12th Global Meeting of the NTA Network

Measuring National Transfer Accounts from an intra-country perspective:
A first release for Canadian provinces

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Issue

- NTA accounts are constructed on a country basis

- Population aging and welfare state can be heterogeneous within a country

- This is particularly true for federal countries, such as Canada, where Provinces are in charge of Education, health expenditures, and social services

- Results that are valid at the country level could differ at the subnational level

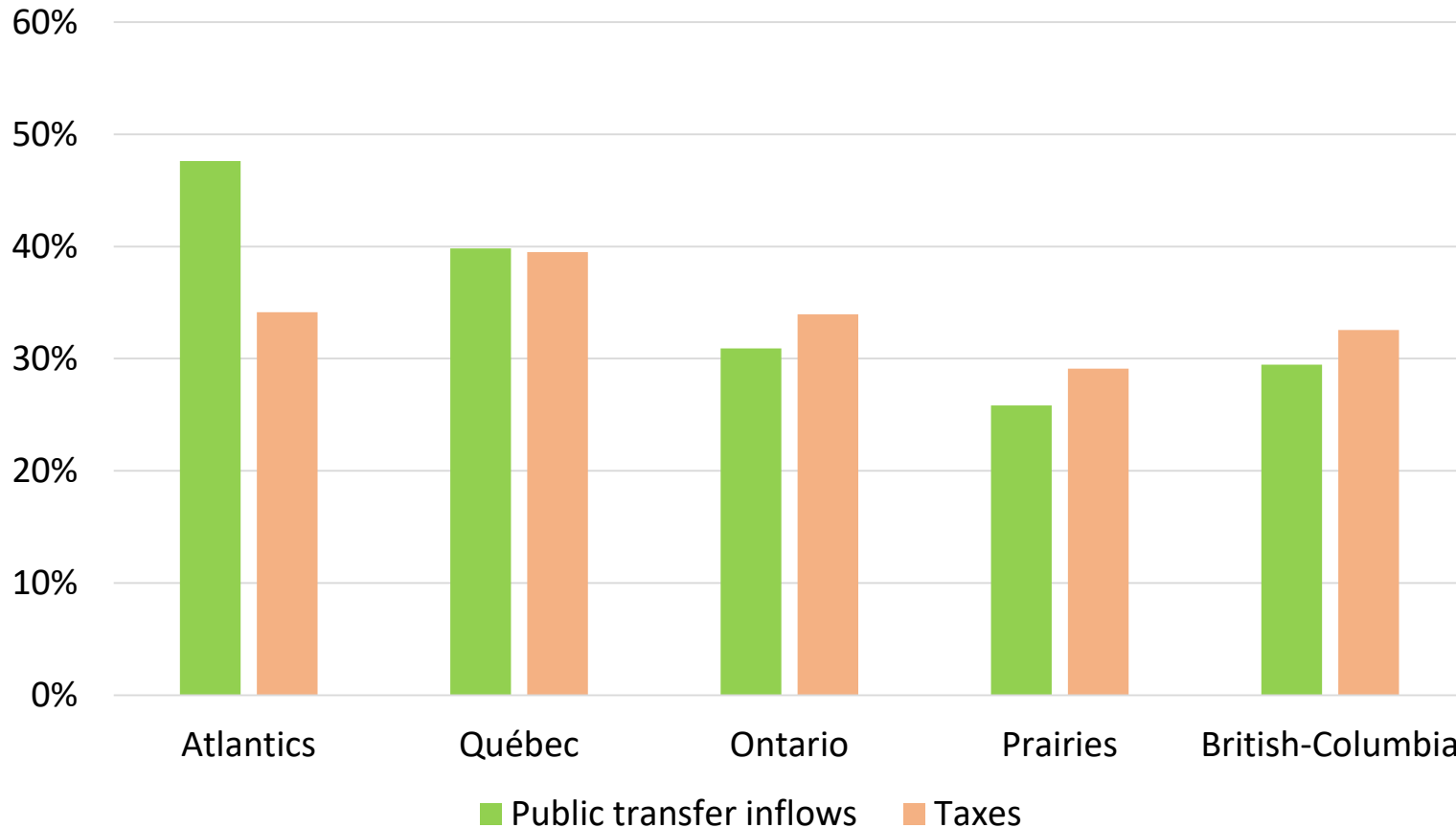uOttawa

Issue

Share of people aged 65+ in provinces

	Canada	Atlantics	Québec	Ontario	Prairies	British Columbia
1998	12%	13%	12%	12%	12%	13%
2018	17%	21%	19%	17%	14%	19%
2038	24%	31%	25%	24%	19%	25%

Distribution of the 37 millions people in Canada, 2018

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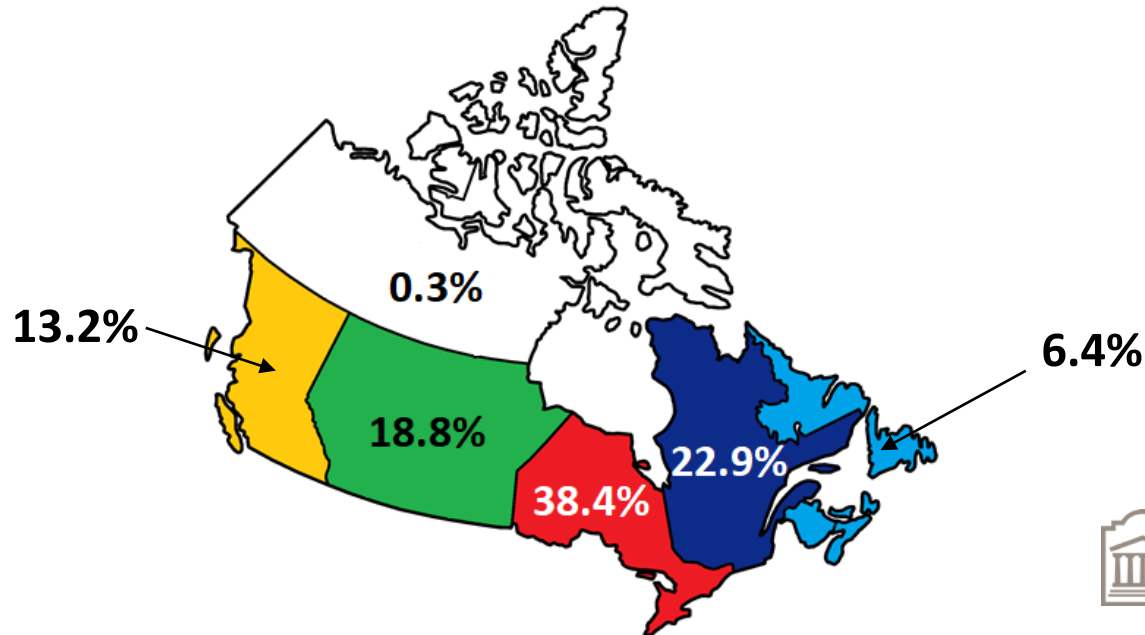
Issue

Public transfers flows in 2015, % GDP

Contributions

- Suggesting a new NTA methodology for sub-national accounts at the provincial level

- Building a new database for five Canadian regions between 1998 and 2013

🟦	Atlantic provinces
🟪	Québec
🟥	Ontario
🟩	Prairies
🟨	British Columbia

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Contributions

- Longitudinal NTA for few countries:
  - US: 1960-2003 (Lee, Donehower and Miller, 2011)
  - Taiwan: 1985-2005 (Lai and Tung, 2015)
  - France: 1979-2011 (Navaux, 2016; d'Albis *et al.*, 2017, 2018)
  - Australia: 1981-2010 (Rice, Temple & McDonald, 2017)
  - And many others: Mexico, Korea, Spain, UK

- Intra-country analysis :
  - Germany: 1980-2000 (Vogt and Kluge, 2015)

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Outline

- Subnational NTA equation
- Macro-aggregates and age profiles
- Who pays for the consumption of young and old in Canadian provinces?
- Conclusion

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Subnational NTA equation
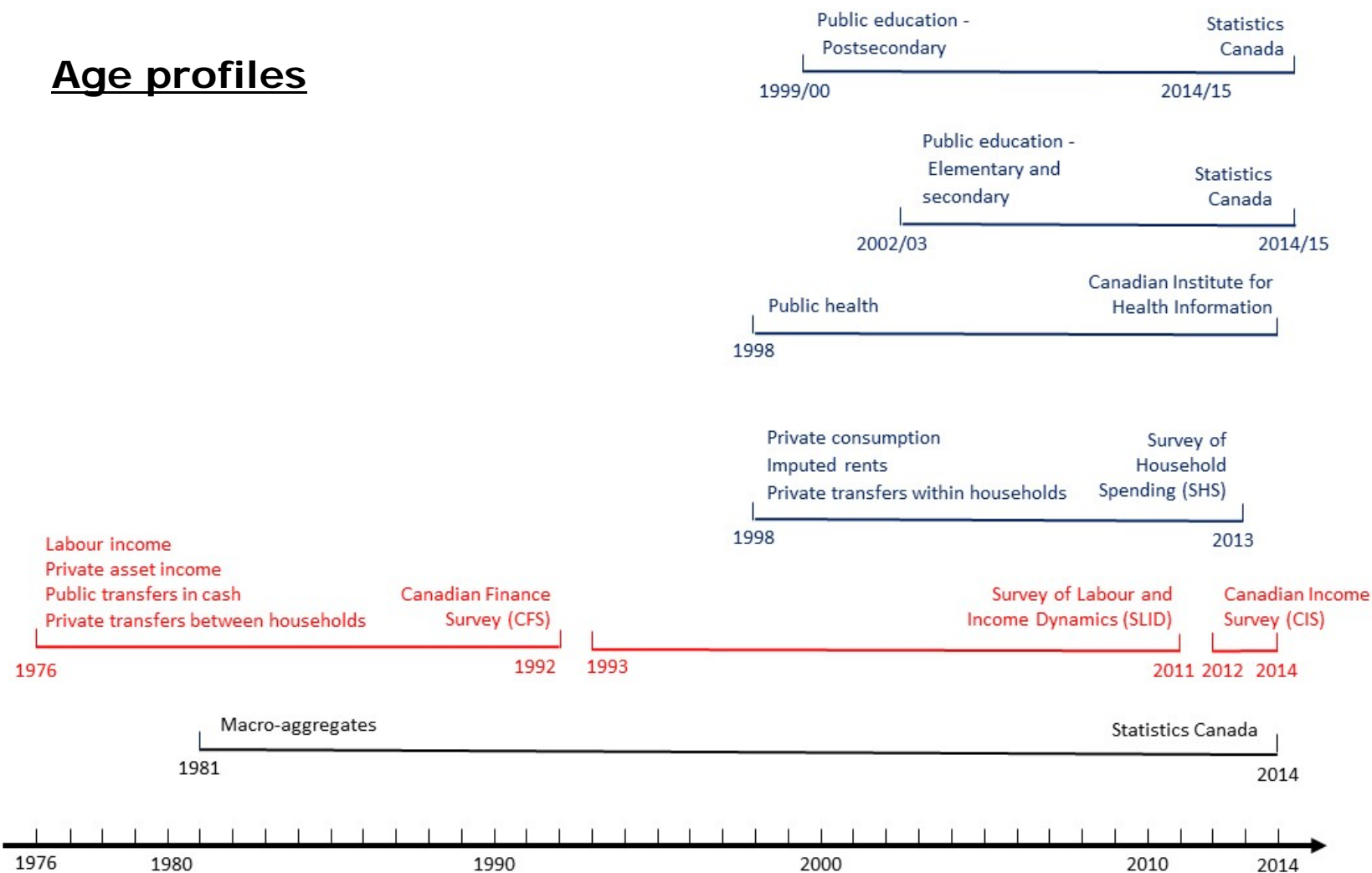
The lifecycle deficit and the age reallocation system

In each province, at each age a:

$$C(a) - YL(a) = \underbrace{TG + TF}_{} + \textcolor{red}{TGP} + \textcolor{red}{TFP} + [YA(a) - S(a)]$$

Lifecycle deficit

Net private transfers

Net private transfers between provinces

Asset–based reallocations

Net public transfers

Net public transfers between provinces

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Macro-aggregates and age profiles

Age profiles

Macro-aggregates

- Two steps :
  1. Gretchen's table

    Table 1. Macro-aggregates for the Atlantics in 2015 (dollars x 1 000 000)

	CF		SF		-T		YL		YAF
	CG	+	SG	+		=		+	YAG
private	63 492		3 625				70 179		9 119
public	34 271		-544						-332
total	97 763		3 081		-21878		70179		8 787

TG   TGP   TF + TFP

  2. Subdivide aggregates of table 1

1. Start with GDP by expenditure and income approaches, identifying private and public components.

	Final Consumption Expenditures	+	Gross Capital Formation	+	Net Exports	=	Compensation of Employees (CoE)	+	Gross Operating Surplus (GOS)	+	Gross Mixed Income (GMI)	+	ITLS
private	72 778		22 770				57 074		21 029		13 592		
public	34 271		5 301						4 875				
total	107 049		28 071	PRO	-12 764		57 074		25 904		13 592		13 003
				RDM	-12 805								

2. Adjust for statistical discrepancies (SD) in GDP by approach. Note that this step does not balance.

				-Income SD	=	-CoE % Expend SD	+	-GOS % Expend SD	+	-GMI % Expend SD
private				12,00		-6,49		-2,31		-1,20

3. Go from domestic to national basis by including net Rest-of-World (ROW) Amounts

		+net Primary Inc from ROW	=	+net CoE from ROW	+	+net Property Inc from ROW
private				-109		-390
public						-442
total		-941		-109		-832

4. Reallocate GMI to Labor verus Capital

		=	+GMI TO LABOR	+	+GMI TO CAPITAL	-	-GMI
private			9 932		3 659		-13 591

5. Reallocate ITLS to consumption, labor and capital to go from "market" to "basic" prices (Worksheet)

	-C share of ITLS	=	+L share of ITLS	+	+K share of ITLS	-	-ITLS
private	-9 286		3 289		428		-13 003

6. Go from gross to net by removing Consumption of Fixed Capital (CFC) from capital share of profits.

	LESS CFC	=	LESS CFC
private	-15 604		-15 604
public	-4 765		-4 765
total	-20 369		-20 369

7. Take saving-related amounts out of net exports and add to investment column to separate saving from transfers.

	+saving related Am.	=	-saving related Am.

7a. Net Capital Transfers

	+saving related Am.	=	-saving related Am.
private	-305		
public	310		
total	6	=	-6

7b. Net Lending/Borrowing

		=	
private	-3 398		
public	-1 229		
total	-4 627	=	4 627

7c. Net non-produced non- financial assets (NPNFA)

		=	
private	161		
public	-161		
total	0	=	0

8. Add columns to get higest-level NTA flow account macro controls.

	CF	+	SF	+	-T	=	YL	+	YAF
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Atlantic provinces, 2015

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Available at the provincial level

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Not available at the provincial level

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Macro-aggregates

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$$\frac{CF}{CG} + \frac{SF}{SG} + (-T) = YL + \frac{YAF}{YAG}$$

Negative TG - ROW	Negative TG - Between Provinces	Negative TF
-656	-13732	-7490

Shared between provinces according to the GDP

From national accounts

Residual

Macro-aggregates

Gretchen's table is calculated for the seven Canadian "regions:"

🇨🇦	Canada
=	
🟦	Atlantic provinces
+	
🟦	Québec
+	
🟥	Ontario
+	
🟩	Prairies
+	
🟨	British Columbia
+	
⬜	Territories
+	
⬛	Canadian residents in the ROW

Age profiles

- Age profiles for territories are only available for consumption and for a few years

- Other age profiles are obtained by scaling the per capita age profile of Canadian regions to match the aggregate values for the territories

- The same hypothesis is applied for the ROW

Age profiles

- Check: Are the subnational NTAs consistent with the country-based NTAs?
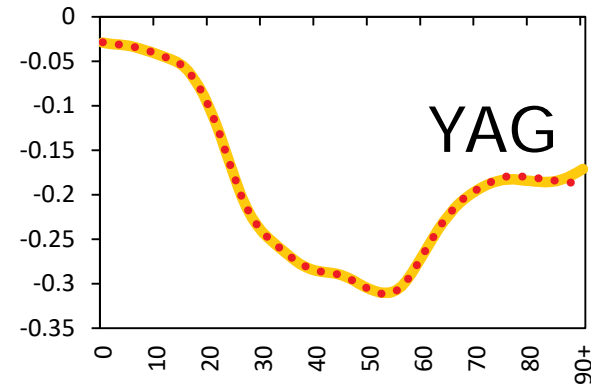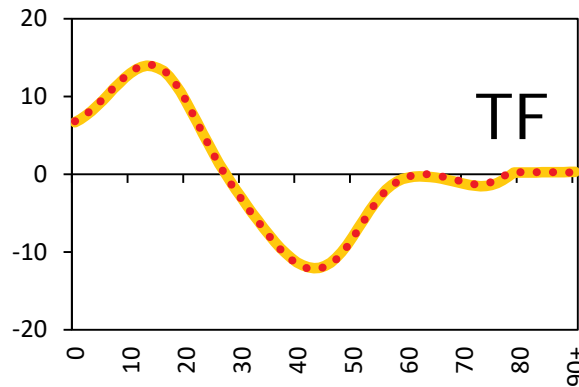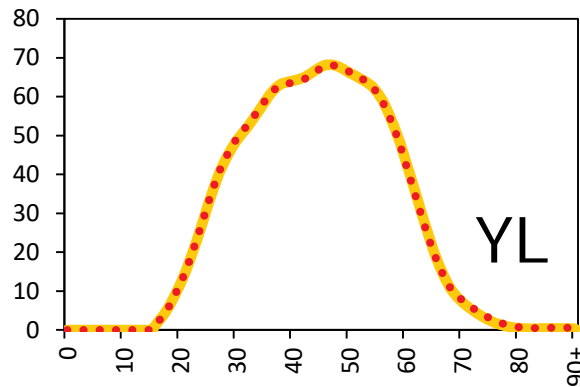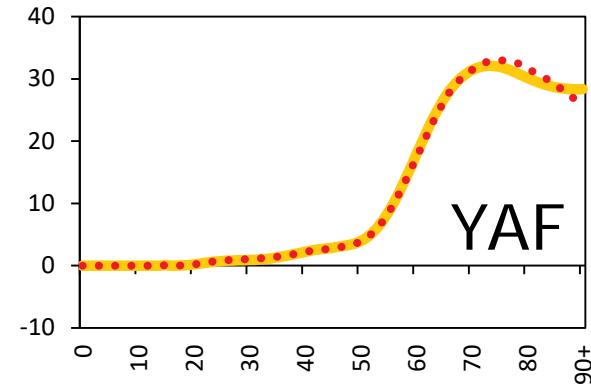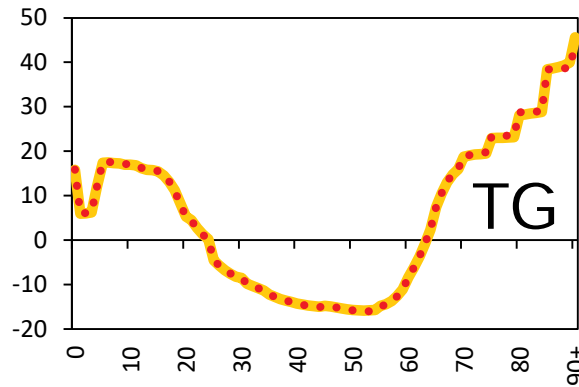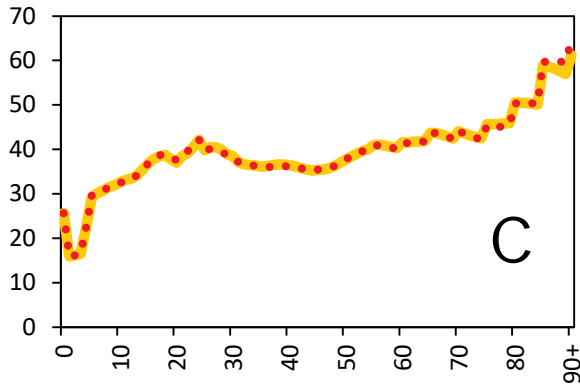

Canada ····· Sum of "regions"

Who pays for the consumption of young and old in Canadian provinces?

How consumption is financed by the **state**, the **family** and **individuals**

d'Albis *et al.* (2018)

$$C(a) = TG(a) + \boldsymbol{TGP(a)} + YAG(a) - SG(a)$$
$$+ TF(a) + \boldsymbol{TFP(a)}$$
$$+ YL(a) + YAF(a) - SF(a)$$

Who pays for the consumption of young and old in Canadian provinces?

Share of consumption financed by the state, the family and individuals in Canada
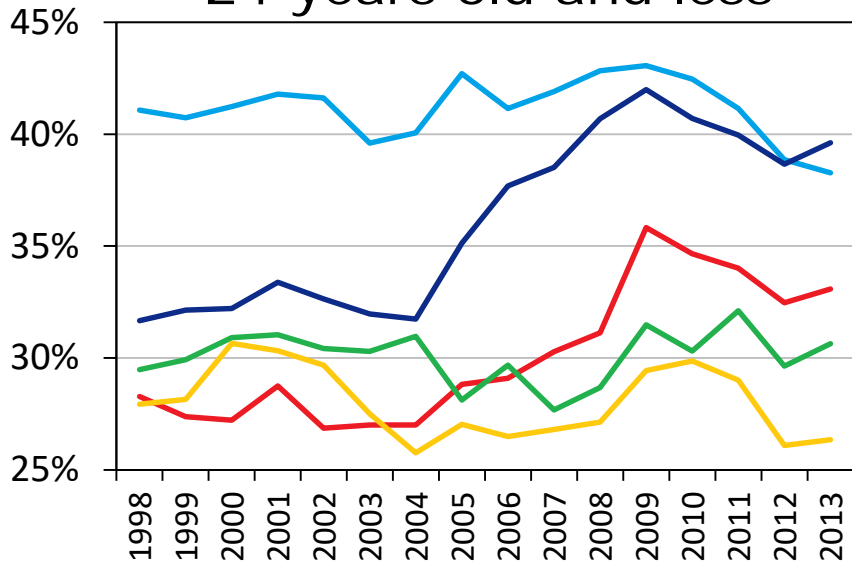

24 years old and less
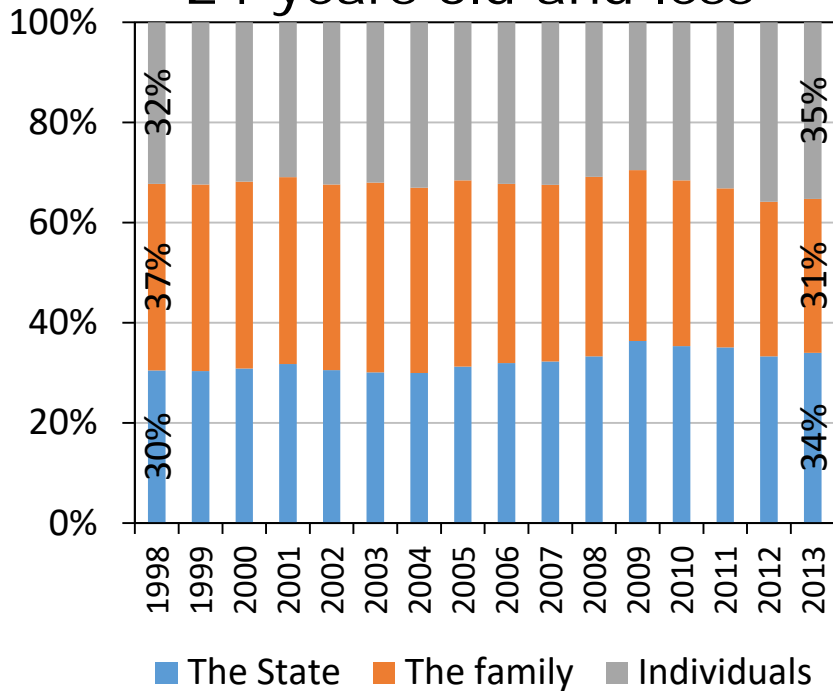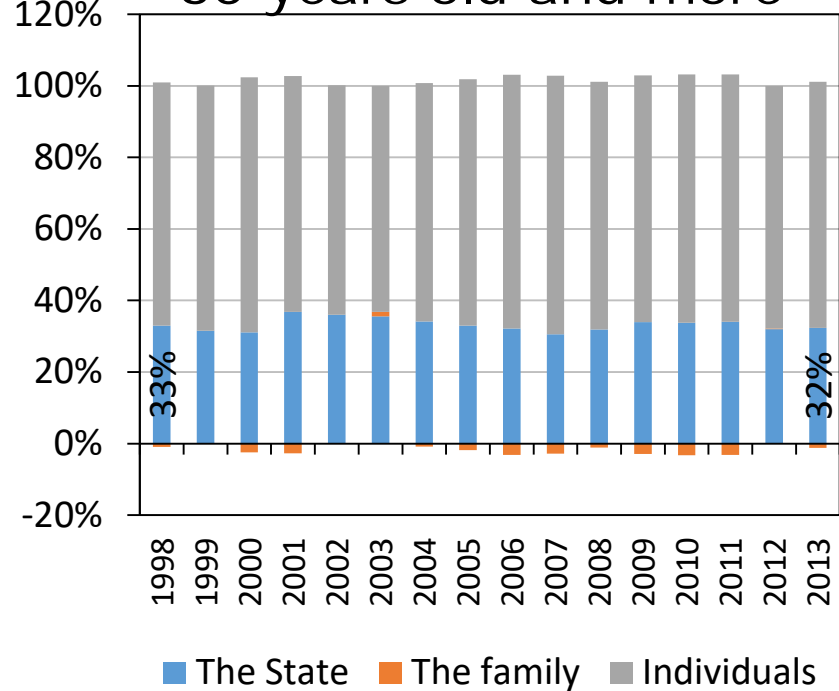
60 years old and more

The State   The family   Individuals

Who pays for the consumption of young and old in Canadian provinces?

Share of consumption financed by the state in Canadian Provinces

24 years old and less

60 years old and more

Legend: Atlantics, Québec, Ontario, Prairies, British-Columbia
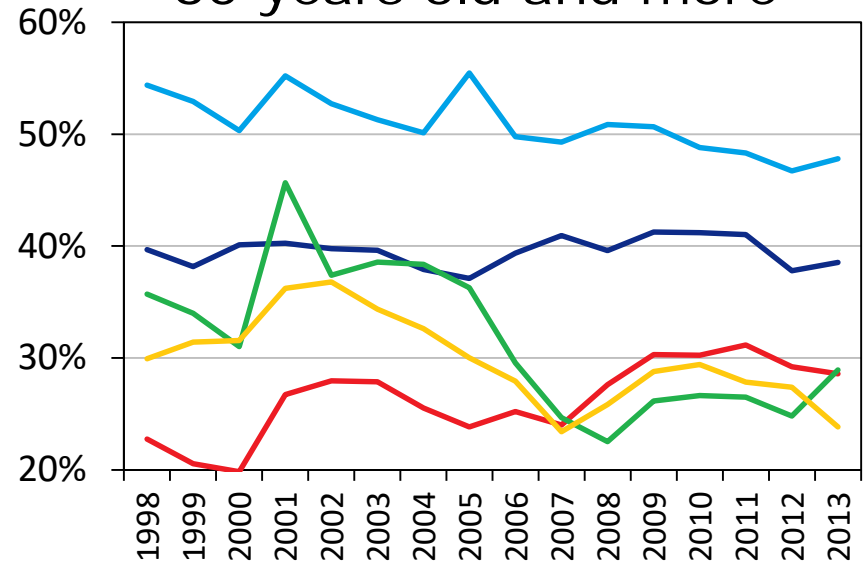
Conclusion

- Heterogeneous population aging and ≠ welfare states in Canada

- This justifies sub-national NTAs for Canadian provinces

- Cross-sectional and longitudinal results show huge difference between Province

- Several major issues in Canada:
  - Population aging in B-C and in the Atlantics: cut on young and old
  - Population aging in the Atlantics and in Québec: High level of TG + strong aging process
  - Population aging is a burden for every province: Transfers between provinces are compromised?

- Implementation of sub-national NTAs with a longitudinal perspective may not always be possible: France for instance

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Promising new accounts for the NTA project

Emotion transfers from young to old

Kylian Mbappé, 19 years old

France, 41 years old on average

Promising new accounts for the NTA project

2026: Mexico, US and Canada

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