

Property taxes relative to income

Boris Palameta and Ian Macredie

Property taxes (residential and non-residential) are by far the most important revenue source for local governments, accounting for 35% of all municipal revenue in 2003 (up from 30% in 1988). However, residential property taxes are commonly viewed as regressive in relation to income (Slack 2002). That is, lower-income homeowners pay proportionately more of their income for property taxes than their higher-income counterparts. This belief underlies certain provincial income-tax-relief programs for low-income homeowners, especially seniors. Similar programs are offered by a number of municipalities as part of the property tax system.¹

A recent study substantiated the regressive nature of property taxes. Although property taxes as a proportion of property value do not vary across income brackets, lower-income families spend a higher proportion of their income on property tax than higher-income families. For example, in 1998, families with incomes below \$20,000 paid an average of 10% of their income in property taxes, compared with under 2% for families with incomes of \$100,000 or more. Thus, property taxes somewhat countered the redistributive effect of income taxes. Although income taxes reduced income inequality by 11%, property taxes increased it by 2% (Chawla and Wannell 2003).

This article uses data from the 2001 Census of Population (see *Data source and definitions*) to quantify the regressiveness of residential property taxes in various Canadian municipalities, and to examine whether regressive taxes are generally attributable to lower-income seniors living in high-priced homes.

Boris Palameta is with the Income Statistics Division. Ian Macredie is with the Public Institutions Division. Boris Palameta can be reached at (613) 951-2124, Ian Macredie can be reached at (613) 951-9456 or both at perspectives@statcan.ca.

Differences among municipalities in terms of level of taxation or services provided are not examined; indeed, the level of taxation in a given municipality has no bearing on how regressive the tax is. Municipal tax rates (commonly called ‘mill rates’) are applied strictly on assessed property value regardless of homeowner income.² How regressive a property tax is has nothing to do with the mill rate; rather, it depends on how variable incomes are in relation to property values. If the distribution of incomes exactly matched the distribution of property values—for example, if households with twice the income of others lived in houses worth twice as much—then property taxes would not be regressive because the ability to pay would be directly proportional to the home value. In practice, however, incomes are more unequally distributed than property values (see *Why property taxes are regressive*). For example, in Toronto, a household in the highest income quartile (top 25%) may have five times the income but own a house worth only one and a half times as much as a household in the lowest income quartile.

Simply put, the regressive nature of property taxes has nothing to do with the tax level set by local governments. Regressiveness is a product of market forces that determine incomes and property values. Because income inequality and the distribution of residential property values vary from municipality to municipality, the regressiveness of property taxes will also vary. The result is that lower-income households pay a greater (often several times greater) proportion of their income on property taxes than high-income households.

Estimating the relative tax burden of lower-income homeowners

To ensure reliable estimates, only predominantly urban municipalities with large sample sizes were selected (see *Selection of municipalities*).

Data source and definitions

The analysis is based on the long questionnaire of the **2001 Census of Population**, sent to one in five occupied private households in Canada.

Adjusted household income is the sum of before-tax incomes of each member of the household, adjusted for household size and composition using an equivalence scale (Carson 2002). Adjusted household income reflects the fact that, at a given level of unadjusted income, spending power decreases as household size increases. Households with income of zero or less (primarily those whose incomes are from self-employment or investments) were excluded from the analysis.

Before-tax income is the only income measure available from the census. Since income taxes are progressive (they reduce income inequality), property taxes would be less regressive if measured as a function of after-tax income. However, property taxes are also less regressive if measured as a function of adjusted rather than unadjusted household income (as in this article), since inequality of unadjusted incomes is higher.

Income quartiles are obtained by ranking households according to adjusted income, applying household-level weights, and dividing the weighted population into four groups of equal size. The lowest quartile represents the bottom 25%, the second quartile the next 25%, and so on.

Property value quartiles are obtained the same way as income quartiles, substituting property value for income.

Senior households are those in which more than half of the total before-tax income came from household members aged 65 or older.

The **mill rate** is the amount of tax paid per dollar of assessed property value as set by local governments.

Municipalities are all represented in the census as **census subdivisions** (CSDs), which are precisely aligned with municipal boundaries. Although it may be interesting to know the property tax distribution in a particular census metropolitan area (CMA), the CSD is the more appropriate level of analysis. CMAs may include several CSDs, each with its own mill rate. Thus, within a given CMA, properties with the same assessed value may pay different amounts of tax, and the property tax distribution in the CMA may not reflect the property tax distribution in many of its CSDs. Analysis at the CSD level removes mill rate as a factor in property tax variability.

Property tax refers to the principal residence only. The census question was "What are the estimated **yearly** property taxes (municipal and school) for this dwelling?" [emphasis in the original].

Property tax information was not collected for rented dwellings, farm operator dwellings, collective dwellings, reserve dwellings, or band housing. These constituted 4.17 million (36%) of the 11.59 million households represented in the 2001 Census.

The remaining 7.42 million households, all owner-occupied, are included in this analysis. Roughly one in five reported no property tax, because it was included in their regular monthly mortgage or loan payments. Households reporting property tax represented all of the 3.32 million households without mortgages, but only 65% of the 4.10 million with mortgages. Given that households with mortgages are more likely to be occupied by non-senior owners with higher incomes (Chawla and Wannell 2004), excluding 35% of them would result in biased estimates. Therefore property taxes were imputed for the 35% of households with mortgages that did not report them, representing a total of 1.43 million households.

In theory, unreported property taxes in a given municipality could be imputed by simply multiplying the property value by the average ratio of property tax to property value in that municipality; the ratio would be roughly equal to the mill rate if reported property values represented assessed values. However, respondents were not asked for the assessed value, but rather an estimate of the current market value, in response to the question "If you were to sell this dwelling now, for how much would you expect to sell it?"

Market value is not necessarily a good proxy for assessed value, particularly for expensive houses. An analysis of property-tax-to-market-value ratios revealed that in most municipalities these ratios declined as market value increased. The use of an average tax-to-value ratio would therefore result in imputations that overestimate property taxes for high-priced homes and underestimate them for lower-priced homes. To account for this, four different ratios were computed for each municipality, corresponding to the median tax-to-value ratio at each property-value quartile. Unreported property taxes were imputed by first placing the property value in the appropriate quartile, then multiplying it by the median tax-to-value ratio of that quartile.

Owner-occupied households were divided into quartiles based on adjusted household income. The median percentage of adjusted household income spent on property tax (that is, the tax-to-income ratio) was estimated for the lowest and highest income quartiles. The relative tax burden borne by the lowest-income

households was defined as the ratio of the two medians. For example, if homeowners in the lowest income quartile paid a median of 10% of their income in property tax, while homeowners in the highest income quartile paid 5%, the relative tax burden would be $10/5 = 2$.

Selection of municipalities

Because property tax values in the census are self-reported, they are subject to error. Inaccurate reporting may bias estimates, especially in small samples. In order to minimize bias, only municipalities with at least 400 dwellings reporting were selected.

A data-quality check was run on all municipalities with 400 or more records from two provinces: Ontario and Alberta. Residential property tax revenues from provincial administrative data (supplied to the Public Institutions Division) were compared with reported property tax totals from the census.³ Two kinds of mismatches were identified:

- a) Because the administrative data included revenues from rented dwellings, the census totals should be lower. Municipalities for which the census totals were higher represented a mismatch.
- b) Because property taxes paid on owner-occupied dwellings were on average higher than those paid on rented dwellings, the ratio of the census total property tax to the administrative total for each municipality should be larger than the ratio of owner-occupied households to all households. Municipalities for which the opposite was true were identified as mismatches.

Mismatches were especially likely for municipalities in Ontario and Alberta with a substantial proportion of rural households. Accordingly, in all provinces and territories, only municipalities with less than 25% of households living in rural areas were selected for further analysis.

The selected sample of 342 municipalities breaks down as follows:

Newfoundland and Labrador: 7	Manitoba: 9
Prince Edward Island: 2	Saskatchewan: 10
Nova Scotia: 5	Alberta: 28
New Brunswick: 9	British Columbia: 57
Quebec: 135	Territories: 3
Ontario: 77	

The higher the relative tax burden, the more regressive the property tax. Each estimate of relative tax burden is paired with a measure of variability—the standard error—to reflect the level of uncertainty associated with that estimate.⁴ Larger municipalities usually yield more precise estimates, and so tend to have smaller standard errors.

Municipalities were divided into three groups, based on how they compared with the municipality with the median relative tax burden: Kingston, Ontario. Group A's property taxes were significantly more regressive than Kingston's, while Group B's were significantly less regressive.⁵ Group C municipalities did not differ significantly from Kingston. (To compare any pair of municipalities, follow the procedure in *Determining relative regressiveness*).

All municipalities in this analysis have regressive property taxes. Even in those with the least regressive, the tax-to-income ratio for the lowest-income homeowners is more than twice that of the highest-income ones.

More regressive in municipalities within the largest CMAs

Municipalities with more regressive property taxes tend to be found in large census metropolitan areas (CMAs). For example, two-thirds of the municipalities in Group A are in the Montréal, Toronto or Vancouver CMAs, and 85% are in one of the 25 most populous CMAs. In contrast, only 15% of the municipalities in Group B are in one of the three largest CMAs (all in Montréal), and less than half are in one of the top 25.

Municipalities in large CMAs often have more regressive property taxes because they tend to have relatively unequal income distributions and/or relatively homogeneous housing prices (Table 1). For example, households in the highest income quartile in the municipality of Montréal have median incomes 4.4 times higher than those in the lowest income quartile, but houses with a median worth only 1.2 times as much. Similar patterns are found in

Table 1: Income and property value inequality in selected municipalities

	Inequality	
	Income*	Property**
More regressive (Table 2, Group A)		
Vancouver	5.53	1.25
Toronto	5.00	1.45
Montréal	4.38	1.23
Calgary	4.05	1.37
Less regressive (Table 2, Group B)		
Winnipeg	3.57	1.59
Regina	3.52	1.50
Halifax	3.72	1.58
Moncton	3.54	1.37

Source: Census of Population, 2001

* (median household income, highest income quartile)/(median household income, lowest income quartile)

** (median property value, highest income quartile)/(median property value, lowest income quartile)

Why property taxes are regressive

Property taxes in Canada are regressive because household incomes are distributed more unequally than the assessed home values on which property taxes are based. This means that households in lower income brackets pay a share of tax that is larger than their share of income; the reverse is true for households in higher income brackets.

For example, in 1999, homeowners in the lowest income quintile (lowest 20%) paid tax on 15% of the total market value of all owned residences, while receiving only 7% of the income of all homeowners. Households in the highest income quintile, on the other hand, paid on 29% of market value and received 39% of income.

Ideally, the above figures would be based on assessed value rather than self-reported market value, since property taxes are set according to assessed value. Assessed values are not always updated annually, making them sometimes lower or higher than market values. However, unless under-assessment is more likely in the lowest income quintile, the pattern of results will not change. If anything, lower-priced housing seems more likely to be over-assessed (Harris and Lehman 2001), so the share of total assessed value held by the lowest income quintile may be even higher than their share of market value.

Owner-occupied households

	Median after-tax income	Share of after-tax income	Share of market value
Quintile	\$		%
Lowest	18,300	6.7	14.9
Second	31,300	12.7	16.8
Third	43,500	17.6	18.1
Fourth	58,300	23.7	21.4
Highest	85,100	39.3	28.8

Source: Survey of Financial Security, 1999

the municipalities of Vancouver, Toronto, and Calgary. Less regressive municipalities in large CMAs—for example, Winnipeg, Regina, Halifax, and Moncton—tend to have more heterogeneous housing prices and/or less unequal incomes.

Not just a seniors' issue

Regressive property taxation is often perceived as especially problematic for seniors, whose homes typically have appreciated in value over many years while

their incomes have diminished.⁶ This perception is implicit in the several tax-relief schemes targeted at seniors, either operating through provincial income tax or administered by the municipalities themselves. How accurate is the perception?⁷

Having established that lower-income homeowners have higher relative tax burdens, the next phase of the analysis looks at who among the lower-income homeowners has the greater tax burden—seniors or non-seniors. Only municipalities with at least 400 senior households reporting were included.

The median percentage of adjusted household income spent on property tax was estimated for non-senior and senior households in the lowest income quartile of each municipality (Table 3). The ratio of the two defines the tax burden of non-seniors relative to seniors. A ratio significantly greater than 1 means that non-seniors have the greater burden, while a ratio significantly less than 1 means that seniors have the greater burden.⁸

Do regressive property taxes affect seniors more than non-seniors? On the one hand, seniors are more likely to be in the lowest income quartile of homeowners, and therefore a higher percentage are affected by regressive property taxes. On the other hand, in terms of number, non-seniors make up the majority of lower-income homeowners in most municipalities.

Furthermore, in the vast majority of municipalities examined (94 out of 101) either no significant difference was seen, or non-seniors had the higher tax-to-income ratio—in some cases much higher. Seniors had the heavier burden in only seven municipalities, and in each case, the difference was relatively small—5% to 10%. Non-seniors had the heavier burden in 53 municipalities, and in almost half of them the difference was 25% or more.

Cases where non-seniors have the higher tax-to-income ratio but the difference is small could be the result of senior-targeted tax-relief schemes offered at the municipal level. In other cases, non-seniors may have a considerably greater tax burden because their incomes are lower or their property values are higher. For example, in Victoria, British Columbia, non-senior households in the lowest income quartile had lower median adjusted household incomes (\$15,500 versus \$16,600) and higher median property values (\$180,000 versus \$160,000) than their senior counterparts.

Determining relative regressiveness

Although the relative tax burdens of two municipalities may look different, each represents an estimate calculated from a sample of dwellings, and, as such, is somewhat imprecise. Therefore, when comparing relative tax burdens, the errors must be taken into account. Consider the example below:

	Relative tax burden	Standard error
Municipality 1	8.50	0.20
Municipality 2	7.30	0.10

- 1) Compute the difference between their relative tax burdens: $8.50 - 7.30 = 1.20$
- 2) Compute the standard error of the difference by using the following formula: $\sqrt{SE_1^2 + SE_2^2}$
In this case $\sqrt{0.20^2 + 0.10^2} = 0.2236$
- 3) Using the standard error of the difference, compute a confidence interval around the difference.

First, multiply the standard error of the difference by a constant, which varies with the size of the confidence interval. In this analysis, a 99% confidence interval is recommended (see note 5), for which the constant is 2.576.

$$2.576 \times 0.2236 = 0.58$$

To set the upper limit of the interval, the product is added to the difference.

$$\text{Upper limit} = 1.20 + 0.58 = 1.78$$

To set the lower limit of the interval, the product is subtracted from the difference.

$$\text{Lower limit} = 1.20 - 0.58 = 0.62$$

The difference between municipalities 1 and 2 is therefore likely to lie somewhere between 0.62 and 1.78. Because the confidence interval does not include zero, the difference between the municipalities is said to be significantly different than zero. In other words, municipality 1 has property taxes that are significantly more regressive than those of municipality 2. If the confidence interval had included zero—in other words, if the lower limit had been a negative number while the upper limit had been positive—the conclusion would have been that there was no evidence for a significant difference between the municipalities.

Higher tax-to-income ratios for non-seniors seemed to be especially evident in British Columbia—21 out of the 23 municipalities examined. In 18 of them, the difference was 25% or more.

Summary

Property taxes are regressive relative to income in every municipality studied here. Even in municipalities with the least regressive taxes, the lowest-income homeowners paid at least twice the amount of tax per dollar of income in relation to the highest-income homeowners. In some municipalities, particularly those in large census metropolitan areas, lower-income homeowners had a tax burden four or five times greater than their higher-income counterparts.

Regressive property taxes cannot be attributed simply to seniors with relatively low incomes living in relatively expensive houses. In fact, municipalities where lower-income non-seniors have the heavier tax burden far exceed those where the reverse is true.

Residential property is taxed strictly as a function of its assessed value. However, because income inequality is far greater than inequality in property values, lower-income homeowners end up spending a relatively large proportion of their income on property tax.

Perspectives

Table 2: Relative property tax burdens: lowest/highest income

Group A: More regressive than the median municipality (Kingston, Ontario)			Group B: Less regressive than the median municipality (Kingston, Ontario)		
Municipality	CMA/CA	Ratio (standard error)	Municipality	CMA/CA	Ratio (standard error)
Anjou	Montréal*	3.98 (0.15)	Blainville	Montréal*	2.67 (0.06)
Beaconsfield	Montréal*	3.68 (0.13)	Brandon	Brandon	2.48 (0.09)
Brossard	Montréal*	3.55 (0.11)	Cap-Rouge	Québec*	2.70 (0.09)
Burnaby	Vancouver*	5.03 (0.14)	Cold Lake	Cold Lake	2.58 (0.14)
Calgary	Calgary*	3.32 (0.02)	Dieppe	Moncton	2.31 (0.11)
Chicoutimi	Chicoutimi-Jonquière*	3.37 (0.10)	Fredericton	Fredericton	2.76 (0.09)
Coquitlam	Vancouver*	4.56 (0.13)	Goderich		2.64 (0.13)
Côte-Saint-Luc	Montréal*	4.54 (0.16)	Granby (canton)	Granby	2.54 (0.13)
Delta	Vancouver*	3.37 (0.07)	Halifax	Halifax*	2.66 (0.03)
Dollard-des-Ormeaux	Montréal*	3.57 (0.12)	La Ronge		2.80 (0.004)
Elliot Lake	Elliot Lake	3.68 (0.16)	Lachenaie	Montréal*	2.57 (0.09)
Hamilton	Hamilton*	3.34 (0.03)	Lacombe		2.47 (0.14)
Hawkesbury	Hawkesbury	3.94 (0.27)	L'Assomption	Montréal*	2.65 (0.11)
Kirkland	Montréal*	3.99 (0.17)	Lloydminster (part, Alta.)	Lloydminster	2.61 (0.13)
Lachine	Montréal*	3.85 (0.16)	Moncton	Moncton	2.75 (0.07)
LaSalle	Montréal*	4.02 (0.11)	Moose Jaw	Moose Jaw	2.72 (0.10)
Laval	Montréal*	3.41 (0.04)	Mount Pearl	St. John's*	2.68 (0.08)
Leamington	Leamington	3.64 (0.13)	Portage la Prairie	Portage la Prairie	2.24 (0.15)
Markham	Toronto*	4.39 (0.07)	Quesnel	Quesnel	2.38 (0.21)
Mission	Abbotsford*	3.58 (0.15)	Regina	Regina*	2.50 (0.03)
Mississauga	Toronto*	3.50 (0.03)	Rock Forest	Sherbrooke*	2.68 (0.12)
Montréal	Montréal*	4.29 (0.05)	Sainte-Julie	Montréal*	2.62 (0.07)
Montréal-Nord	Montréal*	4.01 (0.12)	Saint-Émile	Québec*	2.59 (0.08)
Mont-Royal	Montréal*	5.77 (0.33)	Saint-Jean-Chrysostome	Québec*	2.49 (0.09)
North Vancouver (city)	Vancouver*	4.12 (0.28)	Saint-Luc	Saint-Jean-sur-Richelieu	2.61 (0.11)
North Vancouver (district municipality)	Vancouver*	3.82 (0.10)	Saskatoon	Saskatoon*	2.71 (0.04)
Oakville	Toronto*	3.42 (0.06)	St. Albert	Edmonton*	2.66 (0.07)
Outremont	Montréal*	5.40 (0.44)	Steinbach		2.38 (0.17)
Pierrefonds	Montréal*	3.47 (0.10)	Summerside	Summerside	2.31 (0.14)
Pointe-Claire	Montréal*	3.45 (0.11)	Varenes	Montréal*	2.52 (0.11)
Port Coquitlam	Vancouver*	3.60 (0.14)	Winnipeg	Winnipeg*	2.55 (0.02)
Québec	Québec*	3.24 (0.06)	Wood Buffalo	Wood Buffalo	2.63 (0.10)
Richmond	Vancouver*	5.63 (0.16)	Yellowknife	Yellowknife	2.65 (0.003)
Richmond Hill	Toronto*	4.60 (0.11)			
Rimouski	Rimouski	3.37 (0.10)			
Sainte-Foy	Québec*	3.33 (0.08)			
Saint-Lambert	Montréal*	3.84 (0.21)			
Saint-Laurent	Montréal*	4.45 (0.14)			
Saint-Léonard	Montréal*	4.23 (0.14)			
Salaberry-de-Valleyfield	Salaberry-de-Valleyfield	3.51 (0.14)			
Shawinigan	Shawinigan	3.89 (0.24)			
St. Catharines	St. Catharines-Niagara*	3.33 (0.05)			
Surrey	Vancouver*	3.60 (0.05)			
Thorold	St. Catharines-Niagara*	3.50 (0.16)			
Timmins	Timmins	3.33 (0.09)			
Toronto	Toronto*	4.11 (0.02)			
Trois-Rivières	Trois-Rivières	3.37 (0.11)			
Vancouver	Vancouver*	5.35 (0.12)			
Vaughan	Toronto*	3.58 (0.06)			
Verdun	Montréal*	4.59 (0.20)			
West Vancouver	Vancouver*	5.05 (0.22)			
Westmount	Montréal*	5.01 (0.33)			
Windsor	Windsor*	3.47 (0.05)			

Source: Census of Population, 2001
* 25 largest CMAs

Source: Census of Population, 2001
* 25 largest CMAs

A census metropolitan area (CMA) or census agglomeration (CA) is an area consisting of one or more adjacent municipalities situated around a major urban core. To form a census metropolitan area, the urban core must have a population of at least 100,000. To form a census agglomeration, the urban core must have a population of at least 10,000.

Table 2: Relative property tax burdens: lowest/highest income (continued)

Group C: Not significantly different from the median municipality (Kingston, Ontario)					
Municipality	CMA/CA	Ratio (standard error)			
Abbotsford	Abbotsford*	2.95 (0.08)	East St. Paul	Winnipeg*	3.12 (0.22)
Airdrie	Calgary*	2.88 (0.10)	Edmonton	Edmonton*	3.18 (0.02)
Ajax	Toronto*	2.97 (0.05)	Edmundston	Edmundston	2.99 (0.16)
Alma	Alma	3.29 (0.12)	Esquimalt	Victoria*	3.16 (0.28)
Amherst		2.36 (0.28)	Estevan	Estevan	2.67 (0.20)
Amos	Amos	2.62 (0.20)	Fleurimont	Sherbrooke*	2.77 (0.09)
Aurora	Toronto*	3.22 (0.08)	Fort Erie	St.Catharines-Niagara*	3.32 (0.12)
Aylmer	Ottawa-Hull*	3.05 (0.10)	Fort Frances		2.77 (0.18)
Baie-Comeau	Baie-Comeau	3.28 (0.13)	Fort Saskatchewan	Edmonton*	2.74 (0.11)
Barrie	Barrie*	3.09 (0.05)	Fort St. John	Fort St. John	3.54 (0.23)
Bathurst	Bathurst	2.88 (0.15)	Gander	Gander	2.88 (0.14)
Beauport	Québec*	3.06 (0.06)	Gatineau	Ottawa-Hull*	2.91 (0.05)
Belleville	Belleville	2.98 (0.07)	Granby (ville)	Granby	3.04 (0.09)
Beloil	Montréal*	3.00 (0.10)	Grand Falls-Windsor	Grand Falls-Windsor	2.73 (0.19)
Boisbriand	Montréal*	2.94 (0.10)	Grande Prairie	Grande Prairie	2.89 (0.10)
Bois-des-Filion	Montréal*	3.02 (0.17)	Grand-Mère	Shawinigan	3.22 (0.14)
Boucherville	Montréal*	3.00 (0.09)	Greater Sudbury	Greater Sudbury*	3.11 (0.05)
Bradford West Gwillimbury	Toronto*	2.99 (0.12)	Greenfield Park	Montréal*	3.36 (0.14)
Brampton	Toronto*	3.11 (0.03)	Grimsby	Hamilton*	2.92 (0.08)
Brantford	Brantford	3.09 (0.05)	Guelph	Guelph	2.99 (0.05)
Brockville	Brockville	2.96 (0.10)	Halton Hills	Toronto*	3.10 (0.07)
Brooks	Brooks	3.28 (0.12)	Hay River		2.97 (0.02)
Buckingham	Ottawa-Hull*	2.92 (0.14)	High River		3.34 (0.17)
Burlington	Hamilton*	3.18 (0.04)	Hinton		2.55 (0.22)
Cambridge	Kitchener*	3.02 (0.05)	Hull	Ottawa-Hull*	3.13 (0.10)
Campbell River	Campbell River	3.26 (0.13)	Iberville	Saint-Jean-sur-Richelieu	3.15 (0.19)
Camrose	Camrose	3.06 (0.13)	Ingersoll		2.80 (0.10)
Candiac	Montréal*	2.97 (0.16)	Innisfil	Barrie*	3.08 (0.10)
Canmore		2.85 (0.19)	Joliette	Joliette	3.18 (0.17)
Cap-de-la-Madeleine	Trois-Rivières	2.92 (0.10)	Jonquière	Chicoutimi-Jonquière*	3.30 (0.09)
Cape Breton	Cape Breton	3.00 (0.08)	Kamloops	Kamloops	2.81 (0.07)
Carleton Place		2.73 (0.13)	Kapuskasing		3.19 (0.16)
Castlegar		2.93 (0.23)	Kelowna	Kelowna*	2.88 (0.07)
Central Okanagan G	Kelowna*	2.84 (0.18)	Kenora	Kenora	2.77 (0.11)
Central Okanagan H	Kelowna*	3.45 (0.19)	Kimberley		3.22 (0.25)
Central Saanich	Victoria*	3.12 (0.17)	Kingston	Kingston	3.03 (0.06)
Chambly	Montréal*	2.98 (0.09)	Kirkland Lake		3.55 (0.26)
Charlesbourg	Québec*	3.12 (0.05)	Kitchener	Kitchener*	3.02 (0.04)
Charlottetown	Charlottetown	2.75 (0.11)	Kitimat	Kitimat	3.82 (0.38)
Charny	Québec*	3.28 (0.19)	La Baie	Chicoutimi-Jonquière*	3.24 (0.11)
Châteauguay	Montréal*	3.05 (0.07)	La Plaine	Montréal*	2.84 (0.12)
Chibougamau		3.15 (0.18)	La Prairie	Montréal*	3.34 (0.13)
Chilliwack	Chilliwack	3.07 (0.09)	La Tuque	La Tuque	3.29 (0.20)
Clarington	Oshawa*	2.99 (0.06)	Labrador City	Labrador City	2.96 (0.19)
Coaticook		3.22 (0.29)	Lachute	Lachute	3.34 (0.31)
Cobourg	Cobourg	2.99 (0.12)	Lac-Saint-Charles	Québec*	2.83 (0.12)
Cochrane	Calgary*	2.89 (0.14)	L'Ancienne-Lorette	Québec*	3.03 (0.11)
Coldstream	Vernon	3.02 (0.23)	Langford	Victoria*	2.81 (0.19)
Collingwood	Collingwood	3.17 (0.15)	Langley (city)	Vancouver*	2.98 (0.18)
Colwood	Victoria*	2.70 (0.14)	LaSalle	Windsor*	3.12 (0.10)
Comox	Courtenay	3.03 (0.15)	Le Gardeur	Montréal*	2.77 (0.10)
Conception Bay South	St.John's*	3.12 (0.16)	Leduc	Edmonton*	2.77 (0.13)
Corner Brook	Corner Brook	3.01 (0.11)	Lethbridge	Lethbridge	3.00 (0.07)
Cornwall	Cornwall	3.05 (0.07)	Lévis	Québec*	3.04 (0.09)
Courtenay	Courtenay	3.00 (0.18)	L'Île-Bizard	Montréal*	2.80 (0.14)
Cowansville	Cowansville	3.41 (0.29)	L'Île-Perrot	Montréal*	3.32 (0.19)
Cranbrook	Cranbrook	2.88 (0.14)	London	London*	2.98 (0.03)
Dauphin		2.47 (0.24)	Longueuil	Montréal*	3.24 (0.08)
Dawson Creek	Dawson Creek	3.13 (0.21)	Loretteville	Québec*	3.38 (0.15)
Deux-Montagnes	Montréal*	2.89 (0.12)	Lorraine	Montréal*	2.91 (0.17)
Dolbeau-Mistassini	Dolbeau-Mistassini	3.01 (0.17)	Magog	Magog	2.87 (0.14)
Dorval	Montréal*	3.21 (0.18)	Maple Ridge	Vancouver*	3.15 (0.08)
Drumheller		2.58 (0.20)	Mascouche	Montréal*	3.23 (0.10)
Drummondville	Drummondville	2.97 (0.08)	Masson-Angers	Ottawa-Hull*	2.89 (0.17)
Dryden		2.86 (0.17)	Matane	Matane	3.46 (0.17)
			Medicine Hat	Medicine Hat	3.03 (0.08)
			Mercier	Montréal*	3.27 (0.16)
			Midland	Midland	3.12 (0.14)
			Miramichi		2.73 (0.19)
			Montmagny		2.61 (0.16)
			Mont-Saint-Hilaire	Montréal*	3.18 (0.16)
			Nanaimo	Nanaimo	2.88 (0.08)

Table 2: Relative property tax burdens: lowest/highest income (concluded)

Group C: Not significantly different from the median municipality (Kingston, Ontario)					
Municipality	CMA/CA	Ratio (standard error)			
Nelson		2.85 (0.30)	Sainte-Thérèse	Montréal*	2.81 (0.11)
New Glasgow	New Glasgow	2.71 (0.21)	Saint-Étienne-de-Lauzon	Québec*	2.96 (0.12)
New Westminster	Vancouver*	3.57 (0.21)	Saint-Eustache	Montréal*	2.96 (0.08)
Newmarket	Toronto*	3.12 (0.07)	Saint-Félicien		2.88 (0.16)
Niagara Falls	St.Catharines-Niagara*	3.22 (0.07)	Saint-Georges	Saint-Georges	3.32 (0.15)
North Battleford	North Battleford	2.83 (0.13)	Saint-Hubert	Montréal*	3.02 (0.06)
North Bay	North Bay	2.88 (0.06)	Saint-Hyacinthe	Saint-Hyacinthe	3.07 (0.10)
Notre-Dame-de-l'Île-Perrot	Montréal*	2.73 (0.24)	Saint-Jean-sur-Richelieu	Saint-Jean-sur-Richelieu	3.22 (0.14)
Notre-Dame-des-Prairies	Joliette	3.10 (0.24)	Saint-Jérôme	Montréal*	3.53 (0.22)
Oak Bay	Victoria*	3.45 (0.19)	Saint-Louis-de-France	Trois-Rivières	3.02 (0.18)
Okotoks		3.16 (0.14)	Saint-Romuald	Québec*	3.03 (0.22)
Orangeville	Toronto*	2.88 (0.08)	Saint-Timothée	Salaberry-de-Valleyfield	3.16 (0.17)
Orillia	Orillia	3.08 (0.09)	Sarnia	Sarnia	2.97 (0.07)
Oshawa	Oshawa*	3.19 (0.05)	Saugeen Shores		3.29 (0.17)
Ottawa	Ottawa-Hull*	3.01 (0.02)	Sault Ste. Marie	Sault Ste. Marie	2.99 (0.07)
Otterburn Park	Montréal*	2.91 (0.12)	Selkirk		2.62 (0.17)
Owen Sound	Owen Sound	3.03 (0.11)	Sept-Îles	Sept-Îles	3.35 (0.12)
Parksville	Parksville	2.97 (0.23)	Shawinigan-Sud	Shawinigan	2.99 (0.11)
Pelham	St.Catharines-Niagara*	3.12 (0.11)	Sherbrooke	Sherbrooke*	3.22 (0.09)
Pembroke	Pembroke	3.34 (0.20)	Sidney	Victoria*	2.94 (0.22)
Penetanguishene	Midland	3.30 (0.20)	Sillery	Québec*	3.46 (0.26)
Penticton	Penticton	2.89 (0.17)	Smiths Falls		2.92 (0.16)
Peterborough	Peterborough	3.19 (0.06)	Sorel-Tracy	Sorel-Tracy	3.14 (0.10)
Pickering	Toronto*	3.10 (0.07)	Spruce Grove	Edmonton*	2.84 (0.14)
Pincourt	Montréal*	3.05 (0.12)	Squamish	Squamish	2.59 (0.23)
Pitt Meadows	Vancouver*	2.79 (0.15)	St. John's	St. John's*	2.93 (0.06)
Pointe-du-Lac	Trois-Rivières	2.96 (0.27)	St. Thomas	London*	3.21 (0.10)
Port Alberni	Port Alberni	3.22 (0.17)	Stony Plain	Edmonton*	2.95 (0.19)
Port Colborne	St.Catharines-Niagara*	3.22 (0.14)	Stratford	Stratford	3.04 (0.09)
Port Hope and Hope	Port Hope and Hope	3.09 (0.10)	Strathmore		2.94 (0.14)
Port Moody	Vancouver*	3.57 (0.26)	Strathroy-Caradoc	London*	3.17 (0.13)
Powell River	Powell River	3.16 (0.18)	Swift Current	Swift Current	2.69 (0.15)
Prince Albert	Prince Albert	2.93 (0.11)	Taber		2.86 (0.18)
Prince George	Prince George	2.86 (0.07)	Tecumseh	Windsor*	3.29 (0.13)
Prince Rupert	Prince Rupert	3.19 (0.23)	Terrace	Terrace	2.74 (0.18)
Qualicum Beach	Parksville	3.02 (0.27)	Terrebonne	Montréal*	3.16 (0.07)
Red Deer	Red Deer	3.05 (0.07)	Thetford Mines	Thetford Mines	2.77 (0.11)
Renfrew		2.76 (0.13)	Thompson	Thompson	2.55 (0.18)
Repentigny	Montréal*	3.00 (0.06)	Thunder Bay	Thunder Bay	2.97 (0.05)
Revelstoke		3.18 (0.37)	Tillsonburg	Tillsonburg	3.19 (0.14)
Riverview	Moncton	2.76 (0.11)	Trail		2.48 (0.22)
Rivière-du-Loup	Rivière-du-Loup	3.06 (0.16)	Trois-Rivières-Ouest	Trois-Rivières	2.98 (0.13)
Roberval		2.88 (0.16)	Truro	Truro	2.79 (0.18)
Rosemère	Montréal*	3.17 (0.18)	Val-Bélair	Québec*	2.98 (0.10)
Rothsay	Saint John	2.79 (0.11)	Val-d'Or	Val-d'Or	3.27 (0.15)
Rouyn-Noranda	Rouyn-Noranda	3.40 (0.16)	Vaudreuil-Dorion	Montréal*	3.26 (0.17)
Saanich	Victoria*	3.08 (0.06)	Vernon	Vernon	2.84 (0.10)
Saint John	Saint John	3.06 (0.08)	Victoria	Victoria*	3.24 (0.11)
Saint-Antoine	Montréal*	2.87 (0.14)	Victoriaville	Victoria*	3.12 (0.08)
Saint-Augustin-de-Desmaures	Québec*	2.98 (0.14)	Waterloo	Kitchener*	3.06 (0.07)
Saint-Basile-le-Grand	Montréal*	2.85 (0.15)	Welland	St.Catharines-Niagara*	3.07 (0.08)
Saint-Bruno-de-Montarville	Montréal*	3.30 (0.10)	Wetaskiwin	Wetaskiwin	2.84 (0.22)
Saint-Charles-Borromée	Joliette	2.88 (0.15)	Weyburn		2.87 (0.20)
Saint-Constant	Montréal*	2.85 (0.08)	Whitby	Oshawa*	2.95 (0.05)
Sainte-Anne-des-Plaines	Montréal*	3.05 (0.18)	White Rock	Vancouver*	2.96 (0.23)
Sainte-Catherine	Montréal*	2.92 (0.09)	Whitecourt		3.02 (0.18)
Sainte-Marie		3.27 (0.16)	Whitehorse	Whitehorse	2.96 (0.18)
Sainte-Marthe-sur-le-Lac	Montréal*	3.13 (0.17)	Williams Lake	Williams Lake	2.87 (0.24)
			Winkler		2.65 (0.17)
			Woodstock	Woodstock	3.05 (0.10)
			Yorkton	Yorkton	2.82 (0.14)

Source: Census of Population, 2001
* 25 largest CMAs

Table 3: Property tax burden of lowest-income seniors and non-seniors

		Seniors in		Relative tax burden	
		Lowest income quartile	Overall population	Non-seniors/seniors	Standard error
Municipalities in which non-seniors have a higher tax burden		%			
Abbotsford	British Columbia	47.3	26.3	2.37	(0.15)
Brantford	Ontario	45.6	23.6	1.10	(0.04)
Burnaby	British Columbia	35.1	22.6	1.75	(0.08)
Cape Breton	Nova Scotia	36.2	25.6	1.49	(0.05)
Chicoutimi	Quebec	37.5	17.5	1.12	(0.04)
Chilliwack	British Columbia	49.0	29.1	1.49	(0.07)
Coquitlam	British Columbia	29.1	15.5	1.89	(0.11)
Cornwall	Ontario	42.5	27.4	1.20	(0.06)
Côte-Saint-Luc	Quebec	57.9	46.1	1.13	(0.04)
Delta	British Columbia	33.6	18.1	1.13	(0.04)
Edmonton	Alberta	35.5	19.4	1.04	(0.01)
Fort Erie	Ontario	45.8	26.9	1.27	(0.09)
Fredericton	New Brunswick	36.5	24.8	1.20	(0.07)
Greater Sudbury	Ontario	42.3	21.8	1.14	(0.03)
Halifax	Nova Scotia	31.1	17.5	1.07	(0.02)
Hamilton	Ontario	45.6	23.1	1.08	(0.02)
Innisfil	Ontario	46.5	22.7	1.41	(0.09)
Kamloops	British Columbia	43.0	21.8	1.27	(0.05)
Kelowna	British Columbia	55.8	32.9	1.70	(0.08)
LaSalle	Quebec	45.5	26.4	1.20	(0.06)
Laval	Quebec	33.8	17.5	1.05	(0.02)
Lethbridge	Alberta	41.3	25.0	1.16	(0.04)
Maple Ridge	British Columbia	38.4	18.3	1.23	(0.05)
Markham	Ontario	16.0	11.7	1.15	(0.04)
Medicine Hat	Alberta	49.9	27.9	1.36	(0.06)
Montréal	Quebec	43.2	24.0	1.10	(0.02)
Montréal-Nord	Quebec	47.2	31.5	1.36	(0.11)
Moose Jaw	Saskatchewan	44.2	29.3	1.36	(0.08)
Nanaimo	British Columbia	46.7	29.1	1.52	(0.08)
New Westminster	British Columbia	51.2	23.9	1.57	(0.12)
North Vancouver (City)	British Columbia	50.9	24.9	1.45	(0.12)
North Vancouver (District)	British Columbia	36.7	20.8	1.14	(0.05)
Penticton	British Columbia	63.0	40.1	1.71	(0.14)
Pierrefonds	Quebec	25.2	15.8	1.14	(0.04)
Québec	Quebec	39.0	20.2	1.09	(0.03)
Richmond	British Columbia	26.1	19.2	2.23	(0.11)
Richmond Hill	Ontario	22.4	11.9	1.41	(0.05)
Saanich	British Columbia	48.5	30.7	1.28	(0.04)
Saint John	New Brunswick	39.2	25.2	1.19	(0.05)
Saint-Hubert	Quebec	26.5	11.5	1.12	(0.04)
Saint-Laurent	Quebec	44.5	29.9	1.20	(0.06)
Saint-Léonard	Quebec	58.7	32.2	1.30	(0.07)
St. Catharines	Ontario	49.0	28.2	1.12	(0.03)
Surrey	British Columbia	33.3	18.8	1.64	(0.05)
Thunder Bay	Ontario	47.9	24.4	1.14	(0.04)
Timmins	Ontario	40.4	18.0	1.15	(0.05)
Trois-Rivières	Quebec	42.5	25.2	1.20	(0.06)
Vancouver	British Columbia	34.1	21.4	1.46	(0.04)
Vernon	British Columbia	59.6	34.2	1.68	(0.14)
Victoria	British Columbia	51.9	34.2	1.41	(0.08)
Welland	Ontario	51.9	26.2	1.21	(0.07)
West Vancouver	British Columbia	46.9	33.9	1.58	(0.10)
White Rock	British Columbia	69.5	41.7	1.91	(0.22)

Table 3: Property tax burden of lowest-income seniors and non-seniors (concluded)

		Seniors in		Relative tax burden	
		Lowest income quartile	Overall population	Non-seniors/seniors	Standard error
Municipalities in which seniors have a higher tax burden		%			
Cambridge	Ontario	36.5	15.8	0.94	(0.02)
Mississauga	Ontario	22.9	12.0	0.95	(0.02)
Oakville	Ontario	31.4	16.1	0.93	(0.03)
Oshawa	Ontario	36.9	18.9	0.90	(0.02)
Ottawa	Ontario	29.1	18.3	0.93	(0.01)
Sainte-Foy	Quebec	41.4	27.3	0.90	(0.03)
Vaughan	Ontario	24.2	10.6	0.94	(0.02)
Municipalities with no significant difference					
Barrie	Ontario	30.2	15.1	0.96	(0.03)
Beauport	Quebec	33.2	14.4	0.95	(0.03)
Belleville	Ontario	45.2	29.1	1.03	(0.04)
Brampton	Ontario	17.1	8.5	0.96	(0.02)
Brandon	Manitoba	38.4	23.3	1.06	(0.06)
Brossard	Quebec	26.1	14.6	1.15	(0.06)
Burlington	Ontario	38.7	20.8	0.97	(0.02)
Calgary	Alberta	28.2	14.7	0.98	(0.01)
Charlesbourg	Quebec	36.0	18.9	0.96	(0.03)
Châteauguay	Quebec	36.7	19.5	1.01	(0.04)
Clarington	Ontario	34.0	14.9	0.97	(0.04)
Gatineau	Quebec	26.4	11.2	1.00	(0.03)
Guelph	Ontario	40.6	20.3	0.95	(0.03)
Hull	Quebec	38.3	18.6	0.90	(0.05)
Jonquière	Quebec	37.7	19.2	1.13	(0.06)
Kingston	Ontario	38.4	26.7	1.01	(0.03)
Kitchener	Ontario	39.0	18.2	0.98	(0.02)
London	Ontario	36.1	21.4	1.02	(0.02)
Longueuil	Quebec	38.0	17.2	1.07	(0.04)
Moncton	New Brunswick	39.1	22.7	1.06	(0.04)
Niagara Falls	Ontario	51.6	27.8	1.00	(0.05)
North Bay	Ontario	43.2	25.1	1.06	(0.04)
Oak Bay	British Columbia	54.5	40.5	1.25	(0.11)
Orillia	Ontario	48.6	29.7	1.10	(0.05)
Peterborough	Ontario	46.0	31.1	1.00	(0.03)
Pickering	Ontario	22.1	10.1	0.98	(0.03)
Prince George	British Columbia	28.7	12.9	1.12	(0.05)
Red Deer	Alberta	31.6	17.6	1.03	(0.04)
Regina	Saskatchewan	34.9	19.7	1.06	(0.02)
Repentigny	Quebec	29.6	13.9	1.09	(0.04)
Sarnia	Ontario	39.4	25.7	1.09	(0.04)
Saskatoon	Saskatchewan	32.5	20.6	1.02	(0.02)
Sault Ste. Marie	Ontario	45.7	25.7	1.06	(0.04)
Sherbrooke	Quebec	39.3	24.5	1.13	(0.05)
St. John's	Newfoundland and Labrador	35.4	19.6	1.05	(0.03)
Toronto	Ontario	41.1	23.5	1.02	(0.01)
Waterloo	Ontario	36.4	19.7	1.01	(0.04)
Whitby	Ontario	25.6	11.6	0.99	(0.04)
Windsor	Ontario	48.0	23.5	1.05	(0.02)
Winnipeg	Manitoba	36.3	20.8	1.03	(0.01)
Woodstock	Ontario	46.6	23.1	0.98	(0.05)

Source: Census of Population, 2001

■ Notes

1 This study is based on income before income tax. As a result, the effects of provincial property-tax relief systems operating through the income tax system are not captured. However, rebate schemes operating through the municipal tax system *are* captured, since they directly affect property tax paid. No national data exist on the aggregate size of the tax abatement of either of these types of programs, but the amounts are generally believed to be small and to affect only the low end of the income distribution.

2 All provinces now aim to equate assessed values with market prices; previously, assessed values were based on a property's physical characteristics. The mill rate is generally a flat tax in that the same rate is applied to a property regardless of assessed value. Depending on the municipality, mill rates for rental properties (excluded from this study), or for some other specific types of properties may vary slightly.

3 In its government finance statistics program, the Public Institutions Division generates data on local government only at the provincial level and does not distinguish between residential and non-residential property taxes. Nevertheless, this division received data for individual municipalities from several provinces and, in the case of Ontario and Alberta, property tax revenues were divided into their residential and non-residential components.

4 Medians and confidence intervals were computed with SUDAAN, version 8. The design according to which households were selected to receive the long questionnaire was assumed to be equivalent to stratified random sampling without replacement.

5 Two factors affect the accuracy of standard error estimation. First, the imputation of property tax for some dwellings in each municipality leads to underestimation. Second, the covariance between higher and lower income homeowners was deemed to be negligible under the assumption that they tend to live in different areas. This sometimes erroneous assumption leads to overestimation.

Although it is tempting to say that the two factors balance each other out, it is impossible to determine to what extent each one influences the standard error estimate. Therefore, a conservative approach was used to test for statistical significance. Instead of the conventional 95% confidence interval, 99% confidence intervals were computed.

6 However, the problem in terms of spending power may be mitigated by the mortgage-free status of many senior homeowners (Chawla and Wannell 2004).

7 This study looks only at property taxes in relation to income, not all the costs of owning a home. The broader area of housing affordability is influenced by a variety of tax measures in addition to property tax rebates, including energy tax rebates, GST rebates, and so on.

8 Significance testing was conducted with 99% confidence intervals (see note 5).

■ References

Carson, Jamie. 2002. "Family spending power." *Perspectives on Labour and Income* (Statistics Canada, Catalogue no. 75-001-XIE) 3, no. 10. October 2002 online edition.

Chawla, Raj K. and Ted Wannell. 2003. "Property taxes." *Perspectives on Labour and Income* (Statistics Canada, Catalogue no. 75-001-XIE) 4, no. 7. July 2003 online edition.

---. "Housing costs of elderly families." *Perspectives on Labour and Income* (Statistics Canada, Catalogue no. 75-001-XIE) 5, no. 7. July 2004 online edition.

Harris, Richard and Michael Lehman. 2001. "Social and geographic inequities in the residential property tax: A review and case study." *Environment and Planning A* 33, no. 5 (May): 881-900.

Slack, Enid. 2002. "Property tax reform in Ontario: What have we learned?" *Canadian Tax Journal* 50, no. 2: 576-585.