

Article

Life in metropolitan areas

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Are suburban residents really less physically active?

by Martin Turcotte

The health benefits of physical activity are numerous and widely recognized by scientists and public health authorities.¹ Not everyone benefits in the same way, however, as participation in physical activity varies appreciably by age, health, gender, income, personal taste and so on.²

Aside from these factors, does participation in physical activity differ according to the type of neighbourhood where people live? Does living in a suburb make people less active than they would be if they lived in a city? These questions have interested urban planners and public health researchers over the last decade.^{3,4,5}

According to many experts, North American suburbs encourage physical inactivity because they are built almost exclusively for the automobile. Walking or cycling to workplaces, retail stores or other types of services is unrealistic in most suburbs. The same is true in most rural areas.

In contrast, living in the city centre promotes physical activity because in traditional urban neighbourhoods, homes, services, stores and workplaces are mixed together, which reduces the distance between them. In that kind of environment, residents burn calories without even realizing it as they simply go about their daily business.

GST Summary

This study is the first of its kind to cover all of Canada's metropolitan areas. It differs notably from previous studies in that it examines the relationship between urban planning and various types of physical activities. It reveals that although the activities practiced differ by type of neighbourhood, total activity levels are quite similar wherever people live.

In fact, people living in low-density residential areas are as likely to be physically active over the course of a day as those in high-density areas. However, people living in the central urban neighbourhoods of Canada's largest metropolitan areas are the most likely of all to be physically active.

The type of physical activity varies by place of residence. Residents of urban areas are more likely to get around actively, i.e. by walking or cycling, while tending to their daily affairs. On the other hand, residents of suburban areas are much more apt to get their exercise by performing outside work (gardening, yard work and cleaning).

In view of those findings, some experts suggest that we take a page from the past in the way we design and build neighbourhoods in our cities to promote physical activity and health.^{6,7,8} "New urbanism," an influential trend in urban planning, advocates such changes as a greater mix of residential, commercial and office use, higher density, more sidewalks and better connectivity between streets.⁹

This study, for the first time in the context of Canada's larger metropolitan areas, quantifies the difference between the physical activity levels of residents of traditional urban neighbourhoods (high-density) and of residents of typical suburban neighbourhoods (low-density). With data from the 2005 General Social Survey (GSS) on time use, it focuses on the activities of people aged 15 and over. Time-use

This study is based on data collected by Statistics Canada in the 2005 General Social Survey (GSS). The GSS is an annual survey that measures changes and new trends in society. The 2005 survey was the fourth to collect time-use information from Canadians aged 15 and over living in private households in the 10 provinces.

Survey respondents completed a **time-use diary** to provide a detailed record of the duration (in minutes) and timing of each activity during one day, the **diary day**. Collection of diary data covered a 12-month period, thus participation rates and durations are averages of all diary days of the year.

The data were collected from 19,597 respondents, who represent nearly 26.1 million people. The study deals with the data from 11,653 respondents who were living in one of the 27 census metropolitan areas (CMAs). Table 2 is based on an analysis of 6,738 respondents who were residents of the six largest CMAs (Toronto, Montréal, Vancouver, Ottawa-Gatineau, Calgary and Edmonton).

Low-, medium- and high-density neighbourhoods

Neighbourhood density is based on the type of housing in the census tract where a respondent lives. A census tract generally corresponds to what people consider to be a neighbourhood. Census tracts are small, relatively stable geographic areas that usually have a population of 2,500 to 8,000 people. They are located in CMAs with an urban core population of 50,000 or more as determined in the previous census.

The terms **suburbs**, **suburban** neighbourhoods correspond to **low-density** neighbourhoods. The term **mixed** neighbourhood and **medium-density** are synonymous. **Urban** and **typically urban** have the same meaning as **high-density**.

Low-density or typical suburban neighbourhoods consist mostly of single houses, semi-detached houses and mobile homes, which are regarded as traditional suburban housing. Conversely, **high-density** or traditional urban neighbourhoods are essentially composed of apartment or condominium buildings and row houses. (They accommodate more people per square kilometre.)

To classify neighbourhoods by density, we determine the proportion of traditional suburban housing units in each neighbourhood. This type of housing makes up at least 66.6%

of the units in **low-density** neighbourhoods, between 33.3% and 66.6% in **medium-density** neighbourhoods (mixed neighbourhoods), and less than 33.3% in **high-density** neighbourhoods.

Central and peripheral neighbourhoods

Central urban neighbourhoods lie within a five-kilometre radius of the **city centre**. In this study, the city centre corresponds to the census tract that includes the city hall of the CMA's central municipality. That area includes well-known urban neighbourhoods such as the Plateau Mont-Royal in Montréal, The Annex near the University of Toronto, and Yaletown in Vancouver.

Peripheral urban neighbourhoods are located outside the five-kilometre radius of the city hall.

For more information on how these criteria are defined, see Turcotte, M. (2008). "The city/suburb contrast: How can we measure it?" Martin Turcotte. (2008) *Canadian Social Trends*, 85, Statistics Canada, Catalogue no. 11-008-X. Available electronically at: <http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=11-008-X200800110459&lang=eng>

The minimum recommended level of physical activity

According to the Public Health Agency of Canada, 30 minutes of moderate physical activity (brisk walking, bicycling, raking leaves) will have a number of positive effects on a person's physical and mental health. Sixty minutes of light physical activity (walking at a moderate pace, easy gardening, etc.) will also help people stay in shape or improve their health, as will 20 minutes of vigorous physical activity (jogging, playing hockey).¹

One of the important advantages of the GSS on time use compared with other surveys is that respondents were not asked directly whether they had engaged in any physical activity in recent weeks or months. This was done to avoid the bias that occurs when the question is asked directly, which results in an overestimate of the incidence of physical activity.² However, the GSS on time use does not distinguish between activities on the basis of intensity level. For this study we set the minimum period of activity at 20 minutes to ensure that people who had "only" 20 minutes of vigorous physical activity on the diary day were included as physically active.³

Paid employment and physical activity

This study focuses on daily travel, recreational activities and domestic chores, reflecting the concerns of health experts who recognize that **whether** people are physically active is more important than **how** they get their physical activity. However, the type of job that a person has may also affect his or her level of physical activity. For example, it is reasonable to assume that a construction worker will be more physically active on the job than an office worker. Additional analyses (not presented here) have shown that job type (whether physical effort was involved or not) does not alter the study's qualitative conclusions.

1. Public Health Agency of Canada. Retrieved July 2, 2008 from www.phac-aspc.gc.ca/pau-uap/paguide/why.html
2. Katzmarzyk, P. T., and Tremblay, M. S. (2007). Limitations of Canada's physical activity data: Implications for monitoring trends. *Canadian Journal of Public Health*, 98(suppl.2), S185-S194.
3. This measure is obviously not perfect. Some people may have walked very slowly for 20 minutes and done nothing else the rest of the day, which would be below the required threshold for that level of effort (60 minutes). Even so, they are better off than people who had no physical activity at all during the day. The objective here is not to have a perfect measure of the day's physical activity (such data simply do not exist at the moment) but to identify the differences between various population groups, especially differences related to their neighbourhood type.

diaries permit analysis of the type and length of activities done on a given day (See "What you should know about this study" for definitions and concepts).

Unlike some other research,^{10,11} this study does not attempt to establish a relationship between living in a suburban area and body mass index or obesity. Obesity is a complex issue, and physical activity is just one of the many factors affecting weight. Moreover, the GSS collects no information about a respondent's weight.

Suburban residents are less likely to walk or use a bicycle for routine travel

Nearly every recent study has found that residents of typical suburban neighbourhoods were more likely to use a car for routine travel and much less likely to walk or cycle.¹² This study makes the same observation.

Residents of areas that had the characteristics of traditional suburbs were half as likely to have walked or used a bicycle on at least one non-recreational trip (14%) as residents of more densely-populated urban neighbourhoods (30%). (In this analysis, non-recreational travel includes trips made for the purpose of going to work, running errands

or visiting friends but excludes recreational walking or cycling.)

With regard to travel time, the average time spent by residents of typically urban neighbourhoods travelling on foot or by bicycle was almost three times more than that of residents of typically suburban neighbourhoods (an average of 11 and 4 minutes a day respectively). When only those residents who walked or cycled are considered, the average travel times for high-, medium- and low-density neighbourhoods were 35, 30 and 28 minutes respectively. This indicates that urban dwellers are more likely to travel on foot or by bicycle, and when they do so, it is for longer periods.

Several factors other than type of neighbourhood, such as income, age and health status, are associated with the possibility of having made a physically active journey (Table A.1). For example, people with the lowest household income (less than \$40,000) are more likely to have made at least one physically active trip, probably because fewer of them have a car. Nevertheless, when we compare the variables, the one with the greatest impact, apart from age, was type of neighbourhood (urban, mixed or suburban). The correlation between living in an urban area and

the probability of having made at least one physically active journey during the day remained strong and positive when all the other factors in the analysis were kept constant (Table A.2).¹³

Residents of the suburbs get exercise by gardening or doing yard work; urban residents by travelling

Even though residents of suburban neighbourhoods travel less often on foot, they may be more likely than residents of traditional urban neighbourhoods to engage in physical activity during their free time (walking, cycling, working out, playing sports). Since their yards and houses are generally larger, it is also plausible that suburbanites are more likely to get exercise as they perform household chores (gardening, yard work, indoor and outdoor cleaning). Is that really the case?

Of all the activities that require physical effort on a given day, the most common is indoor cleaning (25% of Canadians engaged in that activity). On average, residents of metropolitan areas spent about 26 minutes dusting, vacuuming, cleaning the bathroom and other indoor cleaning (Table 1). While women devoted much more time to

Table 1 Residents of urban neighbourhoods are more likely to make physically active trips

People doing...	Residential density		
	High	Medium	Low †
Non-recreational travel by foot or by bicycle			
Participation (%)	30*	18*	14
Average duration, all (minutes)	11*	5*	4
Average duration of participants ¹ (minutes)	35*	30	28
Indoor cleaning			
Participation (%)	25	26	25
Average duration, all (minutes)	24	27	25
Average duration of participants ¹ (minutes)	96	105	101
Gardening, yard work / outdoor cleaning			
Participation (%)	5*	9*	12
Average duration, all (minutes)	6*	10*	15
Average duration of participants ¹ (minutes)	118	111	123
Physical activity in leisure/sports			
Participation (%)	25	24	25
Average duration, all (minutes)	27	23*	28
Average duration of participants ¹ (minutes)	108	96*	112
All sources of physical activity (total)			
Participation (%)	60*	57	56
Average duration, all (minutes)	67	66*	72
Average duration of participants ¹ (minutes)	113*	115*	128
20 minutes or more of physical activity			
Participation (%)	53	51	52

† reference group

* statistically significant difference from reference group at $p < 0.05$

1. Participants are those who spent one minute or more doing this activity on a diary day.

Source: Statistics Canada, General Social Survey, 2005.

more grass to cut in the summer, and more outdoor chores of all kinds to complete. Whether or not these outdoor maintenance activities play a role in the decision on where to live, they increase the physical activity level of many residents of low-density neighbourhoods.

For all sources of physical activity combined (physically active travel, recreation, sports and domestic chores), residents of urban neighbourhoods were slightly more likely than residents of typically suburban neighbourhoods to have engaged in at least one physical activity (60% compared with 56%) (Table 1).¹⁴

The proportion of moderately active people is similar in suburban and urban neighbourhoods

Although information about participation in and average time spent on physical activities is useful and relevant, it is also interesting to know which neighbourhood type is associated with a greater probability of reaching a level of physical activity that would be “beneficial” to physical and mental health. In this study, we consider people who spent 20 minutes or more engaging in any physical activity on the diary day to be at least moderately active (See “What you should know about this study”).

The difference between low-density and high-density neighbourhoods in the proportion of people considered “moderately active” was not statistically significant (Table 1). That conclusion remains the same when the effects of factors such as gender, health and household income, that influence the choice of a neighbourhood and the probability of being physically active, are held constant (Table A.2).

While residents of urban neighbourhoods are far more likely to be physically active in their day-to-day travels, residents of suburban neighbourhoods “catch up” when other types of physical activity

this activity than men (37 minutes compared with 13 minutes), the type of neighbourhood made no difference. Even though suburban residences are generally more spacious, participation rates and average lengths of time were practically the same in low-, medium- and high-density neighbourhoods.

There was also no difference between residents of typically urban and suburban neighbourhoods with regard to participation in sports or other physical recreation activities. About one person in four engaged in those activities (Table 1).

For gardening, yard work and outdoor cleaning, the picture is completely different. The distinction between urban and suburban neighbourhoods, in both participation rate and duration of the activity, is clear-cut. In low-

density neighbourhoods, 12% of residents gardened, did yard work or cleaned the outside of their houses, compared with 9% of residents of medium-density neighbourhoods and just 5% of residents of high-density neighbourhoods. They spent an average of 15, 10 and 6 minutes respectively on those activities (Table 1). When other factors associated with participation in gardening, yard work or outdoor cleaning are held constant (such as age, gender, household income and the presence of children), the conclusions remain the same (Table A.2).

The fact that yards are almost always larger in the suburbs means that there could be more room for gardening. It also means that there is more snow to shovel in the winter,

(especially gardening and yard work) are taken into account. Overall, they are neither more nor less likely to have been moderately active.

Central urban neighbourhoods stand out: residents are more likely to be physically active

Some urban neighbourhoods have, to a greater extent than others, traits that should be associated with a higher level of physical activity. They are the central urban neighbourhoods.

We can identify two major types of urban (high-density) neighbourhoods: (1) *central urban neighbourhoods*, which are close to the city centre; and (2) *peripheral urban neighbourhoods*, which also have large numbers of multiple dwellings but are in the suburbs. (See “What you should know about this study” for definitions and concepts.)



Table 2 Residents of central urban neighbourhoods are more physically active

People doing...	Residential density			
	High		Medium	Low
	Central urban neighbourhoods †	Peripheral urban neighbourhoods		
	percentage			
Non-recreational travel by foot or bicycle	42	26*	17*	14*
Indoor cleaning	21	27*	25*	25*
Gardening, yard work / outdoor cleaning	2	6*	10*	11*
Physical activity in leisure/sports	32	21*	23*	25*
At least one type of physical activity	67	57*	56*	55*
20 minutes or more of physical activity	61	50*	51*	51*

† reference group

* statistically significant difference from reference group at $p < 0.05$

Note: Includes only the residents of the census metropolitan areas of Toronto, Montréal, Vancouver, Ottawa-Gatineau, Calgary and Edmonton.

Source: Statistics Canada, General Social Survey, 2005.



Activity by neighbourhood type affects some groups more than others

Physically active travel (non-recreational) is different from other forms of physical activity in that, in most cases, its main purpose is not exercise, amusement or relaxation. Physically active travel has a specific goal (getting somewhere) without necessarily involving a conscious decision to exercise. Hence, people who are less inclined to play sports in their leisure time may benefit even more than others from living in a neighbourhood that encourages physical activity.

Overall, the proportion of residents who made at least one physically active trip was twice as high in high-density neighbourhoods as in low-density neighbourhoods. In certain groups, however, the difference between residents of more urban neighbourhoods and residents of less urban neighbourhoods was even more pronounced (Table A.3).

For example, that was the case for people with busy schedules (persons who spent at least nine hours of their day at work or at school). For those people, who do not necessarily have time to engage in active leisure, area of residence—urban or suburban—made a huge difference in physical activity. Of

those who lived in urban neighbourhoods, 26% made at least one physically active trip. The same was true for only 9%, or about three times fewer proportionally, of the ones living in typically suburban neighbourhoods.

The pattern is similar for people aged 25 to 34. While 38% of the 25-34 age group living in urban neighbourhoods made at least one physically active trip, the same was true for only 12% of young adults living in typically suburban neighbourhoods, also about three times fewer. The difference is so large that it affects the overall level of physical activity in the age group: 59% of urban dwellers in the group had at least 20 minutes of physical activity during the day, compared with 49% for those living in the suburbs.

In short, living in a typically suburban neighbourhood discourages physically active travel in general, with even stronger effects on some groups. That information may be important in campaigns to promote physical activity, particularly those aimed at getting sedentary people to do more.

In central urban neighbourhoods, that is, neighbourhoods which surround the city centre of the central municipality of a metropolitan area, the situation is very different from that in peripheral ones.

Most central urban neighbourhoods were designed before car ownership became almost universal. Therefore, higher density, mixed use and connectivity are the norm, which should promote physically active travel.

Peripheral urban neighbourhoods are different from central urban neighbourhoods not only because of their location in the metropolitan space; they often have less of a mix of residential and commercial uses, are relatively far from major public transportation routes, and are composed of curved streets that are poorly interconnected. They often have many more parking spaces than the city centre. Thus, though they are urban in terms of the type of dwellings they contain, many of them have few characteristics likely to encourage physically active travel.

To highlight the distinct nature of central urban neighbourhoods, we looked at residents of the six largest metropolitan areas (CMAs): Toronto, Montréal, Vancouver, Ottawa-Gatineau, Calgary and Edmonton. Their central neighbourhoods match most closely the traits associated with physically active travel and physical activity in general. That is not necessarily the case in the smaller CMAs.¹⁵

Our study confirms that participation in physical activity is higher in central urban neighbourhoods than in other ones: peripheral urban, mixed, and suburban (low density). Sixty-one percent of residents of the central urban neighbourhoods engaged in physical activity for at least 20 minutes compared with about 50% in each of the other types of neighbourhoods, (Table 2). The difference is primarily due to the unmatched propensity of central urban residents to use physically active modes of travel. Holding

other factors such as age, gender and household income constant, the conclusions remained the same (detailed results not presented here).

However, only a small proportion of metropolitan residents live in central urban neighbourhoods. In the six large CMAs studied, only 7% of residents lived in central high-density neighbourhoods, compared with 47% in low-density neighbourhoods, 29% in medium-density neighbourhoods, and 17% in peripheral high-density neighbourhoods.

Conclusion

This is the first study to examine the differences in physical activity levels between urban and suburban parts of Canada's larger metropolitan areas.

Suburban residents are as active as urban residents. The proportion of people who engaged in physical activity for 20 minutes or more was no higher in high-density (urban) neighbourhoods than in medium-density (mixed) or low-density (suburban) neighbourhoods.

However, one population group living in urban neighbourhoods stands out: residents of the central urban neighbourhoods of Canada's largest cities. They were more likely to be moderately active, though this group represents a small fraction of the population.

Activities differ according to the type of neighbourhood. The residents of high-density neighbourhoods are twice as likely to make their routine trips on foot or by bicycle. This confirms the findings of other studies. Residents of typically suburban neighbourhoods are much more likely to get physically active by doing outdoor work (gardening, outdoor cleaning and maintenance) than those living in traditionally urban ones. That association, which seems obvious, was never explored directly in previous studies.

The proponents of "new urbanism" encourage urban planners to include in their development plans various features of traditional urban

neighbourhoods that they consider positive. Though they remain the exception, some neighbourhoods have actually been designed this way in recent years in both Canada and the United States. However, they are not numerous enough for their residents to be adequately represented in a survey such as the GSS on time use. A challenge for researchers in the future will be to compare central urban neighbourhoods, traditional suburban districts and new neighbourhoods built according to new urbanism's recommendations to determine what effect they have had on physical activity levels of their residents.

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2. For example, see Gilmour, H. (2006). Physically active Canadians. *Health Reports*, 18(3), 45-65, Statistics Canada, Catalogue no. 82-003. Ottawa: Minister of Industry.
3. Frank, L. D., Saelens, B. E., Powell, K. E., and Chapman, J. E. (2007). Stepping towards causation: Do built environments or neighbourhood and travel preferences explain physical activity, driving, and obesity? *Social Science & Medicine*, 65(9), 1898-1914.
4. Frumkin, H., Frank, L., and Jackson, R. (2004). *Urban Sprawl and Public Health—Designing, Planning, and Building for Healthy Communities*. Washington, D.C.: Island Press.
5. Frank, L. D., Schmid, T. L., Sallis, J. F., Chapman, J., and Saelens, B. E. (2005). Linking objectively measured physical activity with objectively measured urban form: Findings from SMARTRAQ. *American Journal of Preventive Medicine*, 28(2S2), 117-125.
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 9. For more details on this trend, see the website www.newurbanism.org/. See also Duany, A., Plater-Zyberk, E., and Speck, J. (2001). *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream*. New York: North Point Press.
 10. Lopez, R. (2004). Urban sprawl and risk for being overweight or obese. *American Journal of Public Health, 94*(9), 1574-1579.
 11. Ross, N. A., Tremblay, S., Khan, S., Crouse, D., Tremblay, M., and Berthelot, J. (2007). Body mass index in urban Canada: neighborhood and metropolitan area effects. *American Journal of Public Health, 97*(3), 500-508.
 12. For a complete bibliographic analysis, see Ewing, R., and Cervero, R. (2001). Travel and the built environment: A synthesis. *Transportation Research Record, 1780*, 87-114. For a more recent bibliographic analysis, see Khattak, A. J., and Rodriguez, D. (2005). Travel behaviour in neo-traditional neighbourhood developments: A case study in USA. *Transportation Research Part A: Policy and Practice, 39*(2005), 481-500.
 13. Some sources have noted that people who prefer walking to driving may choose to live in urban neighbourhoods instead of suburban areas (and vice versa). This might suggest that it is not the physical characteristics of the area that influence the residents' behaviour, but rather the individual characteristics of those who decide to live there. For further explanation, see: Committee on Physical Activity, Health, Transportation, and Land Use, Transportation Research Board, and Institute of Medicine of the National Academies. (2005). *Does the Built Environment Influence Physical Activity? Examining the Evidence*. Transportation Research Board Special Report 282. Also see the following critique: Eid, J., Overman, H. G., Puga, D., and Turner, M. A. (2008). Fat city: Questioning the relationship between urban sprawl and obesity. *Journal of Urban Economics, Elsevier, 63*(2), 385-404.
- Other studies examining this criticism concluded that living in the suburbs was associated with a decrease in physically active non-recreational travel, even when preferences for walking are taken into account. For example, see Frank, L. A., Saelens, B. E., Powell, K. E., and Chapman, J. E. (2007); Handy, S. L., Cao, X., and Mokhtarian, P. L. (2006). Self-selection in the relationship between the built environment and walking. *Journal of the American Planning Association, 72*(1), 55-74. See also Schwanen, T., and Mokhtarian, P. L. (2005). What affects commute mode choice: neighborhood physical structure or preferences toward neighborhoods? *Journal of Transport Geography, 13*(1), 83-99.
14. On the other hand, the difference in duration of activity between residents of low-density neighbourhoods and residents of high-density neighbourhoods was not statistically significant.
 15. When the residents from all 27 CMAs were included, the qualitative conclusions of this analysis were unchanged. However, the differences in participation were slightly smaller than those presented here.

Table A.1 Characteristics associated with participation in different types of physical activities

	People doing...				
	Non-recreational travel by foot or bicycle	Indoor cleaning	Gardening, yard work / outdoor cleaning	Physical activity during leisure time	20 minutes or more of physical activity
	percentage				
Total	19	25	10	24	52
Gender					
Women †	20	36	9	23	58
Men	17*	14*	11*	25*	46*
Age					
15 to 24 years old	31*	11*	2*	24	46*
25 to 34 years old	20*	25	5*	24*	50
35 to 44 years old †	16	28	9	21	50
45 to 54 years old	14	26	12*	24	51
55 to 64 years old	14	30	15*	25*	54
65 to 74 years old	12*	34*	22*	32*	65*
75 years and older	18	35*	16*	28*	63*
Immigrant status					
Non-immigrant †	19	25	10	25	52
Immigrant (before 1990)	15*	29*	13*	27	55*
Recent immigrant (1990 to 2005)	22	21*	6*	21*	49
Health status					
Excellent	19	22*	9	31*	55
Very good †	19	25	10	25	52
Good	18	26	10	22*	51
Fair or poor	17	27	10	19*	48*
Highest level of educational attainment					
No high school diploma	22	25	11*	23*	55
High school diploma	17*	24	9	22*	50
College diploma or trade certificate	17*	27	11*	24*	52
University degree †	20	25	9	28	52
Household income					
Less than \$20,000	30*	32*	7*	23	61*
\$20,000 to \$39,999	21*	27	9*	21*	52
\$40,000 to \$59,999	16	28*	10	25	52
\$60,000 to \$99,999 †	16	25	11	26	54
\$100,000 and more	18	21*	11	27	49*
Presence of a child 4 years or less					
No †	19	24	10	25	52
Yes	18	35*	5*	20*	53
Presence of a child of 5 to 12 years					
No †	18	24	10	25	52
Yes	18	24	10	25	52
Day of the week					
Weekday †	20	24	9	24	51
Weekend	14*	29*	12*	25	55*
Time constraint due to work/education					
0 minutes †	16	36	15	30	64
1 to 419 minutes (less than 7 hours)	28*	24*	8*	22*	54*
420 to 539 minutes (from 7 to nearly 9 hours)	20*	16*	5*	21*	42*
540 minutes and more (9 hours and up)	16	10*	4*	15*	31*

† reference group

 * statistically significant difference from reference group at $p < 0.05$

Source: Statistics Canada, General Social Survey, 2005.

Table A.2 Logistical regression of factors associated with participation in different types of physical activity

	People doing...				
	Non-recreational travel by foot or bicycle	Indoor cleaning	Gardening, yard work / outdoor cleaning	Physical activity during leisure time	20 minutes or more of physical activity
	odds ratio				
Type of neighbourhood					
Urban	2.6*	0.9	0.4*	1.0	1.1
Mixed	1.3*	1.0	0.8*	1.0	1.0
Suburban †	1.0	1.0	1.0	1.0	1.0
Gender					
Women †	1.0	1.0	1.0	1.0	1.0
Men	0.9*	0.3*	1.5*	1.2*	0.7*
Age					
15 to 24 years old	2.5*	0.4*	0.2*	1.4*	0.9
25 to 34 years old	1.2*	0.9	0.5*	1.2*	1.0
35 to 44 years old †	1.0	1.0	1.0	1.0	1.0
45 to 54 years old	0.8	1.0	1.2	1.1	1.0
55 to 64 years old	0.8	1.0	1.3	1.0	0.9
65 to 74 years old	0.6*	0.9	1.8*	1.4*	1.1
75 years and older	1.0	0.9	1.3	1.1	1.0
Immigrant status					
Non-immigrant †	1.0	1.0	1.0	1.0	1.0
Immigrant (before 1990)	0.9	1.1	0.9	1.1	1.1
Recent immigrant (1990 to 2005)	0.9	0.8*	1.0	1.0	1.0
Health status					
Excellent	1.0	0.9	1.0	1.4*	1.2*
Very good †	1.0	1.0	1.0	1.0	1.0
Good	1.0	1.1	1.0	0.8*	0.9
Fair or poor	0.9	0.8*	0.8	0.7*	0.7*
Highest level of educational attainment					
No high school diploma	1.0	1.0	1.0	1.0	1.0
High school diploma	0.8*	1.0	0.9	1.0	0.9
College diploma or trade certificate	0.9	1.0	0.9	1.2	0.9
University degree †	1.2	1.0	0.8	1.4*	1.0
Household income					
Less than \$20,000	1.7*	1.1	0.5*	0.8	1.0
\$20,000 to \$39,999	1.3*	1.0	0.7*	0.8*	0.8*
\$40,000 to \$59,999	1.0	1.1	0.9	1.0	0.9
\$60,000 to \$99,999 †	1.0	1.0	1.0	1.0	1.0
\$100,000 and more	1.2	0.9	1.0	1.0	0.9*
Presence of a child 4 years or less					
No †	1.0	1.0	1.0	1.0	1.0
Yes	0.9	1.7*	0.6*	0.7*	1.0
Presence of a child of 5 to 12 years					
No †	1.0	1.0	1.0	1.0	1.0
Yes	1.1	1.2*	0.9	1.0	1.1
Day of the week					
Weekday †	1.0	1.0	1.0	1.0	1.0
Weekend	0.6*	0.9	0.9	0.7*	0.7*
Time constraint due to work/education					
	0.98*	0.87*	0.87*	0.90*	0.87*

† reference group

 * statistically significant difference from reference group at $p < 0.05$

Source: Statistics Canada, General Social Survey, 2005.

Table A.3 Interaction between the type of physical activity, the type of neighbourhood and socio-economic variables

	People having done at least...					
	One active trip			20 minutes of physical activity		
	Residential density			Residential density		
	High	Low †		High	Low †	
	percentage	ratio	percentage	ratio		
Gender						
Women	31*	15	2.1	57	57	1.0
Men	28*	14	2.1	49	46	1.0
Age						
15 to 24 years	39*	28	1.4	47	45	1.1
25 to 34 years	38*	12	3.1	59*	49	1.2
35 to 44 years	28*	11	2.5	48	50	1.0
45 to 54 years	23*	11	2.0	49	51	1.0
55 to 64 years	25*	12	2.1	54	54	1.0
65 to 74 years	22*	10	2.3	64	64	1.0
75 years and older	22	15	1.5	58	68	0.9
Immigrant status						
Non-immigrant	31*	15	2.1	54	51	1.1
Immigrant (before 1990)	28*	10	2.6	56	56	1.0
Recent immigrant (1990 to 2005)	30*	16	1.8	50	49	1.0
Health status						
Excellent	35*	14	2.4	59	54	1.1
Very good	31*	15	2.1	52	53	1.0
Good	28*	15	1.9	54	51	1.1
Fair or poor	28*	11	2.6	49	47	1.0
Highest level of educational attainment						
No high school diploma	28*	19	1.5	55	54	1.0
High school diploma	29*	13	2.3	52	48	1.1
College diploma or trade certificate	29*	12	2.4	52	54	1.0
University degree †	34*	15	2.3	55	52	1.1
Household income						
Less than \$ 20,000	41*	20	2.0	62	61	1.0
\$20,000 to \$39,999	31*	13	2.4	54	52	1.0
\$40,000 to \$59,999	27*	13	2.1	57	53	1.1
\$60,000 to \$99,999	29*	12	2.5	55	54	1.0
\$100,000 and more	31*	15	2.1	50	49	1.0
Presence of a child of 4 years or less						
No	30*	14	2.1	53	52	1.0
Yes	26*	14	1.9	54	53	1.0
Presence of a child of 5 to 12 years						
No	30*	14	2.2	53	52	1.0
Yes	31*	16	2.0	56	52	1.1
Day of the week						
Weekday	31*	16	2.0	52	50	1.0
Weekend	27*	11	2.6	56	56	1.0
Time constraint due to work/education						
0 minutes	28*	13	2.1	63	65	1.0
1 to 419 minutes (less than 7 hours)	41*	25	1.7	58	54	1.1
420 to 539 minutes (from 7 to nearly 9 hours)	33*	16	2.1	44	42	1.0
540 minutes and more (9 hours and up)	26*	9	2.9	34	29	1.2

† reference group

* statistically significant difference from reference group at $p < 0.05$

Source: Statistics Canada, General Social Survey, 2005.