Worthless: The 2011 National Household Survey

David Hulchanski & Richard Maaranen

Neighbourhood Change Research Partnership

University of Toronto

7 November 2014

This is an extended version of a presentation made at the September 2014 Forum Enforced Ignorance, hosted by Scientists for the Right to Know
IMPOSED IGNORANCE

On what evidence does Ottawa base its policies?
A panel discussion moderated by Carol Goar

DON’T MISS THIS PUBLIC FORUM

MUNIR SHEIKH
School of Public Policy, University of Calgary, Former Chief Statistician of Canada, and Former Deputy Minister of Labour

MEL CAPPE, O.C.
School of Public Policy & Governance, University of Toronto and Former Clerk of the Privy Council and Secretary to the Cabinet

J. DAVID HULCHANSKI
Faculty of Social Work, University of Toronto and Dr. Chow Yee Ching Chair in Housing

Tue. Sept. 30, 2014 6:00PM - 8:00PM
Campbell Conference Facility, Munk School of Global Affairs, University of Toronto
To view a webcast of the Forum:
https://hosting2.desire2learn.com/MUNK/1/Watch/571.aspx

Toronto Star:
“Scientists rail against imposed ignorance: A group of Toronto scientists makes a successful foray into the realm of public advocacy”
Carol Goar, columnist, Toronto Star, October 2, 2014
http://www.thestar.com/opinion/commentary/2014/10/02/scientists_rail_against_imposed_ignorance_goar.html
October 2013 op-ed in *The Globe and Mail*

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

DAVID HULCHANSKI, ROBERT MURDIE, ALAN WALKS AND LARRY BOURNE

Contributed to The Globe and Mail
Published Friday, Oct. 04 2013, 1:38 PM EDT

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.
Op-ed, last paragraph ...

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It should be withdrawn.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 NHS.
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.

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.
Purpose of a Census

• Gold standard for data to reflect “reality” of what is being measured.

• Census gold standard needed for four reasons:
  1. Importance of data quality for variables being measured (e.g. head count, languages);
  2. Anchor for adjusting results of surveys to better reflect “reality”;
  3. Snapshots at different intervals how reality itself may have shifted; and
  4. Only way to get reasonable counts of small populations and small areas.

• Voluntary census—or survey—cannot and does not achieve these objectives.

• Evidence now available from the Canadian experience of the 2011 National Household Survey confirms this.

-- Munir Sheikh, from his Imposed Ignorance Forum presentation, September 2014.
Should anyone use anything in the 2011 NHS?

Two key national income trends — the growing gap between the rich and the poor and the progressively smaller middle-income group — have major social implications at the neighbourhood level that we are only beginning to identify, understand, and explain.
## Income Inequality Between Census Tracts Eight Census Metropolitan Areas

Percentage Differences in the Gini Between Census 2006, NHS 2011 and Taxfiler 2010 data

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Calgary</td>
<td>0.213</td>
<td>0.187</td>
<td>-12.4%</td>
<td>0.187</td>
<td>0.197</td>
<td>-5.2%</td>
</tr>
<tr>
<td>Halifax</td>
<td>0.123</td>
<td>0.118</td>
<td>-4.1%</td>
<td>0.118</td>
<td>0.118</td>
<td>0.3%</td>
</tr>
<tr>
<td>Hamilton</td>
<td>0.155</td>
<td>0.148</td>
<td>-4.8%</td>
<td>0.148</td>
<td>0.155</td>
<td>-4.8%</td>
</tr>
<tr>
<td>Montréal</td>
<td>0.170</td>
<td>0.162</td>
<td>-4.9%</td>
<td>0.162</td>
<td>0.172</td>
<td>-5.9%</td>
</tr>
<tr>
<td>Ottawa - Gatineau</td>
<td>0.138</td>
<td>0.128</td>
<td>-7.3%</td>
<td>0.128</td>
<td>0.132</td>
<td>-2.8%</td>
</tr>
<tr>
<td><strong>Toronto</strong></td>
<td><strong>0.219</strong></td>
<td><strong>0.193</strong></td>
<td><strong>-12.0%</strong></td>
<td><strong>0.193</strong></td>
<td><strong>0.219</strong></td>
<td><strong>-13.6%</strong></td>
</tr>
<tr>
<td>Vancouver</td>
<td>0.169</td>
<td>0.160</td>
<td>-5.3%</td>
<td>0.160</td>
<td>0.166</td>
<td>-3.4%</td>
</tr>
<tr>
<td>Winnipeg</td>
<td>0.154</td>
<td>0.149</td>
<td>-3.6%</td>
<td>0.149</td>
<td>0.156</td>
<td>-4.8%</td>
</tr>
</tbody>
</table>
### Average Individual Income 2010

**NHS versus Taxfiler Data**

<table>
<thead>
<tr>
<th>Census Metropolitan Area</th>
<th>NHS Global Non-Response Rate</th>
<th>Average Income $</th>
<th>Difference $</th>
<th>Difference %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calgary</td>
<td>23.6%</td>
<td>$56,600</td>
<td>$59,104</td>
<td>-$2,504</td>
</tr>
<tr>
<td>Kingston</td>
<td>28.4%</td>
<td>$41,118</td>
<td>$42,632</td>
<td>-$1,514</td>
</tr>
<tr>
<td>Halifax</td>
<td>24.9%</td>
<td>$40,453</td>
<td>$41,877</td>
<td>-$1,424</td>
</tr>
<tr>
<td>Victoria</td>
<td>22.7%</td>
<td>$41,952</td>
<td>$43,427</td>
<td>-$1,475</td>
</tr>
<tr>
<td>Edmonton</td>
<td>25.4%</td>
<td>$49,266</td>
<td>$50,993</td>
<td>-$1,727</td>
</tr>
<tr>
<td>Winnipeg</td>
<td>21.9%</td>
<td>$38,806</td>
<td>$40,019</td>
<td>-$1,213</td>
</tr>
<tr>
<td>Thunder Bay</td>
<td>23.2%</td>
<td>$39,097</td>
<td>$40,317</td>
<td>-$1,220</td>
</tr>
<tr>
<td>St. John's</td>
<td>29.2%</td>
<td>$41,515</td>
<td>$42,731</td>
<td>-$1,216</td>
</tr>
<tr>
<td>Hamilton</td>
<td>26.7%</td>
<td>$42,543</td>
<td>$42,970</td>
<td>-$427</td>
</tr>
<tr>
<td>Regina</td>
<td>23.5%</td>
<td>$46,451</td>
<td>$46,857</td>
<td>-$406</td>
</tr>
<tr>
<td>Barrie</td>
<td>26.2%</td>
<td>$40,537</td>
<td>$40,827</td>
<td>-$290</td>
</tr>
<tr>
<td>Vancouver</td>
<td>24.4%</td>
<td>$41,031</td>
<td>$41,246</td>
<td>-$215</td>
</tr>
<tr>
<td>Kitchener - Cambridge - Waterloo</td>
<td>23.4%</td>
<td>$42,189</td>
<td>$42,277</td>
<td>-$88</td>
</tr>
<tr>
<td>Brantford</td>
<td>28.0%</td>
<td>$37,402</td>
<td>$37,453</td>
<td>-$51</td>
</tr>
<tr>
<td>Oshawa</td>
<td>28.3%</td>
<td>$43,652</td>
<td>$43,656</td>
<td>-$4</td>
</tr>
<tr>
<td>Abbotsford - Mission</td>
<td>31.5%</td>
<td>$35,602</td>
<td>$35,521</td>
<td>$81</td>
</tr>
<tr>
<td>Toronto</td>
<td>25.4%</td>
<td>$44,462</td>
<td>$44,271</td>
<td>$191</td>
</tr>
</tbody>
</table>
## Average Individual Income, 1970-2010

**Six CMAs: Census, CRA, NHS**

Census Income 1970 to 2005 is for persons 15 and over, from all sources, before tax. CRA income 2007, 2010 is from Canada Revenue Agency for all taxfilers, from all sources, before-tax. NHS income 2010 is from the National Household Survey, persons 15 and over, from all sources, before-tax. Income adjusted to constant 2010 dollars based on Bank of Canada national inflation rates.

### Average Individual Income, Unadjusted Dollars

<table>
<thead>
<tr>
<th>Income Year</th>
<th>Halifax</th>
<th>Montreal</th>
<th>Toronto</th>
<th>Winnipeg</th>
<th>Calgary</th>
<th>Vancouver</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>$5,249</td>
<td>$5,043</td>
<td>$5,756</td>
<td>$4,902</td>
<td>$5,637</td>
<td>$5,220</td>
</tr>
<tr>
<td>1980</td>
<td>$12,573</td>
<td>$13,117</td>
<td>$14,384</td>
<td>$12,468</td>
<td>$15,794</td>
<td>$14,746</td>
</tr>
<tr>
<td>1990</td>
<td>$24,254</td>
<td>$23,940</td>
<td>$28,817</td>
<td>$22,671</td>
<td>$27,069</td>
<td>$26,159</td>
</tr>
<tr>
<td>1995</td>
<td>$25,135</td>
<td>$24,625</td>
<td>$28,980</td>
<td>$24,184</td>
<td>$28,963</td>
<td>$27,450</td>
</tr>
<tr>
<td>2000</td>
<td>$29,586</td>
<td>$29,199</td>
<td>$35,618</td>
<td>$28,560</td>
<td>$35,693</td>
<td>$31,421</td>
</tr>
<tr>
<td>2005</td>
<td>$35,031</td>
<td>$34,196</td>
<td>$40,704</td>
<td>$33,838</td>
<td>$48,878</td>
<td>$36,123</td>
</tr>
<tr>
<td><strong>CRA 2007</strong></td>
<td><strong>$39,083</strong></td>
<td><strong>$37,400</strong></td>
<td><strong>$44,545</strong></td>
<td><strong>$37,846</strong></td>
<td><strong>$59,740</strong></td>
<td><strong>$40,782</strong></td>
</tr>
<tr>
<td><strong>CRA 2010</strong></td>
<td><strong>$41,877</strong></td>
<td><strong>$38,940</strong></td>
<td><strong>$44,271</strong></td>
<td><strong>$40,019</strong></td>
<td><strong>$59,104</strong></td>
<td><strong>$41,246</strong></td>
</tr>
<tr>
<td><strong>NHS 2010</strong></td>
<td><strong>$40,453</strong></td>
<td><strong>$38,281</strong></td>
<td><strong>$44,462</strong></td>
<td><strong>$38,806</strong></td>
<td><strong>$56,600</strong></td>
<td><strong>$41,031</strong></td>
</tr>
</tbody>
</table>

### Average Individual Income, Constant 2010 Dollars

<table>
<thead>
<tr>
<th>Income Year</th>
<th>Halifax</th>
<th>Montreal</th>
<th>Toronto</th>
<th>Winnipeg</th>
<th>Calgary</th>
<th>Vancouver</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>$29,941</td>
<td>$28,765</td>
<td>$32,832</td>
<td>$27,962</td>
<td>$32,152</td>
<td>$29,774</td>
</tr>
<tr>
<td>1980</td>
<td>$32,222</td>
<td>$33,617</td>
<td>$36,854</td>
<td>$31,953</td>
<td>$40,477</td>
<td>$37,792</td>
</tr>
<tr>
<td>1990</td>
<td>$35,498</td>
<td>$35,039</td>
<td>$42,178</td>
<td>$33,183</td>
<td>$39,619</td>
<td>$38,287</td>
</tr>
<tr>
<td>1995</td>
<td>$33,349</td>
<td>$32,672</td>
<td>$38,450</td>
<td>$32,087</td>
<td>$38,428</td>
<td>$36,420</td>
</tr>
<tr>
<td>2000</td>
<td>$35,749</td>
<td>$35,281</td>
<td>$43,037</td>
<td>$34,509</td>
<td>$43,128</td>
<td>$37,966</td>
</tr>
<tr>
<td>2005</td>
<td>$37,777</td>
<td>$36,877</td>
<td>$43,895</td>
<td>$36,491</td>
<td>$52,710</td>
<td>$38,955</td>
</tr>
<tr>
<td><strong>CRA 2007</strong></td>
<td><strong>$40,835</strong></td>
<td><strong>$39,072</strong></td>
<td><strong>$46,536</strong></td>
<td><strong>$39,538</strong></td>
<td><strong>$62,410</strong></td>
<td><strong>$42,605</strong></td>
</tr>
<tr>
<td><strong>CRA 2010</strong></td>
<td><strong>$41,877</strong></td>
<td><strong>$38,940</strong></td>
<td><strong>$44,271</strong></td>
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<td><strong>$38,806</strong></td>
<td><strong>$56,600</strong></td>
<td><strong>$41,031</strong></td>
</tr>
</tbody>
</table>
1. Canada’s “Census Metropolitan Areas” (CMA)

GLOBAL NON-RESPONSE RATE (GNR)
Why is the response rate cut-off different for the Census & the NHS?

Global response rates are determined by Statistics Canada for each geographic area. Non-response rates that are too high produce a high level of error and are not released.

- **Census cut-off = 25%**: “Geographic areas with a non-response rate higher than or equal to 25% are suppressed from tabulations.”
- **NHS cut-off = 50%**: “the NHS estimates for any geographic area with a global non-response rate greater than or equal to 50% are not published”
National Household Survey 2011:
Global Non-Response Rates for Canada, Provinces & Territories

In Census 2006, no province or territory had a Global Non-response Rate above 10%. No data was released by Statistics Canada in Census 2006 for geographic areas with a global non-response rate above 25% -- a level deemed to be unreliable. In the voluntary NHS 2011, this threshold was raised to 50%.

National Household Survey 2011: Global Non-Response Rates by Census Metropolitan Area

In Census 2006, no CMA had a Global Non-response Rate above 10%. No data was released by Statistics Canada in Census 2006 for geographic areas with a global non-response rate above 25% -- a level deemed to be unreliable. In the voluntary NHS 2011, this threshold was raised to 50%.

2.

Individual Income: The one NHS variable that we have a reliable alternate source (from the Canada Revenue Agency) to compare the NHS with

2010 NHS INCOME & 2010 INCOME TAX FILER DATA: A COMPARISON
Average Individual Income, City of Toronto, 2010 NHS

Source: Statistics Canada, National Household Survey 2011

NOTES:

- Average Individual Income is for persons 15 and over and includes income from all sources, before-tax. Census tract boundaries are for 2006.

WARNING: The National Household Survey (NHS) is a voluntary survey where the sample responses are weighted in attempt to be representative of the total population. However, due to high non-response rates (small sample size) the accuracy and reliability of the weighted data is highly in doubt. The characteristics of a small non-random minority do not adequately represent the characteristics of everyone.

Costs:

- Very High - 140% to 532% (85 CTs, 16% of the City)
- High - 120% to 140% (23 CTs, 4% of the City)
- Middle Income - 80% to 120% (166 CTs, 32% of the City)
- Low - 60% to 80% (192 CTs, 37% of the City)
- Very Low - 41% to 60% (58 CTs, 11% of the City)
- Not Available

Contact: david.hulchanski@utoronto.ca
Average Individual Income, City of Toronto, 2010 CRA

Census Tract Average Individual Income compared to the Toronto Census Metropolitan Area Average of $44,271

- Very High - 140% to 627% (85 CTs, 16% of the City)
- High - 120% to 140% (31 CTs, 6% of the City)
- Middle Income - 80% to 120% (151 CTs, 29% of the City)
- Low - 60% to 80% (188 CTs, 36% of the City)
- Very Low - 34% to 60% (72 CTs, 14% of the City)
- Not Available

Source: Canada Revenue Agency, Taxfiler Data, 2010
Notes:
(1) Census tract boundaries are for 2006.
(2) Average Individual Income is for persons 15 and over and includes income from all sources, before-tax income for 2010 based on all taxfilers for census tracts 2006 boundaries.

Contact: david.hulchanski@utoronto.ca
Census Tract Average Income 2010:
National Household Survey Versus Taxfiler Data, West Central Toronto

Toronto Taxfiler Average

NHS Average Income

Census tracts are sorted by Taxfiler average income, lowest to highest. NHS income is for persons 15 and over before-tax. Taxfiler income is for all taxfilers before-tax.

The NHS incomes are 7% higher on average than Taxfiler incomes for CTs in West Central Toronto.

NHS income is 7% higher on average
Census Tract Average Income 2010:
National Household Survey Versus Taxfiler Data, North Etobicoke

NHS is 4% Higher
NHS is 9% Higher
NHS is 10% Higher
NHS is 14% Higher
NHS is 17% Higher
NHS is 5% lower

Census tracts are sorted by Taxfiler average income, lowest to highest. NHS income is for persons 15 and over before-tax. Taxfiler income is for all taxfilers before-tax.

The NHS incomes are 4% higher on average than Taxfiler incomes for CTs in North Etobicoke.
Income Category Change in 332 (10.7%) Census Tracts when NHS Average Individual Incomes are Compared with Taxfiler Income Data for 8 Metropolitan Areas, 2010

Income category change: In 332 census tracts out of 3,109 (10.7%), the NHS result is different from that of the Canada Revenue Agency's Taxfiler Data (average individual incomes by census tract).

Notes: The eight Census Metropolitan Areas included are Halifax, Montréal, Ottawa - Gatineau, Toronto, Hamilton, Winnipeg, Calgary and Vancouver. Data analyzed for constant census tract 2006 boundaries. Average individual income from all sources before tax. Low income is CT average below 80% of the CMA average; middle income is 80% to 120%; high income is above 120%
3.

Average Individual Income trends over 40 years at the census tract level for Toronto, Montréal, Vancouver

CENSUS, CRA, AND NHS INCOME COMPARISONS: CMA LEVEL, 1970-2010
Cities: 1970 to 2010

Average individual income
• 1970 to 2006 from the census
• 2010 from the CRA (taxfiler data) compared to the NHS

For
• City of Toronto
• City of Montréal
• City of Vancouver
Neighbourhood Income & Population,
City of Toronto, 1970-2010, with 2010 NHS Comparison

Census Tract Average Income compared to the CMA Average
- High Income (More than 20% Above)
- Middle Income (Within 20%)
- Low Income (More than 20% Below)

Income Definition Notes:
Individual income is for persons 15 and over, from all sources, before-tax. Census tract boundaries correspond to those that existed in each census year. Income for 2010 is based on all taxfilers for 2006 CT boundaries.
Neighbourhood Income & Population, Island of Montréal, 1970-2010, with 2010 NHS Comparison

Census Tract Average Income compared to the CMA Average
- High Income (More than 20% Above)
- Middle Income (Within 20%)
- Low Income (More than 20% Below)

Total Population (thousands)

- 1970: 1,269 (65%), 349 (18%), 538 (31%)
- 1980: 968 (55%), 578 (33%), 538 (31%)
- 1990: 935 (53%), 578 (33%), 538 (31%)
- 1995: 810 (46%), 675 (38%), 538 (31%)
- 2000: 864 (48%), 675 (38%), 538 (31%)
- 2005: 818 (44%), 756 (41%), 538 (31%)
- 2010: 829 (44%), 753 (40%), 538 (31%)
- NHS2010: 801 (43%), 769 (41%), 538 (31%)

Income Definition Notes:
- Individual income is for persons 15 and over, from all sources, before-tax.
- Census tract boundaries correspond to those that existed in each census year.
- Income for 2010 is based on all taxfilers for 2006 CT boundaries.
Neighbourhood Income & Population, City of Vancouver, 1970-2010, with 2010 NHS Comparison

Census Tract Average Income compared to the CMA Average
- High Income (More than 20% Above)
- Middle Income (Within 20%)
- Low Income (More than 20% Below)

Income Definition Notes:
Individual income is for persons 15 and over, from all sources, before-tax. Census tract boundaries correspond to those that existed in each census year. Income for 2010 is based on all taxfilers for 2006 CT boundaries.
CMAs: 1970 to 2010

(Census Metropolitan Areas)

Average individual income

• 1970 to 2006 from the census
• 2010 from the CRA (taxfiler data) compared to the NHS

For

• Toronto CMA
• Montréal CMA
• Vancouver CMA
Neighbourhood Income & Population, Toronto CMA, 1970-2010, with 2010 NHS Comparison

Census Tract Average Income compared to the CMA Average
- High Income (More than 20% Above)
- Middle Income (Within 20%)
- Low Income (More than 20% Below)

Income Definition Notes:
Individual income is for persons 15 and over, from all sources, before-tax. Census tract boundaries correspond to those that existed in each census year. Income for 2010 is based on all taxfilers for 2006 CT boundaries.
Neighbourhood Income & Population, Montréal CMA, 1970-2010, with 2010 NHS Comparison

Census Tract Average Income compared to the CMA Average
- High Income (More than 20% Above)
- Middle Income (Within 20%)
- Low Income (More than 20% Below)

Total Population (thousands)

Income Definition Notes:
Individual income is for persons 15 and over, from all sources, before-tax. Census tract boundaries correspond to those that existed in each census year. Income for 2010 is based on all tax filers for 2006 C.F. boundaries.
Neighbourhood Income & Population, Vancouver CMA, 1970-2010, with 2010 NHS Comparison

Census Tract Average Income compared to the CMA Average

- High Income (More than 20% Above)
- Middle Income (Within 20%)
- Low Income (More than 20% Below)

Income Definition Notes:
- Individual income is for persons 15 and over, from all sources, before-tax.
- Census tract boundaries correspond to those that existed in each census year.
- Income for 2010 is based on all taxfilers for 2006 CT boundaries.
# ANALYSIS #1

Does the Global Non-response Rate Matter in the NHS?

Global Non-response Rate (GNR) 2011 NHS

<table>
<thead>
<tr>
<th>CITY</th>
<th>CMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toronto</td>
<td>26.5%</td>
</tr>
<tr>
<td>Montreal</td>
<td>20.7%</td>
</tr>
<tr>
<td>Vancouver</td>
<td>24.5%</td>
</tr>
</tbody>
</table>

Neighbourhood Change Research Partnership, University of Toronto

November 2014
## ANALYSIS #2

Does Population Size Matter with the NHS?

<table>
<thead>
<tr>
<th>City</th>
<th>Population 2011 (million)</th>
<th>City as % of CMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toronto</td>
<td>2.62</td>
<td>47%</td>
</tr>
<tr>
<td>Montreal</td>
<td>1.85</td>
<td>49%</td>
</tr>
<tr>
<td>Vancouver</td>
<td>0.60</td>
<td>27%</td>
</tr>
</tbody>
</table>
ANALYSIS #3

Toronto: No Match

Toronto: a very large City & CMA population and the lowest NHS global non-response rate (GNR) among major metropolitan areas. Therefore:

NHS & CRA income groups at both City level and CMA level do not match very well

• NHS exaggerates number of middle income CTs
• The high non-response rate is likely the main reason
ANALYSIS #4

Vancouver: No Match

Vancouver: a small City & not very large CMA population and a high NHS global non-response rate (GNR). Therefore:

NHS & CRA income groups at both CMA level and City level do not match very well

• NHS vastly exaggerates number of middle income CTs at the City level
• It does the same at the CMA level but to a lesser degree.
ANALYSIS #5

Montréal “Wins” (sort of)

Montréal: a large City & CMA population and the lowest NHS global non-response rate (GNR) among major metropolitan areas. Therefore:

NHS & CRA income groups at
• CMA level match fairly well
• City level almost as well

BUT: This does not mean individual CTs in the NHS match much better than elsewhere
ANALYSIS #6

But ... Limits of Using the NHS GNR

The NHS GNR is not a good predictor of the NHS-Taxfiler income error across the 8 CMAs. There is very little evidence that higher non-response rates produce greater income measurement error. Lots of CTs have good response rates and high error or poor response rates and very little error.

This is because the non-response rates are NOT an "income non-response rate" measure but rather a GLOBAL non-response rate for the whole population that combines complete non-response (survey not answered at all) and item non-response (some individual questions were not answered). Statistics Canada did not release any "income non-response rates.”
ANALYSIS #6 (continued)

NHS Global Non-Response Rates Versus the NHS-Taxfiler Average Income Error, Census Tracts in 8 CMAs

Notes: The eight Census Metropolitan Areas included are Halifax, Montréal, Ottawa - Gatineau, Toronto, Hamilton, Winnipeg, Calgary and Vancouver. Data analyzed for constant census tract 2006 boundaries. Average individual income from all sources before tax.

36% of census tracts are under 25% non-response rates with an average income difference of 4.9%

64% of census tracts have 25% or higher non-response rates with an average income difference of 6.3%

Linear Trend Line
\[ y = 0.1487x + 1.7089 \]
\[ R^2 = 0.0188 \]
SUMMARY: Global non-response rate

Census standard:
   — Do not publish data if GNR over 25%

NHS GNR for:
   — Canada 26.1%
   — Ontario, the largest province, 27%

If Census standards had been applied, on average, NHS data would not have been published.

-- Munir Sheikh, from his *Imposed Ignorance* Forum presentation, September 2014.
4.

A case example of Toronto’s Black population, 8.3% of Toronto’s population in 2006

WHAT ABOUT VARIABLES OTHER THAN INCOME IN THE NHS?
Can we rely on the NHS to understand ‘race’ and gender issues/trends? Any issues and trends?

National Household Survey: Immigration dramatically changing makeup of Toronto and Canada
New data from the 2011 National Household Survey highlight the changes unfolding in Canadian society. Canada has 200 ethnic groups and 100 religions.

New Canadians take part in a citizenship ceremony at Queen’s Park in Toronto in this file photo. New data from Statistics Canada show that one in five in Canada is foreign-born.

ONTARIO’S GROWING GAP
The Role of Race and Gender
Sheila Block
An Example: City of Toronto’s Black Population
Unlike individual income from the Canada Revenue Agency, we have no 2010/2011 trustworthy alternate data for other variables to compare the NHS with.
City of Toronto's Black Population, Census Tract Percentages, 2006 Census

Source: Statistics Canada, Census Tract Profile Series, 2006

City of Toronto Black Population
Census 2006: 208,555 (8.3%)

Black Population as a Percentage of the Total Population
- 15% to 44%
- 10% to 14.9%
- 5% to 9.9%
- Less than 5%
- Not Available

City of Toronto Priority Neighbourhood (2005)
City of Toronto's Black Population, Census Tract Percentages, 2011 NHS

Black Population as a Percentage of the Total Population by Census Tracts
- 15% to 47% (86 CTs in 2011, 96% same as 2006)
- 10% to 14.9% (82 CTs in 2011, 85% same as 2006)
- 5% to 9.9% (109 CTs in 2011, 79% same as 2006)
- Less than 5% (252 CTs in 2011, 94% same as 2006)


Toronto's Black Population
- 2011 NHS: 218,160 (8.3%)
- 2006 Census: 208,555 (6.3%)
- 2001 Census: 204,075 (6.2%)
- 1996 Census: 192,400 (6.5%)

Toronto's Non-Response Rate:
- 2011 NHS: 25.5%
- 2006 Census: 5% to 10%

WARNING: The National Household Survey (NHS) is a voluntary survey where the sample responses are weighted in attempt to be representative of the total population. However, due to high non-response rates (small sample size) the accuracy and reliability of the weighted data is highly in doubt. The characteristics of a small non-random minority do not adequately represent the characteristics of everyone.

Note: Census Tract boundaries are for 2006.

September 2014

**Difference in Black Population**

- **39%**
  - NHS is Much Higher: 15% to 120%
  - (199 CTs, 39% of the City)
- **28%**
  - NHS is Similar: Within 15%
  - (147 CTs, 28% of the City)
- **33%**
  - NHS is Lower: 15% to 100%
  - (168 CTs, 33% of the City)

**City of Toronto Black Population**

- Census 2006: 208,555
- NHS 2011: 218,160
- Difference: 9,605; +5%

Source:
(1) Statistics Canada, National Household Survey, 2011
(2) Statistics Canada, Census Tract Profile Series, 2006

Note: Census tract boundaries are held consistent to 2006 for both NHS and Census.
City of Toronto's Black Population by Census Tracts
National Household Survey 2011 Versus Census 2006

Note: Census tract boundaries are held constant to 2006.
Toronto's Black Population: Difference Between Census 2001 and 2006

Difference in Black Population
(Census 2006 - Census 2001) / Census 2001

- 37% Census 2006 is Much Higher: 15% to 700% (183 CTs, 37% of the City)
- 33% Census 2006 is Similar: Within 15% (165 CTs, 33% of the City)
- 31% Census 2006 is Lower: 15% to 100% (153 CTs, 31% of the City)
- Zero Black population in Census 2001
- Difference Not Available

City of Toronto Black Population
Census 2001: 204,075
Census 2006: 208,555
Difference: 4,480; +2%

Source: Statistics Canada, Census Tract Profile Series, 2001 and 2006

Note: Census tract boundaries are held constant to 2001 for both years.
City of Toronto's Black Population by Census Tracts
Census 2006 Versus Census 2001

Note: Census tract boundaries are held constant to 2001.
What do we learn from the 2001 to 2010 comparisons?

• There is a great deal of change in the number of Black people in many census tracts over a five year period.

• The NHS is not showing an unusual amount of redistribution of where Black people live (the 2001-2006 comparison and 2006-2011 NHS comparison maps and scatterplot graphs).

• Unlike the census in 2001 and 2006, however, we have no reliable estimate of how many Black people actually live in any census tract in 2011.

• In a voluntary survey it is impossible to compute the response rate for any specific sub-group in the population so we have no idea how good (trustworthy, representative of reality) the data is.
6.

A gap in the post-war

SUMMARY: NHS UNDERMINES THE SCIENTIFIC KNOWLEDGE WE HAVE ABOUT OURSELVES
In summary, from our op-ed

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.”
But, 2011 NHS is being used and reported as “facts”

"2011 Quick Facts" Facts? Really?
What is a “fact”

“Something that has really occurred or is actually the case”

“a particular truth known by actual observation”

“as opposed to what is merely inferred, ... a conjecture or fiction”

Does the 2011 NHS contain any facts?
The NHS is of no scientific value.

The NHS undermines Canadian science.

The 2016 census must be restored to the non-politicized, non-partisan scientific methodology used prior to the 2011 NHS.
APPENDIX

CMA Scatter Plot Graphs

2010 NHS & CRA INDIVIDUAL INCOME COMPARED FOR 8 CMAS
Background: Population of the six CMAs

### Total Population, Six Census Metropolitan Areas 1971-2011

<table>
<thead>
<tr>
<th>Census Year</th>
<th>Halifax</th>
<th>Montréal</th>
<th>Toronto</th>
<th>Winnipeg</th>
<th>Calgary</th>
<th>Vancouver</th>
<th>Total 6 CMAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>222,650</td>
<td>2,743,175</td>
<td>2,627,980</td>
<td>540,245</td>
<td>403,300</td>
<td>1,082,280</td>
<td>7,396,980</td>
</tr>
<tr>
<td>1981</td>
<td>277,727</td>
<td>2,828,349</td>
<td>2,998,947</td>
<td>584,842</td>
<td>592,743</td>
<td>1,268,183</td>
<td>8,273,064</td>
</tr>
<tr>
<td>1996</td>
<td>332,518</td>
<td>3,326,510</td>
<td>4,263,757</td>
<td>667,209</td>
<td>821,628</td>
<td>1,831,665</td>
<td>10,910,769</td>
</tr>
<tr>
<td>2001</td>
<td>359,183</td>
<td>3,426,350</td>
<td>4,682,897</td>
<td>671,274</td>
<td>951,395</td>
<td>1,986,965</td>
<td>11,718,881</td>
</tr>
<tr>
<td>2006</td>
<td>372,858</td>
<td>3,635,571</td>
<td>5,113,149</td>
<td>694,668</td>
<td>1,079,310</td>
<td>2,116,581</td>
<td>12,639,279</td>
</tr>
<tr>
<td>2011</td>
<td>390,328</td>
<td>3,824,221</td>
<td>5,583,064</td>
<td>730,018</td>
<td>1,214,839</td>
<td>2,313,328</td>
<td>13,665,470</td>
</tr>
<tr>
<td>Change 71-11</td>
<td>167,678</td>
<td>1,081,046</td>
<td>2,955,084</td>
<td>189,773</td>
<td>811,539</td>
<td>1,231,048</td>
<td>6,268,490</td>
</tr>
<tr>
<td>% Change 71-11</td>
<td>75%</td>
<td>39%</td>
<td>112%</td>
<td>35%</td>
<td>201%</td>
<td>114%</td>
<td>85%</td>
</tr>
</tbody>
</table>

Source: Statistics Canada, Census 1971-2011
NHS & CRA Individual Income at Census Tract Level, 8 CMAs

**METHOD**

- A scatter plot of average individual incomes indicating how close or how different the NHS is from the known trustworthy CRA tax filer data at various income levels
- If the NHS income is the same as the CRA income in a census tract, the dot will be on the black diagonal line.
- Any dots not on the black line means the NHS and CRA income for that census tract does not match
- Dots below the black line indicates the NHS is reporting higher incomes than the CRA; dots above the black line indicate the NHS is reporting lower incomes
- The angle of the red “Linear Trend Line” summarizes the overall bias that the NHS reports. The red and black lines should be the same (on top of one another) if the NHS reported accurate census tract individual incomes (i.e., equal to the CRA).
OBSERVATIONS

• For the 8 CMAs taken together as one group the NHS is reporting, on average, lower incomes than expected
• Each individual CMA is unique in how similar or different the NHS is compared to the CRA (there is no significant pattern among CMAs)
• Most of the CMAs show the NHS reporting lower incomes on average but by very different amounts, however
  – for Vancouver NHS incomes are higher than the CRA;
  – for Calgary the NHS and CRA on average is similar (the black line and red line almost match) because the distribution of the dots above/below the black line balance each other out so the red line aligns with the black line. This ‘accidental’ average does not mean the CRA and the NHS is the same.
Census Tract Average Income 2010:
National Household Survey Versus Taxfiler Data, Eight CMAs

Note: N = 3,109, census 2006 boundaries.

Source: Statistics Canada, National Household Survey 2011:
Revenue Canada Taxfiler Data 2010
Census Tract Average Income 2010:
National Household Survey Versus Taxfiler Data, Halifax CMA

Line of Equivalence
\[ y = x \]
\[ R^2 = 1 \]

Linear Trend Line
\[ y = 0.9302x + 4493.7 \]
\[ R^2 = 0.8016 \]

Note: N = 85, census 2006 boundaries.

Source: Statistics Canada,
National Household Survey 2011:
Revenue Canada Taxfiler Data 2010
Census Tract Average Income 2010:
National Household Survey Versus Taxfiler Data, Montréal CMA

$250,000

$200,000

$150,000

$100,000

$50,000

$0

$0

$50,000

$100,000

$150,000

$200,000

$250,000

Revenue Canada Taxfiler Census Tract Average Income

National Household Survey Census Tract Average Income

Linear Trend Line
\[ y = 1.0287x - 219.77 \]

\[ R^2 = 0.8819 \]

Line of Equivalence
\[ y = x \]

\[ R^2 = 1 \]

Note: \( N = 856 \), census 2006 boundaries.

Source: Statistics Canada,
National Household Survey 2011:
Revenue Canada Taxfiler Data 2010
Census Tract Average Income 2010: National Household Survey Versus Taxfiler Data, Ottawa - Gatineau CMA

Linear Trend Line
y = 1.0311x - 850.35
R² = 0.9446

Line of Equivalence
y = x
R² = 1

Note: N = 247, census 2006 boundaries.

Source: Statistics Canada,
National Household Survey 2011:
Revenue Canada Taxfiler Data 2010
Census Tract Average Income 2010:
National Household Survey Versus Taxfiler Data, Toronto CMA

Linear Trend Line
\[ y = 1.127x - 5239.4 \]
\[ R^2 = 0.9352 \]

Line of Equivalence
\[ y = x \]
\[ R^2 = 1 \]

Note: \( N = 989 \), census 2006 boundaries.

Source: Statistics Canada,
National Household Survey 2011:
Revenue Canada Taxfiler Data 2010
Census Tract Average Income 2010:
National Household Survey Versus Taxfiler Data, City of Toronto

Linear Trend Line
y = 1.1507x - 5916.1
R² = 0.9459

Line of Equivalence
y = x
R² = 1

Note: N = 524, census 2006 boundaries.

Source: Statistics Canada,
National Household Survey 2011:
Revenue Canada Taxfiler Data 2010
Census Tract Average Income 2010:
National Household Survey Versus Taxfiler Data, Hamilton CMA

Line of Equivalence
y = x
R² = 1

Linear Trend Line
y = 0.9648x + 1794.3
R² = 0.9136

Note: N = 161, census 2006 boundaries.

Source: Statistics Canada,
National Household Survey 2011:
Revenue Canada Taxfiler Data 2010
Census Tract Average Income 2010:
National Household Survey Versus Taxfiler Data, Winnipeg CMA

Linear Trend Line
\[ y = 1.1127x - 2838.4 \]
\[ R^2 = 0.936 \]

Line of Equivalence
\[ y = x \]
\[ R^2 = 1 \]

Note: \( N = 162 \), census 2006 boundaries.

Source: Statistics Canada,
National Household Survey 2011:
Revenue Canada Taxfiler Data 2010
Census Tract Average Income 2010:
National Household Survey Versus Taxfiler Data, Calgary CMA

Linear Trend Line
\[ y = 0.9821x + 375.17 \]
\[ R^2 = 0.8648 \]

Line of Equivalence
\[ y = x \]
\[ R^2 = 1 \]

Note: \( N = 202 \), census 2006 boundaries.

Source: Statistics Canada,
National Household Survey 2011:
Revenue Canada Taxfiler Data 2010
Census Tract Average Income 2010:
National Household Survey Versus Taxfiler Data, Vancouver CMA

Line of Equivalence
\[ y = x \]
\[ R^2 = 1 \]

Linear Trend Line
\[ y = 0.9503x + 2336.8 \]
\[ R^2 = 0.9181 \]

Revenue Canada Taxfiler Census Tract Average Income vs. National Household Survey Census Tract Average Income

Note: N = 407, census 2006 boundaries.

Source: Statistics Canada,
National Household Survey 2011:
Revenue Canada Taxfiler Data 2010