

ARCTIC HOUSING AND COMMUNITY PLANNING HUM 04



THURSDAY

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ROOM 205BC

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LIVING IN NORTHERN QUEBEC
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ARCTIC CHANGE CONFERENCE

QUEBEC CITY

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Sustainable housing and community planning in the Arctic is compounded by climate change and urbanization. The provision of affordable, adequate, suitable, accessible, culturally-appropriate, and safe housing for people across the Arctic is an important condition for well-being. There is a need for housing, public space and amenities, as well as biotechnical and sociocultural infrastructure designs and solutions that are suited to northern climate and environmental conditions, and to local lifestyles and cultural preferences. These will also have to be flexible and adapted to the demands of a rapidly growing population and a changing climate. **This session aims to provide a space for dialogue and knowledge-sharing between different sectors and disciplines, including: construction and design; impacts on health and well-being; energy and infrastructure; planning for an urbanizing Arctic; governance; and more.** Actors from different sectors of intervention from Nunavik, Nunavut, Nunatsiavut and Toronto will lead a discussion panel on solutions for arctic housing and community planning to close this day of exchanges.

SESSION 1

BLOCK 1

10:30 - 11:35

DWELLING DESIGN AND CONSTRUCTION

moderated by
ANDRÉ CASAULT
Université Laval

KATHERINE KOVALCIK University of Waterloo

Architectural lessons on foundation building in Van Tat Gwich'in territory: Foundation typologies constructed within this continuous permafrost region and their reciprocal relationships with people, buildings, and the land

MYRIAM BLAIS Université Laval

Vagabond, nomadic house (imagination + construction + experience)

SAMI TANNOURY EVOQ Architecture

Housing design for the Inuit Nunangat communities, a two tier approach: Fast paced (address the housing shortage crisis) and slow paced (research and develop sustainable housing solutions)

pause 11:35 – 11:45

BLOCK 2

11:45 - 12:30

COMMUNITY PLANNING PROCESSES

moderated by
MARIKA VACHON
Université Laval

ALAIN FOURNIER EVOQ Architecture

Inuit Quajimajatuqangit : How involvement of the community of Ikalukitiak (Cambridge Bay), Nunavut, was key in helping generate the architectural design of the Canadian High Arctic Research Station (CHARS)

JULIEN LANDRY, LAURENCE ST-JEAN Université Laval

Imagining Inukjuak's future development, a review of Northern planning issues and strategies

lunch 12:30 – 13:30

SESSION 2

BLOCK 3

13:30 - 14:15

ENERGY AND INFRASTRUCTURE

moderated by
GENEVIÈVE VACHON
Université Laval

CATE SOROCZAN Canada Mortgage Housing Corporation

*Northern housing - energy efficient design
vs «as occupied» energy use*

NELSON PISCO Government of Nunavut
CHRISTIE MOORE Standards Council of Canada

*Standing strong: How standards help reduce the vulnerability
of Arctic infrastructure and support climate resilient community*

BLOCK 4

14:20 - 15:20

HOUSING, HEALTH AND WELL-BEING

moderated by
MICHELLE MAILLET
McGill University

MARIE BARON CHUQ - U. Laval, **MYLÈNE RIVA** McGill University
CHRISTOPHER FLETCHER Université Laval

*Housing and community factors associated with healthy aging in Inuit
communities in Canada*

CAMILLE PEPIN, **MYLÈNE RIVA** Université Laval
GINA MUCKLE, **JOCELYNE MOISAN**, **NADINE DUBOIS** CHUQ - U. Laval

*Household overcrowding and psychological distress among Nunavik Inuit
adolescents: a longitudinal study*

MYLÈNE RIVA, **PHILIPPE DUFRESNE** McGill University

CHRISTOPHER FLETCHER Université Laval

KARINE PERREAULT Université de Montréal

*Moving to a new house in Nunavik and Nunavut: Assessing the impacts on
changes in housing conditions, health, and well-being*

pause 15:20 – 15:30

PANEL

SOLUTIONS FOR ARCTIC HOUSING AND COMMUNITY PLANNING

15:30 - 17:00



OLIVIA IKEY VICE PRESIDENT, QARJUIT YOUTH COUNCIL NUNAVIK
Olivia Ikey is an Inuk from Kuujuaq. In her region and on a national level, Olivia advocates for youth and Inuit rights, fights against suicide, facilitates reconciliation and decolonization work with youth and newcomers, promotes Inuit identity and culture, and works as the Vice President of the Qarjuit Youth council, the new regional youth body. In September 2016, Olivia received an award for the advancement of Inuit Youth in the region from Inuit Tapiriit Kanatami. She hopes to continue to find new and innovative ways to help her people succeed in bridging the traditional and modern worlds.



JIMMY MAIN NUNAVUT HOUSING CORPORATION
Jimmy Main is a regional director for the Nunavut Housing Corporation. He is a life-long Nunavut resident and has been employed with the Nunavut Housing Corporation for 16 years. His office oversees the operations of the Local Housing Organizations in the Kivalliq region which is comprised of 7 communities (1,700 Public Housing units & 300 GN staff units). M. Main is a recent graduate of the Government of Nunavut's Hivuliqtikhanut - Senior Manager Series Leadership program. He is also a past Hamlet councillor and current a member of the local District Education committee for his home community of Arviat, Nunavut.



KATE MITCHELL NUNATSIAVUT GOVERNMENT
Kate Mitchell is First Minister of the Nunatsiavut Government, and was elected to the position by members of the Assembly in May 2014. The First Minister oversees the running of the Nunatsiavut Executive Council, and acts as the Minister of the Department of Nunatsiavut Affairs, responsible for: (a) implementation of the Labrador Inuit Land Claims Agreement; (b) the administration of justice and the legal services required by the Nunatsiavut Government; (c) eligibility and enrolment of Beneficiaries of the Labrador Inuit Land Claims Agreement; (d) the management of Nunatsiavut Government public property; and (e) housing for Inuit.

co-chairs

MYLÈNE RIVA McGill University

GENEVIÈVE VACHON Université Laval

DENISE PICHÉ Université Laval

PANEL



MASON WHITE LATERAL OFFICE

Mason White is a founding partner at Lateral Office, Toronto. He received his B. Arch from Virginia Tech and his Master of Architecture from Harvard Graduate School of Design. He is an Associate Professor at the Daniels Faculty of Architecture, Landscape, & Design at the University of Toronto. He has taught at Harvard University, Cornell University, Ohio State University, and UC Berkeley. M. White previously worked at Moncaelli Press (New York), Machado Silvetti Associates (Boston), and Panter Hudspith (London) before forming LATERAL OFFICE. He is convinced that there are new roles for architecture out there that we do not know because we are not looking, really looking. He is the recipient of the 2008-09 Arthur Wheelwright Fellowship from Harvard Graduate School of Design and the 2012-13 Howard Friedman Visiting Professorship in the Practice of Architecture at UC Berkeley College of Environmental Design.

moderated by

PAUL PARSONS KATIVIK REGIONAL GOVERNMENT

Paul Parsons was named assistant director of the KRG municipal public works in 2016. His duties are focused on working closely with northern village staff and overseeing implementation of infrastructure programs regarding drinking water and wastewater treatment, landfills, roads and buildings. For the past two years, Paul has been representing the KRG on the working group Habiter Le Nord and remained involved in various community projects. In 2013, he was also awarded the Queen Elizabeth II Diamond Jubilee Medal for his contribution to Canada. Previously, Paul was elected in 2009 as Mayor of Kuujuaq and occupied this role until 2012.



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ABSTRACTS

BLOCK 1 DWELLING DESIGN AND CONSTRUCTION

ARCHITECTURAL LESSONS ON FOUNDATION BUILDING IN VAN TAT GWICH'IN TERRITORY: FOUNDATION TYPOLOGIES CONSTRUCTED WITHIN THIS CONTINUOUS PERMAFROST REGION AND THEIR RECIPROCAL RELATIONSHIPS WITH PEOPLE, BUILDINGS, AND THE LAND

Kovalcik, Katherine (1) (Presenter)

(1) University of Waterloo, Cambridge ON, Canada

The foundation is an architectural component that mediates the relationship between a building and the land. It is a connection that is particularly challenging to ground in dynamic soils underlain by permafrost.

Bridging the Arctic Circle in the Northern Yukon, Van Tat Gwich'in territory is situated between overlapping cultural and geopolitical realities of the North and the South. The lives and knowledge of the Peoples who have inhabited this place for millennia are entangled with a shifting land, one that experiences both changing seasons and increasing warming trends. The Van Tat Gwich'in, like many northern Indigenous Peoples, are positioned as the 'ground truthers' of environmental change in their territory. Distanced professional 'experts' also engage this critical issue through research and design. These perspectives overlap in the practices of foundation design, building, and maintenance. Foundations are located within a web of reciprocity that intertwines multiple ways of knowing the land.

Conceptually, this paper positions foundations as connections to the land. Two main foundation typologies exist for building on permafrost: deep and shallow foundations. Deep foundations – such as piles that require imported materials, equipment, and skilled labour – attempt to isolate a building above the upper surface of the ground from the shifting, active layer by connecting to a more solid material below. Shallow foundations – such as vernacular Gwich'in timber designs used in contemporary life out on the land – float on top of or within the earth's surface. The latter types of systems are often used in residential construction, where the ground's transformations can manifest themselves in the physical experiences of living in these buildings, and often result in a need to maintain and constantly re-level these structures. As the land shifts with climate change, many foundations must adapt and either dig deeper or tolerate more movement.

Methodologically, this paper is compiled as an academic overview of the multi-scalar relationships between people, buildings, and the land that architecture might build on. This work takes the form of an open-ended and non-technical illustrated index of existing foundation typologies for building in this continuous permafrost region, and details how these systems function. At a larger scale, an additional series of deep section drawings annotates the interrelationships between buildings and the ground, and looks beyond the architect's typical 'ground-up' purview

This paper presents an understanding of foundations informed by a constellation of work that includes architectural research, conversations, and time spent over the course of two summer seasons in Old Crow, Yukon, and the author's experience out on the land with local citizens who live close to it. Written from the position of a 'not-knower' – a visiting student of architecture and the land – this paper offers a series of questions, attentions, and prompts for the consideration of the visiting designer that emerge through the examination of foundations and their reciprocal relationships with people, buildings, and the land.

VAGABOND, NOMADIC HOUSE (IMAGINATION + CONSTRUCTION + EXPERIENCE)

Blais, Myriam (1) (Presenter)

(1) Université Laval, Québec QC, Canada

The recent sedentarization of Nunavik's Inuit communities is addressed through an understanding of the nomadic ideal that has characterized – and still does – their relationship to their land and dwelling territories. By tackling the housing crisis mainly in a qualitative manner, we aimed at developing a variety of new possibilities. The idea of the nomadic, vagabond house is thus at the heart of the studio work done by architecture Masters students, at various scales and for different occasions. The studio aimed at re-inventing challenges that are taken for granted. Two main questions emerged [How to live in an arctic environment? How to build in an arctic environment?], which prompted students to “imagine” the ideal “experience” that culturally appropriate housing projects should offer, and to devise relevant and sustainable design and construction methods to achieve it. Design hypotheses implied that: 1) architecture produces the physical frameworks that allow dwelling; 2) dwelling, as fact and as aspiration, articulates various relationships between architecture and reality; 3) the architect's task consists in inventing opportunities for dwelling, in building them.

In such context, the studio developed along a three-step sequence which offered a kind of itinerary for the students' inquiries and architectural projects :

- Imagination + Construction. This first step invited students to “reinvent” design challenges for Northern dwellings, culturally and territorially appropriate for Inuit populations (the “vagabond” attitude of the studio), while revisiting their own preconceptions about the North and Inuit communities. They had to imagine the ideal experience that Inuit dwelling should offer, identify the project's type and characteristics, and specify the most relevant and promising opportunities for construction development (in terms of systems, processes and materials).

- Construction + Experience. This step aimed at materializing design intentions through the study and development of construction systems that are appropriate to the climatic and cultural contexts of Nunavik. The synthesis of the entire design approach has been carried out, considering that the project experience is the result of an eloquent conciliation of imagination and construction.

- Atlas – illustrated travelers' stories (Imagination + Construction + Experience). As a critical synthesis, this step anticipates on the reality and the realization of the housing projects. Illustrated scenarios of implementation of projects were produced that judiciously (and as much as possible) mobilized local resources (be they human, material, or natural).

This communication will present a few of those new itineraries for contemporary Inuit dwellings.

HOUSING DESIGN FOR THE INUIT NUNANGAT COMMUNITIES, A TWO TIER APPROACH: FAST PACED (ADDRESS THE HOUSING SHORTAGE CRISIS) AND SLOW PACED (RESEARCH AND DEVELOP SUSTAINABLE HOUSING SOLUTIONS)

Tannoury, Sami

EVOQ architecture, Montréal QC, Canada

Numerous studies and reports have documented the housing shortage crisis in Inuit communities. With population growth well over the national average, and inadequate federal and provincial funding, Inuit communities are unable to keep up with their advancing needs. The effects of this crisis are wide-spread and promote overcrowded houses, deterioration of housing stock, family tensions, social tensions, education problems, as well as health and security issues. Without effective solutions and added funding the only foreseeable future is further decline.

EVOQ architecture has been designing housing projects for the Inuit Nunangat communities for the past 20 years. Our team has developed over 15 different housing models and has overseen the construction of over 500 housing units in Nunavik, Nunavut and Nunatsiavut. We have helped our clients develop housing amid the ongoing housing crisis with the objective of building as much housing as possible. This faced pace approach is essential to counteract the housing shortage crisis. Through our sustained relationship, and thanks to the communities' sharing and mentoring, over the years, we have developed a unique understanding of the constraints of building in these remote communities and we were also able to develop insight into the specific housing needs of these communities.

The knowledge acquired through these "in the trenches" experiences led, in time and as trust grew, to discussions about long term goals and possible improvements to ongoing projects. This slow paced approach is a true and sincere dialogue that has evolved through meetings, design charettes and public consultations. This dialogue process has led to the design and construction of two pilot projects in Nunavik and Nunatsiavut that are meant to serve as a benchmarks to future housing development.

The lessons learned over the years have confirmed our belief that sustainable building design must strive to achieve more than efficient housing construction systems and energy efficiency targets. Protection of cultural diversity is as important, if not more so. This means that the ideal house for the Inuit Nunangat does not exist. A one shoe fits all approach is not sustainable even if it simplifies, in appearance, management of housing development. The multiple housing models developed attest to the variety of housing needs.

These shared experiences, where local communities are heavily involved, speak loudly to the responsibility of Sustainable Building Design in Inuit communities to go one step further and to support cultural reappropriation and empowerment.

BLOCK 2 **COMMUNITY PLANNING PROCESSES**

INUIT QUAJIMAJATUQANGIT: HOW INVOLVEMENT OF THE COMMUNITY OF IKALUKTITIAK (CAMBRIDGE BAY), NUNAVUT, WAS KEY IN HELPING GENERATE THE ARCHITECTURAL DESIGN OF THE CANADIAN HIGH ARCTIC RESEARCH STATION (CHARS)

Fournier, Alain

EVOQ Architecture (McGill U 1975), Montréal QC, Canada

The Canadian High Arctic Research Station (CHARS) built in Ikalukutiak (Cambridge Bay), Nunavut, as part of Canada's Northern Strategy, is nearing completion. The architects (FGMDA/NFOE) were commissioned to design a world-class Arctic research station, demonstrating state of the art design excellence that serves as a model for similar polar facilities around the world. Now Polar Knowledge Canada's headquarters, covering 83,000m², it is the largest facility in the Inuit Nunangat territory.

The commission also stated that the CHARS would have to be integrated, in every way possible, to the host Inuit community of Ikalukutiak . While CHARS will make an international statement on Canadian research in the Arctic, it must also be an architectural representation of Inuit culture to ensure full integration into the community of Ikalukutiak.

The design and fundamental personality of the CHARS tangibly and visibly constitute a major break away from the old scientific research station model in Arctic communities. The CHARS brings Traditional Science and Technology and Traditional Inuit knowledge to work together under one roof. The architecture (planning and design) of the Station reflects and makes possible this new paradigm.

The community's participation to the design process set a leading-edge precedent of collaborative community design. The community was involved from the very outset of the actual project definition. Numerous consultations, meetings and discussions were held at many important junctures in the design process. These were held with various community groups (elders, youths, community leaders, etc.) This small group approach proved to be very effective, letting all voices to be heard, unencumbered by deference to age, status or public speaking abilities. The resulting building design can be said to have been the result of real co-design. The community asked the architects to integrate Inuit Quaujimajatuqangit (IQ) principles in the design of the station. Inuit Quaujimajatuqangit literally translates as 'What should be known by Inuit. This holistic set of concepts was articulated by the Nunavummiut to assist them in creating their territory Nunavut and shaping all aspects of its development.

IMAGINING INUKJUAK'S FUTURE DEVELOPMENT, A REVIEW OF NORTHERN PLANNING ISSUES AND STRATEGIES

Landry, Julien (1) (Presenter) and St-Jean, Laurence (2) (Presenter)

(1) Université Laval, Québec QC, Canada

(2) Université Laval, Québec QC, Canada

This communication presents the results of an urban design project that focus on representing sustainable and culturally appropriate scenarios and strategies for development and consolidation of the Inuit villages in Nunavik. Illustrated with urban design proposals, these «opportunities» take place on familiar sites in the community of Inukjuak, considering qualities desired by the Inuit. These representations highlight the impacts of certain actions on the environments such as access to community services, the variety of uses and dwellings, the location of houses, etc. After validation with community members, this collection of ideas could help inform decision-making by local Nunavik stakeholders who are implementing their new masterplan and to include citizens in the development of shared visions for the future of Nunavik.

For several years, the lack of housing has led to the emergency construction of clusters of identical houses resulting from standardized programs. Uniform supply of housing, both in terms of program and tenure, does not seem to meet Inuit needs and aspirations nor the diverse demands of different types of households (nuclear families, extended or single-parent families, young couples, singles, etc.). The lack of complementary solutions to social housing hinders Inuit initiatives and participation in housing construction. Some interviewed Inuit expressed that the current construction methods are insensitive to the richness of natural landscapes, from an ecological and a symbolic point of view. Village facilities are often gray, repetitive, standardized, and monotonous.

A one-week stay in Nunavik last March provided an opportunity to visit potential sites, submit draft sketches, and collect new data from the land and local populations. Different technical, cultural and policy issues were discussed with local managers. These consultations were intended to enrich the proposals for a variety of «knowledge» in order to reflect the aspirations, values and visions of local people for living environment.

Based on consultations and meetings with managers, four development themes had been identified : Preservation, Consolidation, Diversity and Meeting Places. These themes help to frame the various issues and potential concerning the urban planning of northern villages, but intend to be flexible, since the issues are not mutually exclusive to each of the themes. The propositions are rather complementary and transcend the different scales of intervention.

The proposals are based on current planning practices in Nunavik while drawing inspirations

from innovative examples of northern development observed elsewhere in the world. The approach is also enriched by local aspirations and values. The results of this work are published on a friendly-user web site. A series of printable posters, intended for discussion meetings through Northern Villages, also summarizes the results and the process of this research.

BLOCK 3

ENERGY AND INFRASTRUCTURE

NORTHERN HOUSING - ENERGY EFFICIENT DESIGN VS «AS OCCUPIED» ENERGY USE

Soroczan, Cate

Canada Mortgage and Housing Corporation, Ottawa ON, Canada

The provision of energy makes up a significant portion of operational costs for housing corporations across the Territories. Within the Public Housing portfolio the NWT Housing Corporation (NWT HC) provides the full cost of heating while tenants pay \$0.09 kW/h electricity (NWT CH, 2012). NWT HC reported that operating expenditures for 2014-15 were \$99.7 million of which 26% (\$26.4 million) was directed to utility costs for their public housing stock.

In Nunavut, the Nunavut Housing Corporation spent approximately \$43 million on heat and electricity in 2012-2013. This has been identified as a "major burden to the Government of Nunavut" and that construction of new units will "put a strain on the Nunavut Housing Corporation and, in turn, the Government of Nunavut to provide operations and maintenance costs for those units."

CMHC has supported a number of studies examining the energy consumption rates of northern housing including the northern sustainable houses in Inuvik and Arviat as well as more recent analysis of energy efficient multi-unit buildings in Whitehorse. These studies document the design and construction of units designed to exceed current energy requirements; however, depending on the specific unit, actual energy consumption can range significantly - highlighting the importance of occupant behaviour on energy use and the need for ongoing education and support.

This presentation will summarize recently completed work and speak to current and future initiatives.

STANDING STRONG : HOW STANDARDS HELP REDUCE THE VULNERABILITY OF ARCTIC INFRASTRUCTURE AND SUPPORT CLIMATE RESILIENT COMMUNITY PLANNING

Pisco, Nelson (1) (Presenter) and Christie Moore (2)

(1) Government of Nunavut, Iqaluit NU, Canada

(2) Standards Council of Canada, Ottawa ON, Canada

Rapid environmental and economic changes are having a profound impact on the physical and built environments of the Arctic. As a consequence, new policies and mechanisms are needed to help Northern communities adapt and reduce the vulnerability of their infrastructure to the impacts of climate change.

This session aims to explore how standards and accompanying educational, training and capacity building efforts have been successful in promoting the development and maintenance of climate resilient community infrastructure, supporting sustainable community planning in a changing Arctic and how, through engaging northern infrastructure experts and policymakers, Canada has become a global leader in Arctic-focused infrastructure standardization.

Historically, few national or international standards have been developed responding to the unique climatic conditions in the Arctic. The Standards Council of Canada (SCC) recognized an emerging need and responded with the creation of the Northern Infrastructure Standardization Initiative (NISI). Since 2011, five (5) standards have been developed and incorporated into regulatory policies and guidelines across the North in critical areas, including managing changing snowload risks for northern community infrastructure, community drainage planning and erosion mitigation measures in permafrost zones. To support the application of the NISI standards, the NISI Education Program was developed to support organizations and community leaders better understand and apply the NISI standards in their community. Over the next five (5) years, an additional seven (7) standards will be developed to support northern policymakers, developers and owners plan and adapt their community infrastructure for a new climate reality.

Key to the success of NISI is the Northern Advisory Committee (NAC). The NAC, a group of northern infrastructure experts and policymakers, provide strategic advice and guidance to ensure that the standards are accessible and applicable in a northern context and that they are developed in the best interest of northerners. NISI is a program guided and delivered by northerners to create resilient and safe northern communities.

BLOC 4 **HOUSING, HEALTH AND WELL-BEING**

HOUSING AND COMMUNITY FACTORS ASSOCIATED WITH HEALTHY AGING IN INUIT COMMUNITIES IN CANADA

Baron, Marie (1,2) (Presenter), M. Riva (3) and C. Fletcher (1,4)

(1) *Axe Santé des populations et pratiques optimales en santé, Centre de recherche du CHU de Québec – Université Laval, Québec QC, Canada*

(2) *Faculté de Sciences Infirmières, Université Laval, Québec QC, Canada*

(3) *Institut de santé et des politiques sociale et Département de géographie, Université McGill, Montréal QC, Canada*

(4) *Département de médecine sociale et préventive, Université Laval, Québec QC, Canada*

Context: In the last decades, important social, cultural and environmental transformation took place in Inuit regions and communities. These transformations have important consequences on living conditions and on people's health. One of these consequences is the gain in life expectancy, leading to an increase in the population aged 45 years and older. As people age, they face increase health challenges: physical limitations, hearing and sight loss, chronic health conditions, cognitive impairments, etc. But several resources in the living environment can support people's health and help them age healthier. Good housing conditions and adapting houses to support aging at home can prevent accidents and are good for mental health. Having positive relationships at home and in the neighborhood are associated with better well-being for aging adults. Having strong family and social connections has been shown to be associated with better physical and mental health. In Inuit communities, land-based activities (e.g. hunting, fishing or picking berries) is associated with better health and is likely to be important for of healthy aging. The objective of this study is to identify living conditions (housing conditions and community perceptions) and individual factors associated with better health for people aged 45 and older.

Methods: About 560 Inuit aged ≥ 45 years participated to the 2006 Aboriginal People Survey. A holistic indicator of health was created in previous analyses using factorial and cluster analyses: participants of the survey were grouped in categories according to their similarities in answering several health-related variables including physical and mental health, spirituality, being loved and having social support, speaking Inuktitut and health-related behaviour. Three groups of participants were created: 1) people with no physical limitations, who have a high social support and a good perceived health 2) people who

sometimes experience physical limitations, have low social support, and poorer mental and self-rated health 3) people with important physical limitations, poor self-rated health, who don't speak Inuktitut but have a high social support. Sex-adjusted multinomial regression models will be used to examine the associations between this indicator and living conditions including: quality of family ties, living in a dwelling in need of repairs, living in an overcrowded household, feeling safe when walking in the community, being satisfied with one's life in the community. Analyses will also be adjusted for education level (having finished elementary school), personal income (<\$20,000 per year vs. ≥ \$20,000) and participation to land-based activities.

Relevance: This project aims to identify housing conditions and community assets associated with healthy aging in Inuit communities. Asset-based research projects are needed to inform health promoting interventions and policies. A better knowledge of living conditions promoting health is relevant to help people age well in their home and their communities. Knowledge produced by this project will inform the formulation of adapted policies on housing and community conditions supporting healthy aging in Inuit Nunangat.

HOUSEHOLD OVERCROWDING AND PSYCHOLOGICAL DISTRESS AMONG NUNAVIK INUIT ADOLESCENTS: A LONGITUDINAL STUDY

Pepin, Camille (1) (Presenter),

G. Muckle (1,2), C. Moisan (1), N. Forget-Dubois (1,2) and M. Riva (3)

(1) Université Laval, Québec QC, Canada

(2) CHU de Québec Research Center, Québec QC, Canada

(3) McGill University, Montréal QC, Canada

At the 2006 Canadian Census, 49% of the population of Nunavik reported living in overcrowded households compared to 3% of the Canadian general population. Living in overcrowded households is associated with a greater risk of suffering from mental health problems for Canadian adolescents. Inuit adolescents are more at risk of suffering from psychological distress than their Canadian peers. The present work is the first empirical and longitudinal study to examine prospectively the hypothesized relationship between household overcrowding in childhood and psychological distress during adolescence among Nunavik Inuit, and whether this relationship varies with sex. Recruited as part of the Nunavik Child Development Study, 220 participants were met at 11 years old in average (T1, 2005-2010) and then when they were 16-20 years old (T2, 2013-2016).

At T1, household overcrowding was assessed using the number of people per room, with a ratio above 1 indicating overcrowding. Psychological distress symptoms were operationalized at T2 using the Center for Epidemiologic Studies Depression Rating Scale and a dichotomous question documenting serious suicidal thoughts during the last 12 months. Results show that household overcrowding, depressive symptoms and suicidal thoughts affected a large proportion of participants. Yet, the results did not show that living in an overcrowded household in childhood had a long-term effect on psychological distress. However, household overcrowding is related to depressive symptoms when both are assessed during adolescence. The association between household overcrowding and psychological distress is not different between men and women. Although we did not observe a longitudinal effect of household overcrowding on psychological distress, living in an overcrowded house could be experienced as a difficulty for adolescents which may influence other health-related outcomes. It is also possible that the direct effect of household overcrowding on psychological distress is mediated by other factors related to the house environment, or that the psychological distress experienced by Inuit adolescents is influenced by factors that have not been included in the present study. Further research is needed to better understand the causes of the high psychological distress rates.

MOVING TO A NEW HOUSE IN NUNAVIK AND NUNAVUT: ASSESSING THE IMPACTS ON CHANGES IN HOUSING CONDITIONS, HEALTH, AND WELL-BEING

Riva, Mylene (1) (Presenter), Perreault, Karine (2) (Presenter),

C. Fletcher (3) and P. Dufresne (1)

(1) McGill University, Montreal QC, Canada

(2) Université de Montréal, Montreal QC, Canada

(3) Université Laval, Quebec QC, Canada

Partners: Kativik Municipal Housing Bureau; Kativik Regional Government; Nunavik Regional Board of Health and Social Services; Société d'Habitation du Québec; Government of Nunavut Department of Health; Nunavut Housing Corporation; Nunavut Tunngavik Inc.

Housing conditions in Inuit Nunangat are an important determinant of individual and community health and well-being. In 2014-2015, over 400 social housing units were constructed in selected communities in Nunavik and Nunavut. Construction included a mix of one-, two-, and four-bedroom houses and apartments, accommodating single-person, small and large family households. The impending shift in housing of a relatively large number of people presented an opportunity to explore the effects of moving to a new housing unit in a population health intervention research framework. In collaboration with Inuit organizations in both regions, we designed a before-and-after study to assess the impacts of moving to a new house on health and well-being. This presentation will describe the overall project and present results of the impacts of moving to a new house on changes in housing conditions and health status.

Baseline data was collected in the Fall 2014 in Nunavik and in the Spring 2015 in Nunavut, one to six months before moving. In selected communities receiving new housing units, households ranked at the top of the waitlist for social housing were recruited by local housing officers. Households were oversampled by 25% given that not everyone met at baseline would get to move. From the 357 eligible households, 241 households were recruited. Within households, all adults aged 18 years and older were invited to participate. A total of 289 adults were recruited at baseline. Of these participants, 179 moved to a new house. Of the participants eligible at the follow-up period 15-18 months after the move, 102 completed the study. Face-to-face questionnaires were administered at baseline and follow-up.

The conceptual framework used in the project delineates and measures housing conditions along three dimensions, structural/material, psychosocial and spatial. Each dimension is hypothesized to influence health either directly or indirectly. The structural/material dimension of housing refers to the physical structure of the dwelling and to the socioeconomic status of tenants, including measures such as household composition and overcrowding; housing quality and repairs needed; and household socioeconomic conditions. The psychosocial dimension of housing makes the distinction between the functional necessity of being housed and the affective sense of having a home. Control, privacy, safety, identity, and satisfaction were assessed as psychosocial factors associated with housing and contributing to the sense of home. The spatial dimension situates housing in a wider context, referring to how communities are lived and experienced by residents. Perceived safety and social cohesion of the community were measured. Dimensions of housing conditions were examined for their impacts on a range of self-reported health measures, including self-rated general and mental health; psychological distress; stress; and respiratory symptoms.

Results from this project have the potential to inform and support housing and public health policies across Inuit Nunangat and contribute to the sustainable development of the region.

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