

Replacing immigration questions with linked administrative data for the Canadian Census of Population

Scott McLeish
Statistics Canada



100

STATISTICS CANADA

ONE HUNDRED YEARS AND COUNTING

2018 UNECE-Eurostat Work Session on
Migration Statistics
October 24 to 26, 2018



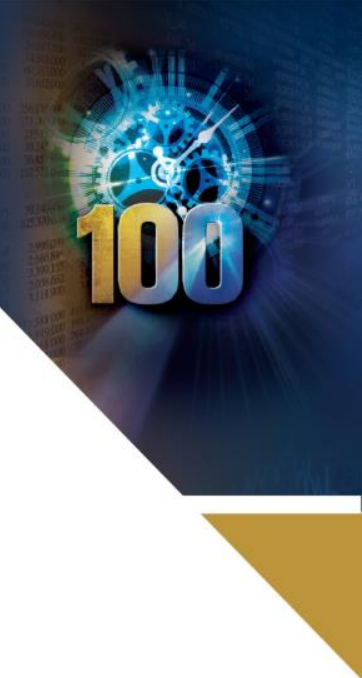
Statistics
Canada

Statistique
Canada

Canada

Project overview

- Replace **immigrant status** and **year of immigration** questions on the 2021 Census with linked administrative data
- Objectives
 - Reduce response burden
 - Improve data quality
 - Potentially add new content to the 2021 Census from administrative data



Immigrant Status in Canada

- **Canadian citizens by birth**
 - Born in Canada
 - Born abroad to Canadian parent(s)
- **Immigrants**
 - Canadian citizens by naturalization
 - Permanent residents
- **Non-permanent residents**
 - Asylum seekers
 - Temporary foreign workers
 - International students
 - Other non-permanent residents



Immigration data in Canada

■ Census of Population

- Key data source on the socio-economic outcomes of immigrants in Canada
- Immigration questions: immigrant status, year of immigration, place of birth, place of birth of parents and citizenship

	Immigrant	Non-immigrant
Canadian by birth		Canadian by birth
Canadian by naturalization	Canadian by naturalization	
Not a Canadian citizen	Permanent resident	Non-permanent resident

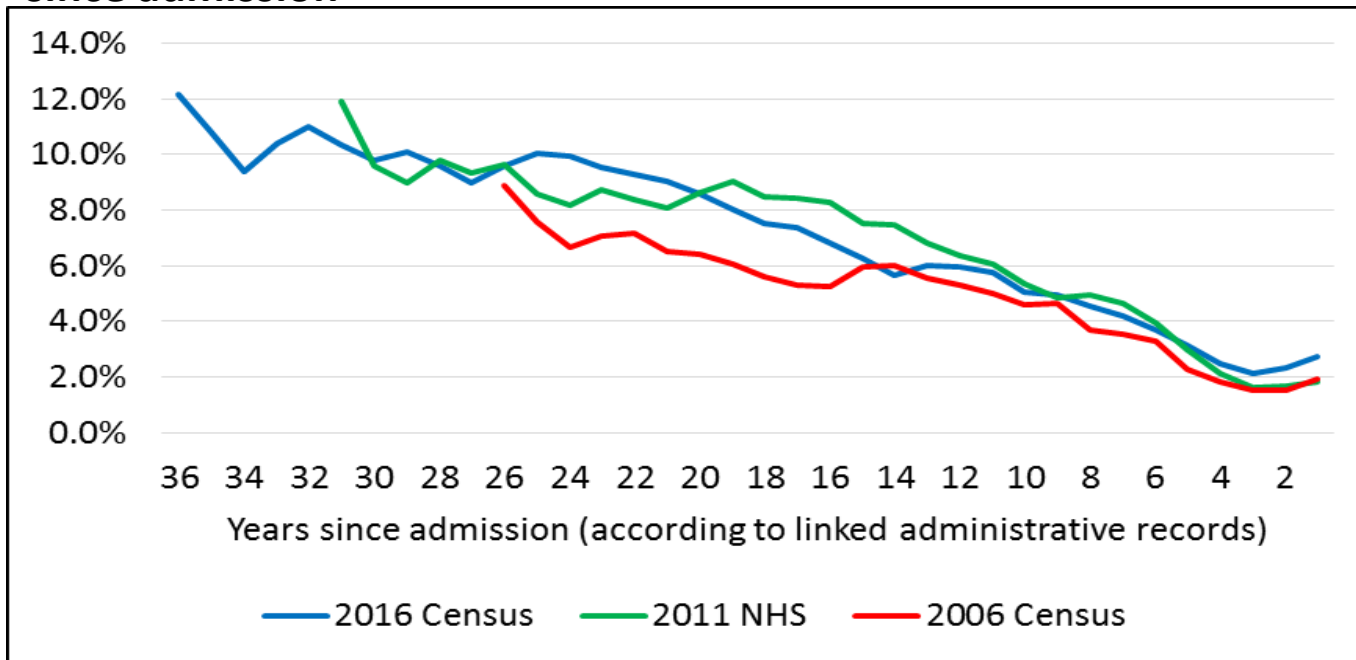
Immigration data in Canada (2)

- **Immigration, Refugees and Citizenship Canada (IRCC) administrative data**
 - Immigration landing file (1980 to present)
 - Historical landing file (1952 to 1979)
 - Asylum claims and temporary resident permits (1980 to present)
- **IRCC administrative data was used to enhance 2016 Census**
 - Used to improve 2016 Census data processing
 - Used to add admission category variables onto the 2016 Census



Limitations of census questions

Percentage of census respondents linked to IRCC immigrant records who responded that they are not immigrants by years since admission

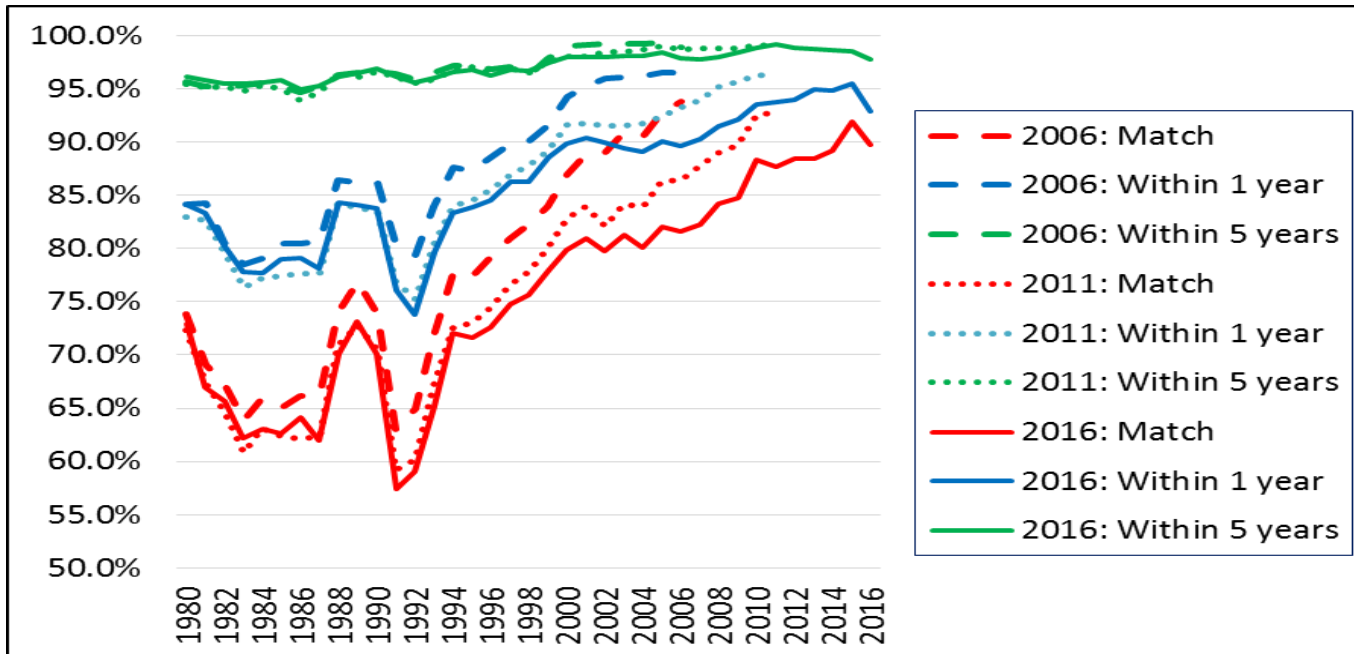


7.6% of respondents who were linked to administrative immigration records responded “No” to the immigrant status question. This proportion increases the longer they have been in Canada. These cases are largely corrected during processing based on other responses.

Limitations of census questions (2)



Match rate for census reported year of immigration by linked administrative value



Over 21% of immigrants had a year of immigration response which did not match their linked administrative value. The longer immigrants have been in Canada, the less likely they are of accurately reporting their year of immigration.

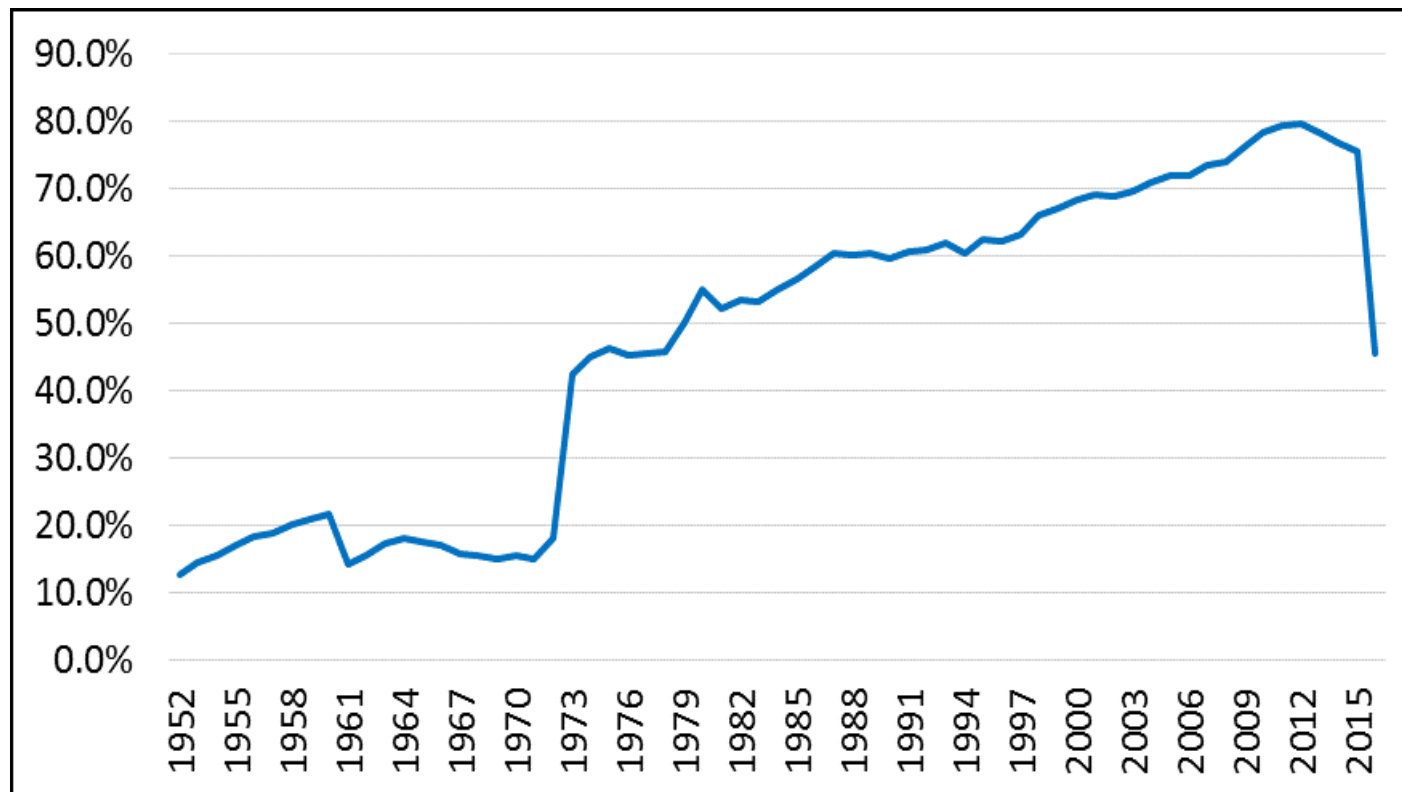
Limitations of administrative data

- Administrative data are not updated to reflect deaths or emigration
 - The data need to be linked to estimate the current population of immigrants
- No records for immigrants who landed prior to 1952
 - 111,000 immigrants or 1.5% of immigrants in 2016
- Weaker linkage quality for the pre-1980 file
 - Especially records from 1961-1972 due to incomplete date of birth (only year of birth is available)
- No records for dependants of temporary resident permit holders, visitors, or other non-permanent residents



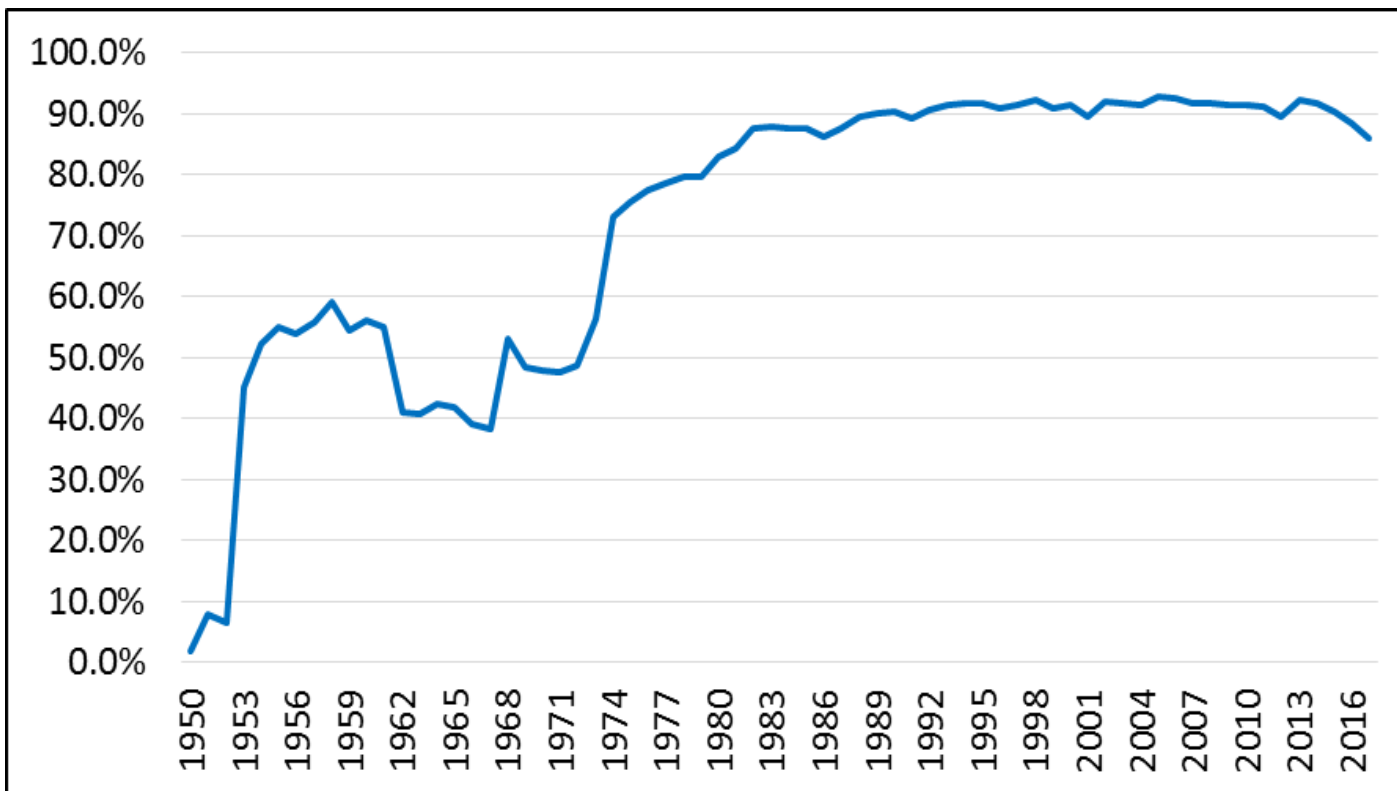
Limitations of administrative data (2)

Percentage of administrative immigration records linked to the 2016 Census by administrative year of immigration



Limitations of administrative data (3)

Percentage of 2016 Census immigrants linked to administrative immigration records by 2016 Census year of immigration



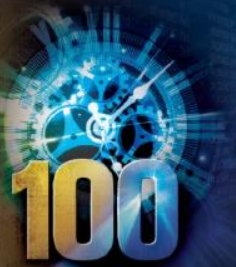
How to replace immigrant status and year of immigration

- Responses to citizenship question would identify the population in scope
 - Canadian citizens by birth are out of scope
 - Canadian citizens by naturalization (immigrants) and non-Canadian citizens (immigrants and non-permanent residents)
- Record linkage to administrative data identifies immigrants and non-permanent residents
 - Year of immigration for immigrants
- Edit and imputation processes to address missing links or inconsistencies between linked values and other census responses



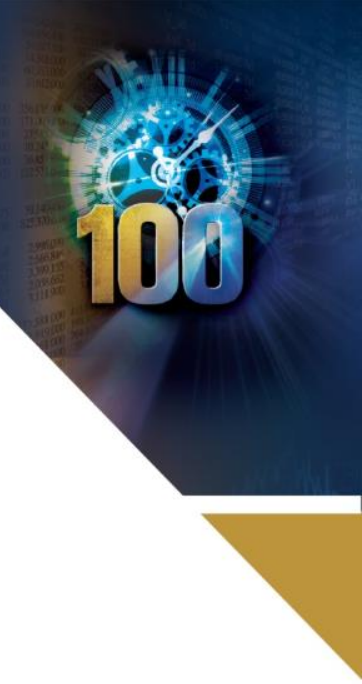
Challenges

- Limitations of administrative data
 - No immigrants before 1952
 - Low linkage rates for immigrants between 1961-1972
- Comparability with past census results
 - Year of immigration will be more reflective of administrative value vs. perceived value



Test environment based on 2016 Census

- Replace responses in the 2016 Census with linked administrative data
 - Use past census responses to supplement administrative data for years prior to 1952
 - Using linked responses from the 2011 National Household survey (NHS), the 2006 Census or the 2001 Census
- For years 1961-1972
 - Different methods currently being explored
- Run edit and imputation processes on all variables



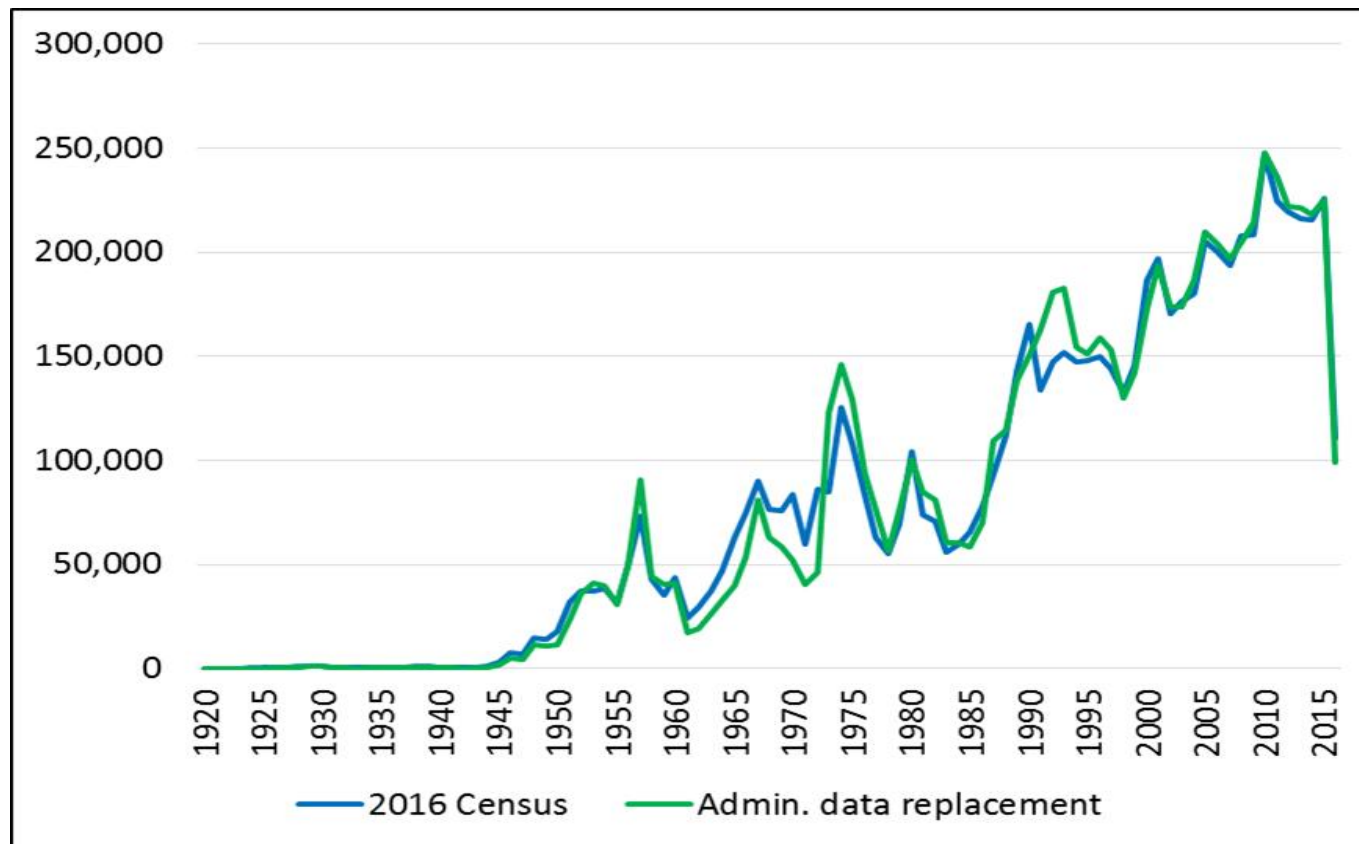
Preliminary test results

Immigrant status and citizenship, 2016 Census and preliminary test results

Immigration status and citizenship	2016 Census	Admin. data replacement	Difference	
			Number	%
Canadian citizens by birth	26,412,610	26,415,100	2,490	0.0%
Immigrants, total	7,540,830	7,563,150	22,320	0.3%
Permanent residents	1,918,855	1,945,945	27,090	1.4%
Canadian citizens by naturalization	5,621,975	5,617,205	-4,770	-0.1%
Non-permanent residents	506,625	481,815	-24,810	-4.9%

Preliminary test results (2)

Single year of immigration, 2016 Census and preliminary test results



Summary of preliminary test results

- Lower estimate of non-permanent residents
 - Resulting higher estimate of permanent residents
 - Possibly caused by undercoverage of linked administrative data
- Delayed response effect in early 1990s
 - Respondents provided year of arrival instead of year of immigration
- Lower estimates for years 1961-1972 due to lower linkage rates
 - Resulting higher estimates for years after 1972



Next steps

- Address lower linkage rates for the 1960s
- Further investigate shift from non-permanent to permanent residents
- Final recommendation for 2021 Census
 - Identify additional variables which could be introduced to the census
 - Make recommendations for other household surveys at Statistics Canada



Acknowledgments

- **Immigration, Refugees, and Citizenship Canada**
- **Social Survey Methods and Household Survey Methods Divisions**
 - Lyne Guertin, Caroline Cauchon, Sean Crowe, and Andrew Stelmack
- **Census Operations Division**
 - Ian Quinn, Stephen Howard-Smith, and John LeDrew
- **Social and Aboriginal Statistics Division**
 - Kathryn Spence, Tristan Cayn, and Eric Mongrain



Contact information

Scott McLeish

Chief, Census and Administrative Data
Social and Aboriginal Statistics Division
Statistics Canada

scott.mcleish@canada.ca

Athanase Barayandema

Analyst

Social and Aboriginal Statistics Division
Statistics Canada

athanase.barayandema@Canada.ca

100