# **Worthless:** The 2011 National Household Survey

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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



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



#### MUNIR SHEIKH

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

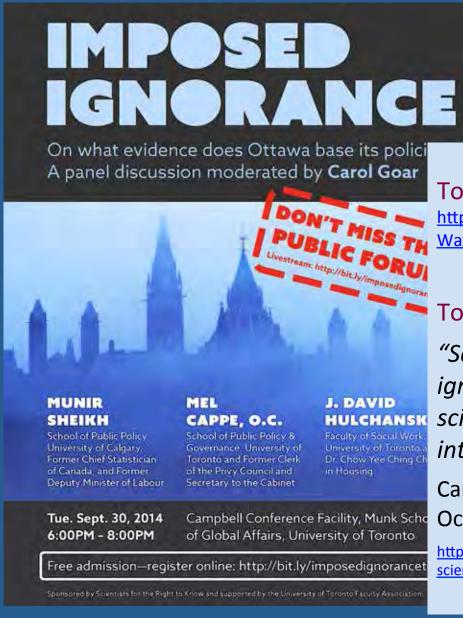
#### MEL CAPPE, O.C.

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.desire2learncapture.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



# 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

October 2013 op-ed in *The Globe* 

and Mail



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.

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

# 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

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:
  - Importance of data quality for variables being measured (e.g. head count, languages);
  - 2. Anchor for adjusting results of surveys to better reflect "reality";
  - Snapshots at different intervals how reality itself may have shifted; and
  - 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?



## NEIGHBOURHOOD CHANGE RESEARCH PARTNERSHIP

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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

Inequality: Gini Coefficient	Census	NHS	% Difference	NHS	Taxfilers	% Difference
Between Census Tracts	2005	2010	NHS - Census	2010	2010	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%
<u>Hamilton</u>	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%

# Average Individual Income 2010 NHS versus Taxfiler Data

	NHS Global	Average I	ncome \$	Differe	nce
Census Metropolitan Area	Non-Response Rate	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%
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	- <mark>0.5%</mark>
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%

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# 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.

Income	Average Indiv	idual Income,	Unadjusted	Dollars		
Year	Halifax	Montreal	Toronto	Winnipeg	Calgary	Vancouver
1970	\$5,249	\$5,043	\$5,756	\$4,902	\$5,637	\$5,220
1980	\$12,573	\$13,117	\$14,384	\$12,468	\$15,794	\$14,746
1990	\$24,254	\$23,940	\$28,817	\$22,671	\$27,069	\$26,159
1995	\$25,135	\$24,625	\$28,980	\$24,184	\$28,963	\$27,450
2000	\$29,586	\$29,199	\$35,618	\$28,560	\$35,693	\$31,421
2005	\$35,031	\$34,196	\$40,704	\$33,838	\$48,878	\$36,123
CRA 2007	\$39,088	\$37,400	\$44,545	\$37,846	\$59,740	\$40,782
CRA 2010	\$41,877	\$38,940	\$44,271	\$40,019	\$59,104	\$41,246
NHS 2010	\$40,453	\$38,281	\$44,462	\$38,806	\$56,600	\$41,031

Income	Average Indiv	idual Income,	Constant 20	10 Dollars		
Year	Halifax	Montreal	Toronto	Winnipeg	Calgary	Vancouver
1970	\$29,941	\$28,765	\$32,832	\$27,962	\$32,152	\$29,774
1980	\$32,222	\$33,617	\$36,864	\$31,953	\$40,477	\$37,792
1990	\$35,498	\$35,039	\$42,178	\$33,183	\$39,619	\$38,287
1995	\$33,349	\$32,672	\$38,450	\$32,087	\$38,428	\$36,420
2000	\$35,749	\$35,281	\$43,037	\$34,509	\$43,128	\$37,966
2005	\$37,777	\$36,877	\$43,895	\$36,491	\$52,710	\$38,955
CRA 2007	\$40,835	\$39,072	\$46,536	\$39,538	\$62,410	\$42,605
CRA 2010	\$41,877	\$38,940	\$44,271	\$40,019	\$59,104	\$41,246
NHS 2010	\$40,453	\$38,281	\$44,462	\$38,806	\$56,600	\$41,031

1.

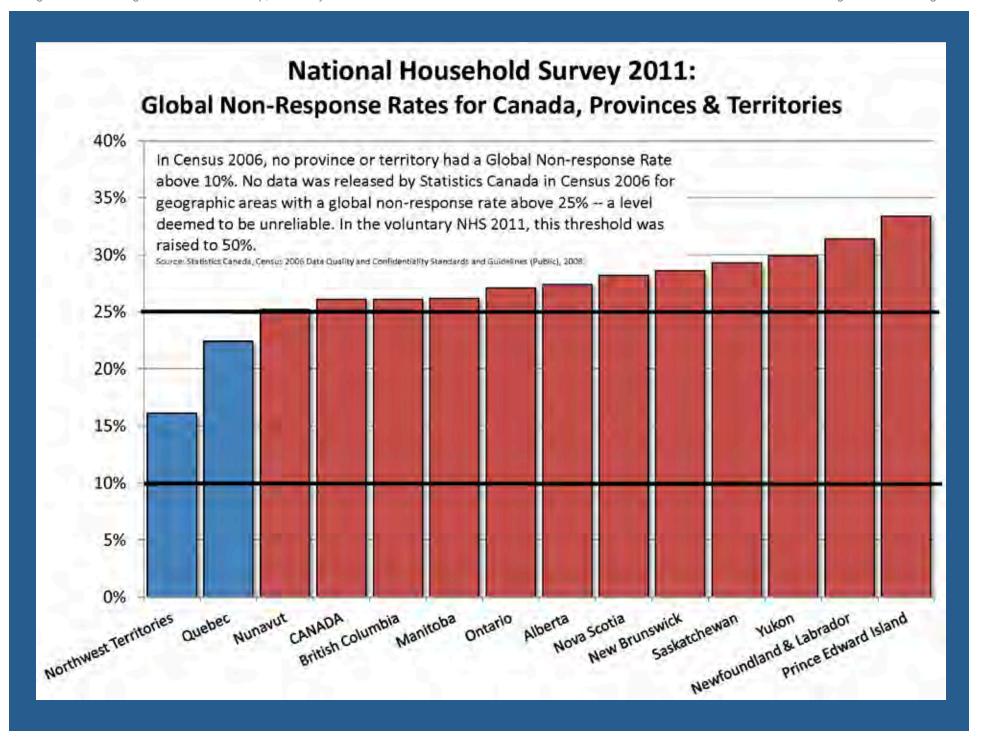
Canada's "Census Metropolitan Areas" (CMA)

**GLOBAL NON-RESPONSE RATE (GNR)** 

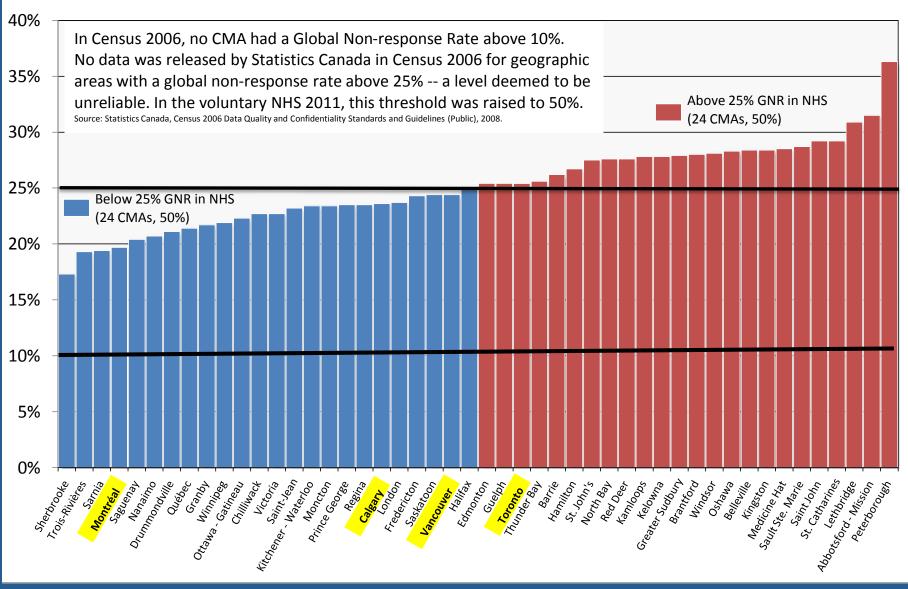
# Why is the response rate cut-off different for the Census & the NHS?

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 nonresponse 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"





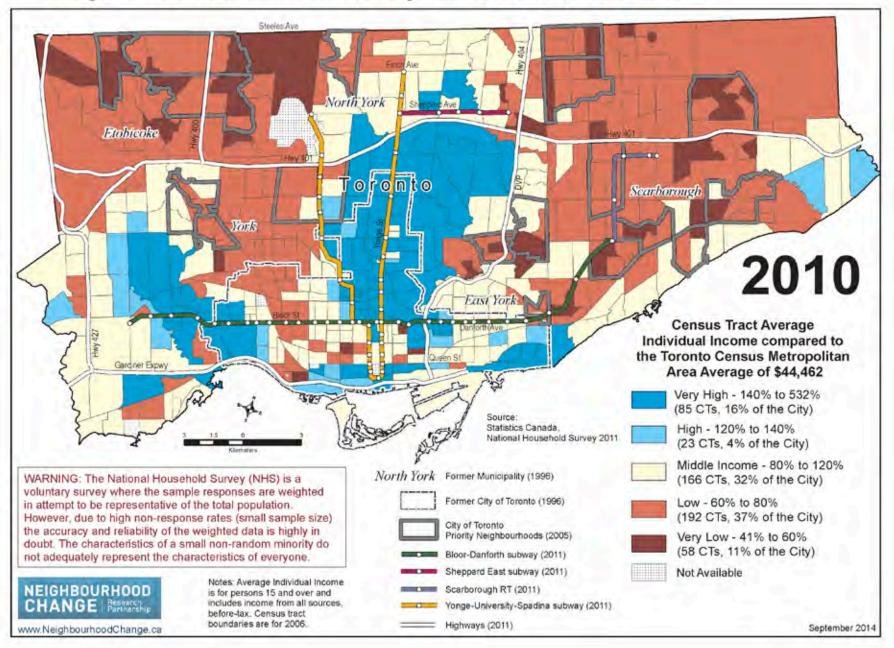


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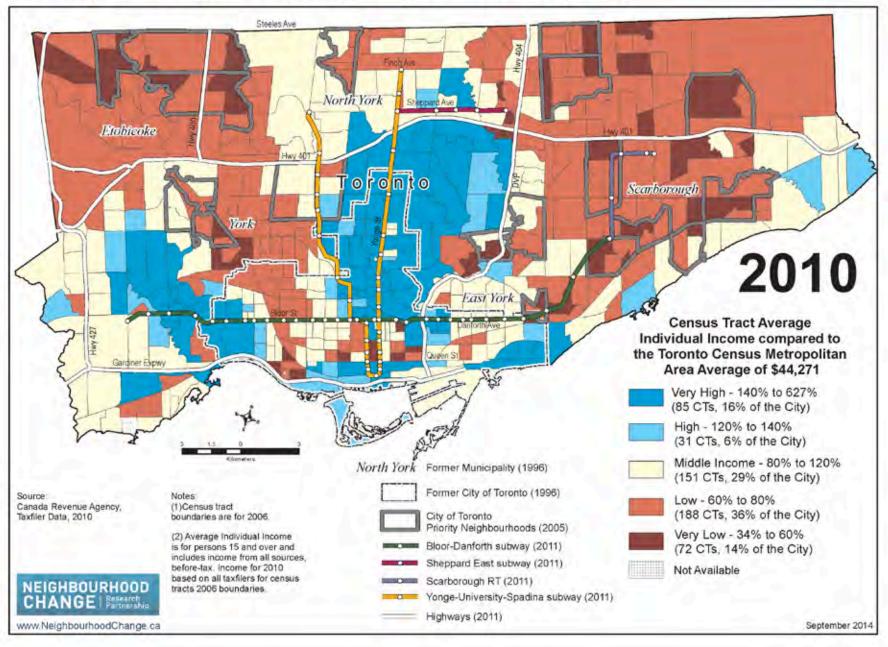
Individual Income: The one NHS variable that we have a reliable alternate source (from the Canada Revenue Agency) to compare the NHS with

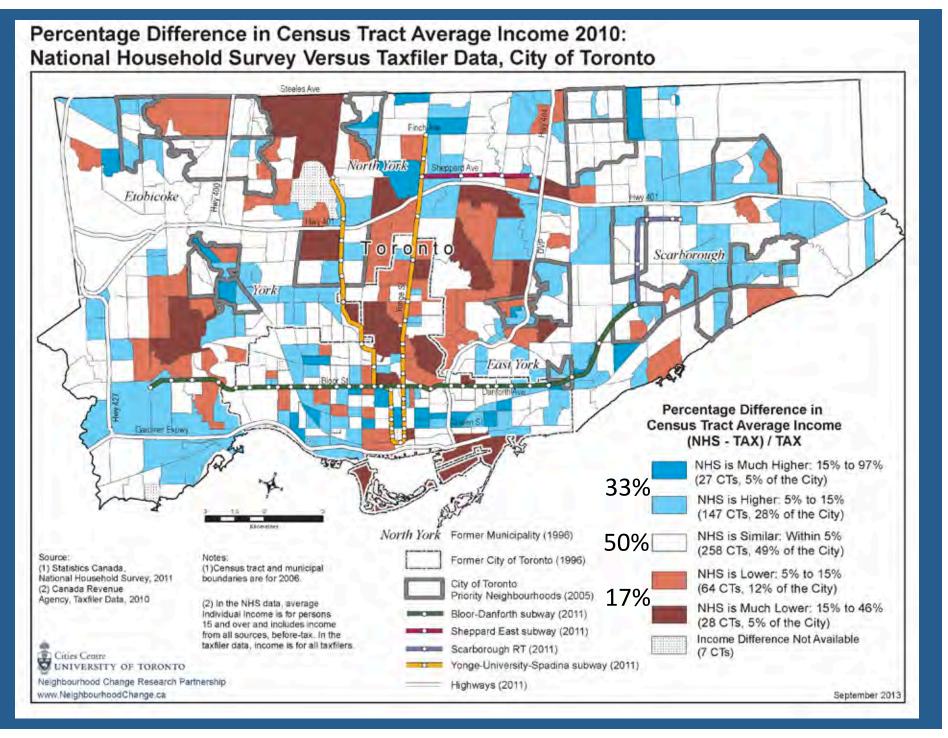
2010 NHS INCOME & 2010 INCOME TAX FILER DATA: A COMPARISON

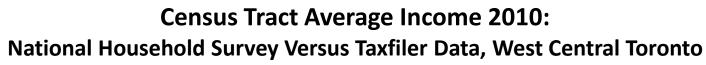
#### Average Individual Income, City of Toronto, 2010 NHS

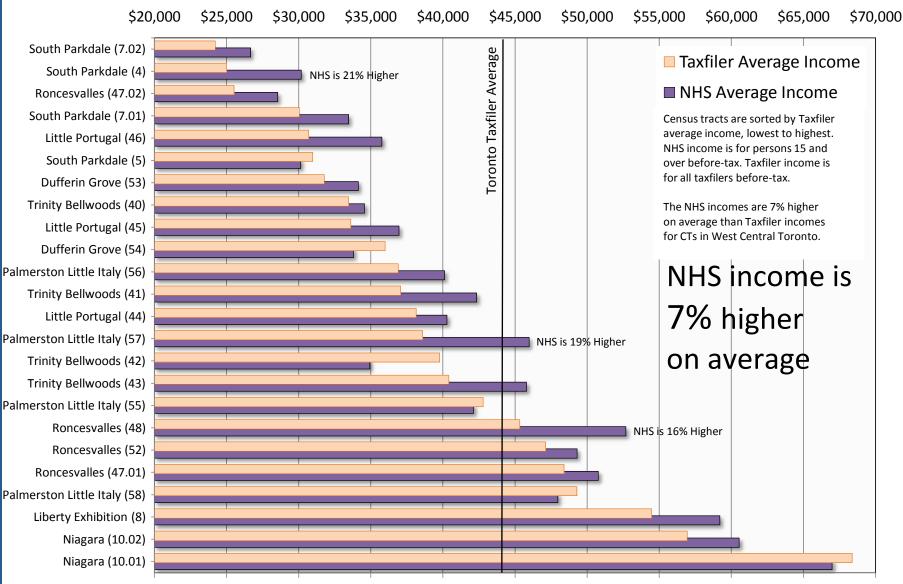


#### Average Individual Income, City of Toronto, 2010 CRA

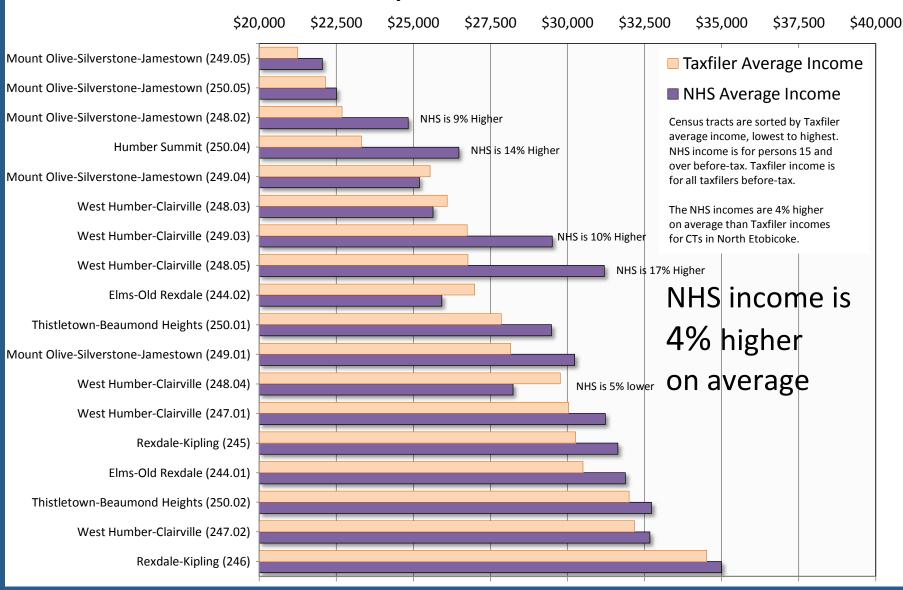


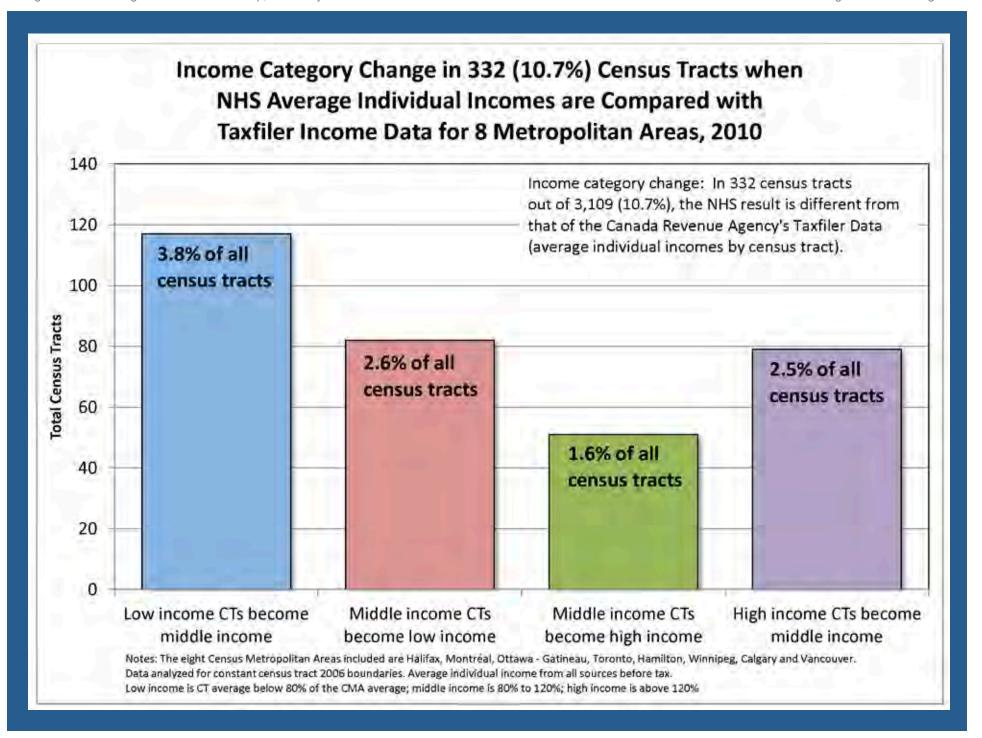












3.

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

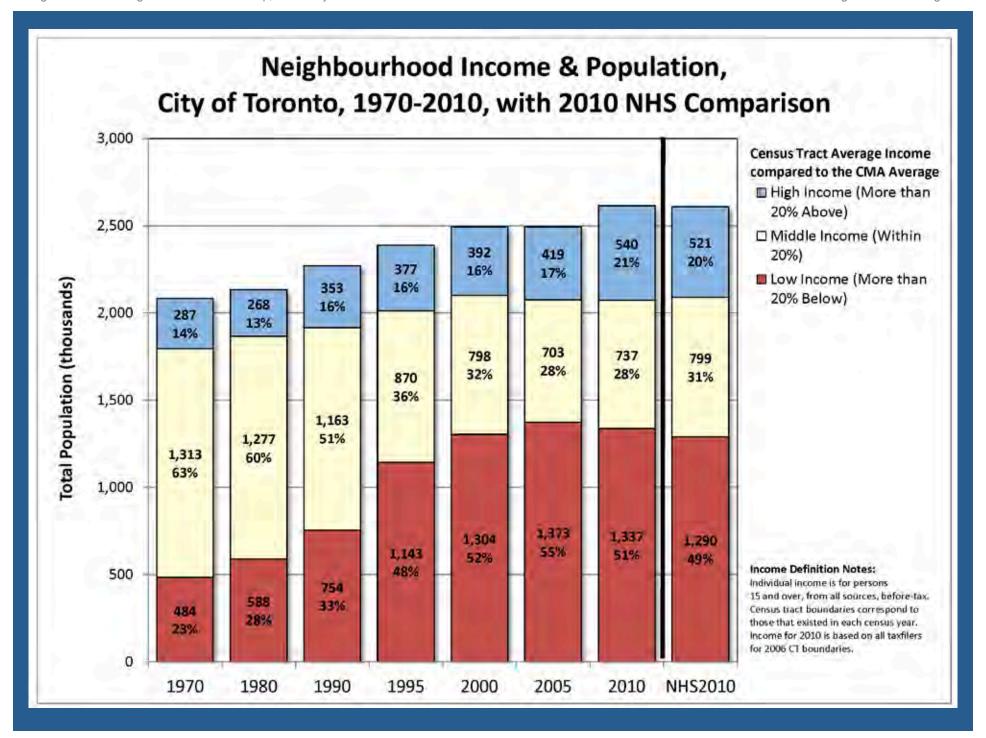
## Cities: 1970 to 2010

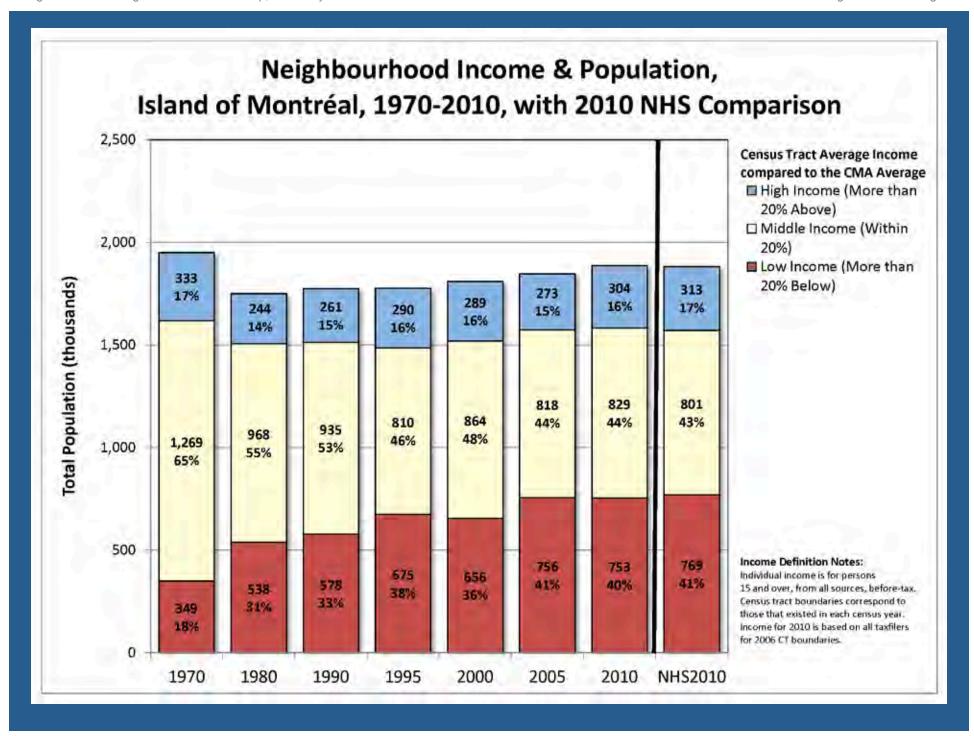
## Average individual income

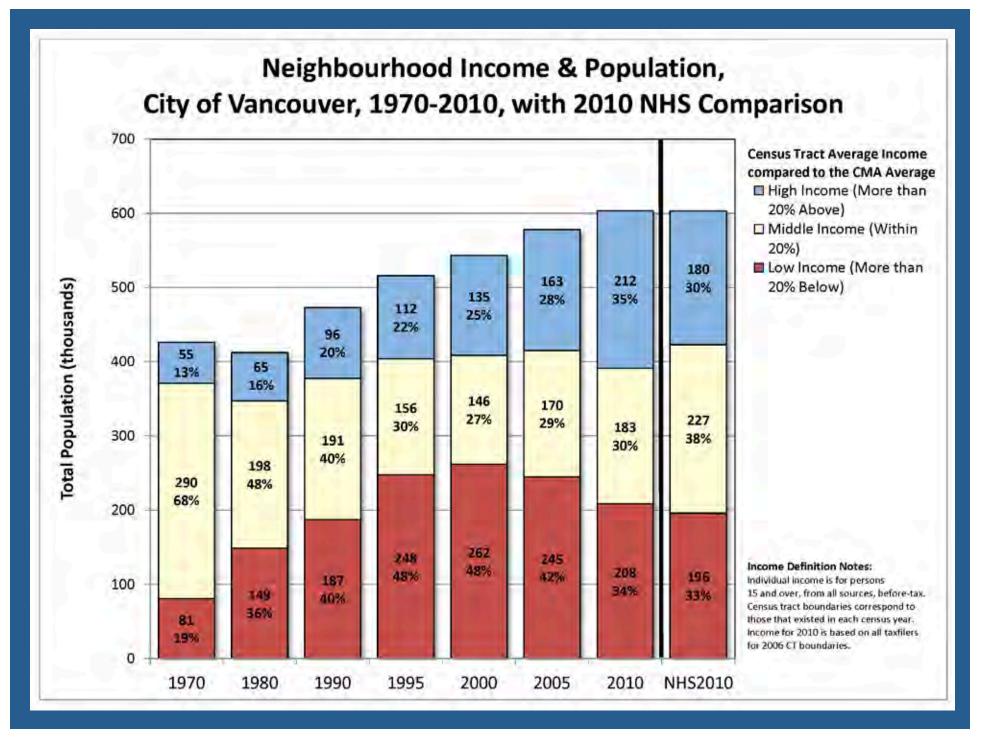
- 1970 to 2006 from the census
- 2010 from the CRA (taxfiler data) compared to the NHS

#### For

- City of Toronto
- City of Montréal
- City of Vancouver







## CMAs: 1970 to 2010

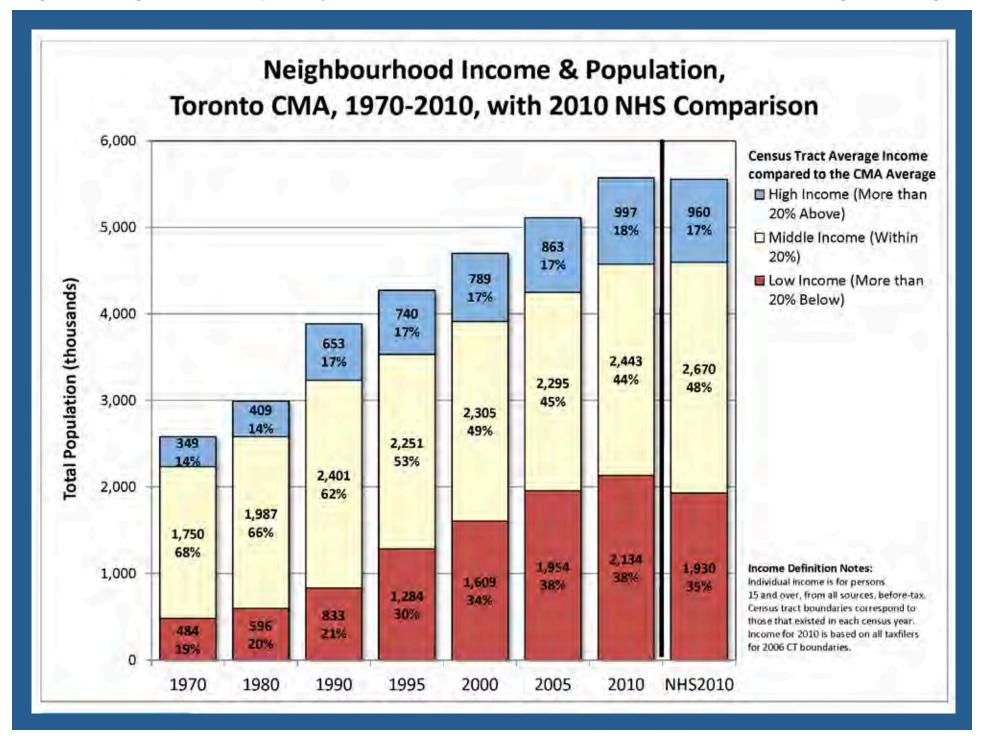
(Census Metropolitan Areas)

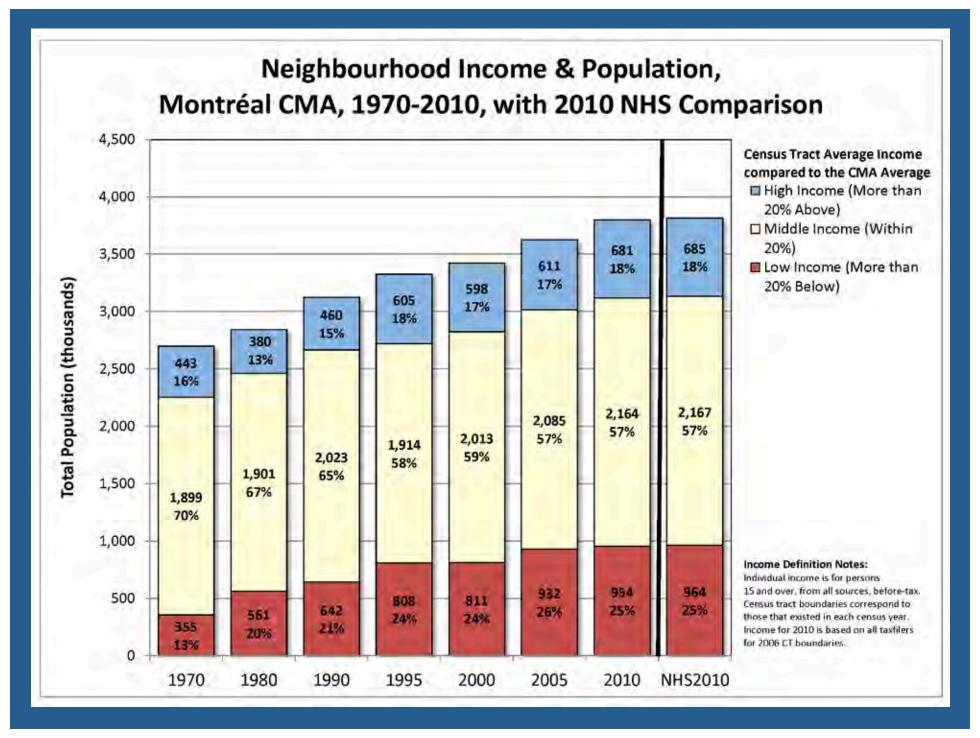
## Average individual income

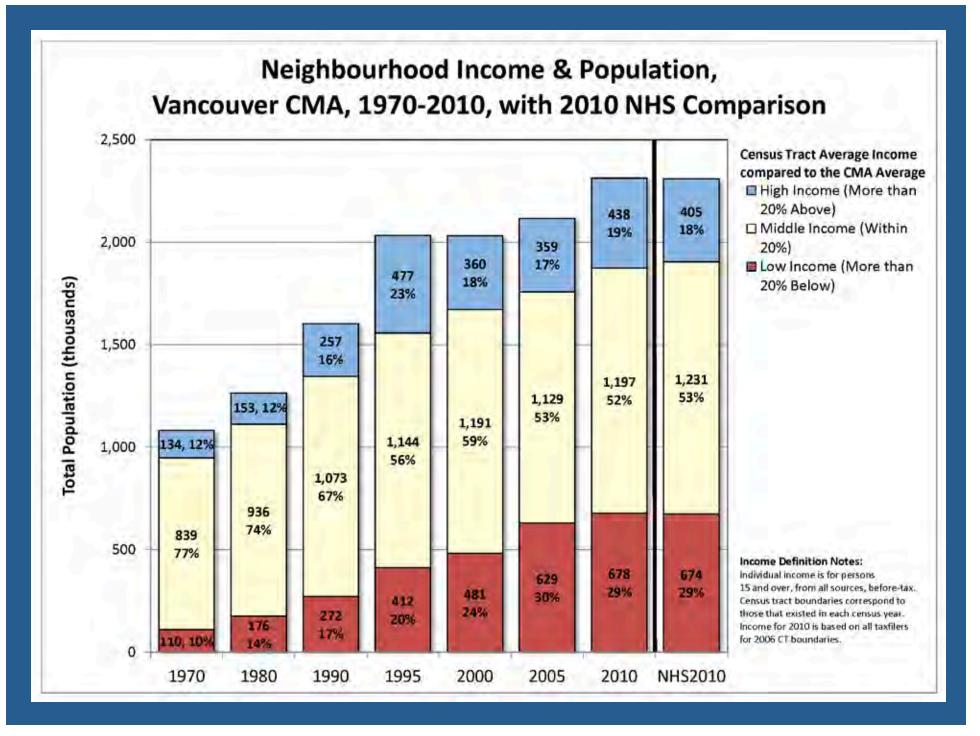
- 1970 to 2006 from the census
- 2010 from the CRA (taxfiler data) compared to the NHS

#### For

- Toronto CMA
- Montréal CMA
- Vancouver CMA







# ANALYSIS #1 Does the Global Non-response Rate Matter in the NHS?

## Global Non-response Rate (GNR) 2011 NHS

	CITY	CMA
Toronto	26.5%	25.4%
Montreal	20.7%	19.7%
Vancouver	24.5%	24.4%

# ANALYSIS #2 Does Population Size Matter with the NHS?

## Population 2011 (million)

	CITY	CMA	City as % of CMA
Toronto	2.62	5.52	47%
Montreal	1.85	3.75	49%
Vancouver	0.60	2.28	27%

## **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

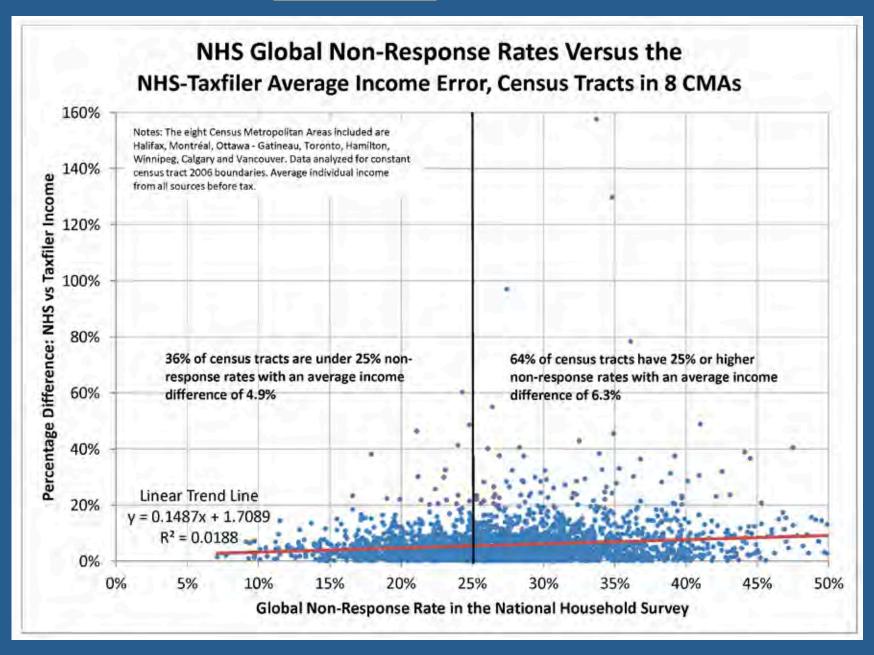
## ANALYSIS #6

## 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)



## 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?

## 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.

ANDREW WALLACE / TORONTO STAR FILE PHOTO

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 in-five in Canada is foreign-born. Can we rely on the NHS to understand 'race' and gender issues/trends? Any issues and trends?

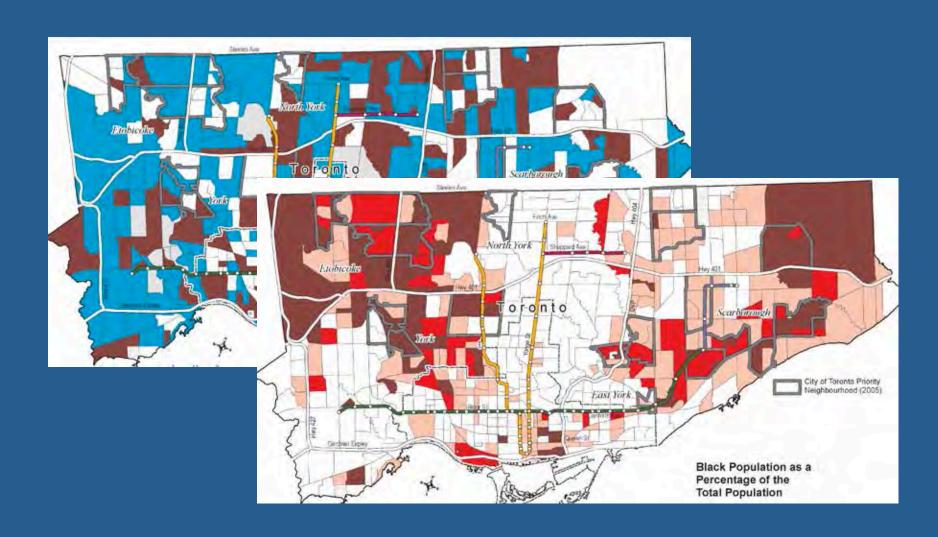
June 2010

#### ONTARIO'S GROWING GAP

The Role of Race and Gender

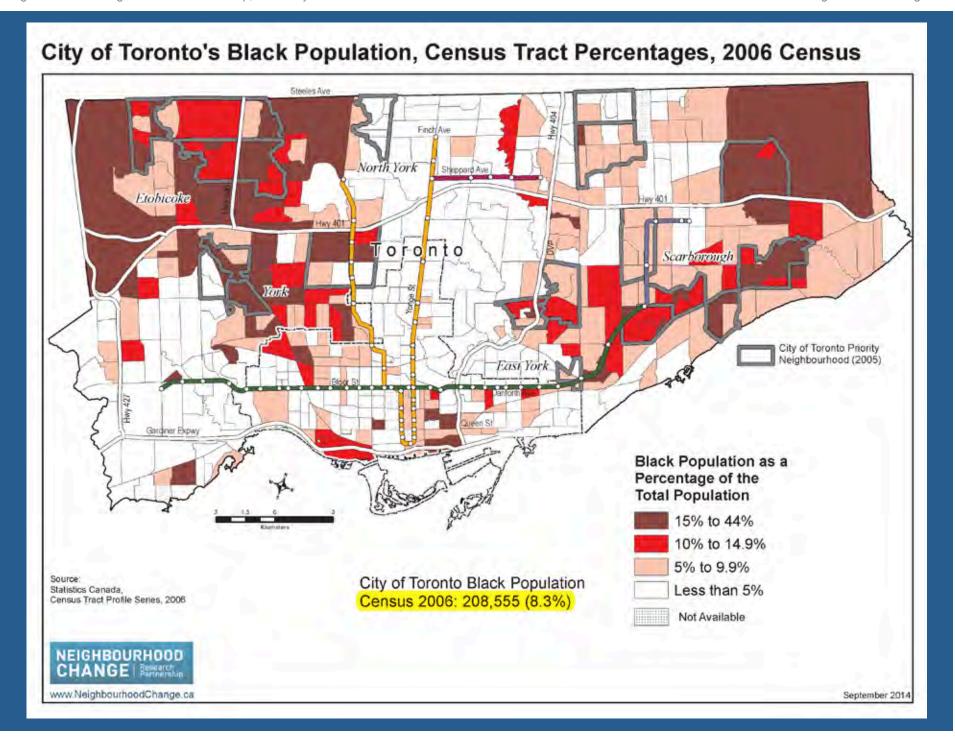
Sheila Block

# An Example: City of Toronto's Black Population

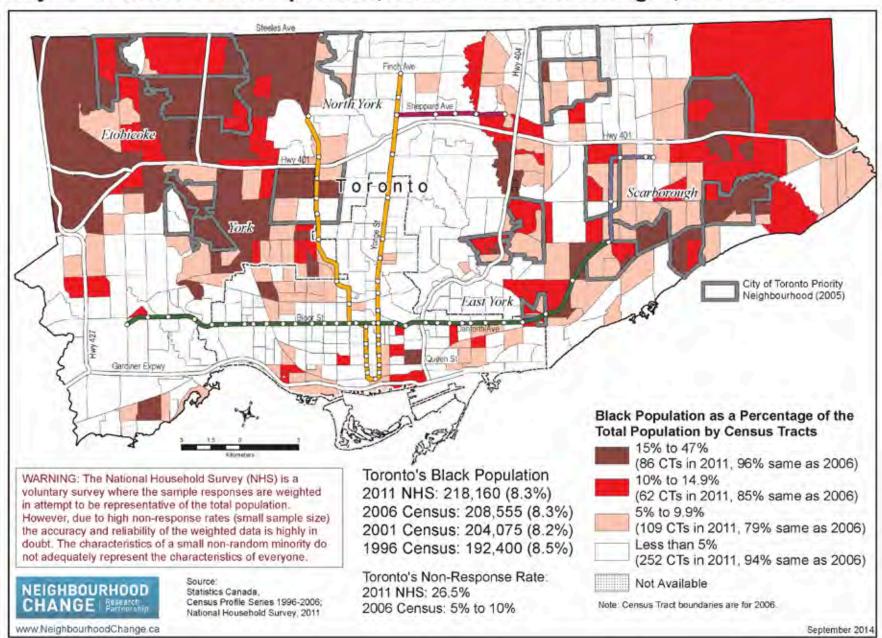


### **PROBLEM**

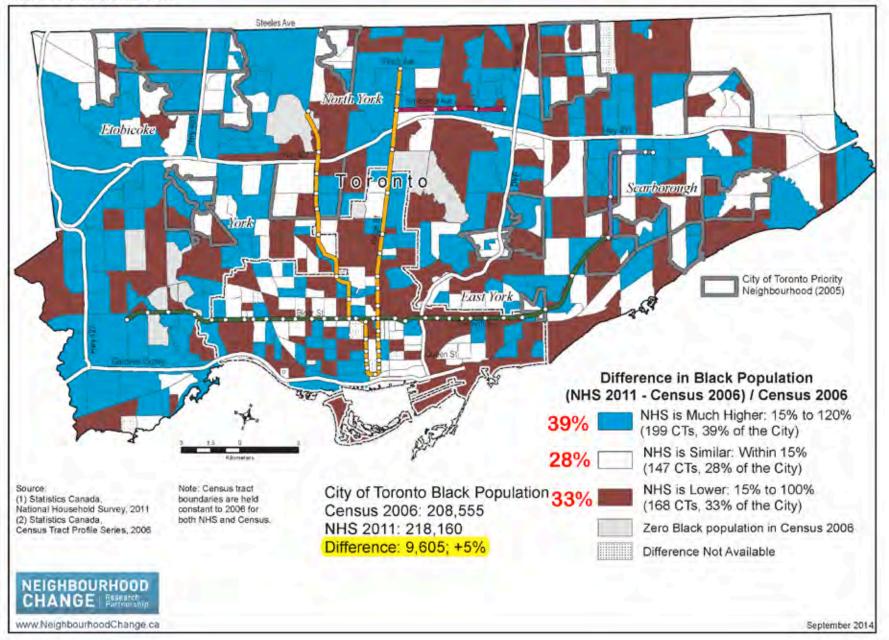
Unlike individual income from the Canada Revenue Agency, we have no 2010/2011 trustworthy alternate data for other variables to compare the NHS with

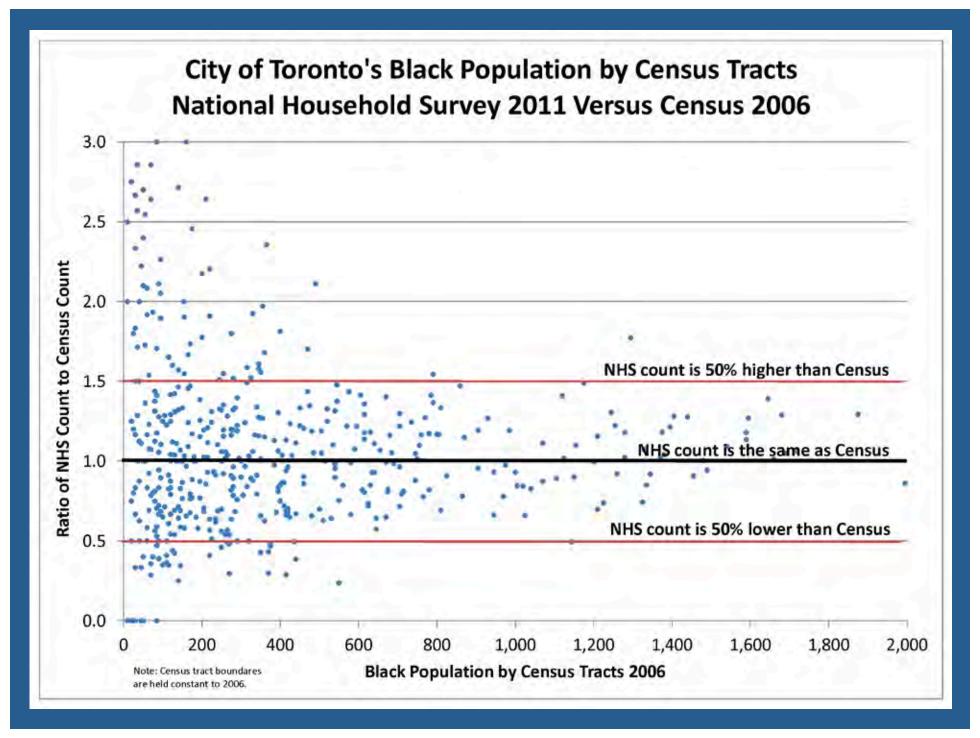


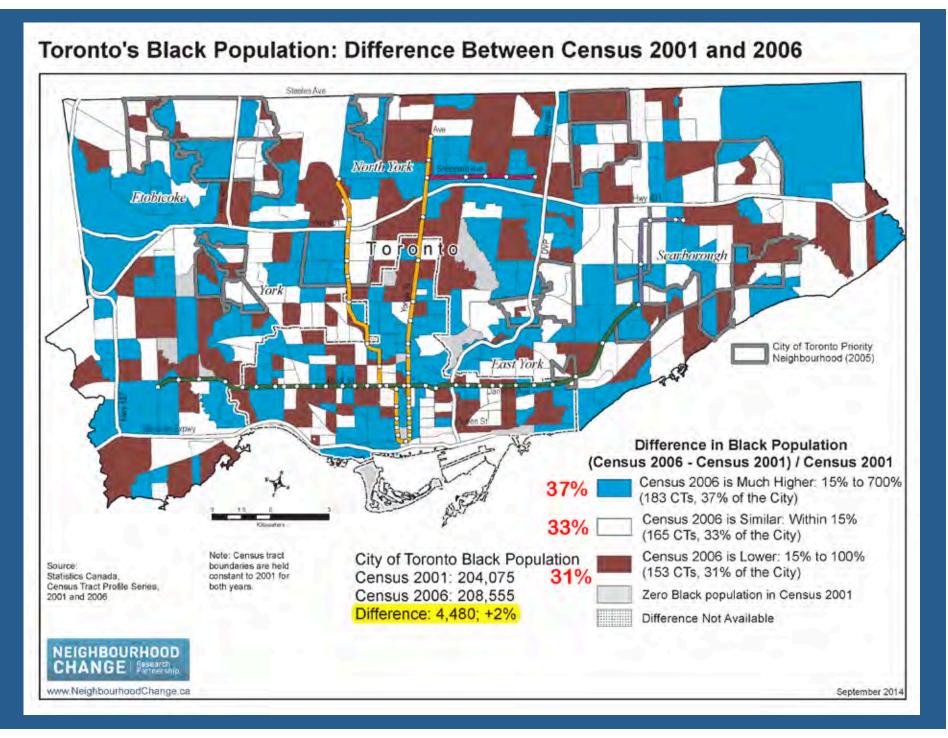
### City of Toronto's Black Population, Census Tract Percentages, 2011 NHS

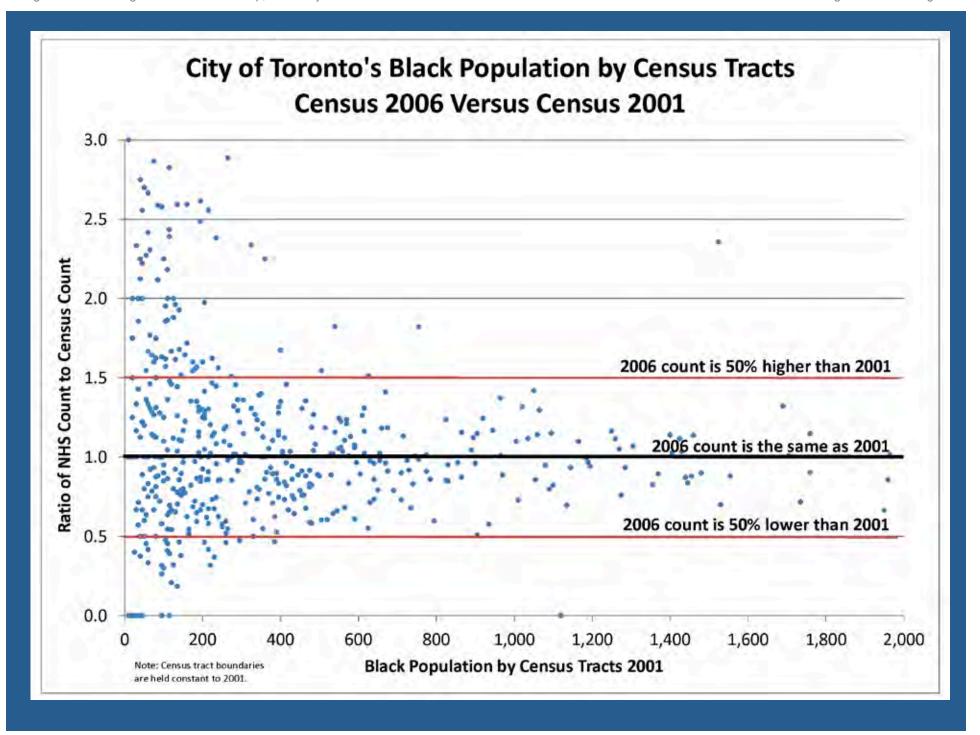


## Toronto's Black Population: Difference Between National Household Survey 2011 and Census 2006









# 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 2006-2011NHS 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

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

# 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?

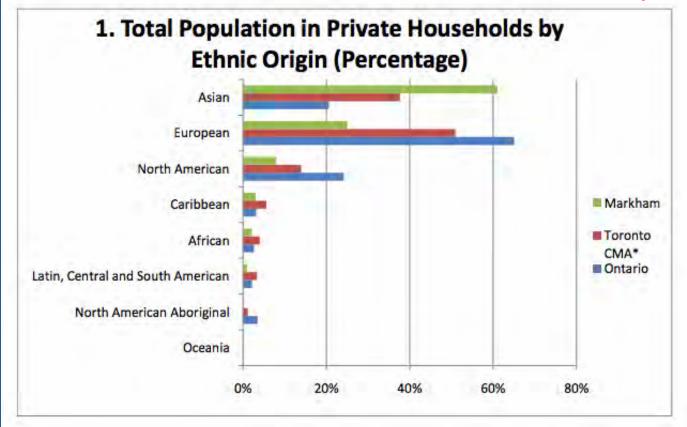
In July 2010 the head of Statistics Canada, Munir Sheikh, who was appointed to that position in 2008 by Mr. Harper, issued a short answer with his resignation: "It can not."

But, 2011 NHS is being used and reported as "facts"

### Quick Facts - Supplementary Graph

The following graphs portray the percentage data presented in Markham Demographics 2011 Quick Facts. The graphs also provide a comparison of Markham responses with the Toronto CMA (census metropolitan area)\* and Ontario.

"2011 Quick Facts" Facts? Really?



## Oxford English Dictionary

## 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?

# IMPOSED IGNORANCE

On what evidence does Ottawa base its policies?

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

Census Year	Halifax	Montréal	Toronto	Winnipeg	Calgary	Vancouver	Total 6 CMAs
1971	222,650	2,743,175	2,627,980	540,245	403,300	1,082,280	7,396,980
1981	277,727	2,828,349	2,998,947	584,842	592,743	1,268,183	8,273,064
1991	320,501	3,127,242	3,893,046	652,354	754,033	1,602,502	10,029,177
1996	332,518	3,326,510	4,263,757	667,209	821,628	1,831,665	10,910,769
2001	359,183	3,426,350	4,682,897	671,274	951,395	1,986,965	11,718,881
2006	372,858	3,635,571	5,113,149	694,668	1,079,310	2,116,581	12,639,279
2011	390,328	3,824,221	5,583,064	730,018	1,214,839	2,313,328	13,665,470
Change 71-11	167,678	1,081,046	2,955,084	189,773	811,539	1,231,048	6,268,490
% Change 71-11	75%	39%	112%	35%	201%	114%	85%

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).

# NHS & CRA Individual Income at Census Tract Level, 8 CMAs

### **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.

