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..	not available for a specific reference period
...	not applicable
p	preliminary
r	revised
x	confidential
E	use with caution
F	too unreliable to be published

Highlights

In this issue

Spenders and savers

- Canadians are spending more and saving less than they did in the past. Much of the spending is financed by borrowing, either through mortgages or consumer debt. From 1982 to 2001, the debt-to-income ratio rose from 55% to 97%. On a constant-dollar basis, per-capita debt doubled from $10,300 to $20,900.
- As aggregate debt soared, the number of households out-spending their income in the course of a year also increased. In 1982, 39% of households spent more than their pre-tax income. By 2001, the proportion had reached 47%.
- Savers (those who spend less than their pre-tax income) earned substantially more than spenders and consequently paid more income tax. Personal income taxes amounted to 25% of expenditure for savers in 2001 versus 16% for spenders.
- After netting out taxes and security payments, spenders consumed more than savers, despite their lower earnings. Spenders out-consumed savers by 15% in 1982 and 10% in 2001. The narrowing consumption gap reflects slower income growth among spending households.
- Even though the proportion of savers consistently rose with income in both 1982 and 2001, the proportion of spenders increased in all income classes between the two years.
- The proportion of spenders increased in all age groups, but particularly among households in the pre-retirement years. Significant increases were also noted among households with education spending, families with children at home, and homeowners with mortgages.
- Spenders out-purchased savers in most categories of goods and services, but car purchases were mostly responsible for pushing spenders into the red. In 2001, for example, spenders put out an average of $15,200 for cars compared with $9,000 for savers.

Property taxes relative to income

- In 342 municipalities examined, homeowners in the lowest income quartile spent a greater proportion of their income on property taxes—sometimes as much as four or five times greater—than those in the highest quartile.
- The regressiveness of property taxes has nothing to do with tax levels set by local governments. It arises because income inequality generally exceeds property value inequality. Municipalities with high income inequality and relatively low property value inequality—mainly municipalities in large, urban areas—generally have more regressive property taxes.
- Neither can regressiveness be attributed simply to seniors with low incomes living in relatively expensive houses. In most municipalities, lower-income non-seniors spent an equal or greater proportion of their income on property taxes compared with their senior counterparts.

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Spenders and savers

Raj K. Chawla and Ted Wannell

The national savings rate has been oscillating around historic lows for several years. This ebb tide in savings has prompted concerns about the resilience of the macro-level economy since growth is increasingly tied to debt-financed consumer spending. Many are also troubled by the balance sheets of households, where ever-expanding debt has rapidly outpaced earnings growth. The resulting record-high, debt-to-income ratios leave households more vulnerable to income interruptions.

While macro-level indicators can give the impression of a single economic ship riding the waves of cyclical activity, it is also important to recognize the variability behind the averages. Many households do save, but increasing numbers are slipping into the red and spending more than they earn in a year. This article focuses on the distinction between savers and spenders (see *Data sources and definitions*). It examines how patterns of saving and spending changed between 1982 and 2001, then looks at differences in the characteristics and spending patterns of saving versus spending households (Chart). The main objectives are to highlight both

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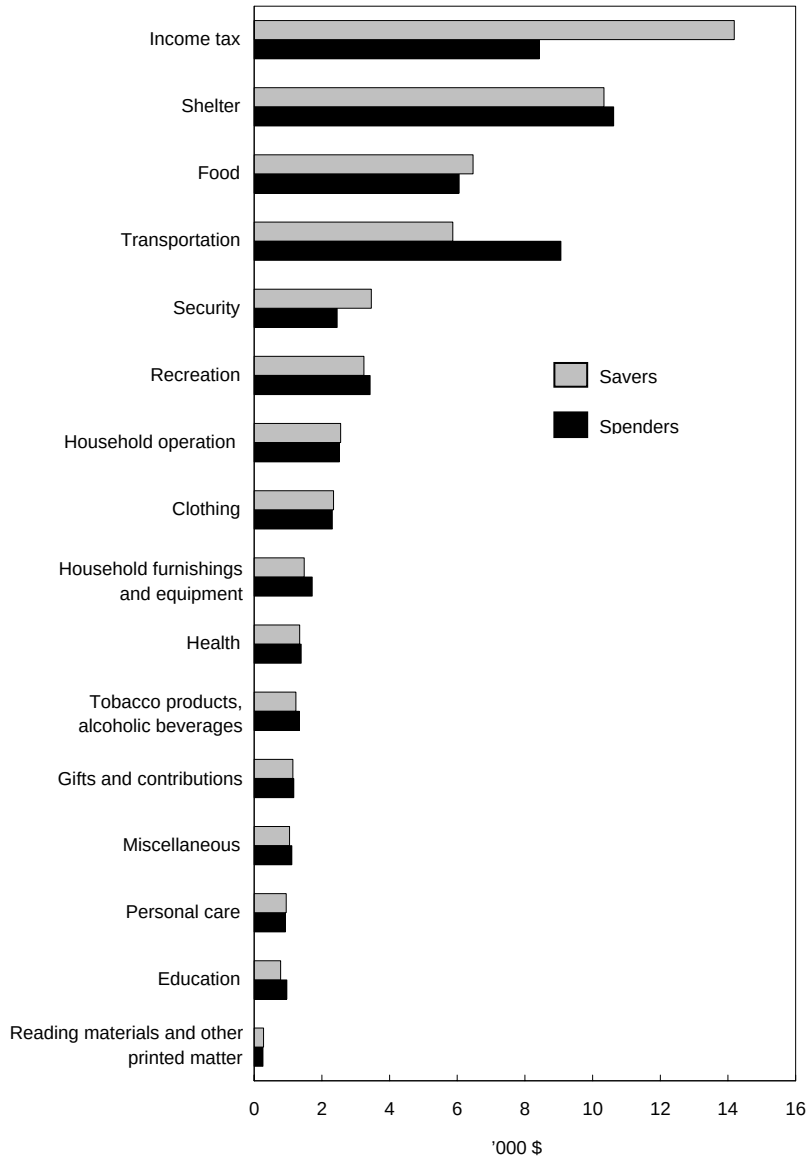
Savers pay more income tax, spend less on transportation.



Source: Survey of Household Spending, 2001

macro and micro factors that have contributed to the declining savings rate, and to provide some evidence on the financial vulnerability of spending households.

A cautionary tale of two time periods

Long-run changes in spending patterns are evident in the span of a generation (20 to 25 years)—sufficient time to observe changes in demography, the labour force and technology. The period from the early 1980s to the early 2000s witnessed the continuation of long-term demographic changes that contribute to an aging of the population: a declining birth rate and increasing life expectancy. The labour force participation of women also continued to rise. And new computer, communications and consumer products progressed from curiosities to commodities in a short span of years (see *New technologies, changing tastes*). All of these factors contributed to immutable changes in spending patterns (see also Harchaoui and Tarkhani, 2004).

New technologies, changing tastes

In addition to the macro-economic factors that seem to be spurring spending, the array of new products and services may also be loosening purse strings. Technologies that were rare or non-existent in 1982—home computers, cellular phones, VCRs, CDs, DVDs, the Internet, game consoles, digital cameras—are now commonplace. Many of these electronic devices follow development paths where features and quality increase rapidly relative to prices, leading to short product life spans. This generates incentive to upgrade frequently.

Spenders and savers do not differ greatly in their ownership of these technological devices. Rather, both reflect the rapid growth in such technologies over the course of a generation. Desktop computers, at the heart of the technological revolution, were in the realm of hobbyists in 1982 but could be found in the majority of homes in 2001. Similarly, connecting these computers to the Internet has progressed from a rarity (not even measured in 1982) to just about half of all households in 2001. Cell phones were owned by almost as many 2001 households.

As of 2001, some newer technologies have begun elbowing their way into categories that were saturated by an earlier wave of technology. For example, DVDs are rapidly supplanting video cassettes. Just less than one in five households owned a DVD player in 2001, jumping to more than half in 2003. Although not on the same rapid trajectory as DVDs, satellite dishes could be found in 18% of households in 2001, providing significant competition to cable TV services.

In addition to these new toys, the taste for comfort and convenience in the home has also increased markedly in the past 20 years. Household ownership of microwave ovens increased sevenfold and central air conditioning fivefold, while twice as many kitchens had dishwashers. Even the stalwart washers and dryers experienced appreciable growth in this period.

Ownership of household technologies and equipment*

	All households		Spenders		Savers	
	1982	2001	1982	2001	1982	2001
			%			
Home computer	2.5	59.7	2.1	59.1	2.7	60.2
Internet	..	49.3	..	48.4	..	50.2
Video equipment	10.0	91.5	10.0	91.3	10.0	91.7
Cable TV	50.9	68.3	50.4	66.1	51.3	70.2
Satellite dish	..	18.2	..	18.0	..	18.4
DVD player	..	19.6	..	19.1	..	20.0
CD player	..	70.7	..	70.3	..	71.1
Cell phone	..	47.5	..	47.8	..	47.2
Central air conditioning	4.8	23.0	3.8	20.4	5.4	25.1
Dishwasher	23.5	51.8	22.4	48.6	24.2	54.5
Microwave oven	12.0	91.3	11.0	90.5	12.6	92.0
Clothes dryer	61.9	75.2	58.9	71.9	63.7	78.0
Washing machine	75.0	80.5	70.4	77.0	77.9	83.6

Sources: Family Expenditure Survey, 1982; Survey of Household Spending, 2001
** As of the end of December of reference year*

On the other hand, some changes in spending may be related to cyclical swings in the economy caused by factors such as job loss and interest rate fluctuations. The early 1980s were punctuated by a short, but steep recession in 1981-82, while the early 2000s witnessed the continuation of a long economic expansion with only a slight pause in 2001. Unemployment, 11.0% in 1982 compared with 7.2% in 2001, may affect household spending adversely, but the effect is dampened by a number of factors. Some spending is 'locked in'—for example, mortgage payments, other loans, utilities, and food consumed in the home. Employment Insurance (EI) benefits can soften the drop in income. Also savings or credit may be used to smooth consumption over short periods of unemployment.

The markets for credit and savings were very different in the two time periods. In the early 1980s, inflation, nominal interest rates, and real interest rates were all very high, while just the opposite was true in the early 2000s.[1] To some extent, this sea change seems to represent a longer-run (or secular) change in environment, rather than a cyclical fluctuation. The change in environment seems to have raised the *level* of spending relative to earnings but its effect on the *disposition* of spending and consumption smoothing is less clear. Suffice it to say that enough changes occurred in the course of 20 years—whole new classes of products, changes in relative prices, income taxes and security systems, to name a few—that the article adopts a mainly empirical approach to expenditure changes, with some reference to demographic life cycles to frame the analysis.

Finally, the exact points for comparison are dependent upon available survey data. In the early 1980s, expenditure surveys were conducted every four years (1982, 1986). The current household spending survey has been conducted annually since 1997, with the 2001 data being the latest available at the beginning of this study. Thus, to meet the criterion of a generational span, 1982 and 2001 were chosen.

Table 1: The proportion of spenders among households

	Age of reference person							
	1982				2001			
	Total	<45	45-64	65+	Total	<45	45-64	65+
	%							
All households	**38.7**	**43.5**	**33.9**	**32.8**	**46.5**	**49.9**	**45.1**	**42.0**
Tenure								
Renter	47.6	51.9	42.3	36.6	54.4	57.3	56.7	42.5
Homeowner with mortgage	34.6	35.6	32.3	36.2	46.1	45.0	46.1	61.2
Homeowner without mortgage	31.2	35.6	29.9	30.2	37.9	37.9	36.4	39.7
Type of household								
Unattached individuals	44.4	53.6	41.1	35.5	51.5	57.6	53.7	44.0
Married couples only	33.3	38.5	29.0	31.5	42.2	44.6	42.3	40.0
Couples with unmarried children only	36.8	39.5	31.7	27.8	43.3	46.1	39.0	42.5
Couples with other relatives/persons	36.7	39.8	35.7	26.3	43.1	44.2	41.9	44.3
Lone-parent families	51.0	61.7	41.8	29.6	55.4	60.1	54.5	36.8
Other, with related persons	35.9	44.0	30.4	31.2	45.6	48.9	44.3	41.4
Other, with unrelated persons	46.9	45.1	64.5	36.5	49.8	52.0	48.1	38.0
Household income*								
Under $20,000	56.6	75.5	61.1	42.6	65.7	79.3	74.8	47.6
$20,000 to $34,999	48.1	59.4	45.4	31.5	55.1	65.7	58.9	41.4
$35,000 to $49,999	40.2	46.2	34.3	22.4	50.2	51.1	52.9	41.8
$50,000 to $74,999	32.5	36.6	27.1	13.7	42.7	45.3	41.0	36.2
$75,000 to $99,999	24.1	25.3	24.4	5.1	34.0	36.0	33.0	23.3
$100,000 and over	16.2	19.1	14.9	0.5	22.9	22.5	23.1	24.2
Education expenditure								
No	37.4	43.5	33.6	32.9	45.1	48.7	44.8	41.9
Yes	40.4	43.5	34.3	31.7	48.4	50.7	45.6	43.1

Sources: Family Expenditure Survey, 1982; Survey of Household Spending, 2001
** In 2001 dollars.*

Savings rate down

The official System of National Accounts (SNA) savings rate is simply the difference between the amount households take in as income and their expenditures on taxes and personal consumption. For each dollar of personal income received in 1982, Canadians paid 20 cents on taxes and deductions, spent 63 cents on personal consumption, and saved the remaining 17 cents. By 2001, taxes and deductions took 25 cents and personal consumption 71 cents, leaving just 3 cents in savings. As noted, annual figures may be affected by cyclical factors, but the broad trends are clear: Canadians are now spending more on taxes and personal consumption than a generation ago and, as a result, are saving less of their income.

A drop in savings potential implies more reliance on current income and borrowed funds for the purchase of both consumption and investment items. The largest investment for most families is their home. While the proportion of households owning a home edged up from 61% to 64% over the period, the SNA shows that household mortgage debt ballooned from $174.1 billion to $447.2 billion (in 2001 dollars).[2] Similarly, SNA estimates of outstanding consumer loans (the amount owed on all credit cards, other personal loans, unpaid bills, and so forth) mushroomed from $84.1 billion to $203.8 billion. As a result, the total debt owed by households rose sharply from $258.2 billion in 1982 to $651.0 billion in 2001—an increase of 152% compared with an increase of just 42% in disposable income. Thus the debt-to-income ratio rose from 55% to 97%. On a per-capita basis, debt doubled from $10,300 to $20,900.

Both the proportion of spenders and the spending gap rose

As the savings rate fell, the number of households outspending their income in the course of a year increased. Of the 8.4 million households in 1982, 39% spent more than their pre-tax income (Table 1). By 2001, the number of households had risen to 11.7 million with 47% being spenders.

Overall, the total expenditures of saving versus spending households are remarkably similar. Spenders actually spent slightly more than savers in 1982, even though they brought in 28% less income. In 2001, saving households spent about $3,000 more than spending households as the income gap expanded to 35%. So it is mainly income that separates savers from spenders.

Since savers have higher average incomes than spenders, one would expect the proportion of savers to rise with income, as is indeed the case. However, between 1982 and 2001, the proportion of spenders rose across the entire income spectrum.

In 1982, 57% of all households with incomes under $20,000 were spenders compared with 16% of those with incomes of $100,000 and over. By 2001, the proportions had risen to 66% and 23% respectively.

Among spenders, the gap between spending and income grew across the income distribution. At the high end of the scale, spenders with incomes of $100,000 or more spent 11% more than their income in 1982 compared with 15% in 2001. The corresponding excess of expenditure over income was more extreme for those with incomes under $20,000—ramping up from 34% in 1982 to 54% in 2001.

Spending up in pre-retirement years

A life-cycle approach provides a useful framework for household spending. This approach divides the life of a household into three phases:

1. Borrowing: Newly formed households finance investment in themselves (education, training) in expectation of rising income.
2. Accumulation: In anticipation of retirement, households save from surplus income.
3. Retirement or dis-saving: Households draw down their savings to finance consumption in later years.

To approximate these three phases, households are classified according to the age of the reference person: under 45, 45 to 64, and 65 or older.

In 1982, the proportion of spenders peaked at 44% in households with a reference person under 45, fell to 34% among those with a reference person aged 45 to 64, and remained at 33% for senior households. There is no apparent upswing in dis-saving after age 65 since public and private pension benefits appear as income for individual households but essentially represent macro-level dis-saving.[3] Furthermore, irregular spending on big-ticket items such as cars will push a certain percentage of accumulators into the red each year. Taking these factors into account, the standard life-cycle model provides a reasonable interpretation of the 1982 data.

Data sources and definitions

The analysis is based on the 1982 **Family Expenditure Survey** (FAMEX), conducted in February-March 1983, and the 2001 **Survey of Household Spending** (SHS) of January-March 2002. Since the surveys were taken nearly 20 years apart, some changes in spending patterns could be attributed to changes in survey concepts, content and methods. Both surveys were conducted by personal interview, and used a multi-stage stratified clustered sample drawn from the Labour Force Survey frame that excludes population in institutions such as nursing homes, hospitals and penitentiaries and those living in the territories or on Indian reserves. However, some key differences remain. First, FAMEX, a periodic survey until 1996, asked 641 questions compared with 425 in the SHS, an annual survey since 1997. Second, the methods used to derive the final weighting factors for the population estimates were different, and much more automated systems were used by the SHS. For more details on these issues, see Statistics Canada (1984, 2000 and 2003).

The surveys collected expenditures and income from all private households in the 10 provinces. The household spending unit is defined as a group of persons dependent on a common or pooled income for major expenses and living in the same dwelling, or one financially independent individual living alone. Since the composition of a household may vary over a year, the use of part-year and full-year households would have distorted some of the comparisons. Hence, the analysis is restricted to full-year households and their composition and dwelling characteristics as of December 31 linked to details on expenditures incurred and income received during the calendar years 1982 and 2001. The usable samples were 10,938 households for 1982 and 15,899 households for 2001.

Household: A person or group of persons occupying one dwelling unit. The number of households, therefore, equals the number of occupied dwellings. A full-year household has at least one full-year member; a part-year household is composed entirely of part-year members.

Head/reference person: Despite some differences, the two concepts are used here synonymously. The 1982 data are classified by age of the head of household and the 2001 data by age of the reference person. The husband was treated as the head in families consisting of married couples with or without children, as was the parent in lone-parent families and normally the eldest in all other families. On the other hand, the reference person was chosen by the household member being interviewed as the person mainly responsible for the financial maintenance of the household. Also, this person must have been a member of the household on December 31 of the reference year. The head/reference person can be either male or female.

Tenure: Households are classified by tenure (homeownership status) into three groups: renters, homeowners without a mortgage, and homeowners with a mortgage.

Expenditure on shelter: Data on this component are not comparable. In 1982, they included mortgage interest on a home or vacation home whereas the principal was included under 'net changes in assets and debts.' In 2001, this component included information on regular mortgage payments (principal and interest).

Pre-tax household income: Sum of incomes before taxes and other deductions received during the reference calendar year by all members of the household. Sources include wages and salaries, net income from self-employment, rental and investment income, government transfers (EI benefits, Child Tax Benefits, GST credits, provincial tax credits, social assistance, Old Age Security, Guaranteed Income Supplement, C/QPP benefits), private and employer pension plans, scholarships, alimony, child support payments, and so forth. Income in kind, windfall gains, and capital gains/losses are excluded.

Disposable income: Pre-tax income less federal and provincial income tax less premiums/contributions paid on components pertaining to security (such as EI, life insurance, C/QPP, and other government and non-government work-related pension plans). Contributions to registered retirement savings plans are not treated as a component of security.

Expenditures collected: With some minor exceptions, the survey includes spending on all goods and services received during the reference calendar year. All expenses attributable to an owned business are excluded. On the other hand, taxes such as the GST, provincial sales tax, duties, customs and excise on all goods and services purchased are included in expenditures.

Total expenditure: Sum of expenditure on current consumption of goods and services, federal and provincial income tax paid, payments pertaining to security, and gifts and contributions made.

Current consumption (also referred to as **total consumer spending**): Includes expenditure on broad components: food, shelter, household operation, household furnishings and equipment, clothing, transportation, health, personal care, recreation, reading material and other printed matter, education, tobacco products and alcoholic beverages, and miscellaneous (including union dues and games of chance). For a detailed breakdown of the components, see Statistics Canada (2003).

Spender/saver: For analytic purposes, households are classified into two groups: those whose total expenditure exceeds income as spenders, and those whose expenditure equals or is less than income as savers. This classification by no means implies that the former group was more extravagant or spent more frivolously than the latter, or had no savings or wealth. This statistical divide, based on total income and expenditures during the reference years, is made simply to look at the two groups by life cycle, compare their spending patterns, and highlight any changes over time.

Data in constant dollars: To remove the effect of inflation or rising prices over time on consumption, all expenditures and incomes are in 2001 dollars. While the prices of all 1982 goods and services may not have moved up at the same pace as the all-items CPI, the use of one conversion factor simplifies the analysis.

Average expenditure by item: Two averages are used; the overall and for reporters only. Tables 2 and 3 use the overall averages.

In 2001, the life-cycle pattern flattened considerably as the proportion of spenders rose in all age groups—the biggest increase occurring in the accumulation phase of the life cycle, where the proportion jumped from 34% in 1982 to 45%. The propensity to outspend income increased to 42% for senior households and to 50% for younger households. So the change in the interest rate and credit environment seems to have increased spending across the life cycle, but particularly among households approaching or already in retirement.

Household composition is another element of the life cycle that contributes to the saving–spending balance. In both 1982 and 2001, about half of all unattached individuals and lone-parent families were spenders. However, the proportion of married couples joining the spending group increased significantly over time.

Investment in education must also be considered. Fees for postsecondary education increased markedly through the 1990s, raising the possibility that increased debt might be necessary to fund studies. Indeed, among households incurring expenditures on education of children or other members, the proportion outspending their income increased from 40% in 1982 to 48% in 2001.

Finally, homeownership also follows a life-cycle pattern, with renting more prevalent among the young, followed by homeownership with a mortgage and then mortgage freedom. In both periods, the proportion of spenders dropped across this progression, but again it also increased over time for each group. The greatest increase in spenders occurred among homeowners with a mortgage, jumping from 35% to 46%.

Higher incomes of savers associated with higher personal taxes

Despite very similar mean expenditures, patterns differ for spenders and savers (Table 2). In 1982, spenders devoted 80.7 cents of their expenditure dollar to current personal consumption, 12.8 to personal taxes, 3.6 to security, and 2.9 to gifts and contributions;[4] the corresponding breakdown for savers was 71.4, 20.6, 4.9, and 3.1. Savers allocated significantly less for current consumption but more for taxes because of their higher incomes.

Table 2: Income and expenditures of spenders and savers

		Age of reference person							
		Spenders				Savers			
	All households	Total	<45	45-64	65+	Total	<45	45-64	65+
1982					$				
Average income	51,390	41,340	44,970	45,100	20,180	57,740	62,510	65,330	32,750
Average expenditure	47,800	48,300	51,950	53,230	24,980	47,490	52,930	52,960	24,390
					%				
Consumption	75.0	80.7	80.4	79.4	87.6	71.4	71.5	69.7	76.6
Personal taxes	17.6	12.8	13.6	13.0	4.7	20.6	21.1	21.8	14.2
Security	4.4	3.6	3.8	3.7	1.9	4.9	5.3	5.1	1.9
Gifts and contributions	3.0	2.9	2.1	3.9	5.8	3.1	2.1	3.4	7.3
2001					$				
Average income	56,840	43,970	45,290	49,610	29,040	68,050	73,930	80,120	35,360
Average expenditure	55,340	53,760	55,540	59,920	36,580	56,710	62,380	66,220	29,030
					%				
Consumption	71.7	77.6	78.0	76.0	81.2	66.9	66.8	64.9	74.9
Personal taxes	20.8	15.7	15.6	17.0	11.8	25.0	25.6	26.2	17.9
Security	5.4	4.6	5.0	4.9	1.8	6.1	6.4	6.8	2.2
Gifts and contributions	2.1	2.2	1.5	2.1	5.1	2.0	1.2	2.1	4.9

Sources: Family Expenditure Survey, 1982; Survey of Household Spending, 2001
Note: All money figures in 2001 dollars

Table 3: Where the money went

	1982		2001	
	Spenders	Savers	Spenders	Savers
	2001 $			
Food	7,390	7,310	6,060	6,470
Shelter	8,830	8,010	10,620	10,340
Household operation	2,190	2,010	2,520	2,560
Household furnishings and equipment	1,930	1,620	1,720	1,480
Clothing	3,110	2,840	2,310	2,340
Transportation	7,120	4,970	9,060	5,870
Health	950	920	1,390	1,350
Personal care	900	850	930	950
Recreation	2,480	2,040	3,430	3,240
Reading material and other printed matter	280	280	260	280
Education	380	300	960	780
Tobacco products, alcoholic beverages	1,800	1,480	1,340	1,230
Miscellaneous	1,620	1,270	1,110	1,050
Total consumption	**38,970**	**33,890**	**41,700**	**37,920**
Income tax	6,160	9,810	8,430	14,190
Security	1,750	2,330	2,450	3,460
Gifts and contributions	1,420	1,460	1,170	1,140
Total expenditure	**48,300**	**47,490**	**53,760**	**56,710**
Total pre-tax income	**41,340**	**57,740**	**43,970**	**68,050**
	%			
Food	15.3	15.4	11.3	11.4
Shelter	18.3	16.9	19.8	18.2
Household operation	4.5	4.2	4.7	4.5
Household furnishings and equipment	4.0	3.4	3.2	2.6
Clothing	6.4	6.0	4.3	4.1
Transportation	14.7	10.5	16.9	10.3
Health	2.0	1.9	2.6	2.4
Personal care	1.9	1.8	1.7	1.7
Recreation	5.1	4.3	6.4	5.7
Reading material and other printed matter	0.6	0.6	0.5	0.5
Education	0.8	0.6	1.8	1.4
Tobacco products, alcoholic beverages	3.7	3.1	2.5	2.2
Miscellaneous	3.4	2.7	2.1	1.8
Total consumption	**80.7**	**71.4**	**77.6**	**66.9**
Income tax	12.8	20.6	15.7	25.0
Security	3.6	4.9	4.6	6.1
Gifts and contributions	2.9	3.1	2.2	2.0
Total expenditure	**100.0**	**100.0**	**100.0**	**100.0**

Sources: Family Expenditure Survey, 1982; Survey of Household Spending, 2001
Note: All money figures in 2001 dollars

Two decades later, both groups were spending less on consumption and more on taxes and security. Of a dollar increase in expenditure, spenders spent 74 cents on consumption and 25 cents on taxes and security, compared with the savers' 57 and 43 cents.

Spenders out-consume savers

Even though total expenditure for spending and saving households is quite similar, spenders actually consume substantially more than savers (Table 3). This is due to the standard definition of consumption, which subtracts personal taxes, security expenditures (for example, EI and C/QPP premiums), and gifts and charitable contributions from total expenditure. Since personal taxes and security payments are higher for savers, less of their spending is devoted to consumption. On average, spenders consumed $39,000 in goods and services in 1982, 15% more than the $33,900 meted out by savers. Reflecting the greater increase in income for saving households between 1982 and 2001, their consumption increased faster than spending households (12% compared with 7%). Still, spenders continued to out-consume savers by 10% in 2001 ($41,700 compared with $37,900).

Cars push spenders into the red

The greatest difference in consumption patterns between spending and saving households is transportation expenditures—mainly car purchases. In 1982, spending households dished out 43% more on transportation than did saving households. By 2001, the differential had grown to 54%. These differentials were driven by average car purchases of $9,900 in 1982 and $15,200 in 2001 for spenders, compared with $6,400 and $9,000 for savers. About one-fifth of both spenders and savers rented or leased a vehicle and spent, on average, about $3,000 on it in 2001.[5]

Shelter expenses were the other major difference between spenders and savers in 1982 ($8,800 versus $8,000), but the gap had narrowed substantially by 2001. Spenders also consistently out-purchased savers, though by smaller margins, in household furnishings and equipment, recreation, education, and tobacco products and alcoholic beverages.

Similar purchasing pattern changes for spenders and savers

Economic and market forces led to similar changes in purchasing patterns for both spending and saving households. Both groups spent more in 2001 on shelter, household operation, transportation, health, personal care, recreation, education, income tax and security; and less on food, household furnishings and equipment, clothing, reading and other printed materials, tobacco products and alcoholic beverages, miscellaneous, and gifts and contributions.[6]

Conclusion

Between 1982 and 2001, the mean pre-tax income of Canadian households grew from $51,400 to $56,800 (11%) whereas expenditure jumped from $47,800 to $55,300 (16%). Not only did expenditure grow more than income, but households also paid relatively more of their income in personal income taxes (federal and provincial) and security (such as premiums for EI, C/QPP, and other government and non-government pensions), leaving less for personal consumption and saving.

At the same time, households increased their indebtedness for both mortgages and consumer debt. Per-capita debt doubled over the two decades. As a result, the proportion of households spending more than their income increased from 39% in 1982 to 47% in 2001. Spending households tended to be younger and to have lower incomes. They were also more likely to be renters or homeowners with a mortgage. Savers, with relatively higher incomes, tended to pay more for taxes and security.

Between 1982 and 2001, the proportion of spenders grew in all income classes and across all life-cycle phases. The incidence of outspending household income increased the most in the 45-to-64 age group. An increasing proportion of senior households also entered the spending ranks.

Spending households had expenditure levels similar to savings households, but substantially lower incomes. After netting out expenditures for taxes and security, spending households had substantially higher levels of current consumption. Spenders out-consumed savers by a small margin across a number of categories, but the main difference was spending on automobiles. These households spent thousands more per year on car purchases.

The influence of automobile purchases suggests a transitory component in the spender–saver split. In any year, a number of households that are long-run savers may borrow enough for the purchase of a car (or other expensive item) to slip into the red. This component is not trivial. In 2001, the purchase price of a car exceeded the net addition to household liabilities in 7 of 10 spending households. Nevertheless, spending households exhibit a greater propensity to consume in relation to their income and across a wide variety of goods and services. And an increasing number of households fit this mould.

Low interest rates and easy credit undoubtedly influence the inclination of households to borrow as household debt continues to rise to unprecedented levels in relation to household disposable income. But at the same time that households have been accumulating this debt, they have also seen a steady rise in their net worth. As a result, SNA estimates of the ratio of household debts to assets have remained in a narrow band of 16% to 19% over the past 14 years. Herein lies another factor related to increased consumption: the recent run-up in housing values. Bank of Canada studies (Macklem 1994; Pichette and Tremblay 2003) indicate that rising home equity has a positive effect on consumer spending.[7] Thus with resale values rising by a third over the past five years, it is no surprise that homeowners are feeling good about their finances and their ability to spend.

This debt-driven consumption and associated economic growth may be subject to peril. A sudden drop-off in the housing market or a sudden spike in interest rates could throw cold water on the spending party. On the other hand, the risks associated with the household sector are somewhat dampened by increased savings in the corporate and government sectors, recently noted in the System of National Accounts. Governments and the Bank of Canada may also use fiscal and monetary policies to dampen the effects of cyclical swings.

Interestingly, the increased propensity among older age groups to consume could help to offset a longer-run economic risk. Long-run forecasts that assume a more traditional life-cycle pattern of spending associate the aging population, notably the retirement of the baby boomers, with a decrease in economic activity. Assuming the boomers can accumulate enough wealth to support their consuming ways, the long-run picture may be a little brighter.

Notes

1 The rate of inflation in 1982 was 10.9% compared with 2.6% in 2001, and the trendsetting bank rate was 13.96% versus 4.31%. The bank rate, set by the Bank of Canada, affects not only the rate households pay on personal loans, mortgages, lines of credit and other consumer loans, but also what they receive as return on their savings and investments.

2 All of this mortgage debt may not necessarily be owed by first-time home buyers; it includes debt owed by those who may have remortgaged their home and used funds for business, investment or consumption.

3 The System of National Accounts treats pension benefits and RRSP withdrawals as dis-savings and thereby presents a more coherent picture of the life-cycle model. In this respect, senior savers as measured by their SHS total income might more properly be thought of as senior households with a positive cash flow.

4 Gifts were treated somewhat differently in the 1982 and 2001 surveys. The 1982 questionnaire contained a separate category for gifts, while in 2001 respondents were directed to include them under the relevant subject category (furniture, toys, and so forth), except for clothing. This creates a small upward bias in personal consumption in 2001 relative to 1982.

5 Since no separate data for expenditure on renting or leasing of automobiles or other vehicles were captured in 1982, this inference should be viewed with some caution. Averages here are for reporters only.

6 Households in the U.S. also spent less on food and clothing in 2000 than in 1990; like their Canadian counterparts, they spent relatively more on shelter, transportation and health. For details, see Weiss (2002).

7 Financial asset appreciation was also found to have a positive, but much weaker effect on consumer spending.

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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.

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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, homeowning households 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 x 0.2236 = 0.58

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

   Upper limit = 1.20 + 0.58 = 1.78

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

   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)

Municipality	CMA/CA	Ratio (standard error)
Anjou	Montréal*	3.98 (0.15)
Beaconsfield	Montréal*	3.68 (0.13)
Brossard	Montréal*	3.55 (0.11)
Burnaby	Vancouver*	5.03 (0.14)
Calgary	Calgary*	3.32 (0.02)
Chicoutimi	Chicoutimi-Jonquière*	3.37 (0.10)
Coquitlam	Vancouver*	4.56 (0.13)
Côte-Saint-Luc	Montréal*	4.54 (0.16)
Delta	Vancouver*	3.37 (0.07)
Dollard-des-Ormeaux	Montréal*	3.57 (0.12)
Elliot Lake	Elliot Lake	3.68 (0.16)
Hamilton	Hamilton*	3.34 (0.03)
Hawkesbury	Hawkesbury	3.94 (0.27)
Kirkland	Montréal*	3.99 (0.17)
Lachine	Montréal*	3.85 (0.16)
LaSalle	Montréal*	4.02 (0.11)
Laval	Montréal*	3.41 (0.04)
Leamington	Leamington	3.64 (0.13)
Markham	Toronto*	4.39 (0.07)
Mission	Abbotsford*	3.58 (0.15)
Mississauga	Toronto*	3.50 (0.03)
Montréal	Montréal*	4.29 (0.05)
Montréal-Nord	Montréal*	4.01 (0.12)
Mont-Royal	Montréal*	5.77 (0.33)
North Vancouver (city)	Vancouver*	4.12 (0.28)
North Vancouver (district municipality)	Vancouver*	3.82 (0.10)
Oakville	Toronto*	3.42 (0.06)
Outremont	Montréal*	5.40 (0.44)
Pierrefonds	Montréal*	3.47 (0.10)
Pointe-Claire	Montréal*	3.45 (0.11)
Port Coquitlam	Vancouver*	3.60 (0.14)
Québec	Québec*	3.24 (0.06)
Richmond	Vancouver*	5.63 (0.16)
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*

Group B: Less regressive than the median municipality (Kingston, Ontario)

Municipality	CMA/CA	Ratio (standard error)
Blainville	Montréal*	2.67 (0.06)
Brandon	Brandon	2.48 (0.09)
Cap-Rouge	Québec*	2.70 (0.09)
Cold Lake	Cold Lake	2.58 (0.14)
Dieppe	Moncton	2.31 (0.11)
Fredericton	Fredericton	2.76 (0.09)
Goderich		2.64 (0.13)
Granby (canton)	Granby	2.54 (0.13)
Halifax	Halifax*	2.66 (0.03)
La Ronge		2.80 (0.004)
Lachenaie	Montréal*	2.57 (0.09)
Lacombe		2.47 (0.14)
L'Assomption	Montréal*	2.65 (0.11)
Lloydminster (part, Alta.)	Lloydminster	2.61 (0.13)
Moncton	Moncton	2.75 (0.07)
Moose Jaw	Moose Jaw	2.72 (0.10)
Mount Pearl	St.John's*	2.68 (0.08)
Portage la Prairie	Portage la Prairie	2.24 (0.15)
Quesnel	Quesnel	2.38 (0.21)
Regina	Regina*	2.50 (0.03)
Rock Forest	Sherbrooke*	2.68 (0.12)
Sainte-Julie	Montréal*	2.62 (0.07)
Saint-Émile	Québec*	2.59 (0.08)
Saint-Jean-Chrysostome	Québec*	2.49 (0.09)
Saint-Luc	Saint-Jean-sur-Richelieu	2.61 (0.11)
Saskatoon	Saskatoon*	2.71 (0.04)
St. Albert	Edmonton*	2.66 (0.07)
Steinbach		2.38 (0.17)
Summerside	Summerside	2.31 (0.14)
Varennes	Montréal*	2.52 (0.11)
Winnipeg	Winnipeg*	2.55 (0.02)
Wood Buffalo	Wood Buffalo	2.63 (0.10)
Yellowknife	Yellowknife	2.65 (0.003)

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)
Airdrie	Calgary*	2.88 (0.10)
Ajax	Toronto*	2.97 (0.05)
Alma	Alma	3.29 (0.12)
Amherst		2.36 (0.28)
Amos	Amos	2.62 (0.20)
Aurora	Toronto*	3.22 (0.08)
Aylmer	Ottawa-Hull*	3.05 (0.10)
Baie-Comeau	Baie-Comeau	3.28 (0.13)
Barrie	Barrie*	3.09 (0.05)
Bathurst	Bathurst	2.88 (0.15)
Beauport	Québec*	3.06 (0.06)
Belleville	Belleville	2.98 (0.07)
Beloeil	Montréal*	3.00 (0.10)
Boisbriand	Montréal*	2.94 (0.10)
Bois-des-Filion	Montréal*	3.02 (0.17)
Boucherville	Montréal*	3.00 (0.09)
Bradford West Gwillimbury	Toronto*	2.99 (0.12)
Brampton	Toronto*	3.11 (0.03)
Brantford	Brantford	3.09 (0.05)
Brockville	Brockville	2.96 (0.10)
Brooks	Brooks	3.28 (0.12)
Buckingham	Ottawa-Hull*	2.92 (0.14)
Burlington	Hamilton*	3.18 (0.04)
Cambridge	Kitchener*	3.02 (0.05)
Campbell River	Campbell River	3.26 (0.13)
Camrose	Camrose	3.06 (0.13)
Candiac	Montréal*	2.97 (0.16)
Canmore		2.85 (0.19)
Cap-de-la-Madeleine	Trois-Rivières	2.92 (0.10)
Cape Breton	Cape Breton	3.00 (0.08)
Carleton Place		2.73 (0.13)
Castlegar		2.93 (0.23)
Central Okanagan G	Kelowna*	2.84 (0.18)
Central Okanagan H	Kelowna*	3.45 (0.19)
Central Saanich	Victoria*	3.12 (0.17)
Chambly	Montréal*	2.98 (0.09)
Charlesbourg	Québec*	3.12 (0.05)
Charlottetown	Charlottetown	2.75 (0.11)
Charny	Québec*	3.28 (0.19)
Châteauguay	Montréal*	3.05 (0.07)
Chibougamau		3.15 (0.18)
Chilliwack	Chilliwack	3.07 (0.09)
Clarington	Oshawa*	2.99 (0.06)
Coaticook		3.22 (0.29)
Cobourg	Cobourg	2.99 (0.12)
Cochrane	Calgary*	2.89 (0.14)
Coldstream	Vernon	3.02 (0.23)
Collingwood	Collingwood	3.17 (0.15)
Colwood	Victoria*	2.70 (0.14)
Comox	Courtenay	3.03 (0.15)
Conception Bay South	St.John's*	3.12 (0.16)
Corner Brook	Corner Brook	3.01 (0.11)
Cornwall	Cornwall	3.05 (0.07)
Courtenay	Courtenay	3.00 (0.18)
Cowansville	Cowansville	3.41 (0.29)
Cranbrook	Cranbrook	2.88 (0.14)
Dauphin		2.47 (0.24)
Dawson Creek	Dawson Creek	3.13 (0.21)
Deux-Montagnes	Montréal*	2.89 (0.12)
Dolbeau-Mistassini	Dolbeau-Mistassini	3.01 (0.17)
Dorval	Montréal*	3.21 (0.18)
Drumheller		2.58 (0.20)
Drummondville	Drummondville	2.97 (0.08)
Dryden		2.86 (0.17)
East St. Paul	Winnipeg*	3.12 (0.22)
Edmonton	Edmonton*	3.18 (0.02)
Edmundston	Edmundston	2.99 (0.16)
Esquimalt	Victoria*	3.16 (0.28)
Estevan	Estevan	2.67 (0.20)
Fleurimont	Sherbrooke*	2.77 (0.09)
Fort Erie	St.Catharines-Niagara*	3.32 (0.12)
Fort Frances		2.77 (0.18)
Fort Saskatchewan	Edmonton*	2.74 (0.11)
Fort St. John	Fort St. John	3.54 (0.23)
Gander	Gander	2.88 (0.14)
Gatineau	Ottawa-Hull*	2.91 (0.05)
Granby (ville)	Granby	3.04 (0.09)
Grand Falls-Windsor	Grand Falls-Windsor	2.73 (0.19)
Grande Prairie	Grande Prairie	2.89 (0.10)
Grand-Mère	Shawinigan	3.22 (0.14)
Greater Sudbury	Greater Sudbury*	3.11 (0.05)
Greenfield Park	Montréal*	3.36 (0.14)
Grimsby	Hamilton*	2.92 (0.08)
Guelph	Guelph	2.99 (0.05)
Halton Hills	Toronto*	3.10 (0.07)
Hay River		2.97 (0.02)
High River		3.34 (0.17)
Hinton		2.55 (0.22)
Hull	Ottawa-Hull*	3.13 (0.10)
Iberville	Saint-Jean-sur-Richelieu	3.15 (0.19)
Ingersoll		2.80 (0.10)
Innisfil	Barrie*	3.08 (0.10)
Joliette	Joliette	3.18 (0.17)
Jonquière	Chicoutimi-Jonquière*	3.30 (0.09)
Kamloops	Kamloops	2.81 (0.07)
Kapuskasing		3.19 (0.16)
Kelowna	Kelowna*	2.88 (0.07)
Kenora	Kenora	2.77 (0.11)
Kimberley		3.22 (0.25)
Kingston	Kingston	3.03 (0.06)
Kirkland Lake		3.55 (0.26)
Kitchener	Kitchener*	3.02 (0.04)
Kitimat	Kitimat	3.82 (0.38)
La Baie	Chicoutimi-Jonquière*	3.24 (0.11)
La Plaine	Montréal*	2.84 (0.12)
La Prairie	Montréal*	3.34 (0.13)
La Tuque	La Tuque	3.29 (0.20)
Labrador City	Labrador City	2.96 (0.19)
Lachute	Lachute	3.34 (0.31)
Lac-Saint-Charles	Québec*	2.83 (0.12)
L'Ancienne-Lorette	Québec*	3.03 (0.11)
Langford	Victoria*	2.81 (0.19)
Langley (city)	Vancouver*	2.98 (0.18)
LaSalle	Windsor*	3.12 (0.10)
Le Gardeur	Montréal*	2.77 (0.10)
Leduc	Edmonton*	2.77 (0.13)
Lethbridge	Lethbridge	3.00 (0.07)
Lévis	Québec*	3.04 (0.09)
L'Île-Bizard	Montréal*	2.80 (0.14)
L'Île-Perrot	Montréal*	3.32 (0.19)
London	London*	2.98 (0.03)
Longueuil	Montréal*	3.24 (0.08)
Loretteville	Québec*	3.38 (0.15)
Lorraine	Montréal*	2.91 (0.17)
Magog	Magog	2.87 (0.14)
Maple Ridge	Vancouver*	3.15 (0.08)
Mascouche	Montréal*	3.23 (0.10)
Masson-Angers	Ottawa-Hull*	2.89 (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)
New Glasgow	New Glasgow	2.71 (0.21)
New Westminster	Vancouver*	3.57 (0.21)
Newmarket	Toronto*	3.12 (0.07)
Niagara Falls	St.Catharines-Niagara*	3.22 (0.07)
North Battleford	North Battleford	2.83 (0.13)
North Bay	North Bay	2.88 (0.06)
Notre-Dame-de-l'Île-Perrot	Montréal*	2.73 (0.24)
Notre-Dame-des-Prairies	Joliette	3.10 (0.24)
Oak Bay	Victoria*	3.45 (0.19)
Okotoks		3.16 (0.14)
Orangeville	Toronto*	2.88 (0.08)
Orillia	Orillia	3.08 (0.09)
Oshawa	Oshawa*	3.19 (0.05)
Ottawa	Ottawa-Hull*	3.01 (0.02)
Otterburn Park	Montréal*	2.91 (0.12)
Owen Sound	Owen Sound	3.03 (0.11)
Parksville	Parksville	2.97 (0.23)
Pelham	St.Catharines-Niagara*	3.12 (0.11)
Pembroke	Pembroke	3.34 (0.20)
Penetanguishene	Midland	3.30 (0.20)
Penticton	Penticton	2.89 (0.17)
Peterborough	Peterborough	3.19 (0.06)
Pickering	Toronto*	3.10 (0.07)
Pincourt	Montréal*	3.05 (0.12)
Pitt Meadows	Vancouver*	2.79 (0.15)
Pointe-du-Lac	Trois-Rivières	2.96 (0.27)
Port Alberni	Port Alberni	3.22 (0.17)
Port Colborne	St.Catharines-Niagara*	3.22 (0.14)
Port Hope and Hope	Port Hope and Hope	3.09 (0.10)
Port Moody	Vancouver*	3.57 (0.26)
Powell River	Powell River	3.16 (0.18)
Prince Albert	Prince Albert	2.93 (0.11)
Prince George	Prince George	2.86 (0.07)
Prince Rupert	Prince Rupert	3.19 (0.23)
Qualicum Beach	Parksville	3.02 (0.27)
Red Deer	Red Deer	3.05 (0.07)
Renfrew		2.76 (0.13)
Repentigny	Montréal*	3.00 (0.06)
Revelstoke		3.18 (0.37)
Riverview	Moncton	2.76 (0.11)
Rivière-du-Loup	Rivière-du-Loup	3.06 (0.16)
Roberval		2.88 (0.16)
Rosemère	Montréal*	3.17 (0.18)
Rothesay	Saint John	2.79 (0.11)
Rouyn-Noranda	Rouyn-Noranda	3.40 (0.16)
Saanich	Victoria*	3.08 (0.06)
Saint John	Saint John	3.06 (0.08)
Saint-Antoine	Montréal*	2.87 (0.14)
Saint-Augustin-de-Desmaures	Québec*	2.98 (0.14)
Saint-Basile-le-Grand	Montréal*	2.85 (0.15)
Saint-Bruno-de-Montarville	Montréal*	3.30 (0.10)
Saint-Charles-Borromée	Joliette	2.88 (0.15)
Saint-Constant	Montréal*	2.85 (0.08)
Sainte-Anne-des-Plaines	Montréal*	3.05 (0.18)
Sainte-Catherine	Montréal*	2.92 (0.09)
Sainte-Marie		3.27 (0.16)
Sainte-Marthe-sur-le-Lac	Montréal*	3.13 (0.17)
Sainte-Thérèse	Montréal*	2.81 (0.11)
Saint-Étienne-de-Lauzon	Québec*	2.96 (0.12)
Saint-Eustache	Montréal*	2.96 (0.08)
Saint-Félicien		2.88 (0.16)
Saint-Georges	Saint-Georges	3.32 (0.15)
Saint-Hubert	Montréal*	3.02 (0.06)
Saint-Hyacinthe	Saint-Hyacinthe	3.07 (0.10)
Saint-Jean-sur-Richelieu	Saint-Jean-sur-Richelieu	3.22 (0.14)
Saint-Jérôme	Montréal*	3.53 (0.22)
Saint-Louis-de-France	Trois-Rivières	3.02 (0.18)
Saint-Romuald	Québec*	3.03 (0.22)
Saint-Timothée	Salaberry-de-Valleyfield	3.16 (0.17)
Sarnia	Sarnia	2.97 (0.07)
Saugeen Shores		3.29 (0.17)
Sault Ste. Marie	Sault Ste. Marie	2.99 (0.07)
Selkirk		2.62 (0.17)
Sept-Îles	Sept-Îles	3.35 (0.12)
Shawinigan-Sud	Shawinigan	2.99 (0.11)
Sherbrooke	Sherbrooke*	3.22 (0.09)
Sidney	Victoria*	2.94 (0.22)
Sillery	Québec*	3.46 (0.26)
Smiths Falls		2.92 (0.16)
Sorel-Tracy	Sorel-Tracy	3.14 (0.10)
Spruce Grove	Edmonton*	2.84 (0.14)
Squamish	Squamish	2.59 (0.23)
St. John's	St. John's*	2.93 (0.06)
St. Thomas	London*	3.21 (0.10)
Stony Plain	Edmonton*	2.95 (0.19)
Stratford	Stratford	3.04 (0.09)
Strathmore		2.94 (0.14)
Strathroy-Caradoc	London*	3.17 (0.13)
Swift Current	Swift Current	2.69 (0.15)
Taber		2.86 (0.18)
Tecumseh	Windsor*	3.29 (0.13)
Terrace	Terrace	2.74 (0.18)
Terrebonne	Montréal*	3.16 (0.07)
Thetford Mines	Thetford Mines	2.77 (0.11)
Thompson	Thompson	2.55 (0.18)
Thunder Bay	Thunder Bay	2.97 (0.05)
Tillsonburg	Tillsonburg	3.19 (0.14)
Trail		2.48 (0.22)
Trois-Rivières-Ouest	Trois-Rivières	2.98 (0.13)
Truro	Truro	2.79 (0.18)
Val-Bélair	Québec*	2.98 (0.10)
Val-d'Or	Val-d'Or	3.27 (0.15)
Vaudreuil-Dorion	Montréal*	3.26 (0.17)
Vernon	Vernon	2.84 (0.10)
Victoria	Victoria*	3.24 (0.11)
Victoriaville	Victoria*	3.12 (0.08)
Waterloo	Kitchener*	3.06 (0.07)
Welland	St.Catharines-Niagara*	3.07 (0.08)
Wetaskiwin	Wetaskiwin	2.84 (0.22)
Weyburn		2.87 (0.20)
Whitby	Oshawa*	2.95 (0.05)
White Rock	Vancouver*	2.96 (0.23)
Whitecourt		3.02 (0.18)
Whitehorse	Whitehorse	2.96 (0.18)
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).

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