THE GLOBE AND MAIL

Signage marks the Statistics Canada officies in Ottawa on Wednesday July 21, 2010.
THE CANADIAN PRESS

Canada's voluntary census is worthless. Here's why

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Finally. There is good news about income inequality in Canada. Statistics Canada's recently released income data reveals that we are a much more equal society than we were a few years ago.

For almost three decades, we've heard only bad news: growing inequality (the gap between the rich and poor) and greater income polarization (a dramatic decline in middle-income groups), resulting in greater income segregation and inequality among neighbourhoods in Canada's cities.

It seems the income-inequality deniers may have been right all along. They just didn't have the "correct" data from the most recent census to convince us with.

We have to thank Prime Minister Stephen Harper's voluntary National Household Survey (NHS), which replaced the mandatory long-form census, for this good news.

According to the NHS, many of the census tracts where low-income people live have seen their average incomes rise, while the highest-income census tracts in the country have lower average incomes. If true, this means we are now a more equal society with a much larger middle-income group. The rich are not so rich; the poor are not so poor.

According to the standard statistical measurement of inequality, the Gini coefficient, neighbourhood income inequality within Canadian cities has dropped significantly (a lower "Gini number" means less inequality or income segregation). In the Toronto and Calgary metropolitan areas, for example, income inequality among neighbourhoods fell by 12 per cent, from a Gini of about 0.22 in the 2006 Census to 0.19 in the 2011 NHS. Impressive.

But … maybe too impressive. Could the good news be too good to be true?

Fortunately, we can check these NHS income results. Our Neighbourhood Change Research Partnership based at the University of Toronto compared the income information from the NHS with the income data collected by the Canada Revenue Agency (CRA) from all tax filers in 2010. The CRA income tax filer data is neither a survey, nor is it voluntary. If you have an income, you must file. You must tell the truth. Or else.

We have been studying income inequality and income polarization in Canada's metropolitan areas since 2005. As soon as the NHS income data was released in early September we began a detailed comparison of the two sets of 2010 income data, the NHS and the CRA, at various levels of geography.

At the highest level, that of the nation, the provinces, and metropolitan areas, the two sets of income match fairly well – within 2 per cent on average for most metropolitan areas. However, the NHS was likely "adjusted" at that level to roughly match the CRA income data. Such an adjustment for very big geographies is easy enough to do.

But the national level of aggregation is not helpful for people in business and marketing, in social services, in government planning and budgeting agencies, and in research in general who need to know in detail, at the local level, people's family, socioeconomic, and ethno-cultural status.

The problem is that the voluntary survey has, as predicted, widely varying non-response rates. The response rates vary by location, socioeconomic status, ethno-cultural origin, family status, and so on. The non-response rate for Montreal was 20 per cent, for Vancouver and Toronto about 25 per cent, and in 18 metropolitan areas it was near or above 30 per cent. Peterborough, at 36 per cent, was the highest for a metropolitan area.

People with higher levels of education, higher-status jobs, higher (but not the highest) incomes and older people had higher response rates. Single parents and one-person households as well as renters had lower response rates. So did those living in the richest and poorest census tracts.

These missing responses explain why the Prime Minister's NHS paints a rosy picture of a country with a growing middle-income group and fewer low-income areas. The fact is, fewer low-income people filled in the voluntary long form.

When we compare the NHS to the CRA results for all census tracts in eight of the largest metropolitan areas, 6.3 per cent of the census tracts (about 200) strangely show up in the NHS as middle-income, tracts that were once either high-income or low-income.

The Gini coefficient of neighbourhood income inequality for Canada's major metropolitan areas in the 2011 CRA and the 2006 Census are about the same, but not in the 2011 NHS. Inequality can increase or decrease in measurable ways over five years, but rarely by the amount claimed in the NHS.

In short, all the good news from the NHS is nonsense.

The sad thing is that the news is now "official." It comes from official government of Canada

statistics. It will, no doubt, be used in partisan ways. It will be used to confuse the debate about the growing gap between rich and poor. It will be used to make it appear that Canada is becoming more equal, when the opposite is happening.

The voluntary nature of the NHS was controversial from the start. Can a voluntary survey ever substitute for a mandatory census? In July 2010 the head of Statistics Canada, Munir Sheikh, who was appointed to that position in 2008 by Mr. Harper, issued a short answer with his resignation: "It can not."

Mr. Sheikh noted that he had no choice but to resign because he "always honoured" his "oath and responsibilities as a public servant as well as those specific to the Statistics Act." It turns out that he is the one in the debate with the Prime Minister who was 'right' and the one who acted 'honourably' on our behalf.

The income data in the National Household Survey is not valid. It should not be used or cited. It should be withdrawn. The 2016 census should be restored to the non-politicized, non-partisan scientific methodology that existed prior to the flawed 2011 National Household Survey.

The authors are professors who direct the data analysis of the Neighbourhood Change Research Partnership based at the University of Toronto, a multi-year national research initiative funded by the Social Sciences and Humanities Research Council of Canada. wwwNeighbourhoodChange.ca

THE GLOBE AND MAIL

October 4, 2013

Canadian income data 'is garbage' without census, experts say

By TAVIA GRANT

Experts question whether the higher cost to produce data of worse quality – at $22-million extra for the survey for a total census cost of $652-million – amounts to wasted taxpayers' dollars

Canada's National Household Survey on incomes produced flawed data with harmful implications for public policy, according to a range of researchers and statistics experts who have sifted through the numbers.

Consultants, urban planners and health policy experts say the data quality is worse than they'd expected, masking key shifts in income inequality and poverty in the country. The blurred picture has also left them unable to track trends over time. And they question whether the higher cost to produce data of worse quality – at $22-million extra for the survey for a total census cost of $652-million – amounts to wasted taxpayers' dollars.

Statistics Canada developed the new voluntary survey after the federal government cancelled the mandatory long-form census in 2010. Some call the data from the survey "dangerous" because lower response rates obscure who is faring better and who is worse off – which could lead to misguided policy decisions in the years ahead.

Voluntary surveys typically garner weaker response rates from those at the higher and lower ends of the income spectrum. And response rates to the National Household Survey show much lower responses in many mid-sized cities, smaller communities and rural areas.

The 2006 mandatory long form, which required everyone who received a questionnaire to fill it out, had a response rate of 93.5 per cent. The NHS was voluntary and had a much lower response rate of 68.6 per cent. A less representative sample makes it much more difficult to draw unbiased conclusions.

Many who rely on the data plan to discard using it altogether.

"The Auditor-General should get on this one," said Thomas Lemieux, professor at the University of British Columbia and president of the Canadian Economics Association.

He says he will stay clear of the NHS data in assessing long-term trends on income inequality. "I had a secret hope that because Statscan has lots of information to fill the hole that they would be able to create still a workable, good-quality product. My heart fell when I saw that Statscan said they're not going to compare to 2006...I didn't think it would be that bad. "

Munir Sheikh, Statistics Canada's former chief statistician who resigned in 2010 over the decision to scrap the census, said the effort has been a waste of money.

"The irony is, we've spent more money compared to a census to get data which is largely useless. Why anyone would want to do this is beyond me. Why would you spend $600-million for this?" said Mr. Sheikh, who is now an adjunct professor at Queen's University.

In Winnipeg, Dr. Patricia Martens, director of the Manitoba Centre for Health Policy, says flawed or missing data – that under-represents, for example, the number of poor children in her province – could lead to misaligned funding for early childhood education programs or immunization campaigns.

"I worry we've left out the most vulnerable people, so we might make erroneous statement like the income gap is shrinking when it's not," said Dr. Martens, who is also a professor at the University of Manitoba's faculty of medicine and member of the Order of Canada.

Her mistrust of the data is such that her team plans to ditch the NHS altogether, and instead rely on the older, mandatory 2006 census.

Statscan has long been regarded as one of the top statistical agencies in the world and many held out hope its respected analysts would find a way to make the data comparable with previous years. But the agency bluntly said in its Sept. 11 release people should "use caution" in comparing the NHS income data with other surveys or censuses due to the methodology change.

David Hulchanski and a team at the University of Toronto have tested the NHS income data. They have found it doesn't align with annual tax-filer data, with "wonky" results in many areas – in particular showing rising incomes among poor people and falling ones among the rich.

"We're concluding it pretty much is garbage," said Prof. Hulchanski, who co-directs data analysis of the Neighbourhood Change Research Partnership based at U of T.

They are concerned the data will be used for partisan purposes and make it seem like Canada is becoming a more equal society "when the opposite is happening."

In Calgary, consultant Robert Gerst is urging his clients – municipalities, provinces and companies in the oil-and-gas sector – not to use the new data. "It's dangerous," he said.

Planners in his city have already started using the survey to help determine where to place new bus routes – though faulty data could mean empty seats and millions of dollars wasted, he said. "It's a mess because it's not that the data is wrong. It's unreliable – we don't know whether it's right or wrong, we have no clue. And there's no scientific way to tell."

Not everyone is ditching the survey. Doug Norris, chief demographer at Environics Analytics in Ottawa, says though he won't use it for long-term comparisons, it still provides a useful snapshot of how incomes in some cities or provinces compare with others. The problem may also be less acute for the private sector because many businesses rely on their own market surveys to make decisions.

Statscan says each user should determine for themselves if the NHS income information meets their particular needs.

"The fit for use depends on the particular analysis done," Statscan said in an emailed statement to The Globe. The new survey "is a very rich source of information and meets the requirements of most users."

The federal government hasn't yet said what it plans to do for the 2016 census. Mr. Sheikh recommends making Statistics Canada an independent agency from the government, similar in structure to the Canada Revenue Agency. Dr. Martens in Winnipeg wants to see the return of the mandatory long-form census. And the U of T professors recommend the next census be restored to the "non-politicized, non-partisan scientific methodology that existed before" the NHS.

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Income Inequality Between Census Tracts, Eight Census Metropolitan Areas
Percentage Differences in the Gini Between Census 2006, NHS 2011 and Taxfiler 2010 data

<mark>Revised Sept 23, 2013.</mark>

Notes: All figures for constant 2006 census tract boundaries. Census and NHS income for persons 15 and over before-tax.

Taxfiler income for all taxfilers, before-tax.

Inequality: Gini Coefficient Between Census Tracts	Census 2005	NHS 2010	% Difference NHS - Census	NHS 2010	Taxfilers 2010	% Difference NHS - Taxfilers
Calgary	0.213	0.187	-12.4%	0.187	0.197	-5.2%
Halifax	0.123	0.118	-4.1%	0.118	0.118	0.3%
Hamilton	0.155	0.148	-4.8%	0.148	0.155	-4.8%
Montréal	0.170	0.162	-4.9%	0.162	0.172	-5.9%
Ottawa - Gatineau	0.138	0.128	-7.3%	0.128	0.132	-2.8%
Toronto	0.219	0.193	-12.0%	0.193	0.219	-13.6%
Vancouver	0.169	0.160	-5.3%	0.160	0.166	-3.4%
Winnipeg	0.154	0.149	-3.6%	0.149	0.156	-4.8%

Income Polarization Between Census Tracts, Eight Census Metropolitan Areas
Percentage Differences in the COP Between Census 2006, NHS 2011 and Taxfiler 2010 data

Notes: All figures for constant 2006 census tract boundaries. Census and NHS income for persons 15 and over before-tax.

Taxfiler income for all taxfilers, before-tax.

Coefficient of Polarization (COP) Between Census Tracts	Census 2005	NHS 2010	% Difference NHS - Census	NHS 2010	Taxfilers 2010	% Difference NHS - Taxfilers
Calgary	0.279	0.260	-6.6%	0.260	0.270	-3.7%
Halifax	0.181	0.179	-1.1%	0.179	0.177	1.1%
Hamilton	0.213	0.205	-3.7%	0.205	0.228	-10.9%
Montréal	0.223	0.224	0.3%	0.224	0.227	-1.4%
Ottawa - Gatineau	0.212	0.202	-4.8%	0.202	0.207	-2.7%
Toronto	0.285	0.271	-4.9%	0.271	0.297	-9.5%
Vancouver	0.226	0.222	-1.9%	0.222	0.225	-1.7%
Winnipeg	0.210	0.204	-3.0%	0.204	0.219	-7.4%

Average Individual Income 2010: National Household Survey Versus Taxfiler Data
The NHS income is for persons 15 and over, before tax. The taxfiler income is for all taxfilers.

Data is sorted by percentage difference between NHS and Taxfiler incomes.

Census Metropolitan Area	NHS Global Non-Response Rate	Average Income $		Difference	
		NHS	Taxfiler	$	%
Calgary	23.6%	$56,600	$59,104	-$2,504	-4.2%
Kingston	28.4%	$41,118	$42,632	-$1,514	-3.6%
Halifax	24.9%	$40,453	$41,877	-$1,424	-3.4%
Victoria	22.7%	$41,952	$43,427	-$1,475	-3.4%
Edmonton	25.4%	$49,266	$50,993	-$1,727	-3.4%
Winnipeg	21.9%	$38,806	$40,019	-$1,213	-3.0%
Thunder Bay	23.2%	$39,097	$40,317	-$1,220	-3.0%
St. John's	29.2%	$41,515	$42,731	-$1,216	-2.8%
Trois-Rivières	19.3%	$33,607	$34,571	-$964	-2.8%
Greater Sudbury / Grand Sudbury	27.9%	$40,843	$42,006	-$1,163	-2.8%
London	23.7%	$39,361	$40,419	-$1,058	-2.6%
Saskatoon	24.4%	$44,101	$45,283	-$1,182	-2.6%
Saint John	29.2%	$38,149	$39,067	-$918	-2.3%
Moncton	23.4%	$36,583	$37,366	-$783	-2.1%
Québec	21.4%	$39,124	$39,864	-$740	-1.9%
Saguenay	20.4%	$35,498	$36,162	-$664	-1.8%
Ottawa - Gatineau	22.3%	$47,727	$48,597	-$870	-1.8%
Windsor	28.1%	$37,971	$38,647	-$676	-1.7%
Montréal	19.7%	$38,281	$38,940	-$659	-1.7%
Kelowna	27.8%	$38,851	$39,502	-$651	-1.6%
Peterborough	36.3%	$37,786	$38,403	-$617	-1.6%
Guelph	25.4%	$43,648	$44,277	-$629	-1.4%
Sherbrooke	28.7%	$34,167	$34,599	-$432	-1.2%
St. Catharines - Niagara	17.3%	$36,552	$36,949	-$397	-1.1%
Hamilton	26.7%	$42,543	$42,970	-$427	-1.0%
Regina	23.5%	$46,451	$46,857	-$406	-0.9%
Barrie	26.2%	$40,537	$40,827	-$290	-0.7%
Vancouver	24.4%	$41,031	$41,246	-$215	-0.5%
Kitchener - Cambridge - Waterloo	23.4%	$42,189	$42,277	-$88	-0.2%
Brantford	28.0%	$37,402	$37,453	-$51	-0.1%
Oshawa	28.3%	$43,652	$43,656	-$4	0.0%
Abbotsford - Mission	31.5%	$35,602	$35,521	$81	0.2%
Toronto	25.4%	$44,462	$44,271	$191	0.4%

National Household Survey 2011

Global Non-Response Rates by Census Metropolitan Area

CMA	Non-Response	CMA	Non-Response
Abbotsford - Mission	31.5	Vancouver	24.4
Barrie	26.2	Victoria	22.7
Belleville	28.4	Windsor	28.1
Brantford	28	Winnipeg	21.9
Calgary	23.6		
Chilliwack	22.7		
Drummondville	21.1		
Edmonton	25.4		
Fredericton	24.3		
Granby	21.7		
Greater Sudbury / Grand Sudbury	27.9		
Guelph	25.4		
Halifax	24.9		
Hamilton	26.7		
Kamloops	27.8		
Kelowna	27.8		
Kingston	28.4		
Kitchener - Cambridge - Waterloo	23.4		
Lethbridge	30.9		
London	23.7		
Medicine Hat	28.5		
Moncton	23.4		
Montréal	19.7		
Nanaimo	20.7		
North Bay	27.6		
Oshawa	28.3		
Ottawa - Gatineau	22.3		
Peterborough	36.3		
Prince George	23.5		
Québec	21.4		
Red Deer	27.6		
Regina	23.5		
Saguenay	20.4		
Saint John	29.2		
Saint-Jean-sur-Richelieu	23.2		
Sarnia	19.4		
Saskatoon	24.4		
Sault Ste. Marie	28.7		
Sherbrooke	17.3		
St. Catharines - Niagara	29.2		
St. John's	27.5		
Thunder Bay	25.6		
Toronto	25.4		
Trois-Rivières	19.3		

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National Household Survey 2011

Rankings of Global Non-Response Rates by Census Metropolitan Area

Rank	CMA	Non-Response	Rank	CMA	Non-Response
1	Peterborough	36.3	45	Montréal	19.7
2	Abbotsford - Mission	31.5	46	Sarnia	19.4
3	Lethbridge	30.9	47	Trois-Rivières	19.3
4	Saint John	29.2	48	Sherbrooke	17.3
5	St. Catharines - Niagara	29.2			
6	Sault Ste. Marie	28.7			
7	Medicine Hat	28.5			
8	Belleville	28.4			
9	Kingston	28.4			
10	Oshawa	28.3			
11	Windsor	28.1			
12	Brantford	28			
13	Greater Sudbury / Grand Sudbury	27.9			
14	Kamloops	27.8			
15	Kelowna	27.8			
16	North Bay	27.6			
17	Red Deer	27.6			
18	St. John's	27.5			
19	Hamilton	26.7			
20	Barrie	26.2			
21	Thunder Bay	25.6			
22	Edmonton	25.4			
23	Guelph	25.4			
24	Toronto	25.4			
25	Halifax	24.9			
26	Saskatoon	24.4			
27	Vancouver	24.4			
28	Fredericton	24.3			
29	London	23.7			
30	Calgary	23.6			
31	Prince George	23.5			
32	Regina	23.5			
33	Kitchener - Cambridge - Waterloo	23.4			
34	Moncton	23.4			
35	Saint-Jean-sur-Richelieu	23.2			
36	Chilliwack	22.7			
37	Victoria	22.7			
38	Ottawa - Gatineau	22.3			
39	Winnipeg	21.9			
40	Granby	21.7			
41	Québec	21.4			
42	Drummondville	21.1			
43	Nanaimo	20.7			
44	Saguenay	20.4			

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Correlations of National Household Survey 2011 Global Non-Response Rates (GNR) and Census 2006 Variables by Census Tracts in Eight CMAs (N = 3,106). Census 2006 boundaries.

Census 2006, Selection of 42 Variables	Non-Response Correlation
1 % Dwellings Needing Major Repairs	0.21 **
2 % Dwellings Constructed Before 1946	0.19 **
3 % Population British	0.18 **
4 % Population 25 years and over without high school certificate	0.15 **
5 % Single Parent Households	0.13 **
6 % One Person Households	0.13 **
7 % Labour Force Manufacturing (trades, transport and manufacturing)	0.12 **
8 % Population Western, Northern and Eastern European	0.12 **
9 % Population Aboriginal	0.11 **
10 % Private Dwellings Rented	0.11 **
11 % Economic Famlies Prevalence of Low Income in 2005	0.10 **
12 % Dwellings Apartment 5+ Stories	0.09 **
13 % Population 25-34 Years of Age	0.09 **
14 Unemployment Rate, Persons 15 and Over	0.08 **
15 % of Persons Receiving Government Transfer Payments	0.08 **
16 % Population African (not including North Africa)	0.08 **
17 Renters plus owners (avg housing cost) / household income	0.07 **
18 % Population Southern European	0.07 **
19 % Population 65 Years and Over	0.06 **
20 % Labour Force Sales and Service	0.06 **
21 % Persons (5 years +) who did not live at the same address 5 years ago	0.06 **
22 Total Persons Per Bedroom	0.04 *
23 % Population Immigrant	0.02
24 % Population Latin, Central and South American, and Caribbean	0.01
25 % Population South Asian	0.00
26 % Home Language Neither English nor French	-0.01
27 % Dwellings Apartment Under 5 Stories	-0.02
28 % Population Recent Immigrant (previous five years)	-0.02
29 % Population Visible Minority	-0.02
30 % Population South East Asian and Filipino	-0.03
31 % Dwellings Single Detached	-0.03
32 % Population 50-64 Years of Age	-0.04 *
33 % Population East Asian (Chinese and Japanese)	-0.04 *
34 Persons Per Household	-0.07 **
35 % Population Arab and West Asian	-0.09 **
36 % Dwellings Constructed 1996-2006	-0.09 **
37 % High Income Households	-0.09 **
38 % Labour Force Managerial	-0.10 **
39 % Population 25 years and over with a degree	-0.10 **
40 %Population Less Than 15 Years	-0.13 **
41 % Population French	-0.15 **
42 % Labour Force Professional	-0.15 **

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Calgary CMA: Correlations of Global Non-Response Rates 2011 and Census 2006 Variables by Census Tracts (N = 201)

Positive Correlations (more likely ignore the NHS)	
% Dwellings Needing Major Repairs	0.418
% of Persons Receiving Government Transfer Payments	0.382
% Labour Force Manufacturing (trades, transport and manufacturing)	0.369
% Population Aboriginal	0.336
% Population 25 years and over without high school certificate	0.315
% Single Parent Households	0.286
% Economic Famlies Prevalence of Low Income in 2005	0.187
Renters plus owners (avg housing cost) / household income	0.183
Negative Correlations (more likely to answer the NHS)	
% Population 25 years and over with a degree	-0.361
% Labour Force Managerial	-0.331
% Labour Force Professional	-0.275
% High Income Households	-0.260
% Population Immigrant	-0.195

Note: all correlations shown are significant at the 0.01 level (2-tailed).

Halifax CMA: Correlations of Global Non-Response Rates 2011 and Census 2006 Variables by Census Tracts (N = 85)

Positive Correlations (more likely ignore the NHS)	
% One Person Households	0.452
% Private Dwellings Rented	0.437
% Dwellings Constructed Before 1946	0.433
% Economic Famlies Prevalence of Low Income in 2005	0.412
% Dwellings Needing Major Repairs	0.406
% of Persons Receiving Government Transfer Payments	0.329
% Population 25-34 Years of Age	0.323
% Single Parent Households	0.317
% Dwellings Apartment 5+ Stories	0.303
Total Persons Per Bedroom	0.302
% Persons (5 years +) who did not live at the same address 5 years ago	0.279
Negative Correlations (more likely to answer the NHS)	
%Population Less Than 15 Years	-0.411
% Dwellings Single Detached	-0.383
Persons Per Household	-0.373
% High Income Households	-0.369
% Dwellings Constructed 1996-2006	-0.330
% Labour Force Managerial	-0.289

Note: all correlations shown are significant at the 0.01 level (2-tailed).

Hamilton CMA: Correlations of Global Non-Response Rates 2011 and Census 2006 Variables by Census Tracts (N = 161)

Positive Correlations (more likely ignore the NHS)	
% Population 25 years and over without high school certificate	0.580
% Labour Force Manufacturing (trades, transport and manufacturing)	0.532
% of Persons Receiving Government Transfer Payments	0.504
% Dwellings Needing Major Repairs	0.483
% Single Parent Households	0.447
% Economic Famlies Prevalence of Low Income in 2005	0.441
% Dwellings Constructed Before 1946	0.440
% Population Aboriginal	0.386
% Private Dwellings Rented	0.359
Unemployment Rate, Persons 15 and Over	0.344
% One Person Households	0.336
% Dwellings Apartment Under 5 Stories	0.263
Renters plus owners (avg housing cost) / household income	0.260
% Population Latin, Central and South American, and Caribbean	0.254
% Home Language Neither English nor French	0.237
Total Persons Per Bedroom	0.214
% Labour Force Sales and Service	0.204
Negative Correlations (more likely to answer the NHS)	
% High Income Households	-0.580
% Labour Force Managerial	-0.580
% Population 25 years and over with a degree	-0.499
% Dwellings Constructed 1996-2006	-0.353
% Labour Force Professional	-0.310
Persons Per Household	-0.283
% Population British	-0.252
% Population Western, Northern and Eastern European	-0.209

Note: all correlations shown are significant at the 0.01 level (2-tailed).

Montréal CMA: Correlations of Global Non-Response Rates 2011 and Census 2006 Variables by Census Tracts (N = 856)

Positive Correlations (more likely ignore the NHS)	
% Dwellings Constructed Before 1946	0.336
% Dwellings Needing Major Repairs	0.320
% One Person Households	0.295
% Population 25-34 Years of Age	0.272
% Private Dwellings Rented	0.248
% Persons (5 years +) who did not live at the same address 5 years ago	0.235
% Economic Famlies Prevalence of Low Income in 2005	0.213
% Dwellings Apartment Under 5 Stories	0.184
% Dwellings Apartment 5+ Stories	0.175
Total Persons Per Bedroom	0.167
% Population Western, Northern and Eastern European	0.155
% Population East Asian (Chinese and Japanese)	0.146
% Population 25 years and over with a degree	0.135
Unemployment Rate, Persons 15 and Over	0.132
% Population Aboriginal	0.126
% Single Parent Households	0.113
% Population Recent Immigrant (previous five years)	0.100
% Population British	0.096
Negative Correlations (more likely to answer the NHS)	
%Population Less Than 15 Years	-0.268
Persons Per Household	-0.264
% Dwellings Single Detached	-0.219
% High Income Households	-0.166
% Labour Force Manufacturing (trades, transport and manufacturing)	-0.127
% Dwellings Constructed 1996-2006	-0.103
% Population 50-64 Years of Age	-0.092

Note: all correlations shown are significant at the 0.01 level (2-tailed).

Ottawa - Gatineau CMA: Correlations of Global Non-Response Rates 2011 and Census 2006 Variables by Census Tracts (N = 247)

Positive Correlations (more likely ignore the NHS)	
% Population 25 years and over without high school certificate	0.521
% of Persons Receiving Government Transfer Payments	0.495
% Dwellings Needing Major Repairs	0.484
% Population Aboriginal	0.447
% One Person Households	0.437
% Private Dwellings Rented	0.423
% Single Parent Households	0.414
% Economic Famlies Prevalence of Low Income in 2005	0.399
% Dwellings Apartment Under 5 Stories	0.387
% Labour Force Manufacturing (trades, transport and manufacturing)	0.339
Unemployment Rate, Persons 15 and Over	0.302
% Labour Force Sales and Service	0.286
% Population 65 Years and Over	0.221
% Dwellings Apartment 5+ Stories	0.219
% Population French	0.201
Total Persons Per Bedroom	0.182
% Population 25-34 Years of Age	0.175
Negative Correlations (more likely to answer the NHS)	
% High Income Households	-0.546
% Labour Force Managerial	-0.454
Persons Per Household	-0.441
% Labour Force Professional	-0.370
% Population 25 years and over with a degree	-0.351
% Population Western, Northern and Eastern European	-0.336
%Population Less Than 15 Years	-0.336
% Population British	-0.301
% Dwellings Single Detached	-0.278
% Population South Asian	-0.239
% Dwellings Constructed 1996-2006	-0.238
% Population East Asian (Chinese and Japanese)	-0.196

Note: all correlations shown are significant at the 0.01 level (2-tailed).

Toronto CMA: Correlations of Global Non-Response Rates 2011 and Census 2006 Variables by Census Tracts (N = 987)

Positive Correlations (more likely ignore the NHS)	
% Dwellings Needing Major Repairs	0.216
% Dwellings Apartment Under 5 Stories	0.193
% Population Aboriginal	0.188
% Dwellings Constructed Before 1946	0.168
% Population 25 years and over without high school certificate	0.157
% Population French	0.152
% Population British	0.121
% Population Southern European	0.118
% Population Western, Northern and Eastern European	0.088
% One Person Households	0.086
% Single Parent Households	0.085
Negative Correlations (more likely to answer the NHS)	
% Population Immigrant	-0.190
% Population Arab and West Asian	-0.185
% Population Visible Minority	-0.185
% Population Recent Immigrant (previous five years)	-0.177
% Home Language Neither English nor French	-0.173
% Population 25 years and over with a degree	-0.168
% Population East Asian (Chinese and Japanese)	-0.157
% Population South East Asian and Filipino	-0.149
% Population South Asian	-0.145
% Dwellings Constructed 1996-2006	-0.142
% Persons (5 years +) who did not live at the same address 5 years ago	-0.125
% Labour Force Professional	-0.122
Renters plus owners (avg housing cost) / household income	-0.116
%Population Less Than 15 Years	-0.106
% Dwellings Apartment 5+ Stories	-0.104
Persons Per Household	-0.092

Note: all correlations shown are significant at the 0.01 level (2-tailed).

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Vancouver CMA: Correlations of Global Non-Response Rates 2011 and Census 2006 Variables by Census Tracts (N = 407)

Positive Correlations (more likely ignore the NHS)	
% Population Aboriginal	0.233
% Population Western, Northern and Eastern European	0.222
% Labour Force Manufacturing (trades, transport and manufacturing)	0.194
% Population French	0.187
% Population British	0.185
Negative Correlations (more likely to answer the NHS)	
% Population East Asian (Chinese and Japanese)	-0.289
% Population Immigrant	-0.274
% Population 25 years and over with a degree	-0.239
% Home Language Neither English nor French	-0.226
% Population Visible Minority	-0.225
% Labour Force Professional	-0.179
% Population Recent Immigrant (previous five years)	-0.156

Note: all correlations shown are significant at the 0.01 level (2-tailed).

Winnipeg CMA: Correlations of Global Non-Response Rates 2011 and Census 2006 Variables by Census Tracts (N = 162)

Positive Correlations (more likely ignore the NHS)	
% Population 25 years and over without high school certificate	0.555
% of Persons Receiving Government Transfer Payments	0.493
% Population Aboriginal	0.441
% Economic Famlies Prevalence of Low Income in 2005	0.438
% Single Parent Households	0.425
% Labour Force Manufacturing (trades, transport and manufacturing)	0.416
Unemployment Rate, Persons 15 and Over	0.360
% Private Dwellings Rented	0.339
% Dwellings Needing Major Repairs	0.333
% One Person Households	0.328
Total Persons Per Bedroom	0.266
% Labour Force Sales and Service	0.238
% Persons (5 years +) who did not live at the same address 5 years ago	0.238
Negative Correlations (more likely to answer the NHS)	
% Labour Force Professional	-0.432
% Population 25 years and over with a degree	-0.419
% High Income Households	-0.411
% Labour Force Managerial	-0.402
% Population South Asian	-0.323
% Population 50-64 Years of Age	-0.278
% Population British	-0.265

Note: all correlations shown are significant at the 0.01 level (2-tailed).

City of Toronto: Correlations of Global Non-Response Rates 2011 and Census 2006 Variables by Census Tracts (N = 522)

Positive Correlations (more likely ignore the NHS)	
% Dwellings Apartment Under 5 Stories	0.271
% Population Southern European	0.196
% Dwellings Constructed Before 1946	0.184
% Population Aboriginal	0.184
% Dwellings Needing Major Repairs	0.172
% Population 25 years and over without high school certificate	0.122
% Population French	0.119
Negative Correlations (more likely to answer the NHS)	
% Population Recent Immigrant (previous five years)	-0.235
% Dwellings Apartment 5+ Stories	-0.205
% Population South Asian	-0.199
% Population Immigrant	-0.175
% Population South East Asian and Filipino	-0.170
% Population Visible Minority	-0.170
% Home Language Neither English nor French	-0.152
% Population Arab and West Asian	-0.141

Note: all correlations shown are significant at the 0.01 level (2-tailed).

Census Tract Average Income Category 2010 Error, Eight CMAs
National Household Survey (NHS) Versus Taxfiler Data (TAX)

Updated Sept-17-2013. Constant 2006 census tract boundaries.

Low Income: CT Average Income is < 80% of the CMA Average

Middle Income: CT Average income >= 80% to 120% of the CMA Average

High Income: CT Average Income is >= 120% of the CMA Average

Eight CMA's			
Income Category		**Census Tracts**	
TAX	**NHS**	**#**	**%**
High	Low	2	0.1
High	Middle	79	2.5
Low	High	1	0.0
Low	Middle	117	3.8
Middle	High	51	1.6
Middle	Low	82	2.6
Total Category Difference		332	10.7
No Category Difference		2,777	89.3
Total Census Tracts		3,109	100.0

Halifax CMA			
Income Category		**Census Tracts**	
TAX	**NHS**	**#**	**%**
High	Low	0	0.0
High	Middle	3	3.5
Low	High	0	0.0
Low	Middle	1	1.2
Middle	High	2	2.4
Middle	Low	2	2.4
Total Category Difference		8	9.4
No Category Difference		77	90.6
Total Census Tracts		85	100.0

Montréal CMA			
Income Category		**Census Tracts**	
TAX	**NHS**	**#**	**%**
High	Low	1	0.1
High	Middle	18	2.1
Low	High	1	0.1
Low	Middle	23	2.7
Middle	High	14	1.6
Middle	Low	27	3.2
Total Category Difference		84	9.8
No Category Difference		772	90.2
Total Census Tracts		856	100.0

Ottawa - Gatineau CMA			
Income Category		**Census Tracts**	
TAX	**NHS**	**#**	**%**
High	Low	0	0.0
High	Middle	11	4.5
Low	High	0	0.0
Low	Middle	7	2.8
Middle	High	8	3.2
Middle	Low	3	1.2
Total Category Difference		29	11.7
No Category Difference		218	88.3
Total Census Tracts		247	100.0

Toronto CMA			
Income Category		**Census Tracts**	
TAX	**NHS**	**#**	**%**
High	Low	1	0.1
High	Middle	20	2.0
Low	High	0	0.0
Low	Middle	53	5.4
Middle	High	9	0.9
Middle	Low	25	2.5
Total Category Difference		108	10.9
No Category Difference		881	89.1
Total Census Tracts		989	100.0

Hamilton CMA			
Income Category		**Census Tracts**	
TAX	**NHS**	**#**	**%**
High	Low	0	0.0
High	Middle	3	1.9
Low	High	0	0.0
Low	Middle	8	5.0
Middle	High	2	1.2
Middle	Low	3	1.9
Total Category Difference		16	9.9
No Category Difference		145	90.1
Total Census Tracts		161	100.0

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Winnipeg CMA			
Income Category		**Census Tracts**	
TAX	**NHS**	**#**	**%**
High	Low	0	0.0
High	Middle	6	3.7
Low	High	0	0.0
Low	Middle	5	3.1
Middle	High	3	1.9
Middle	Low	4	2.5
Total Category Difference		18	11.1
No Category Difference		144	88.9
Total Census Tracts		162	100.0

Calgary CMA			
Income Category		**Census Tracts**	
TAX	**NHS**	**#**	**%**
High	Low	0	0.0
High	Middle	5	2.5
Low	High	0	0.0
Low	Middle	7	3.5
Middle	High	5	2.5
Middle	Low	4	2.0
Total Category Difference		21	10.4
No Category Difference		181	89.6
Total Census Tracts		202	100.0

Vancouver CMA			
Income Category		**Census Tracts**	
TAX	**NHS**	**#**	**%**
High	Low	0	0.0
High	Middle	13	3.2
Low	High	0	0.0
Low	Middle	13	3.2
Middle	High	8	2.0
Middle	Low	14	3.4
Total Category Difference		48	11.8
No Category Difference		359	88.2
Total Census Tracts		407	100.0

City of Toronto			
Income Category		**Census Tracts**	
TAX	**NHS**	**#**	**%**
High	Low	0	0.0
High	Middle	8	1.5
Low	High	0	0.0
Low	Middle	23	4.4
Middle	High	1	0.2
Middle	Low	13	2.5
Total Category Difference		45	8.6
No Category Difference		479	91.4
Total Census Tracts		524	100.0