



The Promoting Physical Activity through Healthy Community Design Report

A study by:

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Published: March 2009

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Research indicates that the risk of obesity can decline by as much as 10% by walking approximately 24 minutes per day.^{iv}

Summary Sheet

Why is this study relevant?

Chronic diseases have become Canada's greatest health threat. Heart disease, for example, is the number one killer in the country. It is also the most costly disease, putting the greatest burden on our national health care system.ⁱ Cancer is the leading cause of premature death in Canada: 1,026,700 potential years were lost in 2004 as a result of cancer. This represents 32% of the potential years of life lost resulting from all causes of death.ⁱⁱ

According to the Heart and Stroke Foundation of Canada, Physical activity can be a lifesaver.ⁱⁱⁱ Regular physical activity can dramatically lower one's risk of chronic disease and related factors such as high blood pressure, high cholesterol and obesity.

What's more, one does not need to engage in high-intensity aerobic exercise in order to get the health benefits of physical exercise. Studies have shown that significant health benefits can be gained by engaging in 30 minutes of moderate physical activity, such as walking or bicycling, five days each week.^v

Yet, most North Americans do not meet these minimum levels of exercise. Scientists have begun to wonder if the *built environment*,

A growing body of research has consistently shown that there is a significant relationship between the built environment, physical activity, and public health. However, most of this research has been conducted in the United States, and few such studies have been conducted in the Canadian context.

which is the arrangement of buildings, parks, schools, road systems, and other infrastructure that we encounter in our daily lives, might have something to do with this unexpected trend.

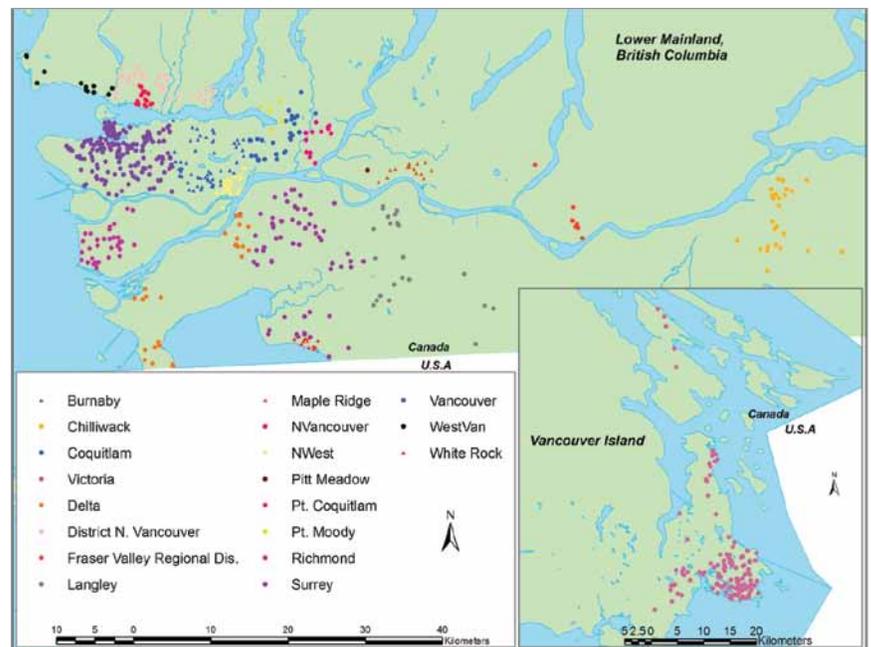
“Promoting Physical Activity through Healthy Community Design” is one of the first comprehensive Canadian studies on the relationship between physical activity and objective measures of the built environment that we encounter in our daily lives.

What methodology was used?

- Researchers obtained physical activity and Body Mass Index data for 620 Greater Vancouver and Greater Victoria residents. The data was originally collected by the Canadian Fitness and Lifestyle Research Institute’s *Physical Activity Monitor Survey*.
^{vi} Survey participants aged 15 and over were recruited through random digit dialing, with a 51% response rate.
- Because previous studies had shown a significant relationship between moderate physical activity and the built environment, the researchers focused their analysis of the survey only on questions relating to moderate physical activity.
- Then, using maps and Geographic Information System (GIS) software, they defined neighbourhood areas around the centre of the postal codes in which each survey participant resided. Each area extended to all destinations that could be reached within a 1-km road or walking path distance from the centre of the postal code.
- Within each neighbourhood, the researchers calculated built

Neighbourhoods with good street lighting, availability of continuous sidewalks, a variety of shops, services, parks, schools and workplaces within walking distance of homes are often called “walkable” neighbourhoods.

Location of Survey Respondents



environment factors that, in previous studies, have been found to influence walking and physical activity levels. These include:

- *Street connectivity* or the degree to which roads and paths are connected and allow direct travel between destinations.
- *Land-use mix* or the degree to which residential, commercial and institutional facilities (e.g. schools, recreation centres, and parks) are located close together.
- *Retail floor area in relation to the total amount of land within a given neighbourhood that serves a retail purpose.* This measure captures the degree to which retail is located near the street edge as is the case in a pedestrian-friendly community or set behind a sea of parking spaces.



High street connectivity. The street network distance between X and Y is only slightly longer than the crow-fly distance.



Low street connectivity. The street network distance between X and Y is more than five times longer than the crow-fly distance.

Researchers then used statistical analysis to see if there were significant linkages between levels of physical activity and Body Mass Index with street connectivity, land-use mix, retail floor area, and other built environment variables. The study also assessed how people's perceptions of their neighborhood, e.g. perceived access to amenities, impacted the likelihood they met physical activity requirements. In both processes, they controlled for socio-demographic factors such as age, gender, annual household income, and educational attainment, which have also been found to affect physical activity levels and Body Mass Index.

The researchers asked questions, such as:

Which built environment variables have the most significant relationships with overweight status and physical activity in south-western British Columbia?

What were the most meaningful findings?

The analysis revealed that certain aspects of the physical environment within a kilometer of one's residence were significantly associated with a lower likelihood of being overweight, over and above demographic factors, at the 95% confidence level. In particular:

- Residents living in the top 25% most walkable areas were half as likely to be overweight than those in the least walkable neighbourhoods.
- Residents living in the top 25% areas for street connectivity were half as likely to be overweight as those living in the lowest 25%.
- Residents living in neighbourhoods with the highest proportions of retail set up against the street i.e. pedestrian-oriented commercial areas, were half as likely to be overweight as those living in the lowest quartile, where retail is set behind vast parking lots.
- Each additional grocery store within about a kilometer distance was associated with 11% reduction in the likelihood of being overweight.

Similarly, certain land uses were associated with higher odds of getting sufficient activity from walking:

A number of studies have shown that people who live in more walkable neighbourhoods make more trips on foot or by bicycle, spend less time driving, and are more likely to meet recommended levels of physical activity than people living in less walkable environments.^{iv}

High-density, mix use development doesn't have to look like a high rise tower. It can also look like 3-4 storey buildings with apartments on top and small-scale retail at the bottom. High-density can also be achieved through allowing a variety of housing types, secondary suites, coach houses, duplexes and townhomes, within neighbourhoods. Smart Growth BC encourages communities to create and adopt the high-density, mix use developments that best fit the unique character of each neighbourhood.

- Living in a neighbourhood with at least one grocery store was associated with nearly 50% increased likelihood of getting sufficient physical activity as compared to living in an area with no grocery stores.
- Survey respondents who felt they had many shops within easy walking distance were more than twice as likely to meet recommended physical requirements compared with those who did not.

What is the most significant policy implication?

This analysis presents a strong public health-based argument in favour of developing walkable communities with high street connectivity, pedestrian-friendly design, and residential density levels that enable frequent transit service and the availability of healthy food choices and retail within walking distance. It also provides powerful evidence favouring the creation of mixed-use environments, and discouraging segregated single-use patterns of development, whether they be exclusively residential neighbourhoods or any other exclusive land uses such as industrial business parks.



ⁱ Health Canada: (<http://www.hc-sc.gc.ca/dc-ma/heart-coeur/index-eng.php>)
ⁱⁱ Canadian Cancer Society: (http://www.cancer.ca/canada-wide/about%20cancer/cancer%20statistics/canadian%20cancer%20statistics/potential%20years%20of%20life%20lost%20due%20to%20cancer%20-%202008.aspx?sc_lang=en)
ⁱⁱⁱ Heart and Stroke Foundation of Canada: (http://www.heartandstroke.com/site/c.ikiQLcMWJtE/b.3483953/k.7D68/Basic_principles_of_physical_activity.htm)
^{iv} Adapted from the Heart and Stroke Foundation of Canada's website: (http://www.heartandstroke.com/site/c.ikiQLcMWJtE/b.3820627/k.DB5D/The_built_environment_physical_activiy_heart_disease_and_stroke.htm)
^v _____ 1996. Physical Activity and Health: A Report of the Surgeon General. Atlanta, GA: United States Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion.
^{vi} Canadian Fitness and Lifestyle Research Institute: (<http://www.cflri.ca/eng/research/benchmarks.php>)

Summary sheet produced by:

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