An Evaluation of *Smart Cities, Healthy Kids'* Knowledge Translation Work

Sujani Sivanantharajah, MPH
Tracy Ridalls, MA
Fleur Macqueen Smith, MA
Nazeem Muhajarine, PhD

Smart Cities, Healthy Kids is an obesity intervention research project that uses mixed methods to examine the role of the built environment on children's physical activity levels. This study was conducted in Saskatoon (2009-12) in partnership with the City of Saskatoon, the Saskatoon Public School Division, the Greater Saskatoon Catholic Schools, and the Saskatoon Health Region. We are grateful to have received funding from the Canadian Institutes of Health Research, the Heart and Stroke Foundation of Canada, and the Health Research Foundation. The goal of *Smart Cities, Healthy Kids* is to determine the impact of neighbourhood design from different eras on children's active living – active transportation (walking and biking), self-reported physical activity, and directly-measured physical activity. There is also a qualitative component examining children's and parents' beliefs about how their neighbourhoods influence children's physical activity. In addition, a sister study, Smart Cities, Healthy Kids: Food Environment (2010-2013) was launched in 2010 with a focus on children's health and its relationship to the food environment in Saskatoon. For more information on both of these projects please visit our website www.smartcitieshealthykids.com, like us on Facebook at Smart Cities, Healthy Kids, or follow us on twitter @SCHKSaskatoon.

Funders:

Canadian Institutes of Health Research

Heart and Stroke Foundation of Canada

Health Research Foundation

Research Team:

Nazeem Muhajarine (Principal Investigator), University of Saskatchewan

Karen Chad, University of Saskatchewan

Adam Baxter-Jones, University of Saskatchewan

Lauren Sherar, Loughborough University

Scott Bell, University of Saskatchewan

Bill Holden, Senior Planner, City of Saskatoon

Cory Neudorf, Saskatoon Health Region

Dale Esliger, Loughborough University

Sara Kirk, Dalhousie University

TABLE OF CONTENTS

LIST OF TABLES & FIGURES

Tables

Figures

EXECUTIVE SUMMARY

The Smart Cities, Healthy Kids (SCHK) project was launched in 2009 with a $426,000 grant from the Canadian Institutes of Health Research (CIHR), the Heart and Stroke Foundation of Canada (HSF), and the Health Research Foundation (HRF) as a part of CIHR's strategic funding initiative on obesity prevention. The project examined how urban planning and built environment design can influence physical activity levels in children, with an ultimate goal of reducing obesity in children. The SCHK project included three main objectives, one of which was to disseminate the research findings to the community including citizens, policy makers and partners. In the third year of the project, an additional $100,000 of knowledge translation funding from CIHR was used to implement a knowledge translation (KT) strategy. Briefly, CIHR defines KT as "a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically-sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the health care system."[2] As part of this KT funding, an external evaluator was hired to conduct an evaluation of the SCHK KT efforts. This evaluation answered the following three questions:

1. Did the KT materials/activities effectively convey the purpose of the Smart Cities, Healthy Kids project to the stakeholders?
2. Which of the KT materials/activities did key informants find the most useful?
3. What sort of impact on behaviours and attitudes did the Smart Cities, Healthy Kids Project have on key informants?

This evaluation report includes a descriptive summary of SCHK's KT presentations, tools and dissemination products, analysis of the data gathered through workshop evaluation forms, a fact sheet evaluation, and key informant interviews conducted with 11 stakeholders. Stakeholders consulted as part of the evaluation belonged to one of three categories: 1. those who led the research (the principal investigator, research coordinator, and a senior research assistant); 2. those who had a relationship as a partner and provided support through a professional organization; and 3. those who participated in workshops and activities with a personal or professional interest in the study. The evaluation was based on presentations and tools developed and dissemination undertaken by the team. Print and broadcast media coverage was tracked, and it is included in Appendix 5,   but it was not discussed in interviews as it was not produced by the SCHK team. In total, SCHK developed 17 kinds of products (see page 13 for a more detailed list)

Presentations and Tools	Dissemination Products
♦ Public Presentations (at public talks, community events, libraries, and other meetings)	♦ Fact Sheets
	♦ Videos
	♦ Website
♦ Workshops	♦ Email Newsletters (as part of kidSKAN News, and from the SCHK website)
♦ Methodology & Methods Teach-In	
♦ Creating Active Communities Workshop	♦ Social Media: Facebook, Twitter
	♦ Neighbourhood Reports
♦ Conference Presentations (at academic conferences)	♦ School Reports
	♦ Planning for Growth document
♦ Researchopoly Game	♦ Peer Reviewed Publications

From the key informant interviews, we learned that that the majority of the stakeholders understood the objectives of the SCHK study (82%). All of the key informants had encountered at least some, if not all, of the KT materials at some point during the SCHK study, and all of the key informants had encountered fact sheets and public presentations. The tools and dissemination products found to be most useful to key informants were, in descending order of usefulness: public presentations, neighbourhood reports, workshops, fact sheets, and the SCHK website.

Participants were questioned about attitude and behaviour changes as a result of the study. They reported that individual level changes were much more prevalent than organizational level changes. Personal attitude changes were seen in 64% of participants, whereas organizational level attitude changes were identified by only 55% of participants. Similarly, behavioural changes at an individual level were expressed by 73% and 55% at a professional level. However, organizational level behavioural changes were only identified by 18% of participants.

A participant checking in for the Bikeable Saskatoon Workshop

After analyzing the results, it was determined from the collected data that SCHK's method of KT delivery: 1. effectively conveyed the purpose of the study to stakeholders; 2. distributed useful KT materials; and 3. impacted attitude and behavioural changes in stakeholders.

The Alberta Mental Health Research Partnership Program has identified eight enablers that contribute to successful research uptake by knowledge-users.[6] These enablers were used to evaluate and determine more specifically the reason behind a successful KT effort with the SCHK project:

1. having early and ongoing involvement of knowledge users in the study to build trustful relationships
2. frequent face-to-face interactions between researchers and key stakeholders
3. making incentives available to encourage knowledge translation
4. having adequate time available in order for relationships and trust to build between the two parties
5. capacity building within researchers in order to effectively communicate and interact with audiences
6. clarifying roles and expectations will lead to an open relationship between both parties
7. using active, effective, and multifaceted dissemination strategies versus using passive ones (i.e. journal publications, print materials) have shown to be much more effective; examples include educational outreach, interactive continuing education, social marketing, and personal involvement
8. using knowledge brokers as links between the researchers and research users.[6]

It was found that the project incorporated all but one enabler strategy (number 3, making incentives available to encourage knowledge translation) resulting in a successful KT effort by the SCHK team. From the results compiled, SCHK's KT activities have definitely stimulated discussions and increased awareness about the built environment on promoting children's physical activity, as outlined in the study objectives. SCHK efforts have contributed to a number of changes in Saskatoon. However, further KT efforts are recommended in order to push for more organizational level behavioural changes that will eventually lead to policy level changes to Saskatoon's built environment.

The research team is regularly approached about city planning activities, and have participated in planning activities held by the city of Saskatoon and the University of Saskatchewan, and provided input into Local Area Plans developed by the city. To date, SCHK's work has impacted the following decisions in Saskatoon:

- **22nd Street barrier:** Due to the increased number of pedestrian/automobile accidents on 22nd Street, a proposal to construct an eight-foot fence from Avenue H to Whitney Avenue was suggested by a City of Saskatoon sub-committee reporting to the Planning and Operations Committee. Researchers from the SCHK team wrote to the Planning and Operations Committee expressing concern about this proposal. From the research, the SCHK team was able to detail the existing issues, specifically a lack of safe crosswalks that may lead to increased jaywalking and increased pedestrian/automobile accidents. At the time there were only five crosswalks in an 18-block stretch, as compared to 14 crosswalks on 20th street and nine crosswalks on Eighth Street. The letter written by the researchers outlining these concerns helped to influence city officials to in their decision to install two new pedestrian controlled crosswalks.
- **College Quarter Design and Development:** The College Quarter (CQ) development is a new set of residence buildings for students off of Cumberland Ave S and College Drive, along Aird Street. The SCHK team participated in the closed planning meeting to redesign College Drive.
- **City Centre Plan:** The City Centre Plan was initiated by the city in 2009 to develop a new plan for the downtown and the surrounding areas. The goal of the plan was to ensure that downtown Saskatoon is equipped for its projected population growth to 500,000. Similar to the College Quarter Design and Development, the SCHK was invited as a stakeholder to provide input on the planning of City Centre at a closed meeting.
- **$0.5M Integrated Growth Plan:** Saskatoon's Integrated Growth Plan (IGP) is a component of the Strategic Plan 2011-2012 and paves the road for how Saskatoon will achieve its goals "Sustainable Growth" and "Moving Around" as outlined in the Strategic Plan. According to one key informant, the local research results disseminated by the SCHK will aid in the decision making process in developing the Integrated Growth Plan.

The SCHK team hopes to continue their contributions to city level urban planning strategies using local Saskatoon data collected by the SCHK team. To assist with this, this evaluation report provides suggestions are provided as next steps for the SCHK team (see page 44).

INTRODUCTION

The Smart Cities, Healthy Kids (SCHK) study was developed by child health researcher Nazeem Muhajarine and colleagues at the University of Saskatchewan, in partnership with other local organizations, including the City of Saskatoon, the Saskatoon Public School Division, the Greater Saskatoon Catholic Schools, and the Saskatoon Health Region. Muhajarine is professor and chair of the Department of Community Health and Epidemiology at the University of Saskatchewan, and leads the Healthy Children research program at the Saskatchewan Population Health and Evaluation Research Unit (SPHERU), of which SCHK was a part.

SCHK was an intervention launched in 2009 to examine the role of Saskatoon's built environment on children's physical activity levels. Researchers received $426,000 from the Canadian Institutes of Health Research, the Heart and Stroke Foundation of Canada, and the Health Research Foundation to fund this major study of the impacts of urban design on children's health. In year three of the Smart Cities, Healthy Kids project, the Canadian Institutes for Health Research granted an additional $100,000 to develop and implement our knowledge translation strategy. In 2010, and as a part of the ongoing research launched with the initial project, Smart Cities, Healthy Kids: Food Environment, another three year intervention, was launched as a sister study to SCHK. Funds were awarded in the amount of $425,000 from the Canadian Institutes of Health Research and the Saskatchewan Health Research Foundation.

Briefly, the goals and objectives of the project, as described on the SCHK website, are:

> ". . . to understand how urban planning and design can be used to encourage children to be more physically active, thus slowing the rise in childhood obesity. Tackling the problem of childhood obesity requires multiple approaches. Many people, from health professionals, funders, policy makers, and researchers, to concerned parents, have identified environmental factors that can either help or hinder children and adults to live more active lifestyles.

However, there has been little research into how aspects of the urban built environment in which we all live—such as buildings, roadways, sidewalks, parks, and green spaces-–can encourage children to be physically active. The built environment refers to the spaces built and designed by people, such as roads, sidewalks, parks and playgrounds. For our purposes, we are assessing neighbourhoods and their impact on the physical activity of Saskatoon's children. By learning about what is and isn't working in our current neighbourhoods in Saskatoon, this novel study will help shape the design of future neighbourhoods, here and elsewhere in Canada.

Our goal is to disseminate our results with the community at large, including citizens, policy makers, and partners, to foster the development of healthier communities."

Broadly, the aims of the research, as described in the initial grant proposal to the Canadian Institutes of Health Research, were: [1]

1. To use the City of Saskatoon as a "case in point," to conduct research that identifies how development of urban forms (policies and strategies underpinning the development) can create built environments that are conducive for children to be physically active and thereby reduce obesity incidence; to engage the community in this research and co-produce knowledge that is useful, timely, and relevant to the decision-makers in the community, but at the same time ensuring the generalizability of the research to those in other parts of Canada and beyond. The specific questions driving the research, were:

    i. How have the specific planning strategies used in Saskatoon's Core Neighbourhoods - Local Area Plans (LAP) and Suburban Development Areas (SDA), and policies related to land use, transportation and safety therein, contributed to the active living potential of these neighbourhoods?
    ii. What is the relationship between neighbourhood active living potential and physical activity and active transportation in children 10 to 13 years old?
    iii. How do children aged 10-13 years and their parents in LAP and SDA neighbourhoods perceive their neighbourhood as an influence on children's physical activity?

2. To build capacity among partners in the community and in the University for conducting evaluative research that focuses on interventions and programs.

3. To share the insights gained, both in doing the research and from the knowledge produced, widely, and in traditional and other creative ways, to audiences locally, nationally and internationally.

The outcome of the third research aim was the development of a series of knowledge translation (KT) tools and activities to disseminate SCHK's study results to urban planning and health promotion professionals, local government members, community members and the general public, including parents and children. The KT

activities were expected to increase awareness of children's physical health and the built environment's impact on it, and ultimately influence policy and practice change.

Knowledge translation is defined by CIHR as "a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically-sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the health care system." [2]

Since the initiation of the Smart Cities, Healthy Kids project in 2009, a number of KT tools/activities, falling into the broad categories of Presentations and Tools, and Dissemination, were developed and put to use with a goal of increasing the understanding of how the built environment in the city of Saskatoon impacts children's physical activity levels. The project also hoped to stimulate discussion and awareness in modifying the built environment to increase children's levels of activity.

The effectiveness of the KT strategies was determined by conducting an outcome evaluation using a mixed methods approach. As well as providing a summary of all the KT activities in SCHK, the evaluation specifically aimed to answer the following three questions:

1. Did the KT materials/activities effectively **convey the purpose** of the Smart Cities, Healthy Kids project to the stakeholders?
2. Which of the KT materials/activities did key informants find the **most useful**?
3. What sort of **impact** on behaviours and attitudes did the Smart Cities, Healthy Kids Project have on key informants?

Thus, the purpose of this evaluation was to determine if SCHK's knowledge translation strategy was successful in disseminating the study results to the relevant stakeholders by overcoming common barriers that exist between knowledge producers (i.e. researchers) and knowledge users (i.e. city planning officials), known as the two-communities theory.[3] Barriers and facilitators were identified in a 2007 knowledge synthesis on knowledge translation, as "perhaps the most frequently addressed topic area in the KTE [knowledge translation and exchange] literature on health policy decision making."[4] This evaluation was intended to determine how effectively SCHK's KT strategies were able to overcome these barriers and disseminate study results effectively.

In order to evaluate the project, the research team decided to engage an external evaluator, both to provide a fresh and objective look at the KT products and activities, and so that key informants interviewed could speak freely about the project. The evaluation was conducted by Sujani Sivanantharajah, a final year Masters of Public Health (MPH) student at the University of Saskatchewan's School of Public Health who had previous evaluation experience. She was hired by Smart Cities, Healthy Kids team as an evaluator in January 2013, having had no previous involvement in the SCHK project.

The evaluation consisted of three steps: a descriptive analysis of SCHK's KT tools and activities; collecting and analyzing data gathered through key informant interviews; and an integration step to bring together both the quantitative and qualitative data collected in steps one and two. A mixed-methods approach was chosen to evaluate this project to ensure that a more robust picture of the impact of the Smart Cities, Healthy Kids project on its stakeholders would be achieved.
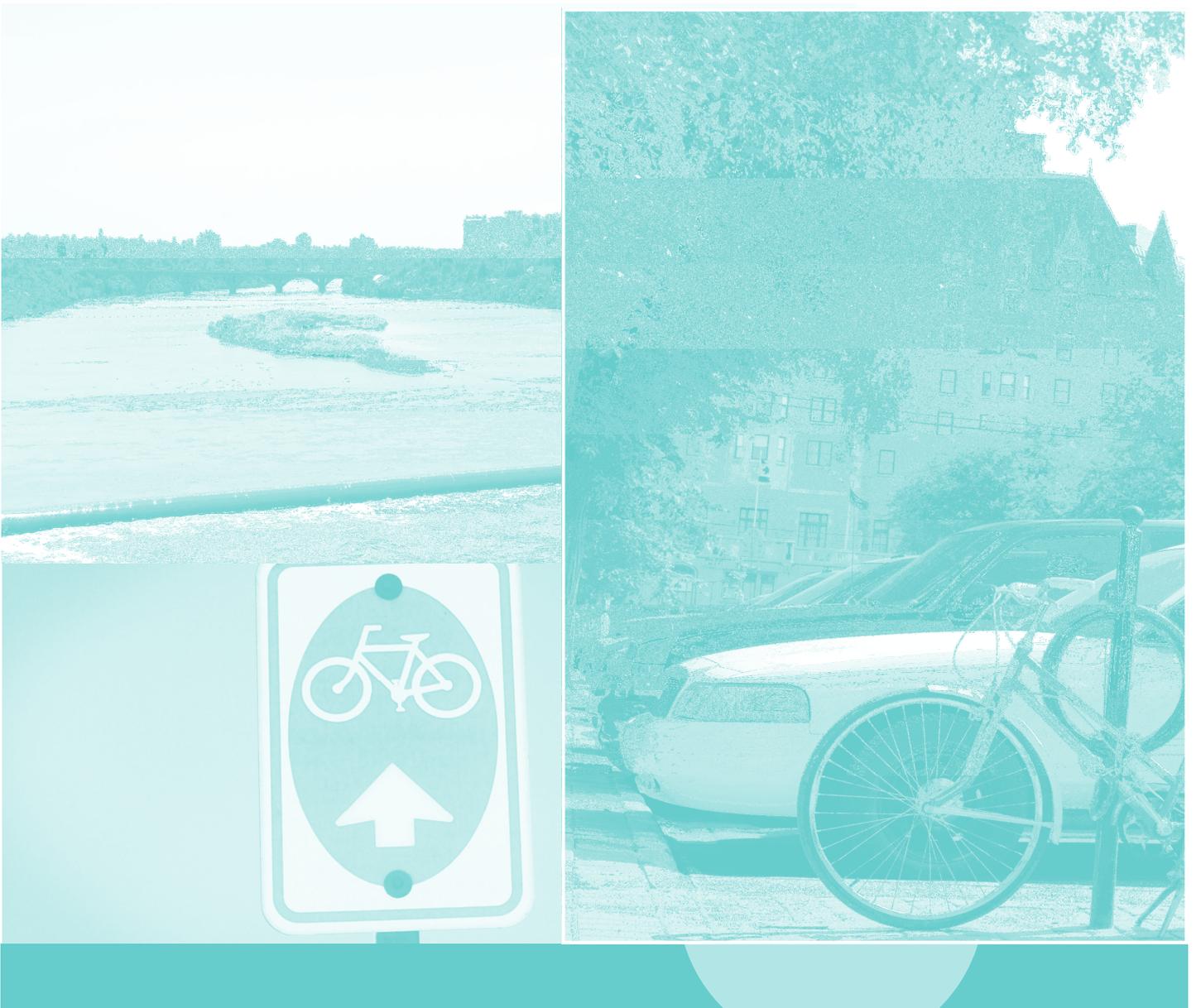
METHODS & RESULTS

The evaluation of the KT activities was conducted with two objectives in mind. First, we aimed to compile and summarize all of the KT activities conducted by SCHK since the inception of the project.

The second objective was to determine the extent to which the main objectives of the project were understood by the key informants, and its impact on their behaviour and attitudes as a result of their encounters with SCHK's knowledge translation materials, at both an individual and organizational level . This was achieved through key informant interviews. The questions used were semi-structured, and were based on the following 14 kinds of KT activities undertaken and products generated (see Appendix 1 for the key informant interview questions).

It is worth noting that, although it was not discussed with key informants, there was considerable media coverage of the SCHK project, including articles about the project, and editorials written by team members in the local daily newspaper. This coverage is reproduced in Appendix 5.

The 17 activities discussed with key informants are:

- Presentations and Tools
  ◊ Public Presentations (public talks, community events, libraries and other meetings)
  ◊ Workshops
  ◊ Methodology & Methods Teach-In (December 2011)
  ◊ Conference Presentations (at academic conferences)
  ◊ Researchopoly Game

- Dissemination Products
  ◊ Fact Sheets: Designing Cities with Children in Mind; Bikeable Saskatoon; Neighbourhood Self-Selection; Safety; Saskatoon's Planning Eras; Children's Physical Activity Patterns
  ◊ Videos on the kidSKAN YouTube Channel
  ◊ Website (initially on www.kidSKAN.ca, then www.SmartCitiesHealthyKids.com)
  ◊ Email Newsletters (kidSKAN News)
  ◊ Social Media: Facebook
  ◊ Social Media: Twitter
  ◊ Neighbourhood Reports
  ◊ School Reports
  ◊ Peer Reviewed Publications

In addition, during the course of the project (2009-2013), evaluation surveys were distributed by SCHK at the *Method to the Madness* workshop, the *Creating Active Communities* workshop, and at the *In Their Own Words: Adolescents Talk About Their Health* public talk at the Saskatoon Public Library. Additionally, further feedback was sought out by distributing evaluation forms on fact sheets to key informants. These survey results from the *Creating Active Communities workshop* are compiled in the summary section.

STEP 1: DESCRIPTIVE SUMMARY OF KT ACTIVITIES

A review of the CIHR KT grant proposal revealed that SCHK projected to complete 10 activities as part of the knowledge translation portion of the project, funded by a CIHR Knowledge Translation Supplement grant at the end of the project. SCHK proposed to have five kinds of presentations and tools, and five kinds of dissemination products to disseminate research results. In total, as of January 2013, SCHK had completed 17 kinds of KT products (11 kinds of dissemination products and six kinds of presentations) (see Table 1). Each of these KT activities is explained in detail below.

Table 1: Comparison of proposed with completed KT activities	
Proposed Activities [10]	**Completed Activities [17]**
Dissemination Products	
1. 4-8 plain language fact sheets to disseminate findings	1. Fact Sheets (6)
2. Several videos to disseminate findings	2. Videos (3)
3. Develop website	3. Website (www.SmartCitiesHealthyKids.com)
4. Circulate email newsletters	4. Coverage in existing kidSKAN News regular email newsletters (11 times between September 2011- March 2012)
	5. Social Media: Facebook (73 likes)
	6. Social Media: Twitter (90 followers, 116 tweets)
5. Develop several news reports (disseminate products using different methods)	7. Neighbourhood Reports (60)
	8. School Demographics Reports (40)
	9. School Report Summarizing MAQ-A and Accelerometer Results (1)
	10. Planning for Growth Document (1)
	11. Peer Reviewed Journal Publications (4)
Presentations and Tools	
6. Hold 8-12 public presentations in Saskatoon (at all 8 branch libraries)	12. Public Presentations (37 presentations – in and beyond Saskatoon)
7. Hold 8-12 targeted workshops for specific audiences	13. Workshops (13)
8. Hold 2, one-day teach-ins to share methodology and methods (Saskatoon and Regina)	14. Methodology & Methods Teach-In (Method to the Madness) (3)
9. Hold 1-day pre-conference workshop in association with the Canadian Federation of Municipalities conference in Saskatoon, June 2012	15. SCHK Organized Workshop – Creating Active Communities (1)
10. Attend 3-4 conferences	16. Attended Conferences (3)
	17. "Researchopoly" Game

FACT SHEETS

DESCRIPTIVE SUMMARY

When the SCHK project was launched, a two-page fact sheet was created to introduce the project, research questions, and team members (March 2009). This fact sheet was updated once, about 18 months into the project when some preliminary results were ready for dissemination. As part of the knowledge translation grant, the SCHK team developed a series of colourful, four-page fact sheets to share specific research findings. There were six fact sheets produced and posted on the SCHK website:

1. The ***Designing Cities with Children in Mind*** fact sheet explains the importance of designing a city with children in mind in order to improve children's activity levels. This document summarizes the impact that neighbourhood designs have on children's active living by providing background on the methods of data collection, analysis, and results. The headings of this fact sheet include:

   - *The Smart Cities, Healthy Kids Study in Saskatoon*
   - *How did we do this study?*
   - *What did we learn?*
     ◊ *Activity Levels*
     ◊ *Neighbourhood design's impact*
     ◊ *Perception of neighbourhood impact*
   - *What's next?*

2. The ***Bikeable Saskatoon*** fact sheet discusses specific results of the SCHK study related to cycling experiences. The topics of discussion in this fact sheet include:
   - *Smart Cities, Healthy Kids*
   - *What parents told us about biking*
   - *What children told us about biking*
   - *Winter biking*

3. The ***Saskatoon's Planning Eras*** fact sheet focuses on a central aspect of the study. It looks at how Saskatoon's built environment has evolved over the years and includes discussion on the planning eras and their relationship to physical activity. The fact sheet includes the following topics:
   - *The Smart Cities, Healthy Kids Study in Saskatoon*
   - *Saskatoon neighbourhoods: planning eras*
     ◊ *How did Saskatoon evolve?*
     ◊ *How did the city's streets, neighbourhoods and the rest of the built environment take shape?*
     ◊ *What are the implications on neighbourhoods' physical activity potential?*
   - *Different eras, different designs, different challenges*

4. The ***Neighbourhood Self-Selection*** fact sheet provides information about the study and specifically discusses why people live where they live. The topics in this fact sheet include:

   - *The Smart Cities, Healthy Kids Study in Saskatoon*
   - *Methods*
   - *Do we live where we want to live?*
   - *Why we live where we live*
   - *What does neighbourhood selection mean when talking about physical activity?*
   - *Discussion*

5. The ***Safety*** fact sheet discusses an aspect of the study – safety – in encouraging physical activity in children. Aspects of how safety is measured and some findings related to the topic are discussed. The headings of this fact sheet include:

   - *The Smart Cities, Healthy Kids Study in Saskatoon*
   - *Two ways to measure Active Living Potential*
     - ◊ *NALP/IMI methods and results*
   - *Beyond measuring Active Living Potential*
   - *Safety a key concern*
   - *Revitalizing neighbourhoods to make them safer*

6. The ***Children's Physical Activity Patterns*** fact sheet summarizes findings from local research on children in Saskatoon. The fact sheet discusses features of children's activity and any patterns that were present in both free play and registered activities. The topics in this fact sheet include:

   - *The Smart Cities, Healthy Kids Study in Saskatoon*
   - *What did we do? – Modifiable Activity Questionnaire for Adolescents (MAQ-A)*
   - *What did we learn?*
     - ◊ *Registered versus free play activites*
     - ◊ *MAQ-A intensity and age*
     - ◊ *MAQ-A intensity and gender*
     - ◊ *MAQ-A and the neighbourhoods*
   - *What can we learn going forward?*
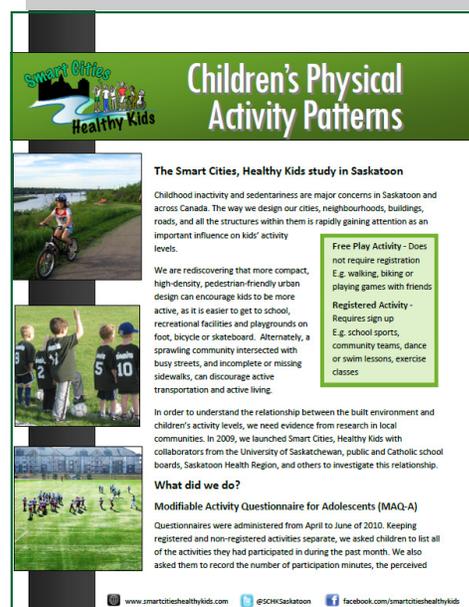
EVALUATION OF FACT SHEETS

In order to evaluate the fact sheets, fact sheet evaluation surveys (Appendix 4A) were distributed to a number of individuals who had encountered the fact sheets at some point during the study. Each fact sheet evaluator was sent a copy of each of the fact sheets and a short, one-page evaluation form. In total, there were 14 participants who evaluated the fact sheets. Of these individuals, six provided a summary evaluation, giving a general evaluation of all of the fact sheets. Seven individuals evaluated a specific fact sheet (one of

the six topics). Determining the median in order to retrieve a summary value combined these individuals' responses. This provided us with seven summary evaluations for all of the fact sheets (n=7). Table 2 shows the number of responses about specified components (content and presentation) for each fact sheet. Individuals evaluated the clarity, the order and organization of the content, and the usefulness of information found in the fact sheets. Further, they evaluated the style, appearance and length of the fact sheets.

Table 2: Frequency distribution and median for the rating of fact sheet components						
	Poor	Fair	Good	Very Good	Excellent	Median
FACT SHEET CONTENT						
Clarity of Content	0	0	3	3	1	Very Good
Order and Organization of content	0	0	3	3	1	Very Good
Usefulness of information	0	0	3	2	2	Very Good
FACT SHEET PRESENTATION						
Style and appearance	0	0	1	4	2	Very Good
Length	1	0	0	4	2	Very Good

Results for the fact sheet content ranged from "good"' to "excellent," whereas the fact sheet presentation ratings ranged from "poor" to "excellent." Overall, the median, for all of the categories, was determined to be "very good." In summary, individuals found the fact sheet content and presentation to be "very good." Individuals were also asked if the information in the fact sheets was "easily understandable." Approximately 86% of individuals indicated "yes" (six out of seven; one blank).

Further, we inquired about knowledge enhancement on the built environment and the study, as a result of the fact sheets. For these questions, all of the participants were included individually (n=14). Eight out of 14 individuals stated that as a result of the fact sheet, they learned about the built environment, and seven out of 14 stated that they learned about the objective of the SCHK study. We investigated reasons why individuals stated that they did not have increased knowledge of the built environment (two out of 14) or the study initiatives (four out of 14) as a result of the fact sheets. With respect to the built environment, one participant was already familiar with this topic, and another felt that the focus on the built environment was not strong as the fact sheet focused on a specific topic, more than defining the built environment clearly. With respect to becoming aware about the study initiatives, three individuals stated that they responded "no" because they were already familiar with the study initiatives prior to reading the fact sheets. One individual stated that the research objectives were not clearly stated in the beginning.

Further, we asked participants if they would share the knowledge they acquired from the fact sheets with others, and, if yes, how would they share the information. Eleven out of 14 individuals said "yes", and three out of 14 did not provide a comment. Of the 11 individuals, seven stated they would incorporate the knowledge to supplement the work they do, three stated they would share the knowledge by making the

materials available electronically to those interested, and one stated they would use the knowledge in everyday general conversation.

When asked about how they would use the knowledge to be put into practice in their own work, participants expressed three general areas of use. Out of the 10 individuals who provided a response, four said they would use it for advocacy/awareness purposes, another four said they would use it for information purposes and knowledge sharing with the work they do, and two individuals said they would use it in planning initiatives, such as designing neighbourhoods.

VIDEOS

Several videos were developed to provide a visual explanation of the Smart Cities, Healthy Kids project, as part of the larger KT work of the Healthy Children research team at the Saskatchewan Population Health and Evaluation Research Unit, home of the SCHK project. These videos were available on YouTube through the kidSKAN channel and were also provided in a link on the SCHK website. Three SCHK related videos are available:

- The Smart Cities, Healthy Kids video looks at built environment and kids. The video is 4:36 minutes in length, and was made available online on September 7, 2011, and was promoted on the kidSKAN website and in the regular kidSKAN News email newsletter. The video presents to viewers a general outline of the Smart Cities, Healthy Kids study explaining how neighbourhood designs have an effect on children's activity levels. As of March 15, 2013, it had received 977 views.

- The CBC Interview with Dr. Nazeem Muhajarine video, is 9:54 minutes in length, was made available online on October 5, 2011, and was promoted on the kidSKAN website and in the regular kidSKAN News email newsletter. This video, from CBC Radio's morning edition's Sheila Coles show, interviews Dr. Nazeem Muhajarine on the SCHK study and how Saskatoon's built environment affects children's activity levels and health. As of March 15, 2013 it had received 178 views.

- The Researchopoly video, is 1:45 minutes in length, and was made available online on October 10, 2012. This video shows SCHK's Researchopoly game in action in its pilot test phase. It was developed as a proof of concept video when investigating the development of a larger training video. It was not mentioned on the kidSKAN website or kidSKAN News email newsletter. It has received 49 views as of March 15, 2013.

WEBSITE

Initially information on the SCHK project was housed on the kidSKAN website; kidSKAN, which stands for the Saskatchewan Knowledge to Action Network for Early Childhood Development, is a KT network facilitated by staff in the Healthy Children research team at SPHERU. As part of the KT grant, the team proposed developing a standalone website for the project.

This website was launched in early August 2012 at www.smartcitieshealthykids.com. The website was designed to appeal to both research professionals and general audiences, with a multimedia approach including videos, photographs, fact sheets, reports, maps and blogging to raise awareness of both our findings and general current events regarding built environment research and the sister project on the food environment. As of March 31, 2013 the website had 27 blog posts, 8 fact sheets, 61 reports (60 neighborhood reports, one policy report), links to 3 videos, 17 maps, and hundreds of original photos. The website currently has 10 subscribers who signed up to receive update emails when new content is posted.

Statistics have been gathered on the website since its launch using Google Analytics. As of March 31, 2013, it has had 2303 visits, 1573 unique visitors and 6137 page views, with 2.66 pages visited per visit. Of those visitors, 68% are new visitors, and 32% returning visitors. The most popular page after the homepage was the event page featuring the most recent workshop, "Creating Active Communities," at 275 views. The next three most popular pages all relate to our blog-roll: "Sitting is the new smoking, 'The Sitting disease'" (205 views); "Smart advertisers, Unhealthy kids: Materialism as a destructive means to cope" (170 views); "Blog" landing page (163 views). Most of the visitors arrive at the website directly through the URL (696 visits), closely followed by visits through Google searches (682 visits). The other significant source of traffic is Facebook by means of promotion through the Smart Cities, Healthy Kids Facebook page (https://www.facebook.com/Smart.Cities.Healthy.Kids/timeline) (682 browser-based Facebook referrals, 74 mobile-based Facebook referrals). Most visitors have Canadian IP addresses (1720 visits), followed by the United States (158 visits), and the United Kingdom (83 visits).

EMAIL NEWSLETTERS

Information about SCHK was included in kidSKAN News, email newsletters sent out about twice a month to almost 1000 subscribers using MailChimp. From their launch in January 28, 2011 to March 21, 2013, 49 regular kidSKAN News e-newsletters were published. There were stories about the Smart Cities, Healthy Kids study in 11 of these newsletters, with links to the kidSKAN website (www.kidskan.ca). Appendix 6 shows the statistics gathered by MailChimp about each mention of SCHK up to March 31, 2013: the number of newsletters sent out in which it was mentioned (as the list grew during this time); the number of those newsletters opened; the percentage and actual number of people who opened it who clicked on the SCHK mention; and the number of clicks on the story it links to on the kidSKAN website.

Additionally, interested individuals can sign up for newsletter emails via the SCHK website. This allows anyone to receive an email when the website has been updated with new information. As of March 31st, 2013, 10 people had signed up to receive these newsletter emails.

SOCIAL MEDIA

The social media tools Facebook and Twitter are used by the SCHK team in order to initiate and sustain an ongoing dialogue with the public.

The Facebook page(www.facebook.com/ Smart.Cities.Healthy.Kids) was launched on June 9, 2011, and had 77 likes as of March 31, 2013.

The Twitter page (https://twitter.com/ SCHKSaskatoon) titled @SCHKSaskatoon, was launched on June 9, 2011. The SCHK Twitter page has 93 followers, and 116 tweets as of March 31, 2013.

REPORTS

Neighbourhood Reports

To determine the Saskatoon neighbourhood designs that are the most supportive of active living, in the summer months of 2009 and 2010, researchers walked each neighbourhood in Saskatoon collecting data on these areas using the Neighbourhood Active Living Potential (NALP) tool and the Irvine-Minnesota Inventory (IMI). Researchers collected data for 60 residential neighbourhoods (See Table 3), and the data were summarized in a report specific to each neighbourhood (see website for these reports).

The reports were completed in 2010 and were made widely available after completion. These documents are available online on the SCHK website. Although the information contained in each report is neighbourhood specific, each report follows a similar format. The reports are four pages long and begin with a description of the data collection tools, and how they were used (NALP and IMI). Each report also includes information on how scores were determined for each neighbourhood in the following built environment domains: Safety, Destinations, Activity Friendliness, Attractiveness, and Universal Accessibility. The researchers provided definitions for each domain in order to allow readers to understand the parameters of the research more readily. Domains and corresponding definitions are below.

- Safety: "We rated each neighbourhood according to the presence or absence of certain neighbourhood elements that increase or detract from a feeling of personal security. Observing both the physical and social characteristics of the neighbourhood, security was measured both in terms of traffic and crime. These ratings suggest whether safety concerns affect an individual's related active living decisions in their neighbourhood."
- Destinations: "We rated each neighbourhood according to the number, diversity, and density of its destinations. These ratings suggest whether destinations in a neighbourhood can motivate deliberate, localized active living choices by providing a place to go and a means to interact with others."
- Activity Friendliness: "We rated the activity friendliness of each neighbourhood based on specific features that encourage or present barriers to an active lifestyle. These ratings suggest whether a neighbourhood assists or limits the opportunities for physical activities such as walking, cycling, or skateboarding."
- Attractiveness: "We rated each neighbourhood based on specific features that could potentially increase or decrease the attractiveness of the neighbourhood. This rating suggests whether the level of attractiveness for each neighbourhood itself can encourage or discourage individuals to participate in an active lifestyle."
- Universal Access: "We rated the universal accessibility of each neighbourhood according to the presence or absence of specific features that help or prevent safe movement for those with mobility, visual, or hearing impairments. These ratings suggest whether people with reduced mobility are able to travel in the neighbourhood safely without assistance."

| Table 3: List of the 60 neighbourhoods for which NALP/IMI data was collected in 2009-10			
Adelaide-Churchill	Erindale	Lakewood Suburban Centre	Queen Elizabeth
Arbor Creek	Exhibition	Lawson Heights	Richmond Heights
Avalon	Fairhaven	Lawson Suburban Centre	River Heights
Brevoort Park	Forest Grove	Massey Place	Riversdale
Briarwood	Greystone Heights	Mayfair	Silverspring
Buena Vista	Grosvenor Park	Meadowgreen	Silverwood Heights
Caswell Hill	Hampton Village	Montgomery Place	Stonebridge
Central Business District	Haultain	Mount Royal	Sutherland
City Park	Holiday Park	North Park	University Heights Suburban Centre
College Park	Holliston	Nutana	The Willows
College Park East	Hudson Bay Park	Nutana Park	Varsity View
Confederation Park	Kelsey Woodlawn	Nutana Suburban Centre	Westmount
Confederation Suburban	King George	Pacific Heights	Westview
Dundonald	Lakeridge	Parkridge	Wildwood
Eastview	Lakeview	Pleasant Hill	Willowgrove

School Demographic Reports (40)

After the demographic questionnaire data had been collected and analyzed, in spring 2011 a "Physical Activity Profile" report was developed for each of the 40 participating elementary schools, and for school board officials. Information specific to each school was summarized into a 15-page report. The focus of the demographic report was to share results specific to each school relating to topics such as: Reasons for Inactivity, Family and Peer Influence, Sedentary Behaviour, the Home Environment, Neighbourhood Perceptions, and Active Transportation. This is a private document for school board use.

PHYSICAL ACTIVITY PROFILE FOR
Alvin Buckwold School

Saskatchewan Population Health and Evaluation Research Unit
Smart Cities, Healthy Kids
smartcitieshealthykids.com

School Reports Summarizing MAQ-A and Accelerometer Results

The data collected from the Modified Activity Questionnaire for Adolescents (MAQ-A) tool and from the accelerometer deployments were aggregated and summarized into one report called the "Physical Activity Profile for Saskatoon Elementary Schools." This report was provided to all participating schools and school board officials in the fall of 2011. The MAQ-A results summarize results from 1610 children in grades 5-8 from 40 schools in Saskatoon. A sub-group of 465 children were asked to wear accelerometers, unobtrusive waist-mounted devices that measure direct physical activity levels, which when analyzed reveal children's activity
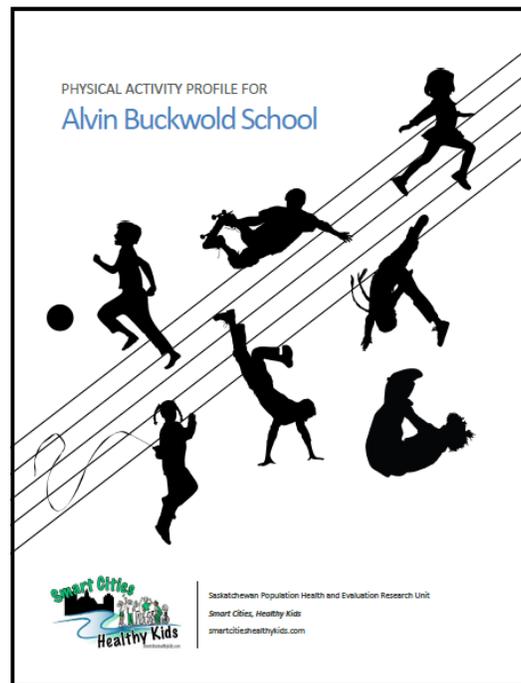
patterns. This report provides background information on the SCHK project, a description of childhood obesity, and information on the study methodology, participants, MAQ-A questionnaire results, accelerometry results, information on the food environment sister study, references, and an appendix. This is a private report for school board use.

Planning for Growth Document

This document is an historical summary of the formation and growth of Saskatoon's neighbourhoods, it outlines the development of the three original villages that amalgamated to form the city of Saskatoon in 1906, and then traces how they changed and developed over the years. In order to situate stages of city development within one of four planning eras, the report also outlines the timeframe in which Saskatoon's additional fifty-seven residential neighbourhoods were developed. This document was distributed to all city councilors and the mayor in 2012, and posted on the SCHK website.

PEER-REVIEWED JOURNAL ARTICLES

At the time of this publication there have been four peer-reviewed articles published on the SCHK study (see titles below). As well, Dr. Muhajarine was instrumental in the development of a special journal supplement, *Canadian Evidence on the Built Environment and Health,* published by the Canadian Journal of Public Health in November/December 2012.

- Fuller DL, Muhajarine N. Replication of the Neighbourhood Active Living Potential Measure in Saskatoon, Canada. Am J Prev Med. 2010; 39(4): 364-367.
- Muhajarine N. Built Environment Health Research: The Time is Now for a Canadian Network of Excellence. Can J Public Health. 2012: 103(3): S3-S4.
- Esliger DW, Sherar LB, Muhajarine N. Smart Cities, Healthy Kids: The Association Between Neighbourhood Design and Children's Physical Activity and Time Spent Sedentary. Can J Public Health. 2012; 103 (3): S22-S27.
- Loptson K, Muhajarine N, Ridalls T, and The Smart Cities, Healthy Kids Research Team. Walkable for Whom?: Examining the Role of the Built Environment on the Neighbourhood-based Physical Activity of Children. Can J Public Health. 2012; 103(3): S29-S34.

PUBLIC PRESENTATIONS

Since 2009, SCHK has made a total of 45 presentations. Twenty-six were made at provincial, national and international conferences. Some examples are: the Saskatchewan Parks and Recreation Association Conference, the Canadian Public Health Association Conference (presenting every year since 2009), and the International Conference on Urban Health (October 27-29, 2010). In addition, 19 public presentations were made to non-academic stakeholders and groups including community associations, the City of Saskatoon Managers, City of Saskatoon Councilors, the Saskatoon Health Region, and the Heart and Stroke Foundation of Saskatchewan. A complete list of presentations that were delivered by SCHK and details of each presentation can be found in Appendix 2.

WORKSHOPS

In addition to public presentations, SCHK developed and conducted a series of customized workshops for various audiences. A total of 13 workshops were conducted as part of the SCHK built environment initiative. For a complete list of workshops, see Appendix 3.

Methodology & Methods Teach-In (Method to the Madness)

Over the course of the project the researchers found that they were often asked for advice or assistance from other projects on best practices related to project management issues. For this reason, when applying for the CIHR KT grant, a one-day workshop on project management was included as a part of the KT strategy. While researchers planned to conduct this workshop twice, once in Saskatoon and once in Regina, an additional workshop was added in Saskatoon due to high demand. It provided a day of informative and hands-on experience on how to successfully manage a research project. The project management skills covered included: organization, people, knowledge translation, and finance. In addition, the workshop included a discussion component and small group activities so participants could apply what they were learning. The workshop was designed around a project that each group worked on for the entire day, and exercises were used to reinforce the skill development of each unit. The culmination of the day was a game of Researchopoly, a project management game that the workshop organizers had developed so that participants could reinforce what they had learned in a fun, interactive way. Across the three workshop dates, a total of 76 individuals registered to attend the Method to the Madness workshop (December 12th = 28 registrations, December 15th= 25 registrations, and December 20th = 23 registrations).

Researchopoly game set up

Researchopoly Board Game: *Developed to teach project management skills as part of Method to the Madness*

This game helps players experience the ups and downs of conducting a research project while moving through the phases of

research and dealing with real-life project management issues. The ultimate goal is to make it through to the project's end (without finishing in a deficit) before the other research teams.

To start, each team of up to six players chooses a research project card. These cards provide specific research background information such as methodology, a funding schedule and research expenses. This card will also provide the context in which each team will operate throughout the game. Using this information, players roll a die and travel around the game board, dealing with issues that arise from landing on Research Meeting, Cost/Benefit and Budget card squares.

For a more detailed description of this workshop and the game, see the article written about it in *On Campus News*, part of Appendix 5, or watch the Researchopoly video on YouTube.

Bedford Road Collegiate Workshop
This workshop was developed in collaboration with teacher Richard Cossette at Bedford Road Collegiate as part of his grade nine urban design class and held in three sessions from May to June, 2012. In order to give the students some hands-on experience in assessing the built environment, the research coordinator developed a three-part workshop for them. In part 1, students were given a presentation on the built environment features and trained to use a simplified

version of the NALP and IMI tools, combined into one modified tool that captured five domain characteristics. In part 2 the students were divided into three groups and, with three leaders from the SCHK project, took the modified tools and assessed their environments. In part 3 the students had a discussion and suggested ideas for redesigning their assigned segment and then presented those designs to the class.

Bikeable Saskatoon Workshop

In order to share the data collected on cycling, the SCHK team developed a focused workshop that centered around a guided bike tour of the city's downtown bike lanes and paths. This workshop took place on June 6, 2012, and was co-sponsored by Saskatoon Cycles, a local cycling advocacy group. Participants traveled on a pre-determined route and then conducted a self-evaluation of the experience and participated in a guided discussion with organizers. They were also given a copy of the Bikeable Saskatoon fact sheet, developed specifically for this workshop. Although the bike ride was open to anyone interested, key decision makers in the City and the Health Region were encouraged to attend, and several did.

Creating Active Communities (CAC)

In order to engage in a broader discussion of built environment research in Canada, the SCHK team developed the Creating Active Communities public workshop held on October 13, 2012, which included presentations by SCHK researchers and researchers from two other built environment projects in Vancouver and Edmonton. As part of this day-long workshop, participants took part in mobile workshops, breakout sessions and interactive discussions, described on page 26. Thirty-eight people participated in Creating Active Communities.

Mobile workshops

Within the Creating Active Communities workshop, three mobile workshops were developed for participants, using an active approach, in line with the research ideals.

Assessing your community – Using the same modified tool described in the Bedford Road workshop, participants traveled by city bus to two different neighbourhoods (first Sutherland, and then Forest Grove) and conducted an assessment of the built environment in each neighbourhood. They then traveled back to campus by bus and discussed options for redesigning these neighbourhoods.

"Assessing your community" workshop participants

Raskelball participants

Raskelball – Raskelball is a workshop that focuses on the importance of unstructured play in keeping people active. Participants were provided with non-specific sporting equipment (balls, hula hoops, bean bags, and pool noodles) and then had to brainstorm a game that they could play together in teams. The name was inspired by an illegible, handwritten description of a sport that one child identified as partaking in when completing the MAQ-A.

Redesign a street – In this workshop, participants walked to a major street (Cumberland Avenue) and took pictures and notes, and then returned to campus and used a street redesign tool to find ways to make the street more pedestrian and bike friendly.
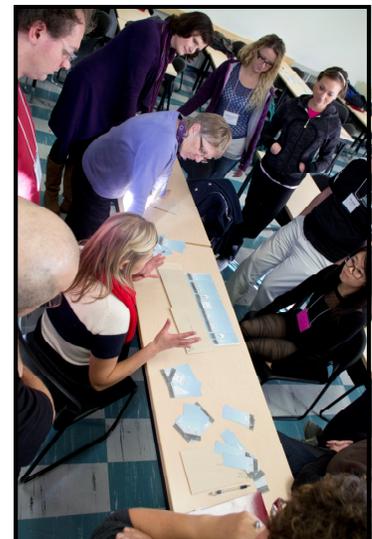
"Redesign a Street" workshop participants

EVALUATION OF CREATING ACTIVE COMMUNITIES

An evaluation survey was provided at the beginning of the workshop to each of the participants (see Appendix 4B for a copy). Attendees were asked to rate their understanding of the topic and their ability to talk about the topic before the workshop started, and then after the workshop ended. Just over half (55%) of the attendees returned completed evaluations at the end of the workshop (n=21).

Before the workshop, the range of understanding of the topic was between poor and excellent, where 4.76% stated they had a poor understanding of the topic, 33.33% stated they had a fair understanding, 38.10% had a good understanding, 14.29% had a very good understanding and 9.52% had an excellent understanding (median = "good"). Following the workshop, the range of ratings moved to become within the range of good to excellent. A total of 47.62% rated themselves as having a good understanding of the topic, 38.10% had a very good understanding, and 14.29% had an excellent understanding (Figure 1; median = "very good").

Attendees' Understanding of the Topic

	Poor	Fair	Good	Very Good	Excellent
Before the Workshop Starts	4.76%	33.33%	38.10%	14.29%	9.52%
After the Worlshop Ends	0.00%	0.00%	47.62%	38.10%	14.29%
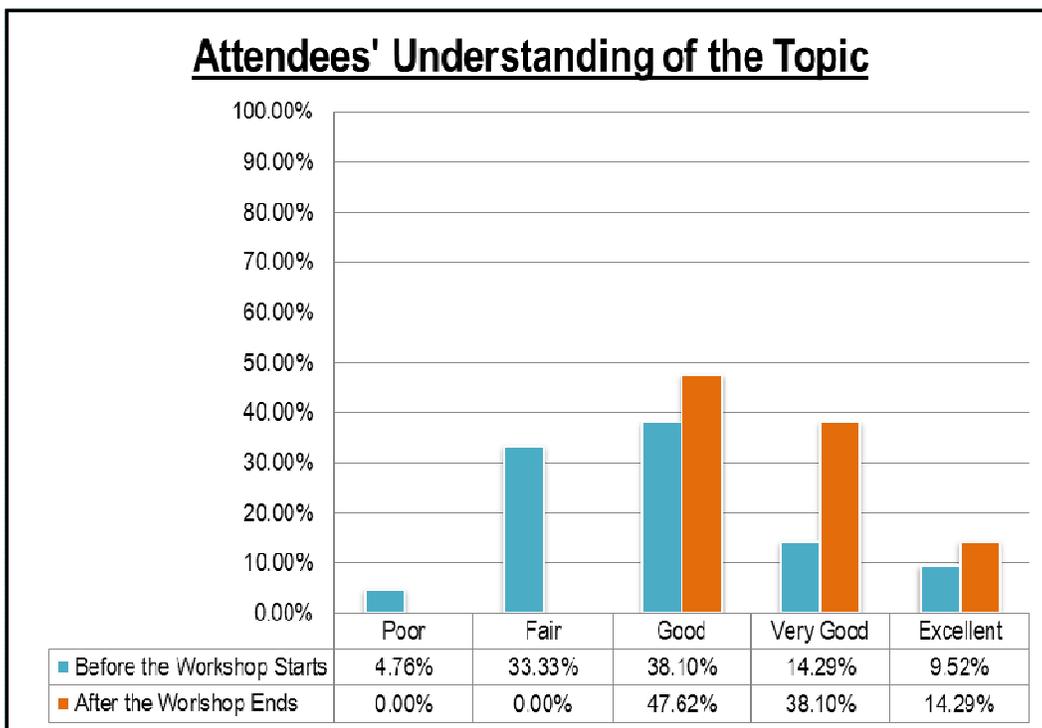
Figure 1: SCHK workshop attendees' understanding of "Creating Active Communities" before and after the workshop.

Similarly, attendees' ability to talk about the topic before the start of the workshop was compared to their ability after the workshop. A total of 14.29% stated their ability to speak about the topic was poor, 57.14% stated it was fair, 9.52% stated it was good, 9.52% stated it was very good and 9.52% stated it was "excellent" (median= "fair"). Following the workshop, the ability to speak about the topic shifted to being between "good" and "excellent." Of participants, 66.67% felt their ability to talk about the topic was "good", 19.05% felt it was "very good," and 14.29% felt it was "excellent" (Figure 2; median = "good").

Attendees' Ability to Talk About the Topic

	Poor	Fair	Good	Very Good	Excellent
Before the Workshop Starts	14.29%	57.14%	9.52%	9.52%	9.52%
After the Worlshop Ends	0.00%	0.00%	66.67%	19.05%	14.29%
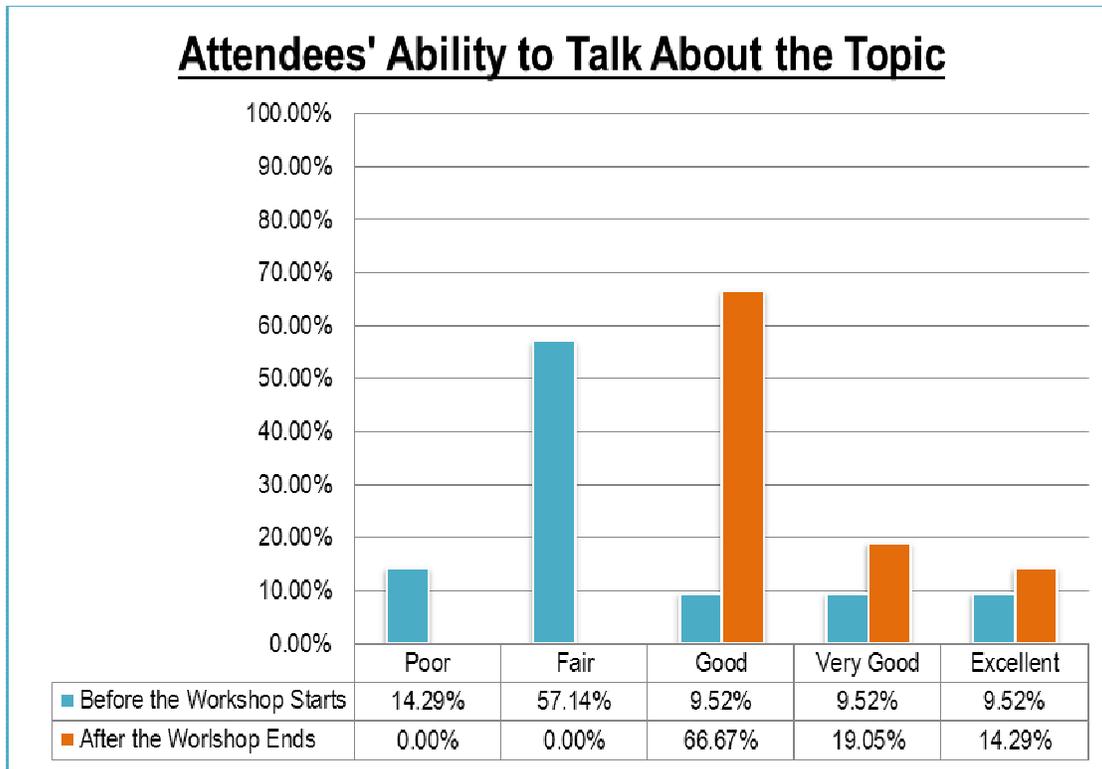
Figure 2: SCHK workshop attendees' ability to talk about "Creating Active Communities" before and after the workshop.

Organizers asked attendees to rate some features of the workshop (opening remarks, plenary presentations, advertising and promotion, registration procedure, suitability of location, space/facilities, and food). Figure 5 displays the rating the participants provided for each component of the workshop.

To see if knowledge would be reproduced and distributed, attendees were asked if they would share the knowledge received, and how. Seventeen out of 21 (80.95%) said "yes," and four out of 21 (19.05%) did not respond. When asked how they would share this knowledge, four categories emerged from the comments, with two out of 17 (11.76%) supplying no comment. Of those who provided comments, nine out of 17 (52.94%) said they would use it for professional work/job related tasks, three out of 17 (17.65%) said they would use it for outreach purposes, two out of 17 (11.76 %) said they would use it generally or for conversational purposes and one person (5.88%) said they would use it for personal changes/use.

Attendees were then asked how they were thinking of putting the knowledge acquired into practice in their own work. Out of 21 respondents, 16 (76.19%) provided a response. Of those 16, one was unsure (6.25%)

and two attendees' comments were not applicable to the question (12.50%). The remaining 13 (81.25%), provided a response. Attendees suggested that their understanding of the data and study as a result of participating in the workshop meant that they would share information within their networks for outreach, promotion, advocacy, and policy and planning initiatives.

When asked if the workshop met their expectations, of the 21 respondents, six (28.57%) said yes, eight (38.10%) said no, five (23.81%) said they were

Figure 3: Attendees' satisfaction on workshop expectations

unsure/did not know, and two (9.52%) did not respond (Figure 3). Since this question was a closed-ended question, reasons as to why attendees' expectations were not met by the workshop were unknown.

Participants were then asked which part of the workshop they found to be the most useful; 17 out of the 21 participants who evaluated the workshop completed this section (81%). Of these respondents, more than half reported that they found the hands-on application portion of the workshop to be the most useful (52.94%; nine out of 17), followed by the presentations (i.e. comparing other cities, opening remarks) (two out of 17; 11.76%), networking and discussions (two out of 17; 11.76%), and the breakout session (two out of 17; 11.76%). 5.88% found the fact sheets to be useful (one out of 17), and another 5.88% found all aspects of the workshop most useful (one out of 17) . Selected participant's comments are provided below:

- *"…the afternoon application - walk about…very practical, provided realism to research…"*
- *"…I also liked the plenary + summary 'breadth of vision' sessions…"*
- *"…enjoyed the smaller sessions and group work…"*
- *"…the site visit as it drives home how to apply the theory & tools…"*

STEP 2: KEY INFORMANT INTERVIEWS

A list of key informants from the SCHK project was developed based on their involvement throughout the duration of the SCHK study. Fourteen individuals were contacted to participate in the interview, of which 12 responded (86% participation rate), and 11 agreed to participate. Researchers developed seven questions for the evaluator to use to guide semi-structured interviews (see Appendix 1 for interview questions used). The evaluator conducted the interview one-on-one over the phone. The responses from the informants were summarized and written down under the appropriate questions, noting down any specific quotes that respondents mentioned were important. The responses were partially transcribed and other remaining responses were summarized. The evaluator transcribed the direct response to each question that was posed. Additional information and supporting comments were summarized. These notes were handwritten during each interview. A full transcription of the telephone interviews was not found to be necessary by the researchers for the purposes of this evaluation. The collected data was analyzed by the evaluator. There was no member checking.

The specific key informants included in the interview were specifically chosen because their involvements with the SCHK project varied, and represented a range of project activities. In summary, the involvement of the 11 individuals with SCHK was in one or more of the three areas discussed below:

- Category 1: Technical involvement in the development of the study: either as a general support or as a part of the core research/study development team
- Category 2: Partnership/support through a professional organization
- Category 3: Learner/participant/personal interest

The diagram below (figure 4) illustrates the distribution of the key informants regarding their initial involvement in the SCHK study. Three of the informants were a part of the core research/study development team (category 1), and another three were a part of the general support of the study (i.e. providing support in the beginning stages of the study through support letters) (also category 1). However, upon completion of their involvement with the study, two of these individuals chose to still be involved in the study as a learner/participant with personal interest. Of the remaining participants, four of the informants were involved at a partnership level (category 2), and one individual was a learner throughout the study (category 3).

Key Informant 1 Research Team	Key Informant 2 Research Team	Key Informant 3 Research Team
Key Informant 4 Study Supporter	Key Informant 5 Study Supporter	Key Informant 6 Study Supporter
Key Informant 7 Partnership	Key Informant 8 Partnership	Key Informant 9 Partnership
Key Informant 10 Partnership	Key Informant 11 Learner	

Figure 4: Distribution of key informants based on initial SCHK study involvement

UNDERSTANDING OF THE OBJECTIVE OF THE SCHK PROJECT

The evaluator asked key informants to explain the objective of the SCHK study in their own words, as a result of their involvement. The evaluator compared these descriptions to SCHK's stated objective in the proposal. According to the website and grant proposal, the SCHK study aimed to understand "…the impacts of urban design on children's health." Furthermore, we used the wording of the SCHK study on the website (please see Box 1 on the following page) as it outlines in lay terminology the goal of the study. Key words from the goals were compared to participants' responses to identify any overlap to determine if and how they understood the objective.

Each participant was given a score out of four based on whether they met the criteria of understanding the objective. A score of one was awarded for mentioning each of the themes (three in total) in their response, and an additional point for emphasizing an association between the three topics:
- One point = Urban Built Environment → related terms: environment, neighbourhood design, neighbourhood safety, features
- One point = Children → related terms: kids, young people
- One point = Physical Activity → related terms: health, obesity/weight, healthy lifestyle, health choices, activity levels, specific activities (driving versus walking/biking, etc.)
- One point = for stating an association between the three themes

The scores awarded to the key informants ranged from two to four; 18.2% of participants (two out of 11) received a score of two, and 81.8% of participants (nine out of 11) received a score of 4 (median = 4; mode = 4).

Box 1: SCHK study objectives retrieved from: www.SmartCitiesHealthyKids.com

The goal of the Smart Cities, Healthy Kids project

The built environment refers to the spaces populated by infrastructure planned and developed by people. For our purposes, we are assessing neighbourhoods and their impact on the physical activity of Saskatoon's children.

[The] Built Environment project is to understand how urban planning and design can be used to encourage children to be more physically active, thus slowing the rise in childhood obesity. Tackling the problem of child-hood obesity requires multiple approaches. Many people, from health professionals, funders, policy makers, and researchers, to concerned parents, have identified environmental factors that can either help or hinder children and adults to live more active lifestyles.

However, there has been little research into how aspects of the urban built environment in which we all live—such as buildings, roadways, sidewalks, parks, and green spaces-—can encourage children to be physically active. By learning about what is and isn't working in our current neighbourhoods in Saskatoon, this novel study will help shape the design of future neighbourhoods, here and elsewhere in Canada.

USE & EFFICACY OF KT MATERIALS/ACTIVITIES

Out of the 14 KT materials which key informants were asked to discuss, on average, an individual encountered about 8 KT materials (mean of 7.82 ± 3.74; range of 3 to 14; median of 6; mode of 5). By far, public presentations and fact sheets were the most popular KT materials that were encountered by the majority of the participants (100% of the participants encountered these). The least accessed material was the Twitter account, which 18.18% of participants had encountered. Figure 5 (following page) lists the KT materials that stakeholders reported accessing most frequently. Further, the evaluator asked which of the KT materials the interviewees found to be the most useful.

Table 4: Frequency distribution table for the knowledge translation materials indicated as being "the most useful"

Knowledge Translation Material	Frequency	Percentage
Public Presentations	6	54.55%
Neighbourhood Reports	6	54.55%
Workshops	5	45.45%
Fact Sheets	3	27.27%
Website	2	18.18%
Researchopoly	1	9.09%
Videos	1	9.09%
School Reports	1	9.09%
Methodology & Methods Teach-In	0	0.00%
Conference Presentation	0	0.00%
Email Newsletters	0	0.00%
Social Media: Facebook	0	0.00%
Social Media: Twitter	0	0.00%
Publications	0	0.00%

Over half of the participants stated that public presentations and neighbourhood reports were found to be the most useful KT materials (Table 4).
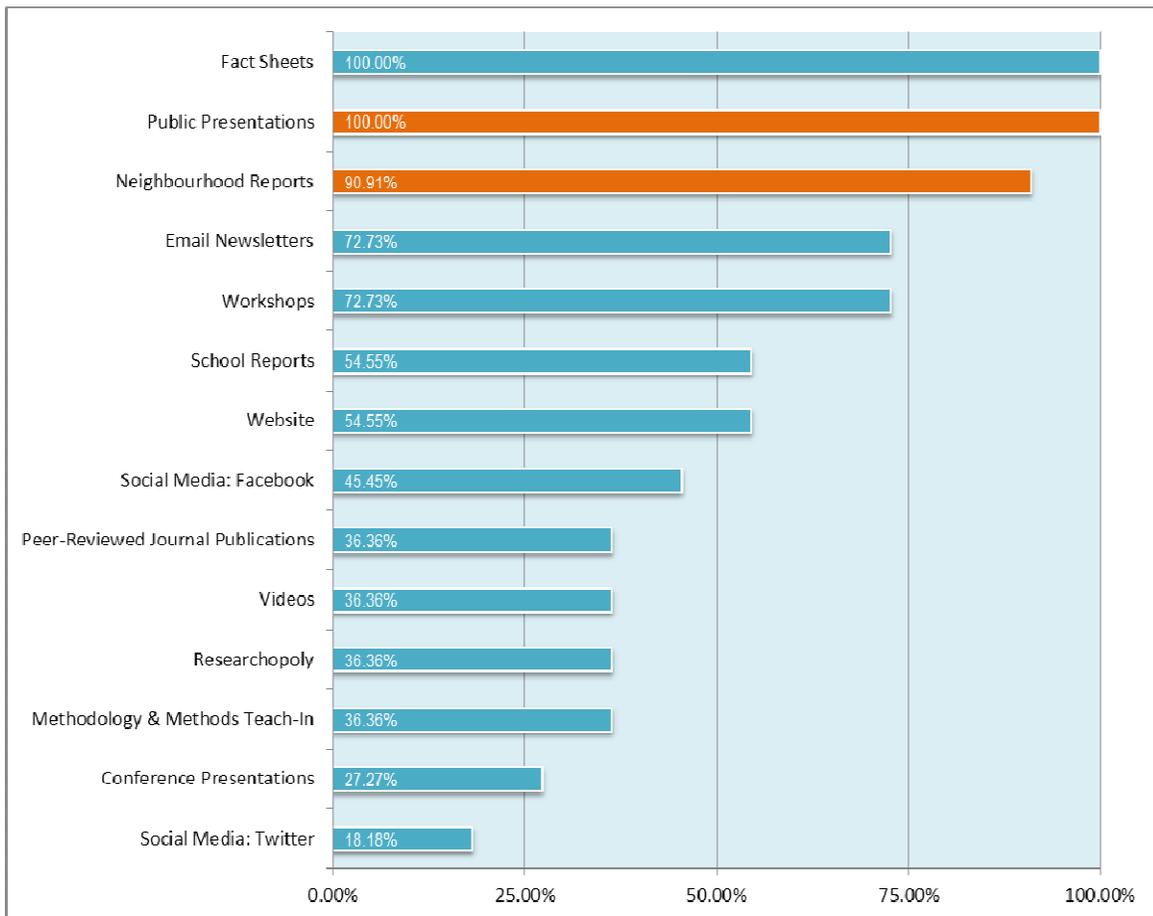
Figure 5: Knowledge translation materials encountered by key informants (most reported to least reported) – orange bars represent the two KT materials indicated as being the "most useful":KT material.

ATTITUDE MODIFICATIONS

The evaluator asked key informants whether being involved with the SCHK study had modified their attitudes and/or their organization's attitudes about the importance of the built environment on children's health. Participants were able to talk about their personal attitude changes with more confidence than whether they saw attitudinal changes within their organizations. The results from this section of the interview are provided on the following page and summarized in the accompanying figures.

Personal Changes

Seven out of 11 (63.6%) participants indicated that their attitudes about the importance of the built environment on children's health had changed as a result of the SCHK study, 9.1% (one out seven) stated that an attitude change "has begun to" occur, and 27.3% (three of 11) stated that there wasn't an attitude change as a result of the SCHK study (Figure 6). With further probing, the evaluator was able to determine that all of these individuals were already familiar with the effects of the built environment on children's health, such that the SCHK study reaffirmed what they already knew.
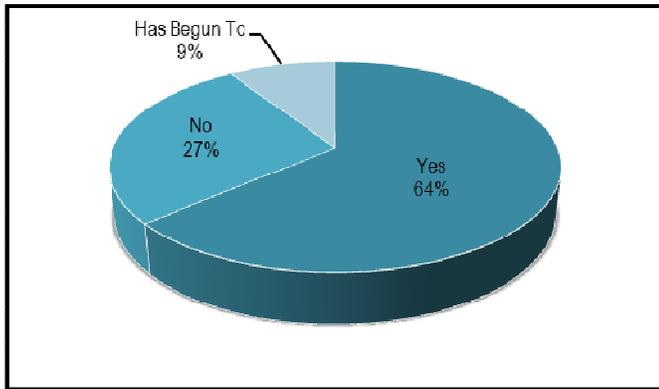
Figure 6: Personal attitude modifications as a result of the SCHK study

"I am a retired physiotherapist…interested in health promotion…now I think that THIS IS PHYSIOTHERAPY! Not surgeries and knee replacements…this is what public health and the health system should be…it is an extension of my profession…we should be engaged in the community to demand environments to be focusing on the built environment…"

Organizational changes

Six out of 11 (54.5%) of participants stated that there has been an attitude modification within their organization, and two out of 11 (18.2%) said there hasn't been a change yet. Three out of 11 (27.3%) participants stated that they were unsure and could not make that connection yet (Figure 7).
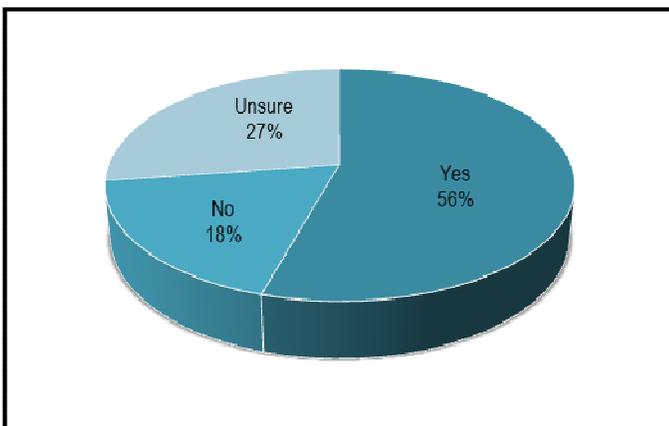
Figure 7: Organizational attitude modifications as a result of the SCHK study

"Commuting to work hasn't changed…I am more resolute now, as I gave up my parking spot permanently. I always held onto it even when I biked….the project was a peer-pressure to be like 'Hey! What are you doing?'"

"…definitely have been pulling in local research evidence for local work I do…"

BEHAVIOUR MODIFICATIONS

The evaluator asked participants whether being involved with the SCHK study has modified their behaviours, either personally or professionally, and whether their organization's behaviours have changed as a result of the project. Similar to attitude modifications, participants were able to talk about their personal attitude changes with more assurance than the behavioural changes of their organization. The results from this section of the interview are provided below and summarized in the accompanying figures.

"…I hadn't thought of it before…I didn't think of it as having an effect…I just thought that you adapt to the built environment and change yourself…"

"I have never looked at the built environment as an influence…always thought it was parental…it opened my eyes.."

Personal Changes

Eight out of 11 (72.7%) participants indicated a behaviour change as a result of the SCHK study and two

out of 11 (18.2%) indicated that there was no such change in personal behaviours. Only one person (9.1%) was unsure about any changes (Figure 8). The two individuals who indicated that they did not have any personal behaviour changes did not comment on why this was the case, however one of these individuals has always been involved in urban planning professionally, so was already aware of the SCHK study's themes. The other individual stated being unsure of any identifiable personal behaviour changes "…but [the] experiential bike tour [Bikeable Saskatoon] and fact sheets have left an impression and I keep this in mind."

Figure 8: Personal behavioural modifications, at an individual level, as a result of the SCHK study

Professional Changes

Six out of 11 (54.5%) participants indicated a professional behaviour change as a result of the SCHK project, and two out 11 (18.2%) participants did not identify a behaviour change. The individual that did not identify a behaviour change stated that this sort of information is already a part of their training and hence the study had provided an increased awareness,
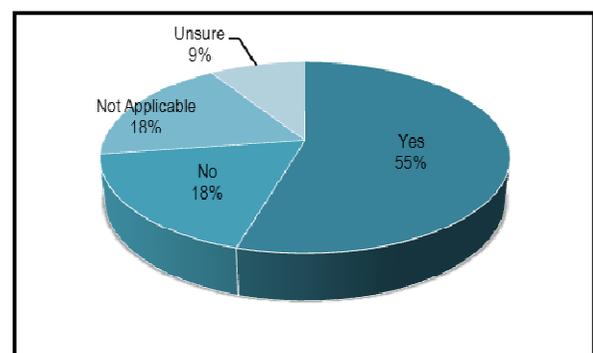
Figure 9: Professional behavioural modifications, at an individual level, as a result of the SCHK study

but not any identifiable behaviour changes. Two out of 11 (18.2%) of participant responses were not applicable and one person (9.1%) was unsure of any such changes (Figure 9).

Organization's Changes

Two out of 11 (18.2%) were able to conclude that the SCHK had led to behaviour changes in their organizations,while four out of 11 (36.4%) participants were not able to find a conclusive link. Three out of 11 (27.3%) participants' responses were not applicable and two out of 11 (18.2%) were unsure if there were any links (Figure 15). Three of the four individuals who stated that there was no behaviour change also stated that their organizations were "not there yet," but hope to be in the future. The other individual stated that their organization "begins and ends at teaching" so there was no behaviour change to comment on.
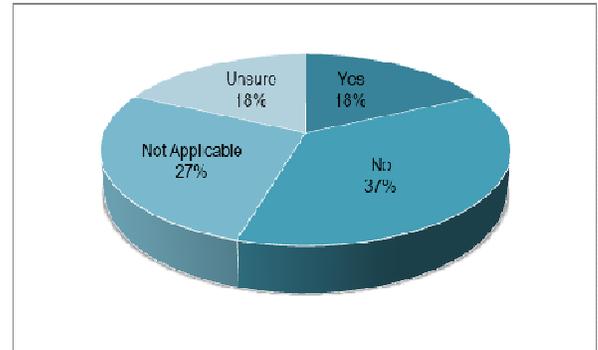
Figure 10: Organizational behavioural modifications, as a result of the SCHK study

"…it is leading to changes in our policies…this info will be relevant to the "integrated plan" a $0.5M growth plan to implement change in policies…"

"…hard to say at this point in time… people are talking about impact of these [built environment] on people's health and wanting to study it…I haven't necessarily heard about…[the]…study having an influence on these but I think it has contributed to the awareness…"

DISCUSSION

ENABLERS VERSUS BARRIERS TO EFFECTIVE KNOWLEDGE TRANSLATION

As previously described, knowledge translation is an integral part of health research. Effective KT strategies can assist stakeholders in moving research into policy and practice. Barriers to effective knowledge translation can result from the difference in the goals and roles between researchers and research users (organizations, policy makers, service providers, etc.), known as the *research-practice gap*,[5] and effective KT practices can bridge this gap.[4]

Alan Wallace, Manager, of Planning and Development at the City of Saskatoon speaking at the Creating Active Communities Workshop

The Alberta Mental Health Research Partnership Program suggests a number of enablers that were compiled from a number of other reports[6] that will contribute to research uptake by "knowledge-users," those individuals and organizations who will use research results and make them into policy and action:

1. having early and ongoing involvement of knowledge users within the study in order to build trustful relationships
2. frequent face-to-face interactions between researchers and key stakeholders
3. making incentives available to encourage knowledge translation
4. having adequate time available in order for relationships and trust to build between the two parties
5. capacity building within researchers in order to effectively communicate and interact with audiences
6. clarifying roles and expectations will lead to an open relationship between both parties
7. using active, effective, and multifaceted dissemination strategies versus using passive ones (i.e. journal publications, print materials) have shown to be much more effective; some of these include educational outreach visits, interactive continuing education, social marketing, and personal involvement[5]
8. using knowledge brokers who are links between the researchers and research users

SCHK's KT efforts made use of all but the third enabler, using incentives, to effectively disseminate the research results to key stakeholders – the knowledge users. Based on the data collected in steps one and

two, it can be concluded that the SCHK's KT methods have led to effective integrated knowledge translation, by: 1. using early and ongoing involvement of stakeholders; 2. having frequent face-to-face interactions with key stakeholders; 4. having adequate time to build relationships; 5. capacity building within researchers through training, 6. clearly laying out roles and expectations; 7. using active, and effective multifaceted dissemination strategies; and 8. using knowledge brokers — in particular, the Healthy Children research program's KT Manager and KT assistants, who shared project updates and disseminated SCHK results through the kidSKAN network.

The Canadian Institutes of Health Research recommends that researchers integrate KT activities throughout the research cycle (integrated knowledge translation) rather than at the end of the research process (end-of-grant KT) (Figure 16).[7] It was evident through the descriptive analysis that SCHK's KT activities began as early as 2009 and continued into 2013. Early activities consisted of public presentations, the first video, distribution of the original fact sheet at events, and coverage of the project on kidSKAN. These early presentations focused on community, partner, and stakeholder engagement and disseminating results from NALP and IMI. Decision makers were also included throughout the study, both as members of the research team, and through focused meetings to update relevant stakeholders, such as school board and city officials. As the project progressed, community and stakeholder engagement increased. As subsequent research phases were completed, presentations focused on a variety of research results. This ongoing engagement over the course of four years meant that there was sufficient time to establish and nurture strong relationships between the researchers and the stakeholders, a critical part of successful KT.[8]
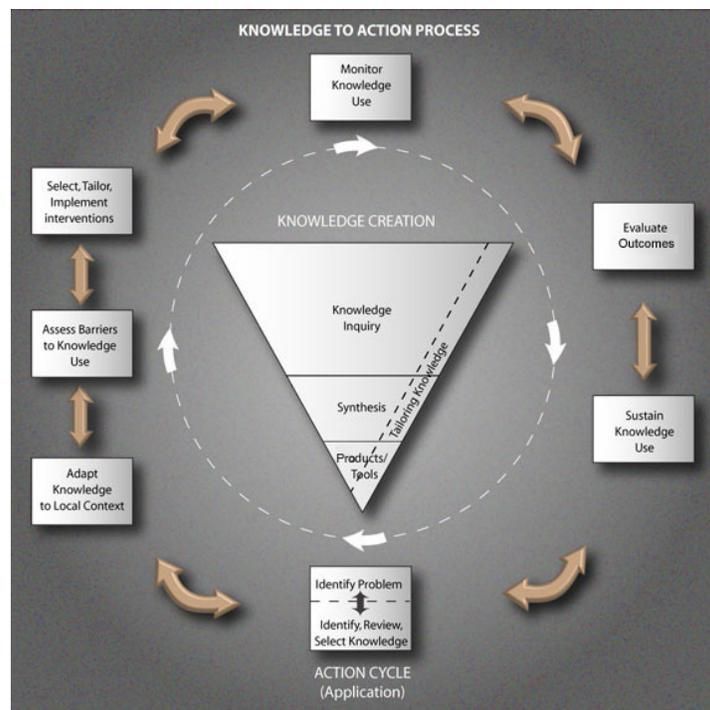
Figure 16: CIHR's research cycle with potential periods for introducing knowledge translation interventions

There were 45 public presentations in Saskatoon and beyond during the course of the study, involving researchers and key stakeholders. There were also other face-to-face interactions, through research team meetings, email and phone calls.

This ongoing engagement over the course of four years meant that there was sufficient time to establish and nurture strong relationships between the researchers and the stakeholders, a critical part of successful KT.[8]

Key informants expressed the importance of this in their interview comments, noting that the SCHK team had made a great effort in bridging the gap between researchers and knowledge users. One participant involved in implementing policy changes within the city stated that *"the link to the university is beneficial to us."* Another individual who is involved in a local organization stated that the SCHK was *"so engaged…[and]… went out of the way to engage the public."* Another participant, who was also a researcher who followed the SCHK study with personal interest, stated that SCHK's choice to *"work with community/stakeholders was a very valuable model and should be looked at and used by others in community-engaged research."* The positive feedback, and the ability for stakeholders to have identified a strong link between the researchers and the community with the SCHK study speaks of the study's success in early, frequent interactions with stakeholders.

Furthermore, SCHK's strategy for multifaceted dissemination of results has also proven to be effective, and

Student volunteers at Creating Active Communities workshop

valuable. As discussed earlier, the SCHK study utilized a total of 17 KT activities as dissemination strategies throughout the duration of the study. The two general categories of these 17 activities were: dissemination products, and presentations and tools. From the key informant interviews, it was determined that all 17 activities were encountered by at least one participant. Overall, public presentations and fact sheets were encountered by 100% of the participants, followed by neighbourhood reports (91%). On average, each participant encountered about eight KT materials and/or KT activities. Other "newer" KT methods such as social media and electronic strategies were not mentioned as frequently by the 11 key informants interviewed (i.e. Facebook, Twitter, videos, newsletters). Similarly, KT activities that required a greater focused time commitment and cost (attending workshops and conferences) were not mentioned as frequently.

The KT work undertaken in the Smart Cities, Healthy Kids project is part of the overall Healthy Children program of research and integrated knowledge dissemination in SPHERU. The Healthy Children research

team has been recognized provincially and nationally for its research and knowledge translation work, which has had a measureable impact on policy and practice. In 2006, Dr. Muhajarine was awarded the Canadian Institutes of Health Research Knowledge Translation Award for impact at a local/regional level (which included $20,000 for KT activities), and in 2009 he received the Saskatchewan Health Research Foundation's Achievement Award, their highest honour. KT Manager Fleur Macqueen Smith's knowledge translation work was instrumental in his receiving these awards. She herself was awarded a National Collaborating Centres for Public Health Knowledge Translation Graduate award for her own KT research and its implementation in the Healthy Children research program[9] which was presented at the Canadian Public Health Association Conference in Montreal in June 2011.

HOW EFFECTIVELY DID THE KT ACTIVITIES CONVEY SCHK'S STUDY OBJECTIVES?

About 82% of the stakeholders were able to correctly convey the objective of the study after having encountered SCHK's KT materials. They were able to identify the three key themes of the study and make an association between them – the effect of the built environment on children's physical activity and health. The remaining 18% (two individuals) only identified two themes; both were able to identify that the project was involved with health although one did not identify the effect on children, and another did not identify the built environment as a factor. Overall, a good proportion of the stakeholders correctly identified the study's objectives.

WHAT DID KEY INFORMANTS THINK OF THE KT ACTIVITIES?

Key informants were asked to identify which were the most useful activities. When considering all of the KT activities that SCHK implemented, of the 17 items, eight were chosen by one or more of the stakeholders as being the most useful KT activity that the individual had encountered (Table 4). It is not surprising to see that the KT activities that were encountered by fewer than 50% of the stakeholders were not identified as the most useful ones. None of the 11 key informants interviewed identified that these activities were most useful: Social Media (Facebook and Twitter), Peer-Reviewed Journal Article Publications, Method to the Madness Workshop, and Conference Presentations.

Dr. Muhajarine at the School Community Council Meeting at Holliston School

Looking at what stakeholders did find useful, key informants identified SCHK's Public Presentations and Neighbourhood Reports as encountered by all or most individuals (100% and 90.01%, respectively), and rated as the most useful KT activity (54.55% and 54.55%, respectively). According to these results, it can be assumed that frequent face-to-face interactions and local

data were most valuable to these knowledge users. Different activities will be useful to different stakeholders. For example, even though it was not identified as popular by the 11 key informants, there are currently 72 Facebook fans and 90 Twitter followers for the SCHK social media, almost 1000 people had viewed the main SCHK video as of March 31, 2013, demonstrating that there is an opportunity to build greater reach within social media in subsequent research the team conducts in this area.

Similarly, a city councilor stated that *"…there is really good info [and] there are new councillors…[I] don't know if they have any awareness… we get a lot of written info that is ignorable [so] presentations are useful."* This identifies an important factor in effective KT. Different populations of knowledge users have different goals and requirements. It is up to the researchers to identify the different populations and cater KT activities to these specific groups – which SCHK has completed successfully.

New street lights installed on 22nd Street

WAS THERE AN IMPACT/CHANGE?

Based on evaluation surveys collected on the fact sheets and workshops, and the stakeholder interviews, it is evident that SCHK project's knowledge translation efforts have made an impact and contributed to changes in attitudes and behaviours for stakeholders. Fact sheet evaluations suggested knowledge enhancement of the built environment and the SCHK study objectives. By comparing pre and post workshop results, workshop evaluations identified a shift in understanding of the topic and an increased ability to talk about the topic. Understanding of the topic shifted from a median of "good" to "very good" among attendees. Similarly, the ability to speak about the topic shifted from "fair" to "good."

The stakeholder interviews provided more nuanced information on specific impacts of the study – attitude and behavioural modifications. From the interviews, the evaluator was able to conclude that the SCHK KT initiatives have increasingly begun to impact attitudes and behaviours both personally and professionally, primarily at an individual level. A high proportion of stakeholders discussed individual level changes in their attitudes (64%), personal (73%) and professional (55%) behaviours as a result of the SCHK study. When asked to comment on their organizations' attitudes and behaviours, fewer changes were noted (55% and 18%,

respectively). These results suggest that SCHK is moving in the right direction. At an organizational level, there have been relatively more attitudinal changes then behavioural changes.

Revisiting the initial proposals for the SCHK KT grant (Box 2), SCHK hoped to "…stimulate discussion and increase awareness of how we can modify the built environment to promote children's physical activity, ultimately leading to policy and practice change." From the results compiled from evaluation surveys, and interviews, SCHK's KT activities have stimulated discussions and definitely increased awareness about the built environment in promoting children's physical activity. In addition, it has also begun to lead to policy and practice changes at a city level. Direct changes that the SCHK is currently aware of around the city include 1. the 22nd street barrier, 2. College Quarter Design and Development, 3. City Centre Plan, and 4. the $0.5M Integrated Growth Plan, all described more fully below.

Box 2: CIHR knowledge translation (KT) grant proposal objectives

<div style="border:1px solid">

Description of the Proposed KT Activities/Strategies

Our proposed activities consist of developing communication products (plain language materials, videos) targeted at different audiences, holding workshops designed to increase understanding of how the built environment impacts children's active lifestyles, and then to evaluate our effectiveness in KT by assessing whether these activities, and the project itself, has resulted in changes. By disseminating our results widely and purposefully to professionals working in urban planning and health promotion, and to those working in local government in addition to community members and laypeople, we expect to stimulate discussion and increase awareness of how we can modify the built environment to promote children's physical activity, ultimately leading to policy and practice change.

</div>

Due to the increased number of accidents on 22nd Avenue, a proposal to construct an eight-foot fence from Avenue H to Whitney Avenue was suggested by city officials, one of whom reported to CTV News that "Police stats show in the last two and half years there have been close to 50 accidents involving pedestrians on 22nd Street."[10] The initial idea proposed by the city included a barrier spanning along the high traffic areas where a majority of the accidents occurred, as was reported on CTV News:

> "One of the ideas that was brought to the committee, as in Prince Albert, they have a barrier down the center median down one of their roadways…The barrier is a wrought iron fence with vertical see through bars. It's been on 2nd Avenue in Prince Albert since the mid '80s . . . It works very well. They don't have any problems with pedestrians trying to jaywalk."[10]

However, the SCHK team criticized this proposal, and identified that the real issue lay in the lack of safe crosswalks along 22nd Street for residents. The researchers raised these concerns in a letter to the officials, and were later interviewed about these concerns by the Saskatoon Star Phoenix (see page 75 for the article):

> "The difference in pedestrian car collisions in the comparable Eighth and 20th streets can be attributed to the greater number of opportunities provided for safe crossing on these streets, compared to the very low number of opportunities for safe crossing provided on 22nd Street . . .

The road is treated "as a highway" despite having a high number of apartment buildings, stores and restaurants on both sides," the project manager said. "The barrier would only embolden drivers who are already travelling at high speeds. More overhead walkways and traffic calming devices such as lights and signals would help slow drivers and make pedestrians feel safer." [11]

Through the letter and subsequent media coverage, SCHK researchers influenced city officials to look into alternate evidence-based options. News-talk 650 Radio reported that two pedestrian controlled crosswalks would be added on 22nd Street in response to the SCHK's advocacy on these changes.[12]

The College Quarter Design and Development influence was regarding a new set of residence buildings for students off of Cumberland Ave S and College Drive, along Aird Street. The SCHK team was invited as a stakeholder to the planning meeting to redesign College Drive.

The City Centre Plan was initiated by the city in 2009 to develop a new plan for downtown and the surrounding areas. The goal of the plan was to ensure that downtown Saskatoon is equipped for its population growth of 500,000. Similar to the College Quarters Design and Development, the SCHK was invited as a stakeholder to provide input on the planning of City Centre at a closed meeting.

Splash Park at River Landing

Saskatoon's Integrated Growth Plan (IGP) is a component of the Strategic Plan 2011-2012 and paves the road for how Saskatoon will achieve its goals for "Sustainable Growth" and "Moving Around" as outlined in the Strategic Plan. According to one key informant, a Saskatoon Planning and Development associate, the local research results disseminated by the SCHK team will aid in the decision making process of the IGP. Similarly, other city officials discussed an interest in using the relevant local data in the near future.

SUGGESTIONS

Based on comments provided by survey and interview participants, the following recommendations for the SCHK team emerged:

- Deliver a summary presentation to the interested stakeholders, summarizing research results and their next steps (i.e. Saskatoon Planning & Development department staff, councilors).
  - ◊ SCHK may need to identify the major interested groups and cater suggestions to their specific goals and interests in any future KT activities. The initiatives should focus on organizational level changes in order to make policy level changes - consensus of entire groups rather than single individuals are required to place ideas on policy agendas.

- Investigate other municipalities who have used this kind of research in planning work, and determine what roles were taken by stakeholders in the planning process (provide this information in the summary presentation):
  - ◊ Now that we have this information - how do we change what we are doing to improve it?
  - ◊ How are children going to be involved in helping "plan" the city or revitalization?

- Explore the possibility of adopting research results into other centers (i.e. campus environment, rural area duplication, small population areas)

- Continue to encourage grassroots awareness to promote and share study results at the local level to interested advocacy groups and individuals, through in-person events and electronically (website, social media).

CONCLUSION

The SCHK study, launched in 2009, aimed to investigate the role of Saskatoon's built environment on children's physical activity levels. Throughout the study (2009-2013), the team disseminated their findings by using a number of knowledge translation materials to stimulate discussion and increase awareness of how the built environment can be modified in order to promote children's physical activity, ultimately leading to policy and practice changes. Consequently, an evaluation was conducted to investigate if SCHK's knowledge translation activities effectively achieved the objectives set out in the CIHR KT grant proposal. Overall, the evaluation aimed to answer the following questions:

1. Did the KT materials/activities effectively convey the purpose of the *Smart Cities, Healthy Kids* Project to the stakeholders?
2. Which of the KT materials/activities was found to be the most useful?
3. What sort of impact on behaviour and attitude did the *Smart Cities, Healthy Kids* Project have on its stakeholders?

After a thorough investigation of SCHK's work, including a compilation of all of the data SCHK disseminated (step 1) and key informant interviews (step 2), it was concluded that SCHK's KT efforts made use of a number of enabling factors to effectively disseminate research results to key knowledge users and ultimately (1) conveyed the purpose of the project to stakeholders, (2) developed a number of useful KT tools (with the top three being public presentations, neighbourhood reports, and workshops), and (3) led to both individual attitude and behaviour changes. Based on analysis conducted in steps one and two, SCHK's KT methods have thus far effectively disseminated research results into the community and to key stakeholders by using:

- Early ongoing involvement of stakeholders;
- frequent face-to-face interactions with key stakeholders;
- having adequate time to build relationships;
- capacity building within researchers through training;
- clearly laying out roles and expectations;
- by using active, and effective multifaceted dissemination strategies; and
- using knowledge brokers who disseminated SCHK results through the kidSKAN network.

Overall, stakeholders were satisfied with presentations, tools and dissemination products provided by the SCHK study. In addition, the SCHK has contributed to attitude modifications at both an individual and organizational level. However, a high percentage of behavioural changes in stakeholders have only been present at an individual level.

SCHK efforts have contributed to a number of changes in Saskatoon. However, further KT efforts are recommended in order to push for organizational level behavioural changes that will eventually lead to policy level changes to Saskatoon's built environment.

REFERENCES

1. Muhajarine N, Chad KE, Baxter-Jones A, Bell S, Holden B et al. Working Upstream: Effecting healthy children through neighbourhood design. Research grant proposal submitted to Canadian Institutes of Health Research, 2008, p. 12a .

2. Canadian Institutes of Health Research. More About Knowledge Translation at CIHR. Canada: CIHR; 2012 October 23 . Available from: http://www.cihr-irsc.gc.ca/e/39033.html

3. N. The two-communities theory and knowledge utilization. American Behavioural Scientist. 1979; 22 (3): 459-470.

4. Mitton, C., Adair, C., Mackenzie, E., Patten, S., & Perry, B. (2007). Knowledge transfer and exchange: review and synthesis of the literature. Milbank Q., 85, 729-768, p. 735.

5. Tsui, L.; Chapman, S.A.; Schnirer, L. & Stewart, S. (2006). A handbook on knowledge sharing: Strategies and recommendations for researchers, policymakers and service providers. Edmonton, AB: Community-University Partnership for the Study of Children, Youth and Families.

6. Alberta Health Services - Alberta Mental Health Board. Alberta Mental Health Research Partnership Program. (2009). Knowledge Translation: A synopsis of the literature 2008. Edmonton, AB: Harrington, A., Beverley, L., Barron, G., Pazderka, H., Bergerman, L. & Clelland, S.

7. Canadian Institutes of Health Research. About Knowledge Translation at CIHR. Canada: CIHR; 2009 April. Available from: http://www.cihr-irsc.gc.ca/e/39158.html

8. Lomas, J. Improving research dissemination and uptake in the health sector: Beyond the sound of one hand clapping (Introduction). In Strauss S, Tetroe J & Graham I (Eds), Knowledge Translation in Health Care: Moving from Evidence to Practice. Oxford, UK: BMJ Books/Wiley-Blackwell

9. Macqueen Smith, F. Using online communications technologies and communities of practice to strengthen researcher-decision maker partnerships. Unpublished master's thesis, University of Saskatchewan, Saskatoon, Saskatchewan, 2010. Available at: http://ecommons.usask.ca/handle/10388/etd-05122010-121406

10. CTV Saskatoon. Proposed barrier could cut down on jaywalking. CTV News. 2011 June 16 . Available From: http://saskatoon.ctvnews.ca/proposed-barrier-could-cut-down-on-jaywalking-1.658017#ixzz2Qdtx0jLW

11. Hutton D. 22nd Street barrier draws criticism. The Star Phoenix. 2011 July 11 . Available From: http://www2.canada.com/saskatoonstarphoenix/news/story.html?id=a99b441b-8c8b-40be-b6fb-e19bd96bba5e. Also included in Appendix 5 (see page 75).

12. Wills A. Pedestrian controlled intersections soon to be online. NewsTalk650. 2012 August 2. Available from: http://www.newstalk650.com/node/67914

APPENDICES

Appendix 1: Key Informant Interview Questions

Smart Cities Healthy Kids Knowledge Translation Evaluation Project
<u>Interview Questions</u>

Name of Interviewee:_____

Affiliated Organization:_____

Date of Interview:_____

Time of Interview:_____

1. **How would you describe your involvement with this project?**

2. **The Smart Cities Healthy Kids project developed a number of knowledge translation activities and materials.**

   a. **Of the 5 knowledge translation activities I will list out to you, which ones did you attend? And which did you find to be the most useful?**

   ○ Public Presentations(at conferences, libraries, meetings, etc.)
   ○ Workshops: _____
   ○ A Method to the Madness Workshop (December 2011)
   ○ Conference Presentation (CPHA, SPRA, APCPS)
   ○ Researchopoly game presentation

   b. **Of the 8 knowledge translation materials/products I will list out to you, which ones have you used? And which did you find to be the most useful?**

   ○ Fact Sheets (6)   □Neighbourhood Self-Selection | □ Safety | □ Saskatoon's Planning Eras |
                        □ Children's Physical Activity Patterns | □ Designing Cities with Children in Mind | □ Bikeable Saskatoon
   ○ Videos(kidskanYouTube Channel)
   ○ Website(www.SmartCitiesHealthyKids.com)
   ○ Newsletter Emails
   ○ Social Media: Facebook
   ○ Social Media: Twitter
   ○ Neighborhood/School Reports
   ○ Peer Reviewed Journal Publications

3. **What do you think the purpose of the project was?**

In the next few questions, when I say the "built environment" , I am referring to the spaces populated by man-made infrastructure.

4. *Thinking about yourself . . .*

    a. **Did the project <u>change your attitude</u> towards the importance of the built environment on children's health?**

    b. **Did the project <u>change your behavior</u>?**

        i. **Personally?**

        ii. **Professionally?**

5. *Thinking about your organization . . .*

    a. **Did the project <u>change your organization's attitude</u> about the built environment?**

    b. **Did the project change your <u>organization's behavior</u>?**

6. **Are there other things that you think we could do that you or your organization would find useful?**

7. **Is there anything else that you would like add?**

Appendix 2: Public Presentations Delivered by the SCHK Team

	Title of Presentation	Date	Presented at	Presented by	Talk Type
1	2009 Neighbourhood Active Living Potential: An Assessment of Saskatoon	11-Jan-2010	Heart and Stroke Foundation of Saskatchewan	Nazeem Muhajarine	Public
2	Smart Cities, Healthy Kids	16-Mar-10	Varsity View LAP	Nazeem Muhajarine	Public
3	Irvine-Minnesota Inventory	29-Apr-10	City Planners	Nazeem Muhajarine	Public
4	Smart Cities, Healthy Kids: Intervention Research on the Built Environment Form in Saskatoon, SK	14-Jun-10	CPHA Centennial Conference	Nazeem Muhajarine, Jessica Stolar	Conference
5	Healthy Children, Healthy Families Through Neighbourhood Design: The Saskatoon Experience	26-28 August-2010	2010 in motion/en mouvement National Physical Activity Institute and Research Day, Saskatoon	Nazeem Muhajarine	Conference
6	Smart Cities, Healthy Kids: Working Upstream to effect healthy kids in Saskatoon	24-Sept-10	Saskatchewan Epidemiology Conference	Jessica Stolar	Conference
7	Smart Cities, Healthy Kids: Effecting Healthy Children through Neighbourhood Design	21-Oct-10	Pan-Canadian built Environment Indicator Workshop, Ottawa	Nazeem Muhajarine	Conference
8	Smart Cities, Healthy Kids: working upstream to effect healthy children	21-Oct-10	Pan-Canadian Built Environment Indicator Workshop, Toronto	Nazeem Muhajarine	Conference
9	Smart Cities, Healthy Kids: working upstream to effect healthy children	27-29 October-10	International Conference on Urban Health, New York	Nazeem Muhajarine	Conference
10	Smart Cities, Healthy Kids: Report on progress made, lessons learned	26-Nov-10	College of Kinesiology Research Seminar	Nazeem Muhajarine	Public
11	Smart Cities, Healthy Kids: Children and youth	8-Mar-2011	Sharing Knowledge Building Links – Advancing Research, Policy and Practice on the Built Environment, Ottawa	Nazeem Muhajarine and Tracy Ridalls and SCHK Research Team	Conference
12	Smart Cities, Healthy Kids: Neighbourhood and community design	8-Mar-11	Sharing Knowledge Building Links – Advancing Research, Policy and Practice on the Built Environment, Ottawa	Nazeem Muhajarine and Tracy Ridalls and SCHK Research Team	Conference
13	Smart Cities, Healthy Kids: Urban development and form	8-Mar-11	Sharing Knowledge Building Links – Advancing Research, Policy and Practice on the Built Environment, Ottawa	Nazeem Muhajarine and Tracy Ridalls and SCHK Research Team	Conference
14	Smart Cities, Healthy Kids study	16-Mar-11	Varsity View Community Association	Nazeem Muhajarine	Public

15	Smart Cities, Healthy Kids	20-Apr-11	Nutana Community Association	Nazeem Muhajarine, Tracy Ridalls	Public
16	Built Environment and Healthy Weights in Kids	24-Apr-11	Consensus for Change: Using Policy to Protect and Promote Health of Children Montreal	Nazeem Muhajarine	Conference
17	Built Environment and Healthy Weights in Kids	27-Apr-11	Consensus for Change: Using Policy to Protect and Promote Health of Children Montreal	Nazeem Muhajarine	Conference
18	Moderate to vigorous physical activity and sedentary behaviour in preadolescent children in Saskatoon	19-20 June-11	National student conference of the Canadian Society of Epidemiology and Biostatistics, Montreal	Tarun Katapally	Conference
19	Examining the impact of the built and social environments of neighbourhoods on physical activity	21-Jun-11	CPHA Conference Montreal	Kristjana Loptson on behalf of Nazeem Muhajarine	Conference
20	A City Divided: Perceived neighbourhood safety and Eastside/Westside bias in Saskatoon, SK	21-Jun-11	Canadian Public Health Association, Montreal	Tracy Ridalls, Nazeem Muhajarine and Kristjana Loptson and SCHK Research Team	Conference
21	Smart Cities, Healthy Kids: Are we building neighbourhoods with children in mind?	13-Sep-11	Association of Professional Community Planners of Saskatchewan Conference, Saskatoon, SK	Nazeem Muhajarine	Conference
22	Smart Cities, Healthy Kids: Are we building neighbourhoods with children in mind?	21-Oct-11	Saskatchewan Parks and Recreation Association Conference, Saskatoon, SK	Nazeem Muhajarine, Tracy Ridalls	Conference
23	Smart Cities, Healthy Kids: Are we building neighbourhoods with children in mind?	17-Nov-11	Roadmap 2020	Nazeem Muhajarine, Tracy Ridalls	Public
24	Smart Cities, Healthy Kids: A progress report	21-Nov-11	CHEP 990, Saskatoon SK	Nazeem Muhajarine, Tracy Ridalls, Ha Le, Tarun Katapally, Nyankomo Marwa	Public
25	Smart Cities, Healthy Kids: Are we building neighbourhoods with children in mind?	23-Jan-2012	RUP 446	Nazeem Muhajarine, Tracy Ridalls	Public
26	Smart Cities, Healthy Kids: Are we building neighbourhoods with children in mind?	1-Feb-12	City Planning	Nazeem Muhajarine, Tracy Ridalls	Public
27	Smart Cities, Healthy Kids: Are we building neighbourhoods with children in mind?	9-Feb-12	CDPAC 4th Conference	Nazeem Muhajarine	Conference

28	Smart Cities, Healthy Kids: Are we building neighbourhoods with children in mind?	15-Feb-12	Saskatoon Public School Division	Nazeem Muhajarine, Tracy Ridalls	Public
29	Smart Cities, Healthy Kids: Are we building neighbourhoods with children in mind?	18-Apr-12	Greater Saskatoon Catholic School Division	Nazeem Muhajarine, Tracy Ridalls	Public
30	Smart Cities, Healthy Kids: Are we building neighbourhoods with children in mind?	23-Apr-12	Holliston School Community Council	Nazeem Muhajarine	Public
31	Working upstream: Effecting healthy children through neighbourhood design	29-Apr-12	City of Saskatoon		Public
32	How Do Variations in Neighbourhood Built Environment Influence Patterns of Preadolescent Children's Physical Activity and Sedentary Behaviour?	29-May-12	Canadian Association of Geographers, 2012 Annual Meeting	Tarun Katapally, PhD student; Dr. Nazeem Muhajarine (mentor)	Conference
33	Sedentary Behaviour in Children Aged 10-14 Years During School Days and Weekend Days in a Built Environment Context: A Multilevel Analysis	21-Jun-12	3rd Canadian Obesity Student Meeting	Tarun Katapally, PhD student; Dr. Nazeem Muhajarine (mentor)	Conference
34	Pausing to Consider the Canadian Evidence and to Chart Next steps	10-Jun-12	CPHA conference Edmonton	Nazeem Muhajarine	Conference
35	Are we building neighbourhoods with children in mind? Results from the Smart cities, Healthy Kids Study	10-Jun-12	CPHA conference Edmonton	Nazeem Muhajarine	Conference
36	Relationship between neighbourhood design and Physical Activity and sedentary behaviours of children in Saskatoon	10-Jun-12	CPHA conference Edmonton	Nazeem Muhajarine	Conference
37	Are we building neighborhoods with children in mind? Smart Cities, Healthy Kids Study	18-Jul-12	Meeting with City Councilors	Nazeem Muhajarine	Public
38	Are we building neighbourhoods with children (on bikes) in mind? Smart Cities, Healthy Kids Study	11-Oct-12	Saskatoon Cycles AGM	Nazeem Muhajarine	Public
39	In Their Own Words: Adolescents Talk about their Health	6-Nov-12	Saskatoon Public Library	Tracy Ridalls	Public
40	Smart Cities, Healthy Kids Study Report to the Health Promotion Department and PHO, SHR	4-Dec-12	SHR	Nazeem Muhajarine	Public
41	Sedentary Behaviour and Physical Activity- What we observed and where do we go from here?	13-Oct-12	Creating Active Communities Workshop	Tarun Katapally, Dr. Nazeem Muhajarine, Tracy Ridalls, SCHK Research Team & Staff	Conference
42	How healthy communities promote healthy childhoods	25-Jan-2013	Saskatchewan Youth Symposium	Nazeem Muhajarine	Conference
43	Evaluating knowledge translation's impact in a built environment project: the Smart Cities, Healthy Kids KT evaluation	12-Jun-13	CPHA conference Ottawa	Tracy Ridalls	Conference
44	Using interactive workshops to inform and engage people in learning about the health impacts of the built environment	12-Jun-13	CPHA conference Ottawa	Tracy Ridalls	Conference
45	Fun with KT! Developing Researchopoly, an Interactive, Engaging Board Game, as a Teaching Tool	12-Jun-13	CPHA conference Ottawa	Tracy Ridalls	Conference

Appendix 3: Workshop Presentations Delivered by the SCHK Team & Workshops Organized by SCHK

	Workshop Title	Date	Presented at	Presented by	Workshop Descriptions
1	Built Environment and Child Health: Pausing to Consider the Canadian Evidence and to Chart Next Steps	13-Jun-2012	2012 Canadian Public Health Association Conference, Edmonton	Nazeem Muhajarine	Part 1: Presentations (45 minutes) Part 2: Small Group Discussion (45 minutes)
2	Creating Active Communities	13-Oct-2012	Saskatoon	Nazeem Muhjarine, Rachel Engler-Stringer, Tracy Ridalls, Meghan Winters, Alan Wallace, Candace Nykiforuk	Day long workshop
3	Bedford Collegiate workshop	May-June 2012 (3 sessions)	Saskatoon	Tracy Ridalls	Three visits to school
4	Bikeable Saskatoon Workshop	4-June-2012		Tracy Ridalls	Evening bike ride and workshop
5	Method to Madness Workshop	12-Dec-2011	Saskatoon	Tracy Ridalls	Day long workshop
6	Method to Madness Workshop	15-Dec-2011	Regina	Tracy Ridalls	Day long workshop
7	Method to Madness Workshop	20-Dec-2011	Saskatoon	Tracy Ridalls	Day long workshop
8	Creating Active Communities: Raskelball session	13-Oct-2012	Saskatoon	Tracy Ridalls	Part of day long workshop
9	Creating Active Communities: Assessing a neighbourhood	13-Oct-2012	Saskatoon	Nazeem Muhajarine	Part of day long workshop
10	Creating Active Communities: Redesign a street	13-Oct-2012	Saskatoon	Meghan Winters	Part of day long workshop
11	Researchopoly	4-Mar-2013	Anne Leis's class, Community Health and Epidemiology, U of Saskatchewan	Tracy Ridalls	Two hours in graduate class
12	Researchopoly	2012	Anne Leis's class, Community Health and Epidemiology,.U of S	Tracy Ridalls	Two hours in graduate class
13	Researchopoly	2012	Pre-tenure Library Group, U of S	Tracy Ridalls	One hour session

PART II: FACT SHEET EVALUATION

1. **Please rate the quality of the following fact sheet components:**

	Poor	Fair	Good	Very Good	Excellent
Fact Sheet Content					
Clarity of content					
Order and organization of content					
Usefulness of information					
Fact Sheet Presentation					
Fact sheet style and appearance					
Length of fact sheets					

2. **Was the information presented in the fact sheets easily understandable?**

    Yes __   No __   Not sure __

3. **After reading the fact sheets, what have you learned about Saskatoon's built environment?**

4. **After reading the fact sheets, what have you learned about Smart Cities, Healthy Kids research initiatives?**

5. **How will you share the knowledge you received from these fact sheets with others?**

6. **How do you think this knowledge can be put into practice in your own work?**

7. **Please suggest any improvements we could make to the fact sheets.**

8. **Any other comments?**

Creating Active Communities Workshop

PART I: WORKSHOP/SESSION EVALUATION

1. **Answer this section <u>before</u> the workshop.**

	Poor	Fair	Good	Very Good	Excellent
Session Topic					
My understanding of this topic is:					
My ability to talk about this topic is:					

2. **Answer this section <u>after</u> the workshop.**

	Poor	Fair	Good	Very Good	Excellent
Session Topic					
My understanding of this topic is:					
My ability to talk about this topic is:					

3. **Which breakout session did you attend?**

    ___ Session A:
    ___ Session B:
    ___ Session C:

4. **Please rate the quality of the following <u>session</u> components:**

	Poor	Fair	Good	Very Good	Excellent
Session Content					
Clarity of content					
Order and organization of content					
Usefulness of materials/information resources					
Session Presentation					
Style of presentation					
Time allotted for discussion					

5. Please rate the quality of the following <u>workshop</u> components:

	Poor	Fair	Good	Very Good	Excellent
Workshop Advertising, Registration, Location					
Advertising and promotion					
Registration procedure					
Suitability of location					
Space/facilities					
Food					

6. Did this workshop meet your expectations?

   Yes ___   No ___   Not sure ___

7. Did the workshop meet the stated aims and objectives?

    Yes ___   No ___   Not sure ___

8. Will you share the knowledge you received in this workshop with others?

    Yes ___   No ___   Not sure ___

9. How do you think this knowledge can be put into practice in your own work?

10. Which elements of the workshop did you find the most useful? Why?

11. Please suggest any improvements for future workshops on this topic.

12. Any other comments?

Sprawling cities contribute to sprawling waistlines

By Paul Hanley

Saskatoon Star-Phoenix, January20, 2009, p. C2

The popular animated film WALL-E is situated in a dystopia overwhelmed by garbage, where people have become immobile, morbidly obese hyper-consumers floating in space. It's a nice piece of social-environmental commentary in a child-friendly package.

Overstatement can be an effective way of pointing out worrisome trends. This planet is being overburdened with waste and people are becoming increasingly immobile and overweight. One cause is the way we design things, from product packaging to the urban environment.

North American urban design generally requires people to move about in cars, not on foot. Cities sprawl. Workplaces are nowhere near homes. More and more services and stores are located at the periphery and can't be reached easily without a vehicle. Small corner stores disappear. Churches and schools get bigger and further apart and these community-building institutions are separated from neighbourhoods. As neighbourhood integrity declines, people are more fearful of walking or letting their children out on their own.

The net result is people get less exercise. Add a high carb and sugar diet and you have the perfect recipe for widespread obesity. Indeed, obesity is growing in North America and worldwide, with childhood obesity particularly worrisome.

"If current trends continue," comments Nazeem Muhajarine, "we will have a generation of children growing up with poorer health status than their parents. For the first time in modern human history, the current generation of children may experience a drop in life expectancy compared to their parents."

Muhajarine, head of community health and epidemiology in the college of medicine at the University of Saskatchewan, points out that human choices caused this alarming situation, albeit unintentionally. It follows that we can change it through more intelligent choices, including choices in environmental design.

Muhajarine is leading an interdisciplinary team in a research project entitled Working Upstream: Effecting healthy children through neighbourhood design, funded by the Canadian Institutes of Health Research. The project has partnered with the City of Saskatoon, Saskatoon Health Region, Roadmap 20/20 and others to strengthen our understanding of the effect neighbourhood design has on sedentariness and obesity.

As mentioned, a number of factors contribute to obesity. More research is needed to identify the role environment plays and to inform policy.

The researchers will spread out through Saskatoon's neighbourhoods to identify how various urban forms -- and the policies and strategies underpinning their development -- create physical environments more or less likely to encourage children to be active. By engaging the community, the research will produce information that is useful, timely and relevant to decision-makers in Saskatoon and elsewhere.

Common sense suggests older core neighbourhoods that are more compact and central facilitate active forms of transportation. However, the loss of grocery stores and centralization of sports activities may undermine their walkability. Neighbourhoods built in

the '60s and '70s are less dense and farther apart; while this might contribute to less walkability, they may also have more parks, playgrounds and recreational facilities. Some of Saskatoon's newest neighbourhoods have reintroduced higher density and incorporated features such as walking paths in linear parks, making it easier to get around on foot. The perceived sense of safety, not to mention poverty or affluence, may also affect walkability.

The research team will take a total of 18 factors into account to try to measure the Neighbourhood Active Living Potential (NALP) of 33 Saskatoon neighbourhoods, including those in the city core and suburban areas.

In the next stage of the research, up to 3,000 children will participate by reporting on their level of physical activity. A subset of this group will also be monitored using an accelerometer, a small instrument worn like a wristwatch that detects and records physical activity. This information will then be compared with the NALP to better understand the relationship between environmental design and activity. Finally, the research will consider how parents and children perceive their neighbourhood's walkability, another factor that can affect physical activity.

It is expected that planners in Saskatoon and other communities will be able to make use of the research to identify policy that best contributes to a more active, healthy community.

CIHR IRSC
Canadian Institutes of Health Research
Instituts de recherche en santé du Canada

Spring 2009

From page 3

Your Health Research Dollars at Work

An Update from the Canadian Institutes of Health Research

CIHR IRSC
Canadian Institutes of Health Research
Instituts de recherche en santé du Canada

WESTERN CANADA

Better MRI Tracking Could Offer New Treatments for Heart Disease

Winnipeg: Stem cells are underused as a therapy for treating heart failure – something researchers at the University of Manitoba hope to change. The team, led by Drs. Rakesh Arora and Ganghong Tian, are working on a better way to use magnetic resonance imaging to significantly increase the retention of cells in the heart, which would make cell transplantation a more effective treatment for heart failure. "We believe that the results of this research have the potential to revolutionize cell therapy for cardiovascular diseases as well as for other diseases," says Dr. Arora.

Sprawling Cities Contribute to Sprawling Waistlines

Saskatoon: Dr. Nazeem Muhajarine, head of Community Health and Epidemiology in the College of Medicine at the University of Saskatchewan, and a research faculty member in the Saskatchewan Population Health and Evaluation Research Unit, has partnered with the City of Saskatoon, the Saskatoon Health Region

Dr. Nazeem Muhajarine

and others to strengthen our understanding of the effect neighbourhood design has on sedentariness and obesity. The CIHR-funded project is studying Saskatoon's residential neighbourhoods to identify how municipal policies linked to neighbourhood designs can affect children's physical activity levels. The results will help both Saskatoon and other cities and towns identify policies that contribute to a more active and healthy community. More information can be found on the study's website, www.smartcitieshealthykids.ca.

Designing More Bicycle-Friendly and Healthier Communities

Vancouver: Meghan Winters, a PhD student at the University of British Columbia, is surveying some 2,000 Vancouver residents to find out what neighbourhood characteristics and transportation networks make it more likely that they'll hop on their bikes for common weekly trips. While cycling may seem a logical thing to promote (no air and noise pollution and increasing fitness), Canadian cities and towns are struggling to accomplish even modest changes. Ms. Winters hopes that by bridging the gap between health

Calgary Researchers Unlock Secret to Premature Aging

Calgary: Dr. Karl Riabowol at the University of Calgary has unlocked a key feature of Hutchinson Gilford Progeria Syndrome, a premature aging disorder. Dr. Riabowol's team at the Aging and Immortalization Lab discovered a family of growth inhibitors that interact with a protein to accelerate premature aging in children. The findings could help researchers develop treatments that will increase the likelihood of people – even those without this disease – living longer and healthier.

Researcher Karl Riabowol and graduate student Mohamed Soliman in the gene array lab.

CENTRAL CANADA

Research Offers Hope for Learning Disabilities Treatment

Toronto: Dr. Roderick McInnes, scientific director of the CIHR Institute of Genetics and a senior scientist at the Research Institute of The Hospital for Sick Children (SickKids), and Dr. Michael Salter, head of the Program in Neurosciences & Mental Health at SickKids, have connected a crucial brain protein with the power to learn in mice. Their research team found that when this single protein, named Neto 1, is missing, it results in learning impairments. They have also found

Dr. Roderick McInnes (left) and Dr. Michael Salter (right)

that a medication, now being tested in Alzheimer's patients, corrected the learning defect in these animals. Their findings, published in the online journal *PLoS Biology*, are important because they establish the principle that it is possible to correct a learning defect with a drug. It is still early days in this research, but these findings raise the hope that similar approaches might someday be used to help humans with learning disabilities.

Finding a Better – And Less Invasive – Way to Test for Colorectal Cancer

Toronto: Let's be honest – colonoscopies are highly unpleasant. The procedure, which requires the bowel to be completely cleaned out and a person to be sedated, is also time-consuming and expensive for the health-care system. Dr. Linda Rabeneck at Sunnybrook Health Sciences Centre is using an easier, quicker and less invasive test, called flexible sigmoidoscopy – which uses a flexible endoscope connected to a fibre optic camera – to better predict who is at high risk of

Dr. Linda Rabeneck

developing colorectal cancer. "By determining who needs a colonoscopy, the results of our study will help guide governments,

Can urban design get kids active?

By **Nazeem Muhajarine, Mike Chouinard**

Saskatoon Star-Phoenix, June 12, 2009, p. A10

Following is the viewpoint of the writer, head of community health and epidemiology at the college of medicine, and a member of the Saskatchewan Population Health and Evaluation Research Unit at the University of Saskatchewan.

If you see some inquisitive-looking young persons with clipboards checking out your neighbourhood this summer, not to worry. There's a good chance they are part of a team from the University of Saskatchewan that's studying children's physical activity in the built environment.

Childhood inactivity is a major concern here and across Canada. According to the 2008 Report Card on Physical Activity for Children and Youth, 26 per cent of our young people are overweight or obese. Being overweight can contribute to serious health problems, from diabetes to depression.

Just 15 per cent of our children were considered overweight or obese 30 years ago. Today in Saskatchewan, 29 per cent of children now fit this category. A current Saskatoon study found that 20 per cent of Grade 5 to Grade 8 students are carrying extra weight, compared to slightly more than 15 per cent as recently as 2007.

While factors such as diet contribute to this condition, inactivity is considered an important cause. A major reason for inactivity is an increasing amount of "screen time." Boys sit at their TV, computer or video game screens an average of six hours daily, girls about an hour less. The Saskatoon study found that fewer than seven per cent of young people who completed a survey on physical activity got the amount of exercise recommended by Health Canada -- an hour each day.

Screen time may be substituting for physical activities such as sports or free play and games like tag and hide-and-seek that help kids maintain a healthy body weight. And it is more common now for parents to drive children to school, or even to sports activities, rather than having them walk, ride a bike or skate.

An important influence on childhood activity that's beginning to draw attention is how we design our cities, neighbourhoods, buildings and roads, and all the structures within them. We are rediscovering that more compact, high-density, pedestrian-friendly urban design, which makes it reasonably easy to get to school, recreational facilities or playgrounds by walking, cycling or skateboarding, encourages kids to be more active. In contrast, a sprawling community intersected with busy streets and incomplete or missing sidewalks discourages active transportation.

However, research on the built environment and inactivity is limited. We need evidence from research in local communities to inform urban policies and practices.

That's why we have launched the Smart Cities, Healthy Kids research project in partnership with a broad range of collaborators within universities and in the community. Over the next three years, our research project will uncover connections between the design of our neighbourhoods, safety and children's physical activity.

This brings me back to those university students who are wandering about in your neighbourhoods.

They are trying to identify its "neighbourhood active living potential." Put simply, measuring NALP involves quantifying neighbourhoods along three categories: Activity friendliness -- how suited the neighbourhood is to activities such as walking, skateboarding, cycling and wheelchair use; Density of destinations -- how easy it is to travel to places such as parks, recreational centres, bus stops, local events, and shops; Safety -- including both physical and social aspects of safety in the neighbourhood.

Our team will score each neighbourhood on a NALP index. We also will be working directly with thousands of school children to gauge their level of activity, as well as their families' perceptions of how safe it is to play and walk outside.

When we compare what we learn about NALP to what the children and their parents tell us, and measure children's activity levels, the result will be a more accurate understanding of the relationship between activity and the built environment.

The point of all this is to come up with reliable and local information to help policy makers and planners make decisions that will result in "smarter cities" that encourage kids and their families to incorporate being active as a part of their daily lives.

We already see positive signs in Saskatoon, such as the recently approved new Evergreen neighbourhood that uses smart design to encourage active transportation. Our project will contribute to a growing body of research that strengthens our understanding of health and urban design.

I welcome you to follow our progress through our website: www.smartcitieshealthykids.ca.

Credit: Nazeem Muhajarine; Special to The StarPhoenix

Copyright Southam Publications Inc. Jun 12, 2009

Active Living Potential of Saskatoon focus of study

By **Jeanette Stewart**

Saskatoon Star-Phoenix, June 19, 2009, p. A3

Muhajarine is principal investigator of the Smart Cities, Healthy Kids research project, as well as professor and chair of community health and epidemiology at the University of Saskatchewan's college of medicine. Chouinard is a communications officer for the Saskatchewan population health and evaluation research Unit.

Some neighbourhoods in Saskatoon, such as Nutana and City Park, make things easy for walkers.

The city as a whole, however, trails many others in Canada when it comes to getting around on two feet.

Recently, an American website that measures walkability of cities released rankings for North America. According to walkscore.com, Saskatoon finished 20 out of 28 Canadian cities with a population of at least 150,000. Regina was even lower, ranked 23.

While this assessment can help us compare our city to others in Canada, it's important to know that it's based on a narrow view of what makes a city more or less appealing to pedestrians. "Walk Scores" reflect the degree to which daily errands can be accomplished on foot, based on how close amenities are to where people live.

This is only one element of what makes a city or neighbourhood a heaven for walkers.

Our Smart Cities, Healthy Kids study uses a much broader understanding of walkability, in an effort to learn how neighbourhood design affects children's activity levels.

Our research looks at the diversity and density of destinations. However, we also consider features such as perceived safety from traffic and crime, accessibility to parks and green space, sidewalks, curb cuts, crosswalks, traffic lights, continuity of bike paths, amenities such as resting places, and even visually attractive elements such as tree cover, public art, and mix of housing styles.

We have found that "activity friendliness" of Saskatoon neighbourhoods varies considerably and reflects the way they were designed, which in turn is related to when the neighbourhoods were developed. Older areas in the city's core have advantages such as a greater number and variety of places to eat, work and shop within walking distance. As well, their grid patterns provide greater street connectivity for pedestrians and cyclists.

Newer suburban neighbourhoods do better in terms of safety.

When we asked children and parents how their neighbourhoods encourage or discourage children's activity, we learned that factors that encourage adults to be more active don't necessarily hold true for children.

Having places to go in the neighbourhood, such as shops, playgrounds and schools, is one thing that makes it more likely that children will be active and might influence families' choice of where to live.

But it is not their foremost concern. Perceived safety - from both traffic and crime - is the most important factor in parents' decisions whether to let their kids walk to school or play in their local park or playground.

Parents' comfort in allowing their children to play, walk or bike in the neighbourhood also depends on whether other kids are around. This, too, is influenced by safety concerns. In some neighbourhoods, children are kept out of parks and playgrounds because of other things that happen there, including criminal activity.

When it comes to the question of what makes a city or neighbourhood walkable, it's important to look at a wide range of factors and take into account the needs of all ages and abilities.

The recent walkscore. com survey provides only part of the answer. We believe that our study can help fill in the gaps, and in doing so, help the City of Saskatoon - as it continues to grow and develop new neighbourhoods - to make walkability and active transportation a priority and ultimately help all of us, adults and children, lead healthier and productive lives.

(www.smartcitieshealthykids.com)

Credit: Nazeem Muhajarine Michael Chouinard; The StarPhoenix

Smart Cities, Healthy Kids

For the first time in modern history, the life expectancy of children may well drop lower than that of their parents. The reason: lifestyles that discourage physical activity and foster obesity.

"To a large extent, the way we behave is shaped by our environment," says Dr. Nazeem Muhajarine. "We tend to develop sedentary lifestyles if we don't have a lot of opportunities for physical activity, or have competing activities that discourage us from being active."

Muhajarine leads the Healthy Children research program within the Saskatchewan Population Health and Evaluation Research Unit (SPHERU), which includes researchers from the University of Saskatchewan and University of Regina. Their "Smart Cities, Healthy Kids" project is looking at the design of urban neighbourhoods in Saskatoon to identify the elements that encourage children to get up and go.

These elements include things such as buildings, roadways, sidewalks, parks, and green spaces, and how they contribute to increasing children's physical activity. By learning what is and isn't working in Saskatoon, the team hopes to inform the design of future neighbourhoods throughout Saskatchewan and across Canada.

Through their research, Muhajarine and his team also seeks to shed light on how the social contexts in which children live — their families and their neighbourhood — help or hinder them in their early years. This is the type of research that he thrives on.

"We have done studies looking at various factors—from family, neighbourhoods, schools, and larger society— that impact children, beginning with even before they are born to when they begin school," Muhajarine says. "What do we see in a community that is essential to nurturing healthy children that grow up to be well-adjusted, productive citizens? How can we provide these essentials?"

In addition to the "Smart Cities, Healthy Kids" project, Muhajarine and his research team are also working on many other research and knowledge transfer projects in early childhood development. They are just about to wrap up a three-year evaluation of the effectiveness of KidsFirst, the provincial government's early childhood development program for vulnerable families with young children delivered locally at nine sites in the province. KidsFirst uses home visiting to mentor parents and connect them to needed supports so they can be the best parents they can be, and have the healthiest children possible. Muhajarine is looking at the impact KidsFirst has made on children and their parents' lives in the first few years of the program.

Findings from previous research projects have contributed to improved programs and services for children in several ways. Saskatoon's school boards have initiated major literacy programs and have introduced and expanded a full-time kindergarten option, while the city's public library has improved access to services in underprivileged areas. Last year, he received CIHR funding to launch kidSKAN, the Saskatchewan Knowledge to Action Network for early childhood development (www.kidskan.ca), a provincial community of practice to connect researchers with practitioners and policymakers across the province.

Muhajarine was awarded his first research grant while he was a doctoral student, from the Saskatchewan Health Research Board (a precursor to SHRF).

"I believe the early funding really contributed to my development as a researcher," Muhajarine says. "Being funded when I was fairly new to the research community as a PhD student was certainly beneficial when I subsequently applied for national grants."

Since his early days as a student, Muhajarine has continued his success in funding through a variety of post-doctoral and establishment grants through HSURC and a variety of national funding sources such as the Canadian Institutes of Health Research. He has won prestigious honours such as CIHR's Knowledge Translation Award and SHRF's Achievement Award.

Health Research Impact Highlight

DR. NAZEEM MUHAJARINE

"I think the funding early in my career as a student has helped me start on a healthy career path, to really make a difference and contribute to Saskatchewan and elsewhere."

Photo: Brinnameade Smith

Smart cities,
healthy kids

For the first time in modern history, the life expectancy of children may well drop lower than that of their parents. The reason: lifestyles that discourage physical activity and foster obesity.

"To a large extent, the way we behave is shaped by our environment," says Dr. Nazeem Muhajarine. "We tend to develop sedentary lifestyles if we don't have a lot of opportunities for physical activity, or have competing activities that discourage us from being active."

Muhajarine, leads the Healthy Children research program within the Saskatchewan Population Health and Evaluation Research Unit (SPHERU), which includes researchers from the University of Saskatchewan and University of Regina. Their "Smart Cities, Healthy Kids" project is looking at the design of urban neighbourhoods in Saskatoon to identify the elements that encourage children to get up and go.

These elements include things such as buildings, roadways, sidewalks, parks, and green spaces, and how they contribute to increasing children's physical activity.

By learning what is and isn't working in Saskatoon, the team hopes to inform the design of future neighbourhoods throughout Saskatchewan and across Canada.

Through their research, Muhajarine and his team also seeks to shed light on how the social contexts in which children live — their families and their neighbourhood — help or hinder them in their early years. This is the type of research that he thrives on.

"We have done studies looking at various factors—from family, neighbourhoods, schools, and larger society—that impact children, beginning with even before they are born to when they begin school," Muhajarine says. "What do we see in a community that is essential to nurturing healthy children that grow up to be well-adjusted, productive citizens? How can we provide these essentials?"

In addition to the "Smart Cities, Healthy Kids" project, Muhajarine and his research team are also working on many other research and knowledge transfer projects in early childhood development.

They are just about to wrap up a three-year evaluation of the effectiveness of KidsFirst, the provincial government's early childhood development program for vulnerable families with young children delivered locally at nine sites in the province. KidsFirst uses home visiting to mentor parents and connect them to needed supports, so they can be the best parents they can be, and have the healthiest children possible. Muhajarine is looking at the impact KidsFirst has made on children and their parents' lives in the first few years of the program.

Findings from previous research projects have contributed to improved programs and services for children in several ways: Saskatoon's school boards have initiated major literacy programs and have introduced and expanded a full-time kindergarten option, while the city's public library has improved access to services in underprivileged areas. Last year, he received CIHR funding to launch kidSKAN, the Saskatchewan Knowledge to Action Network for early childhood development (www.kidskan.ca), a provincial community of practice to connect researchers with practitioners and policymakers across the province.

Muhajarine was awarded his first research grant while he was a doctoral student, from the Saskatchewan Health Research Board (a precursor to SHRF).

"I believe the early funding really contributed to my development as a researcher," Muhajarine says. "Being funded when I was fairly new to the research community as a PhD student was certainly beneficial when I subsequently applied for national grants."

Since his early days as a student, Muhajarine has continued his success in funding through a variety of post-doctoral and establishment grants through HSURC (another precursor to SHRF), and a variety of national funding sources such as the Canadian Institutes of Health Research. He has won prestigious honours such as CIHR's Knowledge Translation Award, and SHRF's Achievement Award. ■

This story and photograph provided courtesy of SHRF. Photo courtesy Brinnameade Smith.

"I think the funding early in my career as a student (from SHRF's precursor) has helped me start on a healthy career path, to really make a difference and contribute to Saskatchewan and elsewhere."
—Dr. Nazeem Muhajarine

Neighborhood study times well

By **Nazeem Muhajarine, Mike Chouinard**

Following is the viewpoint of Muhajarine, principal investigator of the Smart Cities, Healthy Kids research project and professor and chair of community health and epidemiology at the U of S college of medicine, and Chouinard, a research officer in the Saskatchewan Population Health and Evaluation Research Unit. It is the first in an occasional series.

At the recent launch of the Saskatoon Speaks visioning process, Mayor Don Atchison warned of the "doughnut effect" on cities. He cautioned that Saskatoon's development decisions need to avoid a future where its urban core loses people, business and services to suburban sprawl.

While the term "doughnut city" has nothing to do with the amount of honey dips, crullers or long johns consumed, people shouldn't assume there are no health effects resulting from urban design and development. There is a correlation between expanding waistlines and expanding city limits.

Studies show that people are becoming less healthy, in part because of the unhealthy lifestyles associated with living in suburbs farther and farther from an urban core.

Biking and walking become less viable options, with residents hopping into vehicles virtually every time they have to travel somewhere. There is less time for family and recreation, and stress can mount when people are so dependent on commuting by car.

In Saskatoon, researchers are currently in the middle of a three-year research project called Smart Cities, Healthy Kids in conjunction with the city and health region. A key part of the project is to document how Saskatoon's "built environment" affects children's physical activity levels.

The study takes a close look at the role individual neighbourhoods play in determining how active kids are, as well as other factors such as how safe they are from traffic and from crime.

The project has been prompted by concerns about obesity in children -- specifically the concern that today's children may end up being the first generation not to outlive their parents.

In the first phase, which started in mid-2009, researchers walked through all 60 residential neighbourhoods in Saskatoon, looking at the manmade structures, amenities, accessibility, green spaces, attractiveness, safety, and how many destinations were located in each area, to determine their "Neighbourhood Active Living Potential."

This information was used to create short reports on the active living potential of each neighbourhood.

More recently, another phase of the study involved students, with 1,602 children aged 10 to 13 years recruited to complete a survey about their physical activity levels. As well, 465 children were asked to wear waist-mounted accelerometers for 10 hours a day for a week, to directly measure their activity levels during this time.

The Smart Cities, Healthy Kids project is already generating discussion of whether children's activity levels might be affected by how conducive their neighbourhoods are for structured or unstructured recreation, for walking to school, playing outside, and other factors in the environment.

Finally, by interviewing some of the children and their parents about how their neighbourhood environment influences their physical activity levels, the study is examining how children and their parents feel about their neighbourhoods.

To prompt discussion, children have been given cameras to carry around for a week and take pictures of things they think help them be active, and others that stop them from being active. Researchers will look at the pictures with the children, to talk about why they chose to take the pictures they did.

Ultimately, the study, which received funding through the Canadian Institute of Health Research, the Heart and Stroke Foundation of Canada, and the Health Research Foundation wants to determine the extent to which the neighbourhoods we build affect the health of our children.

Other studies have linked the built environment and urban design with physical activity levels, but most have focused on adults. While Smart Cities, Healthy Kids is not a direct part of the Saskatoon Speaks process, the timing couldn't be better.

Saskatoon Speaks provides all Saskatoon residents an opportunity to have a say in what they want their city to look like over the next 50 years to 70 years. Alongside this, Smart Cities, Healthy Kids is looking at how Saskatoon's "built environment" affects children, their activity levels and ultimately their health.

Project researchers are already helping to answer some of the questions the community needs to ask about the future for ourselves -- and for the next generations -- 10, 15 or even 50 to 70 years into the future.

(www.smartcitieshealthykids.com)

Activity rates differ by residence.

By **Nazeem Muhajarine, Mike Chouinard**

Following is the viewpoint of Muhajarine, principal investigator of the Smart Cities, Healthy Kids research project and professor and chair of community health and epidemiology at the U of S college of medicine, and Chouinard, a research officer in the Saskatchewan Population Health and Evaluation Research Unit. It is second in an occasional series:

Where you live in Saskatoon might just affect how active you are or how easily you can access nutritious food.

That's a key theme of a three-year-long project underway called Smart Cities, Healthy Kids, which researchers are conducting in conjunction with the city, the health region, the school divisions and several other organizations.

By coincidence, the city is currently engaged in the Saskatoon Speaks discussion to map out what kind of community citizens want in the decades ahead. In order to create a healthy city tomorrow Saskatoon must ensure the next generation of adults is healthy, especially in light of the looming epidemic of childhood obesity.

This visioning process fits perfectly with Smart Cities, Healthy Kids because one of the study's key goals is to determine how the design of residential neighbourhoods can affect how active people are, specifically, school-aged children.

To calculate this, researchers had to assess what is called a neighbourhood's "Active Living Potential."

This measures the characteristics of an area that have been associated with more active residents, connected to their safety in terms of crime and traffic, accessibility with such things as sidewalks, curb cuts, parks, etc., and whether there is a diversity and high density of work, services, recreational destinations that encourage people to walk, ride bikes or skateboard for short trips.

Active Living Potential was measured by researchers walking through all 60 of Saskatoon's residential neighbourhoods, which have been built over 100 years -- in effect, taking a walk through time.

One thing the researchers found was a distinction between old neighbourhoods close to the river and centre of the city versus the newer suburban neighbourhoods.

The older core areas are characterized by traditional grid road patterns.

Newer neighbourhoods are connected with the rest of the city by arterial or collector roads, but internally they are designed to have crescents, bays, cul-de-sacs and like. This cuts down on traffic within the neighbourhood, but makes it more complicated to get from one point to another, which could discourage biking and walking.

Another distinction is that land use tends to be more diverse in older neighbourhoods. These areas generally offer residents a greater range of places to work, shop or play. As well, they have been built to a higher density, meaning residents have less distance to travel to get to their destinations.

The study found that when it comes to offering a greater diversity of places to go, the oldest neighbourhoods in Saskatoon scored more than twice as high as the newest one, which translates into a higher Active Living Potential.

However, the news is not all good for the older areas. In general, newer neighbourhoods scored higher when it came to safety from both traffic and crime.

Actual crime statistics back up people's perceptions of safety about where they live.

These results point to specific issues city planners and the wider community must consider, whether we're redeveloping existing neighbourhoods or building new ones.

By looking at neighbourhoods and how they are built, researchers have tackled the first part of the equation: Do neighbourhoods built at different times and in different parts of Saskatoon offer different Active Living Potentials?

In short, the answer is yes.

What's still to come is to determine whether where children live actually influences how physically active they are. The researchers are finalizing this part of the study with children right now. As well, a related study is examining neighbourhoods in terms of the access to nutritious food they provide to kids. We will describe this second, companion study in a future article.

Smart Cities, Healthy Kids should encourage everyone in Saskatoon to think about their neighbourhoods, get involved with city planning by giving input and look at challenges affecting people's health.

At the same time, the Saskatoon Speaks visioning process presents an opportunity for everyone to become active as citizens -- and encourage everyone everywhere to become more physically active.

In this way, we can ensure a healthy city tomorrow by first making sure our children are healthy today.

To see the Active Living Potential profiles for all 60 Saskatoon neighbourhoods, got to www.smartcitieshealthykids.com.

Credit: Nazeem Muhajarine and Mike Chouinard; Special to The StarPhoenix

Neighborhood makeup affects diet of families

By **Rachel Engler-Stringer**, **Mike Chouinard**

Saskatoon Star-Phoenix, November 4, 2010, p. A9

The following viewpoint was written by Engler-Stringer, co-principal investigator of the Smart Cities, Healthy Kids: Food Environment research project and assistant professor in the department of community health and epidemiology at the University of Saskatchewan, and by Chouinard, a research officer in the Saskatchewan Population Health and Evaluation Research Unit. It is the third in an occasional series.

The neighbourhood you live in could determine how well you eat. That's a key theme of a new study in Saskatoon.

The three-year Smart Cities, Healthy Kids: Food Environment study looks at food environments -- how places to obtain food are distributed throughout Saskatoon, food quality and cost, and how these factors affect children's eating habits and health.

The study began in September 2010. It is a companion to the current Smart Cities, Healthy Kids: Built Environment study that looks at how neighbourhood design affects children's physical activity. Both studies involve partners such as the city and health region, and ideally will have an impact on policy and planning to decrease childhood obesity.

Childhood obesity is becoming an epidemic. Statistics Canada data show a general rise, from 1979 to 2004, in the proportion of kids considered overweight. The proportion has doubled in some age groups. Even some in the two- to five-years age group are becoming obese, a phenomenon that didn't exist in 1979.

People have tried to combat rising obesity through education, drugs or behaviour changes, but research shows only limited success. It also shows community interventions could be more effective -- for example, by making changes to the neighbourhood environment.

This is where our study picks up. It will answer some key questions: What access do families with children have to healthy food in their neighbourhood? Are there "food deserts" in some areas? How are food stores and restaurants distributed in richer or poorer neighbourhoods?

To start, our researchers are mapping local food stores and restaurants. The Saskatoon Health Region has already mapped large chain grocery stores and fast food restaurants, and found that it's easier for many Saskatonians to get to a fast food restaurant than to a grocery store.

Less than half the population lives within walking distance (less than one kilometre) of a supermarket, but three-quarters can walk to a fast food outlet. Only 17 per cent of residents have more than one supermarket within walking distance, but the average person has at least three fast food choices nearby.

Some areas are considered "food deserts" (areas with the poorest food access). These include Saskatoon's core and neighbourhoods such as Holiday Park, King George, most of Riversdale, portions of Caswell Hill, Pleasant Hill, Westmount, and Mount Royal.

The mapping by SHR is only part of the story. Our neighbourhood food environment study will update this information by including convenience stores, specialty food stores and family restaurants.

Of course, food stores and restaurants don't have the same offerings, so in another phase we'll examine menus and what's on shelves. Our researchers will look for 10 indicator foods (milk, fruit, vegetables, ground beef, hot dogs, frozen dinners, baked goods, beverages, chips and cereal) to grade each store based on the availability, quality and price of healthy food.

At restaurants, we will look for healthy choices on the menu and factors such as signs, pricing and portion size. This will tell us what food is available, but not necessarily what kids are eating and whether they're overweight.

Later, we will survey children 10 years to 13 years old about what they're eating, and use height and weight to gauge their health. We will also interview some children and their parents about their perceptions of their neighbourhood's food environment.

In the final phase, we will determine how best to share this new knowledge and look at potential policy implications to improve Saskatoon's food environment. This discussion will involve officials and decision-makers, including study partners from the health region, municipal government and CHEP Good Food Inc.

Up to now, where stores and restaurants establish themselves or what food they offer have been questions for the businesses themselves. However, the wider community and local officials could have a say over potential interventions, such as zoning, to limit clusters of fast food outlets in certain areas.

Ultimately, we need to know how readily available nutritious food is in our various neighbourhoods, the links between healthy food environments and families' socioeconomic levels, and how this is affecting food choices for families with children and the children's health.

Our study will help answer these questions and we can then take steps to ensure our children are healthy now and will grow into healthy adults.

Credit: Rachel Engler-Stringer and Mike Chouinard; Special to The StarPhoenix

'New urbanism' path to success

By **Rachel Engler-Stringer, Mike Chouinard**

Saskatoon Star-Phoenix, November 26, 2010, p. A12

Following is the viewpoint of Muhajarine, principal investigator of the Smart Cities, Healthy Kids research project , and Chouinard, a research officer in the Saskatchewan Population Health and Evaluation Research Unit. It is the final in a four-part series.

- - -

Smart Cities, Healthy Kids is examining how the design of our city influences the physical activity levels and diets of children in Saskatoon.

In our study and newspaper columns, we've touched on themes crucial to improving the "active living potential" in neighbourhoods, old and new: better transportation networks, safety from traffic and crime, better accessibility, and greater density, as well as diversity of destinations.

Designing cities to become more activity-friendly is part of an urban planning movement in many communities in Canada and beyond. Successful examples of "new urbanism" teach us not only what's possible, but what we must do better to move Saskatoon to the top of the pack in this area.

High density, mixed-use policies in Westminster, Col.: Through specific zoning and land-use policies, the city of Westminster has created neighbourhoods that are pedestrian-oriented and highly functional places as well as business-friendly. Westminster seems to have got the mix right, which is the cardinal principle of livable and active neighbourhoods that combine retail, office and residential space within walkable distances, supported by interconnected streets, paths and park space.

Saskatoon has great potential to adopt these design features in all neighbourhoods, not just some. Both Broadway Avenue in Nutana and 20th Street in Riversdale, for example, are increasingly becoming vibrant, thriving and walkable, mixed-use districts, each offering specialty stores, restaurants, theatres, galleries, and other features. But we need more of these types of districts throughout Saskatoon, especially in neighbourhoods developed in the post-Second World War boom.

Portland, Ore., where growth is up but not out: A key challenge for any city is moving people around, while at the same trying to keep them from moving too far away. Portland is a city working on both ends, with its Region 2040 Growth Concept.

Looking far into the future, it has taken steps to limit the sprawl of its metropolitan area into surrounding farmland, by instead densifying the existing city along major transportation and transit lines. The aspiration is to grow internally -- up, rather than out, which saves public money -- reduces the environmental footprint and at the same time makes its citizens healthier.

While Saskatoon has not yet developed such a plan, there are efforts to increase density in areas such as downtown and along Broadway, which have seen new infill and mixed-use multi-storey developments. Again, the sense one gets is that we know what we need to do, and we do it in some places, but not as thoroughly or imaginatively as we need to raise our game.

Designing main streets and healthy living in Point Cook, Australia: The Smart Cities, Healthy Kids study has found that while many newer suburban neighbourhoods have features to promote activity, they're designed, first and foremost, for vehicular traffic. Major traffic arteries connecting curvilinear residential streets with commercial areas mean residents need vehicles to move around.

However, in Point Cook, about 20 kilometres from Melbourne, a modern suburb is taking shape with a Main Street core that promotes walking and alternate transportation. Point Cook's urban design is ambitious: visual designs with no blank walls, no open parking lots facing the street, open shop fronts and patio dining, and mixed land use with space for libraries and community centres. It even permits "big box" retail, but only if it meets specified design guidelines.

Ultimately, the goal is to establish Main Street as a hub away from traffic arteries. Point Cook could provide an example for new centres such as Rosewood, which is expected to serve future residential developments on the southeast perimeter of Saskatoon.

Democratizing urban planning in Saskatoon through Local Area Plans: While Point Cook offers main street in the suburbs, the model is a natural fit for Saskatoon's older, grid-pattern neighbourhoods such as Nutana, Riversdale and Sutherland.

Saskatoon's older neighbourhoods are reinvigorated by Local Area Plans. These community-based, long-range plans focus on the renewal of core neighbourhoods and, with a particular emphasis on community involvement and collaborative decision-making, can be seen as a model for neighbourhood planning based on citizen engagement and empowerment.

In fact, the level of public involvement, especially through such organizations as community associations, is one thing that sets LAPs apart from similar plans in Canada. The Riversdale LAP, adopted in 2008, is a prime example. The plan covers increased safety, better municipal services, reduced industrial land use, and more sidewalk and bicycle paths linking River Landing, Victoria Park and the 17th Street green space with other areas.

This LAP process is key, as it demonstrates that the public is crucial to neighbourhood development. It is important for all Saskatoon residents to think along these lines, to help shape how the city develops in the future, and from now until Dec. 3, the public will get another chance to do this by registering its voice at the second round of Saskatoon Speaks.

22nd Street barrier draws criticism

By **Dave Hutton**

Saskatoon Star-Phoenix, July 21, 2011, p. A1

A proposal to construct a two-kilometre barrier along 22nd Street to stop jaywalking is drawing criticism from a team of University of Saskatchewan researchers and a local engineer.

"There's not enough opportunities for safe crossing on 22nd Street," said Tracy Ridalls, a research co-ordinator with the University of Saskatchewan's Smart Cities, Healthy Kids project.

The controversial eight foot fence on the boulevard would stretch from Avenue H to Witney Avenue.

The fence proposal, pitched by the city's traffic safety committee, would be part of a report to be delivered in mid-August from city administration on how to make 22nd Street safer for pedestrians and drivers. The report will recommend improvements to the corridor.

The U of S research project, led by Prof. Nazeem Muhajarine, is investigating how neighbourhood design affects how active residents are and happened to have data on the section of 22nd Street under consideration. Erecting a fence on the boulevard will make it more difficult to move from one neighbourhood to the next across 22nd Street, Ridalls said.

The research group compared the number of crossings on comparable stretches of Eighth Street and 20th Street, where statistics show there are far fewer pedestrian-vehicle collisions. On a two-kilometre stretch of Eighth Street, between Cumberland Avenue and Circle Drive, there are nine marked, pedestrian-activated crosswalks with flashing hands. On a similar stretch of 20th Street, there are 14 marked crosswalks.

On 22nd Street, there are five in the 18-block stretch proposed for the fence. The stretch includes eight blocks between avenues H and P without a marked crosswalk, the researchers found.

"The difference in pedestrian car collisions in the comparable (Eighth) and 20th streets can be attributed to the greater number of opportunities provided for safe crossing on these streets, compared to the very low number of opportunities for safe crossing provided on 22nd Street," the research team wrote in a letter to councillors.

The road is treated "as a highway" despite having a high number of apartment buildings, stores and restaurants on both sides, Ridalls said.

The barrier would only embolden drivers who are already travelling at high speeds.

More overhead walkways and traffic calming devices such as lights and signals would help slow drivers and make pedestrians feel safer, she said.

Walter Hall, a local engineering consultant who lives in Mount Royal, took photos of 22nd Street, then compared the visibility under sodium street lighting, which is used on the street, and LED lighting.

There is far less contrast between an object and the background under sodium street lights, which makes it difficult for drivers to see pedestrians on the street, he said.

"The first thing they should do is change the lighting," Hall said. "You have to see an obstacle in order to slow down. I've had some close calls at night on 22nd Street."

Coun. Pat Lorje, who requested the review of the street, said a contributing factor to the problems on 22nd is the number of off-set streets that don't connect. Pedestrians cross the road and connect to a sidewalk on the other side.

"It's a unique challenge," Lorje said. "We have to encourage people to cross at the right place and discourage them from crossing at unsafe places. I don't think we have to build an eight-foot tall fence."

dhutton@thestarphoenix.com Twitter.com/HuttonSP

Credit: David Hutton; The StarPhoenix

Using Urban Design to Improve Children's Health – The Smart Cities, Healthy Kids Study

Summary

This article discusses a study that examines the potential for active living in all 60 of Saskatoon's residential neighbourhoods, as well as how active school-age children are in each of these neighbourhoods. The objective is to determine the links between how urban built environments are developed and how they encourage or discourage children to be active.

Key Terms

Neighbourhood active living potential (NALP) refers to the concept of a defined place (in this case, a neighbourhood) being conducive for a physically active lifestyle, as well as the tool used for its measurement. The tool is a 22-item neighbourhood observation survey measuring activity friendliness, safety, density of destinations, and universal accessibility.

Irvine-Minnesota Inventory (IMI) is a neighbourhood audit measuring 229 features that fall within the domains of attractiveness, diversity of destinations, pedestrian access, safety from crime, and safety from traffic.

Nazeem Muhajarine, PhD, Professor and Chair, Community Health and Epidemiology, University of Saskatchewan; Tracy Ridalls, MA, Research Coordinator for Smart Cities, Healthy Kids

The problem of childhood obesity in North America and other advanced countries has reached the point where this generation could face a life expectancy shorter than that of their parents. While there have been numerous studies looking at the causes, the influence of the social and built aspects of neighbourhoods is a relatively new area of study (Oliver & Hayes, 2005).

This article discusses Smart Cities, Healthy Kids, a three-year, multi-phase study that examines the active living potential of all 60 residential neighbourhoods in the City of Saskatoon, Saskatchewan.

Researchers from the Saskatchewan Population Health and Evaluation Research Unit (SPHERU) surveyed students aged 10 to 13 to determine their actual activity levels, and interviewed some children and their families about how they feel their neighbourhood influences how active they are.

Objectives of the Study

The Smart Cities, Healthy Kids study examines how urban planning and design can help encourage more children to be physically active, while helping to reduce the risk of childhood obesity.

There are studies looking at environmental factors that help or hinder active lifestyles (Cao, Makhtarian & Handy, 2009); however, only recently has research been emerging that looks into how our urban built environment – buildings, roads, sidewalks, parks and green spaces – can affect children's activity levels (Sallis & Glanz, 2006).

SPHERU has a companion study under way that examines the city's food environment – access to nutritious food – and how this affects children's health.

Phase 1 - Urban design and measuring neighbourhood active living potential

In the first part of the Smart Cities, Healthy Kids study, the research team looked at how specific planning strategies the city had undertaken over time have now affected the "active living potential" of each residential neighbourhood in the city.

Researchers used two surveys to measure neighbourhoods in terms of how each neighbourhood's design encouraged or discouraged activity.

- First, the team walked through each neighbourhood to measure its active living potential. This involved the use of a 22-item survey (NALP) that covers activity friendliness; safety; density of destinations for work, shopping, and recreation; and universal accessibility (Fuller & Muhajarine, 2010).

- The Irvine-Minnesota Inventory (IMI) was also used. This is a detailed survey covering 229 neighbourhood features, which results in a score being calculated in each of five domains: attractiveness; diversity of destinations; pedestrian access; safety from crime; and safety from traffic.

Both surveys, in general, found that older neighbourhoods with grid-style road layout offered more walkable destinations and a wider variety of destinations, which could increase physical activity. However, newer, suburban subdivisions with curvilinear road layouts had advantages in terms of social aspects and traffic safety.

Using Urban Design to Improve Children's Health ...(Continued from page 3)

Phase 2 - Measuring physical activity in children

In the second phase, researchers set out to determine the relationship between a neighbourhood's active living potential with the reported and actual level of physical activity of the children, aged 10 to 13, who live there.

Researchers recruited 1,610 children to complete two detailed questionnaires about their physical activity.

- One questionnaire was used to collect data on children's perceptions of what aids or hinders their physical activity.
- The second gathered data on the children's structured and unstructured activities.

A subgroup of 465 children was also asked to wear accelerometers for a week to gather objective data about their physical activity (Hume, Salmon & Ball, 2005).

Phase 3 - Gauging parents and children's perceptions of their neighbourhoods

In the final, qualitative portion of the study, the team asked children and their parents about what influence they felt their neighbourhoods had on their activity levels.

- Twenty-four families whose children took part in earlier phases of the study were interviewed, and each child was lent a digital camera to take photographs — a method known as photovoice (Aitken & Wingate, 1993) — of places and things they felt helped or prevented them from being active.

Some of the photos showed places that encouraged physical activity, such as high-quality playground equipment, while others showed where they could take part in registered activities or take dogs for walks.

Other photos showed barriers to physical activity such as evidence of drug paraphernalia and gang activity, or construction work.

Research to Help Neighbourhoods Plan for Health

The Smart Cities, Healthy Kids study exemplifies collaborations between university researchers, decision-makers, and the community. The collaboration includes researchers with multiple disciplinary backgrounds, and decision-makers from the Saskatoon Health Region and the City of Saskatoon, program planners, and community-based organizations, among others.

The goal of the study is to produce research that will help Saskatoon and other cities understand how neighbourhood planning, policies and practices can encourage more active lifestyles, and, by extension, improve children's health today and in the future. 🌿

About the Authors

Dr. Nazeem Muhajarine is Professor and Chair in Community Health and Epidemiology, University of Saskatchewan. He is a social epidemiologist and leads SPHERU's Healthy Children research area.

Tracy Ridalls, MA, is Research Coordinator for the Smart Cities, Healthy Kids project.

Mike Chouinard, a Research Officer with SPHERU, helped with the preparation of this article.

The Smart Cities, Healthy Kids study was funded by the Canadian Institutes of Health Research, the Heart and Stroke Foundation of Canada, and the Health Research Foundation, a national non-profit organization.

About the Organization

The Saskatchewan Population Health and Evaluation Research Unit (SPHERU) is a bi-university research unit with offices located across Saskatchewan, in Regina, Prince Albert, and Saskatoon. SPHERU engages in population health research, which is the study of social factors that contribute to the well-being of various groups within the population. Working across various disciplines, SPHERU researchers collaborate with communities, other academics, and policy-makers to undertake this critical research.

Making sense of research project 'madness'

By **Colleen MacPherson**

December 20, 2011, 9:50 am

It's one thing to get a large grant for a research project but it takes a particular set of skills to run that project as efficiently and effectively as possible.

It is just those skills that will be the subject of three upcoming workshops being offered to researchers, two to be held at the U of S and the third at the University of Regina. Called A Method to the Madness: Successfully Managing a Research Project, the workshop has been developed by those in the midst of a major project who want to share what they have learned.

Tracy Ridalls with the Saskatchewan Population Health and Evaluation Research Unit is the manager of Smart Cities, Healthy Kids, a major three-year research project that recently received a Canadian Institutes of Health Research (CIHR) knowledge translation grant. Part of the grant application, she explained, was for "teach-ins" to create opportunities to share project management know-how.

"There are lots of workshops for grant writing, for learning how to get funding but nobody really tells you how to run a project," she said. "And you've got to spend that money wisely. What's important is that you want people to do good work, not get lots of funding and become stuck."

Among the topics being covered in the workshop are creating effective partnerships with stakeholders, the art of recruiting and retaining participants, identifying potential problems "before they become actual disasters," team building and communication.

"Not everybody is a born organizer," said Ridalls, "so it can be a real challenge to, for example, recruit 2,000 children for a study, or phase in new research assistants."

Evidence of the desire for skill-building opportunities like this came when the workshop was first advertised. Ridalls said the first event in Saskatoon filled within 12 hours of being announced. A second was scheduled for the U of S and another in Regina. All are now full, and the waiting list includes some 100 names. "Please don't call," she added with a laugh.

A pre-workshop survey of registered participants identified four main areas of interest – organizational skills, people skills, dissemination skills and money skills. As part of their approach to addressing all of these, Ridalls and her colleagues developed a board game they call Researchopoly. Played in teams, the game presents humorous research project scenarios. As the teams progress around the board, they are presented with the various barriers and problems researchers could encounter.

"We'll give good examples of bad things," said Ridalls. "The idea is to help people get the most out of their projects."

Study finds where kids live affects activity levels

By **Charles Hamilton**

Saskatoon Star-Phoenix, June 2, 2012, p. A4

Carmin Smith-Hanson is crouched down on the sidewalk outside her home, doodling with chalk. The neighbourhood around her is bustling. The seven-year-old barely notices the few cars out on the street, but looks up when someone zooms by on a bicycle. It's a beautiful spring day and she is happy to be playing outside. Along with going to the park with her two sisters, scribbling on the sidewalk in front of her Nutana home is part of Carmin's summer routine.

"Maybe some parents are more cautious or apprehensive letting their children go to the park or play outside on their own, so sometimes that spontaneity isn't there for the kids," said Carmin's mother, Yvonne Hanson. "I think we are little bit more liberal as parents."

But the fact Carmin is playing alone outside at the age of seven may have more to do with where she lives than how liberal-minded her parents are. A recent University of Saskatchewan study found children's activity levels are greatly affected by which neighbourhood they live in.

The three-year study - called Smart Cities, Healthy Kids - profiled all 60 Saskatoon neighbourhoods. Researchers attached electronic monitors to a sample group of 1,600 children spread throughout the city that measured activity levels of kids in various neighbourhoods. They scored each neighbourhood on, among other things, how safe they are, how easy they are to get around and how friendly they are for kids to play in.

"We are trying to understand whether neighbourhoods are really good places, whether they promote active living, whether they are conducive to (active living) in the way they are built," said Nazeem Muhajarine, the lead researcher on the project.

Muhajarine and his team spent months walking through neighbourhoods, noticing if there were parks for kids to play in, if there were shops or schools for them to walk or bike to and if they were safe from crime and traffic. They also conducted interviews with various families throughout the city.

Throughout the study, the researchers noticed one constant theme: Kids aren't playing as much as they used to and parents feel less safe letting their kids out of their sight. It's a troublesome pattern because as their research suggests, kids get most of their exercise from unstructured playing rather than sports and scheduled activities.

"That was actually a surprise. You would think that a highly programmed kid who has all kinds of things to go to - a lot of sports or physically active programs - would be more active. But that is not the case," Muhajarine said.

Older more established neighbourhoods with grid roads - such as Nutana - reported higher activity levels than suburban neighbourhoods with curved streets.

Nutana was one of the highest-rated neighbourhoods, scoring well in almost all the categories. It's safe, relatively affluent and there are places for kids to walk and play.

The high rating was no surprise to the Smith-Hanson family. Aside from scheduled activities such as dance and soccer, the Smith-Hanson daughters - Yolanda, Nadja and Carmin - get out and about in their neighbourhood on a regular basis.

The riverbank is only a few blocks away.

"The recreation is the physical, but also the mental," said Bob Smith, their father. "Your imagination, it's another world. And I think that's wonderful. It is such a break from the pavement. We are only 15 minutes walking distance from that."

Hanson regularly asks 11-year-old Yolanda to go the convenience store a few blocks away to grab a jug of milk. In the summer, they go for a walk almost every day after supper.

The parents want their kids to become familiar with the place they live so that they can feel comfortable and safe when out their own.

"(When we go out) we are going somewhere. We are going to see something," Hanson said.

"In this particular neighbourhood you are always going to see people ... It's power in numbers. If it is one kid out alone on a big long street they are a sitting duck potentially. So if you have lots of people on the street that isn't there. "

Simply getting outside and walking to the corner store might not seem like the kind of rigorous daily exercise physicians so often recommend, but Muhajarine says this is precisely the kind of active living the study is promoting.

"If you are walking to school, walking to a park, walking to visit your friends, that is active living. The (children) may not be jogging," Muhajarine said.

SOME AREAS NEED UPGRADES

Across the city, Maria Shupenia and her young daughters are playing in a park just down the road from their house.

"Sigrid wants to go on the swing," one of the five-year-old twin girls blurts out, encouraging her two-year-old sister to the swing set.

"You be careful," Shupenia tells her daughter as she ventures near.

Shupenia and her family - her husband, two boys and three girls - live in the Kelsey Woodlawn neighbourhood, north of downtown. Shupenia loves the feel of an established neighbourhood - the old trees, the character houses and the quietness - but admits there are some things about the area that could be improved. Kelsey Woodlawn scored one of the lowest in the study thanks in part to an odd mixture of industrial and residential lands.

The kids do play in the park next to their house, but downtown is still too far of a walk. Then there is the traffic. The street that runs beside their home is unpaved.

"People who live in this area are very respectful, but people that just cut through here, they just come ripping through. There are stones flying everywhere, dust flying everywhere," Shupenia said.

"Without the (separated) sidewalks? Yeah, we worry a lot. We hope there will never come a time when our kids are just playing in the backyard and something happens."

While the Shupenias do love their home and their neighbourhood, they have been lobbying the city to fix the road problems.

Muhajarine says areas such as Kelsey Woodlawn could be vastly improved if the city did some basic things like paving the streets and putting in sidewalks.

Simple steps like that would get more kids playing and would make the entire neighbourhood a healthier place to live, he says.

"We seem to be building our cities without due care for people - for people to get to know each other, for people to interact with each other," Muhajarine said.

"(With this study) we are trying to revive that idea of a village, a smaller community. If you have a village mindset you need to have some green space, a park, you have to have public spaces, store fronts with wide enough paved walkways so people can hang out. It's a huge part of culture, what we build."

HIGHLIGHTS

. Children get more physical activity from unstructured or free play than organized sports.

. Girls are less active than boys

. Children aged 13-14 are less active than 10-year-olds

. The lower the income level of a neighbourhood, the less physically active kids tend to be.

Credit: Charles Hamilton; The StarPhoenix

Illustration
Greg Pender, The Starphoenix / Bob Smith and Yvonne Hanson stand back while their children, from left, Carmin, Nadja and Yolanda Smith-Hanson, play outside their home in the neighbourhood of Nutana. A study conducted by the University of Saskatchewan determined where children live affects their activity level.; Caption:

Saskatoon lags behind country's most walkable cities

By **Jeremy Warren**

Saskatoon Star-Phoenix, January 24, 2013, p. A3

Saskatoon is a laggard among the country's most walk-able cities, according to one American company.

The city's downtown is one of the most walkable neighbourhoods in Canada, but the entire city ranks in the middle of the pack in a nationwide comparison. American company Walk Score measured the walkability of Canadian cities and ranked Saskatoon 20th among the 28 cities with a population of 150,000 or greater. Regina ranked 23rd.

Saskatoon's ranking is not surprising, says Nazeem Muhajarine, a professor of community health and epidemiology at the University of Saskatchewan. But he believes the city has spent the last five years talking about the right issues and making the changes to improve Saskatoon's walkability.

"By putting this issue into a stark number and ranking the cities, it might get us thinking about how to move up this list," Muhajarine said in a phone interview. "We're already doing things, but we can't take our eye off the ball. Don't be complacent."

Walk Score put Vancouver, Toronto and Montreal at the top of the list. The company looked at 300 Canadian cities and 1,200 neighbourhoods for the rankings, which take into account the walking distance to basic amenities such as shopping, public transportation, schools or work.

Cities were ranked on a scale of 0 to 100, with scores in the 90 to 100 range deemed a "walker's paradise," according to Walk Score. Saskatoon scored 52 while No. 1 city Vancouver scored 78. Saskatoon's position drops down the list when cities with populations below 150,000 are included in the rankings.

Core neighbourhoods such as the downtown - which ranked 26th in Canada for most walkableneighbourhoods - Nutana and City Park topped the list of Saskatoon neighbourhood for walkability. Neighbourhoods on the city's edges ranked among the worst.

While Saskatoon's downtown sits among the best neighbourhoods in Canada, there is still room for improvement, Muhajarine said.

"I think we still have a long way to go," he said. "There some nice places, such as the Meewasin trail along Spadina Crescent, but in other places the sidewalks aren't wide enough for three or four people to walk abreast during a lunch break."

The walkability of a neighbourhood depends on several factors, including having a safe place to walk, the esthetics of infrastructure, housing density and destinations, Muhajarine said.

The more places there are to walk to in a neighbourhood - grocery stores, entertainment, work and the homes of friends or family - the more likely people are to walk, he added.

jjwarren @thestarphoenix.com

Credit: Jeremy Warren; The StarPhoenix

'Walkability' factors of a city cover wide span

By **Nazeem Muhajarine, Michael Chouinard**

Saskatoon Star-Phoenix, February 8, 2013, p. A11

Muhajarine is principal investigator of the Smart Cities, Healthy Kids research project, as well as professor and chair of community health and epidemiology at the University of Saskatchewan's college of medicine. Chouinard is a communications officer for the Saskatchewan population health and evaluation research Unit.

Some neighbourhoods in Saskatoon, such as Nutana and City Park, make things easy for walkers.

The city as a whole, however, trails many others in Canada when it comes to getting around on two feet.

Recently, an American website that measures walkability of cities released rankings for North America. According to walkscore.com, Saskatoon finished 20 out of 28 Canadian cities with a population of at least 150,000. Regina was even lower, ranked 23.

While this assessment can help us compare our city to others in Canada, it's important to know that it's based on a narrow view of what makes a city more or less appealing to pedestrians. "Walk Scores" reflect the degree to which daily errands can be accomplished on foot, based on how close amenities are to where people live.

This is only one element of what makes a city or neighbourhood a heaven for walkers.

Our Smart Cities, Healthy Kids study uses a much broader understanding of walkability, in an effort to learn how neighbourhood design affects children's activity levels.

Our research looks at the diversity and density of destinations. However, we also consider features such as perceived safety from traffic and crime, accessibility to parks and green space, sidewalks, curb cuts, crosswalks, traffic lights, continuity of bike paths, amenities such as resting places, and even visually attractive elements such as tree cover, public art, and mix of housing styles.

We have found that "activity friendliness" of Saskatoon neighbourhoods varies considerably and reflects the way they were designed, which in turn is related to when the neighbourhoods were developed. Older areas in the city's core have advantages such as a greater number and variety of places to eat, work and shop within walking distance. As well, their grid patterns provide greater street connectivity for pedestrians and cyclists.

Newer suburban neighbourhoods do better in terms of safety.

When we asked children and parents how their neighbourhoods encourage or discourage children's activity, we learned that factors that encourage adults to be more active don't necessarily hold true for children.

Having places to go in the neighbourhood, such as shops, playgrounds and schools, is one thing that makes it more likely that children will be active and might influence families' choice of where to live.

But it is not their foremost concern. Perceived safety - from both traffic and crime - is the most important factor in parents' decisions whether to let their kids walk to school or play in their local park or playground.

Parents' comfort in allowing their children to play, walk or bike in the neighbourhood also depends on whether other kids are around. This, too, is influenced by safety concerns. In some neighbourhoods, children are kept out of parks and playgrounds because of other things that happen there, including criminal activity.

When it comes to the question of what makes a city or neighbourhood walkable, it's important to look at a wide range of factors and take into account the needs of all ages and abilities.

The recent walkscore. com survey provides only part of the answer. We believe that our study can help fill in the gaps, and in doing so, help the City of Saskatoon - as it continues to grow and develop new neighbourhoods - to make walkability and active transportation a priority and ultimately help all of us, adults and children, lead healthier and productive lives.

(www.smartcitieshealthykids.com)

Study finds where kids live affects activity levels

By **Nazeem muhajarine, Michael Chouinard**

Saskatoon Star-Phoenix, February 8, 2013, p. A11

Muhajarine is principal investigator of the Smart Cities, Healthy Kids research project, as well as professor and chair of community health and epidemiology at the University of Saskatchewan's college of medicine. Chouinard is a communications officer for the Saskatchewan population health and evaluation research Unit.

Some neighbourhoods in Saskatoon, such as Nutana and City Park, make things easy for walkers.

The city as a whole, however, trails many others in Canada when it comes to getting around on two feet.

Recently, an American website that measures walkability of cities released rankings for North America. According to walkscore.com, Saskatoon finished 20 out of 28 Canadian cities with a population of at least 150,000. Regina was even lower, ranked 23.

While this assessment can help us compare our city to others in Canada, it's important to know that it's based on a narrow view of what makes a city more or less appealing to pedestrians. "Walk Scores" reflect the degree to which daily errands can be accomplished on foot, based on how close amenities are to where people live.

This is only one element of what makes a city or neighbourhood a heaven for walkers.

Our Smart Cities, Healthy Kids study uses a much broader understanding of walkability, in an effort to learn how neighbourhood design affects children's activity levels.

Our research looks at the diversity and density of destinations. However, we also consider features such as perceived safety from traffic and crime, accessibility to parks and green space, sidewalks, curb cuts, crosswalks, traffic lights, continuity of bike paths, amenities such as resting places, and even visually attractive elements such as tree cover, public art, and mix of housing styles.

We have found that "activity friendliness" of Saskatoon neighbourhoods varies considerably and reflects the way they were designed, which in turn is related to when the neighbourhoods were developed. Older areas in the city's core have advantages such as a greater number and variety of places to eat, work and shop within walking distance. As well, their grid patterns provide greater street connectivity for pedestrians and cyclists.

Newer suburban neighbourhoods do better in terms of safety.

When we asked children and parents how their neighbourhoods encourage or discourage children's activity, we learned that factors that encourage adults to be more active don't necessarily hold true for children.

Having places to go in the neighbourhood, such as shops, playgrounds and schools, is one thing that makes it more likely that children will be active and might influence families' choice of where to live.

But it is not their foremost concern. Perceived safety - from both traffic and crime - is the most important factor in parents' decisions whether to let their kids walk to school or play in their local park or playground.

Parents' comfort in allowing their children to play, walk or bike in the neighbourhood also depends on whether other kids are around. This, too, is influenced by safety concerns. In some neighbourhoods, children are kept out of parks and playgrounds because of other things that happen there, including criminal activity.

When it comes to the question of what makes a city or neighbourhood walkable, it's important to look at a wide range of factors and take into account the needs of all ages and abilities.

The recent walkscore. com survey provides only part of the answer. We believe that our study can help fill in the gaps, and in doing so, help the City of Saskatoon - as it continues to grow and develop new neighbourhoods - to make walkability and active transportation a priority and ultimately help all of us, adults and children, lead healthier and productive lives.

(www.smartcitieshealthykids.com)

Credit: Nazeem Muhajarine Michael Chouinard; The StarPhoenix

Copyright Infomart, a division of Postmedia Network Inc. Feb 8, 2013

'Walkability' factors of a city cover wide span

By **Nazeem muhajarine, Michael Chouinard**

Saskatoon Star-Phoenix, February 8, 2013, p. A11

Muhajarine is principal investigator of the Smart Cities, Healthy Kids research project, as well as professor and chair of community health and epidemiology at the University of Saskatchewan's college of medicine. Chouinard is a communications officer for the Saskatchewan population health and evaluation research Unit.

Some neighbourhoods in Saskatoon, such as Nutana and City Park, make things easy for walkers.

The city as a whole, however, trails many others in Canada when it comes to getting around on two feet.

Recently, an American website that measures walkability of cities released rankings for North America. According to walkscore.com, Saskatoon finished 20 out of 28 Canadian cities with a population of at least 150,000. Regina was even lower, ranked 23.

While this assessment can help us compare our city to others in Canada, it's important to know that it's based on a narrow view of what makes a city more or less appealing to pedestrians. "Walk Scores" reflect the degree to which daily errands can be accomplished on foot, based on how close amenities are to where people live.

This is only one element of what makes a city or neighbourhood a heaven for walkers.

Our Smart Cities, Healthy Kids study uses a much broader understanding of walkability, in an effort to learn how neighbourhood design affects children's activity levels.

Our research looks at the diversity and density of destinations. However, we also consider features such as perceived safety from traffic and crime, accessibility to parks and green space, sidewalks, curb cuts, crosswalks, traffic lights, continuity of bike paths, amenities such as resting places, and even visually attractive elements such as tree cover, public art, and mix of housing styles.

We have found that "activity friendliness" of Saskatoon neighbourhoods varies considerably and reflects the way they were designed, which in turn is related to when the neighbourhoods were developed. Older areas in the city's core have advantages such as a greater number and variety of places to eat, work and shop within walking distance. As well, their grid patterns provide greater street connectivity for pedestrians and cyclists.

Newer suburban neighbourhoods do better in terms of safety.

When we asked children and parents how their neighbourhoods encourage or discourage children's activity, we learned that factors that encourage adults to be more active don't necessarily hold true for children.

Having places to go in the neighbourhood, such as shops, playgrounds and schools, is one thing that makes it more likely that children will be active and might influence families' choice of where to live.

But it is not their foremost concern. Perceived safety - from both traffic and crime - is the most important factor in parents' decisions whether to let their kids walk to school or play in their local park or playground.

Parents' comfort in allowing their children to play, walk or bike in the neighbourhood also depends on whether other kids are around. This, too, is influenced by safety concerns. In some neighbourhoods, children are kept out of parks and playgrounds because of other things that happen there, including criminal activity.

When it comes to the question of what makes a city or neighbourhood walkable, it's important to look at a wide range of factors and take into account the needs of all ages and abilities.

The recent walkscore. com survey provides only part of the answer. We believe that our study can help fill in the gaps, and in doing so, help the City of Saskatoon - as it continues to grow and develop new neighbourhoods - to make walkability and active transportation a priority and ultimately help all of us, adults and children, lead healthier and productive lives.

(www.smartcitieshealthykids.com)

Credit: Nazeem Muhajarine Michael Chouinard; The StarPhoenix

Appendix 7: Study mentions, clicks in kidSKAN News

From January 28, 2011 and March 21, 2013, we published 49 regular kidSKAN News e-newsletters. There were stories about the Smart Cities Healthy Kids study in 11 of these newsletters. These statistics were gathered in April 2013.

Date	Story	Number sent	Number opened	Clicks on SCHK story: %	Clicks on SCHK story: #	Reads on kidSKAN site
Sept 13, 2011	Story on BE video	829	168	19.4	19	714
Nov 21, 2011	Story on Muhajarine interview with CBC video	800	195	18%	22	627
Dec 1, 2011	Researchopoly, with link to On Campus News	809	162	7.5%	10	283
May 24, 2012	Calendar posting for Bikeable Saskatoon	903	244	2%	13	242
June 7, 2012	SCHK feature article in Star Phoenix	902	191	13.4%	16	283
June 21, 2012	CPHA coverage of BE workshop	916	231	10.6	13	457
Aug 30, 2102	Calendar event for Creating Active Comm.	905	202	6.8%	7	128
Sept 13, 2012	Story on Creative Active Communities, advertising event	904	197	27.9%	29	385
Oct 19, 2012	Story on Creating Active Comm, post event	920	216	21.2%	29	525
Oct 19, 2012	Calendar event on Teen Health library talk	920	216	2.9%	4	166
Nov 6, 2012	Calendar event on Teen Health library talk	916	235	3.3%	6	166
Dec 4, 2012	Story on new fact sheets, updated content on new SCHK site	907	202	18.7%	22	330