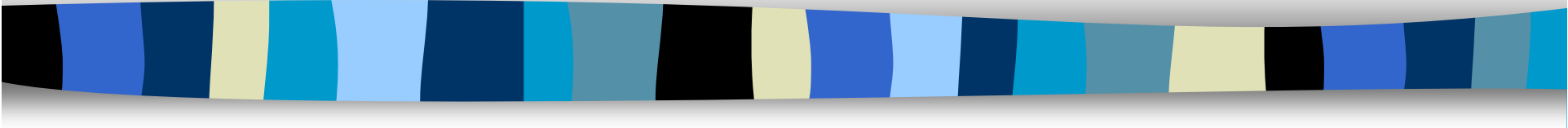


The neighbourhood environment and physical activity and overweight among children and youth

Contexte résidentiel, activité physique et obésité chez les enfants et les jeunes



Lisa Nicole Oliver
Department of Geography
Simon Fraser University

May 20th 2005

Canadian families under pressure? Conference of the Canadian Research Data Network, Montreal



Outline

- Introduction
- Model of Neighbourhood Effects on obesity
- Methods/Data
- Results
- Discussion



Childhood obesity: Findings from the NLSCY

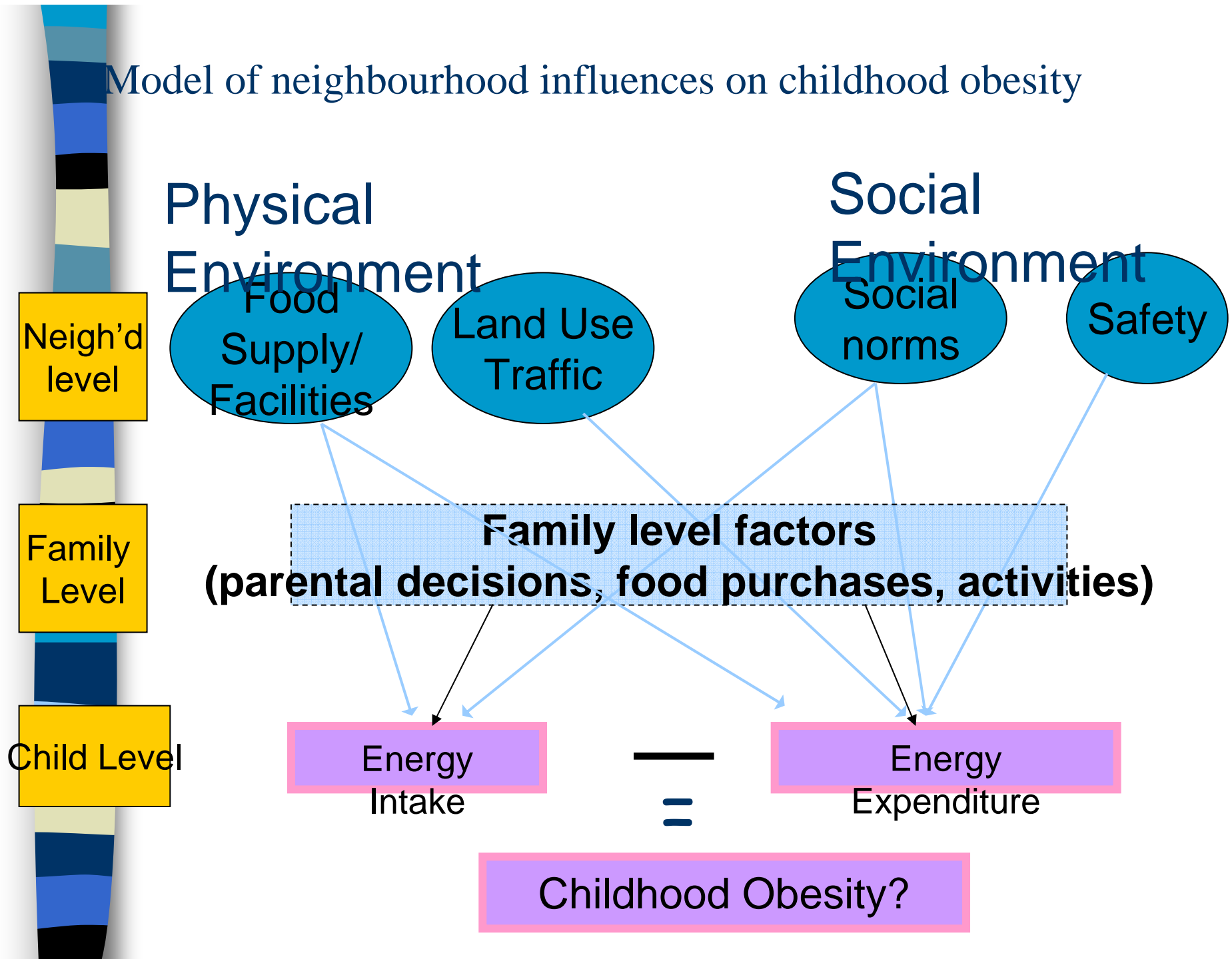
- A two-fold increase between 1981-1996 in overweight among children/youth (Tremblay and Willms, 2001)
- Provincial variation in overweight - increasing prevalence from west to east (Willms et al, 2003)
- Participation in physical activity is associated with reduced risk of overweight/obesity (Tremblay and Willms, 2003)
- Increasing family income and education associated with reduced risk of overweight and more participation in physical activity (Tremblay and Willms, 2003; Willms et al 2003)



Knowledge Gap/Research Question

- Existing studies have tended to focus on individual/family factors without consideration of local environments in which children and families reside
- Research Question
 - Does the neighbourhood socioeconomic context influence child and youth overweight in Canada after accounting for family characteristics

Model of neighbourhood influences on childhood obesity





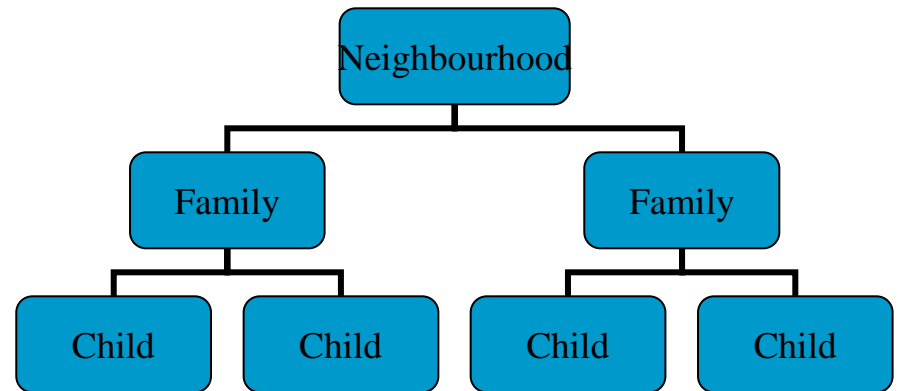
The evidence: neighbourhood deprivation and overweight

- Increased prevalence of obesity (Ellaway et al 1998; van Lenthe 2002)
- Poorer dietary habits (Sundquist et al 1999)
- More fast food restaurants (Riedpath, 2002)
- Fewer grocery stores (Wrigley, 2003)
- Less physical activity (Molnar et al, 2004)

Methods

- Descriptive Statistics
- Hierarchical modelling (HLM 6)
 - 3-level Bernoulli (dichotomous) model to account for data structure
 - Construct models with and without family characteristics

Data Structure





Individual data: NLSCY Cycle 4 00/01

- Children(aged 5-11) and youth (aged 12-18)(n=11455)
- Overweight/Obese
 - determined by an age and sex adjusted BMI of 25/30 and over [cut-offs defined by Cole(1999)]
 - Dichotomous variable
- Physical activity
 - organized sports
 - ‘Always/almost always’ or ‘never/almost never’
 - unorganized sports ‘Always/almost always’ or ‘never/almost never’



Data continued

■ Parent education (PMK)

- no high school
- high school
- some post secondary
- post secondary degree

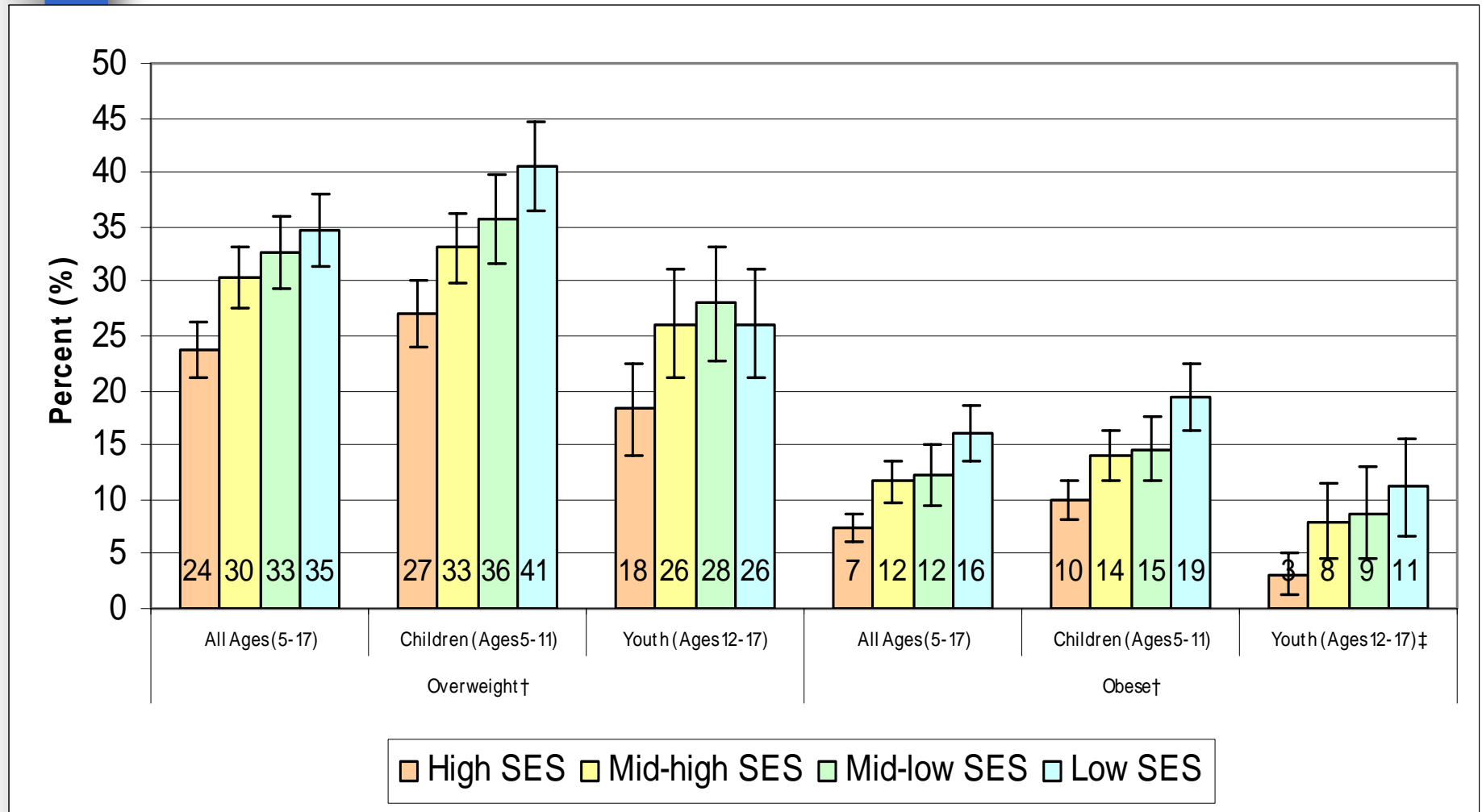
■ Family income (measured in thousands)



Neighbourhood data

- Dissemination Areas (neighbourhoods)
 - smallest geographic area for which complete 2001 census data is available
 - average of 400-700 people
- SES quartiles constructed from index of
 - Unemployment rate
 - Median family income
 - Percent without post-secondary education

Prevalence of overweight and obese children (Ages 5-11) and youth (Ages 12-17) by neighbourhood SES quartiles*

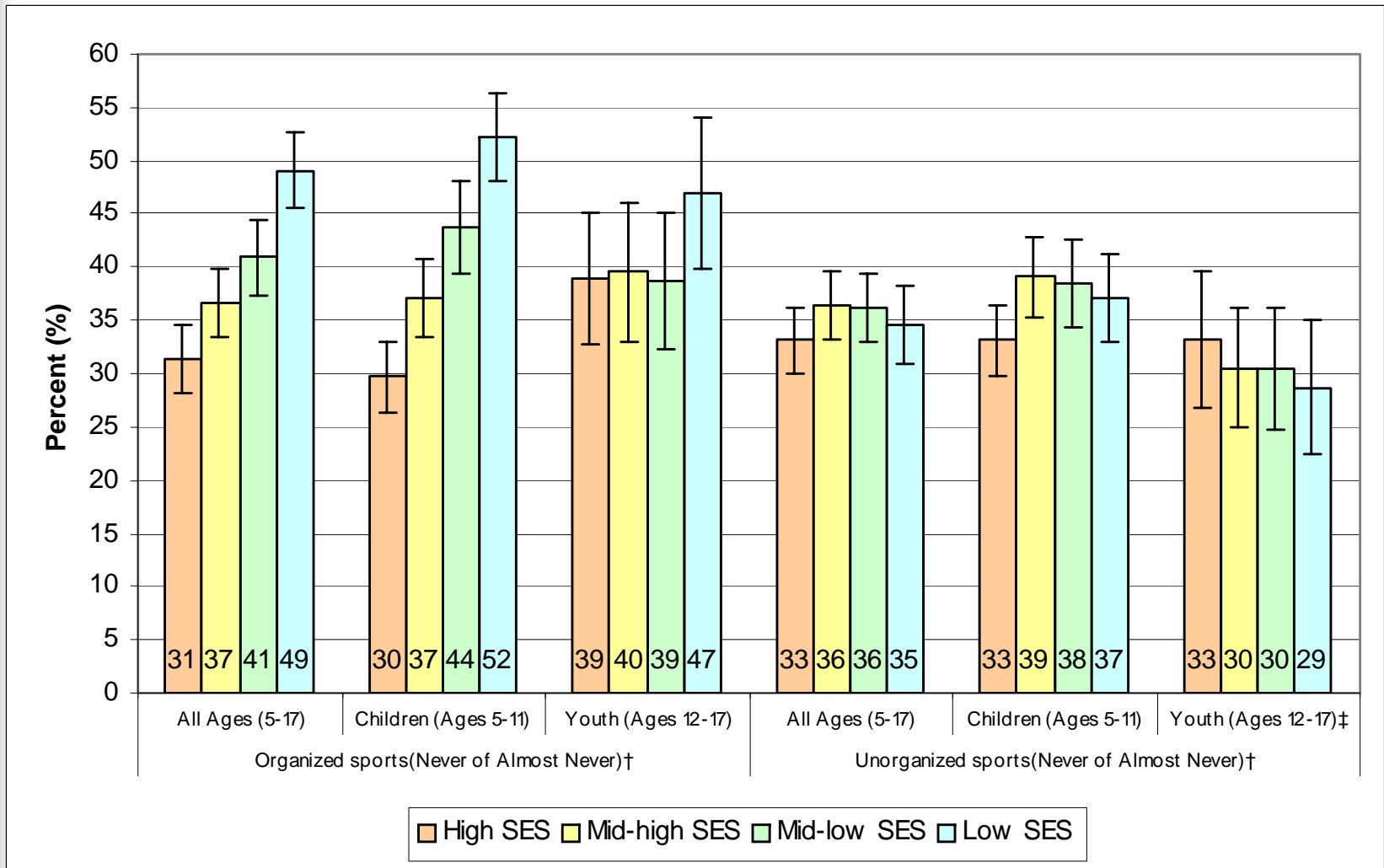


* Percents based on unrounded weighted data, confidence intervals calculated using 1000 bootstrap weights supplied by Statistics Canada to account for the complex sampling design of the NLSCY

† Overweight (includes obese) and obese defined by cut-off points from Cole et al

‡ The coefficient of variation is between 16.6% and 33.3%, which is considered marginal according to Statistics Canada data quality guidelines

Prevalence of 'Never or almost never' participation in organized and unorganized sports for children (Ages 5-11) and youth (Ages 12-17) by neighbourhood SES quartiles



HLM results: outcome variable = overweight

	Partial Model (unadjusted for family)			Full Model (adjusted for family factors)		
	OR	95% CI		OR	95% CI	
<i>Individual Level</i>		Upper	Lower		Upper	Lower
Age (youth=1, child=0)	0.61	0.56	0.67	0.61	0.55	0.67
Gender (female=1, male=0)	0.89	0.83	0.97	0.89	0.83	0.96
<i>Family Level</i>						
No high school	....	....	....	1.24	1.08	1.42
High school	....	....	....	1.20	1.08	1.34
Beyond high school	....	....	....	1.10	0.99	1.23
Post secondary degree (ref)	....	....	....	...	...	...
Family Income (1000's)	....	....	....	0.99	0.99	1.00
<i>Neighbourhood Level</i>						
High SES (ref)	1.00	...	...	1.00	...	...
Mid-High SES	1.21	1.08	1.36	1.15	1.02	1.30
Mid-Low SES	1.34	1.19	1.50	1.23	1.10	1.39
Low SES	1.45	1.29	1.63	1.29	1.14	1.46

Bold= significant at $p < 0.05$



Discussion/Conclusions

- Findings demonstrate a social gradient in obesity and overweight prevalence
- Findings demonstrate a need to understand the local environments in which children reside
- Findings suggest that neighbourhood-based policies to reduce obesity may meet with some success



Limitations

- Height and weight was not directly measured
- To what extent are family factors shaped by or independent of the neighbourhood
- Physical and social neighbourhood characteristics that influence overweight not assessed



Future research

- Examine interplay between family and neighbourhood characteristics
- Examine mechanisms and pathways through which the neighbourhood influences obesity
- Examine issues related to access to physical activity in low SES neighbourhoods
- Trajectories of overweight