

Socioeconomic differences in supplemental prescription drug insurance coverage in Canada

G Emmanuel Guindon, PhD
Centre for Health Economics and Policy Analysis (CHEPA)
Department of Health Research Methods, Evidence, and Impact (HEI)
McMaster University

Canadian Research Data Centre Network (CRDCN) 2018 National Conference
Hamilton, Ontario
18 October, 2018

Acknowledgements, funding, conflict of interest

Co-authors

- Elaine Xiaoyu Guo, University of Toronto [lead];
- Arthur Sweetman, McMaster University

Acknowledgements

- McMaster University: Dennis Ren, Gioia Buckley, Peter Kitchen, Mustafa Ornek, Li Wang
- MOHLTC: Carley Hay, Joanne Thanos, Eric Nauenberg
- MoF: Darren McHugh

Funding

- This analysis builds on work conducted as part of a larger project done in collaboration with the MOHLTC and the MoF that examined extending health benefits to low-income populations;
- Emmanuel Guindon holds the Centre for Health Economics and Policy Analysis (CHEPA)/Ontario Ministry of Health and Long-Term Care (MOHLTC) Chair in Health Equity, an endowed Chair funded in part by the MOHLTC;
- Arthur Sweetman holds the Ontario Research Chair in Health Human Resources, an endowed Chair funded by the MOHLTC.

Conflict of interest

- None.

The views expressed are the views of the authors and should not be taken to represent the views of the Government of Ontario.

MOHLTC, Ontario Ministry of Health and Long-Term Care

CHEPA, Centre for Health Economics and Policy Analysis

MoF, Ontario Ministry of Finance

Background

The Canada Health Act legislates universal coverage for medically necessary hospital and physician services.

Other services viewed by many as equally medically necessary, such as prescription drugs are excluded. Financing of these services largely relies on a patchwork of public and private supplementary health insurance.

- Québec: public/private universal pharmacare
 - British Columbia: income-based pharmacare
 - Ontario: age-based pharmacare (Ontario Drug Benefit, OHIP+)
-
- Clear evidence that increasing cost-sharing reduces the use of prescription drugs (essential and non-essential).

Research objectives

1. Describe the extent to which Canadians have access to supplementary drug insurance;
2. Examine associations between having prescription drug coverage and socioeconomic (SES) characteristics and health status.

Methods — data

1. **Canadian Community Health Surveys, Statistics Canada**
 - **Ontario:** 2005, 2008, 2013, 2014
 - **New Brunswick:** 2007, 2008, 2011, 2013, 2014
 - **Canada:** 2015, 2016
 - 2003 (all), 2005 (ON), 2007 (NB), 2008 (NB, ON), 2009 (NU), 2010 (NU), 2011 (NB, NU), 2013 (NB, ON, NU), 2014 (NB, ON, YT)
 - 2015, 2016 (all)
2. **International Health Policy Survey, Commonwealth Fund**
 - 2007, 2008, 2010, 2011, 2013, 2016, and 2017

Methods — data

I. Canadian Community Health Surveys, Statistics Canada

- Do you have insurance that covers all or part of the cost of your prescription medications?

≤ 2014: Is it ...?:

- a government-sponsored plan
- an employer-sponsored plan
- a private plan

2015, 2016: Is it ...?:

- a government-sponsored plan
- an employer-sponsored benefit plan
- a plan sponsored through an association such as a union, trade association or student organization
- other, such as your own private plan purchased from an insurance company

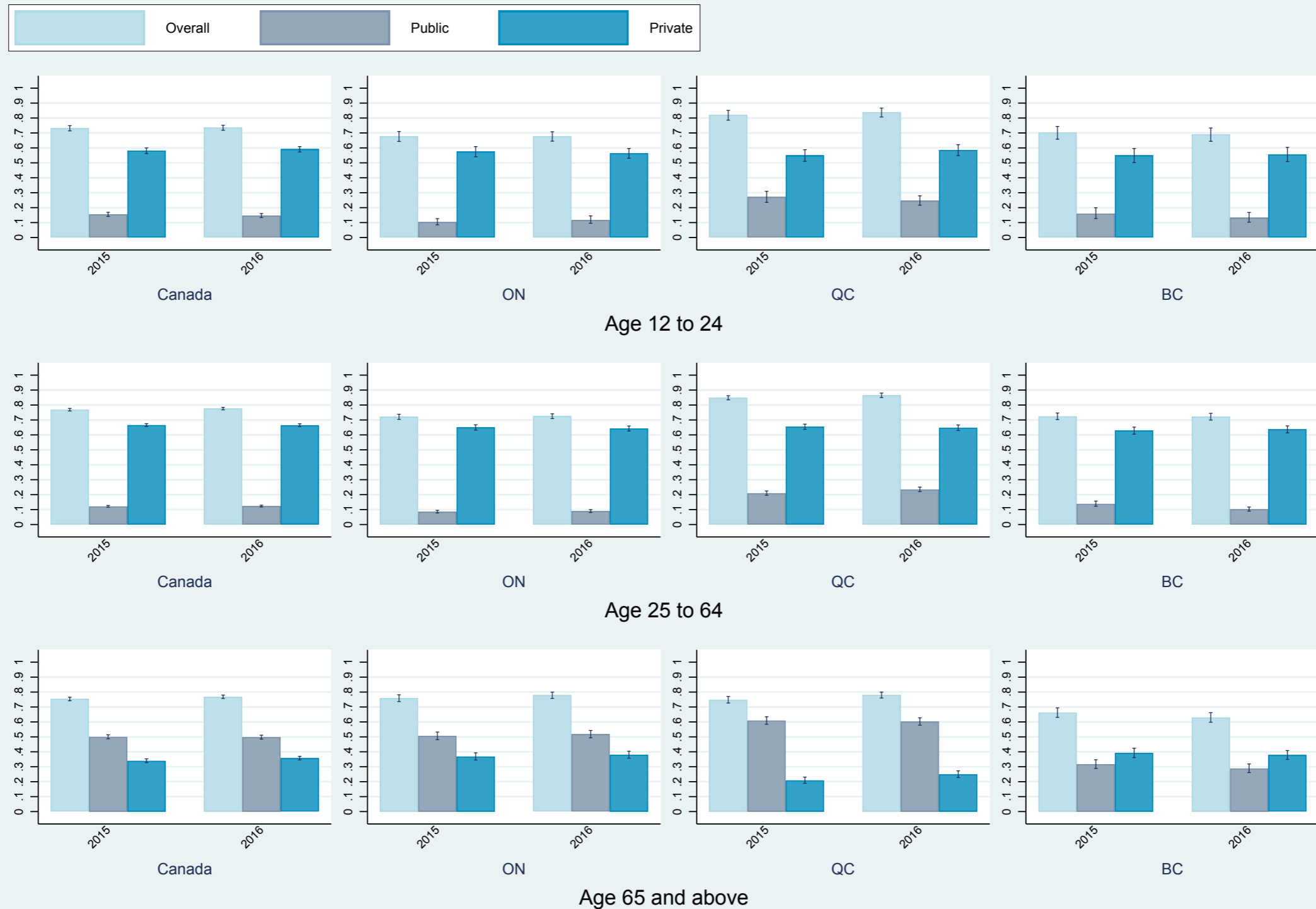
2. International Health Policy Survey, Commonwealth Fund

- In addition to government funded health services, are you currently covered by any private health insurance that you or your family pays for or that an employer or association provides?

Methods

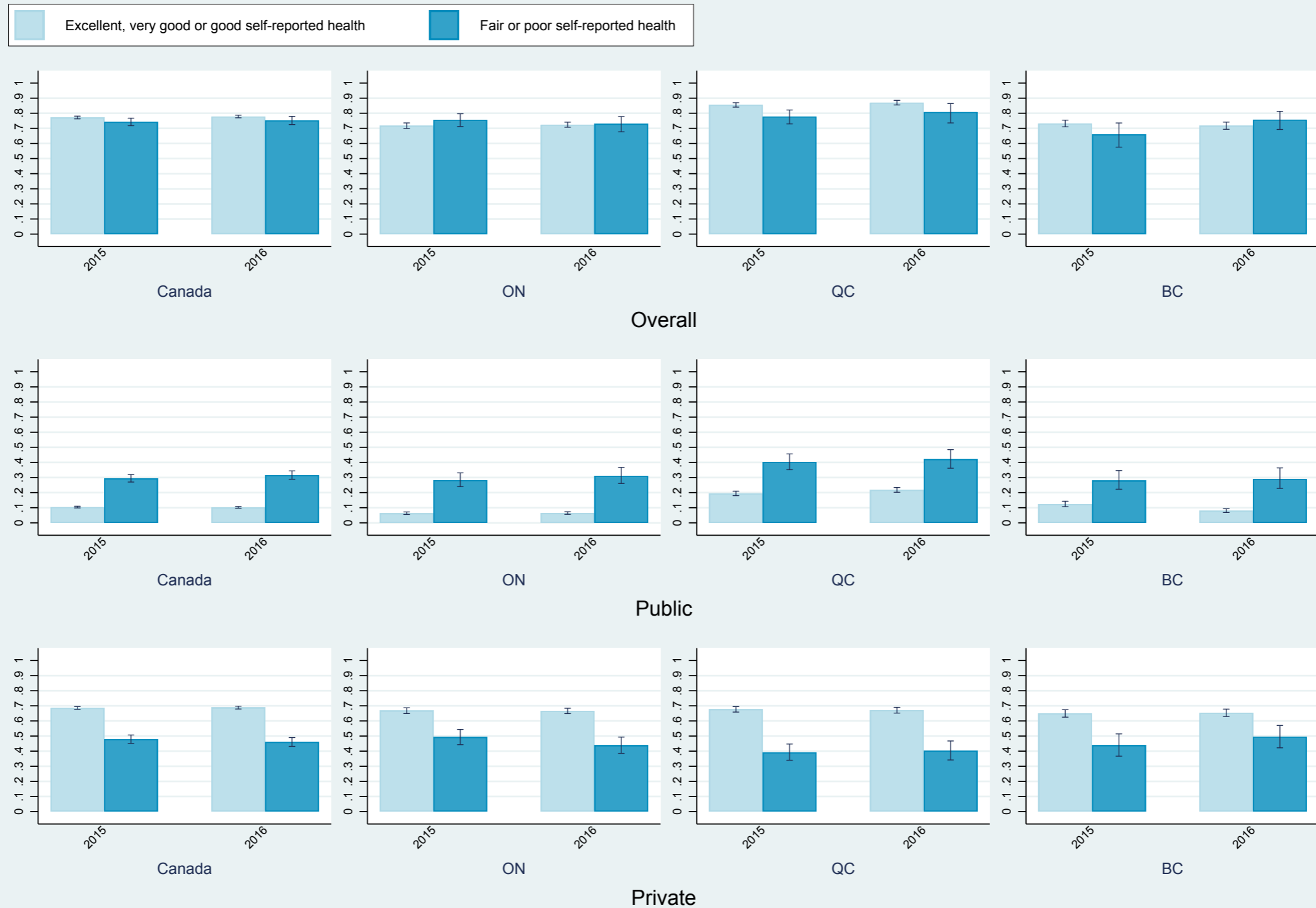
1. Data visualization (i.e., lots of graphs)
2. **Logistic regressions** to examine individual characteristics associated with the odds of reporting supplemental drug insurance coverage.
 - Because the parameters of non-linear models are inconsistent, we tested for the presence of heteroskedasticity and rejected the null hypothesis of homoscedasticity.
 - We then estimated maximum-likelihood heteroskedastic probit models;
 - we found no qualitatively important differences between these models and logistic regression models.

Results, self-reported drug insurance coverage, 2015-2016



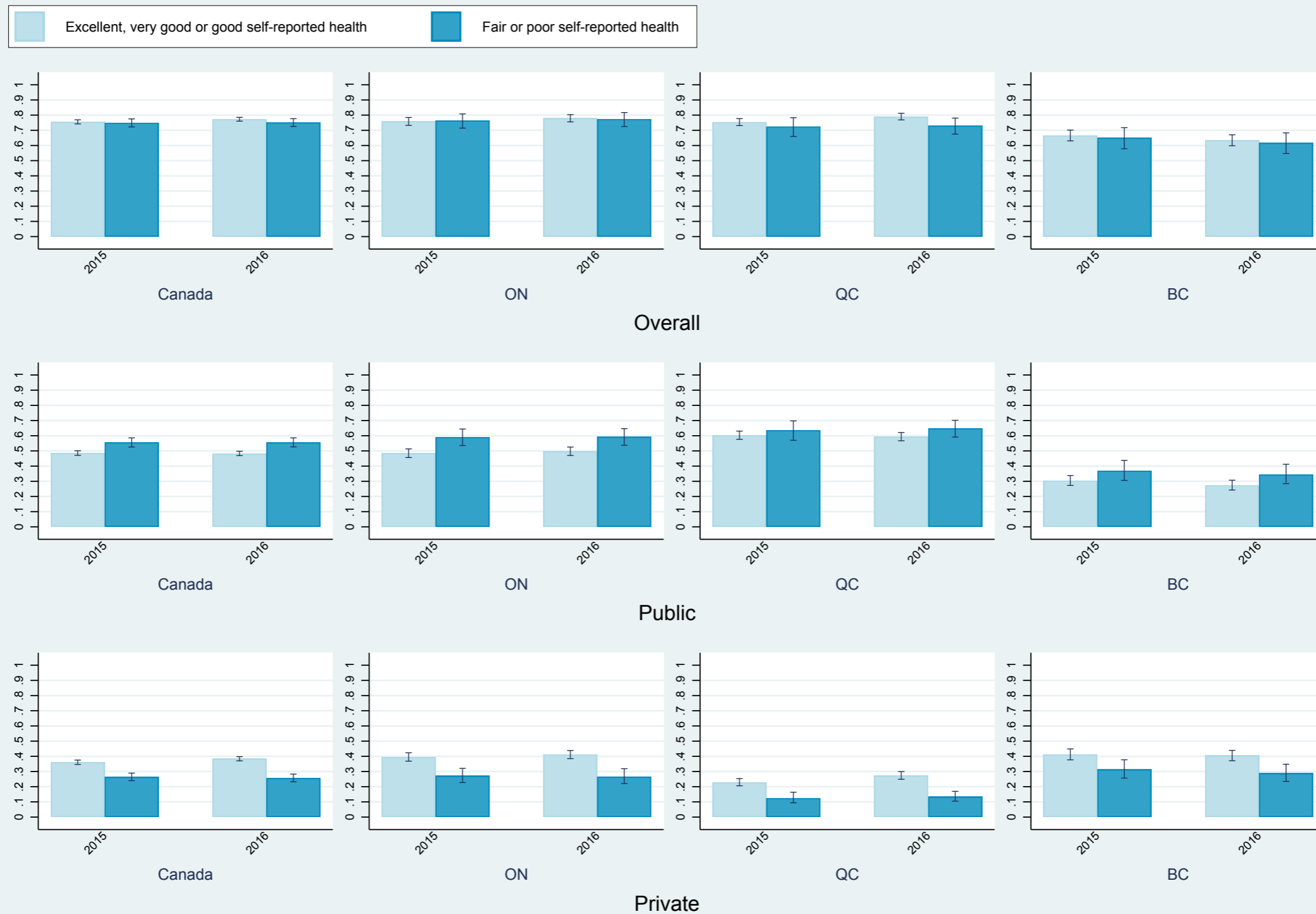
Source: Canadian Community Health Surveys, Statistics Canada.

Results, self-reported drug insurance coverage, 2015-2016 — by self-reported health status, 25-64 years old



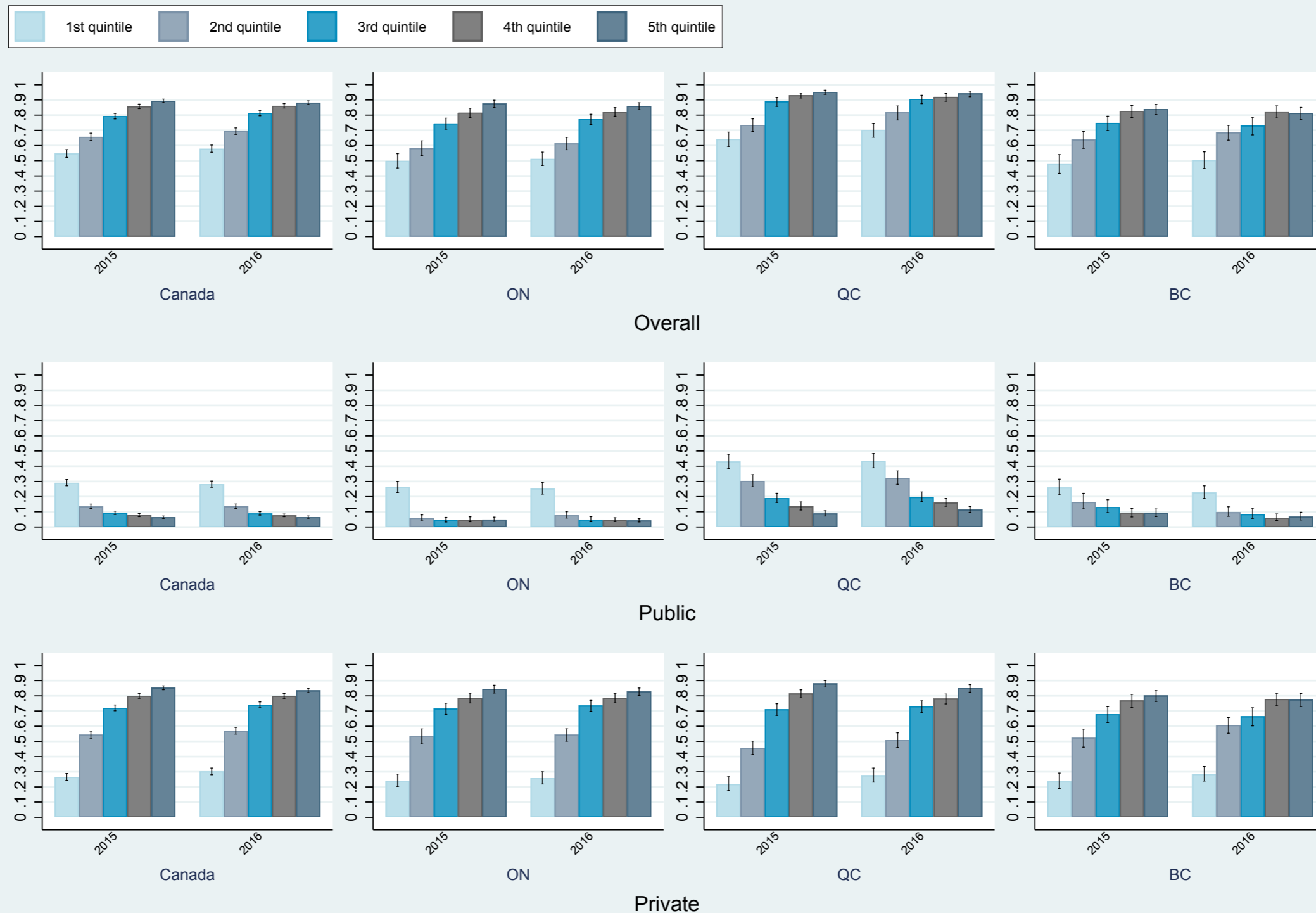
Source: Canadian Community Health Surveys, Statistics Canada.

Results, self-reported drug insurance coverage, 2015-2016 — by self-reported health status, 65+ years old



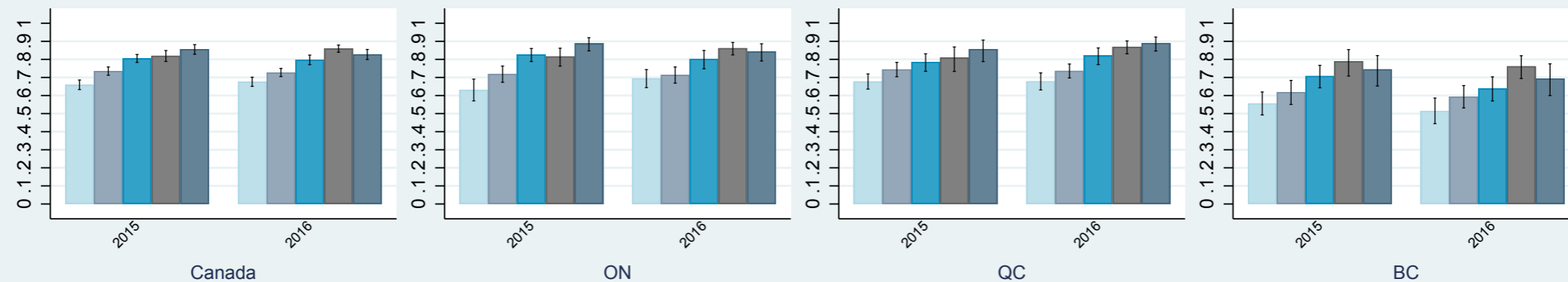
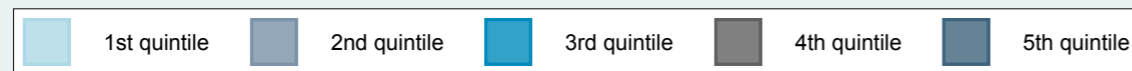
Source: Canadian Community Health Surveys, Statistics Canada.

Results, self-reported drug insurance coverage, 2015-2016 — by household income, 25-64 years old

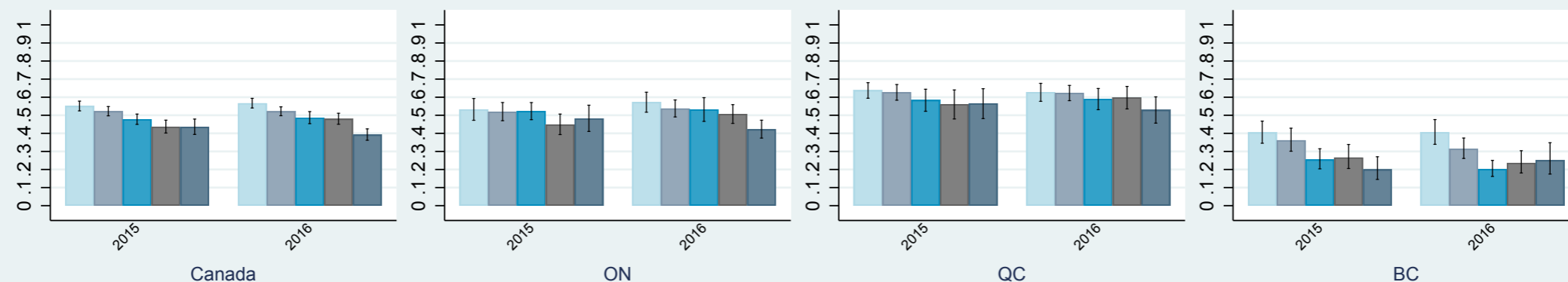


Source: Canadian Community Health Surveys, Statistics Canada.

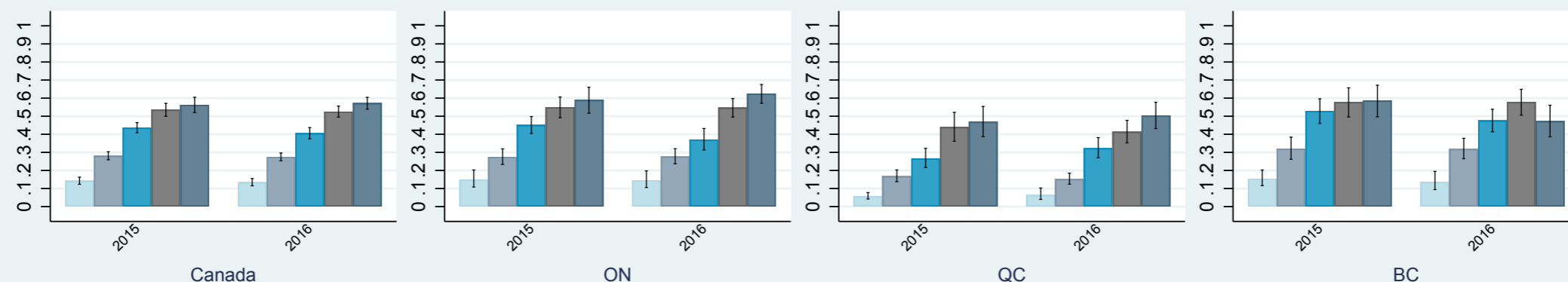
Results, self-reported drug insurance coverage, 2015-2016 — by household income, 65+ years old



Overall



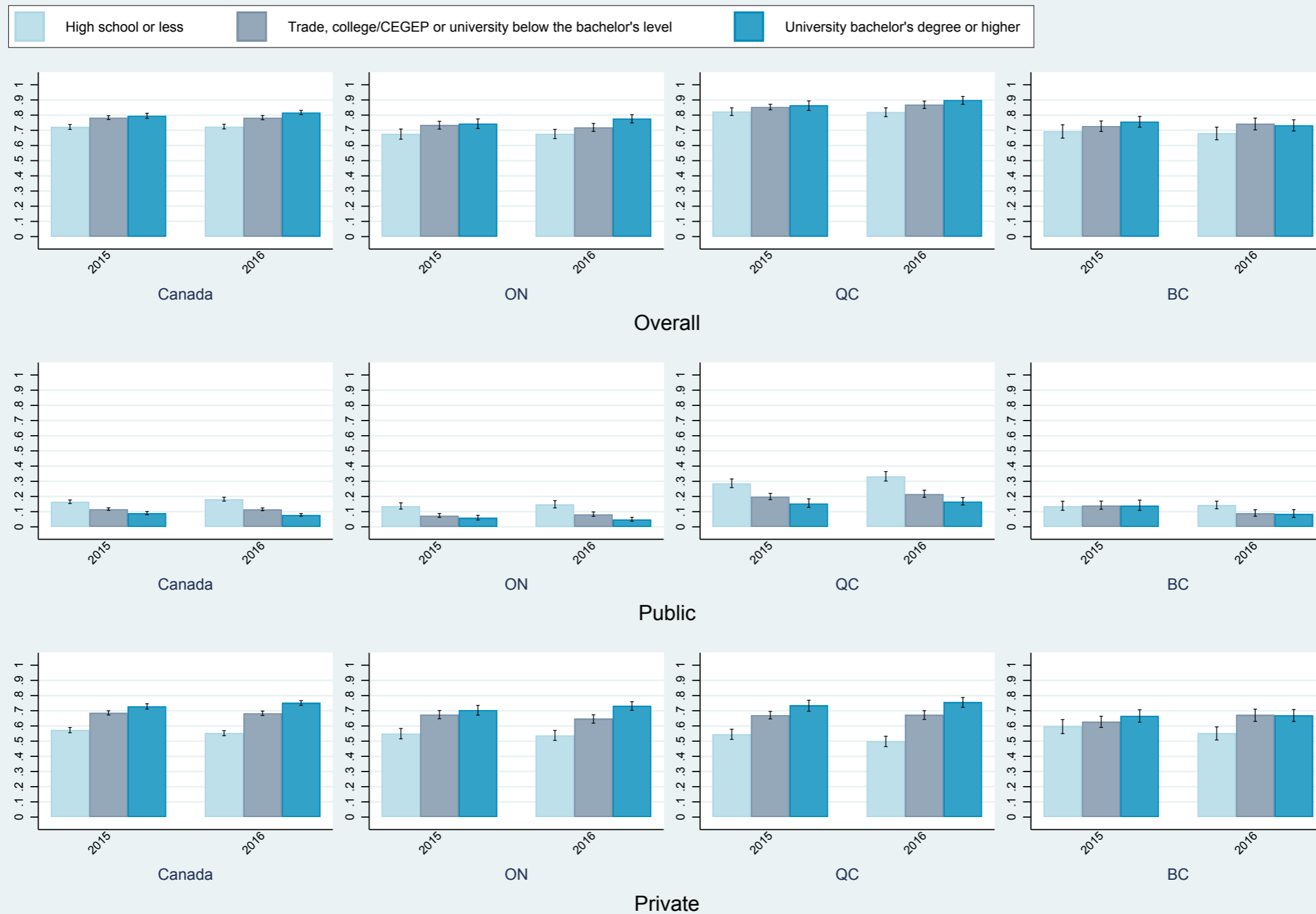
Public



Private

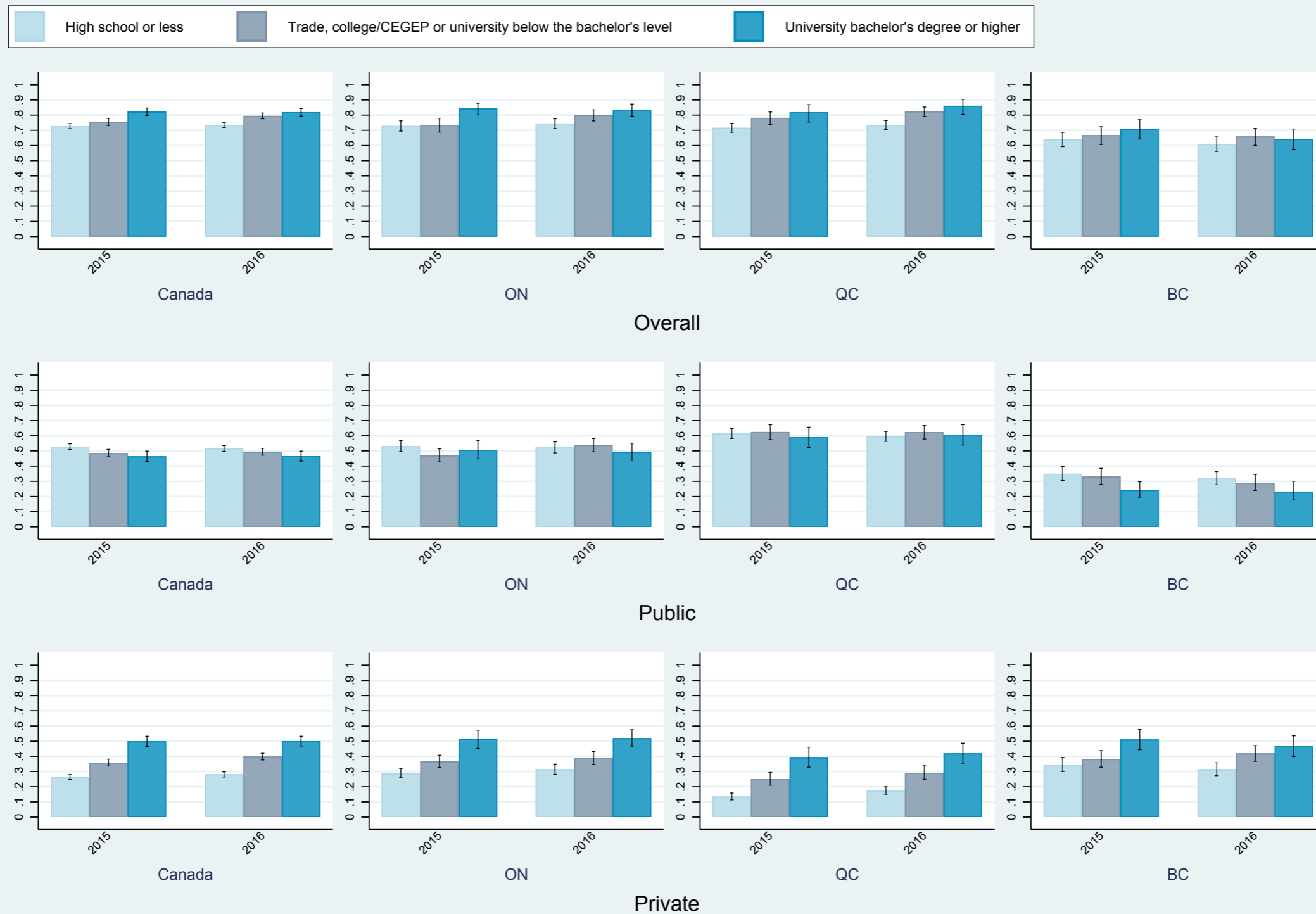
Source: Canadian Community Health Surveys, Statistics Canada.

Results, self-reported drug insurance coverage, 2015-2016 — by education, 25-64 years old



Source: Canadian Community Health Surveys, Statistics Canada.

Results, self-reported drug insurance coverage, 2015-2016 — by education, 65+ years old



Source: Canadian Community Health Surveys, Statistics Canada.

Results, characteristics associated with the odds of reporting drug insurance coverage — household income and education, 25-64 years old*

	Overall		Public		Private	
	Odds ratio	95% CI	Odds ratio	95% CI	Odds ratio	95% CI
Adj. hh income (ref: 1st decile)						
2nd decile	1.16*	1.00,1.36	0.51***	0.44,0.59	2.27***	1.92,2.67
3rd decile	1.39***	1.19,1.62	0.31***	0.26,0.36	3.55***	3.02,4.18
4th decile	2.26***	1.91,2.67	0.25***	0.21,0.30	6.16***	5.23,7.25
5th decile	3.12***	2.66,3.66	0.20***	0.16,0.24	8.64***	7.36,10.14
6th decile	3.75***	3.16,4.45	0.15***	0.13,0.18	11.20***	9.47,13.24
7th decile	4.73***	3.97,5.63	0.15***	0.13,0.18	13.25***	11.21,15.65
8th decile	5.07***	4.28,6.00	0.15***	0.12,0.18	13.95***	11.86,16.41
9th decile	6.31***	5.33,7.49	0.12***	0.10,0.14	18.40***	15.62,21.67
10th decile	5.85***	4.91,6.96	0.13***	0.11,0.15	16.64***	14.08,19.68
Education (ref: ≤ high school)						
Some post-secondary, < bachelor's level	1.24***	1.13,1.35	0.79***	0.72,0.86	1.42***	1.31,1.53
Bachelor's degree or above	1.37***	1.24,1.52	0.71***	0.63,0.80	1.64***	1.50,1.80

- Clear positive SES gradients in private coverage;
- Clear negative SES gradients in public coverage;
- Overall, lower SES individuals had lower odds of reporting drug insurance coverage.

* Controlling for province, age, sex, self-reported health status and chronic diseases and 'imputed income'.

Results, characteristics associated with the odds of reporting drug insurance coverage — household income and education, 65+ years old*

	Overall		Public		Private	
	Odds ratio	95% CI	Odds ratio	95% CI	Odds ratio	95% CI
Adj. hh income (ref: 1st decile)						
2nd decile	1.03	0.85,1.25	0.94	0.78,1.13	1.40***	1.09,1.80
3rd decile	1.32***	1.08,1.61	0.82**	0.68,0.99	2.51***	1.98,3.18
4th decile	1.50***	1.21,1.86	0.73***	0.61,0.89	3.61***	2.85,4.57
5th decile	1.91***	1.51,2.42	0.63***	0.52,0.77	5.11***	4.01,6.50
6th decile	2.32***	1.84,2.93	0.71***	0.57,0.88	5.31***	4.12,6.85
7th decile	2.59***	2.00,3.34	0.65***	0.53,0.80	7.38***	5.74,9.49
8th decile	2.61***	1.97,3.46	0.54***	0.43,0.66	8.10***	6.31,10.42
9th decile	2.46***	1.86,3.25	0.52***	0.42,0.65	8.18***	6.30,10.62
10th decile	2.51***	1.89,3.31	0.52***	0.41,0.66	7.79***	5.93,10.22
Education (ref: ≤ high school)						
Some post-secondary < bachelor's level	1.11*	0.99,1.24	0.94	0.86,1.04	1.27***	1.15,1.40
Bachelor's degree or above	1.36***	1.16,1.60	0.97	0.85,1.09	1.61***	1.42,1.83

- Clear positive SES gradients in private coverage;
- Clear negative SES gradients in public coverage;
- Overall, lower SES individuals had lower odds of reporting drug insurance coverage.

* Controlling for province, age, sex, self-reported health status and chronic diseases and 'imputed income'.

Results, characteristics associated with the odds of reporting drug insurance coverage — self reported health and chronic diseases*

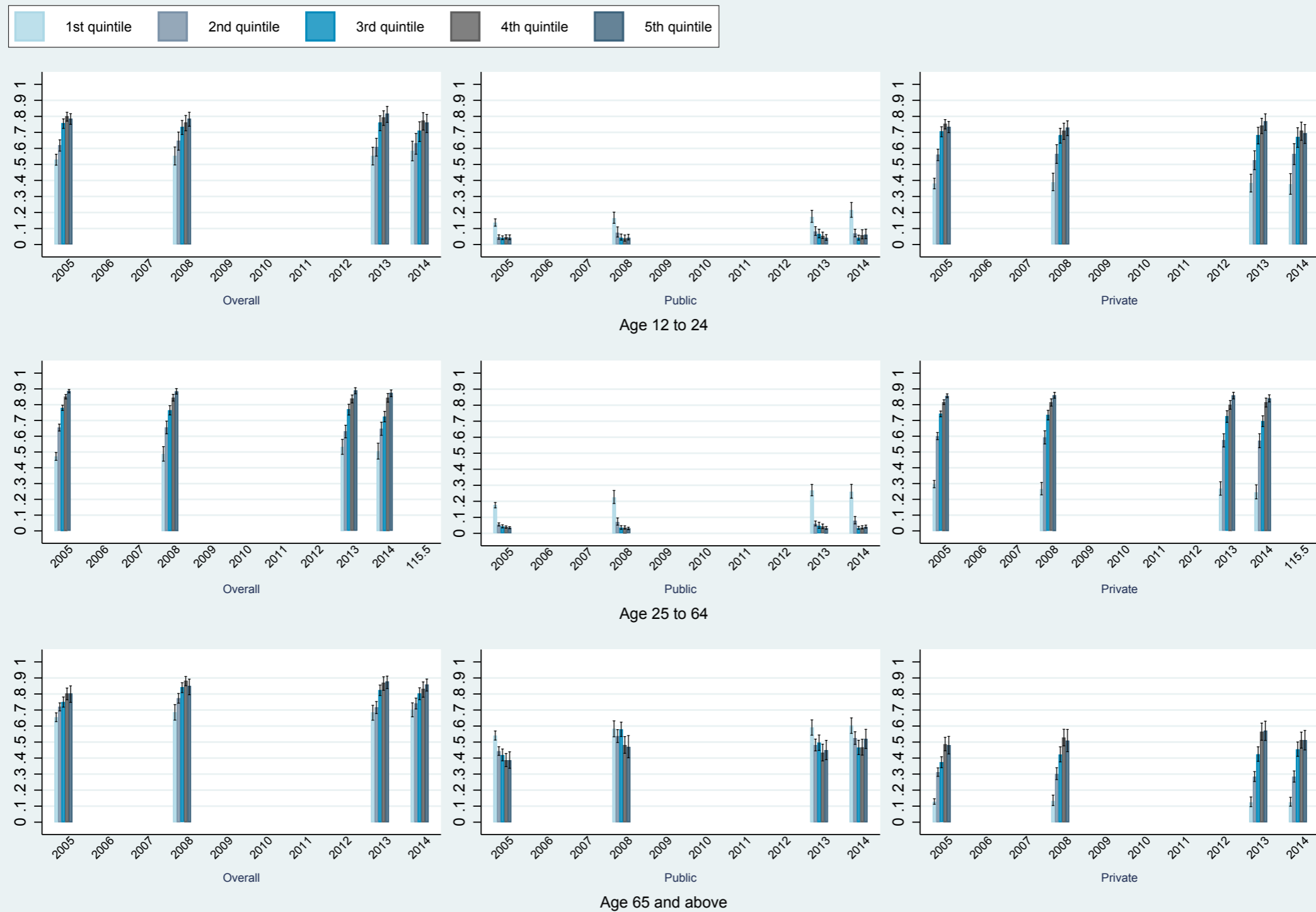
25-64 yrs old	Overall		Public		Private	
	Odds ratio	95% CI	Odds ratio	95% CI	Odds ratio	95% CI
Self-reported health (ref: excellent/very good)						
Good	0.95	0.87,1.04	1.16***	1.05,1.28	0.90**	0.83,0.98
Fair	1.05	0.91,1.22	2.18***	1.89,2.51	0.62***	0.55,0.69
Poor	1.74***	1.38,2.19	3.55***	2.93,4.29	0.57***	0.47,0.68
Chronic diseases	1.42***	1.30,1.55	1.54***	1.40,1.69	1.10***	1.02,1.19

- Public plans predominantly covered those in poorer health;
-
- Private plans predominantly covered those in good health;
-
- Overall, among adults aged 25-64, individuals who self-reported poor health and/or chronic diseases had higher odds of reporting drug insurance coverage.

65+ yrs old	Overall		Public		Private	
	Odds ratio	95% CI	Odds ratio	95% CI	Odds ratio	95% CI
Self-reported health (ref: excellent/very good)						
Good	1.00	0.88,1.12	1.13**	1.03,1.25	0.88**	0.80,0.98
Fair	0.99	0.84,1.15	1.26***	1.11,1.44	0.74***	0.65,0.85
Poor	1.14	0.91,1.43	1.48***	1.20,1.81	0.70***	0.55,0.87
Chronic diseases	1.43***	1.26,1.62	1.39***	1.25,1.54	1.03	0.91,1.15

* Controlling for household income, education, province, age, sex and 'imputed income'.

Results, self-reported drug insurance coverage, 2005-2014 — Ontario, by household income



Source: Canadian Community Health Surveys, Statistics Canada.

Results, characteristics associated with the odds of reporting drug insurance coverage — Ontario, time effects

25-64 yrs old	Overall		Public		Private	
	Odds ratio	95% CI	Odds ratio	95% CI	Odds ratio	95% CI
Year (ref: 2005)						
2008	0.95	0.86,1.04	1.04	0.88,1.22	0.94	0.86,1.03
2013	1.01	0.91,1.11	1.23***	1.05,1.44	0.92	0.84,1.02
2014	0.94	0.85,1.05	1.22**	1.05,1.41	0.89**	0.80,0.98

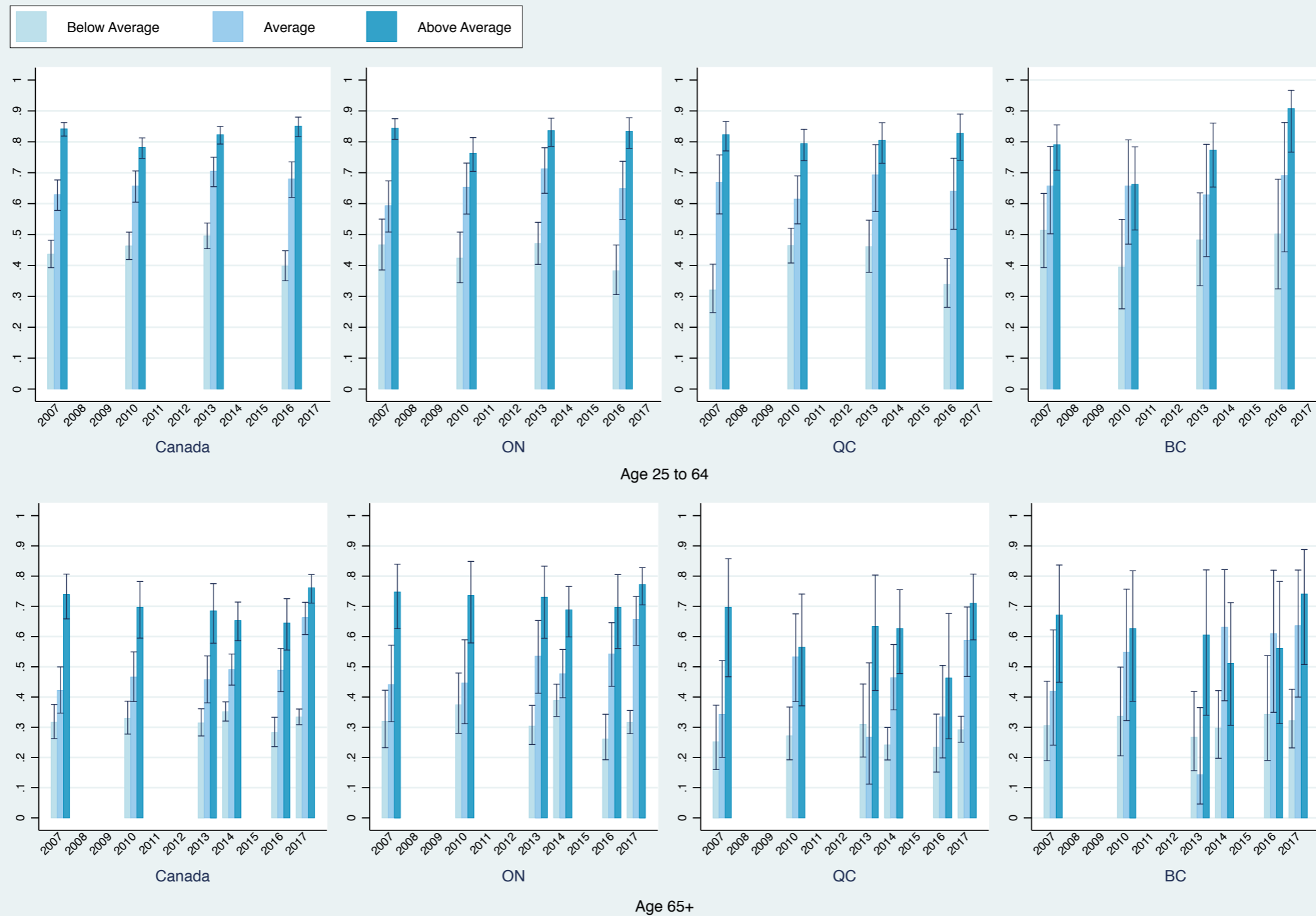
- Among those aged 25-64, respondents had higher odds of reporting public drug coverage in 2008, 2013 and 2014, relative to 2005; and, lower odds of reporting private drug coverage;

65+ yrs old	Overall		Public		Private	
	Odds ratio	95% CI	Odds ratio	95% CI	Odds ratio	95% CI
Year (ref: 2005)						
2008	1.45***	1.25,1.68	1.47***	1.31,1.65	1.09	0.96,1.23
2013	1.25***	1.07,1.44	1.25***	1.11,1.39	1.1	0.98,1.23
2014	1.31***	1.13,1.52	1.42***	1.27,1.59	1.07	0.95,1.21

- Among those aged 65+, respondents had higher odds of reporting public drug coverage in 2008, 2013 and 2014, relative to 2005.

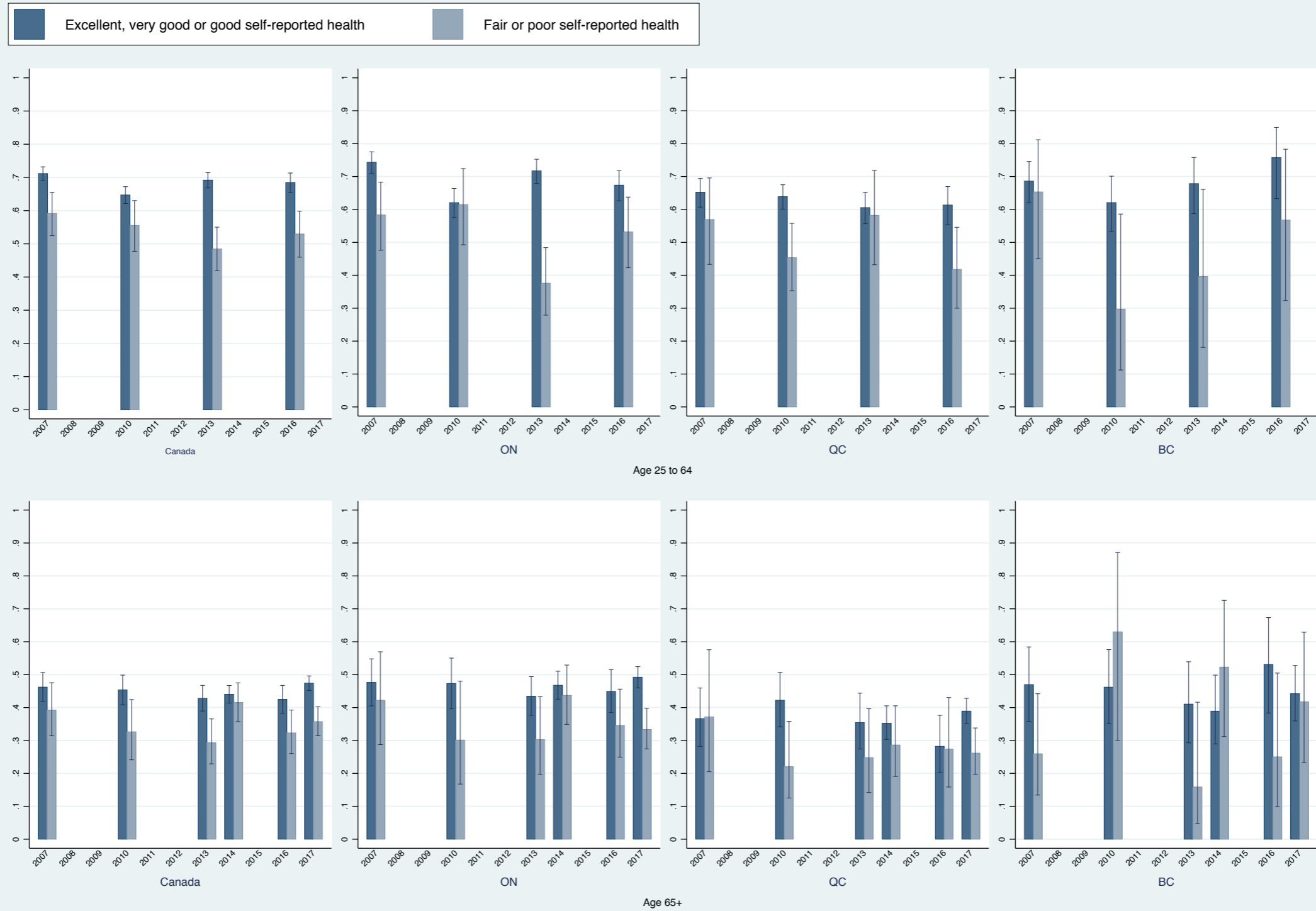
* Controlling for household income, education, province, age, sex, self-reported health status and chronic diseases and 'imputed income'.

Results, self-reported private insurance coverage, 2007-2017 — by household income, International Health Policy Survey



Source: International Health Policy Surveys, The Commonwealth Fund.

Results, self-reported private insurance coverage, 2007-2017 — by household income, International Health Policy Survey



Source: International Health Policy Surveys, The Commonwealth Fund.

Limitations and next steps

Limitations

1. Measurement problem: self-reported insurance coverage \neq actual coverage
2. International Health Policy Survey, Commonwealth Fund
 - private insurance only; not specific to drugs; small sample size
3. Association, not causation
 - difficult to comment on risk selection (adverse selection, cream skimming) and targeting (provincial governments intentionally targeting sicker individuals)

Next steps

1. Factors associated with 'mis-reported' public insurance coverage.

Key messages

1. Positive SES gradients in private coverage;
2. Negative SES gradients in public coverage;
3. Public plans more likely to cover the sick;
4. Private plans more likely to cover the healthy;
5. In Ontario, some evidence that public coverage has gradually supplanted private coverage over the past decade;
6. Measurement matters

Contacts

Commends:

Elaine — elainexiaoyu.guo@mail.utoronto.ca

Emmanuel — emmanuel.guindon@mcmaster.ca

Concerns/criticisms:

Arthur — arthur.sweetman@mcmaster.ca