

# Canadian Community Health Survey (CCHS) linked to the Longitudinal Immigration Database (IMDB)

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STATISTICS CANADA

ONE HUNDRED YEARS AND COUNTING

A first look at the healthy immigrant effect in the IRPA era

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# Outline

- Overview
  - What is the CCHS?
  - What is the IMDB?
- Linkage methodology
  - Probabilistic
  - Linkage rates
  - Evaluation
- The Linked files
  - Research potential
  - An example: A first look at the healthy immigrant effect in the IRPA era
- **Limitation**
- **Conclusion**



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# What is the Canadian Community Health Survey (CCHS)?



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- Collects information related to health status, health care utilization and health determinants for the non-institutionalized Canadian household population aged 12 years or older.
  - Annual component
  - Focus content component
  - Special projects

# What is the Longitudinal Immigration Database (IMDB)?



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- Record linkage between administrative immigration data and annual tax files
- Includes all immigrants admitted to Canada between 1980 and 2014, and their tax files since 1982
- Managed by Statistics Canada on behalf of a federal-provincial consortium lead by Immigration, Refugees and Citizenship Canada (IRCC)
- Provides detailed and reliable information on socio-economic outcomes of immigrants after landing
- Connects short- and long-term outcomes with characteristics at admission



# Similarities and differences between CCHS and IMDB to be mindful of



	Inclusions	Exclusions
<b>CCHS</b>	<ul style="list-style-type: none"> <li>• Households</li> <li>• Canadian-born</li> <li>• Immigrants landing at any time prior to the end of collection period</li> <li>• Living individuals only</li> </ul>	<ul style="list-style-type: none"> <li>• Residents of institutions (nursing homes, prisons)</li> <li>• Persons living outside of the country</li> <li>• Full-time members of the Canadian Forces</li> <li>• Age exclusion (age under 12 years old in the annual files and age under 15 years old in the focus content)</li> <li>• Persons living in the Territories (focus content)</li> <li>• Persons arriving in a given year after the end of the collection period</li> <li>• Persons living on reserves/aboriginal settlements</li> </ul>
<b>IMDB (1980 to 2013)</b>	<ul style="list-style-type: none"> <li>• Households</li> <li>• People living in institutions</li> <li>• Landed immigrants living within or outside of Canada</li> <li>• Any age</li> <li>• Living and dead</li> <li>• Individuals who obtained permanent residency status and landed since 1980</li> </ul>	<ul style="list-style-type: none"> <li>• Canadian-born</li> <li>• Individuals who obtained permanent residency status and landed before 1980</li> </ul>

# Objective of the linkage: To enable for broader health research on immigrant health that is not possible using the CCHS alone....



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To create a linked dataset that includes information on immigrants

- health
- social
- economic characteristics
- along with detailed immigration category
- other landing information.

# Linkage rates by CCHS cycle

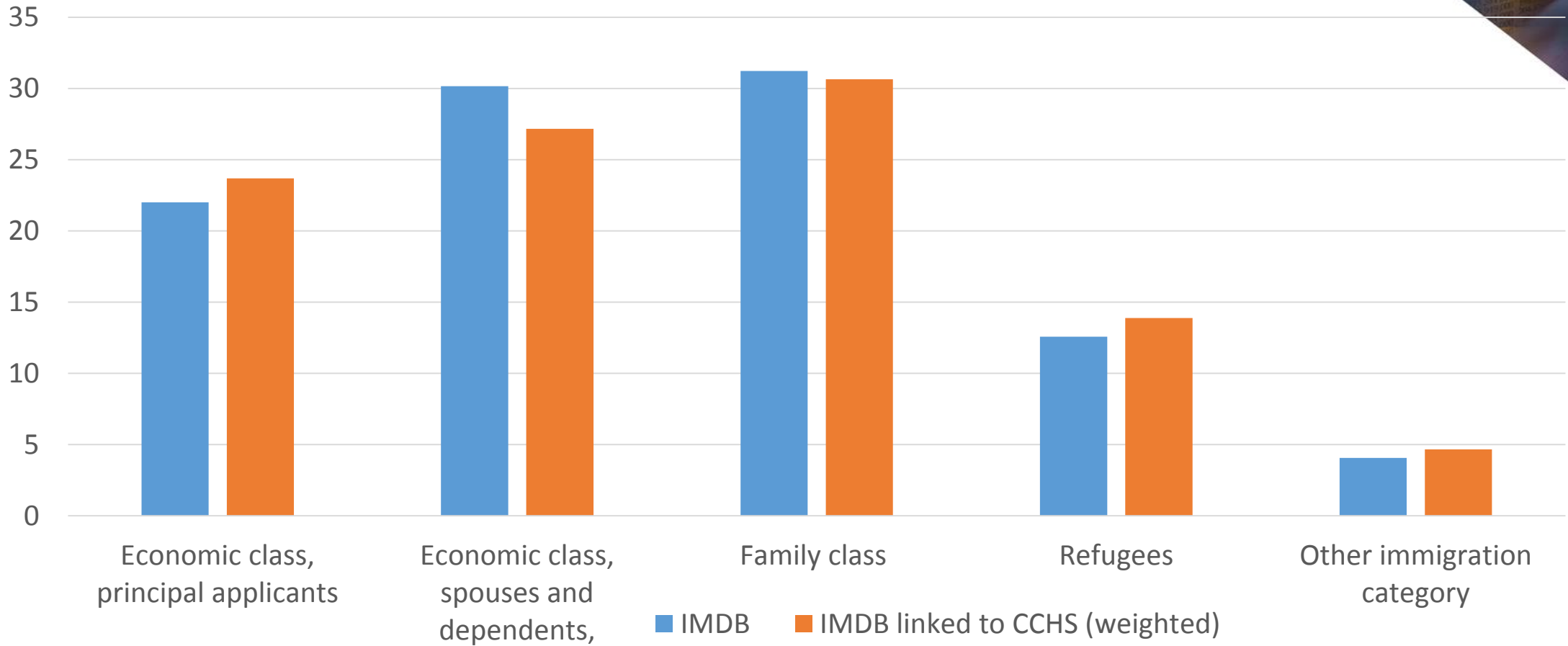


CCHS CYCLE	CCHS self-reported immigrants landed since 1980 (1)	CCHS self-reported immigrants linked to the IMDB (2)	All CCHS respondents linked to the IMDB (3)	Linkage rate (Lower bound) (2)/(1)	Linkage rate (Upper bound) (3)/(1)
1.2	2,130	1,765	1,845	82.9	86.7
2.1	5,890	4,630	4,840	78.6	82.2
2007	3,835	3,160	3,330	82.4	86.9
2008	3,640	2,940	3,070	80.7	84.3
2009	3,625	2,940	3,065	81.1	84.5
2010	3,690	2,960	3,085	80.2	83.6
2011	3,645	2,960	3,140	81.2	86.2
2012	3,675	2,945	3,120	80.2	84.8
2013	3,880	3,050	3,195	78.5	82.3
2014	3,775	2,875	3,040	76.1	80.5
3.1	6,945	5,625	5,875	81.0	84.6
5.2	2,165	1,760	1,815	81.3	83.8
Total	46,905	37,610	39,420	80.2	84.1



# Comparing the distribution of immigrant category in the IMDB with the linked CCHS-IMDB data set

Percent



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# The CCHS-IMDB linked files



- 12 CCHS files (2.1, 3.1, 2007, 2008 ,2009 ,2010 ,2011 ,2012, 2013, 2014, 2.2 et 5.2)
- 41 IMDB files (34 tax files from 1982 to 2015, 7 immigration files)
- 12 linkage key files; 1 per CCHS Cycle/Focus content
- Analysts will only receive the linkage key file for the CCHS cycles requested in their RDC application
- Using the linkage key file, analysts will merge the selected cycles of the CCHS with the IMDB using the individual unique identifier IMDB\_ID
- The CCHS must be merged by both sample ID and person ID
- After merging, verify the number of observations with the number of CCHS respondents in each cycle that linked to the IMDB with counts in the user guide
- Tax files can be merged with the CCHS-IMDB file through IMDB\_ID.
- Share-link weights with corresponding bootstrap weights instead of share weights to be used in the analysis

# Some examples of projects that can be conducted using this linked dataset

- Comparison of health outcomes and the use of health services by immigration category.
- Comparison of social capital/outcomes among immigrant categories
- Examination of the relationships of health, social and economic outcomes by immigration category.
- Evaluation of the representativeness of the immigrant population on the CCHS.



# A first look at the healthy immigrant effect in the IRPA era

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1. Background
2. Health Measures
3. Results
4. Limitation
5. Conclusion



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# 1. Background

- Healthy Immigrant Effect (HIE)
  - Initial health advantage
  - Health advantage disappears over time
  - Positive self-selection and systematic selection effect
- Immigrant and Refugees Protection Act
  - Enforced in 2002
  - Exemption of inadmissibility on health ground

## 2. Health measures

- Type A chronic conditions
  - Asthma, back pain, high blood pressure, migraine, ulcer, arthritis
- Type B chronic conditions
  - Heart disease, cancer, diabetes, Crohn's disease
- Self-assessed health status: Poor or Fair Health
- Overweight (BMI  $\geq 25$ )



Table 1. Percentage distribution of selected characteristics, by sex, aged 20 to 65 in CCHS-IMDB 2007 to 2014, Canadian-born, and Immigrant (recent and overall)

Approximately 17% of sample are immigrants, 2% most recent

	Male			Female		
	Canadian-born	IMDB immigrant		Canadian-born	IMDB immigrant	
		All	Recent (0-3)		All	Recent (0-3)
Population size (N)	7,005,000	1,350,000	177,000	6,563,000	1,324,000	180,000
Sample size (n)	94,845	7,550	985	105,810	8,430	1,115
%	84	16	2	83	17	2
Mean Age	43	42	36	44	42	36

Column percentage (%)

Immigrant related variables

**Immigrant landing duration**

	Male	Female
Pre-landing	2	2
Recent (0 to 3 years)	13	14
Medium (4 to 9 years)	25	23
Long (10 years and above)	60	61

**Immigrant category**

	Male	Female
Economic Class Principal Applicants	35	20
Economic Class Spouse/Dependents	18	30
Family	27	33
Refugee	15	12
Other immigrant	5	4

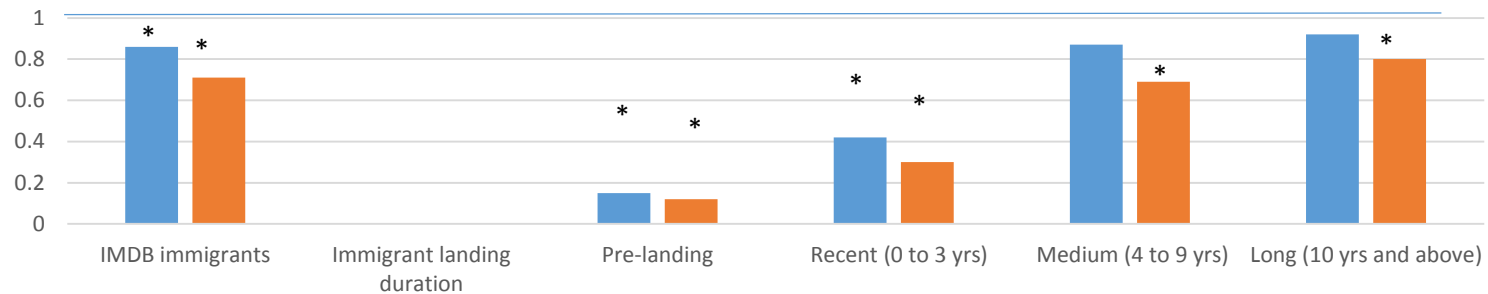
E use with caution, coefficient of variation is greater than 16.6 and less or equal to 33.3.

Note 1: weighted counts rounded to the closest 1000, unweighted counts rounded to the closest 5.

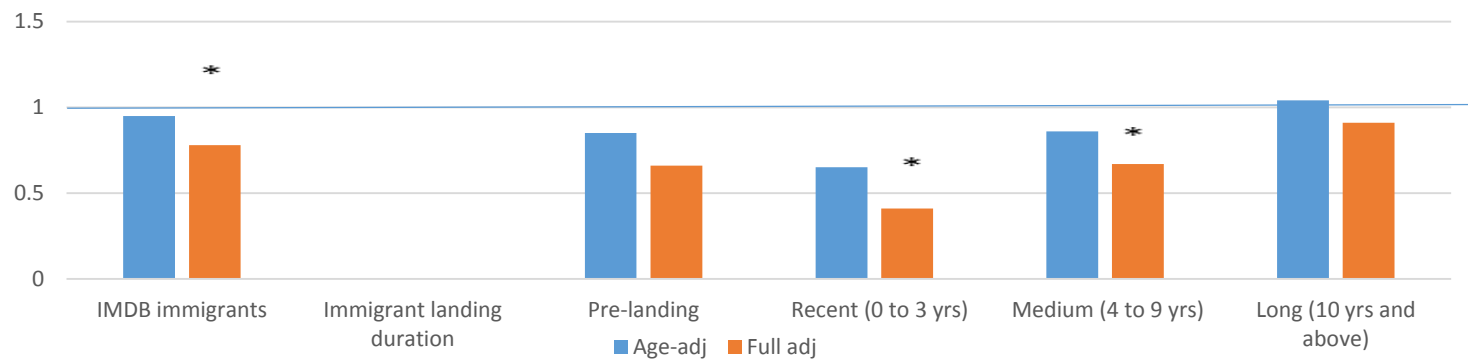
Ranking:  
Economic class followed by family class then refugees.  
  
Difference by recency

Source: Canadian Community Health Survey linked to the Longitudinal Immigration Database file, 2007 to 2014, Statistics Canada.

### Age- and fully adjusted\* Odds ratios, for Chronic B conditions by immigrant status and by duration, Males



### Age- and fully adjusted\* Odds ratios, for Self-assessed health by immigrant status and by duration, Males



\* fully adjustment to socio-economic characteristics included 'married or in common-law', university graduate and above education at household level, employment status, household income decile, home ownership, and ethnicities, and health behavioral risk factors.

Note 1: sample excludes students, pregnant women, residents in territories, those who had BMI greater than 50 or less than 10, or missing information on smoking, physical activity or diet.

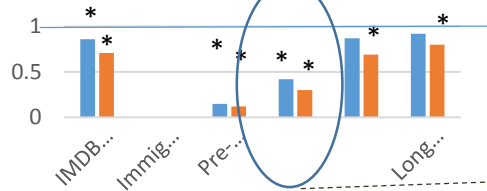
Note 2: all regressions applied share-link subset weights and bootstrap weights to account for complex survey design.

Source: Canadian Community Health Survey linked to the Longitudinal Immigration Database file, 2007 to 2014, Statistics Canada.

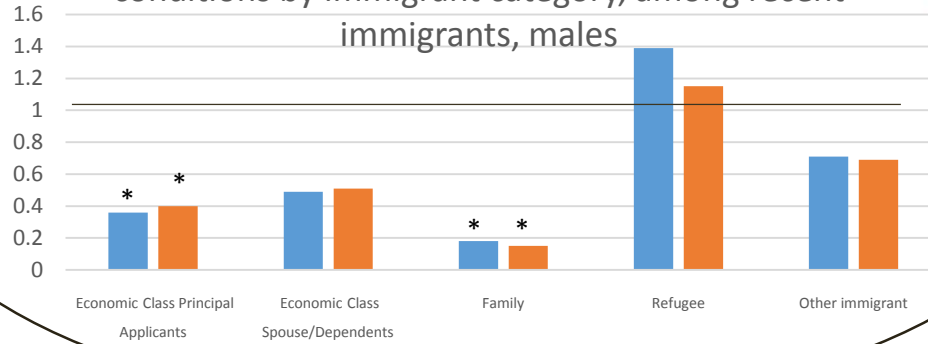




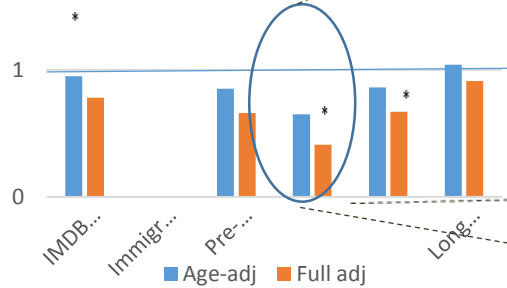
Age- and fully adjusted Odds ratios, for Chronic B conditions by immigrant status and by duration,...



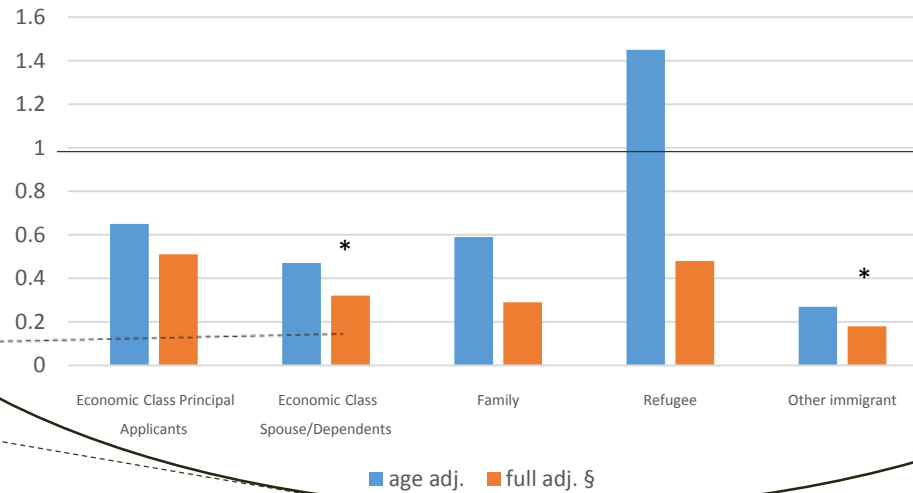
Age- and fully adjusted odds ratios for chronic B conditions by immigrant category, among recent immigrants, males



Age- and fully adjusted Odds ratios, for Self-assessed health by immigrant status and by duration, Males



Age- and fully adjusted odds ratios for self-assessed health by immigrant category among recent immigrants, males





# Limitations

- No data for the pre-IRPA period because cycle 1.1 is not linked
- Subjective health measures
- Linkage to only immigrants obtaining permanent residency status since 1980
- Missed links
- No tax info for those CCHS respondents not linked to the IMDB.



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## Conclusion for the IRPA-HIE example

This study is a first look at HIE under IRPA.

Results corroborate existing literature on the presence of HIE among immigrants, with stronger HIE for family class, and much weaker for the refugees, a group that requires further health monitoring.



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## Conclusion

- CCHS-IMDB linked database is a timely, and highly relevant new information source to understand immigrant health.
- This dataset is now made available since Oct 12 of 2018 at the RDC
  - Access process

# THANK YOU!

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A graphic in the top right corner featuring a blue and gold '100' with a globe and data points in the background.

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