Healthy Families + Healthy communities = Healthy Children

A report of the Chief Medical Health Officer on the health status and development of young children in Saskatoon Health Region





SASKATCHEWAN POPULATION HEALTH AND EVALUATION RESEARCH UNIT

Produced by Public Health Observatory, Population and Public Health, Saskatoon Health Region, in collaboration with the Saskatchewan Population Health and Evaluation Research Unit.



A C K N O W L E D G M E N T S

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- > Communications
- > Community Services
- > Facilities Management
- > Kaizen Promotion Office (formerly Quality Services)
- > Maternal Child Health Services
- > Mental Health and Addictions
- > Population and Public Health
- > Primary Health Care and Chronic Disease Management
- > Representative Workforce, First Nations and Métis Health

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- > Child Care Advocacy Association of Canada
- > Conseil scolaire Fransaskois (Saskatchewan Francophone School Board)
- > FASD Support Network of Saskatchewan Inc.
- > Greater Saskatoon Catholic Schools
- > Horizon School Division
- > KidSKAN
- > Kinsmen Activity Place (KAP)
- > Métis Nation Saskatchewan
- > Prairie Spirit School Division
- > Rural Early Years Coalition
- > Saskatchewan Children's Advocate Office
- > Saskatchewan Ministry of Health
- > Saskatchewan Prevention Institute
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For More Information

http://www.saskatoonhealthregion.ca/PHO www.spheru.ca www.kidskan.ca



Population and Public Health



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All errors and omissions are the responsibility of the authors.

LIST OF ACRONYMS

ADHD	Attention Hyper-Activity Disorder
BCS	Behavioral Consultation Services
BFI	Baby Friendly Initiative
CAEH	Canadian Alliance to End Homelessness
CANSIM	Canadian Socio-Economic Information Management System
CAPE	Canadian Association of Professional Employees
CCHS	Canadian Community Health Survey
ССМІ	Coordinated Case Management Initiative
CD	Conduct Disorder
CDS	Cognitive Disabilities Strategy
CHEP	Child Hunger and Education Program
CIC	Citizenship and Immigration Canada
CIHI	Canadian Institute for Health Information
COHS	Canadian Oral Health Strategy
CTG	Children's Task Group
CUMFI	Central Urban Métis Federation Inc.
DA	Dissemination Area
dTAP	Diphtheria Tetanus and Pertussis
ECD	Early Child Development
ED	Emergency Department
EDI	Early Development Instrument
EPDS	Edinburgh Postnatal Depression Scale
ESDP	Early Skills Development Program
F/P/T-CHE	Federal/Provincial/Territorial – Committee on Health and the Environment
FASD	Fetal Alcohol Spectrum Disorder
FDK	Full-day Kindergarten
FN	First Nation
GBS	Group B Streptococcus
HDK	Half-day Kindergarten

HELP	Human Early Learning Partnership
HIV	Human Immunodeficiency Virus
ICD	International Classification of Diseases
IHBQ	In-Hospital Birth Questionnaire
LEAP	Literacy, Education, Activity and Play
LICO	Low Income Cut-off
LICO-AT	Low Income Cut-off – After Tax
LICO-BT	Low Income Cut-off – Before Tax
MMR	Measles Mumps Rubella
ODD	Oppositional Defiant Disorder
OECD	Organization for Economic and Cooperative Development
PHAC	Public Health Agency of Canada
рно	Public Health Observatory
PPH	Population and Public Health
RIS	Registered Indian Status
RM	Regional Municipality
RPZ	Rural Planning Zone
SES	Socio-economic Status
SHR	Saskatoon Health Region
SIDS	Sudden Infant Death Syndrome
SIMS	Saskatchewan Immunization Management System
SPHERU	Saskatchewan Population Health and Evaluation Research Unit
SPRP	Saskatoon Poverty Reduction Partnership
STC	Saskatoon Tribal Council
STCED	Saskatoon Tribal Council Education Unit
UNICEF	United Nations Children's Fund
VPD	Vaccine Preventable Diseases
₩НΟ	World Health Organization

A MESSAGE ABOUT THIS REPORT

A Catalyst for Improving Healthy Childhood Development in our Region

We know that a child's healthy development—beginning with the mother's health—lays the groundwork for a lifetime of health and well-being. When children's physical and emotional needs are met and strengthened by positive early experiences at home and in their social and physical environments, they have greater potential to grow into healthy and successful adults. Healthy and successful adults, in turn, are the cornerstone of vital and productive communities. Simply put, if we care about the future prosperity, sustainability and wellbeing of our Health Region residents, it will be clearly reflected by actions and policies that give our children a healthy start.

On behalf of the Chief Medical Health Officer Saskatoon Health Region, the Public Health Observatory worked with researchers from the Healthy Children program of the Saskatchewan Population Health and Evaluation Research Unit to develop this report. It provides a balance of data, evidence-based literature, and stakeholder perspectives about the health and development of children ages 0 to 6 living in Saskatoon Health Region. The report presents the information through various lenses to inform action. For example, we report on a range of indicators by geography, socio-economic and cultural status where appropriate. We have also included selected highlights reflecting what we heard during stakeholder consultations¹ and In 2005, the World Health Organization's Commission on the Social Determinants of Health identified early child development (ECD) as a priority issue as it is the foundation of human-capital formation, has the highest rate of return in economic development, and is the most costeffective way to reduce poverty and foster economic growth. Commission on Social Determinants Health. 2008. Closing the gap in a generation: health equity through action on the social determinants of health. Final Report of the Commission on Social Determinants of Health. Geneva: World Health Organization. Available at: http://www.who.int/social_determinants/ final_report/csdh_finalreport_2008.pdf

examples of programs and services addressing areas of concern in early childhood health and development. Based on the evidence, we include a set of recommendations which we believe, if adopted by Regional Intersectoral partners, community organizations and government, could go a long way to improving outcomes for children.

Important Findings

A key finding of this report, based on Early Development Instrument scores (EDI), is that 30% of kindergarten-aged children in our Health Region are vulnerable in at least one developmental area, including physical health and well-being, social competency, emotional maturity, language and cognitive development, and communication skills. This means that many children are not getting a healthy start. This indicator and several others revealed significant health inequities in children living in the most deprived areas of Saskatoon and also among First Nations and Métis children. While there is some overlap between these groups, it is important to recognize that proposed solutions are complex. For example, just as the causes of poverty are complex, requiring us to look at many areas, such as how to improve policies of income distribution, education, employment, housing and food security, so too are the root causes of First Nations and Métis health inequities. As one expert suggests "these health inequities can only be understood and intervened upon if understood as holistic challenges." While our First Nations and Métis communities have tremendous strengths, they also face challenges, and we need to understand the deeply rooted causes for why First Nations and Métis children continue to experience health inequities. These causes stem from a history of colonialism that has rippled across generations. The result has been a complex variety of historical, social, political and economic influences that have led to institutionalized racism, higher rates of poverty, barriers to health care and increased vulnerability to stress, all of which contribute to a greater burden of physical and mental disease and shortened life expectancy. We must all come together to change this.

i More details about the consultation process can be found at www.saskatoonhealthreaion.ca/PHO

What's Needed? A Proposed Way Forward and Call to Action

Monitoring children's health and well-being is an important first step in identifying strategies to decrease health inequities and increase future chances of success for all children. In addition to the many indicators included in this report, future measures should include a focus on strength-based outcomes.

The recommendations in this report are based on regional, provincial, national and international evidence and the advice of many local organizations and individuals. The recommendations call for a province-wide, multi-sector, multi-partner early childhood health and development strategy. Work with, and led by, First Nations and Métis partners will be critical to the strategy's success. The strategy should be based on prevention and health promotion as a foundation and recognize the range of needs of the Region's children. The recommendations focus on investments and improved policies, programs and services and encourage commitment for collective action from an array of stakeholders, including government and businesses. Strategic investments in communities and in public health that create the conditions for all families to raise healthy children are paramount. Investments that focus on prevention and health promotion in the early years will help reduce the social and economic burden of illness, not only in childhood but also throughout the adult years. This approach could be the single most important strategic investment we as a society could make to ensure a prosperous future. Most importantly, it is the right thing to do.

We believe that a good measure of initial success would be improving Early Development Instrument (EDI) outcomes by working together to reduce the 30% vulnerable score to 18% by 2018. "18 by 18" is a target well worth achieving and a start for further success in future years. We look forward to working together with our partners to give children in Saskatoon Health Region the best possible start.

Dr. Cory Neudorf Chief Medical Health Officer, Saskatoon Health Region

Voyeer Makaj -

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CHAPTER 1

Setting the Context



HIGHLIGHTS

Setting the Context

30.1% of kindergarteners in the Health Region were falling behind their peers developmentally and considered 'not ready for school' at time of school entry from 2008 to 2011.

Results were the same between urban
 and rural areas but vast differences were

found at the neighbourhood level in Saskatoon with the percentage of children considered not ready for school ranging from a low of 10% in some neighbourhoods to a high of 56.7% in others.

This report is of interest to all those who care about children and the future of our communities. It presents information about children's health and development in Saskatoon Health Region from before birth up to and including age six, as well as factors that influence health.^{*i*} In addition, this report provides evidence-informed recommendations to improve health outcomes for children.

1.1 How "Ready To Learn" are Saskatoon Health Region's Children?

Children are born "ready to learn"--their neurosystems are equipped with the ability to learn and develop; how well a child learns depends on the experiences the child receives.¹ Research has shown that a kindergarten teacher's assessment of a child's readiness to learn is the single strongest predictor of academic success in early grades. Subsequently, success in early grades is a strong predictor for high school completion. Measures to improve children's readiness to learn in kindergarten are protective against both premature drop-out (before completing high school) and adolescent delinquency. What it boils down to is that children who are successful in school tend to be successful in other parts of their lives – maturing into successful adults.² This healthy start in life improves chances of good future health.

In order to measure children's "readiness to learn," in many provinces in Canada, including Saskatchewan, kindergarten teachers have been assessing their students using the Early Development Instrument (EDI), which is a population level tool that provides a snapshot of children's overall health and development in the early years of their lives, before children reach school.

What is it? The Early Development Instrument (EDI) is a validated tool that uses a 104-item checklist. Teachers fill out the EDI, rating each student's development in five "domains".^{2,3} The EDI is meant to report on the outcomes of groups of children, such as classes or schools — it is not intended to assess an individual child's progress. The domains are:

Physical health and well-being: rates children's physical readiness for the school day, physical independence, and gross and fine motor skills.

Social competence: rates children's approaches to learning, responsibility and respect, and readiness to explore new things.

Emotional maturity: rates children's behaviour, be it helpful, anxious or aggressive, and their levels of hyperactivity and inattention.

Language and cognitive development: rates children's level of interest and ability in reading, writing and math.

.....



Communication skills and general knowledge: rates a child's ability to communicate his own needs and understand those of others and his interest in the world around him.

The EDI is administered province-wide and questionnaires are completed by kindergarten teachers in February or March every year.^{4,5,6}

In 2008-2009, almost 73% of Saskatchewan kindergarten students entered school fully ready to learn. About 27.1% of kindergarten students were assessed as low on at least one of the five EDI domains.^{*ii*}

Geographical Breakdown

In Saskatoon Health Region, from 2008-2009 to 2010-2011, 30.1% of kindergarteners were falling behind their peers developmentally (scoring low on one of the five domains) and considered "not ready for school" at time of school entry. This level of vulnerability was higher than the Canadian rate of 25%, and the provincial rate of 27.1%, both of which were quite high.

EDI findings were the same between Saskatoon and rural Health Region communities. Between 2008-2009 and 2010-2011, in both geographic areas, 30% of kindergarten children were considered *not ready for school*.

A Closer Look at Saskatoon

There are vast differences at the neighbourhood level in the proportion of children who were rated as scoring "low" in at least one EDI domain (Map 1.0). The percentage of children who were considered not ready for school ranged from a low of 10% in some neighbourhoods to a high of 56.7% in others.

ii Available from the Saskatchewan Ministry of Education at http://www.education.gov.sk.ca/ELCC/early-development-instrument

Map 1.0: Percentage of Kindergarten Children Who Scored Low on at Least One Domain of EDI by Neighbourhood, Saskatoon, 2008-2009 to 2010-2011 Combined



Source: Saskatchewan Ministry of Education, Early Years Branch, Early Childhood Development and Integrated Services Map: Public Health Observatory, Population and Public Health, Saskatoon Health Region Note: Map classes are based on a quantile classification, with each category representing an approximately equal number of residential neighbourhoods.

1.2 A Closer Look at Health Equity

A common thread throughout this report is the application of a health equity lens in order to identify disparities across populations, such as those described by the EDI outcomes noted above. This includes analysis by socioeconomic status using the Deprivation Index and core neighbourhood analysis. Geographic areas are reported by Rural Planning Zones (RPZ) and Aboriginal ancestry is reported by Registered Indian Status (RIS) and self-identified Aboriginal ancestry.^{III}

Why Measure Health Equity? iv

Identifying health inequities is a useful tool for policy creation, tailoring health interventions to certain groups within the larger population of children and examining rigorously what may be the historical, social and environmental determinants of such health inequities.

As noted in the EDI indicator presented above and in the chapters that follow, there is much more to the data when examined through this lens because the differences in outcomes are stark.

iii See Technical Appendix for descriptions of each.

iv The discussions in this report are descriptive and do not focus on etiological reasoning. However, associations among indicators and inferences regarding trends in indicators are made throughout the report.

Creating greater health equity has been identified as a priority by both the Saskatchewan Ministry of Health and the Saskatoon Health Region. ^v Health equity is especially important in creating a strong developmental foundation for children. When defining health equity, it is important to identify and differentiate between health inequalities and health inequities. Differences in health that exist between groups highlight the existence of health inequalities, sometimes also referred to as disparities.⁷ In circumstances where these inequalities are deemed to be unfair, unjust and modifiable, they are considered to be health inequities.⁸ Therefore, in order to achieve health equity, conditions must be in place to eliminate unfair, unjust and avoidable differences in health status. Health equity is then an achievement of the conditions in which all people can reach their full health potential.⁸

There are a breadth of factors which contribute to the overall health and well-being of individuals and populations. The broad determinants as described by the Public Health Agency of Canada include: Income and Social Status, Social Support Networks, Education and Literacy, Employment/Working Conditions, Social Environments, Physical Environments, Personal Health Practices and Coping Skills, Healthy Child Development, Biology and Genetic Endowment, Health Services, and Gender and Culture.⁹ Achieving health equity involves systematic efforts toward creating equity within each of these factors, referred to as social determinants of health. The World Health Organization (WHO) defines these as "the conditions in which people are born, grow, live, work and age, including the health system. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels.... The social determinants of health are mostly responsible for health inequities."¹⁰

Health Equity and Children

Achieving equity in each of the social determinants of health is especially important for children as these determinants affect a child's cognitive, emotional and social development.¹¹ By correcting unjust and avoidable differences in the health status of children, we provide the foundation for accomplishing equitable health for our children, families and communities, today and into the future.

Health Equity and Aboriginal Children

Of particular concern within our local geography are the existing health inequities between Aboriginal and non-Aboriginal peoples. ^{vi} Saskatoon has the second highest percentage of Aboriginal residents of all major cities in Canada at just over 9% of the population, and this population is expected to increase. ¹², ^{vii} Of even greater significance to this report, Aboriginal children account for 17% of all the children in Saskatoon ages 14 and under. Unfortunately, over 45% of the Aboriginal people living in Saskatoon are living in poverty (below the Low Income Cut-Off). Poverty greatly influences all of the previously mentioned social determinants of health and thus contributes to creating health inequities.

Despite efforts to improve Aboriginal health, in general there remain substantial inequities in the health of Aboriginal peoples in Canada compared to the rest of the population.^{13,14,15} These inequities are due to a combination of economic, political and social disparities that have resulted from the complex history of relations between Aboriginal peoples and Canada.¹⁶ At the core of the colonization experience is the loss of culture, which includes the loss of language, land, resources, spiritual practices, political and personal autonomy.¹⁷ Aboriginal peoples were subjected to a system of forced assimilation through the "aggressive civilization" policy that sought to destroy cultural identity through such things as residential schooling.^{18,19} The stress, isolation and abuse that stemmed from residential schools has affected generations of Aboriginal peoples and resulted in problems such as family dysfunction, addictions, homelessness, violence and poverty, all of which have contributed to poor health status.²⁰

While there is recognition of the impact of cultural disruption on mental, emotional and spiritual health, there remains limited consideration for physical health. The inequities between Aboriginal and non-Aboriginal peoples have often been attributed to low socio-economic status (SES), but recent evidence, including the 2001 Canadian Community Health Survey, suggests that SES alone cannot account for the severe health inequities present. Individual choices and lifestyles that contribute to health risk behaviours are also unable to account for such inequity.²⁰ Current research suggests that the historical stressors from colonization have led to intergenerational

v The Saskatchewan Ministry of Health's Plan for 2012-2013 is available at http://www.finance.gov.sk.ca/PlanningAndReporting/2012-13/HealthPlan1213-Print.pdf

vi Within the local context, the term Aboriginal is used to refer primarily to First Nations and Métis peoples, given the geography and demographic composition of Saskatoon Health Region. Nationally, however, the term Aboriginal includes all of Canada's first peoples including First Nations, Métis, and Inuit peoples.

Population Projections by Aboriginal Identity in Canada, 2006 to 2031 are available from Statistics Canada at http://www.statcan.gc.ca/pub/91-552-x/91-552x2011001-eng.htm

trauma and post-traumatic stress response (PTSR), collectively referred to as historical trauma, throughout the Aboriginal population. The prolonged exposure of stress on the body creates hormonal imbalances that can directly harm health through increasing vulnerability to anxiety and depression and decreasing self-esteem.^{21,22,23} Such negative emotional states can have detrimental effects on the immune system and can change behavioural patterns affecting disease risk, leading to a greater burden of physical and mental disease and shortened life expectancy.^{24,21,22,20}

In addition to the health consequences of historical trauma, the erosion of culture has created ongoing oppression and disempowerment that has silenced the voice of many Aboriginal peoples and adversely affected the way in which they seek out care.²⁵ This can stem from contemporary institutionalized racism and discrimination, both overt and unconscious, which can lead to poor communication experiences between Aboriginal peoples and health care providers.²⁵ These experiences often result in distrust of the health care system and reluctance to return. With consideration of these and many other factors, it is clear that the health of Aboriginal peoples is complex. Moving forward, it is important that we consider the collective emotional and psychological injury that has occurred over the lifespan and across generations of Aboriginal peoples when observing the inequities still present in many aspects of Aboriginal health and well-being. In addition, it will be important to work in partnership with the full spectrum of First Nations and Métis agencies and organizations to improve health equity since each group has a unique experience that needs to be honoured.

1.3 A Framework for Healthy Children

Given that 30% of children in the Health Region are considered vulnerable in one or more EDI domain and given that many of these children live in neighbourhoods of highest deprivation and are Aboriginal, it is important to consider a framework that will lead to comprehensive recommendations for improved early childhood health.

The Building Blocks of Developmental Health

In the last decades of the 20th century, a rapidly expanding body of research in the neurobiological, behavioural and social sciences documented the tremendous importance of optimal growth and development in the early years. We know that it is the most intensive period of brain development and overall development throughout the lifespan. Adequate stimulation, care and nutrition are essential for optimal development during the first years of life when the brain is most sensitive to external influences. Infants and children who are well nurtured and cared for in their earliest years are more likely to survive, grow up healthy, experience less illness and develop the thinking, language, emotional and social skills needed to function

Successful children grow up to be successful adults, with positive consequences for the individual, the family and communities.

effectively in the world. It also minimizes the likelihood of negative outcomes such as unemployment, criminal behaviour and premature mortality. What happens during this period also influences future health, education and economic participation. As such, early childhood development is a foundation for community and economic development. Given its impact on lifelong health, early childhood development is seen by many as a health determinant in itself, not merely a stage of development, and a key to reducing health inequities and economic and social burdens in societies.^{26,27}

The development of the brain begins before birth, continues throughout life and is influenced by the interaction between genetics and individual experience. Parents' and caregivers' "back and forth" interactions with babies not only secure attachment, they also biologically build the brain architecture. Positive and negative experiences in early childhood determine the formation of critical pathways in the brain by altering brain structure and chemical pathways that in turn influence an individual's capacity to respond, learn and thrive.^{28,29} For example, a child who is emotionally secure and is not distracted by social anxieties is likely more able to concentrate on learning experiences. In turn, once the child begins to achieve success in learning and is met with positive reinforcement by parents, teachers and peers, the child's self-confidence and motivation is likely to increase.

Linking Policy, Environment, Determinants and Outcomes– A Framework for Developmental Health

In addition to the individual nurturing and care a child receives as described above, policy can play an important role in influencing developmental health outcomes. The Family Policy Framework reproduced below (originally conceived by Dr Martin Guhn, University of British Columbia) highlights the relationship between children's developmental health, the social determinants of developmental health, and the social and institutional contexts (i.e. family, social networks and health, education and care services in communities) that underpin developmental health.³⁰

Defining the Framework

Developmental health outcomes are defined as age-appropriate skills, abilities and competencies acquired in the early years that are closely associated with future success. They are interconnected and develop interdependently. They tell us how well children are developing in their early years. These outcomes could inform target-setting and timelines for improvements in child health and could be monitored over time. In this report Chapter 3 (Physical Health), Chapters 4 (Mental Health) and 5 (Social Development and Early Learning) and Chapter 6 (Cognitive Development) cover the developmental health outcomes extensively.

The three **building blocks** of developmental health are the immediate "environments" of care and include loving support by caregivers (emotional care); healthy nutrition, physical safety and preventive medical care and services (physical care); and regular opportunities for socially embedded play and learning experiences (social care). These environments need to be jointly, consistently and dependably present throughout the developmentally sensitive first years of life. These environments are primarily created by family, at home, and ideally offer children stable and loving relationships with adults who provide responsive and reciprocal interaction, protection from harm, encouragement for exploration and learning, and transmission of cultural values. Children's relationships with parents and other caregivers are considered the key "building block" of healthy development, and, as the creators of children's first environments, caregivers play a primary role in the early years.³¹ In this report Chapters 2 (Population Characteristics) and 7 (Material Well-being) cover the family environments in which the children are nurtured in Saskatoon and region.

At the next level, children's development is influenced by the social systems of which they are a part, such as neighbourhoods and communities (*Figure 1*).³¹ The **social**



Dr. Nazeem Muhajarine and Fleur Macqueen Smith, Saskatchewan Population Health and Evaluation Research Unit (SPHERU), 2012

context of families and their support networks and the **institutional context** of health and education services are an important part of these systems. Communities need to provide safe environments, actively include and engage all children, and provide opportunities for children to grow and thrive, including access to schooling and the expansion of caring relationships. Access to services, programs and amenities, such as child care centres, health care facilities, and libraries has an impact on children's development and parents' ability to provide adequate care and stimulating learning environments.³¹ Efforts to improve early childhood development cannot focus solely on parents but must consider the environments in which families live.

Policies can directly influence both the institutional and social contexts of families for optimal child development. **Four guiding policy principles** of the framework include:

Consistency. Human development is contingent on the degree to which children's first environments are predictable and the conditions can be anticipated. Families and communities, in their efforts to raise developmentally healthy children, must be able to rely on the availability of certain supports over time and place and across various local contexts.^{32,33}

Universal access. Within Canadian society, in which we value interdependence, social justice and equity for all, policies should be guided by the principle of universal access, which is in balance with targeted approaches to ensure full physical, social and cultural inclusion and representation.

Quality. Policies and programs must promote consistently effective nurturing and stimulating environments for all young children, generally referred to as quality in programs and services.

Adaptability to local context and culture. Policy implementation must be informed by local and cultural contexts, specifically to communities' history, competences, resources, and needs.^{34,35,36} This is closely tied to the principle of universal access. Research shows that universal policies and programs that disregard or ignore differences in cultural and local contexts commonly fail, are typically unsustainable and frequently lead to counterproductive results.^{37,38}

Policies that enable families to thrive—i.e. that provide time, resources and access to needed services and that allow parents to balance their caring and earning responsibilities-- are intimately related to the socio-economic status of the family. A family's socio-economic circumstances have a fundamental impact on creating conditions that are necessary for children's early well-being. For example, how well families are able to access services such as high-quality education and health programs is largely dependent on socio-economic status. Throughout this report the social context of families (especially Chapter 7) and institutional responses to various child developmental issues are highlighted.

This framework promotes comprehensive family policies that have both the resources and the flexibility to provide a combination of universal and targeted programs. For too long, programs have been provided in a manner that trades off universal accessibility with addressing special needs or special populations. This is counter to the evidence accumulated over the last several decades that shows vulnerable children live in families with specific socio-economic needs as well as in families across the socio-economic spectrum. In order to have the most reach and effectiveness, policies and programs need to be both universal and yet flexible for local contexts. This is an important consideration for the recommendations contained in Chapter 8.

1.4 Taking Action: Improving Health and Readiness to Learn and Meeting the Needs of Vulnerable Children

This chapter has provided a general snapshot of where children in Saskatoon Health Region stand as it relates to readiness for school. For the most part, it identified that children from areas of highest deprivation (or low socioeconomic status) and Aboriginal children experience a larger burden of vulnerability. The chapter also provided an overview of health equity to understand the complexities that explain these vulnerabilities, with a focus on children (and Aboriginal children in particular). Finally, the chapter presented a framework that establishes solid conditions to support healthy childhood development. It highlighted the roles of parents, institutions and policies, while recognizing local cultural context, which are important in light of recommendations that follow.

WHAT DID WE HEAR?

Based on local consultation, there is strong commitment from decision makers across sectors to improve EDI scores and ensure a much greater proportion of children are ready to learn over the next several years. In order to achieve this aim, key priorities at a local level must be adopted. The recommendations contained in Chapter 8 of this report will help to inform those priority actions.

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CHAPTER 2

Population Characteristics



HIGHLIGHTS

Population Characteristics

Children ages 0 to 6 made up almost 9% of the Health Region's population in 2011.

- Children ages 0 to 6 made up 8.8% (27,933) of the Health Region's population in 2011; this was an increase from 8.4% (25,390) in 2009.
- 72% lived in Saskatoon; 28% lived in rural communities.
- Almost 25% of children in Saskatoon lived in areas of highest deprivation.ⁱ

The birth rate is increasing.

- In 2009, the birth rate was 13.5 per 1,000 residents, the highest since 1995, and has been increasing since 2004.
- The Registered Indian Status (RIS) population has birth rates up to three times higher than the non-RIS population (33.4 per 1,000 residents compared to 12.3 per 1,000 residents in 2009).[#]
- > The highest birth rates (17 per 1,000 residents) are among those living in the areas of highest deprivation in Saskatoon.

The number of newcomer children ages 0 to 6 has increased sevenfold since 2005.

- There has been a significant annual increase in the number of immigrant children arriving in the Health Region between 2005 (44) and 2010 (302).
- > 98% of these newcomer children settled in Saskatoon.

 Refugee children made up 13.7% of newcomers to the Region.

Rates of single-parent families vary by geography.

> 16.4% of families in the Health Region were headed by single parents similar to provincial and national averages (2006), but there were geographical differences:

Saskatoon: 19.3% of families were headed by single parents (15.6% of which were female-headed singleparent families).^{III}

- Core neighbourhoods, Saskatoon: 36.8% of families were headed by single parents.
- Rural areas: 9.8% of families were headed by single parents.
- Newly released 2011 Census data showed that the percentage of single-parent families in Saskatoon had decreased to 17.8% (14.3% of which were femaleheaded).

There has been more attention to the needs of children in care in recent years. "

> The provincial Cabinet Committee on Children and Youth and other agencies are taking direct action to address the needs of this vulnerable group.

- iii Based on 2006 Census, most recent year of data available.
- iv Children in the care of the Ministry of Social Services

i See Glossary for definitions of deprivation and Technical Appendix for methodology.

ii A person of Registered Indian Status (RIS) means that the person is registered under Section 6 of The Indian Act. It does not include people of Métis or Inuit heritage or those of Aboriginal ancestry who are not registered; therefore, is an underrepresentation of the total aboriginal population.

This chapter describes the characteristics of the population ages 0 to 6 in Saskatoon Health Region. Key areas examined include population count (by geography and Registered Indian Status), population growth (birth rate and newcomers) and family characteristics (single-parent families and children in care).

2.1 Population count

Saskatoon Health Region includes 33 communities, 14 partial rural municipalities and four First Nations communities. The 2011 population was 318,102 (29.3% of the provincial population) and is projected to increase to more than 344,000 by 2029.^v

Children ages 0 to 6 made up 8.8% (27,933) of the Health Region's population in 2011, which was an increase from 8.4% (25,390) in 2009. This section provides a breakdown of this population by geographical area, socio-economic status and Registered Indian Status.

What is it? Population count is the number of children ages 0 to 6 in Saskatoon Health Region in 2011 by geography and Registered Indian Status (RIS). The percentage of children is expressed as the number of children in a geography (i.e., Rural Planning Zone, or neighbourhood) by the number of children in the larger geography (i.e., Health Region or Saskatoon).^{vi} Population data comes from Health Card statistics provided by the Saskatchewan Ministry of Health.

Geographical breakdown

Table 2.1 shows that in 2011, 28.3% of children ages 0 to 6 lived in rural communities, while 71.7% lived in Saskatoon.

0 '									
Age	0	1	2	3	4	5	6	Total 0-6	Percent (%) of Saskatoon Health Region 0-6 Population
Saskatoon	2982	3002	2997	2969	2782	2688	2620	20040	71.7
Saskatoon Rural Planning Zone	595	602	587	572	607	525	571	4057	14.5
Rosthern Rural Planning Zone	250	232	233	257	251	237	213	1674	6.0
Humboldt Rural Planning Zone	194	190	190	181	175	172	174	1276	4.6
Watrous Rural Planning Zone	122	127	122	126	147	105	137	886	3.2
Saskatoon Health Region	4143	4153	4128	4105	3962	3726	3715	27933	100.0

Table 2.1: Population Counts of Children Ages 0 to 6, Saskatoon, Rural Planning Zones, and Saskatoon Health Region, 2011

Source: Saskatchewan Ministry of Health, Covered Population

A Closer Look at Rural Areas

Among all children ages 0 to 6 living in rural areas, about half (7,893 children) resided in the Saskatoon Rural Planning Zone which surrounds Saskatoon. (*Table 2.1 and Map 2.1*) Map 2.2 shows the distribution of the children ages 0 to 6 by Rural Municipality (RM).

v Saskatchewan Ministry of Health

vi Rural Planning Zones (RPZ) include Saskatoon and area (i.e. bedroom communities of Saskatoon); Rosthern and area; Humboldt and area, and Watrous and area.



Map 2.1: Population Distribution of Children Ages 0 to 6, by Rural Planning Zone, Saskatoon Health Region, 2011



Source: Saskatchewan Ministry of Health, Covered Population Map: Public Health Observatory, Population and Public Health, Saskatoon Health Region





Map 2.2: Population Distribution of Children Ages 0 to 6 by Rural Municipality, Saskatoon Health Region, 2011



Source: Saskatchewan Ministry of Health, Covered Population

Map: Public Health Observatory, Population and Public Health, Saskatoon Health Region

Note: Map classes are based on a quantile classification, with each category representing an approximately equal number of rural municipalities and Corman Park (n = 2,930) indicated separately.

A Closer Look at Saskatoon

Map 2.3 indicates the percentage of children ages 0 to 6 as a proportion of the total 0 to 6 population of Saskatoon (20,040).





Source: Saskatchewan Ministry of Health, Covered Population Map: Public Health Observatory, Population and Public Health, Saskatoon Health Region

Socio-Economic Status in Saskatoon: Population by Quintiles of Deprivation

The deprivation index is a tool used to monitor socio-economic inequalities in health. The Saskatoon Census Dissemination Areas are ranked from lowest deprivation (Quintile 1) to highest deprivation (Quintile 5), based on the population's average income, education, employment levels, living arrangements, marital status and proportion of single-parent families from the 2006 Census. They are then divided into five parts (quintiles), each of which represents approximately 20% of the population.

In Saskatoon, almost one quarter of children ages 0 to 6 lived in the areas of highest deprivation (Quintile 5), followed by 21.2% in areas of lowest deprivation (Quintile 1) (Table 2.2).

Age	0	1	2	3	4	5	6	Total 0-6	Percent (%) of Saskatoon 0 to 6 Population
Quintile 1 (lowest deprivation)	558	590	628	628	642	618	594	4258	21.2
Quintile 2	480	483	454	465	455	428	441	3206	16.0
Quintile 3	533	479	527	503	473	464	455	3434	17.1
Quintile 4	502	540	489	526	446	465	437	3405	17.0
Quintile 5 (highest deprivation)	795	806	775	736	673	617	583	4985	24.9

Table 2.2: Population by Deprivation Quintile of Children Ages 0 to 6, Saskatoon, 2011

Aboriginal Children

In this report, Registered Indian Status (RIS) is used to estimate the Aboriginal population living in Saskatoon Health Region. This results in an underestimate of the total Aboriginal population as it excludes children who have Aboriginal ancestry but are not registered through *The Indian Act* as well children of Métis or Inuit heritage.

In 2011, just over 8.1% (2,264) of all children ages 0 to 6 were of Registered Indian Status. Age-specific rates are shown in Table 2.3.

Children ages 0 to 6 as a proportion of the total RIS population was higher (13.6%) than the proportion of children ages 0 to 6 in the total non-RIS population (8.5%).

Table 2.3: Population by Registered Indian Status and Non-Registered Indian Status of Children Ages 0 to 6,Saskatoon Health Region, 2011

Age	0	1	2	3	4	5	6	Total 0-6	Percent of Saskatoon Health Region 0-6 Population
Registered Indian Status	356	167	289	342	364	341	405	2264	8.1
Non-Registered Indian Status	3787	3986	3839	3762	3598	3385	3310	25669	91.9

Source: Saskatchewan Ministry of Health, Covered Population

In Saskatoon, the largest percentage of children ages 0 to 6 of RIS live in Saskatoon's west neighbourhoods. (Map 2.4)





Source: Saskatchewan Ministry of Health, Covered Population

Map: Public Health Observatory, Population and Public Health, Saskatoon Health Region

Note: Map classes are based on a quantile classification, with each category representing an approximately equal number of residential neighbourhoods.

2.2 Population Growth

The 0 to 6 population in Saskatoon Health Region is experiencing considerable growth due to two different factors; the birth rate has been increasing since 2004 and the number of immigrant children moving to Saskatoon has increased sevenfold between 2005 and 2009.

Birth Ratevii

What is it? Birth rate refers to the number of live births in a population over a given time period, expressed per 1000 residents and excludes stillbirths, miscarriages or terminations. The use of a birth rate, rather than number of births alone, allows for the interpretation of birth outcomes within the context of population size.

In 2009, there were 4,059 live births in the Health Region and the birth rate was 13.5 per 1,000 population; the highest rate since 1995. The rate has been increasing since 2004.

Provincial rates were similar to Region rates over time, with Canadian rates being slightly lower at 11.3 per 1,000 population in 2008 (Figure 2.1).

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vii Also known as crude birth rate.





Source: Saskatchewan Ministry of Health, Vital Statistics.

Socio-Economic Status and Birth Rates in Saskatoon

In 2009, those living in Saskatoon's areas of highest deprivation (Quintile 5) had the highest birth rate compared to all other groups. There was a marked difference between Quintile 1, which had the lowest proportion of births (10.4 per 1,000) and Quintile 5, which had the highest proportion of births (17.0 per 1,000).

Aboriginal Birth Rates - Registered Indian Status

Birth rates vary dramatically within sub-groups of the population. Similar to national trends, the Region's Registered Indian Status (RIS) population had birth rates almost three times higher than the non-RIS population (33.4 per 1,000 residents compared to 12.3 per 1,000 residents in 2009). This has been a consistent trend dating back to 1995. (Figure 2.2) Compared to the general Canadian population, the Aboriginal population has a higher proportion of women in their childbearing age.¹

In the next two decades, the RIS population in the Prairies is expected to have the highest population growth; it is projected that Saskatchewan will see a 59% increase in its on-reserve RIS population.¹







Figure 2.2: Crude Birth Rates, Registered Indian Status, Saskatoon Health Region, 1995-2009

Source: Saskatchewan Ministry of Health, Vital Statistics.

Newcomers

What is it? In this report, the term newcomer refers to recent immigrants and refugees. Citizenship and Immigration Canada (CIC) provides yearly information on the number of permanent resident landings.

MY EXPERIENCE:

A Newcomer to Saskatoon

My name is Mary. I am married and have two young boys. I moved here from Ethiopia six years ago and had to go through the process of sponsoring my husband who eventually came to Saskatoon two years ago. I work part-time and so does my husband. We live in an apartment and don't own a car. When I had my first baby, I didn't know much about feedings, car seats, and vitamins so I accessed services at Public Health Services to learn more. Healthy Mom, Healthy Baby program was very helpful and I learned about breastfeeding. They helped me to pump my milk. Now I go to the Taylor clinic [South East Health Centre], especially for immunizations. I have also participated in Open Door programs like cooking. Educating new moms and being able to communicate with newcomers is very important!

Saskatoon Health Region Client

Newcomers to Canada, both immigrants and refugees, represent a diverse group in terms of language, education and socio-economic status. The relationship between immigration and health is complex and outcomes vary according to gender, birthplace, and period of immigration.²

Immigrants tend to represent a healthier, younger, more highly-educated and skilled group compared to the general Canadian population. This is due in part to immigration processes that select immigrants who can contribute to the economy.³

The healthy immigrant effect is a commonly described phenomenon in migrant health literature. Recent immigrants (within last 10 years) are generally healthier than their Canadian-born counterparts upon arrival in Canada. Over time, however, this health advantage declines to either meet or become even lower than the health of the Canadian-born population.^{2,4}

Although the healthy immigrant effect is mostly studied in adults, the impact of pre- and post-migration experiences suggests a need to recognize potential implications for the health of immigrant families, particularly in the early years. "There has been a dramatic change in clientele over the past five years. At any given time, if one were to look in the waiting room of [Public Health Services'] Southeast Health Centre, [a high number] of the clientele would be newcomers".

Public Health Nurse

Refugees tend to represent a more vulnerable group of newcomers who have often fled their home country due to disadvantaged and traumatic pre-migration circumstances. They may arrive with more complex physical and mental health needs.

In 2010 there were 358 newly landed immigrant and refugee children ages 0 to 6 in the Health Region, an increase from 293 in 2009.

Consistent with national trends for immigration to urban centres, the majority of newcomer children to the Health Region settled in Saskatoon (98%) compared to rural communities (2%).⁵

A Closer Look at Saskatoon - Urban Growth of Newcomers

The number of newcomers to Saskatoon has been on the rise. From 2005 to 2010, the number of child immigrants ages 0 to 6, excluding refugees, increased sevenfold (*Figure 2.3*). The number of children in each age group has been steady, with the exception being fewer children in the under 1 age group.



Figure 2.3: Number of Newcomer Children Ages 0 to 6*, Saskatoon, 2005-2010

*Landings per year

Source: CIC Microdata Q3 2011, Government of Saskatchewan statistical report using Citizenship and Immigration Canada Microdata.

In 2010, the majority of newcomer children to Saskatoon were immigrants (302 or 86.3%), with refugees comprising only 13.7% (48) of newcomers (Table 2.4).

Table 2.4: Number of Newcomer Children Ages 0 to 6*, Saskatoon, 2005-2010

	2005	2006	2007	2008	2009	2010
Refugees	38	34	58	44	49	48
Immigrants	44	72	134	197	238	302
Total Newcomers	82	106	192	241	287	350

*Landings per year

Source: CIC Microdata Q3 2011, Government of Saskatchewan statistical report using Citizenship and Immigration Canada Microdata.

WHAT DID WE HEAR?

In our consultations with stakeholders, the topic of newcomers was frequently raised. We heard time and time again from service providers that the growing number of newcomers has implications for programs, services and policy.

Some of the issues

- Increased complexity in health assessment of newcomer children and their families. Thus, health providers may lack the dedicated time and resources required to meet the diverse needs of these families;
- > Children with developmental delays;
- > Lack of transportation;
- > Limited or no access to a health professional;
- Newcomer vulnerabilities, such as difficulties accessing the health care system due to language barriers or simply not understanding how the system works;
- Need for improvement in health professionals' cultural competencies to better serve the needs of newcomers (currently a priority for Saskatoon Health Region); and
- Newcomer women themselves told us similar stories about the challenges of learning a new language, finding employment and participating in culturally appropriate programs and services in the community.

Some potential solutions

> A central intake process; and

"...getting newcomers through the system when they arrive, so they can be connected with services needed, such as dental, [and] immunization."

Examples of current initiatives

- Population and Public Health implemented a language line (1 800) pilot project to access translation services on-demand;
- Souris Hall Clinic provides public health services to a largely newcomer population;
- > The City of Saskatoon plans to implement a Municipal Culture Plan and an Immigration Action Plan;⁶
- Studies at the University of Saskatchewan are underway by Dr. Hassan Vatanparast in dietary research aimed at newcomers to Canada to characterize health and nutrition issues that affect children and pregnant women;^{7,8} and Dr. Louise Racine on The Health Needs of Non-Western Immigrants and Refugees in Saskatchewan;
- > A number of community organizations exist to assist newcomers as they transition, such as Saskatoon Open Door Society, Newcomer Information Centre, International Women of Saskatoon, Global Gathering Place, and specific cultural organizations; and,
- Saskatoon Health Region is focussing on increasing staff cultural competency as part of its Representative Workforce Strategic Action Plan.⁹




"We just moved from Ontario in December and we notice a difference in health [services]. It's nice to have a follow up from a public health nurse of what kids need. We're really lucky to have this follow up.

I think though that for newcomers from other provinces and countries, there needs to be a medical supplement – for low income families in particular."

Newcomer Client

2.3 Family Characteristics

Family structure plays an important role in early childhood health and development. Two populations of particular interest in Saskatoon Health Region are single-parent families and children in care.

Single-Parent Families

What is it? The number of single-parent families is based on the number of single parents who reported having at least one child, regardless of the child's age, living in the same dwelling.

Single-parent families typically have less income, less ability to afford food, and less time to spend with children compared to two-parent families. Single parents are also more likely than those with a spouse or partner to report fair or poor mental health.¹⁰

There are important implications for childhood outcomes associated with female-headed single-parent families as they tend to earn less than male single-parent families, making this group one of the most economically vulnerable family groups in Canada.¹¹ It is also a risk factor for developing maternal depression, which is known to have a negative impact on healthy childhood development.¹² Refer to Chapter 4 for information on maternal mental health.

In 2006, the percentage of single-parent families in the Health Region was 16.4%, similar to provincial (16.6%) and national (15.9%) averages. Newly released 2011 Census data found that the percentage of single-parent families in Saskatchewan had decreased to 16.4% while the Canadian average had increased to 16.3%. ^{viii}

Geographical breakdown

In 2011, the percentage of single-parent families in Saskatoon was 17.8%. This was an increase from 15.5% in 1991, but was a decrease from both 2001 (18.9%) and 2006 (19.3%) (*Figure 2.4*).

In 2011, consistent with national findings, female-headed single-parent families made up the majority of singleparent families in the city (14.3% female single parents compared to 3.5% male single parents) (Figure 2.4).

viii 2011 Census data for single-parent families in the Saskatoon Health Region was not available for this report.





Source: Statistics Canada, Census 1991-2011

In 2006, the percentage of single parents in Saskatoon's core neighbourhoods was 36.8%, almost twice that of the city overall. ix (Figure 2.5)

In rural Health Region communities in 2006, single parent families were less common, making up just over half the rate of Saskatoon (9.8%). (Figure 2.5)

Figure 2.5: Percentage of Single Parent Census Families, Core Neighbourhoods, Saskatoon, and Rural, Saskatoon Health Region, 2006



Source: Statistics Canada, Census

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ix See Glossary for definition of core neighbourhoods.

In our consultations, stakeholders acknowledged the need to provide supports to all parents, and in particular, to single-parents. It was suggested that supports should take into consideration the complex challenges faced by families by including such things as flexible hours for programs and services (outside of typical work hours), easy accessibility, and child care provision.

Some of the issues

 Availability of transportation to access services; and Families living in core neighbourhoods are more likely to be of low-income, and less resourced in education and employment, and experience poorer health outcomes.¹³

Examples of current initiatives

Saskatoon Housing and Homelessness Plan (2010-2014) identified single mothers in particular as a group experiencing homelessness.¹⁴ This plan outlined community priorities, objectives and indicators that would impact not only single mothers, but all families who are homeless or at risk of homelessness.

2.4 Children in Care

What is it? The number of children in the care of the Ministry of Social Services.

Children who live in care represent a segment of the 0 to 6 early childhood population that should not be overlooked as they face unique challenges and experiences that shape their lives.

While there was no data available for the number of children in care ages 0 to 6 who live in the Health Region, in 2012 the Ministry of Social Services reported the following information for the province of Saskatchewan:^x

- > A total of 4,591 children under the age of 18 were in out-of-home care, slightly higher than 4,439 in 2008. xi, 15
- > There were 634 foster homes, down from the 765 foster homes in 2009.
- > 403 children lived in foster homes with more than four children, down from 874 children in 2009.xii 15
- Since the release of its Breach of Trust Report in 2009, the Saskatchewan Children's Advocate Office has recognized the work the Ministry of Social Services has done to reduce the number of children coming into foster care, the number of children living in overcrowded foster homes, and the number of overcrowded foster homes in Saskatchewan. However, in his 2011 Annual Report, the Children's Advocate expressed concern regarding the minimal improvement to further reduce these numbers in 2011 and the continued decline in the overall number of foster homes in Saskatchewan.¹⁶

x Data is reported as of March 31 for each year

xi This includes wards, non-wards (a child who is placed by court order in the custody of a designated Person of Sufficient Interest caregiver), and those children with apprehended status (a child who is in need of protection and at risk of incurring serious harm and has been removed from a parent to a place of safety). Placements children in care may include: foster homes; group homes; assessment and stabilization centres or placement with extended family.

xii For more information on Children and Family Services Statistics in the province, refer to http://www.socialservices.gov.sk.ca/children-first

In our consultations with stakeholders, there was a general concern for children in care, in particular, for Aboriginal children in care.

Some of the issues

The Saskatchewan Children's Advocate has recommended the need for:

- Developing a sustainable poverty reduction strategy to address social and economic drivers of the child welfare and criminal justice systems;
- > Transforming the child welfare system to better respond to the needs of families prior to points of crisis, and keep all children and youth in safe and supported homes; and
- Improving services and outcomes for Aboriginal children, youth and their families with substantial supports, interventions and opportunities to succeed and counter the inter-generational

trauma experienced by First Nations and Métis families and communities.¹⁶

Examples of current initiatives

- Establishment of a provincial Cabinet Committee on Children and Youth;
- Partnership between the Saskatoon Health Region and the Ministry of Social Services to reach out to foster families to ensure appropriate immunization coverage for children in care; and
- Saskatoon Tribal Council has partnered with the Ministry of Social Services to ensure Aboriginal children in care are placed with Aboriginal families and that families in crisis have the supports they need. They are "reconnecting, reuniting and building for healthy families".

2.5 Taking Action – Addressing Complexity

Understanding population numbers, rates and trends helps decision-makers, program planners and service providers to better allocate funds, plan future programs and services, and develop policies that reflect the needs of a changing population. A growing and diverse urban population brings new complexity and challenges for health-care and other human service providers.

The number of children ages 0 to 6 in Saskatoon is increasing rapidly. Almost a quarter of the children live in the city's areas of highest deprivation.

The birth rates for the Registered Indian Status population are three times as high as the non-RIS population. The highest birth rates (17 per 1,000 residents) are among those living in the areas of highest deprivation in Saskatoon.

The number of immigrant children has increased sevenfold since 2005; 98% of newcomer families have settled in Saskatoon.

There has been a decrease in the number of single-parent families in Saskatoon. The core neighbourhoods have twice as many single-parent households as Saskatoon overall.

Finally, while data is difficult to access for children ages 0 to 6, the health of children in care requires attention to ensure they do not fall through the cracks.

This complex and changing population raises challenges to ensure the needs of children and their families are met and must be considered when taking action to improve the health of children across our communities.

Stakeholders held differing opinions on how to best provide programs and services for the 0 to 6 population, and their families, given the wide array of needs. Some argued that targeted services and programs address a gap in service delivery and are an effective means of meeting the needs of specific populations. Others suggested that by limiting access to programs to a specific geography and/or population, the needs of similar populations, outside of the specified geography, go unmet.

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CHAPTER 3

Early Childhood Physical Health



HIGHLIGHTS

Early Childhood Physical Health

In Saskatoon Health Region, 14% of children rated low on the Physical Health and Wellbeing domain of the EDI.

The percentage of children with low scores varied greatly among Saskatoon neighbourhoods, ranging from 3.6% to 37.2%.

Infant mortality rate has remained relatively unchanged for the past decade.¹

- > The infant mortality rate in the Health Region was 5.8 per 1,000 live births (using a 3-year average, 2007-2009).
- > It was slightly higher than the national rate but just below the provincial rate.
- > The 2007-2009 rate was considerably lower than the 1993-1995 rate of 9.0 per 1,000 live births.
- The lowest rates were seen in 2002-2004 (4.4 per 1,000 live births).
- > Since 2003-2005 the rate has remained relatively unchanged.
- > Differences by geography and socioeconomic status persist. The infant mortality rate between 2000 and 2009 combined was:
 - 6.1 deaths per 1,000 live births among Saskatoon residents compared to 4.6 for rural Health Region residents.
 - About 1.5 times higher in the core neighbourhoods of Saskatoon compared to the middle-income neighbourhoods.

In 2007-2009, the Registered Indian Status (RIS) and non-RIS populations had the same infant mortality rate (5.8 per 1,000 live births).

Causes of mortality vary with age.

- > Between 2005 and 2009, the leading causes of death in infants under 1 year were congenital anomalies (29%), prematurity (19%) and Sudden Infant Death Syndrome (13%).
- > Leading causes of death in children ages 1 to 6 were cancer (25.6%), injuries (21.9%) and congenital anomalies).

Birth weights are not changing.

- > Low birth weight percentages have been similar to the regional, provincial and national trends and there were no significant differences by geography.
- In 2008, high birth weight percentages in Saskatoon Health Region (13.3%) were higher than Canadian rates (12.2%) but lower than Saskatchewan rates (15.1%).
- High birth weights were significantly higher in RIS populations (18.3%) compared to non-RIS populations (12.3%).

Breastfeeding initiation is increasing.

> The percentage of Health Region mothers who reported having tried breastfeeding, even if it were for a short time, has increased from 83.5% in 2007-2008 to 97.2% in 2009-2010.

^{••••••}

i Three year rolling average from 1992-1994 to 2007-2009. Small numbers result in high variations in rates.

• Mothers who reported exclusively breastfeeding their last infant for at least six months also increased from 36.5% in 2007-2008 to 47.4% in 2009-2010.

Causes of hospitalization and hospitalization rates change with age, Registered Indian Status and areas of deprivation.

- > In 2007-2009, infants had higher hospitalization rates than children ages 1 to 3 and 4 to 6.ⁱⁱ
 - Leading causes of infant hospitalization were conditions arising in the perinatal period (e.g. low birth weight, respiratory distress, pre-term infants).
 - Infants from areas of highest deprivation had significantly higher rates of hospitalization than infants from areas of lower deprivation due to diseases of the respiratory system and conditions originating in the perinatal period.
- In both the 1 to 3 and 4 to 6 year age groups, the leading causes of hospitalization were diseases of the respiratory system, followed by injuries and poisoning.
 - Diseases of the respiratory system made up 42.3% and 37.7% of hospitalizations among children ages 1 to 3 and 4 to 6 years respectively.
 - Injuries made up 10.9% and 18.1% of hospitalizations among children ages 1 to 3 and 4 to 6 years respectively.
 Falls were the leading cause of injury for both age groups (39.8%, and 60.4% respectively).
- Hospitalization rates by RIS varied depending on the age group:
 - The non-RIS hospitalization rate (1,183.2 per 1,000) for infants was significantly higher than the RIS rate (961.8 per 1,000).^{III}
 - RIS children ages 1 to 3 had significantly higher rates of hospitalization (69.9 per 1,000) than non-RIS children (33.3 per 1,000).

 Hospitalization rates for RIS and non-RIS children ages 4 to 6 were similar (26.1 per 1,000 and 22.1 per 1,000 respectively).

Emergency department visits are higher in areas of higher deprivation.

- In 2009, the leading cause of emergency department visits in Saskatoon Health Region, for all three age groups, was diseases of the respiratory system (35.1%, 32.6% and 29.3% respectively).
- Rates of emergency department visits decreased as children aged.
- > Male children had higher rates of emergency department visits than female children.
- In 2009, the rate of emergency department visits was almost two times higher in children from areas of highest deprivation compared to areas of lowest deprivation (799 vs. 407 emergency visits per 1,000 children).
 - The rate of emergency department visits for diseases of the respiratory system in infants was almost three times higher in areas of highest deprivation compared to areas of lowest deprivation (507.0 per 1,000 vs. 182.9 per 1,000 respectively).^{iv}
 - Rates of visits due to diseases of the respiratory system in children ages 1 to 3 were also significantly higher in children from areas of highest deprivation compared to those in areas of lowest deprivation.
 - The rate for the leading cause of emergency department visits in children ages 4 to 6 (injury, poisoning and other external causes) was two times higher among children from areas of highest deprivation compared to those in areas of least deprivation.

iii Includes births.

ii This rate includes hospitalizations for newborn deliveries.

iv 3 year combined rate (2007-2009)

Immunization coverage is increasing.

- Between 2007 and 2011 in Saskatoon Health Region, immunization coverage increased overall.
- Rates for 2-year-old coverage for MMR increased from 70% in 2007 to close to 75% in 2011.
- Rates for 7-year-old coverage for MMR went from 88% in 2007 to 92% in 2011.
- However, there were differences in coverage at the neighbourhood level, and the Health Region is taking steps to address these differences.

Vaccine preventable disease (VPD) fluctuates.

- > Hepatitis B and pertussis are two VPDs that are prevalent in the community.
- In Saskatoon Health Region, between 2006 and 2010, the highest rate of routine vaccine preventable disease was for pertussis (24.9 per 100,000).

Percentage of "vulnerable" births is unacceptably high in Saskatoon Health Region, particularly for mothers living in core neighbourhoods of Saskatoon.

- In 2010, almost 34% (n=1,199) of women in the Health Region delivering a baby, and who completed the In-Hospital Birth Questionnaire (IHBQ), scored 9 or above, signalling cause for concern (for the mother and baby) by those who use and monitor these scores.
- Mothers living in core neighbourhoods (63.6%) were more likely to score 9 or above on IHBQ than those living in affluent and middle-income neighbourhoods (23.6% and 33.5% respectively).

• Mothers of Aboriginal descent were more likely to score 9 or above on IHBQ than mothers of non-Aboriginal descent (70.3% and 27.7% respectively).

Smoking rates higher among mothers in low-income neighbourhoods.

- In 2010, 16.7% of mothers reported smoking at least one cigarette per day. This is about the same as the 16.4% reported in 2006-2007 for women in Saskatchewan.^v
- Mothers who lived in the core neighbourhoods and mothers of Aboriginal descent both reported significantly higher smoking rates during pregnancy (both above 40%) than other mothers.

Substance use during pregnancy is higher among mothers in low-income neighbourhoods.

- In 2010, 5.6% of women living in Saskatoon Health Region who consented to answer the IHBQ reported alcohol and drug use during pregnancy.
- The use of drugs and alcohol during pregnancy was significantly higher in Saskatoon (6.4%) than in rural areas (3.1%).
- Core neighbourhoods had a higher percentage (16.1%) of alcohol and drug use during pregnancy than both affluent (1.5%) and middle-income neighbourhoods (5.5%).
- > The greatest difference in substance use was among women of Aboriginal descent (20.5%) compared to women who reported not being of Aboriginal descent (3.1%).

^{.....}

v Based on Canadian Maternity Experiences Survey and asked during the last three months of pregnancy, did the woman smoke daily, occasionally or not at all.

Oral health is worse in low-income neighbourhoods.

> While the percentage of Grade One children in Saskatoon Health Region that is cavity-free has remained relatively unchanged over time, children attending schools in low-income neighbourhoods were less likely to be cavity-free (34.1%) than children attending school in other neighbourhoods (59.8%).

Canada is in the midst of a childhood obesity epidemic.

- Currently, one in four children and youth in Canada are overweight or obese and rates of obesity are rising. vi,1
- The percentage of young children with healthy weights is declining. Canadian statistics show that among children ages 2 to 5, 15.2% are overweight and 6.3% are obese.²
- Children, in Grades 5 to 8, from the highincome neighbourhoods were more likely to watch 2 hours or less of television per day than children from the core or middleincome neighbourhoods (61.3% vs. 44.9% vs. 56.4%, respectively). Children from core neighbourhoods were more likely to watch more than 2 hours per day compared

to the high- or middle-income neighbourhoods (55.1% vs. 38.7% vs. 43.6%, respectively).

Of the children who self-identified as Aboriginal, 47.2% reported that they had 2 hours or less screen time per day, compared to 57.5% of non-Aboriginal children. Conversely, 52.8% of Aboriginal children had more than 2 hours of screen time per day, compared to 42.5% of non-Aboriginal children.

The physical environment, both natural and built, plays a significant role in influencing healthy child development.

- Some links between children's environmental exposures and health outcomes are well established (for example, lead and brain impacts, ionizing radiation and cancer, air pollution and asthma) whereas other links are less well understood.
- Several recent national and international agreements have specifically highlighted the need for assessing the state of children's environmental health and have called for action to develop children's environmental health indicators.

This chapter covers key elements of physical health that go beyond the absence of disease. Healthy starts include immunizations, healthy birth weights, breastfeeding and pregnancies free of risk factors such as smoking. This chapter also looks at the leading causes of health system contact whether it is for deaths, hospitalizations or emergency department visits. Oral health and active living are also key components of physical health and are reported here.

3.1 Early Development Instrument (EDI): Physical Health and Well-being

What is it? The physical health and well-being domain of the EDI measures competencies such as physical readiness for school, physical independence, general health, gross and fine motor skills.^{vii}

Geographical Breakdown

Findings from the EDI's physical health and well-being domain reveal that in Saskatoon Health Region, 14.0% of kindergarteners were considered *not ready for school*. Findings were similar between urban and rural

.....

vi Ages 2 to 17

vii Refer to Glossary for a full description of the EDI

Saskatoon Health Region (14.1% of children in Saskatoon compared to 13.4% in rural SHR were considered not ready for school based on this domain).

A Closer Look at Saskatoon

At the neighbourhood level in Saskatoon, the percentage of children considered not ready for school based on this domain ranged from 3.6% to 37.2%, more than a 10-fold difference (Map 3.1).

Map 3.1: Percentage of Children Who Scored Low on the Physical Health and Well-being Domain by Neighbourhood, Saskatoon, 2008-2009 to 2010-2011 Combined



Source: Saskatchewan Ministry of Education, Early Years Branch, Early Childhood Development and Integrated Services Map: Public Health Observatory, Population and Public Health, Saskatoon Health Region Note: Map classes are based on a quantile classification; numbers in brackets indicate number of neighbourhoods in each category.

3.2 Infant Mortality Rate

What is it? The infant mortality rate refers to the number of deaths in newborns during their first year of life per 1,000 live births in a given time period. This information is obtained from Vital Statistics, Information Services Corporation. Three-year average rates are presented because of issues with small numbers statistical analysis.

Infant mortality is considered one of the most comprehensive measures of health in a society.³ In addition to measuring the health status of a population, it is an indicator of the effectiveness of preventive care, maternal and child care and broader social factors such as maternal education, smoking and relative deprivation.⁴ For more information on infant mortality, see the *Reducing Infant Mortality in Saskatoon Health Region 2012 Report* (www. saskatoonhealthregion.ca/PHO).

Geographical Breakdown

Infant mortality rates tend to fluctuate by year due to the low numbers of infant deaths in the Health Region. The 3-year average rate (2007 to 2009 combined) was 5.8 deaths per 1,000 live births, which had decreased from its high in the early 1990s (9.0 deaths per 1,000 life births) but had increased from its low between 2002 and 2004 (4.4 per 1,000 live births). It has remained relatively unchanged in the years since 2003-2005 (*Figure 3.1*).

Saskatoon Health Region's infant mortality rate has been slightly higher than the national average but slightly lower than Saskatchewan's rates over time.



Figure 3.1: Infant Mortality Rates, Saskatoon Health Region, Saskatchewan and Canada, 1992-2009, 3 Year Average

Source: Saskatchewan Ministry of Health, Vital Statistics.

A Closer Look at Saskatoon

Between 2000 and 2009, infant mortality rates in Saskatoon's core neighbouhoods were significantly higher than those of middle-income neighbourhoods. No other significant differences were evident among other sub-groups.

More investigation is needed to determine the nature of the differences seen in infant mortality among socioeconomic groups within Saskatoon Health Region.

Infant Mortality in RIS Populations

In the early part of the 1990s, the Registered Indian Status (RIS)^{viii} population had infant mortality rates nearly double that of the non-RIS population. However, more recently, between 2007 and 2009, the RIS population in Saskatoon Health Region had the same infant mortality rate as the non-RIS population (5.8 per 1,000 live births) (*Figure 3.2*). These results are inconsistent with other recent reports that present infant mortality rates for First Nations people in Canada are double that for non-First Nations.^{5,6} However, given the findings in Saskatoon, more investigation is needed regarding the apparent closing of the disparity gap.

viii See glossary for definition of RIS





Figure 3.2: Infant Mortality Rate, Registered Indian Status, Saskatoon Health Region, 1992-2009 3 Year Averages

Source: Saskatchewan Vital Statistics linked births and deaths (Infant health).

3.3 Leading Causes of Mortality

What is it? The leading causes of death in children ages 0 to 6.

Death is the most critical of health outcomes. A child's death represents a tragic loss to parents, families, communities and society as a whole. Mortality measures are used to identify opportunities for prevention.

Geographical Breakdown

In Saskatoon Health Region between 2005 and 2009, there were 116 infant (under 1 year) deaths and 27 deaths in children ages 1 to 6.⁴ Between 2005 and 2009, the leading causes of death in infants were congenital anomalies (29%), prematurity (19%), and Sudden Infant Death Syndrome (13%). Among children ages 1 to 6, the leading causes of death were cancer (25.6%), injuries (21.9%) and congenital anomalies. These are similar to national findings.

Given the low number of deaths in the 0 to 6 year age group, findings at a neighbourhood level were suppressed.

3.4 Low and High Birth Weights

What is it? Birth weight refers to the first weight of the fetus or newborn after birth (ICD-10). Low birth weight is expressed as the percentage of infants weighing less than 2,500 grams at birth out of all live births during the same time period, whereas high birth weight is expressed as the percentage of infants weighing.

Birth weight is considered an important determinant of health and is a general indicator of infant health and prenatal nutrition.⁷ Low birth weight increases the risk of health and developmental problems and is one of the strongest predictors of infant mortality.^{8,9,10} Infants are at higher risk of low birth weight if their mother smokes, abuses alcohol or drugs, has insufficient nutrition, does not receive sufficient prenatal care or is of low socio-economic status. Low birth weight infants are at increased risk of diabetes in adulthood.¹¹ High birth weight infants are at risk for obesity, diabetes and cancer later in life.^{12,13} High birth weights also increase the risk for birth injuries compared to infants of normal birth weight.¹⁰ Infants are at higher risk of high birth weight if male, if mothers had high prepregnancy weight, gestational diabetes, or multiparity (more than two births).¹⁴

Geographical Breakdown

In 2009, the percentage of low birth weight infants in Saskatoon Health Region was 5.7% (231 infants) (*Figure 3.3*) and is similar to provincial and national trends. Between 2007 and 2009, the prevalence of low birth weights varied by geography, but no statistically significant differences were seen.



Figure 3.3: Percentage of Low Birth Weight (<2,500grams) Infants, Saskatoon Health Region, Saskatchewan and Canada, 1992-2009

Source: Statistics Saskatchewan Ministry of Health, Vital Statistics, Canada, CANSIM table 102-4005,

In 2009, 13.2% of infants in the Health Region were high birth weight. The rate has been higher than the Canadian but lower than the provincial trend for a number of years (*Figure 3.4*). There were no statistically significant differences by geography within the Health Region.

Between 2007 and 2009, the prevalence of high birth weights was significantly higher in the RIS population compared to the non-RIS population (18.3% and 12.3%).⁴





Source: Saskatchewan Vital Statistics Births. Canada data from CANSIM table 102-4509 Live birth, by birth weight and sex, Canada, provinces and territories, annual.

3.5 Percentage of Mothers Who Breastfeed: Initiation and Exclusive Breastfeeding

What is it? Statistics Canada, in its Canadian Community Health Survey, defines mothers who have initiated breastfeeding as the percentage of mothers who breastfed or tried to breastfeed their last child even if only for a short time. Exclusive breastfeeding for at least 6 months refers to "the practice of feeding only breast milk (including expressed breast milk). Water, breast milk substitutes, other liquids and solid foods are excluded" and is based on World Health Organization recommendations.¹⁵

Breastfeeding has been well documented as the best way to feed infants as it provides them with optimal nutritional, immunological and emotional benefits for healthy growth and development. There is international consensus on the benefits of breastfeeding, including its contribution to increased cognitive development in children and reduced childhood illnesses like juvenile onset insulin dependant diabetes mellitus and obesity. Because breast milk is so important for the healthy growth and development of infants, Health Canada recommends mothers exclusively breastfeed infants up to six months of age.¹⁵

Geographical Breakdown

In 2009-2010, 97.2% of Saskatoon Health Region mothers reported initiating breastfeeding their infant compared to 83.5% in the two previous years. This is higher than both the Saskatchewan and Canadian averages of 90.1% and 87.4%, though it is only statistically different from the Canadian average (Table 3.1).

Table 3.1: Prevalence of Breastfeeding Initiation, Saskatoon Health Region, Saskatchewan, Canada, 2007-2008 and 2009-2010

	Saskatoon Health Region (%)	Saskatchewan (%)	Canada (%)
2007/2008	83.5	87.5	87.7
2009/2010	97.2	90.1	87.4

Source: Statistics Canada, Canadian Community Health Survey (CCHS). CANSIM table 105-0502

Health Canada recommends exclusive breastfeeding until at least six months of age. Despite this recommendation, the prevalence of six-month-exclusive breastfeeding was low in 2007-2008 but increased in 2009-2010. Saskatoon Health Region rates went from 36.5% to 47.4%, provincially rates rose from 27.2% to 33.1% and nationally rates saw an increase from 23.0% to 26.2%.^{ix}

ix Regional percentages must be interpreted with caution given the small sample size of the Canadian Community Health Survey (CCHS) for the 2007-2008 and 2009-2010 survey years.

The need to continue to improve and sustain breastfeeding rates until at least 6 months, and the need to create a culture of acceptance within the community emerged as themes in consultations with stakeholders.

Some proposed solutions:

1. Focus on the new Saskatchewan Children's Hospital

Stakeholders suggested that, given the development of the Saskatchewan Children's Hospital, initiatives related to breastfeeding could be supported within the hospital setting. For example:

- Develop a breastfeeding centre in the new hospital.
- Increase the number of certified lactation consultants and consider their distribution across urban and rural settings.

2. Promote, protect and support

Stakeholders felt that a multi-pronged approach should be taken to normalize the perception of breastfeeding in the community in order to create supportive breastfeeding-friendly environments in schools, work and other settings. But, it is also essential to understand, appreciate and address barriers to breastfeeding where it may not be possible to breastfeed, for example, the impact of abuse on women who do not want to breastfeed and the effects and treatment for lactose-intolerant babies. It was also suggested that breastfeeding education is important in primary, secondary and postsecondary institutions.

Examples of current initiatives:

> In October 2011, Saskatoon's own West Winds Primary Health Centre was one of ten community facilities in Canada officially designated as a Baby Friendly Initiative™ (BFI). The BFI is a global campaign of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) to improve infant feeding practices. Some of the requirements for this designation are the development of a region-wide breastfeeding policy, development of breastfeeding classes for parents, and ongoing education and training for front line staff.¹⁶

MY EXPERIENCE:

There's more to breastfeeding!

"Breastfeeding has many health benefits. As a mother of seven, I find that breastfed babies have an even greater advantage beyond the physical health benefits! I have breastfed all of my children and may not have done so with my last child if it had not been for the support of West Winds staff and resources. During my pregnancy I developed an aversion to eating meat, and worried about the health of my unborn child. I feared I would not be able to offer the proper nourishment to breastfeed also. West Winds supported me during my pregnancy with cooking classes on how to make meatless dishes. The services offered by West Winds enabled me to maintain the health of my baby before and after pregnancy. My son is healthy and vibrant and will be celebrating his first birthday soon. Thank you West Winds for helping us."

Mother and client of West Winds Primary Health Centre

3.6 Leading Causes of Hospitalizations

What is it? The leading cause of hospitalization for children ages 0 to 6 is expressed as a percentage of all separations (discharges and deaths based on ICD-10 coding) for children ages 0 to 6. Two other measures used are (1) the all-cause hospitalization rate, which is the number of hospital separations in a given age group from all causes per 1,000 population in that age group over a specified period of time and (2) the cause-specific hospitalization rate, which is the number of hospital separations in a given age group from a specified period of time and (2) the cause-specific hospitalization rate, which is the number of hospital separations in a given age group from a specific cause per 1,000 population in that age group over a specified period of time. Hospital discharge data is used because the diagnoses for which a patient was treated during his or her hospitalization are captured upon discharge.

Being admitted to hospital is a serious health event. Depending on the severity of the health outcome, this can be a life-altering experience for a child. Hospitalization measures are used to understand severity of a medical condition, service delivery options, burden on health care system and, ultimately, to identify opportunities for prevention.

Geographical Breakdown

The hospitalization rates and leading causes of hospitalizations are shown in three distinct age groups between 2007 and 2009: infants less than one year, children one to three years and children four to six years.

Among infants less than one year of age living in Saskatoon Health Region, there were 1,153.1 hospitalizations per 1,000 infants from a total of 12,653 hospitalizations^x (3,608 hospitalizations excluding ICD-10 Chapter 21). The leading causes of hospitalization were conditions related to the perinatal period^{xi}, such as short gestation, low birth weight, newborn respiratory distress, neonatal jaundice and other conditions associated with prematurity (*Table 3.2*). Congenital anomalies and respiratory system disease were the next leading causes of hospitalization.

Table 3.2: Leading Causes of Hospitalizations, Children Under 1 Year of Age (Infants), Saskatoon Health Region, 2007-2009 Combined

	Number of Hospital Separations	Percentage (%)
Certain Conditions Originating in the Perinatal Period	2109	58.4
Congenital Anomalies	458	12.7
Diseases of the Respiratory System	431	11.9
Symptoms, Signs and Ill-defined Conditions*	138	3.8
Diseases of the Genitourinary System	100	2.8
Diseases of the Digestive System	90	2.5
Infectious and Parasitic Diseases	88	2.4
Other	194	5.4

Source: Saskatchewan Ministry of Health, Hospital Separations. Note that Chapter 21, factors influencing health status and contact with health services in the International Classification of Disease 10th edition are not included.

* Practically, this cause could be designated "not otherwise specified," "unknown etiology" or "transient."

For Saskatoon Health Region children between ages 1 and 3, there were 37.2 hospitalizations per 1,000 children ages 1 to 3 from a total of 1,187 hospitalizations^{xii}. (1,125 hospitalizations excluding ICD-10 Chaper 21). The leading cause of hospitalizations for this age group was diseases of the respiratory system (42.3%), such as pneumonia, asthma and croup (*Table 3.3*). Injuries made up 10.9% of inpatient hospitalizations, with falls from beds being most common.

x This rate includes ICD-10 Chapter 21, which includes newborn deliveries.

xi 20 weeks gestation up to seven days old

xii Including ICD-10 Chapter 21



Table 3.3: Leading Causes of Hospitalizations, Children Ages 1 to 3, Saskatoon Health Region, 2007-2009 Combined

	Number of Hospital Separations	Percentage (%)
Diseases of the Respiratory System	475	42.3
Injury and Poisoning	122	10.9
Diseases of the Digestive System	88	7.8
Symptoms, Signs and Ill-defined Conditions*	88	7.8
Infectious and Parasitic Diseases	86	7.6
Congenital Anomalies	47	4.1
Diseases of the Nervous System	39	3.5
Diseases of Blood and Blood-Forming Organs	36	3.2
Other	144	12.8

Source: Saskatchewan Ministry of Health, Hospital Separations. Note that Chapter 21, factors influencing health status and contact with health services in the International Classification of Disease 10th edition are not included.

* Practically, this cause could be designated "not otherwise specified," "unknown etiology" or "transient."

For Saskatoon Health Region children between 4 and 6 years of age, there were 22.6 hospitalizations per 1,000 children for a total of 698 hospitalizations^{xiii} (655 hospitalizations excluding ICD-10 Chaper 21). The leading causes of hospitalization were similar to those for one to three year olds. Respiratory system disease made up the bulk of hospitalizations (37.7%) (Table 3.4). Chronic tonsillitis and pneumonia were the two most common conditions in this group. Injuries made up 18.1% of hospitalizations. Falls from playground equipment made up the majority within this age group.

Table 3.4: Leading Causes of Hospitalizations, Children Ages 4 to 6, Saskatoon Health Region, 2007-2009 Combined

	Number of Hospital Separations	Percentage (%)
Diseases of the Respiratory System	247	37.7
Injury and Poisoning	119	18.1
Symptoms, Signs and Ill-defined Conditions*	44	6.7
Diseases of the Digestive System	35	5.4
Infectious and Parasitic Diseases	30	4.6
Diseases of the Nervous System	27	4.1
Congenital Anomalies	26	4.0
Diseases of Blood and Blood-Forming Organs	25	3.8
Diseases of the Genitourinary System	25	3.8
Other	77	11.8

Source: Saskatchewan Ministry of Health, Hospital Separations. Note that Chapter 21, factors influencing health status and contact with health services in the International Classification of Disease 10th edition are not included

* Practically, this cause could be designated "not otherwise specified," "unknown etiology" or "transient."

xiii Including ICD-10 Chapter 21

Childhood Injury

Injuries are the leading cause of death and the third leading cause of hospitalization among children and youth in Canada.^{17,18} Although most childhood injuries are minor, some result in premature death and severe impairment which can require years of interventions and treatments.¹⁹

Saskatchewan is not exempt from these statistics and in fact has a higher rate of injury overall than the national average.¹⁸ Injuries are not random acts that impact individuals – injuries are predictable and, in most cases, preventable.

Serious injuries to children create ripples that affect the family, the community, the health care system and potentially other systems of support such as the education system. Serious injuries can happen to children in a number of settings: home, community, travel, child care and so on. It is the responsibility of those who care for children and those who set public policy to ensure that the environments within which children live, play and learn are as safe as possible.

To decrease injuries to children, the causes of injuries must be addressed through education, engineering, enforcement and evaluation. Using car seats for children as an example, the seats must be installed and used correctly to save lives and decrease injuries. There is need for education for parents, engineering of seats, enforcement by government, through legislation, and by police, through ticketing, and evaluation to determine if the measures that have been implemented are effective in reducing injuries. Injury prevention is not simple work but with determination and perseverance the rates of child injury and the associated impacts can be reduced.

- Noreen Agrey, Saskatchewan Prevention Institute

How Are Children Injured in Saskatoon Health Region? Falls!

From 2007-2009, the leading causes of injury related hospitalizations in Saskatoon Health Region were:

- Infants (under one year): falls (37.8%, n=14), poisoning, drowning and other accidental injury (32.4%, n=12), and victims of assault (21.6%, n=8).
- Children ages 1 to 3: falls (39.8%, n=42), poisoning, drowning and other accidental injury (30.4%, n=32), and exposure to external forces (e.g. foreign object entering eye) (21.3%, n=22).
- Children ages 4 to 6: falls (60.4%, n=62), followed by poisoning, drowning and other accidental causes (14.5%, n=15), and land transportation (motor vehicle, pedestrian, cyclist, rail and other) (13.5%, n=14).

Injury and Deaths of Children in Care

- In 2011, 73 child death or critical injury files were closed by the Children's Advocate Office for the entire province. This included cases from 2006 to 2011 with 36 child death files and 37 critical injury files. Children ages 0 to 5 had the highest deaths (13), and two critical injuries.
- Infant and toddler deaths were associated with significant medical conditions, such as spina bifida and cerebral palsy, respiratory conditions, Sudden Infant Death Syndrome (SIDS), infection, drowning and child abuse. The Saskatchewan Children's Advocate 2011 Annual Report concluded that this age group is particularly vulnerable to natural (e.g. born medically fragile), accidental and violent (e.g. caregiver abuse) deaths.²⁰

A Closer Look at Hospitalization Rates by Rural Planning Zones

Significant differences in infant hospitalization rates were found among Rural Planning Zones. Humboldt had the highest rate (1,306.0 per 1,000) and Saskatoon RPZ had the lowest (1,037.7 per 1,000), which were both significantly different from Saskatoon's rate (1,158.1 per 1,000) (*Figure 3.5*).





Source: Saskatchewan Ministry of Health, Hospital Separations. Note that Chapter 21, factors influencing health status and contact with health services in the International Classification of Disease 10th edition are not included.

Similar to the findings for infants, hospitalization rates for children ages 1 to 3 and 4 to 6 varied among rural planning zones. For the one to three age group, Humboldt RPZ and Rosthern RPZ had the highest rates (55.2 per 1,000 and 55.5 per 1,000 respectively) and were significantly different from the lowest rates in Saskatoon and Saskatoon RPZ (35.1 per 1,000 and 33.2 per 1,000 respectively)(*Figure 3.6*).





Source: Saskatchewan Ministry of Health, Hospital Separations. Note that Chapter 21, factors influencing health status and contact with health services in the International Classification of Disease 10th edition are not included.

Hospitalization rates for children ages 4 to 6 were lower than the other age groups; however, there were significant differences among Rural Planning Zones. Humboldt RPZ had a significantly higher hospitalization rate (46.3 per 1,000) than all other geographies, with Saskatoon and Saskatoon RPZ having the lowest rates (21.1 and 19.8 per 1,000 respectively) (*Figure 3.7*).



Figure 3.7: All-cause Hospitalization Rate, Children Ages 4 to 6 Rural Planning Zone, Saskatoon Health Region, 2007-2009 Combined

Source: Saskatchewan Ministry of Health, Hospital Separations. Note that Chapter 21, factors influencing health status and contact with health services in the International Classification of Disease 10th edition are not included.

A Closer Look at Hospitalization Rates by Registered Indian Status

1,000). However, RIS children ages 1 to 3 had a significantly higher hospitalization rate (69.9 per 1,000) than non-RIS children of the same age group (33.3 per 1,000). The rates for RIS and non-RIS children ages 4 to 6 were similar (26.1 and 22.1 per 1,000 respectively).

A Closer Look at Saskatoon - Hospitalization by Socioeconomic Status: Quintiles of Deprivation

For each of the early years age groups, all-cause hospitalization rates were calculated by quintiles of deprivation but no notable patterns were observed.^{xiv}

Further analysis completed on the leading causes of hospitalization in each of the three age groups revealed some notable findings for infants in Saskatoon. Rates for infants varied significantly among quintiles for conditions originating in the perinatal period and diseases of the respiratory system.

Hospitalization rates for conditions originating in the perinantal period generally increased as deprivation increased, with the rate for infants being highest in areas of highest deprivation. (*Figure 3.8*)

A recent Statistics Canada national study found that between 2001 and 2006, unintentional injury hospitalizations among Canadian children and youth (ages 0 to 19) in areas with a high percentage of Aboriginal identity residents were at least double the rate for their contemporaries in low-percentage Aboriginal identify areas.²¹

xiv See glossary for definition of quintiles of deprivation..



Figure 3.8: Cause-specific Hospitalization Rates: Certain Conditions Originating in the Perinatal Period, Children Under 1 Year of Age (Infants), Saskatoon, 2005 to 2009 Combined



Source: Saskatchewan Ministry of Health, Hospital Separations.

Hospitalization rates for diseases of the respiratory system were significantly higher among infants in Quintile 5 (highest deprivation) compared to other quintiles (*Figure 3.9*).





Source: Saskatchewan Ministry of Health, Hospital Separations.

Understanding the potential reasons for the aforementioned differences in hospitalization rates among Rural Planning Zones, between RIS and non-RIS, and among areas of deprivation requires further study.

3.7 Leading Causes of Emergency Department Visits in Children

What is it? The leading causes of emergency department visits for children ages 0 to 6 is obtained from the data in the National Ambulatory Care Reporting System. Rates of emergency department visits among sub-groups of children living in Saskatoon Health Region were compiled from visits to the three Saskatoon hospitals. Comparison between visits in rural hospitals and Saskatoon emergency departments were not made due to rural data limitations.

Childhood emergency department visit rates are an important indicator of child health and safety. Analyzing local leading causes of emergency visits help in the design of effective programs and strategies to improve children's health, prevent injury and reduce burden of disease. Emergency department visits may also be used as a proxy indicator for access to primary care. Children may access emergency departments because the family does not have access to a family physician, nurse practitioner or drop-in clinic.

Although the literature regarding pediatric use of emergency services is limited, various studies suggest that increased emergency department visits can be attributed to the primary care system being unable to meet the growing demand of the population.²² Many studies conducted in Canada, the United States and Australia (among others) have found that a large proportion of patients are utilizing the emergency department for non-urgent conditions which could be addressed by a regular physician in a non-emergency setting.^{22,23} In one study, 80% of parents cited the lack of a primary care physician as their main reason for using the emergency department for their children's health needs.²⁴ Thus, access to primary care services (in particular, primary care physicians) would likely reduce emergency department visits, particularly for non-urgent conditions.^{22,25} Conversely, some studies found that those who use the emergency department do have primary care physicians.^{24,25,26} However, patients reported unmet medical needs, mainly due to the inability to satisfactorily consult with their physicians.^{24,26} Those who report to being satisfied with their family doctors are less likely to utilize emergency services.²⁴ Therefore, not only the availability but also access and quality of primary care services are important factors in people's choice to utilize emergency services versus primary care services.^{24,25}

Geographical Breakdown

In 2009, there were 11,011 visits of Saskatoon Health Region resident children ages 0 to 6 to hospital emergency departments in Saskatoon. This represents a rate of 473.3 emergency visits per 1,000 children ages 0 to 6.

The leading causes of emergency visits for children ages 0 to 6 were diseases of the respiratory system and injury and poisoning (Table 3.5), but causes varied by age group (Tables 3.6, 3.7 and 3.8).^{xv}

	Number of Emergency Department Visits	Percentage (%)
Diseases of the Respiratory System	3570	32.4
Injury and Poisoning	1956	17.8
Symptoms, Signs and III-Defined Conditions*	1892	17.2
Infectious and Parasitic Diseases	1232	11.2
Diseases of the Digestive System	640	5.8
Diseases of the Ear and Mastoid Process	581	5.3
Other	1140	10.4

Table 3.5: Leading Causes of Emergency Department Visits of Children Ages 0 to 6, Saskatoon Health Region, 2009

Source: Saskatoon Health Region, WINRECS NACRS (National Ambulatory Care Reporting System). Note that Chapter 21, factors influencing health status and contact with health services in the International Classification of Disease 10th Canadian edition are not included. * Practically, this cause could be designated "not otherwise specified," "unknown etiology" or "transient."

xv The types of respiratory system diseases patients were treated for include upper respiratory infections, laryngitis, epiglotitits, asthma, pneumonia and influenza.

In 2009, the three leading causes of emergency department visits in Saskatoon Health Region infants under one accounted for 67% of the total number of infant visits. These included diseases of the respiratory system followed by symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified, and infections and parasitic diseases (Table 3.6).

Table 3.6: Leading Causes of Emergency Department Visits for Children Under One Year of Age (Infants), Saskatoon HealthRegion, 2009

	Number of Emergency Department Visits	Percentage (%)
Diseases of the Respiratory System	995	35.1
Symptoms, Signs and Ill-Defined Conditions*	557	19.6
Infectious and Parasitic Diseases	335	11.8
Injury and Poisoning	235	8.3
Diseases of the Digestive System	233	8.2
Certain Conditions Originating in the Perinatal Period	125	4.4
Other	356	12.6

Source: Saskatoon Health Region, WINRECS NACRS (National Ambulatory Care Reporting System). Note that Chapter 21, factors influencing health status and contact with health services in the International Classification of Disease 10th Canadian edition are not included. * Practically, this cause could be designated "not otherwise specified," "unknown etiology" or "transient."

Similarly, the three leading causes of emergency department visits for children ages 1 to 3 accounted for 68% of the total visits for this age group. They included diseases of the respiratory system, injury and poisoning, and symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified. (Table 3.7)

Table 3.7: Leading Causes of Emergency Department Visits for Children Ages 1 to 3, Saskatoon Health Region, 2009

	Number of Emergency Department Visits	Percentage (%)
Diseases of the Respiratory System	1785	32.6
Injury and Poisoning	1078	19.7
Symptoms, Signs and III-Defined Conditions*	850	15.5
Infectious and Parasitic Diseases	674	12.3
Diseases of the Ear and Mastoid Process	334	6.1
Diseases of the Digestive System	276	5
Other	479	8.7

Source: Saskatoon Health Region, WINRECS NACRS (National Ambulatory Care Reporting System). Note that Chapter 21, factors influencing health status and contact with health services in the International Classification of Disease 10th Canadian edition are not included. * Practically, this cause could be designated "not otherwise specified," "unknown etiology" or "transient."

In 2009, the leading causes of emergency department visits for children ages 4 to 6 accounted for 71% of the total visits made by this age group. These leading causes were diseases of the respiratory system, injury and poisoning, and symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified (*Table 3.8*).



Table 3.8: Leading Causes of Emergency Department Visits for Children Ages 4 to 6, Saskatoon Health Region, 2009

	Number of Emergency Department Visits	Percentage (%)
Diseases of the Respiratory System	790	29.3
Injury and Poisoning	643	23.8
Symptoms, Signs and III-Defined Conditions*	485	18
Infectious and Parasitic Diseases	223	8.3
Diseases of the Ear and Mastoid Process	137	5.1
Diseases of the Digestive System	131	4.9
Other	290	10.7

Source: Saskatoon Health Region, WINRECS NACRS (National Ambulatory Care Reporting System). Note that Chapter 21, factors influencing health status and contact with health services in the International Classification of Disease 10th Canadian edition are not included. * Practically, this cause could be designated "not otherwise specified," "unknown etiology" or "transient."

As children get older, the number of visits to emergency significantly decreases. In 2009, there were 828.4 emergency visits per 1,000 infants, which was significantly higher than all other age groups. Male children had consistently higher emergency department visit rates than female children. These differences were significant within the under 1, 1-year, and 3-year age groups (*Figure 3.10*).





Source: Saskatoon Health Region, WINRECS NACRS (National Ambulatory Care Reporting System). Note that Chapter 21, factors influencing health status and contact with health services in the International Classification of Disease 10th Canadian edition are not included.

A Closer Look at Saskatoon

Childhood emergency department visit rates increased significantly as deprivation increased (*Figure 3.11*). Overall, the rate was almost two times higher in children from areas of highest deprivation compared to areas of lowest deprivation (799 vs. 407 emergency visits per 1,000 children or 3,515 vs. 1,587 total visits).





Source: Saskatoon Health Region, WINRECS NACRS (National Ambulatory Care Reporting System). Note that Chapter 21, factors influencing health status and contact with health services in the International Classification of Disease 10th Canadian edition are not included.

This trend of increasing rates with increasing deprivation was seen for all leading causes of emergency visits in each of the three age groups.

The findings from combining three years of emergency department data (2007 to 2009) showed that the leading cause of emergency department visits in infants (diseases of the respiratory system) was almost three times higher in infants from areas of highest deprivation compared to those in areas of lowest deprivation (Figure 3.12).





Source: Saskatoon Health Region, WINRECS NACRS (National Ambulatory Care Reporting System). Note that Chapter 21, factors influencing health status and contact with health services in the International Classification of Disease 10th Canadian edition are not included.

Similarly, among children ages 1 to 3, the leading cause of emergency department visits rate (diseases of the respiratory system) was significantly higher in areas of highest deprivation compared to all other areas of deprivation (*Figure 3.13*).







Source: Saskatoon Health Region, WINRECS NACRS (National Ambulatory Care Reporting System). Note that Chapter 21, factors influencing health status and contact with health services in the International Classification of Disease 10th Canadian edition are not included.

Based on the three-year combined analysis, it was found that the rate for the leading cause of emergency department visits in children ages 4 to 6 (injury, poisoning and other external causes) was two times higher among those in the most deprived group compared to those in the least deprived group (*Figure 3.14*).





Source: Saskatoon Health Region, WINRECS NACRS (National Ambulatory Care Reporting System). Note that Chapter 21, factors influencing health status and contact with health services in the International Classification of Disease 10th Canadian edition are not included.

3.8 Immunization Coverage

What is it? Immunization coverage refers to the percentage of the population who have received the recommended vaccines for the specific age group. For example, the Saskatchewan Ministry of Health's routine immunization schedule recommends vaccinations against measles, mumps and rubella (MMR) at 12 and 18 months of age.^{xvi} Coverage in this report is defined as the percent of children who received the recommended number of antigens by a specific age and who had an active record in the Saskatchewan Immunization Management System (SIMS), the provincial immunization tracking system.

Childhood immunization rates are a recognized measure of both population health and health care system performance. Immunization is the most effective way to prevent infectious disease, a fact born out by the low rates of vaccine preventable disease in Canada and in Saskatoon Health Region.

Setting Targets for Improving Immunization Coverage

In Saskatoon Health Region, age-appropriate childhood immunization coverage has increased overall since 2007; however there is still room for improvement. The Health Region has set an interim target of 79% for two year old MMR coverage (2 doses) for 2012. The Ministry of Health is working with health regions to set more ambitious targets longer-term as part of its key strategic priorities over the next five years. (http://www.health.gov.sk.ca/plan)

The recognized ages for measuring child immunization rates are two and seven years. Immunization schedules recommend specific numbers of antigens by specific ages; for example, two doses of MMR and four doses of diphtheria, tetanus and pertussis (dTAP) by two years of age. Immunization schedules allow intervals to elapse between vaccines to allow the body to produce disease-fighting antibodies. Adequate population level coverage is needed to prevent outbreaks in the Region; however, even partial vaccine protection (i.e. fewer than the recommended number of doses) provides some protection at the population level. For example, while two doses of rubella is recommended by two years of age for individual protection, it has been recommended nationally that 97% coverage for one dose of rubella at two years would grant a high degree of protection for the population as a whole.^{xvii}

It is also important to measure coverage at intervals preceding two and seven years in order to gauge how far children are falling behind schedule so interventions can be planned to catch them up. Children should receive their first MMR vaccine at one year. *Figure 3.15* shows the percentage of children who have turned 14 months (two months grace from 12 months) that have received their first dose of rubella antigen. The coverage at 14 months was 68.2% in 2011 and has been falling since 2007.

The coverage rate for a single dose of vaccine containing rubella antigen at two years was 88% in 2011. One dose is considered partial protection for a two year old; full protection is conferred by two doses by age two. The full age-appropriate coverage rate at two years (two doses) was 74.9% in 2011(*Figure 3.15*). The coverage rate for diphtheria antigen was 75%.

By the age of seven multiple efforts have been made to ensure children are fully immunized. The rubella coverage (two doses) in 2011 was 92% by seven years (Figure 3.15). In-migration and out-migration of children from the Region presents challenges to keeping the total child population 100% protected.

xvi See http://www.health.gov.sk.ca/immunization-schedule for the Saskatchewan Ministry of Health's Routine Immunization Schedule for Children and Adults. xvii Public Health Agency of Canada. Final Report of Outcomes from the National Consensus Conference for Vaccine-Preventable Diseases in Canada. CCDR

⁻⁻⁻⁻⁻⁻

^{2007;33}S3:1-56 (p 9)





Measles antigen is administered with mumps and rubella and is therefore a proxy measurement for MMR.

Source: Population and Public Health, Saskatoon Health Region

** As measured at 14 months of age. The Saskatchewan Childhood Immunization Schedule recommends the first MMR at 12 months of age. *One dose is considered only partial vaccine coverage. The Saskatchewan Childhood Immunization Schedule recommends two doses by two years of age.

^ 5 diphtheria: at least 1 after age 4 (standard schedule is 2, 4, 6, 18 months & 4 years) OR 4 diphtheria: at least 1 of which was received after age 4.

Geographical Breakdown

Immunization coverage percentage ranged within subgroups and across geographies. For example, in 2011, the two year old MMR coverage rate in Saskatoon Health Region was 74.9% and varied among Rural Planning Zones (RPZ). The rates in Humboldt RPZ (90.2%) and Watrous RPZ (88.9%) were higher than Saskatoon RPZ (77.8%), Saskatoon (73.6%) and the lowest rate in Rosthern RPZ (62.6%) (Appendix B). The Rosthern RPZ includes two reserve communities and coverage rates may be underestimated. Children may be immunized on reserve without having their SIMS records updated and therefore Rosthern may be assessed as being under-immunized.

A Closer Look at Saskatoon

Within Saskatoon, neighbourhoods with the lowest coverage rates cluster around the neighbourhoods of Meadowgreen, King George, Pleasant Hill, Riversdale, Westmount, and Confederation Suburban Centre. However, some of these neighbourhoods have improved coverage, for example Meadowgreen and Pleasant Hill. Pockets of low coverage are also found in neighbourhoods in the south and east parts of the city (*Map 3.2*). The Region is working to improve equity in the uptake of immunization within those neighbourhoods so that vaccine-preventable diseases do not make a come back in the community.

Map 3.2: Two Year Old Measles* (2 Doses) Immunization Coverage by Saskatoon Neighbourhoods, 2011



* Measles antigen is administered with mumps and rubella and is therefore a proxy measurement for MMR. Source: Population and Public Health, Saskatoon Health Region

Increasing Immunization Rates in Saskatoon Health Region

Within the past five years, the Health Region has taken the following actions to increase immunization rates:

- > Implemented a reminder system for children who are overdue across the Region.
- > Implemented a targeted immunization reminder system for children in care of Social Services.
- Implemented community health care worker process that includes personal contact with clients in core neighbourhoods.
- > Contracted translation services with Saskatoon Open Door Society for the translation of immunization histories in order to increase immunization among newcomers.
- > Developed a new matching process between Saskatchewan Immunization Management System and electronic school class lists from Public and Catholic schools in Saskatoon to identify those behind in immunization from preschool to Grade Five to increase school immunization.
- > Offered immunization drop-in clinics during the evening.
- > Explored social media and implemented an immunization awareness campaign with print and billboard ads, Facebook ads and texting.

3.9 Vaccine Preventable Disease

What is it? Vaccine-preventable diseases (VPD) are diseases for which there are effective vaccines readily available and routinely used. The presence of VPDs indicates unimmunized individuals, incompletely immunized individuals or failure of the protection offered to individuals who have been immunized. As noted in 3.8, routine immunization for some VPDs begins as early as two months of age and follows a schedule at recommended intervals. VPD have become less common over the past few decades, largely due to publicly-funded immunization programs. While rare, VPD continue to be reported in Canada and abroad in under-immunized populations. Travel to parts of the world with low immunization rates and circulating VPDs continues to pose a threat to individuals and communities with suboptimal protection. Measles outbreaks, for example were reported in Africa, Europe, United States and Canada in 2011.

Most vaccine preventable diseases (VPD) are rare in Saskatchewan due in large part to the effectiveness of early childhood immunization. Saskatoon Health Region has experienced outbreaks of pertussis and hepatitis B in recent years. Pertussis is immunized against in early childhood and hepatitis B during early adolescence.

Pertussis is an example of a VPD with periodic outbreaks that is particularly serious in infants and young children. Also known as "whooping cough", pertussis is a highly infectious bacterium of the lungs and throat that can cause pneumonia, convulsions, brain damage or death. Pertussis is most severe in infants too young to have started their immunizations and in partially immunized infants (those who only received one or two doses of vaccine). The recommended immunization schedule from the Ministry of Health for pertussis is for doses at 2, 4, 6 and 18 months. Between 2008 and 2010 there were six infant deaths from pertussis in Saskatchewan (in a personal communication with Helen Bangura, provincial communicable disease epidemiologist, July 14, 2011).

The most recent outbreak of pertussis was in 2010. After several years of low rates, pertussis incidence increased in the Health Region to a rate of 24.9 per 100,000 (75 cases) compared to 1.3 per 100,000 in 2009 (fewer than five cases). This rate was slightly higher than the provincial rate of 22.6 per 100,000 population.^{xviii} Rates were highest in the 10 to 14 age group, the age at which children become eligible for the Grade Eight booster because vaccine protection wanes over time. As a result of increased cases of pertussis in 2010, a campaign to immunize mothers and other primary caregivers of infants less than six months of age began in June 2010, with in-hospital immunization postpartum mothers starting in September 2010. The Region saw dramatic increases in pertussis vaccination, as did physician offices. No deaths were reported in Saskatoon Health Region residents.

Hepatitis B is another VPD that can affect children in the early years. A viral liver disease transmitted through blood and blood products, saliva, amniotic fluid, semen and vaginal fluids, hepatitis B causes chronic infection in 90% of infants infected at birth and 20-50% of children infected between ages one to five. Both carrier and acute cases present ongoing risk to young children. Children ages 0 to 6 are at risk through perinatal mother-to-infant transmission, and household contact. Less than 10% of children and 30-50% of adults with acute infection show signs of disease.^{xix} Chronic infection is found in less than 1% of North America and from 1 to 20% in other parts of the world. Although there have been cases reported in Saskatoon Health Region in children six years or younger since 2004, overall hepatitis incidence was 12.6 per 100,000 in 2010 and has remained fairly stable in the past five years. Because the infection often goes undetected in children and children can be infectious without being ill, immunization of contacts and prenatal testing are important control measures. To prevent perinatal transmission, infants born to infected mothers receive a dose of vaccine within 12 hours of birth as well as hepatitis B immune globulin. Children in Saskatchewan have been routinely vaccinated in Grade Six against hepatitis B since 1985. A program to immunize children before Grade Six has been implemented for families who have immigrated from countries in which hepatitis B is endemic (more than 2% of population has been infected).

xviii Saskatchewan Ministry of Health (unpublished) Preliminary data from Notifiable Disease Summary Jan 31, 2011

xix D Heymann. Control of Communicable Diseases Manual 2008 American Public Health Association.

IN FOCUS:

Other Communicable Diseases Affecting Children in the Early Years

Human immunodeficiency virus (HIV) is a bloodborne pathogen that seldom crosses the placenta, however, the risk of transmission from mother to child during birth is approximately 25% if the HIV positive mother is untreated. A second route of transmission from mother to infant is through breast-milk. Because HIV is considered preventable in infants, the rate of neonatal HIV need not be linked to the incidence and prevalence of HIV among women of child-bearing age. HIV antiretroviral treatment during pregnancy and delivery is highly successful in preventing HIV infections in infants. HIV testing is standard in Saskatchewan for all pregnant women during prenatal care; however pregnant women who do not present for prenatal care may not know their HIV status, and therefore it is important for labour and delivery services to test when HIV status is unknown and to implement appropriate prophylaxis protocols. **Fewer than five cases of neonatal HIV have been reported in the Health Region since 2004**. However, as the Region continues to see high rates of HIV among women, the importance of prenatal HIV testing and treatment of HIV positive women are critical to prevention. At present, infant formula is not on the drug formulary, which is a potential barrier to prevention of transmission from mother to infant after delivery. Other work with social services and outreach support is currently being undertaken to ensure barriers to prenatal care are addressed.

Hepatitis C is a viral liver disease that is transmitted mostly through blood and occasionally through sexual contact. Mother-to-infant transmission may be intrauterine, intrapartum or postnatal. **Since 2004**, **10 cases of hepatitis C have been reported in infants under 1 year.** The rate of mother to infant HCV transmission increases among women co-infected with human immunodeficiency virus (HIV) compared with women without HIV infection. Injection drug use and high maternal viral load are also associated with increased transmission rates. Because of the toxicity of hepatitis C drugs to the developing fetus, treatment is not recommended during pregnancy. The incidence of infant hepatitis C is linked to the incidence and prevalence of hepatitis C among women of child bearing age. In the Health Region, the incidence rate ranged between 29 per 100,000 in 15 to 19 year old women and 95 per 100,000 in 20 to 24 year old women; these age-specific female rates are lower than those reported in 2009.

Group B Streptococcus (GBS) infection in newborns can produce sepsis, pneumonia and less frequently meningitis, osteomyelitis or septic arthritis. It is estimated that between 10 to 30% of women carry GBS bacteria in their vagina, and neonatal infections are acquired in utero or during delivery. In Saskatchewan, pregnant women who receive prenatal care are screened for GBS in their third trimester. Women who test positive are given antibiotics during delivery to prevent potential transmission of the infection to the baby during birth. Since 2004 there have been **fewer than five cases of neonatal GBS** disease reported in the Health Region. Prenatal screening and intrapartum chemoprophylaxis prevent most infections, but other risk factors such as prolonged hospital stays and invasive medical treatments remain possible sources of infection. The continued presence of this preventable infection in infants underscores the importance of implementation of testing and treatment protocols in both prenatal care and in labour and delivery.

3.10 Mother/Baby Pairs Identified as Potentially Vulnerable

What is it? The In-Hospital Birth Questionnaire (IHBQ) is a screening tool for mothers who recently gave birth (usually within 48 hours postpartum), and their babies, who may be considered potentially 'vulnerable' and require additional supports to get their children off to a good start.^{xx} It is administered in several provinces and asks all mothers who recently gave birth a series of questions about their life circumstances, such as education level, drug/ alcohol use, mental health, abuse in the home etc. They are also asked about their baby's health: birth weight, exposure to infections in utero and congenital anomalies. Mother/baby pairs who score a nine or higher are considered potentially 'vulnerable' and may be eligible for additional programming (such as Kidsfirst) services and follow-up following further assessment.^{xxi}

A child's primary caregivers shape and influence the environment in which they develop, beginning with the mother's reproductive health and behaviour.²⁷ It is well known that parenting is crucially important for young children's healthy development. The analysis of vulnerable children from Canada's *Longitudinal Survey of Children and Youth* concluded that "sensitive, responsive parenting is the single most important benefit children can receive during their early years."²⁸

Screening mothers after the birth of a baby using tools such as the IHBQ can help identify which families could benefit from additional interventions and supports to assist them in providing sensitive, responsive parenting for their developing child. Screening also provides population-level measures of risk for young children and their families that can be monitored over time so that programs and services can be developed to meet identified needs. "My home visitor has helped me to stand up for myself," one parent told us when interviewed as part of the evaluation. "Before I couldn't do it because I wasn't confident with myself and I figured I'd make the situation worse, but it's different now. I can go up and talk for my children or for myself."

KidsFirst client

Geographical Breakdown

In 2010, of the 3,538 women living in Saskatoon Health Region and who consented to respond to In-Hospital Birth Questionnaire, almost 34% (1,199) had a score of nine or higher, indicating at least one risk factor (and often multiple) associated with the birth. This was similar to the provincial average of 34.6%.

There was significant disparity when examining the potentially vulnerable mother-baby pairs by geography. Saskatoon and Rosthern RPZ had the highest percentages of mother/baby pairs scoring nine or higher at 36.4% and 35.6% respectively. These were significantly higher than the lowest percentage of 21.1% from Saskatoon RPZ. (Figure 3.16).

xx See technical appendix for a description of the IHBQ

xxi See Glossary for more information about KidsFirst







*Some of these values are based on small numbers and should be interpreted with caution. Source: Saskatoon Health Region, KidsFirst

A Closer Look at Saskatoon

Significant differences in the percentage of mother/baby pairs scoring nine or higher also existed among core, middle-income and affluent neighbourhoods where the percentage of potentially vulnerable pairs decreased as neighbourhood income increased (63.6%, 33.5% and 23.6% respectively) (*Figure 3.17*).





*Some of these values are based on small numbers and should be interpreted with caution. Source: Saskatoon Health Region, KidsFirst

Mothers who self-reported Aboriginal descent were 2.5 times more likely to have a score of nine or higher on the IHBQ, indicating at least one or more risk factors associated with the birth compared to mothers of non-Aboriginal descent (70.3% vs. 27.7%).

IN FOCUS:

Findings from the In-Hospital Birth Questionnaire (IHBQ)

As stated in this chapter, Aboriginal mothers or mothers living in the core neighbourhoods are more likely to report substance use or to score 'vulnerable' on the IHBQ compared to non-Aboriginal mothers or mothers living in the middle-income and affluent neighbourhoods.

Since a larger proportion of our Aboriginal population live in the core neighbourhoods, which is also where higher rates of poverty exist, we performed additional analysis of the IHBQ results. We found that:

- 83.1% of Aboriginal mothers compared to 51.2% of non-Aboriginal mothers living in core neighbourhoods scored 'vulnerable' on the IHBQ.
- 30.8% of Aboriginal mothers compared to 6.8% of non-Aboriginal mothers in core neighbourhoods reported alcohol use in pregnancy.
- 61.5% of Aboriginal mothers compared to 28.8% of non-Aboriginal mothers in core neighbourhoods reported that they currently smoke.

This analysis shows overall that Aboriginal mothers are more likely to report substance use or to score 'vulnerable' on the IHBQ compared to non-Aboriginal mothers living in core neighbourhoods.

WHAT DID WE HEAR?

Examples of current initiatives:

Putting KidsFirst in Saskatoon

Families who are identified as vulnerable are often screened to receive the targeted services of *KidsFirst*, a targeted program for families living in selected neighbourhoods of higher deprivation in Saskatoon. Eligible families receive home visiting and other supports focused on improving outcomes for children living in vulnerable circumstances.

The program is federally-funded, provinciallyadministered, and provides services and support to vulnerable families across the province. It was launched in 2002 and is offered in nine areas of the province identified as having high needs, including a number of neighbourhoods in Saskatoon. In mid-2010, SPHERU partnered with the Saskatchewan government to conduct a three-year, in-depth evaluation of *KidsFirst*. SPHERU published a series of reports and fact sheets on the program, its evaluation and recommendations for improvements developed with stakeholders across the province, as well as a short video on the evaluation. They are all available at: www.kidSKAN.ca/kidsfirst.

Social Pediatrics in Saskatoon:

Children and families living in Saskatoon's lowincome neighbourhoods have experienced poor access to primary health services as compared to other areas of the city. In response to these gaps in service, pediatric school-based clinics, which provide comprehensive paediatric care within schools for all children who live in low-income neighbourhoods, were developed in partnership with the University
of Saskatchewan Department of Pediatrics, the Saskatoon Tribal Council, and the Greater Saskatoon Catholic Schools. The first clinic opened at St. Mary's Community School in 2007 and included comprehensive health care, mental health services, physical activity, nutrition, and vision care programs.

There are now four clinics in the city, which have seen nine hundred patients between May 2007 and January 2011, and offer a range of services.²⁹ The full report can be found at: http://www.gscs.sk.ca/ HealthAndWellness/socialpediatrics.pdf

Mothers Reporting Smoking

What is it? The IHBQ screens mothers for whether they currently smoke and the average number of cigarettes smoked per day, which is categorized as zero, 1-10, 11 or more. The questionnaire does not ask whether the mother smoked while pregnant, only her current smoking behaviour.

Cigarette smoking is one of the greatest risk factors of poor health to mothers and their babies. Infants born to mothers who smoke have an increased risk of dying from sudden infant death syndrome (SIDS), have lower average birth weight and are more likely to be small for gestational age.³⁰ Research indicates that adverse effects on children exposed prenatally to tobacco (and its numerous by-products) are dependent on the frequency and quantity of maternal smoking during the gestation period.³¹ The timing of exposure



also affects the outcomes in the exposed child, with the most pronounced effects of smoking on birth weight, for example, occurring during the third trimester .³¹ The good news is that women who quit smoking before or during pregnancy can reduce the risks to themselves and their babies for these negative outcomes.^{32,33}

Children in their early years are also particularly vulnerable to the effects of second-hand smoke because they are still physically developing. Some of the risks associated with early childhood exposure to second-hand smoke include increased risk for asthma, respiratory infections, allergies, and developmental and behavioural problems.³⁴

On a positive note, children's exposure to environmental tobacco smoke has been decreasing nationally and provincially. In 2010, the percentage of children ages 0 to 11 in Saskatchewan who were regularly exposed to environmental tobacco smoke was 5.2%, which is down from 13% in 2005. ^{xxii}

This improvement highlights important strides made in the policy environment aimed at protecting young people from exposure to environmental tobacco smoke, including provincial legislation passed in October 2010 which banned smoking in vehicles where children under 16 are present.³⁵

Geographical Breakdown

In 2010, 16.7% of IHBQ respondents in Saskatoon Health Region reported smoking at least one cigarette per day. This is about the same as the 16.4% reported in 2006-2007 for women in Saskatchewan. ^{xxiii},³⁶

Even though the Saskatoon Health Region average was about the same as the provincial average, there was significant disparity when examining the data geographically. At 8.5%, mothers living in the areas immediately surrounding Saskatoon (Saskatoon RPZ) had the lowest smoking rates in the region compared to mothers in Saskatoon (18.0%) and Rosthern RPZ (21.8%) (Figure 3.18).

xxii http://www.hc-sc.gc.ca/hc-ps/tobac-tabac/research-recherche/stat/ctums-esutc 2010 graph-eng.php

http://www.hc-sc.gc.ca/hc-ps/tobac-tabac/research-recherche/stat/_ctums-esutc_2005/ann-eng.php

xxiii Based on Canadian Maternity Experiences Survey and asked during the last three months of pregnancy, did the woman smoke daily, occasionally or not at all.





*Some of these values are based on small numbers and should be interpreted with caution. Source: Saskatoon Health Region, KidsFirst.

A Closer Look at Saskatoon

Mothers living in core neighbourhoods in Saskatoon had smoking rates five times higher than mothers living in the city's affluent neighbourhoods (41.5% vs. 7.9%) (Figure 3.19).

*Figure 3.19: Percentage of Mothers Reporting Smoking on the In-Hospital Birth Questionnaire by Neighbourhood Income Group, Saskatoon Health Region, 2010**



*Some of these values are based on small numbers and should be interpreted with caution. Source: Saskatoon Health Region, KidsFirst.

Mothers who identified themselves as Aboriginal were four times more likely to report smoking than mothers of non-Aboriginal descent (46.9% vs. 11.6%).

Mothers Reporting Drug and Alcohol Use During Pregnancy

What is it? The IHBQ screens mothers for whether they used alcohol or drugs during pregnancy.

There is considerable evidence that demonstrates strong associations between substance use during pregnancy and life-long adverse consequences on health and development.^{37,31}

The possible consequences of a child's prenatal exposure to alcohol range from subtle deficits to conditions that encompass the Fetal Alcohol Spectrum Disorder (FASD) with Fetal Alcohol Syndrome being the most severe. Impairments can include poor general intellectual functioning, language and academic achievement; developmental delays; problems with learning, memory, information-processing executive functioning (attention, impulsive behaviour, and hyperactivity); inhibition, antisocial and delinquent behaviour; depression and anxiety, poor problem-solving skills, impaired planning and response inhibition; and perceptual and motor development. These can be present with or without the physical features associated with FAS. Although these deficits are most severe in children with FAS, children prenatally exposed to lower levels of alcohol frequently exhibit similar problems.^{38,39,40,41,42,43,44}

A recent study suggests that children whose mothers reported higher-risk alcohol consumption during pregnancy demonstrated long-term negative outcomes in measures of school performance and behaviour problems compared with mothers who reported lower-risk drinking. These problems were more evident in children whose mothers also reported smoking during the pregnancy. The negative effects were most apparent when children were transitioning to school at four years of age and demonstrated poorer school readiness.³⁷

Unfortunately, the exact number of people living with FASD is not known and data is not available for Saskatoon Health Region. The Public Health Agency of Canada (PHAC) estimates that nine out of every 1,000 babes born in Canada have FASD.³⁷ This translates to approximately 9,600 in Saskatchewan.

Geographical Breakdown

In 2010, 5.6% of Saskatoon Health Region women reported alcohol and drug use during pregnancy on the IHBQ. There were significant differences when reported by geography with Saskatoon reporting a significantly higher percentage (6.4%) than rural Health Region residents (3.1%).

A Closer Look at Saskatoon

Significant differences also existed based on income. Core neighbourhoods had a higher percentage (16.1%) of alcohol and drug use during pregnancy than both middle-income (5.5%) and affluent neighbourhoods (1.5%) (*Figure 3.20*).



*Figure 3.20: Percentage of Mothers Reporting Drug and Alcohol Use by Neighbourhood Income Group, Saskatoon Health Region, 2010**

*Some of these values are based on small numbers and should be interpreted with caution. Source: Saskatoon Health Region, KidsFirst. The greatest difference in substance use was among women of Aboriginal descent (20.5%) compared to women who were not of Aboriginal descent (3.1%).

WHAT DID WE HEAR?

In seeking input from stakeholders on FASD, it was noted that knowledge of how FASD impacts individuals has vastly improved as have the supports available within the community.

Some proposed solutions:

Decrease social stigmas and misunderstanding about FASD. Often public perception is that it's only "thoughtless" low-income mothers who drink alcohol while pregnant, when in fact there are many reasons why women drink during pregnancy.⁴⁵

Examples of current initiatives:

- > As part of the Saskatchewan Children and Youth Agenda, the Government of Saskatchewan has promoted a crossgovernment Fetal Alcohol Spectrum Disorder strategy.²⁰
- Comprehensive services to individuals with Fetal Alcohol Spectrum Disorders (FASD) are provided through global funding to the Regional Health Authorities, the Cognitive Disabilities Strategy (CDS) and recent targeted initiatives. For example, the CDS includes a range of initiatives including strengthening FASD prevention and intervention, improving access

to assessments and diagnoses, and strengthening supports based on need. Flexible funding is available to supplement or extend existing programs that support individuals and their families throughout the province, which may include respite care, parent aides and independent living support.

- The FASD Support Network of Saskatchewan Inc. builds community capacity province-wide, with programs like the Saskatchewan FASD Speakers' Bureau that provides information to interested and affected parties across the province. Also, the Network has added the FASD Family Support Program which provides the only direct services solely for individuals and caregivers living with the disability in Saskatchewan.
- In 2011-2012 and 2012-2013 additional investments have been made to support pregnant women at high risk of having an infant with FASD, provide training and education to service providers and stakeholders, enhance assessment and diagnostic capacity in the province, enhance prevention strategies, and pilot family support and additions programs.

3.11 Oral Health

What is it? In Saskatoon Health Region children ages one to five receive dental screenings when they attend fluoride varnish clinics, immunization clinics, targeted pre-kindergarten programs and preschools. In Saskatchewan province-wide dental health screening, which is unique in Canada, has been provided to Grade One students (six-year-olds) every five years. In Saskatoon Health Region this has been provided since 1993-1994 and most recently in 2008-2009.^{xxiv} Over 85% of Grade One children were screened in each of the Saskatoon Health Region surveys. From these

"You are not a healthy person unless you have good oral health. Oral health is part of general health and it can affect your overall health and your quality of life."

C. Everett Koop, Former Surgeon General of the United States

xxiv Provided through Population and Public Health, Oral Health program.

screenings, the percentage of children needing treatment (requiring dental treatment for tooth decay and other mouth conditions) and the percentage of children cavity-free (no tooth decay) was determined.

Oral health is an essential part of total health and contributes to overall well-being and health status. Oral health affects the ability to eat and speak properly, quality of life and self-esteem.⁴⁶ Simply put, children cannot be healthy if their mouths are unhealthy. Tooth decay, pain and infection affect a child's ability to eat, sleep, concentrate, speak and smile.

What Causes Early Childhood Caries?

Infants are not born with decay-causing bacteria in their mouths. These bacteria are transmitted to infants from caregivers (i.e., parent "cleaning" soothers by sucking them, sharing eating utensils). This transmission begins as soon as an infant is born, and continues until the child is approximately 2 ½ years old. By 2 ½, the child will have acquired the majority of the "load" of decay causing bacteria. This means that the oral health of the caregivers is key to the child's oral health.

Lack of dental health education for parents and caregivers, improper pacifier use, improper feeding practices in which a child is put to bed with either milk or food in their mouths, improper oral hygiene practices in which a child is put to bed without brushing their teeth, lack of dental health insurance and reduced access to dental care are some of the contributors to the prevalence of early childhood caries.^{46,47}

In Canada, dental caries is the most common chronic disease affecting children, occurring five to eight times more frequently than asthma, which is the second most common chronic disease among children.⁴⁸

Oral health is one indicator of population health where there is substantial evidence of socio-economic disparities in most developed nations.^{49,50} Significant differences in dental health outcomes exist among people of differing socio-economic status within Canada. The Canadian Oral Health Strategy^{XXV} findings for 2010 state that in Canada, people from low-income neighbourhoods had 2.5 to 3 times higher treatment and decay rates than people from other neighbourhoods. Aboriginal peoples had decay rates three to five times higher than the non-Aboriginal population.⁴⁷ Children living in low-income areas were much more likely to have dental caries than those from more affluent areas. Also, children from low-income areas had more untreated caries in primary teeth and permanent teeth, were more in need of treatment, and had incisor trauma.⁵³ There is a clear relationship between community socio-economic status and children's oral health.

How Can Early Childhood Caries Be Prevented?

Two successful strategies to prevent childhood caries in the community include:

1. Fluoride at optimal levels in drinking water as the most cost-effective community-based preventive strategy for reducing the incidence of dental caries. Fluoride can be found in other sources such as mouth rinse and toothpaste as well as professional applications. Long-term exposure to optimal levels of fluoride results in diminishing levels of caries in both children and adults. Saskatoon Health Region's 2008 *Health Status Report* recommended optimal fluoride levels in drinking water to improve and protect dental health;⁵² and

2. Placing dental sealants on permanent teeth to prevent most of the dental caries in children.⁵¹

Geographical Breakdown

Since 2008, the percentage of cavity-free children ages 1 to 5 in Saskatoon Health Region has decreased, with the exception of 5 year olds, who have shown an increase. This increase may be related to the Region's targeting of children at high risk of disease for fluoride varnish, especially in core areas of Saskatoon. Further investigation is required.

In 2010-2011, 21.7% of one year olds and 35.6% of five year olds needed treatment, with only 41.4% of five year olds being cavity-free (Figures 3.21 and 3.22).

xxv Available at http://www.fptdwg.ca/assets/PDF/Canadian%20Oral%20Health%20Strategy%20-%20Final.pdf





Source: Public Health Services, Saskatoon Health Region





Source: Population and Public Health, Saskatoon Health Region

Between 1993-1994 and 2008-09, the percentage of Grade One children that required dental treatment for tooth decay and the percentage that was cavity-free remained relatively unchanged (Table 3.9).



Screening year	Number of children screened	Needs Treatment (%)	NDE (cavity-free) (%)
1993-1994	3963	17.3	51.6
1998-1999	3960	20.5	53.8
2003-2004	3085	16.6	53.9
2008-2009	2849	19.2	50.8

Source: Public Health Services, Saskatoon Health Region

A Closer Look at Saskatoon

A 2008-2009 comparative analysis of oral health in Saskatoon neighbourhoods found that 34.1% of Grade One children attending school in low-income (LICO as defined by Statistics Canada) neighbourhoods were cavity-free compared to 59.8% of children attending schools not located in low-income (non-LICO) neighbourhoods. Those attending schools in low income neighbourhoods had higher percentages of cavities, no evidence of dental care, and pain/infection.⁵⁴ "To me, poor oral health outcomes show that the basic necessities of life are not being met and oral health is a low priority."

Stakeholder

The 2008-2009 dental screening was the first time that Canadian Oral Health Strategy (COHS) guidelines were measured. The COHS had two goals for children age 6 (Grade One):

- > 50% or more of children age 6 are cavity-free;
- > 20% or less of children age 6 need dental treatment.

The Health Region met both goals, and was the **only** region in Saskatchewan to meet these national standards. A key contributing factor is that 86% of residents had access to fluoridated water during this time.

WHAT DID WE HEAR?

The need to focus on and improve oral health in early childhood emerged as a theme in consultations with stakeholders.

Some proposed solutions:

Healthy Public Policies

Stakeholders recommended implementing public policies recognized by the World Health Organization, such as:

 Food policies that ban marketing of nonnutritious foods;

- Policies that reduce the use of bottle and spillfree sippy cups;
- Standards and policies that support continued (and new) fluoridation of water across communities; and
- Implementing school-based prevention (including prekindergarten, preschools and daycares).

An additional consideration was to provide schoolbased dental teams in all at-risk schools for both treatment and prevention.

Universal and Easy Access to Dental Care

Instituting a universal dental care system for children ages 0 to 18 years could have a number of benefits that extend well beyond dental care to overall better health status and economic savings.⁵⁵

Examples of current initiatives:

Saskatoon Health Region Oral Health Program has implemented a number of initiatives to improve child oral health, including:

- Fluoride varnish for children ages 0 to 6 at immunization clinics, targeted prekindergartens, preschools and day cares;
- Post-natal oral health resource packages provided to complex-needs families who receive home visits;
- Support, referrals and resources for the families of children ages 0 to 6 who had dental treatment under general anaesthesia;

- Dental screening for children ages 0 to 6 with referrals for dental treatment and follow-up;
- Fluoride toothpaste brushing programs in targeted prekindergarten's, preschools, daycares and schools;
- Dental education to preschools, prekindergartens, licensed day care and personal day care homes through dental resource teaching kits;
- > Distribution of educational resources to families on a variety of oral health topics related to young children (e.g. nutrition, pacifiers, sippy cups, and early childhood tooth decay);
- Professional oral health in-services to key groups dealing with young children; and
- > Provision of dental treatment for children ages 0 to 6 at the Population and Public Health Dental Clinic at West Winds Primary Health Centre (all these services are at no charge for eligible children living in the Health Region).

3.12 Childhood Obesity

Canada is in the midst of a child obesity epidemic. Currently, one in four children and youth in Canada are overweight or obese and rates of obesity are rising, which has short- and long-term health and economic consequences.^{xxvi} Obese children are being diagnosed with a range of health conditions that have traditionally been exclusive to adults (e.g., high cholesterol, Type-2 diabetes, high blood pressure, sleep apnea and joint problems), thus increasing the burden of obesity on the health care system, the economy (e.g. due to lost productivity) and society as a whole.¹

Socio-economic status is a risk factor for obesity. Research conducted by the Public Health Agency of Canada concluded that youth in households where no members had more than a high school diploma were more likely to be overweight/obese than were those in households where the highest level of education was post-secondary graduation.¹

As underscored in the Active Healthy Kids Canada 2012 Report Card, the percentage of young children with healthy weights is declining. Canadian statistics show that among children ages 2 to 5 years, 15.2% are overweight and 6.3% are obese.^{56,2} Young children who are overweight have an increased risk of staying that way in later childhood and may follow a trajectory of life-long risk and ill health.^{57,58}

Physical Activity

In March 2012, the Canadian Society for Exercise Physiology released the first official national guidelines for sedentary behaviour and physical activity for preschool-aged children (0 to 4 years old). It recommends that:

 Infants (<1 year) should be physically active several times daily – particularly through interactive floor-based play; and

.....

xxvi Ages 2 to 17

Project Promotes Physical Activity and Healthy Eating in Early Learning Settings

A Saskatchewan pilot program that is currently running in a number of child care centres aims to give three to five year olds a "Healthy Start" when it comes to eating and activity. *Healthy Start* is a resource modelled on a British Columbia program called LEAP BC (Literacy, Education, Activity and Play), designed for families, caregivers and early-learning practitioners who engage with young children. It includes a range of fun games to do with young children, such as Hot Potato and Bubble Chase, songs and rhymes to promote literacy, and a nutritional eating component which incorporates healthy local foods such as lentils.

Through grants and partnerships, the LEAP resources were pilot tested in anglophone and francophone urban and rural child care centres in Saskatchewan.^{xxvii} Researchers found improved child care centre menus through additions such as wheat flour and pulse crops. They also found that children showed improvements in gross motor skills, and structural changes to the centres encouraged more activity, despite a seasonal drop-off during cold weather.

The research team is now looking to expand Healthy Start by introducing it in more child care centres in Saskatchewan, as well as in some prekindergartens in schools and expanding its partnerships.⁶²

• Toddlers (ages 1 to 2 years) and preschoolers (ages 3 to 4 years) should accumulate at least 180 minutes of physical activity at any intensity spread throughout the day, including a variety of activities in different environments, activities that develop movement skills and progression toward at least 60 minutes of energetic play by 5 years of age.⁵⁹

As the primary caregivers, parents have a large influence on the development of children's lifestyle patterns; however, over 54% of Canadian children ages six months to five years spend approximately 29 hours per week in care outside their home.⁶⁰

"There is a lack of opportunities outside of school for organized physical activities. Families either cannot afford the programs offered, or do not know about them."

Saskatoon Regional Intersectoral Partner

In Their Own Words: Students Talk About Physical Activity

Students in grades 5 to 8 surveyed as part of the Smart Cities Healthy Kids study provided comments on physical activity, some of which are included here:⁶¹

"It should be you don't have to be good at the sport to join."

"Don't force us into desks all day."

"I think it's good to be physically active but it's hard for people who are poor or for people who have no equipment."

"Designate some time every day to physical activity."

"School gym classes really need to be improved. They are kind of a free for all. Plus we need better equipment and programs. It should be more intense."

"Stop making gym class the class to miss if something comes up."

xxvii Funding sources include: Saskatoon Health Region community grant, two Community Initiatives Foundation grants, and a larger grant from the Public Health Agency of Canada. The project's sponsor is Réseau Santé en français de la Saskatchewan (RSFS; Saskatchewan Network for Health Services in French), and it includes partners from In motion/en mouvement National Network of Researchers, and Saskatchewan's Francophone school board and parents association.

Screen Time

It is generally accepted that the prevalence of childhood obesity is a health problem of great concern worldwide. Children's screen time, which usually refers to television viewing and computer use, is considered an important risk factor for being overweight through its effect on both energy expenditure and energy intake.^{43,64} Watching TV has been associated with eating more sweets and energy-dense snacks and leading to sedentary behaviour.⁴⁵ Although scientists have recommended that children's accumulated screen time should not exceed two hours per day (American Academy of Pediatrics, Canadian Society for Exercise Physiology), an American study of 4,063 children ages 8 to 16 found that 65.0% children said they watched television for two or more hours per day.⁴⁶

The Canadian Society for Exercise Physiology and ParticiPaction presented 2012 guidelines for sedentary behaviour and recommends limiting screen time for young children. For those under 2 years, screen time (e.g. television, computer, electronic games) is not recommended. For children ages 2 to 4, screen time should be limited to under one hour per day; less is better.⁵⁹



A Closer Look at Saskatoon

While there are no measures of screen time use in children ages 0 to 6 in Saskatoon Health Region, the Health Region's *Student Health Survey* includes self-reported measures of screen time use by children in grades 5 to 8. These measures are included here as research has found that screen time use increases with age and that children reporting more hours in later childhood may have exceeded recommended levels of viewing in early childhood.⁶³

In the 2006-2007 Student Health Survey, children were asked how many hours per day they watch TV or videos or play video games. Of the 4,055 children in Saskatoon elementary schools who responded to the question on screen time use, 1,756 reported that their screen time was more than two hours a day (43.3%) and 2,299 (56.7%) reported that their screen time was two hours or less per day.

Children from the high-income neighbourhoods were more likely to watch 2 hours or less per day than children from the core or middle-income neighbourhoods (61.3% vs. 44.9% vs. 56.4%, respectively). Children from core neighbourhoods were more likely to watch more than 2 hours per day compared to the high or middle-income neighbourhoods (55.1% vs. 38.7% vs. 43.6%, respectively).

Of the children who self-identified as Aboriginal, 47.2% reported that they had 2 hours or less screen time per day, compared to 57.5% of non-Aboriginal children. Conversely, 52.8% of Aboriginal children had more than 2 hours of screen time per day, compared to 42.5% of non-Aboriginal children.

3.13 Children and Environmental Health

The physical environment, both natural and built, plays a significant role in influencing healthy child development. There is increasing scientific literature that environmental pollution can have an adverse health impact and that children may be more at risk for some exposures. Hence, protecting children from exposure to environmental hazards which may result in adverse child health outcomes is a growing concern globally.^{67,68,69,70,71,72,73,74,75,76,77}

Although environmental health is not broadly addressed in this report due to limited data, the importance of the physical environment in influencing healthy childhood growth and development is recognized. It is also essential to recognize that other determinants of health, such as genetic, socioeconomic status and culture, may increase the susceptibility of children to environmental exposures.

Coupled with the considerable scientific evidence of environmental influences on children's health is the fairly universal consensus that children are more susceptible than adults to changes in their physical, emotional and social environments because of their rapid physical and mental growth and smaller body size.^{75,76,77,78}

Some of the reasons why children are more vulnerable to environmental influences include:

- Children are not "little adults." Children have important biological differences. Their bodies undergo many stages of critical development making them more susceptible than adults to potential adverse health effects from environmental. For example, while the most dramatic changes occur in the fetus and early infancy, children's brains and lungs are not fully developed until the end of adolescence.^{76,78,79,80} Exposures during development can lead to lifelong consequences.
- Children are more often involuntarily exposed and unable to avoid exposures of their own accord (e.g. in utero, via breast milk). Their behaviour and activity patterns may result in greater exposure to various substances. For example, children crawl and play on the ground, frequently put their fingers in their mouths, and chew on toys and other objects that are not necessarily intended for mouthing.

- Children eat, drink and breathe more per unit of body weight.
- Children tend to be more physically active and hence may inhale more contaminants as their breathing rates increase during active physical play.
- Children have much more of their life ahead of them during which time they will be exposed and may develop health problems as a result.^{77,81}
- While many children are successful in overcoming illness and disease, physically and physiologically, they have less reserve than an adult- for example, narrower airways and lower blood volume can actually make environmental exposures and reactions life threatening events. ⁷⁵

Research has shown that particularly in urban centres children are exposed to a wide variety of potentially hazardous agents in the air, water, food, soil and consumer products.^{77,80,82}

Some links between children's environmental exposures and health outcomes are well established (for example, lead and brain impacts; ionizing radiation and cancer; air pollution and asthma), whereas other links are less well understood. When risks to human health are uncertain or not clearly measured, the wisest course of action is to prevent or reduce exposure where feasible, rather than incurring a risk that may prove unacceptable in the long run. Several recent national and international agreements have specifically highlighted the need for assessing the state of children's environmental health and have called for action to develop children's environmental health indicators.^{67,68,75,76} In May 2010 Health Canada published the national Strategic Framework to provide guidance for action plans on children's environmental health.⁸¹ This document was drafted by the Children's Task Group (CTG) of the Federal/Provincial/Territorial Committee on Health and the Environment (F/P/T-CHE).⁸¹

3.14 Taking Action – Improving Physical Health

The physical health of a child is paramount to their quality of life. This chapter has provided a number of indicators that describe the physical health of children in Saskatoon Health Region. It goes beyond examining the absence of disease to include indicators on birth weight, breastfeeding, risk-free pregnancies, oral health and physical activity. Taken together, this can help to inform priority actions in areas where physical health can be improved.

The good news is that children in the Health Region are generally healthy; however, across almost all of the physical health indicators in this chapter, those children in neighbourhoods of highest deprivation and of Registered Indian Status are at greater risk of negative health outcomes. Current provincial priorities aimed at enhancing Primary Health Care, reducing wait times in Emergency Departments and reducing communicable disease will go some way to address the health care needs of these populations. However, the findings of this report suggest that a focus on improving the social determinants of health, prevention and health promotion is required to ensure significant improvements in health outcomes.

In summary, there are numerous physical health outcomes and risk factors linked to disease and death. Some are biologically related, while others are influenced by the socio-environments in which we all live. However, all of these factors are connected and we must consider multi-pronged approaches to address improvements in the area of children's physical health status.

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CHAPTER 4

Early Childhood and Maternal Mental Health



HIGHLIGHTS

Early Maternal Mental Health

Between 2008 and 2011, 12.1% of kindergarteners rated low on the emotional maturity domain of the Early Development Instrument (EDI).

The percentage of children with low scores varied greatly among Saskatoon neighbourhoods, ranging from 1.9% to 36.1%.

Between 2006 and 2009, rates of depression among women during pregnancy (14.1% in early pregnancy and 10.4% in late pregnancy) were consistent with previous research indicating a major depressive disorder can range between 10-19% within this population.

 Rates were considerably higher among socially high-risk women (29.5%).

In a study conducted between 2006 and 2009 in the Saskatoon Health Region, the percentage of participants with probable postpartum depression was 8.1%.

The study of mental health in early childhood is a newly emerging field and there is limited understanding about what child mental health is or how to identify, treat and measure it.¹ It is estimated that the prevalence rates of mental illnesses in early childhood are similar to those across the lifespan: somewhere between 10% and 20%.

Young children's mental health is strongly connected to the mental health of their family members, particularly mothers. In fact, studies show that the mental health of a mother during pregnancy can affect the health of a child even before birth. If parents' ability to care for their children is compromised by their own mental health issues, they may be unable to meet their child's physical, social and emotional needs.¹ If these needs are not met, it is more difficult for children to develop appropriately, and they may develop their own mental health issues. This is why this chapter also reports on mental health during pregnancy and after birth.

Identifying Mental Health Concerns in Early Childhood

Mental health concerns in early childhood can include a range of behaviours that are also typical in childhood, such as feeding issues, aggression, emotional reactivity, attachment and bonding with caregivers, separation anxiety, excessive fears and other physical signs, to name a few. In early childhood, some of these issues may pass without causing harm; however, when behaviours or issues persist and interfere with a child's and family's ability to function normally, it may be a mental health issue and require the help of a mental health professional.

A recent Australian study found that for preschool children ages four to five, harsh discipline, poorer physical health and exceptional family grief/illness events were risk factors for behavioural problems. Poorer physical health, female gender, no siblings, maternal emotional distress, over-involved/protective parenting, harsh discipline and neighbourhood disadvantage were predictors of emotional problems.²

In the United States, Action Signs is a project that identifies warning signs for mental health issues in children and seeks to develop better communication, awareness, assessment and service delivery.³ (See http://www.thereachinstitute.org/ for an Action Signs toolkit).



Raising a Child: Positive Parenting

Parenting style and parental engagement are two determinants of healthy child development. Parenting affects a child's cognitive development, educational outcomes, behaviour, mental, emotional and physical health, and involvement with the justice system. Evidence has shown that some parenting education and supports improve parenting skills and child outcomes.^{4,5} For instance, children tend to do better in school when an "authoritative" parenting style (positive parenting) is used. Positive parenting is the establishment of a warm, nurturing relationship in which parents monitor behaviour and set firm limits. This style is responsive to children's needs, and encourages independence with a democratic approach. Research in this area has found that parenting style has a more significant impact on outcomes for children than do socio-economic factors.^{4.6}

There is growing evidence that parenting styles which involve physical punishment of a child, such as spanking, are linked with increased risk for mental health and behavioural problems, such as aggression, depression, unhappiness, anxiety, feelings of hopelessness, and use of drugs and alcohol, later on in life.⁷ The research also shows that physical punishment is not more effective than other parenting styles at achieving compliance by children, and that it is, instead, associated with more negative effects on children. The Canadian Paediatric Society has issued a statement that they "strongly discourage the use of physical punishment on children, including spanking". The use of evidencebased positive parenting styles and techniques is encouraged.

Some online resources exist to support parents:

Caring for Kids, Canadian Paediatric Society http://www.caringforkids.cps.ca/

The Incredible Parent Directory, 2011 http://www.saskatoonhealthregion.ca/pdf/ Incredible_Parent_Directory_All.pdf

Public Health Agency of Canada, Parenting Resources and Support http://www.phac-aspc.gc.ca/hp-ps/dca-dea/ parent/support/index-eng.php

Positive Discipline is in your hands http://www.durham.ca/departments/health/ family_health/parenting/positiveDiscipline/ positiveDisciplineResource.pdf

The Power of Levelness: Making Child Mental Health Visible

"Scientists say that children's mental health affects how they socialize, how they learn, and how well they meet their potential. One way to think about child mental health is that it's like the levelness of a piece of furniture, say, a table. The levelness of a table is what makes it usable and able to function, just like the mental health of a child is what enables him or her to function and do many things. Some children's brains develop on floors that are level. This is like saying that the children have healthy, supportive relationships, and access to things like good nutrition and health care. For other children, their brains develop on more sloped or slanted floors. This means they're exposed to abuse or violence, have unreliable or unsupportive relationships, and don't have access to key programs and resources. Remember that tables can't make themselves level —they need attention from experts who understand levelness and stability and who can work on the table, the floor, or even both. We know that it's important to work on the floors and the tables early on tend to become big wobbles later. So, in general, a child's mental health is like the stability and levelness of a table." ⁸

Scientists and practitioners agree that prevention and early intervention, before mental health issues become more deeply entrenched, are the most effective means of supporting children's mental health.⁸

4.1 Early Development Instrument (EDI): Emotional Health and Maturity

What is it? The emotional health and maturity domain of the EDIⁱ measures children's behaviour (i.e. helpful, anxious or aggressive), levels of hyperactivity and inattention, and competencies related to child mental health (i.e. positive social behaviour, ability to concentrate, demonstration of patience, or fearful or aggressive behaviour). Questions explore how often the child will help another child who is hurt, upset or having difficulty with a task, whether he/she appears unhappy, kicks, bites or hits other children, can't sit still, or is disobedient.

Geographical Breakdown

Between 2008 and 2011, 12.1% of kindergarteners in Saskatoon Health Region rated low on the emotional maturity domain of the EDI. 11.0% of students from rural schools and 12.4% of students from Saskatoon schools rated low on this domain.

A Closer Look at Saskatoon

Vast differences in scores were seen among Saskatoon neighbourhoods. The percentage of children rated as scoring low ranged from 1.9% to 36.1%, a 19-fold difference (Map 4.1).

i See glossary for description of the EDI

Map 4.1: Percentage of Kindergarten Students Who Scored Low on the Emotional Health and Maturity Domain by Neighbourhood, Saskatoon, 2008-2009 to 2010-2011 Combined



Source: Saskatchewan Ministry of Education, Early Years Branch, Early Childhood Development and Integrated Services Note: Map classes are based on a quantile classification; numbers in brackets indicate number of neighbourhoods in each category.

4.2 Prevalence of Prenatal Depression

What is it? From 2006 to 2009, pregnant women residing in Saskatoon Health Region were asked to participate in a longitudinal study focusing on mental health in pregnancy (prenatal) and postpartum.⁹ Almost 650 women completed questionnaires about their feelings in early and late pregnancy and in early postpartum. The Edinburgh Postnatal Depression Scale (EPDS) was used to screen for depression. Those who scored over or equal to 12 were considered to have probable depression.

Depression and anxiety during pregnancy can lead to adverse outcomes, such as pregnancy and neonatal complications.¹⁰ It is also related to an increased risk for pre-term birth and spontaneous abortion.^{11,12} In addition to these complications, depressed or anxious women may be less apt to take care of themselves during pregnancy and may take part in risky behaviours during pregnancy.¹³

Maternal depression can also have far-reaching effects on the child later in life. Studies have shown that children of mothers who experienced prenatal depression and/or anxiety can have cognitive and motor delays and increased social and mental health problems.¹⁴

Depression during Pregnancy in Saskatoon Health Region

The Feelings in Pregnancy and Motherhood study found that in early pregnancy (second trimester) 14.1% of women in the Health Region had scores indicative of probable depression and, in late pregnancy (late stages of third trimester), it was 10.4%. This is similar to what has been found in past research that suggested a major depressive disorder during pregnancy can range between 10% and 19% within this population.^{15,16} The prevalence of prenatal depression has also been found to vary according to groups within the population. In another study of socially highrisk women in Saskatoon Health Region, the prevalence of probable depression was substantially higher at 29.5%.¹⁷

4.3 Prevalence of Postpartum Depression

What is it? The Feelings in Pregnancy and Motherhood longitudinal study included questions in early postpartum. The Edinburgh Postnatal Depression Scale (EPDS) was used to screen for depression. Those who scored over or equal to 12 were considered to have probable depression. The questionnaires also included information on medical problems throughout pregnancy, socio-demographic information, risk behaviours, emotional support, and any medication or counselling for study participants. More information on the study can be found on its website www.feelingsinpregnancy.ca

Postpartum depression is a serious and common illness among women 0 to 12 months after giving birth. The prevalence of postpartum depression in women in the Health Region has been reported at between 10% and 15%.¹⁸

Postpartum depression can have a lasting impact on the family. Research has indicated that postpartum depression can negatively affect the relationship between the child and the mother. This adverse effect on the relationship has been found to also have a significant impact on the cognitive and emotional development of the child.¹⁹ Also, partners of women suffering from postpartum depression are at increased risk of developing depression themselves.^{20,18}

Postpartum Depression in Saskatoon Health Region

The results from this study showed that, in Saskatoon Health Region, 8.1% of women in the early postpartum (within the first 6 weeks of delivery) had scores indicative of probable depression. This falls within the range of 6.5% to 12.9%, which was found in a systematic review of prevalence and incidence of postpartum depression.²¹

The Feelings in Pregnancy and Motherhood study⁹ conducted in Saskatoon, and subsequent work in other areas of the province, found that:

- Up to 20% of mothers in Saskatchewan may face serious depression or anxiety related to pregnancy and childbirth. This has the potential to affect 2,800 families annually.
- The number rises to almost 30% for those in social high-risk groups.
- First Nations, Inuit and Métis women have a higher incidence of maternal depression than the general population.
- Half of the spouses of mothers suffering depression will also experience depression.
- Evidence suggests that the province spends more than \$2 million each year on consequences related to untreated maternal depression.

Unfortunately, the report notes Saskatchewan does not have a provincial policy for maternal mental health.⁹ This means a lack of consistency and coordination when it comes to supporting mothers, their children and their families.

However, as a result of the study, there have been some changes, including:

- The establishment of the Maternal Mental Health program run out of West Winds Primary Health Centre in Saskatoon, with support from the Department of Psychiatry, College of Medicine, University of Saskatchewan;
- A Provincial Maternal Mental Health awareness campaign; and
- The establishment of the MotherFirst Policy Working Group and its release of a report in 2011. More information can be found at: www.skmaternalmentalhealth.ca.

WHAT DID WE HEAR?

In our dialogues with stakeholders, child mental health was one of the most widely mentioned issues. Discussion covered not only childhood mental health but also maternal, caregiver and parental mental health, stress and resilience, and specific mental health disorders.

Some of the issues

- > Concern over the lack of local data regarding children's mental health;
- Concerns about a range of conditions, including anxiety, behavioural issues, aggression, attention/hyperactivity, and disorders such as Autism Spectrum Disorder, Fetal Alcohol Spectrum Disorder, Feeding Disorders, Attachment Disorders, Post-traumatic Stress Disorder, Anxiety Disorders, Depression, Sleep Behaviour Disorder;
- > A lack of awareness of childhood mental health assessments and available interventions;
- Concerns over the impact of trauma and addictions on mental health;
- Concerns over the transition stages from child to youth to adult on mental health;
- Concern over limited access to Parent Talk programs in some areas of Saskatoon;
- Lack of screening tools/programs for mental health issues in early childhood;
- Lack of training of mental health professionals in early childhood mental health issues and treatment; and
- Concerns over inappropriate referral patterns. For example, many physicians refer common behaviour/mental health issues to child psychiatry, where the wait list is one year, when these referrals could be supported by other mental health professionals.

Some proposed solutions:

Create supportive communities for families including social supports. Suggested strategies included:

- Access to holistic support for children, parents and families;
- Access to support services during pregnancy, such as doula services, midwives and dieticians;
- Access to a variety of postpartum mental health supports that are culturally appropriate;
- > Improved awareness and education of families and general public about what mental health issues look like, especially in children ages 0 to 3;
- Access to social supports based on the needs of the mother (i.e. drop-in groups, care for children, in-home visits, etc.);
- Educating caregivers, such as child care providers, teachers, and parents, on signs and behaviours indicating mental health issues;
- Developing possible intervention strategies to assist children identified with mental health concerns;
- Developing community centres in every neighbourhood where public agencies share in providing these kinds of supports;
- Reduced stigma around mental health, including reduced stigma around depression;
- Increased recognition of the importance of a secure attachment and societal support for families to nurture these early relationships;²²
- Increased awareness of referral process and available programs for early childhood mental health problems;
- Increased education of mental health service providers in area of early childhood; and
- Increased screening for mental health issues in early childhood.

Examples of current initiatives:

While there is currently no regional mental health strategy in place for children in early childhood,

many evidence-based programs and services are available in Saskatoon Health Region. For example, together with local partners, the Health Region's Mental Health department offers Children's Services for children ages 0 to 5, which include:

Behavioural Consultation Services (BCS)

Educational psychologists provide behavioural consultation to licensed child care centres in Saskatoon and provide clinical consults to school and community organizations.

Coordinated Case Management Initiative (CCMI)

This interagency project provides case management services to children and their families between the ages of 2 and 5. This is an intensive program with an average of 5-7 children and families being served by one part-time staff.

Pathways to Competence

This is a 10-week parenting group that encourages the development of secure attachment, emotion regulation, concentration, planning and problemsolving and is targeted for parents of young children ages 2 to 5.

Incredible Years Parenting Group

The Incredible Years Parenting Group targets parents and children diagnosed with oppositional defiant disorder (ODD), conduct disorder (CD) and attention hyper-activity disorder (ADHD).

Speech and Language Pathologist

Children's Services has one speech and language therapist who works full-time and sees children, primarily under school-age, who have both speech and language and other mental health-related issues.

Early Skills Development Program (ESDP)

ESDP is a partnership between the three school divisions in Saskatoon: Greater Saskatoon Catholic, Saskatoon Public and Prairie Spirit. It is an intensive, school-based social skills program for children in Kindergarten and Grade 1.

Understanding Children's Anxiety

This is a program for parents of children whose primary presenting issue is anxiety.

The Health Region also offers:

- Early Childhood Psychology services through its Population and Public Health department;
- The Alvin Buckwold Child Development Program;
- Child & Adult Psychiatry services;
- Rural Mental Health Workers;
- Kids First;
- Autism Services; and
- FASD Support Network

The Saskatchewan Prevention Institute also has a number of resources available online to support parents with childhood mental health issues (http://www.preventioninstitute.sk.ca/early-childhood-mental-health).

4.4 Mental Health Issues in Early Adolescence

Given the limited data available on mental health for children ages 0 to 6, examining the mental health of children during early adolescence can potentially shed light on our understanding of young children's mental health status. An understanding of mental health issues of slightly older children is helpful in identifying issues that may have been present when they were younger and may also affect the life course of 0 to 6 year olds.

Mental health is an important factor of children's health status and greatly influences their development.²³ Depression has been found among children and could deeply affect children's emotions, thoughts, behaviours, self-esteem, interpersonal relations, physical functions and school productivity.^{23,24} Moreover, youth depression usually precedes adult depression.²⁵ In 2002, almost 70% of young adults ages 15 to 24 diagnosed with mood and anxiety disorders reported that they experienced symptoms of these mental health issues before age 15.²⁷



Self-Reported Mental Health of Adolescents

Saskatoon Health Region's *Student Health Survey* includes data on selfreported depressed mood children ages 10 to 13.²⁸ In 2011, among the 5174 students who responded to the Saskatoon Health Region's *Student Health Survey*, 873 (16.9%) self-reported as suffering a depressed mood. This finding is similar to a national study, which indicated that about 1 in 5 children and adolescents suffer from depression in Canada.²⁹

The depressed mood rates of children who attended school in Saskatoon and in rural areas of Saskatoon Health Region were almost the same (16.7% vs. 17.3%), indicating that urban or rural area is not a significant contributor to childhood depression.

Children from Saskatoon's low-income neighbourhoods had a higher prevalence of depression compared to children from affluent neighbourhoods (22.3% vs. 12.4%) and the depression rates in children from moderate-income neighbourhoods were slightly higher than those in affluent neighbourhoods (17.3% vs. 12.4%). The results also show that Aboriginal children had a significantly higher depression rate compared to their peers (26.7% vs. 15.5%) when controlling for school location as a proxy for income status of the neighbourhood in which the children attended school (core, middle and affluent neighbourhoods).

De-stigmatizing mental health through social media?

Literature points to open and frank public discourse and the possibilities of internet technology and social media as playing an important role in normalizing mental health issues.³⁷

Bullying and Mental Health

Bullying has been defined as repeated aggression occurring among peers during which one or more people intends to harm another person in various ways.^{30,31} A study among children ages 11 1/2, 13 1/2 and 15 1/2 across 25 countries noted that on average 11% of children report having been bullied.³² Cross-sectional studies have indicated that children who had experienced bullying were more likely to have mental health issues, such as depression and anxiety, as well as being more likely to contemplate suicide.^{33,34} It has also been shown that certain early childhood experiences and exposure to certain parenting styles lead to bullying later in life.³⁵

A longitudinal study in the Netherlands with a sample of almost 1000 children examined the factors that are associated with involvement in bullying at ages 11 and 13 1/2. The study found that both children of lower socioeconomic status and children whose parents identified them as aggressive in early childhood were more likely to be a perpetrator, a victim or both in adolescent years.³⁶

These findings suggest that involvement in bullying later in life may have roots in early childhood mental health. The EDI includes measures of aggressive behaviour and bullying as part of sub-domains that make up the Emotional maturity domain.

Understanding Mental Health in Childhood

While child mental health is an important element of overall well-being, it is much less understood than physical health. The Mental Health Commission of Canada recently released A *Mental Health Strategy for Canada*, a comprehensive approach spanning promotion and prevention, access to services, disparities and diversity. The Strategy's priorities include child mental health, such as Priority 1.2, "Increase the capacity of families, caregivers, schools, post-secondary institutions and community organizations to promote the mental health of infants, children and youth, prevent mental illness and suicide whenever possible, and intervene early when problems first emerge." The report is available at http://strategy. mentalhealthcommission.ca/.

The prevalence of bullying reported by children ages 10 to 13 in Saskatoon Health Region's *Student Health Survey* is both an indicator of potential issues, such as aggressiveness in early childhood, which can lead to later involvement in bullying and of the need to focus on prevention and intervention in children's early years to reduce bullying and its impact on children's mental health.

Bullying in Saskatoon Health Region

In 2010, among the 5602 children who responded to the question on bullying, 782 (14.0%) reported that they had been bullied every week or many times a week in the past four weeks. Similar percentages of children reported having experienced bullying regardless of whether they attended schools in Saskatoon or in the surrounding rural communities (13.3% vs. 15.8%). However, a significant difference in bullying experience was found between children who lived in lowincome neighbourhoods compared to either affluent or moderateincome neighbourhoods (24.6% vs. 11.3% or 13.3%). Also, children of Aboriginal ancestry were more likely to report experiencing bullying compared to their non-Aboriginal peers (19.3% vs. 13.2%).



WHAT DID WE HEAR?

While bullying was not raised in discussions with stakeholders, one particular bullying prevention program shows promise and is featured below.

Examples of current initiatives:

Roots' "tiny little teachers" spread empathy among kids

A local program in which babies and their moms bond with elementary school students is celebrating its first successful year in Saskatchewan. *Roots of Empathy* is a classroom program that aims to reduce levels of aggression among schoolchildren by raising their social/emotional competence and increasing empathy, all of which can support good mental health.

Through the program, children observe the relationship between baby and parent and

understand the baby's intentions and emotions. "It has been an awesome experience to see how much our class has grown," said a Roots volunteer with a Grade 6-7 class at St. Mary Community School. The baby's parent agrees. She's been bringing her nine-month-old to the St. Mary's class each month throughout the school year, and she's been impressed with the effect these visits have had on the children. "They were always so concerned about [the baby's] safety and development," she said. "They really care for him, and they love him. They know that he is their baby."

The program is operating in 10 classes at four public and Catholic schools in Saskatoon, with the sponsorship of the RBC Foundation. In the first year, 250 children took part and there are plans to expand locally and in other parts of the province.

4.5 Taking Action – Promoting Positive Mental Health

While there is limited data on mental health in children ages 0 to 6, this chapter provides a glimpse into children's mental health in the Region. More than 10% of children ages 0 to 6 are deemed vulnerable in their emotional maturity. Depression during pregnancy and in the post-natal period affects up to 20% of pregnant women, which could have an impact on the mental health of the child.

About one in five older children in the Health Region suffer from depressed mood and this rate is higher in Saskatoon's core neighbourhoods. Bullying remains an issue in schools where about 14% of children report being bullied at least once a week.

Despite the limited data, emerging research highlighted in this chapter underscores the important roles parents play in supporting positive mental health in their children. Efforts aimed at supporting parents were a common theme raised during consultation, and emerging research emphasizes that programs supporting improved parenting skills will make positive mental health differences later in life.

A note from the front lines...

In our role as early childhood psychologists, we have noticed that parents have difficulty accessing services for their young children. Sometimes it can be confusing as to what kinds of services are available, who is allowed to make a referral and where they should go to get the help. We have noticed that even professionals have this same trouble with our system. Much of our time and resources are spent helping parents and professionals access and understand services.

We would like to see mental health services for parents and young children better integrated within a primary care setting that is close to their home, easy to access, and available through self-referral. The structure of the primary care setting would depend on the community's needs, and each community within Saskatoon Health Region would have that available to them.

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CHAPTER 5

Early Childhood Social Development and Early Learning Connections



HIGHLIGHTS

Early Childhood Social Development and Early Learning Connections

Approximately 14% of children rated low on the social competence domain of the EDI between 2008 and 2011.

The percentage of children with low scores varied greatly among Saskatoon neighbourhoods, ranging from 1.3% to 30.6%.

The number of licensed child care spaces dedicated to children in their early years was limited (6.7 spaces per 100 children aged 0 to 5 in the Health Region).

- There were 8.3 spaces per 100 children in Saskatoon and 2.8 per 100 children in rural Health Region areas.
- In 2008, there were 20.3 licensed child care spaces per 100 children ages 0 to 5 in Canada. Saskatchewan had the lowest rate of 9.1 licensed spaces per 100 children ages 0 to 5.

There were 70 prekindergarten programs in Saskatoon Health Region in 2011-2012 for a total of 1,120 spaces.

> There were 16 rural programs, half of which were in the Saskatoon Rural Planning Zone.

In Saskatoon, 50 out of 54 programs were located in areas where there are high numbers of children and high levels of deprivation.

Full-time kindergarten programs have been shown to be particularly beneficial for students who are lagging behind their peers due to poorer language skills or difficulties in getting along with other children.

In 2011-2012, there were 58 full-time kindergarten programs funded by the Saskatoon Public, Prairie Spirit and Greater Saskatoon Catholic school boards (the province provides funding for half-day kindergarten programs). Fifty-six programs were located in Saskatoon and two in rural Health Region areas. The programs were cancelled in summer 2012 due to budget shortfalls.

Now, more than ever, there is an understanding of the impact early environments have on children's lives. A 2008 report from UNICEF on early childhood education and care in advanced economies notes that "neuroscience is beginning to confirm and explain the inner workings of what social science and common experience have long maintained – that loving, stable, secure, stimulating and rewarding relationships with family and caregivers in the earliest months and years of life are critical for almost all aspects of a child's development".² This chapter focuses on public programs that influence early childhood development.





"Approximately two-thirds of the developmental vulnerabilities that Canadian children bring to school would have been avoidable if they had had better early experiences. Moreover, early vulnerability predicts school success, the development of numeracy and literacy skills, as well as physical and social-emotional development. There is reason to believe that, if Canada were to spend 1.5 to 2.0% of the GDP in an effective way on early development, we could increase school success; reduce the proportion of Canadians with limited literacy and numeracy skills; and reduce obesity and the burden of mental health problems in Canadian society."¹

Dr. Clyde Hertzman, Director of the Human Early Learning Partnership (HELP), Canada Research Chair in Population Health and Human Development, and Professor in the School of Population and Public Health at University of British Columbia

There is a wealth of research that demonstrates that high quality early childhood education and care provides numerous short- and long-term benefits for children. Short-term benefits of high-quality programs include increased social skills, improved health and higher self-esteem. Long-term outcomes include improved educational attainment and performance, improved social skills, increased employment, reduced involvement in the criminal justice system and overall better health.⁴

Research has also clearly demonstrated that investing in programs makes sense economically, with returns many times greater than the original investments, as they support healthy child development, setting the children up for success in school and later in life.^{2,5} Good early childhood programs can foster the development of children's social, physical, and emotional skills, as well as language and cognitive skills, all of which contribute to healthy development.²

5.1 Percentage of Children Vulnerable on the Social Competence Domain of the Early Development Instrument (EDI)

What is it? The Social Competence domain of the EDI measures children's approaches to learning, responsibility and respect, and readiness to explore new things. It measures a child's ability to get along with other children, take care of school materials, follow directions and eagerness to play with a new toy, game or book.

Given the importance of early childhood experiences, the EDI can provide good population profiles, by neighbourhood, about where children and families require the most supports. As an example, intersectoral coalitions in British Columbia have had great success in using EDI data to inform the funding and development of many of their early learning initiatives.³

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i See glossary for description of EDI.

Geographical Breakdown

Between 2008 and 2011, approximately 14% of children in the Health Region scored low on the social competence domain of the EDI.

A Closer Look at Saskatoon

There were vast differences across Saskatoon neighbourhoods in the percentage of children who scored low on this domain, ranging from a low of 1.3% to a high of 30.6%, a 23-fold difference (Map 5.1).

Map 5.1: Percentage of Kindergarten Children Who Scored Low on the Social Competence Domain of the EDI Saskatoon, 2008-2009 to 2010-2011



Source: Saskatchewan Ministry of Education, Early Years Branch, Early Childhood Development and Integrated Services Map: Public Health Observatory, Population and Public Health, Saskatoon Health Region Note: Map classes are based on a quantile classification; numbers in brackets indicate number of neighbourhoods in each category.

5.2 Number of Licensed Child Care Spaces per 100 Children

What is it? The Saskatchewan Ministry of Education licenses child care spaces in child care centres and child care homes.ⁱⁱ Licensed child care facilities are required to meet and maintain the standards set by the Child Care Act and its regulations and are monitored by the Ministry of Education.

ii Licensed child care homes are similar to child care centres except that providers offer child care services in their homes rather than in a facility.

Understanding the Early Years study has a long term impact in Saskatoon

The Understanding the Early Years in Saskatoon study involved a range of stakeholders and examined the role of families and communities in the lives of Saskatoon children by measuring kindergarten children's "readiness to learn." Using the EDI, the study compared children's outcomes to locally available and accessible resources as well as neighbourhood characteristics.

The study was part of a national initiative to understand the needs of children at a community level and to inform programs and services to meet these needs. As a result of the study, both Saskatoon school boards increased their focus on literacy, and provided more services for young children, including a new public library in a vulnerable Saskatoon neighbourhood. The study has now expanded province-wide.

Following the Understanding the Early Years Study, a provincial early years network was established called "kidSKAN - the Saskatchewan Knowledge to Action Network for early childhood development (kidSKAN. ca), funded by the Canadian Institutes of Health Research. kidSKAN provides an interactive, web-based community that reports regularly on early childhood development issues, news, analysis and events. Social media is widely used. More information about the Saskatoon UEY study is posted on the kidSKAN site at www.kidskan.ca/UEYSaskatoon.

Access to affordable, high-quality child care is important for children, families and society. High-quality care supports children's healthy development, supplementing the care parents provide, and enables parents' participation in the labour market. In turn, this allows families to better balance caring and earning responsibilities.

Access to such care can also help to "level the playing field" for all children. For example, a review of costs and benefits in countries in the Organization for Economic and Cooperative Development (OECD) showed that, "although early childhood education and care benefits all children, much of the evidence suggests that the largest benefits flow to children from the most disadvantaged families...good childcare can compensate, at least partially, for a disadvantaged home life."^{2,6}

Child Care Spaces

In 2011, there were a total of 2,832 licensed child care spaces available to Health Region children aged 0 to 12 (Table 5.1).

57.6%, or 1,630 spaces, were intended specifically for children in their early years (0 to 5). This translates to 6.7 licensed child care spaces per 100 children 0 to 5 years old.^{iv} According to 2008 data, there were 20.3 licensed child care spaces per 100 children ages 0 to 5 in Canada; Saskatchewan had the lowest number of licensed child care spaces for its early years population (9.1 regulated child care spaces per 100 children 0 to 5 years).⁷ These findings suggest that the majority of young children are being cared for in settings other than licensed child care, for which there is no information on their accessibility, affordability or quality of services provided. There is also no waiting list information for licensed spaces. "As a society, we think how lucky we are that our kids have a good kindergarten teacher in a public school system, so why don't we demand this for child care in our province?"

Community Representative

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council (since folded) from 2000 to 2007.

iii This study was co-led by the Saskatchewan Population Health and Evaluation Research Unit (SPHERU) and Communities for Children, Saskatoon's social planning

iv This rate is estimated using the numbers of seats available or occupied by children aged 0 to 5.

Geographical Breakdown

The majority of licensed child care spaces in the Health Region are located in Saskatoon. In 2011, there were three times as many spaces in Saskatoon as in rural Health Region communities with 8.3 licensed spaces per 100 children (0 to 5 years) in Saskatoon compared to 2.8 spaces in rural areas.



Type of licensed child care facility	Age	Saskatoon Health Region	Rural	Saskatoon
Child care centre	Infants (I2 weeks to 17 months)	163	17	146
	Toddler (18 months to 29 months)	410	55	355
	Preschool (30 to 60 months (until grade 1)	1057	117	940
	School age (grade 1 to 12 years)*	180	48	132
	Any age group except infants*	307	48	259
Child care home	No specified age+	715	32	683
Total		2832	317	2515

Source: Saskatchewan Ministry of Education, Early Learning and Child Care Program

* In 2011, it is estimated that 83% of these spaces were occupied by children in the early years

+ Although there are no specified age requirements for spaces within child care homes, a maximum of 63% of these spaces may be offered to children aged 0 to 5.

What the Government of Saskatchewan has done to strengthen early childhood development:

Over the past six years, the Government of Saskatchewan has made a number of investments in early childhood development for vulnerable children in the province.⁸ These investments have been made in prekindergarten to grade 12, and child care resource allocation and infrastructure, including:

- > Increasing the number of designated prekindergarten programs and enhanced the allocation for each prekindergarten program;
- > Early Childhood Intervention Program, a province-wide network of community-based supports for families of children who experience, or are at risk for, developmental delays.
- > Additional funding to child care centres for children with exceptionally high and diverse needs.
- > Resources to improve wages for child care centre staff in the province.
- > Implementing the EDI province-wide to measure children's readiness to benefit from their formal school education.
- Increasing operational funding and the number of spaces for licensed child care, with focus on creating new spaces in schools or post-secondary institutions to facilitate continuing education and improved outcomes for young people.
- > Committed additional funding for Child Care Parent Subsidies to support a additional cases.

"Finding child care in Saskatoon Health Region is challenging. There are often long waiting lists for the limited supply of licensed spaces. As a result, most parents use informal arrangements with extended family members, neighbours or unlicensed care providers. While it is [even] difficult for a family that has the financial resources..., a vehicle to transport their child to a child care setting, and the education and background to determine what might be a high-quality environment, it is even more so for families who don't have all these advantages.

"In comparison, the experience of enrolling children in school is markedly different: parents can go to their neighbourhood school and know there will be a place for their kindergarten-aged child. They don't have to interview the teacher, inspect the classroom or ask to see the curriculum that will be delivered. Nor do they have to pay a fee for the service. And they know that their child's teacher is supported by a whole system promoting a quality education."

Parent and Early Childhood Development Researcher

5.3 Number of Spaces Offered by Prekindergarten Programs

What is it? The Saskatchewan Ministry of Education's prekindergarten program is for three- and four-year-olds. This program differs from licensed child care programs and preschool programs offered through a variety of providers. The Ministry's program takes a holistic approach to early childhood development by incorporating components like social development, self-esteem, education growth, school success, language development and family engagement.⁹ Programs are half-time and employ a teacher with a Bachelor of Education degree: the same as is required for kindergarten. Programming is offered for up to 16 children for a minimum of 12 hours per week, 10 months of the year. School divisions develop guidelines and selection processes based on general guidelines from the Ministry of Education. Children who would benefit most from enhanced programming are prioritized for enrolment. There is no cost to families to attend prekindergarten.

Access to high-quality programs promotes healthy child development. The Saskatchewan Ministry of Education, in collaboration with school divisions, established prekindergarten in Saskatchewan schools in 1996. The prekindergarten program, where children learn through play and exploration, is developmentally and culturally appropriate. Family engagement is an important part of the prekindergarten program. Staff encourage parent involvement in classroom activities, provide social and health programs for parents, and work to establish communication and trust with families through home visits.⁴

Geographical Breakdown

In 2011-2012, the Ministry of Education funded 70 prekindergarten programs in Saskatoon Health Region. With each program offering a maximum of 16 spaces, this represents a total of 1120 prekindergarten spaces available to children ages 3 to 4^v. The number of spaces in the Region makes up approximately a quarter (26%) of the total number of spaces in Saskatchewan (4,336 spaces in the province).

Within Saskatoon Health Region, there are 864 prekindergarten program spaces in Saskatoon compared to 256 in the rural areas (Table 5.2).

Although prekindergarten programs target vulnerable three and four year olds, enrolment criteria vary by school district. For example, some schools may accept only three or four year olds, while others may accept children up to five years of age.



Table 5.2: Number of Prekindergarten Programs and Spaces, Saskatoon Health Region, 2011-2012

	Number of Prekindergarten Programs (Number of Spaces)
Saskatoon	54 (864)
Rural	16 (256)
Saskatoon Health Region	70 (1120)

Source: Ministry of Education, Early Childhood Education Unit, Early Years Branch

As shown in *Map 5.2*, the majority of prekindergarten programs in Saskatoon are located in areas with high numbers of young children and in some of Saskatoon's most vulnerable neighbourhoods (since prekindergarten programs aim to primarily serve children who will gain the most benefits).





Source: Ministry of Education, Early Childhood Education Unit, Early Years Branch Map: Public Health Observatory, Population and Public Health, Saskatoon Health Region


In rural areas, the majority of programs are located within the Saskatoon Rural Planning Zone (RPZ) with 8 programs, followed by Humboldt RPZ with 4 programs, Rosthern RPZ with 3 programs and Watrous with 1 program. The communities in which these prekindergarten programs are located are shown in *Map 5.3*.





Source: Ministry of Education, Early Childhood Education Unit, Early Years Branch Map: Public Health Observatory, Population and Public Health, Saskatoon Health Region

Where does preschool fit?

Preschools play an important role in our community as they offer opportunities for play and socialization in the early years. Programs vary considerably, although they typically offer two hours of programming for two or three days a week, with separate programs for 3 and 4 year olds.

There are no provincial regulations in Saskatchewan guiding the operations of preschools, as they offer programming of less than three hours per day and are not covered in the provincial *Child Care Act*. There is also no provincial funding to support preschools.

The Saskatoon Preschool Foundation was established in 1994 to advocate for and support access to preschool programs. The Foundation provides tuition subsidies for children to attend preschools where fees are a barrier. The Foundation's website (http://spf.sk.ca/) includes a directory of preschools in Saskatoon to assist parents in finding preschools. City leisure guides and community newspapers or community association newsletters also provide this information.

5.4 Full-Day Kindergarten

What is it? Full-day kindergarten refers to kindergarten classes that cover the full school day, five days a week, similar to other school grades. They differ from typical kindergarten programs, which are delivered half time - either as daily halfday classes or full-day, alternating-day classes in some jurisdictions. Currently the Saskatchewan Ministry of Education provides school boards with funding for half-day kindergarten programs.

There is a large body of research evidence on the positive impacts of full-day kindergarten (FDK) programs. A 2010 meta-analysis of studies conducted in the United States and Canada compared students who attended FDK to students who attended half day kindergarten (HDK).¹⁰ Researchers found that FDK students performed



better on tests of academic achievement: "at the end of the kindergarten year children in FDK programs appear to score about one fifth to one third of a standard deviation higher on academic tests than children in HDK programs."¹⁰ While these effects tend to fade out by grade three, similar to many educational interventions, the study's authors concluded that this suggests that "FDK is best viewed not as a magic bullet for struggling students," but rather "as one component in the array of interventions parents and educators can use to help all children grow to their full potential. It should be available to all but not necessarily universally prescribed for all".¹⁰

In 2005-2006, Saskatoon Public and Greater Saskatoon Catholic Schools began to offer FDK programs in some schools, in part in response to findings from the Understanding the Early Years in Saskatoon study. In the 2011-2012 school year, there were 58 FDK programs in the region: 56 in Saskatoon and two in the rural areas.

A 2006 University of Saskatchewan evaluation of FDK and HDK programs assessed children's development, reviewed the structure of the programs and interviewed parents and teachers in order to assess the programs' strengths and weaknesses.¹¹ The evaluation showed that both FDK and HDK programs are suitable learning environments. Full-day programs were shown to be particularly beneficial for students lagging behind their peers due to issues such as poorer language skills or difficulty getting along with other children. FDK teachers reported that they had more time to get to know their students, give one-on-one help, and work with them in smaller groups. Many parents reported that they found the full-day schedule fit better with their own family schedules. Parents felt strongly that they should have a choice as to whether they enrolled their child in part-day or full-day kindergarten, depending on their own family's needs.¹¹

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"Working and going to school at the same time has been exhausting, particularly while being pregnant! The biggest worry I have about being a first-time mom is the type of supports that exist for me once the baby is born. We do not have any family in the city and I am anxious about times when I may need help, advice or a break.

"We have accessed services mainly through Saskatoon Health Region, including our doctor as well as prenatal classes. However, we have not been able to find public services that offer insight into the psychosocial adjustments that will undoubtedly occur in our lives once the baby is born, such as changes to our marriage, our friendships, our finances and our schedules."

Community Member

The issue of providing provincial funding for FDK programs has received considerable attention in the past year. In December 2011, the Saskatchewan School Boards Association passed a resolution calling on the provincial government to provide funding for FDK programs. The Ministry of Education responded that resources were being focused on providing prekindergarten programs instead of FDK programs. In June 2012, both the Saskatoon Public School Board and the Greater Saskatoon Catholic School Board cancelled their FDK programs in order to balance budget shortfalls.¹² It was also reported that demand for prekindergarten programs in Saskatoon Public and Greater Saskatoon Catholic Schools was exceeding the spaces available, and that, if the program were to continue on to 2012-2013 school year, the spaces would be filled quickly.¹³

WHAT DID WE HEAR?

One gap in this chapter, admittedly, is data on social supports for parents as there is currently little data available on this topic in Saskatoon Health Region. Feedback from stakeholders covered a range of issues and suggestions for improved social development.

Some of the issues:

- Lack of child care spaces for infants (0-18 months, and particularly 12-18 months) following parental leaves;
- > Lack of skilled and certified child care staff and lack of overnight care for shift work parents;
- Child care on-reserve, if available, is a different system from child care in non-reserve settings, due to jurisdictional and resource issues. This may pose challenges for families who live on-reserve and depend on child care; and
- Parents called for more and better parental supports, for example, for their own socialization and mentorship in the form of parenting support groups. Such centres in other provinces, such as Ontario's Early Years centres, serve multiple functions, acting as service hubs for the early years. Parents consider them as accessible play groups where they can interact with other parents and children. Centre staff can organize developmentally appropriate activities for children, such as games, songs and storytime, and offer parents support and guidance. They can also make health services, such as language, hearing and dental screening available to families who come to the centres. Ontario is currently in the process of consolidating their existing system into Best Start Child and Family Centres, one of the major recommendations of the Ontario Early

Years Report. Another major recommendation was the provision of full-day kindergarten universally, for both junior kindergarten (3-4 year olds) and senior kindergarten (5-6 year olds).¹⁴

Some proposed solutions:

- Child care services, that are of high quality, affordable and accessible to everyone, available in all parts of the Region;
- More provincial funding for child care spaces and for prekindergarten programs;
- > Funding for school boards to offer full-day kindergarten programs;
- More opportunities and support for parents to further their education (availability of child care is part of this support) and promotion of stay-inschool programs; and
- More gathering spaces and places to provide parents and young children with peer networking support.

Examples of current initiatives:

Early learning curriculum

In 2008, the Government of Saskatchewan published Play and Exploration along with Into Practice, supplementary resources for parents and providers in prekindergarten and childcare settings. This early learning program curriculum for children ages 3 to 5 has been supported by the Ministry of Education through workshops, site visits and mentorships.¹⁵

Schools embrace early learning

School boards in Saskatoon Health Region have become more focused on early learning (prior to kindergarten entry) in the past decade, as

research evidence—particularly from EDI-- has shed light on the needs of students and families before the children enter schools. For example:

- Saskatoon Public Schools have created seamlessday, early learning care centres in a growing number of their elementary schools. The centres provide both learning and child care for children from infancy through to grade eight. For example, Fairhaven School in Saskatoon, through a partnership with Preston Early Learning Centre Inc., houses prekindergarten for three and four year olds, FDK programs, and licensed childcare for children from 18 months to kindergarten age. The school also has partnerships with child care homes in its neighbourhood. Staff at the school have worked hard to make it a welcoming community for neighbourhood families.
- > As well as offering early learning services, several schools in Saskatoon Greater Catholic Schools have integrated health services into their schools by setting up pediatric clinics through a partnership with the University of Saskatchewan's Department of Pediatrics in the College of Medicine and the Saskatoon Tribal Council. Students from nearby public schools also have access to the clinics.

> L'école candienne-française operates as a hub of programs and services for the francophone community it serves, housing a parenting centre, preschool, child care centre, junior kindergarten for four year olds and full day kindergarten for kindergarten-aged children, all on the same site. Staff also help families access health services in French, assisted by the public health nurse assigned to the school who is fluent in French.

Mothers' Centre at Station 20 West

> "The Saskatoon Mothers' Centre Coalition is a group of women from the core neighbourhoods in Saskatoon and some local organizations, such as the Saskatoon Health Region, CHEP, KidsFirst, Breastfeeding Matters, Catholic Family Services and the Open Door Society. Other supporters include: Central Urban Métis Federation, SCYAP, and the Saskatchewan Prevention Institute. It is a safe place for women who are interested in supporting each other, finding and deepening skills, and developing their leadership. There are 750 Mothers' Centres across the world which have great success in supporting women in social entrepreneurship and strengthening collective action. Currently the Saskatoon Mothers' Centre is the only one of its kind in Canada."16

5.5 Taking Action – Early Childhood Social Connections

The data in this chapter has focused on children's social relationships in school and community settings, such as prekindergarten and licensed child care centres. The findings from the EDI results reveal that children in vulnerable neighbourhoods are at risk of lower scores than children in other neighbourhoods.

Other key issues include the limited availability of licensed child care spaces for young children in Saskatoon with very few spaces in rural areas, limited availability of prekindergarten programs in some areas of the city, and the lack of funding for full-day kindergarten programs. However, while these are all important issues, research has established that the most important social relationships in a child's life are those with immediate family. These relationships are crucial to supporting children's healthy development. The early stages of a child's life are "characterized by a rapid expansion of social networks and by the gradual transfer of control over health from parents to self. These trends are related. Not only are many health behaviours, such as eating well, directly organized by parents when children are young, others (e.g., drinking) are strongly prohibited for children".¹⁷

Given the critical role of parents in a child's early development, evidence-based supports for parents and nurturing parenting skills are of the highest importance.

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CHAPTER 6

Early Childhood Cognitive Development



HIGHLIGHTS

Early Childhood Cognitive Development

Between 2008-2009 and 2010-2011, successful transition to school (i.e. school readiness) in language and cognitive development, communication and general knowledge varied greatly among Saskatoon neighbourhoods.

- In language and cognitive development, the scores ranged from a low of 1.5% to a high of 37.1% of children demonstrating some lack of 'readiness' in these areas.
- In communication skills and general knowledge, the scores ranged from a low of 3.7% to a high of 36.1% of children demonstrating some lack of "readiness" in these areas.

Educational attainment by parents has important links to children's health and development.

- In 2006, 15.2% of the general Saskatoon Health Region population aged 25 to 64 reported not having a high school certificate, diploma or degree.
- Significant differences in educational attainment existed by neighbourhood (ranging from 5.9% to 49.0% of the population ages 25 to 64 not having a certificate, diploma or degree).

Early learning is a process in which children develop independence, skills and abilities in order to make their needs known and learn how to relate to their environment. Extensive research in this area illustrates there are a number of factors which can influence cognitive development including, but not limited to, parent's own educational level, employment status and income, parent's mental health, and birth outcomes like preterm infancy.^{1,2,3,4} Cognitive development relates to how children perceive, think and gain understanding of their world.⁵ Measuring cognitive development at school transition includes reading, writing and numeracy skills, the ability to problem solve and communicate in an appropriate manner.

6.1 Percentage of Children Vulnerable on the Language and Cognitive Development Domain of the Early Development Instrument (EDI)

What is it? The language and cognitive development domain of the EDIⁱ measures competencies such as basic literacy, recognition of numbers and shapes, and awareness of time.

Children's readiness to learn at school entry is a well-established predictor of their success in school and later in life. Children who start school not as developmentally prepared to learn and benefit from school are at a disadvantage in comparison to children who are. In addition, children who are not as prepared are often slow to catch up to those who are better prepared.⁶

Geographical Breakdown

Between 2008-2009 and 2010-2011, 10.6% of Saskatoon Health Region kindergarten children scored low in the language and cognitive development domain.

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i See glossary for description of the EDI.

A lower percentage of kindergarten children scored low in Saskatoon compared to children in rural areas (10.1% vs. 12.7%).

A Closer Look at Saskatoon

There were vast differences in scores between neighbourhoods in Saskatoon. The percentage of children considered not ready for school in this domain ranged from 1.5% to 37.1%, more than a 24-fold difference. (Map 6.1)

Map 6.1: Percentages of Kindergarten Children who Scored Low on the Language and Cognitive Development Domain by Neighbourhood, Saskatoon, 2008-2009 to 2010-2011 Combined



Source: Saskatchewan Ministry of Education, Early Years Branch, Early Childhood Development and Integrated Services Map: Public Health Observatory, Population and Public Health, Saskatoon Health Region Note: Map classes are based on a quantile classification; numbers in brackets indicate number of neighbourhoods in each category.

6.2 Percentage of Children Vulnerable on the Communication Skills and General Knowledge Domain of the Early Development Instrument (EDI)

What is it? The communication skills and general knowledge domain measures competencies, such as ability to clearly communicate one's own needs and understand others and interest in general knowledge about the world

Geographical Breakdown

Between 2008-2009 and 2010-2011, 14.4% of Saskatoon Health Region kindergarten children scored low in the communication skills and general knowledge domain.

Findings were similar in urban and rural areas of the Region: 14.4% of kindergarten children scored low in Saskatoon compared to 14.3% in rural areas.

A Closer Look at Saskatoon

There were vast differences among Saskatoon neighbourhoods in the percentage of children considered *not* ready for school in this domain. There was almost a 10-fold difference at the neighbourhood level, ranging from 3.7% to 36.1% (Map 6.2).

Map 6.2: Percentage of Kindergarten Children who Scored Low on the Communication Skills and General Knowledge Domain by Neighbourhood, Saskatoon, 2008-2009 to 2010-2011 Combined



Source: Saskatchewan Ministry of Education, Early Years Branch, Early Childhood Development and Integrated Services Map: Public Health Observatory, Population and Public Health, Saskatoon Health Region Note: Map classes are based on a quantile classification; numbers in brackets indicate number of neighbourhoods in each category.

WHAT DID WE HEAR?

As is common across many themes in this report, the need for good supports for parents as well as the broader socio-economic environment were raised as issues.

Some potential solutions:

- Improve parents' social support system in the community, including support groups and better access to programs and services;
- Engage parents in parenting and spending time with their children;
- Create centres or spaces where parents can go to get parenting support;
- Establish high-level policies addressing the social determinants of health to address root causes of employment, education and income inequalities;
- Address income disparities across neighbourhoods and increase availability and accessibility of housing, educational programs, food security and child care; and
- Improve the built environment, for example, by developing accessible playgrounds and spaces for children that are fairly distributed across neighbourhoods.

Examples of current initiatives:

> The Saskatoon Poverty Reduction Partnership (SPRP), a multi-sector collaboration including individuals with lived experience of poverty and representation from local community services, Aboriginal organizations, health services, provincial and local government, school divisions, the University of Saskatchewan, business and labour, faith communities, poverty advocacy groups, and funding bodies, has formed action groups to address issues related to health, child care, education, housing, income assistance and employment. The SPRP is also monitoring progress on policy options that deal with early years including universal child care and increased support for community schools;

- The Understanding the Early Years in Saskatoon study has had a lasting impact on the Saskatoon school boards. Superintendents say the information collected has allowed schools and teachers to plan and align resources and teaching strategies to best serve children;⁷
- > The Saskatoon Public Schools has established a Literacy for Life program to ensure that all students from kindergarten to grade eight are reading and writing at or above grade level. In 2006, Literacy for Life was awarded the Premier's Board of Education Award for Innovation and Excellence in Education;
- > Greater Saskatoon Catholic Schools is focusing on a Student Learning Model with an emphasis on quality core instruction in classrooms and consistent response where differentiated instruction is needed; and,
- Research has shown numerous human and social capital benefits of family literacy programs, not only for the family but for the community. A Family Literacy program called Romp 'n' Read was developed by READ Saskatoon in 2007 in response to the need for fun, interactive learning activities for preschoolers and their parents or caregivers. Short-term evaluations showed increased literacy activities and literacy strategies to support children, increased confidence in parenting skill, and increased involvement and connection to community.⁸

6.3 Educational Attainment of Parents

What is it? Educational attainment of parents refers to the level of education completed by parents. Data were not available for parents of children ages 0 to 6 exclusively. As such, the proportion of the general Saskatoon Health Region population ages 25 to 64 years who have completed at least high school level education is presented as a proxy measure.

Educational attainment by parents has important links to children's health and development. Parents' education levels have consistently been associated with their children's educational and health outcomes.⁴ Parents with higher levels of education are more likely to have better access to material, social and human resources and their children are more likely to do better in school (i.e. improved school readiness).⁹

Research shows that maternal educational attainment is especially important. Higher maternal education is associated with better nutritional status of children.¹⁰ While the higher the level of education attained the more benefit gained (in terms of employment, income earned), a high school diploma is commonly accepted as a minimal standard necessary to effectively take advantage of opportunities in modern Canadian society.¹¹

Geographical Breakdown

In 2006, 15.2% of the population ages 25 to 64 in Saskatoon Health Region reported not having a high school certificate, diploma or degree. There was a clear difference in the proportion of adults who did not have at least high school level education between the city dwellers and those in rural areas of the Region (12.5% of city dwellers reported not having a high school certificate, diploma or degree, compared to 21.8% of rural dwellers).

A Closer Look at Saskatoon

The educational attainment of adults ages 25 to 64 varied considerably between Saskatoon neighbourhoods as seen in Map 6.3. It is promising to note however, that educational attainment has generally been improving over time across Canada. In Saskatchewan, there has been a consistent decrease, since the 1990s, in the percentage of the population over 15 years without a high school diploma.¹²





Source: Statistics Canada, Census 2006

Map: Public Health Observatory, Population and Public Health, Saskatoon Health Region Note: Map classes are based on a quantile classification; numbers in brackets indicate number of neighbourhoods in each category.

WHAT DID WE HEAR?

Concern over the teen pregnancy rate was noted, suggesting it may have implications for educational attainment.^{*ii*} Coupled with this, concerns over limited access and flexibility of educational programs were also raised.

Some proposed solutions:

To reduce unintended teenage pregnancy:

Interventions that offer holistic programming and public awareness were suggested, along with improved availability and accessibility of contraception methods targeted to teenagers.

To increase parental educational attainment:

- Improve affordability by reducing post secondary tuition costs;
- Increase availability of part-time, flex-time and distance education options;
- > Increase child care availability in school settings;
- > Increase education in the trades;
- > Support people with learning disabilities; and
- Eliminate restrictions within student loan and scholarship criteria to ensure that part time students (considered mature; and/or with families) aren't missing out on opportunities.

Examples of current initiatives:

- > The Saskatoon Tribal Council Education Unit (STCEU) assists member First Nations education systems with programming that is consistent with the spirit and intent of the treaties. The Unit assists in preparing youth for full and meaningful participation in society;
- Saskatoon Food Bank runs a literacy and preemployment program to help participants develop literacy, numeracy and computer skills. Graduates of the program have gone on to explore other training opportunities or seek employment;
- Saskatoon Health Region's Representative Workforce Strategy aims to "improve socioeconomic well-being and social determinants of health of the community by increasing the representative workforce." Examples of initiatives include: STEP Into Health Careers, a pre-employment program targeted at recruiting, training and hiring Aboriginal youth in entry-level positions with the Health Region. The Aboriginal Student Program provides summer employment opportunities through internal and external funding partnerships; and
- > The Saskatoon Regional Intersectoral Committee has been supporting Aboriginal employment as one of its key priorities.

6.4 Taking Action – Improving Cognitive Development and Supporting Higher Education for Parents

This chapter has highlighted key measures of cognitive development. On the surface, the findings signal that between 2008-2009 and 2010-2011, 10.6% of the Health Region's kindergarten children scored low on the language and cognitive development domain of the EDI and 14.4% scored low on the communication skills and general knowledge domain. The scores for Saskatoon and the Health Region's rural areas are similar.

Another important finding is the 24-fold variation in low scores between neighbourhoods in Saskatoon, ranging from a low of 1.5% to a high of 37.1%. As the literature suggests, there appears to be an association between lower socio-economic status neighbourhoods and EDI scores. This has implications for future targeting of interventions and resource allocation into specific areas to improve school readiness.

ii The teen pregnancy rate, while not analyzed in this report, is reported in Reducing Infant Mortality in Saskatoon Health Region (2012). It was found that the Region's teenage pregnancy rates have consistently remained below the Saskatchewan rates but above the Canadian average and increased in 2009. In addition, significant differences in rates exist between Registered Indian Status and non- Registered Indian Status populations, between urban and rural Saskatoon Health Region residents, and between low and high socio-economic status groups (Opondo et al. Available at: www.saskatoonhealthregion.ca/PHO).

Supporting the learning needs and cognitive development of children and youth is one way we can increase the likelihood that they have opportunities to succeed in employment and reduce their risk of perpetuating cycles of low socio-economic status for future generations.

Dr. Clyde Hertzman, a leading proponent of the EDI from UBC's Human Early Learning Partnership, recently outlined some additional future directions, including the need for strong intersectoral leadership over early childhood education and care, more focus on EDI outcomes, equitable access for high-quality programming or proportionate universality at the local level, and greater alignment between early childhood education and care and the school system.¹³

Parental educational attainment is another measure for early childhood cognitive development as well as an important index of socio-economic status that can be used to predict children's educational and behavioural outcomes.¹⁴ While educational attainment generally appears to be rising, it is worth noting that there were vast differences between Saskatoon neighbourhoods in the percentage of parents who had achieved high school certification.

While there are many good initiatives underway, stakeholders called for further action in the areas of improved parental supports and access to education.

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CHAPTER 7

Early Childhood Material Well-being



HIGHLIGHTS

Early Childhood Material Wellbeing

A significant number of children under six live in poverty

- In 2006, 23.3% of children less than six years of age in Saskatoon Health Region lived below the before-tax low-income cut-off (LICO-BT).ⁱ In Saskatoon, more than one in four children less than six years of age lived in low-income households (27.4%, or 3,758 children).
- Poverty rates varied by Saskatoon neighbourhoods, ranging from 5.0% to 82.9% of children less than six years of age living below the before-tax low-income cut-off (LICO-BT).
- The number of children living in poverty in rural areas (one in eight) was half the rate for the city of Saskatoon (12.9%, or 693 children).
- > After accounting for the effects of income redistribution in the tax and transfer systems, 17.5% of children less than six years of age in Saskatoon Health Region lived below the low-income cut-off after tax (LICO-AT).
- In the Health Region's rural communities,
 9.5% (514) lived below the low-income line (LICO-AT).
- Large differences in child poverty prevalence by neighbourhood exist, ranging from 5% to as high as 64.5% (LICO-AT).

Approximately 1 in 4 households in the Health Region spent 30% of more of their income on housing costs in 2010

- Similar to percentages in 2006, estimates for 2010 found that approximately one quarter of Saskatoon households spent
 - 30% or more of their income on housing costs.

- More renters in Saskatoon had housing affordability problems than homeowners (44.8% versus 15.0%).
- > Vast differences in housing affordability were seen at the neighbourhood level, ranging from 6.4% to 50.8% of households spending 30% or more of their income on housing costs.
- > The 2006 Census found that a greater percentage of rural homeowners (14.7%) in Saskatoon Health Region had challenges with housing affordability compared to city homeowners (10.9%), despite lower rural housing costs.

In 2012, Saskatchewan had the second highest number of families with children using food banks in Canada. A breakdown of the Saskatoon Food Bank's clients indicated that:

- Saskatchewan has one of the highest numbers of families with children using food banks in Canada, second only to Manitoba.
- In 2007-2008, almost one in ten Saskatchewan households with children ages 0 to 5 reported that they experienced moderate to severe food insecurity over the past year.
- > About 4 in 10 food bank users in Saskatoon were children below age 17 and 15% were below age 6.ⁱ
- > Over half of all families using the Saskatoon Food Bank were single-parent families.

i These data are reported for children ages 0 to 5 inclusive and are described in the language used by the data provider. Most other indicators in this report are reported for children ages 0 to 6 inclusive.

There are many factors that influence the overall health and well-being of populations and individuals, and children are no different. The purpose of this chapter is to examine the material well-being of Saskatoon Health Region children and families through selected measures, including poverty, housing affordability and food security. It is important to note that a key challenge for this chapter is that the most recent data available for many of these indicators is based on the 2006 Census. In recent years, the province has experienced economic prosperity. It is expected that all citizens will benefit from this prosperity and that there should be better outcomes for all. It is hoped that this shared prosperity will be reflected in the 2011 Census and into the future. [#]

7.1 Percentage of Children Less than Six Years of Age Living Below Low-Income Cut-offs

What is it? One indicator of child poverty is the percentage of children less than six years of age living below the low-income line using the Low-Income Cut-off (LICO) developed by Statistics Canada.

LICO is an income threshold below which a family will likely devote a larger share of its income to the necessities of food, shelter and clothing than an average family would. There are two sets of thresholds for LICO – the LICO-Before Tax (LICO-BT) and LICO-After Tax (LICO-AT). LICO-BT is based on total income, including government transfers, before tax deductions. LICO-AT is also based on total income, including government transfers, but after tax deductions.

Prevalence of low-income is generally higher when using the before-tax measure than the after-tax measure. Statistics Canada indicates that the after-tax measure is better at accounting for the impact of income redistribution and "progressive" tax rates through Canada's tax and transfer system.¹

Income and social status are a key determinant of health where higher income has been shown to equate to better health with every rung of the income ladder.²

The impact of income on health and well-being is well known. For example, at an international level, income inequality or child poverty has been associated with higher rates of adverse educational, social and health outcomes, including:

- Poorer overall child well-being, infant mortality, low birth weight, not having polio immunizations, child mortality due to unintentional injuries, juvenile homicide, low educational attainment, dropping out of school, nonparticipation in higher education, aspiring to low-skilled work, poorer peer relations, having been bullied, increased teenage birth rate, lower physical inactivity, childhood obesity, not eating breakfast, feeling lonely and mental health problems;
- > Living under stressful conditions that affect healthy family functioning;³
- > More likely to experience food insecurity (difficulties with the availability and accessibility of food) and have their health compromised by lack of nutritious food;³
- > More likely to demonstrate high levels of aggression;⁴ and
- > Less likely to participate in organized sports and leisure activities.⁴

Exposure to relative poverty or having low socio-economic status in childhood has been associated with increased adult morbidity and mortality, including:

Stomach, liver, and lung cancer, diabetes, coronary heart disease, stroke, respiratory diseases, nervous system conditions, diseases of the digestive system, alcoholic cirrhosis, unintentional injuries and homicide.⁵

National data indicate that child poverty rates tend to be higher among newcomer or Aboriginal children and those who live in female-headed single parent families. ^{v,6}

ii Detailed 2011 Census data will be available for Saskatoon Health Region and Saskatoon in 2013.

iii Statistics Canada data used in this section is for children ages 0 to 5 and does not include 6 year-old children. Most other indicators in this report are for children ages 0 to 6 inclusive.

iv Before-tax and after-tax variables are commonly reported measures of 'poverty'; therefore, are both included in this report.

v Data not available at a neighbourhood level.

Geographical Breakdown – Low-Income Cut-Off Before Tax (LICO-BT)

In 2006, 23.3% of children less than six years of age in Saskatoon Health Region lived below the LICO-BT. According to the 2006 Census, 27.4% (3,758) of children less than six years of age lived below the before-tax low-income cut-off in Saskatoon.⁷ In rural Health Region communities (which include Saskatoon's 'bedroom communities'), 12.8% (693) or half that of Saskatoon's children lived below the LICO.

A Closer Look at Saskatoon (LICO-BT)

In Saskatoon, child poverty rates, much like EDI scores reported in earlier chapters, vary widely by neighbourhood, ranging from 5.0% to 82.9%. In a large number of neighbourhoods on the west side of the city, more than half of the children less than six years of age lived below the low-income line (*Map 7.1*).





Source: Statistics Canada, Census 2006

Map: Public Health Observatory, Population and Public Health, Saskatoon Health Region

Note: Map classes are based on a manual classification in order to utilize similar cut-offs as Map 7.2 on LICO-AT *Based on 2005 income

Geographical Breakdown – Low-Income Cut-Off After Tax (LICO-AT)

After accounting for the effects of income redistribution via the tax and transfer systems, 17.5% of children less than six years of age in the Health Region lived below the low-income cut-off after tax.

In the Health Region's rural communities, 9.5% (514) lived below the low-income line (LICO-AT).

A Closer Look at Saskatoon (LICO-AT)

LICO-AT accounts for the effects of income redistribution. As such, child poverty was calculated using both the LICO-BT and LICO-AT measures for each neighbourhood in Saskatoon to reflect poverty before and after income redistribution. The relative reduction in child poverty was more noticeable in core neighbourhoods compared to middle- and higher-income neighbourhoods. In 2006, 20.6% (2,825) of children less than six years of age in Saskatoon lived below the low-income line using LICO-AT measure.

Even after taking into account the income and tax transfers, there were large differences in child poverty rates by neighbourhoods in Saskatoon, ranging from 5% to as high as 64.5% (Map 7.2).





Source: Statistics Canada, Census 2006

Note: Map classes are based on a manual classification in order to utilize similar cut-offs as Map 7.1 on LICO-BT *Based on 2005 income

Map: Public Health Observatory, Population and Public Health, Saskatoon Health Region

WHAT DID WE HEAR?

Poverty and its root causes were raised as a primary early childhood health issue. Topics such as unemployment, low socio-economic status and other health determinants linked to poverty were mentioned, including food security, nutrition, access to safe and affordable housing and health care.

Some proposed solutions:

Broadly, stakeholders voiced a need to tackle the root causes of poverty, including income, housing, food security, education, social inclusion, and universal and integrated community services.

Suggested initiatives include: vi

Income

- Increase social assistance rates so that families can afford food and shelter;
- Increase minimum wage and availability of health benefits; and
- Implement a guaranteed annual income.

Education

- > Improve high school graduation rates; and
- > Lower post-secondary tuition costs.

Social Inclusion

- Support Aboriginal families to heal from the negative effects of oppression;
- Create an Aboriginal Employment Transition Centre; and
- > Increase community supports to help integrate newcomers to Saskatoon.

Universal and Integrated Services

- > Provide quality and universal child care;
- > Implement a universal KidsFirst program;
- Implement agency-supported, home-based child care;
- Integrate services based on community needs so individuals can go to one place for all service needs (e.g. Mothers/ Parents Centre and Station 20 West); and
- > Provide services based on relationships.

Examples of current initiatives:

- The Saskatoon Poverty Reduction Partnership (SPRP) is a collaboration of mixed organizations and interest groups working together to raise awareness about the causes of poverty and support sustainable solutions for the well-being of all people in Saskatoon.
 - The 2012-2013 SPRP work plan priorities are: (1) ending homelessness; (2) engaging faith and business communities in poverty reduction activities; and (3) strengthening involvement and collaboration with Aboriginal organizations.
 - The SPRP created an Act NOW! resource to show residents how they can get involved in poverty reduction (http://www. saskatoonpoverty2possibility.ca/actions.html).
 SPRP is also on Facebook.
- The Saskatoon Anti-Poverty Coalition is a group of concerned persons and organizations who are dedicated to addressing the causes and effects of poverty in Saskatoon (on Facebook).
- Saskatoon Regional Intersectoral Committee (http://www.saskatoonric.ca/) has identified early childhood development as a current priority having recently produced a briefing paper and organized a forum inviting key community decision-makers to engage in further discussion.
- Poverty Free Saskatchewan (http://www. povertyfreesask.ca/) is a new network of individuals, organizations, governments and businesses working toward poverty elimination in the province. This network has been active in reporting provincial data and conducting community consultations, having recently released the report, Communities Respond.
- > The Government of Saskatchewan produced the report, From Dependence to Independence: Actions and Investments for Saskatchewan's Most Vulnerable People (Summer 2012), which outlines government initiatives on early childhood development (refer to Chapter 5 for more detail).
- > It is also interesting to note that almost all communitybased organizations who provide services to children and families have a mandate to address poverty.

vii Some of these suggestions are explored in previous chapters of this report.

7.2 Percentage of Households Spending 30% or More on Housing

What is it? The percentage of households spending 30% or more of their income on shelter costs is commonly used as an indicator of housing affordability. Shelter costs include monthly mortgage payments, property taxes, condominium fees and/or rent, as well as payments for utilities, such as heat, water and other municipal services. This indicator is also linked to socio-economic status as people with low-income are more likely to spend a larger proportion of their income on shelter costs.

This information was last comprehensively collected by the Census in 2006. Since that time, Saskatoon's housing market has experienced major changes and, as such, this section presents both 2006 Census results and estimates for 2010 projected by the G5 Super Census.

Housing is one of the social determinants of health. Acceptable housing is affordable, requires no major repairs and is not overcrowded. People without access to adequate housing are more likely to suffer from physical (e.g. respiratory disease and allergies) and mental health issues than those with access to adequate housing.⁴

One measure of access to adequate housing is affordability. Households that spend over 30% of their income on housing costs may have inadequate funds for other necessities, including food, clothing, transportation and health care. This indicator is also reflective of the context in which a child lives (i.e. the type of neighbourhood, access to schools, jobs and community resources).⁸

Homelessness in Saskatoon

The number of homeless people in Saskatoon has jumped by more than 100 people from four years ago, according to a new homeless count.

The rough count shows 372 people were homeless in Saskatoon in September 2012 - up from 261 when the count was last done in 2008.

Of the total, 78 of Saskatoon's homeless were children. The homeless count will provide baseline data for United Way and the Plan to End Homelessness Task Force and other groups that are working toward a 10-year plan to end homelessness in Saskatoon.⁹

A new report by the Canadian Homelessness Research network outlines the cost of homelessness in Canada. The report says homelessness costs Canadian taxpayers \$4.5 billion a year. The report also says that figure is so high because our current approach focuses on a patchwork of emergency services, like emergency health care, law enforcement and shelters, which can place a big strain on these institutions.

The report suggests that re-housing the homeless through rent subsidies would actually be cheaper than relying on emergency services. Placing people in low-income housing would decrease their emergency room visits and involvement with police and the mental health establishment. The report estimates the savings to be over \$9,000 per homeless person.¹⁰

Breakdown by Geography and Housing Ownership Type

According to the 2006 Census, 23.8% of Saskatoon Health Region households spent more than 30% of their household income on shelter costs.^{vii} The percentage of households who spent more than 30% of their income on shelter was almost three times higher for renters as compared to homeowners (44.0% and 14.9% respectively).

In 2006, in rural Health Region communities, a greater percentage of homeowners (14.7%) had challenges with housing affordability compared to city homeowners (10.9%), despite lower rural housing costs. However, renters in rural communities had fewer household affordability challenges than Saskatoon renters (32.3% vs. 44.0%).¹¹

vii Recent estimates were not available at the regional level

Estimates for 2010 - Saskatoon

Similar to the percentages in 2006, estimates for 2010 found that 25.6% of Saskatoon households spent 30% or more of their income on shelter costs. ^{viii} A higher percentage of renters (44.8%) spent 30% or more of income on shelter costs, compared to owners (15.0%). Vast differences in housing affordability are seen at the neighbourhood level, ranging from 6.4% to 50.8% (Map 7.3).

Map 7.3: Percentage of Households Spending 30% or More of their Income on Shelter Costs, Saskatoon, 2010 Estimates



Source: City of Saskatoon's projected estimates based on the G5 Super Census, 2010 Note: Map classes are based on a quantile classification; numbers in brackets indicate number of neighbourhoods in each category.

For homeowners, neighbourhood level findings ranged from 6.8% to 33.3% (Map 7.4). For renters at a neighbourhood level, this ranged from 11.1% to 64.9% (Map 7.5).

viii Estimates are based on G5 Super Census and are available for Saskatoon only





Source: City of Saskatoon's projected estimates based on the G5 Super Census

Note: Map classes are based on a quantile classification; numbers in brackets indicate number of neighbourhoods in each category.





Source: G5 Super Census Note: Map classes are based on a quantile classification; numbers in brackets indicate number of neighbourhoods in each category.

WHAT DID WE HEAR?

The need for access to safe and affordable housing was raised frequently during consultations. With the Health Region's population increasing, stakeholders believe the housing supply is not meeting demand. They called for improved availability and access to affordable, safe housing for all.

Examples of current initiatives:

QUINT Development Corporation is an award-winning community economic development organization that has worked in Saskatoon's core neighbourhoods

since 1995.^{ix} One of its objectives is to improve the affordability and accessibility of housing for lowerincome residents. QUINT owns and manages several apartment buildings and has a home ownership program to assist lower-income families through housing co-ops. Since 1997, Quint has helped to set up eight housing co-ops, and there are over 100 families in co-op homes today (www.quintsaskatoon.ca).

There are also a number of efforts aimed at making housing affordable for all residents at provincial, regional and city levels:

x In 2002, QUINT won the Canada Mortgage and Housing Corporation's national Award for Affordable Housing Innovations (process and management category) for its innovative work with housing co-ops.



- In 2011, the Government of Saskatchewan released A Strong Foundation - The Housing Strategy for Saskatchewan 2011-2019 and the 2011-2012 Provincial Action Plan, which outlines government's key activities for the strategy's first year of implementation.¹²
- > The City of Saskatoon released its 2011 Housing Business Plan and has commenced implementation.¹³
- Saskatoon's Plan to End Homelessness Task Force, with leadership from United Way Saskatoon and Area and support from SPRP, is working to develop a 10-point plan to end homelessness following the model developed by the Canadian Alliance to End Homelessness (http://www.caeh.ca/).
- The Saskatoon Tribal Council's Cress Housing Corporation is dedicated to providing affordable and adequate housing for First Nations persons living in the City of Saskatoon. They nurture and support potential housing solutions geared towards addressing the critical housing shortage

facing the urban First Nations community by providing: rent-geared-to-income housing for all sectors of the urban First Nations community, supported housing for senior citizens, capacity support for other housing providers, affordable market housing, individual home ownership mentorship and support, and lobbyists to advance the profile of First Nations housing needs in Saskatoon. [http://www.sktc.sk.ca/?q=node/81]

> The Central Urban Métis Federation Inc. (CUMFI) Infinity House is a supportive housing facility that provides Aboriginal women and their children who are at risk of becoming homeless with a safe haven that protects them from having to endure an unsafe living environment. Developed through CUMFI's Métis Community Homelessness Initiative, Infinity House is dedicated to providing long-term and emergency housing for single mothers and their children, and the opportunity for stabilization, programming, education and employment. [http://shipweb.ca/cumfi-infinity-house/]

7.3 Food Security

What is it? The Food and Agriculture Organization of the United Nations defines food security as a condition in which "all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life."¹⁶ Food security is a broad concept with many dimensions, including the nature, quality and security of the food supply, in addition to food accessibility.¹⁷

Food security is an important public health issue and is one of the social determinants of health. For children, food insecurity is associated with a range of negative outcomes in cognitive growth and development and nutritional status.¹⁴ Further, Canadians living in households where access to food is a concern are much more likely to report that their health is poor or fair and that they have poor functional health (such as pain, hearing and vision problems, restricted mobility), multiple chronic conditions and major depression or distress.¹⁵



Some Food for Thought

The Food for Thought program was summoned to appear before the Standing Committee on Health Promotion and Prevention in the House of Commons in February 2012. The program assists pre- and postnatal women and their children to achieve improved health. With a focus on cooking low-cost nutritious food, women come together and have an opportunity to share ideas, make friends and talk about their lives. http://www.saskatoonhealthregion.ca/your_health/ ps_primary_health_food_for_thought.htm

I Was Told, "You Can Do That," and I Did!

"I came to Food for Thought in December of 2005. I was single, pregnant and had absolutely nothing to my name. I had been referred by my Healthy Mother Healthy Baby worker. I had just gotten out of a treatment centre and was pregnant for the first time and was desperately afraid of everything. I had gone to treatment for drug addiction because I had been struggling with addictions for many years and finally hit bottom using crack cocaine. I had dropped out of high school and left home at a young age and had been using drugs and alcohol for seven years. I was 19 years old at this time. I had no skills to know how to live a productive life, let alone how to take care of a child. I was also paranoid and in a constant state of panic.

Honestly, my cooking skills were the least reason I came to Food for Thought. I came because it was somewhere safe to go and I was able to access things I couldn't on my own. My babies were able to get immunized; I had support with breastfeeding; I could talk to a nurse or doctor about any concerns; and I created friendships with women who I could relate to. What had the most impact on me however was the information. I learned how to treat myself with love, with respect, and that I had value. This I think is something emphasized greatly, through workshops about healthy relationships, self-care, and is apparent in the relations with the staff and peer leaders. Something else I learned was that I was more then just a mom. I was my own person.

When I was asked to become a peer leader I was so honoured and at the same time couldn't believe that someone saw the qualities that I saw in the other peer leaders in me. I am now eleven months away from receiving a degree in social work. I am a trained labour doula, a mother of three children and engaged to be married. I have material possessions that I never even dreamed of owning. I am still a peer leader with Food for Thought. The past six years have been hard, full of trial and tribulations. When I thought I should go back to school and get my grade twelve, I had a group of women tell me, I know you can and you will succeed. When I mentioned I thought I should go to be a doula, I was told I know you can do that and you would be great at it. When I thought I should go to university and maybe I should be a social worker, I was again told, you can do that, and I did."

Peer Leader and former program client, Food for Thought

Food Insecurity in Saskatchewan

In 2007-2008, the percentage of Saskatchewan households with children ages 0 to 5 that reported being moderately to severely food insecure was 11.0%, similar to the Canadian average of 10.7%. ^x,¹⁸

Furthermore, in 2012, 47.5% of food bank clients in Saskatchewan were children under 18, which made Saskatchewan the province with the second highest percentage of children using food banks following Manitoba (47.6%).¹⁹

A Closer Look at Saskatoon

In 2012, the *HungerCount* survey administered at the Saskatoon Food Bank and Learning Centre found that of the 9,943 Food Bank clients, 42.6% (4,238) were under age 17 and 14.6% (1,454) were children under age 6. The same survey also found that 57.4% of families using the Food Bank in Saskatoon were single-parent families, slightly above the provincial rate of 52.8%.^{19, 20}

"Food money is going to pay the rent!"

Community Representative

At the Saskatoon Food Bank and Learning Centre, 57.2% of all clients reported that they were of Aboriginal ancestry (First Nations or Métis) and 12.3% reported that they were newcomers (immigrants or refugees) who had been in Canada for less than 10 years.

x Data not available for children ages 0 to 6

WHAT DID WE HEAR?

Some proposed solutions:

Improve availability and access to affordable, healthy food through:

- > School breakfast and lunch universal programs;
- Support for sustainable breastfeeding to 6 months;
- > More healthful and nutritious food available at food banks; and
- > Better awareness and support for community gardens.

Examples of current initiatives:

Saskatoon residents are fortunate to have CHEP, a community organization that has a variety of food security programs, including infant and child nutrition, Nutrition Positive in schools, the Good Food Box and community gardening.

Saskatoon Health Region's Population and Public Health department (PPH) partnered with CHEP to offer an immunization incentive that has demonstrated success. In order to attract families to immunization clinics in the core neighbourhoods, CHEP provides a Good Food Store at three clinic locations. After a child is immunized, the family receives a coupon (one coupon per person based on child immunization, \$3 cash value) towards purchasing food from the Store. The Store provides a variety of top-quality, fresh, nutritious foods at an affordable price. This incentive is currently offered at W.P. Bate, Pleasant Hill and St. Thomas clinics.

7.4 Taking Action – Tackling Child Poverty

This chapter has highlighted indicators of material well-being. More than one in four children ages 0 to 6 in the Health Region is growing up in poverty. Families of children in poverty are more likely to be urban, Aboriginal or newcomers to Canada, and headed by a female single parent. These children are also likely to live in households that spend more than 30 % of their income on housing and who access the Food Bank on a regular basis.

As a community, we should be concerned by the data for a number of reasons. Children born into a life of poverty or low-income are more likely to stay in such circumstances into adulthood as a result of a cycle that often perpetuates itself.²¹ Even if these children grow up to break the cycle, the physiological and psychological stresses experienced in their childhood may contribute to adverse health outcomes into adulthood.

Children are a vulnerable group that requires human rights protection. They do not choose to be born into difficult circumstances. Children are an investment in our future and should have the opportunities, resources and supports needed to achieve their potential.

Approaches for improving the material well-being of our children include: (1) delivering programs and services to mitigate the effects of poverty (e.g. food programs) and (2) developing policies that target the root causes of poverty. It has been suggested that child poverty strategies can be grouped into three policy categories: providing economic resources directly to children and their families (e.g. through tax credits and transfers), strengthening family structures to influence marriage and fertility rates, and seeking to improve labour market outcomes for the parents.²²

Saskatoon Health Region stakeholders also commented on the need to focus on and support the development of healthy public policy. As one stakeholder said, "I will be disappointed if we don't create supportive conditions and address root causes [of poverty]," while another stated, "the 'Saskaboom' should mean prosperity across socio-economic groups."

Factors that determine early childhood material well-being -- whether social, economic, physical, environmental or behavioural -- do not exist in isolation. Addressing these determinants of health comprehensively will be fundamental to affecting change in childhood health and development.

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CHAPTER 8

Recommendations for Improving the Early Years in Saskatoon Health Region



The following recommendations are designed to improve the health and development of children ages 0 to 6, their families and communities in Saskatoon Health Region. They are respectfully directed to the Saskatoon Regional Health Authority (SRHA) and the Saskatoon Regional Intersectoral Committee (SRIC). Significant intersectoral action is needed to improve child health and development and also requires a combination of strong provincial and local leadership and action.

The recommendations focus on prevention and health promotion and encourage collective action from an array of stakeholders, including government and businesses. Models for parental education support for example, cannot be addressed by any one sector and should be considered in all government policies and goals.¹

A focus on prevention, health promotion and reduced health inequity in the early years will help reduce the social and economic burden of illness, not only in childhood but also throughout the adult years. This focus could be the single most important strategic investment that we as a society could make to ensure a prosperous future. Most importantly, it is the right thing to do.

Develop and Implement a Provincial Early Childhood Health and Development Strategy

Policy plays an important role in influencing developmental health outcomes. The four pillars of a province-wide, cross-ministerial and regional intersectoral strategy should include:

1. Agreement on a key goal - "18 by 18"

30% of children ages 0 to 6 in our Health Region are vulnerable in at least one developmental area - those areas being physical health and well-being, social competency, emotional maturity, language and cognitive development, and communication skills.^{*i*}

We recommend the adoption of a shared commitment to work together to reduce this score to 18% by 2018.

2. A focus on family needs "

Families require good supports to ensure the best possible start for their children. We need to take a strategic approach and include the development of provincial policies and initiatives that consider the needs of all families, with special emphasis on newcomer, single-parent, First Nations and Métis families, to reduce health inequities. Provincial cross-ministry and regional cross-sector roles will be required. The following should be considered:

- > Parental benefits for all in the first year of a child's life (including arrival within a family as with adoption) with a minimum income for healthy living;
- > High quality, affordable, accessible and developmentally appropriate early learning and child care services for all, including expanded child care, preschool and prekindergarten programs, to meet families' needs and preferences for their children before they start school; and,
- > Expanded, locally-led, evidence-based parenting supports that are integrated across sectors and provide evidence-based education about parenting skills and styles.

3. A holistic approach for improving the health and development of First Nations and Métis children ^{III}

Chapter 1 has provided a clear link between the health of First Nations and Métis peoples and the range of influences, including social determinants and historical complexities. While the recommendations in this chapter apply equally to all people of the Saskatoon Health Region, the complexity of First Nations and Métis health issues requires further attention and action. As such, the following should be considered:

i Based on the Early Development Instrument scores

ii These recommendations are based on the Canadian Family Policy Assessment Tool indicator framework (NCCHPP, June 2012 www.kidskan.ca/

policyassessment), developed by SPHERU and HELP, based on similar international work.

iii Given the local demographic context of the Saskatoon Health Region, these recommendations refer to First Nations and Métis peoples. Nationally, however, the term Aboriginal is used to refer to all of Canada's first peoples, including First Nations, Métis and Inuit peoples.

- > Creating better awareness of the historical and social contexts of First Nations and Métis peoples;
- > Providing more training to increase cultural competency and safety for professionals across sectors;
- > Employing advocates and cultural translators to bridge understanding between systems and First Nations and Metis families and provide system navigation support;
- > Conducting further intervention research aimed at improving the lives of First Nations and Métis children through collaborative, respectful and equitable partnerships;²
- > Increasing delivery of services by First Nation and Métis agencies and providers to children and families; and³
- > Focusing on the needs of children first in matters of jurisdictional dispute over funding health care services for First Nations children by supporting a long-term implementation plan of Jordan's Principle.⁴

4. Commitment to targeted investments

"Research shows that public investment in the policies that promote early developmental health not only helps children and families directly but provides benefits across society. Canada lags behind other industrialized countries in these investments, which has health and well-being consequences for all Canadians (...) the reality of parenting today requires new public policy responses that promote quality home and community based environments."⁵

In order to support family needs, a provincial early-years strategy should include:

- Targeted investments to reduce poverty and ensure food and housing security for children;
- Plans to **increase the proportion of resources allocated to early years** and ensure expenditure is allocated progressively across the social gradient (e.g. increased wages for early years workers, more child care spaces and subsidized child care for those most in need);
- Recognition of the **growing and changing demographic profile** of the early years population in any new funding models; and
- Appropriately **funded efforts aimed at improving cultural competency** (named in various recommendations within this report).

5. Robust monitoring tools

The challenges in finding data to inform this report point to the importance of ensuring that robust monitoring tools are in place to provide better information about how well our children are doing and to monitor the impact of investments made. In addition, there has been work initiated to examine potential evidence-based policy options to consider at the provincial level.^{iv} As such, monitoring and reporting efforts should include:

- > A review of existing gaps in early years surveillance, along with improvements, to ensure that relevant, reliable provincial and local indicators are available and are consistently collected, monitored and reported. Particular consideration should be given to resolving data gaps for First Nations, Métis, newcomer and immigrant populations;
- > Routine reports on a core set of health equity indicators for child health status and determinants of health, available at a neighbourhood level and by rural planning zones;
- > Regular policy monitoring to seek new options and track the impacts of policies over time; and
- Resources to support ongoing applied research and knowledge exchange to improve maternal and child health monitoring and outcomes (e.g. linking the In-Hospital Birth Questionnaire and the Early Development Instrument to better understand how risks at birth potentially result in poorer childhood development outcomes).

iv Health disparity in Saskatoon: analysis to intervention full report is available at http://www.saskatoonhealthregion.ca/your_health/documents/PHO/ HealthDisparityRept-complete.pdf

Encourage and Support Health Sector Action

1. Deliver family-centred, accessible, integrated services

Feedback from clients/patients, families and service providers signals that more work is needed to bridge gaps and ensure seamless delivery of health services across the Region. As such:

- The Health Region's value stream for maternal and child services and the creation of the new Saskatchewan Children's Hospital provide opportunities to improve system coordination and integration and should include programs and services that span Population and Public Health, Primary Health, Acute Medicine and Complex Care, Maternal and Child Services, Mental Health and Addictions, and Cancer Care, to name a few."
- > The various needs of the population should be addressed in reviewing the availability and accessibility of Health Region programs and services for children. For example, children and families living in urban and rural areas as well as areas of highest deprivation, First Nations, Métis, and newcomer families and children may have varying needs.
- > The Region should enhance its current efforts within the health system towards improving First Nations and Métis health. These include:
 - Continued implementation of the Aboriginal Health Strategy;
 - With the Saskatoon Tribal Council and Saskatoon Regional Health Authority Memorandum of Understanding signed in September 2012 as an example of setting future direction in partnership, the development, incorporation and implementation of Memorandums of Understanding (MOU) between the Saskatoon Regional Health Authority and First Nations and Métis peoples should be continued;
 - Increasing the proportion of First Nations and Métis employees in the Health Region through programs such as Step into Health Careers;
 - Shifting from an illness-driven biomedical approach to a holistic wellness approach that focuses on strengths and preventive medicine;
 - Acceptance of traditional knowledge as credible and authentically integrating client beliefs into future individual health planning;
 - Continued efforts towards a coordinated team-based approach to care that includes physical, mental, emotional, social and spiritual support, providing consistent and familiar case management to families;
 - Pending a successful evaluation, establishing and expanding the First Nations and Métis Health Services pilot to Maternal and Child Health Services; and
 - Assessing current organizational and department cultural competency and following up with targeted improvement initiatives.

2. Bolster health promotion and protection, illness and injury prevention efforts

Continued focus on efforts upstream is important in order to achieve provincial targets. Suggested actions include:

- Continued focussed effort to ensure appropriate primary health care is provided to all residents of Saskatoon Health Region with emphasis on ensuring equitable care to those in most need (e.g. children in areas of highest deprivation).
- Aligning efforts with the provincial strategy on achieving **healthy weights** and reducing **obesity**. At a healthy public policy level, greater emphasis on food security and nutrition, physical activity and the built environment, including human transportation and city planning, are essential.

v A Value Stream is defined as "[a]II activities, both value and non-value added, that contribute to the overall patient experience" in Introduction to Hoshin Kanri (Strategy Deployment): Meeting in a Box, Saskatoon Health Region, 2012.

- > Making mental health a priority by:
 - Recognizing that scientists and practitioners call for prevention and early intervention to best address mental health issues before they become deeply entrenched.
 - Actively raising awareness and promoting positive mental health in the community with the aim to improve mental health and de-stigmatize mental illness;
 - Fostering mother-child and parent-child attachment at an early onset;
 - **Building supportive environments** so that families dealing with mental health issues get, and sustain, the treatment that they need; and
 - Streamlining mental health service delivery across sectors to better serve the community.
- > Working with key community partners to achieve provincial immunization targets so that 95% of children are up to date on publicly funded vaccines by ages 2 and 7 by March 2017.
- > Aligning with the provincial children's oral health strategy to improve oral health outcomes for ages 0 to 6 by implementing a comprehensive approach to prevention and treatment. At a regional level this could also include promotion of a universal dental care program and improving water fluoridation to optimal levels in all Health Region communities.
- > Maintaining high levels of breastfeeding initiation and supporting sustained, exclusive **breastfeeding rates** by emphasizing supportive environments and examining barriers to breastfeeding.
- > Participating in the development of a provincial **comprehensive injury prevention strategy** and, in turn, develop an injury prevention program in the Health Region.
- > Developing comprehensive service frameworks for individuals who have Fetal Alcohol Spectrum Disorder (FASD) and establishing an FASD prevention strategy.

3. Work with partners to better protect children from environmental health risks

Strategies should include:

- Measurement of success by means of setting regional priorities for surveillance, reporting and research to improve understanding of the environmental risks to children, along with regular publications to enable evaluation of effectiveness;
- > Advocacy for evidence-based environmental policies and regulations that are inherently protective of child health;
- > Education and communication to raise awareness about environmental hazards and promote action that can be taken to minimize child health risks; and
- > Consideration of the other determinants of health such as socioeconomic status and culture that may have significant influence on the susceptibility of children to environmental exposure.

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APPENDIX A: GLOSSARY OF TERMS

Affluent neighbourhood: Based on 2001 census information, these neighbourhoods had some of the lowest percentages of families living below the Low Income Cut Off (LICO) in Saskatoon and were in a contiguous area. The affluent neighbourhoods include: Briarwood, East College Park, Arbor Creek, Erindale, Lakeridge.

Antenatal: Before birth.

Baby Friendly Initiative (WHO): A program that was launched by WHO and UNICEF in 1991, following the Innocenti Declaration of 1990. The initiative is a global effort to implement practices that protect, promote and support breastfeeding. Since its launching, BFI has grown, with more than 152 countries around the world implementing the initiative.

Birth weight: The weight of an infant determined at birth, or shortly thereafter, expressed in grams. Can be expressed in four categories: very low birth weight is less than 1,500 grams; low birth weight is less than 2,500 grams; normal birth weight is a birth weight equal to or greater than 2,500 grams and less than or equal to 4,000 grams; and high birth weight is a weight greater than 4,000 grams.

Child Care Centres: Licensed child care centres provide child care services in a facility rather than a home.

Child Care Homes: Licensed child care homes are similar to child care centres except that providers offer child care services in their homes rather than in a facility.

Congenital anomaly: An abnormality of structure, function or body metabolism that is present at birth (even if not diagnosed until later in life) and results in physical or mental disability or is fatal.

Core neighbourhoods: are made up of six contiguous neighbourhoods with high levels of poverty (over 30% of the population living below Statistics Canada's low-income cut-off) while affluent neighbourhoods are those with the lowest levels of poverty. Middle-income neighbourhoods make up the rest.

Crude birth rate: Total number of live births during a year per 1000 population.

Cultural competency: Defined as "a set of congruent behaviours, attitudes, and policies that come together in a system, agency or among professionals and enable that system, agency or those professionals to work effectively in cross-cultural and diverse situations."

Deprivation Index: See Quintiles of Deprivation

Early Development Instrument (EDI): A population-level indicator of early childhood development in five key domains: Physical health and well-being, social competence, emotional maturity, language and cognitive development, and communication skills and general knowledge. Scoring low on any one of the domains suggests that students are entering kindergarten without the skills needed to learn. See Technical Appendix for more details.

Feelings in Pregnancy Study: The Feelings in Pregnancy and Motherhood Study collected data on maternal mental health (depression, anxiety, mood-using Edinburgh Postpartum Depression Scale) and several other factors during pregnancy, in postpartum, and of mothers and children after birth. This longitudinal study had an inception sample of 650 mothers from the general population of mothers residing in Saskatoon in 2006 through 2008.

Fetal Alcohol Spectrum Disorder (FASD): describes the range of effects that can occur in infants, children, youth or adults who have experienced prenatal exposure to alcohol. FASD is called a spectrum disorder because of the different effects and diagnoses within the spectrum. The most common diagnoses are Fetal Alcohol Syndrome (FAS), Partial Fetal Alcohol Syndrome (pFAS) and Alcohol-Related Neurodevelopmental Disorder (ARND).

Food for Thought: A program in Saskatoon Health Region that assists pre/postnatal women and their children to achieve improved health. With a focus on cooking low-cost, nutritious food, women come together and have an opportunity to share ideas, make friends and talk about their lives. The food that is cooked is sent home with the

participants to be shared with their families. A participant-driven discussion on topics related to pregnancy follows each cooking session. The interdisciplinary team, who facilitate the program, use a strength-based approach in all their interactions with the participants and Peer Leaders.

Food Security: Food security exists when all people at all times have physical and economic access to sufficient, safe, culturally acceptable and nutritious food to meet their dietary needs and food preferences for an active and healthy life (Canada's Action Plan for Food Security, 1998).

G5 Super Census: Generation5 produces the G5 Super Census annually in order to provide estimates for census information that is typically only collected every 5 years.

Gestational diabetes: A temporary condition that occurs during child-bearing years, especially during pregnancy, and is characterized by hyperglycemia (high blood sugar levels).

Health Inequity: results from differences and variations in health outcomes and distributions of health care resources, which are deemed to be unfair, unacceptable or stemming from some form of injustice, Health inequities arise from the societal conditions in which people are born, grow, live, work and age.

Immigrant: A non-national who moves into a country for the purpose of settling.

Incidence: The number of new cases of a disease in a certain time period.

Infant mortality rate: The number of infant deaths under 1 year of age per 1,000 live births. Note that stillbirths are not included in infant mortality calculations.

KidsFirst: A voluntary program that helps vulnerable families to become the best parents they can be and to have the healthiest children possible. The program enhances knowledge, provides support and builds on family strengths. The KidsFirst program is not designed to replace existing services, but to enhance existing programs in the community.

Live birth: The complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which after such separation, breathes or shows any other evidence of life (WHO definition).

Low-income cut-off (LICO): LICO is an income threshold below which a family will likely devote a larger share of its income to the necessities of food, shelter and clothing than an average family would. There are two sets of thresholds for LICO – the LICO-Before Tax (LICO-BT) and LICO-After Tax (LICO-AT). LICO-BT is based on total income, including government transfers, before tax deductions. LICO-AT is also based on total income, including government transfers, but after tax deductions. Prevalence of low income is generally higher when using the before-tax measure than the after-tax measure. In the absence of a formal national measure of poverty, LICO is often used as an indicator of poverty.

Low-income neighbourhood: Low-income neighbourhoods were determined by using 2001 census information and the percentage of families living under the Low Income Cut Off (LICO). Having 30% or more families living under LICO and being a contiguous area in the west side of Saskatoon designated the following neighbourhoods as low income: Westmount, Meadowgreen, Confederation Suburban Centre, Pleasant Hill, Riversdale, King George.

Middle income neighbourhood: All other residential neighbourhoods in Saskatoon (excluding low-income and affluent neighbourhoods).

Morbidity: The incidence or prevalence of a disease or of all diseases in a population.

Newcomer: In this report, the number of newcomer children, which includes immigrant and refugee children, is extracted from the Citizenship and Immigration Canada (CIC) database on permanent resident landings in the 0 to 6 age group within a defined year, but excludes those arriving through the federal refugee categories.

Perinatal Period: The perinatal period commences at 20 completed weeks of gestation and ends seven completed days after birth.

Postpartum: The period shortly after childbirth.

Prevalence: The number of existing cases in the population.

Quintiles of Deprivation: A tool used to monitor socio-economic inequities in health. The Deprivation Index measures two types of deprivation: material (e.g. income, employment) and social (e.g. marital status, lone parent family). Quintile 5 represents higher levels of material and social deprivation and Quintile 1 represents lower levels of material and social deprivation. See Technical Appendix for more details.

Risk factor: A risk factor is a variable associated with an increased risk of disease or infection. sometimes, 'determinant' is used interchangeably.

Refugee: A person who fears returning to his or her home country (for fear of persecution, cruel and unusual treatment, or punishment) and who seeks the protection of another country.

Registered Indian Status (RIS): The only ethnic identifier available within the Saskatchewan Ministry of Health's registry system. A person of Registered Indian Status means that the person is registered under Section 6 of The Indian Act, has been assigned a ten-digit number in the Indian Registry and has voluntarily declared this information to the Ministry of Health. See Technical Appendix for more details.

Rural Planning Zones (RPZ): include Saskatoon and area (i.e, bedroom communities of Saskatoon), Rosthern and area, Humboldt and area, and Watrous and area. Rural Planning Zones were developed by Saskatoon Health Region's Population and Public Health for service delivery purposes. See Technical Appendix for more details.

Saskatoon Health Region: is a geography composed of both the City of Saskatoon and the surrounding rural area. When comparing Saskatoon to rural, it is understood that rural is within the Saskatoon Health Region.

Social determinants of health: "[A]re the conditions in which people are born, grow, live, work and age, including the health system. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels. The social determinants of health are mostly responsible for health inequities - the unfair and avoidable differences in health status seen within and between countries" [http://www.who.int/social_determinants/en/].

Statistical Significance and Significance: Where differences between two areas are compared in this report, the word significant is used only if it is a statistically significant difference. See Technical Appendix for more details.

Student Health Survey: The Student Health Survey is a survey that asks students in Grades 5, 6, 7 and 8 about themselves and their health. See Technical Appendix for more details.

Sudden Infant Death Syndrome: The sudden death of an infant less than one year of age, which remains unexplained after a thorough case investigation, including the performance of a complete autopsy, an examination of the death scene and a review of the clinical history.

The Edinburgh Postnatal Depression Scale (EPDS): The EPDS is the most frequently used questionnaire to measure mental health (depression, anxiety) in women during pregnancy. The questionnaire also includes information on medical problems throughout pregnancy, socio-demographic information, risk-behaviours, emotional support, and any medication or counselling.
APPENDIX B

Immunization Coverage, Measles, Mumps and Rubella by Age 2 years, Rural Planning Zones (RPZ), Saskatoon, Saskatoon Health Region, 2002-2011



Source: Population and Public Health, Saskatoon Health Region

TECHNICAL APPENDIX

Methodology

The methodology for this report includes descriptive and bivariate (between two variables) analysis. As a result, some caution is needed when interpreting the results published in this report. More detailed multivariate analysis may be needed in future to accurately account for multiple risk factors and their relation to the outcomes of interest. Where data is available, indicators are compared to those from other jurisdictions, primarily the province of Saskatchewan or Canada.

Most of the health outcome data is based on mortality, emergency department visits and hospital separations -- only contact with the health system is measured. No physician visit, prescription drug data or health professional datasets were used. Therefore, any health outcome analysis is limited in scope.

Statistical significance

Where differences between two areas or groups are compared in this report, the word significant is used if it is a statistically significant difference. If the differences are not statistically significant, other language is used (e.g. dramatic, substantial, etc.) or else it is explicitly stated (e.g. no statistically significant differences found between the two groups). Confidence intervals at the 95% level were used to test statistical significance. If there were overlapping confidence intervals, the differences are not statistically significant.

Registered Indian Status (RIS) and Aboriginal populations

Registered Indian Status is the only ethnic identifier available within Saskatchewan Ministry of Health's registry system. A person of Registered Indian Status means that the person is registered under Section 6 of *The Indian Act* and has been assigned a ten-digit number in the Indian Registry (Saskatchewan Ministry of Health, 2008) and has voluntarily declared this information to the Ministry of Health.

Registered Indian Status is an underestimate of the total Aboriginal population because it excludes those that have Aboriginal ancestry but are not registered through *The Indian Act* or who have chosen not to disclose this information. It also does not include people of Métis or Inuit heritage. In total, about 53% of the Aboriginal population in Saskatoon Health Region was of Registered Indian Status based on the 2006 census.

Self-identified Aboriginal ancestry is used in two surveys cited in this report: the In-hospital Birth Questionnaire (IHBQ) and the Saskatoon Health Region's Student Health Survey (SHS).

Sub-regional analysis

The boundaries of rural municipalities (RMs) and regional health authorities are not coterminous. This means that rural municipal populations get apportioned across health regions instead of being assigned to a specific health region, as is done with cities, towns and villages. The RM's population is split between health regions in proportion to the land area. For example, because 22% of the land area in the rural municipality of Harris falls within Saskatoon Health Region (SHR) boundaries, so too does 22% of the population, along with birth, death and hospital separations, get apportioned to Saskatoon Health Region. The other 78% of the RM of Harris is apportioned to Heartland Health Region. A list of common geographical areas used in this report is discussed below.

Quintiles of Deprivation

Local Deprivation Index for Saskatoon:

A deprivation index has been developed by the Institute National de Santé Publique du Québec (INSPQ) to measure deprivation across Canada at a small-area level. This index includes approximately 98% of the population in Canada. Factor scores for both the material and social components of deprivation were determined for each dissemination area (DA), with a population of 400 to 700 persons in each DA. For each measure of deprivation, the DAs have been ranked from the most to the least deprived, then broken down into quintiles, each of which contains 20% of the total population. Quintile 1 represents the least deprived population, while quintile 5 represents the most deprived.

The Public Health Observatory (PHO) recognized that utilizing national level quintiles was not the most appropriate way to make deprivation comparisons at the local level, and used the factor scores to create local material and social deprivation quintiles for the city of Saskatoon, where each quintile represents 20% of the population of the city. The material and social quintiles were then combined into a total deprivation index. Note that total deprivation quintiles do not represent true quintiles but rather range in population from 34, 503 to 47, 012.



Saskatoon Neighbourhoods

Each neighbourhood in Saskatoon is given a number that is used on several of the maps in this report. Please refer to the map on the inside front cover.

Core Neighbourhoods

Based upon 2001 census information, the core neighbourhoods are Saskatoon neighbourhoods that have 30% or more families living under LICO and are in a contiguous area. The core neighbourhoods include: Meadowgreen, King George, Pleasant Hill, Riversdale, Westmount and Confederation Suburban Centre.

Affluent Neighbourhoods

Based on 2001 census information, these neighbourhoods had some of the lowest percentages of families living below the LICO in Saskatoon and were in a contiguous area. The affluent neighbourhoods include: Briarwood, East College Park, Arbor Creek, Erindale and Lakeridge.

Middle-Income Neighbourhoods

All other Saskatoon neighbourhoods that are not listed in the core or affluent neighbourhoods.

Rural Planning Zones

The Public Health Observatory devised a set of rural health planning zones that will hopefully enable more meaningful rural health status assessment.

In devising the rural health planning zones, we need to have enough population to yield reliable data. A population of approximately 15,000 gives meaningful health status results annually for most indicators. As such, we have identified four rural health planning zones outside the city of Saskatoon. These are:

- > Saskatoon area, (i.e. the perimeter surrounding the city of Saskatoon);
- > Rosthern and area;
- > Humboldt and area; and
- > Watrous and area.

Overall Data Limitations

Small populations within certain areas (namely the core neighbourhoods of Saskatoon), coupled with the fact that many health events are relatively rare, means that there can be instability in yearly rates. Where possible, years have been combined to provide more certainty to trends over time.

Any analysis focused on comparing health status of residents in different geographies is limited as we do not know how long residents have lived in certain areas. There is no way to tell from our data how long residents have actually lived in their area; therefore, any health impacts from living in that area may be confounded.

The covered population accounts only for where people prefer to receive their mail, so that if someone lives on a farm in an RM but elects to receive their mail in a town or village, they will be coded as a resident of the town or village. The Ministry of Health cannot at this time provide estimates as to how large of an issue this is.

The analysis in this report is bivariate so there is no in-depth examination of how related risk factors may explain some of the findings. Further research may be required for those topic areas where the descriptive analysis suggests importance.

Main Data Sources, Definitions and Limitations

The following table describes the data sources used for the analysis conducted in this report, including the indicator source, description, inclusion and exclusion criteria as well as limitations of the data.

Database/ Variables	Source	Definition	Inclusion/ Exclusion	Limitations
Birth data	Saskatchewan Ministry of Health's Vital Statistics Branch	Includes births in the Saskatoon Health Region population from 1995 to 2009	Includes only those mothers with Saskatchewan as their province of residence	
Canadian Socioeconomic Database (CANSIM)	Statistics Canada	CANSIM is Statistics Canada's key socioeconomic database. Updated daily, CANSIM provides access to a large range of the latest statistics available in Canada.		
Canadian Community Health Survey (CCHS)	Statistics Canada	The CCHS is a cross- sectional survey that collects information related to health status, health care utilization and health determinants for the Canadian population. There have been five cycles of the survey conducted between 2001 and 2011. The target population is all Canadians aged 12 and over (approximately 135,000 people per year). This includes approximately 1200 Saskatoon Health Region residents each year	The following populations are excluded: individuals living on Indian Reserves and on Crown Lands, institutional residents, full-time members of the Canadian Forces, residents of certain remote regions. Coverage in the provinces is around 98%.	Not available for any area below the health region (i.e. by city neighbourhood or rural municipality). Individuals and households without a telephone are excluded from the sample.
Citizenship and Immigration Canada Database		Includes the number of newcomer children, which includes immigrant and refugee children.	Includes permanent resident landings in the 0 to 6 age group within a defined year, but excludes newcomers arriving through the federal refugee categories	
Census Data	Statistics Canada 2006	Between May 1 and May 13, 2006, 13,576,855 households received a Census of Population questionnaire. 80% of these were short answer (8 questions) while 20% received a long-form questionnaire (61 questions). Historical census data for Saskatoon dates back to 1991 and for the Saskatoon Health Region and rural areas to 2006.	Census sub-division boundaries are not apportioned to the exact health region boundaries. Therefore, instead of having 22% of the census subdivision of Harris, the data includes all people in the census subdivision of Harris. As a result, more people are included in the Saskatoon Health Region boundary than otherwise should. This pertains specifically to rural Saskatoon Health Region.	Comparing censuses is affected by changes in definitions and question wording changes Census information is subjected to a confidentiality procedure known as random rounding to prevent associating census information to a particular individual. This means that totals are rounded up or down to a multiple of 5 or 10. When averages are reported, both the denominator and numerator are rounded before the calculation is performed. Therefore, small cell counts may suffer from significant distortion. Furthermore, suppression of census data occurs for any communities that have a population of less than 40. For income information,

Database/ Variables	Source	Definition	Inclusion/ Exclusion	Limitations
Census Data (continued)				data is suppressed for communities with less than 250 population or less than 40 private households. The Census undercounts some groups, such as the homeless, young adults and Aboriginal peoples on reserves.
Communicable Disease data	Public Health Information System (PHIS) and CDC database	Reportable diseases are entered in the Public Health Information System (PHIS). Sexually transmitted infection counts are aggregated by confirmed case status and case status date; other reportable diseases are aggregated by date reported (CDC database).	All diseases reportable under the Public Health Act are reported to Public Health Services with the exception of tuberculosis which is monitored by the Saskatchewan Tuberculosis Control Program.	HIV is a non-nominal reportable disease; estimates of co-morbidity are done using linkage by first two letters of first and last names and date of birth and represent an underestimate of co- morbid conditions. Also, Communicable Diseases with less than five counts per cell are suppressed.
Covered Population	Provincial Ministry of Health Covered Population databases	Includes counts of all persons who held Saskatchewan Health coverage on June 30th in each year. The database only counts those registered for provincial health coverage and not every person who may have been a resident in Saskatchewan.	Includes all residents of Saskatchewan, except: members of the Canadian Armed Forces, members of the Royal Canadian Mounted Police, inmates of federal prisons, people not yet meeting the residency requirement. Saskatchewan residents who move remain eligible for coverage for the same period, and anyone whose coverage extends through June is included. In the case of death, people who had coverage any time in June are included.	Registered Indian Status (RIS) is a flag within the database and the only ethnic identifier available. This means that the person is registered under Section 6 of The Indian Act. Using only RIS is an underestimate of the total number of Aboriginals that live in Saskatoon Health Region because it excludes those that have Aboriginal ancestry but are not registered through The Indian Act. It also does not include people of Métis or Inuit heritage and is a wholly different definition than that used by Statistics Canada in the census.
Early Development Instrument (EDI)	Saskatchewan Ministry of Education, Early Years Branch, Early Childhood Development and Integrated Services, 2008/09- 2010/11.	The EDI is a population level measure of developmental health in children at age 5. The tool is commonly used in Canada as a measure of 'school readiness' of kindergarten children. This includes a range of competencies that children require at the time of school entry, which fall within five domains: 1) Physical Health and Well-being, 2) Social Knowledge and Competence, 3) Emotional Health and Maturity, 4) Language and Cognitive Development, and 5) Communication Skills and General Knowledge.	This population level data of children attending kindergarten is subject to two main inclusion issues: not all school divisionsand therefore within that division the schools—participated in the data collection for the years we have included EDI data (some school divisions had opted out). In addition, within the classroom some students may have also opted out of participation as well.	Numerous studies, conducted by independent researchers in Canada and internationally, have shown that the EDI is a valid and reliable instrument—it measures well what it is supposed to measure. EDI is not a instrument to diagnose or identify individual children who are not performing well in the classroom however.

Database/ Variables	Source	Definition	Inclusion/ Exclusion	Limitations
Emergency Department data	Saskatoon Health Region, WINRECS NACRS (Saskatoon Acute Sites only)	The WINRECS NACRS (National Ambulatory Care Reporting System) database (ED visits) includes all visits to an Emergency Department in Saskatoon only. This data is based on total visits to the ED, regardless of how many visits one person may have had. Therefore multiple visits by one person will all be represented. A patient may be transferred to another ED within the city, therefore having two visits for the same problem, one at each site. This would count as two visits.	Visits for residents of Saskatoon Health Region who visit other ED's outside of Saskatoon are not included in this data. Visits for non- Saskatoon Health Region residents are excluded.	Data represents visits to the three Saskatoon sites; Rural ED data is not available. Visits for residents of Saskatoon Health Region who visit other EDs outside of Saskatoon are not included in this data. Visits for non- Saskatoon Health Region residents are excluded.
Feelings in Pregnancy and Motherhood Słudy	The Department of Community Health and Epidemiology and the College of Nursing—U of Saskatchewan	The Feelings in Pregnancy and Motherhood Study collected data on maternal mental health (depression, anxiety, mood-using Edinburgh Postpartum Depression Scale) and several other factors during pregnancy, in postpartum, and of mothers and children after birth. This longitudinal study had an inception sample of 650 mothers from the general population of mothers residing in Saskatoon in 2006 through 2008.	All pregnant women living in Saskatoon in 2006 to 2008 were the target population and were approached via various means. Inclusion criteria were that they live in Saskatoon, able to converse in English and were carrying known or expected singleton pregnancies. Informed consent were obtained from each and every participant.	Due to selective participation some of the data may be subject to some selection bias. Given that this is a longitudinal study there has been some attrition/loss to follow up of initial participants as well. The sample cohort however has been compared to the general population of women giving birth in Saskatoon and the women who are loss to follow up are compared to those are retained. Some selection biases may be at play in this study.
G5 Super Census 2012	Various (2006 Census, 2011 Equifax DACD Credit Data, 2011 Canada Post Postal Code Address Data)	Generation5 is a consumer marketing company. The G5 Super Census developed by Generation5 is a demographic and socio-economic micro marketing data file that uses predominantly data from the 2006 census. The Super Census includes values for over 1,700 demographic variables, projected to the six digit postal code level.	The characteristics of the data would be predominantly the same as the 2006 Census. Thus, due to the Census sub-division boundaries not being apportioned to the exact health region boundaries, more people are included in the Saskatoon Health Region boundary than otherwise should.	The limitations would also be similar to those of the Census. Comparing censuses is affected by changes in definitions and question wording changes Census information is subjected to a confidentiality procedure known as random rounding to prevent associating census information to a particular individual. This means that totals are rounded up or down to a multiple of 5 or 10. Therefore, small cell counts may suffer from significant distortion. Furthermore, suppression of census data occurs for any communities that have a population of less than 40. Furthermore, the Census undercounts some groups, such as the homeless, young adults and Aboriginal peoples on reserves.

Database/ Variables	Source	Definition	Inclusion/ Exclusion	Limitations
Hospital Discharge (Hospitalization) data	Saskatchewan Ministry of Health's year-end hospital files	Data includes all acute care in-patient and psychiatric in-patient hospitalizations. This data is based on total number of hospital discharges, irrespective of how many times the same individual is discharged. As well, a resident may be admitted to one hospital and be transferred to another hospital, which would count as two discharges, in spite of being hospitalized for the same event.	The data includes all acute care in-patient and psychiatric in-patient hospitalizations of Saskatoon Health Region residents in Saskatchewan and out-of- province/ country hospitals.	ICD-9 codes are used for all hospital separations prior to 2000/01 fiscal year, after which ICD-10 codes are used. Differences between data coded in ICD-10 and ICD-9 occur for several reasons. The conversion tables are not perfect due to differences in the structure of the two coding systems.
The HungerCount Survey (2011)	Saskatoon Food Bank and Learning Centre	Food bank usage data is available through Food Banks Canada, which administers this national survey annually at food banks across Canada. The survey collects food bank usage information, such as the number of children, single-parent families, immigrants and clients with Aboriginal identity using food bank services.		
The In- Hospital Birth Questionnaire (IHBQ)		The IHBQ is adapted from the Parkyn Postpartum screening tool. Mothers are asked a series of questions about their life circumstances (such as education level, drug/ alcohol use, mental health, abuse in the home etc), and about the health of their babies (birth weight, exposure to infections in utero and congenital anomalies). Those mother/ baby pairs who score a 9 or higher are considered vulnerable and may be eligible for additional programming, services and follow-up.	In the Saskatoon Health Region, all mother/baby pairs are administered the IHBQ in the very early postpartum period (usually within 48 hours postpartum) and the completion rate is nearly 97%.	While the IHBQ is used across Canada, its use and interpretation may vary. In Saskatchewan, the tool identifies a wide range of risk factors related to pregnancy and birth that may have potentially longer-term effects. A score of nine on the IHBQ, however, could be attained by the presence of a single risk factor, leading to being identified as "vulnerable." For instance, if alcohol and/ or drugs were used during pregnancy or if mothers are food insecure, these mother-baby pairs may be identified as vulnerable. It is important to note that the IHBQ is a screening tool, based on an interview of the mother at the hospital and is not a diagnostic tool.

Database/ Variables	Source	Definition	Inclusion/ Exclusion	Limitations
Immunization Coverage Data	Saskatchewan Immunization Management System (SIMS)		Data contained in this report was obtained for the calendar years 2002 to 2010. Children are registered in SIMS at birth. Two year child immunization coverage rates are reported by the year children turn two years.	Neighbourhood-specific rates are calculated by postal code; individuals with postal code information missing or unmatched to neighbourhood or rural grouping are not included in these rates (estimated less than 4%).
Mortality Data	Saskatchewan Ministry of Health's Vital Statistics Branch	Deaths are those that occur to Saskatoon Health Region residents using data from 1992-2009 from Saskatchewan Vital Statistics. ICD-9 codes are used for all deaths before calendar year 2000, and after this date ICD-10 codes are used.	Includes those persons with Saskatchewan recorded as their province of residence.	Conversion between ICD-9 and ICD-10 codes can be problematic for certain disease conditions because the codes are not comparable. Vital Statistics data is based on the underlying cause of death, which is limited to one diagnosis, unless there is an injury, in which case there is a separate code for the external cause. There may be more than one contributing cause of death, but only the most responsible cause is used.
Oral Health Dental Health Screening Program Database	Population and Public Health Services, Saskatoon Health Region	Dental health screening was provided to Grade One students in the Region every five years through the Public Health Services Oral Health Program since 1993/94 and most recently in 2008/09. Oral health standard indicators collected are: # of filled, missing/ extracted, decayed teeth (primary and permanent); pain and/or infection; sealants; malocclusion; and demographic information. From these screenings, the percentage of children needing treatment for tooth decay and other mouth conditions and the percentage of children with no tooth decay can be determined.	All Grade One students (six year olds) in the Saskatoon Health Region. All oral health status data is entered into a dental screening database.	
Smart Cities, Healthy Kids Study	Healthy Children program, Saskatchewan Population Health and Evaluation Research Unit	The Smart Cities, Healthy Kids study collected data from Saskatoon children attending grades 5 through 8 in 2010 and in 2012. They were asked questions using standardized tools related to physical activity, food that they eat, about their neighbourhoods, family physical activity, and demographic factors.	The survey was offered to all elementary schools in the Public and Greater Saskatoon Catholic Schools; however, not schools opted to participate. Active consent (and in some cases passive) procedures were activated to enlist participation.	Due to selective participation of children in the survey there may be some unknown selection bias at play in this survey. The survey participants' characteristics however has been compared to the greater population of children in Saskatoon and has been found to be comparable and representative.

Database/ Variables	Source	Definition	Inclusion/ Exclusion	Limitations
Student Health Survey – 2006/07 Survey and 2010/11 Survey	Population and Public Health Services, Saskatoon Health Region	The Student Health Survey asks students (in Grades 5 to 8) living within Saskatoon Health Region about their health. The survey asks students about exercise, nutrition, mental health, bullying and risk behaviours such as smoking and drinking. The survey was adapted from the National Longitudinal Survey for Children and Youth (NLSCY) developed by Statistics Canada. While the first two cycles (2006/2007 & 2008/2009) of the Student Health Survey only included City of Saskatoon schools, the most recent cycle (2010/2011) included rural schools within Saskatoon Health Region.	The survey was offered to all elementary schools in the Saskatoon Public and Greater Saskatoon elementary schools in Saskatoon as well as to rural schools in Prairie Spirit and Horizon School Divisions in the 2010/11 survey. In the city, John Dolan School, which caters to students with physical and mental disabilities, was excluded from the survey in both cycles. In 2010/11 one city school chose not to participate in the survey. In rural Saskatoon Health Region, a total of 36 schools participated. Some rural schools were excluded due to the small number of students at the school (n<20), whereas other rural schools chose not to participate.	In 2006/07, 4093 out of 9958 Grade 5 to 8 students completed the survey (response rate 41.1%). In 2010/11, 5783 out of 12,391 grade 5 to 8 students completed the survey (response rate 46.7%). Thus, the low response rate can affect the generalizability of the findings

International Classification of Disease Codes

ICD-9 Code Name	ICD-9-C Code Range	ICD-10 Code Range	ICD-10 Code Name
INFECTIOUS AND PARASITIC DISEASES	001-139	А00-В99	INFECTIOUS AND PARASITIC DISEASES
NEOPLASMS	140-239	C00-D49	NEOPLASMS
ENDOCRINE, NUTRITIONAL AND METABOLIC DISEASES	240-279	E00-E90	ENDOCRINE, NUTRITIONAL AND METABOLIC DISEASES
DISEASES OF BLOOD AND BLOOD FORMING ORGANS	280-289	D50-D99	DISEASES OF BLOOD AND BLOOD FORMING ORGANS
MENTAL DISORDERS	290-318	F00-F99	MENTAL & BEHAVIOURAL DISORDERS
DISEASES OF THE NERVOUS SYSTEM	320-388	G00-G99	DISEASES OF THE NERVOUS SYSTEM
EYE AND ADNEXA DISORDERS	360-379	H00-H59	EYE AND ADNEXA DISORDERS
EAR AND MASTOID DISORDERS	380-389	Н60-Н95	EAR AND MASTOID DISORDERS
CIRCULATORY DISEASE	390-459	100-199	CIRCULATORY DISEASE
RESPIRATORY DISEASE	460-519	J00-J99	RESPIRATORY DISEASE
DIGESTIVE SYSTEM DISEASE	520-579	КОО-К93	DIGESTIVE SYSTEM DISEASE
DISEASES OF THE GENITOURINARY SYSTEM	580-629	N00-N99	DISEASES OF THE GENITOURINARY SYSTEM
COMPLICATIONS OF PREGNANCY, CHILDBIRTH AND THE PUERPERIUM	630-676	000-099	COMPLICATIONS OF PREGNANCY, CHILDBIRTH AND THE PUERPERIUM
DISEASES OF THE SKIN AND SUBCUTANEOUS TISSUE	680-709	L00-L99	DISEASES OF THE SKIN AND SUBCUTANEOUS TISSUE
DISEASES OF THE MUSCULOSKELETAL SYSTEM AND CONNECTIVE TISSUE	710-739	М00-М99	DISEASES OF THE MUSCULOSKELETAL SYSTEM AND CONNECTIVE TISSUE
CONGENITAL ANOMALIES	740-759	Q00-Q99	CONGENITAL ANOMALIES

ICD-9 Code Name	ICD-9-C Code Range	ICD-10 Code Range	ICD-10 Code Name
CERTAIN CONDITIONS ORIGINATING IN THE PERINATAL PERIOD	760-779	P00-P96	CERTAIN CONDITIONS ORIGINATING IN THE PERINATAL PERIOD
SYMPTOMS, SIGNS AND ILL- DEFINED CONDITIONS	780-799	R00-R99	SYMPTOMS, SIGNS AND ILL- DEFINED CONDITIONS
SUPPLEMENTARY CLASSIFICATION OF FACTORS INFLUENCING HEALTH STATUS AND CONTACT WITH HEALTH SERVICES	V01-V82	ZOO-Z99	FACTORS INFLUENCING HEALTH STATUS AND CONTACT WITH HEALTH SERVICES
	DETAILED INJ	URY CODING	
EXTERNAL CAUSES OF MORBIDITY AND MORTALITY	E800-E999	V00-Y98	EXTERNAL CAUSES OF MORBIDITY AND MORTALITY
ALL UNINTENTIONAL INJURY	E800-E869, E880-E929	V01-V99, W00-W99, X00-X59, Y85-Y86	ALL UNINTENTIONAL INJURY
ALL INTENTIONAL INJURY	E950-E978, E990-E999	X60-X99, Y00-Y09, Y35-Y36, Y87.0, Y87.1, Y89.0, Y89.1	ALL INTENTIONAL INJURY

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