The index of intergenerational equity-2016

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Foreword

The Quebec Index of Intergenerational Equity was born in 2013 during a conference hosted by the Association of Junior Chambers of Commerce of Quebec (RJCCQ). Inspired by participant enthusiasm for the Index, Carole Beaulieu, editor-in-chief and publisher of *L'actualite*, and Christian Bélair, the former head of the RJCCQ, put their heads together to launch the initiative. Shortly thereafter, and engaged the economist Alexis Gagné to develop the index.

The first edition of the Index was released in March 2014 by *L'actualité* magazine. The Index covered the period from 1976 to 2011, focusing on young Quebecers aged 25 to 34 years. It showed that the kids, or rather young people in the workforce, are alright. Intergenerational equity, measured via the index, has generally improved for Generations X and Y compared to baby boomers. However, the sustainability of this progression in quality of life faces significant threats from global warming and changes to Quebec public policy due to fiscal constraints – either through tax increases or cuts in services.

Emboldened by the success of the first Index of Intergenerational Equity, Alexis Gagné, Maripier Isabelle, Christian Bélair, Laura O'Laughlin and Isabelle Fontaine, decided to form a nonprofit institute named the Generations Institute. The Generations Institute launched other initiatives including the Youth Budget, in collaboration with *L'actualité* in March 2015, and updated the "Manifesto for a Lucid Quebec" on its 10-year anniversary, the results of which were published in *Les Affaires* in October 2015.

For the 2016 edition of the Index of Intergenerational Equity, members of the Institute wanted to extend the index to other Canadian provinces. Together with their advisory board, the Generations Institute refined, updated, and extended the Index. As for the comparison with other Canadian provinces, data availability and workload have only temporarily curbed their enthusiasm, restraining the 2016 edition to a comparison between Quebec and Ontario.

The Generations Institute (L'Institut des générations)

The Generations Institute (the "Institute") is a non-profit organization, with the mission is to create and disseminate tools, analysis, and proposals on issues related to intergenerational equity. Its primary objective is to stimulate and inform discussions on these issues in an open, non-partisan way.

The Generations Institute was created by Quebecers from different generations and different political beliefs. All members unanimously agree on the importance of improving the quality of life – both economically and socially – across all generations.

The Generations Institute is an independent non-profit organization. All members, including the advisory board, contribute their time on a voluntary basis.

A Few Words of Thanks

Introduction

The 2016 edition of the Index of Intergenerational Equity (Index) quantitatively assesses the evolution of intergenerational equity, measuring the impact of public policy decisions over the last 37 years. Covering the period from 1976 to 2013 and focusing on young people aged 25 to 34 years, we added an additional dimension in 2016: a comparison between Quebec and Ontario.

Our analysis aims to explore the evolution of certain indicators and their distribution between generations over recent decades. These indicators can be thought of as a measure of the costs and benefits associated with public policy and political choices. As a "cost" for one person may be a "benefit" for another, the selection of indicators and their classification into costs and benefits is not a simple, universal process. Therefore, the composition and classification of the Index is the result of two focus groups, one with youth aged 20 to 35 and the second with people aged 55 and over. We also conducted a series of informal consultations with Quebecers of all ages from all political backgrounds, involved in various spheres of activity, with varying experiences, and all mobilized by the issue of equity between generations.

The composition of the 2016 edition of the Index is slightly different from the first edition. We hope it is a change for the better. Regardless, the following two interrelated issues remain at the core of the Index:

1.   Has the living standard of young people improved or deteriorated?
2.   Have power, wealth, and jobs been shared more or less equally across generations?

To answer these questions as accurately as possible, we collected 26 socio-economic indicators (see the section "The Indicators" for further details) and combined them to form the Index of Intergenerational Equity. These were divided into two groups. The first group of 16 indicators aims to answer the first question by analyzing different factors contributing to the standard of living of individuals. The second group of 10 indicators answers the second question, and as such, is more focused on analyzing the sharing of power and wealth. We trace the individual and joint evolution of these 26 indicators over the 1976-2013 time period, using 1990 as the reference year. This year, the Index is an analysis in two dimensions: first comparing the relative standard of living for young people against their parents' generation, and then comparing this relative standard of living between Quebec and Ontario. The evolution of the Index is summarized in the table below:

We would have also liked the Index to cover some additional dimensions, and in particular, certain environmental indicators. Unfortunately, the data were simply not available in sufficient quantity and quality. It is also important to note that four indicators are calculated only for Québec, as their Ontario equivalent unfortunately cannot be calculated under the available resources.

Finally, we believe that Canadians would benefit greatly from more studies of intergenerational equity. One of the last in-depth studies of the subject was directed by Miles Corak for Statistics Canada in 1998. This type of analysis contributes greatly to the discussions on intergenerational equity. Other research, related to the concept of generational accounting, presented in the works of Kotlikoff and in a study in the Canadian context by Vaillancourt and Oreopoulous in 1998, would ideally be renewed every five years. Such exercises allow, among others, to estimate the tax rates that different generations have or will incur in order to maintain their standard of living

Methodology

As mentioned in the introduction, the Index addresses two core questions:

1.   Has the living standard of young people improved or deteriorated?
2.   Have power, wealth, and jobs been shared more or less equally across generations?

26 indicators were selected for this version of the index. These indicators therefore aim to cover all aspects of an analysis related to these two questions, whether economic, social or other. As previously mentioned, the Index traces the evolution of these indicators as they relate the well-being of young people aged 25 to 34, over the 1976 to 2013 time period. We selected 1990 as the base year because many indicators became available at this time. Additionally, the 23-year period between 1990 and 2013 nearly represents the typical 25-year period that marks a generation.

The Index uses 26 indicators, plus an additional four indicators available only for Quebec. We separate these indicators into two categories that answer the two core questions.

Question 1: Living Standards and Young People (25-34):

1.   Median income after tax, 25 to 34
2.   Unemployment rate, 25 to 34
3.   Average length of unemployment spells (in weeks), 25 and 34
4.   Average number of hours worked, 25 to 34 years +
5.   Pay equity: Weekly salary of women aged 25 to 34 / weekly salary of men aged 25 to 34
6.   Income inequality: Gini coefficient, 25 and 34
7.   Median net assets, 25 and 34
8.   Ratio of average house prices and median income after tax, 25 to 34
9.   Ratio of average rent for a 2 bedroom and the median after-tax monthly, 25 to 34
10. Crime rate per 100 000 population (excluding traffic violations)
11. High school graduation rate, 25 to 34
12. University graduation rate , 25 to 34
13. Life expectancy at birth
14. Stock of provincial public infrastructure as a percentage of GDP
15. Overall Satisfaction with regard to life in the 25 to 34 years
16. Rates of major depression in the past year and perception of mental health for 25 to 34

Question 2: Sharing of power, wealth, and employment opportunities

17. Ratio of median income after tax, 25 to 34 years and the median after-tax income, 16+
18. Ratio of the unemployment rate for 25 to 34 years and the unemployment rate, 15+
19. Ratio of median net assets of 25 to 34 years and the median net assets, 16+
20. Ratio of average tax rate, 25 to 34 and the average tax rate, 16 years and over (average before tax - average after-tax income / average before tax income)
21. *Gross (Quebec) or net (Ontario) debt of the provincial government as a percentage of GDP (Quebec and Ontario not comparable)*

22. Percentage of GDP up to provincial education spending
23. Percentage of GDP going to the provincial health spending
24. *Percentage of GDP going to provincial spending on childcare (Quebec only)*
25. Percentage of GDP going to provincial spending on debt service
26. *Average age of MNAs after each election (Quebec only)*
27. Average age of board members of large companies
28. Emissions of greenhouse gas (megatonnes of CO2 equivalent)
29. Concentration of fine particles in southern Quebec and southern Ontario
30. *Water quality at the mouth of the main southern watersheds (Quebec only)*

Grayed indicators are new in the 2016 edition of the Index. Italicized indicators are available for Quebec only and are not included in any comparison with Ontario.

The 26 indicators available for both Quebec and Ontario are aggregated into a single Index of Intergenerational Equity by a simple process:

1. Each indicator is converted with a base equal to 100, with the base year of 1990=100.[1]
2. A weight of 4 was given to two indicators: (i) median income and (ii) income inequality.[2] A ¼ weight was assigned to two other indicators (i) crime rate and (ii) University graduation rates.[3]
3. A weighted average is then calculated.

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[1] This index increases or decreases in parallel and proportionally to the changes in the indicator, if the increase of the indicator is positive for equity. If the increase of the indicator is detrimental to equity, the associated index increases and decreases in the opposite direction of the indicator. For example, if the unemployment rate increased from 5% in the base year to 10%, the index will decrease from 100 to 50.

[2] These two indicators are considered very important by the authors. As they do not fluctuate rapidly, the impact on the index as a whole is seen as insufficient.

[3] These two indicators are considered important, but their major variation observed during the period of interest made their impact on the index too large.
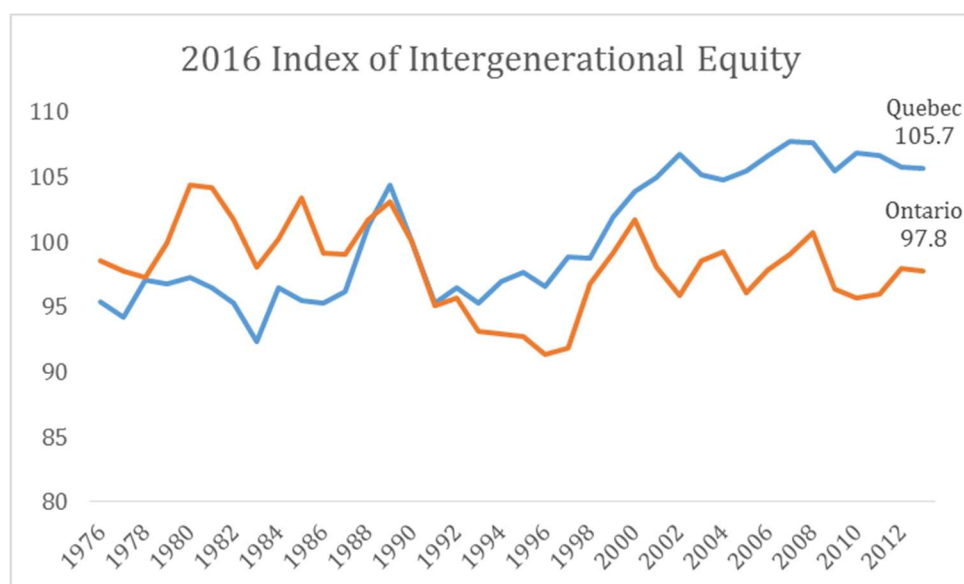
The 2016 Index: Key Findings

Table 1 - Index of Intergenerational Equity : Québec - Ontario Comparison								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1976	95.4	98.6	1989	104.4	103.1	2002	106.8	95.9
1977	94.2	97.7	**1990**	**100.0**	**100.0**	2003	105.2	98.6
1978	97.1	97.3	1991	95.3	95.1	2004	104.8	99.3
1979	96.8	100.0	1992	96.5	95.7	2005	105.5	96.1
1980	97.3	104.4	1993	95.3	93.1	2006	106.7	97.9
1981	96.5	104.2	1994	97.0	92.9	2007	107.7	99.0
1982	95.3	101.7	1995	97.7	92.7	2008	107.7	100.7
1983	92.3	98.1	1996	96.6	91.3	2009	105.5	96.3
1984	96.5	100.3	1997	98.9	91.8	2010	106.9	95.7
1985	95.5	103.4	1998	98.8	96.8	2011	106.6	96.0
1986	95.3	99.2	1999	101.9	99.1	2012	105.8	98.0
1987	96.2	99.1	2000	103.8	101.7	**2013**	**105.7**	**97.8**
1988	101.3	101.7	2001	105.0	98.1			

Due to data availability, the last year in the 2016 Index is 2013. Accordingly, the 2013 value of the IEG is the most recent comparison of living standards and resource-sharing between the generation of young people aged 25 to 34 (Generations X and Y) and their parents' generation (Baby-boomers).

Our analysis suggests the following:

- In Quebec, the Index has *increased* from 100 to 105.7 between 1990 and 2013, indicating an improved quality of life and resource-sharing for Quebec's younger working generation. In other words, a fragile equity exists between 25-34 year-olds in Québec and their parents' generation.

- In Ontario, Index has *decreased* from 100 to 97.8 between 1990 and 2013, indicating a deterioration in standard of living and resource-sharing for Ontario's younger

working generation. The living standards of young people seem to have deteriorated slightly compared to the generation of their parents.

- The indicators with the greatest *positive* impact on the Index in Quebec are:
    - Crime rate (decrease from 6,207 to 3,861 infractions per 100,000 people)
    - University graduation rate (increase from 14.4% to 31% of the population)
    - Unemployment rate (10.7% to 7.24%)
    - Median income ($ 24,853 to $ 31,389)
    - Median Net assets ($ 33,631 to $ 43,259)

- The indicators with the greatest *negative* impact on the Index in Quebec are:
    - Mental health (constructed index of 100 to 53)[4]
    - Ratio of net assets of 25-34 year olds to the population as a whole (34% to 22%)
    - Ratio of house prices to income (6.19 to 8.41)

- The indicators with the greatest *positive* impact on the Index in Ontario are:
    - Crime rate (decrease from 7,019 to 3,675 infractions per 100,000 people)
    - University graduation rate (increase from 17.9% to 35.7% of the population)
    - Air quality – fine particulate matter (decrease from 8.36 to 5.88 micrograms per cubic meter)
    - Public provincial Education spending as a percent of provincial budget (3.7% to 4.6% of population with a university degree)
    - Ratio of average tax rate across generations (.98 to .83)

- The indicators with the greatest *negative* impact on the Index in Ontario are:
    - Mental health level (constructed index, with a deterioration of 100 to 55.9)
    - Unemployment duration, in weeks (13.5 to 20.35)
    - Ratio house prices / income (9.15 to 12.96)

- The indicators with the greatest Quebec – Ontario divergence between 1990 and 2013 (in Quebec's favour) are:
    - Median Income:
        - Québec: $ 24,853 to $ 31,389
        - Ontario: $ 29,405 to $ 29,701
    - Unemployment rate:
        - Quebec: 10.66% 7.2%
        - Ontario: 6.7% to 7.7%
    - Average duration of unemployment spells:
        - Quebec: 19.6 to 15.9 weeks
        - Ontario: 13.5 to 20.4 weeks

- The indicators with the greatest Quebec – Ontario divergence between 1990 and 2013 (in Ontario's favour) are:
    - Air Quality (micrograms per cubic meter of fine particulate matter)
        - Quebec: 7.2 to 9.4

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[4] It is important to note that the sharp deterioration in this indicator might partly be due to a change in culture that has made mental health problems less taboo. Thus, the deterioration in the mental health indicator may simply be due to increased reporting and recognition

- Ontario: 8.4 to 5.9
  - Public expenditure on education as percentage of GDP:
    - Quebec: 6% to 5.2%
    - Ontario: 3.7% to 4.6%
  - Intergenerational ratio of average tax rates:
    - Quebec: 1.02 to 0.99
    - Ontario: 0.98 to 0.83

- The fact that the Index is higher in Quebec than in Ontario does not necessarily mean that the standard of living and sharing of resources among youth aged 25 to 34 is higher in Quebec compared to Ontario. Indeed, the Index studies the evolution and not the absolute level of the standard of living and sharing of resources.

- The data nonetheless permit a direct comparison. A look at the *level* of the 26 indicators that compose the Index for the years 2012 and 2013 further suggests that young Quebecers' have a standard of living that exceeds that of their Ontarian counterparts. Of the 26 indicators available for 2012 and 2013, 13 were in favor of young Quebecers, 11 in favor of Ontarian youth – and many of these in key areas, including:
  - A higher median income;
  - A lower unemployment rate;
  - A shorter average period of unemployment;
  - A lower level of income inequality.

For comparison purposes, we calculate a sub-index only on the first 16 indicators related to quality of life for three age groups: 25-34 years, 35-64 years, and 65 and over. The results are presented below:
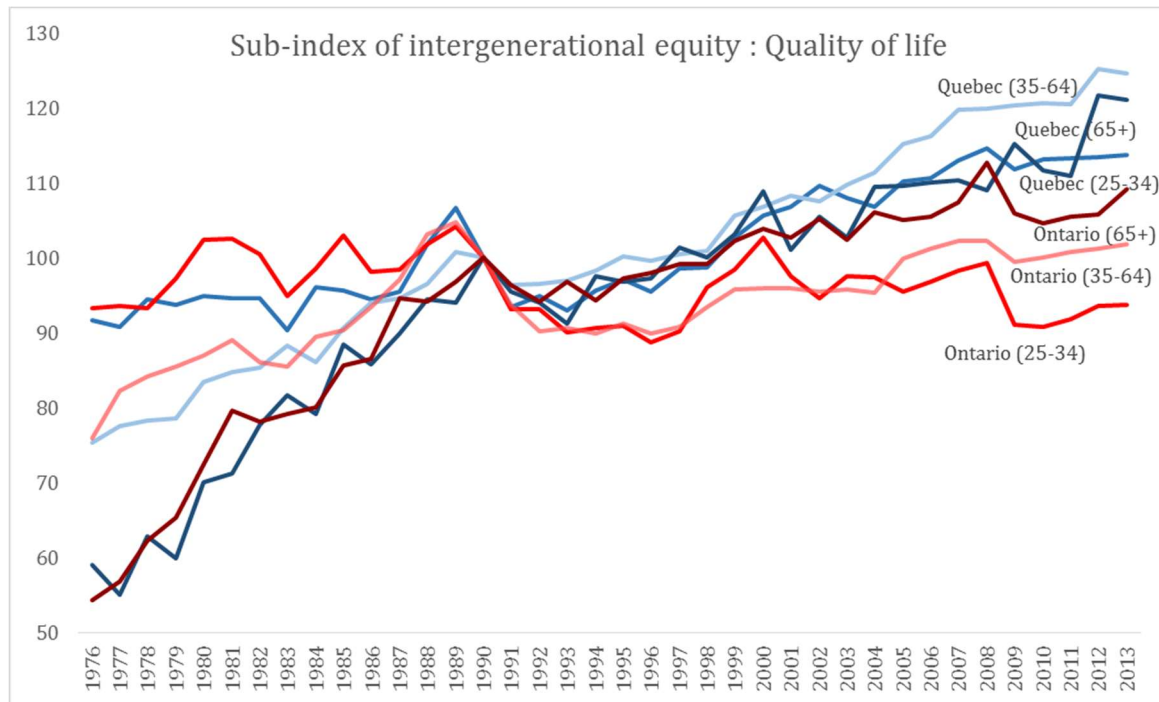
The evolution of the index for each of these groups indicate that between 1990 and 2013, Quebecers aged 35 to 64 and 65+ have seen their standard of living increase the most rapidly. Only Ontarians aged 25 to 34 have seen a decline in living standards.

In the next section, we present the evolution of each of the 26 key indicators and the 4 indicators available for Quebec only. All the indicators and data used to compose these indicators in dollars are in real 2012 dollars.[5] Specifically, the next section contains, for each indicator:

- The definition of the indicator;
- The source or sources of the data;
- The annual value of the indicator for the 25 to 34 age group, in both Quebec and Ontario;
- A graphic comparison between Quebec and Ontario.

All data for other age groups are attached in an annex.

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[5] For price indices, Table 326-0021, Statistics Canada, special compilation, Institute of Statistics of Quebec

The Indicators

Indicator 1: **Median after-tax income**
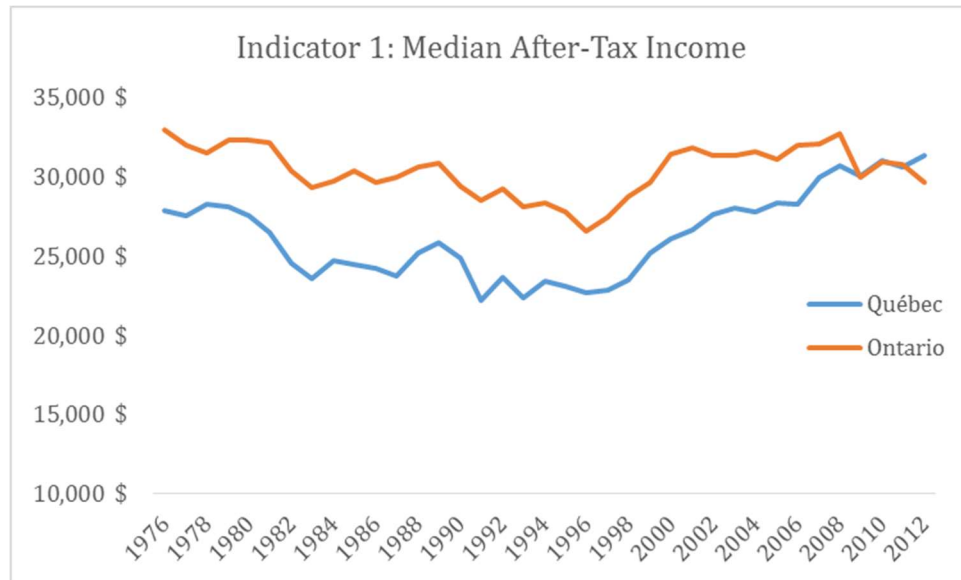
Indicator 1 - Median income after taxes and transfers								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1976	27,918 $	32,954 $	1989	25,839 $	30,867 $	2002	27,617 $	31,353 $
1977	27,526 $	32,043 $	**1990**	**24,854 $**	**29,405 $**	2003	28,050 $	31,328 $
1978	28,287 $	31,521 $	1991	22,170 $	28,520 $	2004	27,768 $	31,611 $
1979	28,085 $	32,349 $	1992	23,648 $	29,229 $	2005	28,390 $	31,154 $
1980	27,552 $	32,373 $	1993	22,372 $	28,102 $	2006	28,305 $	32,016 $
1981	26,542 $	32,181 $	1994	23,397 $	28,358 $	2007	29,984 $	32,107 $
1982	24,581 $	30,365 $	1995	23,095 $	27,759 $	2008	30,731 $	32,766 $
1983	23,598 $	29,374 $	1996	22,702 $	26,593 $	2009	30,068 $	30,023 $
1984	24,706 $	29,769 $	1997	22,885 $	27,466 $	2010	31,009 $	30,970 $
1985	24,446 $	30,426 $	1998	23,485 $	28,760 $	2011	30,593 $	30,801 $
1986	24,232 $	29,664 $	1999	25,190 $	29,630 $	**2012**	**31,389 $**	**29,701 $**
1987	23,773 $	29,978 $	2000	26,073 $	31,440 $			
1988	25,224 $	30,620 $	2001	26,680 $	31,825 $			

Description: This indicator represents the evolution of the median disposable income (after taxes and transfers) of young people from 25 to 34 years old.

Source: Statistics Canada, Survey of Labour Dynamics and Income Survey of Financial Security, master file compilation by Stéphane Crespo, ISQ.

Indicator 2: Unemployment rate

Indicator 2 - Unemployment rate
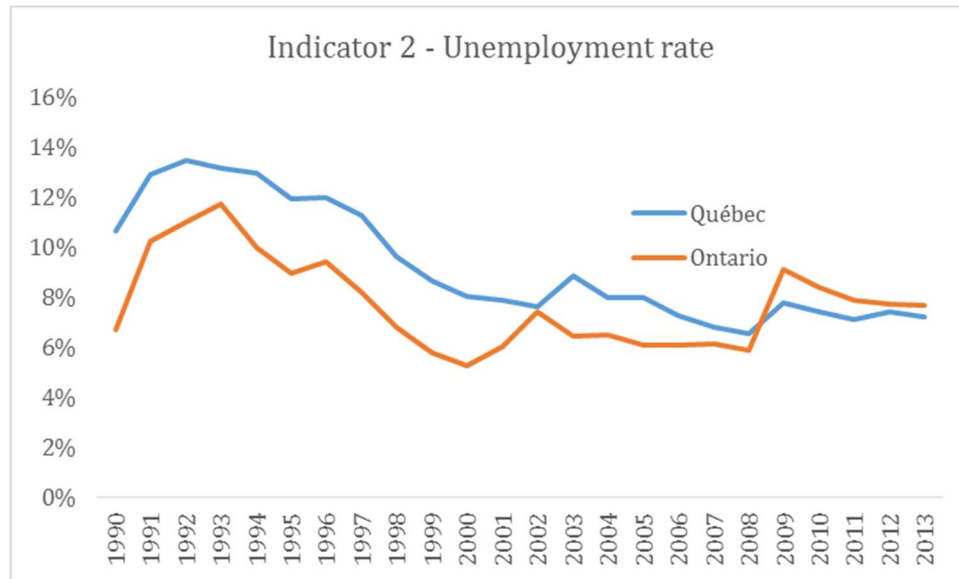
Indicator 2 - Unemployment rate								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1990	**10.66%**	**6.70%**	1998	9.66%	6.82%	2006	7.28%	6.09%
1991	12.93%	10.23%	1999	8.67%	5.80%	2007	6.80%	6.14%
1992	13.47%	11.02%	2000	8.05%	5.28%	2008	6.56%	5.90%
1993	13.20%	11.75%	2001	7.92%	6.03%	2009	7.77%	9.11%
1994	12.99%	9.98%	2002	7.62%	7.45%	2010	7.44%	8.39%
1995	11.93%	8.97%	2003	8.87%	6.44%	2011	7.12%	7.88%
1996	12.01%	9.45%	2004	7.99%	6.50%	2012	7.45%	7.74%
1997	11.30%	8.18%	2005	8.01%	6.11%	**2013**	**7.24%**	**7.69%**

Description: This indicator represents the evolution of the unemployment rate for people aged from 25 to 34 years.

Source: Statistics Canada, Labour Force Survey, authors' calculations

Indicator 3: Average duration of unemployment (weeks)

Indicator 3 - Average duration of unemployment (weeks)
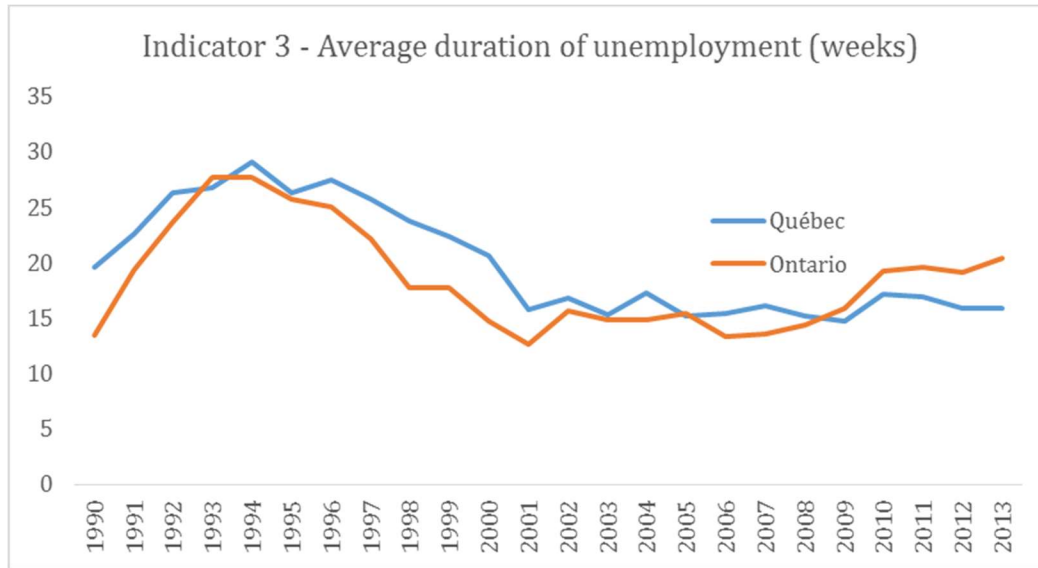
Indicator 3 – Average duration of unemployment (weeks)								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1990	**19.6**	**13.48**	1998	23.75	17.73	2006	15.43	13.39
1991	22.66	19.33	1999	22.39	17.73	2007	16.1	13.6
1992	26.29	23.63	2000	20.65	14.71	2008	15.23	14.37
1993	26.75	27.69	2001	15.78	12.63	2009	14.7	15.93
1994	29.08	27.72	2002	16.81	15.61	2010	17.16	19.19
1995	26.36	25.71	2003	15.25	14.81	2011	16.89	19.61
1996	27.5	25.01	2004	17.31	14.82	2012	15.88	19.18
1997	25.73	22.14	2005	15.21	15.47	**2013**	**15.94**	**20.35**

Description: This indicator represents the evolution of the length of unemployment spells for people from 25 to 34 years old.

Source: Statistics Canada, Labour Force Survey, authors' calculations

Indicator 4: Average number of hours worked per week
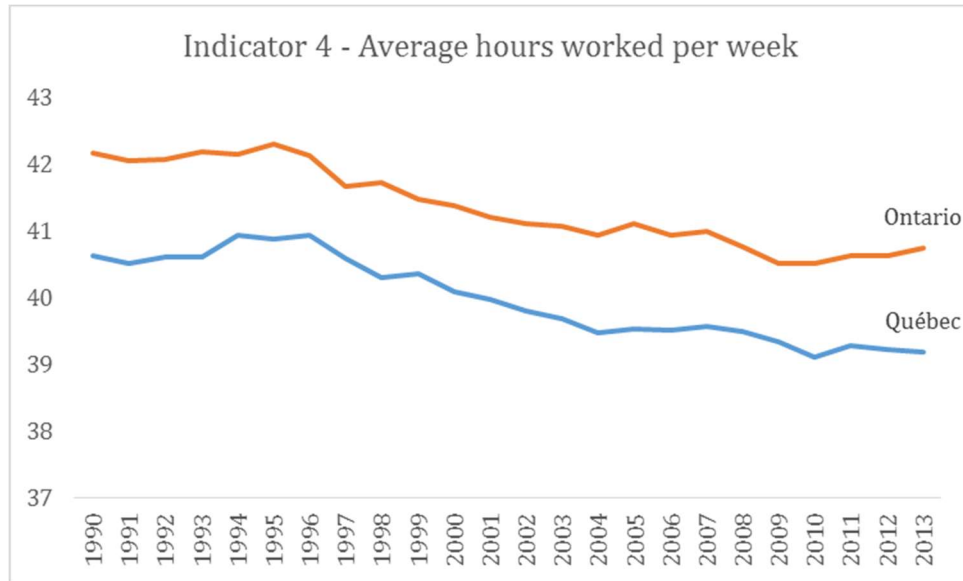

Indicator 4 – Average number of hours worked per week								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1990	**40.63**	**42.17**	1998	40.3	41.71	2006	39.5	40.93
1991	40.5	42.04	1999	40.35	41.46	2007	39.57	40.99
1992	40.61	42.07	2000	40.09	41.37	2008	39.48	40.75
1993	40.61	42.18	2001	39.97	41.2	2009	39.33	40.51
1994	40.93	42.14	2002	39.8	41.1	2010	39.11	40.5
1995	40.88	42.3	2003	39.69	41.06	2011	39.27	40.63
1996	40.94	42.12	2004	39.46	40.93	2012	39.22	40.62
1997	40.58	41.67	2005	39.52	41.1	**2013**	**39.18**	**40.73**

Description: This indicator shows the change in the average number of hours worked by individuals 25 to 34 years. It only includes individuals working full-time.

Source: Statistics Canada, Labour Force Survey, authors' calculations

Indicator 5: Pay equity ratio (weekly salary of women / weekly salary of men)
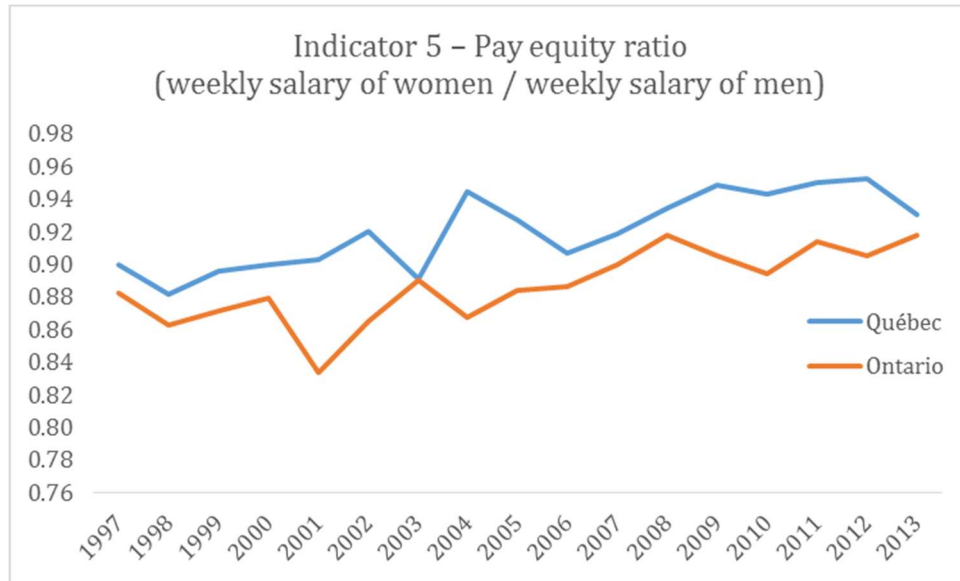
Indicator 5 Pay Equity - Ratio of weekly average salary of women / Weekly average salary of men								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1997	0.90	0.88	2003	0.89	0.89	2009	0.95	0.91
1998	0.88	0.86	2004	0.94	0.87	2010	0.94	0.89
1999	0.90	0.87	2005	0.93	0.88	2011	0.95	0.91
2000	0.90	0.88	2006	0.91	0.89	2012	0.95	0.90
2001	0.90	0.83	2007	0.92	0.90	**2013**	**0.93**	**0.92**
2002	0.92	0.87	2008	0.93	0.92			

Description: This indicator is calculated by dividing the average weekly earnings of women 25 to 34 years by the average weekly wage of men 25 to 34 years.

Source: Statistics Canada, Labour Force Survey, special authors' calculations

Indicator 6: Income inequality - Gini coefficient
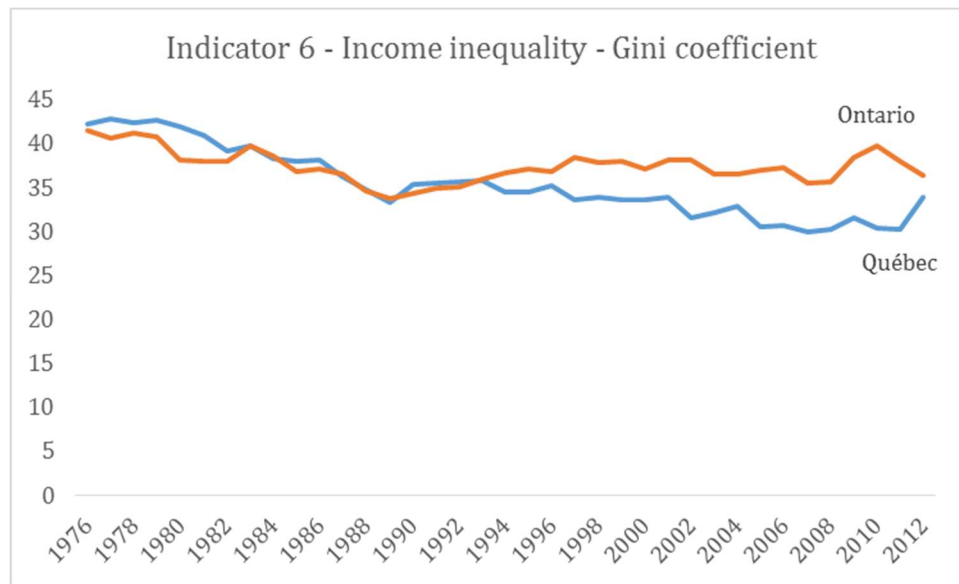
Indicator 6 – Income inequality: Gini coefficient								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1976	42.15	41.51	1989	33.30	33.76	2002	31.49	38.05
1977	42.79	40.64	**1990**	**35.31**	**34.35**	2003	32.20	36.48
1978	42.29	41.16	1991	35.54	34.98	2004	32.94	36.45
1979	42.70	40.71	1992	35.68	35.13	2005	30.60	36.90
1980	41.91	38.12	1993	35.81	35.93	2006	30.63	37.26
1981	40.83	37.94	1994	34.54	36.63	2007	30.02	35.55
1982	39.07	37.91	1995	34.53	37.03	2008	30.20	35.63
1983	39.75	39.79	1996	35.13	36.82	2009	31.58	38.45
1984	38.25	38.62	1997	33.54	38.40	2010	30.38	39.68
1985	37.94	36.76	1998	33.91	37.85	2011	30.26	37.93
1986	38.07	37.12	1999	33.62	37.92	**2012**	**33.83**	**36.42**
1987	36.23	36.44	2000	33.53	37.03			
1988	34.78	34.58	2001	33.96	38.09			

Description: This indicator represents the evolution of the Gini coefficient, calculated using after-tax income. The Gini coefficient is a widely-used measure of income inequality, where the value of 1 represents perfect inequality and 0 represents perfect equality (all people have exactly the same after-tax income.

Source: Statistics Canada, Survey of Labour Dynamics and Income Survey of Financial Security, master file compilation by Stéphane Crespo, ISQ.

Indicator 7: Median net assets of 25-34 year olds

Indicator 7 Median net assets		
Année	Québec	Ontario
1999	33,631.62 $	60,473.24 $
2005	29,532.37 $	48,071.98 $
2012	**43,259.18 $**	**67,630.08 $**

Description: This indicator represents the evolution of median net assets of 25-34 year-olds (assets minus liabilities).

Source: Statistics Canada, Survey of Financial Security, master file compilation by Marc-André Gauthier

Indicator 8: Ratio of average house prices and median after-tax income
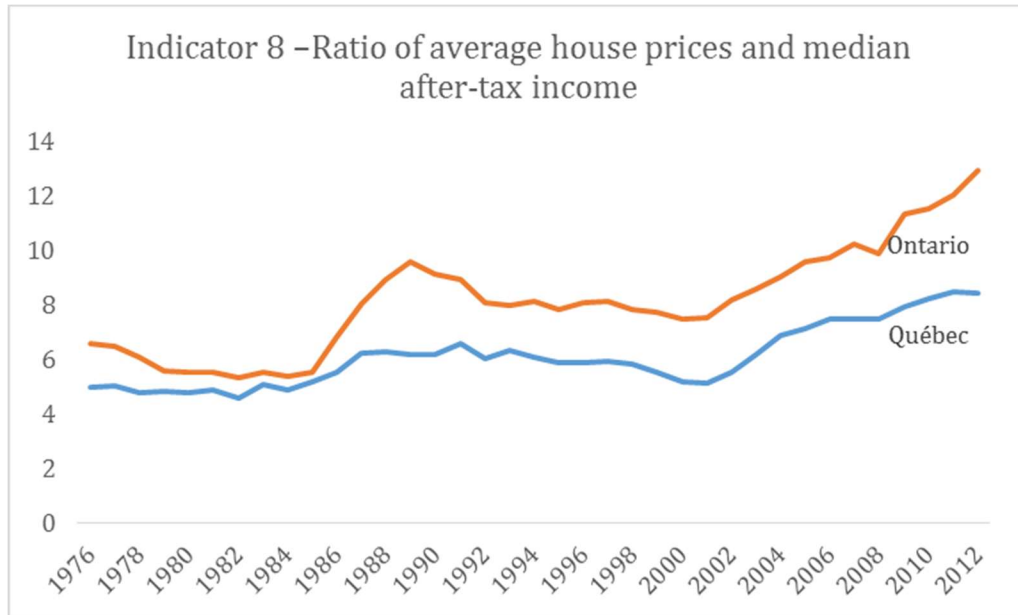
Indicator 8 – Ratio of average house price and median after-tax income								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1976	4.98	6.58	1989	6.19	9.57	2002	5.52	8.20
1977	5.01	6.50	**1990**	**6.19**	**9.15**	2003	6.16	8.59
1978	4.79	6.08	1991	6.59	8.91	2004	6.90	9.04
1979	4.83	5.56	1992	6.03	8.07	2005	7.14	9.60
1980	4.78	5.55	1993	6.31	8.00	2006	7.50	9.71
1981	4.86	5.54	1994	6.09	8.11	2007	7.47	10.23
1982	4.57	5.30	1995	5.86	7.84	2008	7.49	9.89
1983	5.05	5.54	1996	5.85	8.09	2009	7.96	11.34
1984	4.88	5.38	1997	5.91	8.11	2010	8.22	11.54
1985	5.18	5.54	1998	5.81	7.81	2011	8.48	12.03
1986	5.52	6.81	1999	5.51	7.74	**2012**	**8.41**	**12.96**
1987	6.23	8.03	2000	5.15	7.49			
1988	6.27	8.92	2001	5.14	7.55			

Description: This indicator is calculated by dividing the average house price in Quebec and Ontario by the median after-tax income of 25 to 34 year-olds.

Source: Average house prices: Canadian Real Estate Association, median after-tax income: Statistics Canada, Survey of Labour Dynamics and Income Survey of Financial Security, master file compilation by Stéphane Crespo, ISQ.

**Indicator 9: Ratio of average monthly rent (2 bedroom apartment) and median after-tax income**

Indicator 9 – Ratio of average monthly rent (two bedroom apartment) and median after-tax income
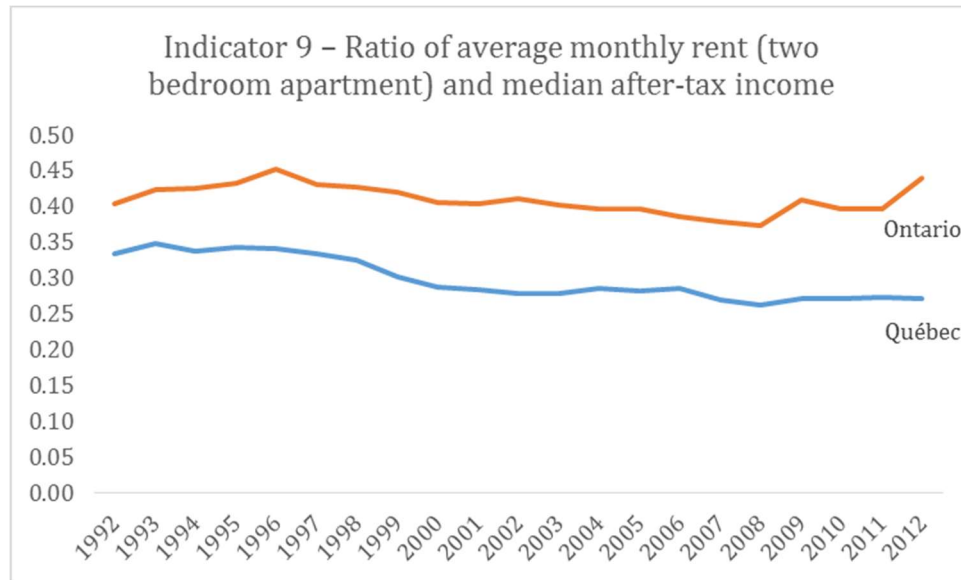
Indicator 9 Ratio of average rent of a 2-bedroom apartment and median monthly income after taxes and transfers								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1992	0.33	0.40	1999	0.30	0.42	2006	0.29	0.39
1993	0.35	0.42	2000	0.29	0.41	2007	0.27	0.38
1994	0.34	0.43	2001	0.28	0.40	2008	0.26	0.37
1995	0.34	0.43	2002	0.28	0.41	2009	0.27	0.41
1996	0.34	0.45	2003	0.28	0.40	2010	0.27	0.40
1997	0.33	0.43	2004	0.29	0.40	2011	0.27	0.40
1998	0.33	0.43	2005	0.28	0.40	**2012**	**0.27**	**0.44**

Description: This indicator is calculated by dividing the average price of a rental of a 2 bedroom apartment in Quebec and Ontario by the monthly median after-tax income of young people aged from 25 to 34 years.

Source: Average rent: Canadian Mortgage and Housing Corporation, median after-tax income: Statistics Canada, Survey of Labour Dynamics and Income Survey of Financial Security, master file compilation by Stéphane Crespo, ISQ .

Indicator 10: Crime rate per 100,000 people (excluding traffic violations)
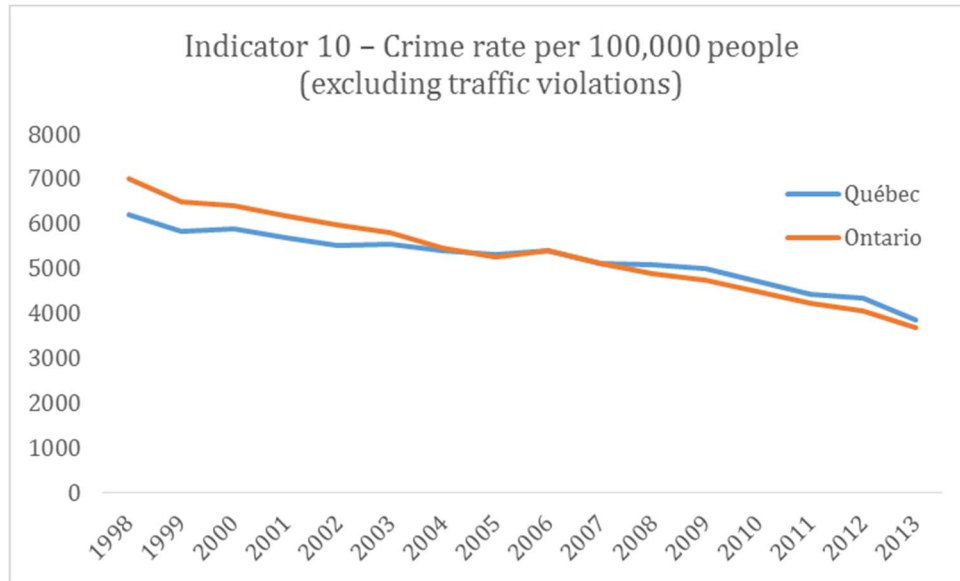
Indicator 10 – Crime rate per 100,000 people (excluding traffic violation)								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1998	6207.07	7018.84	2004	5395.41	5448.56	2010	4713.81	4501.59
1999	5822.36	6485.88	2005	5319.93	5257.27	2011	4427.79	4227.40
2000	5878.30	6402.09	2006	5413.87	5399.14	2012	4337.50	4052.09
2001	5688.54	6175.93	2007	5123.59	5116.75	**2013**	**3861.17**	**3675.23**
2002	5513.38	5974.87	2008	5091.98	4891.17			
2003	5538.28	5813.02	2009	5005.65	4738.48			

Description: This indicator represents the number of criminal offenses per 100,000 people excluding traffic infractions.

Source: Statistics Canada, CANSIM table 252-0051

Indicator 11: High school graduation rate
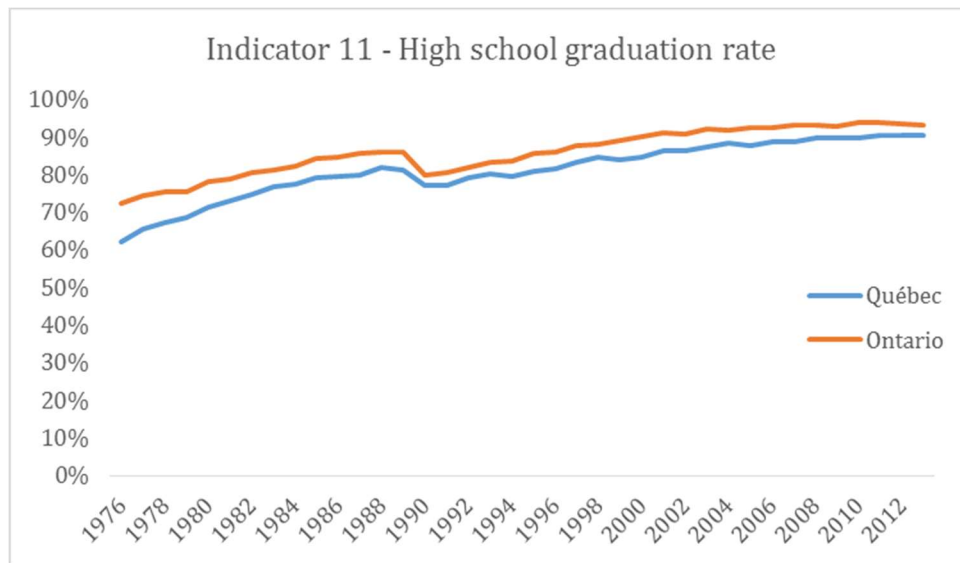
Indicator 11 – High school graduation rate								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1976	62%	72%	1989	81%	86%	2002	86%	91%
1977	66%	74%	1990	77%	80%	2003	87%	92%
1978	67%	75%	1991	77%	80%	2004	88%	92%
1979	69%	75%	1992	79%	82%	2005	88%	93%
1980	71%	78%	1993	80%	83%	2006	89%	92%
1981	73%	79%	1994	79%	84%	2007	89%	93%
1982	75%	81%	1995	81%	85%	2008	90%	93%
1983	77%	81%	1996	82%	86%	2009	90%	93%
1984	77%	82%	1997	83%	88%	2010	90%	94%
1985	79%	84%	1998	84%	88%	2011	90%	94%
1986	79%	85%	1999	84%	89%	2012	90%	94%
1987	80%	86%	2000	85%	90%	**2013**	**91%**	**93%**
1988	82%	86%	2001	86%	91%			

Description: This indicator shows the change in the percentage of individuals aged 25 to 34 who have obtained a high school diploma.

Source: Statistics Canada, Labour Force Survey, special authors' calculations

Indicator 12: University graduation rate
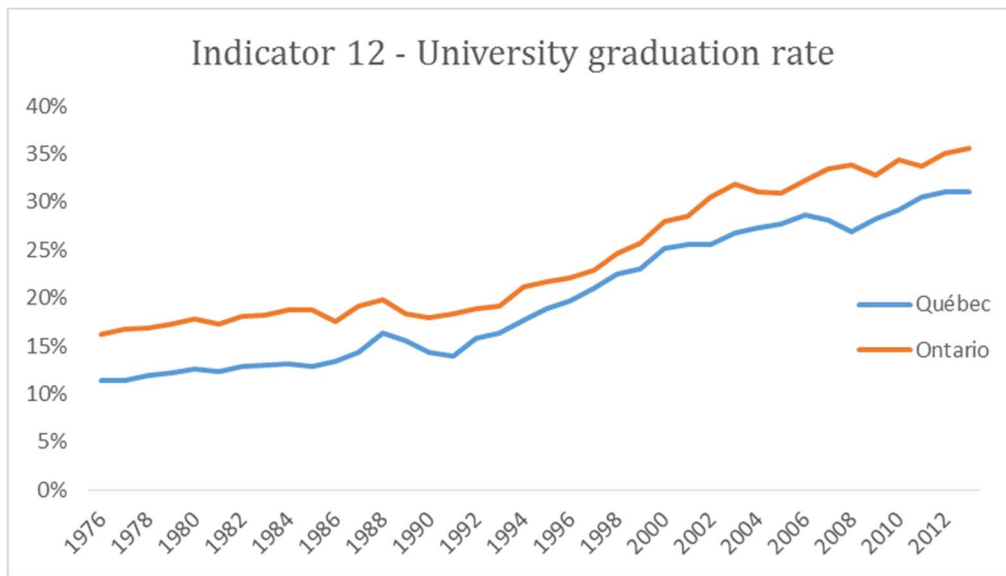
| Indicator 12 – University graduation rate								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1976	11%	16%	1989	16%	18%	2002	26%	30%
1977	11%	17%	1990	14%	18%	2003	27%	32%
1978	12%	17%	1991	14%	18%	2004	27%	31%
1979	12%	17%	1992	16%	19%	2005	28%	31%
1980	13%	18%	1993	16%	19%	2006	29%	32%
1981	12%	17%	1994	18%	21%	2007	28%	33%
1982	13%	18%	1995	19%	22%	2008	27%	34%
1983	13%	18%	1996	20%	22%	2009	28%	33%
1984	13%	19%	1997	21%	23%	2010	29%	34%
1985	13%	19%	1998	23%	25%	2011	31%	34%
1986	13%	17%	1999	23%	26%	2012	31%	35%
1987	14%	19%	2000	25%	28%	**2013**	**31%**	**36%**
1988	16%	20%	2001	26%	29%			

Description: This indicator shows the change in the percentage of individuals aged 25 to 34 who have obtained a university degree.

Source: Statistics Canada, Labour Force Survey, special authors' calculations

Indicator 13: Life expectancy at birth
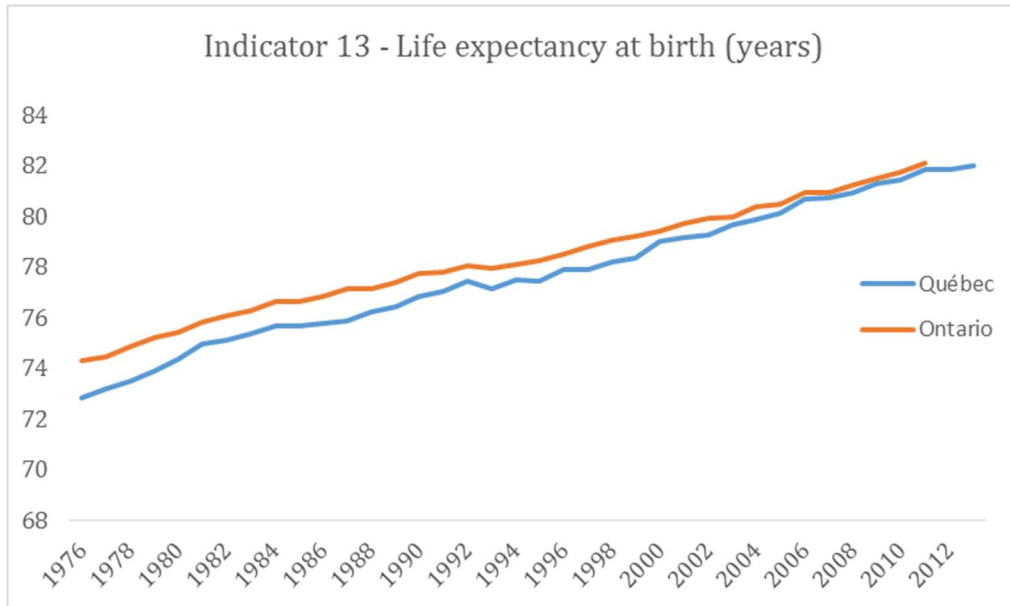
Indicator 13 – Life expectancy at birth (années)								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1976	72.83	74.29	1989	76.45	77.38	2002	79.25	79.90
1977	73.17	74.45	1990	76.84	77.76	2003	79.67	79.98
1978	73.50	74.85	1991	77.04	77.80	2004	79.89	80.40
1979	73.89	75.19	1992	77.44	78.04	2005	80.12	80.50
1980	74.36	75.39	1993	77.16	77.96	2006	80.68	80.95
1981	74.96	75.80	1994	77.49	78.09	2007	80.73	80.94
1982	75.09	76.07	1995	77.46	78.26	2008	80.94	81.22
1983	75.36	76.30	1996	77.92	78.52	2009	81.28	81.47
1984	75.65	76.61	1997	77.88	78.80	2010	81.46	81.74
1985	75.69	76.63	1998	78.20	79.06	2011	81.85	82.11
1986	75.75	76.81	1999	78.36	79.23	2012	81.85	82.11
1987	75.89	77.13	2000	79.02	79.42	**2013**	**82.00**	**82.11**
1988	76.24	77.13	2001	79.18	79.71			

Description: This indicator represents the evolution of life expectancy at birth.

Source: Database on Canadian longevity, University of Montreal (1976-2011), Statistical Institute of Quebec (2012, 2013, Québec)

Indicator 14: Stock of provincial public infrastructure as a percent of GDP

Indicator 14 - Stock of provincial public infrastructure as a percent of GDP
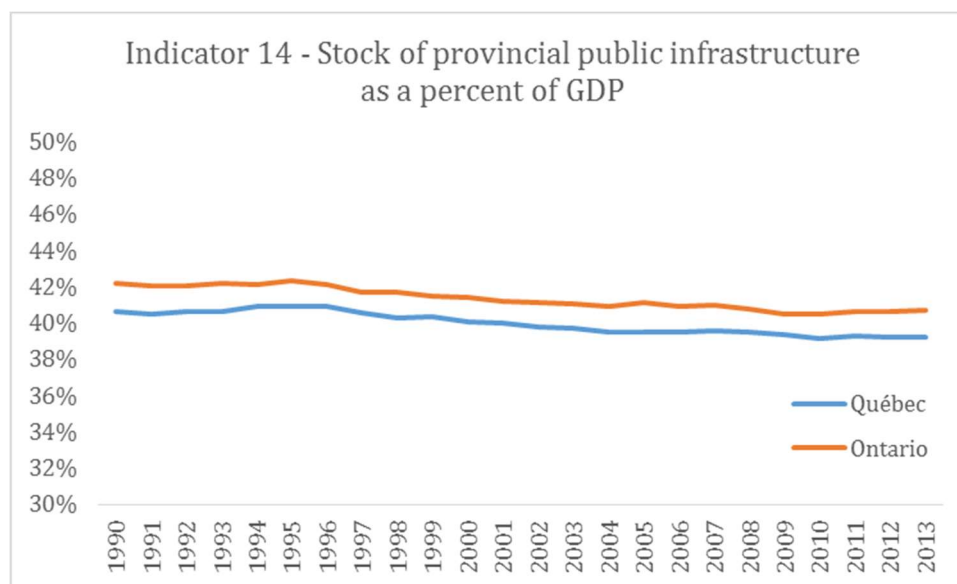
Indicator 14 - Stock of provincial public infrastructure as a percent of GDP								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1990	**40.63%**	**42.17%**	1998	40.30%	41.71%	2006	39.50%	40.93%
1991	40.50%	42.04%	1999	40.35%	41.46%	2007	39.57%	40.99%
1992	40.61%	42.07%	2000	40.09%	41.37%	2008	39.48%	40.75%
1993	40.61%	42.18%	2001	39.97%	41.20%	2009	39.33%	40.51%
1994	40.93%	42.14%	2002	39.80%	41.10%	2010	39.11%	40.50%
1995	40.88%	42.30%	2003	39.69%	41.06%	2011	39.27%	40.63%
1996	40.94%	42.12%	2004	39.46%	40.93%	2012	39.22%	40.62%
1997	40.58%	41.67%	2005	39.52%	41.10%	**2013**	**39.18%**	**40.73%**

Description: This index represents the net stock of public infrastructure in current dollars, as a percentage of GDP in current dollars. It includes the infrastructure of all types and all three levels of government (municipal, provincial, federal).

Source: Stock of provincial public infrastructure: Statistics Canada, CANSIM Table 031-0005, Gross Domestic Product: Statistics Canada, CANSIM table 384-0037

**Indicator 15: Self-reported general life satisfaction**
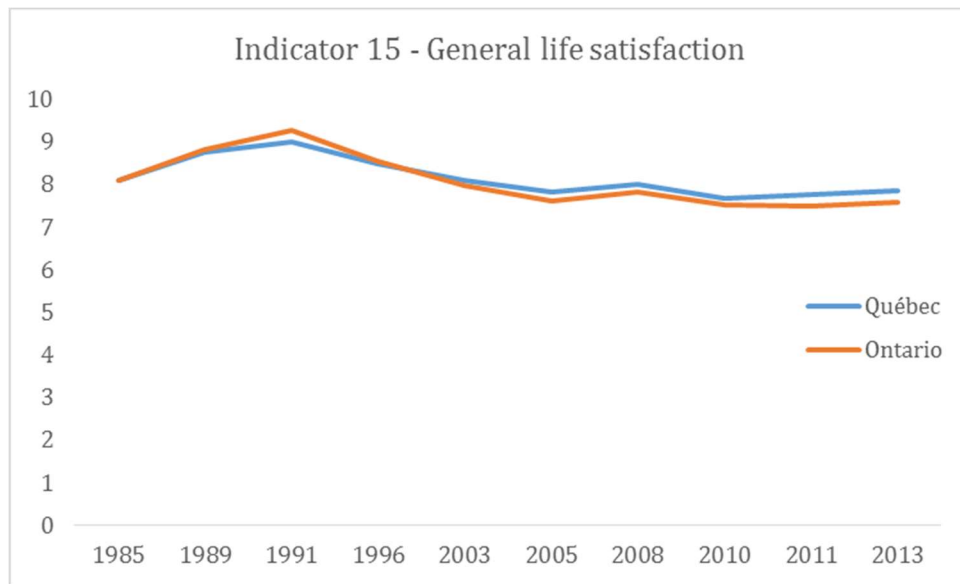
Indicator 15 - Self-reported general life satisfaction								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1985	8.10	8.10	2003	8.08	7.97	2011	7.76	7.49
1989	8.77	8.83	2005	7.84	7.62	**2013**	**7.87**	**7.60**
1991	8.99	9.26	2008	8.02	7.82			
1996	8.50	8.56	2010	7.66	7.53			

Description: This indicator collects the answers to the question of the GSS: How do you feel about your life in general? This same question was posed with two different scales (1-4, very dissatisfied to very satisfied, 1-10, very dissatisfied to very satisfied). The authors have converted the scale of 1-4 to a scale of 1 to 10.

Source: Statistics Canada, General Social Survey

Indicator 16: Self-reported mental health
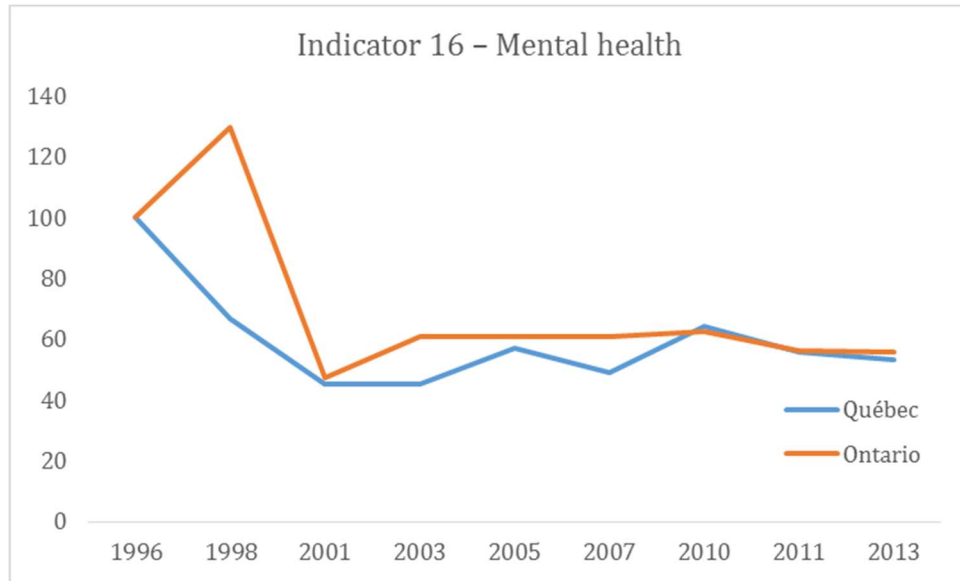
Indicator 16 – Self-reported mental health		
Année	Québec	Ontario
1996	100.00	100.00
1998	66.86	129.60
2001	45.39	47.19
2003	45.39	60.82
2005	57.14	
2007	48.95	
2010	64.41	62.58
2011	55.73	56.13
2013	**53.21**	**55.90**

Description: This indicator is a composite index. It combines the rates of major depression (based on a variable derived from health surveys Statistics Canada that uses a standard scale to determine whether a respondent experienced a depressive episode in the previous year) and perceived health mental individuals (variable of the General social Survey).

Source: Statistics Canada, General Social Survey

Indicator 17: Ratio of after-tax income (25-34 years and after-tax income (16 years and over)
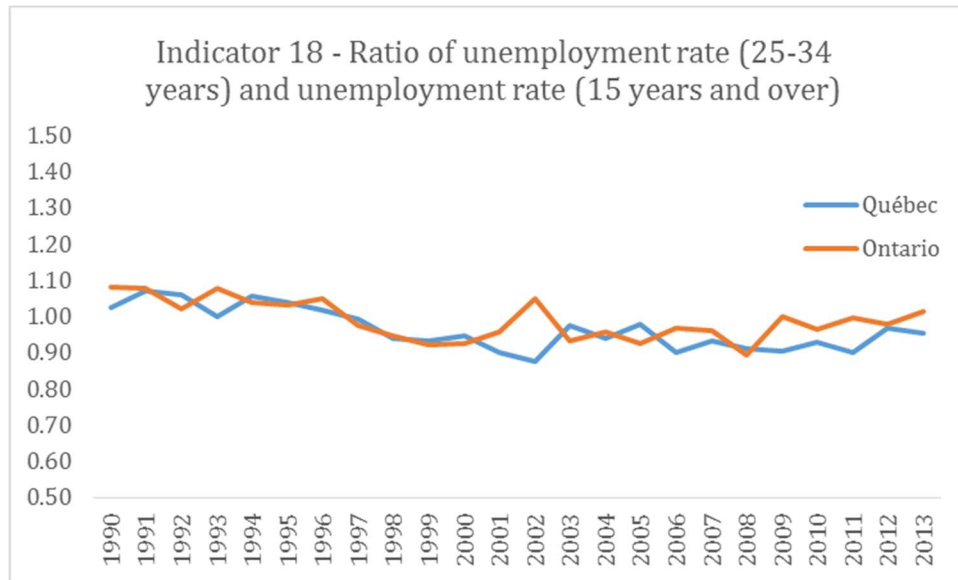

Indicator 17								
Ratio of after-tax income (25 - 34 years) and after-tax income (16 years and over)								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1976	1.50	1.47	1989	1.24	1.14	2002	1.19	1.18
1977	1.45	1.39	1990	1.24	1.15	2003	1.22	1.19
1978	1.46	1.36	1991	1.18	1.18	2004	1.17	1.21
1979	1.47	1.37	1992	1.23	1.21	2005	1.19	1.18
1980	1.45	1.36	1993	1.18	1.17	2006	1.17	1.18
1981	1.40	1.33	1994	1.21	1.20	2007	1.19	1.16
1982	1.33	1.32	1995	1.18	1.16	2008	1.23	1.18
1983	1.33	1.35	1996	1.18	1.14	2009	1.16	1.11
1984	1.34	1.31	1997	1.20	1.16	2010	1.21	1.14
1985	1.29	1.28	1998	1.19	1.16	2011	1.20	1.15
1986	1.27	1.24	1999	1.21	1.14	**2012**	**1.20**	**1.10**
1987	1.23	1.22	2000	1.21	1.22			
1988	1.28	1.18	2001	1.20	1.20			

Description: This indicator is calculated by dividing the median after-tax income for individuals aged from 25 to 34 years by the median after-tax income of all individuals 16 years and over.

Source: Statistics Canada, Survey of Labour Dynamics and Income Survey of Financial Security, master file compilation by Stéphane Crespo, ISQ.

Indicator 18: Ratio of unemployment rate (25-34 years) and unemployment rate (15 years and over)

Indicator 18 - Ratio of unemployment rate (25 to 34 years) and unemployment rate (15 years and over)								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1990	1.03	1.08	1998	0.94	0.95	2006	0.90	0.97
1991	1.07	1.08	1999	0.93	0.92	2007	0.93	0.96
1992	1.06	1.02	2000	0.95	0.93	2008	0.91	0.89
1993	1.00	1.08	2001	0.90	0.96	2009	0.90	1.00
1994	1.06	1.04	2002	0.88	1.05	2010	0.93	0.96
1995	1.04	1.03	2003	0.97	0.93	2011	0.90	1.00
1996	1.02	1.05	2004	0.94	0.96	2012	0.97	0.98
1997	0.99	0.97	2005	0.98	0.93	**2013**	**0.95**	**1.01**

Description: This indicator is calculated by dividing the specific unemployment rate of 25 to 34 year olds by the unemployment rate for all individuals 16 years and over.

Source: Statistics Canada, Labour Force Survey, special authors' calculations

Indicator 19: Ratio of median net assets (25-34 years) and median net assets (16 years and over)

Indicator 19 – Ratio of median net assets (25-34 years) and median net assets (16 years and over)		
Année	Québec	Ontario
1999	0.34	0.36
2005	0.25	0.22
2012	**0.22**	**0.25**

Description: This indicator is calculated by dividing the median net assets of individuals 25 to 34 years by the median net assets of all individuals aged 16 and over.

Source: Statistics Canada, Survey of Financial Security, master file compilation by Marc-André Gauthier

Indicator 20: Ratio of average tax rate (25-34 years) and average tax rate(16 years and over)
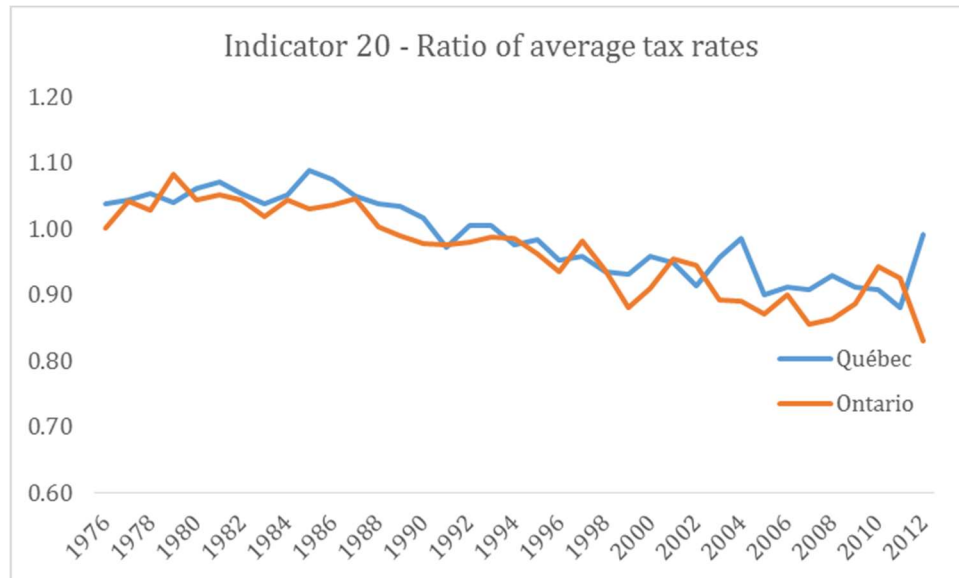
Indicator 20 – Ratio of average tax rate (25 to 34 years) and average tax rate (16 years and over)								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1976	1.04	1.00	1989	1.03	0.99	2002	0.91	0.94
1977	1.04	1.04	1990	1.02	0.98	2003	0.96	0.89
1978	1.05	1.03	1991	0.97	0.98	2004	0.98	0.89
1979	1.04	1.08	1992	1.00	0.98	2005	0.90	0.87
1980	1.06	1.04	1993	1.01	0.99	2006	0.91	0.90
1981	1.07	1.05	1994	0.97	0.99	2007	0.91	0.86
1982	1.05	1.04	1995	0.98	0.96	2008	0.93	0.86
1983	1.04	1.02	1996	0.95	0.93	2009	0.91	0.89
1984	1.05	1.04	1997	0.96	0.98	2010	0.91	0.94
1985	1.09	1.03	1998	0.94	0.94	2011	0.88	0.93
1986	1.07	1.04	1999	0.93	0.88	**2012**	**0.99**	**0.83**
1987	1.05	1.05	2000	0.96	0.91			
1988	1.04	1.00	2001	0.95	0.95			

Description: This indicator is calculated by dividing the average tax rate for individuals from 25 to 34 years by the average tax rate for all individuals 16 years and over. The average tax rate is calculated by the following formula: (Average income before taxes and transfers - the average income after taxes and transfers) / average income before taxes and transfers).

Source: Statistics Canada, Survey of Labour Dynamics and Income Survey of Financial Security, master file compilation by Stéphane Crespo, ISQ.

Indicator 21: Gross (Quebec) and net (Ontario) public debt of provincial government as a percentage of GDP. *(Not comparable across provinces)*

Indicator 21 – Net public debt of provincial government as a percentage of GDP (not comparable across provinces)								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1981	0.25	0.00	1992	0.46	0.17	2003	0.52	0.27
1982	0.29	0.00	1993	0.51	0.21	2004	0.51	0.27
1983	0.32	0.00	1994	0.54	0.27	2005	0.51	0.26
1984	0.34	0.00	1995	0.59	0.28	2006	0.50	0.27
1985	0.36	0.00	1996	0.59	0.30	2007	0.49	0.27
1986	0.38	0.00	1997	0.58	0.31	2008	0.49	0.26
1987	0.38	0.00	1998	0.58	0.31	2009	0.50	0.28
1988	0.38	0.00	1999	0.55	0.30	2010	0.50	0.32
1989	0.38	0.00	2000	0.52	0.32	2011	0.50	0.34
1990	**0.39**	**0.00**	2001	0.52	0.29	2012	0.52	0.36
1991	0.42	0.13	2002	0.51	0.28	**2013**	**0.53**	**0.37**

Description: This indicator is calculated by dividing the gross public debt (Quebec) or net public debt (Ontario) by GDP in current dollars. Gross public debt of Quebec has first been modified to compensate for changes in accounting of the Quebec government.

Source: Québec Gross debt: Quebec Ministry of Finance, special calculation of employees, net debt of Ontario: Ministry of Finance of Ontario GDP: Gross domestic product: Statistics Canada, CANSIM table 384-0037

Indicator 22: Percentage of provincial GDP allocated to provincial education spending
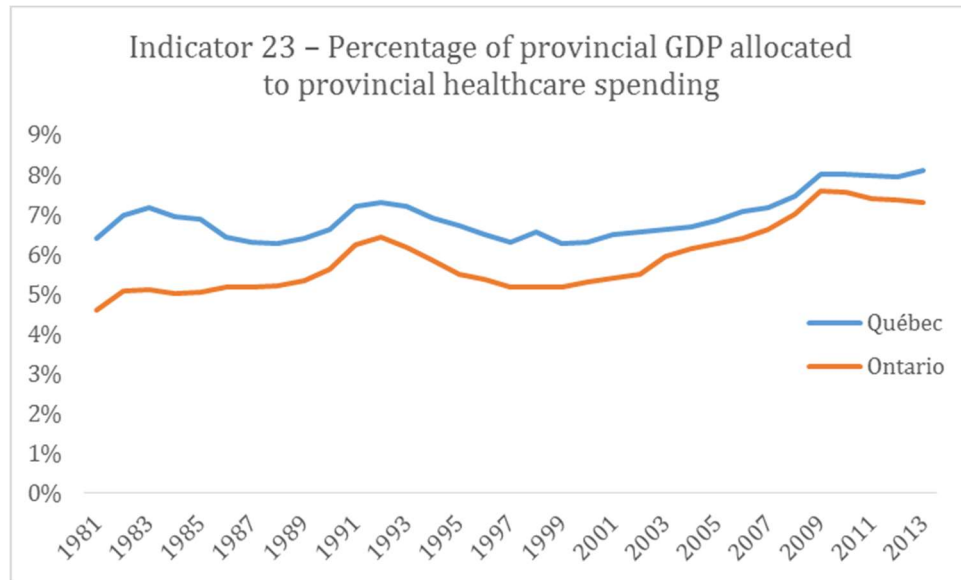

Indicator 22 - Percentage of provincial GDP allocated to provincial education spending
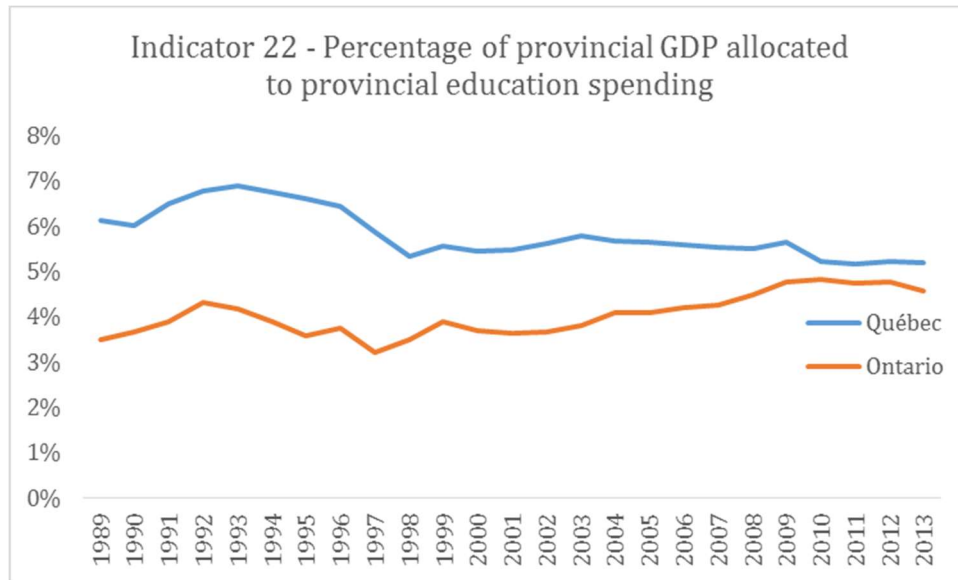
Indicator 22 - Percentage of provincial GDP allocated to provincial education spending								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1989	6.13%	3.48%	1998	5.33%	3.48%	2007	5.52%	4.26%
1990	**6.02%**	**3.66%**	1999	5.55%	3.89%	2008	5.50%	4.48%
1991	6.48%	3.88%	2000	5.44%	3.70%	2009	5.64%	4.76%
1992	6.78%	4.31%	2001	5.47%	3.64%	2010	5.22%	4.81%
1993	6.88%	4.17%	2002	5.60%	3.66%	2011	5.17%	4.73%
1994	6.73%	3.89%	2003	5.79%	3.81%	2012	5.23%	4.78%
1995	6.59%	3.58%	2004	5.68%	4.10%	**2013**	**5.18%**	**4.58%**
1996	6.43%	3.73%	2005	5.65%	4.08%			
1997	5.88%	3.20%	2006	5.60%	4.20%			

Description: This indicator represents provincial government spending in current dollars in education as a percentage of GDP in revenues in current dollars.

Source: Expenditures: Ministry of Finance of Quebec, Gross Domestic Product: Statistics Canada, CANSIM table 384-0037

Indicator 23: Percentage of provincial GDP allocated to provincial healthcare spending
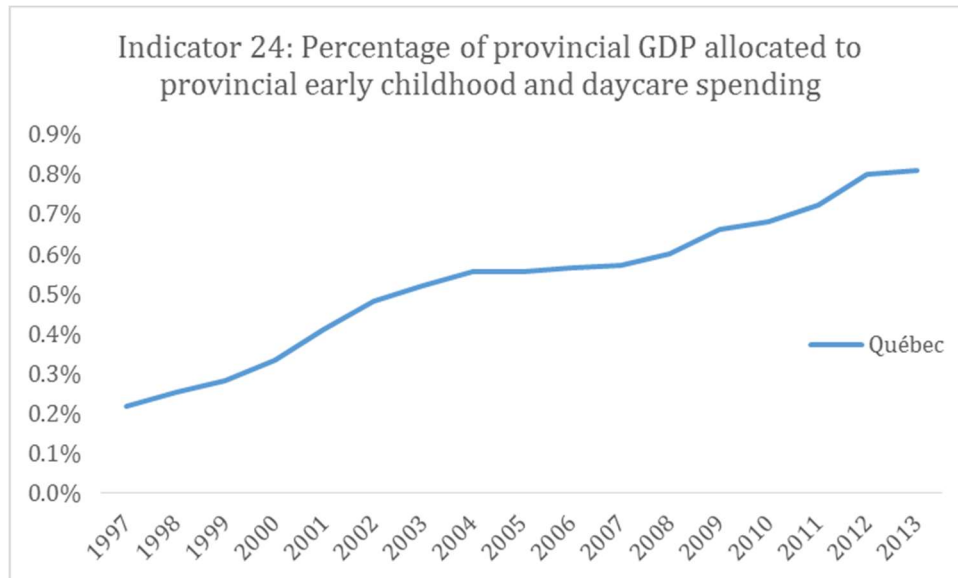

Indicator 23 – Percentage of provincial GDP allocated to provincial healthcare spending

Indicator 23 – Percentage of provincial GDP allocated to provincial healthcare spending								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1981	6.39%	4.59%	1992	7.29%	6.42%	2003	6.62%	5.96%
1982	6.99%	5.08%	1993	7.20%	6.16%	2004	6.70%	6.13%
1983	7.16%	5.12%	1994	6.93%	5.86%	2005	6.83%	6.28%
1984	6.96%	5.02%	1995	6.71%	5.50%	2006	7.06%	6.41%
1985	6.88%	5.04%	1996	6.48%	5.38%	2007	7.16%	6.62%
1986	6.44%	5.17%	1997	6.31%	5.17%	2008	7.45%	7.01%
1987	6.29%	5.18%	1998	6.55%	5.17%	2009	8.00%	7.60%
1988	6.28%	5.22%	1999	6.27%	5.16%	2010	8.01%	7.54%
1989	6.41%	5.33%	2000	6.29%	5.29%	2011	7.97%	7.41%
1990	**6.63%**	**5.64%**	2001	6.51%	5.38%	2012	7.93%	7.36%
1991	7.21%	6.23%	2002	6.55%	5.51%	**2013**	**8.11%**	**7.30%**

Description: This indicator represents the provincial government spending in current dollars in health as a percentage of GDP in revenues in current dollars.

Source: Expenditures: Canadian Institute for Health Information, Gross Domestic Product: Statistics Canada, CANSIM table 384-0037

Indicator 24: Percentage of provincial GDP allocated to provincial early childhood and daycare spending
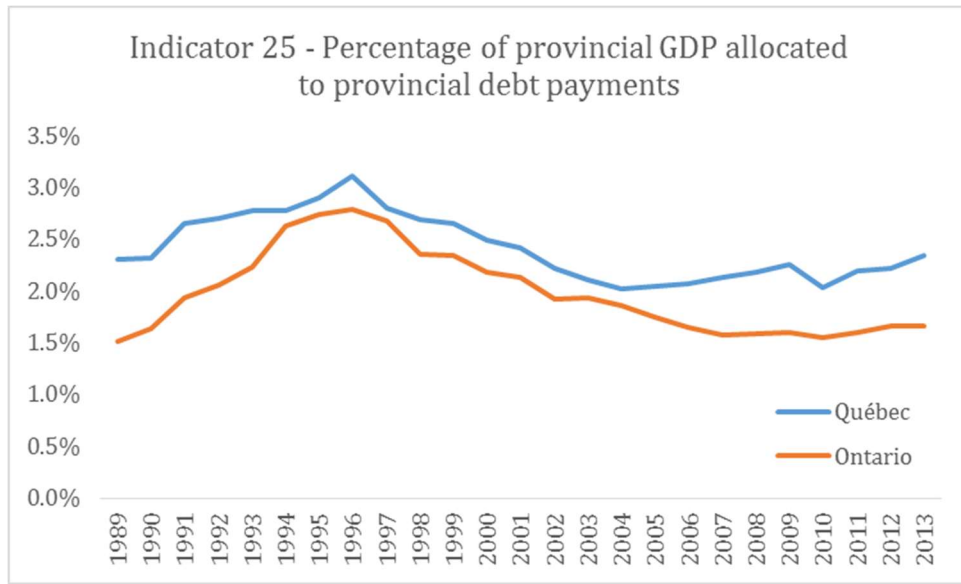

Indicator 24 – Percentage of provincial GDP allocated to provincial early chilhood and daycare spending					
Année	Québec	Année	Québec	Année	Québec
1997	0.22%	2003	0.52%	2009	0.66%
1998	0.25%	2004	0.55%	2010	0.68%
1999	0.28%	2005	0.56%	2011	0.72%
2000	0.33%	2006	0.56%	2012	0.80%
2001	0.41%	2007	0.57%	**2013**	**0.81%**
2002	0.48%	2008	0.60%		

Description: This index represents the provincial government spending in current dollars by going to daycares / early childhood education as percentage of GDP in revenues in current dollars. Spending is obtained by summing the expenditures of the Ministry of Family to the amount of the tax credit to childcare costs from the Quebec government.

Source: Expenditures: Ministry of Finance of Quebec, Gross Domestic Product: Statistics Canada, CANSIM table 384-0037

Indicator 25: Percentage of provincial GDP allocated to provincial debt payments


Indice 25 - Percentage of provincial GDP allocated to provincial debt payments								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1989	2.31%	1.51%	1998	2.68%	2.36%	2007	2.13%	1.57%
1990	**2.31%**	**1.64%**	1999	2.64%	2.34%	2008	2.18%	1.59%
1991	2.65%	1.93%	2000	2.49%	2.18%	2009	2.25%	1.60%
1992	2.70%	2.05%	2001	2.41%	2.13%	2010	2.03%	1.54%
1993	2.78%	2.23%	2002	2.22%	1.92%	2011	2.19%	1.60%
1994	2.77%	2.62%	2003	2.10%	1.93%	2012	2.21%	1.65%
1995	2.90%	2.74%	2004	2.02%	1.86%	**2013**	**2.34%**	**1.66%**
1996	3.11%	2.78%	2005	2.04%	1.75%			
1997	2.80%	2.67%	2006	2.07%	1.65%			

Description: This index represents provincial government spending in current dollars in debt service as a percentage of GDP in current dollars.

Source: Expenditures: Ministry of Finance of Quebec, Gross Domestic Product: Statistics Canada, CANSIM table 384-0037

**Indicator 26: Average age of provincial MNAs after election (Quebec only)**
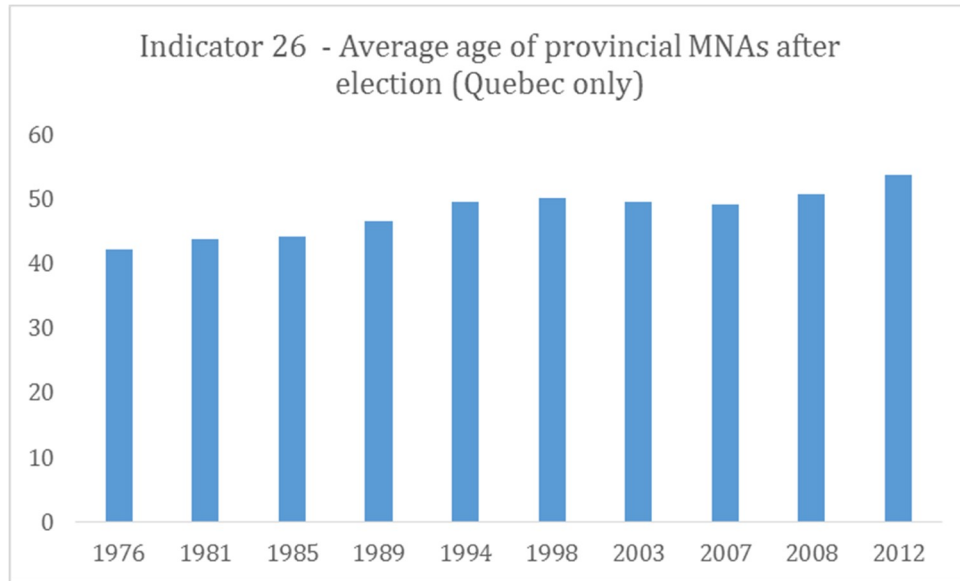
Indicator 26 – Average age of provincial MNAs after election					
Année	Québec	Année	Québec	Année	Québec
1976	42.20	1994	49.60	2008	50.80
1981	43.80	1998	50.10	**2012**	**53.70**
1985	44.10	2003	49.60		
1989	46.50	2007	49.10		

Description: This indicator represents the average age of MNAs after each election.

Source: Library of the Quebec National Assembly

**Indicator 27: Average age of board members in large Canadian companies**
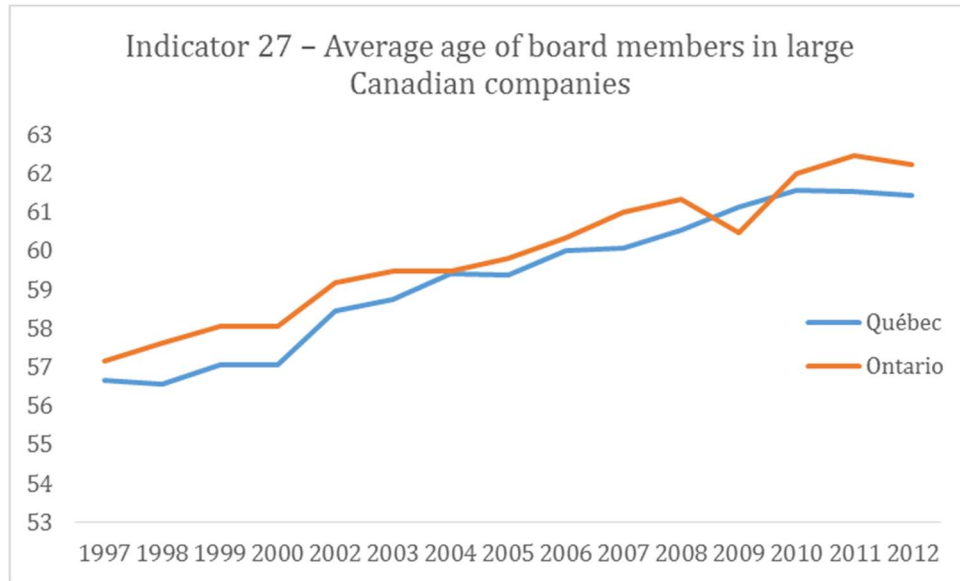
Indicator 27 – Average age of board members in large Canadian companies								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1997	56.66	57.15	2003	58.73	59.48	2009	61.12	60.46
1998	56.56	57.61	2004	59.40	59.46	2010	61.55	61.98
1999	57.05	58.05	2005	59.38	59.80	2011	61.51	62.43
2000	57.05	58.05	2006	60.02	60.34	**2012**	**61.42**	**62.21**
2001	58.08	58.79	2007	60.06	61.01			
2002	58.45	59.18	2008	60.54	61.32			

Description: This indicator represents the average age of the directors of large companies headquartered in the relevant province. For the years 1997 to 2003, the term of office is used to predict the age, which is not available in the Spencer Stuart data from 2004.

Source: Spencer Stuart Board Index, authors' calculations

**Indicator 28: Greenhouse gas emissions (megatonnes of CO2-equivalent)**
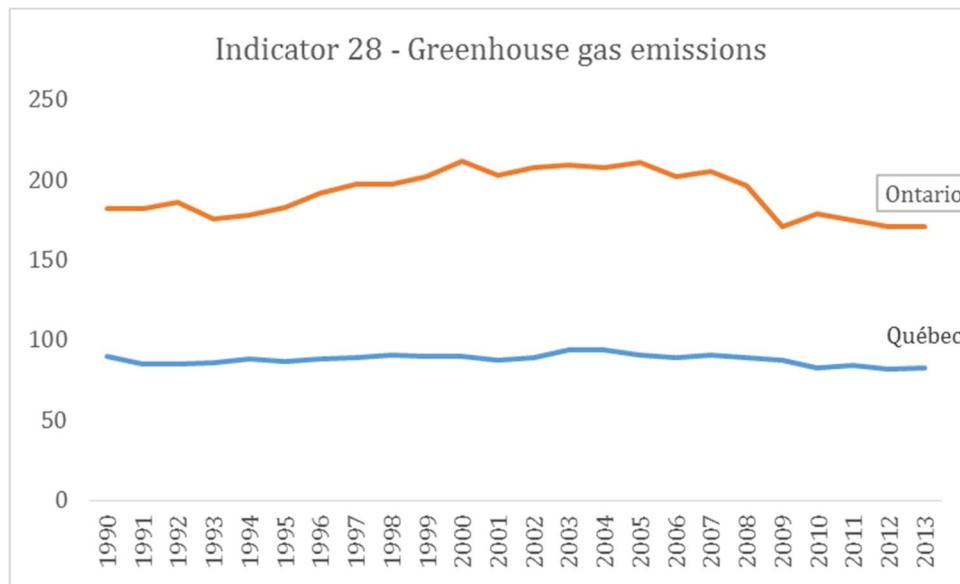
Indicator 28 - Greenhouse gas emissions (megatonnes of CO2-equivalent)								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
1990	**89.79**	**182.05**	1998	90.56	197.18	2006	88.82	201.91
1991	84.69	181.96	1999	89.80	201.96	2007	90.34	205.49
1992	84.62	185.52	2000	89.67	211.25	2008	88.72	196.29
1993	85.75	175.60	2001	87.45	202.69	2009	87.56	171.03
1994	88.01	177.72	2002	89.26	207.65	2010	82.67	178.34
1995	86.89	182.67	2003	93.55	209.27	2011	84.17	174.65
1996	88.27	191.16	2004	94.07	207.59	2012	81.64	170.90
1997	88.63	196.71	2005	90.20	210.96	**2013**	**82.65**	**170.77**

Description: This indicator represents the emission of greenhouse gases in Quebec in gigatonnes of carbon dioxide equivalent.

Source: Climate Change Connection, http://climatechangeconnection.org/wp-content/uploads/2014/08/Canada_GHG_emissions_trend_by_-province_1990-2013.pdf

**Indicator 29: Concentration of fine particulate matter in Southern Quebec and Southern Ontario**
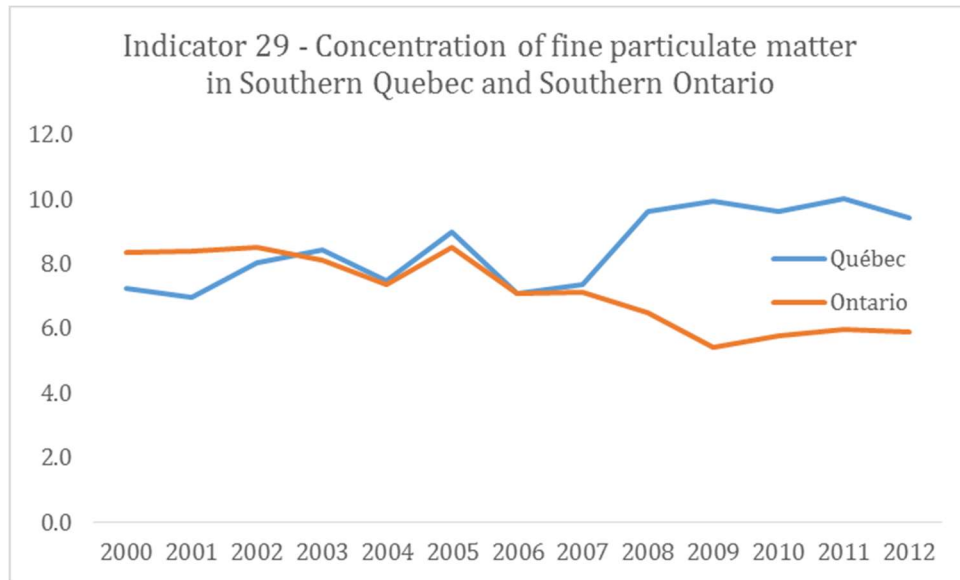
Indicator 29 - Concentration of fine particulate matter in Southern Québec and Southern Ontario								
Année	Québec	Ontario	Année	Québec	Ontario	Année	Québec	Ontario
2000	7.22	8.36	2005	9.00	8.50	2010	9.60	5.76
2001	6.97	8.37	2006	7.06	7.06	2011	10.03	5.95
2002	8.02	8.52	2007	7.34	7.10	**2012**	**9.41**	**5.88**
2003	8.43	8.11	2008	9.63	6.47			
2004	7.47	7.35	2009	9.94	5.40			

Description: This indicator represents the concentration of fine particles (less than 2.5 microns) in micrograms per cubic meter.

Source: Data on air quality, Environment Canada

Indicator 30: Quality of key watersheds (Quebec)
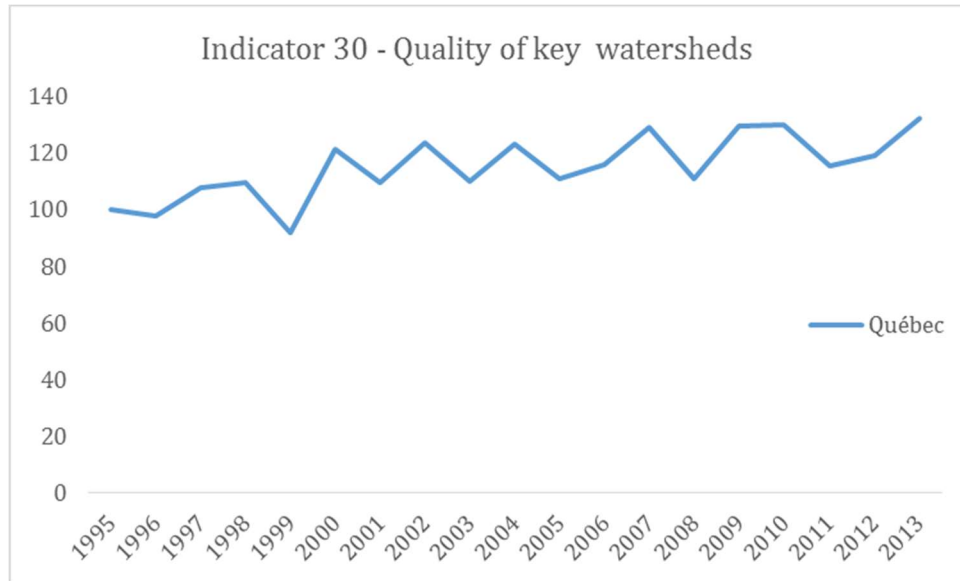
Indicator 30 - Quality of key watersheds					
Année	Québec	Année	Québec	Année	Québec
1995	100.00	2002	123.50	2009	129.35
1996	97.97	2003	109.84	2010	129.79
1997	107.81	2004	123.11	2011	115.34
1998	109.46	2005	110.88	2012	119.29
1999	91.97	2006	115.99	**2013**	**132.13**
2000	121.40	2007	129.13		
2001	109.53	2008	110.88		

Description: This indicator is a composite index combining 3 water quality indicators at the mouth of the main southern watersheds: fecal coliform, phosphorus and suspended solids. An increase in the indicator is an improvement of the water quality.

Source: Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques (MDDELCC), Banque de données sur la qualité du milieu aquatique (BQMA).

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