

# Season, demographics and built environment features predict sedentary behaviour in 9-14-year-old Canadian children

The longitudinal study on Seasonality and Saskatoon Kids (SASK)

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# What is sedentary behaviour?

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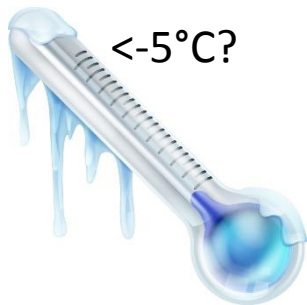
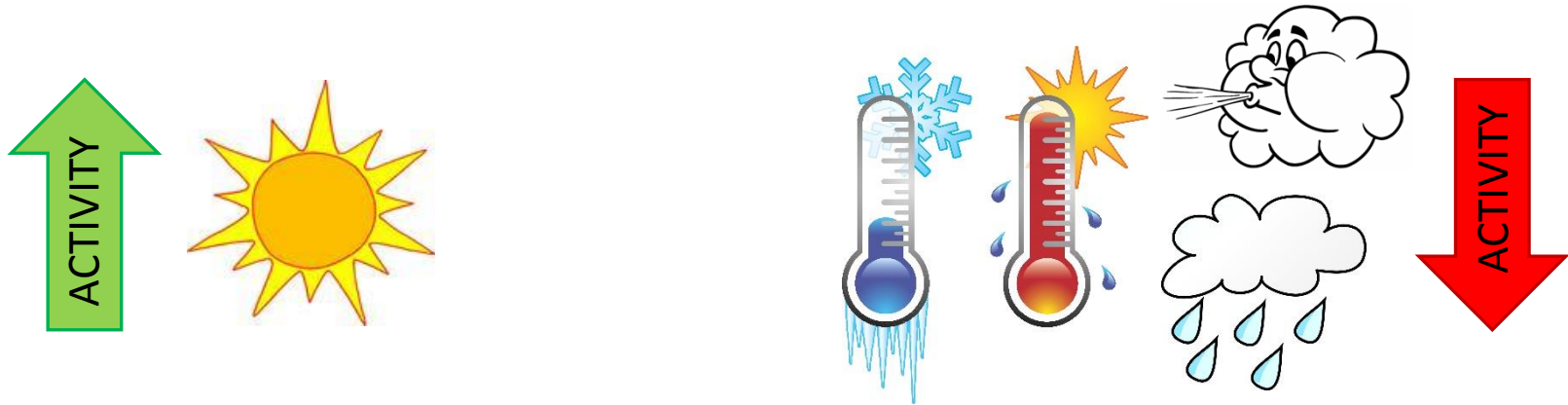
Any “waking behaviour characterized by an energy expenditure  $\leq 1.5$  metabolic equivalents to task (METs) while in a sitting or reclining posture” (*Sedentary Behaviour Research Network 2012*)

## THE PROBLEM:

**Saskatoon and Canadian youth** spends **8+ waking hours** of their day in a sedentary state (*Katapally et al. 2014, Colley et al. 2011*)

**Sedentary behaviour is** associated with an increased **lifelong risk** of overweight, obesity, metabolic syndrome, and cardiovascular disease (*Tremblay et al. 2011*)

# Sedentary Behaviour in Kids – What's missing?



All 4 seasons?

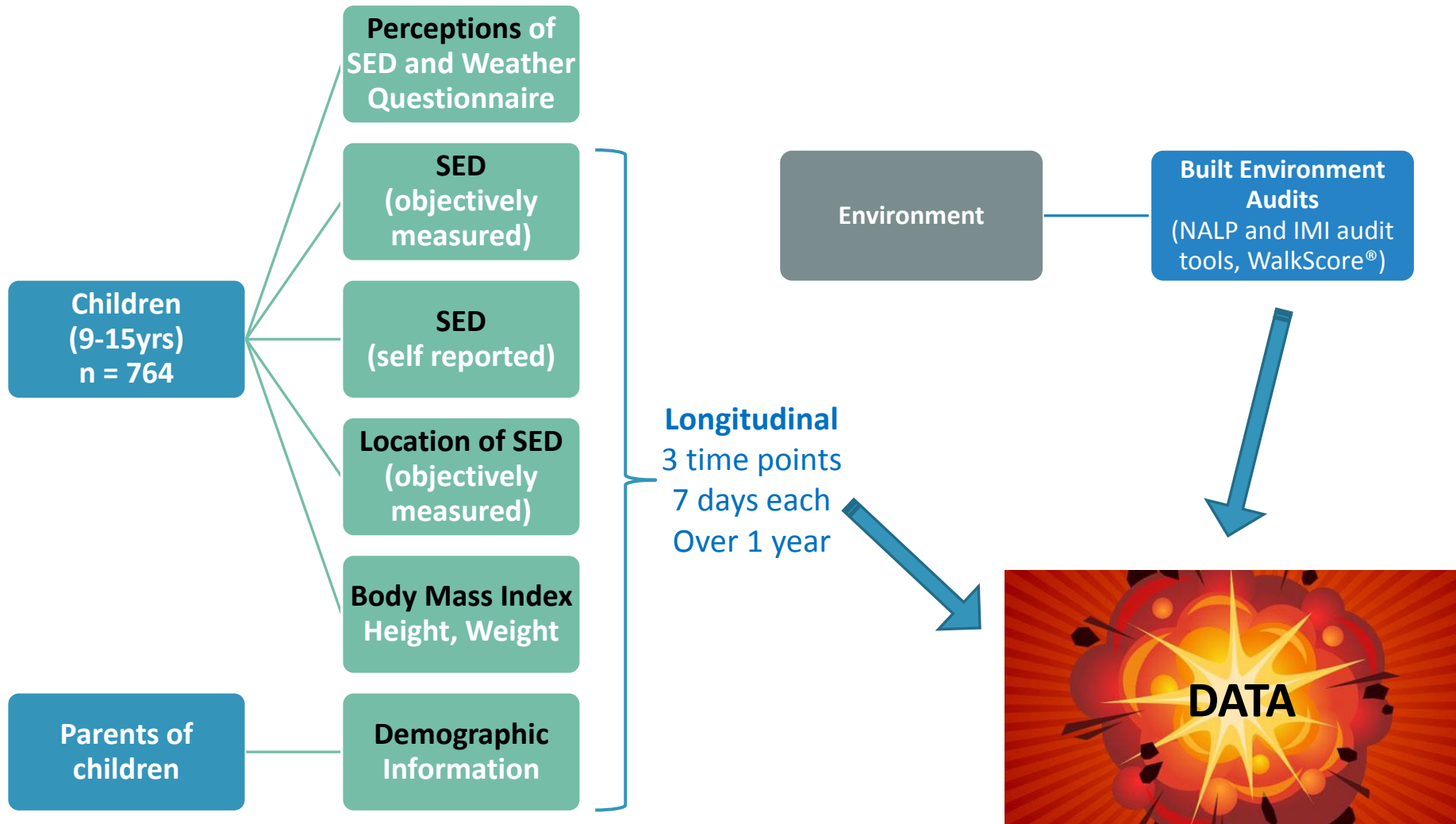


Built environment  
AND season?

# Research Questions

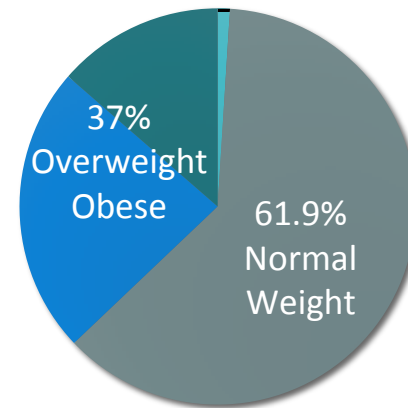
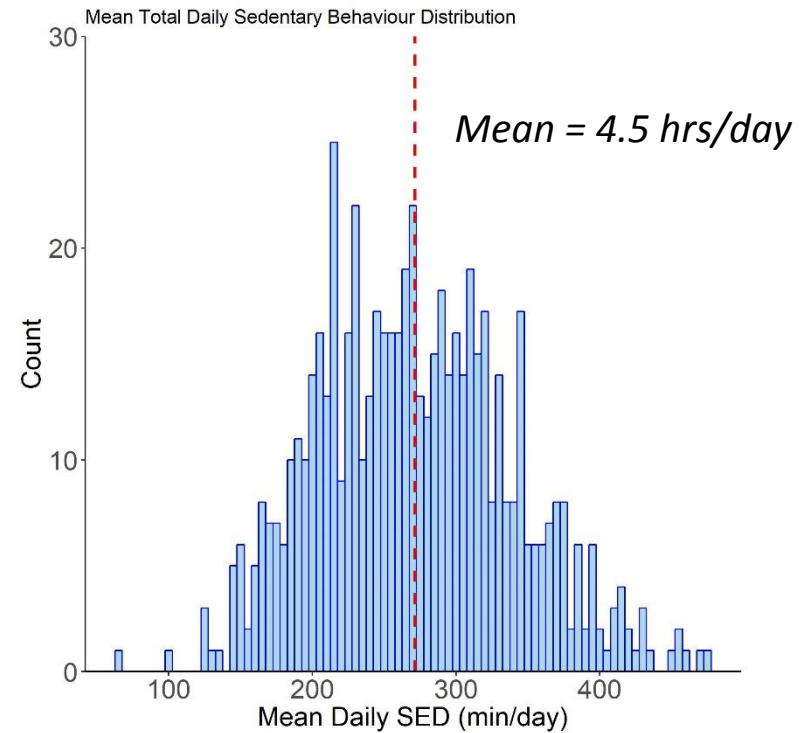
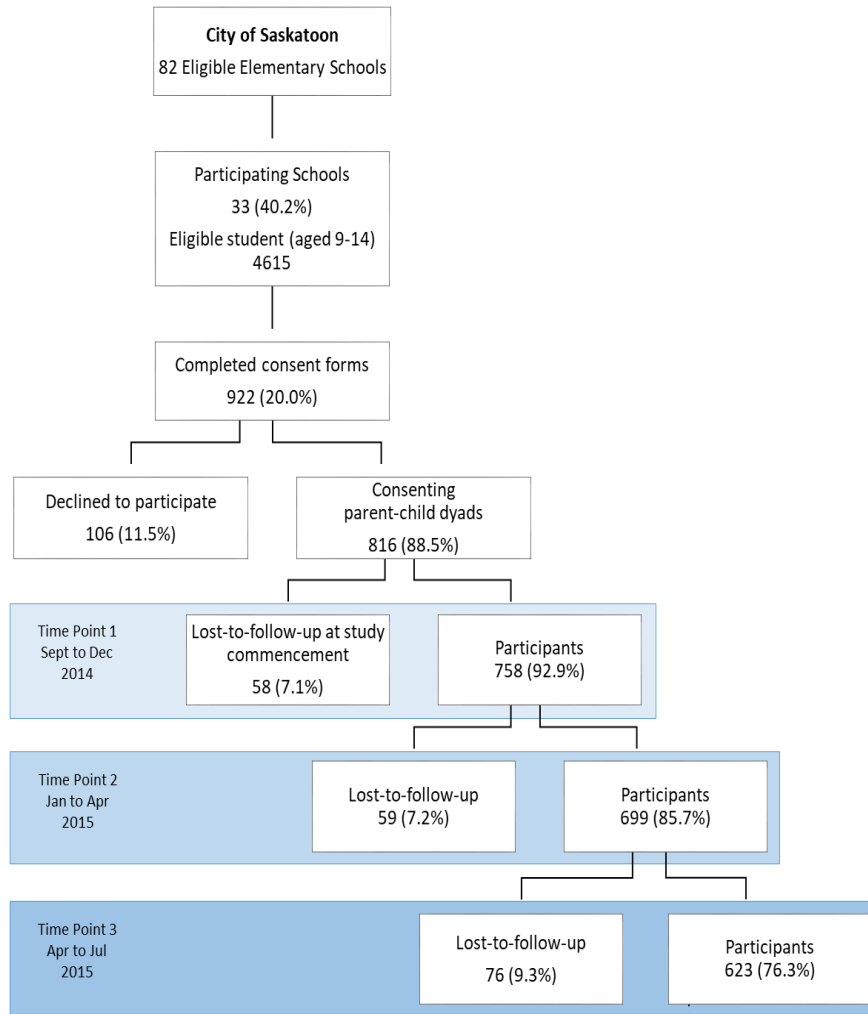
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1. How do changes in season affect sedentary behaviour (SED) in children when they are at home?
2. How are SED effects moderated by urban design and built environment?



*This portion of the project is receiving help from Dr. Kevin Stanley and the USask DISCUS Lab*

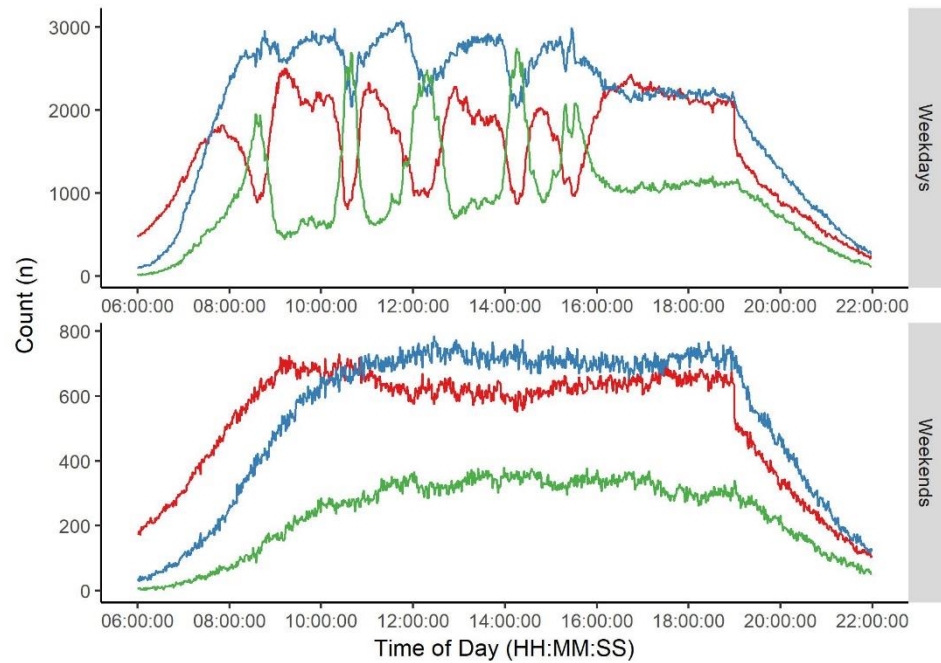
# Study Population



*Overweight and obese children spend 19 and 49 additional minutes SED/day, respectively*

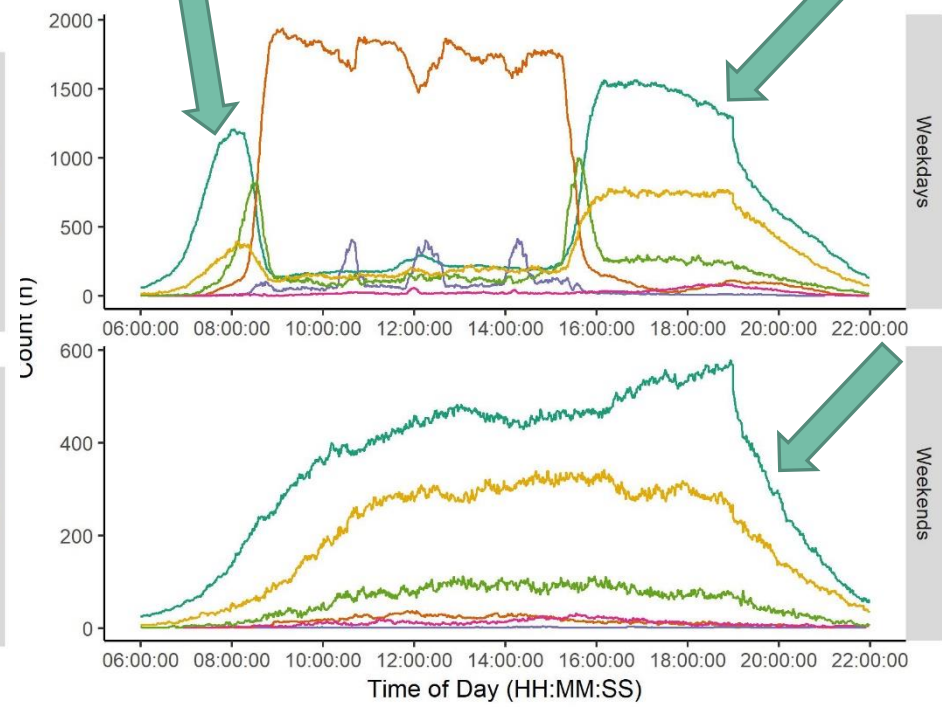
# Children's activity behaviours and locations

## Activity Behaviour of Children



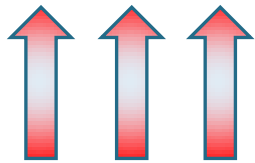
- SED
- LPA
- MVPA

## Location of Children

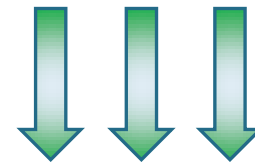


- Home
- School
- School Park
- Park
- Road
- Other

# What predicts **home area** sedentary behaviour in children?



Sedentary Behaviour  
*Negative behaviour outcome*



Sedentary Behaviour  
*Positive behaviour outcome*



Light Physical Activity



Moderate to Vigorous Physical Activity



TGIF!? Weekends >>> Weekdays



+20 min New Comers to Canada



Age: +7min/year



**BMI** +13min Obesity >>> Normal Weight

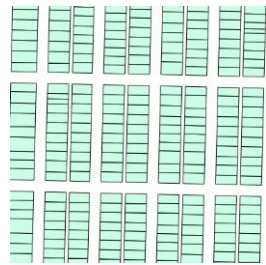


+11 min Males >>> Females



# Does Built Environment Matter? In What Way?

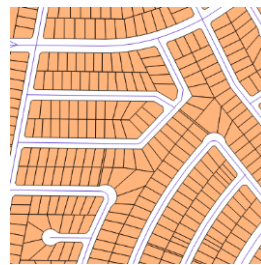
*Total Daily Sedentary Behaviour*



<1930 Grid  
(reference)



1930-1960s  
Fractured Grid  
+17min/day

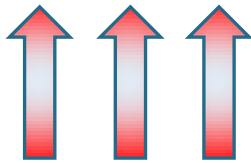


1960s-1998  
Curvilinear  
+21min/day

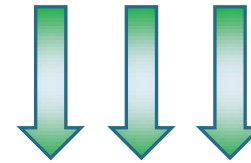


>1998  
Modified Grid  
+22min/day

↑↑↑  
**SED**



**Sedentary Behaviour**  
*Negative behaviour outcome*



**Sedentary Behaviour**  
*Positive behaviour outcome*

↑↑  
Safer Neighbourhoods (IMI Safety from Crime)  
Activity Friendly Neighbourhoods (IMI Cumulative Score)

↑↑  
Higher Walkability (WalkScore®)  
Higher Density of Destinations (NALP)

# Does Season Matter? In What Way?

*Total Daily Sedentary Behaviour*

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Winter (Reference)



Spring +6 min/day



Summer



Fall -11 min/day

Children living in neighbourhoods with higher pedestrian access and safety from crime are more sedentary and spring and summer months (vs winter)

# Key Findings

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- Moderate-to-vigorous physical activity are associated with reduced sedentariness
- Older children, those with obesity, and new immigrants to Canada are more likely to be sedentary than their counterparts
- Neighbourhood destination density and walkable neighbourhoods, but not safety from crime or overall activity friendliness, may promote physical activity.
- The effect of season on sedentary behaviour is moderated by a child's home neighbourhood environment

# Project Significance & Conclusions

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1. Improve our understanding of **what factors drive sedentary behaviour** in children
2. Provide a more solid platform to carry out **disruptive interventions** to reduce sedentary behaviour in children. Broad spectrum interventions may have limited success due to the different SED outcomes younger vs older children and females vs males experience.
3. **Increase awareness** of how our communities shape the activity levels of children

# Acknowledgements

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**CIHR IRSC**

Canadian Institutes of  
Health Research

Instituts de recherche  
en santé du Canada



SASKATCHEWAN POPULATION HEALTH AND EVALUATION RESEARCH UNIT



**UNIVERSITY OF  
SASKATCHEWAN**

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College of Medicine



# Thank you! Questions?

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