

SASKATCHEWAN POPULATION HEALTH AND EVALUATION RESEARCH UNIT

















ANNUAL REVIEW 2015-2016

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Exercise participants Sunset at Ile-a-la-Crosse Elevator at Young, SK Kylee Wilyman

History of Health Inequities
Residential school

Carolyn Tran
Derrick Owen
Carolyn Tran
Sharianne Caffet
Saskatchewan Archives Board

University of Alberta Peel collection

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WHO WE ARE

SPHERU is an interdisciplinary, bi-university unit at the Universities of Saskatchewan and Regina. Founded in 1999, SPHERU promotes health equity through innovative, timely, policy-relevant research. Our researchers come from a variety of academic backgrounds including geography, political science, anthropology, epidemiology, social work, kinesiology, and nutrition. Researchers are located at three SPHERU sites: the main campus of the Universities of Saskatchewan and Regina, and at the University of Regina Prince Albert campus.

SPHERU has a built a national profile and is one of a handful of research units in Canada well-known for advanced population health research.

SPHERU conducts intervention research to address issues of health inequity among vulnerable populations with a focus on children, rural seniors, and northern and Indigenous populations. This work involves evaluations of existing policies and programs, integrates interventions within research projects, and uses iterative and innovative knowledge translation strategies to ensure that findings from our research make their way to policy makers at multiple levels of governance.

Our mission – the promotion of health equity by understanding and addressing population health disparities through policy-relevant research – is incorporated into all of our projects. SPHERU's work includes the following types of research:

- Creation of new knowledge;
- Independent policy analysis;
- Collaborative research with communities;
- Collaborative research with policy makers; and
- Evaluations of policies, programs, and interventions.

FUNDERS

SPHERU receives funding from a variety of sources. While its two university partners primarily provide in-kind support, the majority of SPHERU's funding comes in the form of project-specific grants from provincial and federal health research funding agencies. Key among these are the Phase III Health Research Group Grant from the Saskatchewan Health Research Foundation (SHRF) and operating grants from the Canadian Institutes of Health Research (CIHR) held by one or more researchers affiliated with the unit. As well, SPHERU has been awarded smaller grants from a number of sources that support conferences, knowledge translation, training, project development, and other activities. SPHERU undertakes contract research on behalf of governments and non-governmental agencies that align with the unit's overall mission, and also conducts program evaluations in the area of population health. All of these sources of funding combine to support the work of the unit.







Conseil de recherches en sciences humaines du Canada



PARTNERS

Health research is a major focus for the University of Regina, with world-class researchers conducting leading-edge studies in aging, long-term care, pain assessment and management, cancer research, population health, rehabilitation and risk reduction, rural health, and northern health. Work at the University of Regina includes a multidisciplinary study of the impact of health determinants on various populations, as well as research on policy and program interventions designed to improve these determinants and provide equitable access to health services. Through the provision of funding and office space in both Prince Albert and Regina, the University of Regina continues to support SPHERU in its work to produce high-quality, policy-relevant research.



The University of Saskatchewan, through its involvement with SPHERU, is helping to redefine the way people think about health determinants and to chart new territory by actively engaging communities, non-governmental organizations, and

policy makers in the research enterprise. With a wide range of health science colleges and programs, the University of Saskatchewan is committed to expanding health research. The university is home to SPHERU's Saskatoon-based researchers and staff. This relationship, along with an association with the College of Medicine, affords SPHERU opportunities to expand its research and achieve its goals.

MESSAGE FROM THE DIRECTORS

The year 2015-16 has seen some exciting changes to SPHERU as we both shape and respond to a shifting population health research landscape provincially, nationally, and globally.

We have a great deal to contribute as the focus expands to population health intervention research. There is recognition that while it is important to continue building on what we know about how the social determinants of health shape population outcomes in inequitable ways, there are also a myriad of opportunities to bring a research lens to population level policy and program interventions based on the knowledge already produced.

SPHERU, along with our population health colleagues elsewhere, is rapidly developing new concepts and methods to produce evidence of what works (or doesn't) and why. To that end, we were excited to welcome three new research faculty in 2015-16.

Dr. Gabriela Novotna from the Faculty of Social Work at the University of Regina specializes in research related to gender and addiction and has a particular interest in evidence-informed policy development. Dr. Michelle Stewart from the Department of Justice Studies at the University of Regina works in the area of Fetal Alcohol Spectrum Disorder (FASD) with a focus on how it is understood in different communities of practice and how advocates can mobilize information about FASD in different settings. Dr. Daniel Fuller, a CRC in Population Physical Activity at Memorial University in St. John's, Newfoundland. Dr. Fuller initially joined us while appointed to the School of Public Health at the University of Saskatchewan, and we were keen to retain him as our first research faculty member from out-of-province.

This is an opportune shift for SPHERU as we move to formalize national and international research relationships with colleagues whose partnerships with us transcend individual projects contributing to the collective conceptual, methodological, and applied research for which we are recognized here at home and outside of Saskatchewan.

We invite you to explore the 2015-16 SPHERU Annual Review to meet the new faces among our faculty, PDFs, and research staff, and see highlights of what we've been up to over the last 12 months.

Sylvia Abonyi, PhD

Acting Co-Director, SPHERU

University of Saskatchewan (2014-2016)

Tom McIntosh, PhD

Co-Director

University of Regina

MANAGEMENT ADVISORY GROUP

As a bi-university research group, SPHERU is guided by a Memorandum of Understanding (MOU) signed by the University of Regina and the University of Saskatchewan. The MOU, which is in effect for 2014-2019, outlines the cooperative agreement of the partner institutions to support the work of SPHERU and is operationalized through a Management Advisory Group (MAG). MAG members are senior university administrators who are appointed by the Vice-Presidents Research at both universities. SPHERU's co-directors meet twice a year with the MAG to provide updates on the group's research and financial activities and to seek advice and support for the unit.

MAG members for 2015-2016:



Dr. M.E. (Beth) Horsburgh is Professor and Interim Dean of the College of Nursing at the University of Saskatchewan and a Special Advisor to Saskatchewan Centre for Patient-Oriented Research (SCPOR). She is also a member of both the Office of the Vice-President Research Executive Committee at the University of Saskatchewan.



Dr. David Malloy is Vice-President (Research) at the University of Regina and a professor in the Faculty of Kinesiology & Health Studies. His research focuses upon applied ethics and philosophy in administrative contexts. His interests include ethical decision-making, codes of ethics, leadership, and ethical climate/culture.



Dr. Gordon McKay, prior to his retirement in September 2015, was Professor Emeritus at the University of Saskatchewan, Acting Vice-Dean of Research in the College of Medicine, and the director of the Core MS laboratory. He was special advisor to the Office of the Vice President of Research in the areas of clinical and biomedical health and Chair of the Board of Directors for the Saskatchewan Health Research Foundation. SPHERU thanks Dr. McKay for his contributions.



Dr. Harold Riemer is the Dean of the Faculty of Kinesiology and Health Studies at the University of Regina. A graduate of the University of Alberta and Eastern Washington University, he holds a PhD in sport management from Ohio State University, with a major focus on organization theory and behaviour.

RESEARCHERS



SYLVIA ABONYI, PHD

Dr. Abonyi is an anthropologist working primarily in the area of Indigenous health. She explores the role of culture in health through a number of research projects in northern and remote areas of Saskatchewan and across the Prairies. She is currently interim director of SPHERU and an associate professor with the University of Saskatchewan's Community Health and Epidemiology Department.



JAMES DASCHUK, PHD

Dr. Daschuk is an associate professor in the Faculty of Kinesiology and Health Studies at the University of Regina. His book, "Clearing the Plains: Disease, Politics of Starvation and the Loss of Aboriginal Life" (University of Regina press, 2013) has won numerous awards including the Governor General's Medal for Scholarly Research in History and has sold more than 20,000 copies.



RACHEL ENGLER-STRINGER, PHD

Dr. Engler-Stringer is an associate professor in Community Health and Epidemiology at the University of Saskatchewan. Her research interests include food systems and food security, food environments and food environment interventions, nutritional health inequities, community-based and participatory research. Her current research includes a large mixed-methods critical ethnographic study of food practices in the inner city, and several projects focused on student and school food.



DANIEL FULLER, PHD

Dr. Fuller, a newly appointed CRC in Population Physical Activity at Memorial University in St. John's, Newfoundland, is looking at the use of mobile health technologies to increase physical activity. Dr. Fuller initially joined us while appointed to the School of Public Health at the University of Saskatchewan. With his strong personal and professional ties to Saskatchewan we were keen to retain him as our first research faculty member located out-of-province.



PAUL HACKETT, PHD

Dr. Hackett's interests focus on the impact of cultural change on community health. His research includes type 2 diabetes among First Nations in Saskatchewan and Manitoba, and the history of tuberculosis among western First Nations. He is also team lead on the SPHERU project looking at the origins and import of health inequities in Saskatchewan. He is an assistant professor with the University of Saskatchewan's Department of Geography and Planning.



BONNIE JEFFERY, PHD

Dr. Jeffery has been a researcher with SPHERU since 2000 and served as Director from 2006-2012. She is a professor with the Faculty of Social Work at the University of Regina based out of the Faculty's campus in Prince Albert. Dr. Jeffery has had extensive experience in conducting population health research with rural, remote, and northern communities. Her current research program focuses on population health intervention research to support healthy aging in place for rural seniors.



SHANTHI JOHNSON, PHD

Dr. Johnson is a professor in the Faculty of Kinesiology and Health Studies at the University of Regina. Her work covers epidemiological research related to the surveillance and monitoring of falls and fall-related injuries among seniors, and intervention research on the understanding of the underlying mechanisms associated with falls among seniors in community and long-term care settings. In 2015, she was a visiting scholar at Mae Fah Leung University in Thailand and a Fulbright scholar at the Florida Policy Exchange Center on Aging, University of South Florida.



TOM McIntosh, PhD

Dr. McIntosh brings expertise on public policy making, and knowledge transfer and exchange to numerous SPHERU projects, most notably his work on the political and economic components of SPHERU's historical analysis of population health in Saskatchewan. He is a professor and head of the Department of Politics and International Studies at the University of Regina, as well as associate director of SPHERU.



NAZEEM MUHAJARINE, PHD

Dr. Muhajarine is a professor, Community Health and Epidemiology, University of Saskatchewan, and leads SPHERU's Healthy Children research program. His research includes community and family contextual influences in child development and health, risk in the prenatal period, and developing community-university research partnerships to improve knowledge creation, transfer, and application. He is on leave from SPHERU Director at the U of S (2014-16) while taking on the role of interm Executive Director for the School of Public Health at the U of S.



NUELLE NOVIK, PHD

Dr. Novik is an associate professor with the Faculty of Social Work at the University of Regina. Her research interests include the social determinants of health and equity, rural and remote practice in health and social services, aging and seniors, mental health, community-based research, and palliative care and bereavement. She works with the Healthy Aging in Place project.



GABRIELA NOVOTNA, PHD

Dr. Gabriela Novotna is an assistant professor at the Faculty of Social Work at the University of Regina. Her research interests include understanding and addressing issues related to the implementation of treatment and interventions, particularly for substance abuse problems, and the development and testing of knowledge translation strategies into real-world clinical practice.



MICHELLE STEWART, PHD

Dr. Michelle Stewart is the Director of the Community Research Unit at the University of Regina. Her research is focused on understanding and addressing the question of equal access to justice, supports and services for those living with stigmatized medical conditions, including FASD and mental illness.



SARAH OOSMAN, PHD

Dr. Oosman is a physiotherapist and an assistant professor at the School of Physical Therapy, University of Saskatchewan. She works in the area of health promotion with a specific interest in community-based health intervention research in partnership with First Nation and Métis communities. She is interested in culture-based health promotion programs to influence health across the lifespan.

RESEARCH ASSOCIATE



CORY NEUDORF, MD

Dr. Neudorf is an assistant professor in the Department of Community Health and Epidemiology at the University of Saskatchewan and Chief Medical Officer of Health for the Saskatoon Health Region. In this role, he collaborated with SPHERU to produce the *Healthy Families, Healthy Communities* report and is also involved in research on health inequities.

POST DOCTORAL FELLOWS



ANDREW HATALA, PHD

Dr. Andrew Hatala was a Canadian Institutes of Health Research post doctoral fellow in the Department of Community Health and Epidemiology at the University of Saskatchewan. He left this position in January 2016 to take up a tenure track position as an assistant professor in the Department of Community Health Sciences at the University of Manitoba. He recently received a CIHR new Investigator Award to expand and extend the research program on mental health and resilience strategies of inner-city Indigenous youth he started at SPHERU.



AMANDA LAVALLEE, PHD

Dr. Amanda LaVallee is a post doctoral fellow in the Department of Community Health and Epidemiology at the University of Saskatchewan. She is working under the direction of Dr. Sylvia Abonyi and Dr. Sarah Oosman on the research project, Wuskiwiy-tan! (Let's Move!): Aging well in a northern Saskatchewan Métis Community.

PROJECT AND ADMINISTRATIVE STAFF

COLLEEN HAMILTON

Administrative and Research Coordinator
Based at SPHERU's Prince Albert site, Colleen oversees
the unit's financial and administrative activities at
both institutions.

JUANITA BACSU

Project Coordinator

Juanita has been project coordinator with SPHERU's Healthy Aging in Place projects and is currently completing her PhD in Community Health and Epidemiology at the University of Saskatchewan.

SHARIANNE CAFFET

Research Coordinator

Sharianne recently joined SPHERU and is based at the Regina office, where she coordinates Dr. Shanthi Johnson's falls prevention research program.

CAROLYN TRAN

Project Coordinator

From the University of Saskatchewan site, Carolyn coordinates the community research activities of the Healthy Aging in Place project. She is completing her Master's degree in Social Work with the University of Regina.

MIKE CHOUINARD

Communications Officer

Based in Saskatoon, Mike promotes and disseminates the work of the unit across both universities. He also manages the knowledge translation activities for the Health Children Research program.

DIANA FEDOSOFF

Research Officer

As project coordinator for Dr. Sylvia Abonyi, Diana manages the administrative, financial, and research activities for a number of projects. Diana is based at the University of Saskatchewan site.

TRACY RIDALLS

Project Manager

Located at the University of Saskatchewan site, Tracy manages a number of projects, including Smart Cities, Healthy Kids; Seasonality and Active Saskatoon Kids; and Healthy Aging in Place projects.



RESEARCH STAFF AND TRAINEES

Aiya Amery - Research Assistant Thilina Bandara - Research Assistant (PhD) Joanne Blythe - Admininstrative Assistant Janice Braden - Professional Research Associate Dwight Bramble - Project Assistant Melanie Brockman – Research Officer Valerie Caron – Research Assistant (graduate) James Digel – Research Assistant (graduate) Melissa Gan - Research Assistant Margot Gough – Research Coordinator Donelda Gowan-Moody – Research Asssistant Sabyasachi Gupta – Research Assistant Roberta Hamilton - Research Assistant Joel Heitmar - Research Assistant Abby Hodgins – Research Assistant (undergraduate) Suzanne LeClaire – Research Assistant (graduate) Larisa Lotoski - Research Assistant (PhD) Nicole Loucks – Research Assistant (graduate) Swati Madan – Research Assistant (PhD) Maggie McBride - Research Assistant Jordan Nixdorf - Research Assistant



Kylee Wilyman - Graduate Research Assistant, University of Regina



Joel Heitmar - Research Assistant, University of Saskatchew

Derrick Owen – Research Assistant
Boabang Owusu -- Research Assistant
Thomas Roy – Research Assistant
Joelle Schaefer – Technical Assistant
Megan Sehn – Research Assistant (graduate)
Tayyab Shah – Research Assistant
Jacinda Sigurdson – Research Assistant (graduate)
Tanner Treen – Research Assistant (graduate)
Paul Tuhin – Research Assistant (graduate)
Jeffrey Walters – Research Coordinator
Sugandhi Wickremarachchi – Research Assistant (Master's)
Ramona Wijesinghe – Research Coordinator
Kylee Wilyman – Research Assistant (graduate)

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WHAT WE DO

SPHERU's work includes the creation of new knowledge, independent policy analysis, collaborative research with policy makers, and collaboration with communities to develop strategies to reduce health inequities.

NORTHERN AND INDIGENOUS HEALTH



Globally, Indigenous peoples experience poorer overall health outcomes when compared with other populations.

Many Indigenous peoples and communities are characterized by incredible resilience and a growing capacity internally for addressing these inequities.

SPHERU research projects and evaluation contracts in this area use a community-driven, participatory approach towards identifying relevant issues.

RURAL HEALTH



With a significant portion of Saskatchewan's aging population living in rural communities, more people in those areas look to community groups to provide primary care and services.

SPHERU research in this area is conducted in partnership with rural communities to create change based on study findings by developing programs and policy that can support healthy aging for seniors.

HISTORY OF HEALTH INEQUITIES



In order to compare First Nations with non-Indigenous populations, or rural with urban populations, SPHERU is looking at a range of historical data collections to understand how health changed during the 20th century.

SPHERU also looks at how health varied between communities, and how the lessons of the past could assist modern policy makers to reduce health inequities.

HEALTHY CHILDREN



SPHERU focuses on how social and physical environments play a role in the health and development of children.

SPHERU also studies the outcomes and impacts of community- and population-level interventions for children and families.

KNOWLEDGE TRANSLATION HIGHLIGHTS



Dr. Rachel Engler-Stringer

SPHERU RESEARCHER NAMED A 'FOOD HERO'

Slow Food in Canada named SPHERU researcher Dr. Rachel Engler-Stringer as one of seven "Food Heroes" at an annual meeting in Montreal in June 2015.

The award is presented each year to recognize individuals that contribute to a healthy food system by promoting "sustainable, good, clean and fair food."

Slow Food in Canada called Engler-Stringer a "dynamic activist" and cited her activities on the Saskatoon Food Council, and her research on food systems and health.

Her research also focused on urban food environments and food security issues. Engler-Stringer had been developing an online interactive Local Food Map to connect people in the community with sources of food.

SPHERU brings researchers together in an environment that promotes and supports collaboration between academics and community partners. Researchers developing projects are able to draw on their colleagues' disciplinary expertise, experience and professional relationships.

SPHERU's knowledge translation and exchange activities are an integral part of our collaborative research strategy. We identify people who will potentially utilize research and involve them throughout the process.

SPHERU knowledge translation and exchange strategies include:

- Publishing research findings in accessible, plain language documents;
- Using new media to share findings;
- Developing toolkits of findings for communities to use as resources;
- Developing research networks for knowledge exchange; and
- Delivering and participating in presentations, forums, and expert dialogues.

KIDS' WELL-BEING KEY TO REFUGEE FAMILIES ADAPTING

refugees would best adapt to their new environments.

While Canada was in the midst of welcoming Syrian refugees to the country in January 2016, SPHERU's Dr. Nazeem Muhajarine shared his thoughts with the Saskatoon Star Phoenix on how

In his editorial entitled, "Kids' well-being key to refugee families adapting," Muhajarine writes that while welcoming refugees, Canadians must also be mindful of mental health needs, particularly the impact of trauma on children.

"Major adverse events in early life, such as witnessing violence, loss of family members and displacement can significantly harm children's ability to grow into healthy, well-functioning adults," writes Muhajarine.

Muhajarine goes on to say that early years are critical for children's development and the time after settlement. The children need the chance to be kids again by playing and participating in before- and after-school programs.

"Major adverse events in early life, such as witnessing violence, loss of family members and displacement can significantly harm children's ability to grow into healthy, well-functioning adults."

- Dr. Nazeem Muhajarine

As the children become connected to their communities, the benefits extend to the rest of their family as well.

MHEALTH INFORMATION FOR MIGRANTS

SPHERU's Dr. Nazeem Muhajarine co-led a Vietnamese pilot program to provide sexual health information for migrant women.

Muhajarine and Dr. Lan Vu from Vietnam's Hanoi School of Public Health lauched the project called "mHealth information for migrants."



Funded by Grand Challenges Canada, the goal of the project was to increase migrant workers' access to health information in Vietnam by providing low-cost health advice for migrant workers through technology.

The country has seen a massive increase of internal migration as workers head to cities to find employment. People in Vietnam face challenges such as low income, lack of family support, poor social benefits and trouble accessing health information and services.

Upon project evaluation, Muhajarine found participants showed a better understanding of sexual health issues because of increased access to information.

FOOD ENVIRONMENTS AND SMART PHONES

Using face-to-face interviews and smart phones, SPHERU researchers are entering the latest phase in a food environment research project.

"Nutrition and Inequity in the Inner City: A study of diet and food access in the context of community-based food interventions" takes a look at how people eat and where they procure food within Saskatoon.

The first phase of the pilot project is being funded by a \$200,000 grant for more than two years from CIHR and SHRF.



Smart phones are being used to gather data on diets and food procurement

"We're trying to pilot using smart phones to collect diet data, food procurement data and movement throughout the city," said SPHERU researcher Dr. Rachel Engler-Stringer, principal investigator on the project.

The project has also received \$40,000 from the Saskatchewan Health Research Foundation as well as an operating grant for \$25,500 from the Social Sciences and Humanities Research Council of Canada.

"We're trying to pilot using smart phones to collect diet data, food procurement data and movement throughout the city."

- Dr. Rachel Engler-Stringer

The research team worked with 30 families, easing participants into the phase by taking time to build relationships with them.

"This is a marginalized, inner-city population," said Engler-Stringer.

"Almost all of the smart phone data studies to date have been done within affluent areas."

The team also gathered specific information from the families including household income, and when they are paid, in order to learn when

money is being spent.

Near the end of the study, researchers will interview participants and receive their observations and conduct focus groups to get a better idea of how families are obtaining their food.

"We're trying to use all of these sources of information to paint a comprehensive picture of household food procurement in low income, inner city, marginalized environments," Engler-Stringer said.



Children at a Residential schoo

RESIDENTIAL SCHOOL DATA PROVIDES INSIGHT INTO INDIGENOUS HEALTH ISSUES

SPHERU researcher Dr. Paul Hackett was interviewed for the prestigious journal *The Lancet* in May 2015. The article looks at health disparities for Indigenous people in Canada and focuses on different research across the country.

Along with fellow SPHERU researcher Dr. Sylvia Abonyi, and co-author Dr. Roland Dyck, the trio looked at type 2 diabetes among First Nations populations in Canada.

Dr. Hackett and Dr. Abonyi have been examining residentical school entrance exam data from 1919-1953, while also creating a database of historical body mass index (BMI) values.

The three researchers presented their findings in Fredericton, NB in November 2015 at the Canadian Association for Physical Anthropology conference. Dr. Abonyi also presented more BMI findings at a conference on circumpolar health in Finland in 2016.

While the data provided a look into historical population health, the research also raised ethical questions about accessing historical Indigenous population health data, and how it should be used.

SPHERU STUDENT WINS PEOPLE'S CHOICE AWARD

In September 2015, SPHERU research assistant Kylee Wilyman brought home the People's Choice Award for Best Poster at the Canadian Rural Health Research Conference in Edmonton.

Her poster focused on examining rural seniors' access to information about services such as home care, health, mental health and support for independence. The poster also lays a conceptual framework on identifying seniors' information needs and how to relay that information to those living in rural areas.

Wilyman is a Master's of Science student in Community Health and Epidemiology at the University of Saskatchewan and a research assistant with the Healthy Aging in Place research project.



SPHERU was featured in a two-page spread in the December 2015 issue of SHRF.

SPHERU FEATURED IN SHRF PUBLICATION

SPHERU was featured in the December 2015 issue of Saskatchewan Health Research Foundation's (SHRF) Research for Health magazine.

The article provides an excellent overview of the work done by researchers under the SPHERU umbrella. It explores the unit's 15-year history of research and connections.

It focuses on the importance SPHERU places on connecting with communities, not simply conducting research on them, but in partnership with the people living there.

SPHERU makes connections across research disciplines, with communities and policy makers. The unit also makes it a priority to reach broad audiences through various knowledge translation strategies.

The purpose and strength of the unit lies in exploring how these connections work together in order to produce new policies and information relevant to addressing health inequities among populations.

EFFECTIVE APPROACHES FOR HEALTHY COMMUNITIES

SPHERU researchers led and authored "The Effectiveness of Healthy Community Approaches on Positive Health Outcomes in Canada and the United States," published in the journal, *Social Sciences*.

SPHERU research assistant and PhD candidate Hazel Williams-Roberts led the publication, while researchers Dr. Bonnie Jeffery, Dr. Shanthi Johnson and Dr. Nazeem Muhajarine co-authored the article.

The project, funded through a contract with the Public Health Agency of Canada, focused on a number of studies that evaluated the effectiveness of interventions using a healthy community approach, which aims to create supportive environments to improve health outcomes.

Findings from the review showed that such approaches have been relatively unexplored and more study is required to demonstrate their effectiveness. The review also found that any communities do not have the resources to follow up on the implementation and effectiveness of the programs.

SPHERU RESEARCHER ORGANIZES MENTAL HEALTH WORKSHOPS FOR RURAL SENIORS

SPHERU researcher Dr. Nuelle Novik organized a number of workshops to determine what emotional and mental health supports for seniors are needed in rural communities.

The workshops were held in Ituna and Preeceville, two communities located in the Sunrise Health Region. The events were part of Novik's pilot research project, "Exploring emotional and mental healthcare supports for seniors in rural Saskatchewan."

Novik partnered with the Canadian Red Cross - Saskatchewan division to provide information to seniors about the Friendly Visiting Program. The three-year intervention program, offered by the Sunrise Health Region, matches seniors with volunteer visitors who connect with them on a regular basis.

Funding for this project came from the Canadian Mental Health Association - Saskatchewan division, and the Saskatchewan Health Research Foundation through an existing SPHERU research project. Additional funding for the workshops was provided by the Office of the President of the University of Regina, and from the Office of the Dean of the Faculty of Social Work.

HEALTH INEQUITIES PERSIST

The study "Changes in Social Inequalities in Health Over Time in Saskatchewan" suggests that poverty continues to negatively impact the health of the poorest among us.

SPHERU's Dr. Cory Neudorf noted in an interview with the Saskatoon Star Phoenix that in times of economic boom, the effect of health inequalities can be amplified as housing and other costs rise.

According to the study findings, the low end of income earners make \$1 to every \$7 made by the highest income earners; higher income earners live longer than other income earners and disparities keep increasing over time.

The study goes on to say that people living in more deprived areas have a 30 per cent greater chance of dying, in comparison to those residing in the highest income areas; and between 2001 and 2009, there was a 51 per cent increase in deaths for the lowest income earner group.

Neudorf said investing in housing first initiatives and basic income could have the biggest impact on improving health.

According to findings in the study, "Changes in Social Inequalities in Health Over Time in Saskatchewan:

- low-end income earners make \$1 to every \$7 made by the highest income earners;
- high-end income earners live longer than other income earners
- disparities between income earners continue to increase

Taneeganewak

WUSKIWIY-TAN! LET'S MOVE! AGING WELL IN A NORTHERN SASKATCHEWAN MÉTIS COMMUNITY

Very little is known about the aging experiences, aspirations, and support needs of Indigenous seniors overall, and even less about under-researched Métis peoples.

SPHERU researchers Dr. Sylvia Abonyi, Dr. Sarah Oosman, Dr. Bonnie Jeffery, Dr. Shanthi Johnson and Dr. Nazeem Muhajarine are working with partners Liz Durocher (co-investigator) and TJ Roy (project coordinator) in the Metis community of Île-à-la-Crosse to fill the knowledge gap and provide evidence of the effectiveness of current and emerging programs and policy interventions that promote aging well for Métis and other Indigenous peoples.

Over a five-year period (2014-2019), with a grant of more than \$1.2 million from the Canadian Institutes of Health Research, this project will reveal concepts and experiences of healthy aging through discussion groups, interviews, and photo projects with children, adults, and seniors. Seniors will also complete activity, diet, and quality of life measures at regular intervals. Finally, formal and informal supports and services available to seniors in the community will be systematically identified, with a selection of them to undergo evaluation.

TAH-NIGAHNIWHAK!

While Wuskiwiy-tan looks at Indigenous senior populations, SPHERU's second project focuses on a younger population. Tah-Nigahniwhak focuses on Canada's Indigenous youth population and their experience with more chronic conditions at an earlier age as compared to the country's overall population. This trajectory is set early in life and is influenced by circumstances in which people are born, grow up, live, and age.



Project coordinator TJ Roy, co-investigator Dr. Sylvia Abonyi, principal investigator Dr. Sarah Oosman and co-investigator Liz Durocher.

Principal investigator Dr. Sarah Oosman, and co-investigators Dr. Sylvia Abonyi and Dr. Bonnie Jeffery are conducting research in the community of Île-à-la-Crosse to determine what Indigenous youth perceive to be important to them in order to set them on a healthier life trajectory. While existing research has focused on First Nations, this study will reveal aspirations and current experiences for Métis youth in a remote community.

The project was developed in partnership with the Métis community of Île-à-la-Crosse, SK, and is part of a broader program of research exploring living well across generations in northern Saskatchewan.

SUPPORTING RURAL HEALTHY AGING: THE EFFECTS AND SUSTAINABILITY OF A COMMUNITY-BASED EXERCISE PROGRAM

SPHERU researchers Dr. Bonnie Jeffery, Dr. Shanthi Johnson and Dr. Tom McIntosh travelled to Washington, DC for the Aging in America conference in March 2016 to present findings from the Healthy Aging in Place: Improving Rural Seniors' Health Through Policy and Community Level Interventions research project.

Funded by the Saskatchewan Health Research Foundation, Study 1 of the project - Improving Rural Seniors' Mobility and Social Interaction through Exercise - examined the effect of a three-

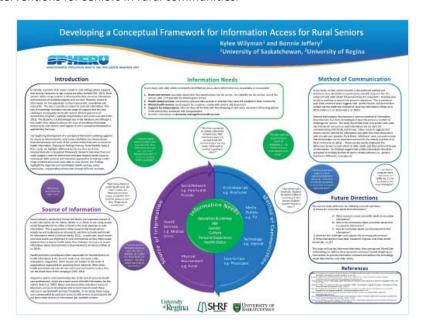


Participants take part in the first exercise of the Healthy Aging in Place project.

month community-based exercise program on mobility and social interaction outcomes for rural seniors.

While previous research revealed that simple interventions support seniors to remain in their communities, it failed to address how to establish and sustain intervention programs within rural communities.

The presentation detailed the elements of a community-based and sustainable exercise intervention in rural communities. Based on findings, researchers discussed how to make policy recommendations to support interventions for seniors in rural communities.



The Developing a Conceptual
Framework for Information
Access for Rural Seniors poster,
pictured left, won People's Choice
Award for Best Poster at the
Canadian Rural Health Research
Conference.

AWARDED PROJECTS

SPHERU researchers hold grant funds as principal investigators or co-investigators on a number of projects related to our research themes. The following is a listing of some of the recently awarded and continuing projects our researchers are working on, often collaboratively with others at Saskatchewan universities, as well as institutions throughout Canada and abroad.

ARE WE INVESTING WISELY? A SOCIAL RETURN ON INVESTMENT ANALYSIS OF THE SASKATCHEWAN/NEW BRUNSWICK HEALTHY START/DÉPART SANTÉ INTERVENTION SPHERU RESEARCHERS: NAZEEM MUHAJARINE (CO-PRINCIPAL INVESTIGATOR) WITH NAZMI SARI (NOMINATED PRINCIPAL INVESTIGATOR)

Public Health Agency of Canada (\$42,000) 2016

Healthy Start/Départ Santé (HSDS) is a bilingual, Saskatchewan grown initiative. HSDS is a population health, evidence-based intervention which aims to increase opportunities for physical activity and healthy eating for 3 to 5 year old children in Francophone and Anglophone early learning and childcare settings (including Aboriginal, newcomer children and families) in Saskatchewan and New Brunswick. The primary purpose of this study is to conduct the first phase of a social return on investment (SROI) analysis of a physical activity and healthy eating intervention (Healthy Start-Départ Santé) implemented in early learning centres throughout Saskatchewan and New Brunswick over the course of three years.

CHANGING INNER-CITY FOOD ENVIRONMENTS: INTERVENTIONS TO ADDRESS NUTRITIONAL HEALTH INEQUITIES

SPHERU RESEARCHERS: RACHEL ENGLER-STRINGER (PRINCIPAL INVESTIGATOR); SYLVIA ABONYI, NAZEEM MUHAJARINE (CO-INVESTIGATORS)

Canadian Institutes of Health Research Operating Grant -- Population Health Intervention Research Saskatchewan Health Research Foundation (\$200,000) 2015-2016

This project builds on our on-going research on food environments and a grocery store intervention in the inner city. By examining household food practices in low income inner city neighbourhoods, the study will allow us to understand how families access the food they need in urban environments where healthy food access is limited. It will also provide insight into programs and policies that improve nutritional health. With the support of community agencies and the Saskatoon Health Region we will use interviews, observations, photos and videography to collect in-depth information on the food practices of participating families. This project will be conducted in close partnership with community groups in a way that achieves a positive impact for the people in the neighbourhood.

GOOD FOOD FOR LEARNING: AN EXAMINATION OF THE CURRENT STATE OF SCHOOL FOOD IN THE SASKATOON REGION

SPHERU RESEARCHERS: RACHEL ENGLER-STRINGER (PRINCIPAL INVESTIGATOR); NAZEEM MUHAJARINE (CO-INVESTIGATOR)

University of Saskatchewan -- College of Medicine (\$30,000) 2016-2017

A national school food program has been presented as one solution to the problems associated with childhood nutrition. The purpose of this research is to characterize the school lunches and snacks of elementary school children in Saskatoon and the surrounding rural areas (that make up the Saskatoon Health Region) as the first step towards a comprehensive study of school food practices in Saskatchewan. This research will provide the first stage of data collection that will be used to compare the effectiveness of future interventions in these schools.

HOTSPOTTING: IDENTIFYING SUPERUSERS OF HEALTH CARE SERVICES WITH MENTAL HEALTH AND ADDICTION PROBLEMS

SPHERU RESEARCHERS: NAZEEM MUHAJARINE, CORY NEUDORF (CO-INVESTIGATORS); J. QUAIL & W. WODCHIS (CO-PRINCIPAL INVESTIGATORS)

Canadian Institutes of Health Research SPOR Network in Primary and Integrated Health Care Innovations -- (\$80,000) 2015-2016

"Hotspotting" is the growing trend to identify people who are very expensive for the healthcare system. Many of these people are frequent users of healthcare services, and have complex needs that are not adequately addressed by the services that are currently available. The proposed research addresses one category of high cost healthcare user: people with complex mental health and addiction issues (MHA). The research will investigate the characteristics of these MHA users to gain an understanding of why some become so costly for the healthcare system.

The research will use statistical analyses to chart and understand the trajectories of expensive MHA users through the Saskatchewan and Ontario healthcare systems. The ultimate goal of the research is to improve the health care management of people with MHA so that the system will address their needs proactively instead of reactively.

USHERING IN TRANSFORMATIONS OF URBAN FORM TO PROMOTE POPULATION HEALTH AND EQUITY: THE ROLE AND IMPACT OF INTERSECTORAL PARTNERSHIPS NURTURED BY PUBLIC HEALTH ORGANIZATIONS AND CITIES IN CANADA

SPHERU RESEARCHERS: NAZEEM MUHAJARINE, CORY NEUDORF (CO-PRINCIPAL INVESTIGATORS) WITH LISE GAUVIN (NOMINATED PRINCIPAL INVESTIGATOR); P.DALY, R. MASSE, D. MCKEOWN, AND M.RAYNAULT (CO-PI'S)

Canadian Institutes of Health Research and Environments & Health: Programmatic grants in intersectoral prevention research LOI (\$50,000) 2016

Initially in developed countries and now in developing nations, there have been major increases in chronic diseases such as diabetes, cardiovascular disease, and several cancers. To counter these threats to population health, public health departments have forged new alliances with major Canadian cities to create environments that foster the supply of healthy and affordable food, enhance the practice of physical activity, and reduce the risks of road injuries. Our research will study the effectiveness of cross-sector partnerships aimed at transforming built environments to increase the availability of fruit and vegetables, promote active transport and physical activity, and improve availability of affordable housing. With the active participation of the directors of the public health organizations in Montreal, Saskatoon, Toronto, and Vancouver we will work together to identify the factors that lead to success in forward-looking initiatives aimed at preventing the new epidemics of chronic diseases.

WHAT GETS MEASURED, GETS MANAGED: NUTRITIONAL QUALITY INDICATORS IN LONG-TERM CARE SPHERU RESEARCHERS: SHANTHI JOHNSON (PRINCIPAL INVESTIGATOR); TOM MCINTOSH, BONNIE JEFFERY (CO-INVESTIGATORS); WITH HEALTH REGION PARTNERS

Saskatchewan Centre for Patient-Oriented Research (SCPOR)

Within long-term care (LTC), food, a basic necessity of life, has been a routine aspect of care provision and an indicator of quality care at the individual and facility levels. Despite this, malnutrition and other dietary problems are widespread. Improving nutrition-related quality of care in LTC facilities has been identified as a global priority for research, program, and policy. In Saskatchewan, addressing the quality of vulnerable seniors in home care and LTC as well as the culture of safety are part of the provincial priorities. In this study we will examine the nutrition-related quality indicators in LTC facilities in Saskatchewan. Using RAI-MDS data (2004 to 2014) a 10 year profile will be created for future quality improvement work. The study will also look at variation in the rates based on factors of importance within the Saskatchewan context, including age, gender, level of care, rural/urban setting, and health region.

CONTINUING PROJECTS

ASSESS, REDRESS, RE-ASSESS: ADDRESSING DISPARITIES IN RESPIRATORY HEALTH AMONG FIRST NATIONS PEOPLE

SPHERU RESEARCHER: SYLVIA ABONYI (CO-PRINCIPAL INVESTIGATOR) WITH JAMES DOSMAN, UNIVERSITY OF SASKATCHEWAN (NOMINATED PRINCIPAL INVESTIGATOR), JO-ANNE EPISKENEW, PUNAM PAHWA (CO-PRINCIPAL INVESTIGATORS)

Canadian Institutes of Health Research (\$1,592,521) 2011-2016

Living and social conditions in some First Nations communities have created environments that are associated with adverse respiratory outcomes. In partnership with the rural communities of Beardy's and Okemasis First Nation and Montreal Lake Cree Nation, the project is evaluating individual and contextual factors on the outcomes of asthma, chronic bronchitis, and other respiratory conditions. Characterization of conditions will provide communities with information that will assist them to undertake interventions aimed at redressing the issues.



COMPARATIVE POLICY ANALYSIS FOR FALLS PREVENTION AND ACTIVE AGINGSPHERU Researcher: Shanthi Johnson (Principal Investigator)

University of Regina President's Fund (\$5,000) 2014-15

The objective of this project is to establish a framework and carry out a comparative policy analysis of falls and injury-prevention policies. The first phase involves development of a framework for analysis and dialogue from the active aging and falls/injury prevention perspective, based on existing literature and in collaboration with project partners. In the second phase a comparative policy analysis of the falls and injury-prevention policies is being



comparative policy analysis of the falls and injury-prevention policies is being conducted, in context of the active aging framework.

FOOD ENVIRONMENTS IN CANADA: SYMPOSIUM AND WORKSHOP

SPHERU RESEARCHERS: RACHEL ENGLER-STRINGER (CO-PRINCIPAL INVESTIGATOR), NAZEEM MUHAJARINE (CO-INVESTIGATOR)

Saskatchewan Health Research Foundation Research Connections Program (\$10,000) 2014-2015

The Food Environments in Canada: Symposium and Workshop was held in Saskatoon from May 21-23, 2015. The goal of this symposium and methodological workshop was to bring together researchers, students, and practitioners to discuss completed and ongoing studies along with the distinct strengths and challenges of Canadian food environments research, and to strategize for how to move this research forward in the future. Many researchers have voiced the need for more Canadian-specific discussions of food



environments. This symposium and workshop provided the time and place for these discussions to happen, leading to new collaborations and initiatives.

FURTHER DEVELOPMENT OF SPHERU'S HISTORY OF HEALTH IN SASKATCHEWAN TIMELINE SPHERU RESEARCHER: TOM MCINTOSH (PRINCIPAL INVESTIGATOR)

University of Regina President's Fund (\$3,998) 2014-15

The SPHERU Historical Health Timeline is a web-based, interactive resource that chronicles events that have played a role in impacting Saskatchewan residents' health, healthcare, and standards of social and economic living over the past century. Events include formal legislation, technological interventions, medical breakthroughs, widespread epidemics, and changing health care practices and policies. This project is further developing both timeline content and its application as a teaching and learning tool.



THE GOOD FOOD JUNCTION: A COMMUNITY-BASED FOOD INTERVENTION TO REDUCE NUTRITIONAL HEALTH INEQUITIES

SPHERU RESEARCHERS: RACHEL ENGLER-STRINGER AND NAZEEM MUHAJARINE (CO-PRINCIPAL INVESTIGATORS)
SYLVIA ABONYI, CORY NEUDORF (CO-INVESTIGATORS)

Canadian Institutes of Health Research (\$200,000)

The environments in which people live, work, and play have an important role in determining their health,

including obesity, diabetes, and nutrition. The Good Food Junction, which opened in September 2012, is a 4,900-square-foot, full-service, not-for-profit grocery store containing a full range of fresh, frozen, and packaged foods. It is located in a low-income food desert neighbourhood in Saskatoon's inner city. The goal of this two-year study is to understand and model how the introduction of this large community-based food program impacts the health of individuals and families. This research presents a unique opportunity to study and understand how transformation occurs from a food desert with poor health outcomes to neighbourhoods with healthy food and healthy citizens.



HEALTH INEQUALITY IN SASKATCHEWAN: COMPARING SMALL AREA AGGREGATE DATA AND INDIVIDUAL LINKED DATA IN URBAN AND RURAL DEVELOPMENTS

SPHERU RESEARCHERS: CORY NEUDORF (PRINCIPAL INVESTIGATOR), NAZEEM MUHAJARINE (CO-INVESTIGATOR)

Saskatchewan Health Research Foundation (\$120,000) 2012-2015

This study is examining the relative effect of individual and area-level socio-economic factors on health inequalities. Analyzing health administrative data and survey data at both individual and aggregate levels will help researchers to define geographic areas of greater health inequalities within the province overall, and within the targeted areas, and determine the inequality trends over time for selected health indicators. Through dissemination and discussion of the findings, the research will provide a better understanding of priorities and possible interventions at local, regional, and provincial levels, and will assist in determining potential policy and program options.

HEALTHY AGING IN PLACE: IMPROVING RURAL SENIORS' HEALTH THROUGH POLICY AND COMMUNITY LEVEL INTERVENTIONS

SPHERU RESEARCHERS: BONNIE JEFFERY, PRINCIPAL INVESTIGATOR; NAZEEM MUHAJARINE, CO-PRINCIPAL INVESTIGATOR; SYLVIA ABONYI, PAUL HACKETT, SHANTHI JOHNSON, DIANE MARTZ, TOM MCINTOSH, NUELLE NOVIK, SARAH OOSMAN, CO-INVESTIGATORS

Saskatchewan Health Research Foundation Phase III Health Research Group Grant (\$749,335) 2014-2017

This research builds on findings from our 2009-2010 pilot project (Role of Social Systems in the Health of Seniors Living in Rural Saskatchewan), and our previous Healthy Aging in Place (2011-2014) SHRF Group Grant project. Findings from these previous studies determined rural seniors had concerns about access to doctors, pharmacists, other health care services, and the ability to age in their communities. We will develop interventions that support rural older adults' ability to remain independent and live within their own homes, and communities, for as long as they choose. Our community-based research is being conducted in collaboration with community advisory groups in the towns of Young, Watrous, Rosetown, and Woseley. The studies include: an exercise intervention to improve mobility and social interaction; an examination of the walkable built environment to determine barriers and supports to seniors' mobility; and a project focused on assessing rural senors' access to information.

HEALTHY START/DÉPART SANTÉ: A MULTILEVEL INTERVENTION TO INCREASE PHYSICAL ACTIVITY AND HEALTHY EATING AMONG YOUNG CHILDREN (AGES 3-5) ATTENDING CHILDCARE

SPHERU RESEARCHER: NAZEEM MUHAJARINE (CO-PRINCIPAL INVESTIGATOR); RACHEL ENGLER-STRINGER (CO-INVESTIGATOR) WITH ANNE LEIS AND LOUISE HUMBERT, UNIVERSITY OF SASKATCHEWAN; ROGER GAUTHIER, RÉSEAU SANTÉ EN FRANCAIS DE LA SASKATCHEWAN (CO-PRINCIPAL INVESTIGATORS)

Public Health Agency of Canada (\$240,000 – KDE portion) February 2013 to January 2017

Healthy Start is a bilingual initiative developed in Saskatchewan that increases healthy eating and physical activity opportunities in early learning environments. Through a partnership of organizations led by the Réseau Santé en français de la Saskatchewan (Saskatchewan Network for Health Services in French), the Healthy Start approach engages directors, educators, cooks, and parents by providing resources,



training, and ongoing support. SPHERU, along with researchers across Canada, is involved in an evaluation component of the initiative to monitor and assess the impact of Healthy Start in both Saskatchewan and New Brunswick. SPHERU is leading the communications and knowledge dissemination and exchange (KDE) component of this research.

IMPROVING FUNCTIONAL CAPACITY AND REDUCING FALLS AMONG FRAIL OLDER ADULTS: DELIVERY OF EXERCISE INTERVENTION THROUGH HOME CARE NETWORK SPHERU RESEARCHER: SHANTHI JOHNSON WITH DAWN MCNEIL (PRINCIPAL INVESTIGATORS)

Canadian Institutes of Health Research (\$282,008) Saskatchewan Health Research Foundation (\$68,252) 2012-2015

This project is studying ways to improve functional capacity and reduce falls among frail, largely homebound older adults by examining the impact of a home-based exercise program on functional capacity, falls, and fall-related injuries. Comparisons will be made among seniors living in rural and urban areas, and between those participating in an exercise group and those who are not. By focusing on the delivery of exercise programs through home care networks, researchers aim to reduce the impact of falls on the lives of Saskatchewan residents and the health care system.



IT TAKES A VILLAGE... GROWING TOGETHER FOR PROMOTING HEALTHY AGING IN PLACE SPHERU RESEARCHER: SHANTI JOHNSON (PRINCIPAL INVESTIGATOR)

Fulbright Canada RBC Eco-Leadership Program (\$4,000) 2014-15

Working in collaboration with the Sun Country Health Region (SCHR) and community partners, the project created an age-friendly community garden in Estevan, Saskatchewan during the 2015 growing season. Specifically, a number of raised garden plots were built with support of youth from the local alternative school, immigrant families, and seniors. Led by the community nutritionist, and Fulbright Scholar Dr. Shanthi Johnson, the project is including community education on different aspects of gardening, facilitated by seasoned local gardeners and/or experts.



A PILOT STUDY EXPLORING EMOTIONAL AND MENTAL HEALTH CARE SUPPORTS FOR SENIORS IN RURAL SASKATCHEWAN

SPHERU RESEARCHER: NUELLE NOVIK (PRINCIPAL INVESTIGATOR)

Canadian Mental Health Association (\$10,000); SPHERU (\$10,000) 2014-15

This one-year pilot project is identifying the mental healthcare needs of seniors living in rural Saskatchewan, and examining the factors that contribute to, or hinder, their emotional well-being. Focusing upon the Sunrise Health Region in Saskatchewan, the study targets two distinct geographic areas within the region (Preeceville/Norquay and Ituna/Melville), both similar from a socio-economic perspective. The study methodology involves eco-mapping, which provides a visual depiction of supports identified by participants. As part of the study we are gathering feedback from the seniors interviewed about the effectiveness of ecomapping as a research tool. Data gathered from this pilot project will be used to develop a CIHR operating grant application for funding to conduct a larger provincial study.



Putting Patients First

SPOR PAN-CANADIAN NETWORK IN PRIMARY AND INTEGRATED HEALTH CARE INNOVATIONS: MANAGEMENT AND OPERATING GRANTS

SPHERU RESEARCHERS: NAZEEM MUHAJARINE (CO-PRINCIPAL INVESTIGATOR), CORY NEUDORF (CO-PRINCIPAL INVESTIGATOR), SHANTHI JOHNSON (CO-INVESTIGATOR)

Strategy for Patient-Oriented Research

Canadian Institutes of Health Research / Strategy for Patient-Oriented Research Phase 2 (\$500,000) 2015-2020

The purpose of this grant is to develop a collaborative network of Saskatchewan researchers, physicians, community members, and policy makers that will focus on generating new evidence in primary and integrated health care effectiveness, efficiency, and access across the care spectrum. The team will work together to improve health equity, more specifically in indigenous and rural areas, focus on prevention, and look for ways to improve services to patients across their life spans. The value of the Saskatchewan network lies in allowing researchers from different areas to come together to work on integrating primary health care and social determinants across urban and rural areas and with indigenous peoples, while involving both physicians and policy makers to identify specific issues.

A STEP TOWARDS CREATING ACTIVE URBAN COMMUNITIES: SEASONALITY AND ACTIVE SASKATOON KIDS (SASK) SPHERU RESEARCHER: NAZEEM MUHAJARINE (PRINCIPAL INVESTIGATOR), DAN FULLER (CO-INVESTIGATOR)

Canadian Institutes of Health Research (\$362,845) 2014-2016

Seasonality and Active Saskatoon Kids (SASK) is an obesity intervention research project that aims to measure and identify locations where physical activity occurs in Saskatoon, across all seasons, among children aged 10-14 years. Using both a self-

Kids studies previously conducted in Saskatoon (2009-14).

reported activity questionnaire and accelerometers, the research team will learn about children's active and sedentary activities at school, at home, and within the community. The goal of the study is to create more active communities in Saskatoon by addressing several existing knowledge gaps, such as the seasonal effects





SASKATCHEWAN POPULATION HEALTH AND EVALUATION RESEARCH UNIT

on physical activity and sedentariness, and where these occur. This study builds on the Smart Cities, Healthy

FOR MORE INFORMATION ABOUT SPHERU OR OUR RESEARCH, SEE OUR WEBSITE AT WWW.SPHERU.CA









SPHERU Saskatoon University of Saskatchewan Email: spheru@usask.ca Phone: (306) 966-2250 SPHERU Prince Albert University of Regina Email: spherupa@uregina.ca Phone: (306) 953-5535 SPHERU Regina University of Regina Email: spheru@uregina.ca Phone: (306) 585-4400