: Comparison of house size on Island Lake reserve and Canada



Source: Thompson, 2023

The average household size in every Island Lake First Nation is more than double that of off-reserve households in Canada (Statistics Canada, 2023). Over 60 percent of homes in Garden Hill and Wasagamack have five occupants (Statistics Canada, 2023), compared with 10 percent off reserve in Canada (Statistics Canada, 2023). Extended-family households make up over 20 percent of homes in all four IRs in Island Lake, indicating overcrowding (Statistics Canada, 2023), at almost ten times Canada's rate of 2.9 percent (Statistics Canada, 2023), as shown in Figure 5.

Figure 5: Numbers of people living in Island Lake reserve households compared with the rest of Canada

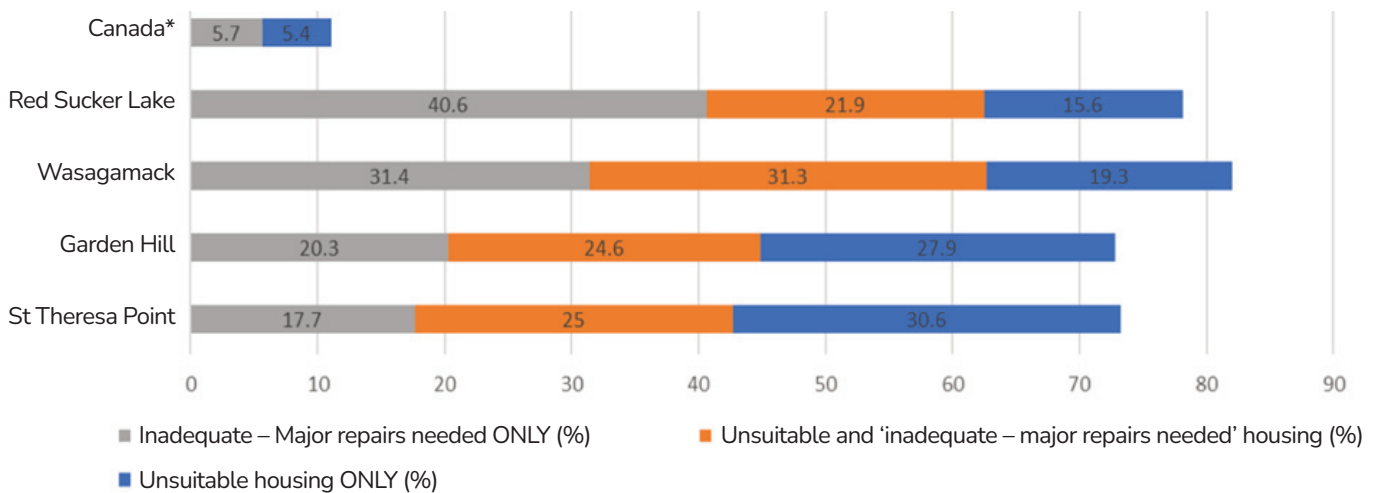


Long waiting lists of hundreds of families exist in Garden Hill and Wasagamack First Nations. Typically, First Nations prioritize housing places for large families with four or five children, due to their greater need. Single mothers, men, women, and Elders are lower priority and rarely receive housing, and instead must live with parents and other family members or rely on couch surfing.

Island Lake First Nation People in Double Jeopardy of both Overcrowding and Inadequate Housing

Over 70 percent of IR housing in Island Lake is either inadequate, overcrowded, or both (Statistics Canada, 2023; Figure 6). Although inadequate IR houses and unsuitable houses are separate issues, combined, these issues account for one-third (31%) of Wasagamack's housing, which is 78 times higher than for Canada. In contrast, very few houses in Canada (0.4%) face this double jeopardy situation of inadequate and unsuitable housing (Statistics Canada, 2021b). The inadequate and/or unsuitable off-reserve housing total for Canada is 11.5 percent, with six to seven times higher rates in the different Island Lake First Nations (Statistics Canada, 2023).

Figure 6: Rates of inadequate and/or unsuitable houses in Island Lake First Nations and Canada



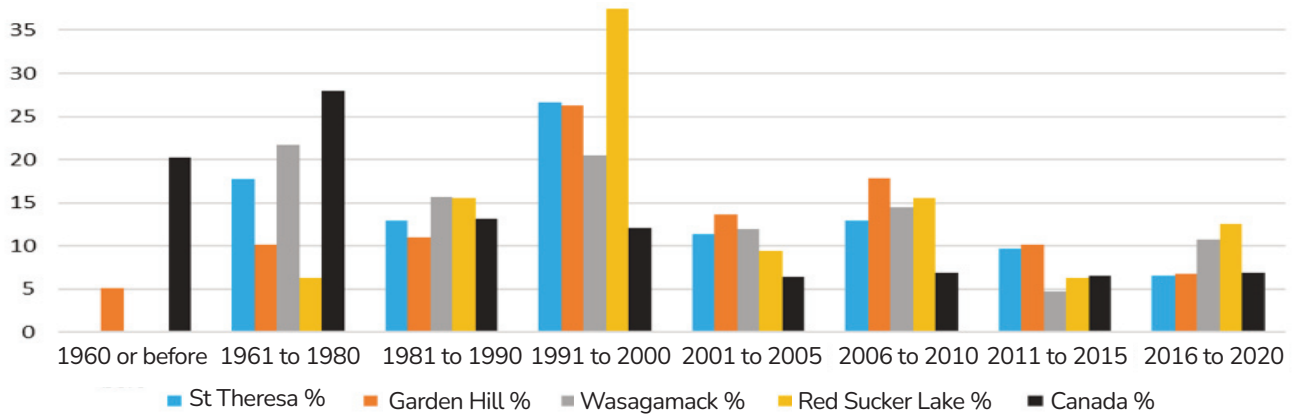
Source: Thompson, 2023

ISLAND LAKE'S HISTORY

Island Lake's history is relevant to its housing story (Thompson et al., 2019). Island Lake is a remote and difficult-to-access location. European settlers did not impact Island Lake's housing or culture until 1818 (Thompson et al., 2019). Due to being "as remote as the North Pole," the community escaped most colonial controls until the arrival of floatplanes after World War II (Thompson et al., 2019). In 1925, Island Lake commonly had log homes along the water's edge to access unpolluted water (Thompson et al., 2019) and nomadic houses on traplines. In 1956, government officials flew to Island Lake's traditional lands to forcefully take children from their parents and culture and brought them to far-away residential schools; many parents moved close to local mission schools to be near their children.

Housing changed in Island Lake in the late 1960s under government control. In 1969, the Canadian government split the Island Lake band into four IRs—Garden Hill, Wasagamack, Red Sucker Lake, and St. Theresa Point—banishing from Old Post at Linklater Island, to start the IR housing stock (Statistics Canada, 2023). Extended-family log homes were replaced by side-by-side nuclear-family homes typical of southern suburban design (Thompson et al., 2019), except without electricity or running water (Wasagamack First Nation, 2010; Thompson et al., 2019). Not until 2004 did piped water and sewage become available to the school and health centre, with most homes relying on

Figure 7: Age of housing on Island Lake's Indian reserves



Source: Thompson, 2023

pails for drinking and bathing water (Thompson et al., 2019). People, regardless the season, filled barrels from the lake or community pump. Until 2015, most houses had no running water or cisterns. Basic electricity came from generators until the Manitoba Hydro grid connection in 1999, with all heat generated from wood stoves (Wasagamack First Nation, 2010; Thompson et al., 2019).

Island Lake's IR housing builds have been insufficient to keep up with demand. Island Lake's IR housing is less than fifty years old. Although some houses were lost due to fire or decay, the age of the houses, shown in Figure 7, offers some building history. Figure 7 reveals that the housing builds in Island Lake have declined over the last few decades, despite dramatic population growth (Statistics Canada, 2023).

METHOD

Employment training at Wasagamack and Garden Hill First Nations developed a participatory research housing education program with co-author, Shirley Thompson, who had previously worked with Norah Whiteway and Ivan Harper on traditional land use and the Meechim Farm youth programming. The authors developed a successful partnership grant with memorandums of understanding to build local homebuilding capacity and houses in these communities. Students were hired through the program for a 2019 start and received a small stipend for their work. The First Nation Housing and Employment Training Departments provided most building materials. The university provided funding for a local carpentry foreman, Indigenous teachers, workshops, project managers, designs, and stipends for 70 local students.

To commence the Homebuilder postsecondary program, a design workshop was held in 2019. For this community engagement, two of the co-authors, Shirley Thompson and Shauna Mallory-Hill, travelled to Wasagamack for three days and then to Garden Hill by boat for a few days to conduct "design cafés" and home visits with Elders and youth. The authors documented the community cafés through film, design drawings, photos, and notes to assist with designs and programming (Oni et al., 2023). Further, co-authors Catrina Sallese and Shirley Thompson worked with Homebuilder students and the community with several week-long stays in the community to teach, visit, and build alongside Homebuilders (Figure 8). During that period, the authors participated in

cultural and community events to better understand the priorities of the community. Based on this research, Sallèse developed designs for a single-family home that were translated into professionally stamped construction drawings, which the Homebuilder students in Garden Hill and Wasagamack built, although COVID-19 lockdowns made finishing the interior very difficult.

Figure 8: Sawmilling for building materials in Wasagamack



Source: Sallèse, 2021

FINDINGS

In the community cafés focused on housing, Island Lake people shared how their relationship with the land should be visible in their home designs. Island Lake people wanted their love of nature, family, and culture reflected by using a local supply of materials, energy (biomass and passive solar), cultural elements, and larger family-sized homes. The Elders explained that Anisininew people are most at home amongst the wildlife, boreal forest, lakes, and land shaped from ancient mountains. People told us that wood stoves were always the centre of their homes, like in a teepee, to radiate warmth.

The three-bedroom design of the single-family house (Figure 9) was designed to accommodate the average Anisininew family size of five. Sallèse developed the design based on the community café findings and in collaboration with local experts. The housing design was constrained by its low budget, Homebuilder students' beginner construction skills, and high building costs in the north.

Figure 9: Anisininew single-family home plan (left) with interior view (right)



Source: Sallèse, 2021

This simple rectilinear wood framed house is designed to be easily constructed using local materials and labour. The open-concept kitchen-living room provides space for entertaining, family gatherings, and home-based wakes. It is custom in Island Lake to have a wake at home, to view the body and invite everyone from the community to pray. After this design was drawn, a professional engineer reviewed and stamped it before materials were ordered. The houses were built by local Homebuilder students in both Island Lake communities.

The multigenerational household is common in the four First Nations of Island Lake with three generations often living together. Extended families are seen as a positive way for children and youth to learn their culture and traditions from their Elders. Everyone helps share the high cost of living in the remote north. However, due to the shortage of housing, multigenerational living is also a necessity and results in overcrowding. The authors witnessed three families living in one house, with people sleeping in shifts on mattresses in living rooms and hallways. Parents often have to share bedrooms with their children, as other rooms are taken by other families or grandparents.

The desire to accommodate multigenerational families was the inspiration for the Anisininew extended-family home. The extended-family home provides a modular design for parents and their grown children and their families and other relations to live together in one building. Both communal spaces and separate nuclear-family spaces provide places for privacy and large family gatherings (Figure 10). The extended-family house includes a large family living and gathering space to accommodate 25 people or more for feasts, wakes, ceremonies, and celebrations. The universal design facilitates safe access throughout people's lifespans to accommodate Elders, children, and disabled people. Extended-family houses, although wanted, could not be built in Garden Hill and Wasagamack due to the colonial funding model.

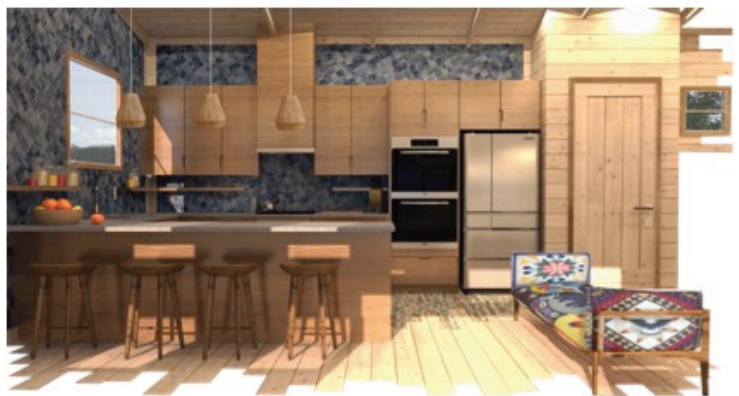
The central large family living and gathering space is the heart of this extended-family longhouse design. The space features colourful, locally made art and textiles for quilts and furnishing covers (Figure 10). A full bathroom, along with shared laundry facilities are in a room off the main area. A shared kitchen facilitates cooking large game, such as moose, and other traditional foods. The communal kitchen features long, stone countertops, allowing

Figure 10: Anisininew extended-family plan



Source: Sallèse, 2021

Figure 11: Anisininew extended-family communal kitchen



Source: Sallèse, 2021

families to cook together and learn from Elders. The backsplash is made from an upcycled car roof (Figure 11), with an extruded diamond pattern to mimic the scales on two local fish. The sturgeon's sharp diamond-shaped scales and the trout's shiny blue-silver scales are displayed.

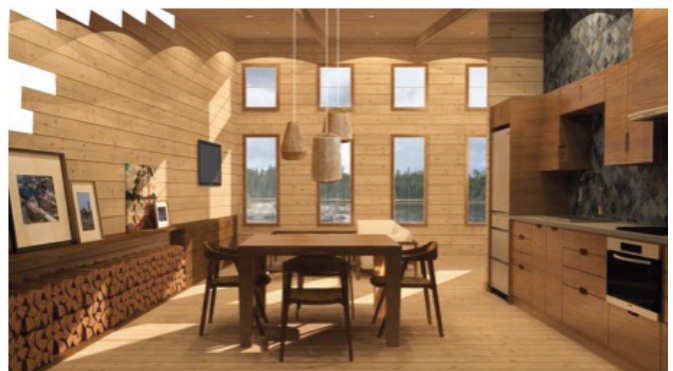
Both home designs consider nature, through local materials, and weatherproofing. At each entrance are mudrooms to store outdoor clothes and equipment. These spaces are important transition zones to halt cold drafts and isolate dirt from footwear. An exterior porch extends the living space to enjoy nature and process fish, game, and gardening. Country food is an important cultural element for Indigenous food sovereignty and food security, with the high costs of food in Island Lake. On one side of the large kitchen is an area to clean and process fish and wild game.

Figure 12: Anisininew extended-family communal space



Source: Sallese, 2021

Figure 13: Interior view of two-bedroom unit



Source: Sallese, 2021

Both the single- and extended-family home designs maximize the use of local wood including for walls, ceilings, floors, doors, siding, and furniture (see Figures 12 and 13). Unlike drywall, wood is not susceptible to mould or easily damaged and is washable. Lumber was obtained from nearby islands on Crown land in Island Lake's traditional territory. The Homebuilder students learned how to cut down trees safely and sustainably to supply the lumber under special woodlot permits, issued by the province. The Homebuilders used a local small sawmill to produce structural lumber. However, despite Homebuilder students being trained and certified as lumber graders, the lumber needed stamping by an industrial forestry stamp owner to meet national grading laws, which added costs and delays.

The house design applies some passive solar techniques and wood stoves to reduce the high cost of energy in the north. Bilateral windows, along with building orientation, allow for passive cross ventilation, as heat recovery ventilation often breaks and its noisy operation disrupts the peace. Clerestory windows provide opportunities for natural daylighting. Most windows face south to benefit from solar gain and reduce heat loss. The open-concept design and central woodstove are intended to allow heat to disperse throughout the home. Elders said that woodstoves were all they had growing up and remember cutting wood. The wood stove provides radiant, dry heat. Two removable racks for drying winter gear are adjacent to the wood-burning stove.

With the extreme cold and long winters in Island Lake, reliable heating is required. Island Lake homes get heat and power from Manitoba Hydro's electrical grid. The long transmission lines in-

crease Island Lake communities' vulnerability to power outages. Delays in the repair of downed grid lines can freeze water lines and cisterns before the power is restored. Renewables, such as wood, sun, wind, geothermal and/or small-scale hydro, are considered critical backup power sources. Woodstoves are considered the best way to heat their homes, as is the traditional practice, and gives local people control over fuels for heating and cooking. People see fire as a spiritual element. With the high cost of hydropower, savings from wood and solar and maximizing energy efficiency were key considerations.

Building houses in remote communities requires local resources and labour, but also access roads. Although the design with local labour and materials is a good start, Homebuilders in Island Lake faced many barriers to erect the houses. Despite having local stamped lumber, other materials including pipes, windows, insulation, foundation, roofing materials, and equipment are expensive to transport up long distances on winter roads. Island Lake First Nations get most of their supplies and equipment from Winnipeg, Manitoba, which is 1,500 km or 17 hours of winter road travel. In 2019, the winter road season was too short to ship building materials up to the community for the Homebuilder training. The lack of winter road delayed building for a year. Without trucked-in gas, construction and maintenance material prices skyrocketed (Oni et al., 2023). The house in Garden Hill was finished after the winter road delay, but a fire in Wasagamack's warehouse burned all building materials, with no insurance or funds to replace some things, although a standing house was produced. Despite delays and hiccups, Garden Hill and Wasagamack First Nations Homebuilder students designed and learned building skills. The community-university partnership allowed poorly funded, remote First Nations some resources to design and pay stipends for 70 local students to learn to build houses.

This Mino Bimaadiziwin Homebuilder model was adopted by other First Nation communities. York Factory First Nation (YFFN) adopted the model in 2023, as a Homebuilder trainer in Island Lake was from YFFN. When the trainer, Darryl Wastesicoot, became YFFN's Chief, he teamed up with co-author Shirley Thompson's community-university partnership to train twelve YFFN Homebuilder students. Several one-bedroom homes designed by Sallesse were built in 2023. The YFFN partnership engaged in the CMHC rapid housing initiative proposal for northern housing. University of Manitoba's Shirley Thompson and Deanna Hill facilitated YFFN engagement with Chief Darryl Wastesicoot to successfully write the proposal and film a promotional video. This teamwork was a winning combination; YFFN received \$8.4 million to build a trades workshop, a housing materials warehouse, a dormitory for Homebuilding Trades students, and four prototypes. However, this money came with a timeline restriction of one year by CMHC. The strict timeline shows that these colonial program conditions and structures need more flexibility, particularly given climate change limiting both ferry use and winter road season. These unreasonable funding conditions set up the communities for undue hardship, potential disappointment and even incapacity to reach targets and deliverables.

CONCLUSION

The *Indian Act* creates inequitable housing, health crises, and human rights violations due to the shortage and poor quality of IR housing stock. Due to discriminatory restrictions on IR housing, First

Nations are hotspots for inadequate and unsuitable housing. Remote communities experience the worst housing, such as Wasagamack where over 80 percent of houses are inadequate and/or unsuitable. The AFN (2022) estimates that roughly 150,000 housing units are required to address overcrowding and inadequacy of IR homes. Another 80,000 IR homes need renovation.

Housing is not all that is wrong with IRs. Infrastructure and services are missing from most IRs, particularly the 122 lacking roads. Without roads, piped water, piped sewage, fire stations, banks, post-secondary education centres, hospitals, building warehouses, financing options, equipment, and hardware stores, Island Lake First Nations are lacking basic services and infrastructure. These missing pieces are needed to create a functional home-building value chain to construct quality housing for people in First Nation communities.

Despite the many barriers, Homebuilder students at Garden Hill and Wasagamack First Nations designed and built houses with Sallesse, Thompson, and other experts. The community-university partnership provided remote First Nations with resources to design culturally appropriate housing and pay stipends to 70 local Homebuilder students to learn to build houses. First Nation community-university partnerships offer some ways to both research, design, and build the needed 150,000 future homes, considering local needs. Culturally appropriate designs using local materials and labour need to be part of an action plan to build sufficient, sustainable housing and infrastructure on IRs to support cultural, health, social, and economic development. To realize Mino Bimaadiziwin, First Nations need more funding for houses, better infrastructure, including all-weather roads, community-university partnerships, and the decolonization of policy and programs.

First Nations face very limited financing for housing and infrastructure, controlled by colonial institutions and many other barriers despite the severe housing crisis. Designing culturally-appropriate, sufficient, and quality homes starts us on a reconciliatory, sustainable path for equitable housing and human rights. Contextually, culturally, and environmentally supportive conditions of program delivery and deliverables with flexible timelines need to be reconciled. Designing houses to work with local labour and materials are possible and positive if sufficient funding can circumvent the many systemic barriers. However, as everyone, including First Nations people, has a right to healthy housing, we need to not only design houses but remove inequitable laws and policies for housing that erect the barriers to healthy housing. This inequality breaches Section 36 (1) of the Canadian constitution. As the *Indian Act* undermines housing rights, human rights, and Indigenous rights, systemic change in housing, infrastructure, and other areas means overturning the *Indian Act*.

REFERENCES

- Adegun, A., & Thompson, S. (2021). Higher COVID-19 rates in Manitoba's First Nations compared to non-First Nations linked to limited infrastructure on reserves. *Journal of Rural and Community Development*, 16(4), 28–53.
- Ahmed, T., Geebu, R., & Thompson, S. (2019). Assessing land loss from flooding in the Lake St. Martin basin in Manitoba, Canada. *Journal of Geoscience and Environment Protection*, 07(12), 171–180. doi:10.4236/gep.2019.712012
- Allary, C., Thompson, S., & Mallory-Hill, S. (2023). Investing in saving lives: Designing second-stage women's shelters on First Nation reserves. *Canadian Journal of Nonprofit and Social Economy Research*, 14(S1), 27–44. doi:10.29173/cjnser557

- AFN [Assembly of First Nations]. (2022, March 11). *Assembly of First Nation bulletin—Housing priorities—National First Nation housing and related infrastructure strategy*. <https://afn.ca/all-news/bulletins/assembly-of-first-nations-bulletin-housing-priorities-national-first-nations-housing-and-related-infrastructure-strategy/> [Mar. 11, 2022].
- Bailie, R. S., & Wayte, K. J. (2006). Housing and health in Indigenous communities: Key issues for housing and health improvement in remote Aboriginal and Torres Strait Islander communities. *Australian Journal of Rural Health, 14*(5), 178–183. doi:10.1111/j.1440-1584.2006.00804.x
- Ballard, M. (2012). *Flooding sustainable livelihoods of the Lake St Martin First Nation: The need to enhance the role of gender and language in Anishinaabe knowledge systems* [Thesis]. University of Manitoba. <https://mspace.lib.umanitoba.ca/server/api/core/bitstreams/b1121cdb-39c6-40bc-bf30-ad3659ae8e45/content> [Feb. 10, 2024].
- Belanger, Y. D. (2016). A critical review of Canadian First Nation and Aboriginal housing policy, 1867–present. In N. Nichols & C. Doberstein (Eds.), *Exploring effective systems responses to homelessness* (pp. 442–459), Ottawa, Ontario: Canadian Observatory on Homelessness. <http://www.homelesshub.ca/sites/default/files/attachments/4.3-Belanger.pdf> [Jan. 10, 2024].
- Bernstein, C. N. (1999). Seroprevalence of *Helicobacter pylori*, incidence of gastric cancer, and peptic ulcer-associated hospitalizations in a Canadian Indian population. *Digestive Diseases and Sciences, 44*(4), 668–674. doi:10.1023/a:1026689103952
- Blacksmith, C., Thompson, S., Hill, S., Thapa, K., & Stormhunter, T. (2021). The Indian Act virus worsens COVID-19 outcomes for Canada's Native People. In A. Neve (Ed.), *Canadian Yearbook on Human Rights' Special Issue on COVID-19, 2021* (pp. 24–26). Toronto, Ontario: University of Ottawa Centre for Human Rights Press. <https://www.scirp.org/reference/referencespapers.aspx?referenceid=3371554> [Feb. 20, 2024].
- Boyce, J. M. (2001). MRSA patients: Proven methods to treat colonization and infection. *The Journal of Hospital Infection, 48*, S9–S14. doi:10.1016/s0195-6701(01)90005-2
- Carrière, G., Bougie, E., Kohen, D., Rotermann, M., & Sanmartin, C. (2016). Acute care hospitalization by Aboriginal identity, Canada, 2006 through 2008. *Health Reports, 27*(8), 3–11. <https://pubmed.ncbi.nlm.nih.gov/27532620/> Feb. 20, 2024].
- Chakraborty, L., Thistlethwaite, J., Minano, A., Henstra, D., & Scott, D. (2021). Leveraging hazard, exposure, and social vulnerability data to assess flood risk to Indigenous communities in Canada. *International Journal of Disaster Risk Science, 12*(6), 821–838. doi:10.1007/s13753-021-00383-1
- Curtis, V., & Cairncross, S. (2003). Effect of washing hands with soap on diarrhoea risk in the community: A systematic review. *The Lancet – Infectious Diseases, 3*(5), 275–281. doi:10.1016/s1473-3099(03)00606-6
- ICTINC [Indigenous Corporate Training Inc.]. (2023, Jan. 11). 8 First Nation Reserve FAQs - #1 of 2 First Nation reserves series. [ictinc.ca](https://www.ictinc.ca/blog/8-first-nation-reserve-faqs). <https://www.ictinc.ca/blog/8-first-nation-reserve-faqs> [Feb. 19, 2024].
- Indigenous Foundations. (2023, April 11). Reserves. <https://indigenousfoundations.arts.ubc.ca/reserves/> [Feb. 21, 2024].
- Elash, A., & Walker, C. (February 11, 2019). Ottawa to examine First Nation's water system after residents voice concerns. *CBC News*. <https://www.cbc.ca/news/indigenous/garden-hill-first-nation-water-feasibility-study-1.4994175> [Feb. 10, 2024].
- Eusebi, L. H., Zagari, R. M., & Bazzoli, F. (2014). Epidemiology of *Helicobacter pylori* infection. *Helicobacter, 19*(s1), 1–5. doi:10.1111/hel.12165
- Flett vs Supreme Court of Canada (SCC). (2023). SCC Court File No. T-1207-23. <https://www.mccarthy.ca/sites/default/files/2023-08/Fresh%20as%20Amended%20Statement%20of%20Claim%20-%20STAMPED%20-%20Jul%2028%2C%202023%2848407047.1%29.pdf>. [Apr. 15, 2024].
- FNIGC [First Nations Information Governance Centre]. (2012). *First Nations Regional Health Survey (RHS) 2008/10: National report on adults, youth and children living in First Nations communities*. Ottawa, ON: FNIGC. https://fnigc.ca/wp-content/uploads/2020/09/8df51b653b65f2c39930156f72db642d_first_nations_regional_health_survey_rhs_2008-10_-_national_report_youth.pdf [Dec. 12, 2023].
- Harris, C. (2002). *Making Native space: Colonialism, resistance, and reserves in British Columbia*. Vancouver, BC: UBC Press. <https://www.ubcpres.ca/making-native-space> [Jan. 10, 2024].

- Hennessy, T. W., Ritter, T., Holman, R. C., Bruden, D. L., Yorita, K. L., Bulkow, L., et al. (2008). The relationship between in-home water service and the risk of respiratory tract, skin, and gastrointestinal tract infections among rural Alaska Natives. *American Journal of Public Health, 98*(11), 2072–2078. doi:10.2105/ajph.2007.115618
- Hill, S., Bonnycastle, M., & Thompson, S., (2020). COVID-19 policies increase the inequity in northern Manitoba's Indigenous communities. In A. Rounce & K. Lévasseur (Eds.), *COVID-19 in Manitoba: Public policy responses to the first wave* (pp. 98–115). Winnipeg, MB: University of Manitoba Press. https://uofmmpress.ca/files/9780887559501_web.pdf [Jan. 20, 2024].
- Harvey, M.-F. (2016). *Portrait of homelessness in First Nations communities in Quebec*. Wendake, QC: FNQLHSSC. <https://files.cssspnql.com/index.php/s/mPAyftDumPHPjL9> [Feb. 10, 2024].
- Indian Act. (1876). An Act to amend and consolidate the laws respecting Indians. S. C. 1876, c.18. <https://www.sac-isc.gc.ca/eng/1100100010252/1618940680392> [April. 15, 2024].
- Indian Act. (1985). RSC 1985, c l-5. <https://www.canlii.org/en/ca/laws/stat/rsc-1985-c-i-5/latest/rsc-1985-c-i-5.html> [Jan. 20, 2024].
- Jones, N. L., Chiba, N., Fallone, C., Thomson, A., Hunt, R., Jacobson, K., & Goodman, K. (2012). *Helicobacter pylori* in First Nations and recent immigrant populations in Canada. *Journal Canadien de Gastroenterologie, 26*(2), 97–103. doi:10.1155/2012/174529
- Joseph, B. (2018). *21 things you may not know about the Indian Act: Helping Canadians make reconciliation with Indigenous Peoples a reality*. Toronto, Ontario: Indigenous Relations Press.
- Kovesi, T., Mallach, G., Schreiber, Y., McKay, M., Lawlor, G., Barrowman, N., et al. (2022). Housing conditions and respiratory morbidity in Indigenous children in remote communities in Northwestern Ontario, Canada. *Canadian Medical Association Journal, 194*(3), E80–E88. doi:10.1503/cmaj.202465
- Kiryuchuk, S., Russell, E., Rennie, D., Karunanayake, C., Roberts, C., Seesequasis, J., et al. (2022). Housing inadequacy in rural Saskatchewan First Nation communities. *PLOS Global Public Health, 2*(8), e0000470. doi:10.1371/journal.pgph.0000470
- Larcombe, L., Nickerson, P., Singer, M., Robson, R., Dantouze, J., McKay, L., & Orr, P. (2011). Housing conditions in 2 Canadian First Nations communities. *International Journal of Circumpolar Health, 70*(2), 141–153. doi:10.3402/ijch.v70i2.17806
- McCarthy Tétrault. *First Nations class action*. <https://www.mccarthy.ca/en/first-nations-housing-class-action> [Feb. 20, 2024].
- Mino Bimaadiziwin Partnership. (2020, December 17). *Homebuilders curriculum*. <http://ecohealthcircle.com/curriculum-developed/> [Feb. 20, 2024].
- Minuk, G. Y., Zhang, M., Wong, S. G. M., Uhanova, J., Bernstein, C. N., Martin, B., et al. (2003). Viral hepatitis in a Canadian First Nations community. *Journal Canadien de Gastroenterologie, 17*(10), 593–596. doi:10.1155/2003/978162
- Oni, B., Martin, D., Bonnycastle, M., Wood, N., & Thompson, S. (2023). Mino Bimaadiziwin Homebuilder Program's impact on sustainable livelihoods among youth in Garden Hill and Wasagamack First Nations: An evaluative study. *Canadian Journal of Nonprofit and Social Economy Research, 14*(S1), 45–71. doi:10.29173/cjnser554
- Rolfe, S., Garnham, L., Godwin, J., Anderson, I., Seaman, P., & Donaldson, C. (2020). Housing as a social determinant of health and wellbeing: Developing an empirically informed realist theoretical framework. *BMC Public Health, 20*(1). doi:10.1186/s12889-020-09224-0
- Sallese, C. (2021). *Home interiors & furnishings in remote northern First Nation communities* [Thesis]. University of Manitoba. <https://mspace.lib.umanitoba.ca/items/1643dad8-a094-429b-b7ec-c7acd21d7ee8> [Feb. 10, 2024].
- Shapiro, G. D., Sheppard, A. J., Mashford-Pringle, A., Bushnik, T., Kramer, M. S., Kaufman, J. S., & Yang, S. (2021). Housing conditions and adverse birth outcomes among Indigenous people in Canada. *Canadian Journal of Public Health, 112*, 903–911. doi:10.17269/s41997-021-00527-2
- Sinha, S. K., Martin, B., Sargent, M., McConnell, J. P., & Bernstein, C. N. (2002). Age at acquisition of *Helicobacter pylori* in a pediatric Canadian First Nations population. *Helicobacter, 7*(2), 76–85. doi:10.1046/j.1083-4389.2002.00063.x

- Standing Committee on Indigenous and Northern Affairs. (2022, March 4). *The effects of the housing shortage on Indigenous Peoples in Canada*. Ourcommons.ca. <https://www.ourcommons.ca/Content/Committee/441/INAN/Reports/RP11862143/inanrp03/inanrp03-e.pdf> [Feb. 12, 2024].
- Statistics Canada. (2021a, November 25). *Statistics on Indigenous peoples*. https://www.statcan.gc.ca/eng/subjects-start/indigenous_peoples [(write date accessed) [Jan. 4, 2024].
- Statistics Canada. (2021b, September 22). *Variant of status of tenure of household*. <https://www23.statcan.gc.ca/imdb/pUtil.pl?Function=getNote&Id=1323809&NT=01> [Jan. 4, 2024].
- Statistics Canada. (2022, September 21). *Housing indicators, 2021 census*. Statcan.gc.ca. <https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/dv-vd/housing-logement/index-en.cfm> [Jan. 4, 2024].
- Statistics Canada. (2023, June 21). *Indigenous population profile, 2021 census of population*. Statcan.gc.ca. <https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/ipp-ppa/index.cfm?Lang=E> [Jan. 4, 2024].
- Thistlethwaite, J., Minano, A., Henstra, D., & Scott, D. (2020). *Indigenous reserve lands in Canada face high flood risk*. Cigionline.org. <https://www.cigionline.org/static/documents/documents/PB%20no.159.pdf> [Jan. 12, 2024].
- Thompson, S. (2015). Flooding of First Nations and environmental justice in Manitoba: Case studies of the impacts of the 2011 flood and hydro development in Manitoba. *Manitoba Law Journal*, 38(2), 220–220. <https://journals.library.ualberta.ca/themanitobalawjournal/index.php/mlj/article/view/928> [Jan. 20, 2024].
- Thompson, S., Hill, S., Salles, A., Ahmed, T., Adegun, A., & Nwankwo, U. (2023). The Northern Corridor, food insecurity and the resource curse for Indigenous communities in Canada. *The School of Public Policy Publications*, 15(40), 1–44. doi:10.11575/sppp.v16i1.76089
- Thompson, S., Thapa, K., & Whiteway, N. (2019). Sacred harvest, sacred place: Mapping harvesting sites in Wasagamack First Nation. *Journal of Agriculture, Food Systems, and Community Development*, 9(B), 251–279. doi:10.5304/jafscd.2019.09B.017
- Thompson, S., & Suzuki, K. (2022). Displacement of Indigenous people in Canada under the Indian Act: Participatory video with Lake St. Martin and Little Saskatchewan First Nations on flood impacts. *Journal of Geoscience and Environment Protection*, 10(11), 242–264. doi:10.4236/gep.2022.1011017
- United Nations. (2023). *The human right to adequate housing: Special Rapporteur on the right to adequate housing*. <https://www.ohchr.org/en/special-procedures/sr-housing/human-right-adequate-housing> [Month dd, year].
- Wasagamack First Nation. (2010). *The way it was: Foundation for the future*. Winnipeg, MB: Manitoba First Nations Education Resource Centre Inc.
- World Health Organization. (2004). *Water, sanitation and hygiene links to health facts and figures*. Worldwater council.org. <https://www.worldwatercouncil.org/sites/default/files/2017-10/factsfigures2005.pdf> [Jan. 18, 2024].
- Zingel, A. (2020). N.W.T. First Nation asking why it can't access federal housing loan guarantees. *CBC News*. <https://www.cbc.ca/news/canada/north/first-nation-federal-housing-loan-guarantees-1.5801699> [Jan. 18, 2024].

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